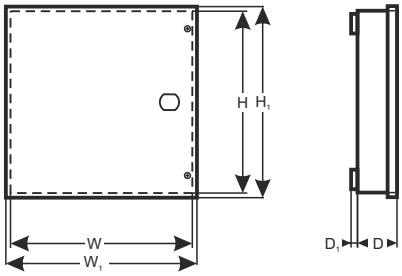
PSBEN/LED series power supply unit
Buffer, switch mode power supply unit 27,6V DC Grade 3

EN**

CODE: **PSBEN 5024C** v.1.1/VIII
TYPE: **PSBEN 27,6V/5A/2x17Ah/EN buffer, switch mode power supply unit Grade 3.**

BLACK POWER



This product is suitable for the systems designed in compliance with the EN 50131-6 grade 1, 2 or 3 and II environmental class."

Functional requirements	Requirements of EN 50131-6			PSBEN5024C
	Grade 1	Grade 2	Grade 3	
EPS network absence	YES	YES	YES	YES
Battery low voltage	YES	YES	YES	YES
Protection against full battery discharge	-	-	YES	YES
Battery fault	-	-	YES	YES
No battery charge	-	-	YES	YES
Output low voltage	-	-	YES	YES
Output high voltage	-	-	YES	YES
PSU fault	-	-	YES	YES
Surge protection	-	-	YES	YES
Short circuit protection	YES	YES	YES	YES
Overload protection	YES	YES	YES	YES
Output fuse activation	-	-	-	YES
Battery fuse fault	-	-	-	YES
EPS technical output	YES	YES	YES	YES
APS technical output	YES	YES	YES	YES
PSU technical output	YES	YES	YES	YES
Collective failure input	-	-	-	YES
Remote battery test	-	-	-	YES
Tamper resistance – enclosure opening	YES	YES	YES	YES
Tamper resistance – detachment from the mounting surface	-	-	YES	YES

PSU features:

- EN50131-6 compliance, 1÷3 grades and II environmental class
- mains supply of ~230 V
- uninterrupted voltage of 27,6 V DC
- fitting battery: 2x17 Ah/12 V
- high efficiency 83%
- PSU current efficiency:
  - 1,4 A – for grades 1 , 2 *
  - 0,56 A – for grades 3 **
  - 5 A – for general use ***

  (see: chapter 3.1)
- low level of voltage ripple
- microprocessor-based automation system
- intelligent management of PSU's output power level
- 'SERIAL' communication port with implemented MODBUS RTU protocol
- remote monitoring (option: Wi-Fi, Ethernet, RS485, USB)
- free program - 'PowerSecurity' for monitoring the PSU operation parameters
- load current control
- output voltage control
- output fuse status control
- dynamic battery test
- battery circuit continuity control
- battery voltages control
- battery fuse status control
- battery charge and maintenance control
- deep discharge battery protection (UVP)
- battery overcharge protection
- battery output protection against short circuit and reverse polarity connection
- jumper selectable battery charging current 0,6 A/1,5 A/2,2 A/3 A
- remote battery test (additional module required)
- START button for battery activation
- STOP button for disconnecting during battery-assisted operation
- optical indication – LED panel
  - output current readings
  - output voltage readings
  - failure codes with history
- optical indication of PSU overload OVL
- acoustic indication of failure
- adjustable times indicating AC power failure
- technical inputs/outputs with galvanic isolation
- EXT IN input of collective failure
- EPS technical output indicating AC power loss
- PSU technical output indicating PSU failure
- APS technical output indicating battery failure
- internal memory of PSU operating status
- protections:
  - SCP short circuit protection
  - OLP overload protection
  - OHP overheat protection
  - OVP over voltage protection
  - surge protection
  - against tampering: unwanted opening of the enclosure or detachment from the mounting surface
- convectional cooling
- warranty – 5 year from the production date

DESCRIPTION

The buffer power supply is designed in accordance with the requirements of the EN 50131-6 standard, grade 1÷3 and II environmental class. It is intended for an uninterrupted supply of alarm system devices requiring stabilized voltage of 24 V DC (+/-15%).

Depending on a required protection level of the alarm system in the installation place, the PSU efficiency and the battery charging current should be set as follows:

* Grade 1, 2 - standby time 12h

Output current 1,4 A + 3 A battery charge

** Grade 3 - standby time 30h if the faults of the main power source are reported to the Alarm Receiving Centre - ARC (in accordance with 9.2 – EN 50131-1 standard).

Output current 0,56 A + 3 A battery charge

- standby time 60h if the faults of the main power source are reported to the Alarm Receiving Centre - ARC (in accordance with 9.2 – EN 50131-1 standard).

Output current 0,28 A + 3 A battery charge

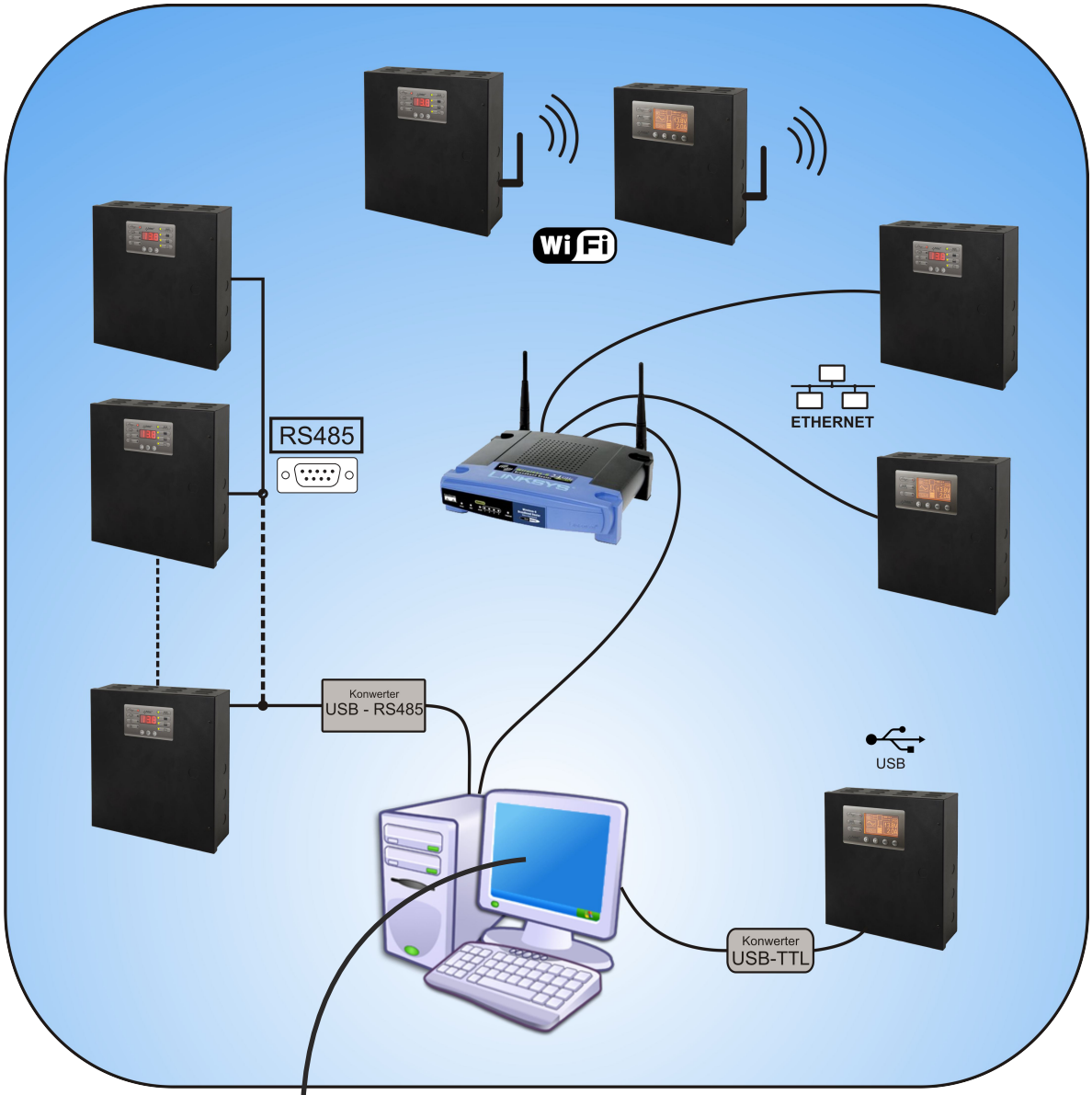
*** General use – if the PSU is not mounted in an installation complaint with the EN-50131 standard, the acceptable current efficiency amounts to:

1. Output current 5 A + 0,6 A battery charge
2. Output current 4,1 A + 1,5 A battery charge
3. Output current 3,4 A + 2,2 A battery charge
4. Output current 2,6 A + 3 A battery charge
Total current of the receivers + battery: 5,6 A max.

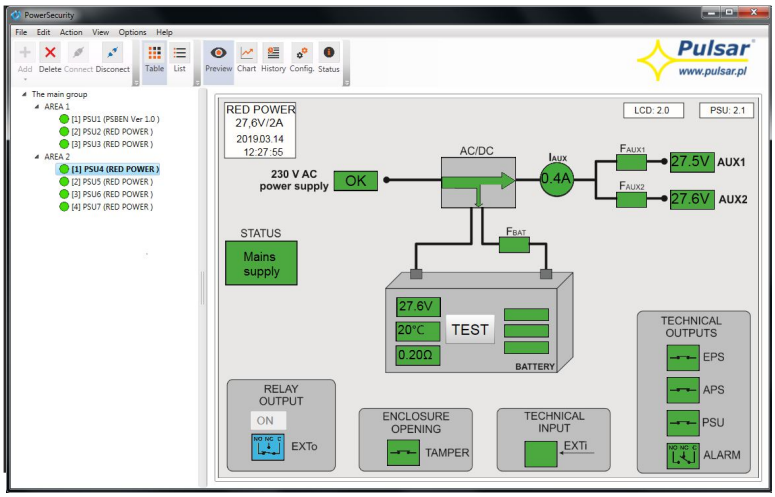
In case of power decay, a battery back-up is activated immediately. The PSU is housed in a metal enclosure (color: RAL 9005 - black) with battery space for a 2x17 Ah/12 V battery. It is fitted with micro switches indicating unwanted door opening (front panel) and detachment from the mounting surface.

SPECIFICATIONS	
PSU type	A, protection class 1÷3, II environmental class
Mains supply	~230 V; 50 Hz
Current consumption	1,1 A
PSU's power	155 W
Efficiency	83%
Output voltage	22 V÷27,6 V DC – buffer operation 20 V÷27,6 V DC – battery-assisted operation
Output current	**- for grades 1, 2:** **Io = 1,4 A + 3 A battery charging** **- for grade 3:** **Io = 0,56 A + 3 A battery charging -** (connection with ARC required, compliant with 9.2 – EN 50131-1) **Io = 0,28 A + 3 A battery charging** **- for general use:** **Io = 5 A + 0,6 A battery charging** **Io = 4,1 A + 1,5 A battery charging** **Io = 3,4 A + 2,2 A battery charging** **Io = 2,6 A + 3 A battery charging**
Output voltage adjustment range	24 V÷ 29 V
Ripple voltage	160 mV p-p max.
Current consumption by the PSU systems during batter-assisted operation	I = 22mA
Battery charging current	0,6 A/1,5 A/2,2 A/3 A –I_{BAT} jumper selectable
Short circuit protection SCP	Electronic – current limitation and / or F_{BAT} fuse failure in the battery circuit (requires fuse replacement) Automatic return
Overload protection OLP	Program - equipment
Surge protection	varistors
Over voltage protection OVP	U>31 V, disconnection of the output voltage, automatic return (AUX+ disconnection)
Battery circuit protection SCP and reverse polarity connection	T6,3 A- current limiting, F_{BAT} fuse (failure requires fuse-element replacement)
Deep discharge battery protection UVP	U<20 V (± 2%) – disconnection (-BAT) of the battery, configuration with jumper P_{BAT}
Indication of opening the cover of the power supply or detachment from the ground	Micro switch TAMPER
Technical outputs: - EPS FLT; output indicating AC power failure	- type – electronic, max 50mA/30 V DC, galvanic isolation 1500 V_{RMS} - time lag, approx. 5s/140s/17m/2h 20m (+/-5%)
- APS FLT; output indicating battery failure	- type – electronic, max 50mA/30 V DC, galvanic isolation 1500 V_{RMS}
- PSU FLT; output indicating PSU failure	- type – electronic, max 50mA/30 V DC, galvanic isolation 1500 V_{RMS}
EXT IN technical input	Voltage 'on' – 10÷30 V DC Voltage 'off' – 0÷2 V DC Level of galvanic isolation: 1500 V_{RMS}
Optical indication:	- LEDs on the PSU's pcb, - LED panel • output current readings • output voltage readings • failure codes with history
Additional accessories (not included)	- interface USB-TTL 'INTU'; communication: USB-TTL - interface RS485 'INTR'; communication: RS485 - interface USB-RS485 'INTUR'; communication: USB-RS485 - interface Ethernet 'INTE'; communication: Ethernet - interface WiFi "INTW'; wireless communication: Wi-Fi - interface RS485-Ethernet "INTRE'; communication: RS485- Ethernet - interface RS485-WiFi "INTRW'; wireless communication: RS485-WiFi
Operating conditions	2nd environmental class, -10 °C÷40 °C
Enclosure	Steel plate DC01 1mm, colour RAL 9005 (black)
Dimensions	W=400, H=350, D+D_1=92+8 [+/- 2mm] W_1=405, H_1=355 [+/- 2mm]
The dimensions of the battery compartment	380 x 165 x 85mm (WxHxD) max
Net/gross weight	7,1/7,6 kg
Closing	Cheese head screw x2 (at the front), lock assembly possible
Deklarations, warranty	CE, RoHS, 5 year from the production date
Notes	The enclosure does not adjoin the assembly surface so that cables can be led. Convectional cooling.

Parameters remote control system.
(additional modules required)



POWER SECURITY



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. The USB –TTL interface enables the connection between the PSU and the computer.

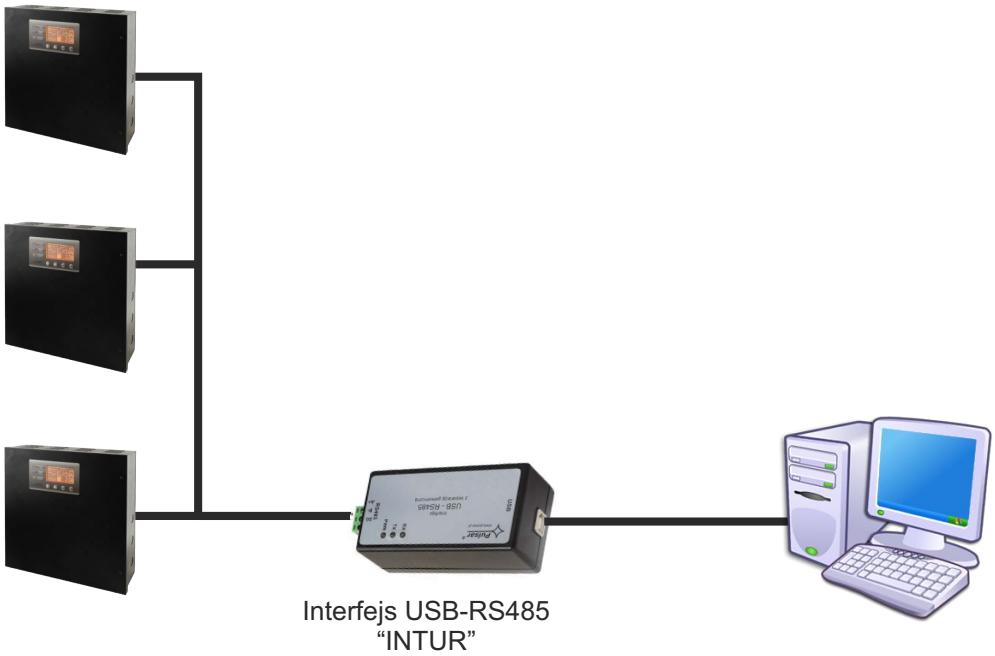
Communication via the USB-TTL interface.

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.

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

RS485 network communication.

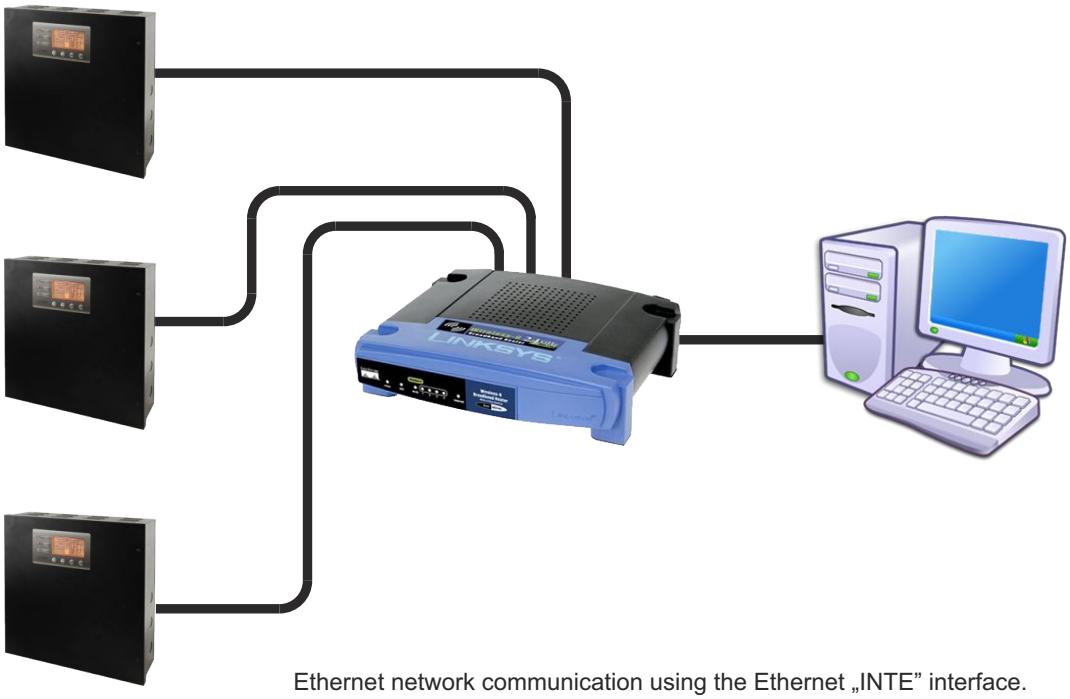
Another type of network communication is the RS485 communication using two-wire transmission path. To achieve this kind of data exchange, the PSU should be equipped with the additional RS485 TTL "INTR" interface, converting data from the PSU into the RS485 standard and the USB-RS485 "INTUR" interface,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



Rs485 communication using the „INTR" and „INTUR" interfaces.

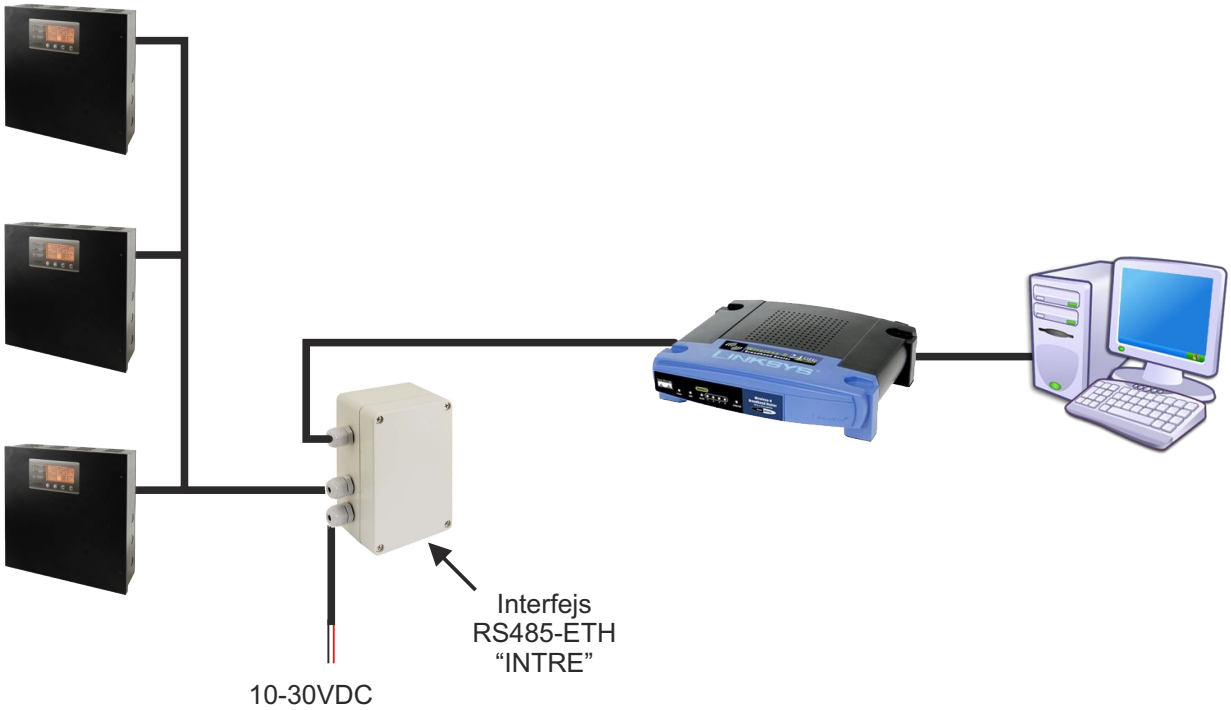
ETHERNET network communication.

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 network communication using the Ethernet „INTE” interface.

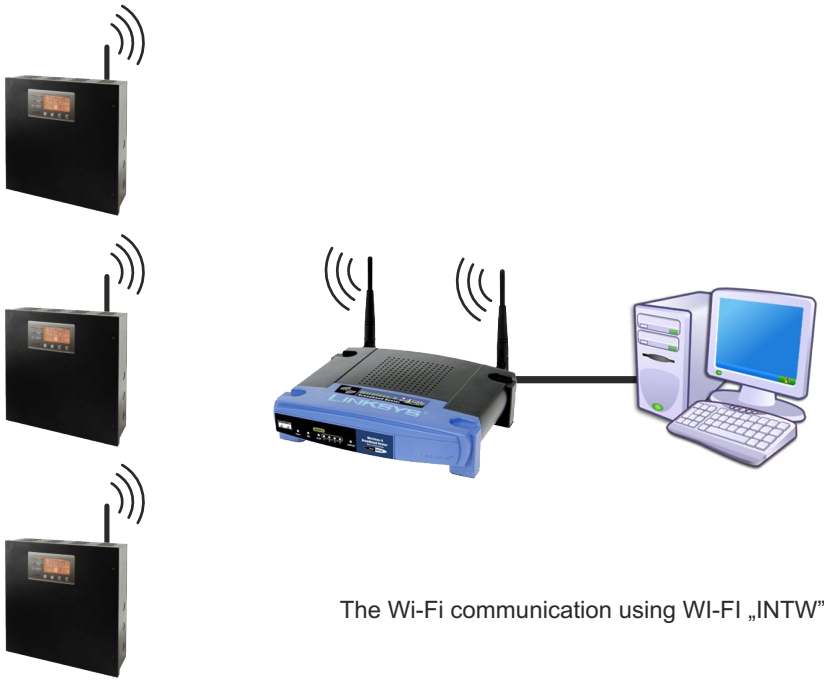
The RS485-WiFi „INTRE” interface is a device used to convert signals between the RS485 bus and the Wi-Fi network. For proper operation, the unit requires an external power supply in the range of 10÷30 V DC e.g. drawn from a PSU of the PSBEN series.The physical connection of the interface takes place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



Ethernet network communication using the RS485 „INTRE” interface.

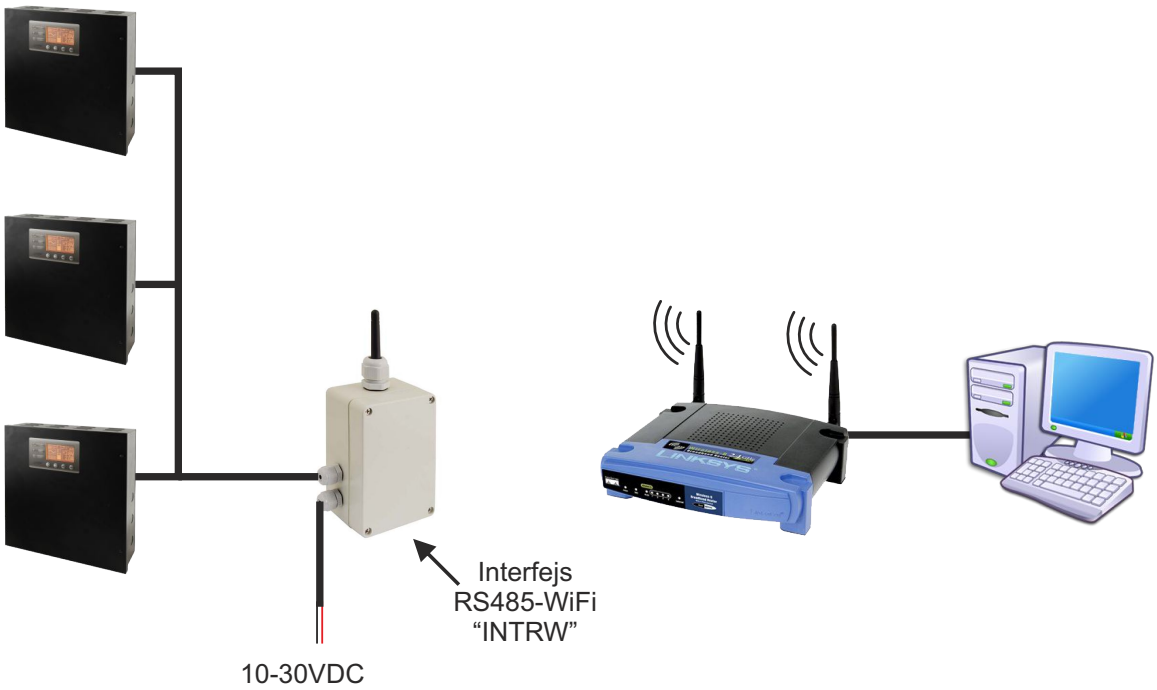
The Wi-Fi wireless communication.

The Wi-Fi wireless communication can be implemented on the basis of additional WI-Fi 'INTW' and RS485-WiFi interfaces, operating within 2,4GHz frequency band, according to the IEEE 802.11 bgn standard. The Wi-Fi "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 Wi-Fi network. For proper operation, the unit requires an external power supply in the range of 10÷30 V DC e.g. drawn from a PSU of the PSBEN 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 Wi-Fi communication using the RS485-WIFI „INTRW" interface.

OPTIONAL POWER SUPPLY CONFIGURATIONS:

1. **Buffer power supply PSBEN 27,6 V/4x1 A/2x17 Ah/INTERFACE**
   - PSBEN 5024C + LB4 4x1 A (AWZ575, AWZ576)+2x17 Ah+INTERFACE
2. **Buffer power supply PSBEN 27,6 V/24 V/2,5 A/2x17 Ah/INTERFACE**
   - PSBEN 5024C + RN25024 (27,6 V/24 V)+2x17 Ah+INTERFACE
3. **Buffer power supply PSBEN 27,6 V/24 V/4x0,5 A/2x17 Ah**
   - PSBEN 5024C + RN25024 (27,6 V/24 V)+LB4 4x0,5 A (AWZ575, AWZ576)+2x17 Ah