



**AC-DC**  
Single output 240W  
switching power supply

**General Features**

- Single output 240W switching power supply
- Europe format 6U 14TE depth 220mm
- Input voltage from 88 to 270 Vac or from 88 to 300 Vdc
- Power factor close to 1 thanks to the presence of a PFC circuit
- Internal fuse on the input
- Parallelable, with automatic current sharing on the output
- Internal redundancy diode
- Sensors to compensate for the voltage drop in the connections
- Overload and short circuits protection and overvoltages
- Protection against overtemperature with triple threshold circuit
- Power good signal and Overtemperature check via relay contacts
- Output voltage adjust by frontal multi turns trimmer
- Led and frontal test point for the control of the status of operation of the module
- Front lever to facilitate the extraction of the module
- Output voltage is floating respect to the case
- 100% test and burn-in (reports available on request)
- No load operation allowed
- Two years warranty

**Electromagnetic compatibility**

- EN50081-2; EN50082-2 (CE industrial environment)
- EN 61000-4-5 level 4 (surge)
- EN 61000-3-2 class D (current harmonic)

**Safety**

- EN 60950 (CEI 74-2)

**Case protection**

- IP20

**Flammability class**

- UL 94 V



**Standard models**

Model	Output voltage and maximum load	
	Volt	Ampere
2024PLS	24	10
2027PLS	27	9

**Environment**

**Operating temperature**

-10° to +55°C ambient;  
derate the output power at 2,5% for °C  
from +55° a +70°C

**Relative humidity**

Up to 93% non condensing

**Storage temperature**

-40 a +85 °C

**Isolation resistance**

Input to output	Input to case	Output to case
100 MOhm (500Vdc for 1')		

**Electric strength**

Input to output	Input to case	Output to case
3000Vrms for 1'	2500Vrms for 1'	2500Vrms for 1'

## Electrical input specifications

• <b>Input voltage</b>	88 - 270 Vac 47-400Hz o da 88 a 300 Vdc without commutation
• <b>Input current</b>	3 A a 110 Vac/dc - 1.2 A a 230 Vac
• <b>Harmonic distortion</b>	3% typical
• <b>Power factor (W/VA)</b>	0.99
• <b>Leakage current</b>	$\leq 3\text{mA}$ a 240 Vac/50 Hz
• <b>Input line fuse</b>	An internal fuse 6.3A slow (5x20) on the line
• <b>EMI filter</b>	according to EN55022 class A
• <b>Inrush current</b>	20 A ( $V_{in}=230\text{Vac}$ )
• <b>Transients suppressor</b>	14 joule 350Vdc / 470 Vp

## Output specifications

Model	V nom (V)	Vadj	I max (A)	Efficiency	Output stability	
					Toward input variations	Toward output variations from 10 to 100%
2024PLS	24	-2.5V +0.5V	10	85% tip.	$\pm 0.5\%$	$\pm 1\%$
2027PLS	27	(trimmer)	9			

• <b>Output power</b>	240 W
• <b>Switching frequency</b>	70 KHz typical
• <b>Transient recovery time</b>	$\leq 1\text{ms}$ for 50% of load variation the $V_{out}$ remains within 2%
• <b>Ripple (0 - 2MHz)</b>	$\leq 1\%$
• <b>Spikes (2 - 20MHz)</b>	$\leq 2\%$
• <b>Hold-up time</b>	$\geq 100\text{ms}$ @ $I_{max}$ , in all the input voltage range
• <b>Start-up time</b>	300ms typical
• <b>Overvoltage</b>	No overvoltage at power on or off
• <b>Parallel operation</b>	With load current sharing
• <b>Remote sensing</b>	Recovery of voltage drop on cables: Max 0.5V total

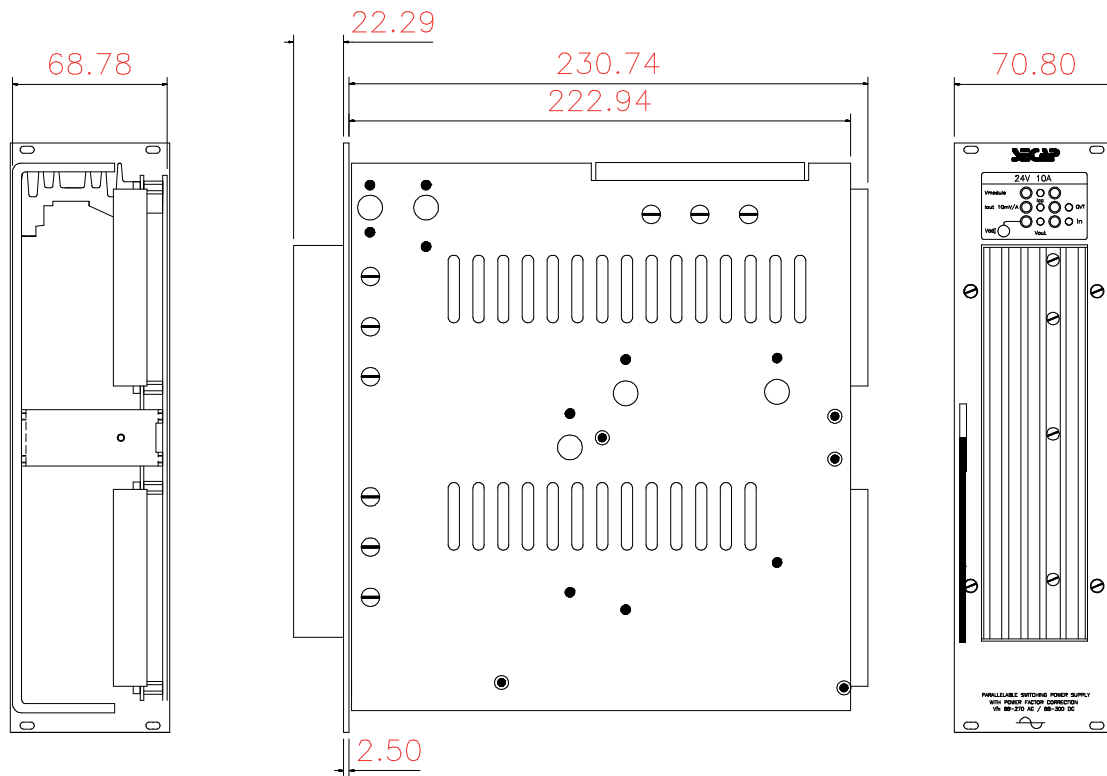
### Segnalazioni

• <b>PG</b>	Normally closed contact and green LED on front. The contact is open and the LED is on when the voltage is present on the anode of the redundancy diode. Relè rating of PG: 1A, 48V.
• <b>OVT</b>	Normally open contact and red LED on front. The contact closes and the LED lights up if there is an excessive temperature inside the module. Relè rating of OVT: 1A, 48V
• <b>Overload</b>	Red LED on front on if the module is stopped due to overcurrent protection intervention

### Protections

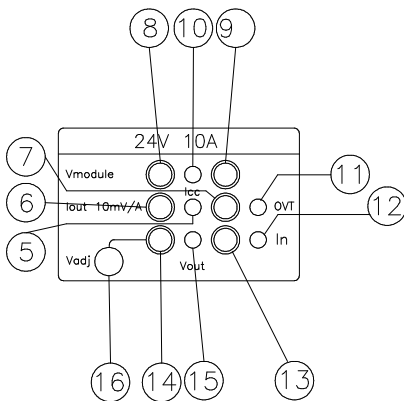
• <b>Overload and short circuits</b>	Stop current protection: after 4 seconds of overload the power supply turns off; on request, on model 2027PLS, constant current protection for battery chargers.
• <b>Overvoltage</b>	Electronic protection which turns off the power supply.
• <b>Overtemperature</b>	Three-threshold protection sensitive to the temperature inside the module. When the first threshold is reached, the fan inside the module is switched on; when the second threshold is reached, the OVT contact closes and the relative red led is turned on; when the third threshold is reached, the power supply is switched off.

## Dimensions and weight



Weight: about 3 kg

## LEDs, test points and front settings



POSITION IN DRAWING	SCREEN PRINTING	TYPE	DESCRIPTION
5	Icc	RED LED	ON - THE MODULE IS STOPPED DUE TO A PROLONGED SHORT CIRCUIT
6	Iout 10mV/A	TEST POINT	CURRENT DETECTION OF THE MODULE THROUGH A VOLTMETER WITH A TRANSFORM RATIO EQUAL TO 10mV FOR EVERY AMPERE
7		TEST POINT	
8	Vmodule	TEST POINT	MEASUREMENT OF THE VOLTAGE VALUE UPSTREAM THE PARALLEL CIRCUIT. THE MEASURED VALUE MUST BE ABOUT 0.5VOLT + -20% GREATER OUTPUT VOLTAGE
9		TEST POINT	
10		GREEN LED	ON - REGULAR OPERATION
11	OVT	RED LED	ON - THE MODULE INDICATES OVER TEMPERATURE
12	Iin	GREEN LED	ON - INPUT VOLTAGE IS PRESENT
13	Vmodule	TEST POINT	MEASUREMENT OF VOLTAGE PRESENT ON LOAD
14		TEST POINT	
15		GREEN LED	ON - THE LOAD VOLTAGE IS PRESENT
16	Vadj	TRIMMER	FINE TRIMMER REGULATION OF VOLTAGE ON LOAD

## Connections

### DIN 41612 H15 type connector : rear view

4		
6	+Vo	POSITIVE OUTPUT
8		
10	+ S	POSITIVE SENSING
12	- S	NEGATIVE SENSING
14		
16		
18	- Vo	NEGATIVE OUTPUT
20		
22		
24	PAR	PARALLEL SIGNAL
26	SB-INH	NOT ACTIVE SIGNAL
28	n.c.	
30	0 SB-INH	NOT ACTIVE SIGNAL
32	n.c.	

4	n.c.	
6	n.c.	
8	CPG	POWER GOOD SIGNAL CONTACT
10	NCPG	
12	COVT	OVERTEMPERATURE SIGNAL CONTACT
14	NAOVT	
16	n.c.	
18	n.c.	
20	n.c.	
22		
24	AC/DC-L	LINE INPUT
26		
28	AC/DC-N	NEUTRAL INPUT
30	n.c.	
32	GND	GROUND

## Technical notes

### Proportional distribution of load current

Loads of power greater than what can be supplied by a single module can also be powered using multiple connected modules in parallel (for example, a 550W load can be powered with three 240W power supplies in parallel). However, if the power supplies used are not able to distribute equally the load current between the various units, inevitably one or more of these will work at its maximum power, leaving the others practically discharged. This results in a greater thermal stress on the first that age prematurely compared to the latter, reducing the reliability of the system.

The automatic distribution of load current, present on this model, allows to have a reduced imbalance between the various modules in parallel, thus obtaining the best reliability of the system.

### Redundancy operation

If the number of power supplies used is higher than the minimum required to supply the load, i.e., if the 550W load is supplied by four 240W power supplies in parallel, you get a redundant power supply system: that is a system whose capability to supply the load is not affected by the shutdown, for failure or other, of one of the power supplies. The presence of the decoupling diode adds an additional element of reliability to the system: if, due to an internal fault, a short circuit occurs on the output of a module, this remains decoupled from load, whose operation is not disturbed.

Furthermore, each 2000PLS module is equipped with a relay contact to monitor its state: this allows the remote detection of a failed drive in the system.

Even in case of maintenance it is not necessary to disconnect the power supply. This ensures continuity of operation.

For the correct use of the connections and for the use of the module in current distribution see the instructions for use of the power supply code 2000PLS-IS1 and those of the BUS code 0820MT1

## Accessories

### BUS

BUSs are printed circuits that have all the electrical connections between the power supply modules of the 2000PLS series and make the input and output terminals available to the user. The electrical solutions implemented in their construction allow the insertion and disconnection of each power supply module without interfering with the operation of the system. The input and output terminals of the various card models are standardized to allow easy installation and subsequent extensions. All the models made can be fixed on any standard rack DIN 41494.

The available BUS models are as follows:

MOD. 1P2080 for NR. 1 module;

MOD. 2P2080 for NR. 2 modules;

MOD. 3P2080 for NR. 3 modules

MOD. 4P2080 for NR. 4 modules

MOD. 6P2080 for NR. 6 modules

### SECAP S.R.L.

20082 Binasco (MI) - Viale delle Scienze, 15

Tel.: +39 02 9055758 - fax 02.90096482

e-mail: infosecap@secap.it - [www.secap.it](http://www.secap.it)

