Installation Instructions for PSG60E24SP POWER SUPPLY

READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Danger of explosion!
- To guarantee sufficient convection cooling, please keep a distance of 50 mm above and below the device as well as a lateral distance of 20 mm to other units.
- Please note, that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
- Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation free environment and indoor location) that is relatively free of conductive contaminants.

- CAUTION: “FOR USE IN A CONTROLLED ENVIRONMENT”.

2. Device description (Fig. 1)

(1) Input terminal block connector
(2) Output terminal block connector
(3) DC voltage adjustment potentiometer
(4) DC OK control LED (green)
(5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounting on 35 mm DIN rails in accordance with EN 60715. The device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

Snap on the DIN rail as shown in Fig. 2:
1. Tilt the unit slightly upwards and put it onto the DIN rail.
2. Push downwards until stopped.
3. Press against the bottom front side for locking.
4. Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, pull or slide down the latch as shown in Fig. 3. Then, slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring. A plastic cover provides the necessary isolation of the electric connection. You can use flexible (stranded wire) or solid cables with cross section 0.32-2.1 mm² (AWG 22-14) and torque of 0.78-0.98 Nm (6.94-8.68 lb in). To secure reliable and shock proof connections, the stripping length should not exceed 7 mm.

In accordance to EN 60950 / UL 60950, flexible cables require ferrules. Use appropriate copper cables that are designed to sustain operating temperature of at least 75°C or more to fulfill UL requirements.

For stranded wires it is recommended to use suitable lug to crimp wires (see Fig. 4).

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and PE connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection.

The device has an internal fuse. 6 A, 10 A or 16 A power circuit breakers are recommended as backup fuses.

The internal fuse must not be replaced by the user.

In case of internal defect, please call 1 - 877 - ETN - CARE

5.2. Output connection (Fig. 1 (2))

Use the “+” and “−” screw connections to establish the 24 VDC connection. The output provides 24 VDC. The output voltage can be adjusted from 22 to 28 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 35 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of a short circuit or overload the output voltage and current collapses (I_0, or I_SC is >I_surge (150%)). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6).

In the case of ambient temperatures below -10°C (Vertical), the output capacity is at 80% load. At -10°C to 0°C (Vertical), the output capacity has to be reduced by 2% per degree Celsius increase in temperature, and at ambient temperatures above +50°C (Vertical), the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature. If the output capacity is not reduced when T_Amb > 50°C, the device will run into thermal protection by switching off i.e. device will go in bouncing mode and will recover when ambient temperature is lowered or load is reduced as far as necessary to keep device in working condition.

FOR TECHNICAL ASSISTANCE CALL 1 - 877 - ETN - CARE
TECHNICAL DATA FOR PSG60E24SP

Input (AC)

- Nominal input voltage / frequency: 100-240 VAC / 50-60 Hz
- Voltage range: 85-264 VAC (DC input range 120-375 VDC)
- Frequency: 47/63 Hz
- Nominal current: < 1.10 A @ 115 VAC, < 0.70 A @ 230 VAC
- Inrush current limitation. I²t (+25°C) typ.: < 40 A @ 115 VAC, < 80 A @ 230 VAC
- Mains buffering at nominal load (typ.): > 20 ms @ 115 VAC, > 125 ms @ 230 VAC
- Turn-on time: < 3 sec.
- Internal fuse: T 3.15 AH / 250 V
- Recommended backup fuse: 6 A, 10 A or 16 A
- Power circuit-breaker characteristic: B
- Leakage current: < 1 mA @ 240 VAC

Output (DC)

- Nominal output voltage U_{IN} / tolerance: 24 VDC ± 2 %
- Adjustment range of the voltage: 22-28 VDC (maximum power ≤ 60 W)
- Derating: < 0°C (2% / °C), > 50°C (2.5 % / °C) in Vertical
- Startup with capacitive loads: Max. 8,000 μF
- Max. power dissipation idling / nominal load approx.: 10 W
- Efficiency: > 86.0% @ 115 VAC, > 87.0% @ 230 VAC
- Residual ripple / peak switching (20 MHz) (at nominal values): < 50mVpp / < 240 mVpp
- Parallel operation: PSG480R24RM / PSG960R24RM / With ORing Diode

General Data

- Type of housing: Plastic (PC), closed
- Signals: Green LED DC OK
- MTBF: > 800,000 hrs.
- Dimensions (L x W x H): 121 mm x 32 mm x 113 mm
- Weight: 0.33 kg
- Connection method: Screw connection
- Stripping length: 7 mm max. or use suitable lug to crimp
- Operating temperature (surrounding air temperature): -20°C to +80°C (Refer to Fig. 6)
- Storage temperature: -25°C to +85°C
- Humidity at +25°C, no condensation: < 95% RH
- Vibration (non-operating): 10 to 150 Hz, 0.35 mm acc. 50 m/s², single amplitude (5 G max.) for 90 min. in each X, Y & Z directions, in acc. with IEC 68-2-6
- Shock (in all directions): 30 G (300 m/s²) in all directions according to IEC 68-2-27
- Pollution degree: 2
- Climatic class: 3K3 according to EN 60721

Certification and Standards

- Electrical equipments of machines: IEC 60204-1 (over voltage category III)
- Electronic equipment for use in electrical power installations: EN 50178 / IEC 62103
- Safety entry low voltage: PELV (EN 60044), SELV (EN 60950)
- Industrial control equipment: cULus listed to UL 508 and CSA C22.2 No.107.1-01, CSA to C22.2 No.107.1-01 (File No. 250468)
- Protection against electric shock: DIN 57100
- CE: In conformance with EMC directive 2004/108/EC and low voltage directive 2006/95/EC
- TTE: EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024
- Industrial: EN 55011
- Limitation of mains harmonic currents: EN 61000-3-2

RoHS Compliant: Yes

Safety and Protection

- Transient surge voltage protection: VARISTOR
- Current limitation at short-circuits approx.: \( I_{max} = 150 \% \) of \( P_{max} \) typically
- Surge voltage protection against internal surge voltages: Yes
- Isolation voltage:
  - Input / output (type test/routine test): 4 kVAC / 3 kVAC
  - Input / PE (type test/routine test): 1.5 kVAC / 1.5 kVAC
  - Output / PE (type test/routine test): 1.5 kVAC / 500 VAC
- Protection degree: IPX0
- Safety class: Class I with PE connection

Rev. 01