



AWZ 101

v1.2

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

Linear, Buffer Power Supply Unit

EN**

Edition: 5 from 15.05.2014

Supersedes the edition: 4 from 13.02.2014

GREY POWER



Features:

- 13,8VDC/1A uninterruptible supply
- fitting battery: 7Ah/12V
- mains supply 230VAC
- linear voltage regulator
- battery over-discharge protection (UVP)
- 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

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 LED indication
 - 3.2 Technical outputs
4. Operation and use.
 - 4.1 Overload or short circuit of the PSU output
 - 4.2 Battery-assisted operation
 - 4.3 Maintenance

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 ÷ 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 protected against over-discharge (UVP)**. The PSU is housed in a metal enclosure which can accommodate a 7Ah/12V battery. It features a micro switch (TAMPER) that indicates door opening (front cover).



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.

1.2 Block diagram (Fig. 1).

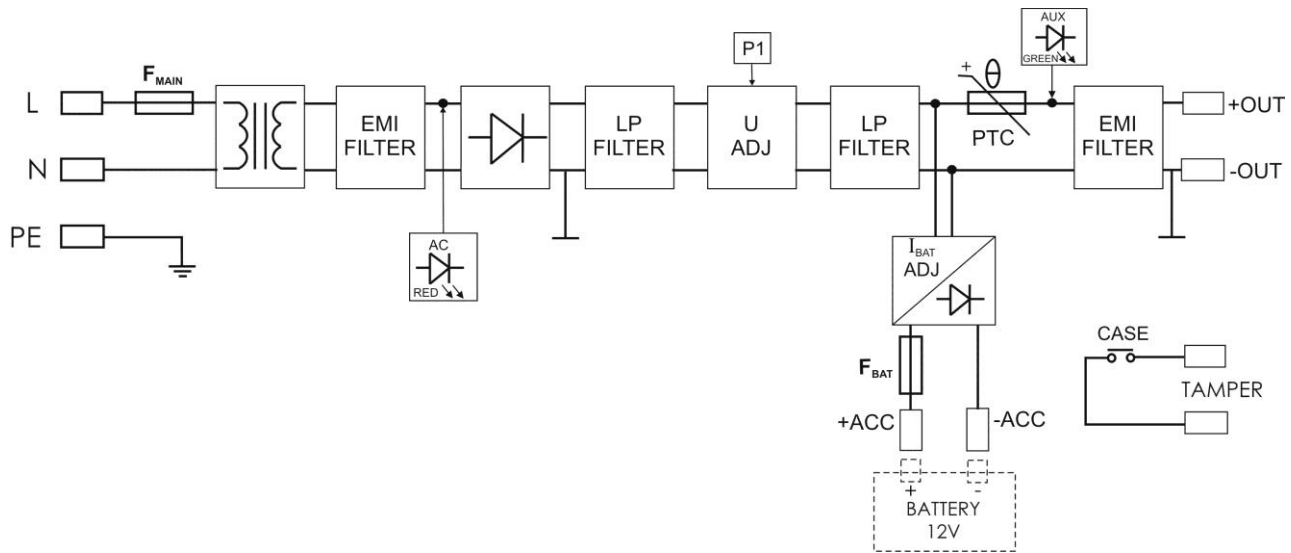


Fig. 1. Block diagram of the PSU.

1.3 Description of PSU components and connectors.

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

Element no.	Description
[1]	Connector: AC power supply input – factory setting
[2]	F _{BAT} fuse in the battery circuit – F2A
[3]	P1 potentiometer, adjustable DC voltage in the range of 12V÷ 14,5V
[4], [5]	LED indication: AC - LED for AC voltage AUX - LED for DC output voltage
[6]	Connectors: +BAT- DC supply output of the battery (+BAT= red, -BAT=black) +AUX- DC supply output (+AUX= +U, -AUX=GND) TAMPER - contacts of the sabotage protection switch (NC)
[7]	P_{BAT}; pins - configuration of UVP battery protection function <ul style="list-style-type: none"> • P_{BAT} = protection (disconnection) of the battery off • P_{BAT} = protection (disconnection) of the battery on - page.7 section.4.2
[8]	START – button (launching the PSU from a battery)- page.7 section.4.2

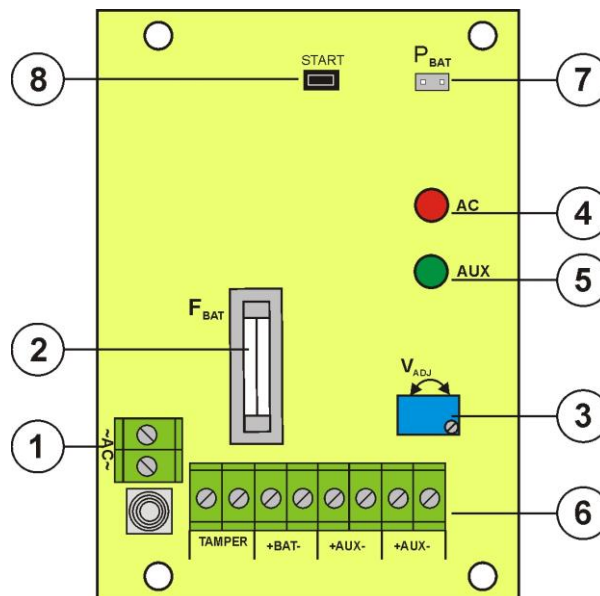



Fig. 2. The view of the PSU pcb.

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]	TAMPER – microswitch (contacts) of antisabotage protection (NC)
[4]	F_{MAIN} fuse in the battery circuit (230V/AC)
[5]	L-N 230V/AC power supply connector,  PE protection connector
[6]	Battery connectors +BAT = red, - BAT = black

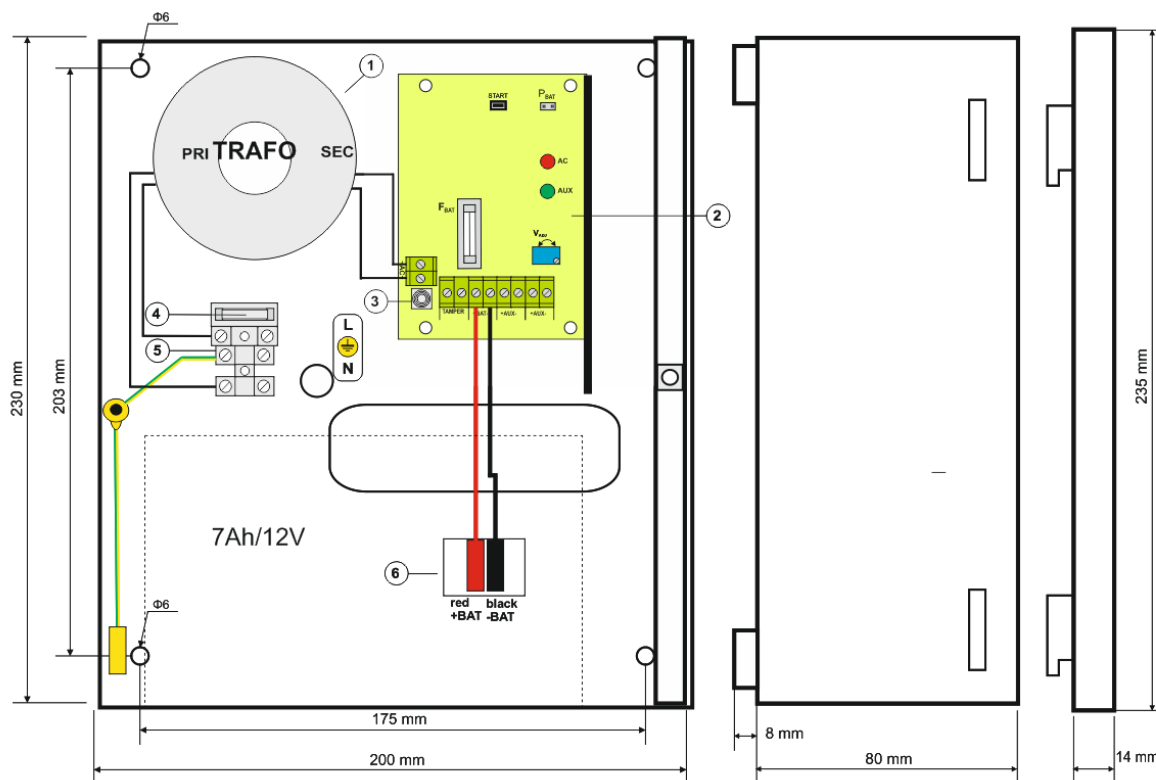
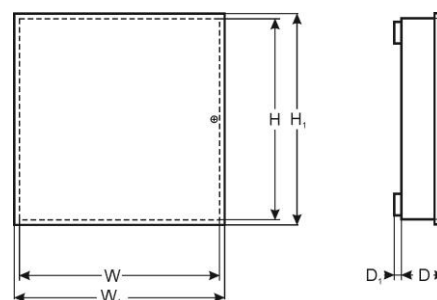


Fig. 3. The view of the PSU.

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	12,8V ÷ 13,8V DC – buffer operation
Output current	1A (without a battery) 0,9A + 0,1A battery charge
Voltage adjustment range	12V ÷ 14,5V
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 (1sr/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 _{BAT} fuse (in case of a failure, fuse-element replacement required)
Over-discharge protection UVP	U<10V (± 5%) – disconnection (- BAT) of the battery,
Technical output: - TAMPER - indicates enclosure opening	- a micro switch, NC contacts (enclosure closed), 0,5A@50V DC (max.)
F _{BAT} fuse F _{MAIN} fuse	F2A / 250V T315mA / 250V

Mechanical specifications (tab. 4).

Dimensions	W=200 H=230 D+D ₁ =82 + 8 [+/- 2mm] W ₁ =205 H ₁ =235 [+/- 2mm]
Fixing	175 x 203 x Φ 6 x 4szt (WxH)
Fitting battery	7Ah/12V (SLA) max. 165x100x75mm (WxHxD) max 
Net/gross weight	1,8 / 2,1 kg
Enclosure	Steel plate DC01, thickness: 0,8mm, colour: RAL 9003
Closing	Cheese head screw (at the front)
Connectors	Outputs: Φ0,51±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 MΩ, 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

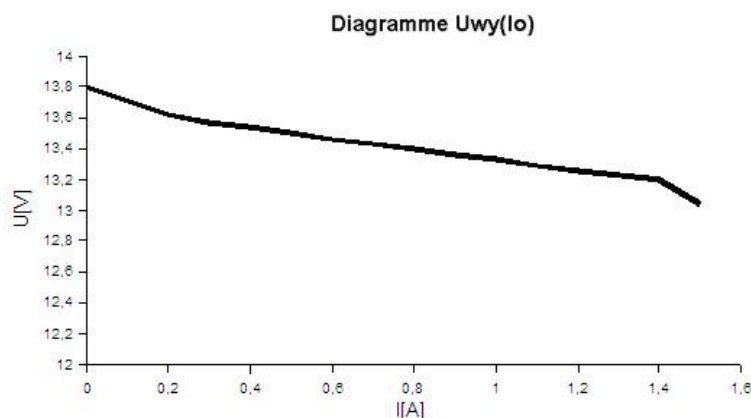


Fig. 4. Current-voltage characteristics of the PSU.

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.



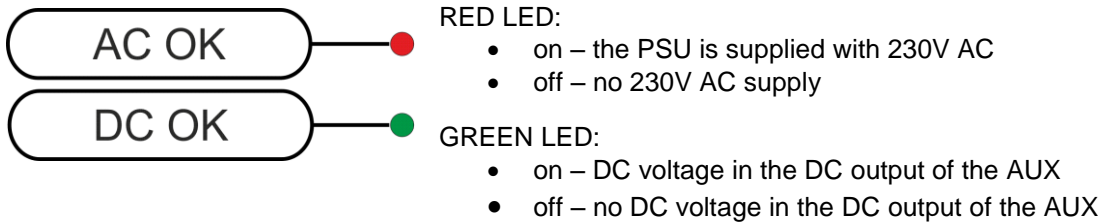
The shock protection circuit shall be performed with a particular care, i.e. the yellow and green wire coat of the power cable shall stick to one side of the terminal - marked with  symbol on the PSU enclosure. Operation of the PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause a device failure or an electric shock.

3. Connect the receivers' cables to the + AUX, - AUX connectors of the terminal block on the PSU board (optionally connect the MZN1 module to the + AUX 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 AC diode and the AUX diode should be permanently illuminated)
6. Check the output voltage (the PSU voltage without load should amount to 13,6V÷ 13,9V, during battery charge: 12,8V÷13,8V). If the value of the voltage requires adjustment, it should be set by the P1 potentiometer, monitoring the voltage at the AUX 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 in the front panel.



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 AUX 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 AUX, BAT 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 BAT output requires replacement of the fuse.

4.2 Battery-assisted operation.

Immediate battery reverting in case of main power outage.

In order to run the PSU from the battery only, connect the BAT connectors in accordance with the signs: + BAT red to 'plus' and, - BAT black to 'minus' then press the START button on the main board and hold it for 5 seconds.



The PSU contains the discharged battery disconnection system (UVP), configured through the P_{BAT} pins. The battery protection is on after removing the P_{BAT} jumper.

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.

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