

SPS CENTRAL BATTERY SYSTEMS

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SPS CENTRAL BATTERY SYSTEMS

SYSTEM OVERVIEW

The Central Battery System SPS provides emergency power supply when the mains power is lost or its parameters are inappropriate. The main purpose of the system is to supply power to emergency lighting luminaires and assure 100% of the power for at least 1 hour. The lighting which uses LED luminaires, fluorescent luminaires or compact fluorescent luminaires can combine them in the same system. It is possible to connect any type of luminaire and it is not necessary to install any additional internal module. When designing the device, all applicable standards were followed. The device is composed of an inverter which serves to maintain the voltage of 230 VAC $\pm$ 3 % 50 Hz on output circuits. The system is equipped with batteries whose capacity is dependent upon load and emergency luminaire supply period.

The batteries are self-operating accumulators with a 10-year operation life. SPS is based on the Offline technology, connected devices are supplied directly from the mains. The supply voltage is regularly monitored and in the event of a loss, the control system (after ca. 150 ms) disconnects the mains power and switches into accumulator mode. The device is secured against extensive load and short circuit. The circuit safety devices are continuously monitored and the damage notification is displayed on the front signaling panel. In spite of the simple structure, SPS has been provided with a set of modern functions. The unit can be configured and operated by means of the built-in www server and SmartVisio app (optional). The use of all-purpose Modbus and BACnet protocols allows integrating system from BMS. A small size of the cabinet allows installing the system in places where large-size central battery systems do not fit.



SPS 300

SPS 600

SPS 1000

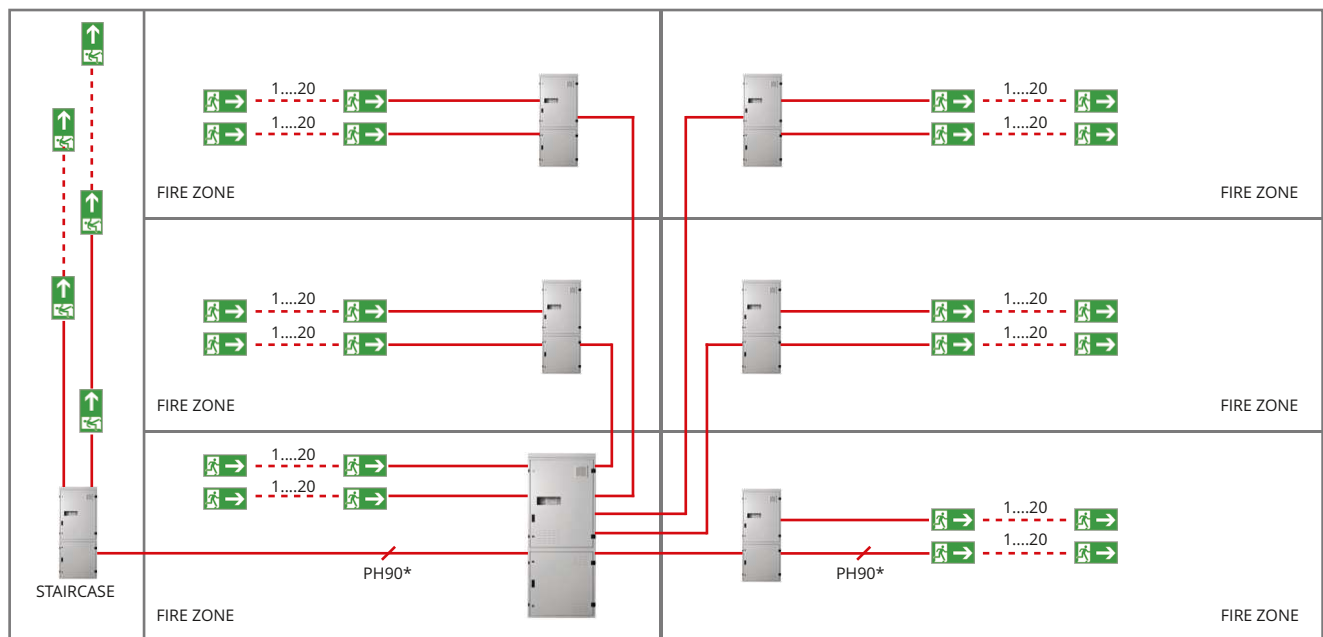
SPS 1500

SPS 2000

SPS CENTRAL BATTERY SYSTEMS

COMPARING VARIOUS SUPPLY VARIANTS: CONVENTIONAL, DECENTRALIZED

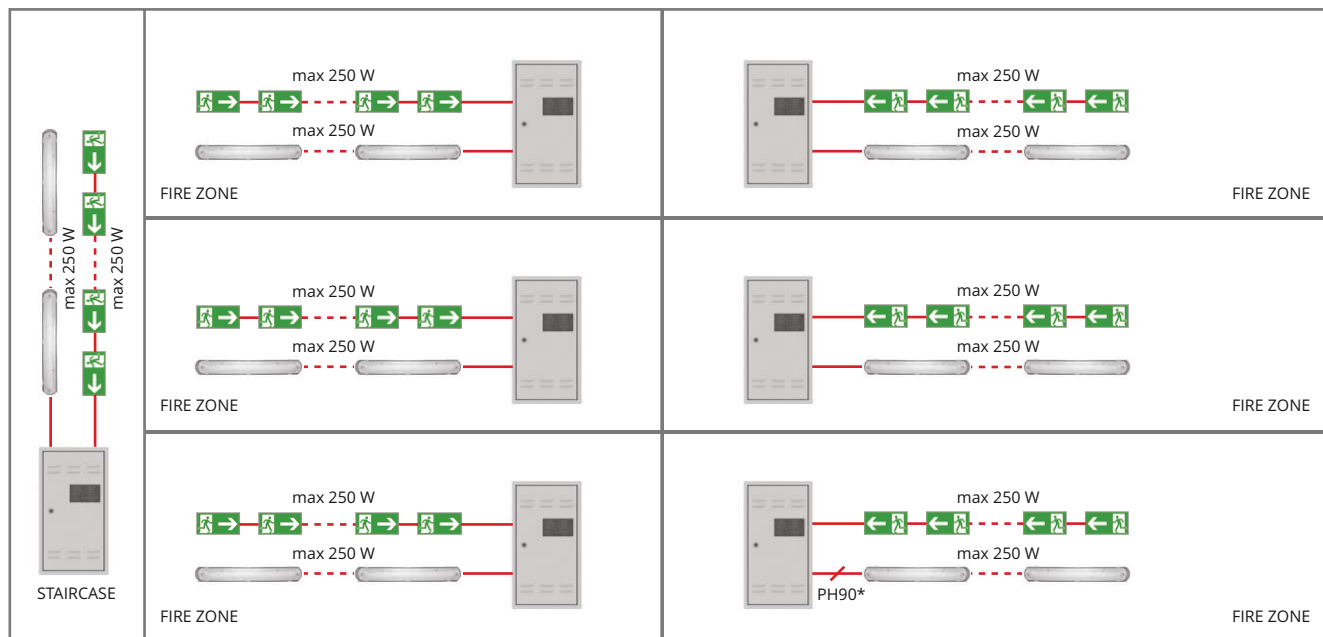
CBS – CONVENTIONAL CENTRAL BATTERY SYSTEM



Conventional system

Main station failure	Failure of the entire facility
Wiring failure, main station – substation	Failure of the entire substation
Damage to final circuit insulation	Possible fire hazard

SPS – GROUP BATTERY SYSTEM



Decentralized system

Main station failure	No central system
Wiring failure, main station – substation	Each system is independent, failure in one fire zone only
Damage to final circuit insulation	Possible fire hazard

* national regulations apply

SPS CENTRAL BATTERY SYSTEMS

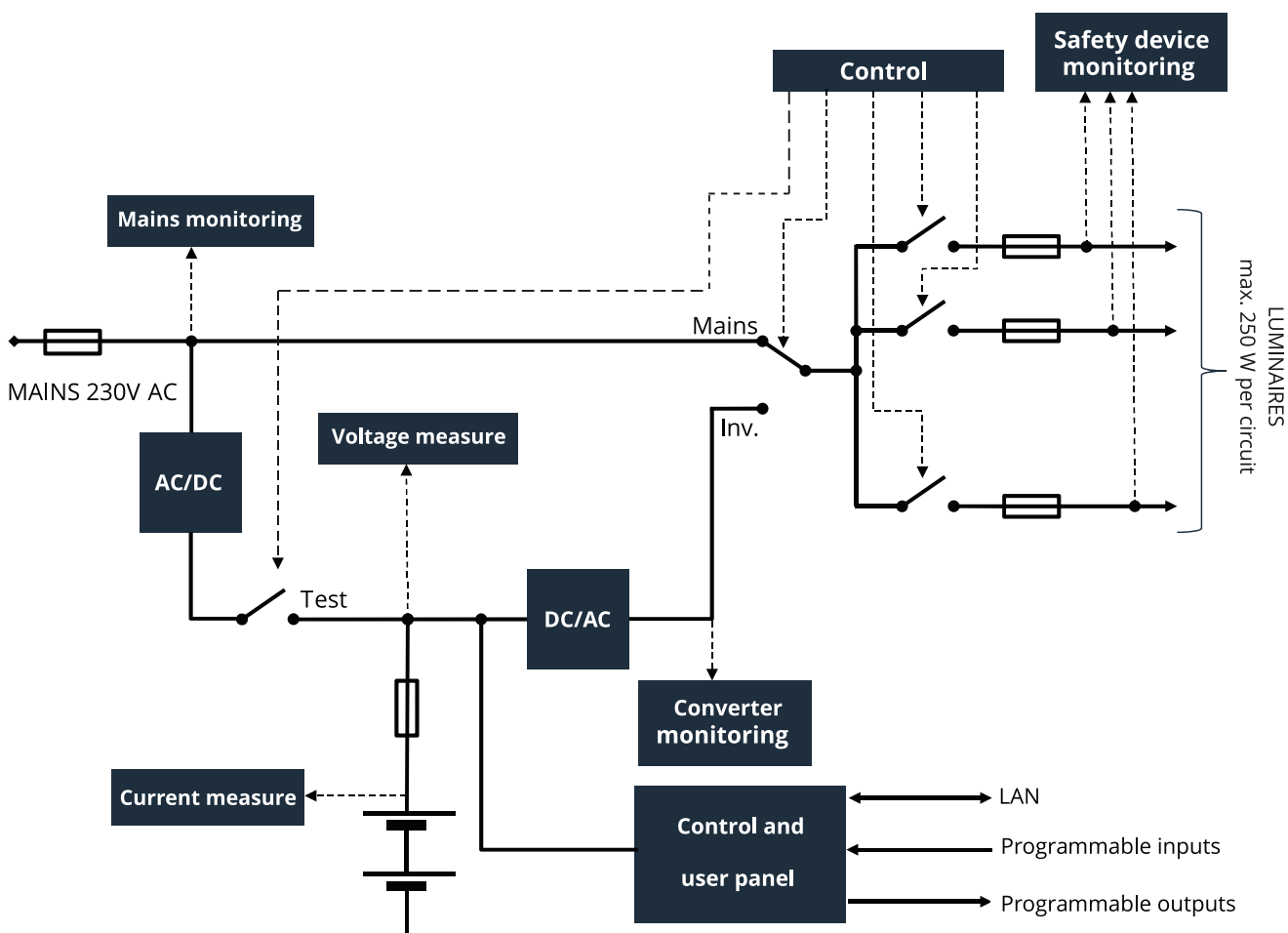
OFFLINE TECHNOLOGY - IF NEEDED

The Central Battery System SPS is based on the Offline technology. Thanks to this technology, it is possible to minimize energy losses during mains operation and thus increase durability and reduce operation costs. In practice, it is possible to supply devices connected to SPS directly from the mains. During a normal mains operation, the system control unit and a unit responsible for monitoring accumulator parameters are supplied with power. The supply voltage is monitored on a regular basis and in case of its loss (after about 160ms) the converter starts operating and converts the constant voltage of 24 VDC from accumulators into alternating voltage for output (230 VAC 50 Hz sinus).

Advantages OFFLINE:

- Inconsiderable energy losses during mains power operation
- low working temperature
- increased system component durability
- low operation costs due to low damage rate
- low noise emission during mains operation

SPS block diagram:

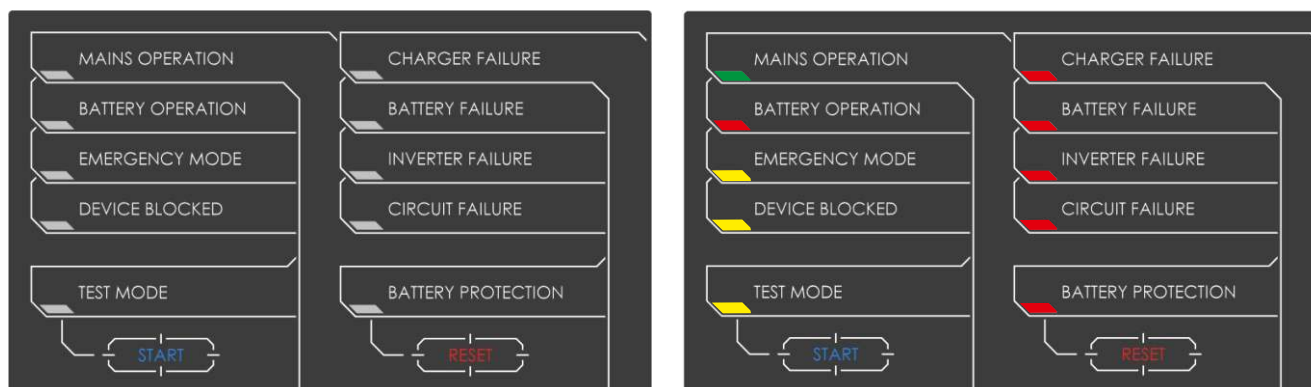


The block diagram of the emergency supply central system SPS.

SPS CENTRAL BATTERY SYSTEMS

CONTROL UNIT - GENERAL DESCRIPTION

The system control unit has a clear signaling panel serving to display the most important system statuses, i.e. mains operation, batterybased operation, inverter failure, charger failure, etc. The statuses are displayed via colored diodes. Additionally, the panel is equipped with two buttons intended for testing and resetting protection against serious discharge. All indicators and buttons were designed in accordance with requirements of PN-EN 50171 standard. To configure inputs/outputs, circuit operation modes, test parameters and to operate them, a complex www server interface is used or Smart Visio application is applied.

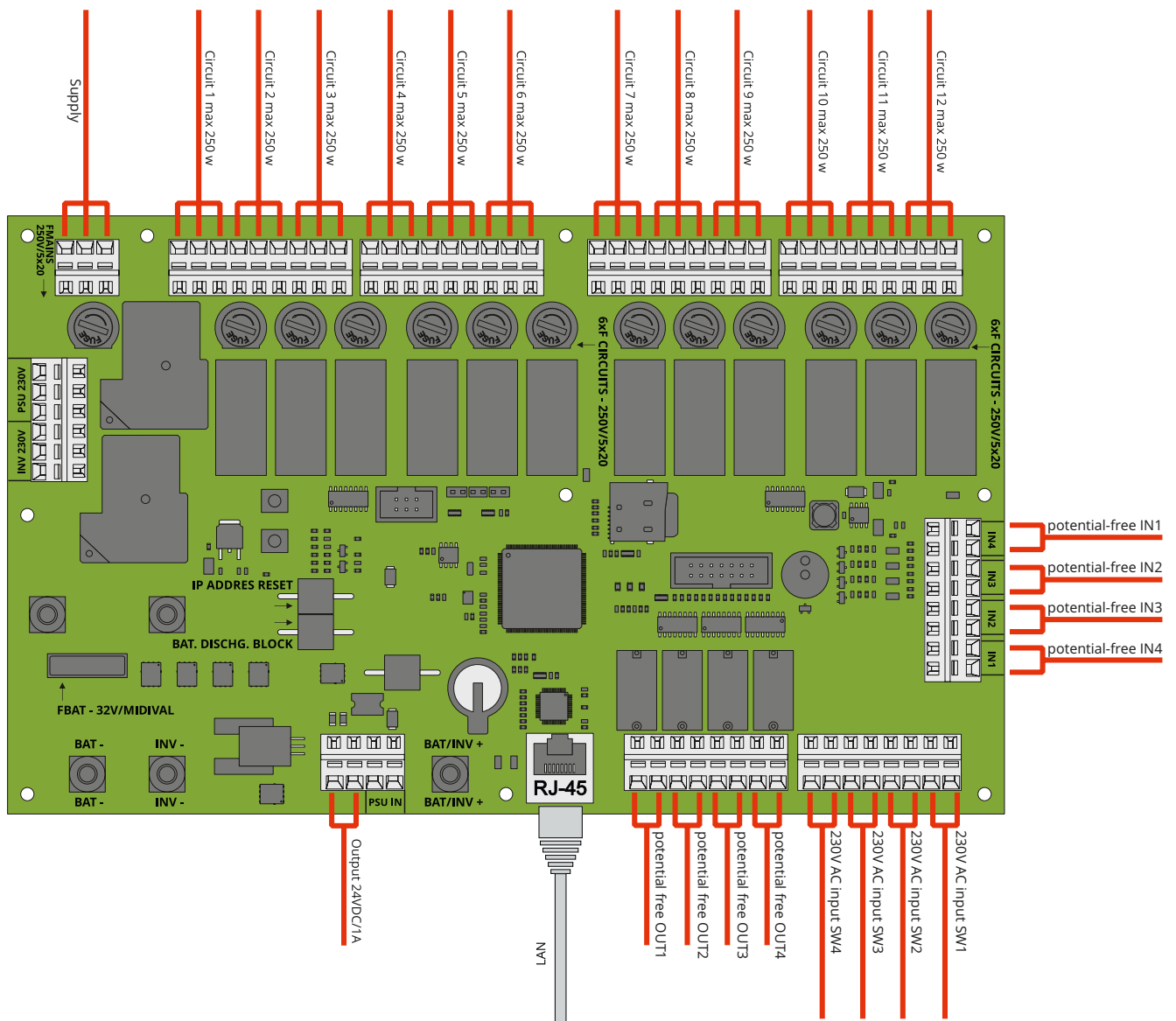


Features:

- Compliance with the following standards: EN 50171, EN 50272-1, EN 50272-2, EN 60950-1
- Measuring voltage and current of battery charging/discharging
- Monitoring circuit safety devices
- Built-in internal power supply loss sensor with a switch point in compliance with EN 60950-2-22
- 4 potential-free inputs configurable as a switch, phase cancellation sensor, interlock
- 4 voltage inputs configurable as a switch, phase cancellation sensor, interlock
- 4 potential-free outputs configurable as the mains operation indicator, battery-based operation, defects, emergency operation, interlock, test, etc.
- Protection against battery deep discharge
- Configuration and operation through the built-in www Server and SmartVisio app
- MODBUS and BACNET protocol included
- Configuration of non-maintained operation, maintained operation, switchable operation
- Possible to set any work modes, phase loss sensors and duration time
- Remote configuration, data import/export, access to log book and firmware updates
- Possible to send e-mails automatically
- Functional test (short) and duration test (long) automatically or manually activated
- Supporting many languages
- Programmable late switch into emergency mode recovery time
- Status indicators: mains operation, battery operation, emergency operation, device blocked, test, charger failure, battery failure, inverter failure, circuit failure, protection against deep discharge

SPS CENTRAL BATTERY SYSTEMS

CONTROL UNIT - CONNECTING WIRES

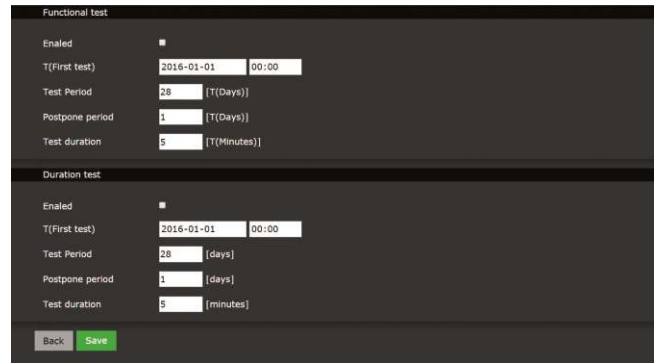
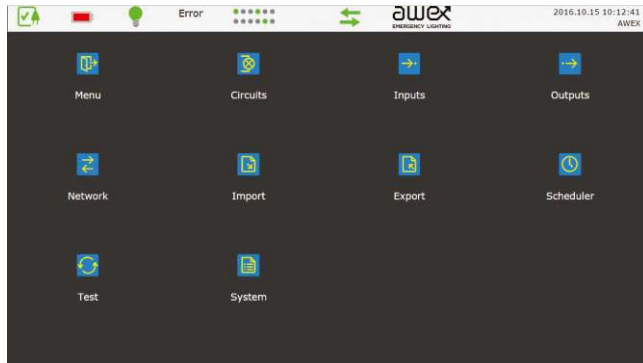


SPS main board and connection method

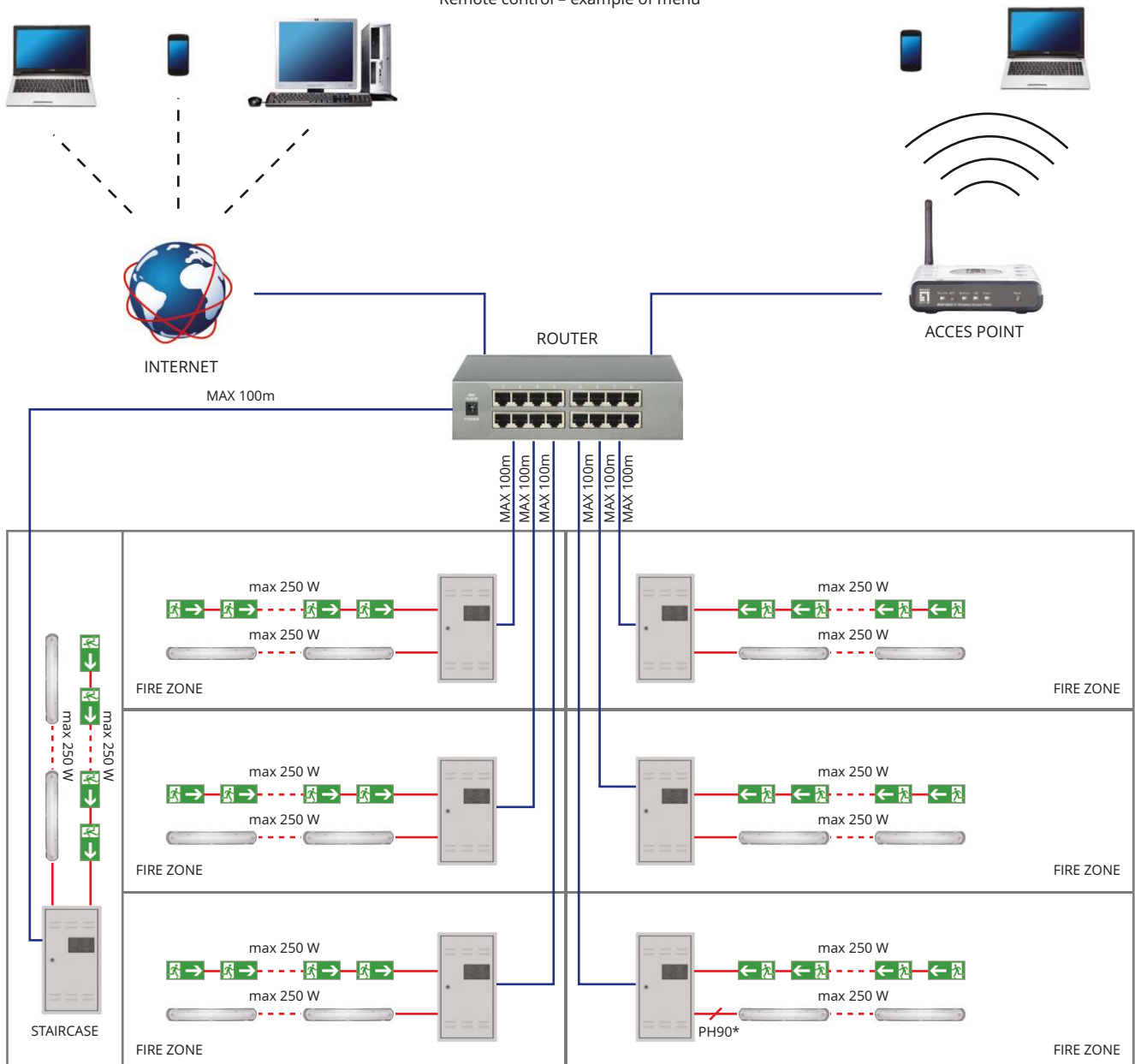
SPS CENTRAL BATTERY SYSTEMS

CONTROL UNIT - REMOTE CONTROL

SPS system is equipped in standard with RJ45 socket and freely programmable IP address. Thanks to this, it's possible to control and configure the system remotely via standard web browser. An access to the web interface is protected by password.



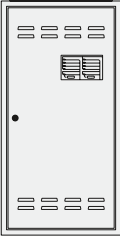
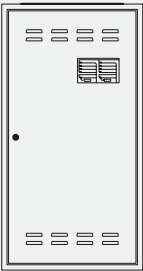
Remote control – example of menu



* national regulations apply

SPS CENTRAL BATTERY SYSTEMS

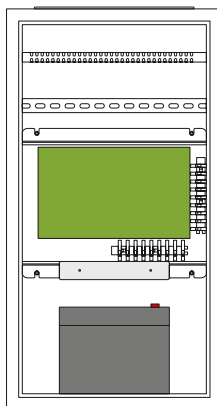
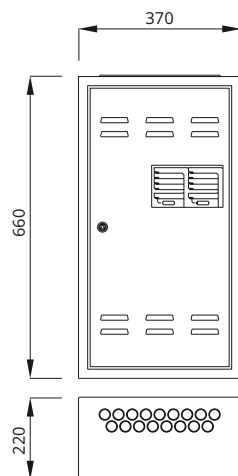
SPS TECHNICAL DATA - COMPARING SPS

Technical data		SPS 300	SPS 600	SPS 1000	SPS 1500	SPS 2000
Protection class: I IP rating : IP20 Output voltage 230V AC 50Hz Working temperature: -5°C to 30°C						
Supply voltage		AC: 1-phase 230V ± 10%, 50/60Hz	AC: 1-phase 230V ± 10%, 50/60Hz	AC: 1-phase 230V ± 10%, 50/60Hz	AC: 1-phase 230V ± 10%, 50/60Hz	AC: 1-phase 230V ± 10%, 50/60Hz
Battery capacity		26Ah	55Ah	80Ah	120Ah	150Ah
Max. power	1h	238W	475W	725W	1090W	1365W
	3h	99W	209W	303W	458W	574W
	8h	42W	92W	133W	203W	256W
Number of circuits		6	6	12	12	12
Max. circuit load		250W	250W	250W	250W	250W
Terminal connection [mm²]						
Power connector		2,5	2,5	2,5	2,5	2,5
Circuit connector		2,5	2,5	2,5	2,5	2,5
Power connector 24V out		2,5	2,5	2,5	2,5	2,5
24V power out		2,5	2,5	2,5	2,5	2,5
Switch monitoring connector		2,5	2,5	2,5	2,5	2,5
Potential-free input connector		2,5	2,5	2,5	2,5	2,5
Signaling output connector		2,5	2,5	2,5	2,5	2,5
Cable penetrators		17xM20	17xM20	17xM20	25xM20	25xM20
Max. length of circuits	1,5	200				
	2,5	300				
Weight [kg]		25,4 kg	51,5 kg	59,6 kg	114,3 kg	142,5 kg
Dimensions [mm]		660x370x220	800x400x260	940x450x270	1200x490x310	1300x490x310

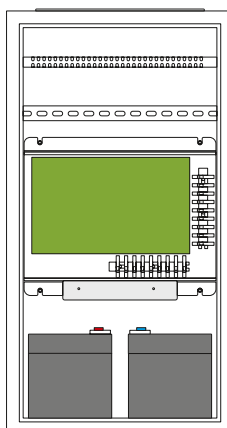
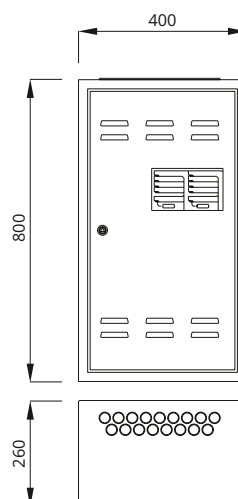
SPS CENTRAL BATTERY SYSTEMS

SPS TECHNICAL DATA - COMPARING MECHANICS

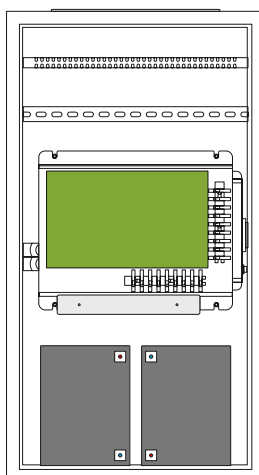
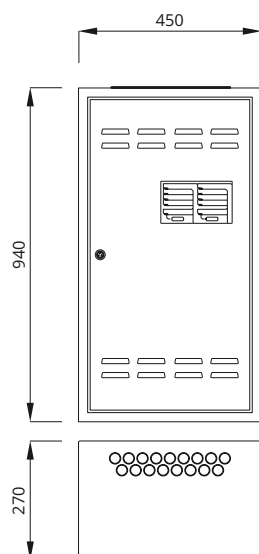
SPS 300



SPS 600

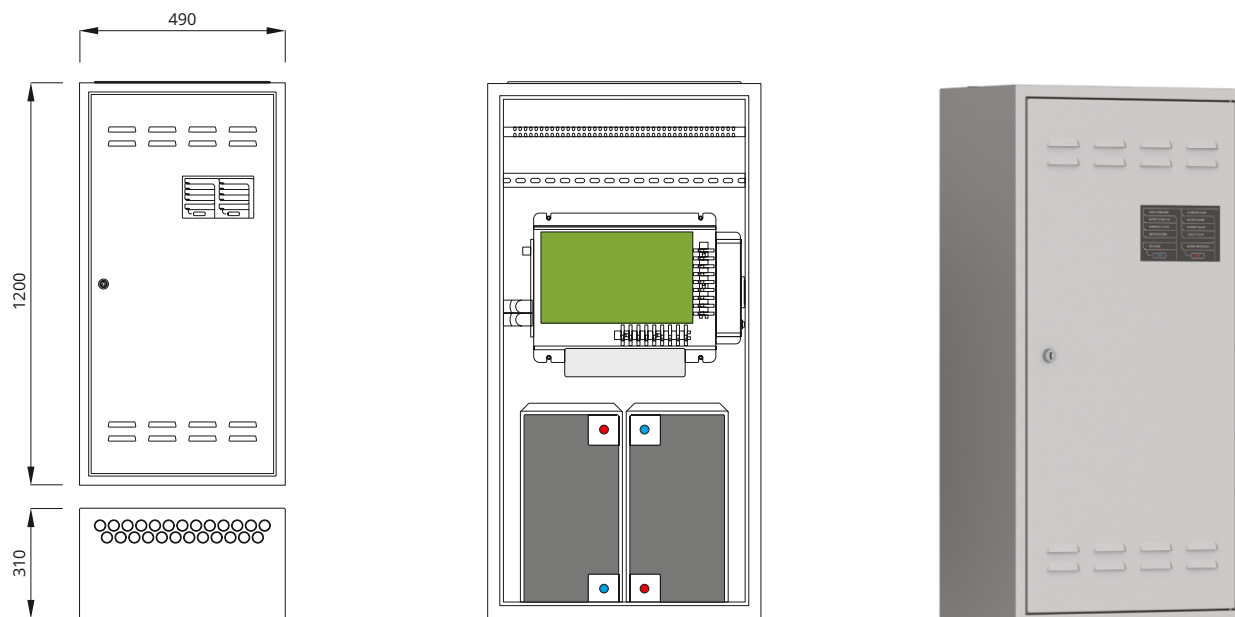


SPS 1000

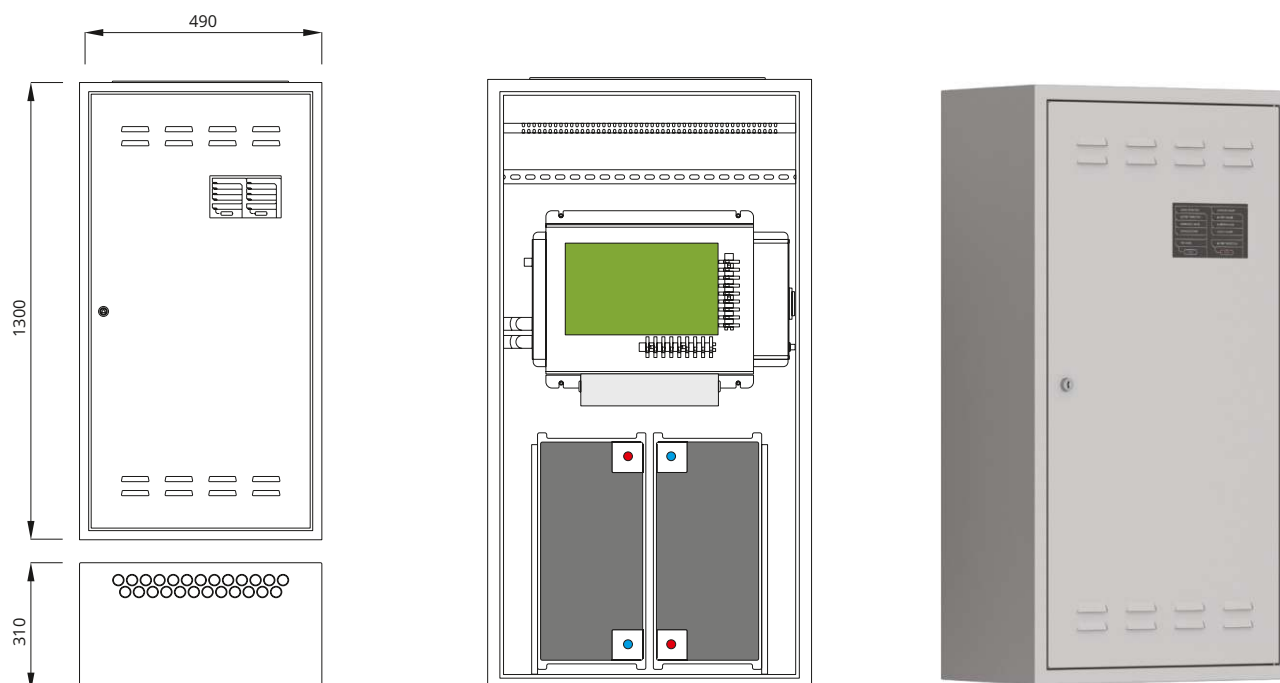


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SPS 1500



SPS 2000



SPS CENTRAL BATTERY SYSTEMS

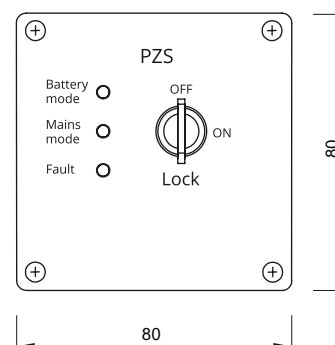
ACCESSORIES

REMOTE SIGNALING PANEL - PZS

The panel is intended for remote control of basic system statuses, such as: readiness for work, battery-based operation, defect. To lock the continuous operation, the built-in key must be used.

This solution secures the system against access of unauthorized persons.

Technical specifications	PZS
Connection (wire size)	1,5mm ²
Max. dimensions (HxWxD)	80x80x55mm
Mounting	Wall-mounted
Part No.	WCB 000006C



PHASE LOSS SENSOR: CZF-01

The quick-acting phase loss sensor is used to monitor the voltage in primary lighting switchboards to ensure that specific circuits or the whole system are energized for emergency operation.

The voltage changeover threshold is as per PN-EN 60598-2-22.

Technical specifications	CZF
Supply voltage	230/400V 50Hz
Switchover threshold	as per PN-EN 60598-2-22
Mounting	DIN-3 (TH35)
Delay time	< 200 ms
Connection (wire size)	2,5 mm ²
Contact	230V/50Hz 0.5A
Dimensions (HxWxD)	129x17,5x170 mm
Part No.	WCB 0000007

