

CODE: **Power supplies EN54C-LCD series** v.1.0/I  
TYPE: **Power supplies for fire alarm systems and smoke and heat control systems.**

**PL**

**RED POWER plus**



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

| Functional requirements                                              | Requirements according to standards | Power supplies EN54C series |
|----------------------------------------------------------------------|-------------------------------------|-----------------------------|
| Two independent power sources                                        | YES                                 | YES                         |
| EPS network 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                         |
| Recharging the battery to 80% of the rated capacity within 24 hours  | YES                                 | YES                         |
| Deep discharge battery protection                                    | YES                                 | YES                         |
| Short-circuit protection of battery terminals                        | YES                                 | YES                         |
| Battery fuse failure indication                                      | YES                                 | YES                         |
| Charging circuit failure indication                                  | YES                                 | YES                         |
| Short-circuit protection                                             | YES                                 | YES                         |
| Overload protection                                                  | YES                                 | YES                         |
| Output of collective failure ALARM                                   | YES                                 | YES                         |
| EPS technical output                                                 | YES                                 | YES                         |
| Low output voltage indication                                        | -                                   | YES                         |
| High output voltage indication                                       | -                                   | YES                         |
| Indication of power supply failure                                   | -                                   | YES                         |
| Overvoltage protection                                               | -                                   | YES                         |
| Input of an external failure indication EXTi                         | -                                   | YES                         |
| Remote battery test                                                  | -                                   | YES                         |
| Optical indication – LCD panel                                       | -                                   | YES                         |
| Tamper indicating enclosure opening                                  | -                                   | YES                         |

## PSU features

- Compliant with requirements of EN 54-4:2001+A1:2004+ A2:2007 EN 12101-10:2007+AC:2007 standards and pt. 12.2 of Regulation of Minister of Interior and Administration of Republic of Poland of 27.04.2010
- 27,6 V DC uninterruptible power supply
- available versions with **2 A / 3 A / 5 A / 10 A** current efficiencies
- available versions with space for **7 Ah – 65 Ah** batteries
- independently protected outputs AUX1 and AUX2
- high efficiency (up to 89%)
- low level of voltage ripple
- microprocessor-based automation system
- measurement of resistance of battery circuit
- automatic temperature-compensated charging
- automatic battery test
- two-stage battery charging process
- accelerated battery charging
- monitoring of continuity of battery circuit
- monitoring of battery voltage
- monitoring of charging and maintenance of batteries
- deep discharge battery protection (UVP)
- battery overcharge protection
- LoB low battery voltage indication
- battery output protection against short-circuit and reverse connection
- output voltage control
- fuse monitoring of AUX1 and AUX2 outputs
- „SERIAL” communication port with implemented MODBUS RTU protocol and TCP/IP – a list of registers is available
- cooperation with EN54C-LB4 and EN54C-LB8 fuse modules (optional equipment)
- cooperation with EN54C-LS4 and EN54C-LS8 sequential modules (optional equipment)
- relay output of collective failure ALARM
- EPS relay output indicating 230 V power loss
- EXTi input of external failure
- protections:
  - SCP short-circuit protection
  - OLP overload protection
  - OVP overvoltage protection
  - surge protection
  - antisabotage protection – Tamper
- closing enclosure - lock
- convection cooling (forced only in EN54C-10AxxLCD)
- Warranty - 3 years from production date

### **MOREOVER, IN THE VERSION WITH A LCD AND ETHERNET COMMUNICATION**

- optical indication – LCD display
  - display of electrical parameters, e.g. voltage, current, resistance of battery circuit readings
  - failure indication
  - PSU settings adjusted from panel's level
  - adjustable delay for 230 V AC power loss indication
  - 2 levels of password protected access
  - operation memory of PSU
  - failure memory
  - a real-time clock (RTC) with battery backup
- remote monitoring
  - Ethernet communication or RS485 (option)
  - embedded PowerSecurity web application
  - preview of the operating parameters: voltages, currents, temperature and resistance of the battery circuit
  - PSU work history chart from a period of more than 100 days: voltages, currents and resistance of the battery circuit
  - battery operating temperature readings from period up to 5 years
  - event log of up to 2048 power supply failures
  - SSL email encryption
  - remote battery test

### General description.

The buffer power supplies 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 24 V DC ( $\pm 15\%$ ). The power supplies are fitted with two independently protected AUX1 and AUX2 outputs, which provide a voltage of **27,6 V DC** and the total current efficiency depending on the version:

| Power supply model | Battery | Continuous operation<br>I <sub>max a</sub> | Instantaneous operation<br>I <sub>max b</sub> |
|--------------------|---------|--------------------------------------------|-----------------------------------------------|
| EN54C-2A7LCD       | 7 Ah    | 1,6 A                                      | 2 A                                           |
| EN54C-2A17LCD      | 17 Ah   | 1,2 A                                      |                                               |
| EN54C-3A7LCD       | 7 Ah    | 2,6 A                                      | 3 A                                           |
| EN54C-3A17LCD      | 17 Ah   | 2,2 A                                      |                                               |
| EN54C-3A28LCD      | 28 Ah   | 1,8 A                                      |                                               |
| EN54C-5A7LCD       | 7 Ah    | 4,6 A                                      | 5 A                                           |
| EN54C-5A17LCD      | 17 Ah   | 4,2 A                                      |                                               |
| EN54C-5A28LCD      | 28 Ah   | 3,8 A                                      |                                               |
| EN54C-5A40LCD      | 40 Ah   | 3,2 A                                      |                                               |
| EN54C-5A65LCD      | 65 Ah   | 2,4 A                                      |                                               |
| EN54C-10A17LCD     | 17 Ah   | 9,2 A                                      | 10 A                                          |
| EN54C-10A28LCD     | 28 Ah   | 8,8 A                                      |                                               |
| EN54C-10A40LCD     | 40 Ah   | 8,2 A                                      |                                               |
| EN54C-10A65LCD     | 65 Ah   | 7,4 A                                      |                                               |

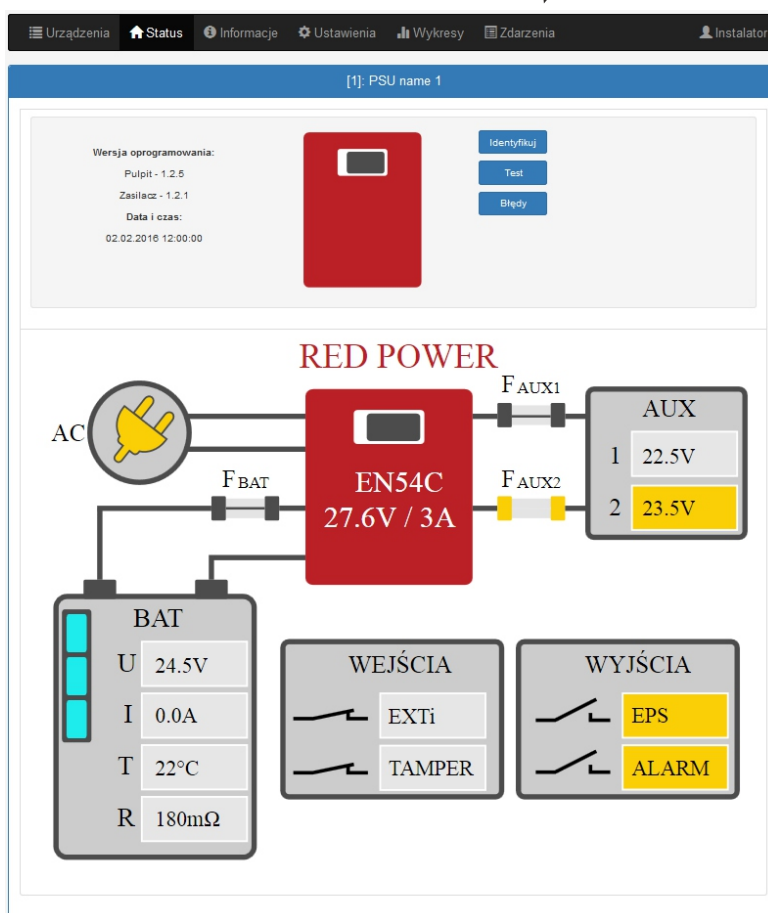
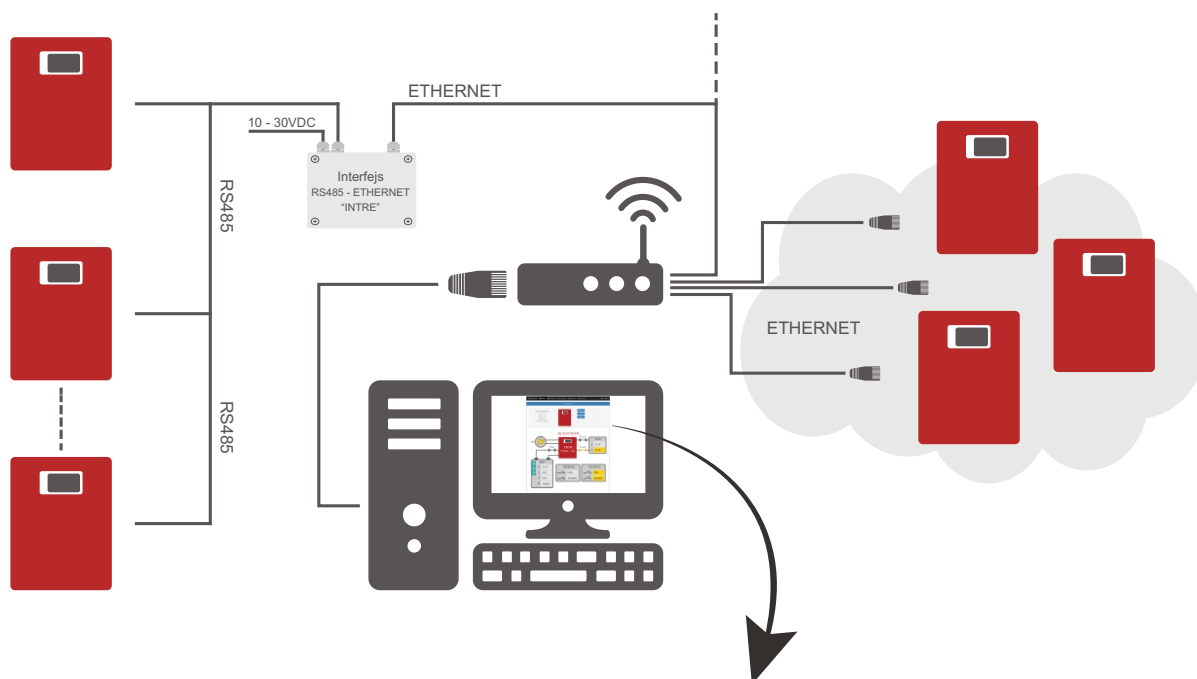
In case of power loss, the PSU switches to battery power, providing uninterruptible power supply.  
 The power supply unit is housed in a metal enclosure (color red RAL 3001) with space for battery.

Power supply units works with maintenance-free lead acid batteries made with AGM technology or gel technology.

|                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Functional class PN-EN 12101-10:2007</b>                                                                              | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Supply voltage</b>                                                                                                    | ~230V; 50Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Efficiency</b>                                                                                                        | 89% max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Output voltage at 20°C</b>                                                                                            | 22V ÷ 27,6V DC – buffer operation<br>20V ÷ 27,6V DC – battery-assisted operation                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Maximal resistance of battery circuit</b>                                                                             | 300m Ohm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Ripple voltage</b>                                                                                                    | 30 ÷ 150mVp-p max.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Current consumption by PSU during battery-assisted operation</b>                                                      | 64 ÷ 97mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Coefficient of temperature compensation of battery voltage</b>                                                        | -36mV/ °C (-5°C ÷ 40°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Low battery voltage indication</b>                                                                                    | U <sub>bat</sub> < 23V, during battery operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Over voltage protection (OVP)</b>                                                                                     | U > 32V ± 2V, automatic recovery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Short-circuit protection SCP</b>                                                                                      | F <sub>AUX1</sub> , F <sub>AUX2</sub> melting fuse (failure requires fuse replacement)                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Overload protection OLP</b>                                                                                           | 105-150% of power supply, automatic recovery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Battery circuit protection SCP and reverse polarity connection</b>                                                    | F <sub>BAT</sub> melting fuse (failure requires fuse replacement)                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Deep discharge battery protection UVP</b>                                                                             | U < 20V (± 2%) – disconnection of the batteries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Tamper indicating enclosure opening</b>                                                                               | Microswitch TAMPER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Technical outputs:</b><br>- EPS FLT; output indicating AC power failure<br><br>- ALARM; indicating collective failure | - relay type: 1 A@ 30 V DC / 50 V AC<br>- delay 10s/1m/10m/30m (+/-5%) – configured from the LCD panel (factory settings 10s)<br>- relay type: 1 A@ 30 V DC / 50 V AC                                                                                                                                                                                                                                                                                                                                                                 |
| <b>EXTi technical input</b>                                                                                              | Closed input – no indication<br>Open input - alarm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Optical indication:</b>                                                                                               | - LEDs on PCB of power supply unit<br>- front panel of power supply unit <ul style="list-style-type: none"> <li>• ~230V</li> <li>• AUX</li> <li>• ALARM</li> </ul> - LCD panel <ul style="list-style-type: none"> <li>• display of electrical parameters, e.g. voltage, current, resistance of circuit</li> <li>• failure indication</li> <li>• PSU settings adjusted from panel's level</li> <li>• operation memory of PSU – 100 days</li> <li>• failure history - 2048 events</li> <li>• real-time clock, battery-backed</li> </ul> |
| <b>Additional equipment (not included)</b>                                                                               | - Interface RS485-TTL „INTR-C”; RS485 communication<br>- Interface RS485-Ethernet “INTRE-C”; RS485-Ethernet communication<br>- Interface INTE-C; Ethernet communication<br>- Fuse modules: EN54C-LB4, EN54C-LB8<br>- Sequential modules: EN54C-LS4, EN54C-LS8                                                                                                                                                                                                                                                                         |
| <b>Operating conditions</b>                                                                                              | I environmental class (PN-EN12101-10:2007), -5 °C÷40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Enclosure</b>                                                                                                         | Steel sheet DC01, 0,7÷1,2mm, color RAL3001 (red)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Closing</b>                                                                                                           | Key lock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Certification, declarations, warranty</b>                                                                             | Certificate of constancy of performance CNBOP-PIB No. 1438-CPR-0628,<br>Certificate of approval CNBOP-PIB No. 3501/2019<br>CE, 3 years from production date                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Notes</b>                                                                                                             | Enclosure does not adjoin assembly surface so that cables can be led..<br>convexional cooling                                                                                                                                                                                                                                                                                                                                                                                                                                         |

|                       | <b>PSU power</b> | <b>Charging current</b> | <b>Enclosure dimensions</b> |
|-----------------------|------------------|-------------------------|-----------------------------|
| <b>EN54C-2A7LCD</b>   | 56,8W            | 0,4A                    | 335 x 308 x 82 [mm]         |
| <b>EN54C-2A17LCD</b>  |                  | 0,8A                    | 390 x 406 x 88 [mm]         |
| <b>EN54C-3A7LCD</b>   | 85,2W            | 0,4A                    | 335 x 308 x 82 [mm]         |
| <b>EN54C-3A17LCD</b>  |                  | 0,8A                    | 390 x 406 x 88 [mm]         |
| <b>EN54C-3A28LCD</b>  |                  | 1,2A                    | 425 x 411 x 178 [mm]        |
| <b>EN54C-5A7LCD</b>   | 142W             | 0,4A                    | 335 x 308 x 82 [mm]         |
| <b>EN54C-5A17LCD</b>  |                  | 0,8A                    | 390 x 406 x 88 [mm]         |
| <b>EN54C-5A28LCD</b>  |                  | 1,2A                    | 425 x 411 x 178 [mm]        |
| <b>EN54C-5A40LCD</b>  |                  | 1,8A                    | 425 x 411 x 178 [mm]        |
| <b>EN54C-5A65LCD</b>  |                  | 2,6A                    | 416 x 618 x 180 [mm]        |
| <b>EN54C-10A17LCD</b> | 284W             | 0,8A                    | 390 x 406 x 88 [mm]         |
| <b>EN54C-10A28LCD</b> |                  | 1,2A                    | 425 x 411 x 178 [mm]        |
| <b>EN54C-10A40LCD</b> |                  | 1,8A                    | 425 x 411 x 178 [mm]        |
| <b>EN54C-10A65LCD</b> |                  | 2,6A                    | 416 x 618 x 180 [mm]        |

**Parameters remote control system.**  
(additional modules requiredy)

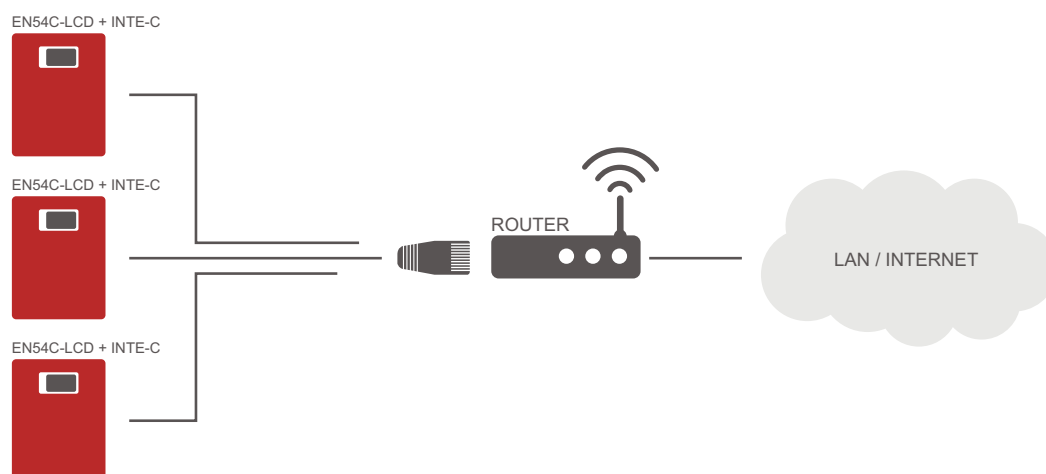


### Remote monitoring (options).

PSU has been adjusted to operate in a system that requires a remote control of parameters in a monitoring centre. *Realizacja tej funkcji jest możliwa po zainstalowaniu dodatkowego interfejsu komunikacyjnego. Dane przesyłane są z wykorzystaniem protokołu modbus a ich wymiana może się odbywać poprzez magistralę RS485 lub sieć Ethernet.*

### ETHERNET network communication.

Communication in Ethernet network is possible due to additional Interface: Ethernet „INTE-C” , compliant to IEEE802.3 standard. Ethernet „INTE-C” interface features full galvanic isolation and protection against surges. It should be mounted inside enclosure of PSU. *Po zamontowaniu uzyskujemy możliwość podłączenia do sieci Ethernet.*

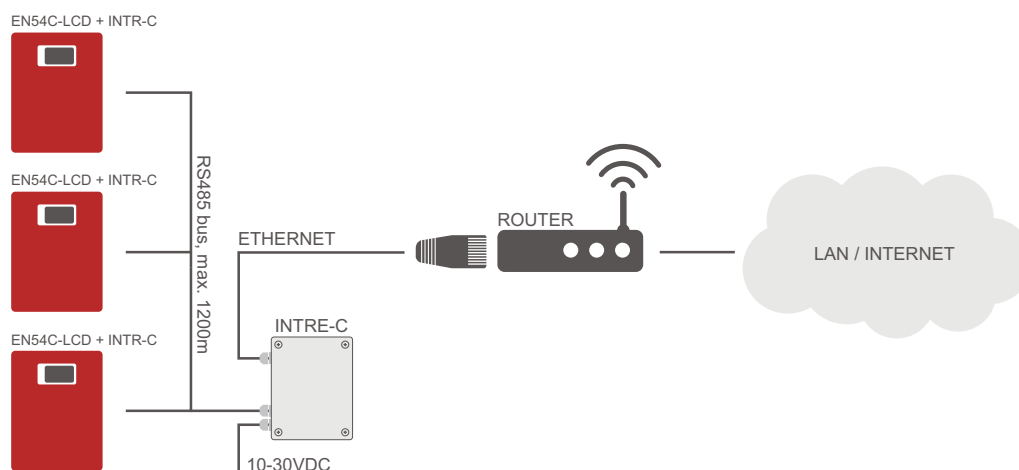


### RS485-ETHERNET network communication.

Komunikację z zasilaczami można zrealizować w oparciu o magistralę RS485 za pośrednictwem dodatkowych modułów „INTR-C” oraz „INTRE-C”.

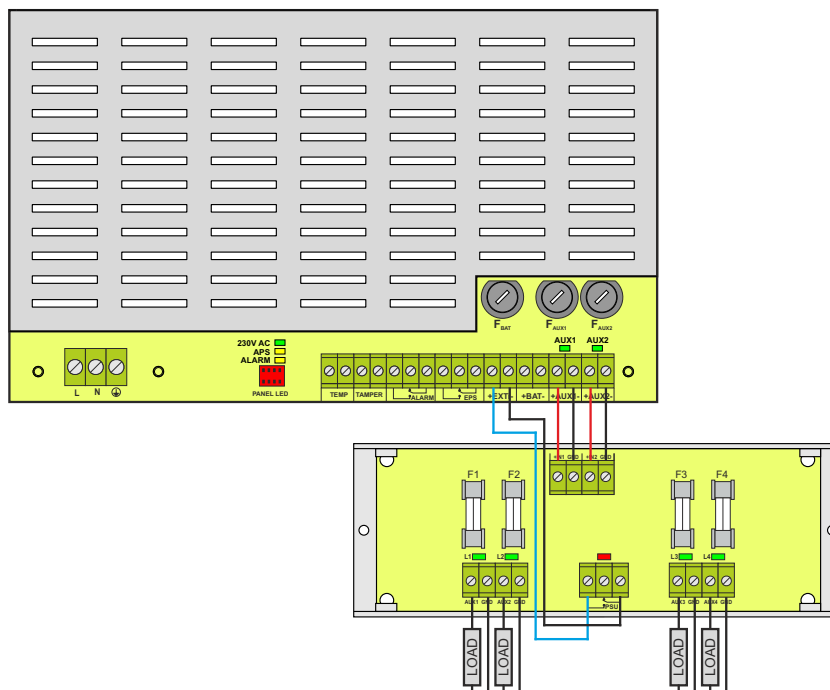
W tym rodzaju komunikacji w każdym zasilaczu musi zostać zamontowany dodatkowy interfejs RS485-TTL „INTR-C”, który umożliwi podłączenie zasilacza do magistrali RS485. Do magistrali można podłączyć maksymalnie 247 zasilaczy. Połączenie z siecią Ethernet umożliwi interfejs RS485-ETHERNET „INTRE-C” wyposażony w gniazdo RJ45.

RS485-ETHERNET „INTRE-C” interface is a device used to convert signals between RS485 bus and Wi-Fi network. For proper operation, unit requires an external power supply in range of 10÷30 V DC e.g. drawn from a PSU of EN54C-LCD series. Unit is mounted in a hermetic enclosure protecting against adverse environmental conditions.

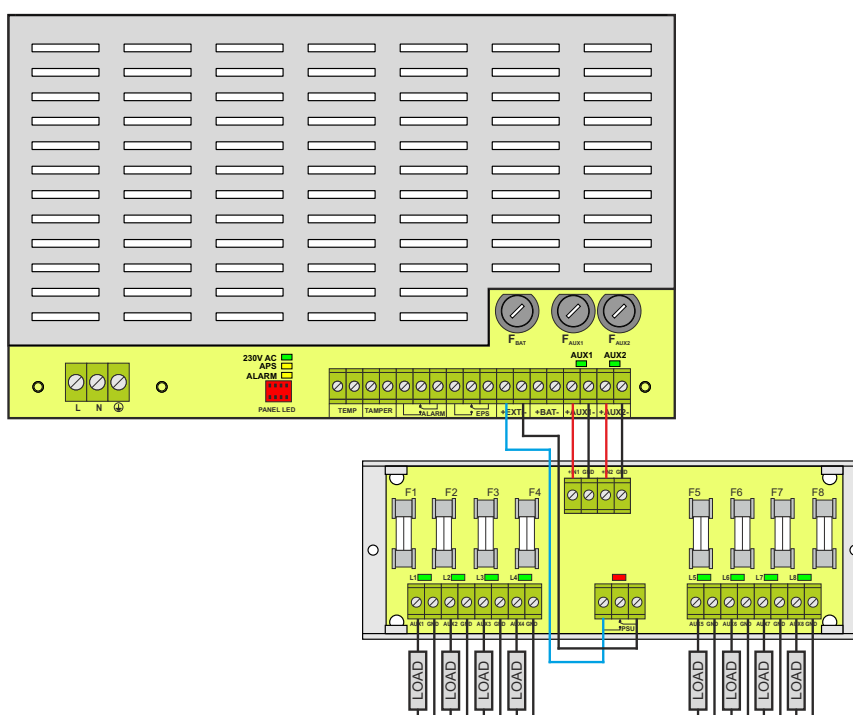


### EN54C-LB4 or EN54C-LB8 fuse modules.

Moduły bezpiecznikowe EN54C-LB4 i EN54C-LB8 umożliwiają podłączenie odpowiednio 4 lub 8 odbiorników do zasilacza. Stan wyjść sygnalizowany jest poprzez zielone diody LED. Sygnał przepalenia bezpiecznika przekazywany jest do wejścia awarii zbiorczej zasilacza EXTi w wyniku czego zasilacz zgłasza awarię na wyjściu ALARM i zapisuje odpowiedni komunikat do pamięci. Relay output of PSU fuse strip can be used for remote control, e.g. external optical indication.



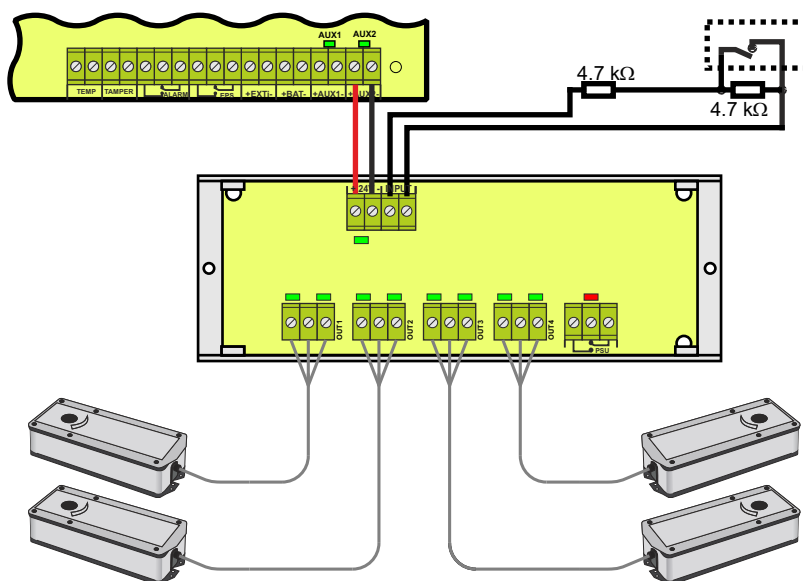
Example of a connection with fuse module EN54C-LB4.



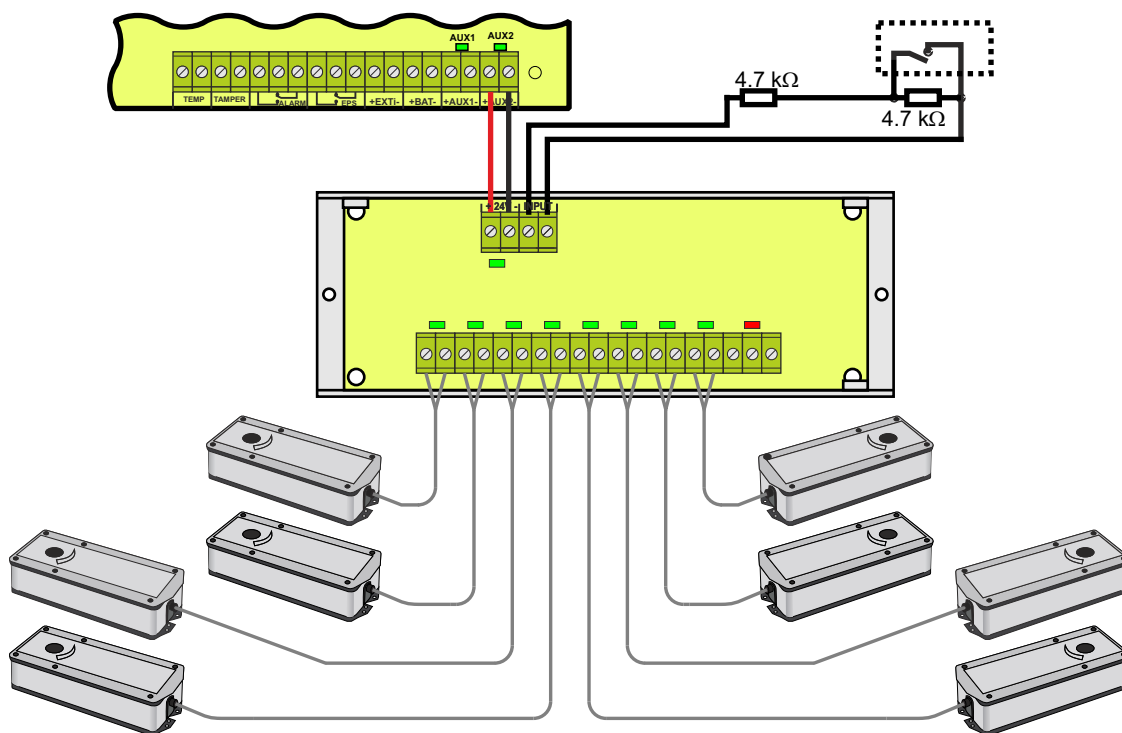
Example of a connection with fuse module EN54C-LB8.

### Moduły sekwencyjne EN54C-LS4 oraz EN54C-LS8.

Sequential modules are designed for use with electric actuators without return spring (EN54C-LS4) and with electric actuators with return spring (EN54C-LS8) used for fire dampers and smoke vents. These devices are used in fire alarm systems and smoke and heat control systems. When switching on electric actuator, a short-term current surge, exceeding its rated current, may occur. If multiple electric actuators are connected, above-mentioned surge current poses a risk of incorrect operation of power supply (e.g. triggering protection of output circuit), despite not exceeding current capacity of power supply. Sequential switching module causes receivers connected to its outputs to be sequentially switched, with a delay of 100 ms. Thanks to this solution, surge current is reduced to value ensuring correct operation of power supply.



Example of connection of EN54C-LS4 sequential module.



Example of connection of EN54C-LS8 sequential module.