Switching Power Supply
Type SPP1 20W
Enclosed type

- **Universal AC input full range**
- **Short circuit protection**
- **Internal input filter**
- **High efficiency**
- **High everage 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 20V for industrial control and automation applications.
Most carry fullcertifications 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

UL60950-1

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%
Load regulation	±1%
Minimum load	0%
Turn on time (full resistive load)	
Vi nom, Io nom	1000ms
Vi nom, Io nom with **3500**µF	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 (I_0**nom, Vi nom**)	150ms
Voltage rise time	
Vi nom, Io nom (full resistive load)	150ms
Vi nom, Io nom with **3500**µF CAP	500ms

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
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
Reverse voltage	
5V Model	7.5VDC
12V Model	18VDC
15V Model	22VDC
24V Model	35VDC
Capacitor load	3500µF

Input Data

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Rated input voltage Inom	100 - 240VAC
Voltage range	
AC IN	88 - 264VAC
DC IN	120 - 375VDC
Rated input current	
Vi: 115/230 VAC Io nom	390mA / 250 mA
Vi: 88 VAC Io nom	250mA
Inrush current	
Vi= 115VAC	20A
Vi= 230VAC	40A

Power dissipation		
(Vi : 230VAC, Io nom)	**5V Model**	4.5W
	12V Model	4W
	15V Model	4W
	24V Model	4W
Frequency range		47- 63Hz
Leakage current		
	Input-Output	0.25mA
	Input-FG	3.5mA

Controls and Protections

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Overload	120 – 160%
Input fuse	T2A/250VAC internal[1)]
Output short circuit	Hiccup mode

[1)] Fuse not replaceable by user

	VDC	
Over voltage protection	**Min.**	**Max.**
5V Model	5.75	6.75
12V Model	13.8	16.2
15V Model	17.25	20.25
24V Model	28.8	32.4

General Data

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

Ambient temperature	-40°C to +71°C
Derating (>60°C to +71°C)	2.5%/°C (see curve)
Relative humidity	20 ~ 95%RH
Storage	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
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

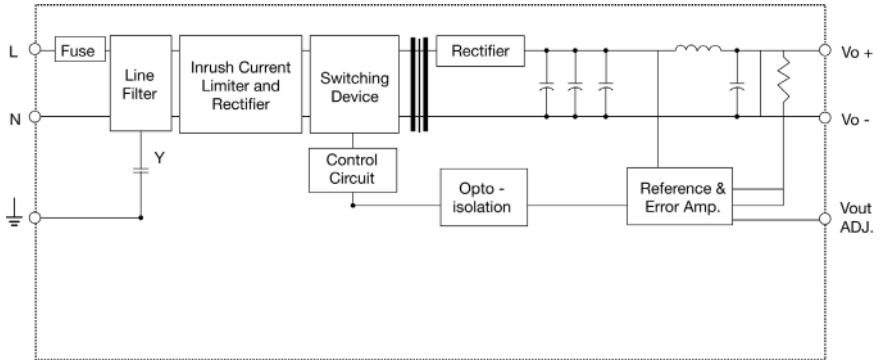
MTBF (Bellcore issue 6 @ 40°C, GB)	
5V Model	729000 Hours
12V Model	740000 Hours
15V Model	746000 Hours
24V Model	772000 Hours
Case material	Plastic: PC, UL94-V0
Altitude IEC 60068-2-13	4850m
Stand-by power comsumption	0.3W
Dimensions LxWxD mm(inch)	92(3.62)x54(2.13)x30(1.18)
Weight	140g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
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

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

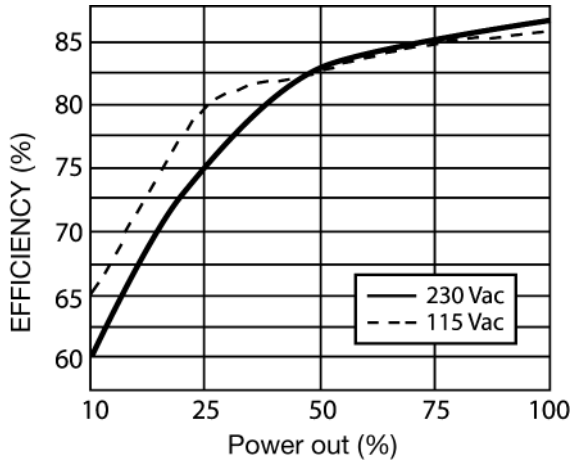
Block Diagrams



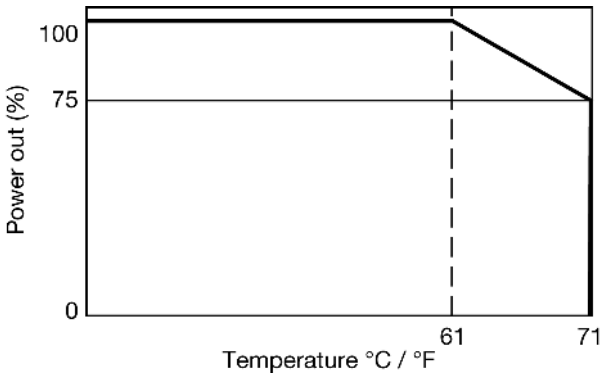
Pin Assignement and Front Controls

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

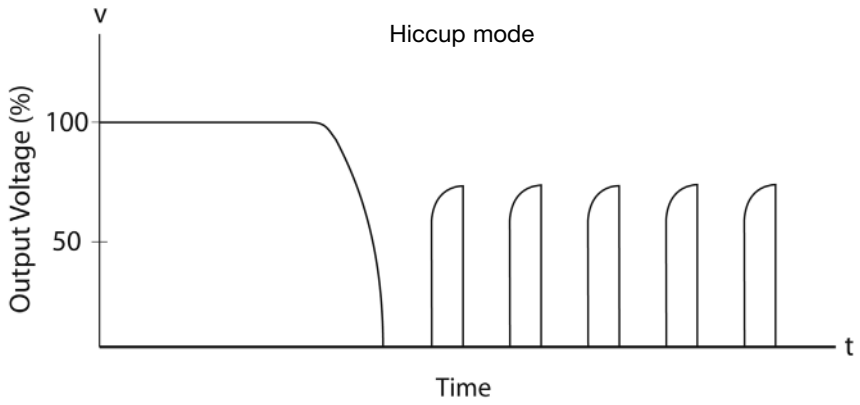
Typ. Efficency Curve



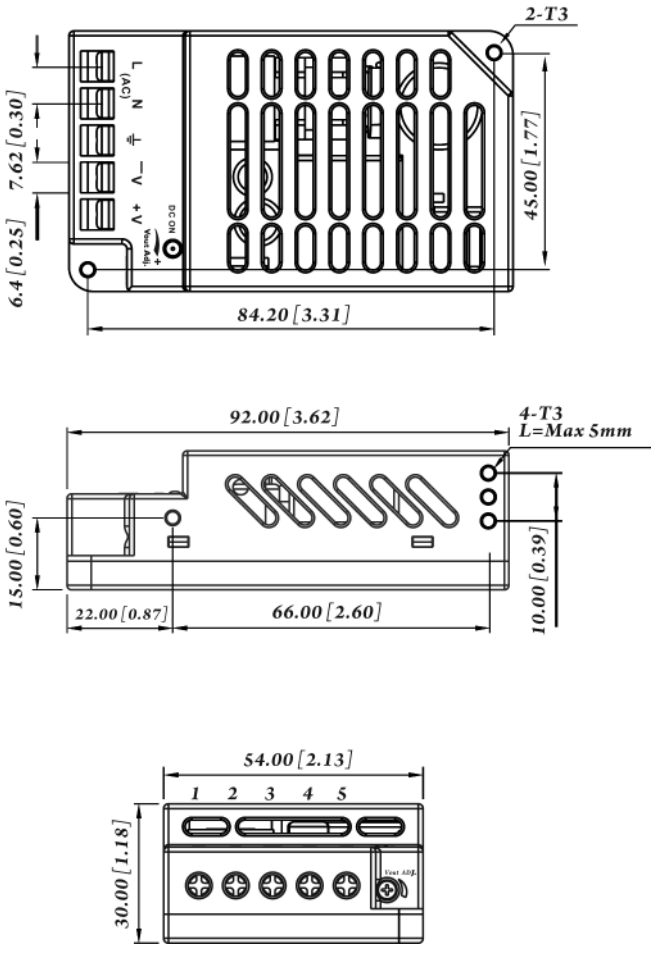
Derating Diagram



Typ. Current Limited Curve



Mechanical Drawings mm (inches)



Installation

Ventilation and cooling	Ventilation/Cooling Normal convection
Connector size range **Spring terminal**	AWG22-12 (0.2~2.5mm²) 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)** **30.00 (1.18) ÷ 120.00 (4.72)**	 ±0.30 (0.01) ±0.50 (0.02)