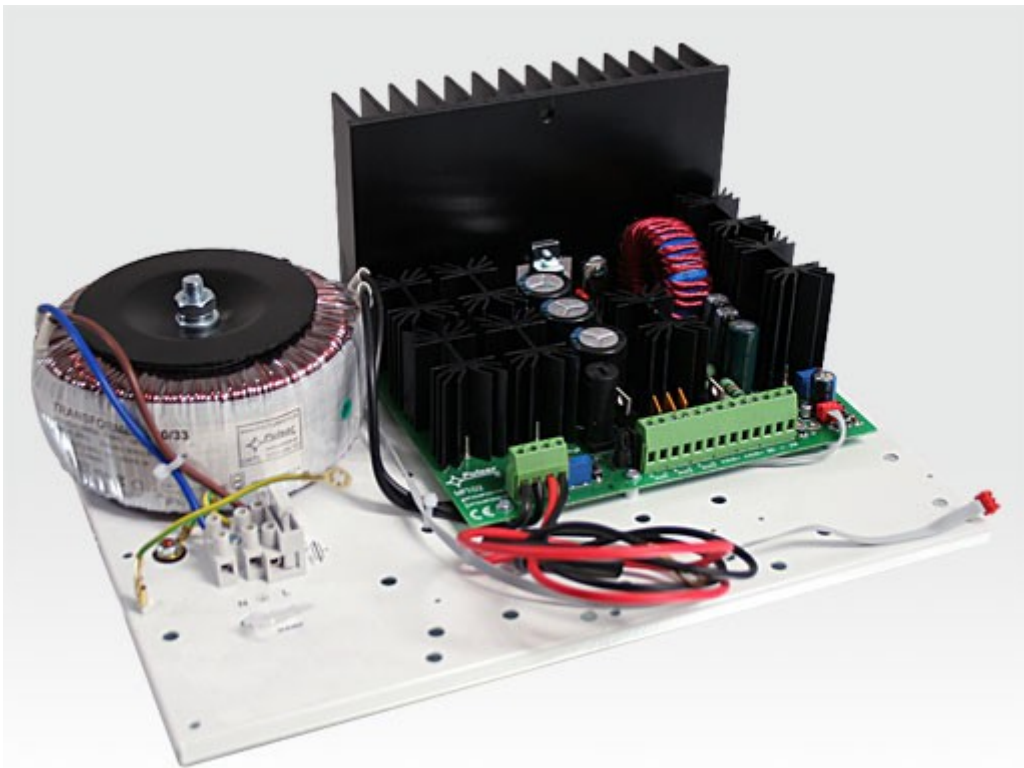


## SONGPL\*TR10



### Features of the power supply unit:

- 13.8 VDC/10A uninterruptible power supply
- high efficiency 72%
- battery charge and maintenance control
- protecting of battery against excessive discharging (UVP)
- battery output full protection against
- short-circuit and reverse polarity connection
- jumper selectable charging
- current 0,7A/2,1A/3,6A/4,8A
- START function of manual battery actuation
- checking the status of safety fuses of AUX1, AUX2 and AUX3 outputs
- LED optical signalisation
- FAC output for the signalling loss of the 230V network
- FPS output of power supply unit failure, tripped by:
  - outlet short-circuit (SCP)
  - outlet overload (OLP)
  - battery disconnection < 10V (UVP)
  - failure of DC/DC voltage converter

Safety equipment:

- SCP short-circuit protection
- OLP overload protection
- OHP overheat protection
- OVP overvoltage protection
- Surge protection

### CONTENTS:

- 1. Technical description
  - 1.1. General description
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  - 1.3. Description of elements and power supply connectors
  - 1.4. Technical parameters
- 2. Installation.
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### 1. Technical description.

### 1. Technical description.

#### 1.1 General description.

The buffer power-supply is used for uninterrupted supply of alarm systems devices requiring stabilized voltage of **12V/DC (+/-15%)**. The power-supply provides voltage within the following range **13,8 V DC** of current efficiency equal:



- 1. **Output current 10A (without battery)**
- 2. **Output current 9,3A + 0,7A battery charging**
- 3. **Output current 7,9A + 2,1A battery charging**
- 4. **Output current 6,4A + 3,6A battery charging**
- 5. **Output current 5,2A + 4,8A battery charging**

**Total device current + battery: 10A max.**

W In case of power voltage decay, prompt switching to battery supply occurs. Battery charging current – set on 2,1A.

The module is intended to be mounted in enclosures:

- AVZUPL\*3427
- AVZUPL\*3444
- AVZUPL\*4044

1.2. Block diagram (fig.1).

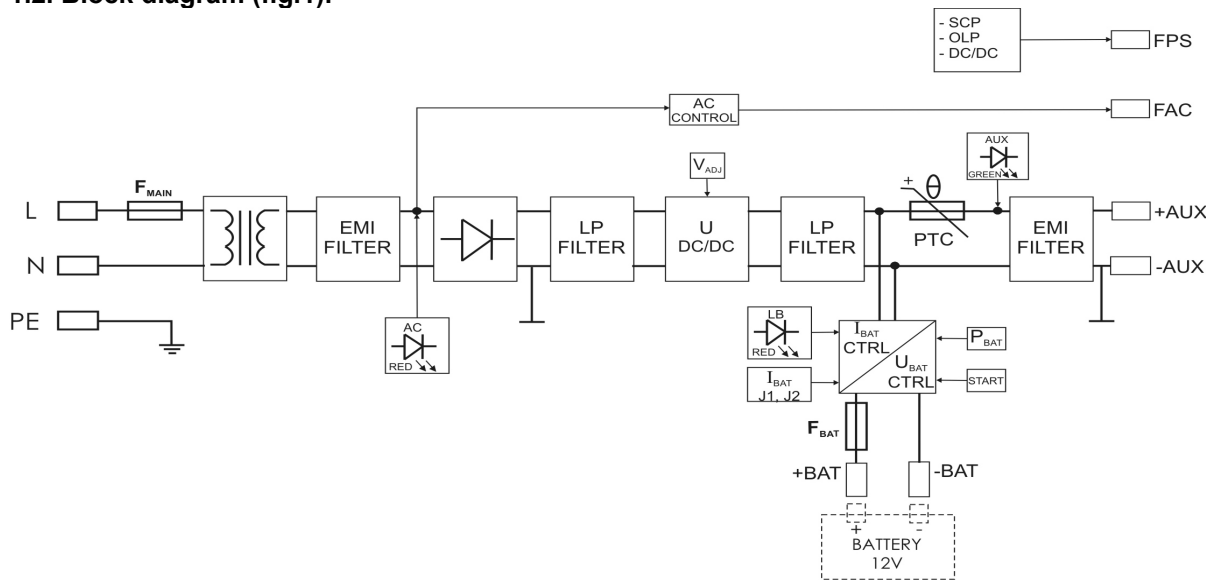
















Fig.1. Block diagram of the power-supply unit.

1.3. Description of elements and connection links of the power-supply unit (tab.1, tab.2, fig.2, fig.3).

Element no. [Fig. 2]	Description
[1]	F1 fuse in the battery circuit
[2]	START pushbutton (power-supply activation from the battery)
[3]	J, jumper - configuration of UVP battery protection function <ul style="list-style-type: none"> <li>• J =  protection function (disconnection) of the battery off</li> <li>• J =  protection function (disconnection) of the battery on</li> </ul> Legend:  jumper installed,  jumper removed
[4]	P1 potentiometer, DC voltage adjustment
[5]	+AUX- +AUX1- +AUX2- +AUX3- Outputs for DC power supply (+AUX= +U, -AUX=GND)
[6]	O1, O2, O3, AUX - optical signalisation of power supply operation
[7]	AC - LED diode that indicates the presence of AC voltage
[8]	LB - LED diode that indicates battery charging
[9]	OVP - LED diode that indicates the activation of the OVP overvoltage protection
[10]	J1, J2, jumpers – battery charging current configuration <ul style="list-style-type: none"> <li>• J1=  J2=  I<sub>bat</sub> =0.7A</li> <li>• J1=  J2=  I<sub>bat</sub> =2.1A</li> <li>• J1=  J2=  I<sub>bat</sub> =3.6A</li> <li>• J1=  J2=  I<sub>bat</sub> =4.8A</li> </ul> Legend:  jumper installed  jumper removed
[11]	+BAT - DC power supply output of the battery (+BAT = red, -BAT = black)
[12]	FAC - technical output of AC shortage – OC type hi-Z level = status: AC power supply L level = status: AC power supply failure
[13]	FPS - failure technical output – OC type Activation: SCP, OLP, UVP, converter failure L level = status: correct operation hi-Z level = status: failure, overload
[14]	LED signalisation connection

Tab.1. Elements of the PCB board of the power-supply unit (refer to fig.2).

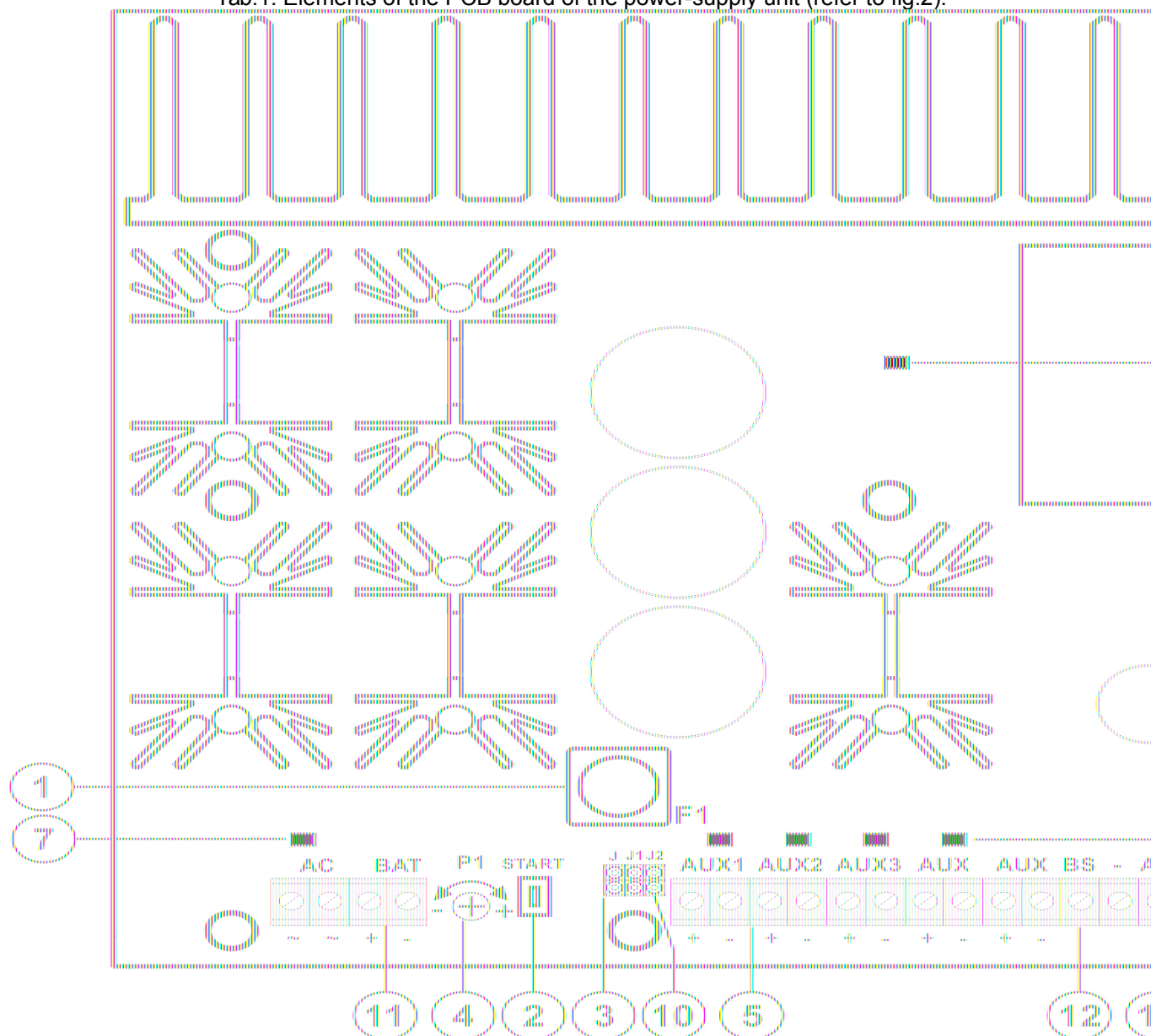



Fig.2. View of the PCB board of the power-supply unit.

Table 2.

Element no. [Fig. 3]	Description of outputs of the power-supply unit
[1]	Separation transformer
[2]	Power-supply unit board (tab. 1)
[3]	Battery connectors +BAT = red, - BAT = black
[4]	F <sub>MAIN</sub> fuse in the power supply circuit (230VAC)
[5]	L-N 230VAC power supply connection ,  PE protection connection

Tab.2. Elements of the power-supply unit (refer to fig. 3).

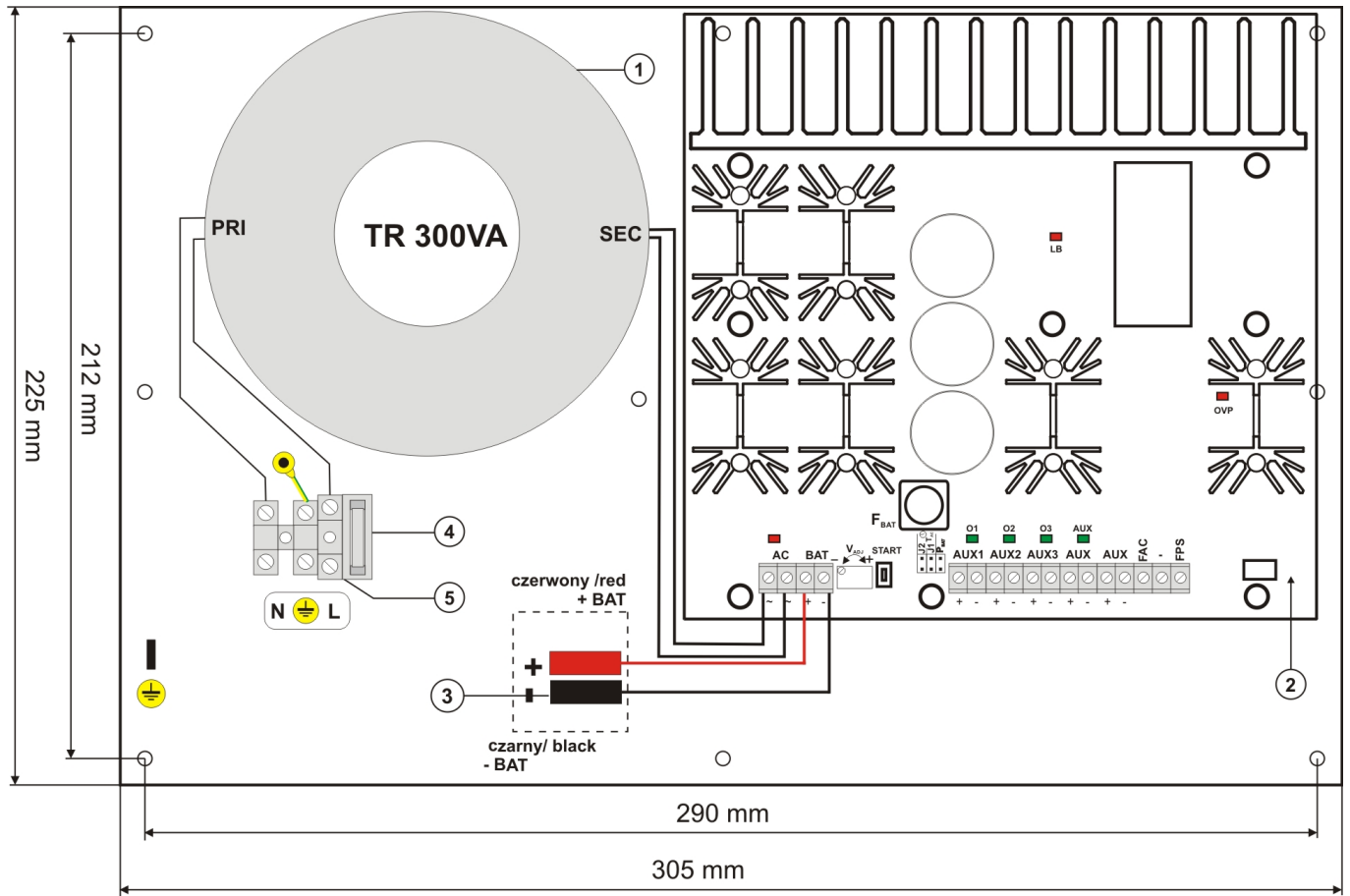


Fig.3 View of the power-supply unit.

**1.4. Technical parameters:**

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

Electrical parameters (tab.3).

Supply voltage	230V/AC (-15%/+10%)
Current consumption	1,1 A max.
Power frequency	50Hz
Supply power	138W
Efficiency	71%
Output voltage	11,0 V± 13,8 V DC – buffer operation 10,0 V± 13,8 V DC – battery assisted operation
Output current	<b>Output current 10A (without battery)</b> <b>9,3A + 0,7A battery charging</b> <b>7,9A + 2,1A battery charging</b> <b>6,4A + 3,6A battery charging</b> <b>5,2A + 4,8A battery charging</b>  <b>3x2,5A- outputs +AUX1-, AUX2-, AUX3-</b> <b>1x2,5A- output AUX</b>
Output voltage setting, escalation and keeping time	20ms / 30ms / 50ms
Voltage adjustment range	12,0 V± 14,5 V
Ripple voltage	50 mV p-p max.
Current consumption by PSU systems	20 mA – battery assisted operation
Battery charging current	0,7A / 2,1A / 3,6A / 4,8A - changed with jumper I <sub>BAT</sub> (J1, J2)
Short-circuit protection SCP	200% ÷ 250% of power supply, hiccup mode – 13A/200ms and/or

	fuse failure in the battery circuit (fuse-element replacement required)
Overload protection OLP	110% ÷ 150% of power supply – electronic. Disconnection of power supply outputs – automatic reconnection after the disconnecting of the DC output circuit
Protection of the battery circuit SCP and reverse polarity protection	10 A - current limitation, F <sub>BAT</sub> fuse (failure requires replace of the fuse-element)
Excessive discharge protection UVP	U<10,0 V (± 5%) – disconnection of (- BAT) battery, configuration with jumper P <sub>BAT</sub>
Technical outputs: - FAC; output indicating failure of AC power supply - FPS; technical output indicating operation status of the power supply	- OC type, 50mA max. normal status: level L (0V), failure: level hi-Z, 10s time lag. - OC type, 50mA max. normal status: level L (0V), failure: level hi-Z (automatically recovered after returning correct operation)
F <sub>BAT</sub> fuse F <sub>MAIN</sub> fuse	T 10A / 250V T 6,3A / 250V

#### Mechanical parameters (tab.4).

Dimensions	305 x 225 x 120 (WxHxD) [mm] (+/- 2)
Fixation	290 x 212 Φ 6 x 9szt (WxH)
Net/gross weight	5,20/ 5,45 kg
Connectors	Power-supply: Φ0.41-2.5 Outputs: Φ0.41÷2.5 BAT battery outputs: connectors Φ6 (M6-0-2.5)

#### Operation safety (tab.5).

Protection class PN-EN 60950-1:2007	I (first)
Protection grade PN-EN 60529: 2002 (U)	IP20
Electrical strength of insulation: - between input (network) circuit and output circuits of power-supply (I/P-O/P) - between input circuit and PE protection circuit (I/P-FG) - between output circuit and PE protection circuit (O/P-FG)	3000V AC min. 1500V AC min. 500V AC min.
Insulation resistance: - between input circuit and output or protection circuit	100MΩ, 500V DC

#### Operation parameters (tab.6).

Operation temperature	-10°C...+40°C
Storage temperature	+25°C...+60°C
Relative humidity	30%...90%, without condensation
Vibrations during operation	Unacceptable
Impulse waves during operation	Unacceptable
Direct isolation	Unacceptable
Vibrations and impulse waves during transport	According to PN-83/T-42106

## 2. Installation.

### 2.1. Requirements.

The buffer power-supply shall be mounted by the qualified installer having appropriate (required and necessary for a given country) permissions and qualifications for connecting (operating) 230V AC installations and low-voltage installations. The device shall be mounted in closed rooms, according to the environment class II, of the normal air humidity (RH=90% max. without condensation) and the temperature within the range from -10°C to +40°C. The power-supply shall operate in a vertical position so that free and convectional air flow through ventilating holes of the casing is guaranteed. The power-supply provides voltage within the following range **13,8 V DC** of current efficiency equal:




### Output current 10A (without battery)

1. Output current 9,3A + 0,7A battery charging
2. Output current 7,9A + 2,1A battery charging
3. Output current 6,4A + 3,6A battery charging
4. Output current 5,2A + 4,8A battery charging


**Total device current + battery: 10A max.**

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

## 2.2. Installation procedure.

1. **Before installation is started, the voltage in the 230V power-supply circuit shall be isolated.**
2. The power-supply shall be mounted in a selected location and connection cords shall be lead.
3. The power cables (230 VAC) shall be connected to L-N terminals of the power supply. The earth conductor shall be connected to the terminal marked by the earth symbol . The connection shall be made by means of a three-core cable (with a yellow and green PE protection wire). The power cables shall be lead to appropriate terminals of the connection board through bushing.



**The circuit of the shock protection shall be performed with a particular care, i.e. the yellow and green protection wire of the power cable shall be connected from one side to the terminal marked by the symbol of  in the casing of the power-supply. Operation of the power-supply without the properly made and fully operational circuit of the shock protection is UNACCEPTABLE! It can result in failure of devices and electric shock.**

4. Connect the conductors of the loads to the +AUX-, +AUX1-, +AUX2-, +AUX3- terminals of the terminal box on the power-supply unit.
5. If necessary, connect the conductors from the equipment to the technical outputs:
  - FAC status indication (alarm panel, controller, signalling unit, LED diode, etc.)
  - FPS technical output of failure
6. Using the jumper 'J1', 'J2' determine maximal battery charging current, take into consideration battery parameters (refer to tab.1 page 4).
7. Using the jumper 'J' determine whether the function of disconnecting the discharged battery  $U < 10V (+/- 5\%)$  is to be on or off. **The battery protection is on if the jumper 'J' is removed.**
8. Activate the 230V AC supply (the AC diode should be permanently illuminated, and AUX O1, O2, O3 diode should be permanently illuminated).
9. Check the output voltage (the power-supply unit voltage without load should be anywhere between 13.6V÷13.9V, and during battery charging 11V÷13.8V). If the value of the voltage requires adjustment, the setting should be made by means of the potentiometer  $V_{ADJ}$ , monitoring the voltage at the AUX output of the PSU.
10. Connect the battery in accordance with the indications: +BAT red to 'plus', -BAT black to 'minus', (the LB red diode should go on and the lighting intensity should reduce with the charging time elapsed increasing).

## 3. The power supply operation indication.

### 3.1. Optical indication.

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

The PSU is equipped with three diodes indicating operation status: AC, LB, AUX, O1, O2, O3, and UVP, placed on the PCB (fig.2) of the power-supply unit module:

- **AC - red diode:** under normal status (AC supply) the diode is permanently illuminated. The absence of AC supply is indicated by the AC diode going off.
- **LB - red diode:** indicates the battery charging process; the intensity of illumination is dependent on the charging current.
- **AUX - green diode:** indicates the DC supply status at the output of the PSU. Under normal status, the diode is permanently illuminated and in the case of short-circuits or overload, the diode goes off.

- **O1, O2, O3 - green diodes:** indicate the status of DC power supply at AUX1, AUX2, AUX3 outputs, which are independently protected with 2.5A polymer safety equipment. In normal state, the diode emits continuous light – in the case of short-circuit or overload, the diode goes off.
- **UVP – red diode:** signals the activation of the UVP overvoltage protection. In normal state, the diode is off – in the case of short-circuit or overload, the diode emits continuous light.

### 3.2. Technical outputs.

The PSU is equipped with indication outputs:

- **FAC - absence of AC supply output:** - OC output type indicates the loss of AC supply in a normal status, with the supply equal to 230V, the output is deactivated and in case of power supply loss the PSU activates the output after 30s.
- **FPS - technical output of failure:** OC output type indicates failure the occurrence of at least one of the following failures: SCP, OLP, UVP, voltage converter failure. In normal state (correct operation), the output has the L status "ground" (0V) – in the case of failure, the output is open (hi-Z high impedance).

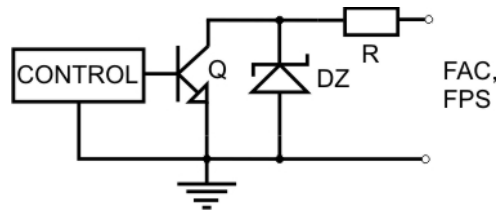


Fig. 4. Electrical diagram of OC outputs.

### 4. Service and operation.

The output circuit has an electronic current protection. If permissible value of the  $I_{max}$  output current is exceeded, the power-supply unit output voltage is disconnected and this is indicated by the O1, O2, O3 and AUX diodes going off. The voltage is restored automatically, when the receivers are disconnected from the output.

Additionally, the AUX1, AUX2, AUX3 outputs of the power-supply unit are independently protected, using the PTC polymer fuses. If the output is loaded with the current that exceeds 2.5A, the output voltage is automatically disconnected, which is indicated by the O1, O2 or O3 green diode going off. The restoration of the voltage at the output requires the disconnecting output load for the period of at least one minute.

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

#### 4.2. Battery operation.

In the case of power failure, in the unit will instantly switch to the battery assisted operation.

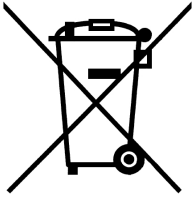
In order to activate the operation of the PSU from the battery itself, connect the BAT connectors in accordance with the indications: +BAT red to 'plus' and, -BAT black to 'minus' of the battery and press and keep depressed for five seconds the START pushbutton on the equipment board.

**The PSU is equipped with the discharged battery disconnection system (UPV); the configuration of functions through the jumper  $P_{BAT}$ . The battery protection is on if the jumper  $P_{BAT}$  is removed.**

#### 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 fuse replacement, only the substitutes in conformity to the original ones are allowed.





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**WEEE MARK**

**The waste electric and electronic products do not mix with general household waste.  
There are separate collection system for used electric and electronic products in  
accordance with legislation under the WEEE Directive and is effective only with EU.**

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

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