Pulsar®

USER MANUAL

EN

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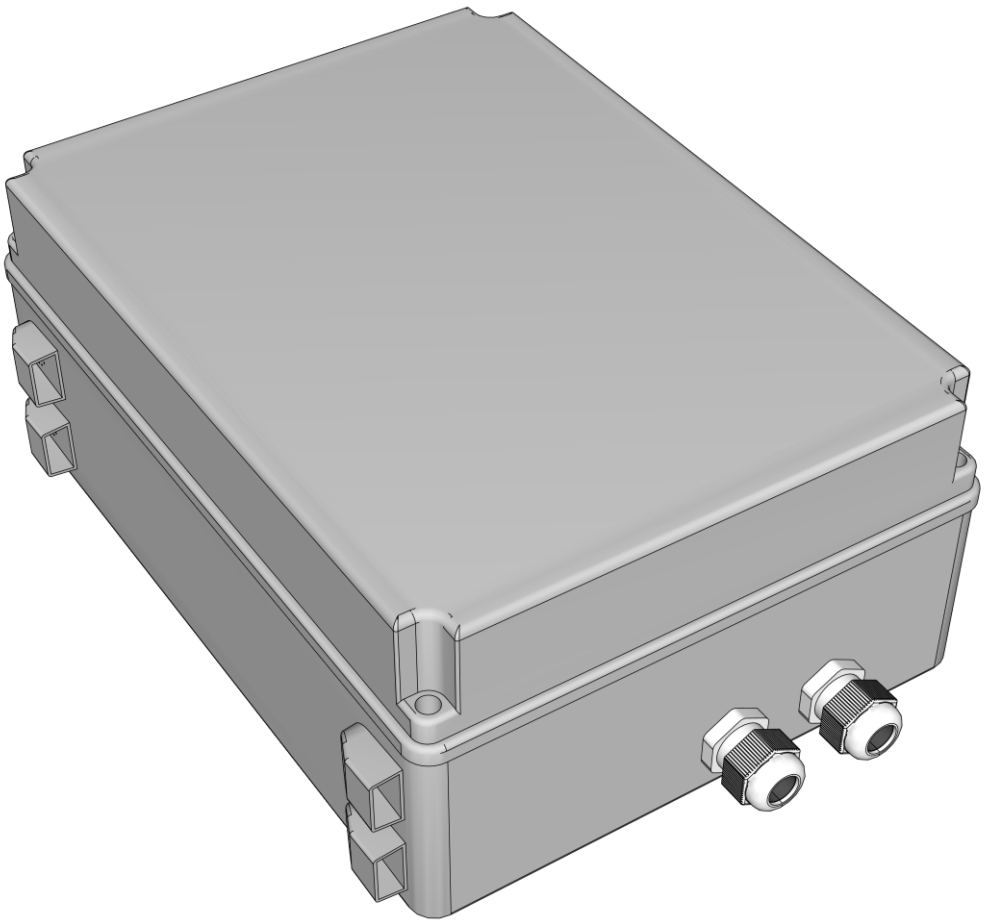
Supersedes edition:

HPSG2H-12V5A-C

v1.0

HPSG2H 13,8V/5A/17Ah switch mode power supply unit with battery backup, Grade 2, ABS enclosure IP44



Features:

- compliance with norm EN50131-6:2017 in grade 1, 2 and II environmental class
- compliance with norm EN60839-11-2:2015+AC:2015 and I environmental class
- supply voltage **~200 - 240 V**
- DC 13,8 V/5 A uninterruptible power supply
- space for battery 17Ah/12V (SLA)
- high efficiency (up to 87%)
- function START allows running PSU from battery power
- enclosure **ABS – IP44**
- used glands help to provide wires into enclosure
- possibility of pole mounting (requires OZB4 adapter - optional accessory)
- LED optical indication
- deep discharge battery protection (UVP)
- battery charging current jumper selectable
- dynamic battery test
- battery circuit continuity control
- battery voltage control
- battery charging and maintenance control
- battery output protection against short circuit and reverse connection
- protections:
  - SCP short circuit protection
  - OLP overload protection
  - OVP overvoltage protection
  - surge protection
  - antisabotage protection: unwanted enclosure opening
- warranty – 2 years from production date

TABLE OF CONTENTS:

1. Technical description.

1.1. General description.

The buffer power supply is designed in accordance with the requirements of the (I&HAS) EN50131-6:2017 in grade 1, 2 and II environmental class and (KD) EN60839-11-2:2015+AC:2015 standard and I environmental class. The power supplies unitsare intended for for an uninterrupted supply of I&HAS and KD devices requiring stabilized voltage of 12 V DC (±15%).

Table 1. Displaying parameters of the power supply:

PSU's name	Output voltage	Charging current	Output current		Total output current with charging
			in standby mode for grade 1, 2 EN50131-6	for general purpose application	
HPSG2H-12V5A-C	**13,8 V**	**1 / 2 A**	**Σ=1,41 A**	**4 / 3 A**	**5 A**

In case of power failure, a battery back-up is activated immediately. Power supply is placed in **ABS (IP44)** enclosure, which can accommodate a 17Ah/12V (SLA) battery. Enclosure is equipped with a tamper switch signaling opening the door (front panel).

PSU module should be configured properly, depending on application, to work in burglary and assault signalling systems or access control. For this purpose, appropriate charging current should be selected (taking into account battery capacity and required charging time).

1.2. Block diagram (Fig. 1).

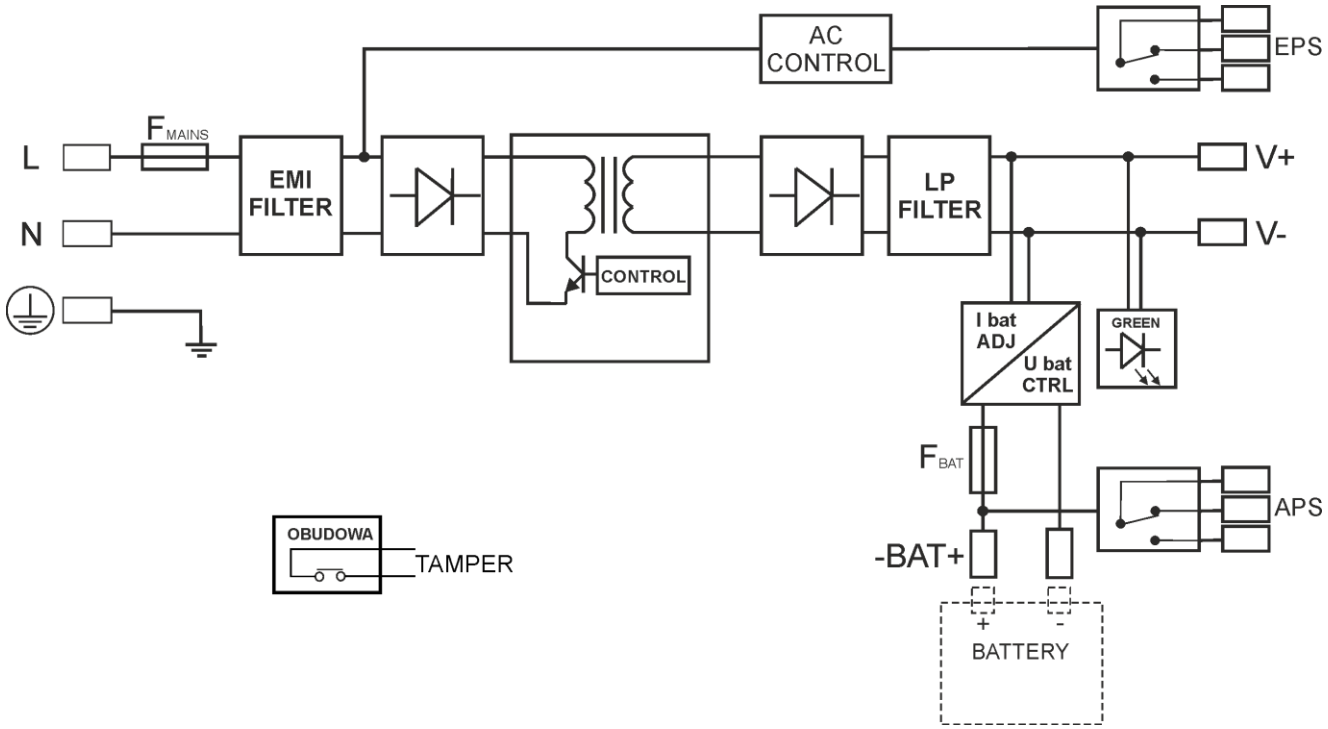


Fig.1. Block diagram of PSU.

1.3. Description of PSU components and connectors.

Table 2. Elements and connector of PSU (see Fig.2).

Element no.	Description
[1]	Ventilation
[2]	Power supply unit
[3]	Battery space (17Ah; 12 V; SLA)
[4]	Selection jumper for charging current: • **I_{BAT}** = ▬, I_{BAT} = 1 A • **I_{BAT}** = ▪▪, I_{BAT} = 2 A
[5]	**START** - START button (launching from battery)
[6]	Output of PSU (**V+**, **V-)**
[7]	Technical outputs (dla Mean Well: ALARM FUNCTION)
[8]	**L-N** power supply connector 230 V AC, ⏚ – connector for connection of a protective conductor
[9]	BAT +, BAT - battery outputs + BAT red, - BAT black
[10]	Cable glands
[11]	**TAMPER;** microswitch of antisabotage protection (NC)

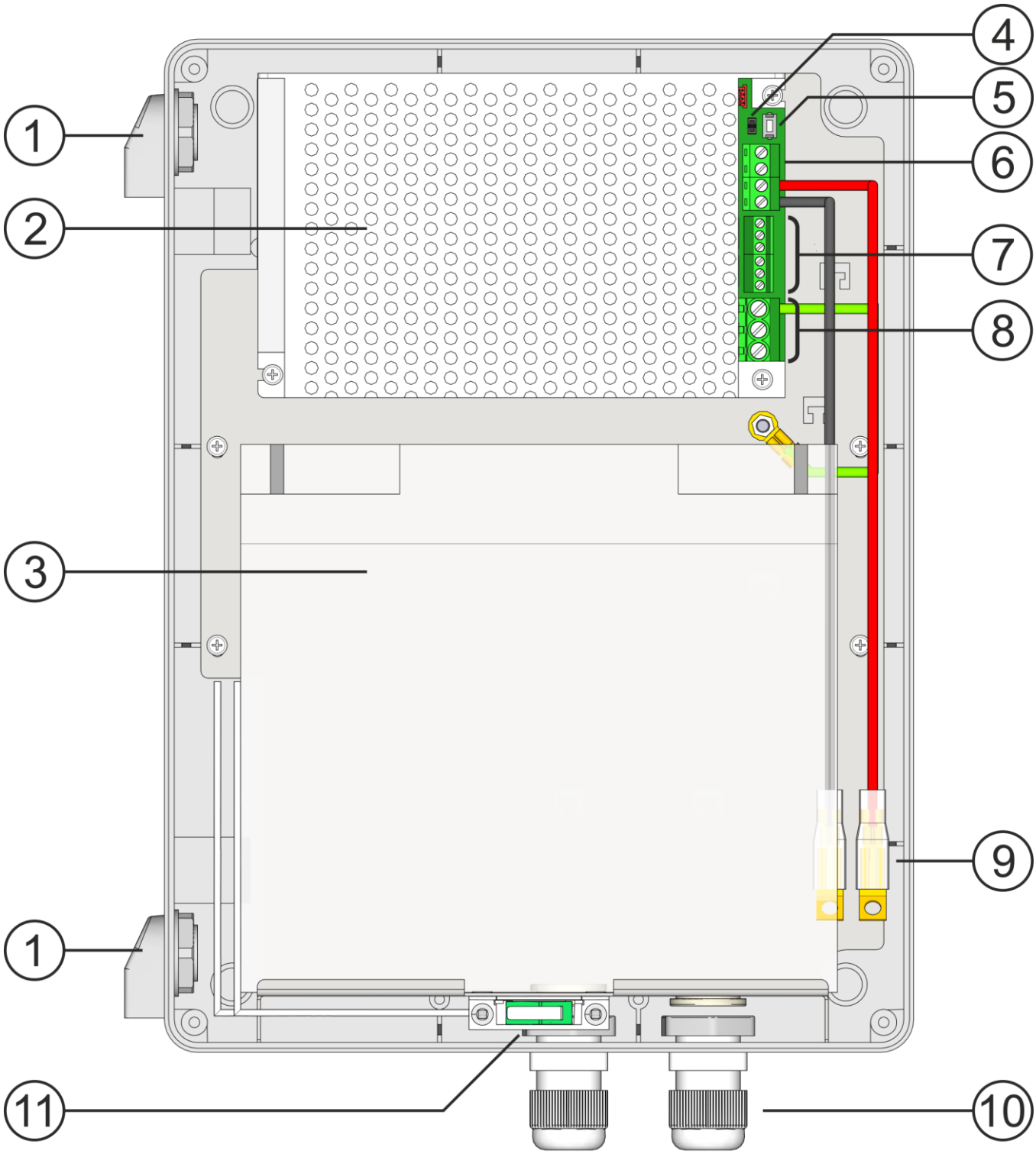


Fig. 2. View of PSU.

1.4. Specifications:
- **electrical parameters (Tab. 3)**
- **mechanical parameters (Tab. 4)**
- **operation safety (Tab. 5)**
- **operating parameters (Tab. 6)**

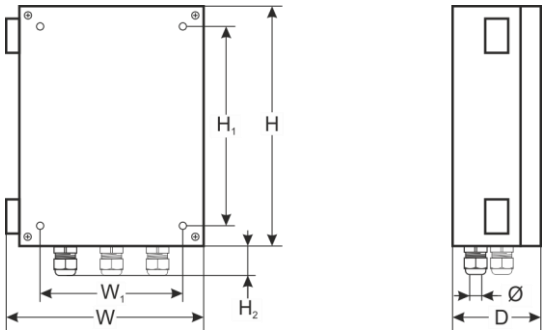


Table 3. Electrical parameters.

PSU type (EN 50131-6)	A (EPS - External Power Source), II environmental class
Supply voltage	~ 200 - 240 V
Current consumption	0,8 A
Power frequency	50/60 Hz
Inrush current	40 A
Output power PSU	69 W
Total output current with charging	5 A
Efficiency	87%
Output voltage	11 - 13,8 V – buffer operation 10 - 13,8 V – battery-assisted operation
Ripple voltage (max.)	100 mV p-p
Current consumption by PSU systems during battery-assisted operation	30 mA
Battery capacity	17-20 Ah/ 12 V (SLA)
Charging current (jumper selectable)	1 / 2 A
Overload protection (OLP)	105-150% PSU power, automatically recovered
Over voltage protection (OVP)	>19 V (activation requires disconnecting the load or supply for about approx. 1 min.)
Battery circuit protection SCP and reverse polarity connection	- glass fuse F_{BAT} (in case of a failure, fuse-element replacement required – under power supply cover)
Fuses: - F_{BAT}	T 6,3A/250V
Deep discharge battery protection UVP	U<9,5 V (± 5%) – disconnection of battery circuit
Technical outputs: **- EPS; output indicating AC power failure** **- APS; output indicating battery failure**	- relay type: 1A@ 30VDC/50VAC
Optical indication	- LCDs on PSU's PCB
Terminals: **Mains supply:** **Outputs:**	0,5 – 2,5 mm^2 (AWG 26 – 12)
Battery outputs:	Battery wires 6,3F – 45cm, angle muffs ML062
TAMPER	Wires 40cm
Notes	Convectional cooling

Table 4. Mechanical parameters.

Enclosure dimensions	W=238, H=308, D=130 [+/- 2mm]
Installation	W_1=185, H_1=265 [+/- 2mm]
Height glands	H_2=37 [+/- 2mm]
Recomended battery	W=190, H=176, D=86 [+/- 2mm]
Number of cable glands / cable diameter:	2 pc. / 10 - 14 mm
Net/gross weight	1,9 / 2,1 [kg]
Enclosure	ABS enclosure, IP44
Closing	Screw x 4 (at front)

Table 5. Operation safety.

Protection class EN 62368-1	I (first)
Protection grade EN 60529	IP44
Electrical strength of insulation: **- between input and output circuits of PSU** **- between input circuit and protection circuit** **- between output circuit and protection circuit**	 4000 V DC min. 2500 V DC min. 500 V DC min.
Insulation resistance: **- between input circuit and output or protection circuit**	 100 MΩ, 500 V DC

Table 6. Operating parameters.

Environmental class EN 50131-6	II
Environmental class EN 60839-11-2	I
Operating temperature	-10ºC...+40ºC
Storage temperature	-20ºC...+60ºC
Relative humidity	20%...90%, without condensation
Vibrations during operation	unacceptable
Impulse waves during operation	unacceptable
Direct insolation	unacceptable
Vibrations and impulse waves during transport	According to PN-83/T-42106

2. Installation.

2.1 Requirements.

Buffer power supply is designed to be installed only by qualified installer with necessary permits and authorisations (required in installation country) to connect (interfere) with the ~230 V mains supply. Unit should be mounted in confined spaces, in accordance, with normal relative humidity (RH=90% maximum, without condensing) and temperature from -10°C to +40°C.

Device must be mounted in a vertical position with cable glands facing downwards. Mounting in any other position is not permitted. Ensure free convective airflow around enclosure. In order to meet the EU requirements, follow the guidelines on: power supply, enclosures and shielding: - according to application.

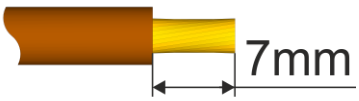
Because the power supply is designed for the continuous operation and is not equipped with ON/OFF switch, the power supply circuit should have the appropriate overload protection. Moreover, the user shall be informed about the method of unplugging (most frequently through separating and assigning an appropriate fuse in the fuse-box).
The electrical system shall follow valid standards and regulations.

2.2 Installation procedure.

CAUTION!
Before installation, cut off voltage in 230 V power-supply circuit. To switch power off, use an external switch, in which distance between contacts of all poles in disconnection state is not less than 3mm.

It is required to install in the supply circuits, in addition to power supply, circuit breaker with 6 A nominal current.

1. Mount device and feed connection wires through glands and filler inserts. Then tighten the glands (unused ones should be blanked off).
2. Connect power cables (~230 V) to L-N clips of PSU. Connect ground wire to clip marked by earth symbol ⏚. Use a three-core cable (with a yellow and green protection wire) to make connection⏚). Lead the power cables to the relevant terminals of the power supply via an isolation conduit. Wires should be deisolated to a length of 7mm.



The shock protection circuit shall be done with a particular care: the yellow and green wire coat of the power cable should be connected to the terminal marked with the grounding symbol on the PSU enclosure. Operation of the PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause damage to the equipment or an electric shock

3. If needed, connect the device cables to the technical outputs:
   - EPS; technical output of AC network absence indication
   - APS; technical output indicating battery failure
4. Connect equipment to the appropriate output terminals of power supply (positive connector +V, negative connector -V).
5. Use the I_{BAT} jumper to set the maximum battery charging current, taking into account charging capacity and required charging time.
6. Mount the battery in the battery compartment of the enclosure. Mount the battery in the battery compartment of the enclosure. Connect the batteries with the PSU paying special attention to the correct polarity and type of connections.
7. Switch on ~230 V supply. LEDs on the PCB of power supply should light.

Output voltage of the PSU, without load U = 13,8 V DC.
During battery charge, voltage can amount to U = 11 - 13,8 V DC.

8. During battery charge, voltage can amount to:
   - **cutting off the 230 V current**: EPS technical outputs will change status into opposite after about 30s
   - **battery disconnection**: APS technical output will change status after a battery test have been completed (~5min).
9. After installing and checking proper working, the enclosure can be closed (ensure that cover fits evenly over its entire surface).

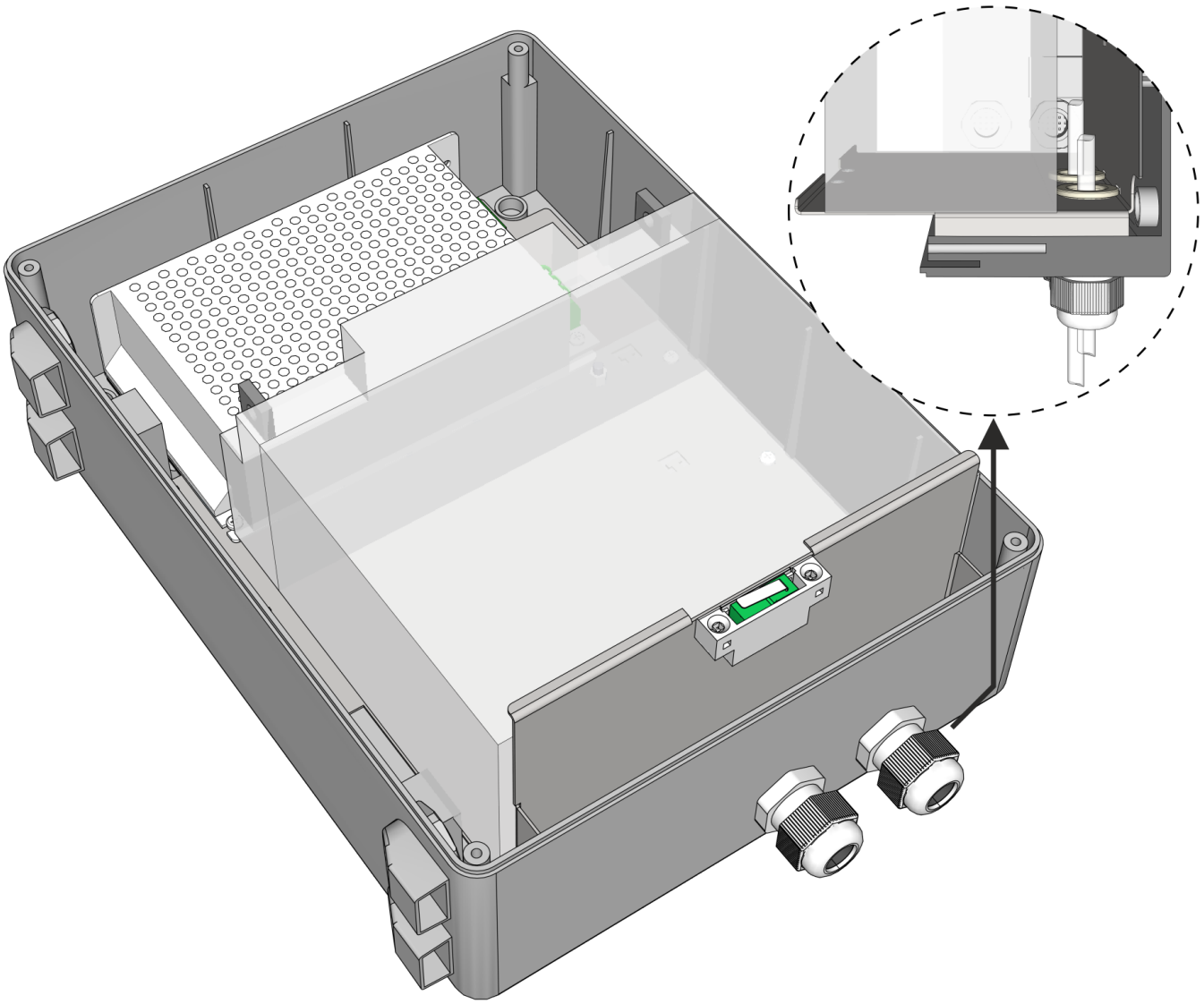


Fig. 3. PSU installation example

3. Operating status indication.

3.1 Optical indication.

Moreover, PSU is equipped with LED indicating presence of voltage at PSU output, located on PCB of PSU module.

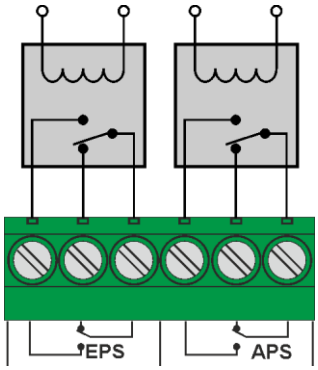
3.2 Technical outputs.

The PSU is equipped with indication outputs:

- **EPS FLT - output indicating 230 V power loss**.
  The output indicates 230V AC power failure In case of power failure, contacts of relay change over after about 30 seconds.

- **APS FLT - output indicating battery failure.**
  The output indicates the PSU failure. In case of failure, contacts of relay change over. PSU failure can be caused by the following events::
  - defective or low battery
  - battery fuse failure
  - no continuity in the battery circuit
  - battery voltage below 11,5 (23) V during battery-assisted operation

  A battery failure is detected within a maximum of 5 minutes - after each battery test



CAUTION! The figure set of contacts shows a potential-free status of relay, which corresponds to power supply failure.

3.3 Standby time.

Battery-assisted operating depends on battery capacity, charging level and load current. To maintain an appropriate standby time, current drawn from the PSU in battery mode should be limited. Required battery capacity can be calculated using following formula:

$$Q_{AKU} = \text{standby time} * (I_{WY} + Iz)$$

where:
Q_{AKU} – minimum battery capacity [Ah]
I_{WY} – power supplies output current (drawing by the load
Iz – PSU current consumption (including optional modules) [A] (Table 4)

Total current of the receivers + battery charging current mustn't exceed maximum current of power supply.

3.4 Battery charging time.

The PSU has a battery circuit charged with direct current. The current selection is done with use of the I_{BAT} jumpers. The table below shows how long does it take to charge a (fully discharged) battery up to min. 80% of its nominal capacity.

Table 7. Approximate battery charging time up to the capacity of 0,8.

Battery	Charging current	
	1 A	2 A
17Ah	16h	8h

3.5 Running PSU on battery backup.

Power supply allows you to run on battery backup when necessary. To do this, press the START button on PCB.

4. Maintenance.

Any and all maintenance operations may be performed following the disconnection of the PSU from the power supply network. The PSU does not require performing any specific maintenance measures, however, in the case of significant dust rate, its interior is recommended to be cleaned with compressed air. In the case of a fuse replacement, use a replacement of the same parameters.

WEEE LABEL

Waste electrical and electronic equipment must not be disposed of with normal household waste. According to the European Union WEEE Directive, waste electrical and electronic equipment should be disposed of separately from normal household waste.

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