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PSM 1 12 24

DIN-Rail Switching Mode Power Supply 24Vdc 500mA FULL RANGE

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

COMATEC snc
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2nd Edition



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

CODICE – CODE:
CE0337

FOGLIO - SHEET:
2 of 10

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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=500mA (full load) Vin=240Vrms - 50Hz; full load Vin=100Vrms - 60Hz; NO load Vin=240Vrms - 50Hz; NO load | | 0.265 0.150 0.008 0.008 | | 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=125mA Vin=115Vrms - 60Hz; Iout=250mA Vin=115Vrms - 60Hz; Iout=375mA Vin=115Vrms - 60Hz; Iout=500mA Vin=230Vrms - 50Hz; Iout=125mA Vin=230Vrms - 50Hz; Iout=250mA Vin=230Vrms - 50Hz; Iout=375mA Vin=230Vrms - 50Hz; Iout=500mA | | 79.4 80.4 80.8 79.8 71.8 80.4 80.8 80.4 | | % % % % % % % % |
| 7 | Input Power | Vin=115Vrms - 60Hz; NO load Vin=230Vrms - 50Hz; NO load | | 0.250 0.320 | | 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 input 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 | 24.0 +/- 3% | | | Vdc |
| 2 | Output Current | Vin = 230Vrms | 0 | | 0.500 | Adc |
| 3 | Rated Output Power | Vin = 230Vrms | | 12 | | W |
| 4 | Line Regulation | | | +/- 0.01 | | % |
| 5 | Load Regulation | | | +/- 0.05 | | % |
| 6 | Output Ripple (switching component) (line component) | Vin = 240Vrms - 50Hz; full load Vin = 100Vrms - 60Hz; full load | | 60 100 | | mVpp mVpp |
| 7 | PARD | Vin = 240Vrms - 50Hz; full load | | 60 | | 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 | 600 550 | | 640 590 | 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: 0.25Imax to 0.75Imax to 0.25Imax (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.

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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>00009/2010</i> | EN55022/B | |
| 4 | EMS | | EN55024 | |
| 5 | EMC | | EN61000-3-2(3) | |
| 6 | ErP | | Eco-design Directive | 2009/125/EC (tier1) |

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 | | <i>Tamb=25°C; fin=50Hz, unless otherwise specified</i> | | | | |
|--|---|--|--------------------------|------------|-----|-----------------------|
| 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 | | 760 760 | | mA mA |
| 5 | Output Current Limiting (Vth = 23.28Vdc) | Vin = 100Vrms – 60Hz Vin = 240Vrms – 50Hz | | 550 555 | | mA mA |
| 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% = 23.28Vdc).

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 30V.

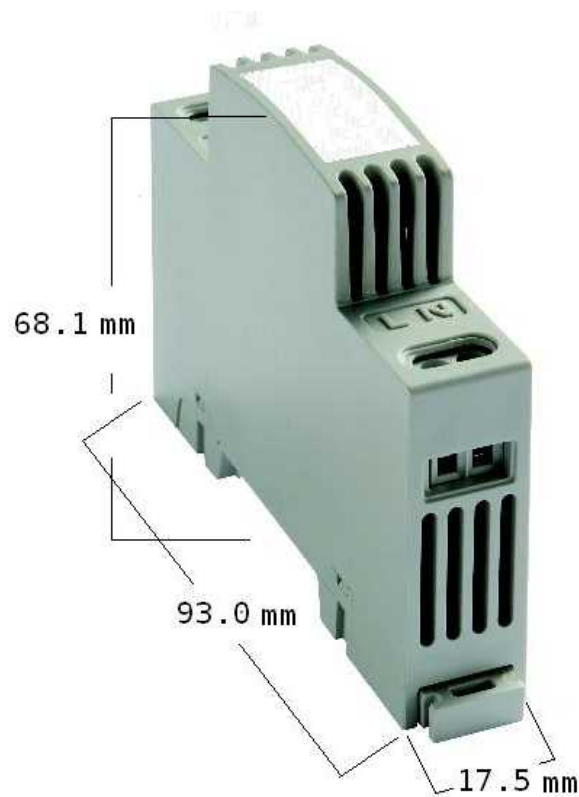
Note 8: When the output voltage goes down specified value the device shall shutdown without latch-off the output.

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 1.5 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*

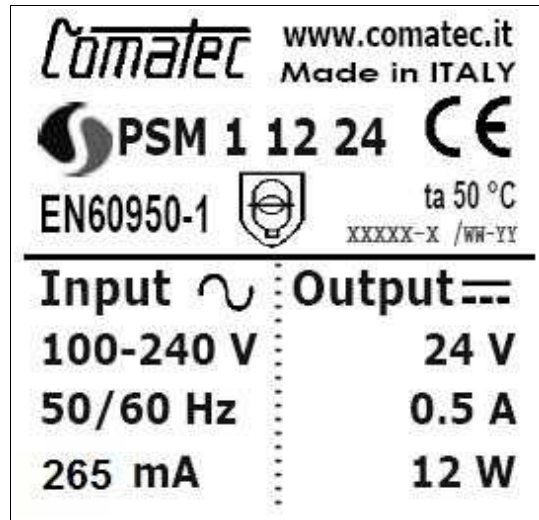
MATERIALE PLASTICO *Plastic Material*

| BAYER KU2 or equivalent (see datasheet for more details) | |
|---|-----------------|
| 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

