

Characteristics:

General Description:

The PSD1206 is a DIN-Rail Power Supply to supply process control equipment and can be located in Safe Area / Non Hazardous Location or Zone 2 / Division 2 Hazardous Area / Hazardous Location.

It provides 24 Vdc nominal with 6 A output current and isolation between input - output - ground (2000 V).

This supply unit can be paralleled for redundancy operation to increase availability upgrading the system from SIL 2 to SIL 3 or to increase the output power. Internal power diode for parallel operation prevents fault propagation in parallel connected supply systems and load sharing distributes current load equally to each power supply to increase reliability and reduce internal power dissipation.

Signaling LED:

Power supply status indication (green).

Alarming:

Output voltage deviation $\geq \pm 5\%$ from nominal 24 Vdc.

Power ON led is off when output voltage is in overvoltage condition or is blinking in undervoltage or overload condition.

Overvoltage protection:

Three independent overvoltage protections:

1 voltage limiting loop at 27 Vdc and 1 + 1 crowbars at 29 Vdc.

Periodical testing:

Inbuilt provisions for on-site T-proof test without having to remove enclosure.

EMC:

Fully compliant with CE marking applicable requirements.

High load fuse breaking capacity:

In case of short circuit of one of the loads, the output current has a peak of 430 A for a duration of 0.5 ms (40 times the max. value) and then reaches 12 A (max. value) after 1.5 ms. For two units in parallel this current reaches 860 A (80 times the max. value). This characteristic ensures the instant breakage of the protective fuse or circuit breaker. Because of the very short peak duration, other equipments connected are not affected by the failure event and continue to operate without interruption. Refer to instruction manual ISM0076 for a detailed diagram of the output current.

Features:

- SIL 3 according to IEC 61508 for Tproof = 3 / 6 years (10 / 20 % of total SIF, two units in parallel with NE Load).
- SIL 2 according to IEC 61508 for Tproof = 9 / 10 years (10 / 20 % of total SIF, two units in parallel with ND Load).
- SIL 2 according to IEC 61508 for Tproof = 1 / 3 years (10 / 20 % of total SIF, single unit with NE Load).
- SIL 1 according to IEC 61508 for Tproof = 5 / 10 years (10 / 20 % of total SIF, single unit with ND Load).
- PFDavg (1 year) 3.03 E-05, SFF 99 % (2 units, NE Load).
- PFDavg (1 year) 8.09 E-05, SFF 97 % (2 units, ND Load).
- PFDavg (1 year) 5.90 E-04, SFF 80 % (1 unit, NE Load).
- PFDavg (1 year) 1.53 E-03, SFF 48 % (1 unit, ND Load).
- Universal AC / DC Input, 95 to 264 Vac (48 to 62 Hz) or 115 to 350 Vdc.
- Installation in Zone 2, Division 2.
- ATEX, FM & FM-C Certifications.
- Power Factor Correction eliminates power-line harmonics loading.
- High load fuse breaking capacity without interrupting operation.
- Highly regulated, trimmable output of 24 Vdc up to 6 A.
- 3 over-voltage redundant protections prevent risks to the load.
- Supports redundant parallel connection with load sharing.
- Under-Over voltage alarm monitoring with signalling output ($\pm 5\%$).
- Under-Over voltage LED indication.
- 100 ms hold-up time at full load, mitigates power-line glitches.
- Durable metal enclosure, improves shielding and heat sinking.
- High (better than 80 %) efficiency.
- Simplified installation using standard DIN-Rail and plug-in input and output terminal blocks.
- Externally accessible connections for Tproof periodic test.

Ordering Information:

Model: PSD1206

Technical Data:

Supply:

Input voltage: 95 to 264 Vac (48 to 62 Hz) or 115 to 350 Vdc.
Limit supply voltage to 250 Vrms for Intrinsic Safety applications.

Power Factor Correction (AC input): 0.95.

Efficiency: higher than 80 %.

Max. internal power dissipation: 30 W.

AC input current (sinusoidal at full load): 0.8 A @ 230 Vac supply voltage,
1.7 A @ 115 Vac supply voltage

Protection: 6.5 A fuse.

Connection: plug-in terminal block for 4 mm² wire.

Isolation:

Input to output isolation: 2000 Vrms (routine test).

Input to ground isolation: 2000 Vrms (routine test).

Output:

Output voltage: 24 Vdc (adjustable from 22.8 to 25.2 Vdc).

Regulation: 0.2 % for a 100 % load change.

Stability: 0.1 % for a 20 % line voltage change.

Ripple: ≤ 50 mVpp.

Output current: 6 A nominal.

Parallel connection for redundancy with load sharing.

Connection: plug-in terminal block for 4 mm² wire.

Hold-up time at full load: 100 ms (AC input).

Over voltage protection: output limited to 27 Vdc plus redundant crowbars for over voltage protection at 29 Vdc.

Power good signalling:

Output good: $0.95 \leq V_{out} \leq 1.05$ nominal value.

Indication: power good green LED, OFF in overvoltage condition or blinking in undervoltage or overload condition.

Signaling: voltage free SPST normally energized optocoupled open-collector transistor, de-energize in overvoltage/undervoltage/overload conditions.

Open-collector rating: 100 mA at 35 V (≤ 2.0 V voltage drop)

Leakage current: ≤ 50 μ A at 35 V.

Connection: plug-in terminal block for 2.5 mm² wire.

CE Compatibility:

CE mark compliant, conforms to EN61000-6-2, EN61000-6-4 and EN60950 for electrical safety.

Environmental conditions:

Operating temperature limits: -20 to +60 °C; -20 to +70 °C for up to 75% output load.

Relative humidity limits (up to 40 °C): 10 to 90 %, non condensing.

Transport, storage temperature limits: -45 to +80 °C.



Safety Description:

ATEX Category 3 for Zone 2.

II 3 G EEx nA IIC T4, -20 °C \leq Ta \leq 60 °C.

AEx nA T3 for FM certification, -20 °C \leq Ta \leq 60 °C.

Approvals:

DNV-2006-OSL-ATEX-0099X conforms to EN60079-15,

FM & FM-C No. 3024643, 3029921C, conforms to Class 3600, 3611, 3810 and

C22.2 No.142, C22.2 No.213, E60079-0, E60079-15,

EXIDA Report No. GMI 06/11-20 R004, SIL1 / SIL 2 / SIL 3 according to IEC 61508.

Please refer to Functional Safety Manual for SIL applications.

Mechanical:

Mounting: T35 DIN Rail according to EN50022.

Weight: about 1.8 Kg.

Location: Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4, Class I, Division 2, Groups A, B, C, D Temperature Code T3 and Class I, Zone 2, Group IIC, IIB, IIA T3 installation.

Protection class: IP 20.

Dimensions: width 200 mm, height 95 mm, depth 110 mm.

Power vs. Temperature Diagram:

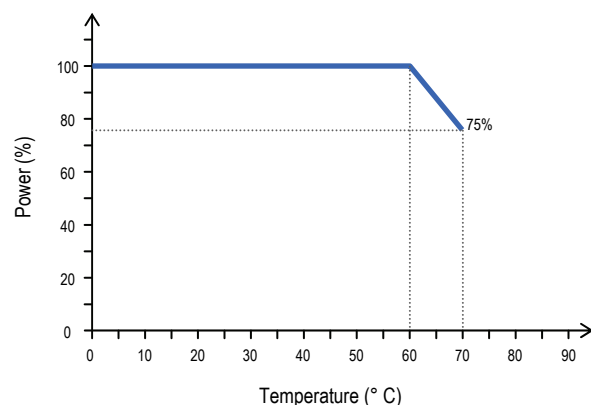


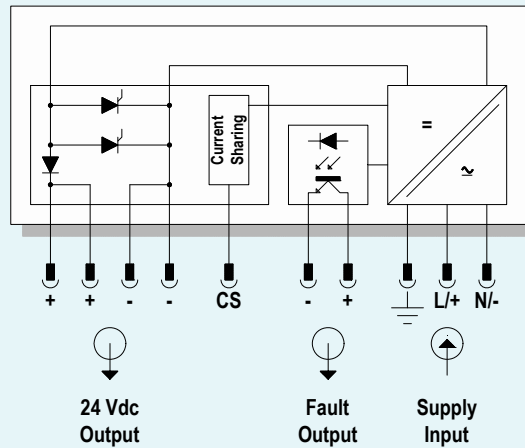
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Function Diagram:

SAFE AREA, ZONE 2 GROUP IIC T4,
NON HAZARDOUS LOCATIONS, CLASS I, DIVISION 2, GROUPS A, B, C, D T-Code T3, CLASS I, ZONE 2, GROUP IIC T3

MODEL PSD1206



MODEL PSD1206

SIL 3

MODEL PSD1206

