COOLING FAN

San Ace

2018

SANYO DENKI

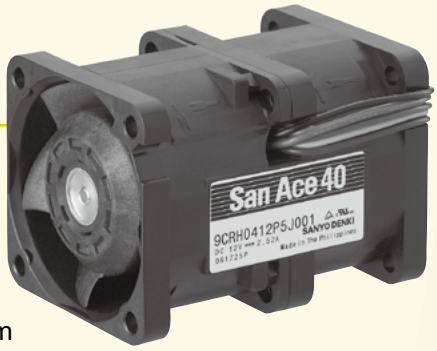
San Ace Recommendations Featuring New Products

NEW

DC Counter Rotating Fan 9CRH type

The series lineup has been enriched with a new model featuring higher static pressure than our current model*. It offers ideal cooling solutions for servers, power supplies, ICT devices, and data storage systems.

* 40×40×56 mm *San Ace 40 9CRV* type.



40×40×56 mm
pp. 229 to 230

NEW

DC G Proof Fan 9GP type

These cooling fans can withstand high levels of G-force. These are suitable for cooling devices that are required to operate in environments with high G-force or vibration.

120×120×38 mm
pp. 408 to 409

Ø172×150×51 mm
pp. 410 to 411

DC Bracket-mounted Centrifugal Fan 9B1T type

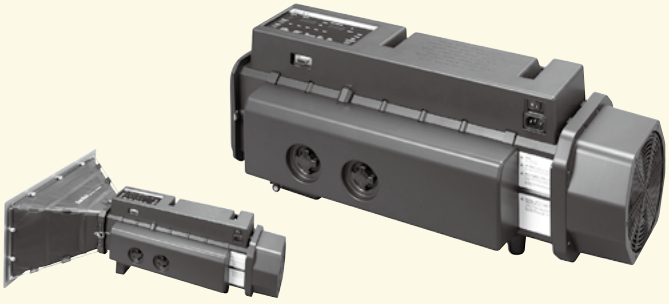
The Centrifugal Fan and an inlet nozzle come integrated in one, making the installation work to your device easy.

270×270×99 mm
pp. 430 to 432

270×270×119 mm
pp. 433 to 434

Airflow Tester pp. 506 to 511

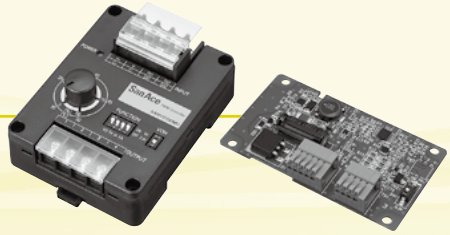
This is a portable measuring device that enables you to easily measure the system impedance and operating airfow of devices.



With connection duct mounted

PWM Controller pp. 500 to 505

This device provides external speed control of PWM control function fans. By using this product, PWM control function fans can be fully utilized without the need for preparing new circuits, contributing to reducing the system power consumption and the fan noise.



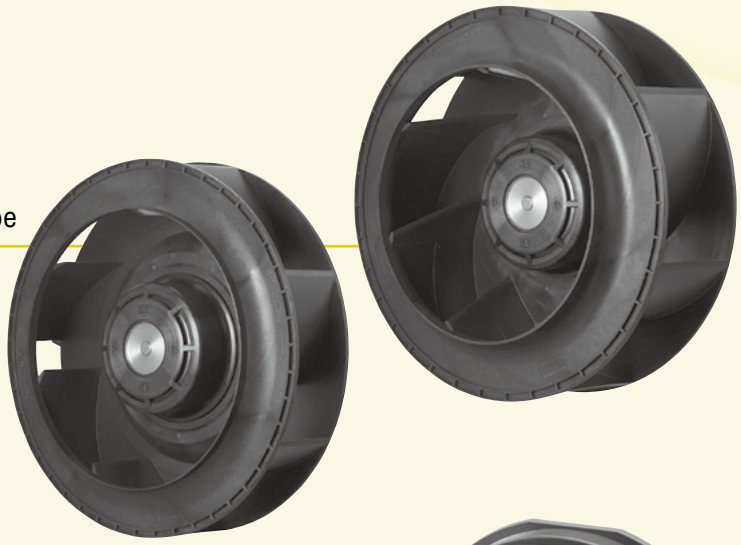
Box type PCB type

A wide variety of products are available in various features. See the following pages to find out more.

NEW

DC Splash Proof Centrifugal Fan 9W2T type

The series lineup of the Splash Proof Centrifugal Fan has been expanded.



Ø221×71 mm
pp. 330 to 331

Ø225×99 mm
pp. 332 to 333

NEW

DC Reversible Flow Fan 9RF type

The series lineup has been expanded for the Reversible Flow Fans that can blow air in two switchable directions. These are especially suitable for ventilating houses, and cooling beverage vending machines, food display cases, and LED lights.

Ø92×38 mm
pp. 262 to 263

AC ACDC Fan 9AD type

These fan operates by internally converting AC power into DC power. It provides the superior performance of a DC fan with the flexibility of AC input.

92×92×38 mm
pp. 458 to 460

120×120×38 mm
pp. 461 to 463

NEW

DC Blower 9BMC type

The series lineup has been expanded with a new model with higher airflow and higher static pressure than our current model*. It is suitable for servers, power supplies, printers, copy machines, air purifiers, house ventilation devices, and fuel cells.

* 97×33 mm *San Ace B97 9BMB* type.

97×33 mm
pp. 444 to 445

NEW

DC Low Power Consumption Fan 9GA type

The series lineup has been expanded with a new model featuring even lower power consumption than our current model*. It is suitable for use in medical equipment, electrical measuring instruments, PV inverters, industrial inverters, LCDs, and arcade amusement machines.

* 120×120×25 mm *San Ace 120 9GV* type.

120×120×25 mm
pp. 168 to 171

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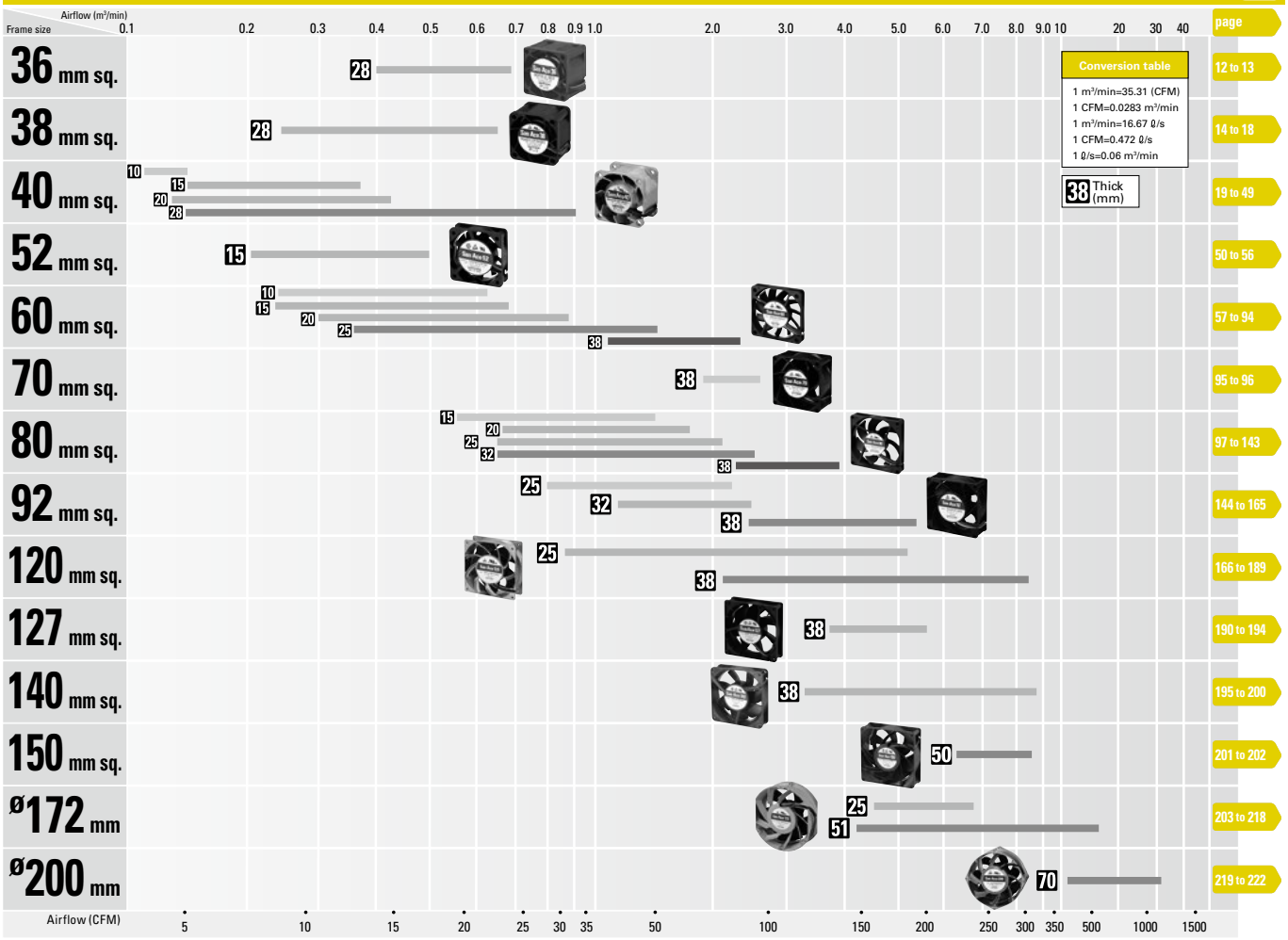
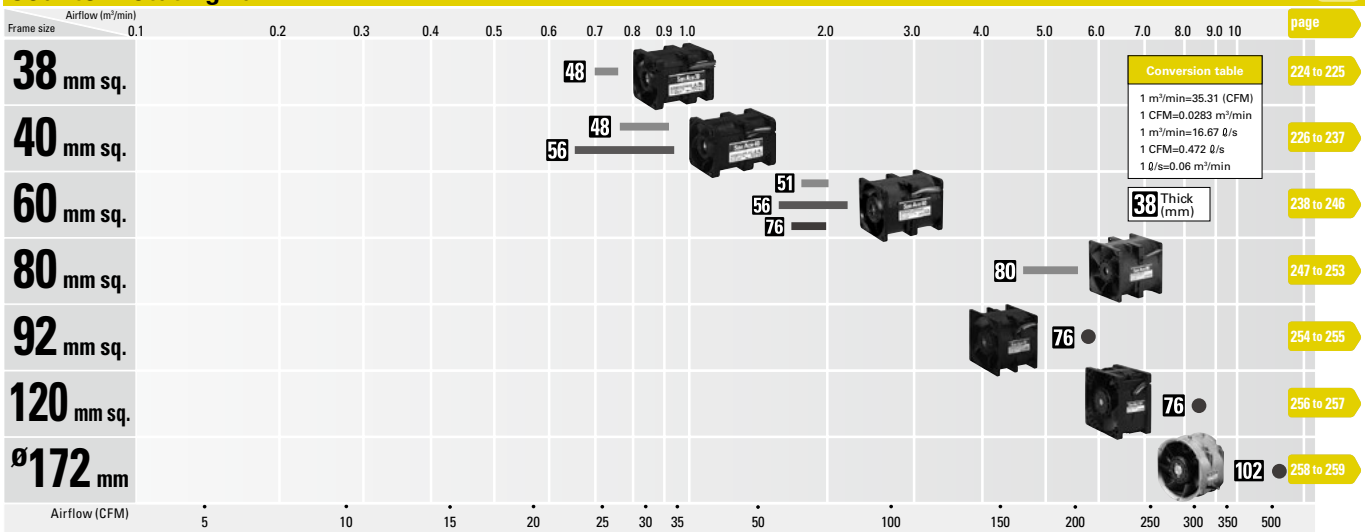
DC Fan

DC



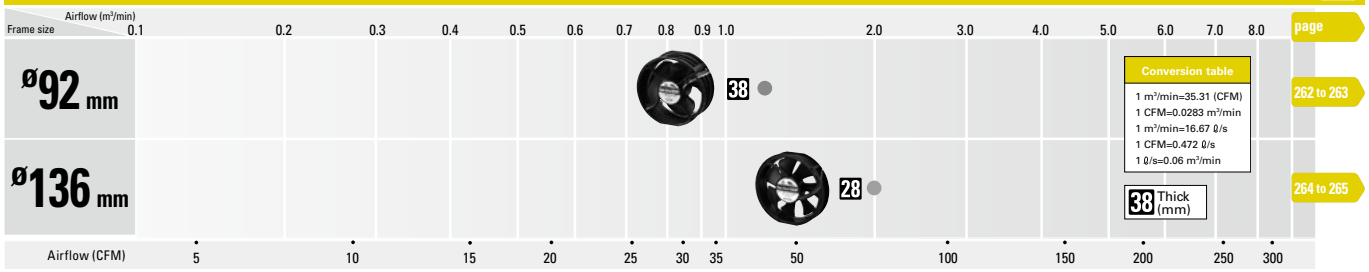
Counter Rotating Fan

DC



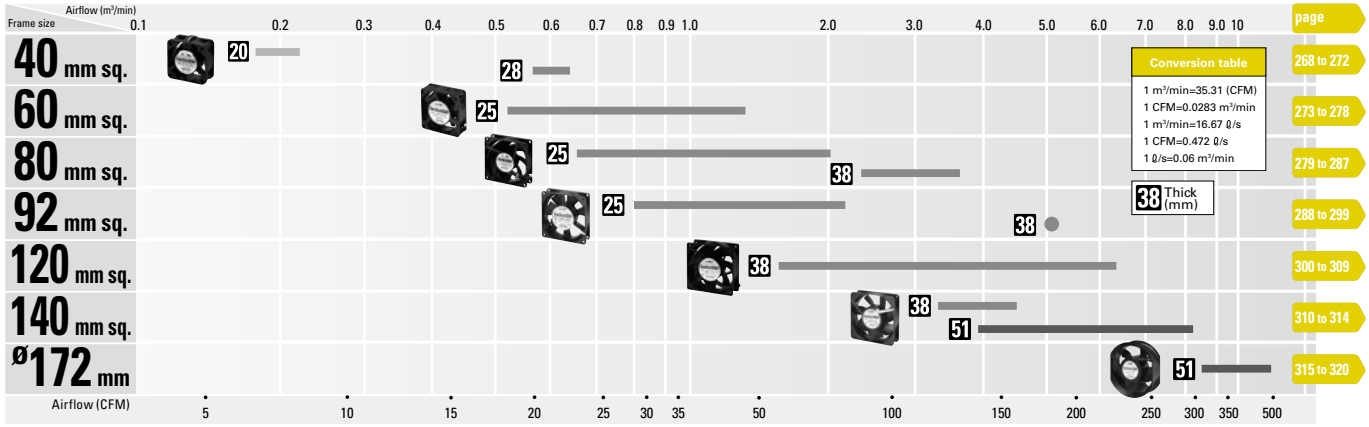
Reversible Flow Fan

DC



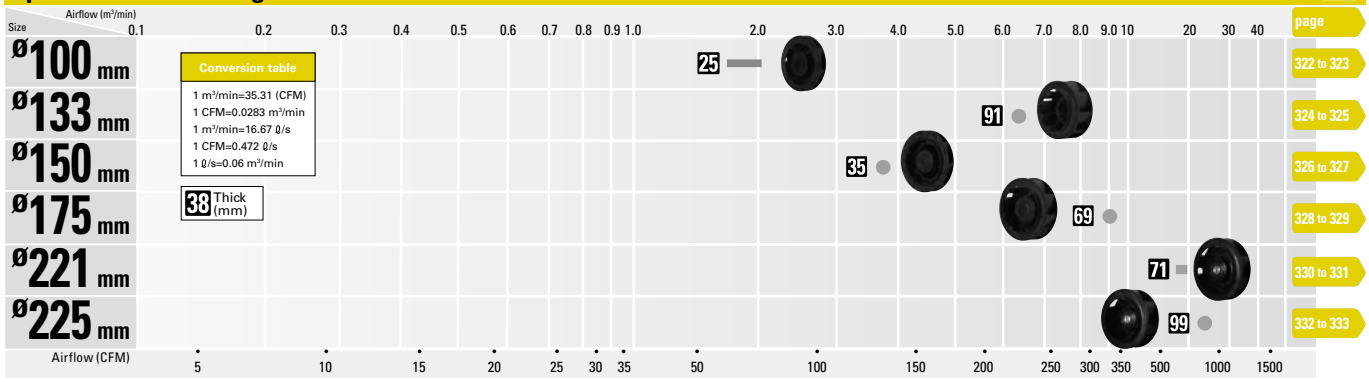
Splash Proof Fan

DC



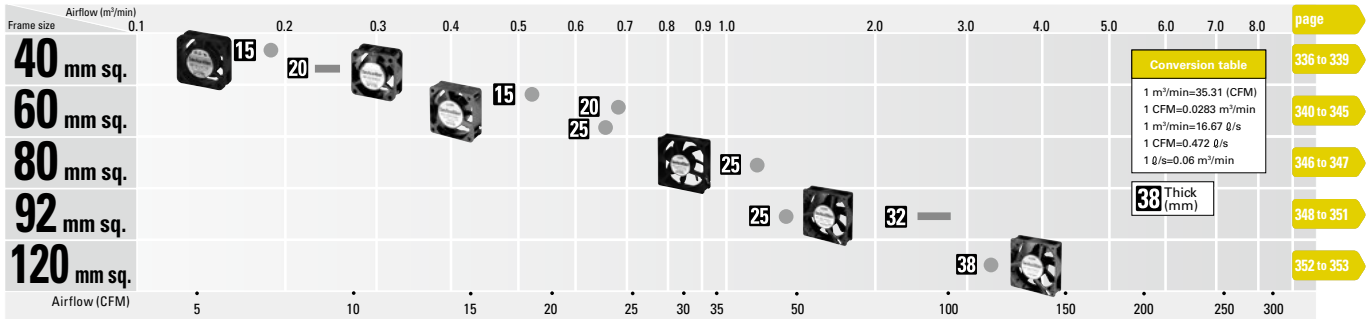
Splash Proof Centrifugal Fan

DC



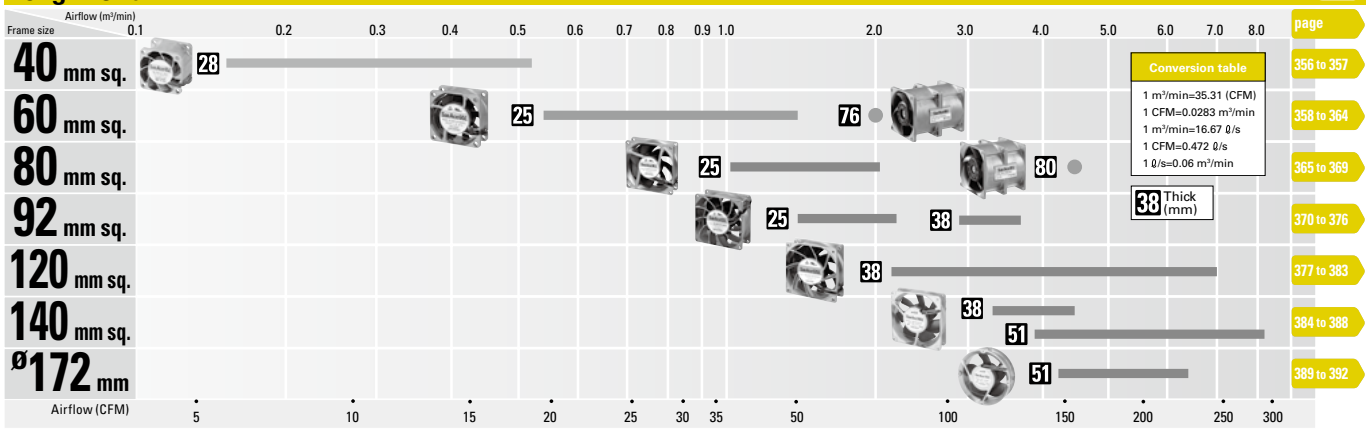
Oil Proof Fan

DC



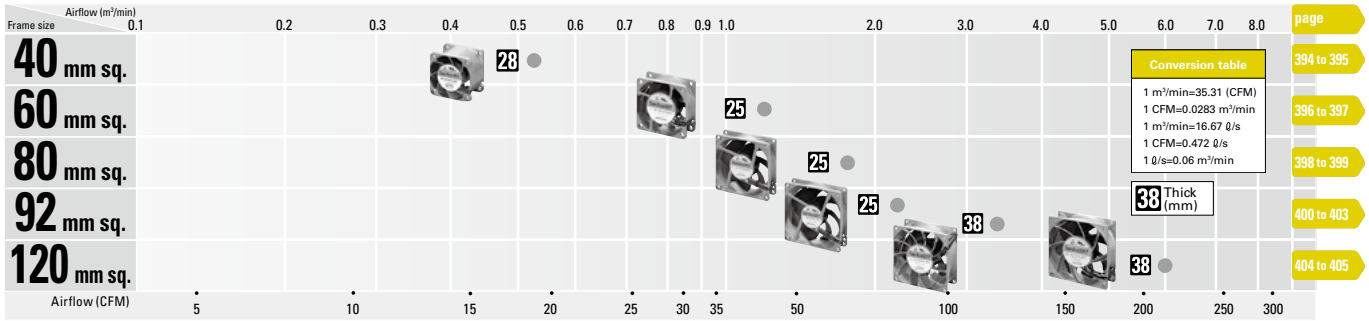
Long Life Fan

DC



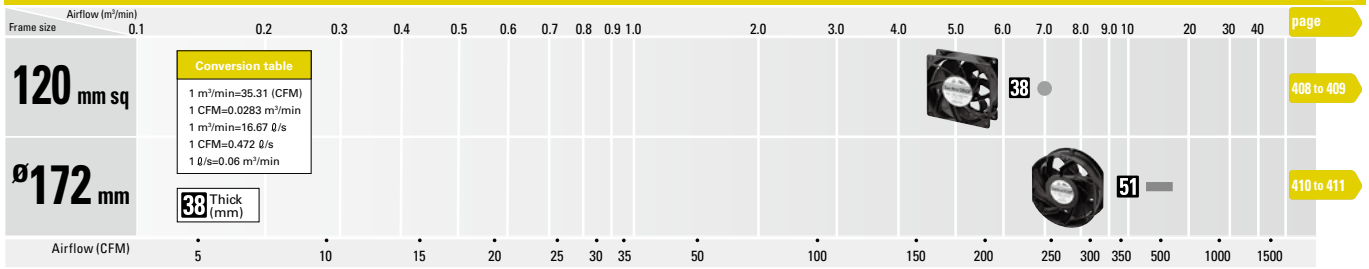
Wide Temperature Range Fan

DC



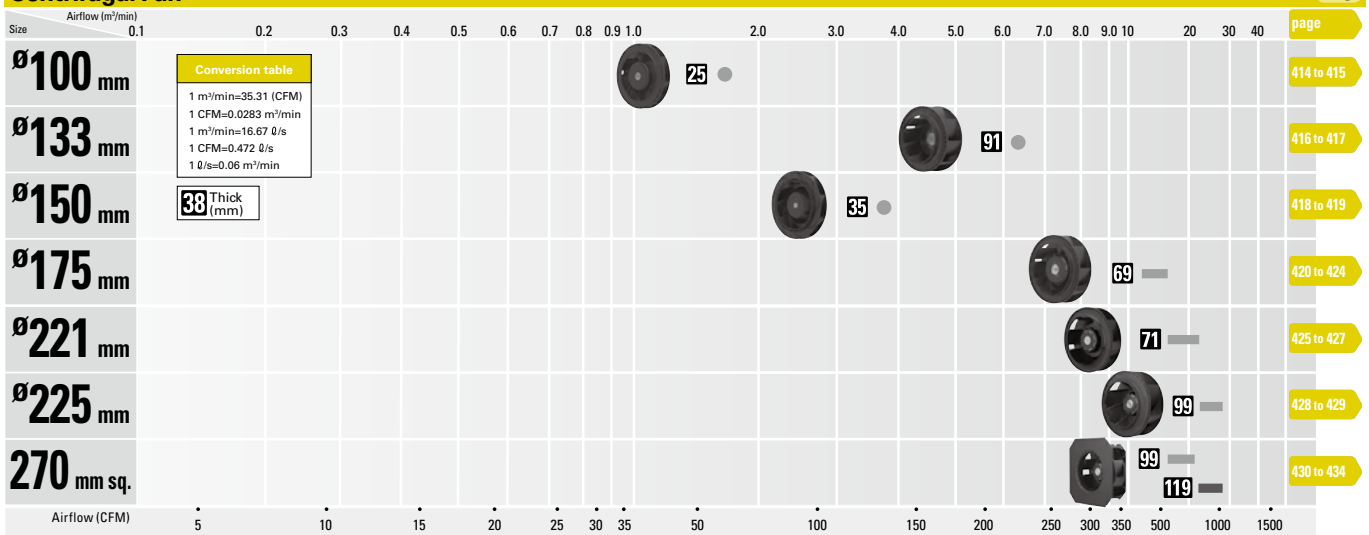
G Proof Fan

DC



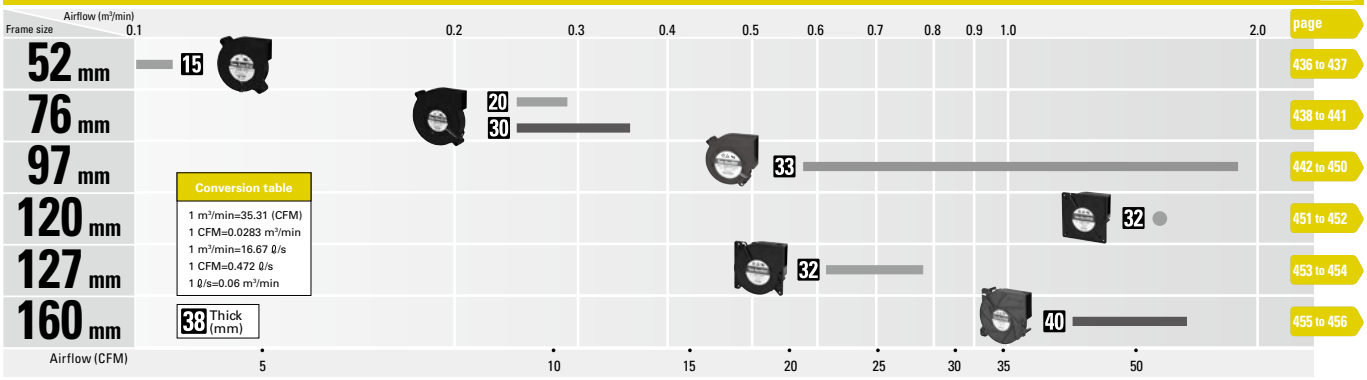
Centrifugal Fan

DC



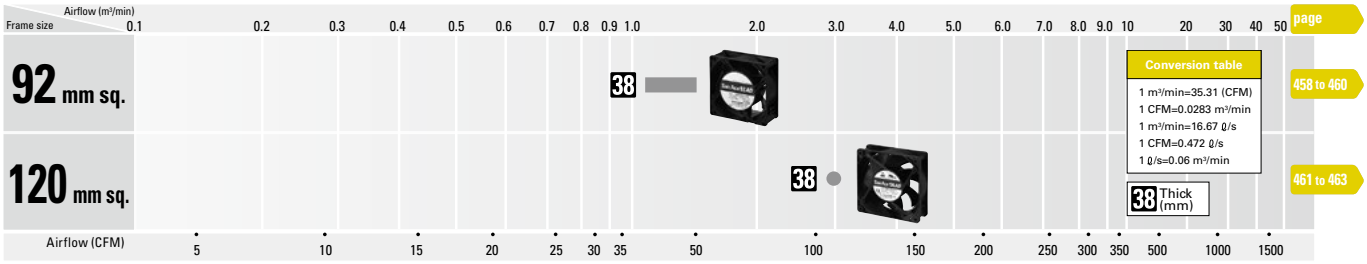
Blower

DC



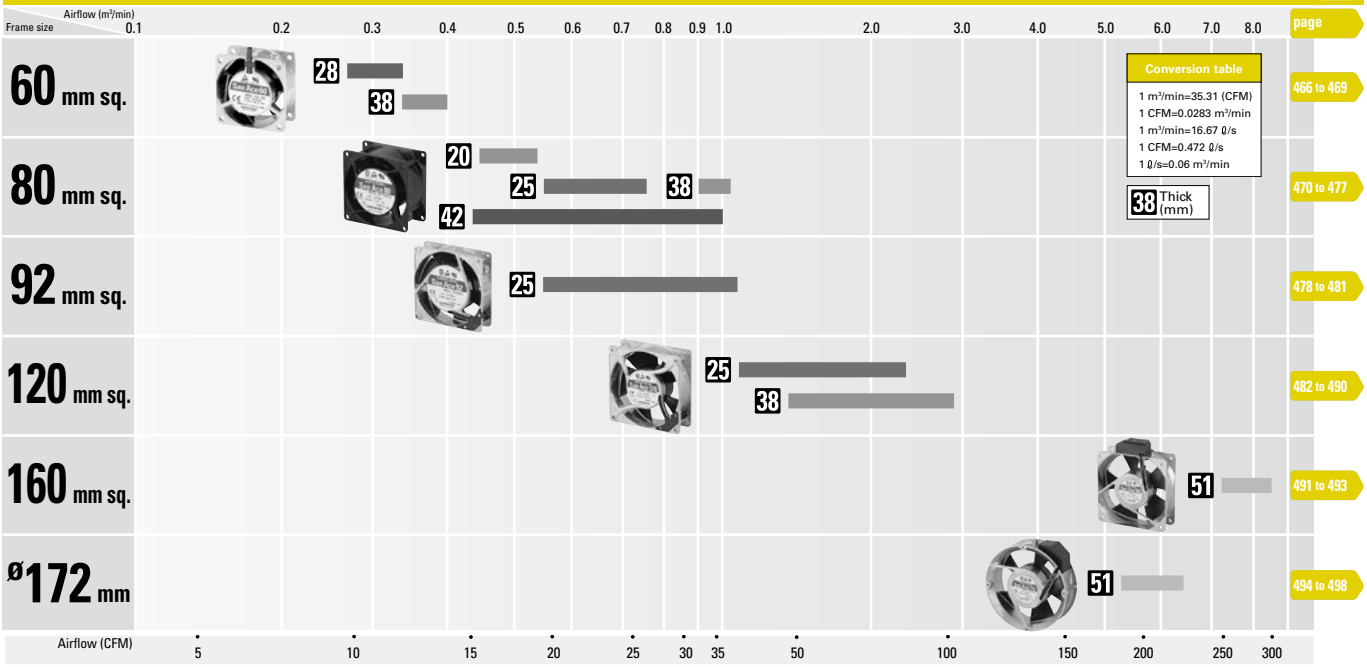
ACDC Fan

AC



AC Fan

AC



DC Fan

Wide lineup including low power consumption fans (9GA type), silent fans (9S type), and high airflow and high static pressure fans.

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9GV	12	12	J	1	01	1
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications	Frame form

Fans with PWM control function

9GV	12	12	P	4	G	01	
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec (2 to 4 digits)	Frame form

Type name	9E 9P 9R 9A 9EC 9G 9GA 9GAX 9GV 9GE 9GX 9HV 9HVA 9S 9SG
Frame size (mm)	03: 38×38; 04: 40×40; 05: 52×52; 06: 60×60; 08: 80×80; 09: 92×92; 12: 120×120; 13: 127×127; 14: 140×140; 15: 150×150; 17: ø172; 36: 36×36; 47: ø172×147 (sidecut); 57: ø172×150 (sidecut); 20: ø200
Voltage (V)	05: 5; 12: 12; 24: 24; 48: 48; etc.
Speed code	A B C D E F G H J K L M S W etc.
Frame thickness (mm)	0: 70; 1: 38; 2: 32; 3: 28; 4: 25; 5: 50, 51; 6: 20; 7: 15; 9: 10
Sensor specifications	01 or 001: With a pulse sensor; 02 or 002: Without a sensor; D01 or D001: With a lock sensor
Frame form	Nil: Plastic frame: Ribbed frame, Aluminum frame: Ribless frame; 1: Plastic frame: Ribless frame; 3: 40 × 40 × 28 mm for 1U applications, Plastic frame: Ribbed frame

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

36×36×28 mm

San Ace 36 9GX/9GV type (Model no.: 9GX3612P3K001 only) /

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30～+70˚C (Non-condensing, Model no.: 9GX3612P3K001 only), -20 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  (For models without PWM control function, there is no speed control wiring.)
- Mass ····· 46 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GX3612P3K001	12	10.8 to 13.2	100	1.3	15.6	24000	0.69	24.4	838	3.367	66	-10 to +60	40000/60˚C (70000/40˚C)
			0	0.07	0.84	3200	0.09	3.2	14.0	0.056	32		

* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 556).

The models listed below **have ribs and pulse sensors.**

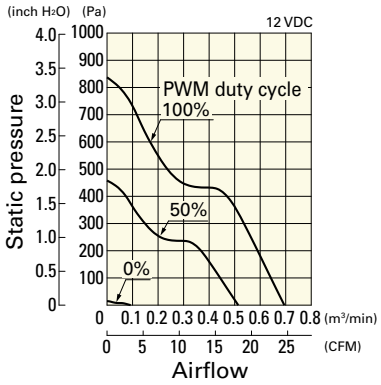
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV3612J301	12	7.0 to 13.2	0.75	9.0	19000	0.55	19.4	525	2.108	58.5	-20 to +60	40000/60˚C
9GV3612G301			0.34	4.08	14000	0.4	14.1	275	1.104	52.0		

Other sensor specifications are available as options. Refer to the index (p. 556).

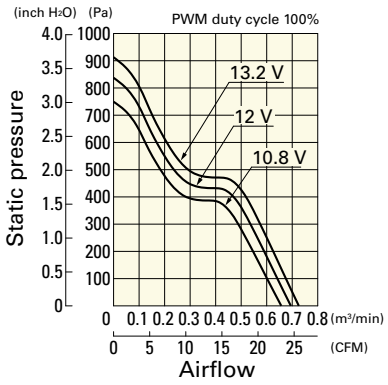
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GX3612P3K001 With pulse sensor with PWM control function

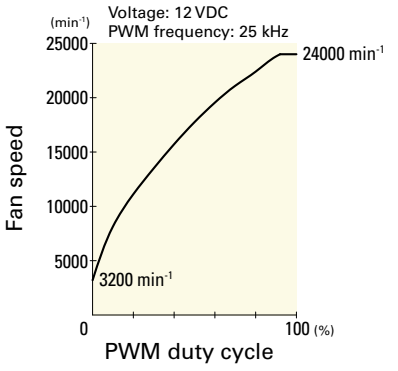
PWM duty cycle



Operating voltage range



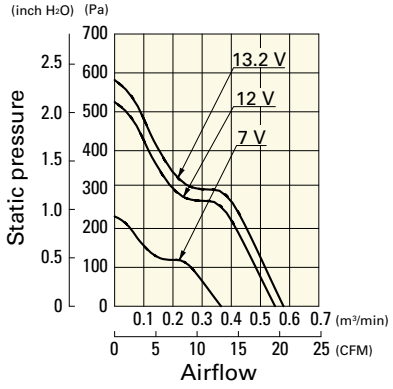
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

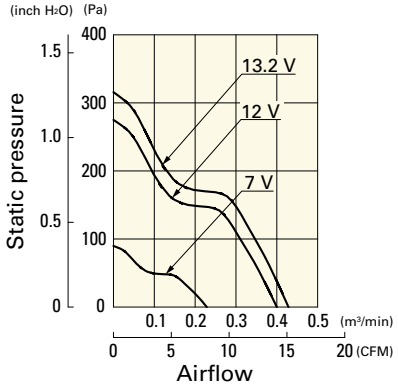
9GV3612J301 With pulse sensor

Operating voltage range

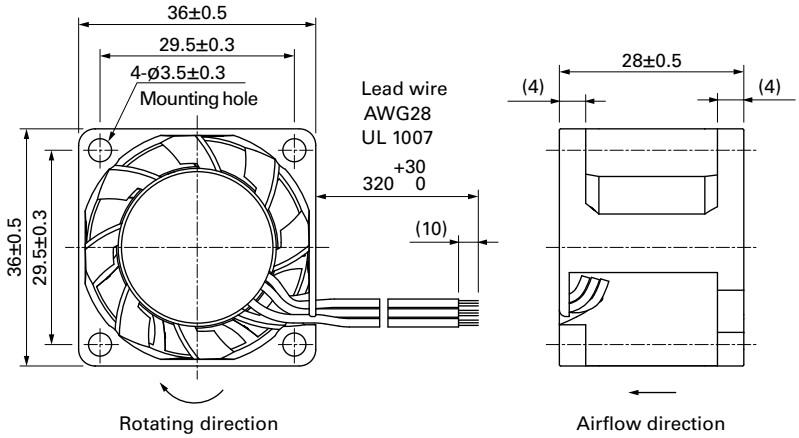


9GV3612G301 With pulse sensor

Operating voltage range

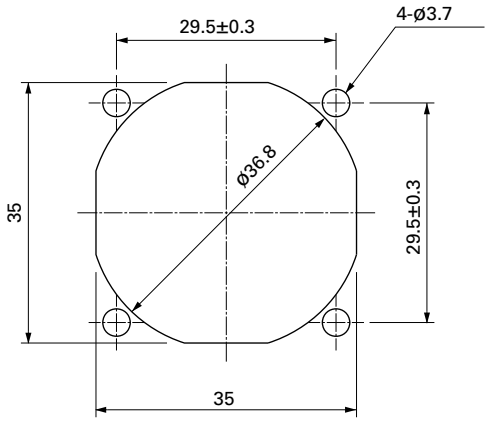


Dimensions (unit: mm) (With pulse sensor)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-1050

38×38×28 mm

San Ace 38 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 52 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0312P3K001	12	10.8 to 13.2	100	0.62	7.4	25000	0.6	21.2	800	3.21	59.0	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.06	0.7	3000	0.07	2.5	11	0.04	15.0		
9GA0312P3J001			100	0.52	6.2	23500	0.57	20.1	720	2.89	57.5		
			0	0.06	0.7	3000	0.07	2.5	11	0.04	15.0		
9GA0312P3G001			100	0.33	4.0	19000	0.45	15.9	460	1.85	53.0		
			0	0.06	0.7	3000	0.07	2.5	11	0.04	15.0		

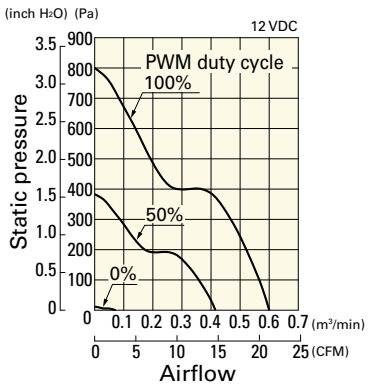
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 551).

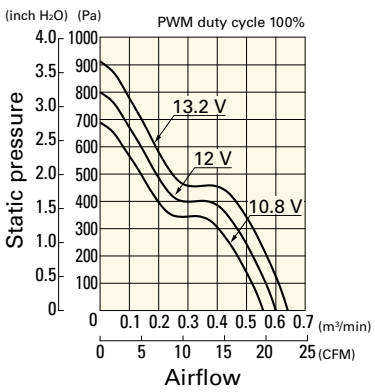
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0312P3K001 With pulse sensor with PWM control function

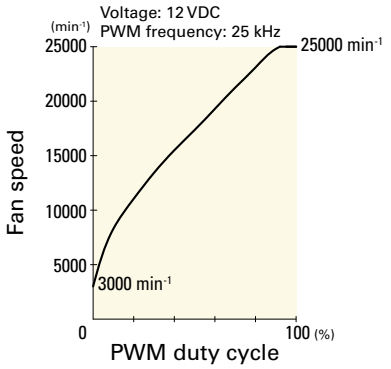
PWM duty cycle



Operating voltage range



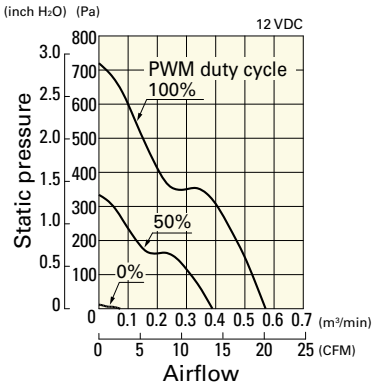
PWM duty - Speed characteristics example



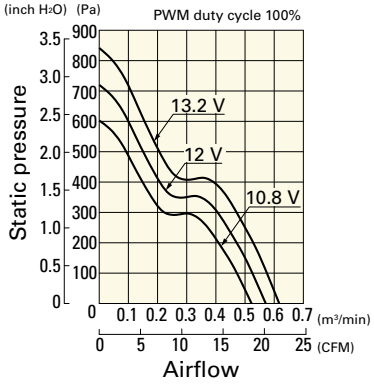
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0312P3J001 With pulse sensor with PWM control function

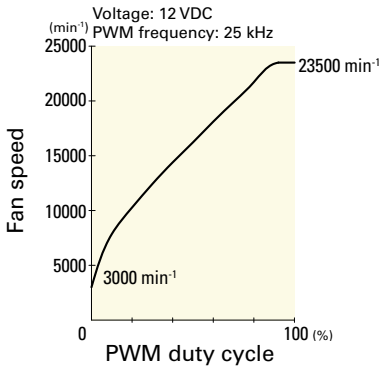
PWM duty cycle



Operating voltage range

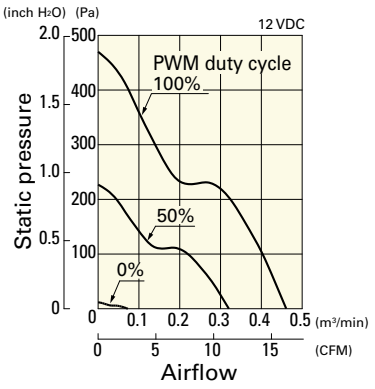


PWM duty - Speed characteristics example

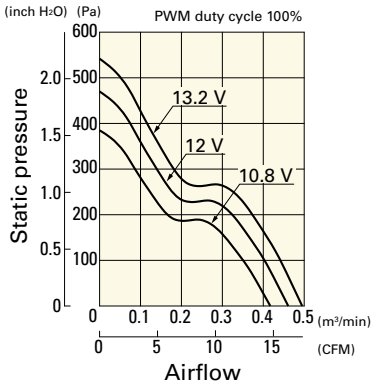


9GA0312P3G001 With pulse sensor with PWM control function

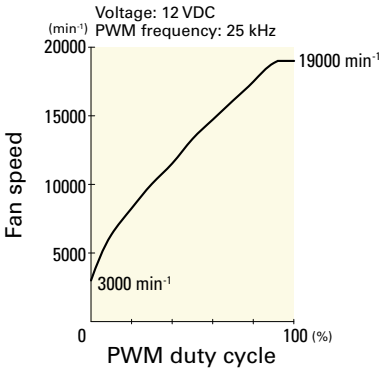
PWM duty cycle



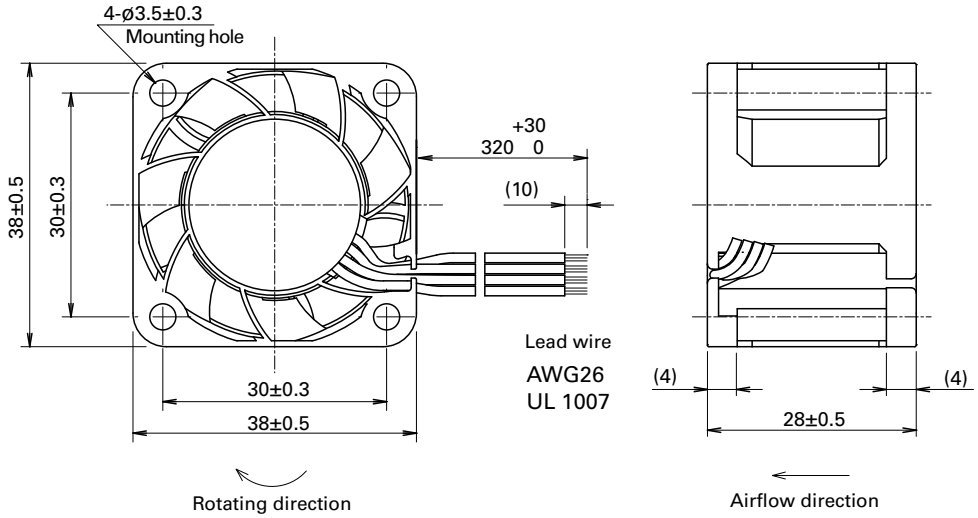
Operating voltage range



PWM duty - Speed characteristics example

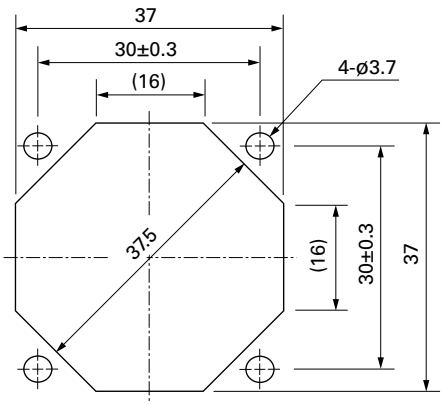


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-1065

38×38×28 mm

San Ace 38 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -20 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 50 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

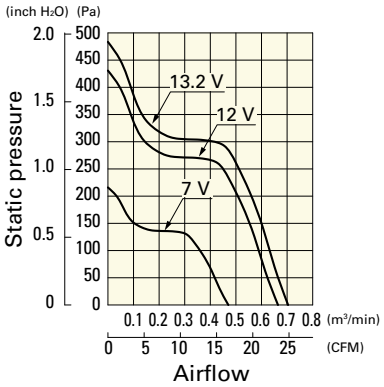
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV0312K301	12	7 to 13.2	0.79	9.48	18200	0.65	23	425	1.707	59	-20 to +60	40000/60˚C
9GV0312J301			0.6	7.2	15900	0.57	20	315	1.265	54		
9GV0312G301			0.4	4.8	13500	0.48	17	220	0.924	50		
9GV0312E301		4.5 to 13.2	0.21	2.52	10500	0.37	13.1	130	0.522	43		
9GV0312H301			0.16	1.92	7000	0.24	8.5	60	0.241	34		

Other sensor specifications are available as options. Refer to the index (p. 554).

Airflow - Static Pressure Characteristics

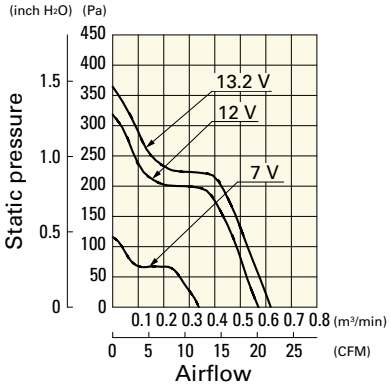
9GV0312K301 With pulse sensor

Operating voltage range



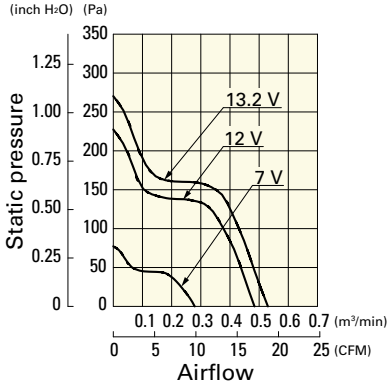
9GV0312J301 With pulse sensor

Operating voltage range



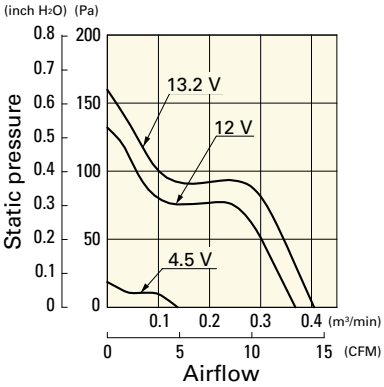
9GV0312G301 With pulse sensor

Operating voltage range



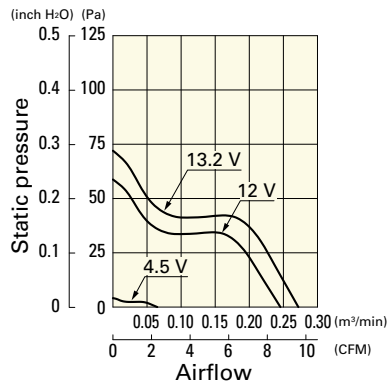
9GV0312E301 With pulse sensor

Operating voltage range

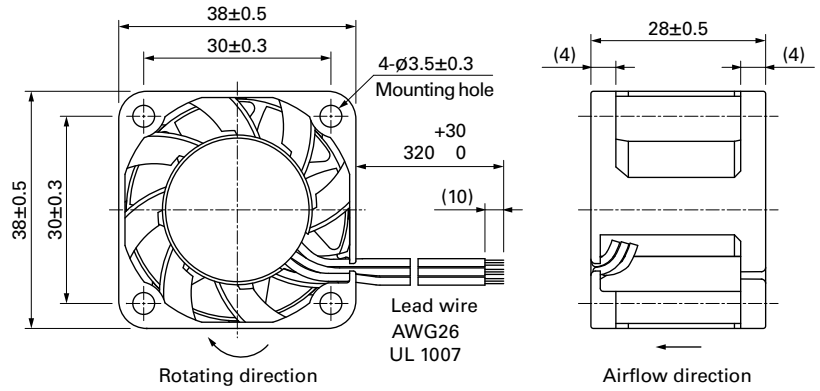


9GV0312H301 With pulse sensor

Operating voltage range

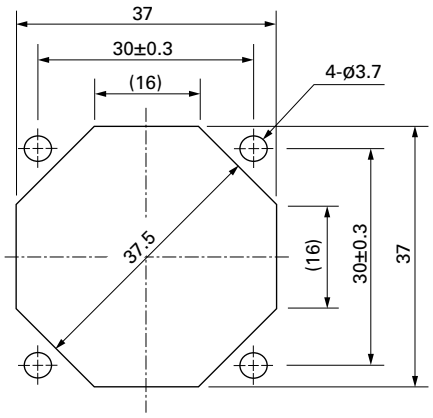


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-1065

40×40×10 mm

San Ace 40 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 19 g

Specifications

The models listed below **have ribs and pulse sensors.**

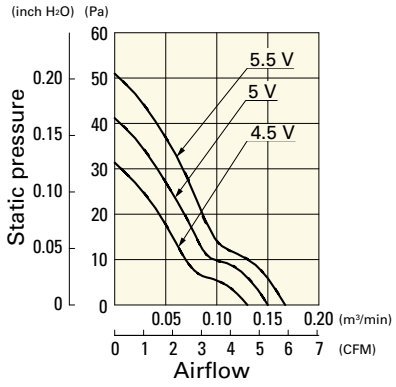
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected iife [h]
109P0405H901	5	4.5 to 5.5	0.16	0.8	6200	0.15	5.3	41.2	0.165	25	-10 to +60	40000/60˚C
109P0405M901			0.11	0.55	5000	0.12	4.2	27	0.108	21		
109P0412H901	12	7 to 13.8	0.07	0.84	6200	0.15	5.3	41.2	0.165	25		
109P0412M901			0.06	0.72	5000	0.12	4.2	27	0.108	21		

Other sensor specifications are available as options. Refer to the index (pp. 543 to 544).

Airflow - Static Pressure Characteristics

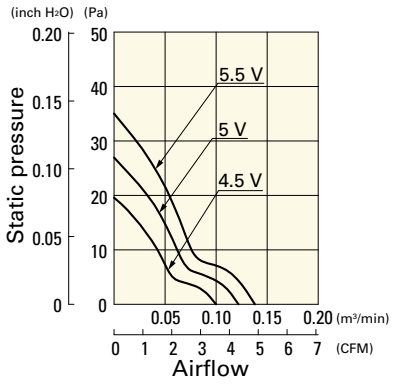
109P0405H901 With pulse sensor

Operating voltage range



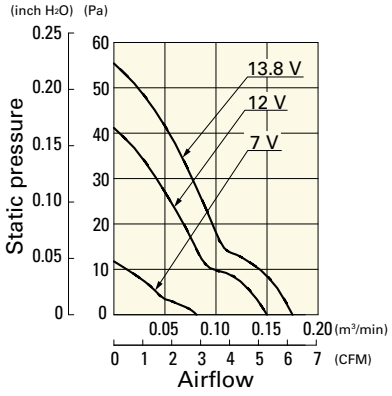
109P0405M901 With pulse sensor

Operating voltage range



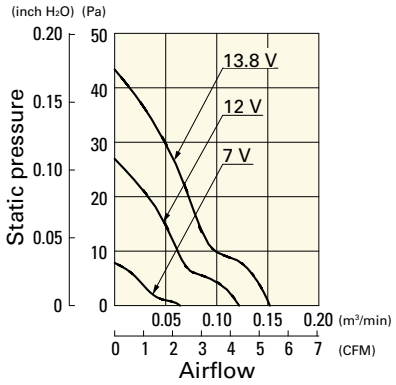
109P0412H901 With pulse sensor

Operating voltage range

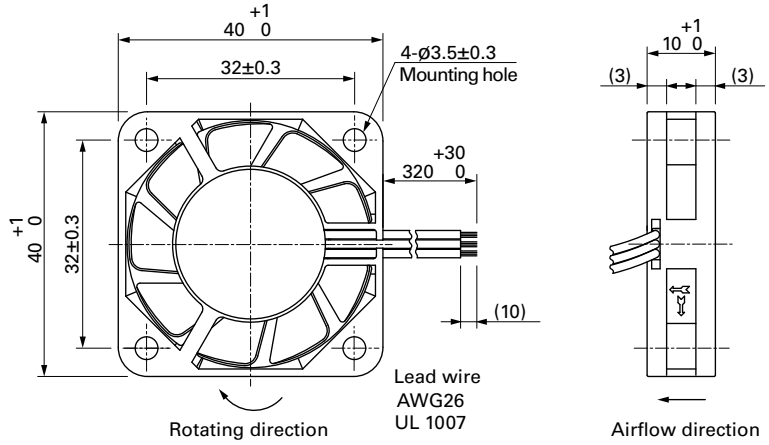


109P0412M901 With pulse sensor

Operating voltage range

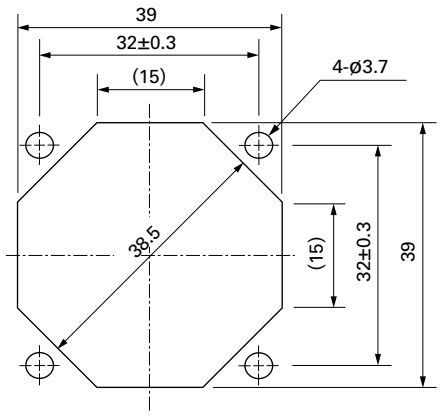


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×15 mm

San Ace 40 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  (For models without PWM control function, there is no speed control wiring.)
- Mass ····· 28 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0412P7G001	12	10.2 to 13.8	100	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60˚C (70000/40˚C)

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

The models listed below **have ribs and pulse sensors.**

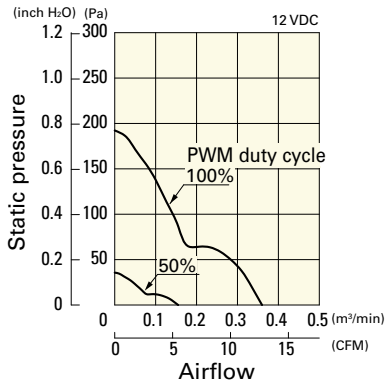
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60˚C (70000/40˚C)
9GA0412H7001			0.06	0.72	7300	0.2	7.1	59.6	0.24	28		

Other sensor specifications are available as options. Refer to the index (p. 551).

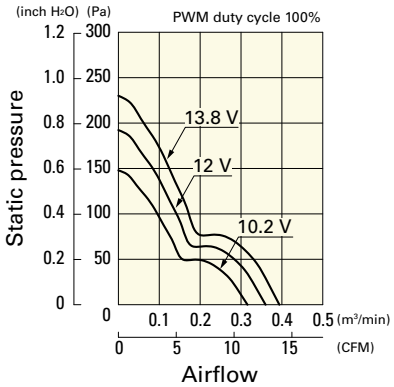
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0412P7G001 With pulse sensor with PWM control function

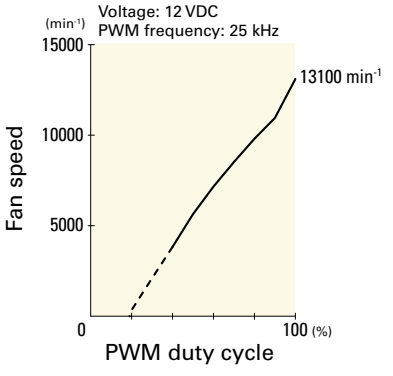
PWM duty cycle



Operating voltage range



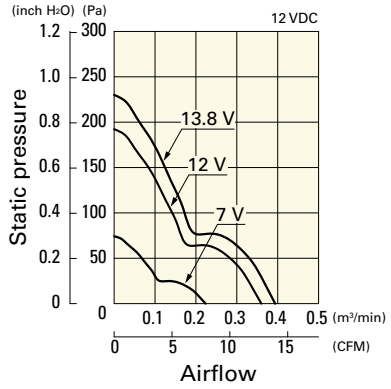
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

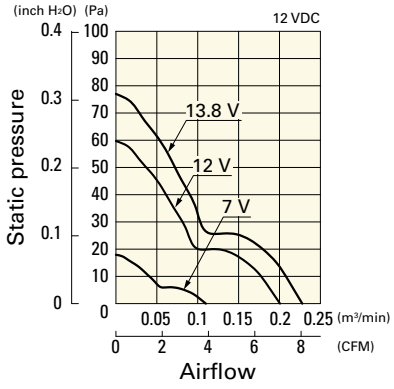
9GA0412G7001 With pulse sensor

Operating voltage range

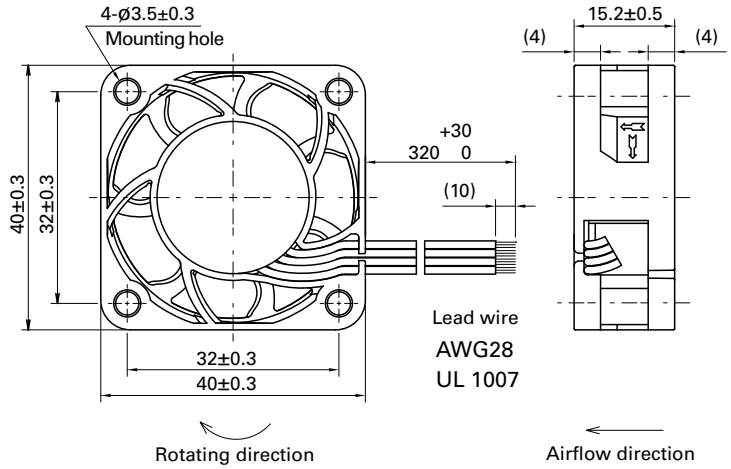


9GA0412H7001 With pulse sensor

Operating voltage range

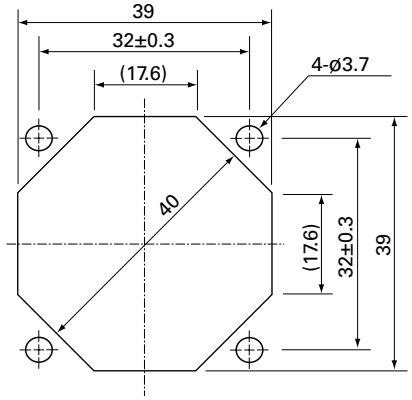


Dimensions (unit: mm) (With pulse sensor with PWM control function)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×15 mm

San Ace 40 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 32 g

Specifications

The models listed below **have ribs and pulse sensors.**

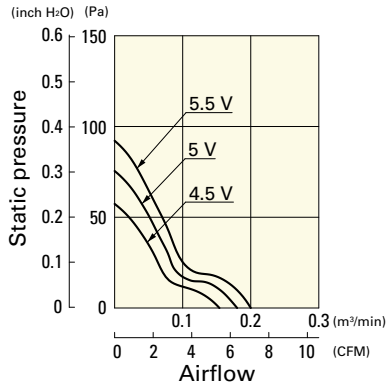
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0405H701	5	4.5 to 5.5	0.28	1.4	7700	0.18	6.4	75.5	0.303	28	-20 to +60	60000/60˚C
109P0405M701			0.21	1.05	6500	0.15	5.3	52.9	0.213	24	-20 to +70	
109P0412R701	12	7 to 13.8	0.13	1.56	9700	0.227	8.0	111.9	0.449	34		40000/60˚C
109P0412S701		10.2 to 13.8	0.18	2.16	8600	0.2	7.06	92.1	0.369	32		60000/60˚C
109P0412H701			0.13	1.56	7700	0.18	6.4	75.5	0.303	28		
109P0412M701			0.095	1.14	6500	0.15	5.3	52.9	0.213	24		
109P0424H701	24	20.4 to 27.6	0.08	1.92	7700	0.18	6.4	75.5	0.303	28		

Other sensor specifications are available as options. Refer to the index (pp. 543 to 544).

Airflow - Static Pressure Characteristics

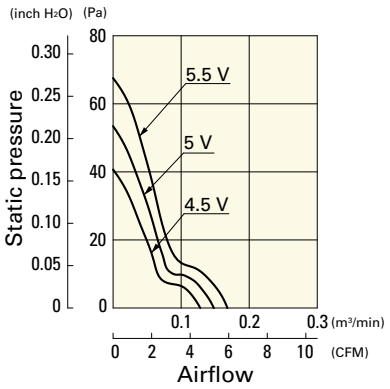
109P0405H701 With pulse sensor

Operating voltage range



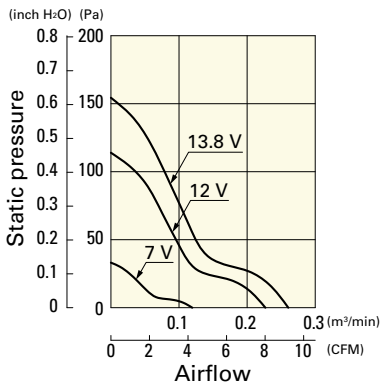
109P0405M701 With pulse sensor

Operating voltage range



109P0412R701 With pulse sensor

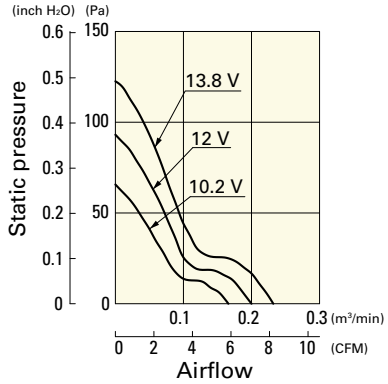
Operating voltage range



Airflow - Static Pressure Characteristics

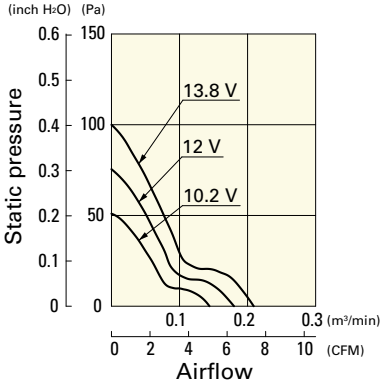
109P0412S701 With pulse sensor

Operating voltage range



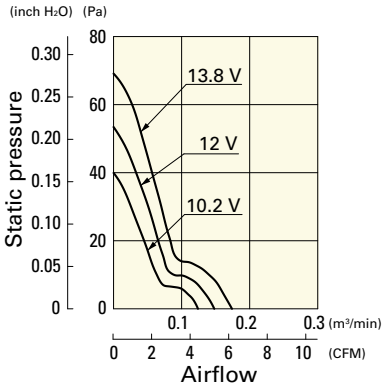
109P0412H701 With pulse sensor

Operating voltage range



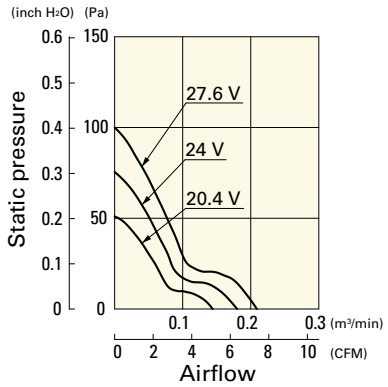
109P0412M701 With pulse sensor

Operating voltage range

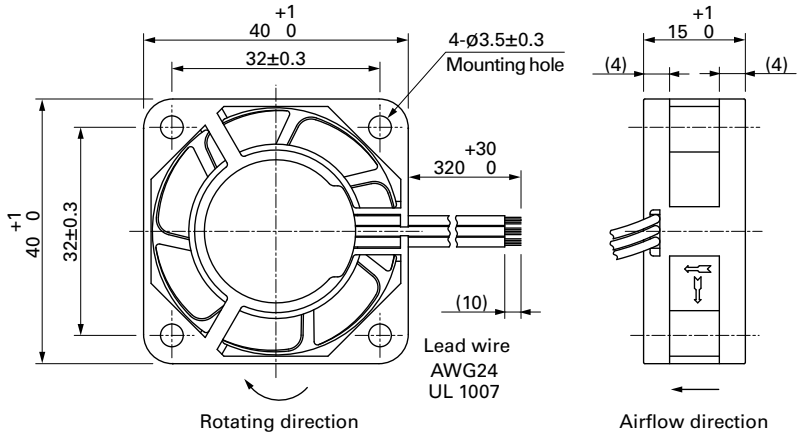


109P0424H701 With pulse sensor

Operating voltage range

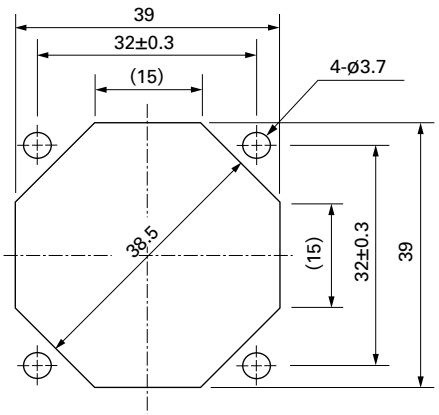


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×20 mm

San Ace 40 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 35 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0405P6H001**	5	4.5 to 5.5	100	0.35	1.75	12400	0.33	11.7	191	0.77	40	-20 to +70	40000/60˚C
9GA0405P6F001**			100	0.18	0.9	8000	0.21	7.4	79.5	0.32	28		60000/60˚C
9GA0412P6G001	12	10.2 to 13.8	100	0.23	2.76	16000	0.42	14.8	318	1.28	47		40000/60˚C
			0	0.04	0.48	3800	0.1	3.5	17.9	0.07	14		
9GA0412P6H001			100	0.14	1.68	12400	0.33	11.7	191	0.77	40		60000/60˚C
			0	0.04	0.48	3800	0.1	3.5	17.9	0.07	14		
9GA0412P6F001			100	0.08	0.96	8000	0.21	7.4	79.5	0.32	28		
			0	0.03	0.36	2200	0.06	2.1	6.0	0.02	10		
9GA0424P6G001**	24	20.4 to 27.6	100	0.13	3.12	16000	0.42	14.8	318	1.28	47		40000/60˚C
9GA0424P6H001**			100	0.08	1.92	12400	0.33	11.7	191	0.77	40		60000/60˚C
9GA0424P6F001**			100	0.04	0.96	8000	0.21	7.4	79.5	0.32	28		

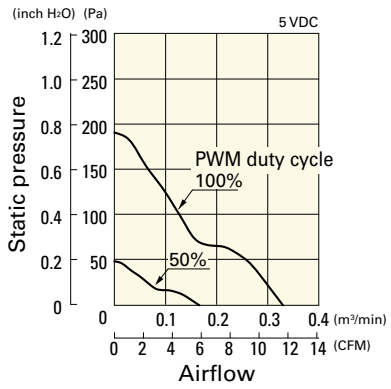
* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 551).

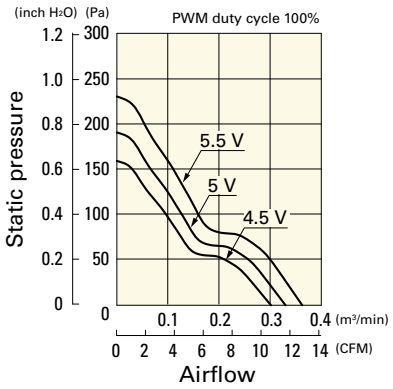
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0405P6H001 With pulse sensor with PWM control function

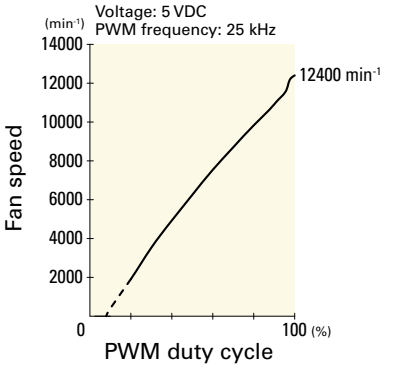
PWM duty cycle



Operating voltage range



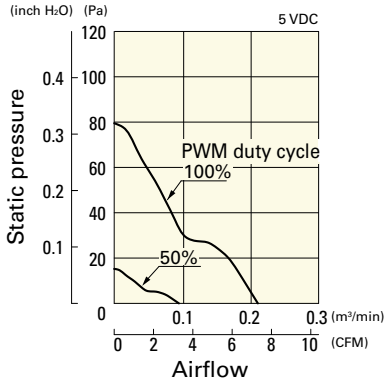
PWM duty - Speed characteristics example



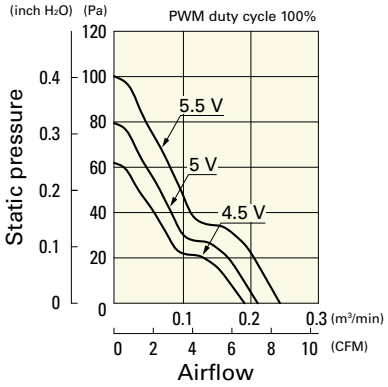
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0405P6F001 With pulse sensor with PWM control function

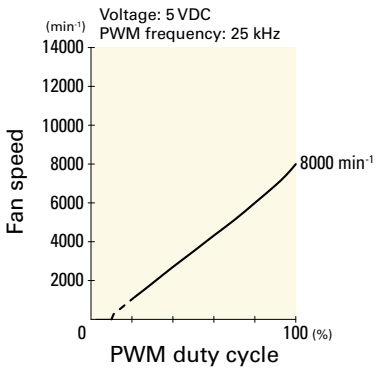
PWM duty cycle



Operating voltage range

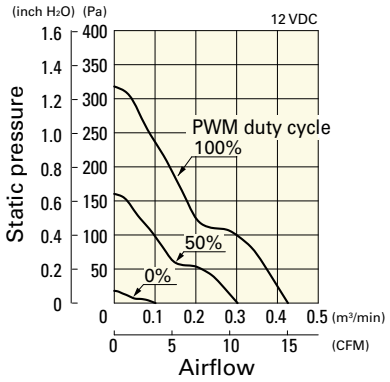


PWM duty - Speed characteristics example

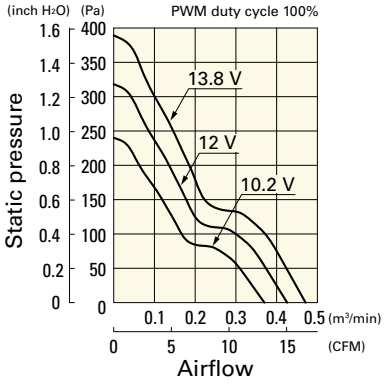


9GA0412P6G001 With pulse sensor with PWM control function

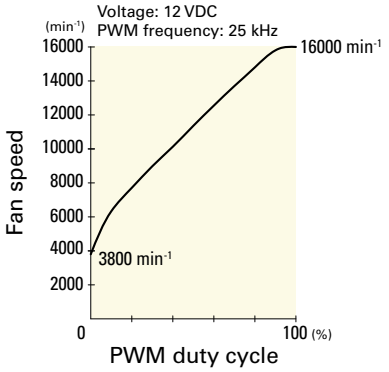
PWM duty cycle



Operating voltage range

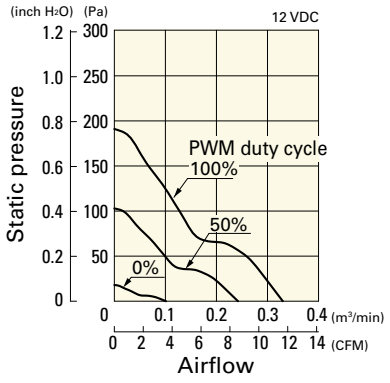


PWM duty - Speed characteristics example

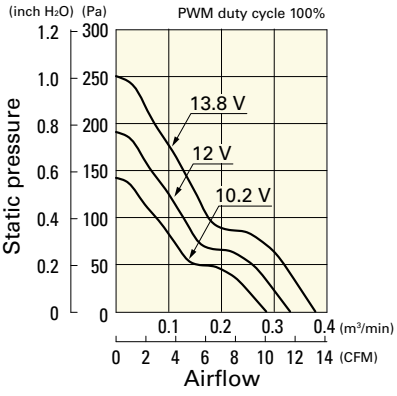


9GA0412P6H001 With pulse sensor with PWM control function

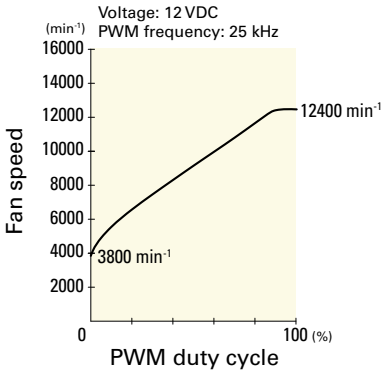
PWM duty cycle



Operating voltage range

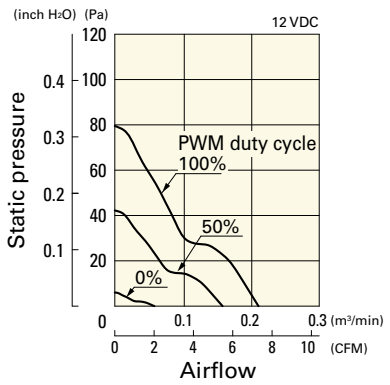


PWM duty - Speed characteristics example

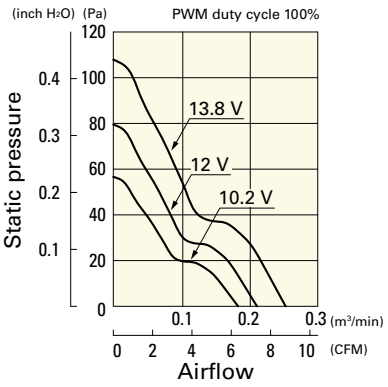


9GA0412P6F001 With pulse sensor with PWM control function

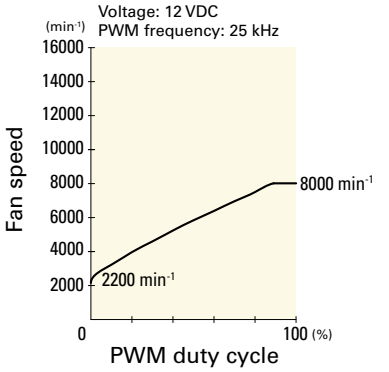
PWM duty cycle



Operating voltage range



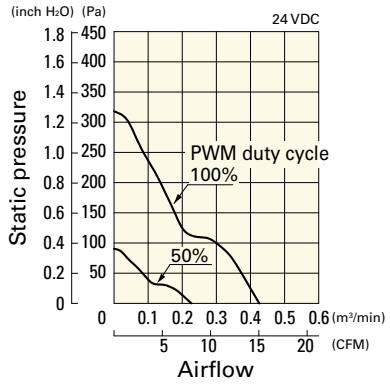
PWM duty - Speed characteristics example



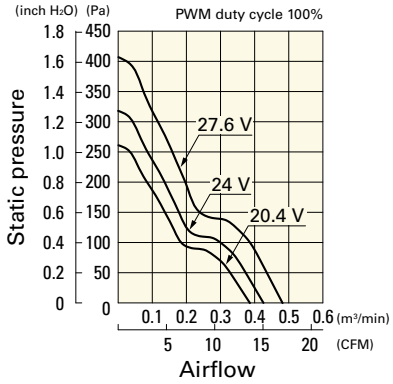
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0424P6G001 With pulse sensor with PWM control function

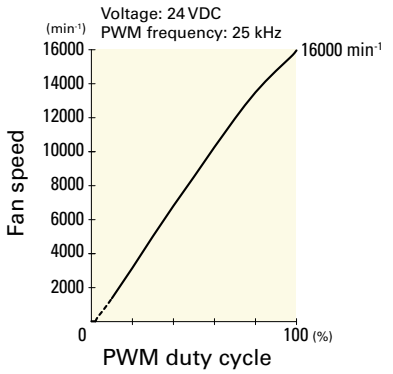
PWM duty cycle



Operating voltage range

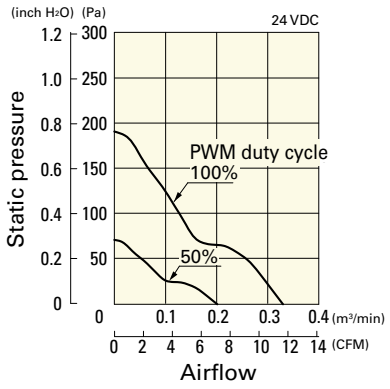


PWM duty - Speed characteristics example

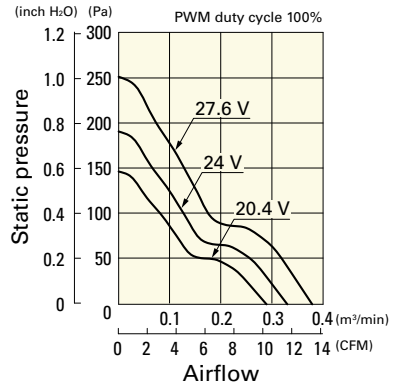


9GA0424P6H001 With pulse sensor with PWM control function

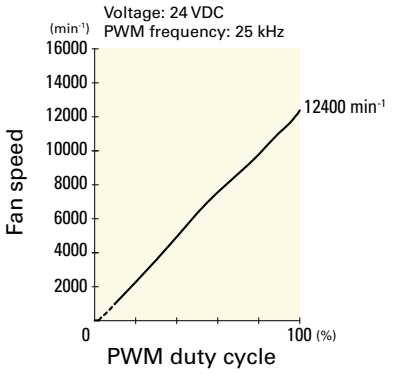
PWM duty cycle



Operating voltage range

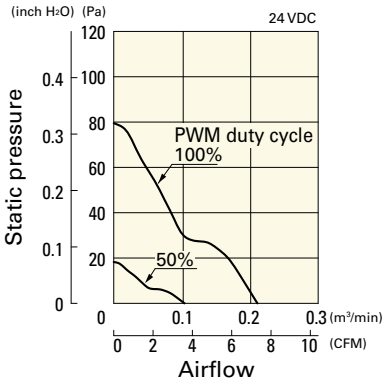


PWM duty - Speed characteristics example

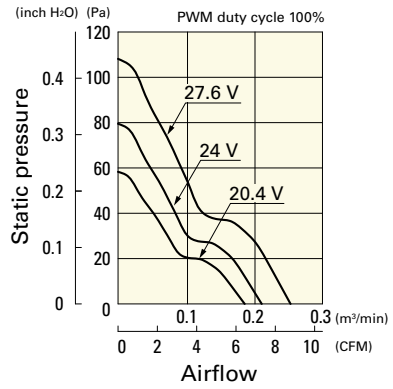


9GA0424P6F001 With pulse sensor with PWM control function

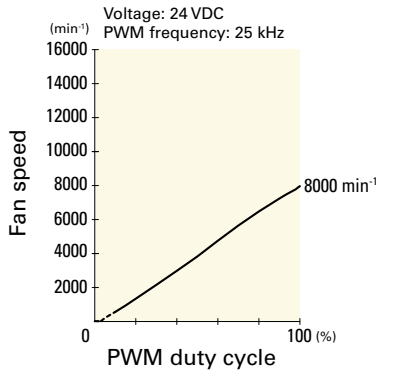
PWM duty cycle



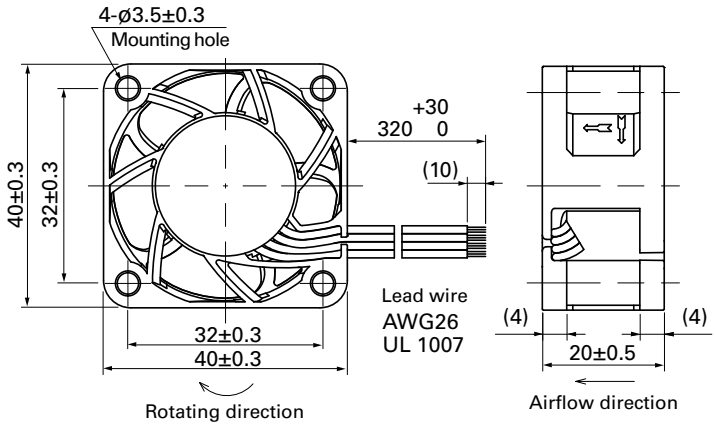
Operating voltage range



PWM duty - Speed characteristics example

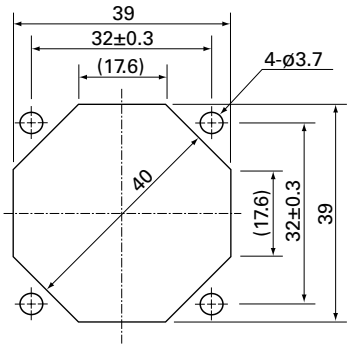


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×20 mm

San Ace 40 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 45 g

Specifications

The models listed below **have ribs and pulse sensors.**

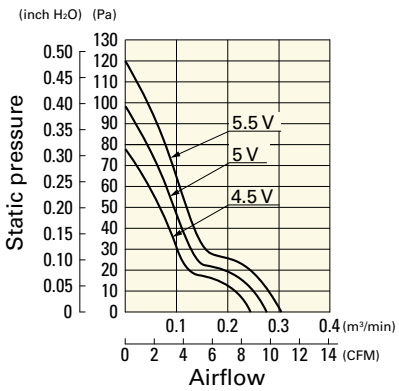
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	[CFM]	Max. static pressure [Pa]	[inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0405J601	5	4.5 to 5.5	0.46	2.3	9800	0.28	9.9	98.5	0.396	39	-20 to +70	40000/60˚C
109P0405H601			0.32	1.6	8000	0.225	8.0	65.7	0.264	33		
109P0405F601			0.25	1.25	6500	0.183	6.5	45.1	0.181	28		60000/60˚C
109P0405M601			0.12	0.6	5000	0.136	4.8	26.5	0.106	24		
109P0412G601	12	7 to 13.8	0.28	3.36	12500	0.35	12.4	153.8	0.618	44	-20 to +60	40000/60˚C
109P0412D601			0.18	2.16	11000	0.31	10.9	124	0.498	42		60000/60˚C
109P0412E601			0.13	1.56	9200	0.26	9.2	87.3	0.351	37	-20 to +70	
109P0412H601			0.11	1.32	8000	0.225	8.0	65.7	0.264	33		
109P0412F601			0.09	1.08	6500	0.183	6.5	45.1	0.181	28		
109P0412M601		8 to 13.8	0.06	0.72	5000	0.136	4.8	26.5	0.106	24		
109P0424G601	24	12 to 27.6	0.15	3.6	12500	0.35	12.4	153.8	0.618	44	-20 to +60	40000/60˚C
109P0424D601		12 to 27.6	0.13	3.12	11000	0.31	10.9	124	0.498	42		
109P0424H601		12 to 27.6	0.07	1.68	8300	0.233	8.2	69.6	0.28	35	-20 to +70	60000/60˚C
109P0424F601		14 to 27.6	0.06	1.44	6500	0.183	6.5	45.1	0.181	28		
109P0424B601		20.4 to 27.6	0.06	1.44	5200	0.14	4.9	28.3	0.114	25		

Other sensor specifications are available as options. Refer to the index (pp. 543 to 544).

Airflow - Static Pressure Characteristics

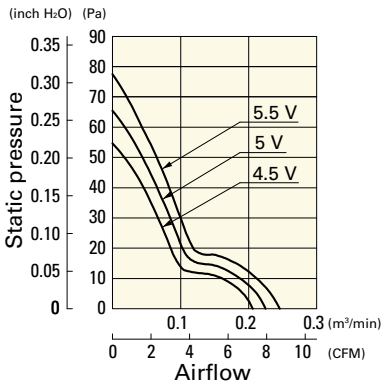
109P0405J601 With pulse sensor

Operating voltage range



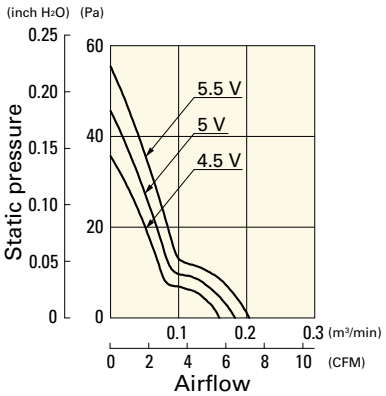
109P0405H601 With pulse sensor

Operating voltage range



109P0405F601 With pulse sensor

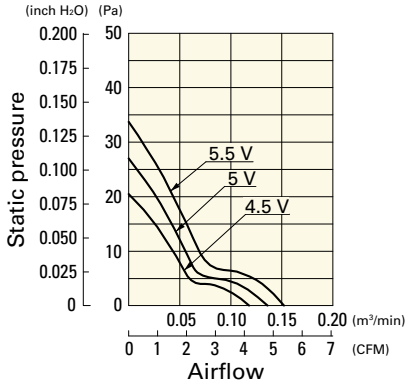
Operating voltage range



Airflow - Static Pressure Characteristics

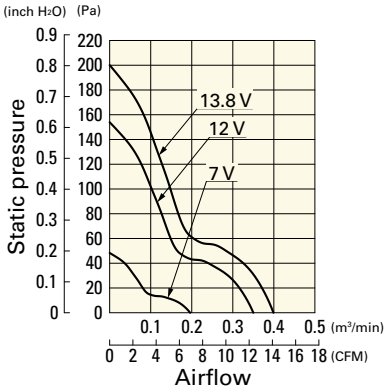
109P0405M601 With pulse sensor

Operating voltage range



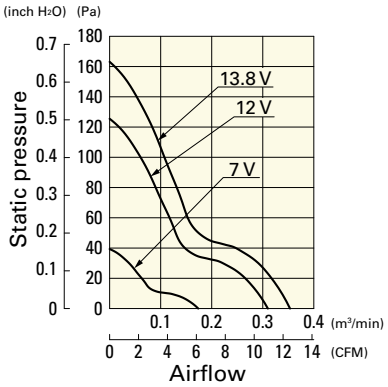
109P0412G601 With pulse sensor

Operating voltage range



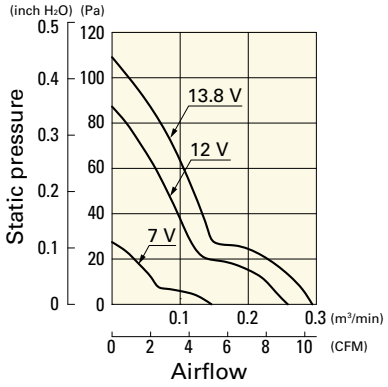
109P0412D601 With pulse sensor

Operating voltage range



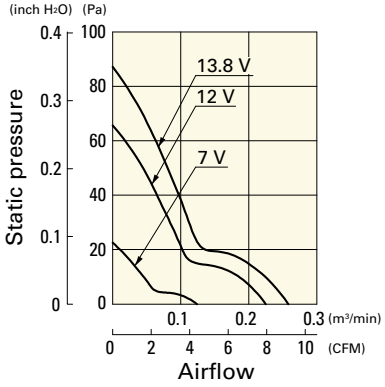
109P0412E601 With pulse sensor

Operating voltage range



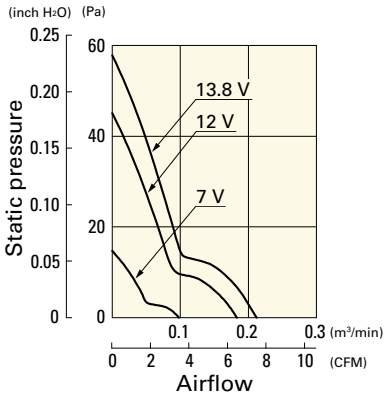
109P0412H601 With pulse sensor

Operating voltage range



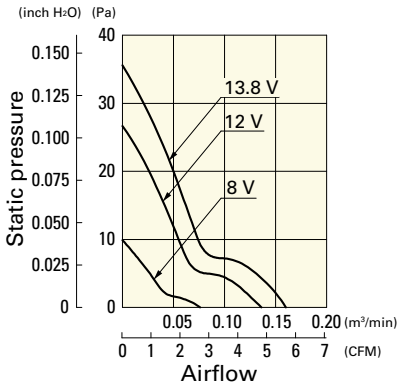
109P0412F601 With pulse sensor

Operating voltage range



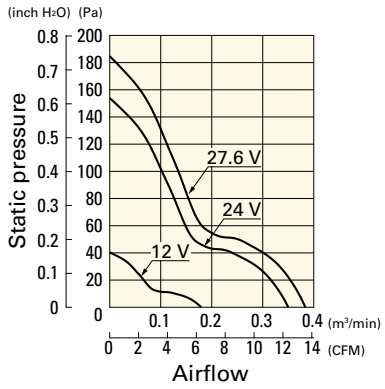
109P0412M601 With pulse sensor

Operating voltage range



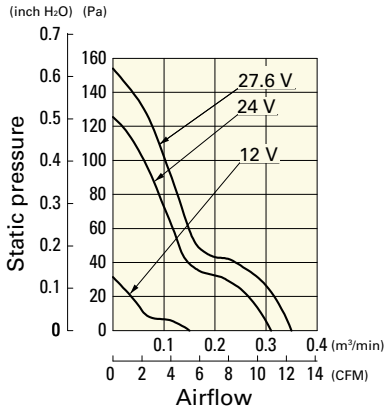
109P0424G601 With pulse sensor

Operating voltage range



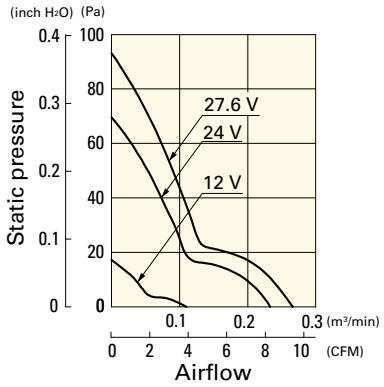
109P0424D601 With pulse sensor

Operating voltage range



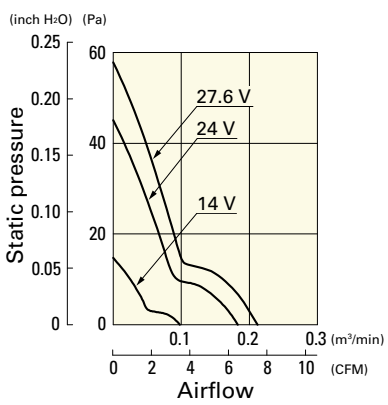
109P0424H601 With pulse sensor

Operating voltage range



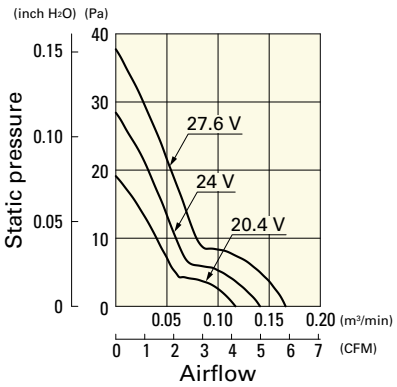
109P0424F601 With pulse sensor

Operating voltage range

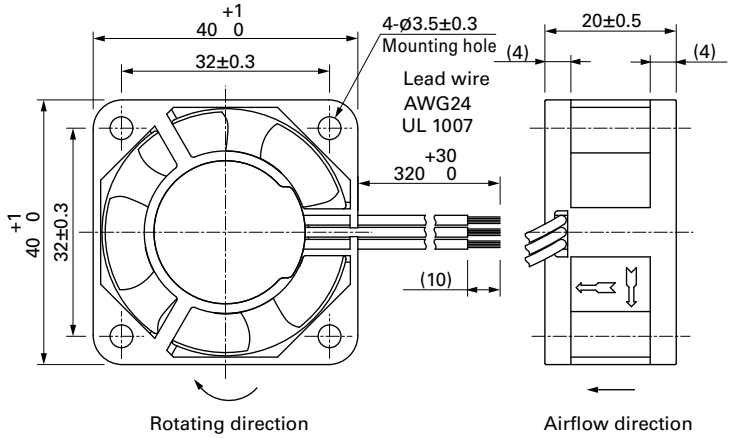


109P0424B601 With pulse sensor

Operating voltage range

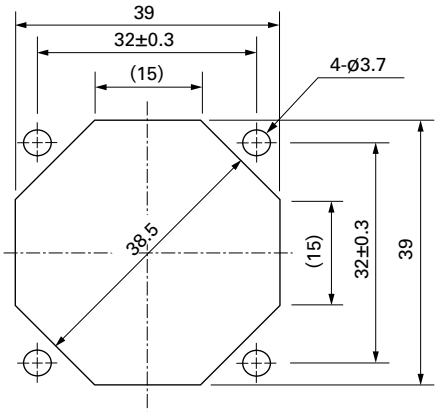


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×28 mm

San Ace 40 9HV type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black Sensor Yellow Control Brown
- Mass ····· 60 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

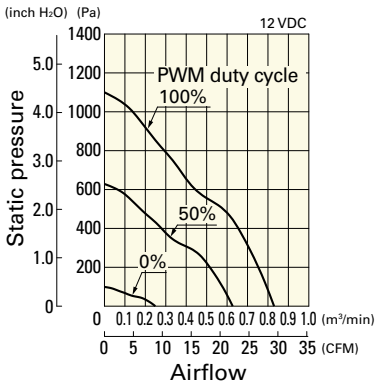
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9HV0412P3K001	12	10.8 to 12.6	100	1.52	18.3	25000	0.83	29.3	1100	4.42	65	-20 to +60	40000/60˚C
			0	0.2	2.4	7500	0.25	8.8	99	0.4	37		

* PWM frequency: 25 kHz

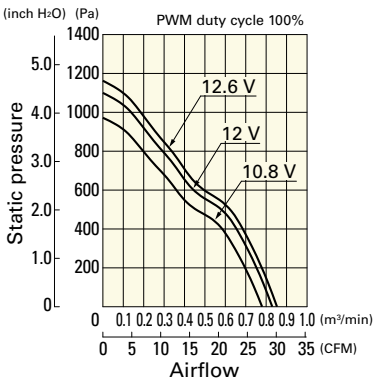
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV0412P3K001 With pulse sensor with PWM control function

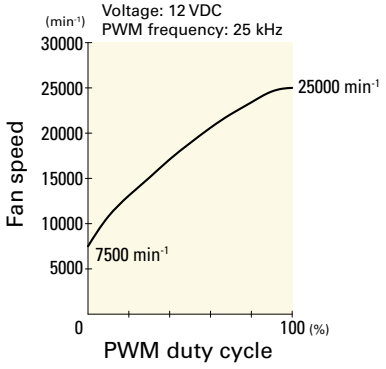
PWM duty cycle



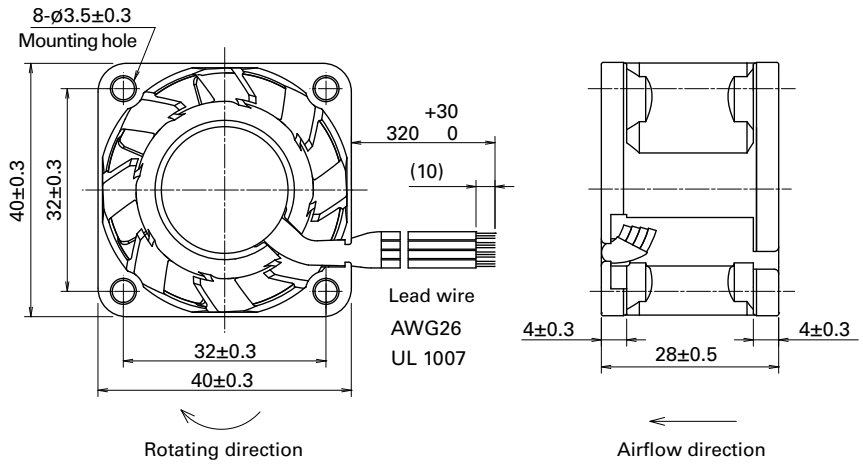
Operating voltage range



PWM duty - Speed characteristics example

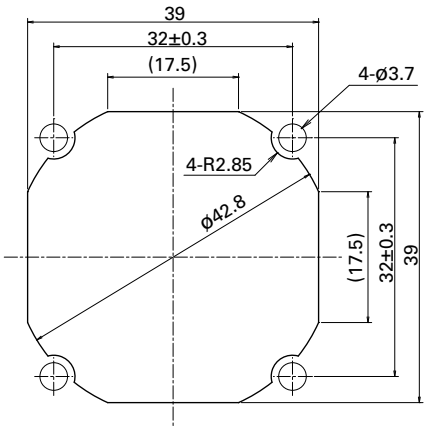


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×28 mm

San Ace 40 9GAX type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 53 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

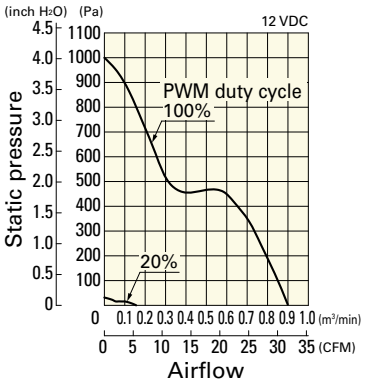
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GAX0412P3S001**	12	10.8 to 12.6	100	1.3	15.6	25000	0.9	31.8	1000	4.02	64	-20 to +60	30000/60˚C
			20	0.07	0.84	4400	0.155	5.5	32	0.125	21.5		
9GAX0412P3S003			100	1.3	15.6	25000	0.9	31.8	1000	4.02	64		
			0	0.11	1.32	7800	0.26	9.2	87	0.35	38		
9GAX0412P3K001**		10.8 to 13.2	100	0.92	11.04	22000	0.81	28.6	800	3.21	61		
			20	0.07	0.84	4200	0.15	5.3	28	0.11	21		
9GAX0412P3K003			100	0.92	11.04	22000	0.81	28.6	800	3.21	61		
			0	0.1	1.2	6500	0.24	8.5	70	0.28	32		

* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

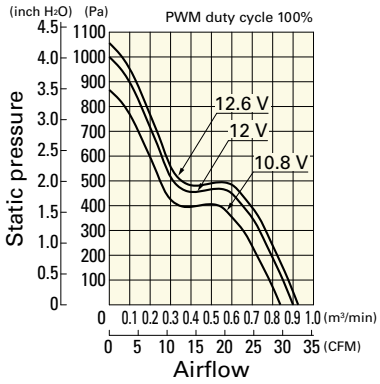
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GAX0412P3S001 With pulse sensor with PWM control function

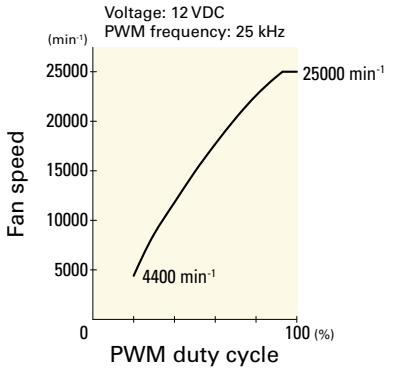
PWM duty cycle



Operating voltage range



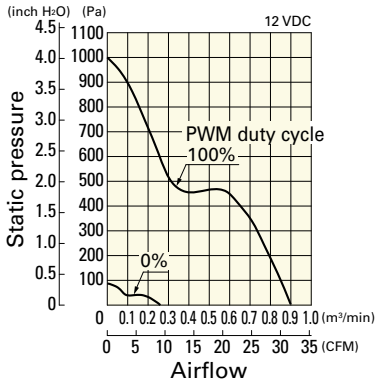
PWM duty - Speed characteristics example



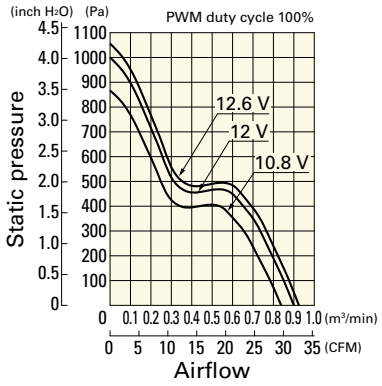
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GAX0412P3S003 With pulse sensor with PWM control function

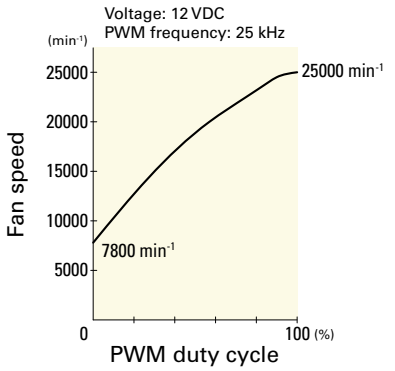
PWM duty cycle



Operating voltage range

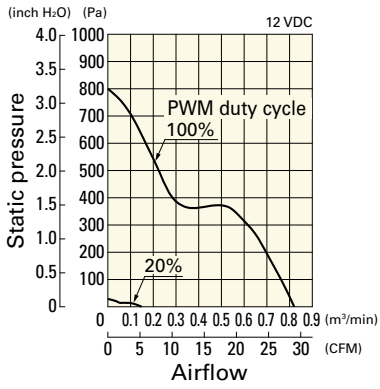


PWM duty - Speed characteristics example

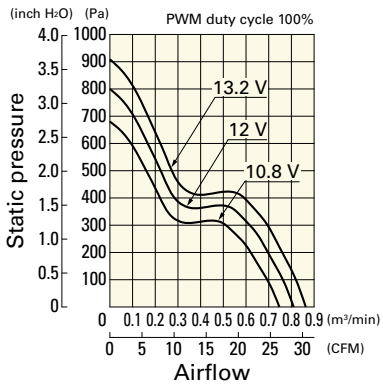


9GAX0412P3K001 With pulse sensor with PWM control function

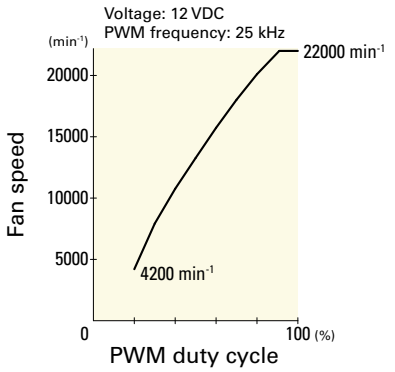
PWM duty cycle



Operating voltage range

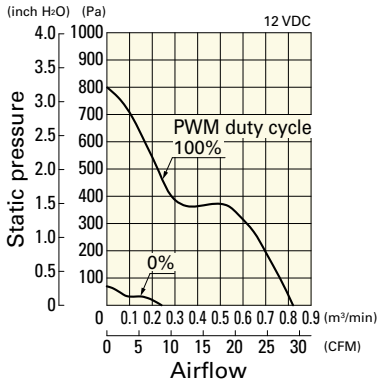


PWM duty - Speed characteristics example

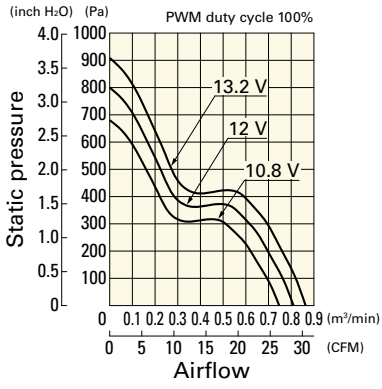


9GAX0412P3K003 With pulse sensor with PWM control function

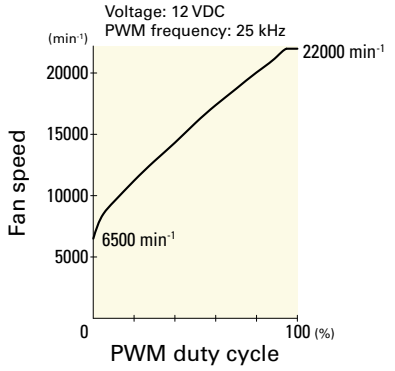
PWM duty cycle



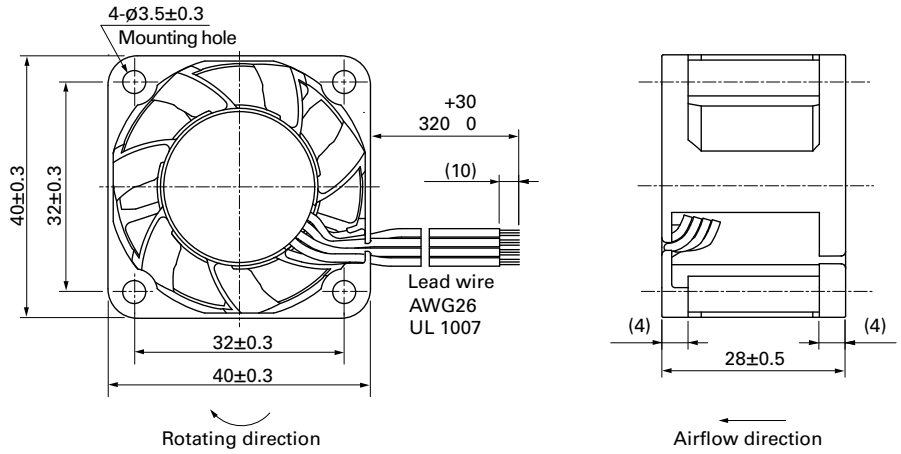
Operating voltage range



PWM duty - Speed characteristics example

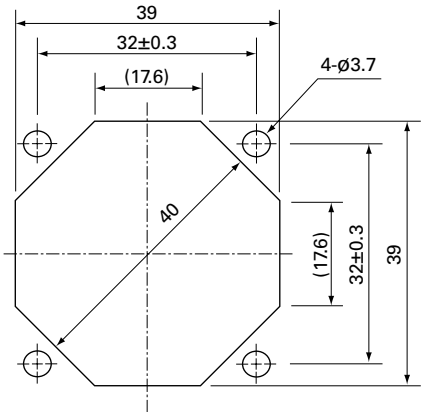


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×28 mm

San Ace 40 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 53 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0412P3K01	12	10.8 to 13.2	100	0.92	11.04	22000	0.81	28.6	799	3.21	61	-20 to +60	30000/60˚C
			0	0.1	1.2	6500	0.23	8.12	68	0.27	32		
9GA0412P3J01			100	0.49	5.88	18000	0.67	23.7	535	2.15	54	-20 to +70	40000/60˚C
			0	0.05	0.6	4500	0.16	5.7	33	0.13	22		
9GA0412P3G01			100	0.39	4.68	16500	0.61	21.5	450	1.81	53		
			0	0.05	0.6	4500	0.16	5.7	33	0.13	22		
9GA0412P3H01			100	0.28	3.36	14500	0.54	19.1	347	1.39	50		
			0	0.04	0.48	3500	0.13	4.6	20	0.08	17		
9GA0412P3M01			100	0.21	2.52	12500	0.46	16.2	258	1.04	47		
			0	0.04	0.48	3500	0.13	4.6	20	0.08	17		
9GA0424P3J001**	24	21.6 to 26.4	100	0.27	6.48	18000	0.67	23.7	535	2.15	54		
9GA0424P3G001**			100	0.22	5.28	16500	0.61	21.5	450	1.81	53		
9GA0424P3H001**			100	0.16	3.84	14500	0.54	19.1	347	1.39	50		
9GA0424P3M001**			100	0.11	2.64	12500	0.46	16.2	258	1.04	47		

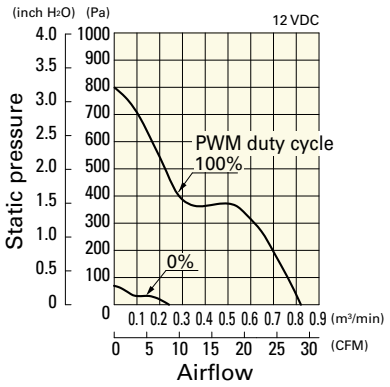
* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 551).

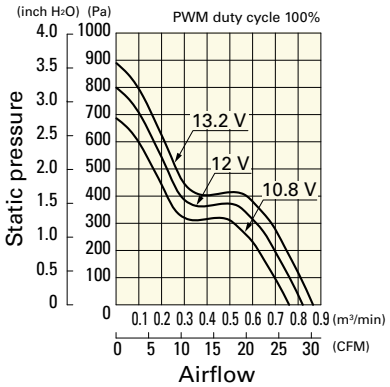
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0412P3K01 With pulse sensor with PWM control function

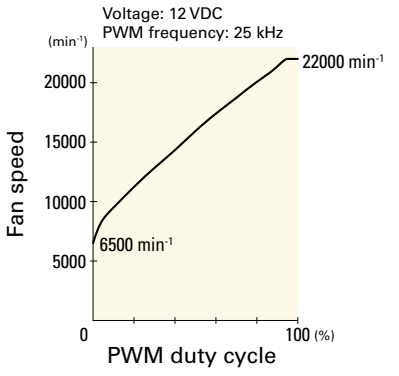
PWM duty cycle



Operating voltage range



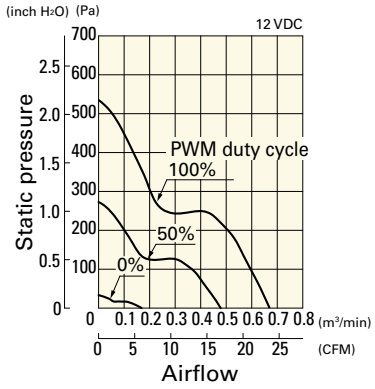
PWM duty - Speed characteristics example



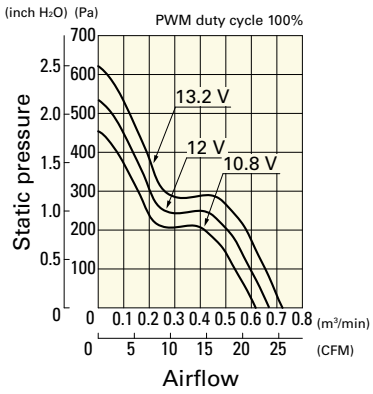
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0412P3J01 With pulse sensor with PWM control function

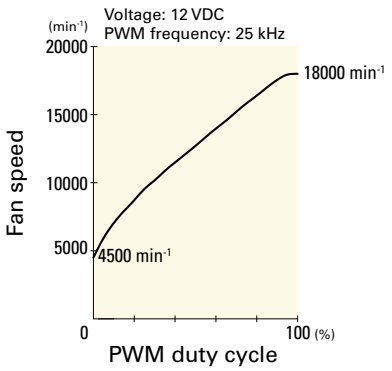
PWM duty cycle



Operating voltage range

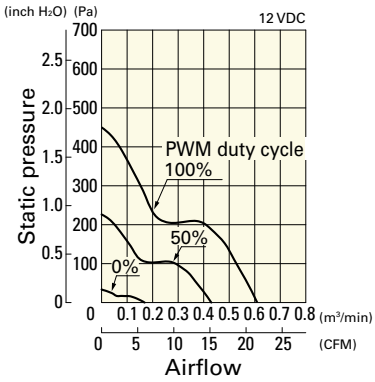


PWM duty - Speed characteristics example

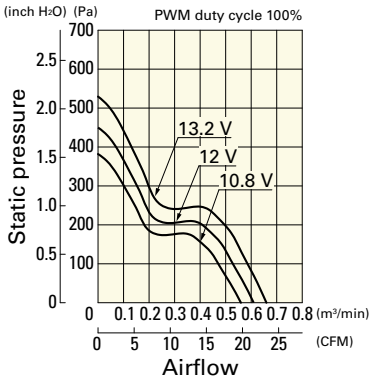


9GA0412P3G01 With pulse sensor with PWM control function

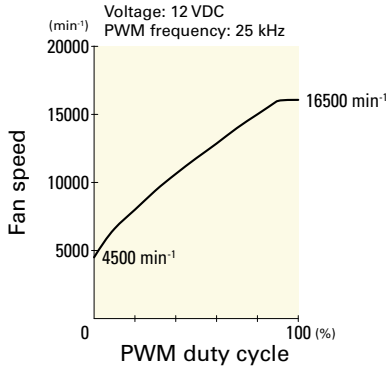
PWM duty cycle



Operating voltage range

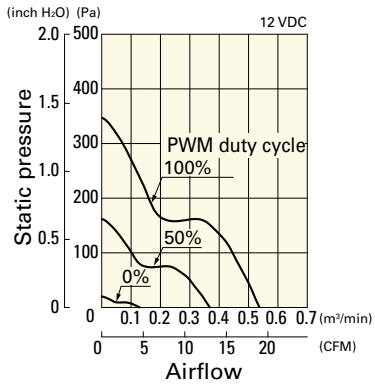


PWM duty - Speed characteristics example

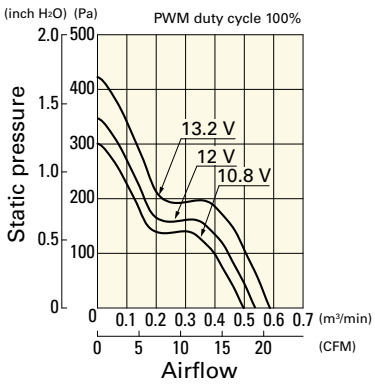


9GA0412P3H01 With pulse sensor with PWM control function

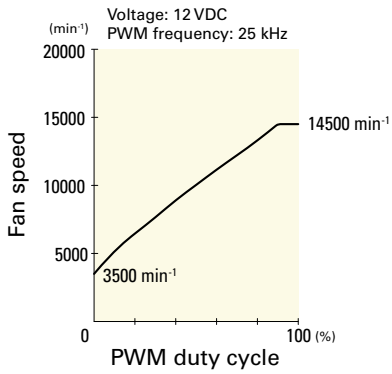
PWM duty cycle



Operating voltage range

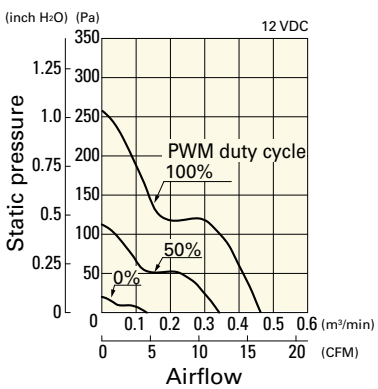


PWM duty - Speed characteristics example

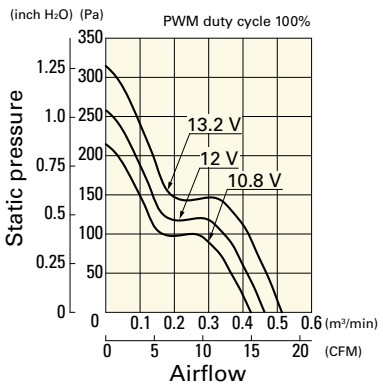


9GA0412P3M01 With pulse sensor with PWM control function

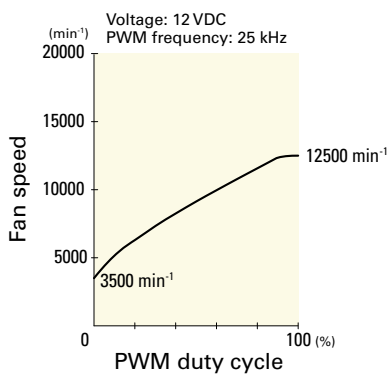
PWM duty cycle



Operating voltage range



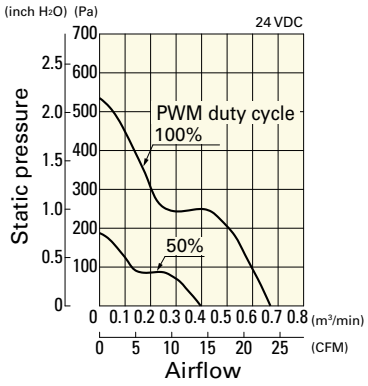
PWM duty - Speed characteristics example



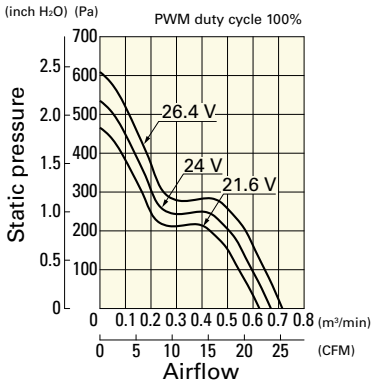
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0424P3J001 With pulse sensor with PWM control function

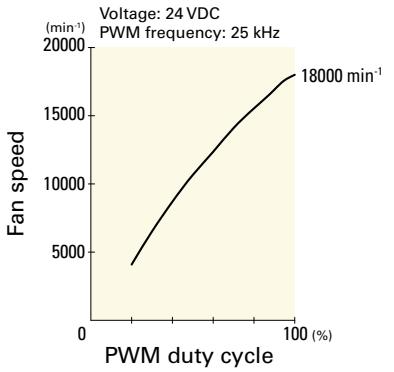
PWM duty cycle



Operating voltage range

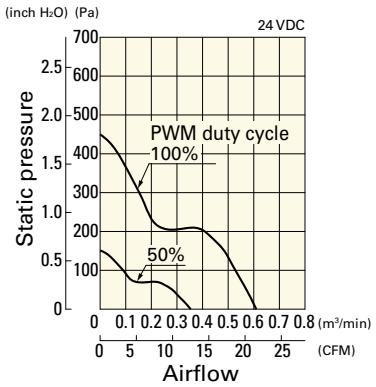


PWM duty - Speed characteristics example

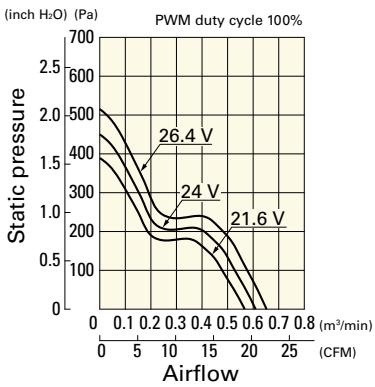


9GA0424P3G001 With pulse sensor with PWM control function

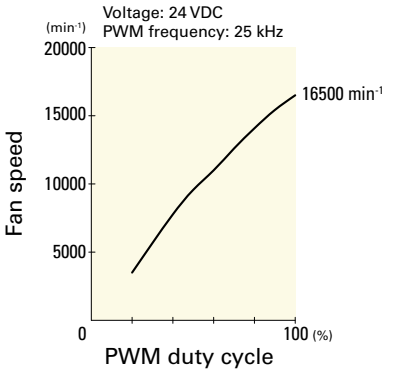
PWM duty cycle



Operating voltage range

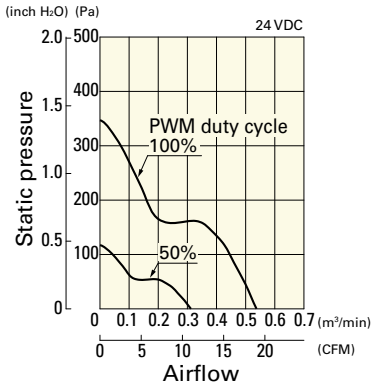


PWM duty - Speed characteristics example

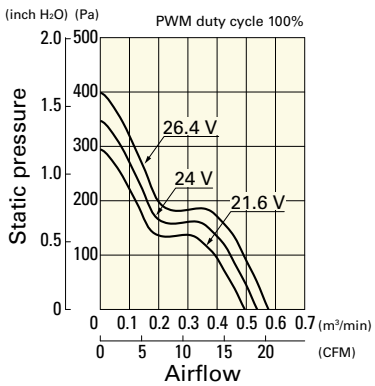


9GA0424P3H001 With pulse sensor with PWM control function

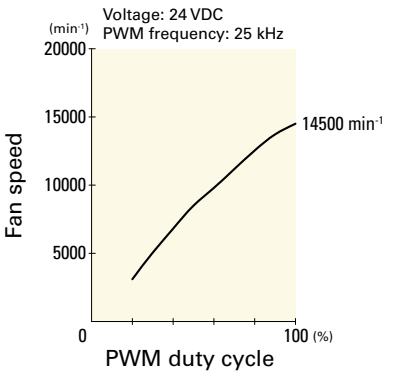
PWM duty cycle



Operating voltage range

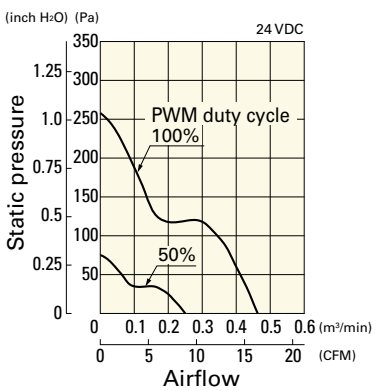


PWM duty - Speed characteristics example

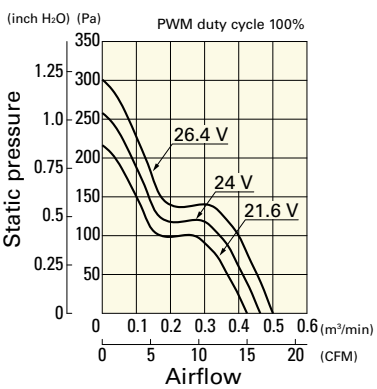


9GA0424P3M001 With pulse sensor with PWM control function

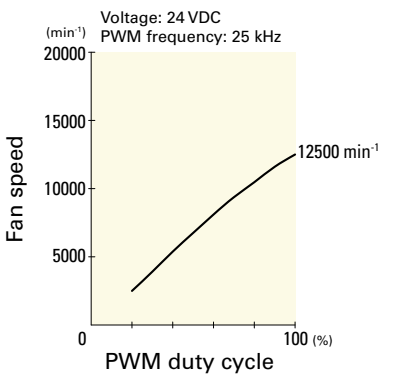
PWM duty cycle



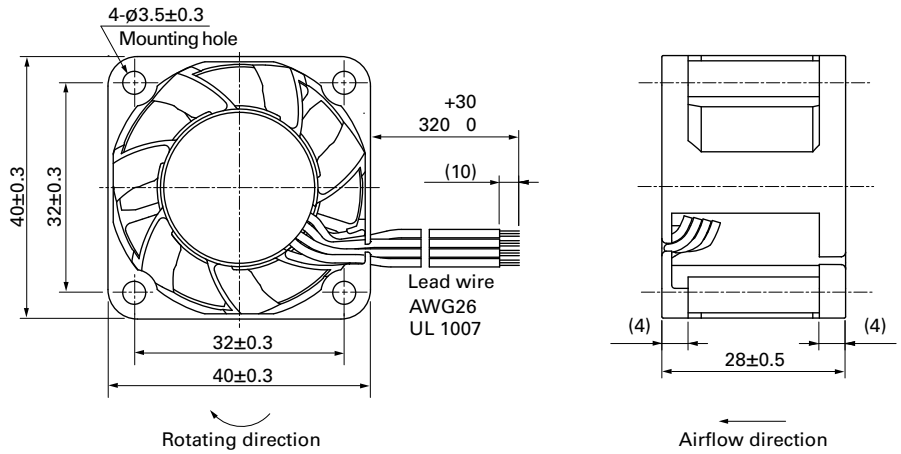
Operating voltage range



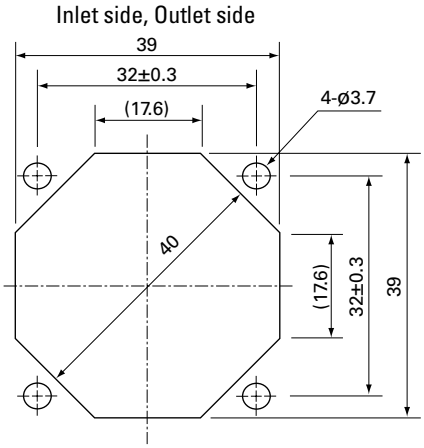
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×28 mm

San Ace 40 9GE type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 55 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GE0412P3K03	12	10.8 to 13.2	100	0.84	10.08	16500	0.76	26.8	415	1.666	58	-20 to +60	40000/60˚C
			0	0.07	0.84	3000	0.13	4.6	13	0.052	17		
9GE0412P3J03			100	0.65	7.8	15000	0.69	24.4	343.0	1.378	56		
			0	0.05	0.6	2650	0.12	4.2	10.7	0.042	14		
9GE0412P3G03			100	0.47	5.64	13000	0.6	21.2	260	1.044	52		
			0	0.05	0.6	2400	0.11	3.9	8.2	0.033	13		

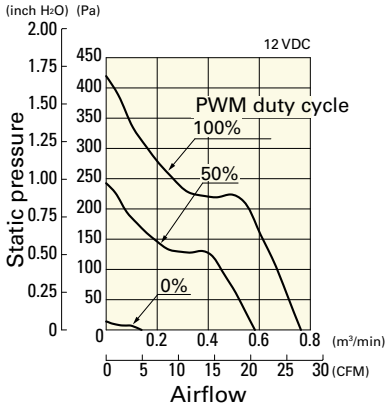
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 554).

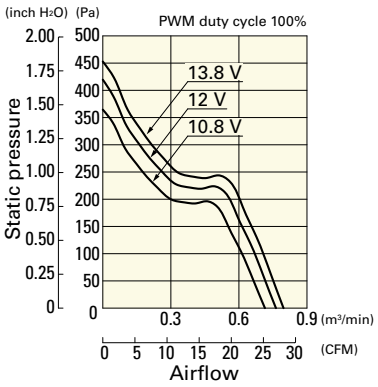
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GE0412P3K03 With pulse sensor with PWM control function

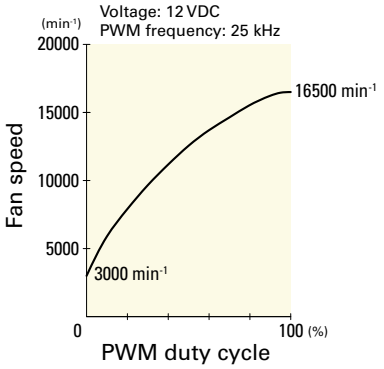
PWM duty cycle



Operating voltage range



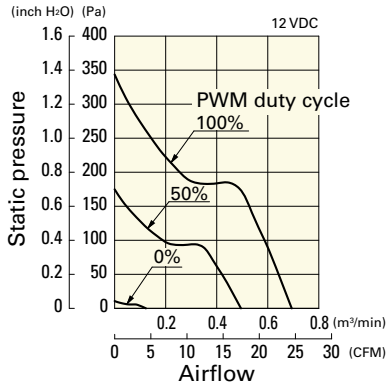
PWM duty - Speed characteristics example



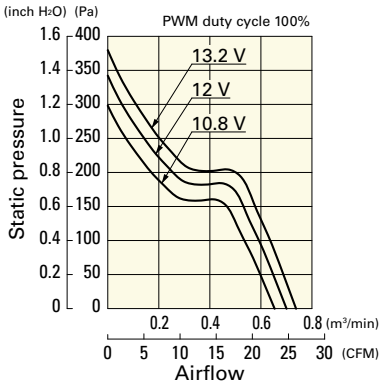
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GE0412P3J03 With pulse sensor with PWM control function

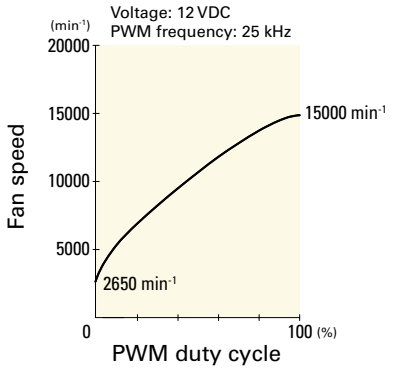
PWM duty cycle



Operating voltage range

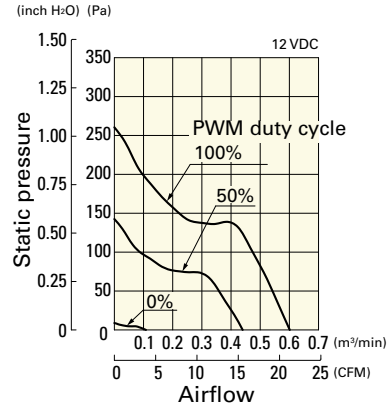


PWM duty - Speed characteristics example

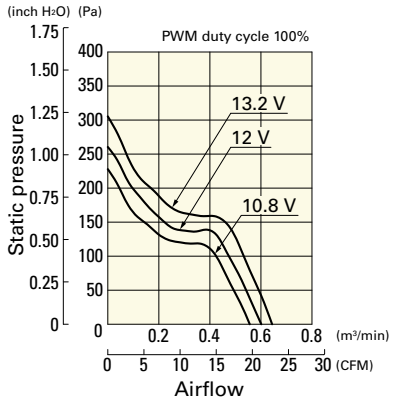


9GE0412P3G03 With pulse sensor with PWM control function

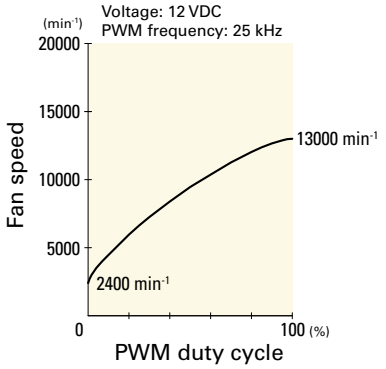
PWM duty cycle



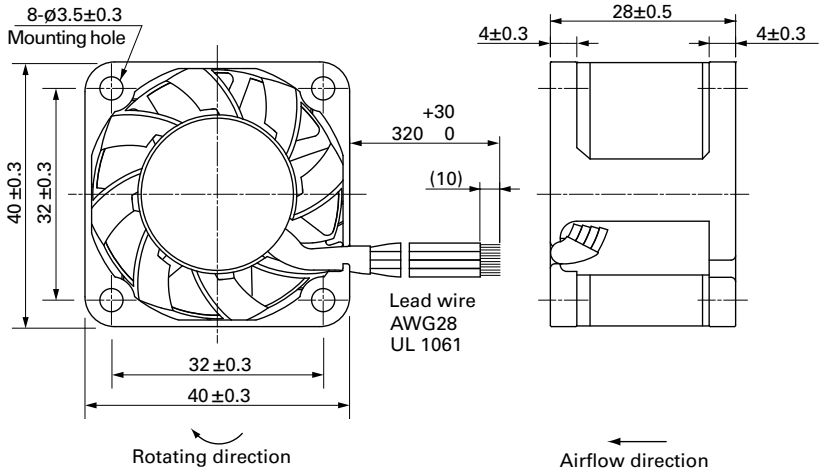
Operating voltage range



PWM duty - Speed characteristics example

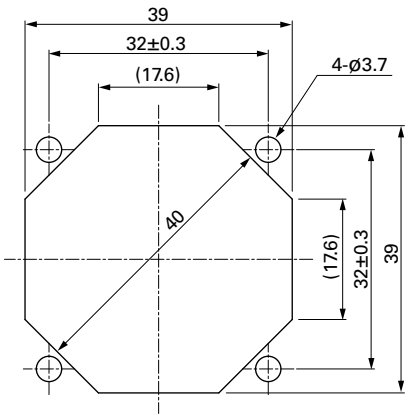


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×28 mm

San Ace 40 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -20 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 50 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

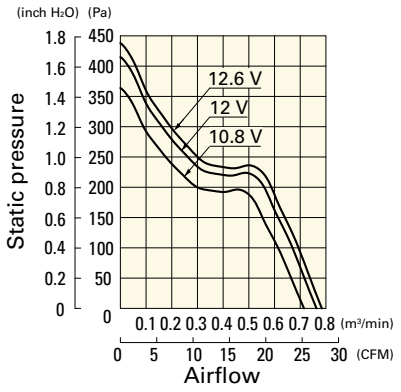
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV0412K301	12	10.8 to 12.6	0.84	10.08	16500	0.76	26.8	415	1.668	58	-20 to +60	40000/60˚C
9GV0412J301		7 to 13.2	0.6	7.2	14700	0.68	24.0	330	1.325	55		
9GV0412G301			0.47	5.64	13000	0.6	21.1	260	1.044	52		
9GV0412H301			0.31	3.72	11600	0.53	18.7	207	0.831	49		
9GV0412C301			0.15	1.8	8300	0.37	13.1	100	0.402	41	-20 to +70	

Other sensor specifications are available as options. Refer to the index (p. 554).

Airflow - Static Pressure Characteristics

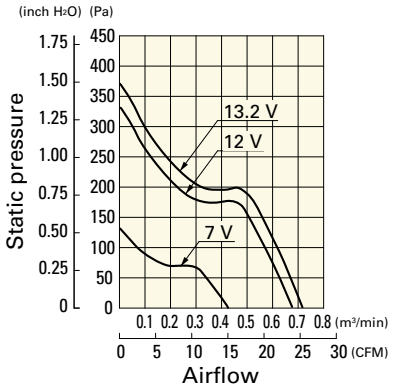
9GV0412K301 With pulse sensor

Operating voltage range



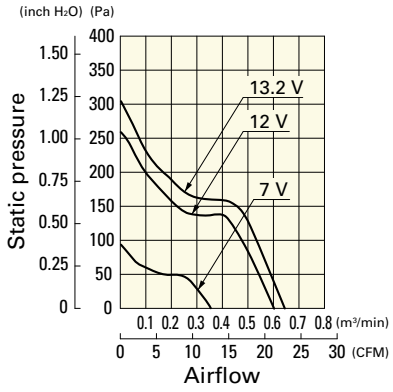
9GV0412J301 With pulse sensor

Operating voltage range



9GV0412G301 With pulse sensor

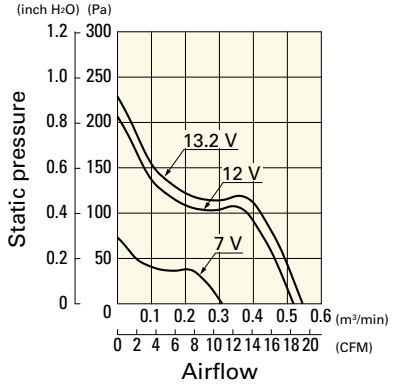
Operating voltage range



Airflow - Static Pressure Characteristics

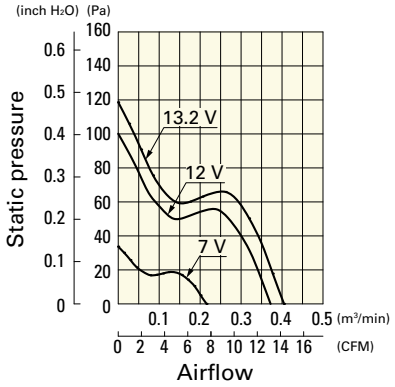
9GV0412H301 With pulse sensor

Operating voltage range

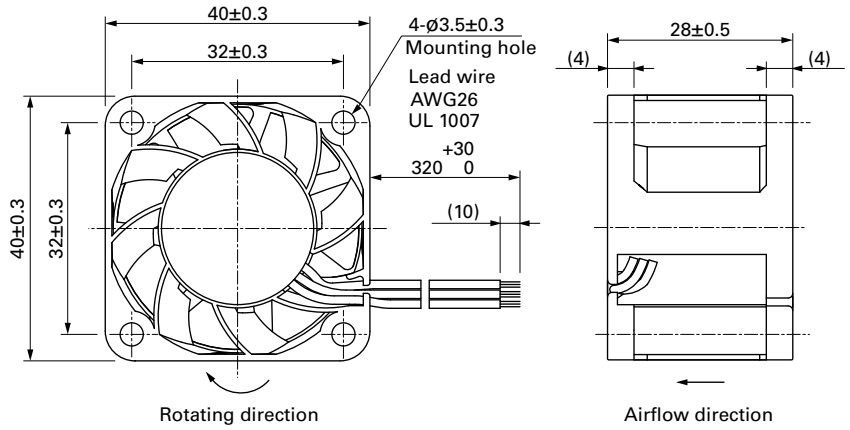


9GV0412C301 With pulse sensor

Operating voltage range

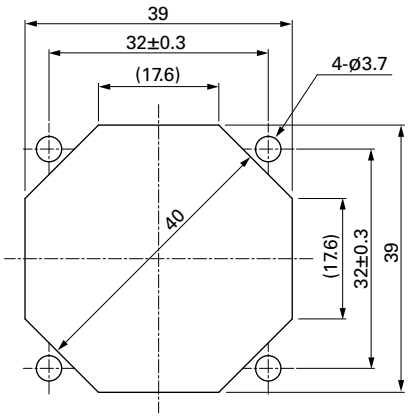


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×28 mm

San Ace 40 9P type

Model 109P0424R3013 is not certified.

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 52 g

Specifications

The models listed below **have ribs and pulse sensors.**

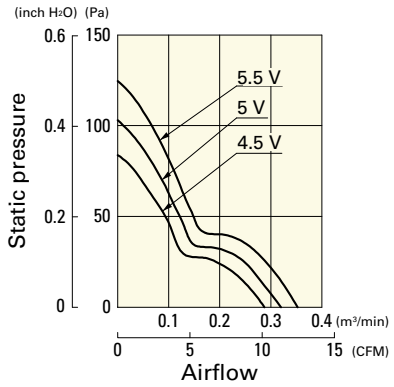
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0405H3013	5	4.5 to 5.5	0.68	3.4	8700	0.32	11.3	102.9	0.414	37	-20 to +70	40000/60˚C
109P0405F3013			0.28	1.4	6700	0.244	8.6	58.8	0.236	30		60000/60˚C
109P0412K3013	12	8 to 13.2	0.55	6.6	15500	0.59	20.8	340	1.365	50		40000/60˚C
109P0412J3013		7 to 13.2	0.35	4.2	12500	0.46	16.2	210	0.843	44	-20 to +60	
109P0412G3013			0.31	3.72	11500	0.42	14.8	179	0.719	42		
109P0412B3013		7 to 13.8	0.28	3.36	10300	0.38	13.4	143	0.574	40		
109P0412H3013			0.195	2.34	8700	0.32	11.3	102.9	0.414	37	-20 to +70	60000/60˚C
109P0412F3013			0.105	1.26	6700	0.244	8.6	58.8	0.236	30		
109P0412M3013		10.2 to 13.8	0.045	0.54	4100	0.15	5.3	21.6	0.087	20		
109P0424R3013	24	12 to 26.4	0.25	6	14000	0.51	18.0	263.4	1.057	47	-20 to +60	40000/60˚C
109P0424J3013			0.18	4.32	12500	0.46	16.2	210	0.843	44		
109P0424G3013			0.19	4.56	11500	0.42	14.8	179	0.719	42		
109P0424B3013			0.13	3.12	10300	0.38	13.4	143	0.574	40		
109P0424H3013		12 to 27.6	0.095	2.28	8700	0.32	11.3	102.9	0.414	37	-20 to +70	60000/60˚C
109P0424F3013		14 to 27.6	0.055	1.32	6700	0.244	8.6	58.8	0.236	30		

Other sensor specifications are available as options. Refer to the index (pp. 543 to 544).

Airflow - Static Pressure Characteristics

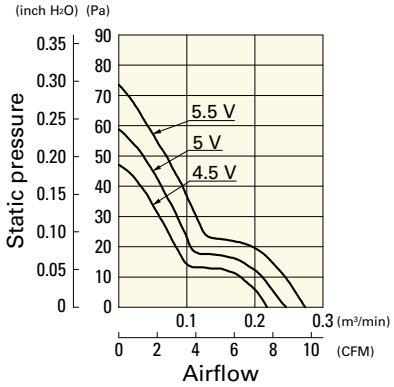
109P0405H3013 With pulse sensor

Operating voltage range



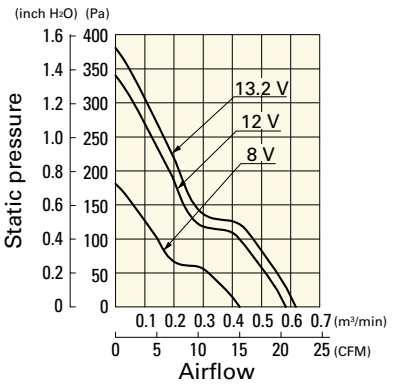
109P0405F3013 With pulse sensor

Operating voltage range



109P0412K3013 With pulse sensor

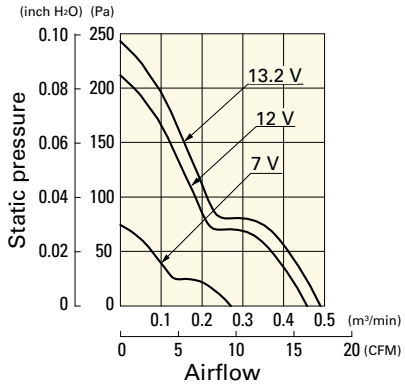
Operating voltage range



Airflow - Static Pressure Characteristics

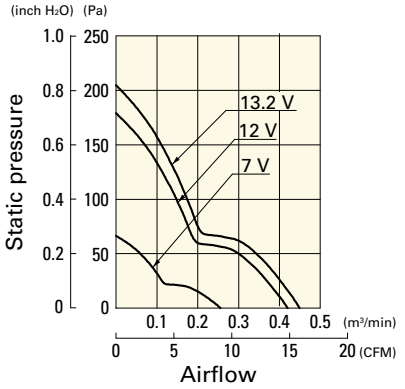
109P0412J3013 With pulse sensor

Operating voltage range



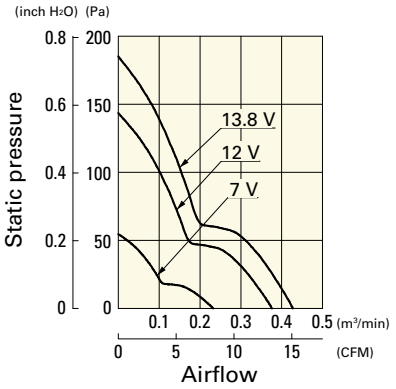
109P0412G3013 With pulse sensor

Operating voltage range



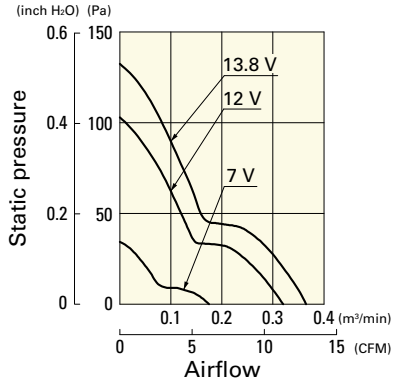
109P0412B3013 With pulse sensor

Operating voltage range



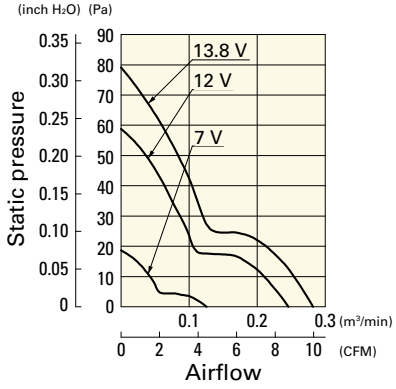
109P0412H3013 With pulse sensor

Operating voltage range



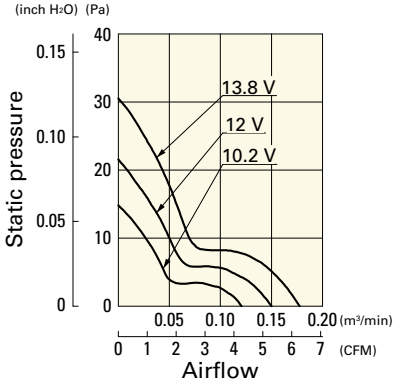
109P0412F3013 With pulse sensor

Operating voltage range



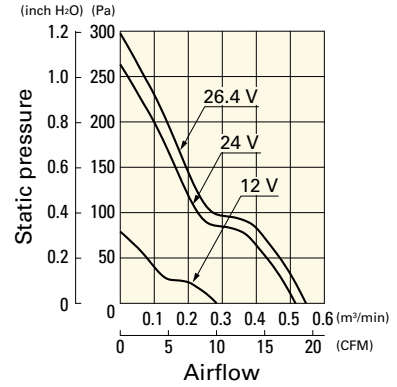
109P0412M3013 With pulse sensor

Operating voltage range



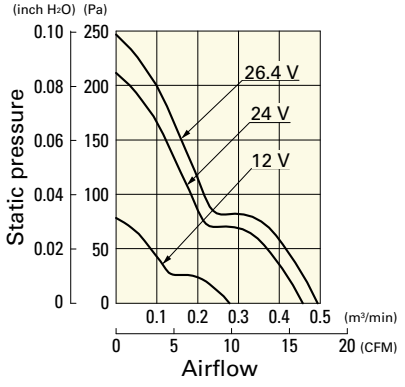
109P0424R3013 With pulse sensor

Operating voltage range



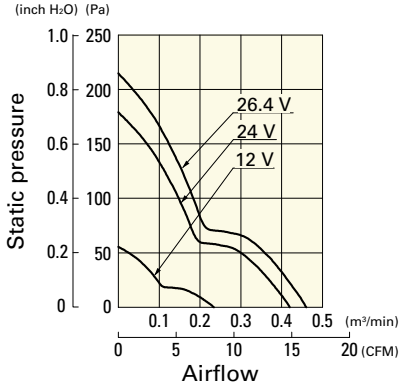
109P0424J3013 With pulse sensor

Operating voltage range



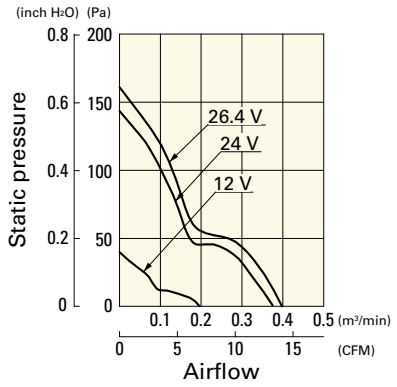
109P0424G3013 With pulse sensor

Operating voltage range



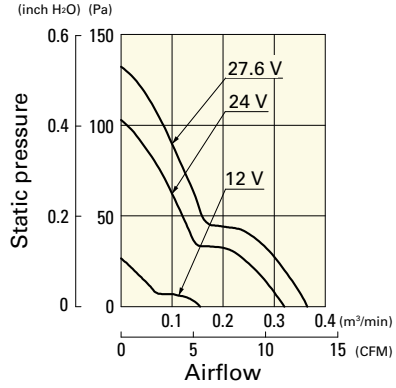
109P0424B3013 With pulse sensor

Operating voltage range



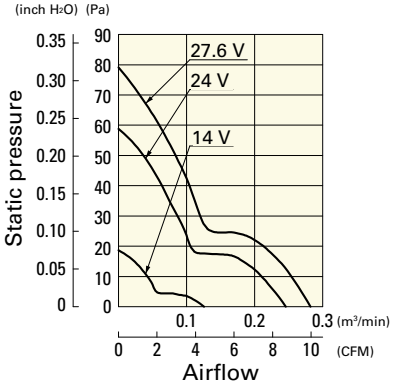
109P0424H3013 With pulse sensor

Operating voltage range

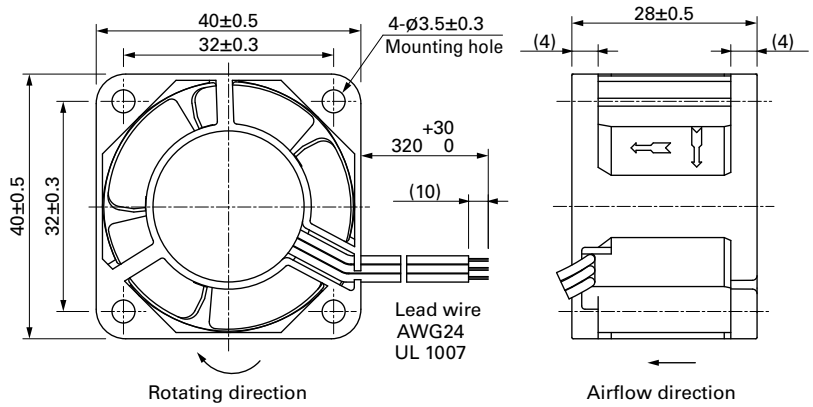


109P0424F3013 With pulse sensor

Operating voltage range

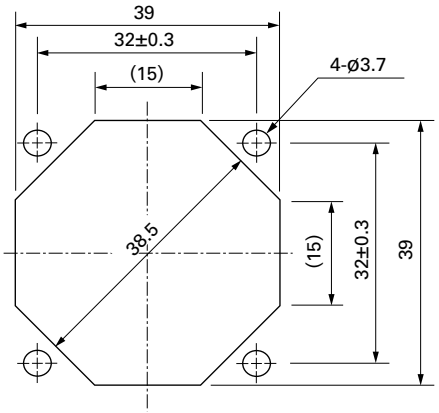


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

52×52×15 mm

San Ace 52 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 40 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0512P7G001	12	10.2 to 13.8	100	0.13	1.56	7800	0.5	17.7	91.5	0.367	38	-20 to +70	40000/60˚C
9GA0512P7A001				0.08	0.96	6300	0.4	14.1	59	0.237	32		
9GA0512P7H001				0.05	0.6	4300	0.275	9.7	27.5	0.11	22		
9GA0512P7M001				0.04	0.48	3400	0.215	7.6	17	0.068	16		
9GA0524P7G001	24	20.4 to 27.6	100	0.07	1.68	7800	0.5	17.7	91.5	0.367	38		
9GA0524P7A001				0.05	1.2	6300	0.4	14.1	59.0	0.237	32		
9GA0524P7H001				0.03	0.72	4300	0.275	9.7	27.5	0.11	22		
9GA0524P7M001				0.02	0.48	3400	0.215	7.6	17.0	0.068	16		

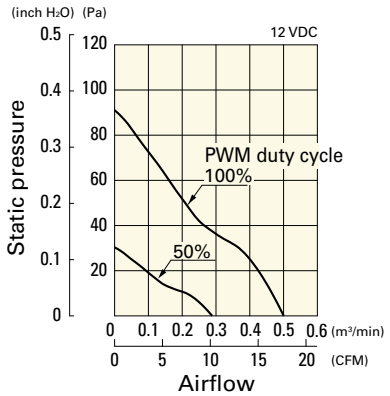
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 551).

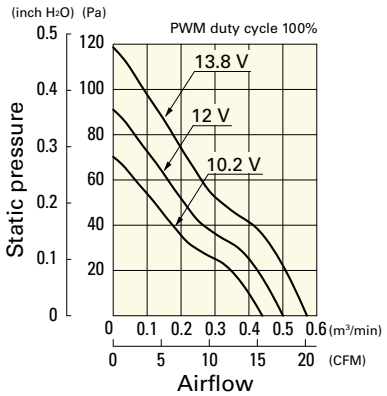
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0512P7G001 With pulse sensor with PWM control function

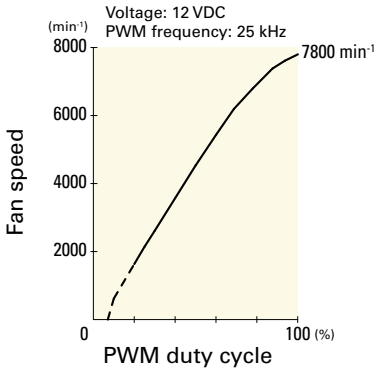
PWM duty cycle



Operating voltage range



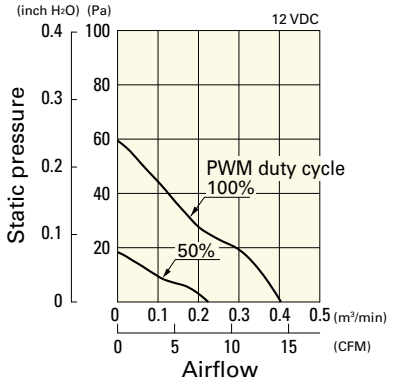
PWM duty - Speed characteristics example



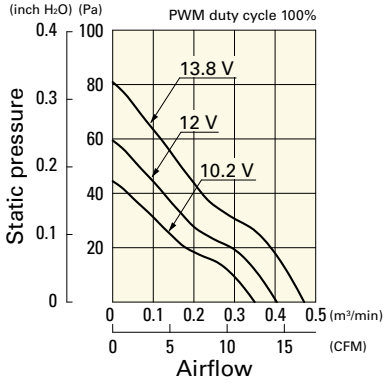
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0512P7A001 With pulse sensor with PWM control function

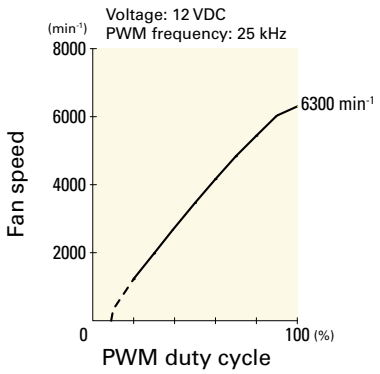
PWM duty cycle



Operating voltage range

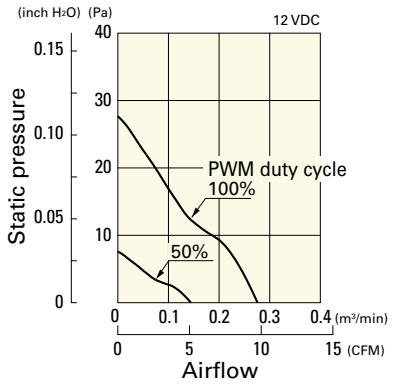


PWM duty - Speed characteristics example

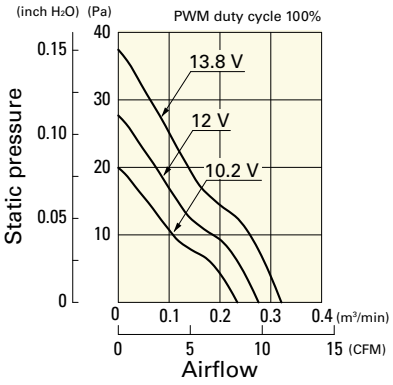


9GA0512P7H001 With pulse sensor with PWM control function

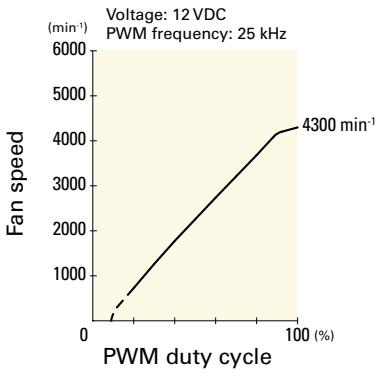
PWM duty cycle



Operating voltage range

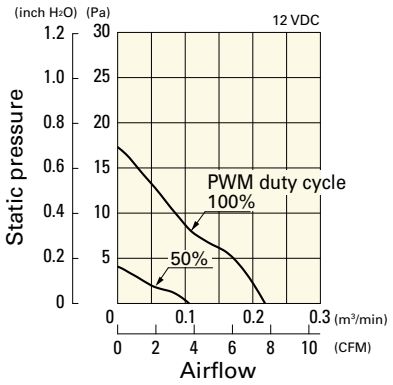


PWM duty - Speed characteristics example

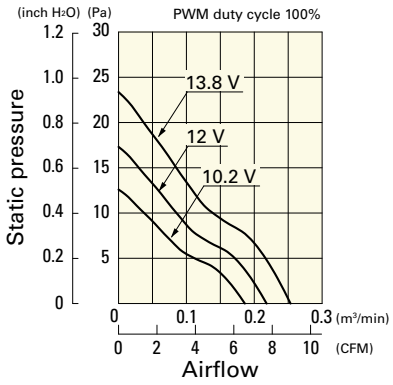


9GA0512P7M001 With pulse sensor with PWM control function

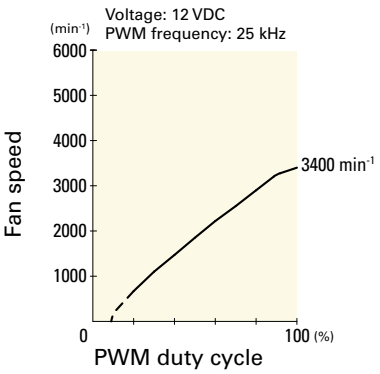
PWM duty cycle



Operating voltage range

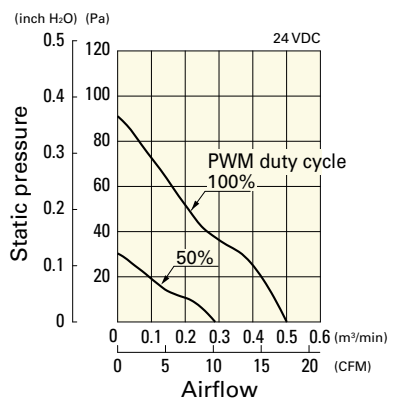


PWM duty - Speed characteristics example

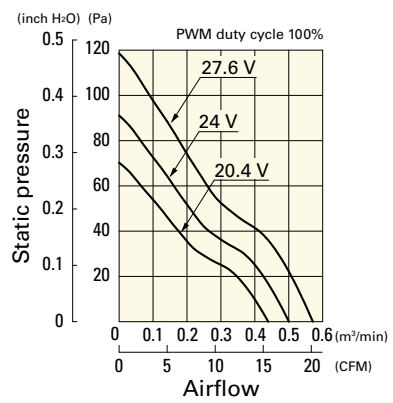


9GA0524P7G001 With pulse sensor with PWM control function

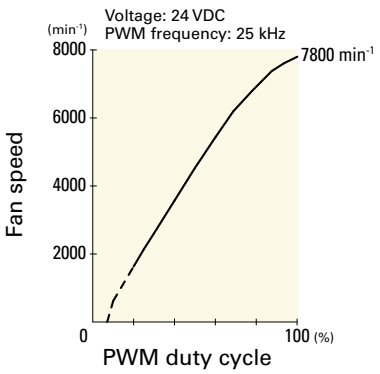
PWM duty cycle



Operating voltage range



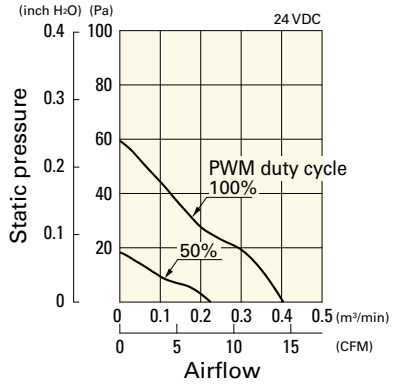
PWM duty - Speed characteristics example



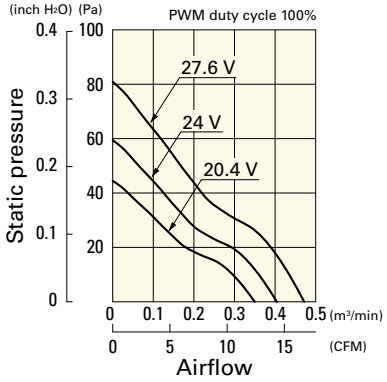
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0524P7A001 With pulse sensor with PWM control function

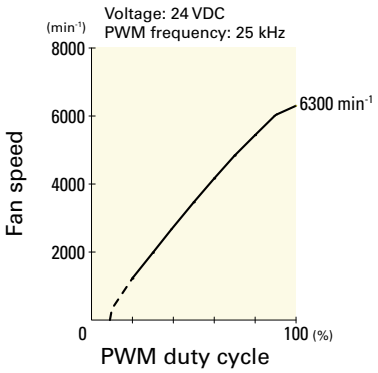
PWM duty cycle



Operating voltage range

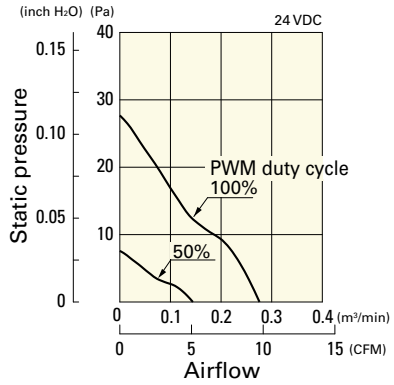


PWM duty - Speed characteristics example

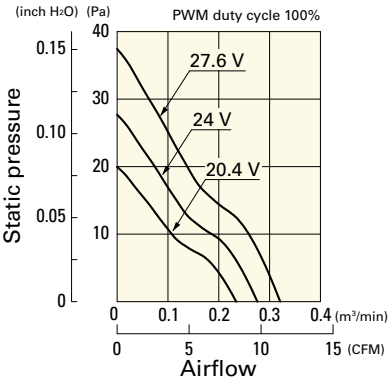


9GA0524P7H001 With pulse sensor with PWM control function

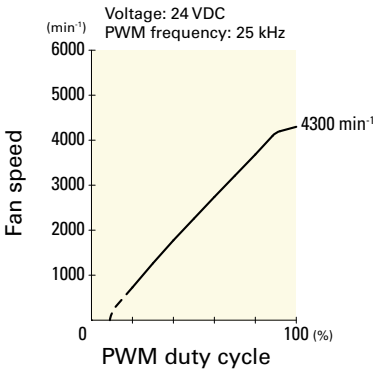
PWM duty cycle



Operating voltage range

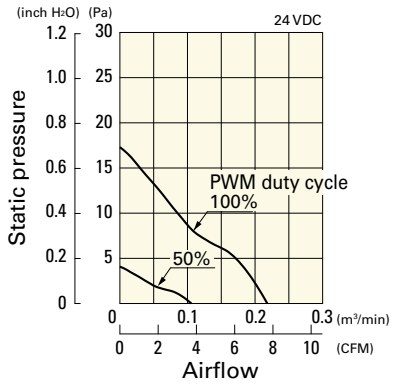


PWM duty - Speed characteristics example

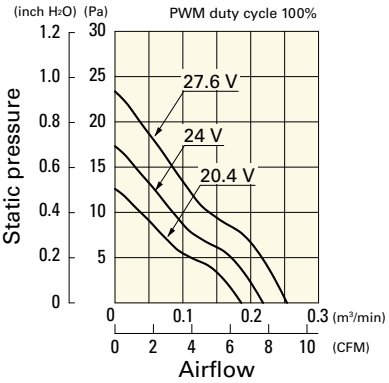


9GA0524P7M001 With pulse sensor with PWM control function

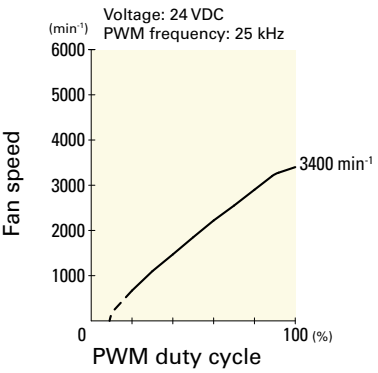
PWM duty cycle



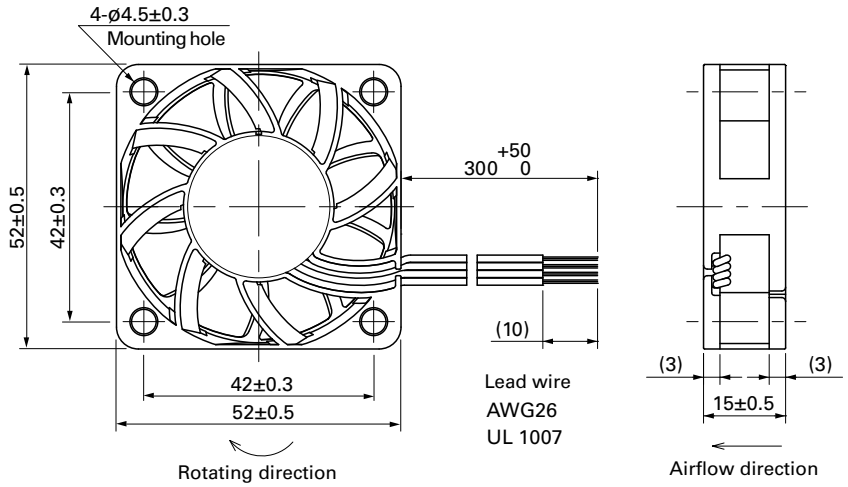
Operating voltage range



PWM duty - Speed characteristics example

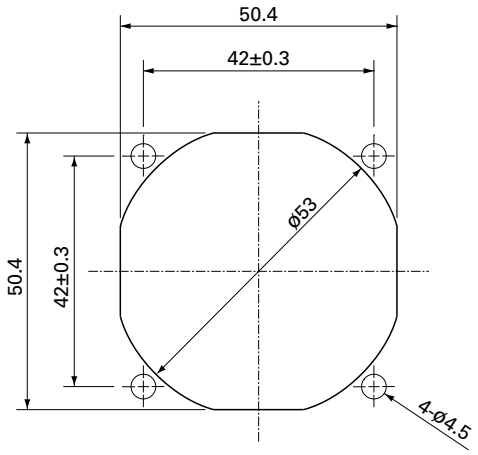


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-149, 109-149E

52×52×15 mm

San Ace 52 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 55 g

Specifications

The models listed below **have ribs and pulse sensors.**

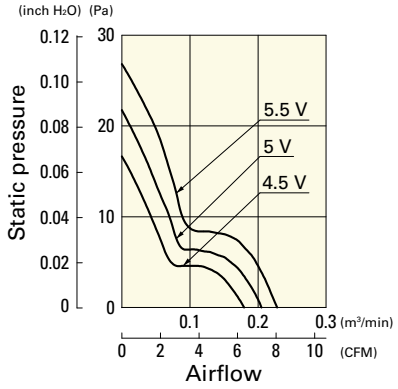
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0505M701	5	4.5 to 5.5	0.15	0.75	3700	0.205	7.24	21.4	0.086	22	-20 to +70	60000/60˚C
109P0512A701	12	10.2 to 13.8	0.21	2.52	6800	0.375	13.25	69.7	0.28	36		40000/60˚C
109P0512H701		7 to 13.8	0.1	1.2	4600	0.255	9.0	31.9	0.128	27		60000/60˚C
109P0512M701			0.07	0.84	3700	0.205	7.24	21.4	0.086	22		
109P0524A701	24	14 to 27.6	0.11	2.64	6800	0.375	13.24	69.7	0.28	36	-20 to +60	40000/60˚C
109P0524H701			0.05	1.2	4600	0.255	9.0	31.9	0.128	27	-20 to +70	60000/60˚C
109P0524M701			0.04	0.96	3700	0.205	7.24	21.4	0.086	22		

Other sensor specifications are available as options. Refer to the index (p. 544).

Airflow - Static Pressure Characteristics

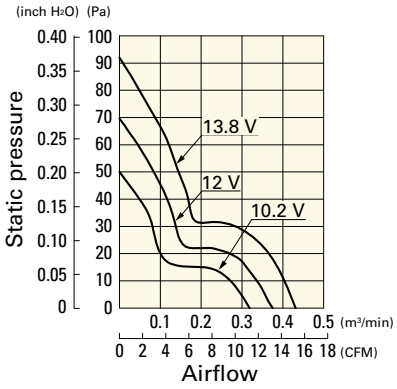
109P0505M701 With pulse sensor

Operating voltage range



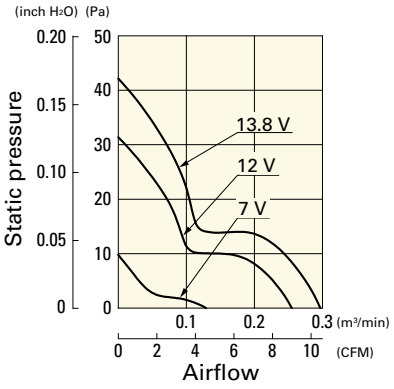
109P0512A701 With pulse sensor

Operating voltage range



109P0512H701 With pulse sensor

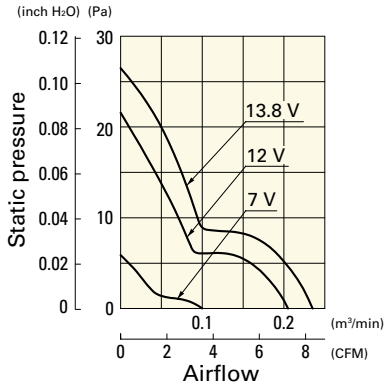
Operating voltage range



Airflow - Static Pressure Characteristics

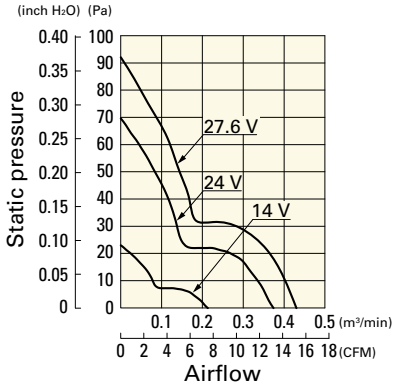
109P0512M701 With pulse sensor

Operating voltage range



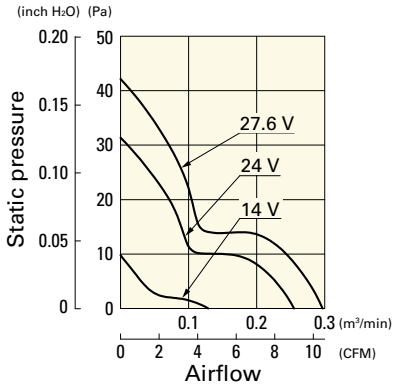
109P0524A701 With pulse sensor

Operating voltage range



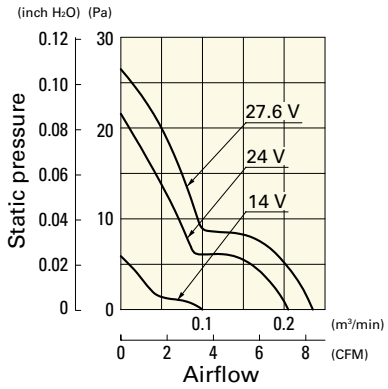
109P0524H701 With pulse sensor

Operating voltage range

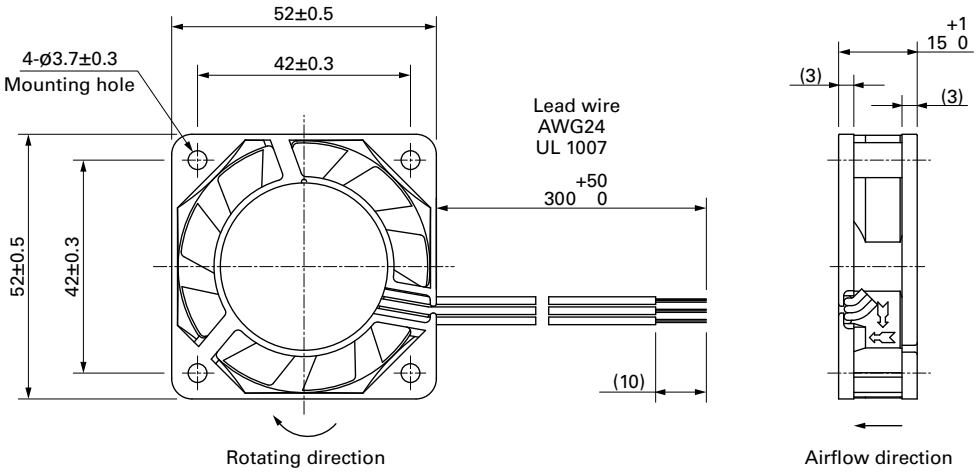


109P0524M701 With pulse sensor

Operating voltage range

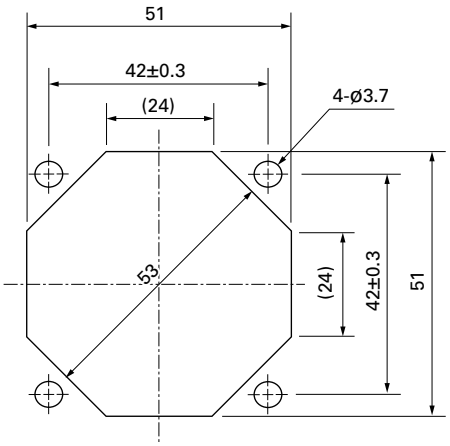


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-149, 109-149E

60×60×10 mm

San Ace 60 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 35 g

Specifications

The models listed below **have ribs and pulse sensors.**

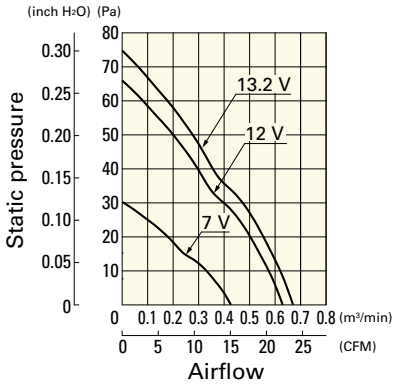
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0612G9001	12	7.0 to 13.2	0.27	3.24	6200	0.62	21.9	66	0.26	43	-20 to +60	40000/60˚C (70000/40˚C)
9GA0612H9001		7.0 to 13.8	0.14	1.68	5000	0.5	17.6	42.9	0.17	37	-20 to +70	
9GA0612L9001			0.03	0.36	2300	0.23	8.1	9.1	0.037	17	-10 to +70	

Other sensor specifications are available as options. Refer to the index (pp. 551 to 552).

Airflow - Static Pressure Characteristics

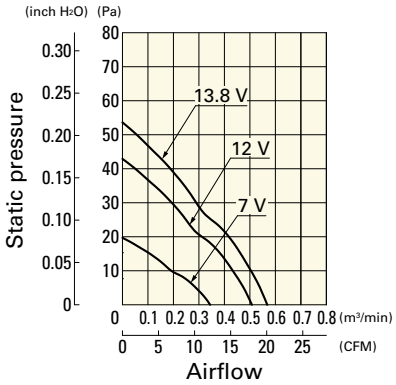
9GA0612G9001 With pulse sensor

Operating voltage range



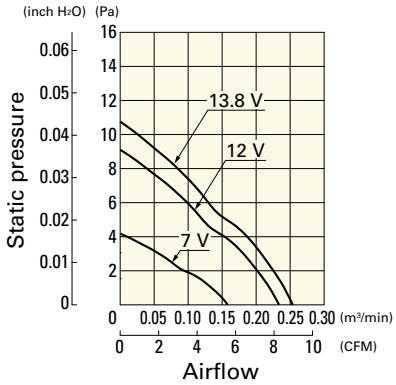
9GA0612H9001 With pulse sensor

Operating voltage range

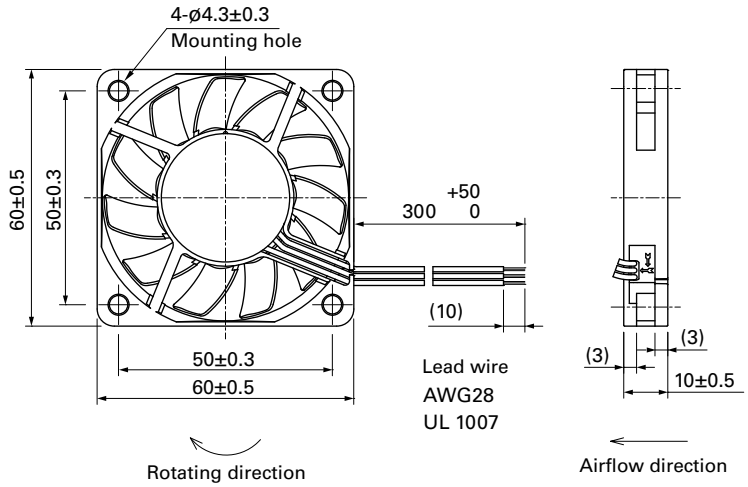


9GA0612L9001 With pulse sensor

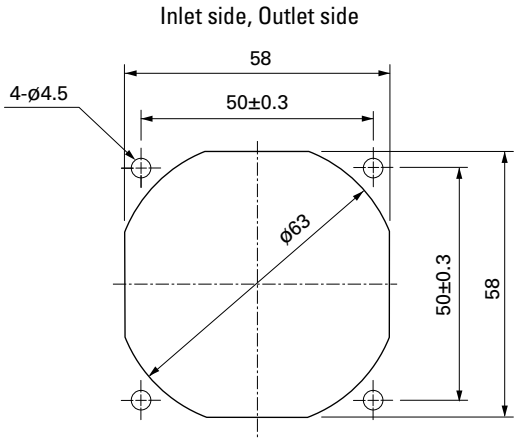
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×15 mm

San Ace 60 9GA type Low Power Consumption Fan

Model 9GA0624P7G01 is not TÜV certified.

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  (For models without PWM control function, there is no speed control wiring.)
- Mass ····· 50 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0612P7G01	12	10.2 to 13.8	100	0.16	1.92	5900	0.68	24	80	0.32	38	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.05	0.6	1500	0.17	6.0	5.2	0.02	10		
9GA0612P7H01			100	0.1	1.2	4900	0.56	19.7	55.6	0.223	34		
			0	0.03	0.36	1300	0.15	5.3	3.9	0.015	8		
9GA0624P7G01**	24	20.4 to 27.6	100	0.08	1.92	5900	0.68	24.0	80	0.32	38		

* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

The models listed below **have ribs and pulse sensors.**

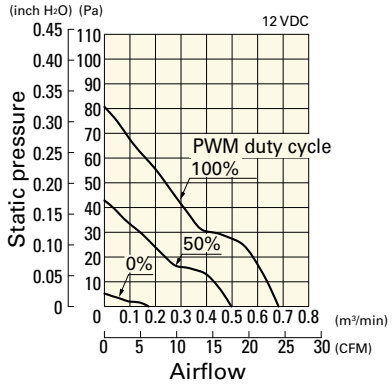
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0612G701	12	6 to 13.8	0.16	1.92	5900	0.68	24	80	0.32	38	-20 to +70	40000/60˚C (70000/40˚C)
9GA0612H701			0.1	1.2	4900	0.56	19.7	55.6	0.223	34		
9GA0612M701			0.08	0.96	3900	0.45	15.9	35.3	0.142	28		60000/60˚C
9GA0612L701			0.03	0.36	2800	0.31	10.9	18	0.072	17		
9GA0624M701	24	12 to 27.6	0.05	1.2	3900	0.45	15.9	35.3	0.142	28		40000/60˚C (70000/40˚C)

Other sensor specifications are available as options. Refer to the index (pp. 551 to 552).

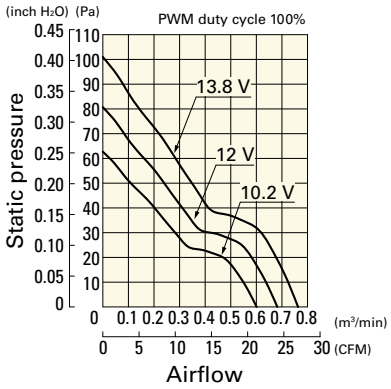
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0612P7G01 With pulse sensor with PWM control function

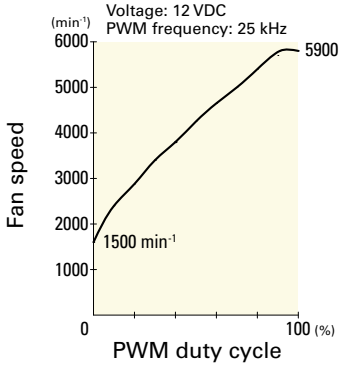
PWM duty cycle



Operating voltage range



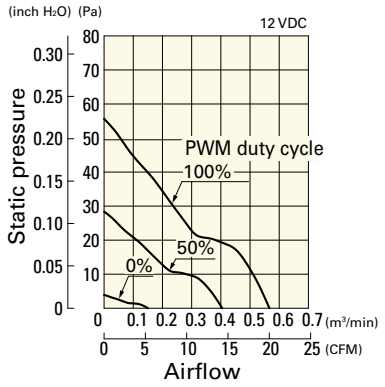
PWM duty - Speed characteristics example



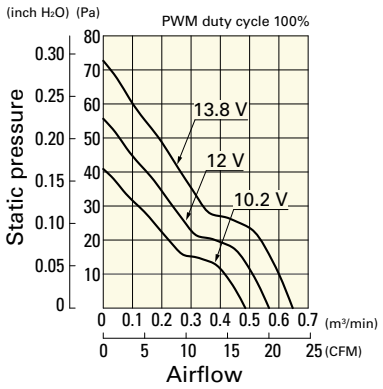
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0612P7H01 With pulse sensor with PWM control function

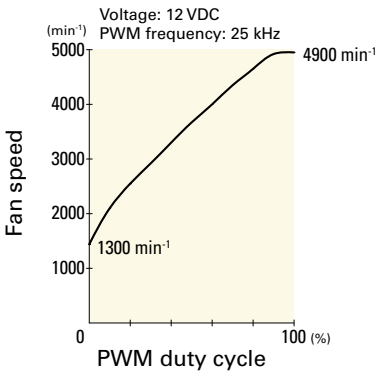
PWM duty cycle



Operating voltage range

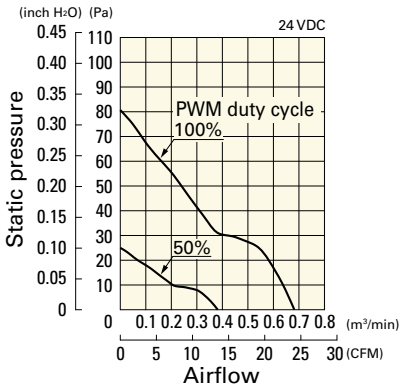


PWM duty - Speed characteristics example

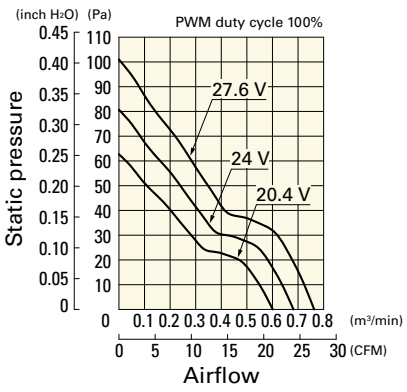


9GA0624P7G01 With pulse sensor with PWM control function

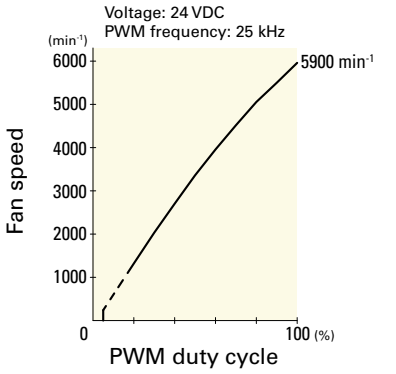
PWM duty cycle



Operating voltage range

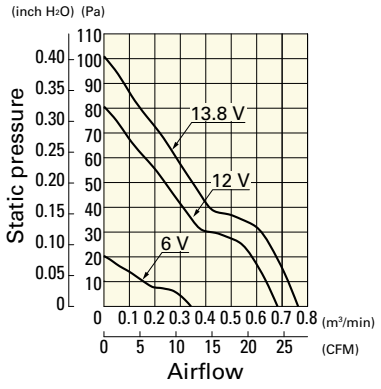


PWM duty - Speed characteristics example



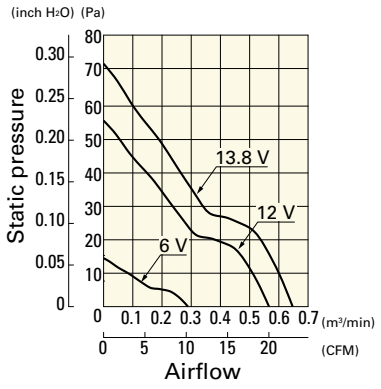
9GA0612G701 With pulse sensor

Operating voltage range



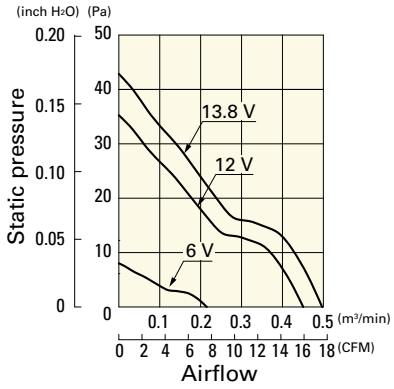
9GA0612H701 With pulse sensor

Operating voltage range



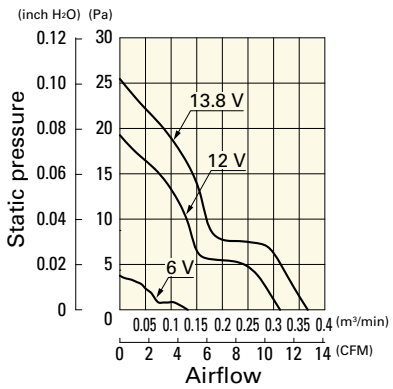
9GA0612M701 With pulse sensor

Operating voltage range



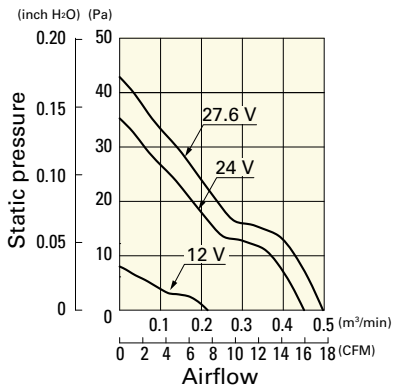
9GA0612L701 With pulse sensor

Operating voltage range

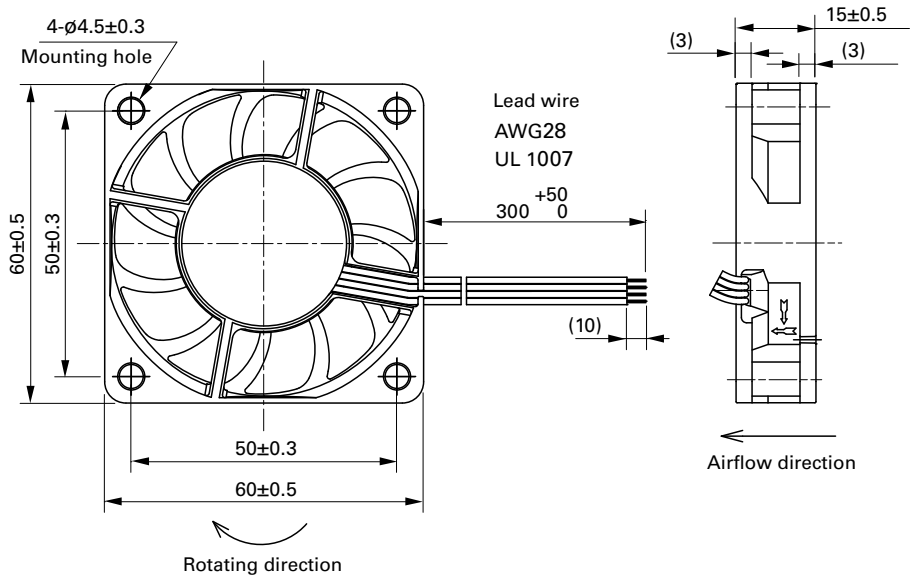


9GA0624M701 With pulse sensor

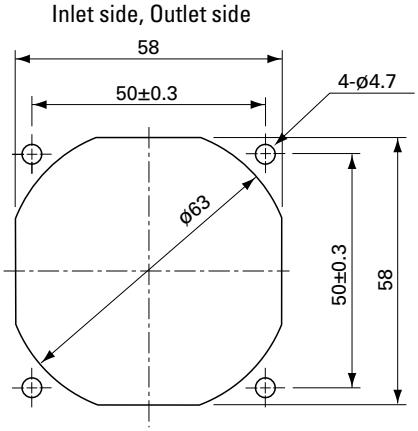
Operating voltage range



Dimensions (unit: mm) (With pulse sensor with PWM control function)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×15 mm

San Ace 60 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 60 g

Specifications

The models listed below **have ribs and pulse sensors.**

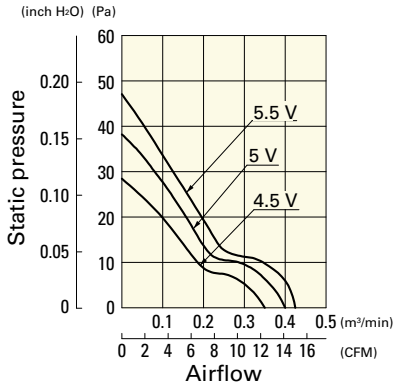
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0605H701	5	4.5 to 5.5	0.26	1.3	4100	0.4	14.1	38.2	0.153	32	-20 to +70	60000/60˚C
109P0605M701			0.15	0.75	3100	0.3	10.6	22.6	0.091	25		
109P0612K701	12	10.2 to 13.8	0.26	3.12	6500	0.62	21.9	99.3	0.399	45	-20 to +60	40000/60˚C
109P0612S701			0.15	1.8	5000	0.48	17.0	58.8	0.236	36	-20 to +70	
109P0612H701		7 to 13.8	0.09	1.08	4100	0.4	14.1	38.2	0.153	32		60000/60˚C
109P0612M701		10.2 to 13.8	0.07	0.84	3100	0.3	10.6	22.6	0.091	25		
109P0612B701			0.05	0.6	2200	0.21	7.42	11.7	0.047	21		
109P0624J701	24	14 to 27.6	0.14	3.36	6200	0.61	21.5	86.5	0.347	44	-20 to +60	40000/60˚C
109P0624S701			0.08	1.92	5000	0.48	16.9	58.8	0.236	36	-20 to +70	
109P0624H701			0.06	1.44	4100	0.4	14.1	38.2	0.153	32		60000/60˚C
109P0624M701		20.4 to 27.6	0.04	0.96	3100	0.3	10.6	22.6	0.091	25		

Other sensor specifications are available as options. Refer to the index (p. 544).

Airflow - Static Pressure Characteristics

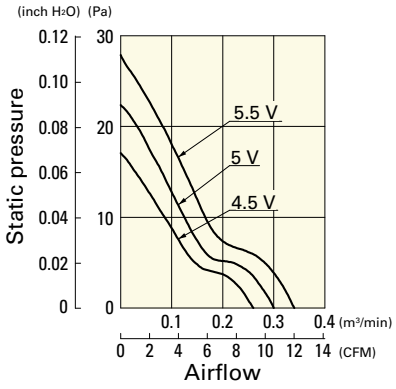
109P0605H701 With pulse sensor

Operating voltage range



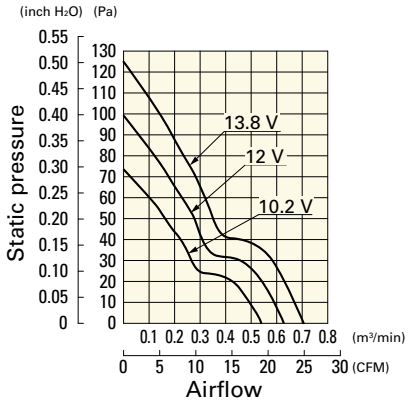
109P0605M701 With pulse sensor

Operating voltage range



109P0612K701 With pulse sensor

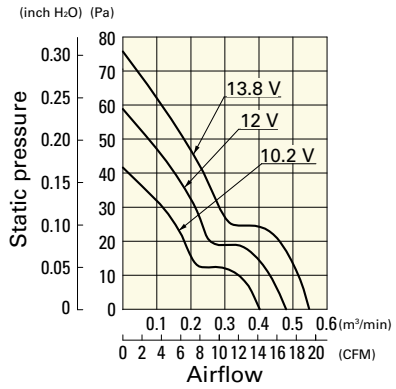
Operating voltage range



Airflow - Static Pressure Characteristics

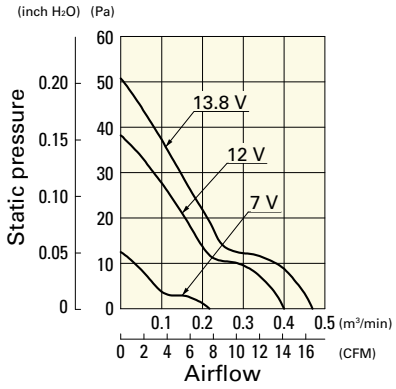
109P0612S701 With pulse sensor

Operating voltage range



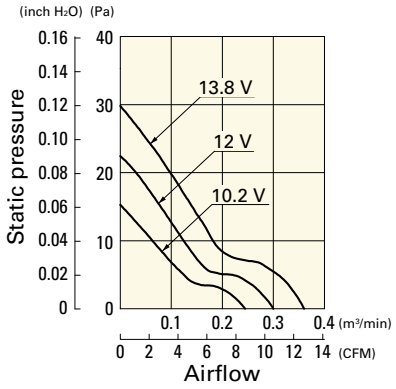
109P0612H701 With pulse sensor

Operating voltage range



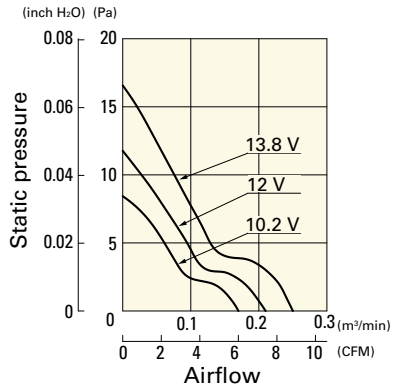
109P0612M701 With pulse sensor

Operating voltage range



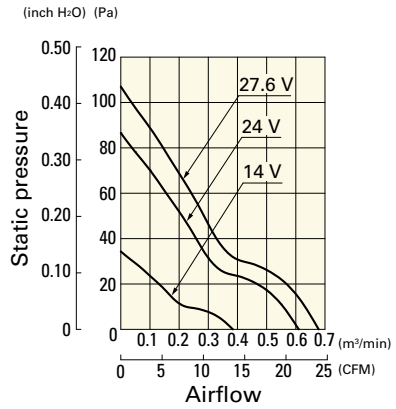
109P0612B701 With pulse sensor

Operating voltage range



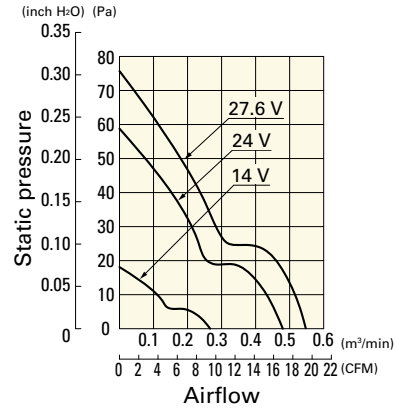
109P0624J701 With pulse sensor

Operating voltage range



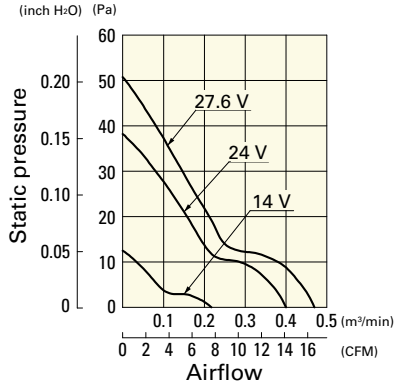
109P0624S701 With pulse sensor

Operating voltage range



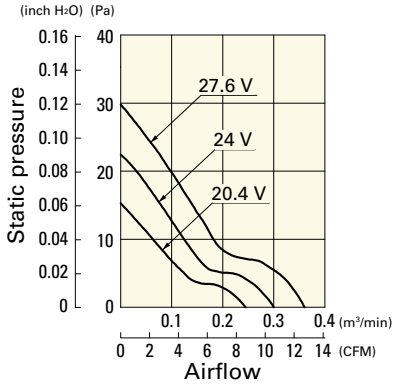
109P0624H701 With pulse sensor

Operating voltage range

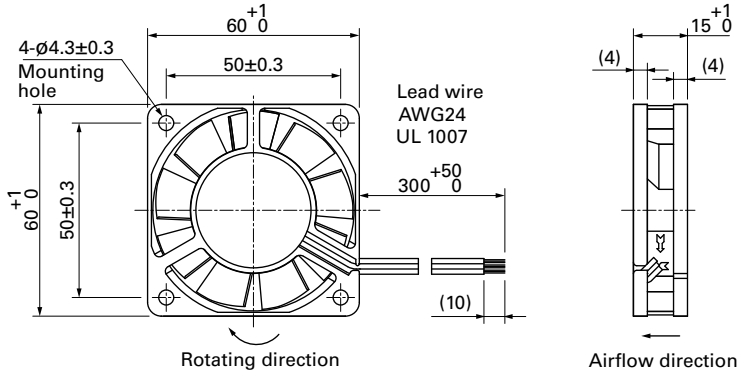


109P0624M701 With pulse sensor

Operating voltage range

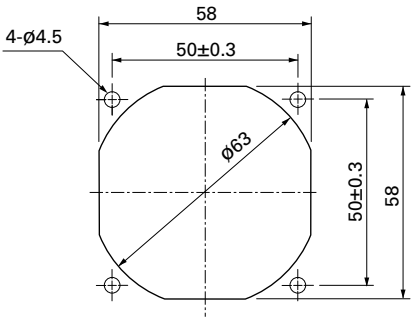


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×20 mm

San Ace 60 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  (For models without PWM control function, there is no speed control wiring.)
- Mass ····· 70 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0612P6G001	12	10.8 to 13.2	100	0.26	3.12	6850	0.88	31.1	125	0.5	43	-20 to +70	40000/60˚C (70000/40˚C)
9GA0612P6S001			100	0.15	1.8	5500	0.7	24.7	81	0.33	36		
9GA0624P6G001	24	21.6 to 26.4	100	0.12	2.88	6850	0.88	31.1	125	0.5	43		
9GA0624P6S001			100	0.07	1.68	5500	0.7	24.7	81	0.33	36		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

The models listed below **have ribs and pulse sensors.**

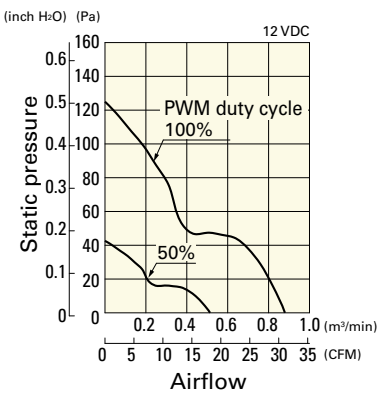
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0612H6001	12	10.8 to 13.2	0.09	1.08	4100	0.52	18.4	45	0.18	29	-20 to +70	60000/60˚C
9GA0612M6001			0.05	0.6	2700	0.34	12.0	20	0.08	18		
9GA0624H6001	24	21.6 to 26.4	0.04	0.96	4100	0.52	18.4	45	0.18	29		
9GA0624M6001			0.03	0.72	2700	0.34	12.0	20	0.08	18		

Other sensor specifications are available as options. Refer to the index (p. 552).

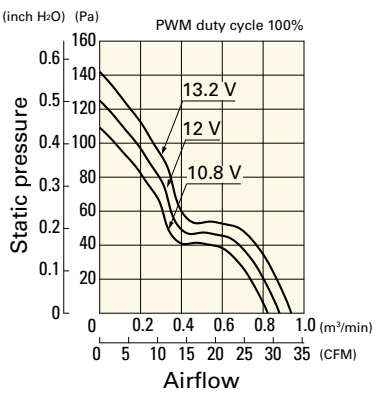
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0612P6G001 With pulse sensor with PWM control function

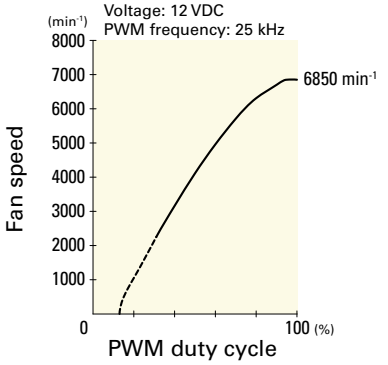
PWM duty cycle



Operating voltage range



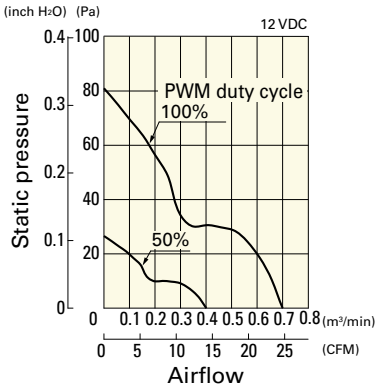
PWM duty - Speed characteristics example



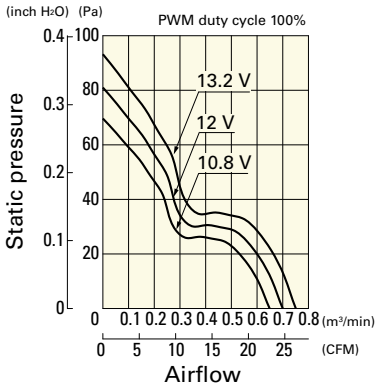
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0612P6S001 With pulse sensor with PWM control function

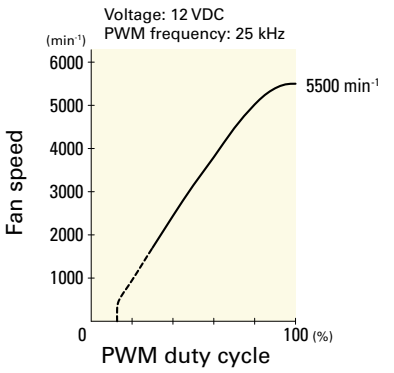
PWM duty cycle



Operating voltage range

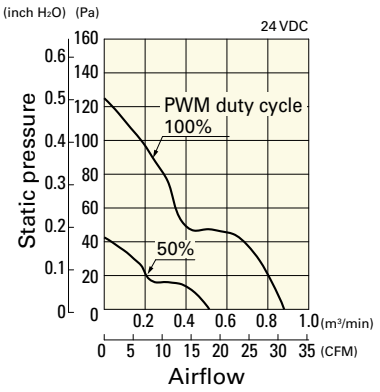


PWM duty - Speed characteristics example

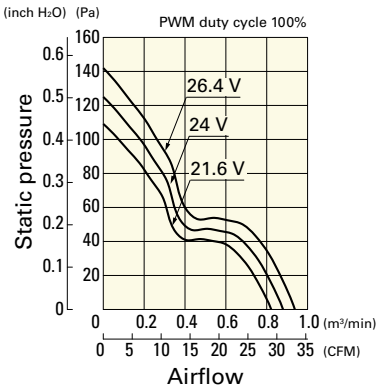


9GA0624P6G001 With pulse sensor with PWM control function

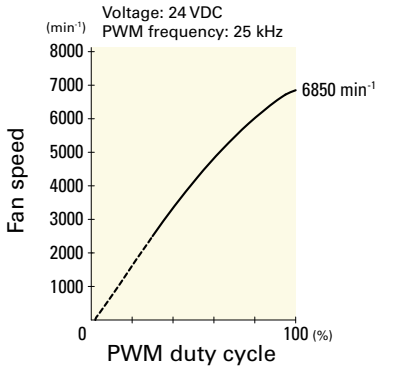
PWM duty cycle



Operating voltage range

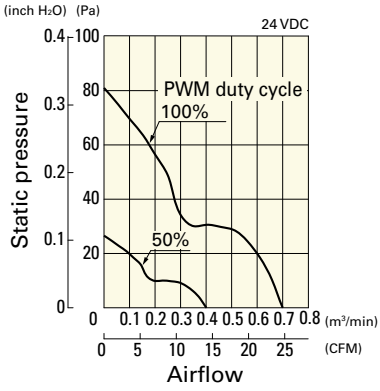


PWM duty - Speed characteristics example

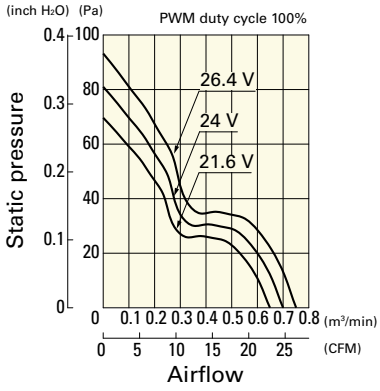


9GA0624P6S001 With pulse sensor with PWM control function

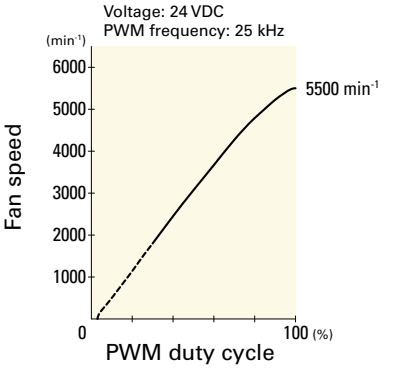
PWM duty cycle



Operating voltage range

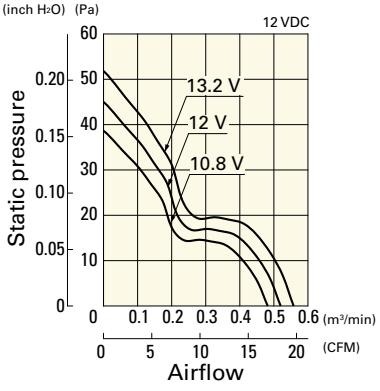


PWM duty - Speed characteristics example



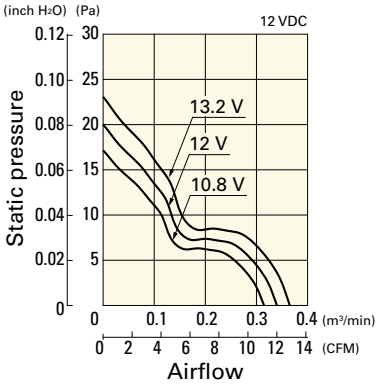
9GA0612H6001 With pulse sensor

Operating voltage range



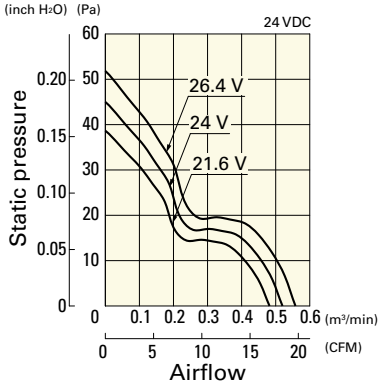
9GA0612M6001 With pulse sensor

Operating voltage range



9GA0624H6001 With pulse sensor

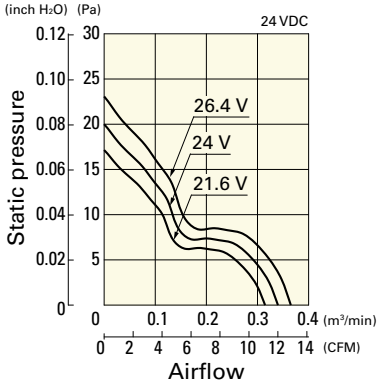
Operating voltage range



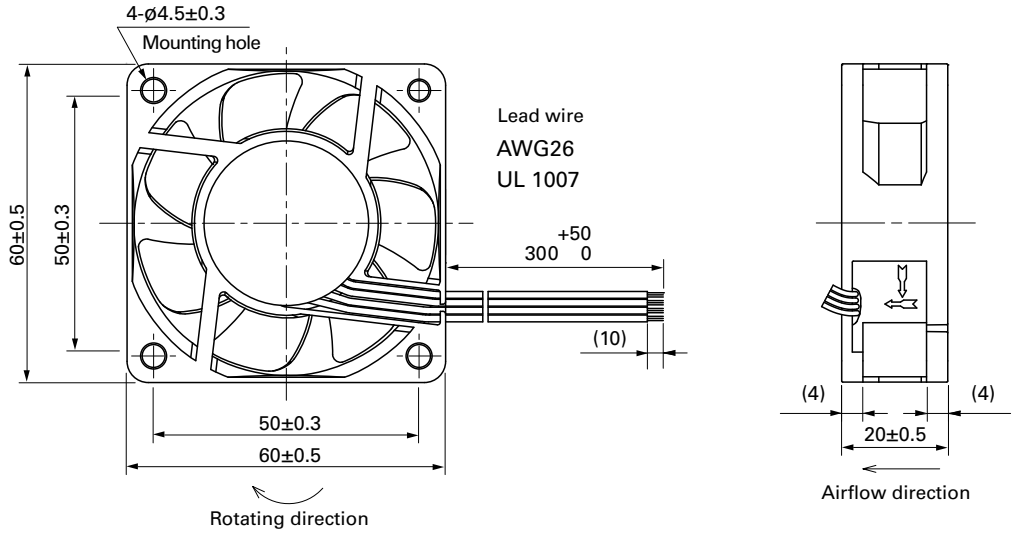
Airflow - Static Pressure Characteristics

9GA0624M6001 With pulse sensor

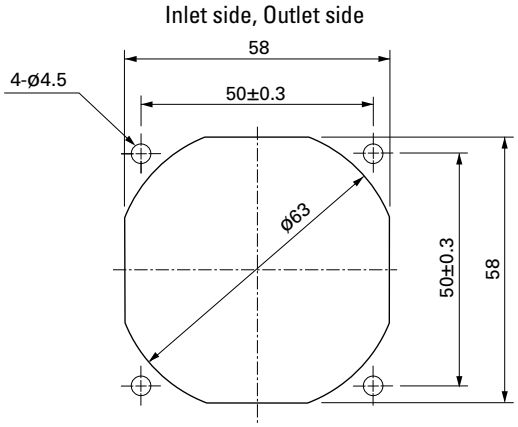
Operating voltage range



Dimensions (unit: mm) (With pulse sensor with PWM control function)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin finger guards page: p. 520

Model no.: 109-1003G

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

60×60×20 mm

San Ace 60 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 90 g

Specifications

The models listed below **have ribs and pulse sensors.**

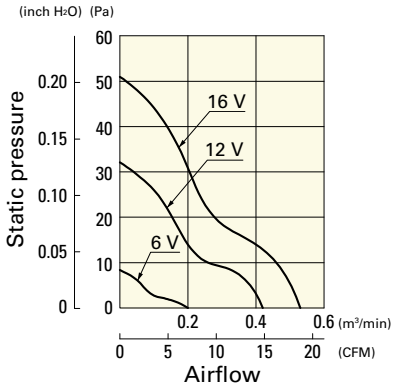
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0612W601	12	6 to 16	0.13	1.56	4200	0.42	14.8	31.8	0.128	31	-20 to +70	60000/60˚C
109P0612H601		10.2 to 13.8	0.13	1.56	4200	0.42	14.8	31.8	0.128	31		
109P0612M601			0.09	1.08	3200	0.3	10.6	18.8	0.076	25		
109P0624W601	24	12 to 30	0.07	1.68	4200	0.42	14.8	31.8	0.128	31		
109P0624H601		20.4 to 27.6	0.07	1.68	4200	0.42	14.8	31.8	0.128	31		
109P0624M601			0.05	1.2	3200	0.3	10.6	18.8	0.076	25		
109P0648H601	48	43 to 53	0.07	3.36	5600	0.55	19.4	52.9	0.212	41		40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 544).

Airflow - Static Pressure Characteristics

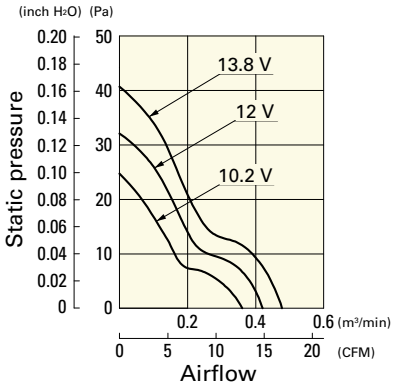
109P0612W601 With pulse sensor

Operating voltage range



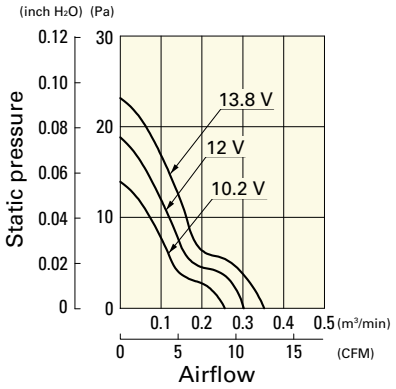
109P0612H601 With pulse sensor

Operating voltage range



109P0612M601 With pulse sensor

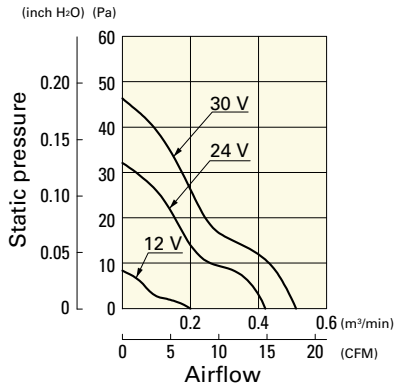
Operating voltage range



Airflow - Static Pressure Characteristics

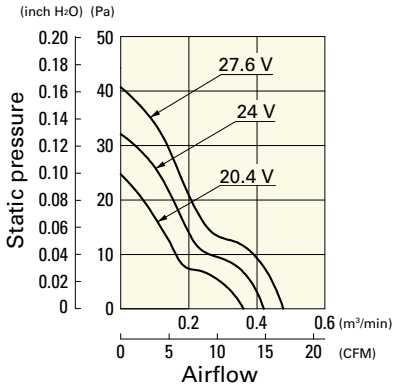
109P0624W601 With pulse sensor

Operating voltage range



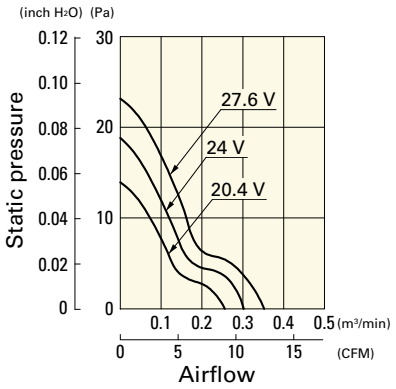
109P0624H601 With pulse sensor

Operating voltage range



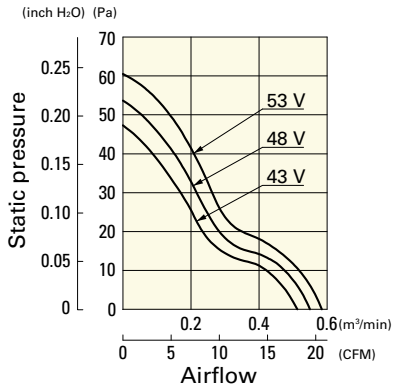
109P0624M601 With pulse sensor

Operating voltage range

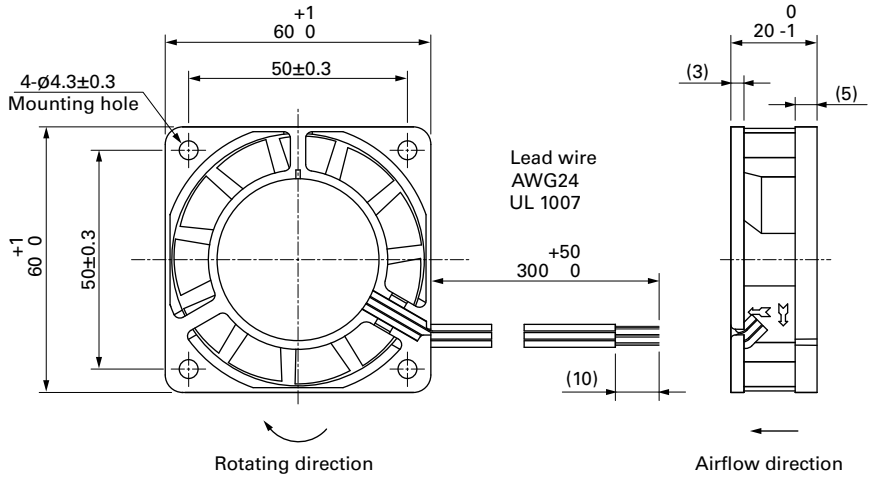


109P0648H601 With pulse sensor

Operating voltage range

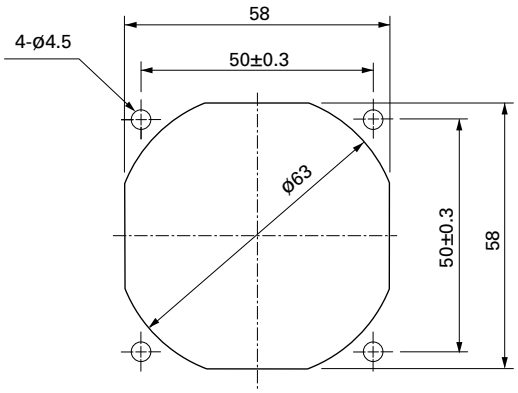


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×25 mm

San Ace 60 9S type Silent Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 55 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

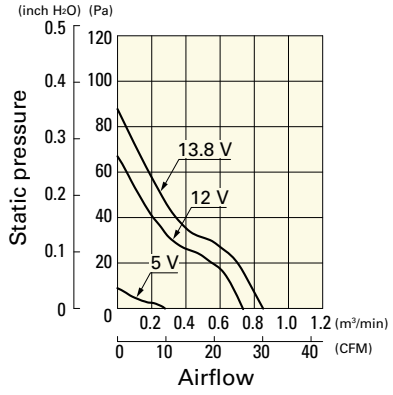
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9S0612S401	12	5.0 to 13.8	0.2	2.4	5000	0.74	26.1	65.7	0.26	31	-10 to +70	40000/60˚C
9S0612H401			0.11	1.32	3900	0.58	20.5	40.0	0.16	24		
9S0612F401		6.0 to 13.8	0.08	0.96	3300	0.49	17.3	29.3	0.12	20		
9S0612M401			0.07	0.84	2700	0.4	14.1	19.7	0.08	16		

Other sensor specifications are available as options. Refer to the index (p. 557).

Airflow - Static Pressure Characteristics

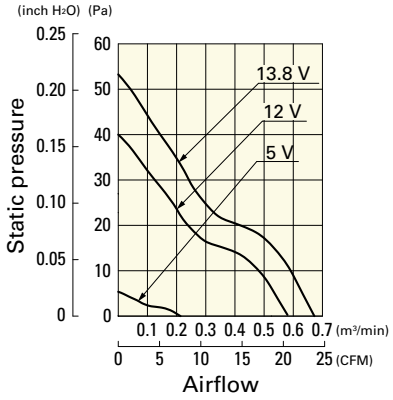
9S0612S401 With pulse sensor

Operating voltage range



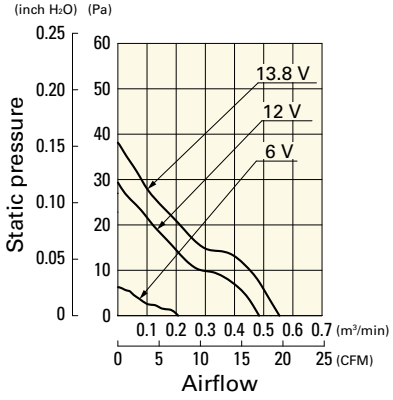
9S0612H401 With pulse sensor

Operating voltage range



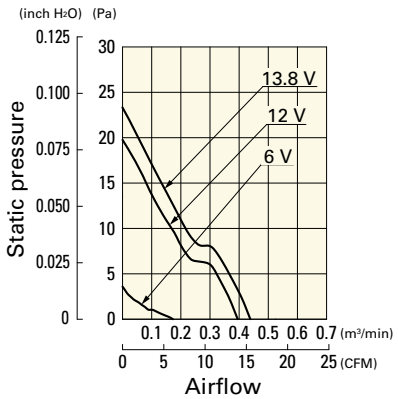
9S0612F401 With pulse sensor

Operating voltage range

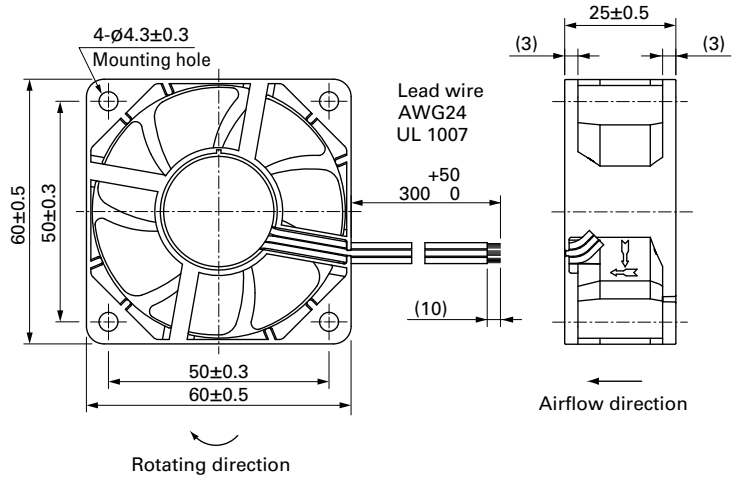


9S0612M401 With pulse sensor

Operating voltage range

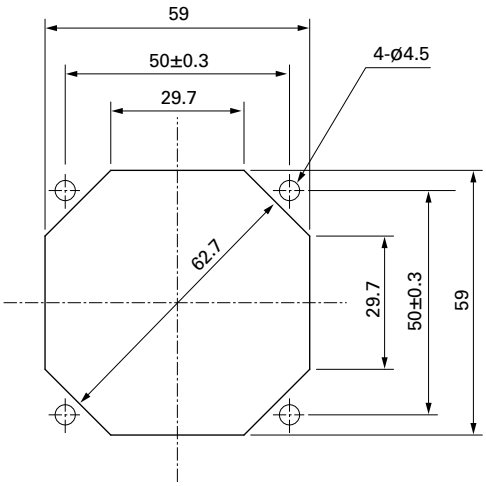


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×25 mm

San Ace 60 9G type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 90 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9G0612P4S001	12	10.2 to 13.8	100	0.67	8.04	11000	1.4	49.4	300	1.2	53	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.07	0.84	3300	0.42	14.8	27	0.11	19		
9G0612P4H001			100	0.5	6.0	9500	1.21	42.7	224	0.9	49		
			0	0.06	0.72	2850	0.36	12.7	20.2	0.08	18		
9G0624P4S001	24	20.4 to 27.6	100	0.34	8.16	11000	1.4	49.4	300	1.2	53		
			0	0.04	0.96	3300	0.42	14.8	27	0.11	19		
9G0624P4H001			100	0.25	6.0	9500	1.21	42.7	224	0.9	49		
			0	0.04	0.96	2850	0.36	12.7	20.2	0.08	18		
9G0648P4S001	48	36 to 72	100	0.18	8.64	11000	1.4	49.4	305	1.22	53		
			0	0.02	0.96	3300	0.42	14.8	27.4	0.11	19		

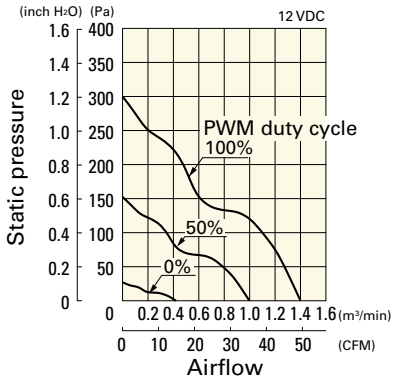
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (pp. 548 to 549).

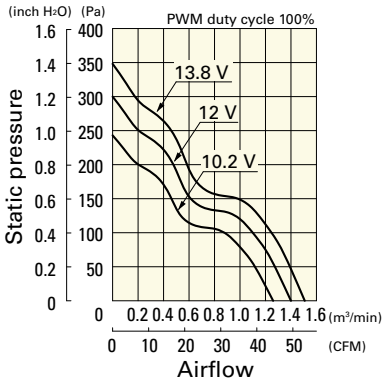
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9G0612P4S001 With pulse sensor with PWM control function

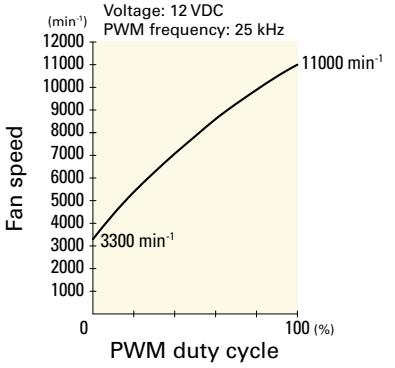
PWM duty cycle



Operating voltage range



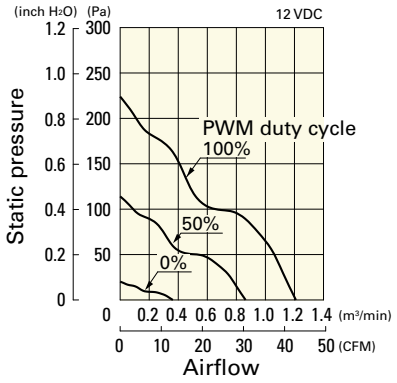
PWM duty - Speed characteristics example



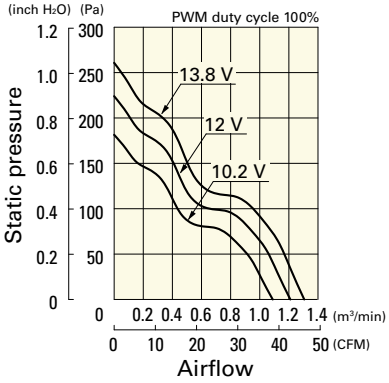
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9G0612P4H001 With pulse sensor with PWM control function

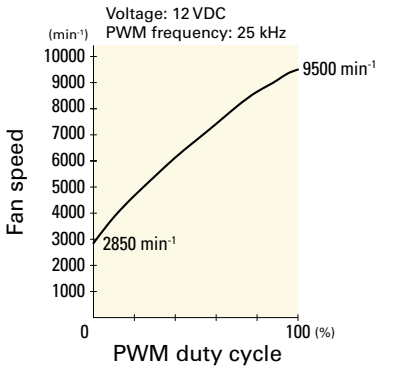
PWM duty cycle



Operating voltage range

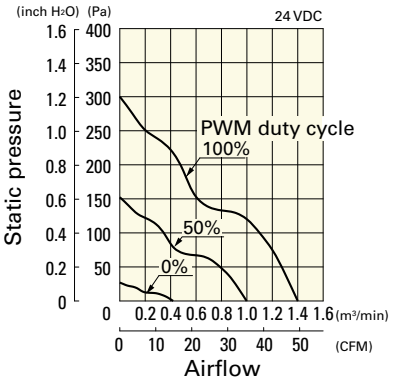


PWM duty - Speed characteristics example

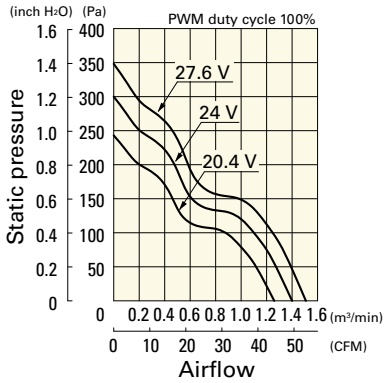


9G0624P4S001 With pulse sensor with PWM control function

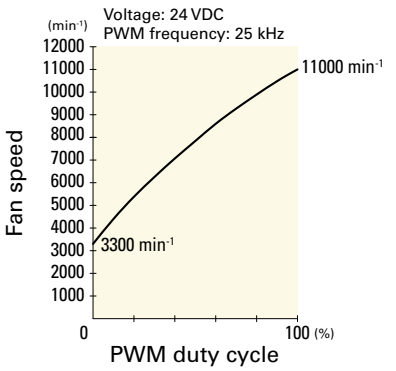
PWM duty cycle



Operating voltage range

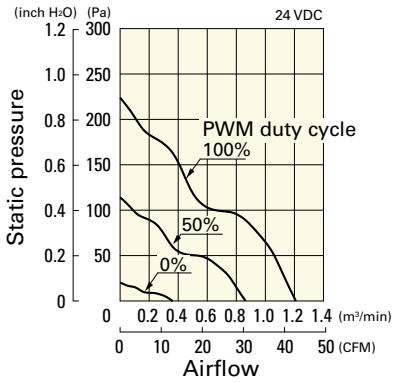


PWM duty - Speed characteristics example

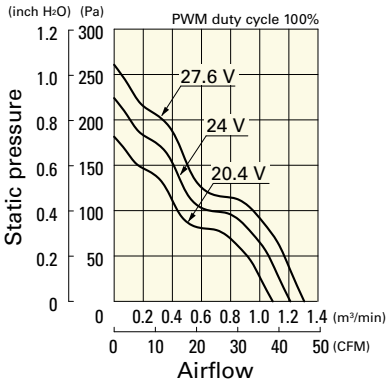


9G0624P4H001 With pulse sensor with PWM control function

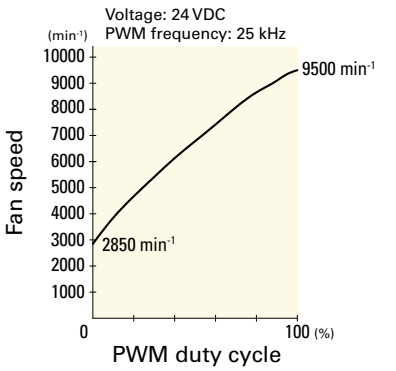
PWM duty cycle



Operating voltage range

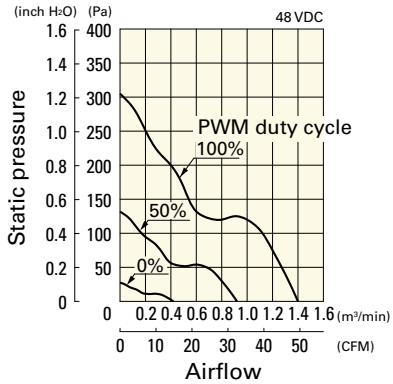


PWM duty - Speed characteristics example

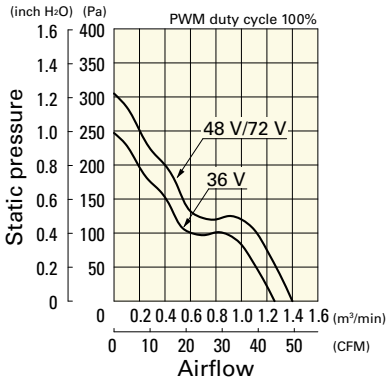


9G0648P4S001 With pulse sensor with PWM control function

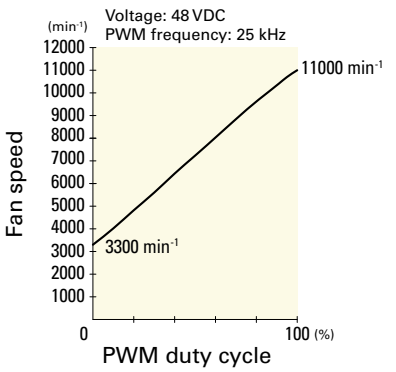
PWM duty cycle



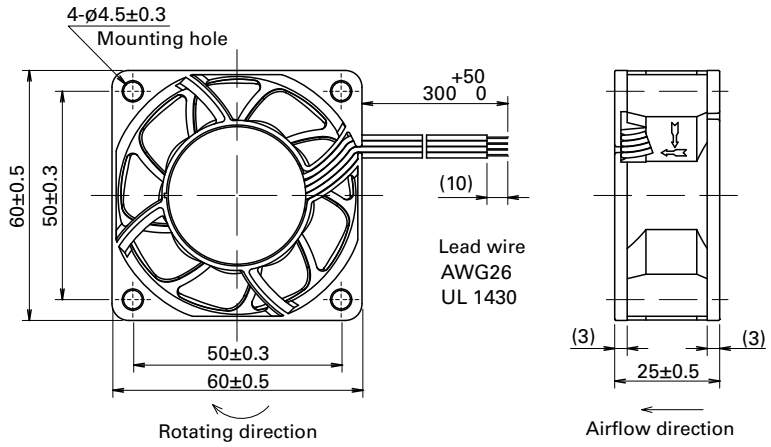
Operating voltage range



PWM duty - Speed characteristics example

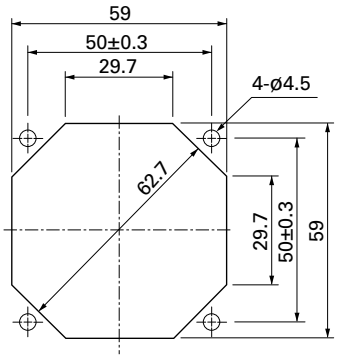


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×25 mm

San Ace 60 9R type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 90 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

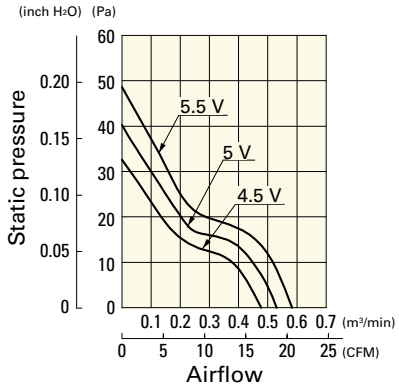
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109R0605H401	5	4.5 to 5.5	0.34	1.7	3800	0.53	18.7	40.2	0.161	28	-20 to +70	60000/60˚C
109R0605F401			0.2	1.0	3200	0.44	15.5	29.4	0.118	24	-20 to +60	
109R0605M401			0.13	0.65	2600	0.36	12.7	19.6	0.079	20	-20 to +70	
109R0612J401	12	10.8 to 13.2	0.47	5.64	7600	1.06	37.1	155.0	0.622	44	-20 to +60	40000/60˚C
109R0612G401			0.24	2.88	5600	0.78	27.5	87.3	0.351	39	-20 to +70	60000/60˚C
109R0612D401		10.2 to 13.8	0.21	2.52	5150	0.72	25.4	73.5	0.295	37		
109R0612S401		6 to 13.8	0.17	2.04	4600	0.65	23.0	56.8	0.228	33		
109R0612H401			0.11	1.32	3800	0.53	18.7	40.1	0.161	28		
109R0612F401			0.09	1.08	3200	0.44	15.5	29.4	0.118	24		
109R0612M401		7 to 13.8	0.06	0.72	2600	0.36	12.7	19.6	0.079	20		
109R0624J401	24	21.6 to 26.4	0.24	5.76	7600	1.06	37.1	155.0	0.622	44	-20 to +60	40000/60˚C
109R0624G401		20.4 to 27.6	0.13	3.12	5600	0.78	27.5	87.3	0.351	39	-20 to +70	
109R0624D401		12 to 27.6	0.12	2.88	5150	0.72	25.4	73.5	0.295	37		
109R0624S401			0.08	1.92	4600	0.65	23.0	56.8	0.228	33		60000/60˚C
109R0624H401			0.06	1.44	3800	0.53	18.7	40.2	0.161	28		
109R0624F401			0.05	1.2	3200	0.44	15.5	29.4	0.118	24		
109R0624M401		14 to 27.6	0.04	0.96	2600	0.36	12.7	19.6	0.079	20		
109R0648J401	48	43.2 to 52.8	0.12	5.76	7600	1.06	37.1	155.0	0.622	44	-20 to +60	40000/60˚C
109R0648G401		43 to 53	0.07	3.36	5600	0.78	27.5	87.3	0.351	39		
109R0648H401		40 to 53	0.04	1.92	3800	0.53	18.7	40.2	0.161	28	-20 to +70	60000/60˚C

Other sensor specifications are available as options. Refer to the index (pp. 545 to 546).

Airflow - Static Pressure Characteristics

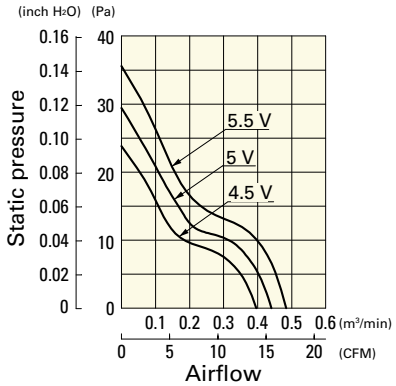
109R0605H401 With pulse sensor

Operating voltage range



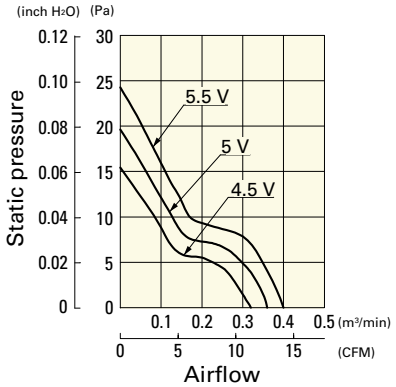
109R0605F401 With pulse sensor

Operating voltage range



109R0605M401 With pulse sensor

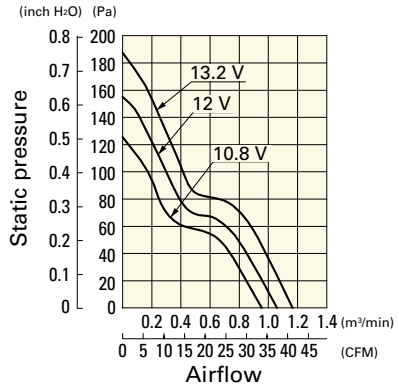
Operating voltage range



Airflow - Static Pressure Characteristics

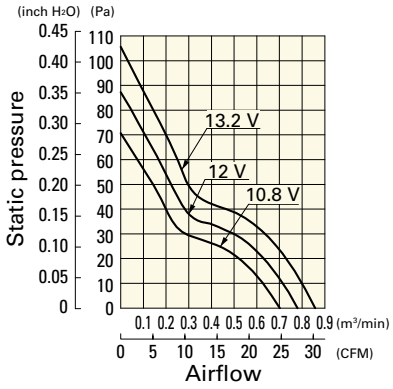
109R0612J401 With pulse sensor

Operating voltage range



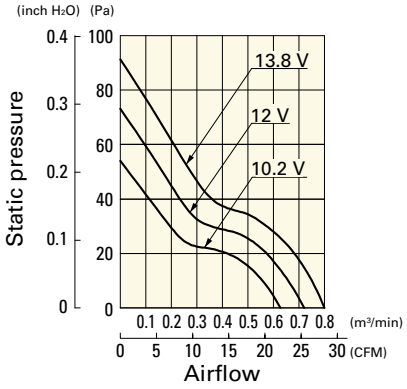
109R0612G401 With pulse sensor

Operating voltage range



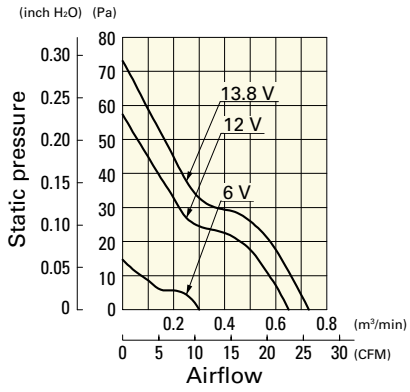
109R0612D401 With pulse sensor

Operating voltage range



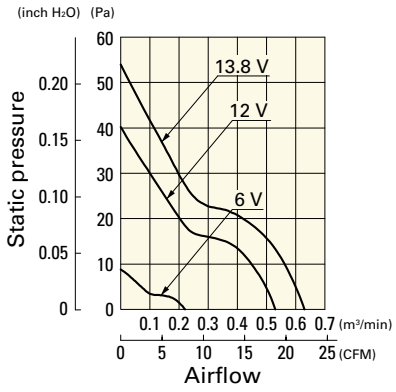
109R0612S401 With pulse sensor

Operating voltage range



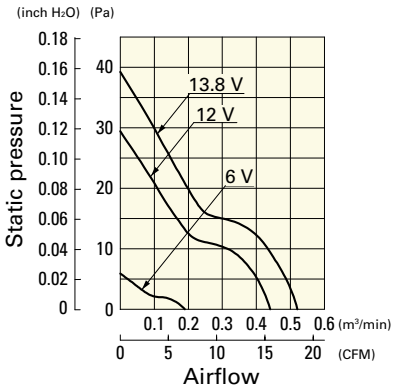
109R0612H401 With pulse sensor

Operating voltage range



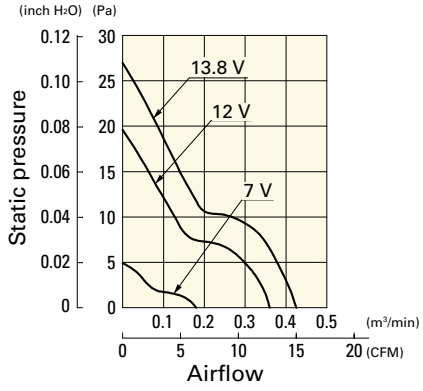
109R0612F401 With pulse sensor

Operating voltage range



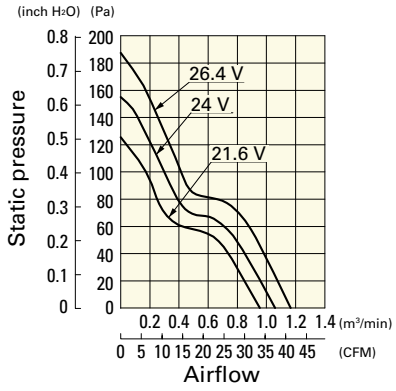
109R0612M401 With pulse sensor

Operating voltage range



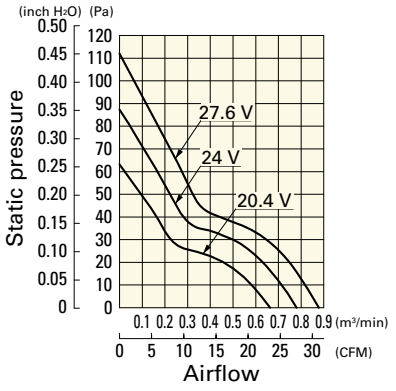
109R0624J401 With pulse sensor

Operating voltage range



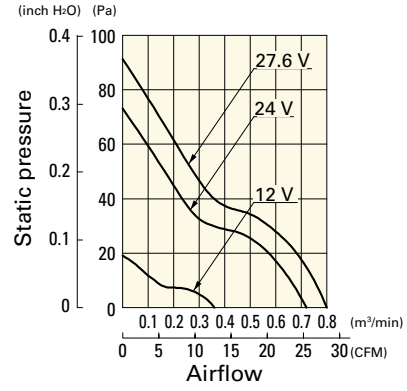
109R0624G401 With pulse sensor

Operating voltage range



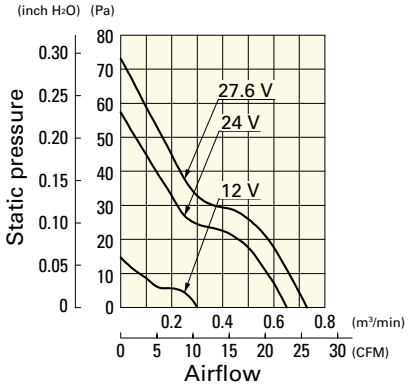
109R0624D401 With pulse sensor

Operating voltage range



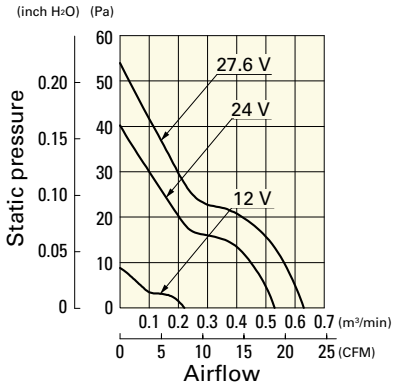
109R0624S401 With pulse sensor

Operating voltage range



109R0624H401 With pulse sensor

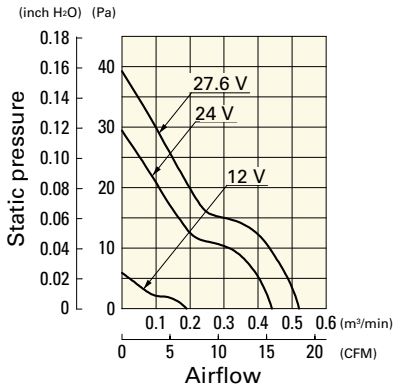
Operating voltage range



Airflow - Static Pressure Characteristics

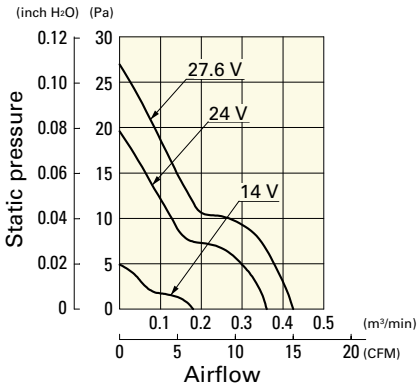
109R0624F401 With pulse sensor

Operating voltage range



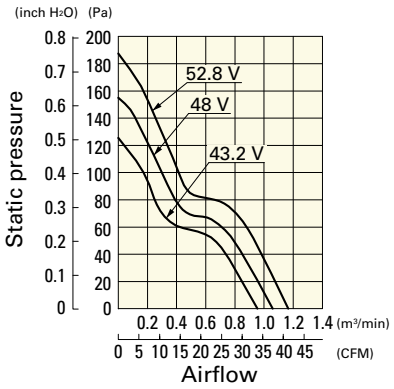
109R0624M401 With pulse sensor

Operating voltage range



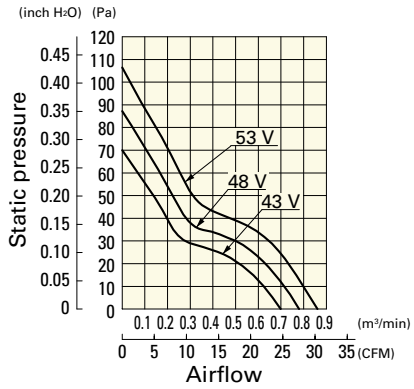
109R0648J401 With pulse sensor

Operating voltage range



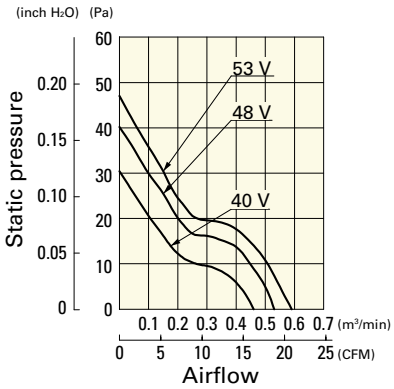
109R0648G401 With pulse sensor

Operating voltage range

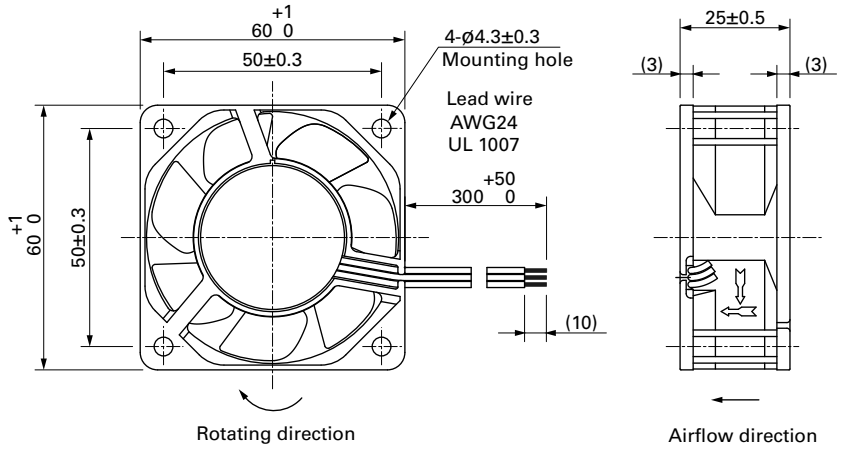


109R0648H401 With pulse sensor

Operating voltage range

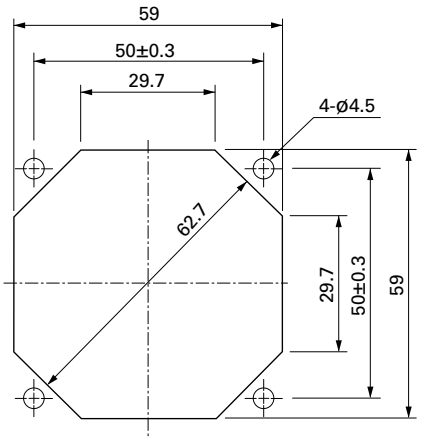


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards

page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits

page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards

page: p. 520

Model no.: 109-1003G

60×60×25 mm

San Cooler 60 9A type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 80 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

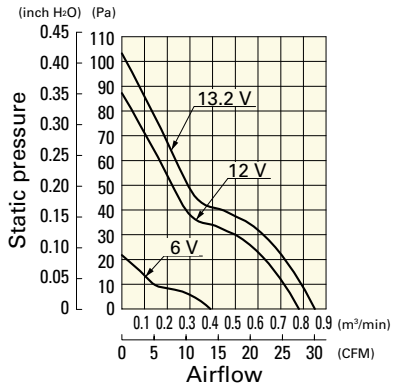
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9A0612G401	12	6 to 13.2	0.24	2.88	5600	0.78	27.6	87.3	0.351	39	-20 to +60	30000/60˚C
9A0612S401		6 to 13.8	0.17	2.04	4600	0.65	23.0	56.8	0.228	33	-20 to +70	40000/60˚C
9A0612H401			0.11	1.32	3800	0.53	18.7	40.2	0.161	28		
9A0612F401			0.09	1.08	3200	0.44	15.5	29.4	0.118	24		
9A0612M401		7 to 13.8	0.06	0.72	2600	0.36	12.7	19.6	0.079	20		
9A0624G401	24	12 to 27.6	0.13	3.12	5600	0.78	27.6	87.3	0.351	39	-20 to +60	30000/60˚C
9A0624S401		12 to 27.6	0.08	1.92	4600	0.65	23.0	56.8	0.228	33	-20 to +70	40000/60˚C
9A0624H401			0.06	1.44	3800	0.53	18.7	40.2	0.161	28		
9A0624F401			0.05	1.2	3200	0.44	15.5	29.4	0.118	24		
9A0624M401		14 to 27.6	0.04	0.96	2600	0.36	12.7	19.6	0.079	20		

Other sensor specifications are available as options. Refer to the index (pp. 546 to 547).

Airflow - Static Pressure Characteristics

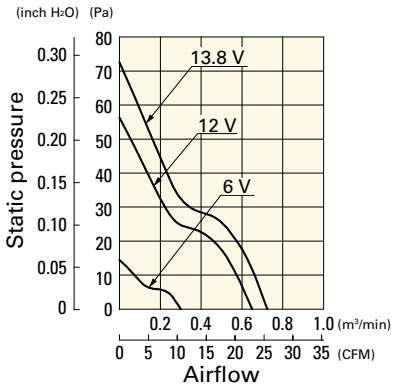
9A0612G401 With pulse sensor

Operating voltage range



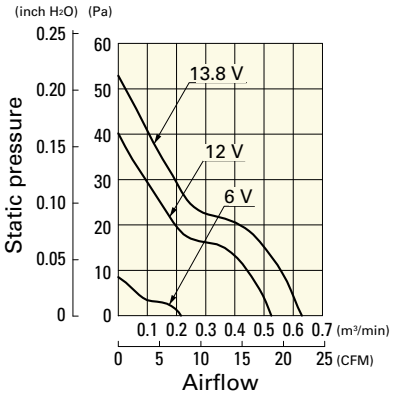
9A0612S401 With pulse sensor

Operating voltage range



9A0612H401 With pulse sensor

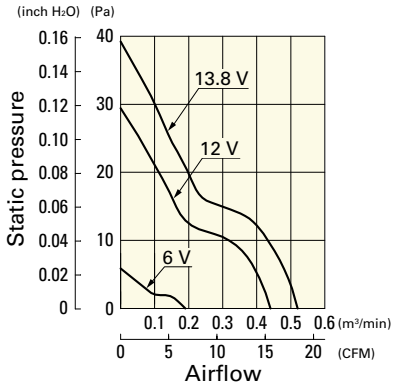
Operating voltage range



Airflow - Static Pressure Characteristics

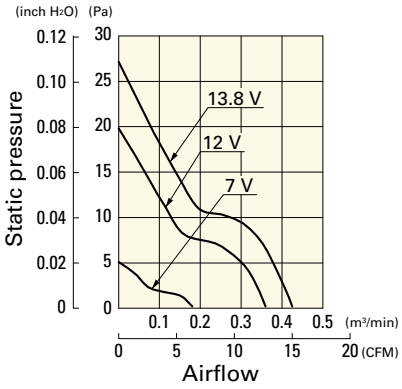
9A0612F401 With pulse sensor

Operating voltage range



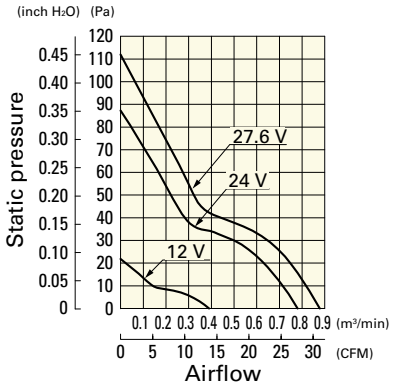
9A0612M401 With pulse sensor

Operating voltage range



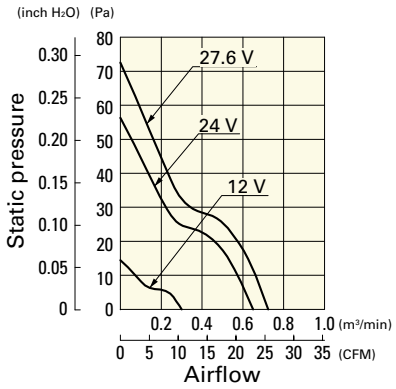
9A0624G401 With pulse sensor

Operating voltage range



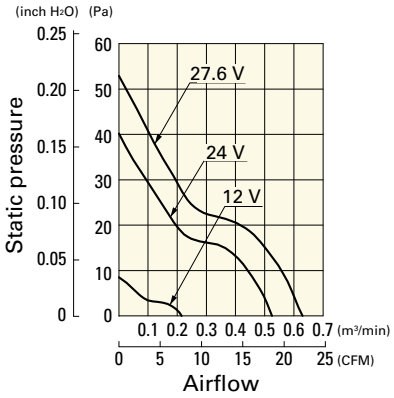
9A0624S401 With pulse sensor

Operating voltage range



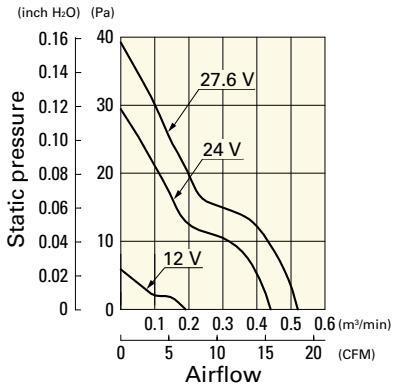
9A0624H401 With pulse sensor

Operating voltage range



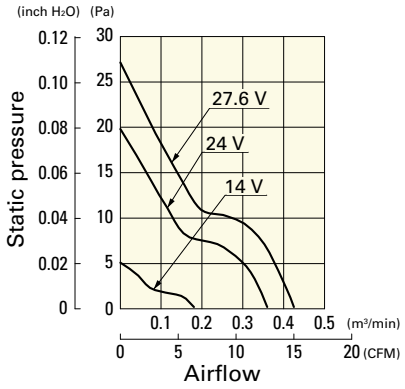
9A0624F401 With pulse sensor

Operating voltage range

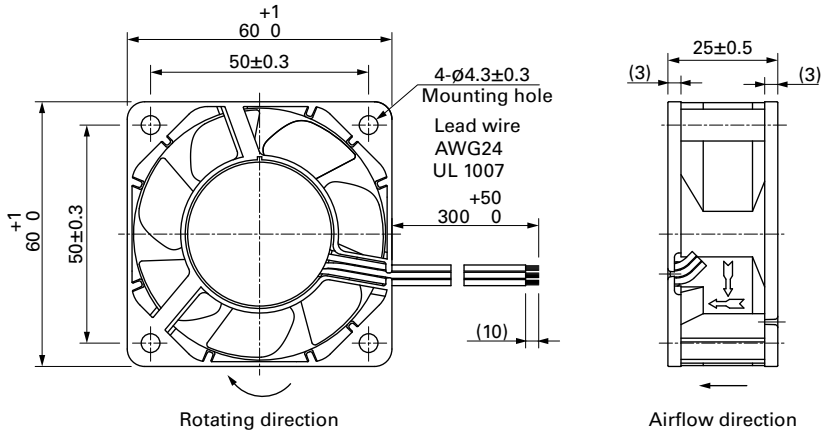


9A0624M401 With pulse sensor

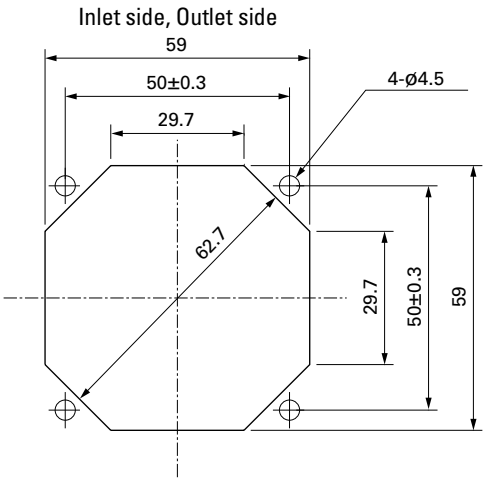
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×38 mm

San Ace 60 9HV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 135 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

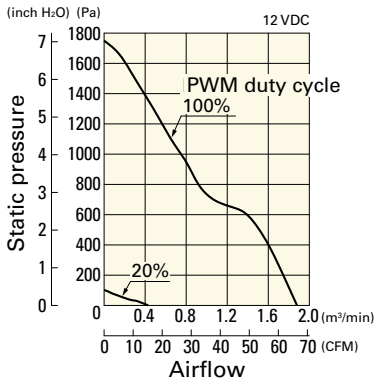
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9HV0612P1J001	12	10.8 to 12.6	100	2.7	32.4	21700	1.88	66.4	1750	7.0	68	-20 to +70	40000/60˚C
			20	0.17	2.04	5300	0.43	15.2	102	0.41	34		(70000/40˚C)

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

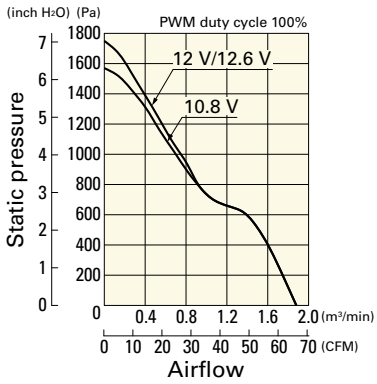
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV0612P1J001 With pulse sensor with PWM control function

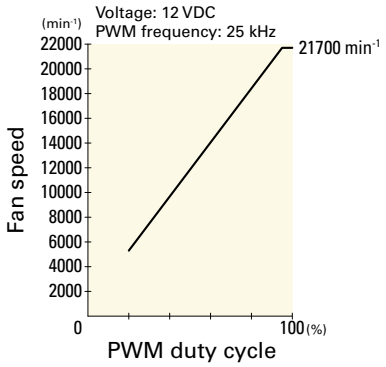
PWM duty cycle



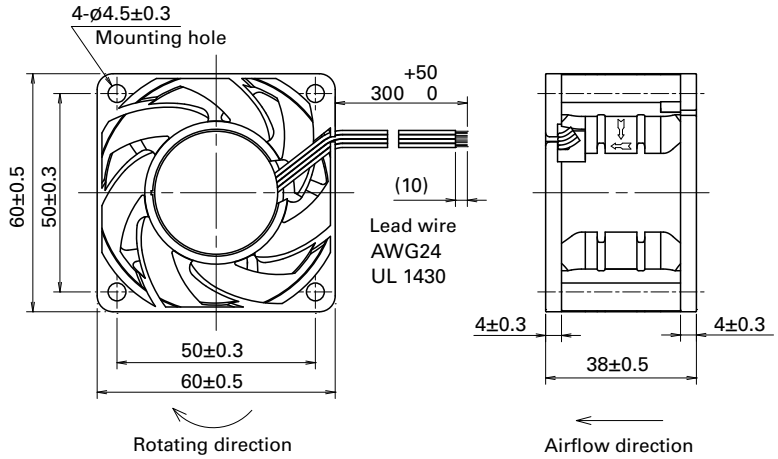
Operating voltage range



PWM duty - Speed characteristics example

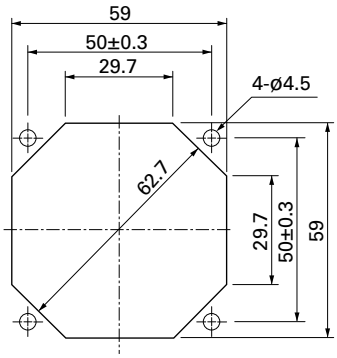


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards

page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits

page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards

page: p. 520

Model no.: 109-1003G

60×60×38 mm

San Ace 60 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 130 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0612P1J03**	12	10.8 to 12.6	100	1.5	18.0	17500	1.75	62	820	3.3	63	-20 to +60	40000/60˚C (70000/40˚C)
			20	0.1	1.2	4000	0.4	14	43	0.17	24		
9GA0612P1K03**		10.8 to 13.2	100	0.95	11.4	14800	1.5	53	600	2.4	59	-20 to +70	
			20	0.1	1.2	4000	0.4	14	43	0.17	24		
9GA0612P1H03**			100	0.55	6.6	11500	1.15	40	375	1.5	52		
			20	0.06	0.72	2600	0.27	9.5	20	0.08	19		
9GA0612P1K60			100	0.95	11.4	14800	1.5	53	675	2.7	59	-20 to +60	
			0	0.05	0.6	1480	0.134	4.7	8.3	0.03	16		
9GA0624P1J03**	24	21.6 to 25.2	100	0.75	18.0	17500	1.75	62	820	3.3	63	-20 to +60	
			20	0.1	2.4	6200	0.63	22	104	0.42	35		
9GA0624P1K03**		21.6 to 26.4	100	0.5	12	14800	1.5	53.0	600	2.4	59	-20 to +70	
			20	0.06	1.44	5000	0.5	17.7	70	0.28	28		

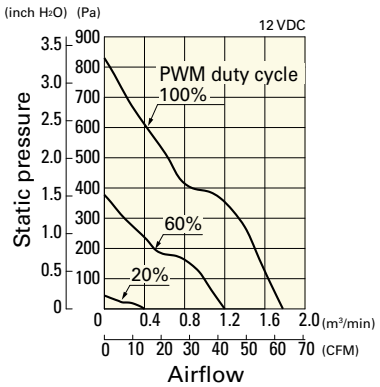
* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 552).

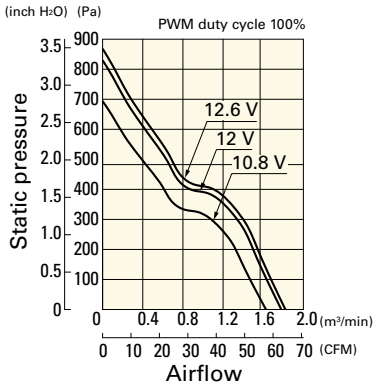
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0612P1J03 With pulse sensor with PWM control function

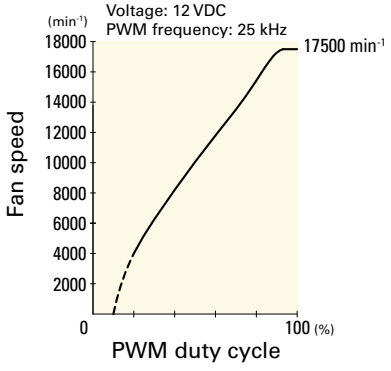
PWM duty cycle



Operating voltage range



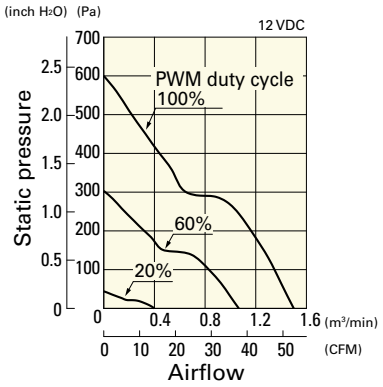
PWM duty - Speed characteristics example



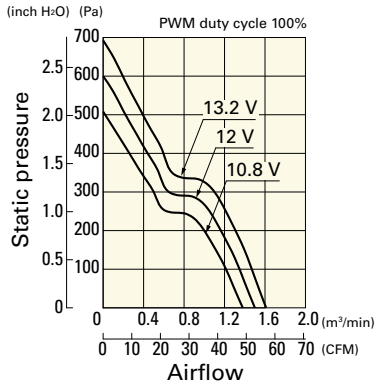
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0612P1K03 With pulse sensor with PWM control function

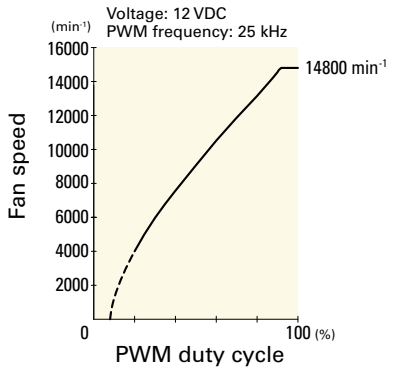
PWM duty cycle



Operating voltage range

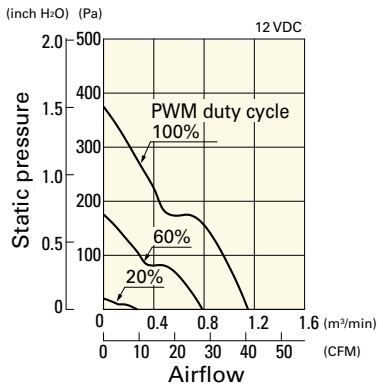


PWM duty - Speed characteristics example

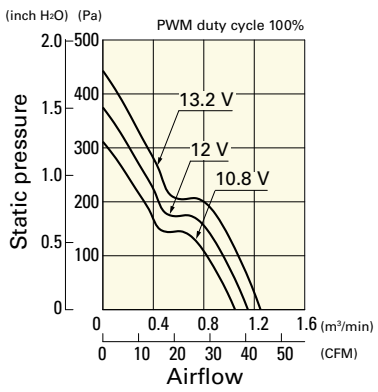


9GA0612P1H03 With pulse sensor with PWM control function

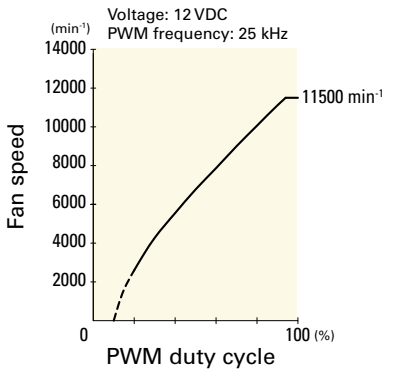
PWM duty cycle



Operating voltage range

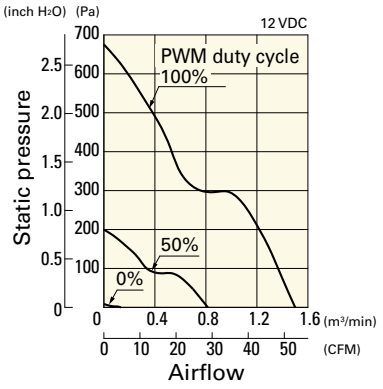


PWM duty - Speed characteristics example

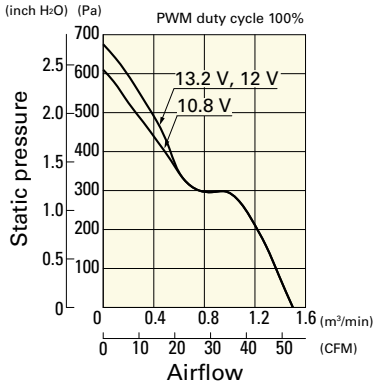


9GA0612P1K60 With pulse sensor with PWM control function

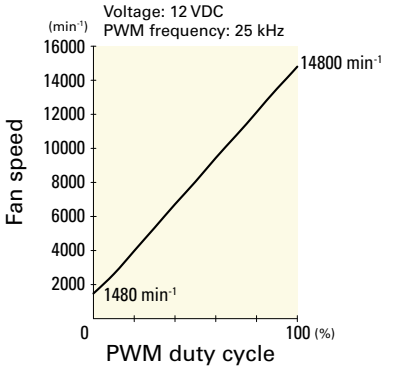
PWM duty cycle



Operating voltage range

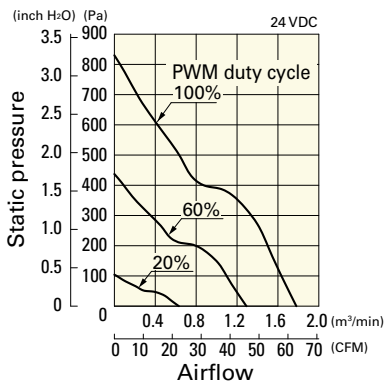


PWM duty - Speed characteristics example

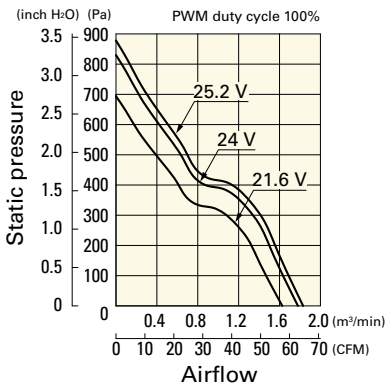


9GA0624P1J03 With pulse sensor with PWM control function

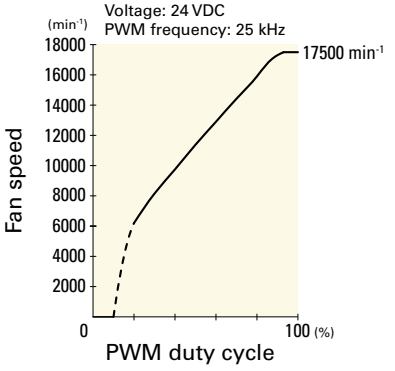
PWM duty cycle



Operating voltage range



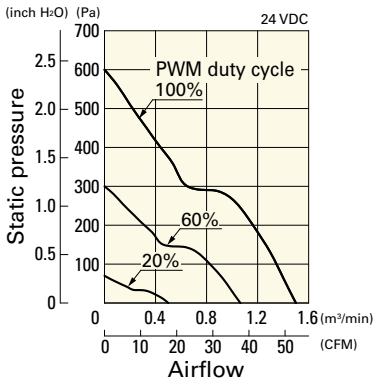
PWM duty - Speed characteristics example



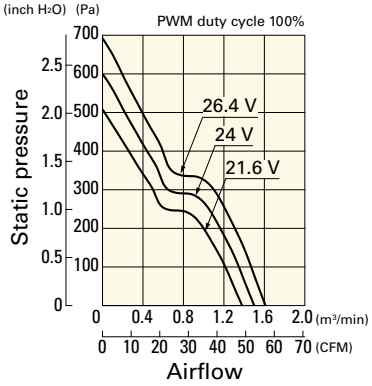
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0624P1K03 With pulse sensor with PWM control function

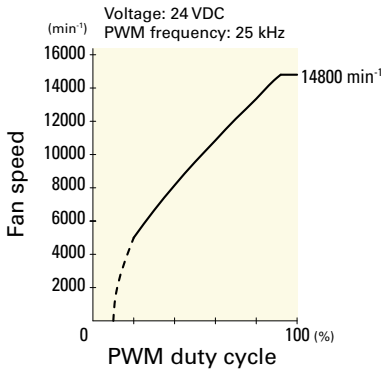
PWM duty cycle



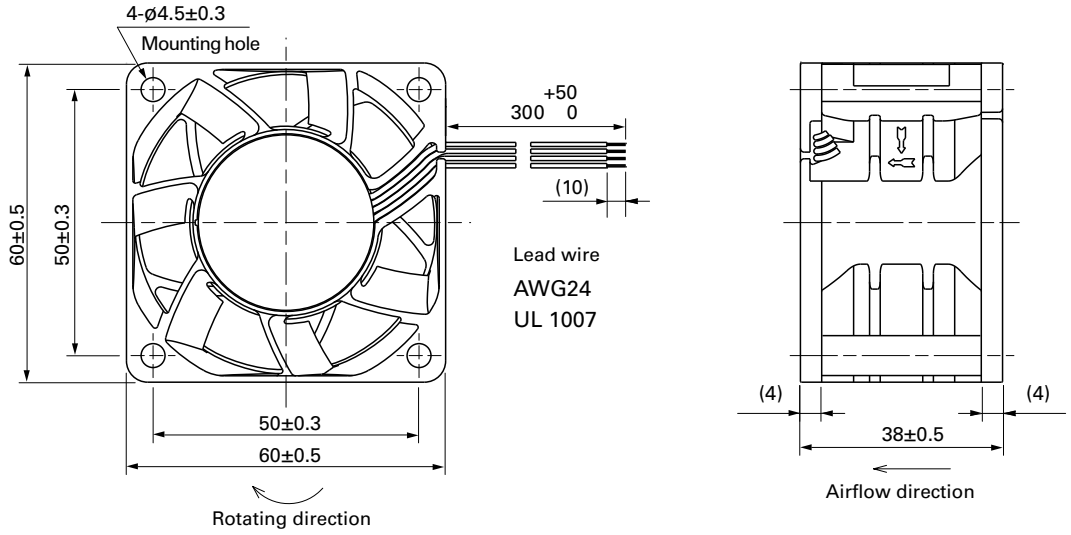
Operating voltage range



PWM duty - Speed characteristics example

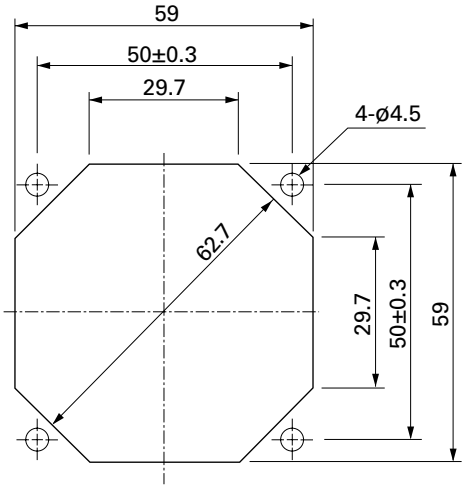


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin finger guards page: p. 520

Model no.: 109-1003G

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

60×60×38 mm

San Ace 60 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 130 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV0612P1G03	12	8.0 to 13.8	100	2.8	33.6	16000	2.37	84	751	3.02	66	-20 to +70	40000/60˚C
			0	0.12	1.5	3100	0.44	15	26	0.1	25		
9GV0612P1H03			100	2.0	24.0	14500	2.15	76	617	2.48	63		
			0	0.1	1.2	2700	0.4	14	21	0.09	22		
9GV0612P1M03			100	1.5	18.0	13000	1.93	68	496	1.99	60		
			0	0.08	1.0	2500	0.38	13	18	0.07	19		
9GV0612P1L01**		10.8 to 13.8	100	0.7	8.4	10000	1.49	52.6	293	1.17	52		
9GV0624P1G03	24	20.4 to 27.6	100	1.4	33.6	16000	2.37	84	751	3.02	66		
			0	0.12	2.88	6000	0.89	31	105	0.42	38		
9GV0624P1M03**			100	0.73	17.52	13000	1.93	68.0	496	1.99	60		
9GV0648P1H03	48	38 to 57	100	0.5	24	14500	2.15	76	617	2.48	63		
			0	0.08	3.84	6000	0.89	31	105	0.42	38		

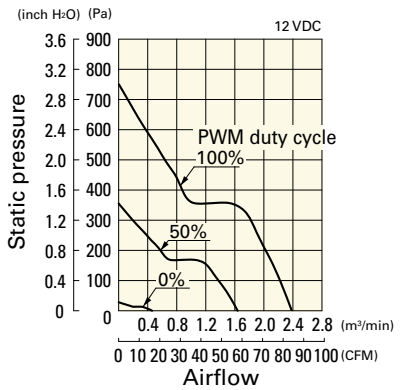
* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (pp. 554 to 555).

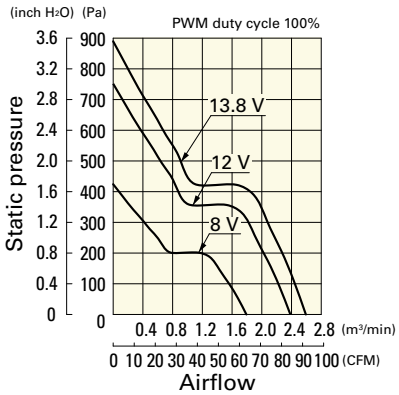
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0612P1G03 With pulse sensor with PWM control function

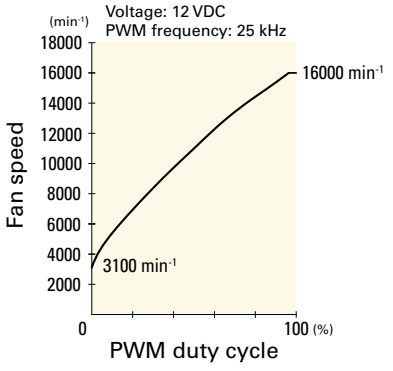
PWM duty cycle



Operating voltage range



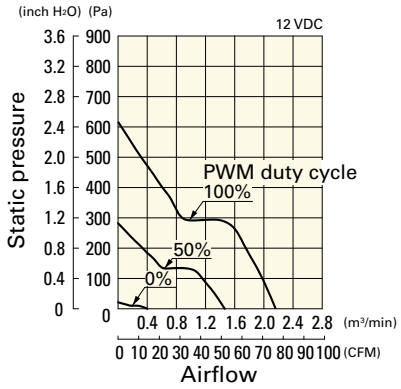
PWM duty - Speed characteristics example



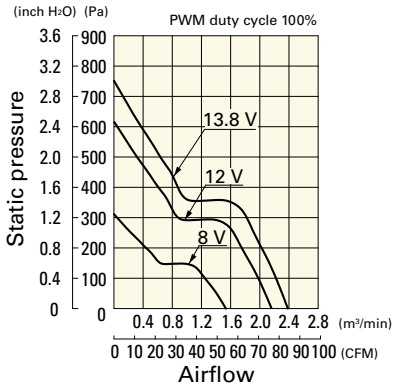
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0612P1H03 With pulse sensor with PWM control function

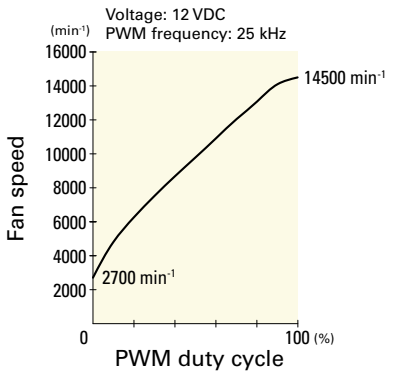
PWM duty cycle



Operating voltage range

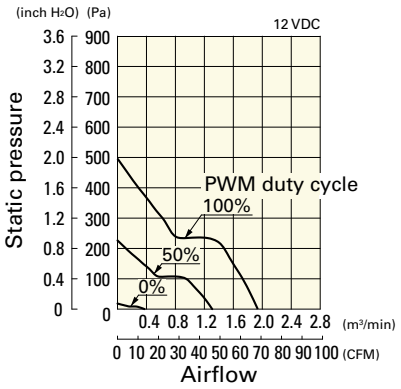


PWM duty - Speed characteristics example

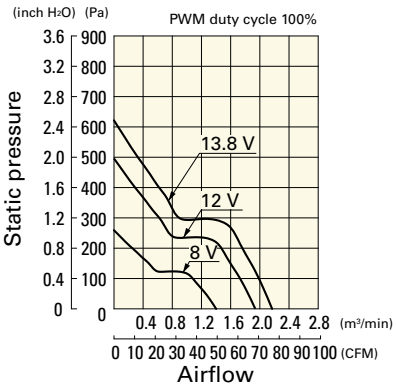


9GV0612P1M03 With pulse sensor with PWM control function

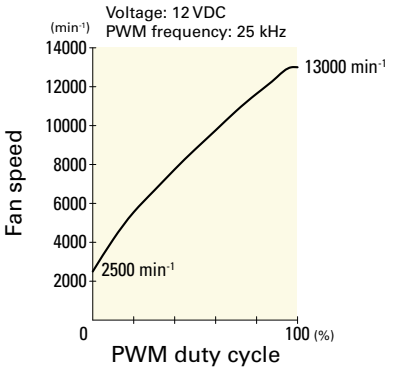
PWM duty cycle



Operating voltage range

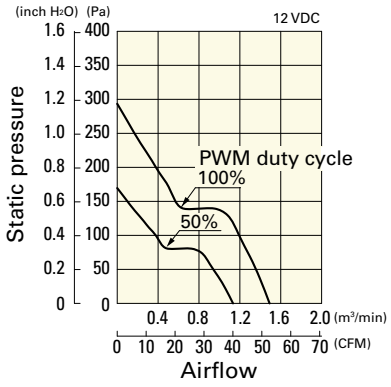


PWM duty - Speed characteristics example

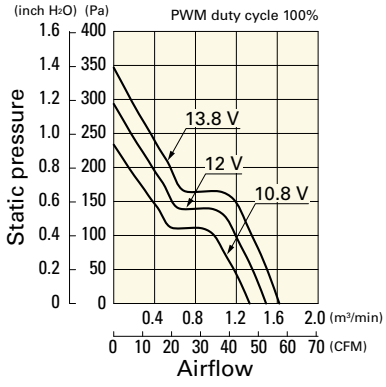


9GV0612P1L01 With pulse sensor with PWM control function

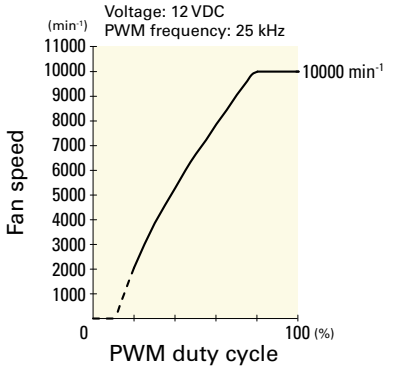
PWM duty cycle



Operating voltage range

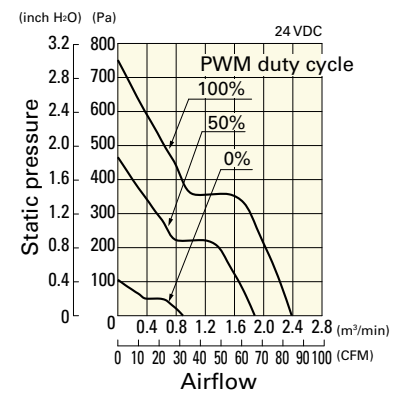


PWM duty - Speed characteristics example

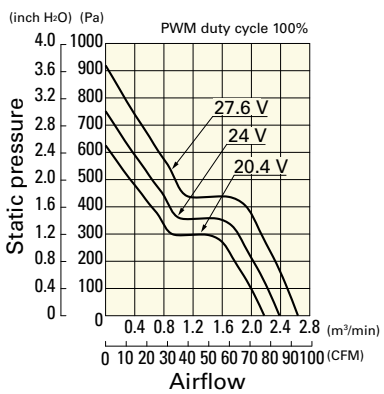


9GV0624P1G03 With pulse sensor with PWM control function

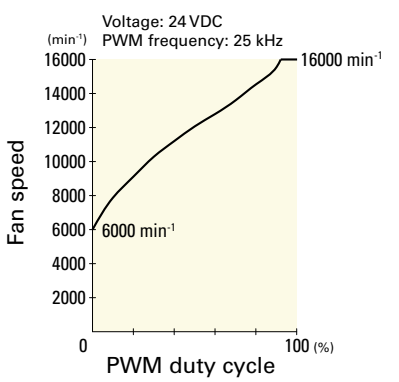
PWM duty cycle



Operating voltage range



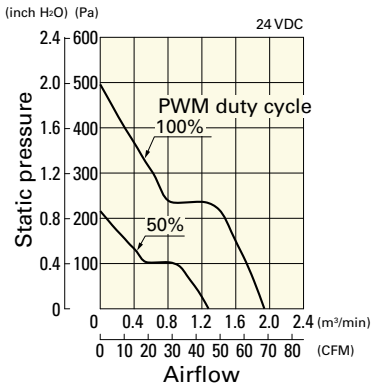
PWM duty - Speed characteristics example



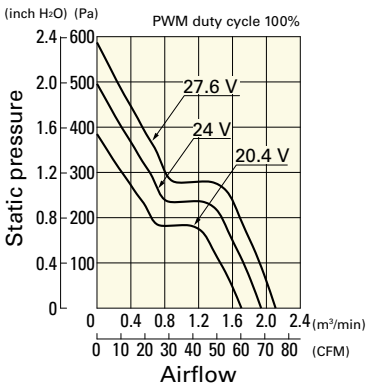
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0624P1M03 With pulse sensor with PWM control function

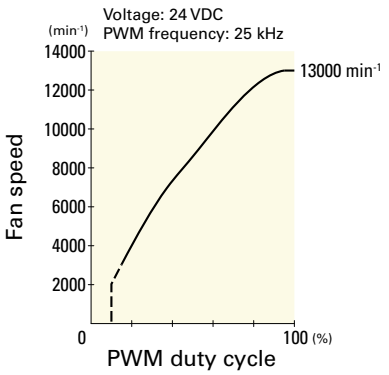
PWM duty cycle



Operating voltage range

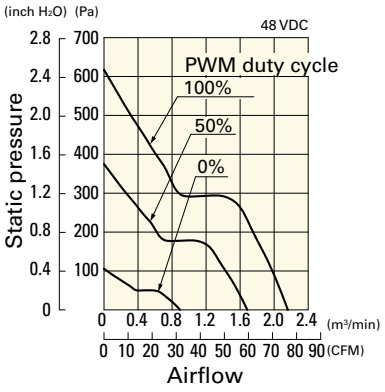


PWM duty - Speed characteristics example

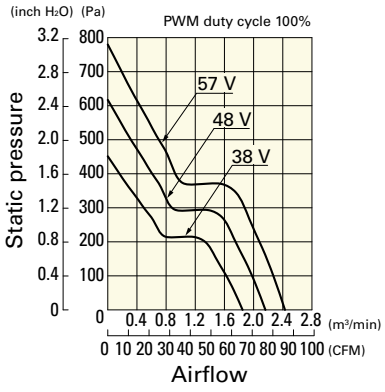


9GV0648P1H03 With pulse sensor with PWM control function

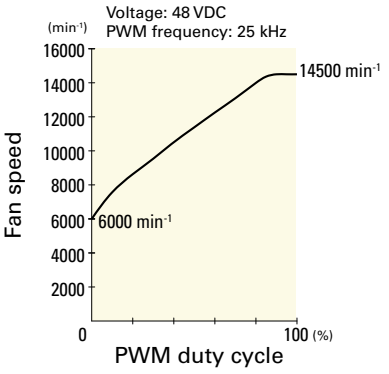
PWM duty cycle



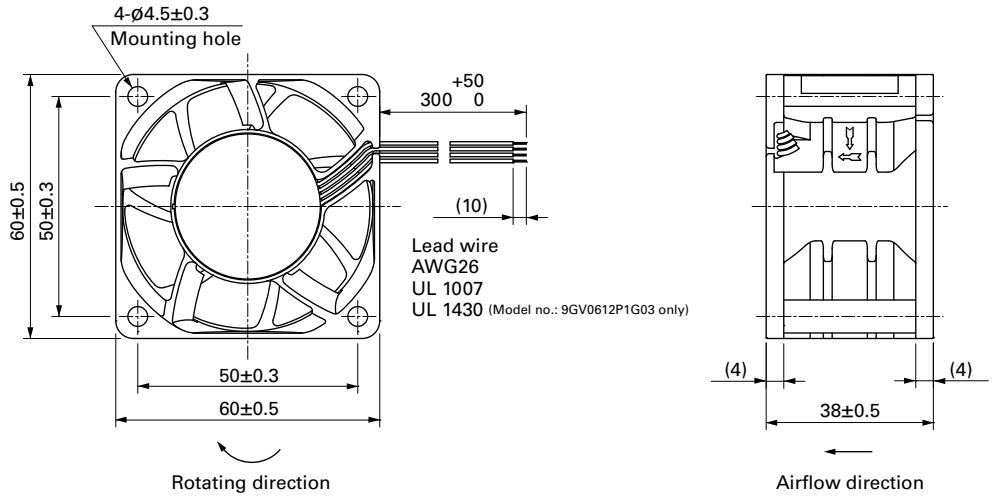
Operating voltage range



PWM duty - Speed characteristics example

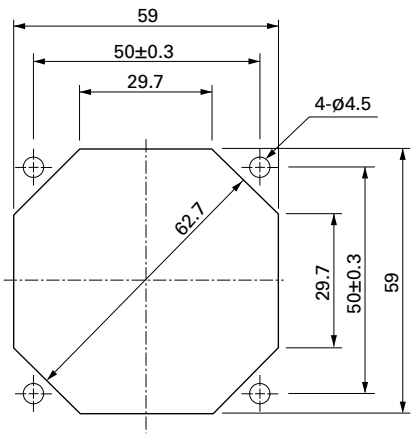


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards

page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits

page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards

page: p. 520

Model no.: 109-1003G

60×60×38 mm

San Ace 60 9G type

(Ribless model depicted)

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 110 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

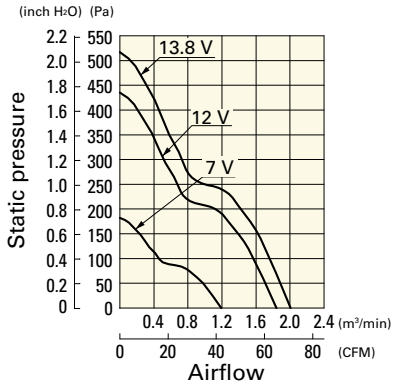
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9G0612G101	12	7.0 to 13.8	1.54	18.5	11800	1.84	65	435	1.747	58	-20 to +70	40000/60˚C
9G0612S101			1.36	16.3	10800	1.7	60	370	1.486	56		
9G0624G101	24	14.0 to 27.6	0.85	20.4	11800	1.84	65	435	1.747	58		
9G0624S101			0.7	16.8	10800	1.7	60	370	1.486	56		
9G0624H101			0.57	13.68	9800	1.54	54.4	304.6	1.223	54		
9G0648G101	48	28 to 55.2	0.35	16.8	11800	1.84	65	435	1.747	58		
9G0648S101			0.29	13.9	10800	1.7	60	370	1.486	56		

Other sensor specifications are available as options. Refer to the index (pp. 548 to 549).

Airflow - Static Pressure Characteristics

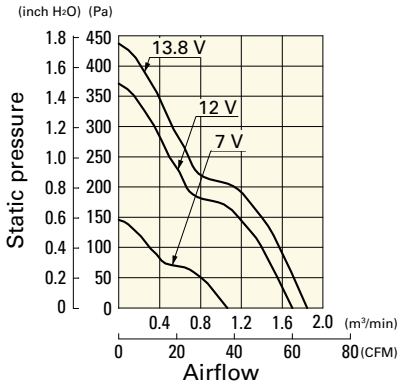
9G0612G101 With pulse sensor

Operating voltage range



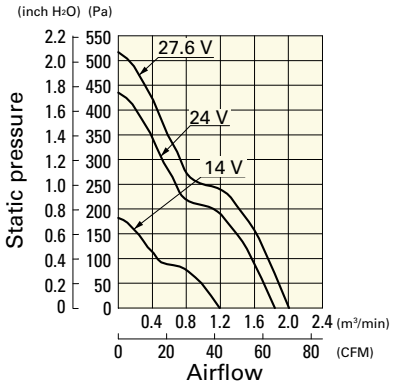
9G0612S101 With pulse sensor

Operating voltage range



9G0624G101 With pulse sensor

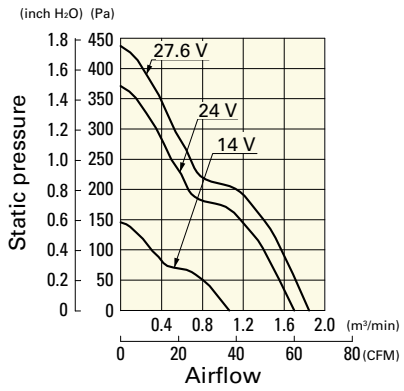
Operating voltage range



Airflow - Static Pressure Characteristics

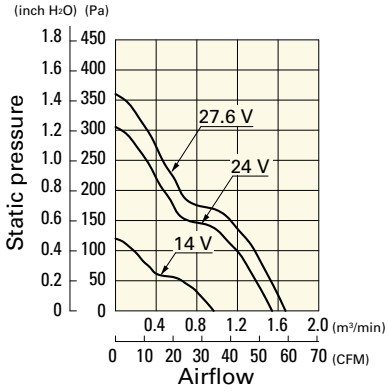
9G0624S101 With pulse sensor

Operating voltage range



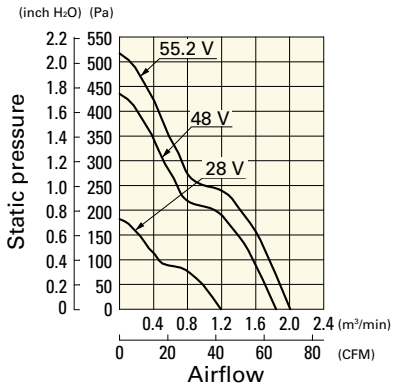
9G0624H101 With pulse sensor

Operating voltage range



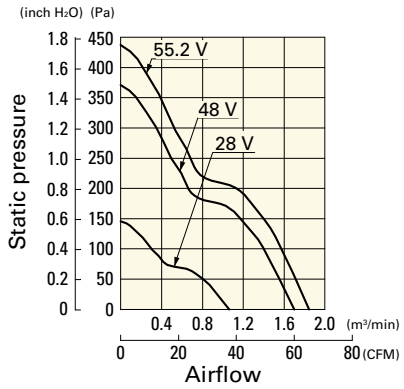
9G0648G101 With pulse sensor

Operating voltage range

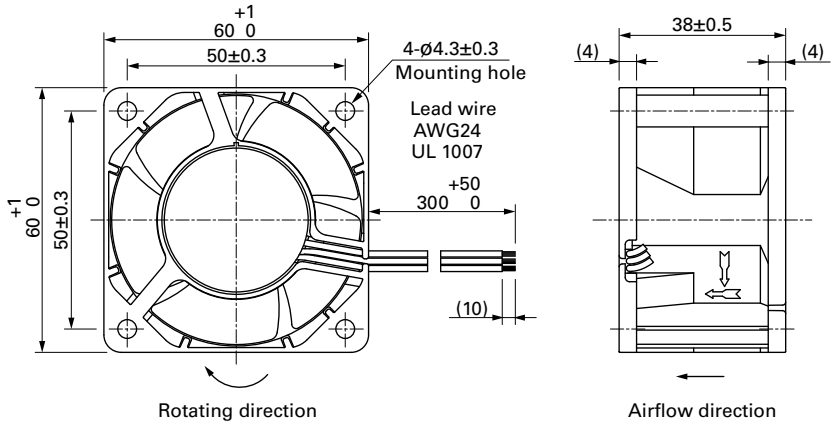


9G0648S101 With pulse sensor

Operating voltage range

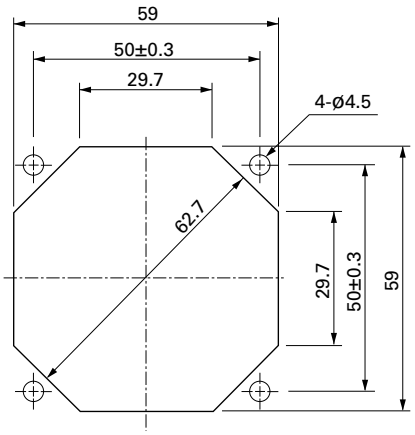


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards

page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits

page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards

page: p. 520

Model no.: 109-1003G

70×70×38 mm

San Ace 70 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 170 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

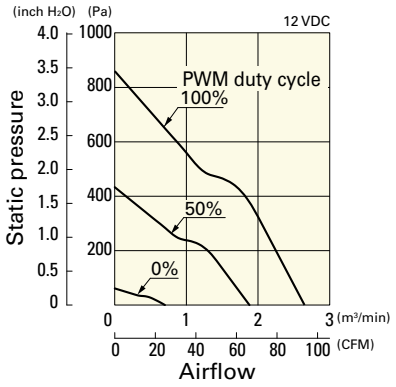
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0712P1G001	12	10.8 to 13.2	100	2.6	31.2	16500	2.65	93.6	860	3.45	65	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.16	1.92	4400	0.7	24.7	61	0.24	30		
9GA0712P1H001			100	1.1	13.2	12000	1.92	67.8	455	1.83	57		
			0	0.07	0.84	2500	0.4	14.1	20	0.08	19		

* PWM frequency: 25 kHz

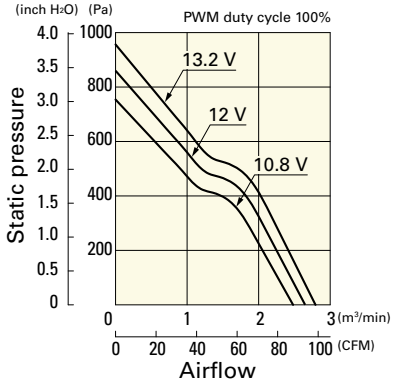
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0712P1G001 With pulse sensor with PWM control function

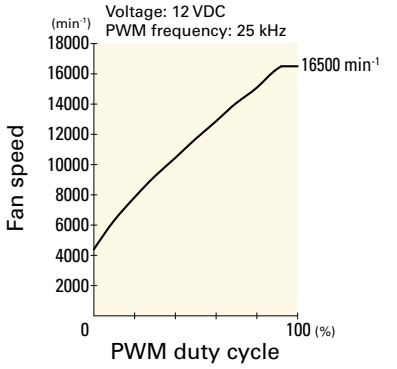
PWM duty cycle



Operating voltage range

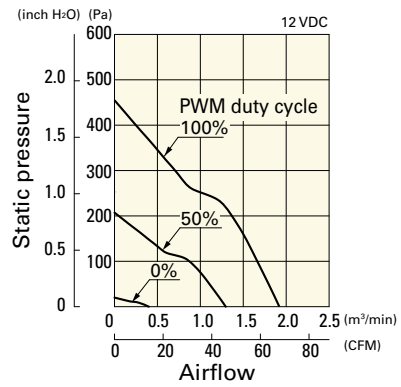


PWM duty - Speed characteristics example

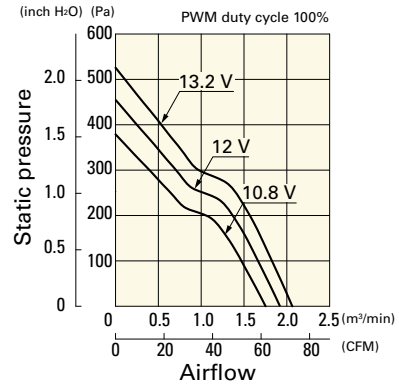


9GA0712P1H001 With pulse sensor with PWM control function

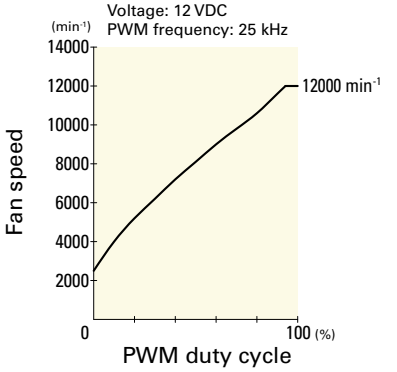
PWM duty cycle



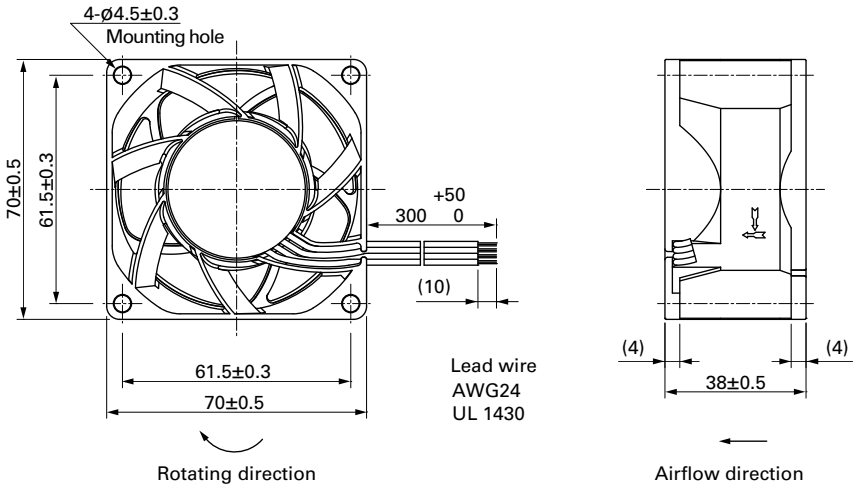
Operating voltage range



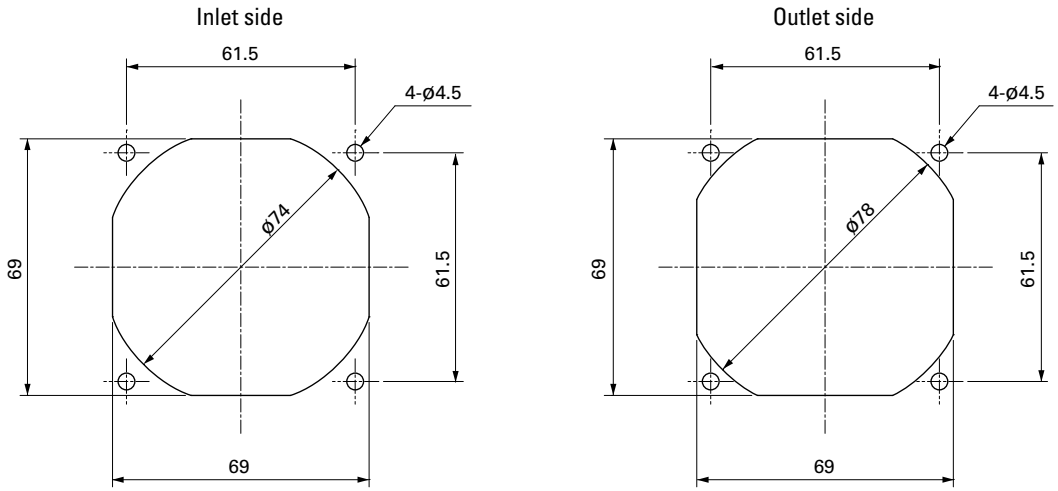
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-1128

80×80×15 mm

San Ace 80 9GA type Low Power Consumption Fan

Model 9GA0812H7001 is not certified.

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  (For models without PWM control function, there is no speed control wiring.)
- Mass ····· 65 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0812P7G001	12	10.2 to 13.8	100	0.29	3.48	6100	1.44	50.9	84.0	0.34	41	-20 to +70	40000/60˚C (70000/40˚C)
9GA0812P7S001			100	0.17	2.04	5000	1.18	41.7	56.4	0.23	37		
9GA0824P7G001	24	20.4 to 27.6	100	0.13	3.12	6100	1.44	50.9	84.0	0.34	41		
9GA0824P7S001			100	0.08	1.92	5000	1.18	41.7	56.4	0.23	37		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

The models listed below **have ribs and pulse sensors.**

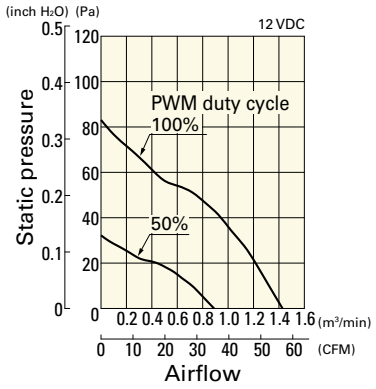
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0812H7001	12	6 to 13.2	0.09	1.08	3800	0.89	31.4	32.6	0.13	29	-20 to +70	40000/60˚C (70000/40˚C)
9GA0824H7001	24	12 to 26.4	0.05	1.2	3800	0.89	31.4	32.6	0.13	29		

Other sensor specifications are available as options. Refer to the index (pp. 552 to 553).

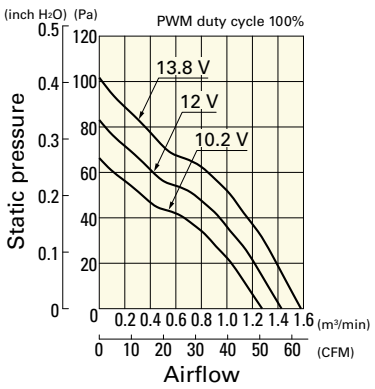
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P7G001 With pulse sensor with PWM control function

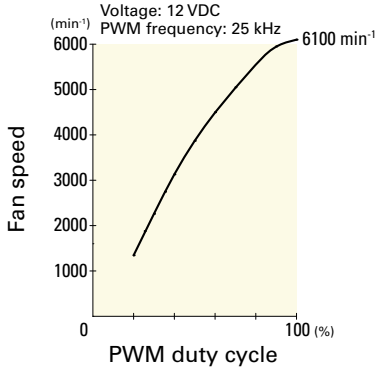
PWM duty cycle



Operating voltage range



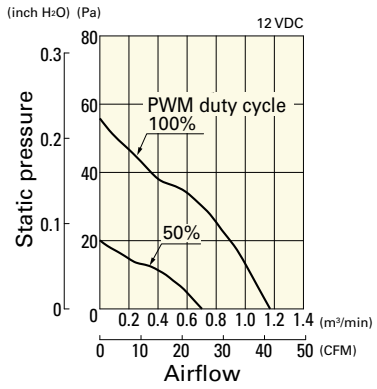
PWM duty - Speed characteristics example



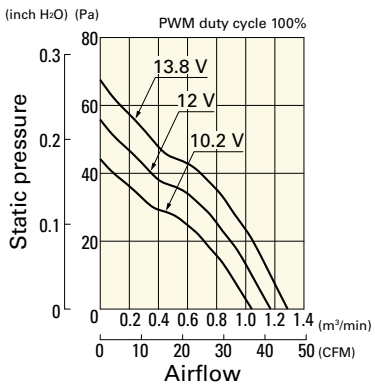
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P7S001 With pulse sensor with PWM control function

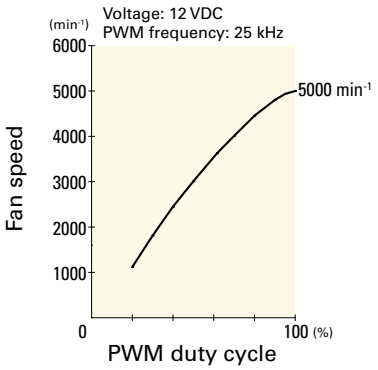
PWM duty cycle



Operating voltage range

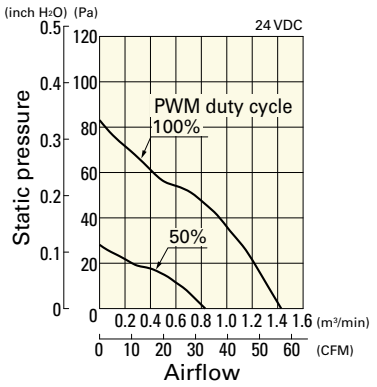


PWM duty - Speed characteristics example

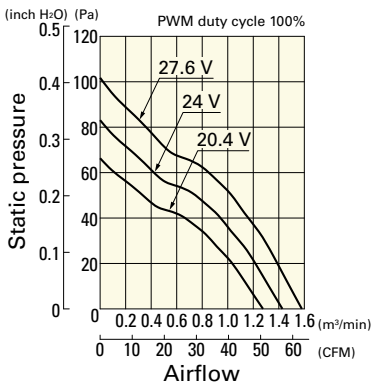


9GA0824P7G001 With pulse sensor with PWM control function

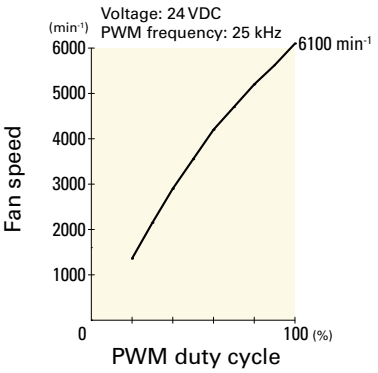
PWM duty cycle



Operating voltage range

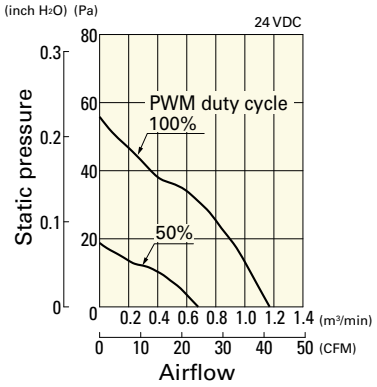


PWM duty - Speed characteristics example

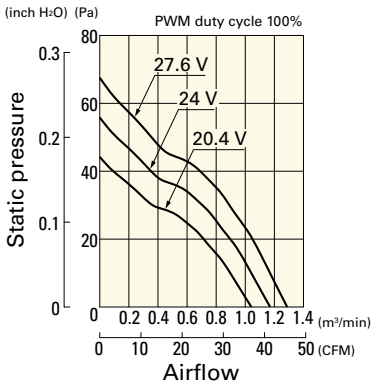


9GA0824P7S001 With pulse sensor with PWM control function

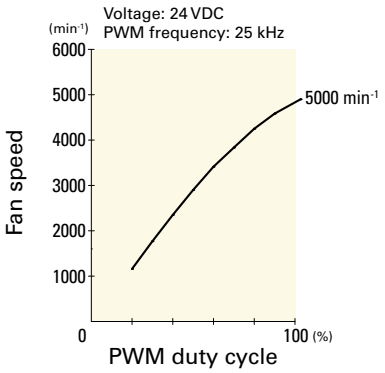
PWM duty cycle



Operating voltage range

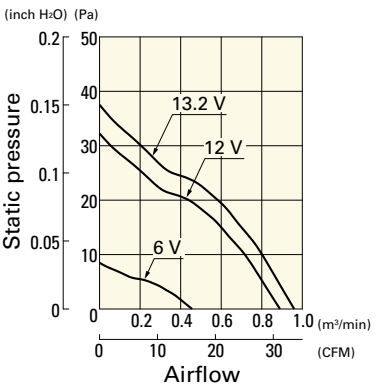


PWM duty - Speed characteristics example



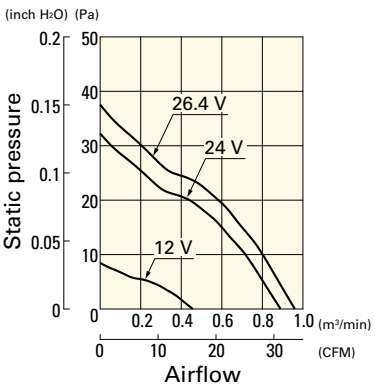
9GA0812H7001 With pulse sensor

Operating voltage range

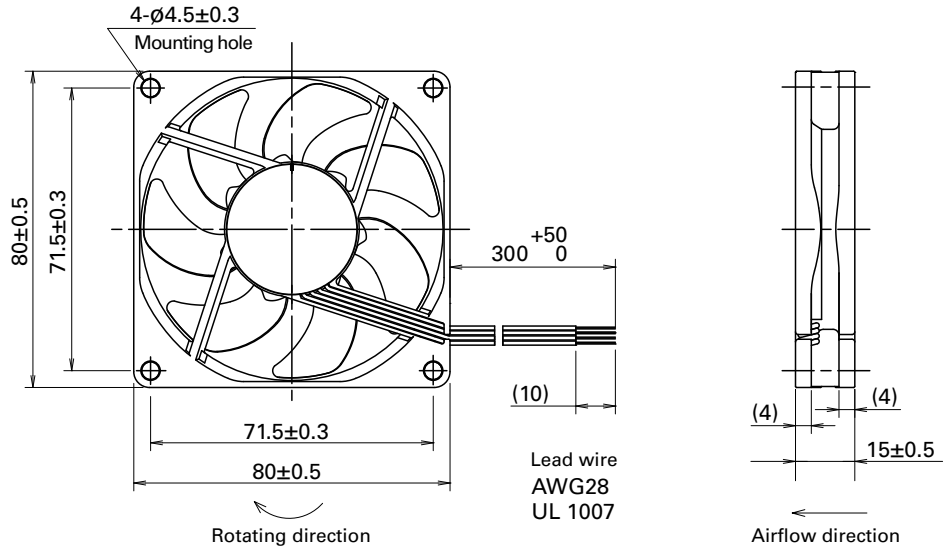


9GA0824H7001 With pulse sensor

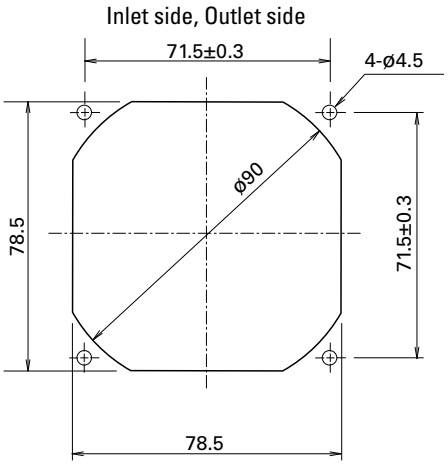
Operating voltage range



Dimensions (unit: mm) (With pulse sensor with PWM control function)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

80×80×15 mm

San Ace 80 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 68 g

Specifications

The models listed below **have ribs and pulse sensors.**

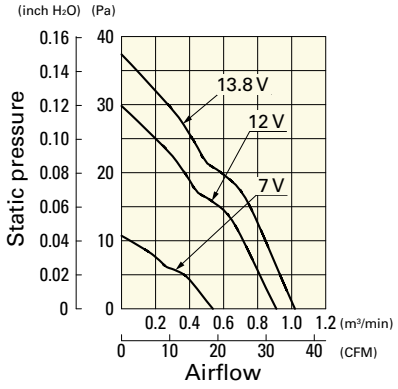
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0812H701	12	7 to 13.8	0.2	2.4	3100	0.91	32.1	29.4	0.118	31	-20 to +70	40000/60˚C
109P0812M701			0.09	1.08	2000	0.57	20.1	12.6	0.051	21		60000/60˚C
109P0824H701	24	14 to 27.6	0.1	2.4	3100	0.91	32.1	29.4	0.118	31		40000/60˚C
109P0824M701			0.05	1.2	2000	0.57	20.1	12.6	0.051	21		60000/60˚C

Other sensor specifications are available as options. Refer to the index (pp. 544 to 545).

Airflow - Static Pressure Characteristics

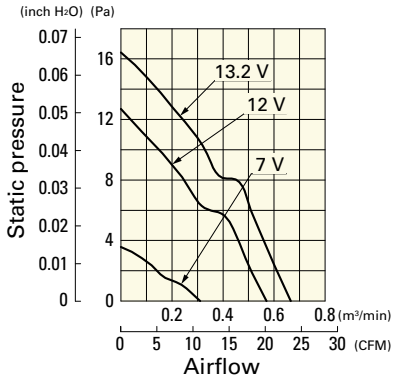
109P0812H701 With pulse sensor

Operating voltage range



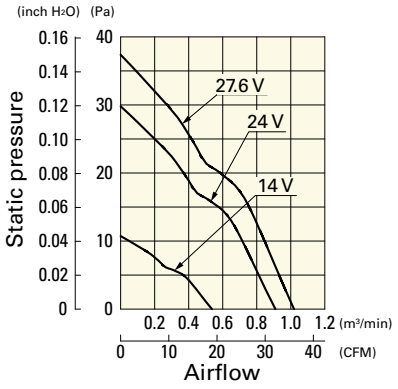
109P0812M701 With pulse sensor

Operating voltage range



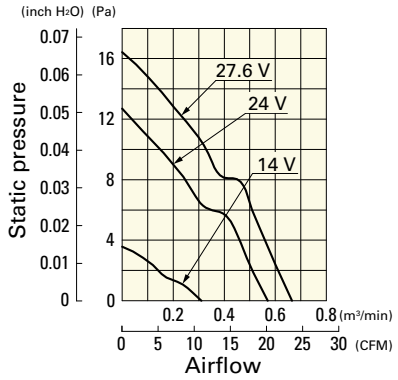
109P0824H701 With pulse sensor

Operating voltage range

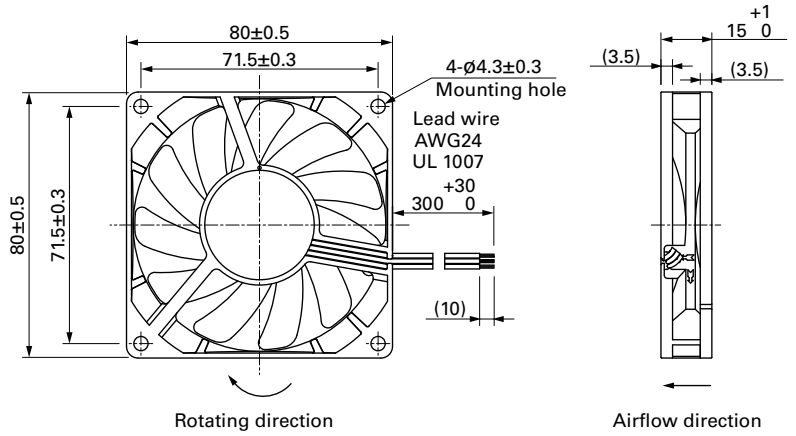


109P0824M701 With pulse sensor

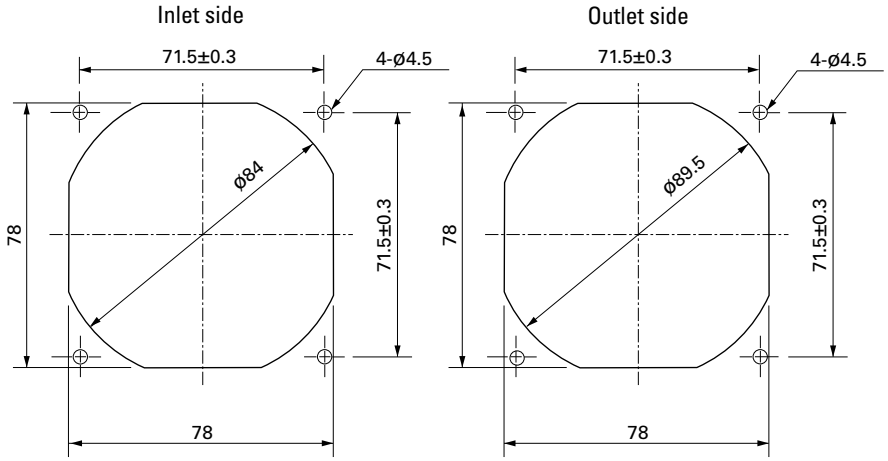
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

80×80×20 mm

San Ace 80 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 80 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0812P6G001	12	10.2 to 13.8	100	0.3	3.6	5850	1.72	60.78	110	0.44	45	-20 to +70	40000/60˚C (70000/40˚C)
9GA0812P6M001				0.06	0.72	2900	0.84	29.68	27	0.11	26.5		60000/60˚C
9GA0824P6G001	24	20.4 to 27.6	100	0.15	3.6	5850	1.72	60.78	110	0.44	45		40000/60˚C (70000/40˚C)
9GA0824P6M001				0.03	0.72	2900	0.84	29.68	27	0.11	26.5		60000/60˚C

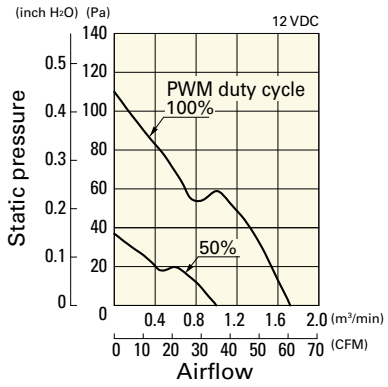
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (pp. 552 to 553).

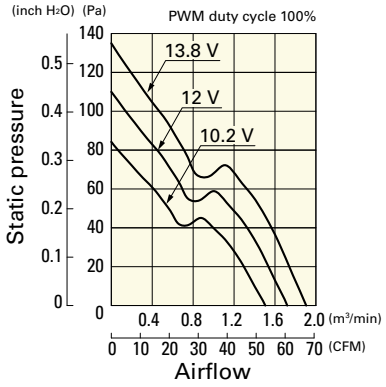
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P6G001 With pulse sensor with PWM control function

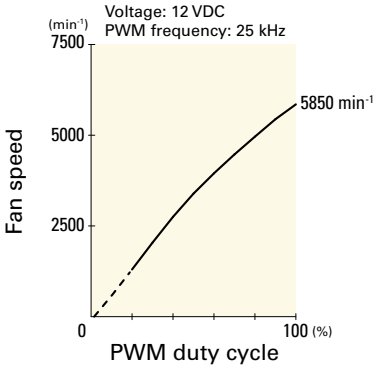
PWM duty cycle



Operating voltage range



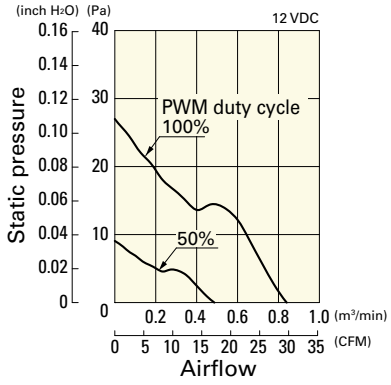
PWM duty - Speed characteristics example



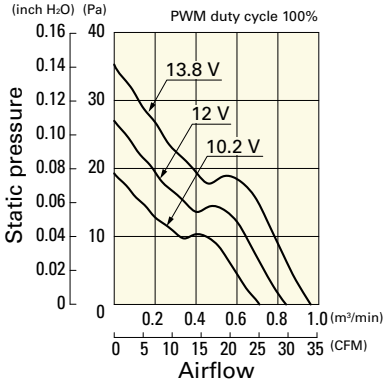
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P6M001 With pulse sensor with PWM control function

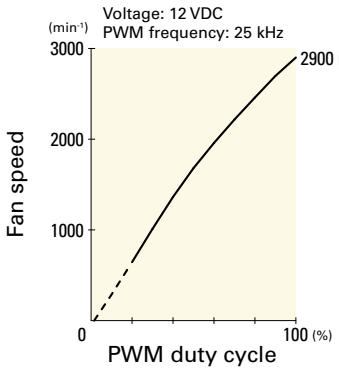
PWM duty cycle



Operating voltage range

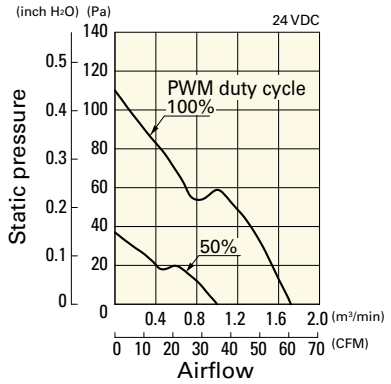


PWM duty - Speed characteristics example

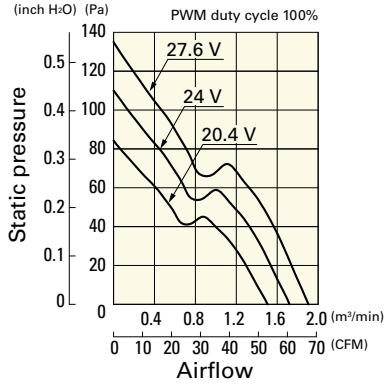


9GA0824P6G001 With pulse sensor with PWM control function

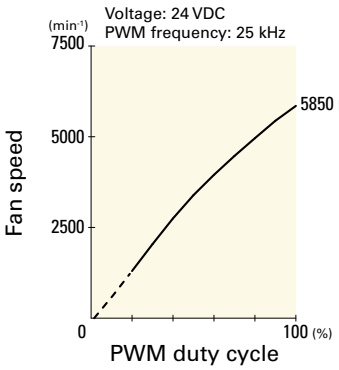
PWM duty cycle



Operating voltage range

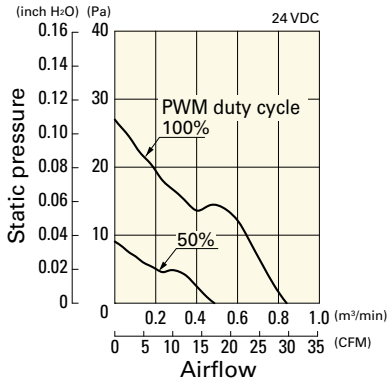


PWM duty - Speed characteristics example

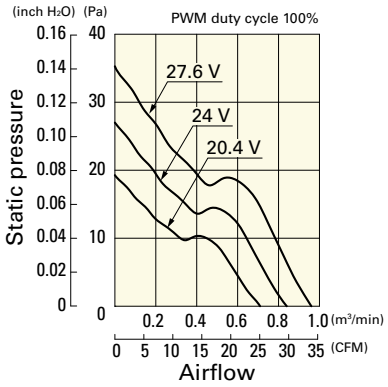


9GA0824P6M001 With pulse sensor with PWM control function

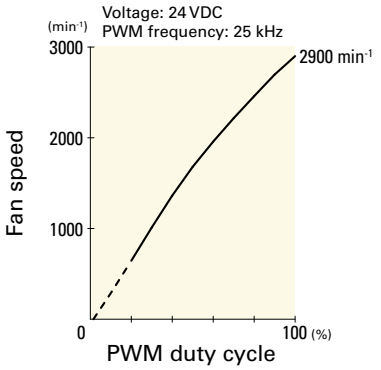
PWM duty cycle



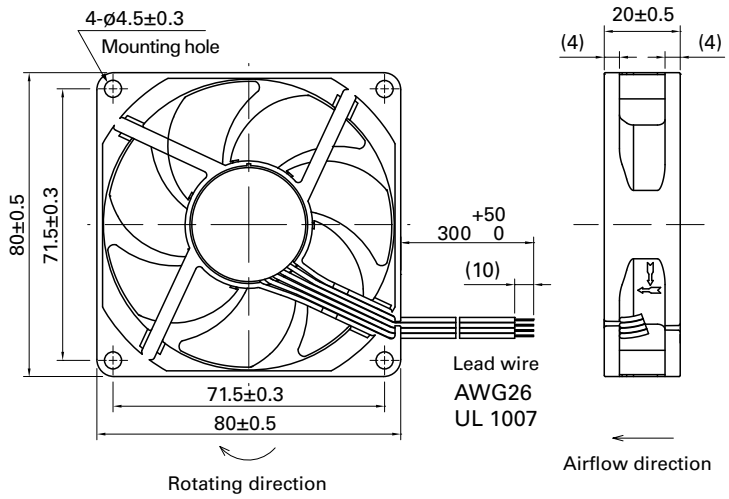
Operating voltage range



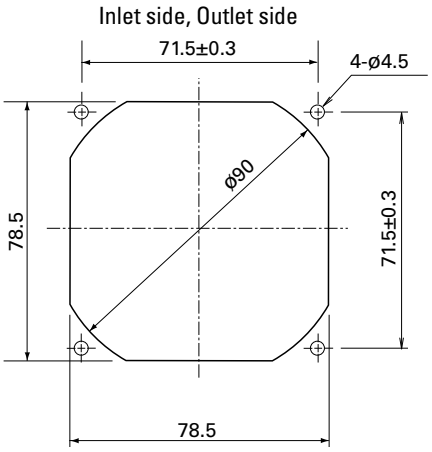
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

80×80×20 mm

San Ace 80 9P type

Model 109P0812C601 is not certified.

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 100 g

Specifications

The models listed below **have ribs and pulse sensors.**

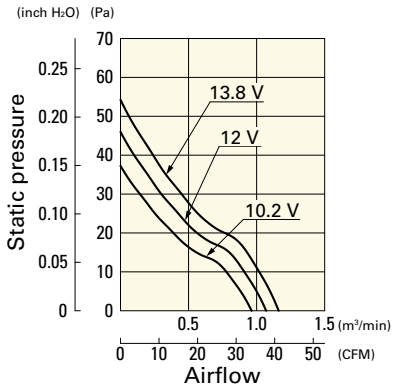
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0812C601	12	10.2 to 13.8	0.29	3.48	3700	1.07	37.8	46	0.185	39	-20 to +60	60000/60˚C
109P0812H601			0.21	2.52	2900	0.84	29.7	29.4	0.118	31	-20 to +70	
109P0812M601			0.13	1.56	2300	0.67	23.7	18.6	0.075	25		
109P0824H601	24	20.4 to 27.6	0.12	2.88	2900	0.84	29.7	29.4	0.118	31		
109P0824M601			0.07	1.68	2300	0.67	23.7	18.6	0.075	25		
109P0848C601	48	38 to 57.6	0.08	3.84	3700	1.07	37.8	46	0.185	39	-20 to +70	40000/60˚C
109P0848H601			0.05	2.4	2900	0.84	29.7	29.4	0.118	31	-20 to +60	

Other sensor specifications are available as options. Refer to the index (pp. 544 to 545).

Airflow - Static Pressure Characteristics

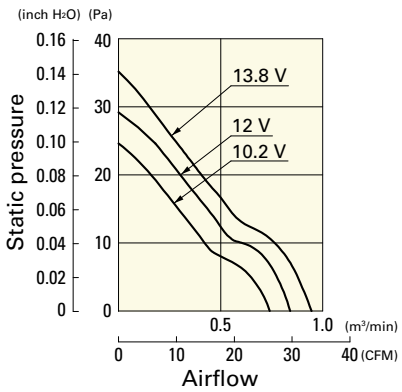
109P0812C601 With pulse sensor

Operating voltage range



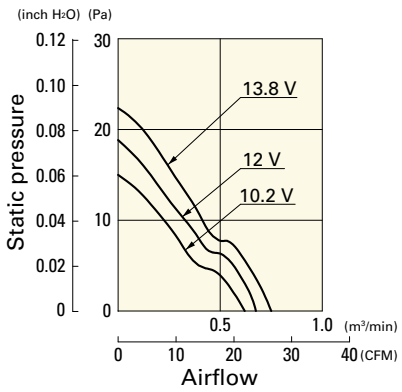
109P0812H601 With pulse sensor

Operating voltage range



109P0812M601 With pulse sensor

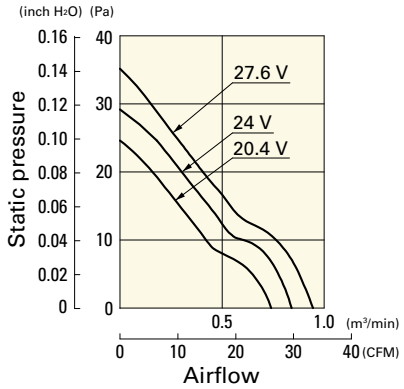
Operating voltage range



Airflow - Static Pressure Characteristics

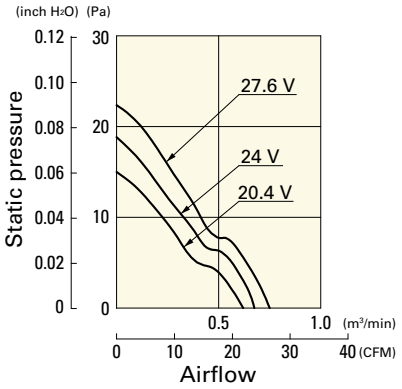
109P0824H601 With pulse sensor

Operating voltage range



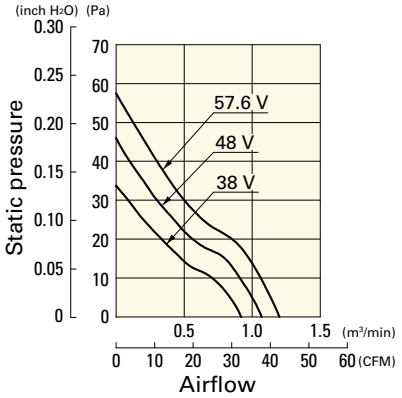
109P0824M601 With pulse sensor

Operating voltage range



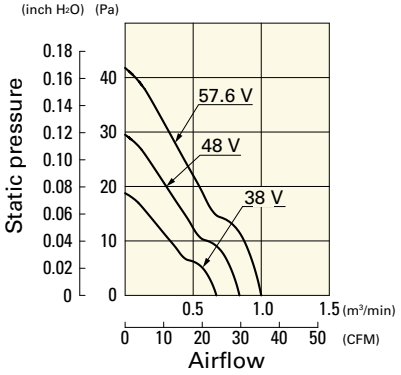
109P0848C601 With pulse sensor

Operating voltage range

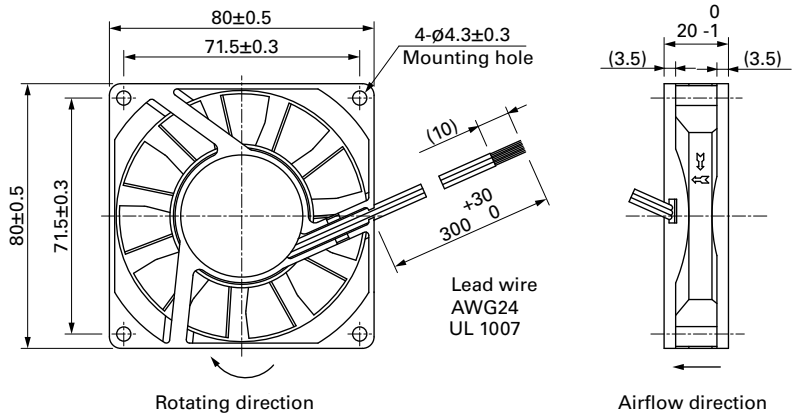


109P0848H601 With pulse sensor

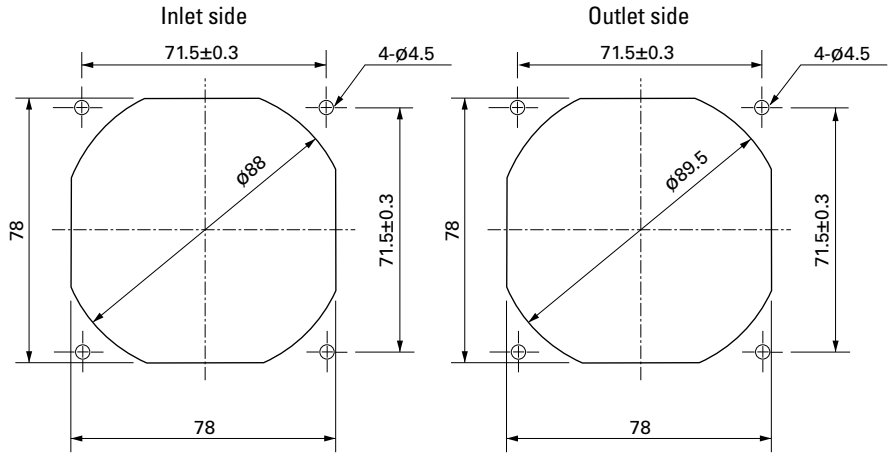
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards
page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits
page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards
page: p. 520

Model no.: 109-1002G

80×80×25 mm

San Ace 80 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 110 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0812P4J001	12	10.8 to 13.2	100	0.6	7.2	7400	2.07	73.0	177.6	0.7	48	-20 to +70	40000/60˚C (70000/40˚C)
			25	0.08	0.96	2500	0.69	24.3	20.2	0.08	21		
9GA0812P4G001			100	0.48	5.76	6800	1.91	67.4	150	0.6	45		
			25	0.06	0.72	1500	0.42	14.8	7.2	0.02	17		
9GA0812P4H001			100	0.22	2.64	5200	1.46	51.5	87.7	0.35	37		
			25	0.06	0.72	1600	0.44	15.5	8.3	0.03	17		
9GA0824P4J001	24	21.6 to 26.4	100	0.28	6.72	7400	2.07	73.0	177.6	0.7	48		
			25	0.06	1.44	2800	0.78	27.5	25.4	0.1	23		
9GA0824P4G001			100	0.21	5.04	6800	1.91	67.4	150	0.6	45		
			25	0.04	0.96	2100	0.58	20.4	14.3	0.05	19		
9GA0824P4H001			100	0.1	2.4	5200	1.46	51.5	87.7	0.35	37		
			25	0.02	0.48	1500	0.42	14.8	7.2	0.02	17		

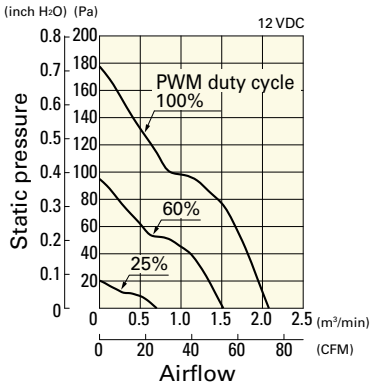
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (pp. 552 to 553).

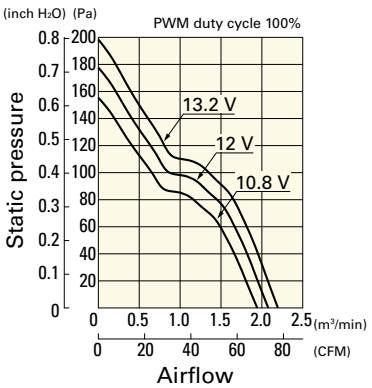
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P4J001 With pulse sensor with PWM control function

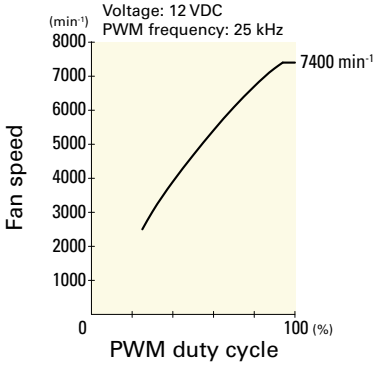
PWM duty cycle



Operating voltage range



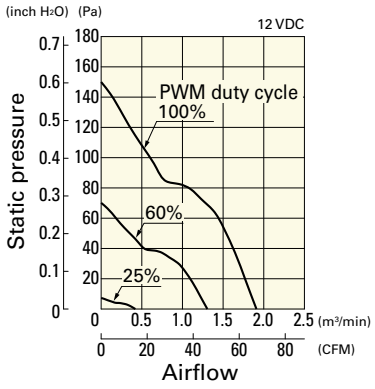
PWM duty - Speed characteristics example



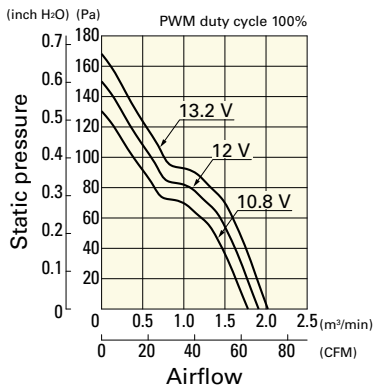
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P4G001 With pulse sensor with PWM control function

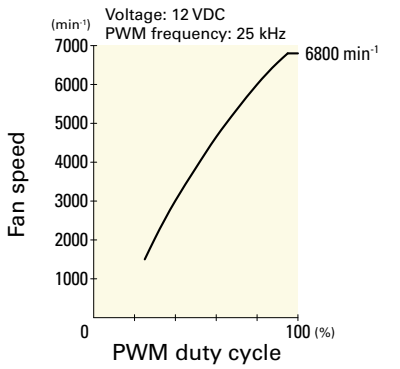
PWM duty cycle



Operating voltage range

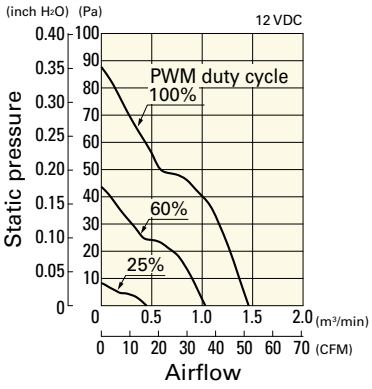


PWM duty - Speed characteristics example

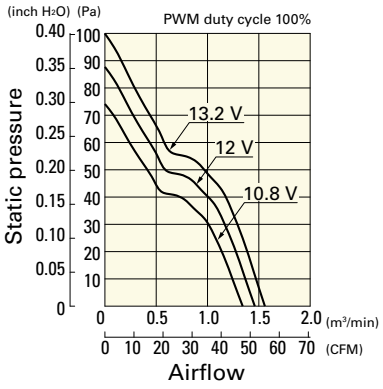


9GA0812P4H001 With pulse sensor with PWM control function

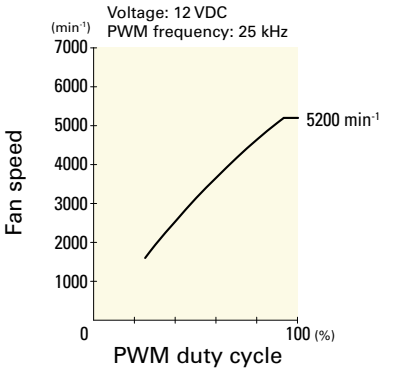
PWM duty cycle



Operating voltage range

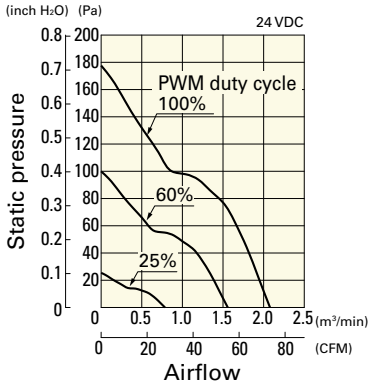


PWM duty - Speed characteristics example

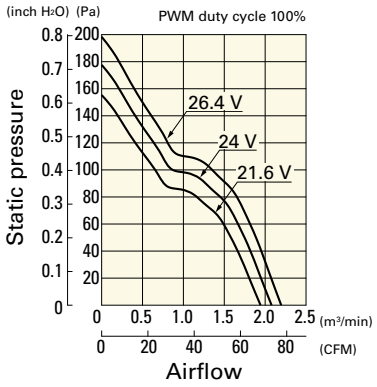


9GA0824P4J001 With pulse sensor with PWM control function

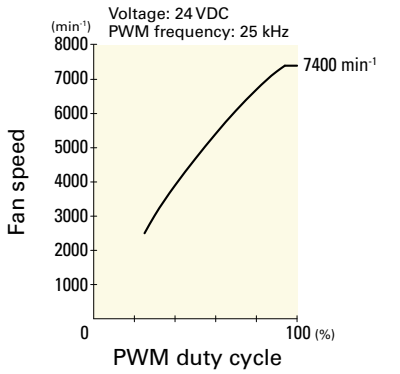
PWM duty cycle



Operating voltage range

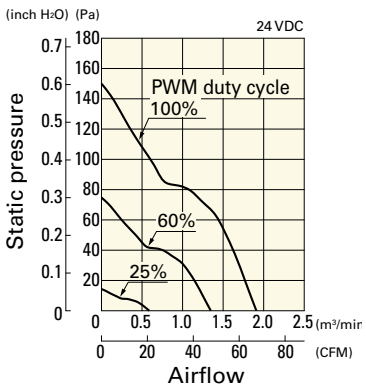


PWM duty - Speed characteristics example

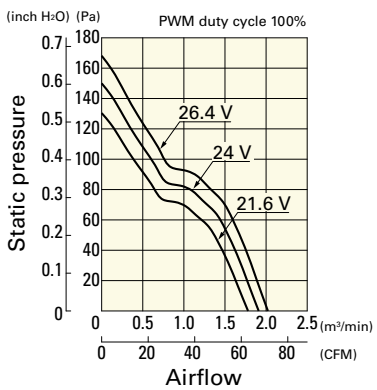


9GA0824P4G001 With pulse sensor with PWM control function

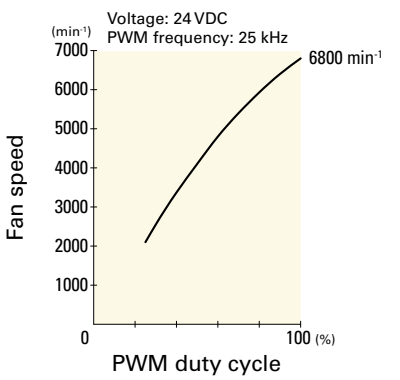
PWM duty cycle



Operating voltage range



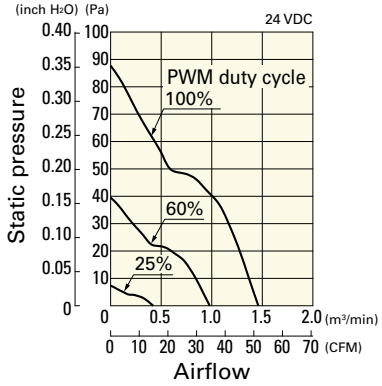
PWM duty - Speed characteristics example



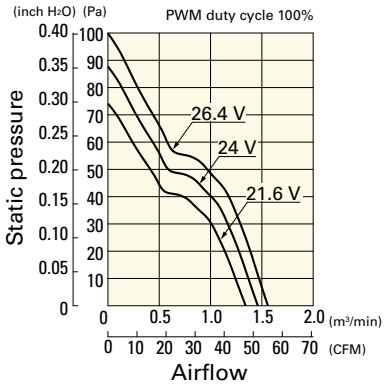
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0824P4H001 With pulse sensor with PWM control function

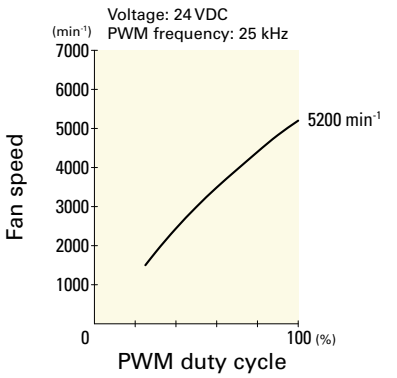
PWM duty cycle



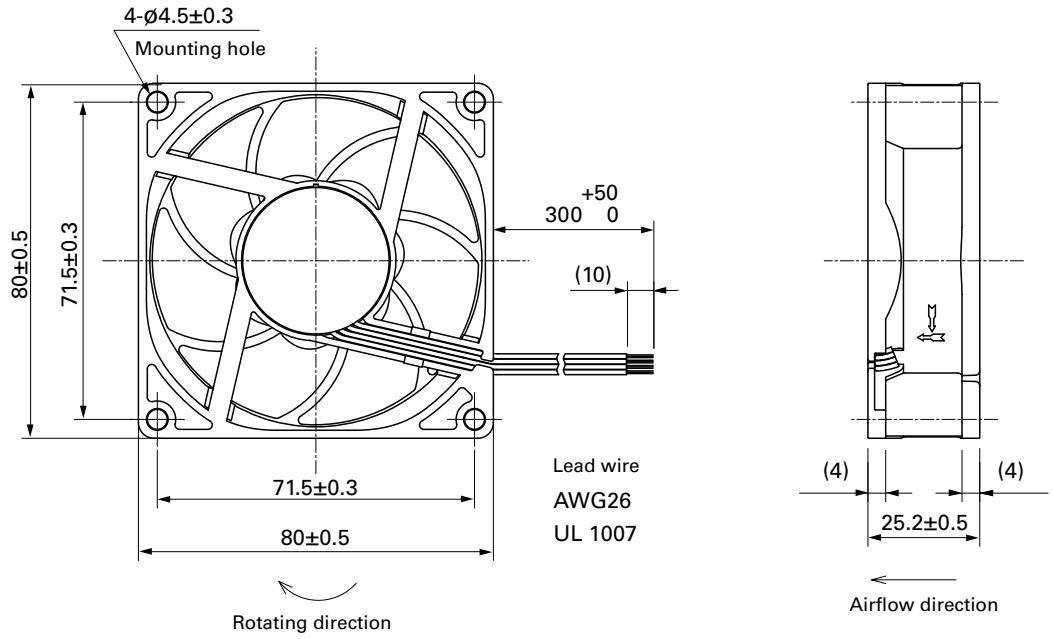
Operating voltage range



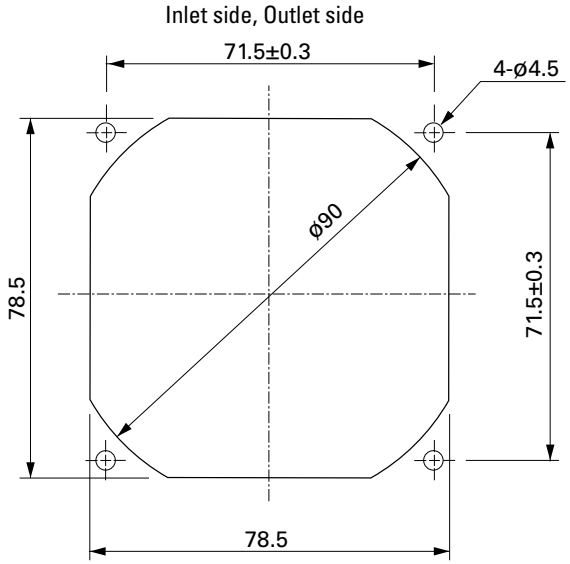
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards
page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits
page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI), 109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards
page: p. 520

Model no.: 109-1002G

80×80×25 mm

San Ace 80 9S type Silent Fan

Model 9S0812H401 is not TÜV certified.

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 75 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

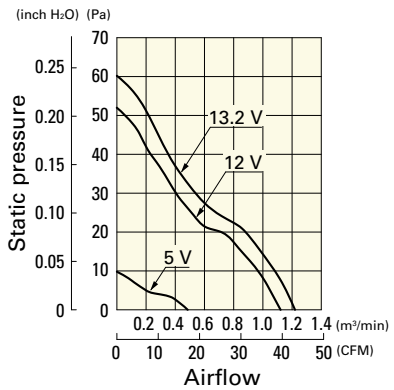
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9S0812H401	12	5.0 to 13.2	0.23	2.76	3400	1.12	39.5	52.15	0.2	31	-10 to +70	40000/60˚C
9S0812F401		5.0 to 13.8	0.11	1.32	2800	0.93	32.8	35.5	0.143	24		
9S0812M401			0.08	0.96	2500	0.83	29.3	27.5	0.11	22		
9S0812L401		6.0 to 13.8	0.05	0.6	2000	0.66	23.3	18.1	0.073	16		
9S0824M401	24	10 to 26.4	0.06	1.44	2500	0.83	29.3	27.5	0.11	22		
9S0824L401			0.04	0.96	2000	0.66	23.3	18.1	0.073	16		

Other sensor specifications are available as options. Refer to the index (p. 557).

Airflow - Static Pressure Characteristics

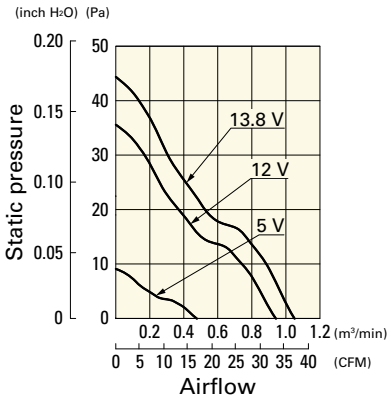
9S0812H401 With pulse sensor

Operating voltage range



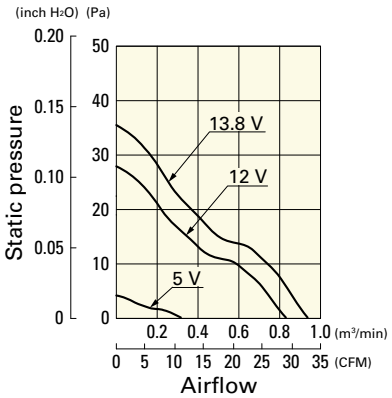
9S0812F401 With pulse sensor

Operating voltage range



9S0812M401 With pulse sensor

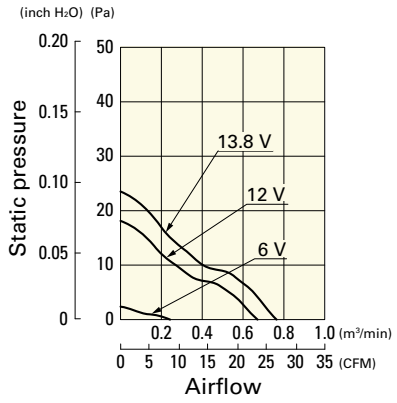
Operating voltage range



Airflow - Static Pressure Characteristics

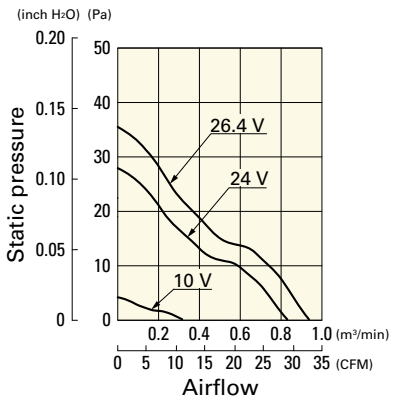
9S0812L401 With pulse sensor

Operating voltage range



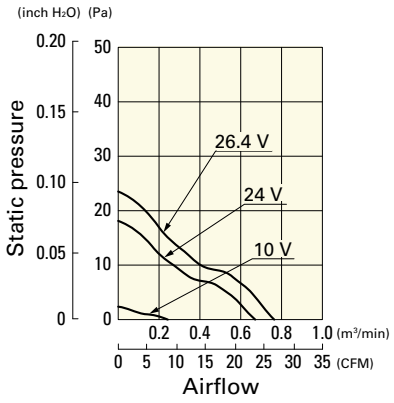
9S0824M401 With pulse sensor

Operating voltage range

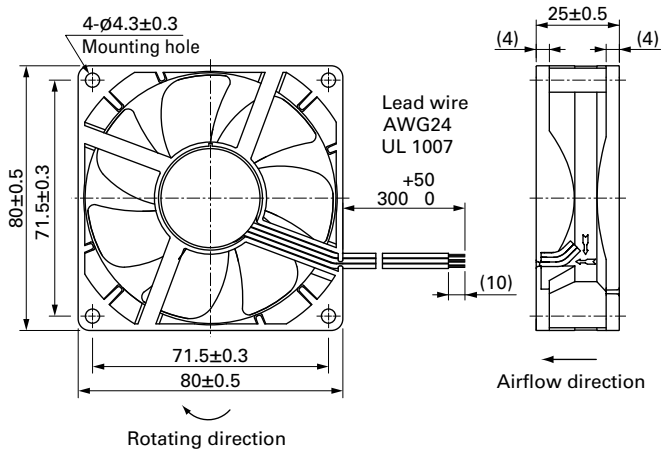


9S0824L401 With pulse sensor

Operating voltage range

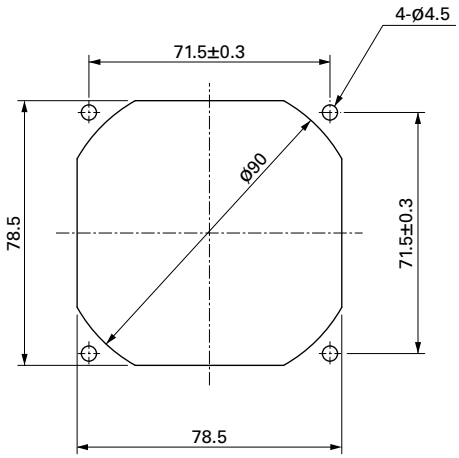


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

80×80×25 mm

San Ace 80 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 125 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV0812P4K03	12	10.2 to 13.8	100	0.87	10.4	5600	2.12	74.8	173.0	0.69	52	-20 to +70	40000/60˚C
			0	0.1	1.2	1400	0.5	18.7	10.3	0.04	18		
9GV0812P4J03			100	0.47	5.6	4500	1.72	60.7	110.0	0.44	46		
			0	0.07	0.8	1200	0.45	16.2	7.5	0.03	14		
9GV0824P4K01	24	20.4 to 27.6	100	0.44	10.56	5600	2.12	74.8	173.0	0.69	52		
			0	0.06	1.44	1400	0.53	18.7	10.8	0.04	18		
9GV0848P4K03	48	43 to 53	100	0.22	10.56	5600	2.12	74.8	173.0	0.69	52		
			0	0.04	1.92	1500	0.57	20.1	12.4	0.05	19		

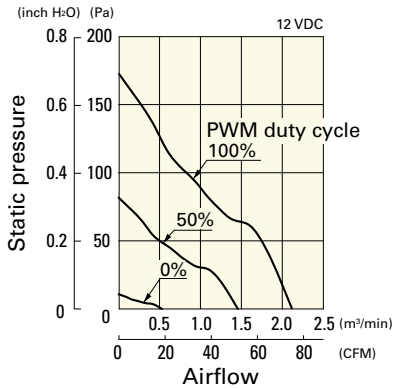
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 555).

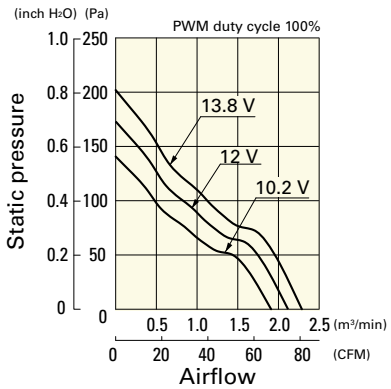
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0812P4K03 With pulse sensor with PWM control function

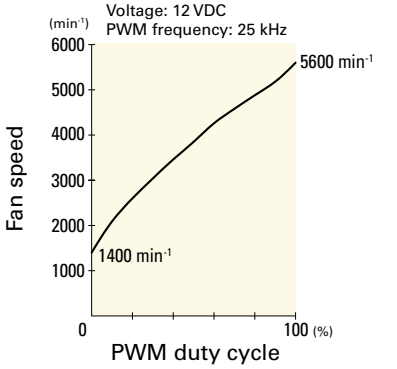
PWM duty cycle



Operating voltage range



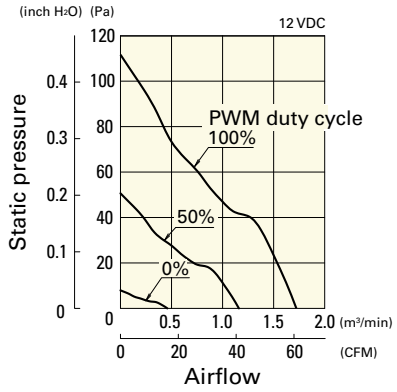
PWM duty - Speed characteristics example



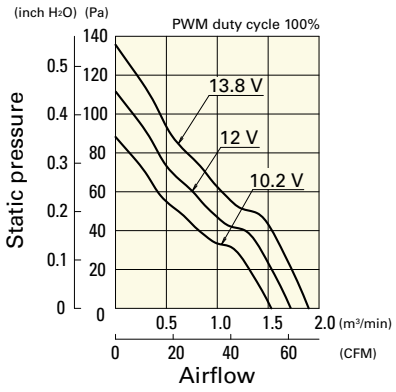
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0812P4J03 With pulse sensor with PWM control function

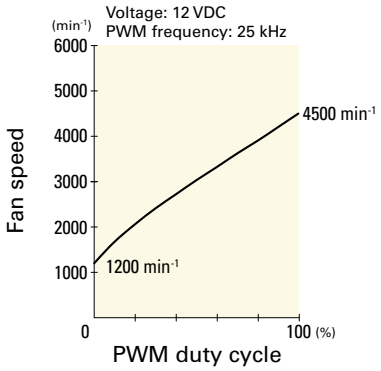
PWM duty cycle



Operating voltage range

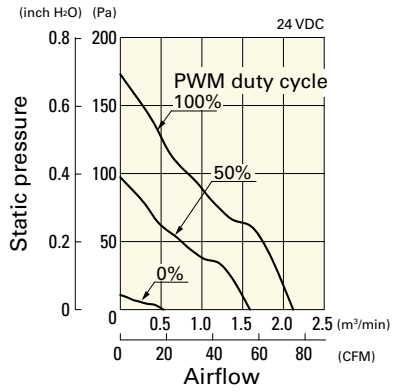


PWM duty - Speed characteristics example

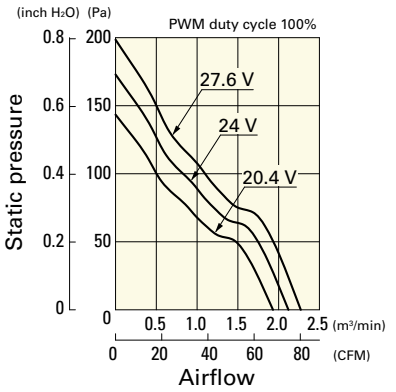


9GV0824P4K01 With pulse sensor with PWM control function

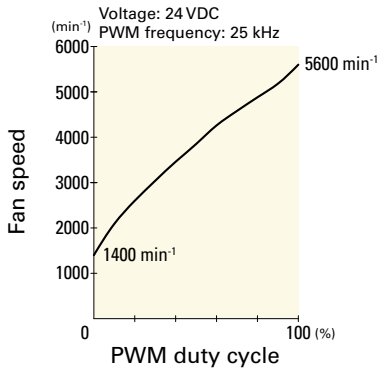
PWM duty cycle



Operating voltage range

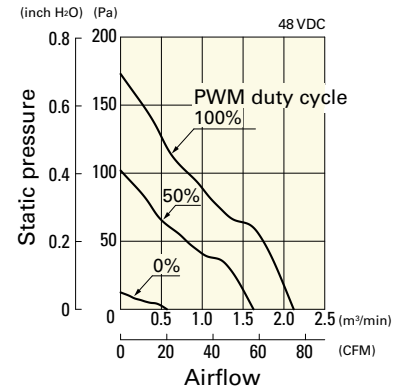


PWM duty - Speed characteristics example

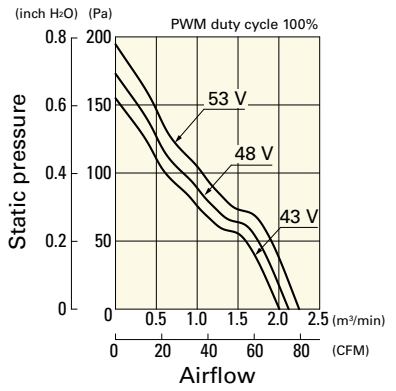


9GV0848P4K03 With pulse sensor with PWM control function

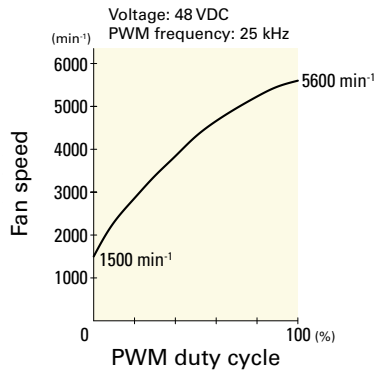
PWM duty cycle



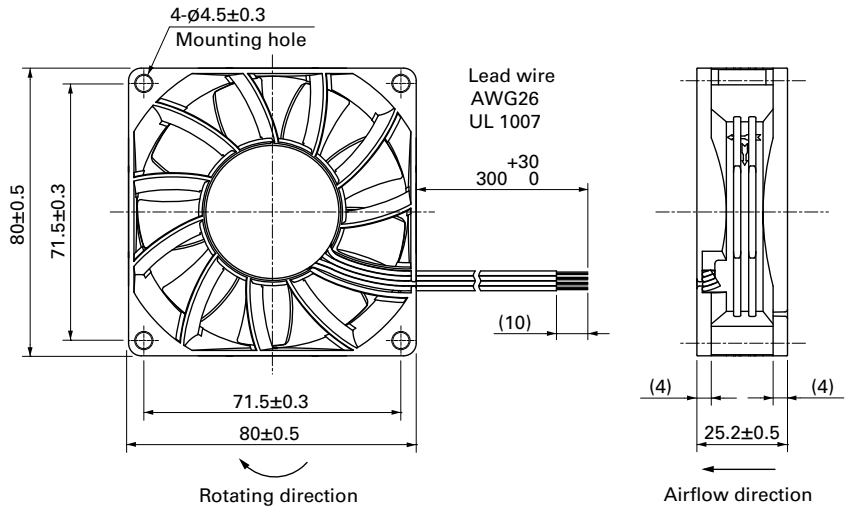
Operating voltage range



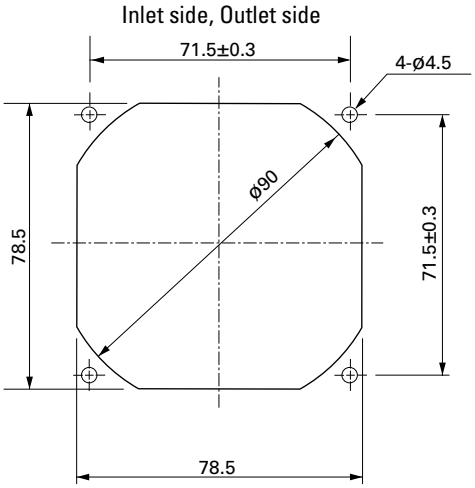
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

80×80×25 mm

San Ace 80 9R type

Model 109R0812E401 is not certified.

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 110 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

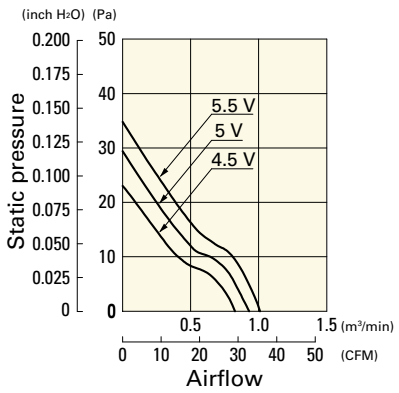
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109R0805F401	5	4.5 to 5.5	0.25	1.25	2600	0.92	32.5	28.4	0.114	26	-20 to +70	60000/60˚C
109R0805M401			0.17	0.85	2350	0.83	29.3	22.5	0.09	23		
109R0812G401	12	10.8 to 13.2	0.37	4.44	4500	1.5	53.0	80.4	0.323	40	-20 to +60	40000/60˚C
109R0812E401		6 to 13.8	0.24	2.88	3700	1.31	46.3	57.8	0.232	35		
109R0812S401			0.18	2.16	3400	1.2	42.4	48.0	0.193	34	-20 to +70	60000/60˚C
109R0812H401			0.13	1.56	2900	1.03	36.4	35.3	0.142	29		
109R0812F401			0.11	1.32	2600	0.92	32.5	28.4	0.114	26		
109R0812M401			0.09	1.08	2350	0.83	29.3	22.5	0.09	23		
109R0812L401		7 to 13.8	0.06	0.72	1850	0.65	23.0	14.7	0.059	20		
109R0824G401	24	20.4 to 26.4	0.2	4.8	4500	1.5	53.0	80.4	0.323	40	-20 to +60	40000/60˚C
109R0824S401		12 to 27.6	0.1	2.4	3400	1.2	42.4	48.0	0.193	34	-20 to +70	60000/60˚C
109R0824H401			0.07	1.68	2900	1.03	36.4	35.3	0.142	29		
109R0824F401			0.06	1.44	2600	0.92	32.5	28.4	0.114	26		
109R0824M401			0.05	1.2	2350	0.83	29.3	22.5	0.09	23		
109R0824L401		14 to 27.6	0.04	0.96	1850	0.65	23.0	14.7	0.059	20		
109R0848K401	48	40.8 to 55.2	0.1	4.8	4600	1.56	55.1	88.4	0.355	41	-20 to +60	40000/60˚C
109R0848S401			0.06	2.88	3400	1.2	42.4	48.0	0.193	34	-20 to +70	60000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 546).

Airflow - Static Pressure Characteristics

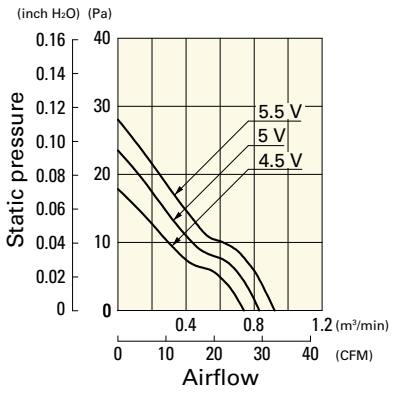
109R0805F401 With pulse sensor

Operating voltage range



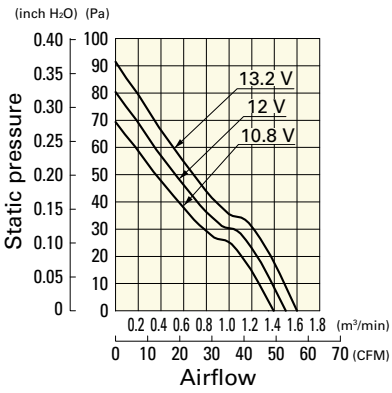
109R0805M401 With pulse sensor

Operating voltage range



109R0812G401 With pulse sensor

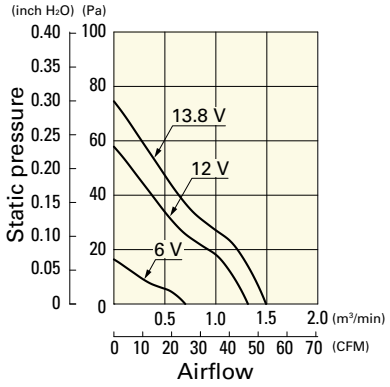
Operating voltage range



Airflow - Static Pressure Characteristics

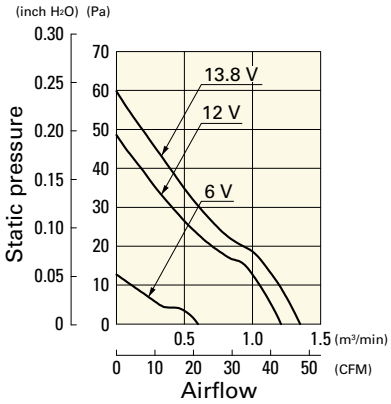
109R0812E401 With pulse sensor

Operating voltage range



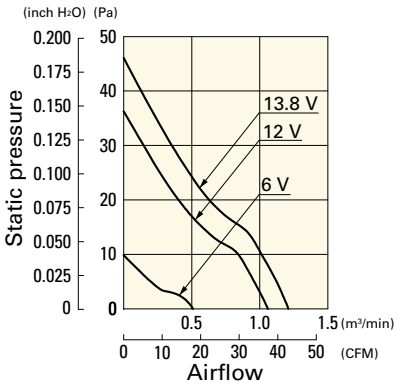
109R0812S401 With pulse sensor

Operating voltage range



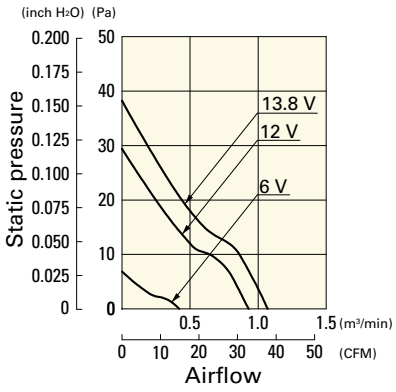
109R0812H401 With pulse sensor

Operating voltage range



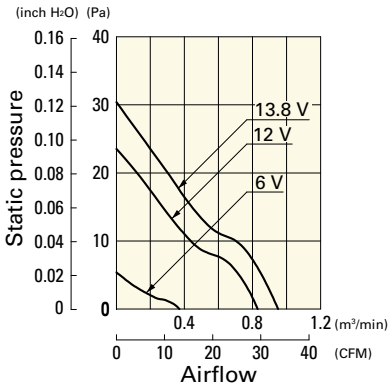
109R0812F401 With pulse sensor

Operating voltage range



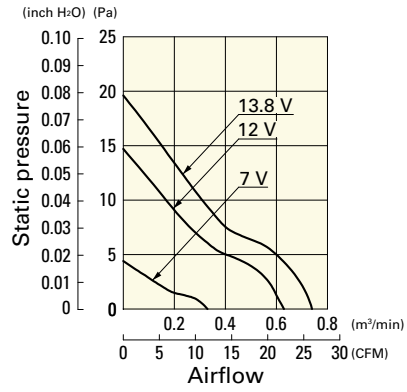
109R0812M401 With pulse sensor

Operating voltage range



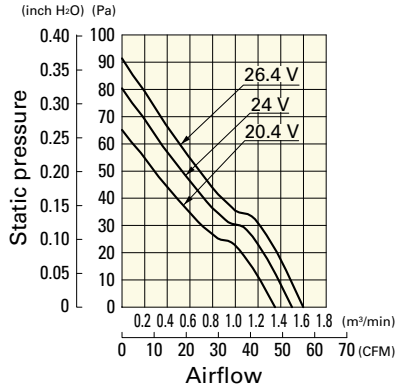
109R0812L401 With pulse sensor

Operating voltage range



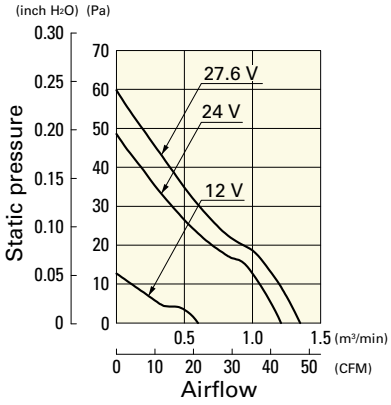
109R0824G401 With pulse sensor

Operating voltage range



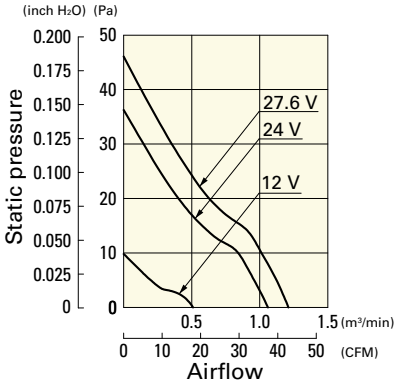
109R0824S401 With pulse sensor

Operating voltage range



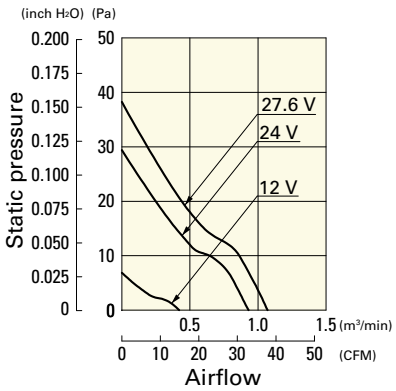
109R0824H401 With pulse sensor

Operating voltage range



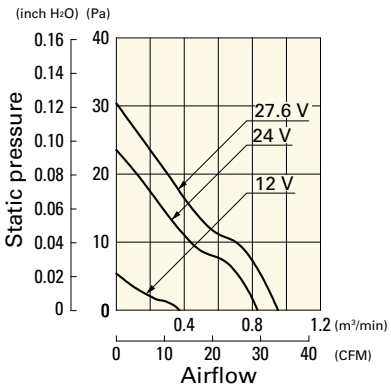
109R0824F401 With pulse sensor

Operating voltage range



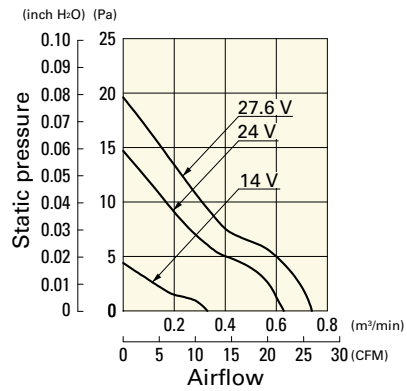
109R0824M401 With pulse sensor

Operating voltage range



109R0824L401 With pulse sensor

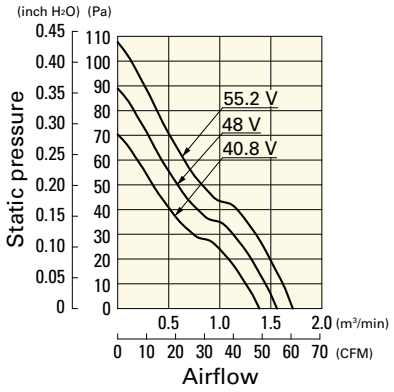
Operating voltage range



Airflow - Static Pressure Characteristics

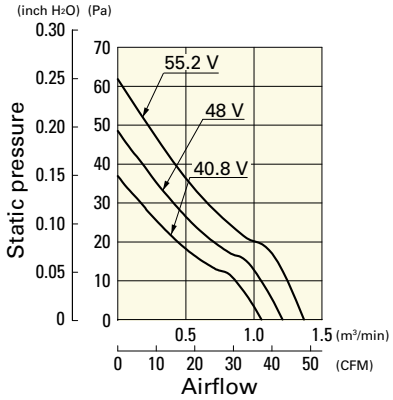
109R0848K401 With pulse sensor

Operating voltage range

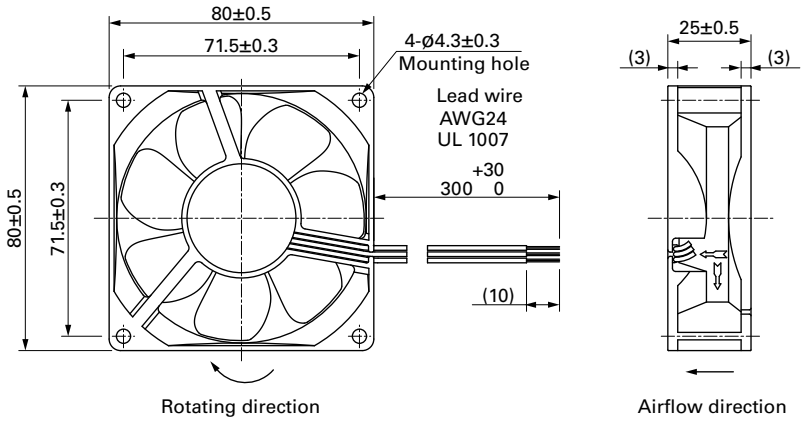


109R0848S401 With pulse sensor

Operating voltage range

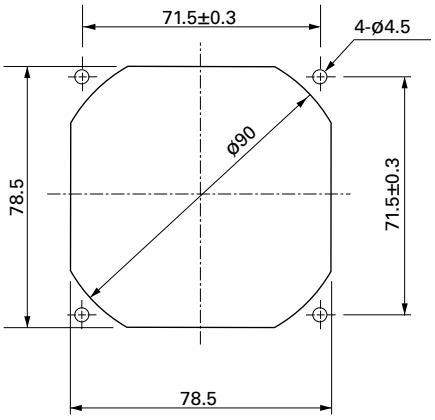


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

80×80×25 mm

San Cooler 80 9A type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 90 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

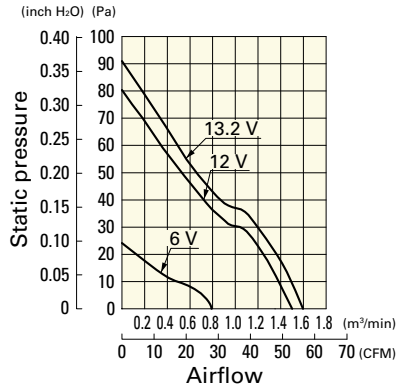
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9A0812G401	12	6 to 13.2	0.38	4.56	4500	1.5	53.0	80.3	0.323	40	-20 to +60	30000/60˚C
9A0812S401		6 to 13.8	0.18	2.16	3400	1.2	42.4	48	0.193	34	-20 to +70	40000/60˚C
9A0812H401			0.13	1.56	2900	1.03	36.4	35.3	0.142	29		
9A0812F401			0.11	1.32	2600	0.92	32.5	28.4	0.114	26		
9A0812M401			0.09	1.08	2350	0.83	29.3	22.5	0.09	23		
9A0812L401		7 to 13.8	0.06	0.72	1850	0.65	23.0	14.7	0.059	20		
9A0824G401	24	12 to 26.4	0.21	5.04	4500	1.5	53.0	80.3	0.323	40	-20 to +60	30000/60˚C
9A0824S401		12 to 27.6	0.1	2.4	3400	1.2	42.4	48	0.193	34	-20 to +70	40000/60˚C
9A0824H401			0.07	1.68	2900	1.03	36.4	35.3	0.142	29		
9A0824F401			0.06	1.44	2600	0.92	32.5	28.4	0.114	26		
9A0824M401			0.05	1.2	2350	0.83	29.3	22.5	0.09	23		
9A0824L401		14 to 27.6	0.04	0.96	1850	0.65	23.0	14.7	0.059	20		

Other sensor specifications are available as options. Refer to the index (p. 547).

Airflow - Static Pressure Characteristics

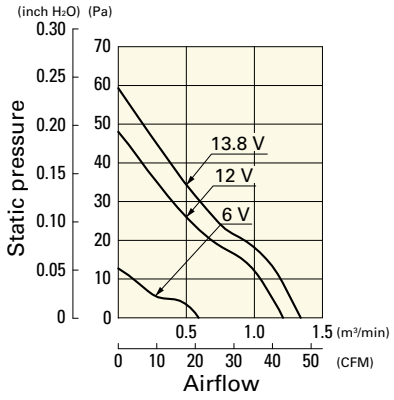
9A0812G401 With pulse sensor

Operating voltage range



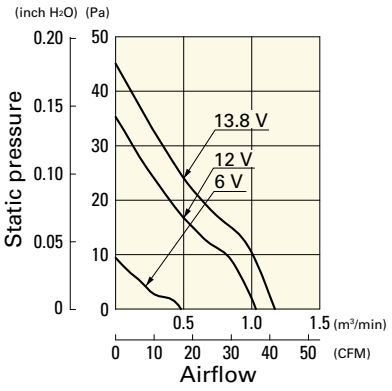
9A0812S401 With pulse sensor

Operating voltage range



9A0812H401 With pulse sensor

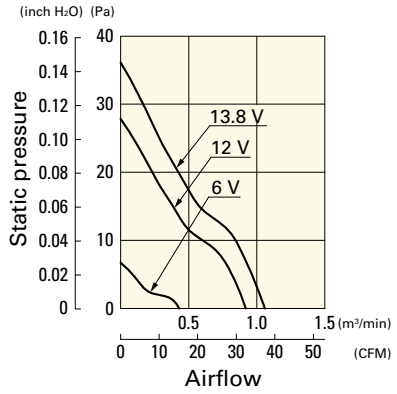
Operating voltage range



Airflow - Static Pressure Characteristics

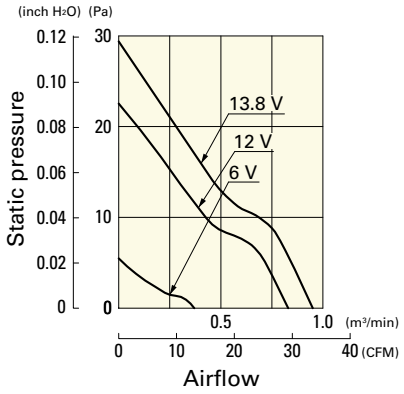
9A0812F401 With pulse sensor

Operating voltage range



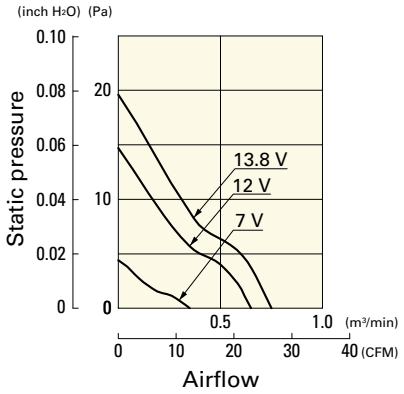
9A0812M401 With pulse sensor

Operating voltage range



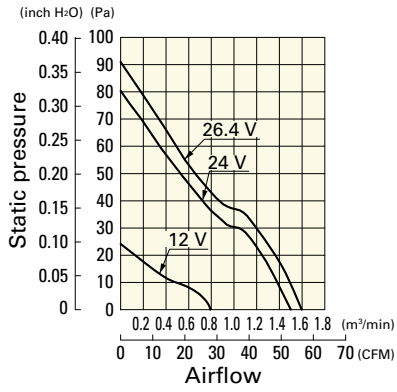
9A0812L401 With pulse sensor

Operating voltage range



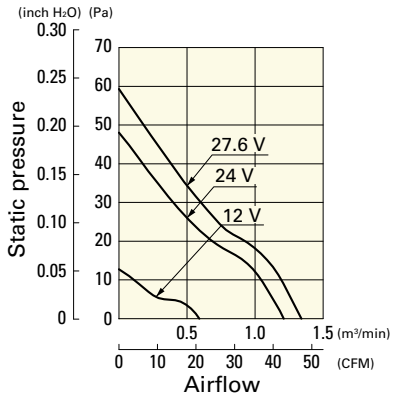
9A0824G401 With pulse sensor

Operating voltage range



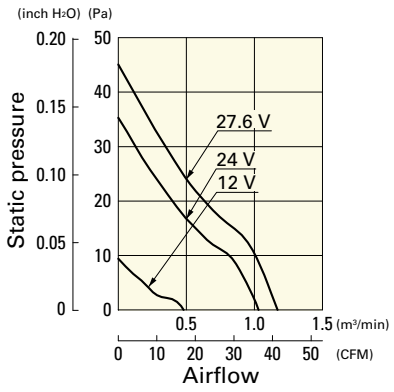
9A0824S401 With pulse sensor

Operating voltage range



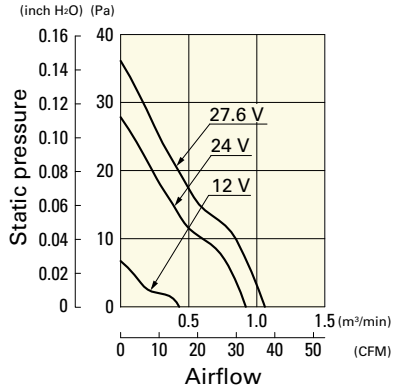
9A0824H401 With pulse sensor

Operating voltage range



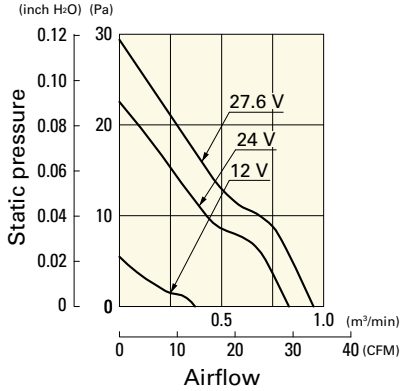
9A0824F401 With pulse sensor

Operating voltage range



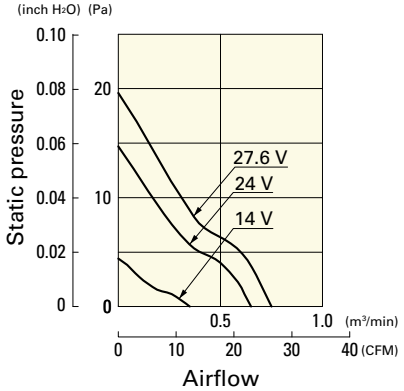
9A0824M401 With pulse sensor

Operating voltage range

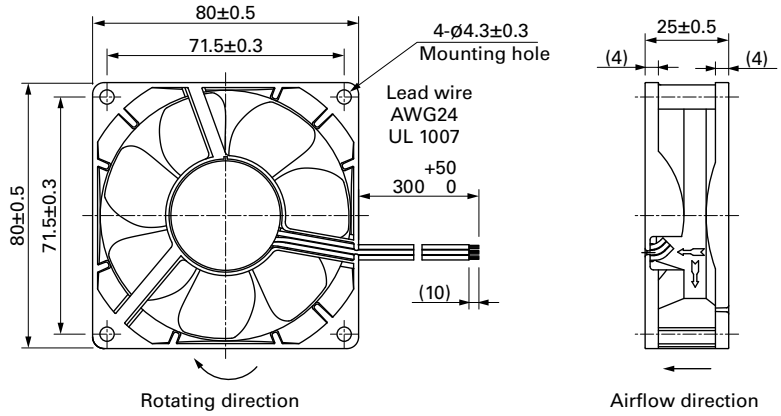


9A0824L401 With pulse sensor

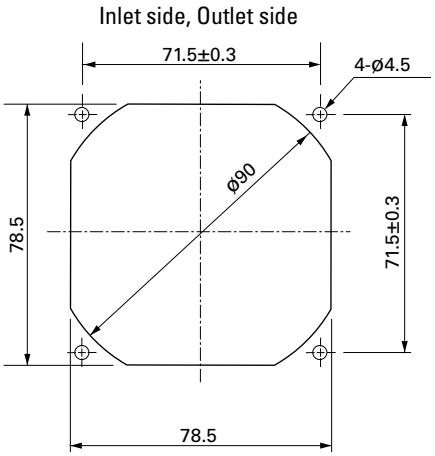
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

80×80×32 mm

San Ace 80 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 130 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0812P2S001	12	10.2 to 13.8	100	0.83	9.96	9700	2.45	86.5	360	1.45	57	-20 to +70	40000/60˚C
			0	0.08	0.96	2800	0.71	25.1	30	0.12	24		
9GA0812P2H001			100	0.59	7.08	8700	2.2	77.7	294	1.18	54		
			0	0.05	0.6	2600	0.66	23.3	26	0.105	21		
9GA0812P2M001		10.2 to 12.6	100	0.35	4.2	6700	1.69	59.6	171	0.68	47	-20 to +55	
			0	0.04	0.48	1400	0.35	12.3	7.5	0.03	10		
9GA0824P2S001	24	20.4 to 27.6	100	0.42	10.1	9700	2.45	86.5	360	1.45	57	-20 to +70	
			0	0.05	1.2	2800	0.71	25.1	30	0.12	24		
9GA0848P2S001	48	40.8 to 55.2	100	0.22	10.56	9700	2.45	86.5	360	1.45	57	-10 to +70	
			0	0.04	1.92	2800	0.71	25.1	30	0.12	24		

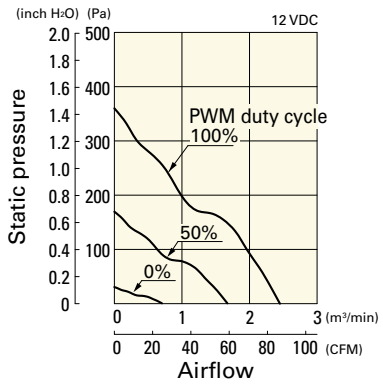
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (pp. 552 to 553).

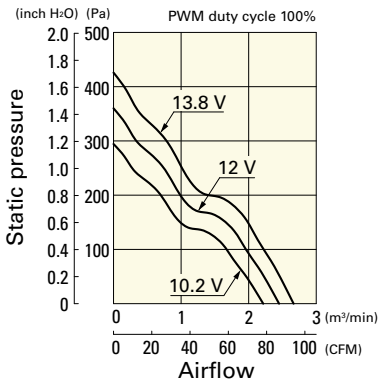
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P2S001 With pulse sensor with PWM control function

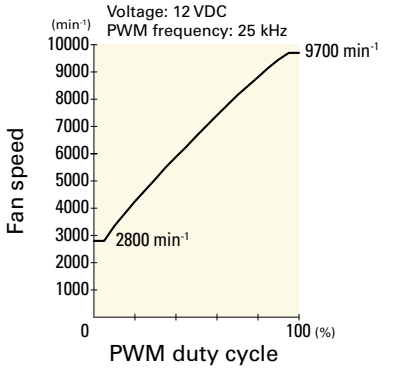
PWM duty cycle



Operating voltage range



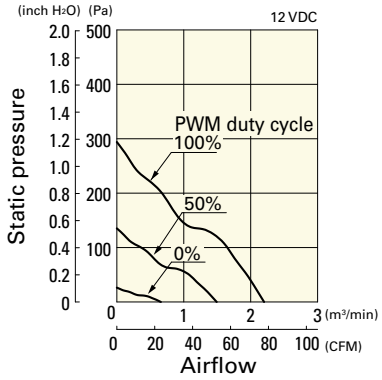
PWM duty - Speed characteristics example



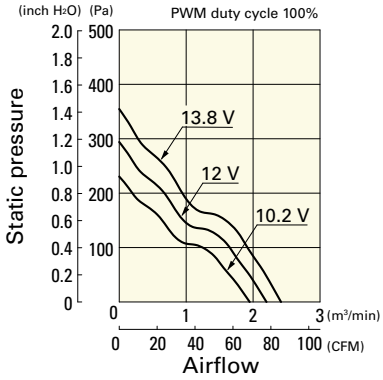
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P2H001 With pulse sensor with PWM control function

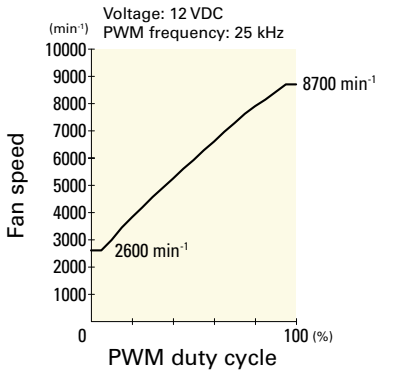
PWM duty cycle



Operating voltage range

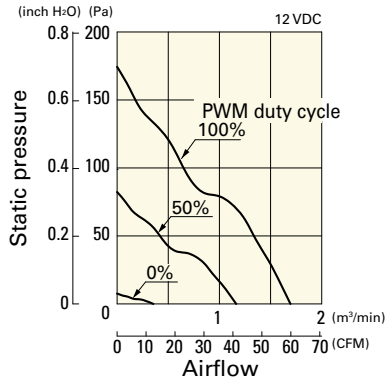


PWM duty - Speed characteristics example

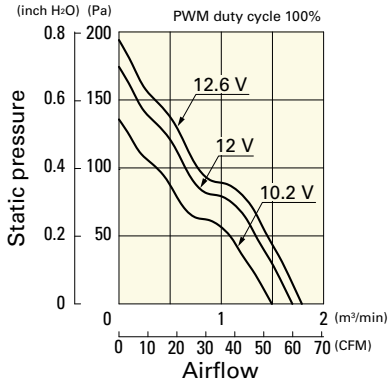


9GA0812P2M001 With pulse sensor with PWM control function

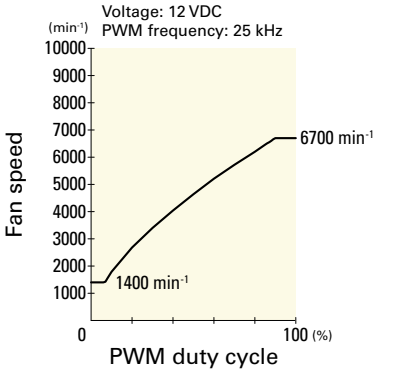
PWM duty cycle



Operating voltage range

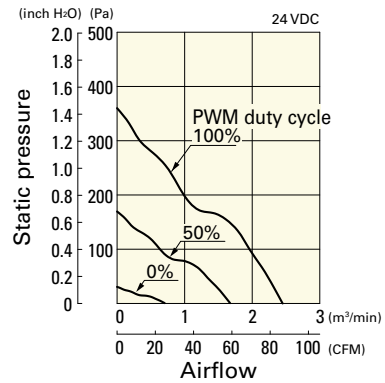


PWM duty - Speed characteristics example

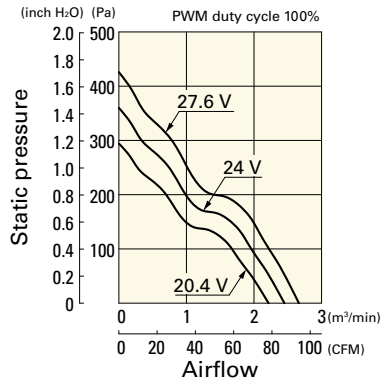


9GA0824P2S001 With pulse sensor with PWM control function

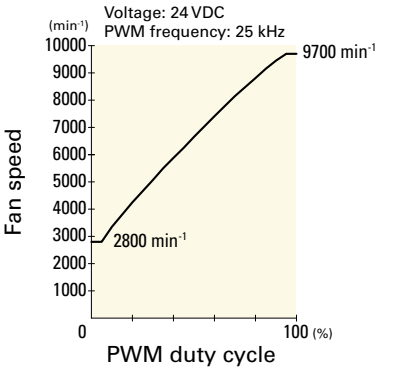
PWM duty cycle



Operating voltage range

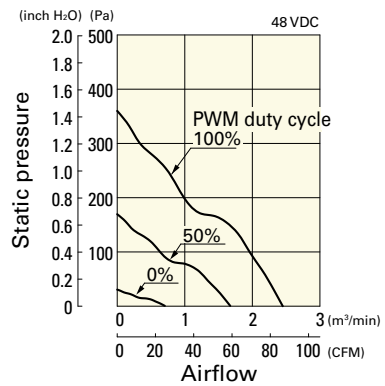


PWM duty - Speed characteristics example

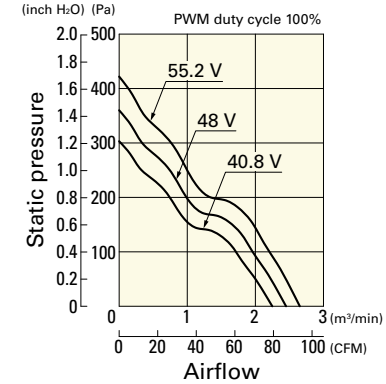


9GA0848P2S001 With pulse sensor with PWM control function

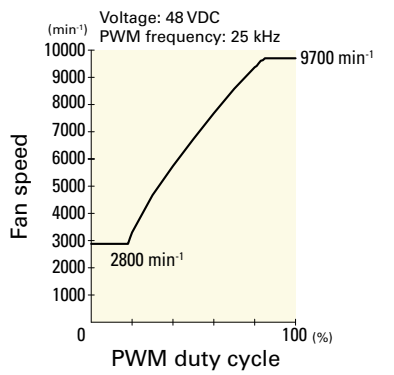
PWM duty cycle



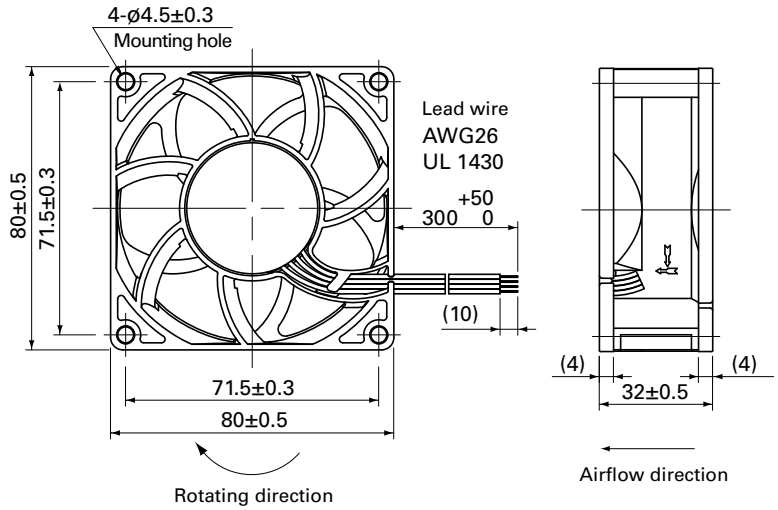
Operating voltage range



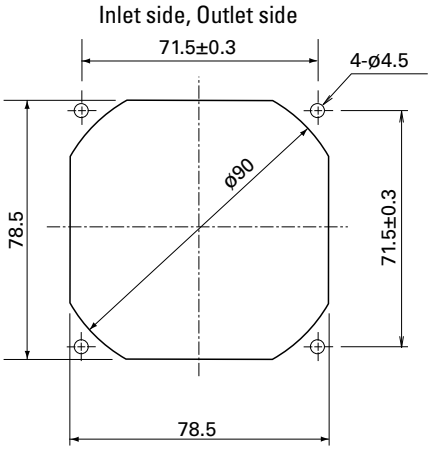
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

80×80×32 mm

San Ace 80 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 150 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

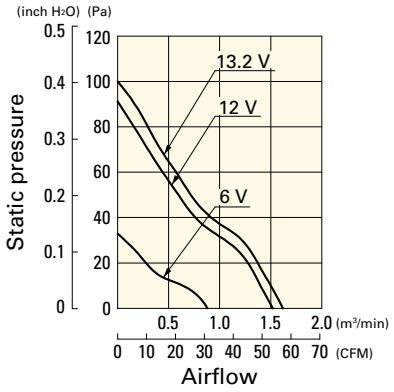
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P0812A201	12	6 to 13.2	0.56	6.72	4600	1.52	53.7	91.1	0.366	45	-20 to +55	40000 (+55˚C)
109P0812H201		10.2 to 13.8	0.16	1.92	3150	1.05	37.1	43.1	0.173	33	-20 to +70	40000/60˚C
109P0812M201			0.07	0.84	2000	0.65	23.0	18.6	0.075	21		60000/60˚C
109P0824A201	24	12 to 26.4	0.29	6.96	4600	1.52	53.7	91.1	0.366	45	-20 to +60	40000/60˚C
109P0824H201		20.4 to 27.6	0.09	2.16	3150	1.05	37.1	43.1	0.173	33	-20 to +70	
109P0824M201			0.04	0.96	2000	0.65	23.0	18.6	0.075	21		60000/60˚C
109P0848H201	48	43 to 53	0.06	2.88	3350	1.1	38.9	50.9	0.204	35		40000/60˚C

Other sensor specifications are available as options. Refer to the index (pp. 544 to 545).

Airflow - Static Pressure Characteristics

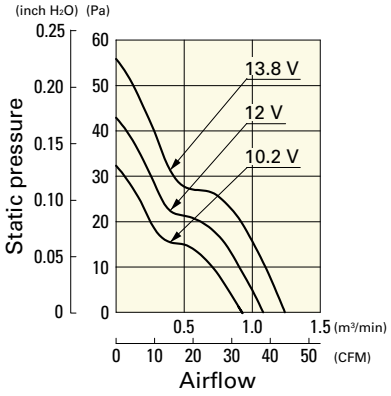
109P0812A201 With pulse sensor

Operating voltage range



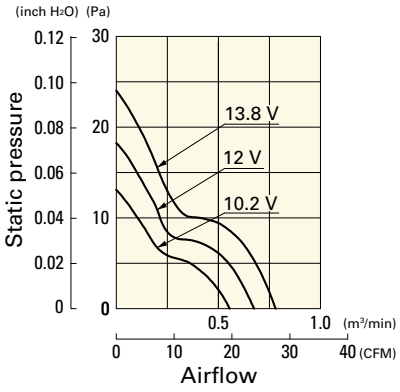
109P0812H201 With pulse sensor

Operating voltage range



109P0812M201 With pulse sensor

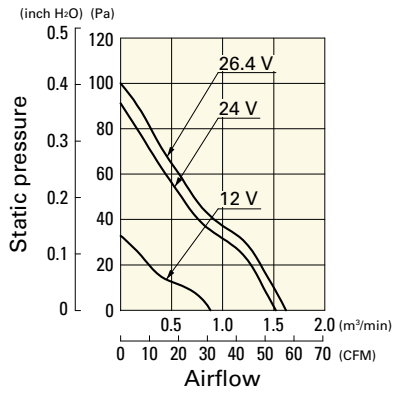
Operating voltage range



Airflow - Static Pressure Characteristics

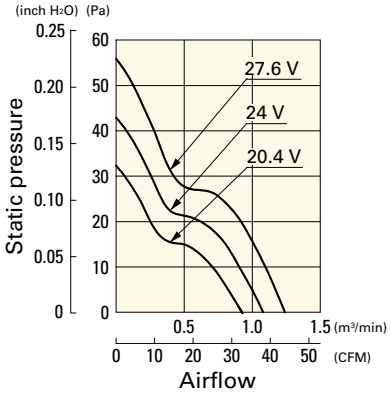
109P0824A201 With pulse sensor

Operating voltage range



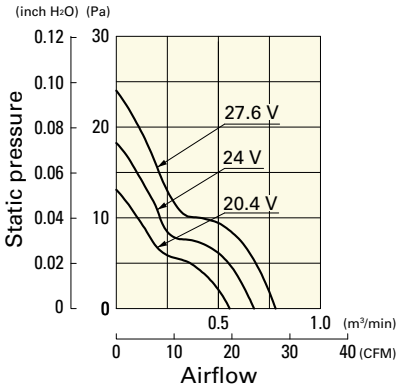
109P0824H201 With pulse sensor

Operating voltage range



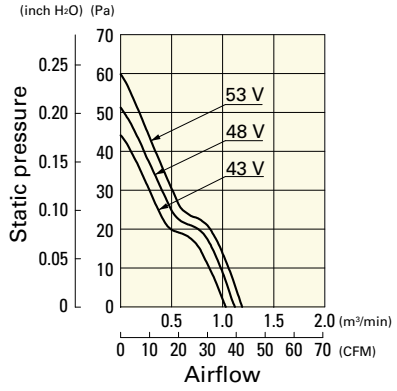
109P0824M201 With pulse sensor

Operating voltage range

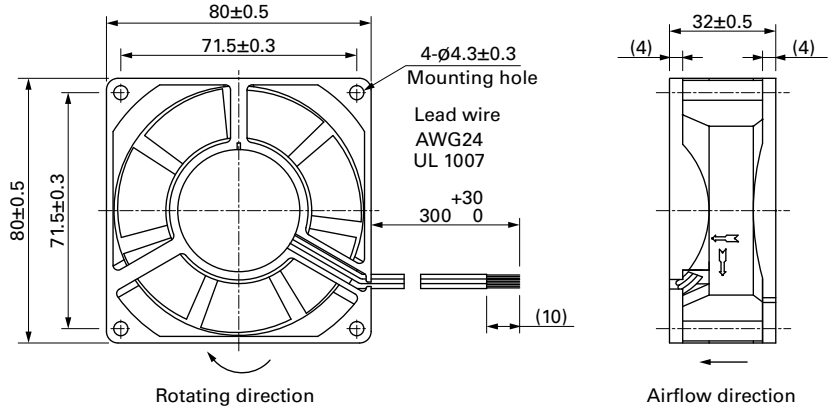


109P0848H201 With pulse sensor

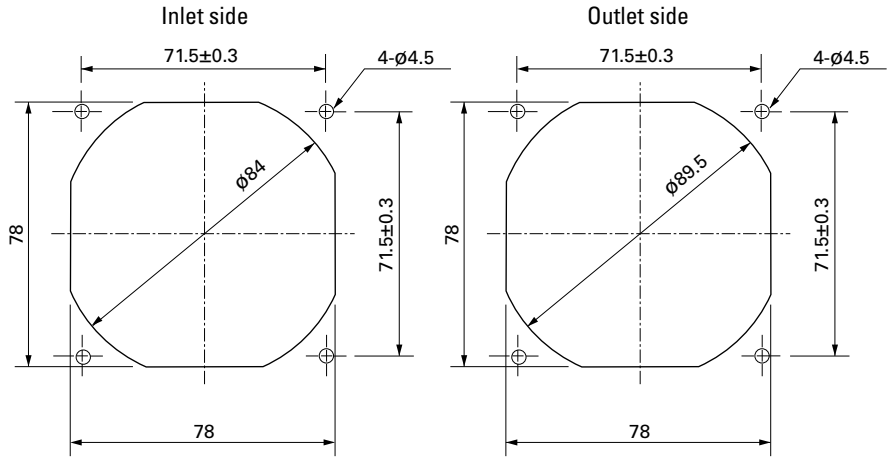
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits page: p. 521

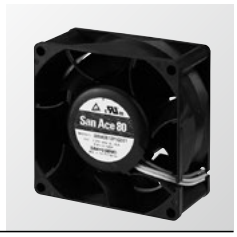
Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

80×80×38 mm

San Ace 80 9HVA type



General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 220 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

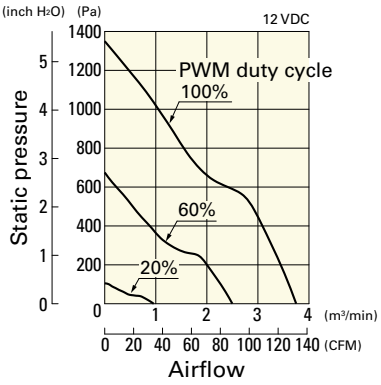
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9HVA0812P1G001	12	10.8 to 13.2	100	3.5	42	16100	3.75	132	1350	5.4	73	-20 to +70	40000/60˚C (70000/40˚C)
			20	0.2	2.4	4200	0.96	33.9	105	0.42	44		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

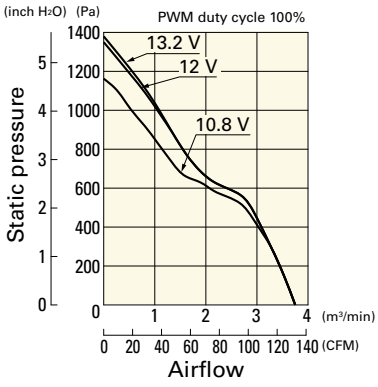
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HVA0812P1G001 With pulse sensor with PWM control function

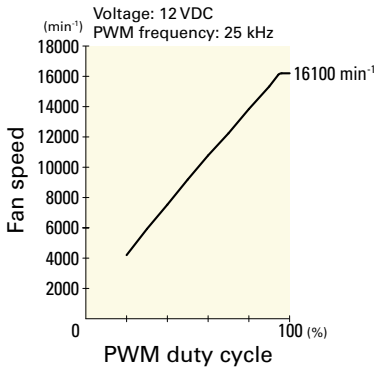
PWM duty cycle



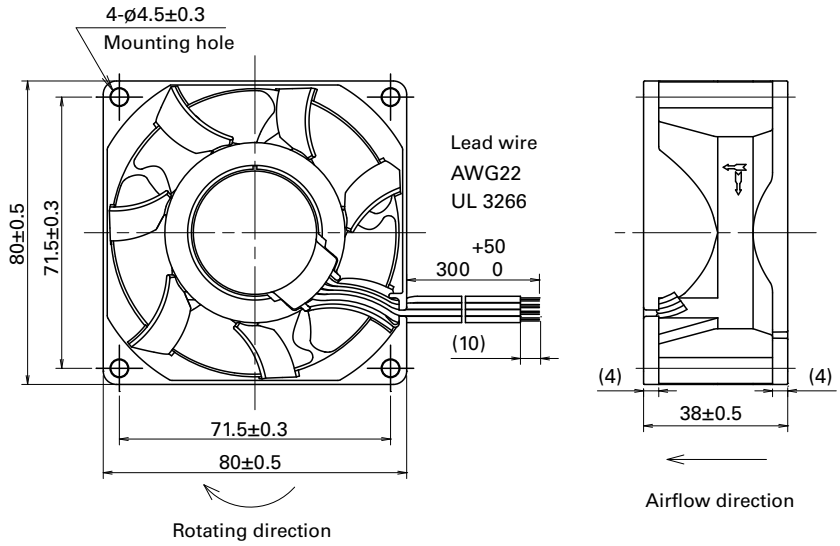
Operating voltage range



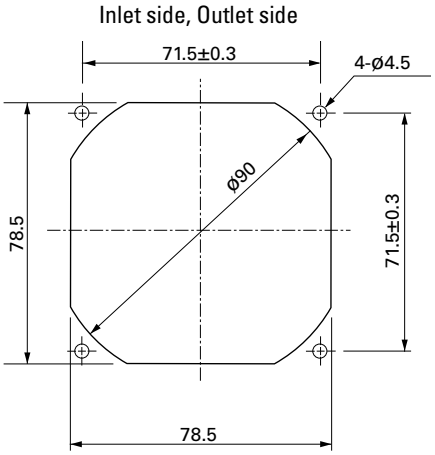
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

80×80×38 mm

San Ace 80 9HV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 230 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9HV0812P1G601	12	10.8 to 13.2	100	3.4	40.8	14900	3.7	130.7	1000	4.0	69	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.25	3	4400	1.06	37.5	87.2	0.35	40		
9HV0824P1G003**	24	21.6 to 26.4	100	1.7	40.8	14900	3.7	130.7	1000	4.0	69		
9HV0848P1G001	48	36 to 57	100	0.85	40.8	14900	3.7	130.7	1000	4.0	69	-10 to +70	
			0	0.13	6.24	4400	1.06	37.5	87.2	0.35	40		

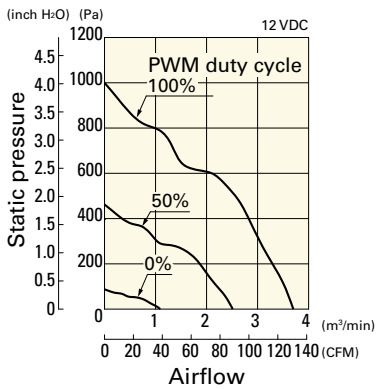
* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%. Model no. for a ribless frame model is 9HV0824P1G0011.

Other sensor specifications are available as options. Refer to the index (p. 556).

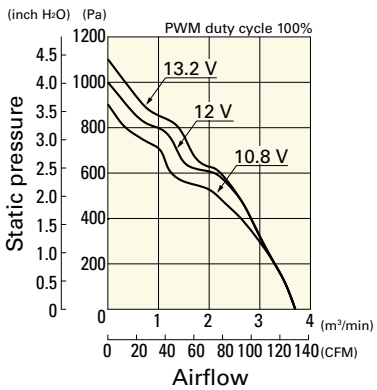
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV0812P1G601 With pulse sensor with PWM control function

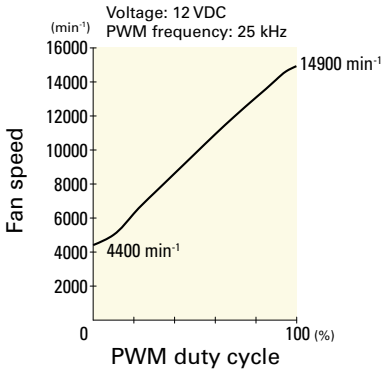
PWM duty cycle



Operating voltage range



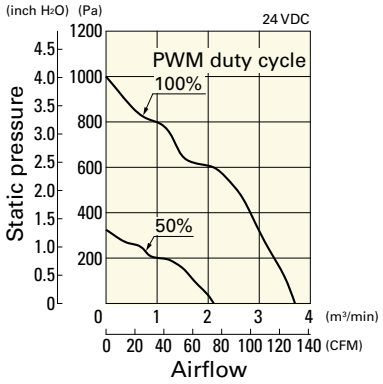
PWM duty - Speed characteristics example



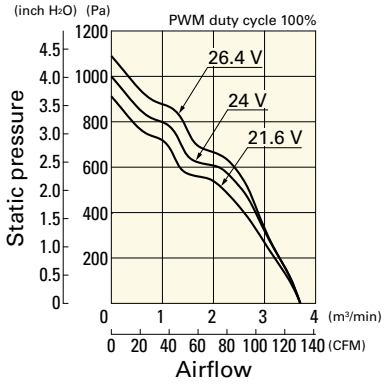
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV0824P1G003 With pulse sensor with PWM control function

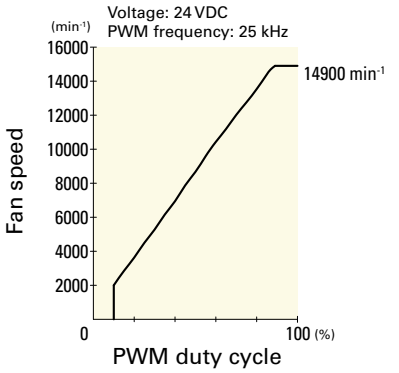
PWM duty cycle



Operating voltage range

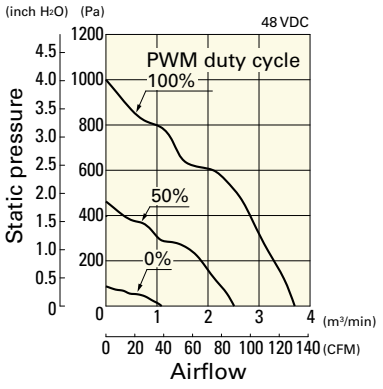


PWM duty - Speed characteristics example

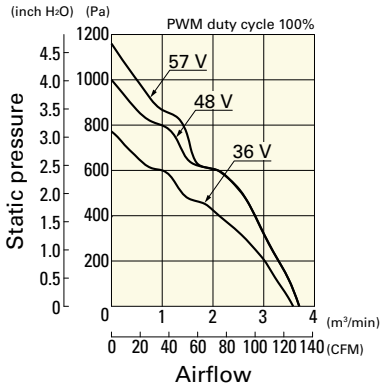


9HV0848P1G001 With pulse sensor with PWM control function

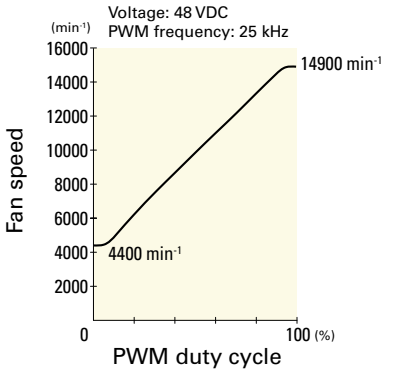
PWM duty cycle



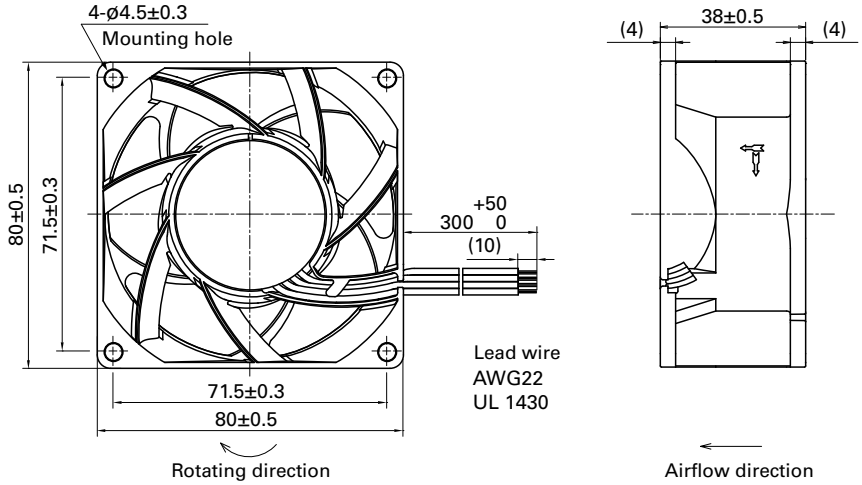
Operating voltage range



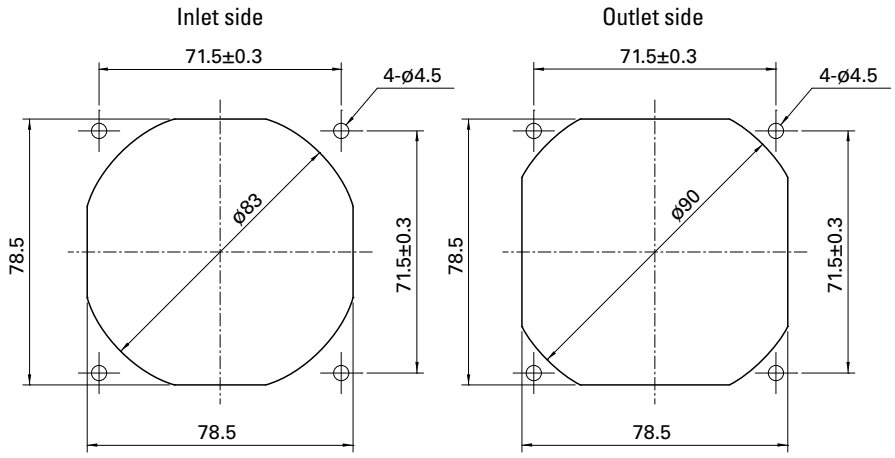
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI), 109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

80×80×38 mm

San Ace 80 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 160 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0812P1G61	12	10.8 to 13.2	100	1.2	14.4	10500	2.85	100.6	480	1.93	60	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.04	0.48	2000	0.51	18.0	28.7	0.11	21		
9GA0812P1S61			100	0.94	11.28	9550	2.6	91.8	480	1.93	59		
			0	0.1	1.2	2900	0.74	26.1	60	0.24	27		
9GA0812P1H61			100	0.6	7.2	8250	2.25	79.4	380	1.53	55		
			0	0.08	0.96	2500	0.64	22.6	45	0.18	24		
9GA0824P1S61	24	20.4 to 27.6	100	0.47	11.28	9550	2.6	91.8	480	1.93	59		
			0	0.06	1.44	2900	0.74	26.1	60	0.24	27		
9GA0824P1H61			100	0.3	7.2	8250	2.25	79.4	380	1.53	55		
			0	0.05	1.2	2500	0.64	22.6	45	0.18	24		
9GA0848P1S61	48	40.8 to 55.2	100	0.25	12	9550	2.6	91.8	480	1.93	59		
			0	0.04	1.92	2990	0.74	26.1	60	0.24	27		

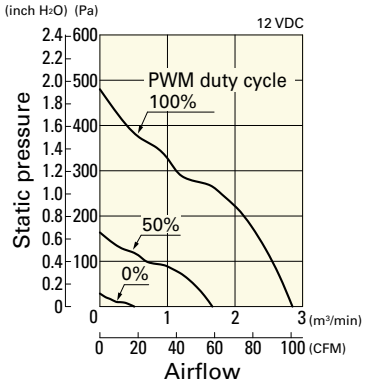
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (pp. 552 to 553).

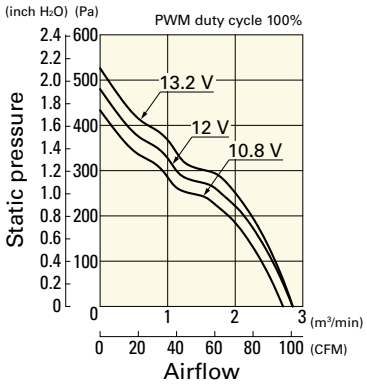
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P1G61 With pulse sensor with PWM control function

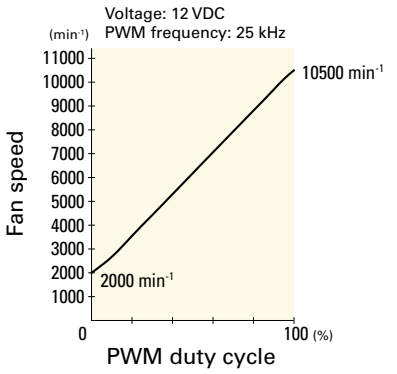
PWM duty cycle



Operating voltage range



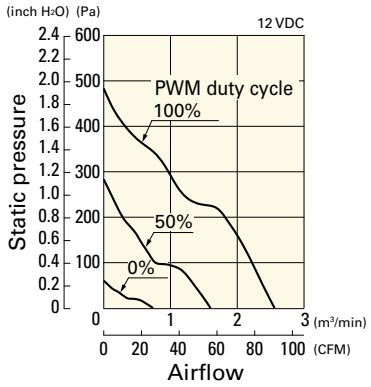
PWM duty - Speed characteristics example



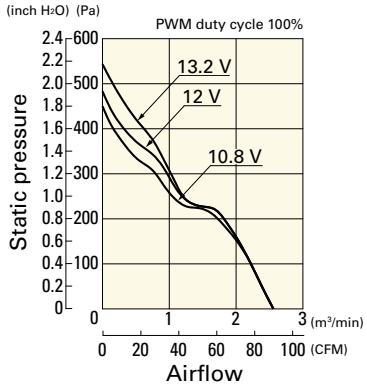
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0812P1S61 With pulse sensor with PWM control function

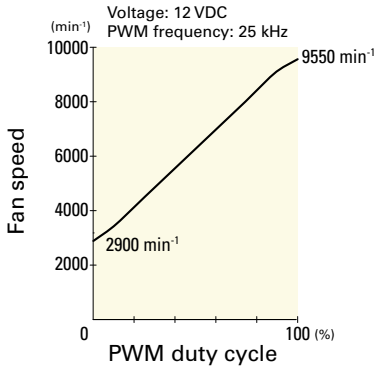
PWM duty cycle



Operating voltage range

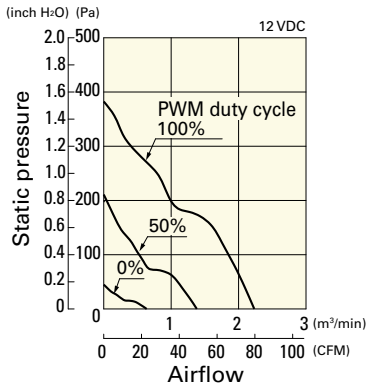


PWM duty - Speed characteristics example

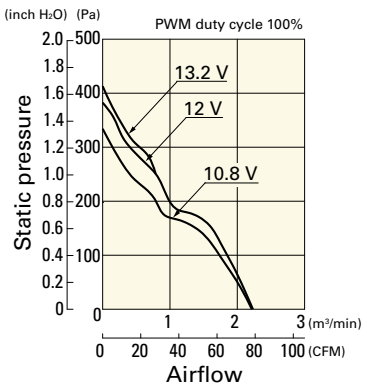


9GA0812P1H61 With pulse sensor with PWM control function

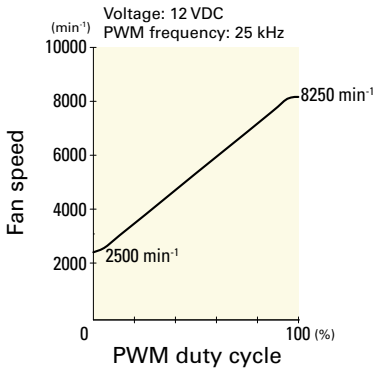
PWM duty cycle



Operating voltage range

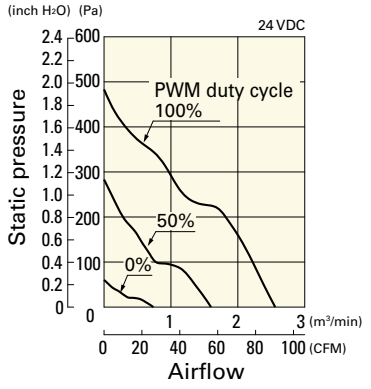


PWM duty - Speed characteristics example

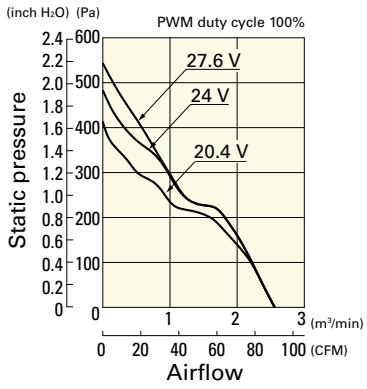


9GA0824P1S61 With pulse sensor with PWM control function

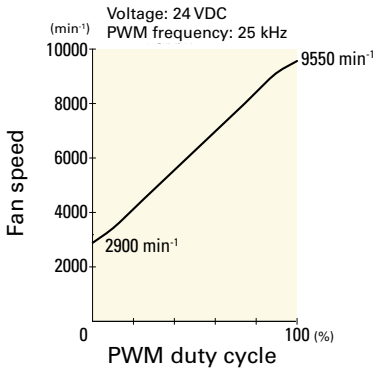
PWM duty cycle



Operating voltage range

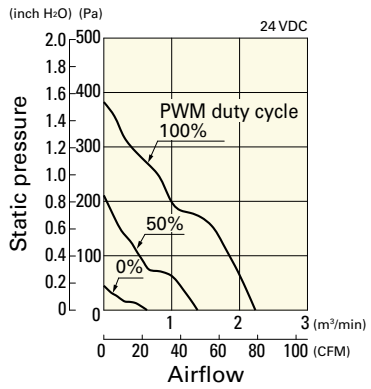


PWM duty - Speed characteristics example

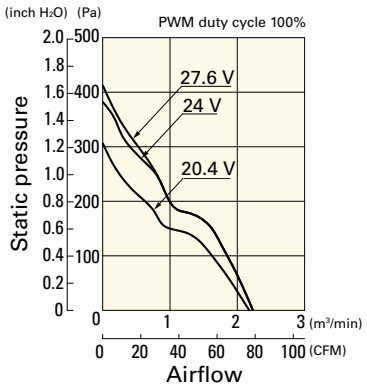


9GA0824P1H61 With pulse sensor with PWM control function

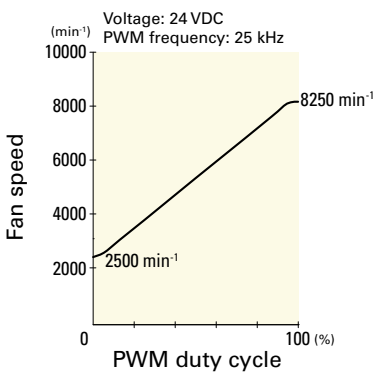
PWM duty cycle



Operating voltage range



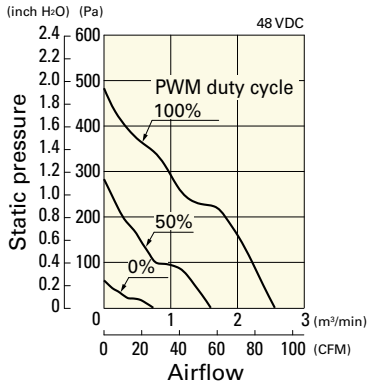
PWM duty - Speed characteristics example



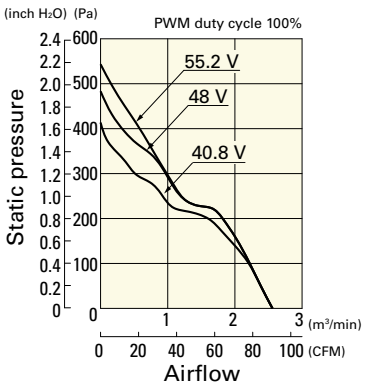
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0848P1S61 With pulse sensor with PWM control function

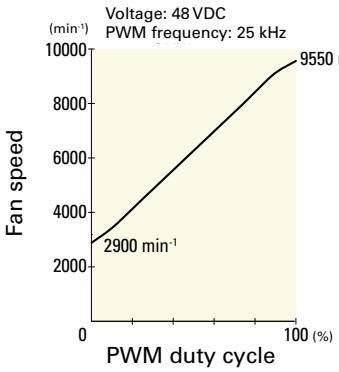
PWM duty cycle



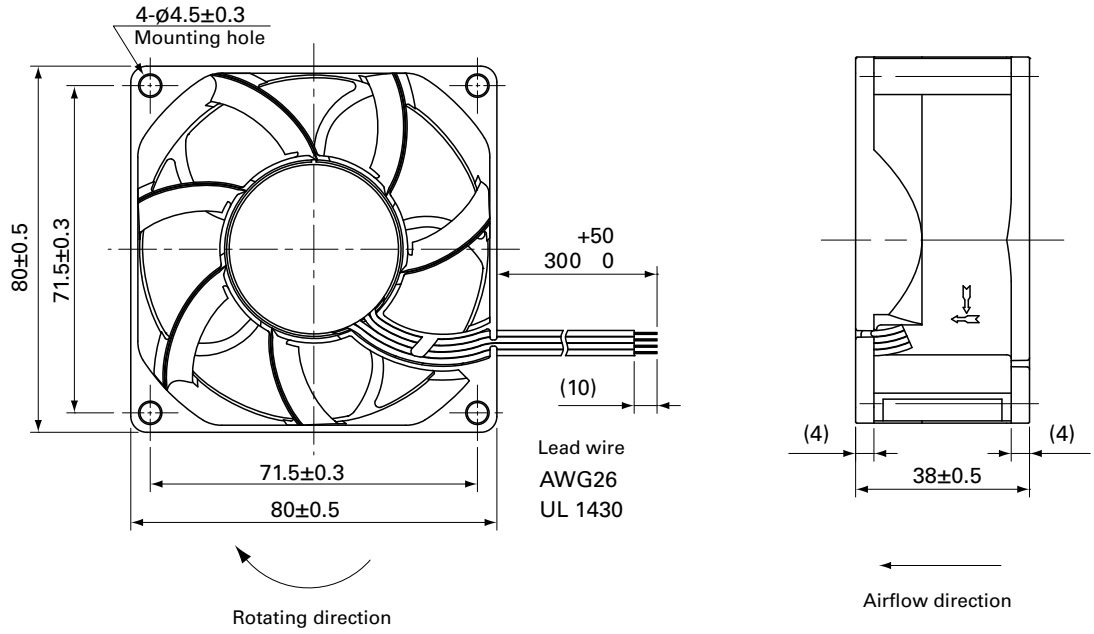
Operating voltage range



PWM duty - Speed characteristics example

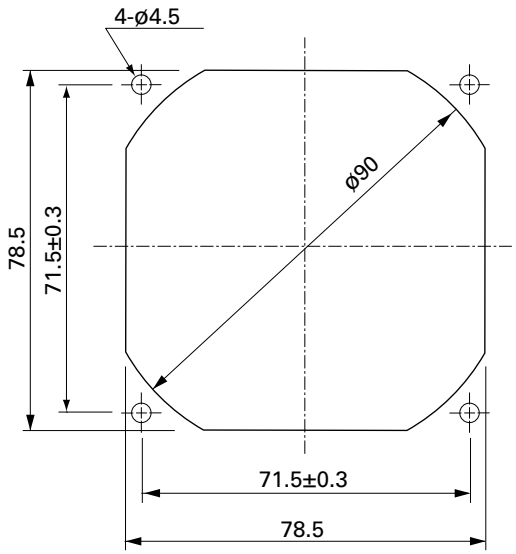


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards
page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits
page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards
page: p. 520

Model no.: 109-1002G

80×80×38 mm

San Ace 80 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 220 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV0812P1G03	12	10.8 to 13.2	100	3.8	45.6	10200	3.9	138.0	490.0	1.97	65	-20 to +70	40000/60˚C
			0	0.32	3.84	3000	1.15	40.6	42.4	0.17	34		
9GV0812P1H03			100	3.0	36.0	9700	3.7	131.0	440.0	1.77	63		
			0	0.2	2.4	2900	1.11	39.2	39.0	0.16	34		
9GV0812P1F03		10.2 to 13.8	100	1.5	18	8000	3.05	108.0	301.0	1.21	58		
			0	0.12	1.44	2400	0.92	32.0	27.1	0.11	26		
9GV0812P1M03			100	0.75	9	6000	2.29	81.0	169.0	0.68	51		
			0	0.09	1.08	1700	0.65	23.0	13.6	0.05	19		
9GV0824P1G03	24	20.4 to 27.6	100	1.6	38.4	10200	3.9	138.0	490.0	1.97	65		
			0	0.3	7.2	4700	1.79	63.2	104.0	0.41	44		
9GV0848P1G03	48	40.8 to 55.2	100	0.84	40.32	10200	3.9	138.0	490.0	1.97	65		
			0	0.15	7.2	4700	1.79	63.2	104.0	0.41	44		

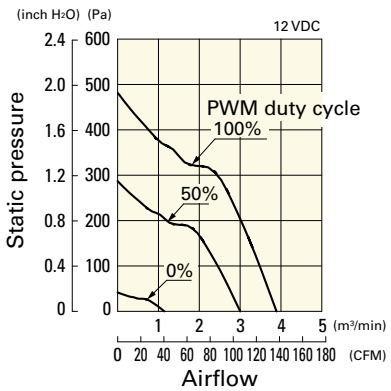
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 555).

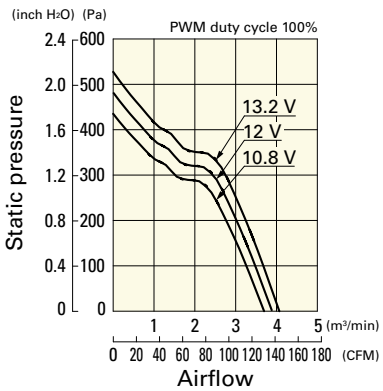
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0812P1G03 With pulse sensor with PWM control function

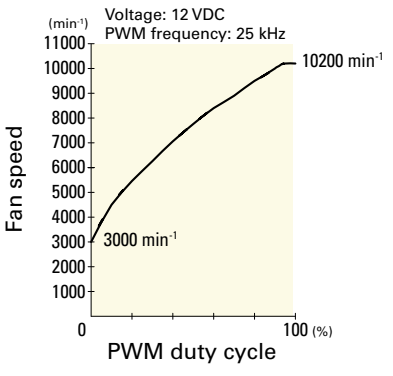
PWM duty cycle



Operating voltage range



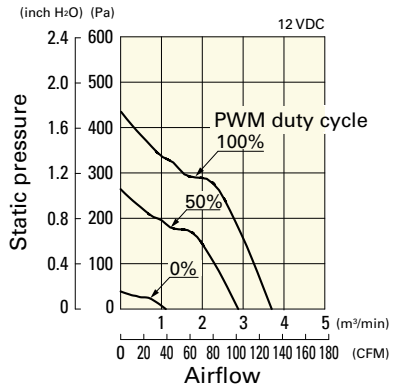
PWM duty - Speed characteristics example



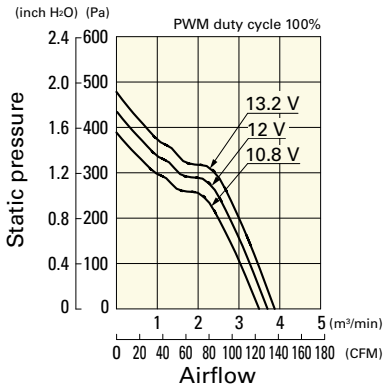
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0812P1H03 With pulse sensor with PWM control function

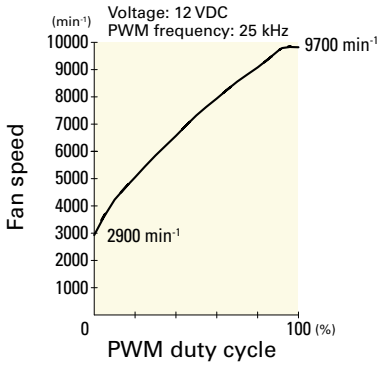
PWM duty cycle



Operating voltage range

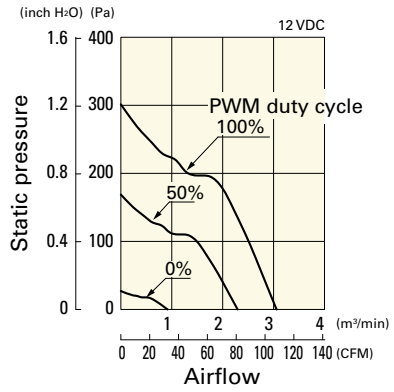


PWM duty - Speed characteristics example

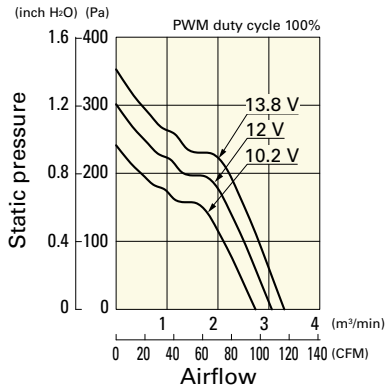


9GV0812P1F03 With pulse sensor with PWM control function

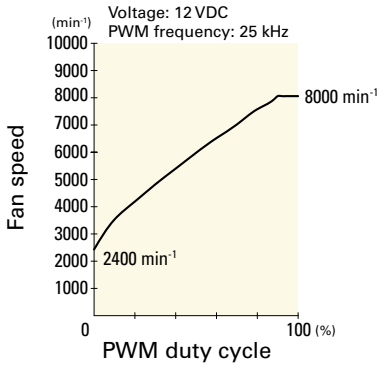
PWM duty cycle



Operating voltage range

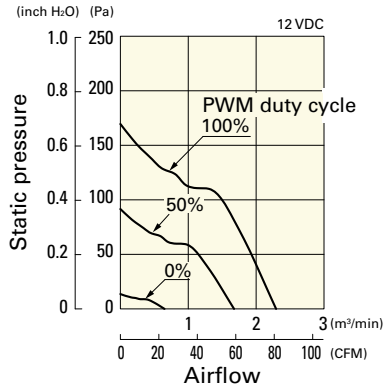


PWM duty - Speed characteristics example

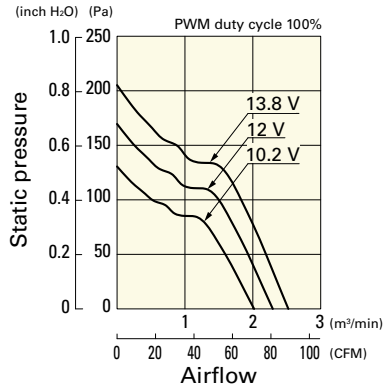


9GV0812P1M03 With pulse sensor with PWM control function

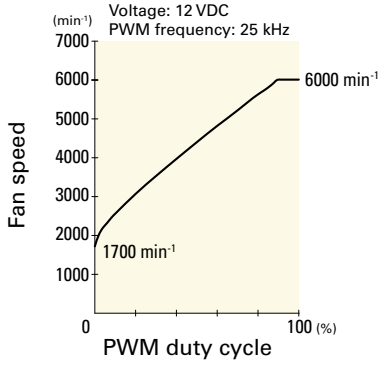
PWM duty cycle



Operating voltage range

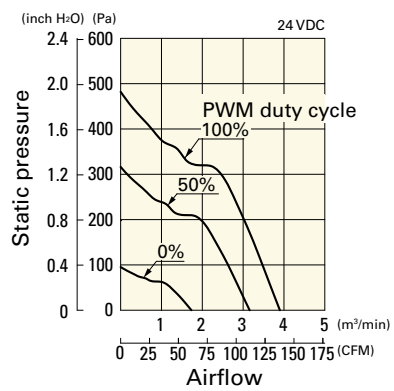


PWM duty - Speed characteristics example

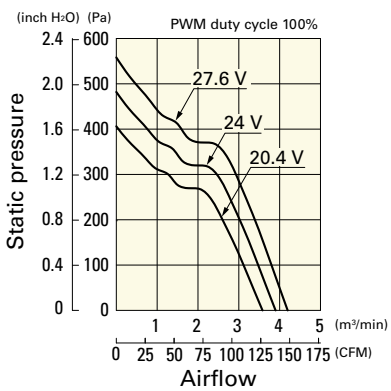


9GV0824P1G03 With pulse sensor with PWM control function

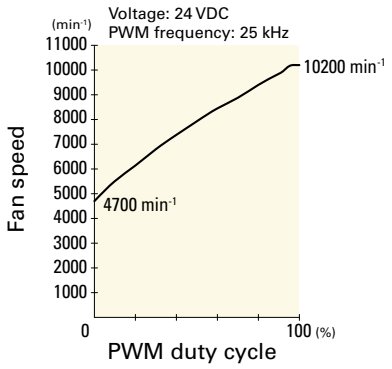
PWM duty cycle



Operating voltage range



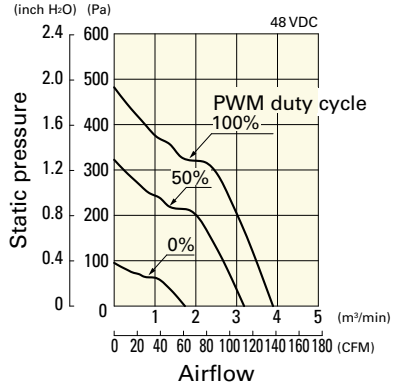
PWM duty - Speed characteristics example



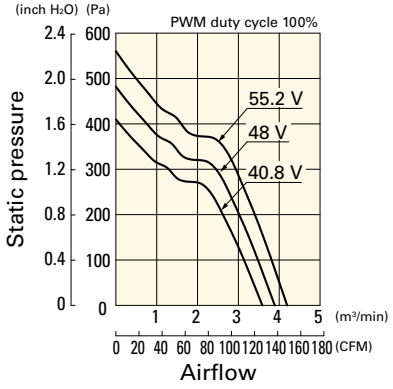
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0848P1G03 With pulse sensor with PWM control function

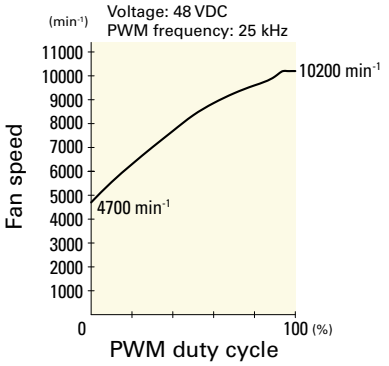
PWM duty cycle



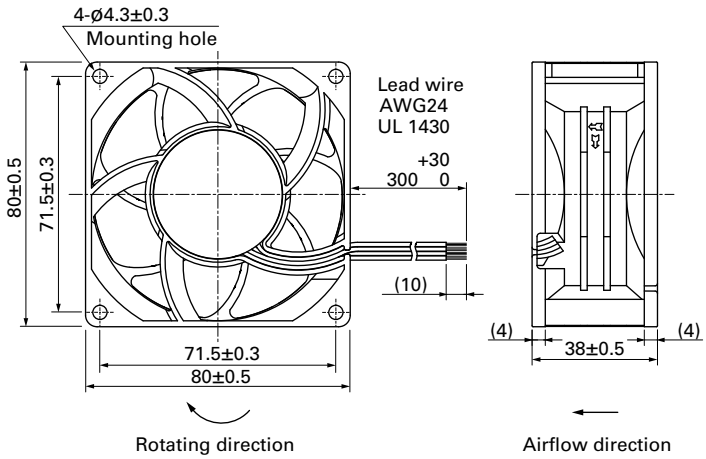
Operating voltage range



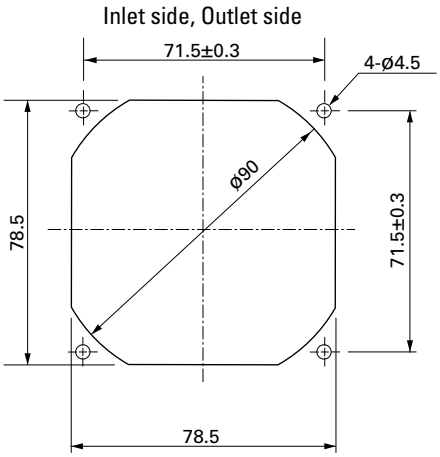
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

80×80×38 mm

San Ace 80 9G type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 170 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

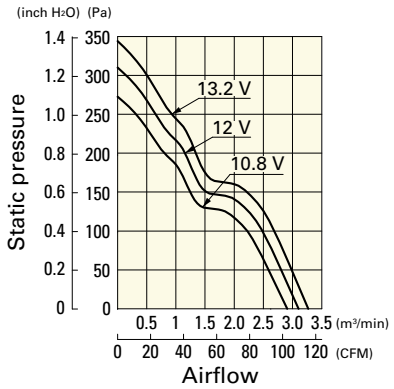
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9G0812K101	12	10.8 to 13.2	1.8	21.6	7800	3.1	107.3	310	1.285	58	-20 to +60	40000/60˚C
9G0812G101		7 to 13.8	1.1	13.2	6300	2.55	90	211	0.847	51	-20 to +70	
9G0812H101			0.9	10.8	5700	2.28	80	171	0.687	49		
9G0824G101	24	20.4 to 27.6	0.56	13.4	6300	2.55	90	211	0.847	51		
9G0824H101			0.42	10.1	5700	2.28	80	171	0.687	49		
9G0848G101	48	40.8 to 55.2	0.27	13.0	6300	2.55	90	211	0.847	51		
9G0848H101			0.2	9.6	5700	2.28	80	171	0.687	49		

Other sensor specifications are available as options. Refer to the index (p. 549).

Airflow - Static Pressure Characteristics

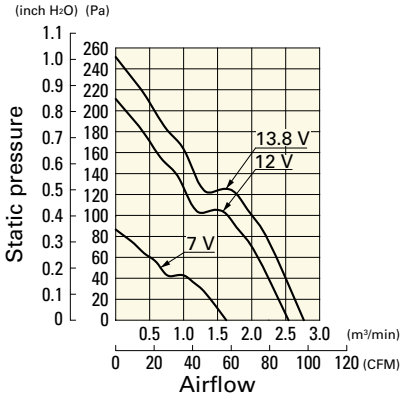
9G0812K101 With pulse sensor

Operating voltage range



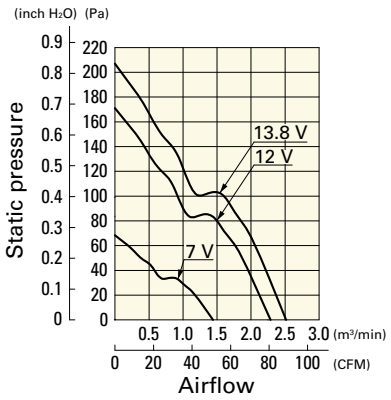
9G0812G101 With pulse sensor

Operating voltage range



9G0812H101 With pulse sensor

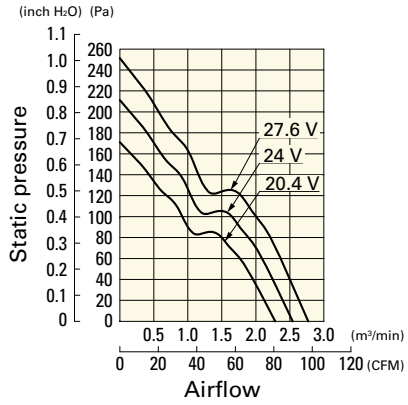
Operating voltage range



Airflow - Static Pressure Characteristics

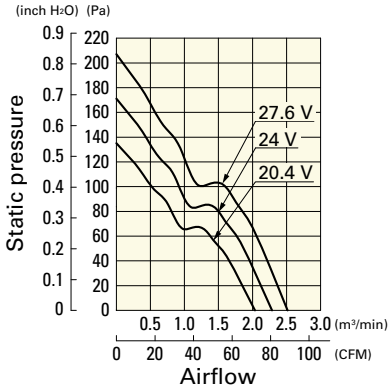
9G0824G101 With pulse sensor

Operating voltage range



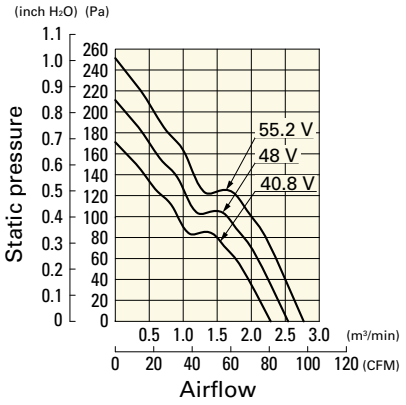
9G0824H101 With pulse sensor

Operating voltage range



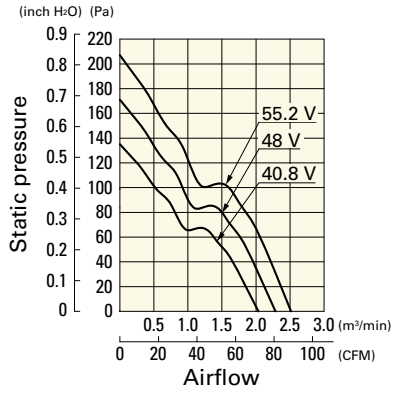
9G0848G101 With pulse sensor

Operating voltage range

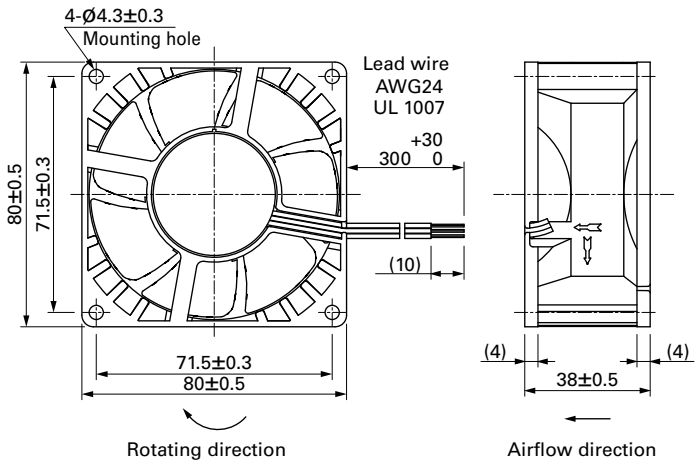


9G0848H101 With pulse sensor

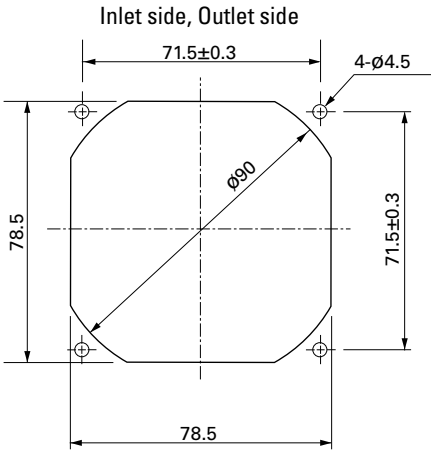
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

92×92×25 mm

San Ace 92 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 125 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0912P4J03	12	10.2 to 13.8	100	0.39	4.68	5000	2.2	77.7	105	0.42	43	-20 to +70	60000/60˚C
			0	0.06	0.72	1500	0.65	23.3	9.4	0.04	14		
9GA0912P4G03			100	0.28	3.36	4400	1.93	68.2	81	0.33	39		
			0	0.06	0.72	1500	0.65	23.3	9.4	0.04	14		
9GA0912P4S03			100	0.2	2.4	3800	1.67	59.0	60.6	0.24	35		
			0	0.06	0.72	1500	0.65	23.3	9.4	0.04	14		
9GA0924P4J03	24	20.4 to 27.6	100	0.2	4.8	5000	2.2	77.7	105	0.42	43		
			0	0.04	0.96	1500	0.65	23.3	9.4	0.04	14		
9GA0924P4G03			100	0.15	3.6	4400	1.93	68.2	81	0.33	39		
			0	0.04	0.96	1500	0.65	23.3	9.4	0.04	14		
9GA0924P4S03			100	0.12	2.88	3800	1.67	59.0	60.6	0.24	35		
			0	0.04	0.96	1500	0.65	23.3	9.4	0.04	14		

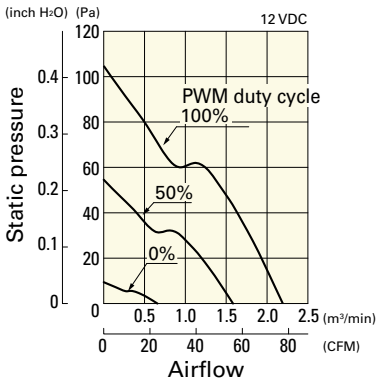
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 553).

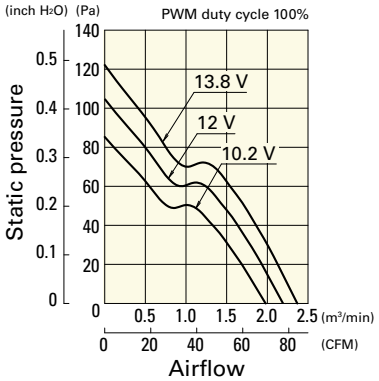
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0912P4J03 With pulse sensor with PWM control function

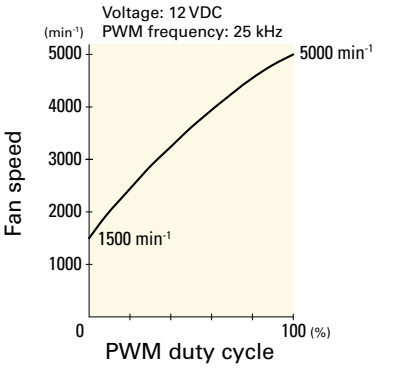
PWM duty cycle



Operating voltage range



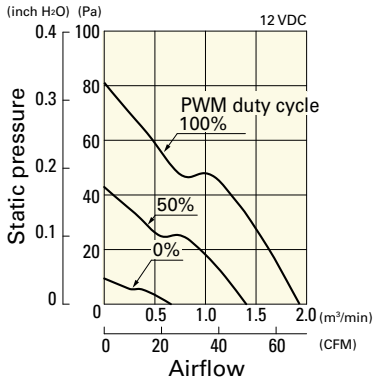
PWM duty - Speed characteristics example



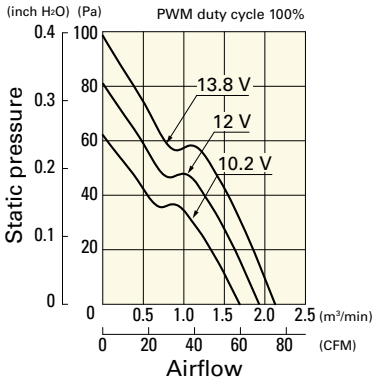
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0912P4G03 With pulse sensor with PWM control function

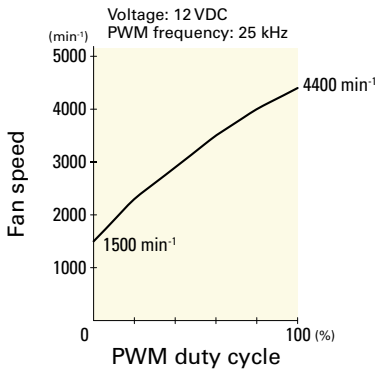
PWM duty cycle



Operating voltage range

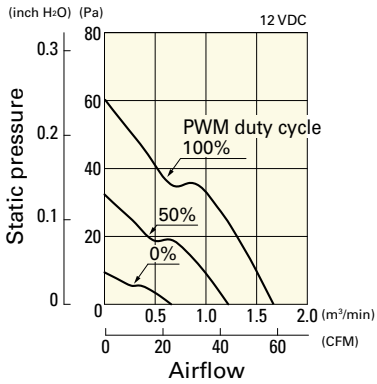


PWM duty - Speed characteristics example

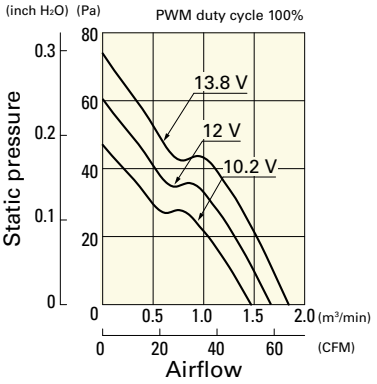


9GA0912P4S03 With pulse sensor with PWM control function

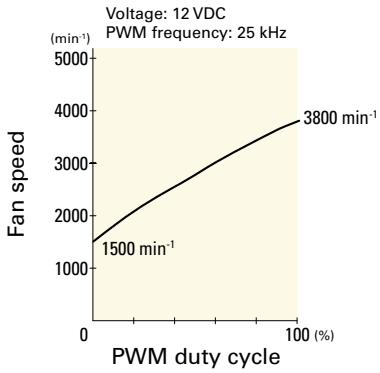
PWM duty cycle



Operating voltage range

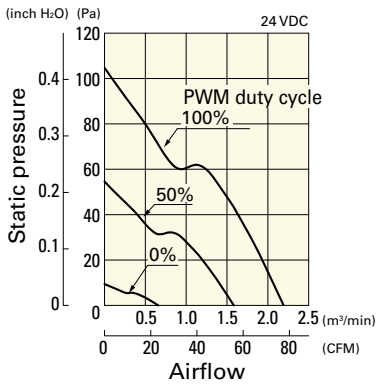


PWM duty - Speed characteristics example

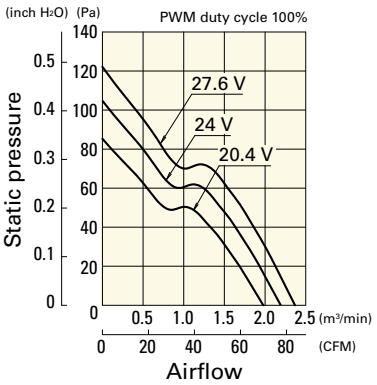


9GA0924P4J03 With pulse sensor with PWM control function

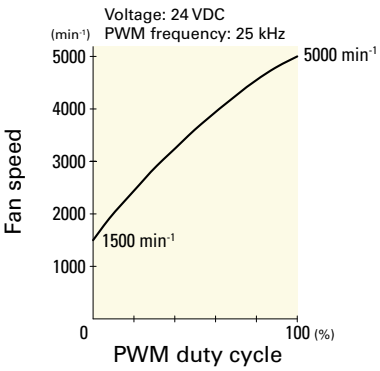
PWM duty cycle



Operating voltage range

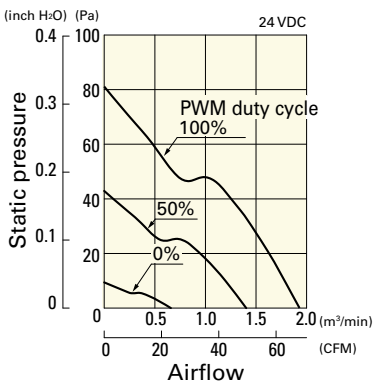


PWM duty - Speed characteristics example

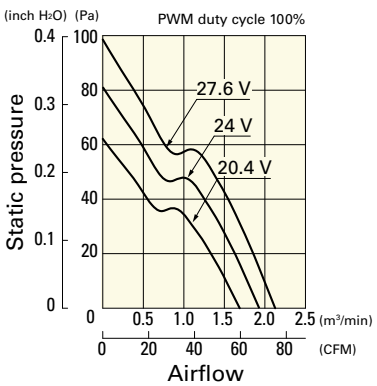


9GA0924P4G03 With pulse sensor with PWM control function

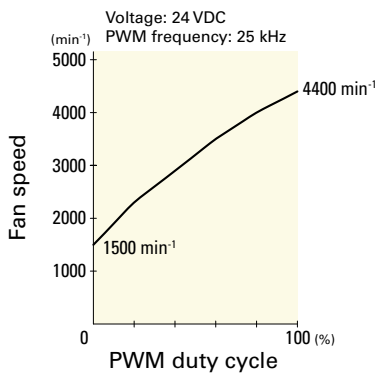
PWM duty cycle



Operating voltage range



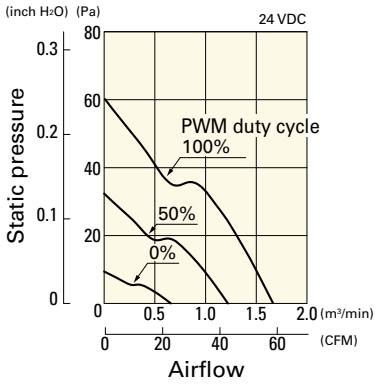
PWM duty - Speed characteristics example



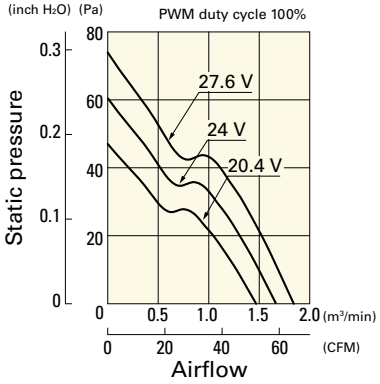
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0924P4S03 With pulse sensor with PWM control function

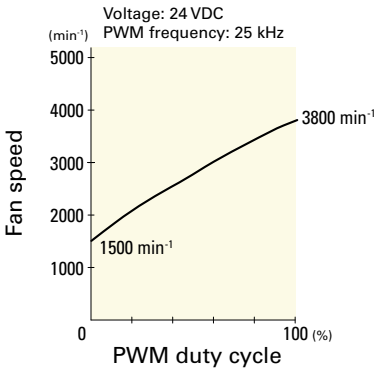
PWM duty cycle



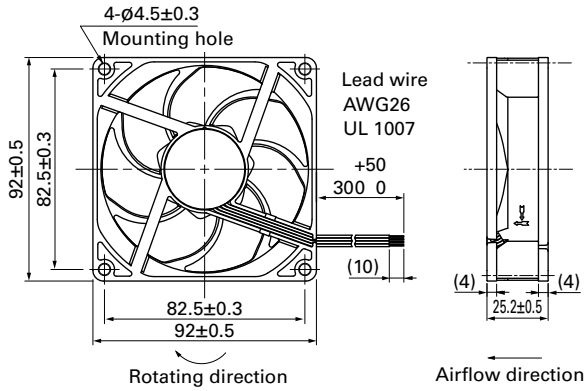
Operating voltage range



PWM duty - Speed characteristics example

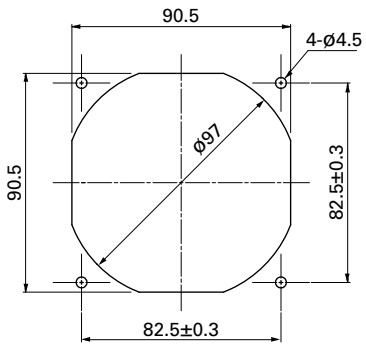


Dimensions (unit: mm) (With ribs)

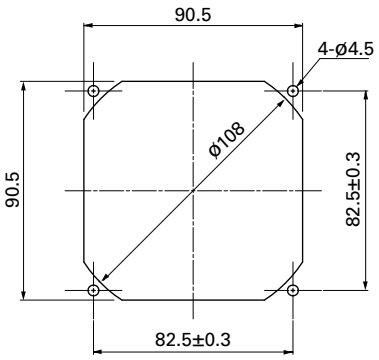


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side



Outlet side



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin finger guards page: p. 520

Model no.: 109-1001G

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

92×92×25 mm

San Ace 92 9S type Silent Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 100 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

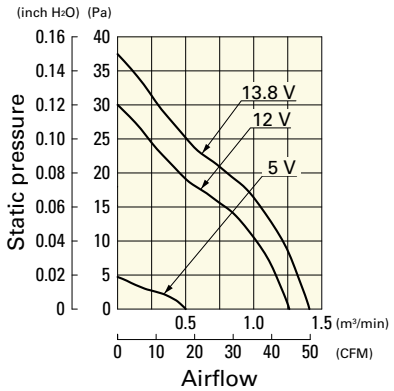
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9S0912F401	12	5.0 to 13.8	0.14	1.68	2650	1.26	44.5	30.0	0.12	27	-10 to +70	40000/60˚C
9S0912M401			0.11	1.32	2250	1.07	37.8	21.6	0.087	22		
9S0912L401		6.0 to 13.8	0.07	0.84	1750	0.83	29.3	13.1	0.053	17		
9S0924F401	24	14 to 26.4	0.09	2.16	2650	1.26	44.5	30.0	0.12	27		
9S0924M401			0.07	1.68	2250	1.07	37.8	21.6	0.087	22		
9S0924L401			0.04	0.96	1750	0.83	29.3	13.1	0.053	17		

Other sensor specifications are available as options. Refer to the index (pp. 557 to 558).

Airflow - Static Pressure Characteristics

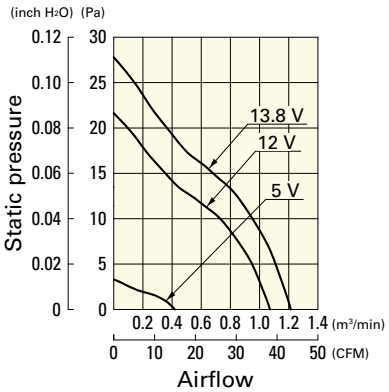
9S0912F401 With pulse sensor

Operating voltage range



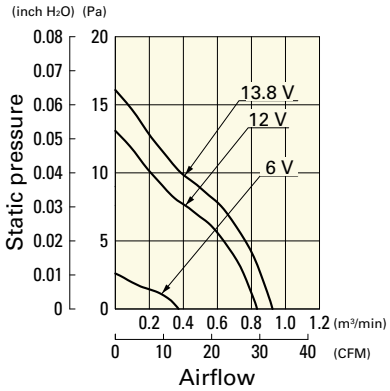
9S0912M401 With pulse sensor

Operating voltage range



9S0912L401 With pulse sensor

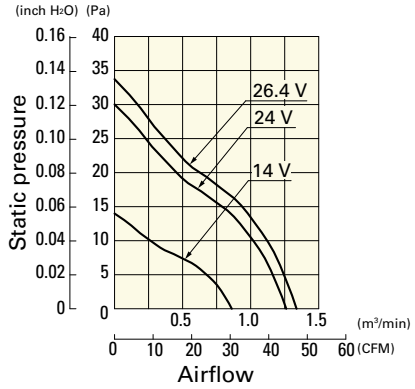
Operating voltage range



Airflow - Static Pressure Characteristics

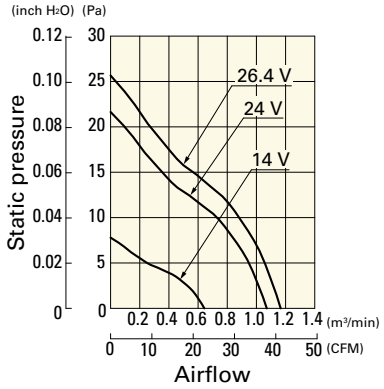
9S0924F401 With pulse sensor

Operating voltage range



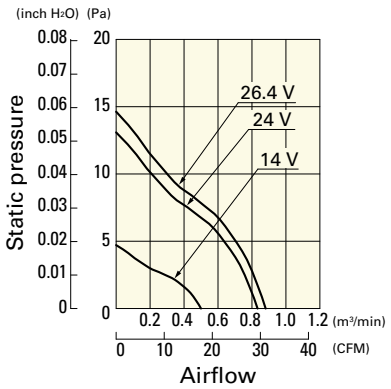
9S0924M401 With pulse sensor

Operating voltage range

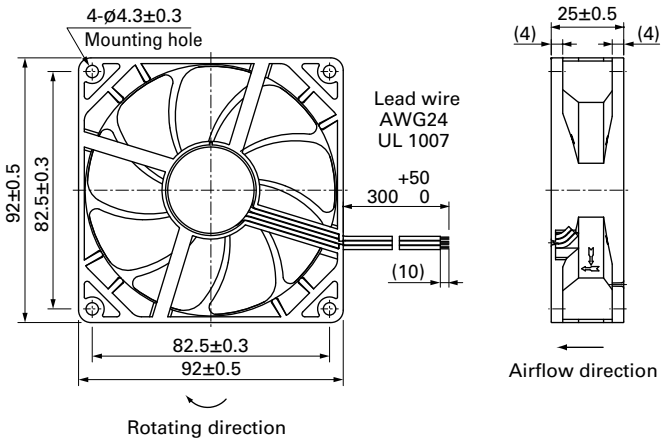


9S0924L401 With pulse sensor

Operating voltage range

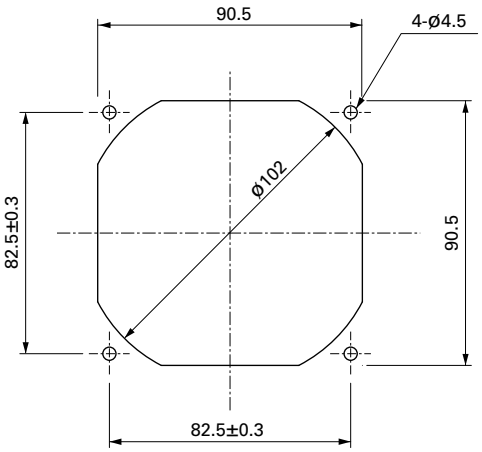


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin finger guards page: p. 520

Model no.: 109-1001G

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

92×92×25 mm

San Cooler 92 9A type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 100 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

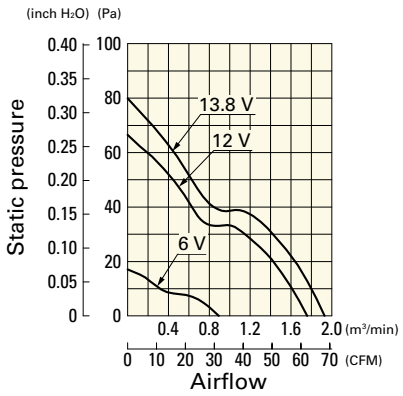
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9A0912G401	12	6 to 13.8	0.39	4.68	3900	1.76	62.1	66.5	0.267	43	-20 to +60	30000/60˚C
9A0912S401			0.27	3.24	3550	1.66	58.6	56.1	0.225	39		40000/60˚C
9A0912H401			0.21	2.52	3150	1.45	51.2	44	0.177	33	-20 to +70	
9A0912F401			0.14	1.68	2650	1.24	43.8	32.2	0.129	30		
9A0912M401			0.12	1.44	2250	1.04	36.7	22.6	0.091	27		
9A0912L401		7 to 13.8	0.07	0.84	1750	0.8	28.2	13.4	0.054	23		
9A0924G401	24	12 to 27.6	0.19	4.56	3900	1.76	62.1	66.5	0.267	43	-20 to +60	30000/60˚C
9A0924S401			0.15	3.6	3550	1.66	58.6	56.1	0.225	39	-20 to +70	40000/60˚C
9A0924H401			0.1	2.4	3150	1.45	51.2	44	0.177	33		
9A0924F401			0.08	1.92	2650	1.24	43.8	32.2	0.129	30		
9A0924M401			0.05	1.2	2250	1.04	36.7	22.6	0.091	27		
9A0924L401		14 to 27.6	0.04	0.96	1750	0.8	28.2	13.4	0.054	23		
9A0948S401	48	40.5 to 53	0.08	3.84	3550	1.66	58.6	56.1	0.225	39	-20 to +60	

Other sensor specifications are available as options. Refer to the index (p. 547).

Airflow - Static Pressure Characteristics

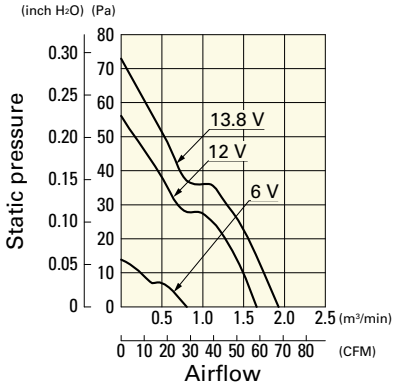
9A0912G401 With pulse sensor

Operating voltage range



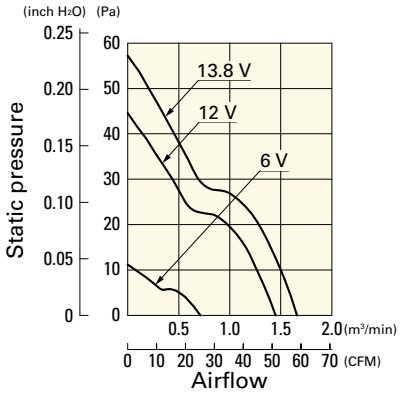
9A0912S401 With pulse sensor

Operating voltage range



9A0912H401 With pulse sensor

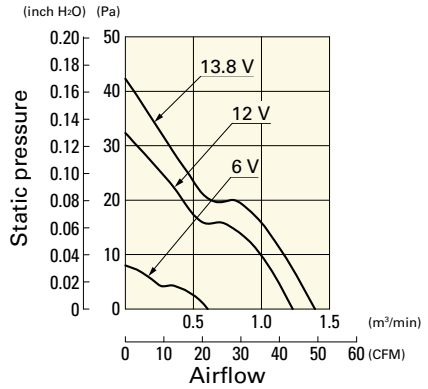
Operating voltage range



Airflow - Static Pressure Characteristics

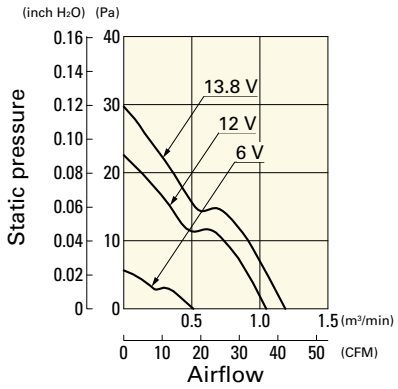
9A0912F401 With pulse sensor

Operating voltage range



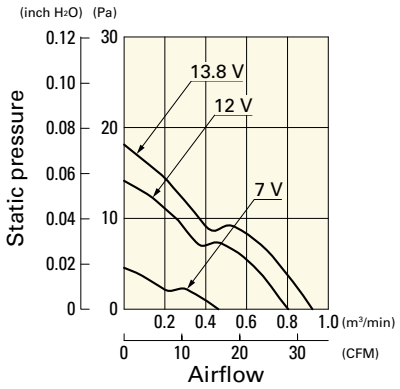
9A0912M401 With pulse sensor

Operating voltage range



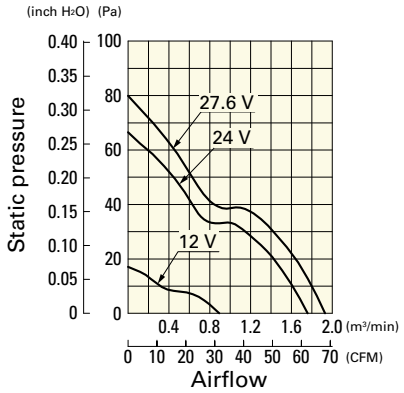
9A0912L401 With pulse sensor

Operating voltage range



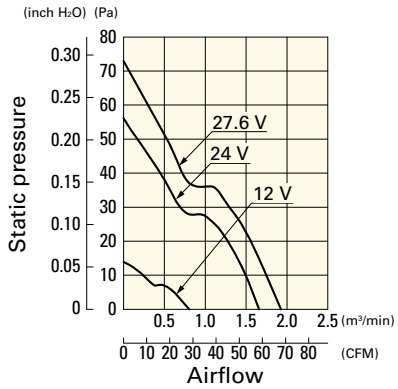
9A0924G401 With pulse sensor

Operating voltage range



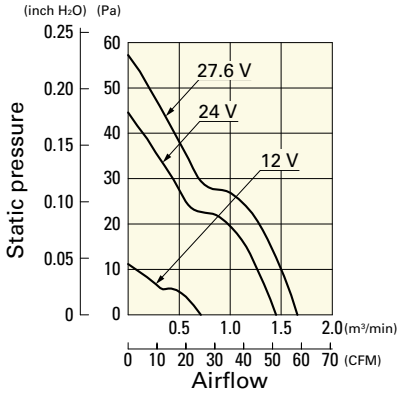
9A0924S401 With pulse sensor

Operating voltage range



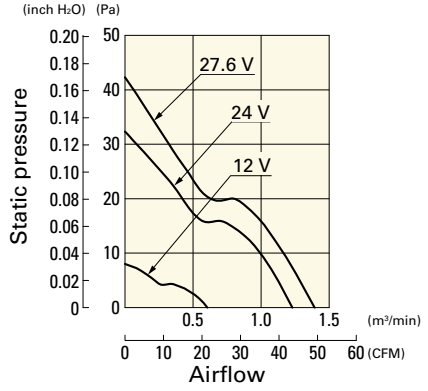
9A0924H401 With pulse sensor

Operating voltage range



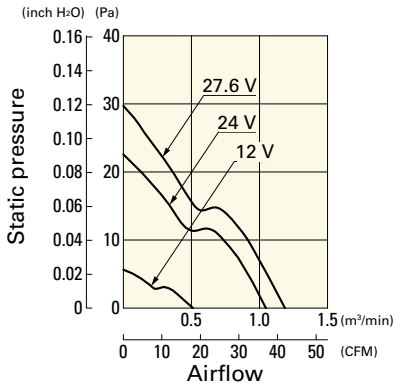
9A0924F401 With pulse sensor

Operating voltage range



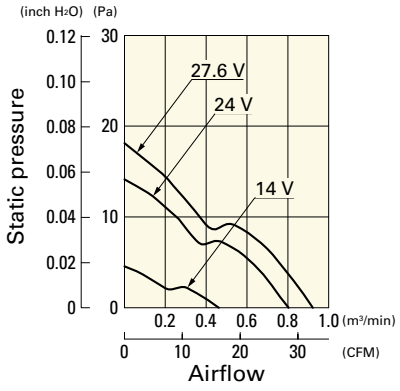
9A0924M401 With pulse sensor

Operating voltage range



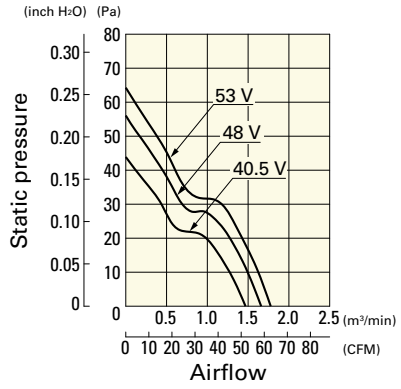
9A0924L401 With pulse sensor

Operating voltage range

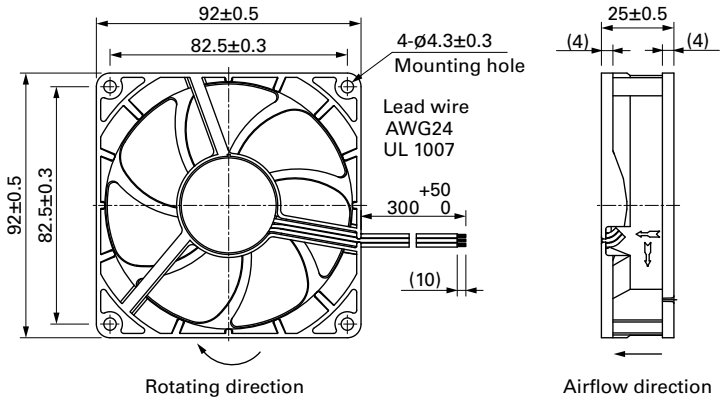


9A0948S401 With pulse sensor

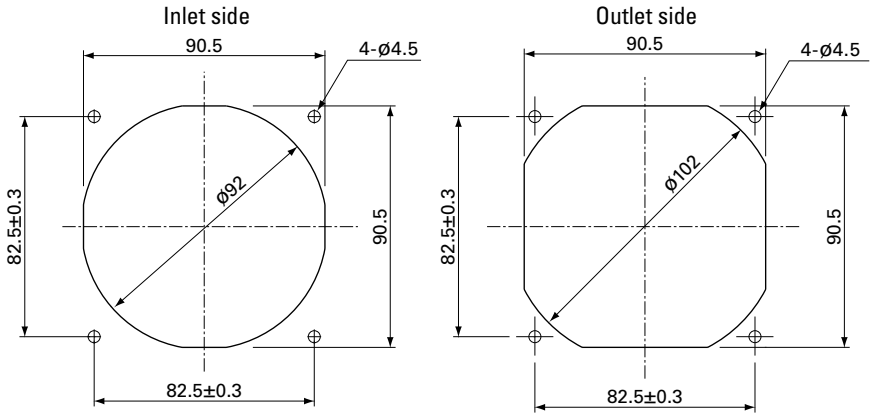
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1001G

92×92×32 mm

San Ace 92 9G type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 170 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

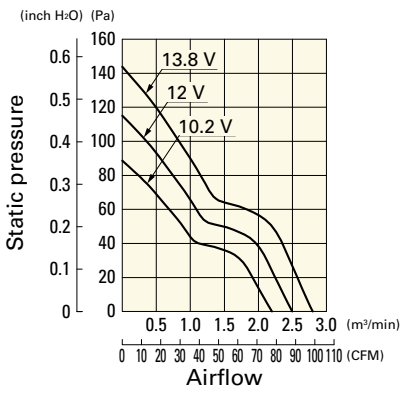
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9G0912A201	12	10.2 to 13.8	0.58	6.96	4300	2.5	88.3	115	0.462	44	-20 to +70	40000/60˚C
9G0912S201			0.38	4.56	3500	2.0	70.7	77	0.309	38		
9G0912H201			0.23	2.76	2850	1.59	56.2	51	0.205	32		
9G0912M201			0.13	1.56	2100	1.2	42.4	27	0.108	25		
9G0924A201	24	20.4 to 27.6	0.3	7.2	4300	2.5	88.3	115	0.462	44	-20 to +60	
9G0924S201			0.19	4.56	3500	2.0	70.7	77	0.309	38	-20 to +70	
9G0924H201			0.12	2.88	2850	1.59	56.2	51	0.205	32		
9G0924M201			0.08	1.92	2100	1.2	42.4	27	0.108	25		
9G0948A201	48	40.8 to 55.2	0.16	7.68	4300	2.5	88.3	115	0.462	44		
9G0948S201			0.11	5.28	3500	2.0	70.7	77	0.309	38		
9G0948H201			0.08	3.84	2850	1.59	56.2	51	0.205	32		
9G0948M201			0.05	2.4	2100	1.2	42.4	27	0.108	25		

Other sensor specifications are available as options. Refer to the index (pp. 549 to 550).

Airflow - Static Pressure Characteristics

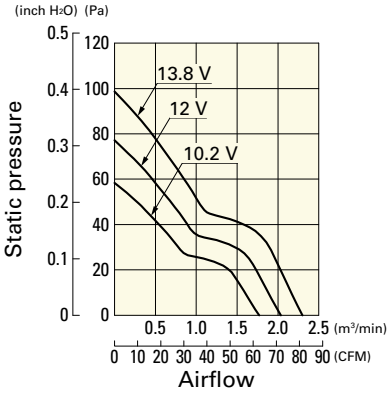
9G0912A201 With pulse sensor

Operating voltage range



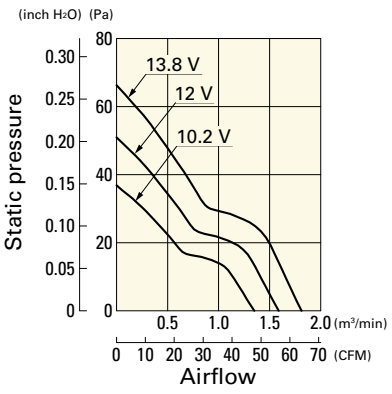
9G0912S201 With pulse sensor

Operating voltage range



9G0912H201 With pulse sensor

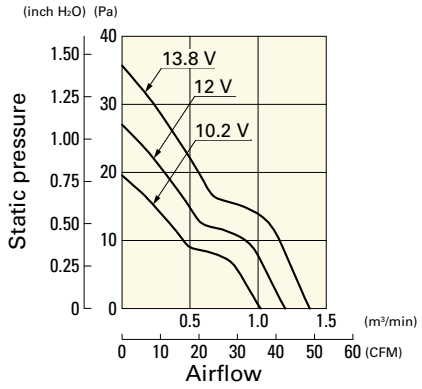
Operating voltage range



Airflow - Static Pressure Characteristics

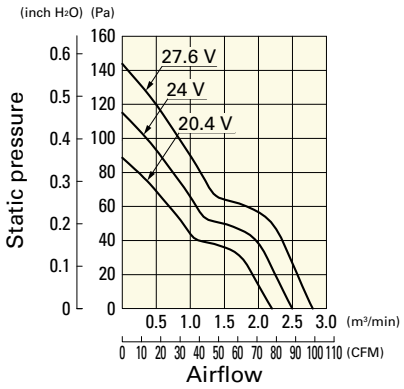
9G0912M201 With pulse sensor

Operating voltage range



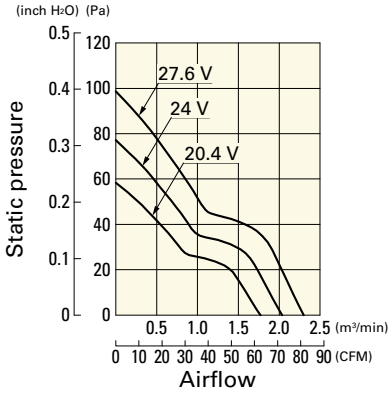
9G0924A201 With pulse sensor

Operating voltage range



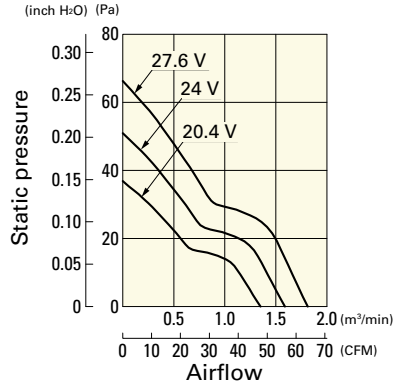
9G0924S201 With pulse sensor

Operating voltage range



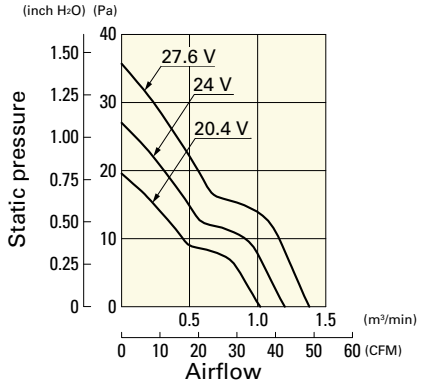
9G0924H201 With pulse sensor

Operating voltage range



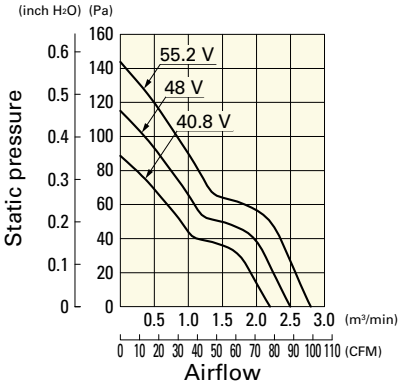
9G0924M201 With pulse sensor

Operating voltage range



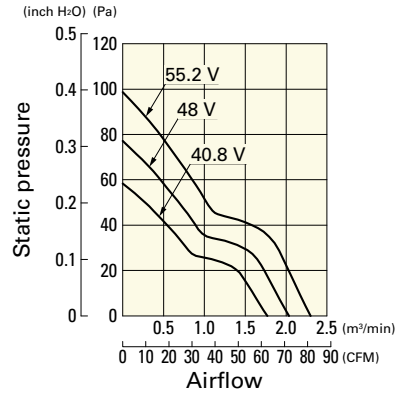
9G0948A201 With pulse sensor

Operating voltage range



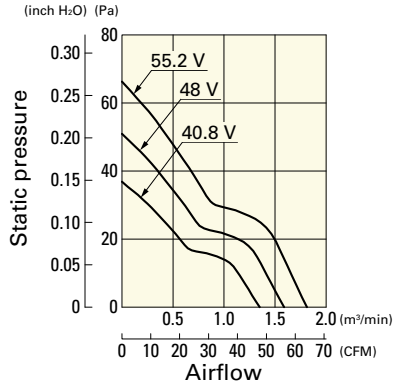
9G0948S201 With pulse sensor

Operating voltage range



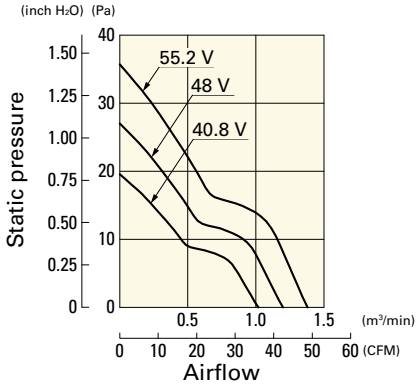
9G0948H201 With pulse sensor

Operating voltage range

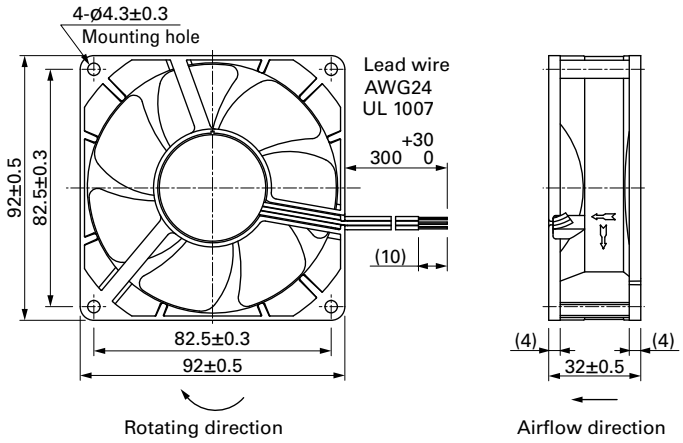


9G0948M201 With pulse sensor

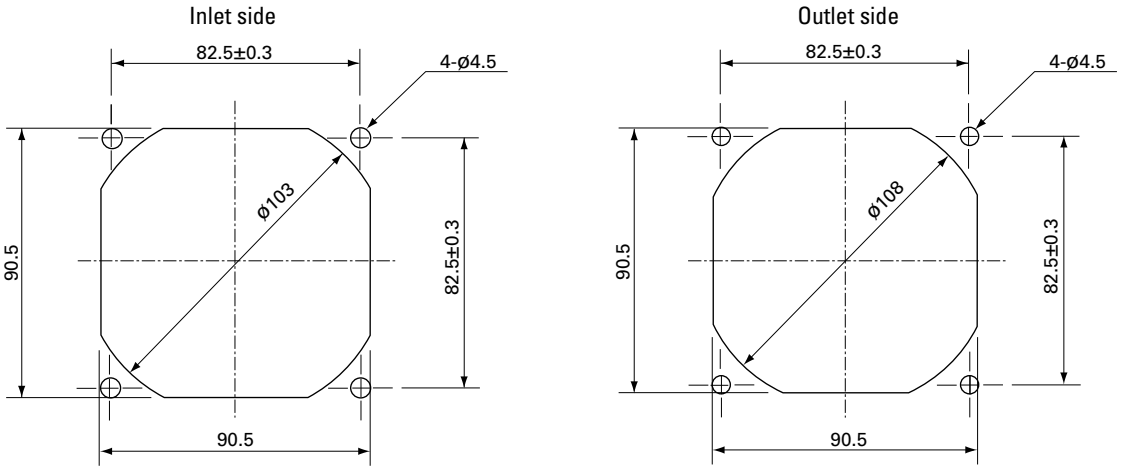
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1001G

92×92×38 mm

San Ace 92 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 240 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0912P1H03	12	10.2 to 13.8	100	2.1	25.2	9700	4.0	141	500	2.01	63	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.16	1.92	2500	0.97	34.3	33	0.13	29		
9GA0924P1H01	24	20.4 to 27.6	100	1.1	26.4	9700	4.0	141	500	2.01	63	-10 to +70	
			0	0.07	1.68	2500	0.97	34.3	33	0.13	29		
9GA0948P1H03**	48	40.8 to 55.2	100	0.55	26.4	9700	4.0	141	500	2.01	63	-20 to +70	

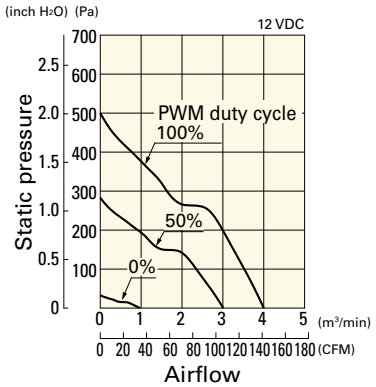
* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 553).

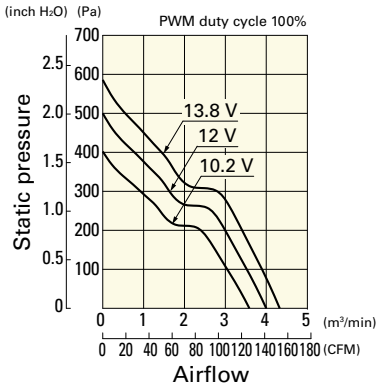
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0912P1H03 With pulse sensor with PWM control function

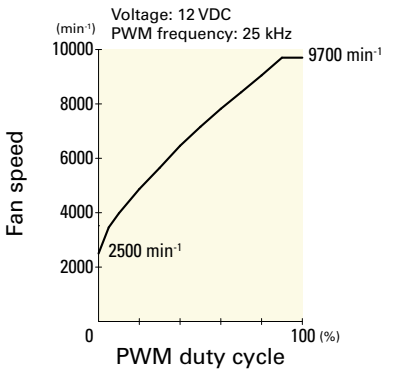
PWM duty cycle



Operating voltage range



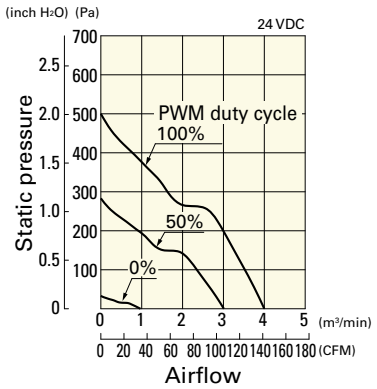
PWM duty - Speed characteristics example



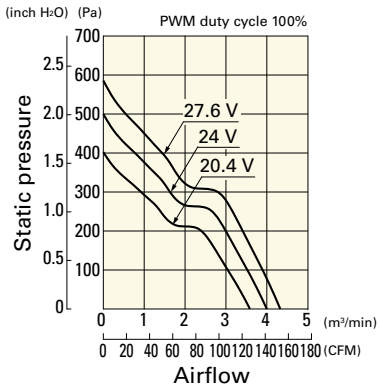
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0924P1H01 With pulse sensor with PWM control function

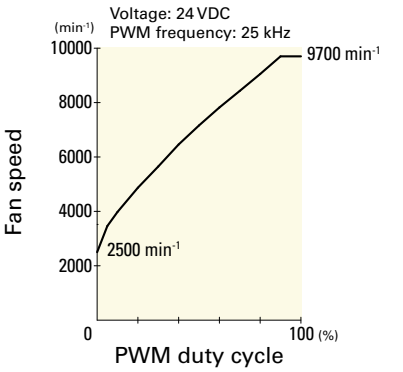
PWM duty cycle



Operating voltage range

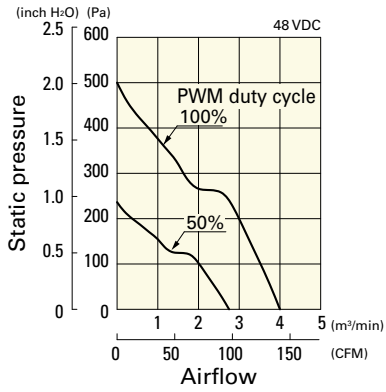


PWM duty - Speed characteristics example

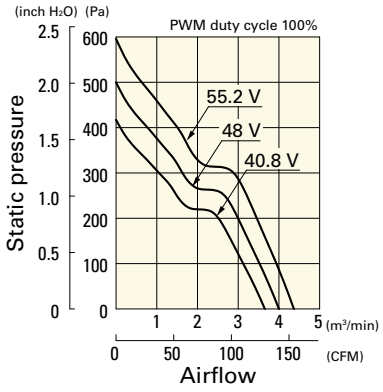


9GA0948P1H03 With pulse sensor with PWM control function

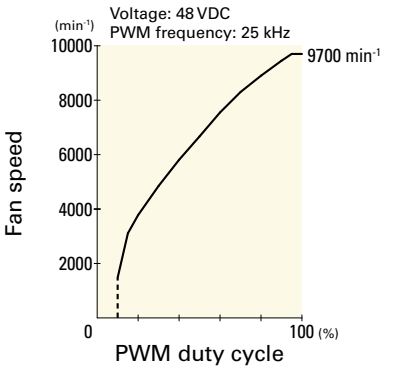
PWM duty cycle



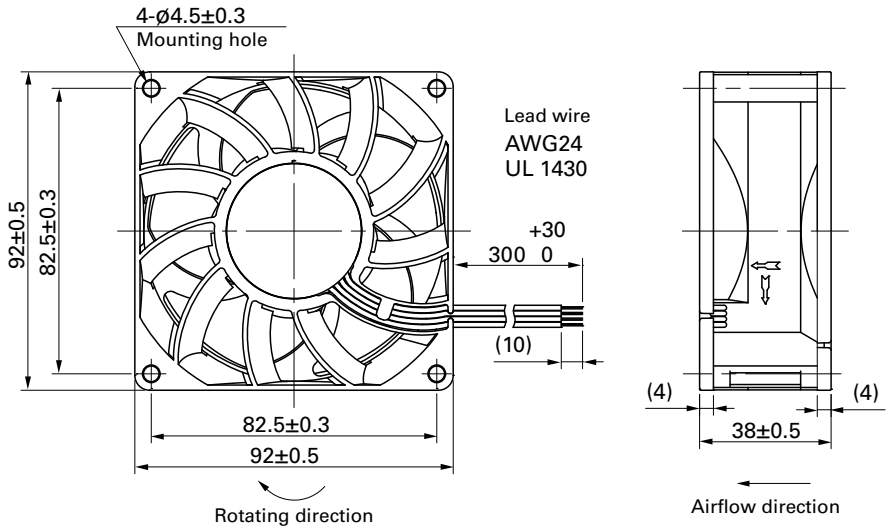
Operating voltage range



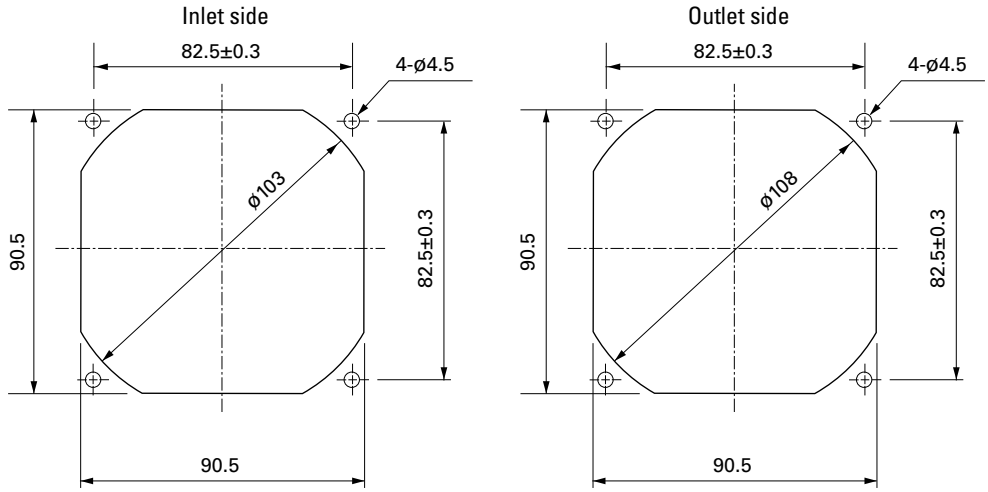
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards
page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits
page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards
page: p. 520

Model no.: 109-1001G

92×92×38 mm

San Ace 92 9HV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 250 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

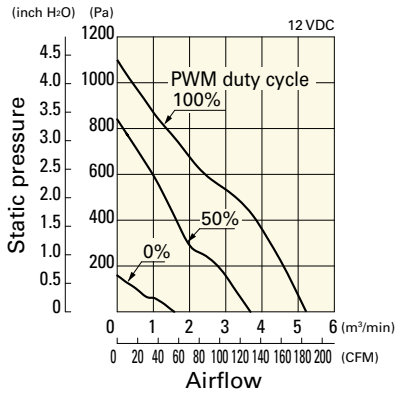
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9HV0912P1G001	12	8 to 12.6	100	5.2	62.4	14900	5.1	180	1100	4.42	72	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.8	9.6	4500	1.54	54.4	160	0.64	44		
9HV0948P1G001	48	36 to 60	100	1.2	57.6	14900	5.1	180	1100	4.42	72		
			0	0.15	7.2	4500	1.54	54.4	160	0.64	44		

* PWM frequency: 25 kHz

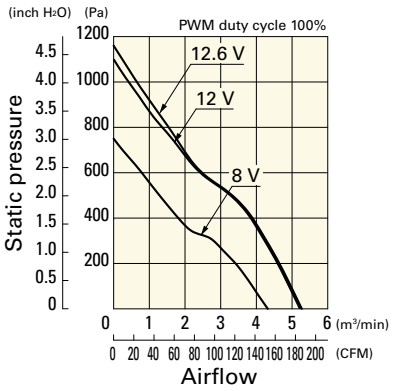
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV0912P1G001 With pulse sensor with PWM control function

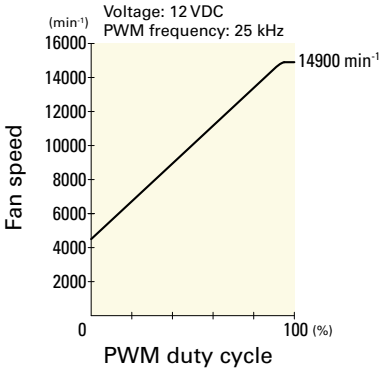
PWM duty cycle



Operating voltage range

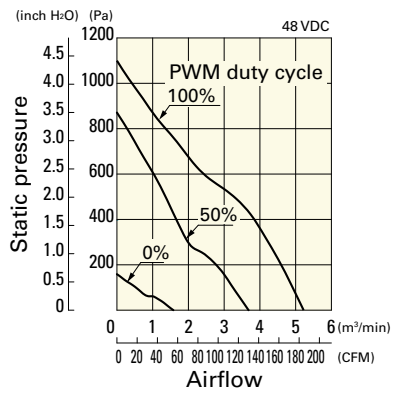


PWM duty - Speed characteristics example

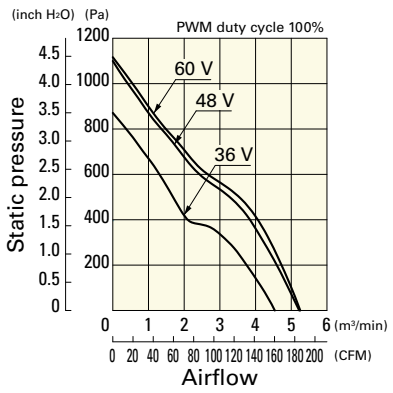


9HV0948P1G001 With pulse sensor with PWM control function

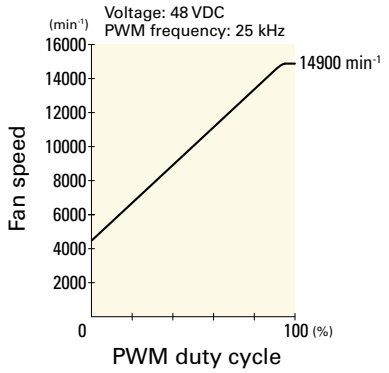
PWM duty cycle



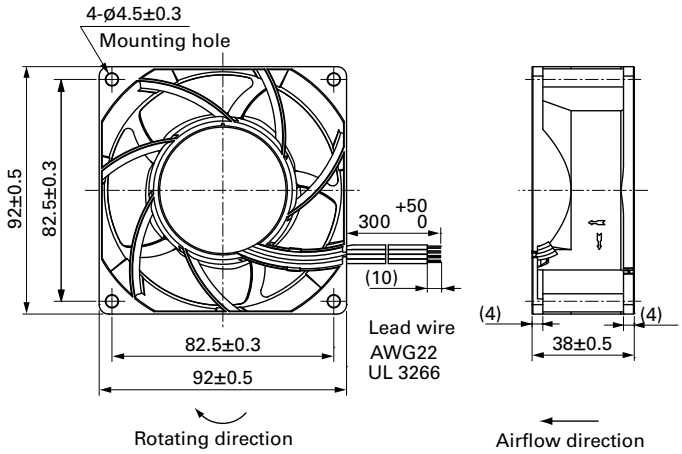
Operating voltage range



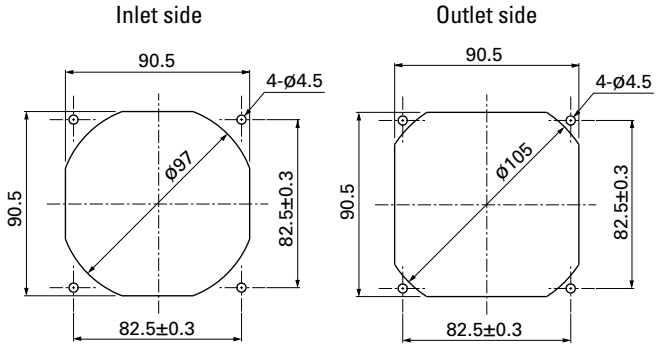
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1001G

92×92×38 mm

San Ace 92 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 250 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV0912P1G03	12	10.8 to 13.2	100	4.1	49.2	9000	5.35	189.0	430.0	1.73	68	-20 to +70	40000/60˚C
			0	0.33	4.0	2900	1.72	60.8	44.6	0.18	37		
9GV0912P1H03		10.2 to 13.8	100	3.5	42.0	8500	5.05	178.0	385.0	1.55	64		
			0	0.29	3.5	2700	1.6	56.5	38.8	0.16	34		
9GV0912P1F03			100	1.9	22.8	7000	4.15	146.6	261	1.05	59	-10 to +70	
			0	0.16	1.92	2200	1.3	45.9	25.7	0.1	31		
9GV0948P1H03	48	40.8 to 55.2	100	0.82	39.4	8500	5.05	178.0	385.0	1.55	64	-20 to +70	
			0	0.14	6.7	4000	2.37	83.7	85.2	0.34	45		
9GV0948P1F03			100	0.48	23.04	7000	4.15	146.6	261	1.05	59	-10 to +70	
			0	0.12	5.76	3500	2.07	73.1	65.2	0.26	42		

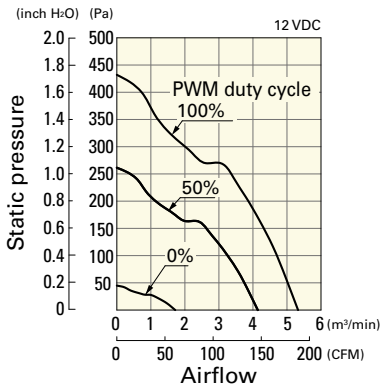
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 555).

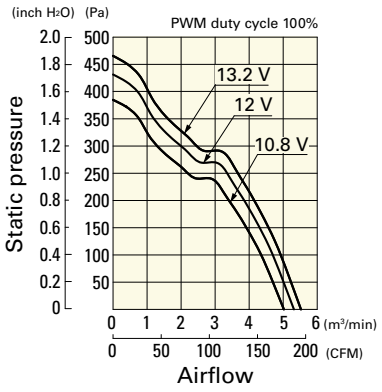
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0912P1G03 With pulse sensor with PWM control function

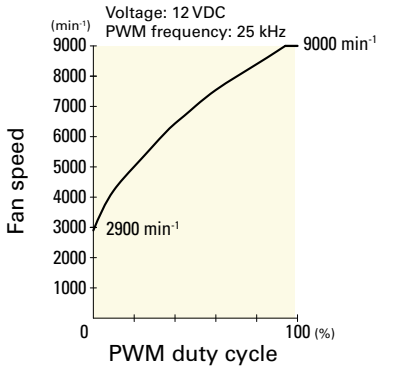
PWM duty cycle



Operating voltage range



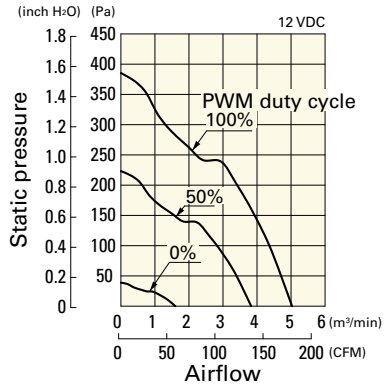
PWM duty - Speed characteristics example



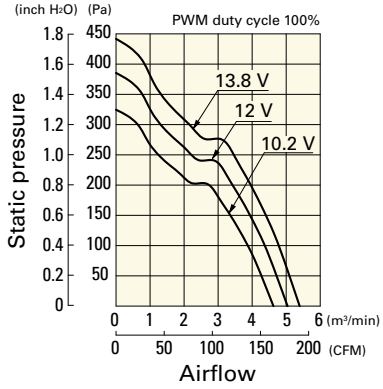
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV0912P1H03 With pulse sensor with PWM control function

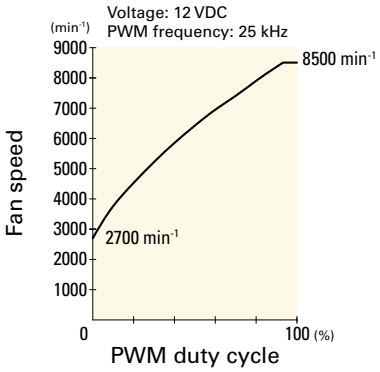
PWM duty cycle



Operating voltage range

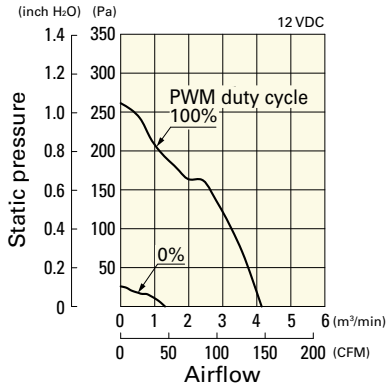


PWM duty - Speed characteristics example

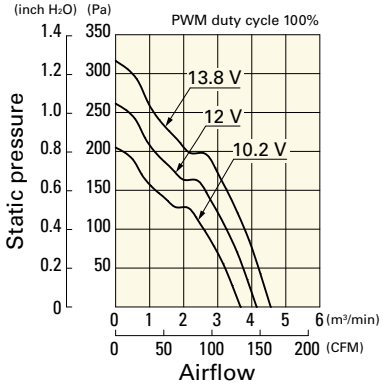


9GV0912P1F03 With pulse sensor with PWM control function

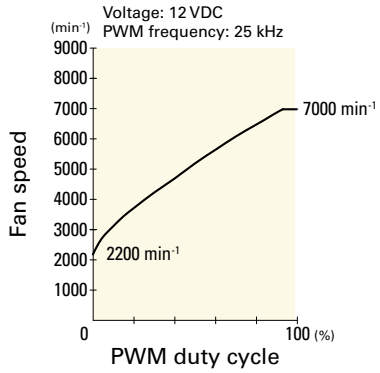
PWM duty cycle



Operating voltage range

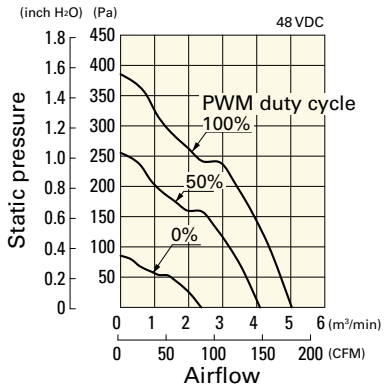


PWM duty - Speed characteristics example

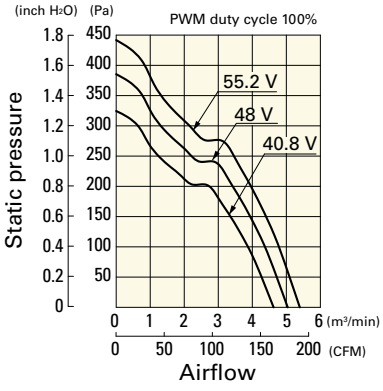


9GV0948P1H03 With pulse sensor with PWM control function

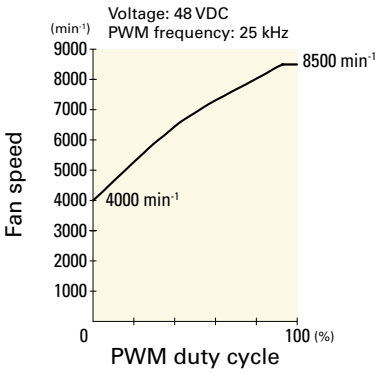
PWM duty cycle



Operating voltage range

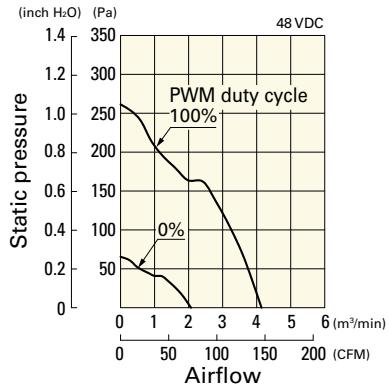


PWM duty - Speed characteristics example

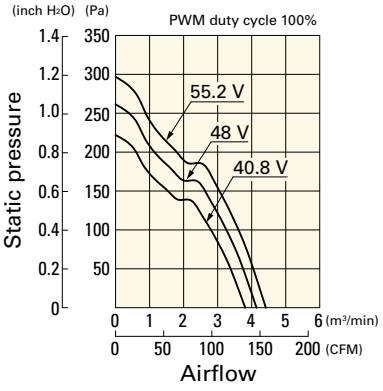


9GV0948P1F03 With pulse sensor with PWM control function

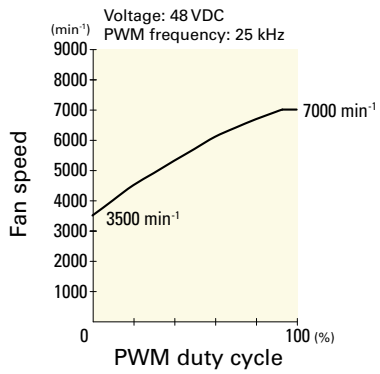
PWM duty cycle



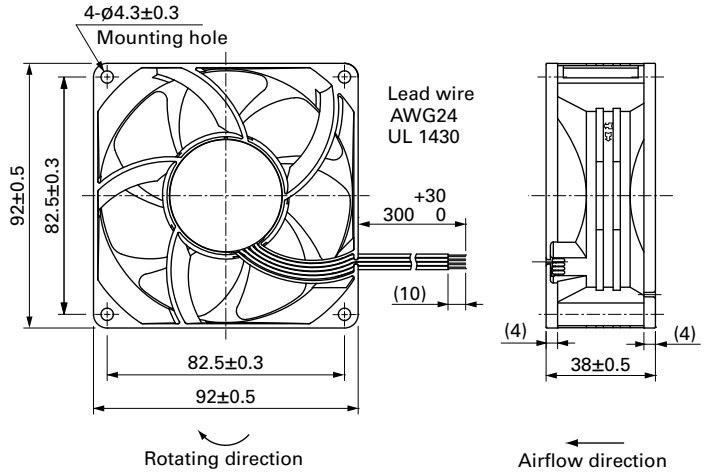
Operating voltage range



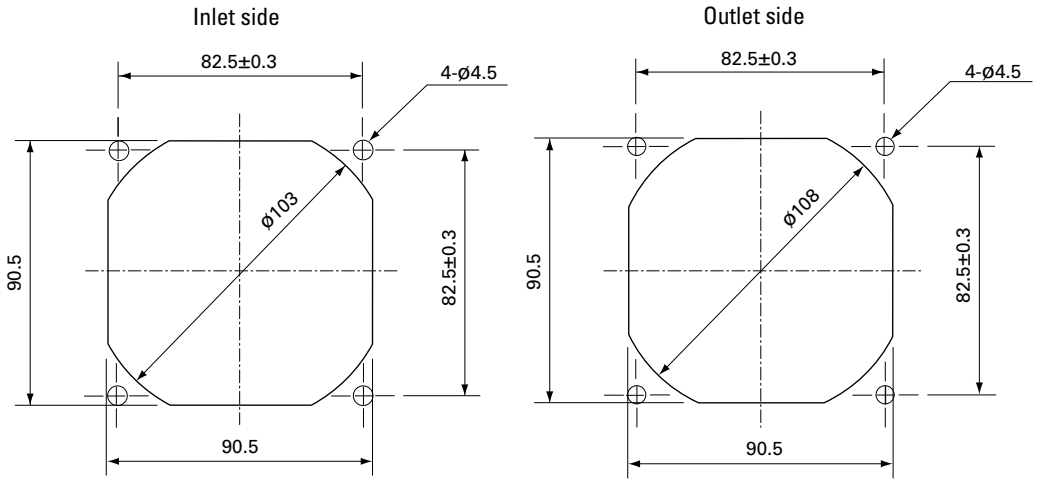
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1001G

92×92×38 mm

San Ace 92 9G type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 180 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

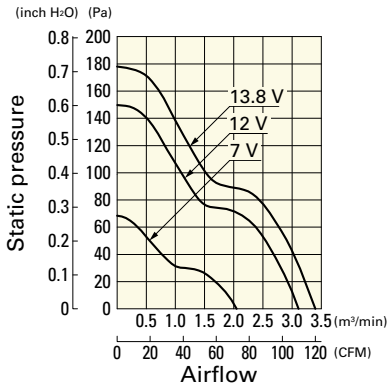
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9G0912G101	12	7.0 to 13.8	1.1	13.2	5000	3.1	110	150	0.602	50	-20 to +60	40000/60˚C
9G0912H101			0.58	6.96	4000	2.54	90	100	0.402	43		
9G0924G101	24	20.4 to 27.6	0.55	13.2	5000	3.1	110	150	0.602	50		
9G0924H101			0.3	7.2	4000	2.54	90	100	0.402	43		
9G0948J101	48	40.8 to 55.2	0.32	15.36	5500	3.41	120.49	178	0.715	55	-20 to +70	
9G0948G101			0.27	12.96	5000	3.1	110	150	0.602	50	-20 to +60	
9G0948H101			0.16	7.68	4000	2.54	90	100	0.402	43		

Other sensor specifications are available as options. Refer to the index (pp. 549 to 550).

Airflow - Static Pressure Characteristics

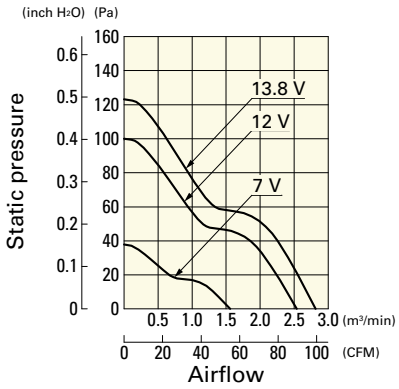
9G0912G101 With pulse sensor

Operating voltage range



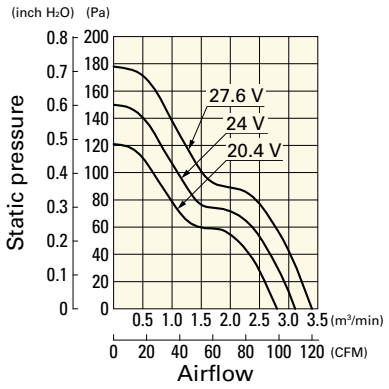
9G0912H101 With pulse sensor

Operating voltage range



9G0924G101 With pulse sensor

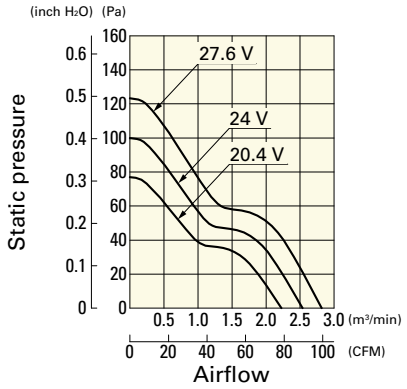
Operating voltage range



Airflow - Static Pressure Characteristics

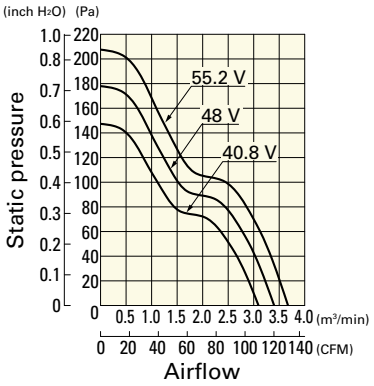
9G0924H101 With pulse sensor

Operating voltage range



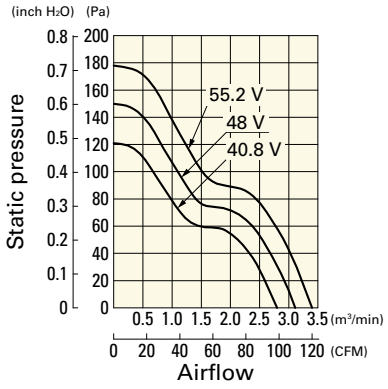
9G0948J101 With pulse sensor

Operating voltage range



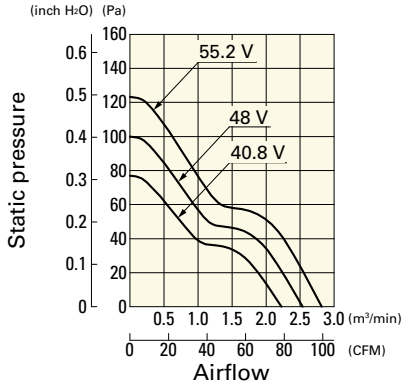
9G0948G101 With pulse sensor

Operating voltage range

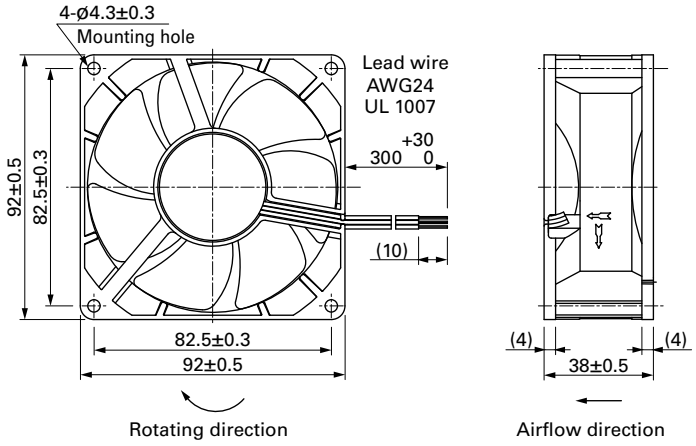


9G0948H101 With pulse sensor

Operating voltage range

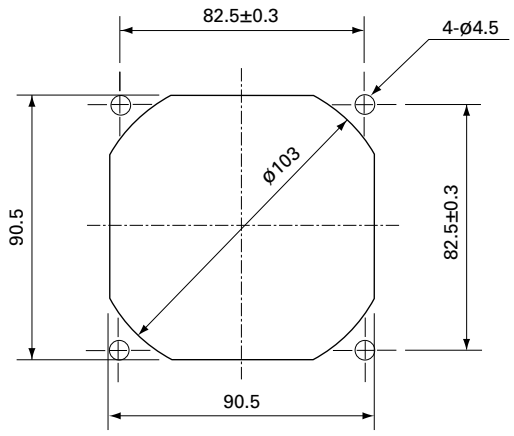


Dimensions (unit: mm) (With ribs)

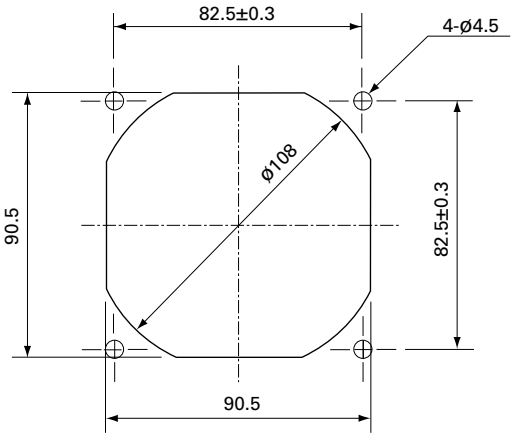


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side



Outlet side



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1001G

120×120×25 mm

San Ace 120 9S type Silent Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 140 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

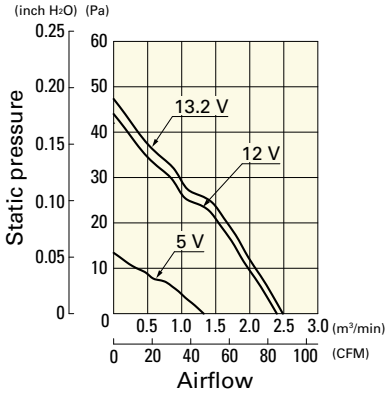
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9S1212H401	12	5.0 to 13.2	0.39	4.68	2700	2.45	86.5	45.2	0.18	36	-10 to +60	40000/60˚C
9S1212F401		5.0 to 13.8	0.19	2.28	2200	2.0	70.6	30.0	0.12	30	-10 to +70	
9S1212M401		6.0 to 13.8	0.13	1.56	1850	1.66	58.6	22.7	0.09	24		
9S1212L401		7.0 to 13.8	0.08	0.96	1500	1.36	48.1	14.9	0.06	17		
9S1224M401	24	14 to 26.4	0.06	1.44	1850	1.66	58.6	22.7	0.09	24		

Other sensor specifications are available as options. Refer to the index (p. 558).

Airflow - Static Pressure Characteristics

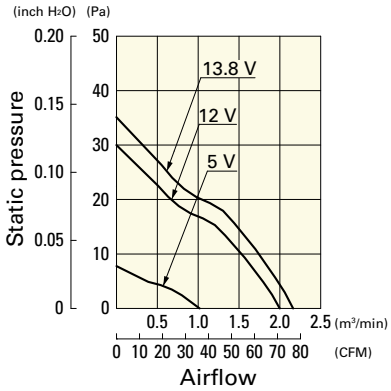
9S1212H401 With pulse sensor

Operating voltage range



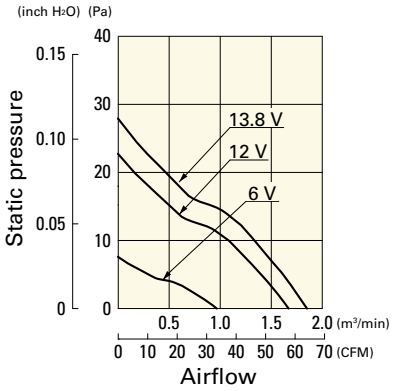
9S1212F401 With pulse sensor

Operating voltage range



9S1212M401 With pulse sensor

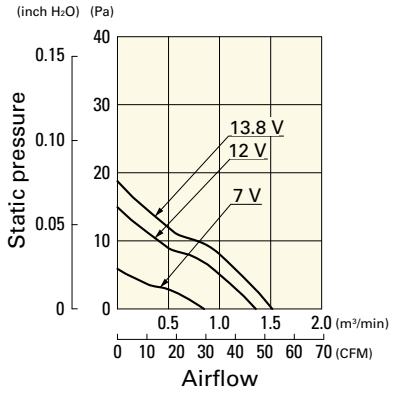
Operating voltage range



Airflow - Static Pressure Characteristics

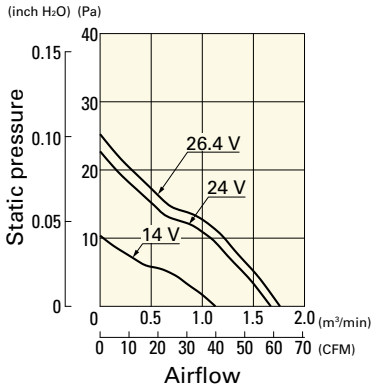
9S1212L401 With pulse sensor

Operating voltage range

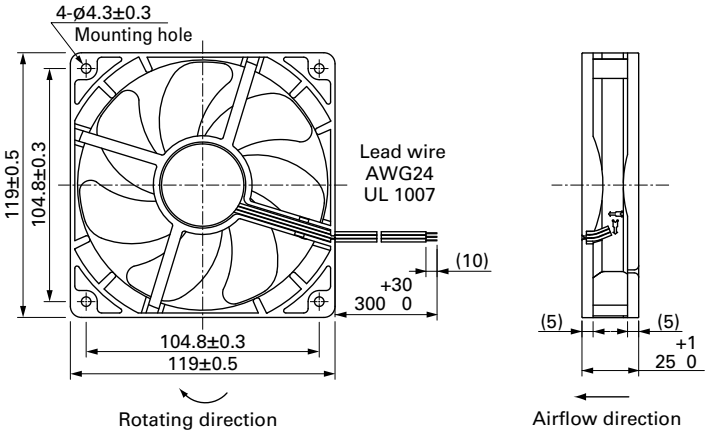


9S1224M401 With pulse sensor

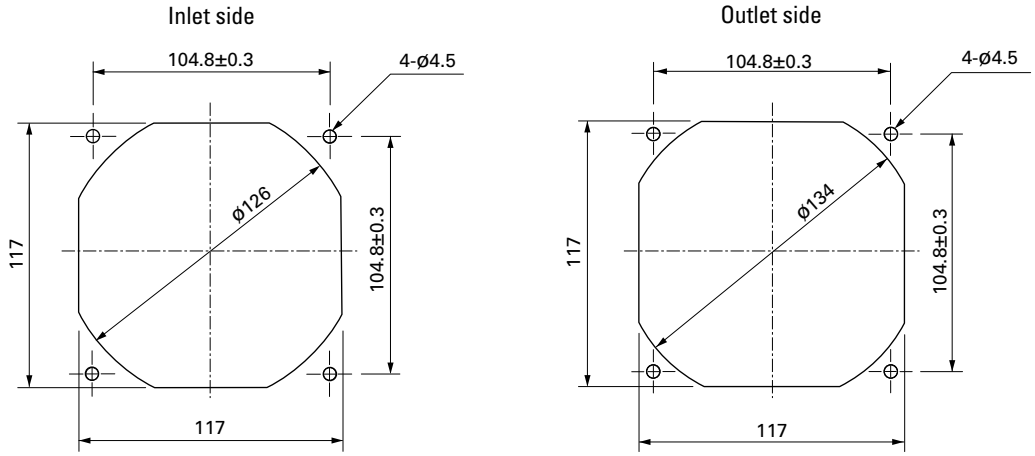
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin finger guards page: p. 520

Model no.: 109-1000G

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

120×120×25 mm

San Ace 120 9GA type Low Power Consumption Fan

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  (For models without PWM control function, there is no speed control wiring.)
- Mass ····· 280 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA1212P4G001	12	10.2 to 13.8	100	0.93	11.16	6400	3.8	134	365	1.47	57	-20 to +70	40000/60˚C (70000/40˚C)
			25	0.16	1.92	2550	1.5	53	60	0.24	34		
9GA1212P4S001			100	0.61	7.32	5400	3.2	113	260	1.04	54		
			25	0.16	1.92	2550	1.5	53	60	0.24	34		
9GA1224P4G001	24	20.4 to 27.6	100	0.47	11.28	6400	3.8	134	365	1.47	57		
			25	0.1	2.4	2550	1.5	53	60	0.24	34		
9GA1224P4S001			100	0.31	7.44	5400	3.2	113	260	1.04	54		
			25	0.1	2.4	2550	1.5	53	60	0.24	34		
9GA1248P4G001	48	40.8 to 53	100	0.24	11.52	6400	3.8	134	365	1.47	57		
			25	0.08	3.84	2550	1.5	53	60	0.24	34		
9GA1248P4S001			100	0.16	7.68	5400	3.2	113	260	1.04	54		
			25	0.08	3.84	2550	1.5	53	60	0.24	34		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

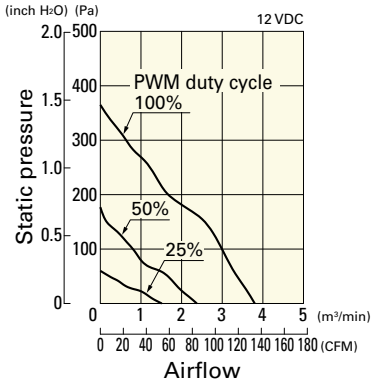
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA1212G4001	12	7 to 13.8	0.93	11.16	6400	3.8	134	365	1.47	57	-20 to +70	40000/60˚C (70000/40˚C)
9GA1212S4001			0.61	7.32	5400	3.2	113	260	1.04	54		
9GA1224G4001	24	14 to 27.6	0.47	11.28	6400	3.8	134	365	1.47	57		
9GA1224S4001			0.31	7.44	5400	3.2	113	260	1.04	54		
9GA1248G4001	48	36 to 53	0.24	11.52	6400	3.8	134	365	1.47	57		
9GA1248S4001			0.16	7.68	5400	3.2	113	260	1.04	54		

Other sensor specifications are available as options. Refer to the index (p. 553).

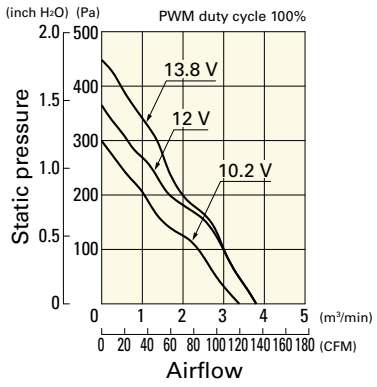
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA1212P4G001 With pulse sensor with PWM control function

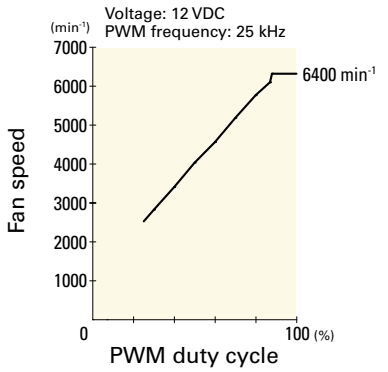
PWM duty cycle



Operating voltage range

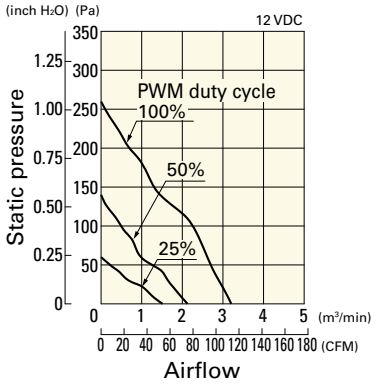


PWM duty - Speed characteristics example

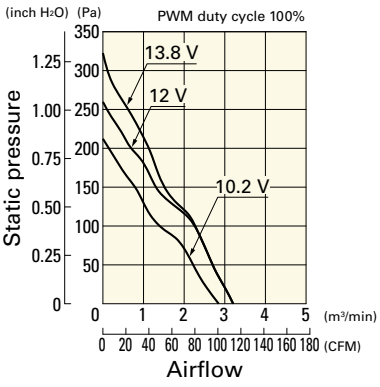


9GA1212P4S001 With pulse sensor with PWM control function

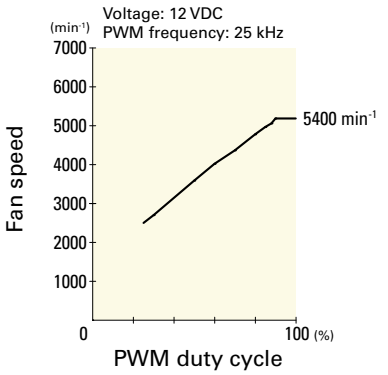
PWM duty cycle



Operating voltage range

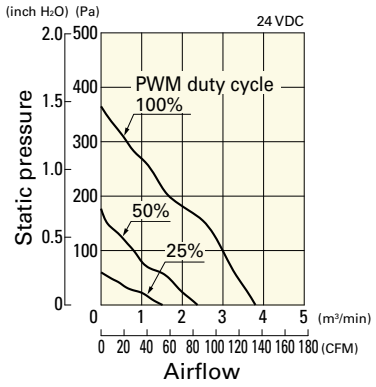


PWM duty - Speed characteristics example

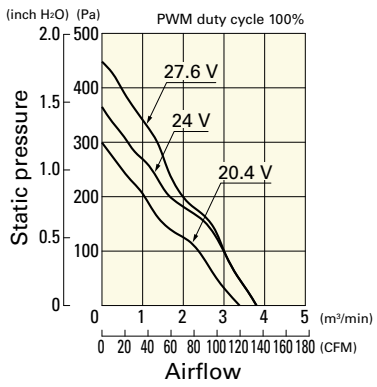


9GA1224P4G001 With pulse sensor with PWM control function

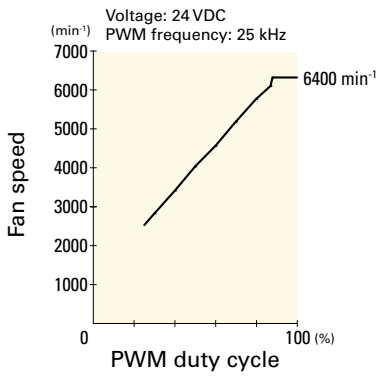
PWM duty cycle



Operating voltage range

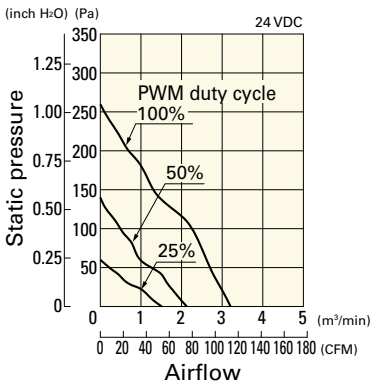


PWM duty - Speed characteristics example

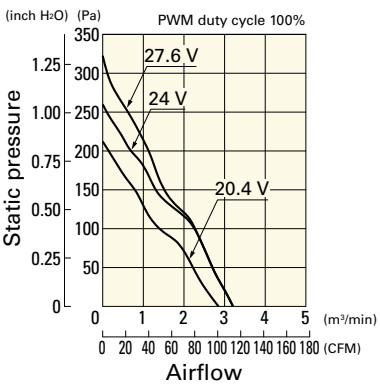


9GA1224P4S001 With pulse sensor with PWM control function

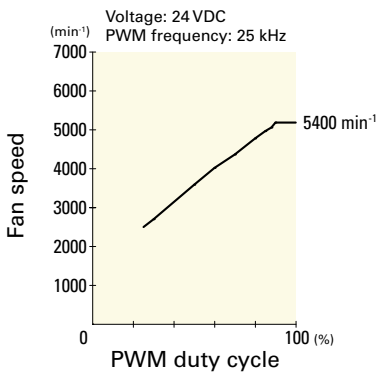
PWM duty cycle



Operating voltage range



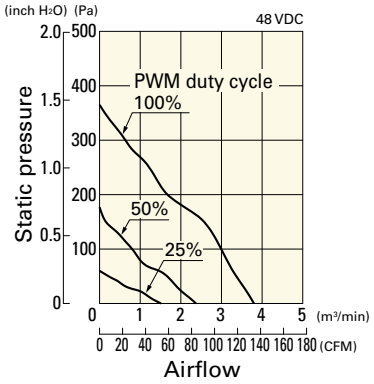
PWM duty - Speed characteristics example



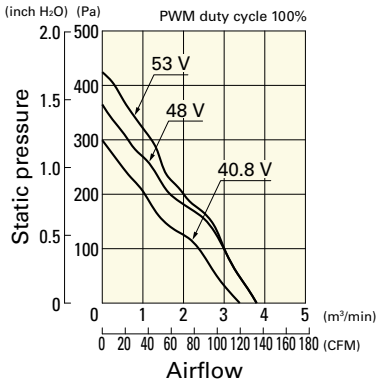
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA1248P4G001 With pulse sensor with PWM control function

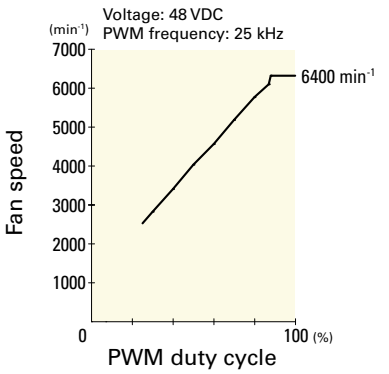
PWM duty cycle



Operating voltage range

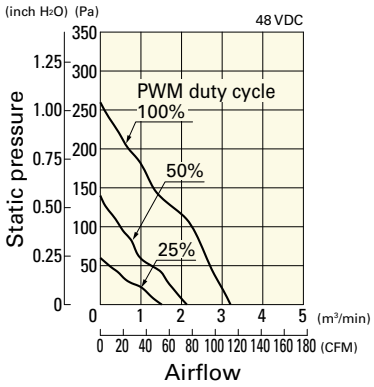


PWM duty - Speed characteristics example

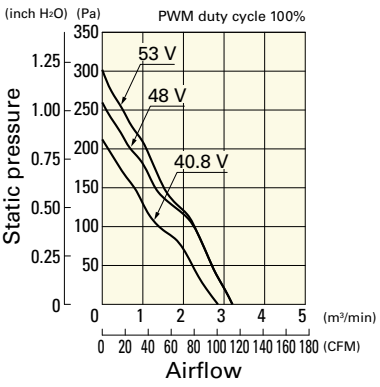


9GA1248P4S001 With pulse sensor with PWM control function

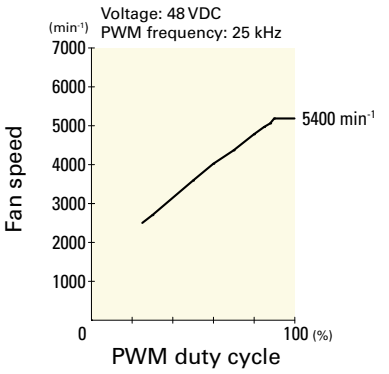
PWM duty cycle



Operating voltage range

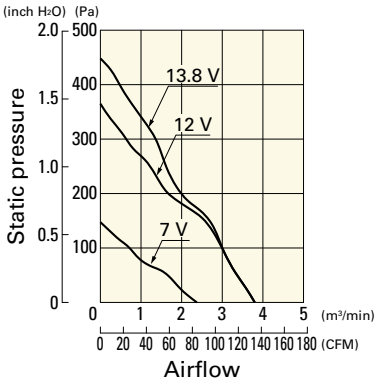


PWM duty - Speed characteristics example



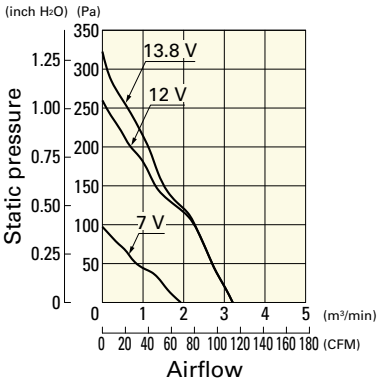
9GA1212G4001 With pulse sensor

Operating voltage range



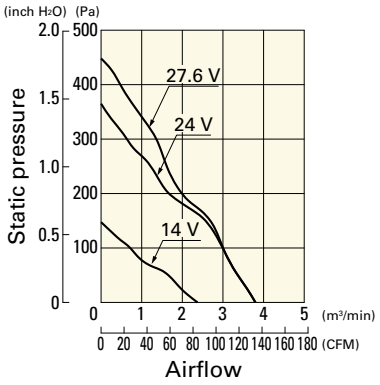
9GA1212S4001 With pulse sensor

Operating voltage range



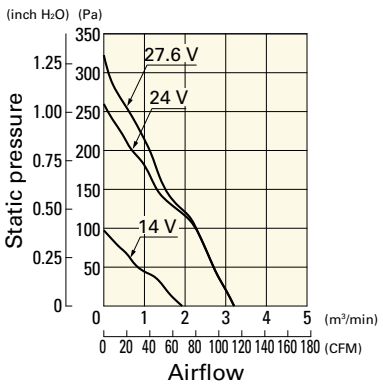
9GA1224G4001 With pulse sensor

Operating voltage range



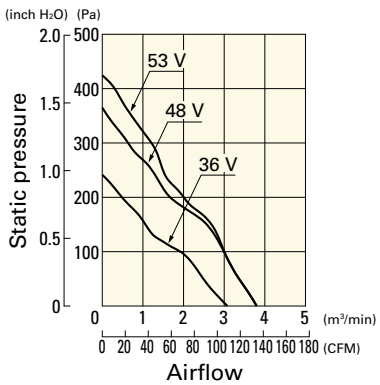
9GA1224S4001 With pulse sensor

Operating voltage range



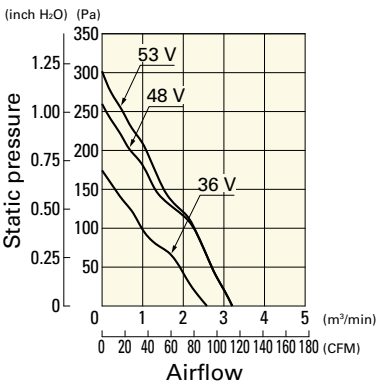
9GA1248G4001 With pulse sensor

Operating voltage range

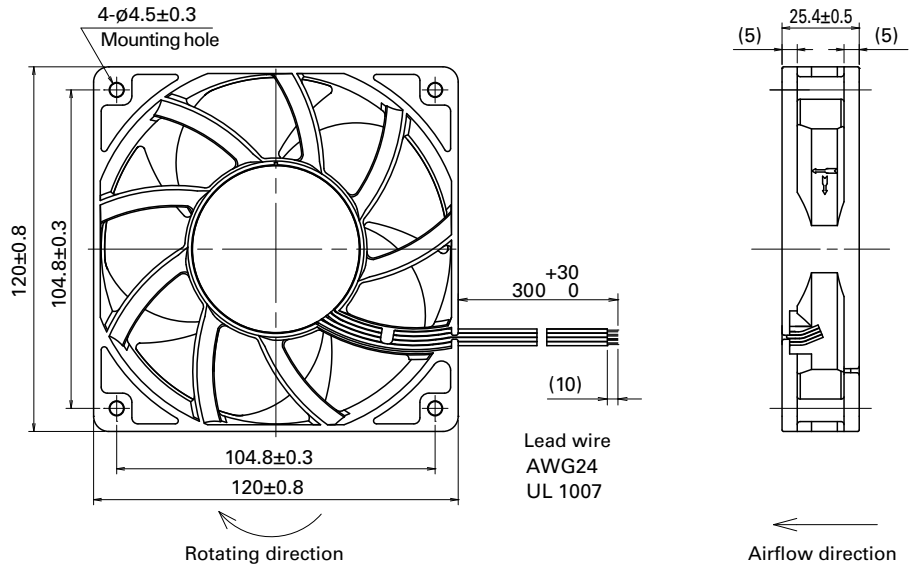


9GA1248S4001 With pulse sensor

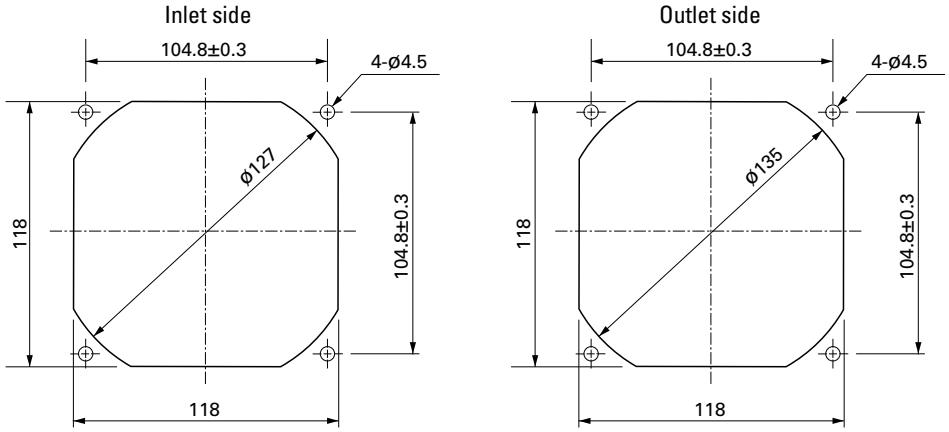
Operating voltage range



Dimensions (unit: mm) (With pulse sensor with PWM control function)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

120×120×25 mm

San Ace 120 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 260 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV1212P4G01	12	10.2 to 13.8	100	1.68	20.16	5100	4.83	171	224	0.9	58	-20 to +70	40000/60˚C
			0	0.18	2.16	1650	1.56	55.1	23.5	0.09	30		
9GV1224P4G01	24	20.4 to 27.6	100	0.84	20.16	5100	4.83	171	224	0.9	58		
			0	0.13	3.12	1650	1.56	55.1	23.5	0.09	30		
9GV1248P4J01	48	40.8 to 55.2	100	0.5	24.0	5400	5.11	180	251	1.01	59		
			0	0.15	7.2	3000	2.84	100	77.5	0.31	47		
9GV1248P4G01		40.8 to 60.0	100	0.42	20.16	5100	4.83	171	224	0.9	58		
			0	0.07	3.36	1650	1.56	55.1	23.5	0.09	30		
9GV1248P4H01			100	0.33	15.84	4600	4.35	154	182	0.73	55		
			0	0.07	3.36	1650	1.56	55.1	23.5	0.09	30		

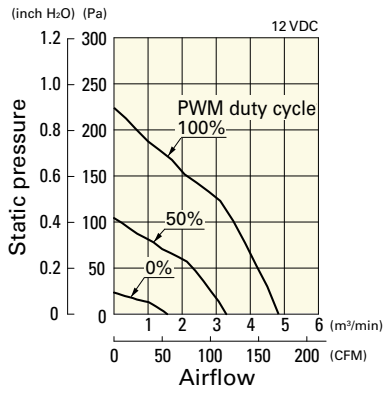
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 555).

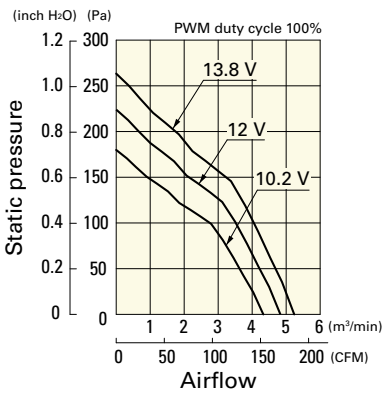
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV1212P4G01 With pulse sensor with PWM control function

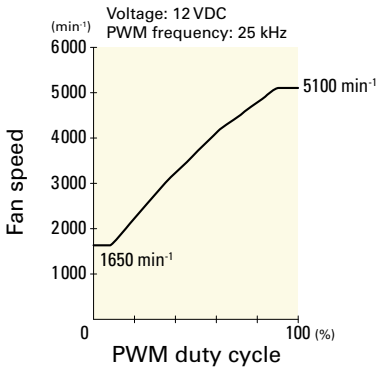
PWM duty cycle



Operating voltage range



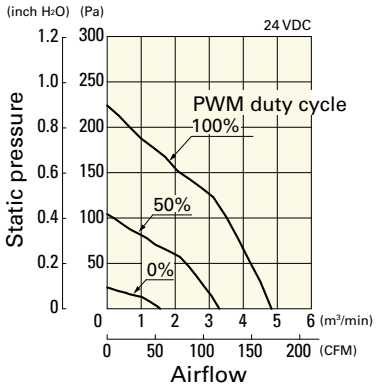
PWM duty - Speed characteristics example



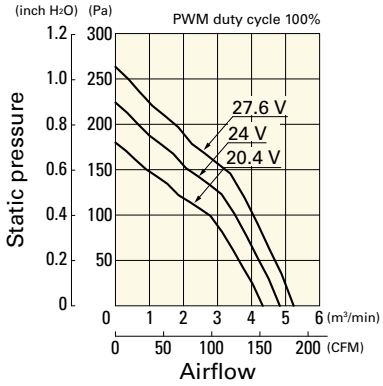
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV1224P4G01 With pulse sensor with PWM control function

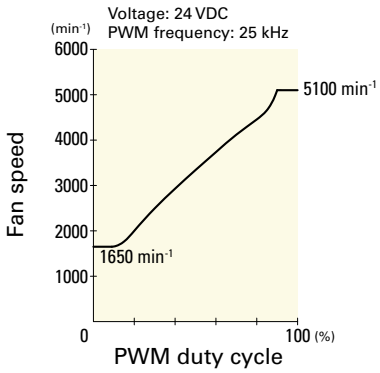
PWM duty cycle



Operating voltage range

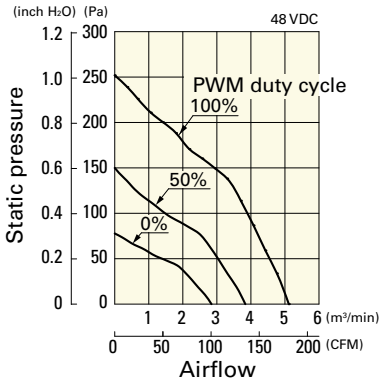


PWM duty - Speed characteristics example

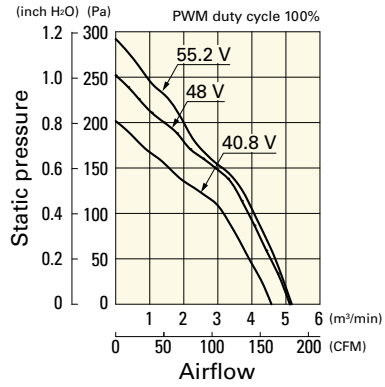


9GV1248P4J01 With pulse sensor with PWM control function

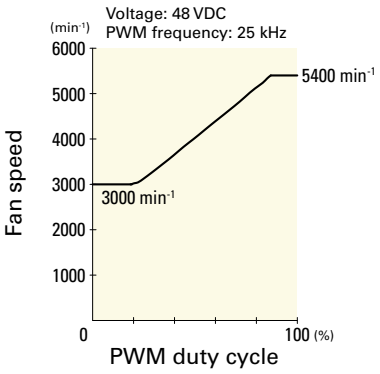
PWM duty cycle



Operating voltage range

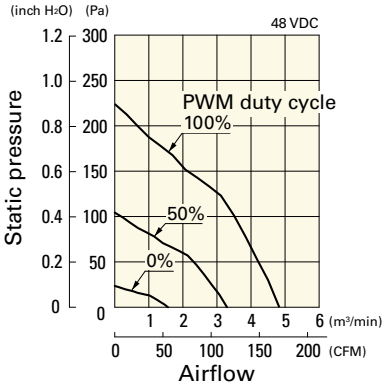


PWM duty - Speed characteristics example

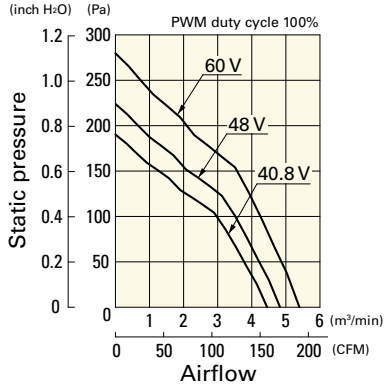


9GV1248P4G01 With pulse sensor with PWM control function

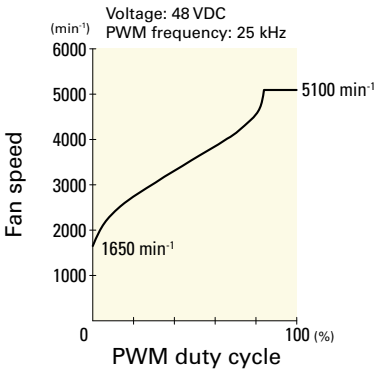
PWM duty cycle



Operating voltage range

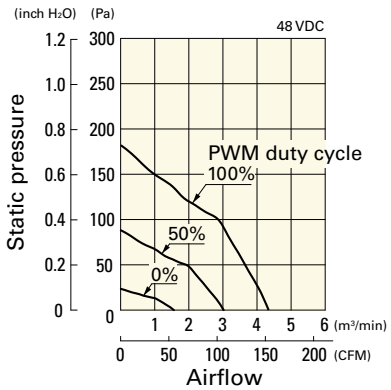


PWM duty - Speed characteristics example

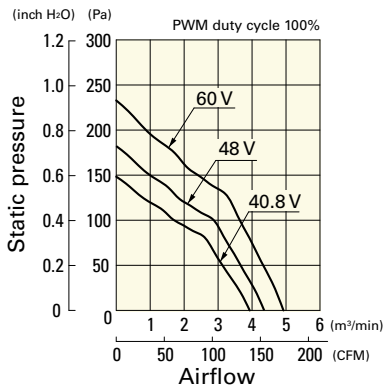


9GV1248P4H01 With pulse sensor with PWM control function

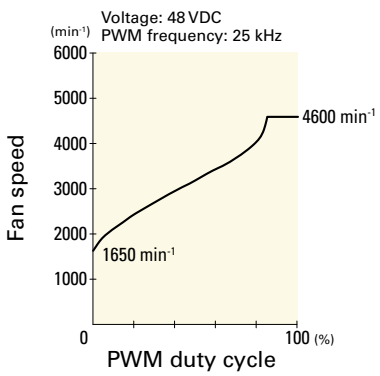
PWM duty cycle



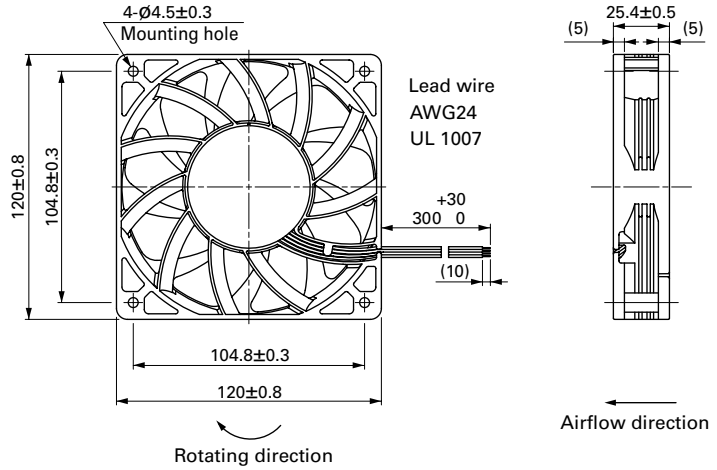
Operating voltage range



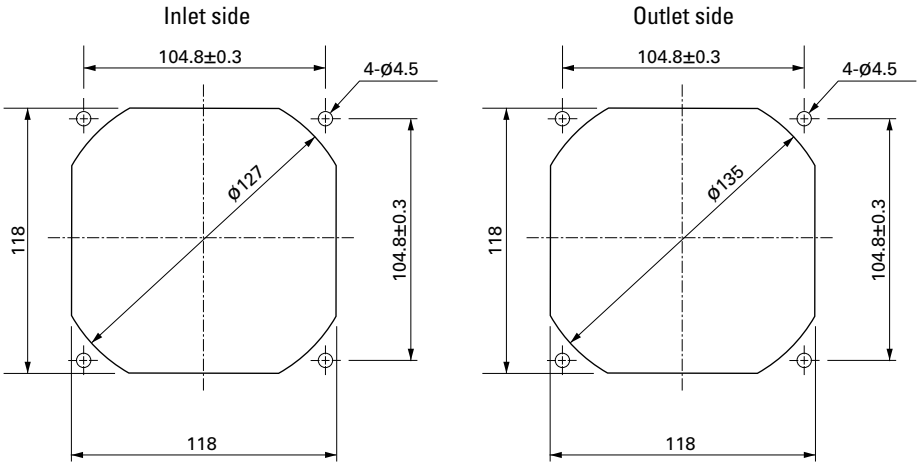
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

120×120×25 mm

San Ace 120 9G type

Model 9G1212B401 is not certified.

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 240 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

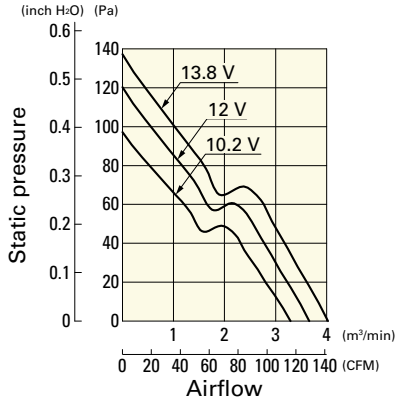
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9G1212G401	12	10.2 to 13.8	0.9	10.8	4100	3.68	130	120	0.482	51	-20 to +70	40000/60˚C
9G1212E401			0.58	6.96	3650	3.25	115	98	0.394	48		
9G1212A401			0.4	4.8	3150	2.83	100	77	0.309	44		
9G1212H401		6 to 13.8	0.31	3.72	2850	2.5	88	64	0.257	40		
9G1212F401		7 to 13.8	0.19	2.28	2250	1.98	70	42	0.169	35		
9G1212M401			0.14	1.68	1950	1.66	59	31	0.124	29		
9G1212B401		10.2 to 13.8	0.06	0.72	1000	0.88	31	9.6	0.039	18		
9G1224G401	24	20.4 to 27.6	0.47	11.28	4100	3.68	130	120	0.482	51		
9G1224E401			0.37	8.88	3650	3.25	115	98	0.394	48		
9G1224A401			0.21	5.04	3150	2.83	100	77	0.309	44		
9G1224H401		12 to 27.6	0.17	4.08	2850	2.5	88	64	0.257	40		
9G1224F401		20.4 to 27.6	0.1	2.4	2250	1.98	70	42	0.169	35		
9G1224M401			0.08	1.92	1950	1.66	59	31	0.124	29		
9G1248G401	48	40.8 to 55.2	0.23	11.04	4100	3.68	130	120	0.482	51		
9G1248E401			0.16	7.68	3650	3.25	115	98	0.394	48		
9G1248A401			0.13	6.24	3150	2.83	100	77	0.309	44		
9G1248H401			0.1	4.8	2850	2.5	88	64	0.257	40		
9G1248F401			0.06	2.88	2250	1.98	70	42	0.169	35		
9G1248M401			0.05	2.4	1950	1.66	59	31	0.124	29		

Other sensor specifications are available as options. Refer to the index (pp. 550 to 551).

Airflow - Static Pressure Characteristics

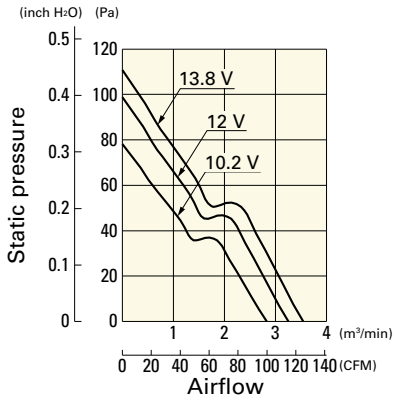
9G1212G401 With pulse sensor

Operating voltage range



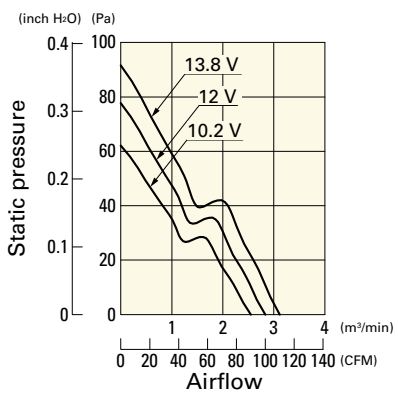
9G1212E401 With pulse sensor

Operating voltage range



9G1212A401 With pulse sensor

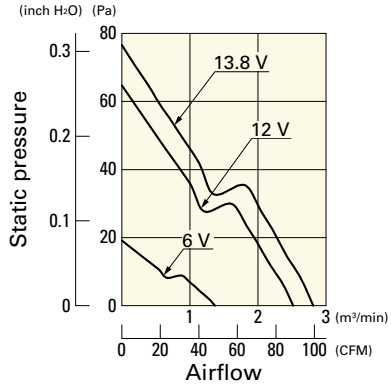
Operating voltage range



Airflow - Static Pressure Characteristics

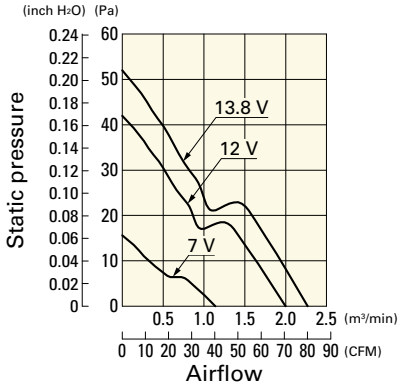
9G1212H401 With pulse sensor

Operating voltage range



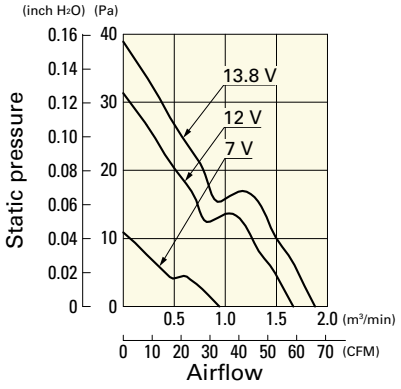
9G1212F401 With pulse sensor

Operating voltage range



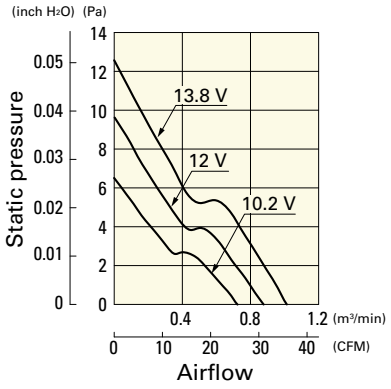
9G1212M401 With pulse sensor

Operating voltage range



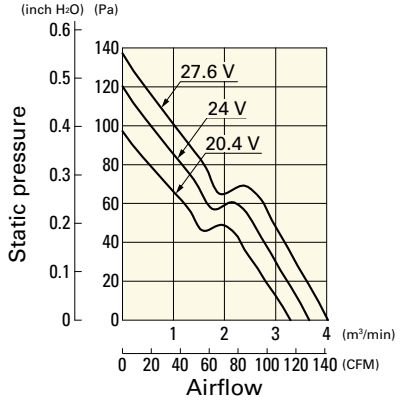
9G1212B401 With pulse sensor

Operating voltage range



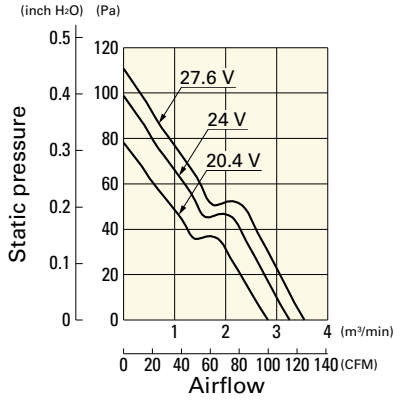
9G1224G401 With pulse sensor

Operating voltage range



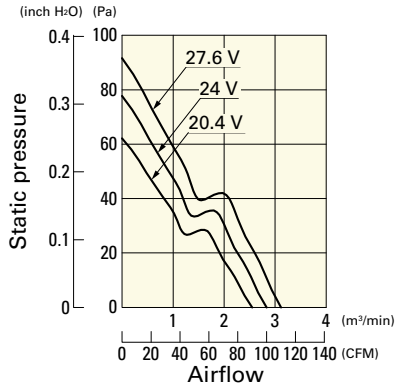
9G1224E401 With pulse sensor

Operating voltage range



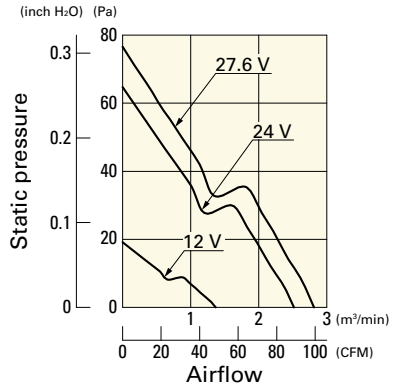
9G1224A401 With pulse sensor

Operating voltage range



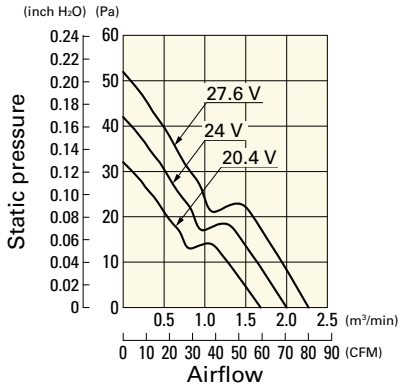
9G1224H401 With pulse sensor

Operating voltage range



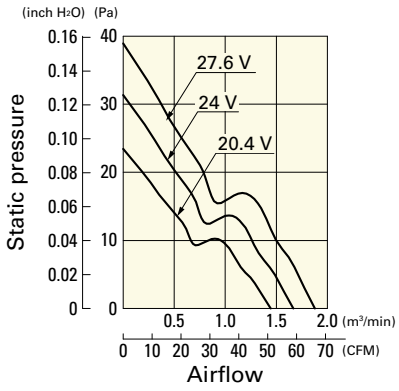
9G1224F401 With pulse sensor

Operating voltage range



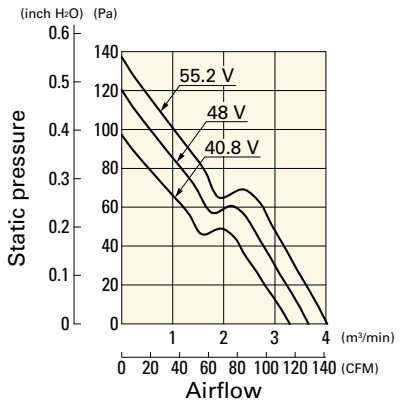
9G1224M401 With pulse sensor

Operating voltage range



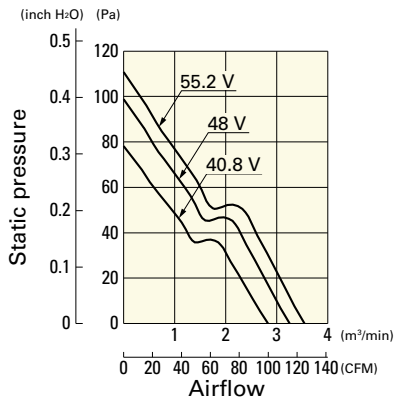
9G1248G401 With pulse sensor

Operating voltage range



9G1248E401 With pulse sensor

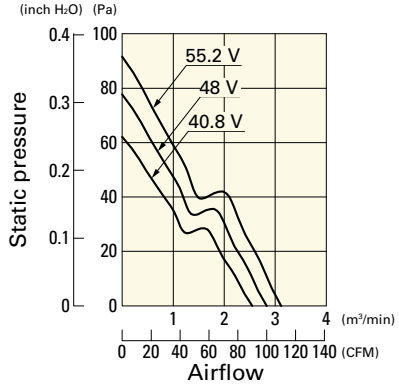
Operating voltage range



Airflow - Static Pressure Characteristics

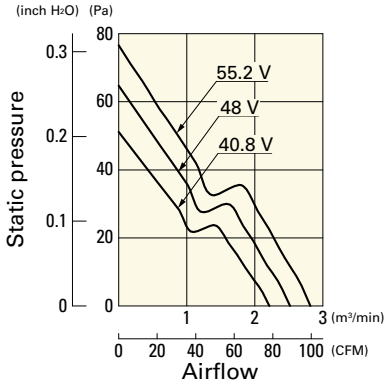
9G1248A401 With pulse sensor

Operating voltage range



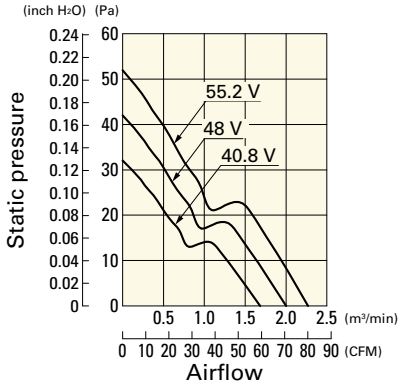
9G1248H401 With pulse sensor

Operating voltage range



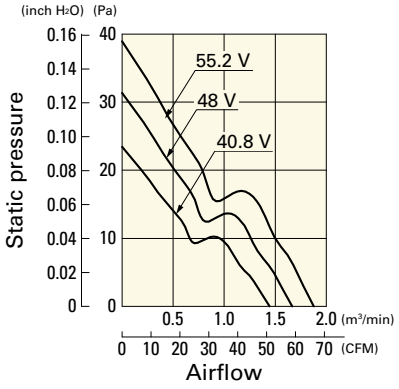
9G1248F401 With pulse sensor

Operating voltage range

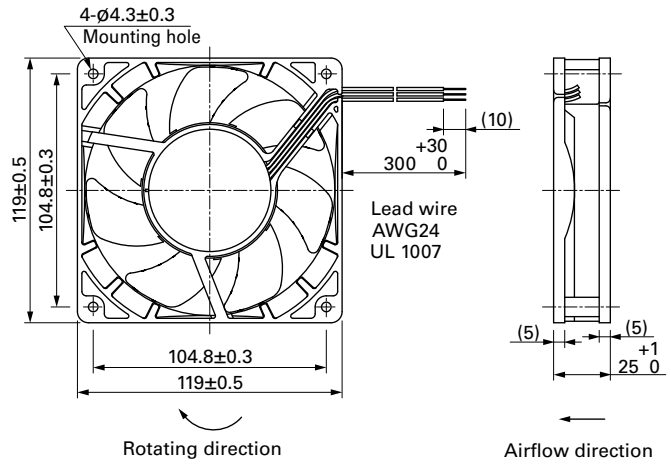


9G1248M401 With pulse sensor

Operating voltage range

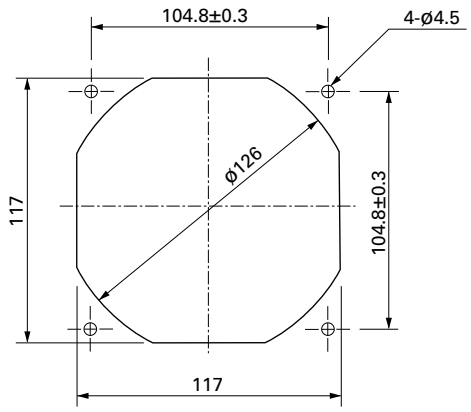


Dimensions (unit: mm) (With ribs)

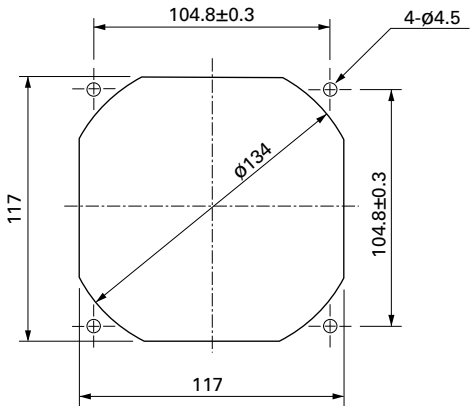


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side



Outlet side



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

120×120×38 mm

San Ace 120 9HV type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 460 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9HV1224P1A001	24	21.6 to 26.4	100	2.4	57.6	9600	7.0	247	950	3.82	71	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.37	8.88	3800	2.7	95	161	0.65	46		
9HV1248P1G001	48	36 to 60	100	2.0	96	11500	8.3	293	1300	5.22	75		
			0	0.23	11	3800	2.7	95	161	0.65	46		
9HV1248P1H001			100	1.4	67	10000	7.2	254	1050	4.22	72		
			0	0.23	11	3800	2.7	95	161	0.65	46		

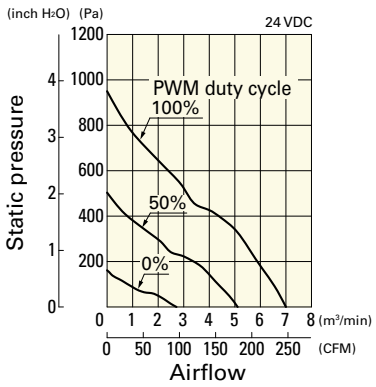
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 556).

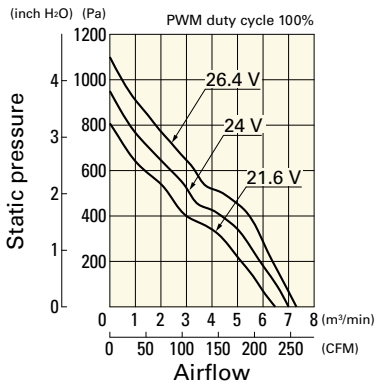
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV1224P1A001 With pulse sensor with PWM control function

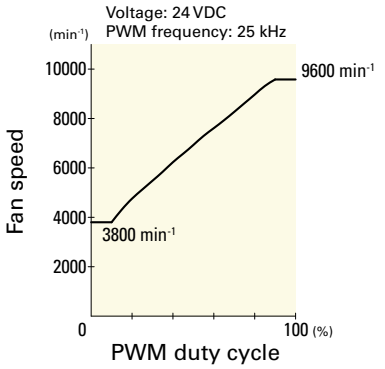
PWM duty cycle



Operating voltage range



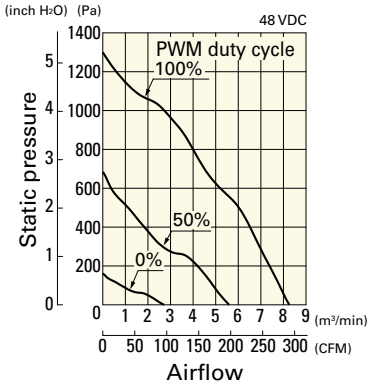
PWM duty - Speed characteristics example



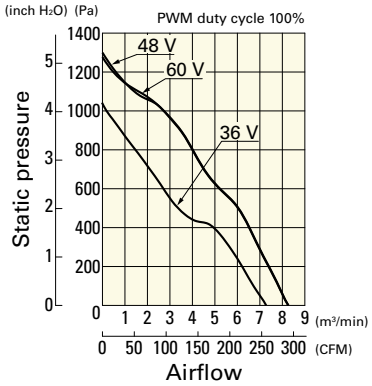
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV1248P1G001 With pulse sensor with PWM control function

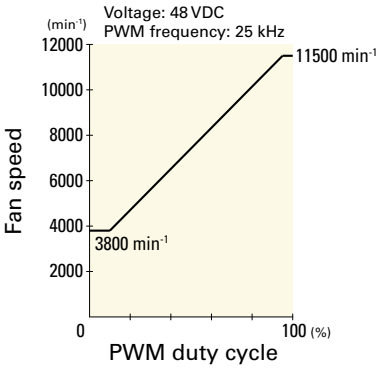
PWM duty cycle



Operating voltage range

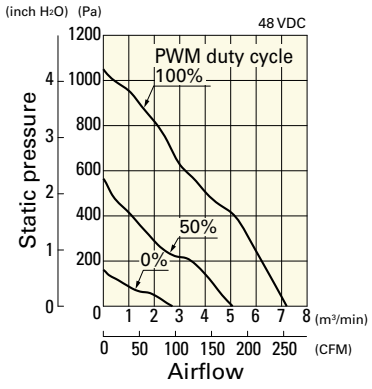


PWM duty - Speed characteristics example

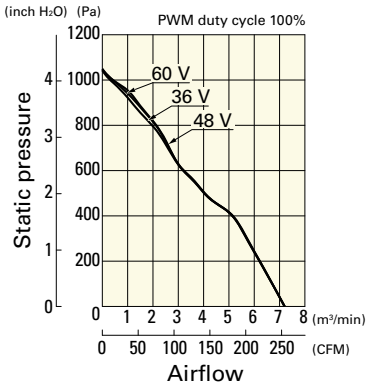


9HV1248P1H001 With pulse sensor with PWM control function

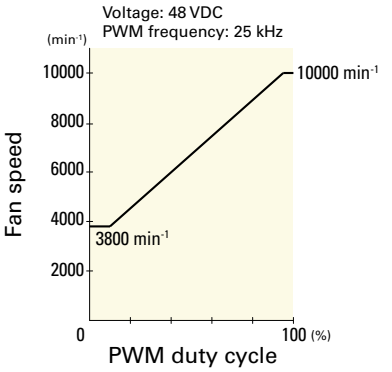
PWM duty cycle



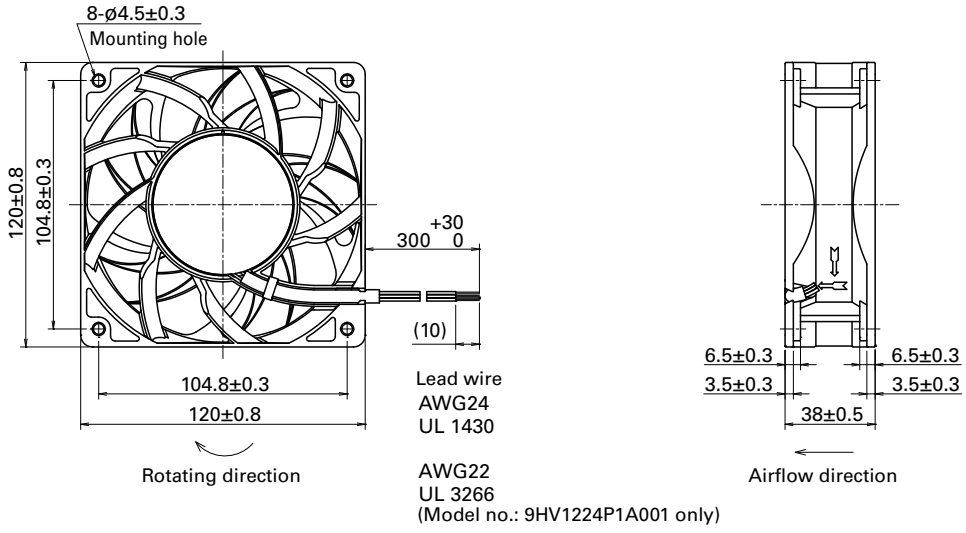
Operating voltage range



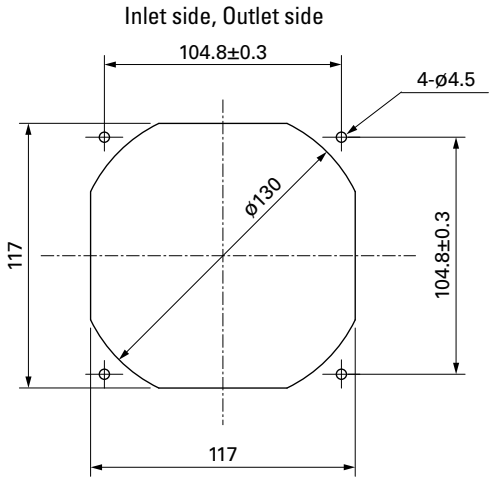
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

120×120×38 mm

San Ace 120 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 360 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV1212P1J01	12	10.2 to 13.8	100	3.0	36.0	6400	6.35	224.0	360.0	1.45	64	-20 to +70	40000/60˚C
			0	0.19	2.28	1500	1.49	52.6	19.8	0.08	33		
9GV1212P1G01			100	2.1	25.2	5500	5.45	192.6	265	1.06	60		
			0	0.19	2.28	1500	1.49	52.6	19.8	0.08	33		
9GV1224P1J01**	24	20.4 to 27.6	100	1.5	36.0	6400	6.35	224.0	360	1.45	64		
9GV1224P1H01**			100	0.8	19.2	5200	5.16	182.3	237	0.95	58		
9GV1248P1J01	48	40.8 to 55.2	100	0.75	36.0	6400	6.35	224.0	360.0	1.45	64		
			0	0.06	2.88	1500	1.49	52.6	26.1	0.106	33		

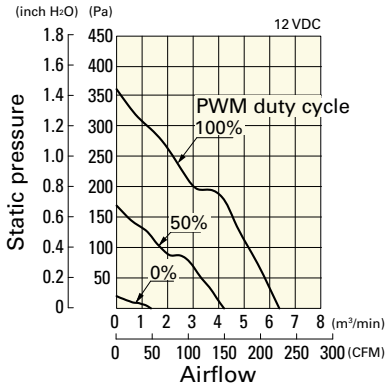
* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 555).

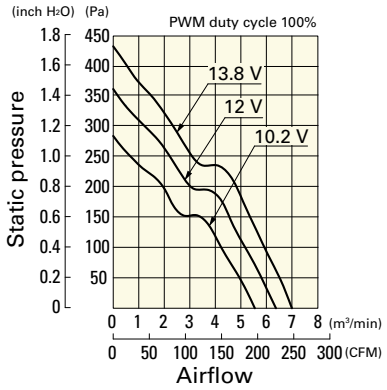
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV1212P1J01 With pulse sensor with PWM control function

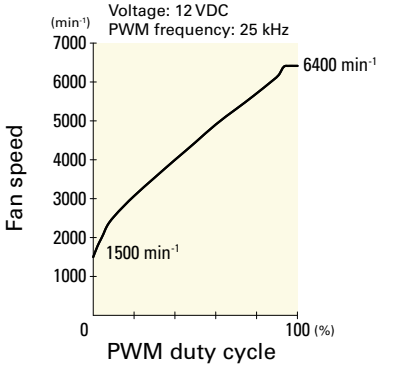
PWM duty cycle



Operating voltage range



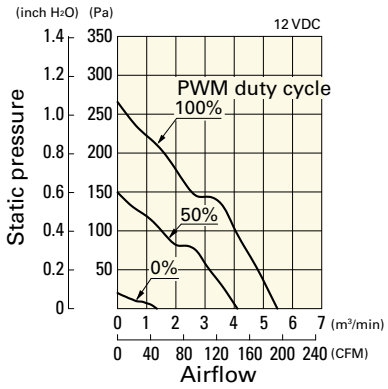
PWM duty - Speed characteristics example



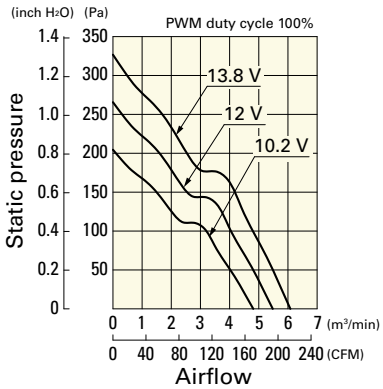
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV1212P1G01 With pulse sensor with PWM control function

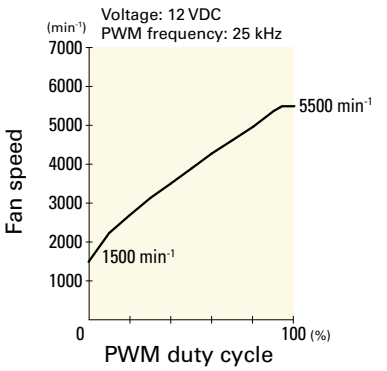
PWM duty cycle



Operating voltage range

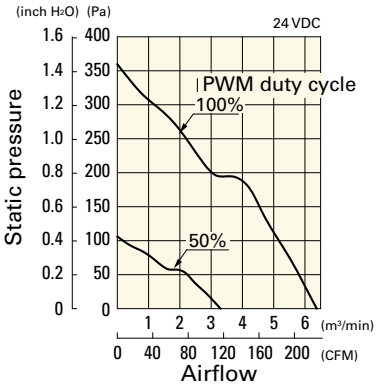


PWM duty - Speed characteristics example

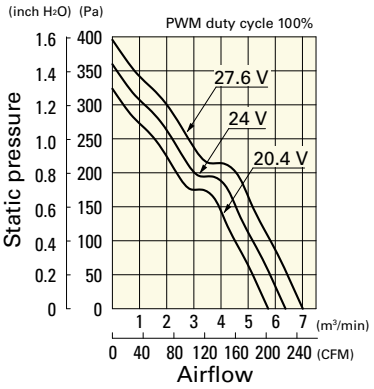


9GV1224P1J01 With pulse sensor with PWM control function

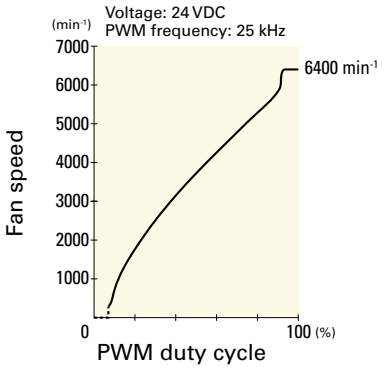
PWM duty cycle



Operating voltage range

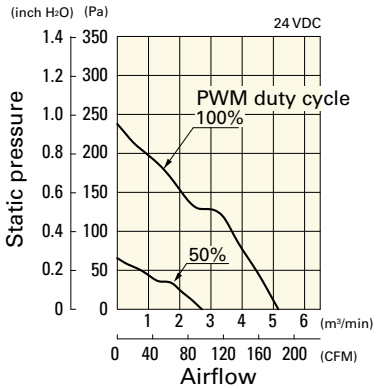


PWM duty - Speed characteristics example

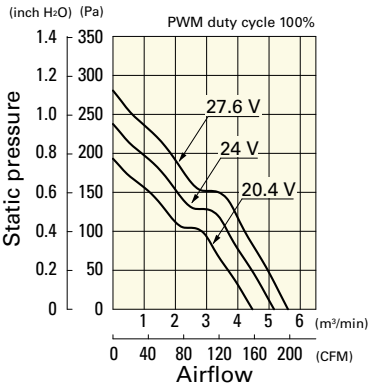


9GV1224P1H01 With pulse sensor with PWM control function

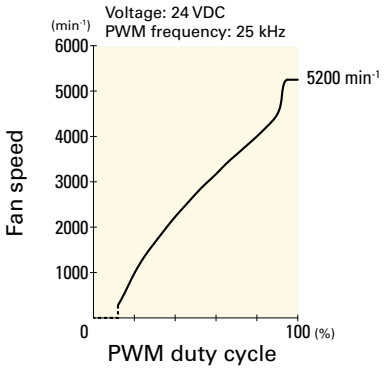
PWM duty cycle



Operating voltage range

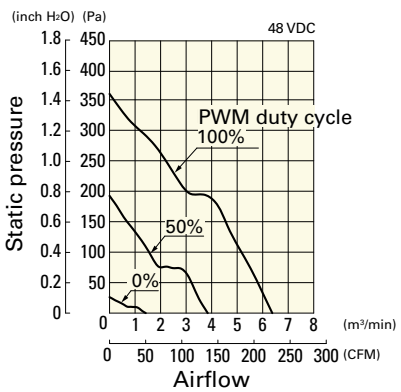


PWM duty - Speed characteristics example

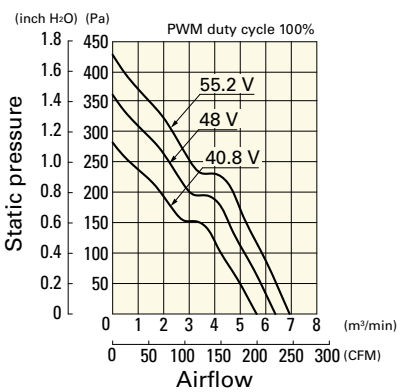


9GV1248P1J01 With pulse sensor with PWM control function

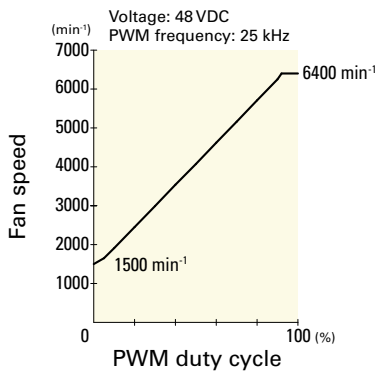
PWM duty cycle



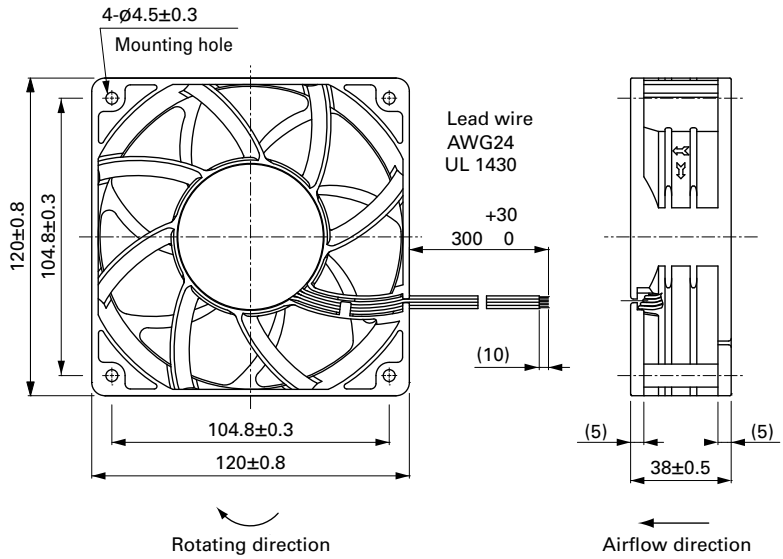
Operating voltage range



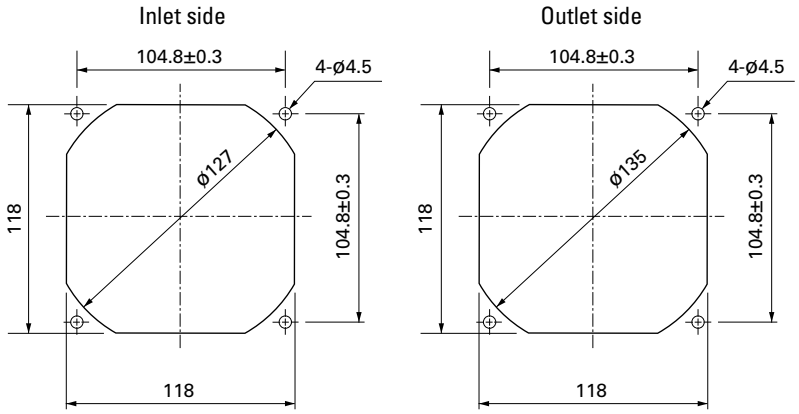
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

120×120×38 mm

San Ace 120 9G type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 330 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

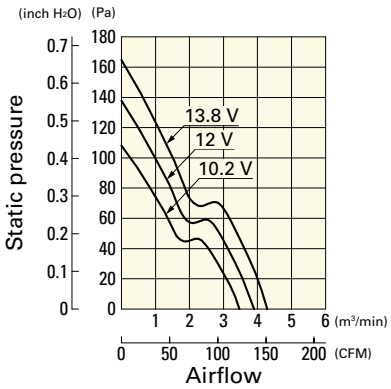
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9G1212G101	12	10.2 to 13.8	0.98	11.76	3600	3.88	137	135	0.542	49	-20 to +70	40000/60˚C
9G1212E101			0.61	7.32	3100	3.34	118	100	0.402	46		
9G1212H101		7 to 13.8	0.38	4.56	2600	2.8	99	70.4	0.283	39		
9G1212F101			0.28	3.36	2280	2.45	87	54.2	0.218	36		
9G1212M101			0.21	2.52	1950	2.1	74	39.6	0.159	32		
9G1224G101	24	20.4 to 27.6	0.5	12	3600	3.88	137	135	0.542	49		
9G1224E101			0.34	8.16	3100	3.34	118	100	0.402	46		
9G1224H101		14 to 27.6	0.22	5.28	2600	2.8	99	70.4	0.283	39		
9G1224F101			0.16	3.84	2280	2.45	87	54.2	0.218	36		
9G1224M101			0.11	2.64	1950	2.1	74	39.6	0.159	32		
9G1248G101	48	40.8 to 55.2	0.25	12	3600	3.88	137	135	0.542	49		
9G1248E101			0.17	8.16	3100	3.34	118	100	0.402	46		
9G1248H101			0.11	5.28	2600	2.8	99	70.4	0.283	39		
9G1248F101			0.09	4.32	2280	2.45	87	54.2	0.218	36		
9G1248M101			0.07	3.36	1950	2.1	74	39.6	0.159	32		

Other sensor specifications are available as options. Refer to the index (pp. 550 to 551).

Airflow - Static Pressure Characteristics

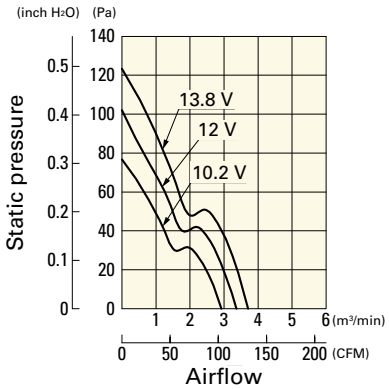
9G1212G101 With pulse sensor

Operating voltage range



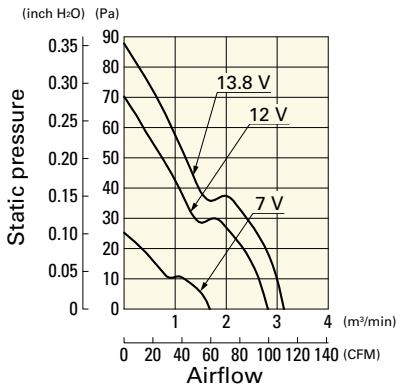
9G1212E101 With pulse sensor

Operating voltage range



9G1212H101 With pulse sensor

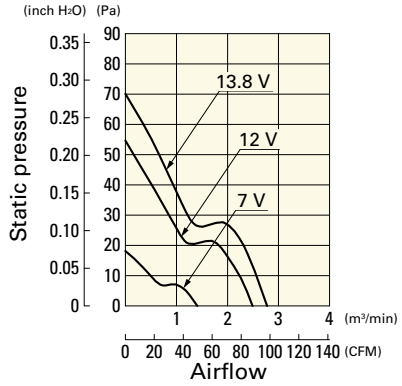
Operating voltage range



Airflow - Static Pressure Characteristics

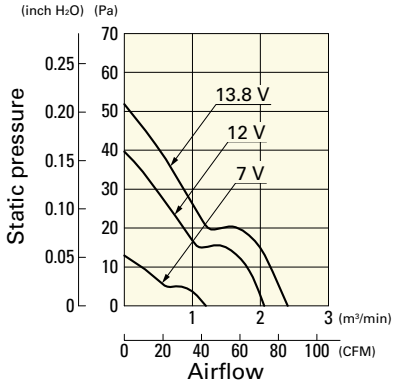
9G1212F101 With pulse sensor

Operating voltage range



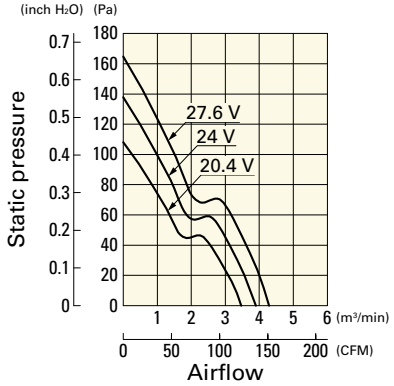
9G1212M101 With pulse sensor

Operating voltage range



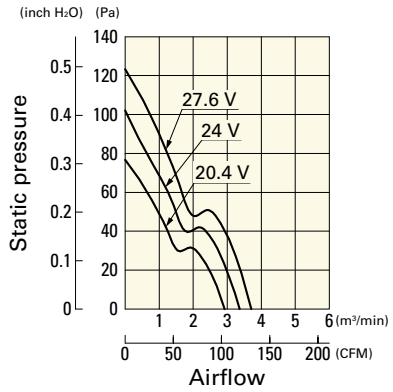
9G1224G101 With pulse sensor

Operating voltage range



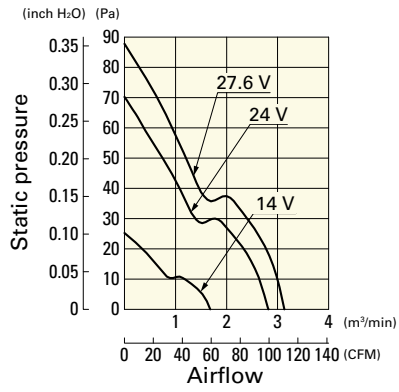
9G1224E101 With pulse sensor

Operating voltage range



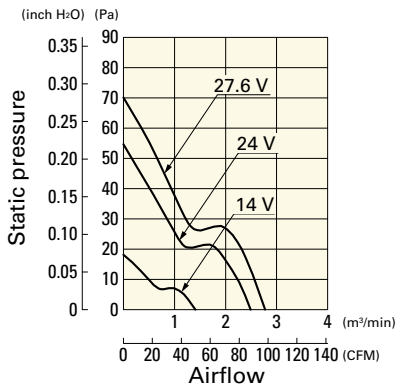
9G1224H101 With pulse sensor

Operating voltage range



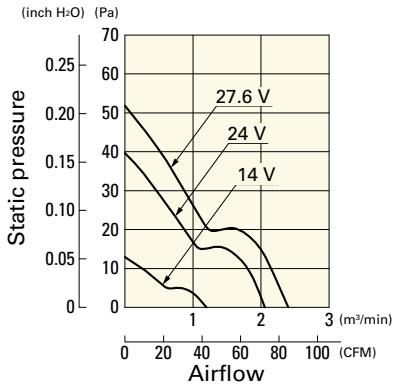
9G1224F101 With pulse sensor

Operating voltage range



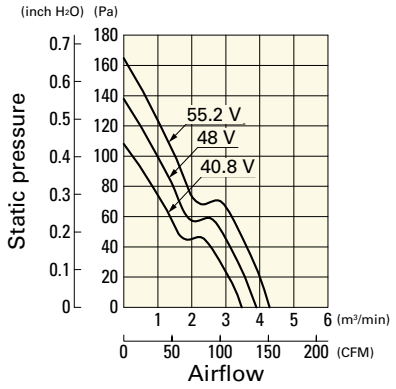
9G1224M101 With pulse sensor

Operating voltage range



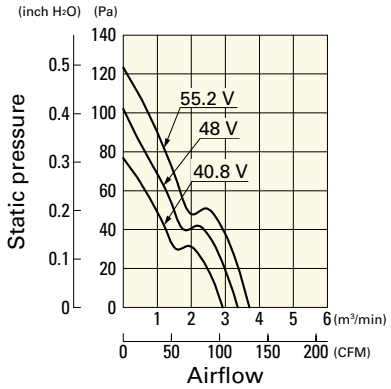
9G1248G101 With pulse sensor

Operating voltage range



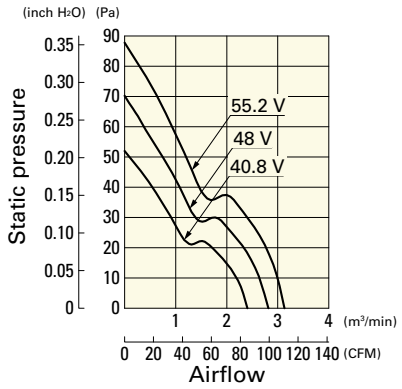
9G1248E101 With pulse sensor

Operating voltage range



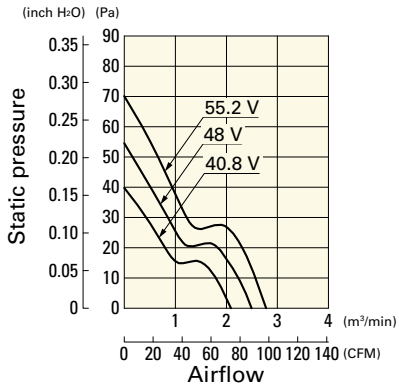
9G1248H101 With pulse sensor

Operating voltage range



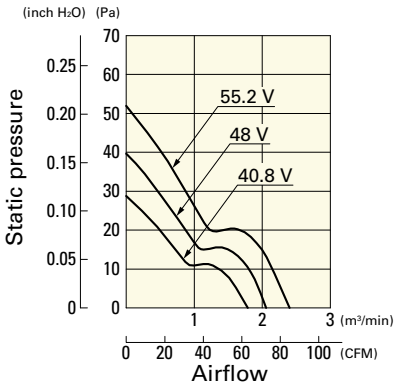
9G1248F101 With pulse sensor

Operating voltage range

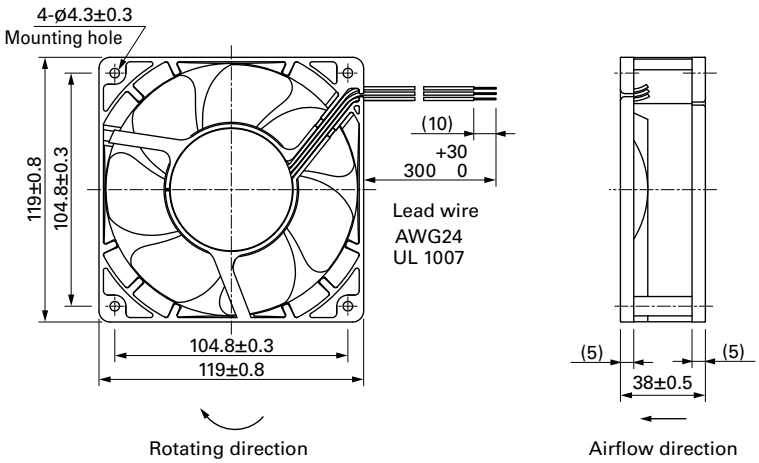


9G1248M101 With pulse sensor

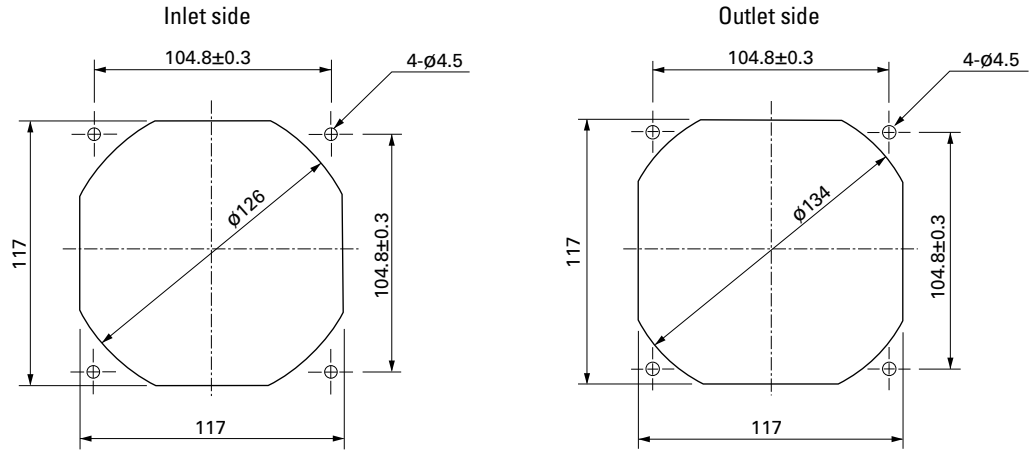
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

120×120×38 mm

San Ace 120 9SG type

Model 9SG1224H101 is not certified.

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 400 g

Specifications

The models listed below **have pulse sensors.**

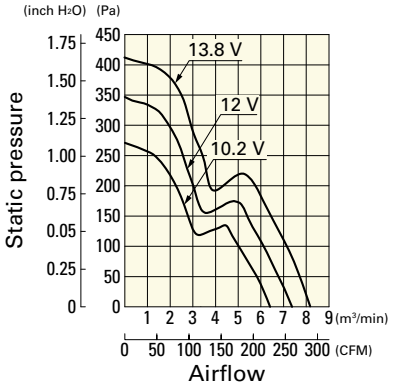
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9SG1212G101	12	10.2 to 13.8	4.0	48.0	6000	7.35	260	340	1.37	64	-20 to +70	40000/60˚C
9SG1224G101	24	20.4 to 27.6	2.0	48.0	6000	7.35	260	340	1.37	64		
9SG1224H101			0.46	11.0	3400	4.02	142	126	0.51	48		
9SG1248G101	48	40.8 to 55.2	1.0	48.0	6000	7.35	260	340	1.37	64		

Other sensor specifications are available as options. Refer to the index (p. 558).

Airflow - Static Pressure Characteristics

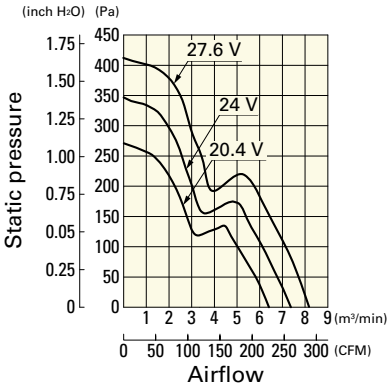
9SG1212G101 With pulse sensor

Operating voltage range



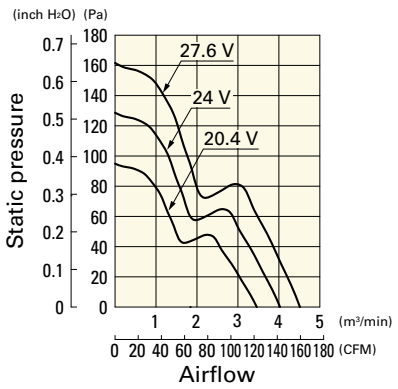
9SG1224G101 With pulse sensor

Operating voltage range



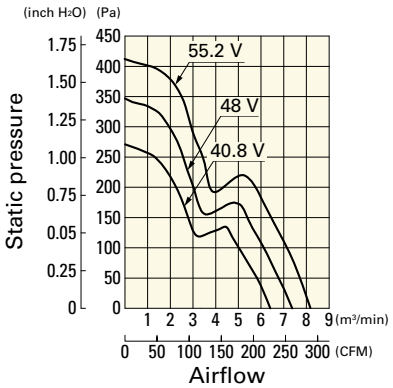
9SG1224H101 With pulse sensor

Operating voltage range

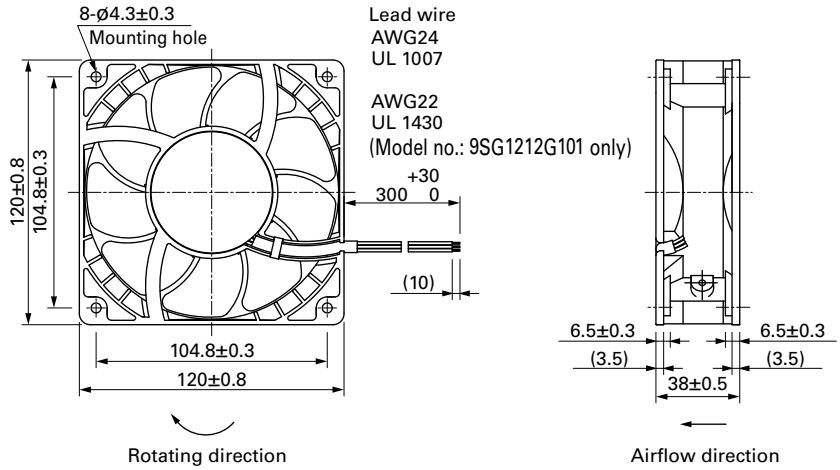


9SG1248G101 With pulse sensor

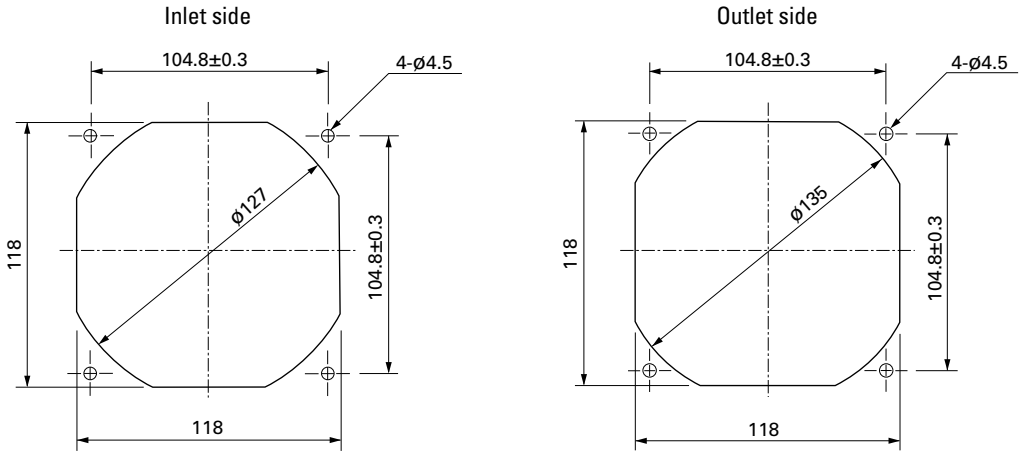
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

127×127×38 mm

San Ace 127 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 350 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

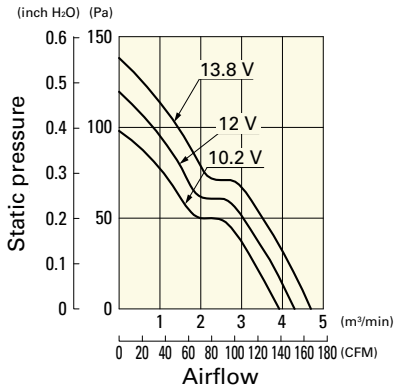
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P1312S101	12	10.2 to 13.8	1.3	15.6	3300	4.2	148	117.6	0.472	47	-20 to +60	40000/60˚C
109P1312H101			0.82	9.84	2950	3.8	134	98	0.394	45		
109P1324S101	24	20.4 to 27.6	0.55	13.2	3300	4.2	148	117.6	0.472	47		
109P1324H101			0.41	9.84	2950	3.8	134	98	0.394	45		
109P1348S101	48	40.8 to 55.2	0.3	14.4	3300	4.2	148	117.6	0.472	47		
109P1348H101			0.2	9.6	2950	3.8	134	98	0.394	45		

Other sensor specifications are available as options. Refer to the index (p. 545).

Airflow - Static Pressure Characteristics

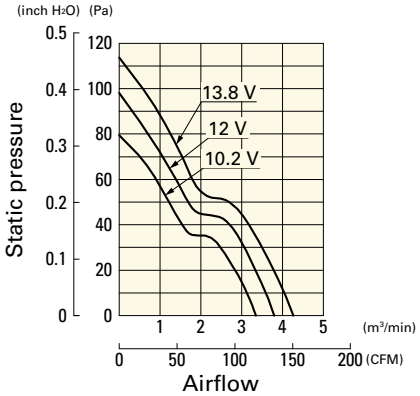
109P1312S101 With pulse sensor

Operating voltage range



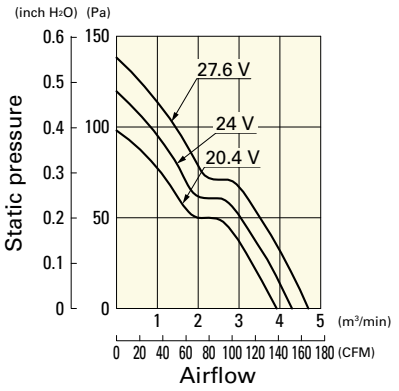
109P1312H101 With pulse sensor

Operating voltage range



109P1324S101 With pulse sensor

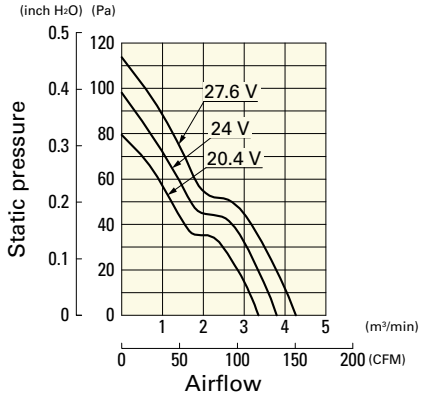
Operating voltage range



Airflow - Static Pressure Characteristics

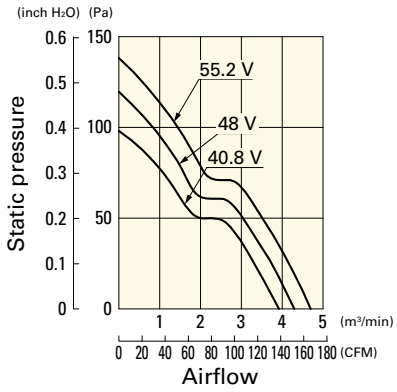
109P1324H101 With pulse sensor

Operating voltage range



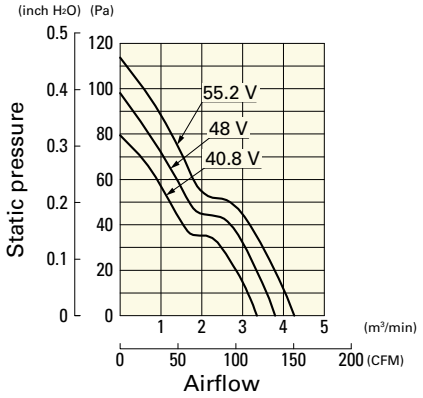
109P1348S101 With pulse sensor

Operating voltage range

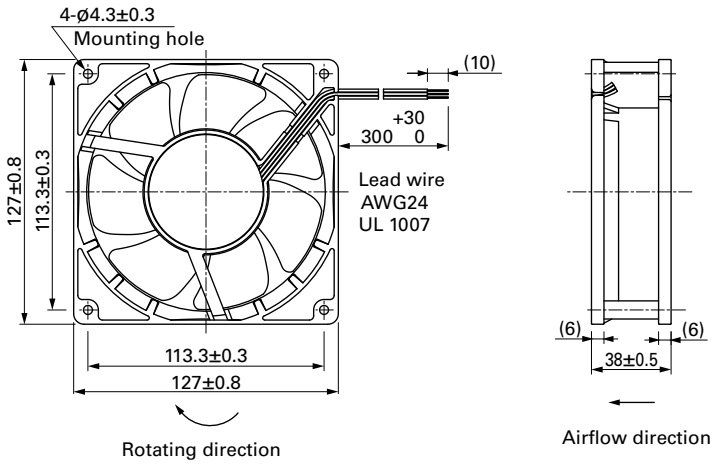


109P1348H101 With pulse sensor

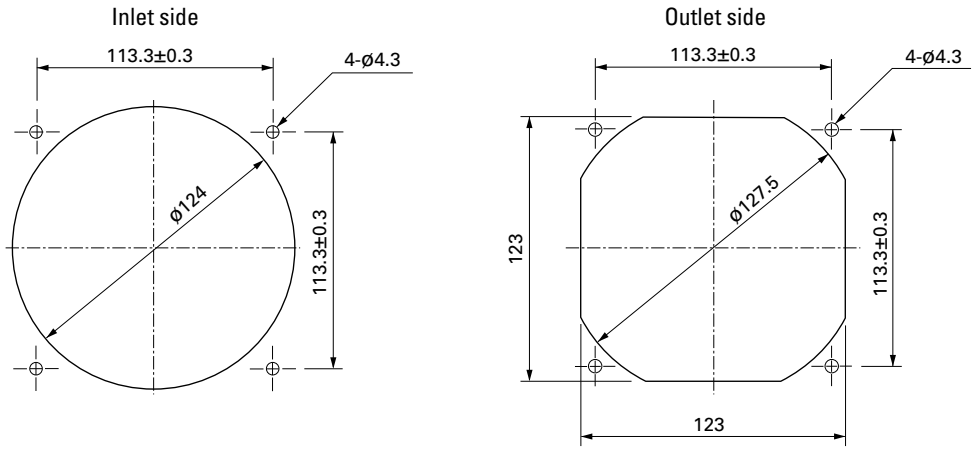
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-722, 109-723

127×127×38 mm

San Ace 127 9E type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 400 g

Specifications

The models listed below **have pulse sensors.**

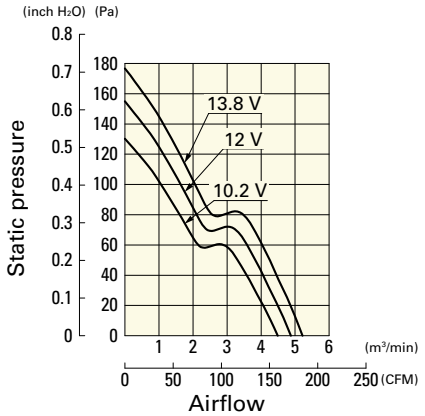
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109E1312A101	12	10.2 to 13.8	1.4	16.8	3850	4.81	170	155	0.622	52	-20 to +70	60000/60˚C
109E1312S101			1.2	14.4	3450	4.37	154	125	0.502	49		
109E1324G101	24	20.4 to 27.6	1.1	26.4	4550	5.66	200	216	0.867	57	-20 to +60	40000/60˚C
109E1324A101			0.7	16.8	3850	4.81	170	155	0.622	52	-20 to +70	60000/60˚C
109E1324S101			0.53	12.7	3450	4.37	154	125	0.502	49		
109E1348G101	48	40.8 to 55.2	0.54	25.9	4550	5.66	200	216	0.867	57	-20 to +60	40000/60˚C
109E1348A101			0.36	17.3	3850	4.81	170	155	0.622	52	-20 to +70	60000/60˚C
109E1348S101			0.28	13.4	3450	4.37	154	125	0.502	49		

Other sensor specifications are available as options. Refer to the index (p. 542).

Airflow - Static Pressure Characteristics

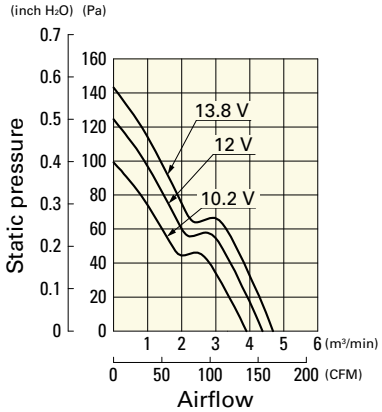
109E1312A101 With pulse sensor

Operating voltage range



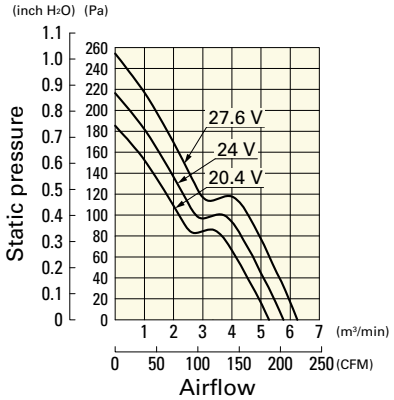
109E1312S101 With pulse sensor

Operating voltage range



109E1324G101 With pulse sensor

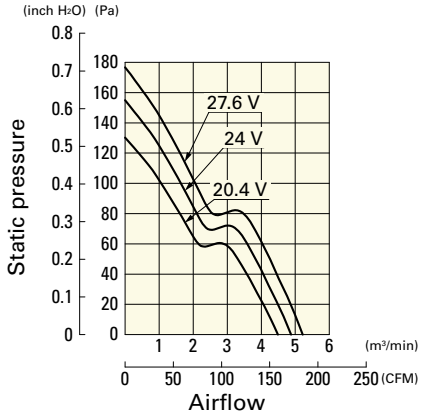
Operating voltage range



Airflow - Static Pressure Characteristics

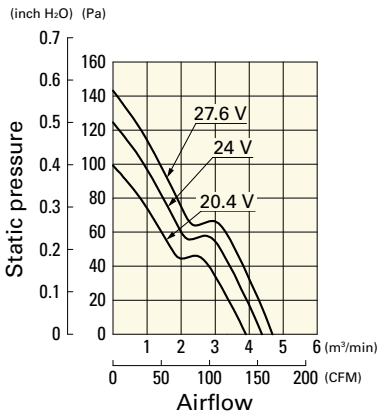
109E1324A101 With pulse sensor

Operating voltage range



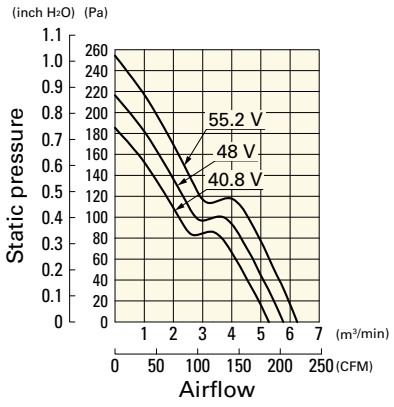
109E1324S101 With pulse sensor

Operating voltage range



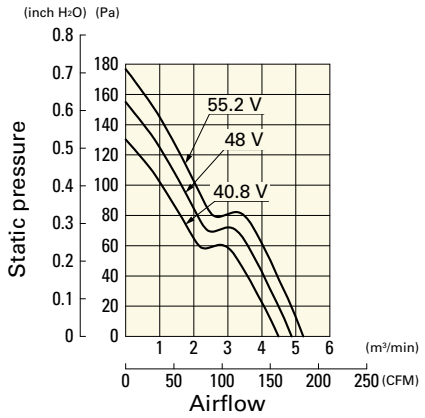
109E1348G101 With pulse sensor

Operating voltage range



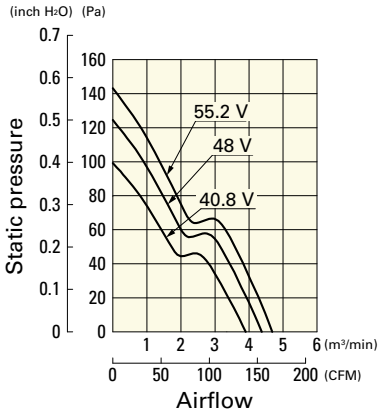
109E1348A101 With pulse sensor

Operating voltage range

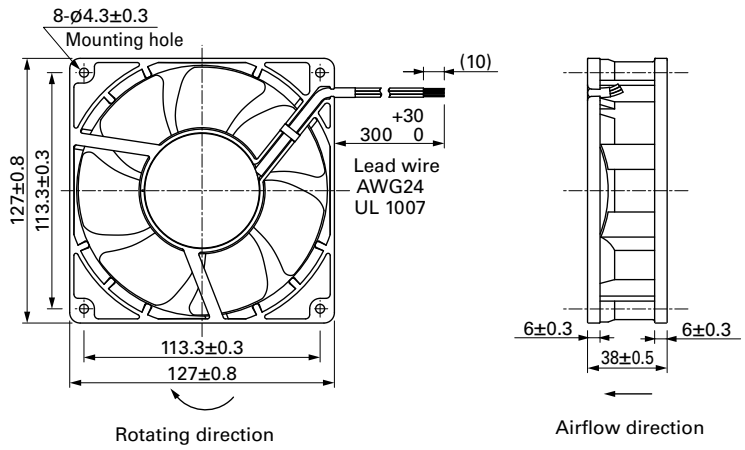


109E1348S101 With pulse sensor

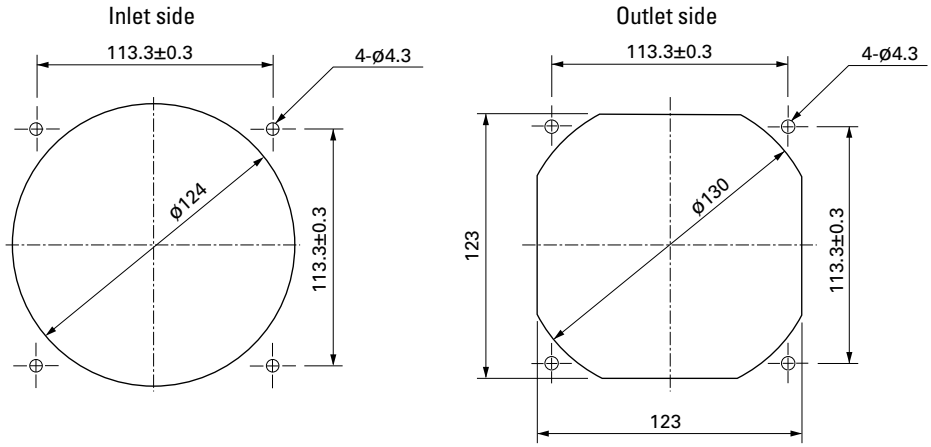
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-722, 109-723

140×140×38 mm

San Ace 140 9GV type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 630 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

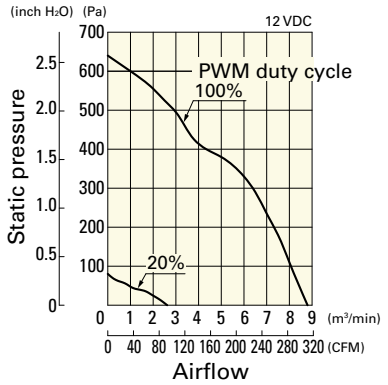
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV1412P1G001	12	10.8 to 13.2	100	4.6	55.2	7600	8.8	310	640	2.57	70	-20 to +70	40000/60˚C
			20	0.26	3.12	2300	2.66	93	80	0.32	39		
9GV1412P1S001			100	3.1	37.2	6650	7.7	272	480	1.93	67		
			20	0.26	3.12	2300	2.66	93	80	0.32	39		
9GV1412P1H001			100	1.7	20.4	5200	6.0	212	300	1.2	62		
			20	0.26	3.12	2300	2.66	93	80	0.32	39		
9GV1424P1G001	24	21.6 to 26.4	100	2.3	55.2	7600	8.8	310	640	2.57	70		
			20	0.13	3.12	2300	2.66	93	80	0.32	39		
9GV1424P1S001			100	1.55	37.2	6650	7.7	272	480	1.93	67		
			20	0.13	3.12	2300	2.66	93	80	0.32	39		
9GV1424P1H001			100	0.85	20.4	5200	6.0	212	300	1.2	62		
			20	0.13	3.12	2300	2.66	93	80	0.32	39		
9GV1448P1G001	48	36 to 60	100	1.15	55.2	7600	8.8	310	640	2.57	70		
			20	0.11	5.28	2300	2.66	93	80	0.32	39		
9GV1448P1S001			100	0.78	37.44	6650	7.7	272	480	1.93	67		
			20	0.11	5.28	2300	2.66	93	80	0.32	39		
9GV1448P1H001			100	0.42	20.16	5200	6.0	212	300	1.2	62		
			20	0.11	5.28	2300	2.66	93	80	0.32	39		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

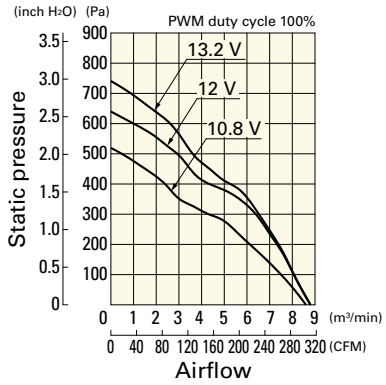
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV1412P1G001 With pulse sensor with PWM control function

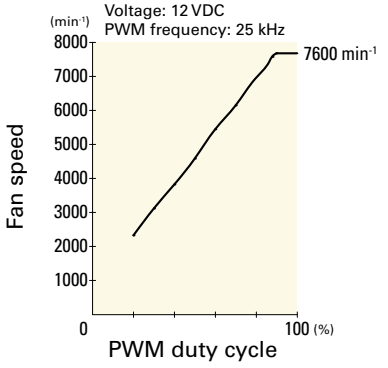
PWM duty cycle



Operating voltage range



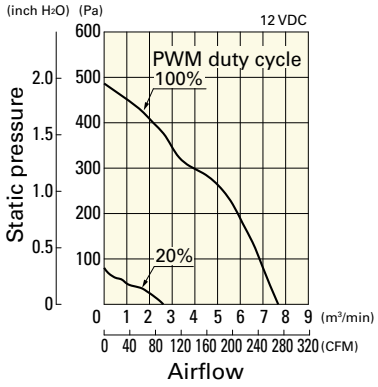
PWM duty - Speed characteristics example



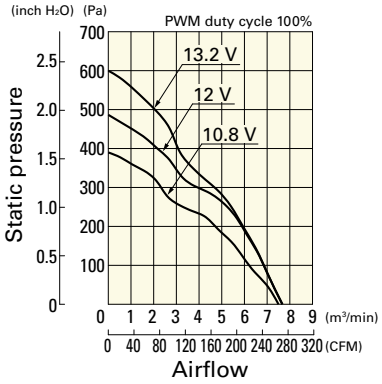
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV1412P1S001 With pulse sensor with PWM control function

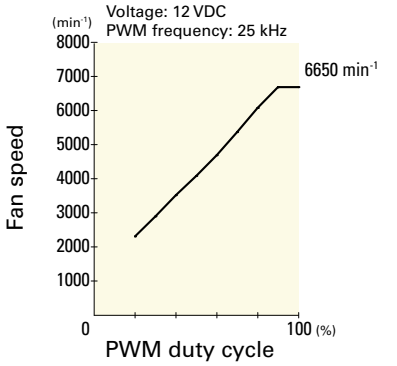
PWM duty cycle



Operating voltage range

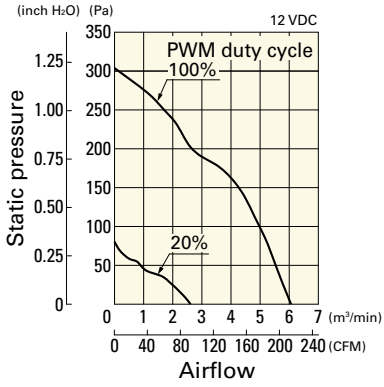


PWM duty - Speed characteristics example

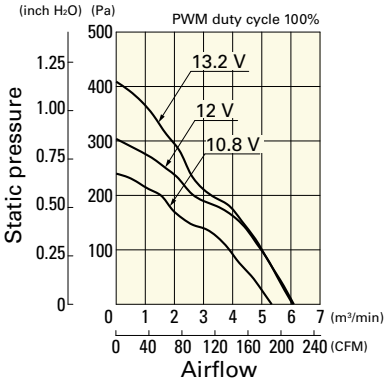


9GV1412P1H001 With pulse sensor with PWM control function

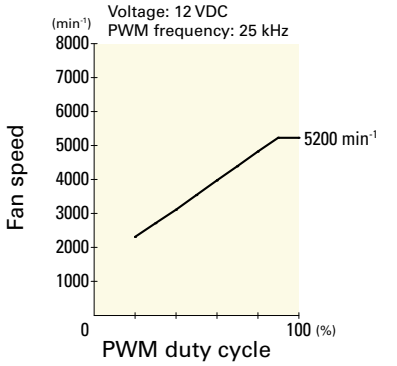
PWM duty cycle



Operating voltage range

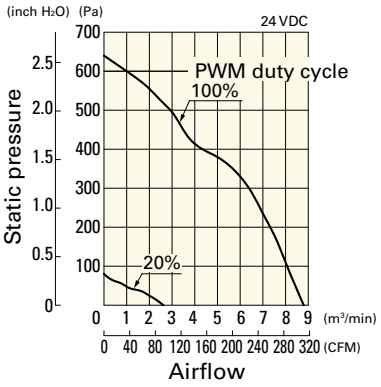


PWM duty - Speed characteristics example

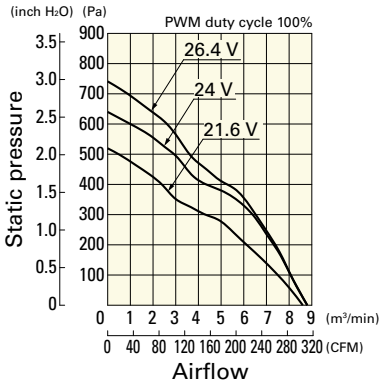


9GV1424P1G001 With pulse sensor with PWM control function

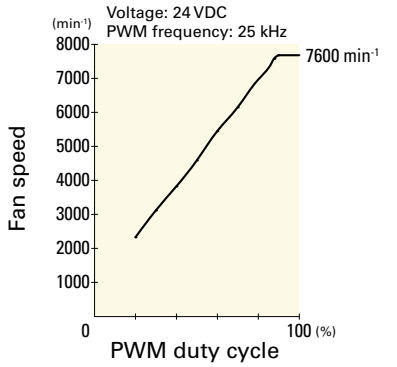
PWM duty cycle



Operating voltage range

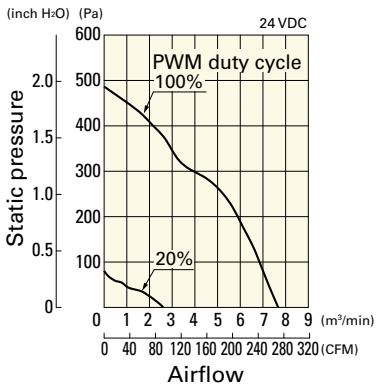


PWM duty - Speed characteristics example

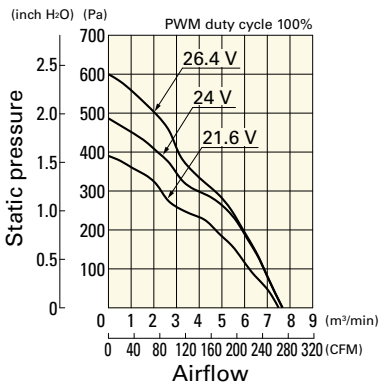


9GV1424P1S001 With pulse sensor with PWM control function

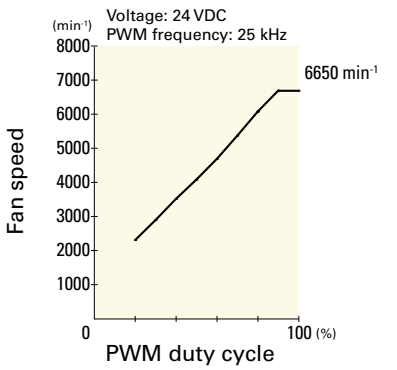
PWM duty cycle



Operating voltage range



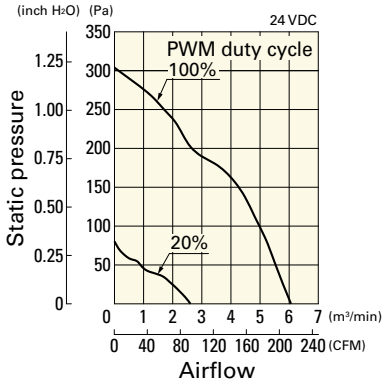
PWM duty - Speed characteristics example



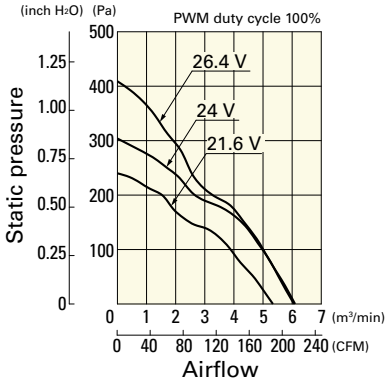
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV1424P1H001 With pulse sensor with PWM control function

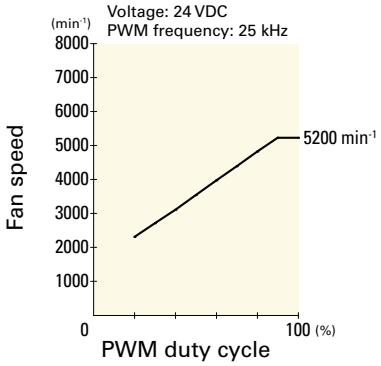
PWM duty cycle



Operating voltage range

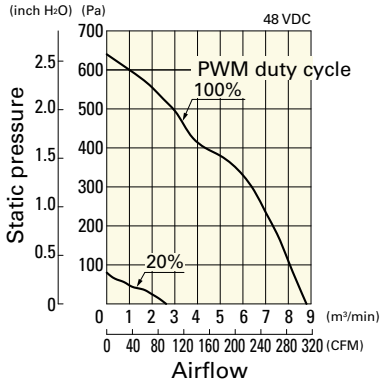


PWM duty - Speed characteristics example

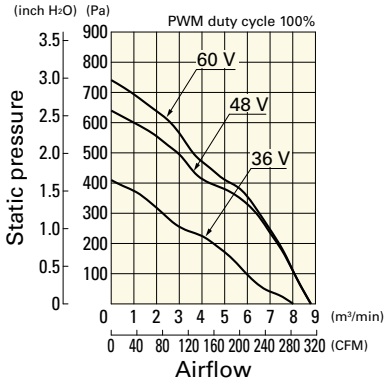


9GV1448P1G001 With pulse sensor with PWM control function

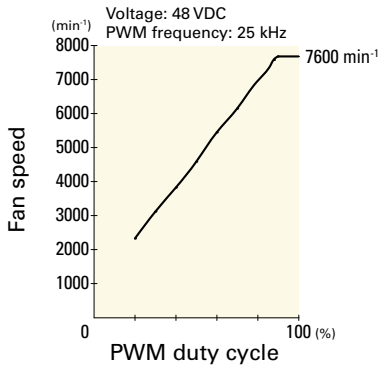
PWM duty cycle



Operating voltage range

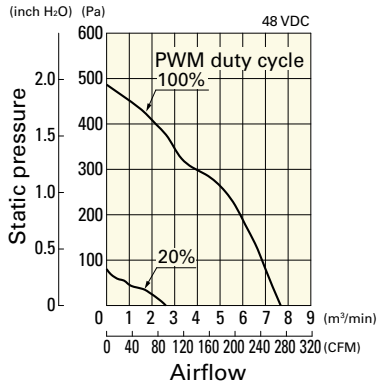


PWM duty - Speed characteristics example

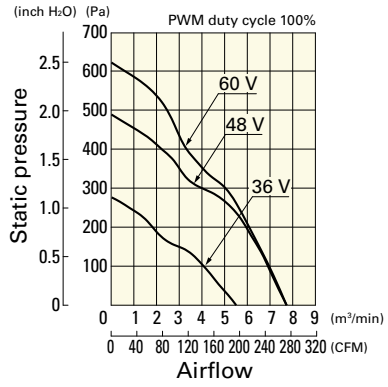


9GV1448P1S001 With pulse sensor with PWM control function

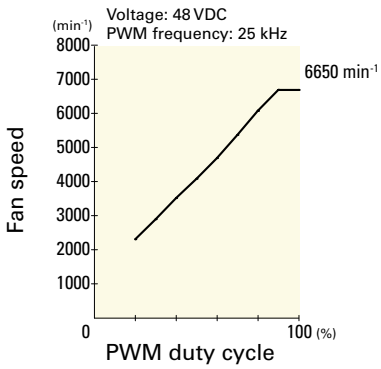
PWM duty cycle



Operating voltage range

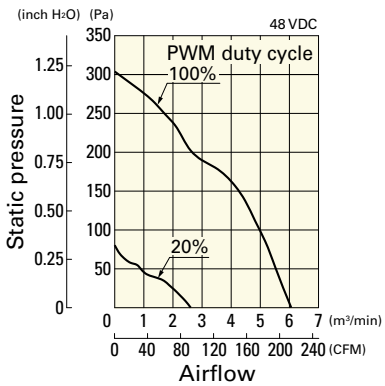


PWM duty - Speed characteristics example

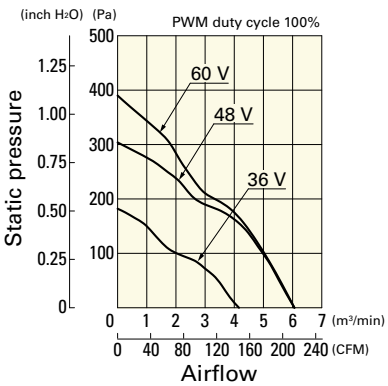


9GV1448P1H001 With pulse sensor with PWM control function

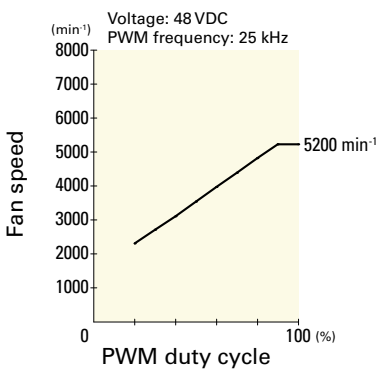
PWM duty cycle



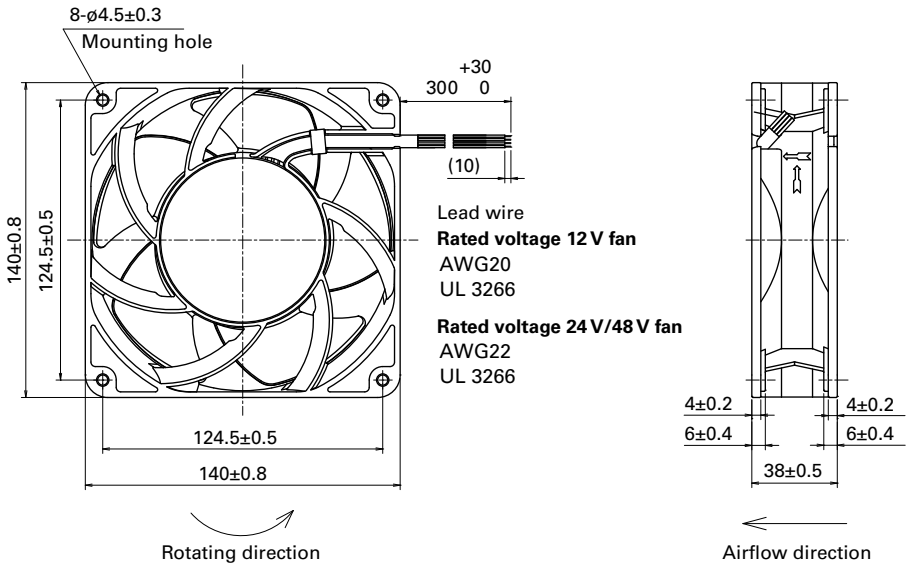
Operating voltage range



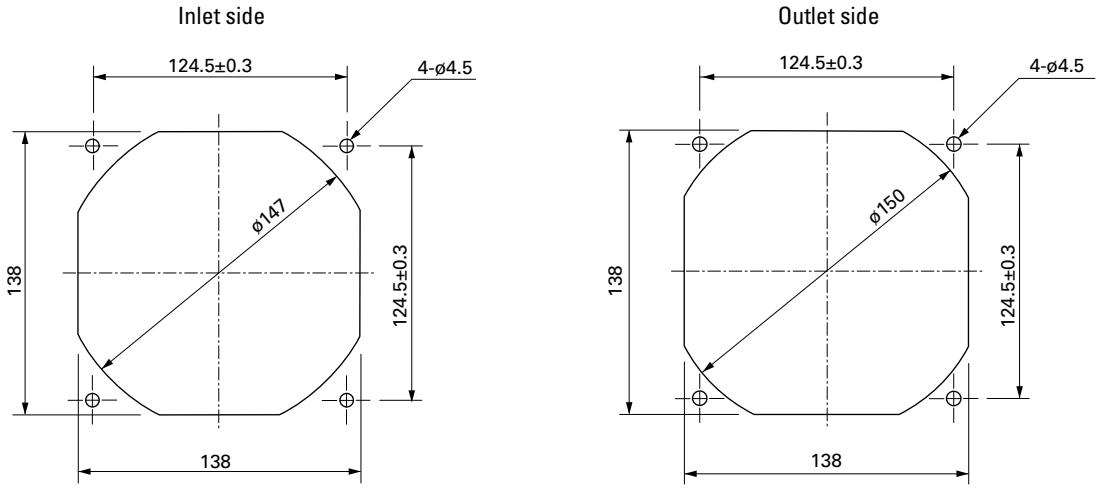
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-719, 109-719H

140×140×38 mm

San Ace 140 9P type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 450 g

Specifications

The models listed below **have ribs and pulse sensors.**

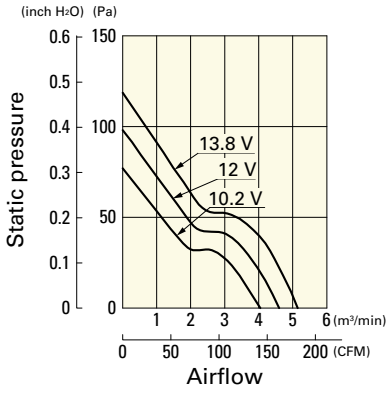
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109P1412H101	12	10.2 to 13.8	0.73	8.76	2600	4.5	159	94	0.378	46	-20 to +70	40000/60˚C
109P1412M101			0.33	3.96	1900	3.3	117	52	0.209	38		
109P1424H101	24	20.4 to 27.6	0.37	8.88	2600	4.5	159	94	0.378	46		
109P1424M101			0.16	3.84	1900	3.3	117	52	0.209	38		
109P1448H101	48	40.8 to 55.2	0.2	9.6	2600	4.5	159	94	0.378	46		
109P1448M101			0.09	4.32	1900	3.3	117	52	0.209	38		

Other sensor specifications are available as options. Refer to the index (p. 545).

Airflow - Static Pressure Characteristics

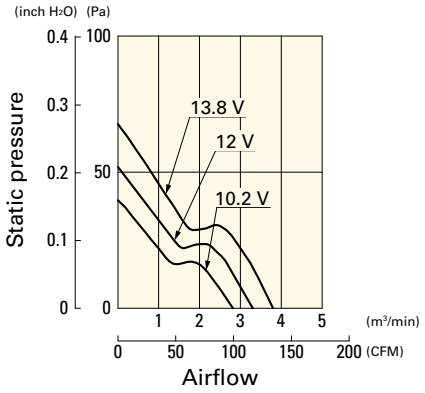
109P1412H101 With pulse sensor

Operating voltage range



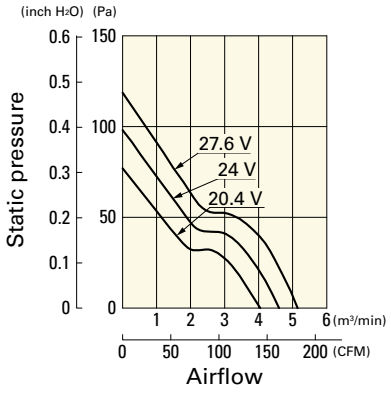
109P1412M101 With pulse sensor

Operating voltage range



109P1424H101 With pulse sensor

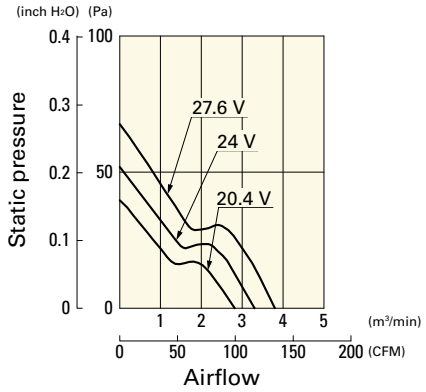
Operating voltage range



Airflow - Static Pressure Characteristics

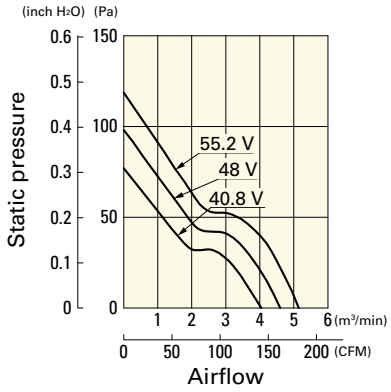
109P1424M101 With pulse sensor

Operating voltage range



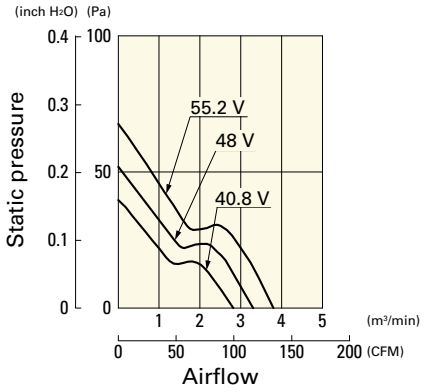
109P1448H101 With pulse sensor

Operating voltage range

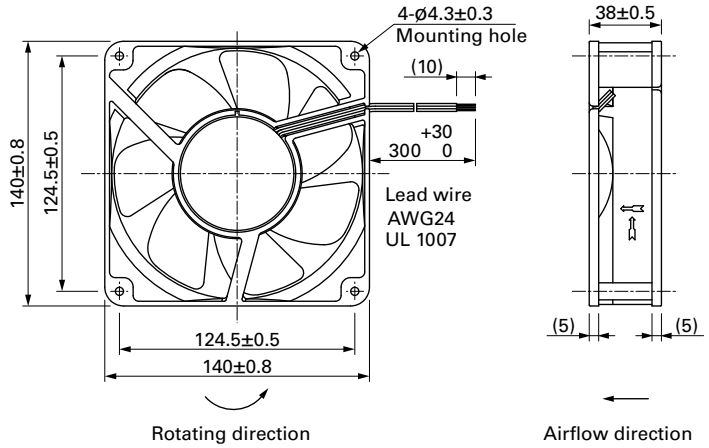


109P1448M101 With pulse sensor

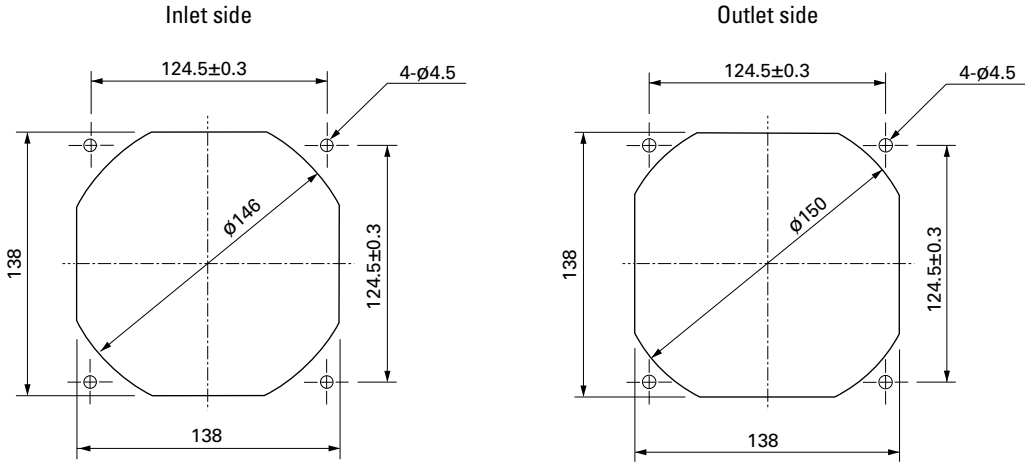
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-719, 109-719H

150×150×50 mm

San Ace 150 9GV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 450 g

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

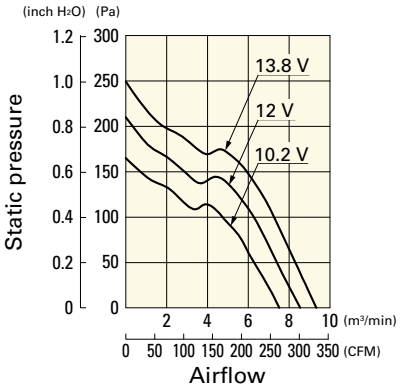
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV1512H501	12	10.2 to 13.8	2.9	34.8	3900	8.54	300	210	0.84	61	-20 to +70	40000/60˚C
9GV1512M501			1.2	14.4	3000	6.35	224	132	0.53	53		
9GV1524M501	24	20.4 to 27.6	0.6	14.4	3000	6.35	224	132	0.53	53		

Other sensor specifications are available as options. Refer to the index (p. 556).

Airflow - Static Pressure Characteristics

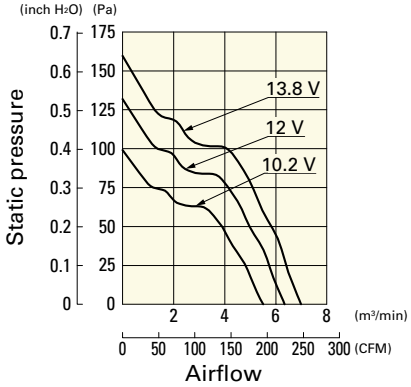
9GV1512H501 With pulse sensor

Operating voltage range



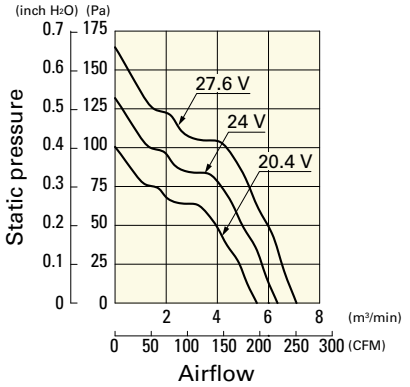
9GV1512M501 With pulse sensor

Operating voltage range

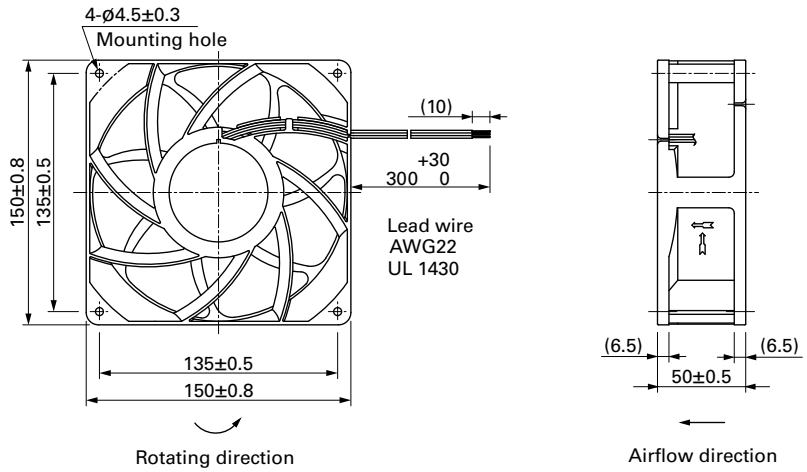


9GV1524M501 With pulse sensor

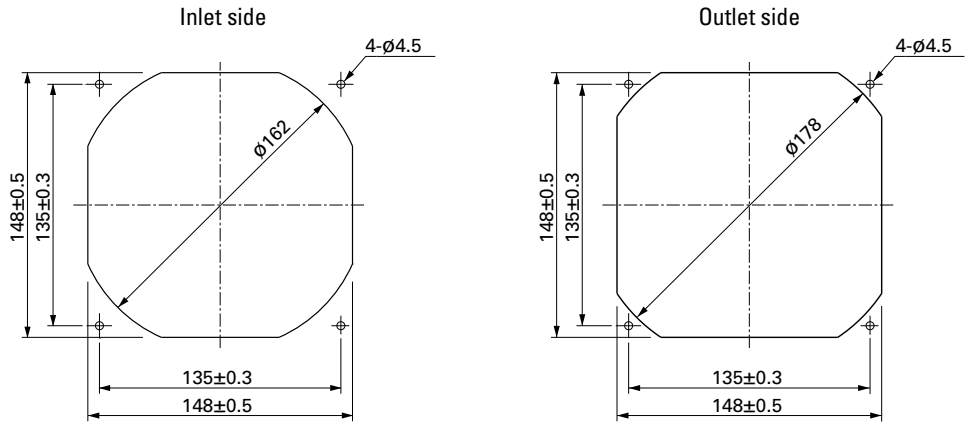
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-1051, 109-1052

ø172×147×25 mm

San Ace 172 9E type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue Sensor Yellow
- Mass ····· 500 g

Specifications

The models listed below **have pulse sensors.**

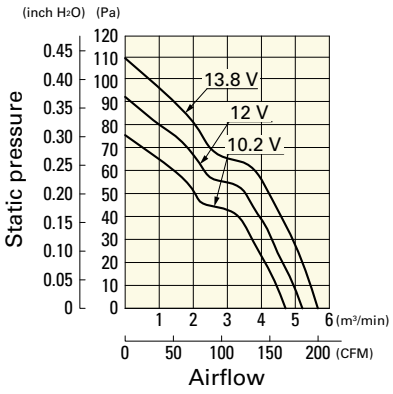
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109E4712M401	12	10.2 to 13.8	1.3	15.6	2800	5.2	183	92	0.369	51	-20 to +60	40000/60˚C
109E4712L401			1.0	12.0	2500	4.6	162	73	0.293	48		
109E4724H401	24	20.4 to 27.6	1.0	24.0	3400	6.4	226	135	0.542	57		
109E4724F401			0.79	19.0	3100	5.8	204	112	0.45	54		
109E4724M401			0.58	13.9	2800	5.2	183	92	0.369	51		
109E4724L401			0.44	10.6	2500	4.6	162	73	0.293	48		
109E4748S401	48	40.8 to 55.2	0.62	29.8	3650	6.8	240	156	0.627	58		
109E4748H401			0.52	25.0	3400	6.4	226	135	0.542	57		
109E4748F401			0.4	19.2	3100	5.8	204	112	0.45	54		
109E4748M401			0.32	15.4	2800	5.2	183	92	0.369	51		
109E4748L401			0.25	12.0	2500	4.6	162	73	0.293	48		

Other sensor specifications are available as options. Refer to the index (pp. 542 to 543).

Airflow - Static Pressure Characteristics

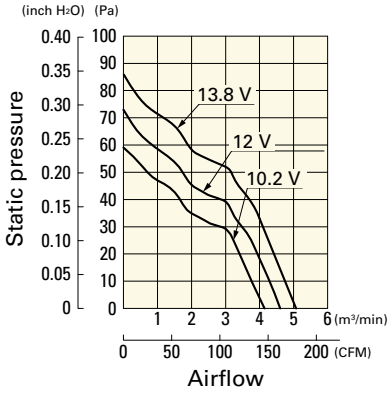
109E4712M401 With pulse sensor

Operating voltage range



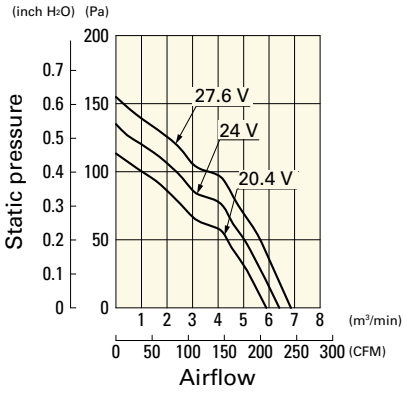
109E4712L401 With pulse sensor

Operating voltage range



109E4724H401 With pulse sensor

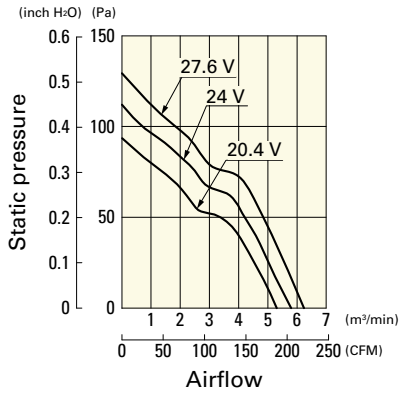
Operating voltage range



Airflow - Static Pressure Characteristics

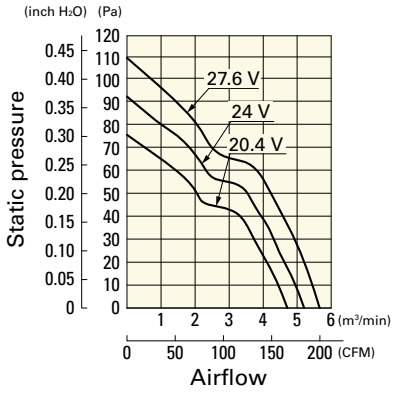
109E4724F401 With pulse sensor

Operating voltage range



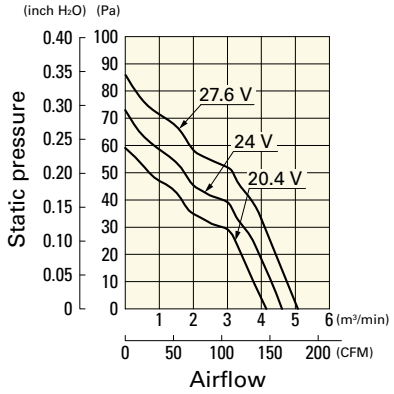
109E4724M401 With pulse sensor

Operating voltage range



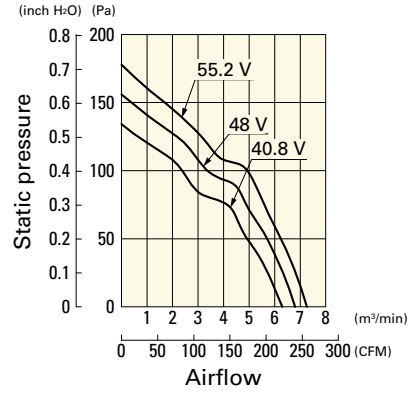
109E4724L401 With pulse sensor

Operating voltage range



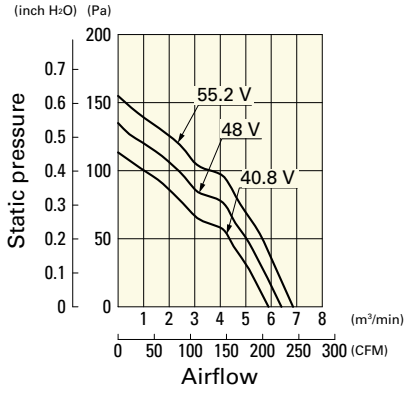
109E4748S401 With pulse sensor

Operating voltage range



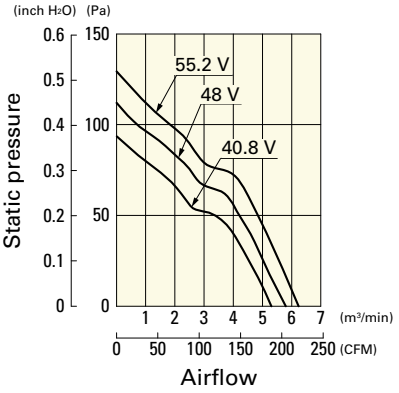
109E4748H401 With pulse sensor

Operating voltage range



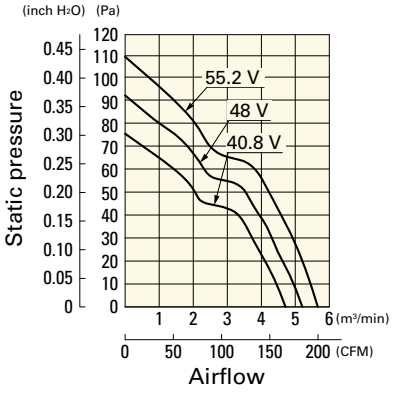
109E4748F401 With pulse sensor

Operating voltage range



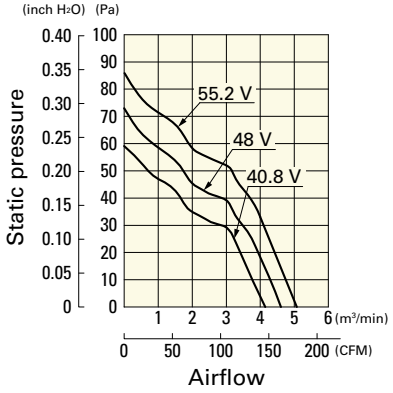
109E4748M401 With pulse sensor

Operating voltage range

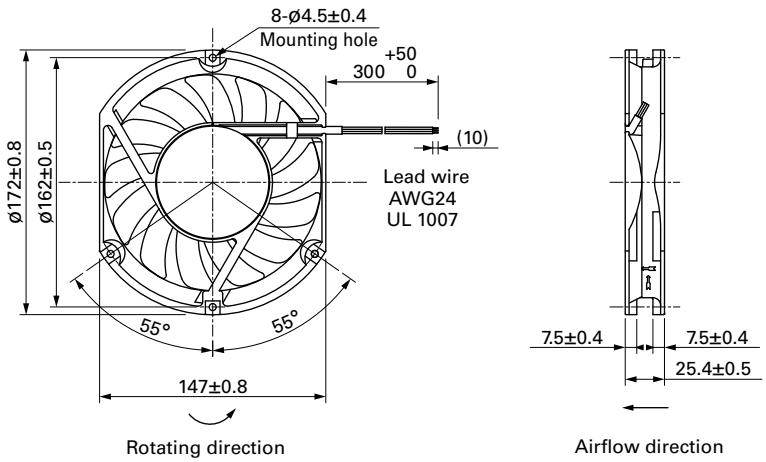


109E4748L401 With pulse sensor

Operating voltage range

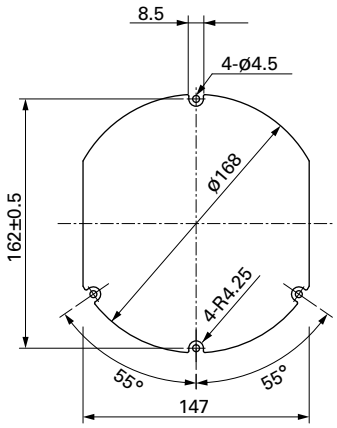


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 515

Model no.: 109-319E, 109-319H, 109-320

ø172×150×51 mm

San Ace 172 9HV type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 800 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9HV5724P5H001	24	16 to 30	100	5.0	120	8000	12.3	434	1000	4.02	77	-20 to +70	40000/60˚C (70000/40˚C)
			20	0.5	12.0	3000	4.6	162	175	0.7	51		
9HV5748P5G001	48	36 to 72	100	5.0	240	10500	16.1	568	1600	6.43	83		
			20	0.41	19.7	3700	5.6	198	250	1.01	57		

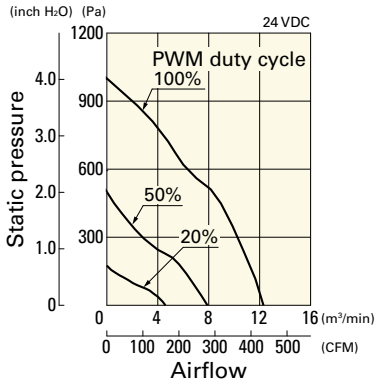
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 556).

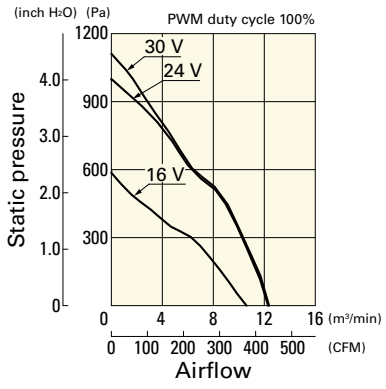
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV5724P5H001 With pulse sensor with PWM control function

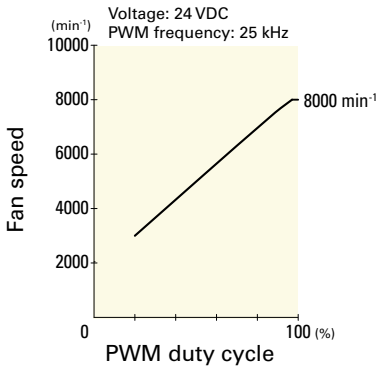
PWM duty cycle



Operating voltage range



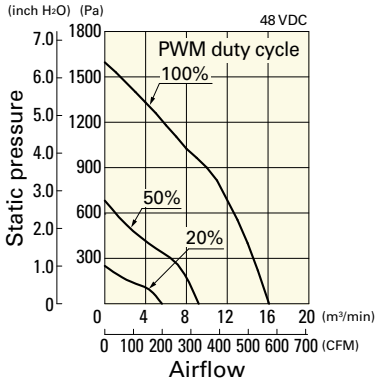
PWM duty - Speed characteristics example



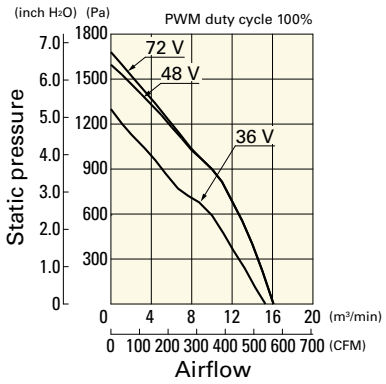
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9HV5748P5G001 With pulse sensor with PWM control function

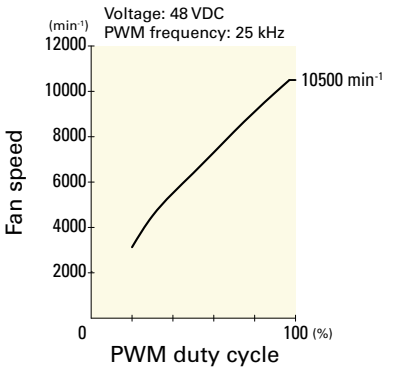
PWM duty cycle



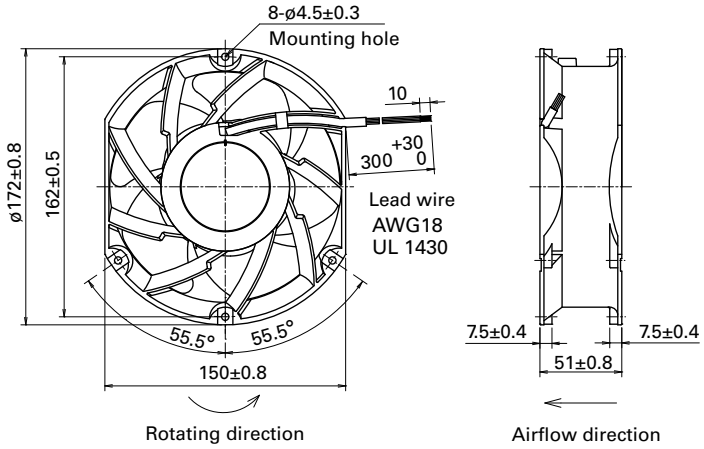
Operating voltage range



PWM duty - Speed characteristics example

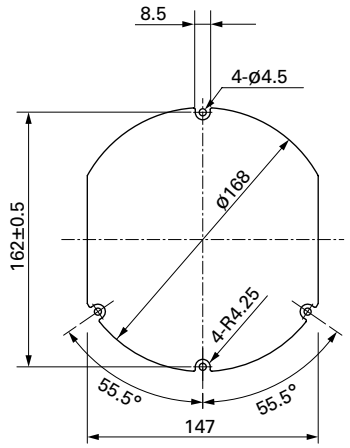


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 515

Model no.: 109-319J, 109-319E, 109-319H, 109-320

ø172×150×51 mm

San Ace 172 9SG type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 760 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9SG5724P5H61	24	20.4 to 27.6	100	2.8	67.2	6500	11.6	410	540	2.16	71	-20 to +70	40000/60˚C
			0	0.18	4.32	1300	2.32	81.9	30	0.12	28		
9SG5748P5G01	48	36 to 72	100	2.91	140	8600	15.46	546	1000	4.02	78	-20 to +60	
			0	0.21	10.1	2000	3.59	127	75.1	0.3	40		
9SG5748P5H01			100	1.62	78	6500	11.6	410	770	3.09	71		
			0	0.21	10.1	2000	3.59	127	75.1	0.3	40		

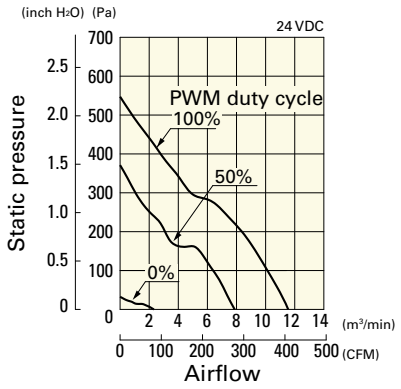
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 558).

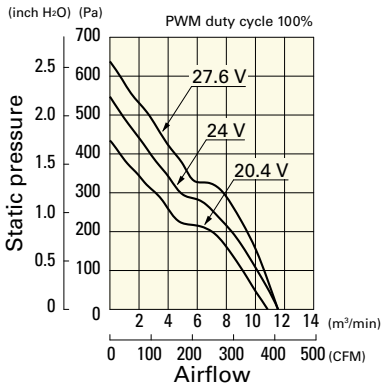
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9SG5724P5H61 With pulse sensor with PWM control function

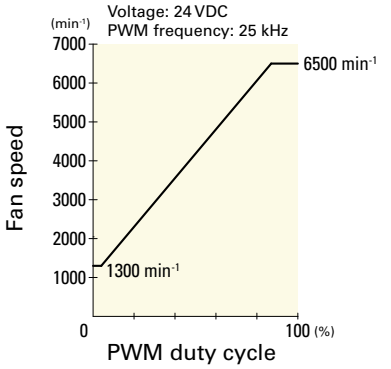
PWM duty cycle



Operating voltage range



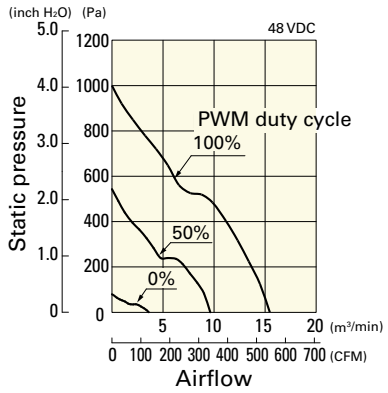
PWM duty - Speed characteristics example



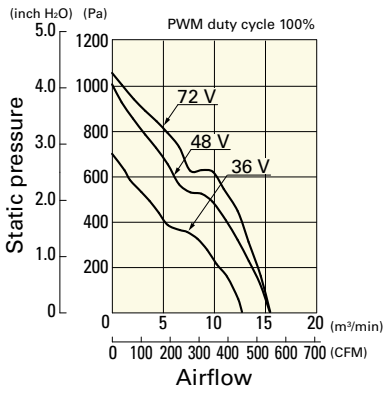
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9SG5748P5G01 With pulse sensor with PWM control function

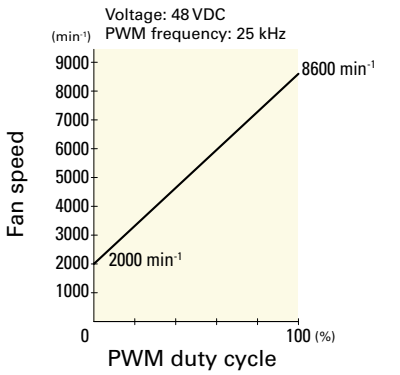
PWM duty cycle



Operating voltage range

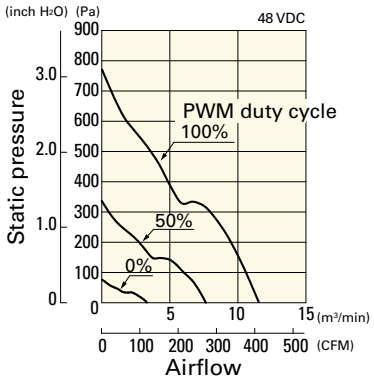


PWM duty - Speed characteristics example

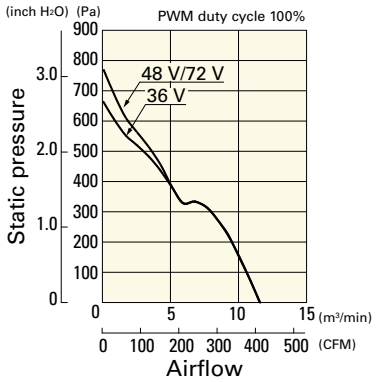


9SG5748P5H01 With pulse sensor with PWM control function

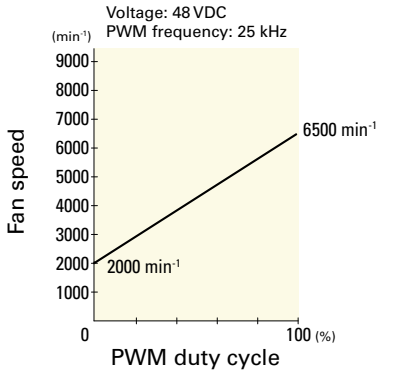
PWM duty cycle



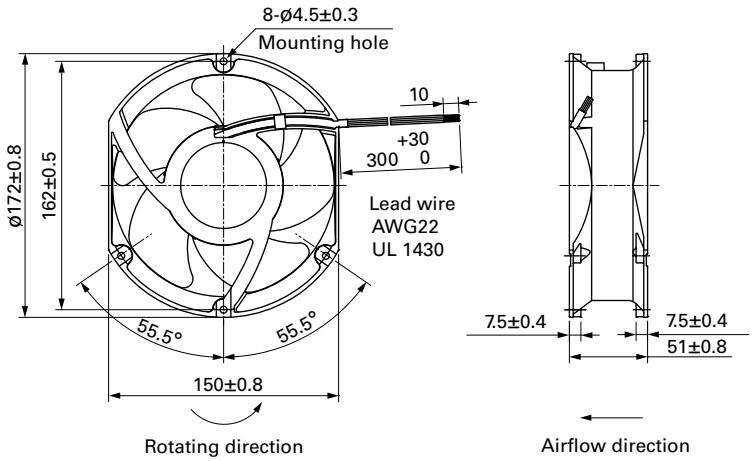
Operating voltage range



PWM duty - Speed characteristics example

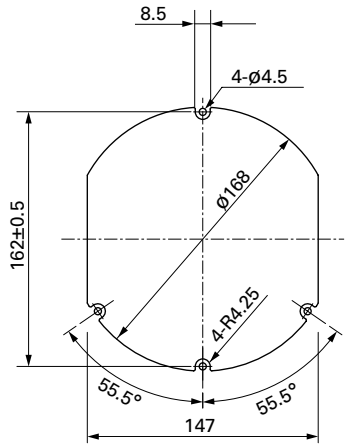


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 515

Model no.: 109-319J, 109-319E, 109-319H, 109-320

ø172×150×51 mm

San Ace 172 9GV type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 800 g

Specifications

The models listed below **have pulse sensors.**

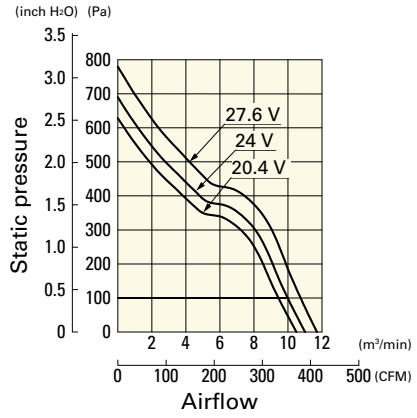
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV5724H501	24	20.4 to 27.6	4.0	96	6300	11.32	400	690	2.77	74	-20 to +70	40000/60˚C
9GV5748H501	48	40.8 to 55.2	2.0	96								

Other sensor specifications are available as options. Refer to the index (p. 556).

Airflow - Static Pressure Characteristics

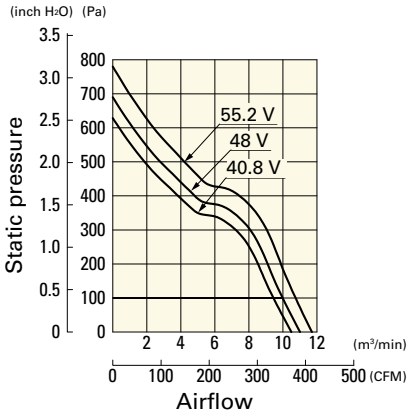
9GV5724H501 With pulse sensor

Operating voltage range

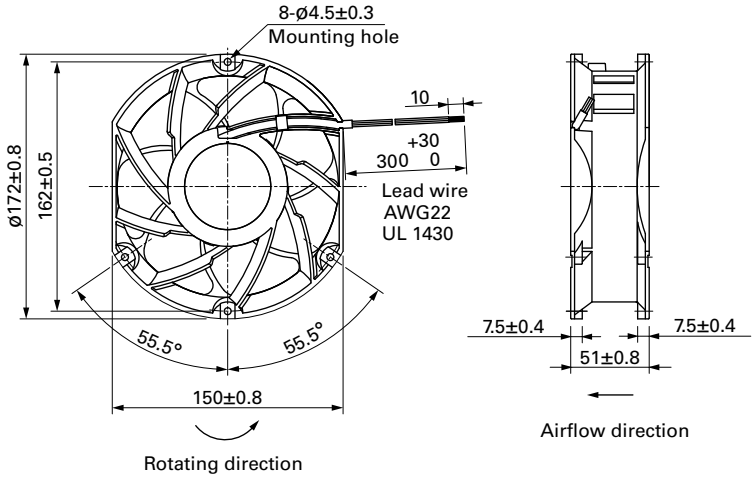


9GV5748H501 With pulse sensor

Operating voltage range

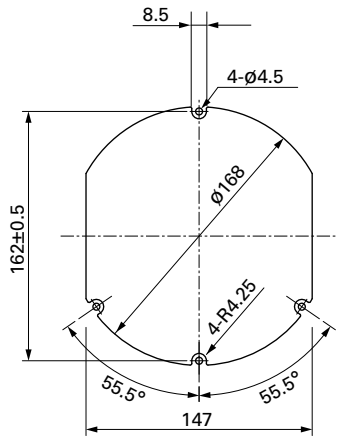


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 515

Model no.: 109-319J, 109-319E, 109-319H, 109-320

ø172×150×51 mm

San Ace 172 9E type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue Sensor Yellow
- Mass ····· 760 g

Specifications

The models listed below **have pulse sensors.**

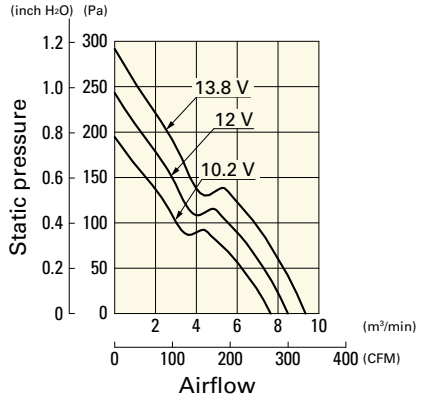
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109E5712K501	12	10.2 to 13.8	2.9	34.8	4100	8.5	300	243.0	0.976	60	-20 to +60	40000/60˚C
109E5712Y501			2.3	27.6	3800	8	282	210	0.84	60		
109E5712H501			1.2	14.4	3050	6.4	226	137.2	0.551	52	-20 to +70	
109E5712F501			0.68	8.16	2500	5.1	180	95	0.38	47		
109E5712M501			0.48	5.76	2000	4.2	148	67.6	0.271	41		
109E5724C501	24	20.4 to 27.6	2.3	55.2	4800	9.9	350	308.0	1.237	66	-20 to +70	
109E5724K501			1.3	31.2	4100	8.5	300	243.0	0.976	60		
109E5724H501			0.58	13.92	3050	6.4	226	137.2	0.551	52		
109E5724F501			0.35	8.4	2500	5.1	180	95	0.38	47		
109E5724M501			0.2	4.8	2000	4.2	148	67.6	0.271	41		
109E5748C501	48	40.8 to 55.2	1.2	57.6	4800	9.9	350	308.0	1.237	66		
109E5748K501			0.7	33.6	4100	8.5	300	243.0	0.976	60	-20 to +60	
109E5748H501			0.28	13.44	3050	6.4	226	137.2	0.551	52	-20 to +70	
109E5748F501			0.19	9.12	2500	5.1	180	95	0.38	47		
109E5748M501			0.11	5.28	2000	4.2	148	67.6	0.271	41		

Other sensor specifications are available as options. Refer to the index (p. 543).

Airflow - Static Pressure Characteristics

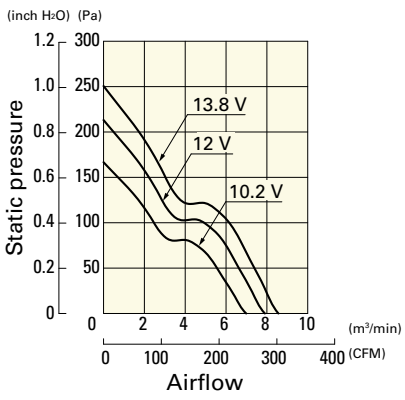
109E5712K501 With pulse sensor

Operating voltage range



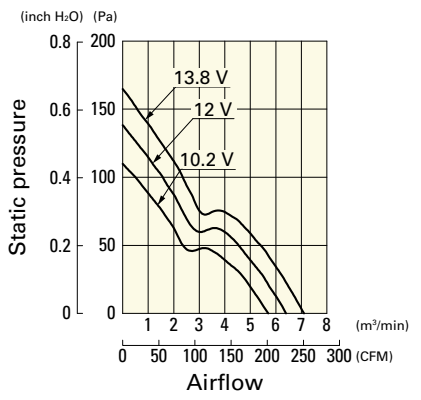
109E5712Y501 With pulse sensor

Operating voltage range



109E5712H501 With pulse sensor

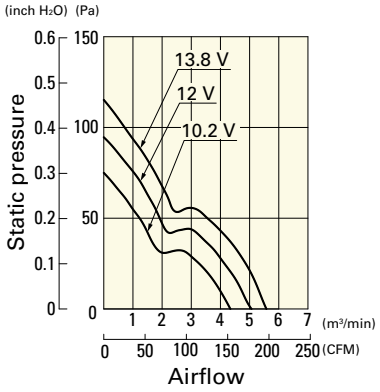
Operating voltage range



Airflow - Static Pressure Characteristics

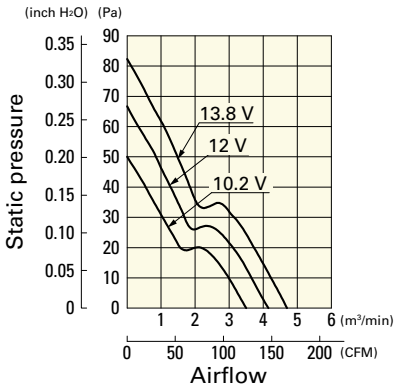
109E5712F501 With pulse sensor

Operating voltage range



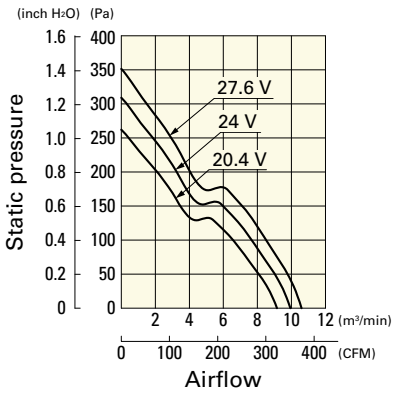
109E5712M501 With pulse sensor

Operating voltage range



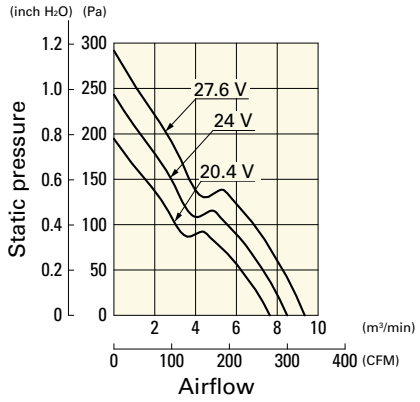
109E5724C501 With pulse sensor

Operating voltage range



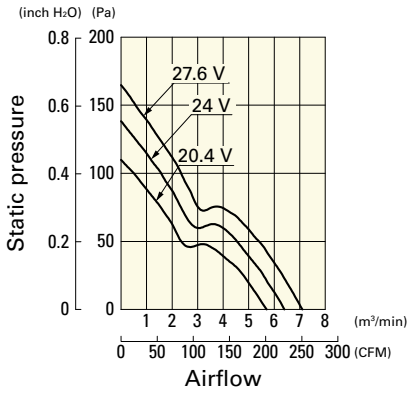
109E5724K501 With pulse sensor

Operating voltage range



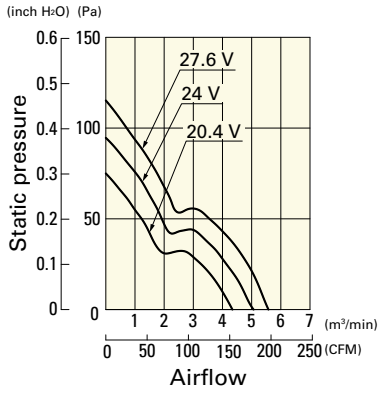
109E5724H501 With pulse sensor

Operating voltage range



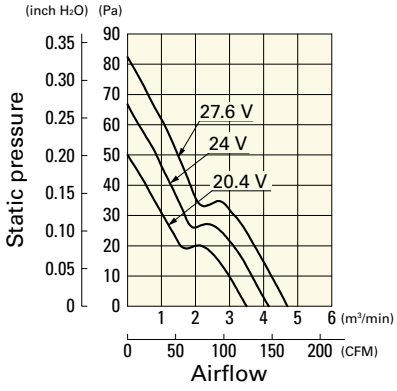
109E5724F501 With pulse sensor

Operating voltage range



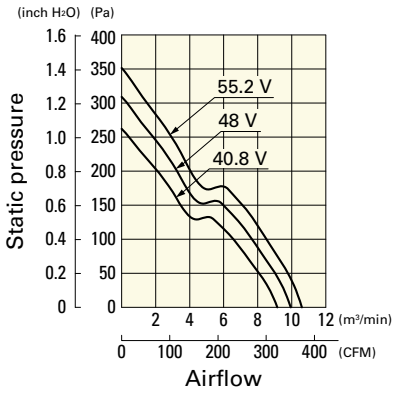
109E5724M501 With pulse sensor

Operating voltage range



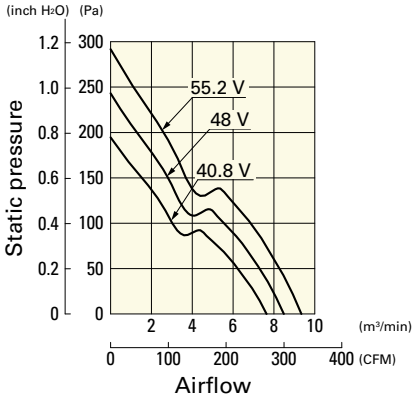
109E5748C501 With pulse sensor

Operating voltage range



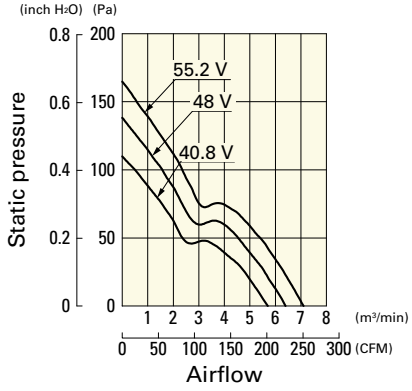
109E5748K501 With pulse sensor

Operating voltage range



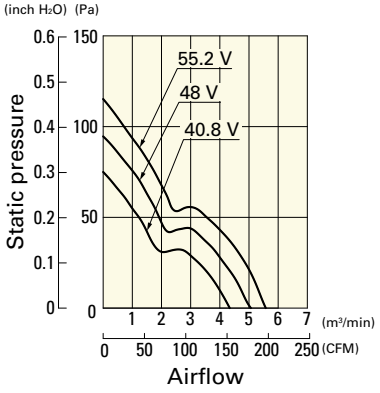
109E5748H501 With pulse sensor

Operating voltage range



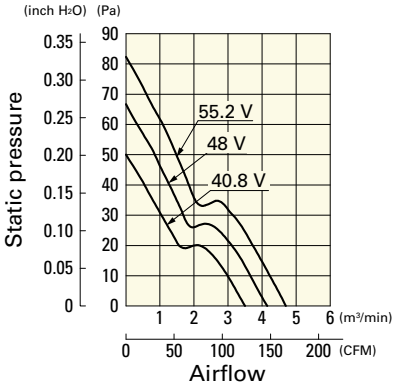
109E5748F501 With pulse sensor

Operating voltage range

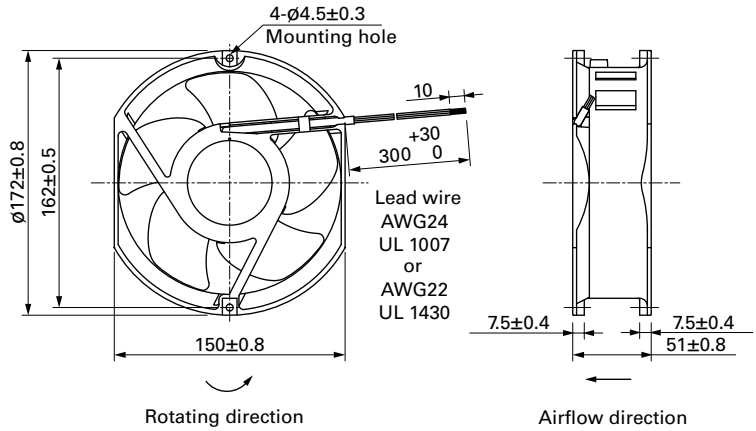


109E5748M501 With pulse sensor

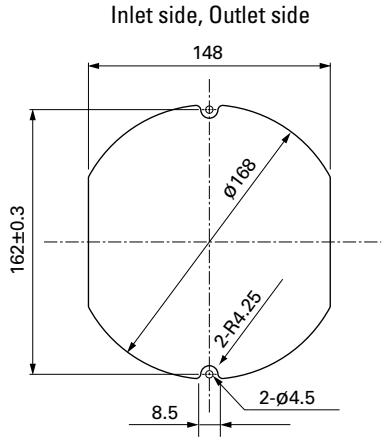
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 515

Model no.: 109-319E, 109-319H, 109-320

ø172×51 mm

San Ace 172 9E type

Round type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 780 g

Specifications

The models listed below **have pulse sensors.**

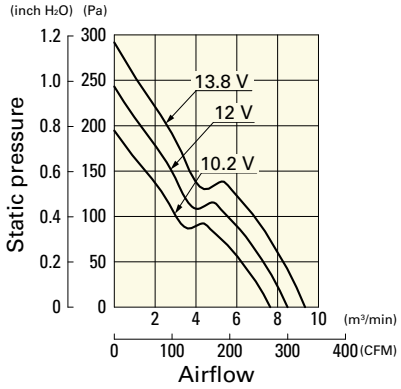
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109E1712K501	12	10.2 to 13.8	2.9	34.8	4100	8.5	300	243.0	0.976	55	-20 to +60	40000/60˚C
109E1712Y501			2.3	27.6	3800	7.8	276	210.0	0.843	53		
109E1712H501			1.2	14.4	3050	6.4	226	137.2	0.551	47	-20 to +70	
109E1712F501			0.9	10.8	2500	5.1	180	95.0	0.382	42		
109E1712M501			0.48	5.76	2000	4.2	148	67.6	0.271	36		
109E1724C501	24	20.4 to 27.6	2.3	55.2	4800	9.9	350	308.0	1.237	60		
109E1724K501			1.3	31.2	4100	8.5	300	243.0	0.976	55		
109E1724H501			0.58	13.92	3050	6.4	226	137.2	0.551	47		
109E1724F501			0.35	8.4	2500	5.1	180	95	0.382	42		
109E1724M501			0.2	4.8	2000	4.2	148	67.6	0.271	36		
109E1748C501	48	40.8 to 55.2	1.2	57.6	4800	9.9	350	308.0	1.237	60		
109E1748K501			0.7	33.6	4100	8.5	300	243.0	0.976	55	-20 to +60	
109E1748H501			0.28	13.44	3050	6.4	226	137.2	0.551	47	-20 to +70	
109E1748F501			0.19	9.12	2500	5.1	180	95	0.382	42	-20 to +60	
109E1748M501			0.11	5.28	2000	4.2	148	67.6	0.271	36	-20 to +70	

Other sensor specifications are available as options. Refer to the index (p. 542).

Airflow - Static Pressure Characteristics

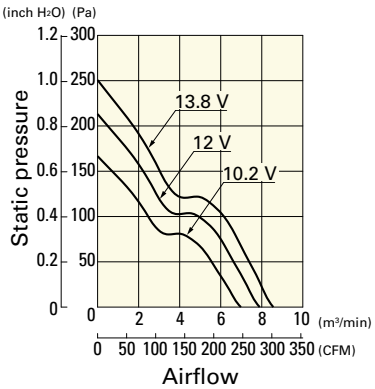
109E1712K501 With pulse sensor

Operating voltage range



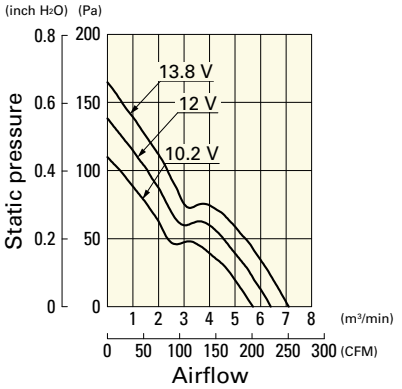
109E1712Y501 With pulse sensor

Operating voltage range



109E1712H501 With pulse sensor

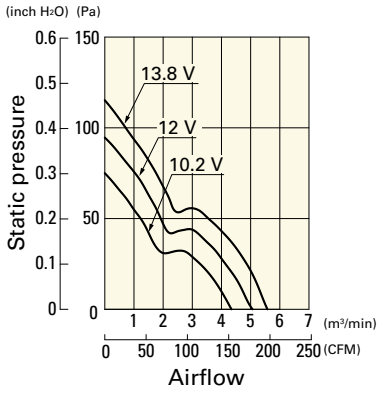
Operating voltage range



Airflow - Static Pressure Characteristics

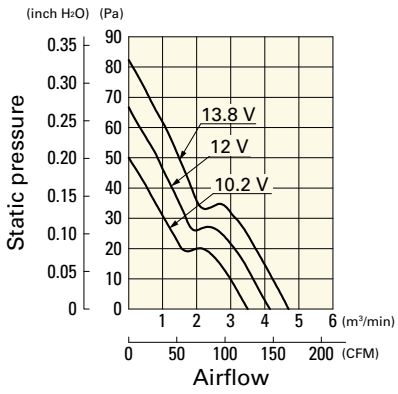
109E1712F501 With pulse sensor

Operating voltage range



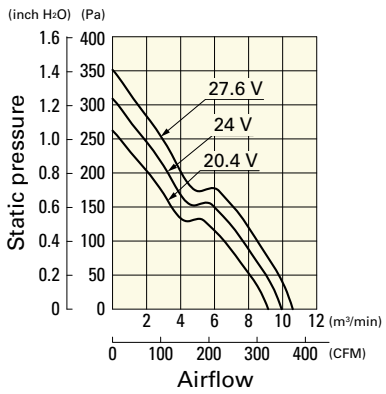
109E1712M501 With pulse sensor

Operating voltage range



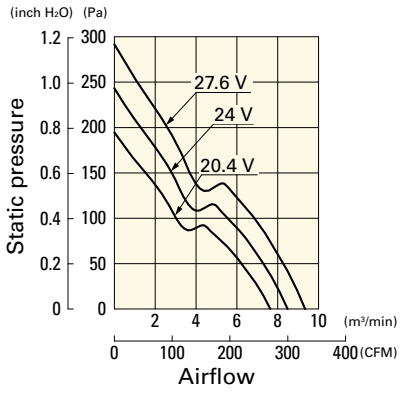
109E1724C501 With pulse sensor

Operating voltage range



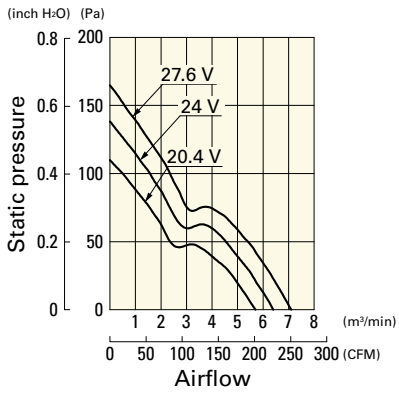
109E1724K501 With pulse sensor

Operating voltage range



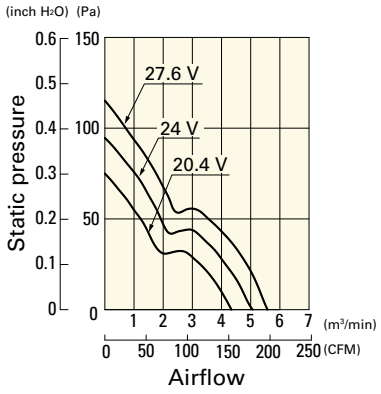
109E1724H501 With pulse sensor

Operating voltage range



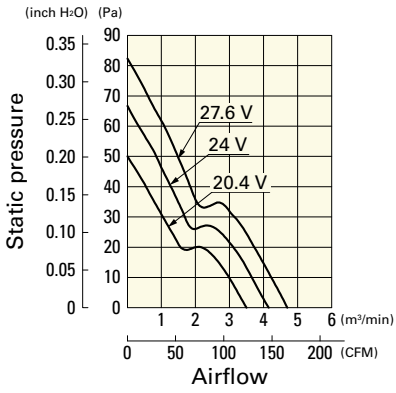
109E1724F501 With pulse sensor

Operating voltage range



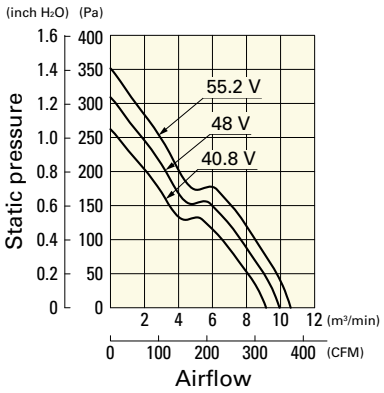
109E1724M501 With pulse sensor

Operating voltage range



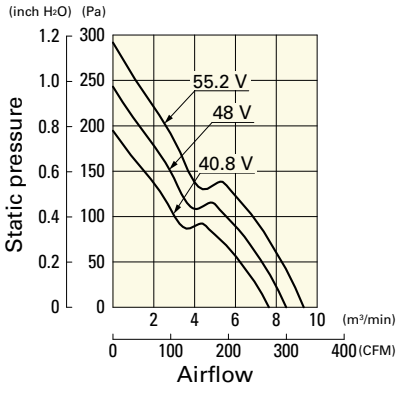
109E1748C501 With pulse sensor

Operating voltage range



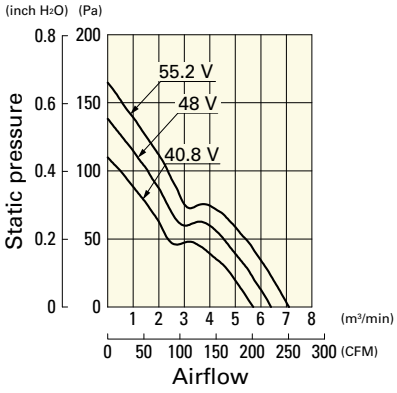
109E1748K501 With pulse sensor

Operating voltage range



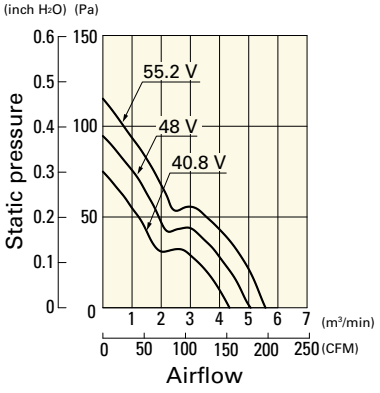
109E1748H501 With pulse sensor

Operating voltage range



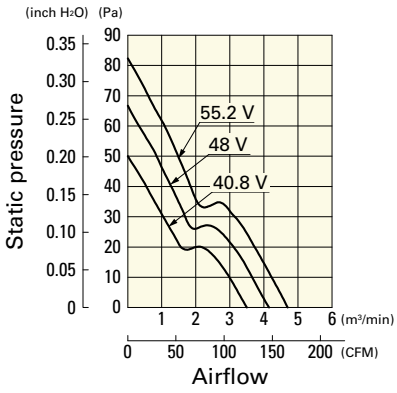
109E1748F501 With pulse sensor

Operating voltage range

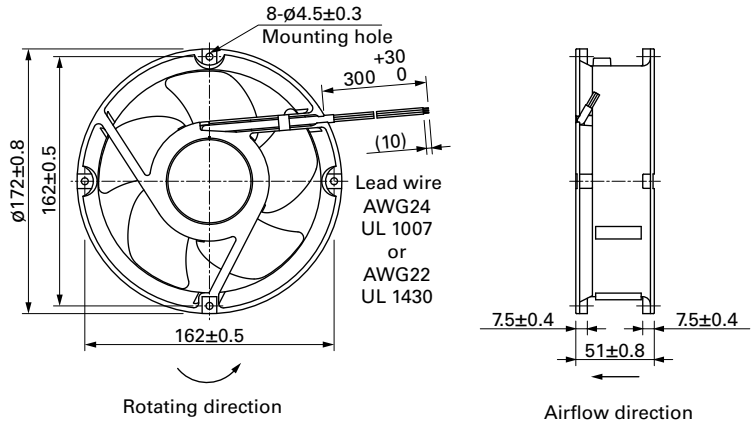


109E1748M501 With pulse sensor

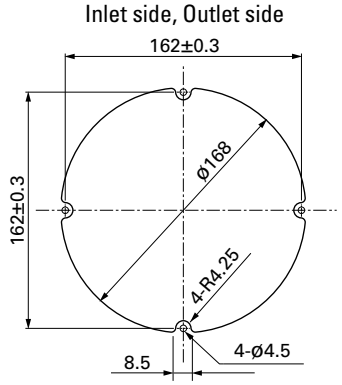
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 515

Model no.: 109-1066, 109-1068, 109-319E, 109-319H, 109-320

ø200×70 mm

San Ace 200 9GV type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 1800 g

Power on when current is shut off. Do not power on 15 s or more after power off.

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GV2048P0G201**	48	36 to 72	100	12.5	600	8000	31.5	1112	1400	5.62	81	-20 to +70	40000/60˚C (70000/40˚C)

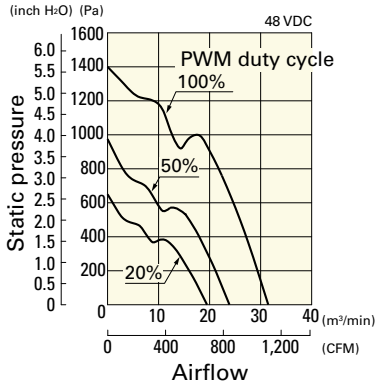
* PWM frequency: 1 kHz ** Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 556).

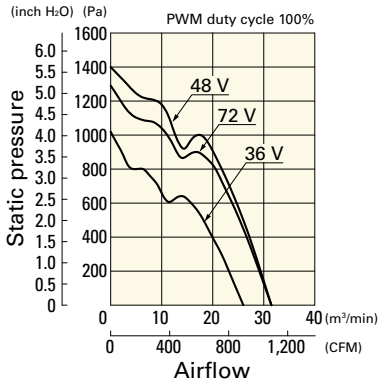
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GV2048P0G201 With pulse sensor with PWM control function

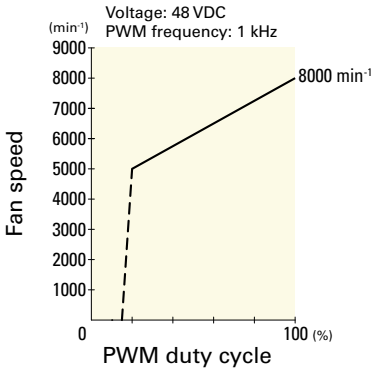
PWM duty cycle



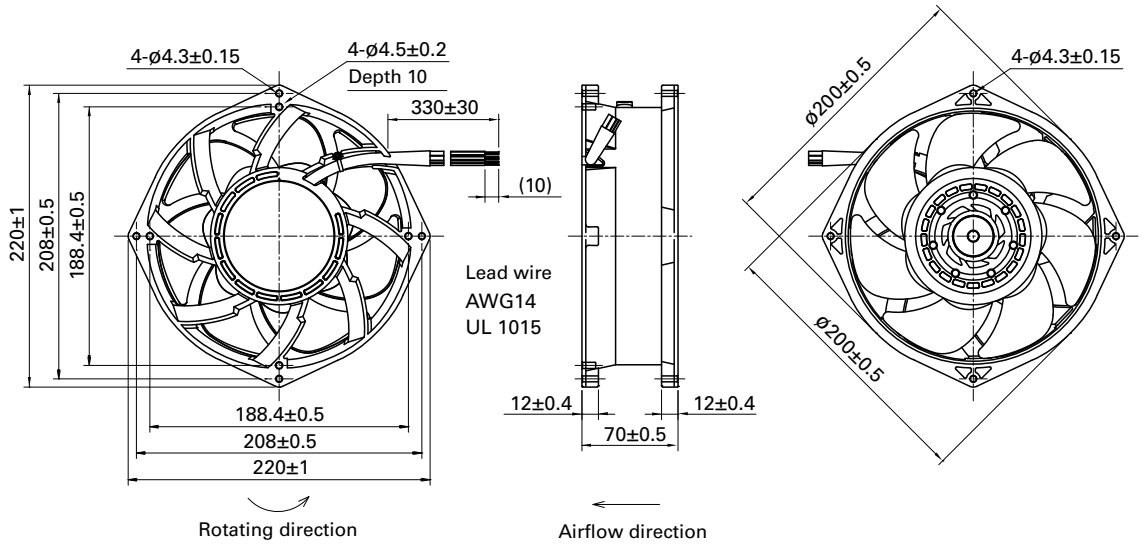
Operating voltage range



PWM duty - Speed characteristics example

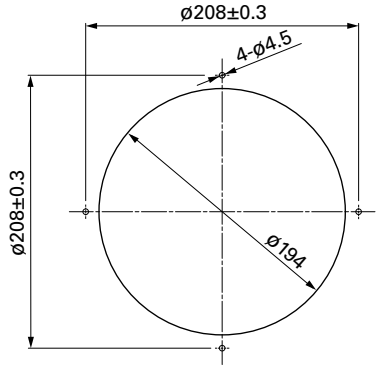


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

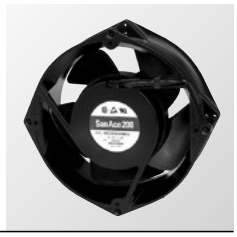
Finger guards page: p. 516

Model no.: 109-1102, 109-1103

ø200×70 mm

San Ace 200 9EC type

Model 9EC2048J001 is not certified.



General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue Sensor Yellow
- Mass ····· 1800 g

Power on when current is shut off. Do not power on 10 s or more after power off.

Specifications

The models listed below **have pulse sensors.**

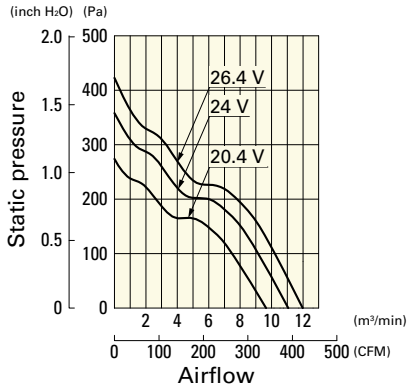
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9EC2024H001	24	20.4 to 26.4	2.0	48.0	3600	11.0	388	360	1.446	60	-20 to +60	40000/60˚C
9EC2048J001	48	40.8 to 55.2	4.4	211.2	6100	18.3	646	1000	4.016	75		
9EC2048A001		43.0 to 51.0	2.2	105.6	4800	14.7	519	640	2.57	68		
9EC2048H001		40.8 to 52.8	1.2	57.6	3600	11.0	388	360	1.446	60		

Other sensor specifications are available as options. Refer to the index (p. 548).

Airflow - Static Pressure Characteristics

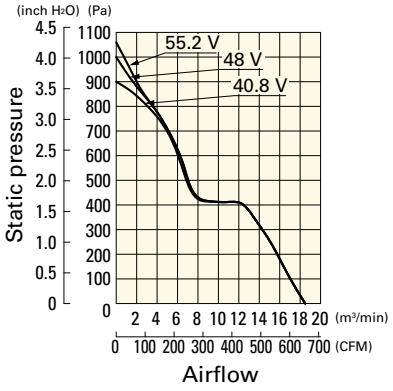
9EC2024H001 With pulse sensor

Operating voltage range



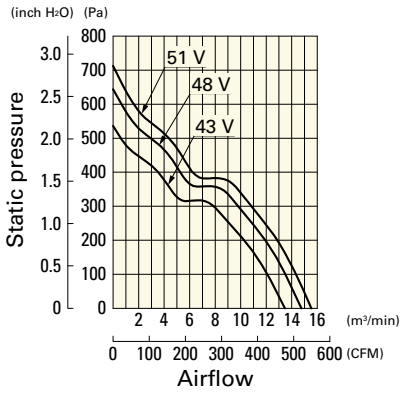
9EC2048J001 With pulse sensor

Operating voltage range



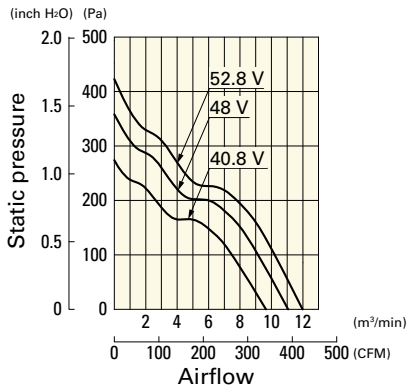
9EC2048A001 With pulse sensor

Operating voltage range

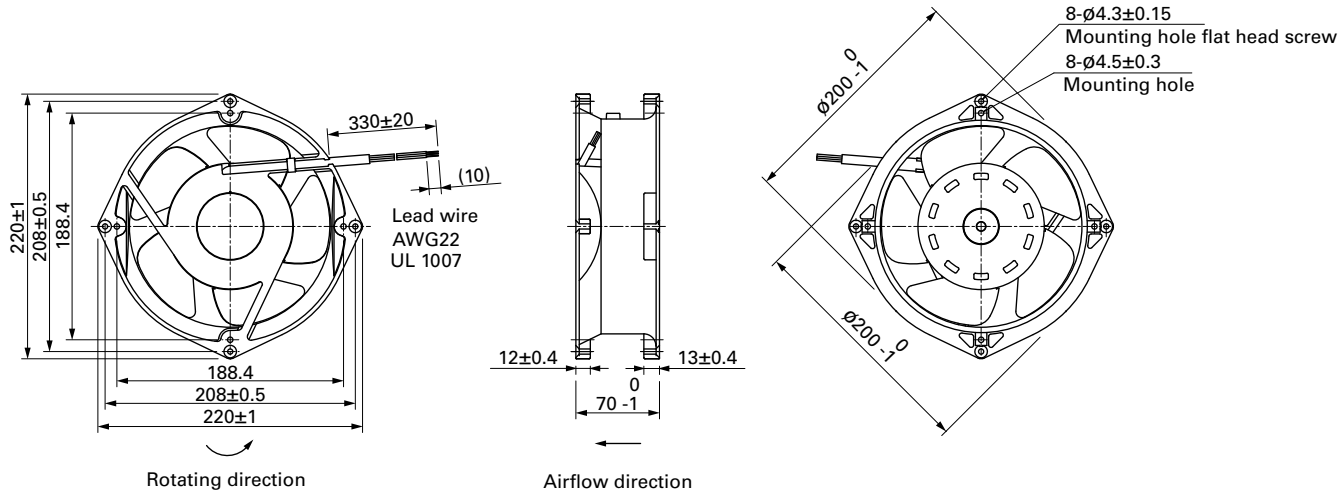


9EC2048H001 With pulse sensor

Operating voltage range

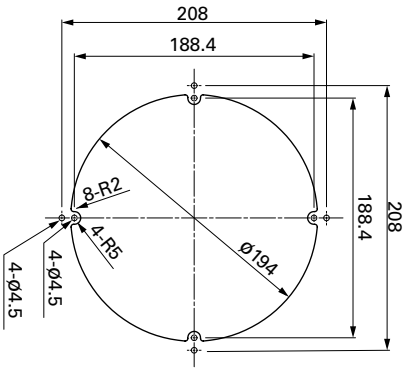


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 516

Model no.: 109-720, 109-720H, 109-721, 109-721H

Counter Rotating Fan

Counter rotating fans feature high airflow and high static pressure.
Related product: Long Life Fan pp. 363, 368

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9CRA	04	12	K	4	01
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications

Fans with PWM control function

9CRA	03	12	P	4	K	03
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec (2 to 3 digits)

Type name	9CR	9CRA	9CRB	9CRD	9CRE	9CRH	9CRV
Frame size (mm)	03 38×38	04 40×40	06 60×60	08 80×80	12 120×120	57 ø172×150 (sidecut)	
Voltage (V)	12 12	48 48					
Speed code	G	H	J	K	S	etc.	
Frame thickness (mm)	0 76	4 48	5 51, 56	6 56	8 80	9 102	
Sensor specifications	01 With a pulse sensor		02 Without a sensor		D01 With a lock sensor		

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

38×38×48 mm

San Ace 38 9CRA type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 80 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRA0312P4K03	12	10.8 to 13.2	100	1.5	18.0	17600	14520	0.77	27.2	700.0	2.81	64	-20 to +70	40000/60˚C
			0	0.2	2.4	5280	4200	0.22	7.8	54.9	0.22	33		
9CRA0312P4J03			100	1.1	13.2	16000	13200	0.7	24.7	560.0	2.25	62		
			0	0.18	2.2	4800	3960	0.21	7.4	50.4	0.2	31		

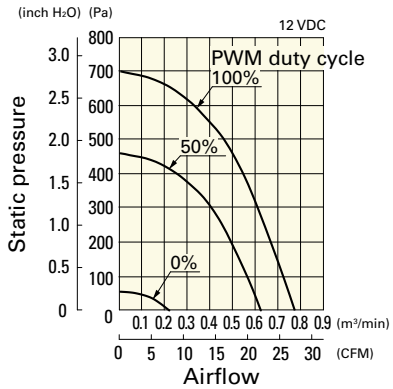
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 548).

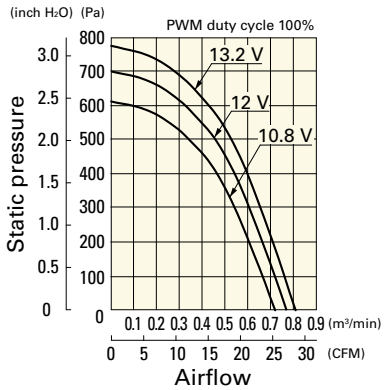
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0312P4K03 With pulse sensor with PWM control function

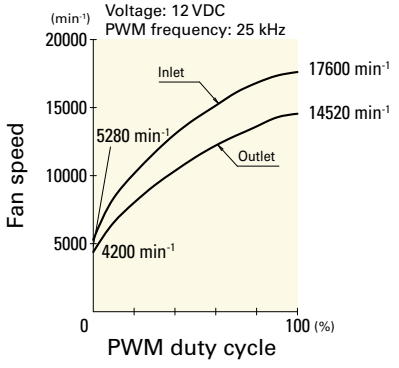
PWM duty cycle



Operating voltage range



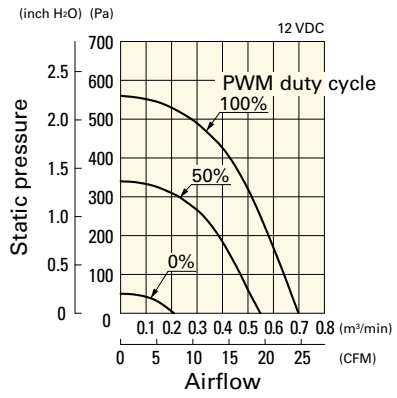
PWM duty - Speed characteristics example



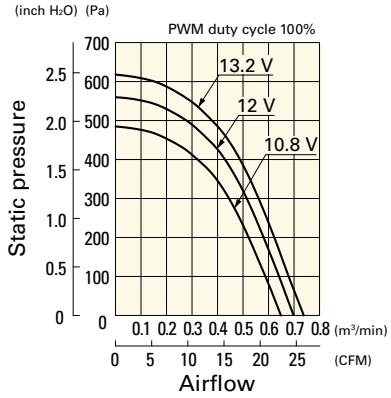
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0312P4J03 With pulse sensor with PWM control function

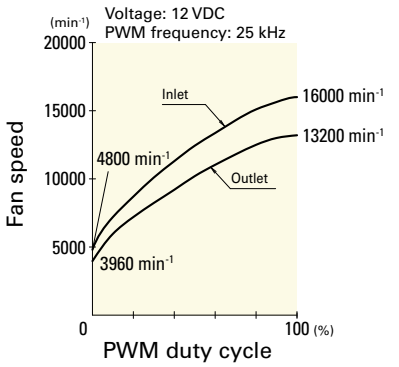
PWM duty cycle



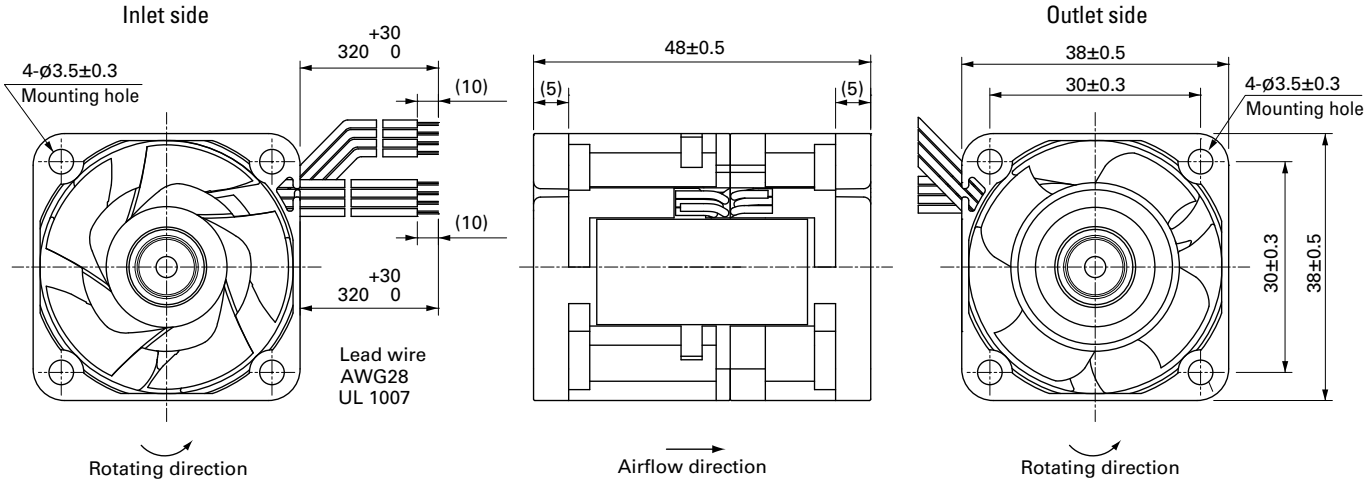
Operating voltage range



PWM duty - Speed characteristics example

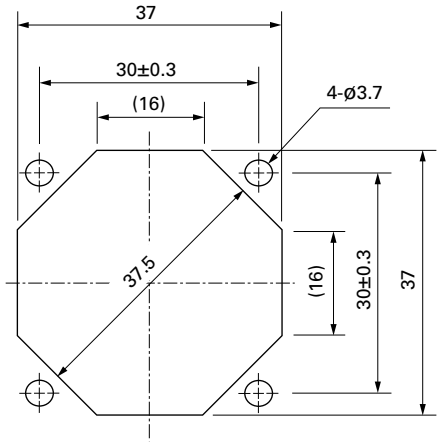


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-1065

40×40×48 mm

San Ace 40 9CRA type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 80 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRA0412P4K03	12	10.8 to 13.2	100	1.6	19.2	17500	11700	0.92	32.5	650.0	2.61	64	-20 to +70	40000/60˚C
			0	0.19	2.28	5250	3510	0.276	9.75	58.5	0.235	33		
9CRA0412P4J03			100	1.2	14.4	16200	10800	0.85	30.0	560.0	2.25	62		
			0	0.15	1.8	4500	3000	0.236	8.33	43.2	0.173	28		
9CRA0412P4G03			100	1.0	12.0	14700	9800	0.77	27.2	460.0	1.85	59		
			0	0.15	1.8	4410	2940	0.231	8.16	41.4	0.166	28		

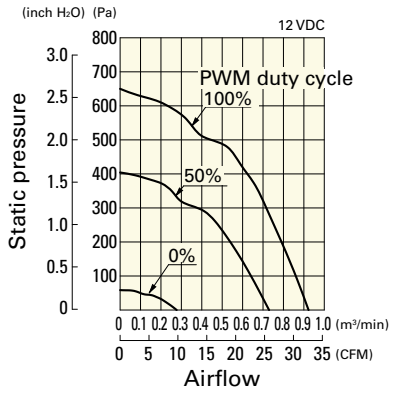
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 548).

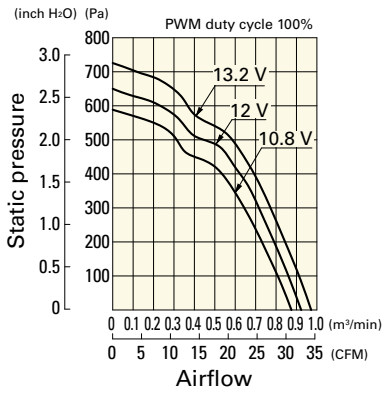
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0412P4K03 With pulse sensor with PWM control function

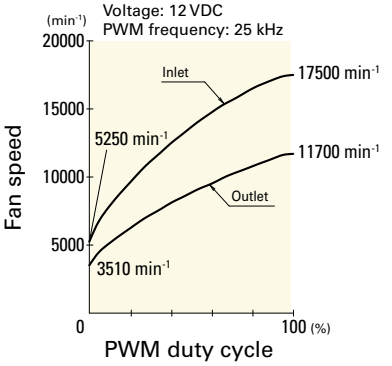
PWM duty cycle



Operating voltage range



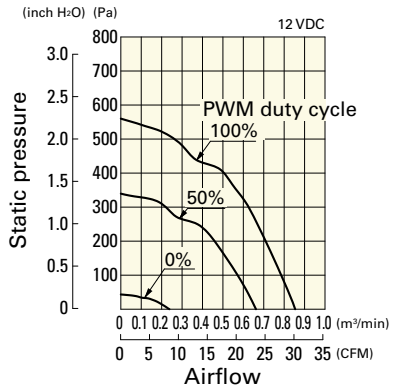
PWM duty - Speed characteristics example



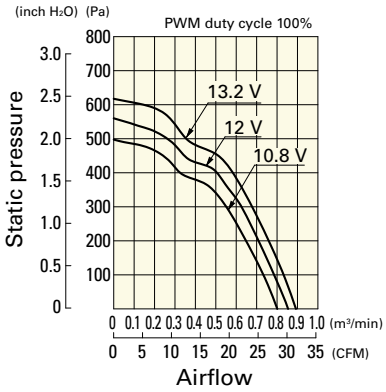
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0412P4J03 With pulse sensor with PWM control function

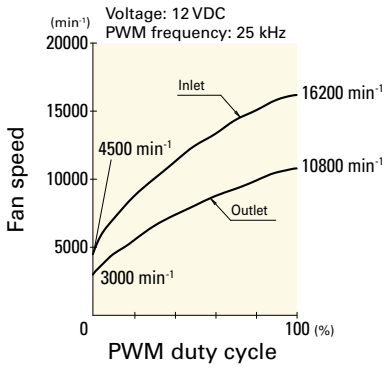
PWM duty cycle



Operating voltage range

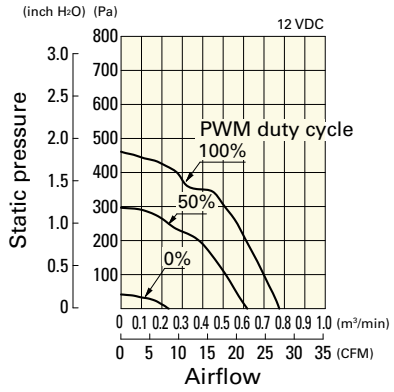


PWM duty - Speed characteristics example

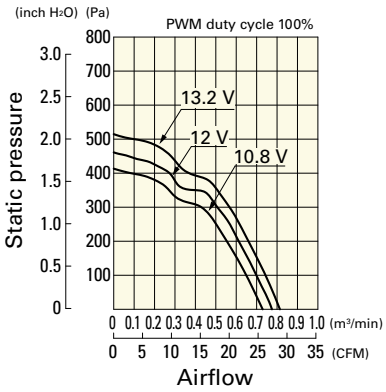


9CRA0412P4G03 With pulse sensor with PWM control function

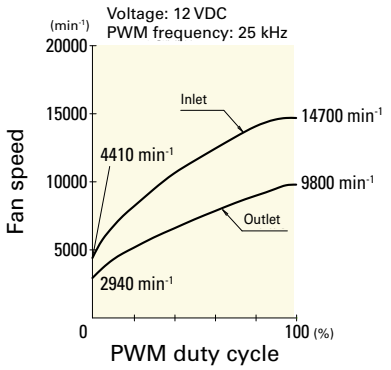
PWM duty cycle



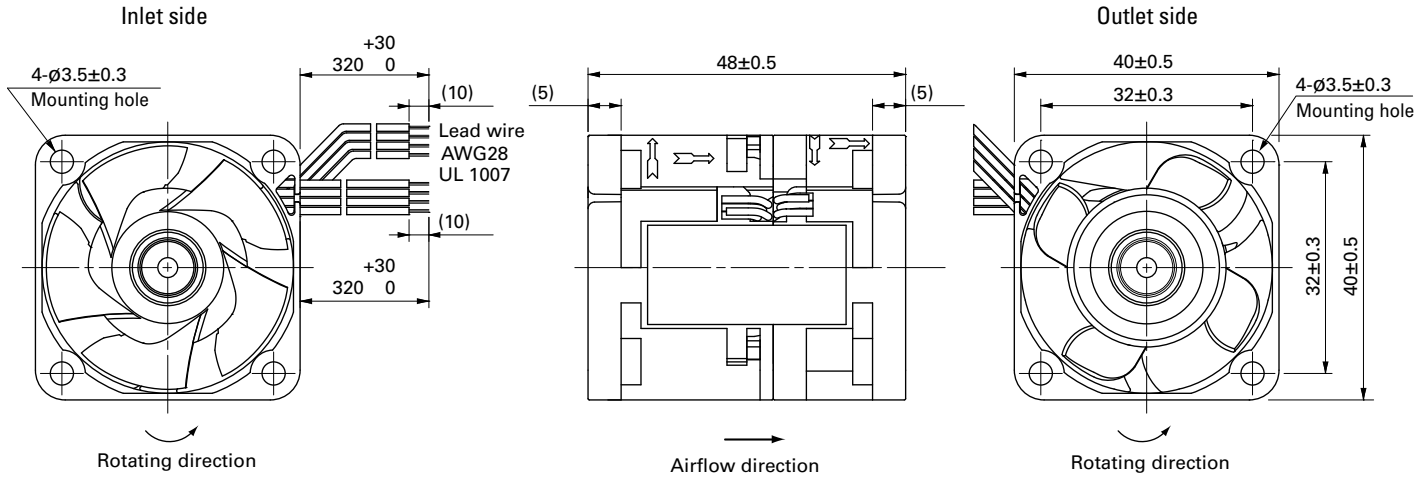
Operating voltage range



PWM duty - Speed characteristics example

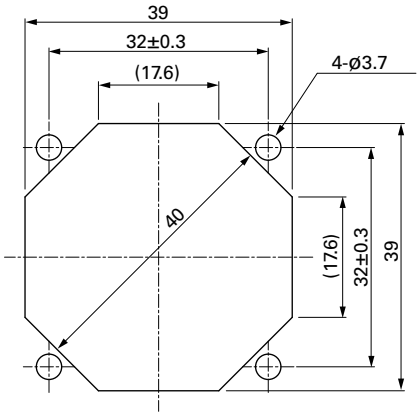


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×56 mm

San Ace 40 9CRH type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 110 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

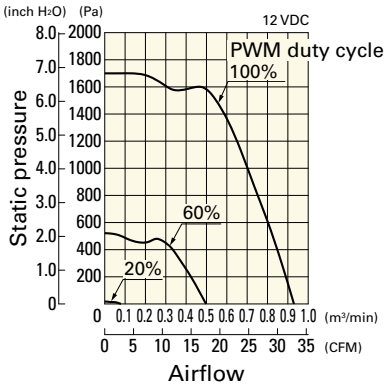
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRH0412P5J001	12	10.8 to 12.6	100	2.52	30.24	29500	25500	0.93	32.9	1700	6.83	70	-20 to +70	30000/60˚C
			20	0.06	0.72	3000	2600	0.08	2.8	17	0.07	20		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

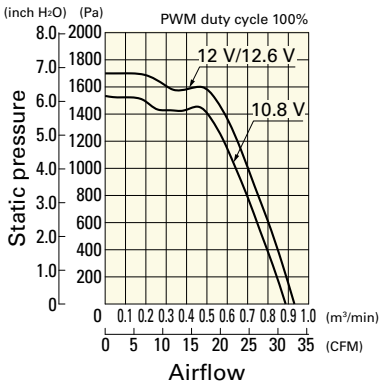
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRH0412P5J001 With pulse sensor with PWM control function

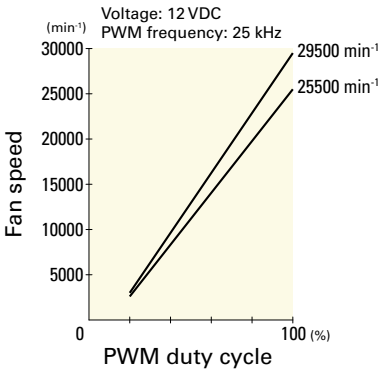
PWM duty cycle



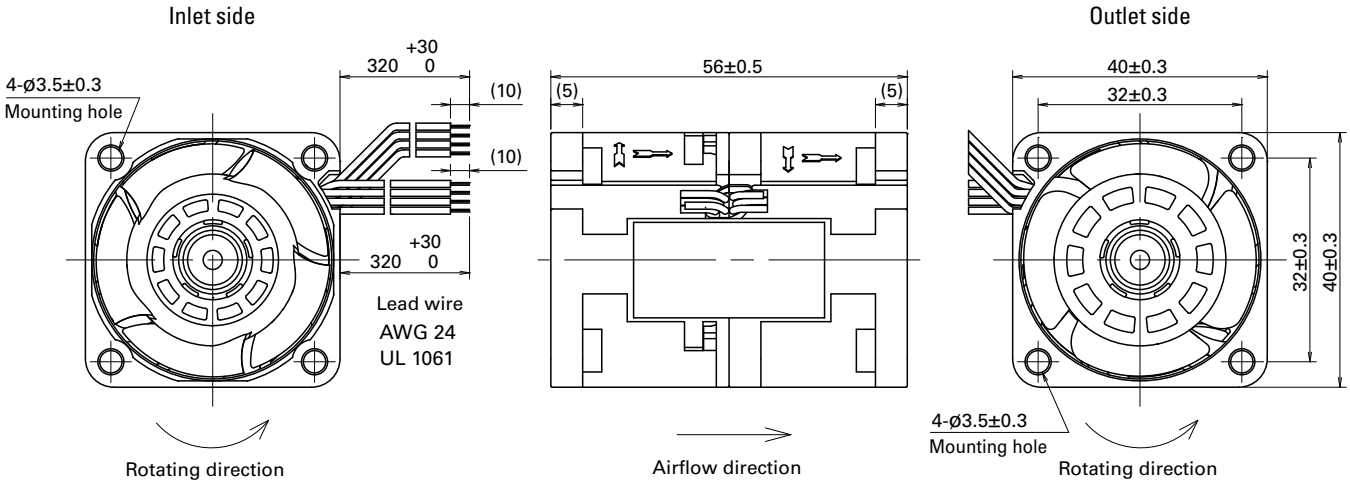
Operating voltage range



PWM duty - Speed characteristics example

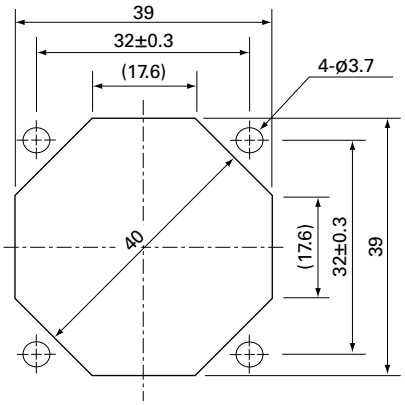


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×56 mm

San Ace 40 9CRV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 100 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

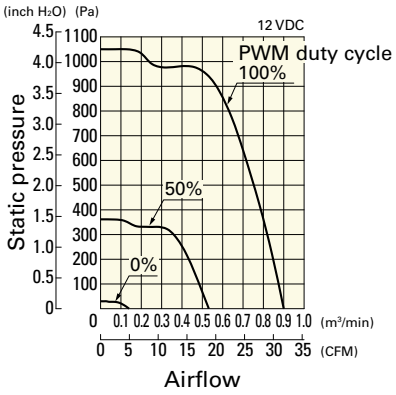
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRV0412P5J201	12	10.8 to 13.2	100	1.8	21.6	22500	20000	0.9	31.8	1050	4.22	68	-20 to +70	40000/60˚C
			0	0.11	1.32	3800	3500	0.14	4.9	30	0.12	26		

* PWM frequency: 25 kHz

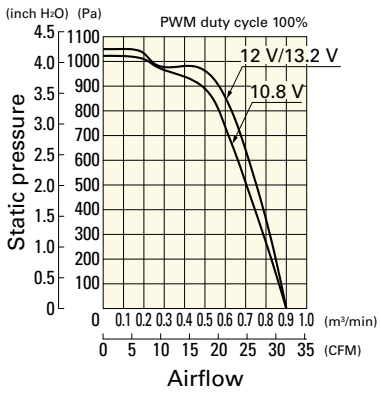
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRV0412P5J201 With pulse sensor with PWM control function

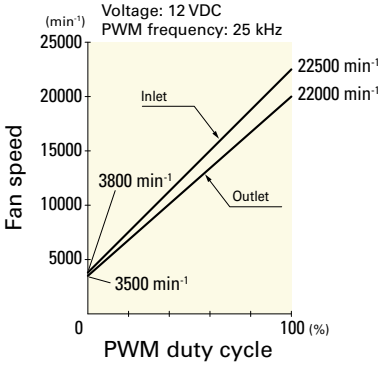
PWM duty cycle



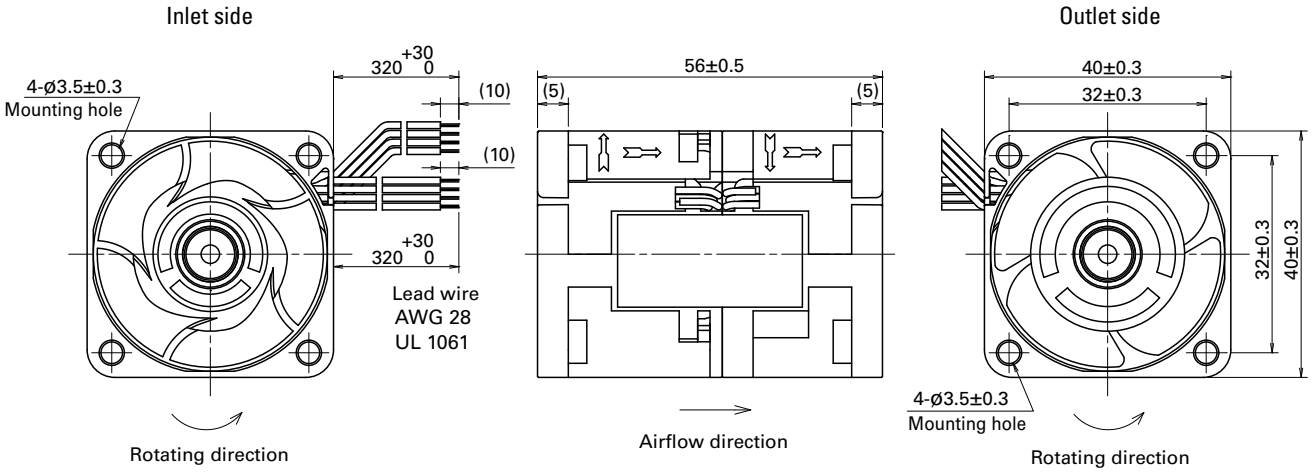
Operating voltage range



PWM duty - Speed characteristics example

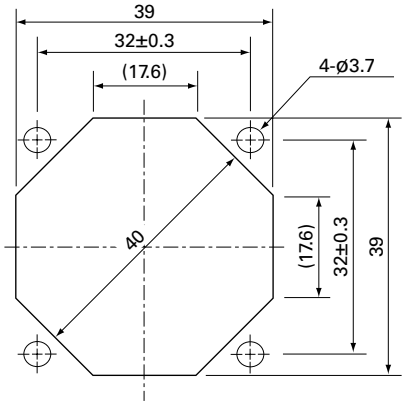


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×56 mm

San Ace 40 9CRD type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 90 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

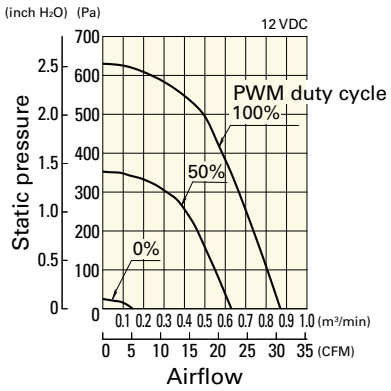
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRD0412P5J03	12	10.8 to 13.2	100	1.15	13.8	19000	12600	0.87	30.72	630	2.53	61	-20 to +70	40000/60˚C
			0	0.12	1.44	3700	2500	0.15	5.3	25	0.1	22		
9CRD0412P5G03			100	0.9	10.8	16700	11250	0.77	27.19	500	2.01	58		
			0	0.1	1.2	3350	2250	0.13	4.59	21	0.08	21		
9CRD0412P5H03			100	0.6	7.2	15000	10000	0.7	24.72	410	1.65	56		
			0	0.09	1.08	3000	2000	0.12	4.24	16	0.06	20		
9CRD0412P5M03			100	0.52	6.24	14000	9300	0.65	22.95	360	1.45	54		
			0	0.07	0.84	2000	1300	0.07	2.47	7	0.03	15		

* PWM frequency: 25 kHz

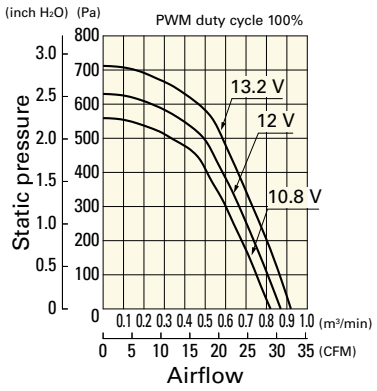
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRD0412P5J03 With pulse sensor with PWM control function

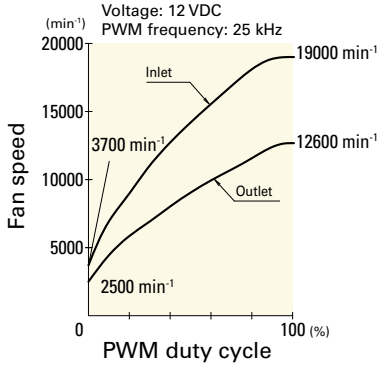
PWM duty cycle



Operating voltage range



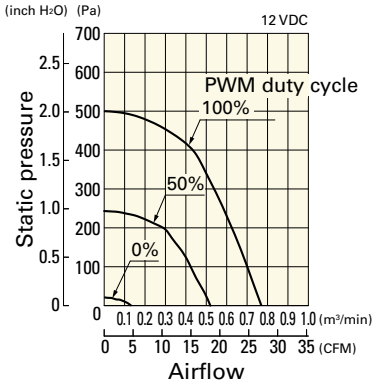
PWM duty - Speed characteristics example



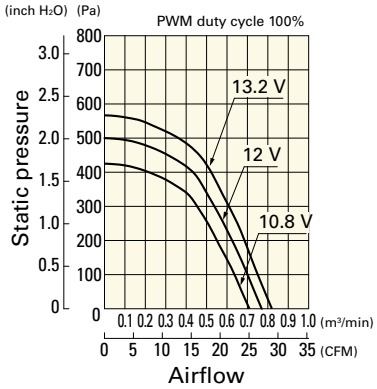
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRD0412P5G03 With pulse sensor with PWM control function

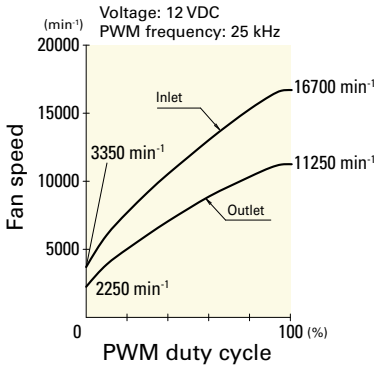
PWM duty cycle



Operating voltage range

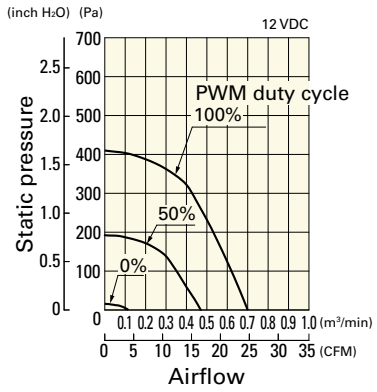


PWM duty - Speed characteristics example

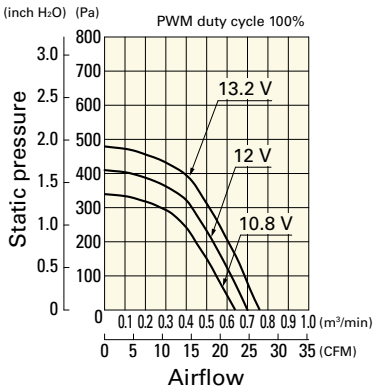


9CRD0412P5H03 With pulse sensor with PWM control function

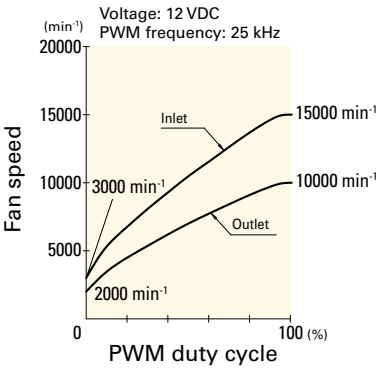
PWM duty cycle



Operating voltage range

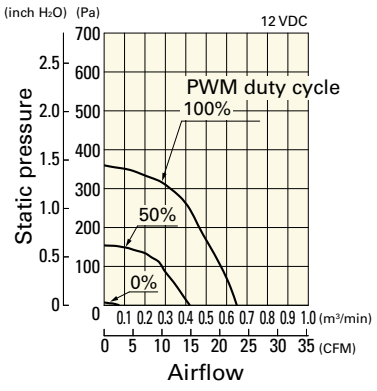


PWM duty - Speed characteristics example

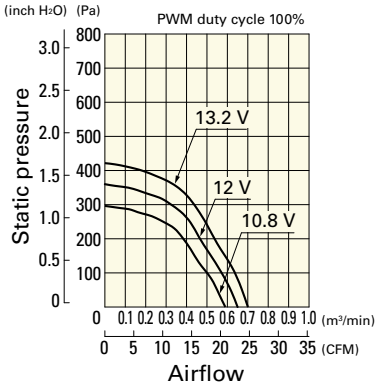


9CRD0412P5M03 With pulse sensor with PWM control function

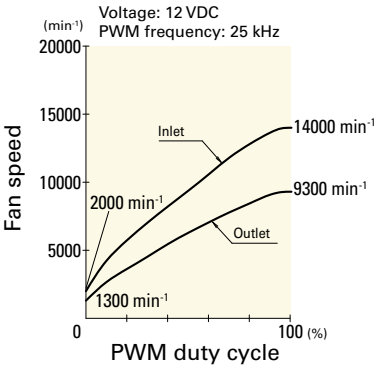
PWM duty cycle



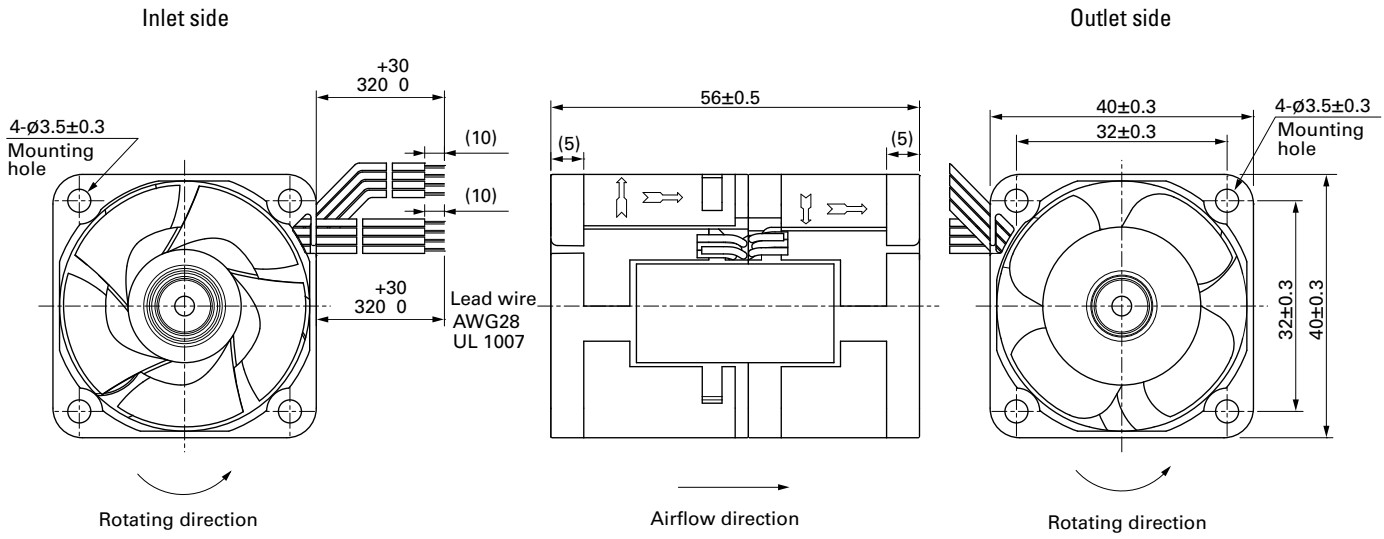
Operating voltage range



PWM duty - Speed characteristics example

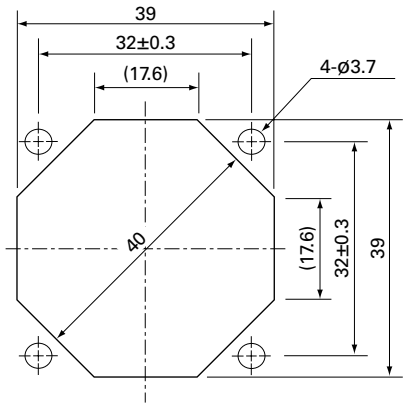


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×56 mm

San Ace 40 9CRE type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 110 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRE0412P5J03	12	10.8 to 13.2	100	1.4	16.8	15800	12200	0.9	31.8	570.0	2.29	62	-20 to +70	40000/60˚C
			0	0.1	1.2	2850	2250	0.12	4.2	13.7	0.055	20.5		

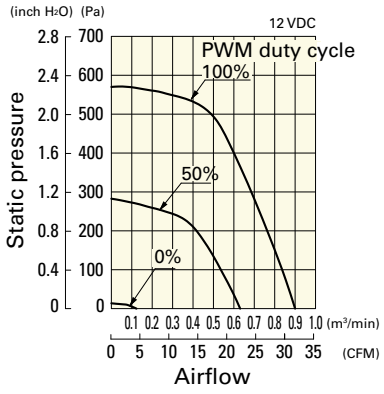
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 548).

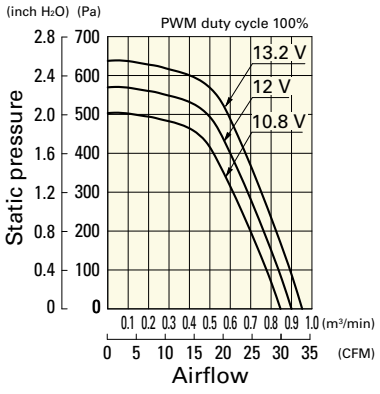
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRE0412P5J03 With pulse sensor with PWM control function

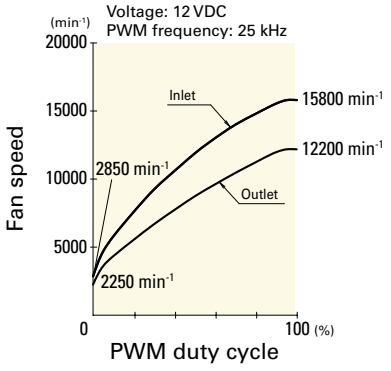
PWM duty cycle



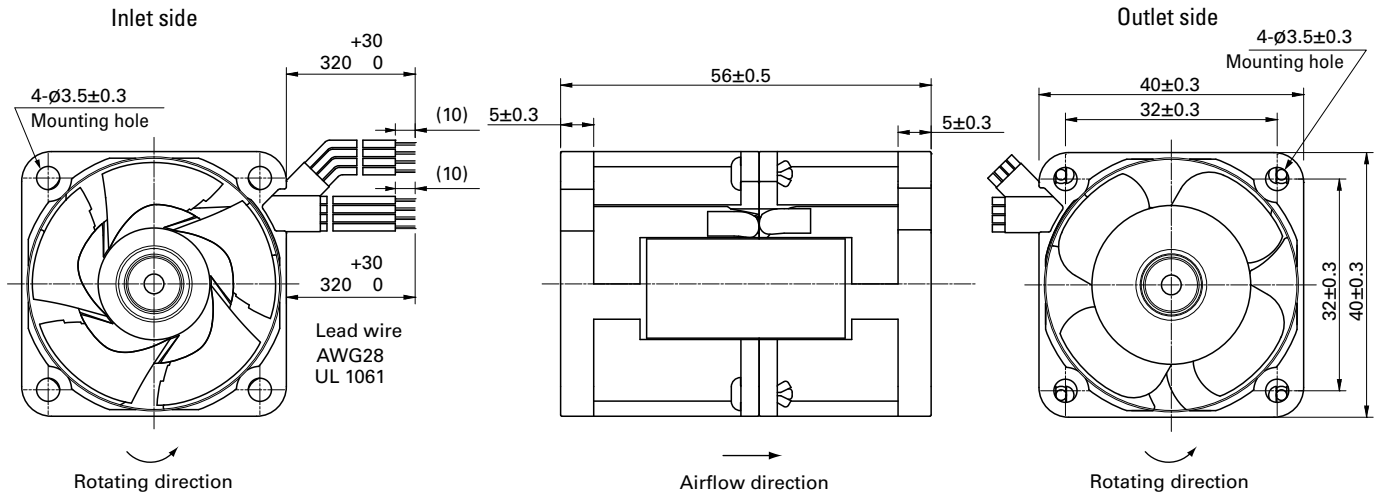
Operating voltage range



PWM duty - Speed characteristics example

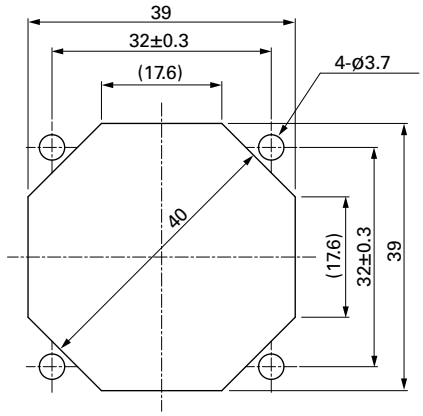


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

60×60×51 mm

San Ace 60 9CR type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 180 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CR0612P5G03	12	10.8 to 13.2	100	2.7	32.4	11500	9000	2.03	71.7	600	2.41	68	-20 to +70	40000/60˚C
			0	0.22	2.64	3000	2300	0.48	16.9	40	0.16	34		
9CR0612P5H03			100	2.0	24.0	10500	8200	1.85	65.4	500	2.01	65		
			0	0.22	2.64	3000	2300	0.48	16.9	40	0.16	34		

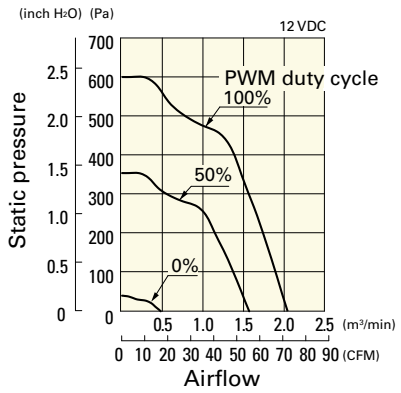
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 548).

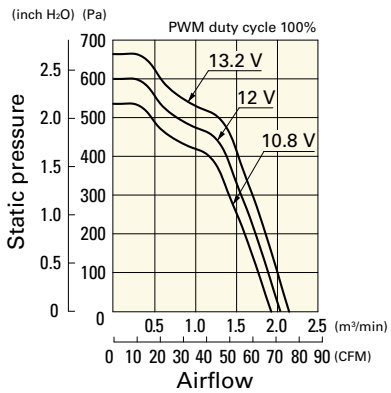
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CR0612P5G03 With pulse sensor with PWM control function

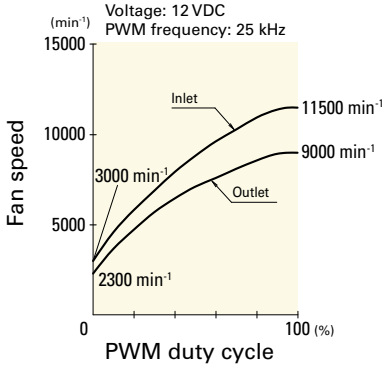
PWM duty cycle



Operating voltage range



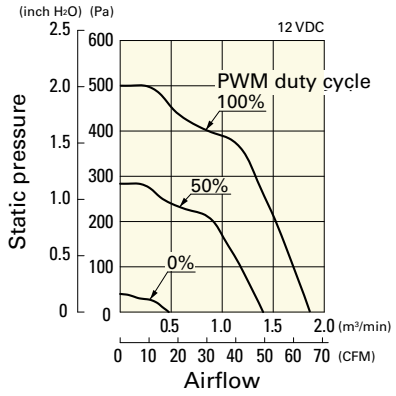
PWM duty - Speed characteristics example



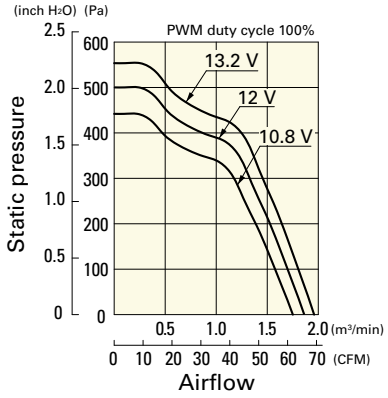
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CR0612P5H03 With pulse sensor with PWM control function

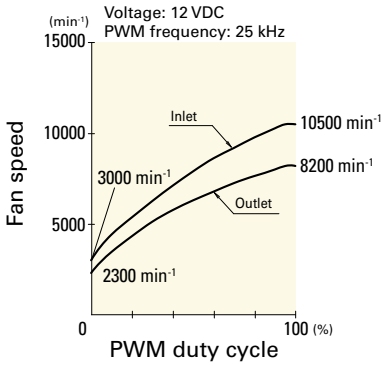
PWM duty cycle



Operating voltage range

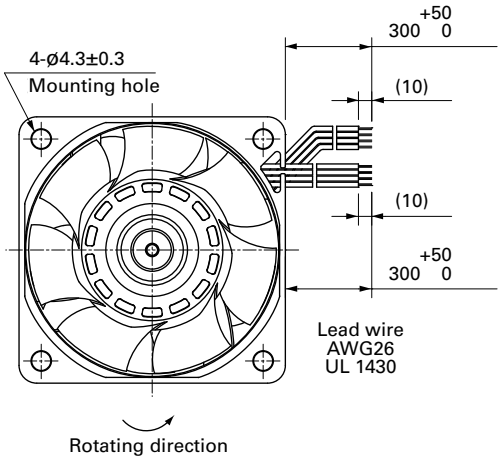


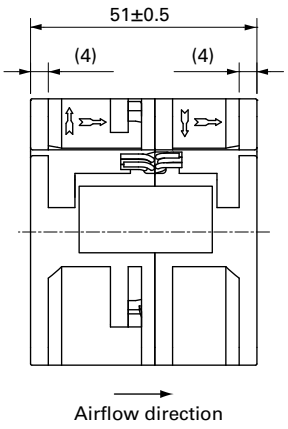
PWM duty - Speed characteristics example



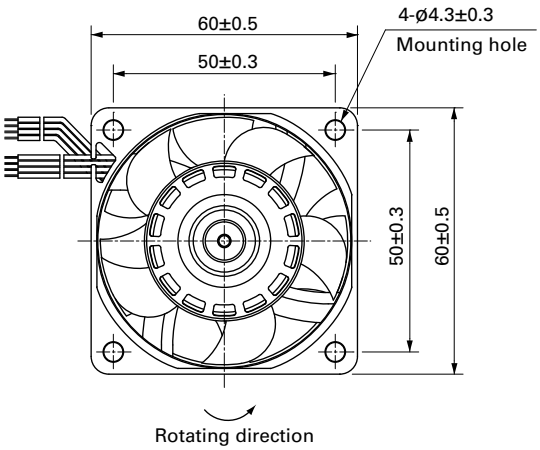
Dimensions (unit: mm)

Inlet side



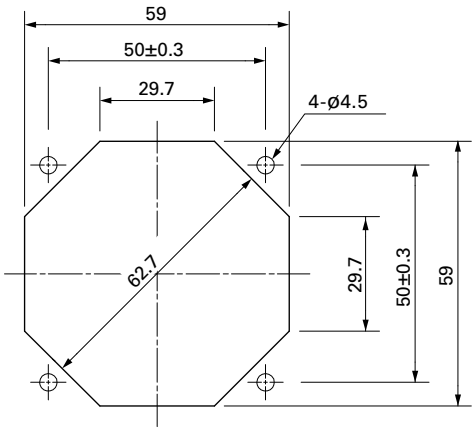


Outlet side



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin finger guards page: p. 520

Model no.: 109-1003G

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

60×60×56 mm

San Ace 60 9CRA type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 200 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

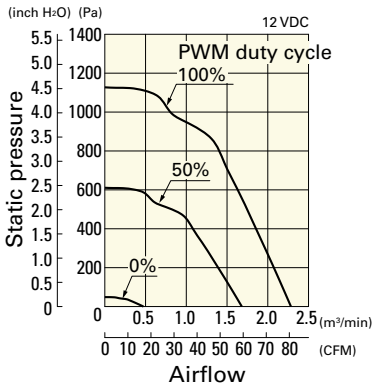
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRA0612P6K001	12	10.8 to 13.2	100	3.1	37.2	18300	15800	2.28	80.5	1130	4.54	73	-20 to +70	30000/60˚C
			0	0.17	2.0	3800	3300	0.47	16.6	49	0.2	35		
9CRA0612P6J001			100	2.3	27.6	16800	14500	2.1	74.2	950	3.82	70		40000/60˚C (70000/40˚C)
			0	0.15	1.8	3800	3300	0.47	16.6	49	0.2	35		
9CRA0612P6G001			100	1.3	15.6	13500	11400	1.65	58.3	620	2.49	65		
			0	0.1	1.2	3000	2500	0.36	12.7	31	0.12	29		

* PWM frequency: 25 kHz

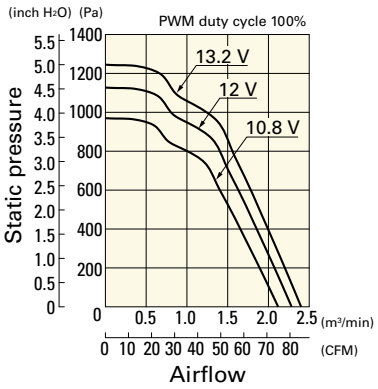
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0612P6K001 With pulse sensor with PWM control function

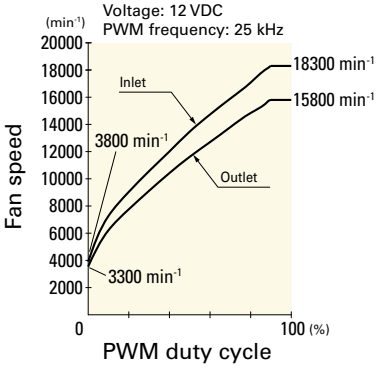
PWM duty cycle



Operating voltage range



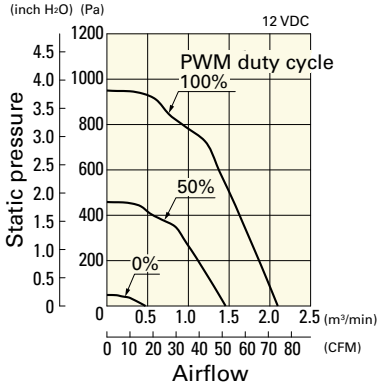
PWM duty - Speed characteristics example



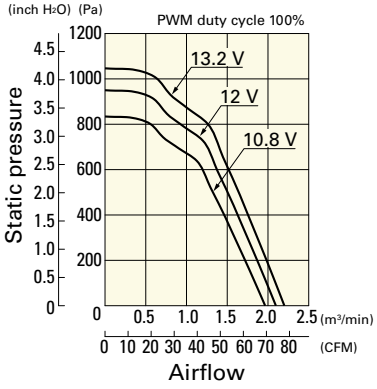
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0612P6J001 With pulse sensor with PWM control function

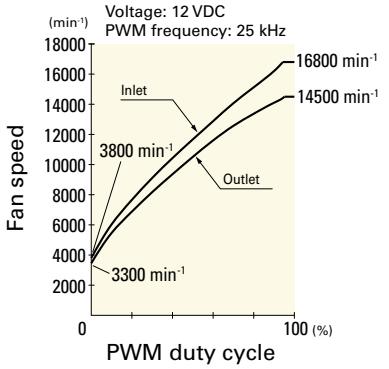
PWM duty cycle



Operating voltage range

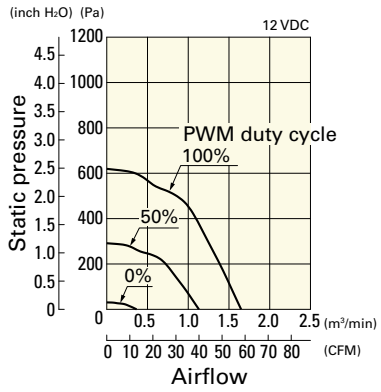


PWM duty - Speed characteristics example

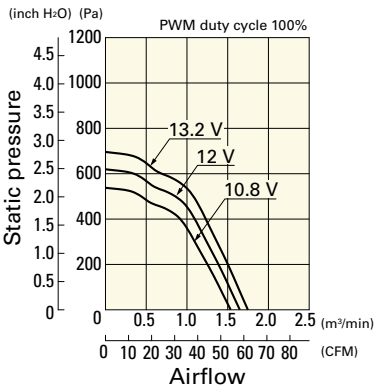


9CRA0612P6G001 With pulse sensor with PWM control function

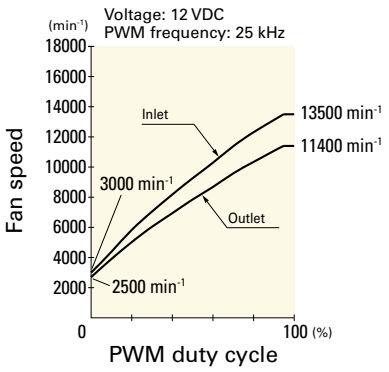
PWM duty cycle



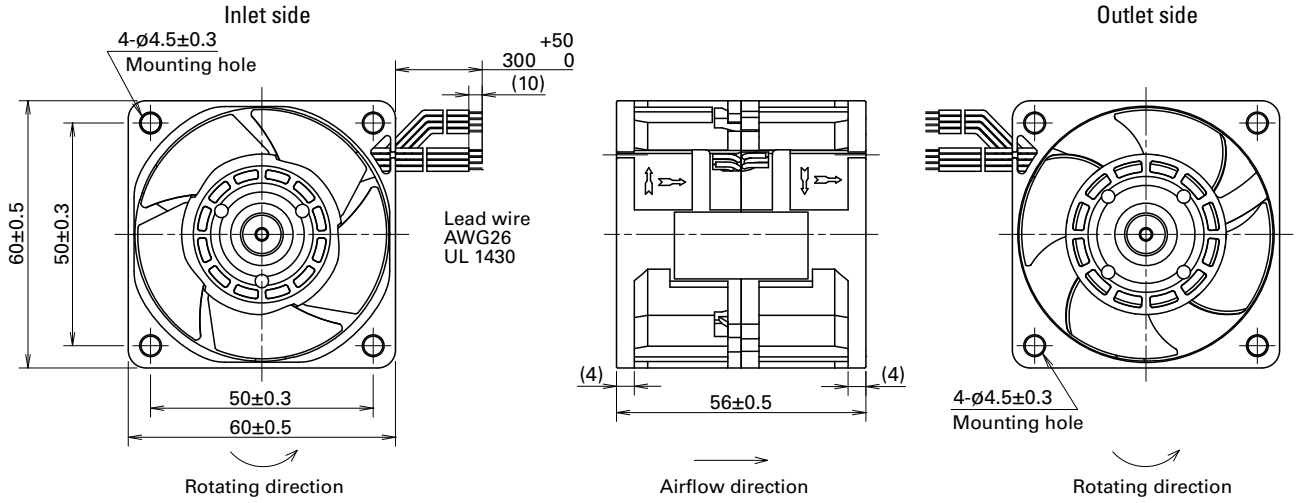
Operating voltage range



PWM duty - Speed characteristics example

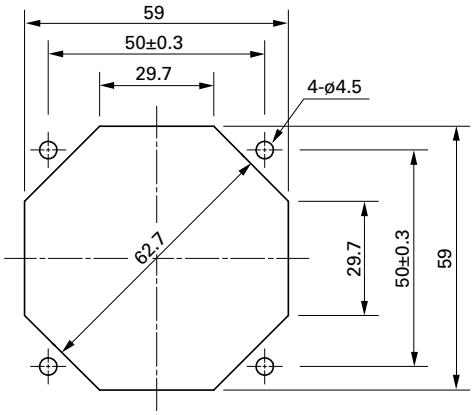


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards

page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits

page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards

page: p. 520

Model no.: 109-1003G

60×60×76 mm

San Ace 60 9CRE type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 300 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

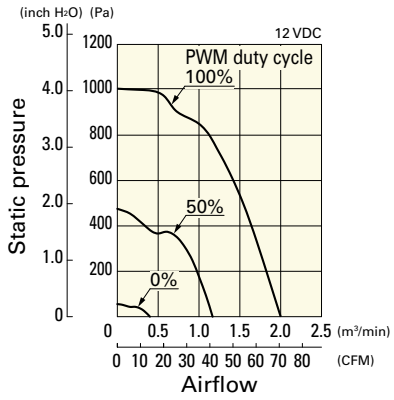
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRE0612P0G001	12	10.8 to 13.2	100	2.3	27.6	16500	13000	2.0	70.6	1000	4.0	66	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.22	2.7	3600	2800	0.43	15.1	47.6	0.19	32		

* PWM frequency: 25 kHz

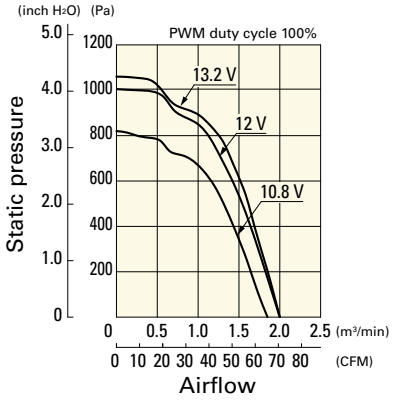
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRE0612P0G001 With pulse sensor with PWM control function

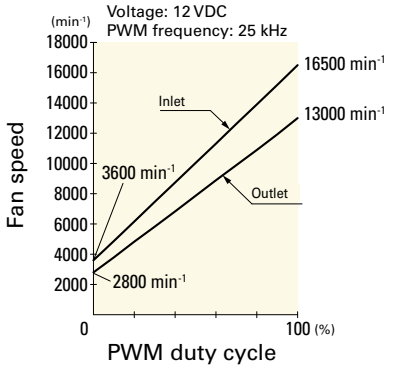
PWM duty cycle



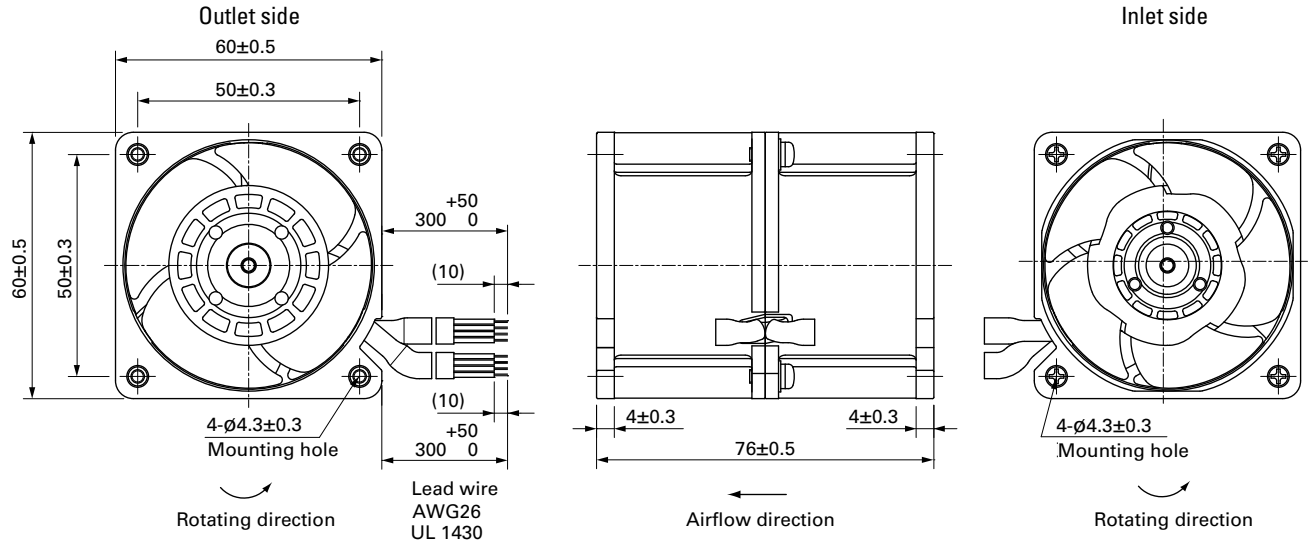
Operating voltage range



PWM duty - Speed characteristics example

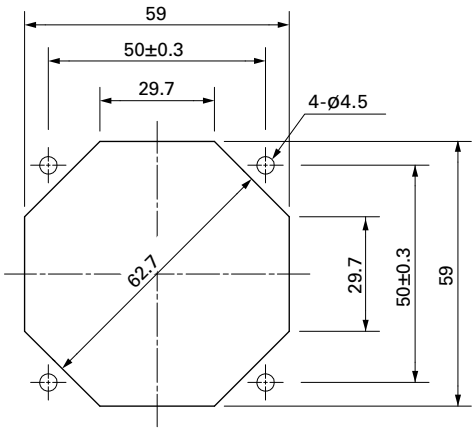


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×76 mm

San Ace 60 9CRA type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 270 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

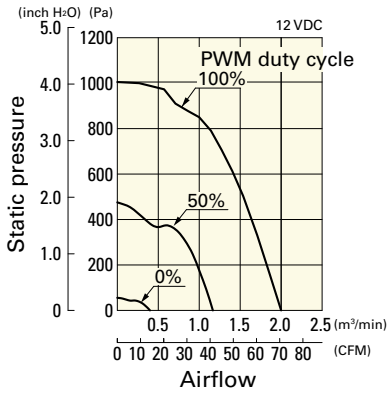
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRA0612P0G001	12	10.8 to 13.2	100	2.3	27.6	16500	13000	2.0	70.6	1000	4.0	66	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.22	2.7	3600	2800	0.43	15.1	47.6	0.19	32		
9CRA0612P0S001			100	1.5	18.0	14000	11000	1.7	60.0	720	2.89	63		
			0	0.17	2.1	3200	2500	0.38	13.4	37.6	0.15	29		

* PWM frequency: 25 kHz

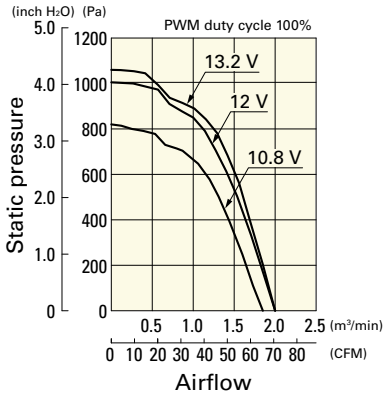
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0612P0G001 With pulse sensor with PWM control function

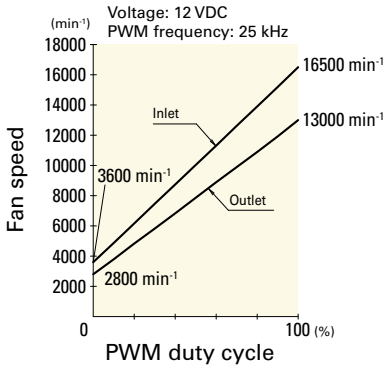
PWM duty cycle



Operating voltage range



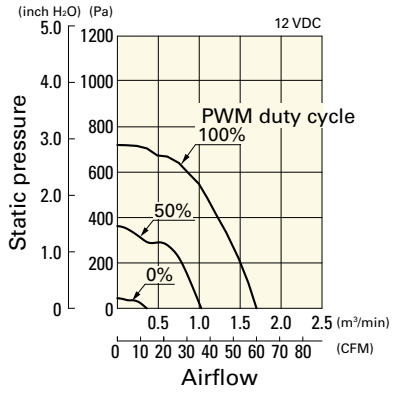
PWM duty - Speed characteristics example



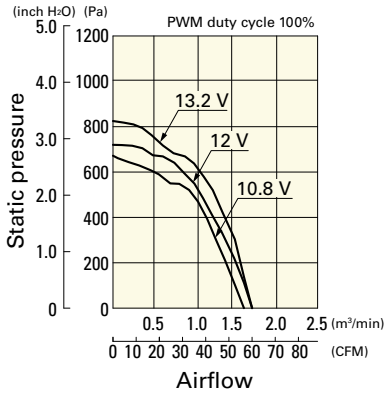
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0612P0S001 With pulse sensor with PWM control function

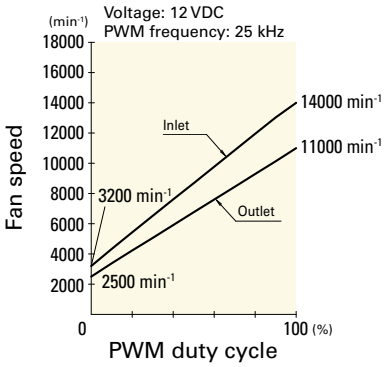
PWM duty cycle



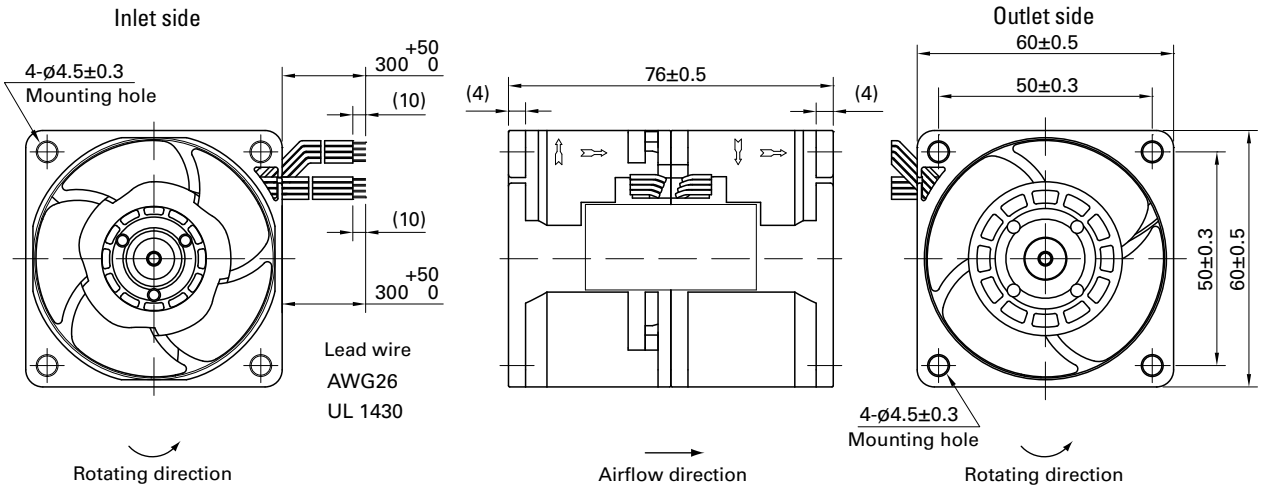
Operating voltage range



PWM duty - Speed characteristics example

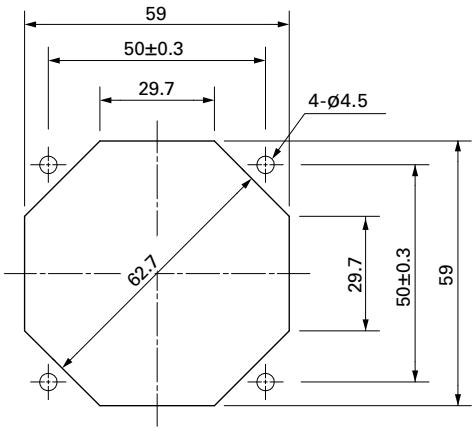


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin finger guards page: p. 520

Model no.: 109-1003G

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

80×80×80 mm

San Ace 80 9CRB type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 430 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

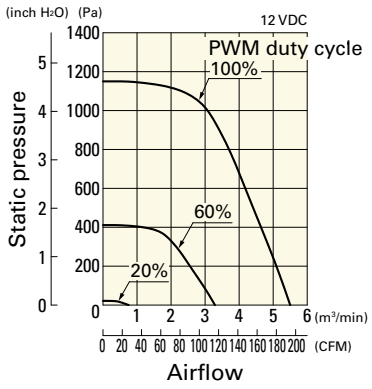
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRB0812P8G001	12	10.8 to 13.2	100	9.2	110.4	14600	12200	5.5	194	1150	4.6	80	-20 to +70	40000/60˚C (70000/40˚C)
			20	0.17	2.04	2000	1670	0.7	24.7	21.6	0.09	24		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

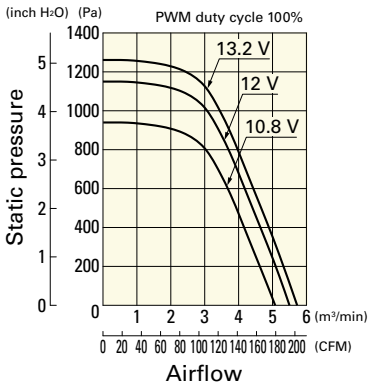
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRB0812P8G001 With pulse sensor with PWM control function

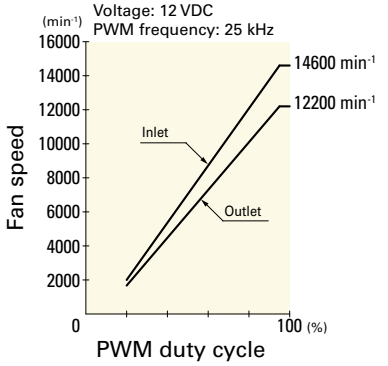
PWM duty cycle



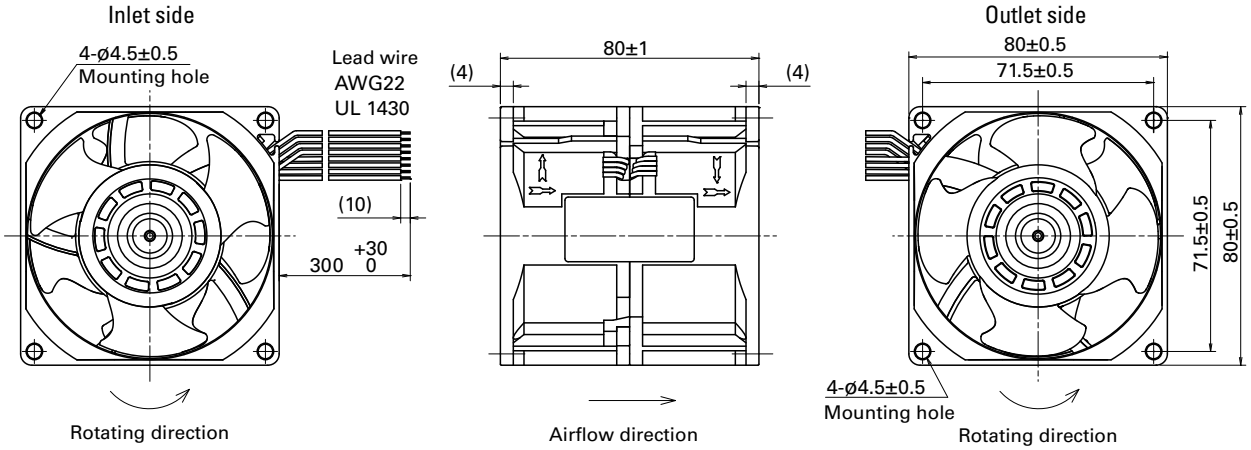
Operating voltage range



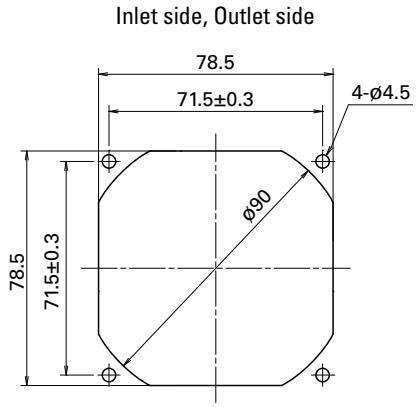
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049E, 109-049H

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1002G

80×80×80 mm

San Ace 80 9CRE type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- EExpected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 490 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

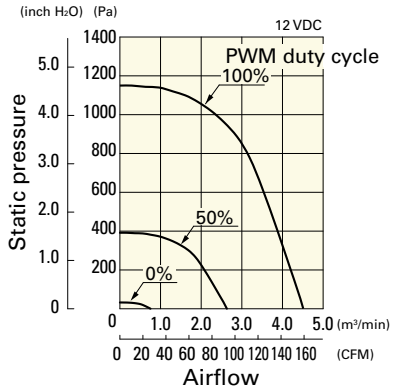
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRE0812P8G001	12	10.8 to 13.2	100	5.3	63.6	12000	11300	4.5	158.9	1150	4.62	76	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.2	2.4	2000	1900	0.74	26.1	31.9	0.13	30		

* PWM frequency: 25 kHz

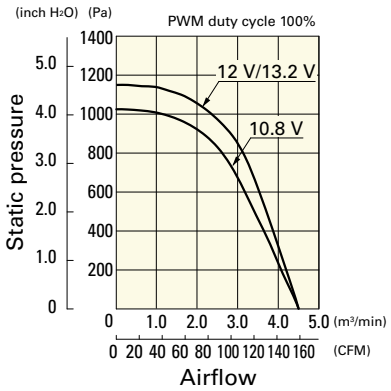
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRE0812P8G001 With pulse sensor with PWM control function

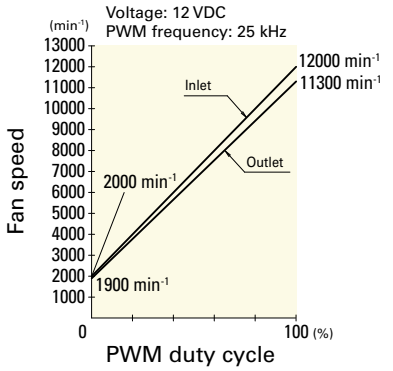
PWM duty cycle



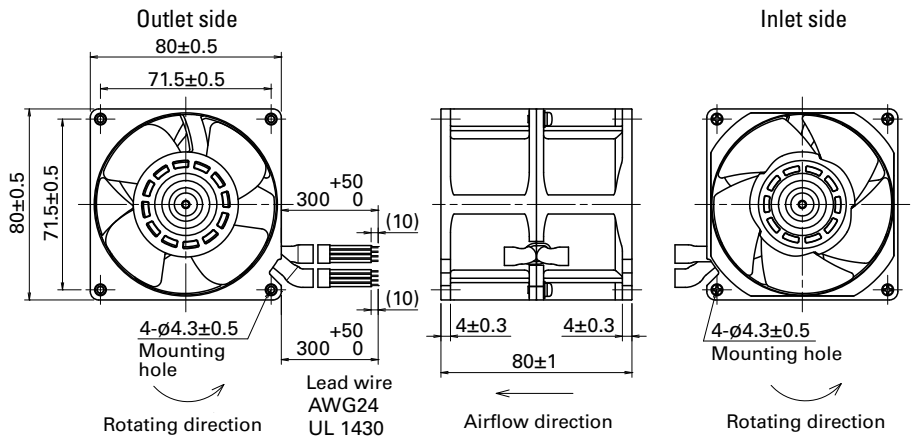
Operating voltage range



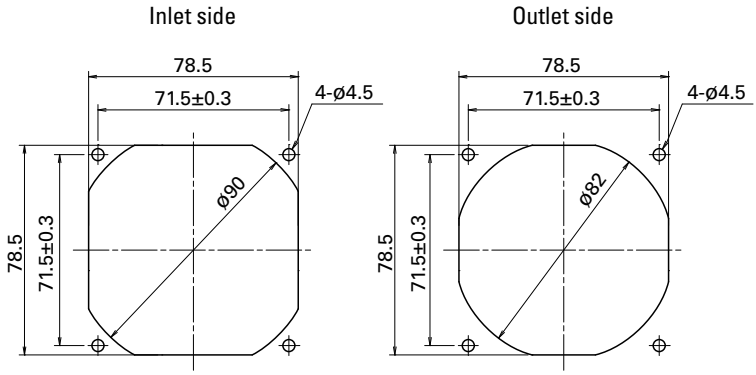
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards
page: p. 513

Model no.: 109-049E, 109-049H

Resin filter kits
page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards
page: p. 520

Model no.: 109-1002G

80×80×80 mm

San Ace 80 9CRA type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 450 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRA0812P8G001	12	10.8 to 13.2	100	5.3	63.6	12000	11300	4.5	158.9	1150	4.62	76	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.2	2.4	2000	1900	0.74	26.1	31.9	0.13	30		
9CRA0824P8G001	24	21.6 to 26.4	100	2.65	63.6	12000	11300	4.5	158.9	1150	4.62	76		
			0	0.09	2.16	2000	1900	0.74	26.1	31.9	0.13	30		
9CRA0848P8G001	48	40.8 to 55.2	100	1.32	63.4	12000	11300	4.5	158.9	1150	4.62	76		
			0	0.29	13.9	5000	4700	1.88	66.2	200	0.8	52		

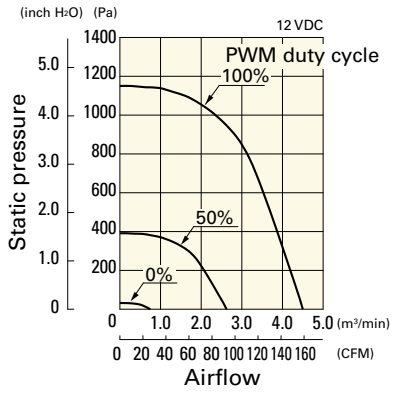
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 548).

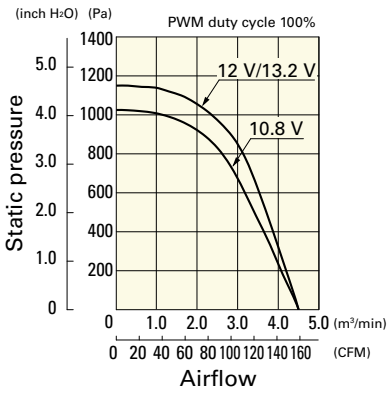
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0812P8G001 With pulse sensor with PWM control function

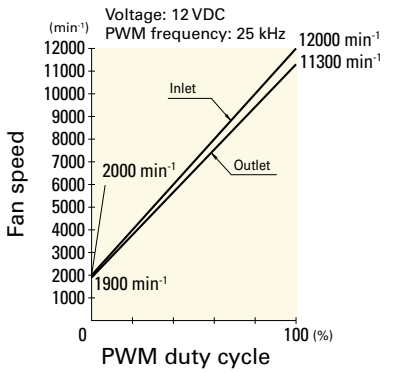
PWM duty cycle



Operating voltage range



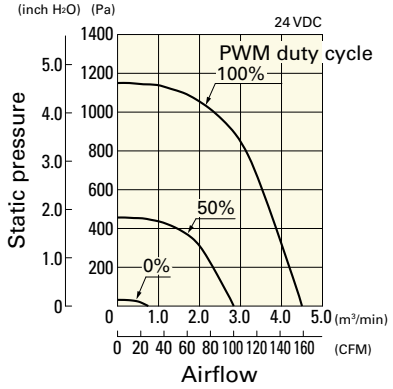
PWM duty - Speed characteristics example



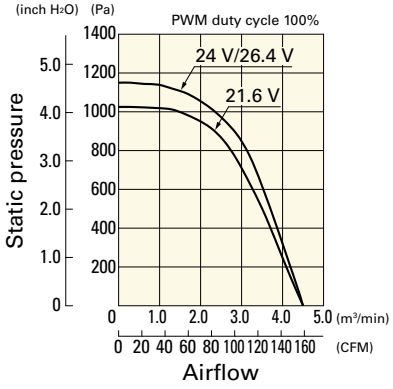
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0824P8G001 With pulse sensor with PWM control function

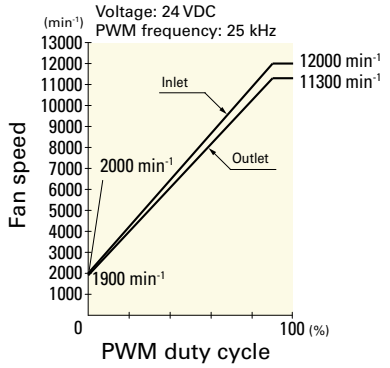
PWM duty cycle



Operating voltage range

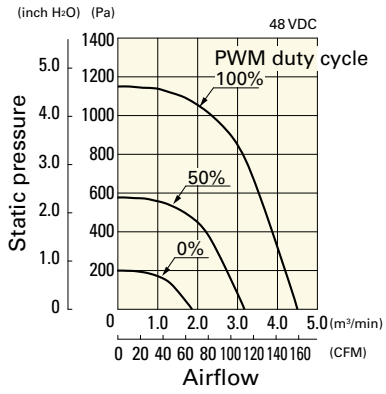


PWM duty - Speed characteristics example

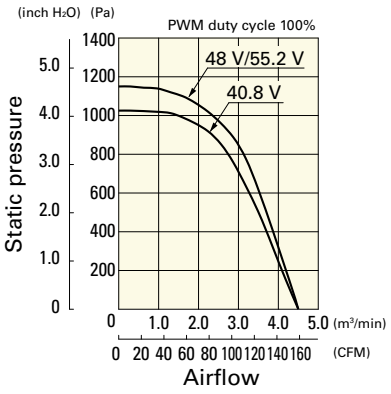


9CRA0848P8G001 With pulse sensor with PWM control function

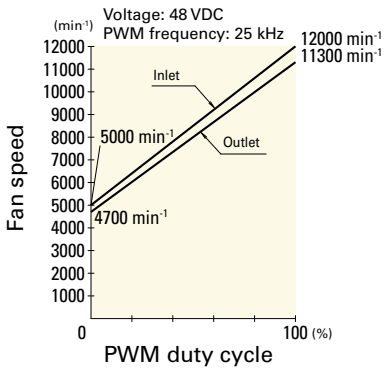
PWM duty cycle



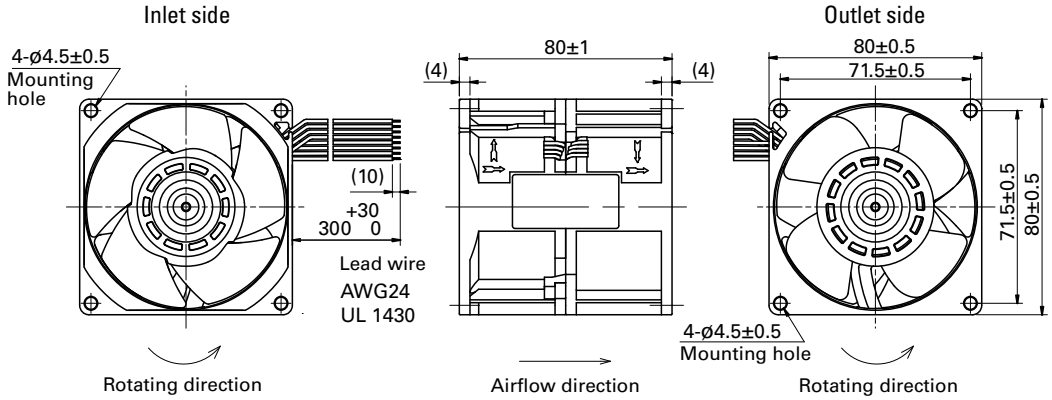
Operating voltage range



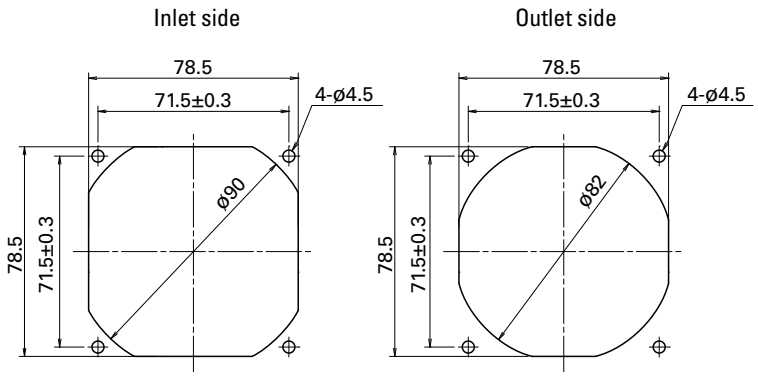
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards

page: p. 513

Model no.: 109-049E, 109-049H

Resin filter kits

page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Resin finger guards

page: p. 520

Model no.: 109-1002G

92×92×76 mm

San Ace 92 9CRA type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 510 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

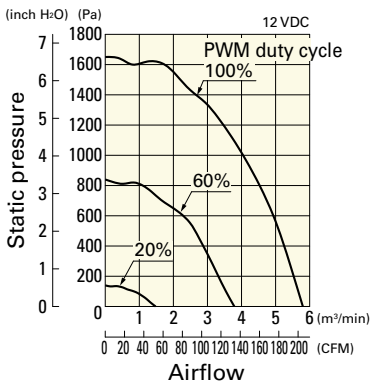
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRA0912P0G001	12	10.2 to 13.2	100	9.0	108.0	13300	12200	5.8	205	1650	6.63	81	-20 to +70	40000/60˚C (70000/40˚C)
			20	0.42	5.04	3500	3200	1.48	52.3	140	0.56	47		
9CRA0948P0G601	48	36 to 60	100	2.2	105.6	13300	12200	5.8	205	1650	6.63	81		
			20	0.15	7.2	3500	3200	1.48	52.3	140	0.56	47		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

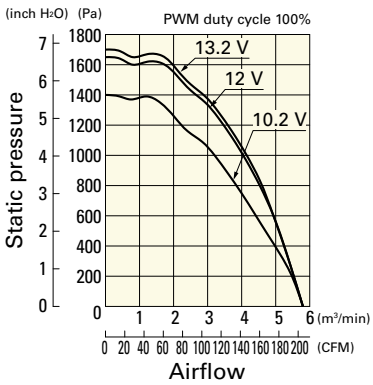
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0912P0G001 With pulse sensor with PWM control function

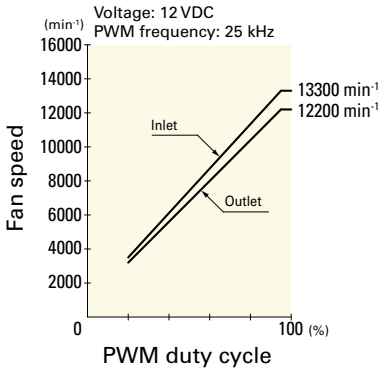
PWM duty cycle



Operating voltage range



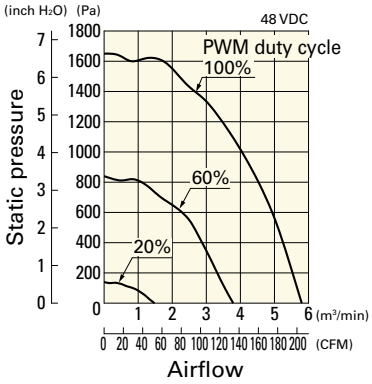
PWM duty - Speed characteristics example



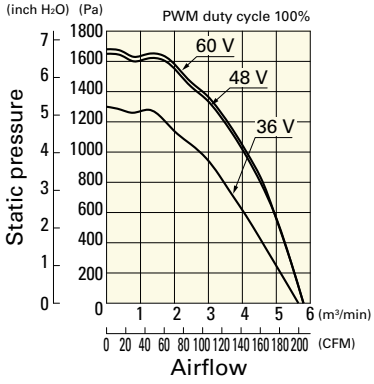
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0948P0G601 With pulse sensor with PWM control function

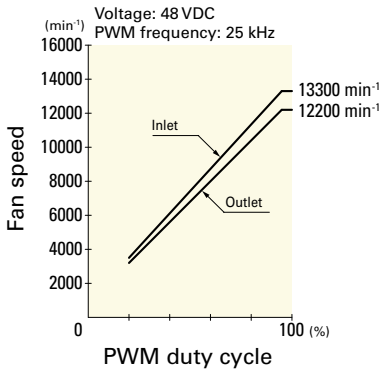
PWM duty cycle



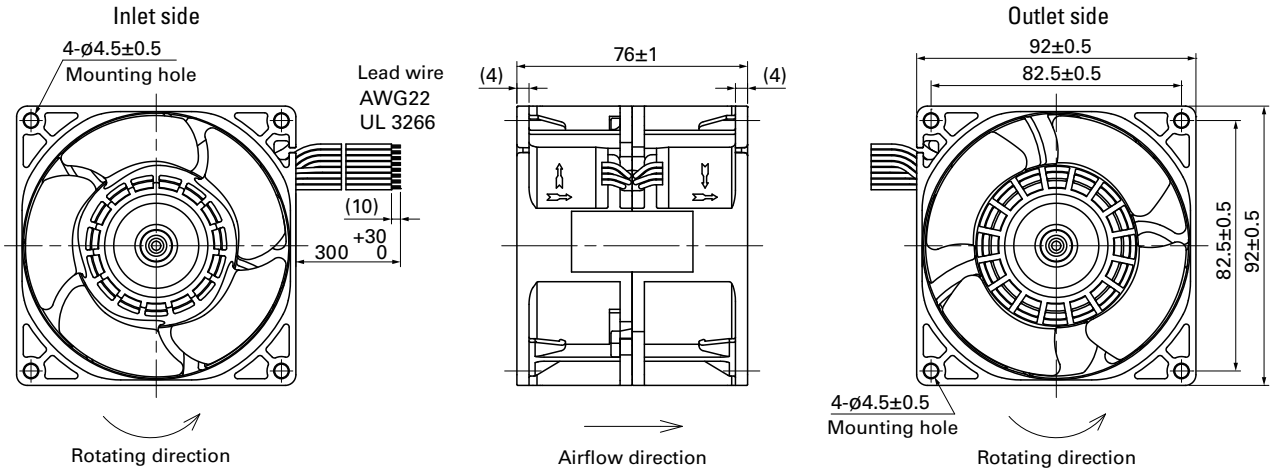
Operating voltage range



PWM duty - Speed characteristics example

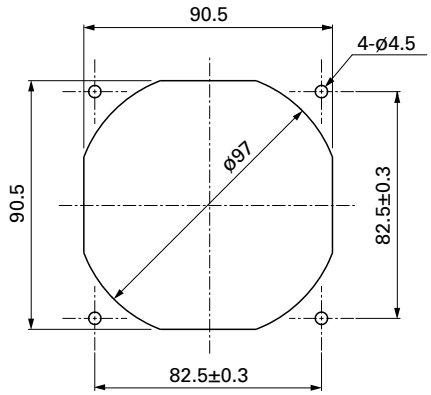


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-099E, 109-099H

Resin finger guards page: p. 520

Model no.: 109-1001G

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

120×120×76 mm

San Ace 120 9CR type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 670 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CR1212P0G03	12	10.8 to 13.2	100	7.2	86.4	6200	3800	8.5	300	480	1.93	70	-20 to +60	40000/60˚C
			0	1.1	13.2	2700	1800	3.8	134	95	0.38	51		

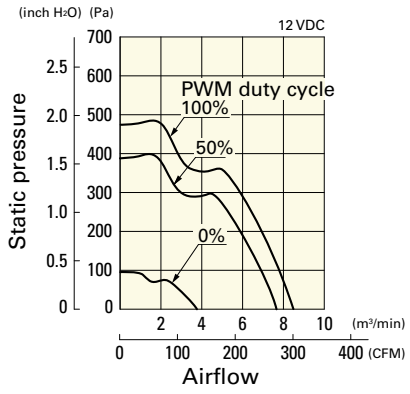
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 548).

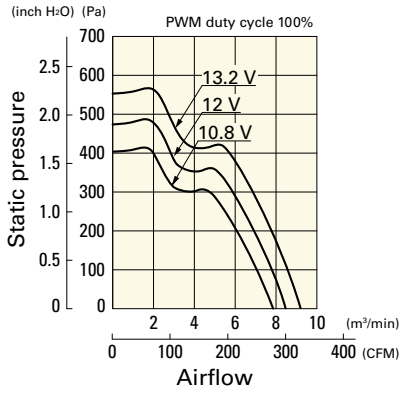
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CR1212P0G03 With pulse sensor with PWM control function

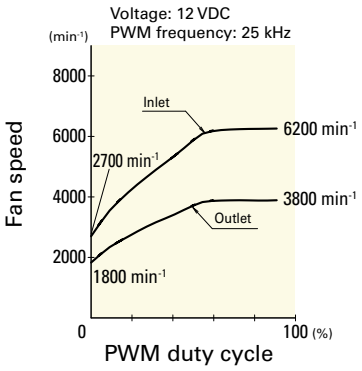
PWM duty cycle



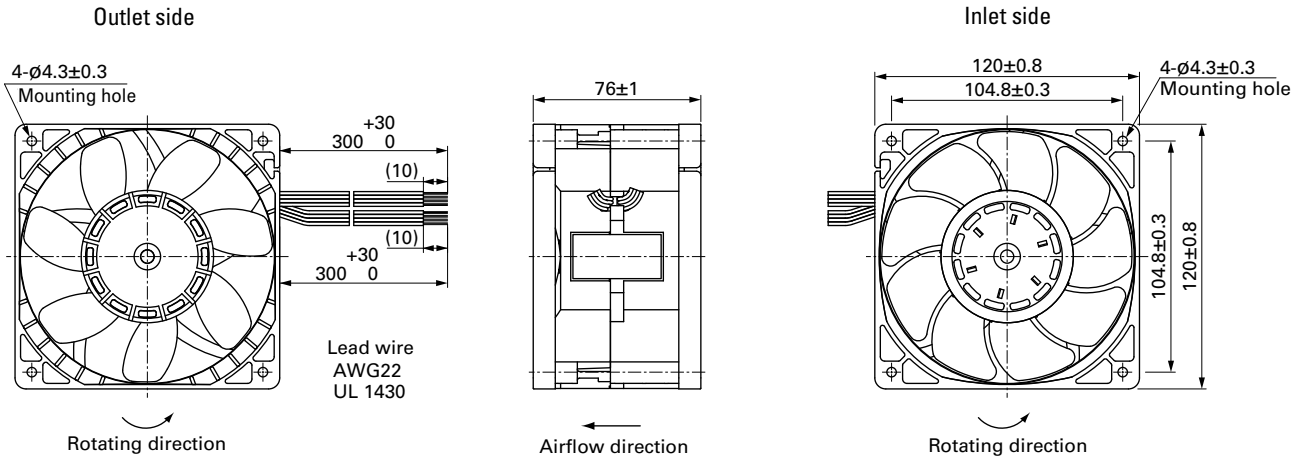
Operating voltage range



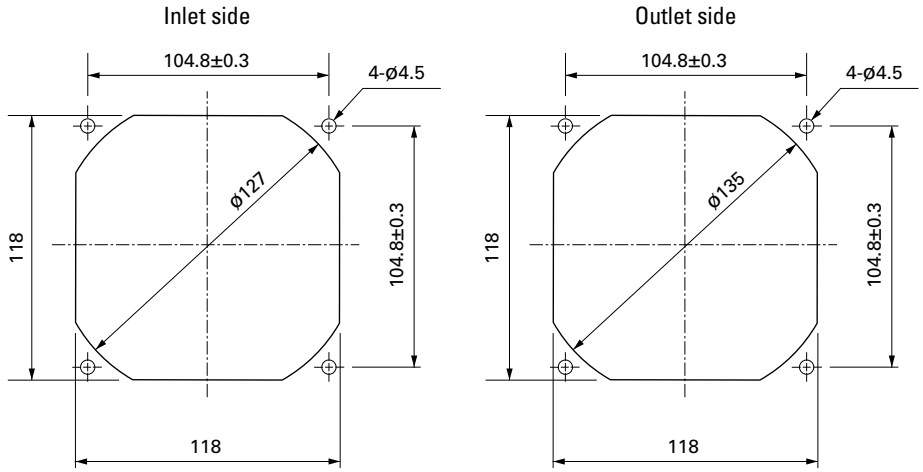
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

ø172×150×102 mm

San Ace 172 9CR type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 1600 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

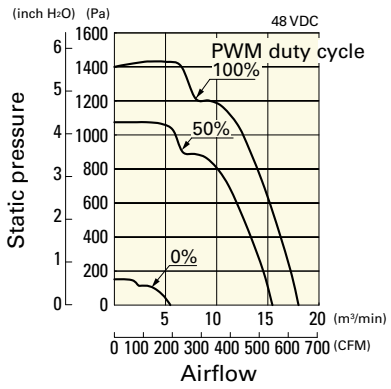
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CR5748P9G001	48	36 to 72	100	5.5	264	7300	6400	18	636	1400	5.62	83	-20 to +70	40000/60˚C
			0	0.5	24	2400	1900	5.5	194.3	152	0.61	54		

* PWM frequency: 25 kHz

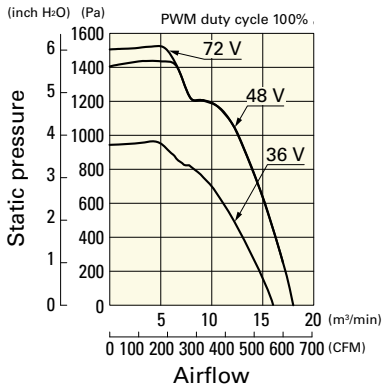
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CR5748P9G001 With pulse sensor with PWM control function

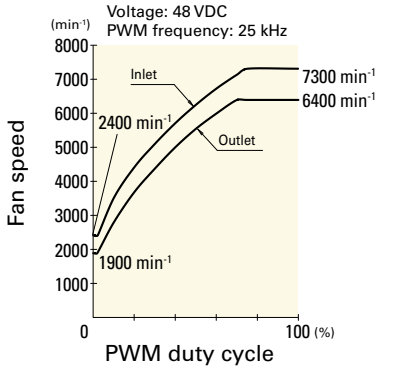
PWM duty cycle



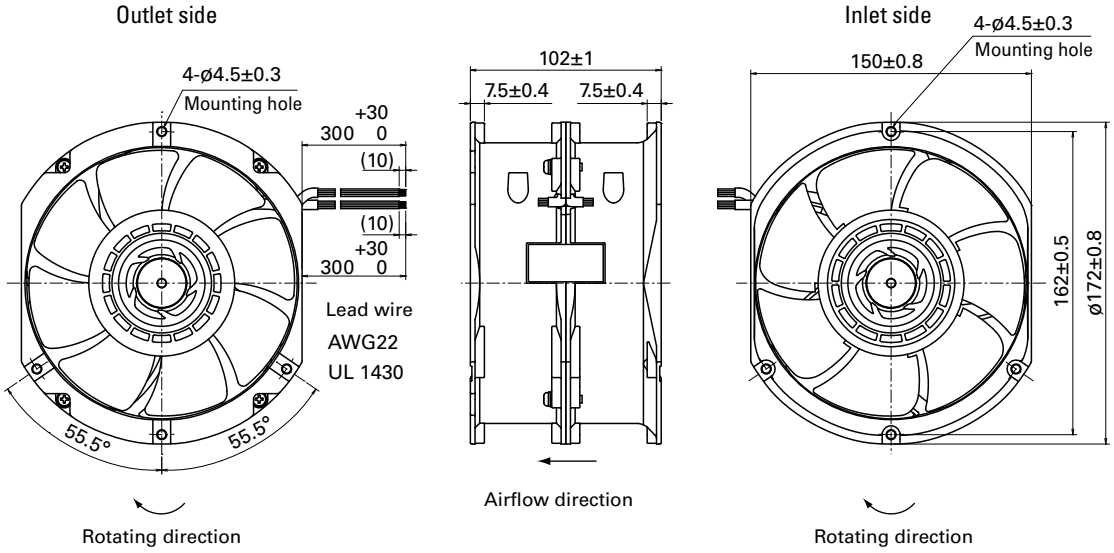
Operating voltage range



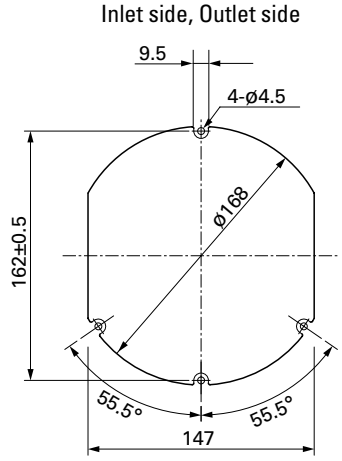
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 515

Model no.: 109-319J, 109-319E, 109-319H, 109-320

Reversible Flow Fan

The wind directions can be switched with these fans. Equivalent cooling performance can be obtained in both directions.

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9RF	13	12	P	3	H	001
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec

Type name	9RF
Frame size (mm)	09 (ø92) 13 (ø136)
Voltage (V)	12 24 12 24
Frame thickness (mm)	1 3 38 28
Speed code	H

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

ø92×38 mm

San Ace 92RF 9RF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 150 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Airflow direction	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9RF0912P1H001	Forward	12	10.2 to 13.8	100	0.17	2.0	5500	1.2	42.4	156	0.63	39	-20 to +70	40000/60˚C (70000/40˚C)
	Reverse			0	0.17	2.0	5300	1.2	42.4	146	0.59	43		
9RF0924P1H001	Forward	24	20.4 to 27.6	100	0.09	2.2	5500	1.2	42.4	156	0.63	39		
	Reverse			0	0.09	2.2	5300	1.2	42.4	146	0.59	43		

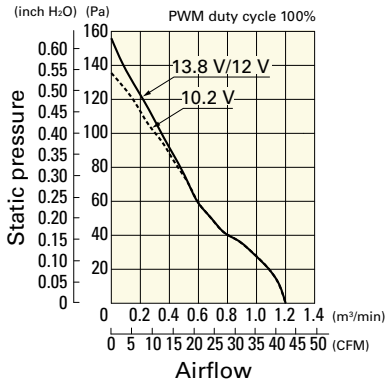
* PWM frequency: 25 kHz

Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9RF0912P1H001 With pulse sensor with PWM control function

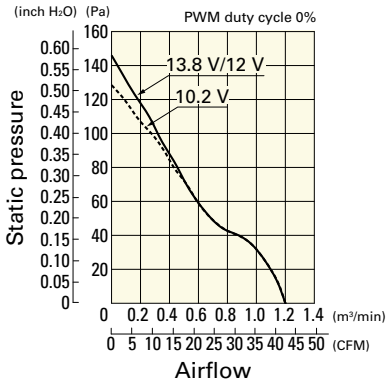
Operating voltage range

Forward

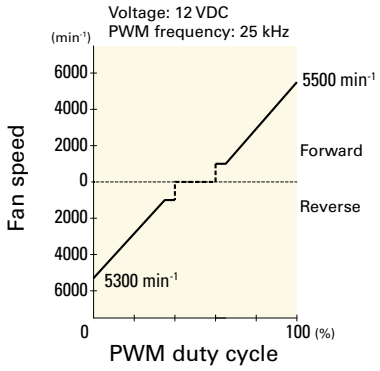


Operating voltage range

Reverse



PWM duty - Speed characteristics example

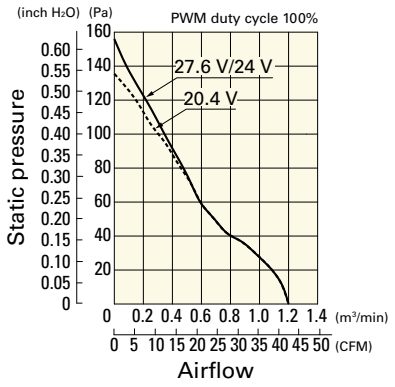


Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9RF0924P1H001 With pulse sensor with PWM control function

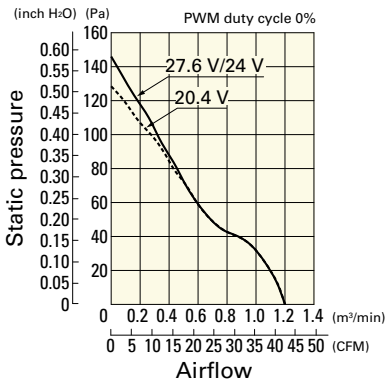
Operating voltage range

Forward

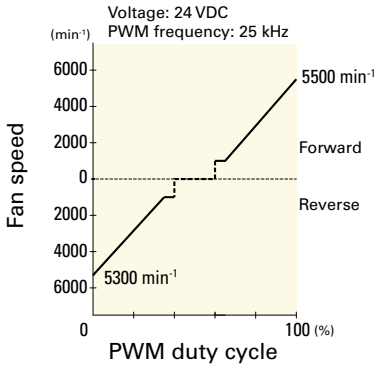


Operating voltage range

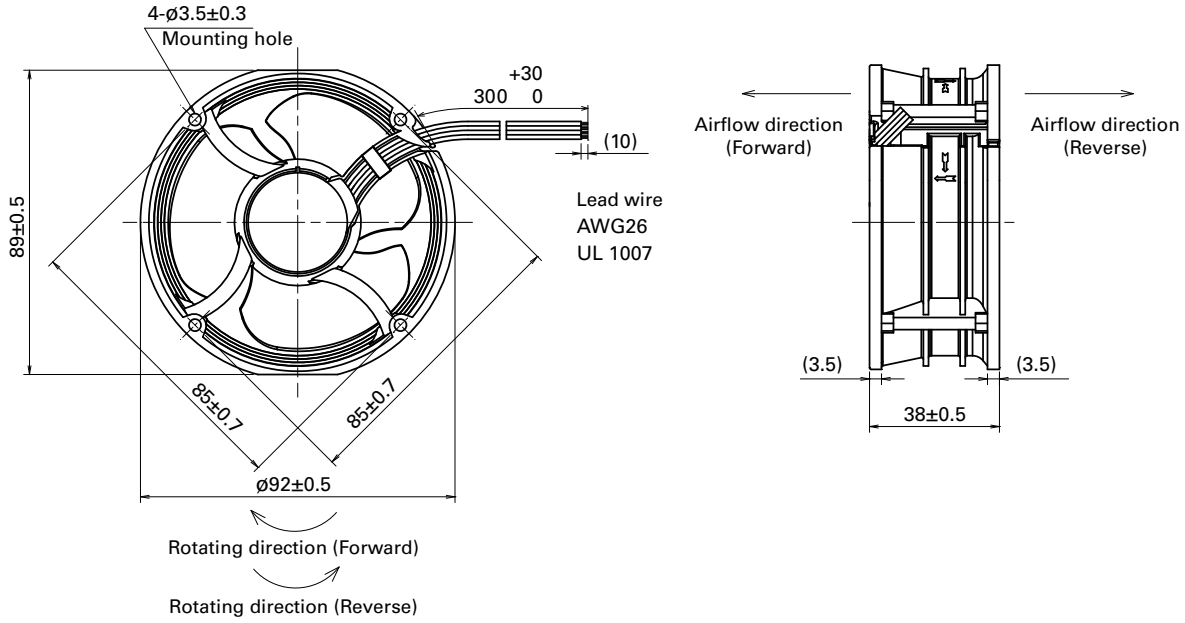
Reverse



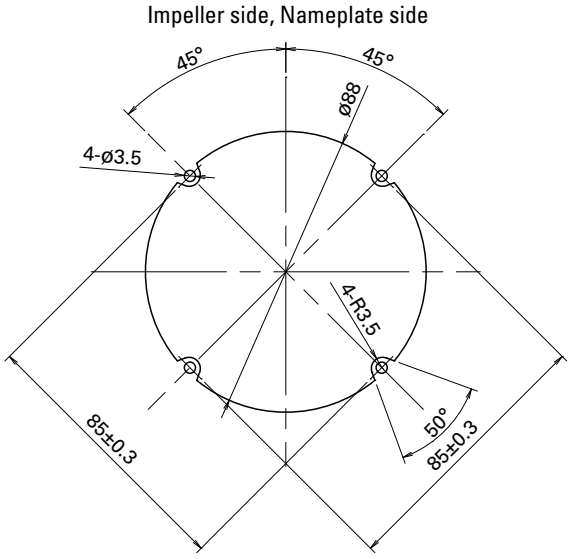
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-1147

ø136×28 mm

San Ace 136RF 9RF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 220 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Airflow direction	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9RF1312P3H001	Forward	12	10.2 to 13.8	100	0.15	1.8	3100	2.0	70.7	102	0.41	35	-20 to +70	40000/60˚C (70000/40˚C)
	Reverse			0	0.15	1.8	3100	2.0	70.7	104	0.418	46		
9RF1324P3H001	Forward	24	20.4 to 27.6	100	0.09	2.2	3100	2.0	70.7	102	0.41	35		
	Reverse			0	0.09	2.2	3100	2.0	70.7	104	0.418	46		

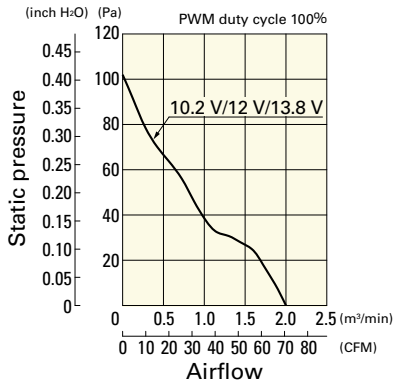
* PWM frequency: 25 kHz

Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9RF1312P3H001 With pulse sensor with PWM control function

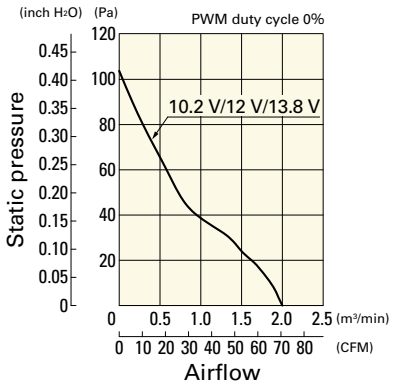
Operating voltage range

Forward

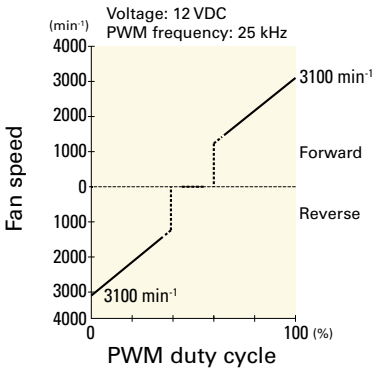


Operating voltage range

Reverse



PWM duty - Speed characteristics example

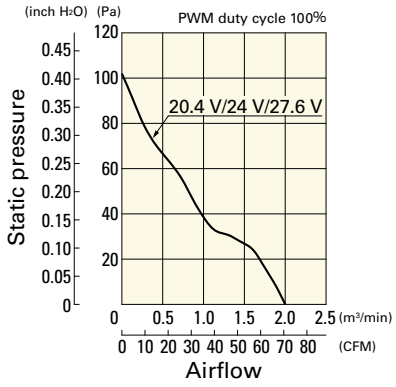


Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9RF1324P3H001 With pulse sensor with PWM control function

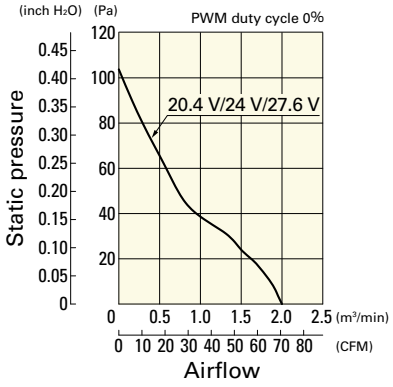
Operating voltage range

Forward

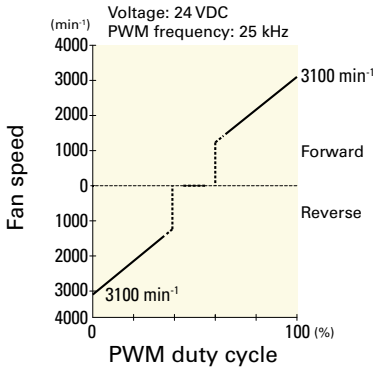


Operating voltage range

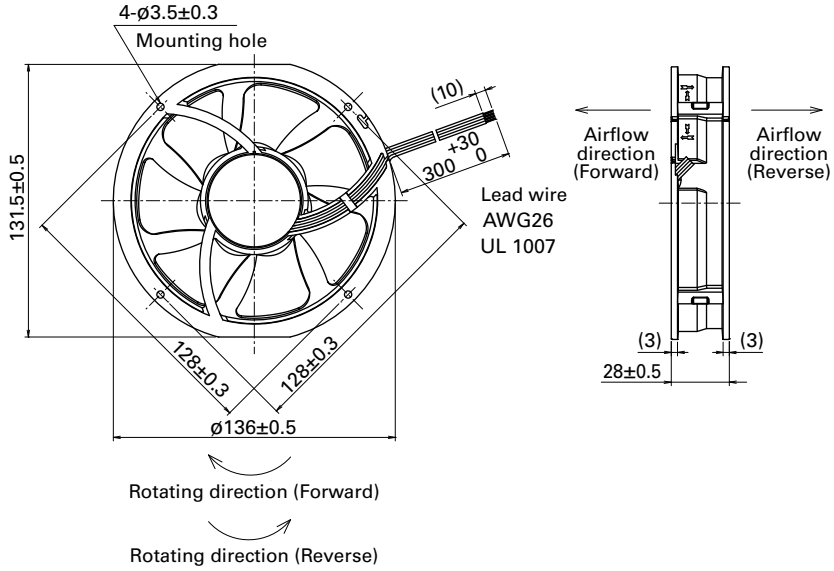
Reverse



PWM duty - Speed characteristics example

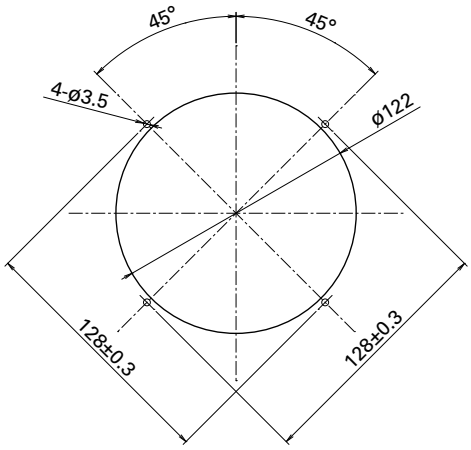


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Impeller side, Nameplate side



Options

Finger guards page: p. 514

Model no.: 109-1139

Splash Proof Fan

Cooling fan of IP54, IP55 and IP68 waterproof capability. For more information on IP rating, refer to p. 534.
Related product: Splash Proof Centrifugal Fan p. 321, Oil Proof Fan p. 335

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9WS	12	12	H	1	01	
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications	Frame form

Fans with PWM control function

9WV	08	48	P	1	H	001	
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec (2 to 3 digits)	Frame form

Type name	9W 9WB 9WE 9WG 9WL 9WP 9WS 9WV
Frame size (mm)	04 (40×40) 06 (60×60) 08 (80×80) 09 (92×92) 12 (120×120) 14 (140×140) 17 (ø172) 57 (ø172×150 (sidecut))
Voltage (V)	12 24 48 12 24 48 etc.
Speed code	A D E F G H J L M S etc.
Frame thickness (mm)	1 (38) 4 (25) 5 (51) 6 (20)
Sensor specifications	01 With a pulse sensor 02 Without a sensor D01 With a lock sensor
Frame form	Nil Plastic frame: Ribbed frame Aluminum frame: Ribless frame 1 Plastic frame: Ribless frame

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

IP68

40×40×20 mm

San Ace 40W 9WP type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 50 g
- Ingress protection ····· IP68

Specifications

The models listed below **have ribs and pulse sensors.**

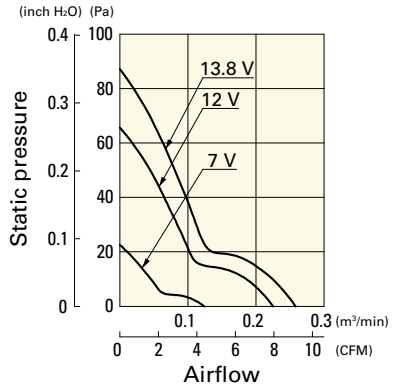
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WP0412H6001	12	7 to 13.8	0.1	1.2	8000	0.225	8.0	65.7	0.264	33	-10 to +60	40000/60˚C (70000/40˚C)
9WP0412F6001			0.06	0.72	6500	0.183	6.5	45.1	0.181	28		

Other sensor specifications are available as options. Refer to the index (p. 559).

Airflow - Static Pressure Characteristics

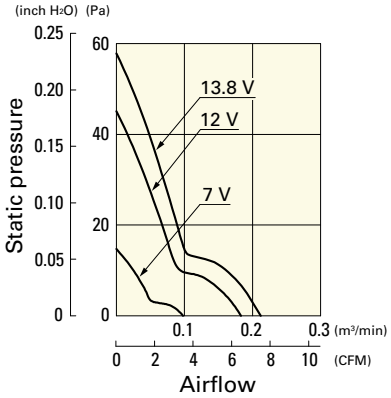
9WP0412H6001 With pulse sensor

Operating voltage range

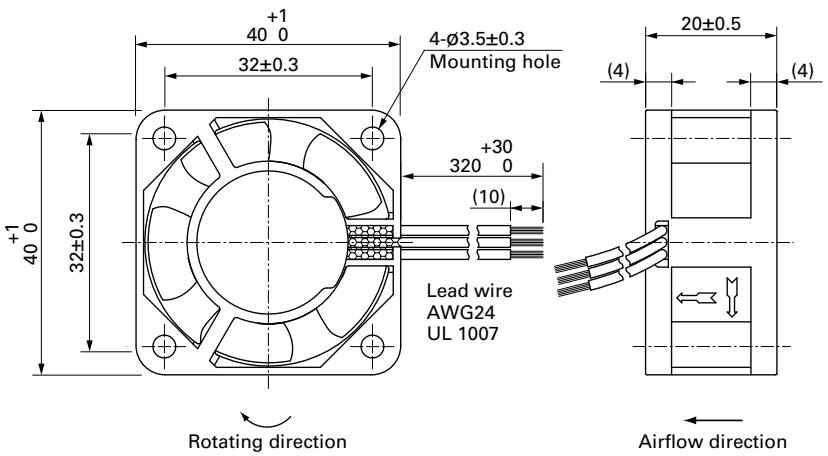


9WP0412F6001 With pulse sensor

Operating voltage range

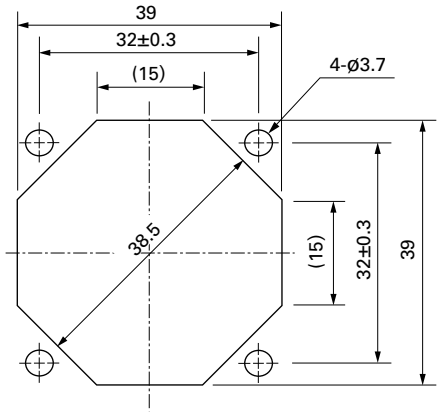


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×28 mm

San Ace 40W 9WL type

IP68

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 70 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WL0412P3J001	12	10.8 to 13.2	100	0.52	6.24	17500	0.63	22.2	400	1.61	51	-20 to +70	150000/60˚C
			20	0.06	0.72	3600	0.13	4.6	16.9	0.07	20		
9WL0412P3G001			100	0.4	4.8	15500	0.56	19.7	310	1.24	47		
			20	0.06	0.72	3300	0.12	4.2	14.0	0.06	18		
9WL0424P3J001	24	21.6 to 26.4	100	0.26	6.24	17500	0.63	22.2	400	1.61	51		
			20	0.04	0.96	4000	0.14	5.1	20.9	0.08	22		
9WL0424P3G001			100	0.2	4.8	15500	0.56	19.7	310	1.24	47		
			20	0.04	0.96	3000	0.11	3.8	11.6	0.05	16		

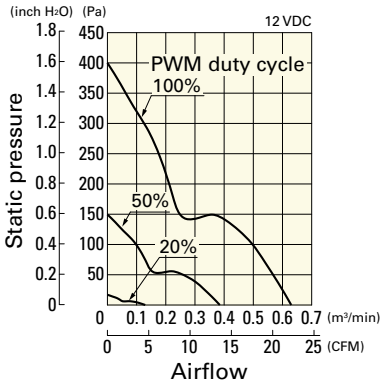
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 559).

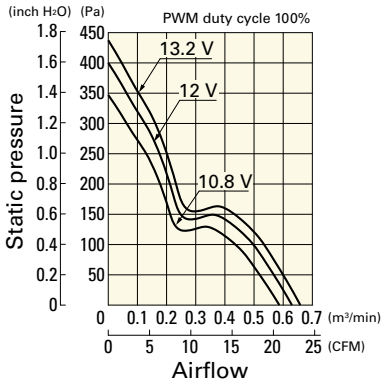
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0412P3J001 With pulse sensor with PWM control function

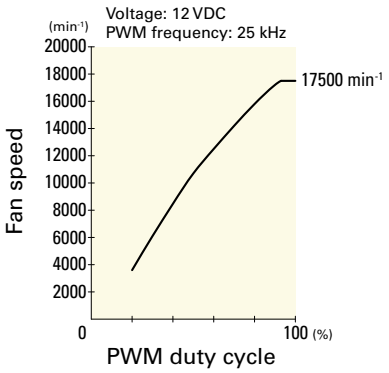
PWM duty cycle



Operating voltage range



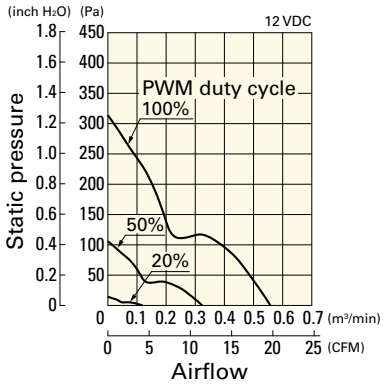
PWM duty - Speed characteristics example



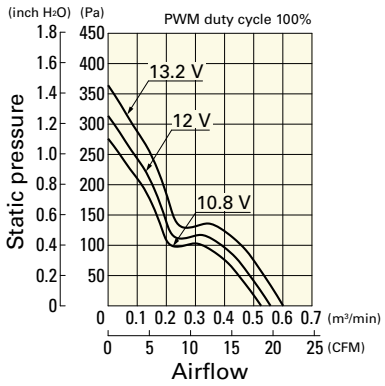
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0412P3G001 With pulse sensor with PWM control function

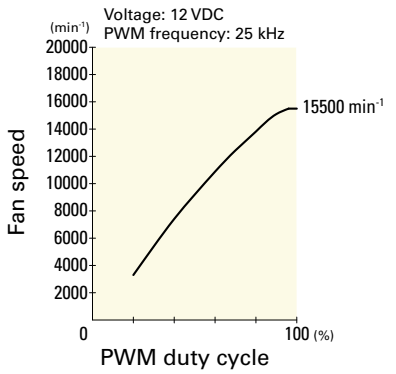
PWM duty cycle



Operating voltage range

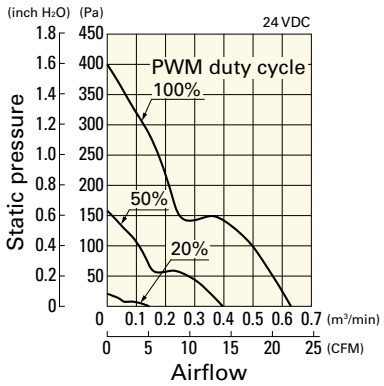


PWM duty - Speed characteristics example

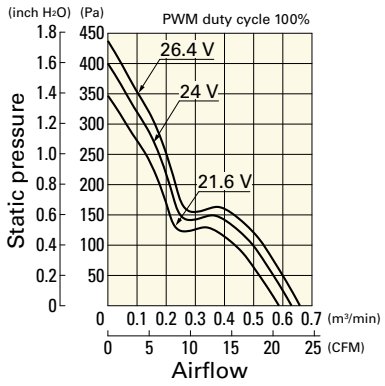


9WL0424P3J001 With pulse sensor with PWM control function

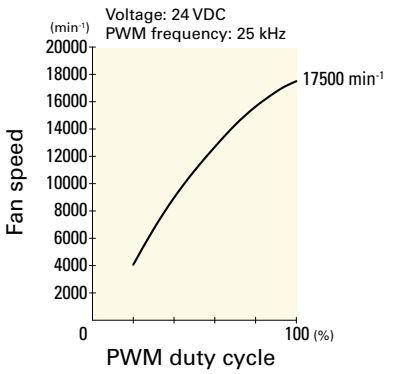
PWM duty cycle



Operating voltage range

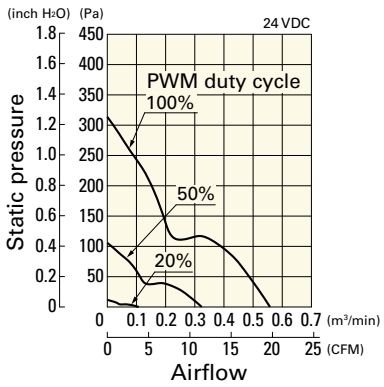


PWM duty - Speed characteristics example

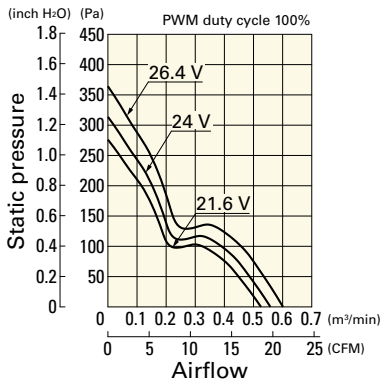


9WL0424P3G001 With pulse sensor with PWM control function

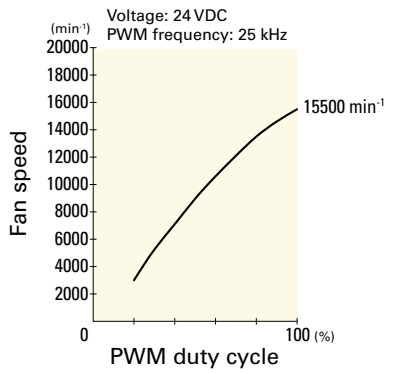
PWM duty cycle



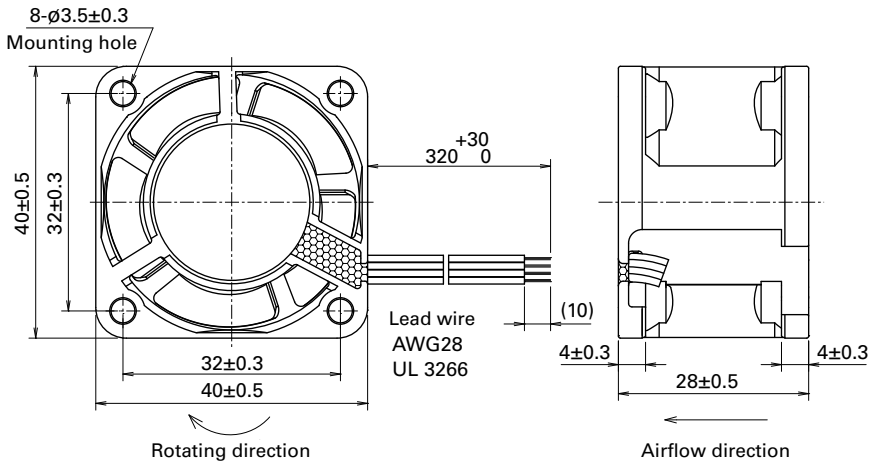
Operating voltage range



PWM duty - Speed characteristics example

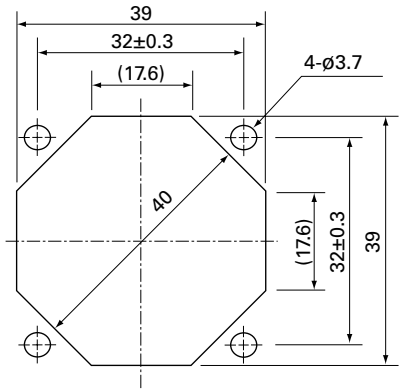


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

IP68

60×60×25 mm

San Ace 60W 9WL type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 120 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WL0612P4S001	12	10.8 to 13.2	100	0.67	8.04	11000	1.4	49.4	300	1.204	53	-20 to +70	180000/60˚C
			20	0.06	0.72	2900	0.36	12.7	20.8	0.083	20		
9WL0612P4J001			100	0.39	4.68	8650	1.1	38.8	182	0.73	47		
			20	0.03	0.36	1150	0.13	4.8	3.3	0.013	14		
9WL0612P4H001			100	0.17	2.04	6150	0.78	27.5	97	0.389	36		
			20	0.03	0.36	1350	0.17	6.0	4.7	0.018	14		
9WL0624P4S001	24	21.6 to 26.4	100	0.34	8.16	11000	1.4	49.4	300	1.204	53		
			20	0.03	0.72	2900	0.36	12.7	20.8	0.083	20		
9WL0624P4J001			100	0.19	4.56	8650	1.1	38.8	182	0.73	47		
			20	0.02	0.48	2200	0.28	9.8	12.0	0.048	17		
9WL0624P4H001			100	0.08	1.92	6150	0.78	27.5	97	0.389	36		
			20	0.02	0.48	1300	0.16	5.6	4.3	0.017	14		

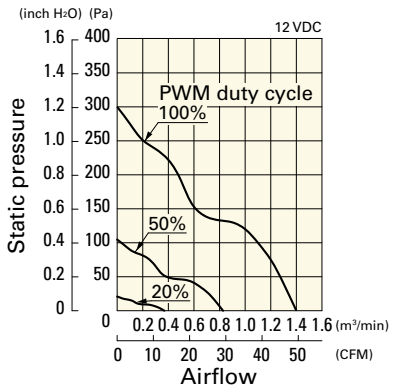
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 559).

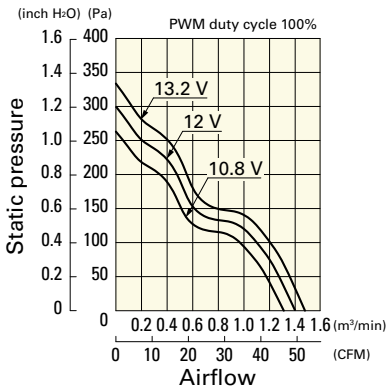
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0612P4S001 With pulse sensor with PWM control function

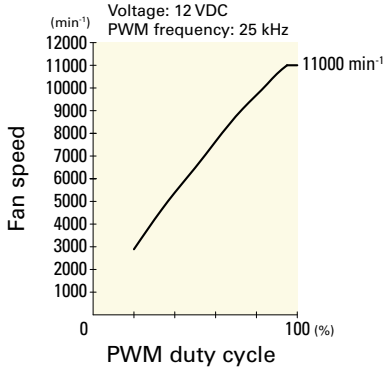
PWM duty cycle



Operating voltage range



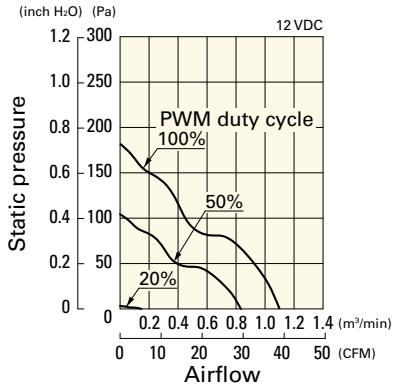
PWM duty - Speed characteristics example



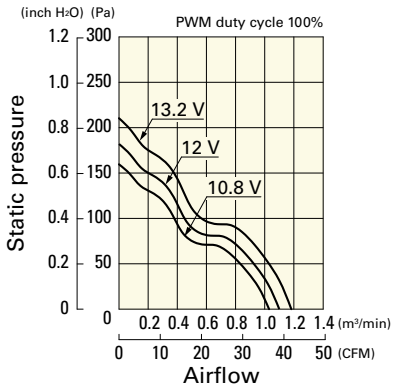
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0612P4J001 With pulse sensor with PWM control function

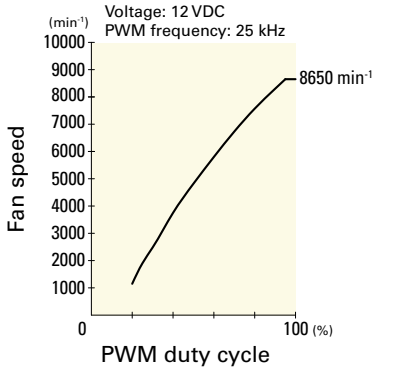
PWM duty cycle



Operating voltage range

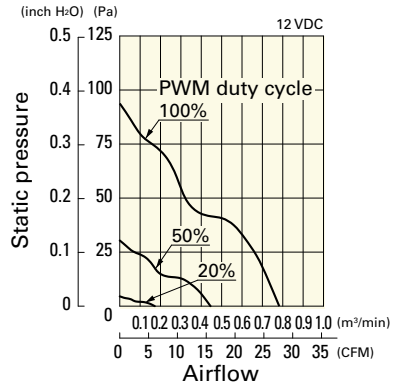


PWM duty - Speed characteristics example

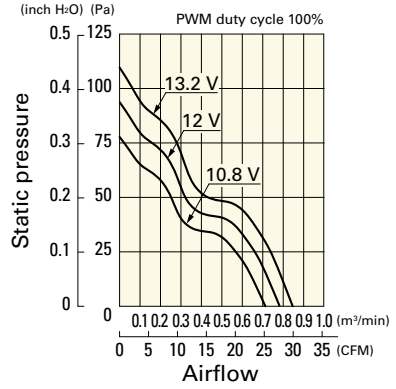


9WL0612P4H001 With pulse sensor with PWM control function

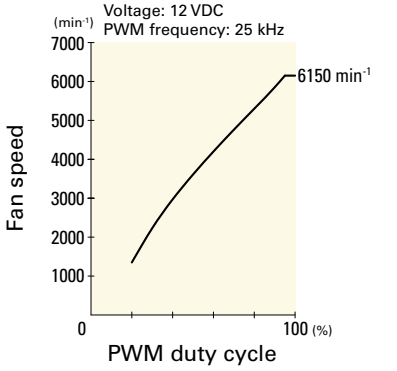
PWM duty cycle



Operating voltage range

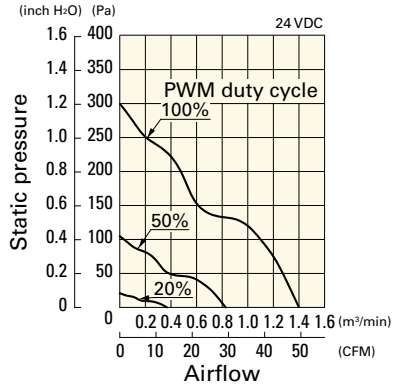


PWM duty - Speed characteristics example

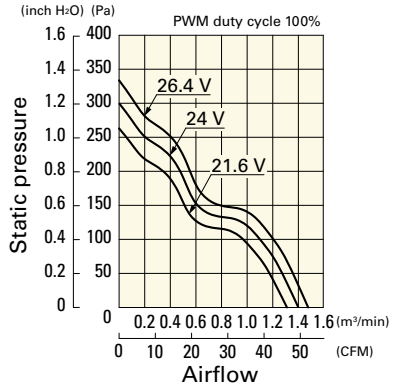


9WL0624P4S001 With pulse sensor with PWM control function

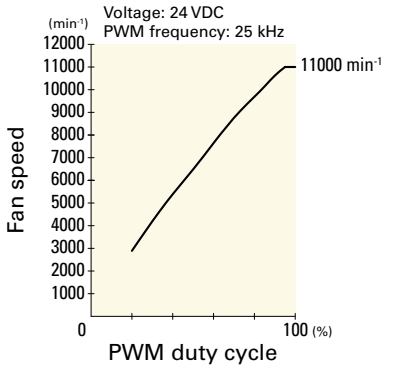
PWM duty cycle



Operating voltage range

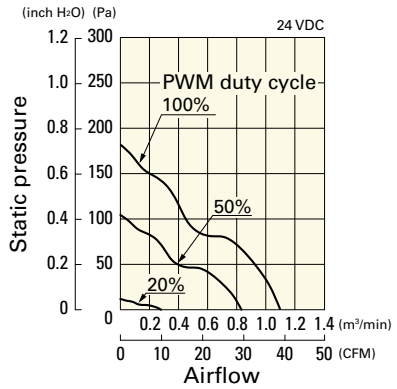


PWM duty - Speed characteristics example

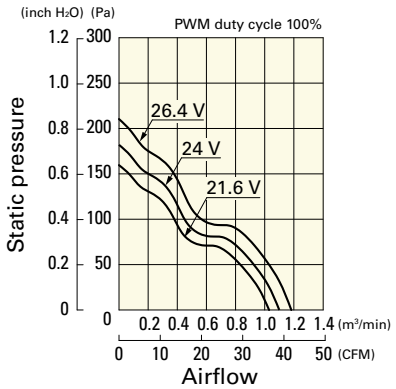


9WL0624P4J001 With pulse sensor with PWM control function

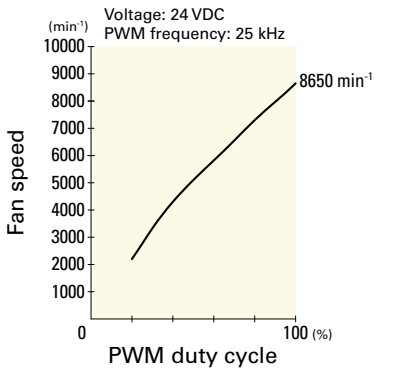
PWM duty cycle



Operating voltage range



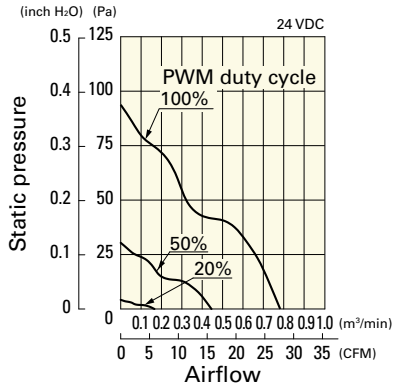
PWM duty - Speed characteristics example



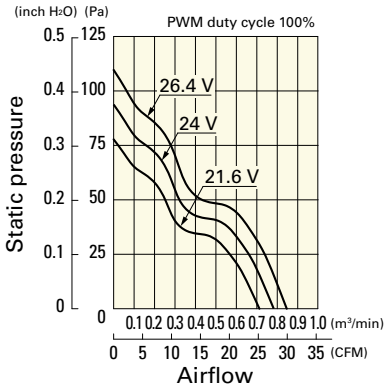
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0624P4H001 With pulse sensor with PWM control function

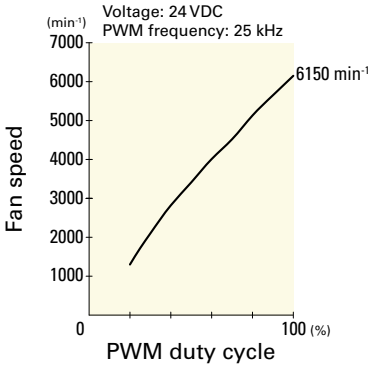
PWM duty cycle



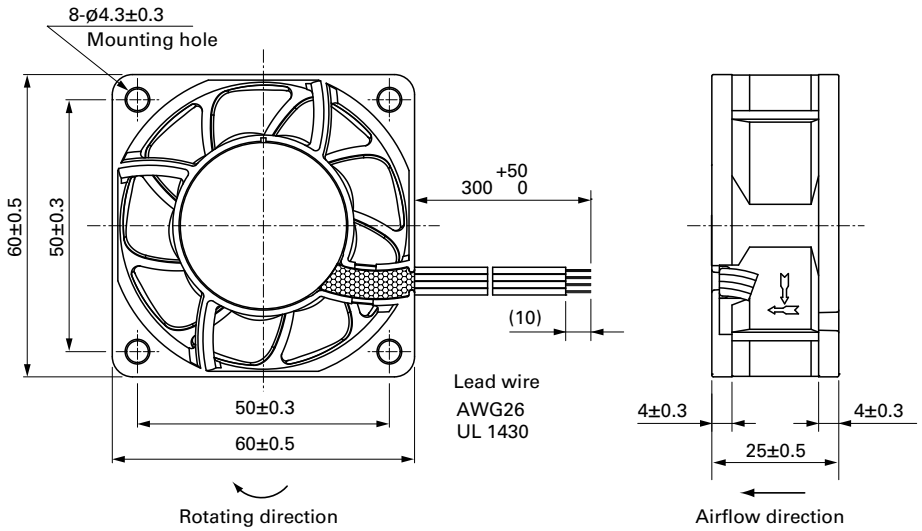
Operating voltage range



PWM duty - Speed characteristics example

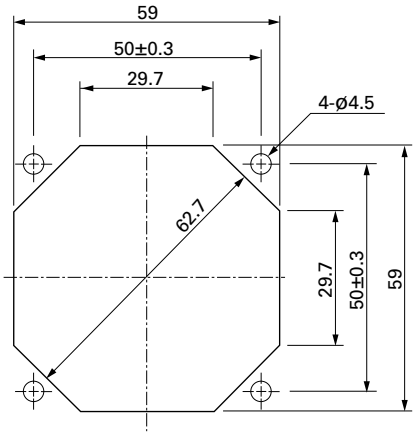


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards	page: p. 513

Model no.: 109-139E, 109-139H

Resin finger guards	page: p. 520

Model no.: 109-1003G

IP68

60×60×25 mm

San Ace 60W 9WP type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 110 g
- Ingress protection ····· IP68

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

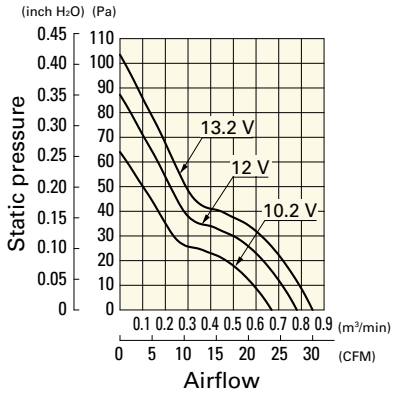
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WP0612G401	12	10.2 to 13.2	0.21	2.52	5600	0.78	27.5	87.3	0.351	39	-20 to +60	40000/60˚C
9WP0612D401		10.2 to 13.8	0.21	2.52	5150	0.72	25	73.5	0.3	37	-20 to +70	60000/60˚C
9WP0612H401			0.11	1.32	3800	0.53	18.7	40.2	0.161	28		
9WP0624J401	24	21.6 to 26.4	0.2	4.8	7600	1.06	37.1	155.0	0.622	44	-20 to +60	40000/60˚C
9WP0624G401		20.4 to 27.6	0.13	3.12	5600	0.78	27.5	87.3	0.351	39		
9WP0624H401			0.06	1.44	3800	0.53	18.7	40.2	0.161	28	-20 to +70	60000/60˚C
9WP0648H401	48	40 to 53	0.04	1.92	3800	0.53	18.7	40.2	0.161	28		

Other sensor specifications are available as options. Refer to the index (pp. 559 to 560).

Airflow - Static Pressure Characteristics

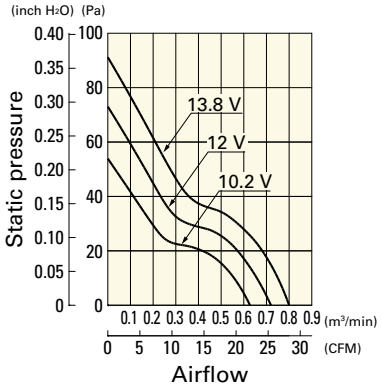
9WP0612G401 With pulse sensor

Operating voltage range



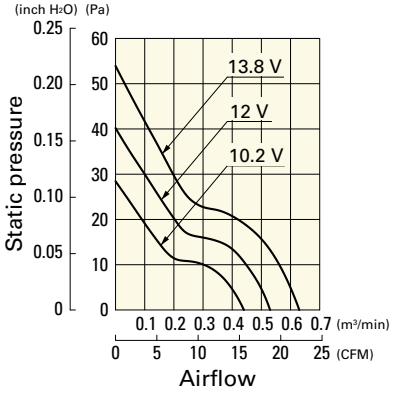
9WP0612D401 With pulse sensor

Operating voltage range



9WP0612H401 With pulse sensor

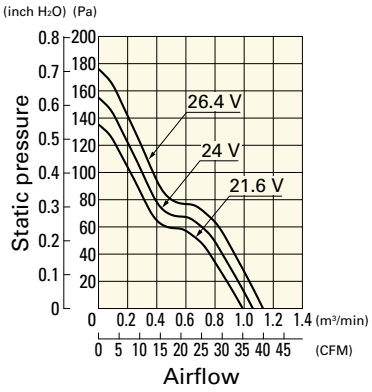
Operating voltage range



Airflow - Static Pressure Characteristics

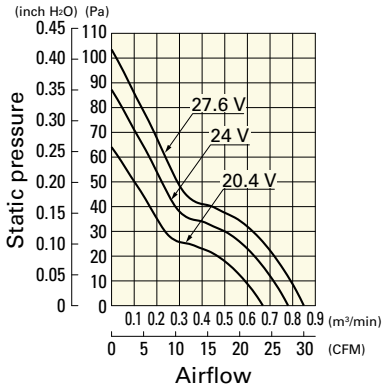
9WP0624J401 With pulse sensor

Operating voltage range



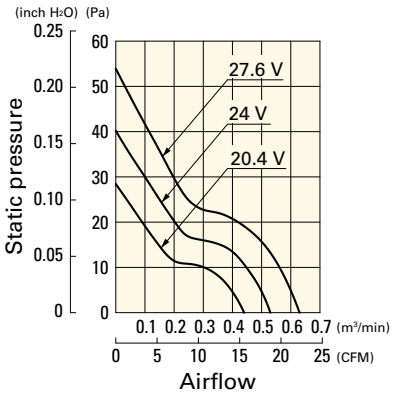
9WP0624G401 With pulse sensor

Operating voltage range



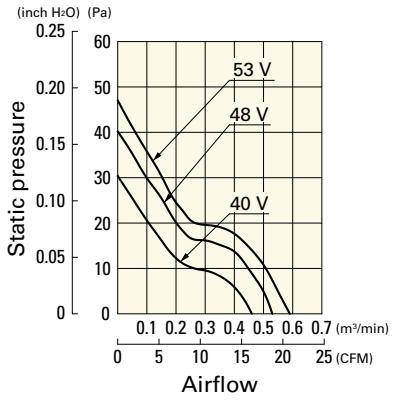
9WP0624H401 With pulse sensor

Operating voltage range

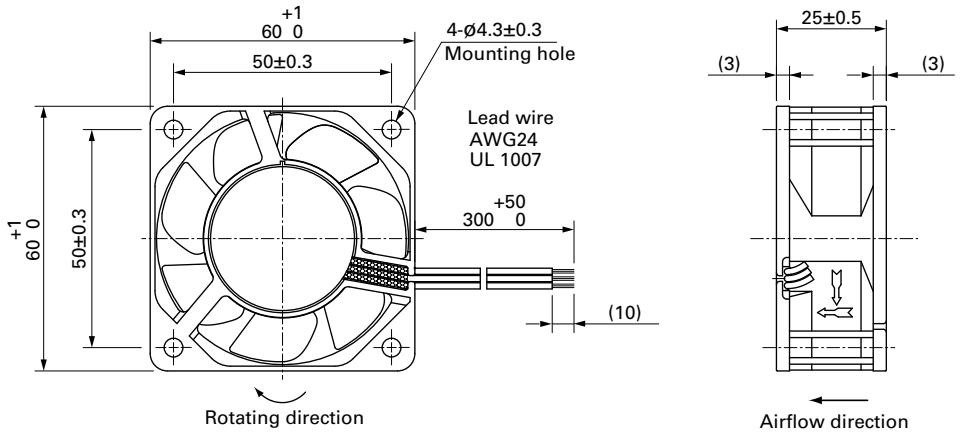


9WP0648H401 With pulse sensor

Operating voltage range

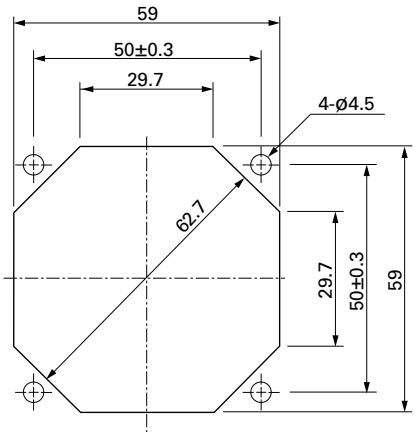


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin finger guards page: p. 520

Model no.: 109-1003G

80×80×25 mm

San Ace 80W 9WL type

IP68

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 150 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WL0812P4J001	12	10.8 to 13.2	100	0.6	7.2	7400	2.07	73.0	177	0.71	49	-20 to +70	180000/60˚C
			20	0.06	0.72	1800	0.5	17.6	10.4	0.04	16		
9WL0812P4G001			100	0.3	3.6	5500	1.54	54.3	98	0.39	43		
			25	0.05	0.6	1400	0.39	13.7	6.3	0.02	14		
9WL0812P4H001			100	0.12	1.44	3700	1.03	36.3	44	0.17	31		
			25	0.04	0.48	1100	0.3	10.5	3.9	0.01	13		
9WL0824P4J001	24	21.6 to 26.4	100	0.28	6.72	7400	2.07	73.0	177	0.71	49		
			20	0.05	1.2	2400	0.67	23.6	18.6	0.07	22		
9WL0824P4G001			100	0.14	3.36	5500	1.54	54.3	98	0.39	43		
			20	0.02	0.48	1200	0.33	11.6	4.6	0.01	13		
9WL0824P4H001			100	0.05	1.2	3700	1.03	36.3	44	0.17	31		
			30	0.02	0.48	1100	0.3	10.5	3.9	0.01	13		

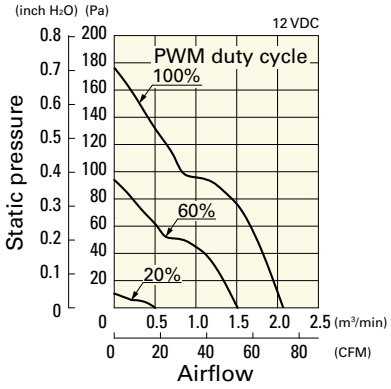
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 559).

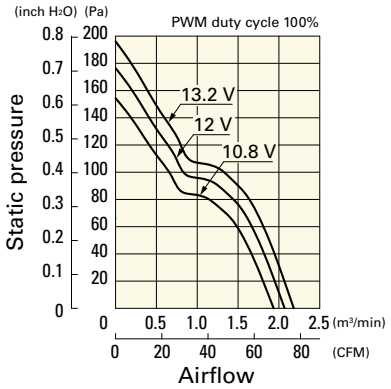
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0812P4J001 With pulse sensor with PWM control function

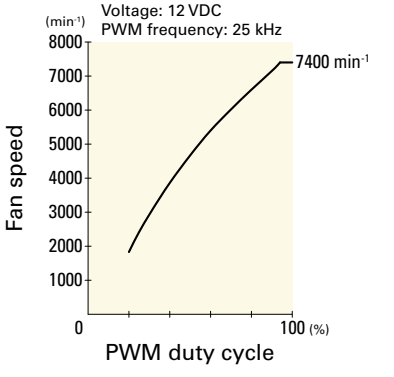
PWM duty cycle



Operating voltage range



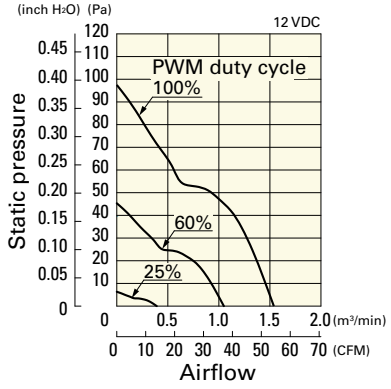
PWM duty - Speed characteristics example



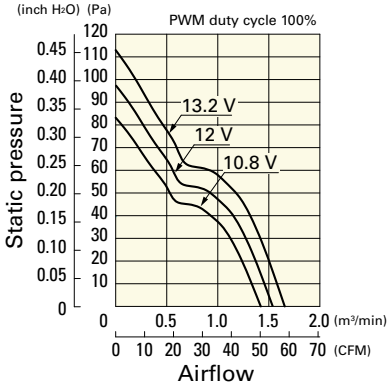
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0812P4G001 With pulse sensor with PWM control function

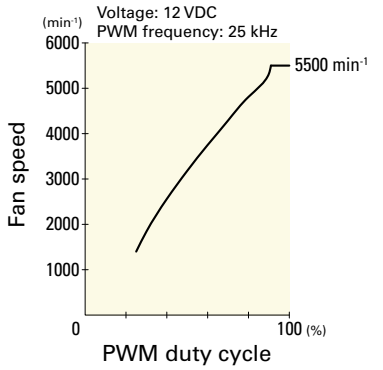
PWM duty cycle



Operating voltage range

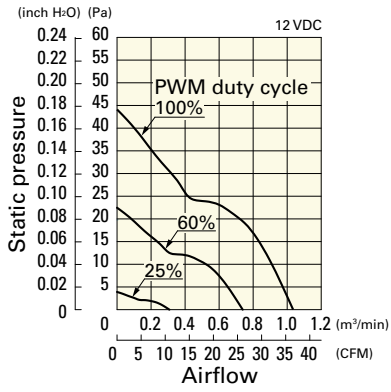


PWM duty - Speed characteristics example

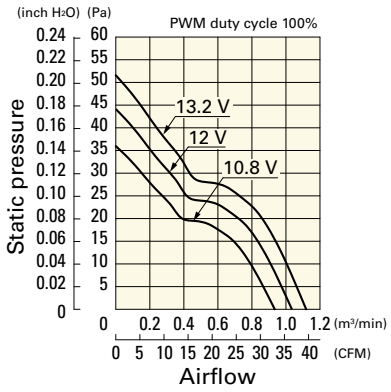


9WL0812P4H001 With pulse sensor with PWM control function

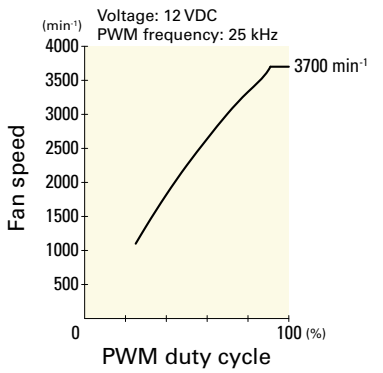
PWM duty cycle



Operating voltage range

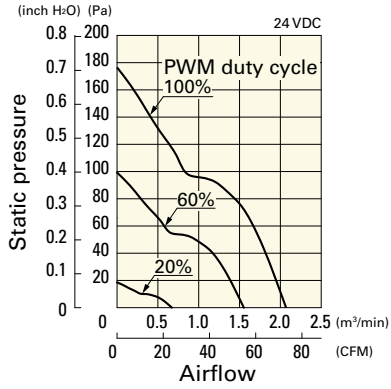


PWM duty - Speed characteristics example

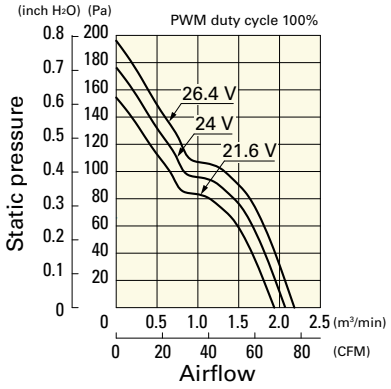


9WL0824P4J001 With pulse sensor with PWM control function

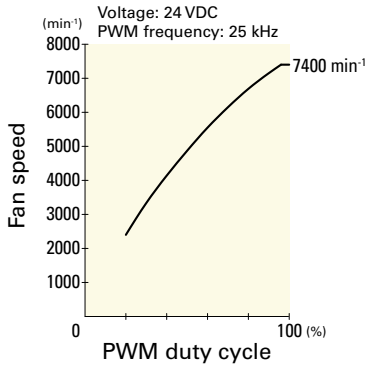
PWM duty cycle



Operating voltage range

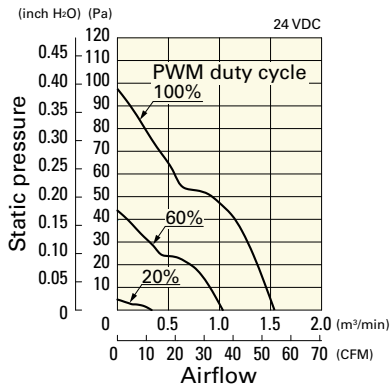


PWM duty - Speed characteristics example

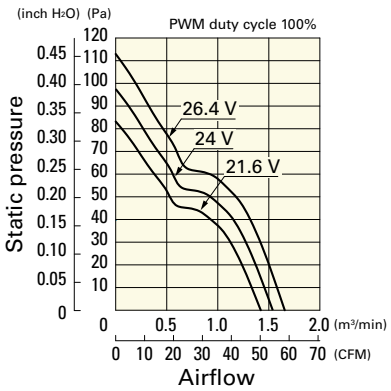


9WL0824P4G001 With pulse sensor with PWM control function

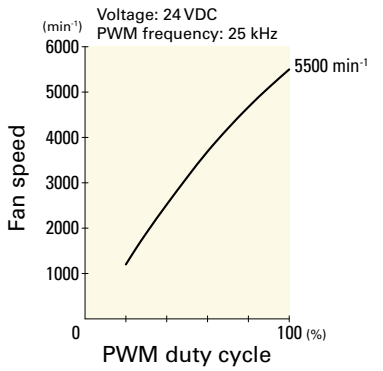
PWM duty cycle



Operating voltage range



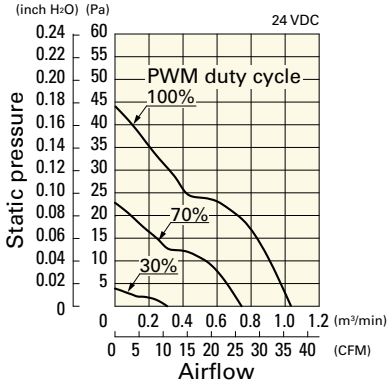
PWM duty - Speed characteristics example



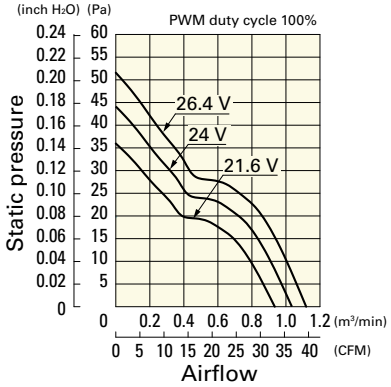
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0824P4H001 With pulse sensor with PWM control function

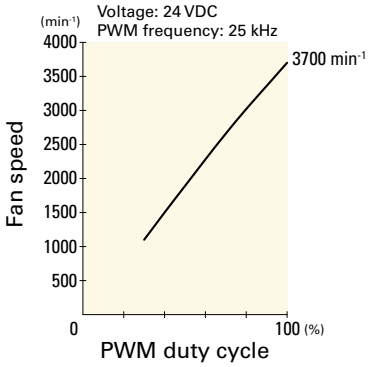
PWM duty cycle



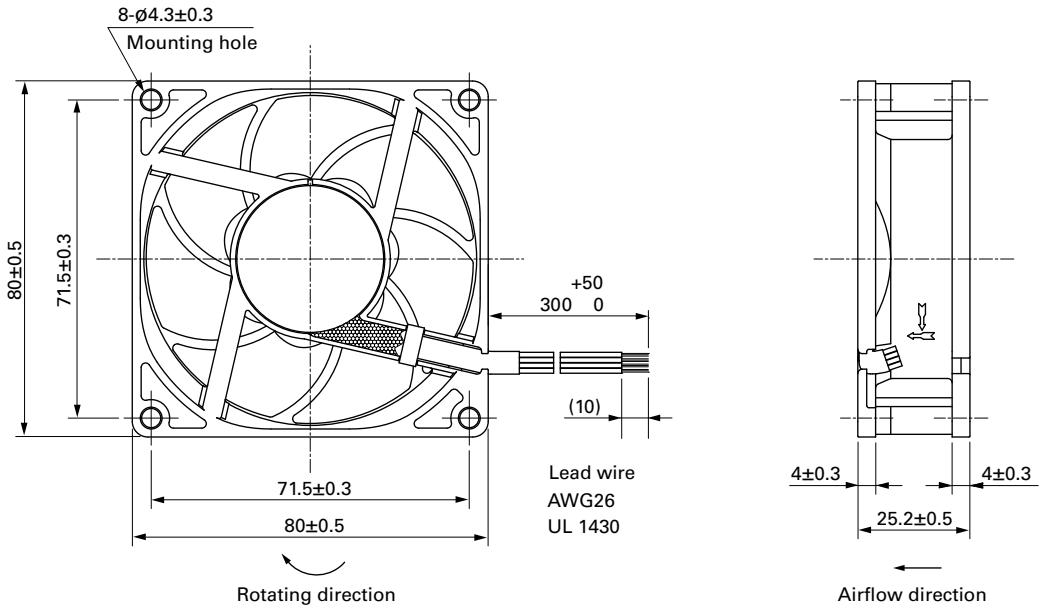
Operating voltage range



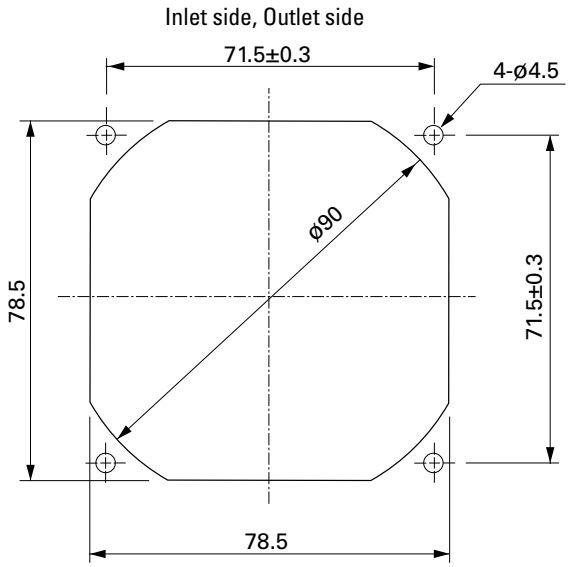
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards	page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards	page: p. 520

Model no.: 109-1002G

IP68

80×80×25 mm

San Ace 80W 9WP type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 130 g
- Ingress protection ····· IP68

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

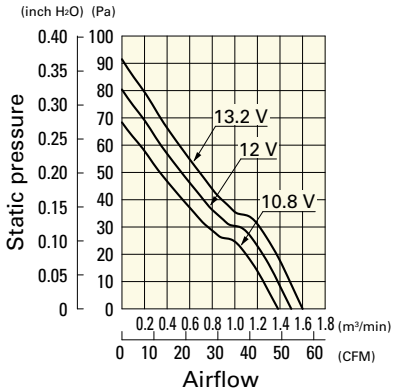
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WP0812G401	12	10.8 to 13.2	0.38	4.56	4500	1.5	53	80.4	0.323	40	-20 to +60	40000/60˚C
9WP0812H401		10.2 to 13.8	0.13	1.56	2900	1.03	36.4	35.3	0.142	29	-20 to +70	60000/60˚C
9WP0824S401	24	20.4 to 27.6	0.1	2.4	3400	1.2	42.4	48.0	0.193	34		40000/60˚C
9WP0824H401			0.07	1.68	2900	1.03	36.4	35.3	0.142	29		60000/60˚C
9WP0848S401	48	40.8 to 55.2	0.06	2.88	3400	1.2	42.4	48.0	0.193	34		40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 560).

Airflow - Static Pressure Characteristics

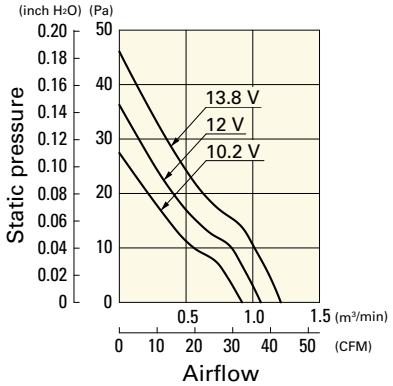
9WP0812G401 With pulse sensor

Operating voltage range



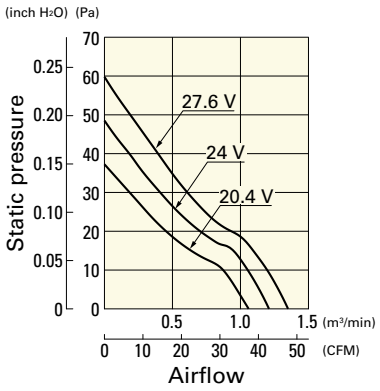
9WP0812H401 With pulse sensor

Operating voltage range



9WP0824S401 With pulse sensor

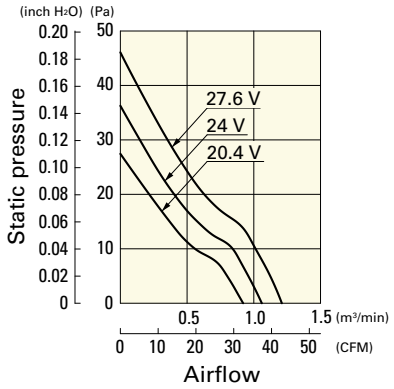
Operating voltage range



Airflow - Static Pressure Characteristics

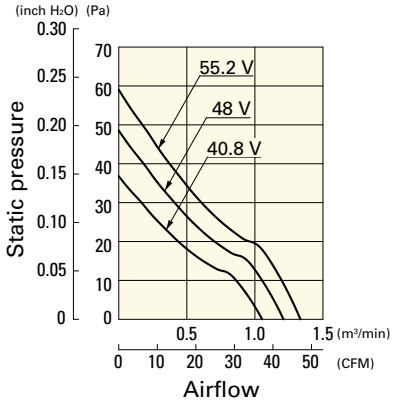
9WP0824H401 With pulse sensor

Operating voltage range

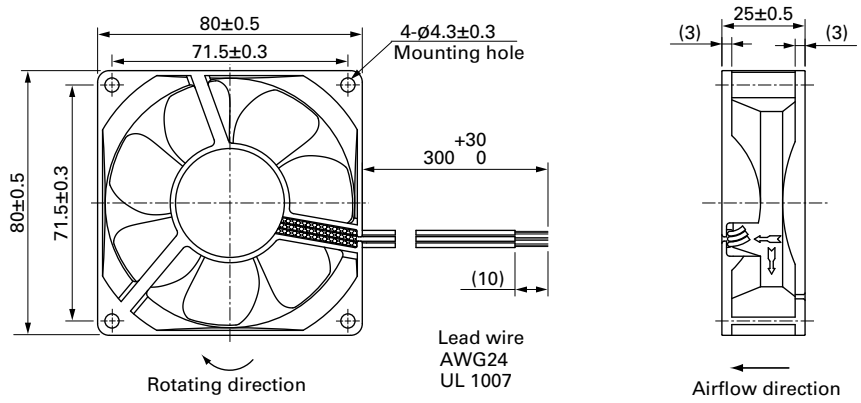


9WP0848S401 With pulse sensor

Operating voltage range

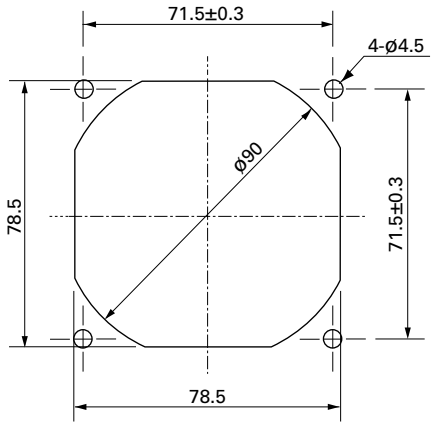


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

IP54

80×80×25 mm

San Ace 80WS 9WS type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 120 g
- Ingress protection ····· IP54

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

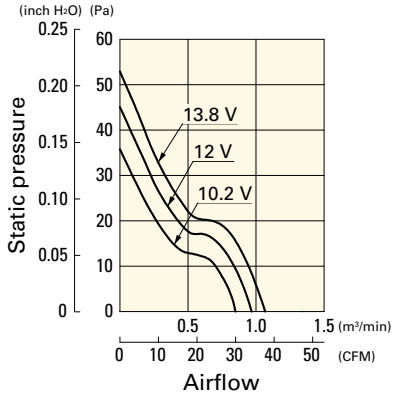
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WS0812H401	12	10.2 to 13.8	0.16	1.92	3100	0.94	33.2	45.1	0.181	32	-20 to +70	40000/60˚C
9WS0812F401			0.13	1.56	2700	0.83	29.3	34.3	0.138	28		
9WS0812M401			0.1	1.2	2200	0.65	23.0	23.5	0.094	23		
9WS0824H401	24	20.4 to 27.6	0.09	2.16	3100	0.94	33.2	45.1	0.181	32		
9WS0824F401			0.07	1.68	2700	0.83	29.3	34.3	0.138	28		
9WS0824M401			0.05	1.2	2200	0.65	23.0	23.5	0.094	23		

Other sensor specifications are available as options. Refer to the index (p. 560).

Airflow - Static Pressure Characteristics

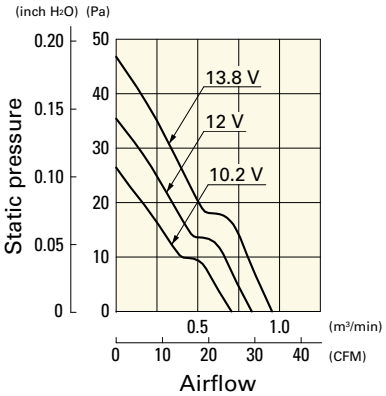
9WS0812H401 With pulse sensor

Operating voltage range



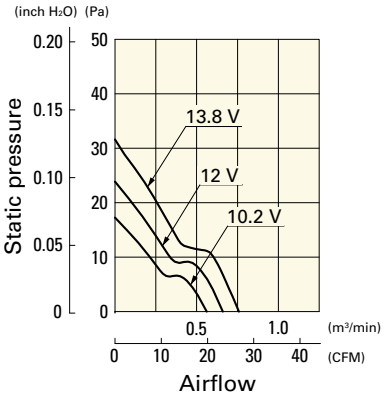
9WS0812F401 With pulse sensor

Operating voltage range



9WS0812M401 With pulse sensor

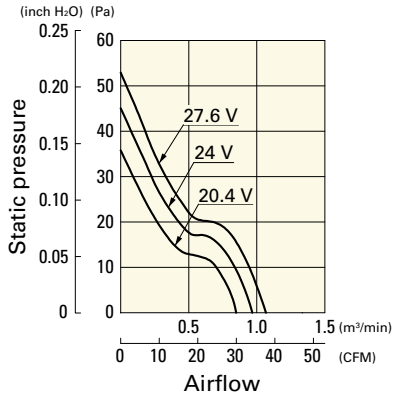
Operating voltage range



Airflow - Static Pressure Characteristics

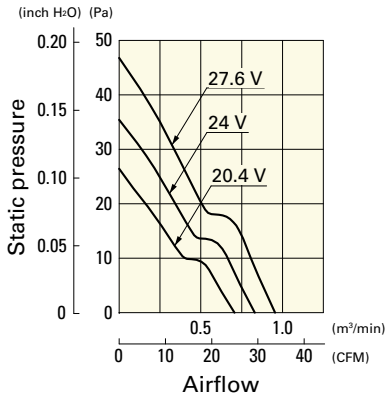
9WS0824H401 With pulse sensor

Operating voltage range



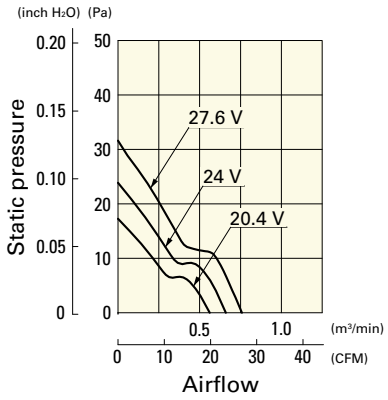
9WS0824F401 With pulse sensor

Operating voltage range

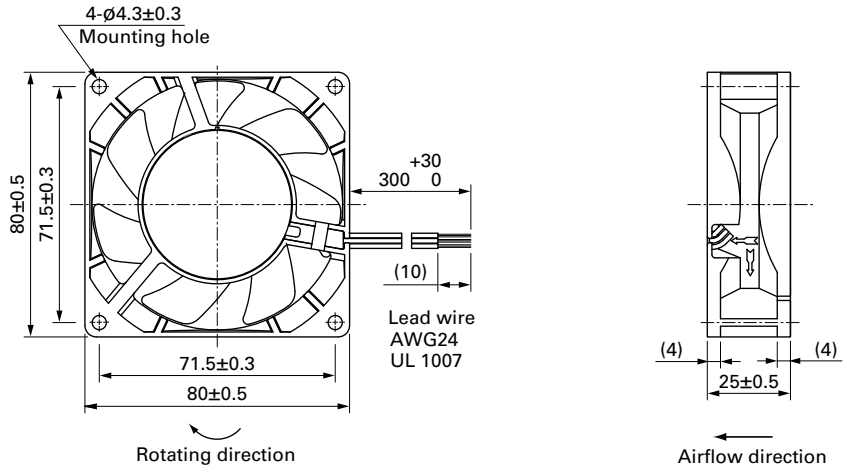


9WS0824M401 With pulse sensor

Operating voltage range

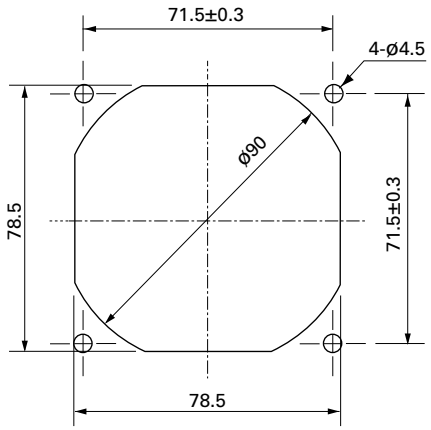


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

IP68

80×80×38 mm

San Ace 80W 9WV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 235 g
- Ingress protection ····· IP68

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WV0812P1M001	12	10.2 to 13.8	100	0.75	9	6000	2.29	80.9	169	0.68	51	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.09	1.08	1700	0.65	23	13.6	0.05	19		
9WV0848P1H001	48	40.8 to 52.8	100	0.75	36	9700	3.7	131	440	1.77	63		
			0	0.15	7.2	4500	1.72	60.7	94.7	0.38	43		

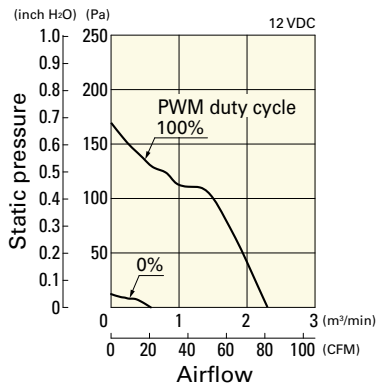
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 561).

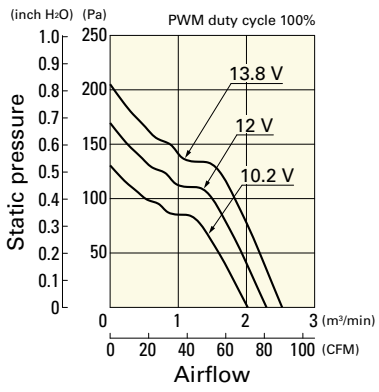
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WV0812P1M001 With pulse sensor with PWM control function

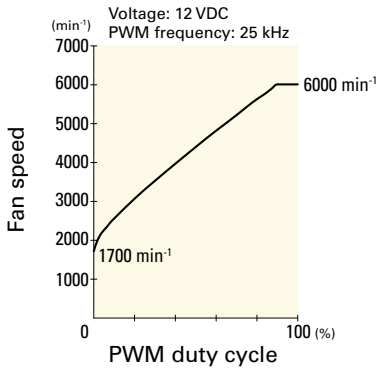
PWM duty cycle



Operating voltage range



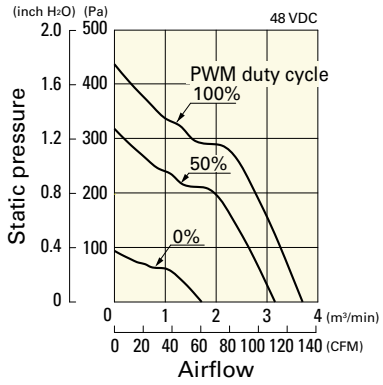
PWM duty - Speed characteristics example



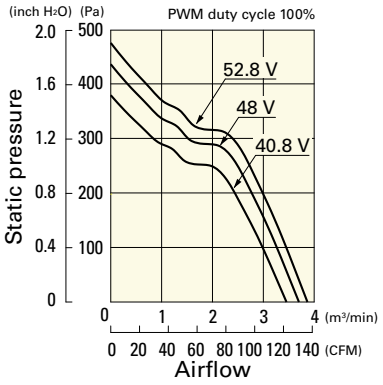
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WV0848P1H001 With pulse sensor with PWM control function

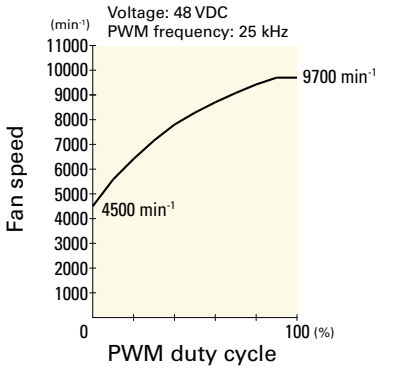
PWM duty cycle



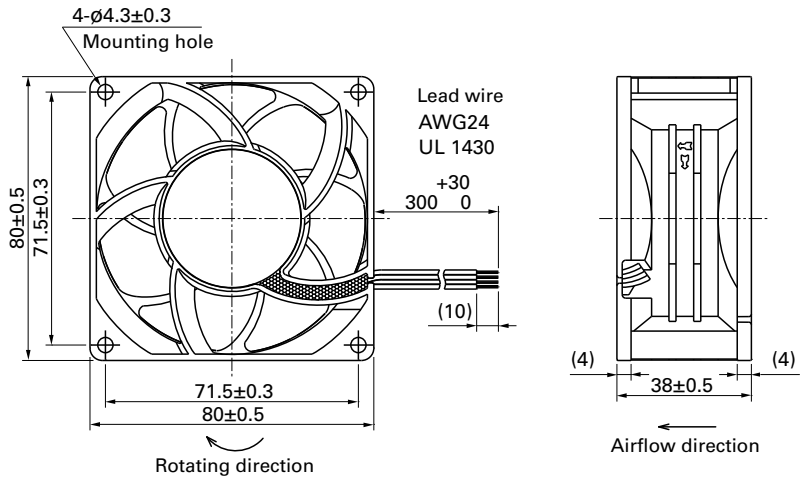
Operating voltage range



PWM duty - Speed characteristics example

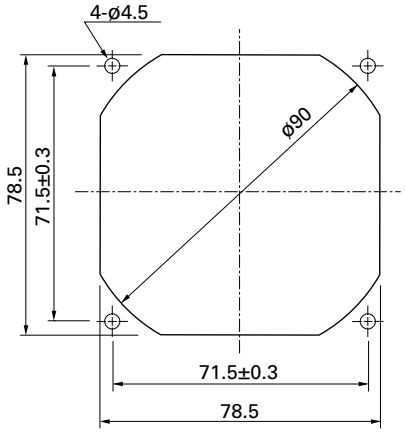


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards	page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards	page: p. 520

Model no.: 109-1002G

IP68

92×92×25 mm

San Ace 92W 9WL type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 170 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WL0912P4J001	12	10.8 to 13.2	100	0.42	5.04	5000	2.2	77.7	105	0.42	44	-20 to +70	180000/60˚C
			20	0.04	0.48	1200	0.52	18.4	6.04	0.024	11		
9WL0912P4G001			100	0.3	3.6	4400	1.93	68.2	81	0.33	40		
			20	0.04	0.48	1000	0.43	15.1	4.18	0.016	8		
9WL0912P4S001			100	0.22	2.64	3850	1.69	59.7	62.1	0.25	37		
			30	0.04	0.48	1400	0.61	21.5	8.21	0.032	13		
9WL0912P4H001			100	0.15	1.8	3150	1.38	48.7	41.6	0.17	32		
			30	0.04	0.48	1100	0.48	16.9	5.07	0.02	9		
9WL0924P4J001	24	21.6 to 26.4	100	0.21	5.04	5000	2.2	77.7	105	0.42	44		
			20	0.02	0.48	1100	0.48	16.9	5.07	0.02	9		
9WL0924P4S001			100	0.11	2.64	3850	1.69	59.7	62.1	0.25	37		
			30	0.02	0.48	1300	0.57	20.1	7.08	0.028	12		
9WL0924P4H001			100	0.07	1.68	3150	1.38	48.7	41.6	0.17	32		
			30	0.02	0.48	1000	0.43	15.1	4.18	0.016	8		

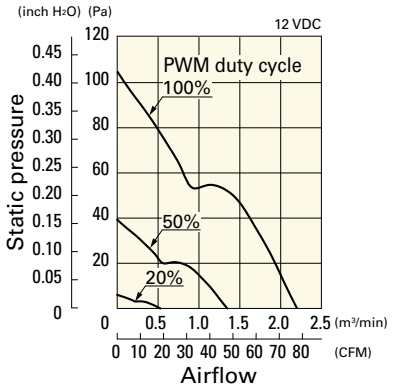
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 559).

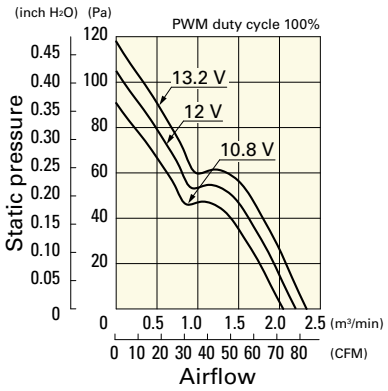
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0912P4J001 With pulse sensor with PWM control function

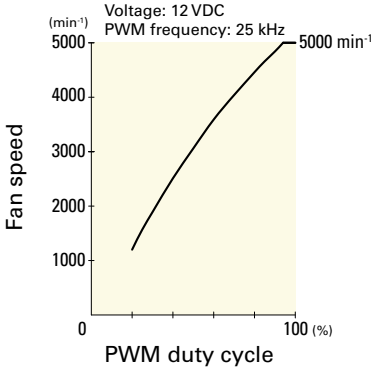
PWM duty cycle



Operating voltage range



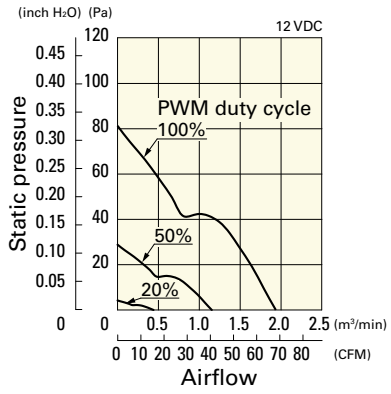
PWM duty - Speed characteristics example



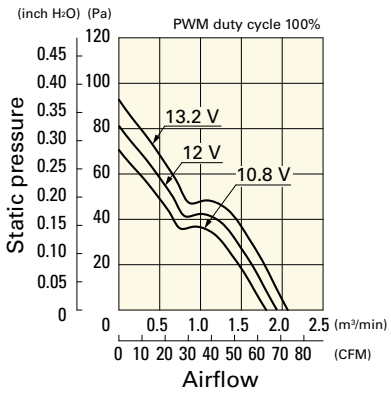
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0912P4G001 With pulse sensor with PWM control function

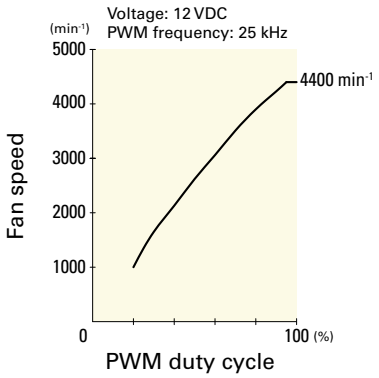
PWM duty cycle



Operating voltage range

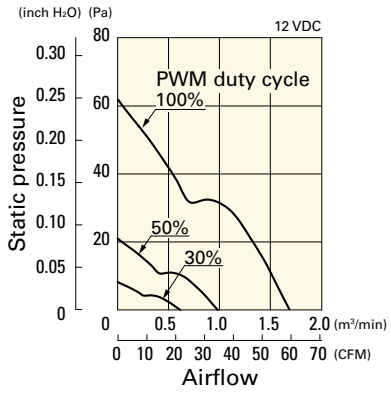


PWM duty - Speed characteristics example

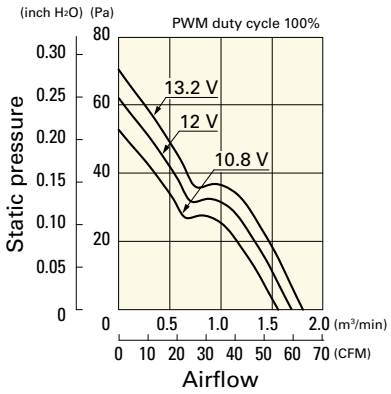


9WL0912P4S001 With pulse sensor with PWM control function

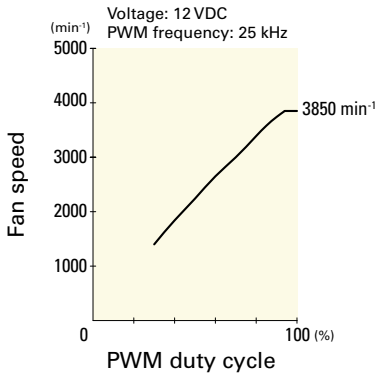
PWM duty cycle



Operating voltage range

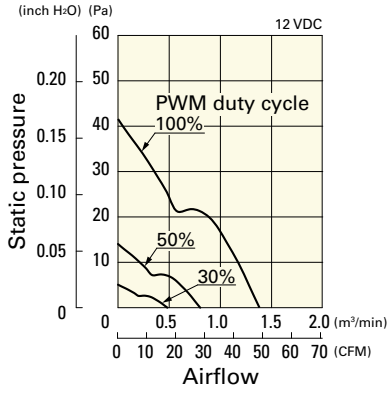


PWM duty - Speed characteristics example

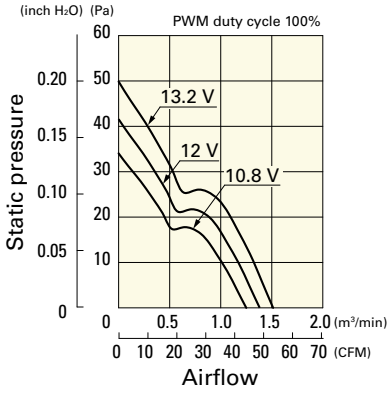


9WL0912P4H001 With pulse sensor with PWM control function

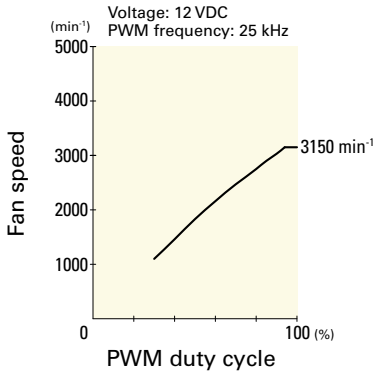
PWM duty cycle



Operating voltage range

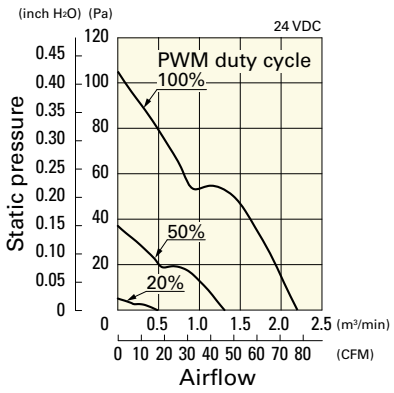


PWM duty - Speed characteristics example

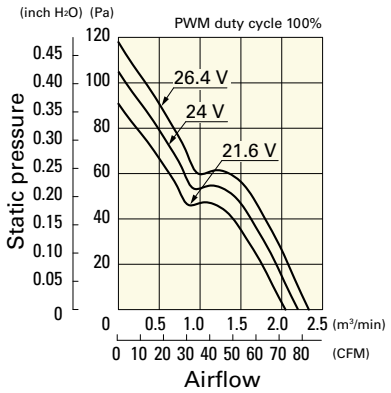


9WL0924P4J001 With pulse sensor with PWM control function

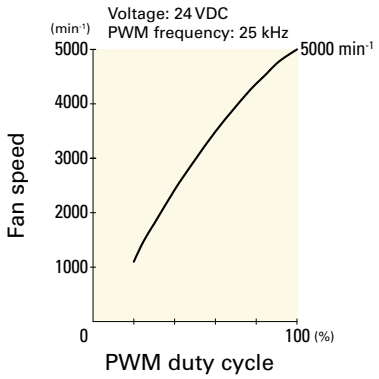
PWM duty cycle



Operating voltage range



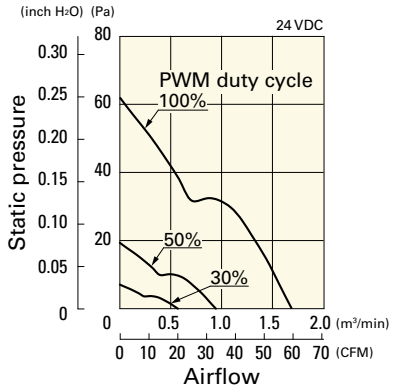
PWM duty - Speed characteristics example



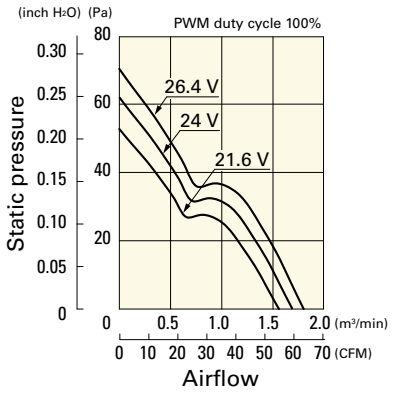
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0924P4S001 With pulse sensor with PWM control function

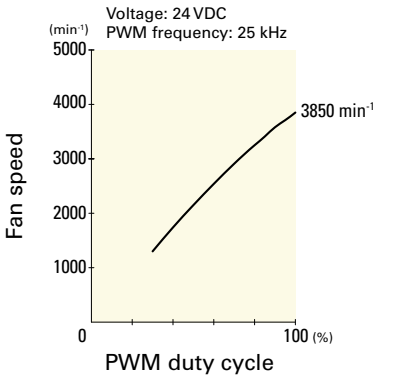
PWM duty cycle



Operating voltage range

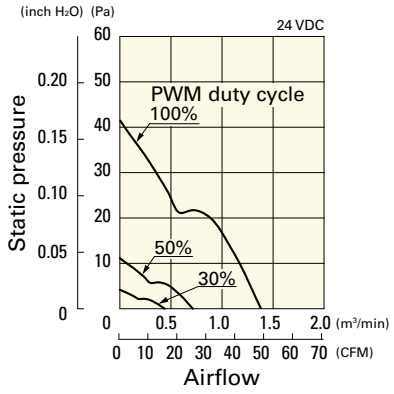


PWM duty - Speed characteristics example

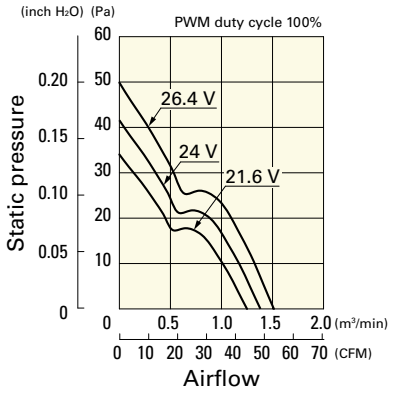


9WL0924P4H001 With pulse sensor with PWM control function

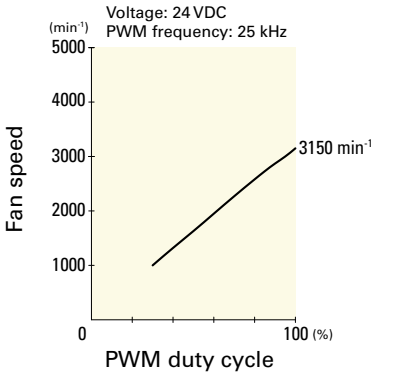
PWM duty cycle



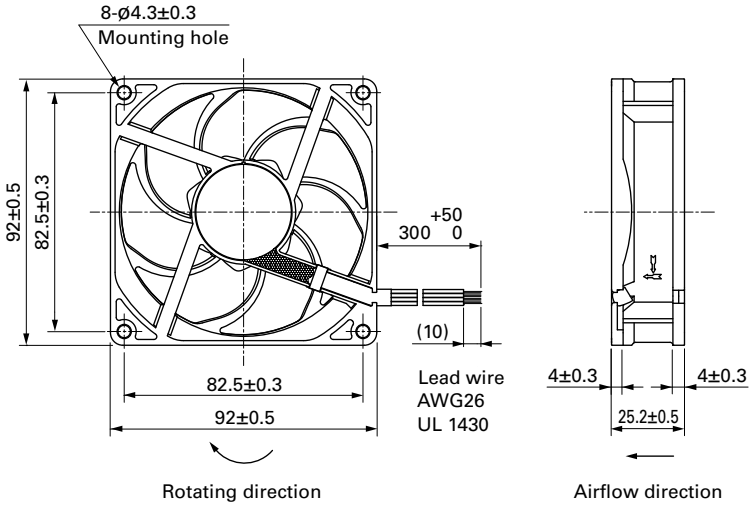
Operating voltage range



PWM duty - Speed characteristics example

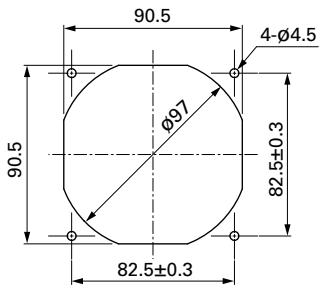


Dimensions (unit: mm)

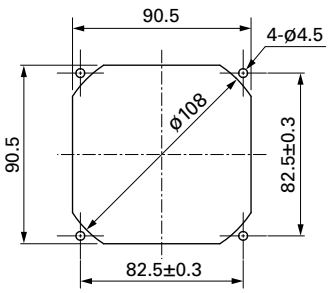


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side



Outlet side



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin finger guards page: p. 520

Model no.: 109-1001G

IP54

92×92×25 mm

San Ace 92WS 9WS type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 150 g
- Ingress protection ····· IP54

Specifications

The models listed below **have ribs and pulse sensors.**

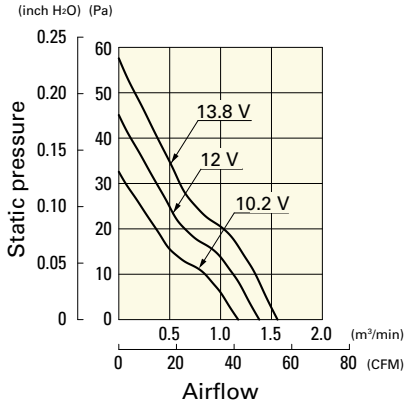
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WS0912H401	12	10.2 to 13.8	0.17	2.04	2850	1.38	48.7	45.1	0.181	33	-20 to +70	40000/60˚C
9WS0912F401			0.13	1.56	2450	1.18	41.7	32.3	0.13	30		
9WS0912M401			0.1	1.2	2100	1.01	35.7	23.5	0.094	27		
9WS0912L401			0.06	0.72	1700	0.8	28.2	16.7	0.067	23		
9WS0924H401	24	20.4 to 27.6	0.1	2.4	2850	1.38	48.7	45.1	0.181	33		
9WS0924F401			0.07	1.68	2450	1.18	41.7	32.3	0.13	30		
9WS0924M401			0.06	1.44	2100	1.01	35.7	23.5	0.094	27		
9WS0924L401			0.05	1.2	1700	0.8	28.2	16.7	0.067	23		

Other sensor specifications are available as options. Refer to the index (p. 560).

Airflow - Static Pressure Characteristics

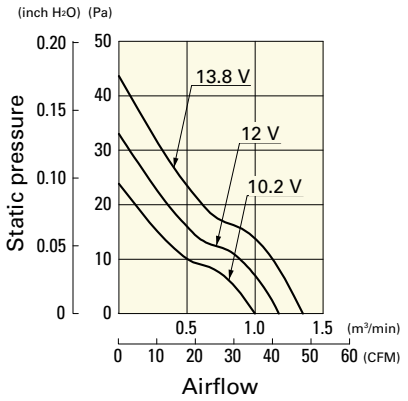
9WS0912H401 With pulse sensor

Operating voltage range



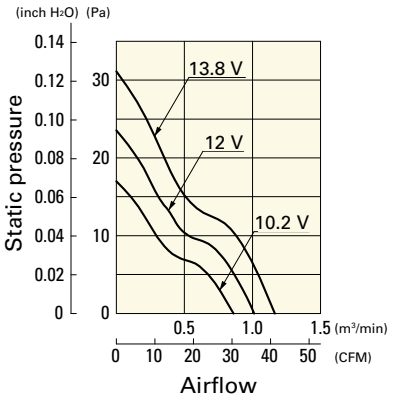
9WS0912F401 With pulse sensor

Operating voltage range



9WS0912M401 With pulse sensor

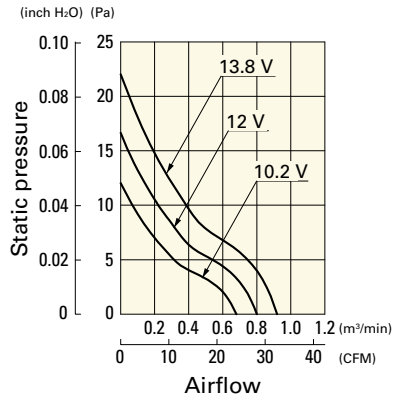
Operating voltage range



Airflow - Static Pressure Characteristics

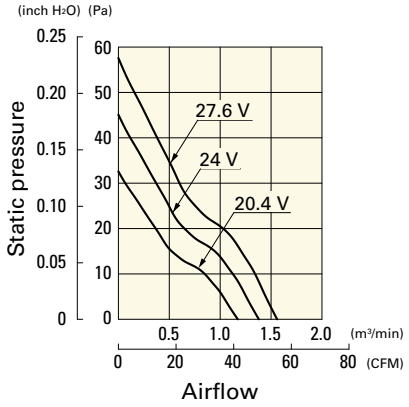
9WS0912L401 With pulse sensor

Operating voltage range



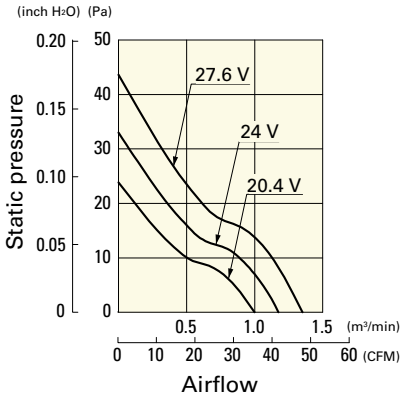
9WS0924H401 With pulse sensor

Operating voltage range



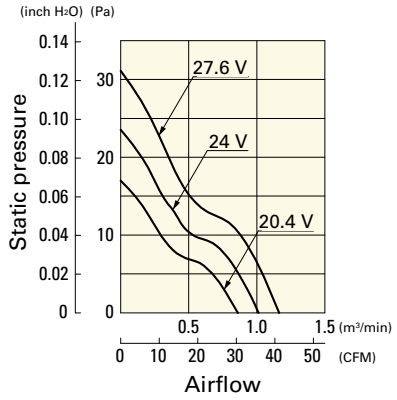
9WS0924F401 With pulse sensor

Operating voltage range



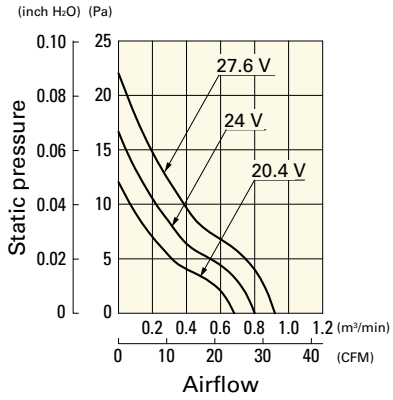
9WS0924M401 With pulse sensor

Operating voltage range

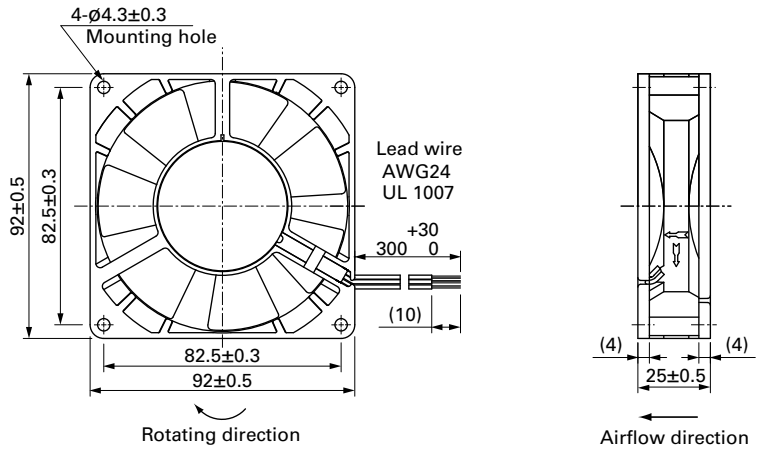


9WS0924L401 With pulse sensor

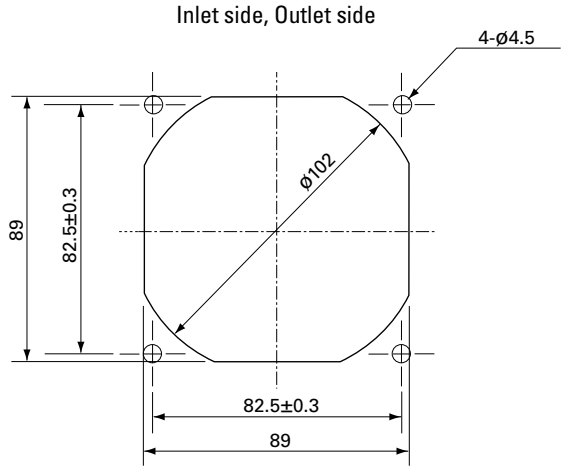
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin finger guards page: p. 520

Model no.: 109-1001G

IP68

92×92×25 mm

San Ace 92W 9WP type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 120 g
- Ingress protection ····· IP68

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

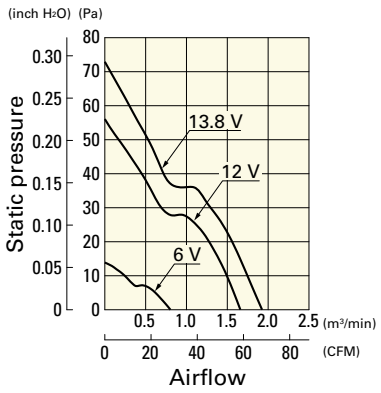
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WP0912S401	12	6 to 13.8	0.27	3.24	3550	1.66	58.6	56.1	0.225	39	-20 to +70	40000/60˚C
9WP0912F401			0.14	1.68	2650	1.24	43.8	32.2	0.129	30		
9WP0924G401	24	12 to 27.6	0.19	4.56	3900	1.76	62.2	66.5	0.267	43		
9WP0924S401			0.15	3.6	3550	1.66	58.6	56.1	0.225	39		
9WP0924H401			0.1	2.4	3150	1.45	51.2	44	0.177	33		
9WP0924F401			0.08	1.92	2650	1.24	43.8	32.2	0.129	30		
9WP0924B401			0.05	1.2	2000	0.9	31.8	18.0	0.072	23	-10 to +70	

Other sensor specifications are available as options. Refer to the index (p. 560).

Airflow - Static Pressure Characteristics

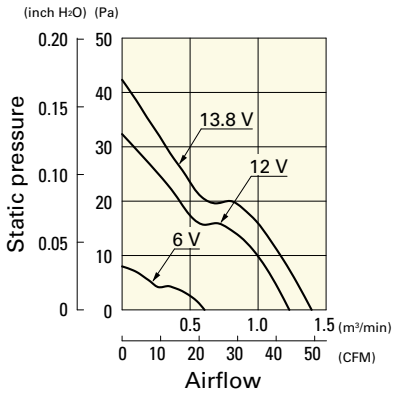
9WP0912S401 With pulse sensor

Operating voltage range



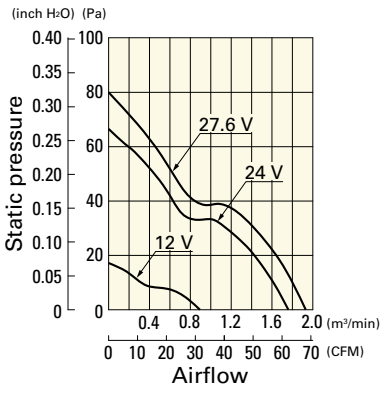
9WP0912F401 With pulse sensor

Operating voltage range



9WP0924G401 With pulse sensor

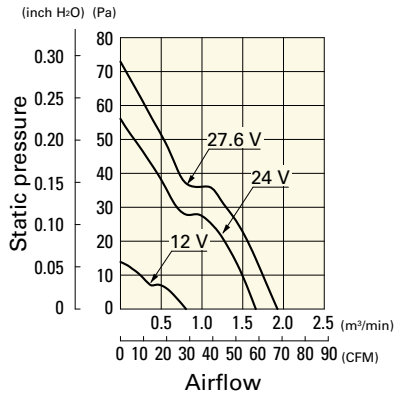
Operating voltage range



Airflow - Static Pressure Characteristics

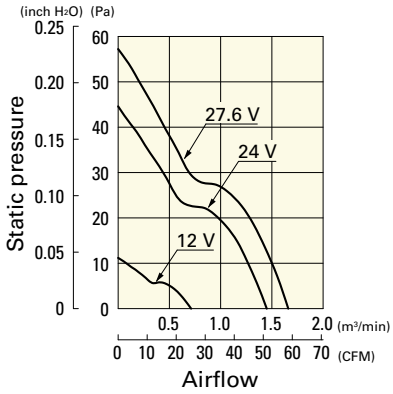
9WP0924S401 With pulse sensor

Operating voltage range



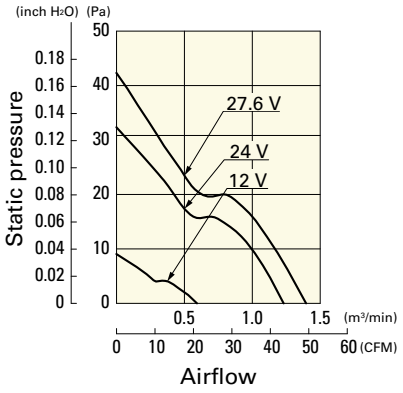
9WP0924H401 With pulse sensor

Operating voltage range



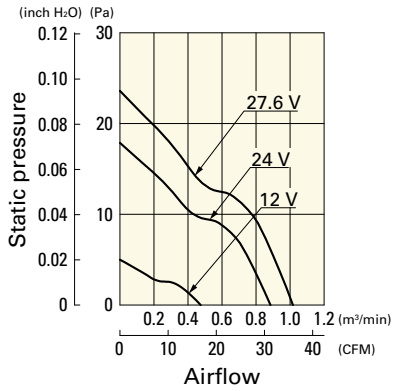
9WP0924F401 With pulse sensor

Operating voltage range

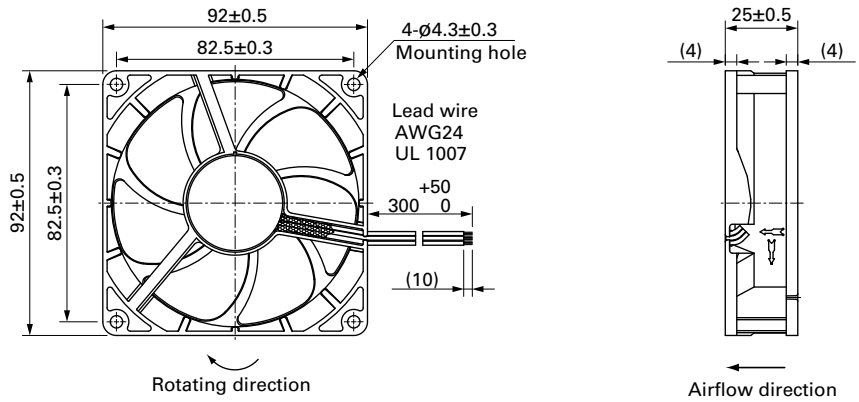


9WP0924B401 With pulse sensor

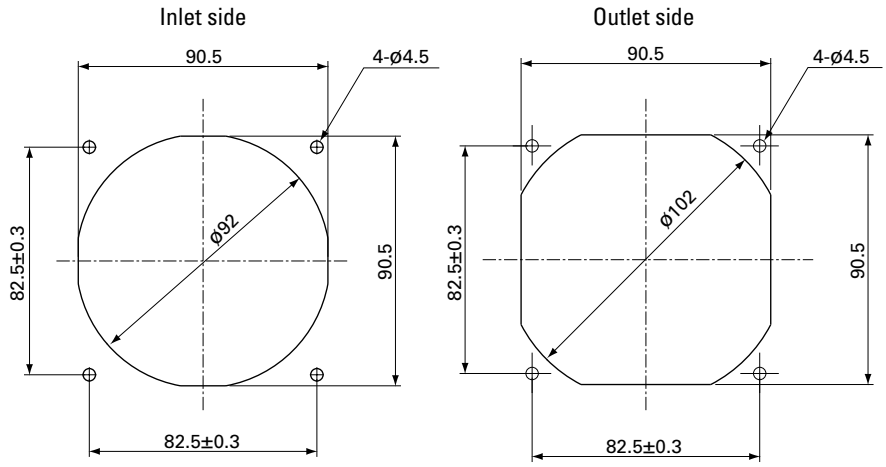
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin finger guards page: p. 520

Model no.: 109-1001G

IP68

92×92×38 mm

San Ace 92W 9WV type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 265 g
- Ingress protection ····· IP68

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

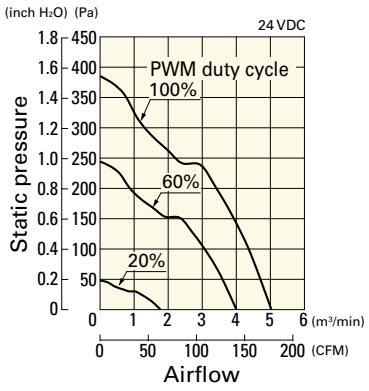
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WV0924P1H001	24	20.4 to 26.4	100	1.6	38.4	8500	5.05	178	385	1.55	64	-20 to +60	30000/60˚C
			20	0.16	3.84	3000	1.78	62.9	47.9	0.19	38		
9WV0948P1H001	48	40.8 to 52.8	100	0.82	39.4	8500	5.05	178	385	1.55	64	-20 to +70	
			0	0.14	6.7	4000	2.37	83.7	85.2	0.34	45		

* PWM frequency: 25 kHz

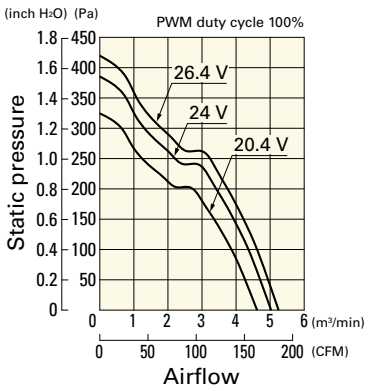
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WV0924P1H001 With pulse sensor with PWM control function

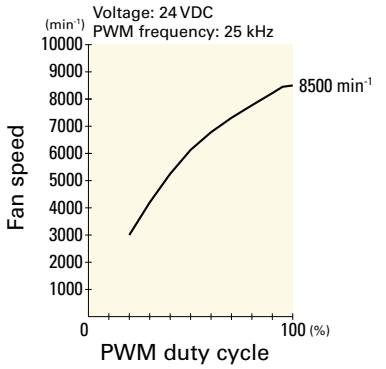
PWM duty cycle



Operating voltage range



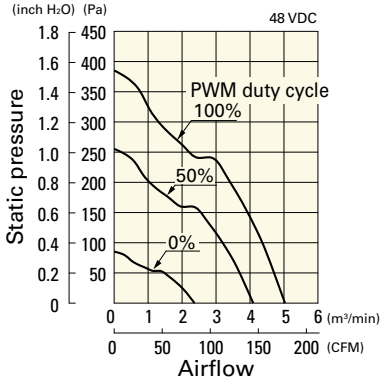
PWM duty - Speed characteristics example



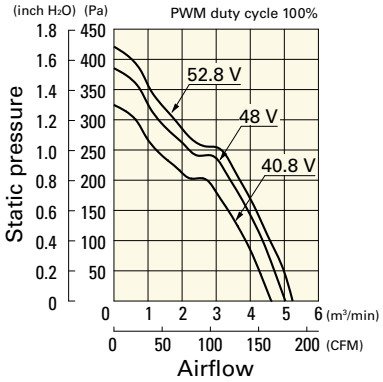
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WV0948P1H001 With pulse sensor with PWM control function

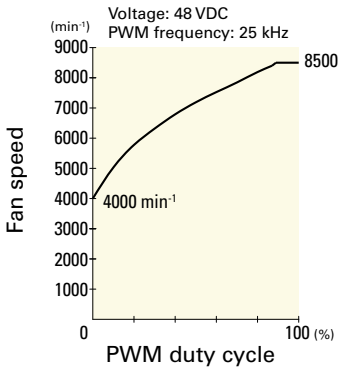
PWM duty cycle



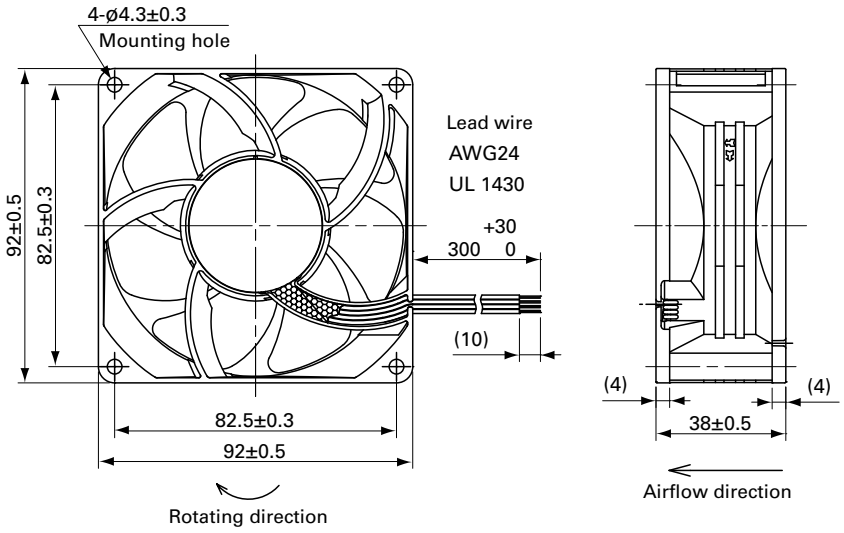
Operating voltage range



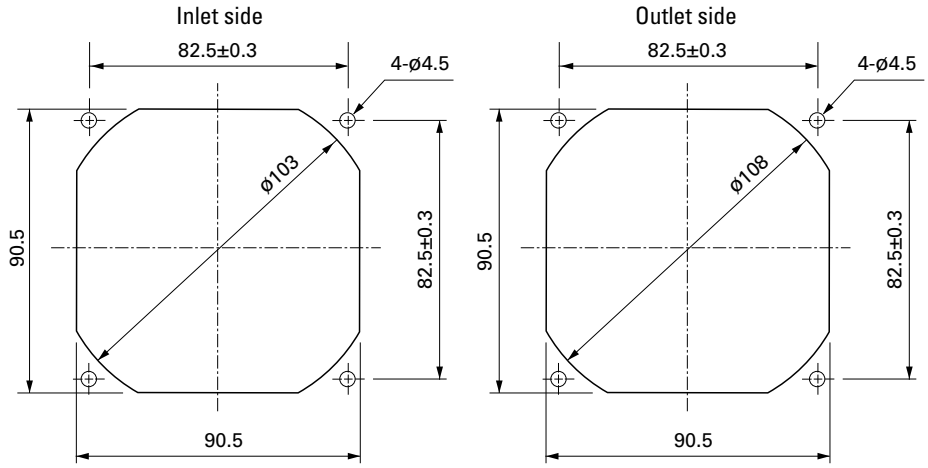
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards	page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin finger guards	page: p. 520

Model no.: 109-1001G

IP68

120×120×38 mm

San Ace 120W 9WV type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 440 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WV1212P1J001	12	10.2 to 13.8	100	3	36	6400	6.35	224.0	360	1.45	64	-20 to +70	60000/60˚C
			0	0.2	2.4	1500	1.49	52.6	19.8	0.08	33		
9WV1224P1J601	24	20.4 to 27.6	100	1.5	36	6400	6.35	224.0	360	1.45	64		
			0	0.12	2.88	1500	1.49	52.6	26.1	0.105	33		
9WV1224P1H001**			100	0.8	19.2	5200	5.16	182	237	0.95	58		
9WV1248P1J001	48	40.8 to 55.2	100	0.65	31.2	6400	6.35	224.0	360	1.45	64		
			0	0.06	2.88	1500	1.49	52.6	26.1	0.105	33		

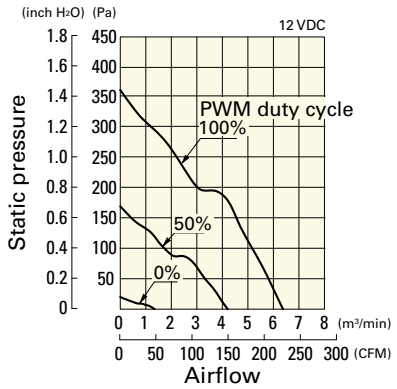
* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 561).

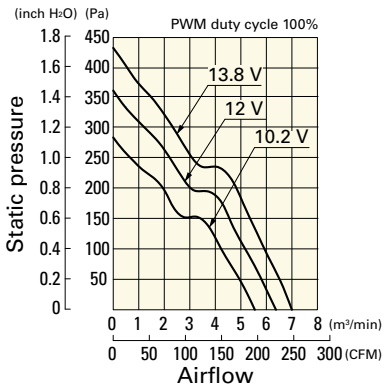
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WV1212P1J001 With pulse sensor with PWM control function

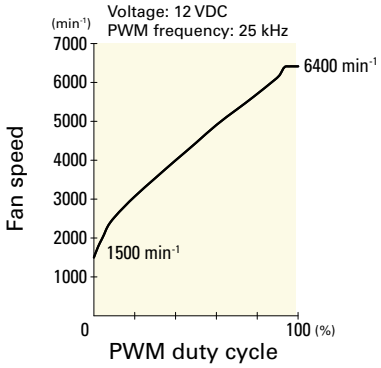
PWM duty cycle



Operating voltage range



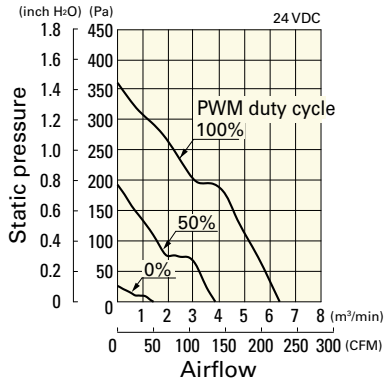
PWM duty - Speed characteristics example



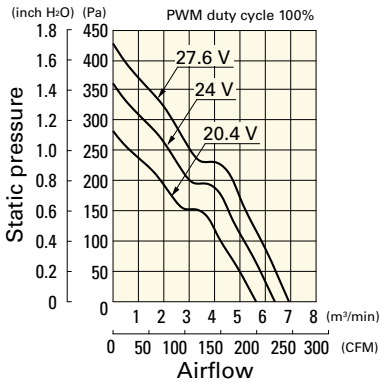
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WV1224P1J601 With pulse sensor with PWM control function

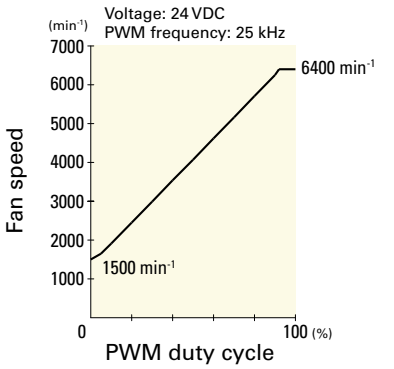
PWM duty cycle



Operating voltage range

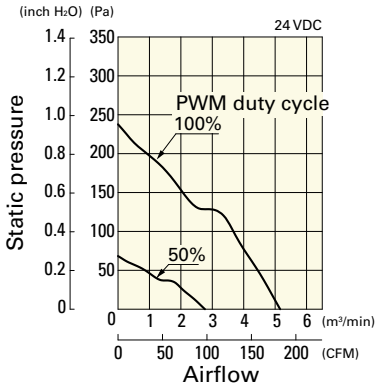


PWM duty - Speed characteristics example

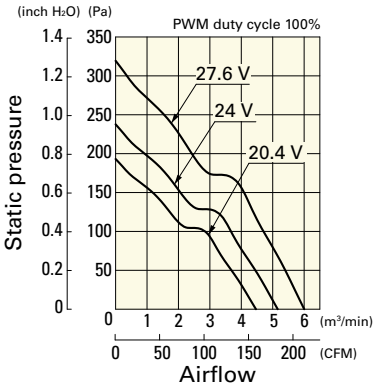


9WV1224P1H001 With pulse sensor with PWM control function

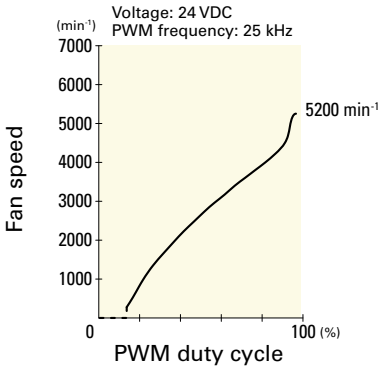
PWM duty cycle



Operating voltage range

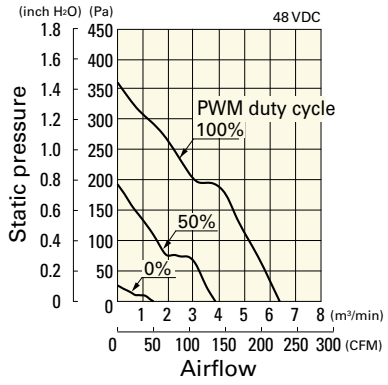


PWM duty - Speed characteristics example

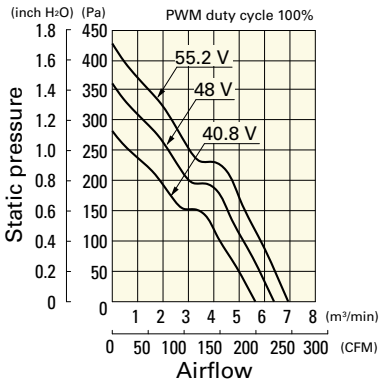


9WV1248P1J001 With pulse sensor with PWM control function

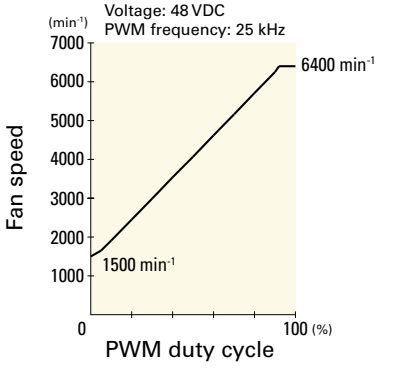
PWM duty cycle



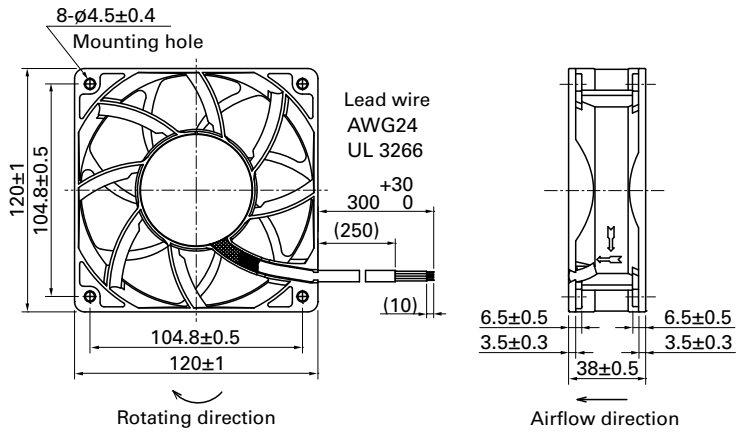
Operating voltage range



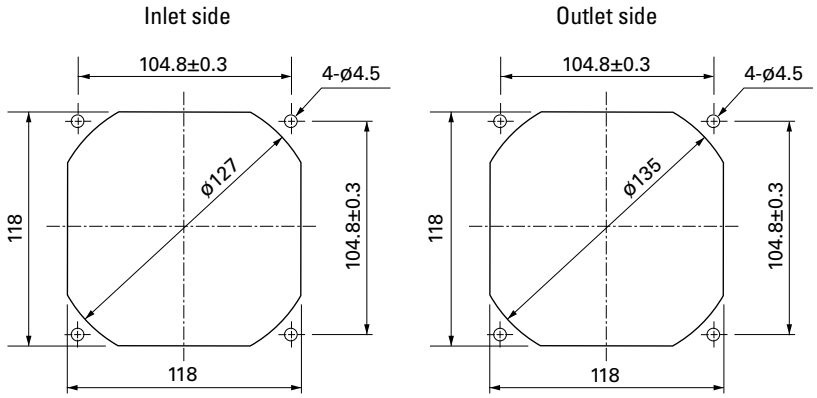
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin finger guards page: p. 520

Model no.: 109-1000G

IP68

120×120×38 mm

San Ace 120W 9WP type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 360 g
- Ingress protection ····· IP68

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

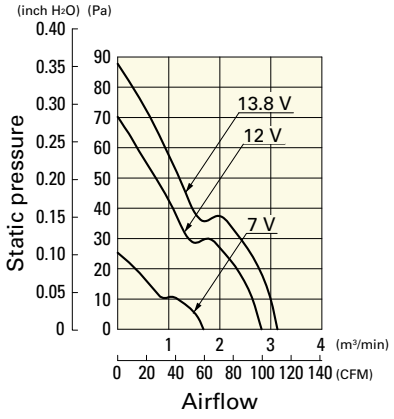
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WP1212H101	12	7.0 to 13.8	0.38	4.56	2600	2.8	99	70.4	0.283	39	-20 to +70	40000/60˚C
9WP1212L101		10.2 to 13.8	0.14	1.68	1500	1.62	57.2	23.4	0.094	26		
9WP1224H101	24	14.0 to 27.6	0.22	5.28	2600	2.8	99	70.4	0.283	39		
9WP1248H101	48	40.8 to 55.2	0.11	5.28	2600	2.8	99	70.4	0.283	39		

Other sensor specifications are available as options. Refer to the index (p. 560).

Airflow - Static Pressure Characteristics

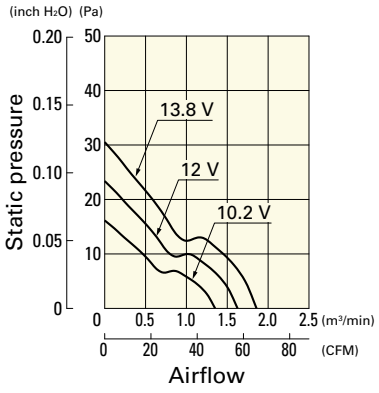
9WP1212H101 With pulse sensor

Operating voltage range



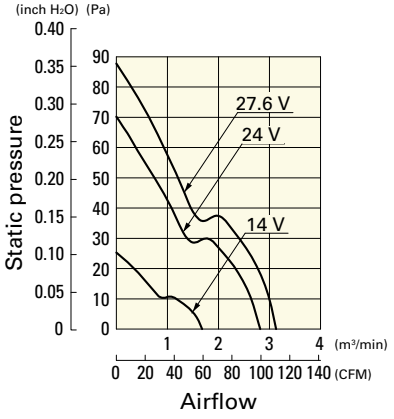
9WP1212L101 With pulse sensor

Operating voltage range



9WP1224H101 With pulse sensor

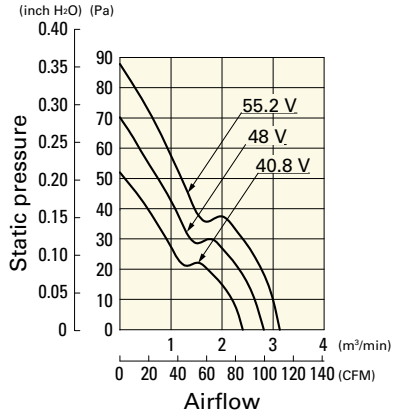
Operating voltage range



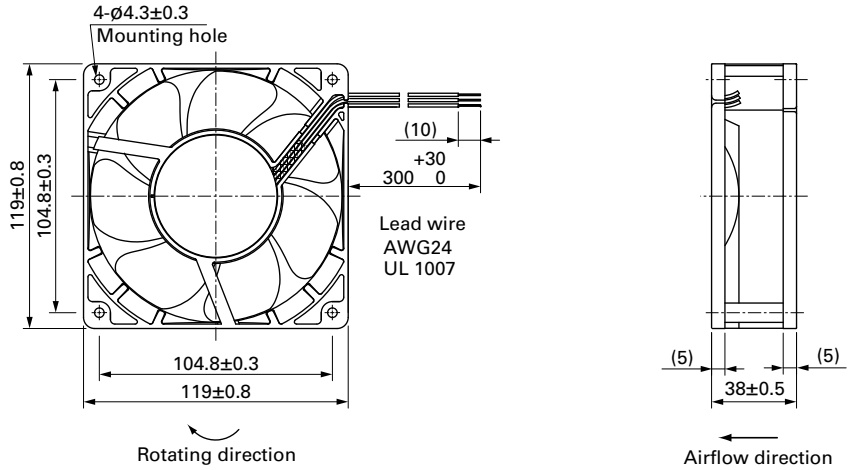
Airflow - Static Pressure Characteristics

9WP1248H101 With pulse sensor

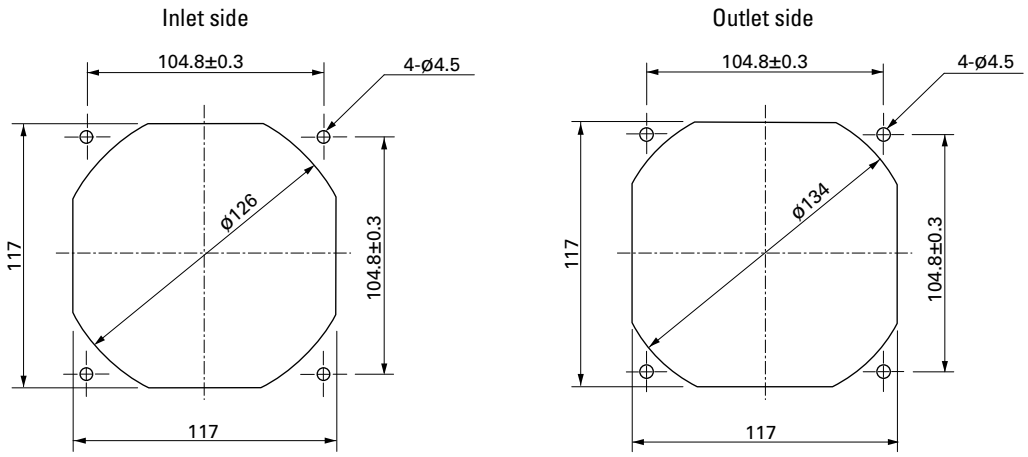
Operating voltage range



Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin finger guards page: p. 520

Model no.: 109-1000G

IP55

120×120×38 mm

San Ace 120W 9WG type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 410 g
- Ingress protection ····· IP55

Specifications

The models listed below **have pulse sensors.**

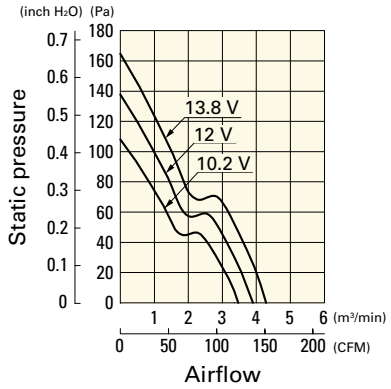
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WG1212G101-E	12	10.2 to 13.8	0.98	11.76	3600	3.88	137	135	0.542	49	-20 to +70	80000/60˚C
9WG1212E101-E			0.61	7.32	3100	3.34	118	100	0.402	46		
9WG1212H101-E		7 to 13.8	0.38	4.56	2600	2.8	99	70.4	0.283	39		100000/60˚C
9WG1212F101-E			0.28	3.36	2280	2.45	87	54.2	0.218	36		
9WG1212M101-E			0.21	2.52	1950	2.1	74	39.6	0.159	32		
9WG1224G101-E	24	20.4 to 27.6	0.5	12	3600	3.88	137	135	0.542	49		80000/60˚C
9WG1224E101-E			0.34	8.16	3100	3.34	118	100	0.402	46		
9WG1224H101-E		14 to 27.6	0.22	5.28	2600	2.8	99	70.4	0.283	39		100000/60˚C
9WG1224F101-E			0.16	3.84	2280	2.45	87	54.2	0.218	36		
9WG1224M101-E			0.11	2.64	1950	2.1	74	39.6	0.159	32		
9WG1248G101-E	48	40.8 to 55.2	0.25	12	3600	3.88	137	135	0.542	49		80000/60˚C
9WG1248E101-E			0.17	8.16	3100	3.34	118	100	0.402	46		
9WG1248H101-E			0.11	5.28	2600	2.8	99	70.4	0.283	39		100000/60˚C
9WG1248F101-E			0.09	4.32	2280	2.45	87	54.2	0.218	36		
9WG1248M101-E			0.07	3.36	1950	2.1	74	39.6	0.159	32		

Other sensor specifications are available as options. Refer to the index (p. 559).

Airflow - Static Pressure Characteristics

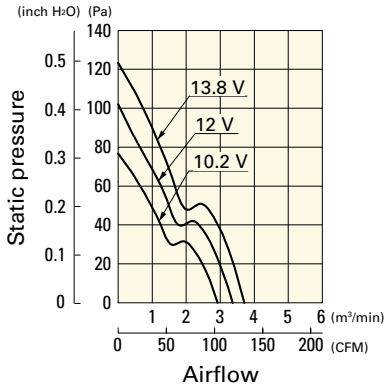
9WG1212G101-E With pulse sensor

Operating voltage range



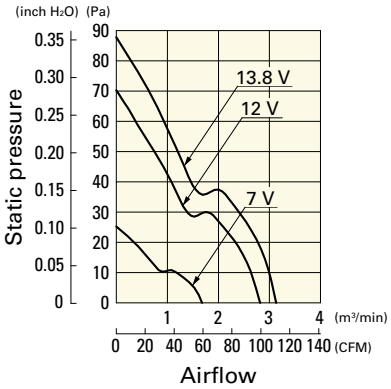
9WG1212E101-E With pulse sensor

Operating voltage range



9WG1212H101-E With pulse sensor

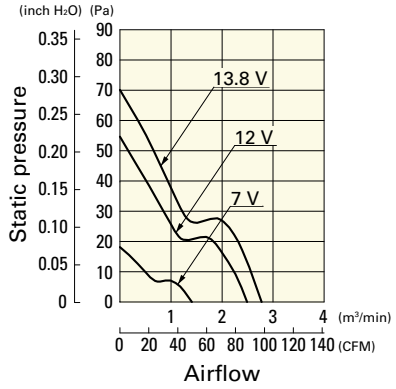
Operating voltage range



Airflow - Static Pressure Characteristics

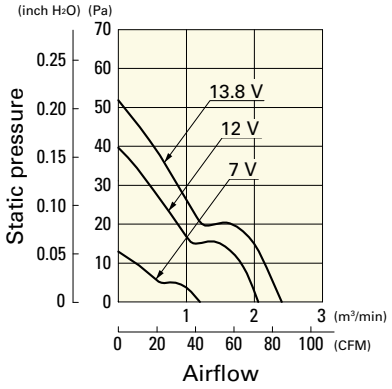
9WG1212F101-E With pulse sensor

Operating voltage range



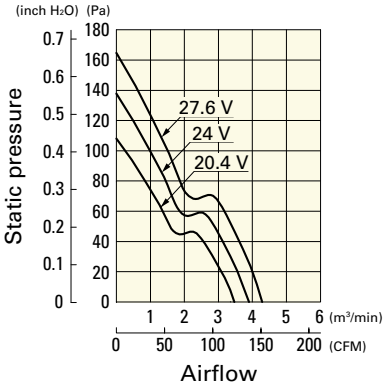
9WG1212M101-E With pulse sensor

Operating voltage range



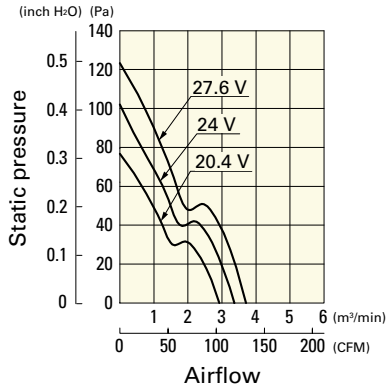
9WG1224G101-E With pulse sensor

Operating voltage range



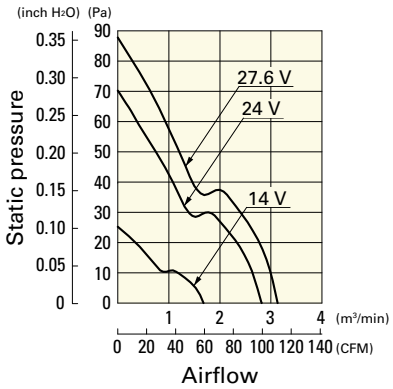
9WG1224E101-E With pulse sensor

Operating voltage range



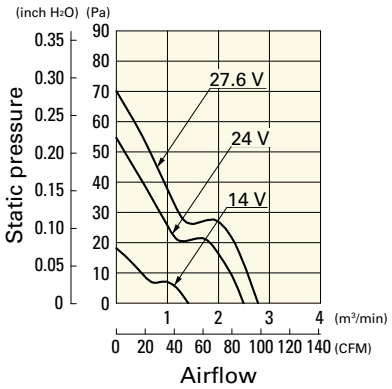
9WG1224H101-E With pulse sensor

Operating voltage range



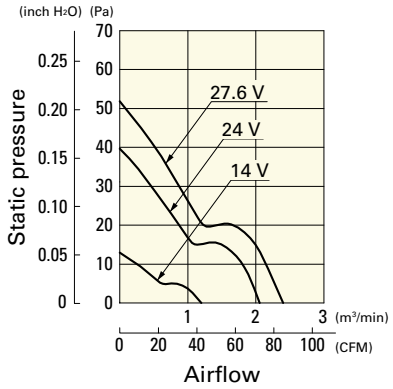
9WG1224F101-E With pulse sensor

Operating voltage range



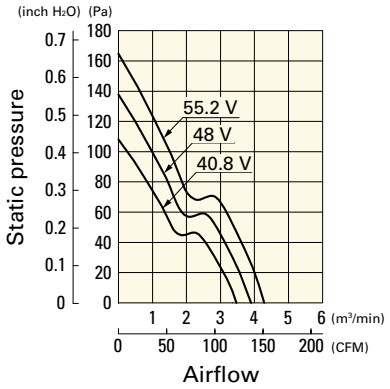
9WG1224M101-E With pulse sensor

Operating voltage range



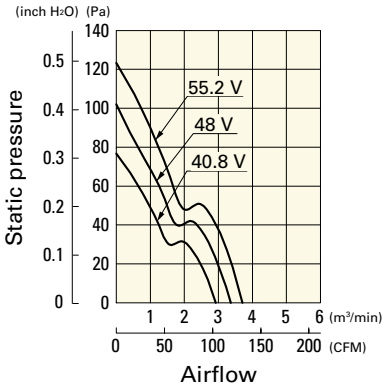
9WG1248G101-E With pulse sensor

Operating voltage range



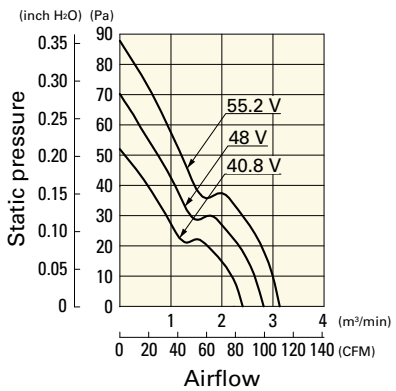
9WG1248E101-E With pulse sensor

Operating voltage range



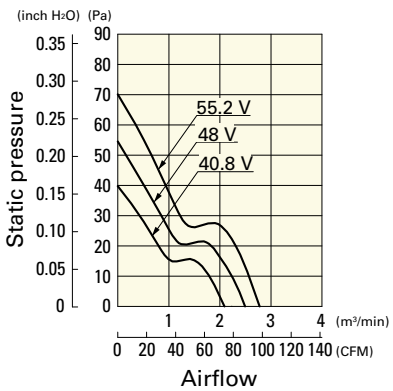
9WG1248H101-E With pulse sensor

Operating voltage range



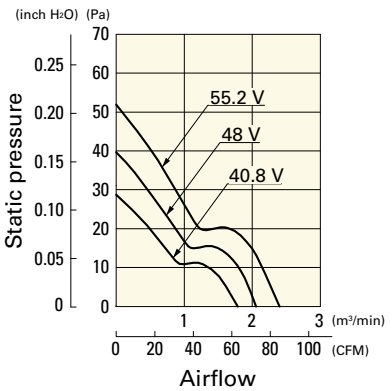
9WG1248F101-E With pulse sensor

Operating voltage range

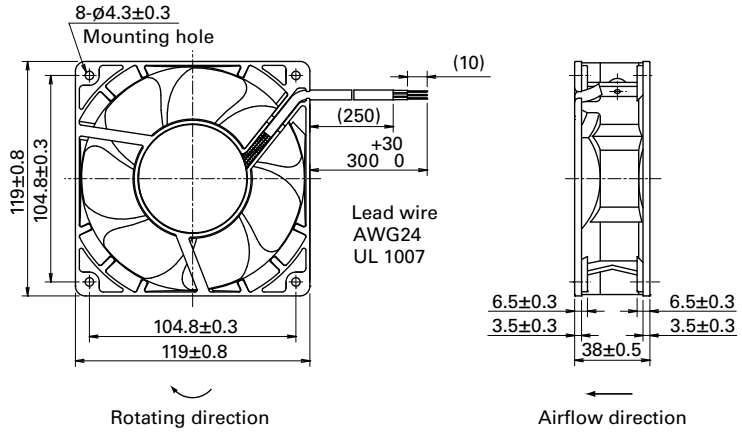


9WG1248M101-E With pulse sensor

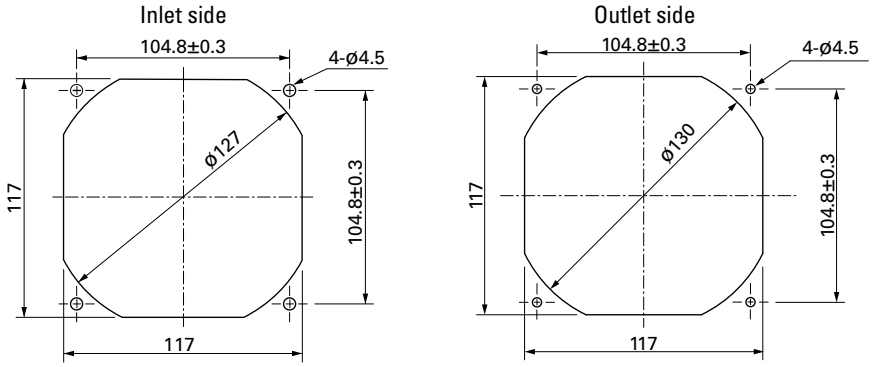
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin finger guards page: p. 520

Model no.: 109-1000G

IP54

120×120×38 mm

San Ace 120WS 9WS type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 260 g
- Ingress protection ····· IP54

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

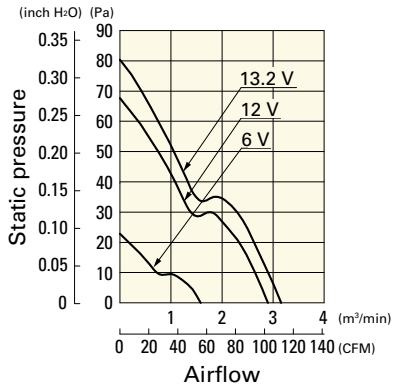
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WS1212H101	12	6 to 13.2	0.47	5.64	2600	2.9	102.4	67.62	0.272	39	-20 to +60	40000/60˚C
9WS1212M101		6 to 13.8	0.23	2.76	1950	2.2	77.7	42.14	0.169	32	-20 to +70	
9WS1224H101	24	12 to 26.4	0.23	5.52	2600	2.9	102.4	67.62	0.272	39	-20 to +60	
9WS1224M101		12 to 27.6	0.13	3.12	1950	2.2	77.7	42.14	0.169	32	-20 to +70	
9WS1248H101	48	40.8 to 52.8	0.13	6.24	2600	2.9	102.4	67.62	0.272	39	-20 to +60	
9WS1248M101		40.8 to 55.2	0.07	3.36	1950	2.2	77.7	42.14	0.169	32	-20 to +70	

Other sensor specifications are available as options. Refer to the index (pp. 560 to 561).

Airflow - Static Pressure Characteristics

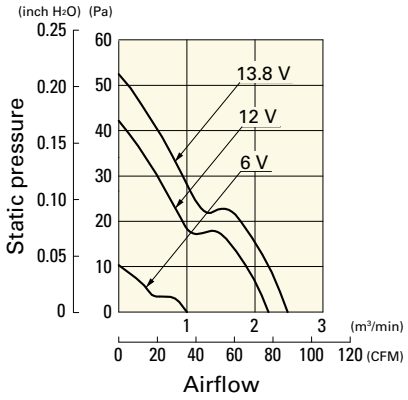
9WS1212H101 With pulse sensor

Operating voltage range



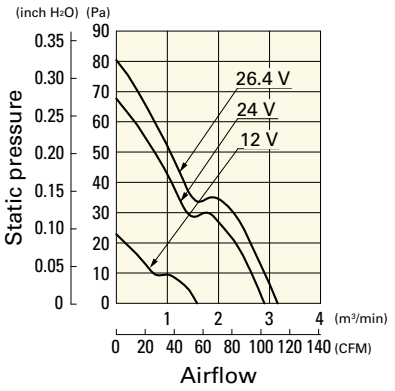
9WS1212M101 With pulse sensor

Operating voltage range



9WS1224H101 With pulse sensor

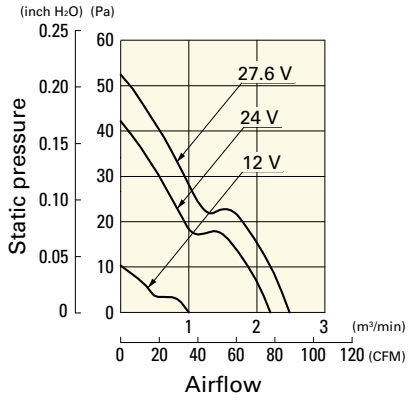
Operating voltage range



Airflow - Static Pressure Characteristics

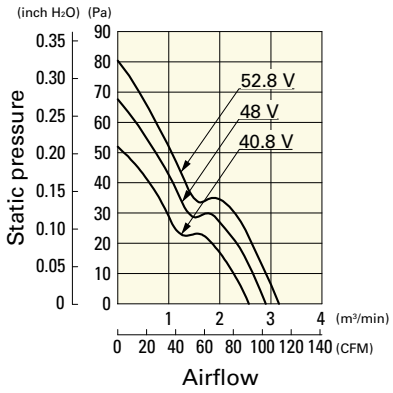
9WS1224M101 With pulse sensor

Operating voltage range



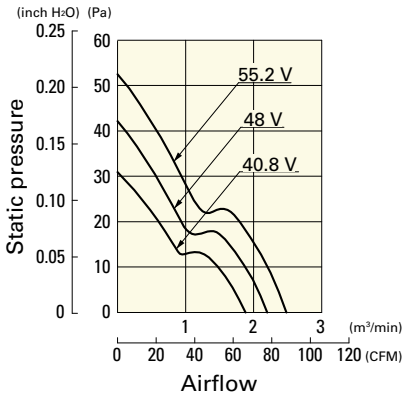
9WS1248H101 With pulse sensor

Operating voltage range

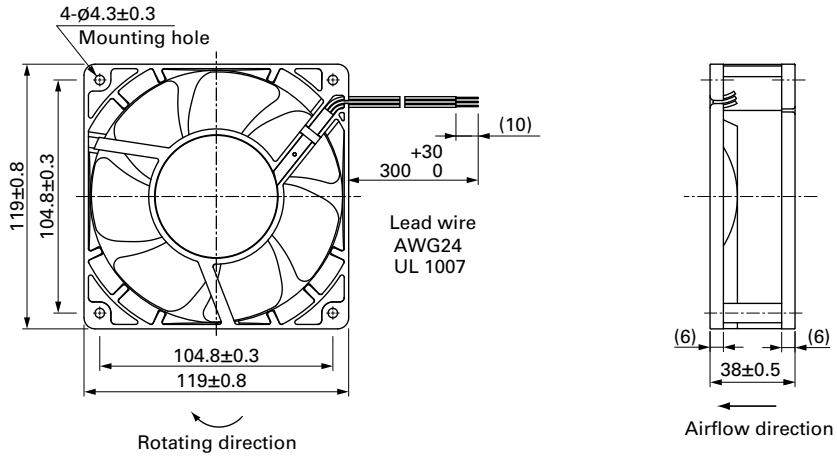


9WS1248M101 With pulse sensor

Operating voltage range

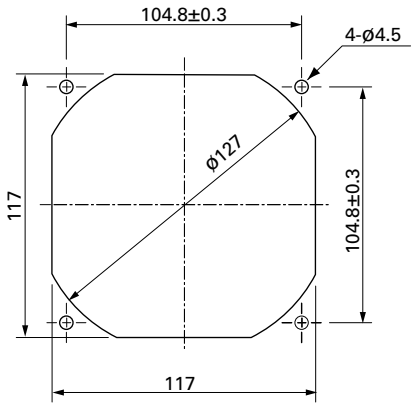


Dimensions (unit: mm) (With ribs)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin finger guards page: p. 520

Model no.: 109-1000G

IP68

140×140×38 mm

San Ace 140W 9W type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 650 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors.**

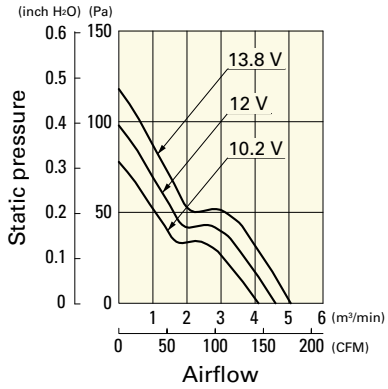
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109W1412H101-U	12	10.2 to 13.8	0.73	8.76	2600	4.5	159	98	0.394	46	-20 to +70	100000/60˚C
109W1412M101-U			0.3	3.6	1900	3.3	117	52	0.209	38		
109W1424H101-U	24	20.4 to 27.6	0.37	8.88	2600	4.5	159	98	0.394	46		
109W1424M101-U			0.16	3.84	1900	3.3	117	52	0.209	38		
109W1448H101-U	48	40.8 to 55.2	0.2	9.6	2600	4.6	159	98	0.394	46		
109W1448M101-U			0.09	4.32	1900	3.3	117	52	0.209	38		

Other sensor specifications are available as options. Refer to the index (p. 546).

Airflow - Static Pressure Characteristics

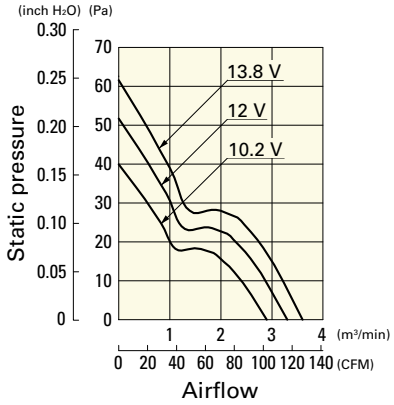
109W1412H101-U With pulse sensor

Operating voltage range



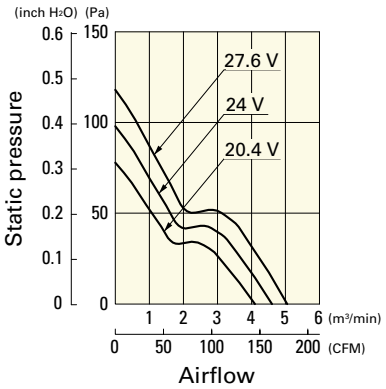
109W1412M101-U With pulse sensor

Operating voltage range



109W1424H101-U With pulse sensor

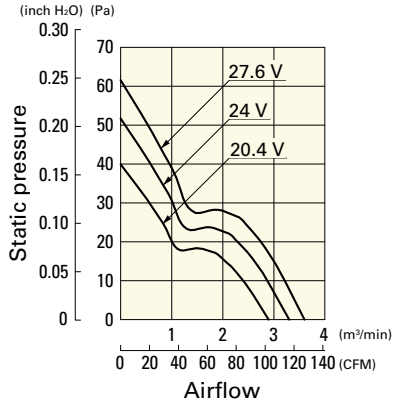
Operating voltage range



Airflow - Static Pressure Characteristics

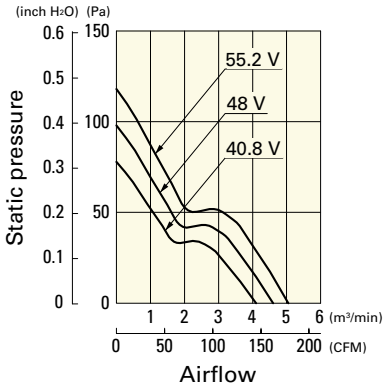
109W1424M101-U With pulse sensor

Operating voltage range



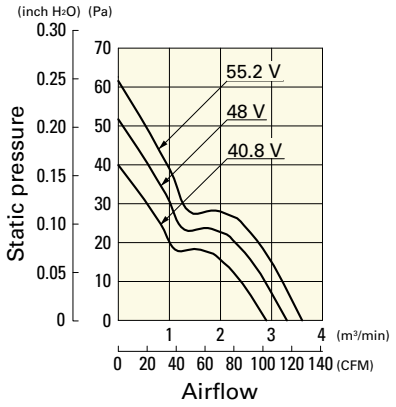
109W1448H101-U With pulse sensor

Operating voltage range

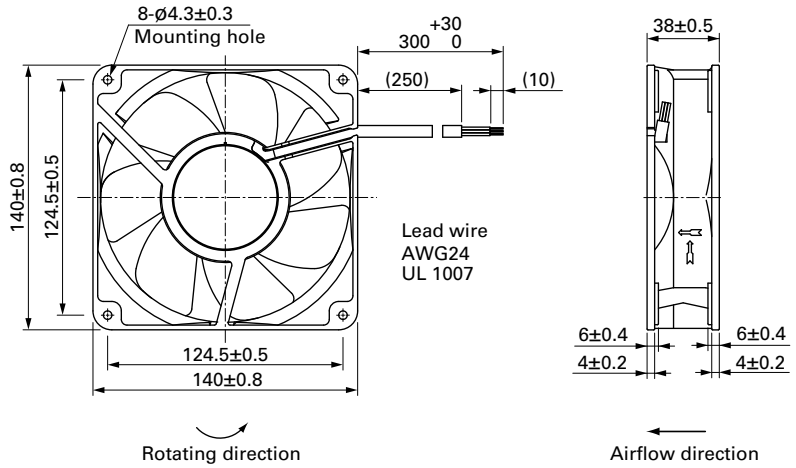


109W1448M101-U With pulse sensor

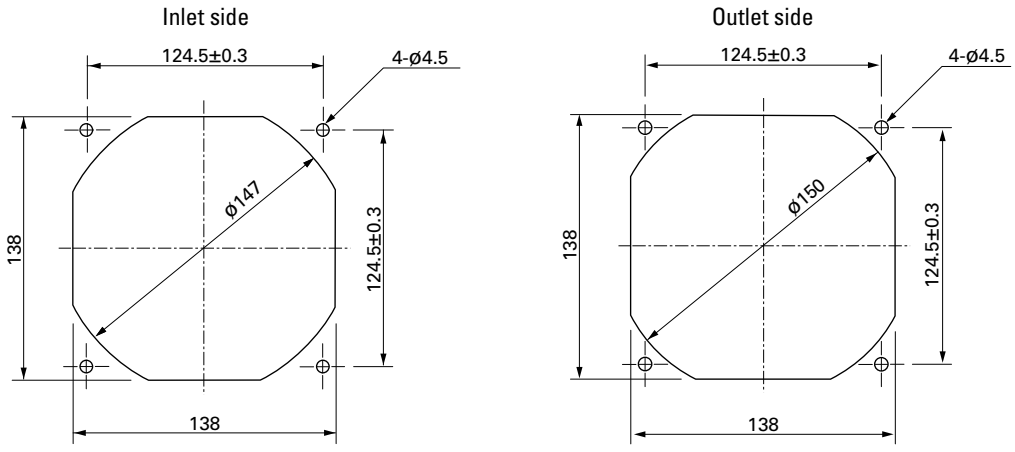
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-719, 109-719H

IP68

140×140×51 mm

San Ace 140W 9WB type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 700 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors.**

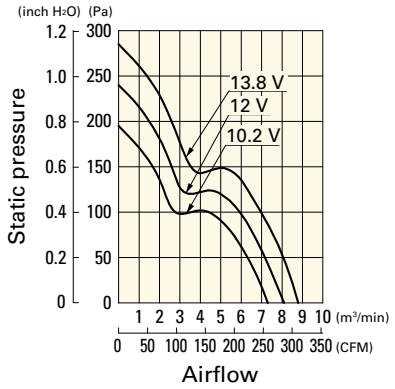
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WB1412S501	12	10.2 to 13.8	2.7	32.4	4200	8.1	286.2	240	0.96	57	-20 to +70	60000/60˚C
9WB1412H501			1.25	15	3100	5.9	208.5	130	0.52	49		100000/60˚C
9WB1412M501			0.46	5.52	2050	3.9	138	63	0.25	39		
9WB1424H501	24	20.4 to 27.6	0.6	14.4	3100	5.9	208.5	130	0.52	49		
9WB1424M501			0.22	5.28	2050	3.9	138	63	0.25	39		
9WB1448S501	48	40.8 to 55.2	0.71	34.08	4200	8.1	286.2	240	0.96	57		60000/60˚C
9WB1448H501			0.27	12.96	3100	5.9	208.5	130	0.52	49		100000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 558).

Airflow - Static Pressure Characteristics

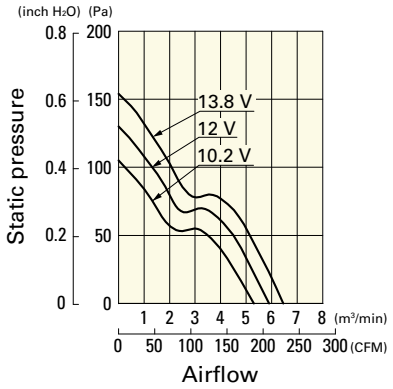
9WB1412S501 With pulse sensor

Operating voltage range



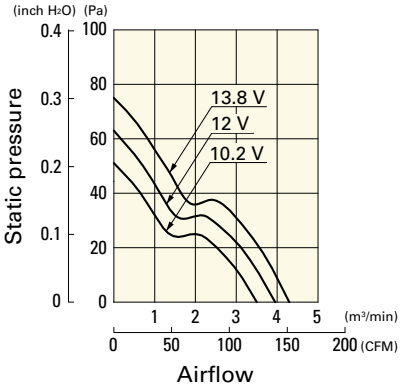
9WB1412H501 With pulse sensor

Operating voltage range



9WB1412M501 With pulse sensor

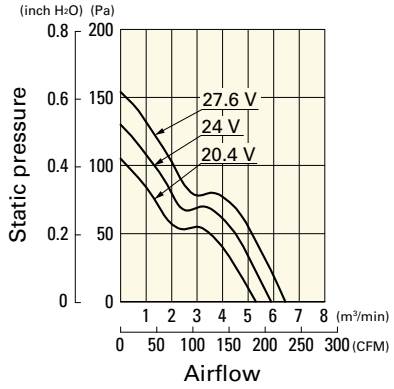
Operating voltage range



Airflow - Static Pressure Characteristics

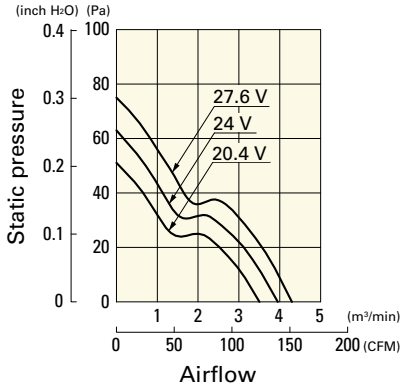
9WB1424H501 With pulse sensor

Operating voltage range



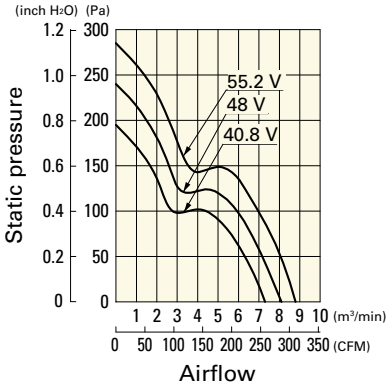
9WB1424M501 With pulse sensor

Operating voltage range



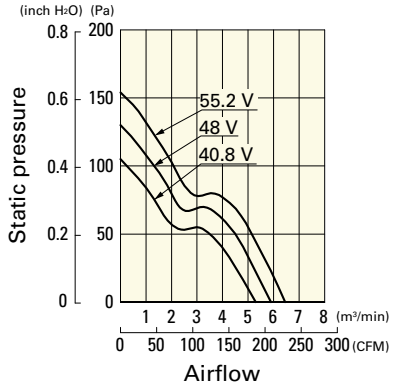
9WB1448S501 With pulse sensor

Operating voltage range

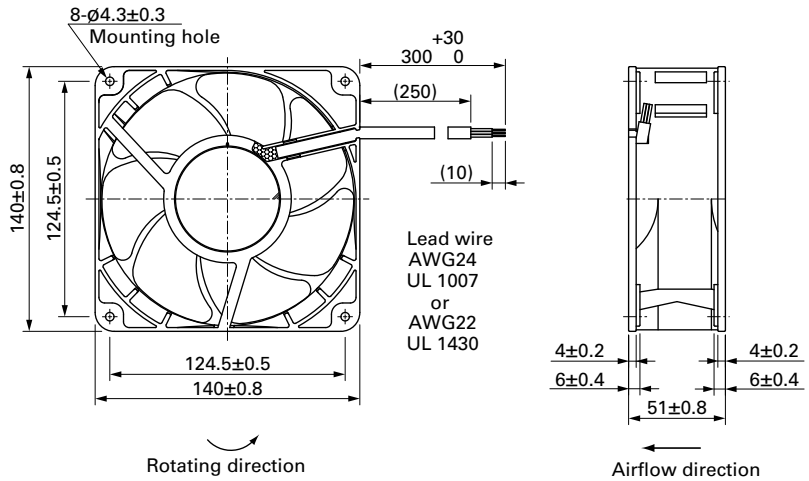


9WB1448H501 With pulse sensor

Operating voltage range

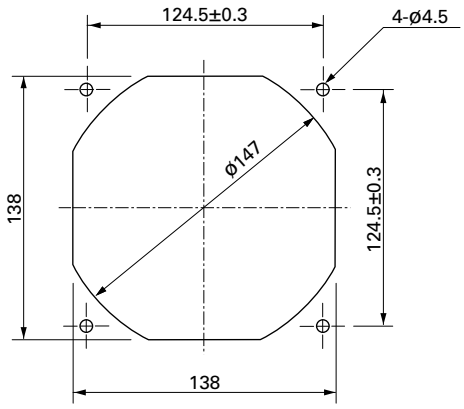


Dimensions (unit: mm)

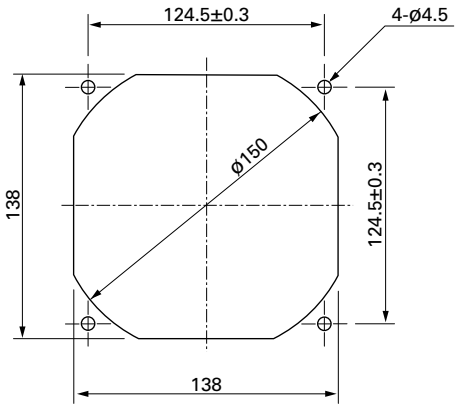


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side



Outlet side



Options

Finger guards page: p. 514

Model no.: 109-719, 109-719H

ø172×150×51 mm

San Ace 172W 9WG type

IP68

Sidecut type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 860 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WG5748P5G001	48	40.8 to 55.2	100	2.91	140.0	8600	15.46	546	1000	4.02	78	-20 to +70	40000/60˚C (70000/40˚C)
			0	0.21	10.1	2000	3.59	127	75.1	0.3	40		
9WG5748P5H001			100	1.62	78.0	6500	11.6	410	770	3.09	71		
			0	0.21	10.1	2000	3.59	127	75.1	0.3	40		

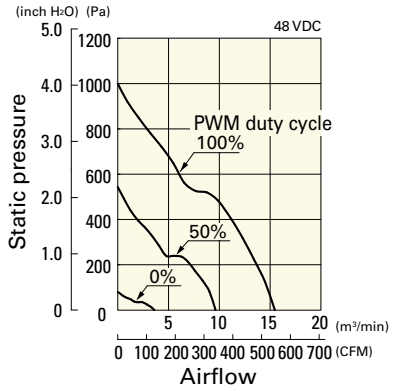
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 559).

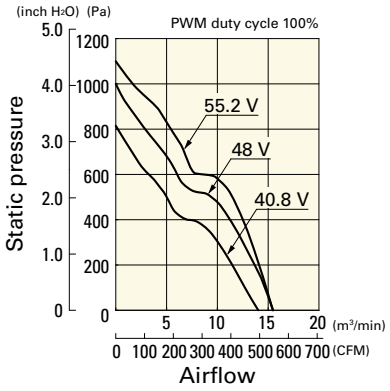
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WG5748P5G001 With pulse sensor with PWM control function

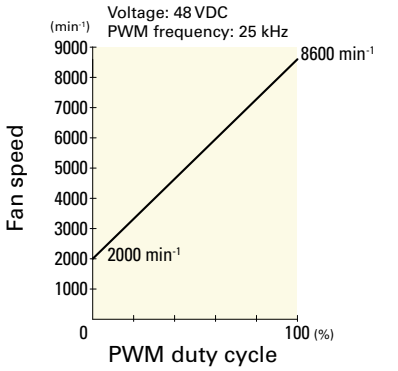
PWM duty cycle



Operating voltage range



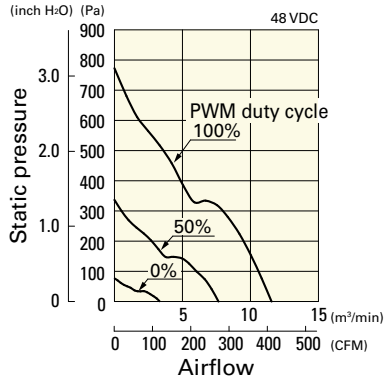
PWM duty - Speed characteristics example



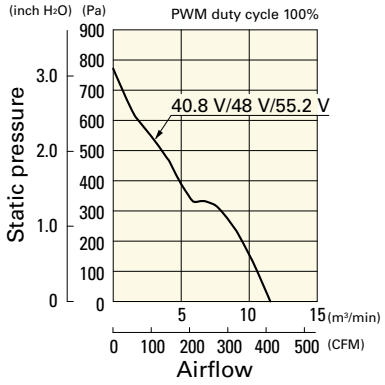
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WG5748P5H001 With pulse sensor with PWM control function

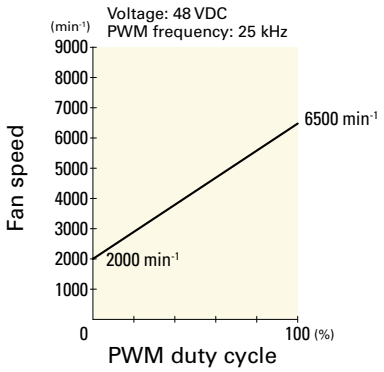
PWM duty cycle



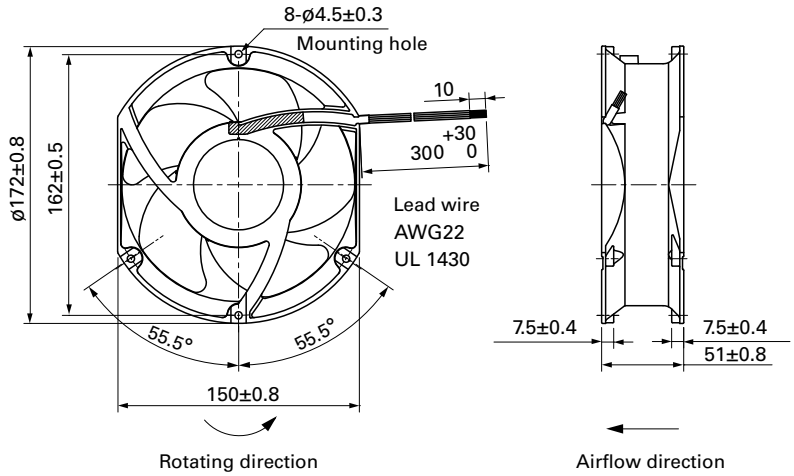
Operating voltage range



PWM duty - Speed characteristics example

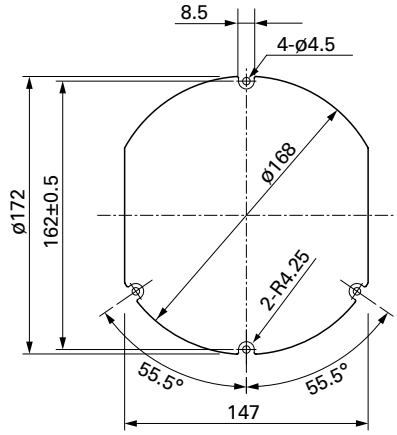


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 515

Model no.: 109-319J, 109-319E, 109-319H, 109-320

ø172×150×51 mm

IP68

San Ace 172W 9WE type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 860 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors.**

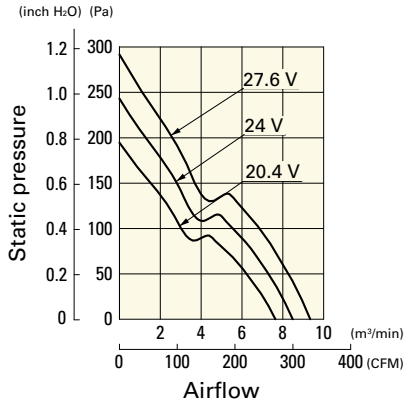
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WE5724K501	24	20.4 to 27.6	1.3	31.2	4100	8.5	300	243	0.976	60	-20 to +60	40000/60˚C
9WE5748K501	48	40.8 to 55.2	0.7	33.6	4100	8.5	300	243	0.976	60		40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 558).

Airflow - Static Pressure Characteristics

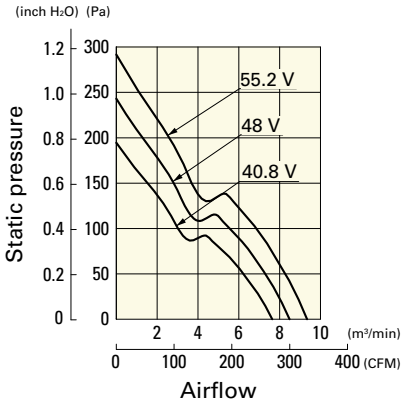
9WE5724K501 With pulse sensor

Operating voltage range

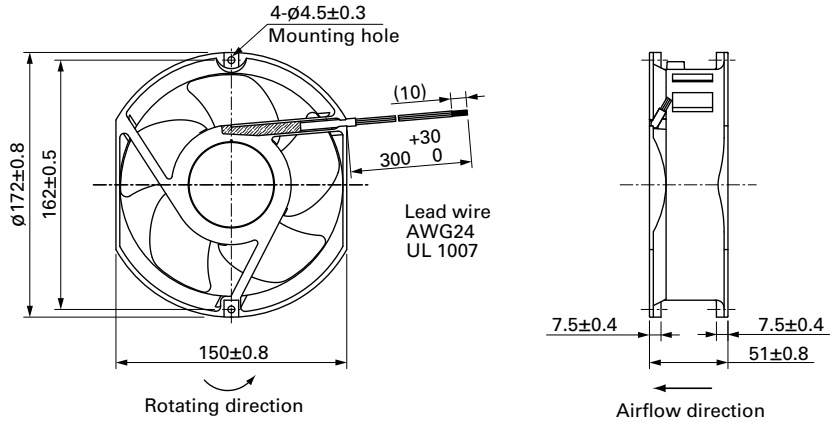


9WE5748K501 With pulse sensor

Operating voltage range

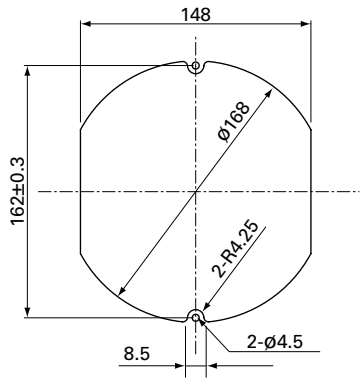


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 515

Model no.: 109-319E, 109-319H, 109-320

ø172×51 mm

San Ace 172W 9WE type

IP68

Round type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 890 g
- Ingress protection ····· IP68

Specifications

The models listed below **have pulse sensors.**

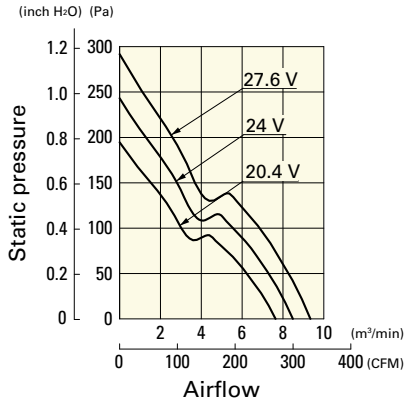
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WE1724K501	24	20.4 to 27.6	1.3	31.2	4100	8.5	300.1	243	0.97	55	-20 to +60	40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 558).

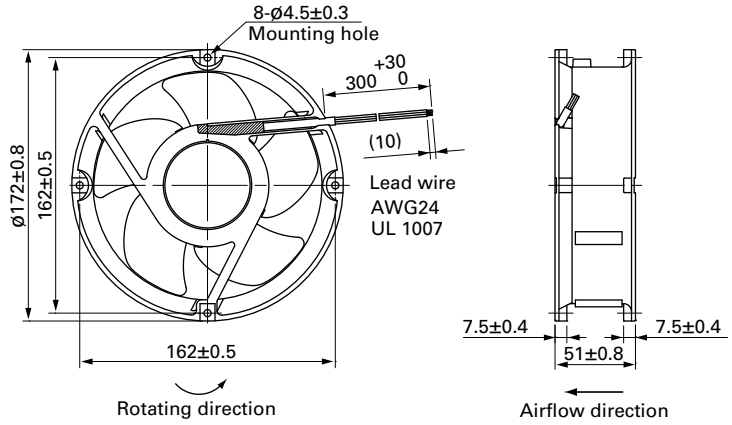
Airflow - Static Pressure Characteristics

9WE1724K501 With pulse sensor

Operating voltage range

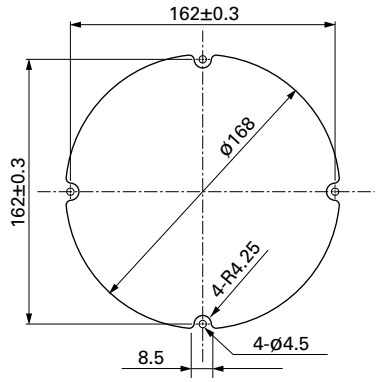


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 515

Model no.: 109-1066, 109-1068, 109-319E, 109-319H, 109-320

Splash Proof Centrifugal Fan

Centrifugal fans of IP54 and IP56 waterproof capability. For more information on IP rating, refer to p. 534.
Related product: Splash Proof Fan p. 267, Centrifugal Fan p. 413, Oil Proof Fan p. 335

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9W1T	M	48	P	4	H	01
Type name	Impeller size	Voltage	PWM control function	Thickness	Speed code	Individual customer's spec (2 to 3 digits)

Type name	9W1T	9W2T					
Impeller size (mm)	G	J	M	N	P	S	
	ø175	ø133	ø100	ø150	ø221	ø225	
Voltage (V)	24	48					
	24	48					
Thickness (mm)	0	1	4				
	69 min.	35	25				
Speed code	H	G	S	etc.			

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

ø100×25 mm

IP54

San Ace 100W 9W1T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 160 g
- Ingress protection ····· IP54

Specifications

When the optional inlet nozzle (109-1080) is mounted.

The models listed below **have pulse sensors with PWM control function.**

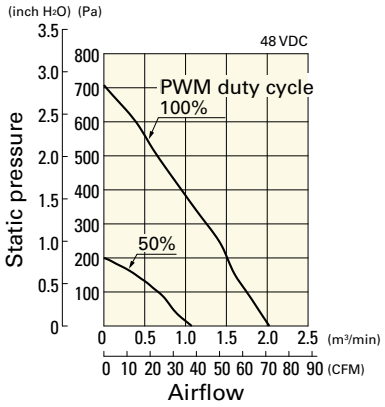
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9W1TM48P4G01**	48	36 to 60	100	0.36	17.28	7400	2.03	71.7	708	2.84	65	-20 to +70	40000/60˚C (70000/40˚C)
9W1TM48P4H01			100	0.22	10.56	6400	1.77	62.5	560	2.25	60		
			0	0.04	1.92	2000	0.51	18.0	48	0.19	34		

* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.
Max input of 9W1TM48P4G01: 22 W, 9W1TM48P4H01: 14 W at rated voltage.

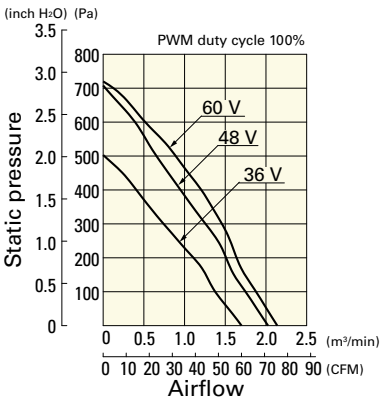
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9W1TM48P4G01 With pulse sensor with PWM control function

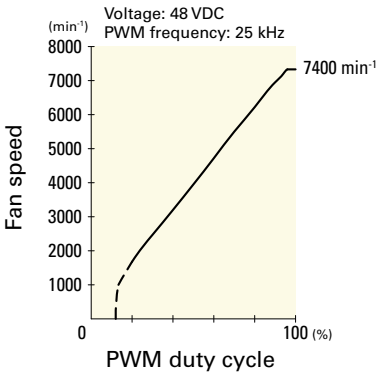
PWM duty cycle



Operating voltage range

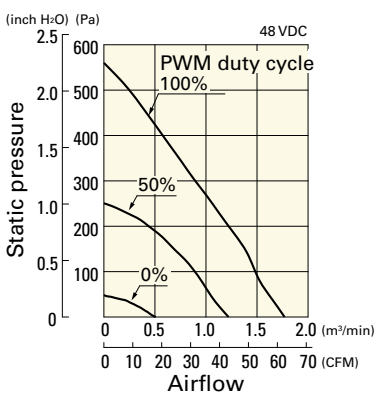


PWM duty - Speed characteristics example

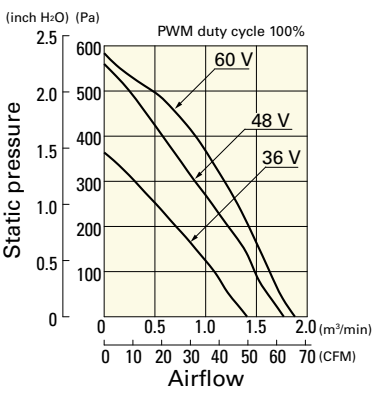


9W1TM48P4H01 With pulse sensor with PWM control function

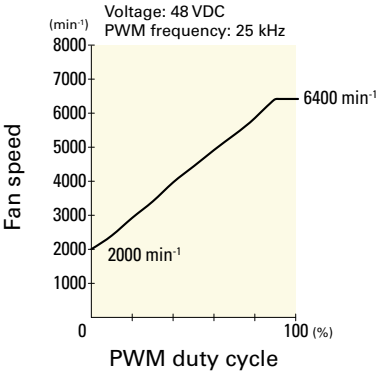
PWM duty cycle



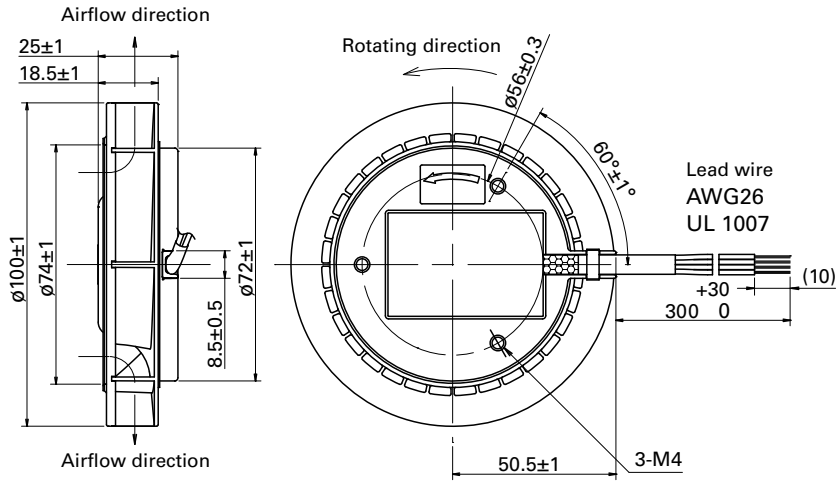
Operating voltage range



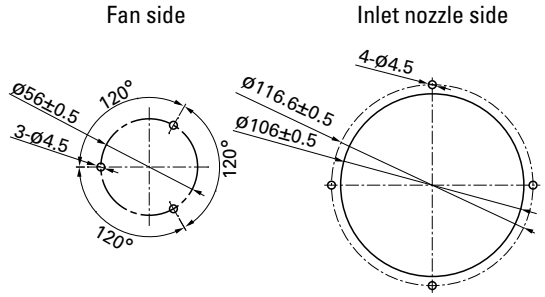
PWM duty - Speed characteristics example



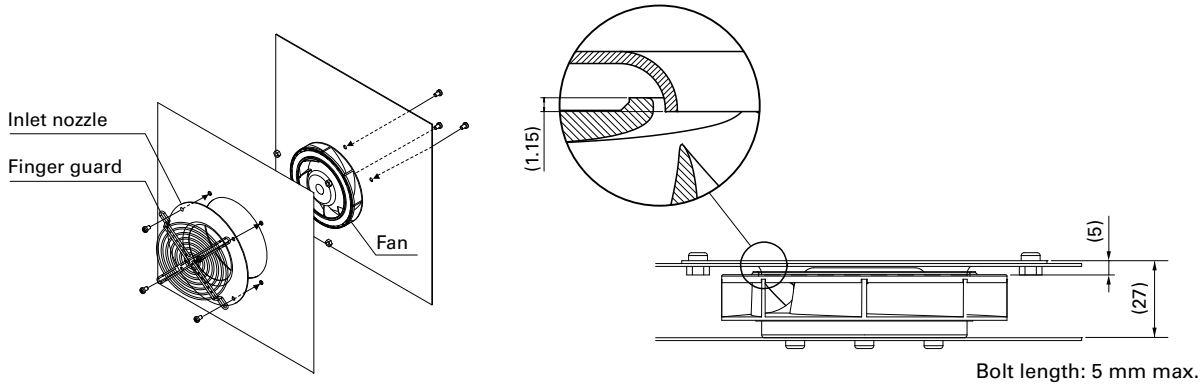
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting



Bolt length: 5 mm max.

Options

Finger guards	page: p. 513

Model no.: 109-099E, 109-099H

Inlet nozzle	page: p. 518

Model no.: 109-1080

ø133×91 mm

IP54

San Ace 133W 9W1T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 720 g
- Ingress protection ····· IP54

Specifications

When the optional inlet nozzle (109-1069) is mounted.

The models listed below **have pulse sensors with PWM control function.**

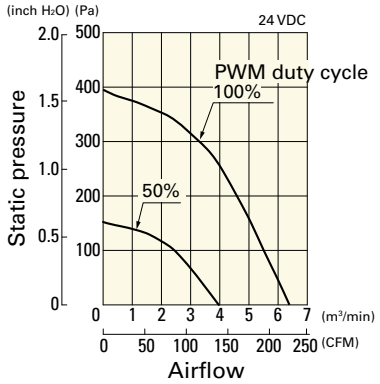
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9W1TJ24P0H61	24	20.4 to 27.6	100	1.2	28.8	4150	6.39	225	395	1.59	61	-20 to +70	40000/60˚C (70000/40˚C)
9W1TJ48P0H61	48	36 to 60	100	0.55	26.4	4150	6.39	225	395	1.59	61		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input is 45 W at rated voltage.

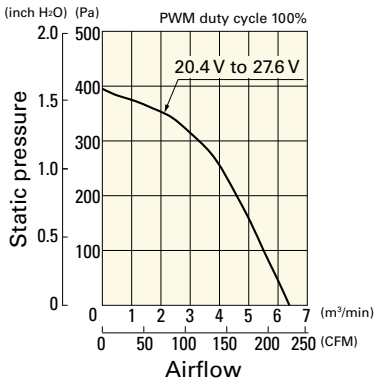
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9W1TJ24P0H61 With pulse sensor with PWM control function

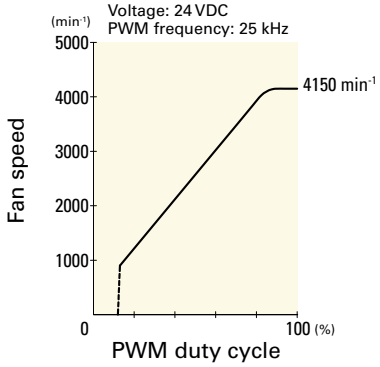
PWM duty cycle



Operating voltage range

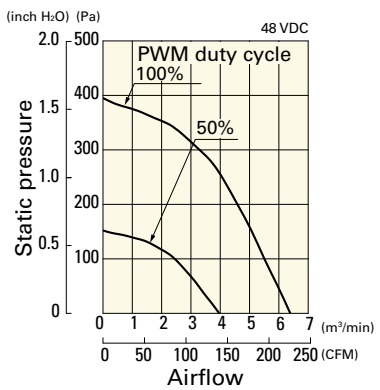


PWM duty - Speed characteristics example

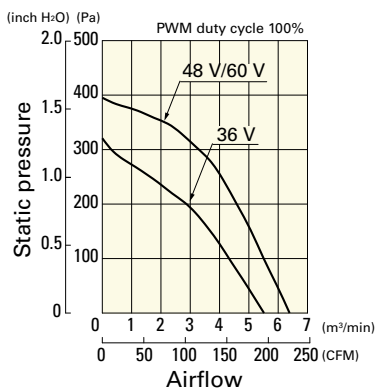


9W1TJ48P0H61 With pulse sensor with PWM control function

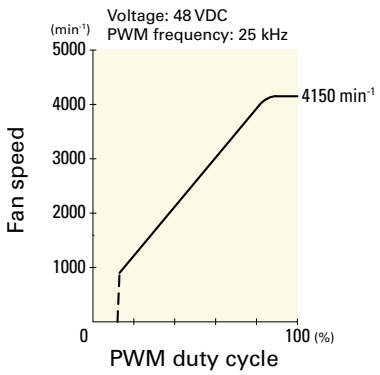
PWM duty cycle



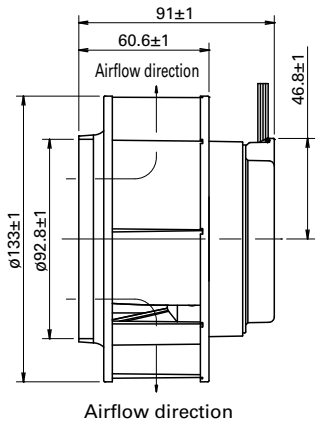
Operating voltage range

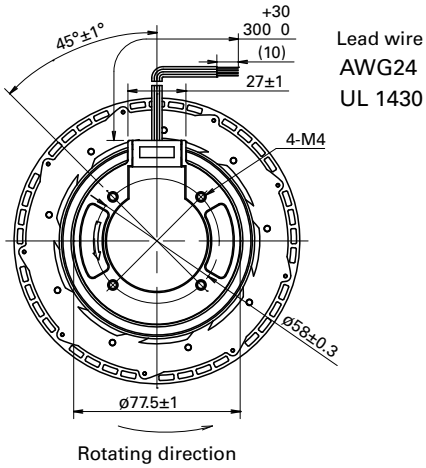


PWM duty - Speed characteristics example



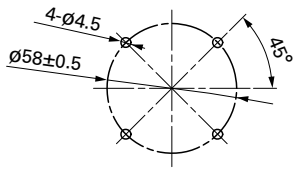
Dimensions (unit: mm)



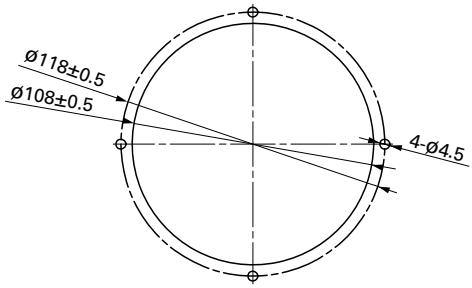


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

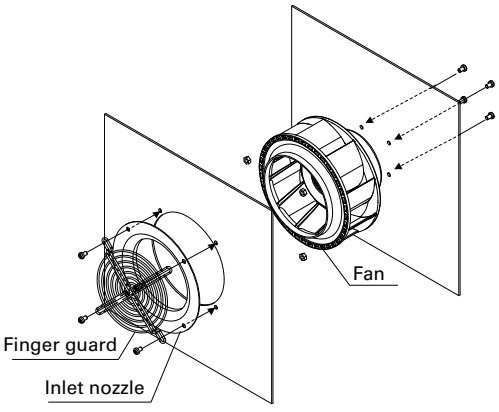
Fan side

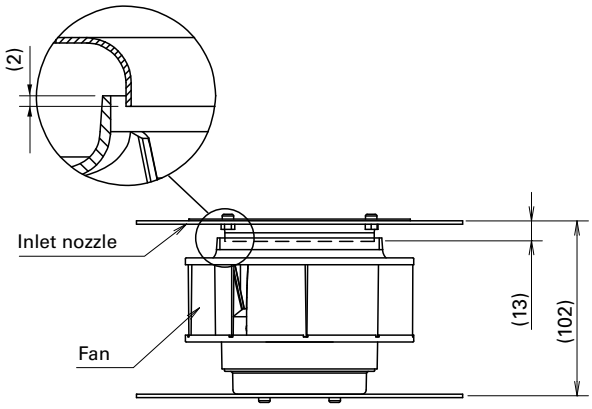


Inlet nozzle side



Reference Diagram for Mounting





Bolt length: 6 mm max.

Options

Finger guards page: p. 514

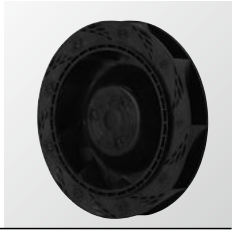
Model no.: 109-1112

Inlet nozzle page: p. 518

Model no.: 109-1069, 109-1069H

ø150×35 mm

IP54



San Ace 150W 9W1T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 330 g
- Ingress protection ····· IP54

Specifications

When the optional inlet nozzle (109-1081) is mounted.

The models listed below **have pulse sensors with PWM control function.**

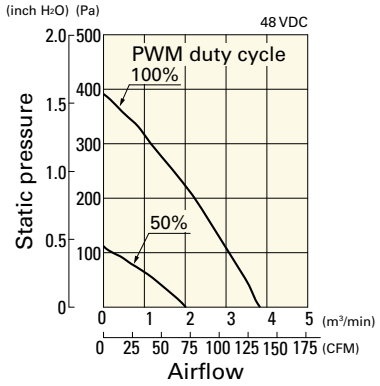
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9W1TN48P1H01	48	36.0 to 55.2	100	0.32	15.4	3800	3.83	135	390	1.57	59	-20 to +70	40000/60˚C (70000/40˚C)

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input is 22 W at rated voltage.

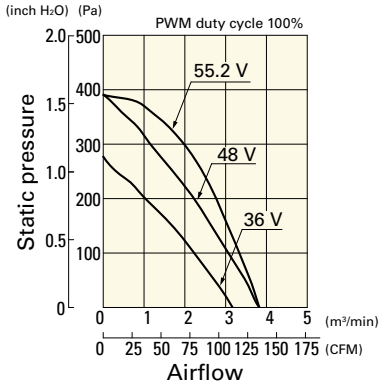
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9W1TN48P1H01 With pulse sensor with PWM control function

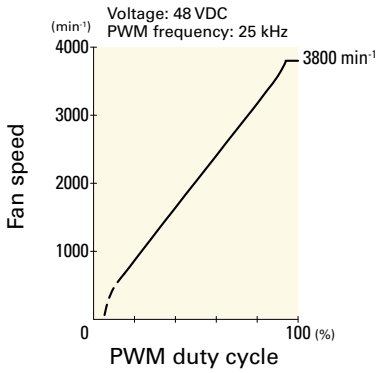
PWM duty cycle



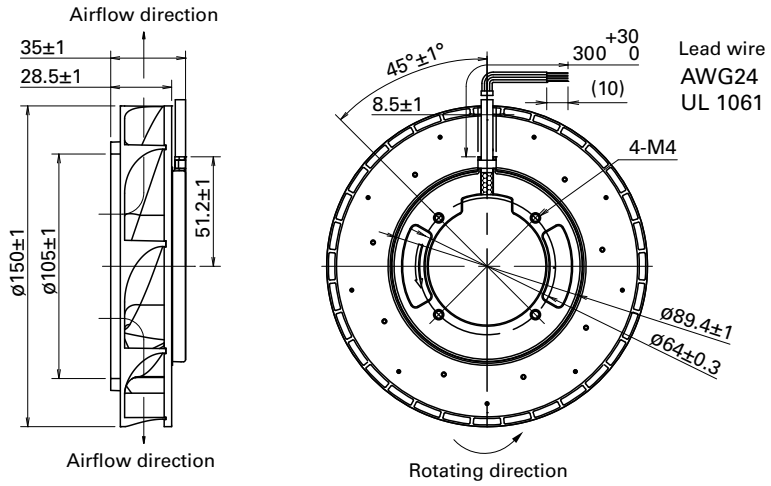
Operating voltage range



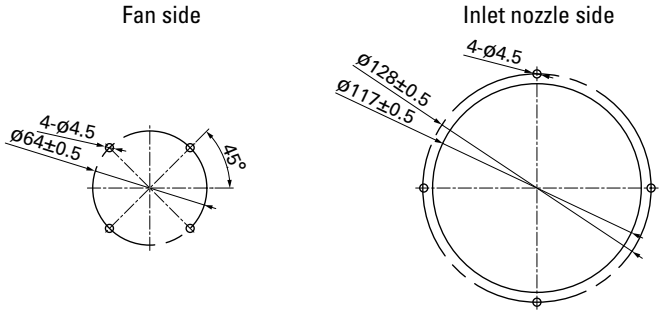
PWM duty - Speed characteristics example



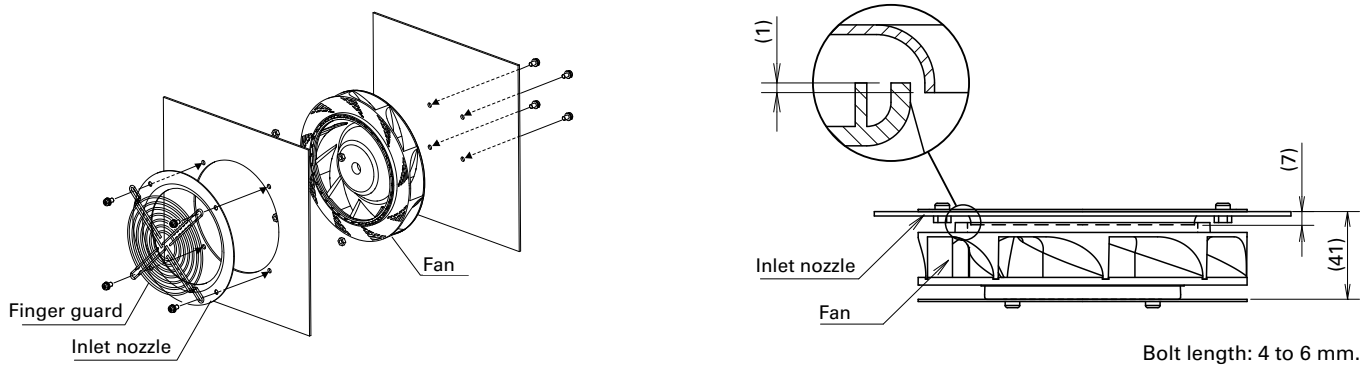
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting



Bolt length: 4 to 6 mm.

Options

Finger guards page: p. 514

Model no.: 109-1104, 109-1104H

Inlet nozzle page: p. 518

Model no.: 109-1081, 109-1081H

ø175×69 mm

IP54

San Ace 175W 9W1T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 760 g
- Ingress protection ····· IP54

Specifications

When the optional inlet nozzle (109-1073) is mounted.

The models listed below **have pulse sensors with PWM control function.**

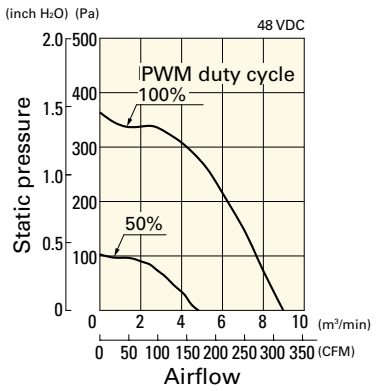
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9W1TG48P0H61	48	36 to 60	100	0.65	31.2	3100	9.0	318	360	1.44	64	-20 to +70	40000/60˚C (70000/40˚C)

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input is 60 W at rated voltage.

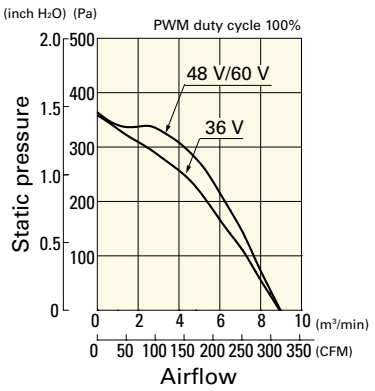
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9W1TG48P0H61 With pulse sensor with PWM control function

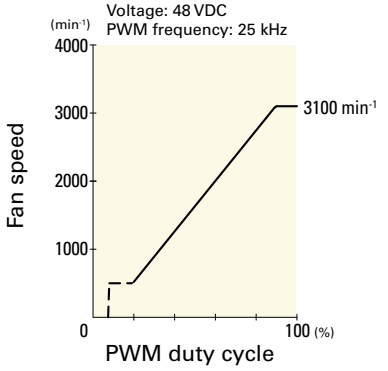
PWM duty cycle



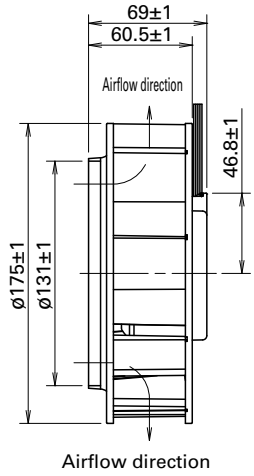
Operating voltage range

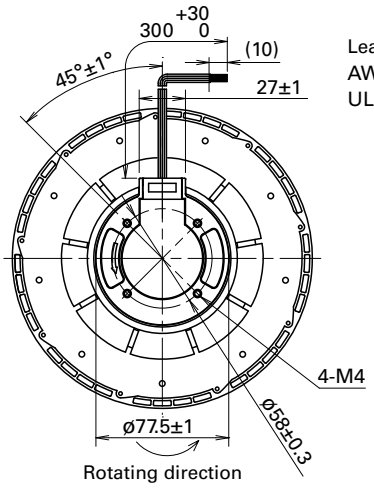


PWM duty - Speed characteristics example



Dimensions (unit: mm)

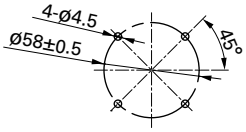




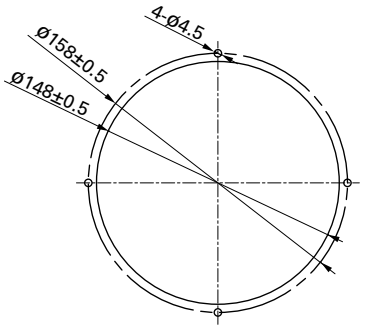
Lead wire
AWG24
UL 1430

Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

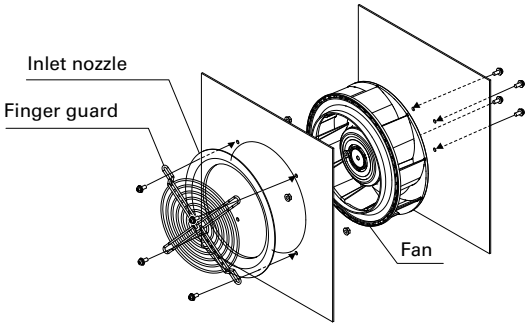
Fan side

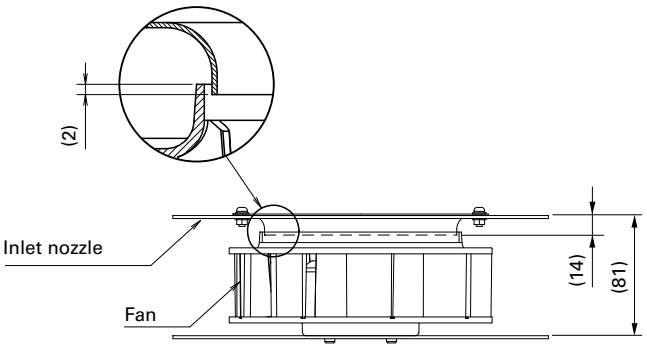


Inlet nozzle side



Reference Diagram for Mounting





Bolt length: 4 to 6 mm.
To prevent bolts from loosening, use plain washers and spring washers.

Options

Finger guards	page: p. 514

Model no.: 109-722

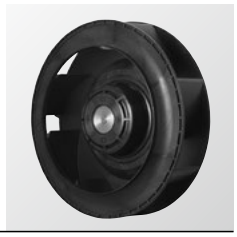
Inlet nozzle	page: p. 518

Model no.: 109-1073, 109-1073H

ø221×71 mm

San Ace 221W 9W2T type

IP56



General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 1250 g
- Ingress protection ····· IP56

Specifications

When the optional inlet nozzle (109-1135H) is mounted.

The models listed below **have pulse sensors with PWM control function.**

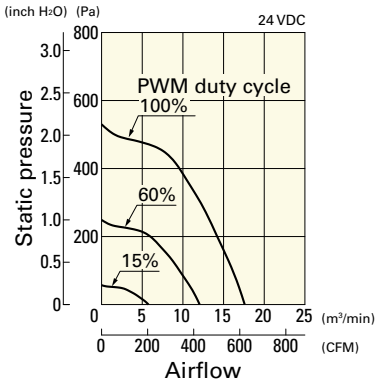
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9W2TP24P0H001	24	16 to 36	100	3.35	80.4	3050	17.6	621	530	2.13	71.5	-25 to +70	40000/60˚C (70000/40˚C)
			15	0.4	9.6	1000	5.75	203	57.0	0.23	53.5		
9W2TP48P0S001	48	36 to 72	100	2.3	110.4	3400	19.6	692	659	2.65	73.5		
			15	0.2	9.6	1000	5.75	203	57.0	0.23	53.5		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input of 9W2TP24P0H001: 150 W, 9W2TP48P0S001: 210 W at rated voltage.

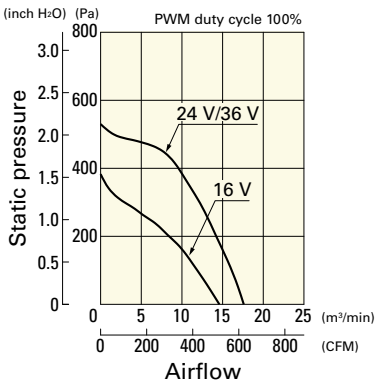
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9W2TP24P0H001 With pulse sensor with PWM control function

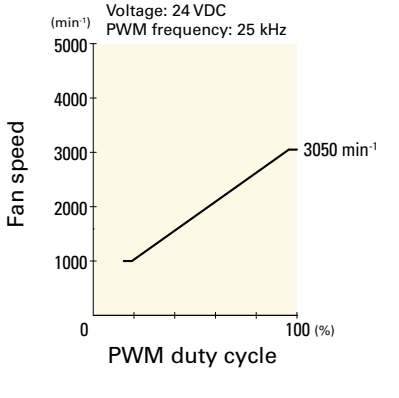
PWM duty cycle



Operating voltage range

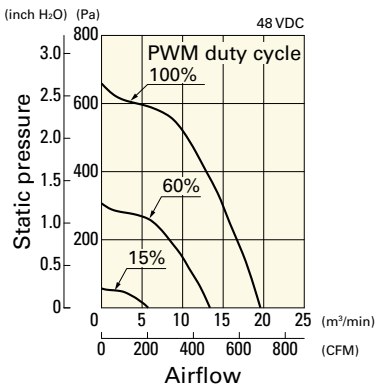


PWM duty - Speed characteristics example

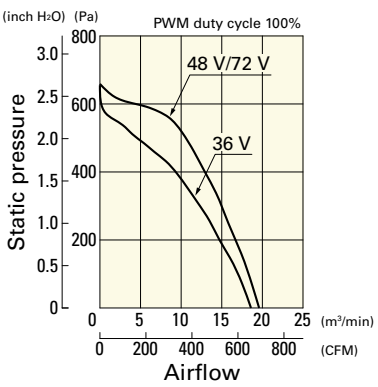


9W2TP48P0S001 With pulse sensor with PWM control function

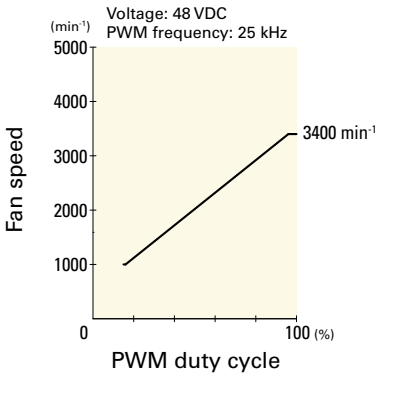
PWM duty cycle



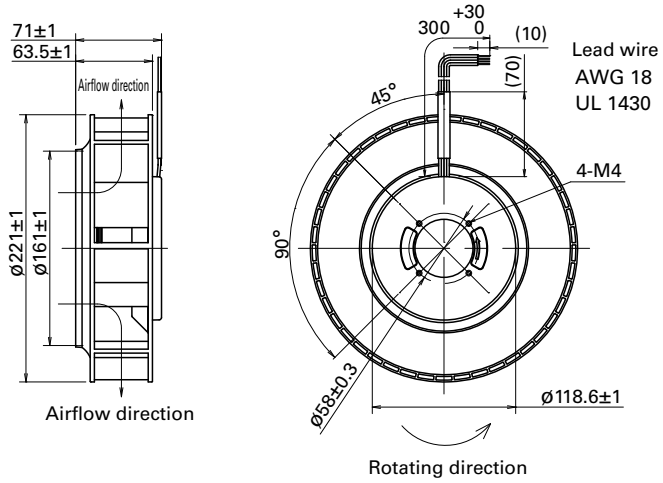
Operating voltage range



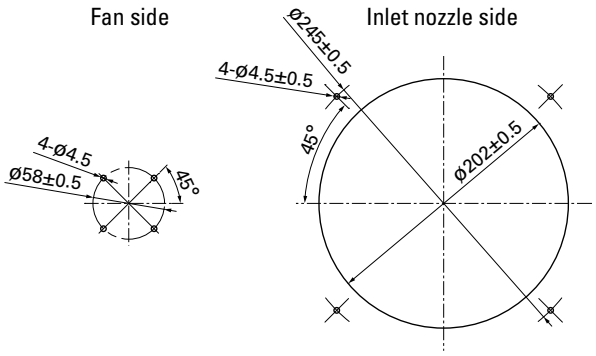
PWM duty - Speed characteristics example



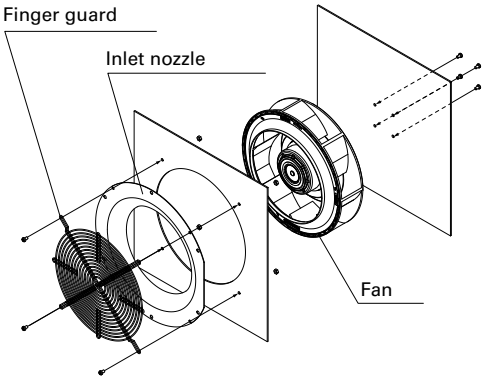
Dimensions (unit: mm)

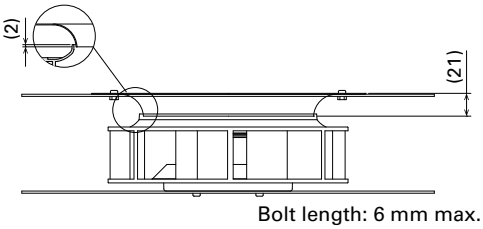


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting





Bolt length: 6 mm max.

Options

Finger guards	page: p. 516

Model no.: 109-1138H

Inlet nozzle	page: p. 518

Model no.: 109-1135H

ø225×99 mm

San Ace 225W 9W2T type

IP56 ECO PRODUCTS

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 1500 g
- Ingress protection ····· IP56

Specifications

When the optional inlet nozzle (109-1134H) is mounted.

The models listed below **have pulse sensors with PWM control function.**

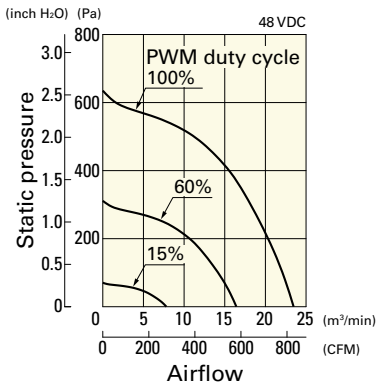
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9W2TS48P0S001	48	36 to 72	100	2.45	117.6	3000	23.5	830	635	2.55	72.0	-25 to +70	40000/60˚C (70000/40˚C)
			15	0.24	11.5	1000	7.83	276	70.6	0.28	52.5		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input is 220 W at rated voltage.

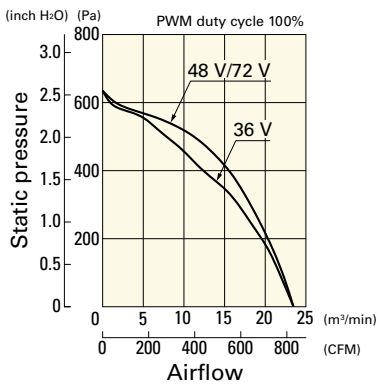
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9W2TS48P0S001 With pulse sensor with PWM control function

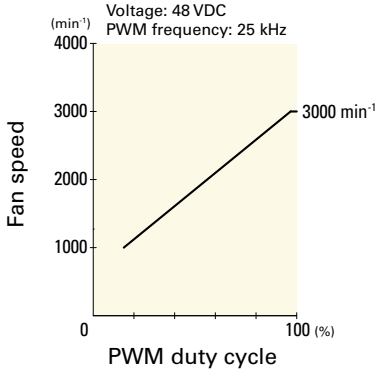
PWM duty cycle



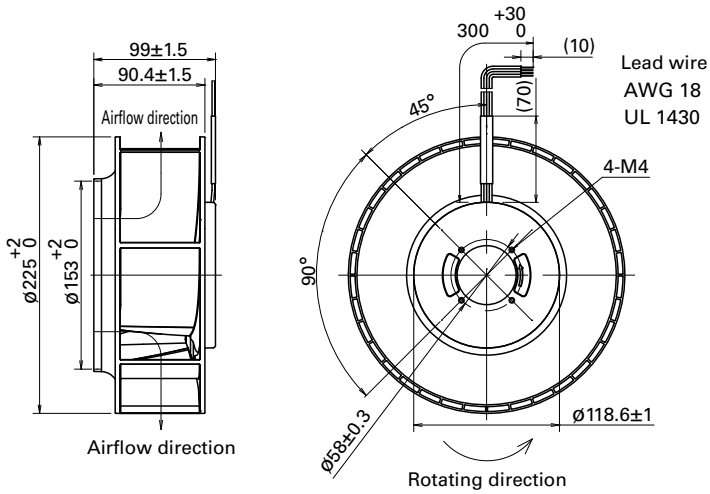
Operating voltage range



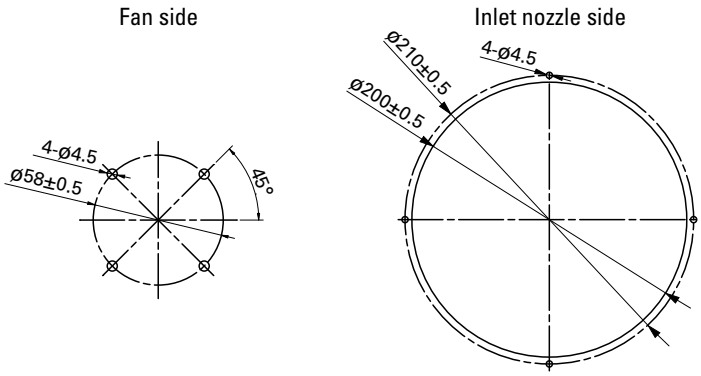
PWM duty - Speed characteristics example



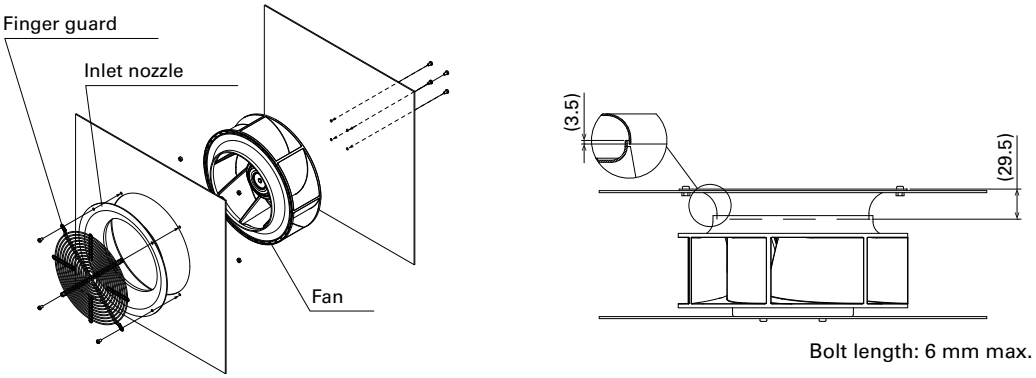
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting



Bolt length: 6 mm max.

Options

Finger guards	page: p. 516

Model no.: 109-1137H

Inlet nozzle	page: p. 518

Model no.: 109-1134H

Oil Proof Fan

Cooling fan capable of operating in an oil-mist environment.
Related product: Splash Proof Fan p. 267, Splash Proof Centrifugal Fan p. 321

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9WF	12	24	H	1	01	
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications	Frame form

Type name	9WF
Frame size (mm)	04 (40×40) 06 (60×60) 08 (80×80) 09 (92×92) 12 (120×120)
Voltage (V)	24 (24)
Speed code	H
Frame thickness (mm)	1 (38) 2 (32) 4 (25) 6 (20) 7 (15)
Sensor specifications	01 With a pulse sensor; 02 Without a sensor; D01 With a lock sensor
Frame form	Nil Ribbed frame

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

40×40×15 mm

San Ace 40WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 35 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.**

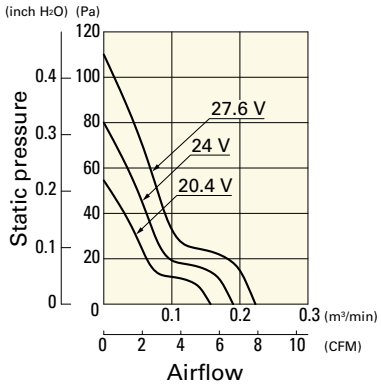
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min^{-1}]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF0424H701	24	20.4 to 27.6	0.085	2.04	11300	0.195	6.9	80	0.32	38	-20 to +70	40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 558).

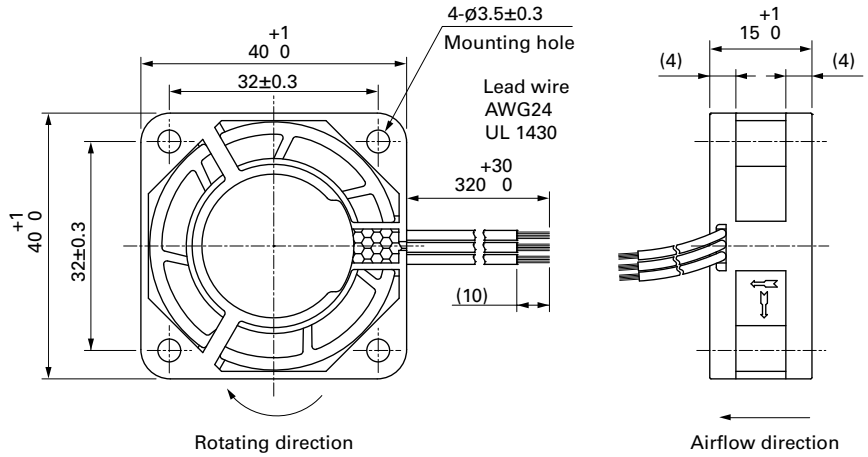
Airflow - Static Pressure Characteristics

9WF0424H701 With pulse sensor

Operating voltage range

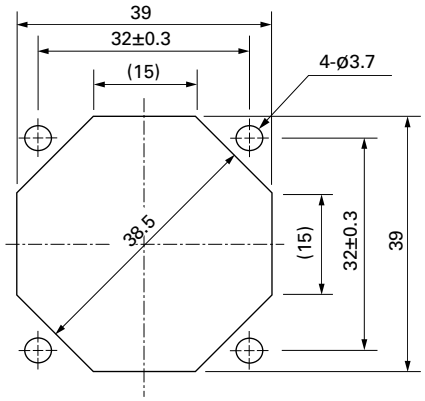


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

40×40×20 mm

San Ace 40WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 50 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.**

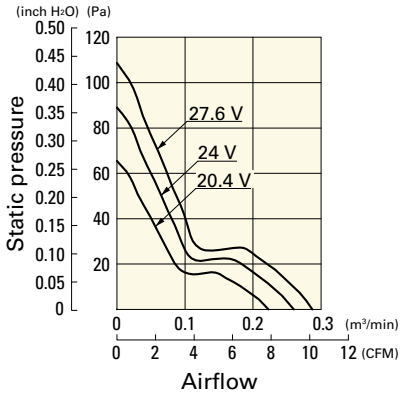
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF0424H601	24	20.4 to 27.6	0.11	2.64	13100	0.26	9.2	90	0.361	42	-20 to +70	40000/60˚C
9WF0424F601			0.076	1.82	11000	0.22	7.77	62.8	0.252	37		

Other sensor specifications are available as options. Refer to the index (p. 558).

Airflow - Static Pressure Characteristics

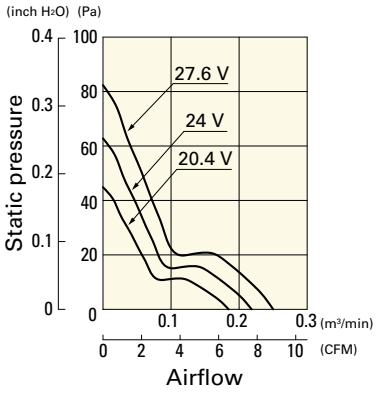
9WF0424H601 With pulse sensor

Operating voltage range

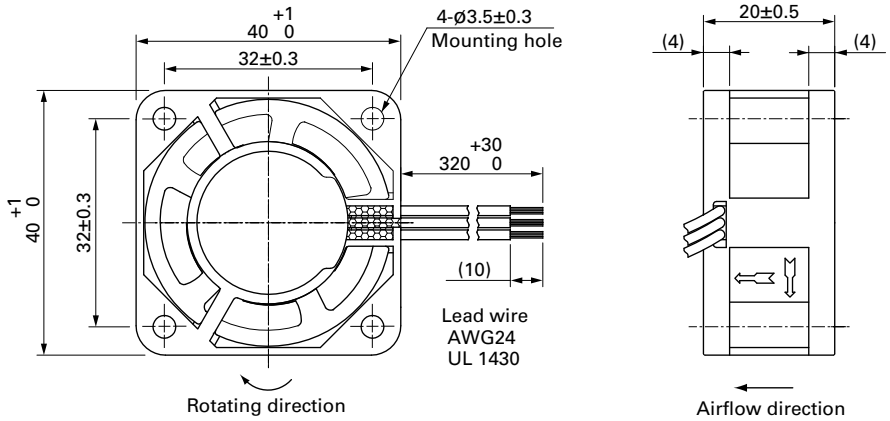


9WF0424F601 With pulse sensor

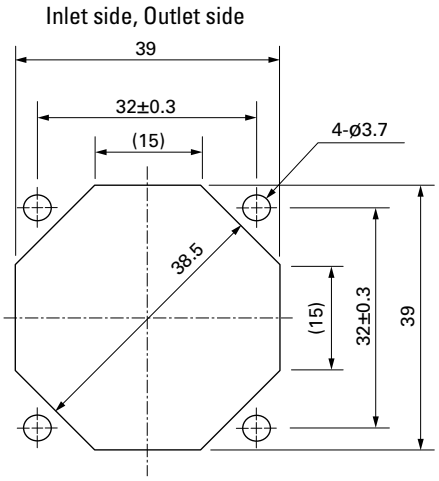
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

60×60×15 mm

San Ace 60WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 62 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.**

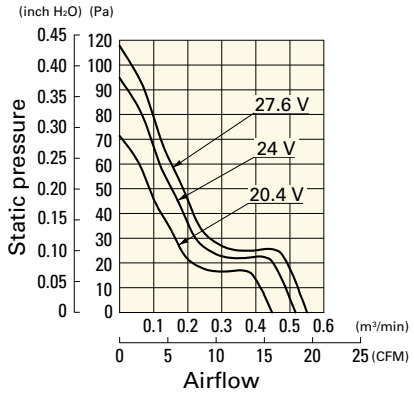
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF0624H701	24	20.4 to 27.6	0.12	2.88	6800	0.52	18.3	95	0.38	44	-20 to +70	40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 558).

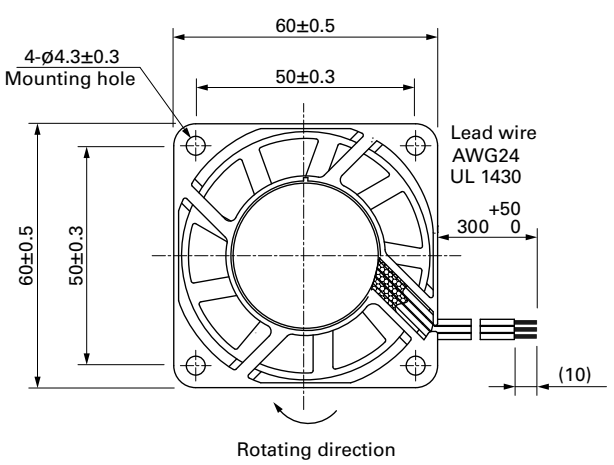
Airflow - Static Pressure Characteristics

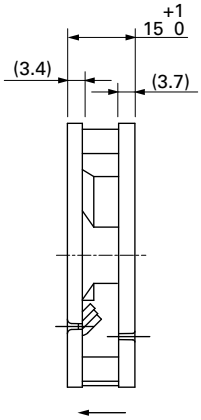
9WF0624H701 With pulse sensor

Operating voltage range



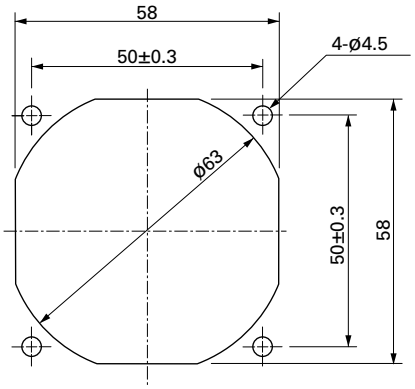
Dimensions (unit: mm)





Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

60×60×20 mm

San Ace 60WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 80 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.**

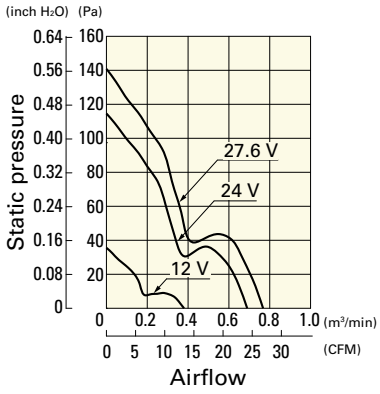
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF0624H601	24	12 to 27.6	0.15	3.6	6600	0.69	24.3	114	0.45	42	-20 to +70	40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 558).

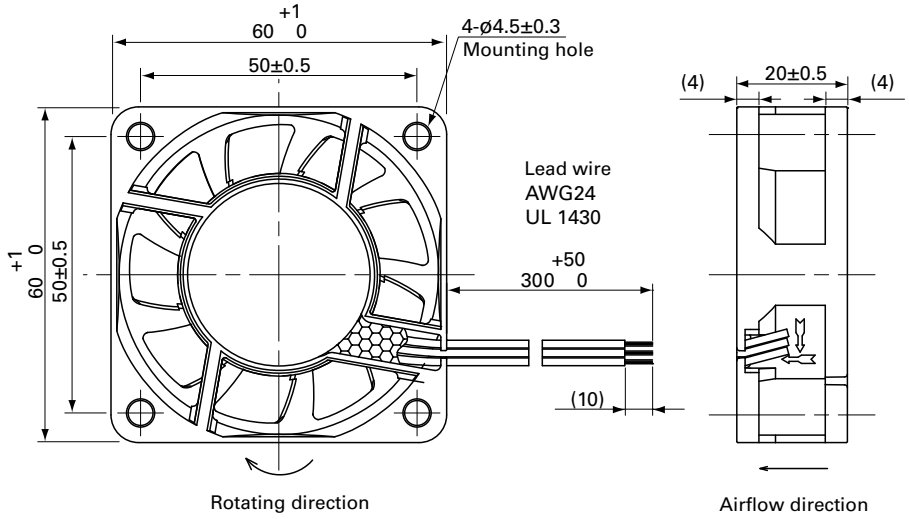
Airflow - Static Pressure Characteristics

9WF0624H601 With pulse sensor

Operating voltage range

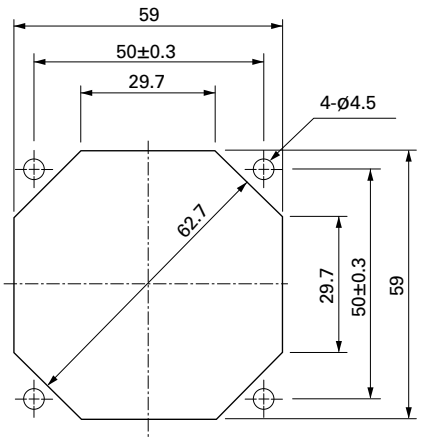


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

60×60×25 mm

San Ace 60WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 110 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.**

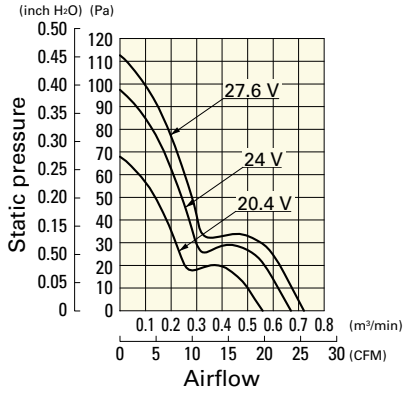
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF0624H401	24	20.4 to 27.6	0.15	3.6	6500	0.67	23.6	97	0.38	41	-20 to +70	40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 558).

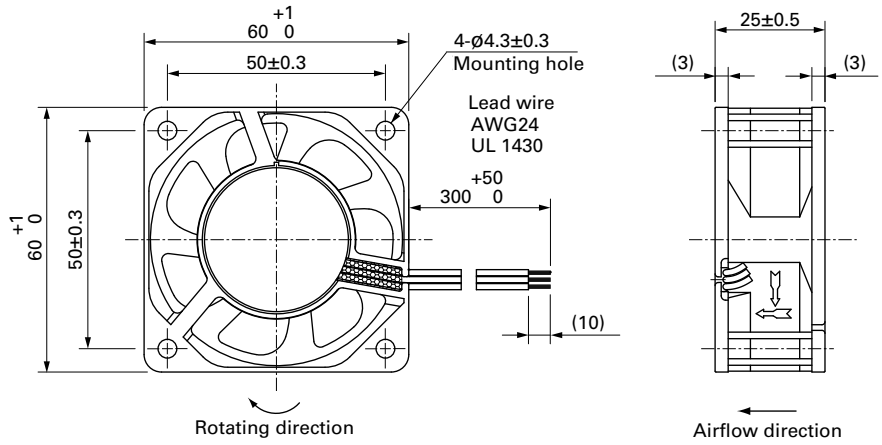
Airflow - Static Pressure Characteristics

9WF0624H401 With pulse sensor

Operating voltage range

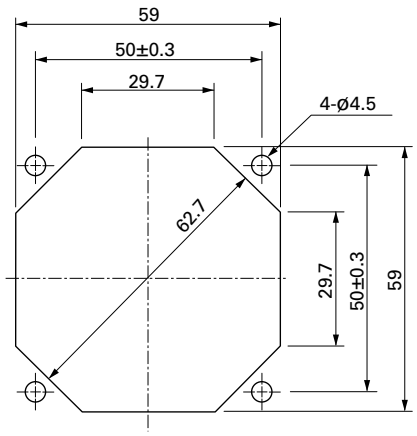


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

80×80×25 mm

San Ace 80WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 130 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.**

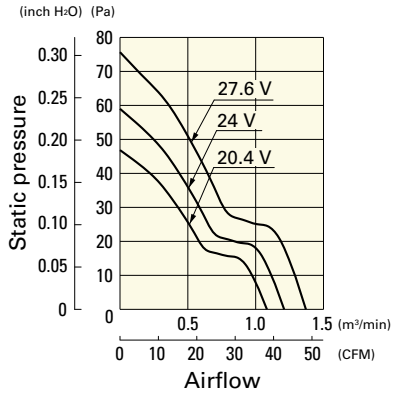
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF0824S401	24	20.4 to 27.6	0.16	3.84	4000	1.2	42.4	58	0.23	38	-20 to +70	40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 558).

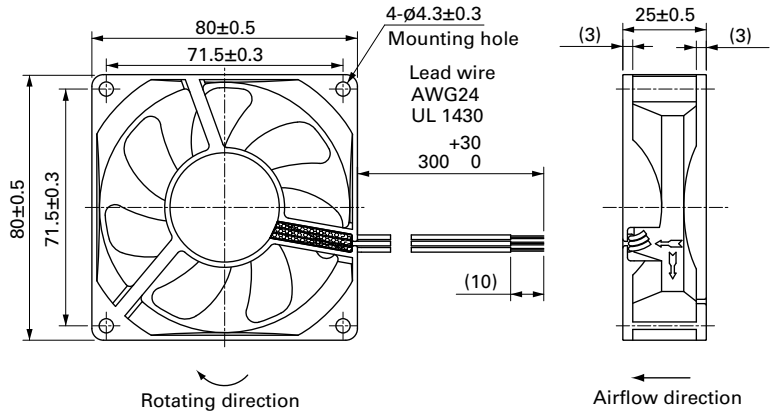
Airflow - Static Pressure Characteristics

9WF0824S401 With pulse sensor

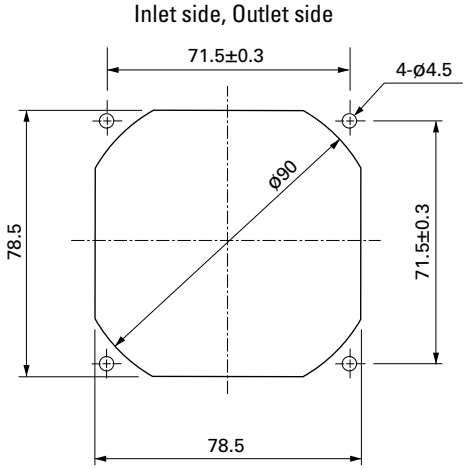
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

92×92×25 mm

San Ace 92WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 120 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

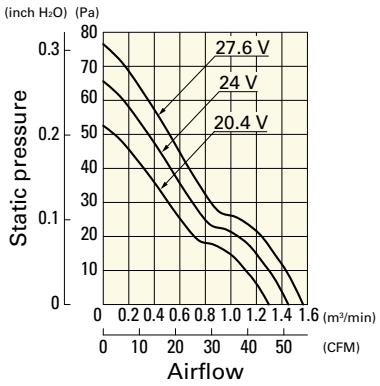
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF0924H401	24	20.4 to 27.6	0.13	3.12	3900	1.45	51.2	66	0.26	42.5	-20 to +70	40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 559).

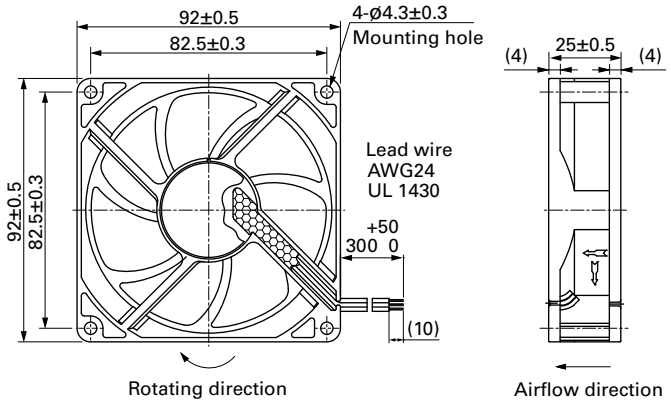
Airflow - Static Pressure Characteristics

9WF0924H401 With pulse sensor

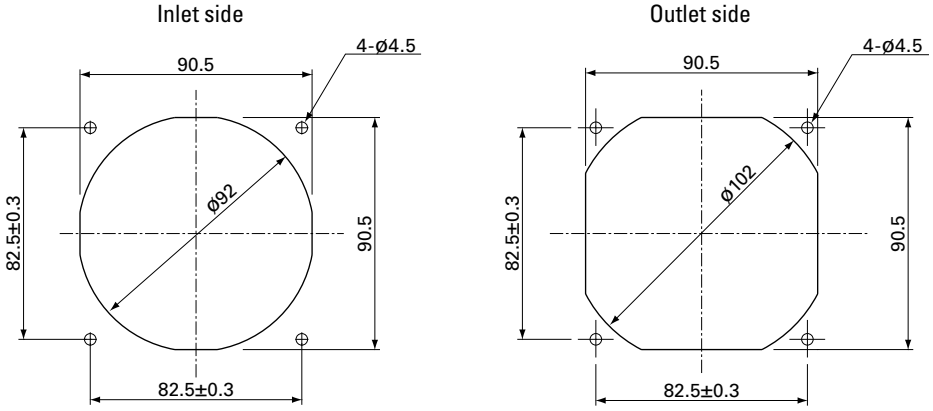
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

92×92×32 mm

San Ace 92WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 185 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.** For models without ribs, append "1" to the end of model numbers.

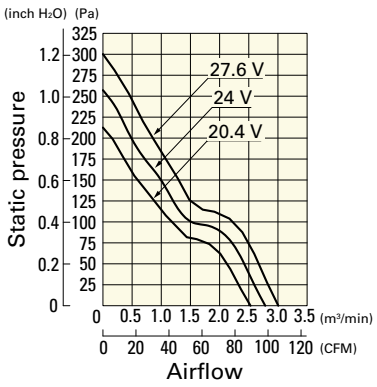
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF0924S201	24	20.4 to 27.6	0.5	12	7300	2.8	98.9	255	1.02	58	-20 to +70	40000/60˚C
9WF0924H201			0.35	8.4	6500	2.45	86.5	200	0.8	56		

Other sensor specifications are available as options. Refer to the index (p. 559).

Airflow - Static Pressure Characteristics

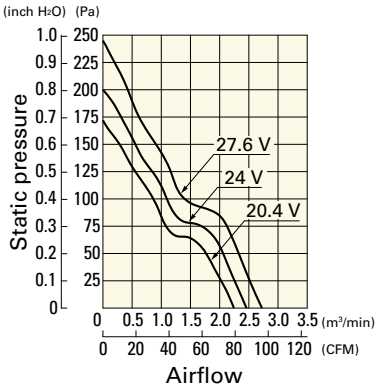
9WF0924S201 With pulse sensor

Operating voltage range

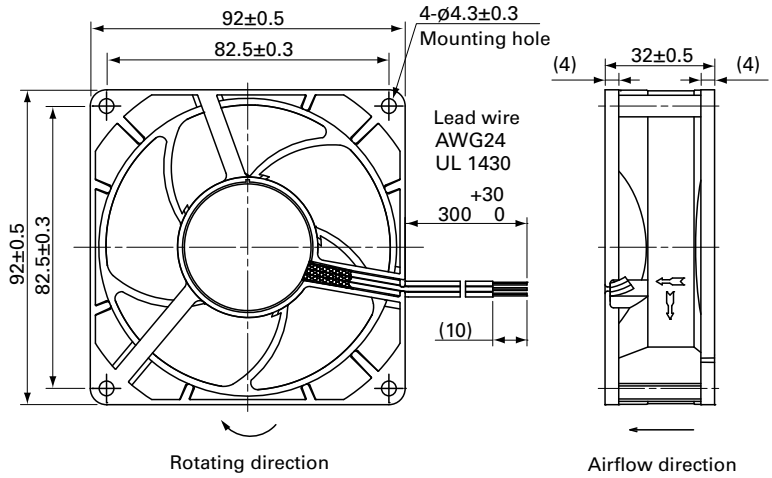


9WF0924H201 With pulse sensor

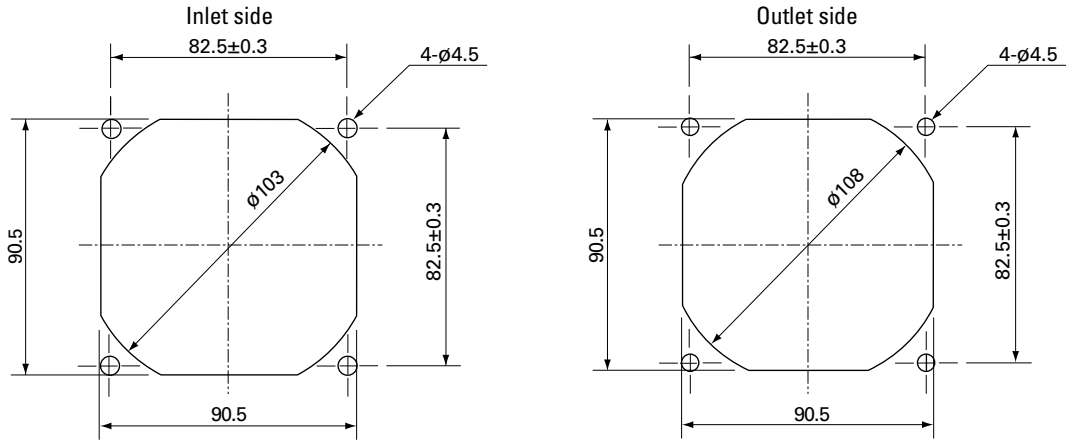
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

120×120×38 mm

San Ace 120WF 9WF type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 355 g

This fan can be used in environments with oil mist.*

* Environment where cutting oil creates oil mist. Conduct a product evaluation with the type of oil to be used.

Specifications

The models listed below **have ribs and pulse sensors.**

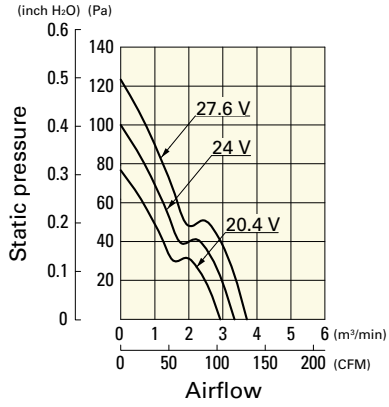
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min^{-1}]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9WF1224H101	24	20.4 to 27.6	0.32	7.68	3100	3.34	118	100	0.4	46	-20 to +70	40000/60˚C

Other sensor specifications are available as options. Refer to the index (p. 559).

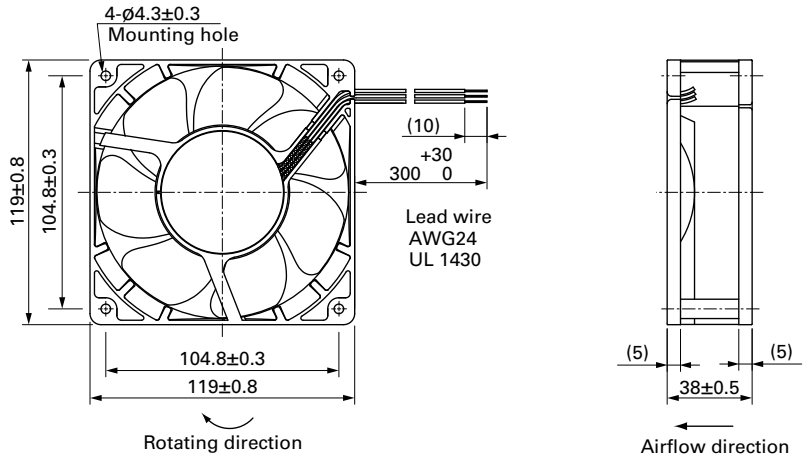
Airflow - Static Pressure Characteristics

9WF1224H101 With pulse sensor

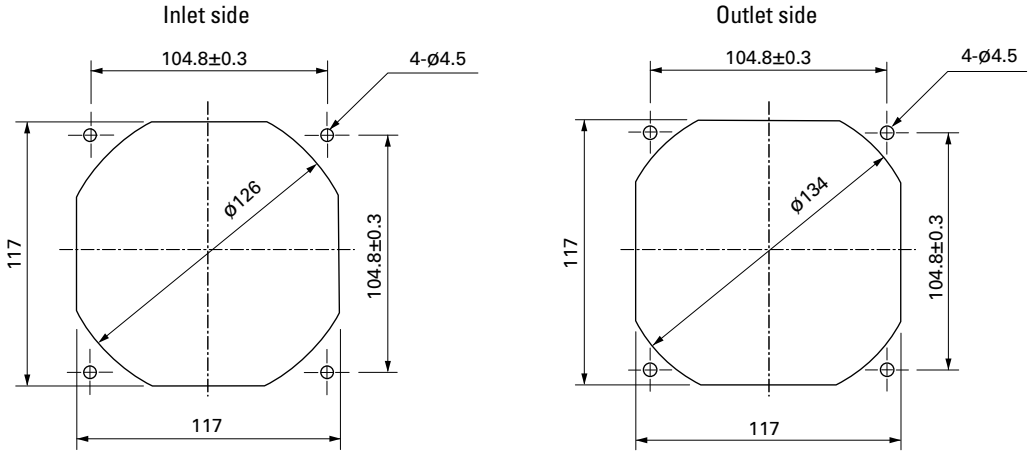
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Long Life Fan

Cooling fan with Max. 200,000 hours of expected life.
Related product: Splash Proof Fan pp. 270, 273, 279, 288

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

109L	12	12	H	1	01
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications

Fans with PWM control function

9LG	06	12	P	4	S	001
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec (2 to 3 digits)

Type name	109L	9CRL	9GL	9L	9LB	9LG		
Frame size (mm)	04	06	08	09	12	14	17	57
	40×40	60×60	80×80	92×92	120×120	140×140	ø172	ø172×150 (sidecut)
Voltage (V)	12	24	48					
	12	24	48	etc.				
Speed code	E	F	G	H	J	L	M	S etc.
Frame thickness (mm)	0	1	3	4	5	8		
	76	38	28	25	51	80		
Sensor specifications	01			02			D01	
	With a pulse sensor			Without a sensor			With a lock sensor	

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

40×40×28 mm

San Ace 40L 9L type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 55 g

Specifications

The models listed below **have pulse sensors.**

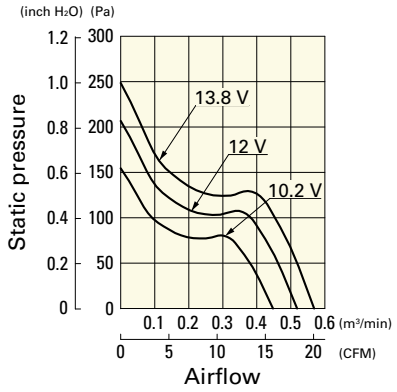
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9L0412J301	12	10.2 to 13.8	0.31	3.72	11700	0.52	18.4	206	0.827	48	-20 to +70	100000/60˚C
9L0412H301			0.15	1.8	8400	0.37	13.1	106	0.426	40		
9L0412M301			0.045	0.54	4000	0.16	5.65	24	0.096	19		

Other sensor specifications are available as options. Refer to the index (p. 556).

Airflow - Static Pressure Characteristics

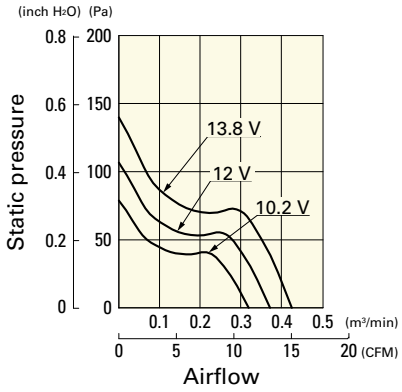
9L0412J301 With pulse sensor

Operating voltage range



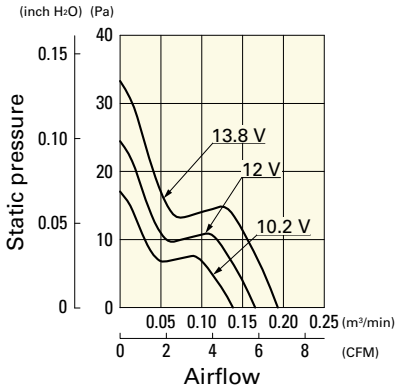
9L0412H301 With pulse sensor

Operating voltage range

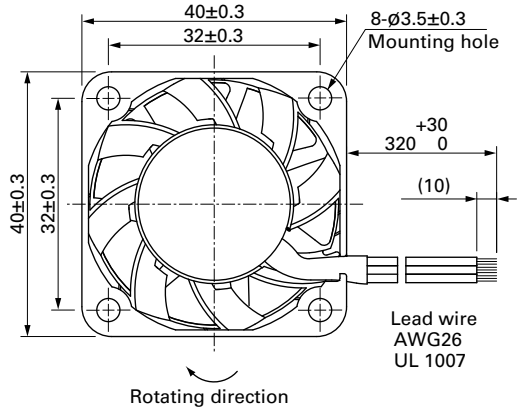


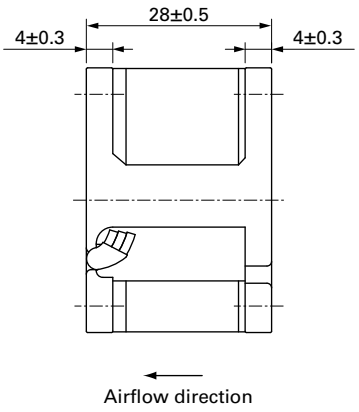
9L0412M301 With pulse sensor

Operating voltage range



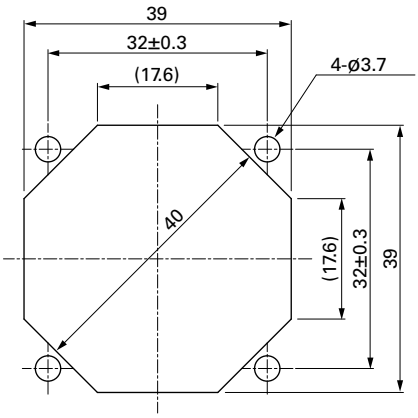
Dimensions (unit: mm)





Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

60×60×25 mm

San Ace 60L 9LG type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 100 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle*[%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG0612P4S001	12	10.8 to 13.2	100	0.67	8.04	11000	1.4	49.4	300	1.204	53	-20 to +70	180000/60˚C
			20	0.06	0.72	2900	0.36	12.7	20.8	0.083	20		
9LG0612P4J001			100	0.39	4.68	8650	1.1	38.8	182	0.73	47		
			20	0.03	0.36	1150	0.13	4.8	3.3	0.013	14		
9LG0612P4H001			100	0.17	2.04	6150	0.78	27.5	97	0.389	35		
			20	0.03	0.36	1350	0.17	6.0	4.7	0.018	14		
9LG0612P4M001			100	0.09	1.08	4200	0.53	18.7	45	0.18	24		
			20	0.03	0.36	900	0.11	3.8	2.0	0.008	14		
9LG0624P4S001	24	21.6 to 26.4	100	0.34	8.16	11000	1.4	49.4	300	1.204	53		
			20	0.03	0.72	2900	0.36	12.7	20.8	0.083	20		
9LG0624P4J001			100	0.19	4.56	8650	1.1	38.8	182	0.73	47		
			20	0.02	0.48	2200	0.28	9.8	12.0	0.048	17		
9LG0624P4H001			100	0.08	1.92	6150	0.78	27.5	97	0.389	35		
			20	0.02	0.48	1300	0.16	5.6	4.3	0.017	14		
9LG0624P4M001			100	0.04	0.96	4200	0.53	18.7	45	0.18	24		
			20	0.01	0.24	800	0.1	3.5	1.6	0.006	14		
9LG0648P4S001	48	36 to 72	100	0.18	8.64	11000	1.4	49.4	305	1.224	53		
			20	0.02	0.96	2900	0.36	12.7	20.8	0.083	20		
9LG0648P4J001			100	0.1	4.8	8650	1.1	38.8	182	0.73	47		
			20	0.02	0.96	2100	0.26	9.1	10.7	0.042	17		
9LG0648P4H001			100	0.06	2.88	6150	0.78	27.5	97	0.389	35		
			20	0.02	0.96	1000	0.12	4.2	2.5	0.01	14		
9LG0648P4M001			100	0.04	1.92	4200	0.53	18.7	45	0.18	24		
			20	0.02	0.96	650	0.08	2.8	1.0	0.004	14		

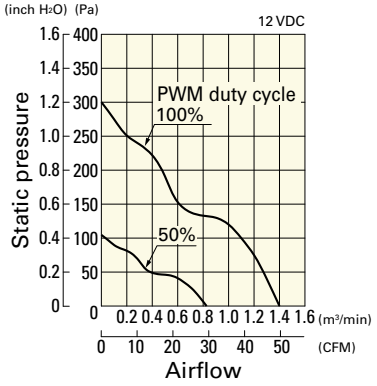
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (pp. 556 to 557).

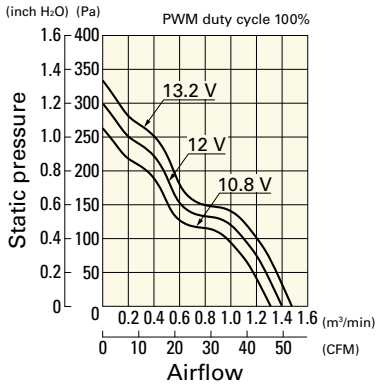
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0612P4S001 With pulse sensor with PWM control function

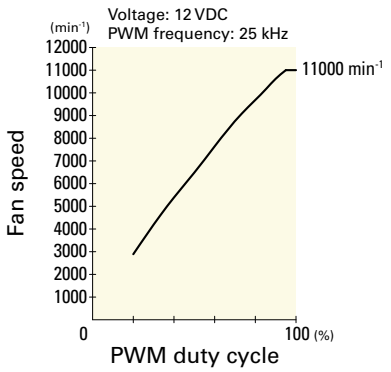
PWM duty cycle



Operating voltage range

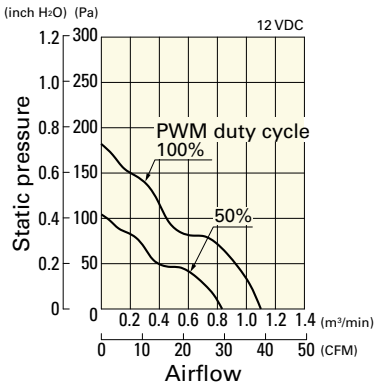


PWM duty - Speed characteristics example

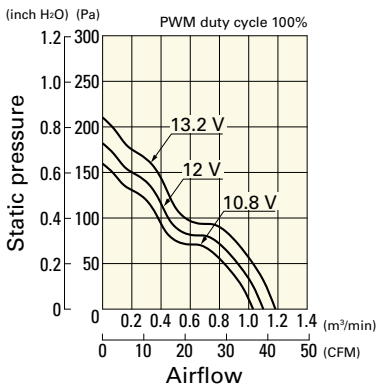


9LG0612P4J001 With pulse sensor with PWM control function

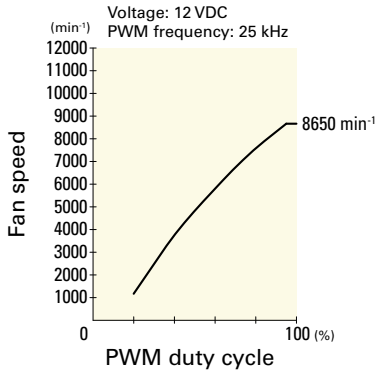
PWM duty cycle



Operating voltage range

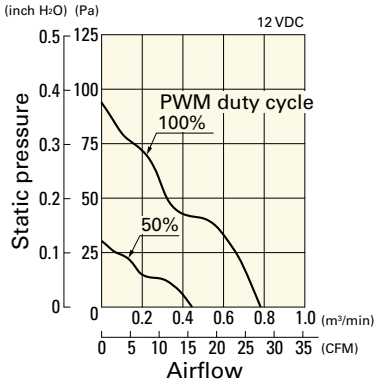


PWM duty - Speed characteristics example

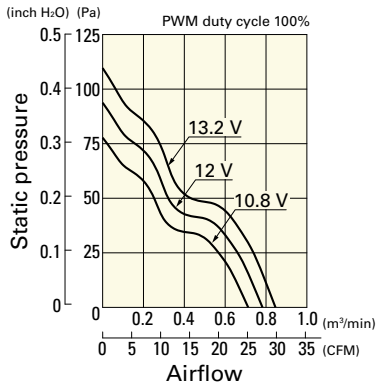


9LG0612P4H001 With pulse sensor with PWM control function

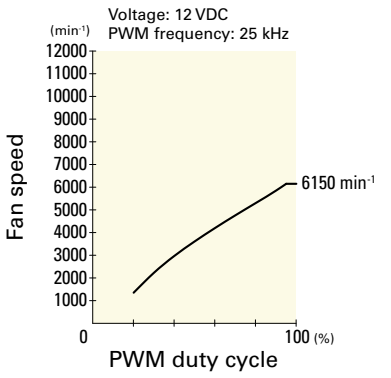
PWM duty cycle



Operating voltage range

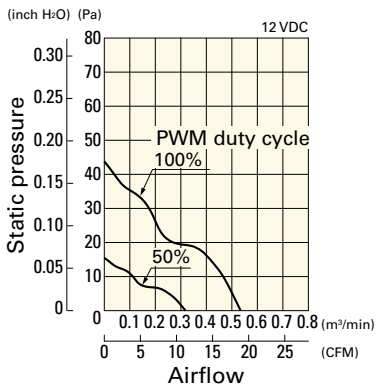


PWM duty - Speed characteristics example

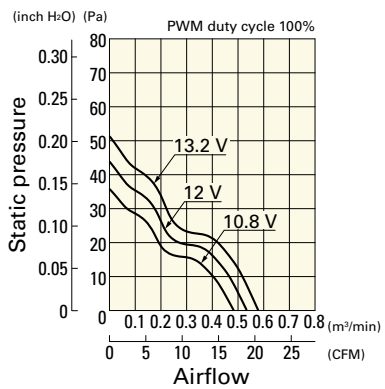


9LG0612P4M001 With pulse sensor with PWM control function

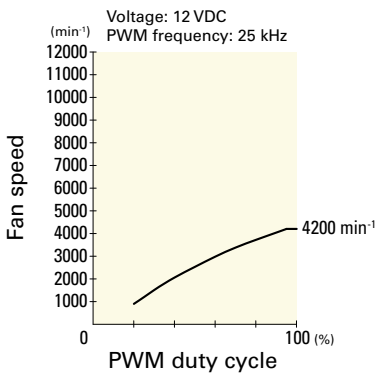
PWM duty cycle



Operating voltage range



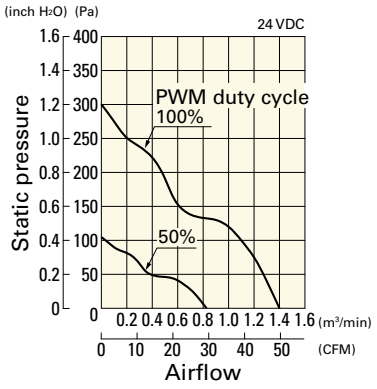
PWM duty - Speed characteristics example



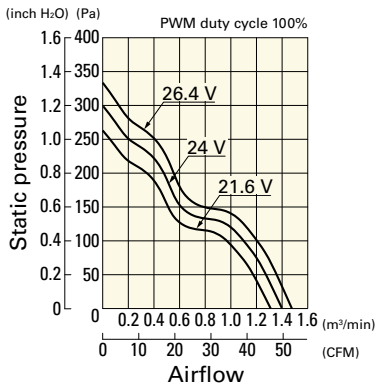
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0624P4S001 With pulse sensor with PWM control function

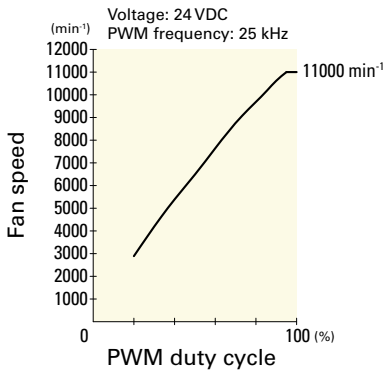
PWM duty cycle



Operating voltage range

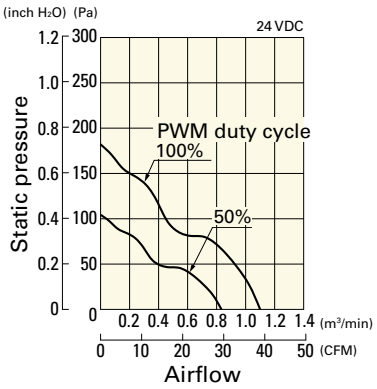


PWM duty - Speed characteristics example

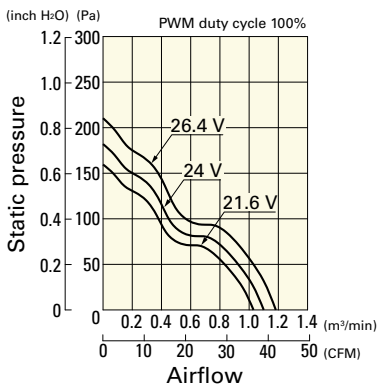


9LG0624P4J001 With pulse sensor with PWM control function

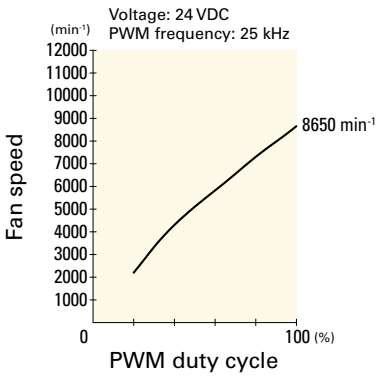
PWM duty cycle



Operating voltage range

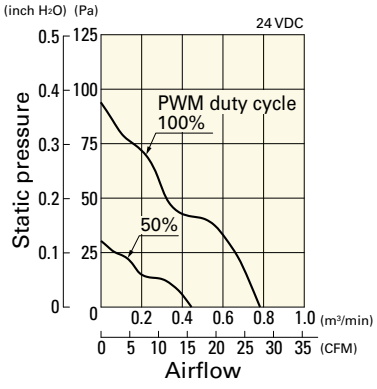


PWM duty - Speed characteristics example

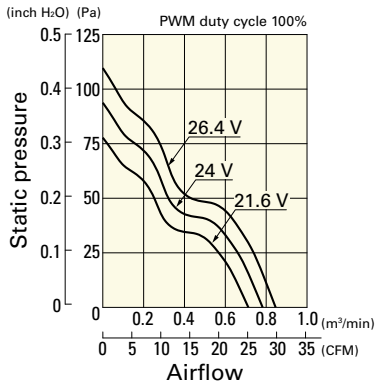


9LG0624P4H001 With pulse sensor with PWM control function

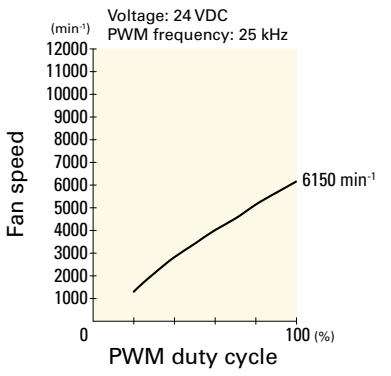
PWM duty cycle



Operating voltage range

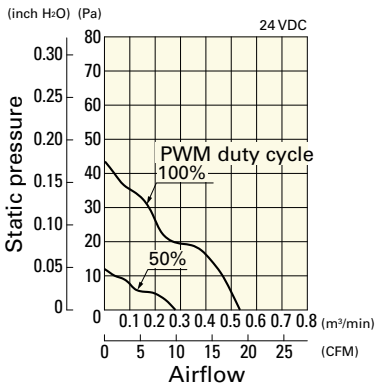


PWM duty - Speed characteristics example

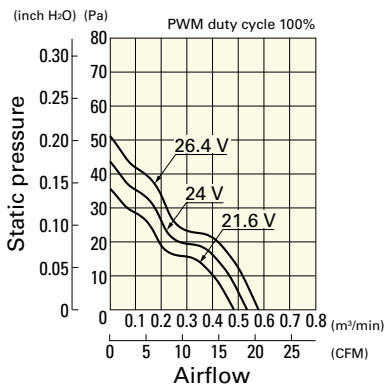


9LG0624P4M001 With pulse sensor with PWM control function

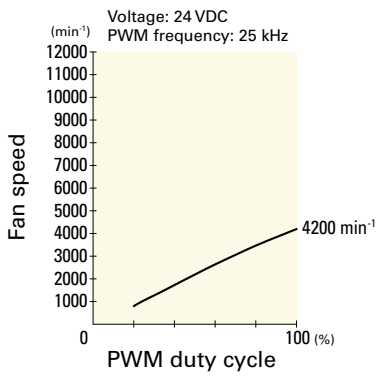
PWM duty cycle



Operating voltage range



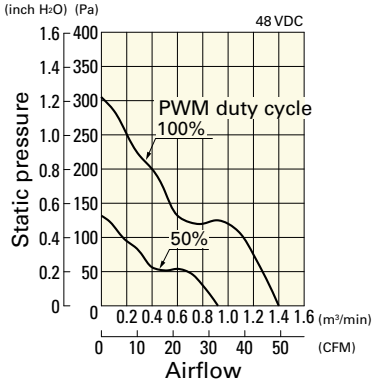
PWM duty - Speed characteristics example



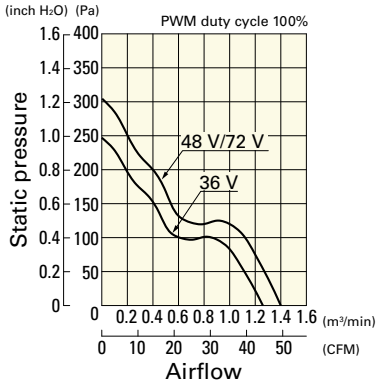
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0648P4S001 With pulse sensor with PWM control function

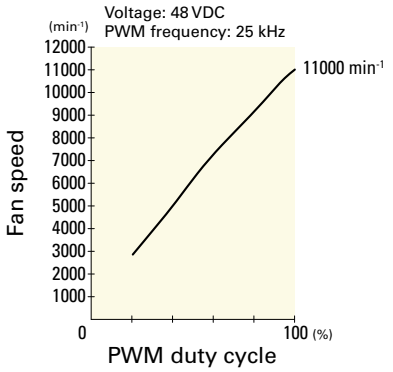
PWM duty cycle



Operating voltage range

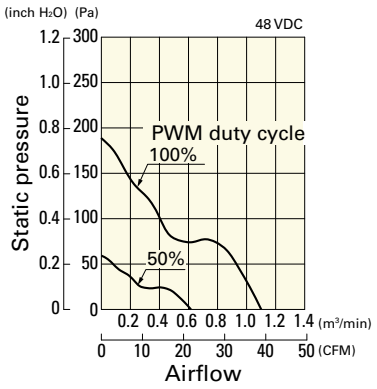


PWM duty - Speed characteristics example

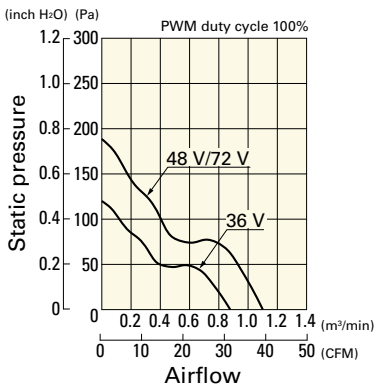


9LG0648P4J001 With pulse sensor with PWM control function

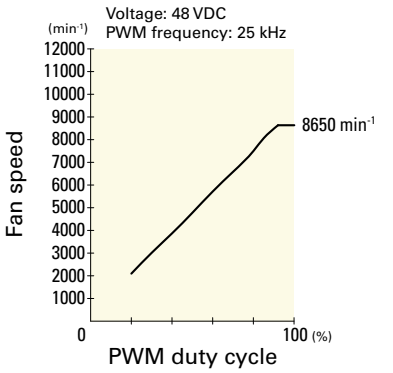
PWM duty cycle



Operating voltage range

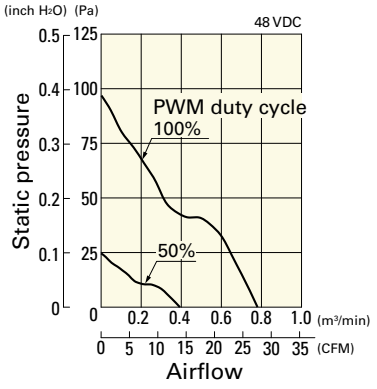


PWM duty - Speed characteristics example

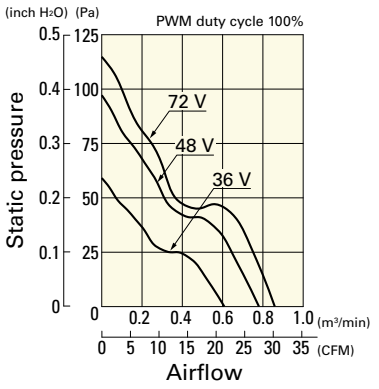


9LG0648P4H001 With pulse sensor with PWM control function

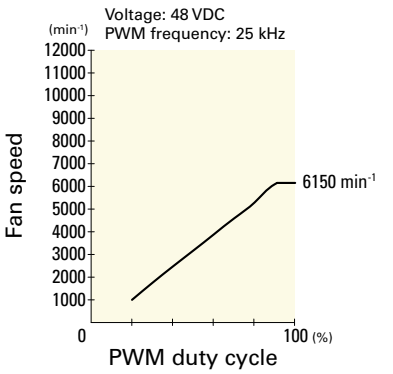
PWM duty cycle



Operating voltage range

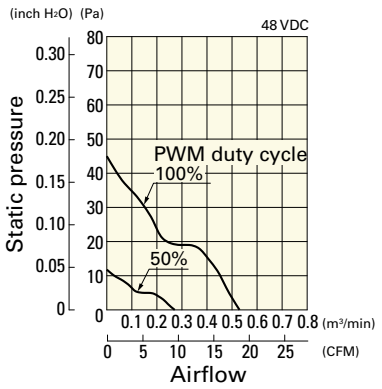


PWM duty - Speed characteristics example

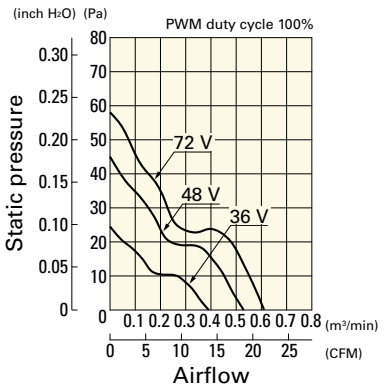


9LG0648P4M001 With pulse sensor with PWM control function

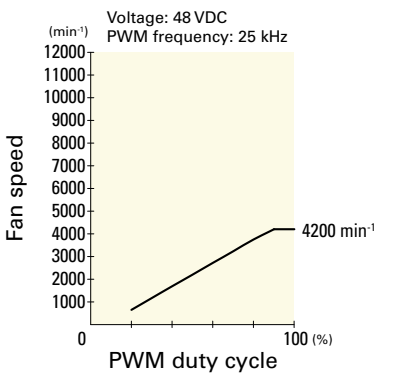
PWM duty cycle



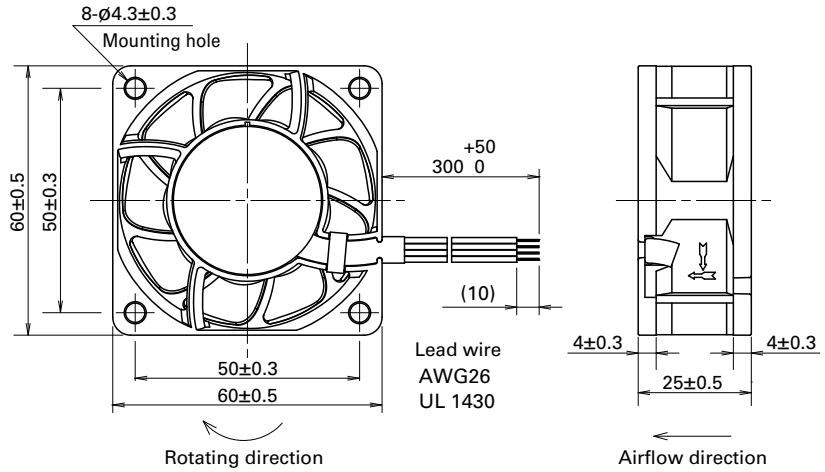
Operating voltage range



PWM duty - Speed characteristics example

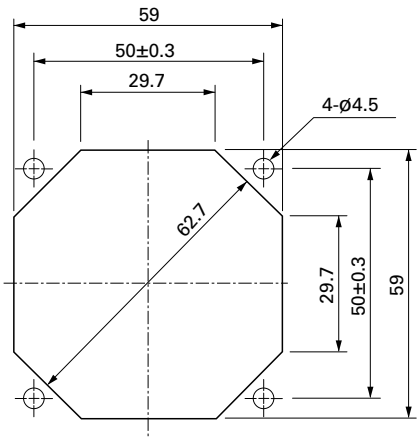


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

60×60×76 mm

San Ace 60L 9CRL type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 300 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

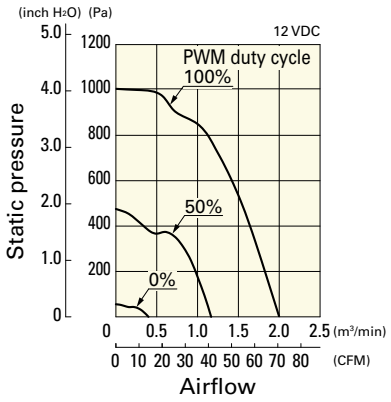
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRL0612P0G001	12	10.8 to 13.2	100	2.3	27.6	16500	13000	2.0	70.6	1000	4.0	66	-20 to +70	130000/60˚C
			0	0.22	2.7	3600	2800	0.43	15.1	47.6	0.19	32		

* PWM frequency: 25 kHz

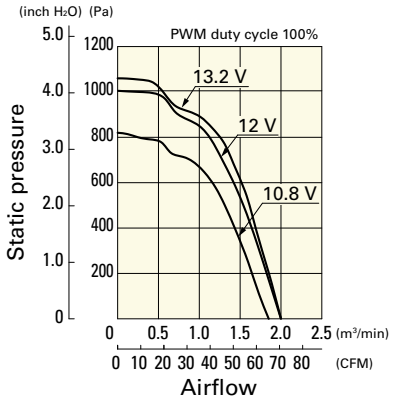
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRL0612P0G001 With pulse sensor with PWM control function

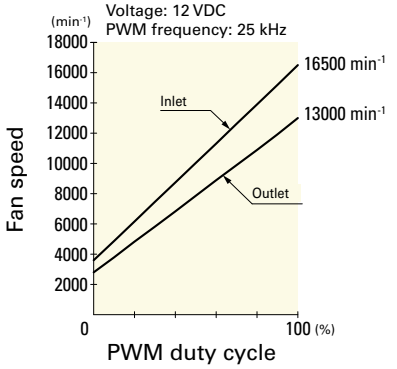
PWM duty cycle



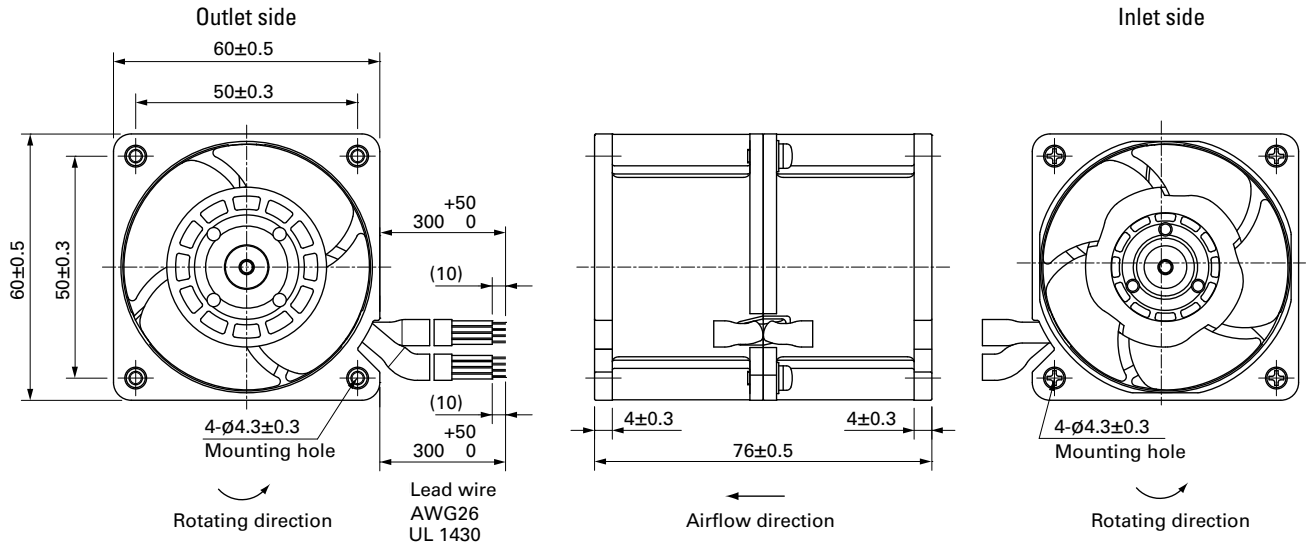
Operating voltage range



PWM duty - Speed characteristics example

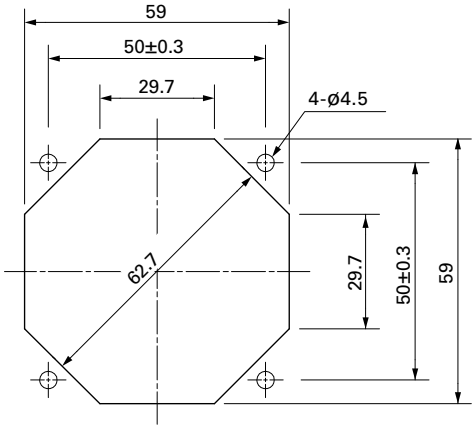


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

80×80×25 mm

San Ace 80L 9LG type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 130 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG0812P4J001	12	10.8 to 13.2	100	0.6	7.2	7400	2.07	73.0	177	0.71	49	-20 to +70	180000/60˚C
			20	0.06	0.72	1800	0.5	17.6	10.4	0.04	16		
9LG0812P4G001			100	0.3	3.6	5500	1.54	54.3	98	0.39	43		
			25	0.05	0.6	1400	0.39	13.7	6.3	0.02	14		
9LG0812P4H001			100	0.12	1.44	3700	1.03	36.3	44	0.17	31		
			25	0.04	0.48	1100	0.3	10.5	3.9	0.01	13		
9LG0824P4J001	24	21.6 to 26.4	100	0.28	6.72	7400	2.07	73.0	177	0.71	49		
			20	0.05	1.2	2400	0.67	23.6	18.6	0.07	22		
9LG0824P4G001			100	0.14	3.36	5500	1.54	54.3	98	0.39	43		
			20	0.02	0.48	1200	0.33	11.6	4.6	0.01	13		
9LG0824P4H001			100	0.05	1.2	3700	1.03	36.3	44	0.17	31		
			30	0.02	0.48	1100	0.3	10.5	3.9	0.01	13		

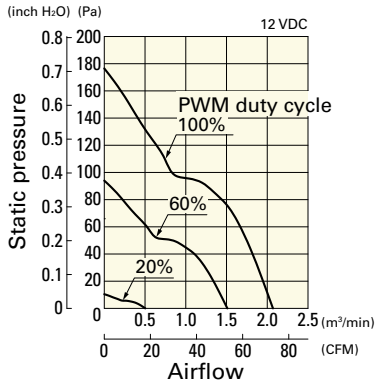
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 557).

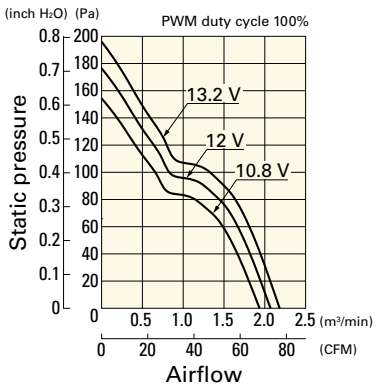
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0812P4J001 With pulse sensor with PWM control function

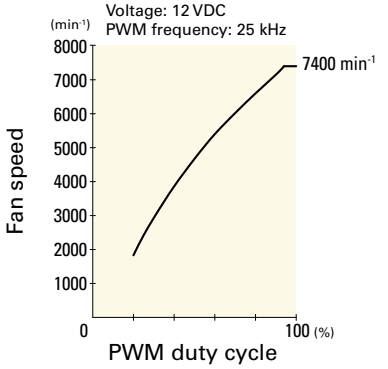
PWM duty cycle



Operating voltage range



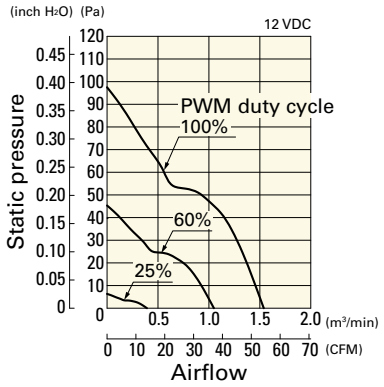
PWM duty - Speed characteristics example



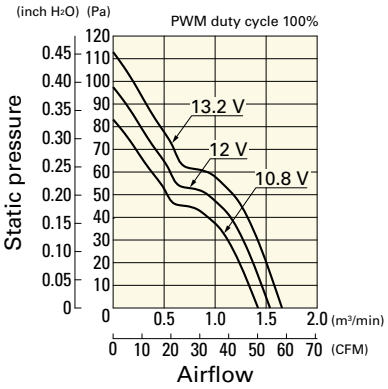
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0812P4G001 With pulse sensor with PWM control function

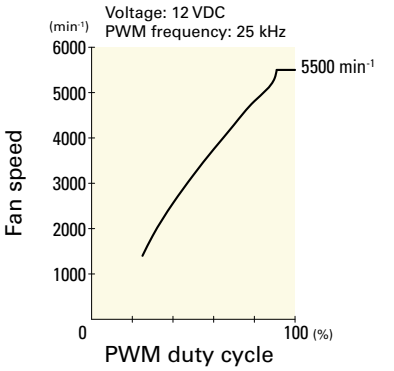
PWM duty cycle



Operating voltage range

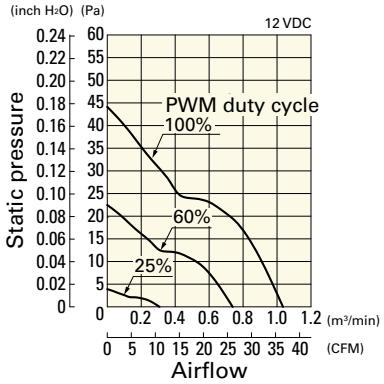


PWM duty - Speed characteristics example

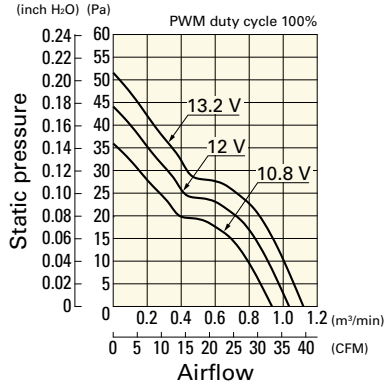


9LG0812P4H001 With pulse sensor with PWM control function

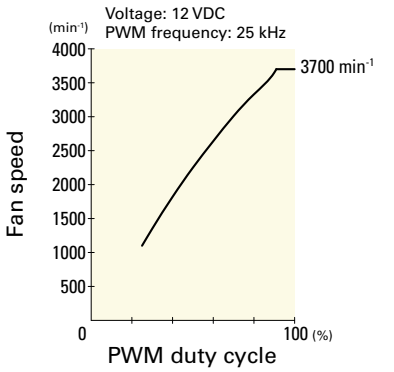
PWM duty cycle



Operating voltage range

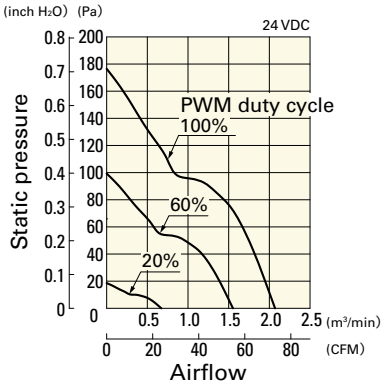


PWM duty - Speed characteristics example

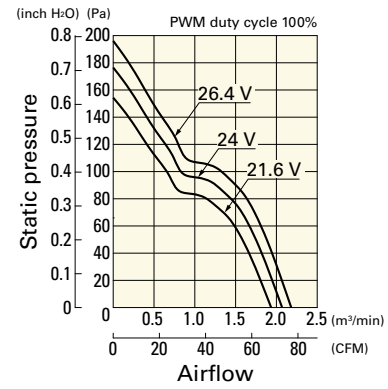


9LG0824P4J001 With pulse sensor with PWM control function

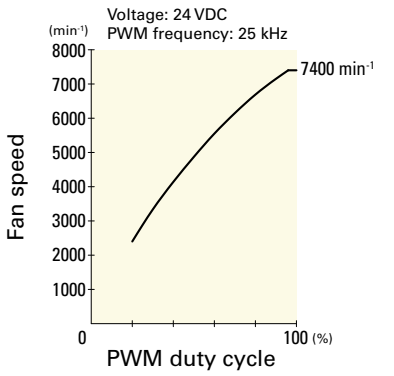
PWM duty cycle



Operating voltage range

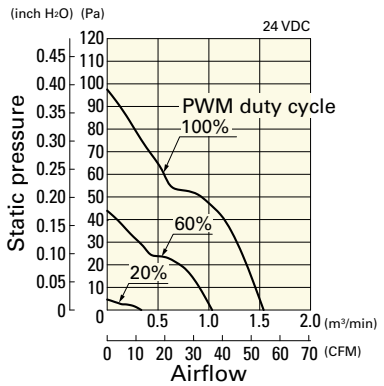


PWM duty - Speed characteristics example

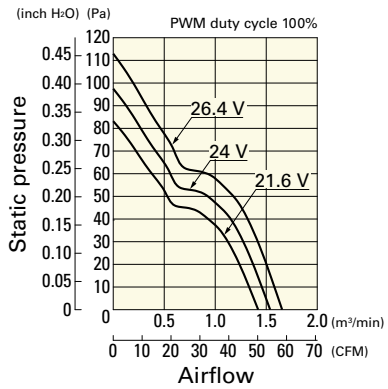


9LG0824P4G001 With pulse sensor with PWM control function

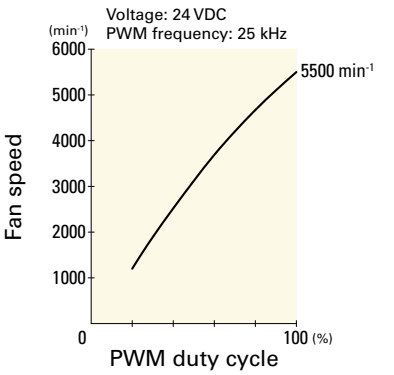
PWM duty cycle



Operating voltage range



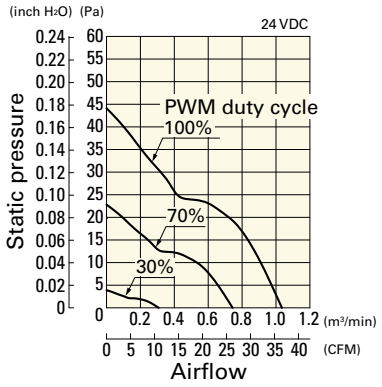
PWM duty - Speed characteristics example



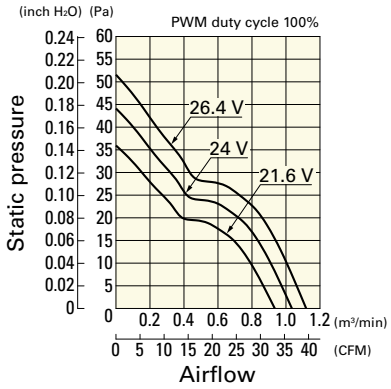
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0824P4H001 With pulse sensor with PWM control function

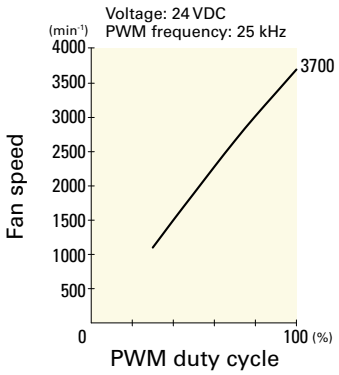
PWM duty cycle



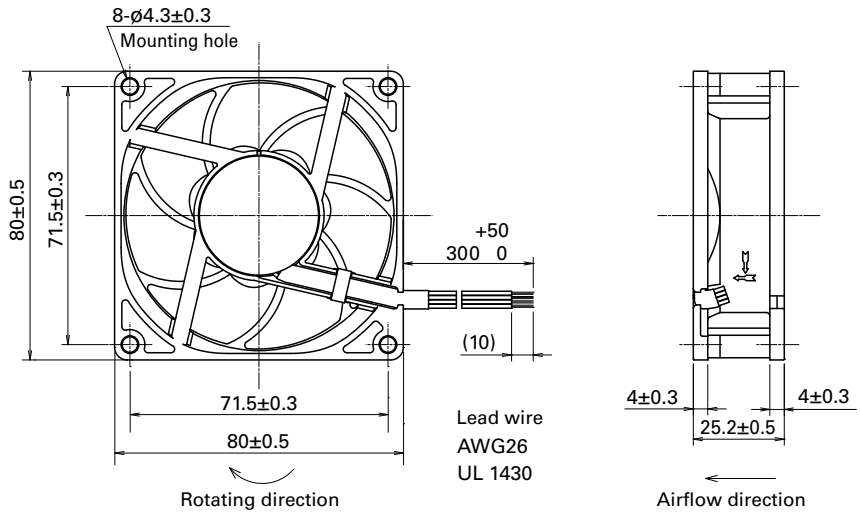
Operating voltage range



PWM duty - Speed characteristics example

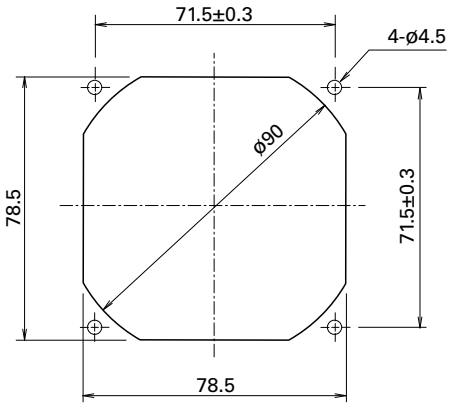


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

80×80×80 mm

San Ace 80L 9CRL type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Inlet ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  Outlet ⊕Orange ⊖Gray (Sensor) Purple (Control) White
- Mass ····· 490 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

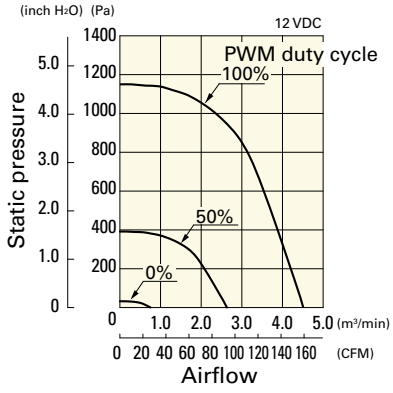
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRL0812P8G001	12	10.8 to 13.2	100	5.3	63.6	12000	11300	4.5	158.9	1150	4.62	76	-20 to +70	130000/60˚C
			0	0.2	2.4	2000	1900	0.74	26.1	31.9	0.13	30		

* PWM frequency: 25 kHz

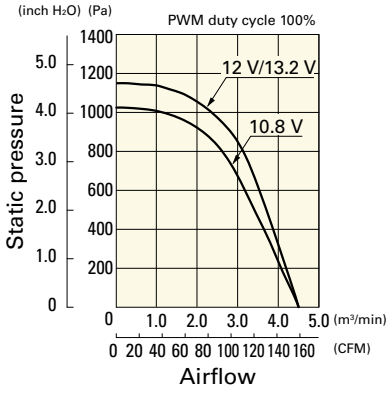
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRL0812P8G001 With pulse sensor with PWM control function

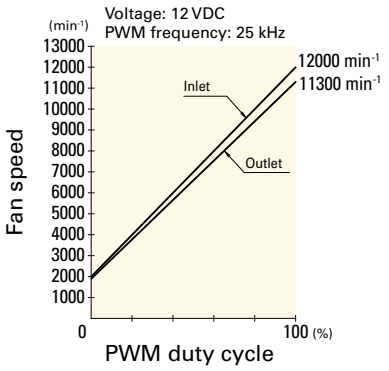
PWM duty cycle



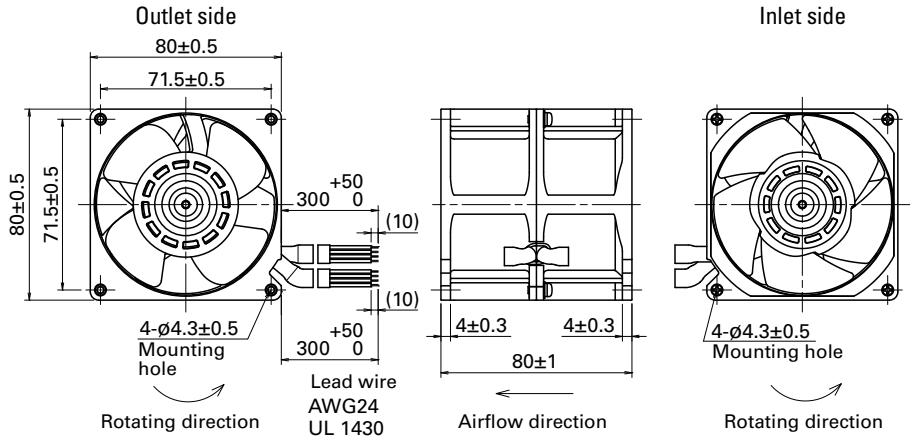
Operating voltage range



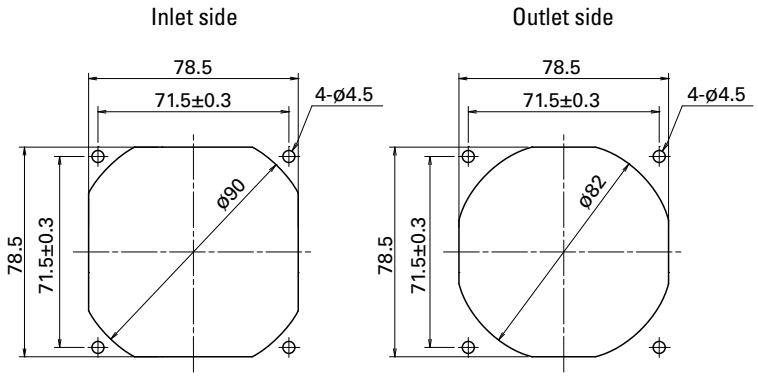
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

92×92×25 mm

San Ace 92L 9LG type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 150 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG0912P4J001	12	10.8 to 13.2	100	0.42	5.04	5000	2.2	77.7	105	0.42	44	-20 to +70	180000/60˚C
9LG0912P4G001			100	0.3	3.6	4400	1.93	68.2	81	0.33	40		
9LG0912P4S001			100	0.22	2.64	3850	1.69	59.7	62.1	0.25	37		
9LG0912P4H001			100	0.15	1.8	3150	1.38	48.7	41.6	0.17	32		
9LG0924P4J001	24	21.6 to 26.4	100	0.21	5.04	5000	2.2	77.7	105	0.42	44		
9LG0924P4G001			100	0.15	3.6	4400	1.93	68.2	81	0.33	40		
9LG0924P4S001			100	0.11	2.64	3850	1.69	59.7	62.1	0.25	37		
9LG0924P4H001			100	0.07	1.68	3150	1.38	48.7	41.6	0.17	32		

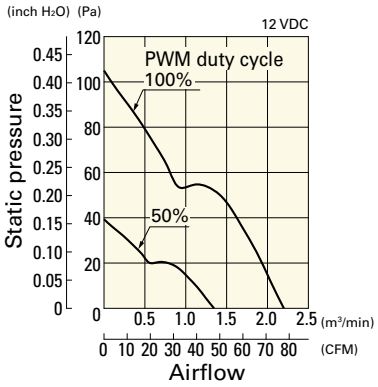
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 557).

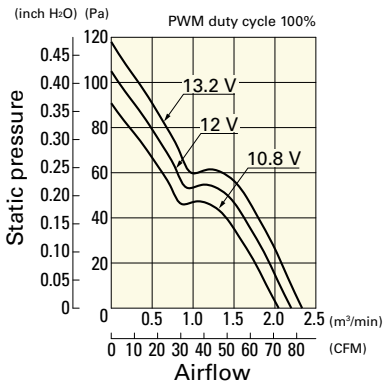
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0912P4J001 With pulse sensor with PWM control function

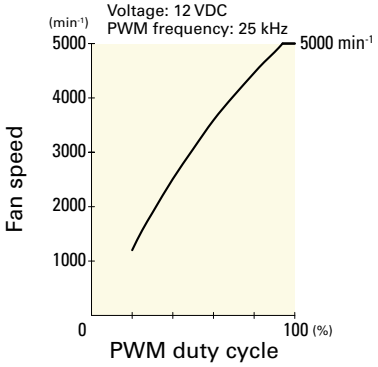
PWM duty cycle



Operating voltage range



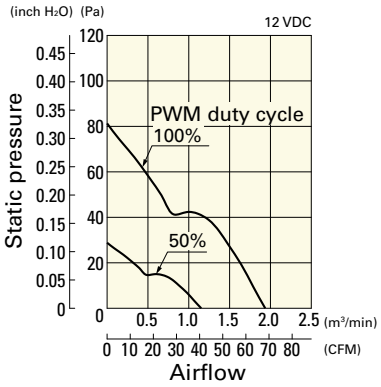
PWM duty - Speed characteristics example



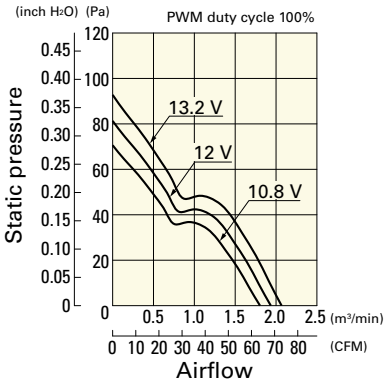
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0912P4G001 With pulse sensor with PWM control function

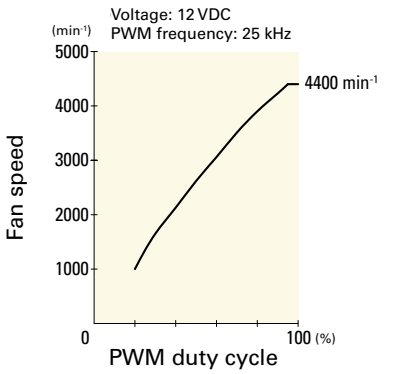
PWM duty cycle



Operating voltage range

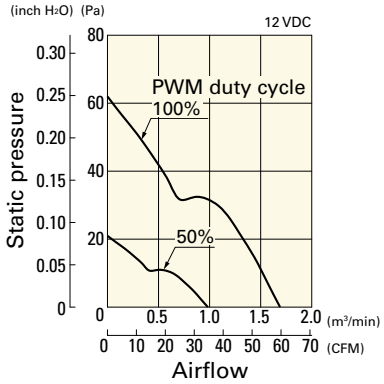


PWM duty - Speed characteristics example

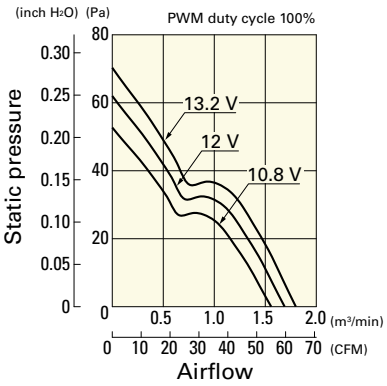


9LG0912P4S001 With pulse sensor with PWM control function

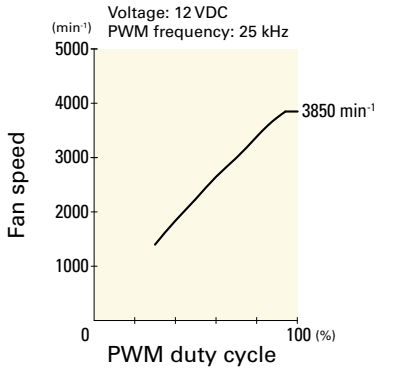
PWM duty cycle



Operating voltage range

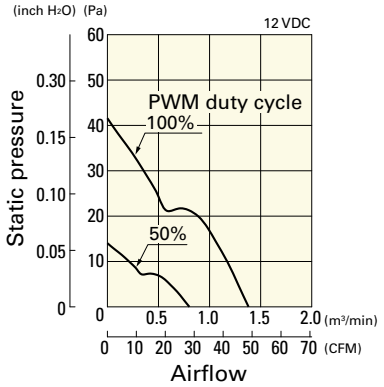


PWM duty - Speed characteristics example

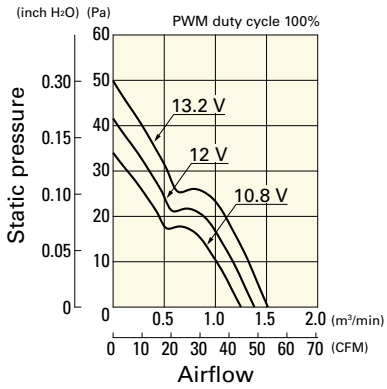


9LG0912P4H001 With pulse sensor with PWM control function

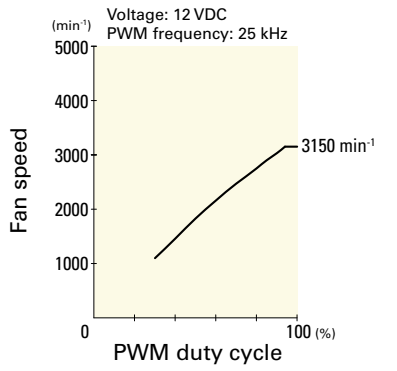
PWM duty cycle



Operating voltage range

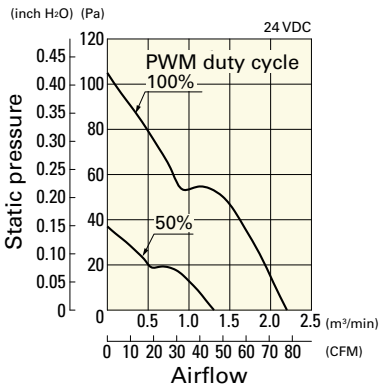


PWM duty - Speed characteristics example

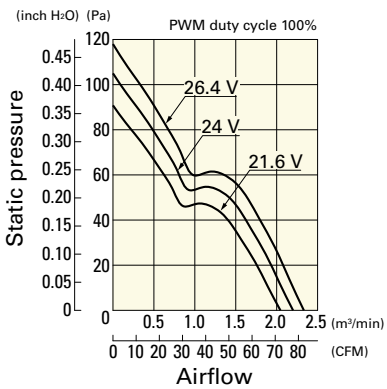


9LG0924P4J001 With pulse sensor with PWM control function

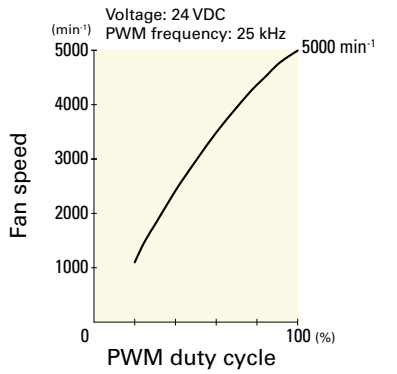
PWM duty cycle



Operating voltage range



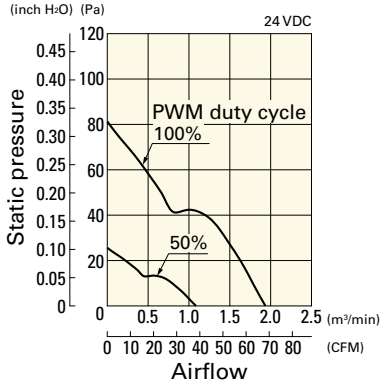
PWM duty - Speed characteristics example



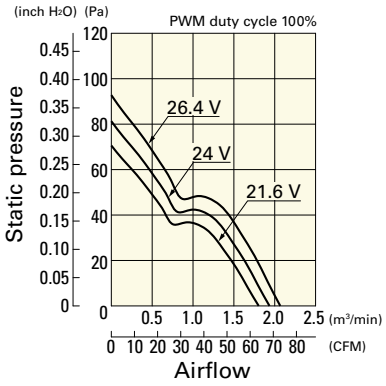
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0924P4G001 With pulse sensor with PWM control function

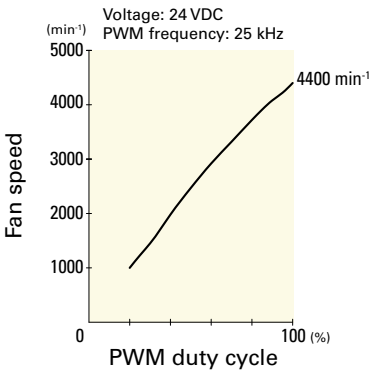
PWM duty cycle



Operating voltage range

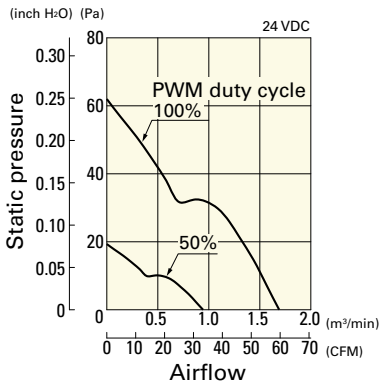


PWM duty - Speed characteristics example

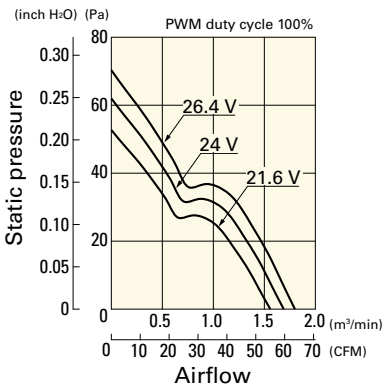


9LG0924P4S001 With pulse sensor with PWM control function

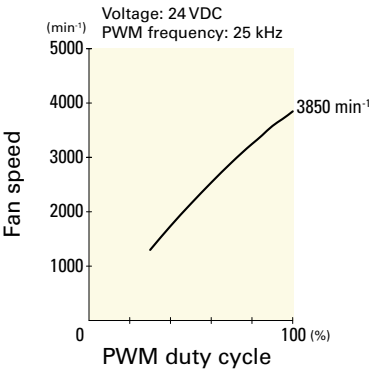
PWM duty cycle



Operating voltage range

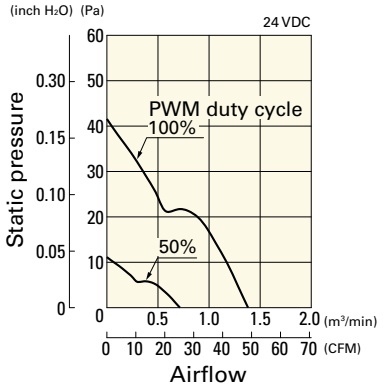


PWM duty - Speed characteristics example

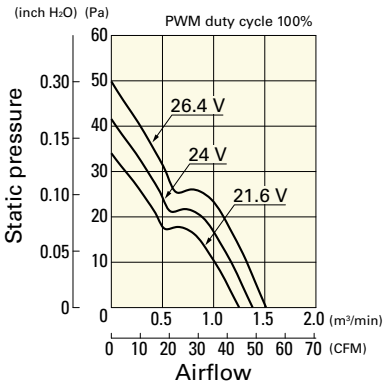


9LG0924P4H001 With pulse sensor with PWM control function

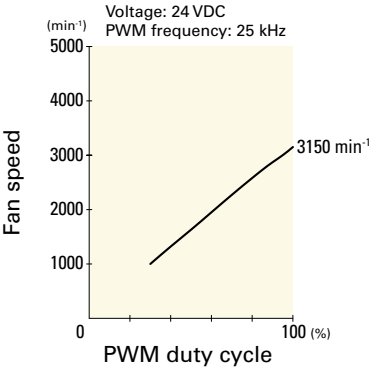
PWM duty cycle



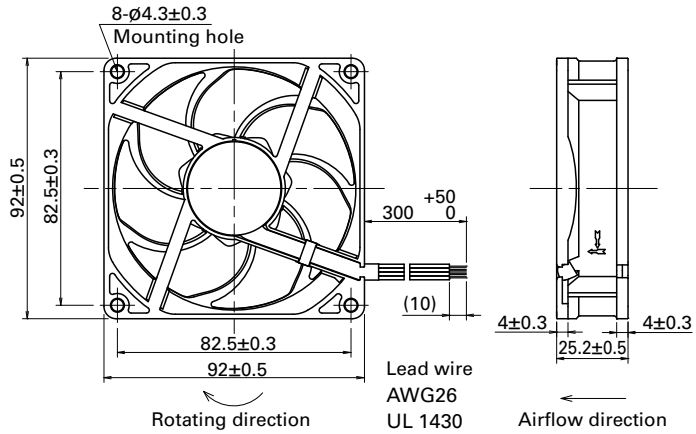
Operating voltage range



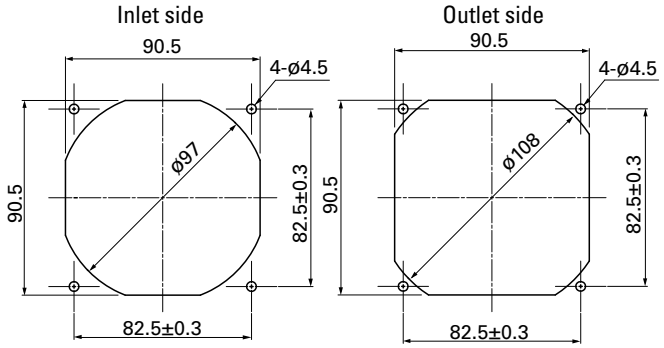
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1001G

92×92×38 mm

San Ace 92L 9LG type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 270 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

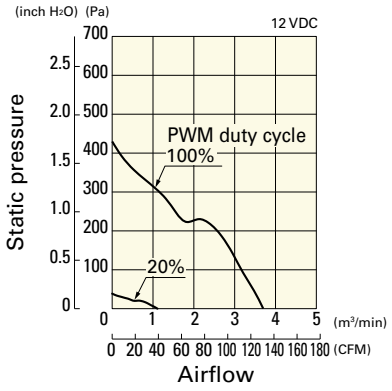
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG0912P1H001	12	10.2 to 13.8	100	2.0	24.0	9000	3.7	130.6	430	1.72	61	-20 to +70	180000/60˚C
			20	0.18	2.16	2700	1.11	39.1	38.7	0.15	30		
9LG0912P1F001			100	1.0	12.0	7000	2.9	102.4	263	1.05	55		
			20	0.11	1.32	2000	0.83	29.3	21.5	0.08	22		
9LG0924P1H001	24	20.4 to 27.6	100	0.9	21.6	9000	3.7	130.6	430	1.72	61		
			20	0.08	1.92	2700	1.11	39.1	38.7	0.15	30		
9LG0924P1F001			100	0.5	12.0	7000	2.9	102.4	263	1.05	55		
			20	0.06	1.44	2000	0.83	29.3	21.5	0.08	22		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

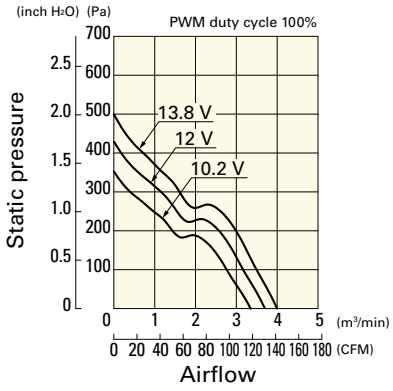
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0912P1H001 With pulse sensor with PWM control function

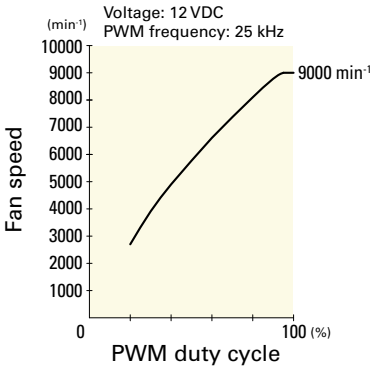
PWM duty cycle



Operating voltage range



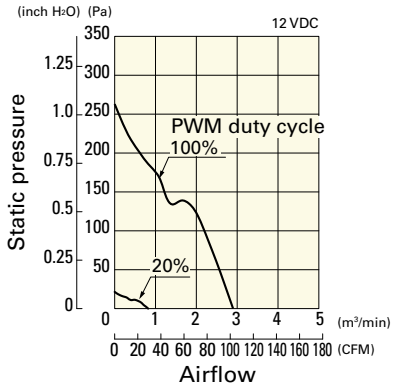
PWM duty - Speed characteristics example



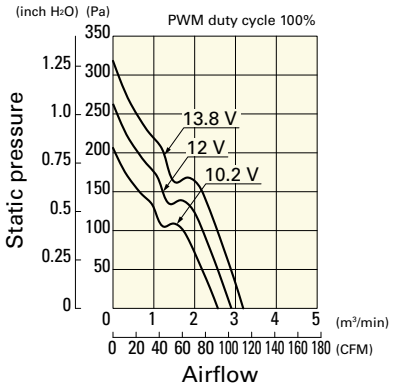
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0912P1F001 With pulse sensor with PWM control function

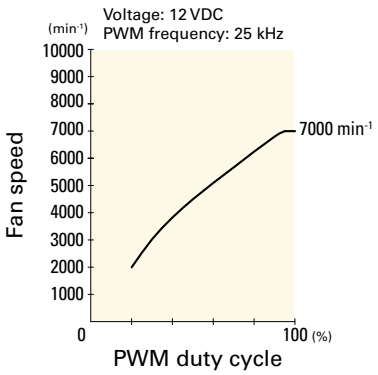
PWM duty cycle



Operating voltage range

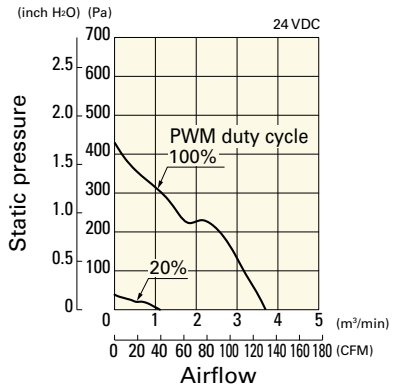


PWM duty - Speed characteristics example

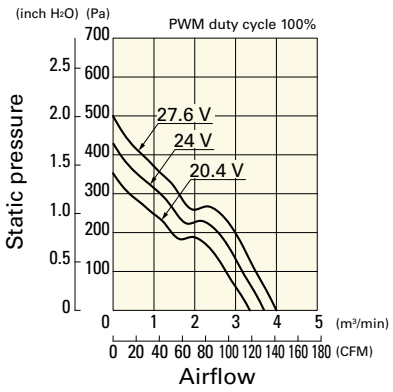


9LG0924P1H001 With pulse sensor with PWM control function

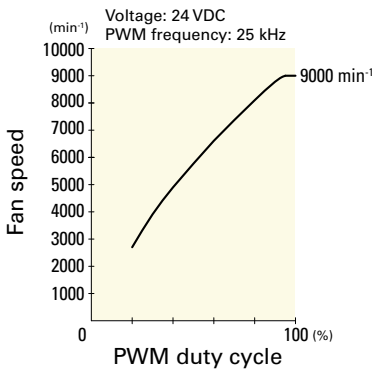
PWM duty cycle



Operating voltage range

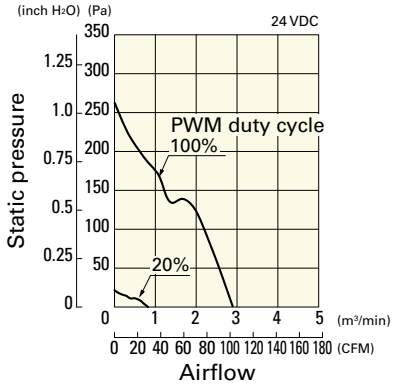


PWM duty - Speed characteristics example

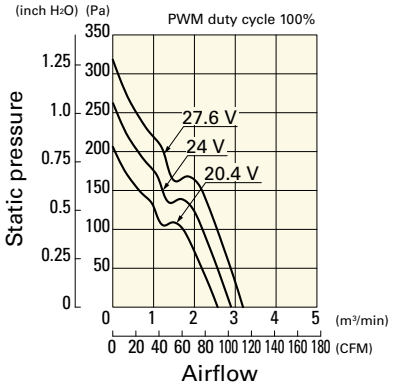


9LG0924P1F001 With pulse sensor with PWM control function

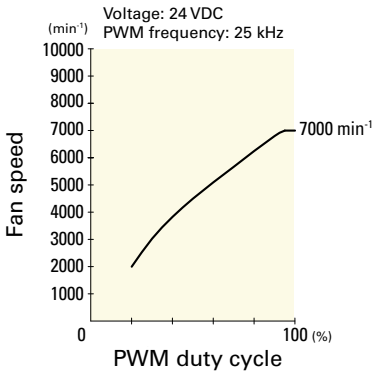
PWM duty cycle



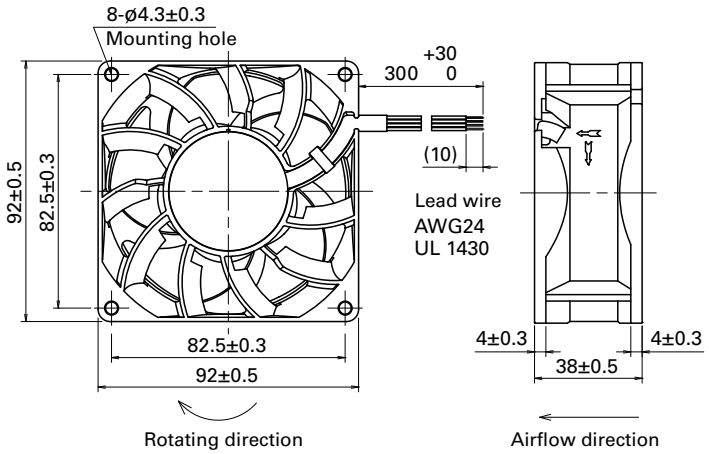
Operating voltage range



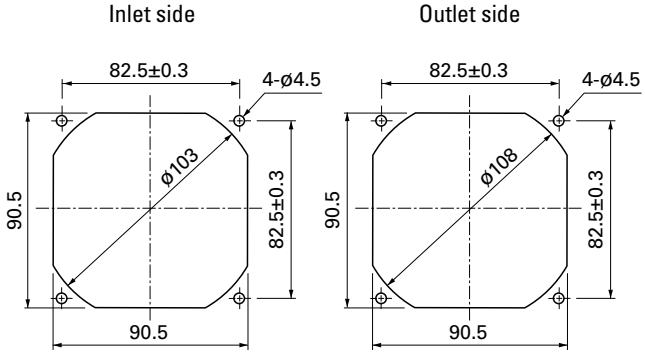
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin finger guards page: p. 520

Model no.: 109-1001G

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

120×120×38 mm

San Ace 120L 9LG type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 420 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG1212P1G001	12	8.0 to 13.8	100	3.2	38.4	6550	7.0	247.1	370	1.48	62	-20 to +70	180000/60˚C
			20	0.24	2.88	2000	2.13	75.2	34.4	0.13	36		
9LG1212P1S001			100	2.2	26.4	5600	6.0	211.8	270	1.08	58		
			20	0.24	2.88	2000	2.13	75.2	34.4	0.13	36		
9LG1212P1H001			100	1.4	16.8	4700	5.0	176.5	190	0.76	54		
			20	0.24	2.88	2000	2.13	75.2	34.4	0.13	36		
9LG1224P1G001	24	15 to 30	100	1.6	38.4	6550	7.0	247.1	370	1.48	62		
			20	0.12	2.88	2000	2.13	75.2	34.4	0.13	36		
9LG1224P1S001			100	1.1	26.4	5600	6.0	211.8	270	1.08	58		
			20	0.12	2.88	2000	2.13	75.2	34.4	0.13	36		
9LG1224P1H001			100	0.7	16.8	4700	5.0	176.5	190	0.76	54		
			20	0.12	2.88	2000	2.13	75.2	34.4	0.13	36		
9LG1248P1G001	48	36 to 60	100	0.8	38.4	6550	7.0	247.1	370	1.48	62		
			20	0.08	3.84	2000	2.13	75.2	34.4	0.13	36		
9LG1248P1S001			100	0.55	26.4	5600	6.0	211.8	270	1.08	58		
			20	0.08	3.84	2000	2.13	75.2	34.4	0.13	36		
9LG1248P1H001			100	0.35	16.8	4700	5.0	176.5	190	0.76	54		
			20	0.08	3.84	2000	2.13	75.2	34.4	0.13	36		

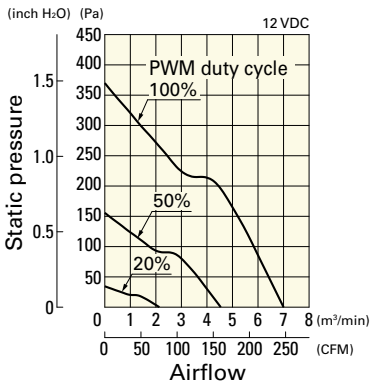
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 557).

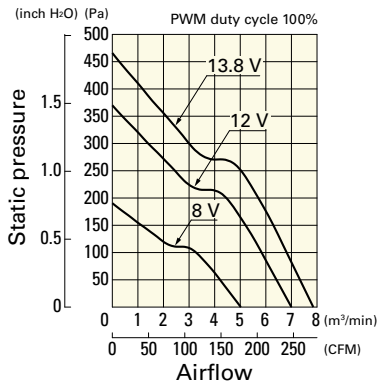
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1212P1G001 With pulse sensor with PWM control function

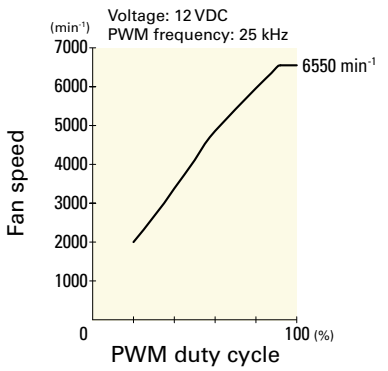
PWM duty cycle



Operating voltage range



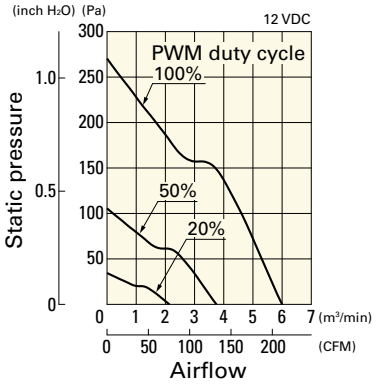
PWM duty - Speed characteristics example



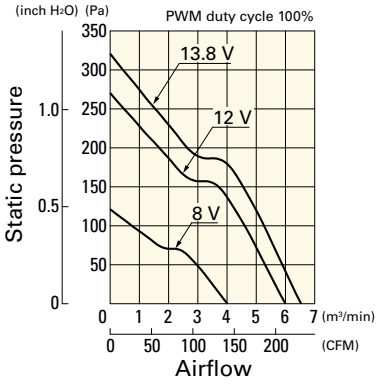
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1212P1S001 With pulse sensor with PWM control function

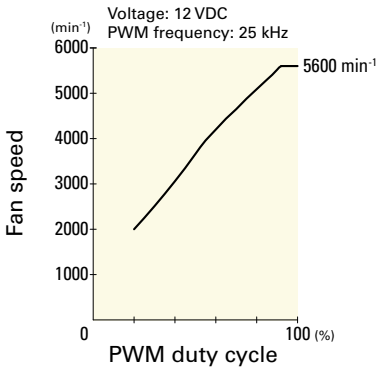
PWM duty cycle



Operating voltage range

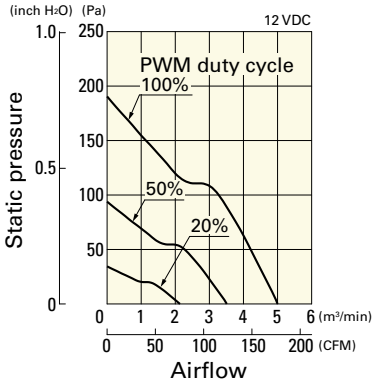


PWM duty - Speed characteristics example

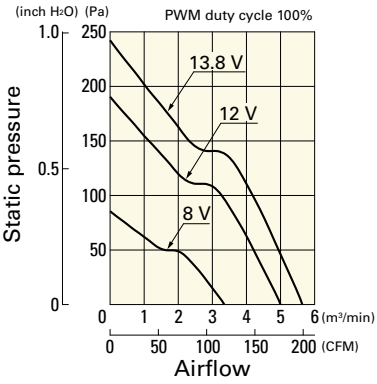


9LG1212P1H001 With pulse sensor with PWM control function

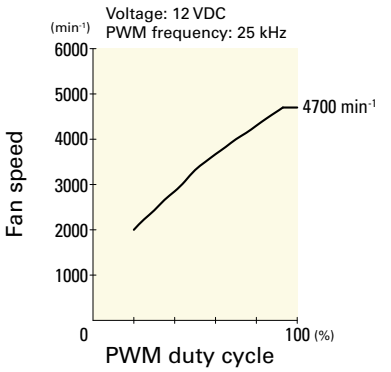
PWM duty cycle



Operating voltage range

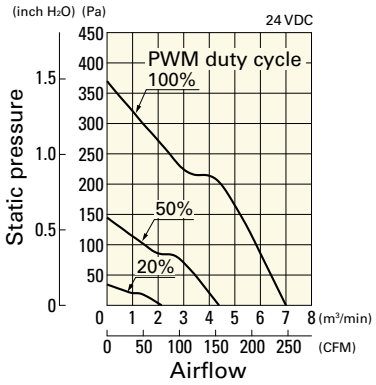


PWM duty - Speed characteristics example

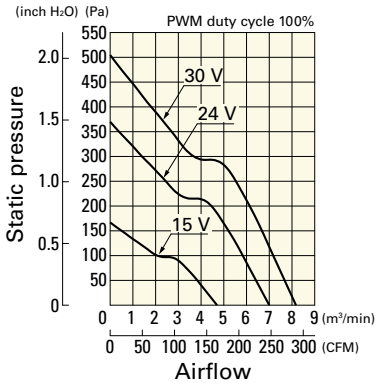


9LG1224P1G001 With pulse sensor with PWM control function

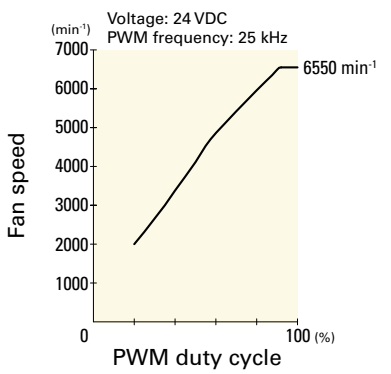
PWM duty cycle



Operating voltage range

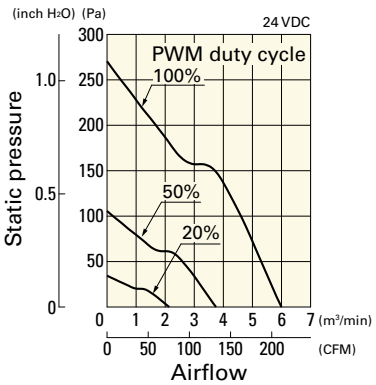


PWM duty - Speed characteristics example

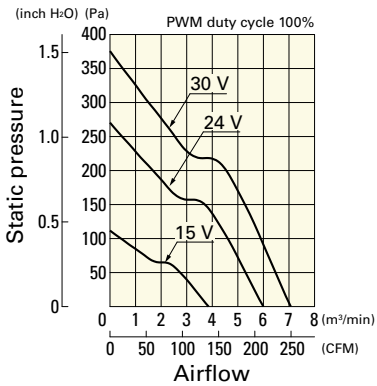


9LG1224P1S001 With pulse sensor with PWM control function

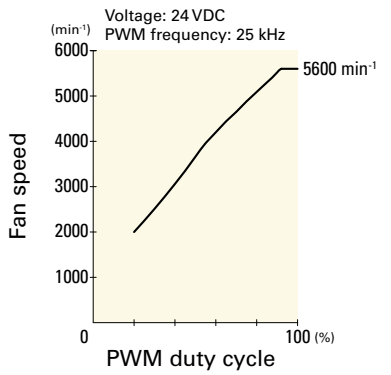
PWM duty cycle



Operating voltage range



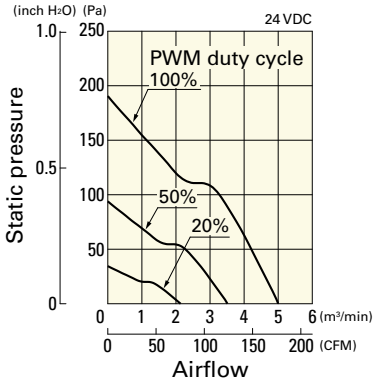
PWM duty - Speed characteristics example



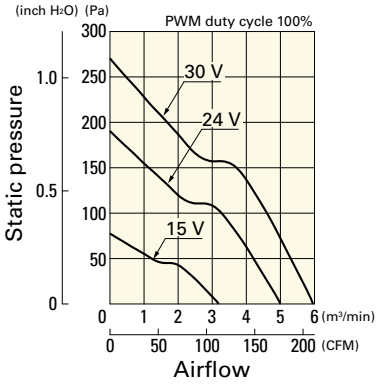
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1224P1H001 With pulse sensor with PWM control function

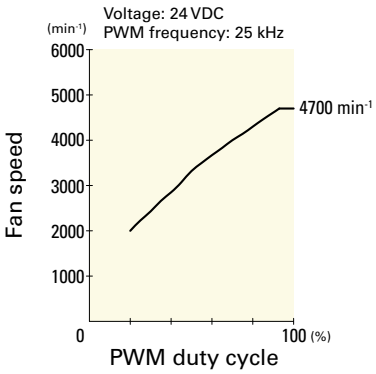
PWM duty cycle



Operating voltage range

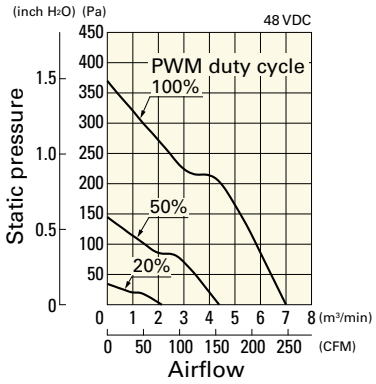


PWM duty - Speed characteristics example

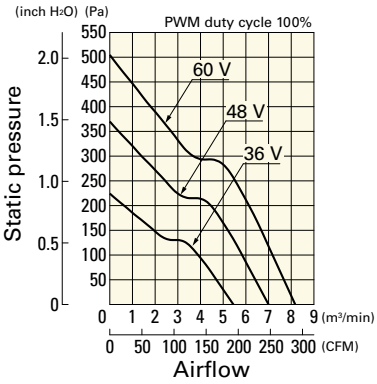


9LG1248P1G001 With pulse sensor with PWM control function

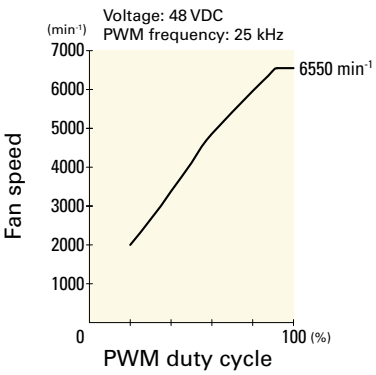
PWM duty cycle



Operating voltage range

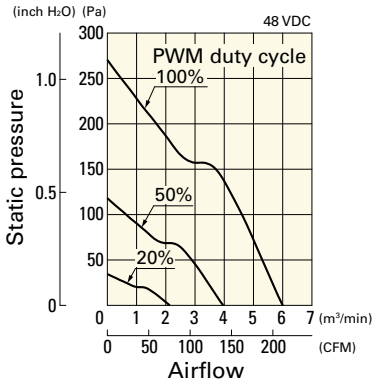


PWM duty - Speed characteristics example

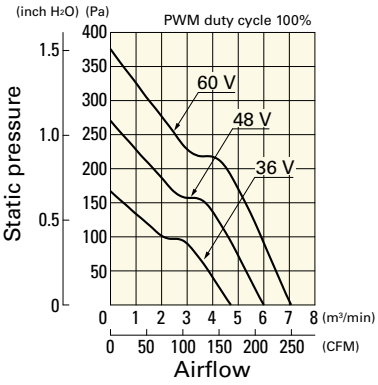


9LG1248P1S001 With pulse sensor with PWM control function

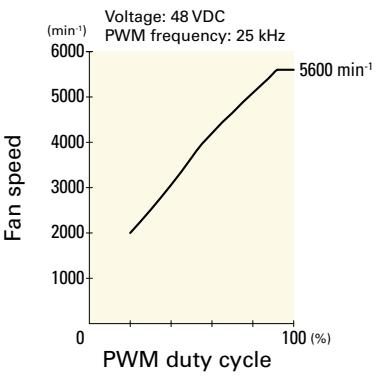
PWM duty cycle



Operating voltage range

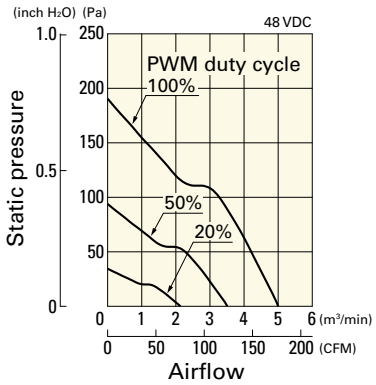


PWM duty - Speed characteristics example

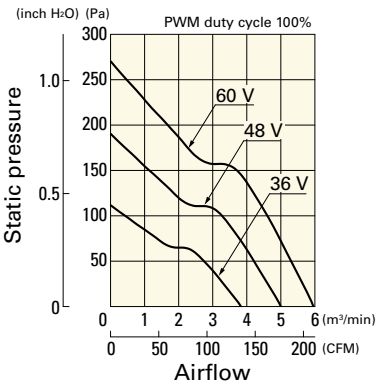


9LG1248P1H001 With pulse sensor with PWM control function

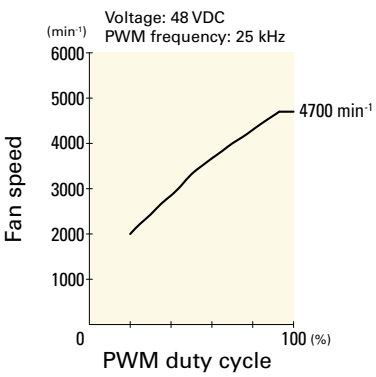
PWM duty cycle



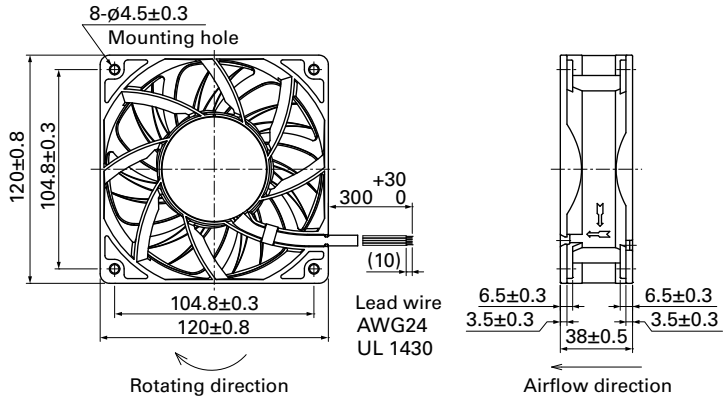
Operating voltage range



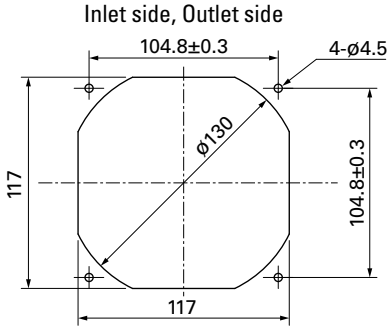
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

120×120×38 mm

San Ace 120L 9GL type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 370 g

Specifications

The models listed below **have pulse sensors.**

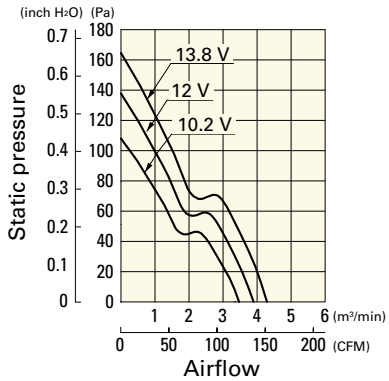
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GL1212G101	12	10.2 to 13.8	0.98	11.8	3600	3.88	137	135	0.542	49	-20 to +70	80000/60˚C
9GL1212E101			0.61	7.32	3100	3.34	118	100	0.402	46		
9GL1212H101		7 to 13.8	0.38	4.56	2600	2.8	99	70.4	0.283	39		100000/60˚C
9GL1212F101			0.28	3.36	2280	2.45	87	54.2	0.218	36		
9GL1212M101			0.21	2.52	1950	2.1	74	39.6	0.159	32		
9GL1224G101	24	20.4 to 27.6	0.5	12.0	3600	3.88	137	135	0.542	49		80000/60˚C
9GL1224E101			0.34	8.16	3100	3.34	118	100	0.402	46		
9GL1224H101		14 to 27.6	0.22	5.28	2600	2.8	99	70.4	0.283	39		100000/60˚C
9GL1224F101			0.16	3.84	2280	2.45	87	54.2	0.218	36		
9GL1224M101			0.11	2.64	1950	2.1	74	39.6	0.159	32		
9GL1248G101	48	40.8 to 55.2	0.25	12.0	3600	3.88	137	135	0.542	49		80000/60˚C
9GL1248E101			0.17	8.16	3100	3.34	118	100	0.402	46		
9GL1248H101			0.11	5.28	2600	2.8	99	70.4	0.283	39		100000/60˚C
9GL1248F101			0.09	4.32	2280	2.45	87	54.2	0.218	36		
9GL1248M101			0.07	3.36	1950	2.1	74	39.6	0.159	32		

Other sensor specifications are available as options. Refer to the index (p. 554).

Airflow - Static Pressure Characteristics

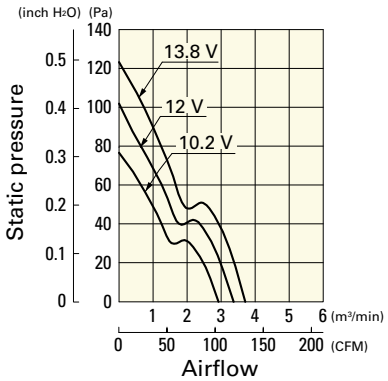
9GL1212G101 With pulse sensor

Operating voltage range



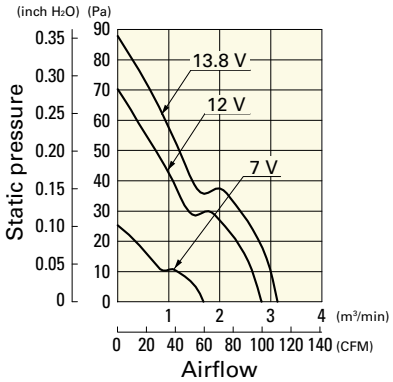
9GL1212E101 With pulse sensor

Operating voltage range



9GL1212H101 With pulse sensor

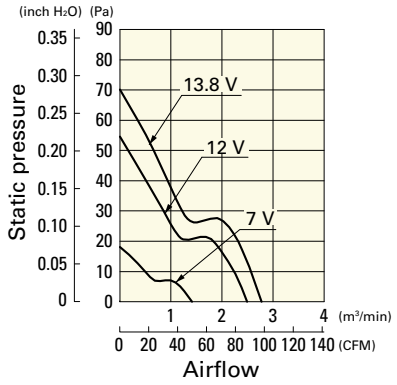
Operating voltage range



Airflow - Static Pressure Characteristics

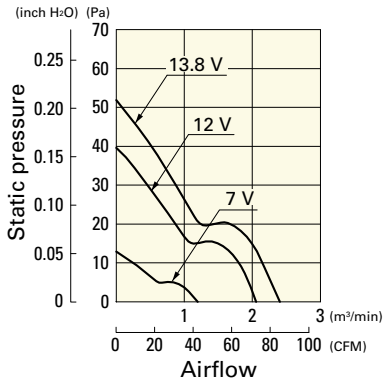
9GL1212F101 With pulse sensor

Operating voltage range



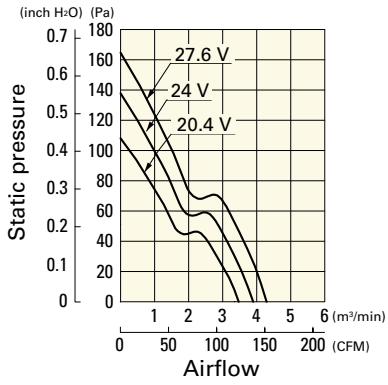
9GL1212M101 With pulse sensor

Operating voltage range



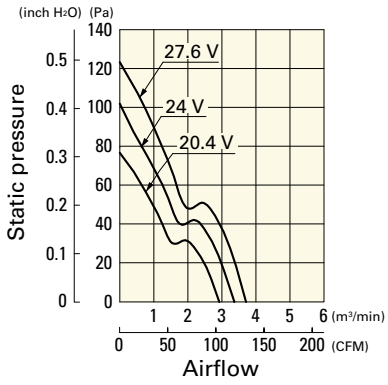
9GL1224G101 With pulse sensor

Operating voltage range



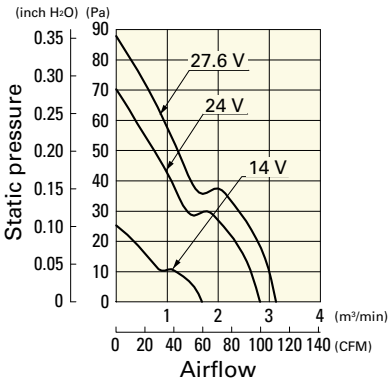
9GL1224E101 With pulse sensor

Operating voltage range



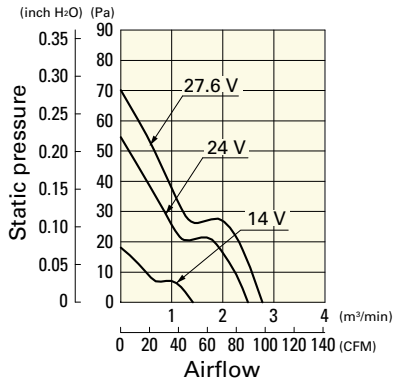
9GL1224H101 With pulse sensor

Operating voltage range



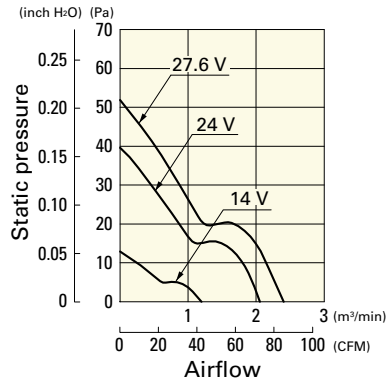
9GL1224F101 With pulse sensor

Operating voltage range



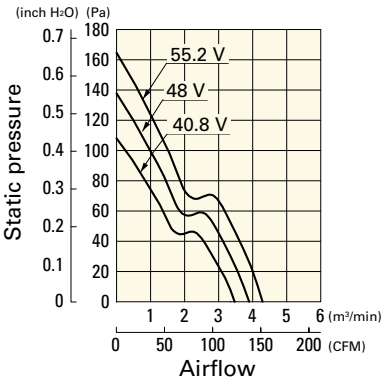
9GL1224M101 With pulse sensor

Operating voltage range



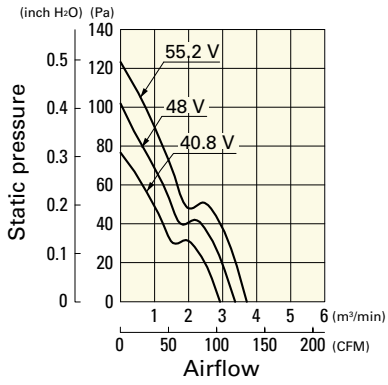
9GL1248G101 With pulse sensor

Operating voltage range



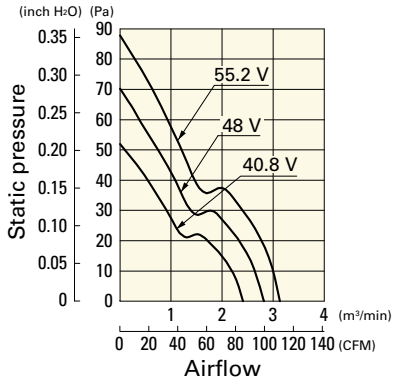
9GL1248E101 With pulse sensor

Operating voltage range



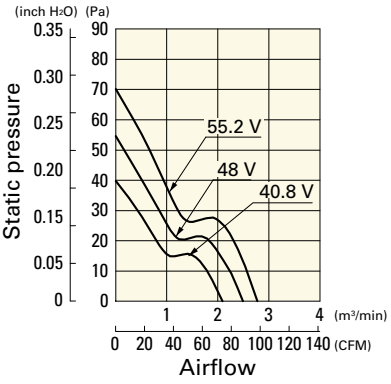
9GL1248H101 With pulse sensor

Operating voltage range



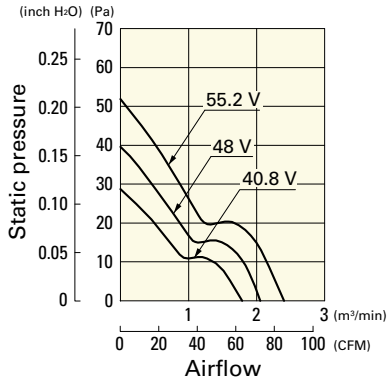
9GL1248F101 With pulse sensor

Operating voltage range

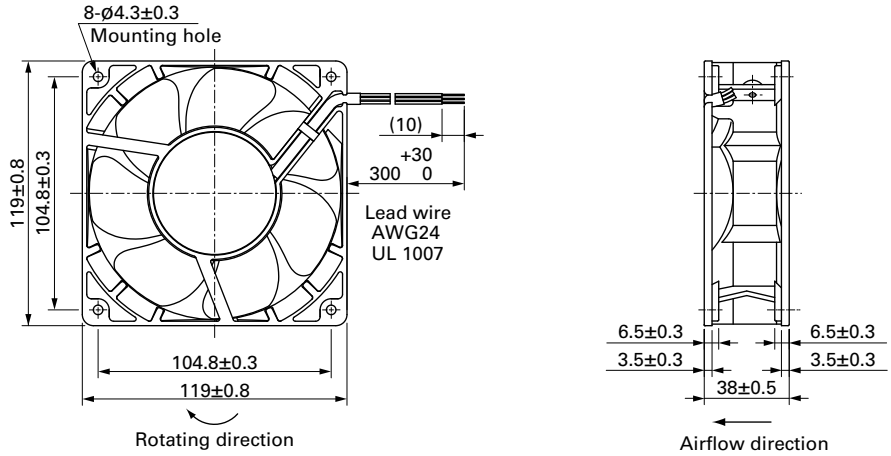


9GL1248M101 With pulse sensor

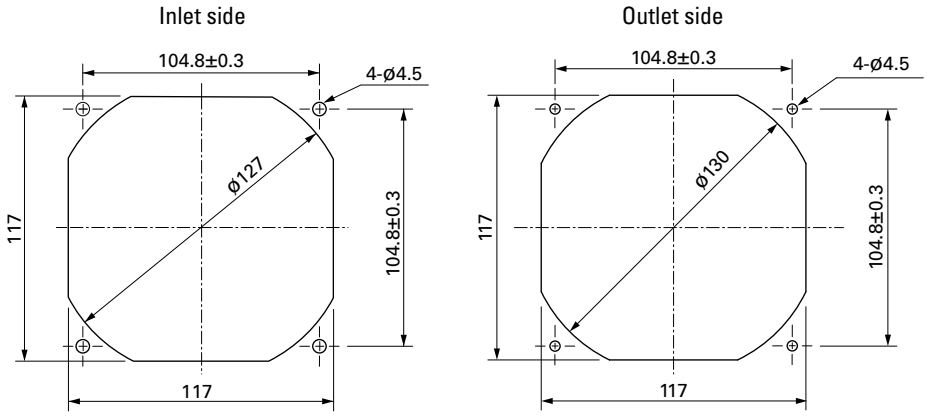
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1000G

140×140×38 mm

San Ace 140L 9L type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 600 g

Specifications

The models listed below **have pulse sensors.**

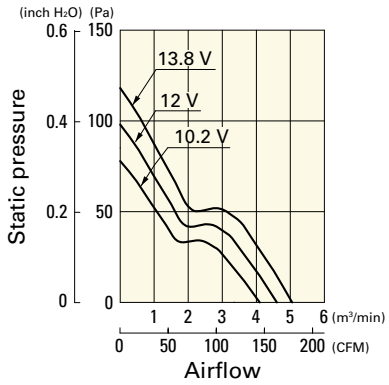
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109L1412H101	12	10.2 to 13.8	0.73	8.76	2600	4.6	159	98	0.394	46	-20 to +70	100000/60˚C
109L1412M101			0.3	3.6	1900	3.3	117	52	0.209	38		
109L1424H101	24	20.4 to 27.6	0.37	8.88	2600	4.6	159	98	0.394	46		
109L1424M101			0.16	3.84	1900	3.3	117	52	0.209	38		
109L1448H101	48	40.8 to 55.2	0.2	9.6	2600	4.6	159	98	0.394	46		
109L1448M101			0.09	4.32	1900	3.3	117	52	0.209	38		

Other sensor specifications are available as options. Refer to the index (p. 543).

Airflow - Static Pressure Characteristics

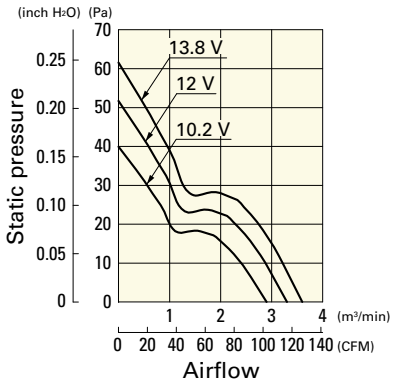
109L1412H101 With pulse sensor

Operating voltage range



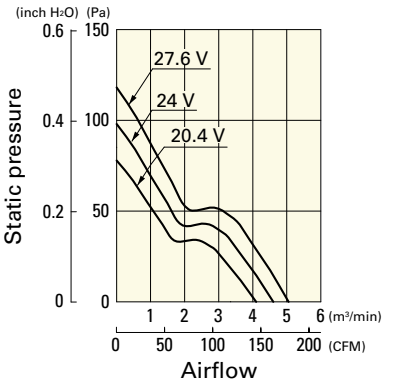
109L1412M101 With pulse sensor

Operating voltage range



109L1424H101 With pulse sensor

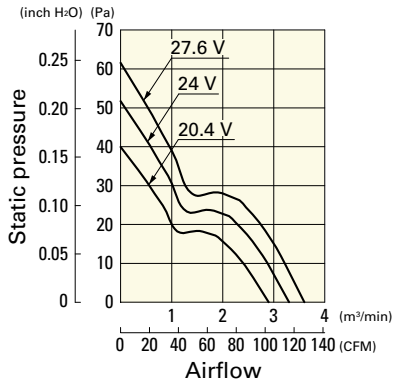
Operating voltage range



Airflow - Static Pressure Characteristics

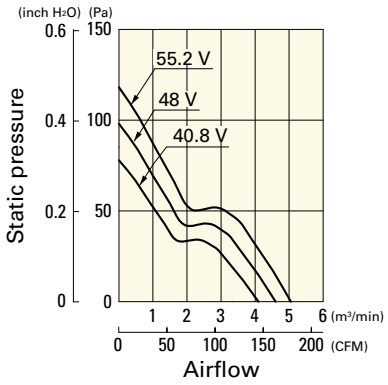
109L1424M101 With pulse sensor

Operating voltage range



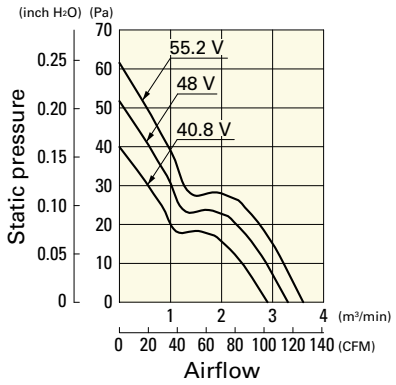
109L1448H101 With pulse sensor

Operating voltage range

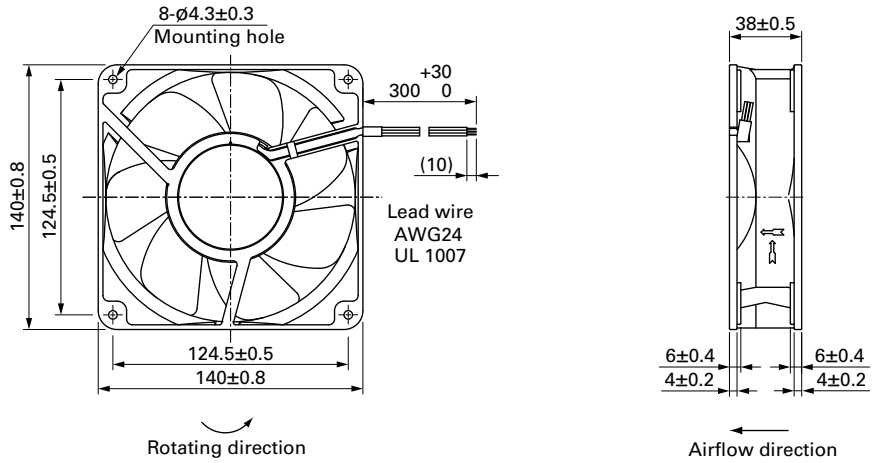


109L1448M101 With pulse sensor

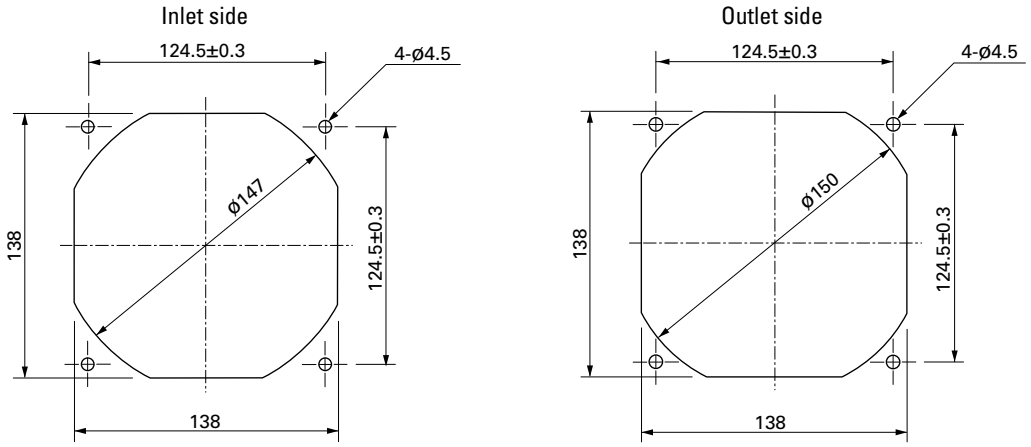
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-719, 109-719H

140×140×51 mm

San Ace 140L 9LB type

Models 9LB1424B501, 9LB1448F501 are not certified.

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 610 g

Specifications

The models listed below **have pulse sensors.**

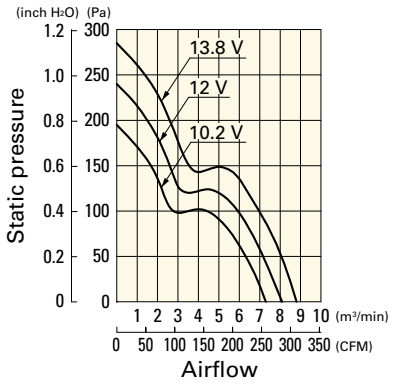
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LB1412S501	12	10.2 to 13.8	2.7	32.4	4200	8.1	286.2	240	0.96	57	-20 to +70	60000/60˚C
9LB1412H501			1.25	15.0	3100	5.9	208.5	130	0.52	49		100000/60˚C
9LB1412M501			0.46	5.52	2050	3.9	138	63	0.25	39		
9LB1424S501	24	20.4 to 27.6	1.38	33.12	4200	8.1	286.2	240	0.96	57		60000/60˚C
9LB1424B501			0.97	23.3	3700	7.1	251	186	0.75	55		
9LB1424H501			0.6	14.4	3100	5.9	208.5	130	0.52	49		100000/60˚C
9LB1424M501			0.22	5.28	2050	3.9	138	63	0.25	39		
9LB1448S501	48	40.8 to 55.2	0.71	34.08	4200	8.1	286.2	240	0.96	57		60000/60˚C
9LB1448H501			0.27	12.96	3100	5.9	208.5	130	0.52	49		100000/60˚C
9LB1448F501			0.18	8.6	2550	4.8	169	91	0.37	44		
9LB1448M501			0.12	5.76	2050	3.9	138	63	0.25	39		

Other sensor specifications are available as options. Refer to the index (p. 556).

Airflow - Static Pressure Characteristics

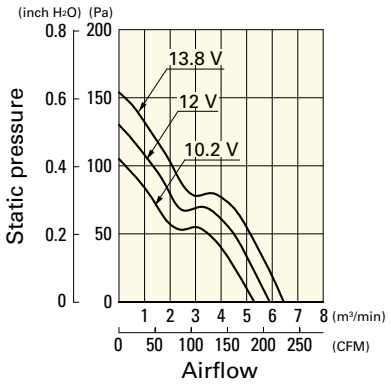
9LB1412S501 With pulse sensor

Operating voltage range



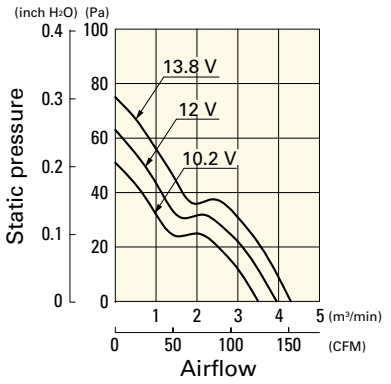
9LB1412H501 With pulse sensor

Operating voltage range



9LB1412M501 With pulse sensor

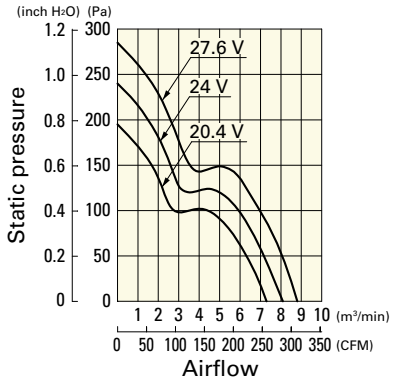
Operating voltage range



Airflow - Static Pressure Characteristics

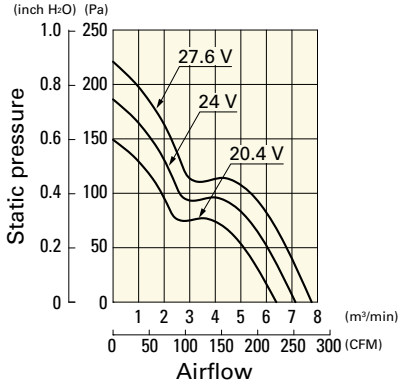
9LB1424S501 With pulse sensor

Operating voltage range



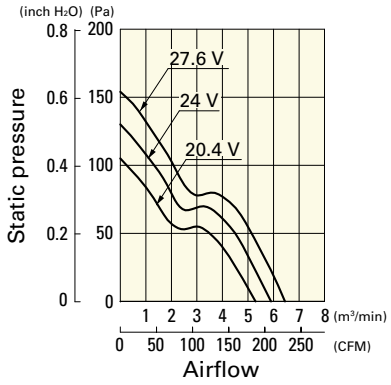
9LB1424B501 With pulse sensor

Operating voltage range



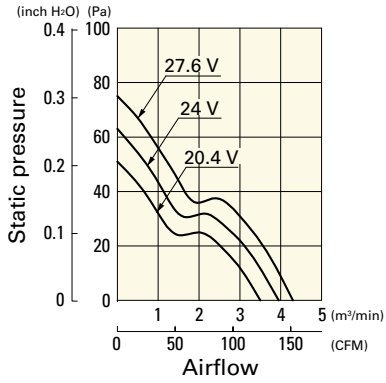
9LB1424H501 With pulse sensor

Operating voltage range



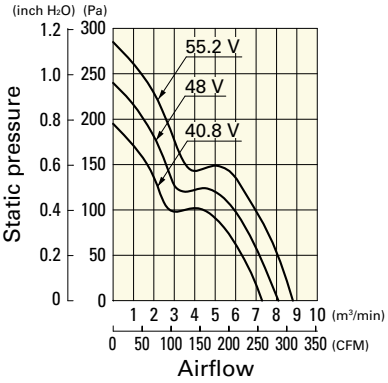
9LB1424M501 With pulse sensor

Operating voltage range



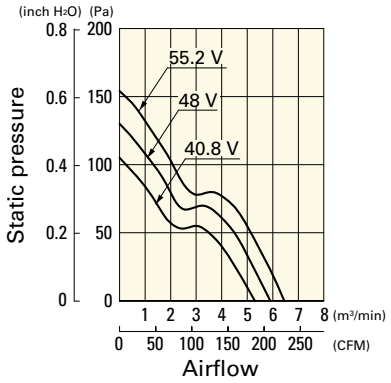
9LB1448S501 With pulse sensor

Operating voltage range



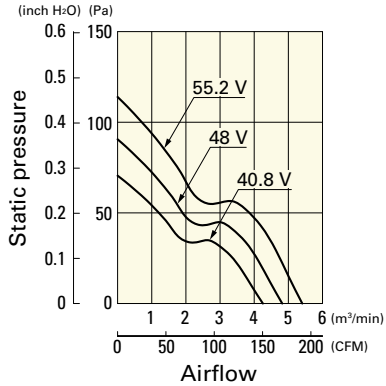
9LB1448H501 With pulse sensor

Operating voltage range



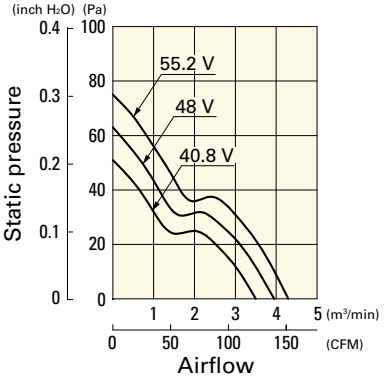
9LB1448F501 With pulse sensor

Operating voltage range

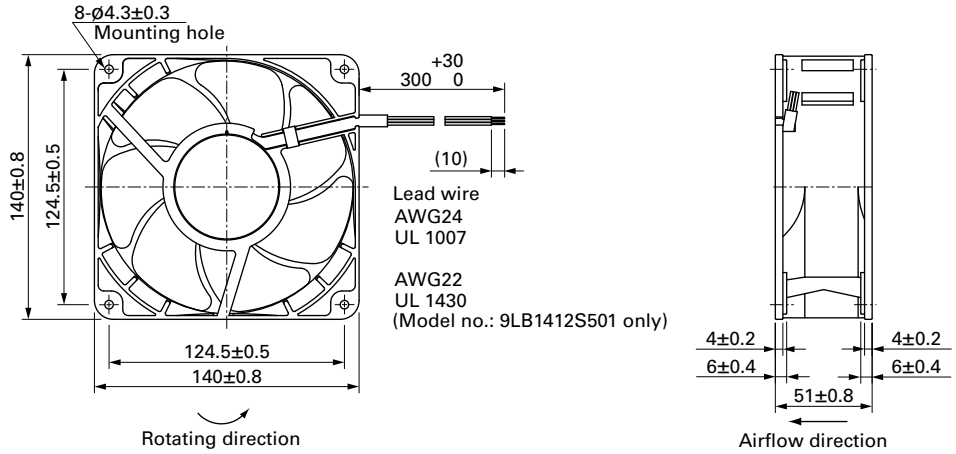


9LB1448M501 With pulse sensor

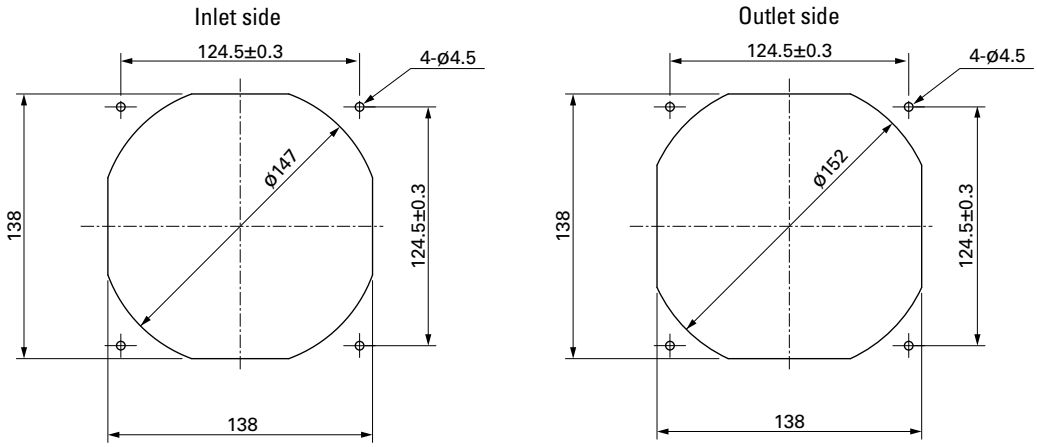
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-719, 109-719H

ø172×150×51 mm

San Ace 172L 9L type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 760 g

Specifications

The models listed below **have pulse sensors.**

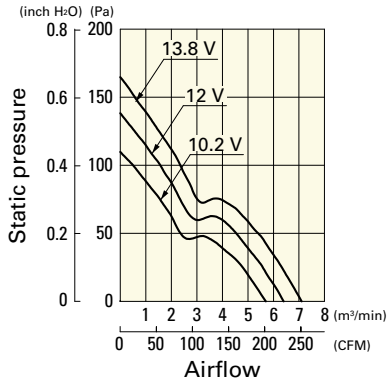
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109L5712H501	12	10.2 to 13.8	1.2	14.4	3050	6.4	226	137.2	0.551	52	-20 to +70	100000/60˚C
109L5712M501			0.48	5.76	2000	4.2	148	67.6	0.271	41		
109L5724H501	24	20.4 to 27.6	0.58	13.92	3050	6.4	226	137.2	0.551	52		
109L5724M501			0.2	4.8	2000	4.2	148	67.6	0.271	41		
109L5748H501	48	40.8 to 55.2	0.28	13.44	3050	6.4	226	137.2	0.551	52		
109L5748M501			0.11	5.28	2000	4.2	148	67.6	0.271	41		

Other sensor specifications are available as options. Refer to the index (p. 543).

Airflow - Static Pressure Characteristics

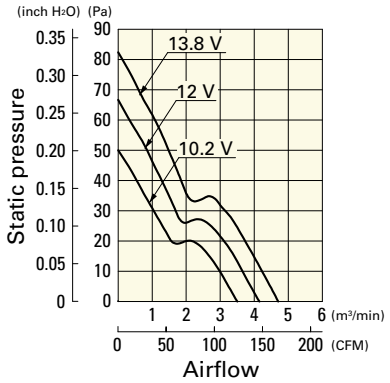
109L5712H501 With pulse sensor

Operating voltage range



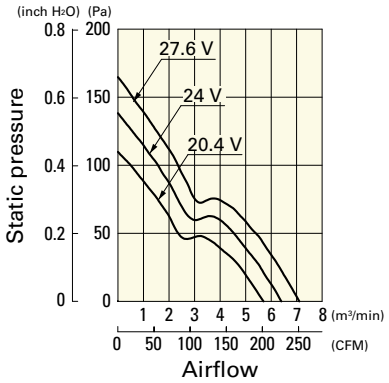
109L5712M501 With pulse sensor

Operating voltage range



109L5724H501 With pulse sensor

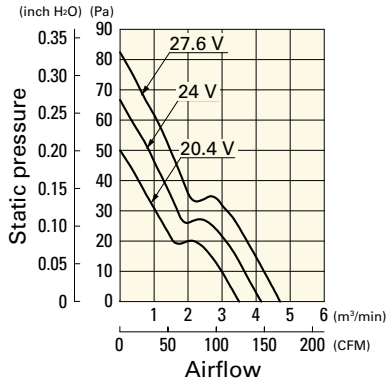
Operating voltage range



Airflow - Static Pressure Characteristics

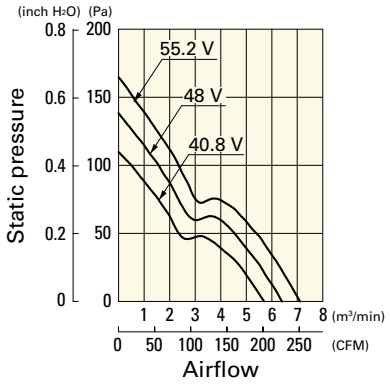
109L5724M501 With pulse sensor

Operating voltage range



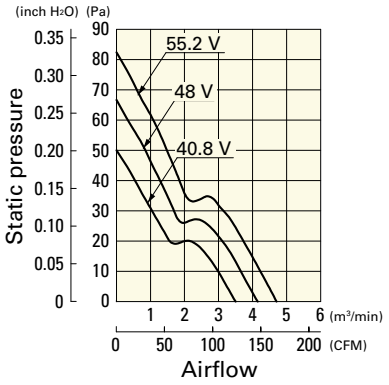
109L5748H501 With pulse sensor

Operating voltage range

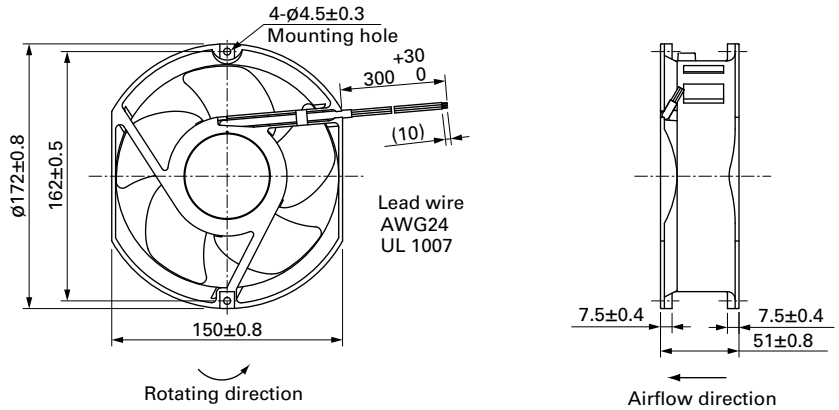


109L5748M501 With pulse sensor

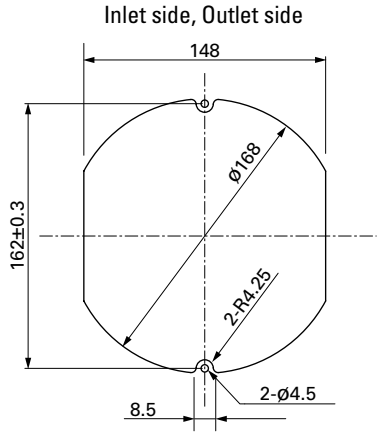
Operating voltage range



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 515

Model no.: 109-319E, 109-319H, 109-320

ø172×51 mm

San Ace 172L 9L type

Round type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 780 g

Specifications

The models listed below **have pulse sensors.**

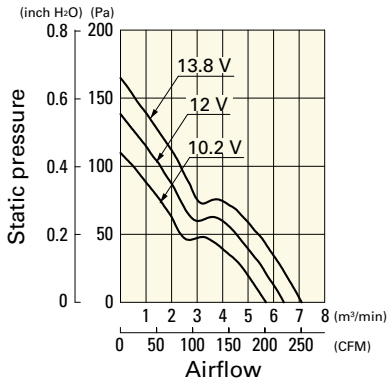
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109L1712H501	12	10.2 to 13.8	1.2	14.4	3050	6.4	226	137.2	0.551	47	-20 to +70	100000/60˚C
109L1712M501			0.48	5.76	2000	4.2	148	67.6	0.271	36		
109L1724H501	24	20.4 to 27.6	0.58	13.92	3050	6.4	226	137.2	0.551	47		
109L1724M501			0.2	4.8	2000	4.2	148	67.6	0.271	36		
109L1748H501	48	40.8 to 55.2	0.28	13.44	3050	6.4	226	137.2	0.551	47		
109L1748M501			0.11	5.28	2000	4.2	148	67.6	0.271	36		

Other sensor specifications are available as options. Refer to the index (p. 543).

Airflow - Static Pressure Characteristics

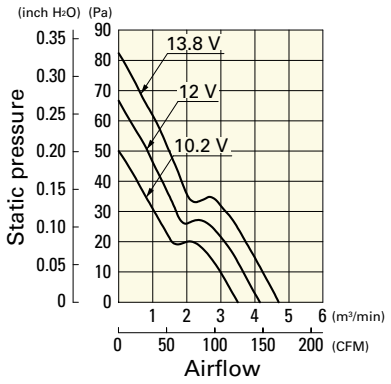
109L1712H501 With pulse sensor

Operating voltage range



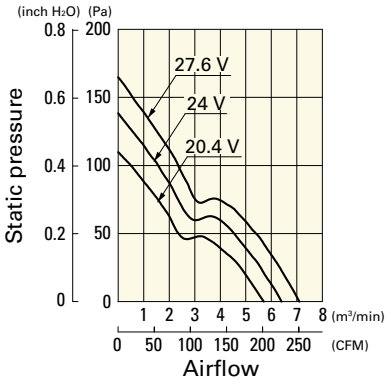
109L1712M501 With pulse sensor

Operating voltage range



109L1724H501 With pulse sensor

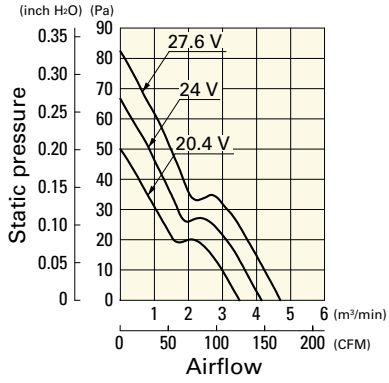
Operating voltage range



Airflow - Static Pressure Characteristics

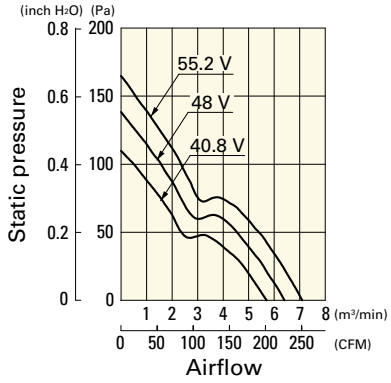
109L1724M501 With pulse sensor

Operating voltage range



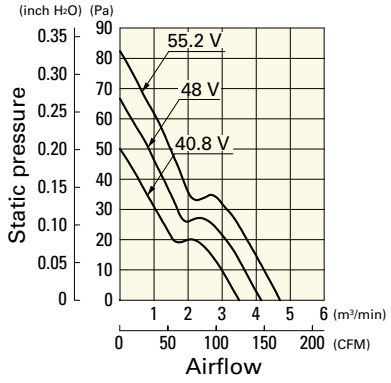
109L1748H501 With pulse sensor

Operating voltage range

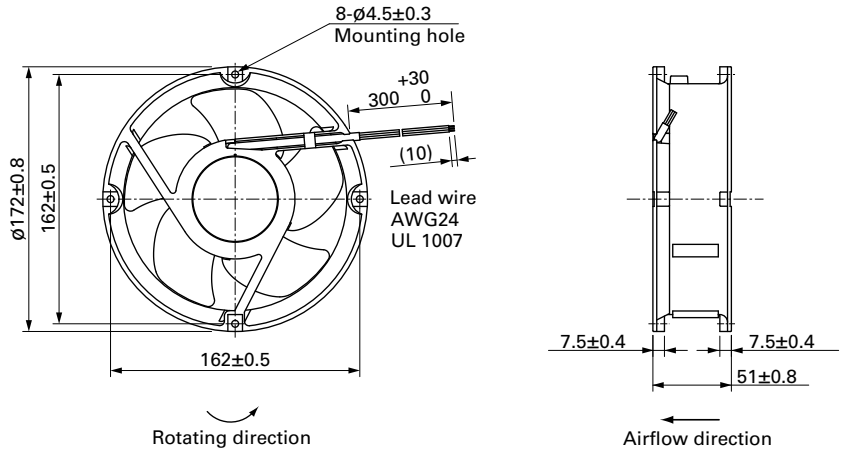


109L1748M501 With pulse sensor

Operating voltage range

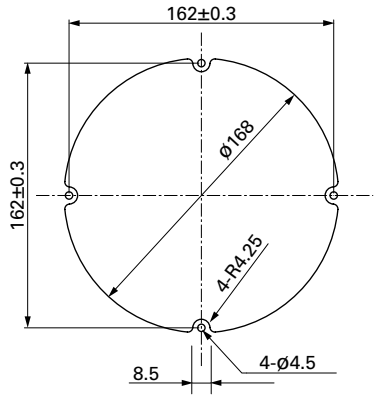


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 515

Model no.: 109-1066, 109-1068, 109-319E, 109-319H, 109-320

Wide Temperature Range Fan

These fans can be used in a wide temperature range from -40 to +85˚C.

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9GT	04	12	P	3	J	001
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec

Type name	9GT
Frame size (mm)	04 (40×40) 06 (60×60) 08 (80×80) 09 (92×92) 12 (120×120)
Voltage (V)	12 12 / 24 24
Frame thickness (mm)	1 38 / 3 28 / 4 25
Speed code	J

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60˚C (70000/40˚C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC

Operating voltage range ····· The voltage range over which fan operation is guaranteed.

Rated current ····· The current when the fan is operating at rated voltage (at free air).

Rated input ····· The power value when the fan is operating at rated voltage (at free air).

Rated speed ····· The speed when the fan is operating at rated voltage (at free air).

Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.

Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.

SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.

Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).

Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60˚C temperature. Expected life at 40˚C is for reference only. For more information, please refer to the technical material section.

40×40×28 mm

San Ace 40T 9GT type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -40 to +85˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 55 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GT0412P3J001	12	10.2 to 13.8	100	0.31	3.72	11700	0.52	18.4	206	0.827	48	-40 to +85	40000/85˚C
			30	0.08	0.96	4100	0.18	6.36	25.2	0.1	21		
9GT0424P3J001	24	20.4 to 27.6	100	0.15	3.6	11700	0.52	18.4	206	0.827	48		
			30	0.05	1.2	4100	0.18	6.36	25.2	0.1	21		

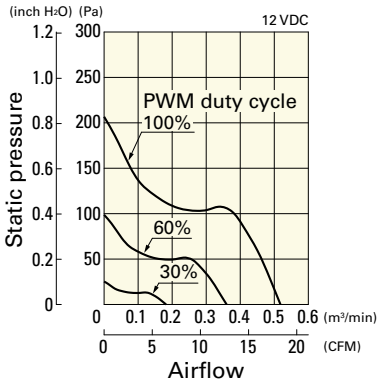
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 554).

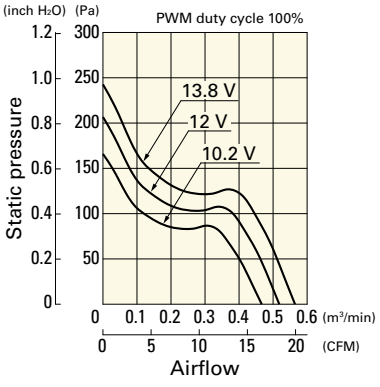
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0412P3J001 With pulse sensor with PWM control function

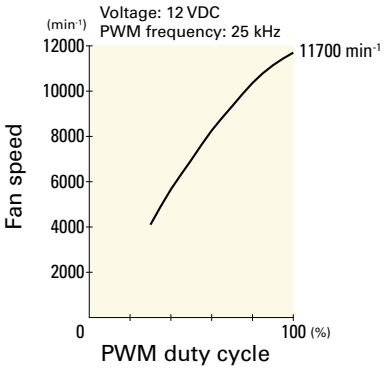
PWM duty cycle



Operating voltage range



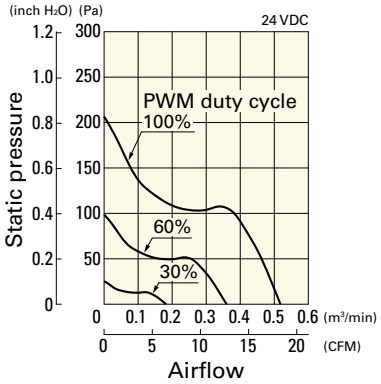
PWM duty - Speed characteristics example



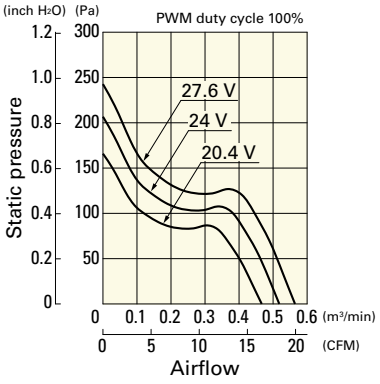
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0424P3J001 With pulse sensor with PWM control function

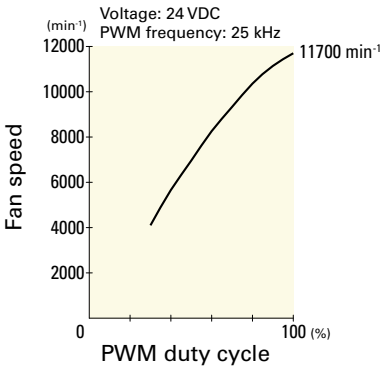
PWM duty cycle



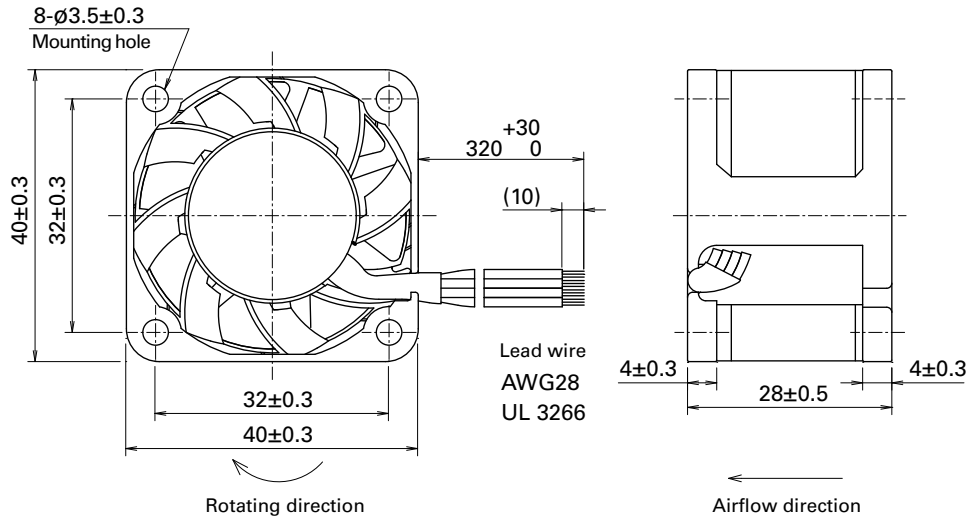
Operating voltage range



PWM duty - Speed characteristics example

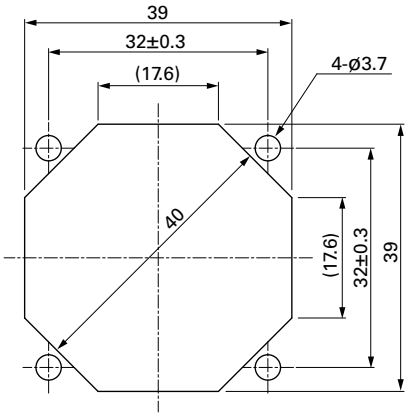


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-059, 109-059H

60×60×25 mm

San Ace 60T 9GT type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -40 to +85˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 100 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GT0612P4G001	12	10.2 to 13.8	100	0.56	6.72	10000	1.26	44.5	243	0.97	52	-40 to +85	40000/85˚C
			30	0.11	1.32	4100	0.52	18.3	42.8	0.17	25		
9GT0624P4G001	24	20.4 to 27.6	100	0.28	6.72	10000	1.26	44.5	243	0.97	52		
			30	0.06	1.44	4100	0.52	18.3	42.8	0.17	25		

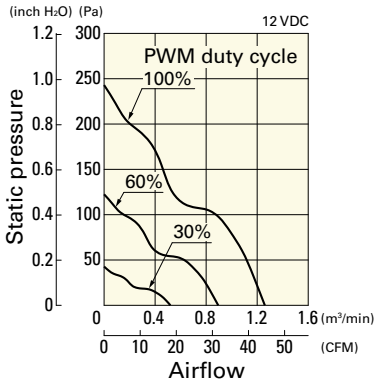
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 554).

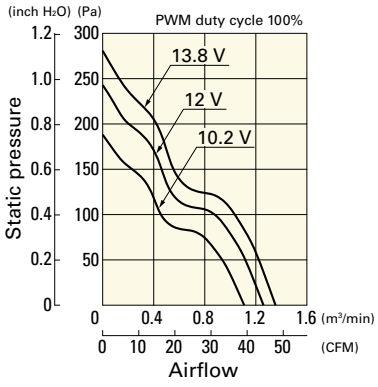
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0612P4G001 With pulse sensor with PWM control function

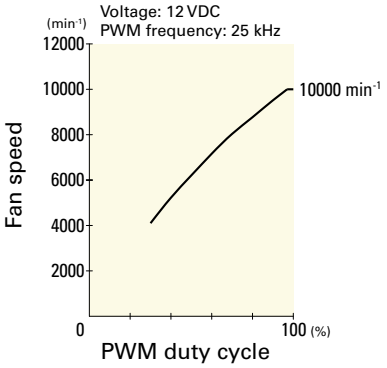
PWM duty cycle



Operating voltage range



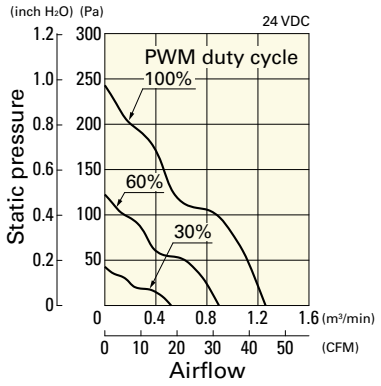
PWM duty - Speed characteristics example



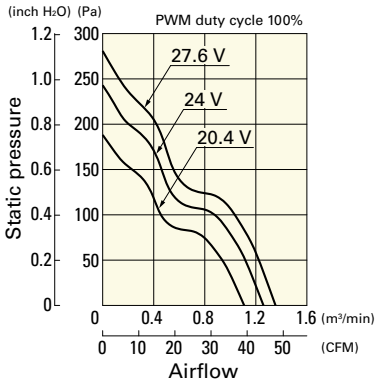
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0624P4G001 With pulse sensor with PWM control function

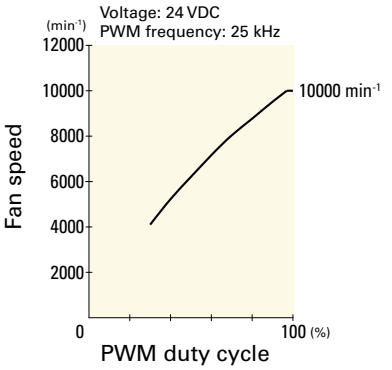
PWM duty cycle



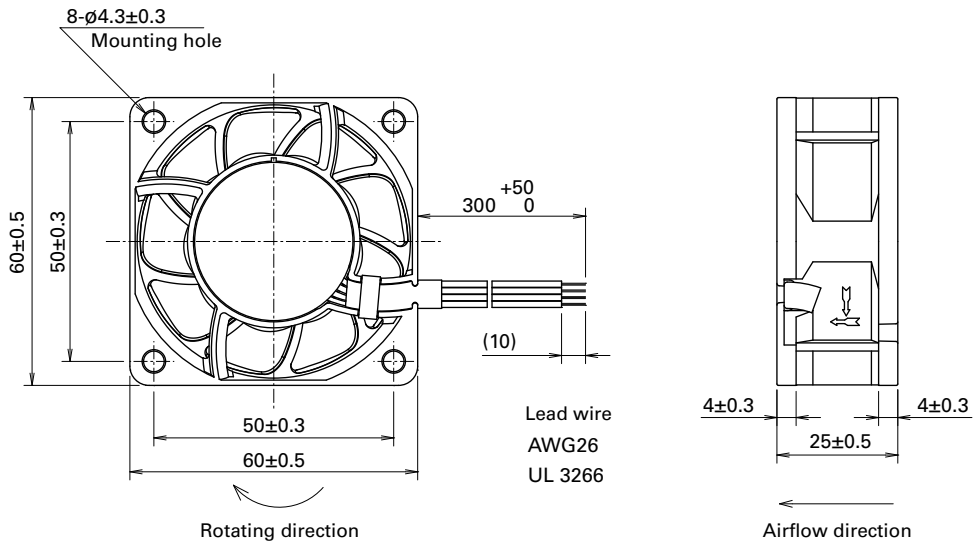
Operating voltage range



PWM duty - Speed characteristics example

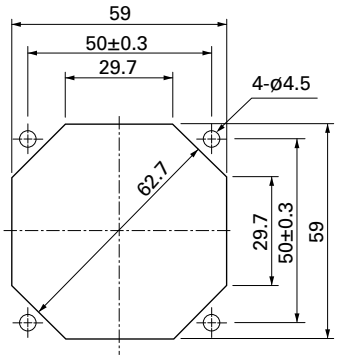


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

80×80×25 mm

San Ace 80T 9GT type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -40 to +85˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 130 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GT0812P4S001	12	10.2 to 13.8	100	0.46	5.52	6700	1.86	65.7	143	0.57	46	-40 to +85	40000/85˚C
			30	0.09	1.08	2650	0.73	25.7	22.3	0.08	26		
9GT0824P4S001	24	20.4 to 27.6	100	0.22	5.28	6700	1.86	65.7	143	0.57	46		
			30	0.05	1.2	2650	0.73	25.7	22.3	0.08	26		

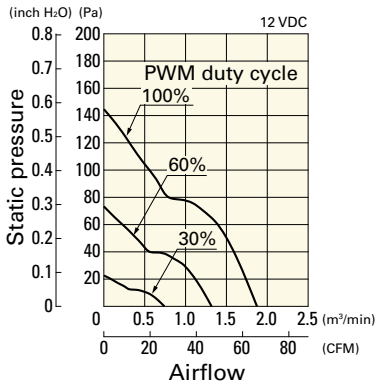
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 554).

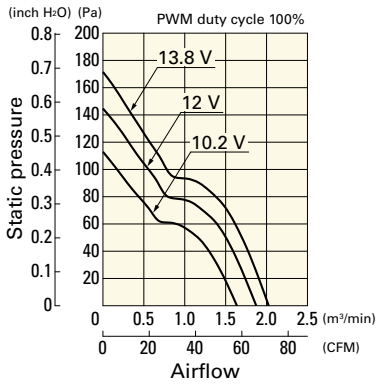
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0812P4S001 With pulse sensor with PWM control function

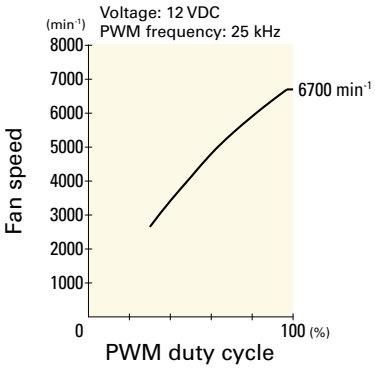
PWM duty cycle



Operating voltage range



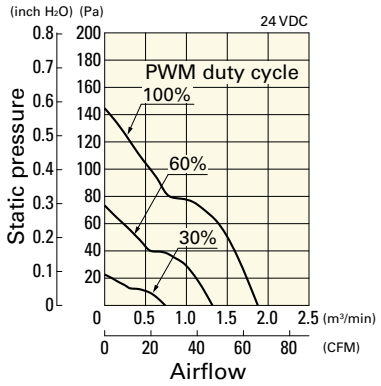
PWM duty - Speed characteristics example



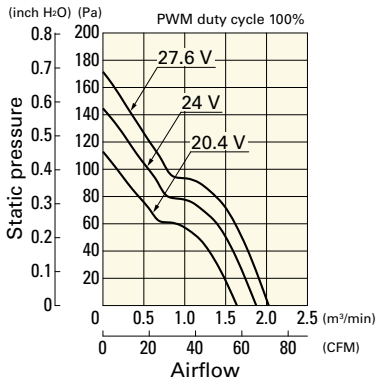
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0824P4S001 With pulse sensor with PWM control function

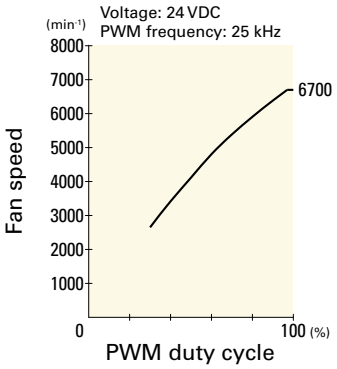
PWM duty cycle



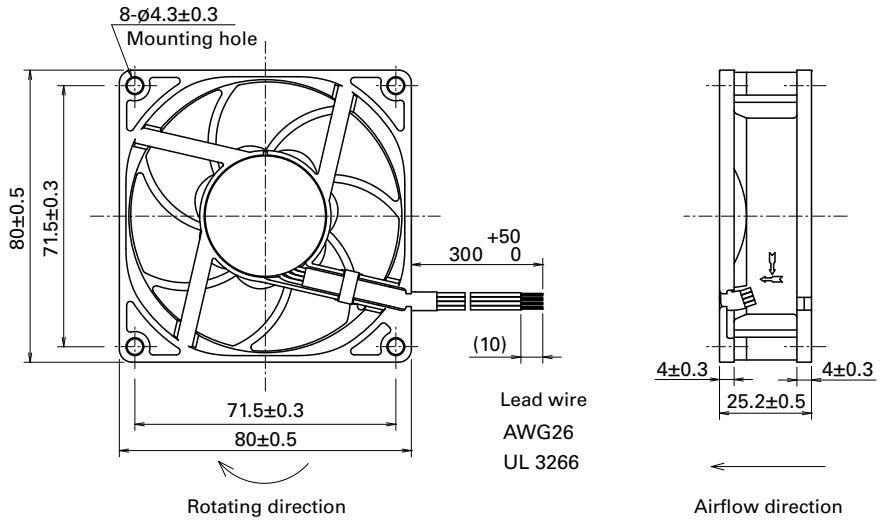
Operating voltage range



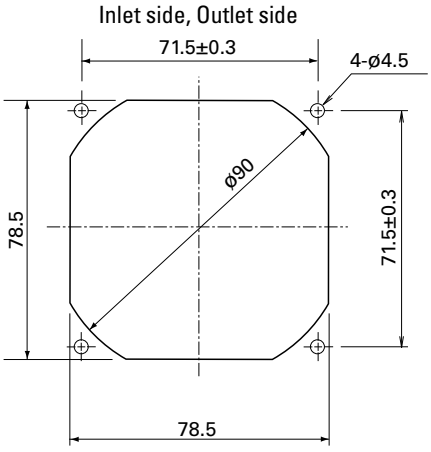
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

92×92×25 mm

San Ace 92T 9GT type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -40 to +85˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 150 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GT0912P4J001	12	10.2 to 13.8	100	0.42	5.04	5000	2.2	77.7	105	0.42	44	-40 to +85	40000/85˚C
			30	0.07	0.84	1850	0.81	28.7	14.3	0.05	18		
9GT0924P4J001	24	20.4 to 27.6	100	0.21	5.04	5000	2.2	77.7	105	0.42	44		
			30	0.05	1.2	1850	0.81	28.7	14.3	0.05	18		

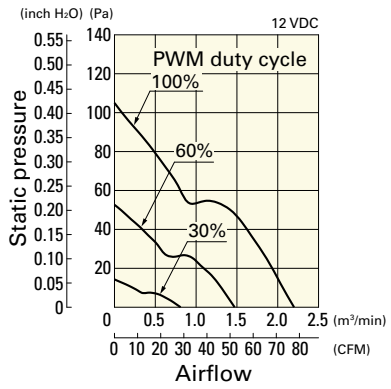
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 554).

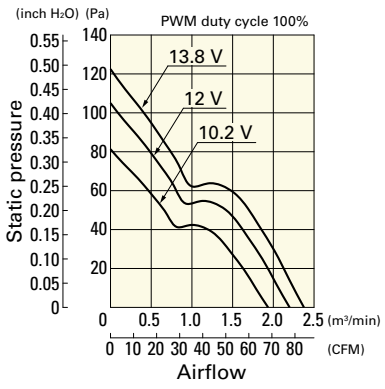
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0912P4J001 With pulse sensor with PWM control function

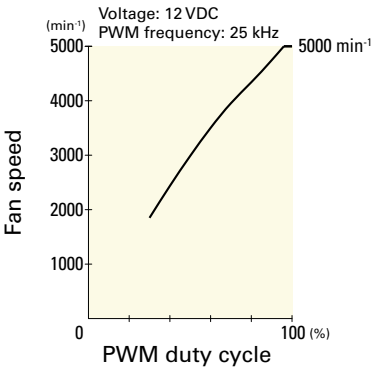
PWM duty cycle



Operating voltage range



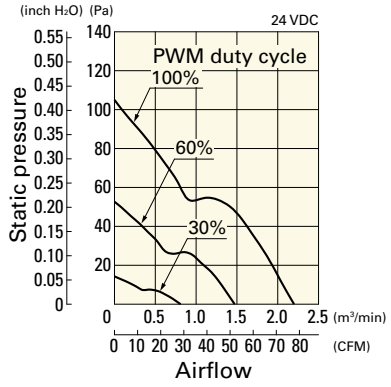
PWM duty - Speed characteristics example



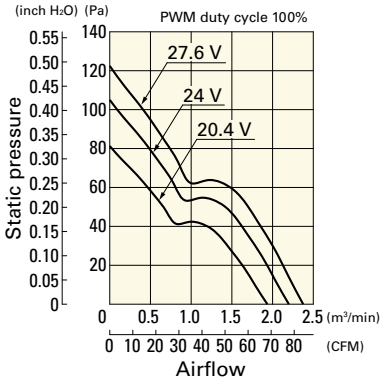
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0924P4J001 With pulse sensor with PWM control function

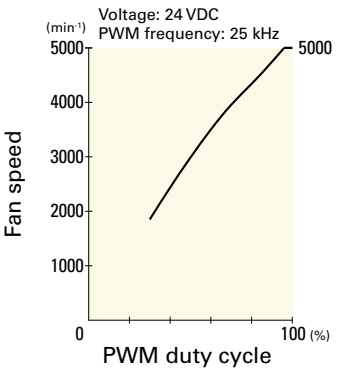
PWM duty cycle



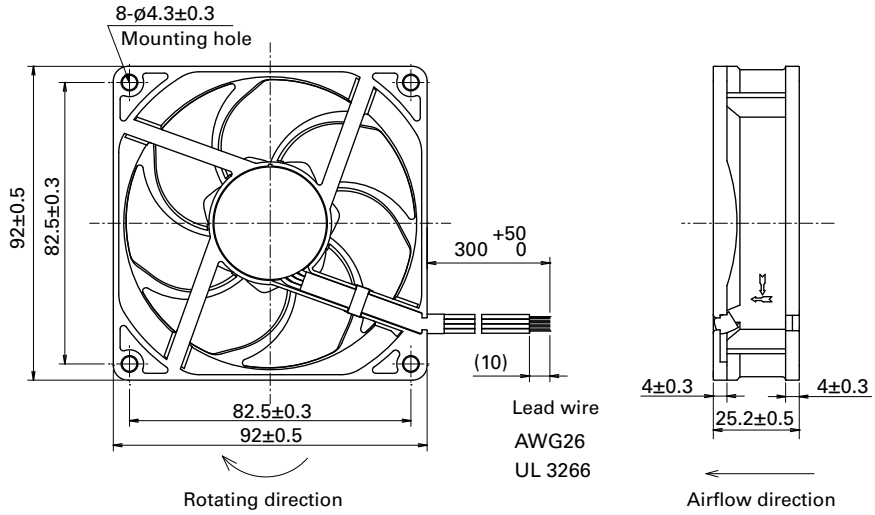
Operating voltage range



PWM duty - Speed characteristics example

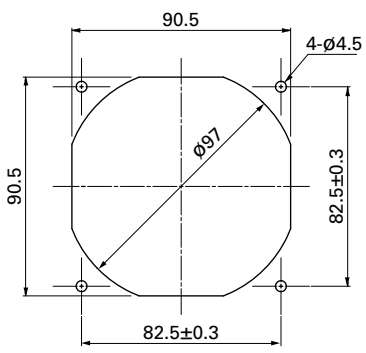


Dimensions (unit: mm)

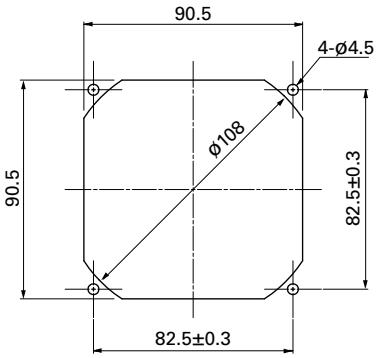


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side



Outlet side



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

92×92×38 mm

San Ace 92T 9GT type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -40 to +85˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 270 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GT0912P1M001	12	10.2 to 13.8	100	1.5	18.0	8100	3.3	116.6	315	1.26	58	-40 to +85	40000/85˚C
			30	0.3	3.6	3750	1.5	53.0	72.0	0.29	37		
9GT0924P1M001	24	20.4 to 27.6	100	0.75	18.0	8100	3.3	116.6	315	1.26	58		
			30	0.15	3.6	3750	1.5	53.0	72.0	0.29	37		

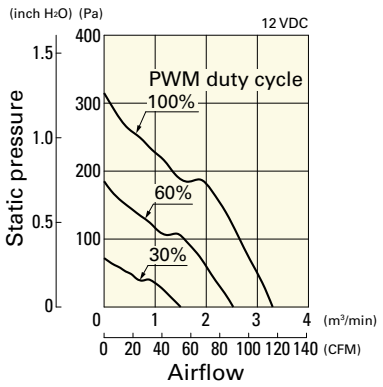
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 554).

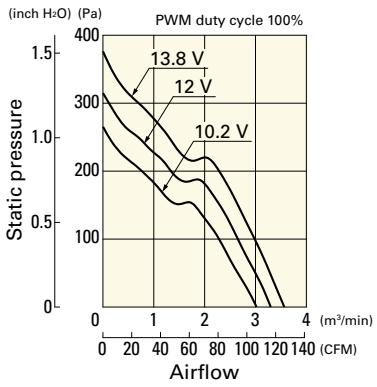
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0912P1M001 With pulse sensor with PWM control function

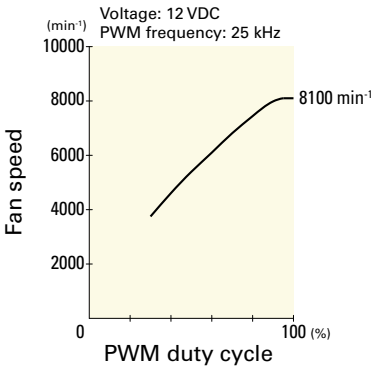
PWM duty cycle



Operating voltage range



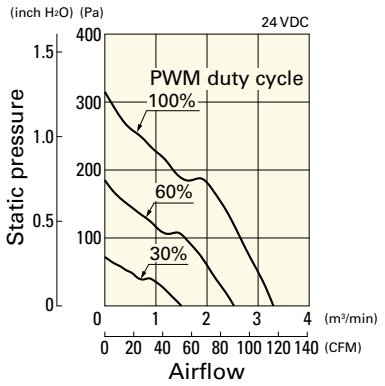
PWM duty - Speed characteristics example



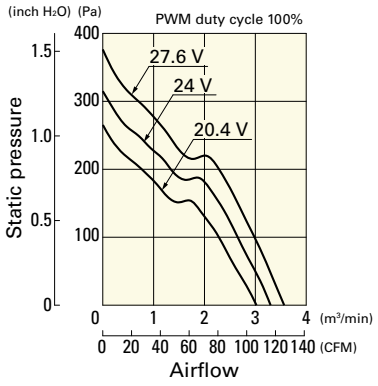
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT0924P1M001 With pulse sensor with PWM control function

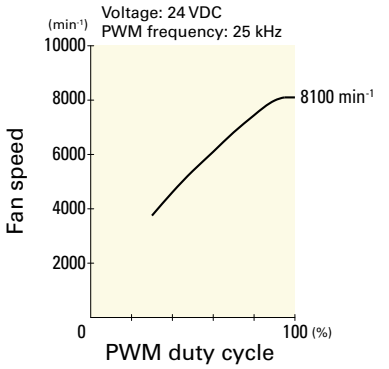
PWM duty cycle



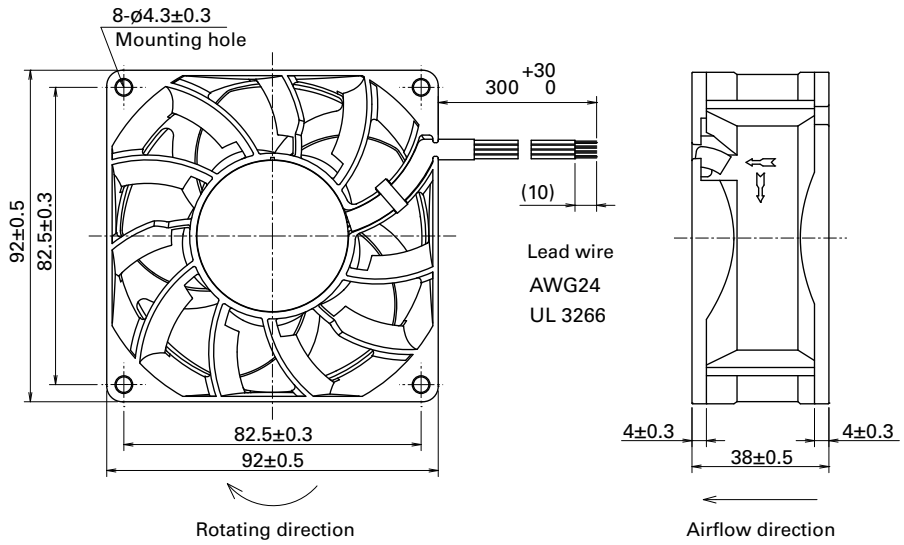
Operating voltage range



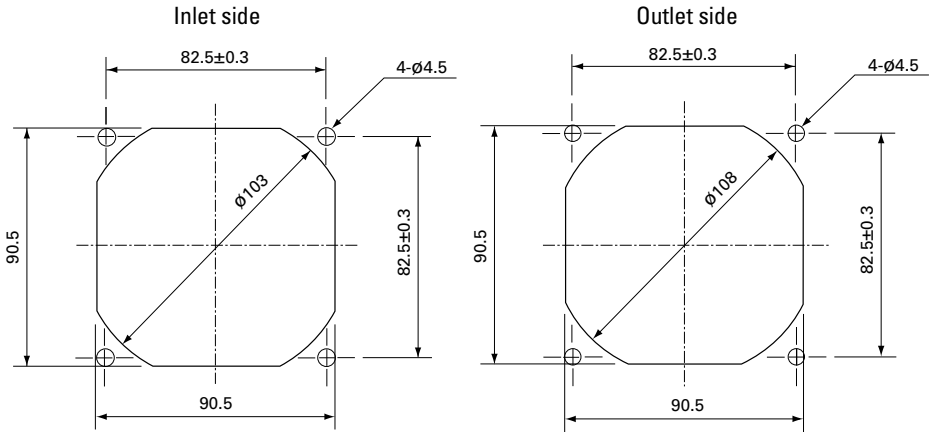
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

120×120×38 mm

San Ace 120T 9GT type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -40 to +85˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 420 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GT1212P1S001	12	9.0 to 13.8	100	2.2	26.4	5600	6.0	211.8	270	1.08	58	-40 to +85	40000/85˚C
			35	0.48	5.76	2900	3.0	106.0	85.6	0.34	41		
9GT1224P1S001	24	18.0 to 27.6	100	1.1	26.4	5600	6.0	211.8	270	1.08	58		
			35	0.24	5.76	2900	3.0	106.0	85.6	0.34	41		

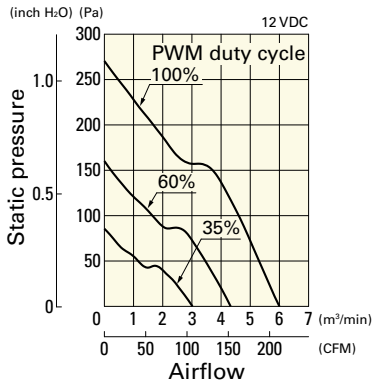
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 554).

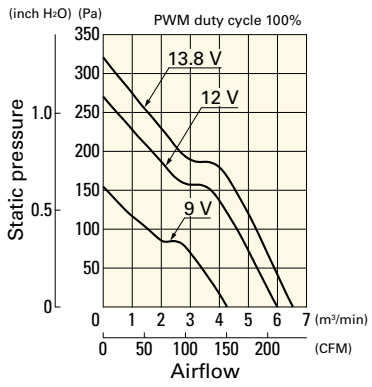
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT1212P1S001 With pulse sensor with PWM control function

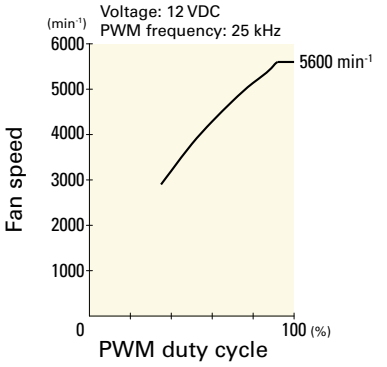
PWM duty cycle



Operating voltage range



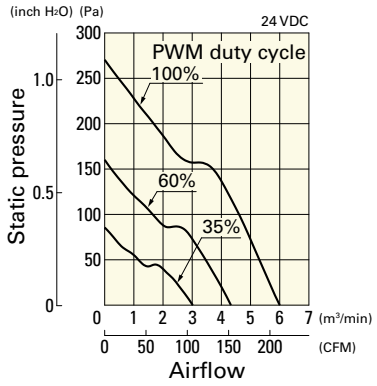
PWM duty - Speed characteristics example



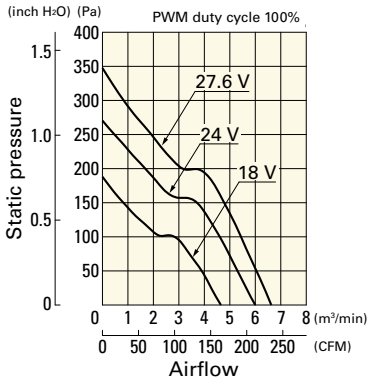
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GT1224P1S001 With pulse sensor with PWM control function

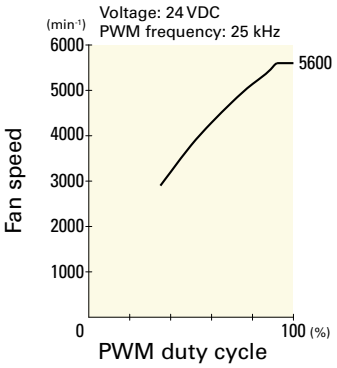
PWM duty cycle



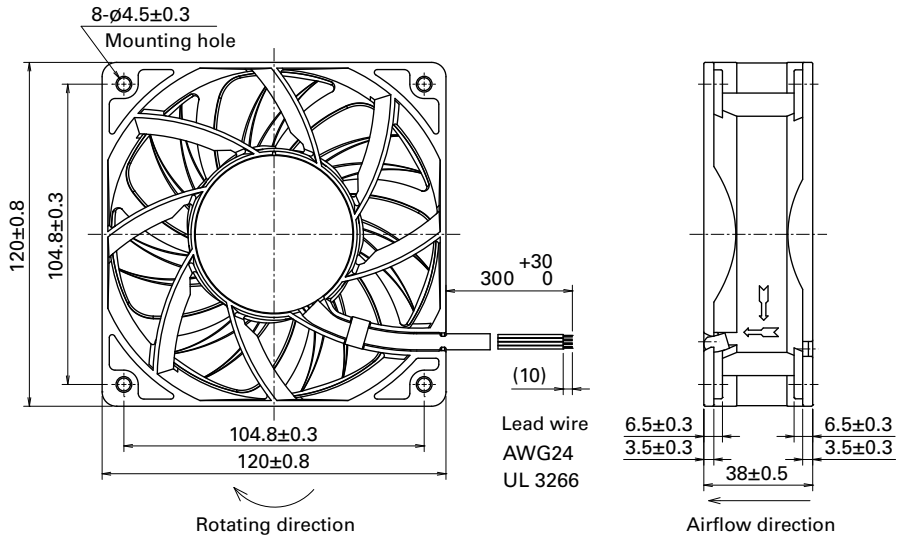
Operating voltage range



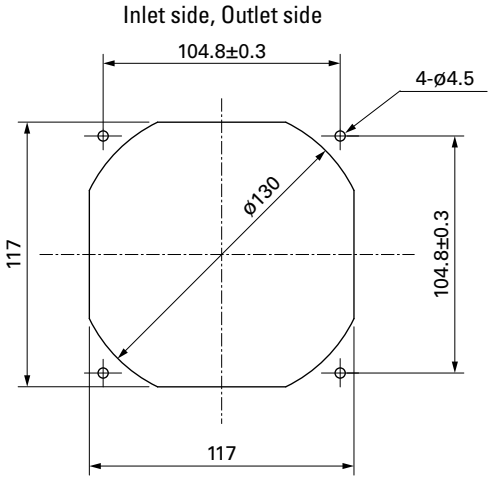
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

G Proof Fan

These fans are suitable for cooling CT scanners and other devices subject to high G-force or vibration.

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9GP	12	24	P	1	G	001
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec (3 digits)

Type name	9GP
Frame size (mm)	12 (120×120) 57 (ø172×150 (sidecut))
Voltage (V)	24 48 24 48
Frame thickness (mm)	1 5 38 51
Speed code	G H

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC

Operating voltage range ····· The voltage range over which fan operation is guaranteed.

Rated current ····· The current when the fan is operating at rated voltage (at free air).

Rated input ····· The power value when the fan is operating at rated voltage (at free air).

Rated speed ····· The speed when the fan is operating at rated voltage (at free air).

Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.

Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.

SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.

Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).

Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

120×120×38 mm

San Ace 120GP 9GP type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 440 g
- G-force tolerance ····· 735 m/s^2 (75 G) for 1000 hours
  (Measured with our G-force testing machine.)

Specifications

The models listed below **have pulse sensors with PWM control function.**

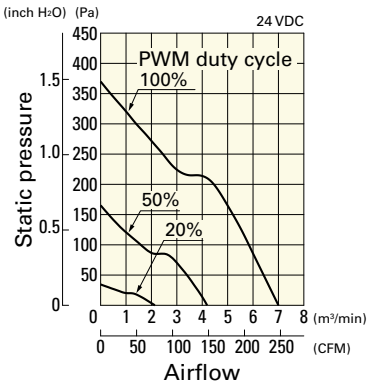
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min^{-1}]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GP1224P1G001	24	15 to 30	100	1.6	38.4	6550	7.0	247	370	1.48	62	-20 to +70	40000/60˚C (70000/40˚C)
			20	0.12	2.88	2000	2.13	75.2	34.4	0.13	36		
9GP1248P1G001	48	36 to 60	100	0.8	38.4	6550	7.0	247	370	1.48	62		
			20	0.08	3.84	2000	2.13	75.2	34.4	0.13	36		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

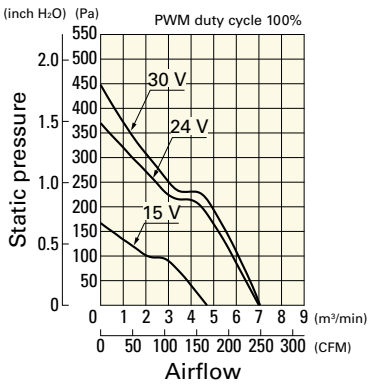
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GP1224P1G001 With pulse sensor with PWM control function

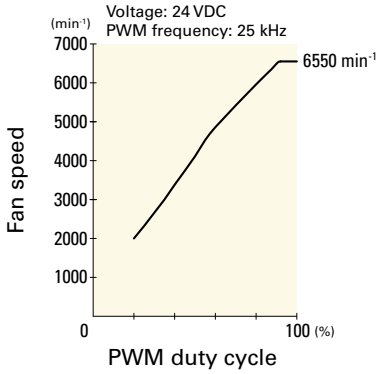
PWM duty cycle



Operating voltage range



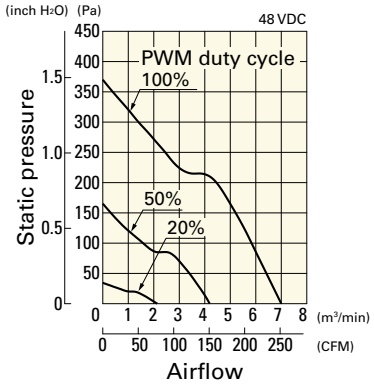
PWM duty - Speed characteristics example



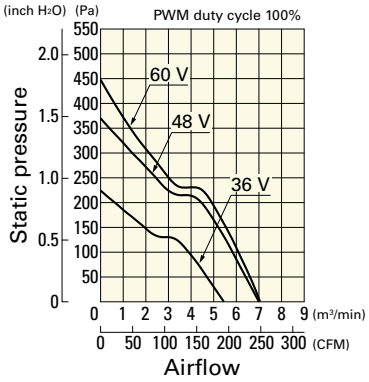
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GP1248P1G001 With pulse sensor with PWM control function

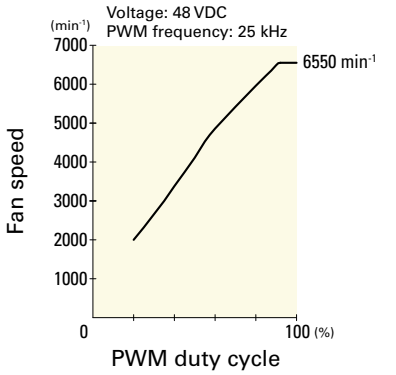
PWM duty cycle



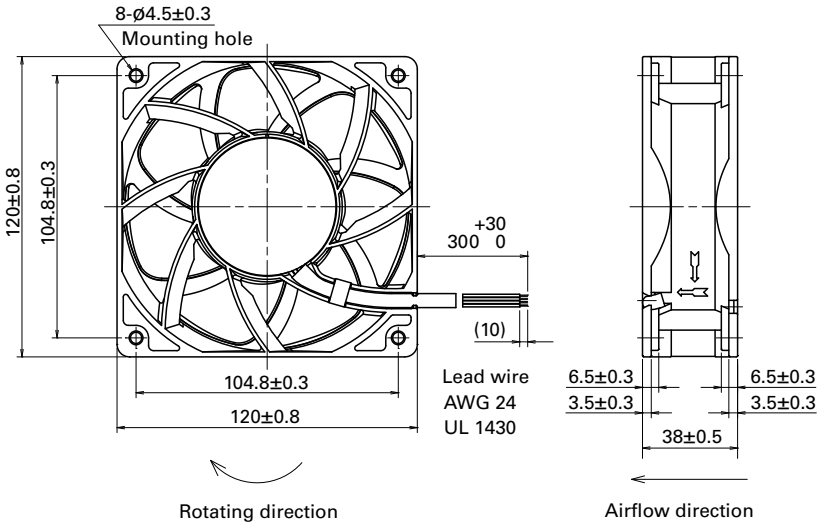
Operating voltage range



PWM duty - Speed characteristics example

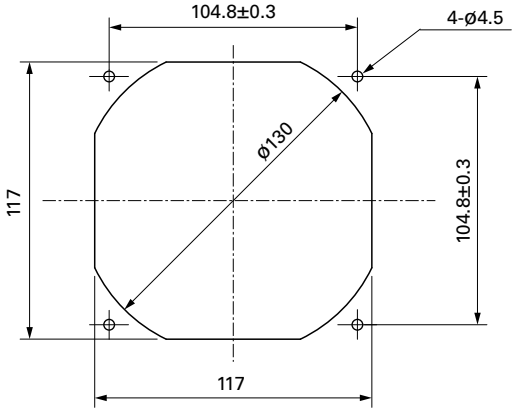


Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin finger guards page: p. 520

Model no.: 109-1000G

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)

ø172×150×51 mm

San Ace 172GP 9GP type

Sidecut type

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 880 g
- G-force tolerance ····· 735 m/s² (75 G) for 1000 hours
  (Measured with our G-force testing machine.)

Specifications

The models listed below **have pulse sensors with PWM control function.**

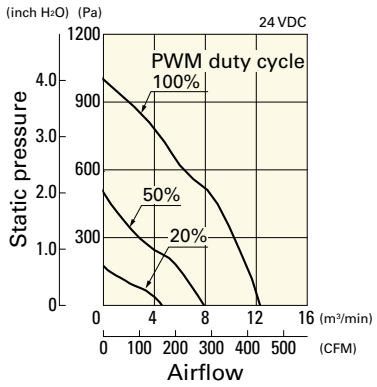
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9GP5724P5H001	24	16 to 30	100	5.0	120	8000	12.3	434	1000	4.02	77	-20 to +70	40000/60˚C (70000/40˚C)
			20	0.5	12.0	3000	4.6	162	175	0.7	51		
9GP5748P5G001	48	36 to 72	100	5.0	240	10500	16.1	568	1600	6.43	83		
			20	0.41	19.7	3700	5.6	198	250	1.01	57		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

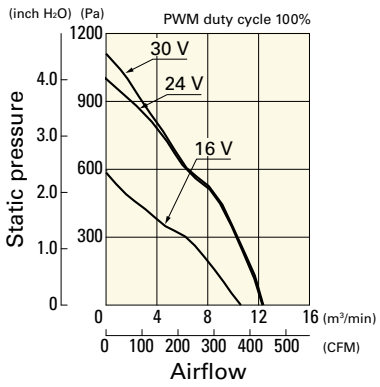
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GP5724P5H001 With pulse sensor with PWM control function

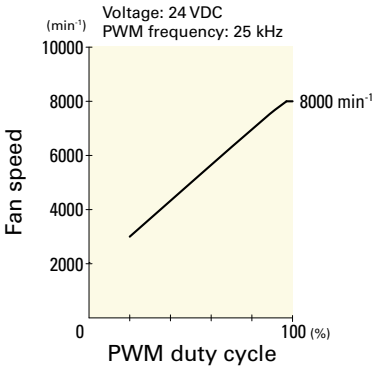
PWM duty cycle



Operating voltage range



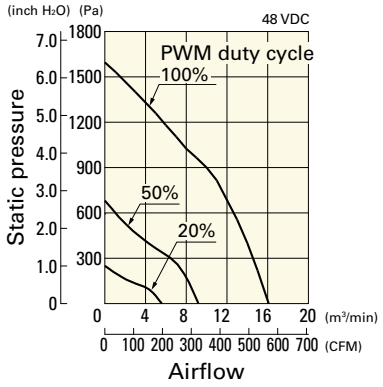
PWM duty - Speed characteristics example



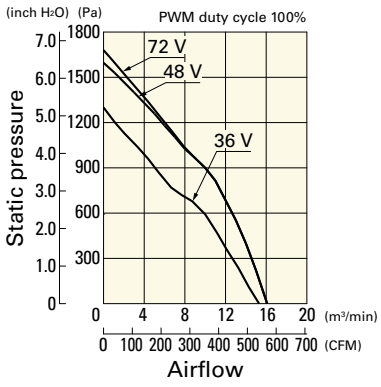
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GP5748P5G001 With pulse sensor with PWM control function

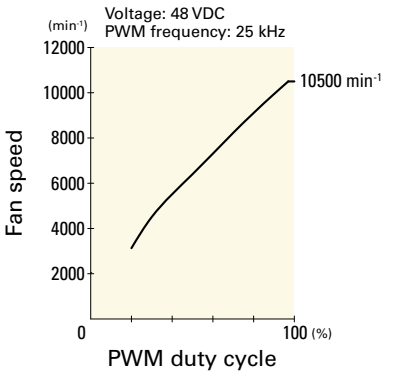
PWM duty cycle



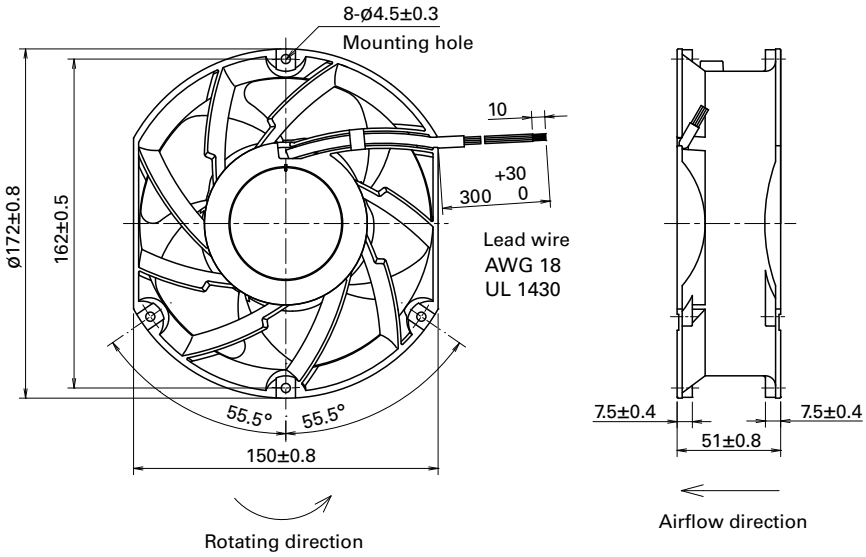
Operating voltage range



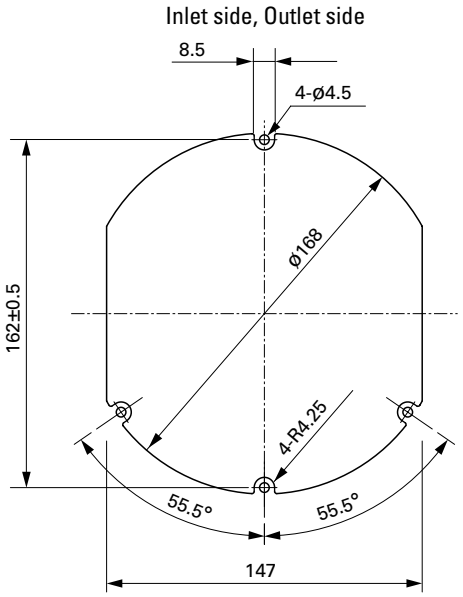
PWM duty - Speed characteristics example



Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options

Finger guards page: p. 515

Model no.: 109-319J, 109-319E, 109-319H, 109-320

Centrifugal Fan

Cooling fan blows air in a centrifugal course. It features high static pressure.
Related product: Splash Proof Centrifugal Fan p. 321

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9T	M	48	P	4	H	01
Type name	Impeller size	Voltage	PWM control function	Thickness	Speed code	Individual customer's spec (2 to 3 digits)

Bracket-mounted Centrifugal Fan

9B1T	P	48	P	0	H	001
Type name	Impeller size	Voltage	PWM control function	Thickness	Speed code	Individual customer's spec (3 digits)

Type name	9B1T	9T				
Impeller size (mm)	G, GA	J	M	N	P	S
	ø175	ø133	ø100	ø150	ø221	ø225
Voltage (V)	24	48				
	24	48				
Thickness (mm)	0		1	4		
	69 min., 99, 119		35	25		
Speed code	H	G	etc.			

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

ø100×25 mm

San Ace C100 9T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 150 g

Specifications

When the optional inlet nozzle (109-1080) is mounted.

The models listed below **have pulse sensors with PWM control function.**

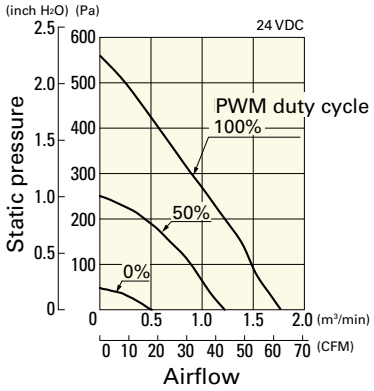
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9TM24P4H01	24	21.6 to 26.4	100	0.44	10.56	6400	1.77	62.5	560	2.25	60	-20 to +70	40000/60˚C
			0	0.05	1.2	2000	0.51	18.0	48	0.19	34		
9TM48P4H01	48	36 to 60	100	0.22	10.56	6400	1.77	62.5	560	2.25	60		
			0	0.04	1.92	2000	0.51	18.0	48	0.19	34		

* PWM frequency: 25 kHz
Max input is 14 W at rated voltage.

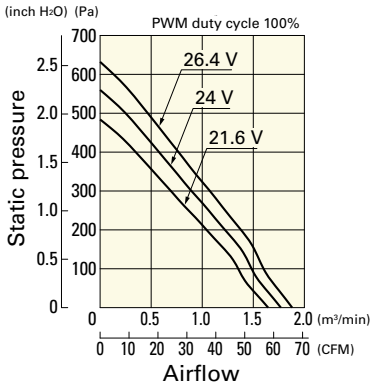
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TM24P4H01 With pulse sensor with PWM control function

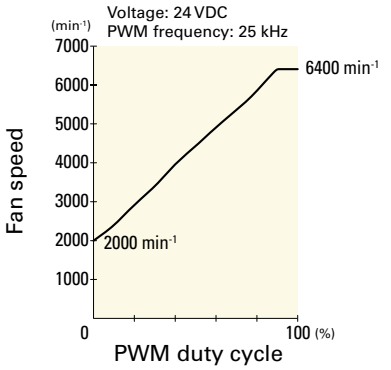
PWM duty cycle



Operating voltage range

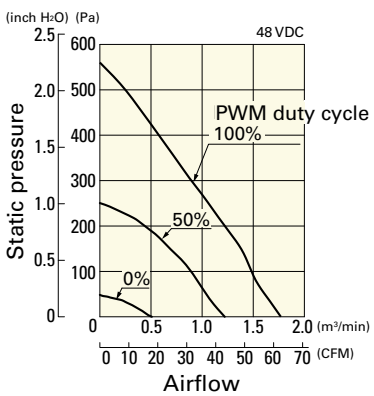


PWM duty - Speed characteristics example

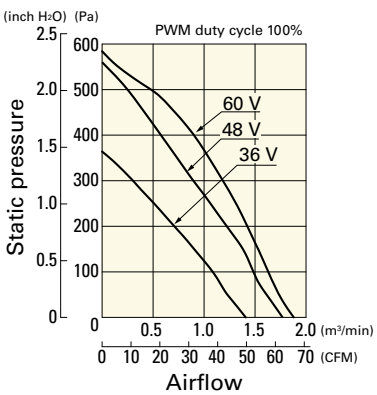


9TM48P4H01 With pulse sensor with PWM control function

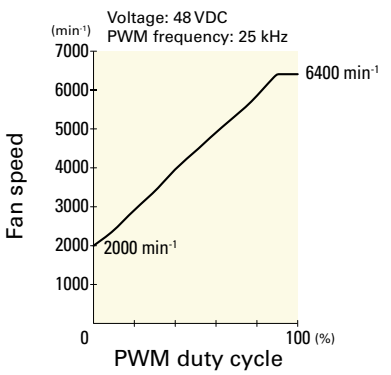
PWM duty cycle



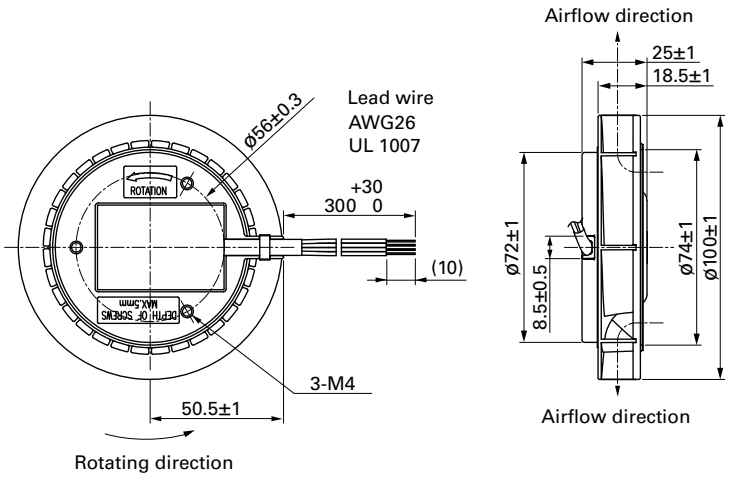
Operating voltage range



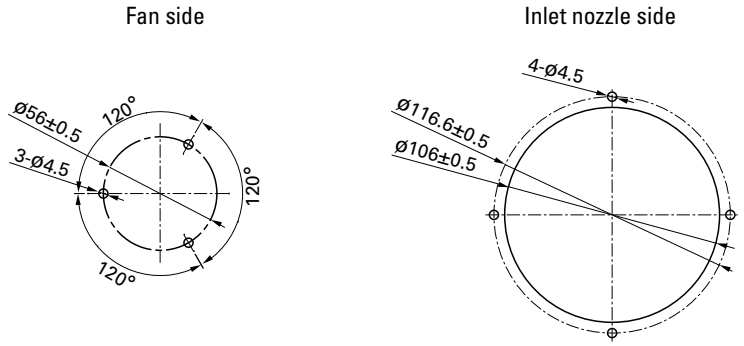
PWM duty - Speed characteristics example



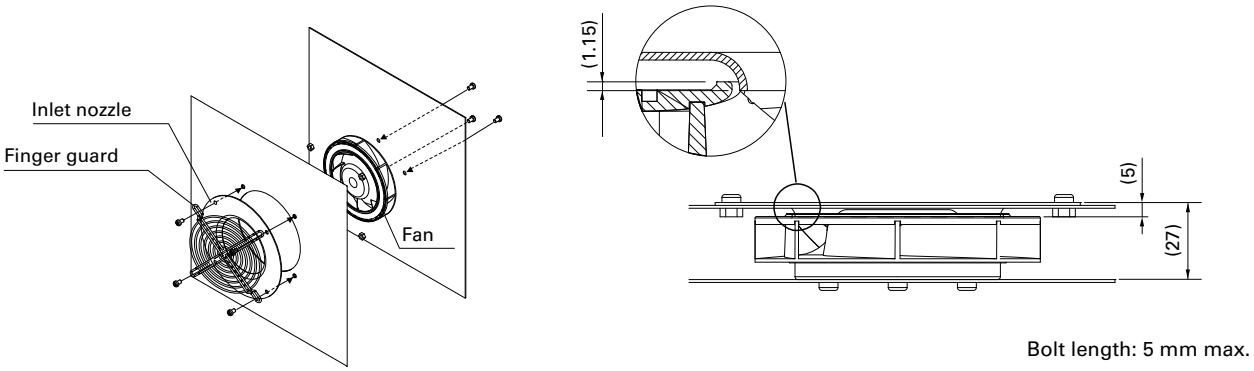
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting



Bolt length: 5 mm max.

Options

Finger guards	page: p. 513

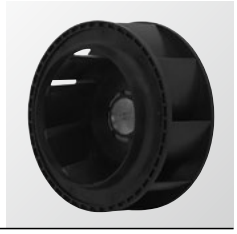
Model no.: 109-099E, 109-099H

Inlet nozzle	page: p. 518

Model no.: 109-1080

ø133×91 mm

San Ace C133 9T type



General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 660 g

Specifications

When the optional inlet nozzle (109-1069) is mounted.

The models listed below **have pulse sensors with PWM control function.**

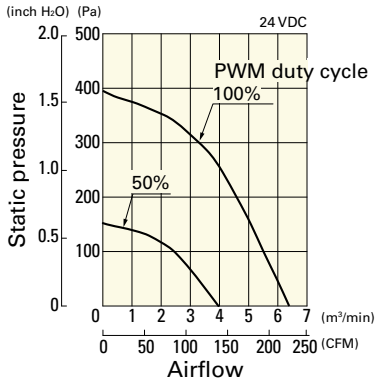
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9TJ24P0H61	24	20.4 to 27.6	100	1.2	28.8	4150	6.39	226	395	1.59	61	-20 to +70	40000/60˚C
9TJ48P0H01	48	36 to 72	100	0.55	26.4	4150	6.39	226	395	1.59	61		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

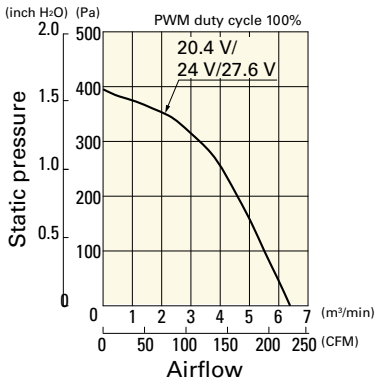
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TJ24P0H61 With pulse sensor with PWM control function

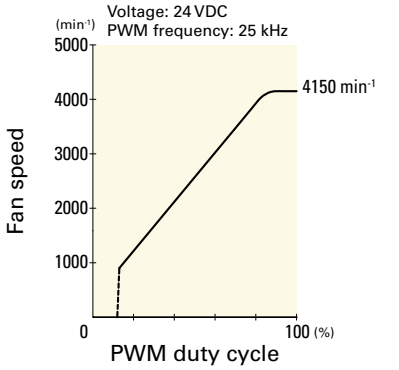
PWM duty cycle



Operating voltage range

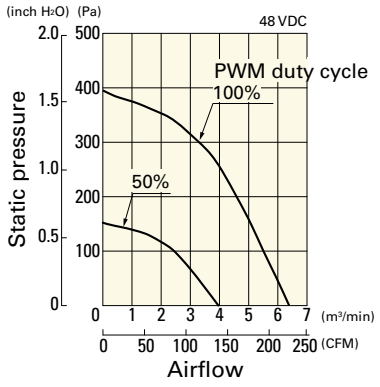


PWM duty - Speed characteristics example

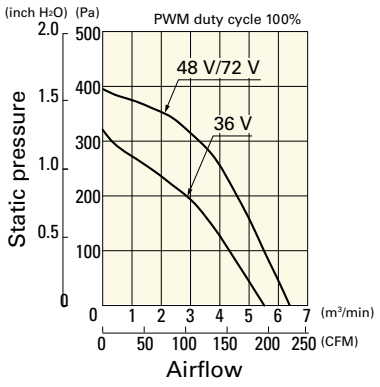


9TJ48P0H01 With pulse sensor with PWM control function

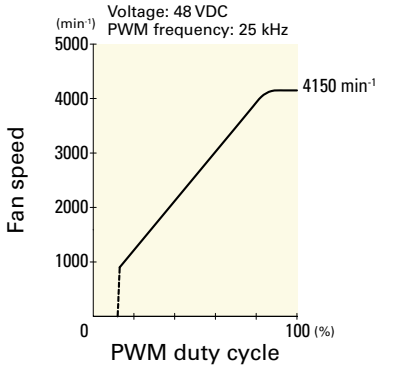
PWM duty cycle



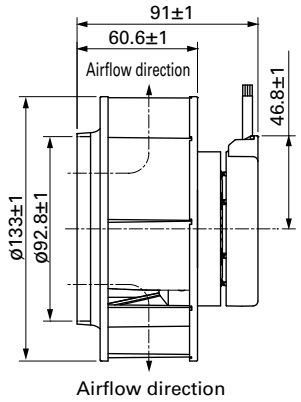
Operating voltage range

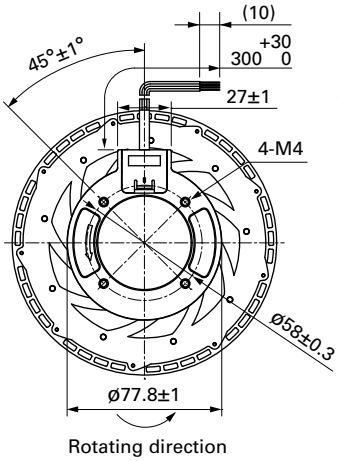


PWM duty - Speed characteristics example



Dimensions (unit: mm)

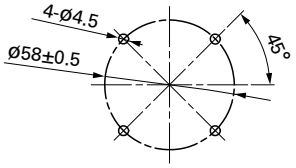




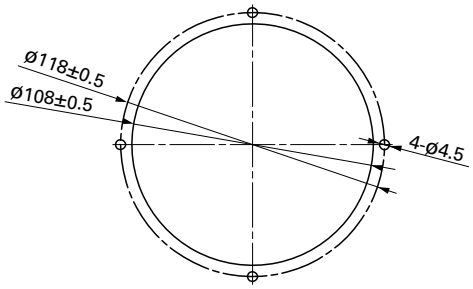
Lead wire
AWG24
UL 1430

Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

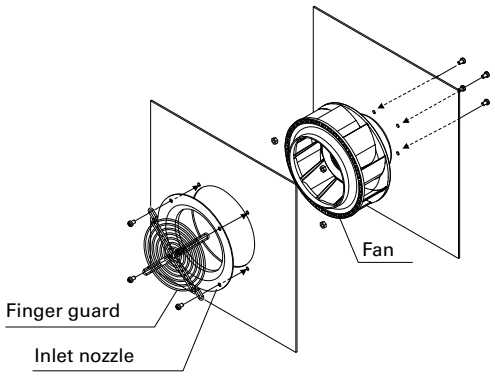
Fan side

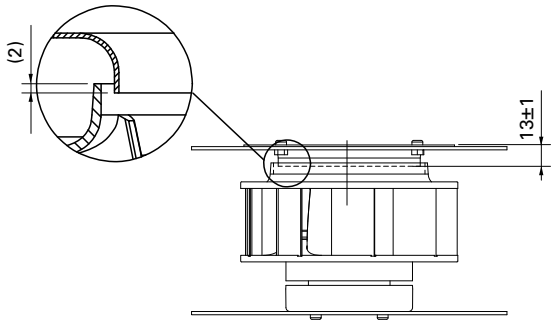


Inlet nozzle side



Reference Diagram for Mounting





Bolt length: 6 mm max.

Options

Finger guards	page: p. 514

Model no.: 109-1112

Inlet nozzle	page: p. 518

Model no.: 109-1069, 109-1069H

ø150×35 mm

San Ace C150 9T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 330 g

Specifications

When the optional inlet nozzle (109-1081) is mounted.

The models listed below **have pulse sensors with PWM control function.**

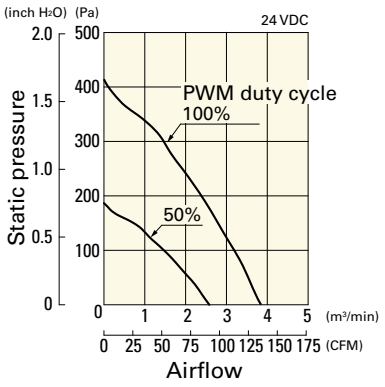
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9TN24P1H01	24	20.4 to 27.6	100	0.62	14.9	3800	3.83	135	410	1.65	59	-20 to +70	40000/60˚C
9TN48P1H01	48	36.0 to 55.2	100	0.32	15.4	3800	3.83	135	390	1.57	59		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input of 9TN24P1H01: 21.4 W, 9TN48P1H01: 22 W.

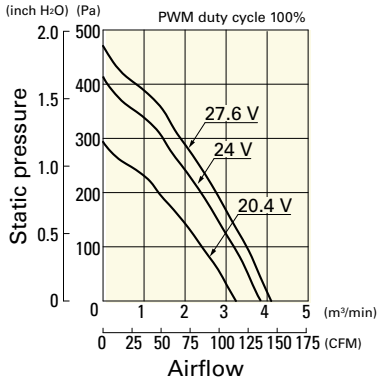
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TN24P1H01 With pulse sensor with PWM control function

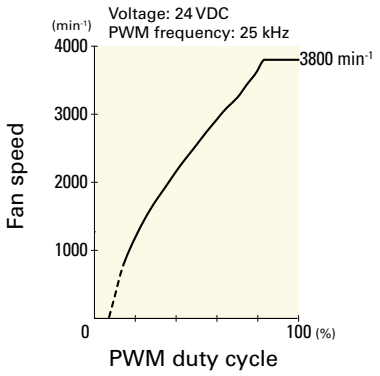
PWM duty cycle



Operating voltage range

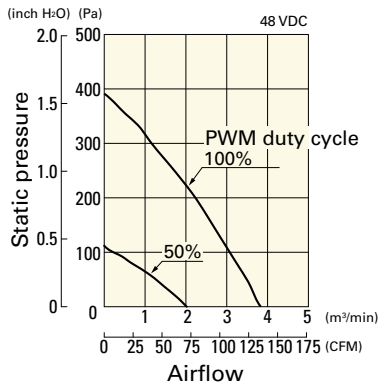


PWM duty - Speed characteristics example

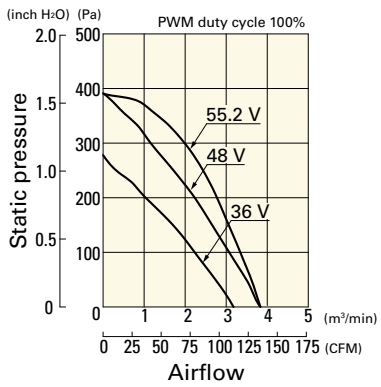


9TN48P1H01 With pulse sensor with PWM control function

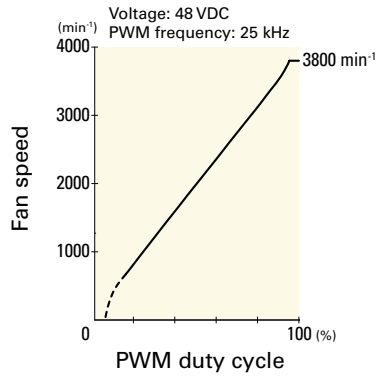
PWM duty cycle



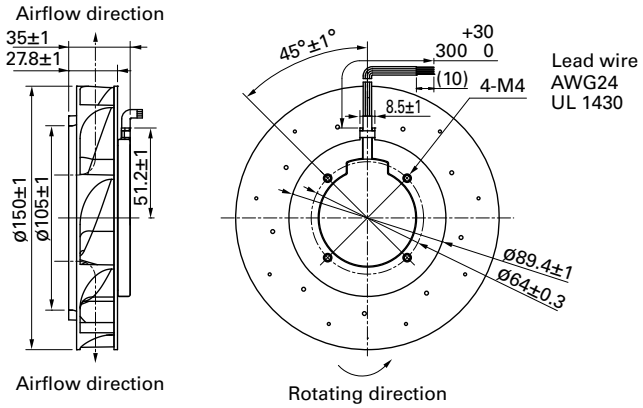
Operating voltage range



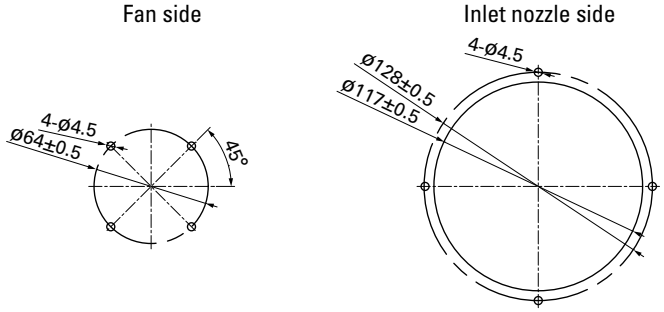
PWM duty - Speed characteristics example



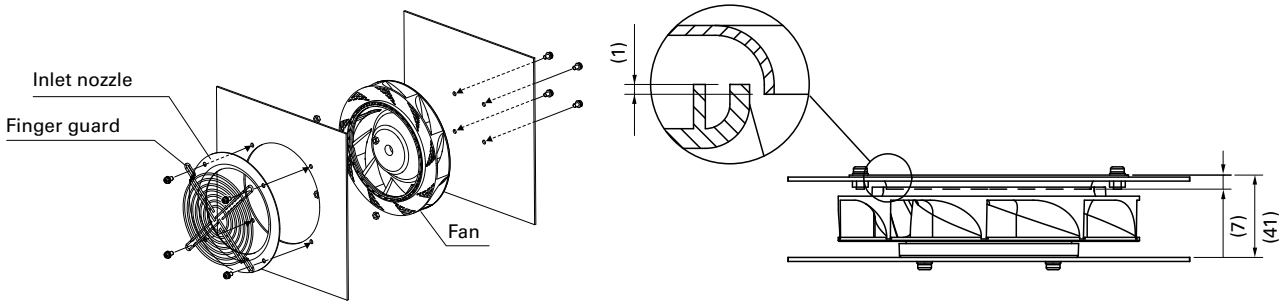
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting



Bolt length: 4 to 6 mm.

Options

Finger guards page: p. 514

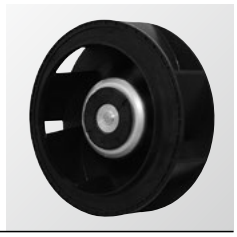
Model no.: 109-1104, 109-1104H

Inlet nozzle page: p. 518

Model no.: 109-1081, 109-1081H

ø175×69 mm

San Ace C175 9T type



General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 720 g

Specifications

When the optional inlet nozzle (109-1073) is mounted.

The models listed below **have pulse sensors with PWM control function.**

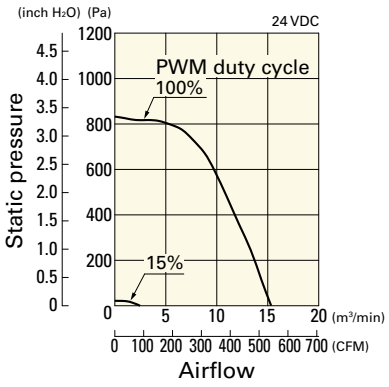
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9TGA24P0H001	24	16 to 36	100	4.8	115	4950	15.3	541	830	3.33	77	-20 to +70	40000/60˚C (70000/40˚C)
			15	0.14	3.36	800	2.5	88.3	21.8	0.088	38		
9TGA48P0G001	48	36 to 72	100	3.5	168	5700	17.6	622	1100	4.42	80		
			15	0.07	3.36	800	2.5	88.3	21.8	0.088	38		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input of 9TGA24P0H001: 210 W, 9TGA48P0G001: 325 W at rated voltage.

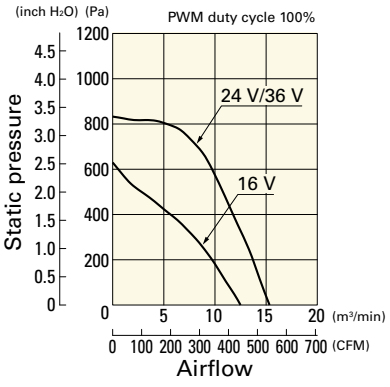
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TGA24P0H001 With pulse sensor with PWM control function

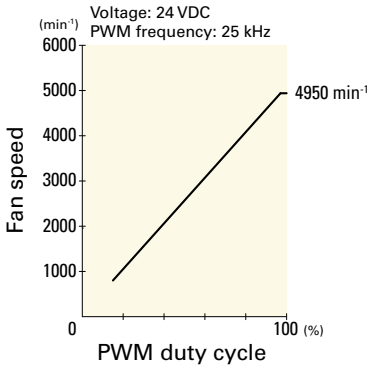
PWM duty cycle



Operating voltage range

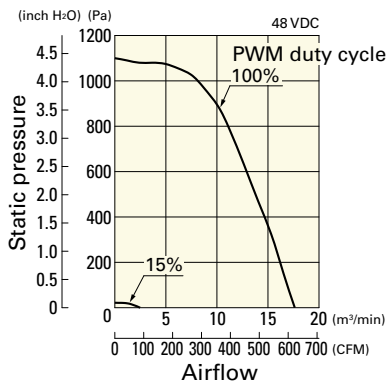


PWM duty - Speed characteristics example

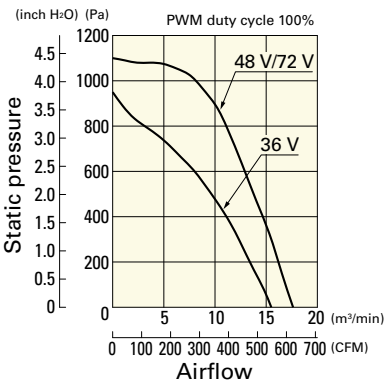


9TGA48P0G001 With pulse sensor with PWM control function

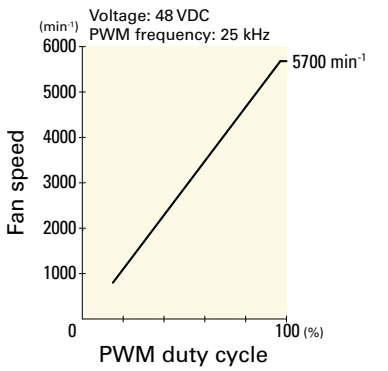
PWM duty cycle



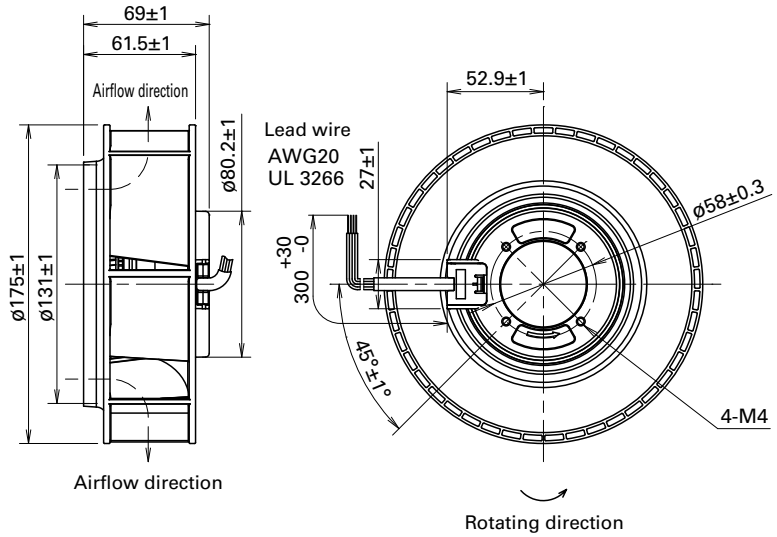
Operating voltage range



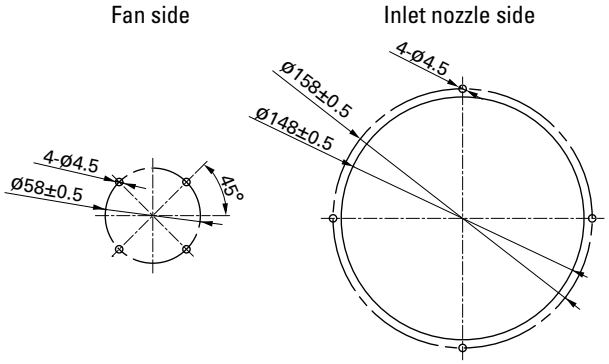
PWM duty - Speed characteristics example



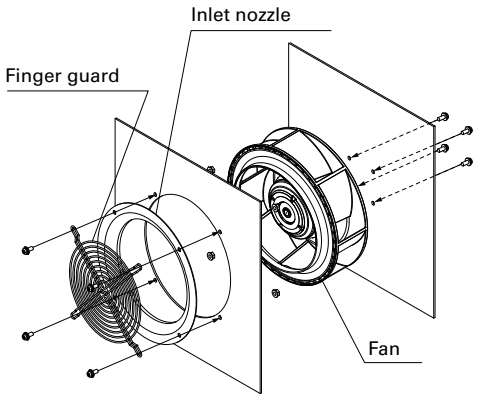
Dimensions (unit: mm)

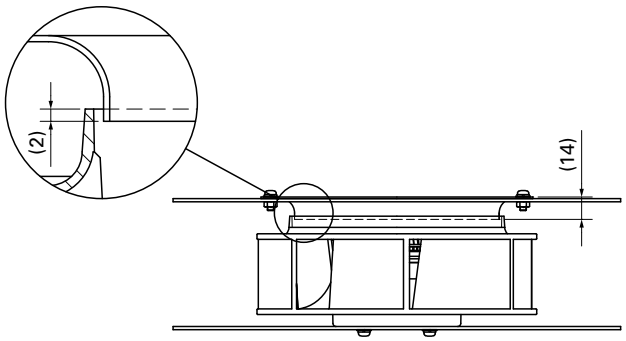


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting





Bolt length: 6 mm max.

Options

Finger guards page: p. 514

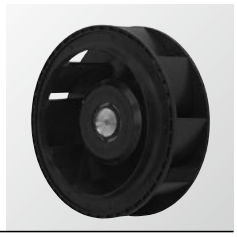
Model no.: 109-722

Inlet nozzle page: p. 518

Model no.: 109-1073, 109-1073H

ø175×69 mm

San Ace C175 9T type



General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 750 g

Specifications When the optional inlet nozzle (109-1073) is mounted.

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9TG24P0G01	24	20.4 to 27.6	100	3.9	93.6	4700	14.0	494.7	885	3.55	73	-20 to +60	40000/60˚C
9TG24P0S01				2.35	56.4	3900	11.6	409.8	609	2.45	69	-20 to +70	
9TG48P0G01	48	36 to 55.2		1.95	93.6	4700	14.0	494.7	885	3.55	73		

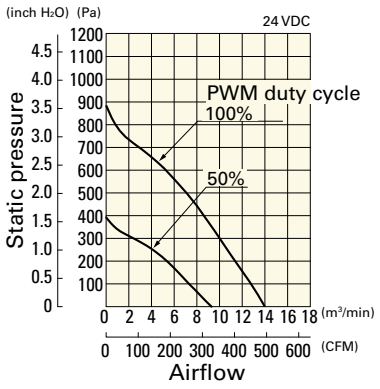
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input is 130 W at rated voltage.

Other sensor specifications are available as options. Refer to the index (p. 558).

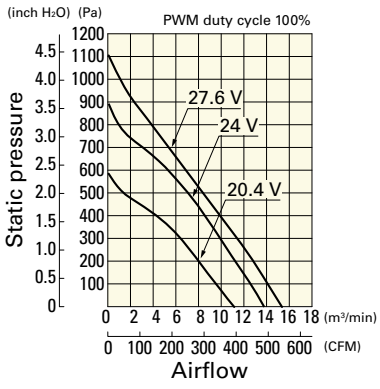
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TG24P0G01 With pulse sensor with PWM control function

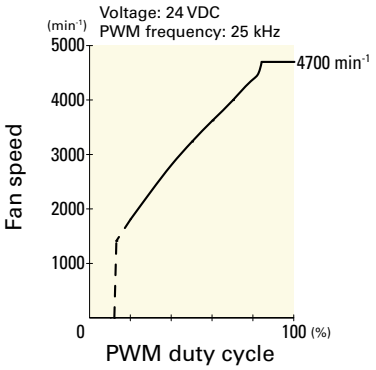
PWM duty cycle



Operating voltage range

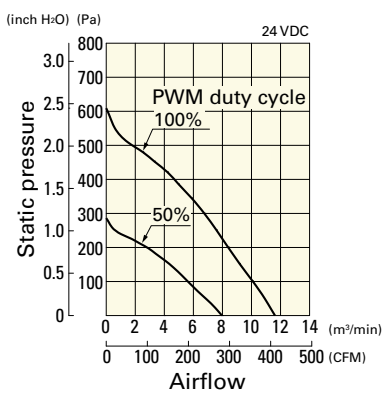


PWM duty - Speed characteristics example

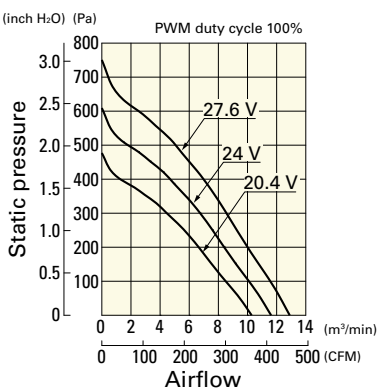


9TG24P0S01 With pulse sensor with PWM control function

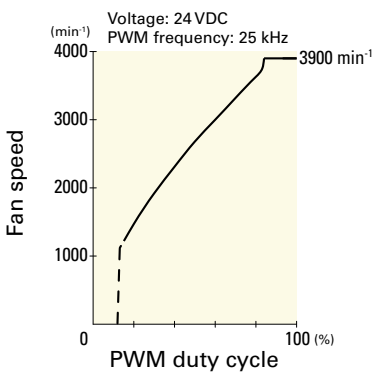
PWM duty cycle



Operating voltage range



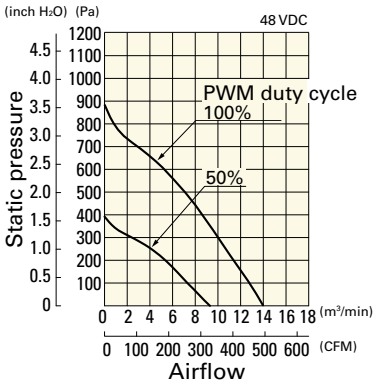
PWM duty - Speed characteristics example



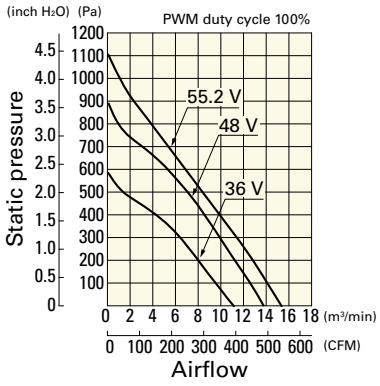
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TG48P0G01 With pulse sensor with PWM control function

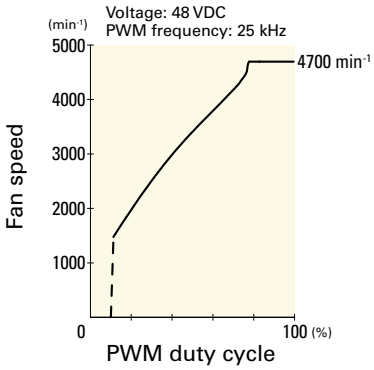
PWM duty cycle



Operating voltage range

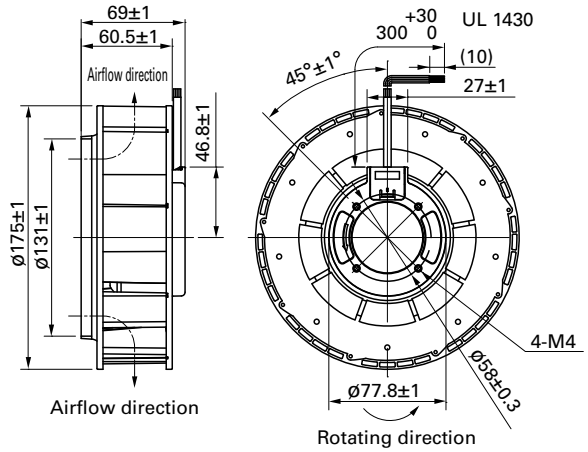


PWM duty - Speed characteristics example



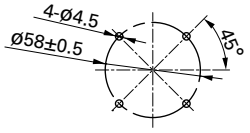
Dimensions (unit: mm)

Lead wire
AWG22 (Model: 9TG24P0G01)
AWG24 (Model: 9TG24P0S01, 9TG48P0G01)
UL 1430

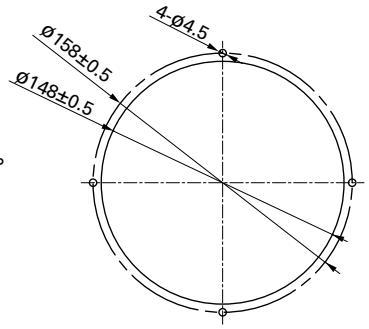


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

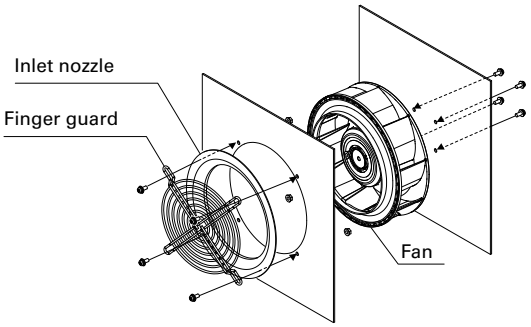
Fan side

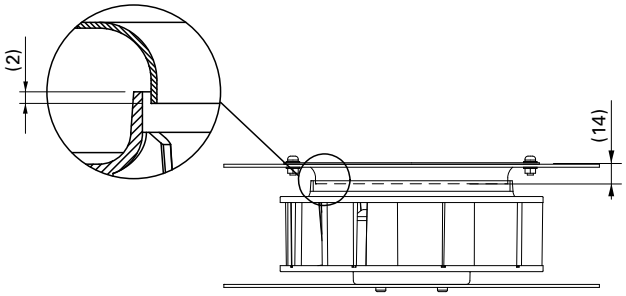


Inlet nozzle side



Reference Diagram for Mounting





Bolt length: 4 to 6 mm.
To prevent bolts from loosening, use plain washers and spring washers.

Options

Finger guards

page: p. 514

Model no.: 109-722

Inlet nozzle

page: p. 518

Model no.: 109-1073, 109-1073H

ø221×71 mm

San Ace C221 9T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 1050 g

Specifications

When the optional inlet nozzle (109-1135) is mounted.

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9TP24P0H001	24	16 to 36	100	3.2	76.8	3050	17.6	622	530	2.13	71	-20 to +70	40000/60˚C (70000/40˚C)
			15	0.4	9.6	1000	5.75	203	57.4	0.23	53		
9TP48P0G001	48	36 to 72	100	2.75	132	3650	21	742	760	3.05	74	-20 to +60	
			15	0.2	9.6	1000	5.75	203	57.4	0.23	53		
9TP48P0H001			100	1.6	76.8	3050	17.6	622	530	2.13	71	-20 to +70	
			15	0.2	9.6	1000	5.75	203	57.4	0.23	53		

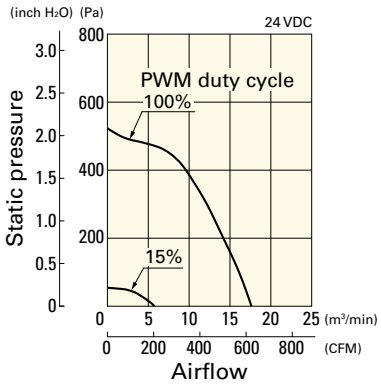
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input of 9TP48P0G001: 280 W, 9TP24P0H001/9TP48P0H001: 160 W at rated voltage.

Other sensor specifications are available as options. Refer to the index (p. 558).

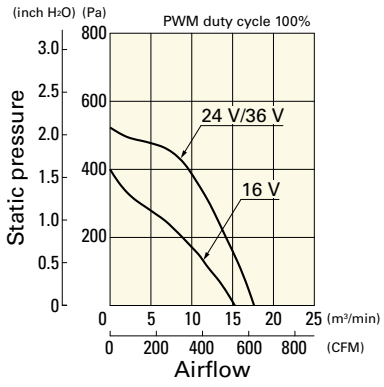
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TP24P0H001 With pulse sensor with PWM control function

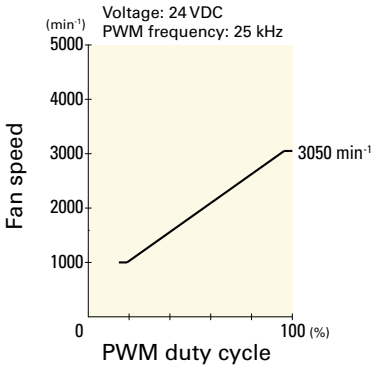
PWM duty cycle



Operating voltage range



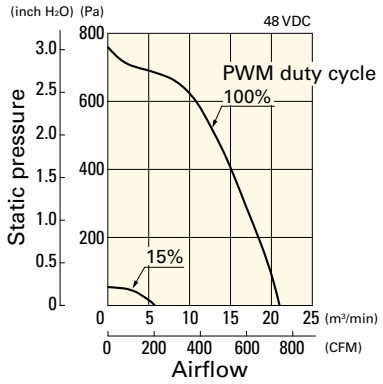
PWM duty - Speed characteristics example



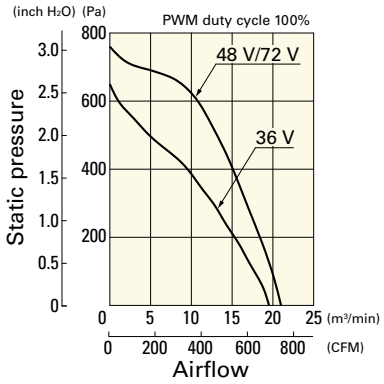
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TP48P0G001 With pulse sensor with PWM control function

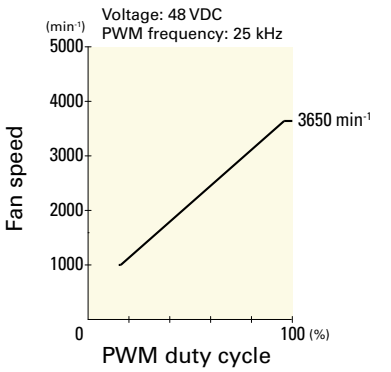
PWM duty cycle



Operating voltage range

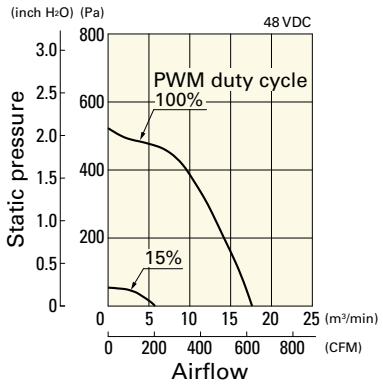


PWM duty - Speed characteristics example

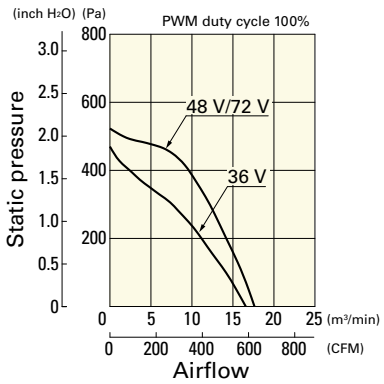


9TP48P0H001 With pulse sensor with PWM control function

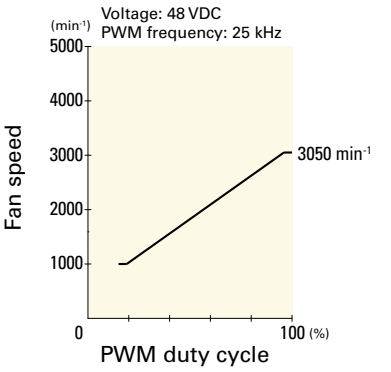
PWM duty cycle



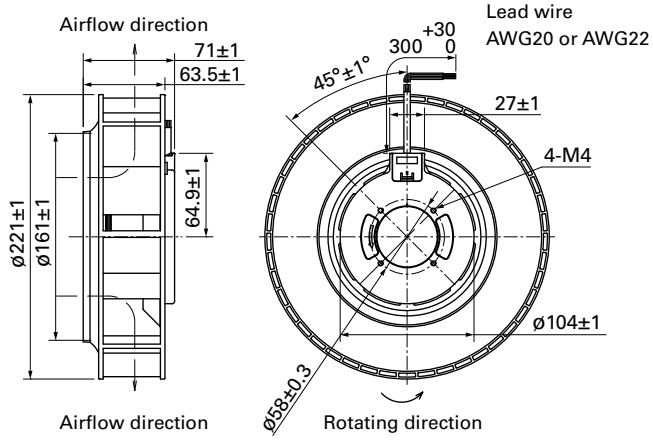
Operating voltage range



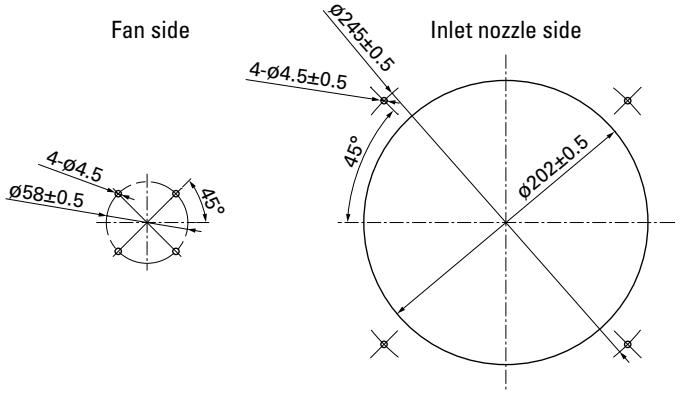
PWM duty - Speed characteristics example



Dimensions (unit: mm)

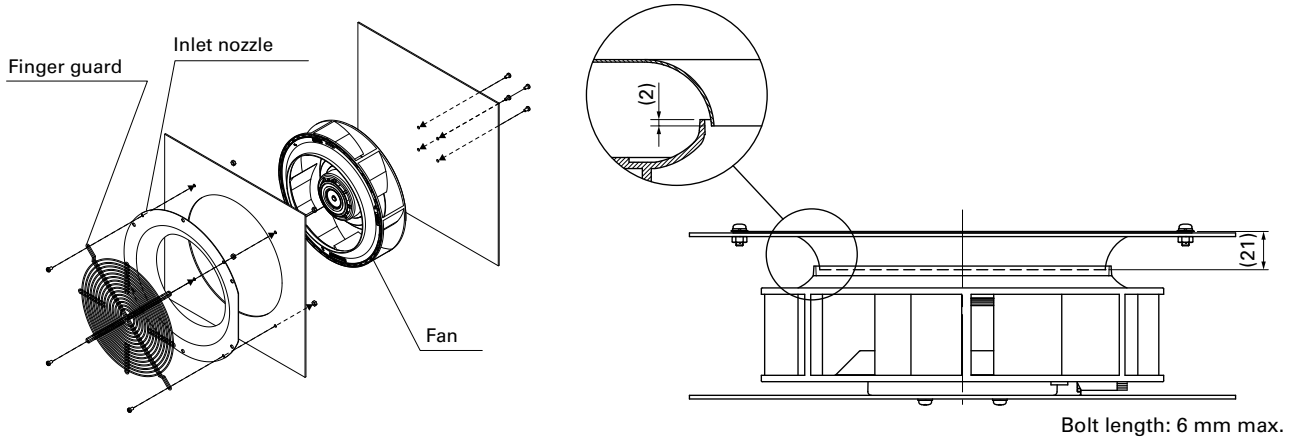


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting

Bracket-mounted model of this fan is available. For details, refer to pp. 430 to 432.



Bolt length: 6 mm max.

Options

Finger guards page: p. 516

Model no.: 109-1138

Inlet nozzle page: p. 518

Model no.: 109-1135

ø225×99 mm

San Ace C225 9T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 1220 g

Specifications

When the optional inlet nozzle (109-1134) is mounted.

The models listed below **have pulse sensors with PWM control function.**

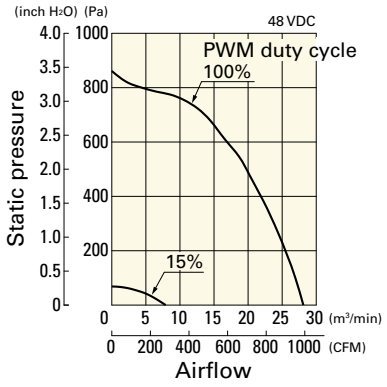
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9TS48P0G001	48	36 to 72	100	3.65	175.2	3550	28.1	992	861	3.46	74.5	-20 to +60	40000/60˚C (70000/40˚C)
			15	0.24	11.5	1000	7.85	277	68.5	0.28	52.0		
9TS48P0H001			100	2.08	99.8	2900	22.7	802	590	2.37	70.5	-20 to +70	
			15	0.24	11.5	1000	7.85	277	68.5	0.28	52.0		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input of 9TS48P0G001: 380 W, 9TS48P0H001: 200 W at rated voltage.

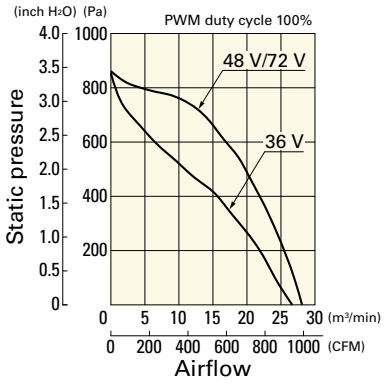
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9TS48P0G001 With pulse sensor with PWM control function

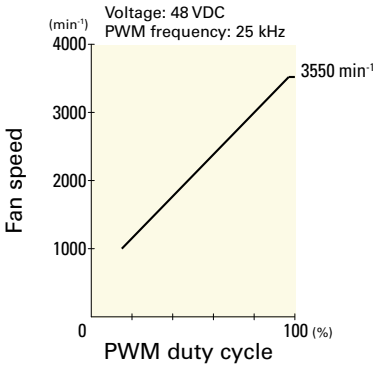
PWM duty cycle



Operating voltage range

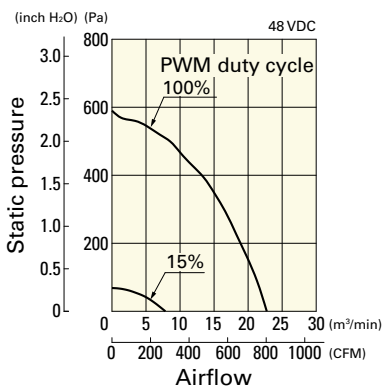


PWM duty - Speed characteristics example

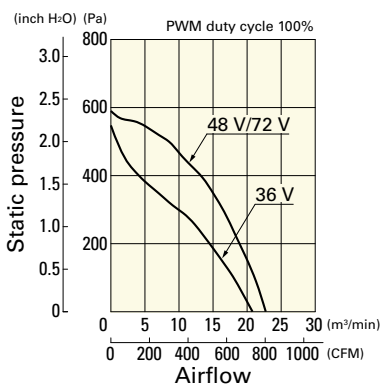


9TS48P0H001 With pulse sensor with PWM control function

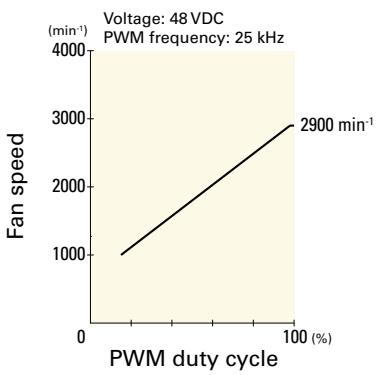
PWM duty cycle



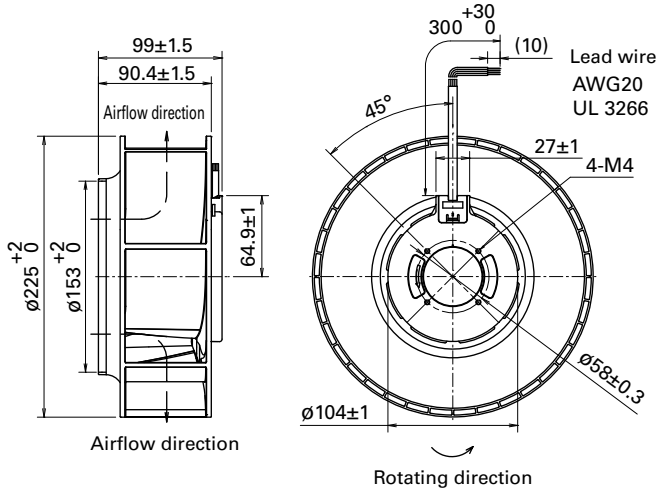
Operating voltage range



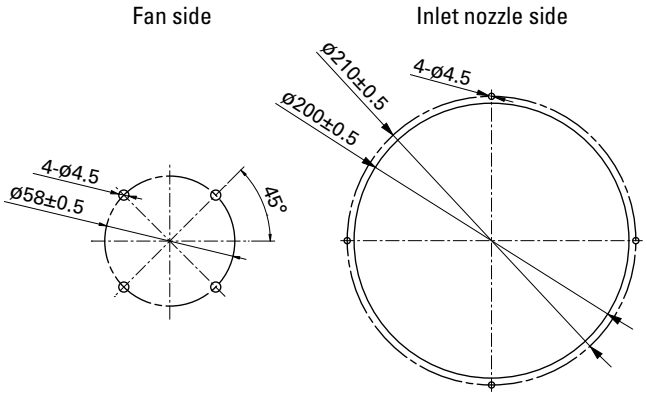
PWM duty - Speed characteristics example



Dimensions (unit: mm)

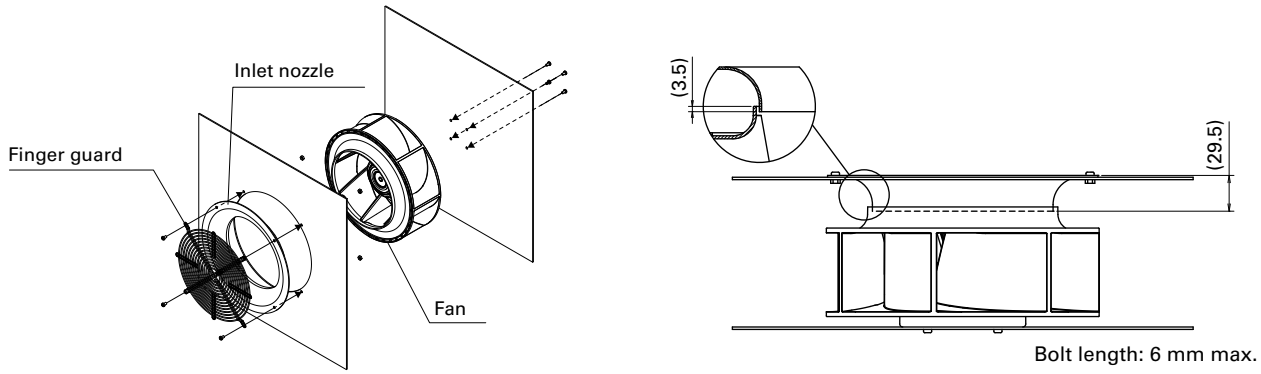


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting

Bracket-mounted model of this fan is available. For details, refer to pp. 433 to 434.



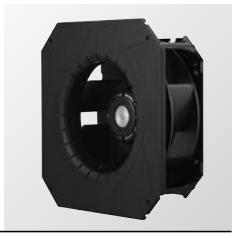
Options

Finger guards	page: p. 516
Model no.: 109-1137	

Inlet nozzle	page: p. 518
Model no.: 109-1134	

270×270×99 mm

San Ace C270 9B1T type



General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
  Bracket: Aluminum, Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black Sensor Yellow Control Brown
- Mass ····· 1700 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

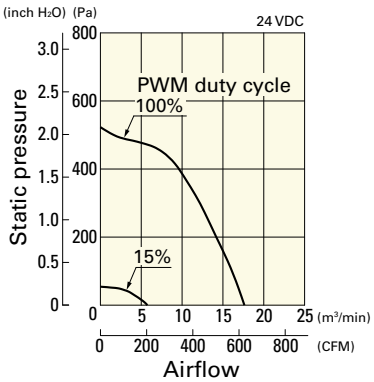
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9B1TP24P0H001	24	16 to 36	100	3.2	76.8	3050	17.6	622	530	2.13	71	-20 to +70	40000/60˚C (70000/40˚C)
			15	0.4	9.6	1000	5.75	203	57.4	0.23	53		
9B1TP48P0G001	48	36 to 72	100	2.75	132	3650	21.0	742	760	3.05	74	-20 to +60	
			15	0.2	9.6	1000	5.75	203	57.4	0.23	53		
9B1TP48P0H001			100	1.6	76.8	3050	17.6	622	530	2.13	71	-20 to +70	
			15	0.2	9.6	1000	5.75	203	57.4	0.23	53		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input of 9B1TP24P0H001/9B1TP48P0H001: 160 W, 9B1TP48P0G001: 280 W at rated voltage.

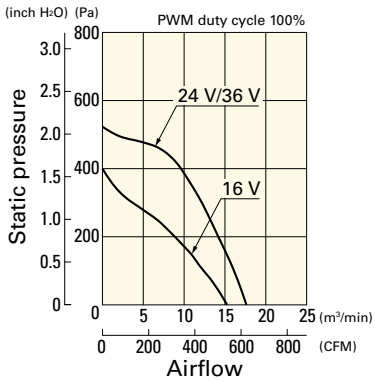
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9B1TP24P0H001 With pulse sensor with PWM control function

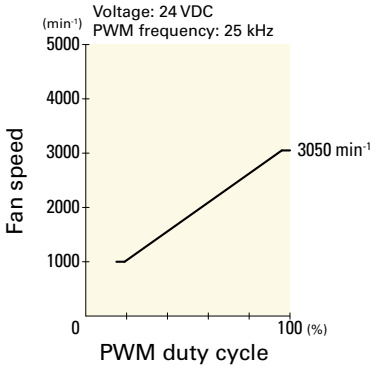
PWM duty cycle



Operating voltage range



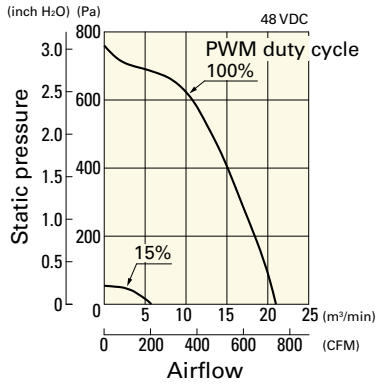
PWM duty - Speed characteristics example



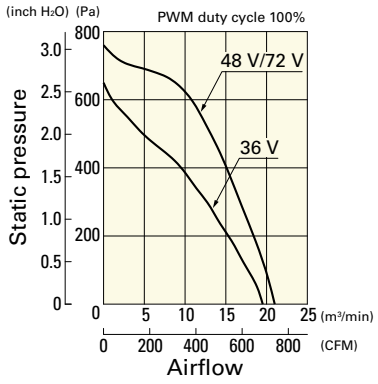
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9B1TP48P0G001 With pulse sensor with PWM control function

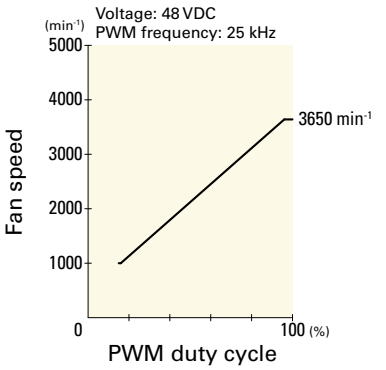
PWM duty cycle



Operating voltage range

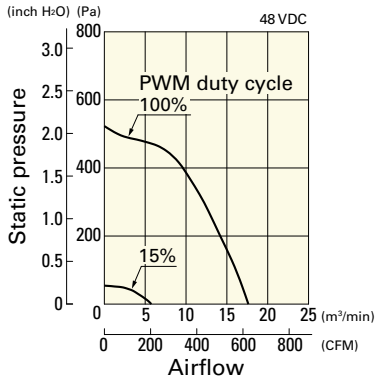


PWM duty - Speed characteristics example

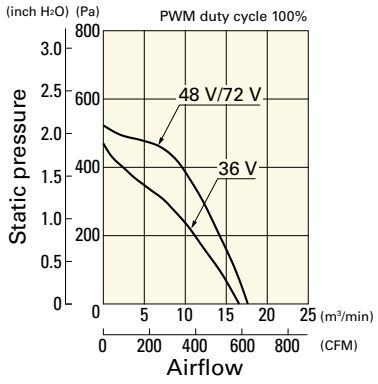


9B1TP48P0H001 With pulse sensor with PWM control function

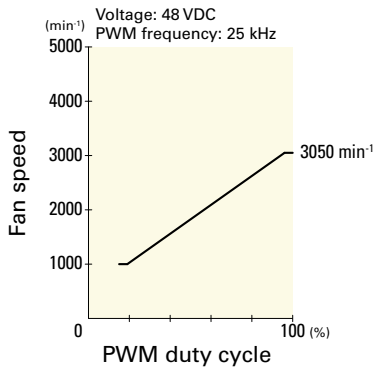
PWM duty cycle



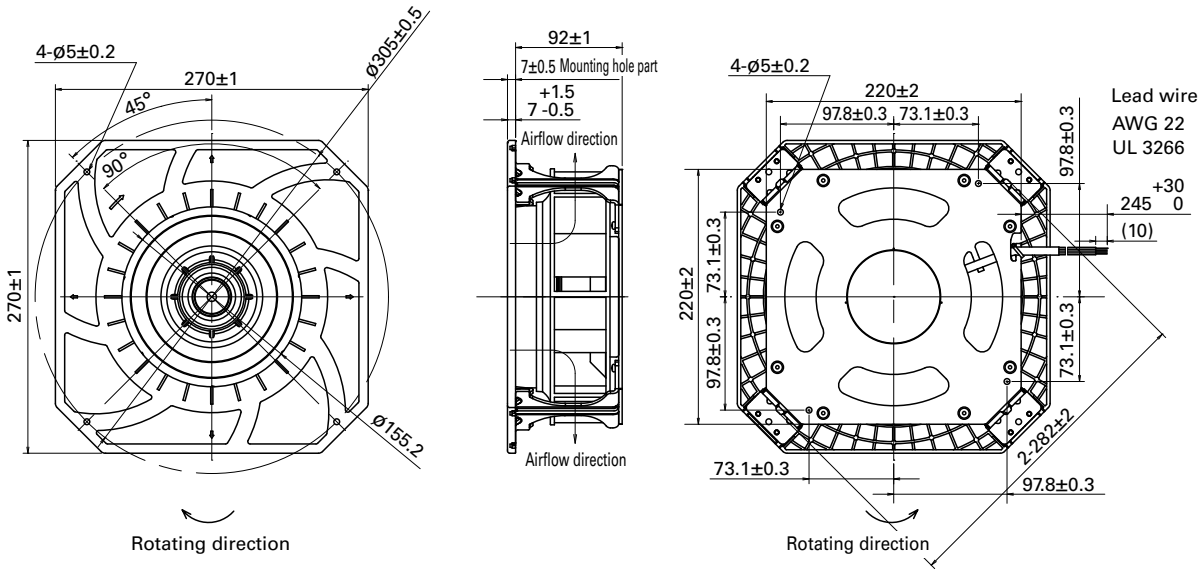
Operating voltage range



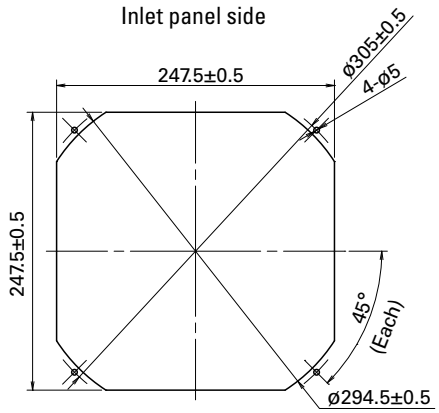
PWM duty - Speed characteristics example



Dimensions (unit: mm)

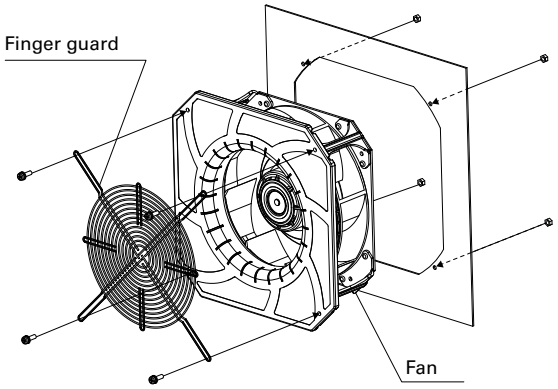


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting

Finger guard 109-1146 should be mounted with four holes as in the drawing.



Options

Finger guards page: p. 517

Model no.: 109-1146

270×270×119 mm

San Ace C270 9B1T type

General Specifications

- Material ····· Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
  Bracket: Aluminum, Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black Sensor Yellow Control Brown
- Mass ····· 1920 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

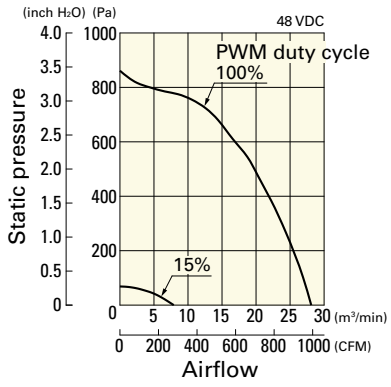
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9B1TS48P0G001	48	36 to 72	100	3.65	175.2	3550	28.1	992	861	3.46	74.5	-20 to +60	40000/60˚C (70000/40˚C)
			15	0.24	11.5	1000	7.85	277	68.5	0.28	52.0		
9B1TS48P0H001			100	2.08	99.8	2900	22.7	802	590	2.37	70.5	-20 to +70	
			15	0.24	11.5	1000	7.85	277	68.5	0.28	52.0		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.
Max input of 9B1TS48P0G001: 380 W, 9B1TS48P0H001: 200 W at rated voltage.

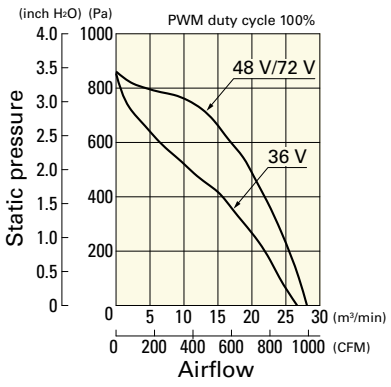
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9B1TS48P0G001 With pulse sensor with PWM control function

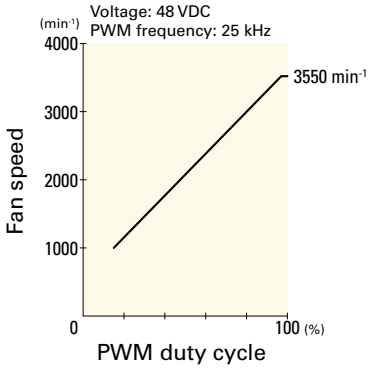
PWM duty cycle



Operating voltage range

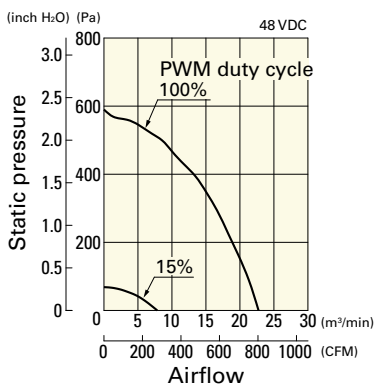


PWM duty - Speed characteristics example

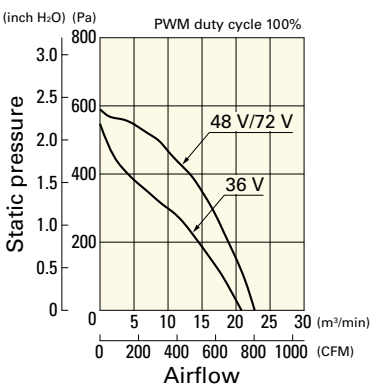


9B1TS48P0H001 With pulse sensor with PWM control function

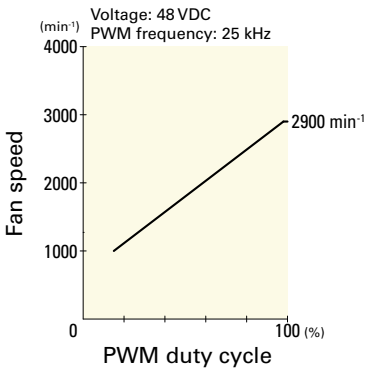
PWM duty cycle



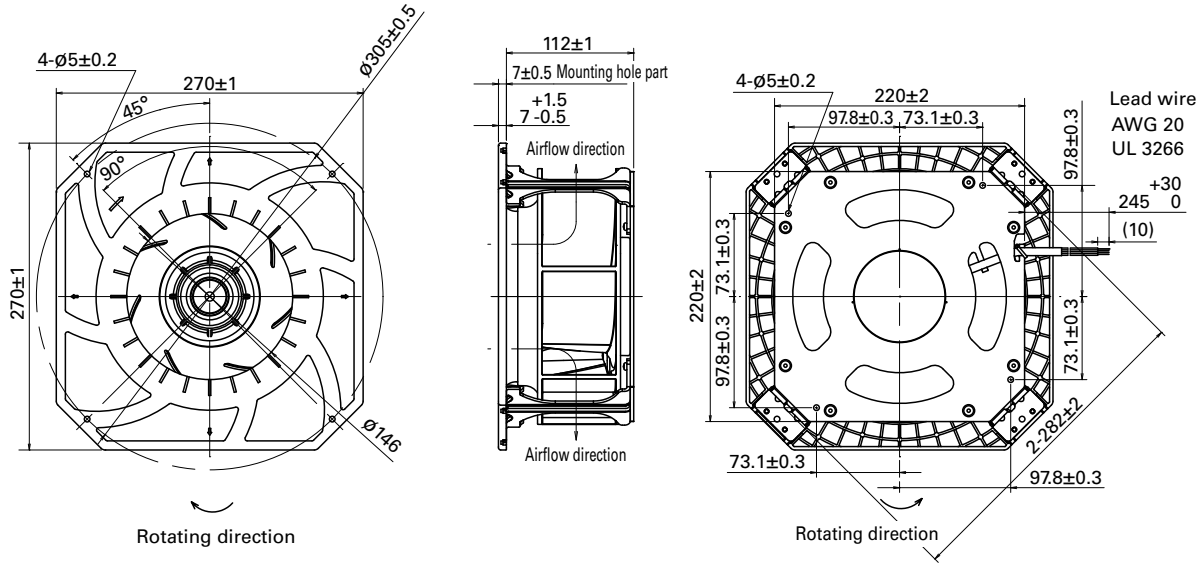
Operating voltage range



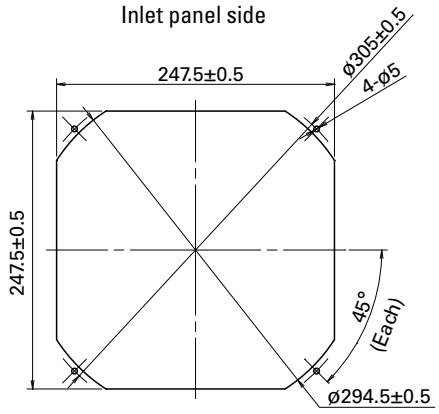
PWM duty - Speed characteristics example



Dimensions (unit: mm)

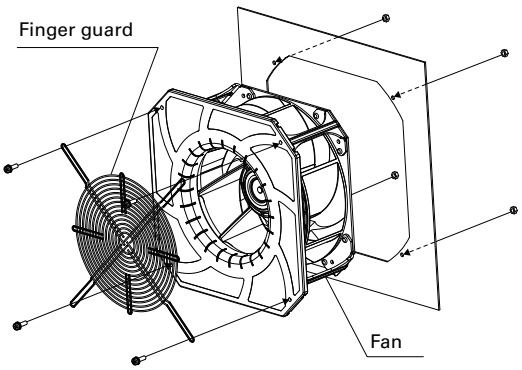


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Reference Diagram for Mounting

Finger guard 109-1146 should be mounted with four holes as in the drawing.



Options

Finger guards page: p. 517

Model no.: 109-1146

Blower

Cooling fan specialized for high static pressure.

Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

109B	C	12	H	C	2	-1
Type name	Frame size	Voltage	Speed code	Sensor specifications	Frame thickness	Individual customer's spec

9B	MB	12	G	2	01	-1
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications	Individual customer's spec

Fans with PWM control function

9B	MB	12	P	2	G	01
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec (2 to 3 digits)

Type name	109B	9B				
Frame size (mm)	C	D	F, FB	G	J	M, MB, MC
	52	76	120	160	127	97
Voltage (V)	12	24				
	12	24				
Speed code	F	G	H	K	M	S etc.
Sensor specifications	A, 02	C, 01	D			
	Without a sensor	With a pulse sensor	With a lock sensor			
Frame thickness (mm)	1	2	7	6		
	40	30, 32, 33	15	20		

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min^{-1}]	Max. airflow [m^3/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH$_2$O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device).
Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device).
Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation.
Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only.
For more information, please refer to the technical material section.

52×15 mm

San Ace B52 9BC type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 33 g

Specifications

The models listed below **have pulse sensors.**

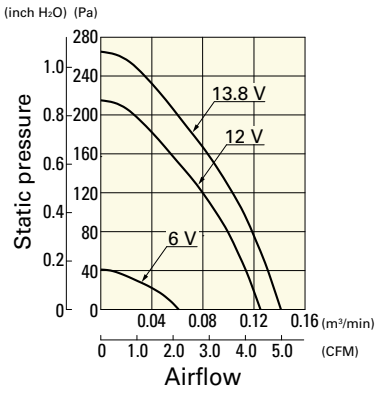
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109BC12GC7-1	12	6 to 13.8	0.12	1.44	6200	0.125	4.4	215	0.86	43	-20 to +70	40000/60˚C (70000/40˚C)
109BC12HC7-1			0.1	1.2	5600	0.112	4.0	165	0.66	40		
109BC12FC7-1			0.08	0.96	5100	0.101	3.6	130	0.52	38		
109BC12MC7-1			0.06	0.72	4600	0.091	3.2	100	0.4	35		
109BC24GC7-1	24	12 to 27.6	0.07	1.68	6200	0.125	4.4	215	0.86	43		
109BC24HC7-1			0.05	1.2	5600	0.112	4.0	165	0.66	40		
109BC24FC7-1			0.04	0.96	5100	0.101	3.6	130	0.52	38		

Other sensor specifications are available as options. Refer to the index (p. 542).

Airflow - Static Pressure Characteristics

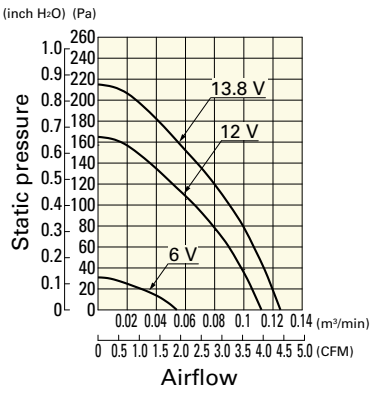
109BC12GC7-1 With pulse sensor

Operating voltage range



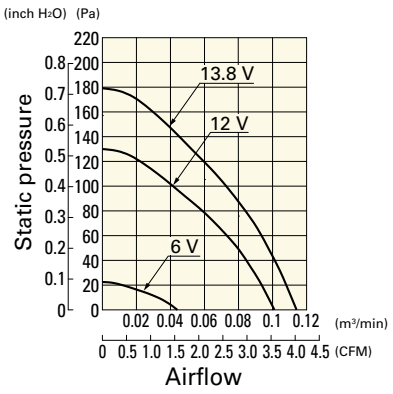
109BC12HC7-1 With pulse sensor

Operating voltage range



109BC12FC7-1 With pulse sensor

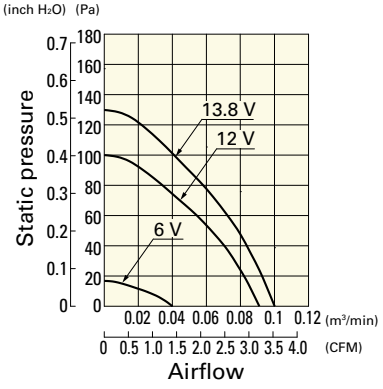
Operating voltage range



Airflow - Static Pressure Characteristics

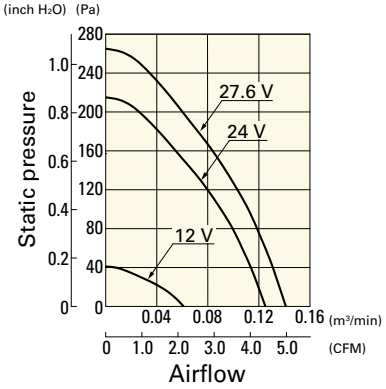
109BC12MC7-1 With pulse sensor

Operating voltage range



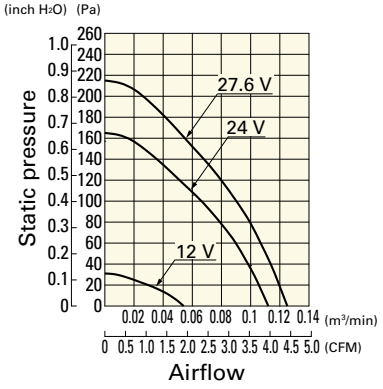
109BC24GC7-1 With pulse sensor

Operating voltage range



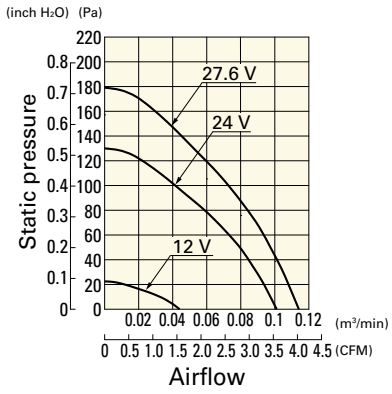
109BC24HC7-1 With pulse sensor

Operating voltage range

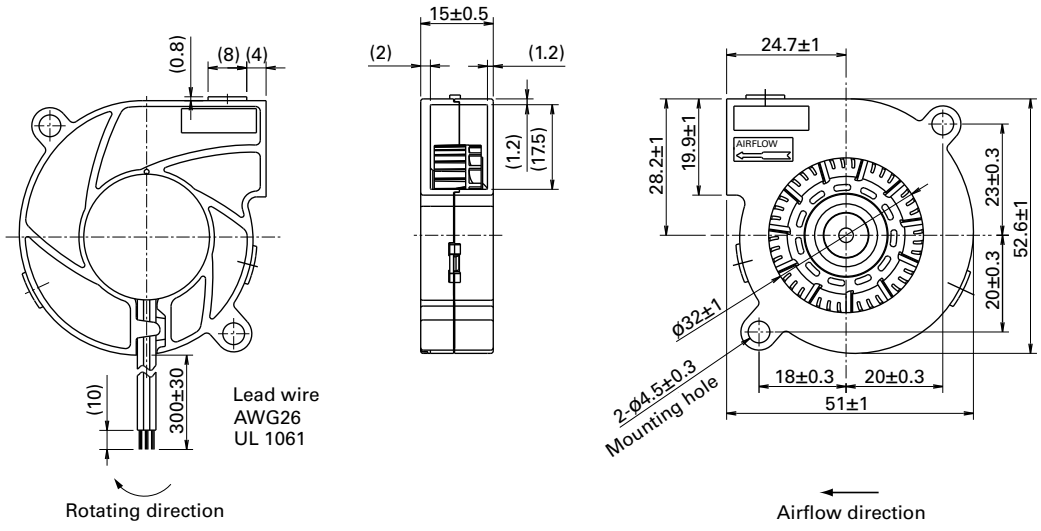


109BC24FC7-1 With pulse sensor

Operating voltage range



Dimensions (unit: mm)



76×20 mm

San Ace B76 9BD type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 58 g

Specifications

The models listed below **have pulse sensors.**

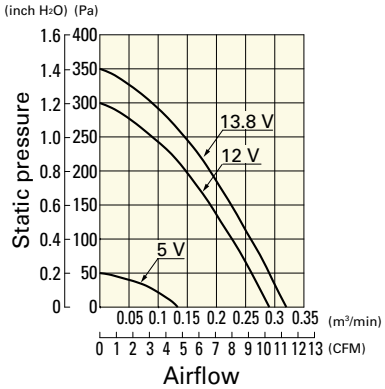
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9BD12SC6-1	12	5 to 13.8	0.28	3.36	4500	0.29	10.2	300	1.2	43	-20 to +70	40000/60˚C (70000/40˚C)
9BD12HC6-1		5.5 to 13.8	0.21	2.52	4200	0.27	9.5	230	0.92	41		
9BD12FC6-1			0.18	2.16	3900	0.25	8.8	200	0.8	39		
9BD24SC6-1	24	10 to 27.6	0.14	3.36	4500	0.29	10.2	300	1.2	43		
9BD24HC6-1			0.12	2.88	4200	0.27	9.5	230	0.92	41		
9BD24FC6-1			0.1	2.4	3900	0.25	8.8	200	0.8	39		

Other sensor specifications are available as options. Refer to the index (p. 547).

Airflow - Static Pressure Characteristics

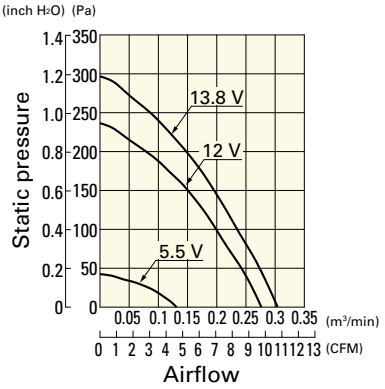
9BD12SC6-1 With pulse sensor

Operating voltage range



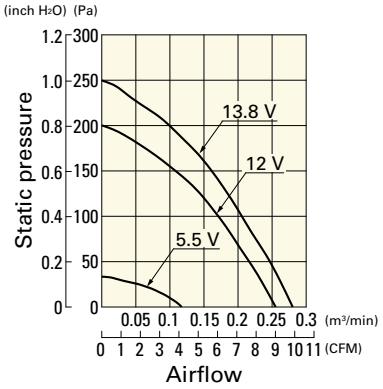
9BD12HC6-1 With pulse sensor

Operating voltage range



9BD12FC6-1 With pulse sensor

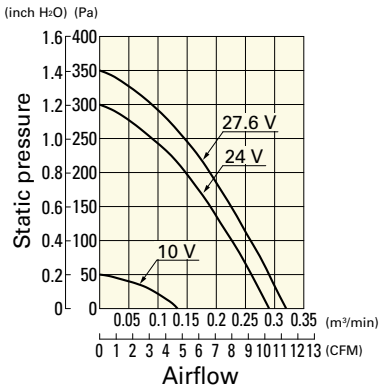
Operating voltage range



Airflow - Static Pressure Characteristics

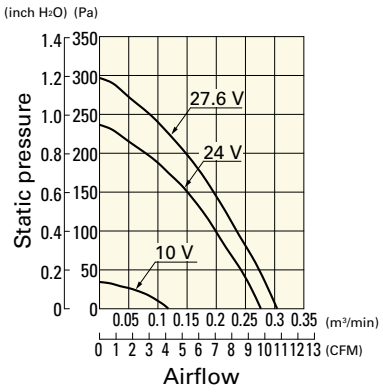
9BD24SC6-1 With pulse sensor

Operating voltage range



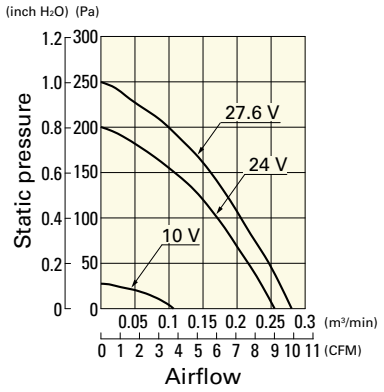
9BD24HC6-1 With pulse sensor

Operating voltage range

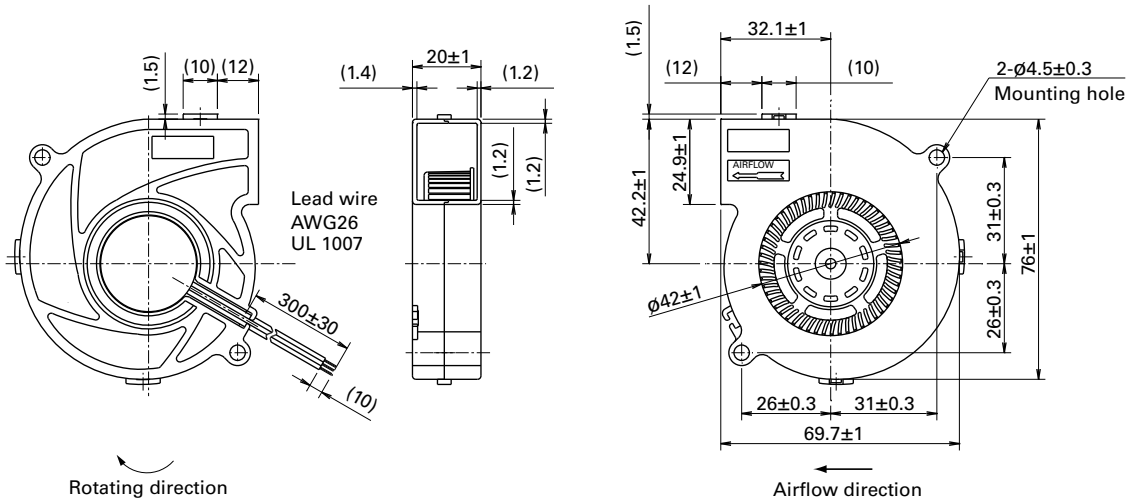


9BD24FC6-1 With pulse sensor

Operating voltage range



Dimensions (unit: mm)



76×30 mm

San Ace B76 9BD type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 100 g

Specifications

The models listed below **have pulse sensors.**

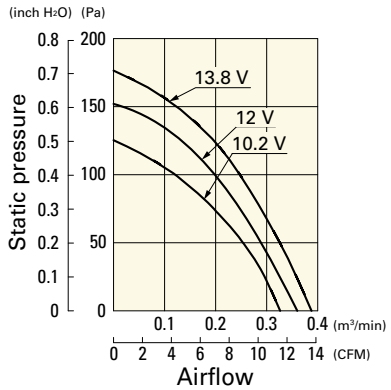
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109BD12HC2	12	10.2 to 13.8	0.37	4.44	3000	0.36	12.7	151.9	0.61	41.5	-20 to +60	40000/60˚C
109BD12FC2			0.27	3.24	2600	0.31	10.9	98	0.394	37	-20 to +70	
109BD12MC2			0.14	1.68	2100	0.25	8.8	58.8	0.236	32.5		
109BD24HC2	24	20.4 to 27.6	0.17	4.08	3000	0.36	12.7	151.9	0.61	41.5	-20 to +60	
109BD24FC2			0.14	3.36	2600	0.31	10.9	98	0.394	37	-20 to +70	
109BD24MC2			0.1	2.4	2100	0.25	8.8	58.8	0.236	32.5		

Other sensor specifications are available as options. Refer to the index (p. 542).

Airflow - Static Pressure Characteristics

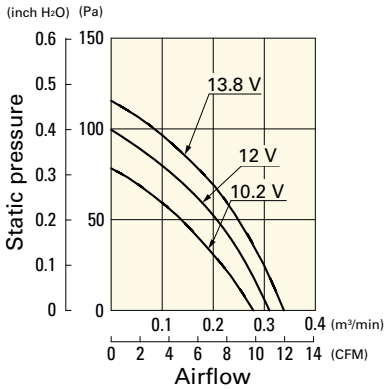
109BD12HC2 With pulse sensor

Operating voltage range



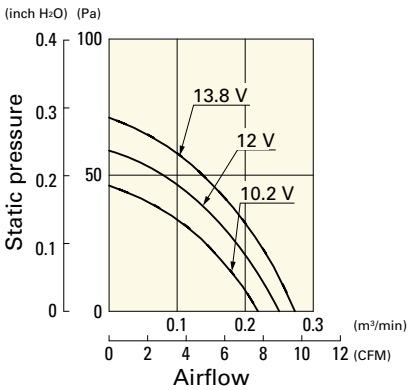
109BD12FC2 With pulse sensor

Operating voltage range



109BD12MC2 With pulse sensor

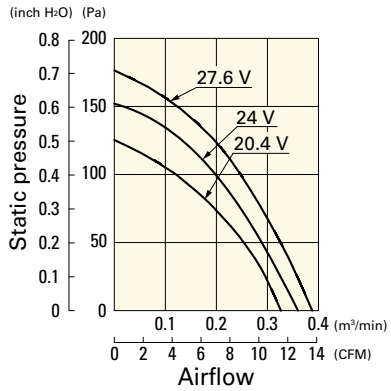
Operating voltage range



Airflow - Static Pressure Characteristics

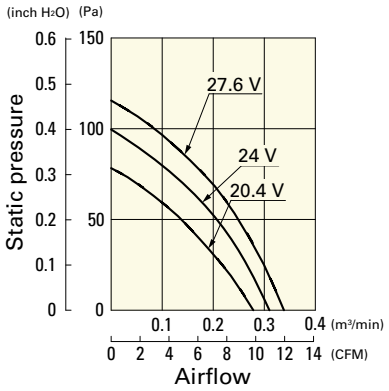
109BD24HC2 With pulse sensor

Operating voltage range



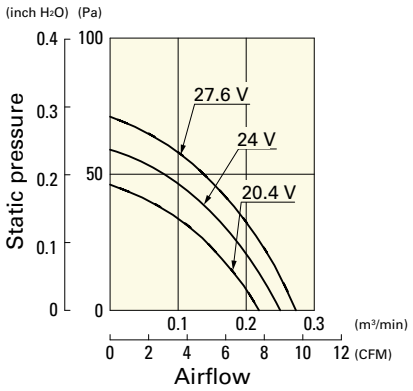
109BD24FC2 With pulse sensor

Operating voltage range

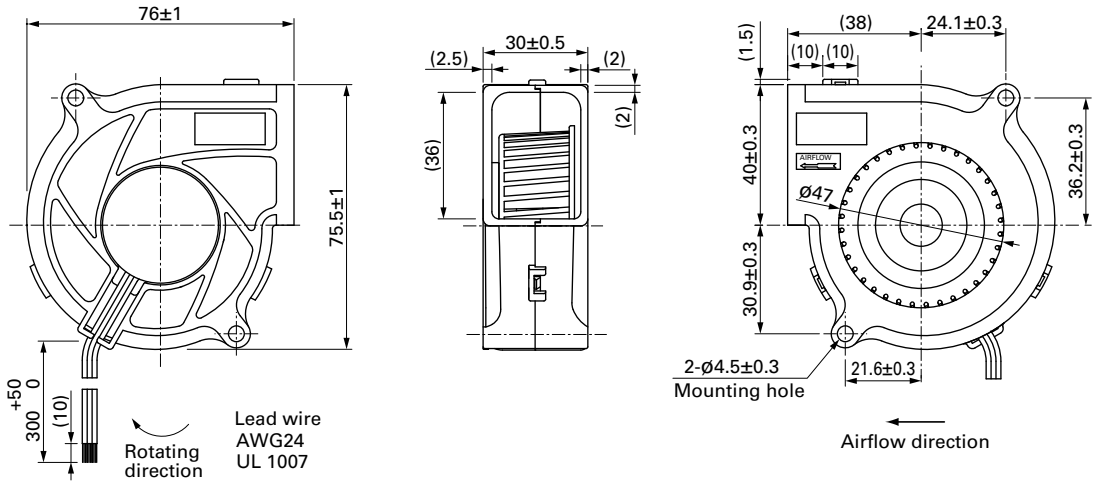


109BD24MC2 With pulse sensor

Operating voltage range



Dimensions (unit: mm)



97×33 mm

San Ace B97 9BM type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow
- Mass ····· 175 g

Specifications

The models listed below **have pulse sensors.**

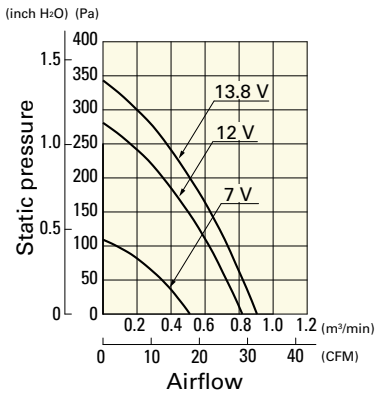
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109BM12GC2-1	12	7 to 13.8	0.6	7.2	3800	0.82	28.9	281	1.129	51.5	-20 to +70	40000/60˚C (70000/40˚C)
109BM12HC2-1			0.4	4.8	3300	0.71	25.1	204	0.819	48.5		
109BM12MC2-1			0.26	3.12	2700	0.58	20.5	119	0.478	43.5		
109BM24GC2-1	24	12 to 27.6	0.31	7.44	3800	0.82	28.9	281	1.129	51.5		
109BM24HC2-1			0.26	6.24	3300	0.71	25.1	204	0.819	48.5		
109BM24MC2-1			0.15	3.6	2700	0.58	20.5	119	0.478	43.5		

Other sensor specifications are available as options. Refer to the index (p. 542).

Airflow - Static Pressure Characteristics

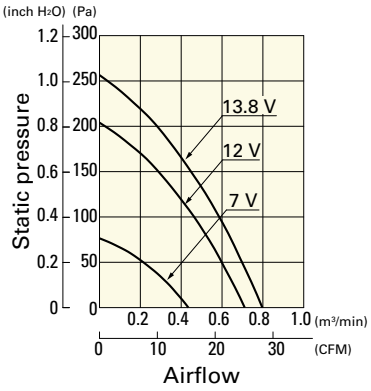
109BM12GC2-1 With pulse sensor

Operating voltage range



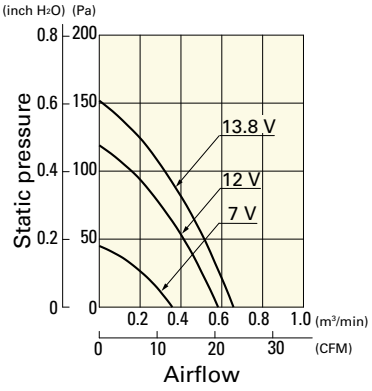
109BM12HC2-1 With pulse sensor

Operating voltage range



109BM12MC2-1 With pulse sensor

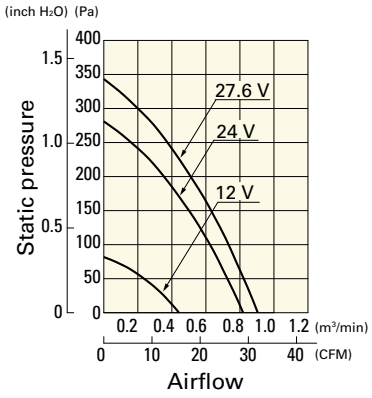
Operating voltage range



Airflow - Static Pressure Characteristics

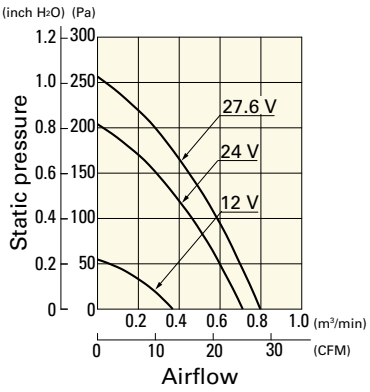
109BM24GC2-1 With pulse sensor

Operating voltage range



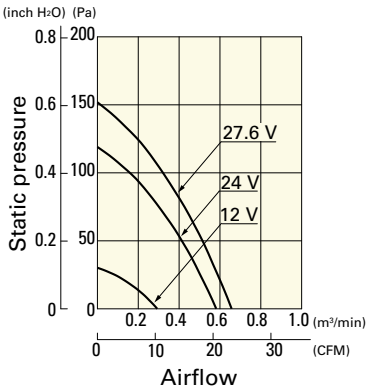
109BM24HC2-1 With pulse sensor

Operating voltage range

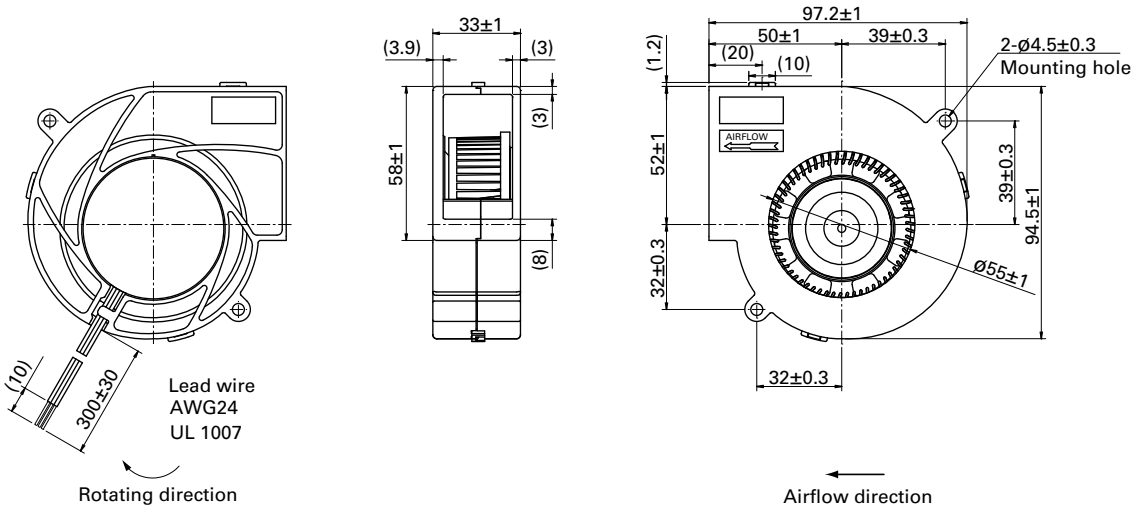


109BM24MC2-1 With pulse sensor

Operating voltage range



Dimensions (unit: mm)



97×33 mm

San Ace B97 9BMC type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 200 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9BMC12P2G001	12	10.8 to 13.2	100	6.2	74.4	8200	1.85	65.3	1950	7.83	69	-20 to +70	40000/60˚C (70000/40˚C)
			20	0.38	4.56	2800	0.58	20.4	121.0	0.48	44		
9BMC24P2G001	24	21.6 to 26.4	100	3.1	74.4	8200	1.85	65.3	1950	7.83	69		
			20	0.19	4.56	2800	0.58	20.4	121.0	0.48	44		

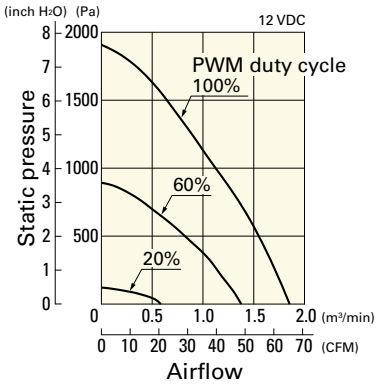
* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

Other sensor specifications are available as options. Refer to the index (p. 548).

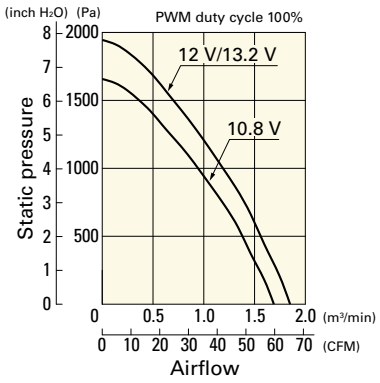
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9BMC12P2G001 With pulse sensor with PWM control function

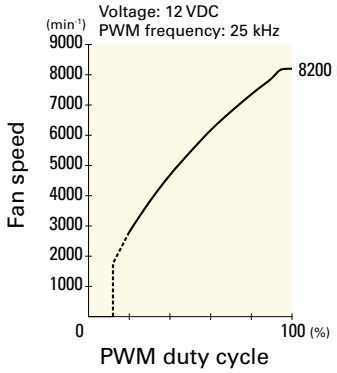
PWM duty cycle



Operating voltage range

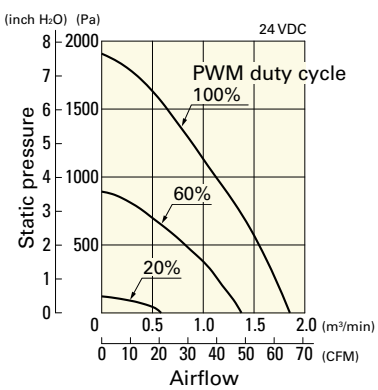


PWM duty - Speed characteristics example

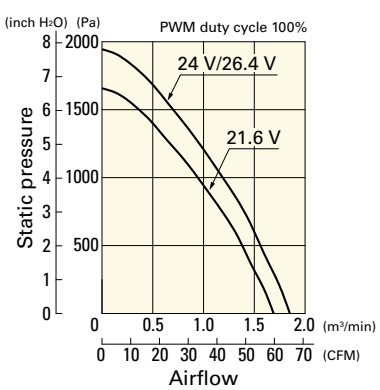


9BMC24P2G001 With pulse sensor with PWM control function

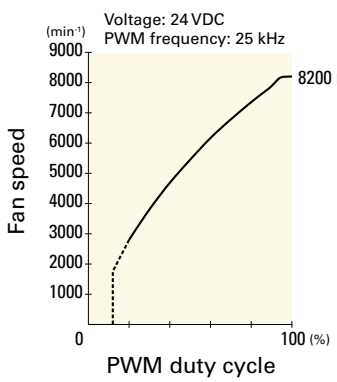
PWM duty cycle



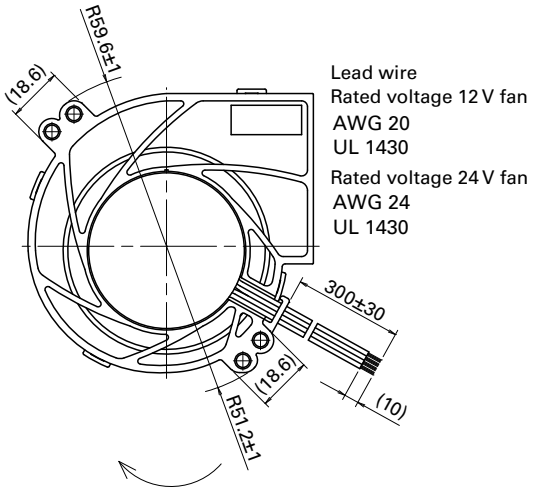
Operating voltage range



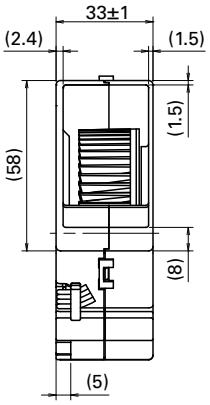
PWM duty - Speed characteristics example

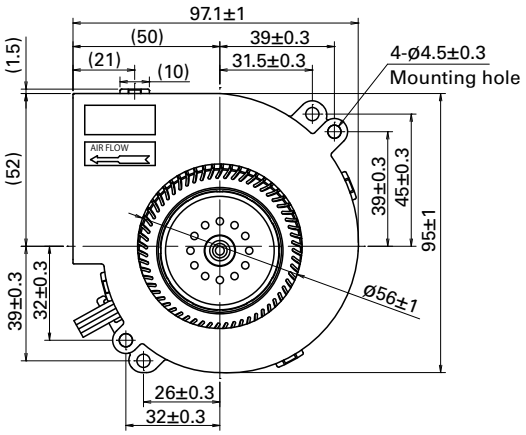


Dimensions (unit: mm)



Rotating direction





Airflow direction

97×33 mm

San Ace B97 9BMB type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
  (For models without PWM control function, there is no speed control wiring.)
- Mass ····· 190 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9BMB12P2K01	12	10.8 to 13.2	100	3.4	40.8	6850	1.61	56.8	1280	5.14	66	-20 to +70	40000/60˚C
9BMB12P2G01		10.2 to 13.8	100	1.8	21.6	5750	1.34	47.3	760	3.05	61		
9BMB12P2S01			100	1.4	16.8	5250	1.22	43.1	610	2.45	59		
9BMB12P2H01			100	1.1	13.2	4850	1.11	39.2	490	1.968	57		
9BMB12P2F01			100	0.9	10.8	4500	1.04	36.7	410	1.64	56		
9BMB24P2K01	24	21.6 to 26.4	100	1.62	38.88	6850	1.61	56.8	1280	5.14	66		
9BMB24P2G01			100	0.83	19.92	5750	1.34	47.3	760	3.05	61		
9BMB24P2S01			100	0.7	16.8	5250	1.22	43.1	610	2.45	59		
9BMB24P2H01			100	0.55	13.2	4850	1.11	39.2	490	1.968	57		
9BMB24P2F01			100	0.45	10.8	4500	1.04	36.7	410	1.64	56		

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

The models listed below **have pulse sensors.**

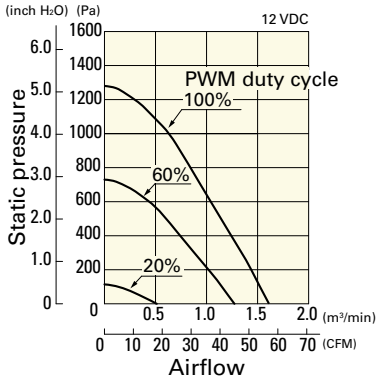
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9BMB12K201	12	7 to 13.2	3.4	40.8	6850	1.61	56.8	1280	5.14	66	-20 to +70	40000/60˚C
9BMB12G201		7 to 13.8	1.8	21.6	5750	1.34	47.3	760	3.052	61		
9BMB12S201			1.4	16.8	5250	1.22	43.1	610	2.45	59		
9BMB12H201			1.1	13.2	4850	1.11	39.2	490	1.968	57		
9BMB12F201			0.9	10.8	4500	1.04	36.7	410	1.647	56		
9BMB24K201	24	21.6 to 26.4	1.62	38.88	6850	1.61	56.8	1280	5.14	66		
9BMB24G201		12 to 26.4	0.83	19.9	5750	1.34	47.3	760	3.052	61		
9BMB24S201			0.7	16.8	5250	1.22	43.1	610	2.45	59		
9BMB24H201			0.55	13.2	4850	1.11	39.2	490	1.968	57		
9BMB24F201			0.45	10.8	4500	1.04	36.7	410	1.647	56		

Other sensor specifications are available as options. Refer to the index (p. 548).

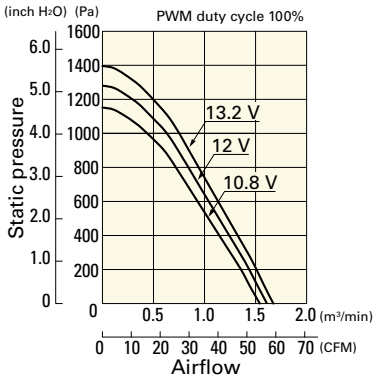
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9BMB12P2K01 With pulse sensor with PWM control function

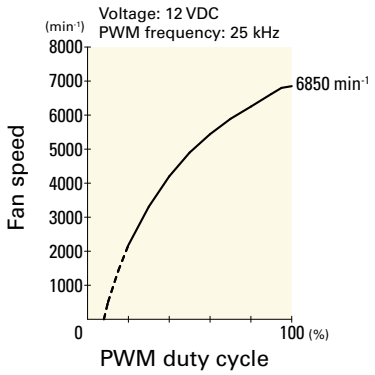
PWM duty cycle



Operating voltage range

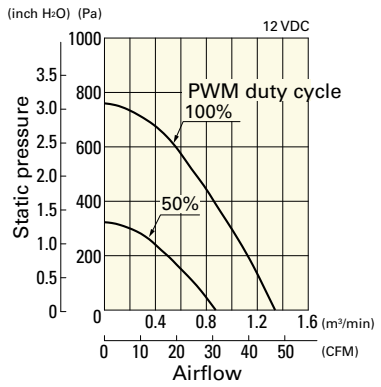


PWM duty - Speed characteristics example

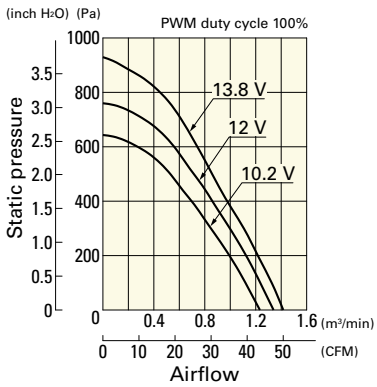


9BMB12P2G01 With pulse sensor with PWM control function

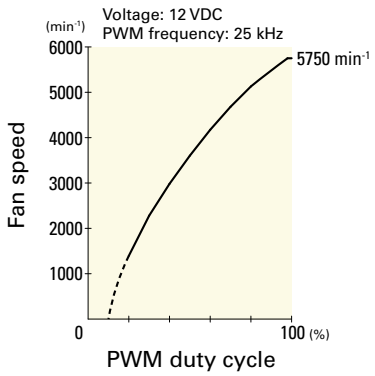
PWM duty cycle



Operating voltage range

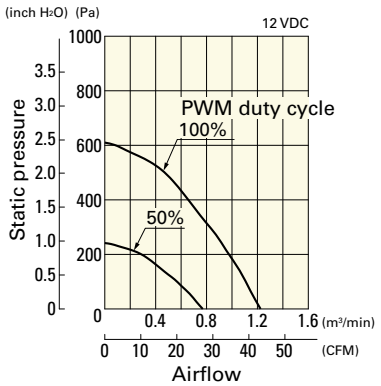


PWM duty - Speed characteristics example

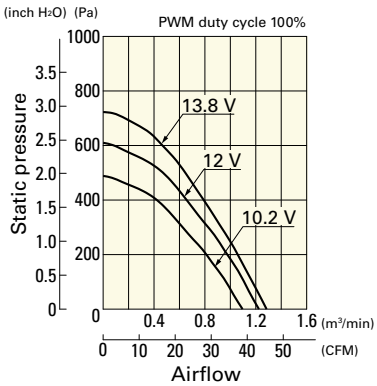


9BMB12P2S01 With pulse sensor with PWM control function

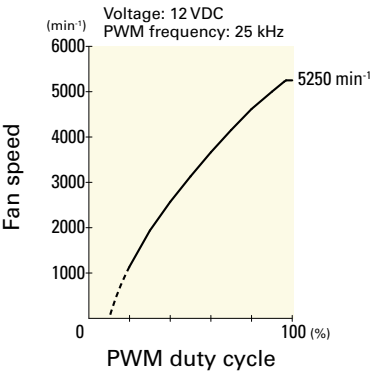
PWM duty cycle



Operating voltage range

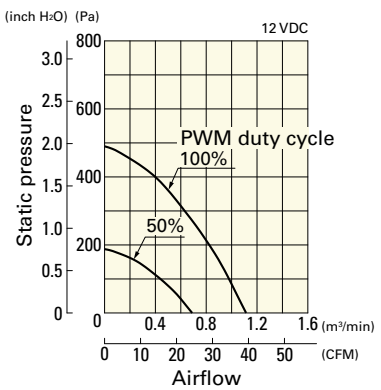


PWM duty - Speed characteristics example

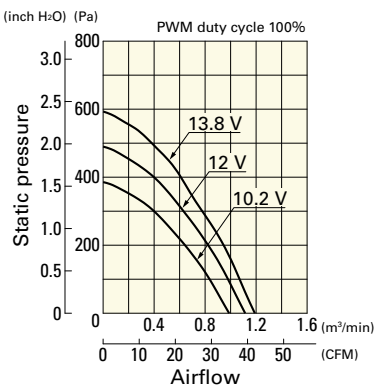


9BMB12P2H01 With pulse sensor with PWM control function

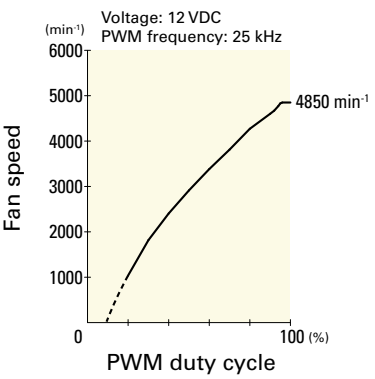
PWM duty cycle



Operating voltage range



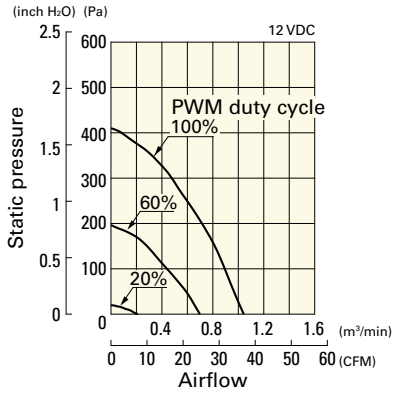
PWM duty - Speed characteristics example



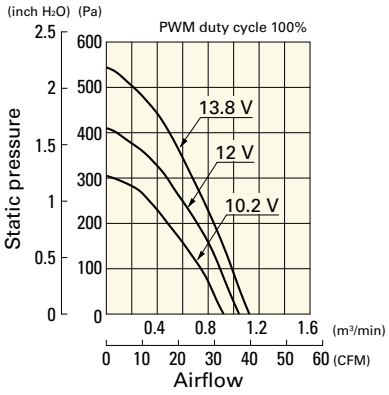
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9BMB12P2F01 With pulse sensor with PWM control function

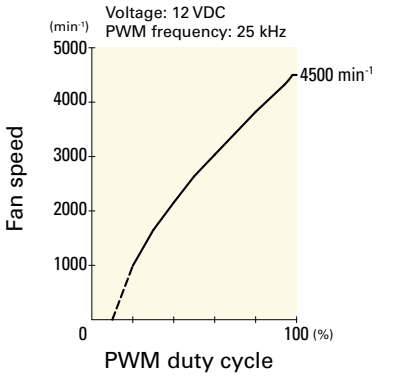
PWM duty cycle



Operating voltage range

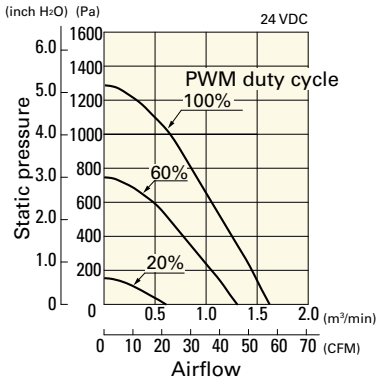


PWM duty - Speed characteristics example

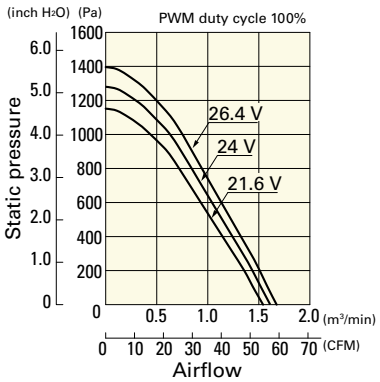


9BMB24P2K01 With pulse sensor with PWM control function

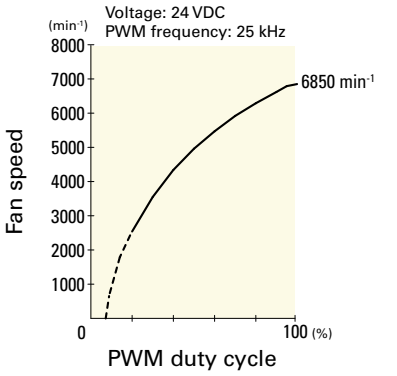
PWM duty cycle



Operating voltage range

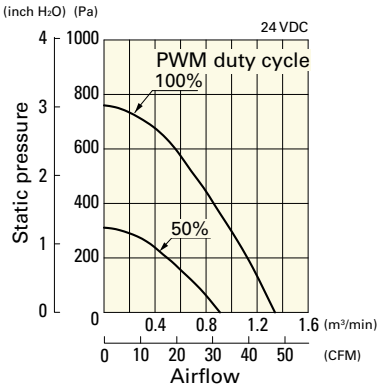


PWM duty - Speed characteristics example

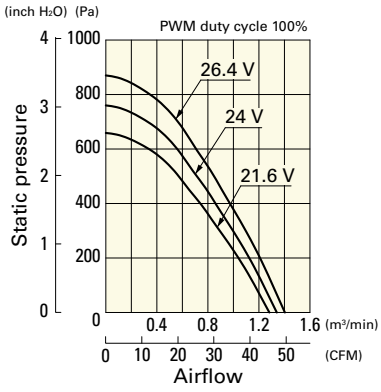


9BMB24P2G01 With pulse sensor with PWM control function

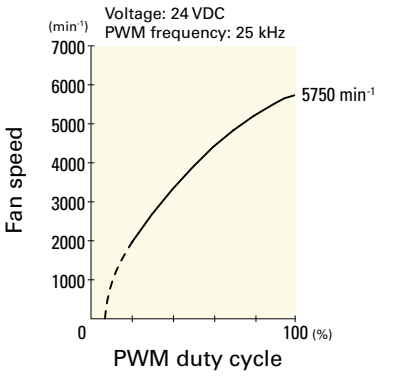
PWM duty cycle



Operating voltage range

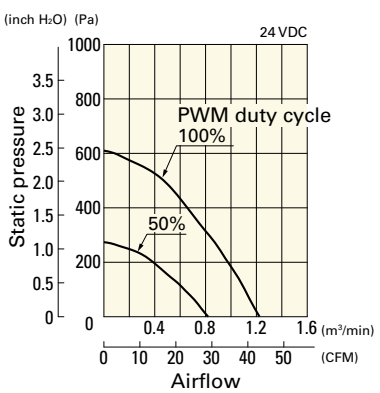


PWM duty - Speed characteristics example

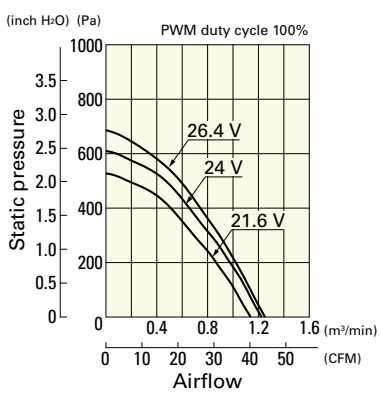


9BMB24P2S01 With pulse sensor with PWM control function

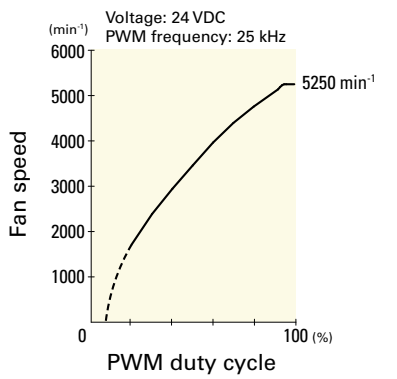
PWM duty cycle



Operating voltage range



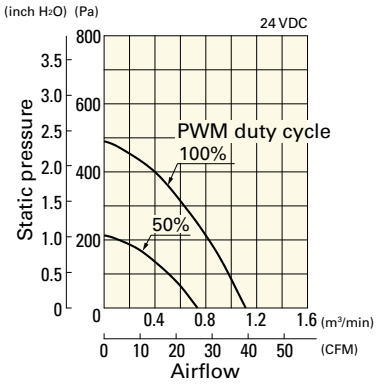
PWM duty - Speed characteristics example



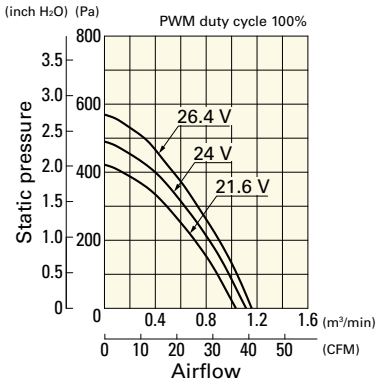
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9BMB24P2H01 With pulse sensor with PWM control function

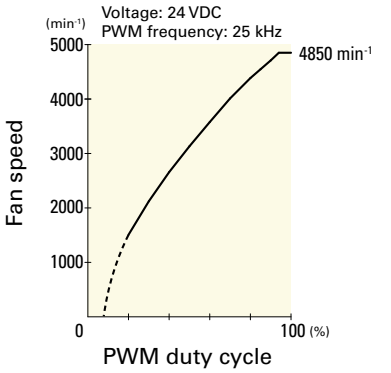
PWM duty cycle



Operating voltage range

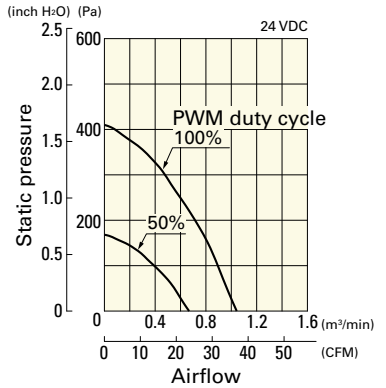


PWM duty - Speed characteristics example

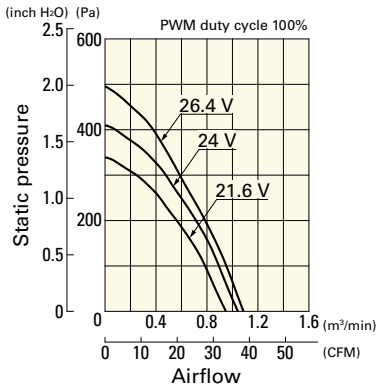


9BMB24P2F01 With pulse sensor with PWM control function

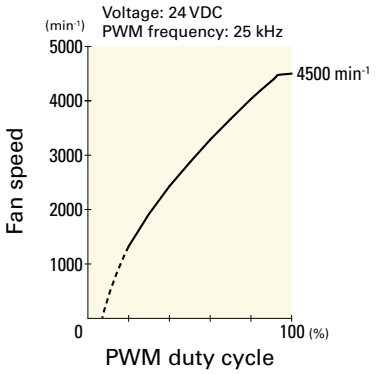
PWM duty cycle



Operating voltage range

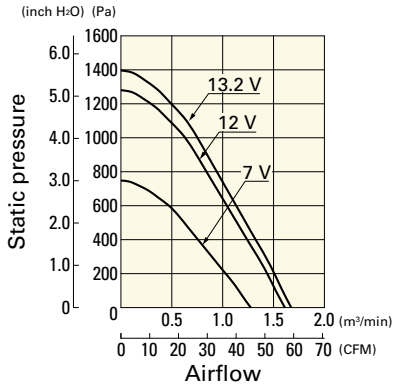


PWM duty - Speed characteristics example



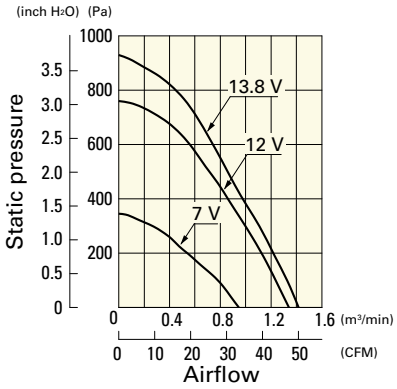
9BMB12K201 With pulse sensor

Operating voltage range



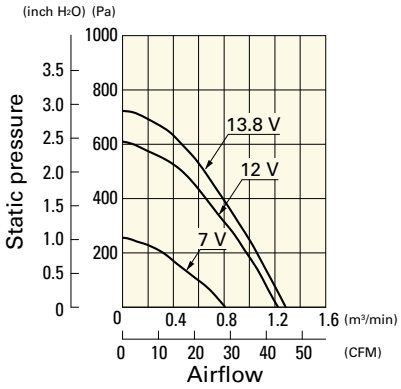
9BMB12G201 With pulse sensor

Operating voltage range



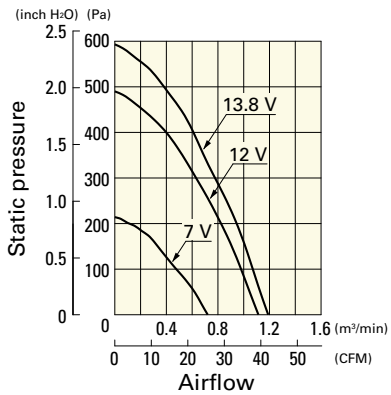
9BMB12S201 With pulse sensor

Operating voltage range



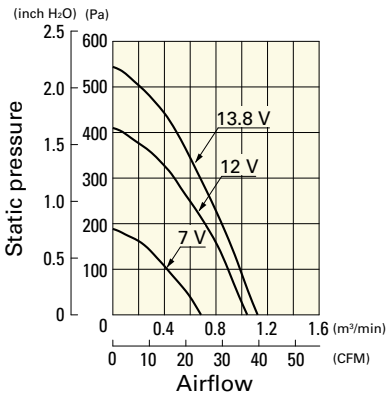
9BMB12H201 With pulse sensor

Operating voltage range



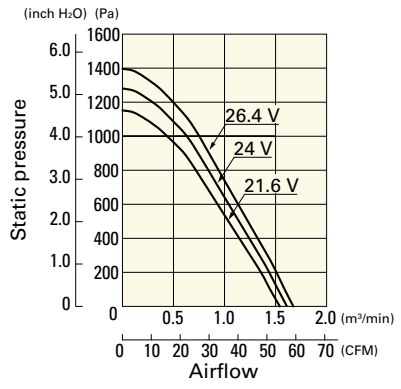
9BMB12F201 With pulse sensor

Operating voltage range



9BMB24K201 With pulse sensor

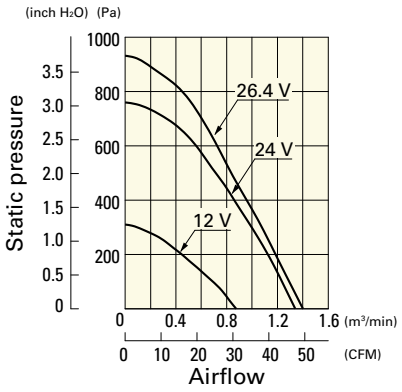
Operating voltage range



Airflow - Static Pressure Characteristics

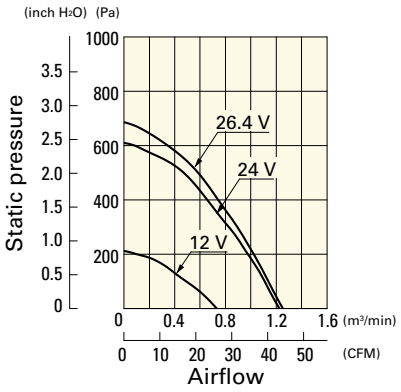
9BMB24G201 With pulse sensor

Operating voltage range



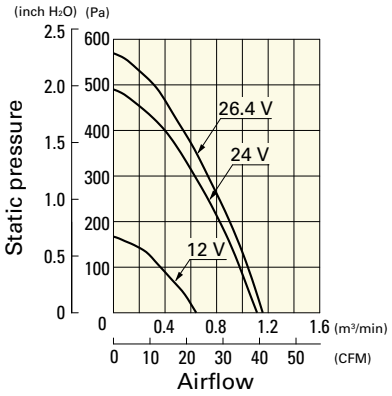
9BMB24S201 With pulse sensor

Operating voltage range



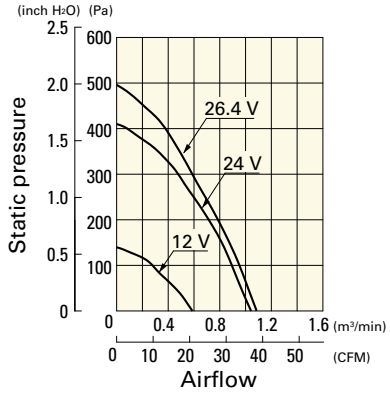
9BMB24H201 With pulse sensor

Operating voltage range

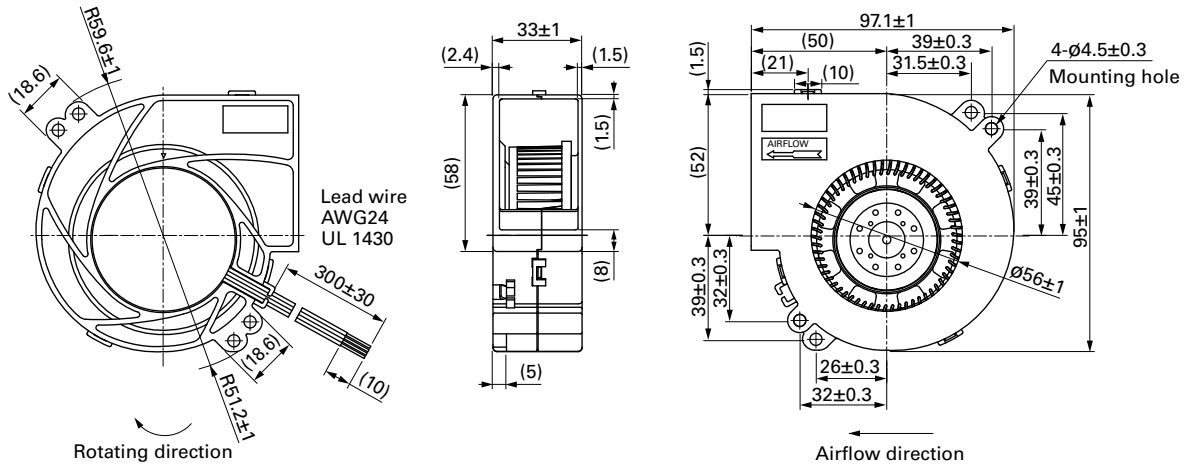


9BMB24F201 With pulse sensor

Operating voltage range



Dimensions (unit: mm) (With pulse sensor with PWM control function)



120×32 mm

San Ace B120 9BFB type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ····· 340 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

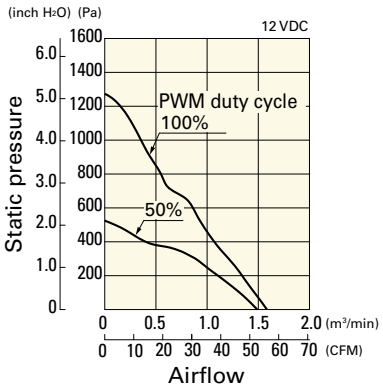
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9BFB12P2H003**	12	10.8 to 13.2	100	2.3	27.6	3750	1.6	56.5	1250	5.02	62	-20 to +70	40000/60˚C (70000/40˚C)
9BFB24P2H003	24	21.6 to 26.4	100	1.1	26.4	3750	1.6	56.5	1250	5.02	62		
			0	0.12	2.88	1300	0.46	16.2	43	0.17	41		

* PWM frequency: 25 kHz ** Fan does not rotate when PWM duty cycle is 0%.

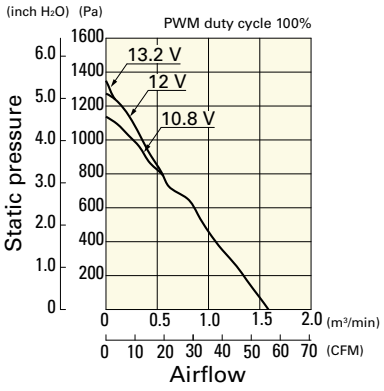
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9BFB12P2H003 With pulse sensor with PWM control function

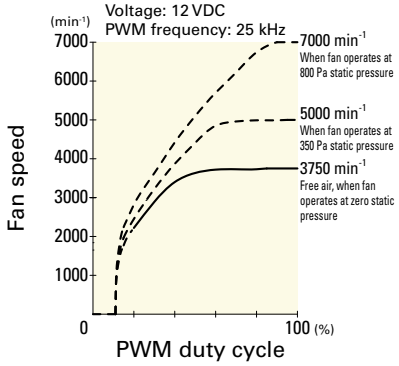
PWM duty cycle



Operating voltage range

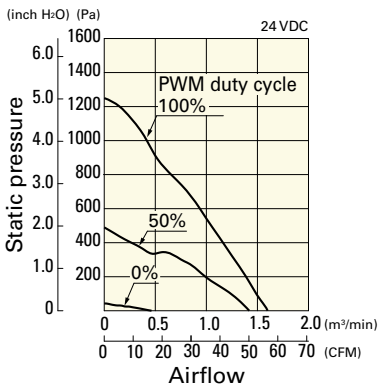


PWM duty - Speed characteristics example

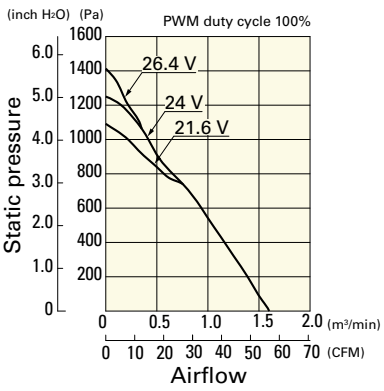


9BFB24P2H003 With pulse sensor with PWM control function

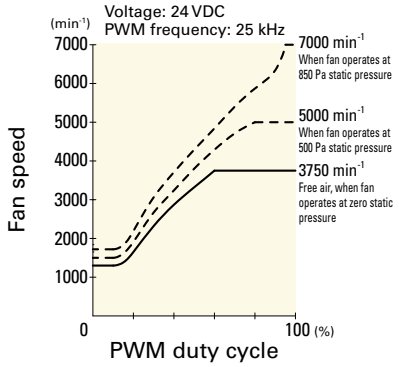
PWM duty cycle



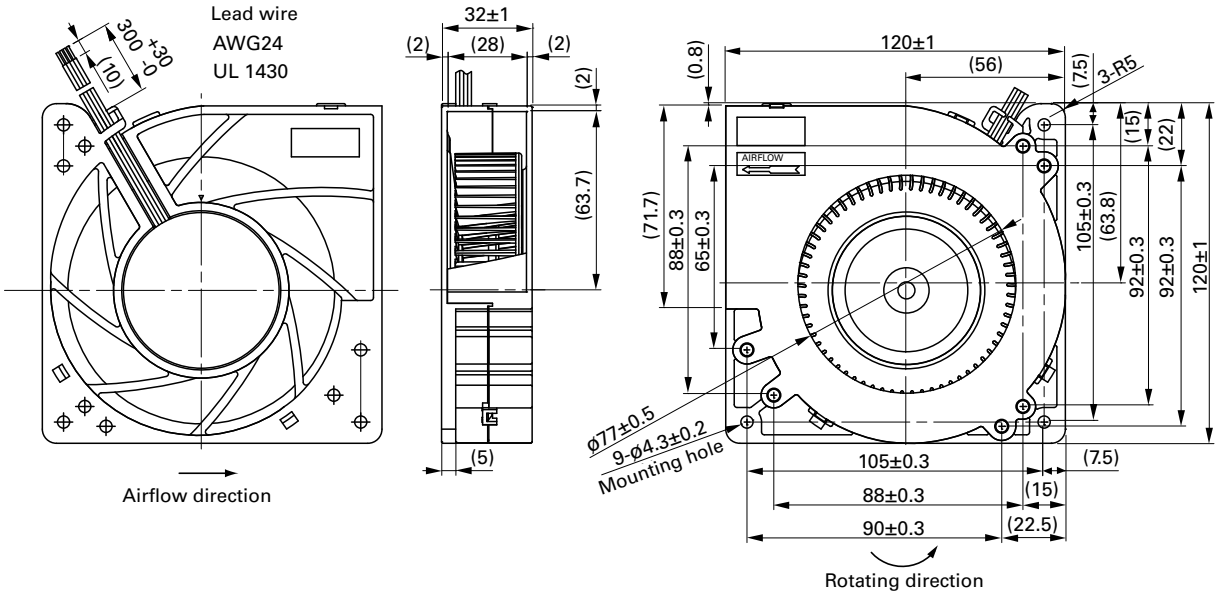
Operating voltage range



PWM duty - Speed characteristics example



Dimensions (unit: mm)



127×32 mm

San Ace B127 9BJ type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 290 g

Specifications

The models listed below **have pulse sensors.**

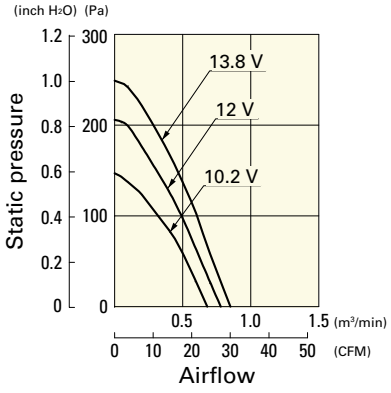
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109BJ12HC2	12	10.2 to 13.8	0.52	6.24	2400	0.78	27.5	205.8	0.826	46	-20 to +70	40000/60˚C
109BJ12MC2			0.29	3.48	1900	0.61	21.5	109.8	0.441	40		
109BJ24HC2	24	20.4 to 27.6	0.26	6.24	2400	0.78	27.5	205.8	0.826	46	-20 to +60	
109BJ24MC2			0.15	3.6	1900	0.61	21.5	109.8	0.441	40		

Other sensor specifications are available as options. Refer to the index (p. 542).

Airflow - Static Pressure Characteristics

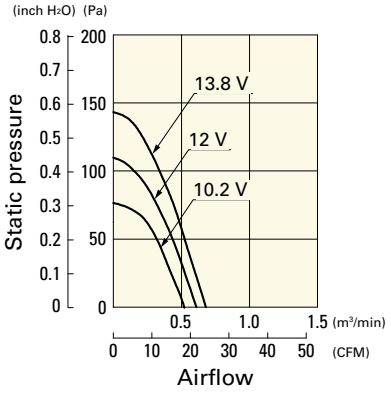
109BJ12HC2 With pulse sensor

Operating voltage range



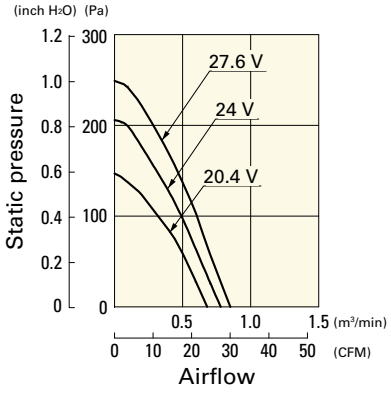
109BJ12MC2 With pulse sensor

Operating voltage range



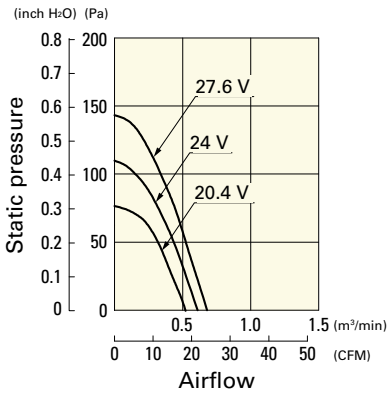
109BJ24HC2 With pulse sensor

Operating voltage range

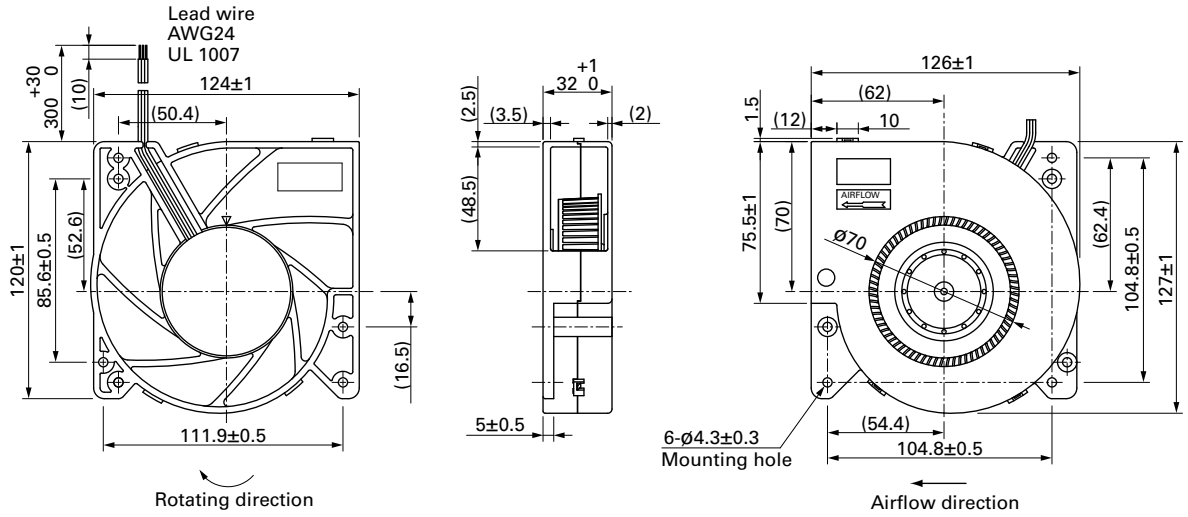


109BJ24MC2 With pulse sensor

Operating voltage range



Dimensions (unit: mm)



160×40 mm

San Ace B160 9BG type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass ····· 580 g

Specifications

The models listed below **have pulse sensors.**

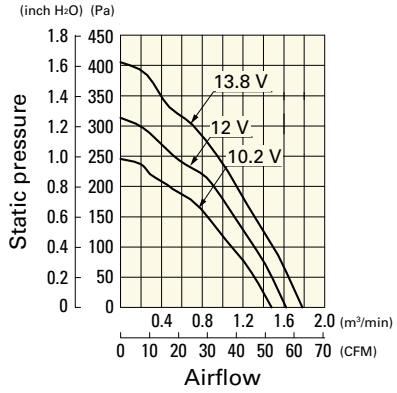
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109BG12HC1	12	10.2 to 13.8	1.3	15.6	2300	1.62	57.2	313.6	1.259	55	-20 to +60	40000/60˚C
109BG12MC1			0.64	7.68	1800	1.26	44.5	156.8	0.629	50		
109BG24HC1	24	20.4 to 27.6	0.62	14.88	2300	1.62	57.2	313.6	1.259	55		
109BG24MC1			0.31	7.44	1800	1.26	44.5	156.8	0.629	50		

Other sensor specifications are available as options. Refer to the index (p. 542).

Airflow - Static Pressure Characteristics

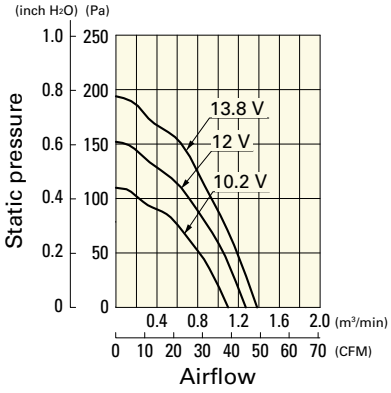
109BG12HC1 With pulse sensor

Operating voltage range



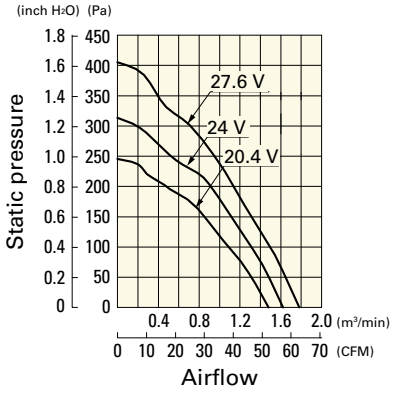
109BG12MC1 With pulse sensor

Operating voltage range



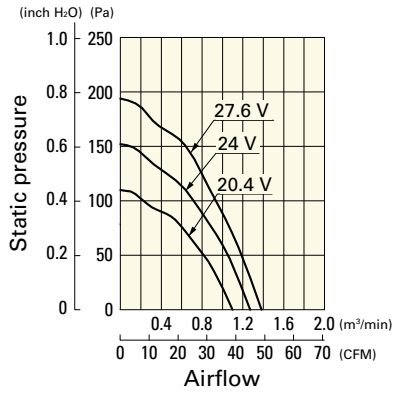
109BG24HC1 With pulse sensor

Operating voltage range

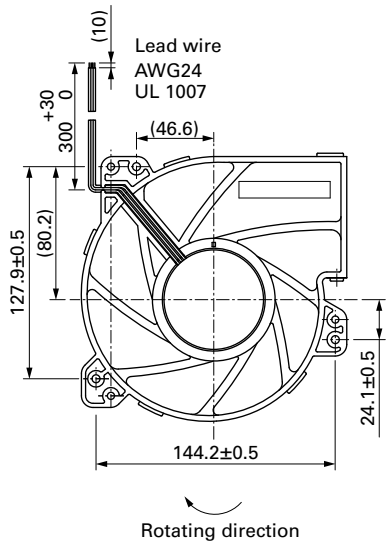


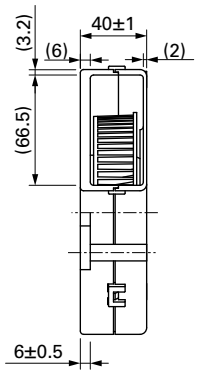
109BG24MC1 With pulse sensor

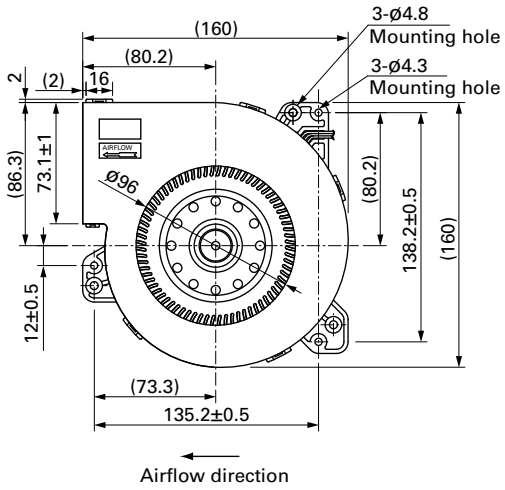
Operating voltage range



Dimensions (unit: mm)







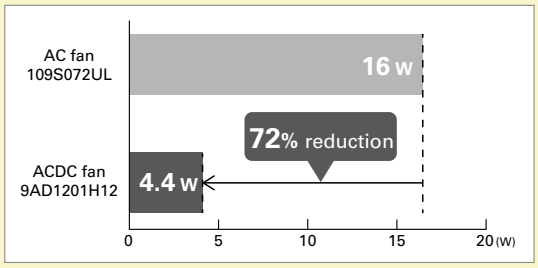
ACDC Fan

This fan works while internally converting AC power into DC power, providing the superior performance of a DC fan with the flexibility of AC input.

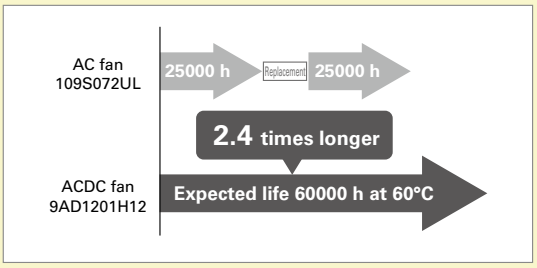
Low power consumption | Long life | Wide voltage range (Compared with our existing AC fan with equal size.)

With AC input, the same level of energy saving and long life as a DC fan can be achieved.
The maintenance effort can be reduced too.

Power consumption comparison



Expected life comparison



Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9AD	09	01	H	1	2	
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications	Frame form

Type name	9AD	
Frame size (mm)	09 92×92	12 120×120
Voltage (V)	01 100 to 240	
Speed code	H	M etc.
Frame thickness (mm)	1 38	
Sensor specifications	2 Without a sensor	H With a low-speed sensor
Frame form	Nil Plastic frame: Ribbed frame	1 Plastic frame: Ribless frame

How to Read Specifications (ACDC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [Hz]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9AD0901H12	100 to 240	90 to 264	50/60	0.08	4.5	3850	1.5	53.0	90	0.36	40	-20 to +75	60000/60°C
9AD0901M12				0.06	3.0	3100	1.18	41.7	56	0.22	33		

Rated voltage ····· This is the necessary voltage to drive the fan. Single-phase 100 to 240 VAC are also available.
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Frequency ····· This is a frequency of alternating current (AC). The frequencies of 50 Hz and 60 Hz are existing in Japan.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. For more information, please refer to the technical material section.

92×92×38 mm

San Ace 92AD 9AD type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Brushless DC motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame, and between sensor output and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +75˚C (Non-condensing)
- Mass ····· 250 g

Do not solder wires directly to AC input terminals.

Specifications

The models listed below **have ribs and no sensors.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [Hz]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9AD0901H12	100 to 240	90 to 264	50/60	0.08	4.5	3850	1.5	53.0	90	0.36	40	-20 to +75	60000/60˚C
9AD0901M12				0.06	3.0	3100	1.18	41.7	56	0.22	33		

The models listed below **have ribs and low-speed sensors.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [Hz]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9AD0901H1H	100 to 240	90 to 264	50/60	0.08	4.5	3850	1.5	53.0	90	0.36	40	-20 to +75	60000/60˚C
9AD0901M1H				0.06	3.0	3100	1.18	41.7	56	0.22	33		

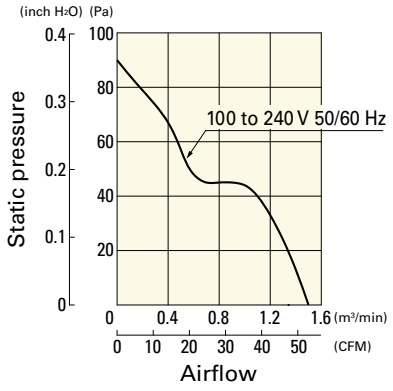
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

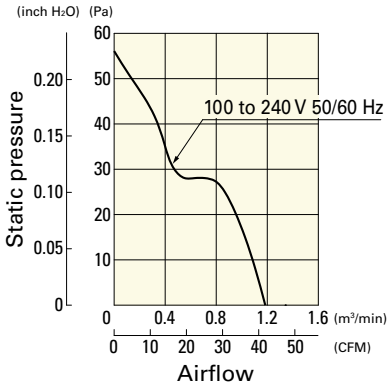
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-9AD0901H12	9AD0901H12	100 to 240 V		489-1635-L10	109-099E	M4×55 mm (4 screws)
ST1-9AD0901M12	9AD0901M12			489-1635-L10	109-099E	
ST1-9AD0901H1H	9AD0901H1H		○	489-1635-L10	109-099E	
ST1-9AD0901M1H	9AD0901M1H		○	489-1635-L10	109-099E	

Airflow - Static Pressure Characteristics

9AD0901H12, 9AD0901H1H

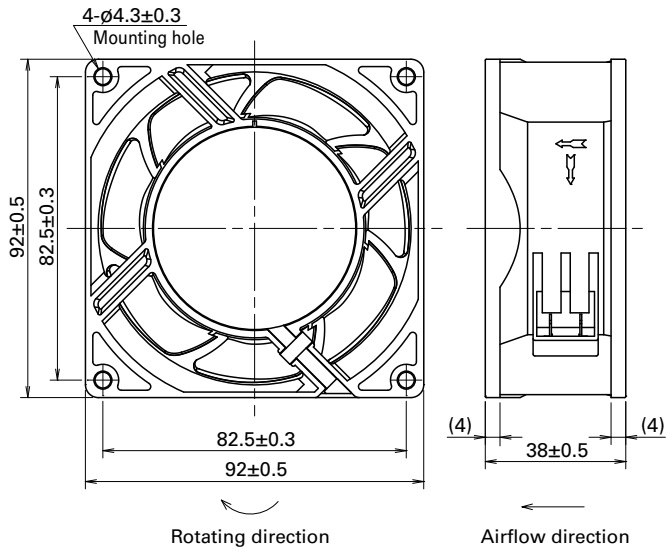


9AD0901M12, 9AD0901M1H

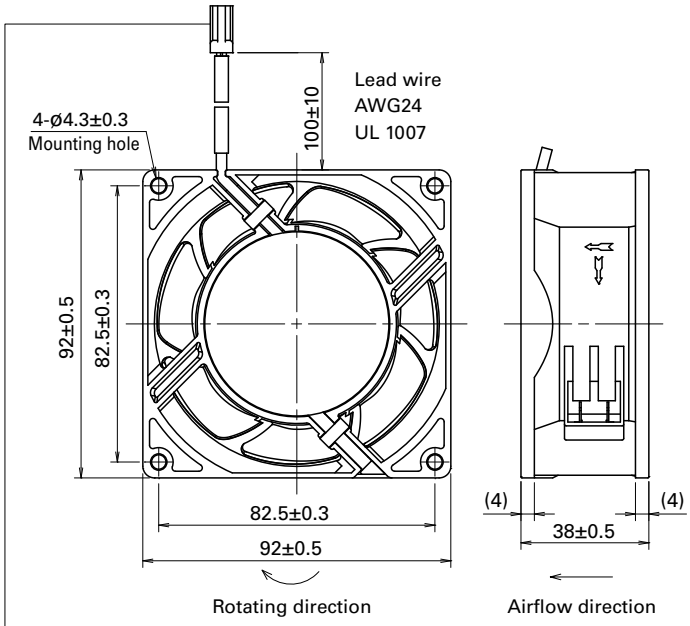


Dimensions (unit: mm) (With ribs)

without Sensor

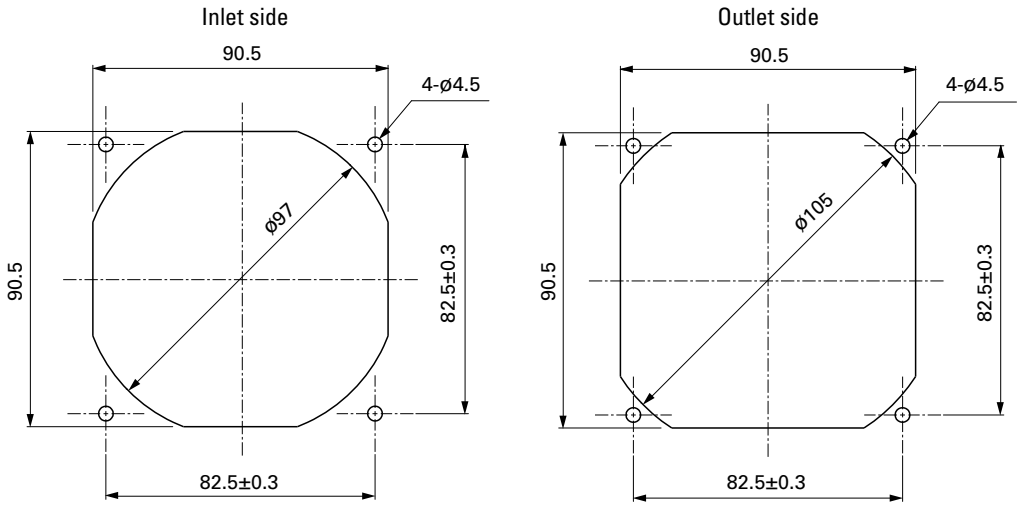


with Low-speed sensor



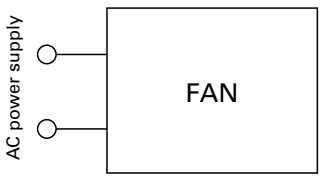
Connector: Tyco Electronics 171822-2
(Pin1 Sensor output: Yellow Pin2 -: Black)
Contact: Tyco Electronics 170262-1
* Recommended connectors and contacts are listed below.
Connector: Tyco Electronics 172211-2
Contact: Tyco Electronics 170376-1

Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

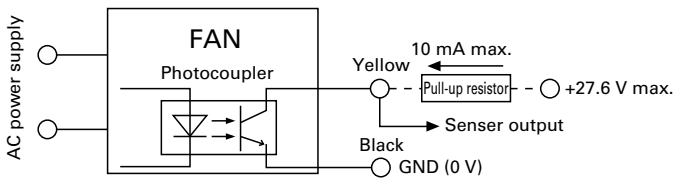


Wiring Diagram

without Sensor

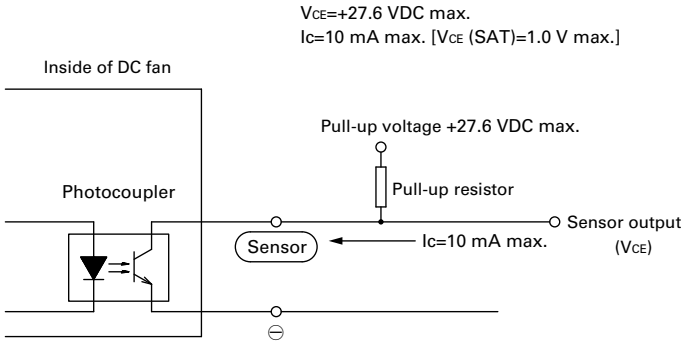


with Low-speed sensor



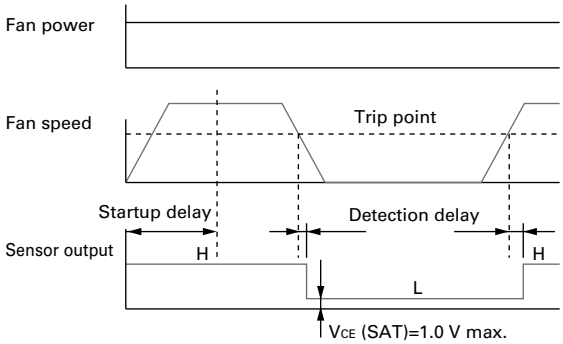
Specifications for Low-speed Sensors

Typical standard model: 9AD0901H1H
Output circuit: Open collector

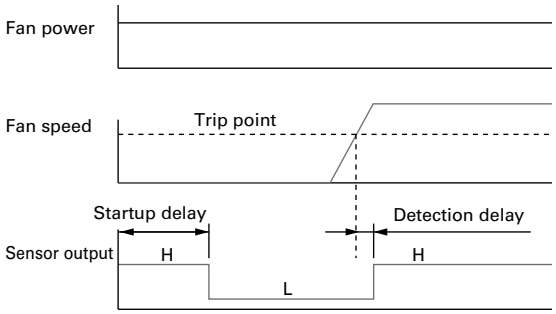


Sensor scheme

Example 1: when steady running



Example 2: when the rotor is locked when the fan motor is turned on and released after the start-up delay time.



9AD0901H1H
Startup delay: 18±3 s
Detection delay: 3 s max.
Trip point: 1700 min^{-1}

9AD0901M1H
Startup delay: 36±3 s
Detection delay: 3 s max.
Trip point: 850 min^{-1}

Options

Finger guards
page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits
page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI), 109-1001F30 (30PPI), 109-1001F40 (40PPI)

Wiring harness for sensor
page: p. 524

Model no.: 489-1636

Resin finger guards
page: p. 520

Model no.: 109-1001G

Plug cord
page: p. 524

Model no.: 489-1635-L10, 489-1635-L21

120×120×38 mm

San Ace 120AD 9AD type

General Specifications

- Material ····· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Brushless DC motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame, and between sensor output and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Storage temperature ····· -30 to +75˚C (Non-condensing)
- Mass ····· 290 g

Do not solder wires directly to AC input terminals.

Specifications

The models listed below **have ribs and no sensors.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [Hz]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9AD1201H12	100 to 240	90 to 264	50/60	0.08	4.4	3250	3.0	106	84	0.34	42	-20 to +75	60000/60˚C

The models listed below **have ribs and low-speed sensors.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [Hz]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9AD1201H1H	100 to 240	90 to 264	50/60	0.08	4.4	3250	3.0	106	84	0.34	42	-20 to +75	60000/60˚C

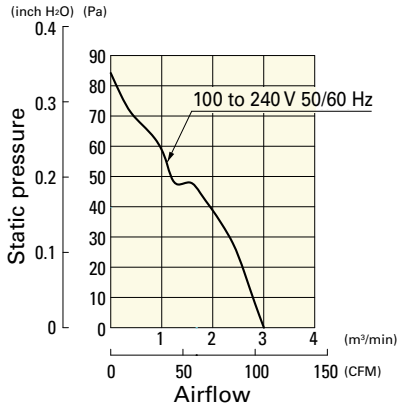
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-9AD1201H12	9AD1201H12	100 to 240 V		489-1635-L10	109-019E	M4×55 mm (4 screws)
ST1-9AD1201H1H	9AD1201H1H		○	489-1635-L10	109-019E	

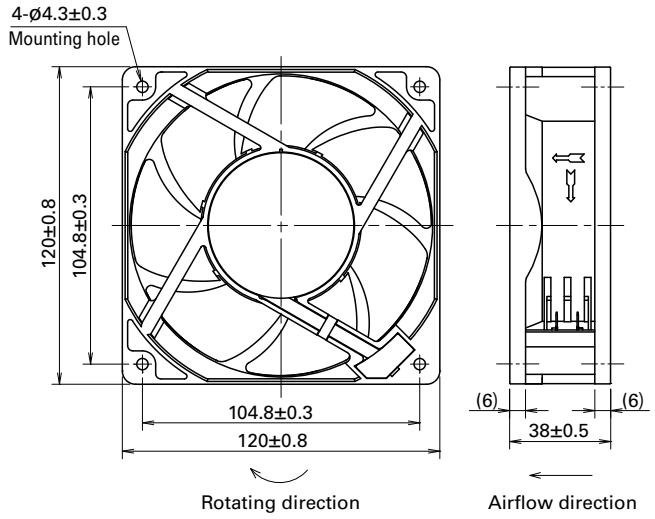
Airflow - Static Pressure Characteristics

9AD1201H12, 9AD1201H1H

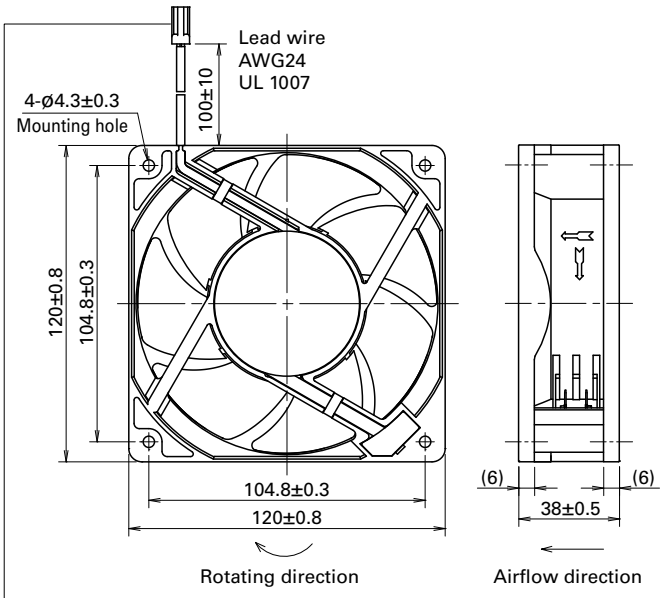


Dimensions (unit: mm) (With ribs)

without Sensor

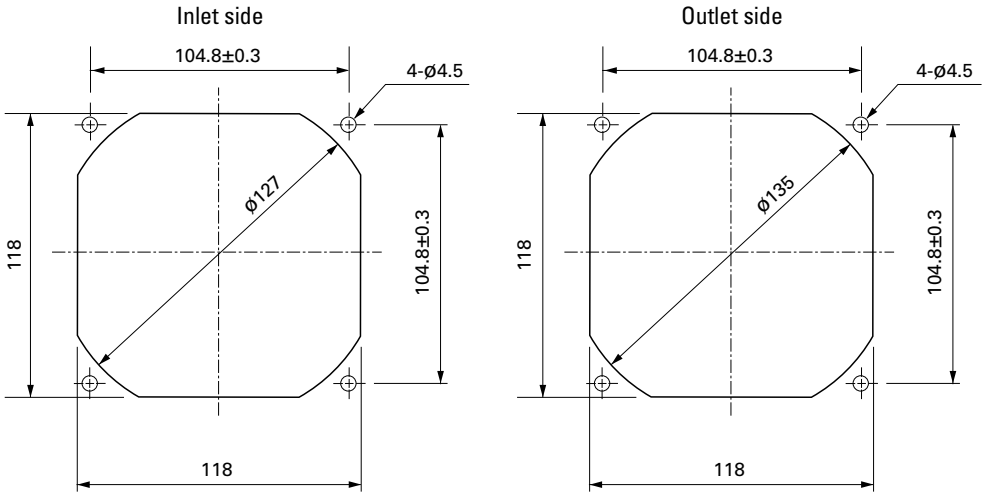


with Low-speed sensor



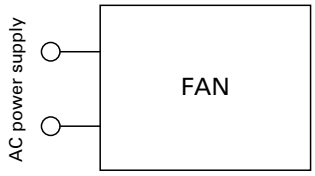
Connector: Tyco Electronics 171822-2
(Pin1 Sensor output: Yellow Pin2 -: Black)
Contact: Tyco Electronics 170262-1
* Recommended connectors and contacts are listed below.
Connector: Tyco Electronics 172211-2
Contact: Tyco Electronics 170376-1

Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

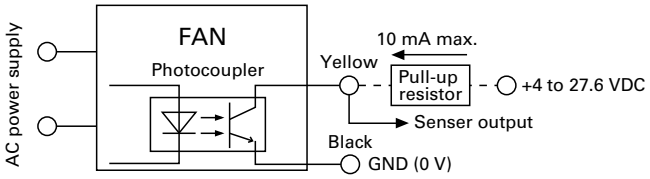


Wiring Diagram

without Sensor



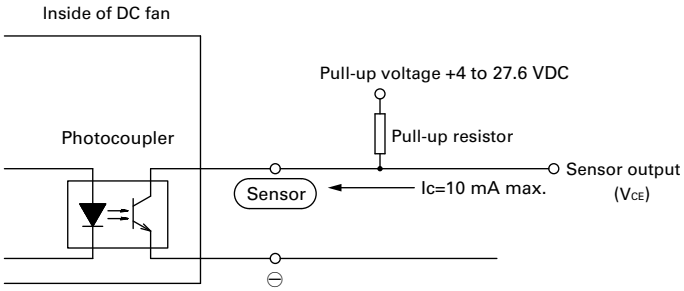
with Low-speed sensor



Specifications for Low-speed Sensors

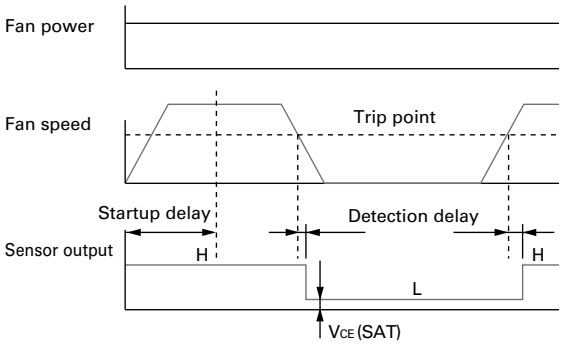
Model No.: 9AD1201H1H
Output circuit: Open collector

V_{CE}=+27.6 VDC max.
Ic=10 mA max. [V_{CE} (SAT)=1.0 V max.]

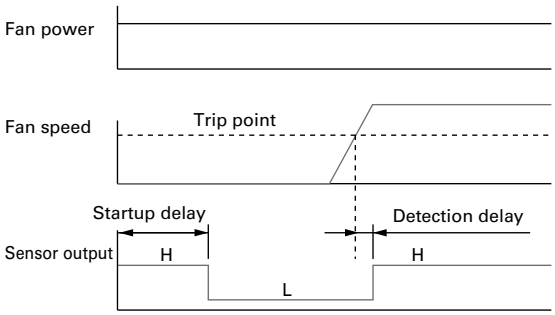


Sensor scheme

Example 1: when steady running



Example 2: when the rotor is locked when the fan motor is turned on and released after the start-up delay time.



Startup delay: 18±3 s
Detection delay: 3 s max.
Trip point: 1700 min^{-1}

Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)

Wiring harness for sensor page: p. 524

Model no.: 489-1636

Resin finger guards page: p. 520

Model no.: 109-1000G

Plug cord page: p. 524

Model no.: 489-1635-L10, 489-1635-L21

AC Fan

The cooling fan operates at 100 to 230 VAC.

How to Read Specifications (AC fan)

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min^{-1}]	Max. airflow [m^3/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH$_2$O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
109-180	100	50/60	5/4	0.06/0.05	0.07/0.06	2250/2700	0.27/0.33	9.5/11.7	11.8/18.6	0.047/0.075	24/26	-30 to +70	25000/60°C
109-183	115				0.06/0.05								

Rated voltage ····· This is the necessary voltage to drive the fan. Single-phase 100, 115, 200 and 230 VAC are also available.

Frequency ····· This is a frequency of alternating current (AC). The frequencies of 50 Hz and 60 Hz are existing in Japan.
Performance of AC fan varies depending on the frequency. Example: Rated speed 2250/2700 = 50 Hz → 2250, 60 Hz → 2700

Input ····· The power value when the fan is operating at rated voltage (at free air).

Current ····· The current when the fan is operating at rated voltage (at free air).

Locked rotor current ····· This is a current when rotor of motor that applies rated voltage is locked.

Rated speed ····· The speed when the fan is operating at rated voltage (at free air).

Max. airflow ····· The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device).
Airflow is the volume of air generated by the fan per unit of time.

Max. static pressure ····· The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device).
Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.

SPL ····· SPL stands for Sound Pressure Level. The noise level during the fan's rated operation.
Please refer to the technical material section for the measurement method.

Operating temperature ····· The temperature range over which fan operation is guaranteed (Non- condensing).

Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. For more information, please refer to the technical material section.

60×60×28 mm

San Ace 60

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Black, 2 pcs
- Mass ····· 120 g

Specifications

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-180	100	50/60	5/4	0.06/0.05	0.07/0.06	2250/2700	0.27/0.33	9.5/11.7	11.8/18.6	0.047/0.075	24/26	-30 to +70	25000/60˚C
109-183	115				0.06/0.05								

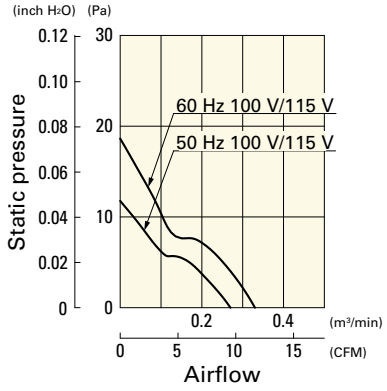
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

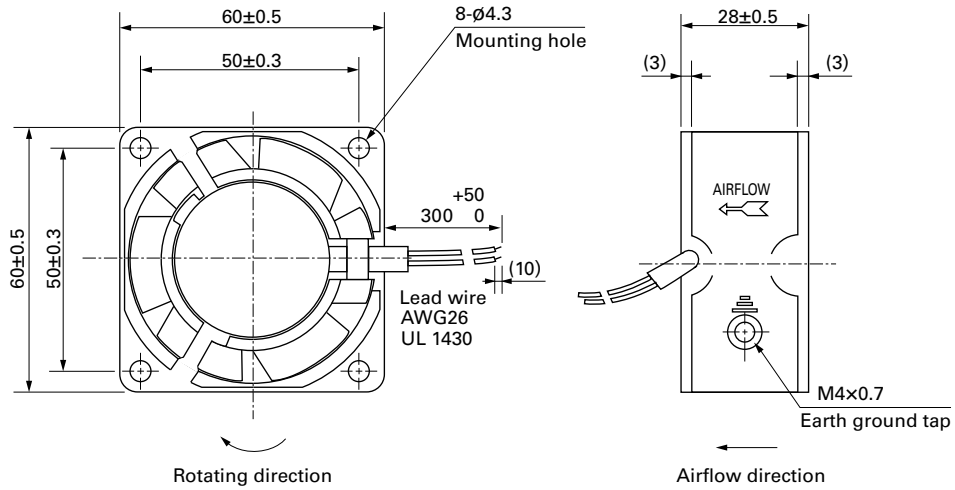
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-180	109-180	100 V		Plug cord is not included because of the exposed-lead structure.	109-139E	M4×40 mm (4 screws)
ST1-109-183	109-183	115 V			109-139E	

Airflow - Static Pressure Characteristics

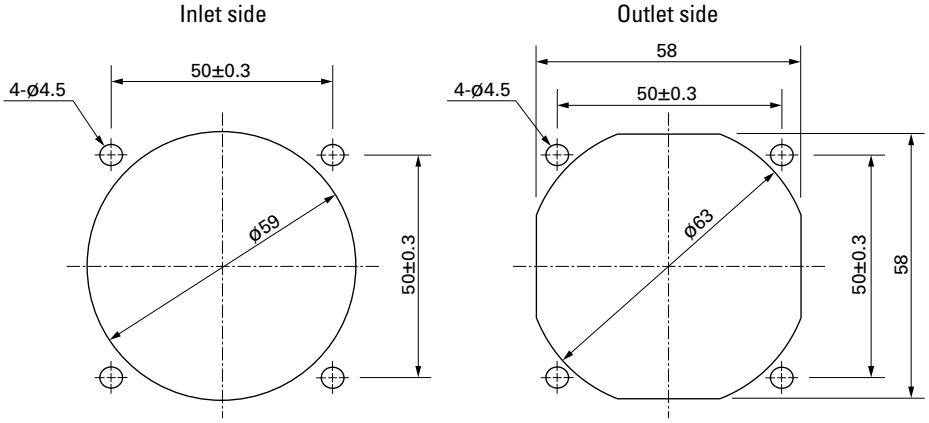
109-180, 109-183



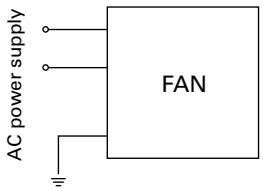
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Wiring Diagram



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin finger guards page: p. 520

Model no.: 109-1003G

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

60×60×38 mm

San Ace 60

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Black, 2 pcs
- Mass ····· 170 g

Specifications

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-130	100	50/60	6/5	0.08/0.07	0.08/0.07	2600/3150	0.33/0.4	11.7/14.1	16.3/23.3	0.065/0.094	28/30	-30 to +60	25000/60˚C
109-133	115			0.07/0.06	0.07/0.06								

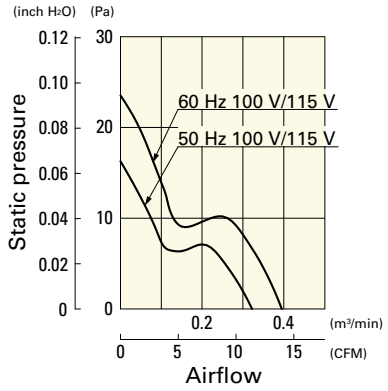
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

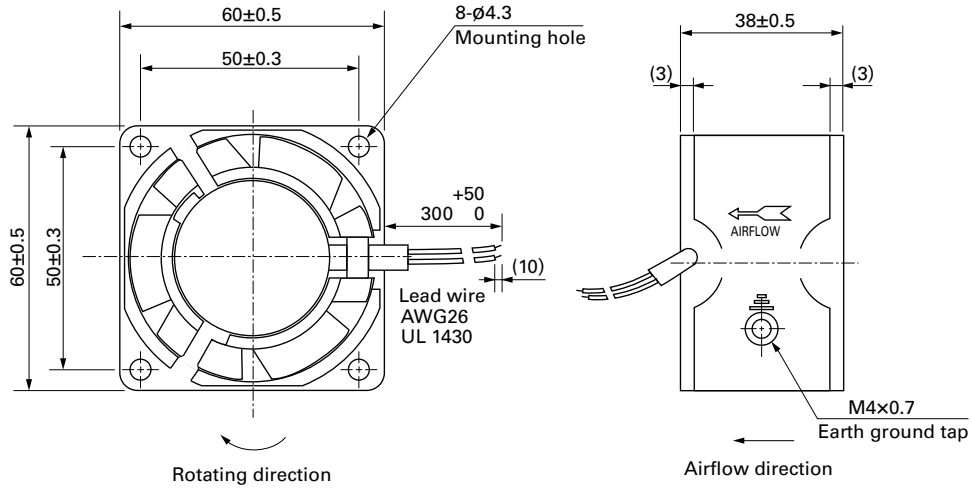
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-130	109-130	100 V		Plug cord is not included because of the exposed-lead structure.	109-139E	M4×55 mm (4 screws)
ST1-109-133	109-133	115 V			109-139E	

Airflow - Static Pressure Characteristics

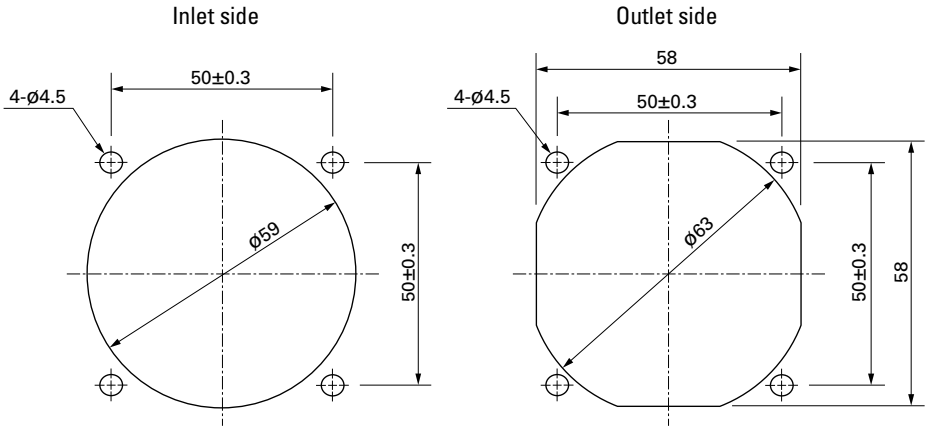
109-130, 109-133



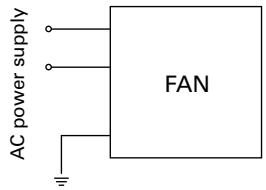
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Wiring Diagram



Options

Finger guards page: p. 513

Model no.: 109-139E, 109-139H

Resin filter kits page: p. 521

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),
109-1003F30 (30PPI), 109-1003F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1003G

80×80×20 mm

San Ace 80

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Lead wire ····· Black, 2 pcs
- Mass ····· 180 g

Specifications

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	[CFM]	Max. static pressure [Pa]	[inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-210	100	50/60	6/5	0.07/0.06	0.07/0.06	2500/3000	0.44/0.53	15.5/18.7	23.5/31.4	0.094/0.126	26/31	-30 to +60	25000/60˚C
109-213	115			0.06/0.05	0.06/0.05								

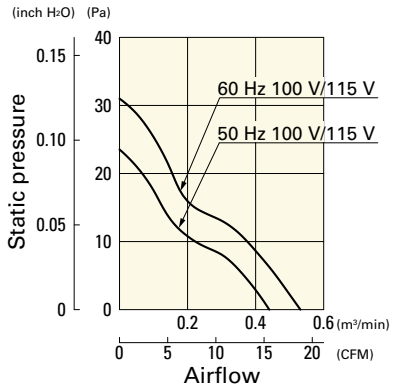
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

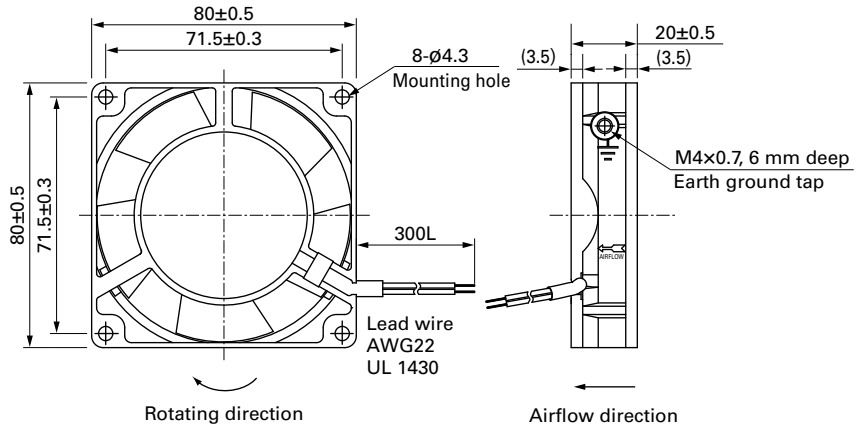
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-210	109-210	100 V		Plug cord is not included because of the exposed-lead structure.	109-049E	M4×40 mm (4 screws)
ST1-109-213	109-213	115 V			109-049E	

Airflow - Static Pressure Characteristics

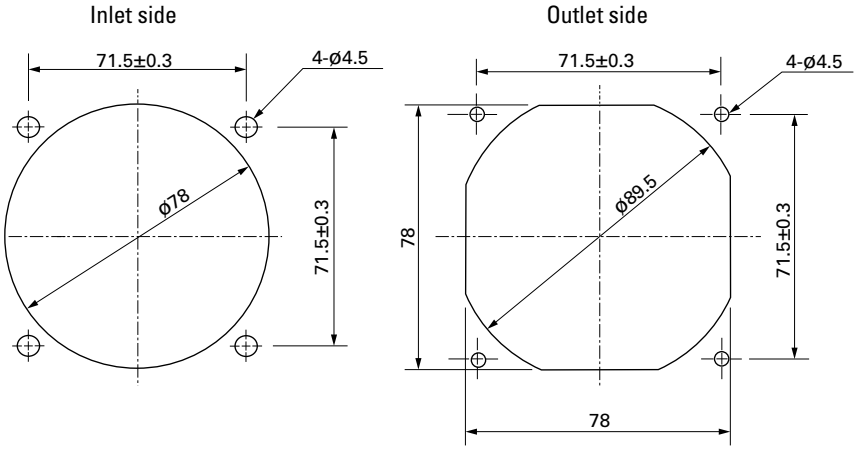
109-210, 109-213



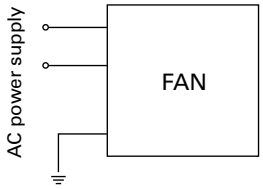
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Wiring Diagram



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

80×80×25 mm

San Ace 80

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Mass ····· 270 g

Specifications

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109S050	100	50/60	9/7	0.12/0.1	0.13/0.11	2650/3100	0.63/0.76	22.3/26.9	27.5/38.3	0.11 /0.154	30/33	-30 to +60	25000/60˚C
109S053	115			0.1 /0.08	0.11/0.09								
109S051	200			0.06/0.05	0.06/0.05								
109S054	230			0.05/0.04	0.05/0.04								
109S030	100			0.12/0.1	0.13/0.11	2350/2700	0.55/0.63	19.4/22.3	21.6/28.4	0.087/0.114	28/30		
109S033	115			0.1 /0.08	0.11/0.09								
109S031	200			0.06/0.05	0.06/0.05								
109S034	230			0.05/0.04	0.05/0.04								

Set Models

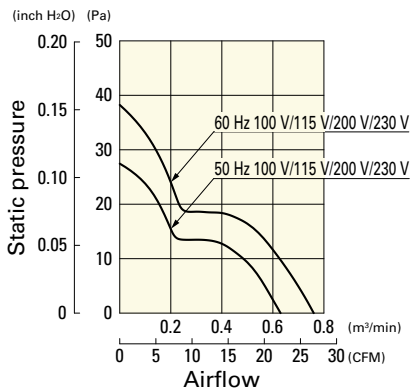
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109S050	109S050	100 V		489-016-L10	109-049E	M4×40 mm (4 screws)*
ST1-109S053	109S053	115 V		489-016-L10	109-049E	
ST1-109S051	109S051	200 V		489-016-L10	109-049E	
ST1-109S054	109S054	230 V		489-016-L10	109-049E	
ST1-109S030	109S030	100 V		489-016-L10	109-049E	
ST1-109S033	109S033	115 V		489-016-L10	109-049E	
ST1-109S031	109S031	200 V		489-016-L10	109-049E	
ST1-109S034	109S034	230 V		489-016-L10	109-049E	

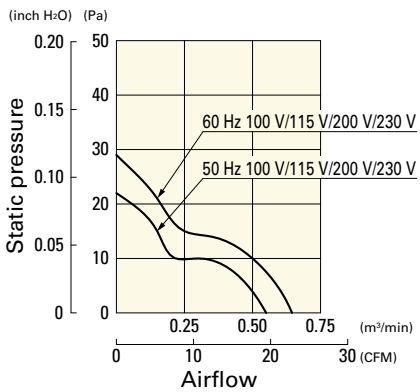
*Though these are 2-hole or 3-hole frame mount types, 4 screws are included for extra.

Airflow - Static Pressure Characteristics

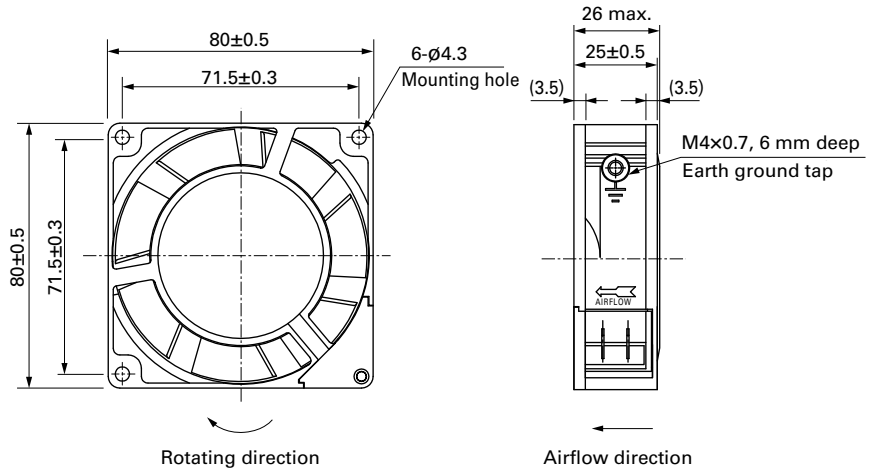
109S050, 109S053, 109S051, 109S054



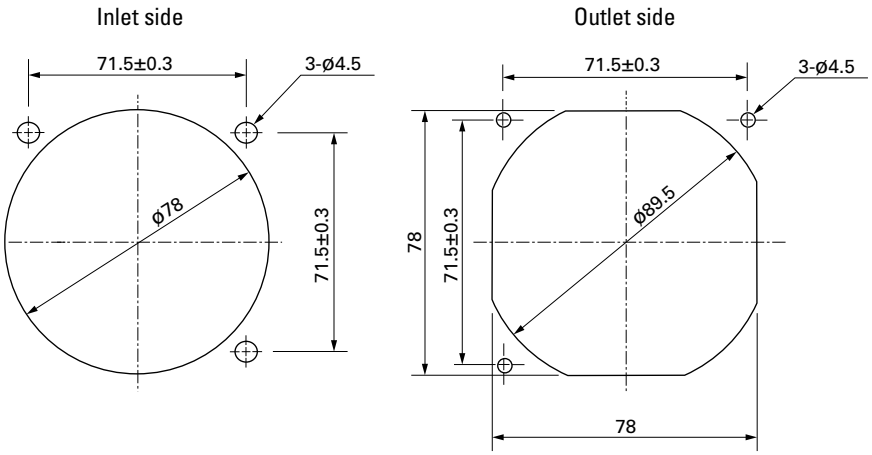
109S030, 109S033, 109S031, 109S034



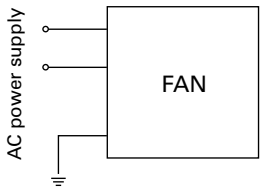
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Wiring Diagram



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI), 109-1002F30 (30PPI), 109-1002F40 (40PPI)

Plug cord page: pp. 523 to 524

Model no.: 489-016-L10, 489-016-L21, 489-047-L10, 489-047-L21

80×80×38 mm

San Ace 80

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Mass ····· 400 g

Specifications

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-150	100	50/60	9/8	0.13/0.11	0.17/0.15	2700/3150	0.9/1.05	31.8/37.1	31.4/44.1	0.126/0.177	35/39	-30 to +60	25000/60˚C
109-153	115			0.11/0.1	0.14/0.12								
109-151	200			0.07/0.06	0.09/0.08								
109-154	230			0.06/0.05	0.08/0.07								

Set Models

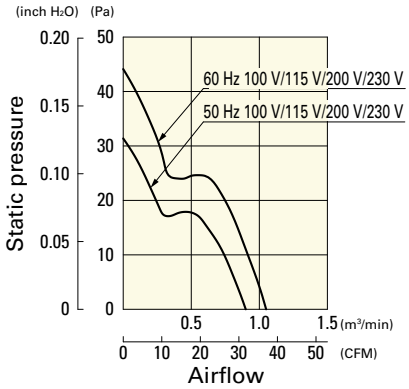
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-150	109-150	100 V		489-016-L10	109-049E	M4×55 mm (4 screws)*
ST1-109-153	109-153	115 V		489-016-L10	109-049E	
ST1-109-151	109-151	200 V		489-016-L10	109-049E	
ST1-109-154	109-154	230 V		489-016-L10	109-049E	

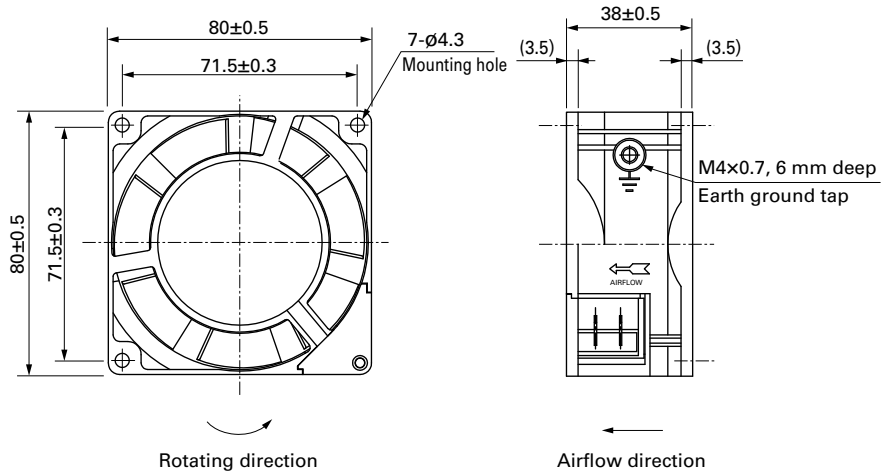
*Though these are 2-hole or 3-hole frame mount types, 4 screws are included for extra.

Airflow - Static Pressure Characteristics

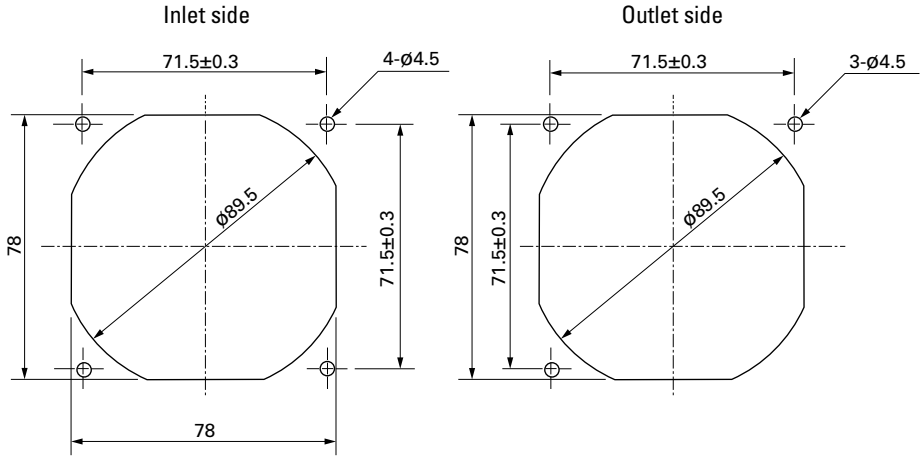
109-150, 109-153, 109-151, 109-154



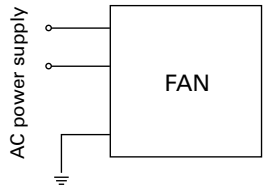
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Wiring Diagram



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI), 109-1002F30 (30PPI), 109-1002F40 (40PPI)

Plug cord page: pp. 523 to 524

Model no.: 489-016-L10, 489-016-L21, 489-047-L10, 489-047-L21

80×80×42 mm

San Ace 80

General Specifications

- Material ····· Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Mass ····· 410 g

Specifications

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-040UL	100	50/60	10/9	0.13/0.11	0.16/0.14	2650/3100	0.85/1.0	30.0/35.3	24.5/35.3	0.098/0.142	40/44	-30 to +60	25000/60˚C
109-043UL	115			0.11/0.1	0.14/0.12								
109-041UL	200			0.07/0.06	0.08/0.07								
109-044UL	230			0.06/0.05	0.07/0.06								
109-047UL	100		4/3.5	0.05/0.05	0.05/0.05	1500/1500	0.43/0.43	15.2/15.2	8.8/ 8.8	0.035/0.035	24/24		
109-033UL	115			0.04/0.04	0.04/0.04								

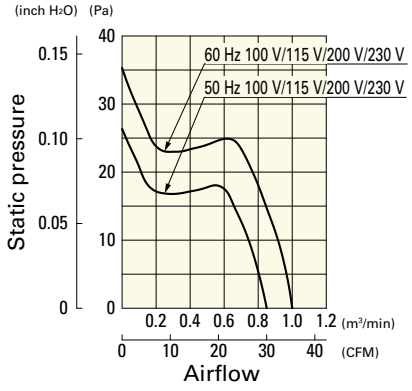
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

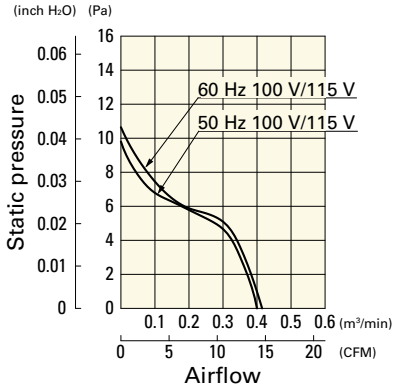
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-040UL	109-040UL	100 V		489-008-L10	109-049E	M4×55 mm (4 screws)
ST1-109-043UL	109-043UL	115 V		489-008-L10	109-049E	
ST1-109-041UL	109-041UL	200 V		489-008-L10	109-049E	
ST1-109-044UL	109-044UL	230 V		489-008-L10	109-049E	
ST1-109-047UL	109-047UL	100 V		489-008-L10	109-049E	
ST1-109-033UL	109-033UL	115 V		489-008-L10	109-049E	

Airflow - Static Pressure Characteristics

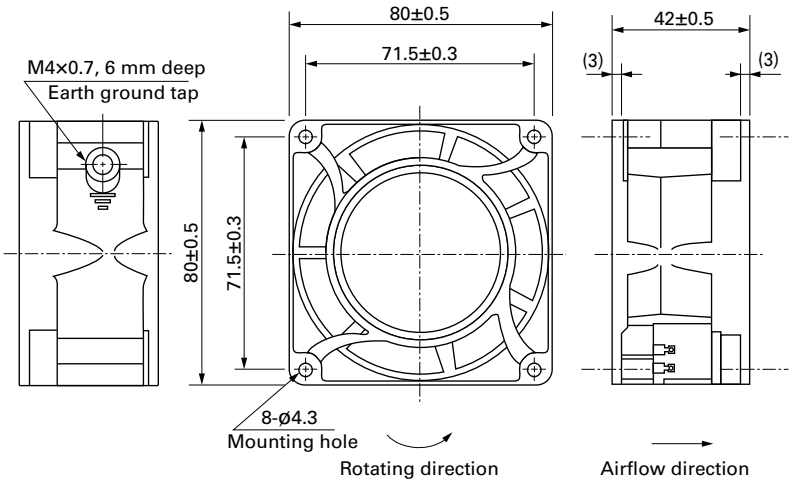
109-040UL, 109-043UL, 109-041UL, 109-044UL



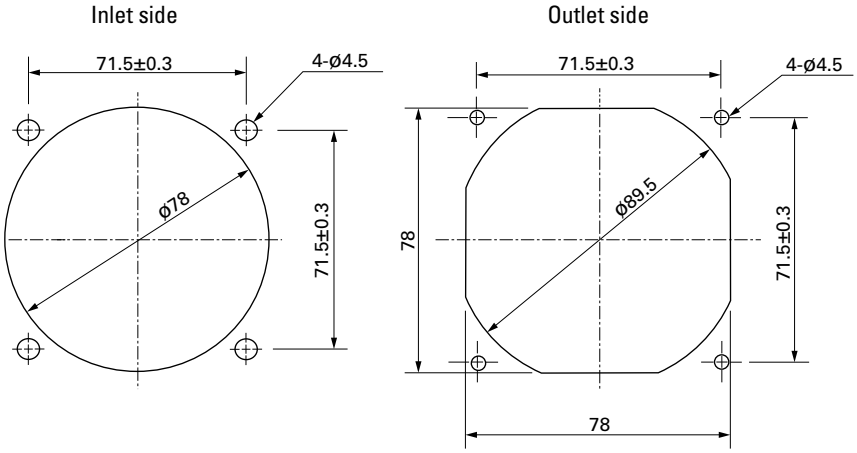
109-047UL, 109-033UL



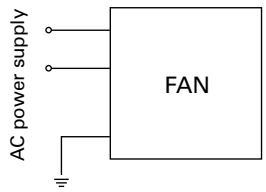
Dimensions (unit: mm)



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Wiring Diagram



Options

Finger guards page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards page: p. 520

Model no.: 109-1002G

Resin filter kits page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI), 109-1002F30 (30PPI), 109-1002F40 (40PPI)

Plug cord page: p. 523

Model no.: 489-008-L10, 489-008-L21, 489-008-L35

92×92×25 mm

San Ace 92

Only standard fans (without sensors) have acquired CSA certification.

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) ····· Between AC input and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
  Between AC input and G: 50/60 Hz 1500 VAC 1 minute
  Between G and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Sensor-Purpose lead wire ····· ⊕Brown ⊖Black (Sensor) Yellow
- Mass ····· 290 g/310 g (with Sensor)

Specifications

Standard

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109S091	100	50/60	8/7	0.1 /0.09	0.13/0.12	2700/3100	0.95/1.1	33.6/38.9	39.2/49.0	0.157/0.197	35/38	-30 to +60	25000/60˚C
109S093	115			0.09/0.08	0.11/0.1								
109S092	200		11/10	0.07/0.06	0.08/0.08								
109S094	230		10/9	0.06/0.05	0.07/0.07								
109S095	100		8/7	0.1 /0.09	0.11/0.1	2400/2800	0.84/0.98	29.7/34.6	31.4/40.2	0.126/0.161	32/35		
109S096*	100		7/6	0.09/0.08	0.09/0.08	1500/1700	0.55/0.65	19.4/23	12.5/16.3	0.05 /0.065	24/27		
109S193*	115			0.08/0.07	0.08/0.07								
109S192*	200		8/7	0.06/0.05	0.06/0.05								
109S194*	230			0.05/0.04	0.05/0.04								

*These are low-speed models.

with Sensor

For sensor specifications, please refer to p. 531. Sensor specification differs depending on the fan's speed specification.
For a 5 V sensor power supply (ITEM-20), please append "-20" to the end of model number. E.g. 109S491-20
For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109S491-30

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109S491	100	50/60	8/7	0.1 /0.09	0.13/0.12	2700/3100	0.95/1.1	33.6/38.9	39.2/49.0	0.157/0.197	35/38	-10 to +60	25000/60˚C
109S493	115			0.09/0.08	0.11/0.1								
109S492	200		11/10	0.07/0.06	0.08/0.08								
109S494	230		10/9	0.06/0.05	0.07/0.07								
109S495	100		8/7	0.1 /0.09	0.11/0.1	2400/2800	0.84/0.98	29.7/34.6	31.4/40.2	0.126/0.161	32/35		
109S496*			7/6	0.09/0.08	0.09/0.08	1500/1700	0.55/0.65	19.4/23	12.5/16.3	0.05 /0.065	24/27		

*These are low-speed models.

For the San Ace 92AD 9AD type 92×92×38 mm fan, please refer to p. 458.

This fan works while internally converting AC power into DC power, providing the superior performance of a DC fan with the flexibility of AC input.

Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

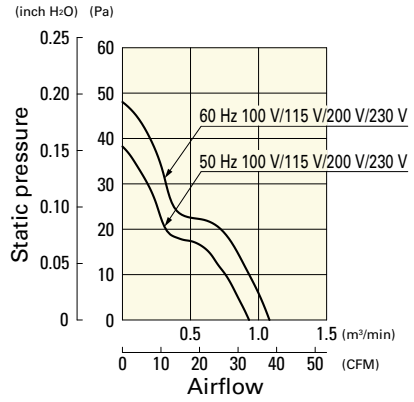
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109S091	109S091	100 V		489-016-L10	109-099E	M3×40 mm (4 screws)*
ST1-109S093	109S093	115 V		489-016-L10	109-099E	
ST1-109S092	109S092	200 V		489-016-L10	109-099E	
ST1-109S094	109S094	230 V		489-016-L10	109-099E	
ST1-109S095	109S095	100 V		489-016-L10	109-099E	
ST1-109S096	109S096	100 V		489-016-L10	109-099E	
ST1-109S193	109S193	115 V		489-016-L10	109-099E	
ST1-109S192	109S192	200 V		489-016-L10	109-099E	
ST1-109S194	109S194	230 V		489-016-L10	109-099E	
ST1-109S491-20	109S491-20	100 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S491-30	109S491-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S493-20	109S493-20	115 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S493-30	109S493-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S492-20	109S492-20	200 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S492-30	109S492-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S494-20	109S494-20	230 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S494-30	109S494-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S495-20	109S495-20	100 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S495-30	109S495-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S496-20	109S496-20		○ (5 V)	489-016-L10	109-099E	
ST1-109S496-30	109S496-30		○ (12 V)	489-016-L10	109-099E	

*Though these are 2-hole or 3-hole frame mount types, 4 screws are included for extra.

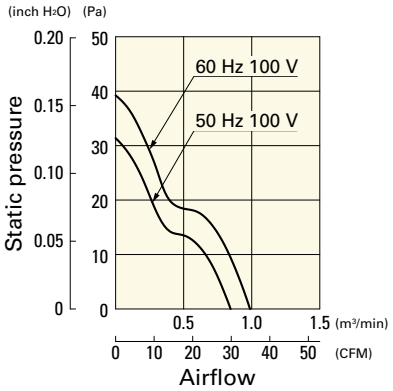
Airflow - Static Pressure Characteristics

Standard

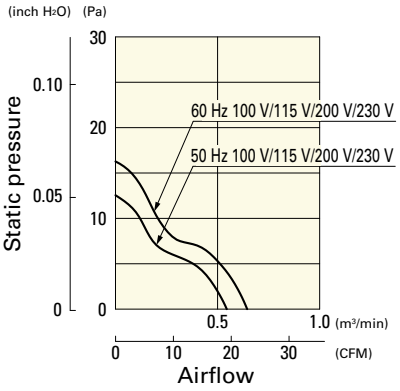
109S091, 109S093, 109S092, 109S094



109S095

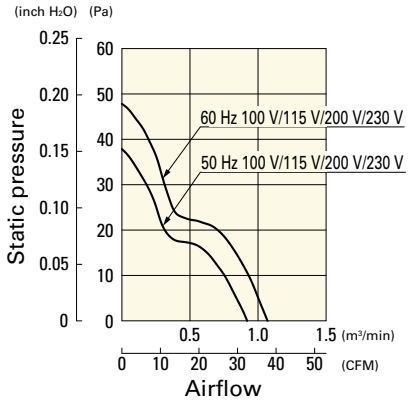


109S096, 109S193, 109S192, 109S194

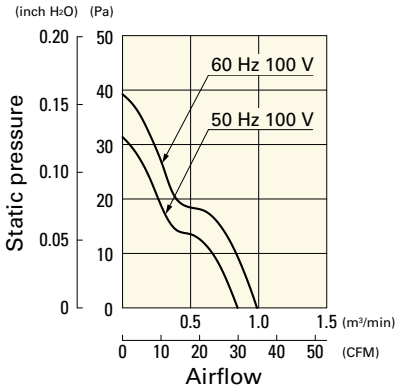


with Sensor

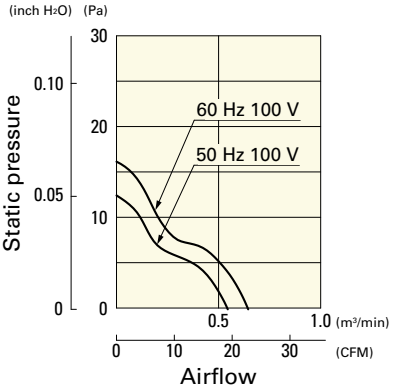
109S491, 109S493, 109S492, 109S494



109S495

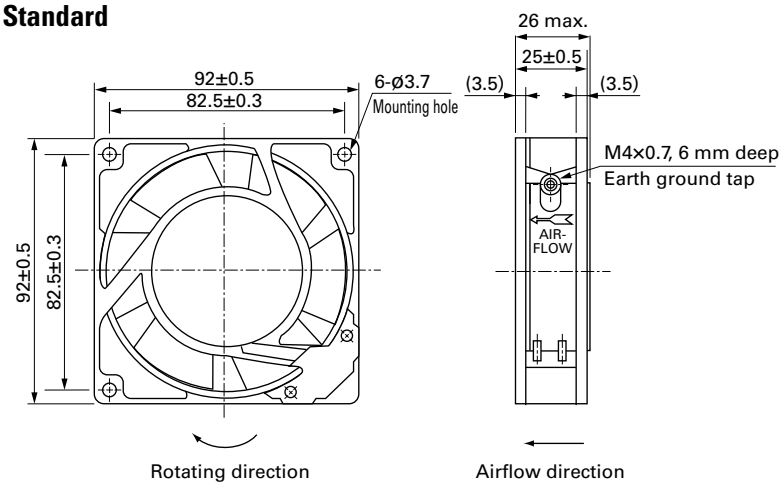


109S496

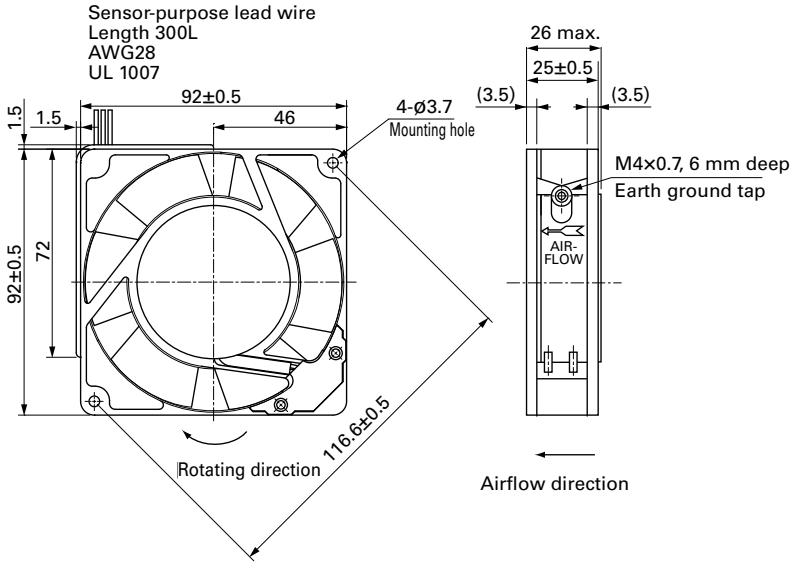


Dimensions (unit: mm)

Standard



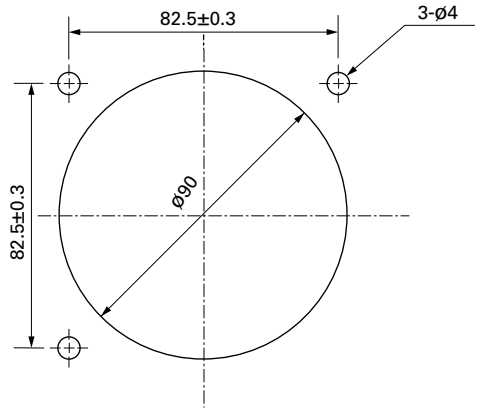
with Sensor



Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

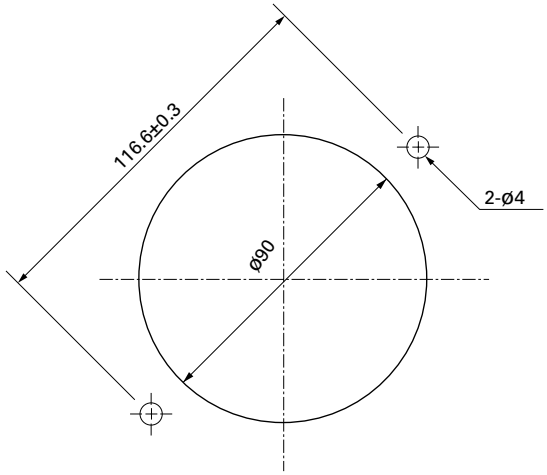
Standard

Inlet side, Outlet side



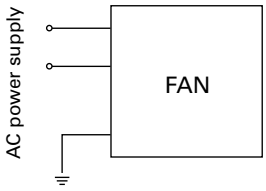
with Sensor

Inlet side, Outlet side



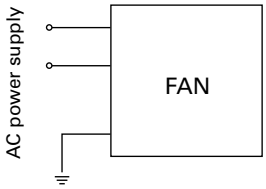
Wiring Diagram

Standard

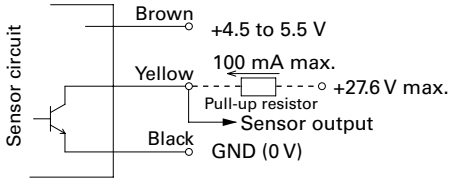


with Sensor

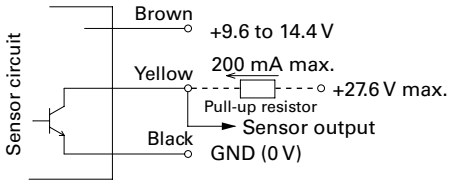
For fan power supply



For sensor circuit
5 V (ITEM-20)



12 V (ITEM-30)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

Options

Finger guards page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI), 109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards page: p. 520

Model no.: 109-1001G

Plug cord page: pp. 523 to 524

Model no.: 489-016-L10, 489-016-L21, 489-047-L10, 489-047-L21

120×120×25 mm

San Ace 120

Only standard fans (without sensors) have acquired CSA certification.

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) ····· Between AC input and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
  Between AC input and G: 50/60 Hz 1500 VAC 1 minute
  Between G and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Sensor-Purpose lead wire ····· ⊕Brown ⊖Black (Sensor) Yellow
- Mass ····· 370 g/390 g (with Sensor)

Specifications

Standard

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109S085	100	50/60	13.5/12	0.16/0.14	0.19/0.17	2500/2900	1.95/2.3	68.9/81.3	48 /51.9	0.193/0.216	38/41	-30 to +60	25000/60˚C
109S084	115			0.14/0.12	0.16/0.15								
109S088	200			0.08/0.07	0.1 /0.09								
109S087	230			0.07/0.06	0.08/0.07								
109S081	100		9.5/8.5	0.11	0.11/0.1	2200/2350	1.7 /1.8	60.1/63.6	29.4/26.5	0.118/0.106	34/35		
109S083	115			0.1	0.1 /0.09								
109S082	200			0.07	0.07/0.06								
109S089	230			0.06	0.06/0.05								
109S086*	100		12/10	0.14/0.12	0.15/0.13	1400/1600	1.1 /1.25	38.9/44.2	14.7/18.6	0.059/0.075	24/27		

*These are low-speed models.

with Sensor

For sensor specifications, please refer to p. 531. Sensor specification differs depending on the fan's speed specification.
For a 5 V sensor power supply (ITEM-20), please append "-20" to the end of model number. E.g. 109S485-20
For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109S485-30

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109S485	100	50/60	13.5/12	0.16/0.14	0.19/0.17	2500/2900	1.95/2.3	68.9/81.3	48 /51.9	0.193/0.216	38/41	-10 to +60	25000/60˚C
109S484	115			0.14/0.12	0.16/0.15								
109S488	200			0.08/0.07	0.1 /0.09								
109S487	230			0.07/0.06	0.08/0.07								
109S486*	100		12/10	0.14/0.12	0.15/0.13	1400/1600	1.1 /1.25	38.9/44.2	14.7/18.6	0.059/0.075	24/27		

*These are low-speed models.

Set Models

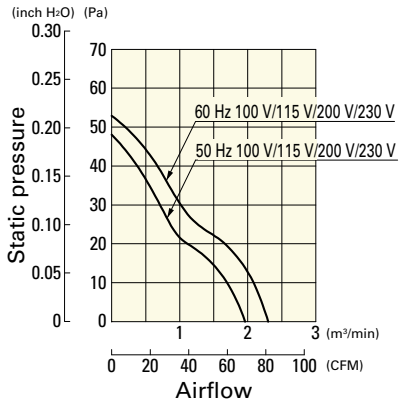
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109S085	109S085	100 V		489-016-L10	109-019E	M3×40 mm (4 screws)
ST1-109S084	109S084	115 V		489-016-L10	109-019E	
ST1-109S088	109S088	200 V		489-016-L10	109-019E	
ST1-109S087	109S087	230 V		489-016-L10	109-019E	
ST1-109S081	109S081	100 V		489-016-L10	109-019E	
ST1-109S083	109S083	115 V		489-016-L10	109-019E	
ST1-109S082	109S082	200 V		489-016-L10	109-019E	
ST1-109S089	109S089	230 V		489-016-L10	109-019E	
ST1-109S086	109S086	100 V		489-016-L10	109-019E	
ST1-109S485-20	109S485-20		◯ (5 V)	489-016-L10	109-019E	
ST1-109S485-30	109S485-30		◯ (12 V)	489-016-L10	109-019E	
ST1-109S484-20	109S484-20	115 V	◯ (5 V)	489-016-L10	109-019E	
ST1-109S484-30	109S484-30		◯ (12 V)	489-016-L10	109-019E	
ST1-109S488-20	109S488-20	200 V	◯ (5 V)	489-016-L10	109-019E	
ST1-109S488-30	109S488-30		◯ (12 V)	489-016-L10	109-019E	
ST1-109S487-20	109S487-20	230 V	◯ (5 V)	489-016-L10	109-019E	
ST1-109S487-30	109S487-30		◯ (12 V)	489-016-L10	109-019E	
ST1-109S486-20	109S486-20	100 V	◯ (5 V)	489-016-L10	109-019E	
ST1-109S486-30	109S486-30		◯ (12 V)	489-016-L10	109-019E	

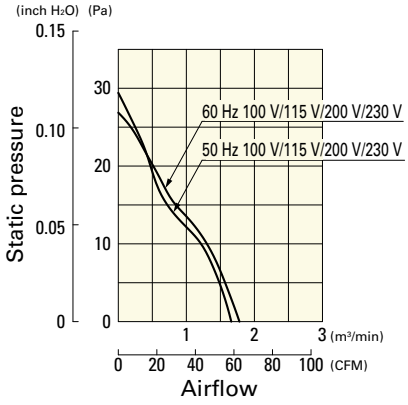
Airflow - Static Pressure Characteristics

Standard

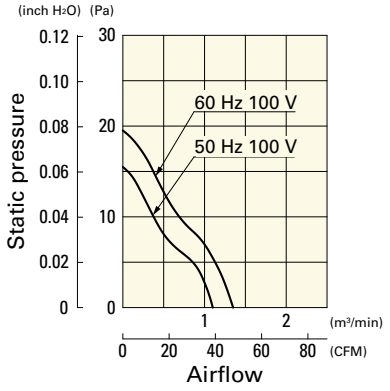
109S085, 109S084, 109S088, 109S087



109S081, 109S083, 109S082, 109S089

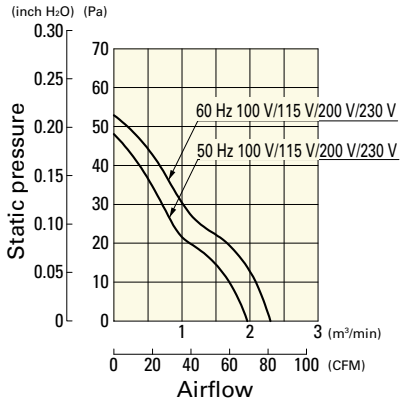


109S086

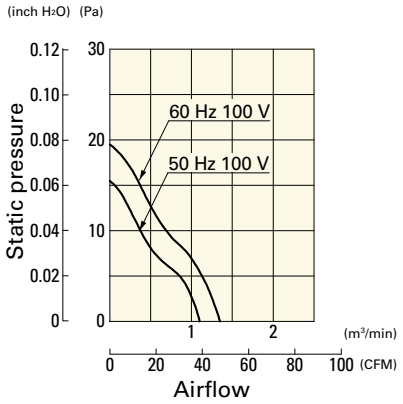


with Sensor

109S485, 109S484, 109S488, 109S487

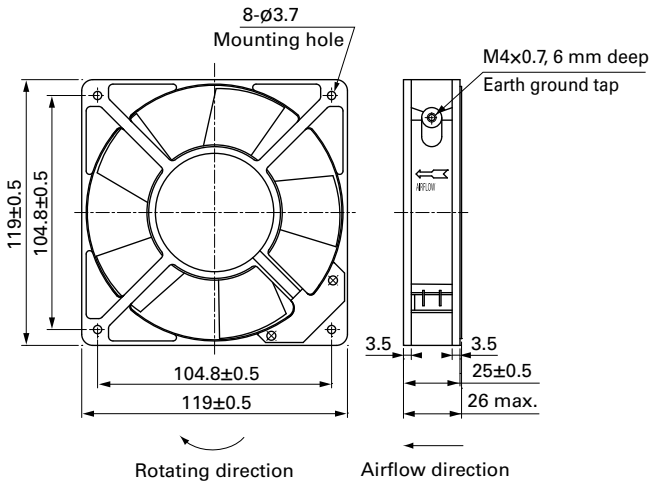


109S486



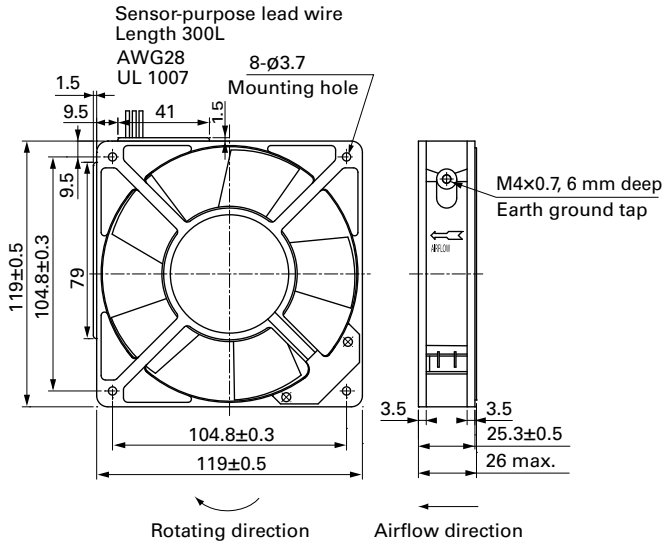
Dimensions (unit: mm)

Standard

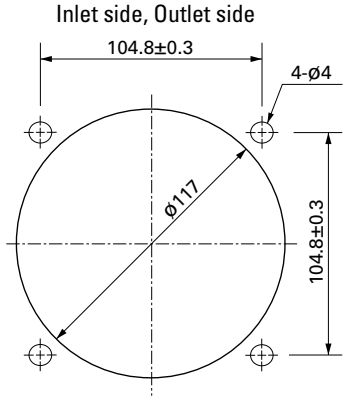


with Sensor

When mounting the model with a sensor, please screw-mount through both flanges as it has a sensor box.

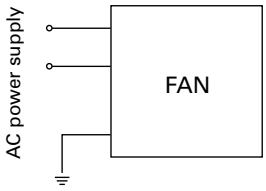


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



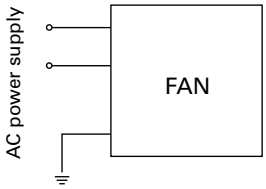
Wiring Diagram

Standard

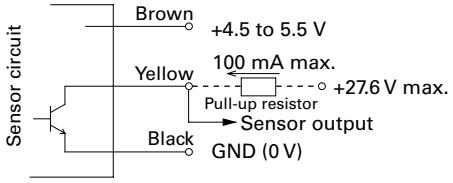


with Sensor

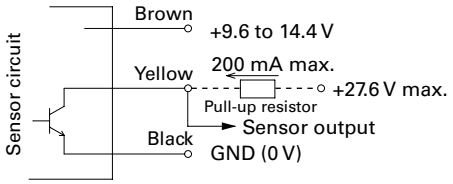
For fan power supply



For sensor circuit
5 V (ITEM-20)



12 V (ITEM-30)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin finger guards page: p. 520

Model no.: 109-1000G

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)

Plug cord page: pp. 523 to 524

Model no.: 489-016-L10, 489-016-L21, 489-047-L10, 489-047-L21

120×120×38 mm

San Ace 120

Certifications vary by model no. Please refer to pp. 562 to 563.

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Shaded coil motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) ····· Between AC input and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
  Between AC input and G: 50/60 Hz 1500 VAC 1 minute
  Between G and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Sensor-Purpose lead wire ····· ⊕Brown ⊖Black (Sensor) Yellow
- Mass ····· 550 g/580 g (with Sensor)

Specifications

Standard

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	[CFM]	Max. static pressure [Pa]	[inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109S075UL	100	50/60	18/16	0.24/0.21	0.32/0.28	2700/3100	2.5 /2.9	88.3/102.5	57.9/68.7	0.233/0.276	42/45	-30 to +60	25000/60˚C
109S074UL	115			0.21/0.18	0.27/0.24								
109S078UL	200			0.12/0.1	0.16/0.14								
109S072UL	230			0.11/0.09	0.14/0.13								
109S005	100		14/12	0.18/0.16	0.25/0.22	2700/3100	2.35/2.7	83 / 95.4	55.9/65.7	0.224/0.264	40/43		
109S005UL													
109S024	120			0.16/0.14	0.21/0.18								
109S024UL	115												
109S008	200			0.09/0.08	0.13/0.11								
109S008UL													
109S025	230			0.08/0.07	0.11/0.09								
109S025UL													
109S029UL	100		14/12	0.18/0.16	0.23/0.21	2450/2700	2.15/2.35	76 / 83	44.1/49.0	0.177/0.197	38/40		
109S013			13/11	0.16/0.14	0.16/0.15	1800/2000	1.55/1.75	54.8/ 60.8	23.5/26.4	0.094/0.106	30/32		
109S013UL													
109S006*			7/7	0.1 /0.09	0.1 /0.09	1650/1700	1.45/1.5	51.2/ 53	17.6/17.6	0.071/0.071	28/28		
109S006UL*	115		10/10	0.13/0.11	0.13/0.11	1800/1900	1.56/1.64	55 / 57.9	20 /20.6	0.08 /0.083	30/31		
109S010*	200		7/7	0.05/0.04	0.05/0.04	1650/1700	1.45/1.5	51.2/ 53	17.6/17.6	0.071/0.071	28/28		
109S010UL*	240		11/11	0.06/0.05	0.06/0.05	1800/1950	1.58/1.68	55.8/ 59.3	20.6/21.6	0.083/0.087	30/32		

*These are low-speed models.

with Sensor

For sensor specifications, please refer to p. 531. Sensor specification differs depending on the fan's speed specification.
For a 5 V sensor power supply (ITEM-20), please append "-20" to the end of model number. E.g. 109S405UL-20
For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109S405UL-30

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min] [CFM]	Max. static pressure [Pa] [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
109S405UL	100	50/60	14/12	0.18/0.16	0.25/0.22	2700/3100	2.35/2.7 83 / 95.4	55.9/65.7 0.224/0.264	40/43	-10 to +60	25000/60°C
109S424UL	115			0.16/0.14	0.21/0.18						
109S408UL	200			0.09/0.08	0.13/0.11						
109S425UL	230			0.08/0.07	0.11/0.09						
109S429UL	100			0.18/0.16	0.23/0.21	2450/2700	2.15/2.35 76 / 83	44.1/49.0 0.177/0.197	38/40		
109S406UL*			7/6	0.09/0.08	0.1 /0.09	1650/1700	1.45/1.5 51 / 53	17.7/17.7 0.071/0.071	28/28		
109S475UL	100		18/16	0.24/0.21	0.32/0.28	2700/3100	2.5 /2.9 88.3/102.4	57.9/68.7 0.233/0.276	42/45		
109S474UL	115			0.21/0.18	0.27/0.24						
109S478UL	200			0.12/0.1	0.16/0.14						
109S472UL	230			0.11/0.09	0.14/0.13						

*These are low-speed models.

For the San Ace 120AD 9AD type 120×120×38 mm fan, please refer to p. 461.

This fan works while internally converting AC power into DC power, providing the superior performance of a DC fan with the flexibility of AC input.

Set Models

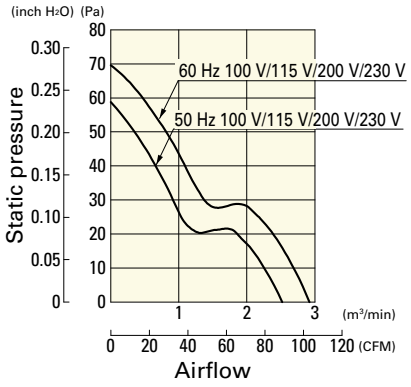
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109S075UL	109S075UL	100 V		489-037-L10	109-019E	M3×55 mm (4 screws)
ST1-109S074UL	109S074UL	115 V		489-037-L10	109-019E	
ST1-109S078UL	109S078UL	200 V		489-037-L10	109-019E	
ST1-109S072UL	109S072UL	230 V		489-037-L10	109-019E	
ST1-109S005	109S005	100 V		489-006-L10	109-019E	
ST1-109S005UL	109S005UL			489-037-L10	109-019E	
ST1-109S024	109S024	120 V		489-006-L10	109-019E	
ST1-109S024UL	109S024UL	115 V		489-037-L10	109-019E	
ST1-109S008	109S008	200 V		489-006-L10	109-019E	
ST1-109S008UL	109S008UL			489-037-L10	109-019E	
ST1-109S025	109S025	230 V		489-006-L10	109-019E	
ST1-109S025UL	109S025UL			489-037-L10	109-019E	
ST1-109S029UL	109S029UL	100 V		489-037-L10	109-019E	
ST1-109S013	109S013			489-006-L10	109-019E	
ST1-109S013UL	109S013UL			489-037-L10	109-019E	
ST1-109S006	109S006			489-006-L10	109-019E	
ST1-109S006UL	109S006UL	100 V 115 V		489-037-L10	109-019E	
ST1-109S010	109S010	200 V		489-006-L10	109-019E	
ST1-109S010UL	109S010UL	200 V 240 V		489-037-L10	109-019E	
ST1-109S405UL-20	109S405UL-20	100 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S405UL-30	109S405UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S424UL-20	109S424UL-20	115 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S424UL-30	109S424UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S408UL-20	109S408UL-20	200 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S408UL-30	109S408UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S425UL-20	109S425UL-20	230 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S425UL-30	109S425UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S429UL-20	109S429UL-20	100 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S429UL-30	109S429UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S406UL-20	109S406UL-20	100 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S406UL-30	109S406UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S475UL-20	109S475UL-20	100 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S475UL-30	109S475UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S474UL-20	109S474UL-20	115 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S474UL-30	109S474UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S478UL-20	109S478UL-20	200 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S478UL-30	109S478UL-30		◯ (12 V)	489-037-L10	109-019E	
ST1-109S472UL-20	109S472UL-20	230 V	◯ (5 V)	489-037-L10	109-019E	
ST1-109S472UL-30	109S472UL-30		◯ (12 V)	489-037-L10	109-019E	

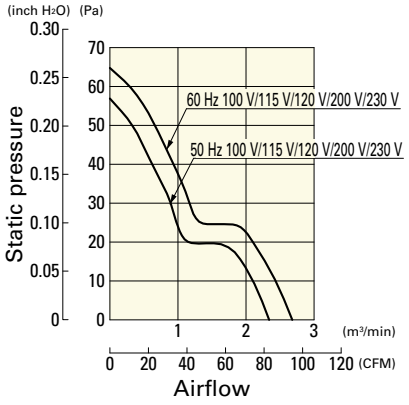
Airflow - Static Pressure Characteristics

Standard

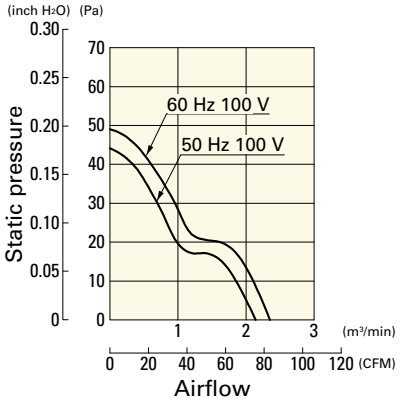
109S075UL, 109S074UL, 109S078UL, 109S072UL



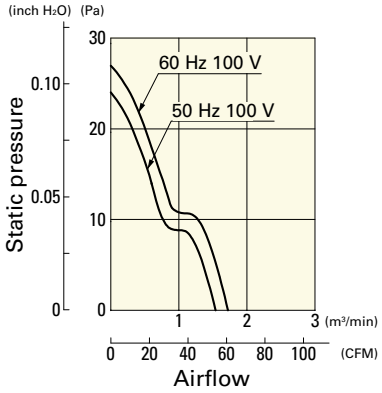
109S005, 109S005UL, 109S024, 109S024UL, 109S008, 109S008UL, 109S025, 109S025UL



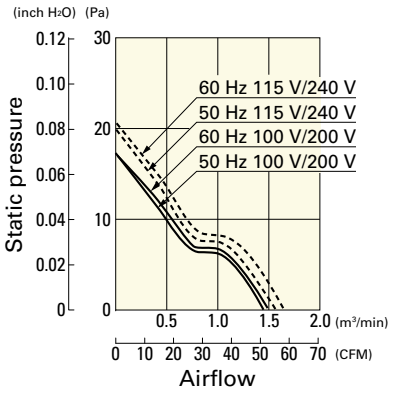
109S029UL



109S013, 109S013UL

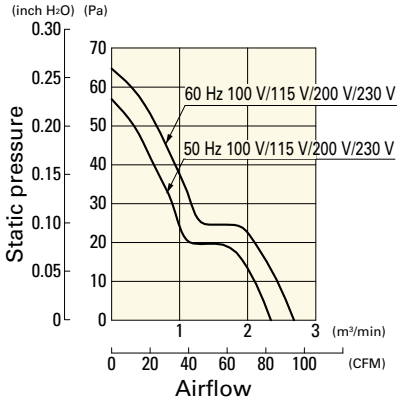


109S006, 109S006UL, 109S010, 109S010UL

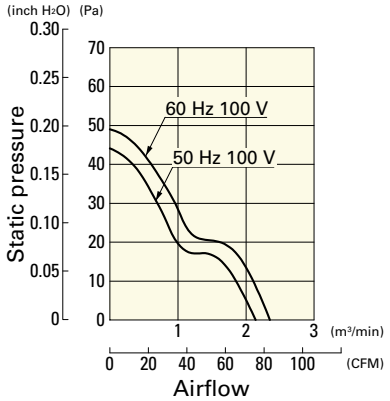


with Sensor

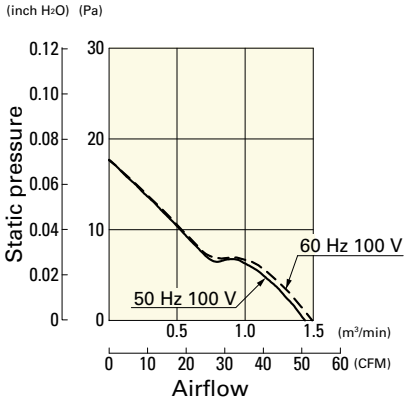
109S405UL, 109S424UL, 109S408UL, 109S425UL



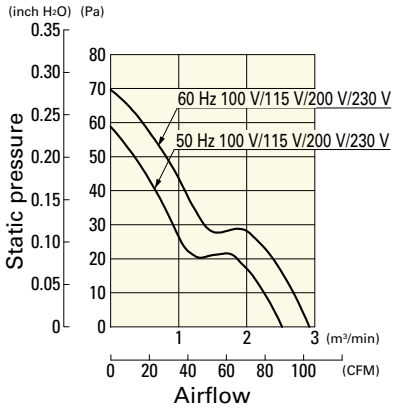
109S429UL



109S406UL

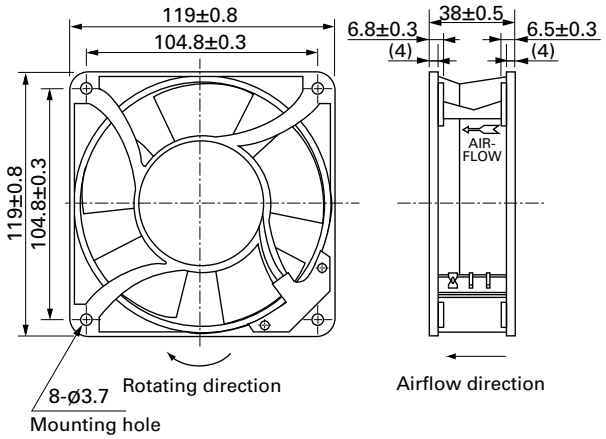


109S475UL, 109S474UL, 109S478UL, 109S472UL



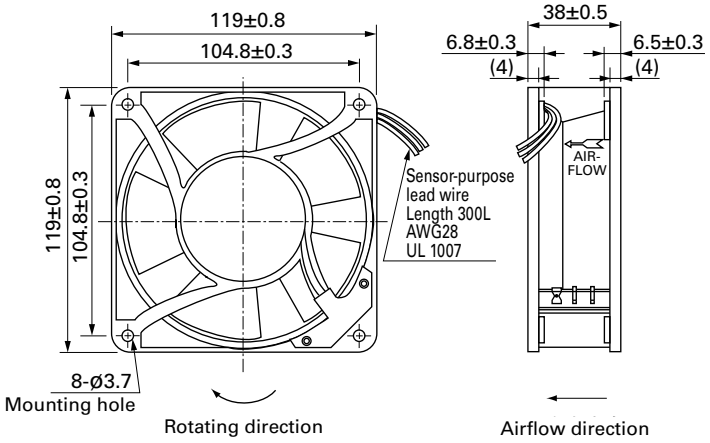
Dimensions (unit: mm)

Standard

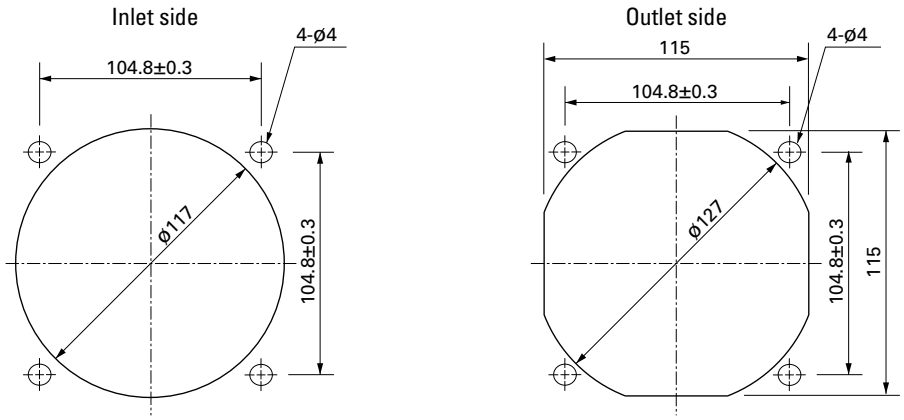


with Sensor

When mounting the model with a sensor, please screw-mount through both flanges as it has a sensor box.

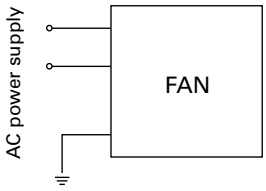


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



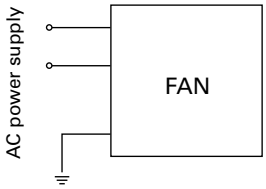
Wiring Diagram

Standard

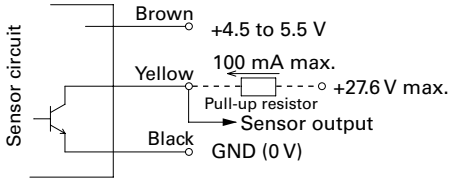


with Sensor

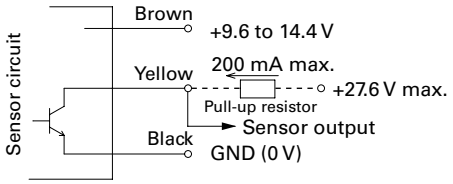
For fan power supply



For sensor circuit
5 V (ITEM-20)



12 V (ITEM-30)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin finger guards page: p. 520

Model no.: 109-1000G

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
109-1000F30 (30PPI), 109-1000F40 (40PPI)

Filter kits page: p. 522

Model no.: 109-018

Screen kits page: p. 522

Model no.: 109-020

Plug cord page: pp. 523 to 524

Exclusive for fans without UL at the end of the model number.
Model no.: 489-006-L10, 489-006-L21, 489-006-L35

Exclusive for fans with UL at the end of the model number.
Model no.: 489-037-L10, 489-037-L21, 489-037-L35,
489-007-L10, 489-007-L21

160×160×51 mm

San Ace 160

Only standard fans (without sensors) have acquired CSA certification.

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Capacitor motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) ····· Between AC input and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
  Between AC input and G: 50/60 Hz 1500 VAC 1 minute
  Between G and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Sensor-Purpose lead wire ····· ⊕Brown ⊖Black (Sensor) Yellow
- Mass ····· 1100 g

Specifications

Standard

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-601	100	50/60	37.5/33	0.43/0.35	0.72/0.7	2850/3350	7.2/8.5	254.4/300.4	156.8/166.6	0.63/0.669	56/60	-30 to +60	25000/60˚C
109-604	115			0.39/0.31	0.62/0.61								
109-602	200			0.23/0.18	0.36/0.35								
109-603	230			0.21/0.16	0.32/0.31								

with Sensor

For sensor specifications, please refer to p. 531. Sensor specification differs depending on the fan's speed specification.
For a 5 V sensor power supply (ITEM-20), please append "-20" to the end of model number. E.g. 109-641-20
For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109-641-30

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-641	100	50/60	37.5/33	0.43/0.35	0.72/0.7	2850/3350	7.2/8.5	254.4/300.4	156.8/166.6	0.63/0.669	56/60	-10 to +60	25000/60˚C
109-644	115			0.39/0.31	0.62/0.61								
109-642	200			0.23/0.18	0.36/0.35								
109-643	230			0.21/0.16	0.32/0.31								

Set Models

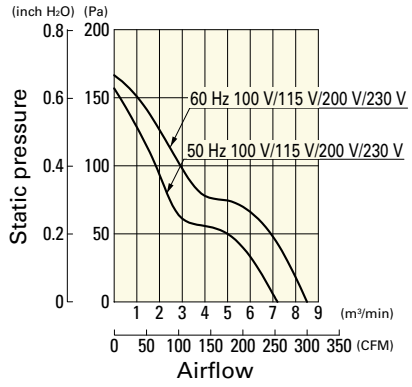
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-601	109-601	100 V		489-1618-L10	109-619E	M5×20 mm (4 screws)
ST1-109-604	109-604	115 V		489-1618-L10	109-619E	
ST1-109-602	109-602	200 V		489-1618-L10	109-619E	
ST1-109-603	109-603	230 V		489-1618-L10	109-619E	
ST1-109-641-20	109-641-20	100 V	◯ (5 V)	489-1618-L10	109-619E	
ST1-109-641-30	109-641-30		◯ (12 V)	489-1618-L10	109-619E	
ST1-109-644-20	109-644-20	115 V	◯ (5 V)	489-1618-L10	109-619E	
ST1-109-644-30	109-644-30		◯ (12 V)	489-1618-L10	109-619E	
ST1-109-642-20	109-642-20	200 V	◯ (5 V)	489-1618-L10	109-619E	
ST1-109-642-30	109-642-30		◯ (12 V)	489-1618-L10	109-619E	
ST1-109-643-20	109-643-20	230 V	◯ (5 V)	489-1618-L10	109-619E	
ST1-109-643-30	109-643-30		◯ (12 V)	489-1618-L10	109-619E	

Airflow - Static Pressure Characteristics

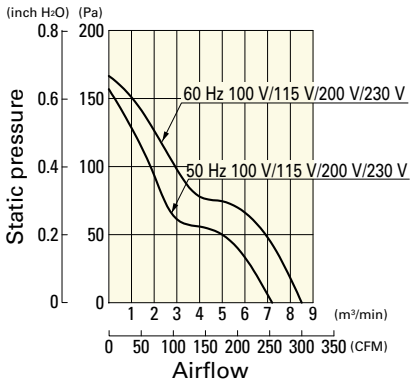
Standard

109-601, 109-604, 109-602, 109-603



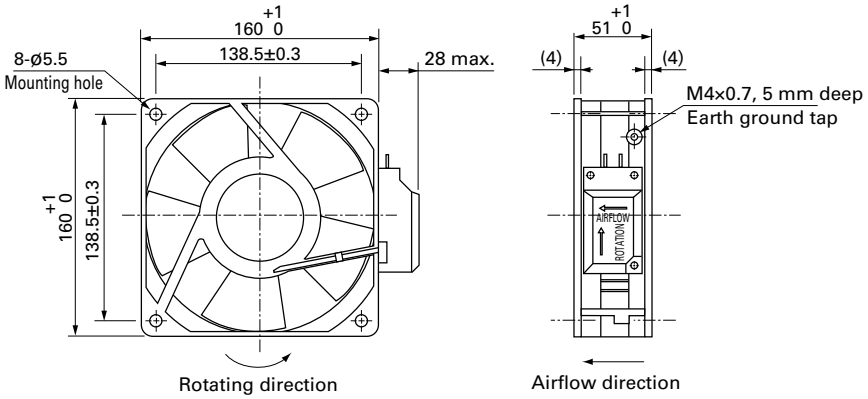
with Sensor

109-641, 109-644, 109-642, 109-643

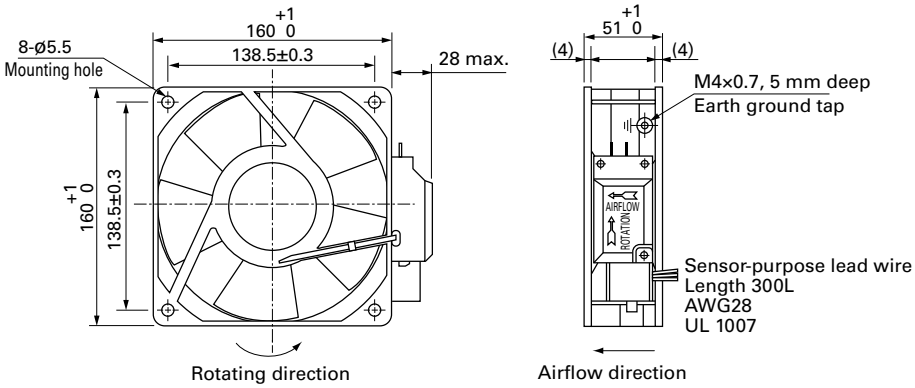


Dimensions (unit: mm)

Standard

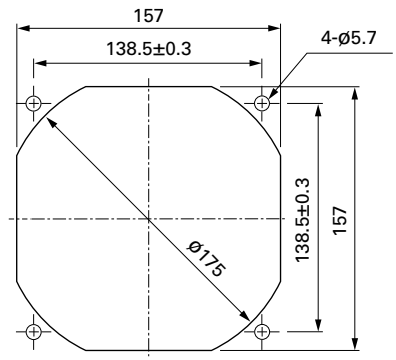


with Sensor



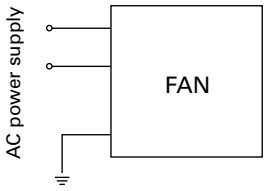
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



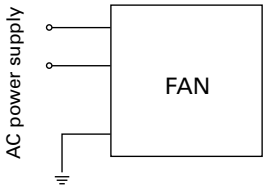
Wiring Diagram

Standard

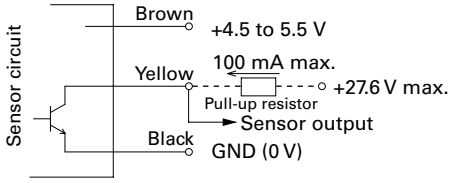


with Sensor

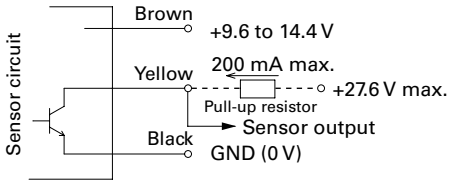
For fan power supply



For sensor circuit
5 V (ITEM-20)



12 V (ITEM-30)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

Options

Finger guards

page: p. 514

Model no.: 109-619E, 109-619H, 109-620

Plug cord

page: pp. 523 to 524

Model no.: 489-084-L10, 489-084-L21, 489-086-L10, 489-086-L21, 489-1618-L10, 489-1618-L21, 489-1618-L28, 489-1619-L10, 489-1619-L21

ø172×150×51 mm

San Ace 172

Sidecut type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Capacitor motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Mass ····· 1000 g

Specifications

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109S301	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4	187.3/226.1	147/196	0.59/0.787	51/56	-30 to +60	25000/60˚C
109S304	115			0.29/0.22	0.55/0.54								
109S302	200			0.16/0.13	0.33/0.32								
109S303	230			0.14/0.11	0.28/0.27								

Set Models

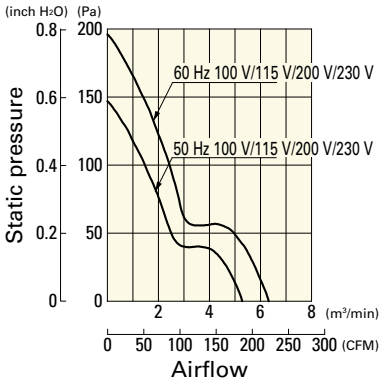
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109S301	109S301	100 V		489-1619-L10	109-319E	M4×25 mm (4 screws)*
ST1-109S304	109S304	115 V		489-1619-L10	109-319E	
ST1-109S302	109S302	200 V		489-1619-L10	109-319E	
ST1-109S303	109S303	230 V		489-1619-L10	109-319E	

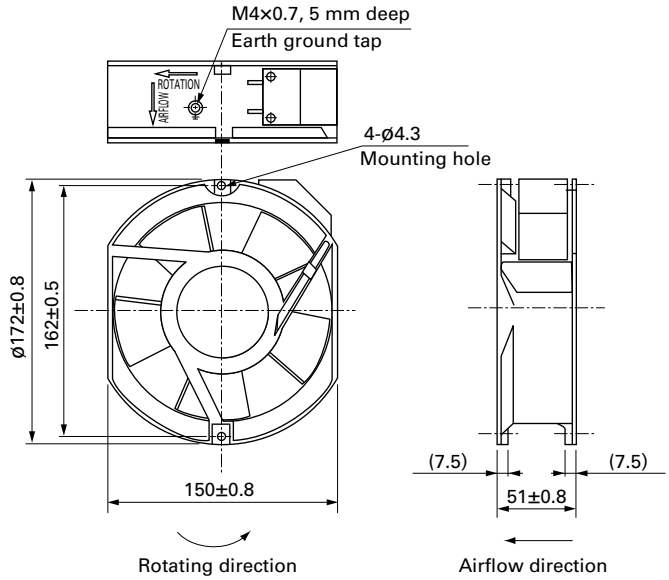
*Though these are 2-hole or 3-hole frame mount types, 4 screws are included for extra.

Airflow - Static Pressure Characteristics

109S301, 109S304, 109S302, 109S303

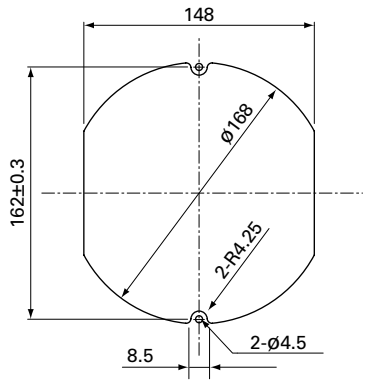


Dimensions (unit: mm)

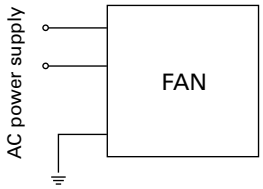


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



Wiring Diagram



Options

Finger guards page: p. 515

Model no.: 109-319E, 109-319H, 109-320

Plug cord page: pp. 523 to 524

Model no.: 489-1619-L10, 489-1619-L21, 489-084-L10, 489-084-L21

ø172×51 mm

San Ace 172

Only standard fans (without sensors) have acquired CSA certification.

Round type

General Specifications

- Material ····· Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ····· See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage)
- Motor structure ····· Capacitor motor
- Motor protection function ····· Locked rotor burnout protection, Reverse polarity protection
  For details, please refer to p. 529.
- Dielectric strength ····· 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) ····· Between AC input and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
  Between AC input and G: 50/60 Hz 1500 VAC 1 minute
  Between G and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
- Insulation resistance ····· 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) ····· At 1 m away from the air inlet
- Operating voltage range ····· Voltage of each model ±10%
- Storage temperature ····· -30 to +70˚C (Non-condensing)
- Sensor-Purpose lead wire ····· ⊕Brown ⊖Black (Sensor) Yellow
- Mass ····· 1000 g

Specifications

Standard

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-311	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4	187.3/226.1	147/196	0.59/0.787	47/51	-30 to +60	25000/60˚C
109-314	115			0.29/0.22	0.55/0.54								
109-312	200			0.16/0.13	0.33/0.32								
109-313	230			0.14/0.11	0.28/0.27								

with Sensor

For sensor specifications, please refer to p. 531. Sensor specification differs depending on the fan's speed specification.
For a 5 V sensor power supply (ITEM-20), please append "-20" to the end of model number. E.g. 109-371-20
For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109-371-30

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109-371	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4	187.3/226.1	147/196	0.59/0.787	47/51	-10 to +60	25000/60˚C
109-374	115			0.29/0.22	0.55/0.54								
109-372	200			0.16/0.13	0.33/0.32								
109-373	230			0.14/0.11	0.28/0.27								

Set Models

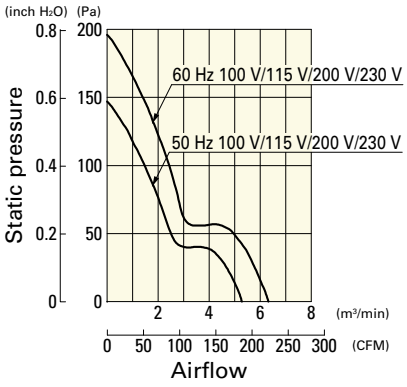
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-311	109-311	100 V		489-1619-L10	109-319E	M4×25 mm (4 screws)
ST1-109-314	109-314	115 V		489-1619-L10	109-319E	
ST1-109-312	109-312	200 V		489-1619-L10	109-319E	
ST1-109-313	109-313	230 V		489-1619-L10	109-319E	
ST1-109-371-20	109-371-20	100 V	◯ (5 V)	489-1619-L10	109-319E	
ST1-109-371-30	109-371-30		◯ (12 V)	489-1619-L10	109-319E	
ST1-109-374-20	109-374-20	115 V	◯ (5 V)	489-1619-L10	109-319E	
ST1-109-374-30	109-374-30		◯ (12 V)	489-1619-L10	109-319E	
ST1-109-372-20	109-372-20	200 V	◯ (5 V)	489-1619-L10	109-319E	
ST1-109-372-30	109-372-30		◯ (12 V)	489-1619-L10	109-319E	
ST1-109-373-20	109-373-20	230 V	◯ (5 V)	489-1619-L10	109-319E	
ST1-109-373-30	109-373-30		◯ (12 V)	489-1619-L10	109-319E	

Airflow - Static Pressure Characteristics

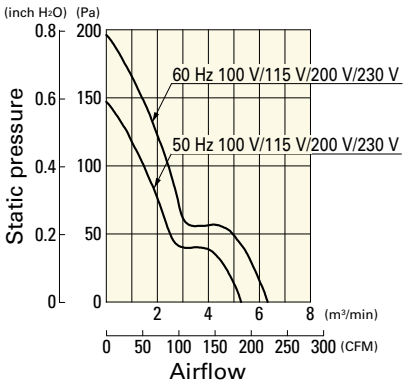
Standard

109-311, 109-314, 109-312, 109-313



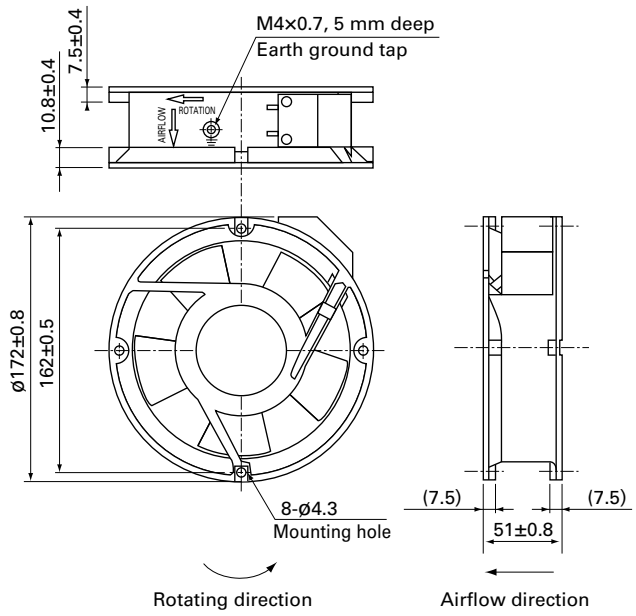
with Sensor

109-371, 109-374, 109-372, 109-373

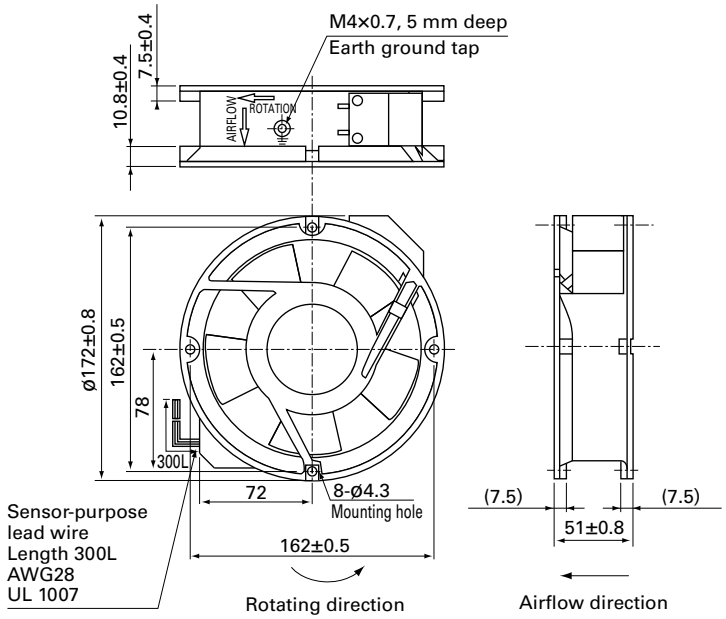


Dimensions (unit: mm)

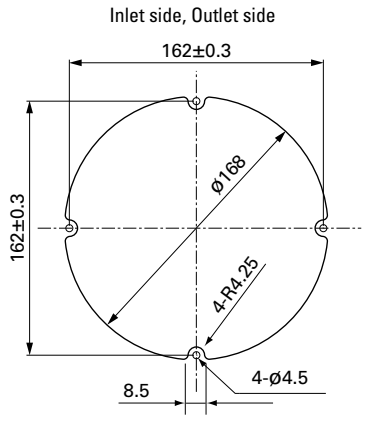
Standard



with Sensor

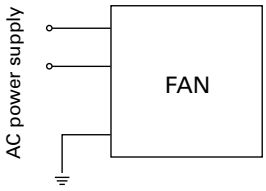


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



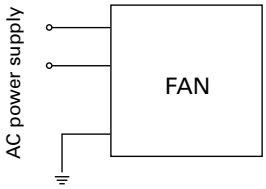
Wiring Diagram

Standard

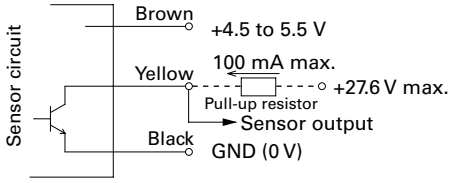


with Sensor

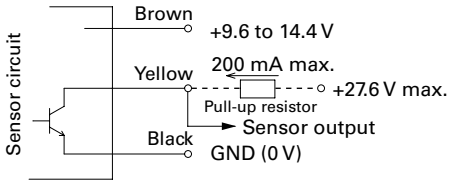
For fan power supply



For sensor circuit
5 V (ITEM-20)



12 V (ITEM-30)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

Options

Finger guards page: p. 515

Model no.: 109-319E, 109-319H, 109-320, 109-1066, 109-1068

Plug cord page: pp. 523 to 524

Model no.: 489-1619-L10, 489-1619-L21, 489-084-L10, 489-084-L21

AC Fan ø172 mm AC

PWM Controller

Features

Reduces system power consumption and fan noise

For PWM fan speed control, a PWM control circuit needs to be newly designed and configured.

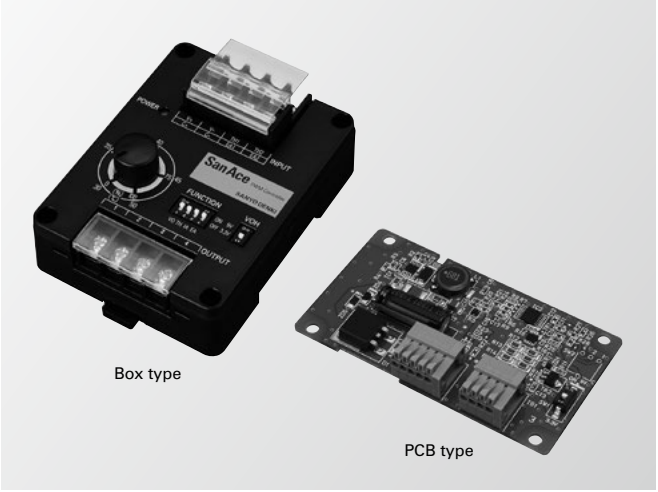
By using this product, however, PWM control function fans can be fully utilized without the need for preparing new circuits, contributing to reducing the system power consumption and the fan noise.

Can be common-powered by the fan power supply

The controller can be powered by the fan power supply of rated voltage 12, 24, and 48 VDC, and no separate supply is required.

Maximum of four fans connectable

Up to four fans with PWM control function can be connected and controlled.



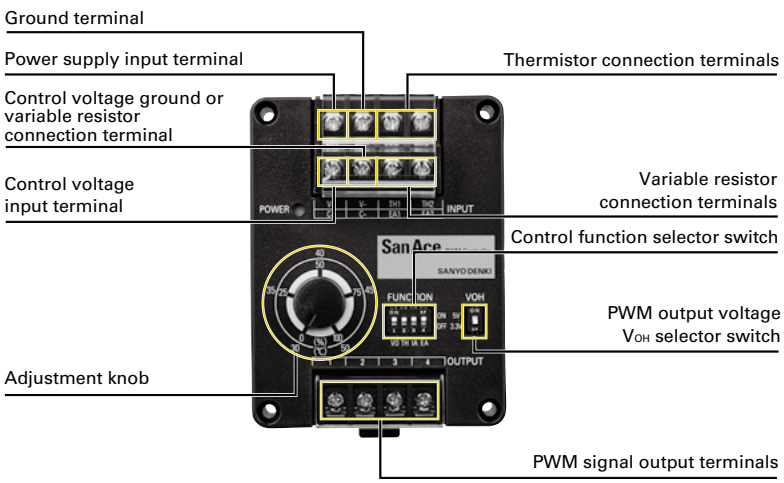
Specifications

		Box type	PCB type		
Model no.		**9PC8666X-S001**	**9PC8045D-V001**	**9PC8045D-R001**	**9PC8045D-T001**
Size [mm]		86 (H)×66 (W)×38 (D)	80 (H)×45 (W)×17 (D)		
Rated voltage [V]		12/24/48			
Power consumption [W]		0.2*			
Operating temperature [˚C]		-20 to +70			
Input terminal	Input voltage range [V] (V+, V-)	7 to 60			
	Control voltage range [V]	0 to 5.5			
Output terminal	PWM signal output	V_{OH} (high level voltage): 3.3 or 5 VDC selectable			
	PWM frequency [kHz]	25			
	Output current	20 mA max. (total sum of 4 terminals)			
	Output breakdown voltage [V]	6.5			
	No. of connectable fans	Up to 4 fans			
Control functions**		Voltage control, Internal adjustment (variable resistor) control, External adjustment (variable resistor) control***, Thermistor control***	Voltage control	Variable resistor control***	Thermistor control***
Mounting method		DIN rail mounting or screw mounting	Screw mounting		
Mass [g]		110	27		
Material		Case: Plastic	PCB: FR-4		

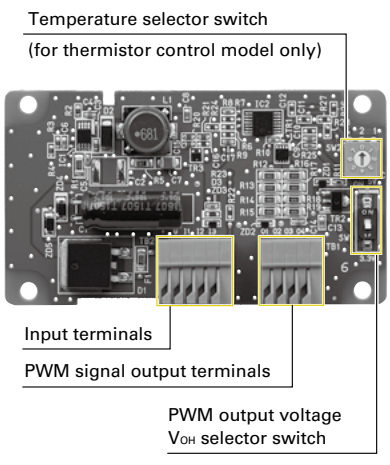
* When output terminals are turned on. ** Control functions are mutually exclusive for Box type.
*** Variable resistor and thermistor are not supplied with the controller and need to be prepared separately.
Be noted that if applied input voltage or frequency is out of range of the connected fan, how the fan speed responds to the PWM duty cycle may be altered.

Front View (component names)

- Box type



- PCB type



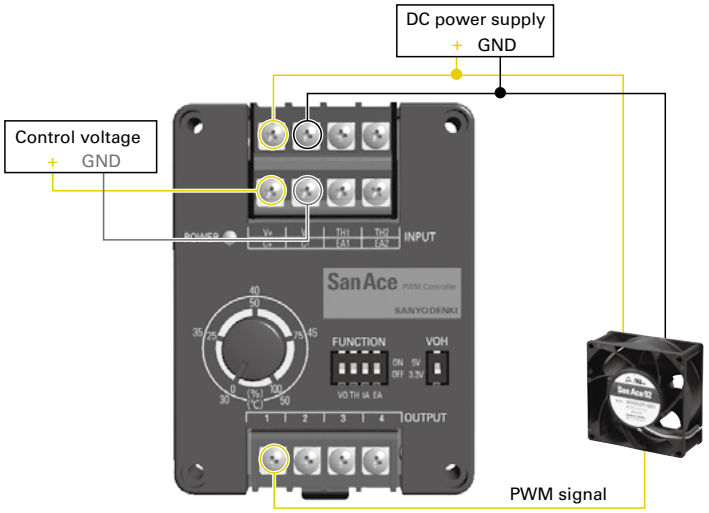
Connection Examples and PWM Signal Output Characteristics

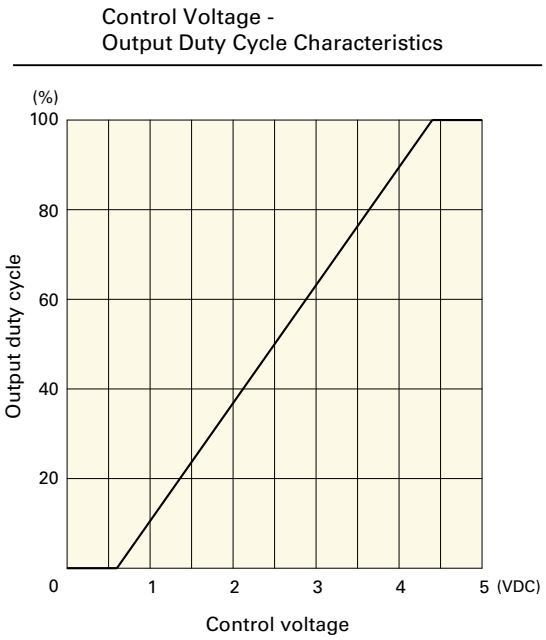
Controller can be common-powered by the power supply for 12, 24, and 48 VDC rated voltage fans.
It can also be powered by a separate supply as long as both supplies share the same ground.

Voltage control

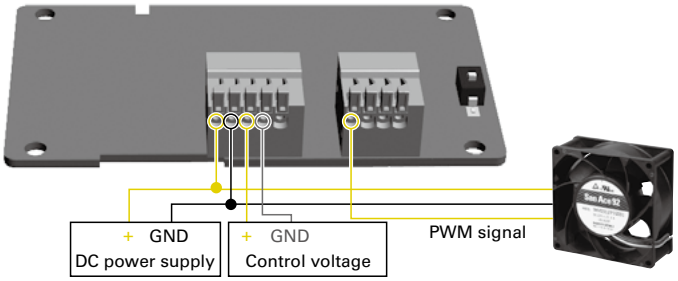
Output duty cycle controlled with input voltage of 0 to 5 VDC. *Ensure that the input voltage does not exceed 5.5 VDC.

- Box type





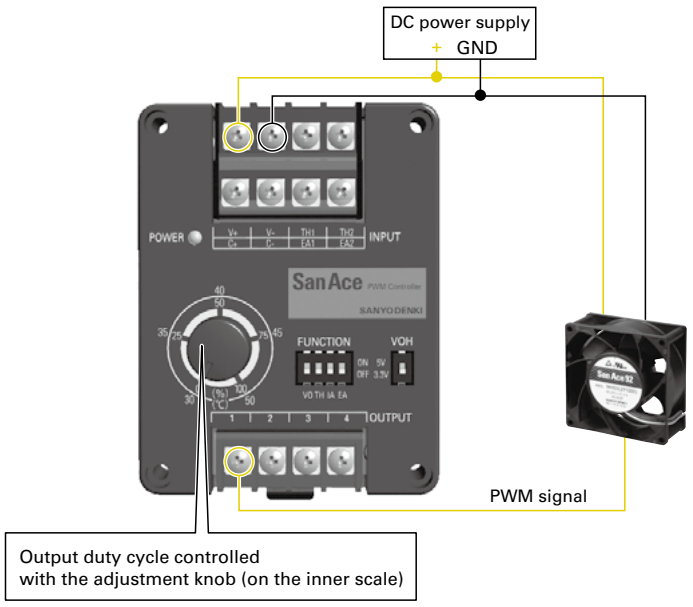
- PCB type (Model no.: 9PC8045D-V001)

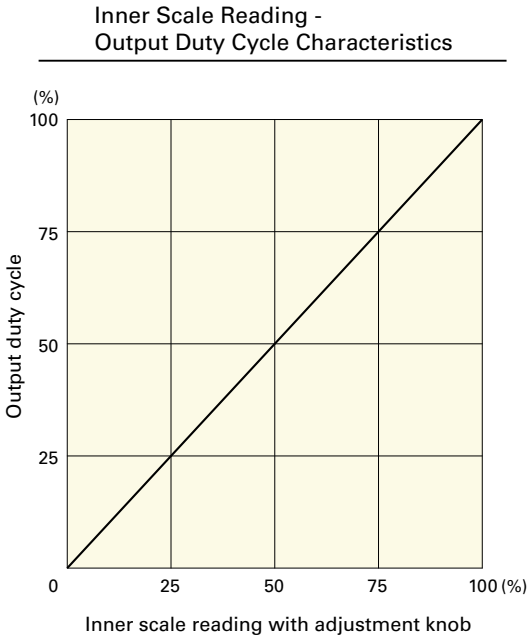


Internal adjustment (variable resistor) control

Output duty cycle controlled with the adjustment knob.

- Box type

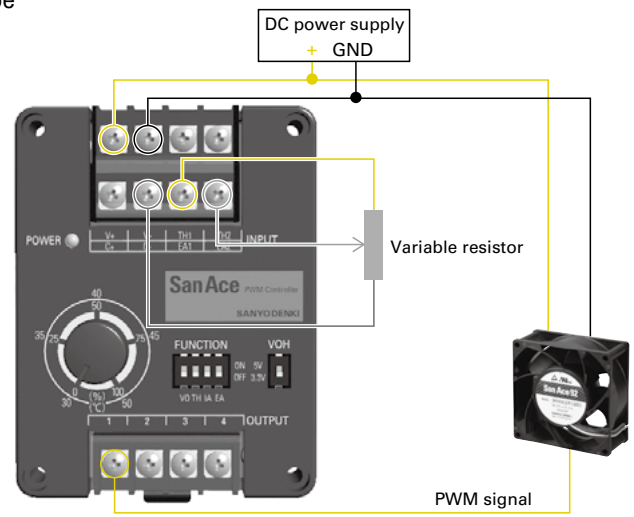




External adjustment (variable resistor) control

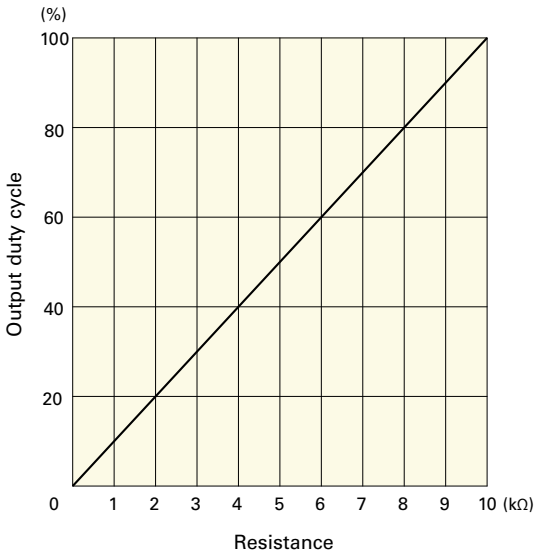
Output duty cycle controlled with variable resistor connected to terminals.

- Box type

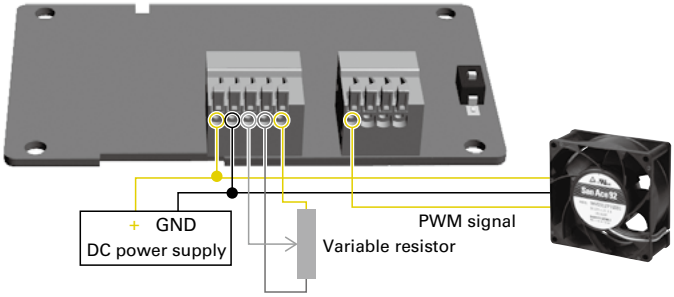


Resistance - Output Duty Cycle Characteristics

Recommended total resistance: 10 kΩ
Resistance taper: B (linear curve fitting)



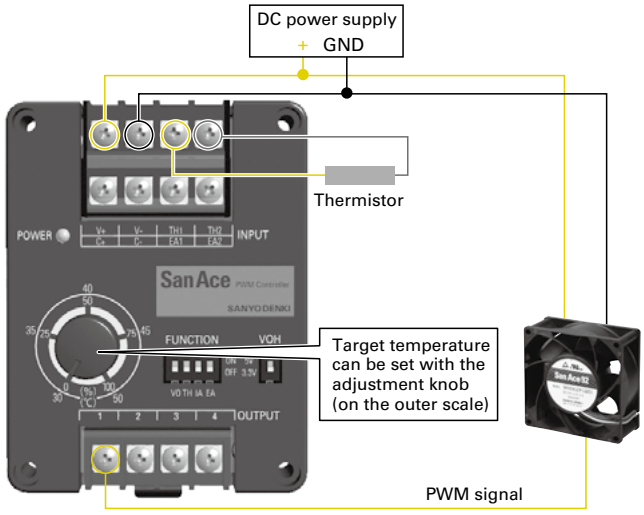
- PCB type (Model no.: 9PC8045D-R001)



Thermistor control

Automation control of output duty cycle in response to the temperature detected with an external thermistor.

- Box type



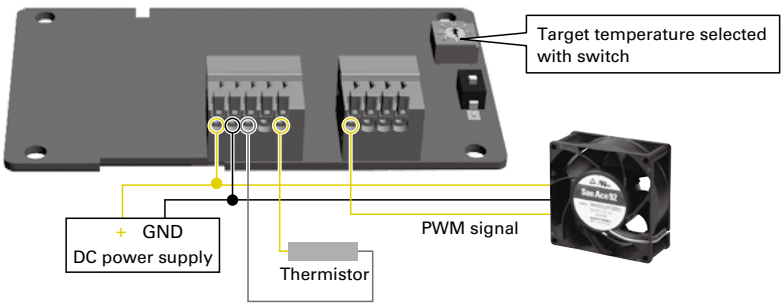
Controlling Conditions

T_{ST}: Temperature set with the adjustment knob (30 to 50°C)
T_{TH}: Temperature detected with thermistor

Recommended thermistor conditions
Type: NTC
R_{25} (Resistance at 25°C): 10 kΩ
B value: $B_{25/85}$ = 3435 K

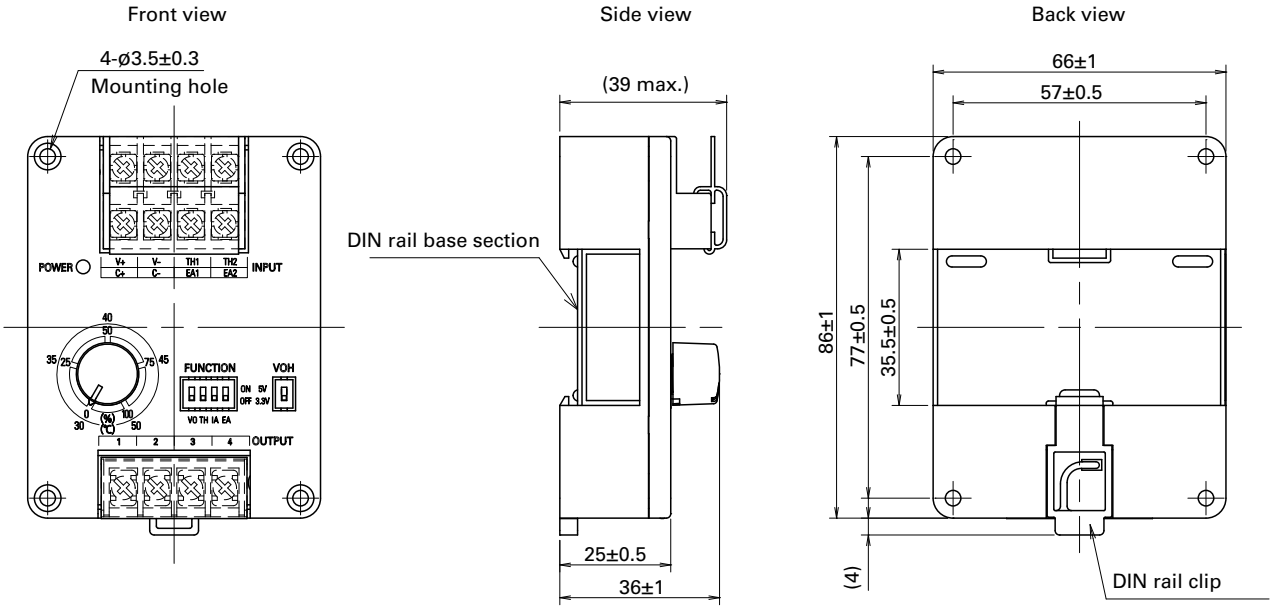
Temperature conditions	Duty cycle	Fan rotational speed (For reference)
$T_{ST} < T_{TH}$	Increases	Increases
$T_{ST} > T_{TH}$	Decreases	Decreases
$T_{ST} \approx T_{TH}$	Maintained	Maintained

- PCB type (Model no.: 9PC8045D-T001)

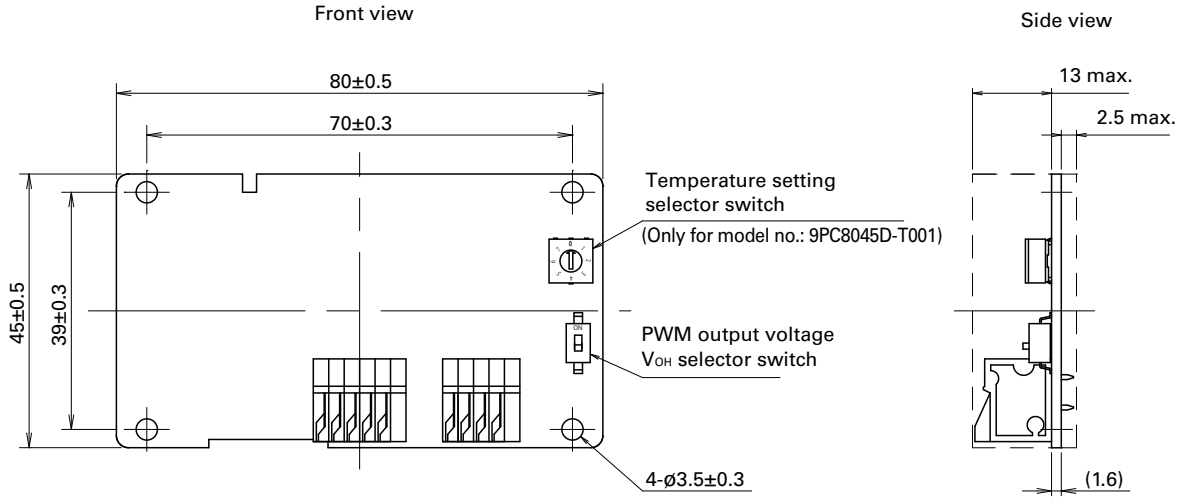


Dimensions (unit: mm)

- Box type



- PCB type



Safety Precautions

Box type

- To ensure that the product is used safely, be sure to read and fully understand the Safety Precautions and only use the product as directed.
- Read the Safety Precautions carefully before installing, connecting, operating, maintaining, or inspecting the product.
- The product has been designed and manufactured for use in general industrial machinery, and may not be used as a standalone product.
- The product of our company (hereafter referred to as "the product") falls into the category of the products specified in the Attached List 1, Item 16 (Class 85, Item 43) of the Export Trade Control Ordinance. To export the product as an individual part or to export a device into which the product is assembled, the "Information Requirements" and "Objective Requirements" that the Ministry of Economy, Trade and Industry established based on the "Catchall Controls" must be studied for applicability. Based on information on applicability and specified requirements, appropriate export procedures must be taken.
- When disposing of the product, treat it as industrial waste. For instructions on proper disposal methods, please contact local government authorities.
- When using the product in an environment with vibration, such as in a car or a ship, use it at your own discretion only after deploying sufficient safety measures and making prior evaluations. Fully understand the Safety Precautions described in this instruction manual before using the product.

In order to prevent any possible bodily injury or damage to property or equipment, the following precautions for ensuring safety are displayed according to the following two ranks of importance:

Danger	Handling or using the product improperly and in disregard of the instructions with this mark may result in serious bodily injury or death.
Caution	Handling or using the product improperly and in disregard of the instructions with this mark may result in bodily injury or physical damage.

* Items marked 'Caution' may also result in serious bodily injury or death in some circumstances. Always follow the instructions for items marked 'Danger.'

Danger

- If the product is used in medical appliances or other types of equipment that affect people's lives, sufficient safety-related evaluations and preparations must be made in advance, and the product or the type of equipment into which the product is assembled must be used under the full responsibility of the user.
- If the product is used in types of equipment that have a strong social and public impact, sufficient prior evaluations and safety-related evaluations and preparations must be made, and the product or the type of equipment into which the product is assembled must be used under the full responsibility of the user.
- The product is not designed to be used in a car or a ship. When using the product in an environment with vibration, such as in a car or a ship, use it at your own discretion only after deploying sufficient safety measures and making prior evaluations.
- Connect all wires properly and securely. Failure to do so may result in fire, burns, or electrical shock.
- Do not use the product in a location where there is flammable gas. Otherwise, it may result in fire, burns, or bodily injury.
- Do not operate the product when electronic components are exposed. Otherwise, it may result in electrical shock.
- Turn off the power and stop using the product immediately if you notice any sparks, smoke, odd odors, sounds, or anything unusual during operation. Failure to do so may result in fire, bodily injury, or electrical shock.
- Never allow the product to fall, topple over, or otherwise be subjected to excessive shocks when moving it. Otherwise, it may result in product failure.
- The product should be handled only by personnel with sufficient training and knowledge and under the full responsibility of the user.
- Never attempt to disassemble, repair, or alter the product in any way, as doing so may result in fire, burns, or electrical shock.

Caution

Handling

- Installation, placement, connections, wiring, or relocation of the product should be performed by knowledgeable or correctly licensed personnel. Never perform such work while the product is on. Failure to do so may result in bodily injury, fire, burns, or electrical shock.
- Never allow yourself to come into contact with the ends of wires or plugs when measuring insulation resistance or dielectric strength voltage. Otherwise, it may result in electrical shock.
- Never attempt to disassemble or alter the product in any way. Doing so may invalidate any warranties concerning the functions or performance of the product, and may also result in fire, burns, bodily injury, or electrical shock.

Instruction

- Take measures to protect the device from potential damage caused by the product stopping during operation.
- Never use the product at voltages, temperatures, or any other settings which exceed those given in the product specifications. Otherwise, it may result in substandard operation, failure, fire, bodily injury, or electrical shock.
- Never remove the product nameplate or install the product so that the identification cannot be seen after installation. Otherwise, it may result in the product being improperly used, and subsequently result in fires.
- Do not turn the power supply ON/OFF on a ground wire. Otherwise, it may result in product failure.
- Do not apply excessive force to the product while it is operating. Otherwise, it may result in product failure.
- If you install and use the product in a car or a ship, we shall not be responsible for any faults caused by the environment of the car or ship in which the product is installed.

Installation

- When fixing the product into place, be sure to take into consideration the product's weight and all other relevant factors. Failure to do so may result in the product or its parts falling, resulting in bodily injury or device failure.
- Never install or remove the product while it is wired.
- When fixing the product with screws, ensure correct tightening torque. If the tightening torque is over the recommended values, the product structure may deform or break.
- Take proper precautions against static electricity when making electrical connections. Failure to do so may result in device or product failure.
- Make electrical connections properly. Failure to do so may result in device failure, product failure, or product malfunction.
- Ensure that wires are fitted with insulation to prevent accidental short-circuiting. Failure to do so may result in device failure, product failure, or product malfunction.

Operating environment

- Do not use or store the product where it is exposed to flammable or corrosive gas, water or oil splashes, dust or humidity, condensation, radioactive rays or direct sunlight, salty air or saltwater, or where the product may be contaminated by corrosive materials such as sulfurous water, sulfurous volcanic ash, organic solvents, acidic chemicals, alkali chemicals, nuclear fuel materials, or other hazardous substances. If it is used or stored in such places or environments, there is the possibility that a fire may occur, the product may malfunction or its performance may deteriorate.
- Do not use or store the product in locations and environments where it could be constantly exposed to vibrations, strong shocks, magnetic or electromagnetic noise, or in which electromagnetic noise overlaps into power voltage. Otherwise, it may result in product failure.
- Do not use or store the product in environments subject to sudden changes in temperature and humidity. Otherwise, it may result in product failure.

Maintenance

- Only certified personnel with sufficient training and knowledge should perform maintenance and inspections. Otherwise, it may result in fire, burns, bodily injury, or electrical shock.
- Perform maintenance or inspections while the product is off. Otherwise, it may result in fire, burns, bodily injury, or electrical shock.
- Never use gasoline, paint thinner, benzene, or any other organic solvents to clean the product. Otherwise, it may result in product deformation or substandard operation.

PCB type

- To ensure that the product is used safely, be sure to read and fully understand the Safety Precautions and only use the product as directed.
- Read the Safety Precautions carefully before installing, connecting, operating, maintaining, or inspecting the product.
- The product has been designed and manufactured for use in general industrial machinery, and may not be used as a standalone product.
- The product of our company (hereafter referred to as "the product") falls into the category of the products specified in the Attached List 1, Item 16 (Class 85, Item 43) of the Export Trade Control Ordinance. To export the product as an individual part or to export a product into which the product is assembled, the "Information Requirements" and "Objective Requirements" that the Ministry of Economy, Trade and Industry established based on the "Catchall Controls" must be studied for applicability. Based on information on applicability and specified requirements, appropriate export formalities must be performed.
- When disposing of the product, treat it as industrial waste. For instructions on proper disposal methods, please contact local government authorities.
- When using the product in an environment with vibration, such as in a car or a ship, use it at your own discretion only after deploying sufficient safety measures and making prior evaluations. Fully understand the Safety Precautions described in this instruction manual before using the product.

In order to prevent any possible bodily injury or damage to property or equipment, the following precautions for ensuring safety are displayed according to the following two ranks of importance:

Danger	Handling or using the product improperly and in disregard of the instructions with this mark may result in serious bodily injury or death.
Caution	Handling or using the product improperly and in disregard of the instructions with this mark may result in bodily injury or physical damage.

* Items marked 'Caution' may also result in serious bodily injury or death in some circumstances. Always follow the instructions for items marked 'Danger.'

Danger

- If the product is used in medical appliances or other types of equipment that affect people's lives, sufficient safety-related evaluations and preparations must be made in advance, and the product or the type of equipment into which the product is assembled must be used under the full responsibility of the user.
- If the product is used in types of equipment that have a strong social and public impact, sufficient prior evaluations and safety-related evaluations and preparations must be made, and the product or the type of equipment into which the product is assembled must be used under the full responsibility of the user.
- The product is not designed to be used in a car or a ship. When using the product in an environment with vibration, such as in a car or a ship, use it at your own discretion only after deploying sufficient safety measures and making prior evaluations.
- Connect all wires properly and securely. Failure to do so may result in fire, burns, or electrical shock.
- Do not use this product in a location where there is flammable gas. Otherwise, it may result in fire, burns, or bodily injury.
- Only use the product integrated with another device or system. Failure to do so may result in burns or electrical shock.
- Do not touch the product while it is operating. Otherwise, it may result in burns or electrical shock.
- Turn off the power and stop using the product immediately if you notice any sparks, smoke, odd odors, sounds, or anything unusual during operation. Failure to do so may result in fire, bodily injury, or electrical shock.
- Never allow the product to fall, topple over, or otherwise be subjected to excessive shocks when moving it. Otherwise, it may result in product failure.
- The product should be handled only by personnel with sufficient training and knowledge and under the full responsibility of the user.
- Never attempt to disassemble, repair, or alter the product in any way. Failure to do so may result in fire, bodily injury, or electrical shock.

Caution

Handling

- Discharge static electricity from your body before handling the product. In addition, avoid packaging or covering the product with materials which generate static electricity. Contact with static electricity may result in product failure.
- Do not touch solder joints or pins. Otherwise, it may result in bodily injury.
- Installation, placement, connections, wiring, or relocation of the product should be performed by knowledgeable or correctly licensed personnel. Never perform such work while the product is on. Failure to do so may result in bodily injury, fire, burns, or electrical shock.
- Never allow yourself to come into contact with the ends of wires or plugs when measuring insulation resistance or dielectric strength voltage. Otherwise, it may result in electrical shock.
- Never attempt to disassemble or alter the product in any way. Doing so may invalidate any warranties concerning the functions or performance of the product, and may also result in fire, burns, bodily injury, or electrical shock.

Instruction

- Do not touch the product for a period after the power has been turned off as it may still be hot. Otherwise, it may result in burns.
- Take measures to protect the device from potential damage caused by the product stopping during operation.
- Never use the product at voltages, temperatures, or any other settings which exceed those given in the product specifications. Otherwise, it may result in substandard operation, failure, fire, bodily injury, or electrical shock.
- Never remove the product nameplate or install the product so that the identification cannot be seen after installation. Otherwise, it may result in the product being improperly used, and subsequently result in fires.
- Do not turn the power supply ON/OFF on a ground wire. Otherwise, it may result in product failure.
- Do not apply excessive force to the product while it is operating. Otherwise, it may result in product failure.
- If you install and use the product in a car or a ship, we shall not be responsible for any faults caused by the environment of the car or ship in which the product is installed.

Installation

- When fixing the product into place, be sure to take into consideration the product's weight and all other relevant factors. Failure to do so may result in the product or its parts falling, resulting in bodily injury or device failure.
- Never install or remove the product while it is wired.
- When fixing the product with screws, ensure correct tightening torque. If the tightening torque is over the recommended values, the product structure may deform or break.
- Install the product carefully without touching conductors or other electrical components. Touching these components may result in device failure, product failure, or product malfunction.
- Take proper precautions against static electricity when making electrical connections. Failure to do so may result in device or product failure.
- Make electrical connections properly. Failure to do so may result in device failure, product failure, or product malfunction.
- Ensure that wires are not allowed to short-circuit. Failure to do so may result in device failure, product failure, or product malfunction.

Operating environment

- Do not use or store the product where it is exposed to flammable or corrosive gas, water or oil splashes, dust or humidity, condensation, radioactive rays or direct sunlight, salty air or saltwater, or where the product may be contaminated by corrosive materials such as sulfurous water, sulfurous volcanic ash, organic solvents, acidic chemicals, alkali chemicals, nuclear fuel materials, or other hazardous substances. If it is used or stored in such places or environments, there is the possibility that a fire may occur, the product may malfunction or its performance may deteriorate.
- Do not use or store the product in locations and environments where it could be constantly exposed to vibrations, strong shocks, magnetic or electromagnetic noise, or in which electromagnetic noise overlaps into power voltage. Otherwise, it may result in product failure.
- Do not use or store the product in environments subject to sudden changes in temperature and humidity. Otherwise, it may result in product failure.

Maintenance

- Only certified personnel with sufficient training and knowledge should perform maintenance and inspections. Otherwise, it may result in fire, burns, bodily injury, or electrical shock.
- Perform maintenance or inspections while the product is off. Otherwise, it may result in fire, burns, bodily injury, or electrical shock.
- Never use gasoline, paint thinner, benzene, or any other organic solvents to clean the product. Otherwise, it may result in product deformation or substandard operation.

Airflow Tester

Features (Patented as a movable measurement device for measuring device airflow and system impedance)

Enables the selection of the optimal fan for a device

An optimal fan for a device can be selected by entering accurate measurement results into thermal design simulation software.

Compact and lightweight

With a compact design and weight of approximately 6 kg, it is portable enough to measure immobile equipment.

Measurement Functions

- System Impedance — Measurement of the resistance to the flow of air within a device
- Operating Airflow — Measurement of the actual airflow that passes through a device when a fan is mounted
- P-Q Performance — Measurement of airflow versus static pressure characteristics*

* Performance curve that illustrates the characteristics of a fan for use within a certain system.
It shows the relationship between airflow and static pressure.

With connection duct mounted

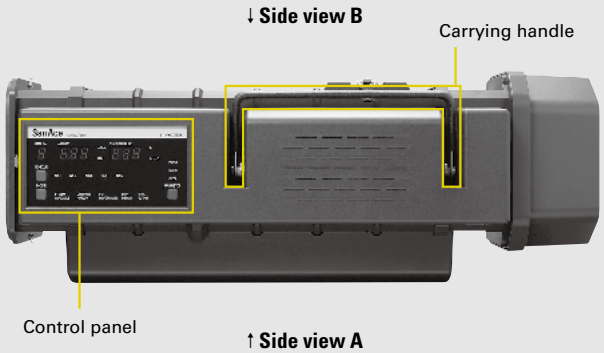
CE

Specifications

Model no.		9AT2560S-000□*	9AT2560A-000□*	9AT2560C-000□*
Measurement units	Airflow	m^3/min	CFM	CFM
	Static pressure	Pa	inchH_2O	Pa
Measurement range	Airflow	0.20 to 8.00 m^3/min	7 to 282 CFM	7 to 282 CFM
	Static pressure	0 to 1000 Pa	0 to 4.01 inchH_2O	0 to 1000 Pa
Measurement accuracy	Airflow	±7% of maximum measurable airflow with each nozzle		
	Static pressure	±10 Pa (0.04 inchH_2O) for measurement results < 200 Pa, ±50 Pa (0.20 inchH_2O) for measurement results ≥ 200 Pa		
Operating environment	Ambient temperature	0 to 40˚C		
	Humidity	20 to 85% RH (non-condensing)		
Display		Data no., Measurement values (airflow, static pressure**), Measurement status, Nozzle selection, Measurement mode selection		
Interface		Digital output: Included USB serial adapter		
Power supply	Input voltage	100 to 240 VAC, 50/60 Hz		
	Power consumption	260 VA max.		
Dimensions		600 (W)×250 (H)×250 (D) mm		
Mass		Main unit: Approx. 6 kg, Connection duct (including board holder): Approx. 1.5 kg		
Included peripherals		1 Set of measurement nozzles, Plastic mounting board (5 pcs / set), Connection duct, AC power cable (2.5 m), USB serial adapter, Instruction manual, Quick start guide, Data viewer software		

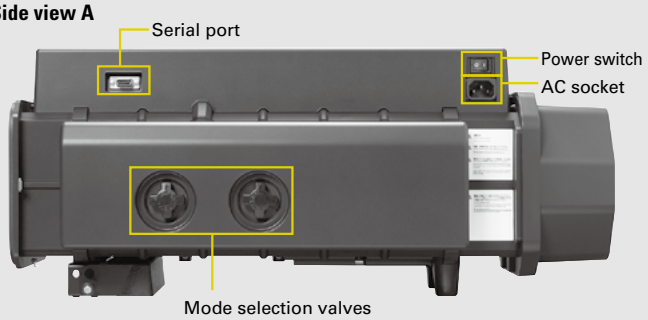
* The AC power plug shape differs with the number in □ of model numbers.
AC power plug included in models with 1 in □ is for Japan and North America regions (2 parallel flat pins + a round grounding pin), Input voltage: 100/120 VAC, 50/60 Hz
AC power plug included in models with 2 in □ is for Europe region (2 round pins + a female grounding contact), Input voltage: 220 VAC, 50 Hz
AC power plug included in models with 3 in □ is for China region (2 angled flat pins + a flat grounding pin), Input voltage: 220 VAC, 50 Hz
Product also available without an AC power cable. Model no. 9AT2560S-0000, 9AT2560A-0000, 9AT2560C-0000
** Static pressure values are calculated with standard atmosphere as 1013 hPa at 20˚C.

Top view



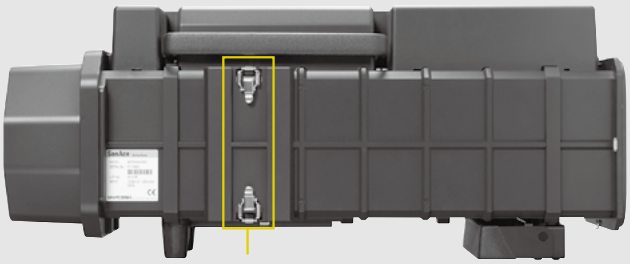
Front view (air inlet side)

Side view A

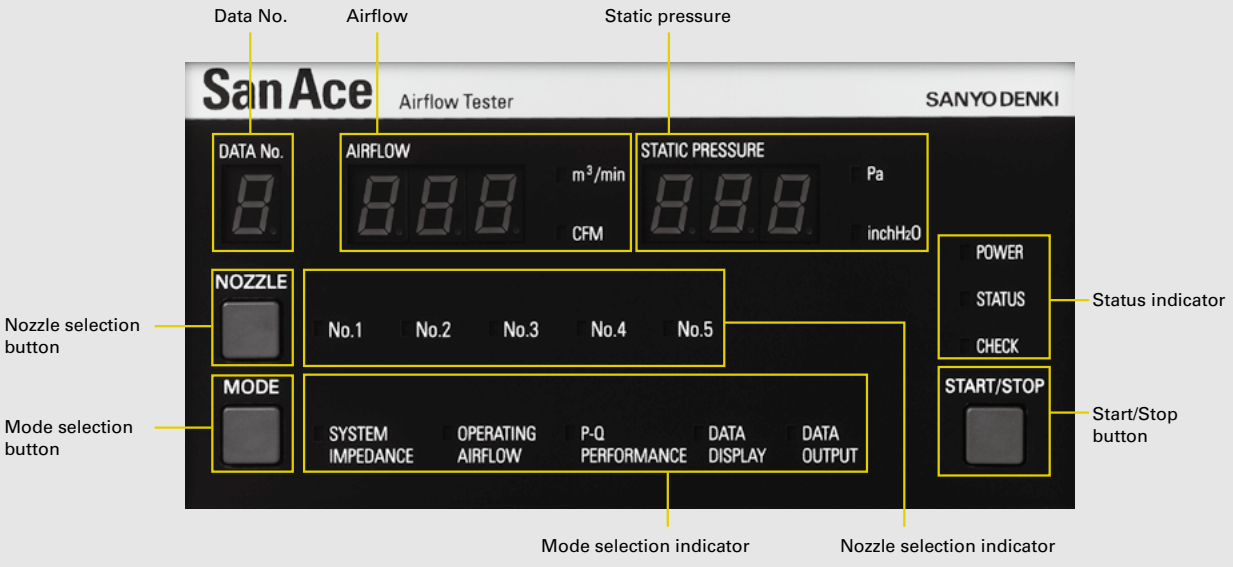


Back view (air outlet side)

Side view B

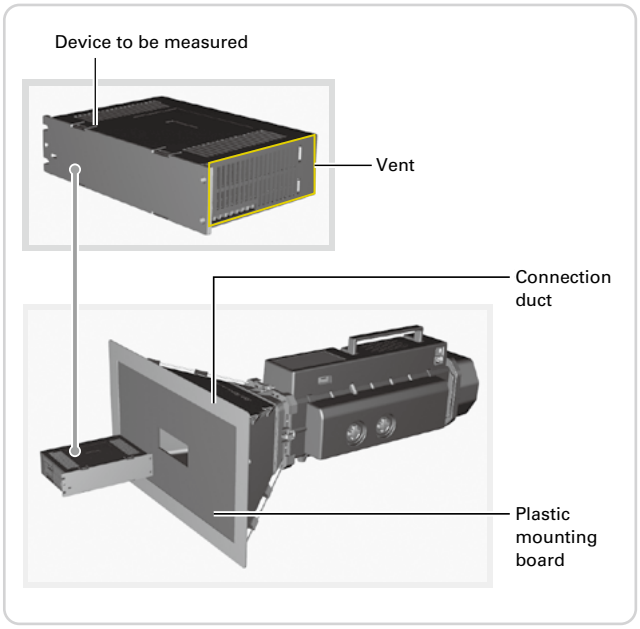


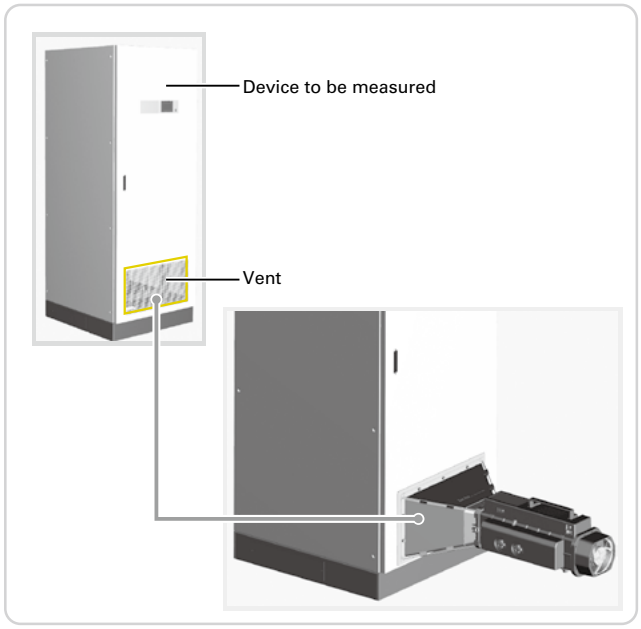
Control panel (zoomed in)



Usage Examples

Cut out a hole in the mounting board matching the vent opening of the device to be measured, and place the mounting board firmly against the device to perform measurements.

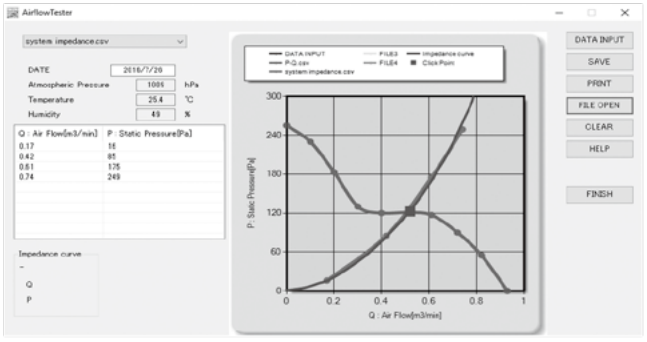


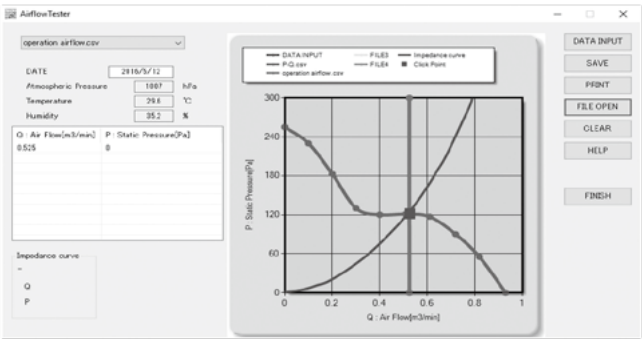


Data Viewer Software (included)

Obtained measurement data can be represented as a graph and saved on a PC.

Screen examples P-Q performance shown below based on catalog data.





Option

Carrying case

Measurement nozzle case included

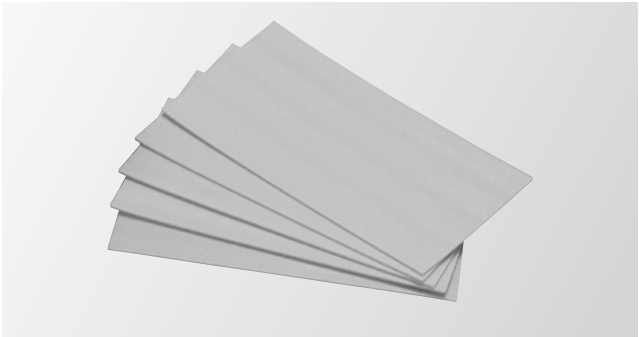
Model no.	9AT2560-B001 Please add "CS" to the end of the model no. of Airflow Tester in page 1 when ordering Airflow Tester and carrying case as a set. e.g. 9AT2560S-0001CS
Dimensions	705 (W)×385 (H)×415 (D) mm

Carrying case, measurement nozzle case

Plastic mounting boards

Sized to fit the duct frame. Five boards included with Airflow Tester.

Model no.	9AT2560-P001
Quantity	5 pcs / set
Dimensions	525 (W)×275 (H)×4 (D) mm



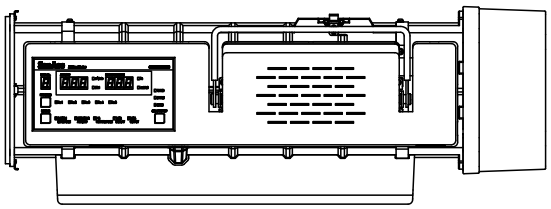
Plastic mounting boards (5 pcs)

Dimensions (unit: mm)

- Main unit

Top view

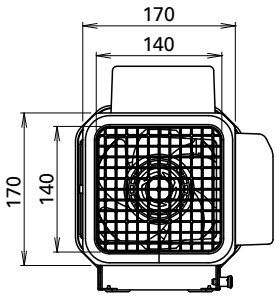
↓ Side view B



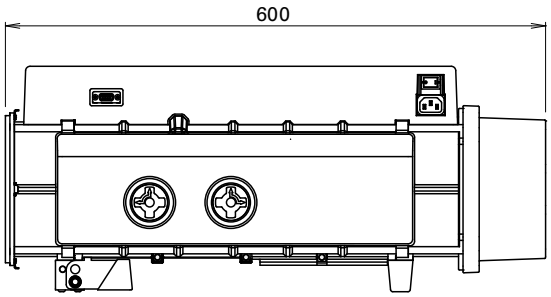
Airflow direction

↑ Side view A

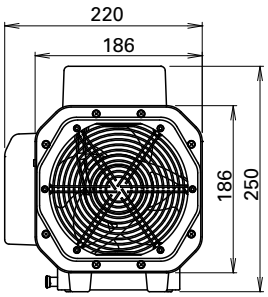
Front view (air inlet side)



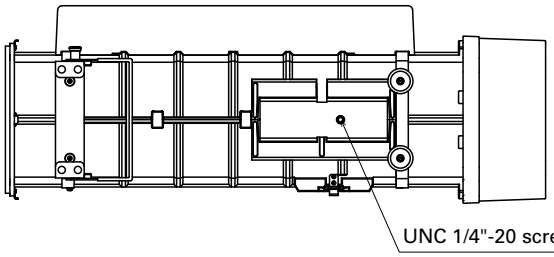
Side view A



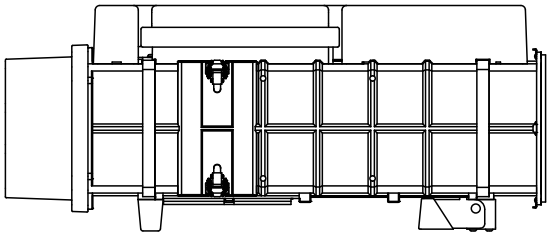
Back view (air outlet side)



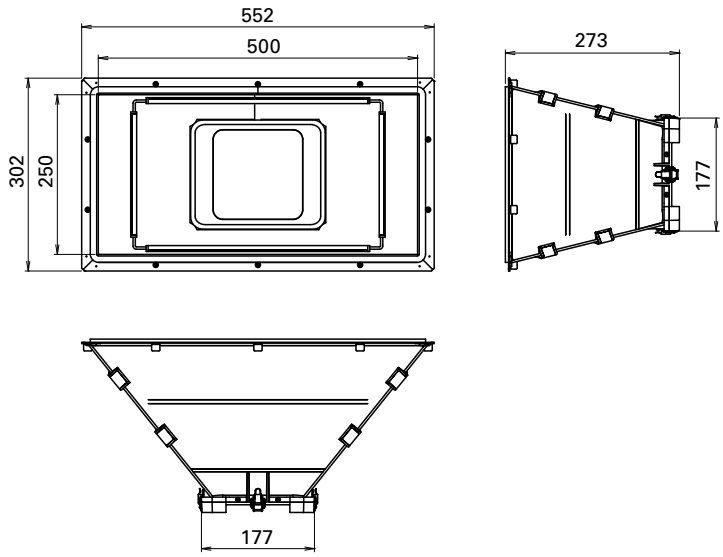
Bottom view



Side view B



- Connection duct



Safety Precautions

Please read the instruction manual and its appendix carefully prior to installation, operation, maintenance or inspection and perform all tasks according to the instructions provided here.
A good understanding of this equipment, its safety information as well as all Warnings/Cautions is also necessary prior to operation.
Matters that require attention are ranked as "Danger", "Warning", and "Caution" in this document.

Warning symbols

Warning	Denotes immediate hazards which could cause severe bodily injury or death as a result of incorrect operation.
Caution	Denotes hazards which could cause bodily injury and product or property damage as a result of incorrect operation.

Caution Even those hazards denoted by this symbol could lead to a serious accident. Make sure to strictly follow these safety precautions.

Prohibited, mandatory symbols

	Indicates actions that must not be allowed to occur / prohibited actions.
	Indicates actions that must be carried out / mandatory actions.

Warning

Operating precautions

- Avoid using the product in the presence of flammable, explosive, or corrosive gases, locations subjected to splashing water or oil, or near combustibles. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.
- Turn off the power before performing any wiring, maintenance, or inspection. Once the power is off, remove the AC power cable, and confirm that the POWER LED is off before performing these tasks. Failure to do so may result in electric shock.
- Operate the product with dry hands. Failure to do so may result in electric shock.
- Never attempt to disassemble or alter the product in any way. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.
- Do not damage the AC power cable. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.
- If the product emits unusual noise, odors, or smoke, or if water or other liquids enter the product, immediately turn off the power and disconnect the power cable. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.
- Read the instruction manual carefully prior to using the product. Failure to do so may result in electric shock, bodily injury, fire, product failure, or damage.
- Always use the supplied AC power cable if included. Using an AC power cable with inappropriate ratings may result in electric shock, bodily injury, fire, product failure, or damage.
- If an AC power cable is not included, please prepare a cable matching the specifications listed in section 9.2 "Specifications" of Instruction Manual. Using an AC power cable with inappropriate ratings may result in electric shock, bodily injury, fire, product failure, or damage.
- Prior to turning on the power, be sure to ground the product by connecting it to a grounded outlet. Insufficient grounding may result in electric shock, bodily injury, fire, product failure, or damage.

Caution

Operating precautions

- Avoid using the product near bodies of salt water or other locations susceptible to salt damage. Otherwise, it may result in product failure or damage caused by salt.
- Due to the internal power supply, certain sections of the product may experience an elevation in temperature that may cause a burn or bodily injury.
- Do not use the product outside its specifications. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.
- Do not use the product if it is defective, damaged, or burnt out. Otherwise, it may result in electric shock, bodily injury, or fire.
- When not using the product, turn off the power and unplug the AC power cable. Failure to do so may result in electric shock, bodily injury, fire, product failure, or damage.

Transportation

- Excess stacking may cause the load to collapse so follow the directions written on the outside box. Failure to do so may result in bodily injury or damage.
- Handle the product with care during transportation, as it is dangerous if dropped. Failure to do so may result in bodily injury.
- The product is heavy so handle with care. Failure to do so may result in bodily injury.

Handling

- Do not apply excessive stress or place heavy objects on the product. Otherwise, it may result in electric shock, bodily injury, product failure, or damage.
- Transport the product using the carrying handle. Failure to do so may result in bodily injury, product failure, or damage.
- Do not drop the product or subject it to excessive shock of any kind. Otherwise, it may result in product failure or damage.
- If the connection duct or tripod is attached to the main unit, make sure it does not tip over or drop while moving. Otherwise, it may result in bodily injury, product failure, or damage.
- Only use the product as specified in this instruction manual. Failure to do so may result in product failure or damage.
- Make sure that the intake and exhaust vents are free of debris and foreign matter. Otherwise, it may result in bodily injury, product failure, or damage.
- Mount the product on incombustible material below 60°C. Failure to do so may result in fire, product failure, or damage.

Connecting the AC power cable

· Connect the AC power cable as instructed by the instruction manual. Failure to do so may result in electric shock, bodily injury, fire, product failure, or damage.

Operation

· Operate the product within the specified input-power voltage to maintain stability. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.
· The auxiliary fan rotates during operation. Make sure that the intake and exhaust vents are free of debris and foreign matter.
· Keep hands away from the exhaust vent. Failure to do so may result in bodily injury, fire, product failure, or damage.

Maintenance and inspection

· Some parts of the product (fan motor, gasket, electrolytic condenser, sensor, LED, switches) can deteriorate with long-term use. As preventive maintenance, perform periodic maintenance and inspection to maintain measuring accuracy. For details on maintenance, inspection, and repair, please contact SANYO DENKI. Disassembly is not to be performed by the end-user. Disassembly may result in electric shock, bodily injury, fire, malfunction, product failure, or damage.

Prohibited

Handling

· Do not scratch the connection duct with sharp objects as it may tear or damage the material.

Operation

· Applying voltage outside the input voltage range may result in electric shock, bodily injury, fire, product failure, or damage. Never use voltages outside of specification.
· Keep the USB serial adapter away from static electricity and high voltage. Failure to do so may result in failure or damage.
· Do not use a polarized grounding adapter with the product. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.

Storage

· Do not store the product where it could be exposed to rain, water, toxic gases, or other liquids. Failure to do so may result in product failure or damage.

Maintenance and inspection

· Do not perform disassembly, inspection, or repairs. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.
· Do not measure the insulation resistance or the pressure resistance. Otherwise, it may result in product failure or damage.
· Never unplug the AC power cable while the power is on as the resulting surge voltage may damage electronic components. Otherwise, it may result in electric shock, bodily injury, or fire.
· Do not remove the nameplate attached to the product. Doing so voids the warranty.
· Do not wipe the product with benzene, paint thinner, or other solvents. Otherwise, it may result in deformation, deterioration, discoloration, product failure, or damage.

Mandatory

Operation

· In the case of any irregular operation, stop the device immediately. Otherwise, it may result in electric shock, bodily injury, fire, product failure, or damage.
· As a provisional measure, ensure that the power can be turned off at any time. Inability to turn off the power may result in electric shock, bodily injury, fire, product failure, or damage.
· If an error occurs, eliminate the cause and ensure safety before resuming.
· Use the product within the specified temperature and humidity range. Failure to do so may result in product failure or damage.
Temperature: 0ºC to 40ºC / Humidity 20 to 85% RH (non-condensing)
· Be sure to use the supplied AC power cable to prevent electric shock, bodily injury, fire, product failure, or damage.
· Be sure to prepare a cable matching the ratings listed in section 9.2 "Specifications" of Instruction Manual to prevent electric shock, bodily injury, fire, product failure, or damage.
· Prior to turning on the power, be sure to ground the product by connecting it to a grounded outlet to prevent electric shock, bodily injury, fire, product failure, or damage.

Storage

· Store the product in a location that is not exposed to direct sunlight, at a temperature and humidity within specifications. Failure to do so may result in product failure.
· If the product has been stored for a long period, contact SANYO DENKI. There is the possibility that components may have deteriorated and require maintenance.

Disposal

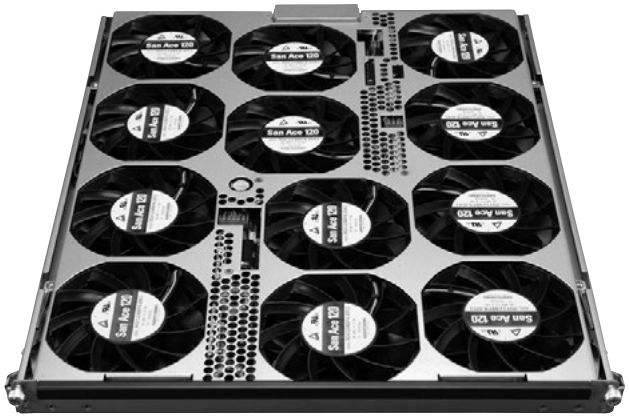
· When disposing of the product, treat it as industrial waste.

Cooling Fan Units CUSTOMIZED PRODUCTS

Features DC AC

We provide assembled fan units in accordance with the specification or requirements of the equipment.
For use in communications equipment, servers, storage systems.

■Example



Electrolytic Corrosion Proof Fans CUSTOMIZED PRODUCTS → p. 535

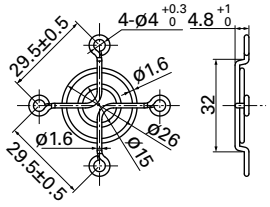
Features DC AC

This cooling fan prevents electrolytic corrosion of bearings even under conditions where electromagnetic noise is generated.
Electrolytic corrosion of ball bearings is prevented by using ceramic balls in ball bearings. The ceramic material is an insulating material.
Manufacturable to meet specifications of all San Ace series fans.

36 mm sq. type

Model no.	Surface treatment	Mass (g)
109-1050	Nickel-chrome plating (silver)	4

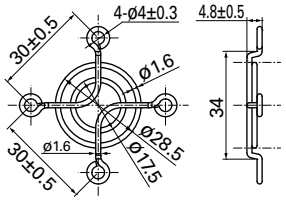
Inlet side, Outlet side



38 mm sq. type

Model no.	Surface treatment	Mass (g)
109-1065	Nickel-chrome plating (silver)	5

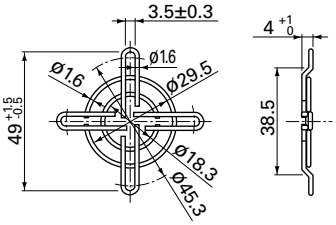
Inlet side, Outlet side



40 mm sq. type

Model no.	Surface treatment	Mass (g)
109-059	Nickel-chrome plating (silver)	7
109-059H	Cation electropainting (black)	

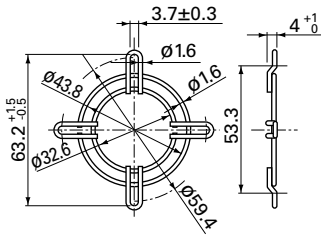
Inlet side, Outlet side



52 mm sq. type

Model no.	Surface treatment	Mass (g)
109-149	Nickel-chrome plating (silver)	7

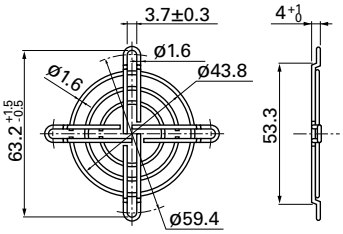
Outlet side



52 mm sq. type

Model no.	Surface treatment	Mass (g)
109-149E	Nickel-chrome plating (silver)	9

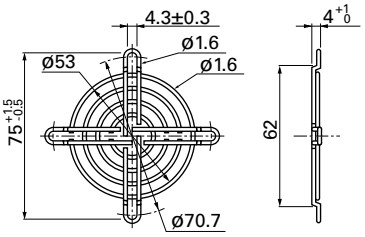
Inlet side, Outlet side



60 mm sq. type

Model no.	Surface treatment	Mass (g)
109-139E	Nickel-chrome plating (silver)	14.5
109-139H	Cation electropainting (black)	

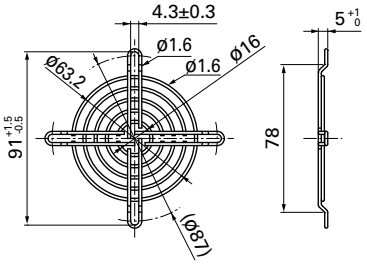
Inlet side, Outlet side



70 mm sq. type

Model no.	Surface treatment	Mass (g)
109-1128	Nickel-chrome plating (silver)	17

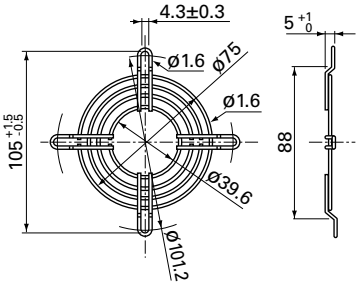
Inlet side, Outlet side



80 mm sq. type

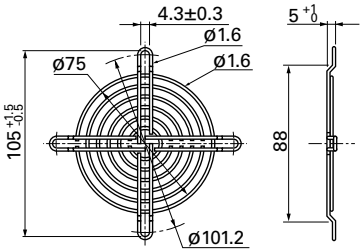
Model no.	Surface treatment	Mass (g)
109-049C	Nickel-chrome plating (silver)	17

Outlet side



Model no.	Surface treatment	Mass (g)
109-049E	Nickel-chrome plating (silver)	21
109-049H	Cation electropainting (black)	

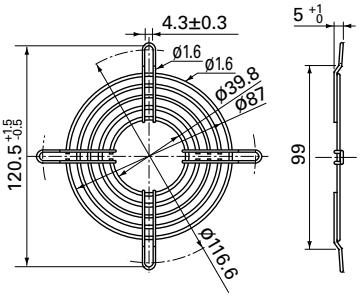
Inlet side, Outlet side



92 mm sq. type

Model no.	Surface treatment	Mass (g)
109-099C	Nickel-chrome plating (silver)	22

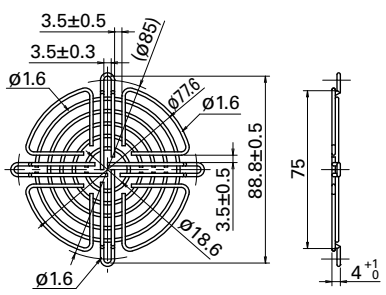
Outlet side



ø92 mm type

Model no.	Surface treatment	Mass (g)
109-1147	Nickel-chrome plating (silver)	23

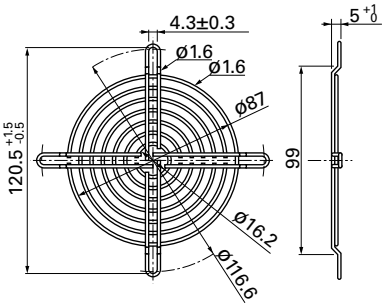
Impeller side, Nameplate side



92 mm sq., ø100 mm type

Model no.	Surface treatment	Mass (g)
109-099E	Nickel-chrome plating (silver)	29
109-099H	Cation electropainting (black)	

Inlet side, Outlet side



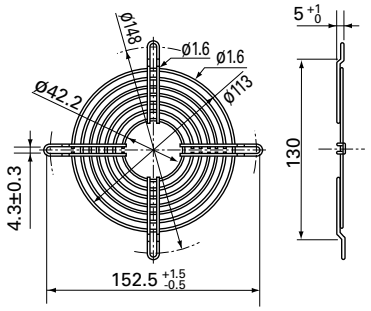
Option

Finger guards Dimensions (unit: mm) DC AC

120 mm sq. type

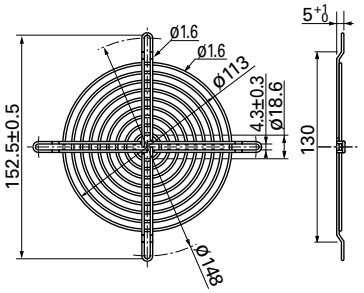
Model no.	Surface treatment	Mass (g)
109-019C	Nickel-chrome plating (silver)	32
109-019H	Cation electropainting (black)	

Outlet side



Model no.	Surface treatment	Mass (g)
109-019E	Nickel-chrome plating (silver)	42
109-019K	Cation electropainting (black)	

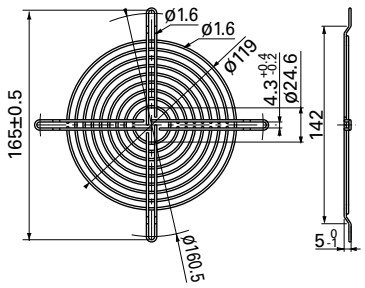
Inlet side, Outlet side



127 mm sq., ø175 mm type

Model no.	Surface treatment	Mass (g)
109-722	Nickel-chrome plating (silver)	43

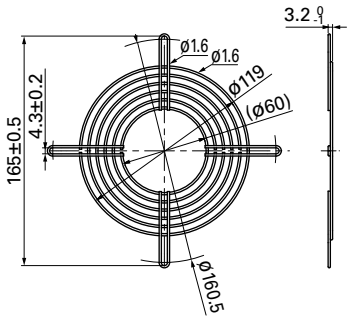
Inlet side, Outlet side



127 mm sq. type

Model no.	Surface treatment	Mass (g)
109-723	Nickel-chrome plating (silver)	34

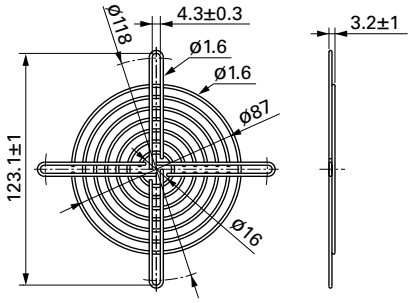
Outlet side



ø133 mm type

Model no.	Surface treatment	Mass (g)
109-1112	Nickel-chrome plating (silver)	65

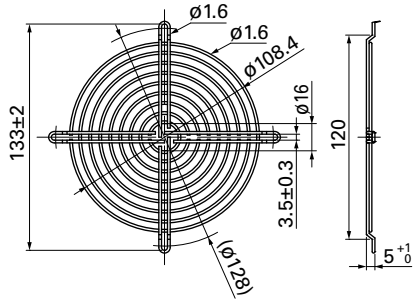
Inlet side



ø136 mm type

Model no.	Surface treatment	Mass (g)
109-1139	Nickel-chrome plating (silver)	41

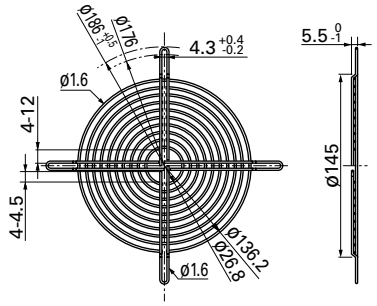
Impeller side, Nameplate side



140 mm sq. type

Model no.	Surface treatment	Mass (g)
109-719	Nickel-chrome plating (silver)	51
109-719H	Cation electropainting (black)	

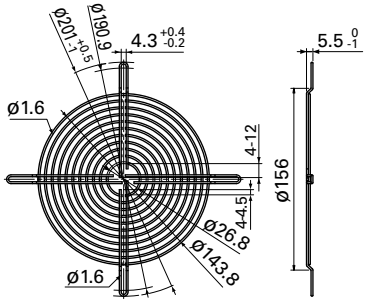
Inlet side, Outlet side



150 mm sq. type

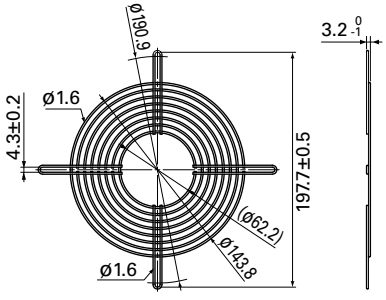
Model no.	Surface treatment	Mass (g)
109-1051	Nickel-chrome plating (silver)	63

Inlet side, Outlet side



Model no.	Surface treatment	Mass (g)
109-1052	Nickel-chrome plating (silver)	53

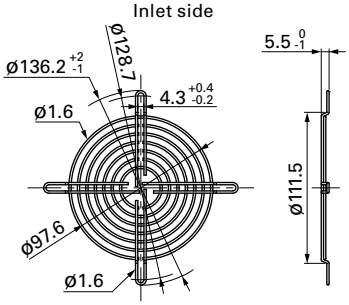
Outlet side



ø150 mm type

Model no.	Surface treatment	Mass (g)
109-1104	Nickel-chrome plating (silver)	31
109-1104H	Cation electropainting (black)	

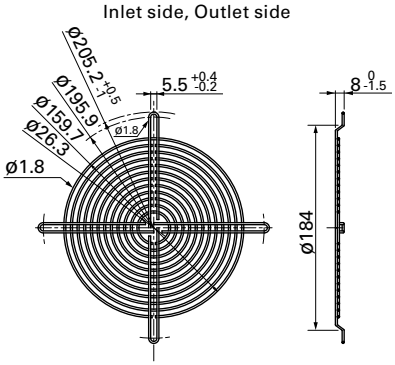
Inlet side



160 mm sq. type

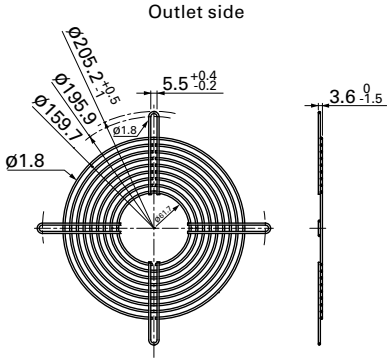
Model no.	Surface treatment	Mass (g)
109-619E	Nickel-chrome plating (silver)	85
109-619H	Cation electropainting (black)	

Inlet side, Outlet side



Model no.	Surface treatment	Mass (g)
109-620	Nickel-chrome plating (silver)	74

Outlet side

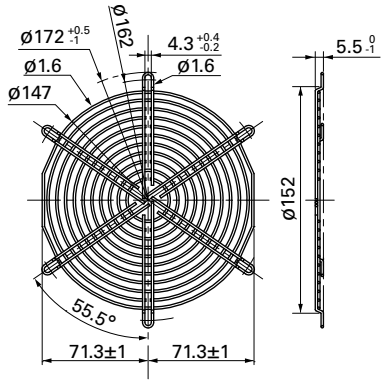


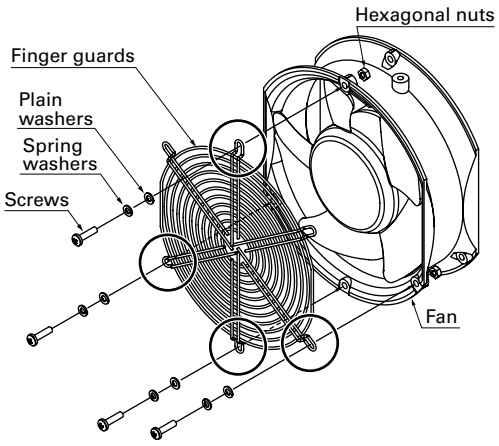
ø172 mm Sidecut type

Model no.	Surface treatment	Mass (g)	Applicable model no.
109-319J	Nickel-chrome plating (silver)	65	9SG57□□P5□□□/9GV57□□H501 9CR5748P9G001/9WG5748P5□001

Finger guard 109-319J should be mounted with four holes as in the drawing.

Inlet side, Outlet side





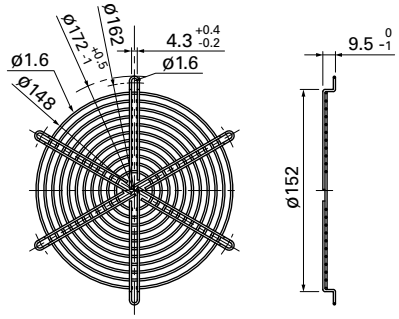
ø172 mm Sidecut, Round type

Model no.	Surface treatment	Mass (g)
109-319E	Nickel-chrome plating (silver)	69
109-319H	Cation electropainting (black)	

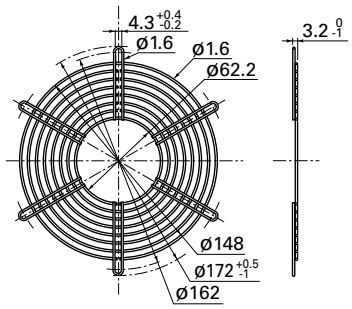
Model no.	Surface treatment	Mass (g)
109-320	Nickel-chrome plating (silver)	53

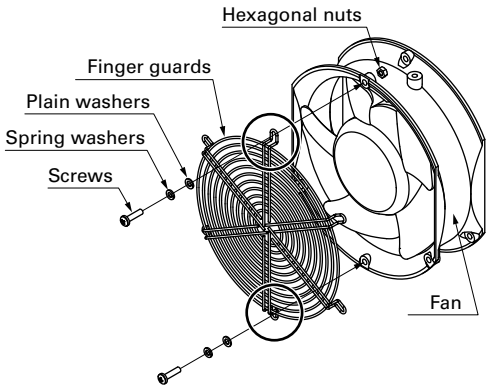
Finger guards 109-319E, 109-319H, and 109-320 should be mounted with two holes as in the drawing and do not use any other holes.

Inlet side, Outlet side



Outlet side



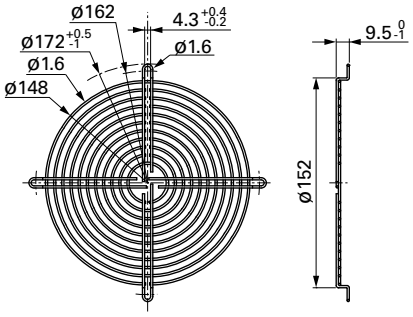


ø172 mm Round type

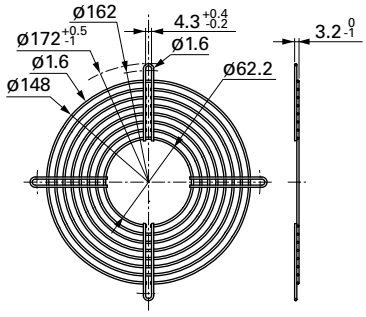
Model no.	Surface treatment	Mass (g)
109-1066	Nickel-chrome plating (silver)	61

Model no.	Surface treatment	Mass (g)
109-1068	Nickel-chrome plating (silver)	54

Inlet side, Outlet side



Outlet side



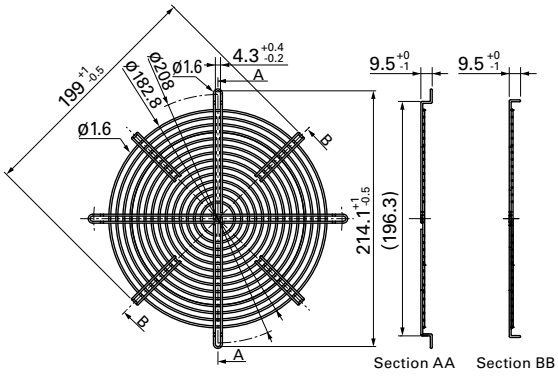
Finger guards Dimensions (unit: mm) DC AC

ø200 mm type

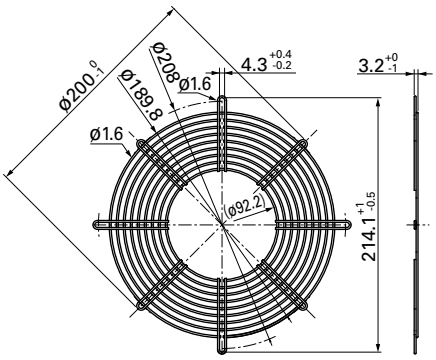
Model no.	Surface treatment	Mass (g)	Applicable model no.
109-1102	Nickel-chrome plating (silver)	100	9GV2048P0G201

Model no.	Surface treatment	Mass (g)	Applicable model no.
109-1103	Nickel-chrome plating (silver)	80	9GV2048P0G201

Inlet side, Outlet side



Outlet side

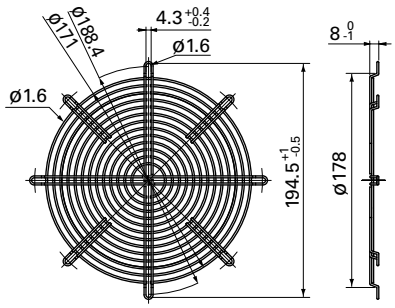


ø200 mm type

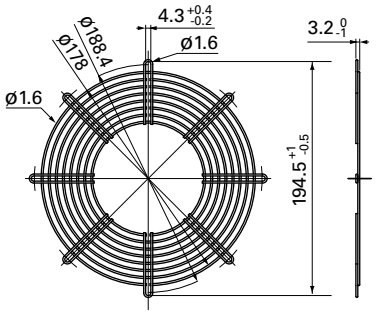
Model no.	Surface treatment	Mass (g)	Applicable model no.
109-720	Nickel-chrome plating (silver)	84	109E2024□□□□ 9EC20□□□001
109-720H	Cation electropainting (black)		

Model no.	Surface treatment	Mass (g)	Applicable model no.
109-721	Nickel-chrome plating (silver)	66	109E2024□□□□ 9EC20□□□001
109-721H	Cation electropainting (black)		

Inlet side, Outlet side



Outlet side



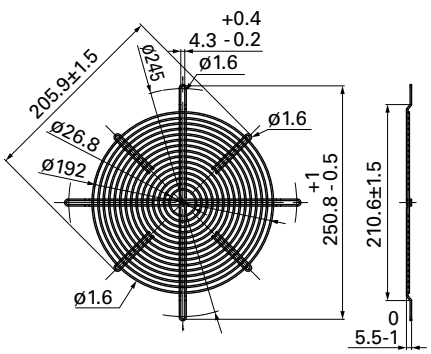
ø221 mm type

Model no.	Surface treatment	Mass (g)
109-1138	Nickel-chrome plating (silver)	105
109-1138H	Cation electropainting (black)	

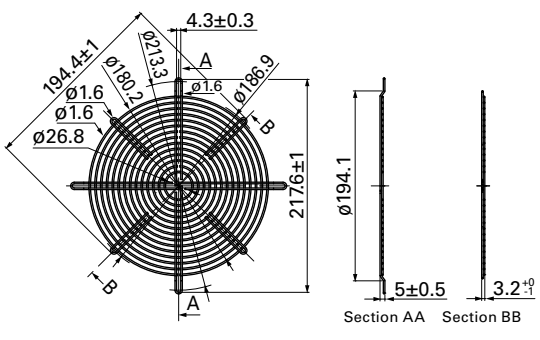
ø225 mm type

Model no.	Surface treatment	Mass (g)
109-1137	Nickel-chrome plating (silver)	94
109-1137H	Cation electropainting (black)	

Inlet side



Inlet side

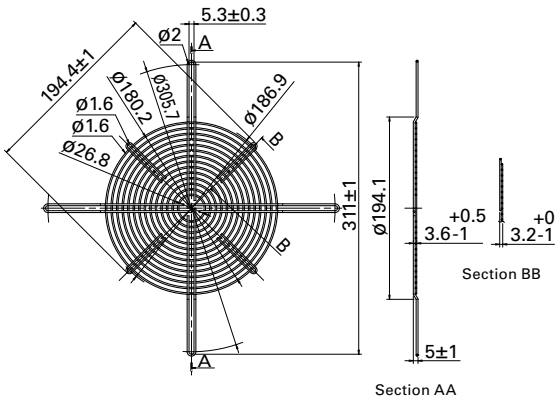


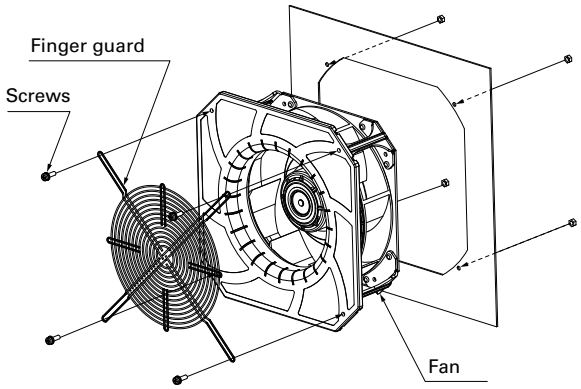
270 mm sq. type (for Bracket-mounted Centrifugal Fan)

Model no.	Surface treatment	Mass (g)
109-1146	Nickel-chrome plating (silver)	106

Finger guard 109-1146 should be mounted with four holes as in the drawing.

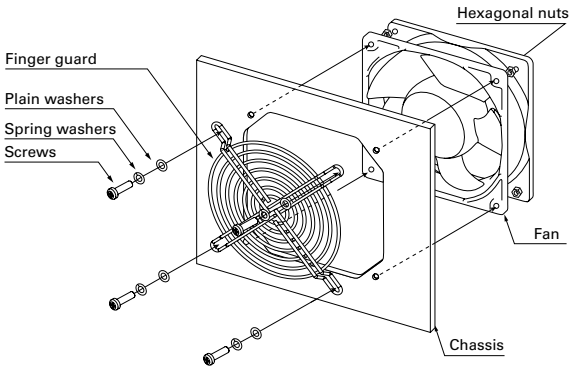
Inlet side



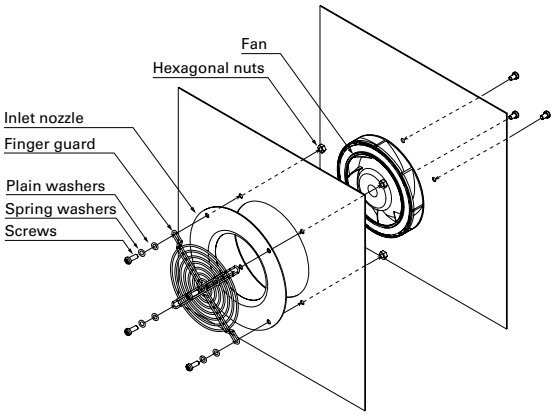


Mounting example

Axial fan



Centrifugal fan

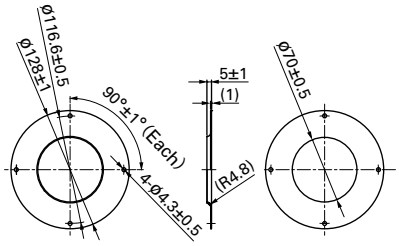


Inlet nozzle for centrifugal fan and splash proof centrifugal fan Dimensions (unit: mm) DC

Nozzle mounted in fan inlet side to adjust the flow of introduced air. Material: Steel sheet

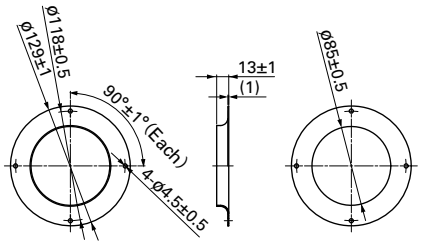
ø100 mm type

Model no.	Surface treatment	Mass (g)
109-1080	Electro nickel plating (silver)	80



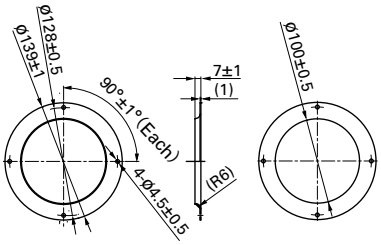
ø133 mm type

Model no.	Surface treatment	Mass (g)
109-1069	Electro nickel plating (silver)	76
109-1069H	Cation electropainting (black)	



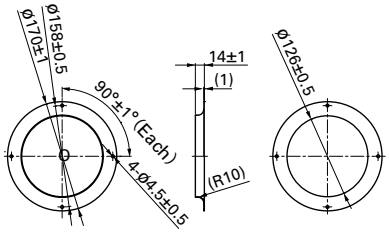
ø150 mm type

Model no.	Surface treatment	Mass (g)
109-1081	Electro nickel plating (silver)	70
109-1081H	Cation electropainting (black)	



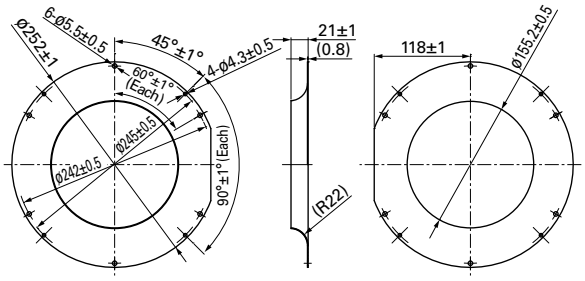
ø175 mm type

Model no.	Surface treatment	Mass (g)
109-1073	Electro nickel plating (silver)	100
109-1073H	Cation electropainting (black)	



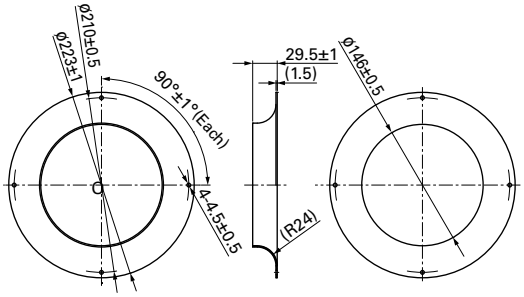
ø221 mm type

Model no.	Surface treatment	Mass (g)
109-1135	Electro nickel plating (silver)	230
109-1135H	Cation electropainting (black)	



ø225 mm type

Model no.	Surface treatment	Mass (g)
109-1134	Electro nickel plating (silver)	360
109-1134H	Cation electropainting (black)	



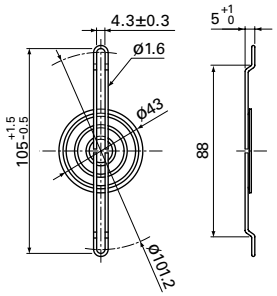
EMC guards Dimensions (unit: mm) DC

It is a metallic piece that protects materials from the adverse effects of electromagnetic noise sources. It provides electromagnetic shielding. It is attached to the casing of a device by means of the fan fixing screw (s). Ground the devices equipped with an EMC guard.

80 mm sq. type

Model no.	Surface treatment	Mass (g)
109-1038	Nickel-chrome plating (silver)	14

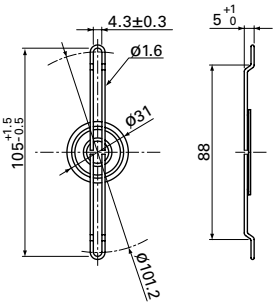
Representative fans model numbers	Dimensions of fans (mm)
109P08*	80×80×20
109L08*	80×80×25
9GV08*	
109P08*	80×80×32
9GV08*	80×80×38
9HV08*	
9HVA08*	



80 mm sq. type

Model no.	Surface treatment	Mass (g)
109-1039	Nickel-chrome plating (silver)	10

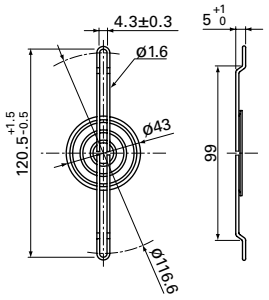
Representative fans model numbers	Dimensions of fans (mm)
109P08*	80×80×15
9GA08*	80×80×20
109R08*	80×80×25
9A08*	
9GA08*	
9GA08*	80×80×32
9G08*	80×80×38
9GA08*	



92 mm sq. type

Model no.	Surface treatment	Mass (g)
109-1040	Nickel-chrome plating (silver)	15

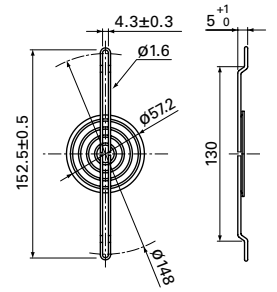
Representative fans model numbers	Dimensions of fans (mm)
109L09*	92×92×25
109P09*	
9G09*	92×92×32
9G09*	92×92×38
9GV09*	
9GA09*	



120 mm sq. type

Model no.	Surface treatment	Mass (g)
109-1037	Nickel-chrome plating (silver)	26

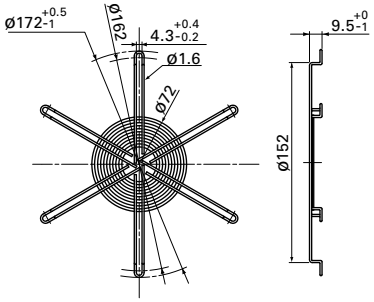
Representative fans model numbers	Dimensions of fans (mm)
9G12*	120×120×25
9GV12*	
9GL12*	120×120×38
9LB12*	
9G12*	
9GV12*	
9HV12*	
9LG12*	

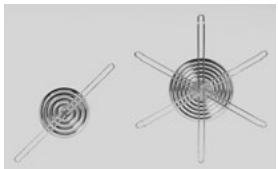


ø172 mm type

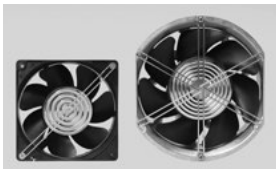
Model no.	Surface treatment	Mass (g)
109-1036	Nickel-chrome plating (silver)	49

Representative fans model numbers	Dimensions of fans (mm)
109E47*	ø172×25
109L17*	ø172×51
9GV57*	
109E17*	
109E57*	
9SG57*	





EMC guard



attached to a cooling fan

Option

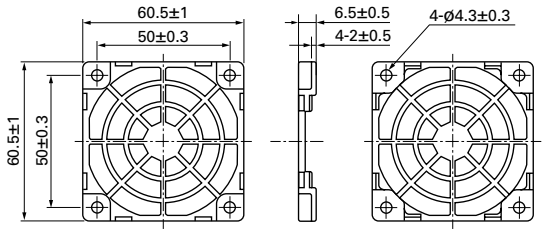
Resin finger guards Dimensions (unit: mm)

DC AC

Material Frame: Resin (PPE+PS) UL file no. E82268 94V-0

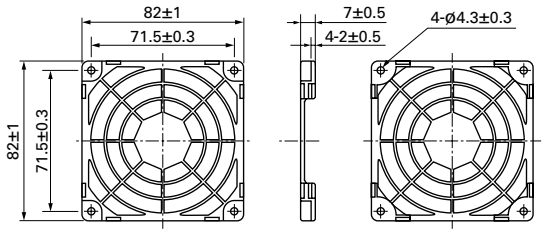
60 mm sq. type

Model no.	Mass (g)
109-1003G	7



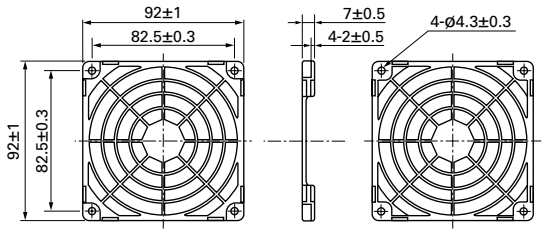
80 mm sq. type

Model no.	Mass (g)
109-1002G	10



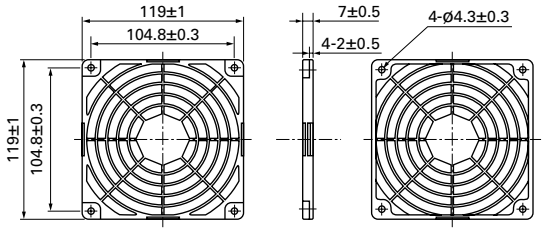
92 mm sq. type

Model no.	Mass (g)
109-1001G	12



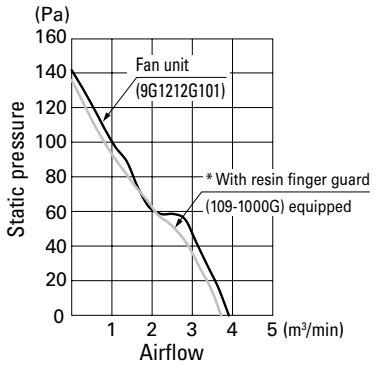
120 mm sq. type

Model no.	Mass (g)
109-1000G	23



Airflow - Static pressure characteristics

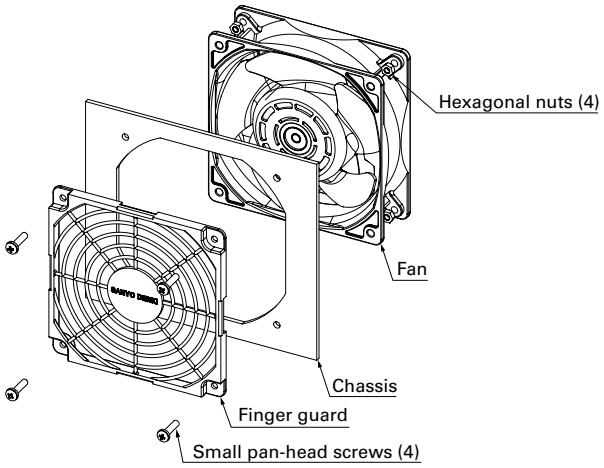
Measured with our double chamber measuring device (120 mm sq. type)



Applied voltage: 12 VDC

* Finger guard is attached on air inlet side of fan.

Mounting example



- Operating temperature limit is between -20 to +70°C. (non condensing)
- Plastic finger guards are placed on both the intake and exhaust sides of the fan.
- No nuts or screws for use in attachment included.

Resin filter kits Dimensions (unit: mm)

DC AC

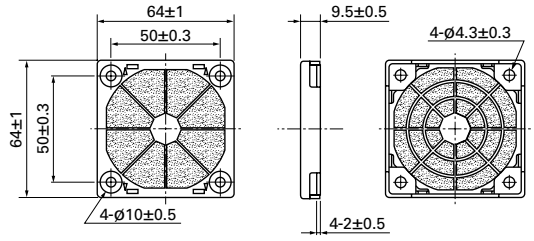
Material Guard, cover: Resin (PPE+PS) UL file no. E82268 94V-0 Filter: Polyurethane foam UL file no. E74916 (S) 94HF-1

PPI: Particles Per Inch Indicates the number of holes per inch. Note that the higher the number, the finer the grain of the sponge.

60 mm sq. type

Model no.	Mass (g)
109-1003F13 (13 PPI)	11
109-1003F20 (20 PPI)	
109-1003F30 (30 PPI)	
109-1003F40 (40 PPI)	

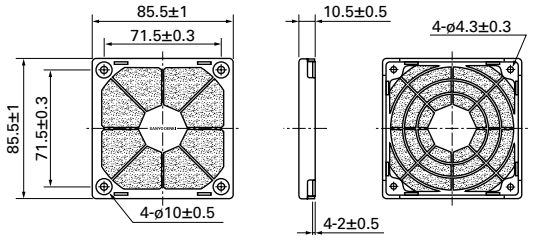
Replacement filter model no.	Quantity
109-1003M13 (13 PPI)	5
109-1003M20 (20 PPI)	
109-1003M30 (30 PPI)	
109-1003M40 (40 PPI)	



80 mm sq. type

Model no.	Mass (g)
109-1002F13 (13 PPI)	19
109-1002F20 (20 PPI)	
109-1002F30 (30 PPI)	
109-1002F40 (40 PPI)	

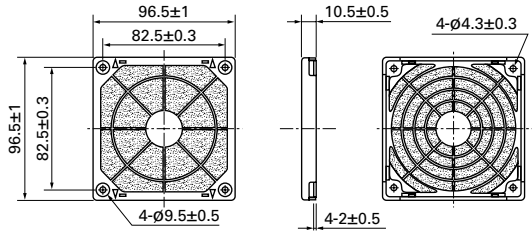
Replacement filter model no.	Quantity
109-1002M13 (13 PPI)	5
109-1002M20 (20 PPI)	
109-1002M30 (30 PPI)	
109-1002M40 (40 PPI)	



92 mm sq. type

Model no.	Mass (g)
109-1001F13 (13 PPI)	25
109-1001F20 (20 PPI)	
109-1001F30 (30 PPI)	
109-1001F40 (40 PPI)	

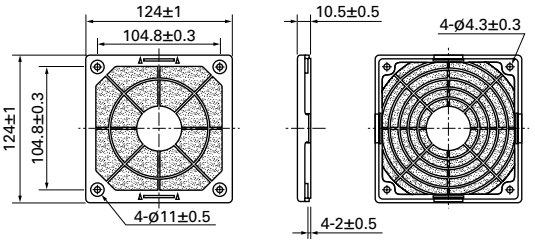
Replacement filter model no.	Quantity
109-1001M13 (13 PPI)	5
109-1001M20 (20 PPI)	
109-1001M30 (30 PPI)	
109-1001M40 (40 PPI)	



120 mm sq. type

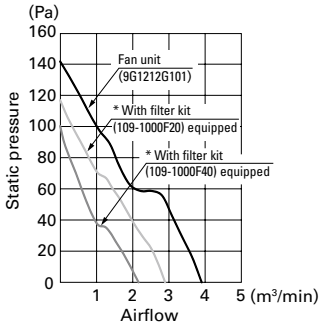
Model no.	Mass (g)
109-1000F13 (13 PPI)	44
109-1000F20 (20 PPI)	
109-1000F30 (30 PPI)	
109-1000F40 (40 PPI)	

Replacement filter model no.	Quantity
109-1000M13 (13 PPI)	5
109-1000M20 (20 PPI)	
109-1000M30 (30 PPI)	
109-1000M40 (40 PPI)	



Airflow - Static pressure characteristics

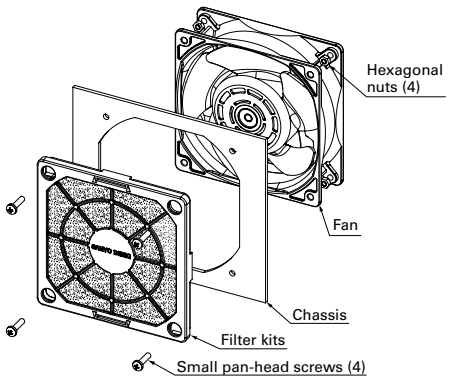
Measured with our double chamber measuring device (120 mm sq. type)



Applied voltage: 12 VDC

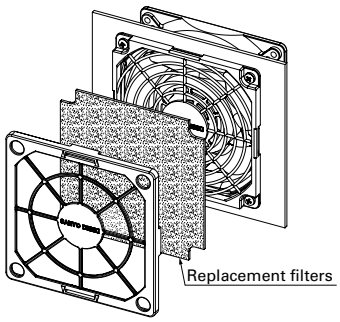
* Filter kit is attached on air inlet side of fan.

Mounting example



Filter replacement (example)

Replacement filters can be replaced by taking off the front part of the filter kit. There is no need to remove the screws.



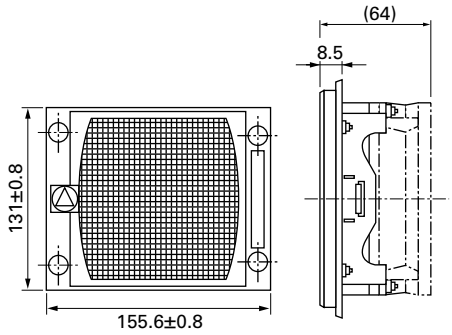
- Filter kit is one of the option to keep air in the chassis clean filtering dust in external atmosphere when pulling-air cooling is implemented. The filter kit is hooked up through mounting hole of fan frame with screw as well as finger guard. Some performances (airflow & static pressure) of the fan motor decreases when filter kit is hooked up.
- This Filter Kit is composed of 3 components, including a guard, a filter and a cover. It is delivered as a finished product at delivery, saving assembly time when mounting. It can be mounted by inserting a screw in the apertures of the cover.
- The filter and cover can be easily removed from the guard with one touch. There is no need for fan removal when undertaking maintenance. ● Operating temperature limit is between -10 to +60°C. (non condensing)
- The filter will deteriorate with age, and the level of deterioration will vary upon usage conditions. Please be aware that the filter has a greater tendency to deteriorate under high temperature and humidity. For long-term storage, please store under the temperature range of 10 to 30°C, humidity range of 20 to 65%. Usage and storage period is approximately 2 years.
- Cooling ability decreases with filter contamination due to clogging. Filter replacement is recommended approximately every six months of usage. Please replace the filter if deterioration or clogging is seen at inspection.
- When replacing the filter, please use genuine SANYO DENKI filters. ●Do not water-wash the filter.
- Avoid use and storage under high temperature or humidity, direct sunlight or exposure to ultraviolet light, or in corrosive gas. ●No nuts or screws for use in attachment included.

Filter kits Applicable models: AC Fan 120×120×38 mm Dimensions, Reference Dimensions of Mounting Holes (unit: mm) AC

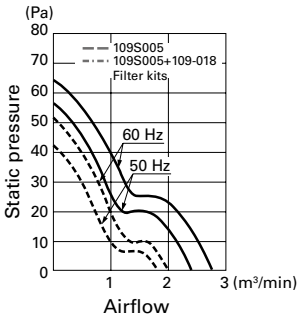
Neither filter kit can be installed on ACDC fans, or AC fans with sensors. Please evaluate it by assembly filter kits on the derice.

Model no.	Material	Mass (g)
109-018	Steel Wire Mesh: Stainless 16-mesh nets in 3 layers Cover: Resin Metal fittings: Steel (chromate-plated)	182

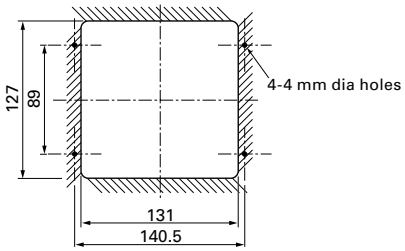
Dimensions



Airflow - Static Pressure Characteristics
(Measured with our double chamber measuring device)

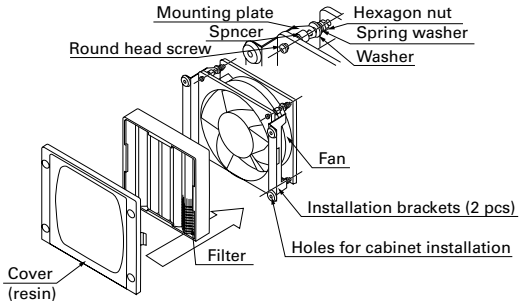


Reference Dimensions of Mounting Holes



●The parts shown in the installation diagram (nuts, washers, and screws) are included.

Mounting Example

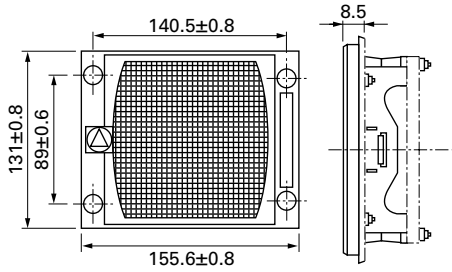


Screen kits Applicable models: AC Fan 120×120×38 mm Dimensions, Reference Dimensions of Mounting Holes (unit: mm) AC

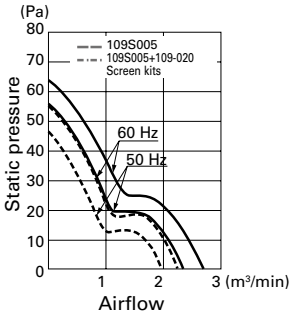
Neither screen kit can be installed on ACDC fans, or AC fans with sensors.

Model no.	Material	Mass (g)
109-020	Steel Wire Mesh: Stainless 16-mesh nets in 1 layers Cover: Resin Metal fittings: Steel (chromate-plated)	135

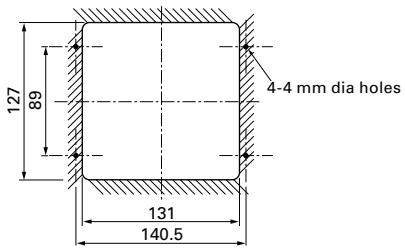
Dimensions



Airflow - Static Pressure Characteristics
(Measured with our double chamber measuring device)

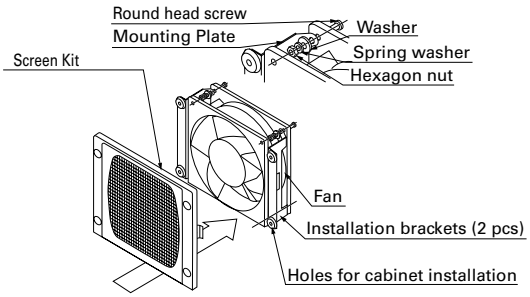


Reference Dimensions of Mounting Holes



●The parts shown in the installation diagram (nuts, washers, and screws) are included.

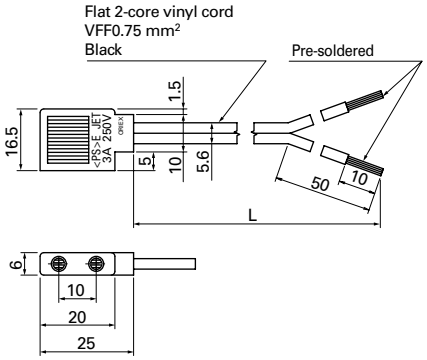
Mounting Example



Products compliant with electrical appliance and material safety law

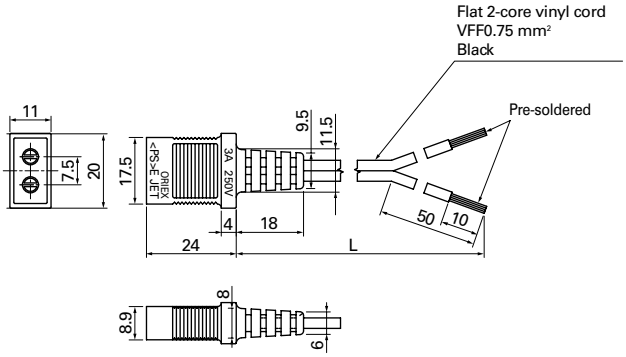
For 80×80×42 mm

Model no.	Power cord length [L] (mm)	Mass (g)
489-008-L10	1000	30
489-008-L21	2100	61
489-008-L35	3500	99



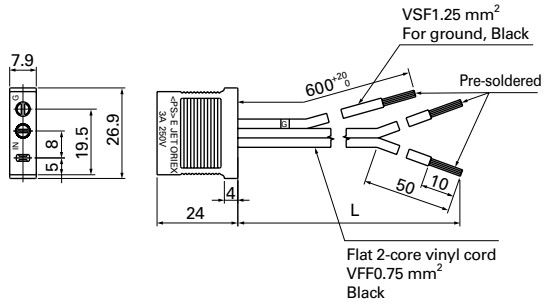
For 80×80×25 mm, 80×80×38 mm, 92×92×25 mm, 120×120×25 mm

Model no.	Power cord length [L] (mm)	Mass (g)
489-016-L10	1000	34
489-016-L21	2100	64



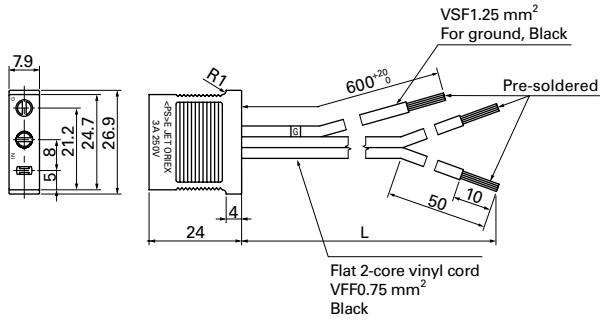
For 120×120×38 mm (not including AC/DC fan)

Model no.	Power cord length [L] (mm)	Mass (g)
489-006-L10	1000	47
489-006-L21	2100	76
489-006-L35	3500	114



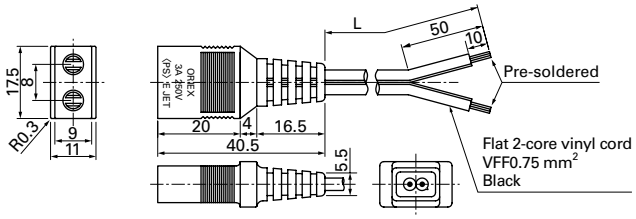
For 120×120×38 mm (not including AC/DC fan)

Model no.	Power cord length [L] (mm)	Mass (g)
489-037-L10	1000	46
489-037-L21	2100	76
489-037-L35	3500	114



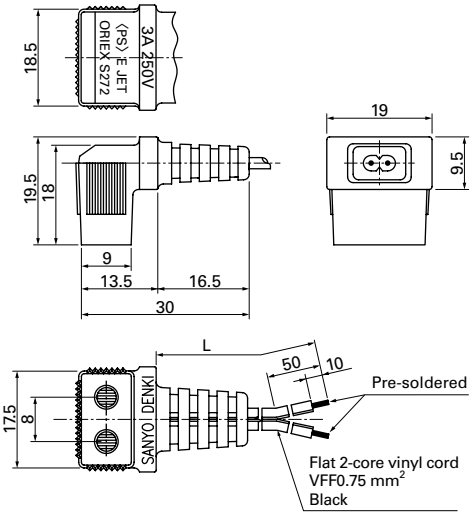
For 160×160×51 mm

Model no.	Power cord length [L] (mm)	Mass (g)
489-1618-L10	1000	34
489-1618-L21	2100	63
489-1618-L28	2800	83



For ø172×51 mm, ø172×150×51 mm, 160×160×51 mm

Model no.	Power cord length [L] (mm)	Mass (g)
489-1619-L10	1000	34
489-1619-L21	2100	64



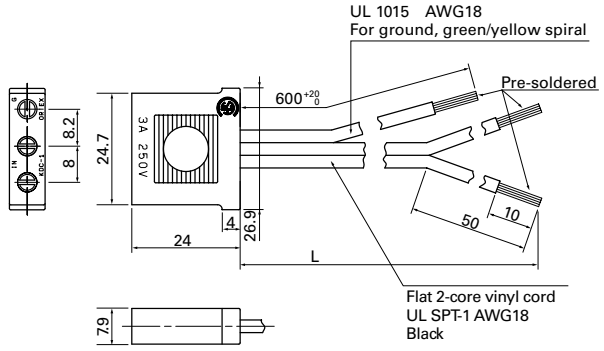
●Be careful not to damage the plug/cord when taking them out of the package.

Plug cord for AC fan Dimensions (unit: mm) AC

UL/CSA certified UL file no.: E50197 CSA file no.: LR67048

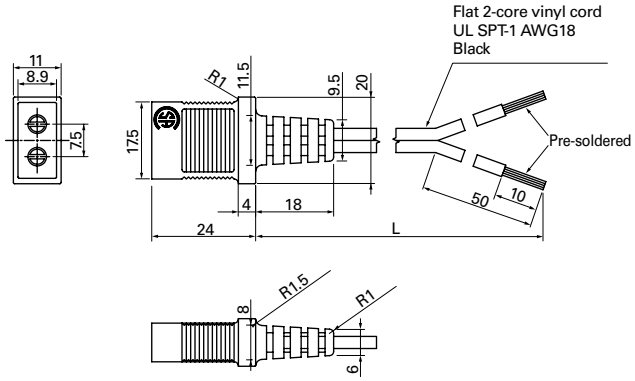
For 120×120×38 mm (not including AC/DC fan)

Model no.	Power cord length [L] (mm)	Mass (g)
489-007-L10	1000	48
489-007-L21	2100	80



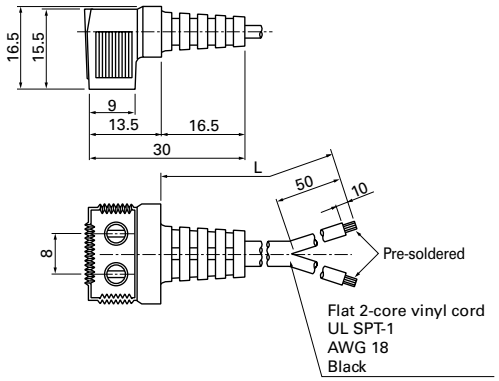
For 80×80×25 mm, 80×80×38 mm, 92×92×25 mm, 120×120×25 mm

Model no.	Power cord length [L] (mm)	Mass (g)
489-047-L10	1000	38
489-047-L21	2100	71



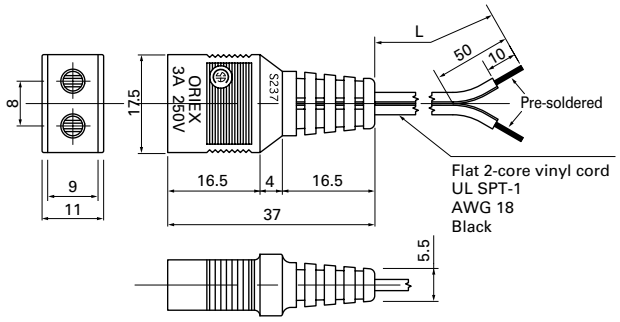
For ⌀172×51 mm, ⌀172×150×51 mm, 160×160×51 mm

Model no.	Power cord length [L] (mm)	Mass (g)
489-084-L10	1000	37
489-084-L21	2100	70



For 160×160×51mm

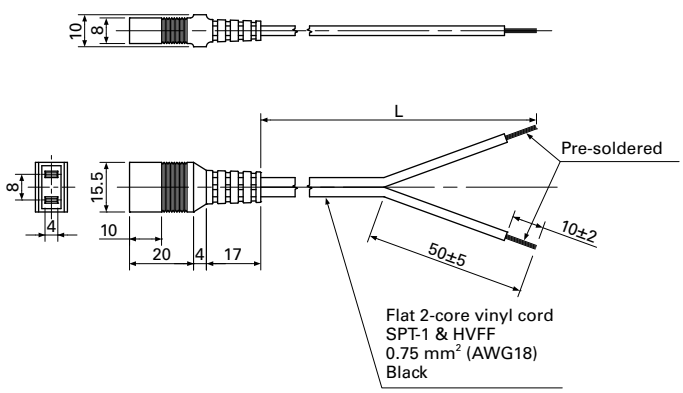
Model no.	Power cord length [L] (mm)	Mass (g)
489-086-L10	1000	37
489-086-L21	2100	70



Plug cord for ACDC fan Dimensions (unit: mm) AC

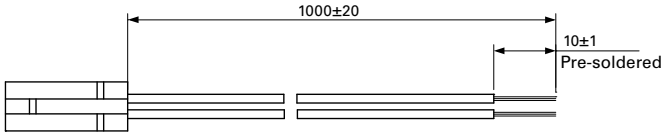
Products compliant with electrical appliance and material safety law, UL/CSA [c-UL] certified UL file no.E43202

Model no.	Power cord length [L] (mm)	Mass (g)
489-1635-L10	1000	38
489-1635-L21	2100	74



Wiring Harness for Sensor

Model no.	Mass (g)
489-1636	9



●Be careful not to damage the plug/cord when taking them out of the package.

Recommended connectors for DC fans

DC

Manufacturer	2 pins Housing model number	3 pins Housing model number	4 pins Housing model number	Contact model number
MOLEX	22-01-1022:P/N 5051-02	22-01-1032:P/N 5051-03 22-01-3037:P/N 2695-03RP	22-01-1042:P/N 5051-04	08-70-0064:P/N 5159T
				08-70-0048:P/N 5159PBT
				39-00-0372:P/N 2759T
	43025-0200	—	43025-0400	43030-0001
				43030-0002
				43030-0003
	51191-0200	51191-0300	51191-0400	50802-9001
	50-37-5023:P/N 5264-02	50-37-5033:P/N 5264-03	50-37-5043:P/N 5264-04	08-70-1039:P/N 5263PBT
	39-01-2020:P/N 5557-02R	—	39-01-2040:P/N 5557-04R	39-00-0059:P/N 5556PBT
				39-00-0038:P/N 5556T
Tyco Electronics	171822-2	171822-3	171822-4	170262-1
	179228-2	179228-3	179228-4	179227-1
Hirose	DF1B-2EP-2.5RC	DF1B-3EP-2.5RC	—	DF1B-2428PCF
	DF3-2EP-2C	DF3-3EP-2C	DF3-4EP-2C	DF3-EP2428PCF
	DF3AA-2EP-2C	DF3AA-3EP-2C	DF3AA-4EP-2C	
Japan Solderless Terminals	EHR-2	EHR-3	EHR-4	SEH-001T-P0.6
	SMP-02V-BC	SMP-03V-BC	SMP-04V-BC	SHF-001T-0.8BS
	SMP-02V-NC	SMP-03V-NC	—	
	H2P-SHF-AA	H3P-SHF-AA	—	
	PHR-2	PHR-3	PHR-4	SPH-002T-P0.5S
	XAP-02V-1	XAP-03V-1	XAP-04V-1	SXA-001T-P0.6
	XMP-02V	XMP-03V	—	
	XHP-2	XHP-3	XHP-4	SXH-001GU-P0.6
				SXH-001T-P0.6
	SMR-02V-B	SMR-03V-B	SMR-04V-B	SYM-001T-P0.6
	SMR-02V-N	SMR-03V-N	SMR-04V-N	

Recommended tubes and cable ties for DC fan

DC

	Manufacturer	Representative model numbers	Specifications	UL file no.
PVC tube	YAMAICHI CHEMICAL	YET-300H	105˚C 300 V VW-1	E55011
	IWASE KAGAKU KOGYO	AH-3		E56036
Thermal contraction tube	SUMITOMO ELECTRIC	SUMITUBE® F2 (Z)	125˚C 600 V VW-1	E48762
	SUMI-PAC	SUMITUBE® F32		
Cable tie	THOMAS & BETTS	TY-23M	UL 94V-2	E49405
	PANDUIT	BT1M		E56854
	HellermannTyton	T18R		E64962

Note : The specifications in this table are for reference purposes only. When selecting, please check catalogs of each brand.

Overview and Characteristics of Fan

Overview DC AC

A cooling fan is widely used to extend life of your system by cooling off heat of the system that many electrical components are mounted in a very high density and dissipating heat. Since we SANYO DENKI developed "San Ace" which is the first AC fan in Japan in 1965, we have increased fan motor lineup until now meeting customer's needs rapidly based on our tremendous career. We SANYO DENKI will continue to develop new fans with high airflow, low noise, low vibration, and energy-saving design.

Characteristics DC AC

We can roughly devide fan into two types which are AC and DC.

AC fans

SANYO DENKI succeeded in the mass-production of AC fans in 1965. SANYO DENKI was the first Japanese manufacturer to have succeeded at this.

- ●High performance
- ●High reliability
- ●Safety

DC fans

SANYO DENKI succeeded in the mass-production of DC fans in 1982.

- ●High performance
- ●Low power consumption
- ●Low vibration
- ●Low leakage of flux
- ●High reliability

SANYO DENKI currently has a wider variety of products like Long Life Fan, CPU cooler, Splash Proof Fan, and Oil Proof Fan etc to meet all customer needs.

Guideline in Selecting a Fan

How to select an appropriate fan DC AC

The following example is a guideline regarding how to select an appropriate fan for cooling your system

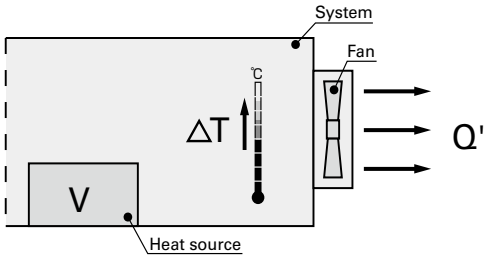
1. Determining of your system specifications and conditions

Determine the temperature rise inside your system and obtain the total heating value inside your system on the basis of its inputs and outputs.

Example

V: Total heating value of your system (W)=100 (W)

△T: Inside temperature rise (K)=15 (K)



2. Calculating the required airflow for cooling

After the equipment specifications and conditions of your system have been determined, calculate required airflow to meet the conditions. (Note that the formula shown below only applies when the heat radiation is performed only by cooling air from the fan.)

Example

Q': Motion airflow (m^3/min)

$$Q' = \frac{V}{20\triangle T} = \frac{100\ (W)}{20\times 15\ (K)} \fallingdotseq 0.33\ (m^3/min)$$

3. Selecting the fan

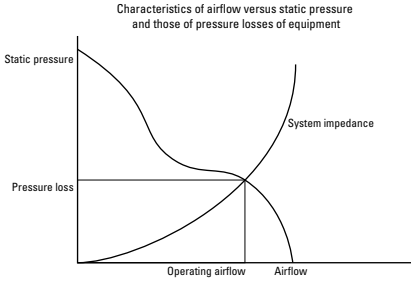
After the motion airflow has been calculated, select an appropriate fan motor based on the value.The motion airflow when the fan motor is actually mounted in your system can be obtained using the airflow-static pressure characteristics curve and system impedance.However, the system impedance cannot be measured without a measuring equipment, so fan with 1.5 to 2 times higher airflow than the actual max airflow should be selected (operating airflow is one-third to two-thirds of maximum airflow).

Example

Q: Maximum airflow (m^3/min)

Q'=Q×2/3

Q=Q'×3/2=0.33×3/2≒0.5 (m^3/min)



Next, In case that you select a fan having an airflow of 0.5 (m^3/min) or more and a appropriate size for the space inside your system.

For example, If you need a fan of 60 mm square, 25 mm thickness and 12 V, you should select is 109R0612H402 (maximum airflow = 0.53 m^3/min).

4. Confirming the selected fan

Calculate the temperature rise inside your sysetem when your sysetem having 100 (W) of total heating value is forcefully cooled down by a 109R0612H402 fan.

Example

Q' =Q×2/3=0.53×2/3≒0.353 (m^3/min)

△T=V/20Q'=100 (W)/20×0.353 (m^3/min)≒14.2 (K)

From the above, the temperature rise inside your system is calculated as 14.2 (K).

Since the value obtained from the above equation is only a rough target, final fan selection should be based on your actual installation test.

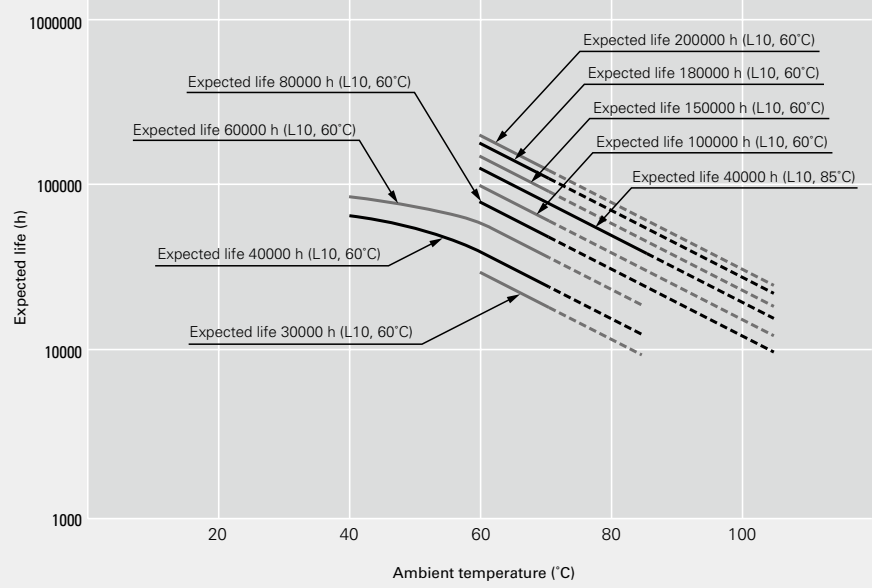
Characteristics Calculation Method and Description

Reliability and expected life

DC AC

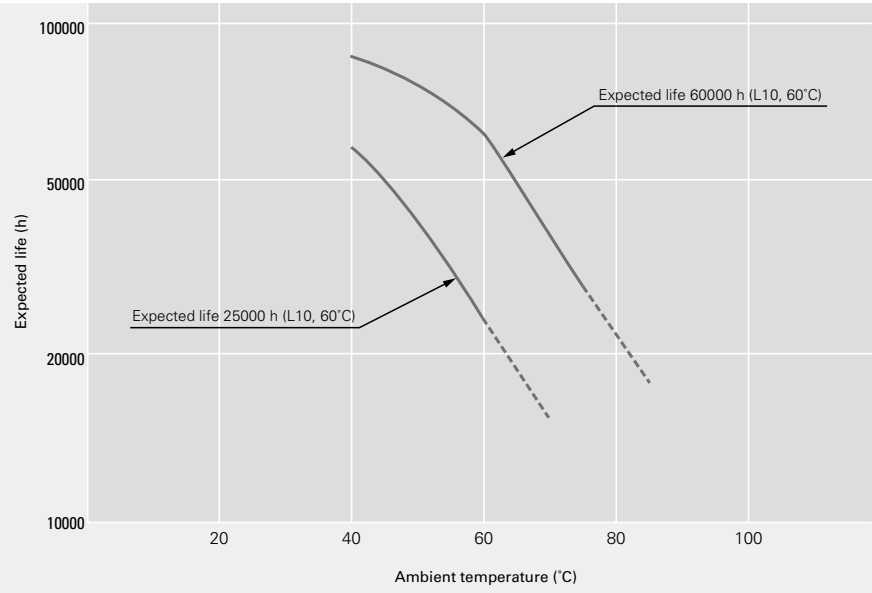
A cooling fan generally cools itself as well. The temperature rise of the motor is relatively low and the temperature rise of the grease in the bearings is also low, so expected life is longer than general some either motors. Since the service life of bearings is a theoretical value that applies when they are ideally lubricated, the life of lubricant can be regarded as expected life of the fan. DC fan consumes less power and its temperature rise of bearing is very low. When the measurement conditions are: L10 (the remaining product life in the lifespan test is 90%),with an atmospheric temperature of 60 degrees, at the rated voltage, and continuously run in a free air state. The table below indicates the relationship between ambient temperature and expected life estimated on the basis of our life tests and same other tests conducted by SANYO DENKI.

Expected life of DC fans



Rated voltage, continuously run in a free air state, survival rate of 90%

Expected life of AC fans

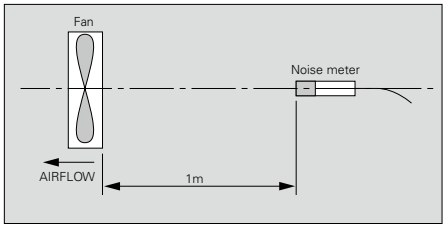


Rated voltage, continuously run in a free air state, survival rate of 90%

Noise characteristics

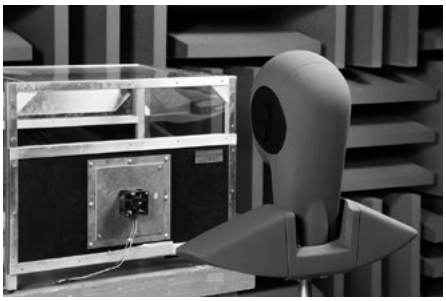
DC AC

Noise is average value that measured at l meter away from air intake side of fan that is suspended on special frame in anechoic chamber (as per JIS B 8346).



Acoustic radio wave anechoic chamber

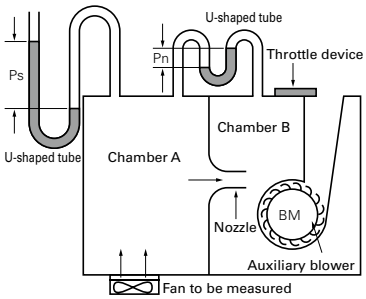
Noise characteristic measurement equipment



Measuring airflow and static pressure

DC AC

It is very difficult to measure airflow and static pressure. In fact, the performance curve may vary greatly according to the type of measuring equiment.
The commonly-used type of measuring equipment is a wind tunnel using a Pitot tube. SANYO DENKI uses a very precise method using double chamber equipped with many nozzles.



Double chamber measuring equipment

$Q = 60A\bar{v}$ (A)
where
Q = airflow (m^3/min)
A = cross sectional area of nozzle $= \frac{\pi}{4}D^2$ (m^2)
D = nozzle diameter
$\bar{v}$ = average airflow velocity of nozzle $= \sqrt{2g\frac{Pn}{\gamma}}$ (m/s)
γ = Specific weight of air = ρg (N/m^3)
(Air density ρ = 1.2 kg/m^3 at 20˚C, 1 atm)
g = acceleration of gravity = 9.8 (m/s^2)
Pn= differential pressure (Pa)
Ps= static pressure (Pa)

The measuring equipment using double chanber is method to be calculated from airflow goes through nozzle and differential pressure between pressure of inside of chamber (Ps) and atomospheric pressure by measuring differetial pressure between air intake and exhaust of nozzle (Pn).

Conversion table

DC AC

Static pressure

1 mm H_2O=0.0394 inch H_2O
1 mm H_2O=9.8 Pa (Pascal)
1 inch H_2O=25.4 mm H_2O
1 Pa=0.102 mm H_2O
1 inch H_2O=249 Pa

Airflow

1 m^3/min=35.31 ft^3/min (CFM)
1 CFM=0.0283 m^3/min
1 m^3/min=16.67 ℓ /s
1 CFM=0.472 ℓ /s
1 ℓ /s=0.06 m^3/min

Motor Protection

If the fan blades are restricted, an overcurrent occurs and leads to a rise in the fan coil temperature. This can result in reduced performance, damage, or a fire. To prevent this from occurring, SANYO DENKI's fans incorporate an overheating protection function.

Reverse polarity protection function (DC fan)

No problem about fan even if positive & negative lead are connected in reverse.
However, when wiring fans with sensors or PWM speed control function, connecting positive and negative leads in reverse may damage the fans.

Burnout protection function at locked rotor condition (DC fan, ACDC fan)

Current cutoff system
If the fan blades are restricted, the coil current is cut off at regular cycles to prevent overheating of the coil. When the hindrance is removed, the fan restarts automatically.

Burnout protection function at locked rotor condition (AC fan)

Impedance protection (60 mm sq., 80 mm sq., 92 mm sq., 120 mm sq.)
This system is used for shading coil-type fans. When the blades are restricted, the current is reduced by the impedance of the coil itself to prevent a temperature rise in the coil. However, if the applied voltage exceeds the specification range, an overcurrent can occur and result in overheating, and so care needs to be taken.

Thermal protection (160 mm sq., ø172 mm)
This system is used for condenser phase-type fans. A temperature sensor is incorporated in the coil so that if the temperature exceeds the specification temperature, the current is cut off to prevent overheating of the coil.

Specifications for DC Fan Sensors

Pulse sensor (Tach output type) example DC

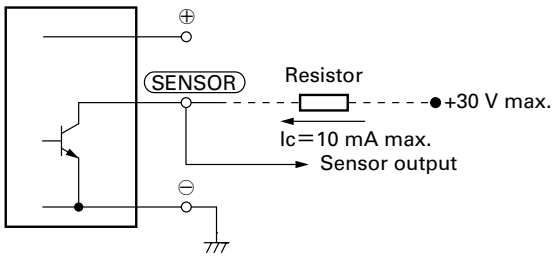
Pulse sensor outputs two pulse waves per revolution of fan, and it is good to detect fan speed. Pulse sensors can be incorporated in all kinds of DC fans.
* Noise from inside the fan or from external devices may effect sensor output.
Contact us for more information.

The specifications listed below are for the 9G1212H101 model, and vary with the model number used. Please contact your point of sale for details.

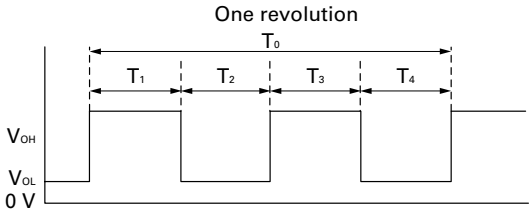
Output circuit
Open collector

Specifications
V_{CE}= +30 V max.
(For a 48 V-rated fan: Vce= +60 V max.)
Ic=10 mA max. [Vol=Vce (SAT)= 0.4 V or less]

Inside of DC fan



Output waveform (Need pull-up resistor)
In case of steady running



$T_{1\ to\ 4} \fallingdotseq (1/4)\ T_0$
$T_{1\ to\ 4} \fallingdotseq (1/4)\ T_0 = 60/4\ N$ (s)
N= **Fan speed** (min^{-1})

* If you want detailed specifications that apply when the rotor is locked, please contact SANYO DENKI.

Locked rotor sensor (rotation / lock detection type) example DC

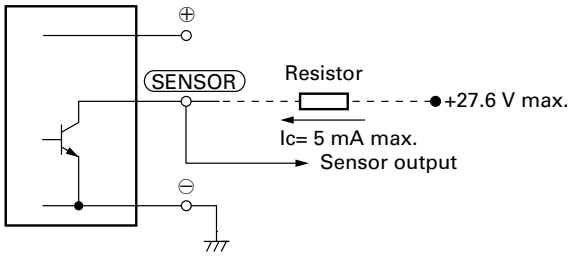
Locked rotor sensor outputs fan status signals. It is good to check whether the fan is running or locked
* Noise from inside the fan or from external devices may effect sensor output.
* Regarding details of the reverse logic and specifications of lock sensor output signals, please contact SANYO DENKI.
* Lock sensor can not be used in some models. Contact us for more information.

The specifications listed below are for the 9G1212H1D01 model, and vary with the model number used. Please contact your point of sale for details.

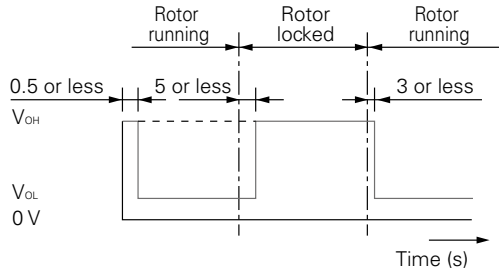
Output circuit
Open collector

Specifications
V_{CE}= +27.6 V max.
For a 48 V fan V_{CE} = +60 V max.
Ic= 5 mA max. [V_{OL}= V_{CE} (SAT)= 0.6 V or less]
For a 48 V fan: V_{CE} (SAT)= 0.4 V or less

Inside of DC fan



Output waveform (Need pull-up resistor)



Note: The output is completely at Vol with 0.5 s or less after power-up.

Low-speed sensor (rotating speed detection type) example DC

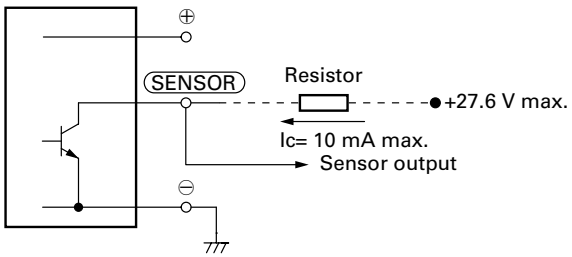
Low-speed sensor outputs a signal when fan speed goes down to trip point or less. It is good to detect cooling degradation of fan.
*Noise from inside the fan or from external devices may effect sensor output, please.
*If you want detailed specification and reverse signal output,please contact SANYO DENKI.
*Low-speed sensors can not be used in some models. Contact us for more information.

The specifications listed below are for the 9G1212H1H01 model, and vary with the model number used. Please contact your point of sale for details.

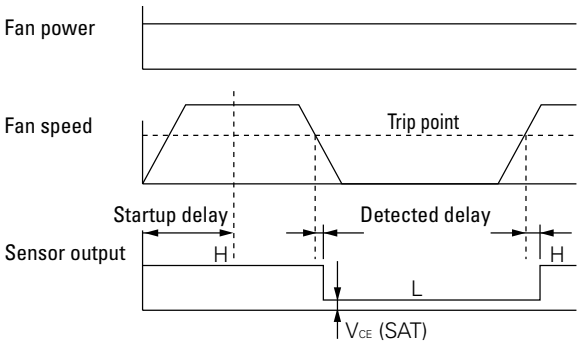
Output circuit
Open collector

Specifications
V_{CE}= +27.6 V max.
Ic= 10 mA max. [V_{OL}= V_{CE} (SAT)= 0.5 V or less]

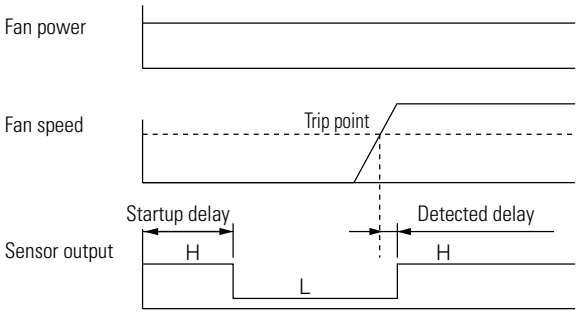
Inside of DC fan



Sensor scheme
Example 1: In case steady running



Example 2: In case that the rotor is locked when the fan motor is turned on and released after the start-up delay time.



Specifications for AC Fan Sensor

ACDC fan sensor specifications differ from those below. Please refer to each product page.

Specifications of sensor circuit AC

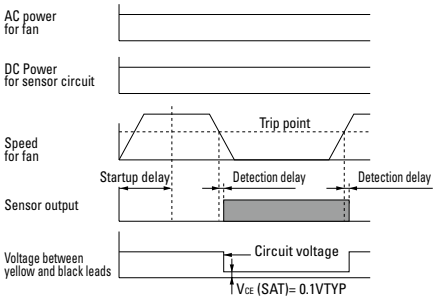
	5 V (ITEM-20*)	12 V (ITEM-30*)
Example of model.no	109S405UL	
System	Speed detection, Auto-restart, Open collector	
Power supply	5 VDC±10% At 5 V, 6 mA	12 VDC±20% At 12 V, 10 mA
Recommend sensor circuit output	At Vp= 5 V, I= 100 mA max.	At Vp= 12 V, I = 200 mA max.
Trip point	Standard speed: 1700 min^{-1}±10% Low speed: 850 min^{-1}±10%	
Response speed	Standard speed: Startup delay 18 s Detection delay 1 s Low speed: Startup delay 36 s Detection delay 2 s	
Insulation resistance	10 MΩ min. at a 500 VDC megger (Note)	
Dielectric strength	50/60 Hz, 1000 VAC, 1 minute (Note)	
Ambient conditions	Temperature: -10 to +60˚C , humidity: 90% RH max. (at 40˚C)	

Nameplate

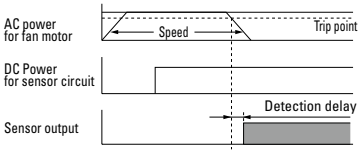
*[ITEM-20] and [ITEM-30] are printed on the fan nameplate.

Note: Between one end that all sensor leads consisting of brown, yellow and black are tied together and the G terminal or power terminal of the fan.

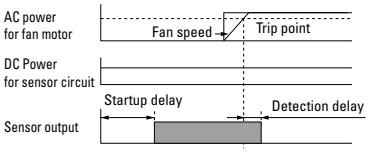
Sensor scheme
Example 1: When the AC power for the fan and the DC power for the sensor are turned on at the same time



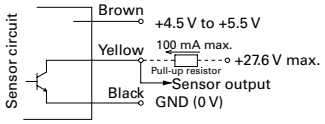
Example 2: When the AC power for the fan is turned on first, then the DC power for sensor is powered on



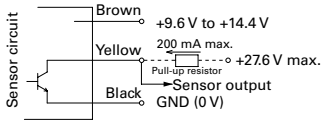
Example 3: When the DC power for sensor is first powered on, then the AC power for the fan is turned on



Sensor output circuit
5 V (ITEM-20*)



12 V (ITEM-30*)



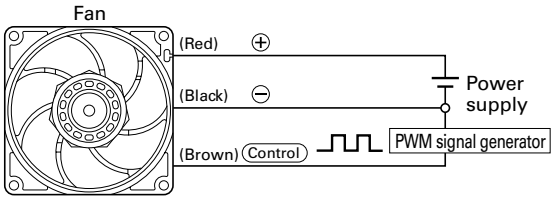
GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

Fans with PWM Control Function

PWM control function DC

1. Overview

Pulse Width Modulation (PWM) control function enables you to externally control the speed of the fan by varying the duty cycles of PWM input signals between control and grounding terminals.
It allows fans to operate optimally in response to the device's heat level, lowering the noise and power consumption of the system.

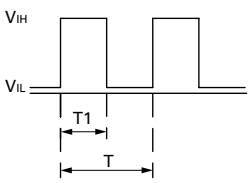


PWM control function has the following advantages:
(1) Because the PWM signal is digitally input, precise control is possible.
(2) Because the PWM signal is digitally input, multiple fans can be controlled.
(3) Upon users request, how the fan speed responds to PWM signals can be customized. For example, fan can be set to stop or run at low speed at 0% PWM duty cycle.

2. PWM duty input signals and wiring diagram

Other than a TTL input, an open collector/drain input can be used for PWM signal input.
Be noted that if an open collector/drain input is used or applied an input voltage and frequency is out of specified range, how the fan speed responds to the PWM duty cycle may be altered.
The input signal voltage and the frequency differ with models. Please contact us for details.

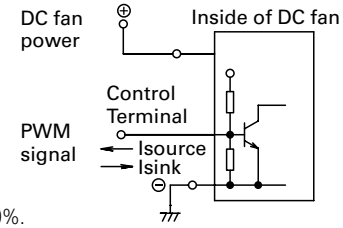
■Example of input signal (TTL input)



V_{IH}=4.75 to 5.25 V
V_{IL}= 0 to 0.4 V
PWM duty cycle (%) = $\frac{T1}{T}\times 100$
PWM frequency 25 (kHz) = $\frac{1}{T}$

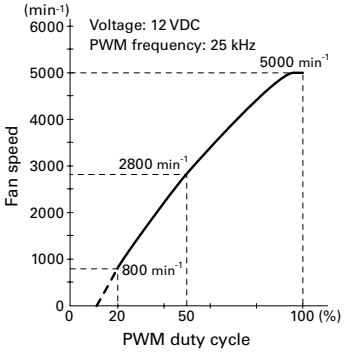
Current source (Isource) = 1 mA max. (when control voltage is 0 V)
Current sink (Isink) = 1 mA max. (when control voltage is 5.25 V)
Control terminal voltage = 5.25 V max. (when control terminal is open)
When the control terminal is open, fan speed is the same as when PWM duty cycle is 100%.

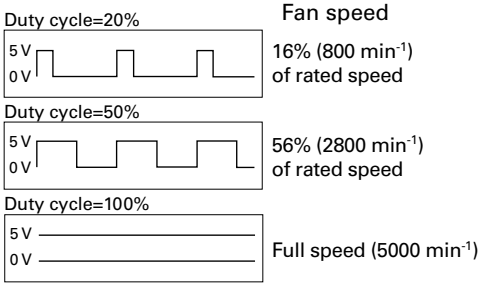
■Wiring example



3. PWM duty cycle – Speed characteristics

Fan speed of PWM control fans change, as the below performance curve shows, in response to the PWM duty cycle input.
If necessary, users can do the speed setting by themselves, making the fans operate at the optimum speed.
Also, upon user's request, how fan speed responds to a PWM signal can be customized so that the fan stops or runs at low speed for a certain PWM duty cycle input. The below performance curve is for a fan that stops at 0% PWM duty cycle. Specifications differ with models. Please contact us for details.





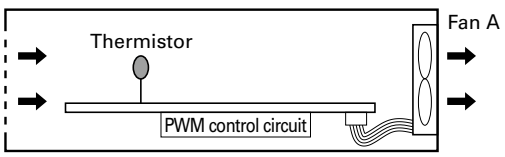
The dotted part of the performance curve (area below 20% PWM duty cycle in the above case) indicates the fan speed is unstable in the area.

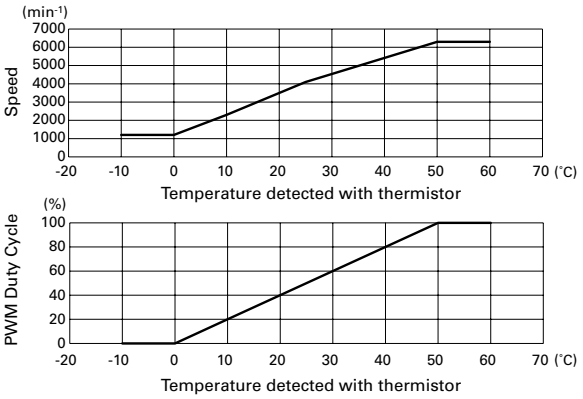
4. When you wish to obtain a fan performance with 100 or 0% PWM duty cycle without a PWM signal generator for built-in test.

Performance at 100% PWM duty cycle: Leave the control lead wire open and no connection.
Performance at 0% PWM duty cycle: Connect the control lead wire directly to ⊖ pin.

5. Application examples of PWM control fan

Here are a few application examples of PWM control fan.
(1) This system controls the fan speed in response to changing device temperature.
By combining a PWM control circuit and thermistor that detects temperature of device and its parts, it is able to control the fan speed of PWM control fan in response to the changing temperature.

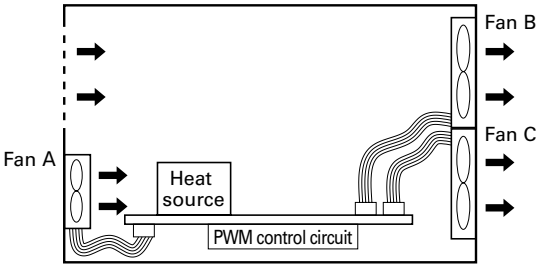




(2) Simultaneous control of multiple fans

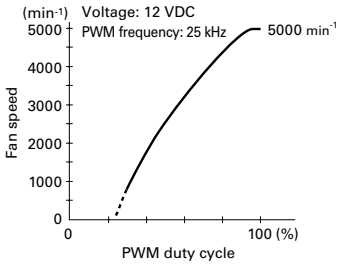
Because PWM control is done with digital signal inputs, regardless of fan types or input voltage, multiple fans can be controlled simultaneously.

Below figure shows a system that can control multiple fans with various PWM characteristics simultaneously. Such systems contribute to the low power consumption and noise.

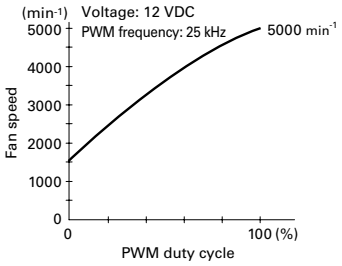


Operation mode	PWM Duty	Fan A	Fan B, C
Full-power	100%	5000 min^{-1}	5000 min^{-1}
Normal	60%	3500 min^{-1}	4000 min^{-1}
Standby (eco mode)	0%	Stop	1500 min^{-1}

Fan A
(model that stops at 0% PWM duty cycle)



Fan B, C
(model that runs at low speed at 0% PWM duty cycle)



Controlling device that easily regulates the rotational speed of PWM control fans DC

San Ace PWM Controller

■Features

Reduces system power consumption and fan noise

For PWM fan speed control, a PWM control circuit needs to be newly designed and configured.

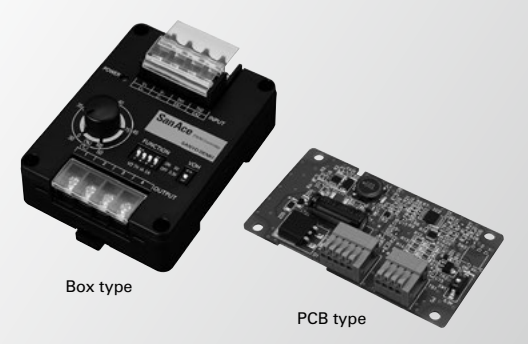
By using this product, however, PWM control function fans can be fully utilized without the need for preparing new circuits, contributing to reducing the system power consumption and the fan noise.

Can be common-powered by the fan power supply

The controller can be powered by the fan power supply of rated voltage 12, 24, and 48 VDC, and no separate supply is required.

Maximum of four fans connectable

Up to four fans with PWM control function can be connected and controlled.



Please refer to page 500 for detail.

Splash Proof Fan

Ingress protection ratings (IP code) DC

■ IP Codes used by SANYO DENKI express the level of protection that internal electrical components (for fans: electrical components and motor coils) have against solid objects, water, and access to hazardous parts.
San Ace Splash Proof fans feature high protection levels.

Protected electrical components and motor coils

■ Definition of Ingress Protection (IP Code)
Ingress Protection (IP Code) is defined in IEC (International Electrotechnical Commission) 60529*
DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP Code). *IEC 60529:2001

I P X X

- Second digit: Protection against water
- First digit: Protection against solid objects and access to hazardous parts

First digit	Definition
0	No protection
1	Protection against solid objects > 50 mm
2	Protection against solid objects > 12.5 mm
3	Protection against solid objects > 2.5 mm
4	Protection against solid objects > 1 mm
5	Protection against a level of dust that could hinder operation or impair safety
6	Complete protection against dust

Second digit	Definition
0	No protection
1	Protection against dripping water
2	Protection against water spray up to 15°
3	Protection against spraying water
4	Protection against splashing water
5	Protection against low pressure water jets
6	Protection against high pressure water jets
7	Protection against temporary immersion in water
8	Protection against submersion in water

UPS, inverter, rectifier, high-voltage power supply, etc.

Cautions for Use of a Cooling Fan in the Vicinity of a Power Switching Circuit (prevention of electrolytic corrosion)

If a fan is installed near a large-power or high-voltage switching circuit, the heavy electromagnetic noise resulting from electromagnetic induction in such circuits or the influence of high-frequency noise imposed through the power line of the fan may induce current through the shaft bearing of the fan. Such current may damage the oil film on the bearing and even the friction surface of the bearing. This adverse effect is known as "electrolytic corrosion of the fan. "Electrolytic corrosion affects the smooth revolution of the fan and may reduce its service life. An audible symptom is unusual noise emitted from the fan. This adverse effect is often observed and may partly be explained by the practice of mounting high-density parts, which reduces the gap between the switching circuits and the fan and the use of higher switching frequencies apt to provoke induction. Data processing/communications devices that operate at low voltages are not liable to electrolytic corrosion since they generate less electromagnetic noise.

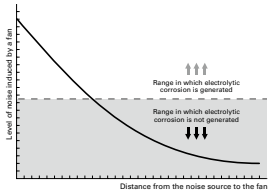
A Case of electrolytic corrosion

DC AC

Fans without anti-corrosion features installed near components that generate electromagnetic noise, such as inverter controllers, are liable to experience electrolytic corrosion.

No.	Use	Period until the occurrence of unusual noise
1	Switching power supply	6 months to 2 years
2	UPS	6 months to 2 years
3	General-purpose inverter	1 to 1.5 years
4	Air cleaner	2 to 3 months
5	Inverter for LCDs	6 months

The curve shown in the graph below represents the relationship between the level of the electromagnetic noise induced by a fan and the distance from the fan to the noise source.

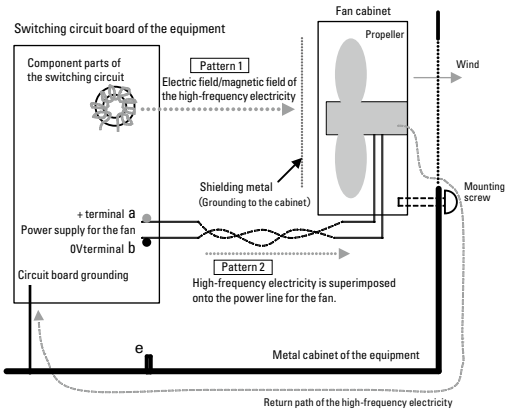


Occurrence of electrolytic corrosion Pattern 1

(1) The fan gets charged with high-frequency electricity by high-frequency noise (electric field/magnetic field) generated in the switching circuit.
(2) Because of high-frequency electricity charged in the fan, an electric current flows through the bearing of the fan.
(3) The electric current breaks the oil membrane on the surface of the bearing and the bearing gets abraded (electrolytically corroded).
(4) This symptom often occurs in equipment in which switching circuits are sped up and implemented in high density.
(5) Countermeasure 1: To provide a shield plate* inside the fan (The plate should be such that does not interfere with airflow).
(6) Countermeasure 2: To use a fan with ceramic bearings.

Occurrence of electrolytic corrosion Pattern 2

(1) High-frequency electricity flows from the circuit board into the inside of the fan superimposed with the power line for the fan.
(2) High-frequency electricity that has entered into the fan flows through the bearing.
(3) Oil membrane on the surface of the bearing gets broken and the bearing gets abraded (electrolytically corroded).
(4) Countermeasure 1: To remove high-frequency component between terminals "a" and "b", "a" and "e" and "b" and "e" of the power supply for the fan, or to insert a filter** into the power line for the fan.
(5) Countermeasure 2: To use a fan with ceramic bearings
(6) Cables should be twisted in order to decrease induction to the power line for the fan.



* Shielding metal plate
As an electromagnetic shield metal, "EMC Guard" is available from our company. http://www.sanyodenki.co.jp/product/newfan/indexf.html
Certain shielding effect can be expected from mounting a general-purpose finger guard inside the fan. In each case, grounding to the cabinet is required.
** Filter
Insert a common mode filter when the high-frequency electricity is superimposed on both lines "a" and "b" in the same phase and, if not, insert a normal mode filter.

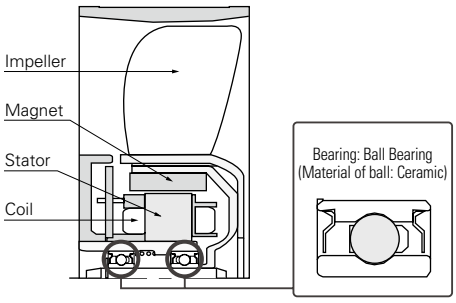
Measures against electrolytic corrosion

DC AC

- Relocate fans far from all electromagnetic noise sources.
- Attach an EMC guard to ordinary fans. This should have an effect on electromagnetic noise due to radiation.
- As a power supply, the fan is wired from a circuit for which noise is not superimposed.
- Against heavy electromagnetic noise (electromagnetic induction) and conductive noise from the power supply line for a fan, we recommend the use of an "Electrolytic corrosion proof fan" with ceramic bearing.

This cooling fan prevents electrolytic corrosion of bearings even under conditions where electromagnetic noise is generated.
Electrolytic corrosion of ball bearings is prevented by using ceramic balls in ball bearings. The ceramic material is an insulating material.
Manufacturable to meet specifications of all San Ace series fans.

■Component diagram



Caution

Electrolytic Corrosion Proof Fan has been designed to prevent the electrolytic corrosion of ball bearings in the fan, but this does not guarantee that the fan will operate normally under conditions where there is strong electromagnetic noise.
Please be sure to fully evaluate the value of fan malfunction due to noise in advance.

Safety Standards

List of safety standards acquired → refer to the index (pp. 542 to 565)

Description of safety standards

1. UL ratings (USA)

Underwriters Laboratories Inc. was established by the American Union of Fire Insurance Underwriters. The purpose of UL is to ensure safety of machines, equipment, and materials and protect human lives and property from fire and other accidents. To that end, UL has conducted numerous tests and extensive research and, as a result, set up UL ratings. Any seller of products in any of the majority of the states of the USA must produce their products according to the UL ratings, have them pass UL-specified safety inspections, and have them listed in UL's registration book. Therefore, to export and sell any product in the United States, one must in most cases apply for UL-listing.
Additionally, UL is accredited by The Standards Council of Canada (SCC) as both a Certification Organization (CO) and a Testing Organization (TO) and is officially recognized in all provinces and territories throughout Canada. Accordingly, our products can be tested by UL for compliance with Canadian safety standards. Certified products are entitled to display the C-UL Mark, which authorizes their use and sale in Canada. If products are deemed to be compliant with both U.S. and Canadian standards, then both the UL Mark and C-UL Mark can be displayed or a combination U.S. and Canadian mark (bottom left).
Our products are certified as satisfying all UL 507 requirements.

2. CSA standards (Canada)

The Canadian Standards Association (CSA) was set up in response to the advice of the Canadian government. In Canada, the law prohibits the use and sale of any product other than those approved under CSA in terms of safety. CSA has set up CSA standards as inspection procedures and other requirements to ensure product safety.
Our products are certified as satisfying the CSA standard C22.2 No. 113.

3. EN standards (EU members)

In the EU territory, the harmonization of industrial standards and safety standards of different countries is under way. The unified standards are called Harmonized Standards. Each of these standards is marked EN above the standard number. EN standards offer the grounds in design and manufacture when one exports a product to the EU territory. In order for a product to receive a safety marking, the product must be found to conform to TÜV, VDE, or other relevant standard.
Our products are certified as satisfying all TÜV Rheinland EN60950 requirements.

4. Electrical appliance and material safety law

As of April 1, 2001, the Electrical Appliance and Material Control Law has been revised and reenacted as the Electrical Appliance and Material Safety Law.
AC fans are classified as 'Blowers' under 'Electric motor-operated appliances' . They are categorized as electrical products other than specific electrical appliances (with the exception of some models) and are required to be labeled to indicate PSE certification.

5. CE marking

CE marking

To distribute their equipment in the EU territory, manufacturers are obligated to give a CE marking as proof that the equipment conforms to related EC directives. Manufacturers use EN standards as criteria of judgment as to whether the equipment satisfies the requirements of specific directives or, in the absence of applicable EN standards, they use IEC standards. Manufacturers then prepare a self-declaration to indicate that the equipment conforms to related directives and apply a CE marking. (Depending on the degree of risk of the equipment, some kinds of equipment are required to receive type tests conducted by certified authorities and, after a type test certificate is obtained, manu-facturers make a self-declaration.)
Scope of application and compulsory timing of major EC directives

Machine directives

These directives apply to equipment that has a moving part that may injure humans. The directives generally apply to a wide range of machine tools and other industrial machines.

EMC directives

They apply to equipment which may be affected by electromagnetic interference (EMI) or has ele-ctromagnetic susceptibility (EMS).

Low-voltage directive

This directive applies to equipment that is used in an AC range between 50 and 1000 V and in a DC range between 75 and 1500 V.

JIS: Japanese Industrial Standards
Japan's national standards related to mining and manufacturing industries

IEC : International Electrotechnical Commission
This is an international commission on electrical standardization. This commission promotes the unification and cooperation of international standards related to electric and electronics engineering and issues IEC standards in order eventually to allow different countries to conform to the international standards.

DIN : Deutsches Institut fur Normung e.V.
This is a German standards institute. The institute uses a wide-range set of standards covering many industrial sectors. The set of standards includes basic standards.

VDE : Verband Deutscher Elektrotechniker e.V.
It is a German association of electric engineers. VDE establishes safety standards related to electrical engineering and issues them as DIN-VDE standards.

RoHS Directive

Since October 2012, all the products in this catalog have complied with the maximum concentration values of the hazardous substances referred to in the Annex II to EU RoHS Directive 2011/65/EU,* except for the exempted applications specified in the Annex III to the Directive.
Please note that SANYO DENKI does not use exemption 7(c)-III: Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 VAC or 250 VDC, for those products.
* Lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)

RoHS Directive:
DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Eco-products

Efforts for designing Eco-products

As for product design, we are carrying out R&D to incorporate the latest energy-saving technologies into our new products. At the same time, we carry out product assessments to evaluate the environmental impact of products at each stage, such as component and material procurement, manufacture, distribution, use, recycling, and disposal.
Newly developed products are compared with commercially available and existing products and are certified as Eco-products (Eco-design products) if they satisfy the specified evaluation standards. Eco-products are presented in catalogues and other materials with a LEAF symbol.

ECO PRODUCTS

Life cycle assessment (LCA)

LCA is one of the techniques used to provide a general quantitative measure of levels of environmental impact including global warming that products have through their life cycles. We evaluate the environmental compatibility of a product using this method. Our rate of implementing LCA in our Ecoproducts was 90%.

Operating Precautions DC AC

Temperature conditions

Operating temperature: Refer to the specifications table for each model.

Storage temperature: -20 ～ +70˚C / -30 ～ +70˚C (Varies for each model / Non condensing)

* Rapid change in temperature may cause condensation. Prevent condensation when storing. Condensation may affect lubrication performance and insulation.

Power specifications

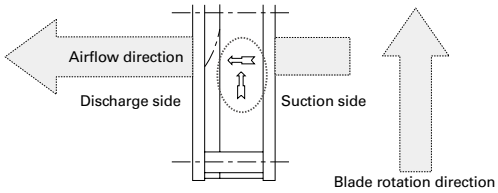
For the specification of rated voltage and voltage range, please check the catalog or drawing for the model number.
Use of voltage exceeding the specified range may lead to performance degradation, device failure, or fire hazards. Do not apply voltage that exceeds specifications to the fan.
An electronic circuit is used for the DC fan. For power supply, use power with ripple less than 5% with low line noise and surge to prevent electronic circuit trouble.

Handling precautions

The fan motor is equipped with a precision ball bearing. Therefore, please handle the motors carefully in order not to shock the bearings.

Installation tips

There are no limitations on the installation direction of fans or blowers. Fans have symbols on the fan indicating the airflow direction and blade rotation direction. When installing, use these symbols to check the airflow direction.



Symbols indicating the fan airflow direction and blade rotation direction

Recommended screw torque

This shows the recommended values for the screw torque when installing the fans. If the tightening torque is higher than the recommended values, the fan can be deformed or damaged.
Use care when tightening. Also, be sure to always use a fan with a ribbed structure when securing by screws with both flanges.

DC fan

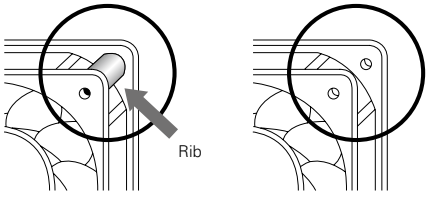
Fan mounting hole diameter [mm]	Nominal screw diameter	Recommended screw torque
ø3.5	M3	0.44 N·m max.
ø4.3, ø4.5	M4	0.78 N·m max.
ø4.3, ø4.5	M4	0.98 N·m max. (ø172 mm×51 mm, ø172 mm×150 mm×51 mm, ø200×70 mm)

AC fan

Fan mounting hole diameter [mm]	Nominal screw diameter	Recommended screw torque
ø3.5, ø3.7	M3	0.44 N·m max.
ø4.3	M4	0.58 N·m max. (120 mm×120 mm max.)
ø4.3	M4	0.78 N·m max. (ACDC fan, ø172 mm)
ø5.5	M4, M5	0.78 N·m max. (160 mm×160 mm)

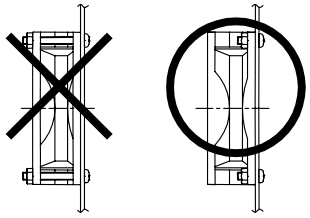
Comparison of ribbed and ribless structures

Regarding plastic frame, we have a option ribbed and ribless about mounting. Please use preferred type up to your application. Please use ribbed fan in case that you hook fan up clamping either side fan mounting hole target. (According to the model, only models with or without ribs are available.)
*Use a fan with a rib structure when securing by screws with both flanges.



Ribbed Ribless

· When securing screws to ribless plastic frame models, use a flange to secure on one side.



Securing with flanges on both sides

Securing with a flange on one side

Fan Mounting Using Self-tapping Screw DC

Installing self-tapping screws into the plastic frame of the fan may split or deform it.
If using self-tapping screws, use screws that are recommended by our company, and refer to our recommended tightening torques and recommended pilot hole shapes. Pay close attention to the operating precautions and fully understand your equipment before you use it.

Recommended screw torques

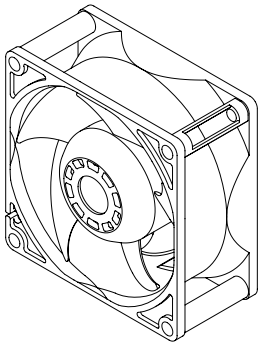


Fig. A: Ribbed fan

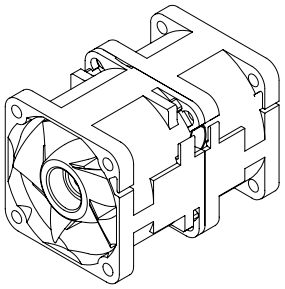


Fig. B: Counter rotating fan

	Recommended screw torque [N·m]	Fan mounting hole diameter [mm]
Ribbed fan (Fig. A)	0.8 max.	ø3.5, ø4.3, ø4.5
Counter rotating fan (Fig. B)	0.6 max.	

Do not use self-tapping screws in the following cases:

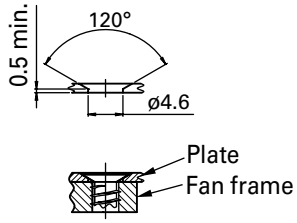
· For ribless fans (except for counter rotating fans)
· When mounting finger guards on fans

Using self-tapping screws could deform or split the frame. Please use regular screws.

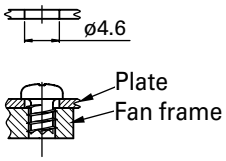
Recommended pilot hole shape

[For nominal diameter 4 mm]

Self-tapping screw model no.
SY-NS020412P11



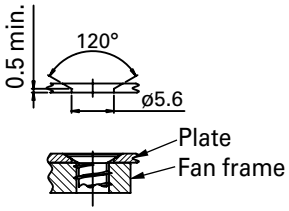
Self-tapping screw model no.
SY-NS010412P11



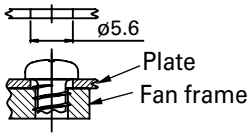
Minimum mounting plate thickness: T=1.2 mm

[For nominal diameters of 4.8 mm and 5 mm]

Self-tapping screw model no.
SY-NS024812P15
SY-NS020512P15



Self-tapping screw model no.
SY-NS014812P15
SY-NS010512P15



Minimum mounting plate thickness: T=1.2 mm

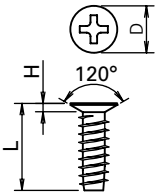
Recommended self-tapping screws

· Material: Steel
· Plating: Trivalent chromating plating

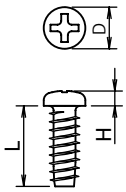
unit: mm

Fan mounting hole diameter	Self-tapping screw model no.	Nominal screw diameter	Length [L]	Head shape	Flat-head/pan-head dimensions		
					Head diameter [D]	Height of head [H]	Cross recess No.
ø3.5	SY-NS020412P11	4	12	Flat	6.2	1.1 max.	2
	SY-NS010412P11	4	12	Pan	5.5	2.0	2
ø4.3	SY-NS024812P15	4.8	12	Flat	6.8	1.2 max.	2
	SY-NS014812P15	4.8	12	Pan	7.0	2.6	2
ø4.5	SY-NS020512P15	5	12	Flat	6.8	1.2 max.	2
	SY-NS010512P15	5	12	Pan	7.0	2.6	2

Head shape: Flat

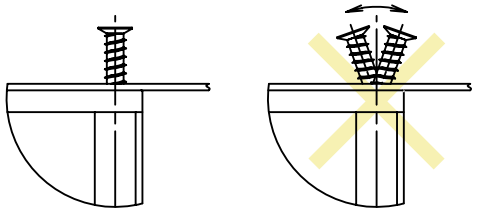


Head shape: Pan



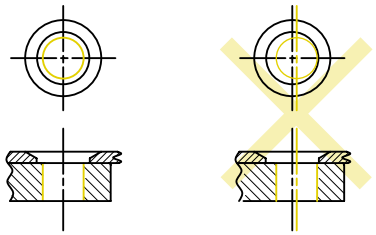
Operating precautions

· Place the self-tapping screw so that it is vertical and centered with the frame mounting hole (Fig. A) and then screw it in. The self-tapping screw could deform or split the frame if you screw it into the frame when the screw is not vertical.
· Screw in the self-tapping screw with the center of the mounting hole on the fan and the center of the pilot hole on the mounting plate aligned (Fig. B). Misaligned holes could lead to the frame being deformed or split.



Vertically placed screw　Inclined screw

Fig. A



Aligned and centered holes　Misaligned holes

Fig. B

· Tightening the screw beyond the recommended screw torque could deform or split the frame.
· With flat-head screws, failure to use the recommended pilot hole shape will cause interference between the flat-head screw and fan frame which could split the frame.

Recommended screw manufacturer

To purchase the screws, please contact the screw manufacturer directly.

SAIMA CORPORATION
2-9-17 Tsujido Fujisawa Kanagawa 251-0047 JAPAN
TEL:+81-466-36-3656 FAX:+81-466-36-0009
http://www.saima.co.jp/English/

Safety Precautions DC AC

- In order to ensure that this product is used safely, be sure that you read and understand the following precautions fully and use the product only as directed.
- Be sure to read these Safety Precautions carefully before installing, connecting, operating, maintaining, or inspecting this product. Follow all the precautions and directions given here.
- This product has been designed and manufactured for use as a device to be used in general industrial machinery, and may not be used as a standalone product.
- The product of our company (hereafter called the product) falls into the category of the products specified in the Attached List 1, Item 16 (Class 84, Item 14) of the Export Trade Control Ordinance. To export the product as an individual part or to export a product into which the product is assembled, the "Information Requirements" and "Objective Requirements" that the Ministry of Economy, Trade and Industry established based on the "Catchall Controls" must be studied for applicability. Based on information on applicability and specified requirements, appropriate export formalities must be performed.

In order to prevent any possible bodily injury or damage to property or equipment, the following precautions for ensuring safety are displayed according to the following two ranks of importance:

Danger	Handling or using the product improperly and in disregard of the instructions with this mark might result in serious bodily injury or death.
Warning	Handling or using the product improperly and in disregard of the instructions with this mark might result in bodily injury or physical damage.

* Items marked 'Warning' might also result in serious bodily injury or death in some circumstances. Always follow the instructions for items marked 'Danger'.

Descriptions of the precautions to be taken to ensure safety are given below.

Danger

- If the product is used in medical appliances or other types of equipment that affect people's lives, sufficient safety-related evaluations and preparations must be made in advance, and the product or the type of equipment into which the product is assembled must be used on the user's own responsibility.
- If the product is used in types of equipment that have a strong social and public impact, sufficient prior evaluations and safety-related evaluations and preparations must be made, and the product or the type of equipment into which the product is assembled must be used on the user's own responsibility.
- If the product is used in an environment where there are vibrations, for example, in a car or aboard a ship, sufficient prior evaluations and safety-related evaluations and preparations must be made, and the product or the piece of equipment into which the product is assembled must be used on the user's own responsibility.
- Connect all wires properly and securely. Failure to do so might result in burns, fire, or exposure to electrical shock.
- If there are any grounding taps or wires, attach all grounds securely. Failure to do so might result in exposure to electrical shock.
- Never use in explosive atmosphere, as doing so might result in fires, burns, or bodily injury.
- Never operate with any live wires exposed, as doing so might result in electrical shock.
- Never allow any persons or objects to approach or come into contact with the rotor while in operation, as doing so might result in damage or personal injury.
- Turn off the power and stop using the product immediately if you notice any sparks, smoke, odd odors, sounds, or anything unusual during operation. Failure to do so might result in fire, burns, or electrical shock.
- Never allow the product to fall, topple over, or otherwise be subjected to excessive shocks when moving it, as doing so might result in product breakdown or substandard operation.
- The product should be handled only by personnel with sufficient training and knowledge and under the responsibility of the end user.
- Never attempt to disassemble, repair, or alter this product in any way, as doing so might result in fire, burns, or electrical shock.
- Dispose of the product as industrial waste. Please contact your local government office for further details about disposal.

Warning

Handling

- Installation, placement, connections, wiring, or relocation of the product should be performed by knowledgeable or correctly licensed personnel. Never perform such work while the product is live as this might lead to injury, electrical shock, burns, or fire.
- Do not use the fan if not fixed or stand in hand.
- Never allow yourself to come into contact with the ends of wires or plugs when measuring the insulation resistance or dielectric strength voltage. This might result in electrical shock.
- Never attempt to disassemble or alter this product in any way. Doing so might invalidate any warranties concerning the functions or performance of the product, and might also result in fire, burns, bodily injury, or electrical shock.

Instruction

- If the fan stops during operation, give proper consideration to the device for its protection.
- Never use the product at voltages, temperatures, or any other settings which exceed those given in the product specifications. This might result in substandard operation, breakdown, fire, bodily injury, or electrical shock.
- The fan may fail to operate properly if there is insufficient power capacity, because the starting current is several times larger than the rated current will flow at the moment of the voltage is supplied to the fan. Be sure to inquire about startup current levels for individual models.
- Do not control the speed of the fan by power supply PWM. It may cause fan failure.
- Start up all fans at the same possible timing if two or more fans which wind interferes with each other are installed in the device.
  If the fan is exposed to wind from other fans at start up, it may cause fan failure or the fan may not start up correctly.
- Never insert or remove any lead wires, plug cord or connectors while the power is turned on. When inserting or removing plugs or connections, always be sure to first check that the power has been turned off and hold the housing of the plug or connector when doing so. Failure to do so might result in damage or exposure to electrical shock.
- Do not remove the lead wire from the frame hook. It may scratch and damage the surface of the lead wire.
- Never remove the product identification plate. This might result in breakdown or electrical shock.
- Do not push the nameplate of the DC fan with strong force. The nameplate may break and touch the shaft.
- The product might become damaged if foreign objects or external forces are allowed to interfere with normal fan operation.
- Do not implement ON-OFF of power supply in negative line. That might cause damage of the fan.

⚠ Warning

Installation

- When fixing this product into place, be sure to take into consideration the product's weight, the vibrations generated during operation, and all other relevant factors. Failure to do so might cause the product or parts of it to fall out of position, resulting in bodily injury or malfunction of the product.
- Be sure to check the direction of installation (i.e., the fan), as failing to do so might result in bodily injury or mechanical breakdown.
- In order to ensure that the product operates properly, allow spaces for ventilation and take whatever steps necessary to prevent the entry of foreign objects. Failure to do so might result in bodily injury or mechanical breakdown.
- When fixing the fan with screws, make sure the screw and sheet metal do not deform the frame of the fan before operation. If the frame of the fan is deformed, mechanical failure may be occurred or specified performance may not be generated.
- When fixing the fan with screws, ensure the screwing torque. If the screwing torque is over the recommended screw torque, fan frame may be deformed or damaged. Use a plastic frame with a ribbed structure when securing by screws with both flanges. In order to prevent from loosing screw, please use plain washer and spring lock washer. For screwing torque of each fan type, contact SANYO DENKI or SANYO DENKI distributor.
- When fixing the fan with self-tapping screws, fan frame may be damaged.
- When excessive shock is attacked to fan, impeller may be protruded from the surface of fan frame. Make sure that impeller does not touch cover such as finger guard and mounting plate. Do not give excessive shock to fan to avoid fan failure and deteriorate of fan performance.
- Pulling or pinching the lead wires could result in damage to the wire, and you should avoid placing excessive stresses on these wires. The device should also be installed so that the lead wires are not allowed to come into contact with the rotor or blades. Failure to do so might result in damage or exposure to electrical shock.
- Take proper precautions against static electricity when making electrical connections. Failure to do so might cause the breakdown of the fan or device.
- Install a finger guard or other cover if there is any danger of fingers, hands or objects coming into contact with the rotor or blades. Failure to do so might result in bodily injury or mechanical breakdown.
- Install the finger guard, filter, and plate to the fan in the correct position while avoiding touching of the rotor blade. Avoiding this will prevent device failure.
  Please use SANYO DENKI genuine finger guards and filter kits.
- Make electrical connections properly. If not, there is a possibility that breakdown of device, malfunction, breakdown and deterioration of product might cause.

Installation of centrifugal fan

- The fan shall be fixed with screws. For screw size of each fan type, refer to drawing or catalog.
- Do not use the screws with length over the depth of mounting screw. Fan might not be fixed by damaging threaded hole . For depth of mounting screw of each fan type, refer to drawing or catalogue.
- When fixing the fan with screws, ensure the screwing torque. If the screwing torque is over the recommended screw torque, threaded holes may be damaged. Also, in order to prevent from loosing screw, please use plain washer and spring lock washer. For screwing torque of each fan type, contact SANYO DENKI or SANYO DENKI distributor.
- When excessive shock is given to fan, impeller may be protruded. Make sure that impeller does not touch cover such as inlet nozzle and finger guard, and mounting plate. For positional relation among the fan, inlet nozzle, and plate of each fan type, refer to drawing or catalog.
- Install the inlet nozzle, finger guard, and plate to the fan in the correct position while avoiding touching of the rotor blade. Avoiding this will prevent device failure. Please use SANYO DENKI genuine inlet nozzle.

Environment of usage

- The product must not be used or stored in a flammable or corrosive gas atmosphere, in a place where water or oil splashes (not applicable to Splash Proof or Oil Proof Fans), in a place where there is much dust or humidity, in a place where condensation occurs, in a place where the product is exposed to radioactive rays or is in direct sunlight, in a place where a salty sea breeze blows or seawater splashes, or in an environment where the product may be contaminated by such corrosive materials as sulfurous water, sulfurous volcanic ash, organic solvents, acidic chemicals, alkali chemicals, etc., such hazardous substances as nuclear fuel materials, etc. If it is used or stored in such places or environments, there is the possibility that a fire may occur, the product may malfunction or its performance may deteriorate.
- Avoid using or storing the product in locations and an environment where it could be constantly exposed to vibrations, strong shocks, centrifugal force (not applicable to G Proof Fans), magnetic or electromagnetic noise, and which the electromagnetic noise overlaps into power voltage. This might result in product breakdown or substandard operation.
- Avoid using or storing the product under environments where rapidly changed such as thermal and humidity change. This might result in product breakdown or deterioration.

Maintenance

- Maintenance and inspections should always be performed by personnel with sufficient training and knowledge. Failure to do so might result in fire, burns, bodily injury, or electrical shock.
- Never perform any maintenance or inspections while the product is in operation. Also note that the blades continue to rotate for some time immediately after operation ceases. You should always be sure to check to see that all rotating parts have come to a stop before beginning work.
- Never use gasoline, paint thinner, benzene, or any other organic solvents to clean the product as this could result in the deformation or substandard operation.

Index by Model No./Safety Standards List - DC Fans DC

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right. Contact us for details of models with "-" model numbers.)				Frame size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
109BC12FC7-1	109BC12FA7-1	109BC12FC7-1	109BC12FD7-1	—	52×15 mm	—	✓	✓	✓	436
109BC12GC7-1	109BC12GA7-1	109BC12GC7-1	109BC12GD7-1	—	52×15 mm	—	✓	✓	✓	436
109BC12HC7-1	109BC12HA7-1	109BC12HC7-1	109BC12HD7-1	—	52×15 mm	—	✓	✓	✓	436
109BC12MC7-1	109BC12MA7-1	109BC12MC7-1	109BC12MD7-1	—	52×15 mm	—	✓	✓	✓	436
109BC24FC7-1	109BC24FA7-1	109BC24FC7-1	109BC24FD7-1	—	52×15 mm	—	✓	✓	✓	436
109BC24GC7-1	109BC24GA7-1	109BC24GC7-1	109BC24GD7-1	—	52×15 mm	—	✓	✓	✓	436
109BC24HC7-1	109BC24HA7-1	109BC24HC7-1	109BC24HD7-1	—	52×15 mm	—	✓	✓	✓	436
109BD12FC2	109BD12FA2	109BD12FC2	109BD12FD2	—	76×30 mm	—	✓	✓	✓	440
109BD12HC2	109BD12HA2	109BD12HC2	109BD12HD2	109BD12P2H01	76×30 mm	—	✓	✓	✓	440
109BD12MC2	109BD12MA2	109BD12MC2	109BD12MD2	—	76×30 mm	—	✓	✓	✓	440
109BD24FC2	109BD24FA2	109BD24FC2	109BD24FD2	—	76×30 mm	—	✓	✓	✓	440
109BD24HC2	109BD24HA2	109BD24HC2	109BD24HD2	—	76×30 mm	—	✓	✓	✓	440
109BD24MC2	109BD24MA2	109BD24MC2	109BD24MD2	—	76×30 mm	—	✓	✓	✓	440
109BG12HC1	109BG12HA1	109BG12HC1	109BG12HD1	—	160×40 mm	—	✓	✓	✓	455
109BG12MC1	109BG12MA1	109BG12MC1	109BG12MD1	—	160×40 mm	—	✓	✓	✓	455
109BG24HC1	109BG24HA1	109BG24HC1	109BG24HD1	—	160×40 mm	—	✓	✓	✓	455
109BG24MC1	109BG24MA1	109BG24MC1	109BG24MD1	—	160×40 mm	—	✓	✓	✓	455
109BJ12HC2	109BJ12HA2	109BJ12HC2	109BJ12HD2	—	127×32 mm	—	✓	✓	✓	453
109BJ12MC2	109BJ12MA2	109BJ12MC2	109BJ12MD2	—	127×32 mm	—	✓	✓	✓	453
109BJ24HC2	109BJ24HA2	109BJ24HC2	109BJ24HD2	—	127×32 mm	—	✓	✓	✓	453
109BJ24MC2	109BJ24MA2	109BJ24MC2	109BJ24MD2	—	127×32 mm	—	✓	✓	✓	453
109BM12GC2-1	109BM12GA2-1	109BM12GC2-1	109BM12GD2-1	—	97×33 mm	—	✓	✓	✓	442
109BM12HC2-1	109BM12HA2-1	109BM12HC2-1	109BM12HD2-1	—	97×33 mm	—	✓	✓	✓	442
109BM12MC2-1	109BM12MA2-1	109BM12MC2-1	109BM12MD2-1	109BM12P2M01	97×33 mm	—	✓	✓	✓	442
109BM24GC2-1	109BM24GA2-1	109BM24GC2-1	109BM24GD2-1	—	97×33 mm	—	✓	✓	✓	442
109BM24HC2-1	109BM24HA2-1	109BM24HC2-1	109BM24HD2-1	—	97×33 mm	—	✓	✓	✓	442
109BM24MC2-1	109BM24MA2-1	109BM24MC2-1	109BM24MD2-1	—	97×33 mm	—	✓	✓	✓	442
109E1312A101	109E1312A102	109E1312A101	109E1312A1D01	—	127×127×38 mm	No	✓	✓	✓	192
109E1312S101	109E1312S102	109E1312S101	109E1312S1D01	—	127×127×38 mm	No	✓	✓	✓	192
109E1324A101	109E1324A102	109E1324A101	109E1324A1D01	—	127×127×38 mm	No	✓	✓	✓	192
109E1324G101	109E1324G102	109E1324G101	109E1324G1D01	—	127×127×38 mm	No	✓	✓	✓	192
109E1324S101	109E1324S102	109E1324S101	109E1324S1D01	—	127×127×38 mm	No	✓	✓	✓	192
109E1348A101	109E1348A102	109E1348A101	109E1348A1D01	—	127×127×38 mm	No	✓	✓	✓	192
109E1348G101	109E1348G102	109E1348G101	109E1348G1D01	—	127×127×38 mm	No	✓	✓	✓	192
109E1348S101	109E1348S102	109E1348S101	109E1348S1D01	—	127×127×38 mm	No	✓	✓	✓	192
109E1712F501	109E1712F502	109E1712F501	109E1712F5D01	—	ø172×51 mm	No	✓	✓	✓	216
109E1712H501	109E1712H502	109E1712H501	109E1712H5D01	—	ø172×51 mm	No	✓	✓	✓	216
109E1712K501	109E1712K502	109E1712K501	—	—	ø172×51 mm	No	✓	✓	✓	216
109E1712M501	109E1712M502	109E1712M501	—	—	ø172×51 mm	No	✓	✓	✓	216
109E1712Y501	109E1712Y502	109E1712Y501	—	—	ø172×51 mm	No	✓	✓	✓	216
109E1724C501	109E1724C502	109E1724C501	109E1724C5D01	9EH1724P5C01	ø172×51 mm	No	✓	✓	✓	216
109E1724F501	109E1724F502	109E1724F501	109E1724F5D01	—	ø172×51 mm	No	✓	✓	✓	216
109E1724H501	109E1724H502	109E1724H501	109E1724H5D01	—	ø172×51 mm	No	✓	✓	✓	216
109E1724K501	109E1724K502	109E1724K501	109E1724K5D01	—	ø172×51 mm	No	✓	✓	✓	216
109E1724M501	109E1724M502	109E1724M501	109E1724M5D01	—	ø172×51 mm	No	✓	✓	✓	216
109E1748C501	109E1748C502	109E1748C501	—	—	ø172×51 mm	No	✓	✓	✓	216
109E1748F501	109E1748F502	109E1748F501	—	—	ø172×51 mm	No	✓	✓	✓	216
109E1748H501	109E1748H502	109E1748H501	109E1748H5D01	—	ø172×51 mm	No	✓	✓	✓	216
109E1748K501	109E1748K502	109E1748K501	—	109E1748P5K03	ø172×51 mm	No	✓	✓	✓	216
109E1748M501	109E1748M502	109E1748M501	—	—	ø172×51 mm	No	✓	✓	✓	216
109E4712L401	109E4712L402	109E4712L401	109E4712L4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4712M401	109E4712M402	109E4712M401	109E4712M4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4724F401	109E4724F402	109E4724F401	109E4724F4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4724H401	109E4724H402	109E4724H401	109E4724H4D01	109E4724P4H01	ø172×147×25 mm	No	✓	✓	✓	203

Please contact your point of sale regarding low-speed sensors.

Standard name	Certification number
UL	E46810
CSA	172248

TÜV certification numbers differ by model.

The content of this catalog is current as of September 2017. Please ask us about new products that we released after September 2017 if you want.

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
109E4724L401	109E4724L402	109E4724L401	109E4724L4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4724M401	109E4724M402	109E4724M401	109E4724M4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4748F401	109E4748F402	109E4748F401	109E4748F4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4748H401	109E4748H402	109E4748H401	109E4748H4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4748L401	109E4748L402	109E4748L401	109E4748L4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4748M401	109E4748M402	109E4748M401	109E4748M4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E4748S401	109E4748S402	109E4748S401	109E4748S4D01	—	ø172×147×25 mm	No	✓	✓	✓	203
109E5712F501	109E5712F502	109E5712F501	—	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5712H501	109E5712H502	109E5712H501	109E5712H5D01	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5712K501	109E5712K502	109E5712K501	109E5712K5D01	109E5712P5K04	ø172×150×51 mm	No	✓	✓	✓	213
109E5712M501	109E5712M502	109E5712M501	109E5712M5D01	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5712Y501	109E5712Y502	109E5712Y501	—	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5724C501	109E5724C502	109E5724C501	109E5724C5D01	9EH5724P5C01	ø172×150×51 mm	No	✓	✓	✓	213
109E5724F501	109E5724F502	109E5724F501	—	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5724H501	109E5724H502	109E5724H501	109E5724H5D01	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5724K501	109E5724K502	109E5724K501	109E5724K5D01	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5724M501	109E5724M502	109E5724M501	—	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5748C501	109E5748C502	109E5748C501	—	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5748F501	109E5748F502	109E5748F501	—	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5748H501	109E5748H502	109E5748H501	109E5748H5D01	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5748K501	109E5748K502	109E5748K501	—	—	ø172×150×51 mm	No	✓	✓	✓	213
109E5748M501	109E5748M502	109E5748M501	—	—	ø172×150×51 mm	No	✓	✓	✓	213
109L1412H101	109L1412H102	109L1412H101	109L1412H1D01	—	140×140×38 mm	No	✓	✓	✓	384
109L1412M101	109L1412M102	109L1412M101	—	—	140×140×38 mm	No	✓	✓	✓	384
109L1424H101	109L1424H102	109L1424H101	109L1424H1D01	—	140×140×38 mm	No	✓	✓	✓	384
109L1424M101	109L1424M102	109L1424M101	109L1424M1D01	—	140×140×38 mm	No	✓	✓	✓	384
109L1448H101	109L1448H102	109L1448H101	109L1448H1D01	—	140×140×38 mm	No	✓	✓	✓	384
109L1448M101	109L1448M102	109L1448M101	109L1448M1D01	—	140×140×38 mm	No	✓	✓	✓	384
109L1712H501	109L1712H502	109L1712H501	109L1712H5D01	—	ø172×51 mm	No	✓	✓	✓	391
109L1712M501	109L1712M502	109L1712M501	109L1712M5D01	—	ø172×51 mm	No	✓	✓	✓	391
109L1724H501	109L1724H502	109L1724H501	109L1724H5D01	—	ø172×51 mm	No	✓	✓	✓	391
109L1724M501	109L1724M502	109L1724M501	109L1724M5D01	—	ø172×51 mm	No	✓	✓	✓	391
109L1748H501	109L1748H502	109L1748H501	109L1748H5D01	—	ø172×51 mm	No	✓	✓	✓	391
109L1748M501	109L1748M502	109L1748M501	109L1748M5D01	—	ø172×51 mm	No	✓	✓	✓	391
109L5712H501	109L5712H502	109L5712H501	109L5712H5D01	—	ø172×150×51 mm	No	✓	✓	✓	389
109L5712M501	109L5712M502	109L5712M501	109L5712M5D01	—	ø172×150×51 mm	No	✓	✓	✓	389
109L5724H501	109L5724H502	109L5724H501	109L5724H5D01	—	ø172×150×51 mm	No	✓	✓	✓	389
109L5724M501	109L5724M502	109L5724M501	109L5724M5D01	—	ø172×150×51 mm	No	✓	✓	✓	389
109L5748H501	109L5748H502	109L5748H501	109L5748H5D01	—	ø172×150×51 mm	No	✓	✓	✓	389
109L5748M501	109L5748M502	109L5748M501	109L5748M5D01	—	ø172×150×51 mm	No	✓	✓	✓	389
109P0405F3013	109P0405F3023	109P0405F3013	109P0405F3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0405F601	109P0405F602	109P0405F601	109P0405F6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0405H3013	109P0405H3023	109P0405H3013	109P0405H3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0405H601	109P0405H602	109P0405H601	109P0405H6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0405H701	109P0405H702	109P0405H701	109P0405H7D01	—	40×40×15 mm	Yes	✓	✓	✓	23
109P0405H901	109P0405H902	109P0405H901	109P0405H9D01	—	40×40×10 mm	Yes	✓	✓	✓	19
109P0405J601	109P0405J602	109P0405J601	—	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0405M601	109P0405M602	109P0405M601	109P0405M6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0405M701	109P0405M702	109P0405M701	109P0405M7D01	—	40×40×15 mm	Yes	✓	✓	✓	23
109P0405M901	109P0405M902	109P0405M901	109P0405M9D01	—	40×40×10 mm	Yes	✓	✓	✓	19
109P0412B3013	109P0412B3023	109P0412B3013	109P0412B3D013	109P0412P3B013	40×40×28 mm	Yes	✓	✓	✓	47
109P0412D601	109P0412D602	109P0412D601	109P0412D6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0412E601	109P0412E602	109P0412E601	109P0412E6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0412F3013	109P0412F3023	109P0412F3013	109P0412F3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0412F601	109P0412F602	109P0412F601	109P0412F6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0412G3013	109P0412G3023	109P0412G3013	109P0412G3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0412G601	109P0412G602	109P0412G601	109P0412G6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0412H3013	109P0412H3023	109P0412H3013	109P0412H3D013	109P0412P3H013	40×40×28 mm	Yes	✓	✓	✓	47
109P0412H601	109P0412H602	109P0412H601	109P0412H6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0412H701	109P0412H702	109P0412H701	109P0412H7D01	—	40×40×15 mm	Yes	✓	✓	✓	23
109P0412H901	109P0412H902	109P0412H901	109P0412H9D01	109P0412P9H01	40×40×10 mm	Yes	✓	✓	✓	19
109P0412J3013	109P0412J3023	109P0412J3013	109P0412J3D013	9PH0412P3J013	40×40×28 mm	Yes	✓	✓	✓	47

Please contact your point of sale regarding low-speed sensors.

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right. Contact us for details of models with "-" model numbers.)				Frame size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
109P0412K3013	109P0412K3023	109P0412K3013	109P0412K3D013	9PH0412P3K033	40×40×28 mm	Yes	✓	✓	✓	47
109P0412M3013	109P0412M3023	109P0412M3013	109P0412M3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0412M601	109P0412M602	109P0412M601	109P0412M6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0412M701	109P0412M702	109P0412M701	109P0412M7D01	—	40×40×15 mm	Yes	✓	✓	✓	23
109P0412M901	109P0412M902	109P0412M901	109P0412M9D01	—	40×40×10 mm	Yes	✓	✓	✓	19
109P0412R701	109P0412R702	109P0412R701	109P0412R7D01	—	40×40×15 mm	Yes	✓	✓	✓	23
109P0412S701	109P0412S702	109P0412S701	109P0412S7D01	—	40×40×15 mm	Yes	✓	✓	✓	23
109P0424B3013	109P0424B3023	109P0424B3013	109P0424B3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0424B601	109P0424B602	109P0424B601	109P0424B6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0424D601	109P0424D602	109P0424D601	109P0424D6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0424F3013	109P0424F3023	109P0424F3013	109P0424F3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0424F601	109P0424F602	109P0424F601	109P0424F6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0424G3013	109P0424G3023	109P0424G3013	109P0424G3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0424G601	109P0424G602	109P0424G601	109P0424G6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0424H3013	109P0424H3023	109P0424H3013	109P0424H3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0424H601	109P0424H602	109P0424H601	109P0424H6D01	—	40×40×20 mm	Yes	✓	✓	✓	30
109P0424H701	109P0424H702	109P0424H701	109P0424H7D01	—	40×40×15 mm	Yes	✓	✓	✓	23
109P0424J3013	109P0424J3023	109P0424J3013	109P0424J3D013	—	40×40×28 mm	Yes	✓	✓	✓	47
109P0424R3013	109P0424R3023	109P0424R3013	—	—	40×40×28 mm	Yes	—	—	—	47
109P0505M701	109P0505M702	109P0505M701	109P0505M7D01	—	52×52×15 mm	Yes	✓	✓	✓	54
109P0512A701	109P0512A702	109P0512A701	109P0512A7D01	—	52×52×15 mm	Yes	✓	✓	✓	54
109P0512H701	109P0512H702	109P0512H701	109P0512H7D01	—	52×52×15 mm	Yes	✓	✓	✓	54
109P0512M701	109P0512M702	109P0512M701	109P0512M7D01	—	52×52×15 mm	Yes	✓	✓	✓	54
109P0524A701	109P0524A702	109P0524A701	109P0524A7D01	—	52×52×15 mm	Yes	✓	✓	✓	54
109P0524H701	109P0524H702	109P0524H701	109P0524H7D01	—	52×52×15 mm	Yes	✓	✓	✓	54
109P0524M701	109P0524M702	109P0524M701	109P0524M7D01	—	52×52×15 mm	Yes	✓	✓	✓	54
109P0605H701	109P0605H702	109P0605H701	109P0605H7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0605M701	109P0605M702	109P0605M701	109P0605M7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0612B701	109P0612B702	109P0612B701	109P0612B7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0612H601	109P0612H602	109P0612H601	109P0612H6D01	—	60×60×20 mm	Yes	✓	✓	✓	68
109P0612H701	109P0612H702	109P0612H701	109P0612H7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0612K701	109P0612K702	109P0612K701	109P0612K7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0612M601	109P0612M602	109P0612M601	109P0612M6D01	—	60×60×20 mm	Yes	✓	✓	✓	68
109P0612M701	109P0612M702	109P0612M701	109P0612M7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0612S701	109P0612S702	109P0612S701	109P0612S7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0612W601	109P0612W602	109P0612W601	109P0612W6D01	—	60×60×20 mm	Yes	✓	✓	✓	68
109P0624H601	109P0624H602	109P0624H601	109P0624H6D01	—	60×60×20 mm	Yes	✓	✓	✓	68
109P0624H701	109P0624H702	109P0624H701	109P0624H7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0624J701	109P0624J702	109P0624J701	109P0624J7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0624M601	109P0624M602	109P0624M601	109P0624M6D01	—	60×60×20 mm	Yes	✓	✓	✓	68
109P0624M701	109P0624M702	109P0624M701	109P0624M7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0624S701	109P0624S702	109P0624S701	109P0624S7D01	—	60×60×15 mm	Yes	✓	✓	✓	62
109P0624W601	109P0624W602	109P0624W601	109P0624W6D01	—	60×60×20 mm	Yes	✓	✓	✓	68
109P0648H601	109P0648H602	109P0648H601	109P0648H6D01	—	60×60×20 mm	Yes	✓	✓	✓	68
109P0812A201	109P0812A202	109P0812A201	109P0812A2D01	—	80×80×32 mm	Yes	✓	✓	✓	126
109P0812A2011	109P0812A2021	109P0812A2011	109P0812A2D011	—	80×80×32 mm	No	✓	✓	✓	126
109P0812C601	109P0812C602	109P0812C601	109P0812C6D01	—	80×80×20 mm	Yes	—	—	—	105
109P0812H201	109P0812H202	109P0812H201	109P0812H2D01	—	80×80×32 mm	Yes	✓	✓	✓	126
109P0812H2011	109P0812H2021	109P0812H2011	109P0812H2D011	—	80×80×32 mm	No	✓	✓	✓	126
109P0812H601	109P0812H602	109P0812H601	109P0812H6D01	—	80×80×20 mm	Yes	✓	✓	✓	105
109P0812H701	109P0812H702	109P0812H701	109P0812H7D01	—	80×80×15 mm	Yes	✓	✓	✓	100
109P0812M201	109P0812M202	109P0812M201	109P0812M2D01	—	80×80×32 mm	Yes	✓	✓	✓	126
109P0812M2011	109P0812M2021	109P0812M2011	109P0812M2D011	—	80×80×32 mm	No	✓	✓	✓	126
109P0812M601	109P0812M602	109P0812M601	109P0812M6D01	—	80×80×20 mm	Yes	✓	✓	✓	105
109P0812M701	109P0812M702	109P0812M701	109P0812M7D01	—	80×80×15 mm	Yes	✓	✓	✓	100
109P0824A201	109P0824A202	109P0824A201	109P0824A2D01	—	80×80×32 mm	Yes	✓	✓	✓	126
109P0824A2011	109P0824A2021	109P0824A2011	—	—	80×80×32 mm	No	✓	✓	✓	126
109P0824H201	109P0824H202	109P0824H201	109P0824H2D01	—	80×80×32 mm	Yes	✓	✓	✓	126
109P0824H2011	109P0824H2021	109P0824H2011	109P0824H2D011	—	80×80×32 mm	No	✓	✓	✓	126
109P0824H601	109P0824H602	109P0824H601	109P0824H6D01	—	80×80×20 mm	Yes	✓	✓	✓	105
109P0824H701	109P0824H702	109P0824H701	109P0824H7D01	—	80×80×15 mm	Yes	✓	✓	✓	100
109P0824M201	109P0824M202	109P0824M201	109P0824M2D01	—	80×80×32 mm	Yes	✓	✓	✓	126

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
109P0824M2011	109P0824M2021	109P0824M2011	109P0824M2D011	—	80 × 80 × 32 mm	No	✓	✓	✓	126
109P0824M601	109P0824M602	109P0824M601	109P0824M6D01	—	80 × 80 × 20 mm	Yes	✓	✓	✓	105
109P0824M701	109P0824M702	109P0824M701	109P0824M7D01	—	80 × 80 × 15 mm	Yes	✓	✓	✓	100
109P0848C601	109P0848C602	109P0848C601	109P0848C6D01	—	80 × 80 × 20 mm	Yes	✓	✓	✓	105
109P0848H201	109P0848H202	109P0848H201	109P0848H2D01	—	80 × 80 × 32 mm	Yes	✓	✓	✓	126
109P0848H2011	109P0848H2021	109P0848H2011	—	—	80 × 80 × 32 mm	No	✓	✓	✓	126
109P0848H601	—	109P0848H601	109P0848H6D01	—	80 × 80 × 20 mm	Yes	✓	✓	✓	105
109P1312H101	109P1312H102	109P1312H101	109P1312H1D01	—	127 × 127 × 38 mm	Yes	✓	✓	✓	190
109P1312H1011	109P1312H1021	109P1312H1011	109P1312H1D011	—	127 × 127 × 38 mm	No	✓	✓	✓	190
109P1312S101	109P1312S102	109P1312S101	109P1312S1D01	—	127 × 127 × 38 mm	Yes	✓	✓	✓	190
109P1312S1011	109P1312S1021	109P1312S1011	109P1312S1D011	—	127 × 127 × 38 mm	No	✓	✓	✓	190
109P1324H101	109P1324H102	109P1324H101	109P1324H1D01	—	127 × 127 × 38 mm	Yes	✓	✓	✓	190
109P1324H1011	109P1324H1021	109P1324H1011	109P1324H1D011	—	127 × 127 × 38 mm	No	✓	✓	✓	190
109P1324S101	109P1324S102	109P1324S101	109P1324S1D01	—	127 × 127 × 38 mm	Yes	✓	✓	✓	190
109P1324S1011	109P1324S1021	109P1324S1011	109P1324S1D011	—	127 × 127 × 38 mm	No	✓	✓	✓	190
109P1348H101	109P1348H102	109P1348H101	109P1348H1D01	—	127 × 127 × 38 mm	Yes	✓	✓	✓	190
109P1348H1011	109P1348H1021	109P1348H1011	109P1348H1D011	—	127 × 127 × 38 mm	No	✓	✓	✓	190
109P1348S101	109P1348S102	109P1348S101	109P1348S1D01	—	127 × 127 × 38 mm	Yes	✓	✓	✓	190
109P1348S1011	109P1348S1021	109P1348S1011	109P1348S1D011	—	127 × 127 × 38 mm	No	✓	✓	✓	190
109P1412H101	109P1412H102	109P1412H101	109P1412H1D01	—	140 × 140 × 38 mm	Yes	✓	✓	✓	199
109P1412M101	109P1412M102	109P1412M101	—	—	140 × 140 × 38 mm	Yes	✓	✓	✓	199
109P1424H101	109P1424H102	109P1424H101	109P1424H1D01	—	140 × 140 × 38 mm	Yes	✓	✓	✓	199
109P1424M101	109P1424M102	109P1424M101	—	—	140 × 140 × 38 mm	Yes	✓	✓	✓	199
109P1448H101	109P1448H102	109P1448H101	—	—	140 × 140 × 38 mm	Yes	✓	✓	✓	199
109P1448M101	109P1448M102	109P1448M101	—	—	140 × 140 × 38 mm	Yes	✓	✓	✓	199
109R0605F401	109R0605F402	109R0605F401	109R0605F4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0605F4011	109R0605F4021	109R0605F4011	—	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0605H401	109R0605H402	109R0605H401	109R0605H4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0605H4011	109R0605H4021	109R0605H4011	—	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0605M401	109R0605M402	109R0605M401	109R0605M4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0605M4011	109R0605M4021	109R0605M4011	—	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0612D401	109R0612D402	109R0612D401	109R0612D4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0612D4011	109R0612D4021	109R0612D4011	109R0612D4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0612F401	109R0612F402	109R0612F401	109R0612F4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0612F4011	109R0612F4021	109R0612F4011	109R0612F4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0612G401	109R0612G402	109R0612G401	109R0612G4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0612G4011	109R0612G4021	109R0612G4011	109R0612G4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0612H401	109R0612H402	109R0612H401	109R0612H4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0612H4011	109R0612H4021	109R0612H4011	109R0612H4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0612J401	109R0612J402	109R0612J401	109R0612J4D01	109R0612P4J03	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0612J4011	109R0612J4021	109R0612J4011	109R0612J4D011	109R0612P4J061	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0612M401	109R0612M402	109R0612M401	109R0612M4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0612M4011	109R0612M4021	109R0612M4011	109R0612M4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0612S401	109R0612S402	109R0612S401	109R0612S4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0612S4011	109R0612S4021	109R0612S4011	109R0612S4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0624D401	109R0624D402	109R0624D401	109R0624D4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0624D4011	109R0624D4021	109R0624D4011	—	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0624F401	109R0624F402	109R0624F401	109R0624F4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0624F4011	109R0624F4021	109R0624F4011	109R0624F4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0624G401	109R0624G402	109R0624G401	109R0624G4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0624G4011	109R0624G4021	109R0624G4011	109R0624G4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0624H401	109R0624H402	109R0624H401	109R0624H4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0624H4011	109R0624H4021	109R0624H4011	109R0624H4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0624J401	109R0624J402	109R0624J401	109R0624J4D01	9RH0624P4J01	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0624J4011	109R0624J4021	109R0624J4011	109R0624J4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0624M401	109R0624M402	109R0624M401	109R0624M4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0624M4011	109R0624M4021	109R0624M4011	109R0624M4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0624S401	109R0624S402	109R0624S401	109R0624S4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0624S4011	109R0624S4021	109R0624S4011	109R0624S4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0648G401	109R0648G402	109R0648G401	109R0648G4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76
109R0648G4011	109R0648G4021	109R0648G4011	109R0648G4D011	—	60 × 60 × 25 mm	No	✓	✓	✓	76
109R0648H401	109R0648H402	109R0648H401	109R0648H4D01	—	60 × 60 × 25 mm	Yes	✓	✓	✓	76

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
109R0648H4011	109R0648H4021	109R0648H4011	109R0648H4D011	—	60×60×25 mm	No	✓	✓	✓	76
109R0648J401	109R0648J402	109R0648J401	109R0648J4D01	—	60×60×25 mm	Yes	✓	✓	✓	76
109R0648J4011	109R0648J4021	109R0648J4011	—	—	60×60×25 mm	No	✓	✓	✓	76
109R0805F401	109R0805F402	109R0805F401	109R0805F4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0805F4011	109R0805F4021	109R0805F4011	—	—	80×80×25 mm	No	✓	✓	✓	117
109R0805M401	109R0805M402	109R0805M401	109R0805M4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0805M4011	109R0805M4021	109R0805M4011	—	—	80×80×25 mm	No	✓	✓	✓	117
109R0812E401	109R0812E402	109R0812E401	—	—	80×80×25 mm	Yes	—	—	—	117
109R0812E4011	—	109R0812E4011	—	—	80×80×25 mm	No	—	—	—	117
109R0812F401	109R0812F402	109R0812F401	109R0812F4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0812F4011	109R0812F4021	109R0812F4011	109R0812F4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0812G401	109R0812G402	109R0812G401	109R0812G4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0812G4011	109R0812G4021	109R0812G4011	109R0812G4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0812H401	109R0812H402	109R0812H401	109R0812H4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0812H4011	109R0812H4021	109R0812H4011	109R0812H4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0812L401	109R0812L402	109R0812L401	109R0812L4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0812L4011	109R0812L4021	109R0812L4011	109R0812L4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0812M401	109R0812M402	109R0812M401	109R0812M4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0812M4011	109R0812M4021	109R0812M4011	109R0812M4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0812S401	109R0812S402	109R0812S401	109R0812S4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0812S4011	109R0812S4021	109R0812S4011	109R0812S4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0824F401	109R0824F402	109R0824F401	109R0824F4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0824F4011	109R0824F4021	109R0824F4011	109R0824F4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0824G401	109R0824G402	109R0824G401	109R0824G4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0824G4011	109R0824G4021	109R0824G4011	109R0824G4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0824H401	109R0824H402	109R0824H401	109R0824H4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0824H4011	109R0824H4021	109R0824H4011	109R0824H4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0824L401	109R0824L402	109R0824L401	109R0824L4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0824L4011	109R0824L4021	109R0824L4011	109R0824L4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0824M401	109R0824M402	109R0824M401	109R0824M4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0824M4011	109R0824M4021	109R0824M4011	109R0824M4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0824S401	109R0824S402	109R0824S401	109R0824S4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0824S4011	109R0824S4021	109R0824S4011	109R0824S4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0848K401	109R0848K402	109R0848K401	109R0848K4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0848K4011	109R0848K4021	109R0848K4011	109R0848K4D011	—	80×80×25 mm	No	✓	✓	✓	117
109R0848S401	109R0848S402	109R0848S401	109R0848S4D01	—	80×80×25 mm	Yes	✓	✓	✓	117
109R0848S4011	109R0848S4021	109R0848S4011	109R0848S4D011	—	80×80×25 mm	No	✓	✓	✓	117
109W1412H101-U	109W1412H102-U	109W1412H101-U	—	—	140×140×38 mm	No	✓	✓	✓	310
109W1412M101-U	109W1412M102-U	109W1412M101-U	109W1412M1D01-U	—	140×140×38 mm	No	✓	✓	✓	310
109W1424H101-U	109W1424H102-U	109W1424H101-U	—	—	140×140×38 mm	No	✓	✓	✓	310
109W1424M101-U	109W1424M102-U	109W1424M101-U	—	—	140×140×38 mm	No	✓	✓	✓	310
109W1448H101-U	109W1448H102-U	109W1448H101-U	109W1448H1D01-U	—	140×140×38 mm	No	✓	✓	✓	310
109W1448M101-U	109W1448M102-U	109W1448M101-U	—	—	140×140×38 mm	No	✓	✓	✓	310
9A0612F401	9A0612F402	9A0612F401	9A0612F4D01	—	60×60×25 mm	Yes	✓	✓	✓	80
9A0612F4011	9A0612F4021	9A0612F4011	9A0612F4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0612G401	9A0612G402	9A0612G401	9A0612G4D01	9AH0612P4G03	60×60×25 mm	Yes	✓	✓	✓	80
9A0612G4011	9A0612G4021	9A0612G4011	9A0612G4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0612H401	9A0612H402	9A0612H401	9A0612H4D01	9AH0612P4H05	60×60×25 mm	Yes	✓	✓	✓	80
9A0612H4011	9A0612H4021	9A0612H4011	9A0612H4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0612M401	9A0612M402	9A0612M401	9A0612M4D01	—	60×60×25 mm	Yes	✓	✓	✓	80
9A0612M4011	9A0612M4021	9A0612M4011	9A0612M4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0612S401	9A0612S402	9A0612S401	9A0612S4D01	—	60×60×25 mm	Yes	✓	✓	✓	80
9A0612S4011	9A0612S4021	9A0612S4011	9A0612S4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0624F401	9A0624F402	9A0624F401	9A0624F4D01	—	60×60×25 mm	Yes	✓	✓	✓	80
9A0624F4011	9A0624F4021	9A0624F4011	9A0624F4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0624G401	9A0624G402	9A0624G401	9A0624G4D01	—	60×60×25 mm	Yes	✓	✓	✓	80
9A0624G4011	9A0624G4021	9A0624G4011	—	—	60×60×25 mm	No	✓	✓	✓	80
9A0624H401	9A0624H402	9A0624H401	9A0624H4D01	—	60×60×25 mm	Yes	✓	✓	✓	80
9A0624H4011	9A0624H4021	9A0624H4011	9A0624H4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0624M401	9A0624M402	9A0624M401	9A0624M4D01	—	60×60×25 mm	Yes	✓	✓	✓	80
9A0624M4011	9A0624M4021	9A0624M4011	9A0624M4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0624S401	9A0624S402	9A0624S401	9A0624S4D01	—	60×60×25 mm	Yes	✓	✓	✓	80

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9A0624S4011	9A0624S4021	9A0624S4011	9A0624S4D011	—	60×60×25 mm	No	✓	✓	✓	80
9A0812F401	9A0812F402	9A0812F401	9A0812F4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0812F4011	9A0812F4021	9A0812F4011	9A0812F4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0812G401	9A0812G402	9A0812G401	9A0812G4D01	9AH0812P4G04	80×80×25 mm	Yes	✓	✓	✓	120
9A0812G4011	9A0812G4021	9A0812G4011	9A0812G4D011	9AH0812P4G011	80×80×25 mm	No	✓	✓	✓	120
9A0812H401	9A0812H402	9A0812H401	9A0812H4D01	9AH0812P4H04	80×80×25 mm	Yes	✓	✓	✓	120
9A0812H4011	9A0812H4021	9A0812H4011	9A0812H4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0812L401	9A0812L402	9A0812L401	9A0812L4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0812L4011	9A0812L4021	9A0812L4011	9A0812L4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0812M401	9A0812M402	9A0812M401	9A0812M4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0812M4011	9A0812M4021	9A0812M4011	9A0812M4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0812S401	9A0812S402	9A0812S401	9A0812S4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0812S4011	9A0812S4021	9A0812S4011	9A0812S4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0824F401	9A0824F402	9A0824F401	9A0824F4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0824F4011	9A0824F4021	9A0824F4011	9A0824F4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0824G401	9A0824G402	9A0824G401	9A0824G4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0824G4011	9A0824G4021	9A0824G4011	9A0824G4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0824H401	9A0824H402	9A0824H401	9A0824H4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0824H4011	9A0824H4021	9A0824H4011	9A0824H4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0824L401	9A0824L402	9A0824L401	9A0824L4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0824L4011	9A0824L4021	9A0824L4011	9A0824L4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0824M401	9A0824M402	9A0824M401	9A0824M4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0824M4011	9A0824M4021	9A0824M4011	9A0824M4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0824S401	9A0824S402	9A0824S401	9A0824S4D01	—	80×80×25 mm	Yes	✓	✓	✓	120
9A0824S4011	9A0824S4021	9A0824S4011	9A0824S4D011	—	80×80×25 mm	No	✓	✓	✓	120
9A0912F401	9A0912F402	9A0912F401	9A0912F4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0912F4011	9A0912F4021	9A0912F4011	9A0912F4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0912G401	9A0912G402	9A0912G401	9A0912G4D01	9AH0912P4G03	92×92×25 mm	Yes	✓	✓	✓	149
9A0912G4011	9A0912G4021	9A0912G4011	9A0912G4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0912H401	9A0912H402	9A0912H401	9A0912H4D01	9AH0912P4H03	92×92×25 mm	Yes	✓	✓	✓	149
9A0912H4011	9A0912H4021	9A0912H4011	9A0912H4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0912L401	9A0912L402	9A0912L401	9A0912L4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0912L4011	9A0912L4021	9A0912L4011	9A0912L4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0912M401	9A0912M402	9A0912M401	9A0912M4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0912M4011	9A0912M4021	9A0912M4011	9A0912M4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0912S401	9A0912S402	9A0912S401	9A0912S4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0912S4011	9A0912S4021	9A0912S4011	9A0912S4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0924F401	9A0924F402	9A0924F401	9A0924F4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0924F4011	9A0924F4021	9A0924F4011	9A0924F4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0924G401	9A0924G402	9A0924G401	9A0924G4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0924G4011	9A0924G4021	9A0924G4011	—	—	92×92×25 mm	No	✓	✓	✓	149
9A0924H401	9A0924H402	9A0924H401	9A0924H4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0924H4011	9A0924H4021	9A0924H4011	9A0924H4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0924L401	9A0924L402	9A0924L401	9A0924L4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0924L4011	9A0924L4021	9A0924L4011	9A0924L4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0924M401	9A0924M402	9A0924M401	9A0924M4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0924M4011	9A0924M4021	9A0924M4011	9A0924M4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0924S401	9A0924S402	9A0924S401	9A0924S4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0924S4011	9A0924S4021	9A0924S4011	9A0924S4D011	—	92×92×25 mm	No	✓	✓	✓	149
9A0948S401	9A0948S402	9A0948S401	9A0948S4D01	—	92×92×25 mm	Yes	✓	✓	✓	149
9A0948S4011	9A0948S4021	9A0948S4011	—	—	92×92×25 mm	No	✓	✓	✓	149
9B1TP24P0H001	—	—	—	9B1TP24P0H001	ø270×99 mm	—	✓	✓	✓	430
9B1TP48P0G001	—	—	—	9B1TP48P0G001	ø270×99 mm	—	✓	✓	✓	430
9B1TP48P0H001	—	—	—	9B1TP48P0H001	ø270×99 mm	—	✓	✓	✓	430
9B1TS48P0G001	—	—	—	9B1TS48P0G001	ø270×119 mm	—	✓	✓	✓	433
9B1TS48P0H001	—	—	—	9B1TS48P0H001	ø270×119 mm	—	✓	✓	✓	433
9BD12FC6-1	9BD12FA6-1	9BD12FC6-1	9BD12FD6-1	—	76×20 mm	—	✓	✓	✓	438
9BD12HC6-1	9BD12HA6-1	9BD12HC6-1	9BD12HD6-1	—	76×20 mm	—	✓	✓	✓	438
9BD12SC6-1	9BD12SA6-1	9BD12SC6-1	9BD12SD6-1	9BD12P6S01	76×20 mm	—	✓	✓	✓	438
9BD24FC6-1	9BD24FA6-1	9BD24FC6-1	9BD24FD6-1	—	76×20 mm	—	✓	✓	✓	438
9BD24HC6-1	9BD24HA6-1	9BD24HC6-1	9BD24HD6-1	—	76×20 mm	—	✓	✓	✓	438
9BD24SC6-1	9BD24SA6-1	9BD24SC6-1	9BD24SD6-1	9BD24P6S06	76×20 mm	—	✓	✓	✓	438

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9BFB12P2H003	—	—	—	9BFB12P2H003	120×32 mm	—	✓	✓	✓	451
9BFB24P2H003	—	—	—	9BFB24P2H003	120×32 mm	—	✓	✓	✓	451
9BMB12F201	9BMB12F202	9BMB12F201	9BMB12F2D01	9BMB12P2F01	97×33 mm	—	✓	✓	✓	446
9BMB12G201	9BMB12G202	9BMB12G201	9BMB12G2D01	9BMB12P2G01	97×33 mm	—	✓	✓	✓	446
9BMB12H201	9BMB12H202	9BMB12H201	9BMB12H2D01	9BMB12P2H01	97×33 mm	—	✓	✓	✓	446
9BMB12K201	9BMB12K202	9BMB12K201	—	9BMB12P2K01	97×33 mm	—	✓	✓	✓	446
9BMB12P2F01	9BMB12F202	9BMB12F201	9BMB12F2D01	9BMB12P2F01	97×33 mm	—	✓	✓	✓	446
9BMB12P2G01	9BMB12G202	9BMB12G201	9BMB12G2D01	9BMB12P2G01	97×33 mm	—	✓	✓	✓	446
9BMB12P2H01	9BMB12H202	9BMB12H201	9BMB12H2D01	9BMB12P2H01	97×33 mm	—	✓	✓	✓	446
9BMB12P2K01	9BMB12K202	9BMB12K201	—	9BMB12P2K01	97×33 mm	—	✓	✓	✓	446
9BMB12P2S01	9BMB12S202	9BMB12S201	—	9BMB12P2S01	97×33 mm	—	✓	✓	✓	446
9BMB12S201	9BMB12S202	9BMB12S201	—	9BMB12P2S01	97×33 mm	—	✓	✓	✓	446
9BMB24F201	9BMB24F202	9BMB24F201	9BMB24F2D01	9BMB24P2F01	97×33 mm	—	✓	✓	✓	446
9BMB24G201	9BMB24G202	9BMB24G201	9BMB24G2D01	9BMB24P2G01	97×33 mm	—	✓	✓	✓	446
9BMB24H201	9BMB24H202	9BMB24H201	9BMB24H2D01	9BMB24P2H01	97×33 mm	—	✓	✓	✓	446
9BMB24K201	9BMB24K202	9BMB24K201	—	9BMB24P2K01	97×33 mm	—	✓	✓	✓	446
9BMB24P2F01	9BMB24F202	9BMB24F201	9BMB24F2D01	9BMB24P2F01	97×33 mm	—	✓	✓	✓	446
9BMB24P2G01	9BMB24G202	9BMB24G201	9BMB24G2D01	9BMB24P2G01	97×33 mm	—	✓	✓	✓	446
9BMB24P2H01	9BMB24H202	9BMB24H201	9BMB24H2D01	9BMB24P2H01	97×33 mm	—	✓	✓	✓	446
9BMB24P2K01	9BMB24K202	9BMB24K201	—	9BMB24P2K01	97×33 mm	—	✓	✓	✓	446
9BMB24P2S01	9BMB24S202	9BMB24S201	—	9BMB24P2S01	97×33 mm	—	✓	✓	✓	446
9BMB24S201	9BMB24S202	9BMB24S201	—	9BMB24P2S01	97×33 mm	-	✓	✓	✓	446
9BMC12P2G001	9BMC12G2002	—	—	9BMC12P2G001	97×33 mm	-	✓	✓	✓	444
9BMC24P2G001	—	—	—	9BMC24P2G001	97×33 mm	-	✓	✓	✓	444
9CR0612P5G03	9CR0612G502	9CR0612G501	—	9CR0612P5G03	60×60×51 mm	—	✓	✓	✓	238
9CR0612P5H03	—	9CR0612H501	—	9CR0612P5H03	60×60×51 mm	—	✓	✓	✓	238
9CR1212P0G03	9CR1212G002	9CR1212G001	—	9CR1212P0G03	120×120×76 mm	—	✓	✓	✓	256
9CR5748P9G001	—	—	—	9CR5748P9G001	ø172×150×102 mm	—	✓	✓	✓	258
9CRA0312P4J03	—	9CRA0312J401	—	9CRA0312P4J03	38×38×48 mm	—	✓	✓	✓	224
9CRA0312P4K03	9CRA0312K402	—	—	9CRA0312P4K03	38×38×48 mm	—	✓	✓	✓	224
9CRA0412P4G03	9CRA0412G402	—	—	9CRA0412P4G03	40×40×48 mm	—	✓	✓	✓	226
9CRA0412P4J03	9CRA0412J402	9CRA0412J401	—	9CRA0412P4J03	40×40×48 mm	—	✓	✓	✓	226
9CRA0412P4K03	9CRA0412K402	9CRA0412K401	—	9CRA0412P4K03	40×40×48 mm	—	✓	✓	✓	226
9CRA0612P0G001	—	—	—	9CRA0612P0G001	60×60×76 mm	—	✓	✓	✓	245
9CRA0612P0S001	—	—	—	9CRA0612P0S001	60×60×76 mm	—	✓	✓	✓	245
9CRA0612P6G001	—	—	—	9CRA0612P6G001	60×60×56 mm	—	✓	✓	✓	240
9CRA0612P6J001	—	—	—	9CRA0612P6J001	60×60×56 mm	—	✓	✓	✓	240
9CRA0612P6K001	—	—	—	9CRA0612P6K001	60×60×56 mm	—	✓	✓	✓	240
9CRA0812P8G001	—	9CRA0812G8001	—	9CRA0812P8G001	80×80×80 mm	—	✓	✓	✓	251
9CRA0824P8G001	—	—	—	9CRA0824P8G001	80×80×80 mm	—	✓	✓	✓	251
9CRA0848P8G001	—	—	—	9CRA0848P8G001	80×80×80 mm	—	✓	✓	✓	251
9CRA0912P0G001	—	—	—	9CRA0912P0G001	92×92×76 mm	—	✓	✓	✓	254
9CRA0948P0G601	—	—	—	9CRA0948P0G601	92×92×76 mm	—	✓	✓	✓	254
9CRB0812P8G001	—	—	—	9CRB0812P8G001	80×80×80 mm	—	✓	✓	✓	247
9CRD0412P5G03	—	—	—	9CRD0412P5G03	40×40×56 mm	—	✓	✓	✓	233
9CRD0412P5H03	—	—	—	9CRD0412P5H03	40×40×56 mm	—	✓	✓	✓	233
9CRD0412P5J03	—	—	—	9CRD0412P5J03	40×40×56 mm	—	✓	✓	✓	233
9CRD0412P5M03	—	—	—	9CRD0412P5M03	40×40×56 mm	—	✓	✓	✓	233
9CRE0412P5J03	9CRE0412J502	—	—	9CRE0412P5J03	40×40×56 mm	—	✓	✓	✓	236
9CRE0612P0G001	—	—	—	9CRE0612P0G001	60×60×76 mm	—	✓	✓	✓	243
9CRE0812P8G001	—	—	—	9CRE0812P8G001	80×80×80 mm	—	✓	✓	✓	249
9CRH0412P5J001	—	—	—	9CRH0412P5J001	40×40×56 mm	-	✓	✓	✓	229
9CRL0612P0G001	—	—	—	9CRL0612P0G001	60×60×76 mm	No	✓	✓	✓	363
9CRL0812P8G001	—	—	—	9CRL0812P8G001	80×80×80 mm	No	✓	✓	✓	368
9CRV0412P5J201	—	—	—	9CRV0412P5J201	40×40×56 mm	-	✓	✓	✓	231
9EC2024H001	9EC2024H002	9EC2024H001	9EC2024H0D01	—	ø200×70 mm	No	✓	✓	✓	221
9EC2048A001	9EC2048A002	9EC2048A001	9EC2048A0D01	9EC2048P0A01	ø200×70 mm	No	✓	✓	✓	221
9EC2048H001	9EC2048H002	9EC2048H001	—	—	ø200×70 mm	No	✓	✓	✓	221
9EC2048J001	9EC2048J002	9EC2048J001	—	9EC2048P0J01	ø200×70 mm	No	—	—	—	221
9G0612G101	9G0612G102	9G0612G101	9G0612G1D01	9G0612P1G03	60×60×38 mm	Yes	✓	✓	✓	92
9G0612G1011	9G0612G1021	9G0612G1011	9G0612G1D011	9G0612P1G011	60×60×38 mm	No	✓	✓	✓	92
9G0612P4H001	9G0612H4002	—	9G0612H4D001	9G0612P4H001	60×60×25 mm	Yes	✓	✓	✓	73

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9G0612P4H0011	9G0612H40021	9G0612H40011	9G0612H4D0011	9G0612P4H0011	60×60×25 mm	No	✓	✓	✓	73
9G0612P4S001	9G0612S4002	9G0612S4001	—	9G0612P4S001	60×60×25 mm	Yes	✓	✓	✓	73
9G0612P4S0011	9G0612S40021	—	—	9G0612P4S0011	60×60×25 mm	No	✓	✓	✓	73
9G0612S101	9G0612S102	9G0612S101	9G0612S1D01	—	60×60×38 mm	Yes	✓	✓	✓	92
9G0612S1011	9G0612S1021	9G0612S1011	—	—	60×60×38 mm	No	✓	✓	✓	92
9G0624G101	9G0624G102	9G0624G101	9G0624G1D01	9G0624P1G03	60×60×38 mm	Yes	✓	✓	✓	92
9G0624G1011	9G0624G1021	9G0624G1011	9G0624G1D011	9G0624P1G031	60×60×38 mm	No	✓	✓	✓	92
9G0624H101	9G0624H102	9G0624H101	9G0624H1D01	—	60×60×38 mm	Yes	✓	✓	✓	92
9G0624H1011	9G0624H1021	9G0624H1011	—	—	60×60×38 mm	No	✓	✓	✓	92
9G0624P4H001	9G0624H4002	9G0624H4001	9G0624H4D001	9G0624P4H001	60×60×25 mm	Yes	✓	✓	✓	73
9G0624P4H0011	9G0624H40021	—	—	9G0624P4H0011	60×60×25 mm	No	✓	✓	✓	73
9G0624P4S001	9G0624S4002	—	9G0624S4D001	9G0624P4S001	60×60×25 mm	Yes	✓	✓	✓	73
9G0624P4S0011	9G0624S40021	—	—	9G0624P4S0011	60×60×25 mm	No	✓	✓	✓	73
9G0624S101	9G0624S102	9G0624S101	9G0624S1D01	—	60×60×38 mm	Yes	✓	✓	✓	92
9G0624S1011	9G0624S1021	9G0624S1011	—	—	60×60×38 mm	No	✓	✓	✓	92
9G0648G101	9G0648G102	9G0648G101	9G0648G1D01	9G0648P1G01	60×60×38 mm	Yes	✓	✓	✓	92
9G0648G1011	9G0648G1021	9G0648G1011	—	9G0648P1G011	60×60×38 mm	No	✓	✓	✓	92
9G0648P4S001	—	—	—	9G0648P4S001	60×60×25 mm	Yes	✓	✓	✓	73
9G0648P4S0011	—	—	—	9G0648P4S0011	60×60×25 mm	No	✓	✓	✓	73
9G0648S101	9G0648S102	9G0648S101	9G0648S1D01	—	60×60×38 mm	Yes	✓	✓	✓	92
9G0648S1011	9G0648S1021	9G0648S1011	—	—	60×60×38 mm	No	✓	✓	✓	92
9G0812G101	9G0812G102	9G0812G101	9G0812G1D01	9G0812P1G04	80×80×38 mm	Yes	✓	✓	✓	141
9G0812G1011	9G0812G1021	9G0812G1011	9G0812G1D011	9G0812P1G081	80×80×38 mm	No	✓	✓	✓	141
9G0812H101	9G0812H102	9G0812H101	9G0812H1D01	9G0812P1H03	80×80×38 mm	Yes	✓	✓	✓	141
9G0812H1011	9G0812H1021	9G0812H1011	9G0812H1D011	9G0812P1H051	80×80×38 mm	No	✓	✓	✓	141
9G0812K101	9G0812K102	9G0812K101	9G0812K1D01	9G0812P1K08	80×80×38 mm	Yes	✓	✓	✓	141
9G0812K1011	9G0812K1021	9G0812K1011	—	9G0812P1K081	80×80×38 mm	No	✓	✓	✓	141
9G0824G101	9G0824G102	9G0824G101	9G0824G1D01	9G0824P1G04	80×80×38 mm	Yes	✓	✓	✓	141
9G0824G1011	9G0824G1021	9G0824G1011	9G0824G1D011	—	80×80×38 mm	No	✓	✓	✓	141
9G0824H101	9G0824H102	9G0824H101	9G0824H1D01	—	80×80×38 mm	Yes	✓	✓	✓	141
9G0824H1011	9G0824H1021	9G0824H1011	9G0824H1D011	—	80×80×38 mm	No	✓	✓	✓	141
9G0848G101	9G0848G102	9G0848G101	9G0848G1D01	9G0848P1G03	80×80×38 mm	Yes	✓	✓	✓	141
9G0848G1011	9G0848G1021	9G0848G1011	9G0848G1D011	—	80×80×38 mm	No	✓	✓	✓	141
9G0848H101	9G0848H102	9G0848H101	9G0848H1D01	9G0848P1H04	80×80×38 mm	Yes	✓	✓	✓	141
9G0848H1011	9G0848H1021	9G0848H1011	—	—	80×80×38 mm	No	✓	✓	✓	141
9G0912A201	9G0912A202	9G0912A201	9G0912A2D01	9G0912P2A01	92×92×32 mm	Yes	✓	✓	✓	152
9G0912A2011	9G0912A2021	9G0912A2011	9G0912A2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0912G101	9G0912G102	9G0912G101	9G0912G1D01	9G0912P1G03	92×92×38 mm	Yes	✓	✓	✓	163
9G0912G1011	9G0912G1021	9G0912G1011	—	9G0912P1G031	92×92×38 mm	No	✓	✓	✓	163
9G0912H101	9G0912H102	9G0912H101	9G0912H1D01	9G0912P1H05	92×92×38 mm	Yes	✓	✓	✓	163
9G0912H1011	9G0912H1021	9G0912H1011	9G0912H1D011	—	92×92×38 mm	No	✓	✓	✓	163
9G0912H201	9G0912H202	9G0912H201	9G0912H2D01	9G0912P2H01	92×92×32 mm	Yes	✓	✓	✓	152
9G0912H2011	9G0912H2021	9G0912H2011	9G0912H2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0912M201	9G0912M202	9G0912M201	9G0912M2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0912M2011	9G0912M2021	9G0912M2011	9G0912M2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0912S201	9G0912S202	9G0912S201	9G0912S2D01	9G0912P2S01	92×92×32 mm	Yes	✓	✓	✓	152
9G0912S2011	9G0912S2021	9G0912S2011	9G0912S2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0924A201	9G0924A202	9G0924A201	9G0924A2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0924A2011	9G0924A2021	9G0924A2011	9G0924A2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0924G101	9G0924G102	9G0924G101	9G0924G1D01	—	92×92×38 mm	Yes	✓	✓	✓	163
9G0924G1011	9G0924G1021	9G0924G1011	9G0924G1D011	—	92×92×38 mm	No	✓	✓	✓	163
9G0924H101	9G0924H102	9G0924H101	9G0924H1D01	—	92×92×38 mm	Yes	✓	✓	✓	163
9G0924H1011	9G0924H1021	9G0924H1011	9G0924H1D011	—	92×92×38 mm	No	✓	✓	✓	163
9G0924H201	9G0924H202	9G0924H201	9G0924H2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0924H2011	9G0924H2021	9G0924H2011	9G0924H2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0924M201	9G0924M202	9G0924M201	9G0924M2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0924M2011	9G0924M2021	9G0924M2011	9G0924M2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0924S201	9G0924S202	9G0924S201	9G0924S2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0924S2011	9G0924S2021	9G0924S2011	9G0924S2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0948A201	9G0948A202	9G0948A201	9G0948A2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0948A2011	9G0948A2021	9G0948A2011	9G0948A2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0948G101	9G0948G102	9G0948G101	9G0948G1D01	—	92×92×38 mm	Yes	✓	✓	✓	163

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9G0948G1011	9G0948G1021	9G0948G1011	—	—	92×92×38 mm	No	✓	✓	✓	163
9G0948H101	9G0948H102	9G0948H101	9G0948H1D01	—	92×92×38 mm	Yes	✓	✓	✓	163
9G0948H1011	—	9G0948H1011	—	—	92×92×38 mm	No	✓	✓	✓	163
9G0948H201	9G0948H202	9G0948H201	9G0948H2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0948H2011	9G0948H2021	9G0948H2011	9G0948H2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0948J101	—	9G0948J101	—	—	92×92×38 mm	Yes	✓	✓	✓	163
9G0948J1011	—	9G0948J1011	—	9G0948P1J031	92×92×38 mm	No	✓	✓	✓	163
9G0948M201	9G0948M202	9G0948M201	9G0948M2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0948M2011	9G0948M2021	9G0948M2011	9G0948M2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G0948S201	9G0948S202	9G0948S201	9G0948S2D01	—	92×92×32 mm	Yes	✓	✓	✓	152
9G0948S2011	9G0948S2021	9G0948S2011	9G0948S2D011	—	92×92×32 mm	No	✓	✓	✓	152
9G1212A401	9G1212A402	9G1212A401	9G1212A4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1212A4011	9G1212A4021	9G1212A4011	9G1212A4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1212B401	—	9G1212B401	—	—	120×120×25 mm	Yes	—	—	—	175
9G1212B4011	—	9G1212B4011	—	—	120×120×25 mm	No	—	—	—	175
9G1212E101	9G1212E102	9G1212E101	9G1212E1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1212E1011	9G1212E1021	9G1212E1011	9G1212E1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1212E401	9G1212E402	9G1212E401	9G1212E4D01	9G1212P4E05	120×120×25 mm	Yes	✓	✓	✓	175
9G1212E4011	9G1212E4021	9G1212E4011	9G1212E4D011	9G1212P4E041	120×120×25 mm	No	✓	✓	✓	175
9G1212F101	9G1212F102	9G1212F101	—	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1212F1011	9G1212F1021	9G1212F1011	—	—	120×120×38 mm	No	✓	✓	✓	185
9G1212F401	9G1212F402	9G1212F401	9G1212F4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1212F4011	9G1212F4021	9G1212F4011	9G1212F4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1212G101	9G1212G102	9G1212G101	9G1212G1D01	9G1212P1G04	120×120×38 mm	Yes	✓	✓	✓	185
9G1212G1011	9G1212G1021	9G1212G1011	9G1212G1D011	9G1212P1G081	120×120×38 mm	No	✓	✓	✓	185
9G1212G401	9G1212G402	9G1212G401	9G1212G4D01	9G1212P4G03	120×120×25 mm	Yes	✓	✓	✓	175
9G1212G4011	9G1212G4021	9G1212G4011	9G1212G4D011	9G1212P4G031	120×120×25 mm	No	✓	✓	✓	175
9G1212H101	9G1212H102	9G1212H101	9G1212H1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1212H1011	9G1212H1021	9G1212H1011	9G1212H1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1212H401	9G1212H402	9G1212H401	9G1212H4D01	9G1212P4H04	120×120×25 mm	Yes	✓	✓	✓	175
9G1212H4011	9G1212H4021	9G1212H4011	9G1212H4D011	9G1212P4H091	120×120×25 mm	No	✓	✓	✓	175
9G1212M101	9G1212M102	9G1212M101	9G1212M1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1212M1011	9G1212M1021	9G1212M1011	9G1212M1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1212M401	9G1212M402	9G1212M401	9G1212M4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1212M4011	9G1212M4021	9G1212M4011	9G1212M4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1224A401	9G1224A402	9G1224A401	9G1224A4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1224A4011	9G1224A4021	9G1224A4011	9G1224A4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1224E101	9G1224E102	9G1224E101	9G1224E1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1224E1011	9G1224E1021	9G1224E1011	9G1224E1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1224E401	9G1224E402	9G1224E401	9G1224E4D01	9G1224P4E01	120×120×25 mm	Yes	✓	✓	✓	175
9G1224E4011	9G1224E4021	9G1224E4011	9G1224E4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1224F101	9G1224F102	9G1224F101	9G1224F1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1224F1011	9G1224F1021	9G1224F1011	—	—	120×120×38 mm	No	✓	✓	✓	185
9G1224F401	9G1224F402	9G1224F401	9G1224F4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1224F4011	9G1224F4021	9G1224F4011	9G1224F4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1224G101	9G1224G102	9G1224G101	9G1224G1D01	9G1224P1G01	120×120×38 mm	Yes	✓	✓	✓	185
9G1224G1011	9G1224G1021	9G1224G1011	9G1224G1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1224G401	9G1224G402	9G1224G401	9G1224G4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1224G4011	9G1224G4021	9G1224G4011	9G1224G4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1224H101	9G1224H102	9G1224H101	9G1224H1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1224H1011	9G1224H1021	9G1224H1011	9G1224H1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1224H401	9G1224H402	9G1224H401	9G1224H4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1224H4011	9G1224H4021	9G1224H4011	9G1224H4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1224M101	9G1224M102	9G1224M101	9G1224M1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1224M1011	9G1224M1021	9G1224M1011	9G1224M1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1224M401	9G1224M402	9G1224M401	9G1224M4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1224M4011	9G1224M4021	9G1224M4011	9G1224M4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1248A401	9G1248A402	9G1248A401	9G1248A4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1248A4011	9G1248A4021	9G1248A4011	9G1248A4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1248E101	9G1248E102	9G1248E101	9G1248E1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1248E1011	9G1248E1021	9G1248E1011	9G1248E1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1248E401	9G1248E402	9G1248E401	9G1248E4D01	9G1248P4E05	120×120×25 mm	Yes	✓	✓	✓	175

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Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right. Contact us for details of models with "-" model numbers.)				Frame size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9G1248E4011	9G1248E4021	9G1248E4011	9G1248E4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1248F101	9G1248F102	9G1248F101	9G1248F1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1248F1011	9G1248F1021	9G1248F1011	—	—	120×120×38 mm	No	✓	✓	✓	185
9G1248F401	9G1248F402	9G1248F401	9G1248F4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1248F4011	9G1248F4021	9G1248F4011	9G1248F4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1248G101	9G1248G102	9G1248G101	9G1248G1D01	9G1248P1G04	120×120×38 mm	Yes	✓	✓	✓	185
9G1248G1011	9G1248G1021	9G1248G1011	9G1248G1D011	9G1248P1G041	120×120×38 mm	No	✓	✓	✓	185
9G1248G401	9G1248G402	9G1248G401	9G1248G4D01	9G1248P4G04	120×120×25 mm	Yes	✓	✓	✓	175
9G1248G4011	9G1248G4021	9G1248G4011	9G1248G4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1248H101	9G1248H102	9G1248H101	9G1248H1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1248H1011	9G1248H1021	9G1248H1011	9G1248H1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1248H401	9G1248H402	9G1248H401	9G1248H4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1248H4011	9G1248H4021	9G1248H4011	9G1248H4D011	—	120×120×25 mm	No	✓	✓	✓	175
9G1248M101	9G1248M102	9G1248M101	9G1248M1D01	—	120×120×38 mm	Yes	✓	✓	✓	185
9G1248M1011	9G1248M1021	9G1248M1011	9G1248M1D011	—	120×120×38 mm	No	✓	✓	✓	185
9G1248M401	9G1248M402	9G1248M401	9G1248M4D01	—	120×120×25 mm	Yes	✓	✓	✓	175
9G1248M4011	9G1248M4021	9G1248M4011	9G1248M4D011	—	120×120×25 mm	No	✓	✓	✓	175
9GA0312P3G001	—	9GA0312G3001	—	9GA0312P3G001	38×38×28 mm	Yes	✓	✓	✓	14
9GA0312P3G0011	—	—	—	9GA0312P3G0011	38×38×28 mm	No	✓	✓	✓	14
9GA0312P3J001	—	9GA0312J3001	—	9GA0312P3J001	38×38×28 mm	Yes	✓	✓	✓	14
9GA0312P3J0011	—	—	—	9GA0312P3J0011	38×38×28 mm	No	✓	✓	✓	14
9GA0312P3K001	—	9GA0312K3001	—	9GA0312P3K001	38×38×28 mm	Yes	✓	✓	✓	14
9GA0312P3K0011	—	—	9GA0312K3D0011	9GA0312P3K0011	38×38×28 mm	No	✓	✓	✓	14
9GA0405P6F001	9GA0405F6002	9GA0405F6001	—	9GA0405P6F001	40×40×20 mm	Yes	✓	✓	✓	26
9GA0405P6H001	9GA0405H6002	9GA0405H6001	—	9GA0405P6H001	40×40×20 mm	Yes	✓	✓	✓	26
9GA0412G7001	9GA0412G7002	9GA0412G7001	9GA0412G7D001	9GA0412P7G001	40×40×15 mm	Yes	✓	✓	✓	21
9GA0412H7001	9GA0412H7002	9GA0412H7001	9GA0412H7D001	—	40×40×15 mm	Yes	✓	✓	✓	21
9GA0412P3G01	9GA0412G302	9GA0412G301	—	9GA0412P3G01	40×40×28 mm	Yes	✓	✓	✓	38
9GA0412P3G011	9GA0412G3021	9GA0412G3011	—	9GA0412P3G011	40×40×28 mm	No	✓	✓	✓	38
9GA0412P3H01	9GA0412H302	9GA0412H301	9GA0412H3D01	9GA0412P3H01	40×40×28 mm	Yes	✓	✓	✓	38
9GA0412P3H011	9GA0412H3021	9GA0412H3011	9GA0412H3D011	9GA0412P3H011	40×40×28 mm	No	✓	✓	✓	38
9GA0412P3J01	9GA0412J302	9GA0412J301	9GA0412J3D01	9GA0412P3J01	40×40×28 mm	Yes	✓	✓	✓	38
9GA0412P3J011	9GA0412J3021	9GA0412J3011	—	9GA0412P3J011	40×40×28 mm	No	✓	✓	✓	38
9GA0412P3K01	9GA0412K302	9GA0412K301	9GA0412K3D01	9GA0412P3K01	40×40×28 mm	Yes	✓	✓	✓	38
9GA0412P3K011	9GA0412K3021	9GA0412K3011	—	9GA0412P3K011	40×40×28 mm	No	✓	✓	✓	38
9GA0412P3M01	9GA0412M302	9GA0412M301	9GA0412M3D01	9GA0412P3M01	40×40×28 mm	Yes	✓	✓	✓	38
9GA0412P3M011	9GA0412M3021	9GA0412M3011	—	9GA0412P3M011	40×40×28 mm	No	✓	✓	✓	38
9GA0412P6F001	9GA0412F6002	9GA0412F6001	—	9GA0412P6F001	40×40×20 mm	Yes	✓	✓	✓	26
9GA0412P6G001	9GA0412G6002	9GA0412G6001	—	9GA0412P6G001	40×40×20 mm	Yes	✓	✓	✓	26
9GA0412P6H001	9GA0412H6002	9GA0412H6001	—	9GA0412P6H001	40×40×20 mm	Yes	✓	✓	✓	26
9GA0412P7G001	9GA0412G7002	9GA0412G7001	9GA0412G7D001	9GA0412P7G001	40×40×15 mm	Yes	✓	✓	✓	21
9GA0424P3G001	9GA0424G3002	9GA0424G3001	9GA0424G3D001	9GA0424P3G001	40×40×28 mm	Yes	✓	✓	✓	38
9GA0424P3G0011	9GA0424G30021	9GA0424G30011	—	9GA0424P3G0011	40×40×28 mm	No	✓	✓	✓	38
9GA0424P3H001	9GA0424H3002	9GA0424H3001	9GA0424H3D001	9GA0424P3H001	40×40×28 mm	Yes	✓	✓	✓	38
9GA0424P3H0011	9GA0424H30021	9GA0424H30011	—	9GA0424P3H0011	40×40×28 mm	No	✓	✓	✓	38
9GA0424P3J001	9GA0424J3002	9GA0424J3001	9GA0424J3D001	9GA0424P3J001	40×40×28 mm	Yes	✓	✓	✓	38
9GA0424P3J0011	9GA0424J30021	9GA0424J30011	—	9GA0424P3J0011	40×40×28 mm	No	✓	✓	✓	38
9GA0424P3M001	9GA0424M3002	9GA0424M3001	—	9GA0424P3M001	40×40×28 mm	Yes	✓	✓	✓	38
9GA0424P3M0011	9GA0424M30021	9GA0424M30011	9GA0424M3D001	9GA0424P3M0011	40×40×28 mm	No	✓	✓	✓	38
9GA0424P6F001	9GA0424F6002	9GA0424F6001	—	9GA0424P6F001	40×40×20 mm	Yes	✓	✓	✓	26
9GA0424P6G001	9GA0424G6002	9GA0424G6001	9GA0424G6D001	9GA0424P6G001	40×40×20 mm	Yes	✓	✓	✓	26
9GA0424P6H001	9GA0424H6002	9GA0424H6001	9GA0424H6D001	9GA0424P6H001	40×40×20 mm	Yes	✓	✓	✓	26
9GA0512P7A001	9GA0512A7002	9GA0512A7001	—	9GA0512P7A001	52×52×15 mm	Yes	✓	✓	✓	50
9GA0512P7G001	9GA0512G7002	9GA0512G7001	—	9GA0512P7G001	52×52×15 mm	Yes	✓	✓	✓	50
9GA0512P7H001	9GA0512H7002	9GA0512H7001	9GA0512H7D001	9GA0512P7H001	52×52×15 mm	Yes	✓	✓	✓	50
9GA0512P7M001	9GA0512M7002	9GA0512M7001	—	9GA0512P7M001	52×52×15 mm	Yes	✓	✓	✓	50
9GA0524P7A001	9GA0524A7002	9GA0524A7001	—	9GA0524P7A001	52×52×15 mm	Yes	✓	✓	✓	50
9GA0524P7G001	9GA0524G7002	9GA0524G7001	9GA0524G7D001	9GA0524P7G001	52×52×15 mm	Yes	✓	✓	✓	50
9GA0524P7H001	9GA0524H7002	9GA0524H7001	—	9GA0524P7H001	52×52×15 mm	Yes	✓	✓	✓	50
9GA0524P7M001	9GA0524M7002	9GA0524M7001	—	9GA0524P7M001	52×52×15 mm	Yes	✓	✓	✓	50
9GA0612G701	9GA0612G702	9GA0612G701	9GA0612G7D01	9GA0612P7G01	60×60×15 mm	Yes	✓	✓	✓	59
9GA0612G9001	9GA0612G9002	9GA0612G9001	9GA0612G9D001	9GA0612P9G001	60×60×10 mm	Yes	✓	✓	✓	57

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9GA0612H6001	9GA0612H6002	9GA0612H6001	9GA0612H6D001	—	60×60×20 mm	Yes	✓	✓	✓	65
9GA0612H701	9GA0612H702	9GA0612H701	9GA0612H7D01	9GA0612P7H01	60×60×15 mm	Yes	✓	✓	✓	59
9GA0612H9001	9GA0612H9002	9GA0612H9001	9GA0612H9D001	—	60×60×10 mm	Yes	✓	✓	✓	57
9GA0612L701	9GA0612L702	9GA0612L701	9GA0612L7D01	—	60×60×15 mm	Yes	✓	✓	✓	59
9GA0612L9001	9GA0612L9002	9GA0612L9001	9GA0612L9D001	—	60×60×10 mm	Yes	✓	✓	✓	57
9GA0612M6001	9GA0612M6002	9GA0612M6001	9GA0612M6D001	—	60×60×20 mm	Yes	✓	✓	✓	65
9GA0612M701	9GA0612M702	9GA0612M701	—	—	60×60×15 mm	Yes	✓	✓	✓	59
9GA0612P1H03	9GA0612H102	9GA0612H101	—	9GA0612P1H03	60×60×38 mm	Yes	✓	✓	✓	85
9GA0612P1H031	9GA0612H1021	9GA0612H1011	—	9GA0612P1H031	60×60×38 mm	No	✓	✓	✓	85
9GA0612P1J03	9GA0612J102	9GA0612J101	9GA0612J1D01	9GA0612P1J03	60×60×38 mm	Yes	✓	✓	✓	85
9GA0612P1J031	9GA0612J1021	9GA0612J1011	—	9GA0612P1J031	60×60×38 mm	No	✓	✓	✓	85
9GA0612P1K03	9GA0612K102	9GA0612K101	9GA0612K1D011	9GA0612P1K03	60×60×38 mm	Yes	✓	✓	✓	85
9GA0612P1K031	9GA0612K1021	9GA0612K1011	—	9GA0612P1K031	60×60×38 mm	No	✓	✓	✓	85
9GA0612P1K60	—	—	—	9GA0612P1K60	60×60×38 mm	Yes	✓	✓	✓	85
9GA0612P1K601	—	—	—	9GA0612P1K601	60×60×38 mm	No	✓	✓	✓	85
9GA0612P6G001	9GA0612G6002	9GA0612G6001	—	9GA0612P6G001	60×60×20 mm	Yes	✓	✓	✓	65
9GA0612P6S001	9GA0612S6002	9GA0612S6001	—	9GA0612P6S001	60×60×20 mm	Yes	✓	✓	✓	65
9GA0612P7G01	9GA0612G702	9GA0612G701	9GA0612G7D01	9GA0612P7G01	60×60×15 mm	Yes	✓	✓	✓	59
9GA0612P7H01	9GA0612H702	9GA0612H701	9GA0612H7D01	9GA0612P7H01	60×60×15 mm	Yes	✓	✓	✓	59
9GA0624H6001	9GA0624H6002	9GA0624H6001	9GA0624H6D001	—	60×60×20 mm	Yes	✓	✓	✓	65
9GA0624M6001	9GA0624M6002	9GA0624M6001	9GA0624M6D001	—	60×60×20 mm	Yes	✓	✓	✓	65
9GA0624M701	9GA0624M702	9GA0624M701	—	—	60×60×15 mm	Yes	✓	✓	✓	59
9GA0624P1J03	9GA0624J102	9GA0624J101	—	9GA0624P1J03	60×60×38 mm	Yes	✓	✓	✓	85
9GA0624P1J031	9GA0624J1021	9GA0624J1011	—	9GA0624P1J031	60×60×38 mm	No	✓	✓	✓	85
9GA0624P1K03	—	—	—	9GA0624P1K03	60×60×38 mm	Yes	✓	✓	✓	85
9GA0624P1K031	—	—	—	9GA0624P1K031	60×60×38 mm	No	✓	✓	✓	85
9GA0624P6G001	9GA0624G6002	9GA0624G6001	—	9GA0624P6G001	60×60×20 mm	Yes	✓	✓	✓	65
9GA0624P6S001	9GA0624S6002	—	—	9GA0624P6S001	60×60×20 mm	Yes	✓	✓	✓	65
9GA0624P7G01	9GA0624G702	—	—	9GA0624P7G01	60×60×15 mm	Yes	✓	✓	—	59
9GA0712P1G001	—	—	—	9GA0712P1G001	70×70×38 mm	Yes	✓	✓	✓	95
9GA0712P1G0011	—	—	—	9GA0712P1G0011	70×70×38 mm	No	✓	✓	✓	95
9GA0712P1H001	—	—	—	9GA0712P1H001	70×70×38 mm	Yes	✓	✓	✓	95
9GA0712P1H0011	—	—	—	9GA0712P1H0011	70×70×38 mm	No	✓	✓	✓	95
9GA0812H7001	—	9GA0812H7001	9GA0812H7D001	—	80×80×15 mm	Yes	✓	✓	✓	97
9GA0812P1G61	—	—	—	9GA0812P1G61	80×80×38 mm	Yes	✓	✓	✓	134
9GA0812P1G611	—	—	—	9GA0812P1G611	80×80×38 mm	No	✓	✓	✓	134
9GA0812P1H61	9GA0812H162	9GA0812H161	9GA0812H1D61	9GA0812P1H61	80×80×38 mm	Yes	✓	✓	✓	134
9GA0812P1H611	9GA0812H1621	9GA0812H1611	—	9GA0812P1H611	80×80×38 mm	No	✓	✓	✓	134
9GA0812P1S61	9GA0812S162	9GA0812S161	9GA0812S1D61	9GA0812P1S61	80×80×38 mm	Yes	✓	✓	✓	134
9GA0812P1S611	9GA0812S1621	9GA0812S1611	—	9GA0812P1S611	80×80×38 mm	No	✓	✓	✓	134
9GA0812P2H001	—	—	—	9GA0812P2H001	80×80×32 mm	Yes	✓	✓	✓	123
9GA0812P2H0011	—	—	—	9GA0812P2H0011	80×80×32 mm	No	✓	✓	✓	123
9GA0812P2M001	—	—	—	9GA0812P2M001	80×80×32 mm	Yes	✓	✓	✓	123
9GA0812P2M0011	—	—	—	9GA0812P2M0011	80×80×32 mm	No	✓	✓	✓	123
9GA0812P2S001	—	9GA0812S2001	—	9GA0812P2S001	80×80×32 mm	Yes	✓	✓	✓	123
9GA0812P2S0011	—	—	—	9GA0812P2S0011	80×80×32 mm	No	✓	✓	✓	123
9GA0812P4G001	9GA0812G4002	9GA0812G4001	—	9GA0812P4G001	80×80×25 mm	Yes	✓	✓	✓	108
9GA0812P4G0011	9GA0812G40021	9GA0812G40011	—	9GA0812P4G0011	80×80×25 mm	No	✓	✓	✓	108
9GA0812P4H001	9GA0812H4002	9GA0812H4001	9GA0812H4D001	9GA0812P4H001	80×80×25 mm	Yes	✓	✓	✓	108
9GA0812P4H0011	9GA0812H40021	9GA0812H40011	—	9GA0812P4H0011	80×80×25 mm	No	✓	✓	✓	108
9GA0812P4J001	9GA0812J4002	9GA0812J4001	9GA0812J4D001	9GA0812P4J001	80×80×25 mm	Yes	✓	✓	✓	108
9GA0812P4J0011	9GA0812J40021	9GA0812J40011	—	9GA0812P4J0011	80×80×25 mm	No	✓	✓	✓	108
9GA0812P6G001	9GA0812G6002	9GA0812G6001	—	9GA0812P6G001	80×80×20 mm	Yes	✓	✓	✓	102
9GA0812P6M001	9GA0812M6002	9GA0812M6001	—	9GA0812P6M001	80×80×20 mm	Yes	✓	✓	✓	102
9GA0812P7G001	—	—	—	9GA0812P7G001	80×80×15 mm	Yes	✓	✓	✓	97
9GA0812P7S001	—	—	—	9GA0812P7S001	80×80×15 mm	Yes	✓	✓	✓	97
9GA0824H7001	9GA0824H7002	9GA0824H7001	9GA0824H7D001	—	80×80×15 mm	Yes	✓	✓	✓	97
9GA0824P1H61	9GA0824H162	9GA0824H161	9GA0824H1D61	9GA0824P1H61	80×80×38 mm	Yes	✓	✓	✓	134
9GA0824P1H611	9GA0824H1621	9GA0824H1611	—	9GA0824P1H611	80×80×38 mm	No	✓	✓	✓	134
9GA0824P1S61	9GA0824S162	9GA0824S161	—	9GA0824P1S61	80×80×38 mm	Yes	✓	✓	✓	134
9GA0824P1S611	9GA0824S1621	9GA0824S1611	—	9GA0824P1S611	80×80×38 mm	No	✓	✓	✓	134
9GA0824P2S001	9GA0824S2002	—	—	9GA0824P2S001	80×80×32 mm	Yes	✓	✓	✓	123

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9GA0824P2S0011	—	—	—	9GA0824P2S0011	80 × 80 × 32 mm	No	✓	✓	✓	123
9GA0824P4G001	9GA0824G4002	9GA0824G4001	—	9GA0824P4G001	80 × 80 × 25 mm	Yes	✓	✓	✓	108
9GA0824P4G0011	9GA0824G40021	9GA0824G40011	—	9GA0824P4G0011	80 × 80 × 25 mm	No	✓	✓	✓	108
9GA0824P4H001	9GA0824H4002	9GA0824H4001	9GA0824H4D001	9GA0824P4H001	80 × 80 × 25 mm	Yes	✓	✓	✓	108
9GA0824P4H0011	9GA0824H40021	9GA0824H40011	—	9GA0824P4H0011	80 × 80 × 25 mm	No	✓	✓	✓	108
9GA0824P4J001	9GA0824J4002	9GA0824J4001	9GA0824J4D001	9GA0824P4J001	80 × 80 × 25 mm	Yes	✓	✓	✓	108
9GA0824P4J0011	9GA0824J40021	9GA0824J40011	9GA0824J4D0011	9GA0824P4J0011	80 × 80 × 25 mm	No	✓	✓	✓	108
9GA0824P6G001	9GA0824G6002	9GA0824G6001	—	9GA0824P6G001	80 × 80 × 20 mm	Yes	✓	✓	✓	102
9GA0824P6M001	9GA0824M6002	9GA0824M6001	—	9GA0824P6M001	80 × 80 × 20 mm	Yes	✓	✓	✓	102
9GA0824P7G001	—	—	9GA0824G7D001	9GA0824P7G001	80 × 80 × 15 mm	Yes	✓	✓	✓	97
9GA0824P7S001	—	—	—	9GA0824P7S001	80 × 80 × 15 mm	Yes	✓	✓	✓	97
9GA0848P1S61	—	—	—	9GA0848P1S61	80 × 80 × 38 mm	Yes	✓	✓	✓	134
9GA0848P1S611	—	—	—	9GA0848P1S611	80 × 80 × 38 mm	No	✓	✓	✓	134
9GA0848P2S001	—	—	—	9GA0848P2S001	80 × 80 × 32 mm	Yes	✓	✓	✓	123
9GA0848P2S0011	—	—	—	9GA0848P2S0011	80 × 80 × 32 mm	No	✓	✓	✓	123
9GA0912P1H03	9GA0912H102	9GA0912H101	9GA0912H1D01	9GA0912P1H03	92 × 92 × 38 mm	Yes	✓	✓	✓	155
9GA0912P1H031	9GA0912H1021	9GA0912H1011	—	9GA0912P1H031	92 × 92 × 38 mm	No	✓	✓	✓	155
9GA0912P4G03	9GA0912G402	9GA0912G401	9GA0912G4D01	9GA0912P4G03	92 × 92 × 25 mm	Yes	✓	✓	✓	144
9GA0912P4G031	9GA0912G4021	9GA0912G4011	—	9GA0912P4G031	92 × 92 × 25 mm	No	✓	✓	✓	144
9GA0912P4J03	9GA0912J402	9GA0912J401	9GA0912J4D01	9GA0912P4J03	92 × 92 × 25 mm	Yes	✓	✓	✓	144
9GA0912P4J031	9GA0912J4021	9GA0912J4011	—	9GA0912P4J031	92 × 92 × 25 mm	No	✓	✓	✓	144
9GA0912P4S03	9GA0912S402	9GA0912S401	—	9GA0912P4S03	92 × 92 × 25 mm	Yes	✓	✓	✓	144
9GA0912P4S031	9GA0912S4021	9GA0912S4011	—	9GA0912P4S031	92 × 92 × 25 mm	No	✓	✓	✓	144
9GA0924P1H01	9GA0924H102	9GA0924H101	9GA0924H1D01	9GA0924P1H01	92 × 92 × 38 mm	Yes	✓	✓	✓	155
9GA0924P1H011	—	9GA0924H1011	9GA0924H1D011	9GA0924P1H011	92 × 92 × 38 mm	No	✓	✓	✓	155
9GA0924P4G03	9GA0924G402	9GA0924G401	9GA0924G4D01	9GA0924P4G03	92 × 92 × 25 mm	Yes	✓	✓	✓	144
9GA0924P4G031	9GA0924G4021	9GA0924G4011	—	9GA0924P4G031	92 × 92 × 25 mm	No	✓	✓	✓	144
9GA0924P4J03	9GA0924J402	9GA0924J401	9GA0924J4D01	9GA0924P4J03	92 × 92 × 25 mm	Yes	✓	✓	✓	144
9GA0924P4J031	9GA0924J4021	9GA0924J4011	—	9GA0924P4J031	92 × 92 × 25 mm	No	✓	✓	✓	144
9GA0924P4S03	9GA0924S402	9GA0924S401	—	9GA0924P4S03	92 × 92 × 25 mm	Yes	✓	✓	✓	144
9GA0924P4S031	9GA0924S4021	9GA0924S4011	—	9GA0924P4S031	92 × 92 × 25 mm	No	✓	✓	✓	144
9GA0948P1H03	9GA0948H102	9GA0948H101	—	9GA0948P1H03	92 × 92 × 38 mm	Yes	✓	✓	✓	155
9GA0948P1H031	—	—	—	9GA0948P1H031	92 × 92 × 38 mm	No	✓	✓	✓	155
9GA1212G4001	—	9GA1212G4001	—	9GA1212P4G001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1212G40011	—	9GA1212G40011	—	9GA1212P4G0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1212P4G001	—	9GA1212G4001	—	9GA1212P4G001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1212P4G0011	—	9GA1212G40011	—	9GA1212P4G0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1212P4S001	—	9GA1212S4001	—	9GA1212P4S001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1212P4S0011	—	9GA1212S40011	—	9GA1212P4S0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1212S4001	—	9GA1212S4001	—	9GA1212P4S001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1212S40011	—	9GA1212S40011	—	9GA1212P4S0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1224G4001	9GA1224G4002	9GA1224G4001	9GA1224G4D001	9GA1224P4G001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1224G40011	—	9GA1224G40011	—	9GA1224P4G0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1224P4G001	9GA1224G4002	9GA1224G4001	9GA1224G4D001	9GA1224P4G001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1224P4G0011	—	9GA1224G40011	—	9GA1224P4G0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1224P4S001	—	9GA1224S4001	—	9GA1224P4S001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1224P4S0011	—	9GA1224S40011	—	9GA1224P4S0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1224S4001	—	9GA1224S4001	—	9GA1224P4S001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1224S40011	—	9GA1224S40011	—	9GA1224P4S0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1248G4001	—	9GA1248G4001	—	9GA1248P4G001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1248G40011	—	9GA1248G40011	—	9GA1248P4G0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1248P4G001	—	9GA1248G4001	—	9GA1248P4G001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1248P4G0011	—	9GA1248G40011	—	9GA1248P4G0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1248P4S001	—	9GA1248S4001	—	9GA1248P4S001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1248P4S0011	—	9GA1248S40011	—	9GA1248P4S0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GA1248S4001	—	9GA1248S4001	—	9GA1248P4S001	120 × 120 × 25 mm	Yes	✓	✓	✓	168
9GA1248S40011	—	9GA1248S40011	—	9GA1248P4S0011	120 × 120 × 25 mm	No	✓	✓	✓	168
9GAX0412P3K001	—	—	—	9GAX0412P3K001	40 × 40 × 28 mm	Yes	✓	✓	✓	35
9GAX0412P3K0011	—	—	—	9GAX0412P3K0011	40 × 40 × 28 mm	No	✓	✓	✓	35
9GAX0412P3K003	—	—	—	9GAX0412P3K003	40 × 40 × 28 mm	Yes	✓	✓	✓	35
9GAX0412P3K0031	—	—	—	9GAX0412P3K0031	40 × 40 × 28 mm	No	✓	✓	✓	35
9GAX0412P3S001	—	—	—	9GAX0412P3S001	40 × 40 × 28 mm	Yes	✓	✓	✓	35

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9GAX0412P3S0011	—	—	—	9GAX0412P3S0011	40×40×28 mm	No	✓	✓	✓	35
9GAX0412P3S003	—	—	—	9GAX0412P3S003	40×40×28 mm	Yes	✓	✓	✓	35
9GAX0412P3S0031	—	—	—	9GAX0412P3S0031	40×40×28 mm	No	✓	✓	✓	35
9GE0412P3G03	—	—	9GE0412G3D01	9GE0412P3G03	40×40×28 mm	No	✓	✓	✓	42
9GE0412P3J03	—	9GE0412J301	9GE0412J3D01	9GE0412P3J03	40×40×28 mm	No	✓	✓	✓	42
9GE0412P3K03	—	9GE0412K301	9GE0412K3D01	9GE0412P3K03	40×40×28 mm	No	✓	✓	✓	42
9GL1212E101	9GL1212E102	9GL1212E101	9GL1212E1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1212F101	9GL1212F102	9GL1212F101	9GL1212F1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1212G101	9GL1212G102	9GL1212G101	9GL1212G1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1212H101	9GL1212H102	9GL1212H101	9GL1212H1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1212M101	9GL1212M102	9GL1212M101	9GL1212M1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1224E101	9GL1224E102	9GL1224E101	9GL1224E1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1224F101	9GL1224F102	9GL1224F101	9GL1224F1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1224G101	9GL1224G102	9GL1224G101	9GL1224G1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1224H101	9GL1224H102	9GL1224H101	9GL1224H1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1224M101	9GL1224M102	9GL1224M101	9GL1224M1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1248E101	9GL1248E102	9GL1248E101	9GL1248E1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1248F101	9GL1248F102	9GL1248F101	9GL1248F1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1248G101	9GL1248G102	9GL1248G101	9GL1248G1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1248H101	9GL1248H102	9GL1248H101	9GL1248H1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GL1248M101	9GL1248M102	9GL1248M101	9GL1248M1D01	—	120×120×38 mm	No	✓	✓	✓	381
9GP1224P1G001	—	—	—	9GP1224P1G001	120×120×38 mm	No	✓	✓	✓	408
9GP1248P1G001	—	—	—	9GP1248P1G001	120×120×38 mm	No	✓	✓	✓	408
9GP5724P5H001	—	—	—	9GP5724P5H001	ø172×150×51 mm	No	✓	✓	✓	410
9GP5748P5G001	—	—	—	9GP5748P5G001	ø172×150×51 mm	No	✓	✓	✓	410
9GT0412P3J001	9GT0412J3002	9GT0412J3001	9GT0412J3D001	9GT0412P3J001	40×40×28 mm	No	✓	✓	✓	394
9GT0424P3J001	9GT0424J3002	9GT0424J3001	9GT0424J3D001	9GT0424P3J001	40×40×28 mm	No	✓	✓	✓	394
9GT0612P4G001	9GT0612G4002	9GT0612G4001	9GT0612G4D001	9GT0612P4G001	60×60×25 mm	No	✓	✓	✓	396
9GT0624P4G001	9GT0624G4002	9GT0624G4001	—	9GT0624P4G001	60×60×25 mm	No	✓	✓	✓	396
9GT0812P4S001	9GT0812S4002	9GT0812S4001	9GT0812S4D001	9GT0812P4S001	80×80×25 mm	No	✓	✓	✓	398
9GT0824P4S001	9GT0824S4002	9GT0824S4001	—	9GT0824P4S001	80×80×25 mm	No	✓	✓	✓	398
9GT0912P1M001	9GT0912M1002	9GT0912M1001	9GT0912M1D001	9GT0912P1M001	92×92×38 mm	No	✓	✓	✓	402
9GT0912P4J001	9GT0912J4002	9GT0912J4001	9GT0912J4D001	9GT0912P4J001	92×92×25 mm	No	✓	✓	✓	400
9GT0924P1M001	9GT0924M1002	—	9GT0924M1D001	9GT0924P1M001	92×92×38 mm	No	✓	✓	✓	402
9GT0924P4J001	9GT0924J4002	9GT0924J4001	—	9GT0924P4J001	92×92×25 mm	No	✓	✓	✓	400
9GT1212P1S001	—	—	—	9GT1212P1S001	120×120×38 mm	No	✓	✓	✓	404
9GT1224P1S001	9GT1224S1002	—	9GT1224S1D001	9GT1224P1S001	120×120×38 mm	No	✓	✓	✓	404
9GV0312E301	9GV0312E302	9GV0312E301	9GV0312E3D01	—	38×38×28 mm	Yes	✓	✓	✓	17
9GV0312E3011	—	9GV0312E3011	9GV0312E3D011	—	38×38×28 mm	No	✓	✓	✓	17
9GV0312G301	9GV0312G302	9GV0312G301	9GV0312G3D01	9GV0312P3G03	38×38×28 mm	Yes	✓	✓	✓	17
9GV0312G3011	9GV0312G3021	9GV0312G3011	—	—	38×38×28 mm	No	✓	✓	✓	17
9GV0312H301	9GV0312H302	9GV0312H301	9GV0312H3D01	—	38×38×28 mm	Yes	✓	✓	✓	17
9GV0312H3011	—	9GV0312H3011	—	—	38×38×28 mm	No	✓	✓	✓	17
9GV0312J301	9GV0312J302	9GV0312J301	9GV0312J3D01	9GV0312P3J03	38×38×28 mm	Yes	✓	✓	✓	17
9GV0312J3011	9GV0312J3021	9GV0312J3011	—	9GV0312P3J031	38×38×28 mm	No	✓	✓	✓	17
9GV0312K301	—	9GV0312K301	9GV0312K3D01	9GV0312P3K01	38×38×28 mm	Yes	✓	✓	✓	17
9GV0312K3011	—	9GV0312K3011	9GV0312K3D011	—	38×38×28 mm	No	✓	✓	✓	17
9GV0412C301	—	9GV0412C301	9GV0412C3D01	—	40×40×28 mm	Yes	✓	✓	✓	45
9GV0412C3011	—	9GV0412C3011	9GV0412C3D011	—	40×40×28 mm	No	✓	✓	✓	45
9GV0412G301	9GV0412G302	9GV0412G301	9GV0412G3D01	9GV0412P3G03	40×40×28 mm	Yes	✓	✓	✓	45
9GV0412G3011	9GV0412G3021	9GV0412G3011	9GV0412G3D011	9GV0412P3G031	40×40×28 mm	No	✓	✓	✓	45
9GV0412H301	—	9GV0412H301	9GV0412H3D01	9GV0412P3H01	40×40×28 mm	Yes	✓	✓	✓	45
9GV0412H3011	—	9GV0412H3011	—	—	40×40×28 mm	No	✓	✓	✓	45
9GV0412J301	9GV0412J302	9GV0412J301	9GV0412J3D01	9GV0412P3J03	40×40×28 mm	Yes	✓	✓	✓	45
9GV0412J3011	9GV0412J3021	9GV0412J3011	9GV0412J3D011	9GV0412P3J031	40×40×28 mm	No	✓	✓	✓	45
9GV0412K301	9GV0412K302	9GV0412K301	9GV0412K3D01	9GV0412P3K03	40×40×28 mm	Yes	✓	✓	✓	45
9GV0412K3011	—	9GV0412K3011	—	—	40×40×28 mm	No	✓	✓	✓	45
9GV0612P1G03	9GV0612G102	9GV0612G101	9GV0612G1D01	9GV0612P1G03	60×60×38 mm	Yes	✓	✓	✓	88
9GV0612P1G031	9GV0612G1021	9GV0612G1011	9GV0612G1D011	9GV0612P1G031	60×60×38 mm	No	✓	✓	✓	88
9GV0612P1H03	9GV0612H102	9GV0612H101	9GV0612H1D01	9GV0612P1H03	60×60×38 mm	Yes	✓	✓	✓	88
9GV0612P1H031	9GV0612H1021	9GV0612H1011	9GV0612H1D011	9GV0612P1H031	60×60×38 mm	No	✓	✓	✓	88
9GV0612P1L01	9GV0612L102	—	—	9GV0612P1L01	60×60×38 mm	Yes	✓	✓	✓	88

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9GV0612P1L011	9GV0612L1021	9GV0612L1011	9GV0612L1D011	9GV0612P1L011	60×60×38 mm	No	✓	✓	✓	88
9GV0612P1M03	9GV0612M102	9GV0612M101	9GV0612M1D01	9GV0612P1M03	60×60×38 mm	Yes	✓	✓	✓	88
9GV0612P1M031	—	9GV0612M1011	9GV0612M1D011	9GV0612P1M031	60×60×38 mm	No	✓	✓	✓	88
9GV0624P1G03	9GV0624G102	—	9GV0624G1D01	9GV0624P1G03	60×60×38 mm	Yes	✓	✓	✓	88
9GV0624P1G031	9GV0624G1021	—	—	9GV0624P1G031	60×60×38 mm	No	✓	✓	✓	88
9GV0624P1M03	9GV0624M102	9GV0624M101	—	9GV0624P1M03	60×60×38 mm	Yes	✓	✓	✓	88
9GV0624P1M031	—	—	—	9GV0624P1M031	60×60×38 mm	No	✓	✓	✓	88
9GV0648P1H03	—	—	—	9GV0648P1H03	60×60×38 mm	Yes	✓	✓	✓	88
9GV0648P1H031	—	—	—	9GV0648P1H031	60×60×38 mm	No	✓	✓	✓	88
9GV0812P1F03	—	—	—	9GV0812P1F03	80×80×38 mm	Yes	✓	✓	✓	138
9GV0812P1F031	—	—	—	9GV0812P1F031	80×80×38 mm	No	✓	✓	✓	138
9GV0812P1G03	9GV0812G102	9GV0812G101	—	9GV0812P1G03	80×80×38 mm	Yes	✓	✓	✓	138
9GV0812P1G031	9GV0812G1021	9GV0812G1011	—	9GV0812P1G031	80×80×38 mm	No	✓	✓	✓	138
9GV0812P1H03	9GV0812H102	9GV0812H101	—	9GV0812P1H03	80×80×38 mm	Yes	✓	✓	✓	138
9GV0812P1H031	9GV0812H1021	9GV0812H1011	—	9GV0812P1H031	80×80×38 mm	No	✓	✓	✓	138
9GV0812P1M03	—	—	—	9GV0812P1M03	80×80×38 mm	Yes	✓	✓	✓	138
9GV0812P1M031	—	—	—	9GV0812P1M031	80×80×38 mm	No	✓	✓	✓	138
9GV0812P4J03	9GV0812J402	9GV0812J401	—	9GV0812P4J03	80×80×25 mm	Yes	✓	✓	✓	114
9GV0812P4J031	9GV0812J4021	9GV0812J4011	—	9GV0812P4J031	80×80×25 mm	No	✓	✓	✓	114
9GV0812P4K03	—	9GV0812K401	9GV0812K4D01	9GV0812P4K03	80×80×25 mm	Yes	✓	✓	✓	114
9GV0812P4K031	9GV0812K4021	9GV0812K4011	9GV0812K4D011	9GV0812P4K031	80×80×25 mm	No	✓	✓	✓	114
9GV0824P1G03	9GV0824G102	9GV0824G101	—	9GV0824P1G03	80×80×38 mm	Yes	✓	✓	✓	138
9GV0824P1G031	—	—	—	9GV0824P1G031	80×80×38 mm	No	✓	✓	✓	138
9GV0824P4K01	9GV0824K402	9GV0824K401	—	9GV0824P4K01	80×80×25 mm	Yes	✓	✓	✓	114
9GV0824P4K011	—	—	—	9GV0824P4K011	80×80×25 mm	No	✓	✓	✓	114
9GV0848P1G03	9GV0848G102	9GV0848G101	—	9GV0848P1G03	80×80×38 mm	Yes	✓	✓	✓	138
9GV0848P1G031	—	9GV0848G1011	—	9GV0848P1G031	80×80×38 mm	No	✓	✓	✓	138
9GV0848P4K03	—	9GV0848K401	—	9GV0848P4K03	80×80×25 mm	Yes	✓	✓	✓	114
9GV0848P4K031	—	—	—	9GV0848P4K031	80×80×25 mm	No	✓	✓	✓	114
9GV0912P1F03	—	—	—	9GV0912P1F03	92×92×38 mm	Yes	✓	✓	✓	160
9GV0912P1F031	—	—	—	9GV0912P1F031	92×92×38 mm	No	✓	✓	✓	160
9GV0912P1G03	—	—	—	9GV0912P1G03	92×92×38 mm	Yes	✓	✓	✓	160
9GV0912P1G031	—	—	—	9GV0912P1G031	92×92×38 mm	No	✓	✓	✓	160
9GV0912P1H03	9GV0912H102	—	9GV0912H1D01	9GV0912P1H03	92×92×38 mm	Yes	✓	✓	✓	160
9GV0912P1H031	—	—	—	9GV0912P1H031	92×92×38 mm	No	✓	✓	✓	160
9GV0948P1F03	—	—	—	9GV0948P1F03	92×92×38 mm	Yes	✓	✓	✓	160
9GV0948P1F031	—	—	—	9GV0948P1F031	92×92×38 mm	No	✓	✓	✓	160
9GV0948P1H03	9GV0948H102	9GV0948H101	—	9GV0948P1H03	92×92×38 mm	Yes	✓	✓	✓	160
9GV0948P1H031	9GV0948H1021	—	—	9GV0948P1H031	92×92×38 mm	No	✓	✓	✓	160
9GV1212P1G01	—	—	—	9GV1212P1G01	120×120×38 mm	Yes	✓	✓	✓	182
9GV1212P1G011	—	9GV1212G1011	9GV1212G1D011	9GV1212P1G011	120×120×38 mm	No	✓	✓	✓	182
9GV1212P1J01	9GV1212J102	9GV1212J101	9GV1212J1D01	9GV1212P1J01	120×120×38 mm	Yes	✓	✓	✓	182
9GV1212P1J011	9GV1212J1021	9GV1212J1011	—	9GV1212P1J011	120×120×38 mm	No	✓	✓	✓	182
9GV1212P4G01	9GV1212G402	9GV1212G401	—	9GV1212P4G01	120×120×25 mm	Yes	✓	✓	✓	172
9GV1212P4G011	9GV1212G4021	9GV1212G4011	—	9GV1212P4G011	120×120×25 mm	No	✓	✓	✓	172
9GV1224P1H01	9GV1224H102	9GV1224H101	9GV1224H1D01	9GV1224P1H01	120×120×38 mm	Yes	✓	✓	✓	182
9GV1224P1H011	9GV1224H1021	9GV1224H1011	9GV1224H1D011	9GV1224P1H011	120×120×38 mm	No	✓	✓	✓	182
9GV1224P1J01	9GV1224J102	9GV1224J101	9GV1224J1D01	9GV1224P1J01	120×120×38 mm	Yes	✓	✓	✓	182
9GV1224P1J011	9GV1224J1021	9GV1224J1011	9GV1224J1D011	9GV1224P1J011	120×120×38 mm	No	✓	✓	✓	182
9GV1224P4G01	9GV1224G402	9GV1224G401	9GV1224G4D01	9GV1224P4G01	120×120×25 mm	Yes	✓	✓	✓	172
9GV1224P4G011	9GV1224G4021	—	—	9GV1224P4G011	120×120×25 mm	No	✓	✓	✓	172
9GV1248P1J01	9GV1248J102	9GV1248J101	9GV1248J1D01	9GV1248P1J01	120×120×38 mm	Yes	✓	✓	✓	182
9GV1248P1J011	9GV1248J1021	9GV1248J1011	—	9GV1248P1J011	120×120×38 mm	No	✓	✓	✓	182
9GV1248P4G01	9GV1248G402	9GV1248G4011	—	9GV1248P4G01	120×120×25 mm	Yes	✓	✓	✓	172
9GV1248P4G011	—	9GV1248G4011	—	9GV1248P4G011	120×120×25 mm	No	✓	✓	✓	172
9GV1248P4H01	9GV1248H402	9GV1248H401	9GV1248H4D01	9GV1248P4H01	120×120×25 mm	Yes	✓	✓	✓	172
9GV1248P4H011	—	—	—	9GV1248P4H011	120×120×25 mm	No	✓	✓	✓	172
9GV1248P4J01	—	—	—	9GV1248P4J01	120×120×25 mm	Yes	✓	✓	✓	172
9GV1248P4J011	—	—	—	9GV1248P4J011	120×120×25 mm	No	✓	✓	✓	172
9GV1412P1G001	—	—	—	9GV1412P1G001	140×140×38 mm	No	✓	✓	✓	195
9GV1412P1H001	—	—	—	9GV1412P1H001	140×140×38 mm	No	✓	✓	✓	195
9GV1412P1S001	—	—	—	9GV1412P1S001	140×140×38 mm	No	✓	✓	✓	195

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9GV1424P1G001	—	—	—	9GV1424P1G001	140×140×38 mm	No	✓	✓	✓	195
9GV1424P1H001	—	—	—	9GV1424P1H001	140×140×38 mm	No	✓	✓	✓	195
9GV1424P1S001	—	—	—	9GV1424P1S001	140×140×38 mm	No	✓	✓	✓	195
9GV1448P1G001	—	—	—	9GV1448P1G001	140×140×38 mm	No	✓	✓	✓	195
9GV1448P1H001	—	—	—	9GV1448P1H001	140×140×38 mm	No	✓	✓	✓	195
9GV1448P1S001	—	—	—	9GV1448P1S001	140×140×38 mm	No	✓	✓	✓	195
9GV1512H501	9GV1512H502	9GV1512H501	—	9GV1512P5H03	150×150×50 mm	Yes	✓	✓	✓	201
9GV1512H5011	9GV1512H5021	9GV1512H5011	—	—	150×150×50 mm	No	✓	✓	✓	201
9GV1512M501	9GV1512M502	9GV1512M501	—	9GV1512P5M03	150×150×50 mm	Yes	✓	✓	✓	201
9GV1512M5011	9GV1512M5021	9GV1512M5011	—	9GV1512P5M011	150×150×50 mm	No	✓	✓	✓	201
9GV1524M501	9GV1524M502	9GV1524M501	9GV1524M5D01	—	150×150×50 mm	Yes	✓	✓	✓	201
9GV1524M5011	—	9GV1524M5011	—	—	150×150×50 mm	No	✓	✓	✓	201
9GV2048P0G201	9GV2048G0202	—	—	9GV2048P0G201	ø200×70 mm	No	✓	✓	✓	219
9GV3612G301	9GV3612G302	9GV3612G301	9GV3612G3D01	9GV3612P3G03	36×36×28 mm	Yes	✓	✓	✓	12
9GV3612J301	9GV3612J302	9GV3612J301	9GV3612J3D01	9GV3612P3J03	36×36×28 mm	Yes	✓	✓	✓	12
9GV5724H501	9GV5724H502	9GV5724H501	—	9GV5724P5H03	ø172×150×51 mm	No	✓	✓	✓	211
9GV5748H501	9GV5748H502	9GV5748H501	—	9GV5748P5H01	ø172×150×51 mm	No	✓	✓	✓	211
9GX3612P3K001	9GX3612K3002	—	—	9GX3612P3K001	36×36×28 mm	Yes	✓	✓	✓	12
9HV0412P3K001	—	—	—	9HV0412P3K001	40×40×28 mm	No	✓	✓	✓	33
9HV0612P1J001	—	—	—	9HV0612P1J001	60×60×38 mm	Yes	✓	✓	✓	83
9HV0612P1J0011	—	—	—	9HV0612P1J0011	60×60×38 mm	No	✓	✓	✓	83
9HV0812P1G601	9HV0812G1002	9HV0812G1001	—	9HV0812P1G601	80×80×38 mm	Yes	✓	✓	✓	131
9HV0812P1G6011	9HV0812G10021	9HV0812G10011	—	9HV0812P1G6011	80×80×38 mm	No	✓	✓	✓	131
9HV0824P1G003	—	—	9HV0824G1D001	9HV0824P1G003	80×80×38 mm	Yes	✓	✓	✓	131
9HV0824P1G0011	—	—	—	9HV0824P1G0011	80×80×38 mm	No	✓	✓	✓	131
9HV0848P1G001	9HV0848G1002	9HV0848G1001	9HV0848G1D001	9HV0848P1G001	80×80×38 mm	Yes	✓	✓	✓	131
9HV0848P1G0011	9HV0848G10021	9HV0848G10011	—	9HV0848P1G0011	80×80×38 mm	No	✓	✓	✓	131
9HV0912P1G001	—	—	—	9HV0912P1G001	92×92×38 mm	Yes	✓	✓	✓	158
9HV0912P1G0011	—	—	—	9HV0912P1G0011	92×92×38 mm	No	✓	✓	✓	158
9HV0948P1G001	—	—	—	9HV0948P1G001	92×92×38 mm	Yes	✓	✓	✓	158
9HV0948P1G0011	—	—	—	9HV0948P1G0011	92×92×38 mm	No	✓	✓	✓	158
9HV1224P1A001	—	—	—	9HV1224P1A001	120×120×38 mm	No	✓	✓	✓	179
9HV1248P1G001	9HV1248G1002	9HV1248G1001	—	9HV1248P1G001	120×120×38 mm	No	✓	✓	✓	179
9HV1248P1H001	9HV1248H1002	9HV1248H1001	—	9HV1248P1H001	120×120×38 mm	No	✓	✓	✓	179
9HV5724P5H001	9HV5724H5002	9HV5724H5001	9HV5724H5D001	9HV5724P5H001	ø172×150×51 mm	No	✓	✓	✓	206
9HV5748P5G001	—	—	—	9HV5748P5G001	ø172×150×51 mm	No	✓	✓	✓	206
9HVA0812P1G001	—	—	—	9HVA0812P1G001	80×80×38 mm	Yes	✓	✓	✓	129
9HVA0812P1G0011	—	—	—	9HVA0812P1G0011	80×80×38 mm	No	✓	✓	✓	129
9L0412H301	9L0412H302	9L0412H301	9L0412H3D01	—	40×40×28 mm	No	✓	✓	✓	356
9L0412J301	9L0412J302	9L0412J301	9L0412J3D01	9L0412P3J01	40×40×28 mm	No	✓	✓	✓	356
9L0412M301	9L0412M302	9L0412M301	9L0412M3D01	—	40×40×28 mm	No	✓	✓	✓	356
9LB1412H501	9LB1412H502	9LB1412H501	9LB1412H5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LB1412M501	9LB1412M502	9LB1412M501	9LB1412M5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LB1412S501	9LB1412S502	9LB1412S501	9LB1412S5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LB1424B501	9LB1424B502	9LB1424B501	—	—	140×140×51 mm	No	—	—	—	386
9LB1424H501	9LB1424H502	9LB1424H501	9LB1424H5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LB1424M501	9LB1424M502	9LB1424M501	9LB1424M5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LB1424S501	9LB1424S502	9LB1424S501	9LB1424S5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LB1448F501	—	9LB1448F501	—	—	140×140×51 mm	No	—	—	—	386
9LB1448H501	9LB1448H502	9LB1448H501	9LB1448H5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LB1448M501	9LB1448M502	9LB1448M501	9LB1448M5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LB1448S501	9LB1448S502	9LB1448S501	9LB1448S5D01	—	140×140×51 mm	No	✓	✓	✓	386
9LG0612P4H001	9LG0612H4002	9LG0612H4001	9LG0612H4D001	9LG0612P4H001	60×60×25 mm	No	✓	✓	✓	358
9LG0612P4J001	—	—	9LG0612J4D001	9LG0612P4J001	60×60×25 mm	No	✓	✓	✓	358
9LG0612P4M001	—	9LG0624M4001	9LG0612M4D001	9LG0612P4M001	60×60×25 mm	No	✓	✓	✓	358
9LG0612P4S001	—	9LG0612S4001	—	9LG0612P4S001	60×60×25 mm	No	✓	✓	✓	358
9LG0624P4H001	—	—	—	9LG0624P4H001	60×60×25 mm	No	✓	✓	✓	358
9LG0624P4J001	—	—	—	9LG0624P4J001	60×60×25 mm	No	✓	✓	✓	358
9LG0624P4M001	—	9LG0624M4001	—	9LG0624P4M001	60×60×25 mm	No	✓	✓	✓	358
9LG0624P4S001	—	—	—	9LG0624P4S001	60×60×25 mm	No	✓	✓	✓	358
9LG0648P4H001	—	—	—	9LG0648P4H001	60×60×25 mm	No	✓	✓	✓	358
9LG0648P4J001	—	—	—	9LG0648P4J001	60×60×25 mm	No	✓	✓	✓	358

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9LG0648P4M001	—	—	—	9LG0648P4M001	60×60×25 mm	No	✓	✓	✓	358
9LG0648P4S001	—	—	—	9LG0648P4S001	60×60×25 mm	No	✓	✓	✓	358
9LG0812P4G001	—	—	—	9LG0812P4G001	80×80×25 mm	No	✓	✓	✓	365
9LG0812P4H001	—	—	—	9LG0812P4H001	80×80×25 mm	No	✓	✓	✓	365
9LG0812P4J001	9LG0812J4002	—	9LG0812J4D001	9LG0812P4J001	80×80×25 mm	No	✓	✓	✓	365
9LG0824P4G001	9LG0824G4002	—	9LG0824G4D001	9LG0824P4G001	80×80×25 mm	No	✓	✓	✓	365
9LG0824P4H001	—	—	—	9LG0824P4H001	80×80×25 mm	No	✓	✓	✓	365
9LG0824P4J001	—	—	9LG0824J4D001	9LG0824P4J001	80×80×25 mm	No	✓	✓	✓	365
9LG0912P1F001	—	—	—	9LG0912P1F001	92×92×38 mm	No	✓	✓	✓	374
9LG0912P1H001	—	—	—	9LG0912P1H001	92×92×38 mm	No	✓	✓	✓	374
9LG0912P4G001	9LG0912G4002	—	—	9LG0912P4G001	92×92×25 mm	No	✓	✓	✓	370
9LG0912P4H001	—	—	—	9LG0912P4H001	92×92×25 mm	No	✓	✓	✓	370
9LG0912P4J001	—	—	—	9LG0912P4J001	92×92×25 mm	No	✓	✓	✓	370
9LG0912P4S001	—	—	—	9LG0912P4S001	92×92×25 mm	No	✓	✓	✓	370
9LG0924P1F001	—	—	—	9LG0924P1F001	92×92×38 mm	No	✓	✓	✓	374
9LG0924P1H001	—	—	—	9LG0924P1H001	92×92×38 mm	No	✓	✓	✓	374
9LG0924P4G001	—	—	—	9LG0924P4G001	92×92×25 mm	No	✓	✓	✓	370
9LG0924P4H001	—	—	—	9LG0924P4H001	92×92×25 mm	No	✓	✓	✓	370
9LG0924P4J001	—	—	9LG0924J4D001	9LG0924P4J001	92×92×25 mm	No	✓	✓	✓	370
9LG0924P4S001	—	—	9LG0924S4D001	9LG0924P4S001	92×92×25 mm	No	✓	✓	✓	370
9LG1212P1G001	—	—	—	9LG1212P1G001	120×120×38 mm	No	✓	✓	✓	377
9LG1212P1H001	—	—	—	9LG1212P1H001	120×120×38 mm	No	✓	✓	✓	377
9LG1212P1S001	—	—	—	9LG1212P1S001	120×120×38 mm	No	✓	✓	✓	377
9LG1224P1G001	—	—	9LG1224G1D001	9LG1224P1G001	120×120×38 mm	No	✓	✓	✓	377
9LG1224P1H001	—	9LG1224H1001	9LG1224H1D001	9LG1224P1H001	120×120×38 mm	No	✓	✓	✓	377
9LG1224P1S001	—	9LG1224S1001	9LG1224S1D001	9LG1224P1S001	120×120×38 mm	No	✓	✓	✓	377
9LG1248P1G001	9LG1248G1002	—	—	9LG1248P1G001	120×120×38 mm	No	✓	✓	✓	377
9LG1248P1H001	—	—	—	9LG1248P1H001	120×120×38 mm	No	✓	✓	✓	377
9LG1248P1S001	—	—	—	9LG1248P1S001	120×120×38 mm	No	✓	✓	✓	377
9RF0912P1H001	—	—	—	9RF0912P1H001	ø92×38 mm	No	✓	✓	✓	262
9RF0924P1H001	—	—	—	9RF0924P1H001	ø92×38 mm	No	✓	✓	✓	262
9RF1312P3H001	—	—	—	9RF1312P3H001	ø136×28 mm	No	✓	✓	✓	264
9RF1324P3H001	—	—	—	9RF1324P3H001	ø136×28 mm	No	✓	✓	✓	264
9S0612F401	9S0612F402	9S0612F401	9S0612F4D01	9S0612P4F01	60×60×25 mm	Yes	✓	✓	✓	71
9S0612F4011	9S0612F4021	9S0612F4011	9S0612F4D011	9S0612P4F011	60×60×25 mm	No	✓	✓	✓	71
9S0612H401	9S0612H402	9S0612H401	9S0612H4D01	9S0612P4H01	60×60×25 mm	Yes	✓	✓	✓	71
9S0612H4011	9S0612H4021	9S0612H4011	9S0612H4D011	9S0612P4H011	60×60×25 mm	No	✓	✓	✓	71
9S0612M401	9S0612M402	9S0612M401	9S0612M4D01	9S0612P4M01	60×60×25 mm	Yes	✓	✓	✓	71
9S0612M4011	9S0612M4021	9S0612M4011	9S0612M4D011	—	60×60×25 mm	No	✓	✓	✓	71
9S0612S401	9S0612S402	9S0612S401	9S0612S4D01	9S0612P4S01	60×60×25 mm	Yes	✓	✓	✓	71
9S0612S4011	—	9S0612S4011	—	—	60×60×25 mm	No	✓	✓	✓	71
9S0812F401	9S0812F402	9S0812F401	9S0812F4D01	9S0812P4F01	80×80×25 mm	Yes	✓	✓	✓	112
9S0812F4011	9S0812F4021	9S0812F4011	9S0812F4D011	9S0812P4F011	80×80×25 mm	No	✓	✓	✓	112
9S0812H401	9S0812H402	9S0812H401	9S0812H4D01	—	80×80×25 mm	Yes	✓	✓	—	112
9S0812H4011	—	9S0812H4011	9S0812H4D011	—	80×80×25 mm	No	✓	✓	—	112
9S0812L401	9S0812L402	9S0812L401	9S0812L4D01	—	80×80×25 mm	Yes	✓	✓	✓	112
9S0812L4011	9S0812L4021	9S0812L4011	9S0812L4D011	—	80×80×25 mm	No	✓	✓	✓	112
9S0812M401	9S0812M402	9S0812M401	9S0812M4D01	9S0812P4M01	80×80×25 mm	Yes	✓	✓	✓	112
9S0812M4011	9S0812M4021	9S0812M4011	9S0812M4D011	9S0812P4M011	80×80×25 mm	No	✓	✓	✓	112
9S0824L401	9S0824L402	9S0824L401	9S0824L4D01	—	80×80×25 mm	Yes	✓	✓	✓	112
9S0824L4011	9S0824L4021	9S0824L4011	9S0824L4D011	—	80×80×25 mm	No	✓	✓	✓	112
9S0824M401	9S0824M402	9S0824M401	9S0824M4D01	—	80×80×25 mm	Yes	✓	✓	✓	112
9S0824M4011	9S0824M4021	9S0824M4011	9S0824M4D011	—	80×80×25 mm	No	✓	✓	✓	112
9S0912F401	9S0912F402	9S0912F401	9S0912F4D01	9S0912P4F01	92×92×25 mm	Yes	✓	✓	✓	147
9S0912F4011	9S0912F4021	9S0912F4011	9S0912F4D011	9S0912P4F011	92×92×25 mm	No	✓	✓	✓	147
9S0912L401	9S0912L402	9S0912L401	9S0912L4D01	—	92×92×25 mm	Yes	✓	✓	✓	147
9S0912L4011	9S0912L4021	9S0912L4011	9S0912L4D011	—	92×92×25 mm	No	✓	✓	✓	147
9S0912M401	9S0912M402	9S0912M401	9S0912M4D01	9S0912P4M01	92×92×25 mm	Yes	✓	✓	✓	147
9S0912M4011	9S0912M4021	9S0912M4011	9S0912M4D011	9S0912P4M011	92×92×25 mm	No	✓	✓	✓	147
9S0924F401	9S0924F402	9S0924F401	9S0924F4D01	—	92×92×25 mm	Yes	✓	✓	✓	147
9S0924F4011	9S0924F4021	9S0924F4011	—	—	92×92×25 mm	No	✓	✓	✓	147
9S0924L401	9S0924L402	9S0924L401	9S0924L4D01	—	92×92×25 mm	Yes	✓	✓	✓	147

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Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right. Contact us for details of models with "-" model numbers.)				Frame size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9S0924L4011	9S0924L4021	9S0924L4011	—	—	92×92×25 mm	No	✓	✓	✓	147
9S0924M401	9S0924M402	9S0924M401	9S0924M4D01	—	92×92×25 mm	Yes	✓	✓	✓	147
9S0924M4011	9S0924M4021	9S0924M4011	—	—	92×92×25 mm	No	✓	✓	✓	147
9S1212F401	9S1212F402	9S1212F401	9S1212F4D01	9S1212P4F01	120×120×25 mm	Yes	✓	✓	✓	166
9S1212F4011	9S1212F4021	9S1212F4011	9S1212F4D011	9S1212P4F011	120×120×25 mm	No	✓	✓	✓	166
9S1212H401	9S1212H402	9S1212H401	9S1212H4D01	9S1212P4H01	120×120×25 mm	Yes	✓	✓	✓	166
9S1212H4011	9S1212H4021	9S1212H4011	—	9S1212P4H011	120×120×25 mm	No	✓	✓	✓	166
9S1212L401	9S1212L402	9S1212L401	9S1212L4D01	—	120×120×25 mm	Yes	✓	✓	✓	166
9S1212L4011	9S1212L4021	9S1212L4011	9S1212L4D011	9S1212P4L011	120×120×25 mm	No	✓	✓	✓	166
9S1212M401	9S1212M402	9S1212M401	9S1212M4D01	9S1212P4M01	120×120×25 mm	Yes	✓	✓	✓	166
9S1212M4011	9S1212M4021	9S1212M4011	9S1212M4D011	9S1212P4M011	120×120×25 mm	No	✓	✓	✓	166
9S1224M401	9S1224M402	9S1224M401	9S1224M4D01	—	120×120×25 mm	Yes	✓	✓	✓	166
9S1224M4011	9S1224M4021	9S1224M4011	9S1224M4D011	—	120×120×25 mm	No	✓	✓	✓	166
9SG1212G101	9SG1212G102	9SG1212G101	9SG1212G1D01	9SG1212P1G01	120×120×38 mm	No	✓	✓	✓	188
9SG1224G101	9SG1224G102	9SG1224G101	9SG1224G1D01	9SG1224P1G01	120×120×38 mm	No	✓	✓	✓	188
9SG1224H101	9SG1224H102	9SG1224H101	9SG1224H1D01	—	120×120×38 mm	No	—	—	—	188
9SG1248G101	9SG1248G102	9SG1248G101	—	9SG1248P1G01	120×120×38 mm	No	✓	✓	✓	188
9SG5724P5H61	9SG5724H562	—	—	9SG5724P5H61	ø172×150×51 mm	No	✓	✓	✓	208
9SG5748P5G01	—	—	—	9SG5748P5G01	ø172×150×51 mm	No	✓	✓	✓	208
9SG5748P5H01	—	—	—	9SG5748P5H01	ø172×150×51 mm	No	✓	✓	✓	208
9TG24P0G01	9TG24G002	9TG24G001	—	9TG24P0G01	ø175×69 mm	—	✓	✓	✓	422
9TG24P0S01	9TG24S002	9TG24S001	—	9TG24P0S01	ø175×69 mm	—	✓	✓	✓	422
9TG48P0G01	—	—	—	9TG48P0G01	ø175×69 mm	—	✓	✓	✓	422
9TGA24P0H001	—	—	—	9TGA24P0H001	ø175×69 mm	—	✓	✓	✓	420
9TGA48P0G001	—	—	—	9TGA48P0G001	ø175×69 mm	—	✓	✓	✓	420
9TJ24P0H61	—	—	—	9TJ24P0H61	ø133×91 mm	—	✓	✓	✓	416
9TJ48P0H01	—	—	—	9TJ48P0H01	ø133×91 mm	—	✓	✓	✓	416
9TM24P4H01	—	—	—	9TM24P4H01	ø100×25 mm	—	✓	✓	✓	414
9TM48P4H01	—	—	—	9TM48P4H01	ø100×25 mm	—	✓	✓	✓	414
9TN24P1H01	—	—	—	9TN24P1H01	ø150×35 mm	—	✓	✓	✓	418
9TN48P1H01	—	—	—	9TN48P1H01	ø150×35 mm	—	✓	✓	✓	418
9TP24P0H001	—	—	—	9TP24P0H001	ø221×71 mm	—	✓	✓	✓	425
9TP48P0G001	9TP48G0002	—	—	9TP48P0G001	ø221×71 mm	—	✓	✓	✓	425
9TP48P0H001	—	—	—	9TP48P0H001	ø221×71 mm	—	✓	✓	✓	425
9TS48P0G001	—	—	—	9TS48P0G001	ø225×99 mm	—	✓	✓	✓	428
9TS48P0H001	—	—	—	9TS48P0H001	ø225×99 mm	—	✓	✓	✓	428
9W1TG48P0H61	—	—	—	9W1TG48P0H61	ø175×69 mm	—	✓	✓	✓	328
9W1TJ24P0H61	—	—	—	9W1TJ24P0H61	ø133×91 mm	—	✓	✓	✓	324
9W1TJ48P0H61	—	—	—	9W1TJ48P0H61	ø133×91 mm	—	✓	✓	✓	324
9W1TM48P4G01	—	—	—	9W1TM48P4G01	ø100×25 mm	—	✓	✓	✓	322
9W1TM48P4H01	—	—	—	9W1TM48P4H01	ø100×25 mm	—	✓	✓	✓	322
9W1TN48P1H01	—	—	—	9W1TN48P1H01	ø150×35 mm	—	✓	✓	✓	326
9W2TP24P0H001	—	—	—	9W2TP24P0H001	ø221×71 mm	—	✓	✓	✓	330
9W2TP48P0S001	—	—	—	9W2TP48P0S001	ø221×71 mm	—	✓	✓	✓	330
9W2TS48P0S001	—	—	—	9W2TS48P0S001	ø225×99 mm	—	✓	✓	✓	332
9WB1412H501	9WB1412H502	9WB1412H501	—	—	140×140×51 mm	No	✓	✓	✓	312
9WB1412M501	9WB1412M502	9WB1412M501	9WB1412M5D01	—	140×140×51 mm	No	✓	✓	✓	312
9WB1412S501	9WB1412S502	9WB1412S501	9WB1412S5D01	—	140×140×51 mm	No	✓	✓	✓	312
9WB1424H501	9WB1424H502	9WB1424H501	9WB1424H5D01	—	140×140×51 mm	No	✓	✓	✓	312
9WB1424M501	9WB1424M502	9WB1424M501	—	—	140×140×51 mm	No	✓	✓	✓	312
9WB1448H501	9WB1448H502	9WB1448H501	9WB1448H5D01	—	140×140×51 mm	No	✓	✓	✓	312
9WB1448S501	9WB1448S502	9WB1448S501	9WB1448S5D01	—	140×140×51 mm	No	✓	✓	✓	312
9WE1724K501	9WE1724K502	9WE1724K501	—	—	ø172×51 mm	No	✓	✓	✓	319
9WE5724K501	9WE5724K502	9WE5724K501	—	—	ø172×150×51 mm	No	✓	✓	✓	317
9WE5748K501	9WE5748K502	9WE5748K501	9WE5748K5D01	9WE5748P5K01	ø172×150×51 mm	No	✓	✓	✓	317
9WF0424F601	9WF0424F602	9WF0424F601	9WF0424F6D01	—	40×40×20 mm	Yes	✓	✓	✓	338
9WF0424H601	9WF0424H602	9WF0424H601	9WF0424H6D01	—	40×40×20 mm	Yes	✓	✓	✓	338
9WF0424H701	9WF0424H702	9WF0424H701	9WF0424H7D01	—	40×40×15 mm	Yes	✓	✓	✓	336
9WF0624H401	9WF0624H402	9WF0624H401	9WF0624H4D01	—	60×60×25 mm	Yes	✓	✓	✓	344
9WF0624H601	—	9WF0624H601	9WF0624H6D01	—	60×60×20 mm	Yes	✓	✓	✓	342
9WF0624H701	9WF0624H702	9WF0624H701	9WF0624H7D01	—	60×60×15 mm	Yes	✓	✓	✓	340
9WF0824S401	9WF0824S402	9WF0824S401	9WF0824S4D01	—	80×80×25 mm	Yes	✓	✓	✓	346

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	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9WF0924H201	9WF0924H202	9WF0924H201	9WF0924H2D01	—	92×92×32 mm	Yes	✓	✓	✓	350
9WF0924H2011	—	9WF0924H2011	—	—	92×92×32 mm	No	✓	✓	✓	350
9WF0924H401	9WF0924H402	9WF0924H401	9WF0924H4D01	—	92×92×25 mm	Yes	✓	✓	✓	348
9WF0924H4011	—	—	9WF0924H4D011	—	92×92×25 mm	No	✓	✓	✓	348
9WF0924S201	9WF0924S202	9WF0924S201	9WF0924S2D01	—	92×92×32 mm	Yes	✓	✓	✓	350
9WF0924S2011	—	9WF0924S2011	—	—	92×92×32 mm	No	✓	✓	✓	350
9WF1224H101	9WF1224H102	9WF1224H101	9WF1224H1D01	—	120×120×38 mm	Yes	✓	✓	✓	352
9WG1212E101-E	9WG1212E102-E	9WG1212E101-E	9WG1212E1D01-E	—	120×120×38 mm	No	✓	✓	✓	305
9WG1212F101-E	9WG1212F102-E	9WG1212F101-E	—	—	120×120×38 mm	No	✓	✓	✓	305
9WG1212G101-E	9WG1212G102-E	9WG1212G101-E	9WG1212G1D01-E	—	120×120×38 mm	No	✓	✓	✓	305
9WG1212H101-E	9WG1212H102-E	9WG1212H101-E	9WG1212H1D01-E	—	120×120×38 mm	No	✓	✓	✓	305
9WG1212M101-E	9WG1212M102-E	9WG1212M101-E	—	—	120×120×38 mm	No	✓	✓	✓	305
9WG1224E101-E	9WG1224E102-E	9WG1224E101-E	9WG1224E1D01-E	—	120×120×38 mm	No	✓	✓	✓	305
9WG1224F101-E	9WG1224F102-E	9WG1224F101-E	9WG1224F1D01-E	—	120×120×38 mm	No	✓	✓	✓	305
9WG1224G101-E	9WG1224G102-E	9WG1224G101-E	9WG1224G1D01-E	—	120×120×38 mm	No	✓	✓	✓	305
9WG1224H101-E	9WG1224H102-E	9WG1224H101-E	9WG1224H1D01-E	—	120×120×38 mm	No	✓	✓	✓	305
9WG1224M101-E	9WG1224M102-E	9WG1224M101-E	—	—	120×120×38 mm	No	✓	✓	✓	305
9WG1248E101-E	9WG1248E102-E	9WG1248E101-E	—	—	120×120×38 mm	No	✓	✓	✓	305
9WG1248F101-E	9WG1248F102-E	9WG1248F101-E	—	—	120×120×38 mm	No	✓	✓	✓	305
9WG1248G101-E	9WG1248G102-E	9WG1248G101-E	—	—	120×120×38 mm	No	✓	✓	✓	305
9WG1248H101-E	9WG1248H102-E	9WG1248H101-E	9WG1248H1D01-E	—	120×120×38 mm	No	✓	✓	✓	305
9WG1248M101-E	9WG1248M102-E	9WG1248M101-E	—	—	120×120×38 mm	No	✓	✓	✓	305
9WG5748P5G001	9WG5748G5002	—	—	9WG5748P5G001	ø172×150×51 mm	No	✓	✓	✓	315
9WG5748P5H001	—	9WG5748H5001	9WG5748H5D001	9WG5748P5H001	ø172×150×51 mm	No	✓	✓	✓	315
9WL0412P3G001	9WL0412G3002	9WL0412G3001	—	9WL0412P3G001	40×40×28 mm	No	✓	✓	✓	270
9WL0412P3J001	9WL0412J3002	9WL0412J3001	—	9WL0412P3J001	40×40×28 mm	No	✓	✓	✓	270
9WL0424P3G001	9WL0424G3002	9WL0424G3001	—	9WL0424P3G001	40×40×28 mm	No	✓	✓	✓	270
9WL0424P3J001	9WL0424J3002	9WL0424J3001	—	9WL0424P3J001	40×40×28 mm	No	✓	✓	✓	270
9WL0612P4H001	—	—	—	9WL0612P4H001	60×60×25 mm	No	✓	✓	✓	273
9WL0612P4J001	9WL0612J4002	—	9WL0612J4D001	9WL0612P4J001	60×60×25 mm	No	✓	✓	✓	273
9WL0612P4S001	9WL0612S4002	—	9WL0612S4D001	9WL0612P4S001	60×60×25 mm	No	✓	✓	✓	273
9WL0624P4H001	—	9WL0624H4001	—	9WL0624P4H001	60×60×25 mm	No	✓	✓	✓	273
9WL0624P4J001	—	—	—	9WL0624P4J001	60×60×25 mm	No	✓	✓	✓	273
9WL0624P4S001	—	—	—	9WL0624P4S001	60×60×25 mm	No	✓	✓	✓	273
9WL0812P4G001	—	—	9WL0812G4D001	9WL0812P4G001	80×80×25 mm	No	✓	✓	✓	279
9WL0812P4H001	9WL0812H4002	—	—	9WL0812P4H001	80×80×25 mm	No	✓	✓	✓	279
9WL0812P4J001	—	—	—	9WL0812P4J001	80×80×25 mm	No	✓	✓	✓	279
9WL0824P4G001	—	—	—	9WL0824P4G001	80×80×25 mm	No	✓	✓	✓	279
9WL0824P4H001	—	—	—	9WL0824P4H001	80×80×25 mm	No	✓	✓	✓	279
9WL0824P4J001	—	—	—	9WL0824P4J001	80×80×25 mm	No	✓	✓	✓	279
9WL0912P4G001	—	—	—	9WL0912P4G001	92×92×25 mm	No	✓	✓	✓	288
9WL0912P4H001	—	—	—	9WL0912P4H001	92×92×25 mm	No	✓	✓	✓	288
9WL0912P4J001	9WL0912J4002	—	—	9WL0912P4J001	92×92×25 mm	No	✓	✓	✓	288
9WL0912P4S001	—	—	—	9WL0912P4S001	92×92×25 mm	No	✓	✓	✓	288
9WL0924P4H001	—	—	—	9WL0924P4H001	92×92×25 mm	No	✓	✓	✓	288
9WL0924P4J001	—	—	—	9WL0924P4J001	92×92×25 mm	No	✓	✓	✓	288
9WL0924P4S001	—	—	—	9WL0924P4S001	92×92×25 mm	No	✓	✓	✓	288
9WP0412F6001	9WP0412F6002	9WP0412F6001	9WP0412F6D001	—	40×40×20 mm	Yes	✓	✓	✓	268
9WP0412H6001	9WP0412H6002	9WP0412H6001	—	—	40×40×20 mm	Yes	✓	✓	✓	268
9WP0612D401	9WP0612D402	9WP0612D401	9WP0612D4D01	—	60×60×25 mm	Yes	✓	✓	✓	276
9WP0612D4011	—	9WP0612D4011	9WP0612D4D011	—	60×60×25 mm	No	✓	✓	✓	276
9WP0612G401	9WP0612G402	9WP0612G401	9WP0612G4D01	9WP0612P4G01	60×60×25 mm	Yes	✓	✓	✓	276
9WP0612G4011	9WP0612G4021	9WP0612G4011	—	—	60×60×25 mm	No	✓	✓	✓	276
9WP0612H401	9WP0612H402	9WP0612H401	9WP0612H4D01	—	60×60×25 mm	Yes	✓	✓	✓	276
9WP0612H4011	9WP0612H4021	9WP0612H4011	9WP0612H4D011	—	60×60×25 mm	No	✓	✓	✓	276
9WP0624G401	9WP0624G402	9WP0624G401	9WP0624G4D01	—	60×60×25 mm	Yes	✓	✓	✓	276
9WP0624G4011	—	9WP0624G4011	—	—	60×60×25 mm	No	✓	✓	✓	276
9WP0624H401	9WP0624H402	9WP0624H401	9WP0624H4D01	—	60×60×25 mm	Yes	✓	✓	✓	276
9WP0624H4011	9WP0624H4021	9WP0624H4011	9WP0624H4D011	—	60×60×25 mm	No	✓	✓	✓	276
9WP0624J401	9WP0624J402	9WP0624J401	—	—	60×60×25 mm	Yes	✓	✓	✓	276
9WP0624J4011	—	9WP0624J4011	—	—	60×60×25 mm	No	✓	✓	✓	276
9WP0648H401	9WP0648H402	9WP0648H401	9WP0648H4D01	—	60×60×25 mm	Yes	✓	✓	✓	276

Please contact your point of sale regarding low-speed sensors.

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right. Contact us for details of models with "-" model numbers.)				Frame size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9WP0648H4011	9WP0648H4021	9WP0648H4011	9WP0648H4D011	—	60×60×25 mm	No	✓	✓	✓	276
9WP0812G401	9WP0812G402	9WP0812G401	9WP0812G4D01	9WP0812P4G01	80×80×25 mm	Yes	✓	✓	✓	282
9WP0812G4011	9WP0812G4021	9WP0812G4011	9WP0812G4D011	—	80×80×25 mm	No	✓	✓	✓	282
9WP0812H401	9WP0812H402	9WP0812H401	9WP0812H4D01	—	80×80×25 mm	Yes	✓	✓	✓	282
9WP0812H4011	9WP0812H4021	9WP0812H4011	9WP0812H4D011	—	80×80×25 mm	No	✓	✓	✓	282
9WP0824H401	9WP0824H402	9WP0824H401	9WP0824H4D01	—	80×80×25 mm	Yes	✓	✓	✓	282
9WP0824H4011	9WP0824H4021	9WP0824H4011	9WP0824H4D011	—	80×80×25 mm	No	✓	✓	✓	282
9WP0824S401	9WP0824S402	9WP0824S401	9WP0824S4D01	—	80×80×25 mm	Yes	✓	✓	✓	282
9WP0824S4011	9WP0824S4021	9WP0824S4011	—	—	80×80×25 mm	No	✓	✓	✓	282
9WP0848S401	9WP0848S402	9WP0848S401	9WP0848S4D01	—	80×80×25 mm	Yes	✓	✓	✓	282
9WP0848S4011	9WP0848S4021	9WP0848S4011	9WP0848S4D011	—	80×80×25 mm	No	✓	✓	✓	282
9WP0912F401	9WP0912F402	9WP0912F401	9WP0912F4D01	—	92×92×25 mm	Yes	✓	✓	✓	295
9WP0912F4011	—	9WP0912F4011	9WP0912F4D011	—	92×92×25 mm	No	✓	✓	✓	295
9WP0912S401	9WP0912S402	9WP0912S401	9WP0912S4D01	—	92×92×25 mm	Yes	✓	✓	✓	295
9WP0912S4011	—	9WP0912S4011	—	—	92×92×25 mm	No	✓	✓	✓	295
9WP0924B401	9WP0924B402	9WP0924B401	9WP0924B4D01	—	92×92×25 mm	Yes	✓	✓	✓	295
9WP0924B4011	9WP0924B4021	9WP0924B4011	9WP0924B4D011	—	92×92×25 mm	No	✓	✓	✓	295
9WP0924F401	9WP0924F402	9WP0924F401	9WP0924F4D01	—	92×92×25 mm	Yes	✓	✓	✓	295
9WP0924F4011	9WP0924F4021	9WP0924F4011	9WP0924F4D011	—	92×92×25 mm	No	✓	✓	✓	295
9WP0924G401	9WP0924G402	9WP0924G401	9WP0924G4D01	—	92×92×25 mm	Yes	✓	✓	✓	295
9WP0924G4011	—	9WP0924G4011	—	—	92×92×25 mm	No	✓	✓	✓	295
9WP0924H401	9WP0924H402	9WP0924H401	9WP0924H4D01	—	92×92×25 mm	Yes	✓	✓	✓	295
9WP0924H4011	—	9WP0924H4011	—	—	92×92×25 mm	No	✓	✓	✓	295
9WP0924S401	9WP0924S402	9WP0924S401	9WP0924S4D01	—	92×92×25 mm	Yes	✓	✓	✓	295
9WP0924S4011	—	9WP0924S4011	—	—	92×92×25 mm	No	✓	✓	✓	295
9WP1212H101	9WP1212H102	9WP1212H101	9WP1212H1D01	—	120×120×38 mm	Yes	✓	✓	✓	303
9WP1212H1011	9WP1212H1021	9WP1212H1011	9WP1212H1D011	—	120×120×38 mm	No	✓	✓	✓	303
9WP1212L101	—	9WP1212L101	—	—	120×120×38 mm	Yes	✓	✓	✓	303
9WP1212L1011	—	9WP1212L1011	—	—	120×120×38 mm	No	✓	✓	✓	303
9WP1224H101	9WP1224H102	9WP1224H101	9WP1224H1D01	—	120×120×38 mm	Yes	✓	✓	✓	303
9WP1224H1011	9WP1224H1021	9WP1224H1011	9WP1224H1D011	—	120×120×38 mm	No	✓	✓	✓	303
9WP1248H101	9WP1248H102	9WP1248H101	9WP1248H1D01	—	120×120×38 mm	Yes	✓	✓	✓	303
9WP1248H1011	9WP1248H1021	9WP1248H1011	9WP1248H1D011	—	120×120×38 mm	No	✓	✓	✓	303
9WS0812F401	9WS0812F402	9WS0812F401	9WS0812F4D01	—	80×80×25 mm	Yes	✓	✓	✓	284
9WS0812F4011	9WS0812F4021	9WS0812F4011	—	—	80×80×25 mm	No	✓	✓	✓	284
9WS0812H401	9WS0812H402	9WS0812H401	—	—	80×80×25 mm	Yes	✓	✓	✓	284
9WS0812H4011	9WS0812H4021	9WS0812H4011	—	—	80×80×25 mm	No	✓	✓	✓	284
9WS0812M401	9WS0812M402	9WS0812M401	9WS0812M4D01	—	80×80×25 mm	Yes	✓	✓	✓	284
9WS0812M4011	9WS0812M4021	9WS0812M4011	—	—	80×80×25 mm	No	✓	✓	✓	284
9WS0824F401	9WS0824F402	9WS0824F401	—	—	80×80×25 mm	Yes	✓	✓	✓	284
9WS0824F4011	9WS0824F4021	9WS0824F4011	—	—	80×80×25 mm	No	✓	✓	✓	284
9WS0824H401	9WS0824H402	9WS0824H401	9WS0824H4D01	—	80×80×25 mm	Yes	✓	✓	✓	284
9WS0824H4011	9WS0824H4021	9WS0824H4011	—	—	80×80×25 mm	No	✓	✓	✓	284
9WS0824M401	9WS0824M402	9WS0824M401	9WS0824M4D01	—	80×80×25 mm	Yes	✓	✓	✓	284
9WS0824M4011	9WS0824M4021	9WS0824M4011	—	—	80×80×25 mm	No	✓	✓	✓	284
9WS0912F401	9WS0912F402	9WS0912F401	9WS0912F4D01	—	92×92×25 mm	Yes	✓	✓	✓	292
9WS0912H401	9WS0912H402	9WS0912H401	—	—	92×92×25 mm	Yes	✓	✓	✓	292
9WS0912L401	9WS0912L402	9WS0912L401	—	—	92×92×25 mm	Yes	✓	✓	✓	292
9WS0912M401	9WS0912M402	9WS0912M401	—	—	92×92×25 mm	Yes	✓	✓	✓	292
9WS0924F401	9WS0924F402	9WS0924F401	—	—	92×92×25 mm	Yes	✓	✓	✓	292
9WS0924H401	9WS0924H402	9WS0924H401	9WS0924H4D01	—	92×92×25 mm	Yes	✓	✓	✓	292
9WS0924L401	9WS0924L402	9WS0924L401	—	—	92×92×25 mm	Yes	✓	✓	✓	292
9WS0924M401	9WS0924M402	9WS0924M401	9WS0924M4D01	—	92×92×25 mm	Yes	✓	✓	✓	292
9WS1212H101	9WS1212H102	9WS1212H101	—	—	120×120×38 mm	Yes	✓	✓	✓	308
9WS1212H1011	9WS1212H1021	9WS1212H1011	—	—	120×120×38 mm	No	✓	✓	✓	308
9WS1212M101	9WS1212M102	9WS1212M101	—	—	120×120×38 mm	Yes	✓	✓	✓	308
9WS1212M1011	9WS1212M1021	9WS1212M1011	—	—	120×120×38 mm	No	✓	✓	✓	308
9WS1224H101	9WS1224H102	9WS1224H101	—	—	120×120×38 mm	Yes	✓	✓	✓	308
9WS1224H1011	9WS1224H1021	9WS1224H1011	—	—	120×120×38 mm	No	✓	✓	✓	308
9WS1224M101	9WS1224M102	9WS1224M101	—	—	120×120×38 mm	Yes	✓	✓	✓	308
9WS1224M1011	9WS1224M1021	9WS1224M1011	—	—	120×120×38 mm	No	✓	✓	✓	308
9WS1248H101	9WS1248H102	9WS1248H101	9WS1248H1D01	—	120×120×38 mm	Yes	✓	✓	✓	308

Please contact your point of sale regarding low-speed sensors.

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right. Contact us for details of models with "-" model numbers.)				Frame size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With lock sensor	With PWM control function and pulse sensor			UL (cUL)	CSA (cUL)	TÜV	
9WS1248H1011	9WS1248H1021	9WS1248H1011	9WS1248H1D011	—	120×120×38 mm	No	✓	✓	✓	308
9WS1248M101	9WS1248M102	9WS1248M101	9WS1248M1D01	—	120×120×38 mm	Yes	✓	✓	✓	308
9WS1248M1011	9WS1248M1021	9WS1248M1011	9WS1248M1D011	—	120×120×38 mm	No	✓	✓	✓	308
9WV0812P1M001	—	9WV0812M1001	9WV0812M1D001	9WV0812P1M001	80×80×38 mm	Yes	✓	✓	✓	286
9WV0812P1M0011	—	—	—	9WV0812P1M0011	80×80×38 mm	No	✓	✓	✓	286
9WV0848P1H001	—	—	—	9WV0848P1H001	80×80×38 mm	Yes	✓	✓	✓	286
9WV0848P1H0011	—	—	—	9WV0848P1H0011	80×80×38 mm	No	✓	✓	✓	286
9WV0924P1H001	9WV0924H1002	—	—	9WV0924P1H001	92×92×38 mm	Yes	✓	✓	✓	298
9WV0948P1H001	—	—	—	9WV0948P1H001	92×92×38 mm	Yes	✓	✓	✓	298
9WV1212P1J001	9WV1212J1002	—	9WV1212J1D001	9WV1212P1J001	120×120×38 mm	No	✓	✓	✓	300
9WV1224P1H001	9WV1224H102	9WV1224H101	9WV1224H1D001	9WV1224P1H001	120×120×38 mm	No	✓	✓	✓	300
9WV1224P1J601	—	9WV1224J1001	—	9WV1224P1J601	120×120×38 mm	No	✓	✓	✓	300
9WV1248P1J001	9WV1248J1002	9WV1248J1001	9WV1248J1D001	9WV1248P1J001	120×120×38 mm	No	✓	✓	✓	300

Please contact your point of sale regarding low-speed sensors.

Index by Model No./Safety Standards List - ACDC Fans AC

Models listed in the main section of this catalog	Frame size	Model	Rated voltage [V]	UL (cUL)	CSA (cUL)	TÜV	CE	PSE	Note	page
9AD0901H12	92×92×38 mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	458
9AD0901H121	92×92×38 mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribless	458
9AD0901H1H	92×92×38 mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	458
9AD0901H1H1	92×92×38 mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribless	458
9AD0901M12	92×92×38 mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	458
9AD0901M121	92×92×38 mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribless	458
9AD0901M1H	92×92×38 mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	458
9AD0901M1H1	92×92×38 mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribless	458
9AD1201H12	120×120×38 mm	San Ace 120AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	461
9AD1201H121	120×120×38 mm	San Ace 120AD	100 to 240	✓	✓	✓	✓	✓	Ribless	461
9AD1201H1H	120×120×38 mm	San Ace 120AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	461
9AD1201H1H1	120×120×38 mm	San Ace 120AD	100 to 240	✓	✓	✓	✓	✓	Ribless	461

Please contact your point of sale for pulse sensors and lock sensors.

Index by Model No./Safety Standards List - AC Fans AC

Models listed in the main section of this catalog	Frame size	Model	Rated voltage [V]	UL	CSA	TÜV	CE	PSE	Note	page
109-033UL	80×80×42 mm	San Ace 80	115	✓	✓	✓	✓	✓		476
109-040UL	80×80×42 mm	San Ace 80	100	✓	✓	✓	✓	✓		476
109-041UL	80×80×42 mm	San Ace 80	200	✓	✓	✓	✓	✓		476
109-043UL	80×80×42 mm	San Ace 80	115	✓	✓	✓	✓	✓		476
109-044UL	80×80×42 mm	San Ace 80	230	✓	✓	✓	✓	✓		476
109-047UL	80×80×42 mm	San Ace 80	100	✓	✓	✓	✓	✓		476
109-130	60×60×38 mm	San Ace 60	100	✓	—	✓	✓	—		468
109-133	60×60×38 mm	San Ace 60	115	✓	—	✓	✓	—		468
109-150	80×80×38 mm	San Ace 80	100	✓	✓	✓	✓	✓		474
109-151	80×80×38 mm	San Ace 80	200	✓	✓	✓	✓	✓		474
109-153	80×80×38 mm	San Ace 80	115	✓	✓	✓	✓	✓		474
109-154	80×80×38 mm	San Ace 80	230	✓	✓	✓	✓	✓		474
109-180	60×60×28 mm	San Ace 60	100	✓	—	✓	✓	—		466
109-183	60×60×28 mm	San Ace 60	115	✓	—	✓	✓	—		466
109-210	80×80×20 mm	San Ace 80	100	✓	✓	✓	✓	—		470
109-213	80×80×20 mm	San Ace 80	115	✓	✓	✓	✓	—		470
109-311	ø172×51 mm (Round type)	San Ace 172	100	✓	✓	✓	✓	✓		496
109-312	ø172×51 mm (Round type)	San Ace 172	200	✓	✓	✓	✓	✓		496
109-313	ø172×51 mm (Round type)	San Ace 172	230	✓	✓	✓	✓	✓		496
109-314	ø172×51 mm (Round type)	San Ace 172	115	✓	✓	✓	✓	✓		496
109-371	ø172×51 mm (with sensor)	San Ace 172	100	✓	—	✓	✓	✓		496
109-372	ø172×51 mm (with sensor)	San Ace 172	200	✓	—	✓	✓	✓		496
109-373	ø172×51 mm (with sensor)	San Ace 172	230	✓	—	✓	✓	✓		496
109-374	ø172×51 mm (with sensor)	San Ace 172	115	✓	—	✓	✓	✓		496
109-601	160×160×51 mm	San Ace 160	100	✓	✓	✓	✓	✓		491
109-602	160×160×51 mm	San Ace 160	200	✓	✓	✓	✓	✓		491
109-603	160×160×51 mm	San Ace 160	230	✓	✓	✓	✓	✓		491
109-604	160×160×51 mm	San Ace 160	115	✓	✓	✓	✓	✓		491
109-641	160×160×51 mm (with sensor)	San Ace 160	100	✓	—	✓	✓	✓		491
109-642	160×160×51 mm (with sensor)	San Ace 160	200	✓	—	✓	✓	✓		491
109-643	160×160×51 mm (with sensor)	San Ace 160	230	✓	—	✓	✓	✓		491
109-644	160×160×51 mm (with sensor)	San Ace 160	115	✓	—	✓	✓	✓		491
109S005	120×120×38 mm	San Ace 120	100	—	—	—	—	✓		486
109S005UL	120×120×38 mm	San Ace 120	100	✓	✓	✓	✓	✓		486
109S006	120×120×38 mm	San Ace 120	100	—	—	—	—	✓		486
109S006UL	120×120×38 mm	San Ace 120	100/115	✓	✓	✓	✓	✓		486
109S008	120×120×38 mm	San Ace 120	200	—	—	—	—	✓		486
109S008UL	120×120×38 mm	San Ace 120	200	✓	✓	✓	✓	✓		486
109S010	120×120×38 mm	San Ace 120	200	—	—	—	—	✓		486
109S010UL	120×120×38 mm	San Ace 120	200/240	✓	✓	✓	✓	✓		486
109S013	120×120×38 mm	San Ace 120	100	—	—	—	—	✓		486
109S013UL	120×120×38 mm	San Ace 120	100	✓	✓	✓	✓	✓		486
109S024	120×120×38 mm	San Ace 120	120	—	—	—	—	✓		486
109S024UL	120×120×38 mm	San Ace 120	115	✓	✓	✓	✓	✓		486
109S025	120×120×38 mm	San Ace 120	230	—	—	—	—	✓		486
109S025UL	120×120×38 mm	San Ace 120	230	✓	✓	✓	✓	✓		486
109S029UL	120×120×38 mm	San Ace 120	100	✓	✓	✓	✓	✓		486

Models listed in the main section of this catalog	Frame size	Model	Rated voltage [V]	UL	CSA	TÜV	CE	PSE	Note	page
109S030	80×80×25 mm	San Ace 80	100	✓	✓	✓	✓	✓		472
109S031	80×80×25 mm	San Ace 80	200	✓	✓	✓	✓	✓		472
109S033	80×80×25 mm	San Ace 80	115	✓	✓	✓	✓	✓		472
109S034	80×80×25 mm	San Ace 80	230	✓	✓	✓	✓	✓		472
109S050	80×80×25 mm	San Ace 80	100	✓	✓	✓	✓	✓		472
109S051	80×80×25 mm	San Ace 80	200	✓	✓	✓	✓	✓		472
109S053	80×80×25 mm	San Ace 80	115	✓	✓	✓	✓	✓		472
109S054	80×80×25 mm	San Ace 80	230	✓	✓	✓	✓	✓		472
109S072UL	120×120×38 mm	San Ace 120	230	✓	✓	✓	✓	✓		486
109S074UL	120×120×38 mm	San Ace 120	115	✓	✓	✓	✓	✓		486
109S075UL	120×120×38 mm	San Ace 120	100	✓	✓	✓	✓	✓		486
109S078UL	120×120×38 mm	San Ace 120	200	✓	✓	✓	✓	✓		486
109S081	120×120×25 mm	San Ace 120	100	✓	✓	✓	✓	✓		482
109S082	120×120×25 mm	San Ace 120	200	✓	✓	✓	✓	✓		482
109S083	120×120×25 mm	San Ace 120	115	✓	✓	✓	✓	✓		482
109S084	120×120×25 mm	San Ace 120	115	✓	✓	✓	✓	✓		482
109S085	120×120×25 mm	San Ace 120	100	✓	✓	✓	✓	✓		482
109S086	120×120×25 mm	San Ace 120	100	✓	✓	✓	✓	✓		482
109S087	120×120×25 mm	San Ace 120	230	✓	✓	✓	✓	✓		482
109S088	120×120×25 mm	San Ace 120	200	✓	✓	✓	✓	✓		482
109S089	120×120×25 mm	San Ace 120	230	✓	✓	✓	✓	✓		482
109S091	92×92×25 mm	San Ace 92	100	✓	✓	✓	✓	✓		478
109S092	92×92×25 mm	San Ace 92	200	✓	✓	✓	✓	✓		478
109S093	92×92×25 mm	San Ace 92	115	✓	✓	✓	✓	✓		478
109S094	92×92×25 mm	San Ace 92	230	✓	✓	✓	✓	✓		478
109S095	92×92×25 mm	San Ace 92	100	✓	✓	✓	✓	✓		478
109S096	92×92×25 mm	San Ace 92	100	✓	✓	✓	✓	✓		478
109S192	92×92×25 mm	San Ace 92	200	✓	✓	✓	✓	✓		478
109S193	92×92×25 mm	San Ace 92	115	✓	✓	✓	✓	✓		478
109S194	92×92×25 mm	San Ace 92	230	✓	✓	✓	✓	✓		478
109S301	ø172×150×51 mm (Sidecut type)	San Ace 172	100	✓	✓	✓	✓	✓		494
109S302	ø172×150×51 mm (Sidecut type)	San Ace 172	200	✓	✓	✓	✓	✓		494
109S303	ø172×150×51 mm (Sidecut type)	San Ace 172	230	✓	✓	✓	✓	✓		494
109S304	ø172×150×51 mm (Sidecut type)	San Ace 172	115	✓	✓	✓	✓	✓		494
109S405UL	120×120×38 mm (with sensor)	San Ace 120	100	✓	–	✓	✓	✓		487
109S406UL	120×120×38 mm (with sensor)	San Ace 120	100	✓	–	✓	✓	✓		487
109S408UL	120×120×38 mm (with sensor)	San Ace 120	200	✓	–	✓	✓	✓		487
109S424UL	120×120×38 mm (with sensor)	San Ace 120	115	✓	–	✓	✓	✓		487
109S425UL	120×120×38 mm (with sensor)	San Ace 120	230	✓	–	✓	✓	✓		487
109S429UL	120×120×38 mm (with sensor)	San Ace 120	100	✓	–	✓	✓	✓		487
109S472UL	120×120×38 mm (with sensor)	San Ace 120	230	✓	–	✓	✓	✓		487
109S474UL	120×120×38 mm (with sensor)	San Ace 120	115	✓	–	✓	✓	✓		487
109S475UL	120×120×38 mm (with sensor)	San Ace 120	100	✓	–	✓	✓	✓		487
109S478UL	120×120×38 mm (with sensor)	San Ace 120	200	✓	–	✓	✓	✓		487
109S484	120×120×25 mm (with sensor)	San Ace 120	115	✓	–	✓	✓	✓		482
109S485	120×120×25 mm (with sensor)	San Ace 120	100	✓	–	✓	✓	✓		482
109S486	120×120×25 mm (with sensor)	San Ace 120	100	✓	–	✓	✓	✓		482
109S487	120×120×25 mm (with sensor)	San Ace 120	230	✓	–	✓	✓	✓		482
109S488	120×120×25 mm (with sensor)	San Ace 120	200	✓	–	✓	✓	✓		482
109S491	92×92×25 mm (with sensor)	San Ace 92	100	✓	–	✓	✓	✓		478
109S492	92×92×25 mm (with sensor)	San Ace 92	200	✓	–	✓	✓	✓		478
109S493	92×92×25 mm (with sensor)	San Ace 92	115	✓	–	✓	✓	✓		478
109S494	92×92×25 mm (with sensor)	San Ace 92	230	✓	–	✓	✓	✓		478
109S495	92×92×25 mm (with sensor)	San Ace 92	100	✓	–	✓	✓	✓		478
109S496	92×92×25 mm (with sensor)	San Ace 92	100	✓	–	✓	✓	✓		478

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109-1002M30	Replacement filter	80 mm sq. type	521
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Plug Cord AC

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489-007-L21	✓	✓		120×120×38 mm	524
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Following models were deleted in this latest version of catalog. However, these models are not discontinued product. Please contact us for further assistance if necessary.

DC Fan

Size	Model no.	Frame material	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
92×92×25 mm	109P0912J401	Plastic	12	6 to 13.8	0.56	6.72	4300	2.03	71.6	92.2	0.37	47	-20 to +60	40000
92×92×25 mm	109P0912W401	Plastic	12	6 to 16	0.21	2.52	2850	1.45	51.2	45	0.181	33	-20 to +70	40000
92×92×25 mm	109P0912H401	Plastic	12	10.2 to 13.8	0.21	2.52	2850	1.45	51.2	45	0.181	33	-20 to +70	40000
92×92×25 mm	109P0912F401	Plastic	12	10.2 to 13.8	0.14	1.68	2450	1.24	43.8	32.3	0.13	30	-20 to +70	40000
92×92×25 mm	109P0912M401	Plastic	12	10.2 to 13.8	0.1	1.2	2100	1.04	36.7	23.5	0.094	27	-20 to +70	40000
92×92×25 mm	109P0912L401	Plastic	12	10.2 to 13.8	0.07	0.84	1700	0.8	28.3	16.6	0.067	23	-20 to +70	40000
92×92×25 mm	109P0924W401	Plastic	24	12 to 30	0.12	2.88	2850	1.45	51.2	45	0.181	33	-20 to +70	40000
92×92×25 mm	109P0924H401	Plastic	24	20.4 to 27.6	0.12	2.88	2850	1.45	51.2	45	0.181	33	-20 to +70	40000
92×92×25 mm	109P0924F401	Plastic	24	20.4 to 27.6	0.08	1.92	2450	1.24	43.8	32.3	0.13	30	-20 to +70	40000
92×92×25 mm	109P0924M401	Plastic	24	20.4 to 27.6	0.06	1.44	2100	1.04	36.7	23.5	0.094	27	-20 to +70	40000
92×92×25 mm	109P0924L401	Plastic	24	20.4 to 27.6	0.05	1.2	1700	0.8	28.3	16.6	0.067	23	-20 to +70	40000
92×92×25 mm	109P0948H401	Plastic	48	43 to 53	0.06	2.88	2850	1.45	51.2	45	0.181	33	-20 to +70	40000
Ø200×70 mm	109E2024S001	Aluminum	24	21.6 to 26.4	1.9	45.6	3200	10.45	369	287.1	1.153	57	-10 to +70	40000
Ø200×70 mm	109E2024H001	Aluminum	24	20.4 to 27.6	1.0	24	2600	8.2	289.5	192	0.771	51	-10 to +70	40000
Ø200×70 mm	109E2024AS001	Aluminum	24	21.6 to 26.4	1.9	45.6	3200	10.45	369	287.1	1.153	57	-10 to +70	40000
					1.45	34.8	2800	9	317.8	215.6	0.865	54		
Ø200×70 mm	109E2024MH001	Aluminum	24	20.4 to 27.6	1.0	24	2600	8.2	289.5	192	0.771	51	-10 to +70	40000
					0.63	15.12	2100	6.7	236.6	115.4	0.463	45		

Counter Rotating Fan

Size	Model no.	Frame material	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
40×40×56 mm	9CRA0412K501	Plastic	12	10.8 to 12.6	1.8	21.6	17000	13000	0.95	33.5	650	2.61	65	-20 to +60	40000
40×40×56 mm	9CRA0412J501	Plastic	12	10.8 to 13.2	1.4	16.8	15800	12200	0.9	31.8	570	2.29	62	-20 to +70	40000
40×40×56 mm	9CRA0412G501	Plastic	12	10.8 to 13.2	1.0	12	14000	10400	0.77	27.2	435	1.75	59	-20 to +70	40000
60×60×76 mm	9CR0612S001	Plastic	12	10.8 to 13.2	3.2	38.4	11500	7000	2.26	80	550	2.21	66	-10 to +60	40000
60×60×76 mm	9CR0612H001	Plastic	12	10.8 to 13.2	2.7	32.4	10300	6500	1.98	70	450	1.81	64	-10 to +60	40000
80×80×80 mm	9CR0812S801	Plastic	12	10.8 to 13.2	5.5	66.0	8000	5300	4.53	160	520	2.09	71	-10 to +60	40000
80×80×80 mm	9CR0812H801	Plastic	12	10.8 to 13.2	3.6	43.2	7000	4600	3.97	140	400	1.61	68	-10 to +60	40000

Size	Model no.	Frame material	Rated voltage [V]	PWM frequency [kHz]	Rated current [A]	Rated speed [min⁻¹] Duty cycle 0%	Rated speed [min⁻¹] Duty cycle 100%	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Expected Life [h]
60×60×76 mm	9CR0612P0S03	Plastic	12	25.0	3.2	Inlet: 1300 Outlet: 800	Inlet: 11500 Outlet: 7000	2.26	79.8	550	2.21	66	40000
	9CR0612P0H03	Plastic	12	25.0	2.7	Inlet: 1200 Outlet: 800	Inlet: 10300 Outlet: 6500	1.98	69.91	450	1.81	64	40000
80×80×80 mm	9CR0848P8S03	Plastic	48	25.0	1.29	Inlet: 2000 Outlet: 1300	Inlet: 8000 Outlet: 5300	4.53	159.95	520	2.09	71	40000

Size	Model no.	Frame material	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
40×40×56 mm	9CRB0412P5S201	Plastic	12	10.8 to 13.2	100	1.4	16.8	22000	19700	0.9	31.8	1045	4.197	68	-20 to +70	40000
					0	0.09	1.08	3800	3500	0.15	5.3	31	0.124	26	-20 to +70	40000
40×40×56 mm	9CRB0412P5K001	Plastic	12	10.8 to 13.2	100	0.88	10.56	19000	17000	0.76	26.83	730	2.93	62	-20 to +70	40000
					0	0.11	1.32	5700	5100	0.21	7.41	67	0.26	33	-20 to +70	40000
40×40×56 mm	9CRB0412P5J201	Plastic	12	10.8 to 13.2	100	0.72	8.64	17300	16000	0.71	25.1	650	2.61	61	-20 to +70	40000
					0	0.07	0.84	3450	3200	0.13	4.59	26	0.1	24	-20 to +70	40000

* PWM frequency: 25 kHz

Splash Proof Fan

Size	Model no.	Frame material	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
80×80×25 mm	109W0812H401-U	Aluminum	12	10.2 to 13.8	0.18	2.16	3000	1.06	37.4	39.2	0.157	32	-10 to +70	100000
80×80×25 mm	109W0812F401-U	Aluminum	12	10.2 to 13.8	0.14	1.68	2700	0.93	32.8	32.3	0.13	29	-10 to +70	100000
80×80×25 mm	109W0812M401-U	Aluminum	12	10.2 to 13.8	0.1	1.2	2400	0.83	29.3	26.5	0.106	26	-10 to +70	100000
80×80×25 mm	109W0812L401-U	Aluminum	12	10.2 to 13.8	0.08	0.96	1900	0.63	22.2	16.67	0.067	22	-10 to +70	100000
80×80×25 mm	109W0824H401-U	Aluminum	24	20.4 to 27.6	0.09	2.16	3000	1.06	37.4	39.2	0.157	32	-10 to +70	100000
80×80×25 mm	109W0824F401-U	Aluminum	24	20.4 to 27.6	0.08	1.92	2700	0.93	32.8	32.3	0.13	29	-10 to +70	100000
80×80×25 mm	109W0824M401-U	Aluminum	24	20.4 to 27.6	0.07	1.68	2400	0.83	29.3	26.5	0.106	26	-10 to +70	100000
80×80×25 mm	109W0824L401-U	Aluminum	24	20.4 to 27.6	0.05	1.2	1900	0.63	22.2	16.67	0.067	22	-10 to +70	100000
80×80×25 mm	109W0848H401-U	Aluminum	48	40.8 to 55.2	0.06	2.88	3150	1.1	38.8	43.1	0.173	34	-10 to +70	100000
92×92×25 mm	109W0912H401-U	Aluminum	12	10.2 to 13.8	0.21	2.52	2850	1.38	48.7	45.1	0.181	33	-10 to +70	100000
92×92×25 mm	109W0912F401-U	Aluminum	12	10.2 to 13.8	0.14	1.68	2450	1.18	41.7	32.3	0.13	30	-10 to +70	100000
92×92×25 mm	109W0912M401-U	Aluminum	12	10.2 to 13.8	0.11	1.32	2100	1.01	35.7	23.5	0.094	27	-10 to +70	100000
92×92×25 mm	109W0912L401-U	Aluminum	12	10.2 to 13.8	0.08	0.96	1700	0.8	28.2	16.7	0.067	23	-10 to +70	100000
92×92×25 mm	109W0924H401-U	Aluminum	24	20.4 to 27.6	0.12	2.88	2850	1.38	48.7	45.1	0.181	33	-10 to +70	100000
92×92×25 mm	109W0924F401-U	Aluminum	24	20.4 to 27.6	0.08	1.92	2450	1.18	41.7	32.3	0.13	30	-10 to +70	100000
92×92×25 mm	109W0924M401-U	Aluminum	24	20.4 to 27.6	0.06	1.44	2100	1.01	35.7	23.5	0.094	27	-10 to +70	100000
92×92×25 mm	109W0924L401-U	Aluminum	24	20.4 to 27.6	0.05	1.2	1700	0.8	28.2	16.7	0.067	23	-10 to +70	100000
92×92×25 mm	109W0948H401-U	Aluminum	48	40.8 to 55.2	0.06	2.88	2850	1.38	48.7	45.1	0.181	33	-10 to +70	100000

Long Life Fan

Size	Model no.	Frame material	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
60×60×25 mm	109L0612G401	Aluminum	12	10.2 to 13.8	0.24	2.88	5600	0.78	27.5	87.3	0.35	39	-20 to +70	100000
60×60×25 mm	109L0612S401	Aluminum	12	10.2 to 13.8	0.17	2.04	4600	0.65	23.0	56.8	0.228	33	-20 to +70	100000
60×60×25 mm	109L0612H401	Aluminum	12	10.2 to 13.8	0.11	1.32	3800	0.53	18.7	40.2	0.161	28	-20 to +70	100000
60×60×25 mm	109L0612F401	Aluminum	12	10.2 to 13.8	0.09	1.08	3200	0.44	15.5	29.4	0.118	24	-20 to +70	100000
60×60×25 mm	109L0612M401	Aluminum	12	10.2 to 13.8	0.06	0.72	2600	0.36	12.7	19.6	0.079	20	-20 to +70	100000
60×60×25 mm	109L0624D401	Aluminum	24	20.4 to 27.6	0.12	2.88	5150	0.72	25.4	73.8	0.296	37	-20 to +70	100000
60×60×25 mm	109L0624S401	Aluminum	24	20.4 to 27.6	0.08	1.92	4600	0.65	23.0	56.8	0.23	33	-20 to +70	100000
60×60×25 mm	109L0624H401	Aluminum	24	20.4 to 27.6	0.06	1.44	3800	0.53	18.7	40.2	0.161	28	-20 to +70	100000
60×60×25 mm	109L0624F401	Aluminum	24	20.4 to 27.6	0.05	1.2	3200	0.44	15.5	29.4	0.118	24	-20 to +70	100000
60×60×25 mm	109L0624M401	Aluminum	24	20.4 to 27.6	0.04	0.96	2600	0.36	12.7	19.6	0.079	20	-20 to +70	100000
60×60×25 mm	109L0648G401	Aluminum	48	40.8 to 55.2	0.07	3.36	5600	0.78	27.5	87.3	0.35	39	-20 to +60	80000
60×60×25 mm	109L0648H401	Aluminum	48	40 to 53	0.04	1.92	3800	0.53	18.7	40.2	0.161	28	-20 to +70	100000
80×80×25 mm	109L0812S401	Aluminum	12	10.2 to 13.8	0.26	3.12	3400	1.2	42.4	50	0.2	37	-20 to +70	100000
80×80×25 mm	109L0812H401	Aluminum	12	10.2 to 13.8	0.18	2.16	3000	1.06	37.4	39.2	0.157	32	-20 to +70	100000
80×80×25 mm	109L0812F401	Aluminum	12	10.2 to 13.8	0.14	1.68	2700	0.93	32.8	32.3	0.13	29	-20 to +70	100000
80×80×25 mm	109L0812M401	Aluminum	12	10.2 to 13.8	0.1	1.2	2400	0.83	29.3	26.5	0.106	26	-20 to +70	100000
80×80×25 mm	109L0812L401	Aluminum	12	10.2 to 13.8	0.08	0.96	1900	0.63	22.2	16.7	0.067	22	-20 to +70	100000
80×80×25 mm	109L0824S401	Aluminum	24	20.4 to 27.6	0.11	2.64	3400	1.2	42.4	50	0.2	37	-20 to +70	100000
80×80×25 mm	109L0824H401	Aluminum	24	20.4 to 27.6	0.09	2.16	3000	1.06	37.4	39.2	0.157	32	-20 to +70	100000
80×80×25 mm	109L0824F401	Aluminum	24	20.4 to 27.6	0.08	1.92	2700	0.93	32.8	32.3	0.13	29	-20 to +70	100000
80×80×25 mm	109L0824M401	Aluminum	24	20.4 to 27.6	0.07	1.68	2400	0.83	29.3	26.5	0.106	26	-20 to +70	100000
80×80×25 mm	109L0824L401	Aluminum	24	20.4 to 27.6	0.05	1.2	1900	0.63	22.2	16.7	0.067	22	-20 to +70	100000
80×80×25 mm	109L0848H401	Aluminum	48	40.8 to 55.2	0.06	2.88	3150	1.1	38.8	43.1	0.173	34	-20 to +70	100000
92×92×25 mm	109L0912S401	Aluminum	12	10.2 to 13.8	0.32	3.84	3500	1.69	59.7	66.6	0.267	39	-20 to +70	100000
92×92×25 mm	109L0912H401	Aluminum	12	10.2 to 13.8	0.21	2.52	2850	1.38	48.7	45.1	0.181	33	-20 to +70	100000
92×92×25 mm	109L0912F401	Aluminum	12	10.2 to 13.8	0.14	1.68	2450	1.18	41.7	32.3	0.13	30	-20 to +70	100000
92×92×25 mm	109L0912M401	Aluminum	12	10.2 to 13.8	0.11	1.32	2100	1.01	35.7	23.5	0.094	27	-20 to +70	100000
92×92×25 mm	109L0912L401	Aluminum	12	10.2 to 13.8	0.08	0.96	1700	0.8	28.2	16.7	0.067	23	-20 to +70	100000
92×92×25 mm	109L0924H401	Aluminum	24	20.4 to 27.6	0.12	2.88	2850	1.38	48.7	45.1	0.181	33	-20 to +70	100000
92×92×25 mm	109L0924F401	Aluminum	24	20.4 to 27.6	0.08	1.92	2450	1.18	41.7	32.3	0.13	30	-20 to +70	100000
92×92×25 mm	109L0924M401	Aluminum	24	20.4 to 27.6	0.06	1.44	2100	1.01	35.7	23.5	0.094	27	-20 to +70	100000
92×92×25 mm	109L0924L401	Aluminum	24	20.4 to 27.6	0.05	1.2	1700	0.8	28.2	16.7	0.067	23	-20 to +70	100000
92×92×25 mm	109L0948C401	Aluminum	48	43 to 53	0.1	4.8	3400	1.65	58.3	64.2	0.258	38	-20 to +70	80000
92×92×25 mm	109L0948H401	Aluminum	48	40.8 to 55.2	0.06	2.88	2850	1.38	48.7	45.1	0.181	33	-20 to +70	100000
120×120×38 mm	9LB1212H101	Aluminum	12	10.2 to 13.8	0.39	4.68	2600	2.9	102.4	67.62	0.272	39	-20 to +70	200000
120×120×38 mm	9LB1212M101	Aluminum	12	10.2 to 13.8	0.22	2.64	2000	2.2	77.7	42.14	0.169	32	-20 to +70	200000
120×120×38 mm	9LB1224S101	Aluminum	24	20.4 to 27.6	0.46	11.04	3500	3.88	137.0	120.8	0.485	48	-20 to +70	100000
120×120×38 mm	9LB1224H101	Aluminum	24	20.4 to 27.6	0.19	4.56	2600	2.9	102.4	67.62	0.272	39	-20 to +70	200000
120×120×38 mm	9LB1224M101	Aluminum	24	20.4 to 27.6	0.11	2.64	2000	2.2	77.7	42.14	0.169	32	-20 to +70	200000
120×120×38 mm	9LB1248H101	Aluminum	48	40.8 to 55.2	0.11	5.28	2600	2.9	102.4	67.62	0.272	39	-20 to +70	200000
120×120×38 mm	9LB1248M101	Aluminum	48	40.8 to 55.2	0.06	2.88	2000	2.2	77.7	42.14	0.169	32	-20 to +70	200000

Thermally Controlled Fan

Size	Model no.	Frame material	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
52×52×15 mm	109P0512T7H12	Plastic	12	10.2 to 13.8	0.13	1.56	4600	0.255	9.0	31.9	0.128	27	-10 to +70	60000
					0.09	1.08	2300	0.13	4.6	8.8	0.035	17		
52×52×15 mm	109P0512T7H122	Plastic	12	10.2 to 13.8	0.13	1.56	4900	0.27	9.5	36.2	0.145	28	-10 to +70	60000
					0.09	1.08	2400	0.14	4.9	9.6	0.039	17		
60×60×15 mm	109P0612T7H12	Plastic	12	10.2 to 13.8	0.12	1.44	4100	0.4	14.1	38.2	0.153	32	-10 to +70	60000
					0.08	0.96	2050	0.2	7.1	9.3	0.037	18		
60×60×15 mm	109P0612T7H122	Plastic	12	10.2 to 13.8	0.12	1.44	4300	0.42	14.8	42.0	0.169	32	-10 to +70	60000
					0.08	0.96	2100	0.2	7.0	9.7	0.039	18		
60×60×20 mm	109P0612T6H12	Plastic	12	10.2 to 13.8	0.15	1.8	4200	0.42	14.8	31.9	0.128	31	-10 to +70	60000
					0.1	1.2	2100	0.21	7.4	8.8	0.035	21		
60×60×20 mm	109P0612T6H122	Plastic	12	10.2 to 13.8	0.15	1.8	4400	0.44	15.5	35.0	0.141	33	-10 to +70	60000
					0.1	1.2	2150	0.22	7.8	9.2	0.037	21		
60×60×25 mm	109R0612T4H12 109R0612T4H121	Plastic	12	10.2 to 13.8	0.13	1.56	3800	0.53	18.7	40.2	0.161	28	-10 to +60	60000
					0.1	1.2	1900	0.26	9.2	9.8	0.039	15		
60×60×25 mm	109R0612T4H122 109R0612T4H123	Plastic	12	10.2 to 13.8	0.13	1.56	3950	0.55	19.4	41.8	0.168	28	-10 to +60	60000
					0.1	1.2	1950	0.27	9.5	10.3	0.041	15		
80×80×20 mm	109P0812T6H12	Plastic	12	10.2 to 13.8	0.18	2.16	2900	0.84	29.7	29.4	0.118	31	-10 to +60	60000
					0.1	1.2	1450	0.42	14.8	7.4	0.03	18		
80×80×20 mm	109P0812T6H122	Plastic	12	10.2 to 13.8	0.18	2.16	3050	0.88	31.0	32.5	0.131	32	-10 to +60	60000
					0.1	1.2	1450	0.42	14.8	7.4	0.03	20		
80×80×25 mm	109R0812T4H12 109R0812T4H121	Plastic	12	10.2 to 13.8	0.14	1.68	2900	1.03	36.4	35.3	0.142	29	-10 to +60	60000
					0.09	1.08	1450	0.51	18.0	8.8	0.035	14		
80×80×25 mm	109R0812T4H122 109R0812T4H123	Plastic	12	10.2 to 13.8	0.14	1.68	3000	1.07	37.8	37.7	0.151	29	-10 to +60	60000
					0.09	1.08	1450	0.51	18.0	8.8	0.035	14		
92×92×25 mm	109P0912T4H12 109P0912T4H121	Plastic	12	10.2 to 13.8	0.2	2.4	2850	1.45	51.2	45.1	0.181	33	-10 to +60	40000
					0.1	1.2	1400	0.71	25.0	11.3	0.045	18		
92×92×25 mm	109P0912T4H122 109P0912T4H123	Plastic	12	10.2 to 13.8	0.2	2.4	3000	1.52	53.7	50.0	0.201	35	-10 to +60	40000
					0.1	1.2	1400	0.71	25.0	11.3	0.045	18		
120×120×25 mm	109P1212T4H12 109P1212T4H121	Plastic	12	10.2 to 13.8	0.55	6.6	2800	2.5	88.3	53.9	0.216	40	-10 to +60	40000
					0.22	2.64	1400	1.25	44.1	13.7	0.055	25		
120×120×25 mm	109P1212T4H122 109P1212T4H123	Plastic	12	10.2 to 13.8	0.55	6.6	2800	2.5	88.3	53.9	0.216	40	-10 to +60	40000
					0.22	2.64	1400	1.25	44.1	13.7	0.055	25		
120×120×38 mm	109R1212T1H12 109R1212T1H121	Plastic	12	10.2 to 13.8	0.48	5.75	2600	2.9	102.4	64.7	0.26	39	-10 to +60	40000
					0.23	2.76	1300	1.4	49.4	16.2	0.065	24		
120×120×38 mm	109R1212T1H122 109R1212T1H123	Plastic	12	10.2 to 13.8	0.48	5.75	2600	2.9	102.4	64.7	0.26	39	-10 to +60	40000
					0.23	2.76	1300	1.4	49.4	16.2	0.065	24		

Blower

Size	Model no.	Frame material	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
120×32 mm	109BF12HC2	Plastic	12	10.2 to 13.8	0.6	7.2	2400	0.78	27.5	175.4	0.704	52	-20 to +60	40000
120×32 mm	109BF12MC2	Plastic	12	10.2 to 13.8	0.32	3.84	1900	0.61	21.5	109.8	0.441	44	-20 to +60	40000
120×32 mm	109BF24HC2	Plastic	24	20.4 to 27.6	0.3	7.2	2400	0.78	27.5	175.4	0.704	52	-20 to +60	40000
120×32 mm	109BF24MC2	Plastic	24	20.4 to 27.6	0.16	3.84	1900	0.61	21.5	109.8	0.441	44	-20 to +60	40000

・Storage temperature is -30 to +70°C.

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IOWA FLUID POWER
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AUTOMATION PROCESS & CONTROLS (IL)
6323 North Avondale Suite 246, Chicago, IL 60631, U.S.A.
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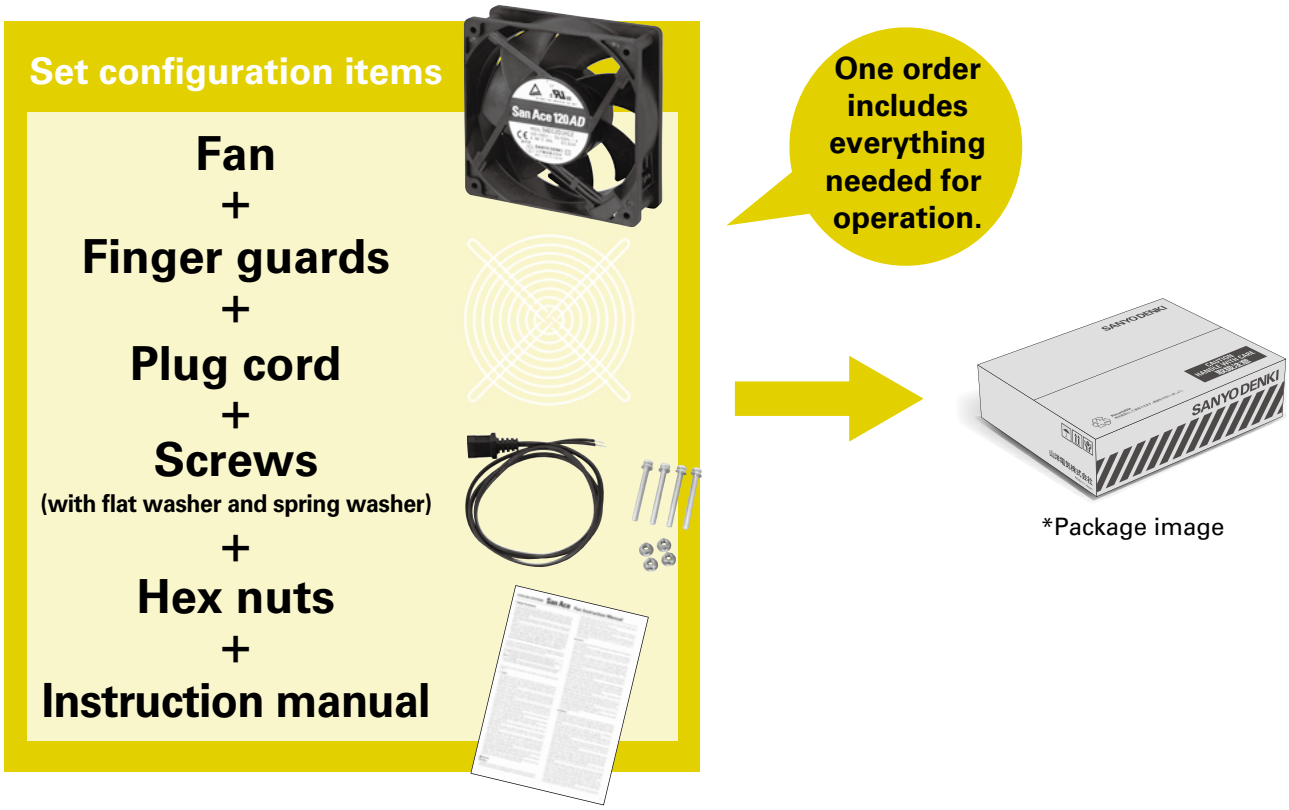

Plug cords are compliant with Electrical Appliance and Material Safety Law, but not UL/CSA certified.

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