

# Modular Switching Power Supply Type SPM 1 DIN rail mounting

CARLO GAVAZZI



- Single DIN module
- Universal input 90/264VAC – 120/370VDC
- High efficiency up to 80%
- 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 single DIN module PS is capable of up to 10W of output power. Its high efficiency prevents excess of heat in the installation place.

## Ordering Key

**SPM 1 - 24 1**

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

## Approvals



## Output Performances

Model	Input Voltage VAC	Output Power (W)	Output Voltage VDC	Current (A)	Typical Efficiency
SPM1-051	90~264	7.5	5	1.50	74%
SPM1-121	90~264	10	12	0.83	78%
SPM1-151	90~264	10	15	0.67	78%
SPM1-241	90~264	10	24	0.42	80%

## Output Data

Line regulation	±1% max.		DC LOW indicator	Min.	Max.
Load regulation	±1%		5V	3.5VDC	4.5VDC
Output Voltage accuracy	±1%		12V	9VDC	10.8VDC
Ripple and Noise	50mV		15V	11VDC	13.5VDC
Temperature Coefficient	±0.03%/°C (±0.0112%/°F)		24V	19.2VDC	21.6VDC
Hold up time	Vi = 115VAC	5V and 12V: 10ms 15V and 24V: 60ms	Voltage rise time	150ms	
	Vi = 230VAC	30ms	Vi nom, Io nom	500ms	
Minimum load	0%		Vi nom, Io nom with 3500µF CAP	150ms	
DC ON indicator	Min.	Max.	Voltage fall time (I <sub>o</sub> nom, Vi nom)	3500µF	
5V	3.5VDC	4.5VDC	Capacitor Load	3500µF	
12V	9VDC	10.8VDC	Transient recovery time	2ms	
15V	11VDC	13.5VDC	(50% load step changed)		
24V	19.2VDC	21.6VDC	Turn on time (full resistive load)	1000ms	
			Vi nom, Io nom	1500ms	
			Vi nom, Io nom with 3500µF		

## Input Data

<b>Voltage range</b> AC in DC in	90 - 264 VAC 120 - 375 VDC	<b>Power dissipation</b> (Vi : 230VAC, Io nom)	<b>5V Model</b>	2.3W
<b>Line frequency</b>	47 - 63Hz		<b>12V Model</b>	2.3W
<b>Inrush current</b> Vi= 115VAC Vi= 230VAC	Typ: 10A Max: 15A Typ: 20A Max: 30A		<b>15V Model</b>	2.3W
<b>Rated input current</b> Vi: 115/230 VAC, Io nom Vi: 90 VAC Io nom	200mA / 135 mA 300mA		<b>24V Model</b>	2.3W
		<b>Leakage current</b>		
		<b>Input-Output</b>		<0.25mA
		<b>Rated input voltage</b>		100/240VAC

## Controls and Protections

<b>Input Fuse</b>	T1A/250VAC internal*	<b>Over voltage protection</b>	<b>VDC</b>	
<b>Output Short Circuit</b>	Fold forward		<b>Min.</b>	<b>Max.</b>
<b>Rated Overload Protection</b>	110-165%		<b>5V Model</b>	5.75
		<b>12V Model</b>	15	16.5
		<b>15V Model</b>	18	20
		<b>24V Model</b>	30	33

\* Fuse not replaceable by user

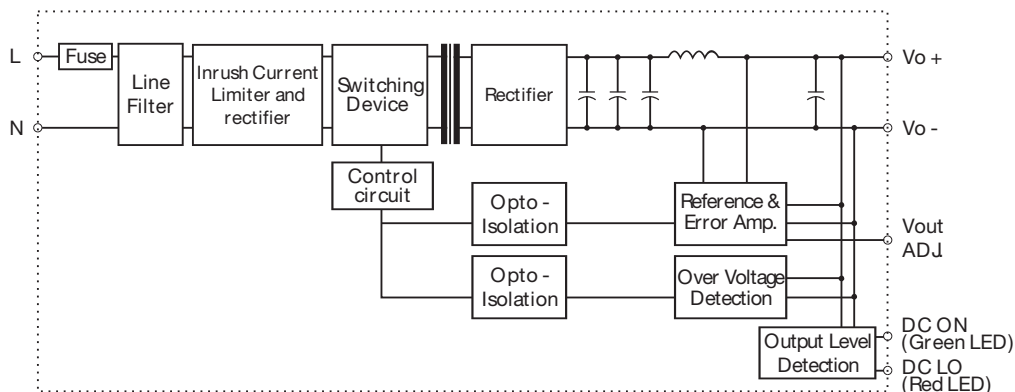
## General Data (@ nominal line, full load, 25°C )

<b>Insulation voltage</b>	3.000/VAC	<b>Case material</b>	Plastic (PC-UL94-V0)
<b>Insulation resistance</b>	100MΩ	<b>Weight</b>	65g
<b>Ambient temperature</b>	-40°C to +71°C	<b>Protection degree</b>	IP20
<b>Derating (&gt;61°C to +71°C)</b>	2.5%/°C (1.4%/°F)	<b>Altitude IEC 60068-2-13</b>	4850m
<b>Ambient humidity</b>	20-95%RH	<b>MTBF</b> (Bellcore issue 6 @ 40°C, GB)	
<b>Storage temperature</b>	-40°C to +85°C	<b>5V Model</b>	970000 Hours
<b>Dimensions L x W x D mm</b>	91 x 18 x 56.5	<b>12V Model</b>	884000 Hours
<b>L x W x D inches</b>	3.582 x 0.709 x 2.22	<b>15V Model</b>	948000 Hours
<b>Cooling</b>	Free air convection	<b>24V Model</b>	868000 Hours

## Norms and Standards

<b>Vibration resistance</b>	meet IEC 60068-2-6 (Mounting by rail: 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)	<b>CE</b>	EN61000-6-3, EN55022 class B, EN61000-3-2, EN61000-3-3, EN61000-6-2, EN55024, EN61000-4-2 Level 3, EN61000-4-3 Level3, 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 Level2, 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>	file: E258355 file: E258395 file: E258396		
<b>TUV</b>	UL508 listed, UL1310 Class 2 power supply, UL60950-1 Recognized ISA 12.12.01 (Class1, Division2, GroupsA, B, C and D)		
	EN60950-1 CB scheme		

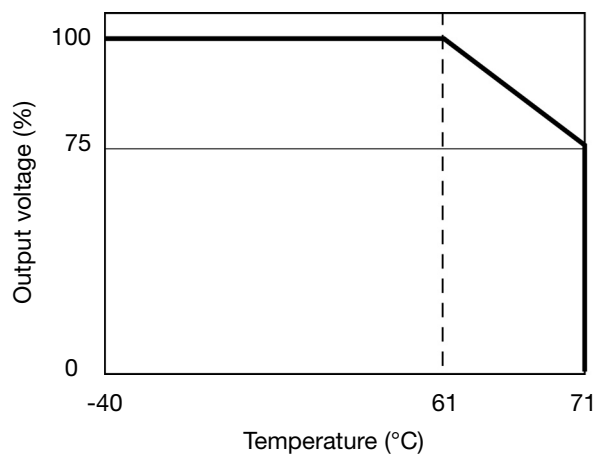
## Block Diagrams



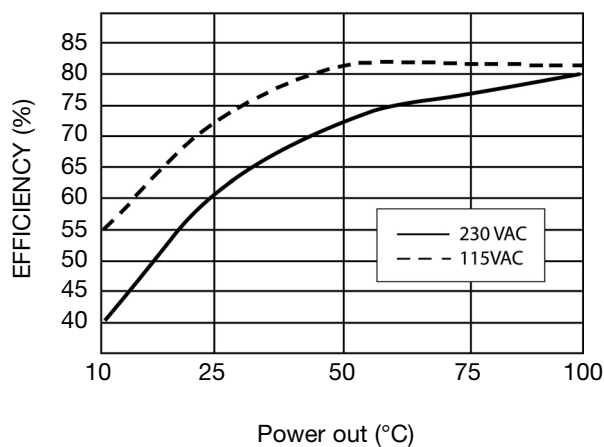
## Pin Assignment and Front Controls

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

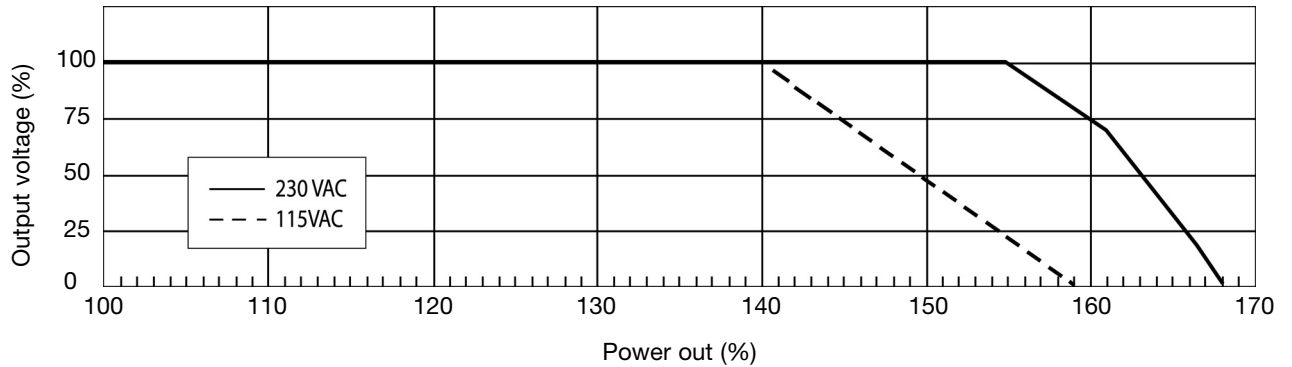
## Derating Diagram



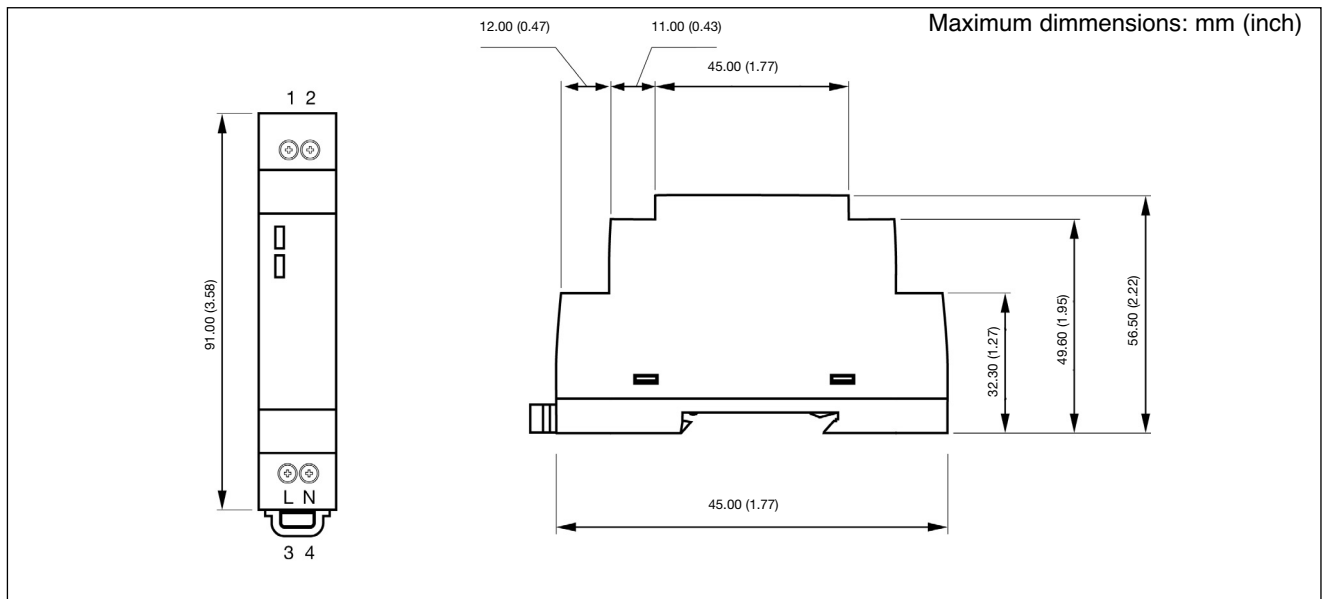
## Typ. Efficiency Curve



## Typ. Current Limited Curve



## Mechanical Drawings (mm)



## 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

<b>Ventilation and cooling</b>	Normal convection All sides 25mm free space for cooling is recommended
<b>Screw terminals</b>	26-12AWG flexible or solid cable (user copper conductors only)
<b>Max. torque for terminals</b>	
Input terminals	0.56Nm (5.0lb-in)
Output terminals	0.56Nm (5.0lb-in)