Honeywell | Fire Solution



Power Supply Units HLS PS Series

Part No. HLSPS25 and HLSPS50

EN Operation and Installation Instruction

HW_MN-DT-1305.EN
05.2020

Intended purpose
This products may be used only for the applications outlined in the catalogue and in the technical description, and only in conjunction with the recommended and approved external devices and components.
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Safety-related user information
This manual includes information required for the proper use of the products described.
In order to ensure correct and safe operation of the product, all guidelines concerning its transport, storage, installation, and mounting must be observed. This includes the necessary care in operating the product.
The term 'qualified personnel' in the context of the safety information included in this manual or on the product itself designates:

- project engineers who are familiar with the safety guidelines concerning fire alarm and extinguishing systems.
- trained service engineers who are familiar with the components of fire alarm and extinguishing systems and the information on their operation as included in this manual.
- trained installation or service personnel with the necessary qualification for carrying out repairs on fire alarm and extinguishing systems or who are authorised to operate, ground and label electrical circuits and/or safety equipment/systems.

Symbols
The following information is given in the interest of personal safety and to prevent damage to the product described in this manual and all equipment connected to it.
Safety information and warnings for the prevention of dangers putting at risk the life and health of user and maintenance personnel as well as causing damage to the equipment itself are marked by the following pictograms.
Within the context of this manual, these pictograms have the following meanings:



Warning - Designates risks for man and/or machine. Non-compliance will create risks to man and/or machine. The level of risk is indicated by the word of warning.



Note - Important information on a topic or a procedure and other important information.



Standards and guidelines - Observe configuration and commissioning information in accordance to the national and local requirements.

Dismantling



In accordance with Directive 2012/19/EU (WEEE), after being dismantled, electrical and electronic equipment is taken back by the manufacturer for proper disposal.

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1 General / Application

The Power Supply units HLS PS Series (Part No. HLSPS25 and HLSPS50) are designed to comply with the requirements of EN 54-4 / AS 7240.4 in order to provide fire control systems with backup supply.

The HLS PS Series operates at 115 / 230 V AC and 50 / 60 Hz.

Both Power Supply Units, HLS PS25 and HLS PS50, are very similar: they consist of a 2 x 65 W, which means 130 W in HLS PS50 and 1 x 65 W in HLS PS25 and a standard module control which supervises the entire power supply.

This results in the following values:

- Pa, max - rated maximum output power that can be supplied continuously:
- Max. Power per Output (Pa, max) : 30.8 Watts (HLSPS25); 61.6 Watts (HLSPS50)
- Max. Power using both Outputs (Pa, max) : 61.6 Watts (HLSPS25); 123.2 Watts (HLSPS50)
- Pc, max - rated maximum output power which can be supplied by the standby power source:
- HLSPS25 : 65 W
- HLSPS50 : 130 W
- Pmin - minimum output power specified by the manufacturer:
- The quiescent current is 0.1 mA for each transformer and so for two transformers is 0.2 mA.
- This is at 230 V AC, so the minimum power consumption is 0.2 mA x 230 V AC; Pmin = 0.046 W

HLS PS25 and HLS PS50 power supplies provide 2.5 Amp and 5 Amp respectively and 300 mA to 600 mA of them are dedicated to charge batteries. These power supplies are able to supply either up to 1.10 and 2.20 Amp current at each PSO1 and PSO2 outputs.
This is the default set up (DIP SW1 ON, up position). However, power supplies can also supply all the current in only one output (DIP SW1 OFF, down position). This way, all the current (2.20 Amp or 4.40 Amp respectively) will be supplied through PSO1 output.



Additional and current information

The features, specifications and product information described in this documentation are correct at time of printing (see cover for date); however the information specified in this document may differ slightly from the actual product as a result of product changes and/or changed standards and guidelines in the planning, installation and start-up.
Updated information and conformity declarations are available for reference on the website www.honeywelllifesafety.es.

2 Standards and guidelines

The general technical rules must be observed when installing fire alarm systems. Any deviation from those rules is only admissible if the same degree of safety can be ensured with different means. Installations within the European Community are primarily subject to all EU regulations defining the current standards for security systems. In Germany, systems are considered to be in compliance with the general technical rules or the standards of the EU for security systems if they meet the technical guidelines of the VDE (Verband Deutscher Elektrotechniker, Association of German Electrical Engineers). They may also be considered to be in compliance with the standards of the EU for security systems if they meet the technical guidelines of another comparable institution within the European Community which have been accepted in accordance with directive on low-voltage systems The same must be applied for all applications of additional, product relating guidelines, e.g. EMI-Guideline and the Construction Products Regulation (CPR).



Ensure local and regional standards and guidelines are observed before installing and operating the power supply.

This subsection lists standards, policies and regulations that the product complies with:

European Standards

- General Product Safety Directive 2001/95/EC
- Low Voltage Directive 2014/35/EU
  - EN 62368-1
    Audio/video, information and communication technology equipment - Part 1: Safety requirements
- Construction Products Regulation 305/2011
  - EN 54-4
    Fire detection and fire alarm systems - Part 4: Power supply equipment
- EMC Directive 2004/108/EC
  - EN 50130-4
    Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder and social alarm systems
  - EN 55032
    Electromagnetic compatibility of multimedia equipment - Emission Requirements
- RoHS Directive 2011/65/EC
  - EN 50581
    Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Australian Standards

- AS 7240.4:2018 Power Supply Equipment
- AS / NZS 60950-1:2015 Safety
- ActivFire Listed - Certificate No. AFP-3441

3 Transport damage inspection

Please check all the packaging and components for damage before commencing the assembly and installation work. Do not assemble or install visibly damaged modules and components!



Fig. 1: Checking components for damage sustained during transport

Danger – Electrical shock!
Remove all power from the FACP before carrying out any installation work!

ESD protection
While handling electronic assemblies, the necessary precautions against electrostatic discharge must be taken.

Protective and functional earth
The PE conductor must be connected to the corresponding terminal at the mains supply. Connect the FE terminal of the panel's cabinet with the protective earthling rail (PE rail) of the power distributor panel from which the fire alarm system will be powered.

4 Back Box HLS PS Series fixing

When a suitable location has been found for installing the HLS PS Series, proceed as follows:

The drawing below shows the position of the fixing holes ① at the back box.
[! symbol]

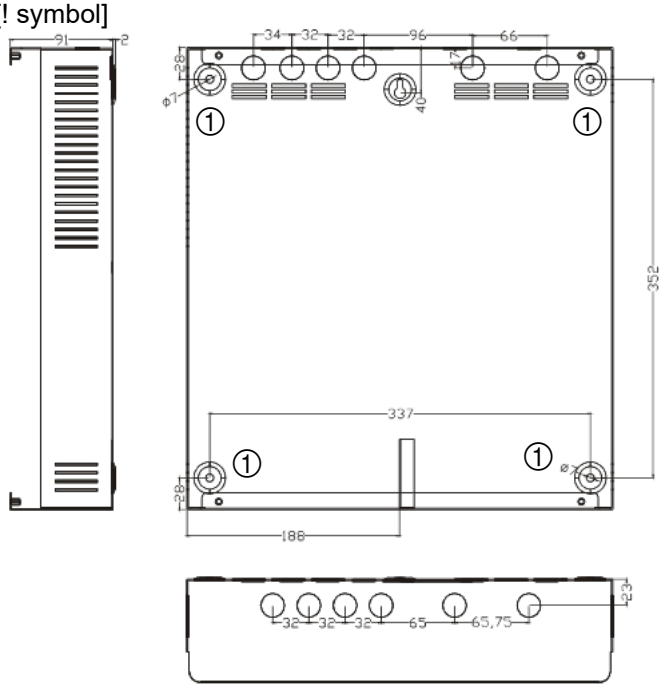


Fig. 2: Back Box HLS PS Series fixing

1. Hold the back box assembly in the required position against the wall and mark the position of the fixing holes, while ensuring the panel is level.
   The cable entries of the housing are closed by the factory and can be opened for the use of cable glands if required.

Only open as many cable entry points as needed! Insert appropriate cable glands. To ensure an ongoing IP30 protection of the housing seal opened, unused cable entry points with dummy plugs!

Do NOT use the back box as a guide when drilling!

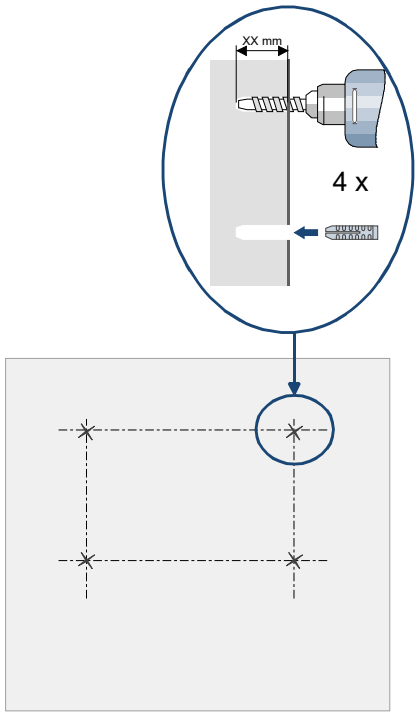


Fig. 3: Drill and plug the wall

2. Drill and plug the wall.
3. Prepare apertures required for cable access.
4. Screw the back box to the wall using the fixing holes and appropriate-sized screws.

4.1 Assembly and installation information

- The Power Supply may only be installed in dry, clean, and adequately lit areas with restricted access. The ambient conditions must correspond to class 3k0.
- The Power Supply must be mounted to an even mounting surface using suitable mounting material 4 screws (4 x 30 mm) + anchors and without creating any mechanical tension. The Power Supply may only be operated after it has been properly mounted to a wall or mounting surface with a sufficient load-bearing capacity.
- Strong electrical / electromagnetic and mechanical influences must be avoided. This especially applies to the installation of the Power Supply, components and installation cables in the direct vicinity of fluorescent lamps or energy cables and to mounting on vibrating, unstable surfaces such as thin partition walls.
- The system must not be installed in facilities and environments that have harmful effects. Parts of the Power Supply may be fed through such environments if the requirements of the DIN VDE 0800 series are met.
- For cabinet or wall installation, operating modules and visual displays should be installed between 800 mm and 1800 mm above the place where the operator stands.
- The Power Supply is not suitable for connection to special power supply systems (e.g. IT).

5 Functions and indicators

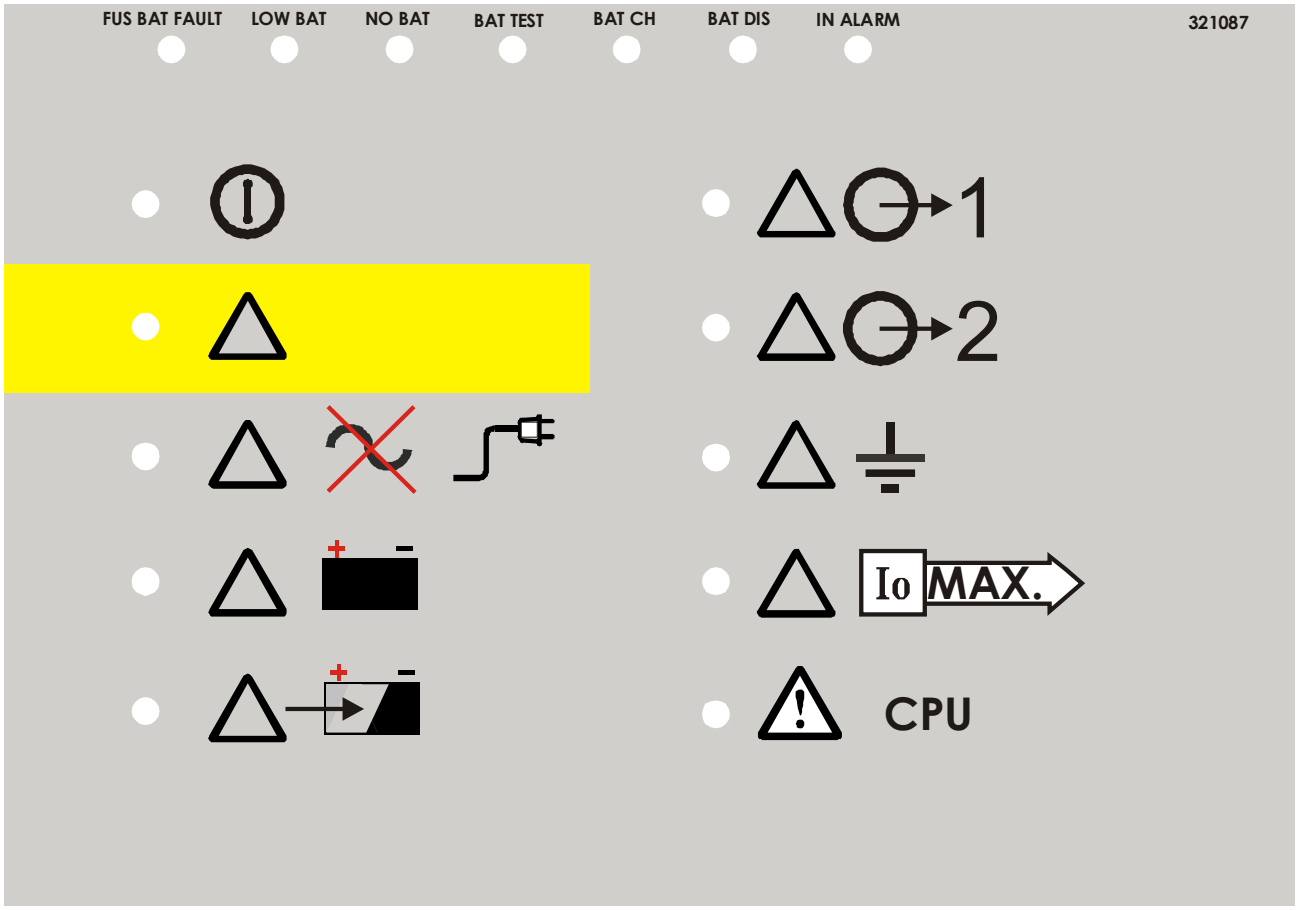


Fig. 4: Front Panel ➔ Power supply LED indicators



OPERATION

Green LED on ➔ when the Control Unit is powered.



FAULT

Yellow LED on ➔ in case of a Power Supply Fault. When this indication is activated, the C and NC contacts of the fault relay will be closed.



MAINS SUPPLY FAULT

Yellow LED off ➔ the Control Unit is powered by batteries. The internal led BAT-DIS is also activated.

Yellow LED on ➔ immediately after detecting power. However, the fault relay signal and the FAULT LED do not activate until the power supply fault remains for more than 8 minutes.

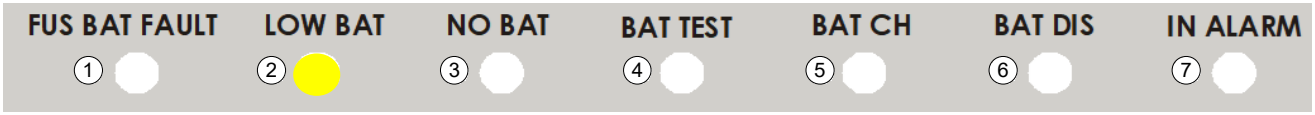


BATTERY FAULT

Yellow LED ➔ Battery is not detected by the Control Unit or the battery voltage is below 22.4 V DC, i.e. the 50 % of its capacity. The FAULT LED and the fault relay signal are also activated.

Yellow LED ➔ When the battery voltage is lower than 20.4 V DC, both outputs, PSO1 and PSO2, and the Output 1 and 2 LED will indicate a fault condition.

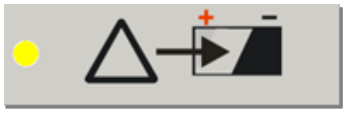
The FAULT LED and the fault relay signal are also activated.



① Battery fuse is open
② Battery below 25 % capacity
③ Battery is not detected

④ Dynamik test
⑤ Charging battery
⑥ Discharging battery

⑦ Alarm input activated. Battery charger disabled



BATTERY CHARGER FAULT

Yellow LED on ➔ when there is a battery charger fault



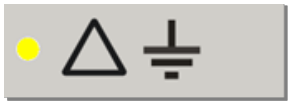
OUTPUT 1 FAULT

Yellow LED on ➔ indicates that the output 1 is not powered



OUTPUT 2 FAULT

Yellow LED on ➔ indicates that the output 2 is not powered

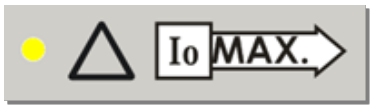


EARTH FAULT

Yellow LED on ➔ indicates an Earth Fault if one of the wirings (+) or (-) is linked to earth.

If J3 is not connected, there will not be earth fault supervision.

Earth fault solution: Make sure that there are no links between Earth and Output 1 and 2 (+) y (-).



OVERLOAD

Yellow LED on ➔ Indicates that the equipment exceeds the maximum current, 5 A.

A momentary peak voltage may be provided by disabling the battery load current in case of alarm by using the IN ALARM connection, which switches the battery current of 300 or 600 mA to the outputs.



SYSTEM FAULT

Yellow LED on ➔ indicates that the Power Supply microprocessor is not operating correctly.

6 Overview

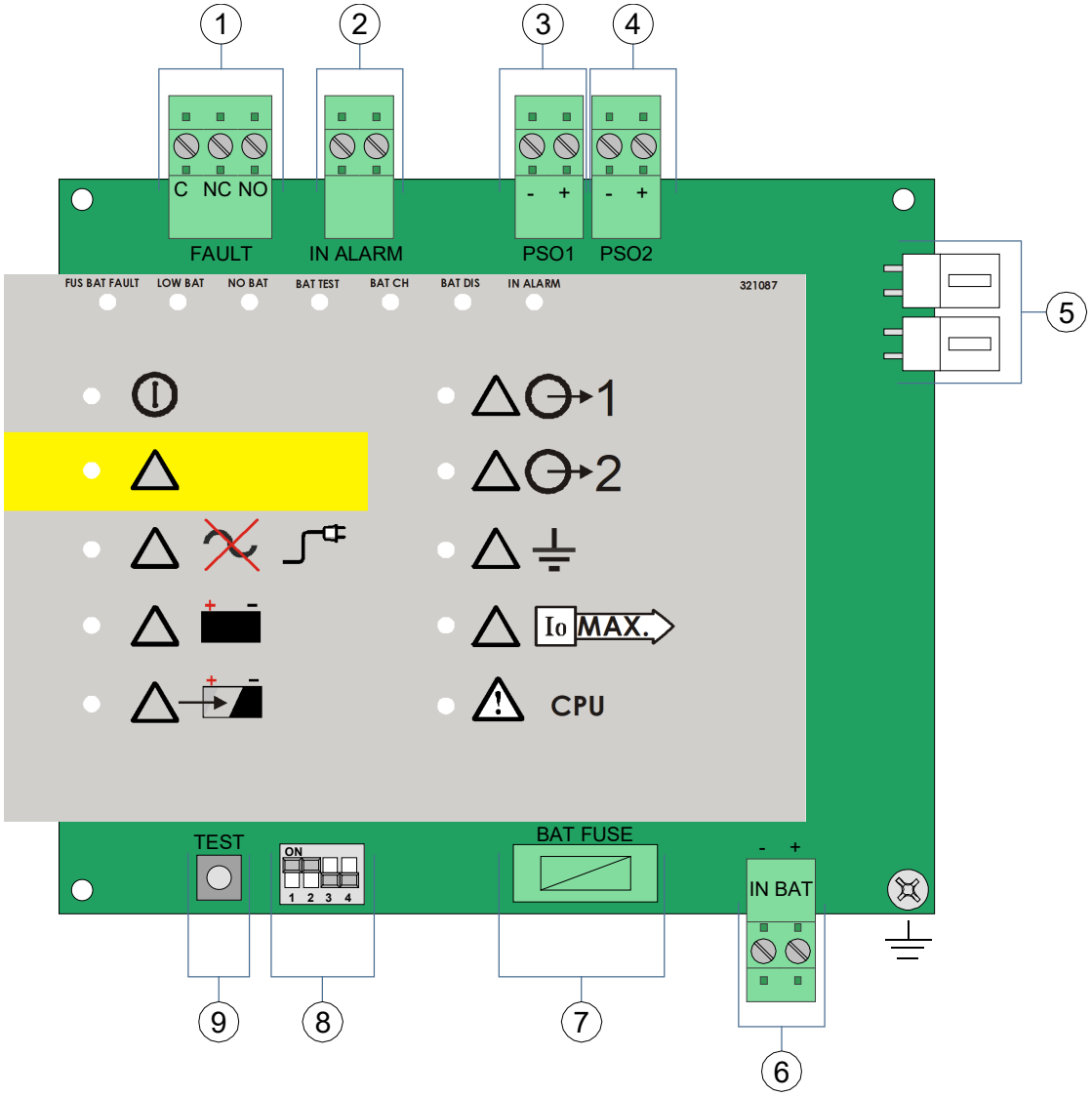


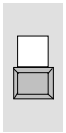
Fig. 5: Overview

Danger by high voltage and current. Do not remove the cover!
Assembly and installation tasks may only be carried out when the device is disconnected from the power supply!

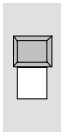
1	**FAULT** (NO) Normally Open Contact / (NC) Normally Closed Contact / (C) Fault Relay Common. The fault relay may be linked to an analogue input module to report any fault to a third equipment like a FACP (Fire Alarm Control Panel).
2	**IN ALARM (+) / IN ALARM (-)** Alarm input to disable, momentarily, the battery charger and be able to supply 300 …600 mA from battery load to the outputs. For this, it is necessary to link both IN ALARM terminals by means of a jumper or short-circuit. When this input is activated, the control unit will have an extra current of battery load 0.3 A or 0.6 A, depending on the DIP SW2 for outputs. Thus, if the power supply is in Overload (Imax) state, the indication will disappear by activating this input, provided that the excess current is the current which is supplying batteries.
3	**PSO1** ➔ Output 1 (+) / Output 1 (-)
4	**PSO2** ➔ Output 2 (+) / Output 2 (-)
5	Input 1 / Input 2
6	**IN BAT** ➔ Battery (+) / Battery (-)  EN 54 - 2 Section 8.2.4 requires that any Earth fault which may affect an obligatory function should be indicated independently. The cable size should be calculated according to the maximum length, the maximum voltage drop supported by devices and the minimum voltage of battery system.
7	**BAT FUSE** ➔ Battery fuse 6.3 A
8	**DIP switch** (1 to 4)
9	**TEST** The test button allows performing a led test and makes a real test of batteries forcing them to supply a fixed current. In case batteries fail, a Battery fault will be reported. The HLS PS Series will supervise automatically the battery each 3 hours. If the battery load is in normal condition, the fault signal will disappear.

6.1 Setting the DIP switch

Meaning

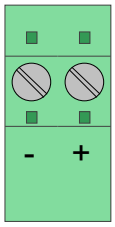
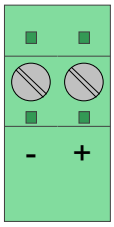
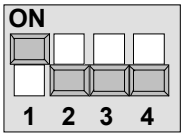
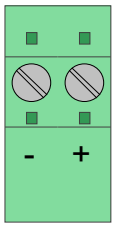
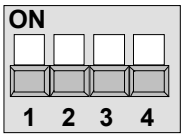


down

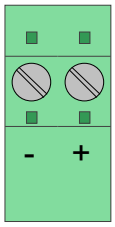
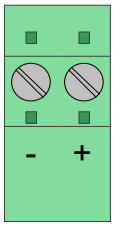
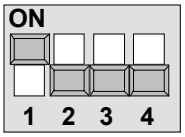
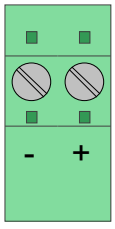
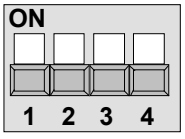


up

HLSPS25

PSO1	PSO2	DIP switch 1	PSO1 Output current / power	PSO2 Output current / power
 PSO1	 PSO2		1.1 A / 30.8 W	1.1 A / 30.8 W
 PSO1	---		2.2 A / 61.6 W	---

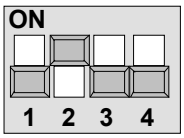
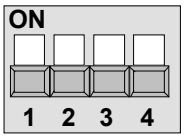
HLSPS50

PSO1	PSO2	DIP switch 1	PSO1 Output current / power	PSO2 Output current / power
 PSO1	 PSO2		2.2 A / 61.6 W	2.2 A / 61.6 W
 PSO1	---		4.4 A / 123.2 W	---

HLSPS 25 : Pb, max = 70 W and HLSPS 50 : Pb, max = 140 W

6.2 Battery

DIP switch 2 allows selecting the maximum current of battery load, depending on the batteries inside the power supply unit box. DIP switch 3 is used to adjust the battery resistance fault.

DIP switch	Setting
	DIP switch 2 ON ➔ 7 A / h batteries can be charged at 300 mA DIP switch 3 ON ➔ 0,7 Ohm
	DIP switch 2 OFF ➔ 17 A / h batteries can be charged at 600 mA DIP switch 3 OFF ➔ 0,5 Ohm

DIP switch 4 ➔ for future use.

6.3 Fault relay

The Power Supply has a fault relay to report any anomaly to a remote control unit.
Any fault has a delay of 30 seconds from the fault signal to fault relay confirmation, except when there is a mains AC loss, which will be indicated after an 8-minute delay to avoid faults from intermittent power cuts.
In stand-by, the fault relay is energized indicating its normal operation. In case of any fault, the relay deactivates after the confirmation time.

FAULT switch with three terminals.

Terminal 1 (right) ➔ C common
Terminal 2 (centre) ➔ NC or Normally Closed
Terminal 3 (left) ➔ NO or Normally Open

Fault relay operates as follows:

No supervision (without power) or in fault condition

Between C and NC ➔ continuity
Between C and NO ➔ open circuit

Operating with supervision without faults, i.e. in NORMAL STATE

Between C and NC ➔ open circuit
Between C and NO ➔ continuity

6.4 Mains and earth connections

The Power Supply may only be electrically connected after it has been mounted to the wall. The unit must be disconnected from the power supply before connecting the electrical connections.

- Use a suitable cable, e.g. NYM 3 x 1.5 mm (max. 2.5 mm²), or a cable with the same characteristics, for connecting the system to the mains.
- Connect the Power Supply to the AC mains power supply via a separate mains isolator or a suitably rated circuit breaker. The rated voltage (e.g. 230 V AC) is specified on the Power Supply's type plate.
- Overvoltage fine protection is integrated into the Power Supply according to EN 54. Should medium and coarse protection be required, this must be installed as required for the specific system by the person fitting it.



Danger - Electric shock!
Assembly and installation work may only be carried out when the Power Supply is voltage free. Observe the rated voltage (e.g. 230 V AC) specifications on the Power Supply's type plate!

ESD / EMC preventive measures
Before handling electronic modules, always take suitable precautions to prevent static electricity.

Commissioning
A complete function test must be performed on the system upon completion of the commissioning as well as after every change to the customer data programming.
Insulation on connecting cables
The cable sheath (jacket) of all of the connecting cables must be left intact up to a point inside the Power Supply's housing and may only be stripped inside the housing.

Fuses
The fuses of the Power Supply cannot prevent an unexpected fault in electrical modules; rather, these fuses are intended to protect users and their surroundings from damage. Therefore, never repair or bridge the fuse that is installed or replace it with anything other than the stated type!

Damage hazard!
The mounting surface and mounting material must be strong enough to hold the weight of the battery type used.

Short circuits
All power and signal lines connected to the Power Supply must be secured with suitable fastening material, e.g. plastic cable fasteners, so that they cannot come loose or move around. Ensure that the power supply line cannot touch the signal lines (SELV) when moved.

EU guidelines
Within the EU, these standards and guidelines and the technological standards must be complied with!

Non-EU guidelines
In other/non-European countries (e.g. USA: NFPA and UL requirements), country-specific standards, guidelines and laws must be complied with!

Local requirements
Depending on the place of use, national/regional requirements of certain organisations (e.g. local fire brigades and competent authorities) must also be observed!

6.5 AC voltage supply

The Power Supply's 230 V AC voltage supply (nominal voltage) must be connected as shown in next figure:

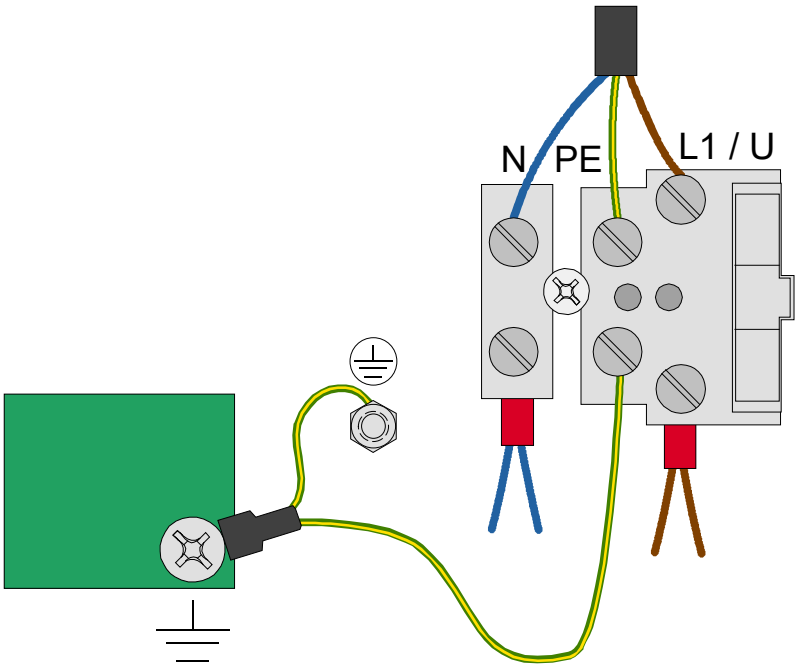


Fig. 6: 230 V AC power supply connection

Emergency power supply

In the event of a mains power failure (e.g. 230 V AC), the connected batteries will supply the Power Supply with power without any interruption. Depending on the capacity of the batteries used, the emergency power supply might be sufficient to power the system for 72 hours or longer.

Initial start up

New batteries must be recharged for at least 24 hours before the system is started up. If the batteries were manufactured more than nine months ago, they will have to be recharged for at least 48 hours.

Low voltage disconnect

The Power Supply periodically checks the charge state of the connected batteries. If this battery check detects a battery charge lower than 23 V DC while the battery is in use, a battery fault message will be issued. The battery charging is controlled by the firmware and it is temperature dependent. If the terminal voltage of the batteries drops below 21 V DC, the emergency power supply will be switched off to protect the batteries. The mains supply fault must be corrected and the Power Supply switched on again. The batteries are automatically charged again when the Power Supply is connected to the mains and the battery voltage is higher than 14 V DC. If the voltage is below 14 V DC, the charger is disabled. The discharged batteries must either be recharged externally or replaced.

- Risk of explosion if the battery is replaced by an incorrect type!
- Only ever connect batteries of the same type to the Power Supply (manufacturer, manufacturing date, capacity, charge)!
- The batteries used within this device may only be replaced by batteries that are in compliance with the standard IEC 60896-21 and IEC 60896-22 and made of material with flammability rating V-1 or better!

The Power Supply might also issue battery fault warnings for reasons other than totally discharged or defective batteries. Such warnings could also indicate excessive contact resistance at the battery terminal clamps or connecting cables.

The battery manufacturer guidelines on the total discharge of batteries must also be observed.

6.6 Connecting the batteries

The Power Supply can be fitted with two series 12 V DC batteries with the same capacity of 17 Ah each as emergency power supplies. The PSU cyclically checks the batteries charge condition, the connecting cables and battery fuses (each 200 ms).

- The two batteries are connected in series using the supplied connecting cables. In the accessories bag there are provided three cables with 6.35 fast-on connectors.
- For the batteries without 6.35 fast-on plug, it is necessary to purchase 6.35 fast-on adapter.

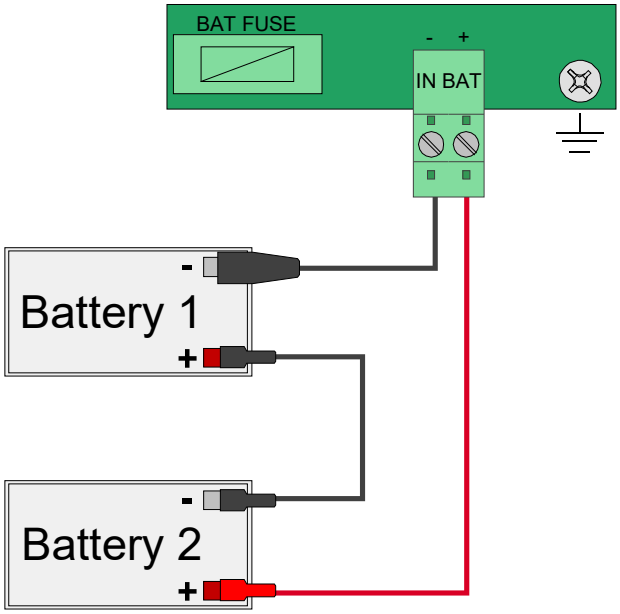


Fig. 7: Example of connecting the batteries

Approved batteries

This device is tested and approved for use with batteries listed below. These batteries are highly recommended to ensure a safe operation:

Voltage	Capacity	Vendor	Reference number
12 V	17 Ah	SUN	SB12 - 17
12 V	17 Ah	YUASA	NP_17_12
12 V	17 Ah	AUS Cell	CJ12 -18

It is recommended to use only the batteries listed above.

6.7 Connecting the outputs

PSO1 and PSO2 may only be electrically connected after unit has been mounted to the wall.

Depending of the equipment which needs to be powered from the HLSPS25-50, fire resistant cable can be used. Section of the wires must be chosen in function of the consumption and distance (drop of voltage) from the equipment to power and with a maximum section of 2.5 mm² for the removable terminals.

7 Specifications

Mains voltage	:	230 V AC (+10% / -15%)
Rated frequency	:	50 ... 60 Hz
Input voltage	:	115 … 230 AC; 50 / 60 Hz
Output voltage	:	28 V DC +/-5% V DC (overload and short circuit protection)
Power	:	Pa, max - rated maximum output power that can be supplied continuously: • Max. Power per Output (Pa, max) : 30.8 Watts (HLSPS25); 61.6 Watts (HLSPS50) • Max. Power using both Outputs (Pa, max) : 61.6 Watts (HLSPS25); 123.2 Watts (HLSPS50) Pc, max - rated maximum output power which can be supplied by the standby power source: • HLSPS25 : 65 W • HLSPS50 : 130 W Pmin - minimum output power specified by the manufacturer: • The quiescent current is 0.1 mA for each transformer and so for two transformers is 0.2 mA. • This is at 230 V AC, so the minimum power consumption is 0.2 mA x 230 V AC; Pmin = 0.046 W
State Indicators	:	10 external LED (5 mm) + 7 internal (SMD)
Optional conversion 2 outputs to 1 output	:	Yes, using DIP SW1
Maximum current per output	:	1.10 A (HLSPS25); 2.20 A (HLSPS50)
Maximum current using only one output	:	2.20 A (HLSPS25); 4.40 A (HLSPS50)
PSU outputs	:	2 outputs
Terminals	:	Removable terminals for 2.5 mm cable
Mains fuse	:	4 A, slow acting
Battery fuse	:	6,3 A, slow acting (HLSPS50)
Alarm Input	:	By linking both terminals with a jumper (or short-circuit), this input allows the battery charger momentary disablement in order to provide extra 300 mA / 600 mA to the outputs
Earth Fault Supervision	:	Configurable (ON, OFF)
Fault Relay	:	C, NC, NO contacts, max. 1 A /24 V DC, Energized in normal state
Battery load current	:	300 mA (7 Ah) / 600 mA (17 Ah). 80 % of the battery capacity is charged in less than 24 h and the 100 % in less than 48 h
Battery room	:	2 x 17 Ah
Conduit knockouts	:	Top of back box ➔ 6 knockouts Ø 21 mm Rear top of back box ➔ 6 knockouts Ø 21 mm
Vibration test	:	10 … 500 Hz 2G 10 min / 1 cycle during 60 min. on each axle
Operating temperature	:	- 5 °C ... + 40 °C
Storage temperature	:	- 15 °C ... + 50 °C
Rel. humidity	:	≤ 95% (no condensation)
Protection rating	:	IP 30
Dimensions (W x H x D)	:	377 x 408 x 92 (mm)



- In case of AC mains fault the batteries, voltage will provide power from a 21.5 V DC ... 27,8 V DC +/- 3 % when the power supply will be switch off!
- Shield cables are required for power supply units' connection.

8 Maintenance

HLSPS25 and HLSPS50 has been designed to be as maintenance-free as possible.

Perform periodically a visual check to make sure that no fault indication are present, the ventilation point are not obscured by dust or dirtiness and the batteries have a normal shape.

Functional test should be done at least once a year:

- LED test (refer page 13, ⑨ for more information).
- Remove the mains fuse, a fault must be generated (refer chapter 5 Function and indicators) and install fuse again before testing the battery fault.
- Remove the wire between both batteries, a fault must be generated (refer chapter 5 Function and indicators).
- Additional standard measurement can be taken during the maintenance as the charge voltage – battery voltage – load current.



- Risk of explosion if the battery is replaced by an incorrect type!
- Only ever connect batteries of the same type to the Power Supply (manufacturer, manufacturing date, capacity, charge)!
- The batteries used within this device may only be replaced by batteries that are in compliance with the standard IEC 60896-21 and IEC 60896-22 and made of material with flammability rating V-1 or better!
- The wear-dependent replacement of batteries must be performed within the period of time specified by the manufacturer of the batteries. Most manufacturer recommend a replacement within five years.
- The batteries must always be disposed in accordance with the battery manufacturer's recommendations and local regulations.
- If the unit fails to function, there are no user parts to change. The complete product must be removed from its installation and a replacement obtained and fitted.
- Before removing, notify the proper authorities that the system is going under maintenance and therefore the system will be temporarily out of service.

Notes

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