

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

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

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

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

<b>Overload</b>	120 – 160%	<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>	Hiccup mode	<b>5V Model</b>	5.75	6.75
		<b>12V Model</b>	13.8	16.2
		<b>15V Model</b>	17.25	20.25
		<b>24V Model</b>	28.8	32.4

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

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

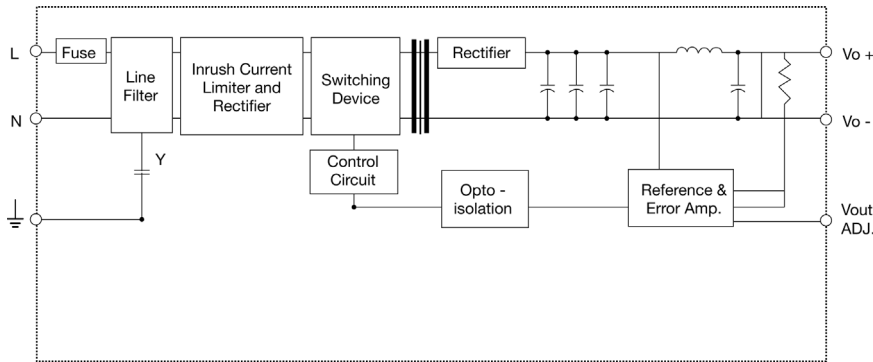
<b>Ambient temperature</b>	-40°C to +71°C	<b>MTBF</b> (Bellcore issue 6 @ 40°C, GB)	<b>5V Model</b> 729000 Hours <b>12V Model</b> 740000 Hours <b>15V Model</b> 746000 Hours <b>24V Model</b> 772000 Hours
<b>Derating (&gt;60°C to +71°C)</b>	2.5%/°C (see curve)	<b>Case material</b>	Plastic: PC, UL94-V0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

## Norms and Standards

<b>Vibration resistance</b>	meet IEC 60068-2-6 (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, 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
<b>Shock resistance</b>	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)		
<b>UL / cUL</b>	UL60950-1, Recognized		
<b>TUV</b>	EN 60950 -1 CB scheme		



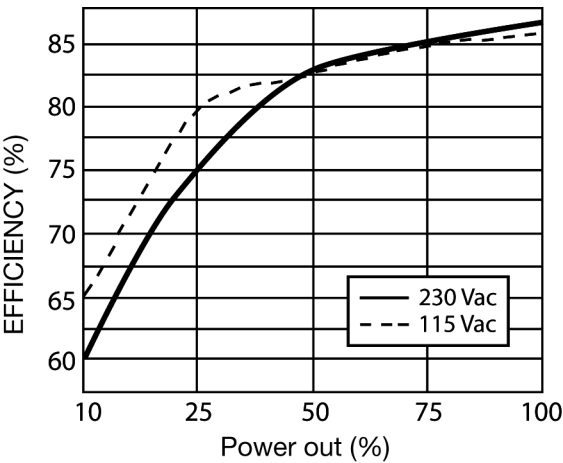
Block Diagrams



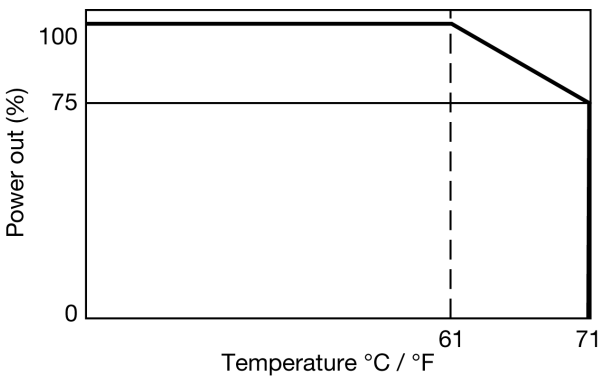
Pin Assignement and Front Controls

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-frequecy emissions
4	-	Negative output terminal
5	+	Positive output terminal
	Vout ADJ	Trimmer-potentiometer for Vout adjustment
	DC ON	Operation indicator LED

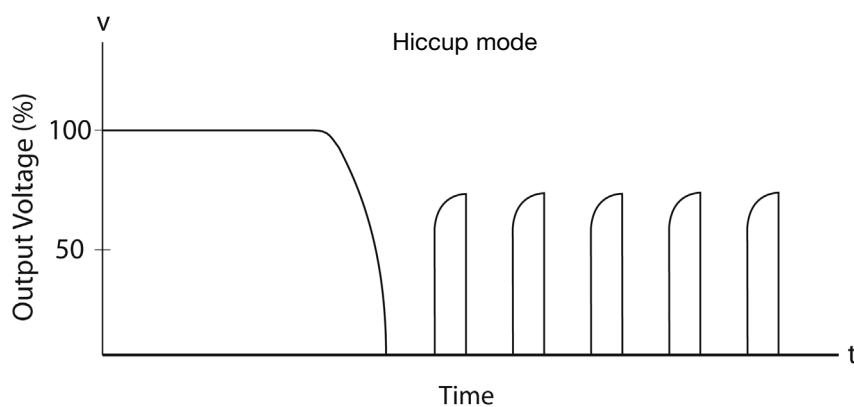
Typ. Efficiency Curve



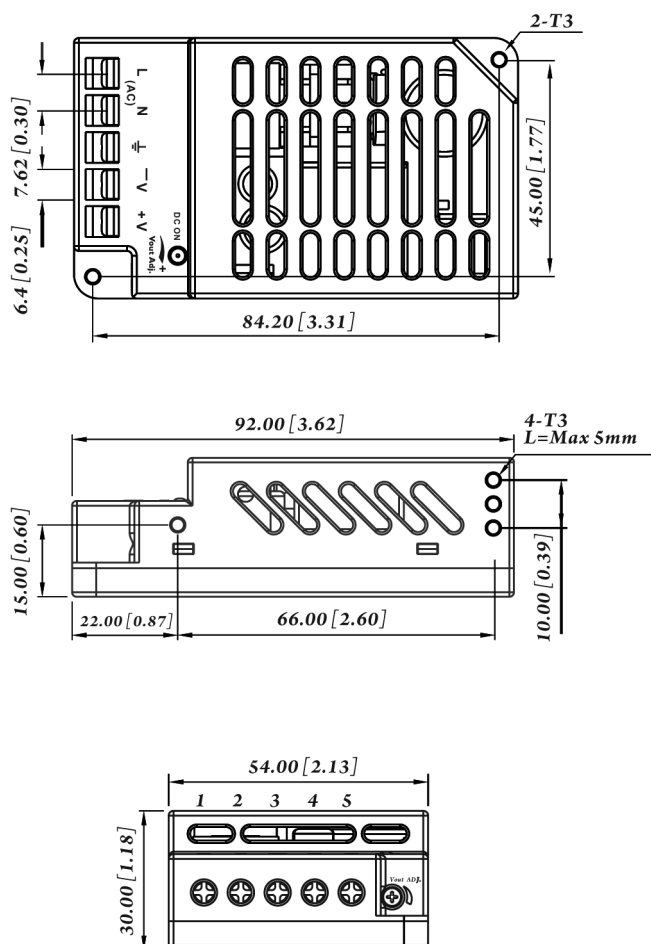
Derating Diagram



## 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 <sup>2</sup> ) 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)