



**AWZ 101**

v1.1

**AWZ 13,8V/1A/7Ah/L**

**Linear, Buffer Power Supply Unit**

**EN\*\***

Edition: 3 from 16.09.2013

Supersedes the edition: 2 from 14.02. 2012

**Features:**

- 13,8VDC/1A uninterruptible supply
  - fitting battery: 7Ah/12V
  - mains supply 230VAC
  - linear voltage regulator
  - battery charge and maintenance control
  - battery output full protection against short-circuit and reverse polarity connection
  - battery charging current 0,1A
  - LED indication
  - protections:
    - SCP short-circuit
    - OLP overload
    - OHP overheat
    - over voltage
    - against sabotage
  - warranty – 5 year from the production date
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**1. Technical description.****1.1 General description.**

A buffer PSU is intended for an uninterrupted supply to alarm system devices requiring stabilized voltage of **12V/DC (+/-15%)**. A linear stabilizing system, which has been used in the unit, provides voltage with a lower level of noise and a quicker response to interference when compared to a switched-mode regulator. The PSU provides voltage of  **$U_{out} = 12,8V \div 13,8V$  DC** during buffer operation, with current capacity:



1. Output current **1A (without a battery)**
2. Output current **0,9A + 0,1A battery charge**

**Total current of the receivers + battery: 1A max.**

In case of power decay, a battery back-up is activated immediately. **The battery is not protected against over-discharge (UVP)**. According to a given application, a proper module shall be used. The PSU is housed in a metal enclosure which can accommodate a 7Ah/12V battery. It features a micro switch that indicates door opening (front cover).

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**CAUTION!** In case of using the PSU for CCTV, KD, SSWiN devices (or other, of similar application), it is recommended to use an over voltage protection module MZN1 in the output circuit of DC power.

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## 1.2 Block diagram (Fig. 1).

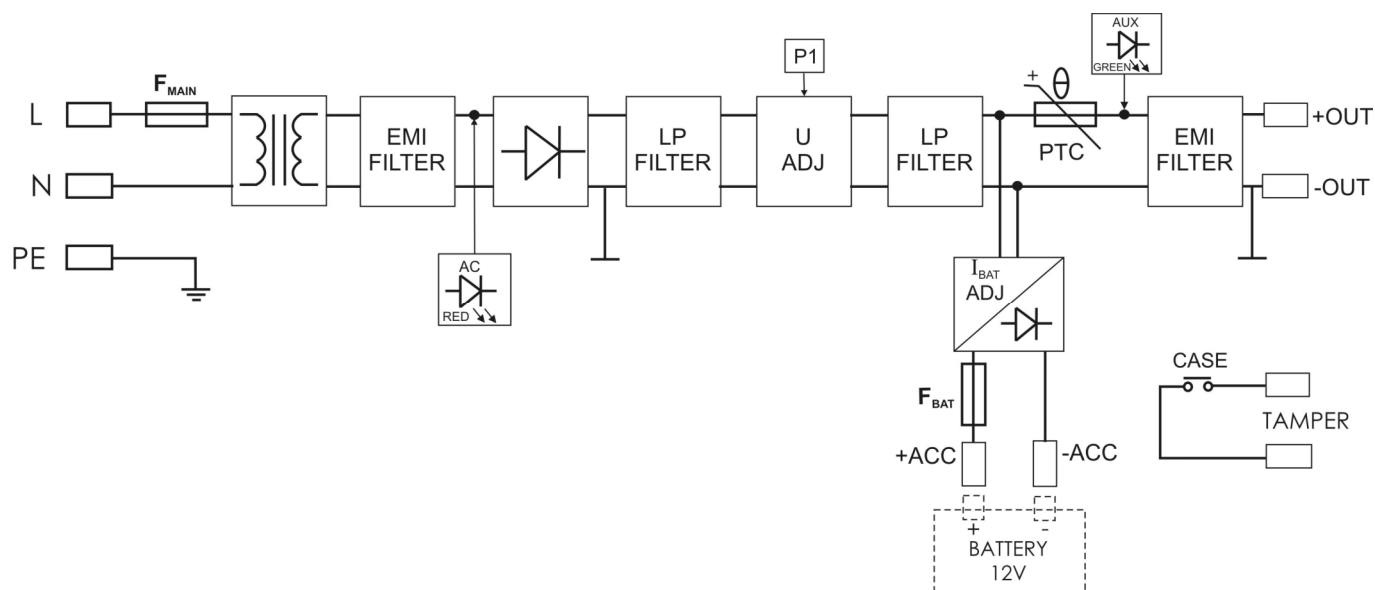


Fig. 1. Block diagram of the PSU.

## 1.3 Description of PSU components and connectors.

Table 1. Elements of the PSU pcb (see Fig. 2).

Element no.	Description
[1]	<b>Connector:</b> input of AC power
[2]	<b>F<sub>BAT</sub></b> fuse in the battery circuit
[3]	<b>P1</b> potentiometer, DC voltage adjustment
[4], [5]	<b>LED indication:</b> <b>POWER</b> - LED for AC voltage <b>OUT</b> - LED for DC output voltage
[6]	<b>Connectors:</b> <b>+OUT</b> - DC supply output (+OUT= Vcc, -OUT=GND) <b>TAMPER</b> - contact of the sabotage protection switch (NC)

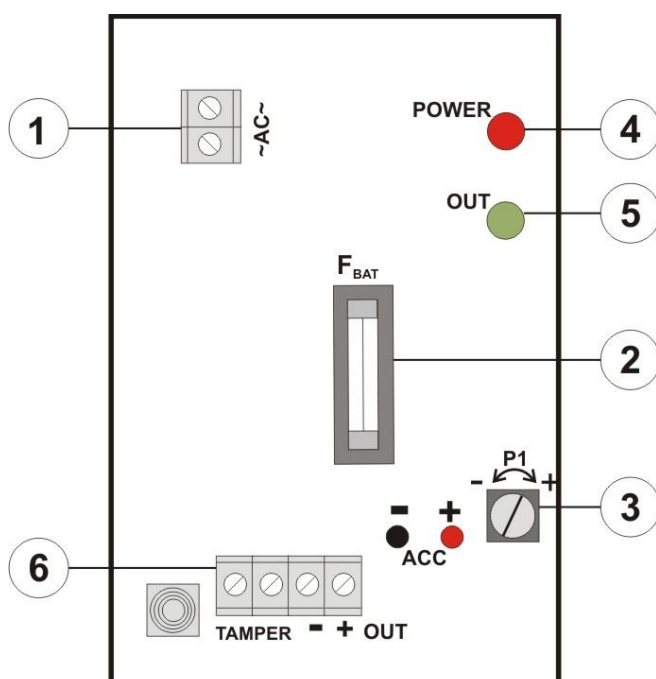



Fig. 2. The view of the PSU pcb.

Table 2. Elements of the PSU (see Fig. 3.)

Element no.	Description
[1]	Isolation transformer
[2]	Pcb of the PSU (Tab. 1, Fig. 2)
[3]	F <sub>MAIN</sub> fuse in the battery circuit (230V/AC)
[4], [5]	L-N 230V/AC power supply connector,  PE protection connector
[6]	Battery connectors +ACC = red, - ACC = black

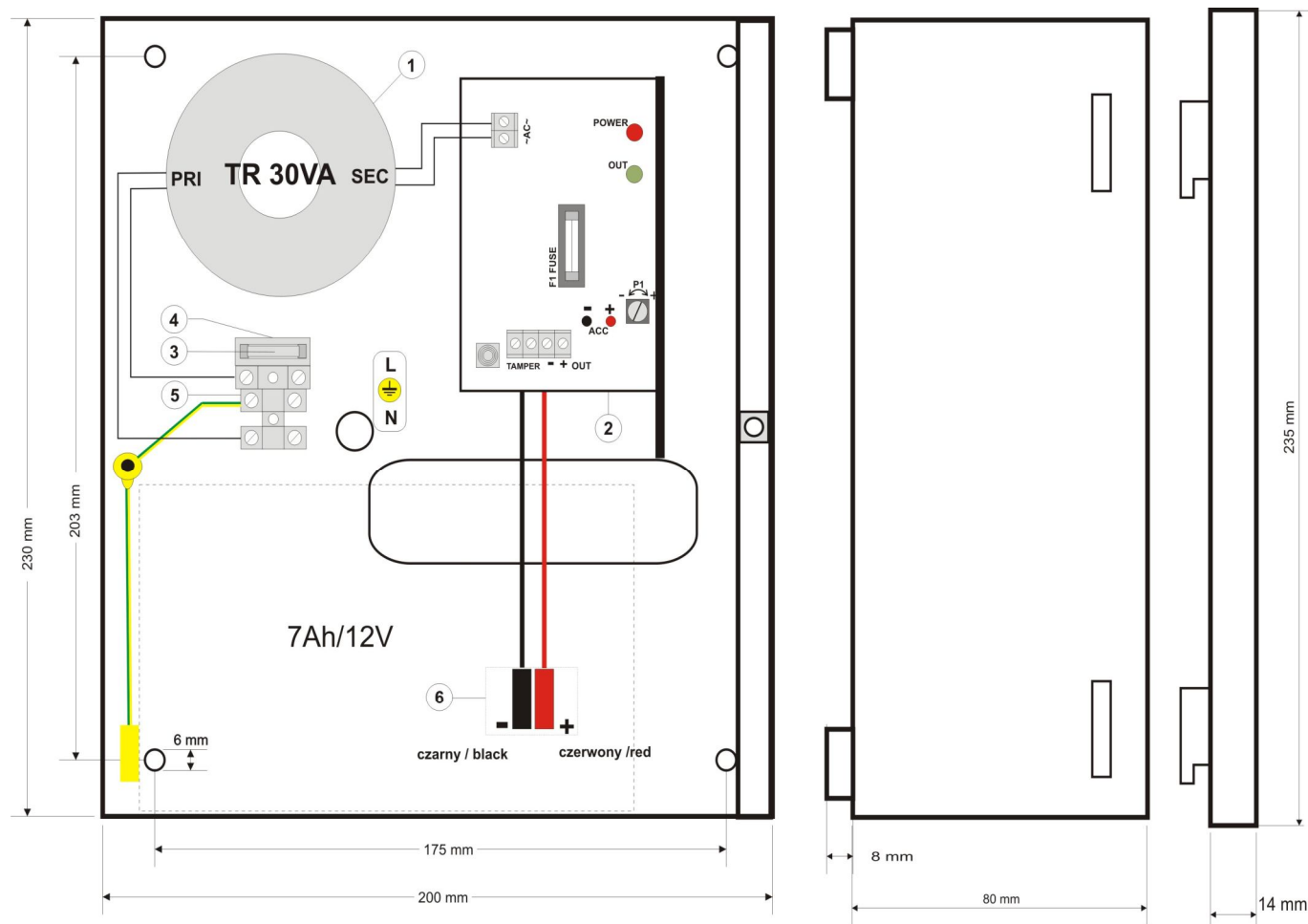


Fig. 3. The view of the PSU.

**1.4 Specifications:**

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

**Electrical specifications (tab. 3)**

PSU type	A (EPS - External Power Source)
Mains supply	230V/AC (-10%/+10%)
Current consumption	0,16 A max.
Power frequency	50Hz
PSU power	18 W
Output voltage	12,8 V÷ 13,8 V DC – buffer operation
Output current	<b>1A (without a battery)</b> <b>0,9A + 0,1A battery charge</b>
Voltage adjustment range	12 V÷ 14,5 V
Ripple	20 mV p-p max.
Current consumption by PSU systems	5 mA – battery assisted operation
Battery charging current	0,3A (max.) 0,1A /24h

Short-circuit protection SCP	200% ÷ 250% of PSU power – current limitation and/or fuse damage in the battery circuit (fuse-element replacement required)
Overload protection OLP	110% ÷ 150% (@65 °C ÷ 25°C) of PSU power - limitation with the PTC resettable fuse, manual restart (the fault requires disconnection of the DC output circuit)
Battery circuit protection SCP and reverse polarity connection	F2A - current limitation, F <sub>BAT</sub> fuse (in case of a failure, fuse-element replacement required)
Technical output: - TAMPER - indicates enclosure opening	- a micro switch, NC contacts (enclosure closed), 0,5A@50V DC (max.)
F <sub>BAT</sub> fuse F <sub>MAIN</sub> fuse	F2A / 250V T315mA / 250V

**Mechanical specifications (tab. 4).**

Enclosure dimensions	200 x 230 x 80+8 (WxHxD) [mm] (+/- 2)
Fixing	175 x 203 x $\Phi$ 6 x 4szt (WxH)
Fitting battery	7Ah/12V (SLA) max.
Net/gross weight	1,8/1,9 kg
Enclosure	Steel plate DC01, thickness: 0,8mm, colour: RAL 9003
Closing	Cheese head screw (at the front)
Connectors	Outputs: $\Phi$ 0,51÷2,5 (AWG 24-12) Battery outputs : BAT: 6,3F-0,75, 19cm

**Operation safety (tab.5).**

Protection class PN-EN 60950-1:2007	I (first)
Degree of Protection PN-EN 60529: 2002 (U)	IP20
Electrical strength of insulation: - between input and output circuits of the PSU (I/P-O/P) - between input circuit and PE protection circuit (I/P-FG) - between output circuit and PE protection circuit (O/P-FG)	3000 V/AC min. 1500 V/AC min. 500 V/AC min.
Insulation resistance: - between input circuit and output or protection circuit	100 M $\Omega$ , 500V/DC

**Operating specifications (tab.6).**

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 insulation	unacceptable
Vibrations and impulse waves during transport	PN-83/T-42106

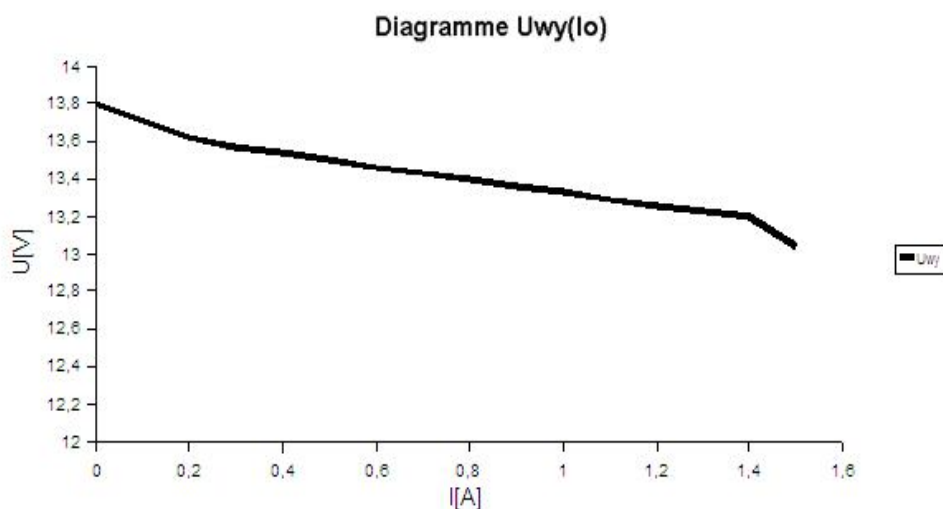


Fig. 4. Current-voltage characteristics of the PSU.

## 2. Installation

### 2.1 Requirements

The buffer PSU is to be mounted by a qualified installer, holding relevant permits and licenses (applicable and required for a given country) for 230V/AC and low-voltage installations. The unit should be mounted in confined spaces, in accordance with the 2nd environmental class, 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.



1. Output current 1A (without a battery)
2. Output current 0,9A + 0,1A battery charge


**Total current of the receivers + battery: 1A max.**

As the PSU is designed for a continuous operation and is not equipped with a power-switch, therefore an appropriate overload protection shall be guaranteed in the power supply circuit. Moreover, the user shall be informed about the method of unplugging (usually through assigning an appropriate fuse in the fuse-box). The electrical system shall follow valid standards and regulations.

### 2.2 Installation procedure




**Before installation, make sure that the voltage in the 230V power-supply circuit is cut off.**

1. Mount the PSU in a selected location and connect the wires.
2. Connect the power cables (~230Vac) to L-N clips of the PSU. Connect the ground wire to the clip marked by the earth symbol . Use a three-core cable (with a yellow and green PE protection wire) to make the connection. Lead the cables to the appropriate clips through the insulating bushing.



**The shock protection circuit shall be performed with a particular care, i.e. the yellow and green wire coat of the power cable shall stick to one side of the terminal - marked with**

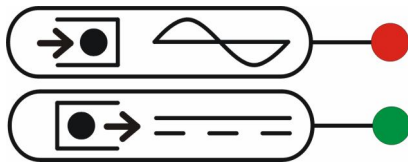
**‘’ symbol on the PSU enclosure. Operation of the PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause a device failure or an electric shock.**

3. Connect the receivers' cables to the +OUT, -OUT connectors of the terminal block on the PSU board (optionally connect the MZN1 module to the +OUT output, and the receivers to the module's output).
4. If necessary, connect the device conductors to the TAMPER technical output (the indicator preventing the PSU from unwanted opening)
5. Activate the ~230V/AC supply (the POWER diode and the OUT diode should be permanently illuminated)
6. Check the output voltage (the PSU voltage without load should amount to 13,6 V÷ 13,9 V, during battery charge: 12,8 V÷13,8 V). If the value of the voltage requires adjustment, it should be set by the P1 potentiometer, monitoring the voltage at the OUT output of the PSU.
7. Connect the battery in accordance with the markings (colours): +BAT red to 'plus', -BAT black to 'minus'
8. Once the tests and operation control have been completed, the enclosure can be locked.

### 3. Operating status indication.

#### 3.1 LED indication

The PSU is equipped with two diodes on the front panel:



RED LED:

- on – the PSU is supplied with 230V AC
- off – no 230V AC supply

GREEN LED:

- on – DC voltage in the OUT output of the PSU
- off – no DC voltage in the OUT output of the PSU

#### 3.2 Technical output:

The PSU is equipped with technical output:

- **TAMPER - output indicates opening the power-supply unit.** The output's volt-free (potential-free) contacts indicate PSU door status:
  - unit closed: NC,
  - unit opened: NO

### 4. Operation and use.

#### 4.1 Overload or short circuit of the PSU output

The OUT output is equipped with a protection due to a PTC polymer fuse. If the load of the PSU exceeds  $I_{max}$  (load 110% ÷ 150% of the PSU power @65 °C÷25°C) the output voltage is automatically cut off and indicated by the green diode going out. To restore the output power and to protect the PTC, cut off the output load for approximately 1 minute.

In the case of a short-circuit to the OUT, ACC output (load 200% ÷ 250% of the PSU power) or a reverse polarity connection, the  $F_{BAT}$  fuse in the battery circuit becomes permanently damaged and the restoration of the voltage at the ACC output requires replacement of the fuse.

#### 4.2 Battery-assisted operation.

##### Activating the PSU from the battery.

Battery-assisted operating time depends on: battery capacity, charging level and load current. E.g. for a typical, fully-charged 7 Ah battery and 1A load current, the maximum safe operating time equals approximately 5,6h.

**Battery-assisted PSU launch:** after plugging the PSU, the voltage appears automatically at the output terminals.



**The PSU does not contain a discharged battery disconnection system (UVP).**

#### 4.3 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 MARK**

**According to the EU WEE Directive – It is required not to dispose of electric or electronic waste as unsorted municipal waste and to collect such WEEE separately.**

The power supply unit is adapted for a sealed lead-acid battery (SLA). After the operation period it must not be disposed of but recycled according to the applicable law.

**GENERAL WARRANTY CONDITIONS**

1. Pulsar K. Bogusz Sp.j. (the manufacturer) grants a five-years warranty for the equipment, counted from the device's production date.
2. The warranty includes free-of-charge repair or replacement with an appropriate equivalent (the selection is at the manufacturer's discretion) if the malfunction is due to the manufacturer, includes manufacturing or material defects, unless such defects have been reported within the warranty period (item 1).
3. The equipment subject to warranty is to be brought to the place where it was purchased, or directly to the main office of the manufacturer.
4. The warranty applies to complete equipment, accompanied by a properly filled warranty claim with a description of the defect.
5. Should the claim be accepted, the manufacturer is obliged to provide warranty repairs, at the earliest convenience, however not later than within 14 days from the delivery to the service centre of the manufacturer.
6. The repair period mentioned in item 5 may be prolonged, if there are no technical possibilities to carry out the repairs, or if the equipment has been conditionally accepted, due to the breaking warranty terms by the claimant.
7. All the services rendered by force of the warranty are carried out at the service centre of the manufacturer, exclusively.
8. The warranty does not cover the defects of the equipment, resulting from:
  - reasons beyond the manufacturer's control,
  - mechanical damage,
  - improper storage and transport,
  - use that violates the operation manual or equipment's intended use
  - fortuitous events, including lightning discharges, power failures, fire, flood, high temperatures and chemical agents,
  - improper installation and configuration (in defiance with the manual),
9. The warranty is void in any of the following circumstances:
  - construction changes
  - repairs carried out by any unauthorized service center
  - damage or removal of warranty labels
  - modifications of the serial number
10. The liability of the manufacturer towards the buyer is limited to the value of the equipment, determined according to the wholesale prices suggested by the manufacturer on the day of purchase.
11. The manufacturer takes no responsibility for the defects that result from:
  - the damaging, malfunctioning or inability to operate the equipment
  - defects that result from using the equipment outside its stated specifications and operating parameters failing to abide by the recommendations and requirements contained in the manual, or the use of the equipment.

**Pulsar K.Bogusz Sp.j.**

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