

Switching Power Supply Type SPD 100W Bi-Phase DIN rail mounting



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- Installation on DIN Rail 7.5 or 15mm
- Short circuit protection
- Input single phase 340 to 575VAC
- Passive PFC
- Power ready output on 24VDC
- LED indicator for DC power ON
- LED indicator for DC low
- Standard parallel function
- Very compact dimensions
- UL, cUL listed and TUV/CE approved
- Class I Div 2 Groups A, B, C, D approved

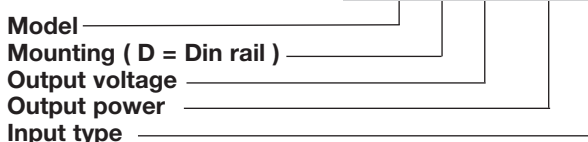
Product Description

This particular SPD is the most compact 100W power supply on the market. Relay output for “power ready” parallel function and PFC are included. Performances are unique with high efficiencies

and the possibility of being used up to 70°C with a little derating. Furthermore it can be powered with 2 phases of a 3 phase grid system due to its high voltage input.

Ordering Key

SP D 24 100 2



Input type: 2= single phase high voltage (bi-phase)

Approvals



Output Performances

| Model | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) | Voltage Trim Range 0.8 I _{o nom} | | DC ON LED (VDC) Threshold at startup | | DC LO LED (VDC) Threshold after startup | | Typical Efficiency |
|----------|----------------------------|------------------|--------------------|--|----------|---|------|--|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD12100 | 12 | 100.8 | 8.4 | 11.4 | 14.5 | 10 | 11.2 | 10 | 11.2 | 86% |
| SPD24100 | 24 | 100.8 | 4.2 | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 87% |
| SPD48100 | 48 | 100.8 | 2.1 | 47.0 | 56.0 | 37.0 | 43.0 | 37.0 | 43.0 | 89% |

Output Data

| | |
|--|---|
| Output voltage accuracy | -0 +1% max (factory adjusted) |
| Line regulation | ± 1% |
| Load regulation | ± 1% |
| Non parallel model | ± 1% |
| Parallel model | ± 5% |
| Temp. coefficient | ± 0.03% / °C |
| Ripple and noise | 50mV |
| V _{i nom} , I _{o nom} , BW=20MHz | |
| Rated continuous Loading | 8.4A @ 12VDC / 6.9A @ 14.5VDC 4.2A @ 24VDC / 3.5A @ 28.5VDC 2.1A @ 48VDC / 1.8A @ 56VDC |
| Fall Time | 150ms |
| Transient recovery time | 2ms |
| V _{i nom} , I _o = 0.5 x I _{o nom} | |
| Turn On Time | 1.0s |
| V _{i nom} , I _{o nom} | |
| V _{i nom} , I _{o nom} with Capacitor load | 1.5s |

| | |
|---|--------------|
| Rise Time | 150ms |
| V _{i nom} , I _{o nom} | |
| V _{i nom} , I _{o nom} with Capacitor load | 500ms |
| Capacitor Load | 7000µF |
| 12V, 24V versions | |
| 48V version | 3500µF |
| Reverse Voltage Immunity | 18V |
| 12V | |
| 24V | 35V |
| 48V | 63V |
| Hold up Time V _{i nom} I _{o max} | 20ms |
| Minimum load V _{i nom} | 0% |
| Parallel Operation | 2 units max. |
| 0.1 I _{o min} ~ 0.9 I _{o max} | |

Input Data

| | | | |
|---|------------------------------|--|-----------------|
| Rated input voltage | 400/500VAC | Frequency range | 47 - 63Hz |
| Voltage range AC in DC in | 340 - 575VAC 480 - 820VDC | Internal Voltage Surge Protection (acc. to IEC61000-4-5) | Varistor |
| Rated input current | 0.48A / 0.75A | Leakage Current Input / Output Input / FG | 0.25mA 3.5mA |
| Power dissipation 12V 24V 48V | 15.0W 13.0W 10.5W | Inrush current | 10A |
| | | P.F.C. | 0.55 |

Controls and Protections

| | | | |
|---|--|---|--|
| Input Fuse | 2A/600VAC internal ¹⁾ | Input Voltage Surge Protection | Varistor |
| Output Short Circuit | current limit | Power ready (only SPD241002) Threshold at start up (contact closed) Contact rating at 60VDC Insulation | Min. 17.6VDC - Max.19.4VDC 0.3A 500VDC |
| Rated Overload Protection | 115 - 135% | | |
| Over voltage protection (auto recovery) 12V model 24V model 48V model | 14.5V to 17.4V 30.0V to 33.0V 60.0V to 66.0V | | |

¹⁾ Fuse not replaceable by user

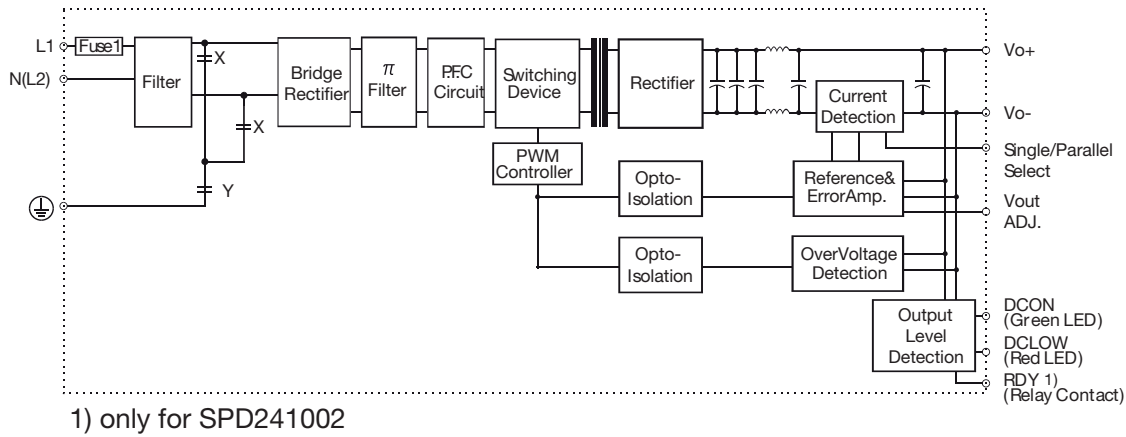
General Data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|---------------------|--|----------------------------------|
| Ambient temperature | -25°C to 71°C | MTBF (Bellcore Issue 6@40°C), GB 12V model 24V model 48V model | 622.000h 661.000h 672.000h |
| Derating (>61°C to +71°C) | 2.5% / °C | Altitude during operation | 3.000m |
| Ambient humidity | 20 to 95%RH | Case material | Plastic |
| Storage | -25°C to +85°C | Dimensions L x W x D | 90 x 54 x 114mm |
| Pollution degree | 2 | Weight | 500g |
| Protection degree | IP20 | | |
| Cooling | Free air convection | | |
| Switching frequency | 45kHz | | |

Approvals and EMC

| | | | |
|---|---|-----------|---|
| Insulation voltage Input / Output Input / FG | 3.000VAC / 4242VDC 1500VAC / 2121VDC | CE | EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3 EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L / N-FG Level 4 EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11 ENV 50204 Level 2, EN 61204-3 |
| Insulation resistance | 100MΩ min | | |
| Shock resistance | acc. to IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face) | | |
| Vibration resistance | acc. to IEC 60068-2-6 (Mounting by rail: 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis) | | |
| UL / cUL | UL 508 Listed UL 60950-1 | | |
| TUV | EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (acc.to EN 60204) | | |
| ISA | 12.12.01 Class I Div 2 Groups A, B, C, D | | |

Block Diagrams



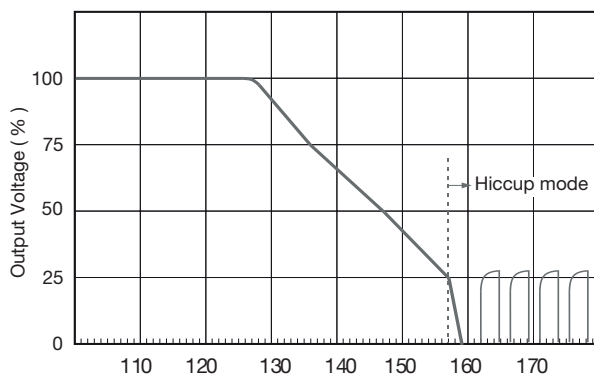
Pin Assignment and Front Controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | RDY | NO relay contact for DC OK (only SPD241002) |
| 2 | RDY | NO relay contact for DC OK (only SPD241002) |
| 3 | V+ | Positive output terminal |
| 4 | V+ | Positive output terminal |
| 5 | V- | Negative output terminal |
| 6 | V- | Negative output terminal |
| 7 | GND | Ground terminal to minimise High frequency emissions |
| 8 | N or L2 | Neutral or phase 2 (no polarity with DC input) |
| 9 | L1 | Phase 1 (no polarity with DC input) |
| L1 | DC ON | DC output ready LED |
| L2 | DC LO | DC low indicator LED |
| POT1 | Vout ADJ. | Trimmer for fine output voltage adjustment |
| SW1 | S/P | Single / Parallel select switch |

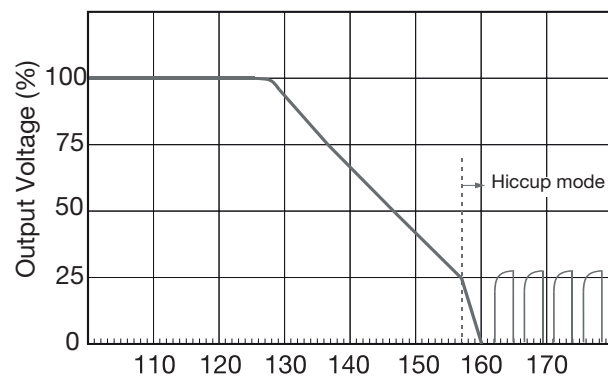
Typ. Current Limited Curve

SPD241002 / 400VAC

SPD241002 / 500VAC

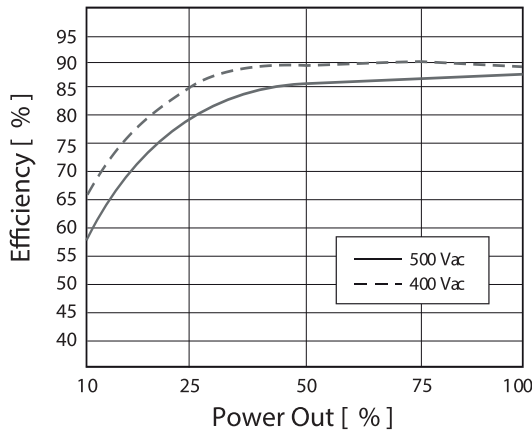


Power Out (%)

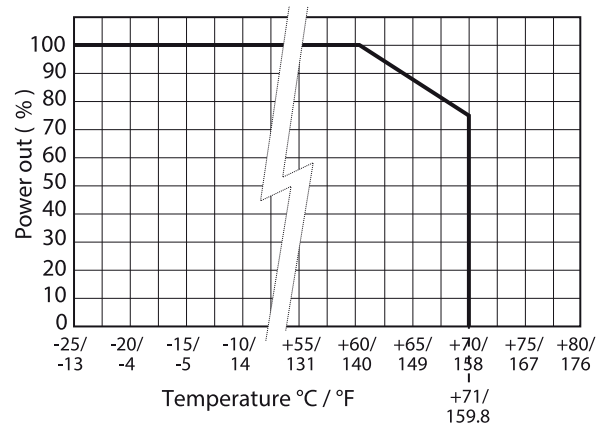


Power Out (%)

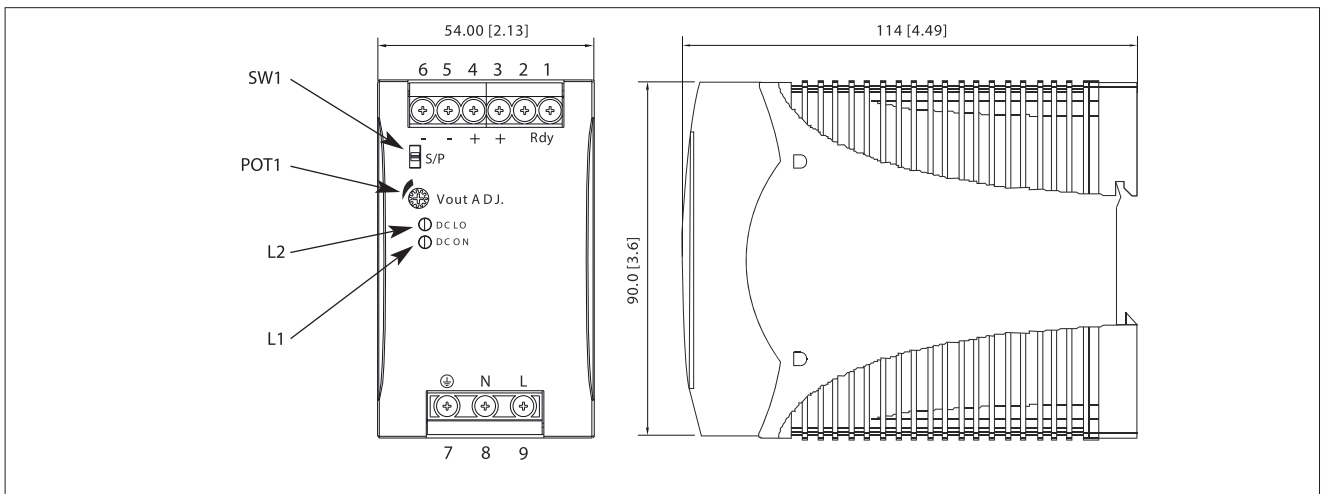
Typ. Efficiency Curve



Derating Diagram



Mechanical Drawings mm (inches)



Installation

| | |
|---|---|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Screw terminals cable 8mm stripping recommend | 10-24AWG flexible or solid |
| Max. torque for screws terminals Input terminals Output terminals | 1.008Nm (9.0lb-in) 0.616Nm (5.5lb-in) |
| Plug-in connectors cable 7mm stripping recommend | 10-24AWG flexible or solid |
| Max. torque for plug-in terminals Input terminals Output terminals | 0.784Nm (7.0lb-in) 0.784Nm (7.0lb-in) |
| Recommended circuit breaker | 3A / 5A / 6A B, D characteristics |