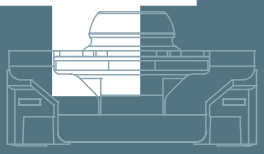
4



PCB KEY SWITCHES

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MICON 5

Tactile switches

Tactile switch range MICON 5, with clear key click and extremely reliable switching. Use under overlay or under keycaps RK 90. THT and SMT versions which can be mounted automatically.
All products are RoHS compliant.

PCB KEY SWITCHES

MICON 5 - TACTILE SWITCHES

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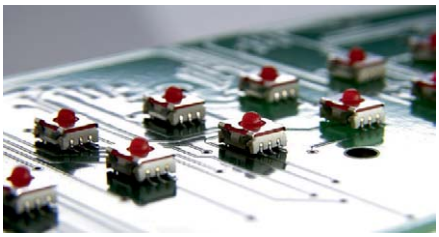
MICON 5
Tactile switches

→ MICON 5 tactile switches offer an extremely high switching reliability while needing very little space. They can be arranged as single keys, in rows or key blocks.
When arranged under an overlay, MICON key switches should be combined with plungers.
The features at a glance:
- Suitable for the most common soldering methods
  - Wave soldering bath for THT versions
  - Reflow soldering for SMT version
  - Vapour phase soldering for SMT versions
  - Manual soldering
- SMT version suitable for processing with an automatic SMT assembly machines
- IMDS listed

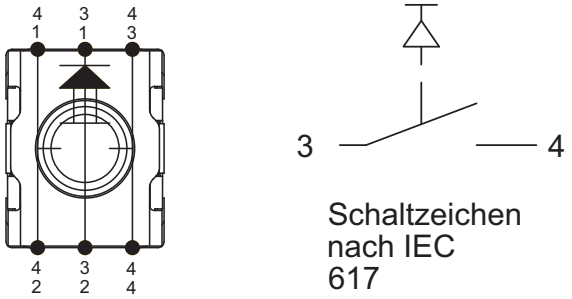
You can download actual product information from our internet site www.rafi.de / Catalogues and Downloads



Technical Data

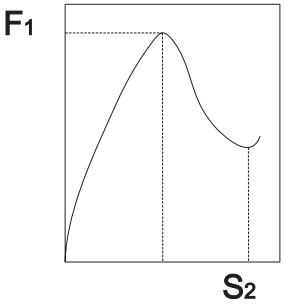
→ **Dimensions**	
Length of housing	6.4 mm
Width of housing	5.1 mm
Overall height	see order block
→ **Mechanical design**	
Mounting	soldering
Terminals	see order block
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	Au
Illumination	no
→ **Mechanical characteristics**	
Operating force F1 (±20%)	see order block
Switching travel S2 (±0.15 mm)	see order block
→ **Electrical characteristics**	
Rated voltage min.	0.02 V
Rated voltage max.	35 V
Rated current min.	0.01 mA
Rated current max.	100 mA
Rated power max. (ohmic load)	1 W
Contact resistance when new	≤ 100 mΩ
Rated voltage restistance AC	250 V
Insulation resistance	10^9 Ω
→ **Other specifications**	
Ambient temp. operating min.	-40 °C
Ambient temp. operating max.	+90 °C
Resistance to environment	IEC 60068-2 -14,-30,-33, -78
Operating life (test force)	see order block
Solder heat resistance / Solderability	see order block
Flammability of materials	UL 94 V1
Packing	see order block
Produkt type	see order block
ROHS compliant	yes
REACH compliant	yes

MICON 5 Circuit diagram acc. to IEC 617



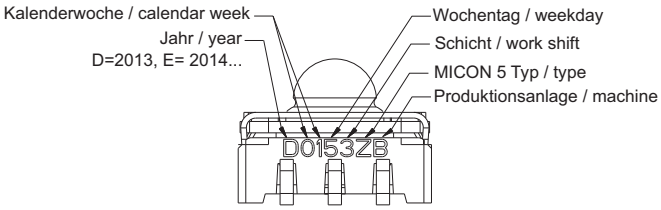
The two outer contacts must be connected.

MICON 5 Force-travel diagram



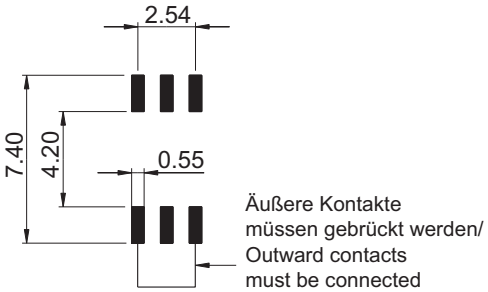
Operating force F1 and switching travel S2 see order block.

MICON 5 Product code acc. to DIN EN ISO 9001 (EN ISO 8402)

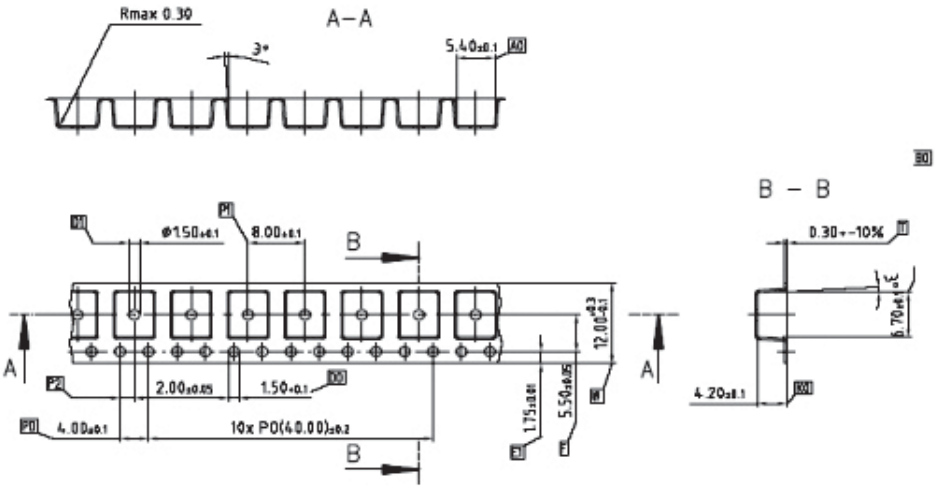


A 7-digit code is printed on the housing of the key switch. This code informs about production date, type and production shift.

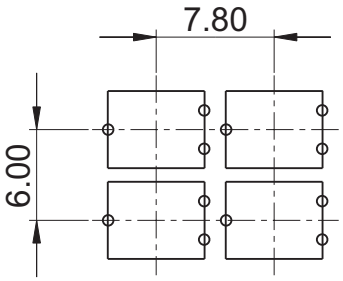
Solder pad



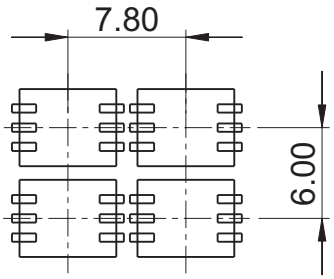
MICON 5 SMT version, tape and reel



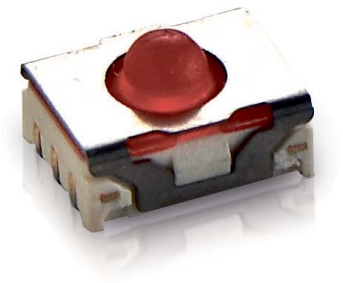
PCB pattern, smallest grid (without plungers)



MICON 5 THT

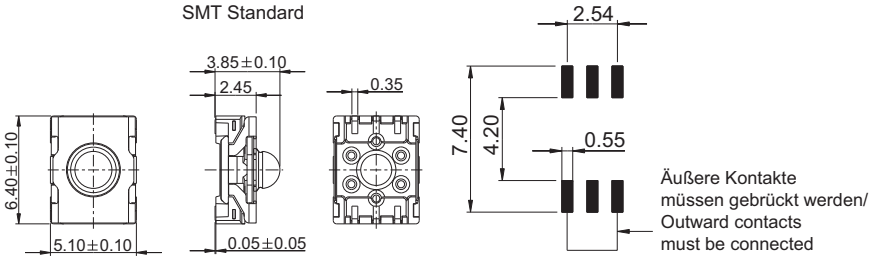


MICON 5 SMT



MICON 5
Tactile switch, SMT Standard

Technical data see page 4 - 5



→	Produkt type	Terminals	Solder heat resistance / Solderability	Operating force F1 (±20%)	Switching travel S2 (±0.15 mm)	Operating life (test force)	Order no.
	X	SMT	DIN EN 60068-2-58	3.0 N	0.7 mm	1,000,000 (4 N)	1.14.002.101/0000
	Z	SMT	DIN EN 60068-2-58	3.6 N	0.8 mm	250,000 (6 N)	1.14.002.001/0000
	W	SMT	DIN EN 60068-2-58	5.5 N	0.9 mm	1,000,000 (8 N)	1.14.002.111/0000
	Y	SMT	DIN EN 60068-2-58	8.0 N	1.1 mm	250,000 (12 N)	1.14.002.011/0000
	J	SMT	DIN EN 60068-2-58	1.5 N	0.5 mm	1,000,000 (4 N)	1.14.002.201/0000

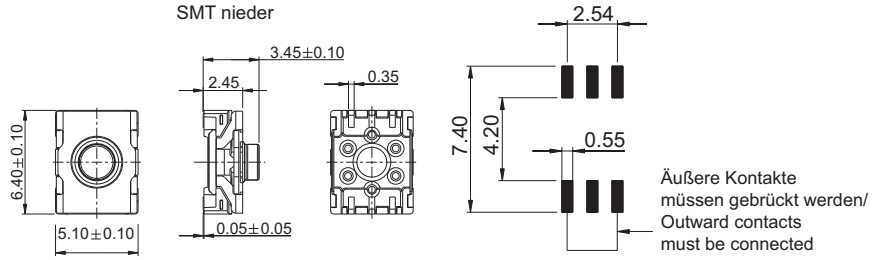
Packing: in tape, reel with 2100 pieces
Keycaps see RK 90

Mounting hints:
Special pipette (Siemens Siplace order no.: 348514-02), mounting with collect and place head
Recommendation for screen printing: 150 µm stencil with 10% reduction of the pad size.

The key switch **1.14.002.201/0000** does not provide tactile and audible feedback. It is therefore generally used only as a **redundant auxiliary switch** to other MICON standard switches, if this is required for safety reasons.

MICON 5
Tactile switch, SMT low

Technical data see page 4 - 5



→	Produkt type	Terminals	Solder heat resistance / Solderability	Operating force F1 (±20%)	Switching travel S2 (±0.15 mm)	Operating life (test force)	Order no.
	S	SMT	DIN EN 60068-2-58	3.0 N	0.6 mm	1,000,000 (4 N)	1.14.002.103/0000
	T	SMT	DIN EN 60068-2-58	3.6 N	0.7 mm	250,000 (6 N)	1.14.002.003/0000

– Table (continued) –
MICON 5 - Tactile switch, SMT low

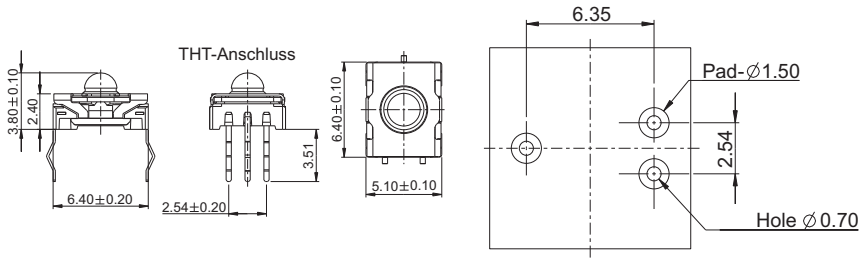
→	Produkt type	Terminals	Solder heat resistance / Solderability	Operating force F1 (±20%)	Switching travel S2 (±0.15 mm)	Operating life (test force)	Order no.
	L	SMT	DIN EN 60068-2-58	5.5 N	0.7 mm	1,000,000 (8 N)	1.14.002.113/0000

Packing: in tape, reel with 2100 pieces
Keycaps see RK 90

Mounting hints:
Special pipette (Siemens Siplace order no.: 348514-02), mounting with collect and place head
Recommendation for screen printing: 150 µm stencil with 10% reduction of the pad size.

MICON 5
Tactile switch, THT Standard

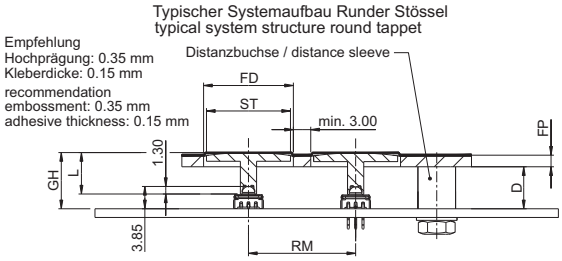
Technical data see page 4 - 5



→	Produkt type	Terminals	Solder heat resistance / Solderability	Operating force F1 (±20%)	Switching travel S2 (±0.15 mm)	Operating life (test force)	Order no.
	O	THT	DIN EN 60068-2-20	3.0 N	0.7 mm	1,000,000 (4 N)	1.14.002.106/0000
	Q	THT	DIN EN 60068-2-20	3.6 N	0.8 mm	250,000 (6 N)	1.14.002.006/0000
	N	THT	DIN EN 60068-2-20	5.5 N	0.9 mm	1,000,000 (8 N)	1.14.002.116/0000
	P	THT	DIN EN 60068-2-20	8.0 N	1.1 mm	250,000 (12 N)	1.14.002.016/0000

Packing: in tubes with 102 pieces
Keycaps see RK 90

MICON 5
Plungers round, not illuminable



→ **Description**

A - Height of key switch: SMT type: 3.85 mm, THT type: 3.80 mm
D - Length of spacer D = GH - KP - FP
FD - Front panel cut-out FD = ST + 1 mm
FP - Front panel thickness
GH - Overall height: GH = A + L1 + 0.05 (SMT type), GH = A + L 1 (THT type)
L - Overall length of plunger
RM - Key grid
ST - Diameter of plunger

The plungers can only be combined with MICON 5 version Standard (red bubble).

Technical Data

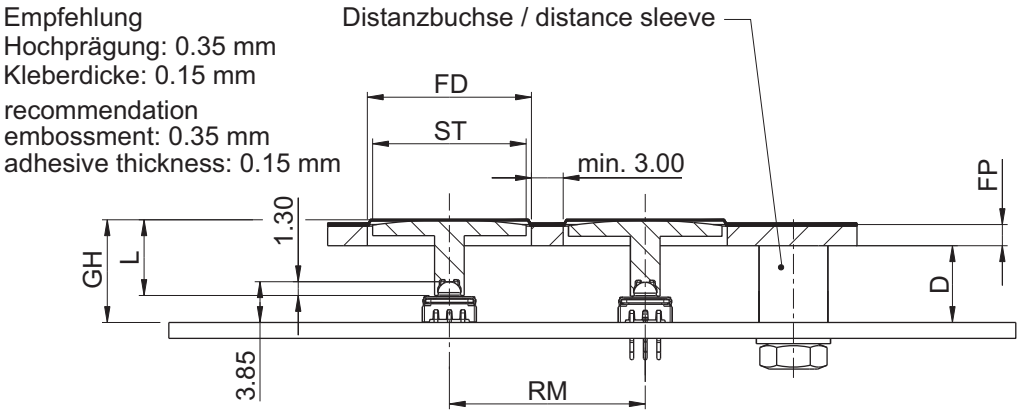
→ **General information**

Plunger diameter/size ST	see order block
Length of plunger L	see order block
Overall height GH with embossing	see order block
9.2 mm compatible	see order block

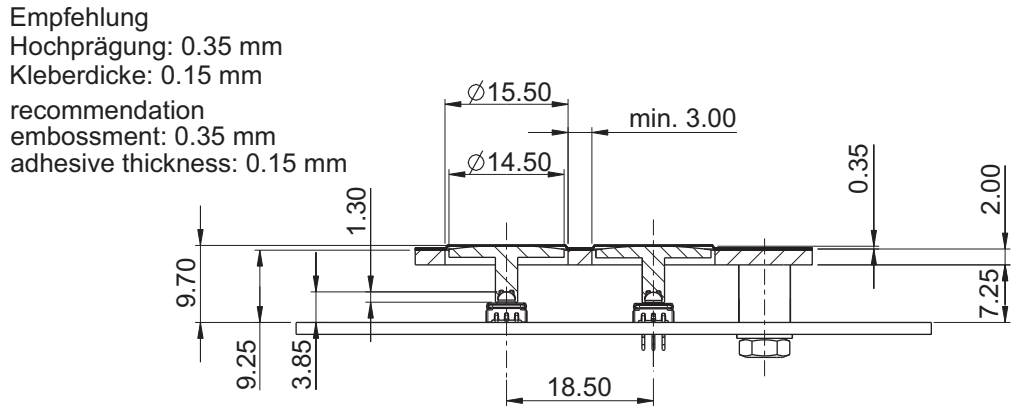
→ **Other specifications**

ROHS compliant	yes
REACH compliant	yes

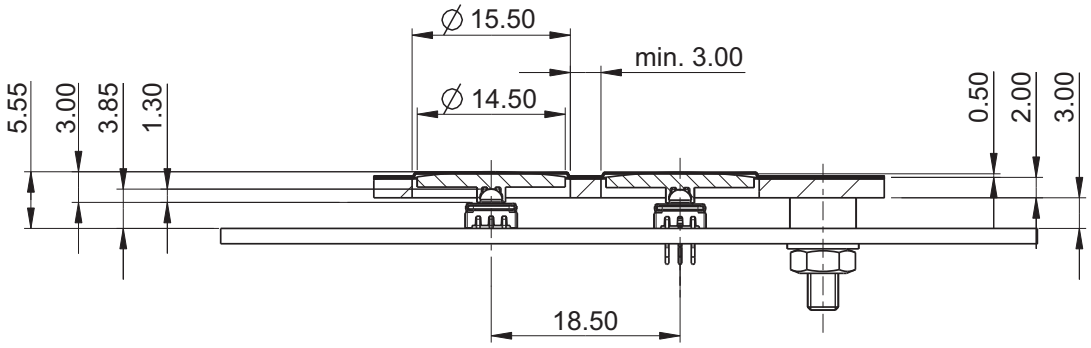
Typical system design under overlay, round plungers, opaque, non-illuminable



RAFI standard system design, 9.70 mm height, round plunger, opaque, non-illuminable



Lowest system design, 5.55 mm height, round plunger, opaque, non-illuminable



MICON 5
Plunger opaque, round, not illuminable

Technical data see page 4 - 10

→	Plunger diameter/size ST	Length of plunger L	Overall height GH with embossing	9.2 mm compatible	Order no.
	6.0 mm	3.00 mm	5.55 mm	-	5.46.001.103/0200
	6.0 mm	3.45 mm	6.0 mm	-	5.46.001.104/0200
	6.0 mm	3.95 mm	6.5 mm	-	5.46.001.105/0200
	6.0 mm	4.45 mm	7.0 mm	-	5.46.001.106/0200
	6.0 mm	7.15 mm	9,7 mm	yes	5.46.001.107/0200
	6.0 mm	9.95 mm	12,5 mm	-	5.46.001.108/0200
	8.0 mm	3.00 mm	5.55 mm	-	5.46.001.123/0200
	8.0 mm	3.45 mm	6.0 mm	-	5.46.001.124/0200
	8.0 mm	3.95 mm	6.5 mm	-	5.46.001.125/0200
	8.0 mm	4.45 mm	7.0 mm	-	5.46.001.126/0200
	8.0 mm	5.50 mm	8.5 mm	-	5.46.001.121/0200
	8.0 mm	7.15 mm	9,7 mm	yes	5.46.001.127/0200
	8.0 mm	9.95 mm	12,5 mm	-	5.46.001.128/0200
	8.0 mm	10.30 mm	12.85 mm	-	5.46.001.122/0200
	11.5 mm	3.00 mm	5.55 mm	-	5.46.001.143/0200
	11.5 mm	3.45 mm	6.0 mm	-	5.46.001.144/0200
	11.5 mm	3.95 mm	6.5 mm	-	5.46.001.145/0200
	11.5 mm	4.45 mm	7.0 mm	-	5.46.001.146/0200
	11.5 mm	5.50 mm	8.5 mm	-	5.46.001.141/0200
	11.5 mm	7.15 mm	9,7 mm	yes	5.46.001.147/0200
	11.5 mm	9.95 mm	12,5 mm	-	5.46.001.148/0200
	11.5 mm	10.30 mm	12.85 mm	-	5.46.001.142/0200
	14.5 mm	3.00 mm	5.55 mm	-	5.46.001.163/0200
	14.5 mm	3.45 mm	6.0 mm	-	5.46.001.164/0200
	14.5 mm	3.95 mm	6.5 mm	-	5.46.001.165/0200
	14.5 mm	4.45 mm	7.0 mm	-	5.46.001.166/0200
	14.5 mm	7.15 mm	9,7 mm	yes	5.46.001.167/0200
	14.5 mm	9.95 mm	12,5 mm	-	5.46.001.168/0200
	19.0 mm	3.00 mm	5.55 mm	-	5.46.001.183/0200

– Table (continued) –
MICON 5 - Plunger opaque, round, not illuminable

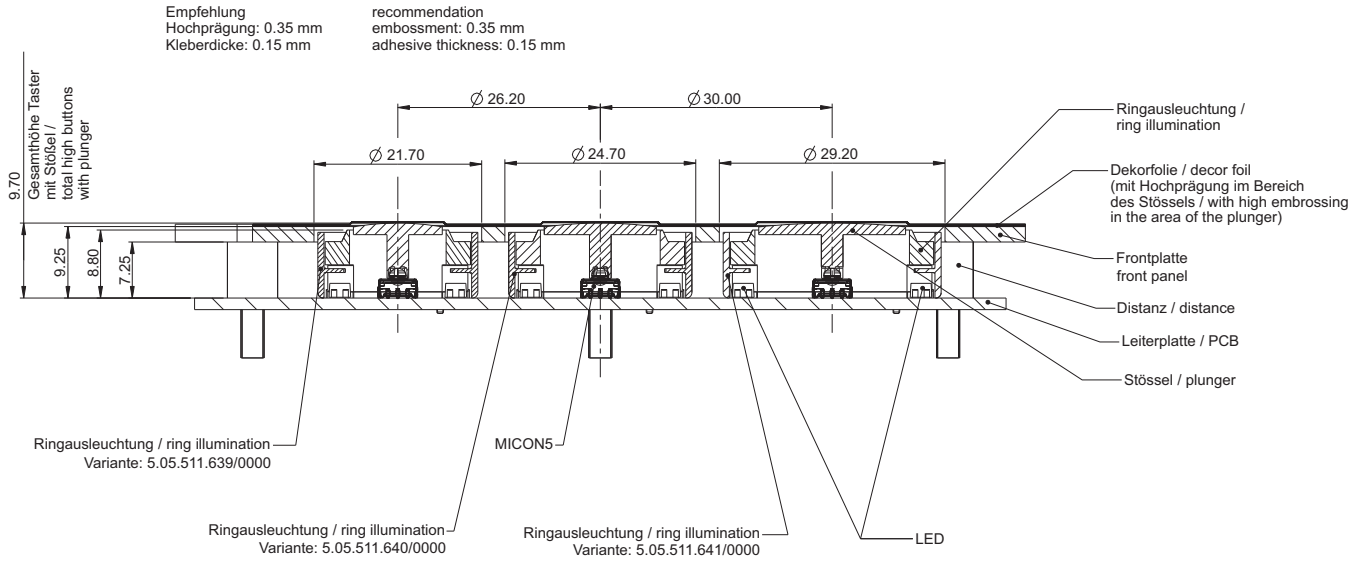
→	Plunger diameter/size ST	Length of plunger L	Overall height GH with embossing	9.2 mm compatible	Order no.
	19.0 mm	3.45 mm	6.0 mm	-	5.46.001.184/0200
	19.0 mm	3.95 mm	6.5 mm	-	5.46.001.185/0200
	19.0 mm	4.45 mm	7.0 mm	-	5.46.001.186/0200
	19.0 mm	7.15 mm	9,7 mm	yes	5.46.001.187/0200
	19.0 mm	9.95 mm	12,5 mm	-	5.46.001.188/0200

Can only be combined with MICON 5 version Standard (red bubble)

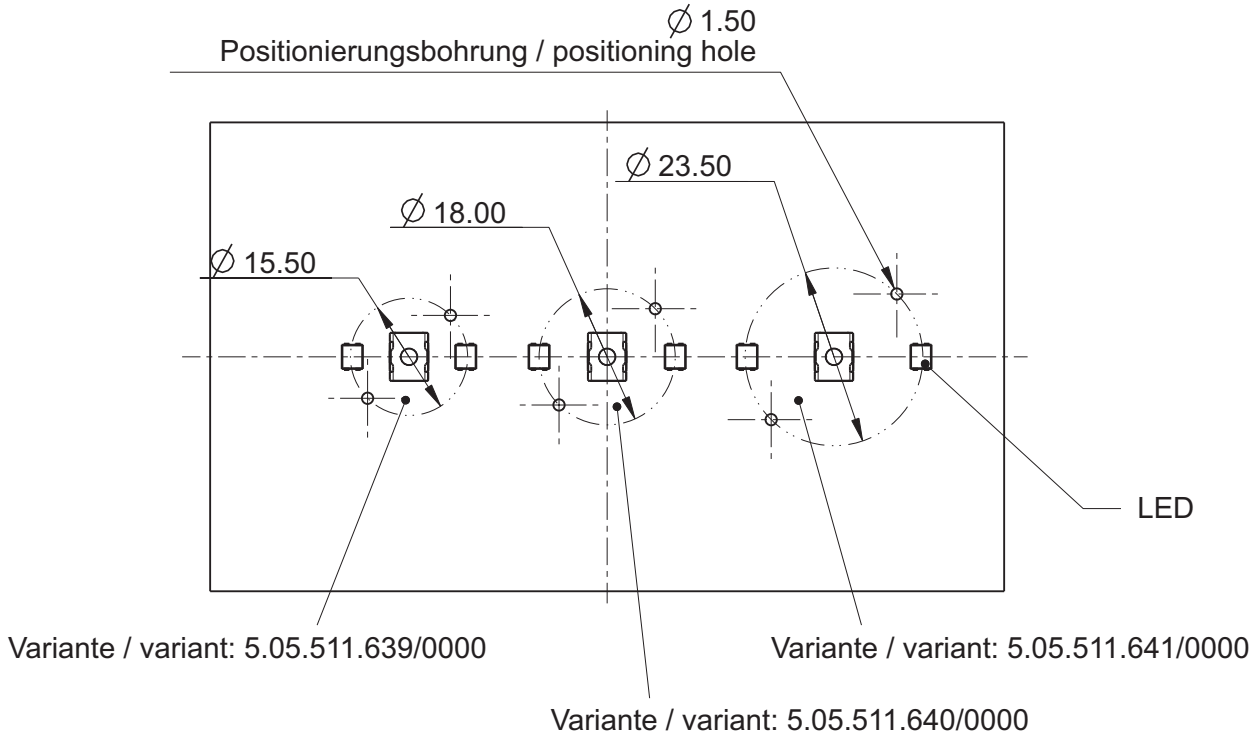
MICON 5
Plungers round, ring illumination

→ A MICON system design with ring illumination is only possible with the type height 9.70 mm. We recommend back printing the ring illumination area with a diffusing ink. For the actuating area, back printing with an opaque ink is recommended.

Typical system design with 9.70 mm height, round plunger, opaque, ring illumination



Hole pattern of PCB

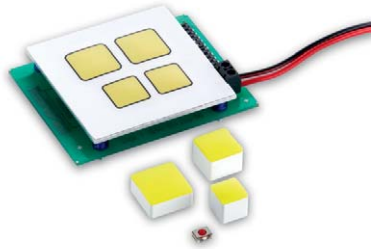


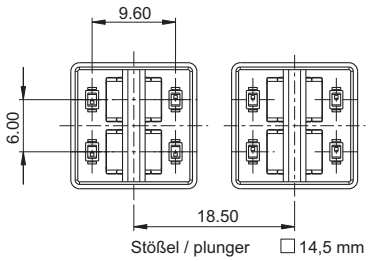
MICON 5
Plunger round, ring illumination

→	Plunger diameter non-illuminated	Diameter ring illumination RA	9.2 mm compatible	Overall height GH with embossing	Order no.
	11.50 mm	20.70	yes	9.70 mm	5.05.511.641/0000
	14.50 mm	23.70	yes	9.70 mm	5.05.511.640/0000
	19.00 mm	28.20	yes	9.70 mm	5.05.511.639/0000

Plunger round, not illuminable is included in delivery.

MICON 5
Plungers square, illuminable





Pic. with 4 LED OSRAM LO M676-Q1R1-24

→ Description

A - Height of key switch: SMT = 3.85 mm, THT = 3.80 mm
B - Width of plunger (11 x 11 mm, 14,5 x 14,5 mm or 18 x 18 mm)
D - GH - FP - 0.5 mm (= embossing height 0.35 mm + glue height 0.15 mm)
FD - Front panel cut-out: B + 1 mm
FP - Thickness of front plate
GH - Overall height: A + 5.75 mm
KS - Glue strip min. 3 mm
R - Grid size: FD + KS
The plungers can only be combined with MICON 5 version Standard (red bubble).

Technical Data

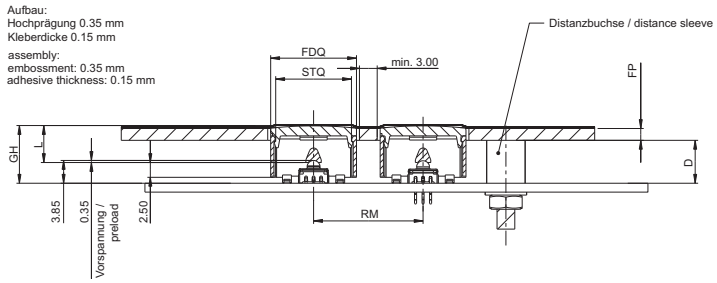
→ General information

Overall height GH	see order block
Color of lens	see order block

→ Other specifications

ROHS compliant	yes
REACH compliant	yes

Typical system design under overlay, square plungers, illuminable



D - Distanzlänge / distance length D = GH - FP - 0.5
(Prägehöhe / embossing height
+ Klebedicke / adhesive thickness)

L - Stößellänge / tappet length

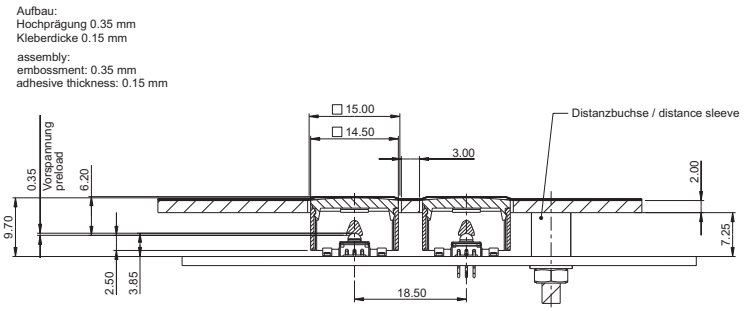
STQ - Breite quadratischer Stößel / width square tappet

FDQ - Quadratischer Frontplattendurchbruch /
square front panel breakthrough FDQ = STQ + 1mm

FP - Frontplattenstärke / Panel thickness

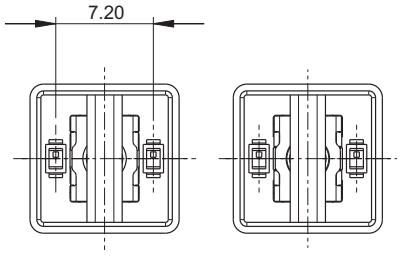
RM - Rastermaß / grid dimensions RM = FDQ + min. 3 mm

RAFI standard system design, 9.70 mm height, square plunger, illuminable

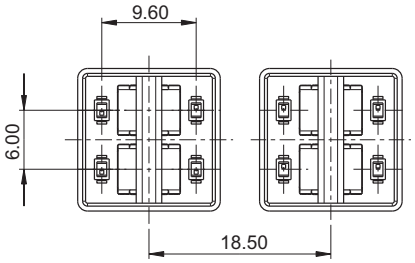


Possible arrangement of LEDs with square plunger, illuminable

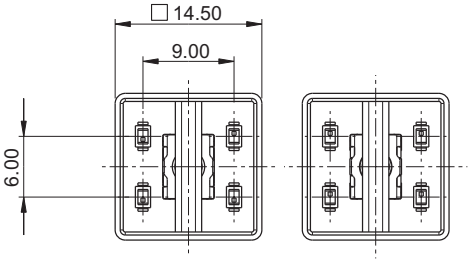
View without frontpanel, ouverlay and lens



Stößel / plunger □ 11 mm



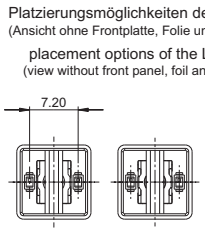
Stößel / plunger □ 14,5 mm



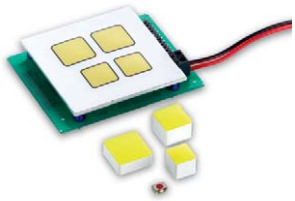
Stößel / plunger □ 14,5 mm

MICON 5
Plunger square, illuminable, 11 x 11 mm

Technical data see page 4 - 17



Pic. with 2 LED OSRAM LO M676-Q1R1-24

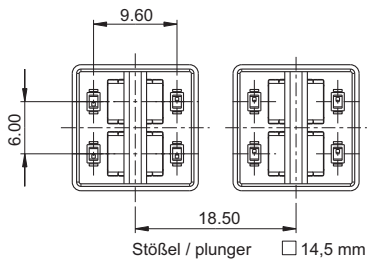


→ Overall height GH	Color of lens	Order no.
9.70 mm	red	5.05.511.470/2300
12.50 mm	red	5.05.511.471/2300
9.70 mm	yellow	5.05.511.470/2400
12.50 mm	yellow	5.05.511.471/2400
9.70 mm	green	5.05.511.470/2500
12.50 mm	green	5.05.511.471/2500
9.70 mm	blue	5.05.511.470/2600
12.50 mm	blue	5.05.511.471/2600
9.70 mm	white	5.05.511.470/2200
12.50 mm	white	5.05.511.471/2200

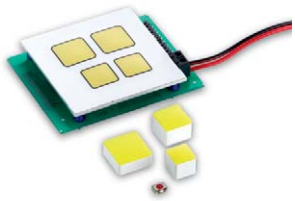
Can only be combined with MICON 5 version Standard (red bubble)

MICON 5
Plunger square, illuminable, 14.5 x 14.5 mm

Technical data see page 4 - 17



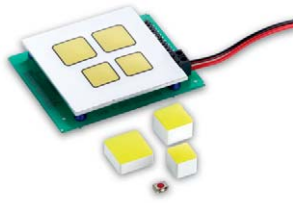
Pic. with 4 LED OSRAM LO M676-Q1R1-24



– Table (continued) –
MICON 5 - Plunger square, illuminable, 14.5 x 14.5 mm

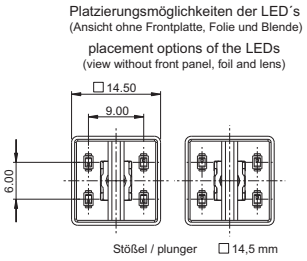
→ Overall height GH	Color of lens	Order no.
9.70 mm	red	5.05.511.475/2300
12.50 mm	red	5.05.511.476/2300
9.70 mm	yellow	5.05.511.475/2400
12.50 mm	yellow	5.05.511.476/2400
9.70 mm	green	5.05.511.475/2500
12.50 mm	green	5.05.511.476/2500
9.70 mm	blue	5.05.511.475/2600
12.50 mm	blue	5.05.511.476/2600
9.70 mm	white	5.05.511.475/2200
12.50 mm	white	5.05.511.476/2200

Can only be combined with MICON 5 version Standard (red bubble)



MICON 5
Plunger square, illuminable, 18 x 18 mm

Technical data see page 4 - 17



→ Overall height GH	Color of lens	Order no.
9.70 mm	red	5.05.511.480/2300
12.50 mm	red	5.05.511.481/2300
9.70 mm	yellow	5.05.511.480/2400
12.50 mm	yellow	5.05.511.481/2400
9.70 mm	green	5.05.511.480/2500
12.50 mm	green	5.05.511.481/2500
9.70 mm	blue	5.05.511.480/2600
12.50 mm	blue	5.05.511.481/2600
9.70 mm	white	5.05.511.480/2200
12.50 mm	white	5.05.511.481/2200

– Table (continued) –
MICON 5 - Plunger square, illuminable, 18 x 18 mm

Can only be combined with MICON 5 version Standard (red bubble)

MICON 5
Plungers square, spot-illumination

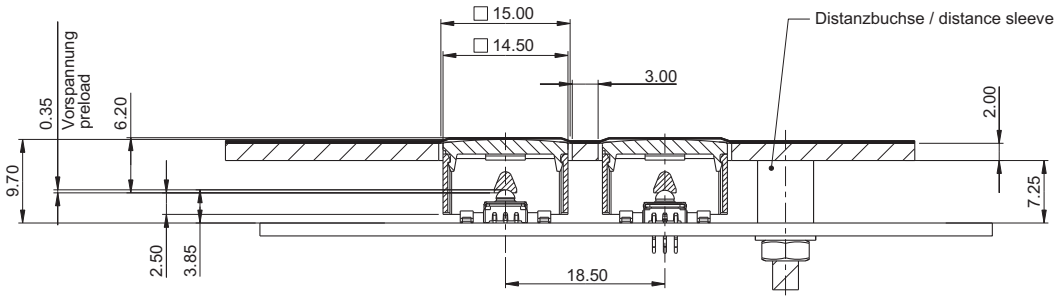
Technical Data

→ General information	
Overall height GH with embossing	9.70 mm
Color of lens	white
Dimensions	see order block
→ Other specifications	
ROHS compliant	yes
REACH compliant	yes

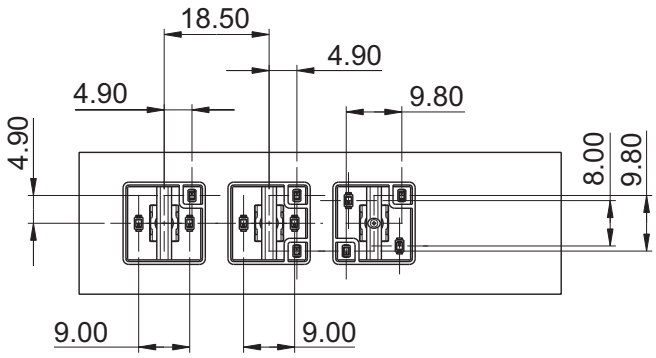
RAFI standard system design, 9.70 mm height, square plunger, spot-illumination

Aufbau:
Hochprägung 0.35 mm
Kleberdicke 0.15 mm

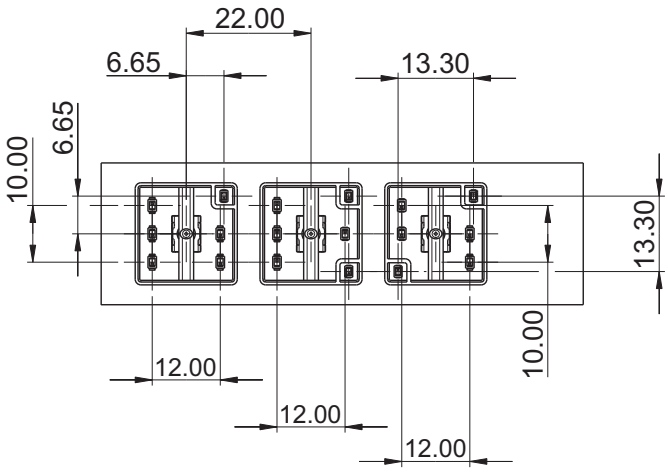
assembly:
embossment: 0.35 mm
adhesive thickness: 0.15 mm



Possible arrangement of LEDs with square plunger, spot illumination, 14,5 x 14,5 mm



Possible arrangement of LEDs with square plunger, spot illumination, 18 x 18 mm



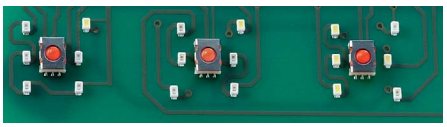
MICON 5
Plunger square, spot-illumination, plunger 14.5 x 14.5 mm

Technical data see page 4 - 22

→ Overall height GH with embossing	Spot-illumination	Color of lens	Dimensions	Order no.
9.70 mm		white	14.5 x 14.5	5.05.511.649/2200
9.70 mm		white	14.5 x 14.5	5.05.511.650/2200
9.70 mm		white	14.5 x 14.5	5.05.511.651/2200

MICON 5
Plunger square, spot-illumination, plunger 18 x 18 mm

Technical data see page 4 - 22



→ Overall height GH with embossing	Spot-illumination	Color of lens	Dimensions	Order no.
9.70 mm		white	18 x 18	5.05.511.658/2200
9.70 mm		white	18 x 18	5.05.511.659/2200
9.70 mm		white	18 x 18	5.05.511.660/2200

The uniqueness of the moment

Whenever a pushbutton or switch made by RAFI is used, the company's technology ensures that proper contact is made. For over 100 years now, we have driven innovation in human–machine communication and set standards across the globe. From operating elements and highly intelligent data entry systems to complete custom solutions from one source – all of our products are developed to meet the requirements of our long-standing customers. The results are excellent: close business relationships, innovative products and motivated employees.

Visit our website to learn more about RAFI.

www.rafi.de

RAFI

MICON 5 Plungers for signal indicator

Technical Data

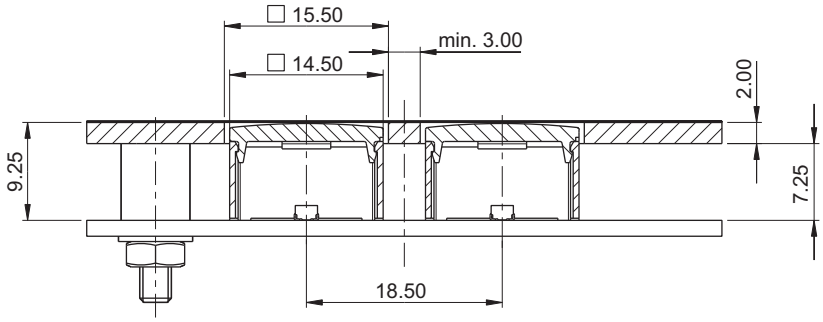
➔ **General information**

Overall height GH with embossing	9.70 mm
Lens color	white
Dimensions	see order block

➔ **Other specifications**

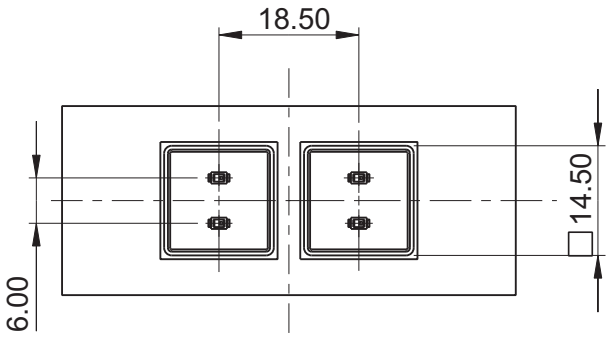
ROHS compliant	yes
REACH compliant	yes

RAFI standard system design, 9.70 mm height, signal indicator



Possible arrangement of LEDs with signal indicator

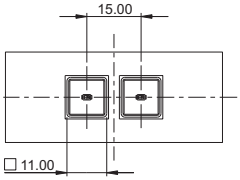
LED Platzierung mit Leuchtfeld 14.5x14.5
LED placement with light field 14.5 x14.5



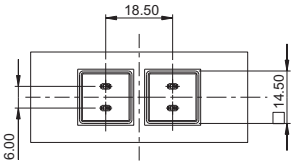
MICON 5
Plunger for signal indicator, 1-module

Technical data see page 4 - 26

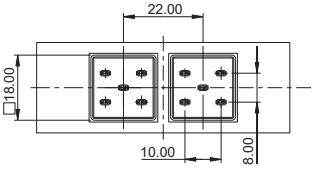
LED Platzierung mit Leuchtfeld 11x11
LED placement with light field 11x11



LED Platzierung mit Leuchtfeld 14.5x14.5
LED placement with light field 14.5 x14.5



LED Platzierung mit Leuchtfeld 18x18
LED placement with light field 18x18

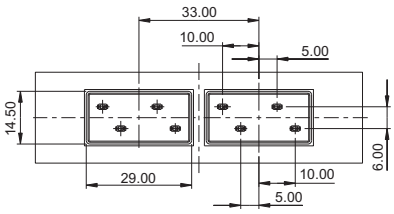


→ Overall height GH with embossing	Lens color	Dimensions	Order no.
9.70 mm	white	11 x 11 mm	5.05.005.182/2200
9.70 mm	white	14.5 x 14.5 mm	5.05.005.175/2200
9.70 mm	white	18 x 18 mm	5.05.005.176/2200

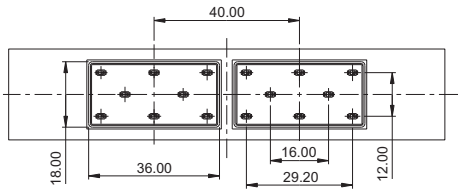
MICON 5
Plunger for signal indicator, 2-module

Technical data see page 4 - 26

LED Platzierung mit Leuchtfeld 14.5x29
LED placement with light field 14.5 x29

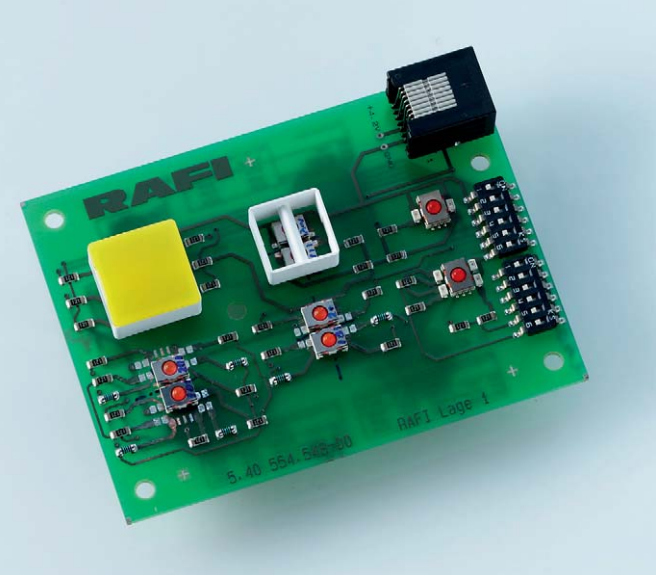


LED Platzierung mit Leuchtfeld 18x36
LED placement with light field 18x36



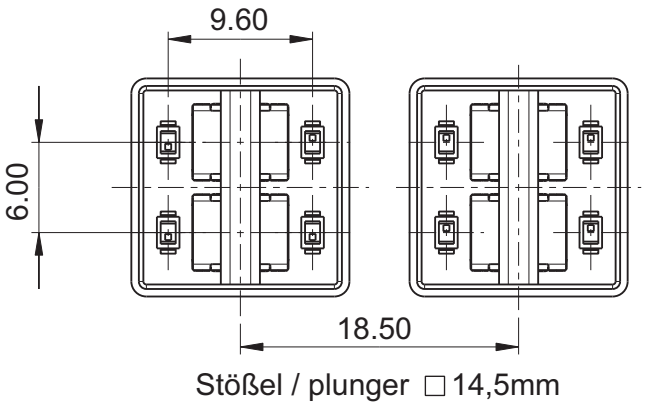
→ Overall height GH with embossing	Lens color	Dimensions	Order no.
9.70 mm	white	14.5 x 29 mm	5.05.005.177/2200
9.70 mm	white	18 x 36 mm	5.05.005.178/2200

Redundant system design with illuminable plungers MICON 1.14.002.201, 1.5 N

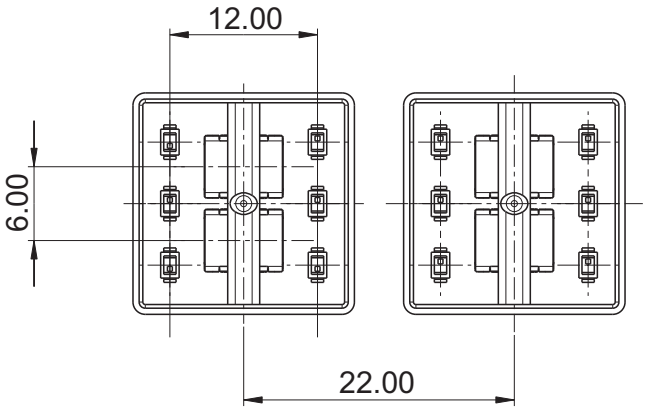


The tactile switch type **1.14.002.201/0000** is designed only for use in a **redundant system** with another SMT switch of standard height. For a redundant system design, the plunger sizes 14.5 x 14.5 mm or 18 x 18 mm must be used.

View without front panel, overlay and lens

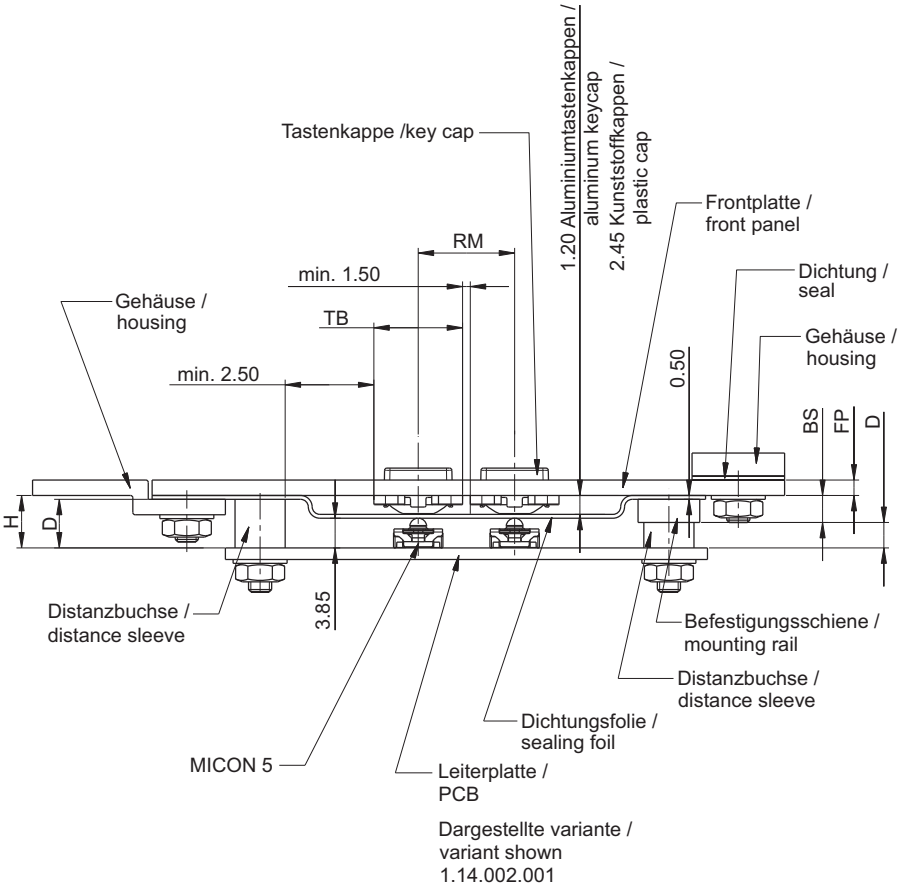


Plunger 14,5 x 14,5 mm

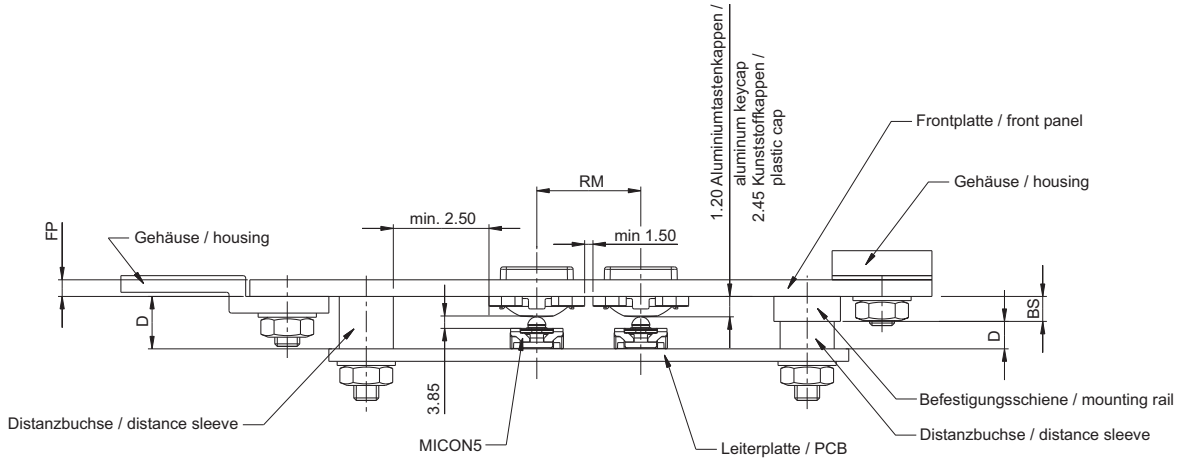


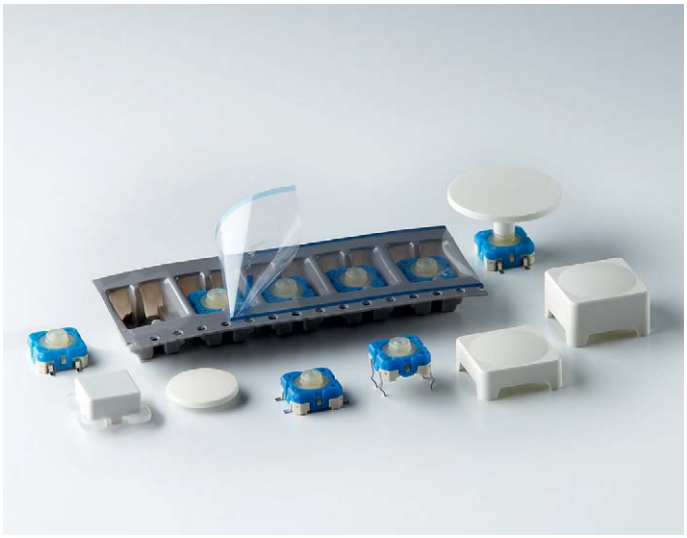
Plunger 18 x 18 mm

Typical system design RK 90 degree of protection IP 65



Typical system design RK 90 degree of protection IP 40





RACON

Tactile switches

RACON tactile switches distinct key click, excellent switching reliability.
For use under an overlay or with RK 90 keycaps. Print and SMD versions available (suitable for automatic assembly).
All products are RoHS compliant.

PCB KEY SWITCHES

RACON - TACTILE SWITCHES

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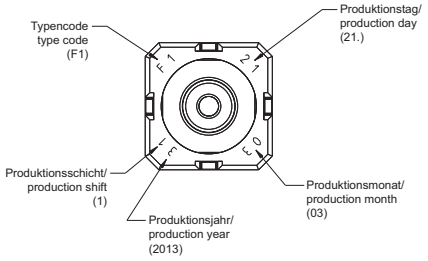
RACON 8
Tactile switches

➔ RACON 8 tactile switches offer an extremely high switching reliability while needing very little space. They can be arranged as single keys, in rows or key blocks.
When arranged under an overlay, RACON key switches should be combined with plungers.

The features at a glance:
- Suitable for the most common soldering methods
  - Wave soldering bath for THT versions
  - Reflow soldering for SMT version
  - Vapour phase soldering for SMT versions
  - Manual soldering

- SMT version suitable for processing with an automatic SMT assembly machine
- IMDS listed

You can download actual product information from our internet site www.rafi.de / Catalogues and Downloads



Technical Data

➔ Dimensions	
Length of housing	8.4 mm
Width of housing	8.4 mm
Height of housing	see order block
➔ Mechanical design	
Mounting	soldering
Terminals	see order block
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	Au
Illumination	no
➔ Mechanical characteristics	
Operating force	$3.3^{\pm 0.6}$ N
Switching travel	$0.34^{\pm 0.1}$ mm
➔ Electrical characteristics	
Rated voltage min.	0.02 V
Rated voltage max.	35 V
Rated current min.	0.01 mA
Rated current max.	100 mA
Rated power max. (ohmic load)	1 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω
➔ Other specifications	
Ambient temp. operating min.	-40 °C
Ambient temp. operating max.	+90 °C
Resistance to environment	DIN EN 60068-2 -14,-30,-33 and -78
Operating life	1,000,000
Solderability / Solder heat resistance	see order block
Flammability of materials	UL 94 HB
Packing	see order block
Produkt type	see order block
ROHS compliant	yes
REACH compliant	yes

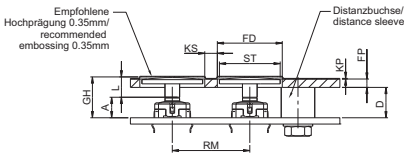
Accessories RACON 8 - Tactile switch

→	Description	Photo	Order no.	Additional accessories see page
	Spacer, round, length 6.25 mm, red		5.30.759.034/0000	2 - 265, 4 - 97, 5 - 32
	Plunger round		5.46.167.311/0209	4 - 49
	RK 90 - Keycap body, for lenses 9 x 9 mm		5.55.103.265/1013	4 - 110

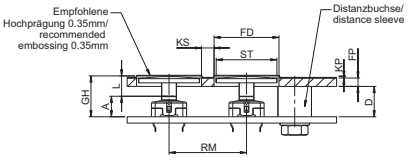
For other plungers, refer to the chapter „RACON special accessories“; for keycaps, refer to the chapter „RK 90“.

RACON 8, Typical system assembly with plunger under overlay

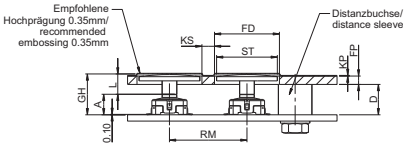
THT terminal outward



THT terminal inward

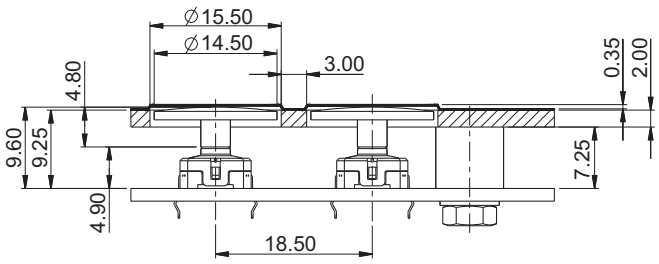


SMT gullwing terminal

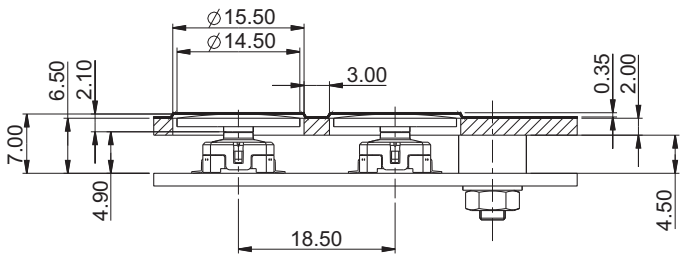


Variable Declaration		THT terminal inward and outward	SMT terminal
A	Height of key switch	A = 4.90 $^{+/- 0.1 mm}$	
D	Length of spacer D = GH - KP - FP		
FD	Front panel cut-out FD = ST + 1 mm		
FP	Front panel thickness		
GH	Overall height	GH = A + L	GH = A + L + 0.1 mm
KP	Thickness of overlay + embossing		
KS	Glue webs for overlay, min. 3 mm		
L	Length of plunger	L = GH - A	L = GH - A - 0.1 mm
RM	Key grid		
ST	Diameter of plunger		

RACON 8, Standard system assembly

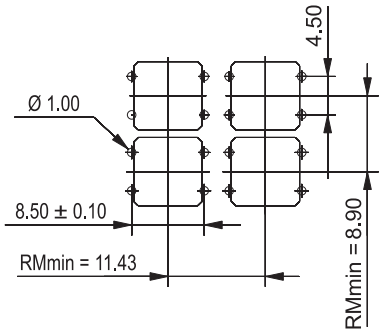


RACON 8, Lowest system assembly



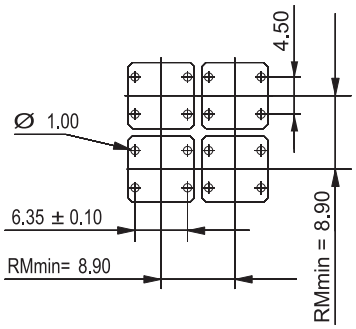
RACON 8, PCB hole pattern, smallest grid

THT terminal outward



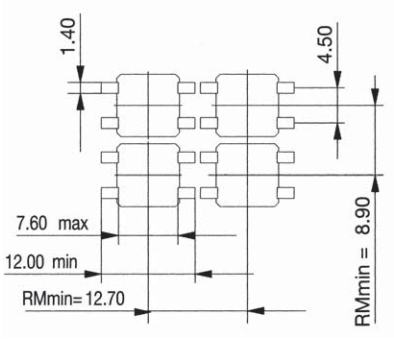
view on component side

THT terminal inward



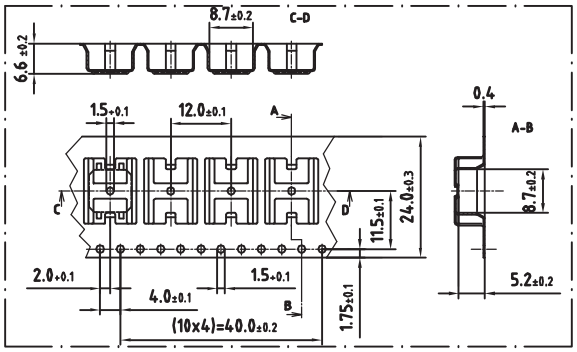
view on component side

SMT gullwing terminal

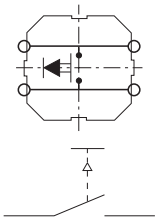


view on component side

RACON 8, SMT terminal, tape and reel

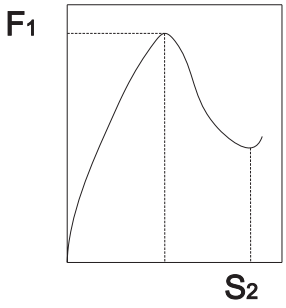


Circuit diagram RACON 8



Switching symbols acc. to IEC 60 617 form X (twice interrupting)

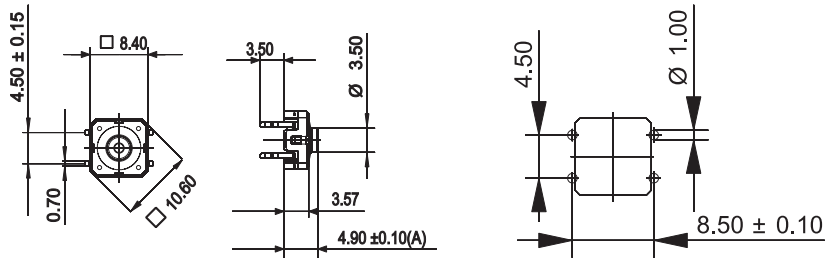
Typical force travel diagram



Operating force F1 and switching travel S2 see order block

RACON 8
Tactile switch, THT outward

Technical data see page 4 - 33



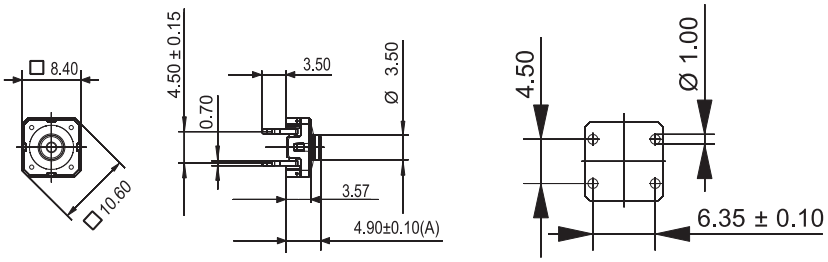
PCB footprint, view on component side

→	Produkt type	Terminals	Operating force	Solderability / Solder heat resistance	Packing	Order no.
	A1	THT outward	$3.3^{\pm 0.6}$ N	DIN EN 60068-2-20	tubes à 60 pieces	1.14.100.501/0000

For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“.

RACON 8
Tactile switch, THT inward

Technical data see page 4 - 33



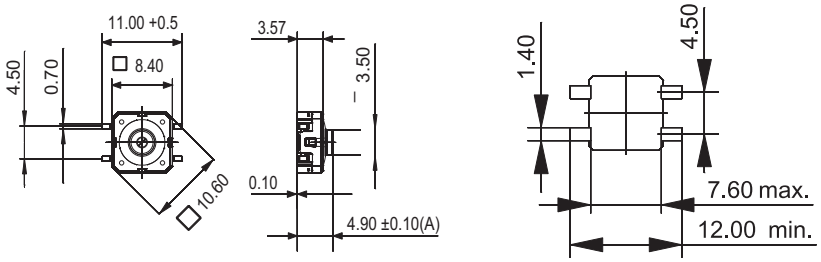
PCB footprint, view on component side

→	Produkt type	Terminals	Operating force	Solderability / Solder heat resistance	Packing	Order no.
	B1	THT inward	$3.3^{\pm 0.6}$ N	DIN EN 60068-2-20	tubes à 60 pieces	1.14.100.502/0000

For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“.

RACON 8
Tactile switch, SMT gullwing (Z) terminals

Technical data see page 4 - 33



PCB footprint, view on component side

→	Produkt type	Terminals	Operating force	Solderability / Solder heat resistance	Packing	Order no.
	C1	SMT Gullwing (Z) Anschluss	$3.3^{\pm 0.6}$ N	DIN EN 60068-2-58	tape and reel à 1000 pieces	1.14.100.503/0000
	C2	SMT Gullwing (Z) Anschluss	$4.8^{\pm 0.8}$ N	DIN EN 60068-2-58	tape and reel à 1000 pieces	1.14.100.603/0000
	C4	SMT Gullwing (Z) Anschluss	$6.3^{\pm 1.0}$ N	DIN EN 60068-2-58	tape and reel à 1000 pieces	1.14.100.803/0000

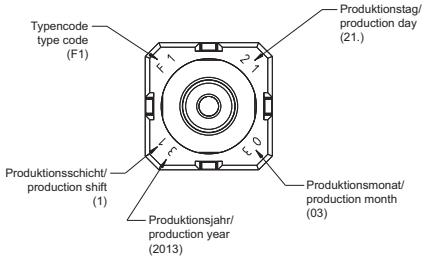
For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“.

RACON 12
Tactile switches

➔ RACON 12 tactile switches offer an extremely high switching reliability while needing very little space. They can be arranged as single keys, in rows or key blocks.
When arranged under an overlay, RACON key switches should be combined with plungers.

The features at a glance:
- Suitable for the most common soldering methods
  - Wave soldering bath for THT versions
  - Reflow soldering for SMT versions
  - Vapour phase soldering for SMT versions
  - Manual soldering

- SMT version suitable for processing with an automatic SMT assembly machine
- IMDS listed



Technical Data

➔ **Dimensions**	
Length of housing	12 mm
Width of housing	12 mm
Overall height	see order block
➔ **Mechanical design**	
Mounting	soldering
Terminals	see order block
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	Au
Illumination	no
➔ **Mechanical characteristics**	
Operating force	see order block
Switching travel	see order block
➔ **Electrical characteristics**	
Rated voltage min.	0.02 V
Rated voltage max.	35 V
Rated current min.	0.01 mA
Rated current max.	100 mA
Rated power max. (ohmic load)	1 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω
➔ **Other specifications**	
Ambient temp. operating min.	-40 °C
Ambient temp. operating max.	+90 °C
Resistance to environment	DIN EN 60068-2 -14,-30,-33 and -78
Operating life	see order block
Solderability / Solder heat resistance	see order block
Flammability of materials	UL 94 HB
Packing	see order block
Produkt code	see order block
ROHS compliant	yes
REACH compliant	yes

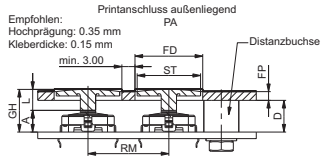
Accessories RACON 12 - Tactile switch

→	Description	Photo	Order no.	Additional accessories see page
	Spacer, round, length 6.25 mm, red		5.30.759.034/0000	2 - 265, 4 - 97, 5 - 32
	Square plunger for membrane data entry system		5.46.001.057/0209	4 - 51
	Plunger round		5.46.168.050/0209	4 - 50
	RK 90 - Keycap body, for lens 1 -module		5.55.103.030/1013	4 - 112

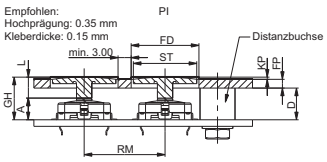
For other plungers, refer to the chapter „RACON special accessories“; for keycaps, refer to the chapter „RK 90“.

RACON 12, Typical system assembly with plunger under overlay

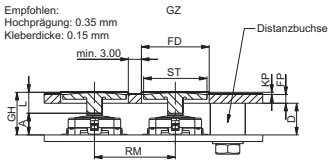
THT terminal outward



THT terminal inward

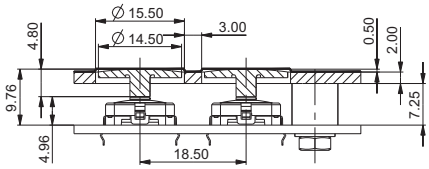


SMT gullwing terminal

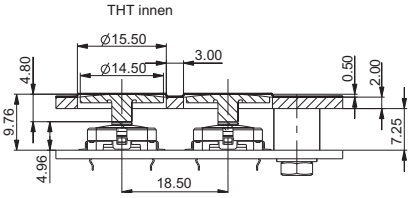


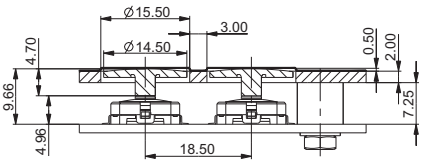
Variable Declaration		THT terminal inward and outward	SMT terminal
A	Height of key switch	A = 4.90 +/- 0.1 mm	
D	Length of spacer D = GH - KP - FP		
FD	Front panel cut-out FD = ST + 1 mm		
FP	Front panel thickness		
GH	Overall height	GH = A + L	GH = A + L + 0.1 mm
KP	Thickness of overlay + embossing		
L	Length of plunger	L = GH - A	L = GH - A - 0.1 mm
RM	Key grid		
ST	Diameter of plunger		

RACON 12, Standard system assembly

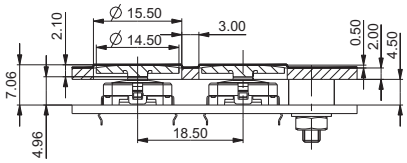


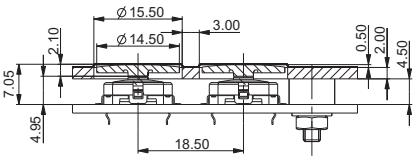
THT innen

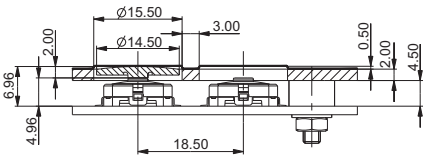




RACON 12, Lowest system assembly





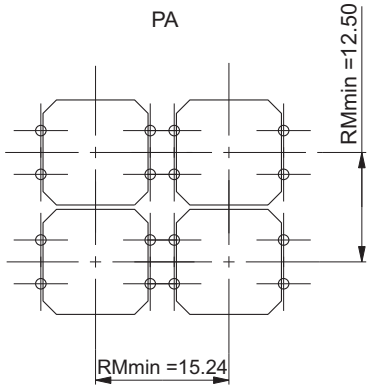


4

RACON

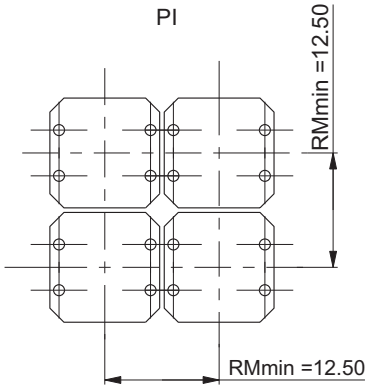
RACON 12, PCB hole pattern, smallest grid

THT terminal outward



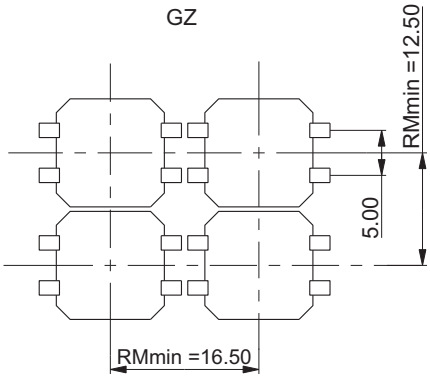
view on component side

THT terminal inward



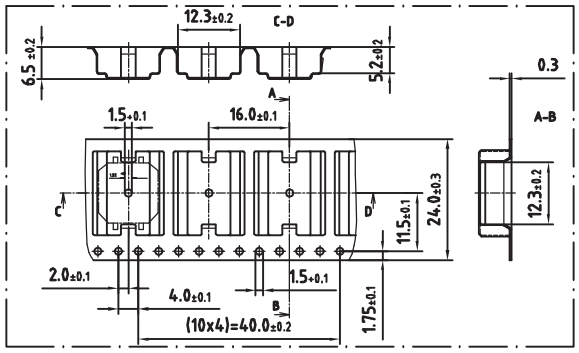
view on component side

SMT gullwing terminal

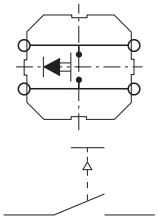


view on component side

RACON 12, SMT terminal, tape and reel

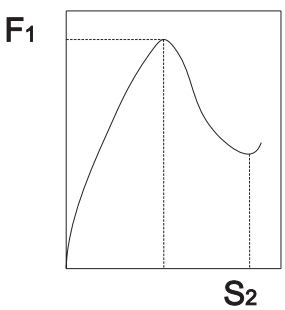


Circuit diagram RACON 12



Switching symbols acc. to IEC 60 617 form X (twice interrupting)

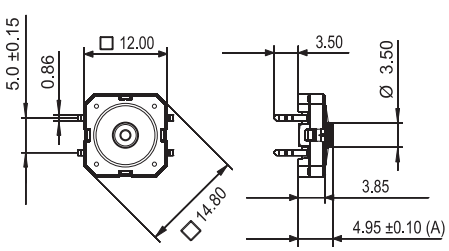
Typical force travel diagram

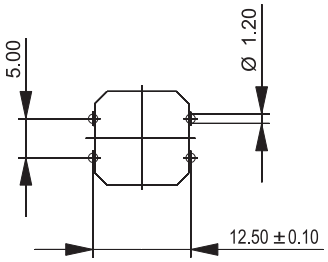


Operating force F1 and switching travel S2 see order block

RACON 12
Tactile switch solder terminals for PCB, outward

Technical data see page 4 - 39





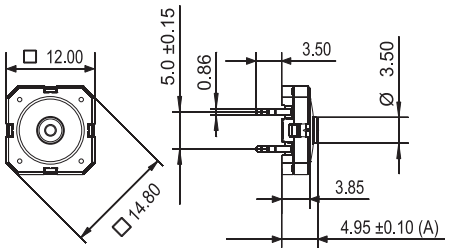
PCB footprint, view on component side

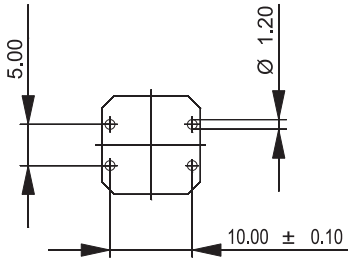
→	Produkt code	Operating force	Switching travel	Operating life	Solderability / Solder heat resistance	Packing	Order no.
	A1	$3.6^{\pm 0.7}$ N	$0.61^{\pm 0.1}$ mm	1,000,000	DIN EN 60068-2-20	tubes à 45 pieces	1.14.001.501/0000

For keycaps refer to chapter „RK 90", plungers see „RACON special accessories".

RACON 12
Tactile switch solder terminals for PCB, inward

Technical data see page 4 - 39





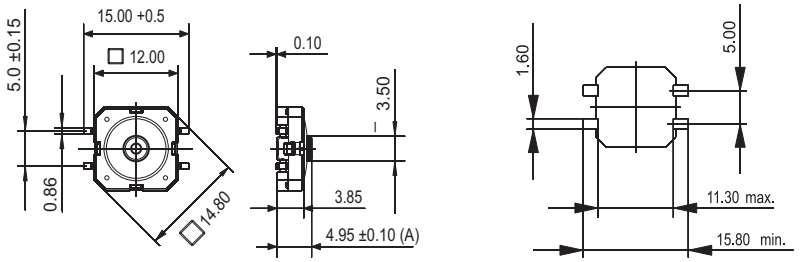
PCB footprint, view on component side

→	Produkt code	Operating force	Switching travel	Operating life	Solderability / Solder heat resistance	Packing	Order no.
	B1	$3.6^{\pm 0.7}$ N	$0.61^{\pm 0.1}$ mm	1,000,000	DIN EN 60068-2-20	tubes à 45 pieces	1.14.001.502/0000

For keycaps refer to chapter „RK 90", plungers see „RACON special accessories".

RACON 12
Tactile switch
SMT gullwing (Z) terminals

Technical data see page 4 - 39



PCB footprint, view on component side

→	Produkt code	Operating force	Switching travel	Operating life	Solderability / Solder heat resistance	Packing	Order no.
	C2	$2.5^{\pm0.6}$ N	0.55 mm	1,000,000	DIN EN 60068-2-58	tape and reel à 750 pieces	1.14.001.603/0000
	C1	$3.6^{\pm0.7}$ N	$0.61^{\pm0.1}$ mm	1,000,000	DIN EN 60068-2-58	tape and reel à 750 pieces	1.14.001.503/0000
	C4	$4.7^{\pm0.8}$ N	0.66 mm	1,000,000	DIN EN 60068-2-58	tape and reel à 750 pieces	1.14.001.803/0000
	ZD	$6.8^{\pm1.6}$ N	$0.7^{\pm0.1}$ mm	1,000,000	DIN EN 60068-2-58	tape and reel à 750 pieces	1.14.001.916/0000
	ZE	$9.7^{\pm2.5}$ N	$0.73^{\pm0.1}$ mm	65.000	DIN EN 60068-2-58	tape and reel à 750 pieces	1.14.001.920/0000

For keycaps refer to chapter „RK 90“, plungers see „RACON special accessories“.

RACON 12 V Tactile switches with vertical adapter

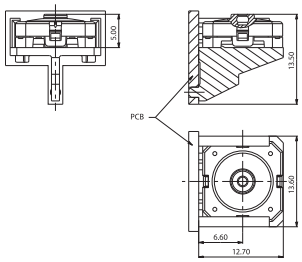
→ The RACON 12 V version can be used, for example, for PC plug-in boards and for measurement and control engineering applications. The vertical mounting adapter (support element) absorbs the operating force so that the pressure on the soldered terminals is reduced. For this mounting arrangement, the key switch is provided with two horizontal terminals on one side.

Technical Data

→ **Dimensions**	
Length	14.5 mm
Width	13.6 mm
Overall height	4.95 mm
→ **Mechanical design**	
Mounting	soldering
Terminals	THT
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	Au
Illumination	no
→ **Mechanical characteristics**	
Operating force	$3.6^{\pm 0.7}$ N
Switching travel	$0.61^{\pm 0.1}$ mm
→ **Electrical characteristics**	
Rated voltage min.	0.02 V
Rated voltage max.	35 V
Rated current min.	0.01 mA
Rated current max.	100 mA
Rated power max. (ohmic load)	1 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω
→ **Other specifications**	
Ambient temp. operating min.	-40 °C
Ambient temp. operating max.	+80 °C
Storage temperature min.	-50 °C
Storage temperature max. (product)	+85 °C
Storage temperature max. (in tube)	+85 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life	1,000,000
Solderability / solder heat resistance	DIN EN 60068-2-20
Flammability of materials	UL 94 HB
Packing	in boxes à 100 pieces
Produkt code	F 1
ROHS compliant	yes
REACH compliant	yes

RACON 12 V
Tactile switch with vertical adapter

Technical data see page 4 - 45



→	Produkt code	Terminals	Contact arrangement	Packing	Order no.
	F 1	THT	1 NO	in boxes à 100 pieces	1.14.001.505/0000

Plungers for overall height of 6.5 mm may not be used.

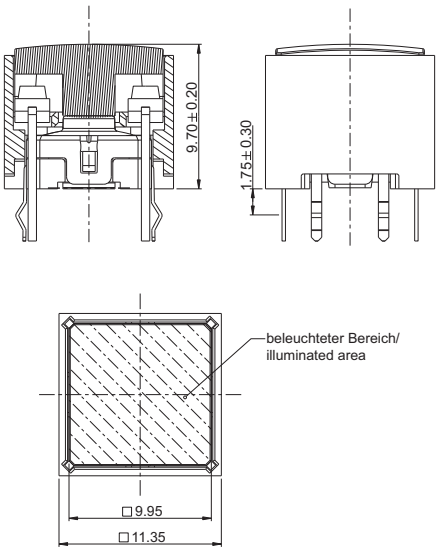
RACON 12 I
Tactile switches

→ **Application note**

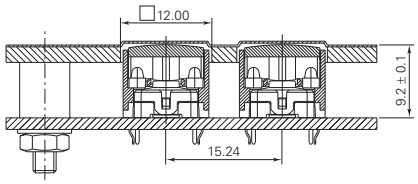
Low-profile keyboards with RACON 12 i components should be designed with a grid spacing of 15.24 mm. With this grid, frame webs remain free between the individual keys. The overlay can be glued onto these frame webs; we recommend area embossing over the keys for the overlays. If our RK 90 system design is used, we recommend the 9 x 9 mm keycaps.

Technical Data

→ **General information**	
Color of lens	see order block
Recommended key grid	15.24 x 15.24 mm
Key grid min.	12.5 x 12.5 mm
→ **Dimensions**	
Length	11.35 mm
Width	11.35 mm
Overall height	9.7 mm
→ **Mechanical design**	
Mounting	soldering
Terminals	THT
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	Au
Illumination	fully illuminated 2 LED
LED color	see order block
LED type	standard 2 mm
→ **Mechanical characteristics**	
Operating force	$3.3^{\pm 0.6}$ N
Switching travel	$0.34^{\pm 0.1}$ mm
→ **Electrical characteristics**	
Rated voltage min.	0.02 V
Rated voltage max.	35 V
Rated current min.	0.01 mA
Rated current max.	100 mA
Rated power max. (ohmic load)	1 W
Contact resistance when new max.	100 mΩ
Dielectric strength AC min.	750 V
Insulation resistance	10^9 Ω
→ **Electrical characteristics of LED**	
LED rated current max. I_F at 25 °C	red/green: 30, yellow: 50 mA
LED current reduction beginning with 50 degree C	red: 0.5 mA/degree C, yellow 0.8 mA/degree C
LED wavelength typ.	red 639, green 510-535, yellow 590
LED forward voltage U_F at 20 mA	red: 1.8 V/20 mA, yellow: 1.9 V/20 mA
LED breakdown voltage U_R at 25 °C	min. 5 V/0.1 mA
→ **Other specifications**	
Ambient temp. operating min.	-40 °C
Ambient temp. operating max.	+80 °C
Storage temperature min.	see order block
Storage temperature max. (product)	see order block
Storage temperature max. (in tube)	see order block
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life	1,000,000
Solderability / solder heat resistance	DIN EN 60068-2-20
Flammability of materials	UL 94 HB
Packing	tubes à 45 pieces
ROHS compliant	yes
REACH compliant	yes



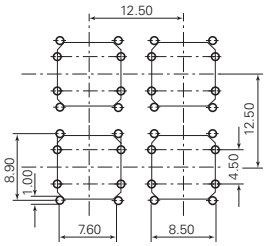
RACON 12i Typical system assembly



view on component side

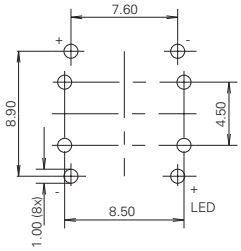
Recommended area embossing:
0.35 mm at glue spacer thickness of 0.15 mm

RACON 12i PCB smallest grid



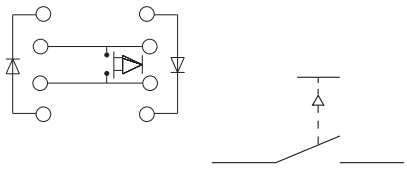
view on component side

LED hole patterns



view on component side

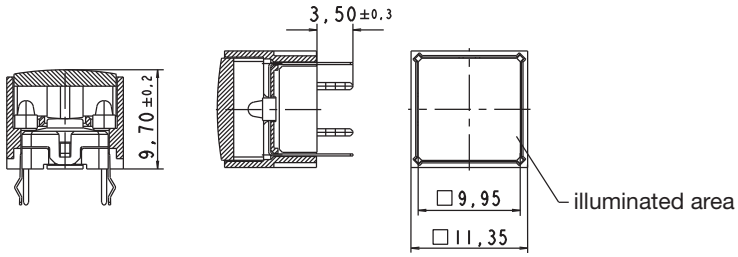
RACON 12i Circuit diagram



Switching symbols acc. to IEC 60 617 form X
(twice interrupting)

RACON 12 i Tactile switch

Technical data see page 4 - 47



→	Terminals	Contact arrangement	Illumination	Color of lens	LED color	Order no.
	THT	1 NO	fully illuminated 2 LED	red	red	1.14.001.551/0000
	THT	1 NO	fully illuminated 2 LED	yellow	yellow	1.14.001.553/0000
	THT	1 NO	fully illuminated 2 LED	orange	yellow	1.14.001.554/0000
	THT	1 NO	fully illuminated 2 LED	green	green	1.14.001.552/0000

If keycaps are used we recommend RK 90 keycaps 9 x 9 mm.

RACON
Special accessories

➔ GH = „L“ lenth oh plunger + „A“ height of key switch (+ 0.1 mm for SMT versions)
Front panel cut-out = size of plunger + 1 mm

Technical Data

➔ **Dimensions**

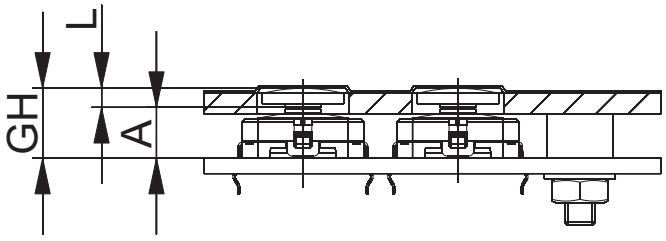
Length of plunger L	see order block
RACON version	see order block
Plunger diameter/size	see order block

➔ **Other specifications**

ROHS compliant	yes
REACH compliant	yes

Plunger round

Technical data see page 4 - 49



➔ Plunger diameter/size	RACON version	Length of plunger L	Order no.
8 mm	RACON 8	1.4 mm	5.46.167.301/0209
8 mm	RACON 8	1.5 mm	5.46.167.102/0209
8 mm	RACON 8	1.6 mm	5.46.167.101/0209
8 mm	RACON 8/12	1.9 mm	5.46.167.090/0209
8 mm	RACON 8/12	2 mm	5.46.167.106/0209
8 mm	RACON 8/12	2.1 mm	5.46.167.107/0209
8 mm	RACON 8/12	4.6 mm	5.46.167.091/0209
8 mm	RACON 8/12	4.7 mm	5.46.167.311/0209
8 mm	RACON 8/12	4.8 mm	5.46.167.094/0209
8 mm	RACON 8/12	7.4 mm	5.46.167.092/0209
8 mm	RACON 8/12	7.5 mm	5.46.167.099/0209
8 mm	RACON 8/12	7.6 mm	5.46.167.096/0209

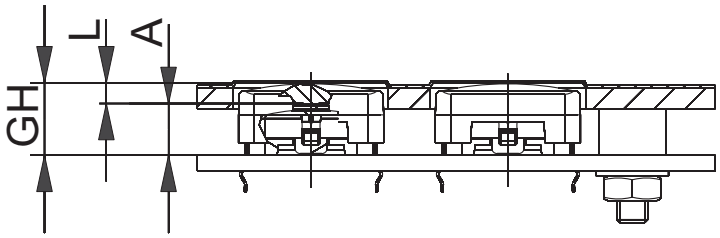
– Table (continued) –
Plunger round

→ Plunger diameter/size	RACON version	Length of plunger L	Order no.
11.5 mm	RACON 8	1.4 mm	5.46.167.227/0209
11.5 mm	RACON 8	1.5 mm	5.46.167.061/0209
11.5 mm	RACON 8	1.6 mm	5.46.167.060/0209
11.5 mm	RACON 8/12	2 mm	5.46.167.067/0209
11.5 mm	RACON 8/12	2.1 mm	5.46.167.064/0209
11.5 mm	RACON 8/12	4.6 mm	5.46.167.043/0209
11.5 mm	RACON 8/12	4.7 mm	5.46.167.050/0209
11.5 mm	RACON 8/12	4.8 mm	5.46.167.047/0209
11.5 mm	RACON 8/12	7.5 mm	5.46.167.059/0209
11.5 mm	RACON 8/12	7.6 mm	5.46.167.058/0209
14.5 mm	RACON 8	1.4 mm	5.46.168.227/0209
14.5 mm	RACON 8	1.5 mm	5.46.168.061/0209
14.5 mm	RACON 8	1.6 mm	5.46.168.060/0209
14.5 mm	RACON 8/12	2 mm	5.46.168.067/0209
14.5 mm	RACON 8/12	2.1 mm	5.46.168.064/0209
14.5 mm	RACON 8/12	4.6 mm	5.46.168.043/0209
14.5 mm	RACON 8/12	4.7 mm	5.46.168.050/0209
14.5 mm	RACON 8/12	4.8 mm	5.46.168.047/0209
14.5 mm	RACON 8/12	7.4 mm	5.46.168.044/0209
14.5 mm	RACON 8/12	7.5 mm	5.46.168.059/0209
14.5 mm	RACON 8/12	7.6 mm	5.46.168.058/0209
19 mm	RACON 8	1.5 mm	5.46.169.061/0209
19 mm	RACON 8	1.6 mm	5.46.169.060/0209
19 mm	RACON 8/12	2 mm	5.46.169.067/0209
19 mm	RACON 8/12	2.1 mm	5.46.169.064/0209
19 mm	RACON 8/12	4.7 mm	5.46.169.050/0209
19 mm	RACON 8/12	4.8 mm	5.46.169.047/0209
19 mm	RACON 8/12	7.5 mm	5.46.169.059/0209
19 mm	RACON 8/12	7.6 mm	5.46.169.058/0209

Front panel cut-out = Plunger diameter + 1 mm.

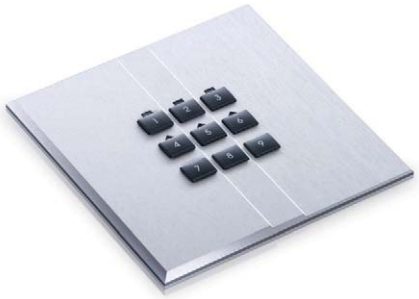
Square plunger for membrane data entry system

Technical data see page 4 - 49

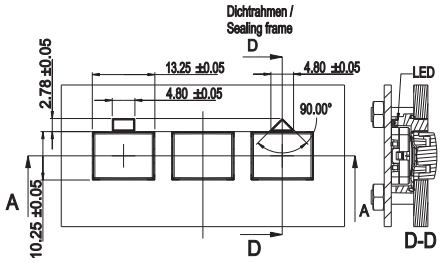


→ Plunger diameter/size	RACON version	Length of plunger L	Order no.
14 x 14 mm	RACON 12 SMT	2 mm	5.46.001.057/0209
14 x 14 mm	RACON 12 SMT	4.7 mm	5.46.001.058/0209
14 x 14 mm	RACON 12 SMT	7.5 mm	5.46.001.059/0209
14 x 14 mm	RACON 12 THT	2.1 mm	5.46.001.064/0209
14 x 14 mm	RACON 12 THT	4.8 mm	5.46.001.060/0209
14 x 14 mm	RACON 12 THT	7.6 mm	5.46.001.063/0209

Front panel cut-out = 15 x 15 mm.



RK 90 II
Key cap system for RACON 12 with individual sealing

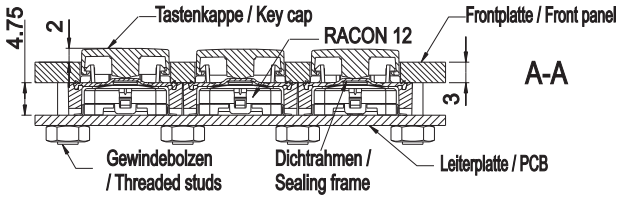


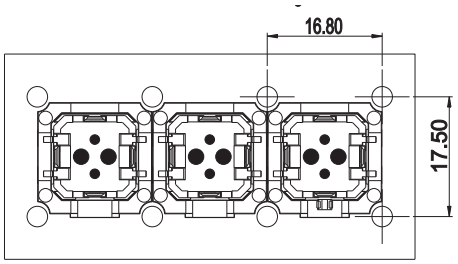
Technical Data

→ General information	
Thickness of front panel	3.00 mm
Light conductor	see order block
Key grid	min. 16.8 x 17.5 mm
Degree of protection	IP65 (DIN EN 60529)
→ Other specifications	
ROHS compliant	yes
REACH compliant	yes

The key cap system RK 90 II has been developed especially fort he tactile switch RACON 12. The lenses are snapped onto the sealing frame and then set onto the RACON 12 key switches. The PCB presses this units against the front panel, so they are sealed.

Two versions of the sealing frames are provided with light conductors, either in square ore triangle form.
The lenses can be legended directly with laser. For bright letters (see picture) first white lenses are painted in dark, then the letters are cut out of the dark color with laser.





Kleinster Raster / Minimum grid: 16.80 x 17.50

RK 90 II
Sealing frame

Technical data see page 4 - 52

Sealing frame with square light conductor

→ Thickness of front panel	Light conductor	Order no.
3.00 mm	square	5.05.004.901/0000
3.00 mm	dreieckig	5.05.004.902/0000
3.00 mm	-	5.05.004.903/0000

Legended lenses on request.

Lenses:
Lens RK 90 II, white: 5.46.654.192/0200
Lens RK 90 II, red: 5.46.654.192/0300
Lens RK 90 II, yellow: 5.46.654.192/0400
Lens RK 90 II, green: 5.46.654.192/0500
Lens RK 90 II, blue: 5.46.654.192/0600
Lens RK 90 II, grey: 5.46.654.192/0700
Lens RK 90 II, grey (varnished): 5.46.654.192/6032
Lens RK 90 II, iron grey (varnished): 5.46.654.192/6033

RF

Tactile switches

RF 15 (15 x 15 mm) and RF 19 (19 x 19 mm) with distinct key click, for use under an overlay or with RK 90 keycaps. Can be fully illuminated.
All products are RoHS compliant.

PCB KEY SWITCHES

RF - TACTILE SWITCHES

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RF 15 N - LED spacer	4 - 99

Specifications LED

LED brightness classes

LEDs are subject to production-related variations in brightness over which we have no control with the manufacturers. It is therefore not possible to arrange a delivery in a specific brightness class, and deviations accordingly do not constitute grounds for complaint regarding our products. The majority of the LEDs we use are delivered from our suppliers in selected brightness classes. In this case, the brightness class is shown on a label on the switch's rack packaging. Where the lighting is required to have a uniform brightness – for aesthetic reasons, for example – this can be achieved in the system by means of the circuitry (with a series resistance, for example).

3 mm LED

(valid for 25 °C)	Red LED	Green LED	Yellow LED
Max. forward current IF:	30 mA	30 mA	20 mA
Current reduction from: T_0 = 50 °C:	approx 0.5 mA/°C	approx 0.5 mA/°C	approx 0.2 mA/°C
Wavelength typ:	635 nm	565 nm	586 nm
Forward voltage UF/IF typ:	2 V/10 mA	2 V/10 mA	2 V/10 mA
Reverse voltage UR/IF typ:	5 V/100 µA min.	5 V/100 µA min.	5 V/100 µA min.
Ambient temperature, operating:	- 20 °C . . . + 80 °C	- 20 °C . . . + 80 °C	- 20 °C . . . + 80 °C

	Blue LED	White LED	Green LED superbright
Max. forward current IF:	20 mA	25 mA	30 mA
Current reduction from: T_0 = 50 °C:	approx 0.6 mA/°C	-	-
Wavelength typ:	470 nm	-	510-545 nm
Forward voltage UF/IF typ:	2.7 V/10 mA	3.6 V/20 mA	3.5 V/20 mA
Reverse voltage UR/IF typ:	5V/100 µA min.	-	-
Ambient temperature, operating:	- 20 °C . . . + 80 °C	- 20 °C . . . + 80 °C	-30 °C . . . + 100 °C

2 mm LED (full illumination of RF 15/19)

(valid for 25 °C)	Red LED	Green LED	Yellow LED
Max. forward current IF:	30 mA	30 mA	50 mA
Current reduction from: T_0 = 50 °C:	0.5 mA/°C	0.5 mA/°C	0.8 mA/°C
Light current fV/IF typ:	-	-	250 mIm/20 mA
Wavelength typ:	637 nm	569 nm	590 nm
Forward voltage UF/IF typ:	1.8 V/20 mA	2.1 V/10 mA	1.9 V/20 mA
Reverse voltage UR/IF typ:	5 V/100 µA min.	5 V/100 µA min.	5 V/100 µA min.
Ambient temperature, operating:	- 55 °C . . . + 100 °C	- 40 °C . . . + 100 °C	-40 °C . . . + 100 °C

	Blue LED	Multi-color LED
Max. forward current IF:	30 mA	30 mA
Current reduction from: T_0 = 50 °C:	-	approx 0.6 mA/°C
Light current fV/IF typ:	-	-
Wavelength typ:	464-485 nm	635/565 nm
Forward voltage UF/IF typ:	3.6 V/20 mA	2 V/10 mA
Reverse voltage UR/IF typ:		-
Ambient temperature, operating:	- 20 °C . . . + 80 °C	- 20 °C . . . + 80 °C

Calculating the series resistor:

$$R_V = \frac{U_B - U_F}{I_F}$$

Rated power of series:

$$P_V = I_F^2 \times R_V$$

Example for 5 Volt:

$$R_V = \frac{5V - 2{,}0\,V}{0{,}02\,A} = 150\ \Omega\ (=\ \text{standard value})$$

RF 15
Tactile switches

→ Low-profile keyboards with RF 15 components should be designed with a 19.05 mm grid. With this grid, frame webs remain free between the individual keys. The overlay can be glued onto these frame webs; we recommend area embossing over the keys for the overlays.

Technical Data

→ **General information**

Color of lens	see order block
Recommended key grid	19.05 mm

→ **Dimensions**

Length	15 mm
Width	15 mm
Overall height	9.7 mm

→ **Mechanical design**

Mounting	soldering in PCB
Terminals	THT
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	see order block
Illumination	see order block
LED color	see order block
LED type	see order block

→ **Mechanical characteristics**

Operating force max.	$2.9^{\pm 0.6}$ N
Switching travel	$0.5^{+0.2}$ mm
Robustness max.	with through-plated PCB 100 N

→ **Electrical characteristics**

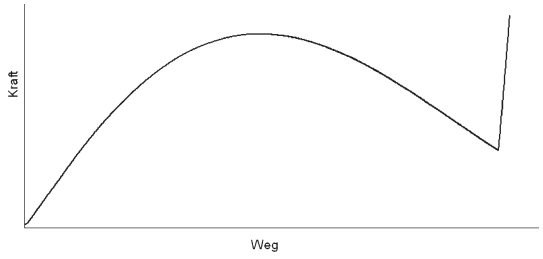
Rated voltage min.	Au: 0.02 V, Ag: 3 V
Rated voltage max.	35 V
Rated current min.	Au: 0.01 mA, Ag: 0.1 mA
Rated current max.	Au: 100 mA, Ag: 250 mA
Rated power max. (ohmic load)	Au: 2 W, Ag: 12.5 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω

→ **Other specifications**

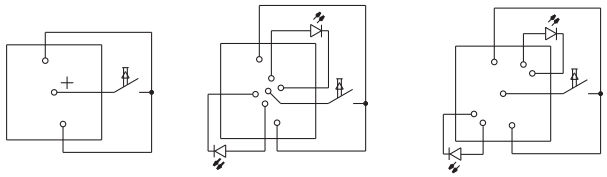
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	1,000,000
Solderability / solder heat resistance	according to DIN EN 60068-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
ROHS compliant	yes
REACH compliant	yes

Typical force travel diagram

Actuating characteristics
Force travel diagram



Circuit diagrams RF 15

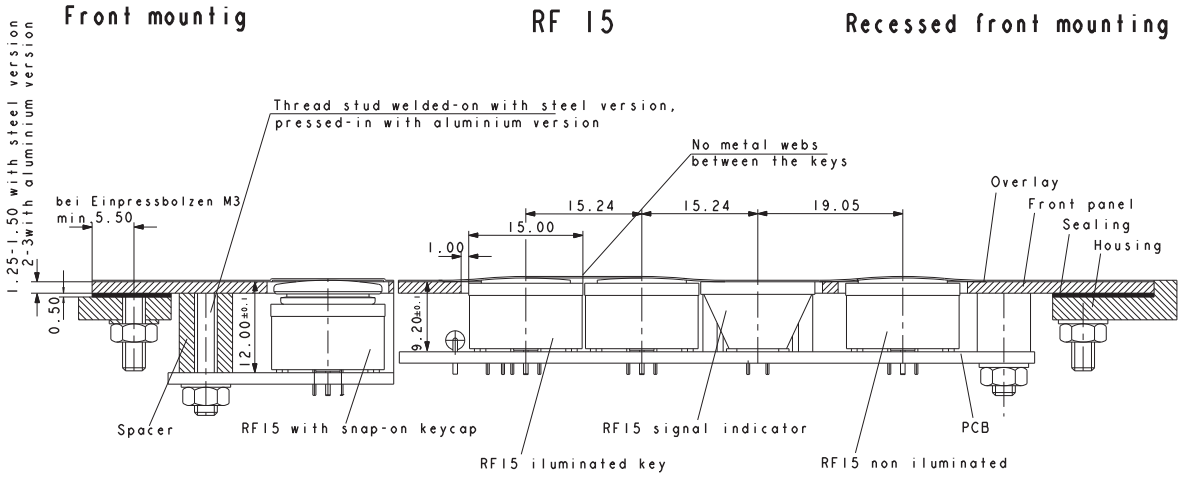


Tactile switch, non-illuminated

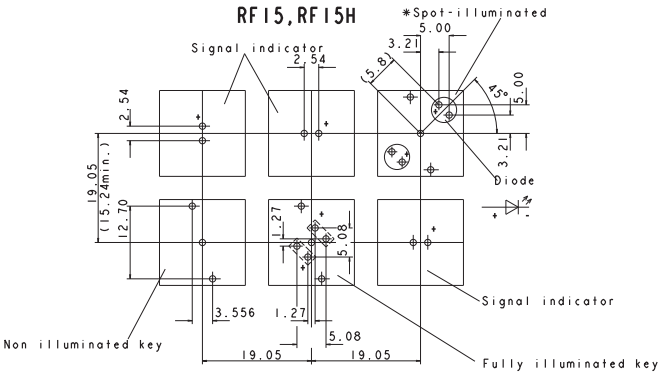
Tactile switch, fully-illuminated

Tactile switch, spot-illuminated

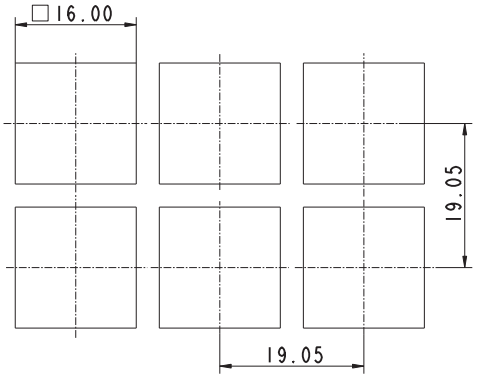
System assembly RF 15



PCB hole patterns RF 15



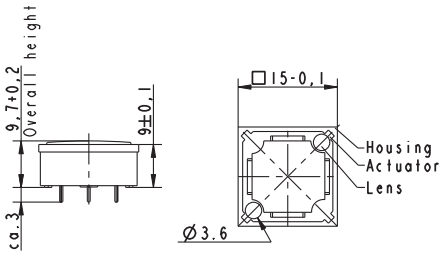
Hole patterns front panel RF 15



View on component side, all hole diameters $1.1^{\pm 0.1}$ mm

RF 15
Tactile switch, non-illuminated

Technical data see page 4 - 58



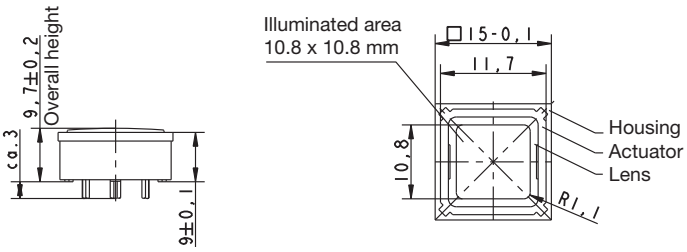
→ Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
Au	not illuminated	transparent	-	-	3.14.100.001/0000
Ag	not illuminated	transparent	-	-	3.14.100.006/0000

For keycaps, refer to chapter accessories and system RK 90.

If exchangeable legends are required, or if an overall height of 12.5 mm is required, a keycap can be mounted on the non-illuminated keys. The keycap legend is visible through a window in the overlay. You can change the legend by replacing the keycap.

RF 15
Tactile switch, fully illuminated with 2 LED

Technical data see page 4 - 58



→ Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
Au	fully illuminated 2 LED	red	red	2 mm	3.14.200.011/0000
Au	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.200.013/0000
Au	fully illuminated 2 LED	orange	yellow	2 mm	3.14.200.014/0000
Au	fully illuminated 2 LED	green	green	2 mm	3.14.200.012/0000
Au	fully illuminated 2 LED	blue	blue	2 mm	3.14.200.015/0000
Ag	fully illuminated 2 LED	red	red	2 mm	3.14.200.021/0000
Ag	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.200.023/0000
Ag	fully illuminated 2 LED	orange	yellow	2 mm	3.14.200.024/0000

– Table (continued) –
RF 15 - Tactile switch, fully illuminated with 2 LED

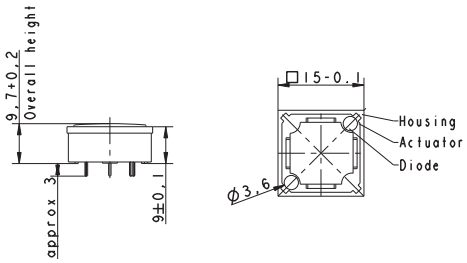
→	Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
	Ag	fully illuminated 2 LED	green	green	2 mm	3.14.200.022/0000
	Ag	fully illuminated 2 LED	blue	blue	2 mm	3.14.200.025/0000

For keycaps, refer to RK 90 system design.

Technical data of LED see seperate page at the beginning of this chapter.

RF 15
Tactile switch, 1 LED spot-illumination

Technical data see page 4 - 58



→	Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
	Au	spot illumination 1 LED	transparent	red	3 mm	3.14.100.031/0000
	Au	spot illumination 1 LED	transparent	yellow	3 mm	3.14.100.033/0000
	Au	spot illumination 1 LED	transparent	green	3 mm	3.14.100.032/0000
	Au	spot illumination 1 LED	opaque white	blue	3 mm	3.14.100.030/0000
	Ag	spot illumination 1 LED	transparent	red	3 mm	3.14.100.041/0000
	Ag	spot illumination 1 LED	transparent	yellow	3 mm	3.14.100.043/0000
	Ag	spot illumination 1 LED	transparent	green	3 mm	3.14.100.042/0000
	Ag	spot illumination 1 LED	transparent	blue	3 mm	3.14.100.040/0000

Double-spot LED illumination available on request

Technical data of LED see seperate page at the beginning of this chapter.

RF 15 N
Tactile switches

→ The RF 15N key switch provides a minimum overall height of 6.2 mm. The overall height can be varied by extension plungers which are inserted into the cross-like notches on the actuator tops.
LEDs can only be arranged separately next to the key switches up to an overall height of 10 mm (i.e. without plunger or with small plunger).
Key switches with overall heights of 12 mm or more can be provided with a maximum of 2 LEDs which are inserted into the recesses of the key switch housing. LEDs of key switches with overall heights of 12.5 mm or more should be placed onto LED spacers in order to obtain satisfactory illumination.

Technical Data

→ **General information**	
Color of lens	see order block
Recommended key grid	19.05 mm
→ **Dimensions**	
Length	15 mm
Width	15 mm
Overall height	6.2 mm
→ **Mechanical design**	
Mounting	soldering in PCB
Terminals	THT
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	see order block
Illumination	external 3 mm LED possible if height more than 12 mm
→ **Mechanical characteristics**	
Operating force max.	$2.9^{\pm 0.6}$ N
Switching travel	$0.5^{+0.2}$ mm
Robustness max.	100 with through-plated PCB N
→ **Electrical characteristics**	
Rated voltage min.	Au: 0.02 V, Ag: 3 V
Rated voltage max.	35 V
Rated current min.	Au: 0.01 mA, Ag: 0.1 mA
Rated current max.	Au: 100 mA, Ag: 250 mA
Rated power max. (ohmic load)	Au: 2 W, Ag: 12.5 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω
→ **Other specifications**	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature max. (in tube)	+50 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	1,000,000
Solderability / solder heat resistance	according to DIN EN 60068-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
ROHS compliant	yes
REACH compliant	yes

Accessories RF 15 N - Tactile switch

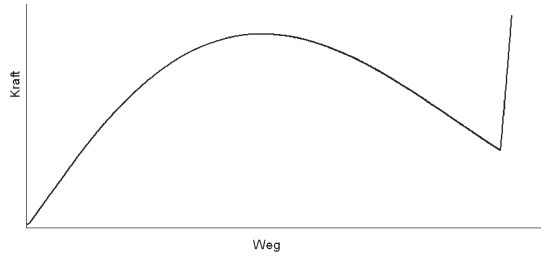
→	Description	Photo	Order no.	Additional accessories see page
	RF 15 N - LED spacer Ø 5 mm, spacing length 2.2 mm, light grey, for use with overall height of 12.5 mm		5.30.109.010/0756	4 - 99
	RF 15 N - Extension plunger, Ø 10 mm, overall height 22.5 mm		5.46.011.028/0710	4 - 95
	RF 15 N - Extension plunger, Ø 15 mm, overall height 22.5 mm		5.46.017.028/0710	4 - 96
	RF 15 N - Extension plunger, Ø 15 mm, overall height 22.5 mm		5.46.017.029/0710	-

PCB KEY SWITCHES

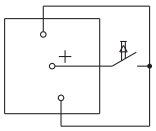
RF 15 N - TACTILE SWITCHES

Typical force travel diagram

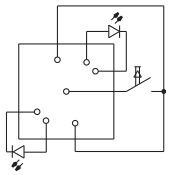
Actuating characteristics
Force travel diagram



Circuit diagrams RF 15 N

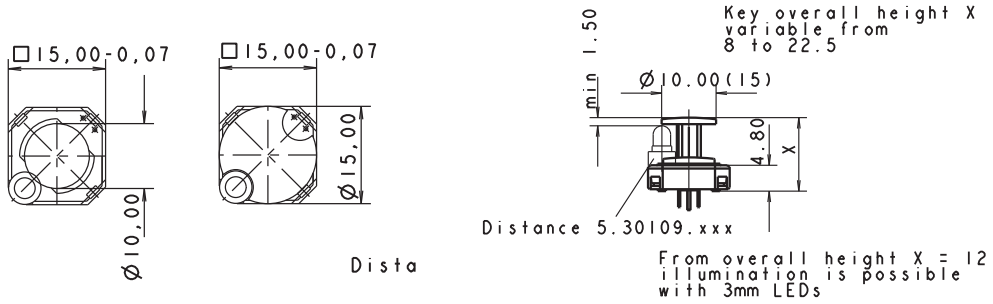


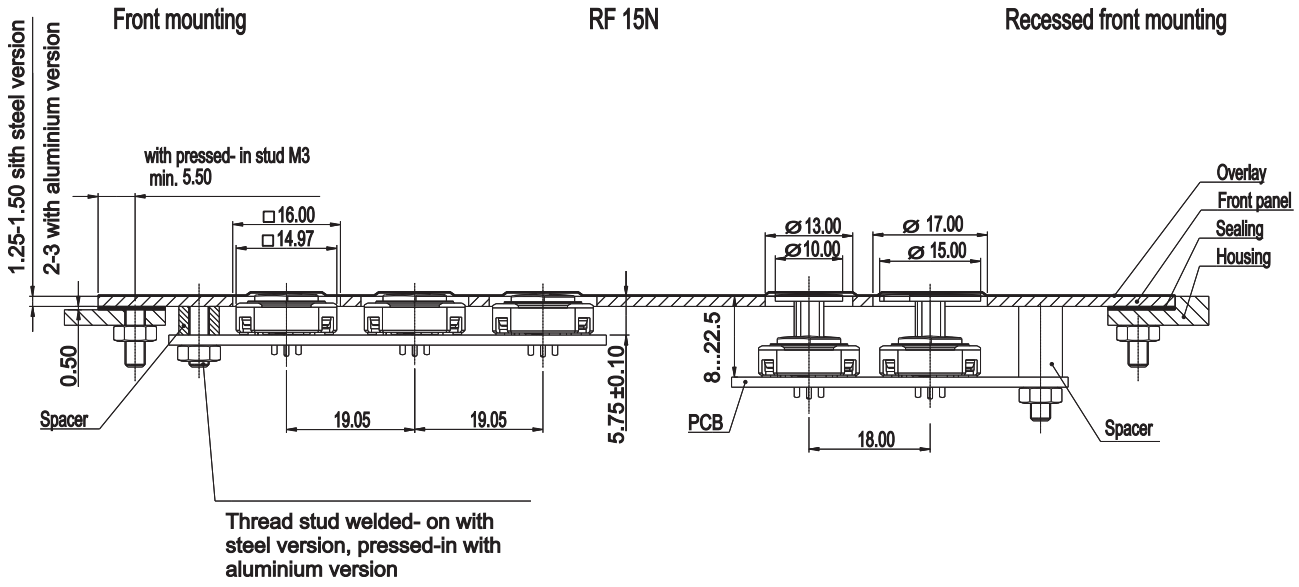
Tactile switch, non-illuminated



Tactile switch, spot-illuminated

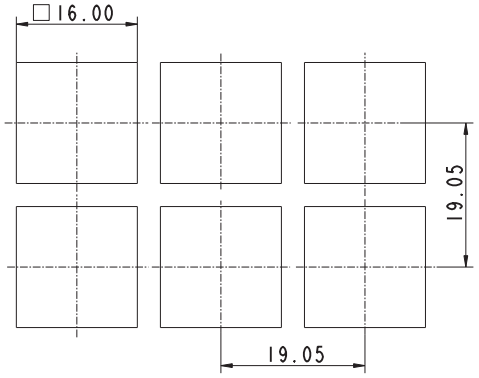
Dimensional drawing RF 15 N



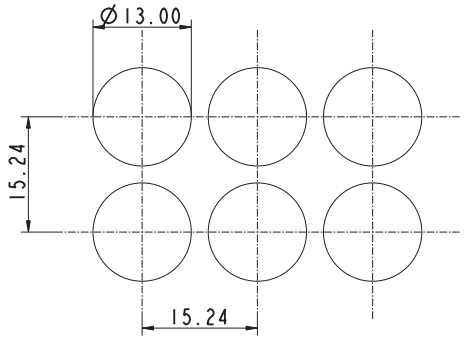


Hole patterns front panel RF 15 N

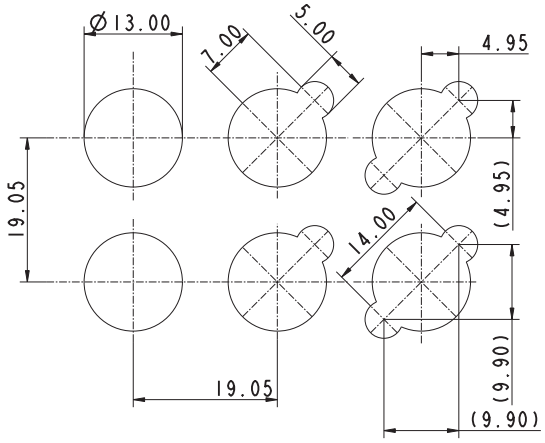
RF 15 N without plunger



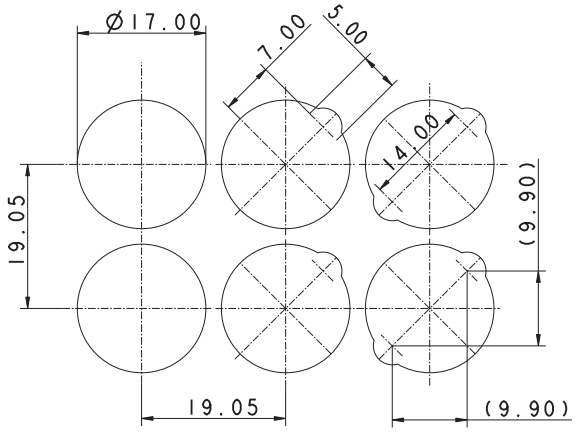
RF 15 N with plunger ø 10 mm, not illuminated



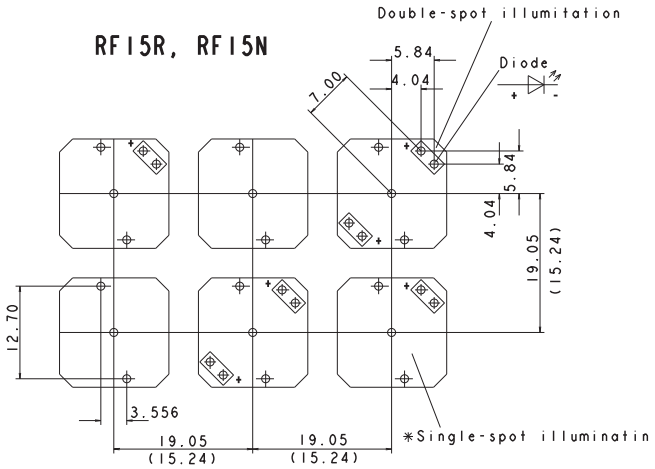
RF 15 N with plunger ø 10 mm, illuminated



RF 15 N with plunger ø 15 mm, illuminated



PCB hole patterns RF 15 N



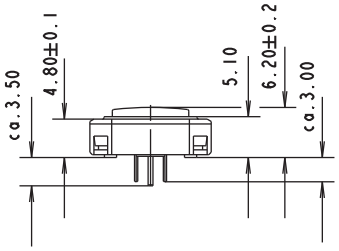
View on component side,
all hole diameters $1.1^{\pm 0.1}$ mm
PCB layout switch 1/400" grid

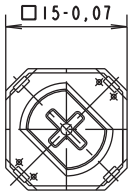
4

RF

RF 15 N
Tactile switch, non-illuminated

Technical data see page 4 - 62





→	Contact materials	Illumination	Recommended key grid	Overall height	Order no.
	Au	external 3 mm LED possible if height more than 12 mm	19.05 mm	6.2 mm	3.14.100.601/0000
	Ag	external 3 mm LED possible if height more than 12 mm	19.05 mm	6.2 mm	3.14.100.606/0000

For keycaps, refer to RK 90 system design.
Double-spot LED illumination available on request.

RF 15 R
Tactile switches

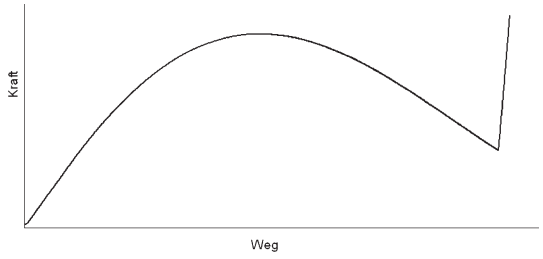
→ The round actuator of the RF 15 R key switch requires round front panel cut-outs. These make it possible to use a narrow keyboard grid of only 15.24 mm with sufficiently large frame webs between the individual keys. We recommend area embossing over the actuators for the overlay.

Technical Data

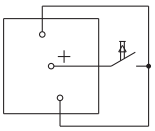
→ **General information**	
Recommended key grid	15.24 mm
→ **Dimensions**	
Length	15 mm
Width	15 mm
Overall height	see order block
→ **Mechanical design**	
Mounting	soldering in PCB
Terminals	THT
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	see order block
Illumination	see order block
LED color	see order block
LED type	see order block
→ **Mechanical characteristics**	
Operating force max.	$2.9^{\pm 0.6}$ N
Switching travel	$0.5^{+0.2}$ mm
Robustness max.	with through-plated PCB 100 N
→ **Electrical characteristics**	
Rated voltage min.	Au: 0.02 V, Ag: 3 V
Rated voltage max.	35 V
Rated current min.	Au: 0.01 mA, Ag: 0.1 mA
Rated current max.	Au: 100 mA, Ag: 250 mA
Rated power max. (ohmic load)	Au: 2 W, Ag: 12.5 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω
→ **Other specifications**	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	1,000,000
Solderability / solder heat resistance	according to DIN EN 60068-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
ROHS compliant	yes
REACH compliant	yes

Typical force travel diagram

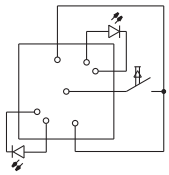
Actuating characteristics
Force travel diagram



Circuit diagrams RF 15 R

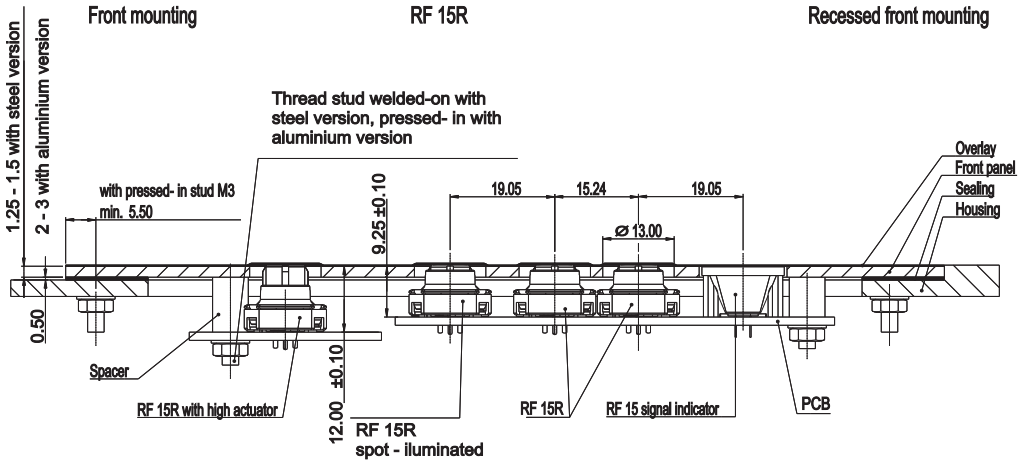


Tactile switch,
non-illuminated

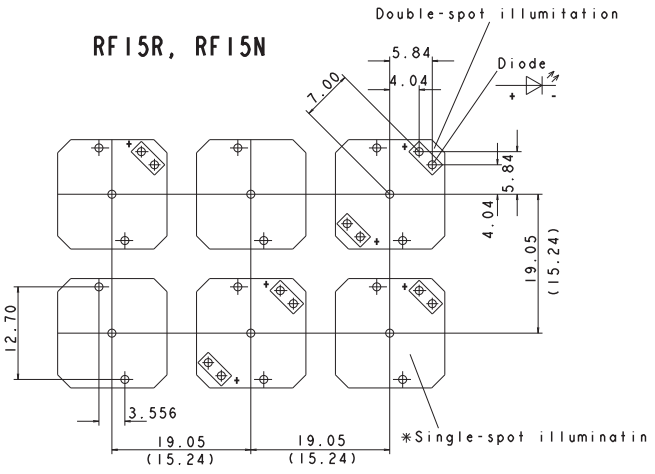


Tactile switch,
spot-illuminated

Dimensional drawing RF 15 R



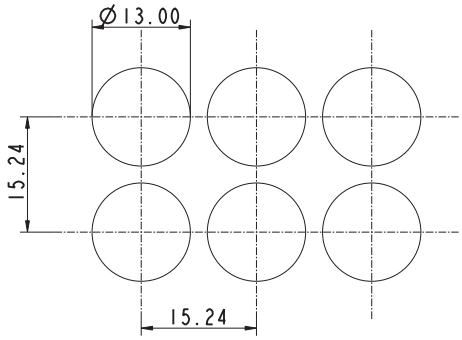
PCB hole patterns RF 15 R



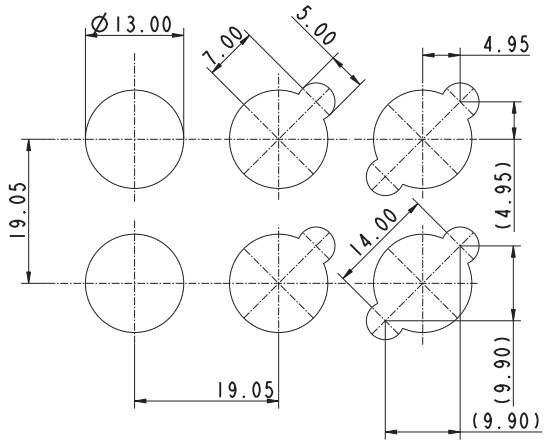
View on component side,
all hole diameters $1.1^{\pm 0.1}$ mm
PCB layout switch 1/400" grid

Hole patterns front panel RF 15 R

RF 15 R, not illuminated

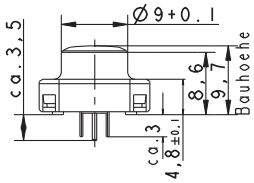


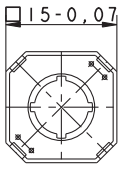
RF 15 R, illuminated



RF 15 R
Low tactile switch, non-illuminated

Technical data see page 4 - 67

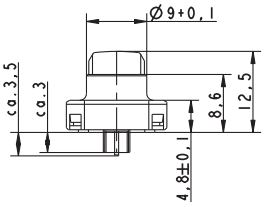


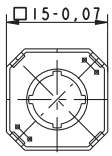


→ Contact materials	Overall height	Illumination	LED type	LED color	Order no.
Au	9.7 mm	not illuminated	-	-	3.14.100.501/0000
Ag	9.7 mm	not illuminated	-	-	3.14.100.506/0000

RF 15 R
High tactile switch, non-illuminated

Technical data see page 4 - 67

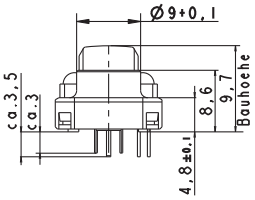


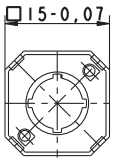


→ Contact materials	Overall height	Illumination	LED type	LED color	Order no.
Au	12.5 mm	not illuminated	-	-	3.14.100.801/0000
Ag	12.5 mm	not illuminated	-	-	3.14.100.806/0000

RF 15 R
Low tactile switch, 1 LED spot-illumination

Technical data see page 4 - 67





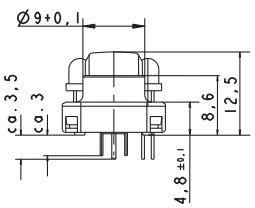
→	Contact materials	Overall height	Illumination	LED type	LED color	Order no.
	Au	9.7 mm	spot illumination 1 LED	2 mm	red	3.14.100.531/0000
	Au	9.7 mm	spot illumination 1 LED	2 mm	yellow	3.14.100.533/0000
	Au	9.7 mm	spot illumination 1 LED	2 mm	green	3.14.100.532/0000
	Ag	9.7 mm	spot illumination 1 LED	2 mm	red	3.14.100.541/0000
	Ag	9.7 mm	spot illumination 1 LED	2 mm	yellow	3.14.100.543/0000
	Ag	9.7 mm	spot illumination 1 LED	2 mm	green	3.14.100.542/0000

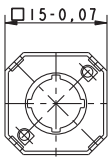
Versions with 2 LEDs available on request.

Technical data of LED see seperate page at the beginning of this chapter.

RF 15 R
High tactile switch, 1 LED spot-illumination

Technical data see page 4 - 67





→	Contact materials	Overall height	Illumination	LED type	LED color	Order no.
	Au	12.5 mm	spot illumination 1 LED	3 mm	red	3.14.100.831/0000
	Au	12.5 mm	spot illumination 1 LED	3 mm	yellow	3.14.100.833/0000
	Au	12.5 mm	spot illumination 1 LED	3 mm	green	3.14.100.832/0000

– Table (continued) –
RF 15 R - High tactile switch, 1 LED spot-illumination

→ Contact materials	Overall height	Illumination	LED type	LED color	Order no.
Au	12.5 mm	spot illumination 1 LED	3 mm	blue	3.14.100.830/0000

Versions with 2 LEDs available on request.

Technical data of LED see seperate page at the beginning of the chapter.

RF 15 H
Tactile switches

→ **Application notes:**
The RF 15 H key has an overall height of 12.5 mm and can be fully illuminated. When designing membrane keyboards, we recommend using a key grid of at least 20 mm and a 0.13 mm overlay with area embossing over the keys.
You can use the O-ring (accessory) to block the key and use it as an indicator field or blank spaceholder.

Technical Data

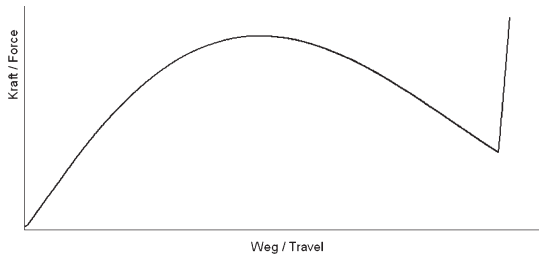
→ **General information**	
Color of lens	see order block
Recommended key grid	20 mm
→ **Dimensions**	
Length	15 mm
Width	15 mm
Overall height	12.5 mm
→ **Mechanical design**	
Mounting	soldering in PCB
Terminals	THT
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	see order block
Illumination	see order block
LED color	see order block
LED type	see order block
→ **Mechanical characteristics**	
Operating force max.	$2.9^{\pm 0.6}$ N
Switching travel	$0.5^{+0.2}$ mm
Robustness max.	with through-plated PCB 100 N
→ **Electrical characteristics**	
Rated voltage min.	Au: 0.02 V, Ag: 3 V
Rated voltage max.	35 V
Rated current min.	Au: 0.01 mA, Ag: 0.1 mA
Rated current max.	Au: 100 mA, Ag: 250 mA
Rated power max. (ohmic load)	Au: 2 W, Ag: 12.5 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω
→ **Other specifications**	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	1,000,000
Solderability / solder heat resistance	according to DIN EN 60068-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
ROHS compliant	yes
REACH compliant	yes

Accessories RF 15 H - Tactile switch

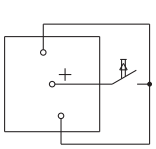
→	Description	Photo	Order no.	Additional accessories see page
	O-ring, black, 16.0 x 1, for blocking RF 19H keys		5.30.125.007/0100	5 - 31

Typical force travel diagram RF 15 H

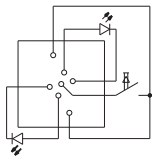
Actuating characteristics
Force travel diagram



Curcuit diagram RF 15 H

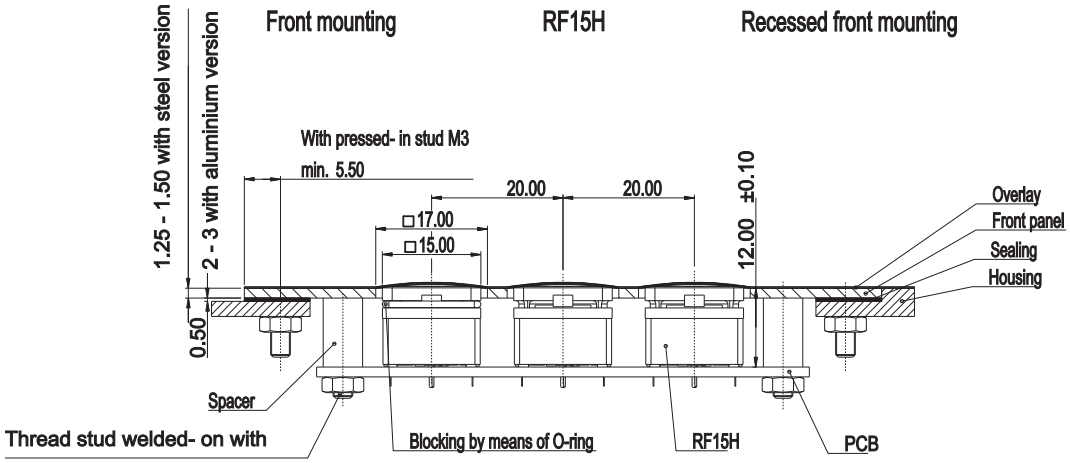


Tactile switch,
non-illuminated

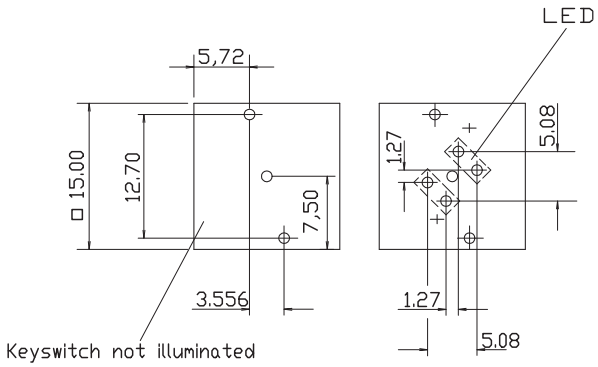


Tactile switch,
fully-illuminated

Dimensional drawing RF 15 H

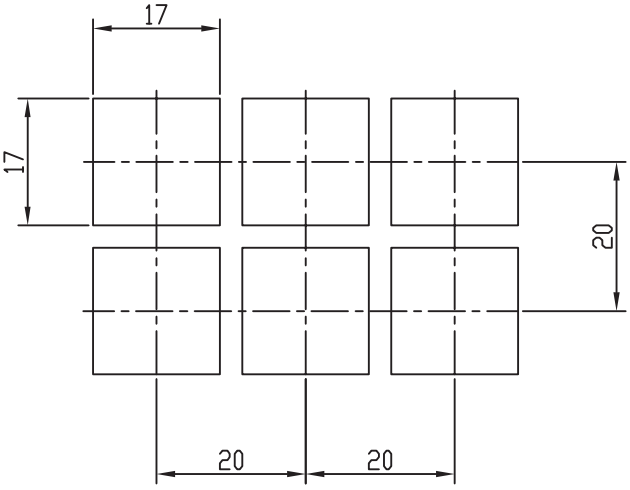


Hole Pattern



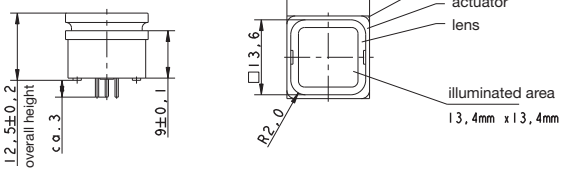
View on component side.

Hole Pattern – Front Panel



RF 15 H
Tactile switch, non-illuminated

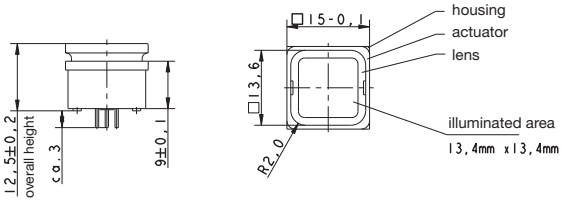
Technical data see page 4 - 73



→	Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
	Au	not illuminated	white	-	-	3.14.100.702/0000
	Ag	not illuminated	white	-	-	3.14.100.707/0000

RF 15 H
Tactile switch, fully illuminated

Technical data see page 4 - 73



→	Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
	Au	fully illuminated 2 LED	red	red	2 mm	3.14.200.731/0000
	Au	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.200.733/0000
	Au	fully illuminated 2 LED	orange	yellow	2 mm	3.14.200.738/0000
	Au	fully illuminated 1 LED	green	green super bright	3 mm	3.14.200.736/0000
	Au	fully illuminated 2 LED	green	green	2 mm	3.14.200.732/0000
	Au	fully illuminated 1 LED	blue	blue	3 mm	3.14.200.739/0000
	Au	fully illuminated 1 LED	white	white	3 mm	3.14.200.735/0000
	Ag	fully illuminated 2 LED	red	red	2 mm	3.14.200.741/0000
	Ag	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.200.743/0000
	Ag	fully illuminated 2 LED	orange	yellow	2 mm	3.14.200.748/0000
	Ag	fully illuminated 1 LED	green	green super bright	3 mm	3.14.200.746/0000

– Table (continued) –
RF 15 H - Tactile switch, fully illuminated

→ Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
Ag	fully illuminated 2 LED	green	green	2 mm	3.14.200.742/0000
Ag	fully illuminated 1 LED	blue	blue	3 mm	3.14.200.749/0000
Ag	fully illuminated 1 LED	white	white	3 mm	3.14.200.745/0000

When using the key switches with multicolor LEDs the illumination color can be varied from red to green by change of polarity. Due to the frequency of the polarity-changes the colors red, green, yellow as well as all secondary colors from these are possible.

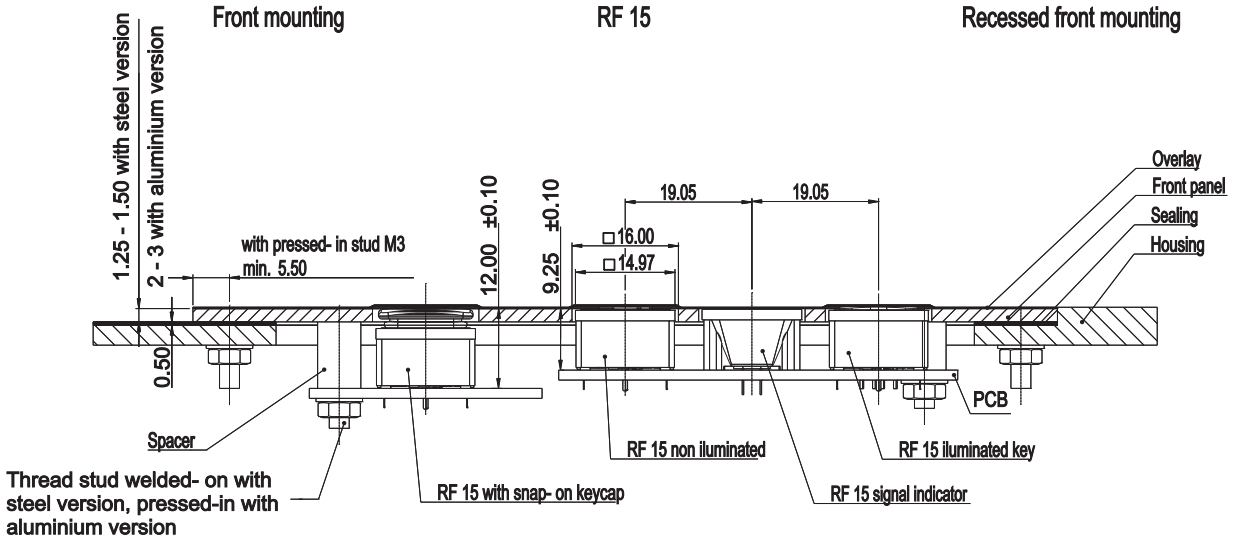
Technical data of LED see separate page at the beginning of this chapter.

RF 15
Signal indicators

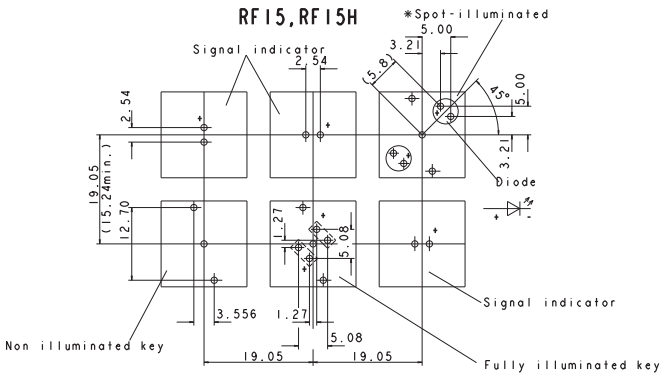
Technical Data

→ General information	
Color of lens	see order block
Recommended key grid	19.05 mm
→ Dimensions	
Length	15 mm
Width	15 mm
Overall height	9.15 mm
→ Mechanical design	
Mounting	THT soldering in PCB
Illumination	fully illuminated 1 LED
LED color	see order block
LED type	2 mm
→ Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Solderability / solder heat resistance	according to DIN EN 60068-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
ROHS compliant	yes
REACH compliant	yes

System assembly RF 15 signal indicator

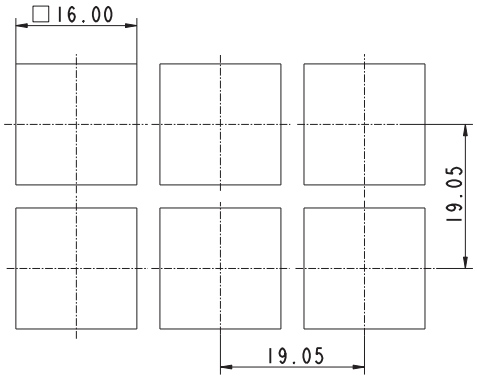


PCB hole patterns RF 15



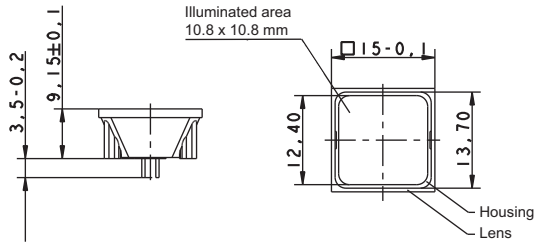
View on component side, all hole diameters $1.1^{\pm 0.1}$ mm

Hole patterns front panel RF 15



RF 15
Signal indicator, fully illuminated, 1 LED

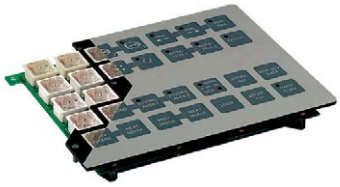
Technical data see page 4 - 78



→ Overall height	Illumination	Color of lens	LED color	LED type	Order no.
9.15 mm	fully illuminated 1 LED	red	red	2 mm	3.14.200.051/0000
9.15 mm	fully illuminated 1 LED	yellow	yellow	2 mm	3.14.200.053/0000
9.15 mm	fully illuminated 1 LED	orange	yellow	2 mm	3.14.200.054/0000
9.15 mm	fully illuminated 1 LED	green	green	2 mm	3.14.200.052/0000
9.15 mm	fully illuminated 1 LED	blue	blue	2 mm	3.14.200.055/0000

Technical data of LED see separate page at the beginning of chapter 4 PCB Key switches.

RF 19
Tactile switches



➔ **Application notes:**
RF 19 keys offer a large actuation area. When designing low-profile keyboards with a grid of >= 23 mm, frame webs remain free between the individual keys.
The overlay can be glued onto these frame webs; we recommend area embossing over the keys for the overlay.

Technical Data

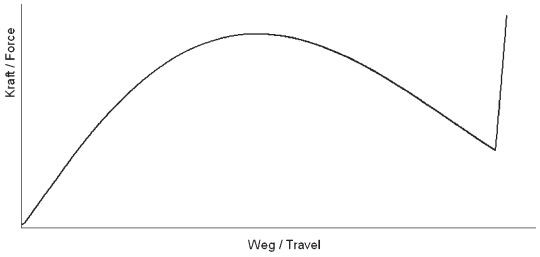
➔ **General information**	
Color of lens	see order block
Recommended key grid	23 mm
➔ **Dimensions**	
Length	19.05 mm
Width	19.05 mm
Overall height	9.7 mm
➔ **Mechanical design**	
Mounting	soldering in PCB
Terminals	THT
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	see order block
Illumination	see order block
LED color	see order block
LED type	see order block
➔ **Mechanical characteristics**	
Operating force max.	$2.9^{\pm 0.6}$ N
Switching travel	$0.5^{+0.2}$ mm
Robustness max.	with through-plated PCB 100 N
➔ **Electrical characteristics**	
Rated voltage min.	Au: 0.02 V, Ag: 3 V
Rated voltage max.	35 V
Rated current min.	Au: 0.01 mA, Ag: 0.1 mA
Rated current max.	Au: 100 mA, Ag: 250 mA
Rated power max. (ohmic load)	Au: 2 W, Ag: 12.5 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω
➔ **Other specifications**	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	1,000,000
Solderability / solder heat resistance	according to DIN EN 60068-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
ROHS compliant	yes
REACH compliant	yes

PCB KEY SWITCHES

RF 19 - TACTILE SWITCHES

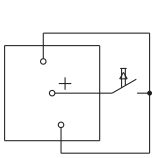
Typical force travel diagram RF 19

Actuating characteristics
Force travel diagram

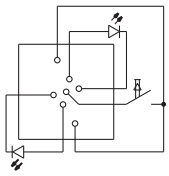


Circuit diagrams RF 19

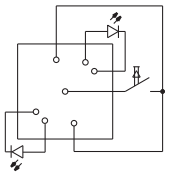
Hole patterns (view on component side)



Tactile switch, non-illuminated

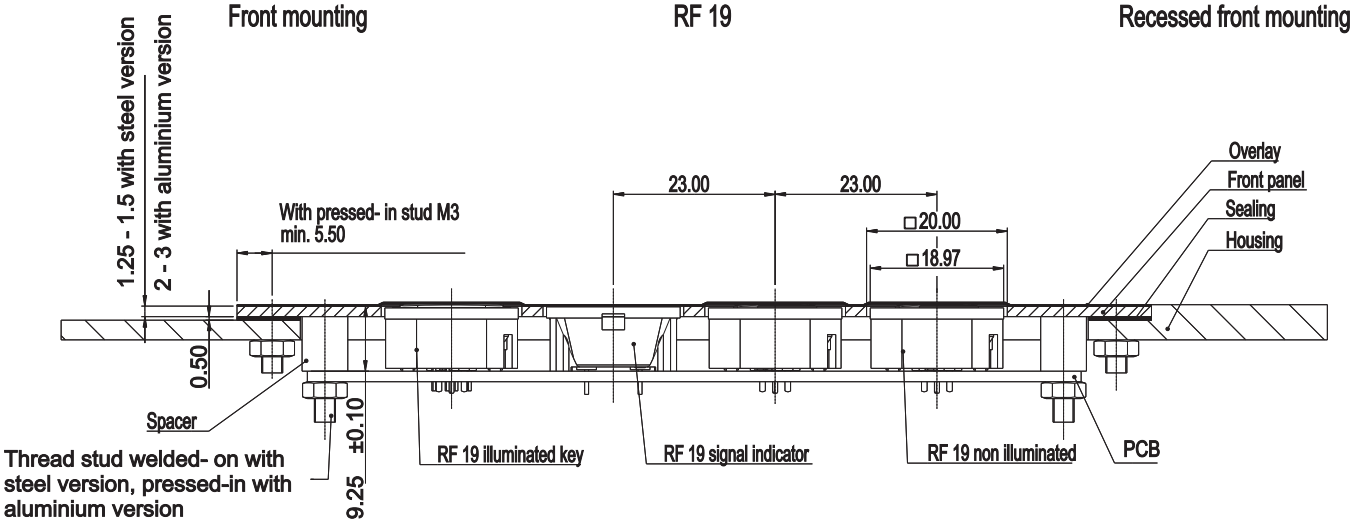


Tactile switch, fully-illuminated



Tactile switch, spot-illuminated

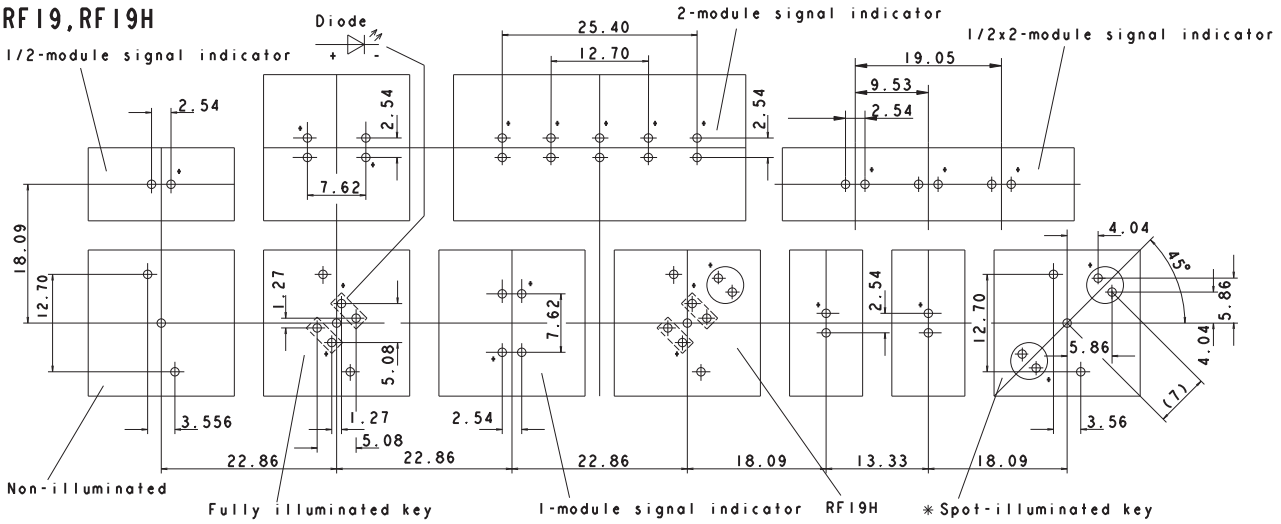
System assembly RF 19



4

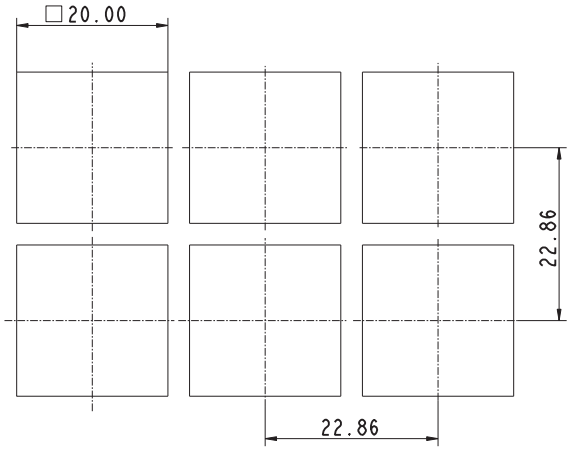
RF

PCB hole patterns RF 19



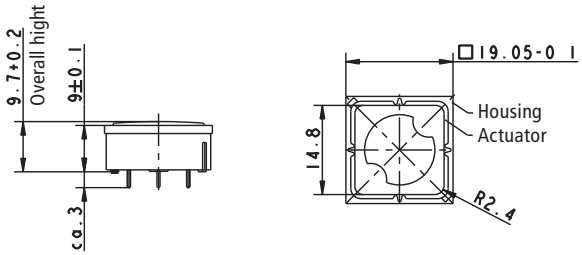
* The LED may be positioned either on the left-hand or right-hand side.
Standard version: LED on left-hand side
View on component side, all hole diameters $1.1^{\pm 0.1}$ mm

Hole patterns front panel RF 19



RF 19
Tactile switch, non-illuminated

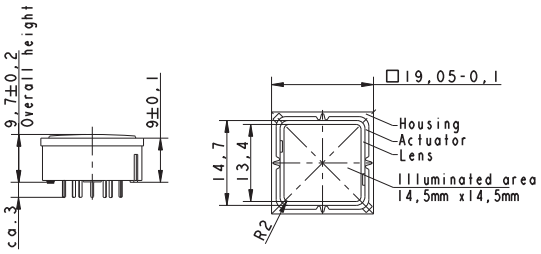
Technical data see page 4 - 81



→ Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
Au	not illuminated	transparent	-	-	3.14.001.001/0000
Ag	not illuminated	transparent	-	-	3.14.001.006/0000

RF 19
Tactile switch, fully illuminated with 2 LED

Technical data see page 4 - 81



→ Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
Au	fully illuminated 2 LED	red	red	2 mm	3.14.002.011/0000
Au	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.002.013/0000
Au	fully illuminated 2 LED	orange	yellow	2 mm	3.14.002.014/0000
Au	fully illuminated 2 LED	green	green	2 mm	3.14.002.012/0000
Au	fully illuminated 2 LED	blue	blue	2 mm	3.14.002.015/0000
Au	fully illuminated 2 LED	opaque white	green	2 mm	3.14.002.901/0000
Ag	fully illuminated 2 LED	red	red	2 mm	3.14.002.021/0000
Ag	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.002.023/0000
Ag	fully illuminated 2 LED	orange	yellow	2 mm	3.14.002.024/0000
Ag	fully illuminated 2 LED	green	green	2 mm	3.14.002.022/0000

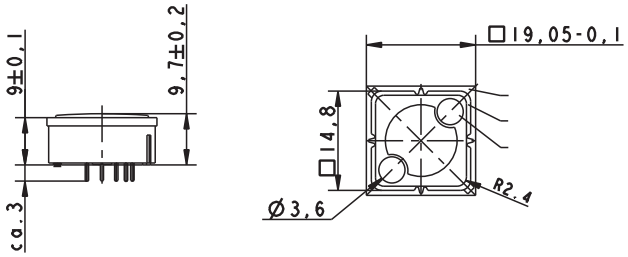
– Table (continued) –
RF 19 - Tactile switch, fully illuminated with 2 LED

→	Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
	Ag	fully illuminated 2 LED	blue	blue	2 mm	3.14.002.025/0000
	Ag	fully illuminated 2 LED	white	yellow	2 mm	3.14.002.027/0000
	Ag	fully illuminated 2 LED	white	green	2 mm	3.14.002.026/0000
	Ag	fully illuminated 2 LED	opaque white	green	2 mm	3.14.002.944/0000

Technical data of LED see separate page at the beginning of this chapter.

RF 19
Tactile switch, 1 LED spot-illumination

Technical data see page 4 - 81



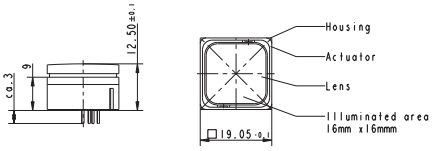
→	Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
	Au	spot illumination 1 LED	transparent	red	3 mm	3.14.001.031/0000
	Au	spot illumination 1 LED	transparent	yellow	3 mm	3.14.001.033/0000
	Au	spot illumination 1 LED	transparent	green	3 mm	3.14.001.032/0000
	Au	spot illumination 1 LED	opaque white	blue	3 mm	3.14.001.030/0000
	Ag	spot illumination 1 LED	transparent	red	3 mm	3.14.001.041/0000
	Ag	spot illumination 1 LED	transparent	yellow	3 mm	3.14.001.043/0000
	Ag	spot illumination 1 LED	transparent	green	3 mm	3.14.001.042/0000
	Ag	spot illumination 1 LED	transparent	blue	3 mm	3.14.001.040/0000

Versions with 2 LEDs available on request.

Technical data of LED see separate page at the beginning of this chapter.

RF 19 H
Tactile switches

→ **Application notes:**
The RF 19H key has an overall height of 12.5 mm and can be fully illuminated. When designing membrane keyboards, we recommend using a key grid of at least 24 mm and a 0.13 mm overlay with area embossing over the keys.
You can use the O-ring (accessory) to block the key and use it as an indicator field or blank spaceholder.



Technical Data

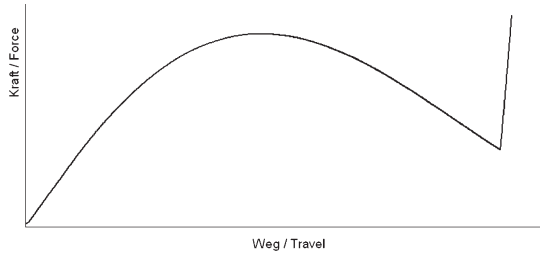
→ General information	
Color of lens	see order block
Recommended key grid	24 mm
→ Dimensions	
Length	19.05 mm
Width	19.05 mm
Overall height	12.5 mm
→ Mechanical design	
Mounting	soldering in PCB
Terminals	THT
Contact system	snap-action contact
Contact arrangement	1 NO
Contact materials	see order block
Illumination	see order block
LED color	see order block
LED type	see order block
→ Mechanical characteristics	
Operating force max.	$2.9^{\pm 0.6}$ N
Switching travel	$0.5^{+0.2}$ mm
Robustness max.	with through-plated PCB 100 N
→ Electrical characteristics	
Rated voltage min.	Au: 0.02 V, Ag: 3 V
Rated voltage max.	35 V
Rated current min.	Au: 0.01 mA, Ag: 0.1 mA
Rated current max.	Au: 100 mA, Ag: 250 mA
Rated power max. (ohmic load)	Au: 2 W, Ag: 12.5 W
Contact resistance when new max.	100 mΩ
Insulation resistance	10^9 Ω
→ Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	1,000,000
Solderability / solder heat resistance	according to DIN EN 60068-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
ROHS compliant	yes
REACH compliant	yes

Accessories RF 19 H - Tactile switch

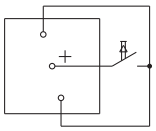
→	Description	Photo	Order no.	Additional accessories see page
	O-ring, black, 16.0 x 1, for blocking RF 19H keys		5.30.125.007/0100	5 - 31

Typical force travel diagram RF 19 H

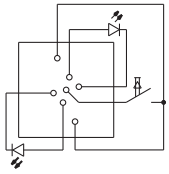
Actuating characteristics
Force travel diagram



Circuit diagrams RF 19 H

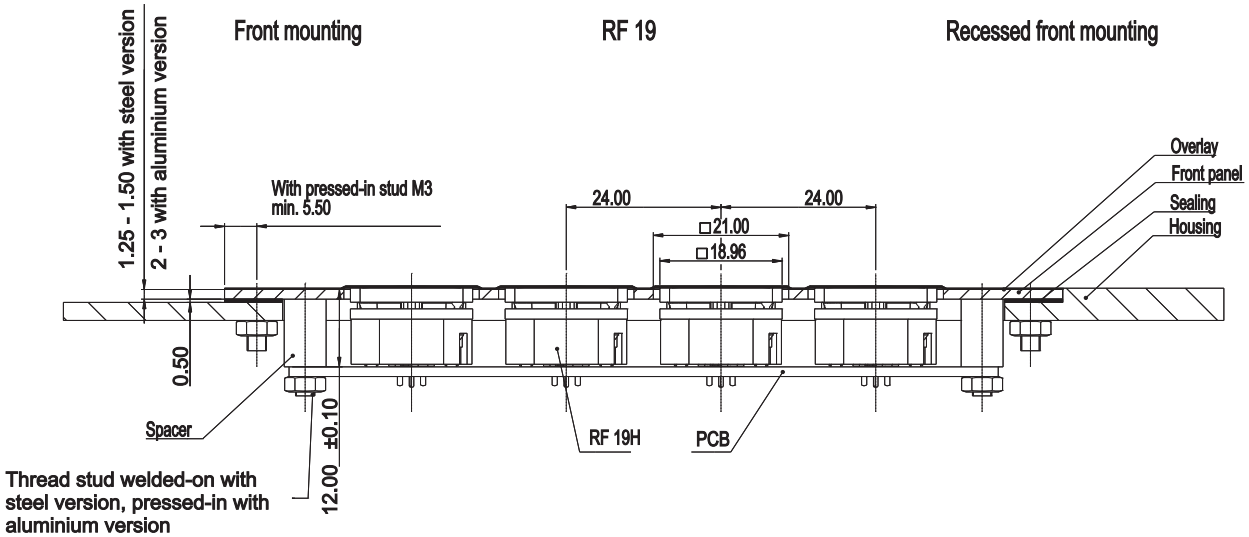


Tactile switch,
non-illuminated

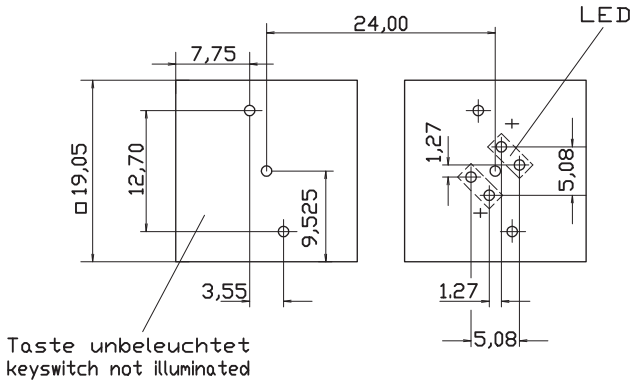


Tactile switch,
fully-illuminated

System assembly RF 19 H

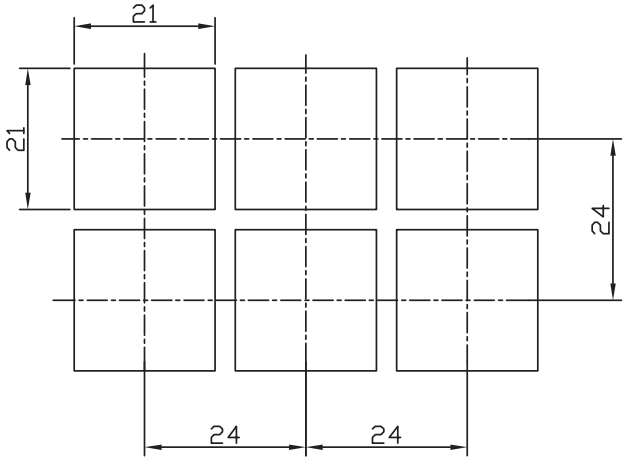


PCB hole patterns RF 19 H



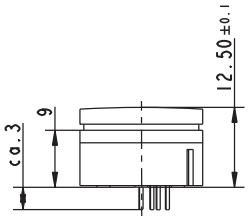
View on component side, all hole diameters $1.1^{\pm 0.1}$ mm

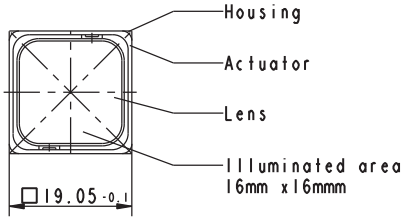
Hole patterns front panel RF 19 H



RF 19 H
Tactile switch, non-illuminated

Technical data see page 4 - 86

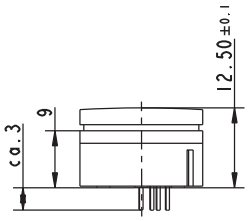


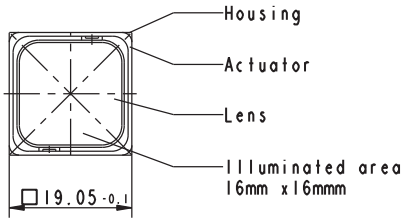


→	Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
	Au	not illuminated	white	-	-	3.14.001.501/0000
	Ag	not illuminated	white	-	-	3.14.001.506/0000

RF 19 H
Tactile switch, fully illuminated

Technical data see page 4 - 86





→	Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
	Au	fully illuminated 2 LED	red	red	2 mm	3.14.002.613/0000
	Au	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.002.653/0000
	Au	fully illuminated 2 LED	orange	yellow	2 mm	3.14.002.673/0000
	Au	fully illuminated 1 LED	green	green super bright	3 mm	3.14.002.633/0000
	Au	fully illuminated 2 LED	green	green	2 mm	3.14.002.632/0000
	Au	fully illuminated 1 LED	blue	blue	3 mm	3.14.002.683/0000
	Au	fully illuminated 1 LED	white	white	3 mm	3.14.002.684/0000
	Ag	fully illuminated 2 LED	red	red	2 mm	3.14.002.623/0000
	Ag	fully illuminated 2 LED	yellow	yellow	2 mm	3.14.002.663/0000
	Ag	fully illuminated 2 LED	orange	yellow	2 mm	3.14.002.678/0000
	Ag	fully illuminated 1 LED	green	green super bright	3 mm	3.14.002.643/0000

– Table (continued) –
RF 19 H - Tactile switch, fully illuminated

→ Contact materials	Illumination	Color of lens	LED color	LED type	Order no.
Ag	fully illuminated 2 LED	green	green	2 mm	3.14.002.642/0000
Ag	fully illuminated 1 LED	blue	blue	3 mm	3.14.002.688/0000
Ag	fully illuminated 1 LED	white	white	3 mm	3.14.002.689/0000

When using the key switches with multicolor LEDs the illumination color can be varied from red to green by change of polarity. Due to the frequency of the polarity-changes the colors red, green, yellow as well as all secondary colors from these are possible.

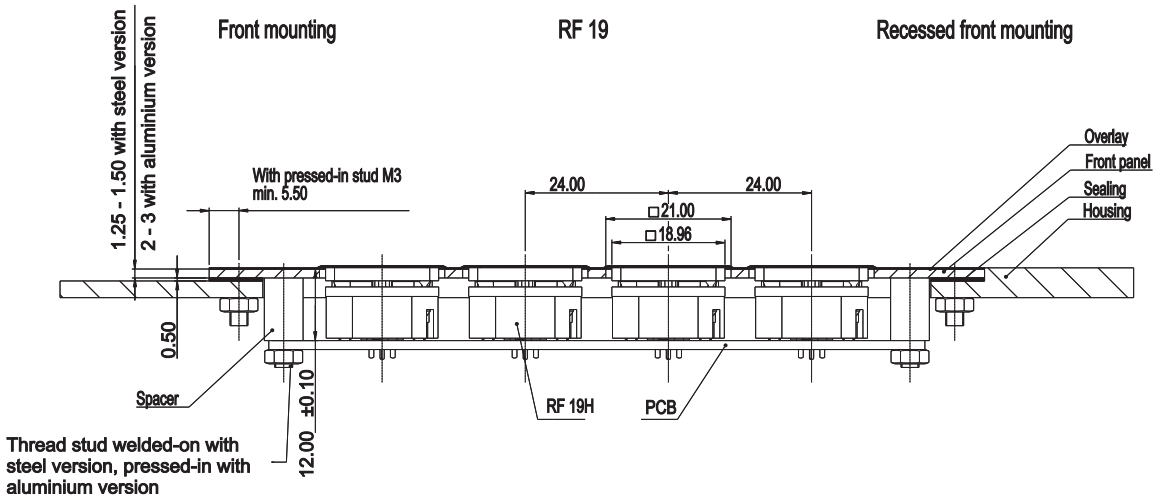
Technical data of LED see separate page at the beginning of this chapter.

RF 19
Signal indicators

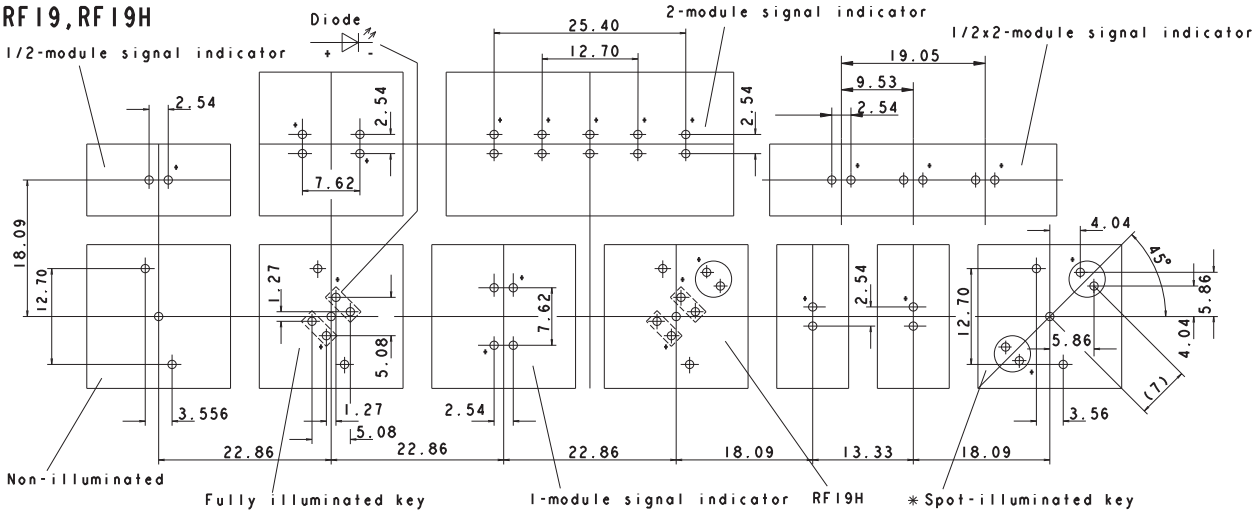
Technical Data

→ General information	
Color of lens	see order block
Recommended key grid	23/x mm
→ Dimensions	
Length	see order block
Width	see order block
Overall height	9.15 mm
→ Mechanical design	
Mounting	THT soldering in PCB
Illumination	see order block
LED color	see order block
LED type	see order block
→ Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Solderability / solder heat resistance	according to DIN EN 60068-2-20
Wave soldering	260 °C max.
Manual soldering	350 °C / 5 sec. max.
ROHS compliant	yes
REACH compliant	yes

System assembly RF 19 signal indicator



PCB hole pattern RF 19

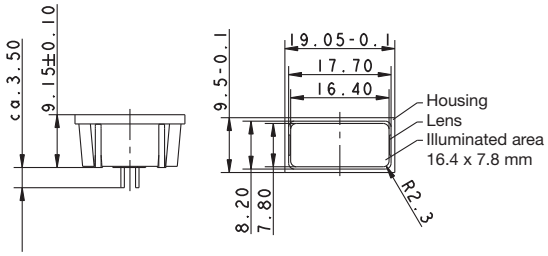


* The LED may be positioned either on the left-hand or right-hand side.
Standard version: LED on left-hand side
View on component side, all hole diameters $1.1^{\pm 0.1}$ mm

Hole patterns front panel = size of indicator + 1 mm

RF 19
Signal indicator, ½ x 1-module

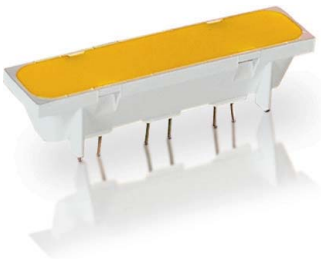
Technical data see page 4 - 91



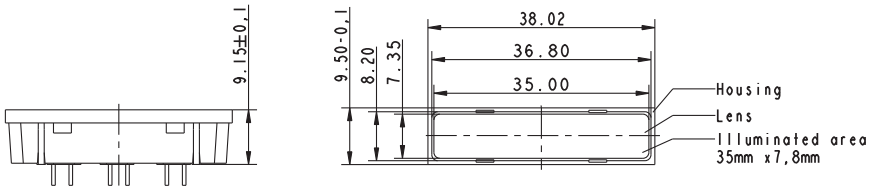
→	Illumination	Color of lens	LED color	LED type	Order no.
	fully illuminated 1 LED	red	red	2 mm	3.14.002.061/0000
	fully illuminated 1 LED	yellow	yellow	2 mm	3.14.002.063/0000
	fully illuminated 1 LED	orange	yellow	2 mm	3.14.002.064/0000
	fully illuminated 1 LED	green	green	2 mm	3.14.002.062/0000

Technical data of LED see separate page at the beginning of chapter 4 PCB Key switches.

RF 19
Signal indicator, ½ x 2-module



Technical data see page 4 - 91

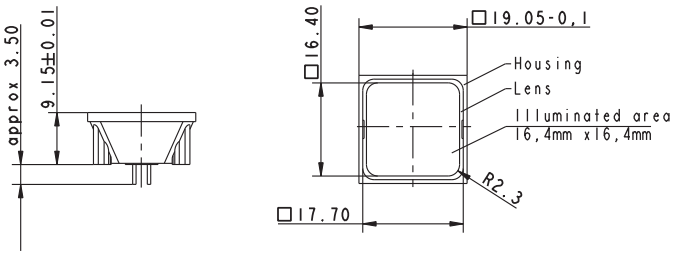


→	Illumination	Color of lens	LED color	LED type	Order no.
	fully illuminated 3 LED	red	red	2 mm	3.14.002.908/0000
	fully illuminated 3 LED	yellow	yellow	2 mm	3.14.002.910/0000
	fully illuminated 3 LED	orange	yellow	2 mm	3.14.002.911/0000
	fully illuminated 3 LED	green	green	2 mm	3.14.002.909/0000

Technical data of LED see separate page at the beginning of chapter 4 PCB Key switches.

RF 19
Signal indicator, 1 x 1-module

Technical data see page 4 - 91



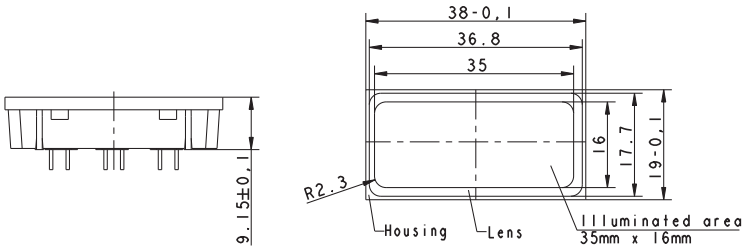
→ Illumination	Color of lens	LED color	LED type	Order no.
fully illuminated 2 LED	red	red	2 mm	3.14.002.051/0000
fully illuminated 2 LED	yellow	yellow	2 mm	3.14.002.053/0000
fully illuminated 2 LED	orange	yellow	2 mm	3.14.002.054/0000
fully illuminated 2 LED	green	green	2 mm	3.14.002.052/0000
fully illuminated 2 LED	blue	blue	2 mm	3.14.001.659/0000

For technical data of the LED see separate page at the beginning of chapter „RF tactile switches“

Suitable for RK 90 system design, illuminated for 2-module keycap.

RF 19
Signal indicator, 1 x 2-module

Technical data see page 4 - 91

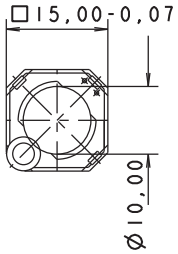


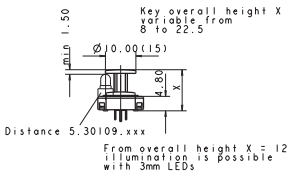
→ Illumination	Color of lens	LED color	LED type	Order no.
fully illuminated 5 LED	red	red	2 mm	3.14.002.071/0000
fully illuminated 5 LED	yellow	yellow	2 mm	3.14.002.073/0000
fully illuminated 5 LED	orange	yellow	2 mm	3.14.002.074/0000
fully illuminated 5 LED	green	green	2 mm	3.14.002.072/0000

For technical data of the LED see separate page at the beginning of chapter „RF tactile switches“

RF 15/19
Special accessories

RF 15 N
Extension plunger, round head

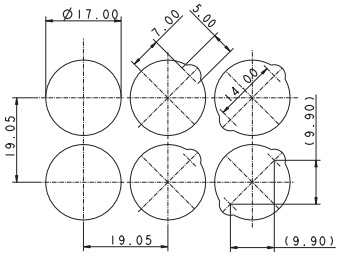


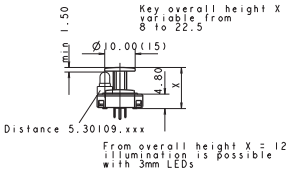


→	Length	Width	Overall height	Diameter	Color	Order no.
		-	9 mm	10 mm	-	5.46.011.036/0710
		-	9.7 mm	10 mm	-	5.46.011.030/0710
		-	12.5 mm	10 mm	-	5.46.011.037/0710
		-	13 mm	10 mm	-	5.46.011.038/0710
		-	22.5 mm	10 mm	-	5.46.011.028/0710

Length of plunger = Overall height - 4.25 mm.

RF 15 N
Extension plunger, round head, with recess for LED

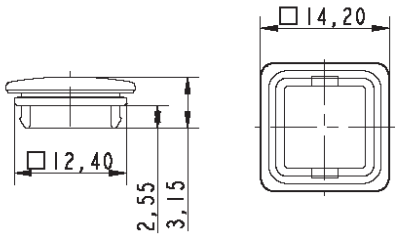




→ Length	Width	Overall height	Diameter	Color	Order no.
	-	9 mm	15 mm	-	5.46.017.036/0710
	-	9.7 mm	15 mm	-	5.46.017.030/0710
	-	12.5 mm	15 mm	-	5.46.017.037/0710
	-	22.5 mm	15 mm	-	5.46.017.028/0710
	-	13 mm	15 mm	-	5.46.017.038/0710

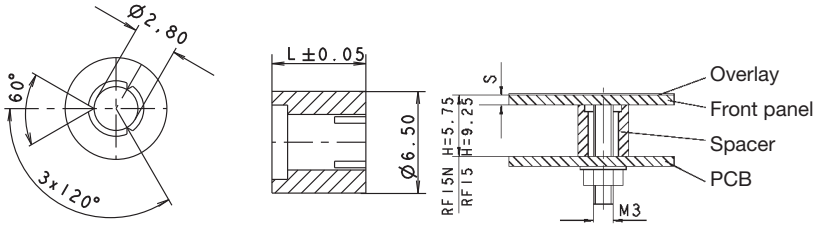
Length of plunger = Overall height - 4.25 mm.

RF 15
Keycap, snap-on, for overall height 12.5 mm



→ Length	Width	Overall height	Diameter	Color	Order no.
14.2 mm	14.2 mm	12.5 mm	-	beige	5.46.654.059/0227

Spacer, round

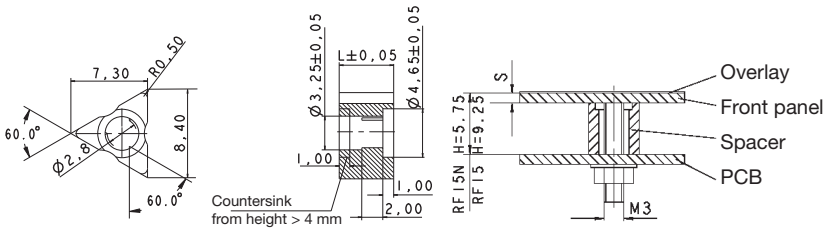


→	Length L	Color	Order no.
	3.50 mm	blue transparent	5.30.759.023/0000
	4.75 mm	blue transparent	5.30.759.028/0000
	5.25 mm	yellow orange transparent	5.30.759.030/0000
	4.50 mm	red	5.30.759.027/0000
	5.50 mm	yellow	5.30.759.031/0000
	4 mm	green	5.30.759.025/0000
	5.75 mm	green	5.30.759.032/0000
	4.25 mm	blue	5.30.759.026/0000
	6 mm	blue	5.30.759.033/0000
	6.2 mm	blue	5.30.759.251/0000
	5 mm	black	5.30.759.029/0000
	10.00 mm	black	5.30.759.043/0104
	6.25 mm	red	5.30.759.034/0000
	6.50 mm	blue transparent	5.30.759.035/0000
	6.75 mm	black	5.30.759.036/0000
	7 mm	yellow orange transparent	5.30.759.037/0000
	7.25 mm	yellow	5.30.759.038/0000
	7.50 mm	green	5.30.759.039/0000
	7.75 mm	blue	5.30.759.040/0000
	8 mm	red	5.30.759.041/0000
	8.25 mm	blue transparent	5.30.759.042/0000

Required spacer length
For keyboards: Overall height of key - front panel thickness - 0.5 mm (area embossing).
For RAFIX 22 FS: 9.25 mm - front panel thickness -thickness of overlay, if existing

triangular version

Spacer, triangular



→ Length L	Order no.
2.50 mm	5.30.759.094/0000
2.75 mm	5.30.759.095/0000
3 mm	5.30.759.096/0000
3.25 mm	5.30.759.097/0000
3.50 mm	5.30.759.098/0000
3.75 mm	5.30.759.099/0000
4 mm	5.30.759.100/0000
4.25 mm	5.30.759.101/0000
4.50 mm	5.30.759.102/0000
4.75 mm	5.30.759.103/0000
5 mm	5.30.759.104/0000
5.25 mm	5.30.759.105/0000
5.50 mm	5.30.759.106/0000
5.75 mm	5.30.759.107/0000
6 mm	5.30.759.108/0000
6.2 mm	5.30.759.253/0000
10.00 mm	5.30.759.124/0000
10.25 mm	5.30.759.125/0000
6.25 mm	5.30.759.109/0000
6.50 mm	5.30.759.110/0000
6.75 mm	5.30.759.111/0000
7 mm	5.30.759.112/0000
7.25 mm	5.30.759.113/0000
7.50 mm	5.30.759.114/0000
7.75 mm	5.30.759.115/0000
8 mm	5.30.759.116/0000
8.25 mm	5.30.759.117/0000
9 mm	5.30.759.254/0000

– Table (continued) –
Spacers, triangular

Required spacer length = Overall height of key - front panel thickness - 0.5 mm (area embossing).

RF 15 N
LED spacer

→	Length	Width	Overall height	Diameter	Color	Order no.
	2.2 mm	-	12.5 mm	5 mm	light grey	5.30.109.010/0756
	12 mm	-	22.5 mm	5 mm	black	5.30.109.019/0105

KN 19

Short-travel main switch

Short-travel main switch for use in membrane keyboards under the overlay or with RK 90 keycaps, 250V, 4A max. A cut-out in the overlay is not required!

- All products are RoHS compliant.

PCB KEY SWITCHES

KN 19 - SHORT-TRAVEL MAIN SWITCH

Content

KN 19 - Short-travel main switches **4 - 103**
KN 19 - Short-travel main switch 4 - 104

KN 19
Short-travel main switches

→ The KN 19 makes it possible to implement a power switch directly in a low-profile data entry system. This eliminates the need for extra switches on the device and additional openings in the overlay. In this way, you can achieve an optimum of safety and a consistent design.
The contact opening widths comply with the VDE standards. The KN 19 can also be employed underneath RK 90 keycaps. Other actuation functions (momentary, latching/momentary) available on request.

Technical Data

→ **General information**	
Recommended key grid	19.05 x 38.1 mm
→ **Dimensions**	
Length	37.8 mm
Width	18.8 mm
Overall height	9.7 mm
→ **Mechanical design**	
Mounting	on PCB
Terminals	THT solder terminals
Contact system	snap-action bridge contact
Contact arrangement	see order block
Contact materials	Ag
Illumination	1 LED (max. 3 mm) possible
Degree of protection	IP40 (DIN EN 60529)
Hot wire ignition acc. to IEC 60695-2-1	850 °C
→ **Mechanical characteristics**	
Operating force max.	$9^{\pm 3}$ N
Operating travel	$0.55^{\pm 0.15}$ mm
Robustness max.	100 N
→ **Electrical characteristics**	
Rated voltage AC min.	12 V
Rated voltage DC min.	12 V
Rated voltage AC max.	250 V
Rated voltage DC max.	50 V
Ohmic load AC	6 A
Ohmic load DC max.	10 A
Ohmic load DC min.	0.1 A
Contact resistance when new max.	50 mΩ
Capacity input current AC max.	100 A
Rated motor current AC	4 A
Rated filament lamp current AC	2.4 A
Bouncing time max.	10 ms
→ **Other specifications**	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life AC	AC 250 V: 200.000 /2A; 100.000 /6A
Operating life DC	50,000(10 A / 50 V=)
Soldering time max.	3 s
Soldering temperature max.	350 °C
Flame class acc. to UL 94	UL 94 VO
ROHS compliant	yes
REACH compliant	yes

Approvals

IEC 61058

UL 508,C22.2 No. 14-M91

PCB KEY SWITCHES

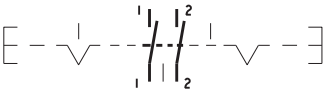
KN 19 - SHORT-TRAVEL MAIN SWITCH

Accessories KN 19 - Short-travel main switch

→	Description	Photo	Order no.	Additional accessories see page
	KN19 - Absorption rubber		5.30.729.009/0000	-

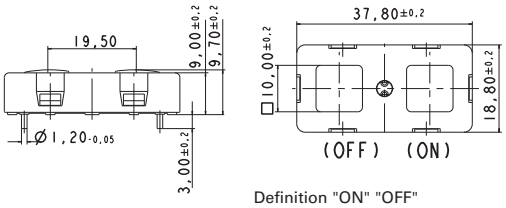
Circuit diagrams

1 NC + 1 NO



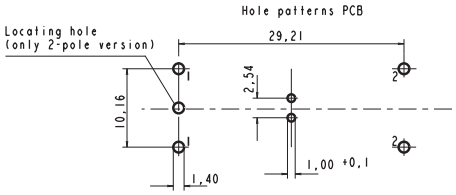
2 NC/2 NO

Dimensional drawing



Definition "ON" "OFF"
only valid for 2-pole version.

PCB hole pattern

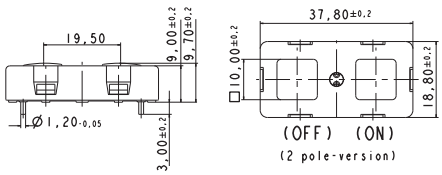


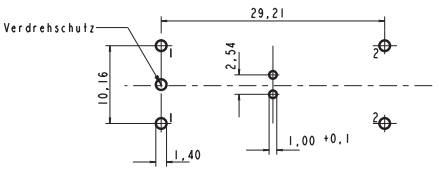
Locating hole only version 2 NO/2 NC

View on component side

KN 19
Short-travel main switch

Technical data see page 4 - 103





PCB footprint

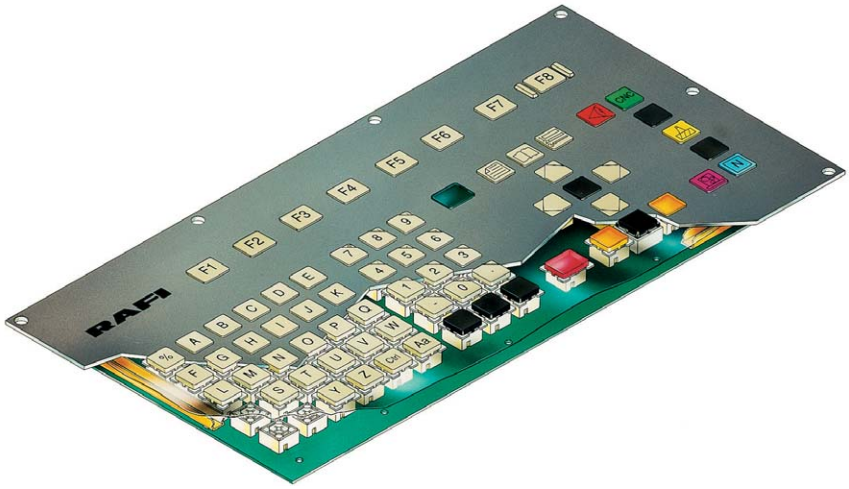
→	Contact arrangement	Rated voltage AC max.	Order no.
	1 NC + 1 NO	250 V	1.12.000.001/0000
	2 NC / 2 NO	250 V	1.12.000.501/0000

For keycaps, refer to RK 90 system design.

Positive opening NC contacts to IEC 60 947-5-1.

1-LED spot-illumination (max. 3 mm) possible.

Accessoires:
KN19 - Absorption rubber: 5.30.729.009/0000



RK 90

Keycaps

Keycaps for RACON, RF 15 / RF 19 and KN 19 tactile switches

- You can insert a legend insert between lens and pressure pad of the transparent keycaps.
- All products are RoHS compliant.

PCB KEY SWITCHES

RK 90 - KEYCAPS

Content

RK 90 - Keycaps, plastic, 9 x 9 mm	**4 - 109**
RK 90 - Keycap body plastic, for lenses 9 x 9 mm	4 - 110
RK 90 - Keycaps, plastic, 14 mm	**4 - 111**
RK 90 - Keycap body plastic, for lenses 14 mm, 1-module	4 - 112
RK 90 - Keycap body plastic, for lenses 1¼-module	4 - 112
RK 90 - Keycap body plastic, for lenses 14 mm, 1½-module	4 - 113
RK 90 - Keycap body plastic, for lenses 2-module	4 - 114
RK 90 - Keycaps, aluminum, 14 mm	**4 - 115**
RK 90 - Keycaps, aluminum, 14 mm, 1-module	4 - 116
RK 90 - Keycaps, aluminum, 14 mm, 1½-module	4 - 116
RK 90 - Keycaps, aluminum, 14 mm, 2-module	4 - 117
RK 90 - Special accessories	**4 - 118**
RK 90 - Fin, to avoid inadvertent operation	4 - 118
RK 90 - Spacer M 4	4 - 119
RK 90 - Silicone foil	4 - 119

Keycap system RK 90

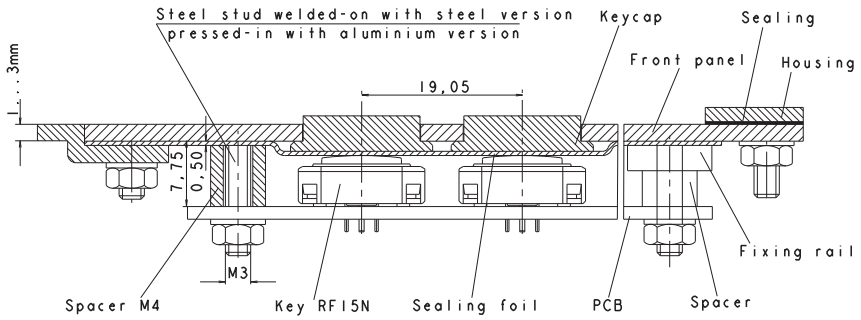
Example with RF 15 key switches. Instead of RF 15 following key switches can be used:
- MICON 5
- RACON 8/12
- RF 15 tactile switches and signal indicators
- RF 19 tactile switches and signal indicators
- Short-travel main switch KN 19

The RK 90 system was granted the prize of the Design Forum of the Hannover Fair.
Degree of protection: IP65 according to DIN in front of the panel, with silicone sealing.

Installation methods

Installation from front

Installation from rear



Mounting from front
Sealing foil between RK 90 keyboard and customer's front panel.

Mounting from rear
Sealing foil is screwed to RK 90 panel with fixing rails; sealing between keyboard and customer's front panel has to be provided.

Legending

- **Laser printing:** This labelling method is possible for opaque keycaps. The symbols are engraved in the keycaps with laser.
- When using transparent lenses, the pressure pad can be legended by printing.

As the legending is protected by the lens, it is friction-proof.

- **Engraving:** With this method the keycaps are engraved with the required symbol and then inlaid with ink.

Recommendations

- **Front panel thickness:**
  - **Aluminum:** 2 mm (1.5 mm min, 3 mm max.)
    (Fixing with M 3 pressed-in studs)
  - **Steel:** 2 mm (3 mm max.): V2A: 1.25 mm
    (Fixing with M 3 welded-on studs)
    The keytop surface is flush with the keyboard at a panel thickness of 3.5 mm.

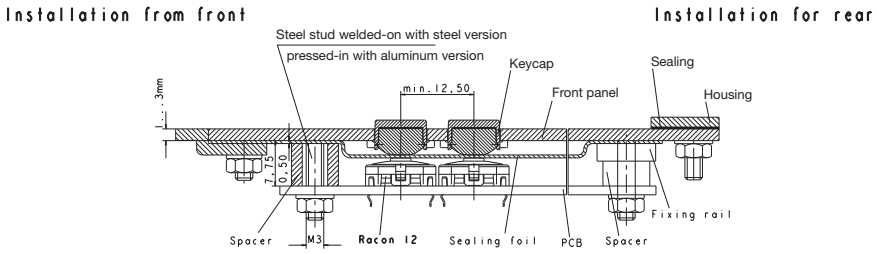
- **Silicone sealing:**
  Material: Silicone transparent
  Type: A-SY 40-79
  Hardness: 30° shore +/- 5°
  Thickness: 0.45 +/- 0.05 mm

- **Installation:** Ensure that the keyboard slopes slightly so that any liquid can drain away between front panel and silicone sealing; if necessary, provide additional drain holes in the front panel.

Cleaning liquids

For the cleaning of the plastic keycaps please do not use cleaning liquids based on alcohol or acid.

RK 90
Keycaps, plastic, 9 x 9 mm



➔ You can design especially small input fields with the small keycap 9 x 9 mm. For example, controls for measurement and laboratory equipment which do not offer much space for input fields because of their small size. RK 90 keycaps 9 x 9 mm and RACON tactile switches can be used to implement key grids of only 12.5 mm. The keycaps can be legended by laser-printing, engraving or standard printing.
This keycap is our first choice in a combination with the illuminated RACON 12 i tactile switch.

Please note: For the cleaning of the plastic keycaps please do not use cleaning liquids based on alcohol or acid.

Technical Data

➔ **General information**

Color of lens	see order block
Size	1-module
Degree of protection (with silicon seal)	IP65 (DIN EN 60529)
Illuminability	see order block

➔ **Dimensions**

Dimension keycap in front of front panel	8.85 x 8.85 mm
Dimension keycap behind front panel	11.5 x 11.5 mm
Dimension (c) hole patterns final size	9.00 x 9.00 mm
Dimension hole patterns punched size	9.20 x 9.20 mm

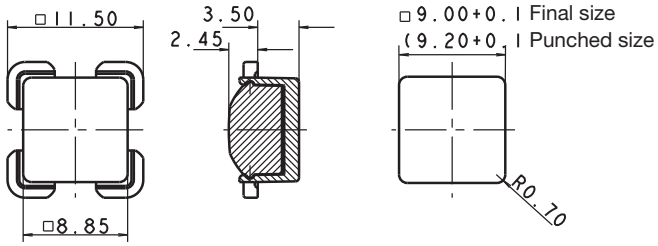
➔ **Other specifications**

ROHS compliant	yes
REACH compliant	yes

Please order lens separately.

RK 90
Keycap body plastic, for lenses 9 x 9 mm

Technical data see page 4 - 109



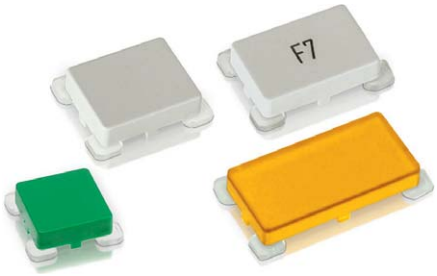
→	Size	Illuminability	Dimension keycap behind front panel	Dimension keycap in front of front panel	Dimension (c) hole patterns final size	Order no.
	1-module	yes	11.5 x 11.5 mm	8.85 x 8.85 mm	9.00 x 9.00 mm	5.55.103.265/1013

Laser printed opaque lenses and keycap sets on request.

Please order lenses separately.

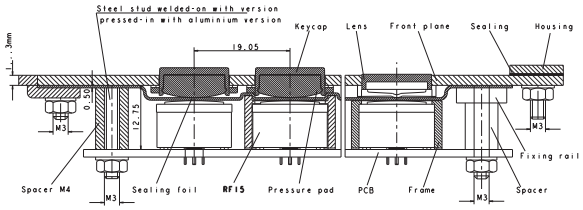
Lenses:
RK 90 - Lens, 9 x 9 mm, opaque red: 5.46.651.015/0309
RK 90 - Lens, 9 x 9 mm, opaque yellow: 5.46.651.015/0409
RK 90 - Lens, 9 x 9 mm, opaque green: 5.46.651.015/0514
RK 90 - Lens, 9 x 9 mm, opaque blue: 5.46.651.015/0611
RK 90 - Lens, 9 x 9 mm, opaque light grey: 5.46.651.015/0700
RK 90 - Lens, 9 x 9 mm, transparent colorless: 5.46.651.019/1002
RK 90 - Lens, 9 x 9 mm, transparent red: 5.46.651.019/1307
RK 90 - Lens, 9 x 9 mm, transparent yellow: 5.46.651.019/1403
RK 90 - Lens, 9 x 9 mm, transparent green: 5.46.651.019/1510

RK 90
Keycaps, plastic, 14 mm



Installation from front

Installation from rear



→ Keycap system for 19.05 mm grid. The keycaps can be legended by laser-printing, engraving or standard printing. Keycaps / sets with legends and other keycap shapes / colors available on request.
Please note: For the cleaning of the plastic keycaps please do not use cleaning liquids based on alcohol or acid.

Technical Data

→ **General information**

Color of lens	see order block
Size	see order block
Degree of protection (with silicon seal)	IP65 (DIN EN 60529)
Illuminability	yes

→ **Dimensions**

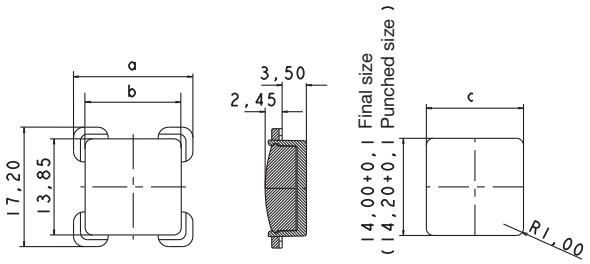
Dimension (b) in front of front panel	see order block
Dimension (a) behind front panel	see order block
Dimension (c) hole patterns final size	see order block
Dimension hole patterns punched size	see order block

→ **Other specifications**

ROHS compliant	yes
REACH compliant	yes

RK 90
Keycap body plastic, for lenses 14 mm, 1-module

Technical data see page 4 - 111

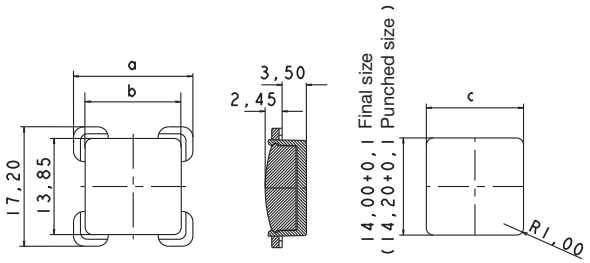


→ Size	Illuminability	Dimension (a) behind front panel	Dimension (b) in front of front panel	Dimension (c) hole patterns final size	Order no.
1-module	yes	17.20 x 17.20 mm	13.85 x 13.85 mm	14.00 x 14.00 mm	5.55.103.030/1013

Lenses:
RK 90 - Lens, 14 x 14 mm, 1-module, opaque red: 5.46.681.001/0309
RK 90 - Lens, 14 x 14 mm, 1-module, opaque yellow: 5.46.681.001/0409
RK 90 - Lens, 14 x 14 mm, 1-module, opaque green: 5.46.681.001/0514
RK 90 - Lens, 14 x 14 mm, 1-module, opaque blue: 5.46.681.001/0611
RK 90 - Lens, 14 x 14 mm, 1-module, opaque light grey: 5.46.681.001/0700
RK 90 - Lens, 14 x 14 mm, 1-module, transparent colorless: 5.46.681.021/1002
RK 90 - Lens, 14 x 14 mm, 1-module, transparent red: 5.46.681.021/1307
RK 90 - Lens, 14 x 14 mm, 1-module, transparent yellow: 5.46.681.021/1403
RK 90 - Lens, 14 x 14 mm, 1-module, transparent green: 5.46.681.021/1510

RK 90
Keycap body plastic, for lenses 1¼-module

Technical data see page 4 - 111



→ Size	Illuminability	Dimension (a) behind front panel	Dimension (b) in front of front panel	Dimension (c) hole patterns final size	Order no.
1 1¼-module	yes	17.20 x 20.7 mm	13.85 x 17.35 mm	14,00 x 17,5 mm	5.55.103.031/1013

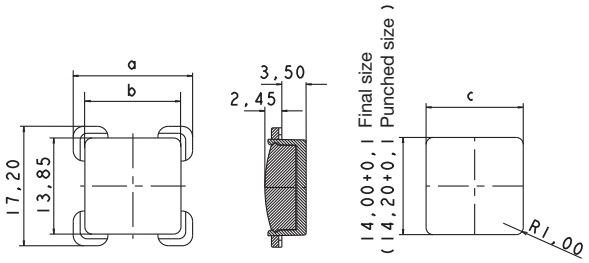
Lenses:
RK 90 - Lens, 14 mm, 1.25-module, opaque red: 5.46.681.002/0309

– Table (continued) –
RK 90 - Keycap body plastic, for lenses 1¼-module

RK 90 - Lens, 14 mm, 1.25-module, opaque light grey: 5.46.681.002/0700
RK 90 - Lens, 14 mm, 1.25-module, transparent colorless: 5.46.681.022/1002
RK 90 - Lens, 14 mm, 1.25-module, transparent red: 5.46.681.022/1307
RK 90 - Lens, 14 mm, 1.25-module, transparent yellow: 5.46.681.022/1403
RK 90 - Lens, 14 mm, 1.25-module, transparent green: 5.46.681.022/1510

RK 90
Keycap body plastic, for lenses 14 mm, 1½-module

Technical data see page 4 - 111

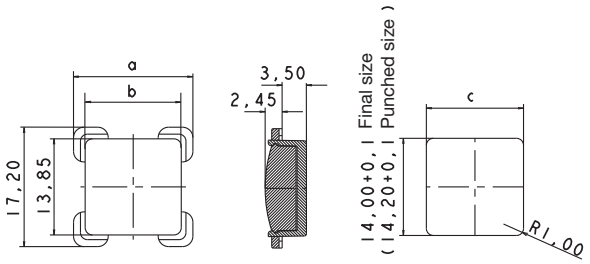


→	Size	Illuminability	Dimension (a) behind front panel	Dimension (b) in front of front panel	Dimension (c) hole patterns final size	Order no.
	1½-module	yes	17.20 x 24.20 mm	13.85 x 20.85 mm	14.00 x 21.00 mm	5.55.103.032/1013

Lenses:
RK 90 - Lens, 14 mm, 1.5-module, opaque red: 5.46.681.003/0309
RK 90 - Lens, 14 mm, 1.5-module, opaque yellow: 5.46.681.003/0409
RK 90 - Lens, 14 mm, 1.5-module, opaque green: 5.46.681.003/0514
RK 90 - Lens, 14 mm, 1.5-module, opaque blue: 5.46.681.003/0611
RK 90 - Lens, 14 mm, 1.5-module, opaque light grey: 5.46.681.003/0700
RK 90 - Lens, 14 mm, 1.5-module, transparent colorless: 5.46.681.023/1002
RK 90 - Lens, 14 mm, 1.5-module, transparent red: 5.46.681.023/1307
RK 90 - Lens, 14 mm, 1.5-module, transparent yellow: 5.46.681.023/1403
RK 90 - Lens, 14 mm, 1.5-module, transparent green: 5.46.681.023/1510

RK 90
Keycap body plastic, for lenses 2-module

Technical data see page 4 - 111



→	Size	Illuminability	Dimension (a) behind front panel	Dimension (b) in front of front panel	Dimension (c) hole patterns final size	Order no.
	2-module	yes	17.20 x 31.20 mm	13.85 x 27.85 mm	14.00 x 28.00 mm	5.55.103.077/1013

Lenses:
RK 90 - Lens, 14 mm, 2-module, opaque red: 5.46.681.004/0309
RK 90 - Lens, 14 mm, 2-module, opaque yellow: 5.46.681.004/0409
RK 90 - Lens, 14 mm, 2-module, opaque green: 5.46.681.004/0514
RK 90 - Lens, 14 mm, 2-module, opaque blue: 5.46.681.004/0611
RK 90 - Lens, 14 mm, 2-module, opaque light grey: 5.46.681.004/0700
RK 90 - Lens, 14 mm, 2-module, transparent colorless: 5.46.681.024/1002
RK 90 - Lens, 14 mm, 2-module, transparent red: 5.46.681.024/1307
RK 90 - Lens, 14 mm, 2-module, transparent yellow: 5.46.681.024/1403
RK 90 - Lens, 14 mm, 2-module, transparent green: 5.46.681.024/1510

RK 90
Keycaps, aluminum, 14 mm

➔ The RK 90 system design with metal keycaps is fairly safe against mechanical, thermal or chemical effects. Combined with a metal front panel, this data entry system offers maximum protection against vandalism. Tried and tested MICON 5, RACON 8/12 or RF 15/19 PCB key switches are used underneath the metal keycaps.
The keycaps can be provided with engraved, colored anodized or laser-printed legends. This means that the legend is durable and cannot be removed by mechanical or chemical means.

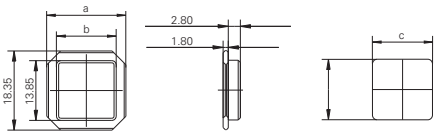
Technical Data

➔ **General information**

Color of lens	aluminum colorless anodized
Size	see order block
Degree of protection (with silicon seal)	IP65 (DIN EN 60529)

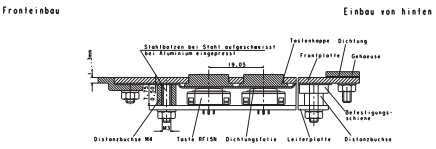
➔ **Dimensions**

Dimension (b) in front of front panel	see order block
Dimension (a) behind front panel	see order block
Dimension (c) hole patterns final size	see order block
Dimension hole patterns punched size	see order block



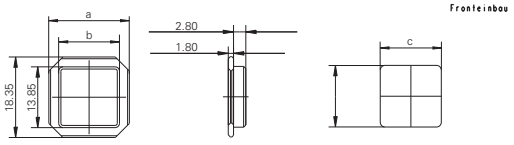
➔ **Other specifications**

ROHS compliant	yes
REACH compliant	yes



RK 90
Keycaps, aluminum, 14 mm, 1-module

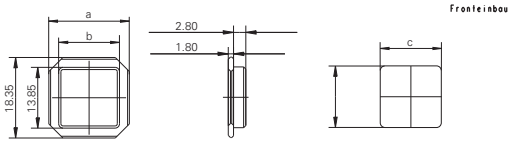
Technical data see page 4 - 115



→	Size	Color of lens	Dimension (a) behind front panel	Dimension (b) in front of front panel	Dimension (c) hole patterns final size	Order no.
	1-module	aluminum colorless anodized	18.35 x 18.35 mm	13.85 x 13.85 mm	14.00 x 14.00 mm	5.46.500.001/4010

RK 90
Keycaps, aluminum, 14 mm, 1½-module

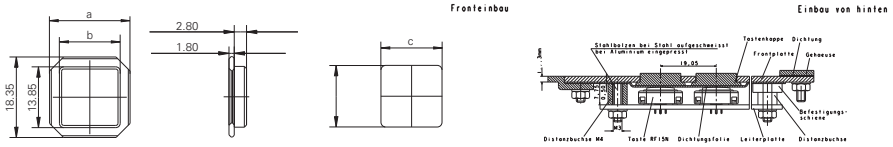
Technical data see page 4 - 115



→	Size	Color of lens	Dimension (a) behind front panel	Dimension (b) in front of front panel	Dimension (c) hole patterns final size	Order no.
	1½-module	aluminum colorless anodized	18.35 x 25.35 mm	13.85 x 20.85 mm	14.00 x 21.00 mm	5.46.500.003/4010

RK 90
Keycaps, aluminum, 14 mm, 2-module

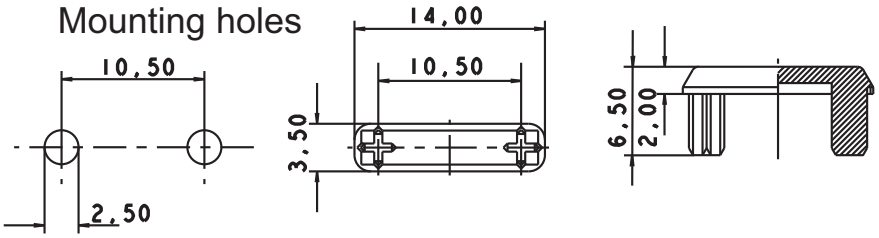
Technical data see page 4 - 115



→	Size	Color of lens	Dimension (a) behind front panel	Dimension (b) in front of front panel	Dimension (c) hole patterns final size	Order no.
	2-module	aluminum colorless anodized	18.35 x 32.35 mm	13.85 x 27.85 mm	14.00 x 28.00 mm	5.46.500.004/4010

RK 90
Special accessories

RK 90
Fin, to avoid inadvertent operation



→ Description	Color	Order no.
RK 90 - Fin, to avoid inadvertent operation, light grey	opaque light grey	5.55.103.079/0700
RK 90 - Fin, to avoid inadvertent operation, charcoal grey	opaque light grey	5.55.103.079/0152

RK 90
Spacer M 4

→ Length L	Color	Order no.
12.5 mm overall height for RF 15 mm	-	5.30.764.040/0000
9.25 mm overall height, for RF 15 mm	-	5.30.764.027/0000
5.5 mm overall height, for RF15 N mm	-	5.30.764.010/0000
7.5 mm overall height for RACON 8/12 mm	-	5.30.764.018/0000
4.25 mm overall height, for RACON 8/12 mm	-	5.30.764.005/0000

Mounting from front (1 pc. per stud)

RK 90
Silicone foil

→ Color	Dimensions	Order no.
transparent	600 x 590 x 0.45 mm	7.16.102.006/0000

RG 85 III

Short-travel system

Vandal-proof input system, ideally suited for elevator controls, info terminals, vending machines, etc.

- Edge illumination and symbol illumination possible
- Connection: Each module individually with an 8-pin Micro-Match socket connector
- Modular fixing system with quick fasteners or single fixing
- Contact arrangement: 1 NO contact
- 35 V/250 mA max.
- Degree of protection IP65 (keylock switch IP40).
- Elevator standardm EN 81-70
- All products are RoHS compliant.

PCB KEY SWITCHES

RG 85 III - PUSHBUTTONS/KEYS

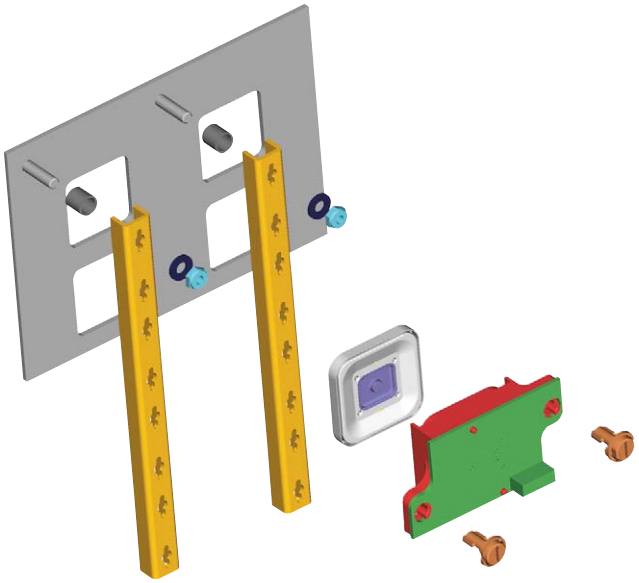
Content

RG 85 III - Key switches	**4 - 125**
RG 85 III - Key switch, round design, without lens	4 - 126
RG 85 III - Key switch, square design, without lens	4 - 126
RG 85 III - Keylock switches	**4 - 128**
RG 85 III - Keylock switch, round design, without lens	4 - 129
RG 85 III - Keylock switch, square design, without lens	4 - 129
RG 85 III - Signal indicators, without lens	**4 - 131**
RG 85 III - Signal indicator, without lens	4 - 132
RG 85 III - Accessories	**4 - 133**
RG 85 III - Lens for key switches, round	4 - 133
RG 85 III - Lens for key switches, square	4 - 134
RG 85 III - Lens for key switches, round flush, elevator standard EN 81-70	4 - 135
RG 85 III - Lens for key switches, round protruding, elevator standard EN 81-70	4 - 136
RG 85 III - Lens for key switches, square flush, elevator standard EN 81-70	4 - 137
RG 85 III - Lens for key switches, square protruding, elevator standard EN 81-70	4 - 138
RG 85 III - Lens for keylock switches, round	4 - 139
RG 85 III - Lens for keylock switches, square	4 - 139
RG 85 III - Lens, round, for signal indicators	4 - 140
RG 85 III - Lens, square, for signal indicators	4 - 140
RG 85 III - Lens, triangular, for signal indicators	4 - 141
Cable, 8 wire, with socket connectors on both ends	4 - 141
Fixing rail, length 490 mm	4 - 142
Spacer	4 - 142
Fixing piece for mounting the elements with the rail fixing method	4 - 142

System Features

Perfectly suited for: elevator controls, info terminals, vending machines, etc.

- Vandal proof construction
- Modular fixing system with quick fasteners or single fixing method using thread studs
- Connection with keyed 8-pin micro-match connector
- Degree of protection: IP40/65



Pushbutton Features

- Round or square design and lens shape
- Edge illumination in one or two colours with 4 LED for each colour
- Additional illumination of the symbol with 2 LED
- Lens material: Aluminum or stainless steel with plastic inlays
- Switching element: short-travel key switch RF 19
  - 1 NO contact, non-illuminated
  - 1 NO contact, fully illuminated

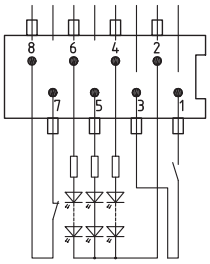
Signal Indicator Features

- Lens shape round, square or triangular (arrow shape)
- Lens material: Translucent plastic material
- Fully illuminated with 5 LED

Keylock Switch Features

- Round or square design and lens shape
- Edge illumination in one or two colours with 4 LED for each colour
- Lens material: Aluminum or stainless steel with plastic inlays
- Contact arrangement: 1 NO
- Cylinder lock with pin tumblers
- Two switching positions: 0 and 90 degrees, key can be removed in any position
- Lock type 5201 – other lock types on request
- Included: 2 keys

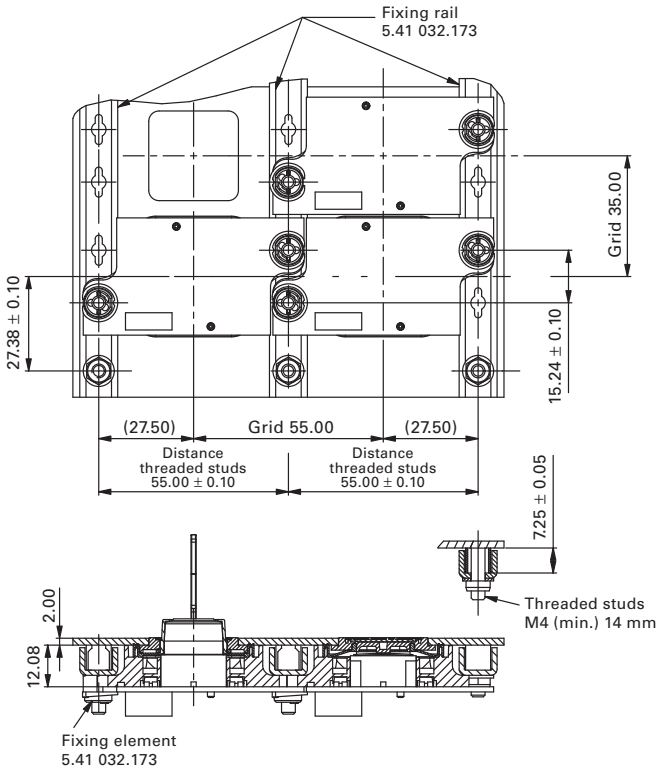
Micro-Match Connector Pin Assignment



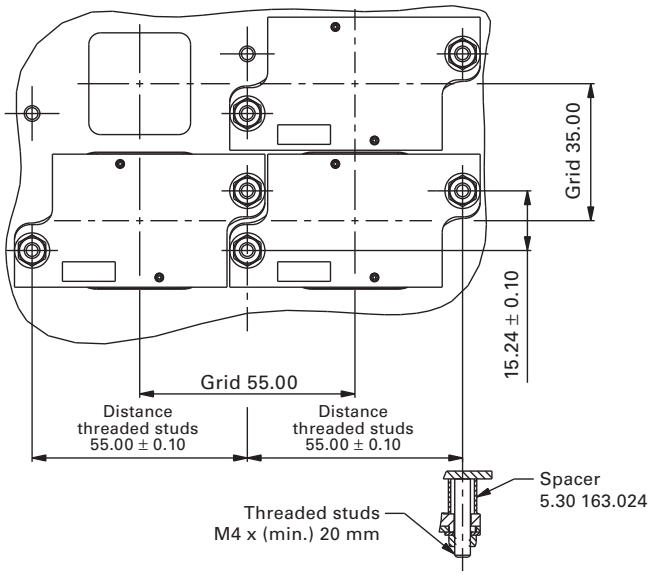
1/3 NO contact
2 O V – LED
4 Edge illuminat./signal indicator 1st colour + 24 V DC +/- 20%
5 Symbol illumination + 24 V DC±20%
6 Edge illuminat./signal indicator 2nd colour + 24 V DC +/- 20%
7/8 NC contact

Installation plan

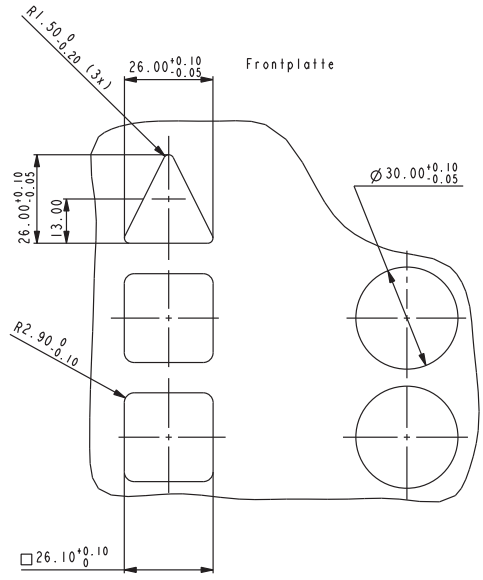
Rail fixing method



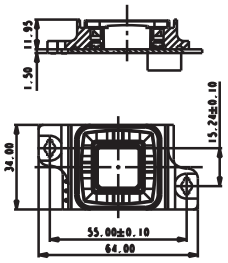
Single fixing method



Front panel



RG 85 III
Key switches



Technical Data

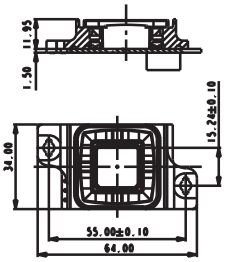
→ Dimensions	
Length	64 mm
Mounting grid min.	55 x 35 mm
Width	34 mm
→ Mechanical design	
Version	see order block
Mounting	on U-rails or single mounting
Terminals	8-pin Micro-Match® female connector
Contact system	snap-action (1 NO)
Contact arrangement	see order block
Contact materials	Ag
Symbol illumination	see order block
Edge illumination	see order block
→ Mechanical characteristics	
Operating force	3.5 N
Operating travel	1 mm
Switching travel NO	1 mm
Switching travel NC	0.6 mm
→ Electrical characteristics	
Rated voltage min.	3 V
Rated voltage max.	35 V
Rated current min.	0.1 mA
Rated current max.	250 mA
Rated power max.	12.5 W
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	3 Ω
Bouncing time max.	10 ms
Operating voltage for LED	$24^{\pm 20\%}$ V
Input current LED	per color/LED row 9 - 16 mA
→ Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	1,000,000
Degree of protection rail mounting	IP40 (DIN EN 60529)
Degree of protection single mounting	IP65 (DIN EN 60529)
Flammability of materials	according to UL 94 HB
ROHS compliant	yes
REACH compliant	yes

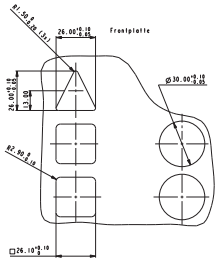
Accessories RG 85 III - Key switch

→ Description	Photo	Order no.	Additional accessories see page
Cable, 8 wires, with socket connectors on both ends, length 1 m		5.03.772.261/0000	4 - 141
RG 85 III - Lenses for key switches, round, stainless steel		5.04.914.000/2000	4 - 133
RG 85 III - Lenses for key switches, square, aluminum		5.04.915.100/2000	4 - 134

RG 85 III
Key switch, round design, without lens

Technical data see page 4 - 125



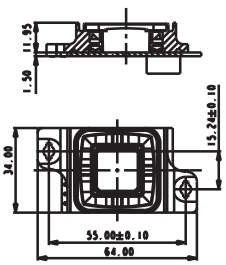


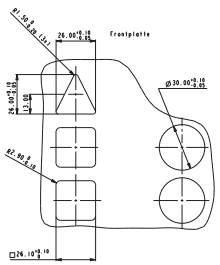
→ Contact arrangement	Edge illumination	Symbol illumination	Version	Order no.
1 NO	4 LED white	2 LED yellow	round	3.99.400.111/2400
1 NO	4 LED red	2 LED red	round	3.99.400.111/3300
1 NO	4 LED yellow	2 LED green	round	3.99.400.111/4500
1 NO	4 LED green	2 LED green	round	3.99.400.111/5500
1 NO	4 LED blue	2 LED blue	round	3.99.400.111/6600
1 NO	4 LED white, 4 LED blue	2 LED blue	round	3.99.400.111/7600
1 NO	4 LED green, 4 LED red	2 LED red	round	3.99.400.111/8300

Please order lenses (round shape) separately.

RG 85 III
Key switch, square design, without lens

Technical data see page 4 - 125



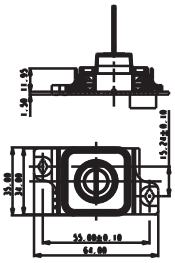


→ Contact arrangement	Edge illumination	Symbol illumination	Version	Order no.
1 NO	4 LED white	2 LED yellow	square	3.99.400.112/2400
1 NO	4 LED red	2 LED red	square	3.99.400.112/3300
1 NO	4 LED yellow	2 LED green	square	3.99.400.112/4500

– Table (continued) –
RG 85 III - Key switch, square design, without lens

→	Contact arrangement	Edge illumination	Symbol illumination	Version	Order no.
	1 NO	4 LED green	2 LED green	square	3.99.400.112/5500
	1 NO	4 LED blue	2 LED blue	square	3.99.400.112/6600
	1 NO	4 LED white, 4 LED blue	2 LED blue	square	3.99.400.112/7600
	1 NO	4 LED green, 4 LED red	2 LED red	square	3.99.400.112/8300

Please order lenses (square shape) separately.



RG 85 III
Keylock switches

Technical Data

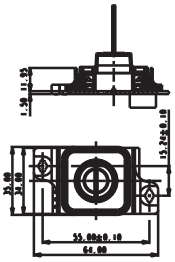
→ Dimensions	
Length	64 mm
Mounting grid min.	55 x 35 mm
Width	34 mm (35 mm with sealing)
→ Mechanical design	
Version	see order block
Mounting	on U-rails or single mounting
Terminals	8-pin Micro-Match® female connector
Contact system	cross contact
Contact arrangement	1 NO
Contact materials	Au alloy
Symbol illumination	none
Edge illumination	see order block
Lock	cylinder lock, lock type 5201
Key removal position	Pos. 0 + 1
→ Mechanical characteristics	
Rotating angle	1 x 90°
Switching travel NO	1 mm
→ Electrical characteristics	
Rated voltage min.	3 V
Rated voltage max.	35 V
Rated current min.	0.1 mA
Rated current max.	100 mA
Rated power max.	1 W
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	3 Ω
Bouncing time max.	10 ms
Operating voltage for LED	$24^{\pm 20\%}$ V
Input current LED	per color/LED row 9 - 16 mA
→ Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	50,000
Degree of protection rail mounting	IP40 (DIN EN 60529)
Degree of protection single mounting	IP65 (DIN EN 60529)
Flammability of materials	according to UL 94 HB
ROHS compliant	yes
REACH compliant	yes

Accessories RG 85 III - Keylock switch

→ Description	Photo	Order no.	Additional accessories see page
RG 85 III - Lenses for keylock switches, round, stainless steel		5.04.914.200/2000	4 - 139
RG 85 III - Lenses for keylock switches, square, aluminum		5.04.915.201/2000	4 - 139

RG 85 III
Keylock switch, round design, without lens

Technical data see page 4 - 128



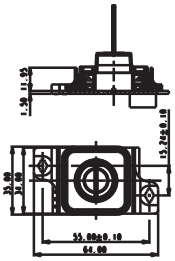
→	Contact arrangement	Edge illumination	Rotating angle	Version	Order no.
	1 NO	4 LED white	1 x 90°	round	3.99.400.141/2000
	1 NO	4 LED red	1 x 90°	round	3.99.400.141/3000
	1 NO	4 LED green	1 x 90°	round	3.99.400.141/5000
	1 NO	4 LED blue	1 x 90°	round	3.99.400.141/6000

Please order lenses (round shape) separately.

Accessoires:
RG 85 III - Lenses for keylock switches, round, stainless steel: 5.04.914.200/2000

RG 85 III
Keylock switch, square design, without lens

Technical data see page 4 - 128



→	Contact arrangement	Edge illumination	Rotating angle	Version	Order no.
	1 NO	4 LED white	1 x 90°	square	3.99.400.142/2000
	1 NO	4 LED red	1 x 90°	square	3.99.400.142/3000
	1 NO	4 LED green	1 x 90°	square	3.99.400.142/5000
	1 NO	4 LED blue	1 x 90°	square	3.99.400.142/6000

– Table (continued) –
RG 85 III - Keylock switch, square design, without lens

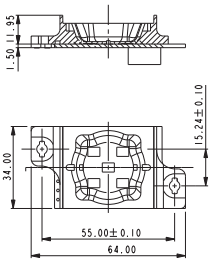
Please order lenses (square shape) separately.

Accessoires:
RG 85 III - Lenses for keylock switches, square, stainless steel: 5.04.914.201/2000

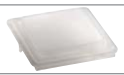
RG 85 III
Signal indicators, without lens

Technical Data

➔ Dimensions	
Length	64 mm
Mounting grid min.	55 x 35 mm
Width	34 mm
➔ Mechanical design	
Version	according to lens
Mounting	on U-rails or single mounting
Terminals	8-pin Micro-Match® female connector
Illumination	see order block
➔ Electrical characteristics	
Operating voltage for LED	$24^{\pm 20\%}$ V
Input current LED	depending on LED color 20 - 30 mA
➔ Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Degree of protection rail mounting	IP40 (DIN EN 60529)
Degree of protection single mounting	IP65 (DIN EN 60529)
Flammability of materials	according to UL 94 HB
ROHS compliant	yes
REACH compliant	yes

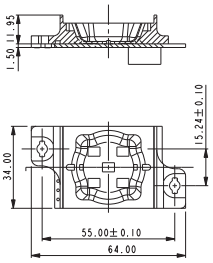


Accessories RG 85 III - Signal indicator, without lens

➔ Description	Photo	Order no.	Additional accessories see page
Cable, 8 wires, with socket connectors on both ends, length 2 m		5.03.772.262/0000	4 - 141
RG 85 III - Lens, square, for signal indicators		5.04.903.009/0000	4 - 140
RG 85 III - Lens, round, for signal indicators		5.04.903.010/0000	4 - 140
RG 85 III - Lens, triangular, for signal indicators		5.04.903.011/0000	4 - 141

RG 85 III
Signal indicator, without lens

Technical data see page 4 - 131



→ Illumination	Order no.
5 LED white	3.99.400.100/2000
5 LED red	3.99.400.100/3000
5 LED green	3.99.400.100/5000
5 LED green, 5 LED red	3.99.400.100/8000

Please order round, square or triangular lenses separately.

RG 85 III
Accessories

RG 85 III
Lens for key switches, round

→ Version	Form of lens	Legending color	Legending	Order no.
aluminum	round	-	-	5.04.915.000/2000
stainless steel	round	-	-	5.04.914.000/2000

The lenses without legending can not be engraved - other than the mentioned legends on request.

RG 85 III
Lens for key switches, square

→ Version	Form of lens	Legending color	Legending	Order no.
aluminum	square	-	-	5.04.915.100/2000
stainless steel	square	-	-	5.04.914.100/2000
stainless steel	square	opaque yellow	symbol „bell“	5.04.914.124/0400
stainless steel	square	opaque black	1	5.04.914.101/0100
stainless steel	square	opaque black	2	5.04.914.102/0100
stainless steel	square	opaque black	3	5.04.914.103/0100
stainless steel	square	opaque black	4	5.04.914.104/0100
stainless steel	square	opaque black	5	5.04.914.105/0100
stainless steel	square	opaque black	6	5.04.914.106/0100
stainless steel	square	opaque black	U	5.04.914.121/0100
stainless steel	square	opaque black	K	5.04.914.122/0100
stainless steel	square	opaque black	E	5.04.914.123/0100
stainless steel	square	opaque black	symbol „open door“	5.04.914.125/0100
stainless steel	square	opaque black	symbol „close door“	5.04.914.126/0100
stainless steel	square	opaque black	symbol „ventilator“	5.04.914.127/0100
stainless steel	square	opaque black	symbol „arrow“	5.04.914.128/0100
stainless steel	square	translucent white	1	5.04.914.101/2000
stainless steel	square	translucent white	2	5.04.914.102/2000
stainless steel	square	translucent white	3	5.04.914.103/2000
stainless steel	square	translucent white	4	5.04.914.104/2000
stainless steel	square	translucent white	5	5.04.914.105/2000
stainless steel	square	translucent white	6	5.04.914.106/2000
stainless steel	square	translucent white	U	5.04.914.121/2000
stainless steel	square	translucent white	K	5.04.914.122/2000
stainless steel	square	translucent white	E	5.04.914.123/2000
stainless steel	square	translucent white	symbol „open door“	5.04.914.125/2000
stainless steel	square	translucent white	symbol „close door“	5.04.914.126/2000
stainless steel	square	translucent white	symbol „ventilator“	5.04.914.127/2000
stainless steel	square	translucent white	symbol „arrow“	5.04.914.128/2000

– Table (continued) –
RG 85 III - Lenses for key switches, square

The lenses without legending can not be engraved - other than the mentioned legends on request.

RG 85 III
Lens for key switches, round flush, elevator standard EN 81-70

→ Version	Form of lens	Legending color	Legending	Order no.
stainless steel	round	-	-	5.04.916.000/2000
stainless steel	round	opaque yellow	symbol „bell“	5.04.916.024/1404
stainless steel	round	translucent white	1	5.04.916.001/2000
stainless steel	round	translucent white	2	5.04.916.002/2000
stainless steel	round	translucent white	3	5.04.916.003/2000
stainless steel	round	translucent white	4	5.04.916.004/2000
stainless steel	round	translucent white	5	5.04.916.005/2000
stainless steel	round	translucent white	6	5.04.916.006/2000
stainless steel	round	translucent white	U	5.04.916.021/2000
stainless steel	round	translucent white	K	5.04.916.022/2000
stainless steel	round	translucent white	E	5.04.916.023/2000
stainless steel	round	translucent white	symbol „open door“	5.04.916.025/2000
stainless steel	round	translucent white	symbol „close door“	5.04.916.026/2000
stainless steel	round	translucent white	symbol „arrow“	5.04.916.033/2000
stainless steel	round	translucent white	symbol „ventilator“	5.04.916.034/2000
stainless steel	round	translucent white	7	5.04.916.007/2000
stainless steel	round	translucent white	8	5.04.916.008/2000
stainless steel	round	translucent white	9	5.04.916.009/2000
stainless steel	round	translucent white	10	5.04.916.010/2000
stainless steel	round	translucent white	11	5.04.916.011/2000
stainless steel	round	translucent white	12	5.04.916.012/2000
stainless steel	round	translucent white	13	5.04.916.013/2000
stainless steel	round	translucent white	14	5.04.916.014/2000
stainless steel	round	translucent white	15	5.04.916.015/2000

– Table (continued) –
RG 85 III - Lenses for key switches, round flush, elevator standard EN 81-70

→ Version	Form of lens	Legending color	Legending	Order no.
stainless steel	round	translucent white	16	5.04.916.016/2000
stainless steel	round	translucent white	17	5.04.916.017/2000
stainless steel	round	translucent white	18	5.04.916.018/2000
stainless steel	round	translucent white	19	5.04.916.019/2000
stainless steel	round	translucent white	20	5.04.916.020/2000
stainless steel	round	translucent white	0	5.04.916.027/2000
stainless steel	round	translucent white	-1	5.04.916.028/2000
stainless steel	round	translucent white	-2	5.04.916.029/2000
stainless steel	round	translucent white	-3	5.04.916.030/2000
stainless steel	round	translucent white	-4	5.04.916.031/2000
stainless steel	round	translucent white	-5	5.04.916.032/2000
stainless steel	round	transparent yellow	symbol „bell“	5.04.916.024/2214

RG 85 III
Lens for key switches, round protruding, elevator standard EN 81-70

→ Version	Form of lens	Legending color	Legending	Order no.
stainless steel	round	opaque yellow	symbol „bell“	5.04.916.224/1404
stainless steel	round	opaque black	-	5.04.916.201/1501
stainless steel	round	opaque black	2	5.04.916.202/1501
stainless steel	round	opaque black	3	5.04.916.203/1501
stainless steel	round	opaque black	E	5.04.916.223/1501
stainless steel	round	opaque black	0	5.04.916.227/1501
stainless steel	round	opaque black	-1	5.04.916.228/1501
stainless steel	round	transparent yellow	symbol „bell“	5.04.916.224/2214

RG 85 III
Lens for key switches, square flush, elevator standard EN 81-70

→ Version	Form of lens	Legending color	Legending	Order no.
stainless steel	square	-	-	5.04.916.100/2000
stainless steel	square	opaque yellow	symbol „bell“	5.04.916.124/1404
stainless steel	square	translucent white	1	5.04.916.101/2000
stainless steel	square	translucent white	2	5.04.916.102/2000
stainless steel	square	translucent white	3	5.04.916.103/2000
stainless steel	square	translucent white	4	5.04.916.104/2000
stainless steel	square	translucent white	5	5.04.916.105/2000
stainless steel	square	translucent white	6	5.04.916.106/2000
stainless steel	square	translucent white	U	5.04.916.121/2000
stainless steel	square	translucent white	K	5.04.916.122/2000
stainless steel	square	translucent white	E	5.04.916.123/2000
stainless steel	square	translucent white	symbol „open door“	5.04.916.125/2000
stainless steel	square	translucent white	symbol „close door“	5.04.916.126/2000
stainless steel	square	translucent white	symbol „arrow“	5.04.916.133/2000
stainless steel	square	translucent white	symbol „ventilator“	5.04.916.134/2000
stainless steel	square	translucent white	7	5.04.916.107/2000
stainless steel	square	translucent white	8	5.04.916.108/2000
stainless steel	square	translucent white	9	5.04.916.109/2000
stainless steel	square	translucent white	10	5.04.916.110/2000
stainless steel	square	translucent white	11	5.04.916.111/2000
stainless steel	square	translucent white	12	5.04.916.112/2000
stainless steel	square	translucent white	13	5.04.916.113/2000
stainless steel	square	translucent white	14	5.04.916.114/2000
stainless steel	square	translucent white	15	5.04.916.115/2000
stainless steel	square	translucent white	16	5.04.916.116/2000
stainless steel	square	translucent white	17	5.04.916.117/2000
stainless steel	square	translucent white	18	5.04.916.118/2000
stainless steel	square	translucent white	19	5.04.916.119/2000
stainless steel	square	translucent white	20	5.04.916.120/2000

– Table (continued) –
RG 85 III - Lenses for key switches, square flush, elevator standard EN 81-70

→ Version	Form of lens	Legending color	Legending	Order no.
stainless steel	square	translucent white	0	5.04.916.127/2000
stainless steel	square	translucent white	-1	5.04.916.128/2000
stainless steel	square	translucent white	-2	5.04.916.129/2000
stainless steel	square	translucent white	-3	5.04.916.130/2000
stainless steel	square	translucent white	-4	5.04.916.131/2000
stainless steel	square	translucent white	-5	5.04.916.132/2000
stainless steel	square	transparent yellow	symbol „bell“	5.04.916.124/2214

RG 85 III
Lens for key switches, square protruding, elevator standard EN 81-70

→ Version	Form of lens	Legending color	Legending	Order no.
stainless steel	square	opaque yellow	symbol „bell“	5.04.916.254/1404
stainless steel	square	opaque black	1	5.04.916.231/1501
stainless steel	square	opaque black	2	5.04.916.232/1501
stainless steel	square	opaque black	3	5.04.916.233/1501
stainless steel	square	opaque black	E	5.04.916.253/1501
stainless steel	square	opaque black	0	5.04.916.257/1501
stainless steel	square	opaque black	-1	5.04.916.258/1501
stainless steel	square	transparent yellow	symbol „bell“	5.04.916.254/2214

RG 85 III
Lens for keylock switches, round

→ Version	Form of lens	Legending color	Legending	Order no.
aluminum	round	-	-	5.04.915.200/2000
stainless steel	round	-	-	5.04.914.200/2000

RG 85 III
Lens for keylock switches, square

→ Version	Form of lens	Legending color	Legending	Order no.
aluminum	square	-	-	5.04.915.201/2000
stainless steel	square	-	-	5.04.914.201/2000

RG 85 III
Lens, round, for signal indicators

→	Version	Form of lens	Legending color	Legending	Order no.
	plastic translucent	round	-	-	5.04.903.010/0000

RG 85 III
Lens, square, for signal indicators

→	Version	Form of lens	Legending color	Legending	Order no.
	plastic translucent	square	-	-	5.04.903.009/0000

RG 85 III
Lens, triangular, for signal indicators

→ Version	Form of lens	Legending color	Legending	Order no.
plastic translucent	triangular	-	-	5.04.903.011/0000

Cable, 8 wire, with socket connectors on both ends

→ Version	Order no.
length: 1 m	5.03.772.261/0000
length: 2 m	5.03.772.262/0000

Fixing rail, length 490 mm

→ Version	Order no.
length: 490 mm	5.41.032.173/7500

Spacer

→ Version	Order no.
mounting on rails	5.30.163.021/6000
single mounting	5.30.163.024/6000

Fixing piece for mounting the elements with the rail fixing method

→ Description	Order no.
Fixing piece for mounting the elements with the rail fixing method	5.55.104.208/0459

RS 76

Full-travel key switches

The RS 76 full-travel key switches are designed for configuring keyboards. They offer very comfortable operation with an overall height of 15.5 / 15.9 mm and a key travel of 4 mm. The modular system with a grid of 3/4“ = 19.05 mm enables you to design any key block you may want.

Mechanical contact system RS 76 M

A gold alloy is used as the contact material and provides high contact reliability, low contact resistance and short bouncing time.

Solid-state contact system RS 76 C

The solid-state switch in Hall-IC technology ensures bounce-free and wear-free switching and a long operating life. Function: When pressing the keys, a permanent magnet changes its position relative to the Hall-IC and thereby generates an output signal. Their use is especially recommended in hostile environments and for heavy duty applications.

- All products are RoHS compliant.

PCB KEY SWITCHES

RS 76 - FULL-TRAVEL KEY SWITCHES

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The RAFI full-travel key switches RS 76 are modular systems for designing individual key blocks and keyboards in the 3/4 inch (= 19.05 mm) grid.

Definitions

Momentary key switches
Momentary key switches return to their initial position after being pressed (momentary action).

Latching key switches
Latching key switches lock when actuated and are returned to their initial position when pressed again (push-push action).

Keycap materials
Keycap without legend insert: ABS
Keycap with legend insert:
– Keycap body: ABS
– Lens: PC

Keycap, n-module
A 2-module keycap f. ex. has the twofold length of a 1-module keycap.

Contact principle
There are two contact principles:
– **Mechanical (M):** Cross contact (RS 76 M)
Bridge contact
(RS 76 M, illuminated)
– **Contactless (C):** Based on Hall-IC (RS 76 C)

Manual Soldering
The soldering temperature should not exceed 300 °C and the soldering time should be less than 5 seconds.

Legending of keycaps

Keycaps can be legended by different methods:

Two-shot moulding
Using this method the symbol is separately manufactured from a plastic and then the appropriate keycap form is moulded round it. Advantage: The character becomes a integrated part of the keycap, thus eliminating abrasion. All RAFI keycap sets with standard legending are manufatured by this method.
Customer specific two-shot moulded keycaps on request.

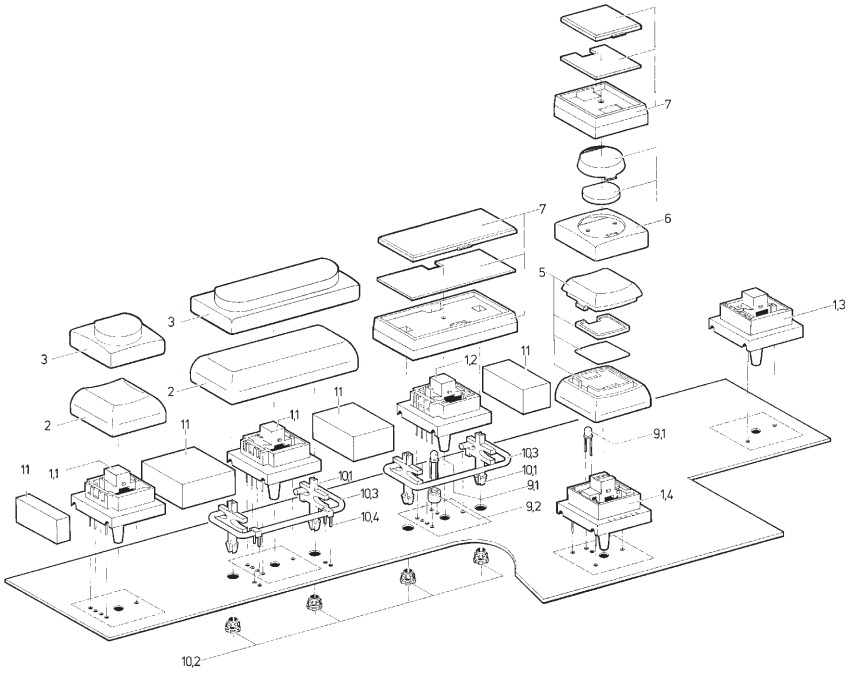
Printing
Keycaps can be printed with a two-component ink on request. The abrasin of this kind of legending is high. This method of legending is suitable for average volumes.

Engraving
In this labour intensive process the keycaps are engraved with the required symbol, then inlaid with ink. Only used for small volumes.

Laser-printing
This method of legending can be recommended when complete keyboards are required in different keyboard layouts for which RAFI will develop the respective software. The keyboards can then be legended within a short time. This method of legending ist particularly recommended for average to large volumes.

Legend inserts
In the case of keycaps with replaceable legend inserts it is possible to print or engrave the legend inserts. As these insets are protected by the lens, there can be no abrasion here either.

Design



No. Description

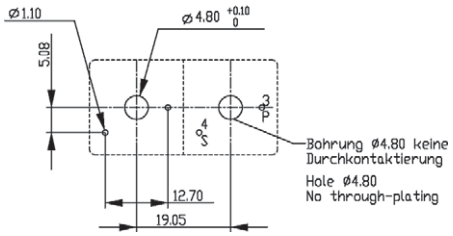
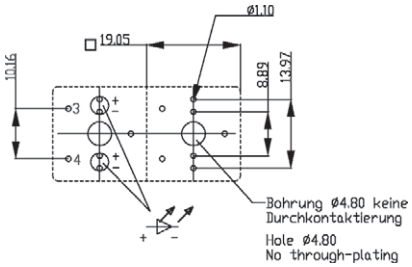
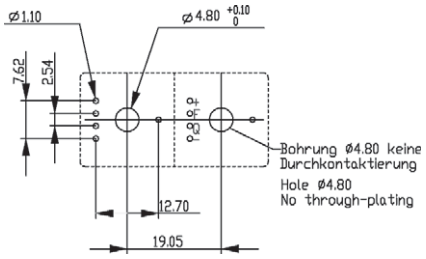
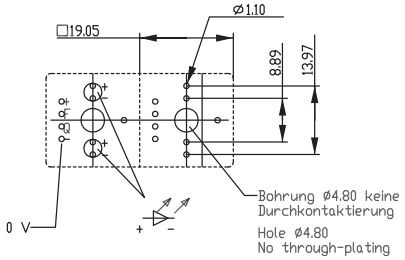
1.1 Key switch RS 76 C
1.2 Key switch RS 76 C with LED
1.3 Key switch RS 76 M
1.4 Key switch R 76 M with LED
2 Keycap, 1- resp. multi-module
3 Keycap with nail protection, 1- resp. multi-module
5 Keycap, illuminated
6 Keycap, illuminated
7 Keycap, illuminated
9.1 LED
9.2 Spacer for LED (for RS 76 C only)
10.1 Plunger for mult-moduel keycaps*
10.2 Sleeve for multi-moduel keycaps*
10.3 Metal lever for multi-module keycaps*
10.4 Bearing bracket for multi-module keycaps*
11 Covers

* These parts are included as a complete packet in the delivery of keycaps ≥ 2-module.

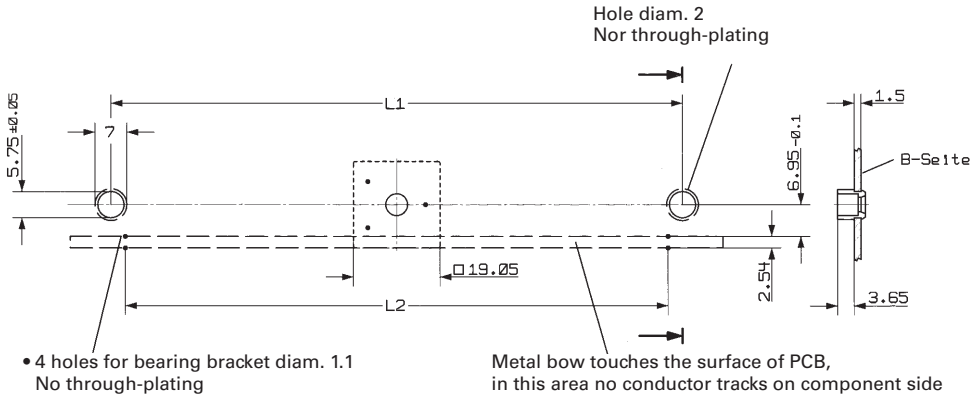
Hole pattern PCB RS 76 M/C

The hole patterns apply to the horizontal position of the keycaps only. Should they be in a vertical position, the momentary key switch must be mounted accordingly, i. e. rotated by 90°.

For 1 – 13/4-module keycaps (view on component side)

	Momentary key switch, non-illuminated	Momentary key switch, non-illuminated
RS 76 M		
RS 76 C		

For 2-, 3- and 8-module keycaps (view on component side)

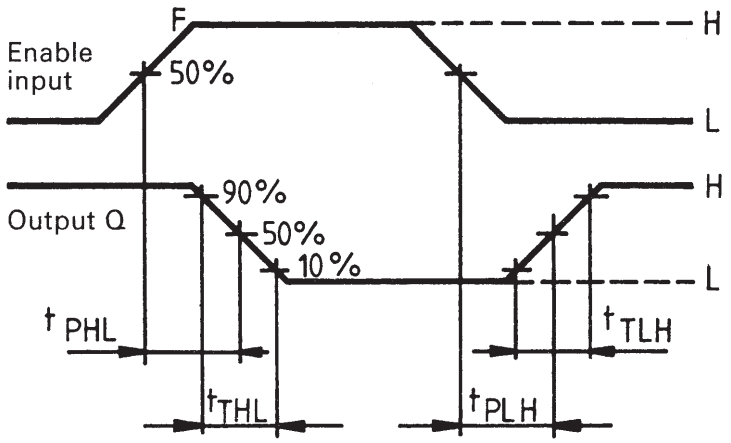
	Momentary key switch, non-illuminated
RS 76 M/C	

Keycap	L 1 mm	L 2 mm
2-module	25.40	22.86
3-module	30.48	24.13
5-module	68.58	68.58

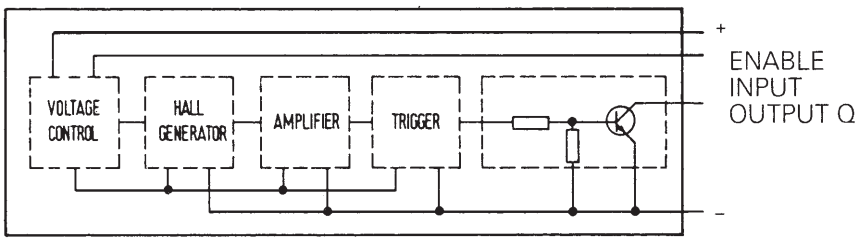
Important note: In the case of 2-, 3- and 8-module keycaps, additional holes must be provided for the accessories.
In the case of keycaps < 2-module, neither accessories nor holes are required.

Specific technical data RS 76 C

Output pulse diagram **Dynamic characteristics** (max.)		**Tw = 25 °C**	**Tw = 50 °C**	**Tw = 70 °C**
Turn-on delay time	t_{PHL}	3 µs	7 µs	10 µs
Turn-off delay time	t_{PHL}	4 µs	5 µs	6 µs
Fall/rise time	t_{PHL}	2 µs	2,5 µs	3 µs
	t_{PHL}	1 µs	1,5 µs	2,5 µs

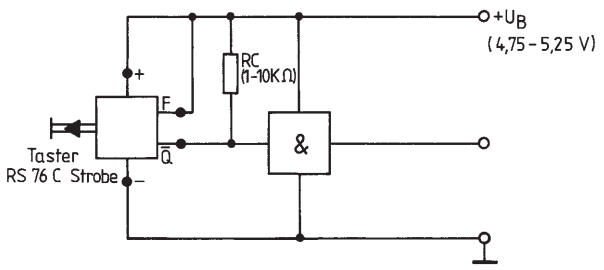


Block diagram
Hall IC

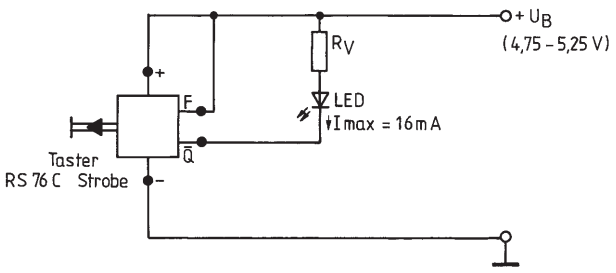


Static with Enable Input

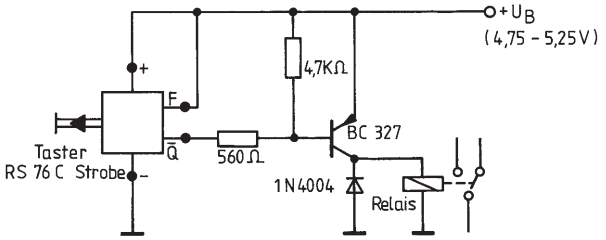
Examples for application RS 76 C



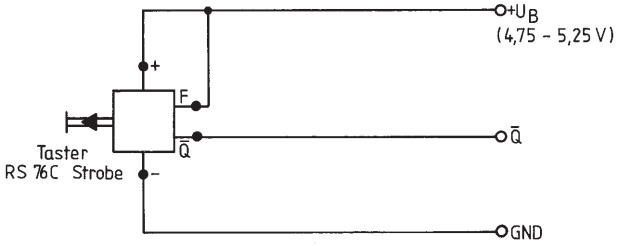
Driving of logic components



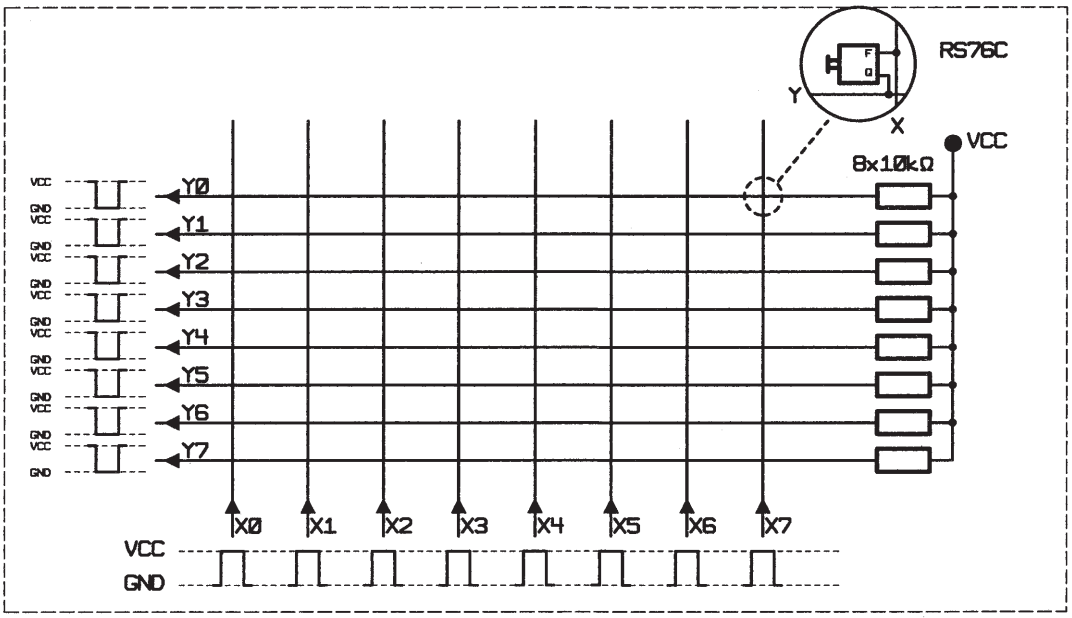
Indication of logical states



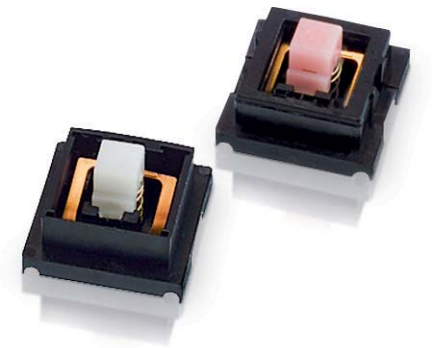
Driving of a PNP transistor



Use as static key with open collector output.
Output transistor (NPN) is conductive when actuated.



Use in keyboards



RS 76 M Full-travel key switches, not illuminable

Technical Data

➔ General information	
Recommended key grid	19.05 mm
➔ Mechanical design	
Contact function	momentary
Mounting	soldering
Terminals	solder terminals, tin-plated
Contact system	cross contact
Contact arrangement	1 NO
Contact materials	Au alloy
Illumination	no
➔ Mechanical characteristics	
Operating force max.	see order block
Operating travel	4 mm
Switching travel	1.5 - 2.8 mm
Robustness max.	100 N
➔ Electrical characteristics	
Rated voltage min.	2 V (with Diode 3 V)
Rated voltage max.	35 V
Rated current min.	0.01 mA
Rated current max.	100 mA
Rated power max.	1 W
Contact resistance when new max.	100 mΩ (ohne Diode)
Contact resistance acc. to life max.	3 Ω (without diode)
Insulation resistance	10^9 Ω
ESD strength max.	8 kV
Bouncing time max.	5 ms
➔ Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max. (product)	+80 °C
Storage temperature max. (rail)	+50 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	10^7
Degree of protection	IP40 (DIN EN 60529)
Flammability of materials	UL 94 HB
ROHS compliant	yes
REACH compliant	yes

Accessories RS 76 M - Full-travel key switch, not illuminable

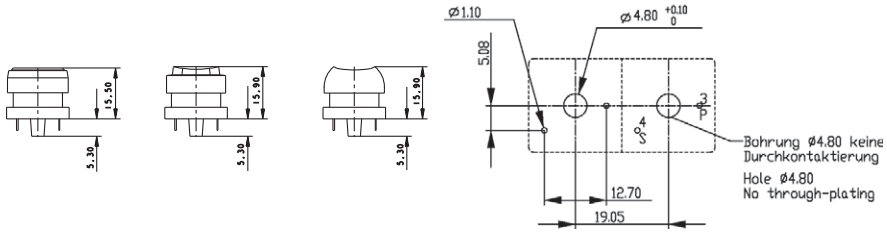
➔ Description	Photo	Order no.	Additional accessories see page
RS 76 C - Keycap with legend insert		-	4 - 162
RS 76 C - Keycap, opaque		-	4 - 161

– Table (continued) –
Accessories RS 76 M - Full-travel key switch, not illuminable

→	Description	Photo	Order no.	Additional accessories see page
	RS 76 C - Keycap, opaque, with nail protection		-	4 - 162

RS 76 M
Full-travel key switch, not illuminable

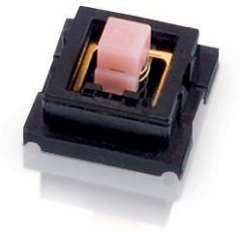
Technical data see page 4 - 150



→	Contact function	Illumination	Contact arrangement	Contact materials	Operating travel	Operating force max.	Order no.
	momentary	no	1 NO	Au alloy	4 mm	0.9 N	3.13.002.502/0000
	momentary	no	1 NO	Au alloy	4 mm	1.4 N	3.13.002.512/0000

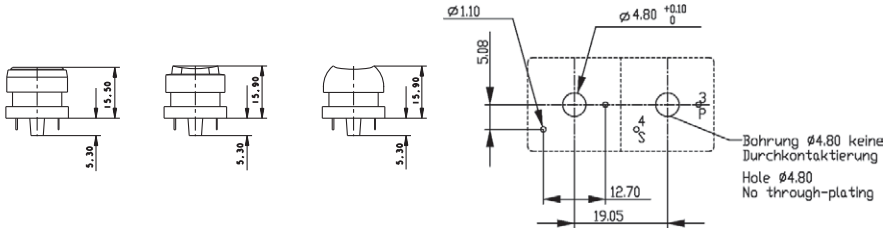
For accessories, refer to RS 76 special accessories.

For keycaps, see keycaps for RS 76.



RS 76 M
Full-travel key switch, with diode, not illuminable

Technical data see page 4 - 150



→	Contact function	Illumination	Contact arrangement	Contact materials	Operating travel	Operating force max.	Order no.
	momentary	no	1 NO	Au alloy	4 mm	0.9 N	3.13.005.001/0000
	momentary	no	1 NO	Au alloy	4 mm	1.4 N	3.13.005.011/0000

For accessories, refer to RS 76 special accessories.

For keycaps, see keycaps for RS 76.

RS 76 M Full-travel key switches, illuminable

RS 76MX, with illuminated keycaps

Technical Data

General information	
Recommended key grid	19.05 mm
Mechanical design	
Contact function	see order block
Mounting	soldering
Terminals	solder terminals, tin-plated
Contact system	bridge contact
Contact arrangement	1 NO
Contact materials	Au alloy
Illumination	see order block
Mechanical characteristics	
Operating force max.	1 N
Operating travel	4 mm
Switching travel	1.5 - 2.8 mm
Robustness max.	100 N
Electrical characteristics	
Rated voltage min.	2 V
Rated voltage max.	35 V
Rated current min.	0.01 mA
Rated current max.	100 mA
Rated power max.	1 W
Contact resistance when new max.	200 mΩ
Contact resistance acc. to life max.	3 Ω
Insulation resistance	10^9 Ω
ESD strength max.	8 kV
Bouncing time max.	10 ms
Other specifications	
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max. (product)	+80 °C
Storage temperature max. (rail)	+50 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	10^7 momentary, 10^5 latching
Degree of protection	IP40 (DIN EN 60529)
Flammability of materials	UL 94 HB
ROHS compliant	yes
REACH compliant	yes

Accessories RS 76 M - Full-travel key switch, illuminable

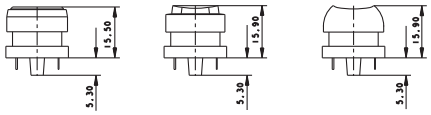
Description	Photo	Order no.	Additional accessories see page
RS 76 - Cover IP40		-	4 - 168
RS 76 - Keycap with light bar		-	4 - 163
RS 76 - Keycap, illuminable, with legend insert		-	4 - 164

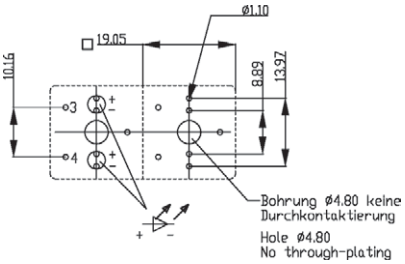
– Table (continued) –
Accessories RS 76 M - Full-travel key switch, illuminable

➔	Description	Photo	Order no.	Additional accessories see page
	RS 76 - Keycap, illuminable, with nail protection and legend insert		-	4 - 164

RS 76 M
Full-travel key switch, illuminable, momentary

Technical data see page 4 - 153





➔	Contact function	Contact system	Illumination	Recommended key grid	Order no.
	momentary	bridge contact	spot illumination possible with 3 LED	19.05 mm	3.13.002.102/0000

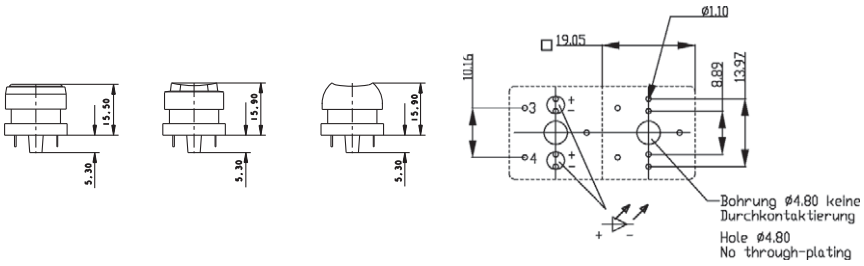
For accessories, refer to RS 76 special accessories.

For keycaps, see keycaps for RS 76.

Accessoires:
THT LED 3 mm, without base: see page 2 - 263, 5 - 8

RS 76 M
Full-travel key switch, illuminable, latching

Technical data see page 4 - 153



→	Contact function	Contact system	Illumination	Recommended key grid	Order no.
	latching	bridge contact	spot illumination possible with 3 LED	19.05 mm	3.13.002.022/0000

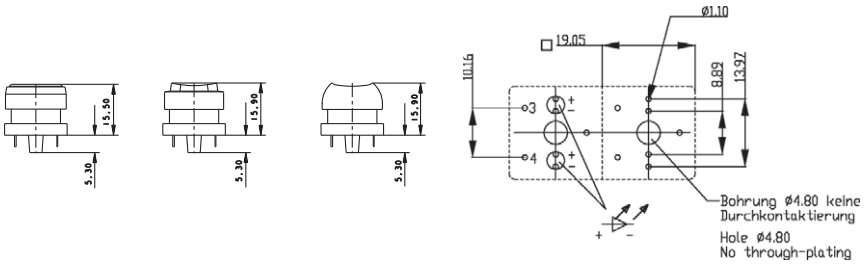
For accessories, refer to RS 76 special accessories.

For keycaps, see keycaps for RS 76.

Accessoires:
THT LED 3 mm, without base: see page 2 - 263, 5 - 8

RS 76 MX
Full-travel key switch, fully illuminable

Technical data see page 4 - 153



→	Contact function	Contact system	Illumination	Recommended key grid	Order no.
	momentary	bridge contact	2 SMT LED needed	19.05 mm	3.13.002.922/0000

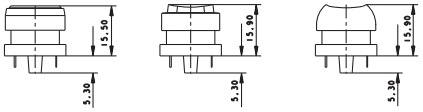
For accessories, refer to RS 76 special accessories.

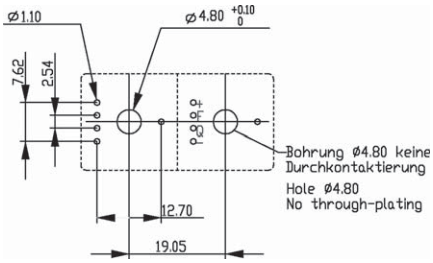
For keycaps, see keycaps for RS 76.

The SMT LEDs are soldered on the back of the printed circuit board and shine through openings in the board and key switch housing.

Accessoires:
RS 76 MX - Keycap, fully illuminated: 5.05.511.168/0209
RS 76 MX - Keycap, fully illuminated: 5.05.511.168/0754

RS 76 C Full-travel key switches, not illuminable





Technical Data

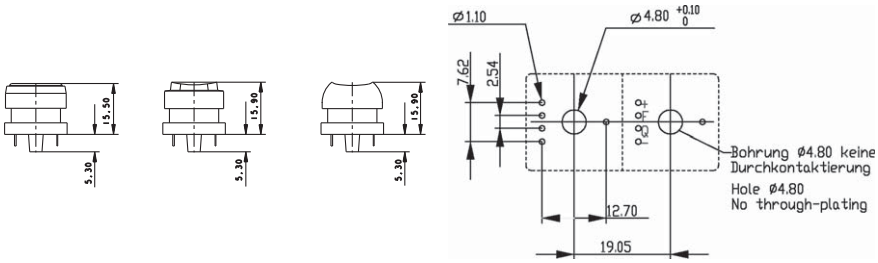
➔ General information	
Recommended key grid	19.05 mm
➔ Mechanical design	
Contact function	momentary
Mounting	soldering
Terminals	solder terminals, tin-plated
Contact system	contactless with Hall-IC
Illumination	no
➔ Mechanical characteristics	
Switching travel off	0.8 ... 2.4 mm
Operating force max.	see order block
Operating travel	4 mm
Switching travel on	1.5 - 2.8 mm
Robustness max.	100 N
➔ Electrical characteristics	
Operating voltage DC	4.75 ... 5.25 V
Supply current max. at U_{IL} = 0 V	0.5 mA
Supply current max. at U_{IH} = 5 V	5 mA
Input voltage (F) at U_{IL} = 0 V	0.4 V
Input voltage (F) at U_{IH} = 2.4V	5.25 V
Output load current (Q) max.	16 mA
Output residual current (Q) max.	10 µA
Output saturation voltage (Q) max. bei 16 mA	0.4 V
ESD strength max.	8 kV
Output switching times (Q) at 25 °C, t_{PHL}	3 µs
Output switching times (Q) at 25 °C, t_{PLH}	4 µs
Output switching times (Q) at 25 °C, t_{THL}	1 µs
Output switching times (Q) at 25 °C, t_{TLH}	2 µs
➔ Other specifications	
Reliability of Hall-IC at 25 °C	$\lambda = 2.5 \times 10^{-7}\ h^{-1}$
Ambient temp. operating min.	0 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max. (product)	+80 °C
Storage temperature max. (rail)	+50 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	see order block
Degree of protection	IP40 (DIN EN 60529)
Flammability of materials	UL 94 HB
ROHS compliant	yes
REACH compliant	yes

Accessories RS 76 C - Full-travel key switch, not illuminable

→	Description	Photo	Order no.	Additional accessories see page
	RS 76 C - Keycap with legend insert		-	4 - 162
	RS 76 C - Keycap, opaque		-	4 - 161
	RS 76 C - Keycap, opaque, with nail protection		-	4 - 162

RS 76 C
Full-travel key switch, not illuminable

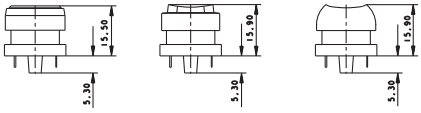
Technical data see page 4 - 156

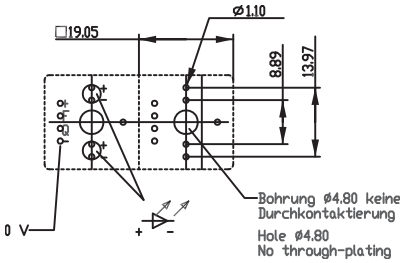


→	Contact function	Operating life min. (operations)	Illumination	Operating force max.	Operating travel	Order no.
	momentary	10^8	no	0.7 N	4 mm	3.13.001.010/0000
	momentary	10^8	no	1 N	4 mm	3.13.001.210/0000

For accessories and keycaps, refer to RS 76. For applications, refer to the general description of RS 76.

RS 76 C Full-travel key switches, illuminable





Technical Data

→ General information	
Recommended key grid	19.05 mm
→ Mechanical design	
Contact function	see order block
Mounting	soldering
Terminals	solder terminals, tin-plated
Contact system	contactless with Hall-IC
Illumination	with LED
LED color	see order block
→ Mechanical characteristics	
Switching travel on	1.5 - 2.8 mm
Switching travel off	0.8 ... 2.4 mm
Operating force max.	0.7 N
Operating travel	4 mm
Robustness max.	100 N
→ Electrical characteristics	
Number of LED	see order block
Operating voltage DC	4.75 ... 5.25 V
Supply current max. at U_{IL} = 0 V	0.5 mA
Supply current max. at U_{IH} = 5 V	5 mA
Input voltage (F) at U_{IL} = 0 V	0.4 V
Input voltage (F) at U_{IH} = 2.4V	5.25 V
Output load current (Q) max.	16 mA
Output residual current (Q) max.	10 µA
Output saturation voltage (Q) max. bei 16 mA	0.4 V
ESD strength max.	8 kV
Output switching times (Q) at 25 °C, t_{PHL}	3 µs
Output switching times (Q) at 25 °C, t_{PLH}	4 µs
Output switching times (Q) at 25 °C, t_{THL}	1 µs
Output switching times (Q) at 25 °C, t_{TLH}	2 µs
→ Other specifications	
Reliability of Hall-IC at 25 °C	$\lambda = 2.5 \times 10^{-7}\ h^{-1}$
Ambient temp. operating min.	0 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max. (product)	+80 °C
Storage temperature max. (rail)	+50 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Operating life min. (operations)	see order block
Degree of protection	IP40 (DIN EN 60529)
Flammability of materials	UL 94 HB
ROHS compliant	yes
REACH compliant	yes

Accessories RS 76 C - Full-travel key switch, illuminable

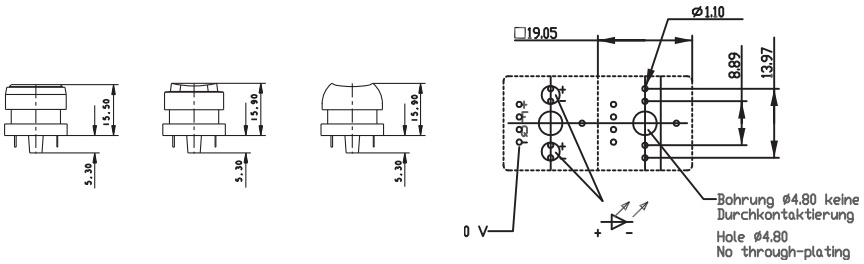
→ Description	Photo	Order no.	Additional accessories see page
RS 76 - Cover IP40		-	4 - 168

– Table (continued) –
Accessories RS 76 C - Full-travel key switch, illuminable

→	Description	Photo	Order no.	Additional accessories see page
	RS 76 - Keycap with light bar		-	4 - 163
	RS 76 - Keycap, illuminable, with legend insert		-	4 - 164
	RS 76 - Keycap, illuminable, with nail protection and legend insert		-	4 - 164

RS 76 C
Full-travel key switch, illuminable, momentary

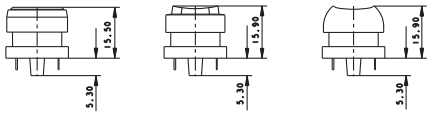
Technical data see page 4 - 158

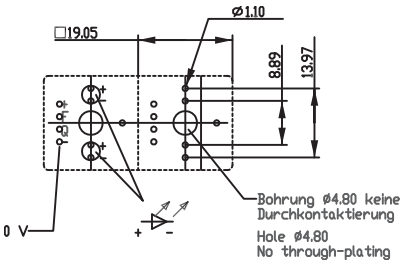


→	Contact function	Operating life min. (operations)	Illumination	Operating force max.	Operating travel	Order no.
	momentary	10^8	with LED	0.7 N	4 mm	3.13.001.110/0000

RS 76 C
Full-travel key switch, illuminable, latching

Technical data see page 4 - 158





→	Contact function	Operating life min. (operations)	Illumination	Operating force max.	Operating travel	Order no.
	latching	10^5	with LED	0.7 N	4 mm	3.13.001.130/0000

RS 76
Keycaps, not illuminable

Technical Data

→	**General information**	
	Form of lens	see order block
	Color of keycap / legending	see order block
	Color of lens / legend insert	see order block
	Illumination	see order block
	Degree of protection	see order block
	Size of keycap	see order block
→	**Other specifications**	
	ROHS compliant	yes
	REACH compliant	yes

RS 76 C
Keycap, opaque

Technical data see page 4 - 161

Keycap, light grey

→	Size of keycap	Illumination	Color of keycap / legending	Color of lens / legend insert	Order no.
	1-module	no	charcoal grey/-	-	5.82.000.000/0152
	1-module	no	light grey/-	-	5.82.000.000/0242

Keycap sets available in two-shot molded design.

Other keycap sizes, e.g. 1.25-, 1.5-, 1.75-, 2-, 3-, 5- and 8-module versions available on request.

RS 76 C
Keycap, opaque, with nail protection

Technical data see page 4 - 161

opaque with nail protection charcoal grey / white

→	Size of keycap	Illumination	Color of keycap / legending	Color of lens / legend insert	Order no.
	1-module	no	charcoal grey/-	-	5.80.000.000/0152
	1-module	no	light grey/-	-	5.80.000.000/0242

Keycap sets available in two-shot molded design.

Other keycap sizes, e.g. 1.25-, 1.5-, 1.75-, 2-, 3- and 8-module versions available on request.

RS 76 C
Keycap with legend insert

Technical data see page 4 - 161

→	Size of keycap	Illumination	Color of keycap / legending	Color of lens / legend insert	Order no.
	1-module	no	charcoal grey/-	colorless/white	5.04.665.221/5520
	1-module	no	light grey/-	colorless/white	5.04.665.230/5520

Supplied as single parts: Mat lens, legend insert, keycap body.

Other colors on request.

RS 76
Keycaps, illuminable

Technical Data

→	**General information**	
	Form of lens	see order block
	Color of keycap / legending	see order block
	Color of lens / legend insert	see order block
	Illumination	see order block
	Degree of protection	see order block
	Size of keycap	see order block
→	**Other specifications**	
	ROHS compliant	yes
	REACH compliant	yes

RS 76
Keycap with light bar

Technical data see page 4 - 163

→	Size of keycap	Illumination	Color of keycap / legending	Color of lens / legend insert	Order no.
	1-module	yes	light grey/-	-	5.82.110.000/0242
	1-module	yes	charcoal grey/-	-	5.82.110.000/0152

Other colors on request.

RS 76
Keycap, illuminable, with legend insert

Technical data see page 4 - 163

→	Size of keycap	Illumination	Color of keycap / legending	Color of lens / legend insert	Order no.
	1-module	yes	charcoal grey/-	colorless/white	5.04.665.521/5520
	1-module	yes	light grey/-	colorless/white	5.04.665.530/5520

Supplied as single parts: Mat lens, legend insert, diffuser foil, keycap body.

Other colors on request.

RS 76
Keycap, illuminable, with nail protection and legend insert

Technical data see page 4 - 163

→	Size of keycap	Illumination	Color of keycap / legending	Color of lens / legend insert	Order no.
	1-module	yes	charcoal grey/-	colorless/white	5.04.665.911/5520
	1-module	yes	light grey/-	colorless/white	5.04.665.920/5520

Supplied as single parts: Mat lens, legend insert, keycap body.

Other colors on request.

RS 76
Keycap, illuminable, with legend insert

Technical data see page 4 - 163

→ Size of keycap	Illumination	Color of keycap / legending	Color of lens / legend insert	Order no.
1-module	yes	charcoal grey/-	colorless/white	5.04.665.161/5520
1-module	yes	light grey/-	colorless/white	5.04.665.170/5520

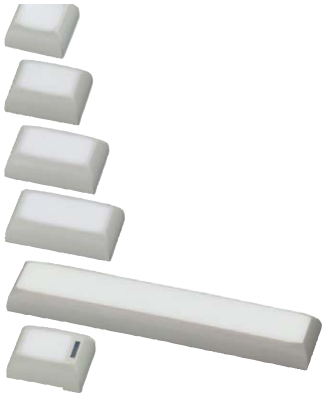
Supplied as single parts: Mat lens, legend insert, diffuser foil, keycap body.

Other colors on request.

RS 76 MX
Keycap, fully illuminable

Technical data see page 4 - 163

RS 76MX, with illuminated keycaps



→ Size of keycap	Illumination	Color of keycap / legending	Color of lens / legend insert	Order no.
1-module	yes	white/-	white translucent/-	5.05.511.168/0209
1-module	yes	light grey/-	white translucent/-	5.05.511.168/0754
1¼-module	yes	white/-	white translucent/-	5.05.511.169/0209
1½-module	yes	white/-	white translucent/-	5.05.511.170/0209
1¾-module	yes	white/-	white translucent/-	5.05.511.171/0209
1¼-module with light conductor	yes	white/-	white translucent/-	5.05.511.173/0209

Laser-printed versions available on request.

RS 76
Keycaps, with legend, two-shot molded/ keycap sets

Mouse button, 2 x PS/2 connector

Technical Data

➔	**General information**	
	Form of lens	see order block
	Color of keycap / legending	see order block
	Symbol	see order block
	Illumination	see order block
	Degree of protection	see order block
	Size of keycap	see order block
➔	**Other specifications**	
	ROHS compliant	yes
	REACH compliant	yes

RS 76
Keycap set, symbols A-Z

Technical data see page 4 - 166

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

light beige

➔	Size of keycap	Form of lens	Color of keycap / legending	Symbol	Order no.
	1-module	keycap opaque with nail protection	charcoal grey/white	A-Z	5.00.999.500/0000
	1-module	keycap opaque with nail protection	light grey/black	A-Z	5.00.999.824/0000
	1-module	keycap opaque	charcoal grey/white	A-Z	5.00.999.525/0000
	1-module	keycap opaque	light grey/black	A-Z	5.00.999.825/0000

Other symbols and colors on request.

RS 76
Keycap set, symbols 0-9

Technical data see page 4 - 166

0 1 2 3 4 5 6 7 8 9

opaque with nail protection charcoal grey / white

→ Size of keycap	Form of lens	Color of keycap / legending	Symbol	Order no.
1-module	keycap opaque with nail protection	charcoal grey/white	0-9	5.00.999.504/0000
1-module	keycap opaque with nail protection	light grey/black	0-9	5.00.999.826/0000
1-module	keycap opaque	charcoal grey/white	0-9	5.00.999.529/0000
1-module	keycap opaque	light grey/black	0-9	5.00.999.827/0000

Other symbols and colors on request.

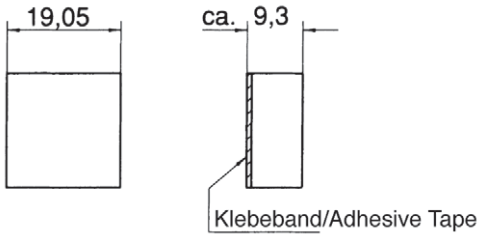
RS 76 Accessories

Technical Data

→	**General information**	
	Color	see order block
	Size	see order block
→	**Other specifications**	
	ROHS compliant	yes
	REACH compliant	yes

RS 76 Cover IP40

Technical data see page 4 - 168



→	Color	Size	Order no.
	charcoal grey	¼-module	5.04.520.171/0152
	light grey	¼-module	5.04.520.171/0242
	light beige	¼-module	5.04.520.171/0710
	dark grey	¼-module	5.04.520.171/0801
	charcoal grey	½-module	5.04.520.172/0152
	light grey	½-module	5.04.520.172/0242
	light beige	½-module	5.04.520.172/0710
	dark grey	½-module	5.04.520.172/0801
	charcoal grey	¾-module	5.04.520.173/0152
	light grey	¾-module	5.04.520.173/0242
	light beige	¾-module	5.04.520.173/0710
	dark grey	¾-module	5.04.520.173/0801
	charcoal grey	1-module	5.04.520.174/0152

– Table (continued) –
RS 76 - Cover IP40

→	Color	Size	Order no.
	light grey	1-module	5.04.520.174/0242
	light beige	1-module	5.04.520.174/0710
	dark grey	1-module	5.04.520.174/0801

Other colors on request.

Keylock / rotary switches

for PCB

Keylock switches for PCB mounting. Matching with the RS 76 full-travel key switches and the RF 15 and RF 19 tactile switches.
• All products are RoHS compliant.

PCB KEY SWITCHES

MICROMEC - KEYLOCK SWITCHES

Content

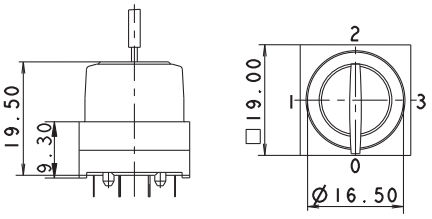
MICROMEC - Keylock switches, IP54 **4 - 173**
MICROMEC - Keylock switch IP54 4 - 176

EUROLOCKS - Keylock switches, IP54 **4 - 177**
EUROLOCKS - Keylock switch IP54 4 - 178

Priority keylock switches, IP54 **4 - 179**
Priority keylock switch IP54 4 - 180

Rotary switches, IP40 **4 - 181**
Rotary switch IP40 4 - 182

MICROMEC Keylock switches, IP54



Technical Data

→ General information	
Color	see order block
Form of collar	square
→ Dimensions	
Length of collar	19 mm
Width of collar	19 mm
Overall height	19.5 mm
→ Mechanical design	
Mounting	soldering
Terminals	tin-plated
Contact system	cross contact self cleaning
Contact function	see order block
Contact materials	Au alloy
Illuminability	no
Lock	Micromec
Wafers	5
Lock type	001
Number of locking positions	500
Main key	on request
Key removal position	see order block
→ Mechanical characteristics	
Switching torque	0.04 ... 0.10 Nm
Robustness max.	2 Nm
Dielectric strength AC min.	500 V
Rated power max.	1 W
→ Electrical characteristics	
Rated voltage	2 ... 35 V
Rated current max.	100 mA
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	200 mΩ
Insulation resistance	10^9 Ω
ESD strength max.	8 kV
→ Other specifications	
Rotating angle	see order block
Operating life	10,000
Degree of protection from front side	IP54
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Flammability of materials	UL 94 HB
ROHS compliant	yes
REACH compliant	yes

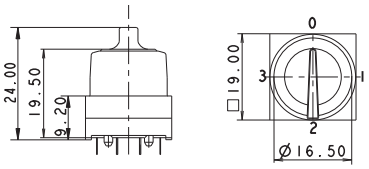
Accessories MICROMEC - Keylock switch IP54

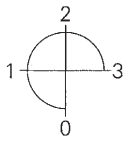
→ Description	Photo	Order no.	Additional accessories see page
O-ring for keylock switch		5.30.120.015/0100	5 - 31

– Table (continued) –
Accessories MICROMEC - Keylock switch IP54

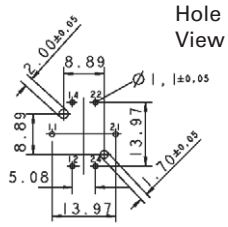
➔	Description	Photo	Order no.	Additional accessories see page
	Spare key, (delivery content 1 key)		5.58.007.001/0000	-
	Spare key, for double action, e.g. 2 x 90° (delivery content 1 key)		5.58.008.001/0000	-
	Spare key for 3 angles, f.ex. 3 x 90° degree (content 1 key)		5.58.009.001/0100	-
	Spare key for 4 angles, f.ex. 4 x 90 degrees, (content 1 key)		5.58.010.001/0100	-

Dimensional drawing

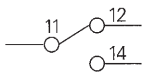
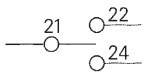
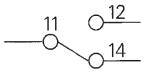
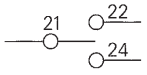
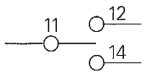
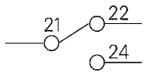
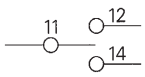
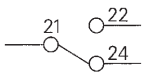




Circuit diagram

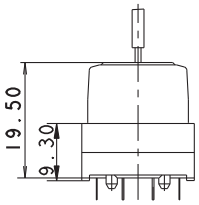


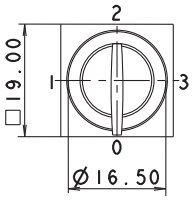
Hole patterns PCB
View on component side

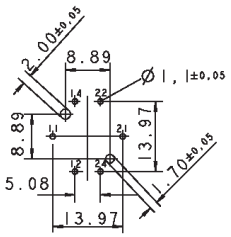
Switching position	Contact function	
0		
1		
2		
3		

MICROMEC
Keylock switch IP54

Technical data see page 4 - 173







PCB hole pattern, component side

→ Contact function	Color	Rotating angle	Key removal position	Order no.
momentary	charcoal grey	1 x 40°	0	3.13.026.041/0000
momentary	light grey	1 x 40°	0	3.13.026.541/0000
latching	charcoal grey	1 x 90°	0	3.13.026.001/0000
latching	light grey	1 x 90°	0	3.13.026.501/0000
latching	charcoal grey	1 x 90°	0+1	3.13.026.006/0000
latching	light grey	1 x 90°	0+1	3.13.026.506/0000
latching	charcoal grey	3 x 90°	0	3.13.026.021/0000
latching	light grey	3 x 90°	0	3.13.026.521/0000
latching	charcoal grey	3 x 90°	0+1+2+3	3.13.026.026/0000
latching	light grey	3 x 90°	0+1+2+3	3.13.026.526/0000
latching	charcoal grey	4 x 90° without stop	0	3.13.026.031/0000
latching	light grey	4 x 90° without stop	0	3.13.026.531/0000
latching	charcoal grey	4 x 90° without stop	0+1+2+3	3.13.026.036/0000
latching	light grey	4 x 90° without stop	0+1+2+3	3.13.026.536/0000
latching	charcoal grey	2 x 90°	0	3.13.026.011/0000
latching	light grey	2 x 90°	0	3.13.026.511/0000
latching	charcoal grey	2 x 90°	0+1+2	3.13.026.016/0000
latching	light grey	2 x 90°	0+1+2	3.13.026.516/0000
latching	charcoal grey	2 x 90°	0	3.13.026.601/0000
latching	light grey	2 x 90°	0	3.13.026.851/0000
latching	charcoal grey	2 x 90°	0+1+3	3.13.026.606/0000
latching	light grey	2 x 90°	0+1+3	3.13.026.856/0000

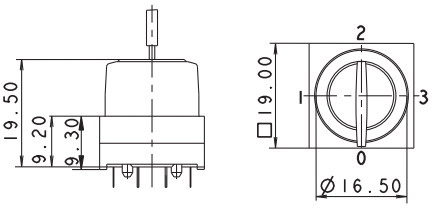
2 keys included.

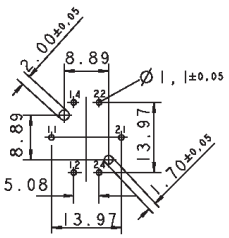
Other lock variants available on request.

EUROLOCKS Keylock switches, IP54

Technical Data

→ General information	
Color	see order block
Form of collar	square
→ Dimensions	
Length of collar	19 mm
Width of collar	19 mm
Overall height	19.5 mm
→ Mechanical design	
Mounting	soldering
Terminals	tin-plated
Contact system	cross contact self cleaning
Contact function	latching
Contact materials	Au alloy
Illuminability	no
Lock	Eurolocks
Wafers	5
Lock type	801
Number of locking positions	50
Main key	no
Symmetric key	yes
Key removal position	see order block
→ Mechanical characteristics	
Switching torque	0.04 ... 0.10 Nm
Robustness max.	2 Nm
Dielectric strength AC min.	500 V
Rated power max.	1 W
→ Electrical characteristics	
Rated voltage	2 ... 35 V
Rated current max.	100 mA
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	200 mΩ
Insulation resistance	10^9 Ω
ESD strength max.	8 kV
→ Other specifications	
Rotating angle	see order block
Operating life	10,000
Degree of protection from front side	IP54
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Flammability of materials	UL 94 HB
ROHS compliant	yes
REACH compliant	yes





PCB hole pattern, component side

4

Accessories EUROLOCKS - Keylock switch IP54

→ Description	Photo	Order no.	Additional accessories see page
O-ring for keylock switch		5.30.120.015/0100	5 - 31

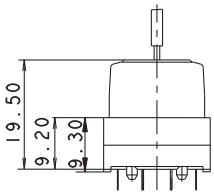
Key Switches

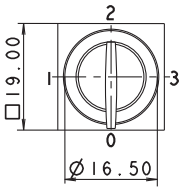
– Table (continued) –
Accessories EUROLOCKS - Keylock switch IP54

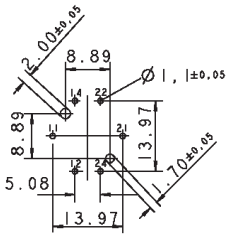
→	Description	Photo	Order no.	Additional accessories see page
	Spare key (delivery content 1 key)		5.58.006.801/0000	-

EUROLOCKS
Keylock switch IP54

Technical data see page 4 - 177







PCB hole pattern, component side

→	Contact function	Color	Rotating angle	Key removal position	Order no.
	latching	charcoal grey	1 x 90°	0	3.13.009.001/0000
	latching	light grey	1 x 90°	0	3.13.009.006/0000
	latching	charcoal grey	1 x 90°	0+1	3.13.009.031/0000
	latching	light grey	1 x 90°	0+1	3.13.009.036/0000

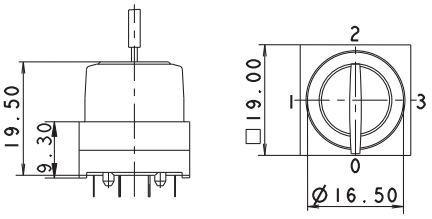
2 keys included.

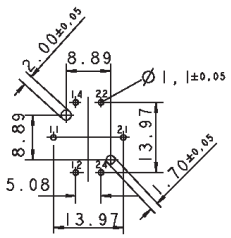
Other lock variants available on request.

For the switching arrangement, refer to Micromec keylock switch IP54.

PRIORITY KEYLOCK SWITCHES, IP54

→ Either 2 or 3 different keys are required, depending on the angle between positions. Key 1 can switch to position 1, key 2 can switch to position 1 and 2, etc.





PCB hole pattern, component side

Technical Data

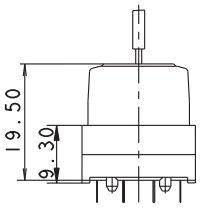
→ General information	
Color	see order block
Form of collar	square
→ Dimensions	
Length of collar	19 mm
Width of collar	19 mm
Overall height	19.5 mm
→ Mechanical design	
Mounting	soldering
Terminals	tin-plated
Contact system	cross contact self cleaning
Contact function	see order block
Contact materials	Au alloy
Illuminability	no
Lock	Micromec
Wafers	5
Lock type	001
Number of locking positions	500
Main key	on request
Key removal position	see order block
→ Mechanical characteristics	
Switching torque	0.04 ... 0.10 Nm
Robustness max.	2 Nm
Dielectric strength AC min.	500 V
Rated power max.	1 W
→ Electrical characteristics	
Rated voltage	2 ... 35 V
Rated current max.	100 mA
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	200 mΩ
Insulation resistance	10^9 Ω
ESD strength max.	8 kV
→ Other specifications	
Rotating angle	see order block
Operating life	10,000
Degree of protection from front side	IP54
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Flammability of materials	UL 94 HB
ROHS compliant	yes
REACH compliant	yes

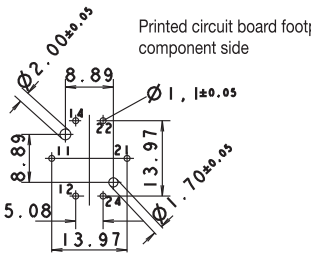
Accessories Priority keylock switch IP54

→ Description	Photo	Order no.	Additional accessories see page
O-ring for keylock switch		5.30.120.015/0100	5 - 31
Set of keys for 2 x 90° type (2 keys)		5.58.099.012/0000	-
Set of keys for 3 x 90° type (3 keys)		5.58.099.013/0000	-

Priority keylock switch IP54

Technical data see page 4 - 179





PCB hole pattern, component side

→ Contact function	Color	Rotating angle	Key removal position	Order no.
latching	charcoal grey	3 x 90°	0	3.13.027.011/0000
latching	light grey	3 x 90°	0	3.13.027.511/0000
latching	charcoal grey	3 x 90°	0+1+2+3	3.13.027.016/0000
latching	light grey	3 x 90°	0+1+2+3	3.13.027.516/0000
latching	charcoal grey	2 x 90°	0	3.13.027.001/0000
latching	light grey	2 x 90°	0	3.13.027.501/0000
latching	charcoal grey	2 x 90°	0+1+2	3.13.027.006/0000
latching	light grey	2 x 90°	0+1+2	3.13.027.506/0000

2 sets of keys included.

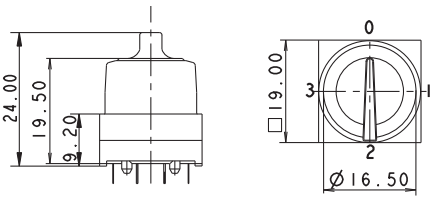
Other lock variants available on request.
For the switching arrangement, see IP54 Micromec keylock switch.

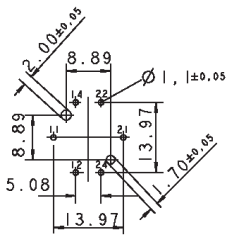
Either 2 or 3 different keys are required, depending on the angle between positions. Key 1 can switch to position 1, key 2 can switch to position 1 and 2, etc.

ROTARY SWITCHES, IP40

Technical Data

→ General information	
Color	see order block
Form of collar	square
→ Dimensions	
Length of collar	19 mm
Width of collar	19 mm
Overall height	24 mm
→ Mechanical design	
Mounting	soldering
Terminals	tin-plated
Contact system	cross contact self cleaning
Contact function	see order block
Contact materials	Au alloy
Illuminability	no
→ Mechanical characteristics	
Torque against stop min.	0.45 Nm
Dielectric strength AC min.	see order block
Rated power max.	1 W
→ Electrical characteristics	
Rated voltage max.	35 V
Rated current max.	100 mA
Contact resistance when new max.	100 mΩ
Contact resistance acc. to life max.	200 mΩ
Insulation resistance	10^9 Ω
ESD strength max.	8 kV
→ Other specifications	
Rotating angle	see order block
Operating life	50,000
Degree of protection from front side	IP40 (DIN EN 60529)
Ambient temp. operating min.	-25 °C
Ambient temp. operating max.	+70 °C
Storage temperature min.	-40 °C
Storage temperature max.	+80 °C
Environmental restistance	acc. to IEC 60068-2-14, -30, -33 and -78
Flammability of materials	UL 94 HB
ROHS compliant	yes
REACH compliant	yes

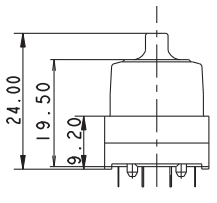


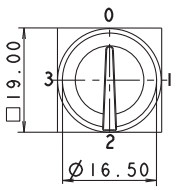


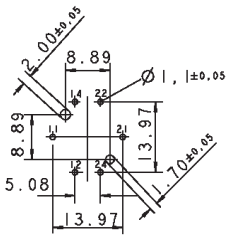
PCB hole pattern, component side

Rotary switch IP40

Technical data see page 4 - 181







PCB hole pattern, component side

→ Contact function	Color	Rotating angle	Order no.
latching	charcoal grey	1 x 90°	3.13.007.001/0152
latching	charcoal grey	3 x 90°	3.13.007.021/0152
latching	charcoal grey	4 x 90°	3.13.007.031/0152
latching	charcoal grey	2 x 90°	3.13.007.011/0152

Other color variants available on request