



RSFUPS116R v1.3

**RSFUPS116R 16-port switch with buffer power supply
for 16 IP cameras and recorder, RACK mounted**



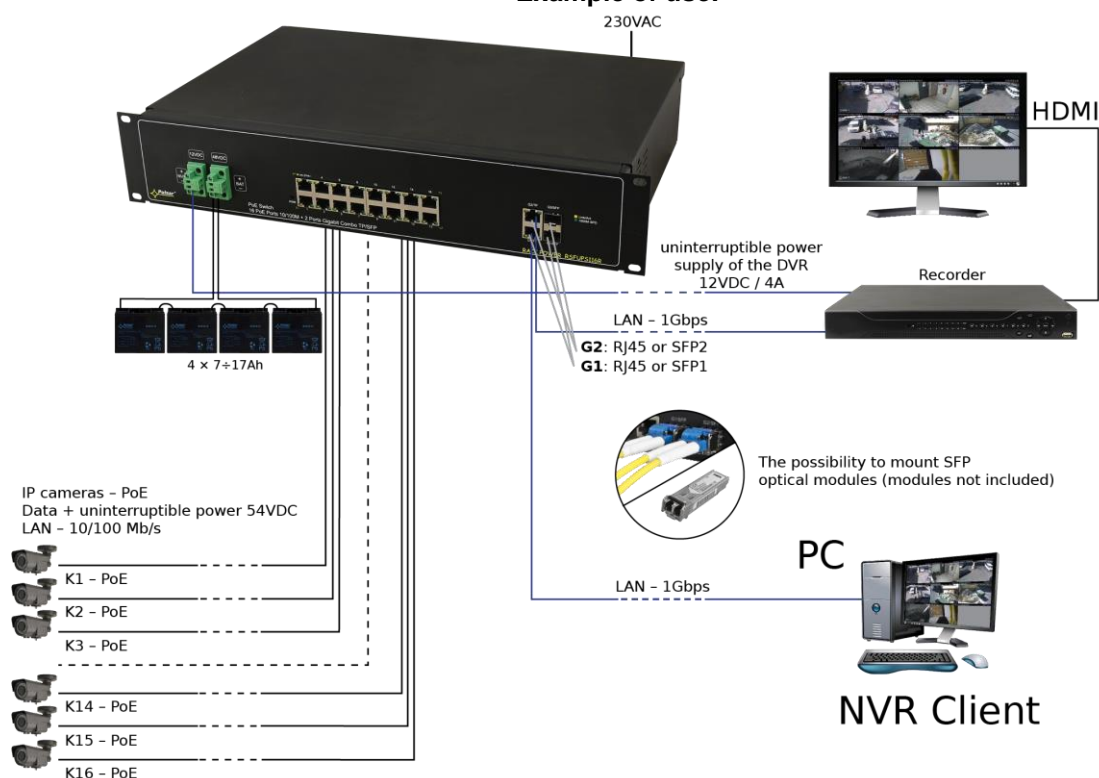
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EN

Features:

- Uninterruptible power supply of 16 IP cameras (54 V DC)
- Uninterruptible power supply of the recorder (12 V DC)
- 16 PoE ports 10/100 Mb/s, (1÷16 ports) (data and power supply)
- 2 ports 10/100/1000 Mb/s (G1/TP, G2/TP2 ports)
- 2 ports 10/100/1000 Mb/s SFP (G1/SFP, G2/SFP ports)
- battery charging and maintenance control
- excessive discharging (UVP) protection
- battery charge current: 0,5 A
(batteries 4x7 Ah / 4x17 Ah)
- Approximate backup time: 4 h
- battery output protection against short circuit and reverse connection
- 30 W for each PoE port, supports devices compliant with the IEEE802.3af/at (**PoE+**) standard
- Supports auto-learning and auto-aging of MAC addresses (16K size)
- LED indication
- Metal enclosure RACK 19" 2U
- color: black RAL 9005
- warranty – 2 year from the production date

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1. Technical description.

1.1. General description.

RSFUPS116R is a 16- ports PoE in RACK 19" enclosure, switch designed for uninterrupted supply IP cameras operating in IEEE 802.3af/at standard (54 V DC power supply) of recorder (12 V DC power supply).

In case of power decay, a battery back-up is activated immediately.

The approximate backup time is given assuming that all output ports are used (using typical devices and 17 Ah 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"](#).

Automatic detection of any devices powered in the PoE/PoE+ standard is enabled at the 1 – 16 ports of the switch. The G1/TP, G2/TP ports is used for connection of another network device via RJ45 connector. The switch is fitted with SFP slots; the use of fiber optic module (GBIC) allows fiber optic transmission. The LEDs at the front panel indicate the operation status (description in the table. 7). The switch is housed in a metal enclosure RACK 19" (color: black RAL 9005).

The PoE technology ensures a network connection and reduces installation costs by eliminating the need to supply a separate power cable for each device. This method allows supplying other network devices, such as IP phone, wireless access point or router.

1.2. Block diagram.

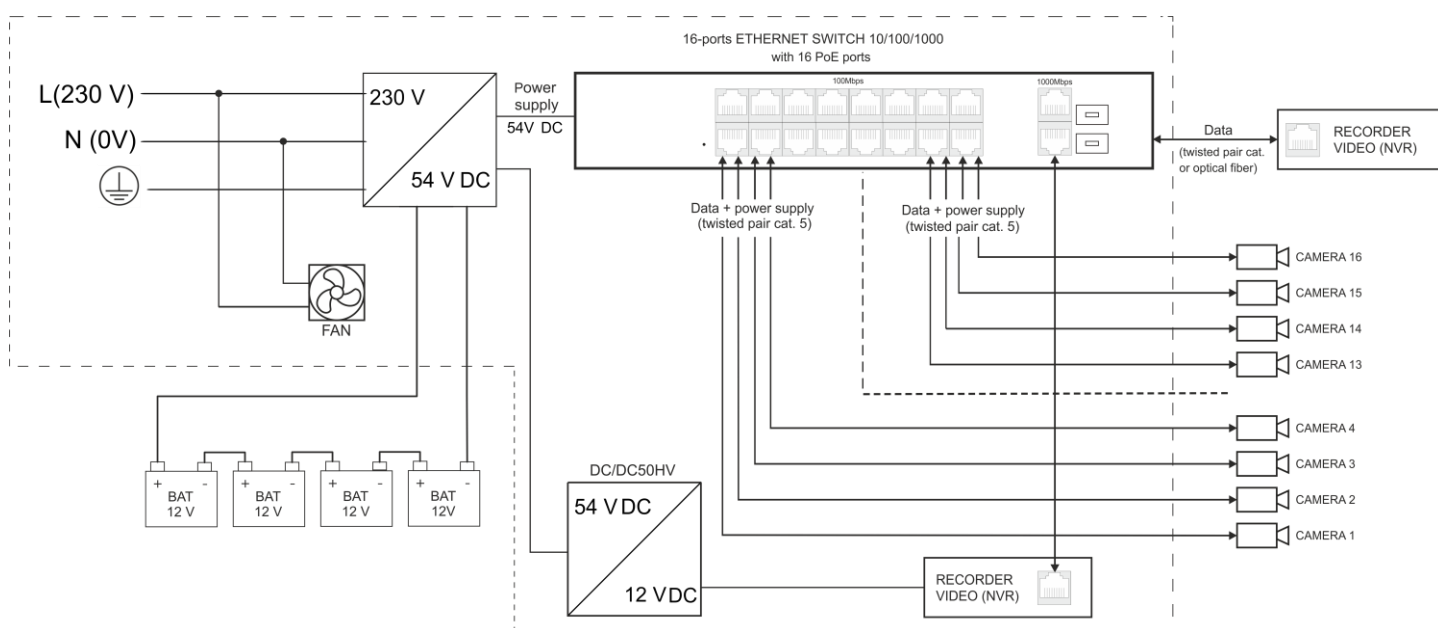


Fig. 1. Block diagram.

1.3. Description of components and connectors.

Table 1. (see Fig. 2)

Element no. (Fig. 2)	Description
[1]	16 x PoE port (1÷16)
[2]	2 x UPLINK port (G1/TP, G2/TP)
[3]	2 x UPLINK port (G1/SFP, G2/SFP)
[4]	LED lights: power supply and LAN connection status at the PoE ports
[5]	BAT +, BAT - battery output + BAT red, - BAT black
[6]	PWR LED indicating the supply voltage at the power input of the switch
[7]	NVR – Independently protected power supply output of the recorder
[8]	230 V INPUT, power socket 230 V, power cable 1,5 m included
[9]	F _{MAINS} , fuse in the supply circuit 230 V, T 6,3 A/250 V

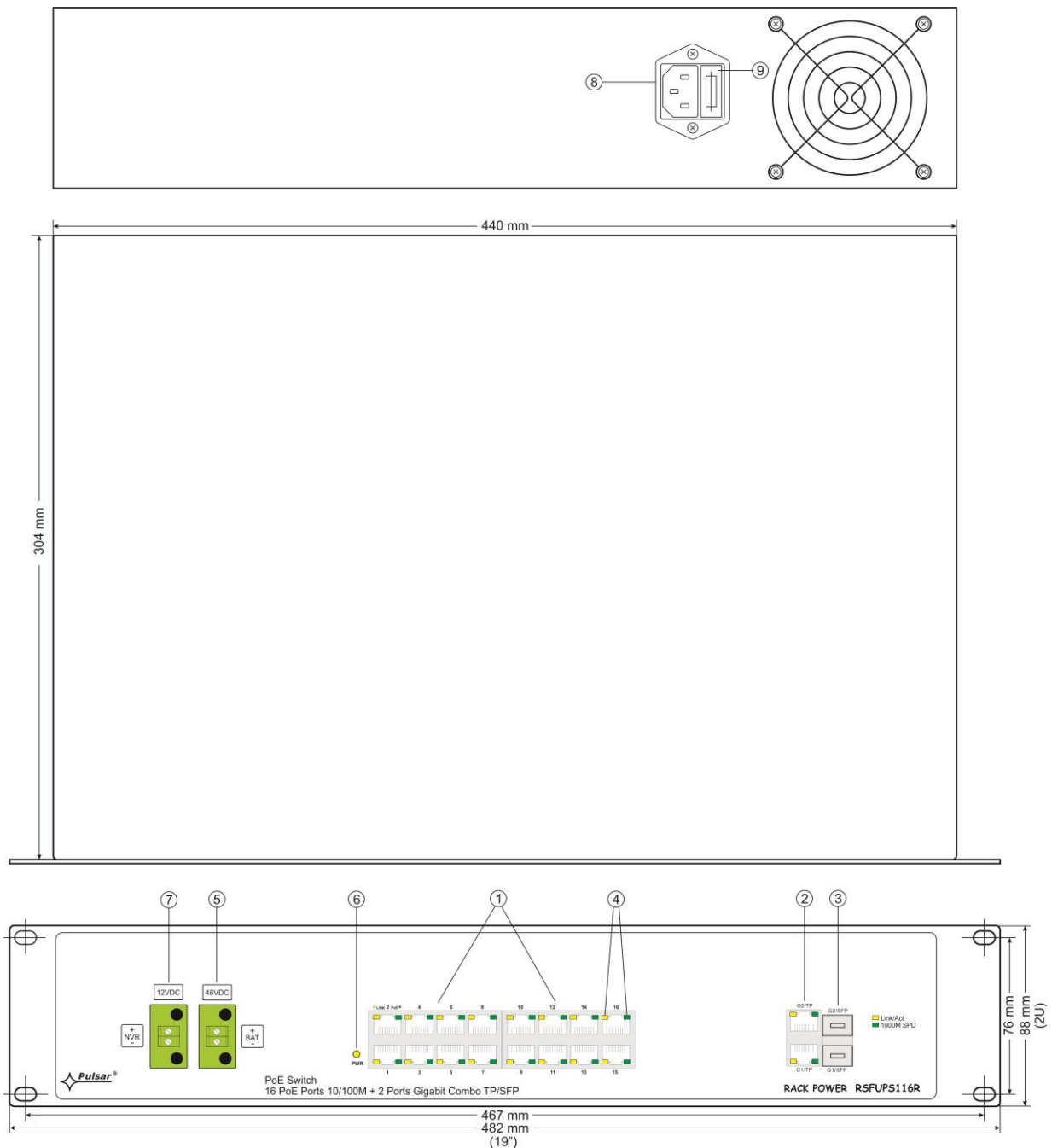


Fig. 2. The enclosure view.

1.4 Technical parameters

- parameters of the switch (tab.2)
- electrical parameters (tab.3)
- mechanical parameters (tab.4)
- operation safety (tab.5)
- operating parameters (tab.6)

Table 2. Parameters of the switch

Ports	16 x PoE (10/100 Mb/s) (RJ-45) 2 x UPLINK (10/100/1000 Mb/s) (RJ-45) 2 x UPLINK (10/100/1000 Mb/s) (SFP) with connection speed auto-negotiation and MDI/MDIX Auto Cross)
PoE power supply	IEEE 802.3af/at (1÷16 ports), 54 V DC / 30 W at each port *
Protocols, Standards	IEEE802.3, 802.3u, 802.3x CSMA/CD, TCP/IP
Bandwidth	14,8 Gbps
Transmission method	Store-and-Forward
Optical indication of operation	Switch power supply Link PoE Status

* The given value of 30 W per port is the maximum value. The total power consumption should not exceed 192 W.

Table 3. Electrical parameters

Mains supply	~230 V; 50 Hz
Current up to	1,5 A
Supply power	267 W
The output current at the PoE (RJ45) ports	16 x 0,6 A Σ I=4 A (max.)
Output voltage at the PoE (RJ45) ports	54 V DC
NVR output – recorder	12 V DC / 4 A (max.)
PSU current consumption	250 mA
Battery charge current (batteries 4x7 Ah / 4x17 Ah, connect batteries in series)	0,5 A max. /4x12 V (+/-5 %)
Approximate backup time	4 h
Battery circuit protection SCP and reverse polarity connection	melting fuse
Excessive discharge protection UVP	U<38 V (± 5 %) – disconnect of connection battery

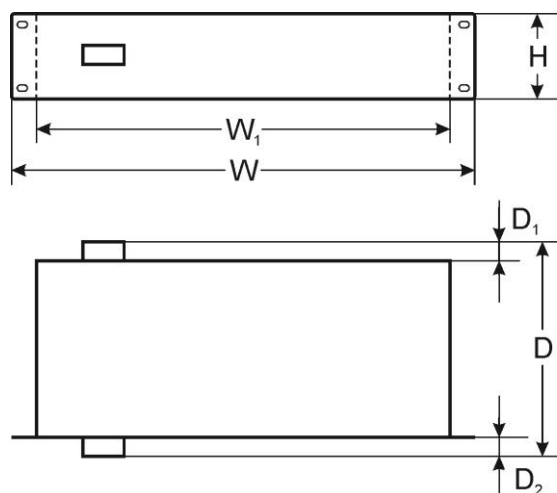


Table 4. Mechanical parameters

Mounting dimensions	W=19", H=2U, D=348
Dimensions	W=482, $W_1=446$, H=88, D=348, $D_1=32$, $D_2=15$ [± 2 mm]
Net/gross weight	6,5 / 7,0 kg
Enclosure	Steel plate, DC01 1,0mm color: black RAL 9005
Fixation	four-point butt mounting to RACK profiles – the set include 4 M6 screws + cage nuts
Connectors	Power supply of the cameras: RJ45 socket Output of recorder: RJ45 socket or SFP The recorder power supply output: $\Phi 0,5-2,1$ (AWG 24-12) 0,5-1,5mm ² , power cord 2 m, terminated with the DC 5,5/2,1 plug (included) Outputs: $\Phi 0,63-2,50$ (AWG 22-10), battery output BAT: 6,3F-2,5
Notes	Forced cooling (fan).

Table 5. Operation safety

Protection class PN-EN 609501:2007	I (first)
Protection grade PN-EN 60529: 2002 (U)	IP 20
Electrical strength of insulation: - between input and output circuits of the PSU - between input circuit and protection circuit - between output circuit and protection circuit	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 , 500 V DC
Declarations	CE

Table 6. Operating parameters

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 shall be mounted by a qualified installer with appropriate permissions and qualifications for 230 V installations and low-voltage installations (required and necessary for a given country).

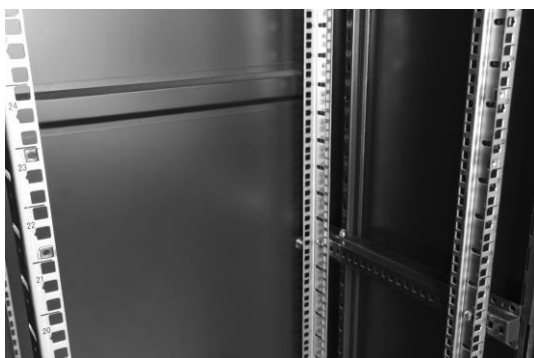
The unit should be mounted in confined spaces, in accordance with the 2nd environmental class, with normal relative humidity (RH=90 % maximum, without condensation) and temperature from -10 °C to +45 °C.

The switch load balance should be done before installation.

The given value of 30 W per port is the maximum value referring to a single output. The total power consumption should not exceed 192 W. The increased demand for power is particularly evident in the case of cameras with heaters or infrared illuminators - when launching these features, the power consumption increases rapidly, which may adversely affect the operation of the switch. As the device 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. The electrical system shall be made in accordance with applicable standards and regulations.

2.2. Installation procedure.

1. Before installation, cut off the voltage in the 230 V power-supply circuit.
2. Mount the power supply in a RACK 19" cabinet as shown below:

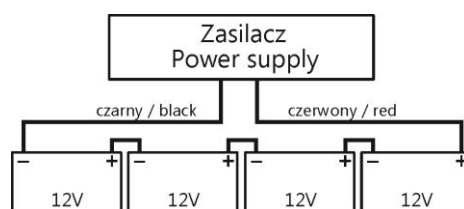


- Mount M6 cage nuts



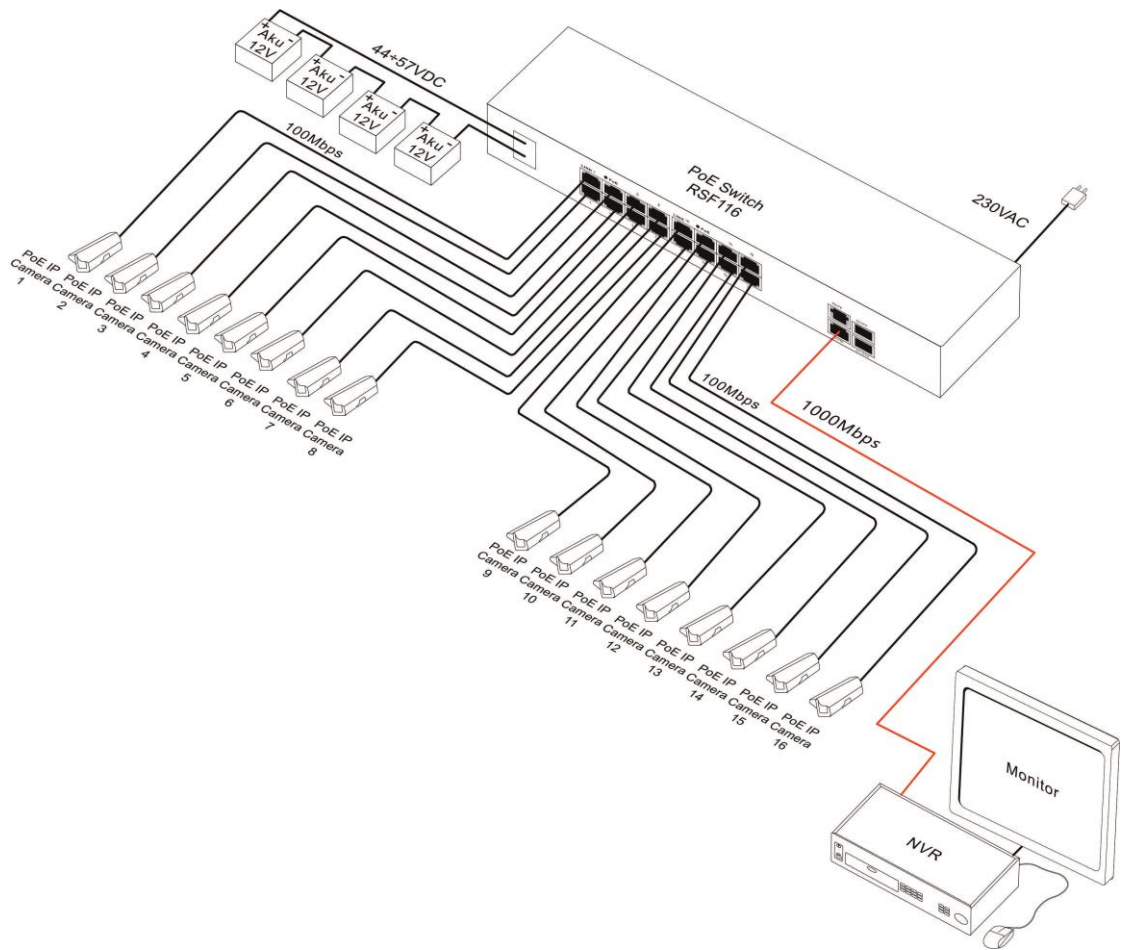
- Secure the enclosure with 4xM6 screws

3. Connect the batteries in series/parallel to the + BAT- terminals:
 - battery output (+): terminal BAT+
 - battery output (-): terminal BAT-








Caution! Connect 4x12V (SLA) batteries in series

4. Connect the camera cables to the RJ45 connectors (PoE connectors – sockets RJ45 from 1 to 16)
Connect the remaining LAN devices to RJ45 (G1/TP or G1/SFP and G1/TP or G2/SFP)
CAUTION! G1/TP and G1/SFP connectors can not operate simultaneously
CAUTION! G2/TP and G2/SFP connectors can not operate simultaneously
5. Podłączyć zasilanie NVR (12 V DC) do rejestratora – kabel zakończony wtykiem DC 5,5/2,1
6. Connect the 230 V power cord with the IEC C13 plug (included) to the 230 V power supply and turn on the power (230 V).
7. Check the optical indication of the switch operation.



3. Operation indication (see table 7.)

Table 7.

OPTICAL INDICATION OF THE SWITCH's POWER SUPPLY		
YELLOW LED LIGHT (Power) Indication of the switch's power supply	PWR 	OFF – no power supply of the switch ON – power supply on, normal operation
OPTICAL INDICATION AT THE PoE PORTS (1÷16)		
GREEN LED LIGHT (PoE) Indication of the PoE power supply at the RJ45 ports		OFF - no power supply at the RJ45 port (the device is not connected or not compliant with the IEEE802.3af/at standard) ON – supply Blinking – short-circuit or output overload
YELLOW LED LIGHT (LINK) The connection status of LAN devices, 10 Mb/s or 100 Mb/s and data transmission		OFF - no connection ON - the device is connected; 10 Mb/s or 100 Mb/s Blinking – data transmission
OPTICAL INDICATION AT THE UPLINK PORT		
YELLOW LED LIGHT (LINK)	 G2/TP G2/SFP G1/TP G1/SFP	OFF - no connection ON - the device is connected Blinking – data transmission CAUTION! The operating status of the G1/TP, G1/SFP, G2/TP and G2/SFP slots is shown on the LEDs located near the RJ45 connector (see below). CAUTION! G1/TP and G1/SFP or G2/TP and G2/SFP sockets can not operate simultaneously. These are COMBO type sockets.
GREEN LED LIGHT (SPEED)	 G2/TP G2/SFP G1/TP G1/SFP	OFF – connection 10 Mb/s or 100 Mb/s ON - connection 1000 Mb/s CAUTION! The operating status of the G1/TP, G1/SFP, G2/TP and G2/SFP slots is shown on the LEDs located near the RJ45 connector (see below). CAUTION! G1/TP and G1/SFP or G2/TP and G2/SFP sockets can not operate simultaneously. These are COMBO type sockets.

4. Operation and use.

4.1 Overload or short circuit of the PSU output (SCP on).

In case of overload, the output voltage is automatically shut off, and so is the LED indicator. The restoration of the voltage takes place immediately once the failure (overload) is over).

4.2 Disconnection of discharged battery.

The PSU is equipped with the discharged battery disconnection system. During the battery-assisted operation, reducing voltage below 38 V at the battery terminals will cause battery disconnection.

4.3 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 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.

The power supply unit is adapted for a sealed lead-acid battery (SLA). After the operation period it must not be disposed of but recycled according to the applicable law.

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