CODE: **EN54-7A17** v.1.1/IV
TYPE: **EN54 27,6V/7A/2x17Ah**
power supply for fire alarm systems

EN**

RED POWER

CNBOP-PIB 1438

Certificate of constancy of performance
CNBOP-PIB No 1438-CPR-0385
Certificate of admittance CNBOP-PIB No 2174/2014

"This product is suitable for the systems designed in compliance with the standards EN 54-4 and EN 12101-10"

Requirements	Requirements according to standards	PSU EN54-7A17
External Power Supply failure indication	YES	YES
Two independent power supply outputs protected against short-circuit	YES	YES
Temperature-compensated battery charging	YES	YES
Measurement of the resistance of the battery circuit	YES	YES
Low battery indication	YES	YES
Deep discharge battery protection	YES	YES
Protection against short-circuit of the battery terminals	YES	YES
Blown battery fuse indication	YES	YES
Charging circuit failure indication	YES	YES
Low output voltage indication	YES	YES
High output voltage indication	YES	YES
Indication of power supply failure	YES	YES
Overvoltage protection	YES	YES
Short-circuit protection	YES	YES
Overload protection	YES	YES
Output of collective failure ALARM	YES	YES
EPS technical output	YES	YES
APS technical output	YES	YES
PSU technical output	-	YES
Input of an external failure indication EXTi	-	YES
Controlled relay output EXTo	-	YES
Remote battery test	-	YES
230V AC mains supply voltage measurement	-	YES
LED optical indication	-	YES
Tamper indicating enclosure opening	-	YES

PSU features:

- In accordance with standards: EN 54-4, EN12101-10
- 27,6V DC/ 7A uninterruptible power supply
- battery housing for two 17Ah/12V batteries
- independently protected outputs AUX1 and AUX2
- high efficiency 82%
- low level of voltage ripple
- microprocessor-based automation system
- intelligent PSU overload protection
- measurement of the resistance of the battery circuit
- automatic temperature-compensated charging
- battery test
- two-stage battery charging process
- accelerated battery charging
- monitoring of the continuity of the battery circuit
- monitoring of the battery voltage
- monitoring of the battery fuse
- monitoring of charging and maintenance of the batteries
- deep discharge battery protection (UVP)
- battery overcharge protection
- battery output protection against short-circuit and reverse connection
- monitoring of the load current
- output voltage control
- fuse monitoring of AUX1and AUX2 outputs
- 230V AC mains supply voltage measurement
- „SERIAL" communication port with implemented MODBUS RTU protocol
- Power Security" is a free application for remote monitoring of power supplies (for PC and Android Phones)
- remote monitoring (options: WiFi, Ethernet, RS485, USB)
- remote battery test (additional modules required)
- cooperation with optional EN54-LB4 or EN54-LB8 fuse modules
- optical indication of PSU overload OVL
- acoustic indication of failure
- adjustable delay for 230V AC power loss indication
- relay output of collective failure ALARM
- input of collective failure EXTi
- controlled relay output EXTo
- technical inputs/outputs with galvanic isolation
- EPS technical output indicating 230V AC power loss
- PSU technical output indicating PSU failure
- APS technical output indicating battery failure
- internal memory of PSU operating status
- optical indication – LED panel
  - output current readings
  - output voltage readings: AUX1, AUX2
  - resistance of the battery circuit
  - 230V AC mains voltage readings
  - failure codes with history
- protections:
  - SCP short-circuit protection
  - OLP overload protection
  - OHP overheat protection
  - OVP overvoltage protection
  - Surge protection
  - Antisabotage protection - Tamper
- closing the enclosure - lock
- convection cooling
- warranty - 5 years from the production date

General description

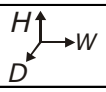
The buffer power supply has been designed for an uninterrupted supply of fire alarm systems, smoke and heat control systems, fire protection equipment and fire automatics requiring stabilized voltage of 24V DC (± 15%). The PSU is fitted with two independently protected outputs AUX1 and AUX2, which supply voltage of **27,6V DC** with a total output current**:**

Continuous operation
Output current Imax a=6A

Instantaneous operation
Output current Imax b=7A

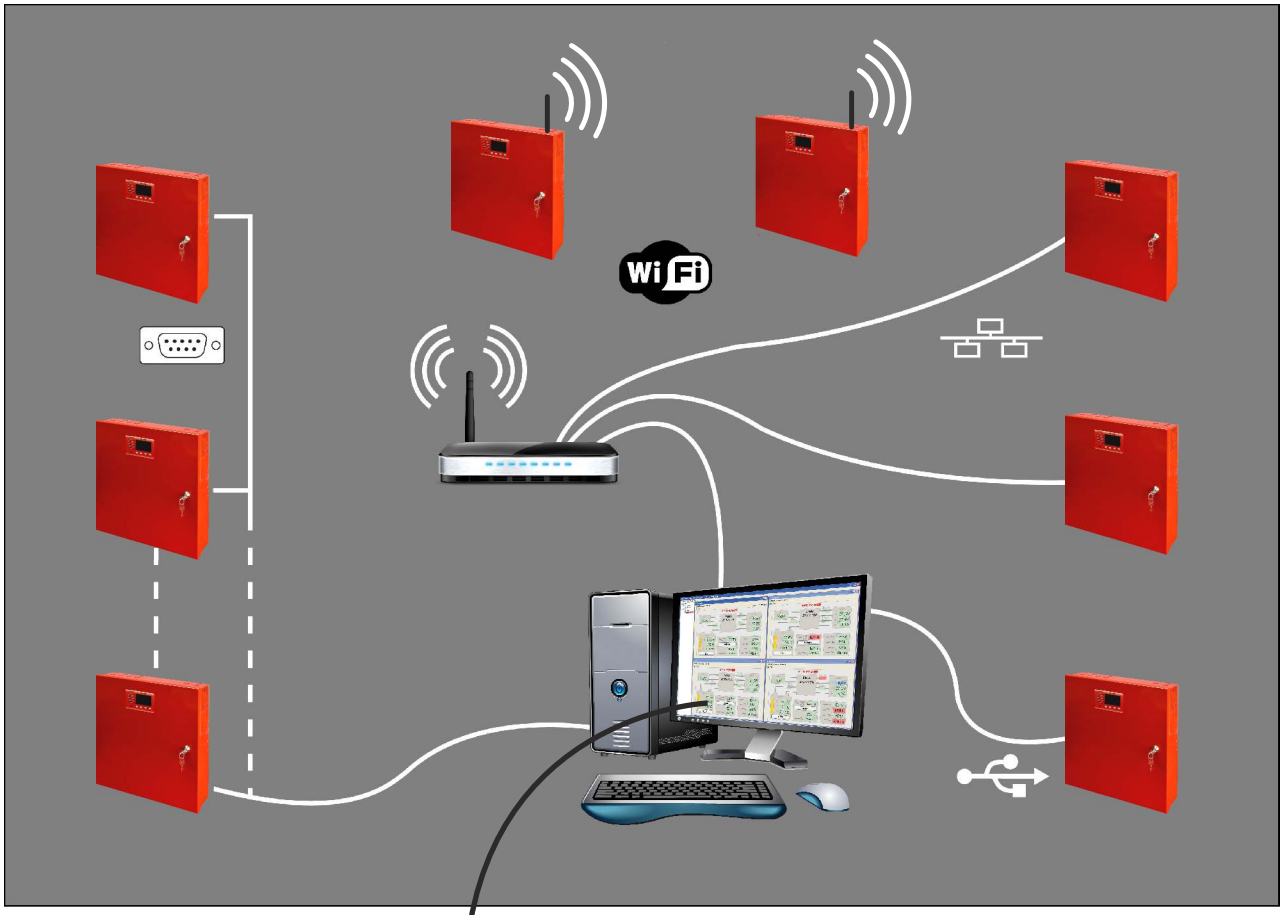
In case of power loss, the PSU switches to battery power, providing uninterruptible power supply. The PSU is enclosed in a metal casing (RAL 3001 - red) with battery housing for two 17Ah/12V batteries. The PSU works with maintenance-free lead acid batteries made with AGM technology or gel technology.

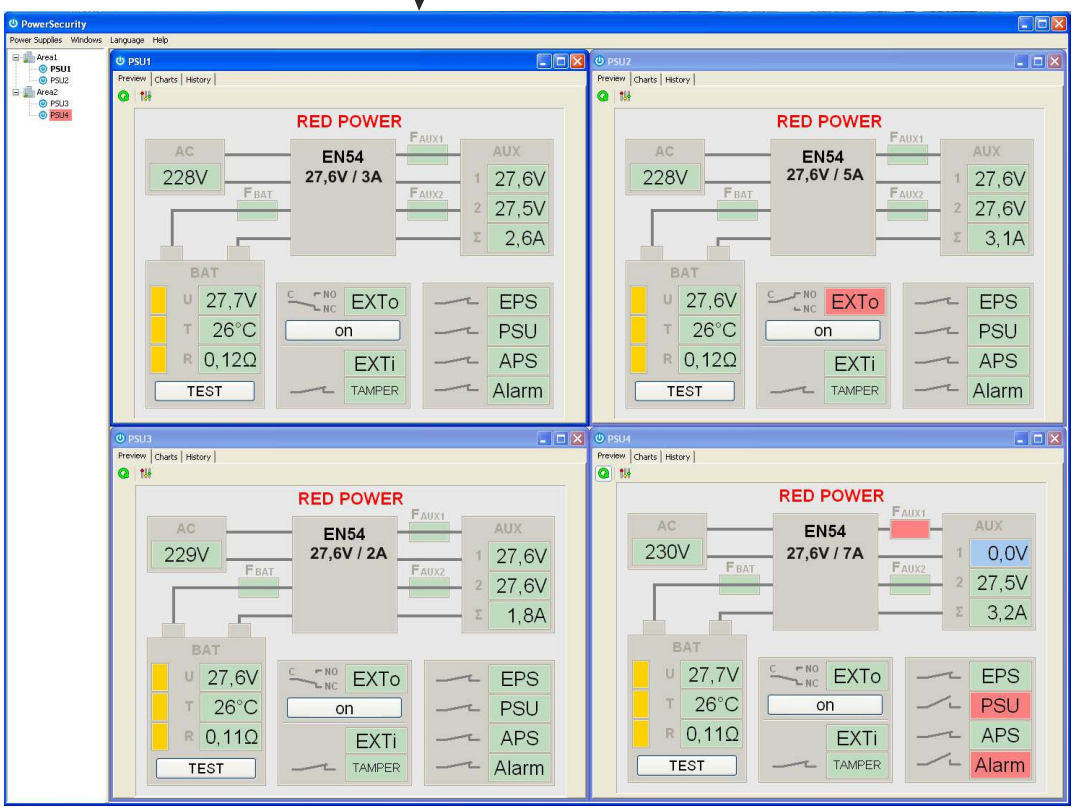
EN54/LED series power supply unit
Power supply for fire alarm systems 27,6V DC

Functional class EN 12101-10:2007	A
Mains supply	230V AC (-15%/+10%)
Current consumption	1,36A @230V AC
Power frequency	50Hz
PSU's power	193W
Efficiency	82%
Output voltage at 20 ºC	22,0V÷ 27,6V DC – buffer operation 20,0V÷ 27,6V DC – battery-assisted operation
Output current	**Continuous operation: Imax a=6A** **Instantaneous operation: Imax b=7A**
Maximal resistance of the battery circuit	300m Ohm
Ripple voltage	100mV p-p max.
Current consumption by the PSU during battery-assisted operation	I = 78mA Caution ! If the power supply is connected with the communication interface or fuse module, additional current consumption should be considered.
Battery charging current	1A
Coefficient of temperature compensation of the battery voltage	-40mV/ ºC (-5 ºC ÷ 40 ºC)
Low battery voltage indication	Ubat < 23V, during battery mode
Overvoltage protection OVP	U>30,5V, disconnection of the output voltage (AUX+ disconnection), automatic return
Short-circuit protection SCP	F8A – current limit, F_{AUX} melting fuse (failure requires fuse replacement)
Overload protection OLP	Hardware - Software
Battery circuit protection SCP and reverse polarity connection	F10A- current limit, F_{BAT} melting fuse (failure requires fuse replacement)
Deep discharge battery protection UVP	U<20V (± 2%) – disconnection (+BAT) of the batteries,
TAMPER output indicating enclosure opening	Microswitch TAMPER
Technical outputs: **- EPS FLT; indicating AC power failure**	- type – electronic, max 50mA/30V DC, galvanic isolation 1500V_{RMS} - delay time approximately 10s/1m/10m/30m (+/-5%) – configured from the LED panel
- APS FLT; indicating battery failure **- PSU FLT; indicating PSU failure**	- type – electronic, max 50mA/30V DC, galvanic isolation 1500V_{RMS}
- ALARM; indicating collective failure	- type – relay: 1A@ 30VDC/50VAC **CAUTION!** In Fig.2 the set of contacts shows a potential-free status of the relay, which corresponds to power supply failure.
EXTi technical input	Voltage „ON" – 10÷30V DC Voltage „OFF" – 0÷2V DC Level of galvanic isolation 1500V_{RMS}
EXTo relay output	1A@ 30V DC /50V AC
Optical indication:	- LEDs on the PCB of the power supply unit, - LED panel • output current readings • output voltage readings: AUX1, AUX2 • resistance of the battery circuit • mains supply voltage • failure codes and history
Acoustic indication:	- piezoelectric indicator ~75dB /0,3m
Fuses: **- F_{MAINS}** **- F_{BAT}** **- F_{AUX1}** **- F_{AUX2}**	 T 6,3A / 250V F 10A / 250V F 8A / 250V F 8A / 250V
Additional equipment (not included)	- USB-TTL „INTU" interface; USB-TTL communication - RS485 „INTR" interface; RS485 communication - USB-RS485 „INTUR" interface; USB-RS485 communication - Ethernet „INTE" interface; Ethernet communication - WiFi "INTW" interface; WiFi wireless communication - RS485-Ethernet "INTRE" interface; RS485-Ethernet communication - RS485-WiFi "INTRW" interface; RS485-WiFi wireless communication
Operating conditions	2nd environmental class (EN12101-10:2007), -5 °C÷+75 °C
Enclosure	Steel plate DC01 1,2mm, color: RAL 3001 (red)
Enclosure dimensions	420 x 420 x 102 (WxHxD) [mm] (+/- 2)
Net/gross weight	10,4/11,7 kg
Fitting battery	2x17Ah/12V (SLA) max. 400 x 180 x 95mm (WxHxD) max 
Closing	Key lock
Certificates, declarations, warranty	Certificate of constancy of performance CNBOP-PIB No 1438-CPR-0385, certificate of approval CNBOP-PIB No 2174/2014, CE, RoHS, 5 years from the production date
Notes	The enclosure does not adjoin the mounting surface so that cables can be led. Convection cooling.

Parameters remote control system.

(additional modules required)



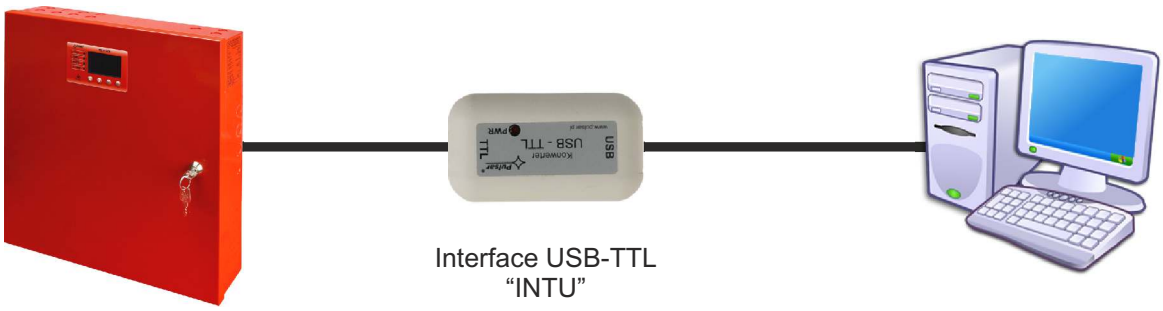


Remote monitoring (options: Wi-Fi, Ethernet, RS485, USB).

The PSU has been adjusted to operate in a system that requires a remote control of the parameters in a monitoring centre. Transmitting data concerning PSU status is possible due to an additional, external communication module responsible for communication in Wi-Fi, Ethernet or RS485 standard. It is possible to connect the PSU and the computer via the USB –TTL interface.
Different connection topologies, presented later in this chapter, are only a part of possible communication schemes. More examples can be found in the manuals dedicated to individual interfaces.

Communication via the USB-TTL interface.

The easiest way of communication between the PSU and the computer is provided by the USB-TTL "INTU" interface. This interface allows direct connection between the computer and the PSU and is recognizable by the operating system as a virtual COM port.

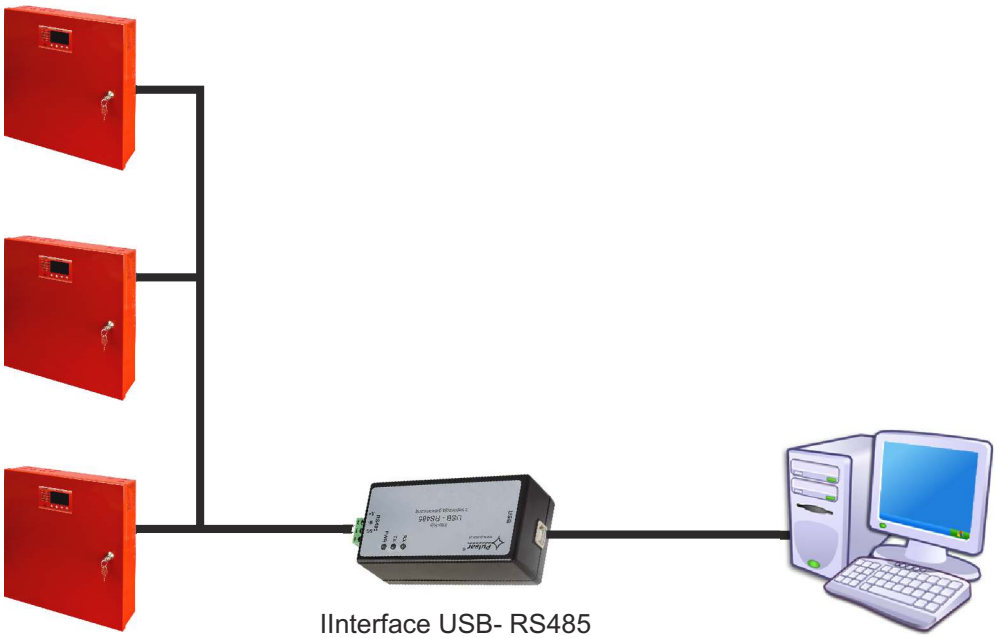


Interface USB-TTL
"INTU"

USB-TTL communication using the USB-TTL „INTU" interface.

RS485 network communication.

Another type of network communication is the RS485 communication using two-wire transmission path. To achieve this kind of data exchange, the PSU should be equipped with the additional RS485 TTL "INTR" interface, converting data from the PSU into the RS485 standard and the USB-RS485 "INTUR" interface, converting data from the RS485 network to the USB. Offered interfaces are galvanically isolated and protected against surges.

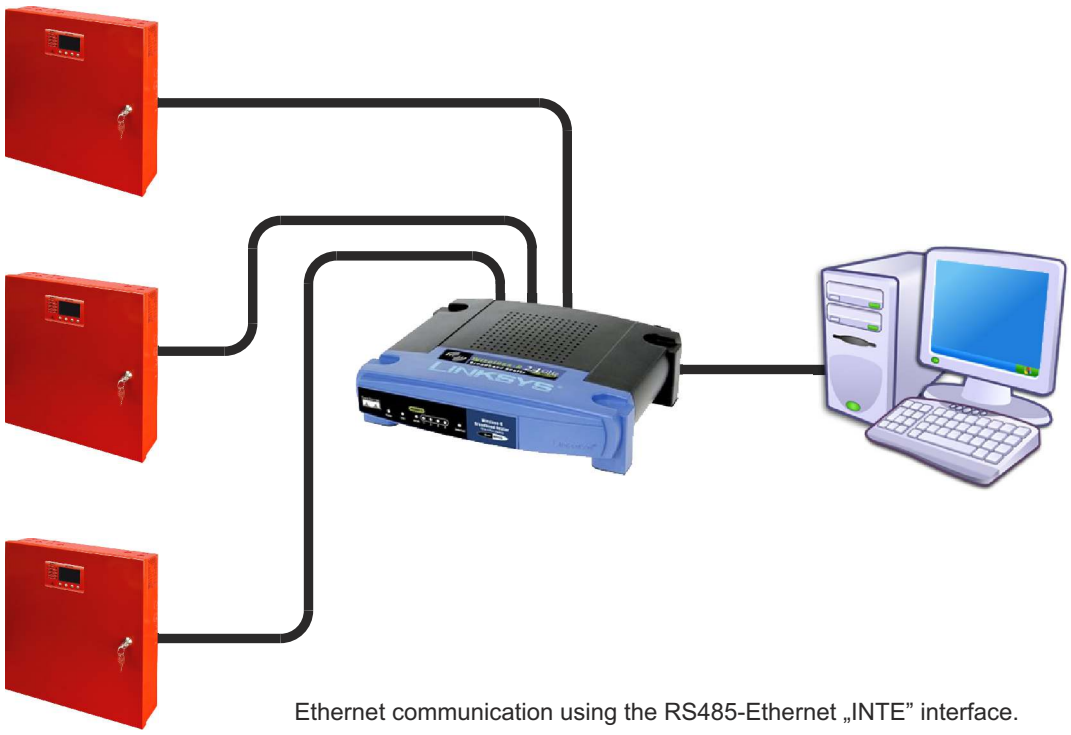


IInterface USB- RS485
"INTUR"

RS485 communication using the „INTR" and „INTUR" interfaces.

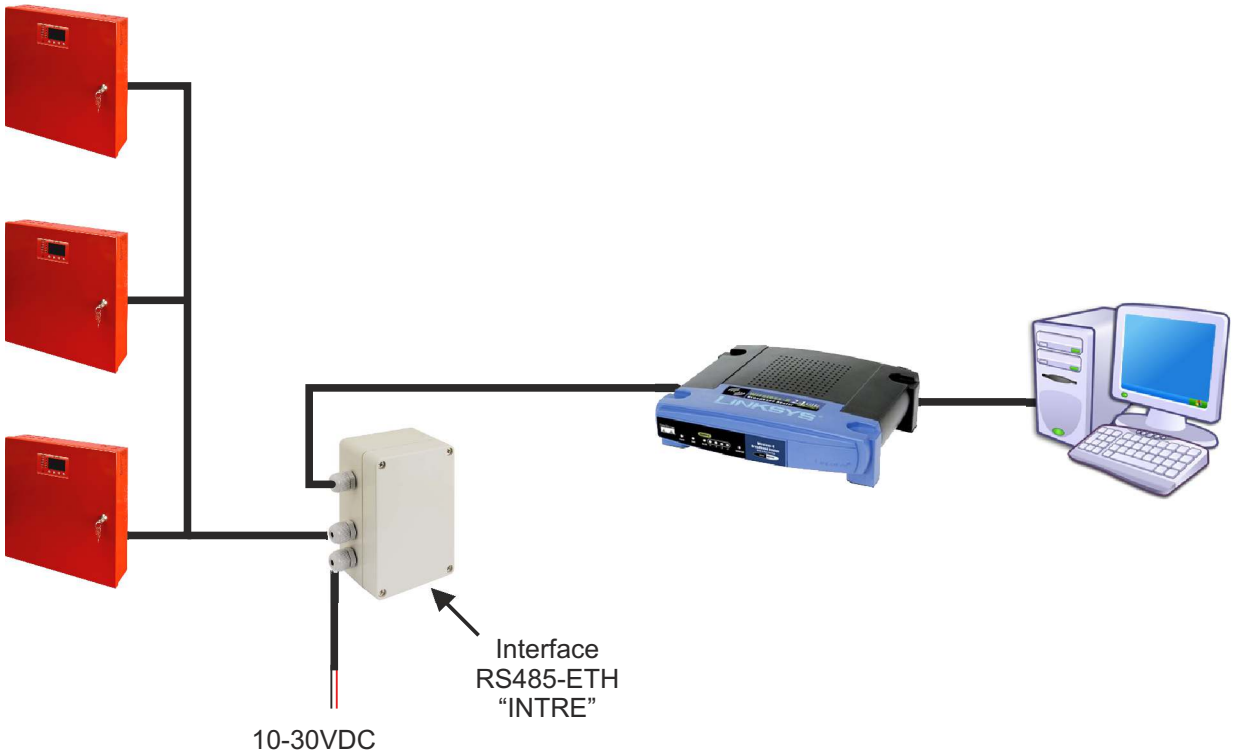
ETHERNET network communication.

Communication in the Ethernet network is possible due to the additional interfaces: Ethernet „INTE" and RS485-ETH „INTRE", according to the IEEE802.3 standard.
The Ethernet „INTE" interface features full galvanic isolation and protection against surges. It should be mounted inside the enclosure of the PSU.



Ethernet communication using the RS485-Ethernet „INTE" interface.

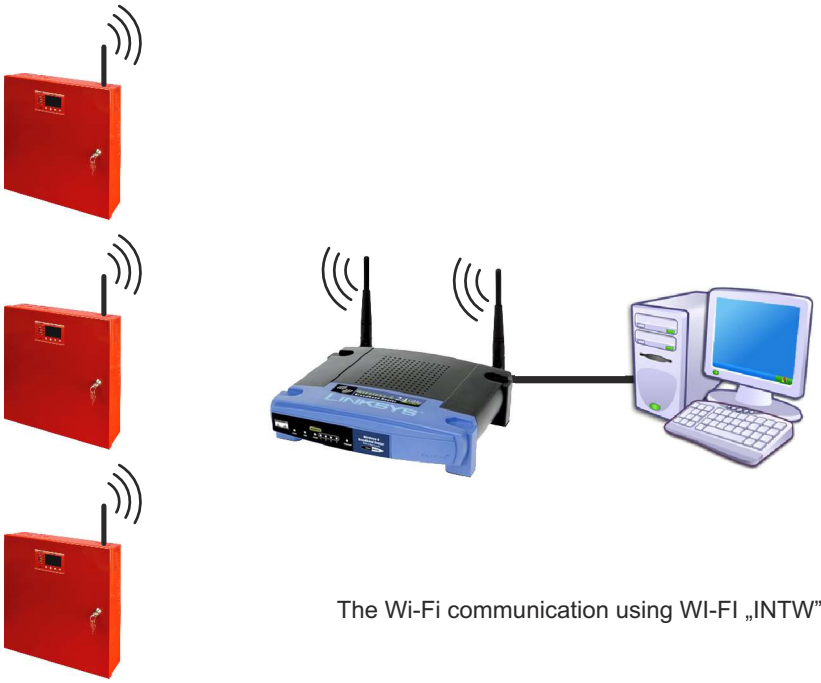
The RS485-ETHERNET „INTRE" interface is a device used to convert signals between the RS485 bus and the Ethernet network. For proper operation, the unit requires an external power supply in the range of 10÷30V DC e.g. drawn from a PSU of the EN54 series. The physical connection of the interface takes place under galvanic isolation. The unit is mounted in a hermetic enclosure protecting against adverse environmental conditions.



Ethernet communication using the RS485-Ethernet „INTRE" interface.

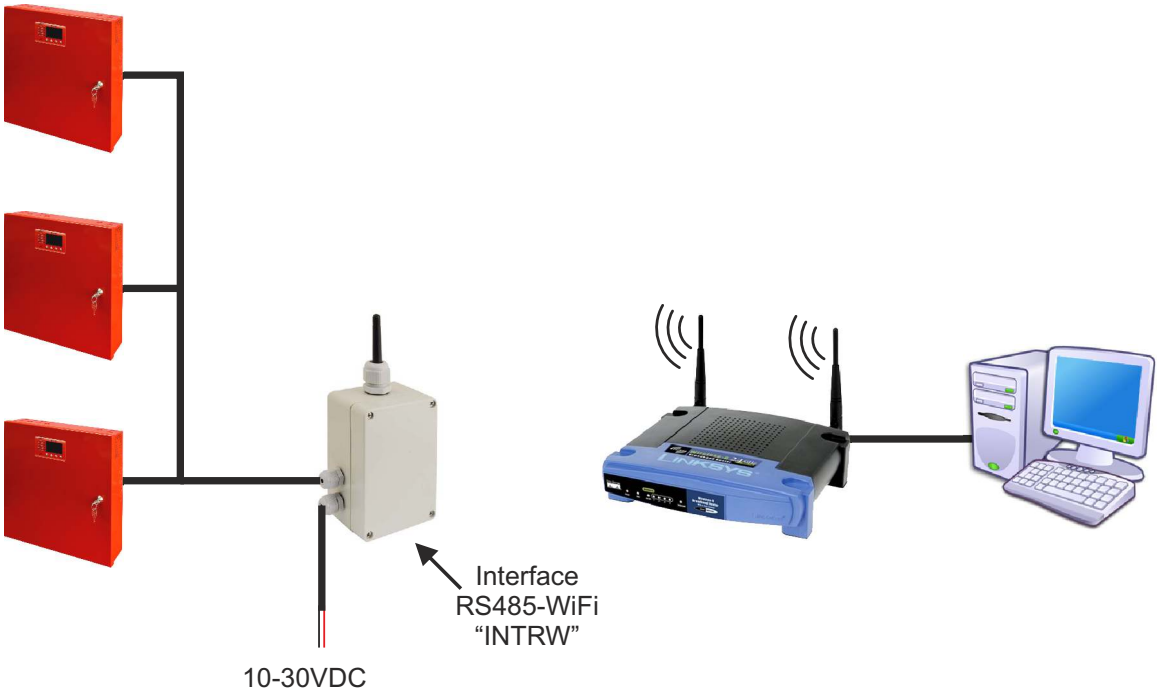
The Wi-Fi wireless communication.

The Wi-Fi wireless communication can be implemented on the basis of additional interfaces: WI-Fi 'INTW' and RS485-WiFi, operating within 2,4GHz frequency band, according to the IEEE 802.11 bgn standard.
The WiFi 'INTW' interface shall be mounted in a selected location inside the enclosure so that the antenna is exposed to the outside.



The Wi-Fi communication using WI-FI „INTW" interface.

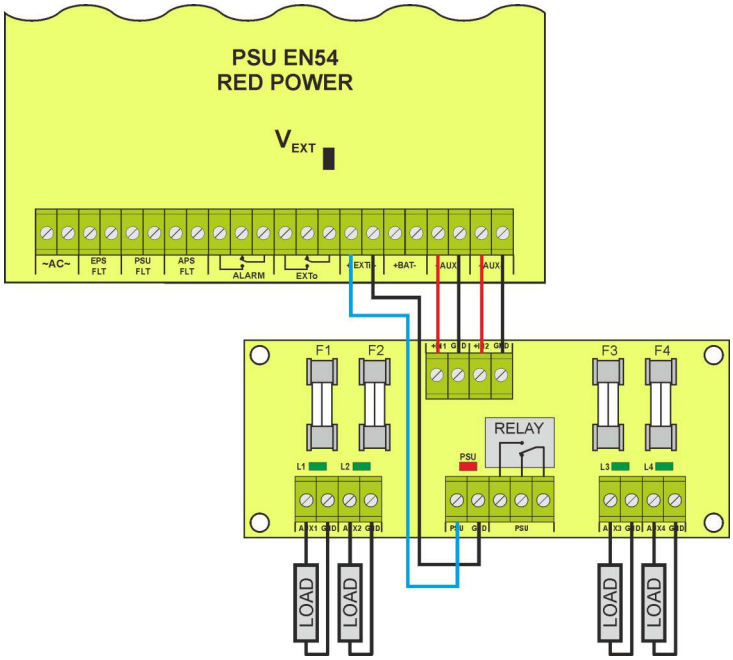
The RS485-WiFi „INTRW" interface is a device used to convert signals between the RS485 bus and the WiFi network. For proper operation, the unit requires an external power supply in the range of 10÷30V DC e.g. drawn from a PSU of the EN54 series. The physical connection of the interface takes place under galvanic isolation. The unit is mounted in a hermetic enclosure protecting against adverse environmental conditions.



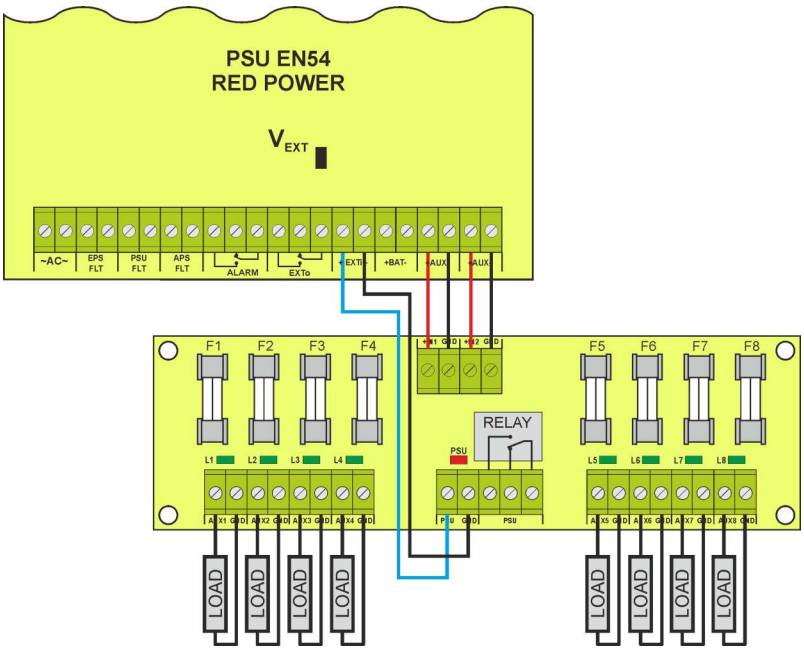
The The Wi-Fi communication using the RS485-WIFI „INTRW" interface.

Fuse modules EN54-LB4 and EN54-LB8

Fuse modules EN54-LB4 and EN54-LB8 allow to connect 4 or 8 receivers to the PSU. Output state is indicated by green LEDs.
Blown fuse signal is transmitted to the input of collective failure EXTi (ALARM) and saved in the internal memory of PSU.
The PSU's relay output can also be used for remote control, including external optical indication.



The connection of fuse module: EN54-LB4.



The connection of fuse module: EN54-LB8.