

# Switching Power Supply Type SPD 30W DIN rail mounting



- 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
- 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 12 30 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	Output Voltage (VDC)	Output Current (A)	Voltage Trim Range		DC on LED (VDC Min.)	Typical Efficiency
			Min. (VDC)	Max. (VDC)		
SPD05	5	6.0	5	5.5	4	79%
SPD12	12	2.5	12	14	9.6	84%
SPD24	24	1.25	24	28	19.2	86%
SPD48	48	0.625	48	55	37	86%

## Output data

Line regulation	± 0.5% max	Output Voltage accuracy	± 2%
Load regulation	± 0.5% max	Temperature coefficient	± 0.02%/°C
Minimum load	0	Hold up Time Vi = 115Vac	20ms min
Turn on time (full resistive load)	1.0s max	Hold up time Vi = 230Vac	30ms min
Transient recovery time	300 ms	Voltage fall time (I <sub>o</sub> nom)	150ms max
Ripple and noise (bw=20Mhz)	50mVpp	Voltage rise time at full resistive load	150ms max

## Input data

Rated input voltage	100 - 240	Frequency range	47- 63 Hz
Voltage range		Inrush current	
AC	85 - 264 Vac	Vi = 115Vac	20A
DC	90 - 375 Vdc	Vi = 230Vac	40A

Specifications are subject to change without notice

## Controls and Protections

<b>Overload</b>	110 – 140%	<b>Over voltage protection</b>	<b>VDC</b>	
<b>Input Fuse</b>	T2A/250Vac internal*		<b>Min.</b>	<b>Max.</b>
<b>Output Short Circuit</b>	Fold forward	SPD5	6	6.8
<b>Power ready output (only SPD 24)</b>		SPD12	15	16.5
On threshold	$\geq 20V \pm 1V$	SPD24	30	33
Off threshold	$\leq 19.2V \pm 1V$	SPD48	60	66

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

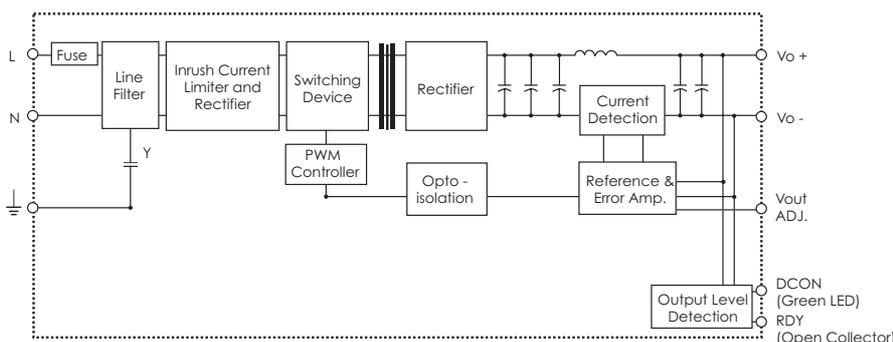
<b>Ambient temperature</b>	-10°C to 71°C	<b>Cooling</b>	Free air convection
<b>Derating (&gt;60°C to +71°C)</b>	2.5%/°C	<b>Switching frequency</b>	50kHz
<b>Ambient humidity</b>	20 ~ 90%RH	<b>MTBF</b>	565.000h
<b>Storage</b>	-25°C to +85°C	<b>Case material</b>	Plastic: PC, UL94-V0
<b>Protection degree</b>	IP20	<b>Dimensions L x W x D</b>	90 x 40.5 x 115
		<b>Weight</b>	290g

## Norms and Standards

<b>Insulation voltage I / O</b>	3.000Vac	<b>CE</b>	EN61000-6-3 - EN55022 Class B EN61000-3-2 - EN61000-3-3 EN61000-6-2 - EN550241 EN61000-4-2 - EN61000-4-3 EN61000-4-4 - EN61000-4-5 EN61000-4-6 - EN61000-4-8 EN61000-4-11
<b>Insulation resistance</b>	100Mohm		
<b>UL / cUL</b>	UL508 listed, UL60950-1, UL1310 Class 2 (5V without class 2) Recognised		
<b>TUV</b>	EN60950-1		

\* fuse not replaceable by user

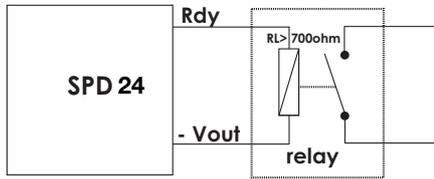
## Block diagrams



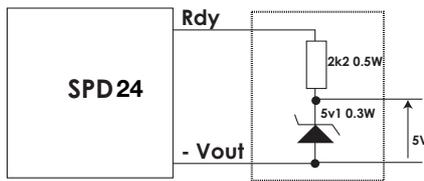
## Pin assignement and front controls

Pin No.	Designation	Description
1	RDY	DC OK output for relay (only on SPD24)
3	+	Positive output terminal
4	+	Positive output terminal
5	-	Negative output terminal
6	-	Negative output terminal
7	GND	Ground terminal to minimise High frequency emissions
8	L	Phase input ( no polarity with DC input )
9	N	Neutral input ( no polarity with DC input )
	Vout ADJ.	Trimmer for fine output voltage adjustment
	DC ON	DC output ready LED

## Output Rdy Wiring diagram

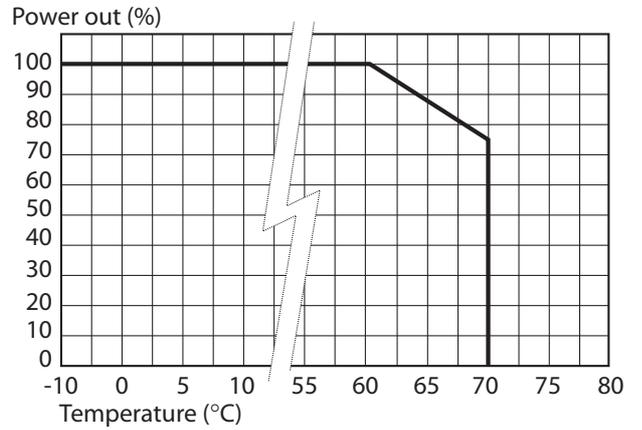


Relay connection diagram

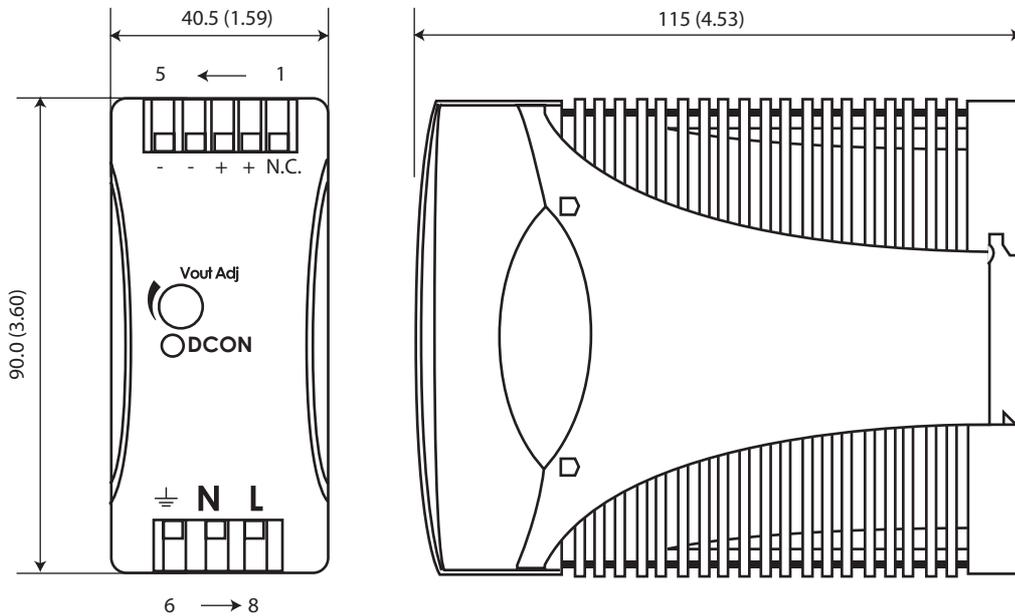


5V signal

## Derating Diagram



## Mechanical Drawings



## Installation

<b>Ventilation and cooling</b>	Normal convection All sides 25mm free space for cooling is recommended
<b>Connector size range</b>	Solid: 0.2 – 2mm <sup>2</sup> (AWG24-14) (use copper conductors only)

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**



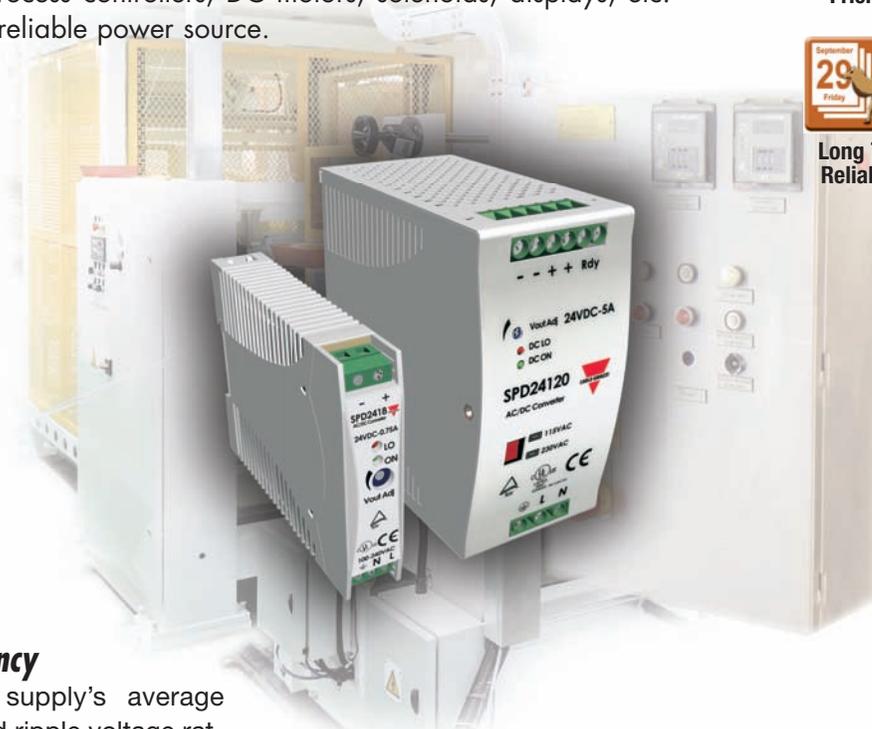
**Minimizing Energy Cost**



**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.



# Switching Power Supplies



**Ventilation Grid**

**Model Number**

**Output Voltage Adjustment**

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

**DIN Rail Clip**

Easy installation on any kind of DIN Rail.

**Safety Label**

Approval data file numbers EAN code and traceability data.

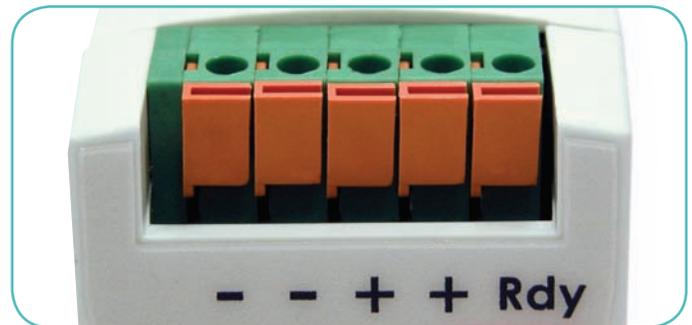
**'ON' LED**

Indicates power output is OK.

## OPTIONAL SPRING LOADED TERMINALS

On all models up to 60W a choice between spring loaded terminals and screw terminals is provided. Spring loaded terminals allow fast and reliable machine connection, saving time and money.

On 30W and 60W '+' and '-' terminals are doubled in order to increase current capacity of connection wires using two smaller section cables.



## SPD 30 and 60W

- 30 and 60W Switching Power Supplies
- 40.5mm wide, plastic enclosure
- DIN rail mounting
- Screw terminal or spring terminal connections
- Input voltage: 85-264VAC or 90-375VDC
- Available output voltages: 5, 12, 24 and 48VDC
- Output voltage adjustment
- Internal noise filter
- Short circuit protection
- Front indication of power 'ON'
- Output with electrical signal of power 'Ready'
- 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.