USER MANUAL

EN

Edition: 1 from 19.03.2021

Supersedes edition:

Power supply units
PWB series

Enclosed buffer switch mode POE power supply units

Features:

- supply voltage ~200 - 240 V
- **DC 52 V** uninterruptible power supply available models: **1,15 A; 2,3 A**
- high efficiency (up to 87%)
- Built-in DC/DC converter allows reduce installation costs and stabilise output voltage regardless of battery charge status
- battery charging and maintenance control
- power supply dedicated for PoE power supply systems
- optional equipment: set of LED optical indication PKAZ168, mounting plate DIN4
- START function of manual switch to battery power
- LED optical indication
- deep discharge battery protection (UVP)
- battery output protection against short circuit and reverse connection
- protections:
  - SCP short circuit protection
  - OLP overload protection
  - surge protection
- warranty – 2 years from production date

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1. Technical description.

1.1. General description.

Switch mode buffer power supply units PWB are intended for continuous power supply to devices that require stabilised voltage of 52 V (**e.g. PoE power systems, PoE switches**). Rozwiązanie posiada dodatkowy atut w postaci stabilizacji napięcia wyjściowego bez względu na stan naładowania baterii. Built-in DC/DC converter allows to reduce costs of installation by reducing number of required batteries. Additional advantage is output voltage stabilisation regardless of battery charge status.

Table 1. Parameters of power supplies:

Model	Output voltage AUX	Output current max.	Charging voltage	Charging current
PWB-52V1A	**52 V**	**1,15 A**	**13,8 V**	**0,5 A**
PWB-52V2A	**52 V**	**2,3 A**	**27,6 V**	**0,5 A**

In case of power failure, a battery back-up is activated immediately. PSU is constructed based on switch mode PSU, with high energy efficiency. In addition, they are equipped with a START button allowing them to be started from the battery (e.g. in the absence of mains power).

1.2. Block diagram (Fig.1).

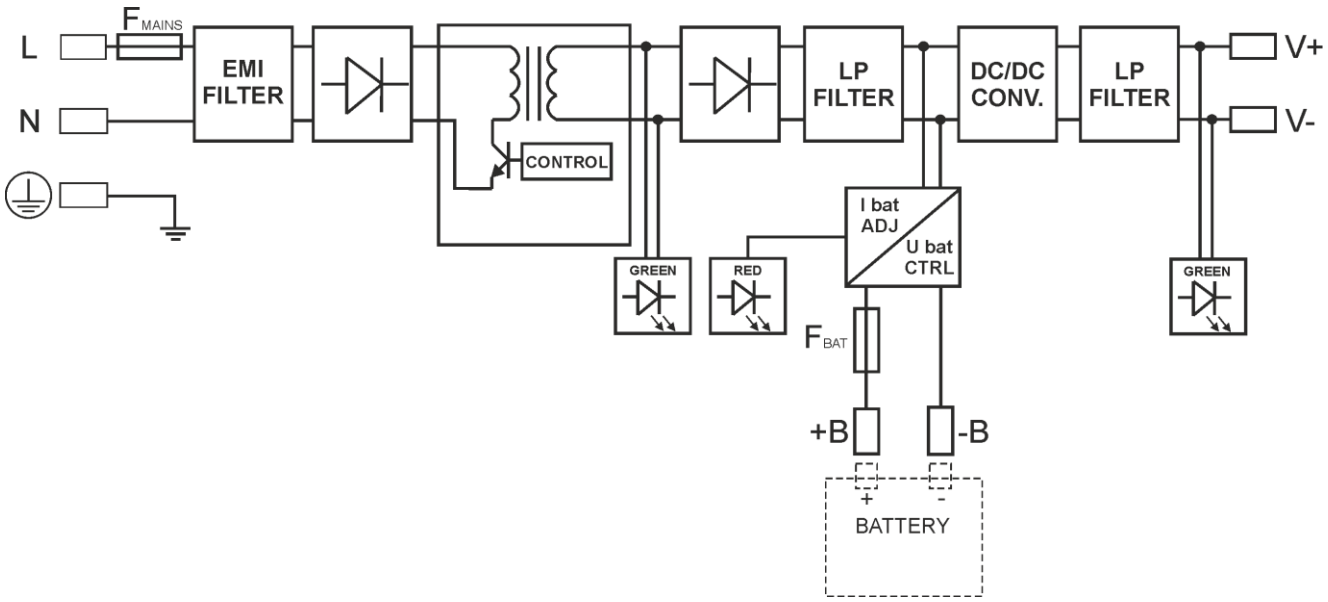

Fig.1. Block diagram of PSU.

1.3. Description of PSU components and connectors.

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

Element no.	Description
[1]	**L-N** power supply connector 230 V AC, ⏚ – connector for protective conductor
[2]	START button (running PSU on battery backup)
[3]	Battery fuse
[4]	Battery terminals (**BAT+**, **BAT-**)
[5]	Output of PSU (**AUX+**, **AUX-)**
[6]	LED indicating the presence of DC voltage
[7]	Connector for external LED indicators

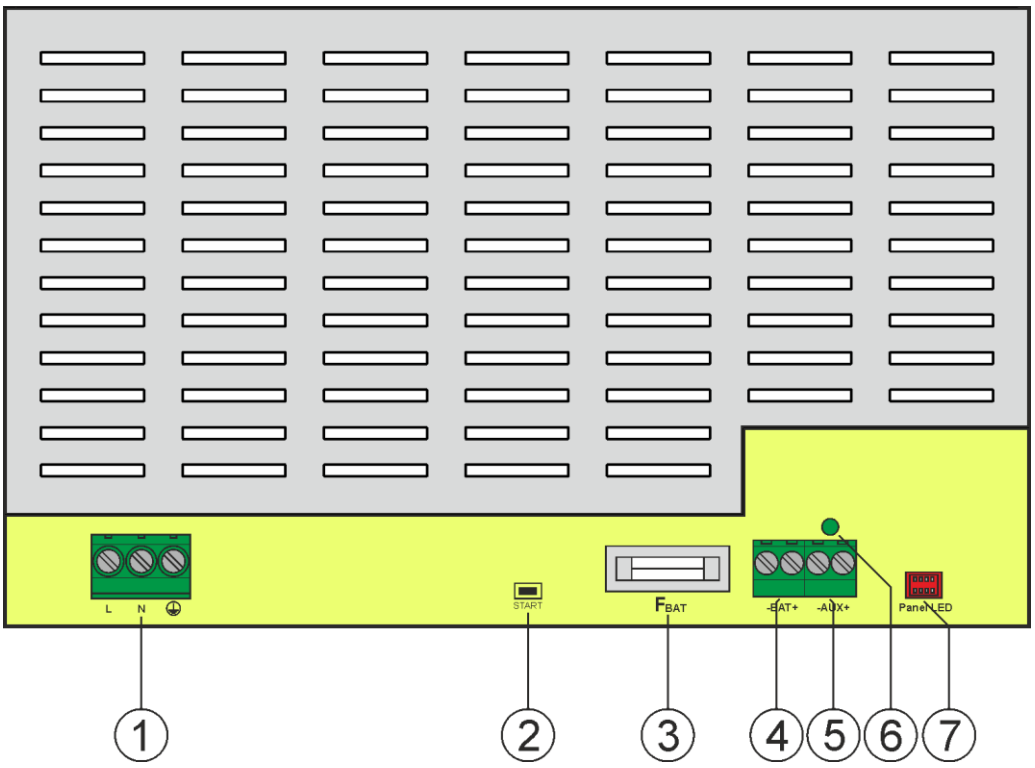

Fig. 2a. View of power supply module PWB-52V1A

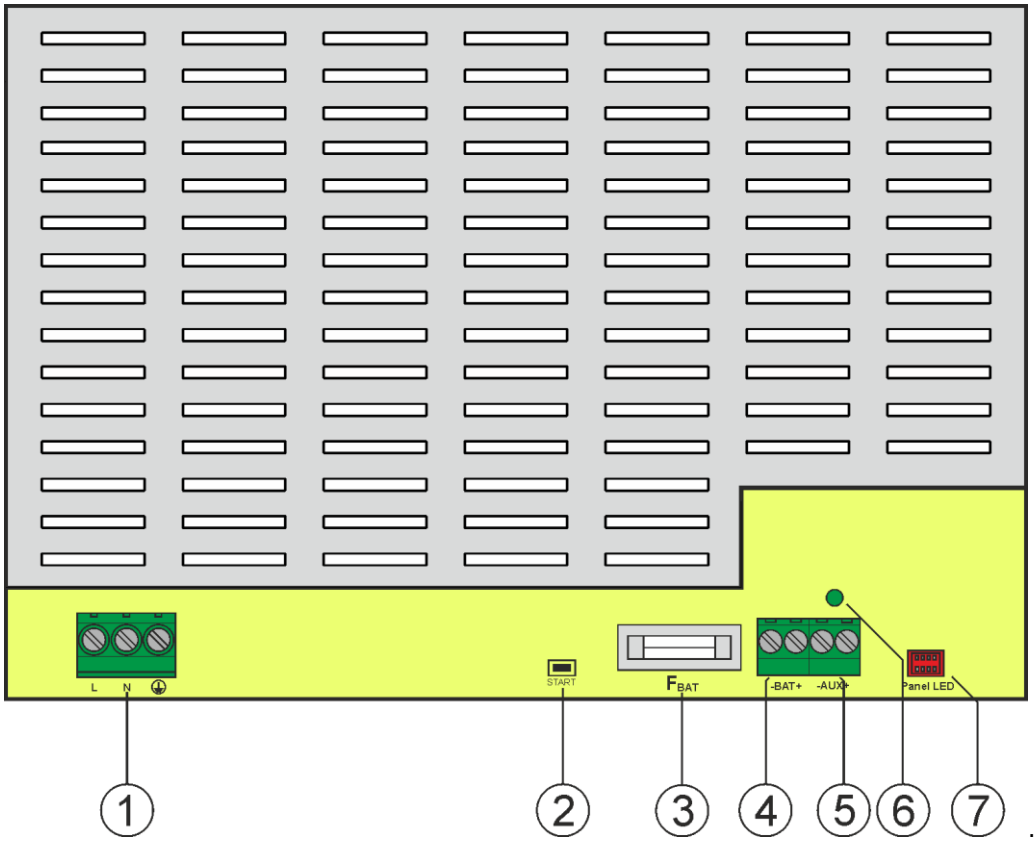

Fig. 2b. View of power supply module PWB-52V2A

1.4. Specification:

- electrical parameters (tab. 3)
- operation safety (tab. 4)
- operating parameters (tab. 5)

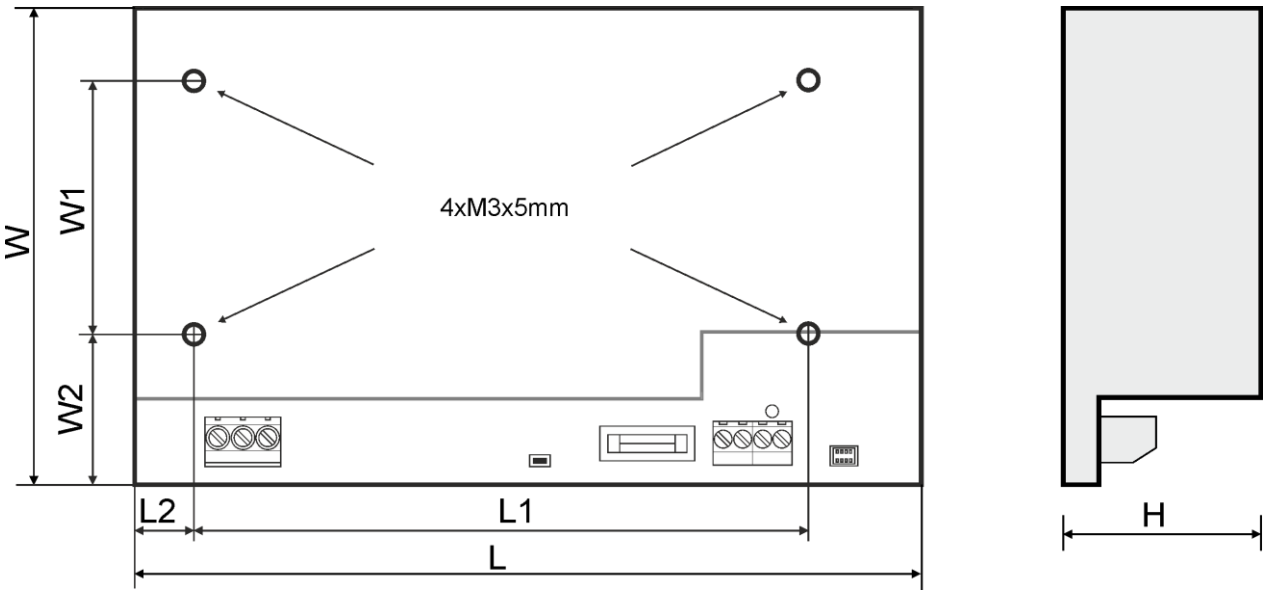

Table 3. Parameters of power supplies.

Model	**PWB-52V1A**	**PWB-52V2A**
Supply voltage	~ 200 - 240 V	
Current consumption	0,7 A	1,2 A
Power frequency	50/60 Hz	
Inrush current	40 A	50 A
PSU power	67 W	134 W
Output current max.	1,15 A	2,3 A
Efficiency	83%	87%
Output voltage	52 V – AUX output 11 - 13,8 V – BAT output	52 V – AUX output 22 - 27,6 V – BAT output
Ripple voltage (max.)	100 mV p-p	
Current consumption by PSU systems during battery-assisted operation.	approx.40 mA	approx. 30 mA
Recommended battery capacity	7 – 20 Ah	7 – 20 Ah **(2x)**
Charging current	0,5 A	0,5 A
Net/gross weight	0,6/0,65 kg	0,9/0,95 kg
Battery circuit protection SCP and reverse polarity connection	- glass fuse	
Overload protection OLP	110-150% PSU power, automatically recovered	
Deep discharge battery protection UVP	U<9,5 V (± 5%) – disconnection of battery circuit	U<19 V (± 5%) – disconnection of battery circuit
Optical indication	- LEDs on PCB of power supply unit - LED indicators on power supply's cover (optional, see section 3.1)	
Fuses: - F_{BAT}	F5A/250V	F5A/250V
Enclosure dimensions (LxWxH) [±2mm]	200x120x48	204x141x52
Fixing (L_1xW_1xL_2xW_2)	155x64x18x41	186x80x26x48
Terminals: **Mains supply:** **Outputs:**	0,5 – 2,5 mm^2 (AWG 26 – 12)	
Battery outputs:	Battery wires 6,3F – 45cm, angle muffs ML062	
Optional equipment	set of external LED indicators PKAZ168, mounting plate DIN4	
Notes	Convectional cooling	

Table 4. Operation safety.

Protection class EN 62368-1	I (first)
Protection grade EN 60529	IP20
Electrical strength of insulation: **- between input and output circuits of the PSU** **- between input circuit and protection circuit** **- between output circuit and protection circuit**	 2500 V AC min. 1500 V AC min. 500 V AC min.
Insulation resistance: **- between input circuit and output or protection circuit**	 100 MΩ, 500 V DC

Table 5. Operating parameters.

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.

The buffer PSU shall be mounted by a qualified installer with appropriate permissions and qualifications for 230 V AC installations and low-voltage installations (required and necessary for a given country). The unit should be mounted in confined spaces with normal relative humidity (RH=90% maximum, without condensing) and temperature from -10°C to +40°C. The PSU shall work in a vertical position that guarantees sufficient convectional air-flow through ventilating holes of the enclosure.

As power supply is designed for a continuous operation and is not equipped with a power-switch, therefore, an appropriate overload protection in power supply circuit should be provided. 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 230V 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 an installation switch with a nominal current of 6 A in power supply circuits outside power supply unit.

1. Mount module of power supply in a selected location and connect wires.
2. Connect power cables (~230 V) to L-N clips of PSU
3. 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 cables to the appropriate clips through the insulating bushing of the PSU.

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

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1. Connect equipment to appropriate output terminals of power supply (positive pole marked AUX+, negative pole marked AUX-).
2. Connect the batteries with the PSU paying special attention to the correct polarity and type of connections (Fig. 4):

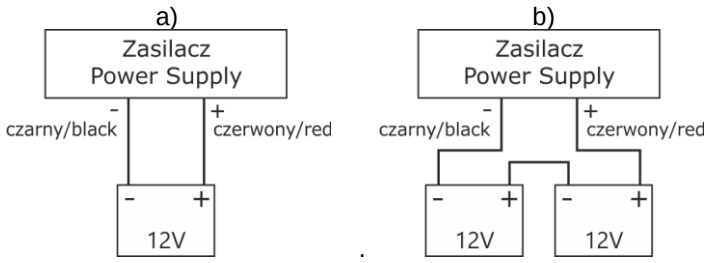


Fig. 4 Connecting batteries depending on version of power supply:
a) PWB-52V1A, b) PWB-52V2A,

CAUTION: PWB-52V1A power supply operates with one 12V battery, while PWB-52V2A requires two 12V batteries connected in series!

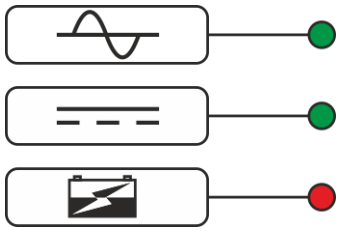
3. Switch on 230 V supply. LEDs on the PCB of power supply should light
4. After installing and checking proper working, enclosure/cabinet etc. can be closed

3. Operating status indication.

The power supply unit features LED status indication

3.1 Optical indication.

PSU is equipped with LED indicating presence of voltage at PSU output, located on PCB of PSU module. Signalling can be extended with optional PKAZ168 module (available offered by PULSAR):



Green LED AC:
- **on – PSU is supplied with 230 V**
- **off – no 230 V power, battery operation**

Green LED DC:
- **on – presence of DC voltage in output of PSU**
- **off – no voltage in output of PSU**

Red LED CHARGE:
- **off – no battery charging**
- **on – battery charging process**

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.

CAUTION! *The power supply unit is adapted for cooperation with the sealed lead-acid batteries (SLA). After the operation period they must not be thrown but recycled according to the applicable law.*

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