

# 24V DC Power Supplies

## FP-PS24 Series



FP-PS24-120E  
5.0A/24V DC

FP-PS24-060E  
2.5A/24V DC

FP-PS24-024E  
1.0A/24V DC

### Features

- Up to 91.5% efficiency (FP-PS24-060E)
- Current limiting and Short circuit save
- High power density with minimal losses
- Wide ambient temperature range from -10°C to +70°C, without performance loss
- Safety Standards Approved (IEC60950, UL60950, CSA22.2-60950, EN60950) tested by CSA
- Protection class II, without grounding
- Easy mounting and wiring
- Extremely compact with optimal air cooling

# FP-PS24 Power Supplies

## Specifications

| Item                       |                                     | FP-PS24-024E                                                                                                                                                                                     | FP-PS24-060E                                                                                                                               | FP-PS24-0120E                                                                                                                                     |
|----------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient temperature        |                                     | -10°C to +70°C, without needing cooling fans                                                                                                                                                     |                                                                                                                                            |                                                                                                                                                   |
| Storage temperature        |                                     | -25 to +85°C                                                                                                                                                                                     |                                                                                                                                            |                                                                                                                                                   |
| Humidity                   |                                     | Max. 95%, no condensation                                                                                                                                                                        |                                                                                                                                            |                                                                                                                                                   |
| Vibration                  |                                     | IEC 60068-2-27, 20g - 6ms, 10g - 11ms; 4 shocks/axis, 18 shocks total                                                                                                                            |                                                                                                                                            |                                                                                                                                                   |
| Shock                      |                                     | IEC 60068-2-6, 2-17.8Hz: $\pm 1.6\text{mm}$ ; 17.8 - 500Hz: 2g 2 hours/axis                                                                                                                      |                                                                                                                                            |                                                                                                                                                   |
| Primary side               | Rated input voltage                 | 100 – 240V AC/DC, 50 – 60Hz                                                                                                                                                                      |                                                                                                                                            |                                                                                                                                                   |
|                            | Power supply voltage                | 85-264V AC, 47-63Hz (DC 100-375V), wide range power supply, switching ranges unnecessary                                                                                                         |                                                                                                                                            |                                                                                                                                                   |
|                            | Input current                       | Fulfills the requirements of EN61000-3-2 (limits for harmonic current emissions)                                                                                                                 |                                                                                                                                            |                                                                                                                                                   |
|                            | Fuse                                | Internal in power supply T4AH/250V, not accessible                                                                                                                                               |                                                                                                                                            |                                                                                                                                                   |
| Secondary side             | Output voltage                      | 24VDC nominal                                                                                                                                                                                    |                                                                                                                                            |                                                                                                                                                   |
|                            | Accuracy, output voltage            | $\pm 1\%$ over the complete load and input voltage range                                                                                                                                         |                                                                                                                                            |                                                                                                                                                   |
|                            | Adjustable range with potentiometer | 23V – 29V                                                                                                                                                                                        |                                                                                                                                            |                                                                                                                                                   |
|                            | Output capacity (max.)              | 1A continuous at 24V<br>1.25A (25% above nominal load)<br>Dynamic for 7s, max.<br>1.5A (50 % above nominal load) dynamic for 2.5s, max.                                                          | 2.5A continuous at 24V<br>3.15A (25% above nominal load)<br>Dynamic for 7s, max.<br>3.75A (50 % above nominal load) dynamic for 2.5s, max. | 5.0A continuous at 24V<br>6.25A (25 % above nominal load) dynamic for 7s, max.sec.<br>7.5A (50 % above nominal load) dynamic for 3s, max.x. 3 sec |
|                            | Output capacity (min.)              | 0A                                                                                                                                                                                               |                                                                                                                                            |                                                                                                                                                   |
|                            | Current limiting (typ.)             | 2A continuous, 2A dynamic                                                                                                                                                                        | 2.7A continuous, 5A dynamic                                                                                                                | 5.3A continuous, 9.5A dynamic                                                                                                                     |
| Efficiency                 | Ripple voltage (< 20MHz)            | = 40mVSS measured at 20MHz, 50 Ohms terminated                                                                                                                                                   |                                                                                                                                            |                                                                                                                                                   |
|                            | VAC = 230V                          | 88.0%                                                                                                                                                                                            | 91.5%                                                                                                                                      | 90.0%                                                                                                                                             |
|                            | VAC = 115V                          | 87.0%                                                                                                                                                                                            | 90.0%                                                                                                                                      | 89.0%                                                                                                                                             |
|                            | VAC = 100V                          | 86.0%                                                                                                                                                                                            | 88.0%                                                                                                                                      | 89.0%                                                                                                                                             |
| Lifetime of the capacitors |                                     | All capacitors used are special 105°C long-life-types with a minimum lifetime of 50,000 hours @ $T_u = 50^\circ\text{C}$ (power supply-air flow temperature)                                     |                                                                                                                                            |                                                                                                                                                   |
| Safety and function tests  |                                     | 100% testing                                                                                                                                                                                     |                                                                                                                                            |                                                                                                                                                   |
| Startup duration           |                                     | Depends on the load, typically 5-10ms                                                                                                                                                            |                                                                                                                                            |                                                                                                                                                   |
| Safety                     | Output                              | Safety extra low voltage (SELV) EN 60950                                                                                                                                                         |                                                                                                                                            |                                                                                                                                                   |
|                            | Class of protection                 | Class II (with additional constructive measures)                                                                                                                                                 |                                                                                                                                            |                                                                                                                                                   |
|                            | Degree of protection                | IP20                                                                                                                                                                                             |                                                                                                                                            |                                                                                                                                                   |
|                            | Leakage current                     | max. 0.25mA, 47-63Hz and max. 264V AC                                                                                                                                                            |                                                                                                                                            |                                                                                                                                                   |
| Protection and monitoring  | Over-voltage protection             | yes, $U_1$ limited to max. 35V                                                                                                                                                                   |                                                                                                                                            |                                                                                                                                                   |
|                            | Short circuit save                  | yes, output is short circuit save                                                                                                                                                                |                                                                                                                                            |                                                                                                                                                   |
|                            | Current limiting::                  | In case of overload the output voltage will be reduced down to approx. 17V below this the power supply will enter hiccup mode to protect power supply and load from over temperature or burning. |                                                                                                                                            |                                                                                                                                                   |
|                            | No load operation                   | yes, indefinite no load safe                                                                                                                                                                     |                                                                                                                                            |                                                                                                                                                   |
|                            | Overload protection                 | yes                                                                                                                                                                                              |                                                                                                                                            |                                                                                                                                                   |
| Dimensions (D x W x H)     |                                     | 105.5 x 30 x 75 mm                                                                                                                                                                               | 104.5 x 44.8 x 75 mm                                                                                                                       | 105.5 x 70 x 85 mm                                                                                                                                |
| Weight                     |                                     | Approx. 170g                                                                                                                                                                                     | Approx. 250g                                                                                                                               | Approx. 500g                                                                                                                                      |

## Dimensions

