

# 1 and 2 Phase Power Supplies

## Primary switched power supply

Thank you for having chosen one of our products for your work. We are certain that it will give the utmost satisfaction and be a notable help on the job.

### Application

The power supplies PSM can be used in areas from extreme industrial environment, and complies with the latest technical standard. Before working with the unit, read these instructions carefully and completely. All these power supplies are single output, IP20, have Mounting DIN Rail IEC 60715/TH35. Class 1 isolation devices suitable for SELV and PELV solutions.

### Installation



**WARNING** – Explosion Hazard Do not disconnect Equipment unless power has been switched off or the area is known to be non-hazardous.



**WARNING** – Explosion Hazard . Substitution of components may impair suitability for class I, Division 2.  
**WARNING** – Switch off the system before connecting the module. Never work on the machine when it is live. The device must be installed in according with EN 60950. The device must have a suitable isolating facility outside the power supply unit, via which can be switched to idle. Danger of fatal Injury!

### Connection:

**Cable Connection:** The following cable cross-sections may be used:

	Solid (mm <sup>2</sup> )	Stranded (mm <sup>2</sup> )	AWG	Torque (Nm)	Stripping Length
Input:	0.2÷2.5	0.2÷2.5	24 – 14	0.5 – 0.6 Nm	7 mm
Output:	0.2÷2.5	0.2÷2.5	24 – 14	0.5 – 0.6 Nm	7 mm
Signal:	0.2÷2.5	0.2÷2.5	24 – 14	0.5 – 0.6 Nm	7 mm

The connection is made by the screw type 2.5 mm<sup>2</sup> terminal blocks. Use only copper cables that are designed for operating temperatures of > 75 °C. Wiring terminal shall be marked to indicate the proper connection for the power supply.

**Input:** The input connection is made by connections:

- 1 Phase Switching Power Supplies (PSM24xxA or PSM24xxC series) L, N, PE ⊕
- 2 Phase Switching Power Supplies (PSM24xxB series) L1, L2, PE ⊕

**Output:** 24 Vdc is made via the L+ (+), M (-).

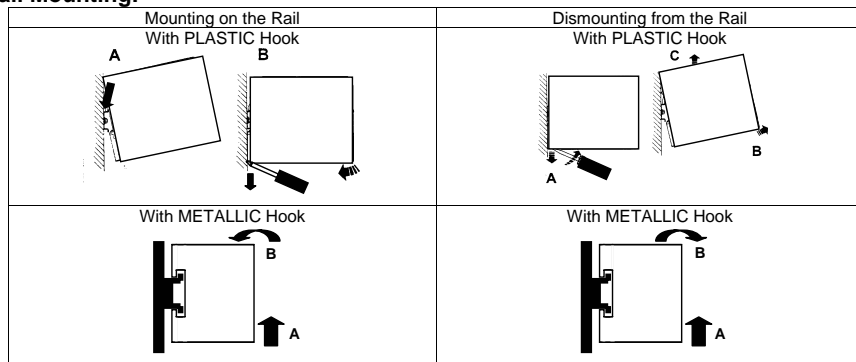
### Signalling

The green led lights up permanently when the input voltage is applied at the power supply.

The red led (DC ok):

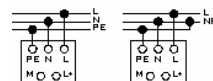
- lights up permanently when the output voltage is OK
- blink when there is in overload range or in short circuit protection.

### Rail Mounting:

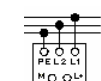


Other modules must have a minimum vertical distance of 10 cm to this power supply in order to guarantee sufficient auto convection. Depending on the ambient temperature and load of the device, the temperature of the housing can become very high!

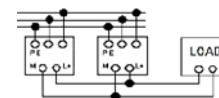
Connection 1 Phase:



Connection 2 Phase:



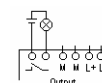
### Parallel Connection for Redundancy or Increased capacity:



The good current share between all devices in parallel, adj. Uout ± 20mV applying 1-2 A load to all devices output before connecting them in parallel. Use only power supplies of the same model.

### Power Good Output Function - Option in some models (\*)

Output are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. When closed, the electrically isolated signal contact indicates that the output voltage has fallen more than 10% below the set value. Maximum current can be switched: 1 A – 30 Vdc.



### Protection:

**On the primary side:** the device is equipped with an internally fuse follow the table into the next page. If the internal fuse is activated, it is most probable that there is a fault in the device. If happen, the device must be checked in the factory. **Caution:** In two phase Input models, Double Pole / Neutral Fusing.

**On the secondary side:** the device is electrically protected against: Over Load, Over Voltage Output and Short circuit automatically. Only in some models (\*) can be selected in Auto or Manual reset:

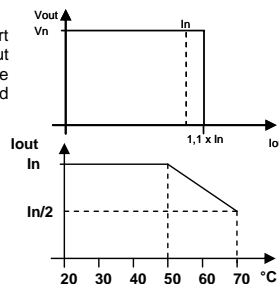
**Hiccup Mode, Auto-reset:** The output turn on when Overload or Short Circuit disappear (default select.).

**Shut Down Mode, Manual Reset:** In some models (\*) you can select Shut Down mode [ ] , factory selection is Hiccup mode [ ]. You can change deep switch selection as you wish. Deep switch setting is on the up side behind cover. You must turn off the device before change setting. If Overload or Short Circuit happen, the output turn off. To restart the power supply it is necessary to turn off mains input for a few second.

### Characteristic Curves

#### Short circuit and overload

The output of the device is electrically protected against overload and short circuit. At nominal voltage the device can supply 1.1 the nominal Current without switching off. In the case of higher overload, the operating point traces the curve illustrated in figure. As the overload increases, the output voltage is reduced until zero.



#### Thermal behaviour

Surrounding air temperature 50 °C, For ambient temperature above 50°C, the output current must be reduced by 2.5% per Kelvin increase in temperature. At the temperature of 70°C the output current will be In/2. The equipment does not switch off in case of ambient temperature above 70°C or thermal overload.

### Standards and Certification

#### EMC Standards:

EN 61000-3-2 ; EN 61000-6-2 (level 4); EN 61000-6-4

#### Surge, Transient immunity:

EN 61000-4-2; EN 61000-4-4; EN 61000-4-5 Criterion B









Radio interference suppression in according with EN 55011 class B

In according to EMC 89/336/EEC and Low voltage directive 73/23/EEC



## 1 Phase (Input 115 – 230Vac)

## 2 Phase (Input 400 – 480Vac)

Technical Data								
Model	PSM241A (**)	PSM242A	PSM244A	PSM247[x]	PSM2410[x]	PSM245B (*)	PSM247B	PSM2410B
<b>INPUT DATA</b>								
Nominal Input Voltage (Vn) / Tensione d'ingresso nominale	115 – 230Vac	115 – 230Vac	115 – 230Vac	[A] 115Vac [C] 230Vac	[A] 115Vac [C] 230Vac	400 – 480Vac	400 – 480Vac	400 – 480Vac
Input Voltage Range / Campo di funzionamento	85 ÷ 264Vac	93 ÷ 264Vac	93 ÷ 264Vac	[A] 90 ÷ 132Vac [C] 187 ÷ 264Vac	[A] 90 ÷ 132Vac [C] 187 ÷ 264Vac	360 ÷ 530Vac	360 ÷ 530Vac	360 ÷ 530Vac
Inrush Current ( Vn and In load) I <sup>2</sup> t / Corrente di Inserzione	≤ 11 A ≤ 5 msec	≤ 11 A ≤ 5 msec	≤ 11 A ≤ 5 msec	≤ 16 A ≤ 5 msec	≤ 14 A ≤ 5 msec	≤ 17 A ≤ 5 msec.	≤ 17 A ≤ 5 msec.	≤ 17 A ≤ 5 msec.
Frequency / Frequenza di Ingresso	47 ÷ 63 Hz	47 ÷ 63 Hz	47 ÷ 63 Hz	47 ÷ 63 Hz	47 ÷ 63 Hz	47 ÷ 63 Hz	47 ÷ 63 Hz	47 ÷ 63 Hz
Input Current ( at Input Rated Voltage) / Assorbimento	0.2 – 0.1A	0.9 – 0.5A CSA 1 – 0.6A UL	0.9 – 0.5A CSA 1.9 – 1.2A UL	2.6 – 1.3A	[A]3.5A CSA–3.3A UL [C]1.6A CSA–2.2A UL	0.7 - 0.6A	0.7 - 0.6A	1 - 0.85A CSA 1.4 – 1A UL
Internal Fuse / Fusibile Interno (non sostituibile)	T 2 A/250 Vac	T 4 A/250 Vac	T 4 A/250 Vac	T 4 A/250 Vac	T 6.3 A/250 Vac	T 4 A/250 Vac	T 4 A/250 Vac	T 4 A/250 Vac
External Fuse (Recommended) / Fusibile Esterno raccomandato	4 A Characteristic B	4 A Characteristic B	4 A Characteristic B	10 A Characteristic B	[A] 16A - [C] 10 A Characteristic B	10 A Characteristic B	10 A Characteristic B	10 A Characteristic B
<b>OUTPUT DATA</b>								
Output Voltage Un (±3%) – In / Tensione di Uscita – In	24Vdc – 1.5A	24Vdc – 2.5A	24Vdc – 5A	24Vdc – 7A	24Vdc – 10A	24Vdc - 5A(60°C) 24Vdc - 7A(50°C)	24Vdc – 7A	24Vdc – 10A
Adjustment range Output (Vadj) / Campo di regolazione (Vadj)	22 + 28Vdc	22 + 26Vdc	22 + 26Vdc	22 + 26Vdc	22 + 26Vdc	22 + 26Vdc	22 + 26Vdc	22 + 26Vdc
Start up with capacitive load / Start up con carichi capacitivi		115Vac≤20 K µF 230Vac≤30 K µF	≤ 30.000µF	≤ 30.000µF	≤ 30.000µF	≤ 30.000µF	≤ 30.000µF	≤ 30.000µF
Turn-On delay after applying mains voltage Tensione in Uscita dopo l'accensione	2.5 sec. (max)	4 sec. (max)	4 sec. (max)	2.5 sec. (max)	2.5 sec. (max)	1 sec. (max)	2.5 sec. (max)	2.5 sec. (max)
Max Current / Corrente max.	1.1 x In ± 5%	Approx. 3,5 A	Approx. 6,5 A	Approx. 9 A	Approx. 13 A	Approx. 9 A	Approx. 9 A	Approx. 13 A
Reserve Current (max 1 min. at 50°C) / Riserva di corrente		In+25% approx.	In+25% approx.	In+25% approx.	In+25% approx.	In+25% approx.	In+25% approx.	In+25% approx.
Residual Ripple / Ripple residuo	≤ 100 mVpp	≤ 60 mVpp	≤ 60 mVpp	≤ 60 mVpp	≤ 60 mVpp	≤ 60 mVpp	≤ 60 mVpp	≤ 60 mVpp
Efficiency / Rendimento tipico (al 50% Vn)	≥ 76 %	≥ 81 %	≥ 82 %	≥ 81 %	≥ 86 %	≥ 88 %	≥ 88 %	≥ 89 %
Dissipation Power / Potenza dissipata (W)	≤ 9	≤ 11	≤ 22	≤ 32	≤ 34	≤ 14	≤ 20	≤ 26
Short-circuit protection / Protezione contro il C.C.	Yes	Yes	Yes	Yes	Yes	Auto / Man	Yes	Yes
Over load protection / Protezione sovraccarico	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Over voltage Output protection / Protezione sovratensione in Uscita	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Remote control / Controllo remoto	Yes	No	No	No	No	No	No	No
Parallel connection / Collegamento in parallelo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>CLIMATIC DATA</b>								
Ambient Temp. Operation / Temperatura Ambiente di Lavoro	-10 + 60°C	-10 + 70°C	-10 + 70°C	-10 + 70°C	-10 + 70°C	-10 + 70°C	-10 + 70°C	-10 + 70°C
Derating T <sup>a</sup> >50°C. (In)	2.5 % °C	2.5 % °C	2.5 % °C	2.5 % °C	2.5 % °C	2.5 % °C	2.5 % °C	2.5 % °C
Ambient Temperature Storage / Temperatura max. Magazzino	-25 + +85°C	-25 + +85°C	-25 + +85°C	-25 + +85°C	-25 + +85°C	-25 + +85°C	-25 + +85°C	-25 + +85°C
Humidity at 25°C, no condensation / Umidità	≤ 95	≤ 95	≤ 95	≤ 95	≤ 95	≤ 95	≤ 95	≤ 95
<b>GENERAL DATA</b>								
Isolation Voltage (IN / OUT) / Tensione di Isolamento (IN / OUT)	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac
Isolation Voltage(IN / PE) / Tensione di Isolamento(IN / TERRA)	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac
Isolation Voltage(OUT / PE) / Tensione di Isolamento(OUT/TERRA)	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac
Protection Class / Protezione Classe	II	I, with PE con.	I, with PE con.	I, with PE con.	I, with PE con.	I, with PE con.	I, with PE con.	I, with PE con.
MTBF in acc. With IEC 1709 (SN 229 500)	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h
Pollution Degree Environment	2	2	2	2	2	2	2	2
Connection terminal Blocks Screw Type / Dimensione morsetti	2,5mm	2,5mm	2,5mm	2,5mm	2,5mm	2,5mm	2,5mm	2,5mm
Dimension (w-h-d) / Dimensioni (l-h-p) mm	71x95x65	50x95x115	55x115x155	55x115x155	132x118x135	55x115x155	150x115x96	150x115x96
Weight / Peso	0.28 kg approx.	0.45 kg approx.	0.70 kg approx.	0.8 kg approx.	1.15 kg approx.	0.7 kg approx.	1.15kg	1.15kg
In conformity to / Conforme alla normativa	EN60950					EN60950		
Safety Standard Approvals / Normative di Sicurezza Certificate		UL508; IEC950; EN60950; UL1950; CSA 20.0 N°950	UL508; IEC950; EN60950; UL1950; CSA 20.0 N°950	IEC950; EN60950; UL1950; CSA 20.0 N°950	UL508; IEC950; EN60950; UL1950; CSA 20.0 N°950		IEC950; EN60950; UL1950; CSA 20.0 N°950	UL508; IEC950; EN60950; UL1950; CSA 20.0 N°950

(\*) This model has power good relay and Auto – Manual reset switch.

(\*\*) Factory settings: remote control contact closed. This model does not have the led red. The functions that are carried out habitually from the red led come carried out from that green.