

**Switching Power Supplies from 5W up to 960W**

**Controls**

# SPD, SPM, SPPC

## Switching power supplies

Carlo Gavazzi provides one of the most complete ranges of power supplies for the automation industry. Most features that other manufacturers provide as options are included as standard features throughout our product range. The selection of the required power supply is very simple; you only have to choose the output voltage and the output power. If you require Power Factor Correction, parallel connection, or output relay, most SPD models include these as standard features. Power supplies are also available with three-phase inputs specifically tailored for the automation industry. The input is three-phase 400-500VAC, but they can also be powered by 380-575VAC singlephase input voltage. The SPP enclosed switching power supply meets your needs for AC/DC and DC/DC power requirements.



### High efficiency

The power supply's typical efficiency is very high, up to 93%.

### Universal input

On all the models the rated input voltage is automatically selected by the power supply. They can also be powered by DC voltage. On the three-phase models the input voltage can be provided by either three-phase or even just 2-phase.

### Adjustable output

Most of the DIN rail models are provided with a front potentiometer in order to adjust the output voltage, generally within a range of  $\pm 10\%$  of the rated voltage.

### "Bi-phase" input

A 100W power supply is available with high-voltage singlephase input. The SPDxx1002 can be powered with 380~575VAC input.

### Power factor correction

PFC function is standard for all SPDs from 90W to 960W, and all SPPCs from 150W to 800W.

### Parallel

Most of the power supplies can be connected in parallel with one identical unit in order to double the power. Some models can be connected up to 3 units.

### Visual and electrical indications

Most of the models are equipped with double LED indication: one for output voltage and one for power ready. They are also equipped, on 24VDC output, with a voltagefree contact relay output providing a signal of power ready.

### Approvals and warranty

All power supplies are approved according to the related European and North American safety standards.

All models feature a two year warranty.



## Applications

### Automation systems

Thanks to the wide range of voltage and current, the SPD, the SPM, and SPPC can be used in a large variety of applications to supply PLCs, timers, drives, sensors, displays, solid

state and electromechanical relays, and other components normally used in automation systems. The size and shape, compliant with the DIN standards, also allow these switching

power supplies to be used in the standard electric distribution panels, where modularity is an important requirement, especially used in building automation applications.



The reliability of an automation system depends on the quality and stability of the power supply. In particular, in electrical distribution, power losses, dips and peaks even of short duration, can limit the performance of

the systems and could have expensive consequences, such as loss of data, malfunctions of the control system and production process downtime. In high volume production processes, such as the automotive industry, where the

average productivity is around 2000 cars per day, even a short downtime of half an hour can cause considerable financial losses.



### Critical industrial environments

Every electronic control system needs a stable power supply. From supervision system requirements to CNC equipment, it is necessary to use a stable and reliable power supply

source with enough power reserve. Our product range includes several versions of power supplies to better match all applications and customer's requirements.

These switching power supplies are designed to manage a wide range of input voltage and include overload and short circuit protections.



# SPD DIN-Rail switching power supplies

SPD 5/10/18W 1-Phase

SPD 30/60W 1-Phase

SPD 90/100W 1-Phase



SPD 120W 1-Phase

SPD 240/300W 1-Phase

SPD 480W 1-Phase

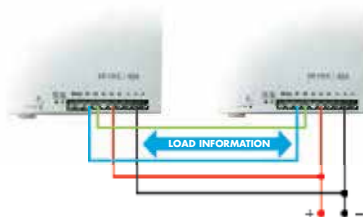


## Front adjustments and LEDs



The adjustments are placed on the front panel of the SPD power supplies. We have an adjustment trimmer pot which serves to fine-tune the output voltage within a range of approximately  $\pm 10\%$  of the rated voltage. On the models from 100W up, there is also a sliding switch which is used in order to select single or parallel operation. Most models have two LEDs, one green and one red, which indicate the operation is normal. The green LED indicates a correct output, whereas the red LED is lit when the output voltage is out of the specified range.

## Active current sharing



The 960 watt power supplies feature active current sharing. By connecting two wires from one power supply to the other, they exchange information regarding the output current and adapt to one another to have equal outputs.

## 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. All power supplies, from 30W and above, have more than one terminal for the connection of the "+" and the "-" outputs. This feature facilitates the use of smaller conductors for the wiring or to ease the parallel connection.

# SPD DIN-Rail switching power supplies



**SPD 100W 2-Phase**



**SPD 120W 3-Phase**



**SPD 240W 3-Phase**



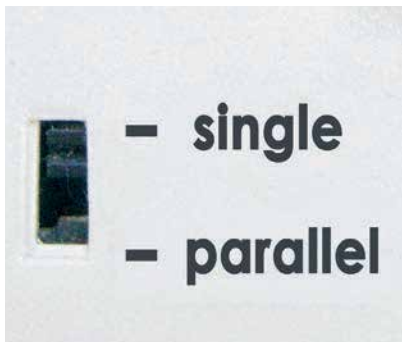
**SPD 480W 3-Phase**



**SPD 960W 3-Phase**

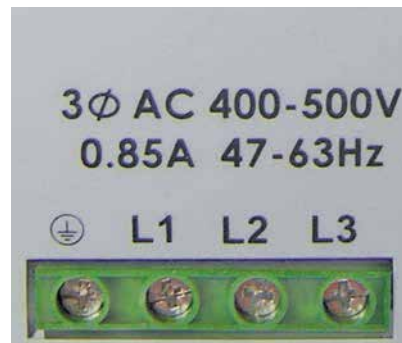


## Main features



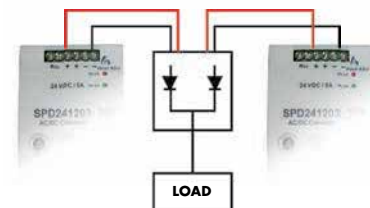
- Universal single phase AC input 85 to 264 VAC
- Universal three-phase AC input 340 to 575VAC or 480 to 820VDC
- LOW voltage LED indicator
- High efficiency up to 89%
- Fine output voltage regulation
- Short circuit protection
- Overload protection
- Internal input filter
- Operating temperature w/o derating -25°C to +60°C
- Active current sharing on 960W types
- UL 1310 Class 2 Output

## Available terminals



The screw terminals of the singlephase power supplies with metal enclosure (120W to 480W) can be chosen with fixed terminals or removable connectors. The 24VDC output devices have two terminals, identified by RDY, which provide an external electrical indication of the power status. In case of failure (low output voltage or no output), the internal contact opens, indicating to remote devices that there is an abnormal situation. The 5W, 10W and 18W versions are not equipped with this.

## Redundant module



The redundant module allows the connection of two or more power supplies, guaranteeing the supply of DC power in case of failure of one of the power supplies.

# SPM

## Low profile switching power supplies

**SPM1 10W**



**SPM3 30W**



**SPM4 60W**



**SPM5 100W**



**SPM5 Battery charger**



### Main feature



- Universal input 90-264VAC / 120-370VDC
- Low voltage LED indicator
- High efficiency up to 89%
- Fine output voltage regulation
- Short circuit protection
- Overload protection
- Internal input filter
- Operating temperature w/o derating -25°C a +60°C
- UL 1310 Class 2 output
- From 1 to 5 DIN modules

### Modularity



This family is specifically developed for home and building automation distribution boxes, with just a little more than 55mm/2.18" of depth, which allows flush mounting on the front panel of the boxes. This concept is modular according to DIN standard.

### Battery charger



The SPM5BC battery chargers are a range of power supply units which charge lead-acid batteries, optimising their performance and duration. Based on switch-mode technology, they produce an output voltage stabilized at a preset value, even when not being charged. Made in a low profile plastic housing, they feature universal input 90~264VAC, integrated short circuit protection and battery polarity protection.

# SPPC Miniature

## Enclosed switching power supplies



SPPC 25W



SPPC 35W



SPPC 50W



SPPC 75W



The new SPPC series offer a comprehensive range of power solutions for industrial control and automation applications, making them ideal for OEMs requiring power between 25W to 800W.

This fully certified power supplies provide a wide range of universal input and screw terminal connections, organised under two main families:

- **Miniature**
- **Compact**

**Miniature size:**

**25W, 35W, 50W, and 75W** delivering high power density, wide operating temperature range, coated PCBs, high efficiency and long life reliability.



# SPPC Compact

## Enclosed switching power supplies

**SPPC 150W (w/out PFC)**



**SPPC 150W**



**SPPC 200W**



**SPPC 240W**



**SPPC 320W**



**SPPC 480W**



**SPPC 600W**



**SPPC 800W**



**Compact size:**  
**150W, 200W, 240W, 320W,**  
**480W, 600W, and 800W** with:

- Built-in cooling fan speed control
- Built-in active PFC

to deliver high efficiency.

The compact family also offers a wide array of output protections, and new features such as high operating altitude and 1U low profile ideal for telecom applications.

The broad wattage option of the SPPC series offer a complete power solution, while making the selection process for large equipment and smaller machine manufacturers extremely simple: they just have to choose the output voltage and the output power to resolve their power supply requirements.

**Main specifications:**

- Five different voltage outputs: 5VDC, 12VDC, 24VDC, 36VDC, and 48VDC.
- Power Factor Correction: PFC>0.98 at 115VAC; PFC>0.95 at 230VAC.
- Wide operating temperature ranges.

- Comprehensive set of output protections: SCP, OLP, OPP, OVP. (selected models).
- Operating altitude up to 5,000m ideal for telecom applications. (selected models).
- 1 U low profile, 41mm (selected models).

- 100% full load burn-in test.
- 105°C long life electrolytic capacitor (selected models).
- MTBF: 200,000+ hours at 25C full load.
- ZVS power dissipation reduction technology (selected models).



# Product selection tables

SPD Single phase description		W	Vin VAC	Vin VDC	Vout VDC	Iout A
Screw terminal item number	Spring terminal item number					
SPD05051	SPD05051B	5W	20-265	120-370	5	1,0
SPD12051	SPD12051B				12	0,42
SPD15051	SPD15051B				15	0,34
SPD24051	SPD24051B	24			0,21	
SPD05101	SPD05101B	10W			5	2,0
SPD12101	SPD12101B				12	0,84
SPD15101	SPD15101B				15	0,67
SPD24101	SPD24101B	24			0,42	
SPD05181	SPD05181B	18W			5	3,0
SPD12181	SPD12181B				12	1,5
SPD15181	SPD15181B		15	1,2		
SPD24181	SPD24181B	24	0,75			
SPD05301	SPD05301B	30W	5	6,0		
SPD12301	SPD12301B		12	2,5		
SPD24301	SPD24301B		24	1,25		
SPD48301	SPD48301B	48	0,625			
SPD05601	SPD05601B	60W	5	10		
SPD12601	SPD12601B		12	5,0		
SPD24601	SPD24601B		24	2,5		
SPD48601	SPD48601B	48	1,25			
SPD24901L ST, PE RDY out		90W	90-264	120-375	24	3,8

**ST:** Screw Terminal

**PE:** Plastic Enclosure

Item number	SPD Single phase description	W	Vin VAC	Vin VDC	Vout VDC	Iout A			
SPD121001	ST, PF, PE	100W	90-264	120-375	12	8,4			
SPD241001	ST, PF, RDY, out PE				24	4,2			
SPD481001	ST, PF, PE				48	2,1			
SPD24901	ST, PFC, PF, ME	90W			24	3,8			
SPD24901B	RC, PFC, PF, ME				24	3,8			
SPD121201	ST, PF, ME	120W			90-264	210-370	12	10	
SPD121201B	RC, PF, ME						12	10	
SPD241201	ST, RDY out						24	5,0	
SPD241201B	RC, RDY out						24	5,0	
SPD48201	ST, PFC, ME						120W	48	2,5
SPD48201B	RC, PFC, ME		48	2,5					
SPD121201N	ST, PFC, PF		120W	90-264			210-370	12	10
SPD121201BN	ST, PFC, PF							12	10
SPD241201N	ST, PFC, PF, out		120W	90-264			210-370	24	10
SPD241201BN	RC, PFC, PF, RDY out							24	10
SPD48201N	ST, PFC, PF	120W	90-264	210-370	48	10			
SPD48201BN	RC, PFC, PF				48	10			
SPD242401	ST, PFC, PF, out	240W	90-264	210-370	24	10			
SPD242401B	RC, PFC, PF, RDY out				24	10			
SPD482401	ST, PFC, PF				48	5,0			
SPD482401B	RC, PFC, PF	48	5,0						
SPD243001	ST, PFC, PF, out	300W	90-264	210-375	24	12,5			
SPD243001B	RC, PFC, PF, RDY out				24	12,5			
SPD483001	ST, PFC, PF				48	6,25			
SPD483001B	RC, PFC, PF	48	6,25						
SPD244801	ST, PFC, PF, RDY out	480W	90-264	210-370	24	20			
SPD244801B	RC, PFC, PF				24	20			
SPD484801	ST, PFC, PF				48	10			
SPD484801B	RC, PFC, PF	48	10						
SPD122401C	ST, PFC, PF, ME	240W	88-264	120-375	12	16			
SPD242401C	ST, PFC, PF, ME				24	10			
SPD122401CB	RC, PFC, PF, ME				12	16			
SPD242401CB	RC, PFC, PF, ME				24	10			

**PFC:** Power Factor Correction  
**PE:** Plastic Enclosure

**ST:** Screw Terminal  
**ME:** Metal Enclosure

**PF:** Parallel Function

**RC:** Removable Connector

# Product selection tables

Item number	SPD Bi and Three phase description	W	Vin VAC	Vin VDC	Vout VDC	Iout A
SPD121002	2ph, ST, PF, PE	100W			12	8,4
SPD241002	2ph, ST, PF, RDY out, PE				24	4,2
SPD481002	2ph, ST, PF, PE	120W			48	2,1
SPD121203	3ph, ST, PFC, ME				12	10
SPD241203	3ph, ST, PFC, RDY out, ME	240W	340-575	480-820	24	5,0
SPD242403	3ph, ST, PFC and PF, RDY out, ME				24	10
SPD482403	3ph, ST, PFC and parallel function, ME	480W			48	5,0
SPD244803	3ph, ST, PFC and PF, RDY out, ME				24	20
SPD484803	3ph, ST, PFC and PF, ME	960W			48	10
SPD249603	3ph, ST, PF, APF, RDY out, ME				24	40
SPD249603L	3ph, ST, PFC, ME	960W			24	40
SPD489603	3ph, ST, PFC, APF, ME				48	20

**PFC:** Power Factor Correction  
**PE:** Plastic Enclosure

**ST:** Screw Terminal  
**ME:** Metal Enclosure

**PF:** Parallel Function  
**APF:** Active Parallel Function

**RC:** Removable Contact

Item number	Redundant module description	Vin VAC	Vin VDC	Vout VDC	Iout A
SPD24RM20	24 20A max.	***	5-24	Vin	20
SPD2RM2410	24 10A max.	***	5-24	Vin	10

Item number	SPD Single phase	W	Vin VAC	Vin VDC	Vout VDC	Iout A
SPM1051	1 DIN module	7.5W			5	1,5
SPM1121	1 DIN module	10W			12	0,83
SPM1151	1 DIN module		15W			15
SPM1241	1 DIN module	24				0,42
SPM3051	3 DIN module	15W			5	3,0
SPM3121	3 DIN module	25W			12	2,1
SPM3151	3 DIN module	30W	90-264	120-370	15	2,0
SPM3241	3 DIN module				24	1,3
SPM4051	4 DIN module	35W			5	7,0
SPM4121	4 DIN module	54W			12	4,5
SPM4151	4 DIN module	60W			15	4,0
SPM4241	4 DIN module				24	2,5
SPM5051	5 DIN module	72W			5	12
SPM5121	5 DIN module				12	6,0
SPM5151	5 DIN module	75W			15	5,0
SPM5241	5 DIN module	100W			24	4,2
SPM5241S	5 DIN module	91W	24	3,8		

Item number	Battery charger description	W	Vin VAC	Vin VDC	Vout VDC	Iout A
SPM5BC1230	5 DIN module	34W			13,6	2,5
SPM5BC2430	5 DIN module				27,2	1,25
SPM5BC1260	5 DIN module	61W	90-264	120-375	23,6	4,5
SPM5BC2460	5 DIN module	68W			27,2	2,5

# Product selection tables

Item number	SPPC Single phase description	W	Vin VAC	Vin VDC	Vout VDC	Iout A
SPPC 5251	Enclosed type switching	25W	90-264	127-370	5	5
SPPC 12251	Enclosed type switching				12	2.0
SPPC 24251	Enclosed type switching				24	1.0
SPPC 5351	Enclosed type switching	35W	90-264	127-370	5	7
SPPC 12351	Enclosed type switching				12	2.9
SPPC 24351	Enclosed type switching				24	1.4
SPPC 5501	Enclosed type switching	50W	90-264	127-370	5	10
SPPC 12501	Enclosed type switching				12	4.16
SPPC 15501	Enclosed type switching				15	3.3
SPPC 24501	Enclosed type switching	75W	90-264	127-370	24	2.0
SPPC 48501	Enclosed type switching				48	1.0
SPPC 5751	Enclosed type switching				5	15
SPPC 12751	Enclosed type switching	150W	88-132 176-264	124-186 248-370	12	6.25
SPPC 24751	Enclosed type switching				24	3.1
SPPC 48751	Enclosed type switching				48	1.5
SPPC 51501	Enclosed type switching	200W	85-264	120-370	5	30
SPPC 121501	Enclosed type switching				12	12.5
SPPC 151501	Enclosed type switching				15	10
SPPC 241501	Enclosed type switching	240W	85-264	120-370	24	6.25
SPPC 481501	Enclosed type switching				48	3.1
SPPC 51501F	Enclosed type switching				5	30
SPPC 121501F	Enclosed type switching	320W	90-264	127-370	12	12.5
SPPC 151501F	Enclosed type switching				15	10
SPPC 241501F	Enclosed type switching				24	6.25
SPPC 481501F	Enclosed type switching with PFC	480W	90-264	127-370	48	3.1
SPPC 52001FC	Enclosed type switching with PFC				5	40
SPPC 122001FC	Enclosed type switching with PFC				12	16.6
SPPC 242001FC	Enclosed type switching with PFC	600W	90-264	127-370	24	8.3
SPPC 482001FC	Enclosed type switching with PFC				48	4.16
SPPC 122401FC	Enclosed type switching with PFC				12	20
SPPC 242401FC	Enclosed type switching with PFC	800W	90-264	127-370	24	10
SPPC 53201FC	Enclosed type switching with PFC				5	64
SPPC 123201FC	Enclosed type switching with PFC				12	26.6
SPPC 243201FC	Enclosed type switching with PFC	800W	90-264	127-370	24	13.3
SPPC 483201FC	Enclosed type switching with PFC				48	6.6
SPPC 124801FC	Enclosed type switching with PFC				12	40
SPPC 244801FC	Enclosed type switching with PFC	800W	90-264	127-370	24	20
SPPC 364801FC	Enclosed type switching with PFC				36	13.3
SPPC 484801FC	Enclosed type switching with PFC				48	10
SPPC 126001FC	Enclosed type switching with PFC	800W	90-264	127-370	12	50
SPPC 246001FC	Enclosed type switching with PFC				24	25
SPPC 366001FC	Enclosed type switching with PFC				36	16.6
SPPC 486001FC	Enclosed type switching with PFC	800W	90-264	127-370	48	12.5
SPPC 248001FC	Enclosed type switching with PFC				24	33.3
SPPC 488001FC	Enclosed type switching with PFC				48	16.6

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