



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

CODICE - CODE:
CE0342

FOGLIO - SHEET:
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PSM 4 60 24

Alimentatore Switching per guida DIN 24V 2.5A
DIN-Rail Switching Mode Power Supply 24V 2.5A

Codice documento - Document Code: **CE0342**
Edizione - Issue: **1st Edition** (19-02-2010)
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Distribuzione - Delivery: **Ing. Fabio Batocchi**

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PROPRIETÀ DEL PRODOTTO
Product Highlight

<ul style="list-style-type: none">- Scatola 4 moduli- Full Range 100 - 240 Vac- Uscita DC isolata- Indice di protezione = IP20- MTBF = 100000h- Protezioni:<ul style="list-style-type: none">sovraccarico d'ingressosovraccarico d'uscitacorto-circuito d'uscita- Standards:<ul style="list-style-type: none">EN60950-1EN55022/BEN61000-4	<ul style="list-style-type: none">- 4 module case- 100 - 240 Vac Full Range- Isolated DC Output- Protection Index = IP20- MTBF = 100000h- Protection:<ul style="list-style-type: none">Input Over-currentOutput Over-currentOutput Short-circuit- Standards:<ul style="list-style-type: none">EN60950-1EN55022/BEN61000-4
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CARATTERISTICHE D'INGRESSO *Input Requirements*

Tamb=25°C, f=50Hz se non specificato altrimenti		Tamb=25°C, f=50Hz unless otherwise specified				
N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	MIN	TYP	MAX	UNITÀ <i>Unit</i>
1	Input Voltage Range		100-240 (+/- 10%)			Vac
2	Input Frequency Range		50		60	Hz
3	Input Current	Full load; Vin=100Vac; Vout=24V No load; Vin=230Vac; Vout=28V Full load; Vin=230Vac; Vout=24V		1.15 20 0.60		Arms mArms Arms
4	Inrush Current	Full load; Vin=265Vac; deg=0° Full load; Vin=265Vac; deg=90° Full load; Vin=265Vac; deg=270°	15 (6.0 ms) 24 (2.5 ms) 25 (2.5 ms)			Apk Apk Apk
5	Protection in the mains supply line	Standard EN60898 Standard EN60947-2	3A Char. C 10A Char. Z			
6	Power Factor	Vin=100-240Vac; full load	0.48		0.60	
7	Efficiency	Vin=100Vac; full load Vin=230Vac; full load		85 90		% %
8	No Load Input	Vin=100Vac; No load; Vout=28V Vin=230Vac; No load; Vout=28V		1.4 0.9		W W

Note1: The range of source voltage for which the power supply is guaranteed to meet its specifications.

Note2: The range of source frequency for which the power supply is guaranteed to meet its specifications.

Note3: 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).

Note4: The high surge of input current that occurs upon initial turn-on, after an OFF period of at least 10 seconds.

Note5: The connection to the mains line should be made using an all-pole mains switch (with a contact separation of at least 3mm in each pole) with the shown characteristics.

Note6: 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.

Note7: The ratio of output power to input power, measured at full load and for any combination of the rated AC input voltage.

Note8: The input power, measured without load.

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CARATTERISTICHE D'USCITA *Output Requirements*

Tamb=25°C, f=50Hz se non specificato altrimenti		Tamb=25°C, f=50Hz unless otherwise specified				
N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	MIN	TYP	MAX	UNIT À <i>Unit</i>
1	Rated Output Voltage	I _{out} =1.25A (half load) Adj.by front panel trimmer		24 to 28 24 (+/-3%)		V _{dc}
2	Output Current Range		0		2.5	A _{dc}
3	Rated Output Power				60	W
4	Derating					
5	Line Regulation	Half load		+/-0.01		%
6	Load Regulation	V _{in} =230Vac		+/-0.60		%
7	Output Ripple - line component - switching component	Full load V _{in} =100-240Vac V _{in} =100-240Vac		< 10 35		mV _{pp} mV _{pp}
8	PARD	V _{in} =100-240Vac; full load		35		mV _{pp}
9	I _{ob}					
10	Set-up Time					
11	Hold-up Time					
12	Repetitive Dynamic Load	V _{in} =100-240Vac		370		mV _{pp}

Note1: The DC voltage measured at the output terminal blocks, for any combination of rated AC voltage, environment and AC input frequency.

Note2: Output current limits within that the power supply is in regulation (see point 1).

Note3: The maximum steady-state power which the equipment is guaranteed to be able to deliver, while continuing to meet its other specifications.

Note4: Reduction in output power (or current) as a function of case temperature above the maximum full-load rated case temperature.

Note5: Amount of change in the DC output voltage (expressed in percentage of rated output voltage) as the input voltage is varied over its specified range.

Note6: Amount of change in the DC output voltage (expressed in percentage of rated output voltage) as the load is varied over its specified range.

Note7: Unwanted portion of output voltage harmonically related in frequency to the input line and to any internally generated switching frequency. The measuring are made directly at the terminal of the power supply. They take place at rated input voltage and rated output current, with an oscilloscope that has bandwidth limitation of 20MHz (if not, the common-mode disturbances will distort the results and reproducibility is not given). In accordance with EN61204, for the low frequency measurement, the normal single-ended method is adequate. For switching noise a special differential test arrangement is being used.

Note8: Measures all disturbances (superimposed to output voltage), including the spikes, high frequency voltage peaks caused, among others, by steep switching slopes. It takes place at nominal input voltage and nominal output current, with an oscilloscope that has bandwidth limitation of 20MHz for reproducibility reasons. In accordance with EN61204, for PARD a special differential test arrangement is being used.

Note9: Output current (measured at nominal input voltage) at the boundary between continuous and discontinuous mode operation.

Note10: Time duration from power supply turn-on until its output voltage goes up into a regulated limit (V_{out} = V_{nom} - 3%).

Note11: Time duration from power supply turn-off until its output voltage goes down into an unregulated limit (V_{out} = V_{nom} - 3%).

Note12: Output voltage ripple (expressed in mV_{pp}) measured when the output is dynamically loaded as follows: I_{min} to I_{max} to I_{min} (slew rate = 3.2mV/us, duration = 100ms).

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CONDIZIONI AMBIENTALI *Environment Conditions*

Tamb=25°C, f=50Hz se non specificato altrimenti		Tamb=25°C, f=50Hz unless otherwise specified				
N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	MIN	TYP	MAX	UNITÀ <i>Unit</i>
1	Operation Temperature Range	Vin=100-240Vac; full load	-10		50	°C
2	Storage Temperature Range		-40		85	°C
3	Operation Humidity Range	Vin=100-240Vac; full load	0		95	%
4	Storage Humidity Range					
5	Cooling	Natural convection, no fan required				
6	Noise	The equipment doesn't produce audible noise				

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AFFIDABILITÀ, SICUREZZA E COMPATIBILITÀ ELETTROMAGNETICA
Reliability, Safety and Electromagnetic Compatibility

Tamb=25°C, f=50Hz se non specificato altrimenti		Tamb=25°C, f=50Hz unless otherwise specified		
N°	PARAMETRO Parameter	CONDIZIONI Conditions	VALORE Value	UNITÀ Unit
1	MTBF	Vin=100-240Vac; full load	100000	h
2	Life of capacitors			
3	SAFETY - protection index - withstand voltage - insulation resist. - leakage current	PRI/SEC (60 seconds) PRI/SEC	EN60950-1 IP20 3000 > 4 < 250	Vac Mohm uA
4	EMI	See test report referred to the model 00082/2009	EN55022/B	
5	EMS		EN61000-4	
6	EMC		EN61000-3-2 EN61000-3-3	

Note1: Mean Time Before Failures. It indicates when, according to statistics, the device will fail due to processing or component defects. It is calculated using MIL-HDBK-217 for military or aerospace applications.

Note2: The life of Aluminium Electrolytic Capacitors is 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 Tamb
Lo = life hours of max. guaranteed temp.
T = max. guaranteed temp. Of capacitor
Tn = the case temp. Of capacitor (Tamb converted)

Note4: Conducted & Radiated Emissions requirements.

Note5: Immunity Characteristics.

Note6: Electromagnetic Compatibility. Limits for harmonic current emissions and limitation of voltage fluctuations & flicker.

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MECCANISMI DI PROTEZIONE *Protection Mechanisms*

Tamb=25°C, f=50Hz se non specificato altrimenti		Tamb=25°C, f=50Hz unless otherwise specified				
N°	PARAMETRO <i>Parameter</i>	CONDIZIONI <i>Conditions</i>	MIN	TYP	MAX	UNITÀ <i>Unit</i>
1	Input Under Voltage	Full load		85		Vac
2	Input Over-Current	By Fuse		T 1.6		Aac
3	Input Inrush Current	See pag.3				
4	Out Current Limiting	Vin=100Vac Vin=230Vac Vin=240Vac		2.7 3.1 3.1		Adc Adc Adc
5	Out Over-current		Lean-forward mode			
6	Out Short-circuit	Vin=100-240Vac		3.5		Adc
7	OV and open-loop		Latch mode			
8	Out Uder-voltage		NOT PRESENT			
9	High Temperature					

Note1: The device shall shutdown without latch-off if the input voltage goes down the specified limit.

Note2: The device has an internal over-current protection. A delayed-blow, high breaking capacity fuse (not accessible) is placed in the line side of the input circuit.

Note3: The device has an internal inrush current protection. A NTC resistor (not accessible) is placed in the line side of the input circuit.

Note4: Maximum steady-state output current obtainable from the regulated output.

Note5: The device shall not be damaged when input power is applied with an output over-current. During this condition the device produces a "LEAN FORWARD MODE" working.

Note6: The device shall not be damaged when input power is applied with an output short circuit (less than 0.1 ohm). During this condition the device produces an "LEAN FORWARD MODE" working.

Note7: The device shall shutdown with latch-off the output. It is necessary to remove the mains supply and restart the device (the output voltage never exceeds 35V).

Note8: When the output voltage goes down specified value, the device shall shutdown without latch-off the output.

Note9: 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.

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 0 volts, during short-circuit). This increased current is permanently available, so that the device neither switches-off nor hiccups as a result of overload or short-circuiting.

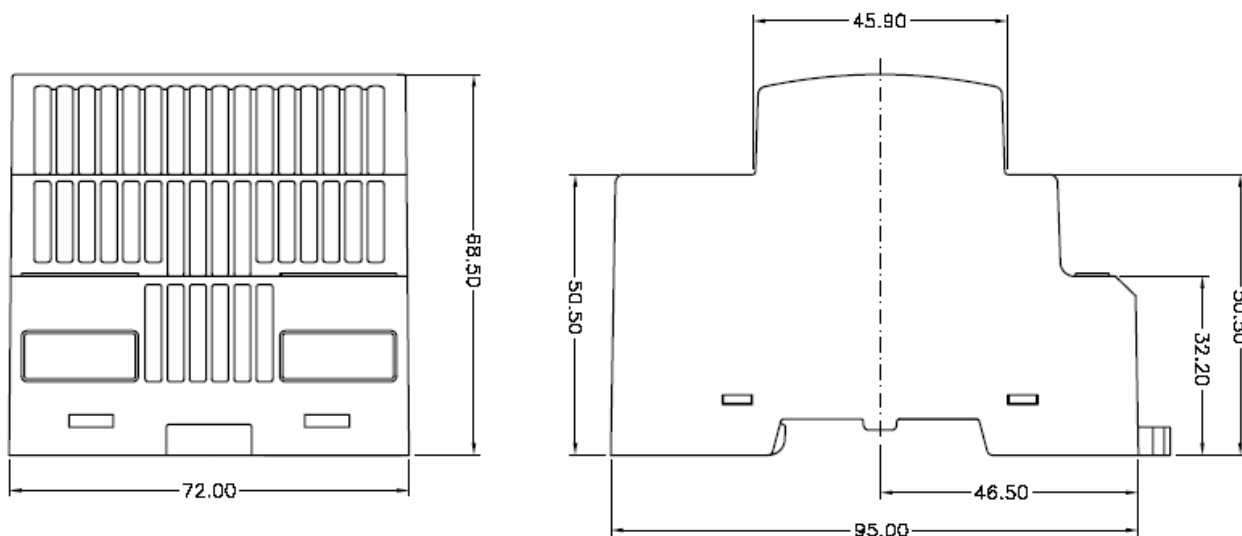
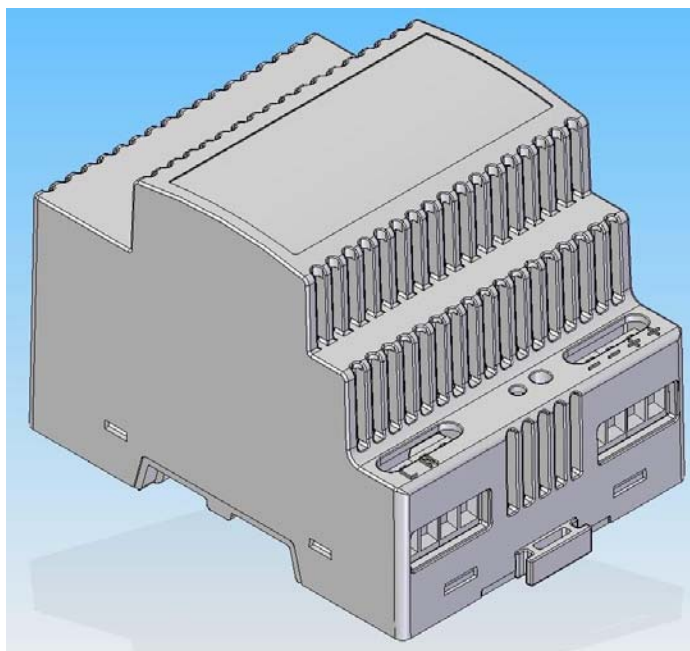
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DIMENSIONI DELLA SCATOLA PLASTICA *Plastic Case Dimensions*



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MATERIALE PLASTICO *Plastic Material*

BAYER KU2 (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>	48 KJ/m ²
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>	1.19 g/cm ³
ASSORBIMENTO DI UMIDITÀ - <i>Humidity Absorption</i>	0.2 %

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ETICHETTE *Labels*

MATERIALE - Material: 3M, polyester mod. 7818

LABEL N.1

		www.comatec.it	
		Made in ITALY	
		PSM 4 60 24	EN60950-1
Input	ta 50 °C	XXXXXX-X/WW-YY	Output
1.15A 50/60Hz		max 60W	2.5 A
100-240V~		24-..- 28V	24 V
L N			

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