



**PSU-U-24V/AC-4A/5/FTA-TR-HC**

**PSACH 0424**

**v.1.0**

**AC/AC power supply unit  
in the ABS IP65 casing.**

Edition: 1 from the 24<sup>th</sup> October 2008

Supercedes edition: -----



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### 1. Technical description.

#### 1.1. General description.

AC/AC **PSACH 0424** power supply is used for supplying devices which require stabilized voltage of **24V 24V (U1= 24,0VAC/ U2= 27,0VAC)** and of total current efficiency equal to **4A@24VAC (S=100VA)**.

The basic features of the power supply include:

- **5 outputs** protected independently by fuses, any failure (short-circuit) in a circuit of any output causes burning of a fuse-element and isolation of circuit from DC supply.
- **regulation of output voltage:** in case of installation, when significant voltage drops at the resistance of power cables of receivers occur, it is possible to change a voltage value by U1/U2 jumper, independently for each AUX output.
- **optical signaling of operation** informing about the state of any output and/or any failure.
- **AW technical output** informing about any output failure (activation of SCP) used for remote control of operation
- **protections:** short-circuit (SCP), overload (OLP), overheat (OHP),
- **ABS casing, hermetic IP 65** equipped with a microswitch (TAMPER) indicating door (front) opening

#### Information about additional equipment for PSAC 0424 power-supply:

- AC/DC power supply module in the ABS casing, MSC 1512 (MSC 12V/1,5A or 24V/1A power supply, switched voltage) allows building 24Vac and 12Vdc/24 supply system.

#### Information about types:

| Model                                                   | Description                                                                                                                                                                                                                                                |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PSAC 0424</b><br><b>PSU-U-24V/AC-4A/5/FTA-TR-MC</b>  | AC/AC 24V AC power-supply unit, with the total current capacity 4A@24V and switched output voltage 24,0V/27,0V. Equipped with the indication panel of AUX outputs status. Metal casing IP20 with an indication panel equipped with the TAMPER microswitch. |
| <b>PSAC 0624</b><br><b>PSU-U-24V/AC-6A/10/FTA-TR-MC</b> | AC/AC 24V AC power-supply unit, with the total current capacity 6A@24V and switched output voltage 24,0V/27,0V. Equipped with the indication panel of AUX outputs status. Metal casing IP20 with an indication panel equipped with the TAMPER microswitch. |
| <b>PSACH 0424</b><br><b>PSU-U-24V/AC-4A/5/FTA-TR-HC</b> | AC/AC 24V AC power-supply unit, with the total current capacity 4A@24V and switched output voltage 24,0V/27,0V. Equipped with the indication panel of AUX outputs status. <b>ABS IP65 casing with equipped with the TAMPER microswitch.</b>                |

### 1.2. Block diagram (fig.1).

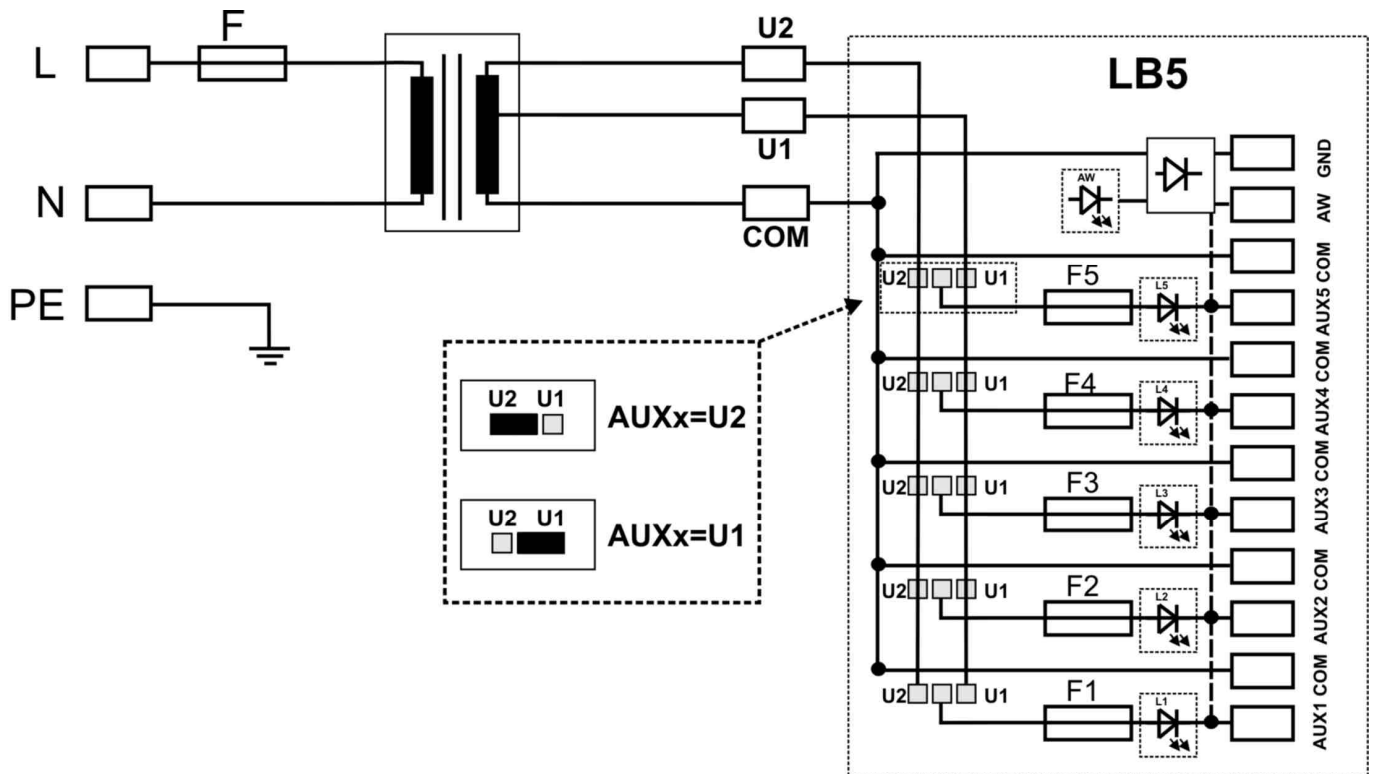


Fig.1. The block diagram of the power supply.

### 1.3. Description of elements and power supply connectors (tab.1, tab.2, fig.2).

Table 1.

| Element no.<br>[Fig. 2] | Description                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| [1]                     | Isolating transformer                                                                                                                           |
| [2]                     | LB5 fuse block (tab 2)                                                                                                                          |
| [3]                     | TAMPER, contact of antisabotage protection (NC)                                                                                                 |
| [4]                     | F switch in the power supply circuit (230V/AC)                                                                                                  |
| [5]                     | L-N power-supply connector 230V/AC,  PE protection connector |

Tab.1. The elements of the power-supply unit.

Table 2.

| [2]              | Description of LAC (LB5) elements                                                                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-U1-U2        | AC supply input (transformer isolation required)                                                                                                                                  |
| AUX1÷AUX5<br>COM | AC supply output, U1 or U2<br>Common contact (COM)                                                                                                                                |
| AW<br>GND        | failure technical output - NC (0V), OC type<br>„ground“ contact of AW output                                                                                                      |
| L1÷L5            | LED diodes (green) indicating L1=AUX1 output status etc.                                                                                                                          |
| L AW             | LED diode (red) indicating failure of min. one output (fuse failure)                                                                                                              |
| F1÷F5            | Fuses in AUX circuits, F1=AUX1 etc.                                                                                                                                               |
| U1-U2            | Jumper of AUX output voltage change (for each output separately):<br><br>U2 dip switch installed, output voltage AUXx= U2<br><br>U1 dip switch installed, output voltage AUXx= U1 |

Tab.2. Contacts and elements of LB5.

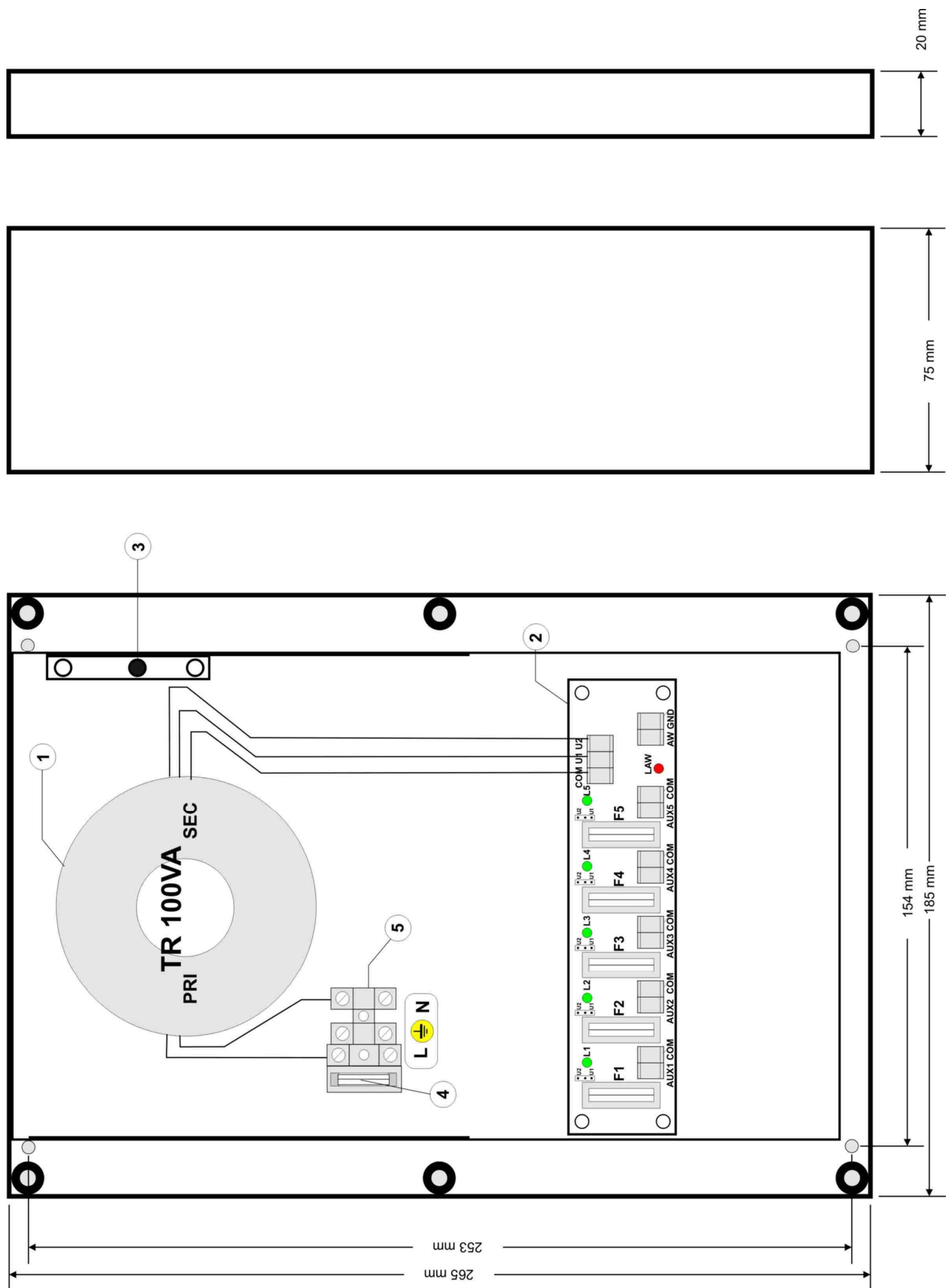


Fig.2. The view of the power supply.

**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%)                                                                                                                                                                                                |
| Supply frequency                                                                                                                                                   | 50Hz (47÷53Hz)                                                                                                                                                                                                     |
| PSU power P                                                                                                                                                        | 100VA max.                                                                                                                                                                                                         |
| Current consumption                                                                                                                                                | 0,5 A max. (5,0 A „ cold boot“)                                                                                                                                                                                    |
| Output voltage                                                                                                                                                     | U1 : 23,0V÷28,0V AC (100% load ÷ 0% load)<br>U2 : 25,5V÷31,5 AC (100% load ÷ 0% load)                                                                                                                              |
| Voltage setting range                                                                                                                                              | U1/U2 (abrupt change)                                                                                                                                                                                              |
| Voltage adjustment range                                                                                                                                           | no adjustment                                                                                                                                                                                                      |
| Output current AUX                                                                                                                                                 | 5x 0,8A for F1A fuses<br>Σ4,0A@24Vacmax. or 3,7A@27Vac max.<br>2A max. for single AUX (F2A)                                                                                                                        |
| SCP short-circuit protection                                                                                                                                       | 5x F1,0A fuse or<br>3x F1,5A fuse (fuse replacement from the set, only three AUX outputs used)<br>- fuse failure – fuse element replacement required                                                               |
| OLP overload protection                                                                                                                                            | 5x F1,0A or 3x F1,5A – AC 24V circuit<br>1x T1,0A –AC 230V circuit                                                                                                                                                 |
| Technical outputs:<br>- AW LB5 output indicating the failure of one AUX output (fuse failure)<br><br>- TAMPER output indicating opening of the power-supply casing | - OC type, 50mA max.<br>normal status: level hi-Z,<br>failure status: level L (0V)<br><br>- microswitch, NC contacts (close casing),<br>0,5A@50V DC (max.)                                                         |
| Optical indication:<br>LED L1÷L5 diodes (green)<br><br>LED LAW diodes (red)                                                                                        | - outputs statusAUX1...AUX5<br>Normal status = illumination<br>Failure status = no illumination<br>- Failure indication of min. one AUX output<br>Normal status = no illumination<br>Failure status = illumination |
| F fuse<br>F1÷F5 fuse                                                                                                                                               | T 1A/250V<br>F1A/ 250V or F1,5A/250V                                                                                                                                                                               |

**Mechanical parameters (tab.4).**

|                   |                                                                                                       |
|-------------------|-------------------------------------------------------------------------------------------------------|
| Casing dimensions | 185 x 265 x 95 (WxHxD) [mm] (+/- 1)                                                                   |
| Fixation          | 154 x 253 x Φ 4 x4pcs (WxH)                                                                           |
| Net/gross weight  | 2,35 kg/2,5 kg                                                                                        |
| Casing color      | RAL 7005, shiny                                                                                       |
| Closing           | Cheese screw x 6 (at the front)                                                                       |
| Connectors        | Power-supply: Φ0,63-2,50 (AWG 22-10)<br>Outputs: Φ0,41÷1,63 (AWG 26-14)<br>TAMPER output: wires, 30cm |
| Notes             | The casing is distant from the assembly surface so that cables can be installed                       |

**Operation safety (tab.5)**

|                                                                                                                       |                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Protection class PN-EN 60950-1:2004                                                                                   | I (first)                                                                                |
| Protection class PN-EN 60529: 2002 (U)                                                                                | IP65<br>(glands installation required:<br>P9 (Φ 4-8mm) x 5pcs<br>P13,5 (Φ 6-12mm) x 1pcs |
| Electrical strength of insulation:<br>- between input (network) circuit and output circuits of power-supply (I/P-O/P) | 3000 V/AC min.                                                                           |

|                                                             |                 |
|-------------------------------------------------------------|-----------------|
| - between input circuit and PE protection circuit (I/P-FG)  | 1500 V/AC min.  |
| - between output circuit and PE protection circuit (O/P-FG) | 500 V/AC min.   |
| Insulation resistance:                                      |                 |
| - between input circuit and output or protection circuit    | 100 MΩ, 500V/DC |

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

|                                               |                            |
|-----------------------------------------------|----------------------------|
| Operation temperature                         | -10°C...+40°C              |
| Storage temperature                           | +5°C...+40°C               |
| Relative humidity                             | 10%...100%                 |
| 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=100% max.) and the temperature within the range from -10°C to +40°C.(table 6). The power-supply shall operate in a vertical or horizontal position.

Before installation is started, the balance of the power-supply load shall be performed. During the normal operation, the sum of currents collected by receivers shall not exceed **I=4,0A@24Vac. It is acceptable to change values of fuses to other than original, if not all outputs of power supply of LB5 block are used and S= 100VA max is not exceeded. (Σ4,0A@24Vacmax and current of single 2A/AUX output).**

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.**
- Glands should be mounted (in a set, P9:Φ 4-8mmx5pcs, P13,5: Φ 6-12mmx1pcs) in the power supply casing, considering the diameter of power supply and receivers wires. The location of the battery and additional equipment elements shall be additionally considered.
- The power-supply shall be mounted in a selected location and connection cords shall be lead.
- The power cables (~230Vac) 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.**

5. Connect the conductors of consumers to the +AU, -AUX terminals of the terminal box on the power-supply unit.
6. If necessary, connect the conductors from the equipment to the technical outputs:
  - **AW LB5** signalization of fuse failure (LB5 block output)
  - **TAMPER** signalization of power-supply unit opening
7. As there are significant voltage drops at the resistance of power cables of receivers during installation, it is possible to adjust a voltage value by (abrupt) correction of voltage value by U1/U2 dip switches. Output voltage value change is independent for every AUX output.
8. Activate the ~230V/AC supply
9. Check optical indication of power supply operation: LED L1-L5 (green) diodes shall light continuously.
10. Once the tests and control operation have been completed, lock the casing.

### 3. Monitoring of the power-supply operation.

The power-supply is equipped with the optical signaling of operation modes. Voltage at the outputs of the power supply is indicated by lighting of green LEDs at the front panel of the device. A failure is indicated by the red LED [!] AW. The power supply mode can be remotely controlled by AW technical output.

#### 3.1 Optical signaling

- Green **LEDs 1....5** indicate the power-supply mode at AUX1.....AUX5 outputs.  
If power supply is lost at an output (fuse blow), a correspondent LED stops lighting (L1 for AUX1, L2 for AUX2, etc.).
- The red **LED [!] AW** indicates any failure of at least one AUX output (the number of the output is indicated by a green LED).

#### 3.2 Technical output.

The power supply is equipped with indication outputs which enable passing information about failure or sabotage.

- **AW** output indicates fuse failure (LB5 block outputs)  
The AW technical output is isolated from frame (GND) during proper operation of LB5, and if any fuse is damaged, the output is shorted to frame. Such state is indicated by a red LED on LB5 block.
- **TAMPER: output indicates opening the power-supply unit**, output as volt-free contacts which indicate power-supply unit door status, unit closed: NC, unit opened: NO

### 4. Service and operation.

#### 4.1 Procedure in the case of short-circuit of the power supply output.

The AUX1÷ AUX5 outputs have short-circuit protection through application of fuses (fuse-elements).

If a failure occurs, the fuse shall be replaced (the same as the original).

**It is acceptable to change values of fuses to other than original, if not all outputs of power supply of LB5 block are used and S= 100VA max. is not exceeded. (Σ4,0A@24Vacmax and current of single 2A/AUX output).**

If the power-supply is overloaded by the current exceeding Σ4,0A@24Vac (110% ÷ 150% P), F fuse in the 230Vac is damaged and/or F1-F5 fuses. In case of the fuse failure, it shall be replaced (the same as original).

#### 4.2 Maintenance.

All maintenance operations can be performed after the power supply is disconnected from the power network. As for the power supply, it is not necessary to perform any special maintenance operations, but if the power supply interior is significantly dusty, it shall be vacuum-cleaned by compressed air. In case of fuse replacement, the spare parts shall be the same as original ones.

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**WEEE MARK**

The waste electric and electronic equipment shall not be discarded together with common home waste materials. According to the WEEE directive valid in EU, particular methods of utilisation shall be applied for the waste electric and electronic equipment.

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**WARRANTY :**

24 months since the sale date, 36 months since the production date.  
**THE WARRANTY IS VALID ONLY** after presenting the invoice of the sale to which the claim refers.