

## Characteristics:

**General Description:** The Power Supply System type PSS1250-2-48 is an anodized aluminium 7" Rack unit (4U high) suitable to accept 2 plug-in Power Supply Modules type PSM1250. Each PSM1250 module provides 24 Vdc output and PSM1250 modules have their outputs connected in series by internal copper bar, therefore PSS1250-2-48 system provides 48Vdc, 25 A output. The system accepts AC power source from 100 to 264 Vac.

**Overvoltage protection:** each PSM1250 module has got 3 independent overvoltage protections: 1 voltage limiting loop at 30 Vdc and 1+1 crowbars at 30 Vdc. Therefore, PSS1250-2-48 system has 60 Vdc upper limit as maximum overvoltage protection value, considering series connection between overvoltage protections of both PSM1250 modules.

**EMC:** Fully compliant with CE marking applicable requirements.

**High load fuses breaking capability:** In case of short circuit on the load, the Power supply system delivers a very high peak current (about 800 Amp) for a duration of 0.5 ms. This characteristic ensures the instant breakage of the protective fuse or circuit breaker. Because of the very short peak current duration, other equipment connected to the load are not affected by the failure event and continue to operate without interruption.

### Functional Safety Management Certification:

G.M. International is certified by TÜV to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3.



## Features:

- SIL 3 for NE Load according IEC 61508:2010 (see ISM0368 for more information).
- SIL 1 for ND Load according to IEC 61508:2010 (see ISM0368 for more information).
- Systematic capability SIL 3.
- AC Input Line: 110 to 240 Vac ( $\pm 10\%$ ) with 48 to 62 Hz frequency.
- Power factor correction.
- EMC Compatibility to EN61000-6-2, EN61000-6-4.
- TÜV Functional Safety Certification.
- Highly regulated output of 48 Vdc - 25 A, due to 24 Vdc out for each PSM1250 module.
- Under and over voltage alarm monitoring, for each PSM1250 module.
- 3 over voltage redundant protections, for each PSM1250 module.
- 85% efficiency @230 Vac input and 48 Vdc output with full load.
- Fan speed control depending on ambient temperature and output power.
- High load fuse breaking capability without interrupting operations.
- 7" Rack unit, 4 U high, anodized aluminium, durable metal enclosure.
- Tropicalization for electronic components.

## Technical Data:

### Supply:

**Input voltage:** 110 to 240 Vac ( $\pm 10\%$ ) with 48 to 62 Hz frequency.

**Power Factor Correction (AC input):** 0.95 typ. @230Vac, 0.99 typ. @115Vac, full load.

**Efficiency @48Vdc out (full load):** better than 85% @ 230 Vac and 83% @ 115 Vac.

**Max. internal power dissipation @48Vdc out (full load):** 220 W @ 230 Vac; 250 W @ 115 Vac.

**AC input current (sinusoidal at full load) @48Vdc out:** 14.6A @100Vac input voltage, 12.7 A @115 Vac input voltage, 6.5 A @230 Vac input voltage.

**Inrush current:** 74 A peak @ 264 Vac; 64 A peak @ 230 Vac; 32 A peak @ 115 Vac.

**AC input connection:** screw terminal blocks suitable for 4mm<sup>2</sup> wires on wall mounting panel.

### Isolation (Test Voltage):

**Input to Output isolation:** 2500 Vrms (routine test).

**Input to Ground isolation:** 1500 Vrms (routine test).

**Ground to Output isolation:** 500 Vrms (routine test).

**Output or Ground to Fault contact isolation:** 500 Vrms (routine test)

### Output:

**Output voltage:** 48 Vdc (adjustable from 42 to 56 Vdc).

Each PSM1250 output is 24 Vdc (adjustable from 21 to 28 Vdc).

**Regulation:** 0.2 % for a 100 % load change.

**Stability:** 0.01 % for a 20 % line voltage change.

**Ripple:**  $\leq 250$  mVpp.

**Output current:** 25 A nominal (@48Vdc out).

**Output power:** max 1200W (@48Vdc out) and up to 1300 W nominal (@56Vdc out).

**Output Rise Time:** 2.5 s.

**Dynamic Response:** 1 ms for 0-100% load change (overshoot  $\pm 0.5\%$  of Vout setting).

**Connection:** screw terminals on copper bars suitable for 50A available on wall mounting panel.

**Hold-up time at full load:** 40 ms (AC input).

**Over voltage protection:** each PSM1250 output is limited to 30 Vdc plus two redundant crowbars for over voltage protection at 30 Vdc. Therefore, PSS1250-2-48 output is upper limited to 60 Vdc maximum value.

### Power good signaling (for each PSM1250 module):

**Output good:**  $19.5 \text{ V} \leq \text{Vout} \leq 29.5 \text{ V}$  (see page 2 for more information).

**Indication:** by Power ON green LED on each PSM1250 module front panel.

**Signaling:** voltage free SPST normally energized relay (contact closed), de-energize in over/under voltage conditions (contact open).

**Contact Rating:** 2 A 50 Vac 100 VA, 2 A 50 Vdc 60 W (resistive load).

**Connection:** screw terminal blocks suitable for 1.5 mm<sup>2</sup> wires on wall mounting panel.

### Compatibility:

CE mark compliant, conforms to Directive:

2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

### Environmental conditions:

**Operating temperature limits:** -40 to +70°C.

**Relative humidity limits (up to 55 °C):** 95 %, condensing.

**Transport, storage temperature limits:** - 45 to + 85 °C.

### Approvals:

SIL 3 / SIL 1 conform to IEC 61508:2010 Ed. 2.

SIL 3 Functional Safety TÜV Certificate conforms to IEC61508:2010 Ed.2, for Management of Functional Safety.

### Mechanical:

**Mounting:** 7" Rack unit, 4 units high.

**Weight:** 7" fully equipped about 7 Kg, fully equipped with 2 PSM1250.

**Location:** Safe Area.

**Protection class:** IP 20.



**Dimensions:** see drawings pages 2 and 3.

## Images:

PSS1250-2-48  
2 x PSM1250



## Ordering Information for PSS1250-2-48:

Description	Rack Dimension (inches) and Configuration	Ordering Code
 <p>Rack unit and back panel for wall mounting into a cabinet</p>	<p>7" wide 1 output 48 Vdc up to 25 A</p>	<p><b>PSS1250-2-48</b></p>
 <p>Power supply module</p>	<p>With 24 Vdc – 50 A output</p>	<p><b>PSM1250 : needed 2 pieces</b></p>

## Output voltage setting - Fault indications

For each PSM1250 power module, the output voltage can be set to 24 Vdc + 18%; -14% via a front panel trimmer.

Under voltage threshold is set to 19.5 V, while Over voltage threshold is set to 29.5 V.

A front panel power ON green LED signals mains voltage is applied to the power module and normal DC output voltage is present on DC output bus.

Power module Fault conditions are signaled by opening contact of NE relay (contact closed in normal condition), positioned on WMP "Fault" terminal block. Faults can be:

- Under voltage  $V_{out} < 19.5 \text{ V}$ .
- Over voltage  $V_{out} > 29.5 \text{ V}$ .

In absence of under / over voltage fault, the green Power ON LED is ON if output voltage is within 19.5 V - 29.5 V range.

If output voltage goes below 19.5 V, the green Power ON LED blinks and holds this condition as long as output voltage goes over 20 V.

If output voltage goes over 29.5 V, the green Power ON LED is OFF and holds this condition as long as output voltage goes below 29 V.

After under / over voltage fault, coming back to normal condition, the green Power ON LED is ON if output voltage is within 20 V - 29 V range.

About PSS1250-2-48 fault indication, it's important to connect in series the Fault relay contacts of two PSM1250 modules, so that when a PSM1250 module goes in fault condition, the fault is reflected to whole PSS1250-2-48 system because the PSS1250-2-48 Fault contact can be considered the series of the Fault relay contacts of two PSM1250 modules.

In addition, when both front panel power ON green LEDs of two PSM1250 modules are ON, the PSS1250-2-48 system is in normal operation.

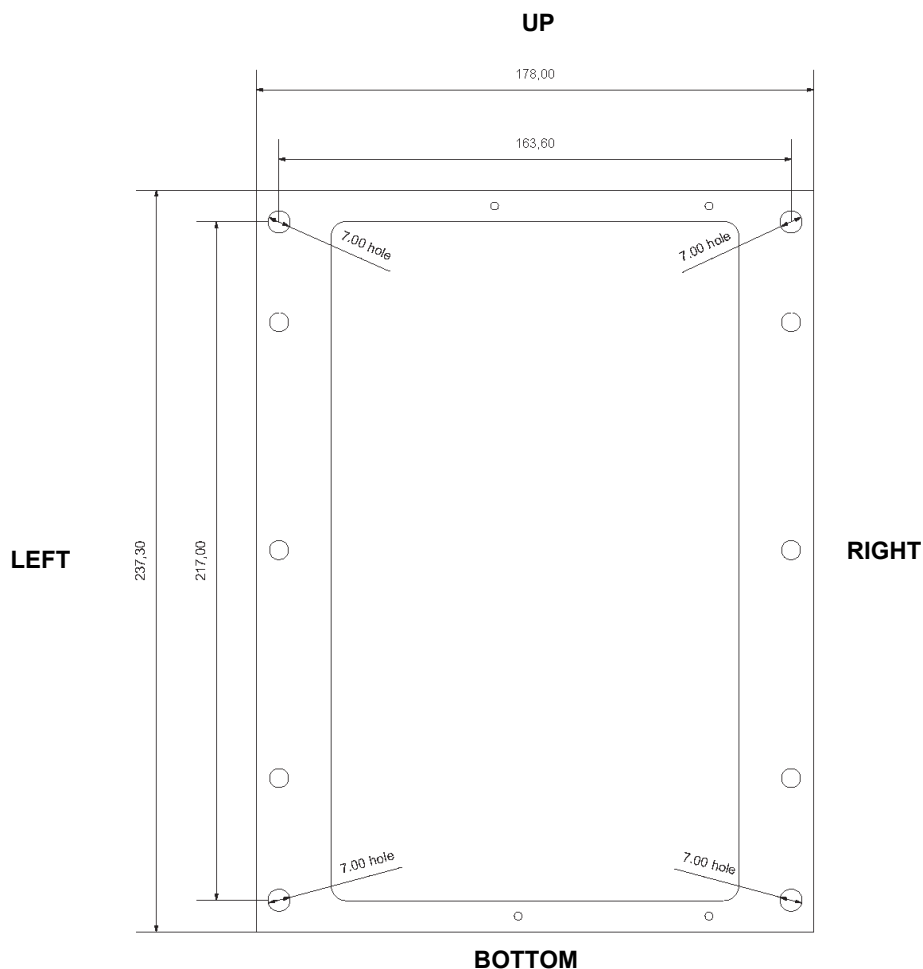
If at least one green Power ON LED of PSM1250 module blinks or is OFF, the PSS1250-2-48 system is in fault (under / over voltage) condition.

## Back Panel PCB of PSS1250-2-48 (for wall mounting into a cabinet) overall dimensions:

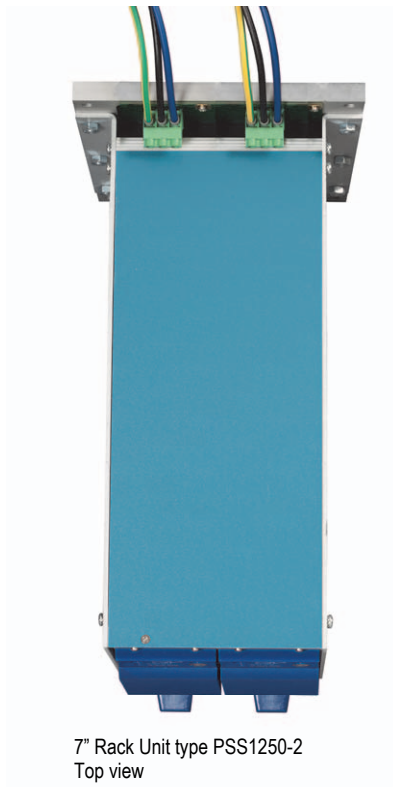
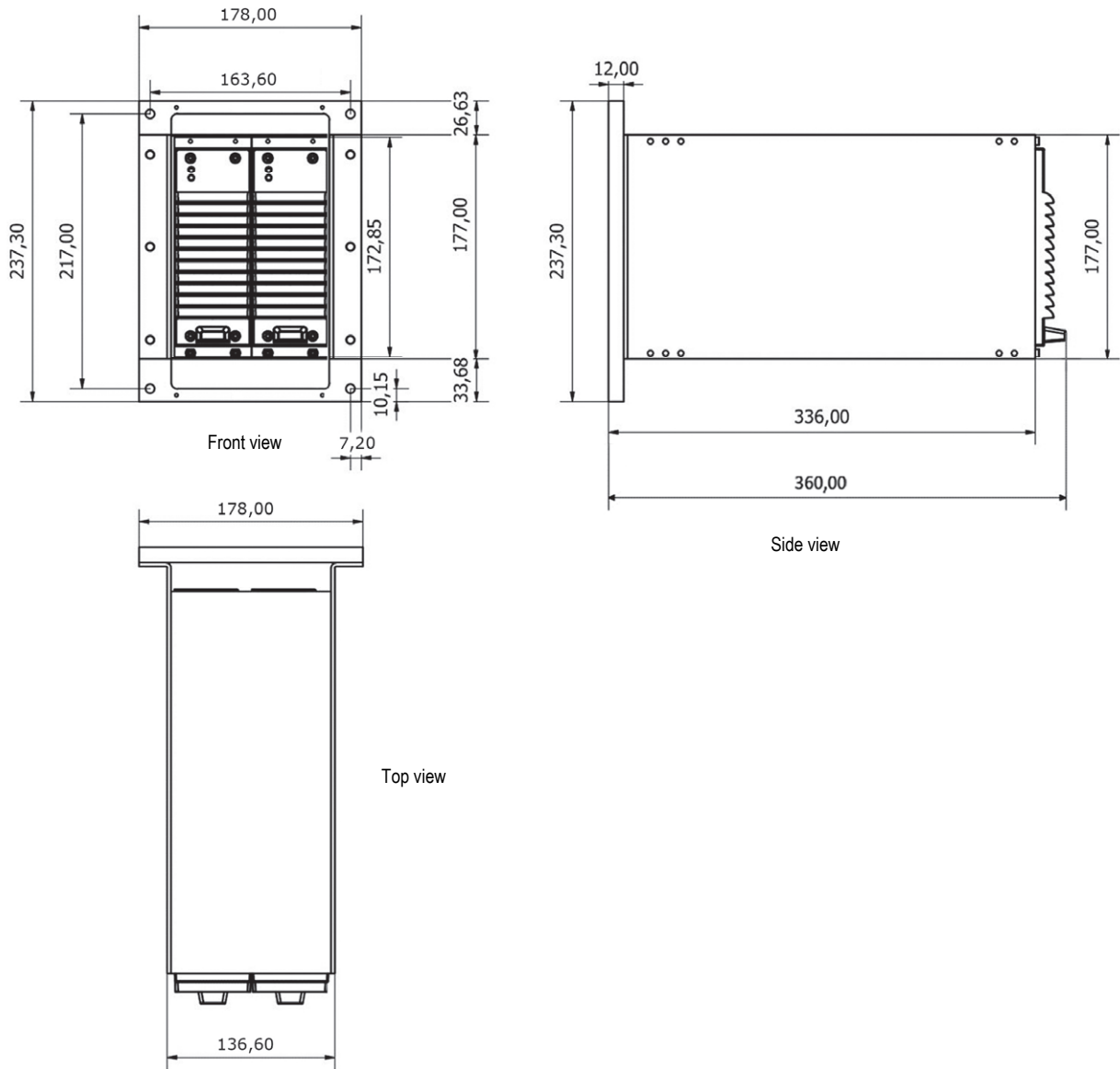
The following drawing with overall dimensions (mm) is applicable to: PSS1250-2-48.

The wall mounting panel is fixed to a vertical wall by means of four screws through four 7.00 mm diameter holes shown in the drawing.

The wall mounting panel must only be installed as oriented in the following drawing.



**PSS1250-2-48 system overall dimensions:**

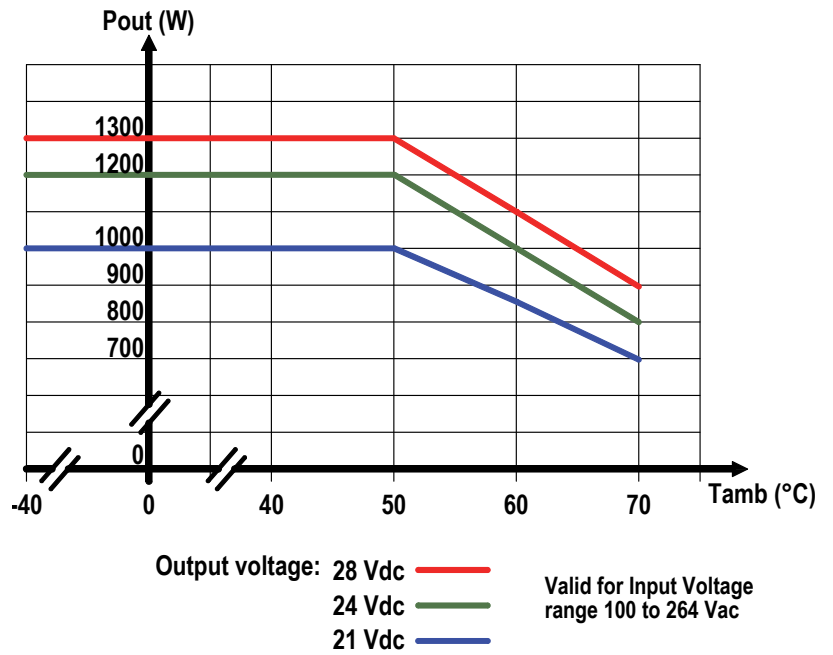


7" Rack Unit type PSS1250-2  
Top view



PSM1250  
Side view

PSM1250  
Maximum Output Power vs. Ambient Operating Temperature



Considering two PSM1250 with outputs in series, each module can give 25 A output up to 70°C operating ambient temperature, with output voltage range 21-28 Vdc and input voltage range 100-264 Vac.



PSM1250  
Top view



PSM1250  
Front view



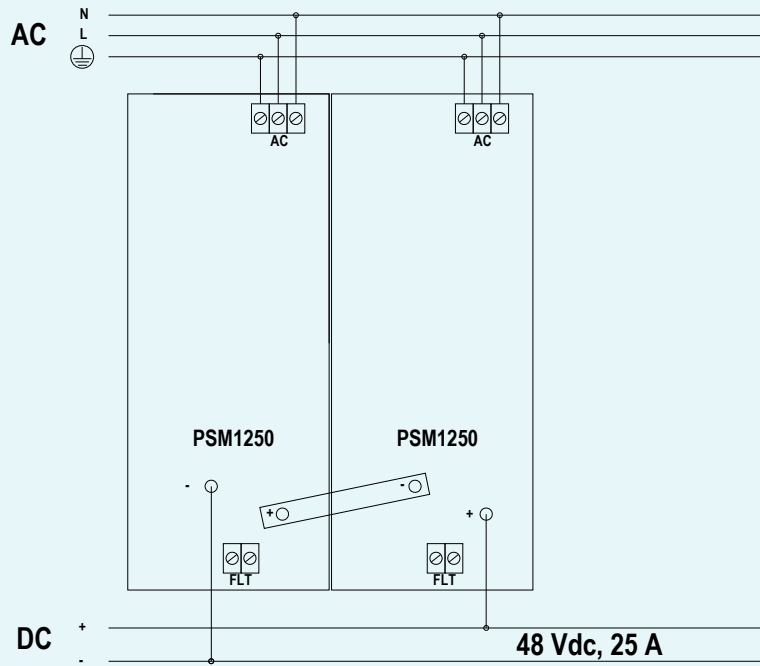
PSM1250  
Side view without cover

## Function Diagram wiring architecture for PSS1250-2-48 fully equipped:

SAFE AREA ,  
NON HAZARDOUS LOCATIONS

### PSS1250-2-48, 48 V - 25 A Output.

two PSM1250 power modules connected in series to provide 48 V - 25 A output.



### Back Panel PCB of PSS1250-2-48:

