



# USER MANUAL

EN

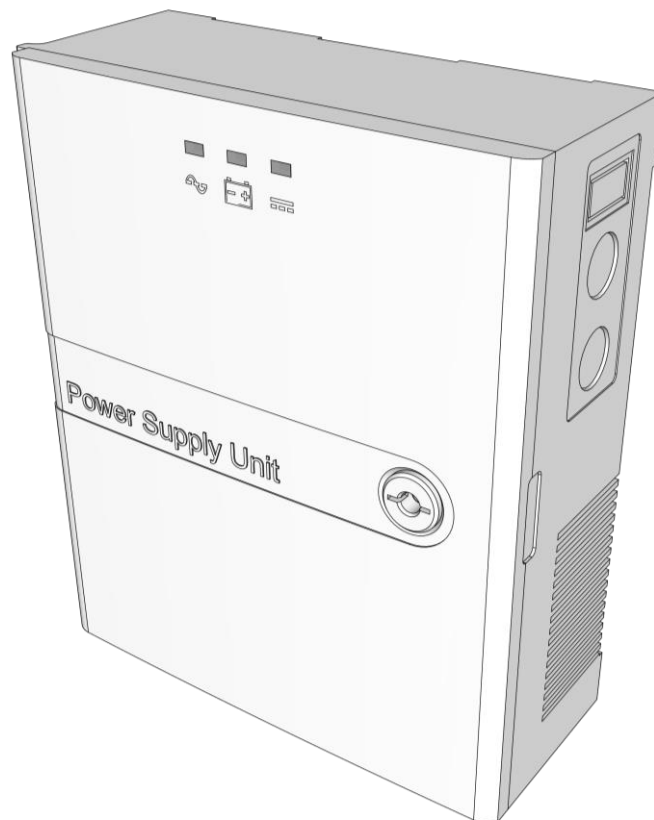
Edition: 1 from 02.10.2024

Supersedes edition: -----

v1.0

## Power supplies PCSB series

**Switch mode power supply units with battery  
backup with technical outputs.**



**Features:**

- supply voltage ~200 – 240 V
- DC 13,8 V uninterruptible power supply
- available versions with 2A / 3A / 5A current
- high efficiency (up to 92%)
- battery charging and maintenance control
- technical outputs:
  - main failure (AC FAILURE)
  - battery low voltage (BT LOW VOLTAGE)
- compact design in a plastic enclosure
- SW1 button – function allows running PSU from battery circuit
- 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
  - OVP overvoltage protection
  - surge protection
  - antisabotage protection: unwanted enclosure opening
- warranty – 2 years

**TABLE OF CONTENTS:**

1. Technical description.
  - 1.1. General description
  - 1.2. Block diagram
  - 1.3. Description of PSU components and connectors
  - 1.4. Specifications
2. Installation.
  - 2.1. Requirements
  - 2.2. Installation procedure
3. Operating status indication.
  - 3.1. Optical indication
4. Maintenance

**1. Technical description.****1.1. General description.**

Switch mode power supply units with battery backup PCSB series are intended for continuous power supply to devices that require stabilised voltage of 12 V DC ( $\pm 15\%$ ).

Parameters of power supplies:

PSU's name	Output voltage	Total output current with charging	Charging current
PCSB-12V2A-B	13,8 V	2,5 A	0,5 A
PCSB-12V3A-B	13,8 V	3,5 A	0,5 A
PCSB-12V5A-B	13,8 V	5,5 A	0,75 A

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

In case of power failure, a battery back-up is activated immediately. Construction is based on switch mode PSU with high energy efficiency, put inside plastic enclosure (colour RAL9003) with space for 7 – 9 Ah battery. The enclosures are fitted with tamper switch indicates enclosure opening.

1.2. Block diagram (Fig. 1).

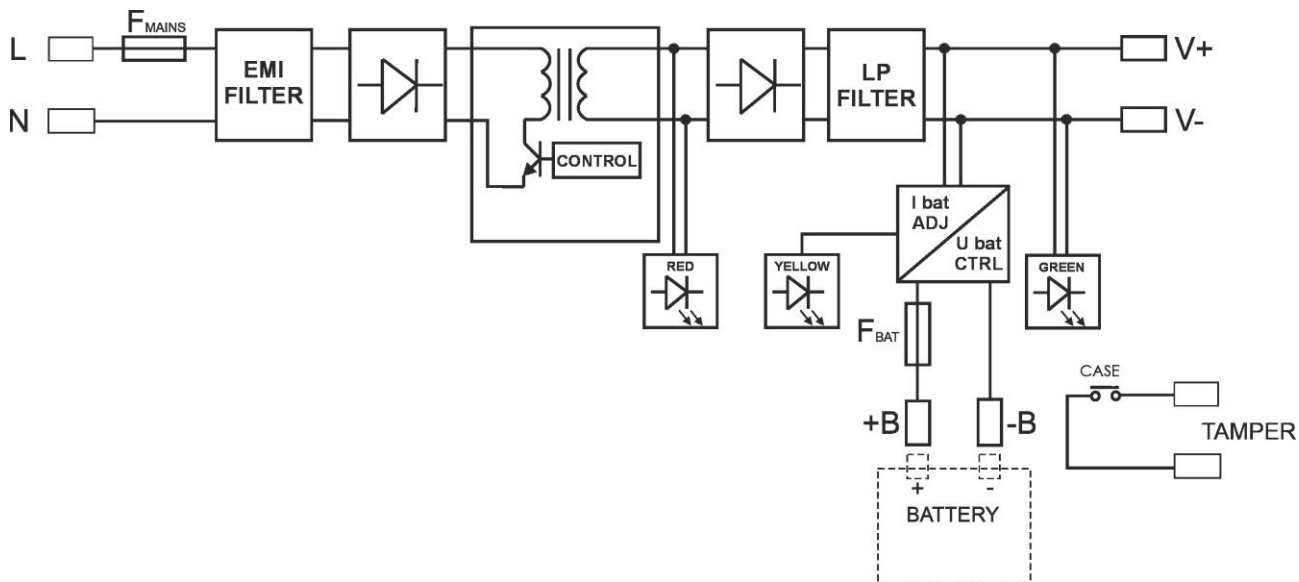


Fig.1. Block diagram of PSU.

1.3. Description of PSU components and connectors.

Table 1. Elements and connector of PSU (see Fig. 2)

Element no.	Description
[1]	Diodes indicating (AC, BATTERY STATE, DC)
[2]	L-N power supply connector 230 V AC
[3]	Battery terminals (+BT-)
[4]	SW1 button (launching from battery)
[5]	Output of PSU (V+, GND)
[6]	Technical output BT LOW VOLTAGE
[7]	Technical output AC FAILURE

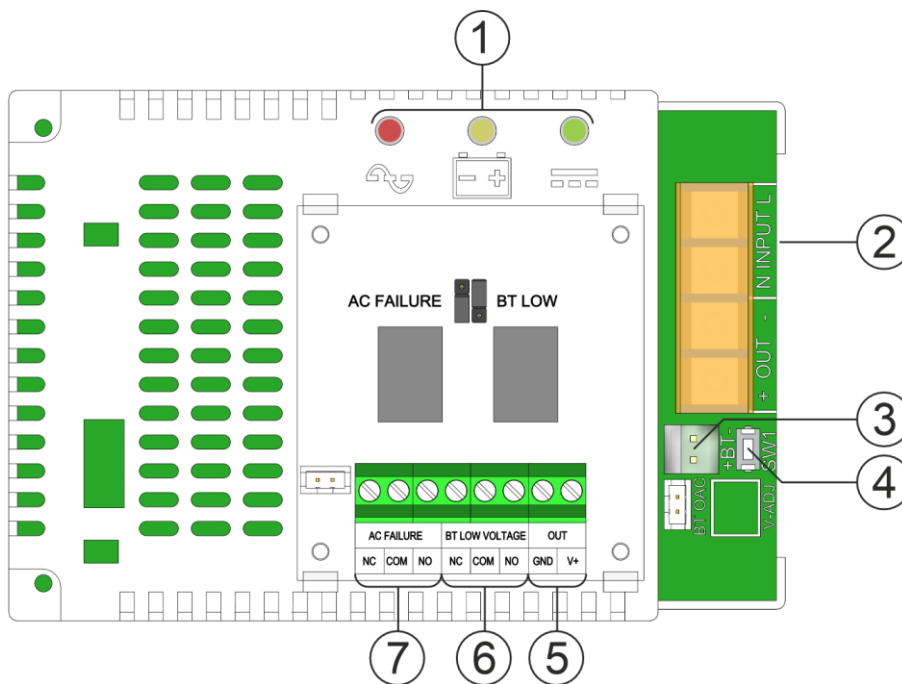


Fig. 2. View of power supply module.

Table 2. View of PSU (see Fig. 3).

Element no.	Description
[1]	PSU module
[2]	TAMPER; microswitch of antisabotage protection (NC)
[3]	Cable ducts
[4]	Space for battery

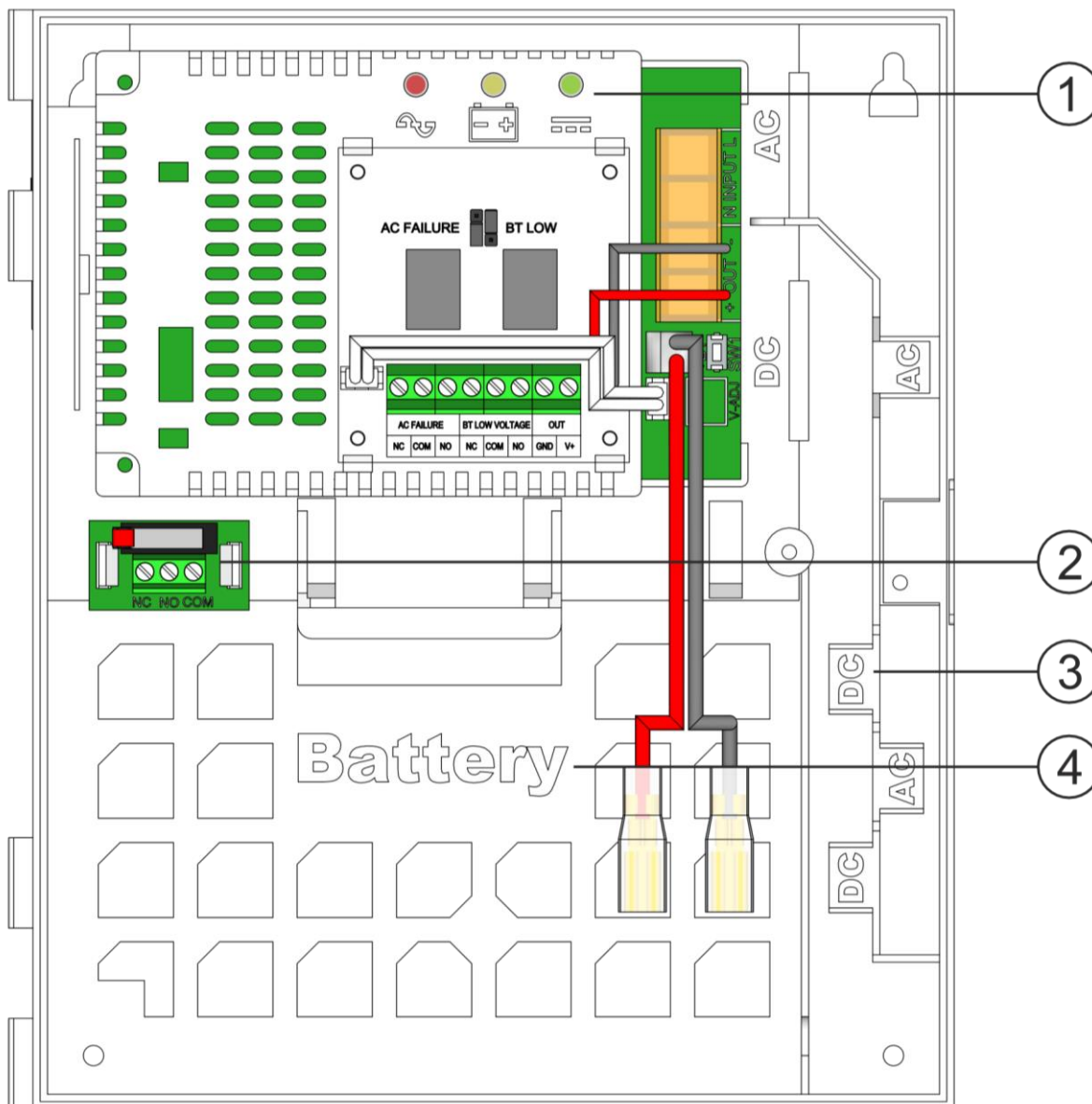


Fig. 3. View of PSU.

1.4. Specifications:

- electrical parameters (tab. 3)
- mechanical parameters (tab. 4)
- operation safety (tab. 5)
- operating parameters (tab. 6)

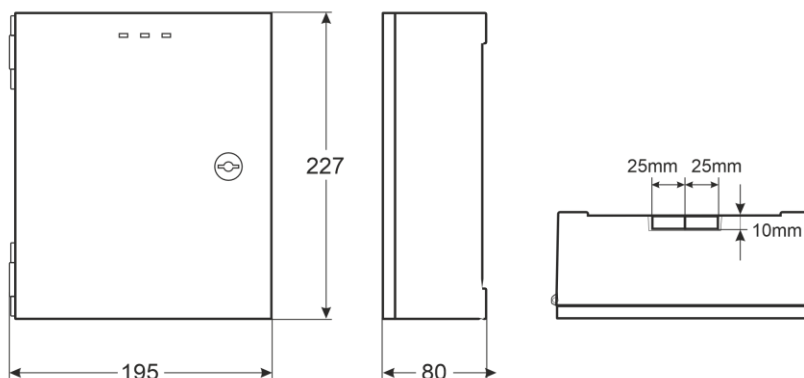


Table 3. Electrical parameters.

Model	PCSB-12V2A-B	PCSB-12V3A-B	PCSB-12V5A-B
Supply voltage	~ 200 - 240 V		
Current consumption	0,4 A	0,5 A	0,8 A
Power frequency	50/60 Hz		
Inrush current	40 A		
PSU power	35 W	48 W	76 W
Total output current with charging	2,5 A	3,5 A	5,5 A
Efficiency	87%	88%	92%
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	30 mA	30 mA
Battery capacity	7 – 9 Ah		
Charging current	0,5 A	0,5 A	0,75A
Net/gross weight	0,75 / 0,85 kg	0,8 / 0,9 kg	0,85 / 0,95 kg
Battery circuit protection SCP and reverse polarity connection	- electronic (auto-return)		
Overload protection (OLP)	105 – 150% PSU power, automatically recovered		
Over voltage protection (OVP)	>16 V (activation requires disconnecting the load or supply for about approx. 1 min.)		
Deep discharge battery protection (UVP)	U<10 V ( $\pm$ 3%) – disconnection of battery circuit		
Optical indication	- LEDs (see section 3.1)		
Tamper switch protection: - TAMPER output indicating unwanted opening of the PSU enclosure	- microswitch, NC contacts (enclosure closed), 0,5 A@50 V DC (max.)		
Fuses: - F <sub>BAT</sub>	- electronic (auto-return)		
Terminals: Mains supply: Outputs: Battery outputs: TAMPER:	0,5 – 2,5 mm <sup>2</sup> (AWG 26 – 12)		
	Battery wires 6,3F – 25cm		
	0,2 – 1 mm <sup>2</sup> (AWG 26 – 17)		

Table 4. Mechanical parameters.

Model	PCSB-12V2A-B	PCSB-12V3A-B	PCSB-12V5A-B
Enclosure dimensions (WxHxD) [ $\pm$ 2mm]	195x227x80		
Installation (WxH)	170x205		
Fitting battery (WxHxD)	155x100x70		
Enclosure	Plastic RAL9003		
Closing	Cheese head screw (at the front)		
Notes	-		

Table 5. Operation safety.

Protection class EN 62368-1	II (second)
Protection grade EN 60529	IP20
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 M $\Omega$ , 500 V DC

Table 6. Operating parameters.

Operating temperature	-10°C...+40°C
Storage temperature	-20°C...+60°C
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 with battery backup shall be mounted by a qualified installer with appropriate permissions and qualifications for 230 V installations and low-voltage installations (required and necessary for a given country). 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 convective 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.

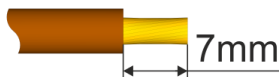


#### CAUTION!

Before installation, cut off voltage in 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 the PSU in a selected location and connect the wires.
2. Connect power cables (~230 V) to L-N clips of PSU. 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.



3. Connect equipment to the appropriate output terminals of power supply (positive connector +V, negative connector GND).
4. Mount the battery in the battery compartment of the enclosure (Fig. 3)
5. 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 (Fig.4):

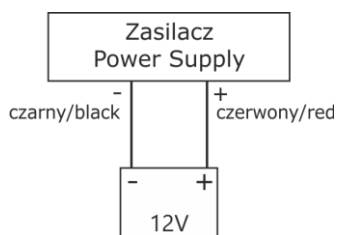


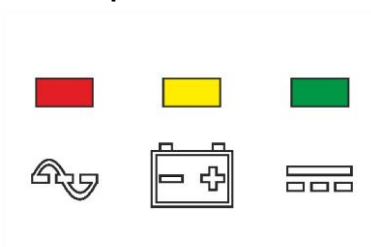
Fig. 4 Connect the batter.

6. Switch on 230 V supply. LEDs on cover of power supply should light.
7. After installing and checking proper working, the enclosure can be closed.

## 3. Operating status indication.

The power supply unit features LED status indication.

### 3.1 Optical indication.



#### LED red AC:

- on – the PSU is supplied with 230 V
- off – no 230 V power, battery-assisted operation

#### LED yellow BAT. STATE:

- off – battery operation (discharge)
- flashing – battery charging process
- on – fully charged battery

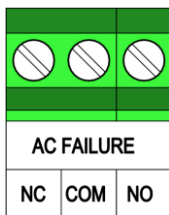
#### LED green DC:

- on – presence voltage in output of PSU
- off – no voltage in the output of the PSU

### 3.2 Technical outputs.

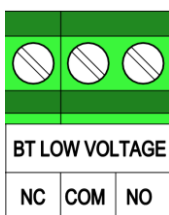
The PSU is equipped with indication outputs:

- **AC FAILURE - output indicating 230 V power loss.**  
The output indicates 230 V power failure. In case of power failure, contacts of relay change over.



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

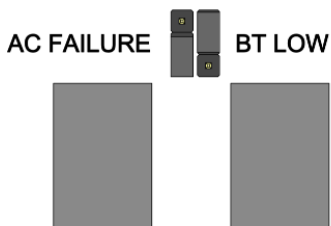
- **BT LOW VOLTAGE - output indicating battery failure.**  
The output indicates low battery voltage during battery operation (below 11V). In case of failure, contacts of relay change over.



**CAUTION!** The figure set of contacts shows a potential-free status of relay, which corresponds to power supply without failure.




**CAUTION 2!** Do not modify the factory settings of the technical output jumpers – this will result in incorrect operation of the outputs.



### 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 European Union WEEE Directive, waste electrical and electronic equipment should be disposed of separately from normal household waste.**

**Pulsar sp. j.**  
 Siedlec 150,  
 32-744 Łapczyca, Poland  
 Tel. (+48) 14-610-19-45  
 e-mail: [sales@pulsar.pl](mailto:sales@pulsar.pl)  
 http:// [www.pulsar.pl](http://www.pulsar.pl)

Facebook



LinkedIn



YouTube



Pulsar.pl

