PSU-S-12V/L-1A/5/FTA-TR-MC
AWZ 150
v.2.2

Linear, stabilized power supply unit.

Edition: 2 from the 25th May 2009
Supercedes edition: 1 from the 30th November 2007
1. Technical description.

1.1. General description.

Buffer power supply unit is designed for the supply of equipment requiring the stabilized voltage of 12V/DC (-/+15% DC) and the total output current of 1A. Basic power supply unit features:

- **five inputs** protected independently by fuses: failure (short circuit) in any output circuit triggers SCP protection and disconnects DC (+U) power supply circuit;
- **five outputs** protected independently by fuses: failure (short circuit) in any output circuit triggers SCP protection and disconnects DC (+U) power supply circuit;
- **optical indication of operation** informs about the status of: outputs, protections: short-circuit (SCP), overload (OLP), overheat (OHP);
- **output voltage adjustment**: in case of installation where appear considerable voltage drops on cable resistance connected to receivers, it is possible to regulate the voltage value with P1 voltage adjustment;
- metal casing (color RAL 9003) with LED signalization panel.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWZ250 PSU-S-12V/L-2A/5/FTA-TR-MC</td>
<td>12V/DC stabilized linear power supply unit with five independent outputs, protected by fuses. The total current capacity 2A@12V, with output voltage adjustment. Metal casing IP20 with a space for a LED signalization panel.</td>
</tr>
<tr>
<td>AWZ255 PSU-S-12V/L-2A/5/PTC-TR-MC</td>
<td>12V/DC stabilized linear power supply unit with five independent outputs, protected by polymer fuses (PTC, automatic). The total current capacity 2A@12V, with output voltage adjustment. Metal casing IP20 with a space for a LED signalization panel.</td>
</tr>
<tr>
<td>AWZ150 PSU-S-12V/L-1A/5/FTA-TR-MC</td>
<td>12V/DC stabilized linear power supply unit with five independent outputs, protected by fuses. The total current capacity 1A@12V, with output voltage adjustment. Metal casing IP20 with a space for a LED signalization panel.</td>
</tr>
</tbody>
</table>
1.2. Block diagram (fig.1).

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

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

Table 1.

<table>
<thead>
<tr>
<th>Element no [Fig. 2]</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] 1, 2, 3, 4, 5</td>
<td>optical signaling of outputs status <del>AC</del> AC supply signaling (only PCB)</td>
</tr>
<tr>
<td>[2] F1, F2, F3, F4, F5</td>
<td>fuses in the output circuit (DC)</td>
</tr>
<tr>
<td>[3] P1 voltage adjustment</td>
<td>output voltage adjustment</td>
</tr>
<tr>
<td>[4] OUTPUTS of power supply unit</td>
<td>connector (Tab.2)</td>
</tr>
<tr>
<td>[6] L-N</td>
<td>power-supply connector 230V/AC, PE protection connector</td>
</tr>
</tbody>
</table>

Tab.1. Power-supply unit elements.

Table 2.

<table>
<thead>
<tr>
<th>[4]</th>
<th>Description of power-supply unit outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>+1, +2, +3, +4, +5</td>
<td>Supply output DC: +U</td>
</tr>
<tr>
<td>- (x3)</td>
<td>Supply output DC: -U (GND, common terminal)</td>
</tr>
<tr>
<td><del>AC</del></td>
<td>Supply input AC</td>
</tr>
</tbody>
</table>

Tab.2. Power supply unit output terminals.
Fig. 2. The 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).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>230V/AC (-15%/+10%)</td>
</tr>
<tr>
<td>Supply frequency</td>
<td>50Hz (47÷53Hz)</td>
</tr>
<tr>
<td>PSU power P</td>
<td>12W max.</td>
</tr>
<tr>
<td>Current consumption</td>
<td>0.15A/230V</td>
</tr>
<tr>
<td>Output voltage</td>
<td>12,0V DC nom.</td>
</tr>
<tr>
<td>Output voltage setting, escalation and keeping time</td>
<td>60ms/70ms/12ms</td>
</tr>
<tr>
<td>Voltage setting range</td>
<td>11,0V÷15,0VDC (-5%/+5%), 1x P1 adjustment</td>
</tr>
<tr>
<td>Voltage adjustment range</td>
<td>± 1%</td>
</tr>
<tr>
<td>Ripple voltage</td>
<td>&lt;10 mVp-p max.</td>
</tr>
<tr>
<td>Output current</td>
<td>5x 0,2A for fuses T 0,2A</td>
</tr>
<tr>
<td>Short-circuit protection SCP</td>
<td>5x T 0,2A fuse (damage, fuse-element replacement required)</td>
</tr>
<tr>
<td>Overload protection OLP</td>
<td>110% ÷ 150% of power supply - limitation with the PTC automatic fuse, reset requires disconnecting load or supply for about 1 min.</td>
</tr>
<tr>
<td>Optical indication:</td>
<td>- outputs status +1…+5:</td>
</tr>
<tr>
<td>diodes1÷5 (green)</td>
<td>normal status = lights</td>
</tr>
<tr>
<td>diode AC (red, on PCB of supply unit)</td>
<td>failure status= does not light</td>
</tr>
<tr>
<td>Fuse F6</td>
<td>T 200mA/250V</td>
</tr>
<tr>
<td>Fuse F1÷F5</td>
<td>F 0,5A/ 250V</td>
</tr>
</tbody>
</table>

### Mechanical parameters (tab. 4).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing dimensions</td>
<td>175 x 185 x 88 (WxHxD)</td>
</tr>
<tr>
<td>Fixation</td>
<td>145 x 174 x Φ 6  WxH</td>
</tr>
<tr>
<td>Net/gross weight</td>
<td>1,6/1,7 kg</td>
</tr>
<tr>
<td>Casing color</td>
<td>RAL 9003</td>
</tr>
<tr>
<td>Closing</td>
<td>Cheese screw: at the front of the casing</td>
</tr>
<tr>
<td>Connectors</td>
<td>Supply 230Vac: Φ0,63-2,05 (AWG 22-12)</td>
</tr>
<tr>
<td></td>
<td>DC outputs: Φ0,51- 2,05 (AWG 24-12)</td>
</tr>
<tr>
<td>Notes</td>
<td>The casing is distant from the assembly surface so that cables can be installed convetion cooling</td>
</tr>
</tbody>
</table>

### Operation safety (tab.5).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection class PN-EN 60950-1:2004</td>
<td>I (first)</td>
</tr>
<tr>
<td>Protection grade PN-EN 60529: 2002 (U)</td>
<td>IP20</td>
</tr>
<tr>
<td>Electrical strength of insulation:</td>
<td>3000 V/AC min.</td>
</tr>
<tr>
<td>- between input (network) circuit and output circuits of power-supply (I/P-O/P)</td>
<td>1500 V/AC min.</td>
</tr>
<tr>
<td>- between input circuit and PE protection circuit (I/P-FG)</td>
<td>500 V/AC min.</td>
</tr>
<tr>
<td>- between output circuit and PE protection circuit (O/P-FG)</td>
<td></td>
</tr>
<tr>
<td>Insulation resistance:</td>
<td>100 MO, 500V/DC</td>
</tr>
</tbody>
</table>

### Operation parameters (tab.6).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature</td>
<td>-10ºC...+40ºC</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>+5ºC...+40ºC</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>30%...90%, without condensation</td>
</tr>
<tr>
<td>Vibrations during operation</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Impulse waves during operation</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Direct isolation</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Vibrations and impulse waves during transport</td>
<td>According to PN-83/T-42106</td>
</tr>
</tbody>
</table>
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.

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=1A (P=12W max.). It is acceptable to change values of fuses to other than original, if not all outputs of power supply are used and Pmax is not exceeded.

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. Remove the power fuse protecting the power supply circuit.
4. 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 cable). 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 ☢ 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: +1-.....+5- (maintaining polarization).
6. 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 P1 potentiometer (11,0V÷15,0V DC).
7. Insert the fuse into the power supply circuit and switch on power.
8. Check the optical signaling of the power supply.
9. After installation is completed and operation of the power-supply is checked, the casing can be closed.

3. Power supply unit operation indication.

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.

3.1 Optical signaling (fig.3.)

- Green LEDs 1....5 indicate the power-supply mode at outputs: +1.....+5.
  If power supply is lost at an output (fuse blow), a correspondent LED stops lighting (L1 for +1, L2 for +2 etc.).
- The red LED AC indicates supply status at power supply unit input. In case of supply loss at input (lack of 230V/AC, F6 failure) the diode stops lighting.
4. Service and operation.

4.1 Procedure in case of short-circuit (activation of SCP) 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 are used and Pmax is not exceeded.**

4.2 Procedure in case of overload (activation of OLP) of the power-supply.

The main output of the power supply unit is equipped with the PTC polymer fuse assisted protection. If the load of the PSU exceeds 1A (load 110% ÷ 150% @25ºC of the PSU power), the output voltage is automatically disconnected and this is indicated by all diodes going off. The voltage at the output may be restored by disconnecting the output load or 230V/AC supply for the period of about one minute.

4.3 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.
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 utilization shall be applied for the waste electric and electronic equipment.