



**CARATTERISTICHE ELETTRICHE E  
MECCANICHE**  
*Electrical & Mechanical Specifications*

CODICE – CODE:  
**CE0336**

FOGLIO - SHEET:  
**1 of 10**

DOC: CE0336\_Ed2A

DATE: 2010-11-11

  
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QUALITY DEPARTMENT

# PSM 1 12 12

DIN-Rail Switching Mode Power Supply 12Vdc 1A FULL RANGE

\*\*\* *All technical specifications are subjected to change without notice* \*\*\*

**COMATEC snc**  
Via Aldo Manna, 98/M  
06132 S. Andrea delle Fratte  
Perugia – ITALY

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Scritto – Written: **Ing. Fabio Batocchi**

Approvato – Approved: **Ing. Fabio Batocchi**

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**CARATTERISTICHE D'INGRESSO** *Input Requirements*

Tamb=25°C; fin=50Hz, se non specificato altrimenti		Tamb=25°C; fin=50Hz, unless otherwise specified				
N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	MIN	TYP	MAX	UNITA' <i>Unit</i>
1	Input Voltage Range		100		240	Vrms
2	Input Frequency Range		48		63	Hz
3	Input Current	Vin=100Vrms - 60Hz; Iout=1Adc (full load) Vin=240Vrms - 50Hz; full load Vin=100Vrms - 60Hz; NO load Vin=240Vrms - 50Hz; NO load		0.275 0.165 0.006 0.006		Arms Arms Arms Arms
4	Inrush Current	Vin=265Vrms; full load		3.0		Apk
5	Power Factor	Vin=100-240Vrms; full load	0.45		0.60	
6	Efficiency	Vin=115Vrms - 60Hz; Iout=250mA Vin=115Vrms - 60Hz; Iout=500mA Vin=115Vrms - 60Hz; Iout=750mA Vin=115Vrms - 60Hz; Iout=1000mA Vin=230Vrms - 50Hz; Iout=250mA Vin=230Vrms - 50Hz; Iout=500mA Vin=230Vrms - 50Hz; Iout=750mA Vin=230Vrms - 60Hz; Iout=1000mA		78.0 77.9 77.8 76.7 72.4 76.9 77.1 76.3		% % % % % % % %
7	Input Power	Vin=115Vrms - 60Hz; NO load Vin=230Vrms - 50Hz; NO load		0.150 0.220		W W

*Note 1: The range of source voltage for which the power supply is guaranteed to meet its specifications.*

*Note 2: The range of source frequency for which the power supply is guaranteed to meet its specifications.*

*Note 3: The maximum value of the steady state AC input current, measured for any combination of rated AC voltage and environment and for any combination of rated continuous output loading (up to a maximum of Watts).*

*Note 4: The high surge of input current that occurs upon initial turn-on, after an OFF period of at least 10 seconds.*

*Note 5: The ratio of actual power used in a circuit to apparent power, for any combination of AC input voltage. Power factor is the measure of the fraction of current in phase with the voltage and contributing to average power.*

*Note 6: The ratio of output power to input power, measured for various loads and for any combination of the rated AC input voltage.*

*Note 7: The maximum value of input power, measured for various loads and for any combination of the rated AC input voltage.*

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**CARATTERISTICHE D'USCITA** *Output Requirements*

Tamb=25°C; fin=50Hz, se non specificato altrimenti		Tamb=25°C; fin=50Hz, unless otherwise specified				
N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	MIN	TYP	MAX	UNITA' <i>Unit</i>
1	Output Voltage	Vin = 100-240Vrms; full load	12.0 +/- 3%			Vdc
2	Output Current	Vin = 100-240Vrms	0		1.0	Adc
3	Rated Output Power	Vin = 100-240Vrms		12		W
4	Line Regulation			+/- 0.01		%
5	Load Regulation			+/- 0.20		%
6	Output Ripple (switching component) (line component)	Vin = 240Vrms - 50Hz; full load Vin = 100Vrms - 60Hz; full load		90 120		mVpp mVpp
7	PARD	Vin = 240Vrms; full load		90		mVpp
8	Set-up Time					
9	Hold-up Time					
10	Rise Time					
11	Fall Time					
12	Repetitive Dynamic Load	Vin = 100 Vrms - 60Hz Vin = 240 Vrms - 50Hz	340 260		370 430	mVpp mVpp

*Note 1: The DC voltage measured at the output terminal blocks, for any combination of rated AC voltage, environment and AC input frequency.*

*Note 2: Output current limits within that the power supply is in regulation. At the start-up, the output current can go over the maximum limit for a period of time below 60 seconds.*

*Note 3: The maximum steady-state power which the equipment is guaranteed to be able to deliver, while continuing to meet its other specifications.*

*Note 4: Amount of change in the DC output voltage (expressed in percentage of output voltage) as the input voltage is varied over its specified range. The parameter is usually measured at half load.*

*Note 5: Amount of change in the DC output voltage (expressed in percentage of output voltage) as the output load is varied over its specified range. The parameter is usually measured at rated input voltage*

*Note 6: Unwanted portion of output voltage harmonically related in frequency to the input line and to any internally generated switching frequency. Ripple is measured with a 100nF ceramic capacitor in parallel with a 47uF electrolytic capacitor connected between the measured voltage and its return. Usually, it is used a differential measure system with 20MHz bandwidth.*

*Note 7: Measures all disturbances (superimposed to output voltage), including the spikes, high frequency voltage peaks caused, among others, by steep switching slopes. PARD is measured with a 100nF ceramic capacitor in parallel with a 47uF electrolytic capacitor connected between the measured voltage and its return. Usually, it is used a differential measure system with 20MHz bandwidth.*

*Note 8: Time duration from power supply turn-on until its output voltage goes up into a regulated limit ( $V_{out} = V_{nom} - 3\%$ ).*

*Note 9: Time duration from power supply turn-off until its output voltage goes down into an unregulated limit ( $V_{out} = V_{nom} - 3\%$ ).*

*Note 10: Time measured (during turn-on transition) between 10% and 90% of the rated output voltage.*

*Note 11: Time measured (during turn-off transition) between 90% and 10% of rated output voltage.*

*Note 12: Output voltage ripple (expressed in mVpp) measured when the output is dynamically loaded as follows: 0.25I<sub>max</sub> to 0.75I<sub>max</sub> to 0.25I<sub>max</sub> (slew rate = 3.2mV/us, duration = 100ms).*

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**CONDIZIONI AMBIENTALI** *Environment Conditions*

N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	MIN	TYP	MAX	UNITA' <i>Unit</i>
1	Operating Temperature Range	Vin=100-240Vrms; full load	-10		+50	°C
2	Storage Temperature Range		-40		+80	°C
3	Operating Humidity Range	Vin=100-240Vrms; full load	0		95	%
4	Storage Humidity Range		0		95	%
5	Cooling	Natural convection, no fan required				
6	Acoustic	The equipment doesn't produce audible noise				

*Note 1: Surrounding air near the power supply.*

**AFFIDABILITA', SICUREZZA E COMPATIBILITA' ELETTROMAGNETICA**

*Reliability, Safety and Electromagnetic Compatibility*

N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	VALUE	UNITA' <i>Unit</i>
1	Life of the equipment (*)	Vin=100-240Vrms; full load; Tamb = 30°C	100000	h
2	SAFETY Protection Index Withstand Voltage Insulation Resistance Leakage Current	Primary / Secondary (60 seconds) Primary / Secondary	EN60950-1 IP20 3000 > 4 < 250	Vrms Mohm uA
3	EMI	See test report referred to the model <i>00067/2009</i>	EN55022/B	
4	EMS		EN55024	
5	EMC		EN61000-3-2(3)	
6	ErP		Eco-design Directive	2009/125/EC (tier 1)

*Note 1: The Life is calculated supposing a percentage of failure below 10%.*

*Note 3: Conducted & Radiated Emissions Requirements.*

*Note 4: Immunity Characteristics.*

*Note 5: Electromagnetic Compatibility.*

*Note 6: European Eco-design Directive for Energy-related products*

**(\*) The life of equipment is based on the life of aluminium electrolytic capacitors, calculated by the following formula (law of 10°C, doubling). The life shall be a double of the calculation result. However, it shall be 1.5 times of the calculation result for capacitors with 10mm diameter or less.**

$$Ln = Lo * 2^{(T-Tn)/10}$$

where:

*Ln = estimated life hours at the ambient temperature of 30°C*

*Lo = life hours of maximum guaranteed temperature T*

*T = maximum guaranteed temperature of capacitor*

*Tn = the case temperature of capacitor (30°C converted)*

**MECCANISMI DI PROTEZIONE** *Protection Mechanisms*

Tamb=25°C; fin=50Hz, se non specificato altrimenti		Tamb=25°C; fin=50Hz, unless otherwise specified				
N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	MIN	TYP	MAX	UNITA' <i>Unit</i>
1	Input Under-Voltage	Full load			70	Vrms
2	Input Over-Current	By fuse		T 0.8		Arms
3	Input Inrush Current	See page 3				
4	Output Short-circuit	Vin = 100Vrms - 60Hz Vin = 240Vrms - 50Hz		1.40 1.35		A A
5	Output Current Limiting (Vth = 11.64Vdc)	Vin = 100Vrms - 60Hz Vin = 240Vrms - 50Hz		1.25 1.25		A A
6	Over-Current Protection	Vin = 100-240 Vrms	LEAN-FORWARD MODE (*)			
7	OV and open-loop	Vin = 100-240 Vrms; full load	BURST MODE			
8	Output Under-Voltage					
9	High Temperature		135	142	150	°C
10	Reset Time					

*Note 1: The device shall shutdown without latch-off if the input voltage goes down the specified limit. This value is measured at full load.*

*Note 2: The device has an internal over-current protection. A slow-blow, high breaking capacity fuse (not accessible) is placed in the line side of the input circuit.*

*Note 3: The device has an internal inrush current protection. A NTC resistor (not accessible) is placed in the line side of the input circuit.*

*Note 4: The device shall not be damaged when input power is applied with a short-circuit (about 0.01 ohm) from the output voltage to its return. During this condition the device produces a constant output current.*

*Note 5: Maximum steady-state output current obtainable from the regulated output (Vth = Vrated - 3% = 11.64Vdc).*

*Note 6: The device shall not be damaged when input power is applied with an output over-load. During this condition the device produces a "LEAN-FORWARD MODE" working.*

*Note 7: When the output voltage exceeds specified value the device shall shutdown without latch-off and goes in the burst mode operation. During burst mode the output voltage pulses with peak value of about 17V.*

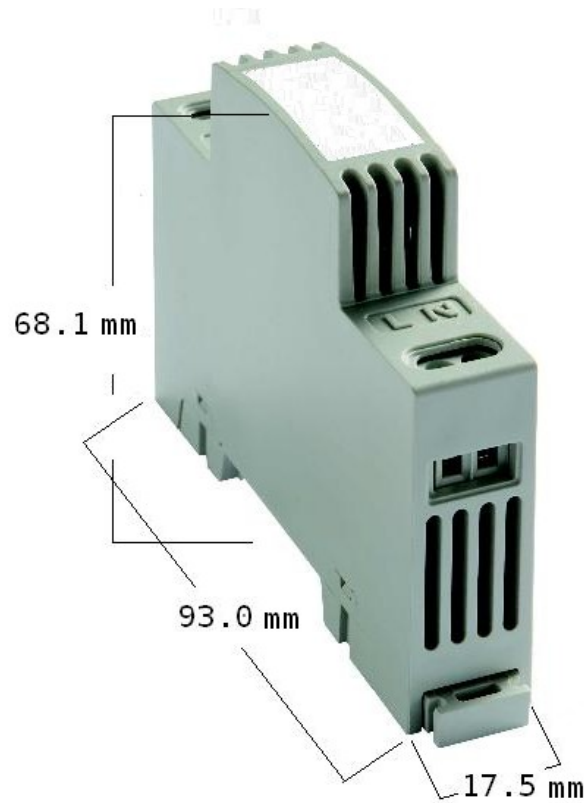
*Note 8: When the output voltage goes down specified value the device shall shutdown without latch-off the output.*

*Note 9: When the junction temperature reaches specified value the controller ic shall shutdown and protects other components from failure. The temperature protection is not-latching; after an over-temperature shutdown, the controller will restart as temperature drops.*

*Note 10: If the device latches-off due to a fault condition, it shall return to normal operation only after the fault has been removed and the supply is reset. Duration of the off-time necessary to reset the device must be at least as shown.*

**(\*) LEAN-FORWARD MODE**

*The equipment permits the current to be increased by a factor 1.4 of the maximum rated value, and slowly reduces the output voltage (up to the full short-circuit). The short-circuit current can be supplied indefinitely, without damage the power supply.*

**DIMENSIONI DELLA SCATOLA PLASTICA** *Plastic Case Dimensions*



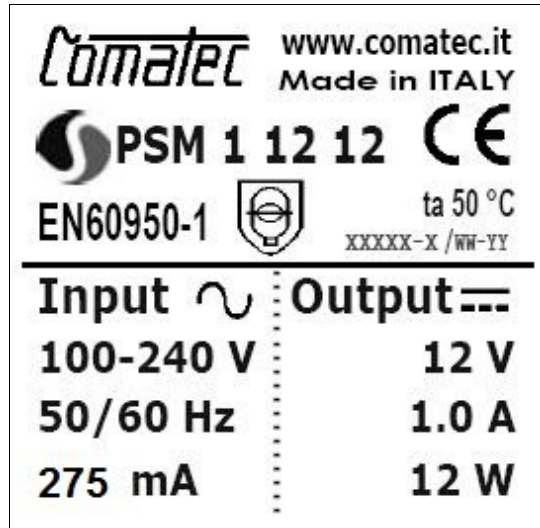
**MATERIALE PLASTICO** *Plastic Material*

<b>BAYER KU2 or equivalent (see datasheet for more details)</b>	
CARICO DI ROTTURA (50mm/min) – <i>Breaking Load</i>	50 MPa
ALLUNGAMENTO A ROTTURA (50mm/min) – <i>Extensibility</i>	>50 %
RESISTENZA ALL'URTO CON INTAGLIO (23°C) – <i>Impact Strenght with notch</i>	2 48 KJ/m
COSTANTE DIELETTRICA (100Hz ; 1 MHz) – <i>Dielectric Constant</i>	3.1 ; 3
RESISTENZA DI VOLUME SPECIFICA – <i>Specific Volume Resistance</i>	17 10 Ohm cm
RESISTENZA DI SUPERFICIE SPECIFICA – <i>Specific Surface Resistance</i>	17 10 Ohm
RIGIDITÀ DIELETTRICA - <i>Dielectric Strenght</i>	30 KV/mm
INFIAMMABILITÀ (1.5 mm) - <i>Flammability</i>	V-0
PROVA DEL FILO INCANDESCENTE – <i>Hot Wire Ignition Test</i>	960/2 °C/mm
TEMPERATURA DI RAMMOLLIMENTO (120K/h) – <i>Softening Temperature</i>	134 °C
RESISTENZA AL CALORE (PROVA DELLA BIGLIA) – <i>Heat Resisting (ball test)</i>	>= 125 °C
DENSITÀ – <i>Density</i>	3 1.19 g/cm
ASSORBIMENTO DI UMIDITÀ – <i>Humidity Absorption</i>	0.2 %

**ETICHETTE** *Labels*

MATERIALE - Material: 3M, polyester mod.7818

LABEL N.1



LABEL N.2

