

Modular Switching Power Supply

Type SPM 4

DIN rail mounting

CARLO GAVAZZI



- Single DIN module
- Universal input 90/264VAC – 120/370VDC
- High efficiency up to 86%
- Short circuit protection
- Overload protection
- Internal input filter
- LOW voltage LED indicator
- UL Class 2 Output

Product Description

SPM Modular switching power supplies are specifically designed in order to satisfy both the Automation and the Building automation application requirements. The four DIN modules PS is capable of up to 60W of output power. Its high efficiency prevents excess of heat in the installation place.

Ordering Key

SPM 4 - 24 1

Series _____
 Number of DIN modules _____
 Output Voltage _____
 Phases (only single phase) _____

Approvals



* only 12, 15, 24VDC

Output Performances

Model	Input Voltage VAC	Output Power (W)	Output Voltage VDC	Current (A)	Typical Efficiency
SPM4-051	90~264	35	5	7.0	80%
SPM4-121	90~264	54	12	4.5	84%
SPM4-151	90~264	60	15	4.0	85%
SPM4-241	90~264	60	24	2.5	86%

Output Data

Line regulation	±1% max.		Voltage rise time	150ms
Load regulation	±1%		Vi nom, Io nom	
Output Voltage accuracy	±1%		Vi nom, Io nom with 3500µF CAP	500ms
Ripple and Noise	50mV		Voltage fall time (I _{0nom} , Vi nom)	150ms
Temperature Coefficient	±0.03%/°C (±0.0112%/°F)		Capacitor Load	3500µF
Hold up time	Vi = 115VAC	5V and 16V: 10ms 15V and 24V: 12ms	Transient recovery time (50% load step changed)	2ms
	Vi = 230VAC	60ms	Turn on time (full resistive load)	1000ms 1500ms
DC ON indicator	Min.	Max.	Vi nom, Io nom	
5V model	3.5VDC	4.5VDC	Vi nom, Io nom with 3500µF	
12V model	9VDC	10.8VDC	Rated continuous loading	
15V model	11VDC	13.5VDC	5V model	7A @ 5VDC / 6.3A @ 5.5VDC
24V model	19.2VDC	21.6VDC	12V model	4.5A @ 12VDC / 3.8A @ 14VDC
DC LOW indicator	Min.	Max.	15V model	4A @ 15VDC / 3.6A @ 16.5VDC
5V model	3.5VDC	4.5VDC	24V model	2.5A @ 24VDC / 2.1A @ 28VDC
12V model	9VDC	10.8VDC	Minimum load	0%
15V model	11VDC	13.5VDC		
24V model	19.2VDC	21.6VDC		

Input Data

Voltage range AC in DC in	90 - 264 VAC 120 - 375 VDC	Power dissipation (Vi : 230VAC, Io nom)	5V Model 12V Model 15V Model 24V Model	8.8W 10.2W 10W 9.9W
Line frequency	47 - 63Hz	Leakage current Input-Output		<0.25mA
Inrush current Vi= 115VAC Vi= 230VAC	Typ: 25A Max: 30A Typ: 50A Max: 60A	Rated input voltage		100/240VAC
Rated input current Vi: 115/230 VAC, Io nom 5V Model Io nom 12; 15V, 24V Models	0.7 / 0.43A 1.1 / 0.6A			

¹⁾ Fuse not replaceable by user

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

Insulation voltage	3.000VAC	Case material	Plastic (PC-UL94-V0)
Insulation resistance	100MΩ	Weight	250g
Ambient temperature	-40°C to 71°C	Protection degree	IP20
Derating (>56°C to +71°C)	2.5% /°C	MTBF (Bellcore issue 6 @ 40°C, GB)	
Ambient humidity	20~95%RH	5V Model	595000 Hours
Storage temperature	-25°C to +85°C	12V Model	582000 Hours
Dimensions L x W x D mm	91 x 71 x 56.5	15V Model	582000 Hours
Dimensions L x W x D inches	3.58 x 2.8 x 2.22	24V Model	608000 Hours
		Cooling	Free air convection

Controls and Protections

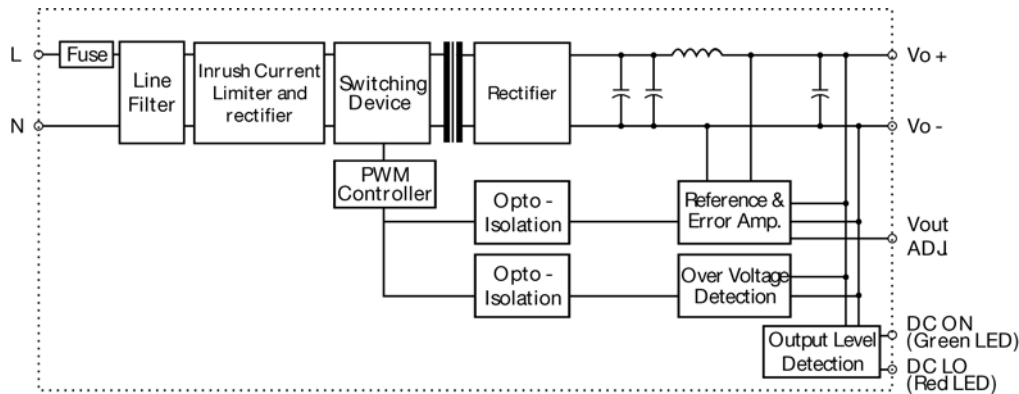
Input Fuse	T2A/250VAC internal ¹⁾	Over voltage protection	VDC	
Output Short Circuit	Fold forward		Min.	Max.
Rated Overload Protection	110-150%	5V Model	5.75	6.5
		12V Model	15	16.5
		15V Model	18	20
		24V Model	30	33

Approvals

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)	CE	EN61000-6-3, EN55022 class B, EN61000-3-2, EN61000-3-3, EN61000-6-2, EN55024, EN61000-4-2 Level 4, EN61000-4-3 Level 3, EN61000-4-4 Level 4, EN61000-4-5 L-N Level 3, EN61000-4-6 Level 3, EN61000-4-8 Level 4, EN61000-4-1, ENV 50204 Level 2, EN 61204-3
Shock resistance	meet IEC 60068-2-27 (15G, 11 ms, 3 Axis, 6 Faces, 3 times for each Face)		
UL / cUL	UL508 listed, UL1310 Class 2 power supply (only 5V w/o Class 2) Recognized, ISA 12.12.01 (Class1. Division2, Groups A, B, C and D) UL60950-1 Recognized		
TUV	EN60950-1, CB scheme		



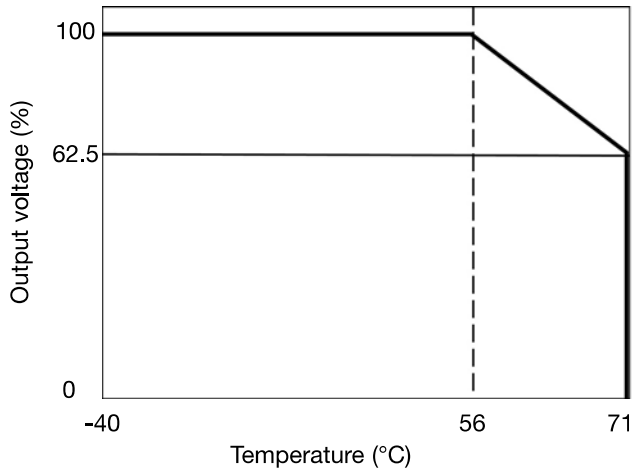
Block Diagrams



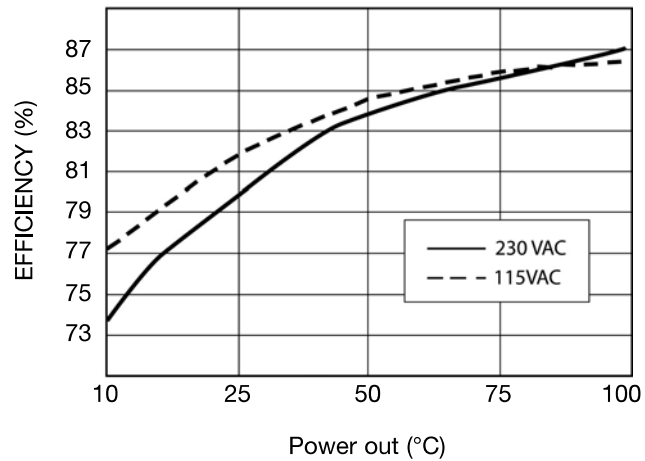
Pin Assignment and Front Controls

Pin No.	Designation	Description
1	-	Negative output terminal
2	-	Negative output terminal
3	+	Positive output terminal
4	+	Positive output terminal
5	L	Input terminals (phase conductor, no polarity at DC input)
6	N	Input terminals (neutral conductor, no polarity at DC input)
	Vout ADJ	Trimmer-potentiometer for Vout adjustment
	DC ON	Operation indicator LED
	DC LO	DC Low indicator LED

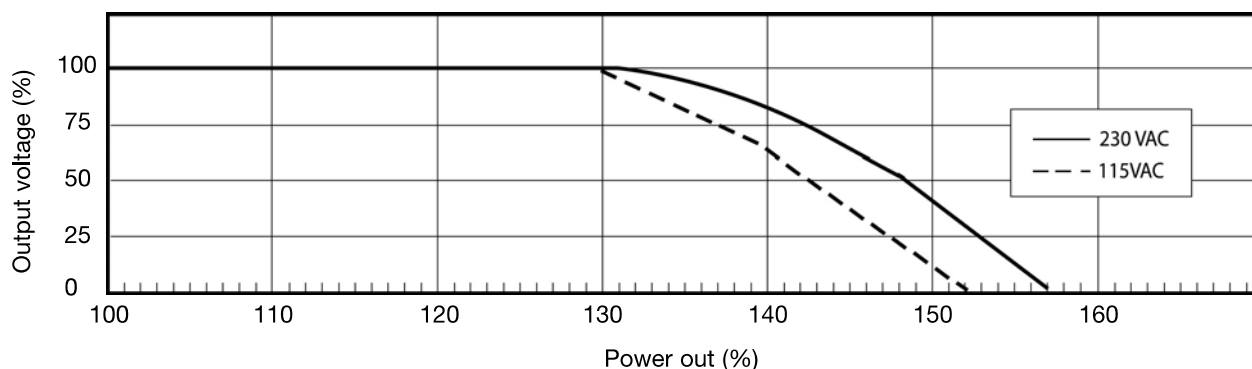
Derating Diagram



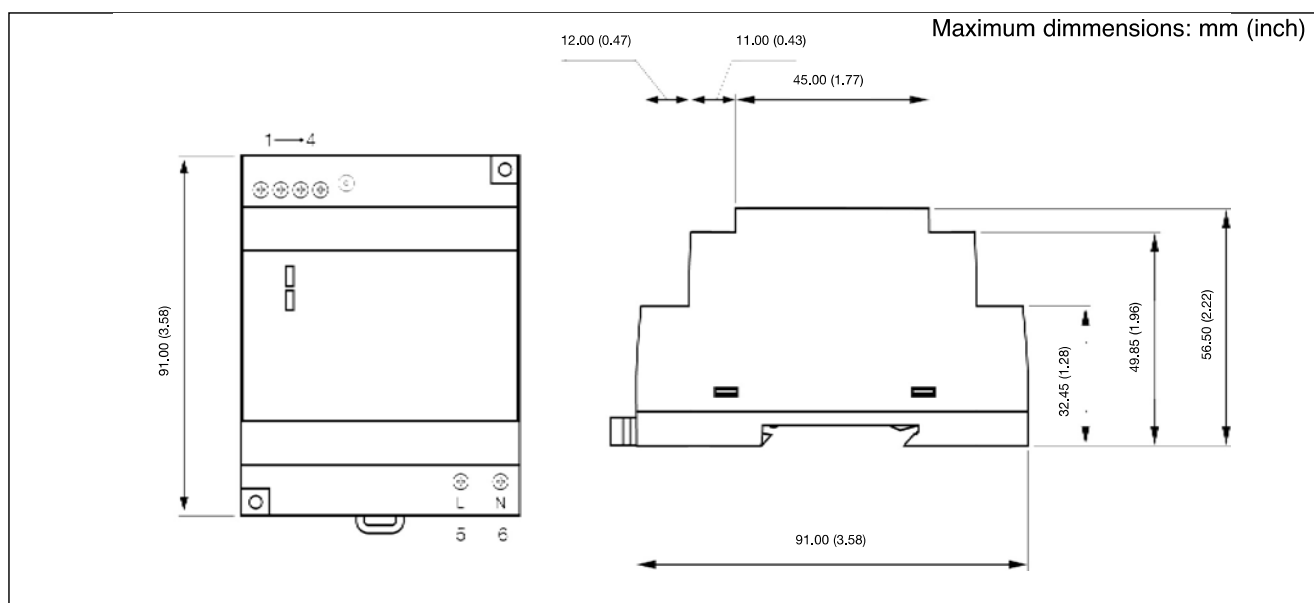
Typ. Efficiency Curve



Typ. Current Limited Curve



Mechanical Drawings



Construction

Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safely and firmly on the rail; no tools required even to remove.

Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling recommended
Screw terminals	24-12AWG flexible or solid cable (user copper conductors only)
Max. torque for terminals	
Input terminals	0.67Nm (6.0lb-in)
Output terminals	0.67Nm (6.0lb-in)