

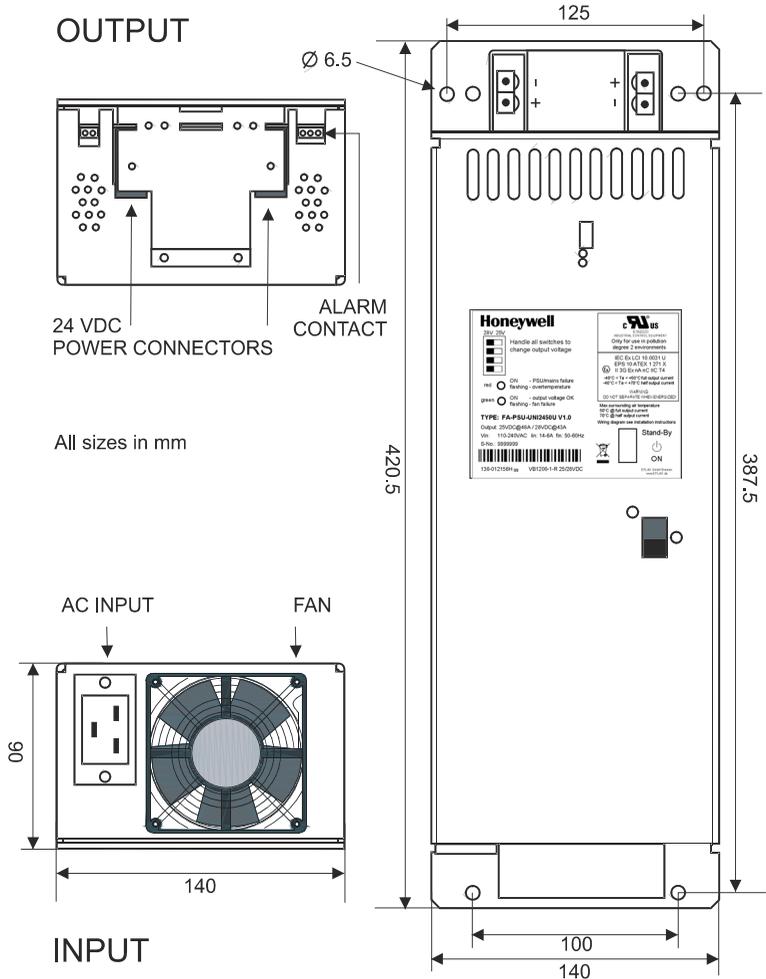
PSU-UNI2450U

25—28 Vdc Power supply (1200 W) – UL508 approved

Description

The PSU-UNI2450U power supply is a UL approved switched-mode DC power supply with a high efficiency (>87% at 230 Vac). It accepts a wide range of input voltages to provide 25 Vdc and 48 A output or 28 Vdc and 43 A output.

Figure 82 Top, bottom and front view of the PSU-UNI2450U power supply



Main features

The units main features include:

- Dual built-in over-voltage protection, to comply with the functional safety requirements of the DIN V 19250 and VDE V 0801 standards
- ON/OFF switch on the power supply combined with isolated AC and DC power connectors enable on-line replacement of the unit in a live system.
- A current limit feature, used to limit the maximum output power to 1200 W.
- Under-voltage alarm
- an output diode for parallel operation
- Optimum protection against continuous overload and short-circuiting.

The LEDs on the front panel indicate the following status:

green LED	on	PSU in operation; output OK
	off	PSU swithed off
	flashing	fan does not reach required speed
red LED	on	PSU/MAINS failure, or in stand-by mode
	off	no failure
	flashing	temperature too high

Hardware control features

The PSU-UNI2450U power supply has the following hardware control features:

- Power switch
- An output adjustment selector switch (25 Vdc or 28 Vdc).
- An alarm contact.

Each of these features is discussed in more detail below.

Power switch



Attention:

Cycling of the power switch can cause permanent damage to the power supply. After you switch the unit OFF, wait at least 30 seconds before you switch it ON again.

The power switch is sunk into the frame to prevent accidental operation. It allows you to switch off the PSU-UNI2450U before you disconnect it.

With the power switched off you can safely remove the AC and DC power cables without risk of sparks or spikes on the grid.

Output adjustment selector switch



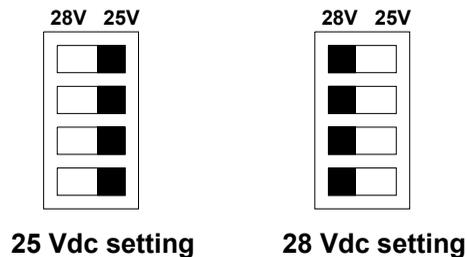
Attention:

Only change the dip-switch settings when the power supply has been switched off.

To adjust the output to 28 Vdc (e.g. for UPS applications), *all four* dip-switches in the PSU front need to be set in their left position, as shown in Figure 83 on page 151.

Default factory setting of the dip-switch is 25 Vdc.

Figure 83 Dip-switch setting to set output voltage

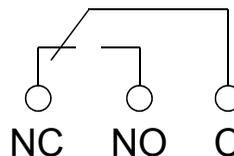


Alarm contact

The PSU-UNI2450U has an alarm contact used for voltage monitoring.

Figure 84 on page 151 shows the alarm contact with the relay energized, which means that the PSU is powered and the output voltage is above 22Vdc.

Figure 84 Alarm contact state with output voltage above 22 Vdc



Installation

The unit can be mounted both vertically or horizontally.

Convection cooling works best when the unit is mounted vertically, with the power and fan input facing downwards (see Figure 85 on page 152).



Notes:

Vertical mounting is preferred for optimal cooling.

1. When the unit is mounted vertically at least 100mm (3.94 inch) free space is required above and below the unit.
2. When the unit is mounted horizontally at least 100mm (3.94 inch) free space is required around the unit.

Figure 85 Vertical mounting of the PSU-UNI2450U power supply

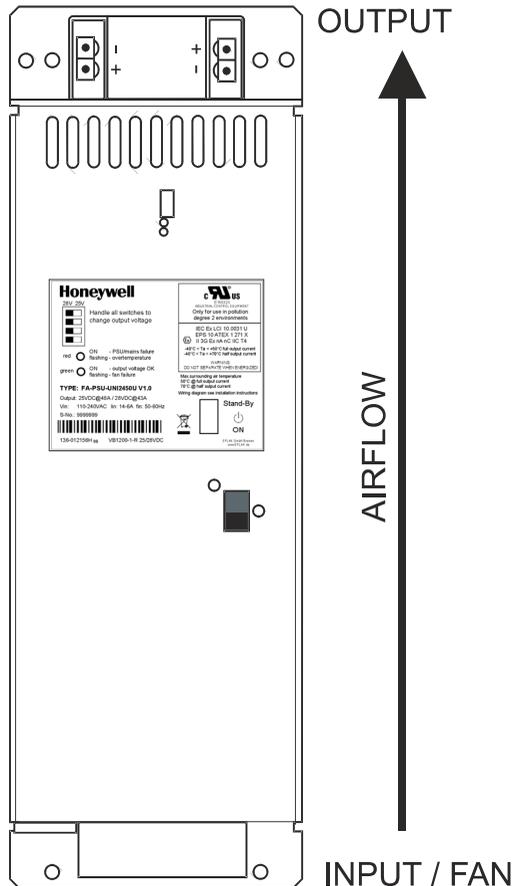
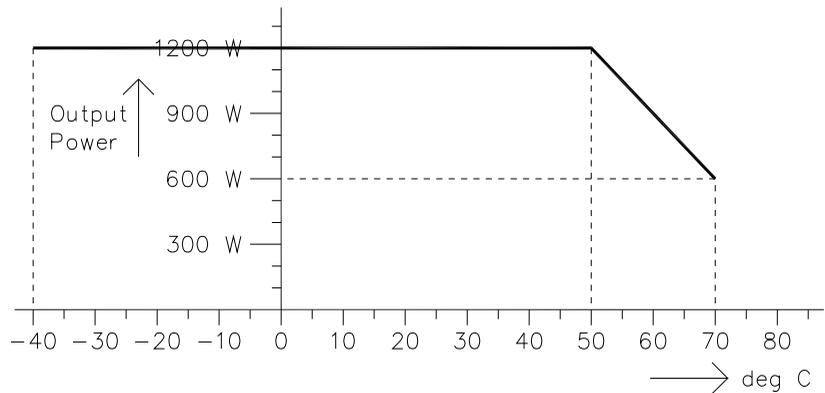


Figure 86 on page 153 shows that:

- The maximum PSU ambient temperature may not exceed 50°C (122°F) when operating at full load.
- When mounting vertically the maximum PSU ambient temperature may go up to 70°C (158°F) when operating at half load or less.

Figure 86 Derating curve¹ for the PSU-UNI2450U power supply.



¹ Operation outside these perimeters may cause a temporary PSU shut-down.

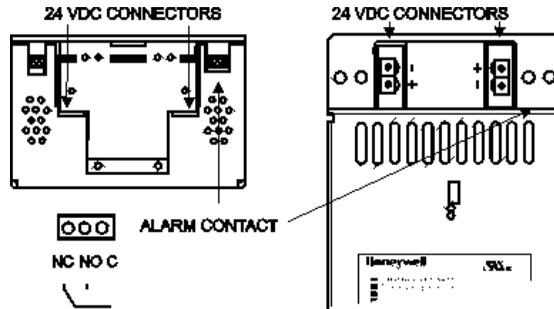
Electrical connections

The following connection details apply to the power supply:

- The AC input uses a IEC60320 C20 inlet socket type with a retaining clip to hold the IEC60320 C19 power connector.
A cable is included to connect the PSU to the mains.
- The DC output uses 2 internally mounted male output connectors, type Phoenix PCV6-16/2-G1F-10,16 with locking nuts.
A dual cable set is included to transfer the load to the main power rail. For more information see “MB-0001” on page 783.
- The external alarm wires are mounted to a 3 pole female screw socket, make Phoenix, type MC 1,5/3-G-3,81. This connector is plugged into a male connector next to the power connectors.

Figure 87 on page 154 shows the connections and connector lay-out on the output side of the PSU-UNI2450U.

Figure 87 Connections on the output side of the PSU-UNI2450U¹



1 Note that both 24 Vdc connectors are wired in parallel; there is no separation diode inbetween.

Table 27 on page 154 shows the recommended wire sizes for the power supply's input and output wiring.

Table 27 Recommended wire sizes for the PSU-UNI2450U power supply

INPUT	OUTPUT	
110 –240 Vac	25 Vdc	Voltage drop (with dual output cable, length 1.8 m)
2.5 mm ² (AWG 14)	2 x 2 x 8.3 mm ² (AWG 8)	192 mV/m at 48 A



Attention:

For installation in ATEX and IECEx systems the metal housing of the power supply unit (PSU) must be connected to ground via an external ground connection.

The ground wire must be connected to one of the four mounting screws of the PSU. Refer to Figure 82 on page 149.

Technical data

The FC-PSU-UNI2450U power supply unit has the following specifications:

General	Type numbers ¹ :	FC-PSU-UNI2450U V1.0
	Approvals:	CE, TUV, UL, CSA, CID2
Power	Power requirements:	110—240 Vac (operating limits: 93—253 Vac)
	Power consumption at no load:	13 W
	Input frequency range	47—63 Hz
Physical	Dimensions:	420.5 × 140 × 90 mm (W × H × D) 16.57 × 5.51 × 3.54 in (W × H × D)
	Weight:	5.7 kg (12.5 lb) – including the cable set
Environment	Storage temperature:	–25°C—+85°C (–13°F—+185°F)
	Operating temperature:	–5°C—+70°C (23°F—+158°F) (see Figure 86 on page 153 for derating of output current as a function of ambient temperature)
Input	Inrush current:	< 15 A
Output	Output voltage:	25 Vdc or 28 Vdc; dual overvoltage protection
	Ripple and noise:	< 40 mVpp
	Output current (25 Vdc):	48 A at –5°C—+50°C (23°F—+122°F)
	Output current (28 Vdc):	43 A at –5°C—+50°C (23°F—+122°F)
	Derating output current:	Starting at 50°C (122°F): 30 W/°C (see Figure 86 on page 153 for derating curve)
	Hold-up time:	100 ms at full load
	Output voltage setting:	25 Vdc
	Efficiency at 230 Vac:	>87%
Isolation	Input to output:	3750 Vrms (1 min.)
	Input to case:	2500 Vrms (1 min.)
	Output to case:	500 Vdc

Connectors	AC input:	IEC 60320 C20 inlet type socket, 16A with retaining clip
	DC output:	2 x Phoenix PCV6-16/2-G1F-10,16 with locking screws
	cable connector	Phoenix PC 16/2-STF-10,16
	• min. wire size	0.75 mm ²
	• max. wire size	16 mm ²
	• strip length	12 mm
	Alarm contact:	3 pole Phoenix socket type MC 1,5/3-G-3,81
	cable connector	Phoenix MC 1,5/3-ST-3,81
	• min. wire size	0.14 mm ²
	• max. wire size	1.5 mm ²
• strip length	7 mm	
Alarm contact	Contact rating	100 mA / 30 V
	Undervoltage alarm contact:	Relay de-energizes when output voltage drops below 22 Vdc.
	Voltage limit:	For safety, two independent regulation circuits limit the output voltage to approximately 27 V (30 V for 28 V mode) in case of malfunction of the normal regulation.

- 1 FC-type modules are conformal coated modules. Modules that are not conformal coated do not have the prefix FC.

The FA-PSU-UNI2450U power supply unit has the following specifications:

General	Type numbers ¹ :	FA-PSU-UNI2450U V1.0 ²
	Approvals:	CE, TUV, CSA, UL, ATEX, IECEX Ex signature:  II 3G nA nC IIC T4 ATEX COC No.: EPS 10 ATEX 1 271 X IECEX COC No: IEC Ex LCI 10.0031 U
Power	Power requirements:	110—240 Vac (operating limits: 93—253 Vac)
	Power consumption at no load:	13 W
	Input frequency range	47—63 Hz
Physical	Dimensions:	420.5 × 140 × 90 mm (W × H × D) 16.57 × 5.51 × 3.54 in (W × H × D)
	Weight:	5.7 kg (12.5 lb) – including the cable set
Environment	Storage temperature:	–25°C—+85°C (–13°F—+185°F)
	Operating temperature:	–40°C—+70°C (–40°F—+158°F) (see Figure 86 on page 153 for derating of output current as a function of ambient temperature)
Input	Inrush current:	< 15 A
Output	Output voltage:	25 Vdc or 28 Vdc; dual overvoltage protection
	Ripple and noise:	< 40 mVpp
	Output current (25 Vdc):	48 A at –40°C—+50°C (–40°F—+122°F)
	Output current (28 Vdc):	43 A at –40°C—+50°C (–40°F—+122°F)
	Derating output current:	Starting at 50°C (122°F): 30 W/°C (see Figure 86 on page 153 for derating curve)
	Hold-up time:	100 ms at full load
	Output voltage setting:	25 Vdc
	Efficiency at 230 Vac:	>87%
Isolation	Input to output:	3750 Vrms (1 min.)
	Input to case:	2500 Vrms (1 min.)
	Output to case:	500 Vdc

Connectors	AC input:	IEC 60320 C20 inlet type socket, 16A with retaining clip
	DC output:	2 x Phoenix PCV6-16/2-G1F-10,16 with locking screws
	cable connector	Phoenix PC 16/2-STF-10,16
	• min. wire size	0.75 mm ²
	• max. wire size	16 mm ²
	• strip length	12 mm
	Alarm contact:	3 pole Phoenix socket type MC 1,5/3-G-3,81
	cable connector	Phoenix MC 1,5/3-ST-3,81
	• min. wire size	0.14 mm ²
	• max. wire size	1.5 mm ²
• strip length	7 mm	
Alarm contact	Contact rating	100 mA / 30 V
	Undervoltage alarm contact:	Relay de-energizes when output voltage drops below 22 Vdc.
	Voltage limit:	For safety, two independent regulation circuits limit the output voltage to approximately 27 V (30 V for 28 V mode) in case of malfunction of the normal regulation.

- 1 FA-type modules can be used to connect to devices in explosive atmospheres, conform to the applicable ATEX / IECEx guidelines.
- 2 In case the FA-PSU-UNI2450U is applied for ATEX / IECEx certified projects, the end user shall ensure that it is placed in an IP54 compliant enclosure.