

Modular Switching Power Supply

Type SPM 5

DIN rail mounting

CARLO GAVAZZI



- Single DIN module
- Universal input 90/264VAC – 120/370VDC
- High efficiency up to 89%
- Short circuit protection
- Overload protection
- Internal input filter
- LOW voltage LED indicator
- UL Class 2 Output (only 91W version)

Product Description

SPM Modular switching power supplies are specifically designed in order to satisfy both the Automation and the Building automation application requirements. The five DIN modules PS is capable of up to 10W of output power. Its high efficiency prevents excess of heat in the installation place.

Ordering Key

SPM 5 - 24 1

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

Approvals



* only SPM5-241S

Output Performances

Model	Input Voltage VAC	Output Power (W)	Output Voltage VDC	Current (A)	Typical Efficiency
SPM5-051	90~264	60	5	12.0	80%
SPM5-121	90~264	72	12	6.0	86%
SPM5-151	90~264	75	15	5.0	86%
SPM5-241	90~264	100.8	24	4.2	89%
SPM5-241S	90~264	91.2	24	3.8	89%

Output Data

Line regulation	±1% max.	
Load regulation	±1%	
Output Voltage accuracy	±1%	
Ripple and Noise	50mV	
Temperature Coefficient	±0.03%/°C	
Hold up time $V_i = 115VAC$	5V & 12V: 16ms 15V & 24V: 10ms	
$V_i = 230VAC$	60ms	
Minimum load	0%	
Voltage trim range	Min.	Max.
5V Model	5VDC	5.5VDC
12V Model	12VDC	14VDC
15V Model	13.5VDC	16.5VDC
24V & 24V S	24VDC	28VDC
Transient recovery time (50% load step changed)	2ms	
Voltage fall time ($I_{O\text{nom}}$, V_i nom)	150ms	
Capacitor load	3500μF	

DC ON indicator	Min.	Max.
5V Model	3.5VDC	4.5VDC
12V Model	9VDC	10.8VDC
15V Model	11VDC	13.5VDC
24V & 24V S	19.2VDC	21.6VDC
DC LOW indicator	Min.	Max.
5V Model	3.5VDC	4.5VDC
12V Model	9VDC	10.8VDC
15V Model	11VDC	13.5VDC
24V & 24V S	19.2VDC	21.6VDC
Turn on time (full resistive load)		
V_i nom, I_o nom	1000ms	
V_i nom, I_o nom with 3500μF	1500ms	
Voltage rise time		
V_i nom, I_o nom	150ms	
V_i nom, I_o nom with 3500μF CAP	500ms	
Rated continuous loading		
5V Model	12A @ 5VDC / 10.5A @ 5.5VDC	
12V Model	6A @ 12VDC / 5.1A @ 14VDC	
15V Model	4.2A @ 24VDC / 3.6A @ 28VDC	
24V Model	3.8A @ 24VDC / 3.7A @ 24.2VDC	

Input Data

Rated input voltage	100/240VAC	Input current Vi: 115/230VAC, 5V Model	1.15 / 0.62A
Voltage range AC in DC in	90 - 264 VAC 120 - 375 VDC	Io nom 12V, 15V Models 24V Model	1.35 / 0.72A 1.8 / 0.9A
Line frequency	47 - 63Hz	Power dissipation Vi: 230VAC, Io nom	
Inrush current Vi= 115VAC Vi= 230VAC	Typ: 25A Max: 30A Typ: 40A Max: 60A	5V Model 12V Model 15V Model 24V Model	15.6W 12.9W 12.5W 12.2W
Leakage current input-output	0.25 mA		

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	380g
Ambient temperature	-40°C to 71°C	Protection degree	IP20
Derating (>61°C to +71°C)²⁾	2.5%/°C	MTBF (Bellcore issue 6 @ 40°C, GB)	
Ambient humidity	20~95%RH	5V Model	566000 Hours
Storage temperature	-40°C to +85°C	12V Model	556000 Hours
Dimensions L x W x D mm	91 x 90 x 57	15V Model	564000 Hours
L x W x D inches	3.58 x 3.54 x 2.24	24V Model	525000 Hours
Cooling	Free air convection	24LS Model	527000 Hours

²⁾ SPM5-051 derating starts from 56°C (132.8°F)

Controls and Protections

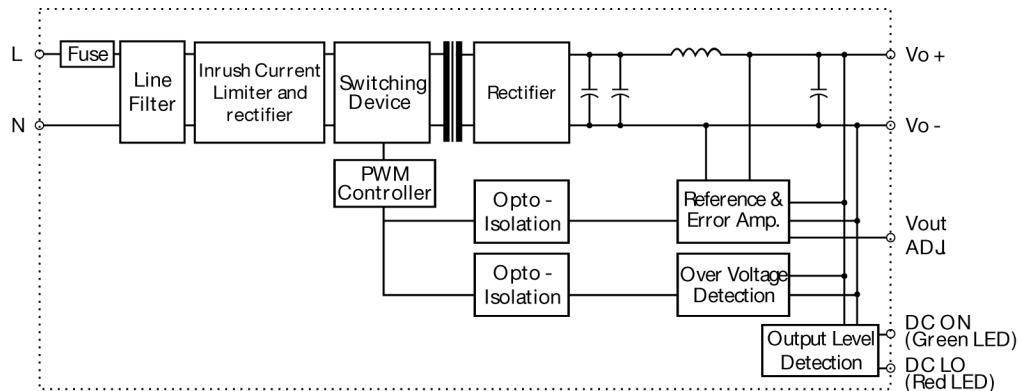
Input Fuse	T3.15A/250VAC internal ¹⁾	Over voltage protection	VDC
Output Short Circuit	Fold forward		Min. Max.
Rated Overload Protection 5V, 12V, 15V & 24V 24V S	110-150% 102-108%	5V Model 12V Model 15V Model 24V Model 24LS Model	5.75 15 18 30 24.5
			6.5 16.5 20 33 25.5

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, EN61000-4-11, 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, UL 60950-1, UL1310 Class 2 Power (24LS model only) Recognized, ISA 12.12.01 (Class1. Division2, Groups A, B, C and D)		
TUV	EN60950-1, CB scheme		



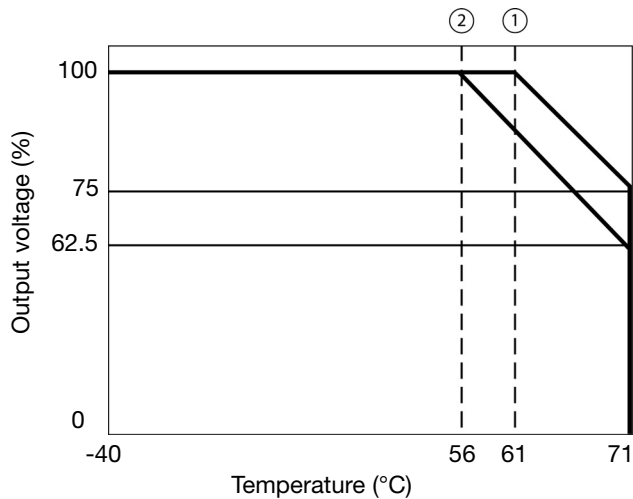
Block diagrams



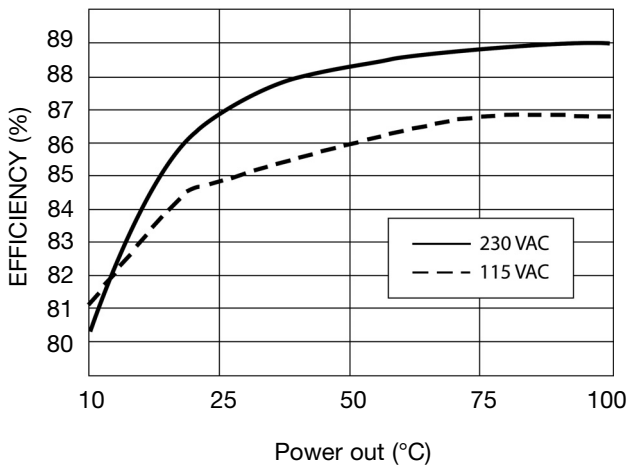
Pin Assignment and Front Controls

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

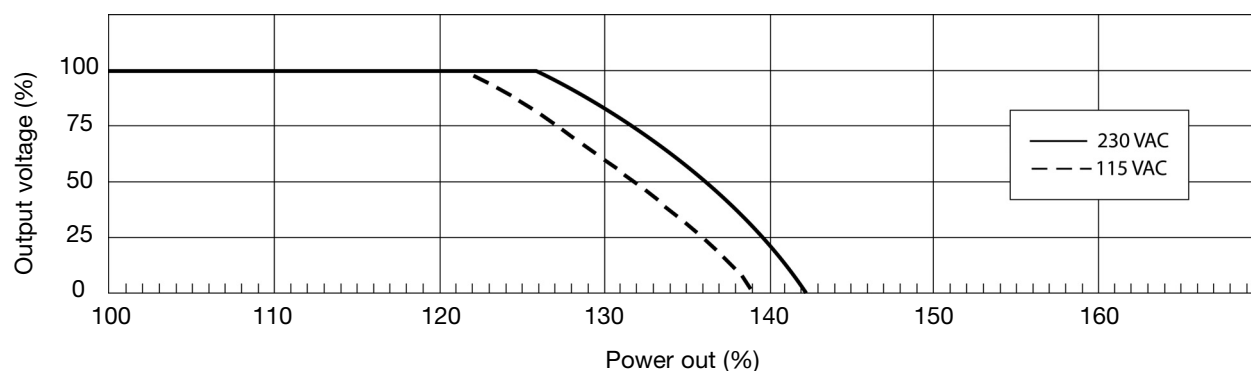
Derating Diagram



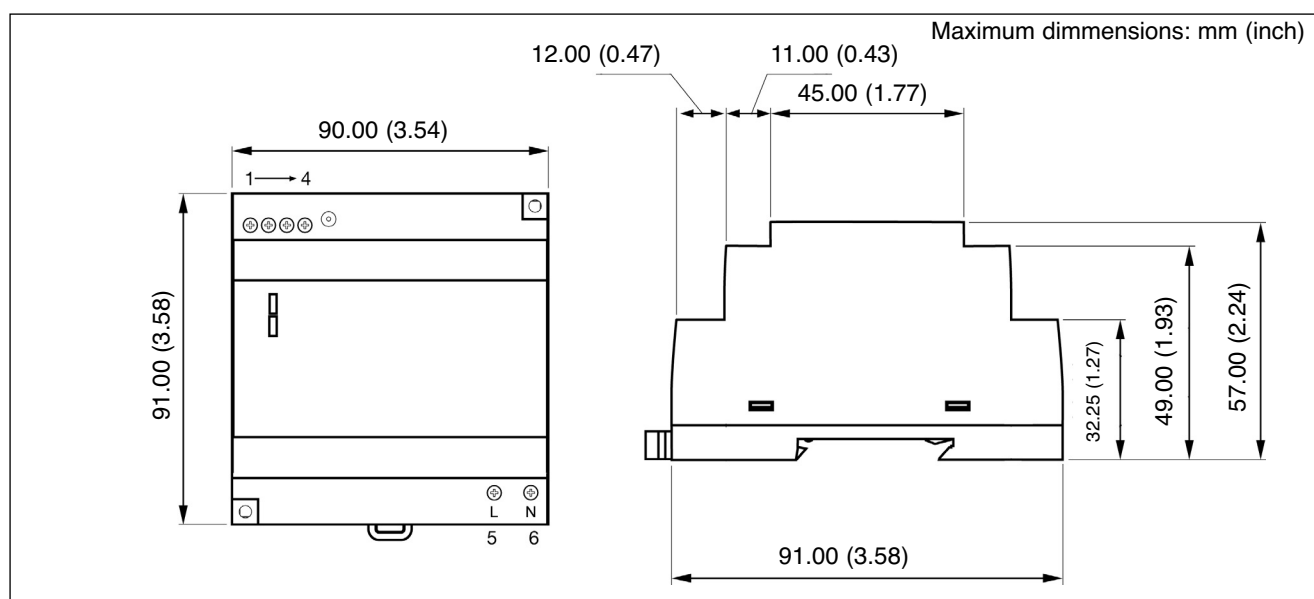
Typ. Efficiency Curve



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 is recommended

Screw terminals

24-14AWG flexible or solid cable (user copper conductors only)

Max. torque for terminals

Input terminals
Output terminals

0.67Nm (6.0lb-in)
0.67Nm (6.0lb-in)