

Switching Power Supply Type SPD 120W 3 phases DIN rail mounting

CARLO GAVAZZI



- Universal AC 3 phases input full range
- Can also be used as single phase 480VAC
- Installation on DIN rail 7.5 or 15mm
- PFC as standard
- High efficiency up to 88%
- Power ready output
- Parallel connection feature
- Compact dimensions
- UL, cUL listed and TUV/CE

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 24 120 3

Model _____
 Mounting (D = Din rail) _____
 Output voltage _____
 Output power _____
 Input Type _____

Input type: 3 = three phase
 (or single phase 400/500VAC³⁾)

Approvals



Output performances

| Model | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) ¹⁾ | Voltage Trim Range ²⁾ | | DC OK Threshold at startup (VDC) | | DC low LED Threshold after startup(VDC) | | Typical Efficiency |
|-------|----------------------------|------------------|----------------------------------|----------------------------------|----------|----------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD12 | 12 | 120 | 10 (7.5) | 11.4 | 14.5 | 10.0 | 11.2 | 10.0 | 11.2 | 87% |
| SPD24 | 24 | 120 | 5 (3.75) | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 88% |

¹⁾ When powered with three phases input; with biphas input value is in the brackets.

²⁾ When S/P switch is set to parallel, it is not possible to trim output voltage.

Output data

| | | | |
|-------------------------|----------------------------------|--|--------------|
| Line regulation | ± 1% | Temperature Coefficient | +0.02% / °C |
| Load regulation | ± 1% | Hold up time Vi = 230Vac | 20ms |
| Non parallel mode | | Minimum load | 0% |
| Output Voltage accuracy | from 0 to +1% (factory adjusted) | Parallel Operation (only with S/P switch on "P" position) | 2 units max. |
| Ripple and Noise | 100mV | | |

Input data

| | | | |
|-------------------------------|--|----------------------------|-----------|
| Rated input voltage | 400/500VAC | Frequency range | 47- 63 Hz |
| Voltage range | 340 - 575VAC ³⁾ 480 - 820VDC | Inrush current | 10A |
| AC in | | P.F.C. Vi= 500VAC, Io nom. | 0.6 |
| DC in | | | |
| Rated input current (380/500) | 0.5A / 0.35A | | |

³⁾ Biphas or triphase input (biphas can be: L1 L2, L2 L3 or L1 L3.
 Note: when used as biphas, the maximum output power is 75% of rated power.

Controls and Protections

| | | | |
|---|--|---|--|
| Input Fuse | 1.0A/600VAC internal/phase ⁴⁾ | Power ready output (only SPD 24) | |
| Overvoltage Protection SPD12 SPD24 | 14.5 – 17.4VDC 30 – 33VDC | Threshold voltages Contact rating at 60VDC insulation | 17.6 - 19.4VDC 0.3A 500VDC |
| Output Short Circuit Continuous | Current limit | Overtemperature | 100 - 110°C (shutdown with auto-restart when temperature is back to normal) |
| Rated Overload Protection | 115 - 135% | | |

⁴⁾ Not replaceable by user.

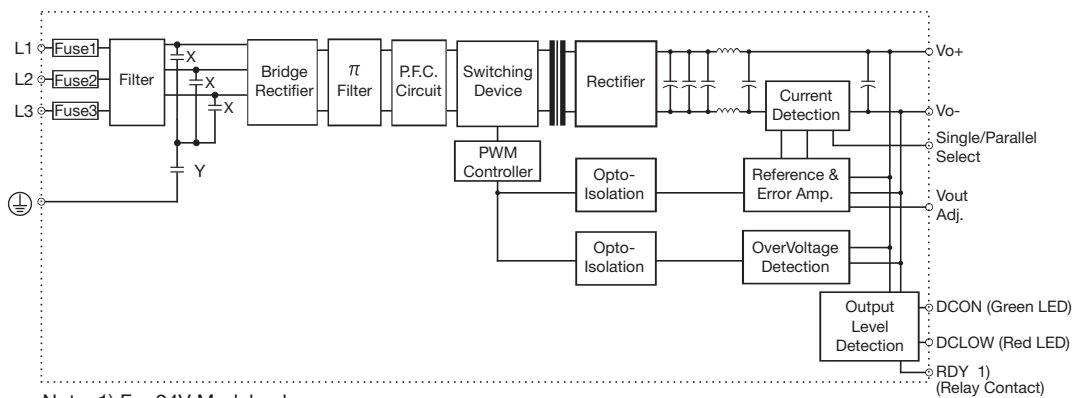
General data (@ nominal line, full load, 25°C)

| | | | |
|--|--|-----------------------------|----------------------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>61°C to +71°C) | 2.5%/°C | MTBF (MIL-HDBK-217F) | n.a. |
| Ambient humidity | 20 - 95%RH | Case material | Metal (powder painted aluminium) |
| Storage temperature | -25°C to +85°C | Weight | 800g / 28.22oz |
| Dimensions L x W x D Screw terminal type | 123.6 x 74.3 x 112 mm 4.87 x 2.93 x 4.41 inches | Protection degree | IP20 |

Approvals and EMC

| | | | |
|---|-------------------------------------|-----------|--|
| Insulation voltage I/O | 3.000VAC | CE | EN61000-6-3 EN55022 class B EN61000-3-2 EN61000-3-3 EN61000-6-2 EN55024 |
| Insulation resistance I/O @ 500VDC | 100MΩ | | |
| UL / cUL | UL508 listed, UL60950-1, Recognized | | |
| TUV | EN60950-1 | | |

Block diagrams



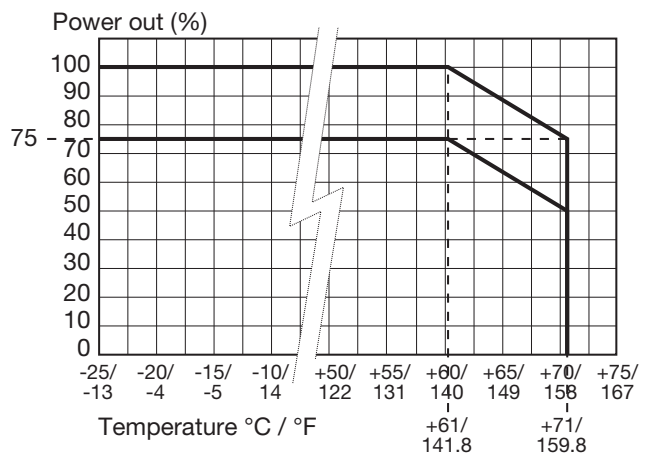
Pin assignement and front controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | V+ | Positive output terminal |
| 2 | V+ | Positive output terminal |
| 3 | V- | Negative output terminal |
| 4 | V- | Negative output terminal |
| 5 | GND | Ground terminal to minimise High frequency emissions |
| 6 | L1 | Input terminals |
| 7 | L2 | Input terminals |
| 8 | L3 | Input terminals |
| 9 | RDY | A normal open relay contact for DC ON level control |
| 10 | RDY | A normal open relay contact for DC ON level control |
| | DC ON | DC output ready LED |
| | DC LO | DC low indicator LED |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |

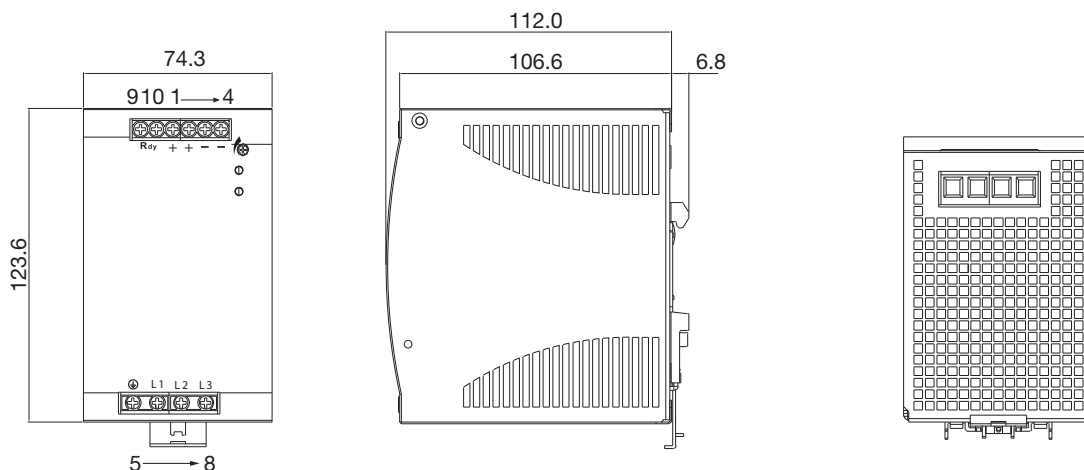
Installation

| | |
|---|---|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Screw connections | 10-24AWG flexible or solid cable 8mm stripping recommend |
| Max. torque for screws terminals | |
| Input terminals | 1.008Nm (9.0lb-in) |
| Output terminals | 0.616Nm (5.5lb-in) |

Derating Diagram



Mechanical Drawings mm/inches



Sense

Switch

Control

Safety

Fieldbus

SPD Switching Power Supplies

CARLO GAVAZZI presents a new range of power supplies especially designed for the automation market. The wide range of supply voltages and DC output voltages/power provide a multitude of choices for all low power electrical or electronic devices commonly used in automatic machinery. Components such as sensors, electromechanical relays, contactors, solid state relays, timers, temperature controllers, PLCs, process controllers, DC motors, solenoids, displays, etc. now have a reliable power source.



Space Optimization



Diagnostic Warning



User Friendly



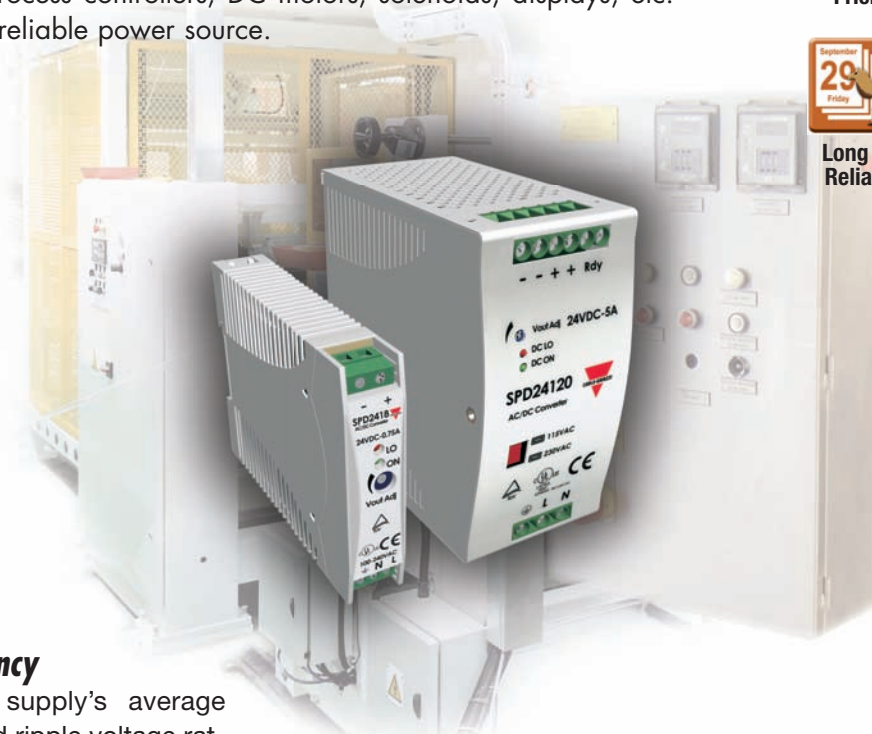
Minimizing Energy Cost



Long Term Reliability



Long Term Reliability



High Efficiency

The power supply's average efficiency and ripple voltage ratings are comparable or better than most power supplies on the market.

Product Range

| | 5V | 12V | 15V | 24V | 48V |
|--------------|----|-----|-----|-----|-----|
| SPD 5-10-18W | ■ | ■ | ■ | ■ | |
| SPD 30-60W | ■ | ■ | | ■ | ■ |
| SPD 120W | | ■ | | ■ | ■ |
| SPD 240-480W | | | | ■ | ■ |

Adjustable Output

All models provide a front potentiometer in order to adjust the output voltage. This useful feature can provide a voltage surplus when line voltage losses cause low voltages to the load.

Parallel Connection

Parallel connection is a standard feature with the 240W and 480W versions, and optional on the 120W version.

Visual and Electrical Indications

Models up to 18W are equipped with two front LEDs, which provide a visual indication of the 'Power Out' enabled and 'Low Voltage' on the output. All other sizes are equipped with an LED indication and also with an output 'Power Ready' signal. This signal could be used by other electronic devices or to power an alarm (this feature is only available on 24VDC output versions).

Power Factor Correction (PFC)

The PFC function is a standard feature on the 240W and 480W models and available upon request on the 120W model.

Approvals and Warranty

All SPD Power Supplies are approved according to UL, cUL, TÜV and CE safety standards: UL class 2 recognized and Class B for the emissions according to European standards. They are also RoHS compliant. All models feature a Two Year Warranty.



Specifications are subject to change without notice.

Ventilation Grid

Output Ready Terminals

Useful feature providing an electrical indication of good operation.

Output Terminals

Double terminals for each pole for easy parallel connection or to use smaller conductors.

Single/Parallel Switch

Selection of operation as a single power supply or in parallel with another one.

Vout Adjustment

Allows adjustment of output voltage within a small range to the required value.

'LO' LED

Indicates output voltage too low.

'ON' LED

Indicates power output is OK.

Model Number

Input Terminals

Also available with removable terminals and/or built in PFC function.



SPD 120W

- 120W Switching Power Supply
- Metal housing
- DIN rail mounting
- Screw terminals or detachable connectors
- Input voltage: 93-264VAC or 210-370VDC (115/230 selectable by switch)
- Available output voltages: 12, 24 and 48VDC
- Output voltage adjustment
- PFC function available on request
- Parallel function available on request (up to three power supplies)
- Short circuit protection and overload protection
- Front indication of Power 'OK' and 'Output Voltage Low'
- Relay output for power 'Ready' signal (voltage free terminals)
- Operating temperature without derating: -10° to +60°C

SPD 240W

- 240W Switching Power Supply
- Metal housing
- DIN rail mounting
- Screw terminals or detachable connectors
- Input voltage 93-264VAC or 210-370VDC (115/230 autoselect)
- Available output voltages 24 and 48VDC
- Output voltage adjustment
- PFC function standard
- Parallel function standard (up to three power supplies) selectable from front panel
- Short circuit protection, overvoltage and overload protection
- Front indication of Power 'OK' and 'Output Voltage Low'
- Relay Output for power 'Ready' signal (voltage free terminals)
- Operating temperature without derating: -10° to +60°C

Switching Power Supplies



| Part Number | Description | Vin *VAC | Vout VDC | Iout A |
|------------------|---|-------------|-------------|-----------|
| SPD 05 05 1 | Switching Power Supply 5W, DIN Rail | 100 - 240 | 5 | 1 |
| SPD 05 05 1B | Switching Power Supply 5W, DIN Rail, Spring terminals | 100 - 240 | 5 | 1 |
| SPD 12 05 1 | Switching Power Supply 5W, DIN Rail | 100 - 240 | 12 | 0.42 |
| SPD 12 05 1 B | Switching Power Supply 5W, DIN Rail, Spring terminals | 100 - 240 | 12 | 0.42 |
| SPD 15 05 1 | Switching Power Supply 5W, DIN Rail | 100 - 240 | 15 | 0.34 |
| SPD 15 05 1 B | Switching Power Supply 5W, DIN Rail, Spring terminals | 100 - 240 | 15 | 0.34 |
| SPD 24 05 1 | Switching Power Supply 5W, DIN Rail | 100 - 240 | 24 | 0.21 |
| SPD 24 05 1 B | Switching Power Supply 5W, DIN Rail, Spring terminals | 100 - 240 | 24 | 0.21 |
| SPD 05 10 1 | Switching Power Supply 10W, DIN Rail | 100 - 240 | 5 | 2 |
| SPD 05 10 1 B | Switching Power Supply 10W, DIN Rail, Spring terminals | 100 - 240 | 5 | 2 |
| SPD 12 10 1 | Switching Power Supply 10W, DIN Rail | 100 - 240 | 12 | 0.84 |
| SPD 12 10 1 B | Switching Power Supply 10W, DIN Rail, Spring terminals | 100 - 240 | 12 | 0.84 |
| SPD 15 10 1 | Switching Power Supply 10W, DIN Rail | 100 - 240 | 15 | 0.67 |
| SPD 15 10 1 B | Switching Power Supply 10W, DIN Rail, Spring terminals | 100 - 240 | 15 | 0.67 |
| SPD 24 10 1 | Switching Power Supply 10W, DIN Rail | 100 - 240 | 24 | 0.42 |
| SPD 24 10 1 B | Switching Power Supply 10W, DIN Rail, Spring terminals | 100 - 240 | 24 | 0.42 |
| SPD 05 18 1 | Switching Power Supply 15W, DIN Rail | 100 - 240 | 5 | 3 |
| SPD 05 18 1 B | Switching Power Supply 15W, DIN Rail, Spring terminals | 100 - 240 | 5 | 3 |
| SPD 12 18 1 | Switching Power Supply 18W, DIN Rail | 100 - 240 | 12 | 1.5 |
| SPD 12 18 1 B | Switching Power Supply 18W, DIN Rail, Spring terminals | 100 - 240 | 12 | 1.5 |
| SPD 15 18 1 | Switching Power Supply 18W, DIN Rail | 100 - 240 | 15 | 1.2 |
| SPD 15 18 1 B | Switching Power Supply 18W, DIN Rail, Spring terminals | 100 - 240 | 15 | 1.2 |
| SPD 24 18 1 | Switching Power Supply 18W, DIN Rail | 100 - 240 | 24 | 0.75 |
| SPD 24 18 1 B | Switching Power Supply 18W, DIN Rail, Spring terminals | 100 - 240 | 24 | 0.75 |
| SPD 05 30 1 | Switching Power Supply 30W, DIN Rail | 100 - 240 | 5 | 6 |
| SPD 05 30 1 B | Switching Power Supply 30W, DIN Rail, Spring terminals | 100 - 240 | 5 | 6 |
| SPD 12 30 1 | Switching Power Supply 30W, DIN Rail | 100 - 240 | 12 | 2.5 |
| SPD 12 30 1 B | Switching Power Supply 30W, DIN Rail, Spring terminals | 100 - 240 | 12 | 2.5 |
| SPD 24 30 1 | Switching Power Supply 30W, DIN Rail | 100 - 240 | 24 | 1.25 |
| SPD 24 30 1 B | Switching Power Supply 30W, DIN Rail, Spring terminals | 100 - 240 | 24 | 1.25 |
| SPD 48 30 1 | Switching Power Supply 30W, DIN Rail | 100 - 240 | 48 | 0.625 |
| SPD 48 30 1 B | Switching Power Supply 30W, DIN Rail, Spring terminals | 100 - 240 | 48 | 0.625 |
| SPD 05 60 1 | Switching Power Supply 50W, DIN Rail | 100 - 240 | 5 | 10 |
| SPD 05 60 1 B | Switching Power Supply 50W, DIN Rail, Spring terminals | 100 - 240 | 5 | 10 |
| SPD 12 60 1 | Switching Power Supply 60W, DIN Rail | 100 - 240 | 12 | 5 |
| SPD 12 60 1 B | Switching Power Supply 60W, DIN Rail, Spring terminals | 100 - 240 | 12 | 5 |
| SPD 24 60 1 | Switching Power Supply 60W, DIN Rail | 100 - 240 | 24 | 2.5 |
| SPD 24 60 1 B | Switching Power Supply 60W, DIN Rail, Spring terminals | 100 - 240 | 24 | 2.5 |
| SPD 48 60 1 | Switching Power Supply 60W, DIN Rail | 100 - 240 | 48 | 1.25 |
| SPD 48 60 1 B | Switching Power Supply 60W, DIN Rail, Spring terminals | 100 - 240 | 48 | 1.25 |
| SPD 12 120 1 | Switching Power Supply 120W, DIN Rail | 100 - 240 | 12 | 10 |
| SP D 12 120 1 F | Switching Power Supply 120W, DIN Rail, with PFC | 100 - 240 | 12 | 10 |
| SP D 12 120 1 P | Switching Power Supply 120W, DIN Rail, with Parallel function | 100 - 240 | 12 | 10 |
| SP D 12 120 1 FP | Switching Power Supply 120W, DIN Rail, with PFC and Parallel function | 100 - 240 | 12 | 10 |

| Part Number | Description | Vin *VAC | Vout VDC | Iout A |
|------------------|--|-------------|-------------|-----------|
| SP D 12 120 1 B | Switching Power Supply 120W, DIN Rail, Removable connectors | 100 - 240 | 12 | 10 |
| SPD 12 120 1 BF | Switching Power Supply 120W, DIN Rail, Removable connectors and PFC | 100 - 240 | 12 | 10 |
| SPD 12 120 1 BP | Switching Power Supply 120W, DIN Rail, Removable connectors and Parallel function | 100 - 240 | 12 | 10 |
| SPD 12 120 1 BFP | Switching Power Supply 120W, DIN Rail, Removable connectors, PFC and Parallel function | 100 - 240 | 12 | 10 |
| SPD 24 120 1 | Switching Power Supply 120W, DIN Rail | 100 - 240 | 24 | 5 |
| SPD 24 120 1 F | Switching Power Supply 120W, DIN Rail, with PFC | 100 - 240 | 24 | 5 |
| SPD 24 120 1 P | Switching Power Supply 120W, DIN Rail, with Parallel function | 100 - 240 | 24 | 5 |
| SPD 24 120 1 FP | Switching Power Supply 120W, DIN Rail, with PFC and Parallel function | 100 - 240 | 24 | 5 |
| SPD 24 120 1 B | Switching Power Supply 120W, DIN Rail, Removable connectors | 100 - 240 | 24 | 5 |
| SPD 24 120 1 BF | Switching Power Supply 120W, DIN Rail, Removable connectors and PFC | 100 - 240 | 24 | 5 |
| SPD 24 120 1 BP | Switching Power Supply 120W, DIN Rail, Removable connectors and Parallel function | 100 - 240 | 24 | 5 |
| SPD 24 120 1 BFP | Switching Power Supply 120W, DIN Rail, Removable connectors, PFC and Parallel function | 100 - 240 | 24 | 5 |
| SPD 48 120 1 | Switching Power Supply 120W, DIN Rail | 100 - 240 | 48 | 2.5 |
| SPD 48 120 1 F | Switching Power Supply 120W, DIN Rail, with PFC | 100 - 240 | 48 | 2.5 |
| SPD 48 120 1 P | Switching Power Supply 120W, DIN Rail, with Parallel function | 100 - 240 | 48 | 2.5 |
| SPD 48 120 1 FP | Switching Power Supply 120W, DIN Rail, with PFC and Parallel function | 100 - 240 | 48 | 2.5 |
| SPD 48 120 1 B | Switching Power Supply 120W, DIN Rail, Removable connectors | 100 - 240 | 48 | 2.5 |
| SPD 48 120 1 BF | Switching Power Supply 120W, DIN Rail, Removable connectors and PFC | 100 - 240 | 48 | 2.5 |
| SPD 48 120 1 BP | Switching Power Supply 120W, DIN Rail, Removable connectors and Parallel function | 100 - 240 | 48 | 2.5 |
| SPD 48 120 1 BFP | Switching Power Supply 120W, DIN Rail, Removable connectors, PFC and Parallel function | 100 - 240 | 48 | 2.5 |
| SPD 24 240 1 | Switching Power Supply 240W, DIN Rail, PFC and Parallel function | 100 - 240 | 24 | 10 |
| SPD 24 240 1 B | Switching Power Supply 240W, DIN Rail, Removable connectors, PFC and Parallel function | 100 - 240 | 24 | 10 |
| SPD 48 240 1 | Switching Power Supply 240W, DIN Rail, PFC and Parallel function | 100 - 240 | 48 | 5 |
| SPD 48 240 1 B | Switching Power Supply 240W, DIN Rail, Removable connectors, PFC and Parallel function | 100 - 240 | 48 | 5 |
| SPD 24 480 1 | Switching Power Supply 480W, DIN Rail, PFC and Parallel function | 100 - 240 | 24 | 20 |
| SPD 24 480 1B | Switching Power Supply 480W, DIN Rail, Removable connector, PFC and Parallel function | 100 - 240 | 24 | 20 |
| SPD 48 480 1 | Switching Power Supply 480W, DIN Rail, PFC and Parallel function | 100 - 240 | 48 | 10 |
| SPD 48 480 1B | Switching Power Supply 480W, DIN Rail, Removable connector, PFC and Parallel function | 100 - 240 | 48 | 10 |

* Approximate AC supply voltage is 100-240VAC. However, they can also be powered by lower and higher AC voltages and also DC Voltages. See datasheet for more accurate specifications.