SF116-CR
v1.3
SF116-CR 16-ports switch for 16 IP cameras in enclosure with recorder space

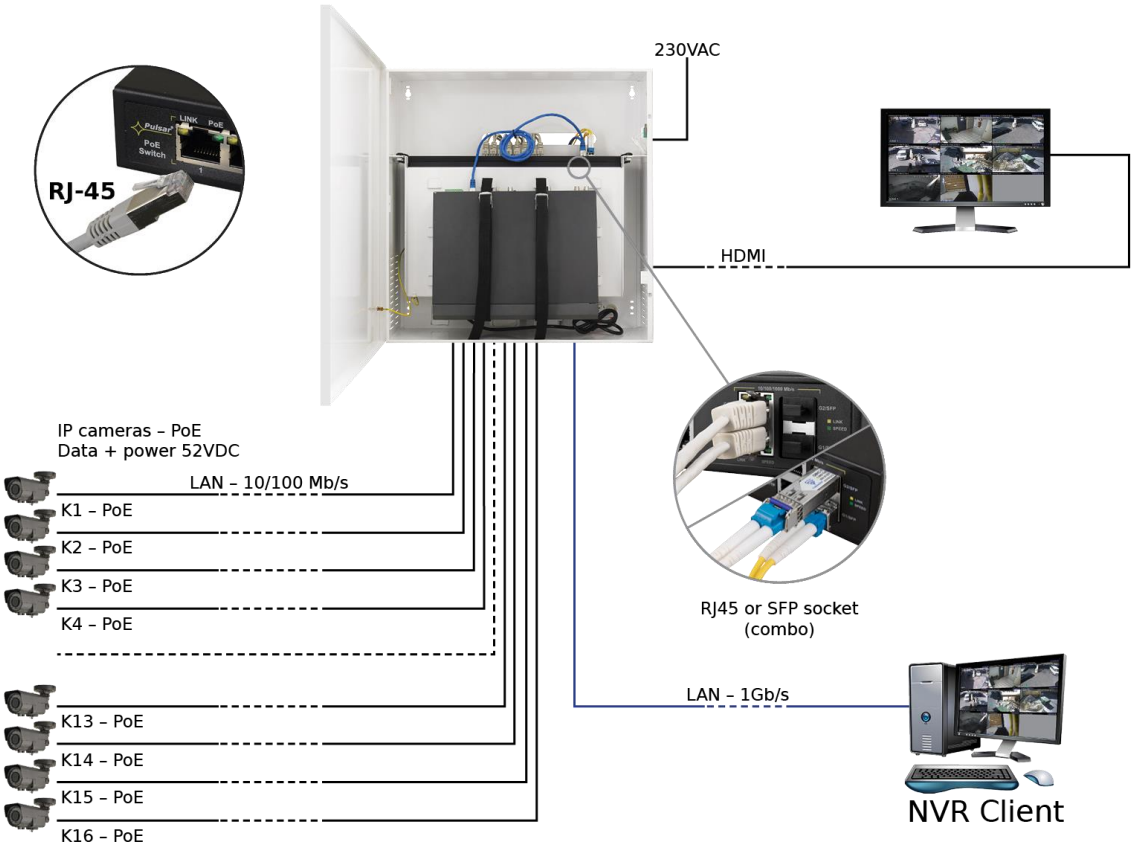
Edition: 4 from 14.02.2019
Supercedes the edition: 3 from 30.11.2018

EN

Features:

- Switch 16 ports
  16 PoE ports 10/100 Mb/s (data transfer and power supply)
  2 ports 10/100/1000Mb/s (G1/TP, G2/TP2 ports) (UpLink)
  2 ports 10/100/1000Mb/s (G1/SFP, G2/SFP ports) (UpLink)
- 30 W for each PoE port, supports devices complaint with the IEEE802.3af/at **(PoE+)** standard
- Supports auto-learning and auto-aging of MAC addresses (16K size)
- Recorder space of dimensions max 400x345x80mm WxHxD
- LED indication
- Additional assembly elements (straps for attaching the DVR in enclosure)
- **The enclosure construction is compliant with the requirements of the General Data Protection Regulation GDPR (the possibility of installing two locks with different codes)**
- Metal enclosure – color white RAL 9003
- warranty – 2 year from the production date

Example of use.



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1. Technical description

1.1. General description.

The SF116-CR is a CCTV kit consisting of a 16-ports switch housed in a metal enclosure. **The enclosure construction is compliant with the requirements of the General Data Protection Regulation GDPR (the possibility of installing two locks with different codes).** The enclosure has a recorder compartment. The switch and recorder are powered by 230 V.

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 below).

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.

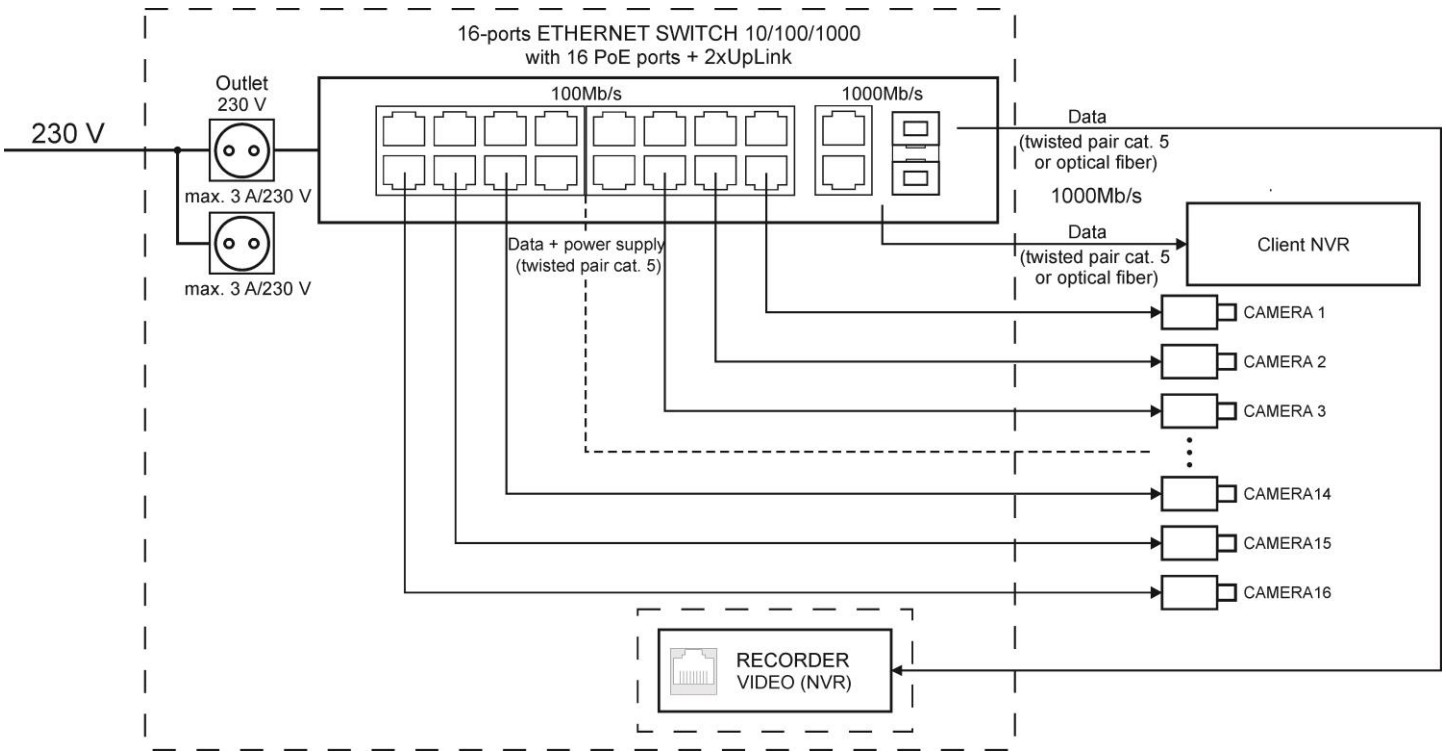

Fig. 1. Block diagram.

1.3 Description of components and connectors.

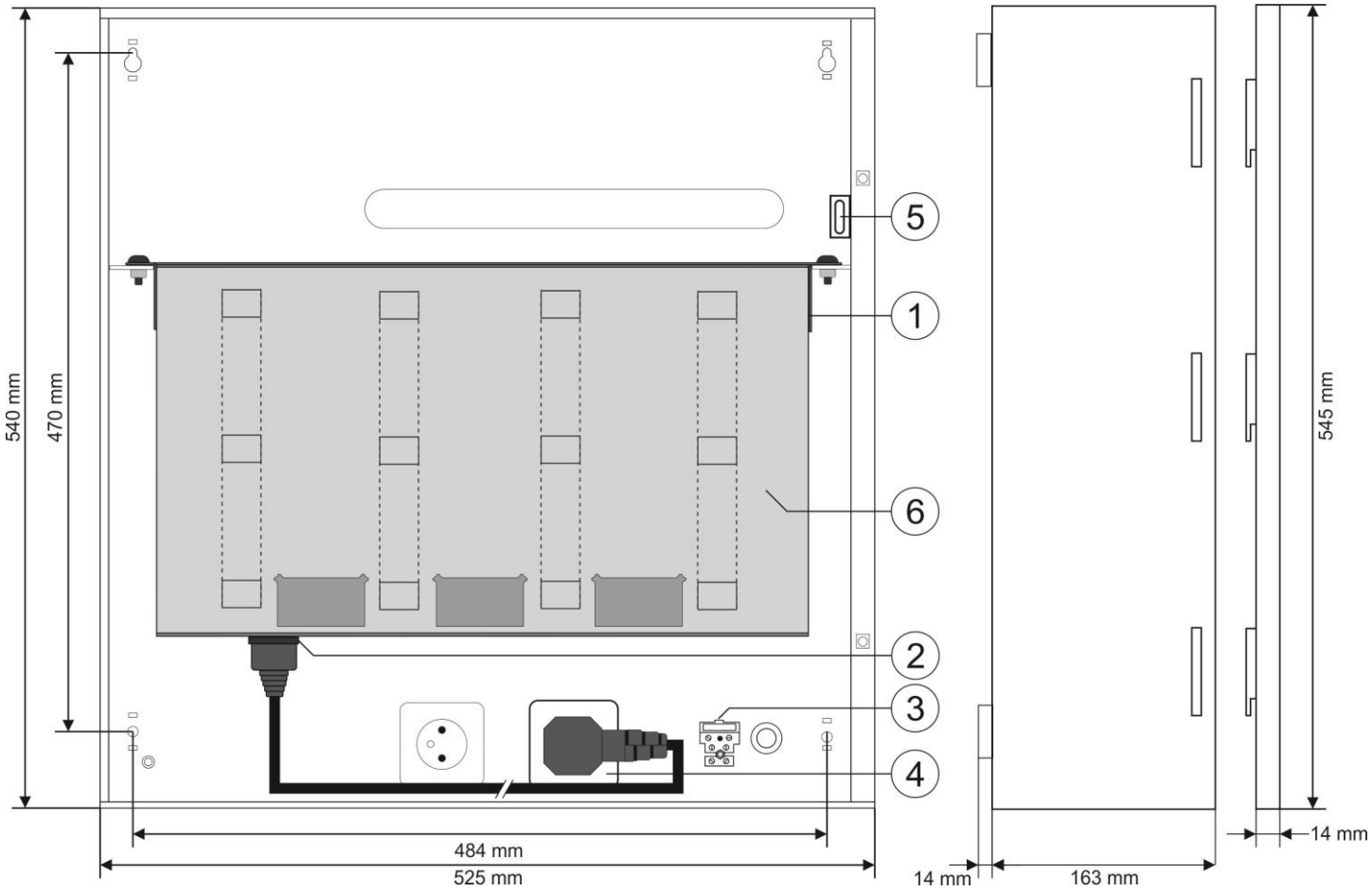

Fig. 2. The enclosure view.

Table 1. Elements of the power supply.

Element no. (Fig. 2)	Description
[1]	PoE switch SF116
[2]	Power Socket of the 230 V switch'a
[3]	**FMAINS -** fuse in the power circuit (230 V, T6,3 A / 250 V) **L-N** power supply connector 230 V, ⏚ protective connector
[4]	Electric socket for switch
[5]	**Tamper** – terminals of tamper protection **(NC)**
[6]	Space for a recorder (straps for mounting the recorder) with the following dimensions max. 400×345×80 W×H×D

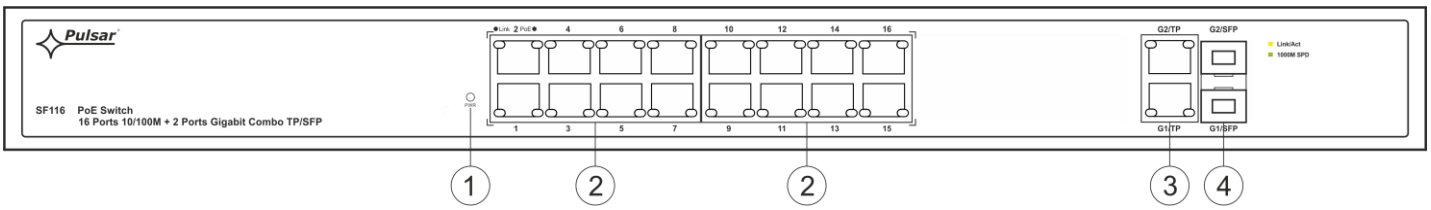

Fig. 3. The view switch'a - front.

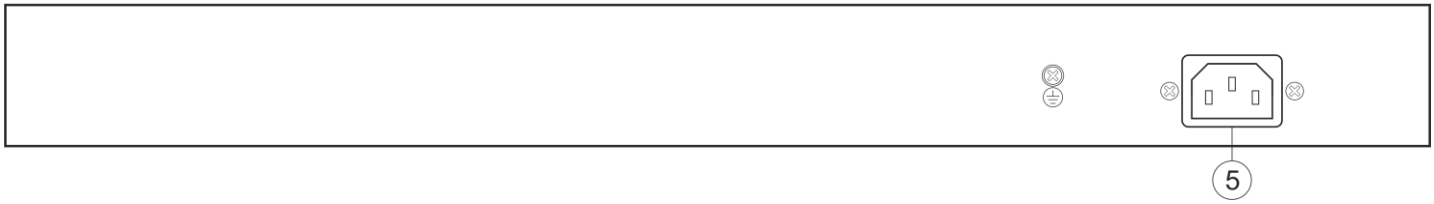

Fig. 4. The view switch'a - rear.

Table 2. Elements of the switch (Fig. 3, 4).

Component No. (Fig. 3)	Description
[1]	LED lights (PWR) yellow – the main supply of the switch
[2]	16 x PoE ports (1÷16)
[3]	2 x UPLINK ports (G1/TP, G2/TP) [RJ45]
[4]	2 x UPLINK ports (G1/SFP, G2/SFP) [SFP]
[5]	230 V power outlet

1.4. Technical parameters

- parameters of the switch (tab.3)
- electrical parameters (tab.4)
- mechanical parameters (tab.5)
- operation safety (tab.6)
- operating parameters (tab.7)

Table 3. Parameters of the switch

Ports	16 x PoE (10/100Mb/s) (RJ-45) 2 x UPLINK (10/100/1000Mb/s) (RJ-45) 2 x UPLINK (10/100/1000Mb/s) (SFP) with connection speed auto-negotiation and MDI/MDIX Auto Cross)
PoE power supply	IEEE 802.3af (1÷16 ports), 52 V DC / 30 W at each port * Used pairs 1/2 (+), 3/6 (-)
Protocols, Standards	IEEE802.3, 802.3u, 802.3x CSMA/CD, TCP/IP
Bandwidth	14,8Gbps
Transmission method	Store-and-Forward
Optical indication of operation	Switch power supply; Link/Act; PoE Status

***** The given value of 30 W per port is the maximum value. The total power consumption should not exceed 160 W.

Table 4. Electrical parameters

Mains supply	~100-240 V; 50/60 Hz
Current up to	1,4 A
Supply power	160 W
Output current at the PoE ports (RJ45)	16 x 0,6 A ΣI=3,1 A (max.)
Output voltage at the PoE ports (RJ45)	52 V DC

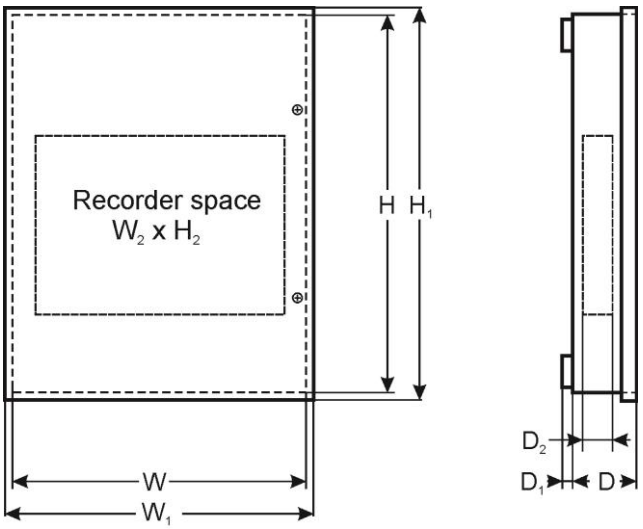

Table 5. Mechanical parameters

Dimensions	W=525, H=540, D+D_1=72+14 [+/- 2mm] W_1=530, H_1=545 [+/- 2mm]
Dimensions of recorder space	W_2=400, H_2=345, D_2=80 [+/- 2mm]
Gross/Net weight	14,9 / 15,9 kg
Enclosure	Steel plate, DC01 1,0mm color white RAL 9003
Closing	Cheese head screw x 2 (at the front) **The possibility of installing two locks with different codes.**
Connectors	Power supply of the cameras: RJ45 socket TAMPER output: wires

Table 6. Operation safety

Protection class PN-EN 609501:2007	I (first)
Protection grade PN-EN 60529: 2002 (U)	IP20
Electrical strength of insulation: **- between input and output circuits of the PSU** **- between input circuit and PE protection circuit**	 1500 V AC min. 1500 V AC min.
Insulation resistance: **- between input circuit and output or protection circuit**	 100 MΩ, 500 V DC
Declarations, warranty	CE, 2 year from the production date

Table 7. Operating parameters

Operating temperature	-10ºC...+40ºC
Storage temperature	-20ºC...+60ºC
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. Installation procedure

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 +40°C. Ensure the free flow of air around the unit. The PSU shall work in a vertical position that guarantees sufficient convectional air-flow through ventilating holes of the enclosure.

The load balance should be done before installation Switcha. The given value of 30W per port is the maximum value referring to a single output. The total power consumption should not exceed 160 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. 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. 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.

2.2. Installation procedure

Before installation, cut off the voltage in the 230 V power-supply circuit.
Το switch power off, use an external switch, in which the distance between the contacts of all poles in the disconnection state is not less than 3mm.

1. Mount the PSU in a selected location and connect the wires.
2. Connect the power cables (230 V) to the L-N terminals.

The shock protection circuit shall be performed with a particular care, i.e. the yellow and green wire coat of the power cable shall stick to one side of the terminal - marked with '⏚' symbol on the PSU enclosure. Operation of the PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause a device failure or an electric shock.

3. Connect the ground wire to the terminal marked by the earth symbol ⏚ (power supply module connector). Use a three-core cable (with a yellow and green ⏚ protection wire) to make the connection. Lead the cables to the appropriate terminals of the connection board through the insulating bushing.
4. Mount the recorder.
5. Connect the power (230 V).
6. Connect the camera wires to the RJ45 connectors (PoE connectors) (sockets RJ45 from 1 to 16).
7. Connect the remaining LAN devices to RJ45 or SFP connectors (using a GBIC)
   (G1/TP or G1/SFP and G2/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
8. Check the optical indication of the switch operation (see figure 3).
9. After installing and checking proper working, the enclosure can be closed.

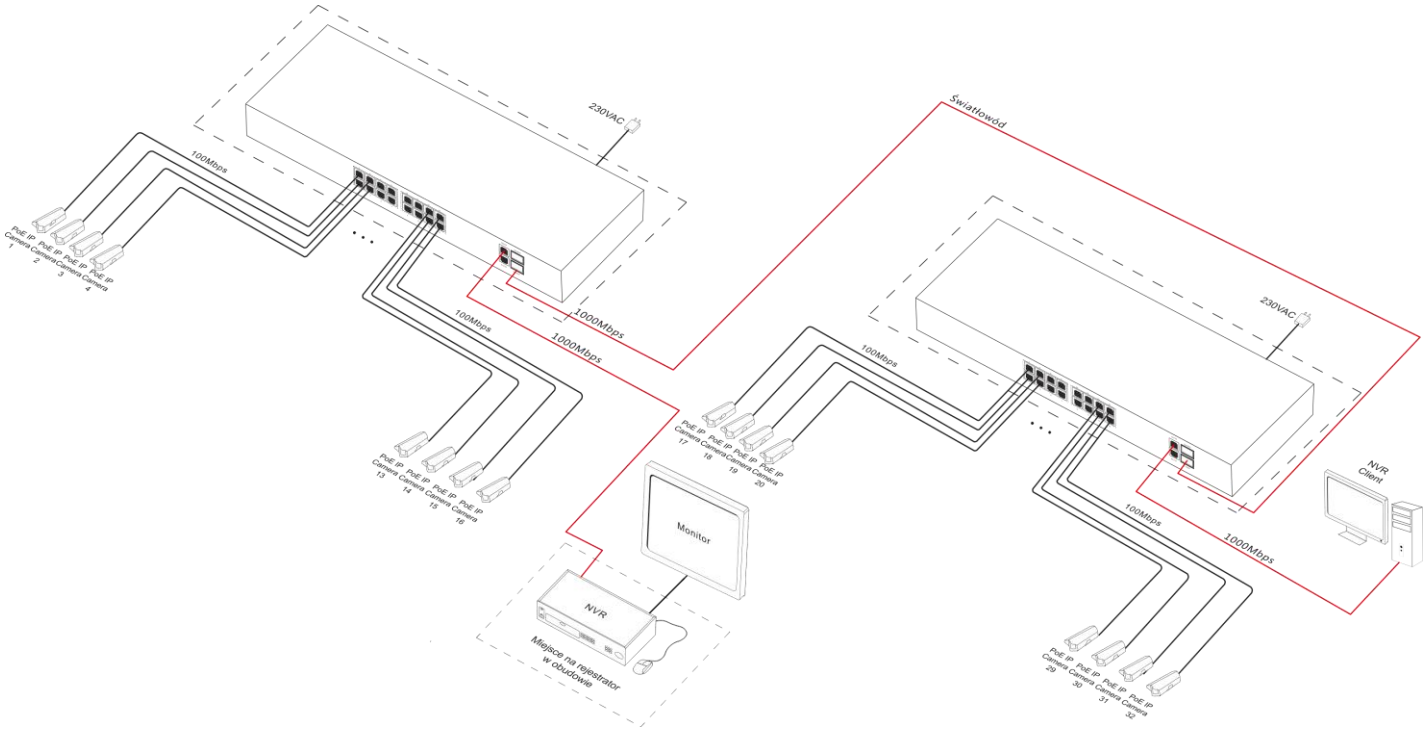

Fig. 4. Connection schemes Switch'a SF116-CR.

4. Optical indication of the switch operation (see Table 8).

Table 8. Operation indication

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 OF THE SWITCH's POWER SUPPLY (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, 10Mb/s or 100Mb/s and data transmission**	**OFF**- no connection **ON** - the device is connected; 10Mb/s or 100Mb/s **Blinking** – data transmission

OPTICAL INDICATION AT THE UPLINK PORT (G1/TP, G2/TP, G1/SFP, G2/SFP)

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 10Mb/s or 100Mb/s **ON** - connection 1000Mb/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.

Fig. 5. The view of the SF116-CR.

4. 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, however, in case of significant dust rate, its interior is recommended to be cleaned with compressed air. 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.

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