



POE0848C

v.1.0

PoE 48V/2,6A/2x17Ah

PoE buffer power supply for up to 8 IP cameras.

EN**

Edition: 3 from 15.11.2017

Supersedes the edition: 2 from 22.11.2016



PSU features:

- DC 48V uninterruptible power supply to 8 cameras IP
- space for two batteries: 17Ah/12V
- built-in 24/48V converter
- Wide range of AC supply voltage: 176÷264V
- High efficiency: 80%
- battery charging and maintenance control
- deep discharge battery protection (UVP)
- battery charging current: 0,5A
- Approximate backup time: 5h 40min
- battery output protection against short circuit and reverse connection
- designed for 10Mbit/s and 100Mbit/s network
- LED optical indication
- protections:
 - SCP short-circuit protection
 - Surge protection
 - Antisabotage protection
 - OLP overload protection
- warranty – 2 year from the production date

An example of power supply for up 8 IP cameras.

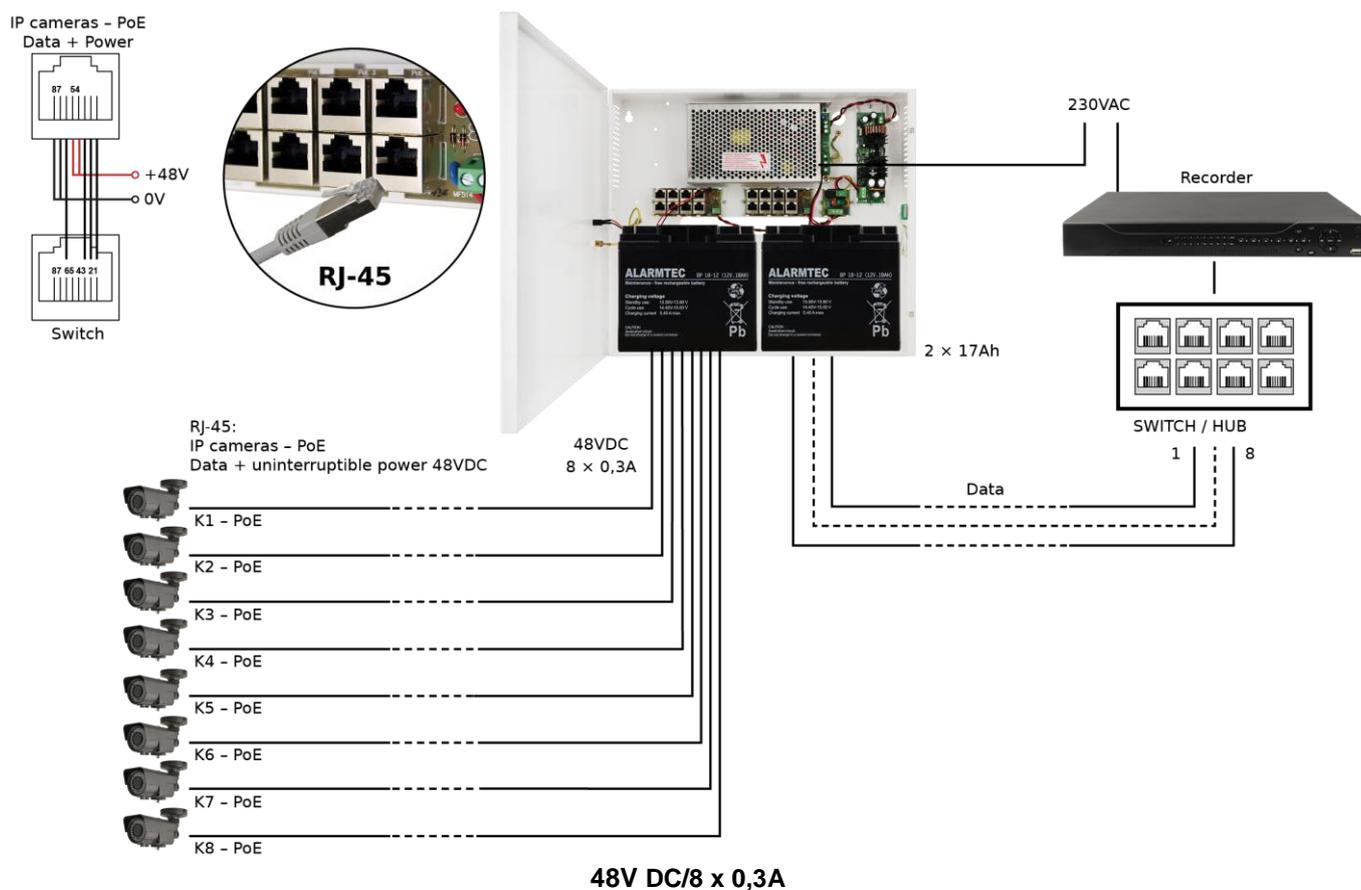


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1. Technical description.

1.1. General description.

The PSU is designed for supply of up to 8 webcams requiring stabilized voltage of **48V DC (+/- 1V)**. The PSU supplies voltage of **48V DC** and total current capacity of **I=8x0,32A+0,5A Battery charging***. In case of mains power loss, the unit will instantly switch to battery operation.

The approximate backup time is given assuming that all output ports are used (using typical devices and 17Ah batteries). The electricity consumption for own needs and the energy efficiency of the power intake track were taken into account. The exact description of how to perform the calculations can be found at: ["Approximate backup time - assumptions for calculations"](#).

The power supply is constructed on the basis of a switch mode PSU with high energy efficiency and 24/48V DC boost converter and is housed in a metal enclosure (RAL 9003) with battery space for a 2x17Ah / 12V battery. A micro switch indicates 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!



During normal operation, the total current drawn by the device should not exceed I=8x0,32A*. Maximum battery charging current is 0,5A.

1.2. Block diagram.

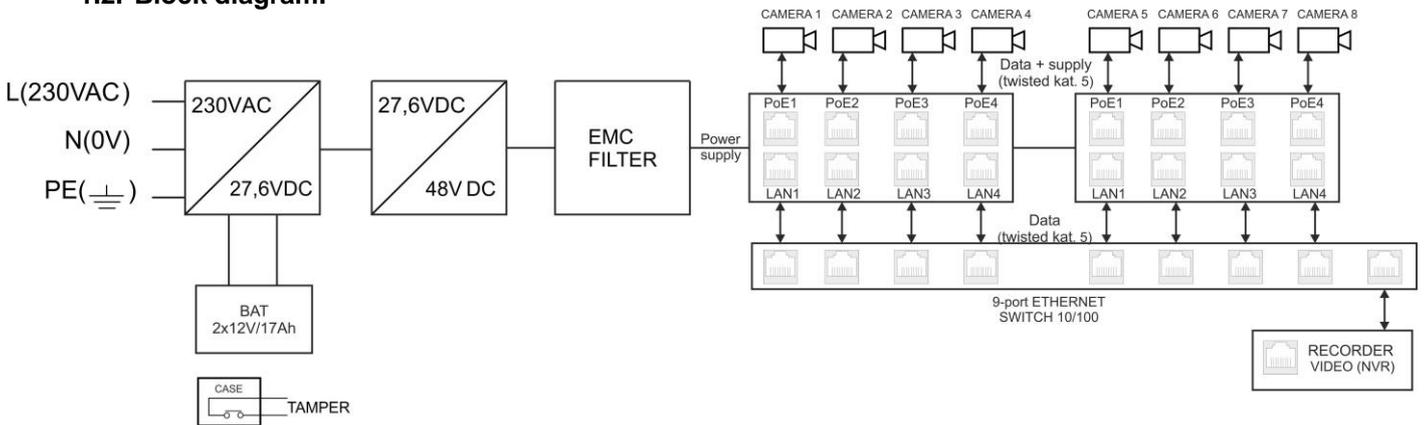


Fig. 1. Block diagram of the PSU.

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

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

| Component No. [Fig. 2] | Description |
|---------------------------|---|
| [1] | IN – screw connection, input power supply of the module (factory setting) |
| [2] | DC red LED – indicates power at the IN output |
| [3] | Optional, external optical indication connector (factory setting) |
| [4] | PoE 1 ÷ PoE4 - Network outputs (Ethernet + power supply) – for camera connection |
| [5] | LAN1 ÷ LAN4 – Network inputs (Ethernet) – for connecting the Ethernet network switch |
| [6] | Mounting board |

* See diagram 1

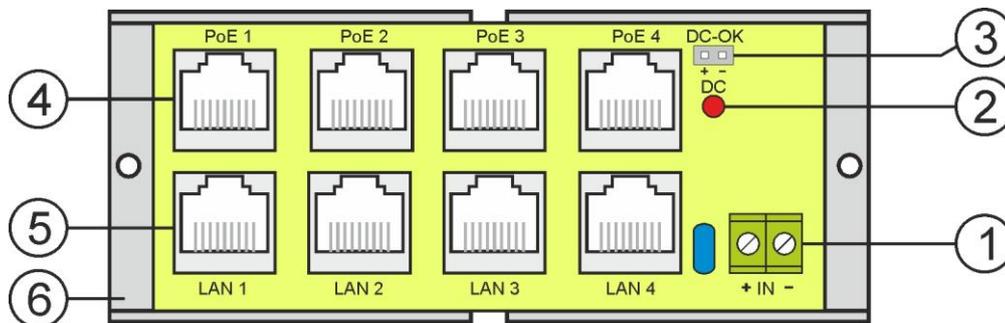


Fig. 2. Components arrangement.

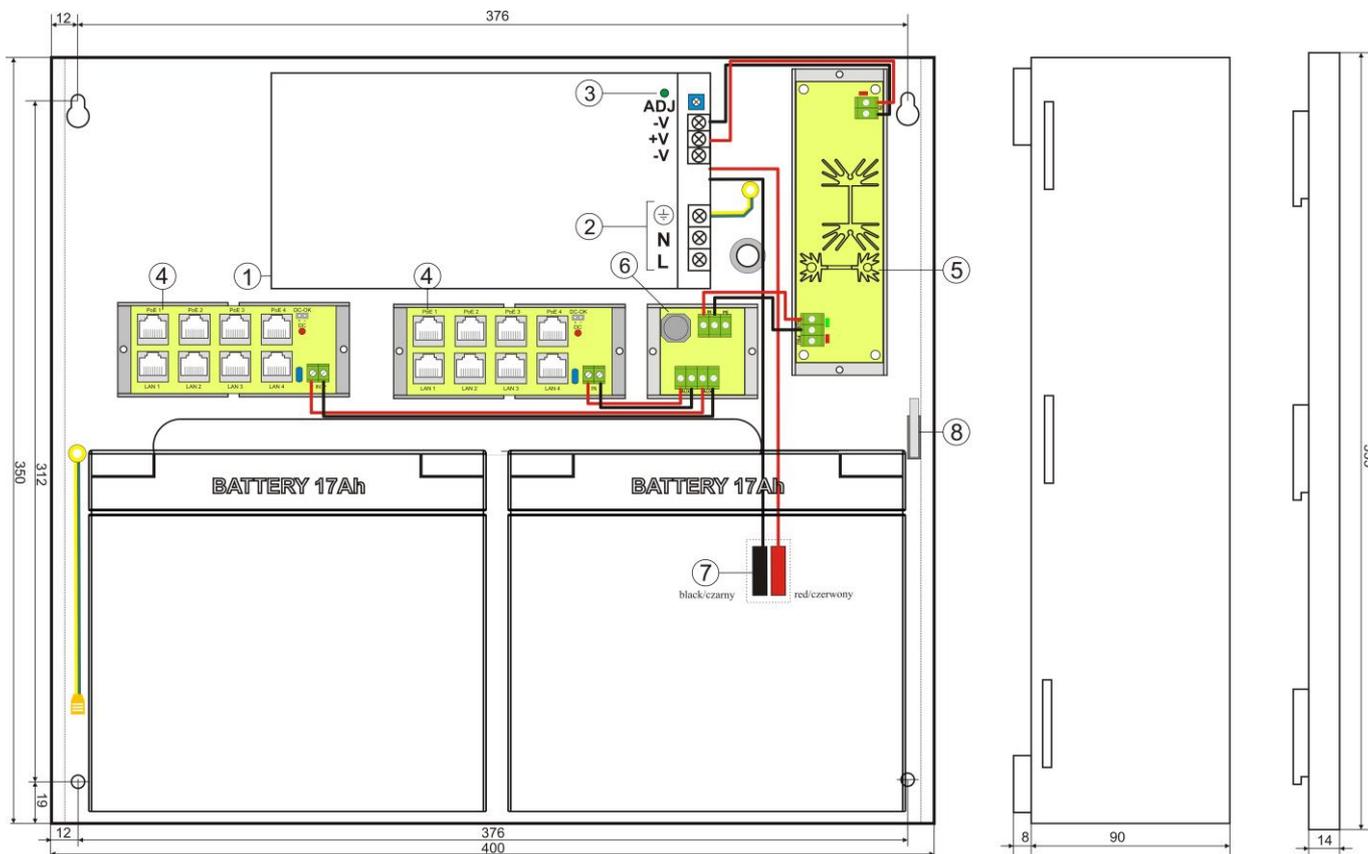


Fig. 3. The view of the PSU.

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

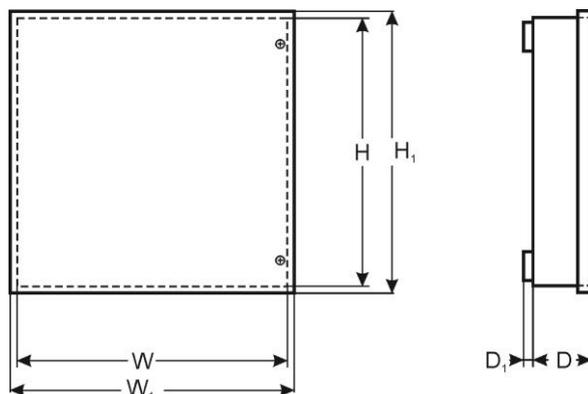
| Component No. [Fig. 3] | Description |
|---------------------------|--|
| [1] | The module of the switch mode PSU |
| [2] | L-N power-supply connector 230V AC, PE protection connector |
| [3] | LED light indicating correct operation of the switch mode PSU |
| [4] | PoE module |
| [5] | DCDC boost converter 24/48V |
| [6] | Fuse F_{AUX} F3,15A |
| [7] | Connectors for connecting the batteries: +BAT = red, - BAT = black |
| [8] | TAMPER – microswitch (contacts) of antisabotage protection (NC) |

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 | 1,4A@230V AC type |
| PSU's power | 139W max. |
| Efficiency | 80% |
| Output voltage | 48VDC (+/- 1V) |
| Output current $t_{AMB}<30^{\circ}C$ | 8 x 0,32A |
| Output current $t_{AMB}=40^{\circ}C$ | 8 x 0,2A |
| Ripple voltage | 150 mV p-p max. |
| PSU current consumption | 0,15A |
| Battery charging current | 0,5A |
| Approximate backup time | 5h 40min |
| Short-circuit protection SCP | F3,15A- melting fuse (in case of a failure, fuse-element replacement required) |
| Overload protection OLP | 110-150% PSU power, manual restart (the fault requires disconnection of the DC output circuit) |
| Battery circuit protection SCP and reverse polarity connection | melting fuse F15A |
| Deep discharge battery protection UVP | $U<19V (\pm 5\%)$ – disconnecting the battery terminal |
| Surge protection | 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 |

**Mechanical parameters (Table 4).**

| | |
|---|---|
| Dimensions | $W=400, H=350, D+D_1=92+8 [+/- 2mm]$ $W_1=405, H_1=355 [+/- 2mm]$ |
| The dimensions of the battery compartment | 370x170x85mm (WxHxD) max |
| Mounting | See Fig. 3 |
| Net weight | 3,8kg / 4,0kg |
| Enclosure | DC01 steel plate, 1,0mm, RAL 9003 |
| Closing | Cylindrical screw x 2 (at the front), lock assembly possible |
| Terminals | Switch mode power supply: $\Phi 0,63-2,5$ (AWG 22-10) LAN/PoE outputs 1...8: RJ45 8P8C TAMPER output: wires, 30cm |
| Notes | The enclosure has a 14mm 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 | -10°C...+40°C (see Figure1) |
| Storing temperature | -20°C...+60°C |
| 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 |

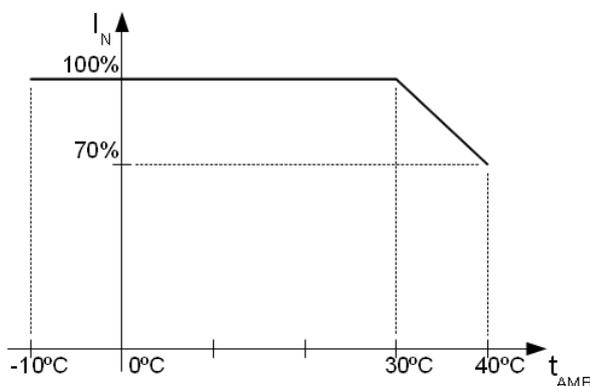


Diagram 1. Maximum permissible output current depending on ambient temperature.

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 convective air flow through ventilating holes of the enclosure.



During normal operation, the total current drawn by the device should not exceed $I=8 \times 0,32A^*$. Maximum battery charging current is 0,5A.

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.

* See diagram 1

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. 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.

4. Connect the network cables (Ethernet) to the PoE module: supply voltage is present only at the POE sockets and the cameras should be connected to them. Pin assignment of the LAN and POE sockets is shown in the Figure 4:

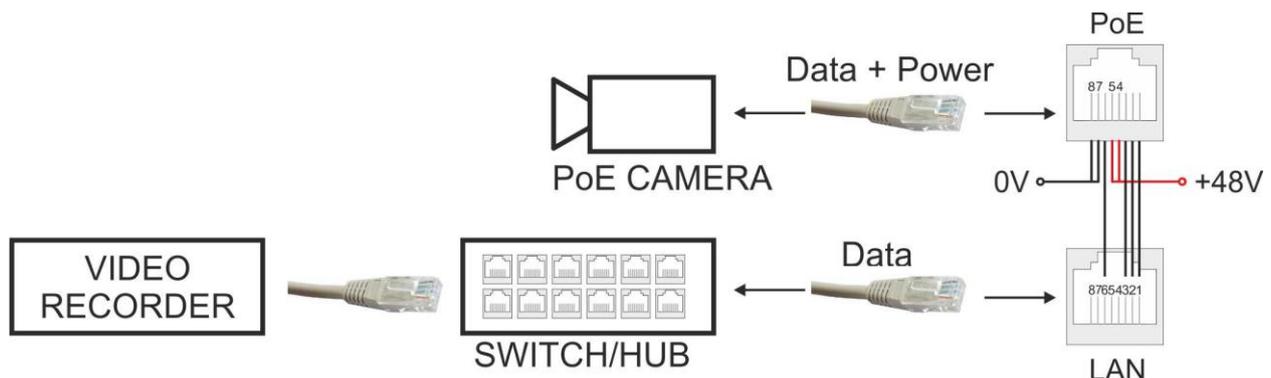


Fig. 4. Connection of cameras and network devices to the LAN and POE terminals.

5. Check the power supply output voltage:
 - output voltage of the unloaded power supply without a battery should amount to $U=48V$ DC.
6. Connect the batteries in series according to the color markings:
 - battery output (+V): BAT+ cable/ red
 - battery output (0V): BAT- cable / black
7. Check the optical indication of the PSU status.
8. Close the cover after installing and checking the operation of the power supply.

3. Power supply operation indication.

The presence of voltage at the input of PoE modules is indicated by LEDs on the front panel.

4. Service and operation.

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

The converter output is protected with a PTC polymer fuse. If the load of the PSU exceeds I_{max} . (Load 110% + 150% @ 25°C of the PSU power), the output voltage is automatically disconnected. The voltage restoration at the output requires disconnecting the output load for the period of approx. 1 minute.

In the case of short circuit of the PSU output, the F_{AUX} F3,15A fuse becomes permanently damaged. Restoration of voltage at the AUX output requires fuse replacement.

4.2. Battery operation.

In case of mains power loss, the unit will instantly switch to battery operation.



The power supply is equipped with a discharged battery disconnection system. If the battery voltage has dropped below 19V during the battery operation, the battery will be disconnected.

4.3. 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. The battery status should be checked periodically. (battery capacity loss, too high internal resistance) batteries should be replaced. 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.

CAUTION! The power supply unit is adapted for cooperation with the sealed lead-acid batteries (SLA). After the operation period they must not be thrown but recycled according to the applicable law.

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