Pulsar®

USER MANUAL

EN

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S108B

v1.0

S108B 10-port switch with buffer power supply for 8 PoE devices

Features:

- Uninterruptible power supply for 8 PoE devices (52 V DC)
- Switch 10 ports
  8 PoE ports 10/100 Mb/s (data transmission + power supply)
  2 UpLink ports 10/100 Mb/s
- 30 W for each PoE port, supports devices complaint with the IEEE802.3af/at standard
- Battery charging current: 0,5 A
- Space for a 2x12Ah/12V (SLA) battery
- Metal enclosure – white colour RAL 9003
- Removable universal mounting plate
- LED optical indication
- **Approximate backup time: >7,5h***
- **START** function of manual switch to battery power
- Battery charging and maintenance control
- Deep discharge battery protection
- Protections:
  - SCP short circuit protection
  - OLP overload protection
  - OVP overvoltage protection
  - surge protection
  - tamper protection: unauthorized enclosure opening
  - protection against reverse battery connection
- Warranty: 2 years

Application example



*- The specified backup time was calculated for a load of 20% (typical monitoring system) and dedicated batteries.

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1. Technical description.

1.1. General description.

S108B is a solution for uninterruptible power supply of 8 PoE devices (52 V DC power supply).

The main components of this system are:
- 10-port PoE switch
- 52 V buffer power supply (with built-in converter), designed to operate with two 12 Ah / 12 V batteries connected in series.

In case of power failure, a battery back-up is activated immediately. The switch - at ports 1 – 8 - automatically detects devices powered in the PoE standard. The ports marked UP LINK are used to connect additional network devices, e.g. a recorder. The front panel features LED optical indication of the operating status (see Table 6). The switch is housed in a metal enclosure (RAL 9003 colour) with space for one 2 x 12 Ah / 12 V battery. The enclosure is equipped with a microswitch indicating door (front panel) opening and three LEDs on the front panel (see section 3.1).

The approximate backup time is specified assuming that all output ports are fully occupied with typical devices and that a 12 Ah (x2) battery is used. The electricity consumption for own needs and the energy efficiency of the power intake track were taken into account. A detailed description of the calculation method can be found in the document: "Approximate backup time - calculation assumptions".

The PoE technology provides a network connection and reduces installation costs by eliminating the need to supply a separate power cable to each device. In addition to cameras, other network devices that use this technology can also be powered in this way, e.g. IP phones, access points, routers, access control devices, video intercoms and PoE speakers.

1.2. Block diagram (Fig.1).

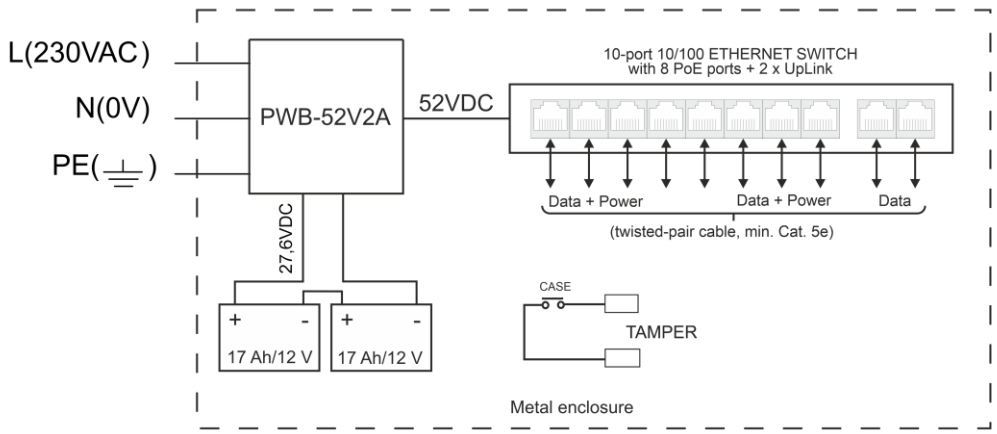


Fig.1. Device block diagram.

1.3. Description of components and connectors.

Table 1. View of PSU (see Fig.2).

Element no.	Description
[1]	**S108** switch
[2]	Screw for locking the mounting plate
[3]	**TAMPER;** microswitch of antisabotage protection (NC)
[4]	Power supply **PWB-52V2A**
[5]	Cable grommet
[6]	BAT+ (red); BAT− (black) – battery output
[7]	**L–N – 230 V AC** power supply connector, ⏚ – connector for protective conductor connection
[8]	START button (starting the power supply from the battery)
[9]	Battery fuse

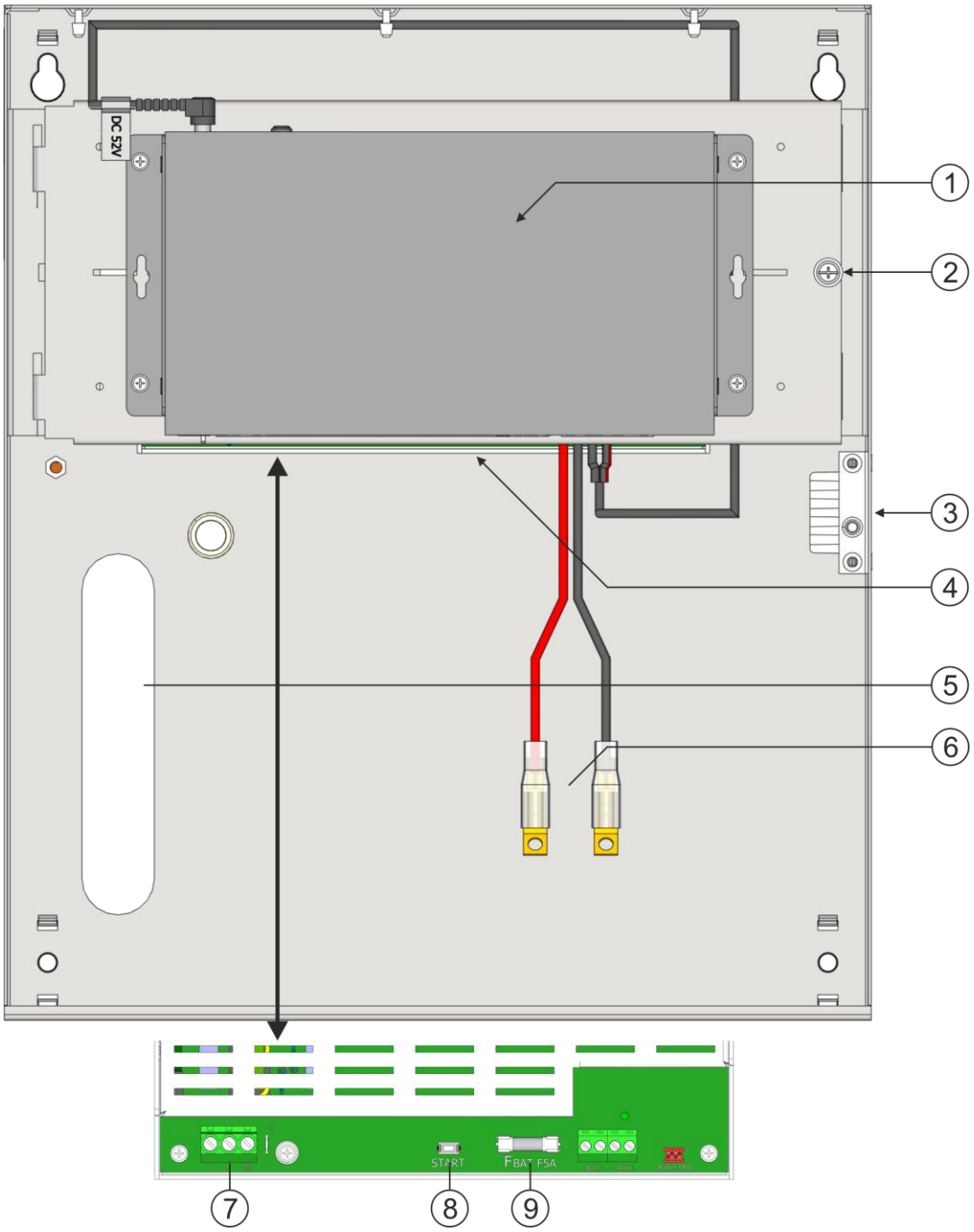


Fig.2. View of device.

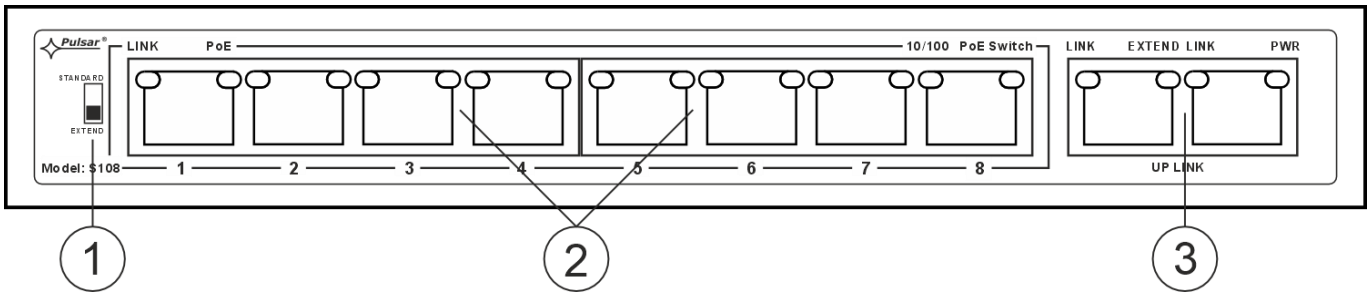


Fig.3. View of the switch.

Table 2. (see Fig.3)

Element no.	Description
[1]	Switch of mode Long Range
[2]	8 x PoE port (1÷8)
[3]	2 x UP LINK port

1.4. Specifications:

- **electrical parameters (tab. 3)**
- **switch parameters (tab. 4)**
- **operation safety (tab. 5)**
- **operating parameters (tab. 6)**

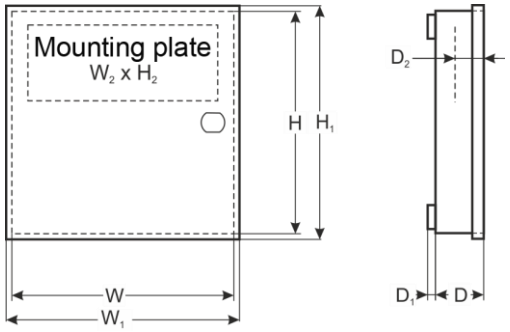


Table 3. Electrical parameters.

Power supply	~ 200 – 240 V; 1,3 A; 50/60 Hz
Inrush current	50 A
Efficiency	87%
PoE supply	52 V DC; 120 W (8 x 0,6A ΣI=2,3A max.)
Approximate backup time	>7,5h
Ripple voltage	100 mV p-p max.
Battery charging voltage	22 – 27,6 V DC
Battery charging current	0,5 A
Battery circuit protection SCP and reverse polarity connection	F_{BAT} fuse: F5A/250V
Deep discharge battery protection UVP	U<19 V (± 5%) - disconnection of battery circuit
Overload protection OLP	105 – 150% of power supply, automatic recovery
Surge protection	varistors
Current consumption (during buffer operation)	ok. 30 mA
LED optical indication output	LED AC - presence of AC voltage LED DC - presence of voltage in output of PSU LED CHARGE - battery charging process
Connectors	Power input: Φ0,63-2,50 (AWG 22–10) PoE power output: DC 2,1/5,5 plug BAT output: 6.3F battery leads – 45 cm, angled ML062 push-on terminals (5.2 mm hole)
Dimensions	W=300, H=350, D+D_1=122+14 [+/- 2mm] W_1=305, H_1=354 [+/- 2mm] W_2=250, H_2=180, D_2=45 [+/- 2mm]
Enclosure	DC01 steel sheet, 1 mm, RAL 9003 colour
Closing	Cylindrical-head screw (front-mounted, lock installation possible)
Notes	Enclosure does not adjoin assembly surface so that cables can be led
Additional equipment	n/a
Net/gross weight	5 / 5,4 [kg]
Declaration	CE

Table 4. Switch parameters

Ports	10 ports 10/100Mb/s (8 x PoE + 2 x UpLink) with auto negotiation of connection speed, auto MDI/MDIX crossover
PoE supply	IEEE 802.3af/at (ports 1 – 8), 52 V DC / 30 W at each port *
Protocols, Standards	IEEE802.3, 802.3u, 802.3x CSMA/CD, TCP/IP
Bandwidth	1,6 Gb/s
Operating modes	Long Range, VLAN
Transmission method	Store-and-Forward
LED operation indication	Switch supplying; Link/Act; PoE Status

* The given value of 30 W per port is the maximum value. The total power consumption should not exceed 120W when all PoE ports are being used.

Table 5. Operation safety.

Protection class EN 62368-1	I (first)
Protection grade EN 60529	IP20
Electrical strength of insulation: - between input and output circuits of the PSU - between input circuit and protection circuit - between output circuit and protection circuit	 2500 V AC min. 1500 V AC min. 500 V AC min.
Isolation resistance: - between input circuit and output or protection circuit	 100 MΩ, 500 V DC

Table 6. 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 insolation	unacceptable
Vibrations and impulse waves during transport	According to PN-83/T-42106

2. Installation.

2.1. Requirements.

The device is intended for installation by a qualified installer holding the appropriate permits and authorisations required in the given country for connection to and intervention in ~230 V installations and low-voltage installations. Unit should be mounted in confined spaces, in accordance, with normal relative humidity (RH=90% maximum, without condensing) and temperature from -10°C to +40°C.

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

The load balance should be done before installation Switcha. The given value of 30 W per port is the maximum value referring to a single output. In case of full occupation of the PoE ports, the overall power intake should not exceed 120 W. The increased power demand is particularly noticeable when, for example, cameras equipped with heaters or infrared illuminators are used. When these components are switched on, power consumption rises sharply, which may affect the correct operation of the switch.

2.2. Long Range mode.

The switch can operate in two modes: standard and extended range. When the Long Range switch is set to the STANDARD position (see Fig. 3), the PoE ports operate at 100 Mb/s and provide an Ethernet transmission range of up to 100 metres. After switching the selector to the EXTEND position, the range is increased to 250 metres and the speed is reduced to 10 Mb/s. Additionally, the VLAN function is activated, isolating the PoE ports from one another (communication takes place between the UpLink ports and the individual PoE ports). In both modes, the UpLink ports operate at 100 Mb/s.

Caution: Changing the operating mode requires a power restart!

2.3. Installation procedure.

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

It is required to install in the supply circuits, in addition to power supply, circuit breaker with 6 A nominal current.

1. Mount the device in a selected location and connect the wires.
2. Unscrew the fixing screw and tilt the mounting plate together with the switch.
3. Connect power cables ~230 V to L-N clips of PSU. Connect ground wire to clip marked by earth symbol ⏚. Use a three-core cable (with a yellow and green protection wire) to make connection ⏚). Lead the power cables to the relevant terminals of the power supply via an isolation conduit.

Shock protection circuit shall be done with a particular care: yellow and green wire coat of power cable should be connected to terminal marked with the grounding symbol on PSU enclosure. Operation of PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause damage to equipment or an electric shock.

4. Connect battery in correct polarity.
5. Reinstall the mounting plate together with the switch.
6. Connect the required network cabling.
7. Switch on the 230 V supply.
8. After installing and checking proper working, the enclosure can be closed.

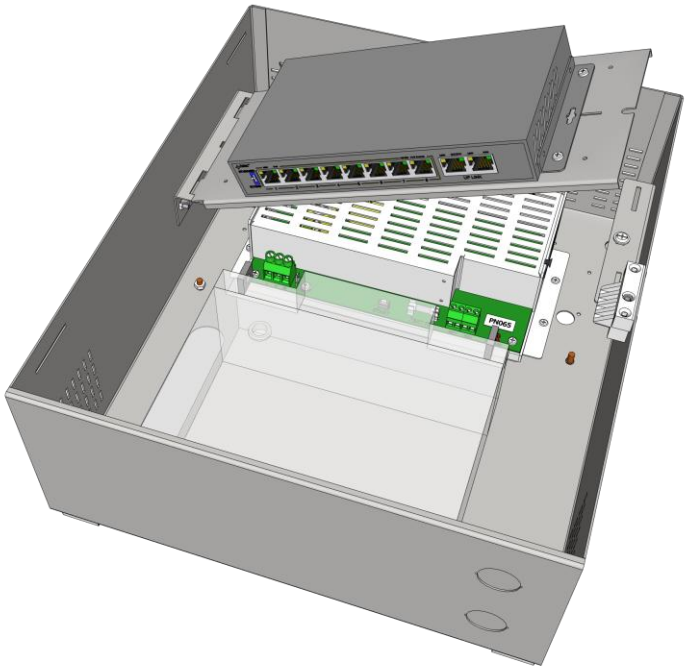
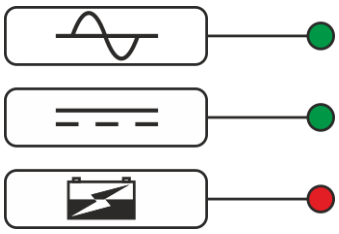


Fig.4. Example of installation.

3. Operating status indication.

The power supply unit features LED status indication.

3.1. Optical indication.



Green LED AC:
- **ON - the PSU is supplied with 230 V**
- **OFF - no 230 V power, battery-assisted operation**

Green LED DC:
- **ON - presence of voltage in output of PSU**
- **OFF - no voltage in the output of the PSU**

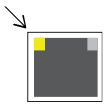
Red LED CHARGE:
- **OFF - no battery charging**
- **ON - battery charging process**

Moreover, PSU is equipped with LED indicating presence of voltage at PSU output, located on PCB of PSU module.

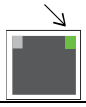
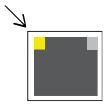
3.2. Optical indication of switch operation.

Table 6. Operation indication.

OPTICAL INDICATION AT THE PoE PORTS (1 – 8)

GREEN LED LIGHT **Indication of the PoE power supply at the RJ45 ports** 	**OFF** - no power supply at the RJ45 port (no device connected or the connected device is not compliant with the IEEE 802.3af/at standard) **ON** - power supply at the RJ45 port **BLINKING** - short-circuit or output overload
YELLOW LED LIGHT (LINK) **Indication of the connection status of LAN devices operating at 10/100 Mb/s and data transmission** 	**OFF** - no connection **ON** - connected device: 10/100 Mb/s **BLINKING** - data transmission

OPTICAL INDICATION AT THE UPLINK PORT

GREEN LED LIGHT 	Port on the left: **OFF** - no power supply to the switch **ON** - switch operates properly	Port on the right: **OFF** - normal operation **ON** - Long Range mode active
YELLOW LED LIGHT (LINK) **Indication of the connection status of LAN devices operating at 10/100 Mb/s and data transmission** 	**OFF** - no data transmission **ON** - connected device: 10/100 Mb/s **BLINKING** - data transmission	

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 19V 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 the case of significant dust rate, its interior is recommended to be cleaned with compressed air. When replacing the fuse, use replacements that comply with the recommended specifications.



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! *Device works with a lead-acid battery (SLA). After the operation period they must not be thrown but recycled according to the applicable law.*

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