SF108-B
v1.3
SF108-B 10-port switch with buffer power supply for 8 IP cameras

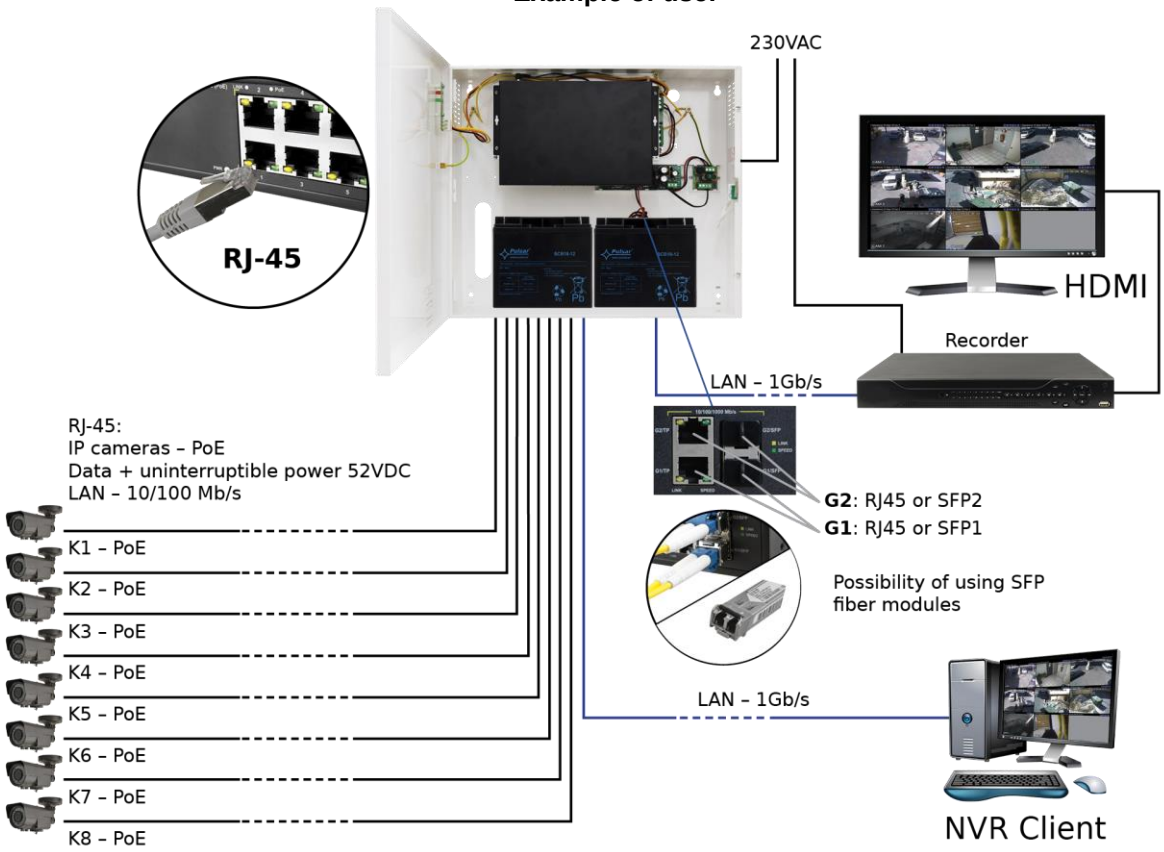
Edition: 5 from 05.11.2019
Supercedes the edition: 4 from 14.02.2019

EN**

Features:

- Uninterruptible power supply of 8 IP cameras (52 V DC)
- Switch 10 ports
  8 PoE ports 10/100 Mb/s, (1÷8 ports) (data and power supply)
  2 ports 10/100/1000 Mb/s (G1/TP, G2/TP ports) (UpLink)
  2 ports 10/100/1000 Mb/s SFP (G1/SFP, G2/SFP ports)
- 30 W for each PoE port, supports devices complaint with the IEEE802.3af/at **(PoE+)** standard
- Approximate backup time: 5h 30min
- LED indication
- Metal enclosure – color white RAL 9003 with space for two 17 Ah/12 V battery
- Supports auto-learning and auto-aging of MAC addresses (1K size)
- warranty – 2 year from the production date

Example of use.



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1. Technical description

1.1. General description.

The SF108-B is dedicated for uninterruptible power supply of 8 IP cameras (52 V DC power supply).

The main elements of this system include:
- 10 ports PoE (SF108) switch
- 27,6V (PSB-1552455) buffer power supply with two 17 Ah / 12 V batteries
- a converter (DC/DC52230) increasing the voltage to 52 V DC (supply of the PoE switch).

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 – 8 ports of the switch. The G1/TP and G2/TP ports is used for connection of another network device via RJ45 connector. The switch is fitted with SFP two 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. 8).

The switch is housed in a metal enclosure (color RAL 9003) which can accommodate a two 17 Ah/12 V batteries. The enclosure features a micro switch tamper indicating door opening (front panel).
The SF108-B is fitted with two LEDs on the front panel (red LED – indicates 230 V power supply of the PSU, green LED indicates the presence of DC voltage).

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.

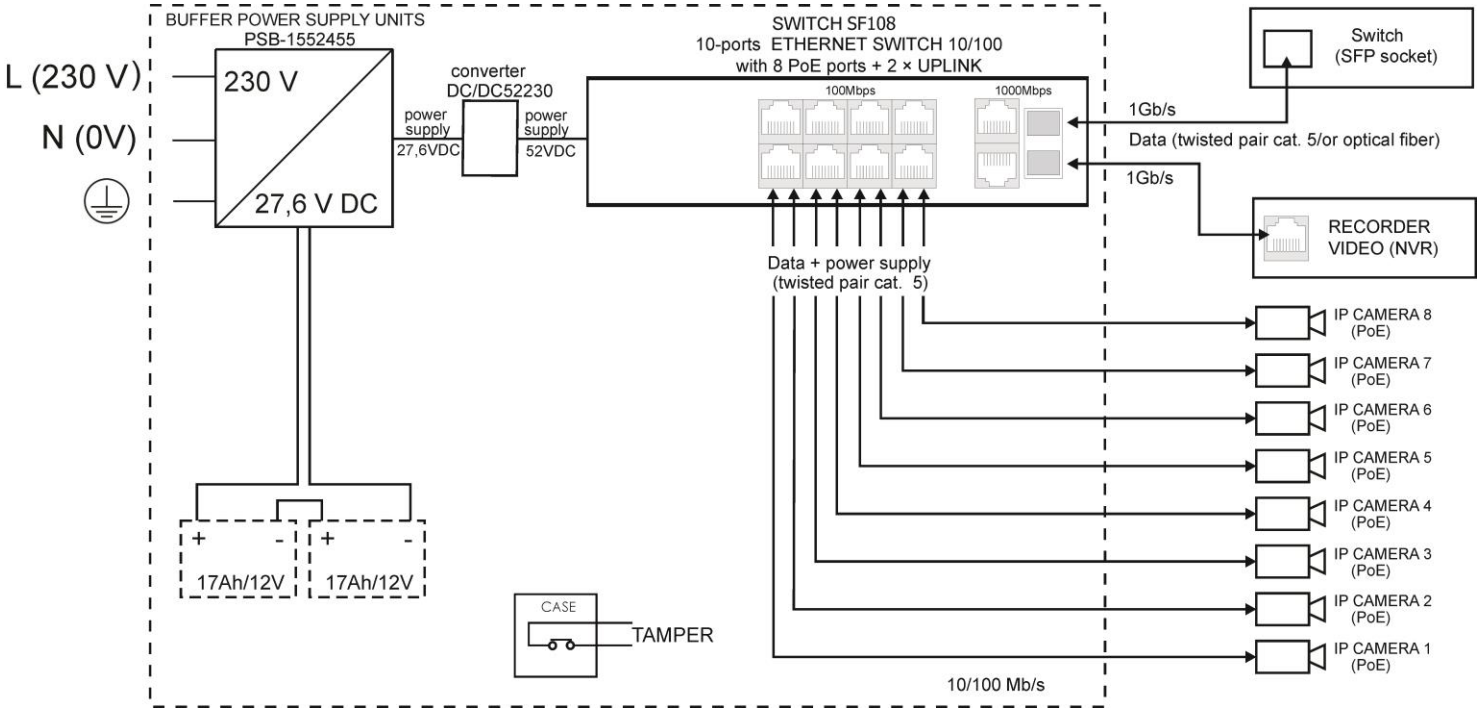


Fig. 1. Block diagram.

1.3 Description of components and connectors.

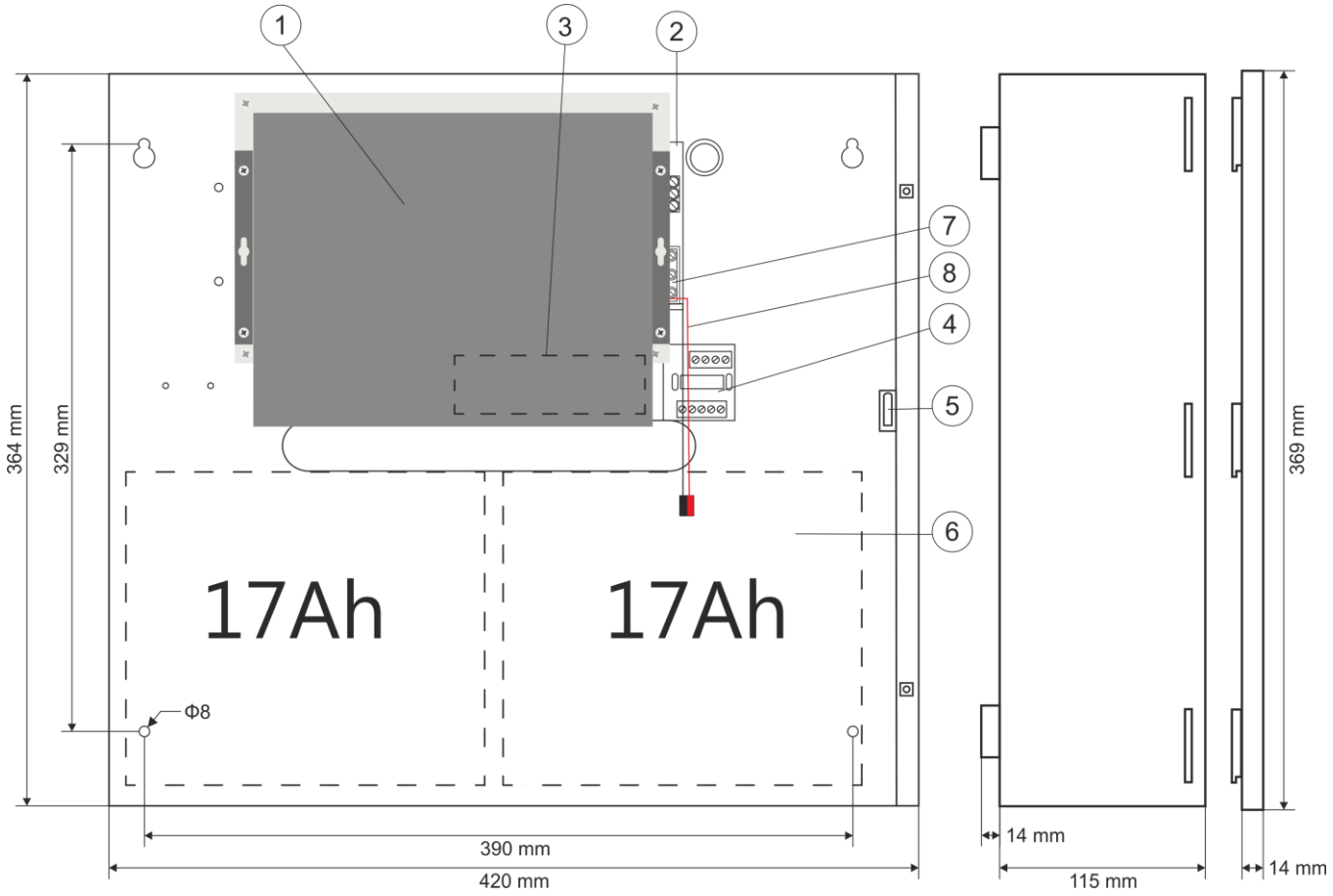


Fig. 2. The enclosure view.

Table 1. (See Fig. 2)

Component No. (Fig. 2)	Description
[1]	Switch PoE SF108
[2]	Switch mode buffer power supply unit PSB-1552455
[3]	DC/DC52230 Step up DC/DC converter
[4]	Output filter
[5]	Tamper – micro switch (terminals) of tamper protection (NC)
[6]	Battery space for two (2 x 17 Ah/12 V - connect the batteries in series)
[7]	Power supply connector of the PSU – L, N Protective connector ⏚ (electric shock)
[8]	BAT +, BAT - battery output + BAT red, - BAT black

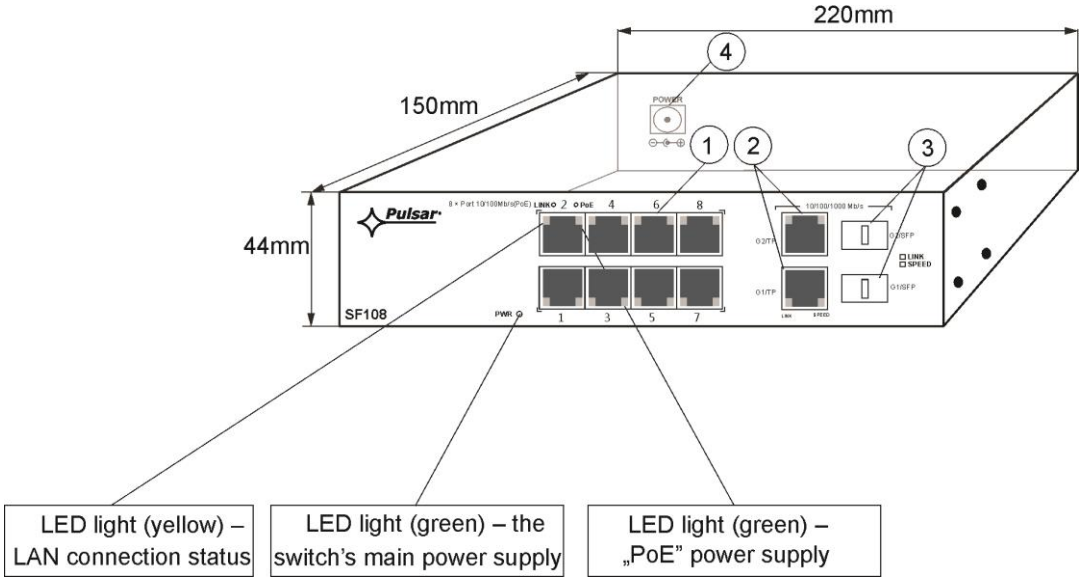


Fig. 3. The view of the switch.

Table 2. (See Fig.3)

Component No (Fig. 3)	Description
[1]	8 x PoE ports (1÷8)
[2]	2 x UPLINK ports (G1/TP, G2/TP), (RJ45 socket)
[3]	2 x UPLINK ports (G1/SFP, G2/SFP) (SFP socket)
[4]	52 V DC power supply socket

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	8 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	IEEE802.3af/at (1÷8 ports), 52 V DC / 30 W at each port *
Protocols, Standards	IEEE802.3, 802.3u, 802.3x CSMA/CD, TCP/IP
Forwarding rate	10BASE-T: 14880 pps/port
	100BASE-TX: 148800 pps/port
Bandwidth	1,6 Gbps
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 96 W.

Table 4. Electrical parameters

Supply	~200-240 V; 50 Hz; 1 A
Supply power	110 W
Output current at the PoE ports (RJ45)	8 x 0,6 A ΣI=2 A (max.)
Output voltage at the PoE ports (RJ45)	52 V DC
Short-circuit protection SCP and overload protection OLP	105 % ÷ 150 % PSU power, manual restart (the fault requires disconnection of the DC output circuit)
PSU current consumption	200 mA
Battery charge current	0,5 A max. / 2x17 Ah (+/-5 %)
Approximate backup time	5h 30 min
Battery circuit protection SCP and reverse polarity connection	melting fuse
Deep discharge battery protection UVP	U<19 V (± 5 %) – disconnection of the batteries
Sabotage protection: **- TAMPER output indicating enclosure opening**	- microswitch, NC contacts (enclosure closed), 0,5 A@50 V DC (max.)

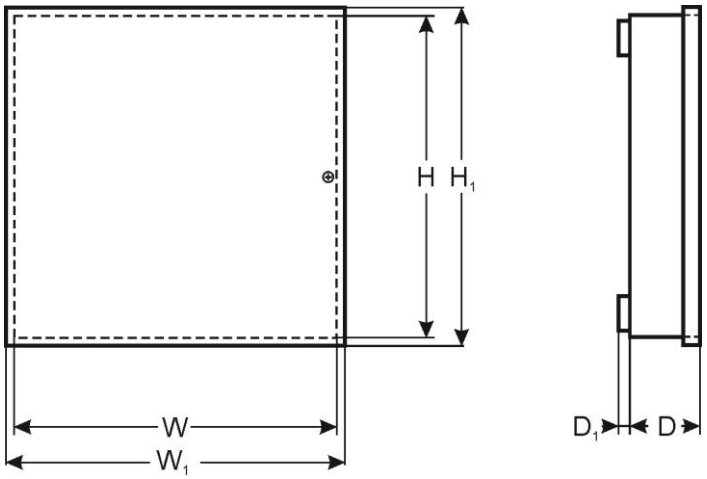


Table 5. Mechanical parameters

Dimensions	W=420, H=364, D+D_1=117+14 [+/- 2mm] W_1=425, H_1=369 [+/- 2 mm]
The dimensions of the battery compartment	370 x 165 x 80 mm (WxHxD) max
Gross/Net weight	5,0 / 5,5 kg
Enclosure	Steel plate, DC01 1,0 mm color white RAL 9003
Closing	Cheese head screw x 2 (at the front), (lock assembly possible)
Connectors	Power supply of the cameras: RJ45 socket Input 230 V: Φ 0,63-2,50 (AWG 22-10) Battery output BAT: 6,3 F-2,5 TAMPER output: wires
Notes	The enclosure does not touch the assembly surface so that cables can be led.

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** **- between output circuit and PE 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 MΩ, 500V DC
Declarations	CE

Table 7. Operating parameters

Operating temperature	-10 ºC...+40 ºC
Storage temperature	-20 ºC...+60 ºC
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 device should be mounted by a qualified installer, holding relevant permits and licenses (applicable and required for a given country) for 230 V and low-voltage installations.

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 to +40 °C.
The switch shall work in a vertical position that guarantees sufficient convectional air-flow through ventilating holes of the enclosure.

Before installation, prepare a Switch'a load balance.

The given value of 30 W per port is the maximum value referring to a single output. The total power consumption should not exceed 96 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 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

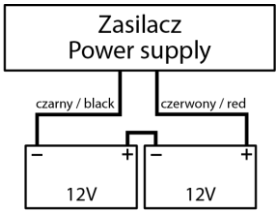
Before installation, cut off the voltage in the 230 V power-supply circuit.
To switch power off, use an external switch, in which the distance between the contacts of all poles in the disconnection state is not less than 3mm.

It is required to install an installation switch with a nominal current of 6 A in the power supply circuits outside the power supply unit.

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

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.

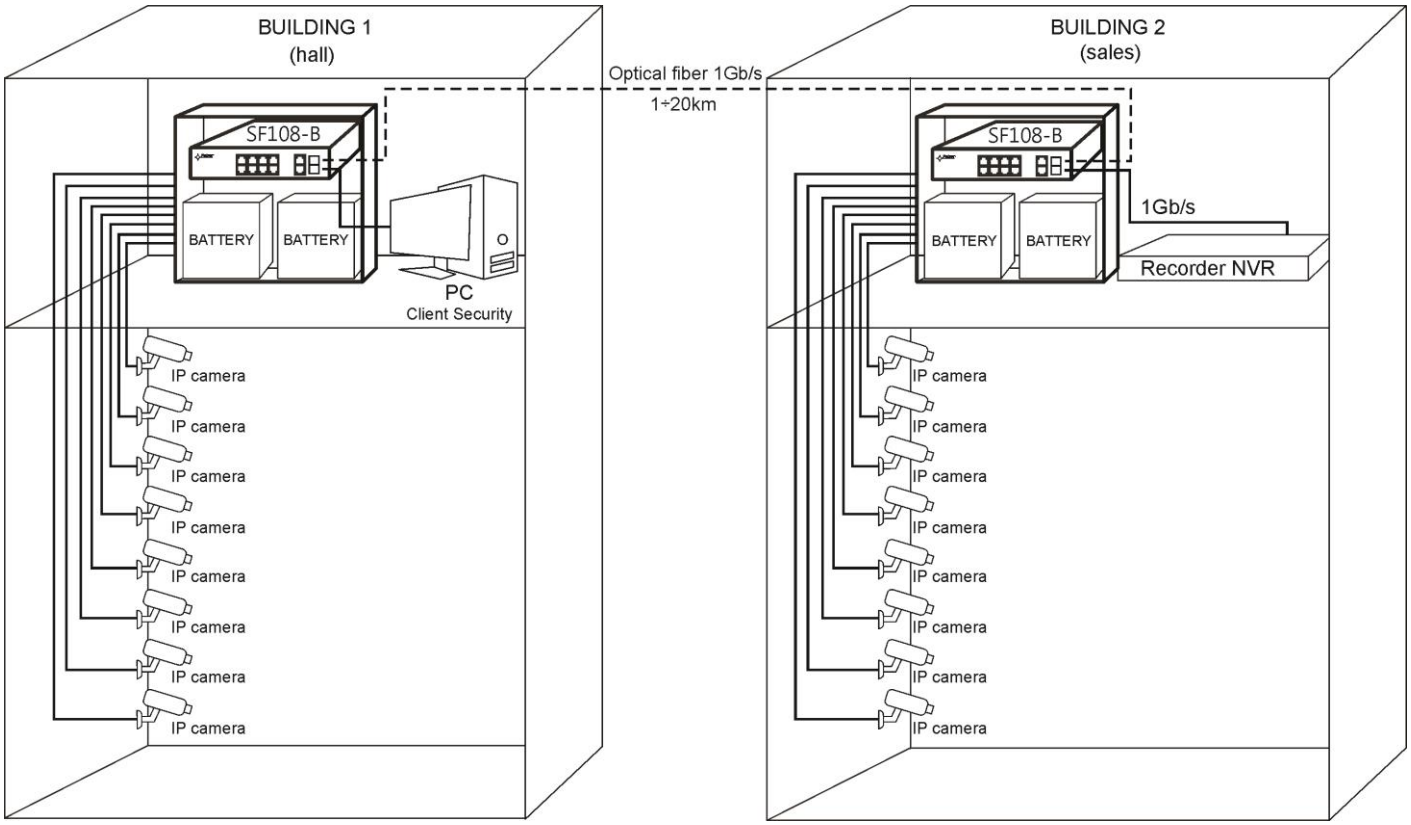
3. Connect the ground wire to the terminal marked with the ⏚ symbol (power supply module connector). Use a three-core cable (with a yellow and green ⏚ protection wire) to make the connection. Lead the cables to the appropriate clips through the insulating bushing of the connection board.
4. Connect the power (230 V).



5. Connect the battery (mind the colours):
- battery output (+V): BAT+ cable / red,
- battery output (0V): BAT – cable / GND / black.
Caution! Connect two 17 Ah/12 V batteries in series

6. Connect the camera cables to the RJ45 connectors (PoE connectors) and connect the recorder to the network (the UPLINK connector).
7. Check the optical indication of the switch operation.
8. After installing and checking proper working, the enclosure can be closed.

Connection schemes:



3. Indication of the device operation.

3.1 LED indication of operating status.

The PSU is equipped with two diodes on the front panel:

RED LED:

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

GREEN LED:

- on – DC voltage in the AUX output of the PSU
- off – no DC voltage in the AUX output of the PSU

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

Table 8. Indication of the switch operation

OPTICAL INDICATION OF THE SWITCH's POWER SUPPLY

GREEN 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÷8)

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 PORTS

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.

Installation example of the SF108-B battery
(Battery not included)

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 after 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 19 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, 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.

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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