

Switching Power Supply

Type SPP1 20W

Enclosed type

CARLO GAVAZZI



- Universal AC input full range
- Short circuit protection
- Internal input filter
- High efficiency
- High average efficiency (meet ErP)
- Low stand-by power consumption
- CE, TUV, and cURus approved

Product Description

Enclosed Switching Power Supply meet your needs for AC DC and DC DC power requirements. SPP provide the most flexible OEM system power solutions from 5V to 24V at 20W for industrial control and automation applications. Most carry full certifications and offer wide range universal input, screw terminal connections. Especially designed where compact dimensions and performance are a must.

Ordering Key

SP P1 24 20 1 X

Model _____
 Mounting (P1 = Panel) _____
 Output voltage _____
 Output power _____
 Input Type _____
 Optional features _____

Input type: 1= single phase

Approvals



Output Performances

MODEL NO.	INPUT VOLTAGE	OUTPUT POWER	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)	EFF. (avg.)
Single Output Models							
SPP1 05201	88~264 VAC	20 WATTS	+ 5 VDC	4000 mA	81%	83%	80%
SPP1 12201	88~264 VAC	20.4 WATTS	+ 12 VDC	1700 mA	84%	86%	83%
SPP1 15201	88~264 VAC	21 WATTS	+15 VDC	1400 mA	85%	87%	84%
SPP1 24201	88~264 VAC	21.6 WATTS	+24 VDC	900 mA	85%	87%	84%

Output Data

All specifications are at nominal values, full load, 25°C unless otherwise noticed

Line regulation	± 0.5%	Voltage trim range	5V Model 4.5-5.5 VDC 12V Model 10.8-13.2 VDC 15V Model 13.5-16.5 VDC 24V Model 21.6-27.6 VDC
Load regulation	±1%	Rated continuous loading	5V Model 4A @ 5VDC/3.6A @ 5.5VDC 12V Model 1.7A @ 12VDC/1.5A @ 13.2 VDC 15V Model 1.4A @ 15VDC/1.25A @ 16.5VDC 24V Model 0.9A @ 24VDC/0.75A @ 27.6VDC
Minimum load	0%	Reverse voltage	5V Model 7.5VDC 12V Model 18VDC 15V Model 22VDC 24V Model 35VDC
Turn on time (full resistive load)		Capacitor load	3500µF
Vi nom, Io nom	1000ms		
Vi nom, Io nom with 3500µF	1500ms		
Transient recovery time	2ms		
Ripple and noise	100mVpp		
Output voltage accuracy	+ 1%		
Temperature coefficient	± 0.03%/°C		
Hold up time Vi= 115VAC	15ms		
Vi= 230VAC	80ms		
Voltage fall time (IOnom, Vi nom)	150ms		
Voltage rise time			
Vi nom, Io nom (full resistive load)	150ms		
Vi nom, Io nom with 3500µF CAP	500ms		

Input Data All specifications are at nominal values, full load, 25°C unless otherwise noticed

Rated input voltage I_{nom}	100 - 240VAC	Power dissipation (V_i : 230VAC, I_o nom)	5V Model 4.5W 12V Model 4W 15V Model 4W 24V Model 4W
Voltage range	AC IN 88 - 264VAC DC IN 120 - 375VDC	Frequency range	47- 63Hz
Rated input current V_i : 115/230 VAC I_o nom V_i : 88 VAC I_o nom	390mA / 250 mA 250mA	Leakage current	Input-Output 0.25mA Input-FG 3.5mA
Inrush current V_i = 115VAC V_i = 230VAC	20A 40A		

Controls and Protections All specifications are at nominal values, full load, 25°C unless otherwise noticed

Overload	120 – 160%	Over voltage protection	VDC	
Input fuse	T2A/250VAC internal ¹⁾		Min.	Max.
Output short circuit	Hiccup mode	5V Model	5.75	6.75
		12V Model	13.8	16.2
		15V Model	17.25	20.25
		24V Model	28.8	32.4

¹⁾ Fuse not replaceable by user

General Data All specifications are at nominal values, full load, 25°C unless otherwise noticed

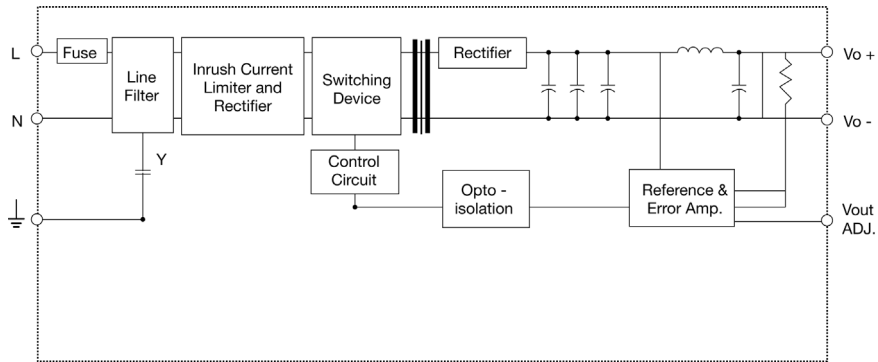
Ambient temperature	-40°C to +71°C	MTBF (Bellcore issue 6 @ 40°C, GB)	5V Model 729000 Hours 12V Model 740000 Hours 15V Model 746000 Hours 24V Model 772000 Hours
Derating (>60°C to +71°C)	2.5%/°C (see curve)	Case material	Plastic: PC, UL94-V0
Relative humidity	20 ~ 95%RH	Altitude IEC 60068-2-13	4850m
Storage	-40°C to +85°C	Stand-by power consumption	0.3W
Protection degree	IP20	Dimensions LxWxD mm(inch)	92(3.62)x54(2.13)x30(1.18)
Cooling	Free air convection	Weight	140g
Insulation voltage	Input-Output 3.000VAC/4242VDC min Input-FG 1.500VAC/2121VDC min		
Insulation resistance I/O	100MΩ min (@ 500VDC)		
Switching Frequency	65 Khz		

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (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, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, ENV 50204, EN 61204-3
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)		
UL / cUL	UL60950-1, Recognized		
TUV	EN 60950 -1 CB scheme		



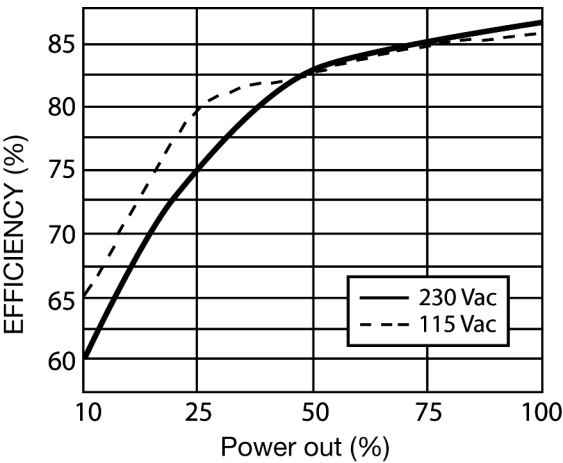
Block Diagrams



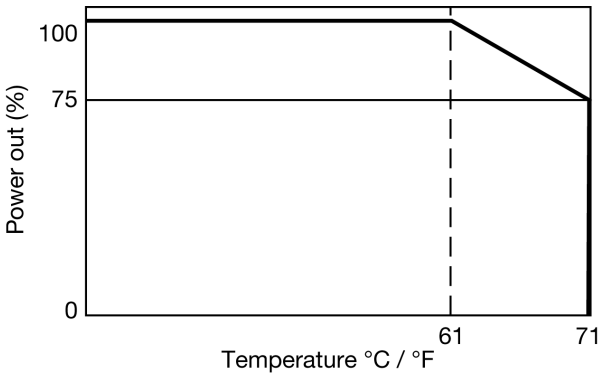
Pin Assignment and Front Controls

Pin No.	Designation	Description
1	L	Input terminals (phase conductor, no polarity at DC input)
2	N	Input terminals (neutral conductor, no polarity at DC input)
3	⊕	Ground this terminal to minimize high-frequency emissions
4	-	Negative output terminal
5	+	Positive output terminal
	Vout ADJ	Trimmer-potentiometer for Vout adjustment
	DC ON	Operation indicator LED

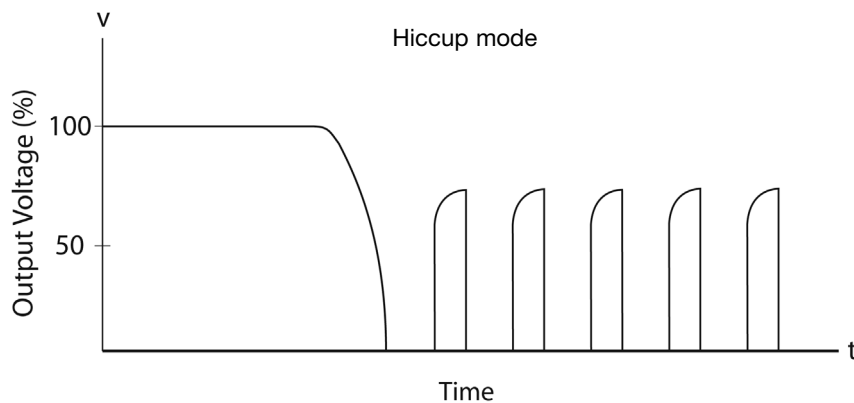
Typ. Efficiency Curve



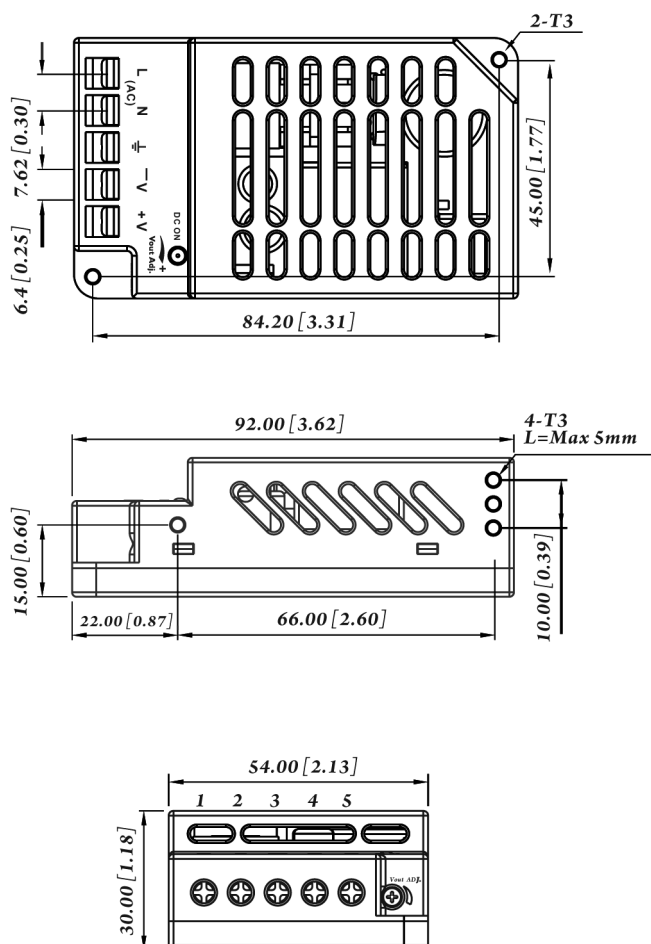
Derating Diagram



Typ. Current Limited Curve



Mechanical Drawings mm (inches)



Installation

Ventilation and cooling	Ventilation/Cooling Normal convection
Connector size range Spring terminal	AWG22-12 (0.2~2.5mm ²) flexible/solid cable, 10mm stripping at cable connector can withstand torque at maximum 0.90 Nm (8 pound-inches)
General tolerances mm(in.)	
0.00 (0.00) ÷ 30.00 (1.18)	±0.30 (0.01)
30.00 (1.18) ÷ 120.00 (4.72)	±0.50 (0.02)