

Switching Power Supply

Type SPD 100W

DIN rail mounting

CARLO GAVAZZI



- Installation on DIN Rail 7.5 or 15mm
- Short circuit protection
- PFC standard
- 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

Product Description

This 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.

Ordering Key

SP D 24 100 1

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

Input type: 1= single phase

Approvals



Output Performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD12100	90~264 VAC	100.8 WATTS	+12 VDC	8,4 A	82%	84%
SPD24100	90~264 VAC	100.8 WATTS	+24 VDC	4,2 A	84%	86%
SPD48100	90~264 VAC	100.8 WATTS	+48 VDC	2,1 A	86%	88%

Output Data

Line regulation	± 1%	Voltage fall time ($I_{o,nom}$ V_i nom)	150ms max
Load regulation		Rated continuous loading	
Non parallel model	±1%	12V Model	8.4A @ 12VDC/6.9A @ 14.5VDC
Parallel model	±5%	24V Model	4.2A @ 24VDC/3.5A @ 28.5VDC
Minimum load	0A	48V Model	2.1A @ 48VDC/1.8A @ 56VDC
Turn on time (full resistive load)		Reverse voltage	
V_i nom, I_o nom 12V/24V		12V Model	VDC 18
models with 7000 μ F CAP	1000ms	24V Model	VDC 35
V_i nom, I_o nom 48V		48V Model	VDC 63
models with 3500 μ F CAP	2000ms	Capacitor load	7000 μ F
Transient recovery time	2ms	Voltage rise time	
Ripple and noise	50mVpp	V_i nom I_o nom	150ms
Output voltage accuracy	±1%	V_i nom, I_o nom 12V/24V	500ms
Temperature coefficient	±0.03%/°C	models with 7000 μ F CAP	500ms
Hold up time		48V model with 3500 μ F CAP	500ms
V_i = 115VAC	15ms		
V_i =230VAC	30ms		

Input Data

Rated input voltage	100 - 240VAC	Power dissipation	
Voltage range		(Vi : 230VAC, Io nom)	
AC	90 - 264VAC	12V Model	18.5W
DC	120 - 375VDC	24V Model	15W
Rated input current		48V Model	14W
(Vi:90VAC, Io nom) Typ.	2.4A	Frequency range	47-63Hz
Inrush current		Leakage current	
Vi= 115VAC	30A	Input-Output	0.25mA
Vi= 230VAC	60A	Input-FG	3.5mA

Controls and Protections

Overload		Over voltage protection	VDC	
12V Model	14.5V to 17.4V		Min.	Max.
24V Model	30.0V to 33.0V	12V Model	14.5	16.5
48V Model	60.0V to 66.0V	24V Model	30	33
Input fuse	T3.15A/250VAC internal ¹⁾	48V Model	60	66
Output short circuit	Fold forward			
Power ready output threshold at start up	≥17.6-19.4VDC	Internal surge voltage protection	Varistor	
Electrical isolation	500VDC	(IEC 61000-4-5)		
Contact rating at60VDC	0.3A			

1) Fuse not replaceable by user

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

Ambient temperature	-35°C to +71°C	Isolation resistance	
Derating (>61°C to +71°C)	2.5%/C	input/output, @500VDC	100MΩ
Ambient humidity	22 - 95% RH	Altitude during operation	5000m
Storage temperature	-40°C to +85°C	Installation position	Vertical
Protection degree	IP20	MTB (Bellcore issue 6 @ 40°C, GB)	
Cooling	Free air convection	5V Model	498000 Hours
Pollution degree	2	12V Model	504000 Hours
Switching frequency		24V Model	520000 Hours
Vi nom, Io nom	45-60 kHz	48V Model	531000 Hours
Isolation voltage		Case material	Plastic: PC, UL94-V0
Input/output	3,000/4,242 VAC/VDC	Dimensions LxWxD mm(inch)	90(3.6) x 54(2.13) x 114(4.49)
Input/FG	1,500/2,121 VAC/VDC	Weight	430 g
Output/FG	500/710 VAC/VDC		

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)	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-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
Shock resistance	meet IEC 60068-2-27 (15G,11ms, 3 Axis, 6 faces, 3 times for each face)		
UL/cUL	UL508 listed, UL60950-1		
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2- 17 (meet EN 60204)		

The diagram illustrates a power supply system with the following components and connections:

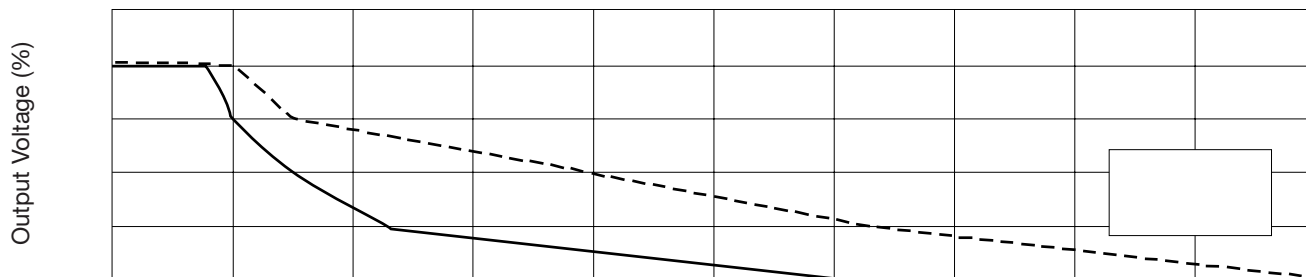
- Input:** L (Line) and N (Neutral) terminals. A ground symbol is connected to the N line.
- Protection:** A Fuse is connected in series with the L line.
- Filtering:** A Filter block is connected to the L and N lines.
- Rectification:** A Bridge Rectifier is connected to the Filter.
- Filtering:** A π Filter is connected to the Bridge Rectifier.
- Switching:** A Switching Device is connected to the π Filter.
- Control:** A PWM Controller is connected to the Switching Device.
- Rectification:** A Rectifier is connected to the Switching Device.
- Output Filtering:** Three capacitors are connected in parallel to the Rectifier output.
- Current Detection:** A Current Detection block is connected to the output capacitors.
- Output:** Vo+ and Vo- terminals. A Single/Parallel Select switch is connected to the Vo- line.
- Monitoring:**
 - An Opto-Isolation block is connected to the PWM Controller and the Reference & Error Amp.
 - Another Opto-Isolation block is connected to the PWM Controller and the Over Voltage Detection block.
 - The Reference & Error Amp is connected to the Current Detection block and the Vo+ and Vo- lines.
 - The Over Voltage Detection block is connected to the Vo+ and Vo- lines.
 - The Output Level Detection block is connected to the Vo+ and Vo- lines.
- Indicators:**
 - DC ON (Green LED) is connected to the Vo+ line.
 - DC LOW (Red LED) is connected to the Vo- line.
 - RDY (Relay Contact) is connected to the Vo+ line.

Pin No.	Designation	Description
1	RDY	A normal open relay contact for DC ON level control
2		Never connect
3, 4	V+	Positive output terminal
5, 6	V-	Negative output terminal
7		Ground this terminal to minimize high-frequency emissions
8	N	Input terminals (neutral conductor, no polarity at DC input)
9	L	Input terminals (phase conductor, no polarity at DC input)
	DC ON	Operation indicator LED
	DC LO	DC LOW voltage indicator LED
	Vout ADJ	Trimmer-potentiometer for Vout adjustment

Temperature (C°)	230VAC Output Voltage (%)	115VAC Output Voltage (%)
10	70	77
25	81	84
50	86	85
75	87	86
100	87	86

Figure 1 is a line graph showing the power output (in %) versus frequency (in MHz) for the proposed scheme. The x-axis ranges from -40 MHz to 71 MHz, with major ticks at -40, 61, and 71. The y-axis ranges from 0% to 100%, with major ticks at 0, 75, and 100. The power output is constant at 100% for frequencies from -40 MHz to 61 MHz. At 61 MHz, the power begins to decrease linearly, reaching approximately 78% at 71 MHz. Beyond 71 MHz, the power drops sharply to 0%.

Typ. Current Limited Curve



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended	Max. torque for terminal Input terminal Output terminal	0.56Nm (5.0lb-in) 0.56Nm (5.0lb-in)
Connector size range Spring terminal	AWG24-14 (0.2~2mm ²) flexible/solid cable, 10mm stripping at cable and recommends use copper conductors only, 60/75°C	General tolerance 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)
Screw terminal	AWG26-12 (0.2~2.5mm ²) 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		

Mechanical Drawings mm (inches)

