



RP1648

v.1.0

RP 48V/16x0,5A

RACK mounted power supply for up to 16 IP cameras.

EN**

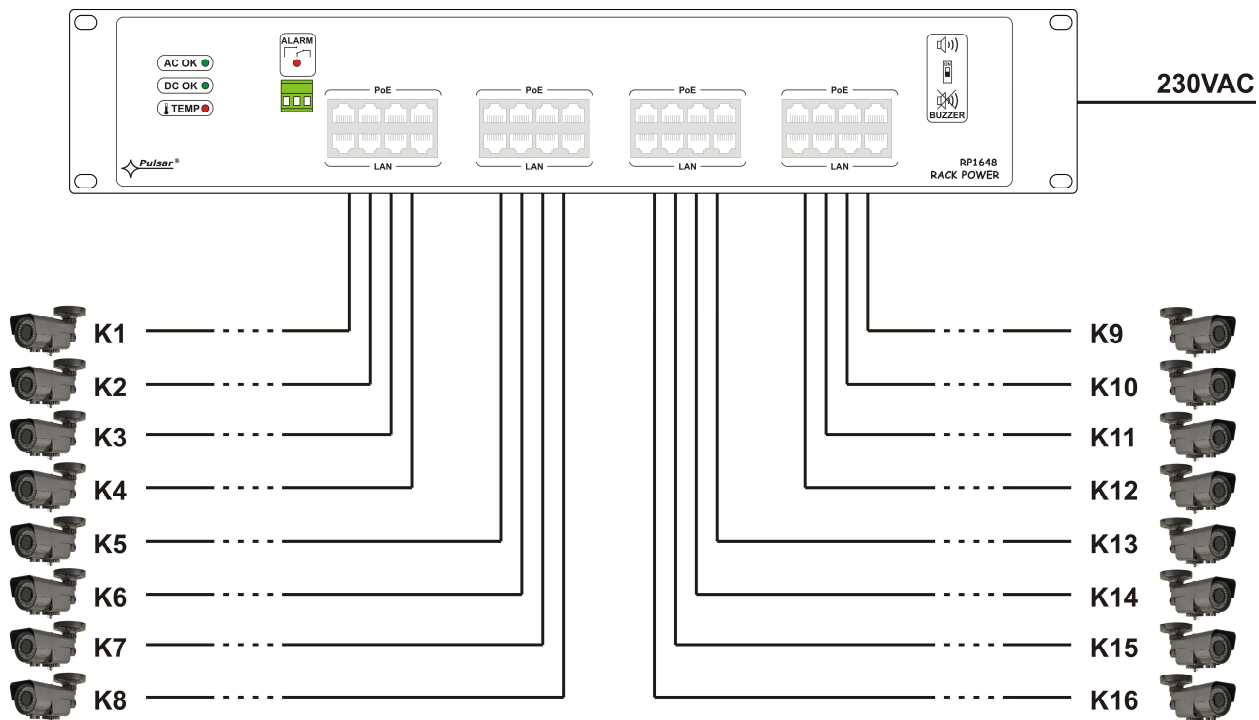
Edition: 1 from 10.10.2016

Supercedes the edition: -----

Features:

- DC 16x0,3A/48V uninterruptible power supply for powering IP cameras (15,4W/ channel)
- 16 outputs independently protected by 0,5A polymer fuses PTC
- wide range of mains supply AC: 176÷264V AC
- built-in power factor correction system (PFC)
- high efficiency 86%
- LED optical indication: AC, DC, TEMP, ALARM
- acoustic indication of failure
- control of voltage presence at the PoE outputs
- designed for 10Mbit/s and 100Mbit/s network
- power over pairs: 4/5(+), 7/8(-)
- the ALARM technical output of collective failure – relay type, activated by:
 - 230V AC power loss
 - activation of the output fuse in the camera power supply circuit
 - too high temperature of the PSU (>70°C)
 - the PSU failure
- protections:
 - SCP short-circuit protection
 - OVP overvoltage protection
 - overvoltage protection
 - overload protection OLP
- forced cooling (fan)
- warranty – 2 year from the production date

Sample application of the RACK power supply unit.



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1. Technical description.

1.1. General description.

The **RP1648** power supply unit is designed for uninterrupted power supply of up to 16 IP cameras requiring stabilized voltage of **48V DC**. The PSU is fitted with 16 outputs protected independently with polymer fuse PTC 0,5A. 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 power supply is fitted with the **ALARM** output of collective failure. In case of failure, relay contacts are switched automatically, which is accompanied by acoustic and optical indication (the corresponding led goes on). The power supply construction is based on the switch mode PSU with high energy efficiency and is located in an enclosure adapted for mounting in standard **RACK 19"** cabinets.

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.

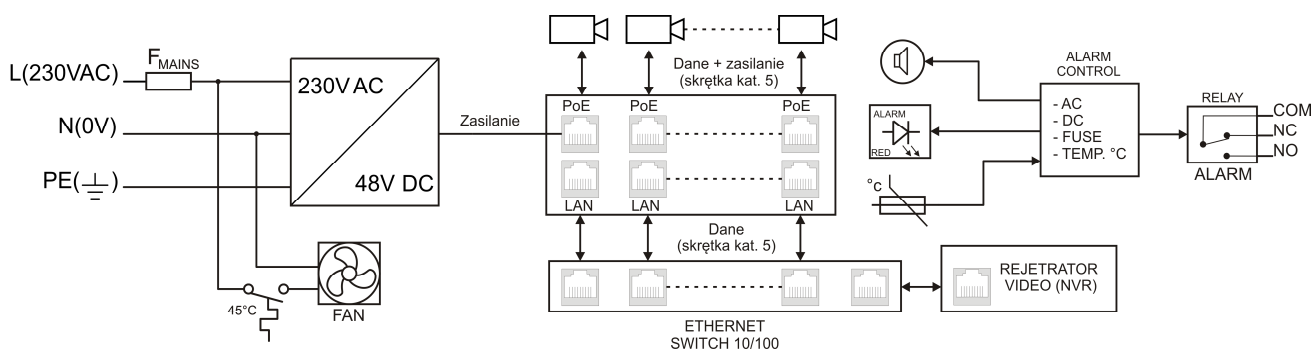


Fig.1. The block diagram of the PSU.

1.3. Description of PSU components and connectors.

Table 1. Components of the front panel of the power supply.

Element no. [Fig. 2, 3]	Description
①	AC OK – green LED, indicating the presence of 230V voltage
②	DC OK – green LED, indicating the presence of DC voltage
③	TEMP – red LED, indicating too high temperature of the power supply (>70°C)
④	LED ALARM – red LED failure indication
⑤	ALARM – technical output of collective failure – relay
⑥	LAN – Network inputs (Ethernet) – for connecting the network switch
⑦	PoE – Network outputs (Ethernet + power supply) – for camera IP connection
⑧	BUZZER, micro switch , turning ON / OFF of acoustic indication switch in the top position, indication ON switch in the down position, indication OFF
⑨	230V AC INPUT , power socket 230V AC, power cable 1,5m included
⑩	F MAINS , fuse in the supply circuit 230V AC, T 6,3A/250V

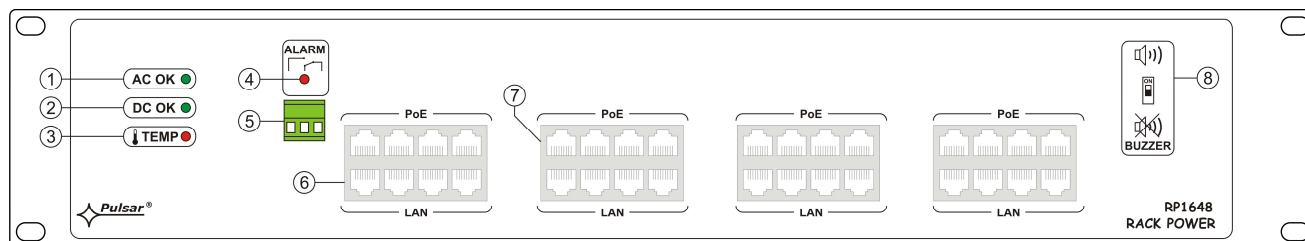


Fig. 2. The front power of the power supply unit.

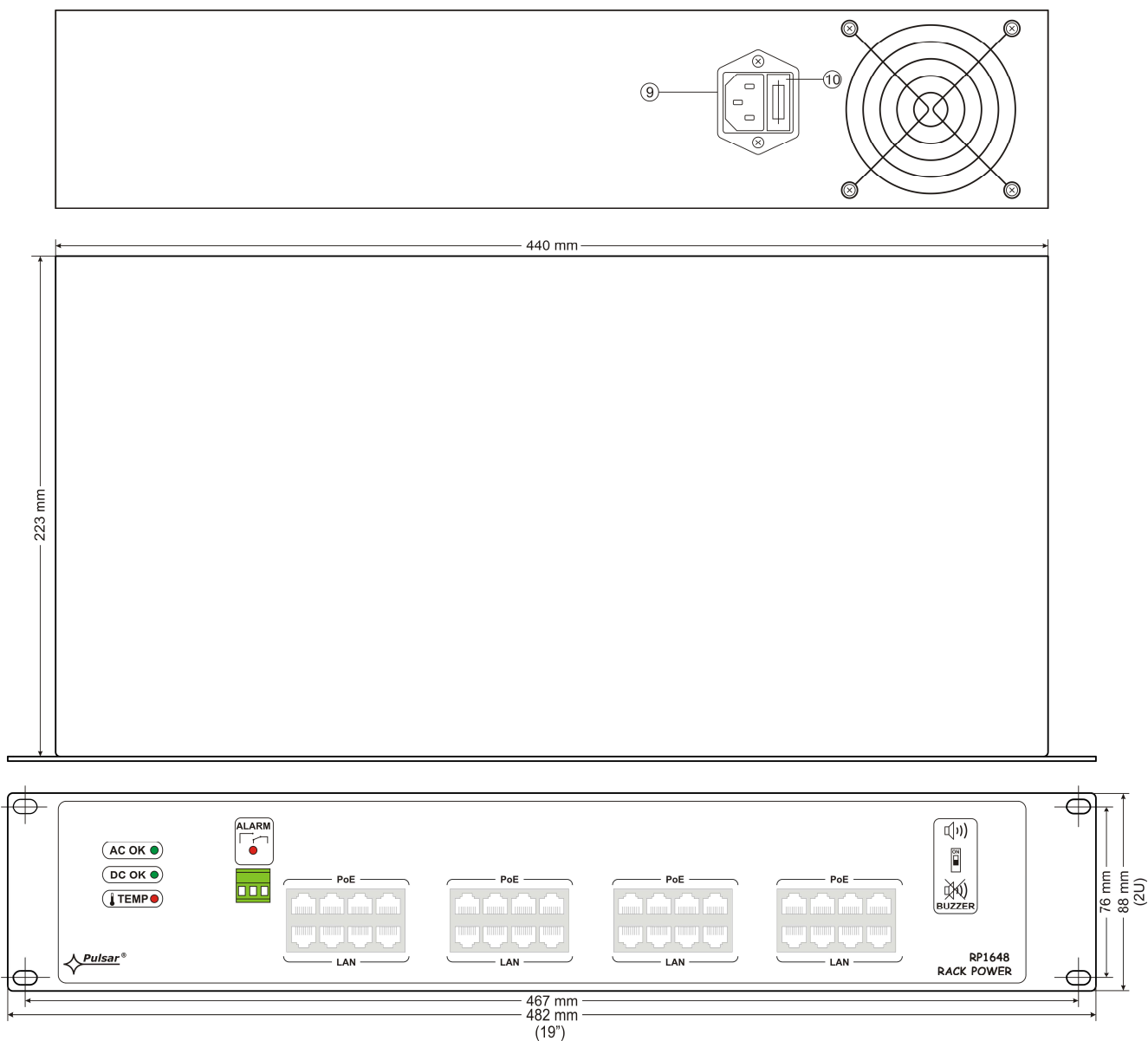


Fig.3. The view of the PSU.

1.4. Specifications.

- electrical parameters (tab.2)
- mechanical parameters (tab.3)
- operation safety (tab.4)
- operating parameters (tab.5)

Electrical parameters (tab. 2).

Mains supply	176÷264V AC
Current up to	1,2A@230V AC max.
Supply power	240W max.
Efficiency	86%
Power factor PF	>0,95 @230V AC

Output voltage	48V DC
Output current	16 x 0,3A ($\Sigma I = 5A$ max.)
Ripple	240 mV p-p max.
Short-circuit protection SCP	105% ÷ 150% of the PSU power, automatic return
Overload protection OLP	16 x PTC 0,5A, polymer fuse
Overvoltage protection OVP	>62V (activation requires disconnecting the load or supply for about 20 s.)
Surge protection	varistors
Optical indication of operation:	LED: AC, DC, TEMP, ALARM
Acoustic operation indication:	Piezoelectric indicator ~75dB/0,3m
The ALARM technical output of collective failure	Relay type: 1A@ 30VDC/50VAC
The F_{MAINS} fuse in the 230V power supply circuit	T 6,3A

Mechanical parameters (tab. 3).

Enclosure dimensions	W=19", H=2U; 482 x 88 x 223 mm (WxHxD)
Fixation	four-point butt mounting to RACK profiles – the set include 4 M6 screws + cage nuts
Net weight	5,46kg / 5,90kg
Enclosure	Steel plate RAL 9005, black
Connectors	230V AC input: the IEC C14 socket with a fuse, power cable 1,5m (included) Outputs: ALARM, $\Phi 0,5-2,1$ (AWG 24-12) 0,5-1,5mm ² Outputs: PoE, LAN: RJ45 8P8C
Notes	forced cooling (fan)

Operation safety (tab.4).

Protection class PN-EN 60950-1:2007	I (first)
Protection grade PN-EN 60529: 2002 (U)	IP20
Electrical strength of insulation: - between input and 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 M Ω , 500V/DC

Operating parameters (tab.5).

Environmental class	II
Operating temperature	-10°C...+45°C
Storage temperature	-20°C...+60°C
Relative humidity	20%...90%, without condensation
Vibrations during operation	unacceptable
Impulse waves during operation	unacceptable
Direct insulation	unacceptable
Vibrations and impulse waves during transport	According to PN-83/T-42106

2. Installation.**2.1. Requirements.**

The PSU RACK shall be mounted by a qualified installer with appropriate permissions and qualifications for 230V/AC installations and low-voltage installations (required and necessary for a given country). The device shall be mounted in confined spaces, according to the environment class II, with normal air humidity (RH=90% max. without condensation) and the temperature from -10°C do +45°C.



During normal operation the total current consumption of the receivers cannot exceed $I=5A$.

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

2.2. Installation procedure.

1. Before installation, cut off the voltage in the 230V power-supply circuit.

2. Mount the power supply in a RACK 19" cabinet as shown below:



- Mount M6 cage nuts



- Secure the enclosure with 4xM4 screws

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

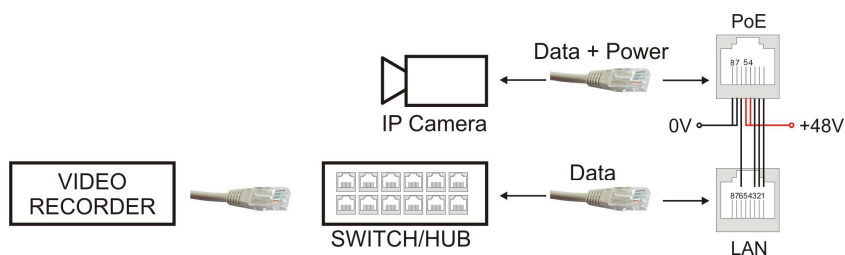


Fig. 4. Connection of network devices to the LAN and POE terminals.

4. If needed, the following technical connections can be made:

- ALARM – technical output of collective failure

5. Connect the ~230V AC power cord with the IEC C13 plug (included) to the 230V AC power supply and turn on the power (~230V).

6. Check the PSU operation indicator.

3. Operating status indication.

3.1. LED indication.

The PSU has 4 LED lights at the front panel:



GREEN LED:

- on – the PSU is supplied with 230V AC
- off – no 230V AC supply



GREEN 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 – failure
- off – no failure



RED LED:

- ON – too high temperature of the switch mode power supply (>70°C)
- OFF – standard temperature of the switch mode power supply

3.2. Technical output.

The power supply is fitted with the **ALARM** output of collective failure (relay type). A collective failure can be triggered by the following events:

- 230V AC mains power failure
- polymer fuses PTC activation
- Failure of the switch mode power supply
- Too high temperature of the switch mode power supply ($>70^{\circ}\text{C}$)

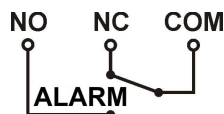


Fig. 5. Electrical diagram of the ALARM collective output of failure.



CAUTION! In Fig. 5 the set of contacts shows a potential-free status of the relay, which corresponds to power supply failure.

3.3. Acoustic indication.

A collective failure is indicated by the piezoelectric indicator, 1 beep every second. The acoustic indication can be turned off by changing the ON / OFF position of the switch F »).



switch in the up position, indication ON



switch in the down position, indication OFF

4. Operation and use.

4.1. Overload or short circuit of the PSU output.

The PoE outputs of the PSU are protected against short-circuit by PTC fuses inserts.. If the power supply load current exceeds I_{max} . ($110\% \div 150\%$ @ 25°C of the PSU power), the output voltage is automatically disconnected. 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).

4.2. 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. In case of fuse replacement, use a replacement of the same parameters.



WEEE MARK

According to the EU WEE Directive – It is required not to dispose of electric or electronic waste as unsorted municipal waste and to collect such WEEE separately.

Pulsar

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