POE084832

v.1.0

PoE 48V/8x0,4A

PoE power supply for up to 8 IP cameras.

EN**

Edition: 3 from 25.05.2015

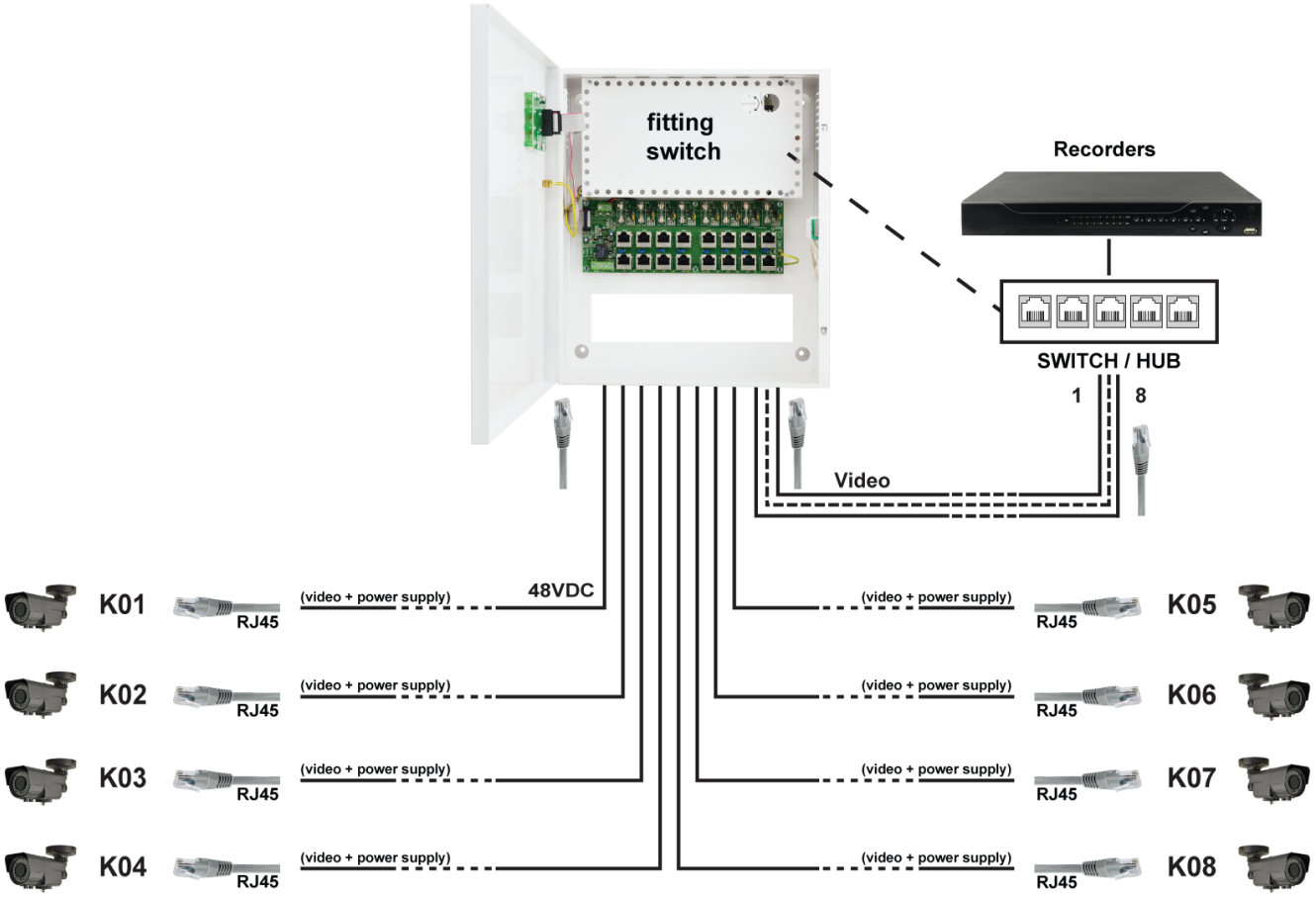
Supersedes the edition: 2 from 19.03.2014

GREEN POWER CCTV
PoE

PSU features:

- the 8x0,4A/48V DC power output for powering 8 cameras IP
- output voltage adjustment 46V÷ 52V DC
- wide range of supply voltage: 176÷264V AC
- high efficiency: 87%
- 8 outputs protected with 0,5A fuses
- jumper selectable fuse type: fuse or polymer fuse
- voltage control at the AUX1 ÷ AUX8 outputs
- designed for 10Mbit/s and 100Mbit/s network
- LED optical indication
- FPS technical output – indication of the output fuse activation– relay and OC type
- protections:
  - SCP short-circuit protection
  - OVP overvoltage protection
  - Surge protection
  - Antisabotage protection
  - OLP overload protection
- Mounting plate for mounting the network switch - Ethernet Switch / Hub
- warranty – 2 year from the production date

Example of power supply of up 8 IP cameras.



range 46V ÷ 52V DC, 8 x 0,4A

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1. Technical description.

1.1. General description.

The PSU is designed for supply of up to 8 webcams requiring stabilized voltage of **48V DC.** The output voltage can be adjusted with a potentiometer between **46V÷52V DC**. There are 8 power supply outputs, independently protected by melting fuses or PTC polymer fuses. Failure (short circuit) in the output circuit will activate the melting fuse or PTC fuse and disconnect the circuit from DC power (+ U). Fuse failure is indicated by switching off the corresponding LEDs: L1 for AUX1, etc. In addition, the FPS output (hi-Z state) and LFPS LED are activated and the relay contacts change their position. The PSU is housed in a metal enclosure with signaling panel equipped with a microswitch indicating door opening (front cover). The power is carried over the spare pairs (4/5 & 7/8), which, according to the Ethernet network standard, are not used for data transmission (data transmission uses 1/2 and 3/6 data pairs).

The PSU can not be used in Gigabit Ethernet networks, where all twisted pairs are involved in the transmission of data!

1.2. Block diagram.

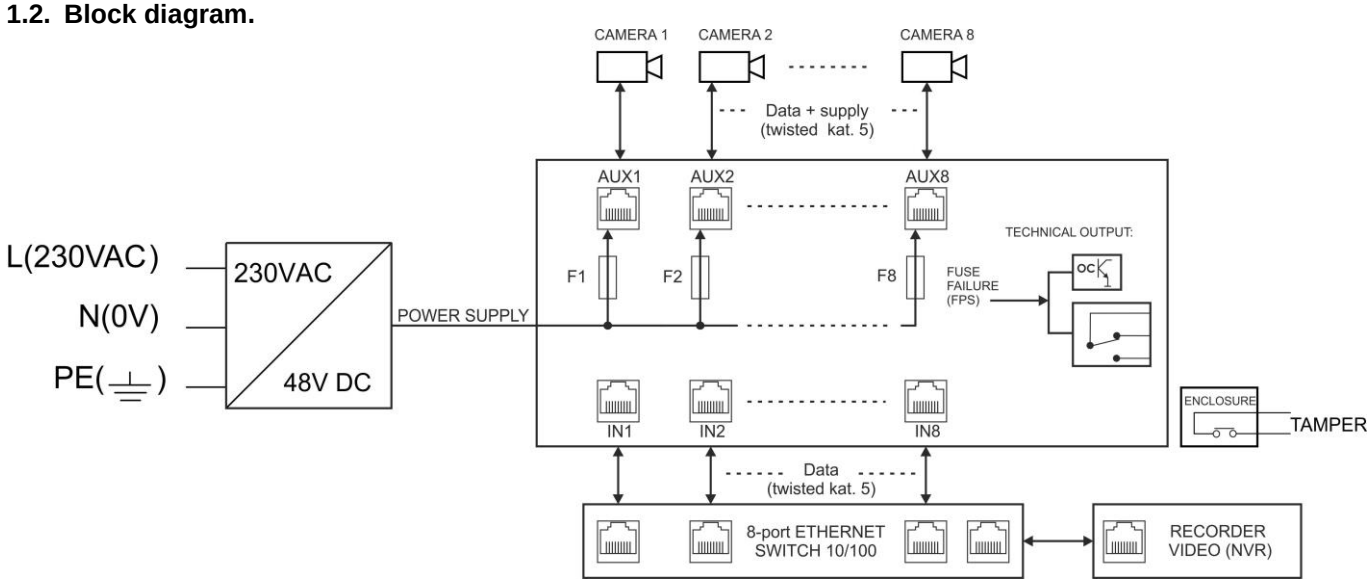


Fig. 1. Block diagram of the PSU.

1.3. The description of components and connectors of the PSU.

Table 1.

Component No. [Fig. 2]	Description
[1], [10]	**LED optical indication:** **green L_{IN}** – indication of voltage at the **IN** input **red L_{FPS}** – **FPS** failure indication
[2]	**Connector:** **IN –** power supply of the module (factory setting)
[3]	**F1 ÷ F8** fuses in the AUX1 ÷ AUX8 (+), F500mA circuits
[4]	Jumper to select melting fuse or PTC polymer fuse
[5]	**Green LED L1 ÷ L8** - voltage indication at the AUX outputs (during normal operation, these LEDs are on)
[6]	Network outputs (Ethernet + power supply) – for camera connection.
[7]	Network outputs (Ethernet)
[8]	**FPS** – technical output indicating failure – OC type
[9]	**FPS** – technical output indicating failure – relay type
[11]	Optional, external optical indication connector (factory setting)
[12]	**PE** – grounding the shield of the RJ45 connectors (factory setting)

Table 1. The description of components of the PoE module.

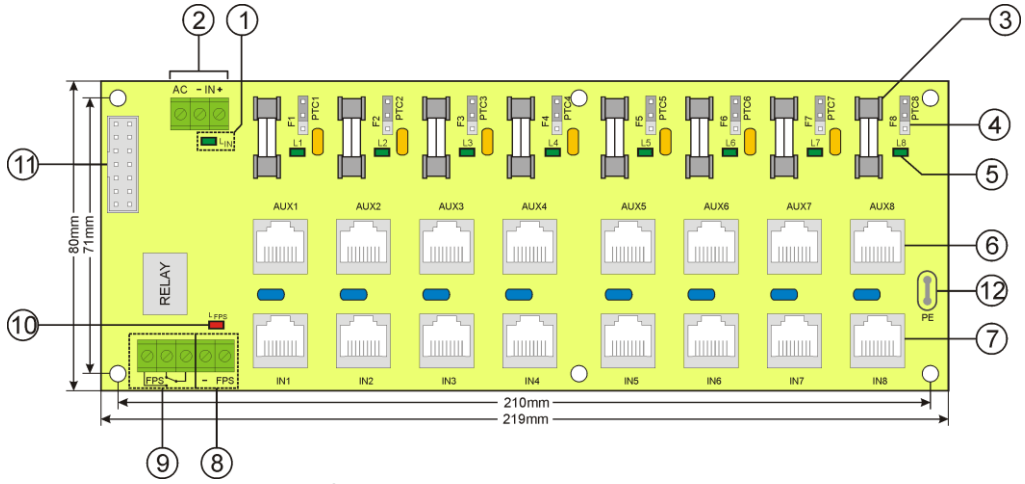


Fig. 2. Components arrangement.

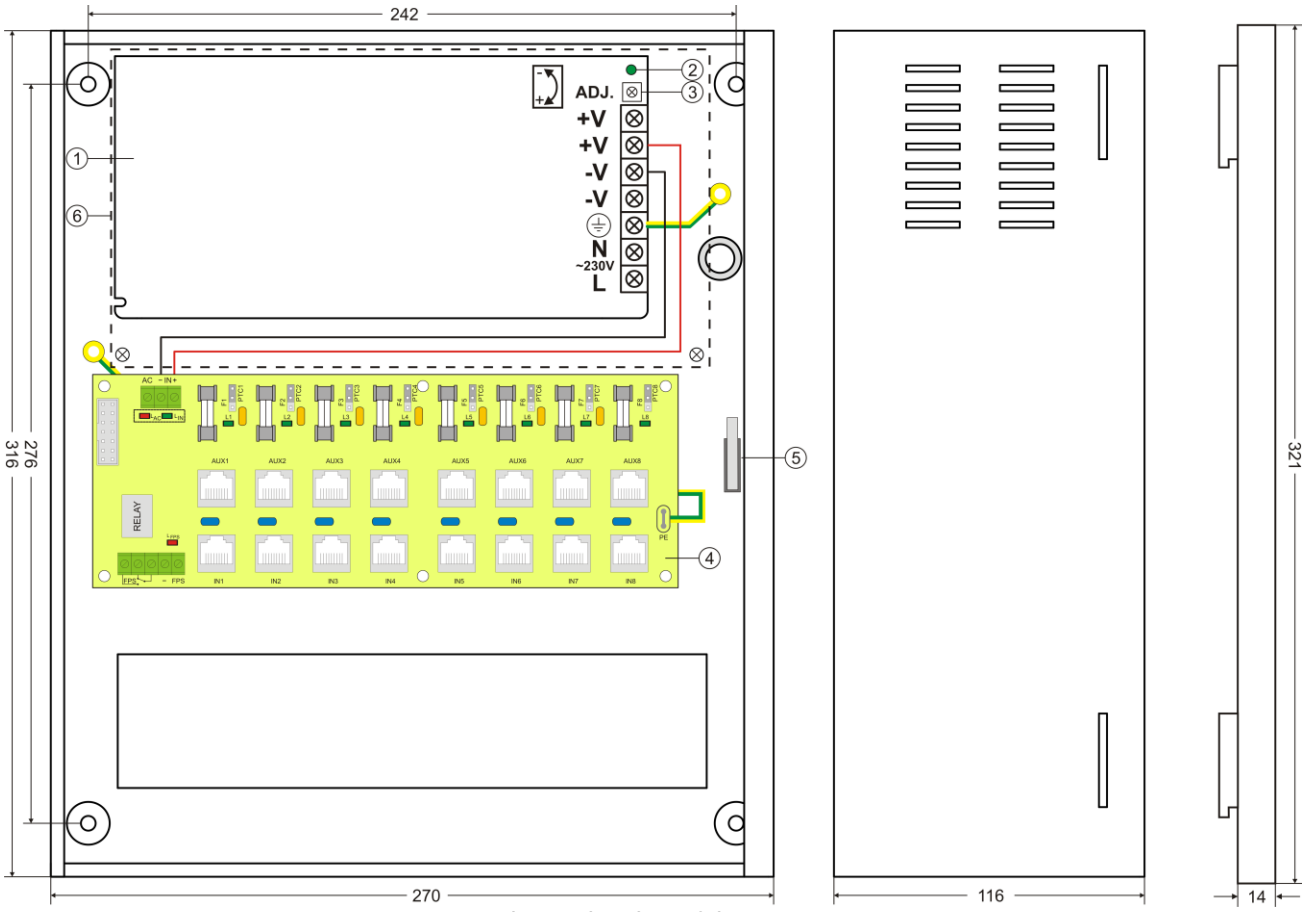


Fig. 3. The view of the PSU.

Component No. [Fig. 3]	Description
[1]	The module of the switch mode PSU
[2]	LED light indicating correct operation of the switch mode PSU
[3]	ADJ potentiometer – regulation of the power supply output voltage
[4]	PoE module
[5]	TAMPER – microswitch (contacts) of antisabotage protection **(NC)**
[6]	Plate for mounting the network switch (Ethernet switch / hub)

Tab. 2. Components of the PSU (see Fig. 3).

1.4 Technical parameters.

- electrical parameters (Table 3)
- mechanical parameters (Table 4)
- safety of use (Table 5)
- operation parameters (Table 6)

Electrical parameters (Table 3).

Mains supply	176÷264V AC
Current consumption	2A@230V AC typ.
PSU's power	153,6W max.
Efficiency	87%
Output voltage	48V DC
The adjustment range of the output voltage	46÷52V DC
Output current	**8 x 0,4A**
Ripple voltage	200 mV p-p max.
Short-circuit protection SCP	PoE MODULE 8 x F 0,5A or 8 x PTC 0,5A (jumper selectable) PSU MODULE 105% ÷ 150% of PSU power, electronic current limiting
Overload protection OLP	105% ÷ 150% of PSU power, electronic current limiting
Overvoltage protection OVP	55,2÷64,8V DC
Surge protection	8 x varistor
Antisabotage protection: - TAMPER output indicating enclosure opening	 - microswitch, NC contacts (enclosure closed), 0,5A@50V DC (max.)
Optical indication of operation:	YES – LED lights
Technical outputs: - FPS technical output indicating output fuse activation	 - OC type, 50mA max. Normal operation: L state (0V), failure: H state (hi-Z), (automatic return once the normal operation is restored) - relay type: 1A@ 30VDC/50VAC, delay time: approximately 10 seconds
F1 ÷ F8 fuses	F 0,5A or PTC 0,5A

Mechanical parameters (Table 4).

Enclosure dimensions	270 x 307 x 116 mm (WxHxD)
Mounting	See Fig. 3
Net weight	3,8kg / 4,05kg
Enclosure	DC01 steel plate, 1,0mm, RAL 9003
Closing	Cylindrical screw x 2 (at the front) lock assembly possible
Terminals	Switch mode power supply: Φ0,4-2,5 (AWG 26-10) PoE module: Φ0,5-2,1 (AWG 24-12) IN1 ÷ IN8 inputs: RJ45 8P8C, shielded AUX1 ÷ 8 outputs: RJ45 8P8C, shielded TAMPER output: Φ0,8
Notes	The enclosure has a 15mm distance from the mounting surface so the cables can be led.

Safety of use (Table 5).

Protection class PN-EN 60950-1:2007	I (first)
Protection grade PN-EN 60529: 2002 (U)	IP20
Insulation electrical strength: - between input (network) circuit and the 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

Operation parameters (Table 6).

Operating temperature	-10ºC...+40ºC (see Figure1)
Storing temperature	-20ºC...+60ºC
Relative humidity	20%...90%, no condensation
Vibrations during operation	unacceptable
Surges during operation	unacceptable
Direct insolation	unacceptable
Vibrations and surges during transport	According to the PN-83/T-42106 standard

2. Installation.

2.1. Requirements.

The buffer PSU should 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, no condensation) and temperature range from -10°C up to +40°C. The power supply should operate in a vertical position in order to provide free and convectional air flow through ventilating holes of the enclosure.

During normal operation, the total current drawn by the device should not exceed I = 8x0,4A.

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 should be provided. Moreover, the user should be informed how to disconnect the power supply unit from the mains supply (usually by assigning an appropriate fuse in the fuse box). The electrical system shall be made in accordance with applicable standards and regulations.

The PSU is designed for 10Mbit/s and 100Mbit/s Ethernet network (so-called Fast Ethernet)**. However, it can not be used for a 1000 Mbit/s network (so-called Gigabit Ethernet).** Connections between the power supply and the camera can be done using UTP-3 cable (networks with data-rates up to 10 Mbit/s) or UTP-5 cable. Due to the lower resistance wiring, it is recommended (especially at large distances between the power supply and receivers) to use UTP-5 cable also for networks with data-rates up to 10 Mbit/s.

2.2. Installation procedure.

1. Before installation, cut off the voltage in the 230V power-supply circuit.
2. Mount the PSU in a selected location and lead the connecting cables.
3. If required, mount the switch network (Ethernet Switch / Hub) on the mounting plate (element 6, Figure 3) using cable ties supplied with the PSU. An example of mounting the Ethernet switch is shown in Figure 4:

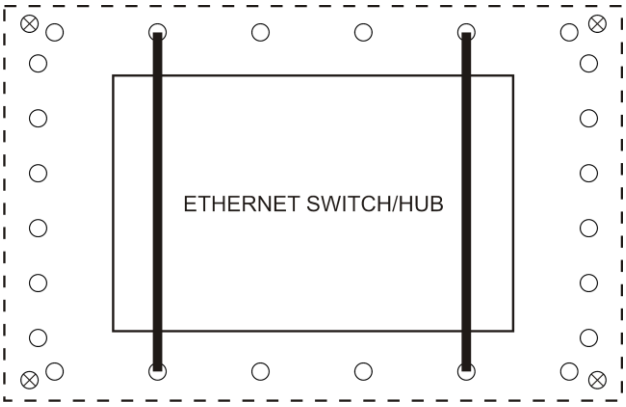


Fig.4. An example of mounting the Ethernet switch.

4. Connect the power cables (230V AC) to L-N terminals of the PSU. Connect the ground wire to the terminal marked with grounding symbol: ⏚. Use a three-core cable (with a yellow and green PE protection wire) to make the connection. The power cables should be connected to the appropriate terminals on the connection board through the bushing.

The shock protection circuit shall be done with a particular care: the yellow and green wire coat of the power cable should be connected to the terminal marked with the ⏚ symbol in the PSU enclosure. Operation of the PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause damage to the equipment or an electric shock.

5. Connect the network cables (Ethernet) to the PoE module:supply voltage is present only at the AUX sockets and the cameras should be connected to them. Pin assignment of the AUX and IN sockets is shown in the Figure 5:

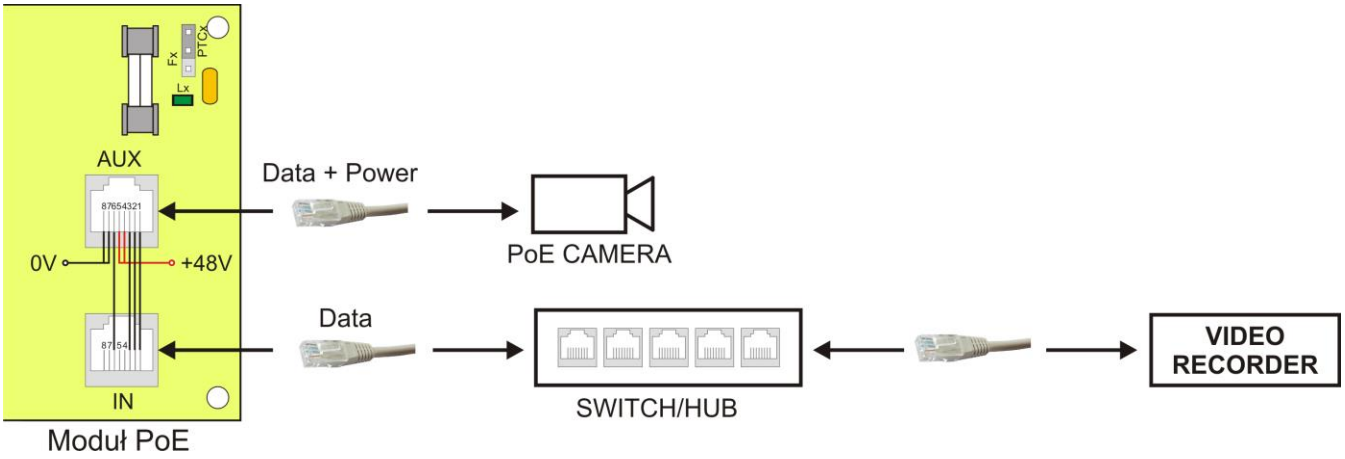


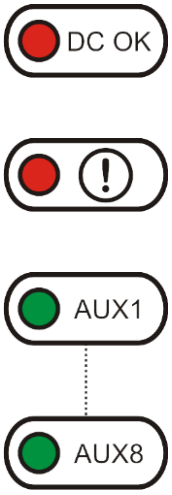
Fig. 5. Connection of cameras and network devices to the IN and AUX terminals.

6. Use the F1/PTC1 ÷ F8/PTC8 jumpers to select the type of short circuit / overload protection of individual circuits. Jumper in the Fx position – melting fuse activation, PTCx – PTC fuse activation.
7. If needed, the following technical connections can be made:
- FPS technical output of the PSU status – indicates the voltage loss at any of the outputs (AUX1 ÷ AUX8).
- **TAMPER** indicating enclosure opening.
8. Check the optical indication of the PSU status: green LED light on the PoE module.
9. In case of significant voltage drops on the receivers' power cables resistance, it is possible to adjust the voltage with the P1 potentiometer (46÷52V DC).
10. Close the cover after installing and checking the operation of the power supply.

3. Power supply operation indication.

3.1. Optical indication.

The PSU has 6 LED lights at the front panel:



RED LED:
- on – DC voltage at the output of the switch mode PSU
- off – no DC voltage at the output of the switch mode PSU

RED LED:
- on – fuse failure at one of the AUX1…AUX8 outputs
- off – no failure

GREEN LED:
- on – DC voltage at the AUX1…AUX8 output
- off – no DC voltage at the AUX1…AUX8 output

Additionally, the PSU is fitted with LED lights inside the enclosure – see Fig. 2 and 3:
- **L_{IN}** green LED (Fig. 2, component 1) indicates DC voltage at the PoE module input. During normal operation (DC supply) the LED is permanently illuminated. No DC no DC voltage at the module input is indicated by turning off the **L_{IN}** LED.
- **L_{FPS}** red LED (Fig. 2, component 10) is not illuminated during normal operation (no failure). In case of activation of the short circuit / overload protection at any output, the LED is permanently illuminated.
- **L1 ÷ L8** green LEDs (Fig. 2, component 5) indicate voltage at the individual outputs of the module (L1 for AUX 1 etc.). Activation of the short circuit / overload protection of a given circuit is indicated by turning off one of the Lx LEDs.

3.2. Technical outputs.

The PSU has the following indication outputs:

- **FPS – technical output of the PSU status**:

- OC type output indicating failure (short-circuit, overload). During normal operation, shorted to ground – L state (0V). In case of power loss, the FPS technical output is switched into hi-Z state (high impedance) at least at one of the AUX outputs.

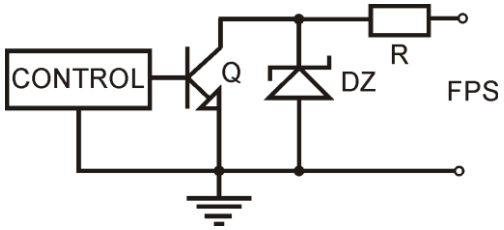


Fig. 6. Electrical diagram of the OC output.

- relay output. In case of failure, relay contacts are switched automatically.

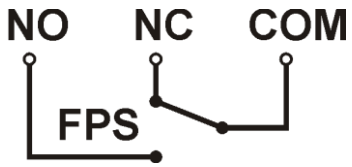


Fig. 7. Electrical diagram of the relay output

CAUTION! The arrangement of contacts at the figure 7 shows a potential-free status of the relay, which is equivalent to a state with no voltage at any of the AUX1 ÷ AUX8 outputs.

- **TAMPER – output indicating enclosure opening**: **-** volt free contact input indicating the status of the power supply doors, PSU closed: contacts closed (NC), PSU open: contacts open (NO).

4. Service and operation.

4.1. Overload or short-circuit of the power supply output.

The AUX1 ÷ AUX8 outputs of the PSU are protected against short-circuit and overload by melting fuse inserts or PTC polymer fuses. If the PTC polymer fuses are used, disconnect the load from the power supply output for approximately 1 minute to restore output voltage. (the time needed to cool down the PTC fuse). In case of melting fuse activation, it should be replaced with a fuse of the same type and of the same rated current.

4.2. Maintenance.

All maintenance procedures can be performed after disconnecting the power supply from the power network. The PSU does not require any specific maintenance; however, its interior should be cleaned with compressed air if used in dusty conditions. In case of fuse replacement, use only compatible replacement parts.



WEEE LABEL

Waste electrical and electronic equipment must not be disposed of with normal household waste. According to the European Union WEEE Directive, waste electrical and electronic equipment should be disposed of separately from normal household waste.

GENERAL WARRANTY CONDITIONS

1. Pulsar (manufacturer) grants a two-year quality warranty for the equipment, starting from the production date.
2. The warranty includes free-of-charge repair or replacement with an appropriate equivalent (selected by the manufacturer) if the malfunction is due to the manufacturer. It includes manufacturing or material defects, provided that such defects have been reported within the warranty period (point.1).
3. The equipment subjected to warranty should be brought to the place of purchase 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 that within 14 days from the delivery to the service centre of the manufacturer.
6. The repair period mentioned in point 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 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 (failure to follow instruction).
9. The warranty is void in case of construction changes and repairs carried out by any unauthorized service center or in case of damage or modifications to warranty stickers and serial numbers.
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 especially when resulting from failure to comply with the recommendations and requirements contained in the manual.

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