

# Switching Power Supply Type SPD 60W DIN rail mounting

CARLO GAVAZZI



- Universal AC input full range
- Installation on DIN rail 7.5 or 15mm
- Short circuit protection
- Overload protection
- Class 2 output
- High efficiency
- LED indicator for DC power ON
- Power Ok output
- CE, TUV approved and cULus Listed

## 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 60 1 B**

Model \_\_\_\_\_  
 Mounting ( D = Din rail ) \_\_\_\_\_  
 Output voltage \_\_\_\_\_  
 Output power \_\_\_\_\_  
 Input Type \_\_\_\_\_  
 Optional features \_\_\_\_\_

Input type: 1= single phase

## Approvals



## Optional Features

Description	Code
Spring connectors	B

## Output Performances

Model	Rated output Voltage (VDC)	Output Power (W)	Output Current (A)	Voltage Trim Range		DC ON green LED at start up DC LOW red LED after start up		Typical Efficiency
				Min. VDC	Max. VDC	Min. VDC	Max. VDC	
SPD05	5	50	10.0	5	5.5	3.5	4.5	79%
SPD12	12	60	5.0	12	14	9.0	10.8	86%
SPD24	24	60	2.5	24	28	18	21.6	89%
SPD48	48	60	1.25	48	55	37	43	89%

## Output Data

<b>Line regulation</b>	± 0.5%	<b>Rated continuous loading</b>	
<b>Load regulation</b>	± 0.5%	<b>5V Model</b>	10A @ 5VDC/9.0A @ 5.5VDC
<b>Minimum load (A)</b>	0	<b>12V Model</b>	5A @ 12VDC/4.25A @ 14VDC
<b>Turn on time (full resistive load)</b>	1000ms max	<b>24V Model</b>	2.5A @ 24VDC/2.1A @ 28VDC
<b>Transient recovery time</b>	2ms	<b>48V Model</b>	1.25A @ 48VDC/1.08A @ 55VDC
<b>Ripple and noise BW = 20MHz</b>	50mVpp	<b>Reverse voltage</b>	
<b>Output voltage accuracy</b>	± 1% max.	<b>5V Model</b>	7.5VDC
<b>Temperature coefficient</b>	± 0.03%/°C	<b>12V Model</b>	18VDC
<b>Hold up time Vi= 115VAC</b>	20ms	<b>24V Model</b>	35VDC
<b>Vi= 230VAC</b>	30ms	<b>48V Model</b>	63VDC
<b>Voltage fall time (I<sub>o</sub>nom)</b>	150ms max	<b>Capacitor load</b>	7000µF
		<b>Voltage rise time at full resistive load</b>	150ms max

## Input Data

<b>Rated input voltage</b>	100 - 240VAC	<b>Power dissipation</b> (Vi : 230VAC, Io nom)	
<b>Voltage range</b>		<b>5V Model</b>	12.5W
<b>AC</b>	85 - 264VAC	<b>12V Model</b>	9.0W
<b>DC</b>	90 - 375VDC	<b>24V Model</b>	8.8W
<b>Rated input current</b>		<b>48V Model</b>	7.8W
(Vi : 115VAC)	1060mA	<b>Frequency range</b>	47- 63Hz
(Vi : 230VAC)	590mA	<b>Leakage current</b>	
<b>Input current (Vi : 85VAC)</b>	1500mA	<b>Input-Output</b>	0.25mA
<b>Inrush current</b>		<b>Input-FG</b>	3.5mA
<b>Vi= 115VAC</b>	20A		
<b>Vi= 230VAC</b>	40A		

## Controls and Protections

<b>Overload</b>	110 – 150%	<b>Over voltage protection</b>	<b>VDC</b>
<b>Input fuse</b>	T2A/250VAC internal <sup>1)</sup>		<b>Min.</b> <b>Max.</b>
<b>Output short circuit</b>	Fold forward	<b>5V Model</b>	6.0              6.8
<b>Power ready output (Rdy)</b>		<b>12V Model</b>	15                16.5
(only SPD 24)		<b>24V Model</b>	30                33
<b>On threshold</b>	Vout > 19,2V ± 2%	<b>48V Model</b>	60                66
<b>Off threshold</b>	Vout < 19,1V ± 2%	<b>Internal surge voltage protection</b> (IEC 61000-4-5)	Varistor

<sup>1)</sup> Fuse not replaceable by user

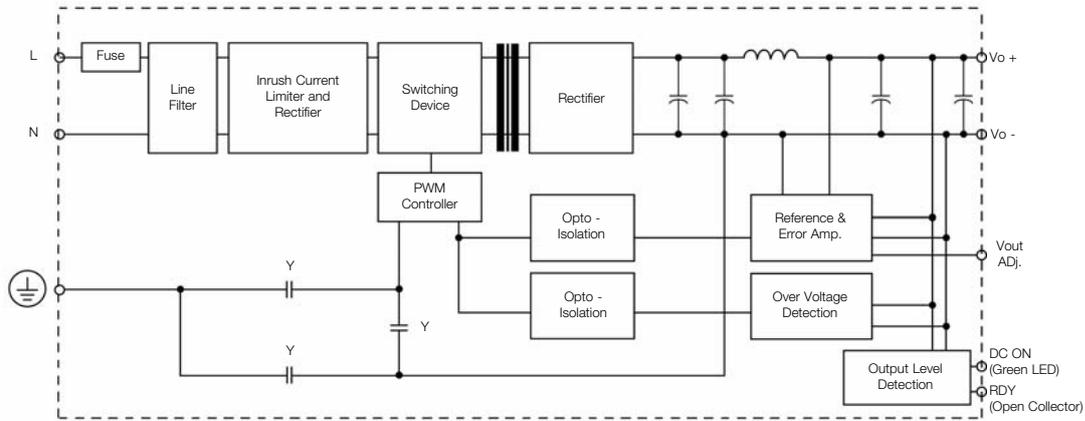
## General Data (@ nominal line, full load, 25°C )

<b>Ambient temperature</b>	-40°C to 71°C	<b>MTBF (Bellcore issue 6 @ 40°C, GB)</b>	
<b>Derating (&gt;61°C to +71°C)</b>	2.5%/°C	<b>5V Model</b>	498000 Hours
<b>Ambient humidity</b>	20 ~ 95%RH	<b>12V Model</b>	504000 Hours
<b>Storage temperature</b>	-40°C to +85°C	<b>24V Model</b>	520000 Hours
<b>Protection degree</b>	IP20	<b>48V Model</b>	531000 Hours
<b>Cooling</b>	Free air convection	<b>Case material</b>	Plastic: PC, UL94-V0
<b>Insulation voltage</b>		<b>Pollution degree</b>	2
<b>Input-Output</b>	3.000VAC/4242VDC min	<b>Altitude</b>	2000m
<b>Input-FG</b>	1.500VAC/2121VDC min	<b>Dimensions LxWxD mm (inch)</b>	90(3.60)x40.5(1.59)x114(4.49)
<b>Insulation resistance I/O</b>	100MΩ min (@ 500VDC)	<b>Weight</b>	340g

## Norms and Standards

<b>Vibration resistance</b>	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)	<b>CE</b>	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-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
<b>Shock resistance</b>	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)		
<b>UL / cUL</b>	UL508 listed, UL60950-1, UL1310 Class 2 Power (only 5V, 12V w/o Class 2) Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)		
<b>TUV</b>	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-16 (meet EN 60204)		
<b>CCC</b>	GB4943, GB9254, GB17625.1		

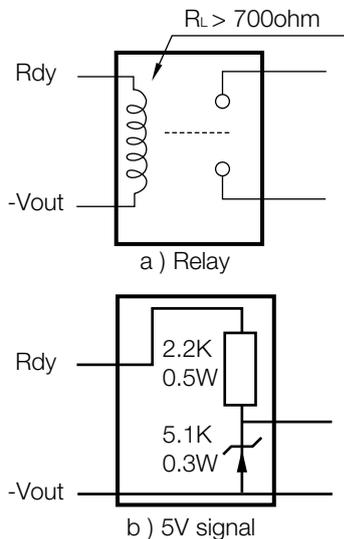
## Block Diagrams



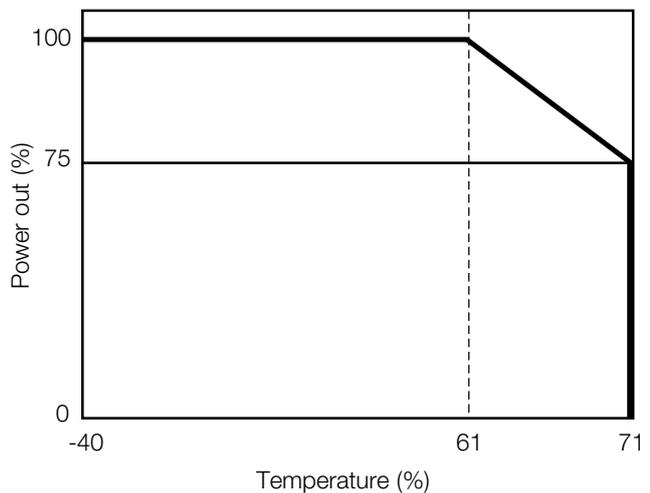
## Pin Assignement and Front Controls

Pin No.	Designation	Description
1	<b>RDY</b>	DC OK, output for relay (only on SPD 24)
2	<b>+</b>	Positive output terminal
3	<b>+</b>	Positive output terminal
4	<b>-</b>	Negative output terminal
5	<b>-</b>	Negative output terminal
6	<b>GND</b>	Ground terminal to minimise High frequency emissions
7	<b>L</b>	Phase input ( no polarity with DC input )
8	<b>N</b>	Neutral input ( no polarity with DC input )
<b>Pot1</b>	<b>Vout ADJ.</b>	Trimmer for fine output voltage adjustment
<b>L1</b>	<b>DC ON</b>	DC output ready LED

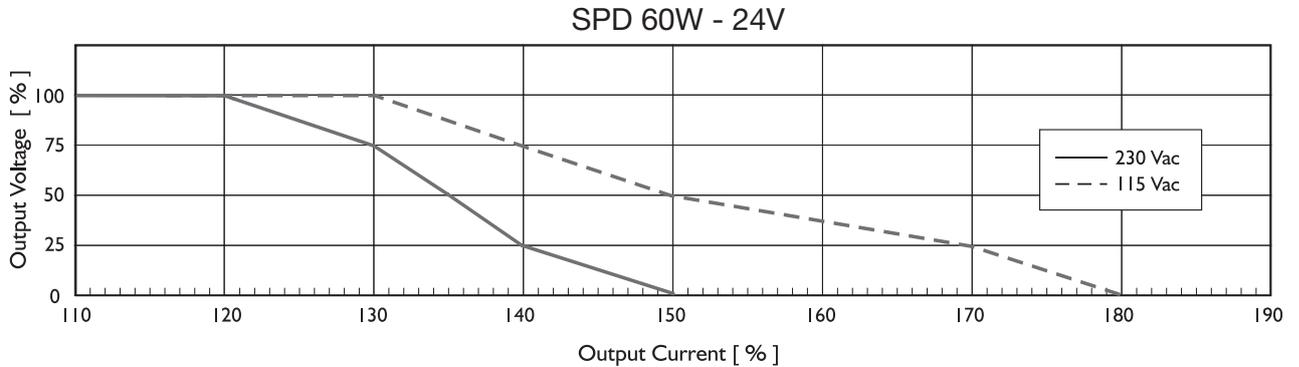
## Output Rdy Wiring Diagram



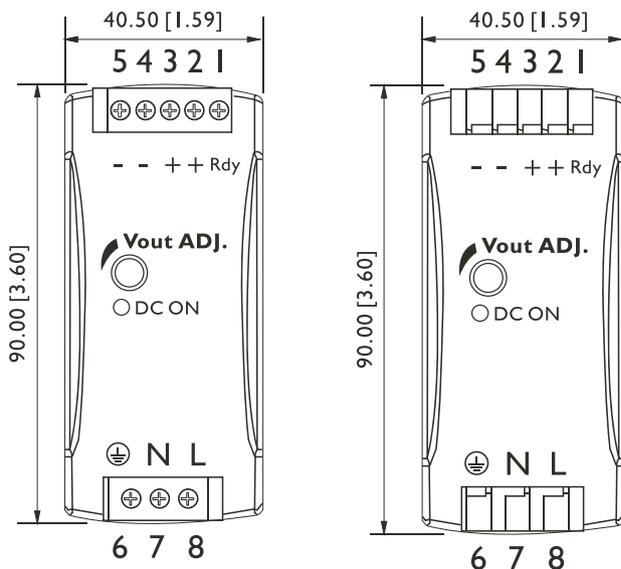
## Derating Diagram



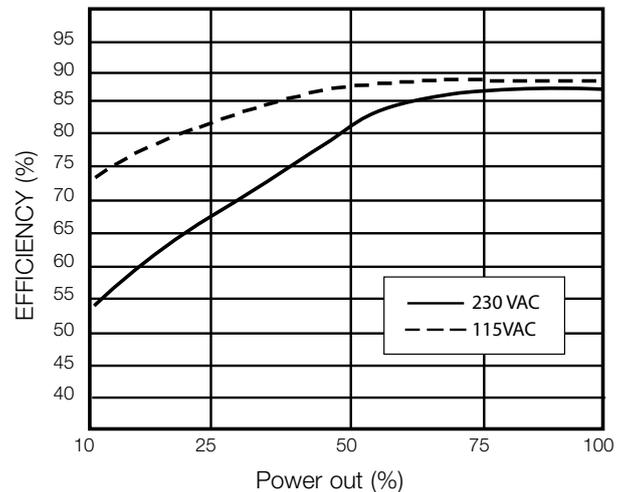
## Typ. Current Limited Curve



## Mechanical Drawings mm (inches)



## Typ. Efficiency Curve



## Installation

### Ventilation and cooling

Normal convection  
 All sides 25mm free space for cooling is recommended

### Connector size range Spring terminal

AWG24-14 (0.2~2mm<sup>2</sup>)  
 flexible/solid cable, 10mm stripping at cable and recommends use copper conductors only, 60/75°C

### Screw terminal

AWG26-12 (0.2~2.5mm<sup>2</sup>)  
 flexible/solid cable, connector can withstand torque at max 0,56Nm (5 lbs-in).  
 4~5 mm stripping at cable and recommends use copper conductors only, 60/75°C

### Max. torque for terminal Input terminals Output terminals

0.56Nm (5.0lb-in)  
 0.56Nm (5.0lb-in)

### General tolerances mm(in.) 0.00 (0.00) ÷ 30.00 (1.18) 30.00 (1.18) ÷ 120.00 (4.72)

±0.30 (0.01)  
 ±0.50 (0.02)