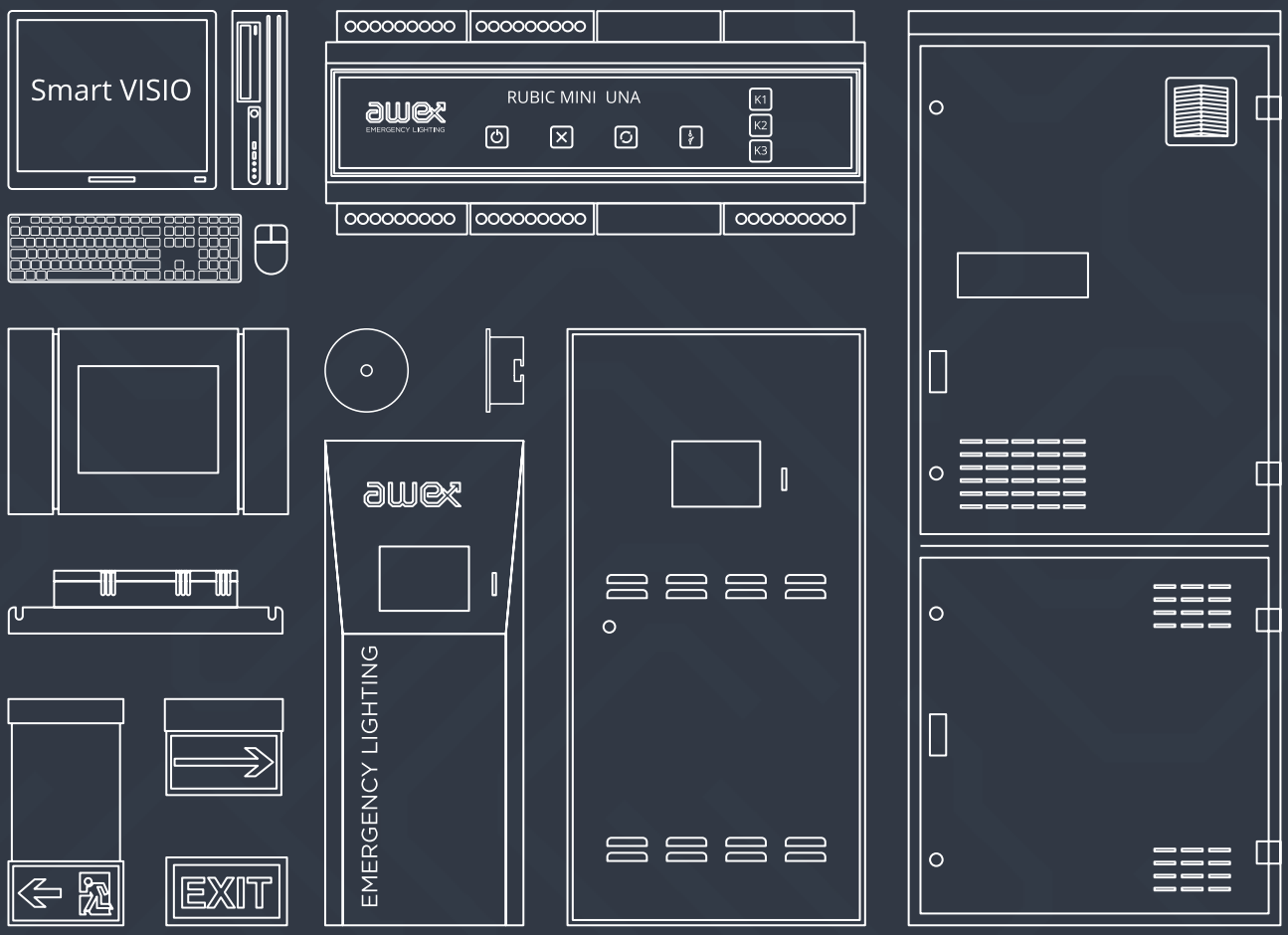
awex®
EMERGENCY LIGHTING

EMERGENCY LIGHTING SYSTEMS

VER 18.1



Awex brand has been existing in the emergency lighting sector since 2002, invariably fulfilling its clearly defined mission: top-quality state-of-the-art products and customer satisfaction. We offer the full range of emergency lighting devices in compliance with all the European standards. Within 15 years of our market presence, we gained the leading position in the industry thanks to the involvement of knowledge, means, cooperation with best specialists, including research facilities, and investments in innovative projects. Awex means the latest technologies, experienced team of designers and engineers, top quality, reliable equipment, diversity of offer, unique design, unlimited productivity and unblemished reputation supported by references. The biggest award is satisfied and trusted customers. We also enjoy the recognition of independent experts. We were awarded the title of the "Export Leader 2006" for our business volume, and the Puls Biznesu awarded us twice with the "Business Gazelles" prize as one of the most dynamically developing companies in Poland.

PROFESSIONAL PERSONNEL

We employ the best specialists in many different fields for whom we ensure constant improvement in qualifications by specialist trainings. The company's design department provides flexible design of individual orders and the team of highly qualified engineers ensures continuous technological progress of offered equipment. The use of modern information flow methods within the company ensures that the offer and functionality of products is updated on an ongoing basis. The effcient project management allows building permanent and trust-based relationships with customers.

INVESTMENTS

We use the latest world technologies to guarantee quality, precise workmanship, optimised technological process, and work ergonomics. We invest time and means so that every stage of manufacturing our products contributes to meeting any expectations of our customers.

TESTS

The research and development works ensure that our offer is constantly updated according to development trends in the industry, and thus we can supply the most modern, multifunctional and technologically advanced products.

WE TAKE CARE OF THE ENVIRONMENT

We offer the environment-friendly products and the manufacturing process meets strict EU standards.

QUALITY WARRANTY

Due to the purpose of the company's mission realization, we have initiated the Quality Control System according to the EN ISO 9001:2008, and the received TÜV NORD certificate guarantees the highest projects quality as well as the production, assemble and service of the emergency lighting devices. In 2016 the company Awex received, for the new products in scope of the fittings and systems of the emergency lighting, a prestige and recognized all over the world the BSI certificate. The certificate's receipt is related to a long procedure and very restricted tests which we had to do. It proves the highest technical quality of the offered products.

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SMART VISIO PLATFORM

SMART VISIO PLATFORM

LAN line for communication between single system devices

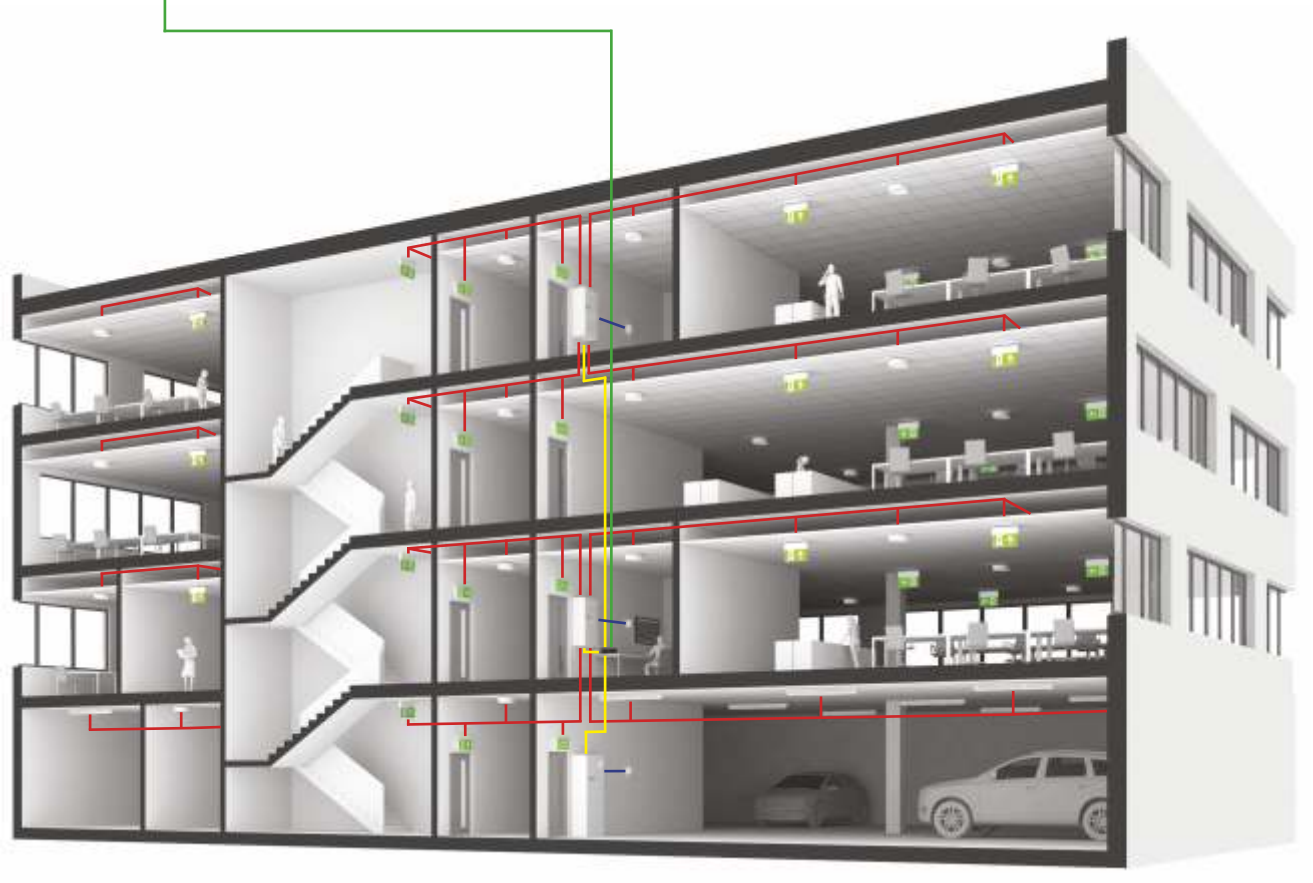
Smart Visio platform communication line

communication line for control units to PZS

communication bus RUBIC UNA

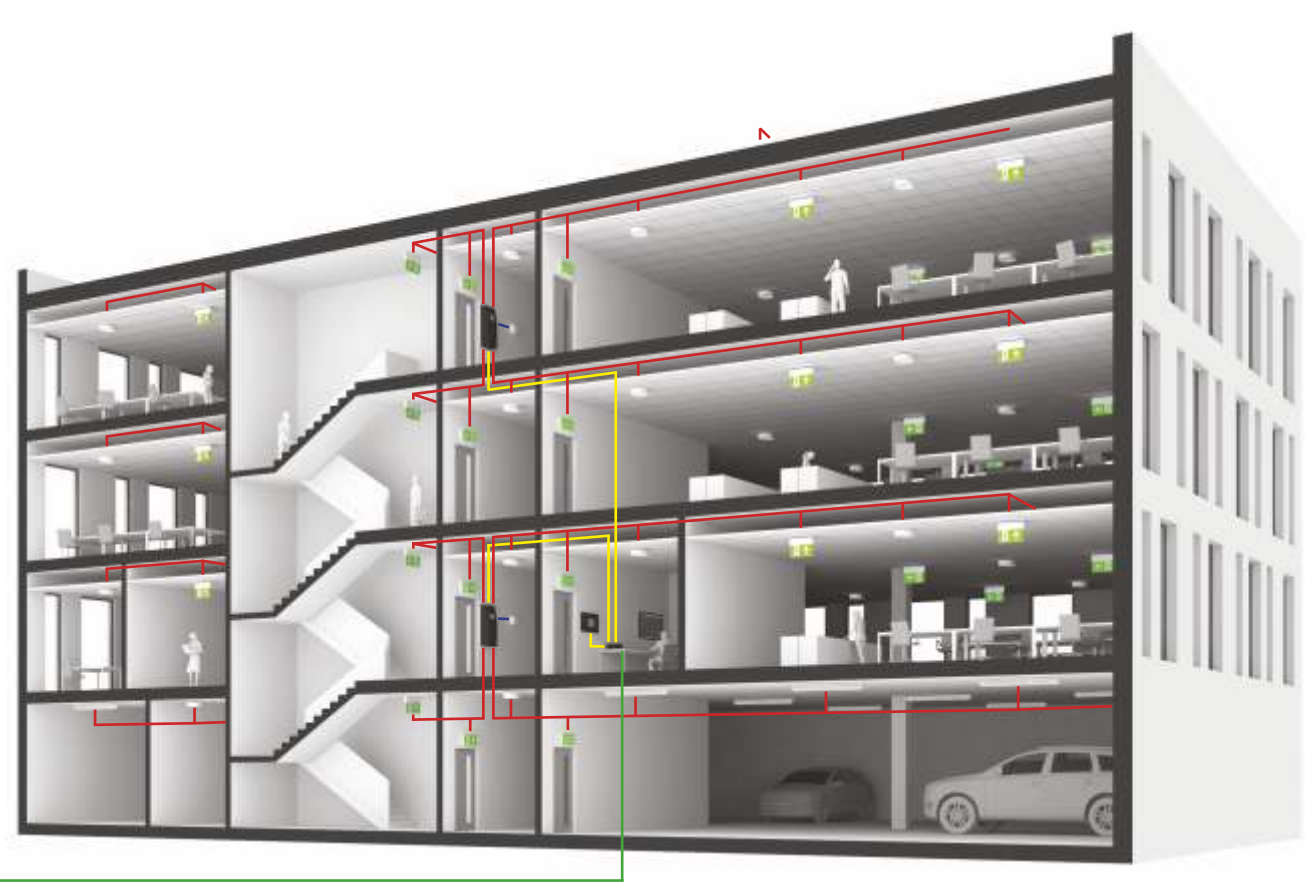
PH90 (E90) power supply cable for FZLV and CBS

communication for control units RUBIC UNA WIRELESS

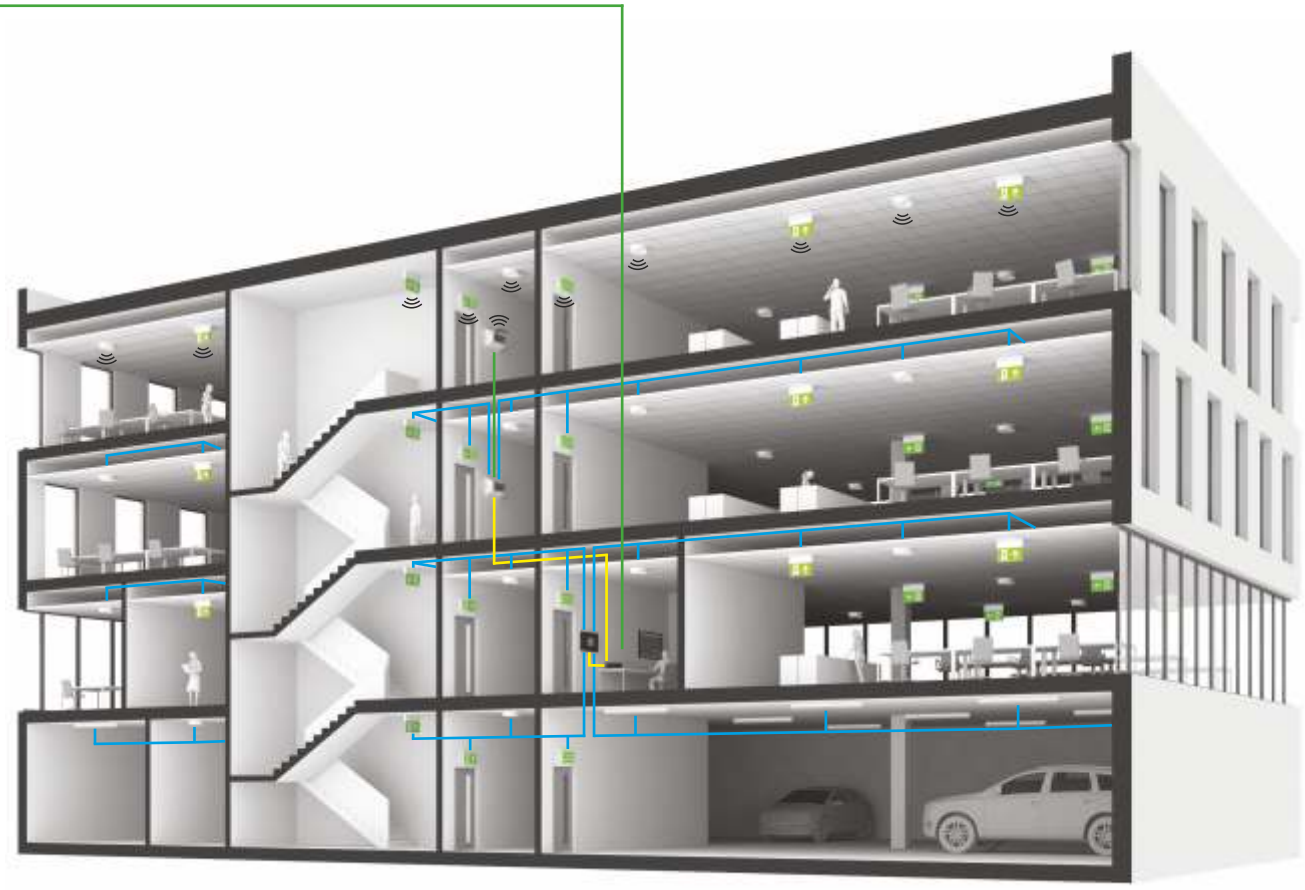


CBS SYSTEM

SMART VISIO PLATFORM



FZLV SYSTEM



RUBIC UNA/ RUBIC UNA WIRELESS

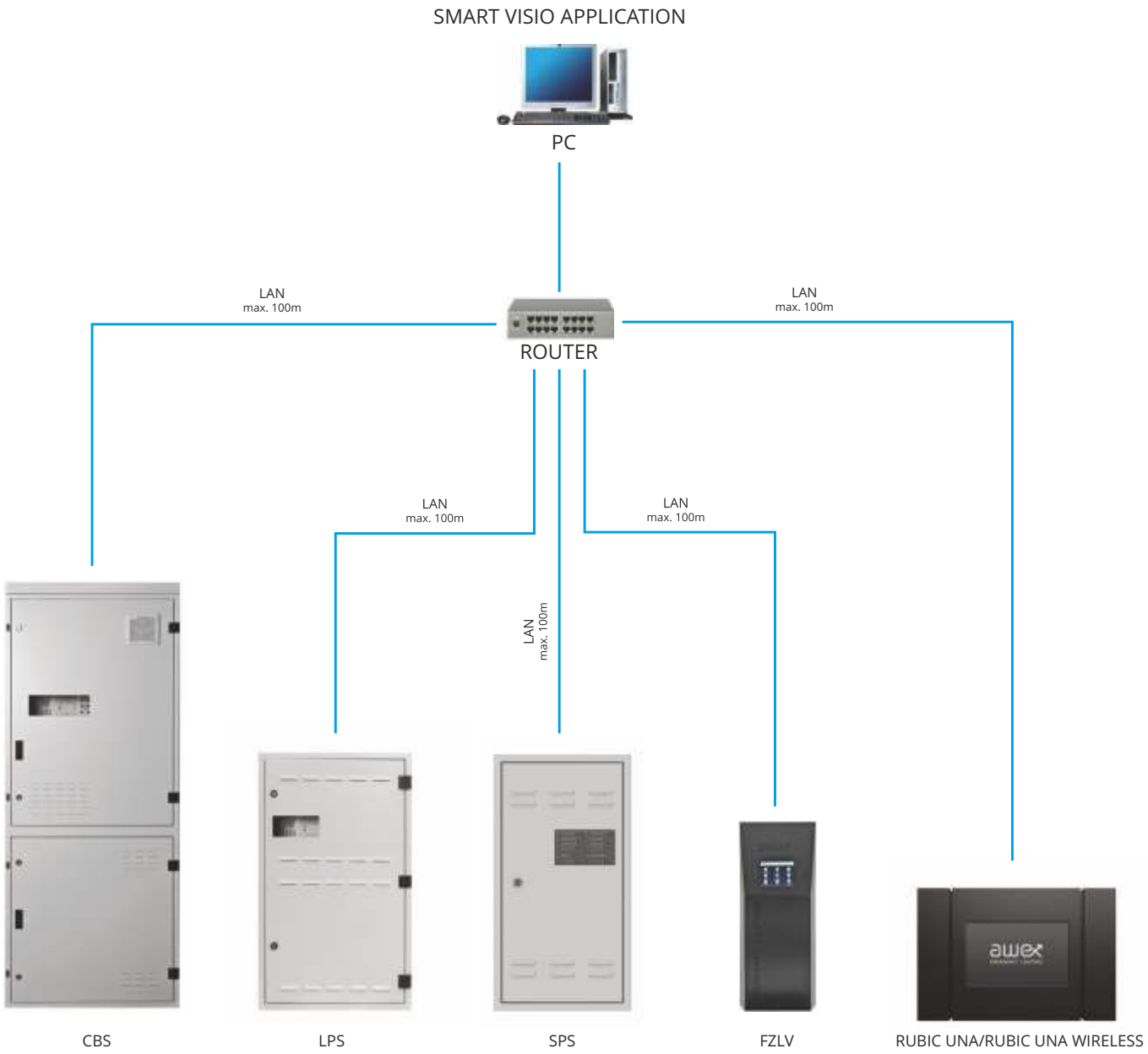
SMART VISIO PLATFORM

SOFTWARE OVERVIEW

SMART VISO is an advanced control and monitoring application for the latest emergency lighting systems manufactured by AWEX. Irrespective of the chosen solution (FZLV, SPS, LPS, CBS, or RUBIC UNA), SMART VISIO enables connection, integration and visualization of each system at the same time in any configuration and at a single control desk. Thanks to the application of the common BACnet protocol for system communication, the software can be implemented virtually in any building. SMART VISIO is inexpensive to install and offers the possibility of complete system visualization, which saves time and costs of everyday supervision. The software is recommended for use in shopping centres, medium and large office buildings, hospitals, stadiums, airport terminals, manufacturing plants and special purpose facilities. The system reporting complies with PN-EN 50172.

Features:

- Compatibility with all other AWEX emergency lighting systems
- Intuitive menu
- Possibility to upload floor plans and luminaire layouts
- Automatic control of emergency lighting
- Unlimited configuration possibilities for individual luminaires and the whole system from one place
- Luminaire and system status monitoring
- Possibility of installation on any Windows-based PC connected to a common LAN
- Instant verification of any faults and system errors
- Quick identification of faulty devices
- Simple diagnostics of primary system parameters visualized in a block diagram
- Possibility of system expansion by any number of connected components
- Possibility of remote management of integrated systems



SMART VISIO PLATFORM

LOCATION OF LUMINAIRES

A drop-down list in the left section of the window enables easy selection of individual luminaires installed in different systems in the building or facility. When a specific luminaire is selected it can be set up or its real-time status can be viewed. The most important information, such as: luminaire name (editable), assigned address and technical parameters are displayed in a clear and user-friendly manner.

The actual location of the selected luminaire in the building or facility can be identified by a single mouse click.

The SMART VISIO platform includes a SMART PANEL module, where the user can view – besides the current status of the luminaires – information about the inputs and outputs handled by the controlled devices.

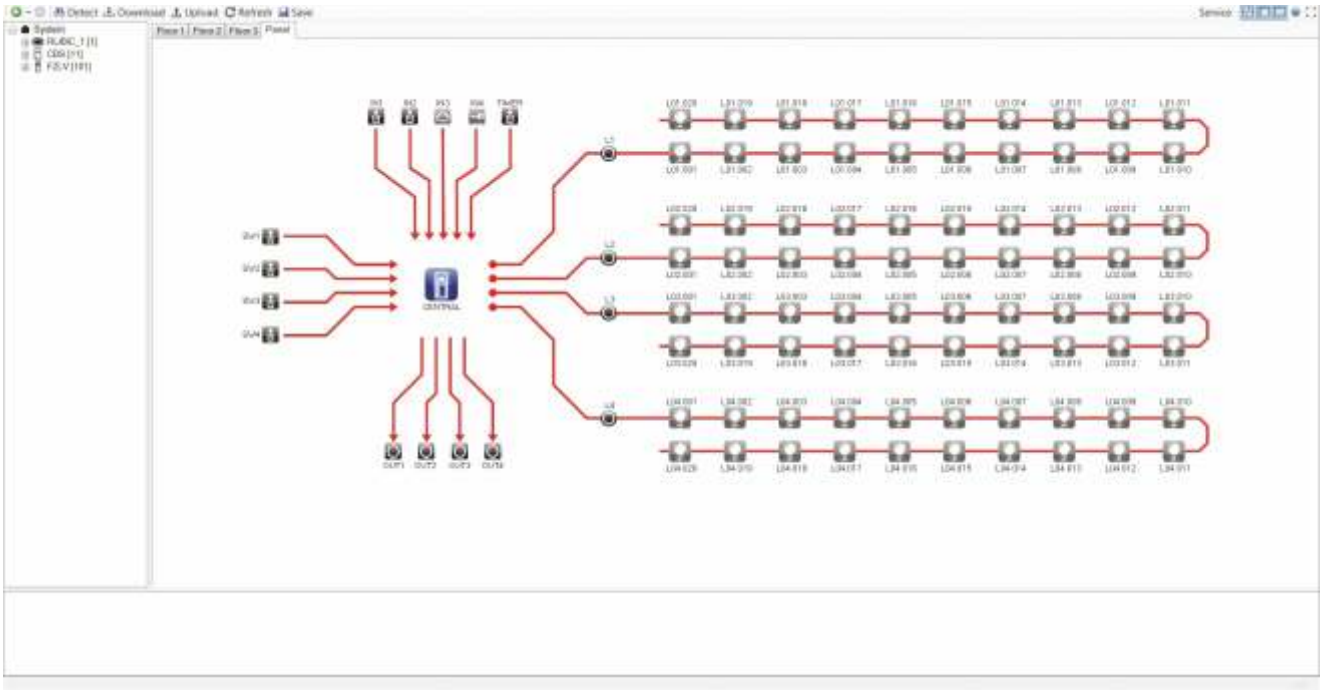
The SMART VISIO enables status verification and luminaire configuration in a clear and easy way, even in the most complex systems. Intuitive menu and the visualization of uploaded floor plans/blueprints enables quick location of luminaires in the building/facility.

When a specific system is selected from the list of available equipment, a clear interface with advanced functions is displayed. One of key features of SMART VISIO is the access it provides to the system status in real time, which enables an immediate response in case of a fault or failure.

SMART VISIO PLATFORM

The layout of a building/facility comprises e.g. a floor plan where the user can place icons representing actual system components. The icons change the colour according to their current status, so the operation of the devices (e.g. luminaires) can be easily monitored. This kind of visualization is an essential tool in the process of dynamic system status control in a building or facility.

The SMART VISIO platform also includes a panel level, from which the user can view – besides the current status of the luminaires – information about the inputs and outputs handled by the controlled devices.

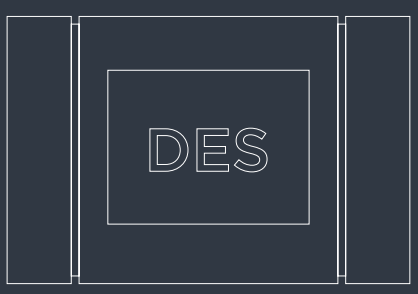


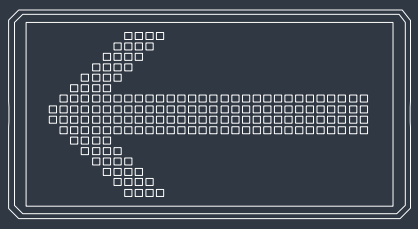
SMART VISIO PLATFORM

SMART VISIO ICONS

	UNKNOWN	ACTIVE	EMG	ERR	OFF	ON
CBS control unit						
FZLV control unit						
RUBIC control unit						
SPS						
Module						
Group						
Luminaire						
Exit Sign						
Luminaire						
Output						
Sensor						
Lock						
Switch						

DES - DYNAMIC ESCAPE SYSTEM





WHAT IS DYNAMIC ESCAPE SYSTEM?

GENERAL INFORMATION

Dynamic illumination is an innovative system controlling escape route depanding on situation present on facility. Due to connection with fire alarm systems, marking allows to fast recognition of safe escape route. Rapidally changing conditions such as smoke or fire require system which allows fast and dynamic change of the safest escape route.

DES – DYNAMIC ESCAPE SYSTEM

DES is a dynamic illumination system which consists of escape route luminaires, control panel and central power system. Dynamic luminaires may display up to ten various characters depanding on programmed scenario. Due to application of DES system it is possible to show proper escape route in case of hazards, eg. fire hazard.

DES LUMINAIRES

Each luminaire may display one of ten characters programmed according to scenario. The luminaire is capable of connecting power from the CBS and the control signal from the DES control panel.

DES INSTALLATION

The DES touch panel module controls scenarios initiated by fire alarms. The communication line controls characters displayed on DES luminaires.

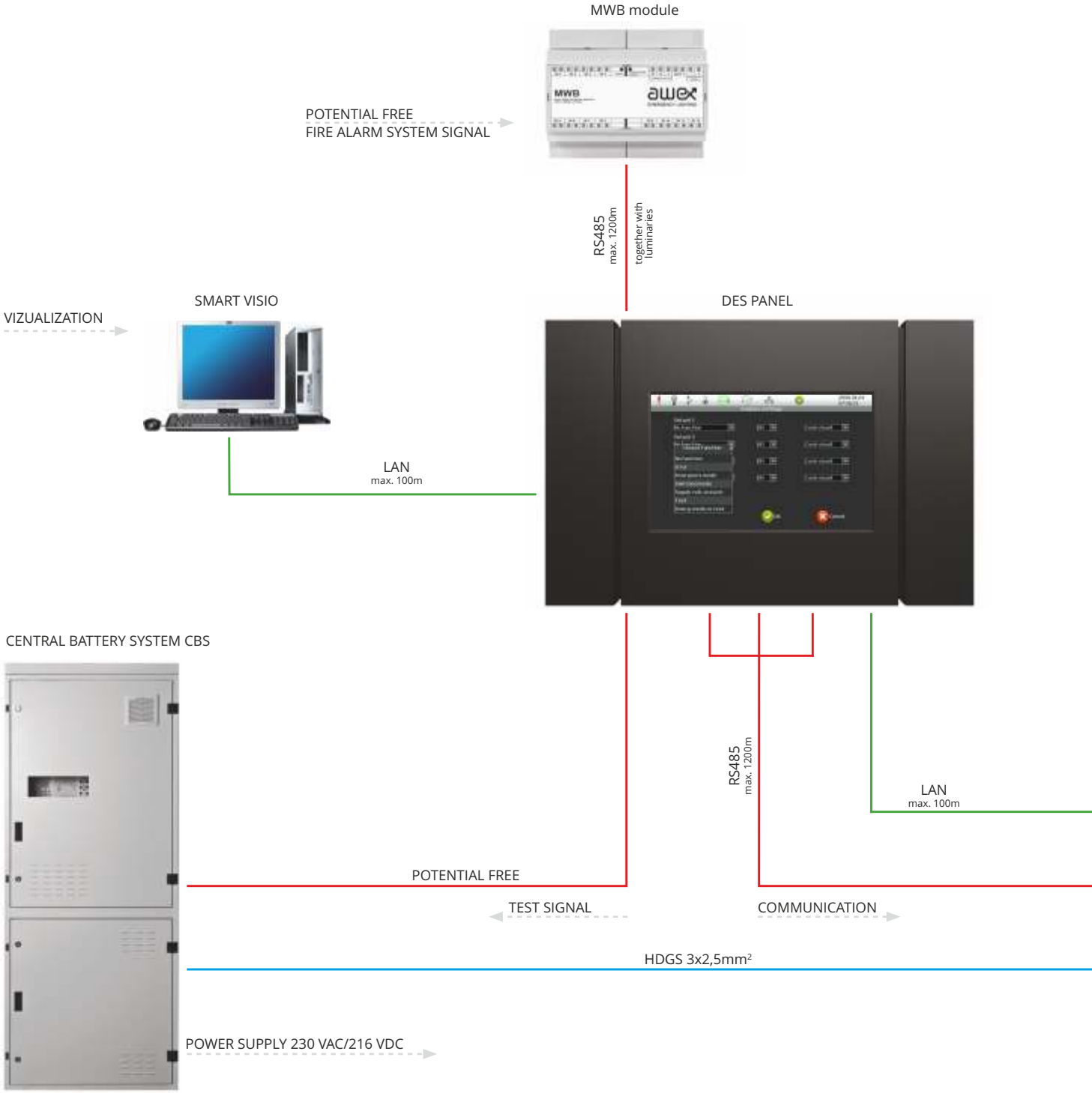
Central battery system provides power supply to the DES luminaires during malfunction due to the use of battery sets. The central battery system has an internal charger which controls charging process and switching of operation mode.

DYNAMIC ESCAPE SYSTEM

SYSTEM TOPOLOGY

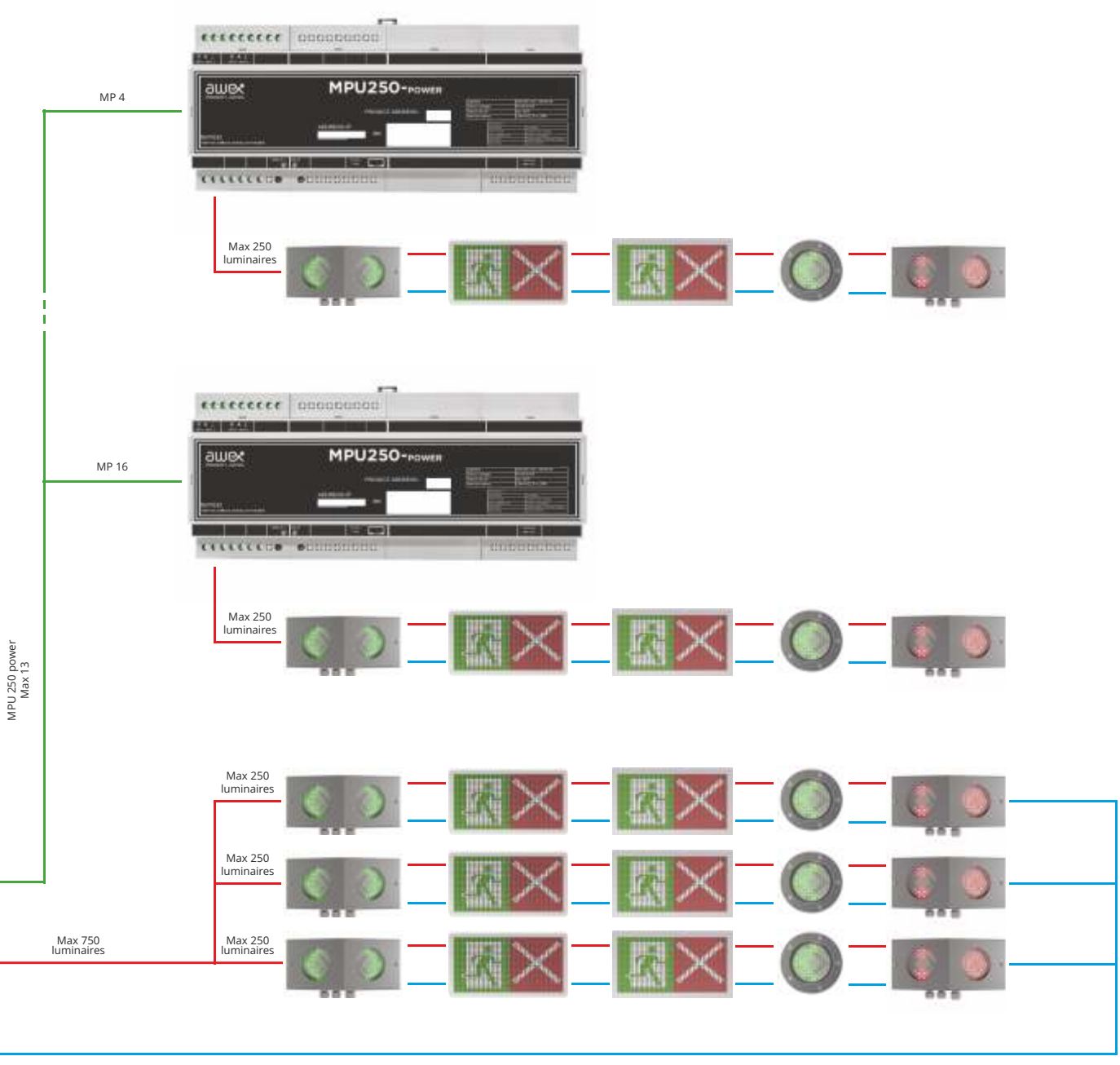
The DES system cooperates with the CBS central battery system. Due to such solution dynamic luminaires are also powered during malfunction. Circuits which power dynamic luminaires should be led with fire resistant 3 core cable.

Comunication between the dynamic luminaires and the control panel is done with the 3 core comunication cable. The DES panel sends information about active scenario to particular luminaires. There is also possibility to check automatically and completely if the installed luminaires work properly. The test result is registered in a log file which is saved in non-volatile memory.



DYNAMIC ESCAPE SYSTEM

Dynamic luminaires may display up to 10 characters depanding on accepted scenerio. Additional function is running light mode. Scenarios are initiated from panel on DES control unit and potential-free MWB input module which gathers signals from detection devices. Any time scenario changes can be done without any additional software.



SYSTEM COMPONENTS

DES PANEL

Features:

- Touch screen control unit
- Unique addresses of luminaires
- Factory-assigned module addresses
- No need for an addressing unit
- Intuitive graphical user interface
- No need to keep the polarity of communication cables connection
- Remote access via website
- Monitoring of up to 750 luminaires per control unit (3 logical buses: 01, 02 and 03 - each one with 2 physical channels)
- Inbuilt four potential-free inputs and outputs
- System status indication
- Internal battery for uninterruptible control unit operation
- Automatic execution of programmed tests from the calendar
- Event log
- Mains supply mode for selected luminaires/groups
- System management and visualization by using dedicated SMART VISIO software
- BACnet standard for Building managment system (BMS)

DYNAMIC ESCAPE SYSTEM

MPU250 POWER – SUBMODULE

Features:

- Monitoring of up to 250 DES luminaires
- Two separate channels for bus with up to 1200m each
- TH35 (DIN-3) rail mounted
- Internal battery for uninterruptible sub module operation
- RJ45 connector for DES panel
- Individually programmable IP address

MWB – INPUT MODULE

Features:

- designed for operation with DES panel and DES luminaires
- comunication with central unit via RS 485 protocol
- up to 6 MWB modules can be connected to the submodule
- 8-32V DC supply, require to use additional uninterruptible power suplply unit
- up to 12 potential-free inputs
- possibile to change single input modes: 1k; 4,7k; 22k; 47k; NC, NO
- indicated status of each single input on central unit
- assembly on DIN rail (TH-35)

ZMP- U – POWER SUPPLY

Features:

- designed to operate with MWB modules
- 230 V AC power suplly
- Internal battery for uninterruptible operation
- possibility to supply up to 2 MWB
- assembly on DIN rail (TH-35)
- 10 - 14,6 V DC output voltage

BM DES – ADDRESSABLE MODULE

Features:

- designed to operate with DES panel and DES luminaires
- comunication with central unit via RS 485 protocol
- displays up to 10 signs
- LED indicator included for any comunication and operation malfunction
- preset scenario activation by 230V control input
- automatic detection of connected light source
- compact housing
- posibility to connect up to 250 modules to the sub-module

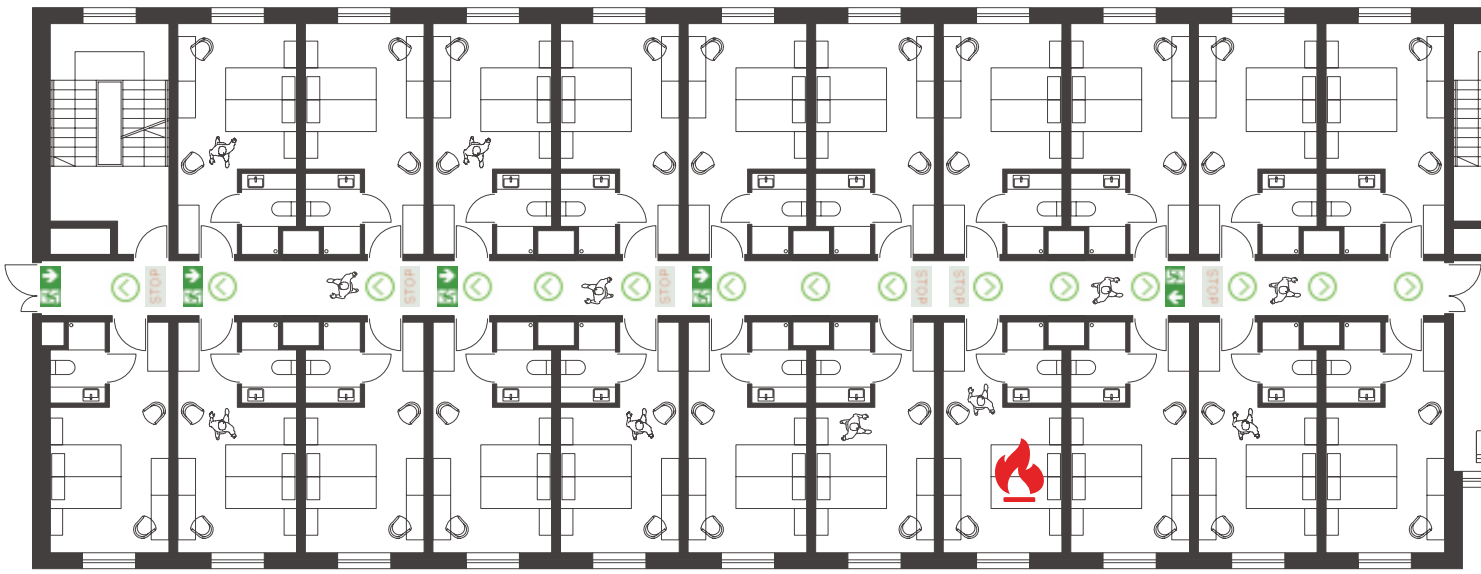
DYNAMIC ESCAPE SYSTEM

The following scenarios show situations in which fire occurs in two buildings of different purposes.

Building plan 1 shows open space and a number of office rooms with conference rooms and sanitary rooms. Building plan 2 shows a hotel building with catering area, technical facility and a lobby with reception. In each of the buildings escape routes have been defined due to dynamic lighting system and INFINITY II and flat eye luminaires. Due to this application, leaving the building takes place on safe roads, ie free from smoke. Dynamic lightning system increase a escape comfort and safety level of people in case of emergency situation.

SCENARIO I

SCENARIO III

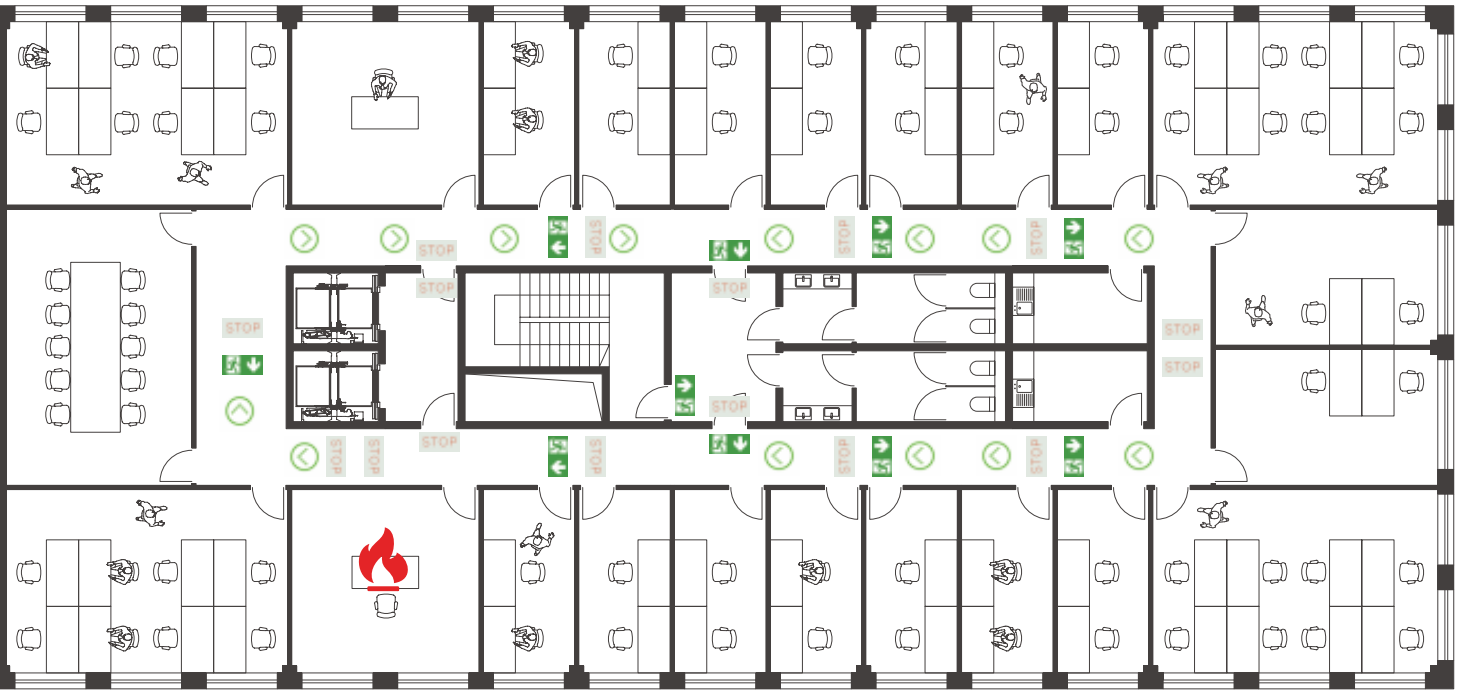


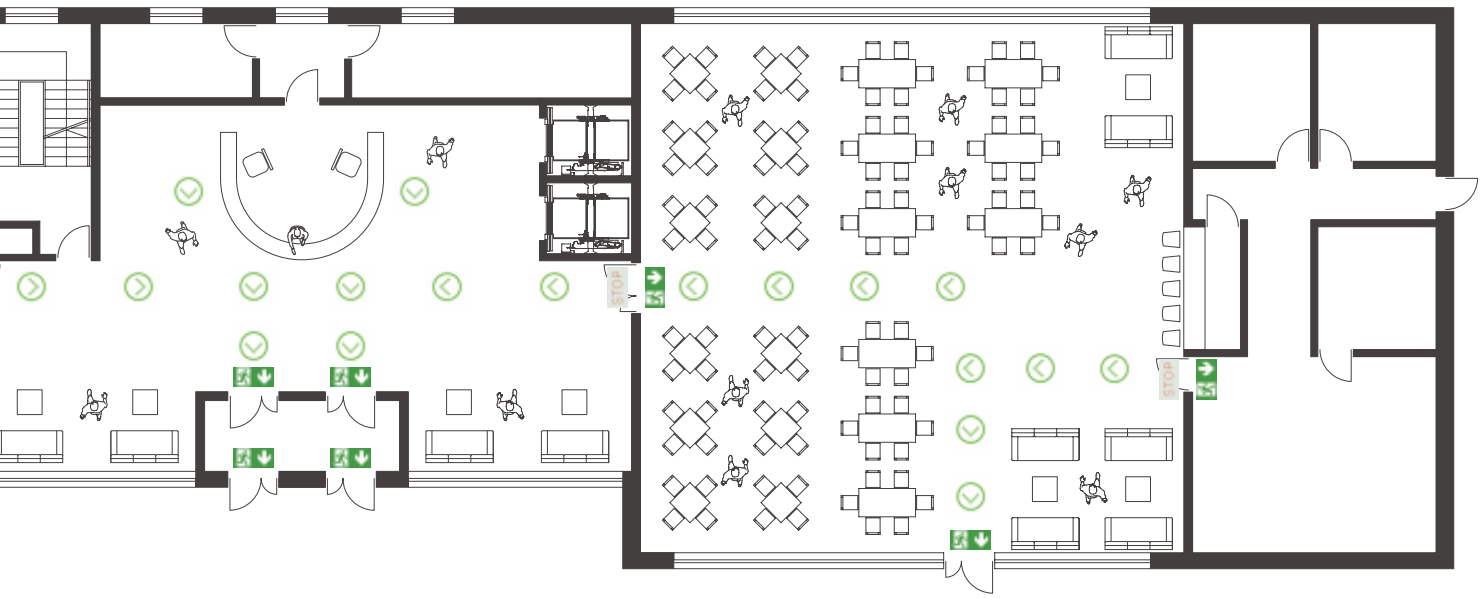
DYNAMIC ESCAPE SYSTEM

Legend:

- fixture EYE FLAT with arrow "right" direction
- fixture EYE FLAT with arrow "left" direction
- fixture EYE FLAT with arrow "up" direction
- fixture EYE FLAT with arrow "down" direction
- fixture EYE FLAT with "STOP" sign
- fixture INFINITY II with arrow "down" direction
- fixture INFINITY II with „STOP' sign
- place of fire
- people inside the building

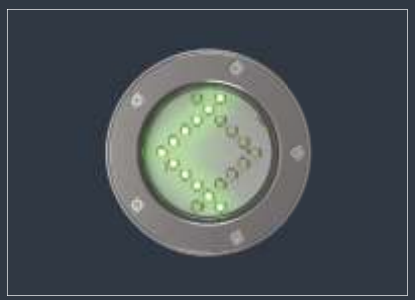
SCENARIO II





DYNAMIC ESCAPE LUMINAIRES

WALL E



FLAT EYE

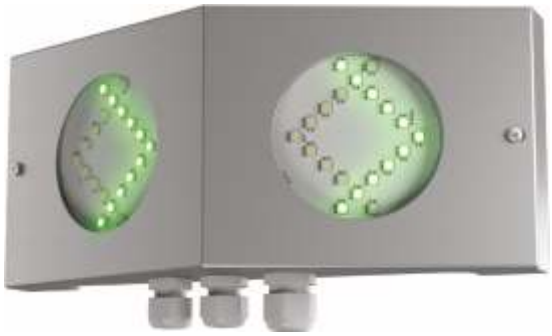
EXIT DES

INFINITY II DES

WALL LINE

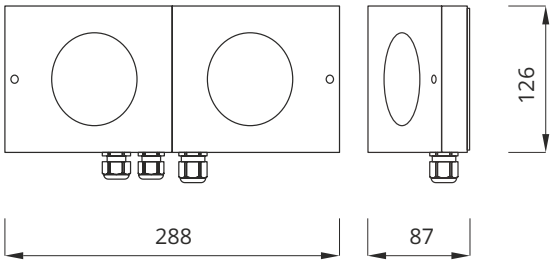
DYNAMIC ESCAPE LUMINAIRES

WALL E



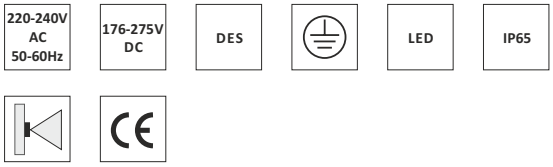
MATERIALS:
Stainless steel 316L
Tempered glass window 5mm
MOUNTING:
Surface (wall)
POWER SUPPLY:
Self contained – 220÷240VAC/50÷60Hz
Central battery – 220÷240VAC/50÷60Hz; 216VDC
LIGHT SOURCE:
max. 2W – high intensity led
INSULATION CLASS:
I
IP RATING:
IP65
AMBIENT TEMPERATURE:
t_a : 0°C ÷ 40°C
OPTIONS:
DES – dynamic escape system
ADDITIONAL INFORMATION:
Luminaire cooperates only with the dynamic escape sign system DES
Luminaire indicate escape route direction according to scenarios from DES.

DIMENSIONS (mm):



DES SYSTEM CONFIGURATION

CODE	POWER	SYSTEM	OPTION
WLE	2W	CB	DES



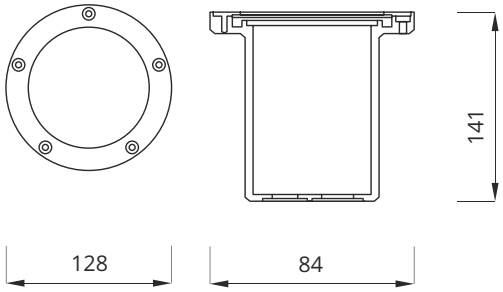
Legend:
DES – dynamic escape system
CB – central battery
WLE – fixture Wall E

DYNAMIC ESCAPE LUMINAIRES

FLAT EYE

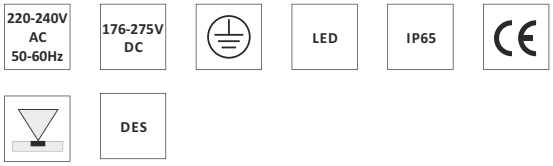
MATERIALS:
Stainless steel 316L
Tempered glass window 5mm
MOUNTING:
Surface (wall)
POWER SUPPLY:
Self contained – 220÷240VAC/50÷60Hz
Central battery – 220÷240VAC/50÷60Hz; 216VDC
LIGHT SOURCE:
max. 2W – high intensity led
INSULATION CLASS:
I
IP RATING:
IP65
AMBIENT TEMPERATURE:
t_a : 0°C ÷ 40°C
OPTIONS:
DES – dynamic escape system
ADDITIONAL INFORMATION:
Luminaire cooperates only with the dynamic escape sign system DES
Luminaire indicate escape route direction according to scenarios from DES.

DIMENSIONS (mm):



DES SYSTEM CONFIGURATION

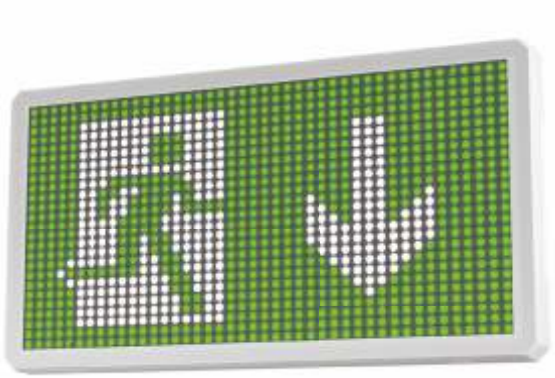
CODE	POWER	SYSTEM	OPTION
FLE	2W	CB	DES



Legend:
DES – dynamic escape system
CB – central battery
FLE – fixture FLAT EYE

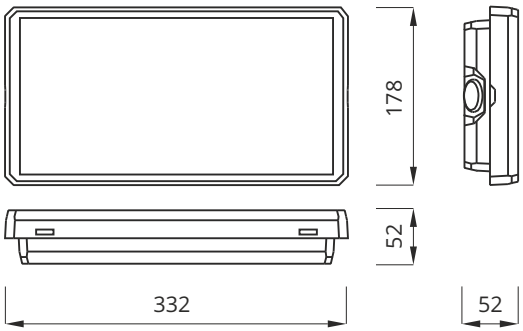
DYNAMIC ESCAPE LUMINAIRES

EXIT DES



MATERIALS:
White polycarbonate body
Opal polycarbonate cover
MOUNTING:
Surface (wall)
Optionally recessed* (wall)
POWER SUPPLY:
Self contained – 220÷240VAC/50÷60Hz
Central battery – 220÷240VAC/50÷60Hz; 216VDC
LIGHT SOURCE:
max. 3W
INSULATION CLASS:
II
IP RATING:
IP65
AMBIENT TEMPERATURE:
t_a : 0°C ÷ 40°C
OPTIONS:
DES – dynamic escape system
ADDITIONAL INFORMATION:
Luminaire cooperates only with the dynamic escape sign system DES
Luminaire indicate escape route direction according to scenarios from DES.
*requires an accessory for recessed mounting

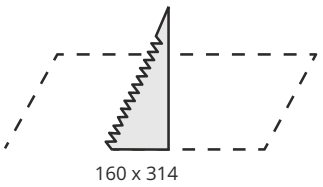
DIMENSIONS (mm):

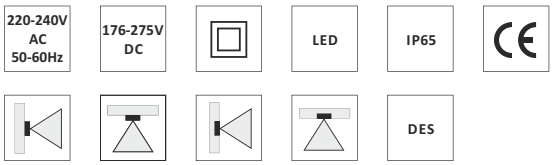


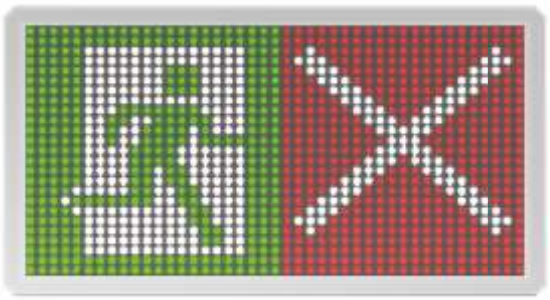
DES SYSTEM CONFIGURATION

CODE	POWER	SYSTEM	OPTION
ETL	3W	CB	DES

RECESSING CUT (mm):
• wall



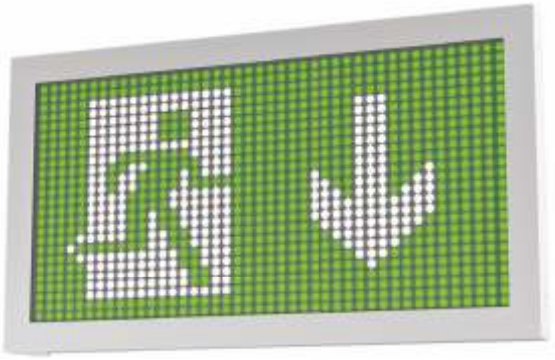




Legend:
DES – dynamic escape system
CB – central battery
ETL – fixture EXIT L DES

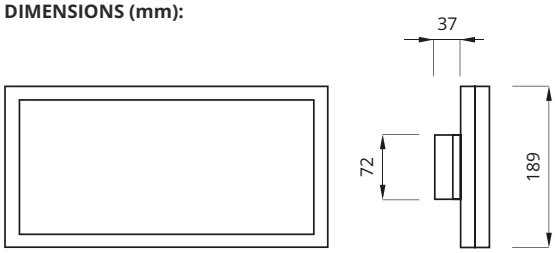
DYNAMIC ESCAPE LUMINAIRES

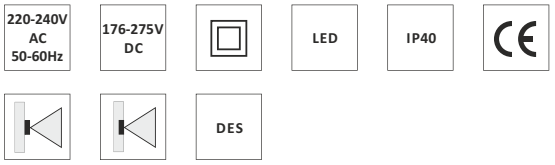
INFINITY II DES



MATERIALS:
White polycarbonate body
Opal polycarbonate cover
MOUNTING:
Surface (wall)
Optionally recessed* (wall)
POWER SUPPLY:
Self contained – 220÷240VAC/50÷60Hz
Central battery – 220÷240VAC/50÷60Hz; 216VDC
LIGHT SOURCE:
max. 3W
INSULATION CLASS:
II
IP RATING:
IP40
AMBIENT TEMPERATURE:
t_a : 0°C ÷ 40°C
OPTIONS:
DES – dynamic escape system
ADDITIONAL INFORMATION:
Luminaire cooperates only with the dynamic escape sign system DES
Luminaire indicate escape route direction according to scenarios from DES.
*requires an accessory for recessed mounting

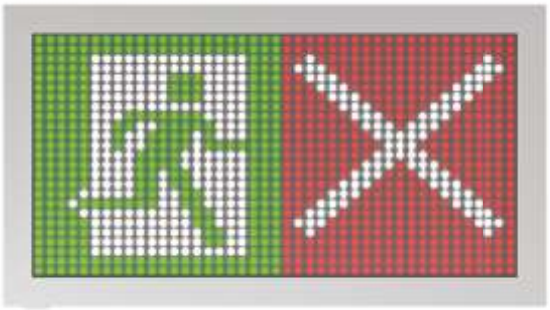
DIMENSIONS (mm):





DES SYSTEM CONFIGURATION

CODE	POWER	SYSTEM	OPTION
IF2B	3W	CB	DES

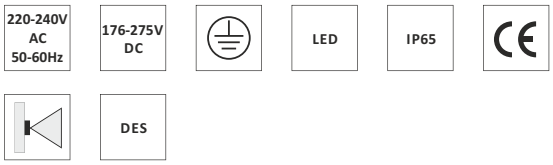


Legend:
DES – dynamic escape system
CB – central battery
IF2B – fixture INFINITY II DES

DYNAMIC ESCAPE LUMINAIRES

WALL LINE

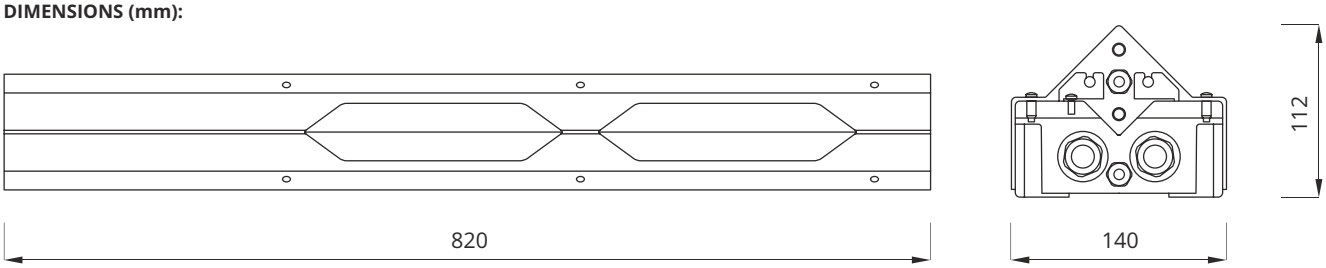
MATERIALS:
Stainless steel body
Plexi glass
MOUNTING:
Surface (wall)
POWER SUPPLY:
Self contained – 220÷240VAC/50÷60Hz
Central battery – 220÷240VAC/50÷60Hz; 216VDC
LIGHT SOURCE:
max. 2W – high intensity led
INSULATION CLASS:
I
IP RATING:
IP65
AMBIENT TEMPERATURE:
t_a : 0°C ÷ 40°C
OPTIONS:
DES – dynamic escape system
ADDITIONAL INFORMATION:
Luminaire cooperates only with the dynamic escape sign system DES
Luminaire indicate escape route direction according to scenarios from DES
Possibility to connect several segments together



DES SYSTEM CONFIGURATION

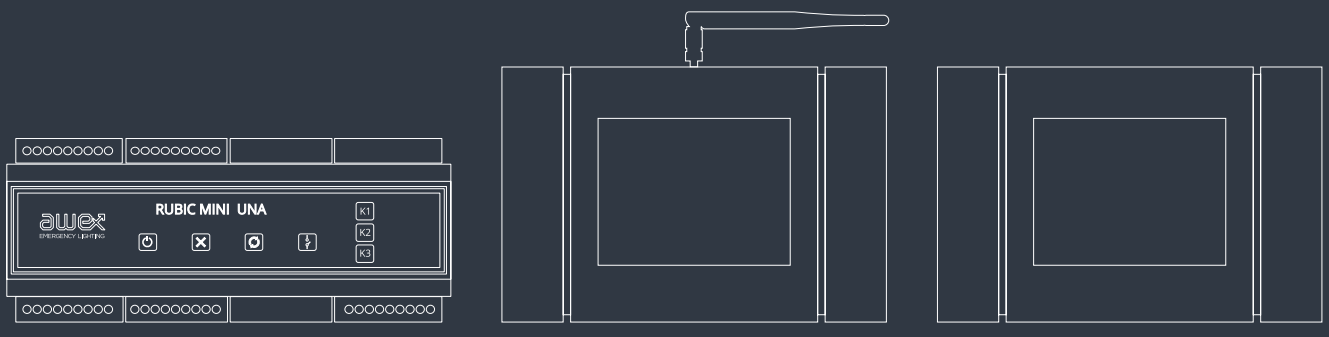
CODE	POWER	SYSTEM	OPTION
WLL	2W	CB	DES

DIMENSIONS (mm):



Legend:
DES – dynamic escape system
CB – central battery
WLL – fixture WALL LINE

RUBIC UNA SYSTEMS



RUBIC UNA SYSTEM

RUBIC MINI UNA

The RUBIC MINI UNA system is a modern, compact solution designed for the monitoring of emergency luminaires with unique addresses installed in small-size buildings and facilities. The system offers the possibility to supervise up to 500 emergency luminaires equipped with RU-type power supply sources.

The main advantages of the MINI UNA control unit are its compact size and the possibility to mount it on a DIN-3 standard rail (TH35). The system is simplified but not deprived of the most important functionalities from the user's point of view. Each control unit is equipped with an RS485 connection for the communication bus, an RJ45 connector, four LEDs indicating the current status of the system, three function keys which can be programmed in the control unit, a reset button and a service pin to assign a unique IP address to the unit. Additionally, the control unit has two potential-free input contacts and two outputs. Communication with RU emergency luminaires is provided by means of an RS485 standard communication bus. A single bus may not exceed 1200 m when linear topology is used. The communication with luminaires is continuous.

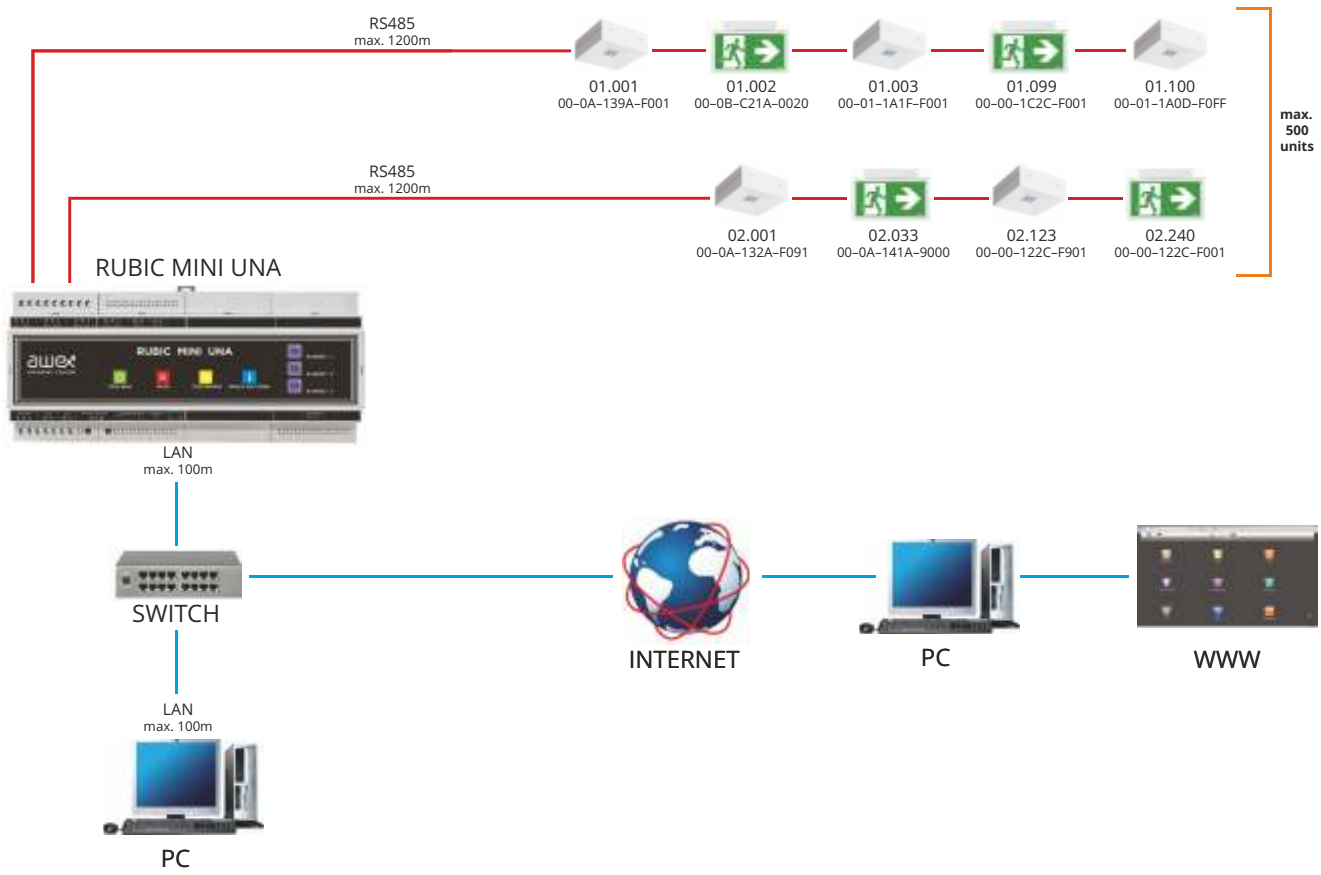
Features:

- Monitoring of up to 500 emergency luminaires
- Maximum lenght of each single bus line 1200m
- System status indicatiors
- TH35 (DIN-3) rail mounted
- Three programmable function keys
- Two potential-free inputs (current loops)
- Two outputs (to control external relays)
- Internal memory to store emergency lighting system reports, compliant with PN-EN 50172
- Mains mode, configured from the control unit
- Testing of individual luminaires or groups of luminaires
- Internal battery for uninterruptible operation
- RJ45 connector for direct communication with any computer via Ethernet
- Individually programmable IP address
- System status preview using any web browser
- Continuous communication with luminaires installed in the system
- System management and visualization by using dedicated SMART VISIO software

For safety reasons, the control unit communicates with luminaires continuously and has a built-in powers supply source. All AWEX systems are manufactured in compliance with applicable European standards.

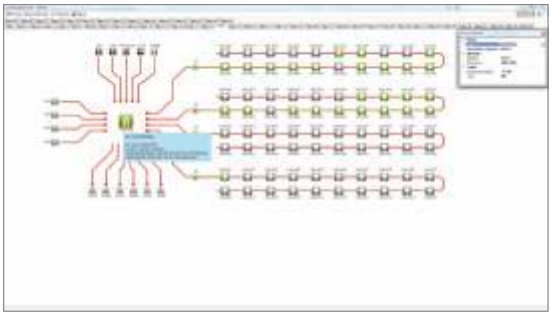
RUBIC UNA SYSTEM

SYSTEM TOPOLOGY



SYSTEM COMPONENTS

ADDRESS MODULE
Features:
- Compatible with LED light sources
- Switching to emergency mode
- $LiFePO_4$ battery
- Battery charge indicator
- Luminaire status indicator



SMART VISIO PLATFORM
Features:
- System status monitoring
- System programming
- Event log viewing
- Test function
- Possibility to upload floor plans of the building/facility

RUBIC UNA SYSTEM

RUBIC UNA

The RUBIC UNA is the latest and the most advanced monitoring system designed to control independent luminaires of emergency and escape route lighting systems. It is designed to be used in medium-to-large facilities and buildings. Each control unit can handle up to 4,000 luminaires using MPU250 Power submodules. The submodules communicate with the RUBIC UNA control unit via LAN. The use of LAN also enables communication between individual submodules.

The RUBIC UNA system is equipped with a touch panel and an intuitive graphic menu to enable quick and easy system configuration without the need for using SMART VISIO.

Thanks to introduced technical solutions polarity does not need to be observed any more while connecting a communication bus to the following system components:

- RUBIC UNA control unit
- MPU250 Power submodules
- RU address modules

Each RU address module is assigned an individual number/address. The addresses are factory-assigned, so an addressing unit is not required for installation, setting up or maintenance work.

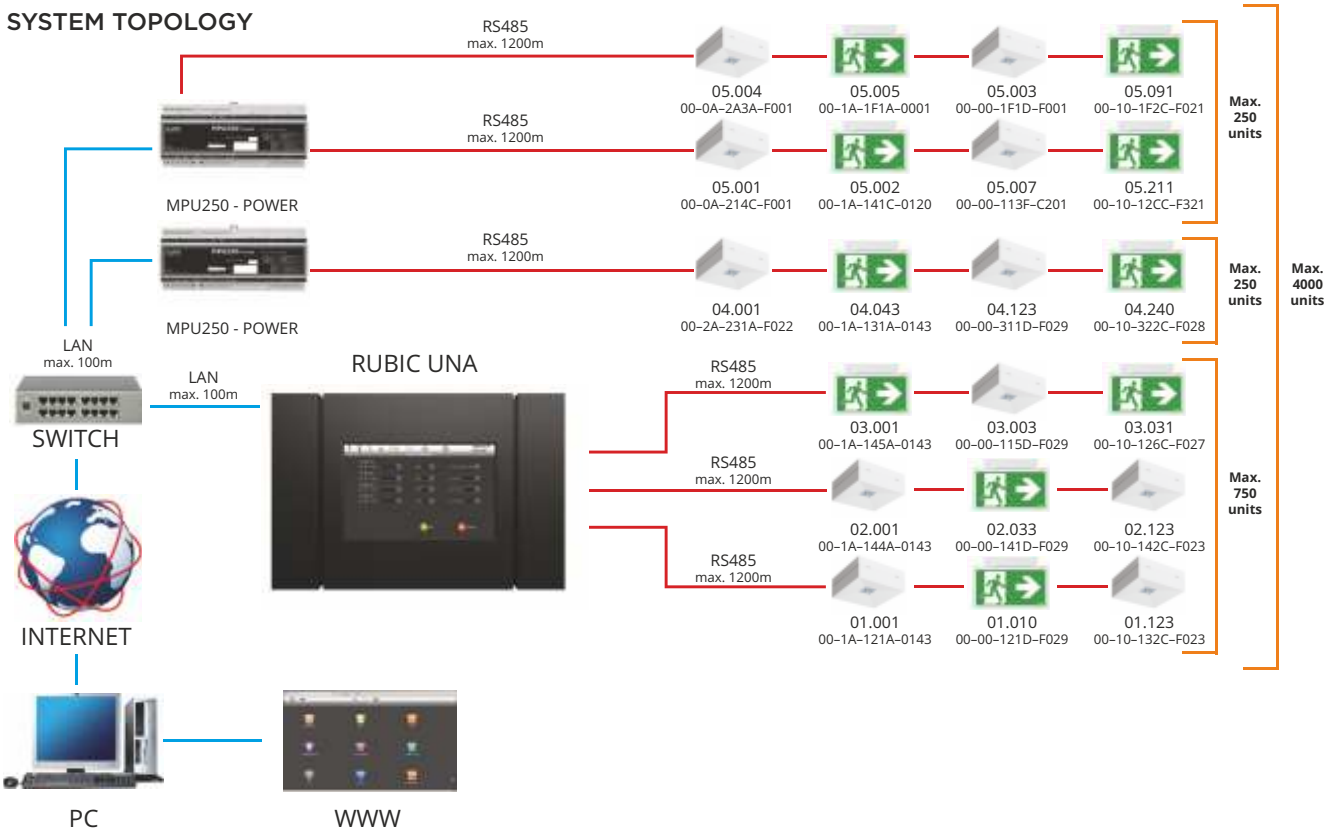
Communication with RU emergency luminaires is provided by means of an RS485 standard communication bus. A single bus may not exceed 1200 m when linear topology is used. The communication with luminaires is continuous.

Features:

- Touch screen control unit
- Unique addresses of luminaires
- Factory-assigned module addresses
- No need for an addressing unit
- Intuitive graphical user interface
- No need to keep the polarity of communication cables connection
- Inbuilt four potential-free inputs and outputs
- Remote access via web browser
- Monitoring of up to 750 luminaires per control unit (3 logical buses: 01, 02 and 03 - each one with 2 physical channels)
- Possibility to expand the control system up to 4,000 luminaires by using additional external submodules
- System status indication
- Compatibility LED light sources
- Internal battery for uninterruptible operation
- Automatic performance of tests
- Event log
- Posibility to divide the luminaires for logic groups
- Mains mode for selected luminaires/groups
- System management and visualization using of dedicated SMART VISIO software
- BACnet standard, enabling compatibility of the RUBIC UNA with Building Management Systems (BMS)

RUBIC UNA SYSTEM

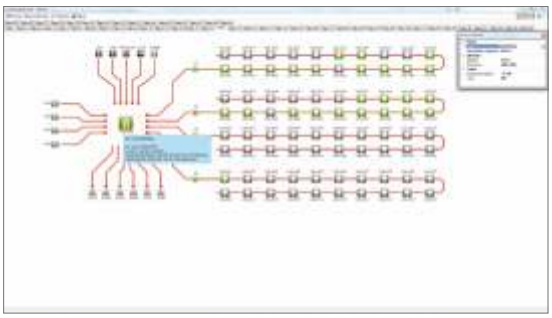
SYSTEM TOPOLOGY



SYSTEM COMPONENTS

MPU250 Power module
Features:
- Submodules mounted on a DIN-3 rail (TH35)
- Monitoring of up to 250 luminaires
- Ethernet connection for LAN communication
- Service pin and Reset button
- Freely programmable IP address
- Built-in uninterruptible power supply unit
- LED indicator of battery charging

ADDRESS MODULE
Features:
- Compatible with LED light sources
- Switching to emergency mode
- Operating on Ni-Cd, Ni-MH or $LiFePO_4$ batteries
- LED status indicator included



SMART VISIO PLATFORM
Features:
- System status monitoring
- System programming
- Event log viewing
- Test function
- Possibility to upload floor plans of the building/facility

RUBIC UNA SYSTEM

RUBIC UNA WIRELESS

RUBIC UNA Wireless system is the latest and most advanced version of the monitoring system intended for emergency and evacuation luminaires. It is dedicated for all types of buildings. Each central unit can control up to 4000 luminaires with the use of submodules MPW250 – Power. submodules communicate with RUBIC UNA RW central unit via LAN network. Communication between luminaires and central unit is wireless. By Mesh network and innovative data sending algorithms was allowed to have a reach up to of 200m in open space area. The system operates in the band ISM 868 MHz which allows overcoming such obstacles as a concrete ceiling and walls. Thanks to this it is possible to increase four times the range in coparison of divices which are oprate with 2,4GHz band, e.g. Wi-Fi standard access points

The Central Unit UNA Wireless has a built in additional submodule with an aerial to communicate with the wireless fittings. To communicate in a wireless mode, each emergency fitting must have a built in aerial. The aerial is assembled in each fitting in a way to avoid or decrease any additional interferences which can may appear during the operation of the electronics.

RUBIC UNA Wireless has a touch panel as well as the graphical and intuitive menu, which causes that in an easy way the system can be configured without using the smartvisio software.

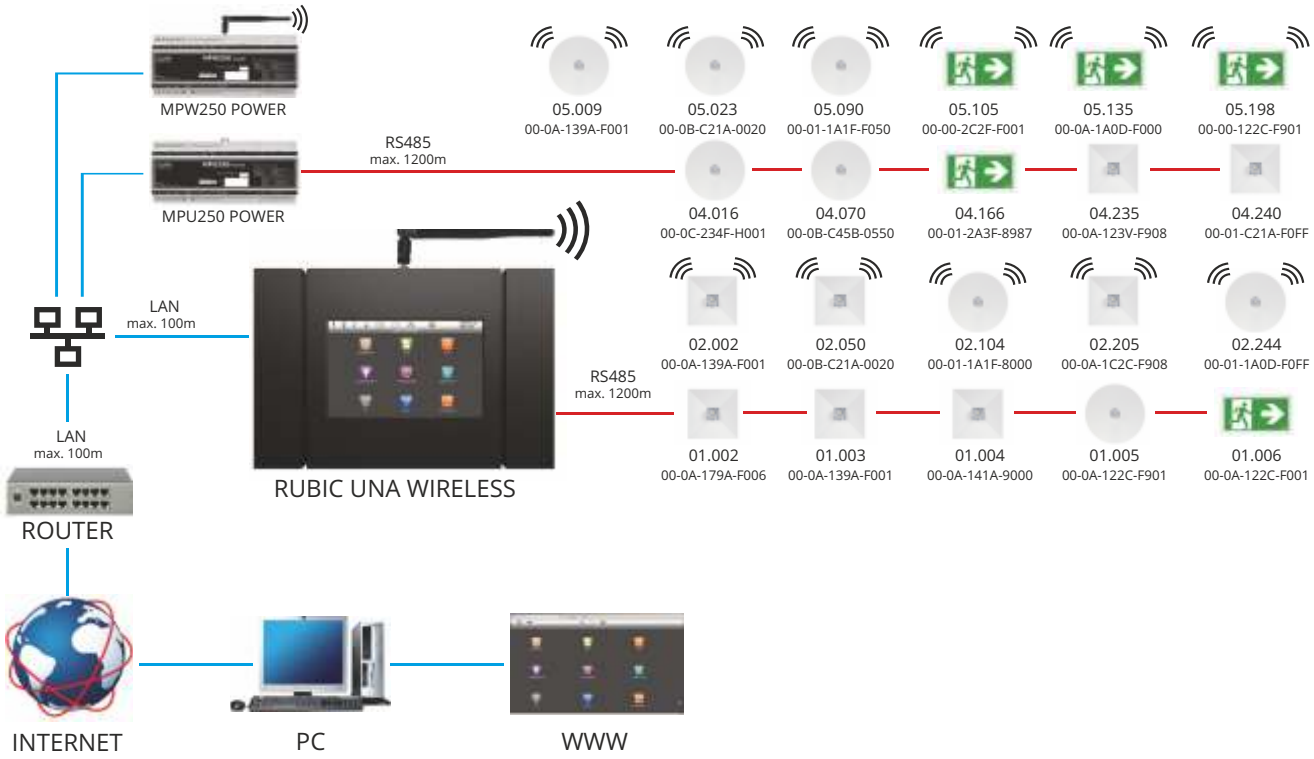
Each addressable RW module has its own individual number/address. The addresses are added during the production process therefore it is pointless to have the additional device such as programmer during the installation or maintenance works.

Features:

- Touch screen control unit
- Unique addresses of luminaires
- Factory-assigned module addresses
- No need for an addressing unit
- Intuitive graphical user interface
- Communication band ISM 868MHz
- Range up to 200m in open space
- Possible to use signal booster
- 4 potential-free inputs and outputs built in the central unit
- Remote access via web browser
- The central unit monitors up to 250 wireless luminaires
- Possible to extend to have 4000 luminaires thanks to use external submodules
- Possible to connect Wireless luminaires and and standard cable connection
- System status indication
- Wireless option for LED luminaires only
- Internal battery for uninterruptible operation
- Automatic performance of tests
- Event log
- Posibility to divide the luminaires for logic groups
- Mains mode for selected luminaires/groups
- System management and presentation by using dedicated SmartVISIO software
- BACnet system

RUBIC UNA SYSTEM

SYSTEM TOPOLOGY



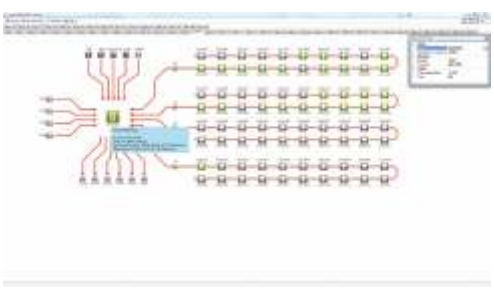
ELEMENTY SYSTEMU

MODULE MPW250 – POWER
Features:

- Assembly of subordinate module on bus DIN-3 (TH35)
- Monitoring up to 250 wireless luminaires
- RJ45 connector
- Service pin and reset button
- Freely programable IP address
- Builtin wireless feeder
- Internal battery for uninterruptible operation with battery indicator

UNILED BM RW WIRELESS ADDRESS MODULE
Features:

- Cooperation with LED light source only
- Emergency mode switch
- Compatible with NiCD and LIFEPO4 batteries
- Storage battery charging signal
- LED indicator included
- Compatible with specific Wireless luminaires



SMART VISIO APPLICATION
Features:

- System status control
- System programming
- Event log readout and printout
- Calling test function
- Possible to read in plans

RUBIC UNA SYSTEM

ACCESSORIES

MPU250 – Power

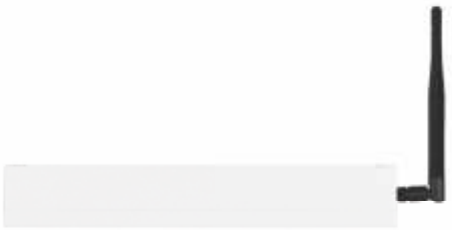
Name	RUBIC UNA submodule with a built-in power supply unit
Max. numberof luminaires	250
Communication	RUBIC UNA – LAN/luminaires – RS485
Mounting	DIN-3 (TH35)
Supply voltage	230VAC
Dimensions	210 x 90 x 58 mm
Output Voltage	12VDC

MPW250 – Power

Name	RUBIC UNA WIRELESS submodule with a built-in power supply unit
Max. numberof luminaires	250
Communication	RUBIC UNA – LAN/luminaires – Wireless
Mounting	DIN-3 (TH35)
Supply voltage	230VAC
Dimensions	210 x 90 x 58 mm
Output Voltage	12VDC

SIGNAL BOOSTER

Name	Wireless signal amplifier
Max. number of booster	10
Communication	Wireless
Mounting	Surface
Supply voltage	230VAC
Dimensions	230 x 70 x 37



ZMP-U

Name	Uninterruptible power supply unit (UPS)
Number of modules	1
Supply voltage	230V AC 50/60 Hz
Output voltage	12V DC
Mounting	DIN-3 (TH35)
Dimensions	105 x 90 x 58 mm

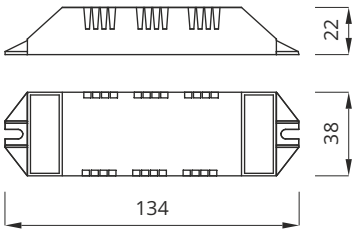
SWITCH RU

Name	Network switch
Number of channels	5 or 8
Supply voltage	12V DC
Output voltage	12V DC
Mounting	DIN-3 (TH35)
Dimensions	33 x 78 x 107 or 64 x 98 x 118 mm

RUBIC UNA SYSTEM

UNILED BM

MATERIALS:
Polycarbonate body
MOUNTING:
Inside the primary lighting luminaire or separately
POWER SUPPLY:
220÷240VAC/50÷60Hz
LIGHT SOURCE:
1W, 3W or 6W*, dedicated 3.3V light sources
CHARGING:
Max. 12 h; energy-effcient electronic pulse charger
AUTONOMY AND BATTERIES:
1h, 2h, 3h or 8h; $LiFePO_4$ batteries
INSULATION CLASS:
II
IP RATING:
IP20
AMBIENT TEMPERATURE:
t_a: 0°C÷40°C
Option: low-temperature version (to -25°C) equipped with an HTR25 heater unit
ADDITIONAL INFORMATION:
LED indicator of mains power supply and battery charging Deep discharge protection
Automatic detection of battery capacity and setting up test parametres
*6W LED output available only in emergency mode (SE)



UNILED BM MODULE CONFIGURATION

CODE	POWER [W]	AUTONOMY [h]	OPTION	BATTERY
BM/1/1/RU	1	1	RU	$LiFePO_4$ 6,4V 1,0Ah
BM/1/3/RU		3	RU	$LiFePO_4$ 6,4V 1,0Ah
BM/1/8/RU		8	RU	$LiFePO_4$ 6,4V 3,0Ah
BM/2/1/RU	2	1	RU	$LiFePO_4$ 6,4V 1,0Ah
BM/2/3/RU		3	RU	$LiFePO_4$ 6,4V 2,0Ah
BM/3/1/RU	3	1	RU	$LiFePO_4$ 6,4V 1,5Ah
BM/3/3/RU		3	RU	$LiFePO_4$ 6,4V 3,0Ah
BM/6/1/RU	6	1	RU	$LiFePO_4$ 6,4V 3,0Ah
BM/6/6/RU		3	RU	$LiFePO_4$ 6,4V 6,0Ah

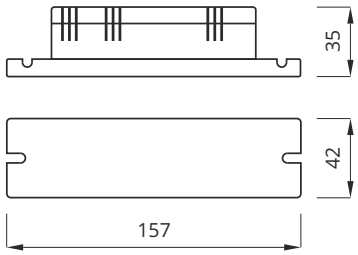
*Battery pack included.

LEGEND:
RU – Rubic UNA central monitoring
BM – UNILED BM emergency module

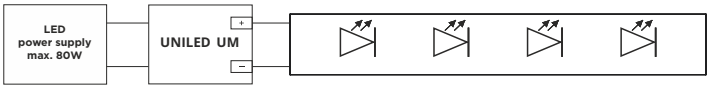
RUBIC UNA SYSTEM

UNILED UM

MATERIALS:
Polycarbonate body
MOUNTING:
Inside the primary lighting luminaire or separately
POWER SUPPLY:
220÷240VAC/50÷60Hz;
LIGHT SOURCE:
Power output mode: max. 80W
Compatible with LED light sources operating at 12V – 90V DC (up to 80W)
OUTPUT POWER:
1W – 9W (100mA – 750mA)
CHARGING:
Max. 12h or 24h, depending on the battery capacity
AUTONOMY AND BATTERIES:
1h, 3h or 8h; $LiFePO_4$ batteries
INSULATION CLASS:
II
IP RATING:
IP20
AMBIENT TEMPERATURE:
t_a: 0°C÷50°C
Option: low-temperature version (to -25°C) equipped with an HTR25 heater unit
ADDITIONAL INFORMATION:
Deep-discharge protection
Automatic detection of battery capacity and setting up test parametres
Automatic detection of the voltage of the installed light source In emergency mode, an LED indicates incorrect configuration



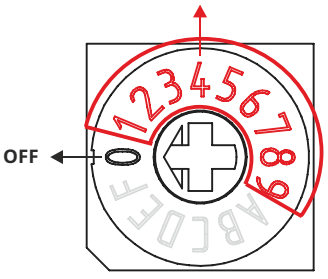
POWER OUTPUT MODE



Battery type		AUTONOMY [H]		
		1h	3h	8h
$LiFePO_4$	9,6V 1500mAh	9W	3W	1W
	9,6V 3000mAh	9W	5W	2W
	9,6V 6000mAh	9W	9W	4W

Settings

Power output mode. Output power selection range: 1W to 9W



Light source power in emergency mode

$$\frac{\text{luminous flux in emergency mode}}{\text{luminous flux in mains supply mode}} = \frac{\text{LED l. s. power in emergency mode}}{\text{LED l. s. power in mains supply mode}}$$

$$\text{luminous flux in emergency mode [lm]} = \frac{\text{LED l. s. power in emergency mode [W]}}{\text{LED l. s. power in mains supply mode [W]}} \times \text{luminous flux in mains supply mode [lm]}$$

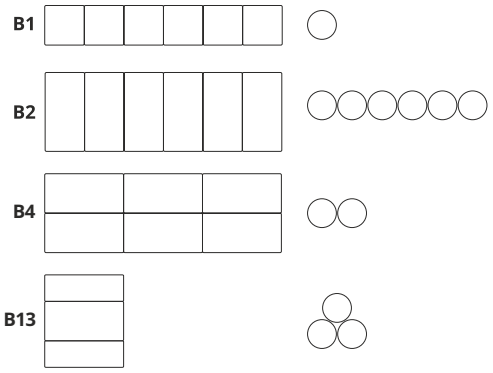
RUBIC UNA SYSTEM

UNILED UM PREMIUM CONFIGURATION

CODE	BATTERY					OPTION
	CAPACITY	TYPE	PACKAGES			
UM	15	Li	B1	B2	B13	RU
UM	30	Li	B1	B2	B13	RU
UM	60	Li	B1	B2	B4	RU

*Battery pack included.

BATTERY PACK CONFIGURATION DIAGRAM



LEGEND:
RU – Rubic UNA central monitoring
UM – UNILED UM emergency module
15 – 1500 mAh battery capacity
30 – battery capacity 3000 mAh
60 – battery capacity 6000 mAh
Li – battery type $LiFePO_4$
B1, B2, B4, B13 – battery pack configuration types

RUBIC UNA SYSTEM

EMERGENCY ESCAPE LUMINAIRES

AXN RU/RW series

Luminaire type	Surface-mounted, ceiling, wall, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W or 6W (SE)
IP Rating	IP42 or IP65
Operating modes	Programmable SA/SE
RW mode	YES

AXNC, AXNR, AXNO, AXNU, AXNA

220-240V AC 50-60Hz | LED | IP42 | IP65

AXP RU series

Luminaire type	Recessed-mounted, ceiling, wall, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W or 6W (SE)
IP Rating	IP20 or IP65/20
Operating modes	Programmable SA/SE

AXPC, AXPR, AXPO, AXPU, AXPA

220-240V AC 50-60Hz | LED | IP20 | IP65/20

LOVATO II RU/RW series

Luminaire type	Surface-mounted, ceiling, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP41
Operating modes	Programmable SA/SE
RW mode	YES

LV2C, LV2R, LV2O, LV2U, LV2A

220-240V AC 50-60Hz | LED | IP41

LOVATO P RU series

Luminaire type	Recessed-mounted, ceiling, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20
Operating modes	Programmable SA/SE

LVPC, LVPR, LVPO, LVPU, LVPA

220-240V AC 50-60Hz | LED | IP20

EYE LED RU series

Luminaire type	Recessed-mounted, ceiling, R or U optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20
Operating modes	Programmable SA/SE

EY, EYR, EYU, EYK, EYKR, EYKU

220-240V AC 50-60Hz | LED | IP20

SPY II RU series

Luminaire type	Inside primary luminaire
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20
Operating modes	Programmable SA/SE

SP2

220-240V AC 50-60Hz | LED | IP20

MICRO SPOT RU series

Luminaire type	Inside primary luminaire, R or U optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20
Operating modes	Programmable SA/SE

MSU, MSR

220-240V AC 50-60Hz | LED | IP20

OUTDOOR LED RU series

Luminaire type	Surface-mounted, wall
Light source	LED 3x1W
IP Rating	IP66
Operating modes	Programmable SA/SE

ODB

220-240V AC 50-60Hz | LED | IP66

EXIT RU/RW series

Luminaire type	Surface/Recessed*-mounted, wall, ceiling
Light source	LED 1W, 2W, 3W, 6W
IP Rating	IP65
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

ETS, ETE, ETL

220-240V AC 50-60Hz | LED | IP65

HELIOS RU/RW series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 3W, 3x1W, 6x1W
IP Rating	IP42/IP65
Operating modes	Programmable SA/SE (*only LED version)
RW mode	YES

H, HL, HHP, HW

220-240V AC 50-60Hz | LED | IP42 | IP65

TIGER RU series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 3W
IP Rating	IP22
Operating modes	Programmable SA/SE (*only LED version)

TL

220-240V AC 50-60Hz | LED | IP22

RUBIC UNA SYSTEM

SK–8 RU/RW series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 3W
IP Rating	IP44
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

SK–8

220-240V AC 50-60Hz | LED | IP44

INFINITY II RU/RW series

Luminaire type	Surface-mounted, wall
Light source	LED 3W
IP Rating	IP40
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

IF2BWD

220-240V AC 50-60Hz | LED | IP40

ARROW N RU series

Luminaire type	Surface-mounted, wall, ceiling with O or C optics
Light source	LED 1W, 2W, 3x1W
IP Rating	IP40
Operating modes	Programmable SA/SE

ARNO, ARNC, ARNS

220-240V AC 50-60Hz | LED | IP40

ARROW P RU series

Luminaire type	Recessed, ceiling with O or C optics
Light source	LED 1W, 2W, 3x1W
IP Rating	IP40
Operating modes	Programmable SA/SE

ARPO, ARPC, ARPS

220-240V AC 50-60Hz | LED | IP40

EDGE R RU/RW series

Luminaire type	Surface-mounted, wall, ceiling
Light source mains mode	LED 12W, 18W, 24W
Light source emergency mode	LED 1W, 3W
IP Rating	IP54
Operating modes	Programmable SA/SE
RW mode	YES

EDRE

220-240V AC 50-60Hz | LED | IP54

EDGE S RU/RW series

Luminaire type	Surface-mounted, wall, ceiling
Light source mains mode	LED 12W, 18W, 24W
Light source emergency mode	LED 1W, 3W
IP Rating	IP54
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

EDSE

220-240V AC 50-60Hz | LED | IP54

*current list of CNBOP fire protection approvals is available at www.awex.eu
**current list of products with Kitemark and ENEC is available at www.awex.eu

RUBIC UNA SYSTEM

ESCAPE ROUTE LUMINAIRES

SK-8 RU/RW series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 1W, 2W
IP Rating	IP44
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

SK–8

220-240V AC 50-60Hz | LED | IP44

ARROW N RU series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 1W, 2W
IP Rating	IP40
Operating modes	Programmable SA/SE

ARN

220-240V AC 50-60Hz | LED | IP40

ARROW P RU series

Luminaire type	Recessed-mounted, ceiling
Light source	LED 1W, 2W
IP Rating	IP40
Operating modes	Programmable SA/SE

ARP

220-240V AC 50-60Hz | LED | IP40

TWINS RU series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 1W, 2W
IP Rating	IP41
Operating modes	Programmable SA/SE

TW

220-240V AC 50-60Hz | LED | IP41

PLEXI LED RU series

Luminaire type	Recessed-mounted, ceiling
Light source	LED 1W, 2W
IP Rating	IP20
Operating modes	Programmable SA/SE

PL

220-240V AC 50-60Hz | LED | IP20

ESCAPE RU series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W, 2W
IP Rating	IP20
Operating modes	Programmable SA/SE

EL

220-240V AC 50-60Hz | LED | IP20

TIGER RU series

Luminaire type	Surface/Recessed-mounted, wall
Light source	LED 1W, 2W
IP Rating	IP22
Operating modes	Programmable SA/SE

TL

220-240V AC 50-60Hz | LED | IP22

TIGER DS RU series

Luminaire type	Surface/Recessed-mounted, ceiling
Light source	LED 1W
IP Rating	IP22
Operating modes	Programmable SA/SE

TSL

220-240V AC 50-60Hz | LED | IP22

SCREEN RU series

Luminaire type	Surface-mounted, wall
Light source	LED 3x1W, 3W, 2x3W
IP Rating	IP40
Operating modes	Programmable SA/SE

SC30, SC40, SC60

220-240V AC 50-60Hz | LED | IP40

SCREEN DS RU series

Luminaire type	Surface-mounted, ceiling
Light source	LED 3x1W, 3W, 2x3W
IP Rating	IP40
Operating modes	Programmable SA/SE

SCS30, SCS40, SCS60

220-240V AC 50-60Hz | LED | IP40

RUBIC UNA SYSTEM

HELIOS RU series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W
IP Rating	IP42/IP65
Operating modes	Programmable SA/SE

HL

220-240V AC 50-60Hz | LED | IP42 | IP65

HELIOS DS RU series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W
IP Rating	IP42/IP65
Operating modes	Programmable SA/SE

HDL

220-240V AC 50-60Hz | LED | IP42 | IP65

EXIT RU/RW series

Luminaire type	Surface/Recessed-mounted*, wall, ceiling**
Light source	LED 1W, 2W
IP Rating	IP65
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

*requires an accessory for Recessed mounting
**requires an accessory – plexi glass

ETS+ETS/PLX, ETE+ETE/PLX, ETL+ETL/PLX

220-240V AC 50-60Hz | LED | IP65

INFINITY II A RU/RW series

Luminaire type	Surface/Recessed-mounted*, ceiling
Light source	LED 1W, 2W
IP Rating	IP40
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

*requires an accessory for Recessed mounting

IF2ACS

220-240V AC 50-60Hz | LED | IP40

INFINITY II A RU/RW series

Luminaire type	Surface/Recessed-mounted*, wall
Light source	LED 1W, 2W
IP Rating	IP40
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

*requires an accessory for Recessed mounting

IF2AWS

220-240V AC 50-60Hz | LED | IP40

INFINITY II A RU/RW series

Luminaire type	Surface/Recessed-mounted*, ceiling
Light source	LED 1W, 2W
IP Rating	IP40
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

*requires an accessory for Recessed mounting

IF2ALS

220-240V AC 50-60Hz | LED | IP40

INFINITY II B RU/RW series

Luminaire type	Surface/Recessed-mounted*, wall
Light source	LED 1W, 2W
IP Rating	IP40
Operating modes	Programmable SA/SE
RW mode	YES, only surface mounting

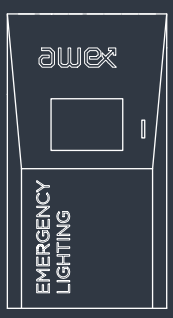
*requires an accessory for Recessed mounting

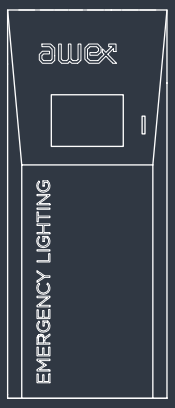
IF2BWS

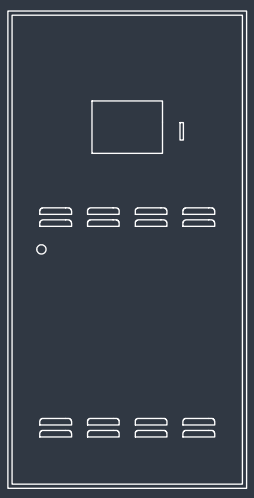
220-240V AC 50-60Hz | LED | IP40

*current list of CNBOP fire protection approvals is available at www.awex.eu
**current list of products with Kitemark and ENEC is available at www.awex.eu

FZLV CENTRAL BATTERY SYSTEM







FZLV CENTRAL BATTERY SYSTEM

SYSTEM OVERVIEW

The emergency luminaire market has recently undergone a significant transformation, in particular as regards light sources. Luminaires with LED lamps are now more and more common in emergency lighting systems due to their longer durability, a better energy efficiency and lower operating temperatures. Moreover, increasingly restrictive requirements concerning safety, reliability and autonomy of such systems, as well as a reduction of their installation costs, inspired AWEX to design a new central battery system (FZLV) that would satisfy all those needs. The FZL V system supplies loads via SELV (Safety Extra-Low Voltage) circuits operating at 24V DC, according to protection class III. The use of SELV ensures a very high level of the safety of operation of the whole system and its components and complies with applicable regulations. The system also provides a good protection against electric shock in case of a firefighting action, even if voltage is present in the circuits. The FZLV combines advantages of decentralized autonomous systems with the convenience of using central battery systems.

The system incorporates own batteries whose capacity depends on the rated load and required duration of emergency lighting. The system is especially useful within a single fire zone. The use of a low power supply voltage does not only enhance the fire safety of the system, but also enables the use of smaller-sized batteries and consequently the cabinet is also smaller. A more compact size of the cabinet can be located in places where bulky central battery systems cannot be fitted.

FZLV

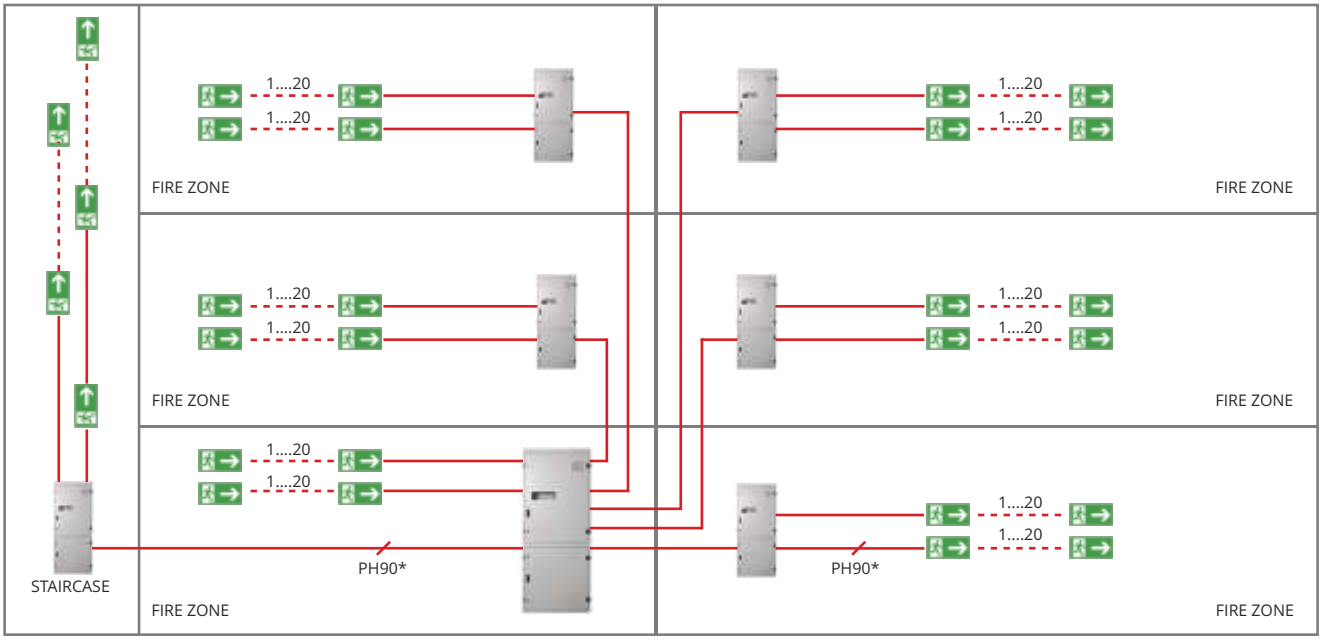
FZLV – MAX

FZLV CENTRAL BATTERY SYSTEM

An FZLV unit can be supplied from a 230V AC or a 216V DC power source. As a result, the unit can be connected to a central battery system (CBS) as a substation without installing internal batteries. This functionality enables the system to be used in facilities where a CBS is required, but a safe voltage must also be ensured in areas where there is a risk of electric shock.

Comparison of two different power supply concepts: conventional and decentralised

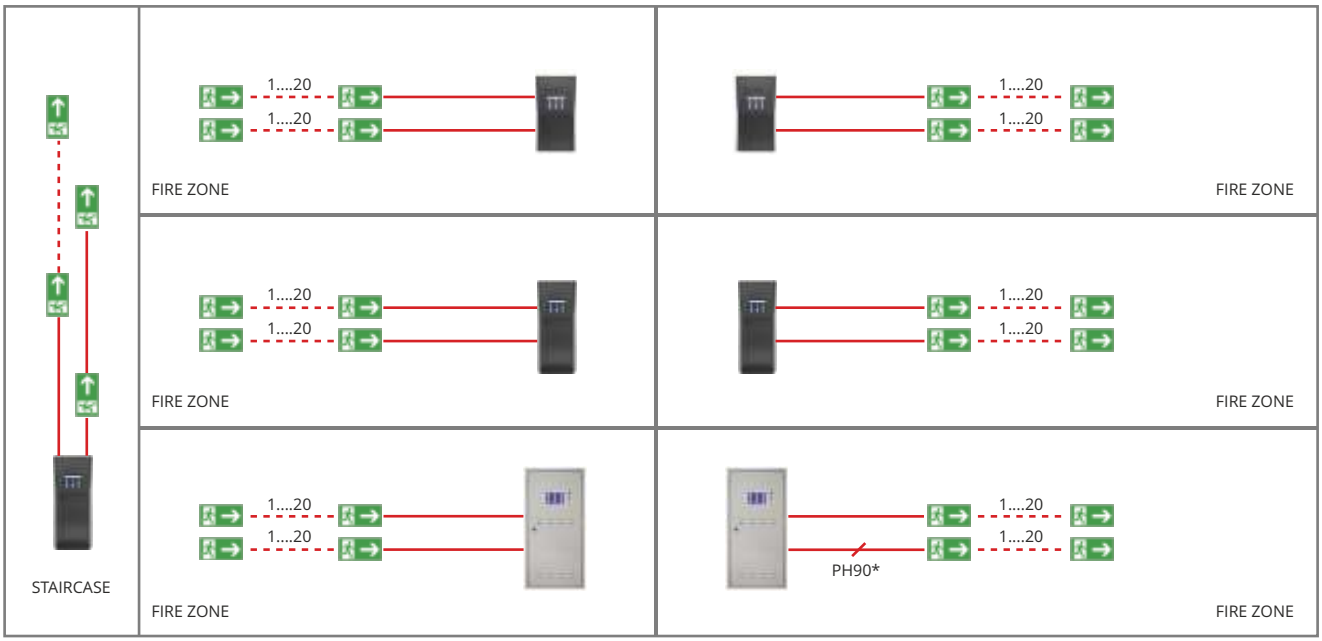
CONVENTIONAL CENTRAL BATTERY SYSTEM



Conventional system

Main station failure	Damaged insulation of the branch circuit
Cable failure: main station – substation	Total substation failure
Damaged insulation of the branch circuit	Risk of electric shock

FZLV CENTRAL BATTERY SYSTEM



Decentralized system

Main station failure	No central system
Cable failure: main station – substation	Each system is independent; the failure is limited to one fire zone
Damaged insulation of the branch circuit	Negligible fire hazard (SELV)

*national regulations apply

FZLV CENTRAL BATTERY SYSTEM

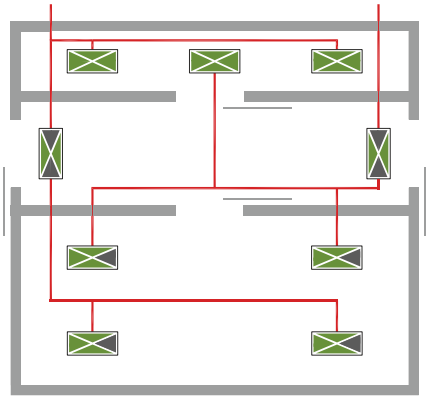
SMART – SWITCHING METHOD AND REVISION TECHNOLOGY

A conventional installation requires that the operating mode of each circuit is specified at the design stage. Subsequent modifications or errors may cause extra costs. In order to eliminate such drawbacks, AWEX has introduced a new technology with automatic monitoring and individual control of each luminaire in a system.

Switching
Method
And
Revision
Technology

or SMART for short. This technology enables installation of luminaires - in a common circuit – operating in four modes: continuous, intermittent, switched and dimmed. Programming and monitoring of the luminaires are provided via power supply cables. The applied technology does not require the use of special communication cables. It can be implemented if appropriate address modules are installed in the luminaires. The modules are fitted as standard in all luminaires designed to work within an FZLV central battery system. Each address module is assigned a unique address which enables its accurate identification in the system.

A SMART TECHNOLOGY SYSTEM LAYOUT



MAINTAINED OPERATION

NON-MAINTAINED OPERATION

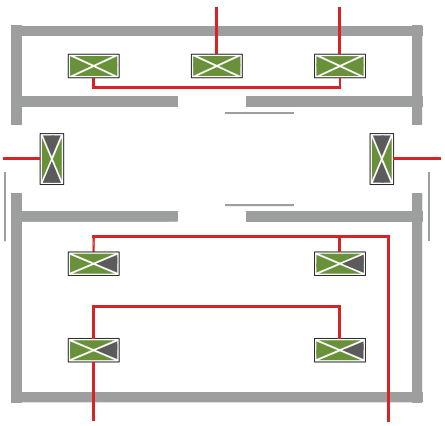
SWITCHED MODE

*DIMMED MODE

SMART advantages:

- Luminaires operating in different modes can be installed within a single circuit
- Less cable is required
- Smaller number of circuits
- Lower installation costs
- Operating modes of the luminaires can be changed at any time

A CONVENTIONAL SYSTEM LAYOUT



MAINTAINED OPERATION

NON-MAINTAINED OPERATION

SWITCHED MODE

Conventional limitations:

As compared with the SMART system, a conventional system has the following limitations:

- Only one operating mode is available in the branch circuit
- Higher installation costs
- Higher costs of subsequent changes
- Changing operating modes is more difficult

* FZLV systems only

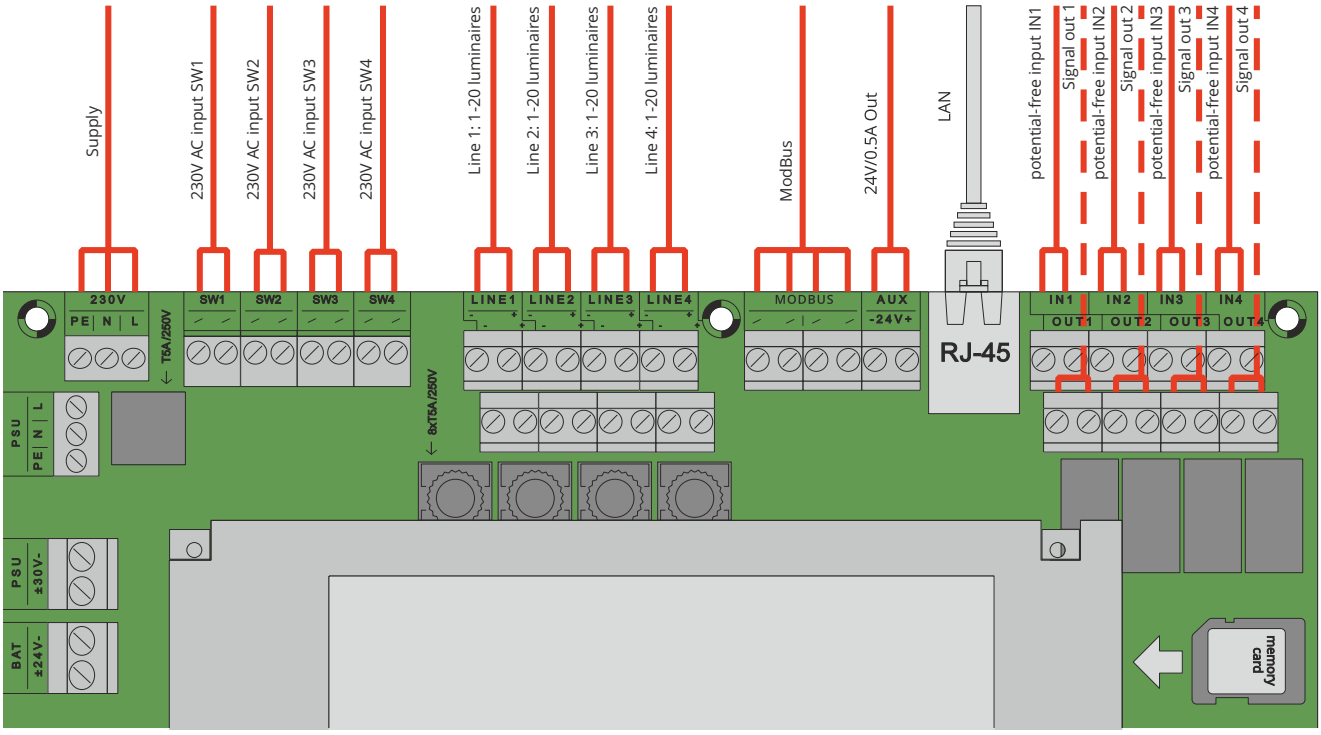
FZLV CENTRAL BATTERY SYSTEM

CONTROL MODULE

The system control module is equipped with a large touch screen panel which displays information on the current operating status of the system and luminaire circuits and enables setting up and modifying all system parameters via a graphic user interface. The statuses are displayed using text and graphics.
Each luminaire integrated within the system can be assigned a name to facilitate its identification.

Features:

- Non-volatile memory to store all events and tests results for at least 2 years
- Control menu with language selection
- Registration of system configuration parameters and events on an SD card
- Standard Ethernet interface for remote control and monitoring via a web browser
- Integrated ModBUS protocol to communicate with a BMS
- System status display
- Automatic detection and integration of new luminaires in the system
- Automatic or manual activation of short or long tests of the whole system
- Operating mode and control configuration for each luminaire
- Setting brightness and emergency duration for each luminaire separately
- Assigning names to luminaires
- Assigning design addresses to luminaires
- Adjustable daytime/nighttime operation timer
- Connection of up to 8 phase loss sensors
- Built-in clock and calendar with DST adjustment and synchronization with a time server
- Remote luminaire diagnostics
- Remote notification of the system status by e-mail



FZLV CENTRAL BATTERY SYSTEM

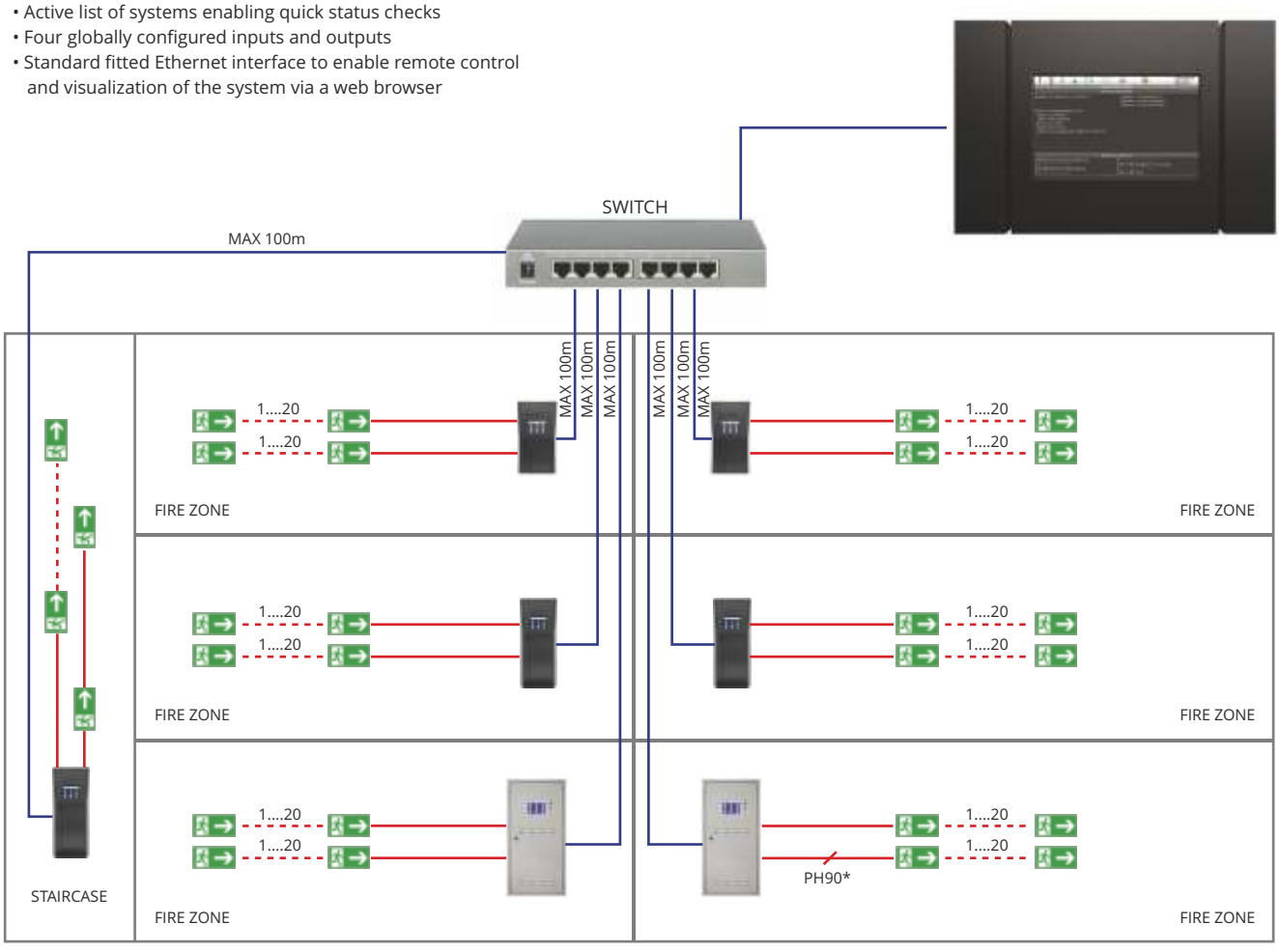
SMART TOUCH CONTROLLER

The SMART TOUCH controller enables remote control and monitoring of any number of units from a single location. The controller provides remote monitoring, configuration and reading of events for each connected FLZV unit.

SMART TOUCH control panel – sample menu

Features:

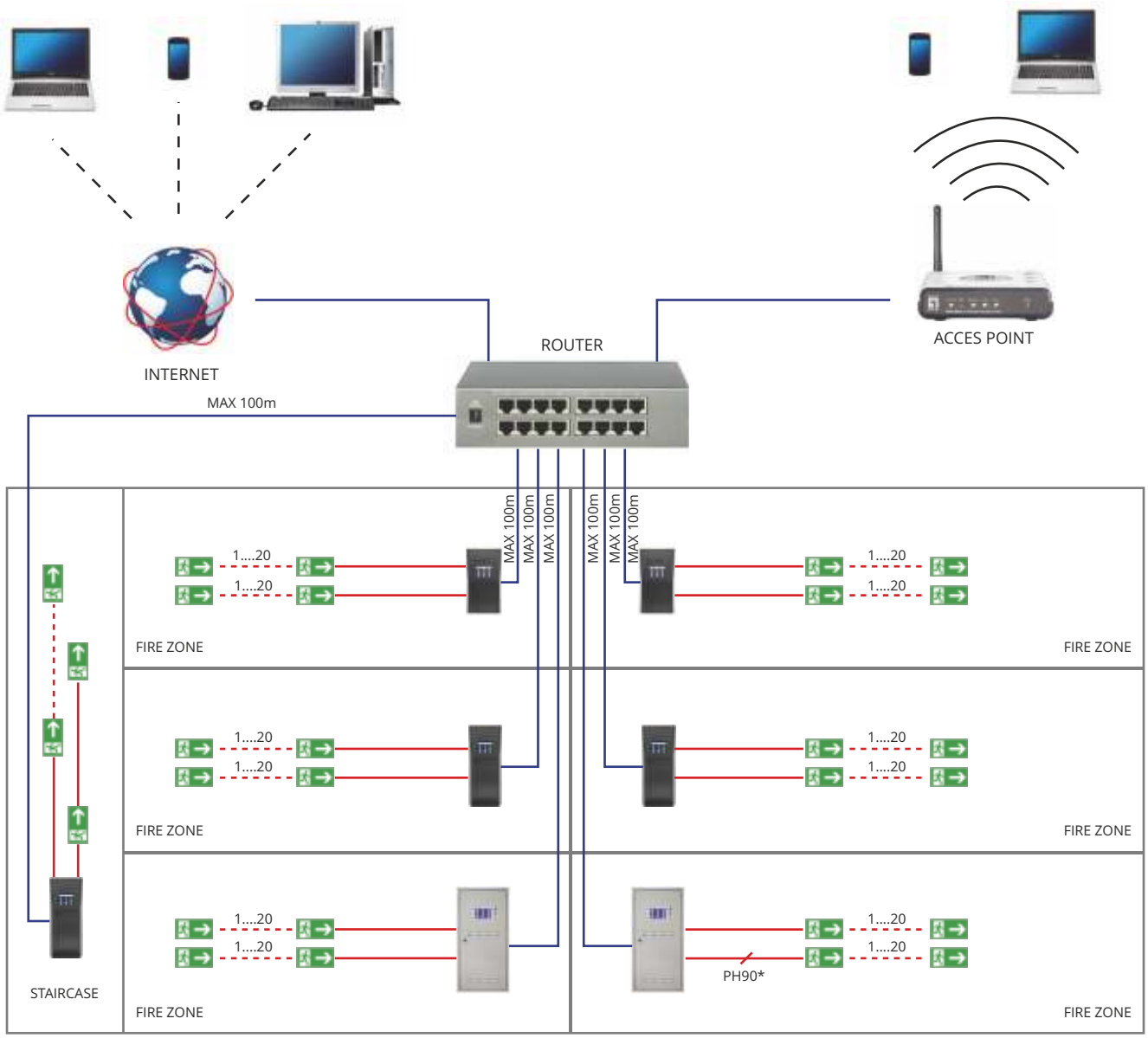
- Functional test/Battery test activation for each device
- Global system locking/unlocking
- Password-protected access to the controller
- Checking the status of individual systems
- Full remote configuration of all systems
- Active list of systems enabling quick status checks
- Four globally configured inputs and outputs
- Standard fitted Ethernet interface to enable remote control and visualization of the system via a web browser



FZLV CENTRAL BATTERY SYSTEM

The FZLV system is equipped with an Ethernet port as standard. The connection enables remote checking of the status and setting up of the system via a dedicated website. This solution provides the user with the ability to control and monitor the system from a computer with a web browser installed. To check the system status using a computer, the user only needs to log in to the structural network of the facility or building where the CBS is installed. Each unit, circuit and luminaire can be monitored via the Internet. The access to the dedicated website is password protected.

Remote control – example menu screens



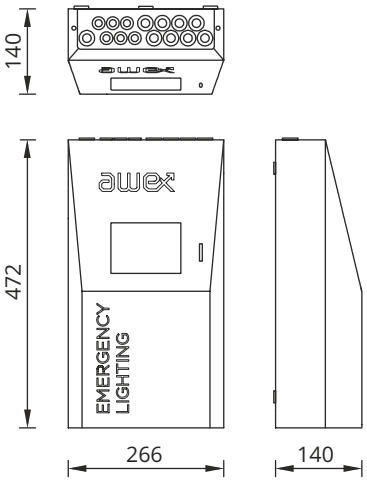
FZLV CENTRAL BATTERY SYSTEM

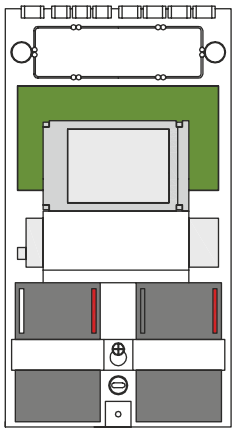
COMPARISON OF FZLV SYSTEMS

Technical specifications - FZLV

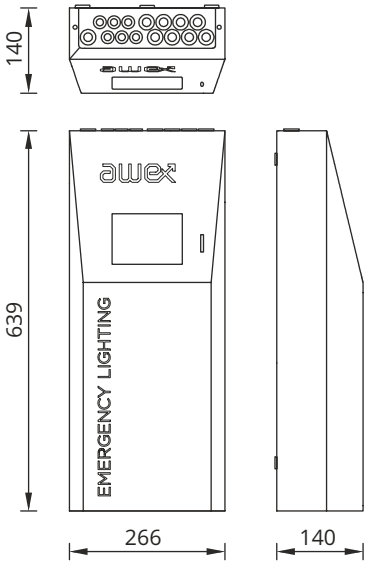
Technical specifications		FZLV – 12 Ah	FZLV – 24 Ah
Supply voltage		AC: 1-phase 230V ± 10%, 50/60Hz or DC: 216V ± 20%	AC: 1-phase 230V ± 10%, 50/60Hz or DC: 216V ± 20%
Protection class		I	I
Ingress protection		IP20	IP20
Output voltage		24V DC ±30%	24V DC ±30%
Operating temperature range		-5°C to 30°C	-5°C to 30°C
Battery capacity		12Ah	24Ah
Number of circuits		4	4
Max. circuit load		76W	76W
Cable glands		9 x M20	9 x M20
		6 x M16	6 x M16
Part No.	1h	WCB 0000011	WCB 0000021
	2h	WCB 0000012	WCB 0000022
	3h	WCB 0000013	WCB 0000023
	8h	WCB 0000014	WCB 0000024

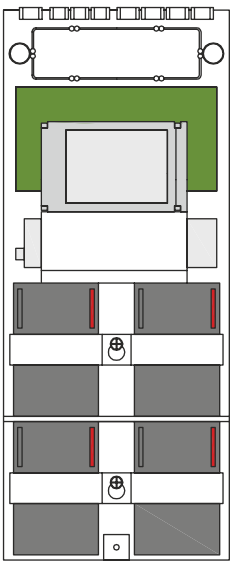
Cabinet dimensions [mm]: FZLV – 12Ah





Cabinet dimensions [mm]: FZLV – 24Ah



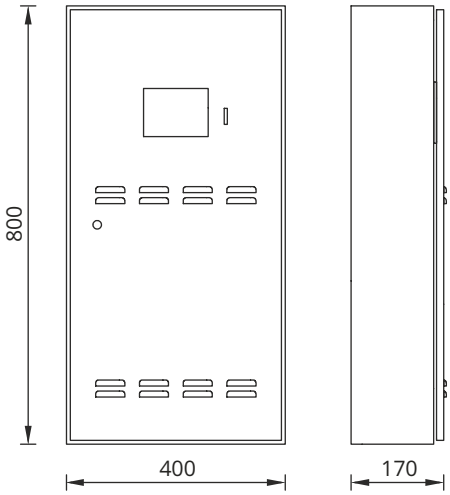


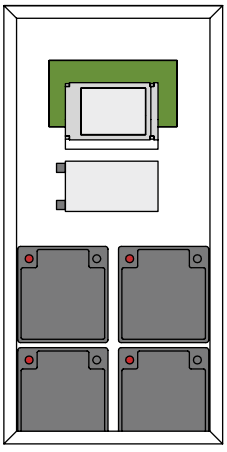
FZLV CENTRAL BATTERY SYSTEM

Technical specifications – FZLV MAX

Technical specifications		FZLV MAX – 33 Ah	FZLV MAX – 52 Ah
Supply voltage		AC: 1-phase 230V ± 10%,50/60Hz or DC: 216 V ± 20%	AC: 1-phase 230V ± 10%,50/60Hz or DC: 216 V ± 20%
Protection class		I	I
Ingress protection		IP20	IP20
Output voltage		24V DC ±30%	24V DC ±30%
Operating temperature range		-5°C to 30°C	-5°C to 30°C
Battery capacity		33Ah	52Ah
Number of circuits		4	4
Max. circuit load		76W	76W
Cable glands		1 x M25	1 x M25
		9 x M20	9 x M20
		6 x M16	6 x M16
Part No.	1h	WCB 0000031	WCB 0000041
	2h	WCB 0000032	WCB 0000042
	3h	WCB 0000033	WCB 0000043
	8h	WCB 0000034	WCB 0000044

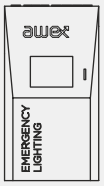
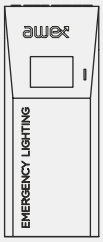
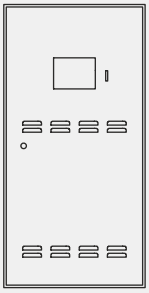
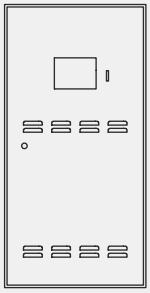
Cabinet dimensions [mm]: FZLV MAX – 33/52Ah





FZLV CENTRAL BATTERY SYSTEM

TECHNICAL SPECIFICATIONS – FZLV

Technical specifications		FZLV – 12 Ah	FZLV – 24 Ah	FZLV MAX – 33 Ah	FZLV MAX – 52 Ah
Protection class: I **Ingress protection: IP20 DC** **Voltage: 24 V ± 30%** **Operating temperature range: -5°C to 30°C**					
Supply voltage		AC: 1-phase 230V ± 10%, 50/60Hz or DC: 216V ± 20%	AC: 1-phase 230V ± 10%, 50/60Hz or DC: 216V ± 20%	AC: 1-phase 230V ± 10%, 50/60Hz or DC: 216V ± 20%	AC: 1-phase 230V ± 10%, 50/60Hz or DC: 216V ± 20%
Battery capacity		12Ah	24Ah	33Ah	52Ah
Max. power output	1h	123W	219W	304W	304W
	2h	70W	142W	195W	301W
	3h	49W	102W	140W	219W
	8h	21W	47W	66W	106W
Number of circuits		4	4	4	4
Maximum circuit load		76W	76W	76W	76W
Cable connection – max wire size [mm²]					
Power supply		2,5	2,5	2,5	2,5
Circuit		2,5	2,5	2,5	2,5
RS485 bus		2,5	2,5	2,5	2,5
24V power out		2,5	2,5	2,5	2,5
Switch monitoring		2,5	2,5	2,5	2,5
Potential free input		2,5	2,5	2,5	2,5
Signal out		2,5	2,5	2,5	2,5
Cable glands		9 x M20 6 x M16	9 x M20 6 x M16	1 x M25 9 x M20 6 x M16	1 x M25 9 x M20 6 x M16
Weight [kg]		15,5 kg	24,3 kg	39,2 kg	48,3 kg
Dimensions [mm]		472x266x140	639x266x140	800x400x170	800x400x170

* loss of power in luminaire supply cables is not considered

FZLV CENTRAL BATTERY SYSTEM

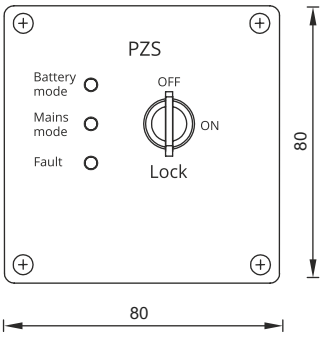
ACCESSORIES

REMOTE STATUS INDICATION PANEL: PZS

This panel enables remote checking of some basic operating statuses of the system, such as: stand-by, battery operation or fault. Continuous operation can be locked using a built-in key.

This prevents the system from unauthorized tampering.

Technical specifications	PZS
Connection (max wire size)	1,5mm²
Max. dimensions (HxWxD)	80x80x55mm
Mounting	Wall-mounted
Part No.	WCB 0000006C

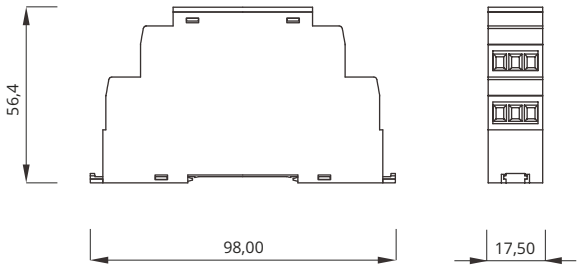


PHASE LOSS SENSOR: CZF-01

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 mm²
Contact	230V/50Hz 0.5A
Dimensions (HxWxD)	98,0 x 17,5 x 56,4
Part No.	WCB 0000007



FZLV CENTRAL BATTERY SYSTEM

EMERGENCY ESCAPE LUMINAIRES

AXN FZLV series

Luminaire type	Surface-mounted, ceiling, wall, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W or 6W (SE)
IP Rating	IP42 or IP65

AXNC, AXNR, AXNO, AXNU, AXNA

24V DC | LED | IP42 | IP65

AXP FZLV series

Luminaire type	Recessed-mounted, ceiling, wall, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20 or IP65/20

AXPC, AXPR, AXPO, AXPU, AXPA

24V DC | LED | IP20 | IP65/20

LOVATO II FZLV series

Luminaire type	Surface-mounted, ceiling, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP41

LV2C, LV2R, LV2O, LV2U, LV2A

24V DC | LED | IP41

LOVATO P FZLV series

Luminaire type	Recessed-mounted, ceiling, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20

LVPC, LVPR, LVPO, LVPU, LVPA

24V DC | LED | IP20

EYE LED FZLV series

Luminaire type	Recessed-mounted, ceiling, R and U optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20

EY, EYR, EYU, EYK, EYKR, EYKU

24V DC | LED | IP20

SPY FZLV series

Luminaire type	Inside the primary luminaire
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20

SP2

24V DC | LED | IP20

MICRO SPOT FZLV series

Luminaire type	Inside the primary luminaire
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20

SP2

24V DC | LED | IP20

OUTDOOR LED FZLV series

Luminaire type	Surface-mounted, wall
Light source	LED 3x1W
IP Rating	IP66

ODB

24V DC | LED | IP66

EXIT FZLV series

Luminaire type	Surface/Recessed-mounted, ceiling, wall
Light source	LED 1W, 2W, 3W
IP Rating	IP65

ETS, ETE, ETL

24V DC | LED | IP65

HELIOS FZLV series

Luminaire type	Surface-mounted, ceiling, wall
Light source	LED 3W, 3x1W, 6x1W
IP Rating	IP42/IP65

HL, HHP, HW

24V DC | LED | IP42 | IP65

TIGER FZLV series

Luminaire type	Surface/Recessed-mounted, ceiling, wall
Light source	LED 3W
IP Rating	IP22

TL

24V DC | LED | IP22

SK–8 FZLV series

Luminaire type	Surface-mounted,ceiling, wall
Light source	LED 1W, 2W, 3W
IP Rating	IP44

SK–8

24V DC | LED | IP44

INFINITY II FZLV series

Luminaire type	Surface-mounted, wall
Light source	LED 3W
IP Rating	IP40

IF2BWD

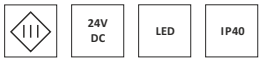
24V DC | LED | IP40

FZLV CENTRAL BATTERY SYSTEM

ARROW N FZLV series

Luminaire type	Surface-mounted, ceiling, O or C optics
Light source	LED 1W, 2W, 3x1W
IP Rating	IP40

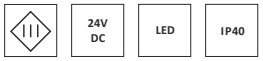
ARNO, ARNC, ARNS



ARROW P FZLV series

Luminaire type	Recessed-mounted,ceiling, O or C optics
Light source	LED 1W, 2W, 3x1W
IP Rating	IP40

ARPO, ARPC, ARPS



*current list of CNBOP fire protection approvals is available at www.awex.eu
**current list of products with Kitemark and ENEC is available at www.awex.eu

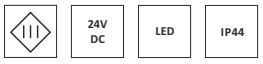
FZLV CENTRAL BATTERY SYSTEM

ESCAPE ROUTE LUMINAIRES

SK–8 FZLV series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W, 2W
IP Rating	IP44

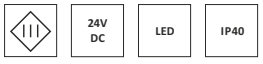
SK–8



ARROW N FZLV series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 1W, 2W
IP Rating	IP40

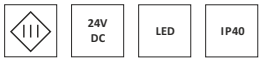
ARN



ARROW P FZLV series

Luminaire type	Recessed-mounted, ceiling
Light source	LED 1W, 2W
IP Rating	IP40

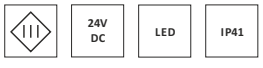
ARP



TWINS FZLV series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 1W
IP Rating	IP41

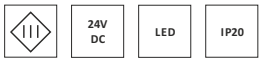
TW



PLEXI LED FZLV series

Luminaire type	Recessed-mounted, ceiling
Light source	LED 1W
IP Rating	IP20

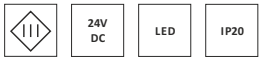
PL



ESCAPE FZLV series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W
IP Rating	IP20

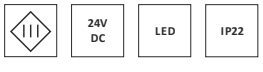
E



TIGER FZLV series

Luminaire type	Surface/Recessed-mounted, ceiling
Light source	LED 1W
IP Rating	IP22

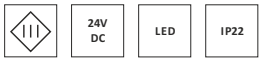
TL



TIGER P FZLV series

Luminaire type	Surface/Recessed-mounted, ceiling
Light source	LED 1W
IP Rating	IP22

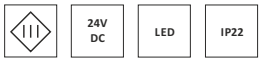
TPL



TIGER DS FZLV series

Luminaire type	Surface/Recessed-mounted, ceiling
Light source	LED 1W
IP Rating	IP22

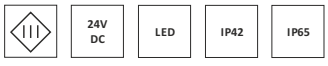
TSL



HELIOS FZLV series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W
IP Rating	IP42/IP65

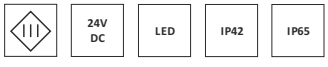
HL



HELIOS P FZLV series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W
IP Rating	IP42/IP65

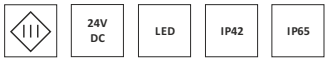
HPL



HELIOS DS FZLV series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W
IP Rating	IP42/IP65

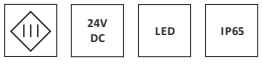
HDL



EXIT FZLV series

Luminaire type	Surface/Recessed-mounted*, wall, ceiling**
Light source	LED 1W, 2W
IP Rating	IP65

ETE



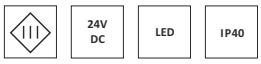
*requires an accessory for recessed mounting
**requires an accessory – plexi glass

FZLV CENTRAL BATTERY SYSTEM

SCREEN FZLV series

Luminaire type	Surface-mounted, wall
Light source	LED 3x1W, 3.2W, 2x3.2W
IP Rating	IP40

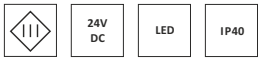
SC30, SC40, SC60



SCREEN DS FZLV series

Luminaire type	Surface-mounted, ceiling
Light source	LED 3x1W,3.2W, 2x3.2W
IP Rating	IP40

SCS30, SCS40, SCS60

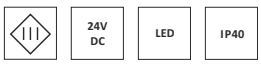


INFINITY II A FZLV series

Luminaire type	Surface/Recessed-mounted*, ceiling
Light source	LED 1W, 2W
IP Rating	IP40

*requires an accessory for recessed mounting

IF2ACS

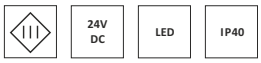


INFINITY II A FZLV series

Luminaire type	Surface/Recessed-mounted*, wall
Light source	LED 1W, 2W
IP Rating	IP40

*requires an accessory for recessed mounting

IF2AWS

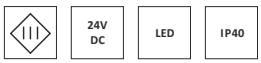


INFINITY II A FZLV series

Luminaire type	Surface/Recessed-mounted*, ceiling
Light source	LED 1W, 2W
IP Rating	IP40

*requires an accessory for recessed mounting

IF2ALS

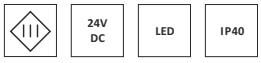


INFINITY II B FZLV series

Luminaire type	Surface/Recessed-mounted*, wall
Light source	LED 1W, 2W
IP Rating	IP40

*requires an accessory for recessed mounting

IF2BWS



*current list of CNBOP fire protection approvals is available at www.awex.eu
**current list of products with Kitemark and ENEC is available at www.awex.eu

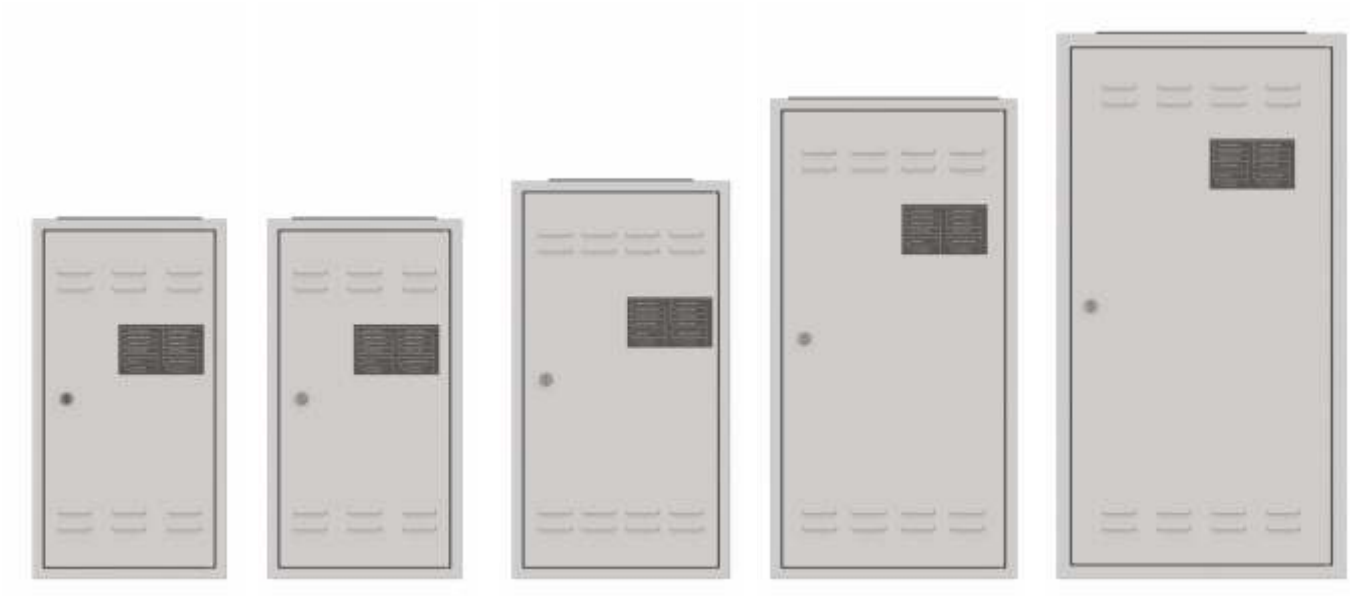
SPS CENTRAL BATTERY SYSTEMS

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 ± 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.

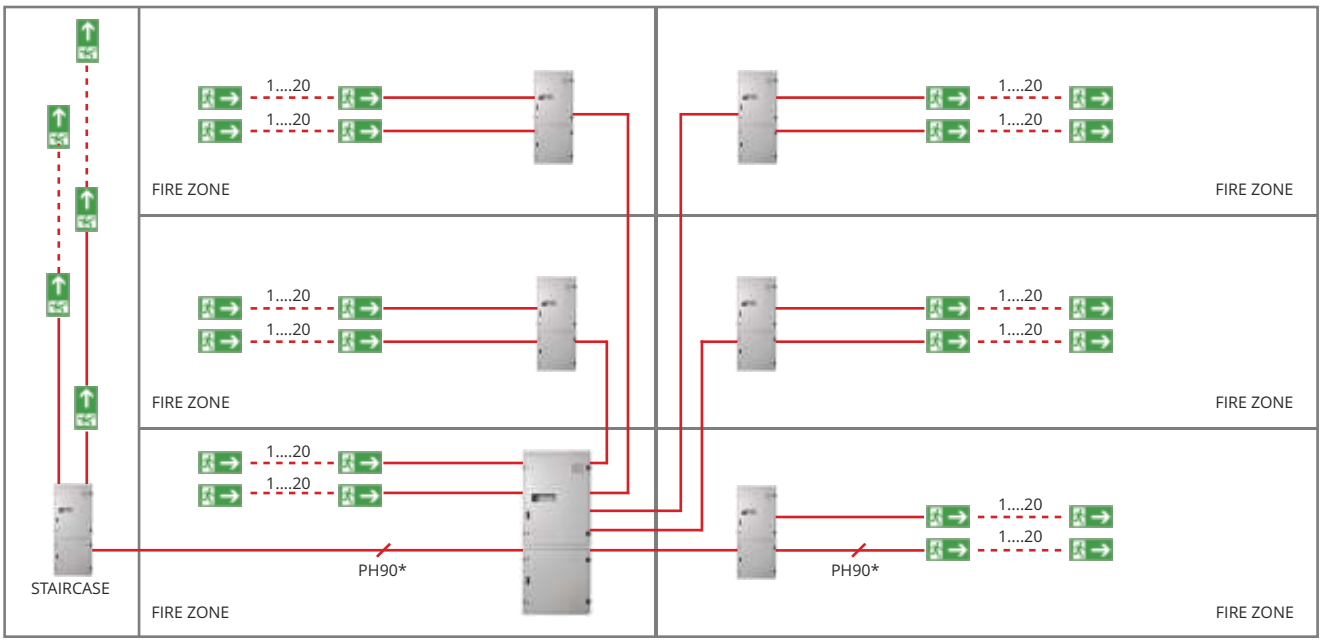


SPS 300 SPS 600 SPS 1000 SPS 1500 SPS 2000

SPS CENTRAL BATTERY SYSTEMS

COMPARING VARIOUS SUPPLY VARIANTS: CONVENTIONAL, DECENTRALIZED

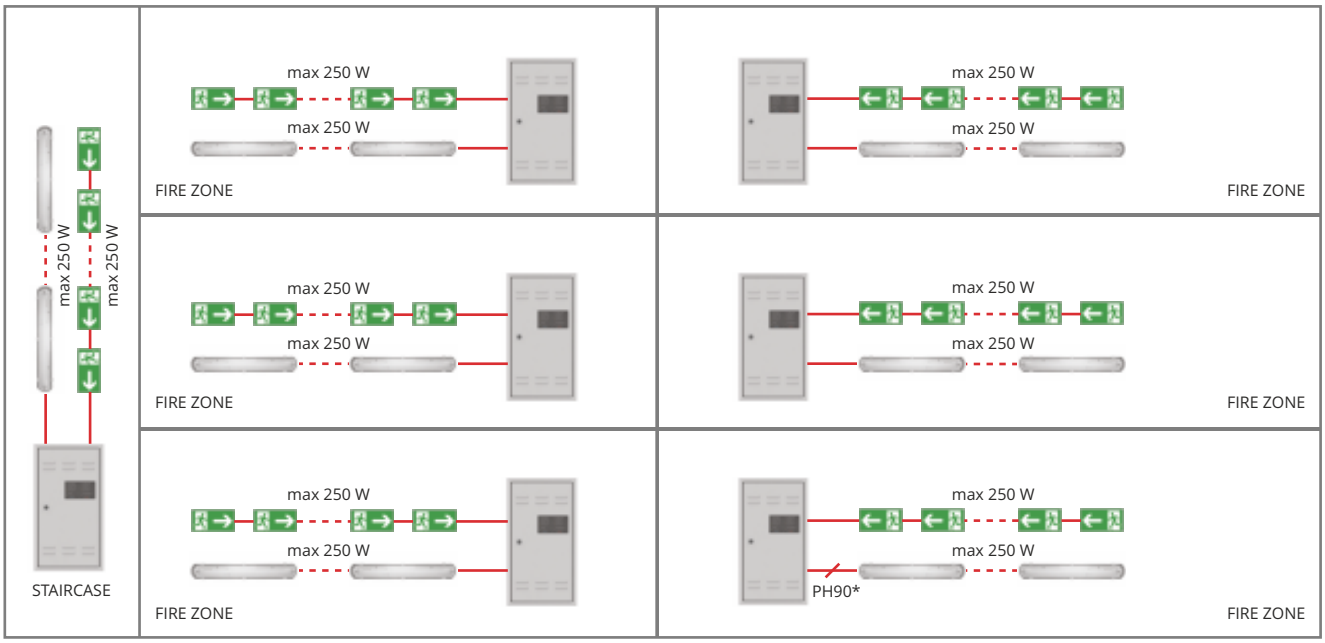
CBS – CONVENTIONAL CENTRAL BATTERY SYSTEM



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

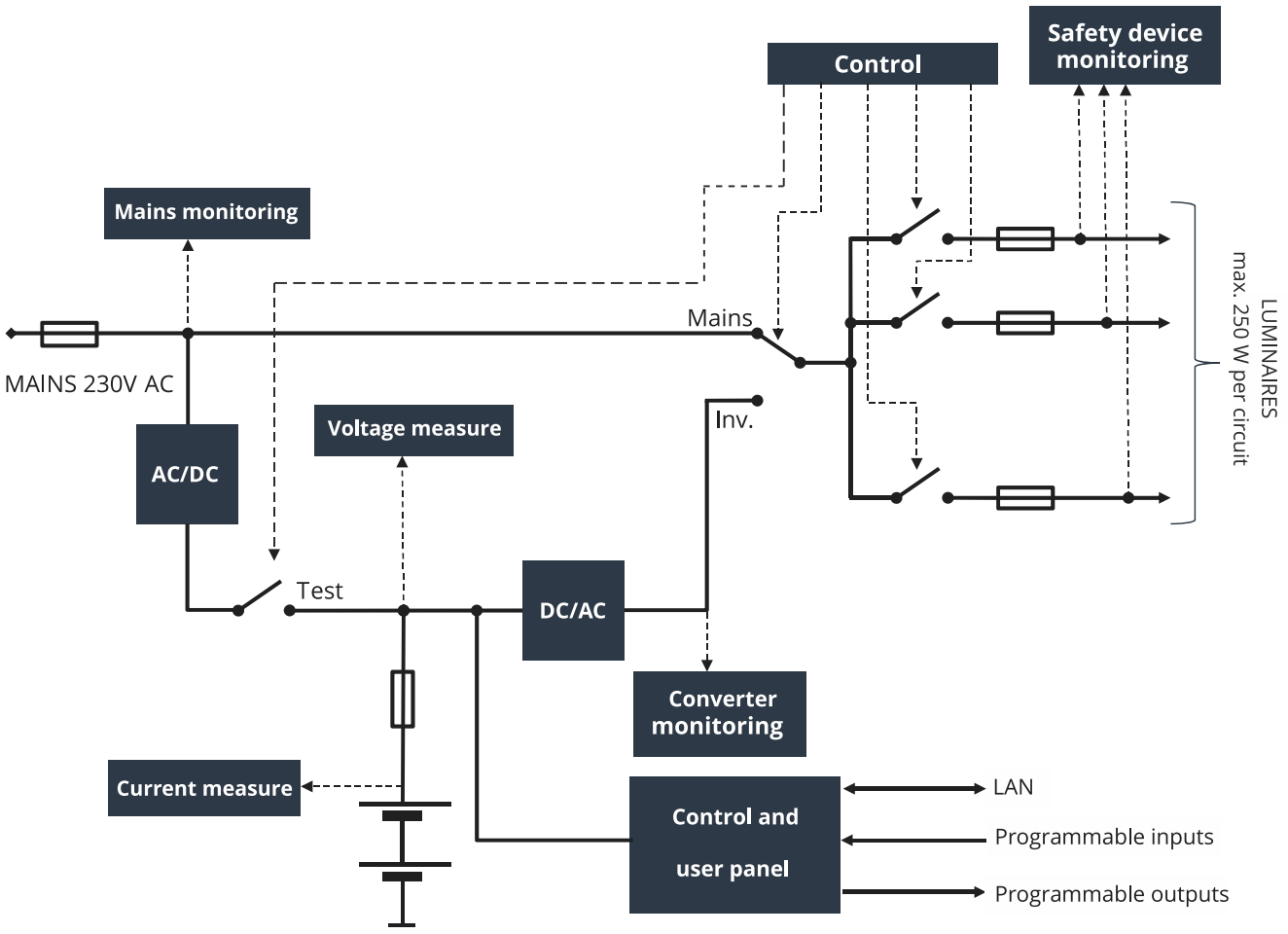
SPS CENTRAL BATTERY SYSTEMS

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:

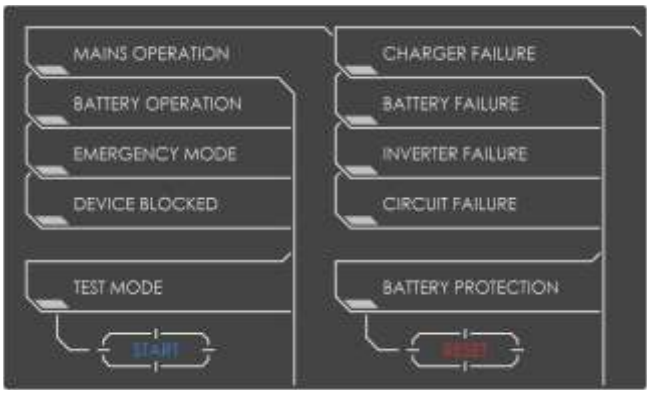


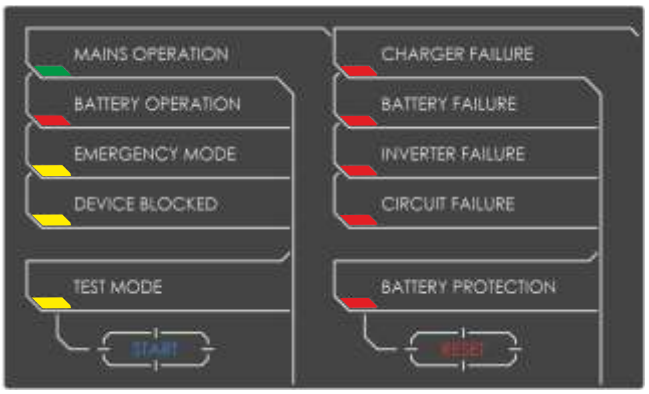
The block diagram of the emergency supply central system SPS.

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.



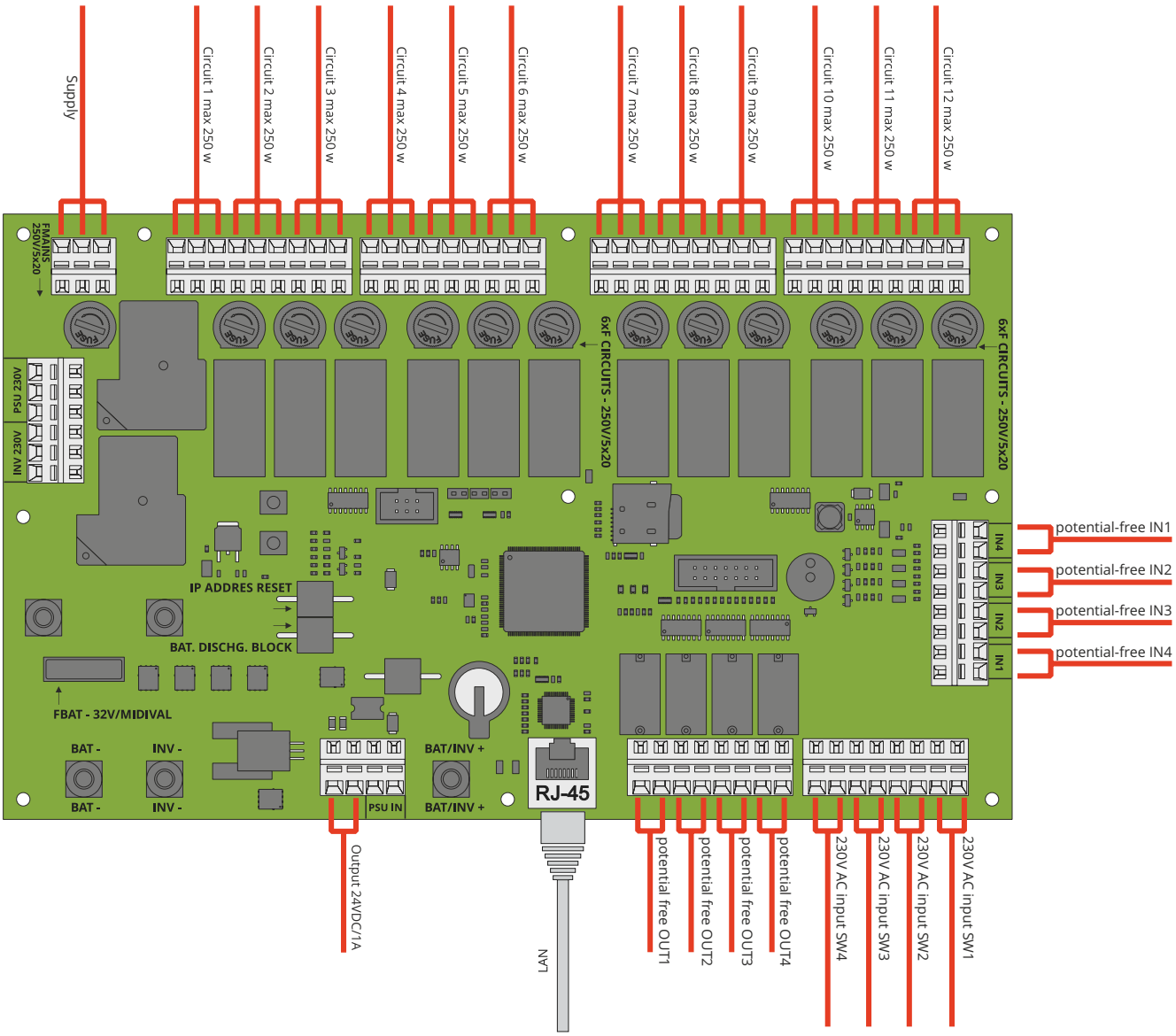


Features:

- 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



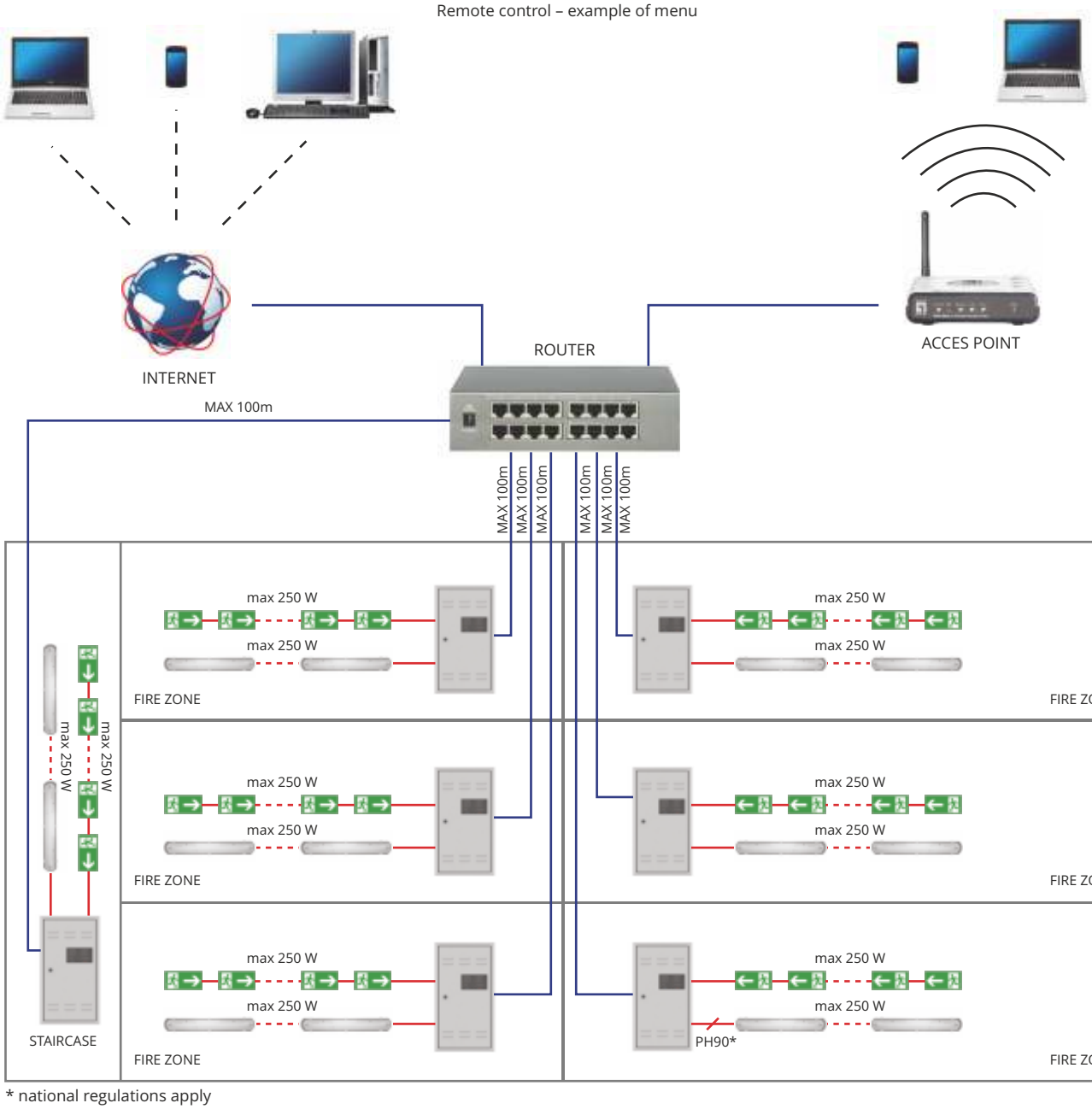
SPS main board and connection method

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.

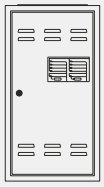
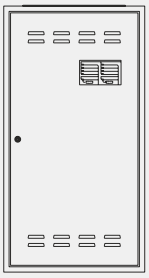
Remote control – example of menu



* national regulations apply

SPS CENTRAL BATTERY SYSTEMS

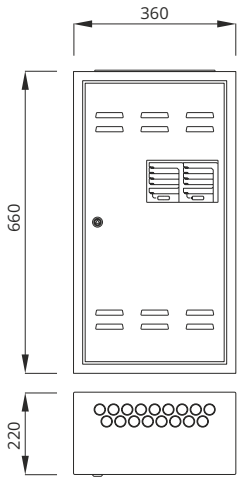
SPS TECHNICAL DATA – COMPARING SPS

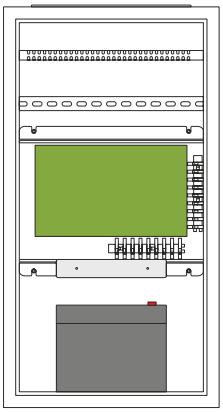
Technical data		SPS 300	SPS 600	SPS 1000	SPS 1500	SPS 2000
Protection class: I **IP rating : IP20** **Output voltage 230V AC 50Hz** **Working temperature: -5°C to 30°C**						
Supply voltage		AC: 1-phase 230V ± 10%, 50/60Hz	AC: 1-phase 230V ± 10%, 50/60Hz	AC: 1-phase 230V ± 10%, 50/60Hz	AC: 1-phase 230V ± 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]		660x355x180	660x355x230	730x400x260	880x450x240	1000x530x280

SPS CENTRAL BATTERY SYSTEMS

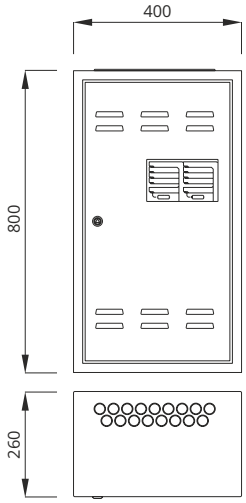
SPS TECHNICAL DATA – COMPARING MECHANICS

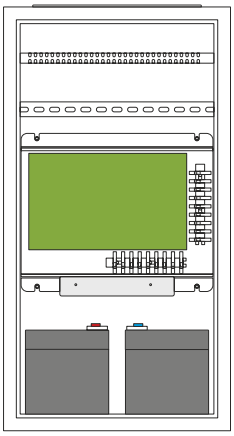
SPS 300



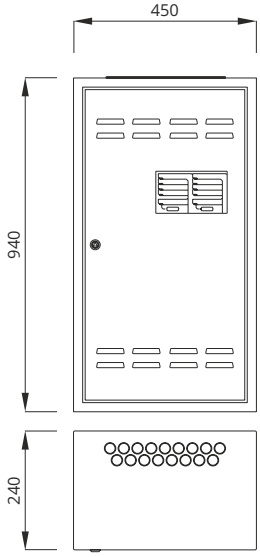


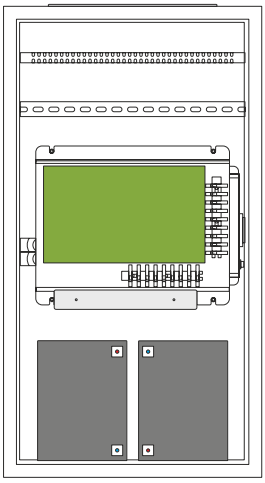
SPS 600





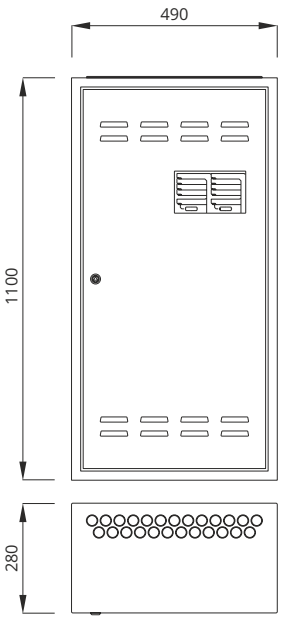
SPS 1000

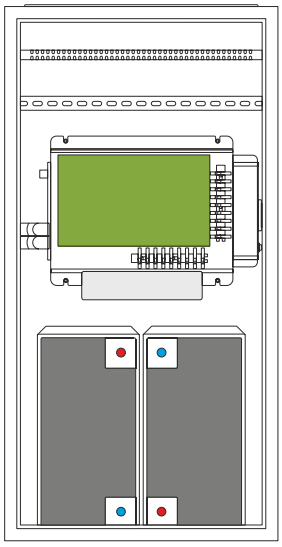




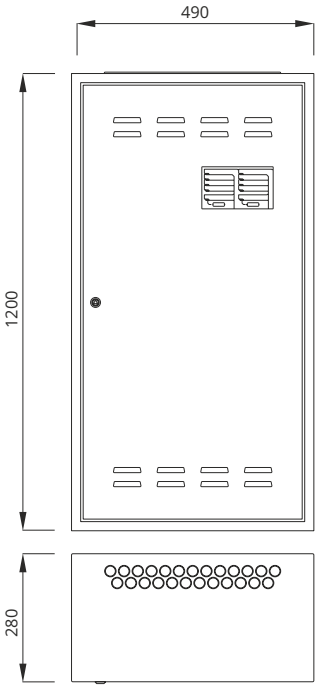
SPS CENTRAL BATTERY SYSTEMS

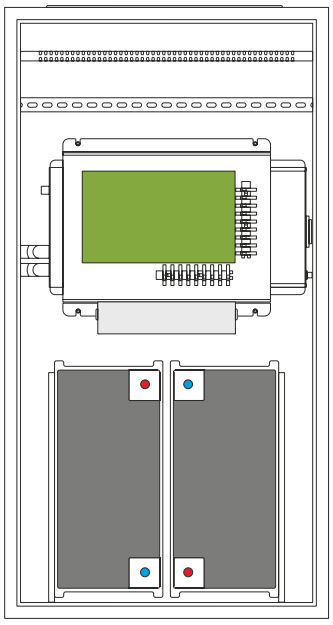
SPS 1500





SPS 2000





SPS CENTRAL BATTERY SYSTEMS

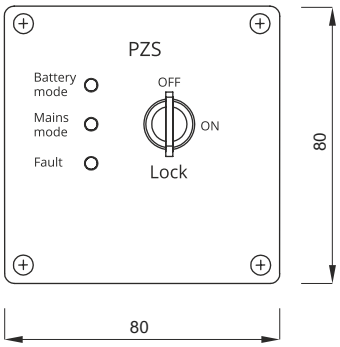
ACCESSORIES

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 0000006C

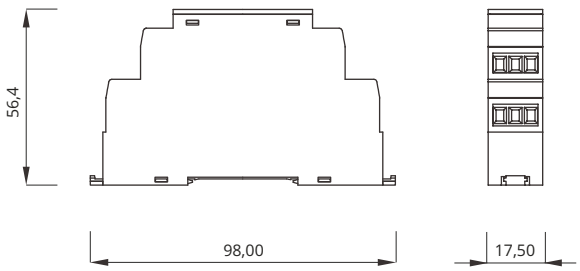


PHASE LOSS SENSOR: CZF-01

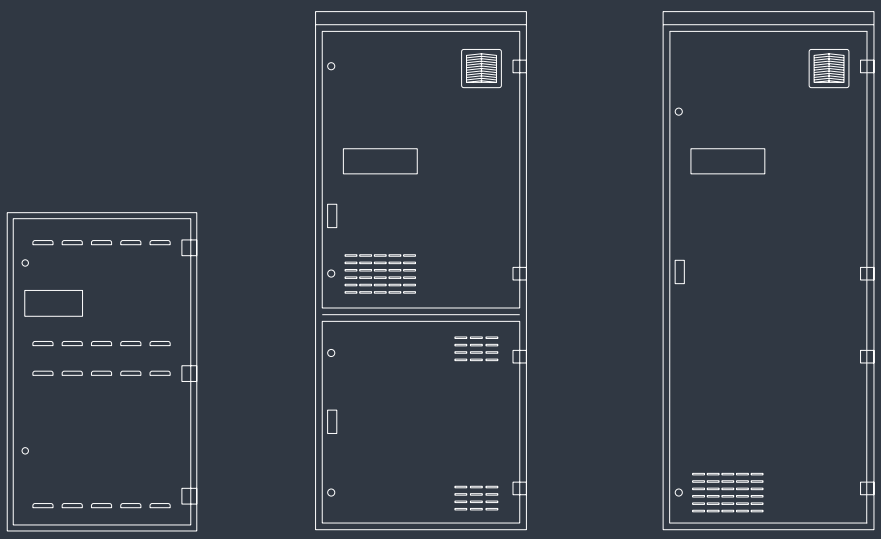
The quick-acting phase loss sensor is used to monitor the voltage in primary lighting switchboards to ensure that specific circuits or the whole system are energized for emergency operation.

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



CBS CENTRAL BATTERY SYSTEMS



CENTRAL BATTERY SYSTEM

SYSTEM OVERVIEW

The CBS central power supply system is a an advanced, reliable and user-friendly central battery system, designed in compliance with the requirements of VDE 0108, PN-EN 50171 and PN-EN 50172 standards.

The system provides the possibility of monitoring circuits, luminaires or both.

A CBS unit is equipped with a controller to supervise the operation and status of the entire system, and to register all events according to the requirements specified in PN-EN 50172. A wide range of luminaire control options enables easy modification of functions as and when required by the user. The operating mode of a luminaire is set at the controller or via SMART VISIO software application and in either case the required mode can be configured at any time. A built-in timer can also be used to activate, for example, the nighttime mode of a luminaire.

The system comprises an intelligent charger which controls the charging process and protects the batteries from damage, and thanks to the use of an active PFC function, fixed costs of operation are considerably reduced.

The CBS can be flexibly adapted to any building or facility by diversifying the power supply plan of fire zones or the routing of emergency lighting circuits by implementing CBS LPS or CBS PBS substation systems, respectively.

The whole system will not fail if the central control unit is damaged, because its substations will take over the control of branch circuits and luminaires, which considerably increases the safety level in the building or facility.

Routine periodic tests, the event log and system configuration data can be stored on an SD memory card provided with the unit. Additionally, all that data is stored in the non-volatile memory of the control unit.

With the safety of firefighting and rescue teams in mind, in all CBS units the IT earthing system

Features:

- Modular design for quick assembly
- Freely-programmable operating modes for each circuit (circuit monitoring)
- Freely-programmable operating mode for each luminaire, irrespective of the circuit settings
- Monitoring of each luminaire and circuits
- Possibility to adapt the system to the layout of fire zones
- Possibility to assign a text description to each luminaire, circuit and control modes
- Four fully-programmable function keys
- Four keys with preset functions
- Temperature and voltage monitoring of single accumulator

CENTRAL BATTERY SYSTEM

SMART TECHNOLOGY

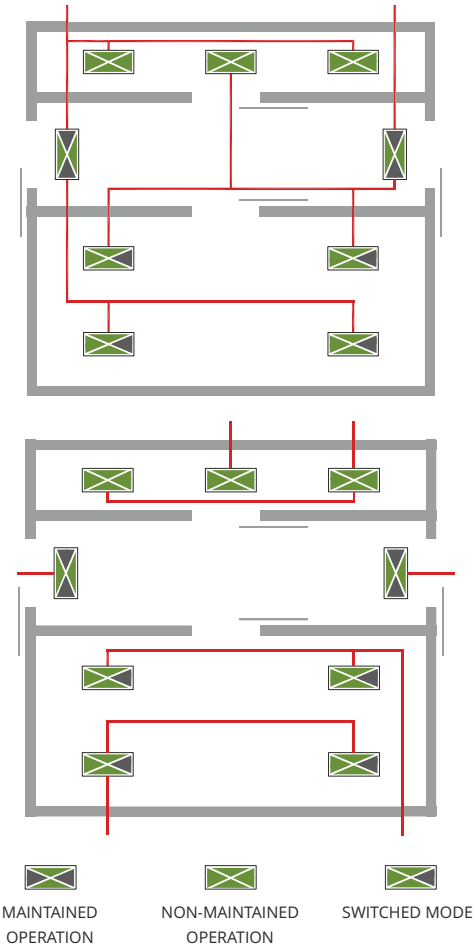
SWITCHING METHOD AND REVISION TECHNOLOGY

A conventional installation requires that the operating mode of each circuit is specified as early as at the design stage. Any possible changes or errors may incur extra costs or even make necessary corrections impossible.

In order to eliminate such inconveniences, AWEX has introduced a new fully automatic technology to monitor and control each luminaire in a circuit:

Switching
Method
And
Revision
Technology

The SMART enables installation of luminaires operating in three different modes: continuous, intermittent and switched, in a single circuit. Programming and control of the luminaires is provided by means of power supply cables and therefore no extra communication cables are required. The SMART functionality is available for luminaires fitted with appropriate ADS address modules. The operating modes are set up from the main controller and no adjustments have to be made at the luminaires.



SMART ADVANTAGES:

- Installation of luminaires operating in different modes within a single circuit
- Flexible design and installation
- Smaller number of circuits
- Lower installation costs
- Operating modes of the luminaires can be changed at any time

CONVENTIONAL LIMITATIONS:

As compared with the SMART system, a conventional system has the following limitations:

- Only one operating mode is available in the branch circuit
- Higher installation costs
- Higher costs of subsequent changes
- Operating mode is difficult or impossible to change

CENTRAL BATTERY SYSTEM

LPS SYSTEM DESCRIPTION

The LPS is a state-of-the-art, reliable and user-friendly central battery system manufactured by AWEX. It has been designed to meet applicable standards and comprises the proprietary SMART technology. From the functional point of view, the LPS is equivalent to the CBS, however due to its compact size and reduced power output it is intended for smaller-sized locations or in places where the power sources of emergency luminaires must be diversified (as a group). The LPS can power luminaires with a total power output of 1500W for 1h or 500W for 3h. Thanks to four sensor inputs provided in the control module, fire zones can be managed by means of phase loss sensors (CZF) which monitor the voltage of the power supplied to the zones, The system is upgradable with ELS230 modules with 9 potential control inputs. Line modules have separate protection for AC and DC mode, which considerably increases the safety of emergency lighting activation in the building/facility. In the DC mode, the system operates as an IT network (insulated).

Features:

- Automatic performance of tests
- Automatic detection and integration of new luminaires
- Circuit monitoring
- Luminaire monitoring
- Luminaire programming and setting up from the system controller
- Communication with luminaires via power supply cable
- SMART technology (adjustable luminaire modes)
- Separate AC and DC voltage for each output circiut in changeover module
- Connection and an SD card to save, transfer and print emergency lighting system reports, according to PN-EN 50172
- Possibility to save system settings (back-up) on an SD memory card
- Nighttime mode
- Controlling of luminaires and system functions by means of 24V and 230V connections (internal and external)
- Monitoring of the power supply at distribution switchboards and individual lighting circuits
- USB port
- RJ45 connector for direct communication with any computer via Ethernet
- System status check by using any website browser
- System management and visualization by using dedicated SMART VISIO software
- Powering up luminaires with a total power output of 1500W for 1h or 500W for 3h

CENTRAL BATTERY SYSTEM

CM-NET CONTROL MODULE

The CM-NET control module supervises and manages other modules included in the central battery system. The keys and LCD display on the front panel enable the user to set up and operate the system. System configuration is also possible through the RJ45 connector and the SMART VISIO installed on a PC. The LEDs on the front panel provide immediate visual information on the current status of the central battery system. The control module supervises the following functions: mains/battery power supply mode, battery charging, system current and voltage, insulation condition, and deep-discharge protection. Detection of a fault or error is immediately indicated and registered in the event log. The occurrence of a short circuit or break in communication wires triggers automatic switchover of all circuits to the emergency mode. The module also offers the function of automatic searching and adding of all luminaires connected to the system. The controller enables making firmware upgrades of all internal system modules, as well as address modules. Thanks to a timer function, the operating mode of a luminaire can be changed according to its assigned, configurable program. The control module has programmable function keys which can be used to switch the system immediately into the service mode or the IT mode.

Features:

Configuration:
- Eight configuration keys
- SD card
- RJ45 connector for SMART VISIO

System control:
- Four 24V potential-free inputs that can be programmed for: functional test, battery test, sensor input etc.
- Four function keys:
  - Lock
  - Functional test activation
  - Battery test activation
  - Deep discharge error reset
- Four programmable function keys:
  - Switching circuits for AC power supply
  - Switching circuits for DC power supply
  - Alarm reset: leakage fault
  - Alarm reset: emergency mode
  - Functional test without preheating
- Three LON communication buses
- 2 timers
- 3PH phase loss sensor connector
- Remote system lock input

External communication:
- Current system status indication
- LED indicators
- LCD display
- BMS – BACnet, LonWorks
- Three potential-free outputs for PZS or BMS

CENTRAL BATTERY SYSTEM

CM-NET CONTROL MODULE

Technical specifications	
Display	Graphic LCD 128x4
Keypad	8 function keys and 8 control keys
LED indicators	4 LED indicators • mains supply mode • battery supply mode • fault • deep discharge
Interfaces	• • SD/MMC cards • • RJ45 – BACnet • • LON x 3 – Lonworks
Potential-free inputs	• locks • phase loss sensor • 4 programmable inputs
Outputs	• 3 programmable relay outputs 24V/0.5A
Acoustic signalling	programmable buzzer
Displayed information	• mains voltage • battery voltage • battery charge current (+) • battery discharge current (-) • date and time • type of test in progress • charging disturbance/error • deep discharge • manual reset • recovery delay • insulation failure • circuit failure • circuit overload • fuse failure • substation failure • circuit and control names • system and control parameters • communication errors • event log review (including substations) • switching substation failure • active critical groups • type of system lock
Event log	Registered on an SD card; reading and printing without dedicated software

CENTRAL BATTERY SYSTEM

CCM CHARGING CONTROL MODULE

CCM module is responsible for accumulators charging process. Charging process is realized by BST - 430W booster. It's possible to use larger accumulators by increasing quantity of BST - 430W booster, up to 16 pcs.

Features:

- Supporting and controlling the BST-430 charge booster
- Monitoring leakage conductance in branch circuits
- Protection against deep discharge
- The ability to control individual batteries in cooperation with BC battery control system
- Fan control
- Two connectors for the measurement of:
  - current
  - temperature
- RS interface for communication with the BC system
- Displaying the current status of the charger
- Three programmable potential-free outputs
- Status indicator LED

Technical specifications		
LED indicators	• Battery fault • Leakage fault • Stand by • Fault • Status	
Protection against deep discharge		183,6V DC
Outputs	• 3 programmable relay	
Max. Booster	16 pcs	

BST 430 - BOOSTER

The Booster module ensures battery charging on the basis of UI characteristic with temperature compensation according to PN-EN 50171. The charging algorithm of the charger is supervised by the control module. The charger is equipped with an internal active PFC module, which guarantees that the power factor is close to 1.0 (λ≈1).

The booster is used for charging batteries with the voltage rated at 216V. The maximum power of the charger is 430W.

Technical specifications		
Charging voltage	Boost charging Float charging	265V DC 246V DC
Max. power Booster		430W ± 5%
Max. current Booster		2A ± 5%
LED indicators	• Charging • Redy • Fault • Status	
Protection against deep discharge		183,6V DC

CENTRAL BATTERY SYSTEM

ML-E 2X6A CIRCUIT MODULE

The 2x6A module supplies power to one branch circuit.

Features:
- Controlling SMART luminaires
- Monitoring up to 20 luminaires per circuit
- Unique addresses programmed during production process
- Freely programmable work mode
- Independent control of each circuit
- Independent control of each luminaire
- Identification of each luminaire
- Fault, module status and circuit status indicators
- Service pin
- Supplying luminaires with PN-EN 60347-2-7 ballasts and luminaires with LED and incandescent light sources
- Adjustable AC/DC changeover time

Technical specifications	
Number of circuits	2
Max. circuit length	up to 600m
Max. load	6A
Max. inrush current	180A/ms
Switch-over time	100 - 2500ms
Fuse	2x10AT / 250V / 6,3x32

ML-E 4X3A CIRCUIT MODULE

The 4x3A module supplies power to two branch circuits.

Features:
- Controlling SMART luminaires
- Monitoring up to 20 luminaires per circuit
- Unique addresses programmed during production process
- Freely programmable work mode
- Independent control of each circuit
- Independent control of each luminaire
- Identification of each luminaire
- Fault, module status and circuit status indicators
- Service pin
- Supplying luminaires with PN-EN 60347-2-7 ballasts and luminaires with LED and incandescent light sources
- Adjustable AC/DC changeover time
- Adjustable emergency duration for each circuit

Technical specifications	
Number of circuits	4
Max. circuit length	up to 600m
Max. load	3A
Max. inrush current	180A/ms
Switch-over time	100 - 2500ms
Fuse	8x5AT / 250V / 6,3x32

CENTRAL BATTERY SYSTEM

ML-E 8X1,5A CIRCUIT MODULE

The 8x1,5A module supplies power independently to four branch circuits.

Features:
- Controlling SMART luminaires
- Monitoring up to 20 luminaires per circuit
- Unique addresses programmed during production process
- Freely programmable work mode
- Independent control of each circuit
- Independent control of each luminaire
- Identification of each luminaire
- Fault, module status and circuit status indicators
- Service pin
- Supplying luminaires with PN-EN 60347-2-7 ballasts and luminaires with LED and incandescent light sources
- Adjustable AC/DC changeover time
- Adjustable emergency duration for each circuit

Technical specifications	
Number of circuits	8
Max. circuit length	up to 600m
Max. load	1,5A
Max. inrush current	180A/ms
Switch-over time	100 - 2500ms
Fuse	16x2,5AT / 250V / 6,3x32

HUB MODULE

The Lon Hub module is a component of the central battery system. It is installed in PBS-20/H substations. PBS-40/H. The module is designed to enable communication of the CM-NET control module with line modules installed in substations (remote cabinets). The LON3 interface is used for communication with the main cabinet.

Features:
- Communication with up to 5 modules: ML-S line modules and LS 24 or LS 230 sensor modules
- Service pin
- Address setting switch to set the HUB module address within the range of 1-10
- Power supply of up to 5 modules
- Built-in termination of a communication line
- Fault and module status indicators
- Push-buttons to: add/remove, select and configure modules

Technical specifications	
Number of addresses	1-10
Number of supported modules	5
Connectors	• LON in – LON3 bus input • LON out – LON3 bus output • Term – for bus termination activation

CENTRAL BATTERY SYSTEM

LS-24 SENSOR MODULE

This potential-free input module monitors up to 8 inputs in a 24V current loop. The inputs enable selective activation of luminaire control groups by assigning phase loss sensors to them. In the event of a voltage loss at the primary lighting switchboard, luminaires with control groups assigned to them are activated.

The inputs can also be used as potential-free inputs for building management systems (BMS) to activate individual control groups. The system can integrate up to 10 modules of the LS-24 and LS-230 type.

Features:

- Monitoring of the phase loss sensor current loop
- Monitoring of the 24V DC current loop
- Possibility of joint control with a BMS via potential-free inputs
- Programmable recovery delay
- Service pin
- Fault and module status indicators
- Active input indicators
- Possibility of sensor input negation

Technical specifications	
Number of inputs	Eight 24V current loop inputs
Recovery delay	from 1 s to 1 h
Connectors	2,5mm^2

LS-230 SENSOR MODULE

The module has eight 230V AC potential-free inputs. It enables setting up emergency luminaire control groups with the power supply of primary lighting circuits. The logic of the inputs can be inverted, so that the input is in active state at 0V and inactive at 240V. This functionality enables monitoring of individual protections of the primary lighting system. The inactive state recovery delay time is programmable within the range of 1 second to 1 hour. The system can integrate up to 10 modules of the LS-24 and LS-230 type.

Features:

- Monitoring of primary lighting switches
- Programmable inversion of input logic
- Possibility of monitoring individual primary lighting protections
- Programmable recovery delay time
- Service pin
- Fault and module status indicators
- Input status and inversion indicators

Technical specifications	
Number of inputs	Eight 230V AC potential inputs
Recovery delay	from 1 s to 1 h
Connectors	2,5mm^2

CENTRAL BATTERY SYSTEM

ELS-230 EXTERNAL MODULE

The ELS-230V sensor module is used for monitoring of 230V AC potential signals from primary lighting switches in order to activate an emergency luminaire control group along with the primary lighting. The module has 9 inputs. The inputs can be inverted to monitor individual circuit protections. The ELS-230 module can also serve as a phase loss sensor. The control inputs can be assigned the recovery delay function. The module has a service pin, rotary address selector switches, a LON connector for data transmission (with a built-in terminating resistor) and a 24V power supply connection. The module is also equipped with LED indicators displaying the current logic settings and the status of individual inputs.

Features:
- Monitoring of primary lighting switches
- Function of a phase loss sensor
- Programmable inversion of input logic
- Possibility of monitoring individual primary lighting protections
- Programmable recovery delay time
- Service pin
- Fault and module status indicators
- Input status and inversion indicators

Technical specifications	
Power supply	24 V DC ± 5V
Protection class	I
Ingress protection	IP21
Operating temperature range	-10°C to + 40°C
Potential inputs	9 isolated inputs
Phase loss control	Monitoring of up to 3 phases
Recovery delay	from 1 s to 1 h
Data transmission	LON
Number of addresses	1-32
Switching threshold	as per 60598-2-22
Dimensions (LxWxD) mm	105x85x60
Connectors	2,5mm²

CZF LON EXTERNAL MODULE

The CZF LON sensor module is used for monitoring of 230V AC potential signals from primary lighting switches in order to activate an emergency luminaire control group along with the primary lighting. The module has 3 inputs. The inputs can be inverted to monitor individual circuit protections. The CZF LON module can also serve as a phase loss sensor. The control inputs can be assigned the recovery delay function. The module has a service pin, rotary address selector switches, a LON connector for data transmission (with a built-in terminating resistor) and a 24V power supply connection. The module is also equipped with LED indicators displaying the current logic settings and the status of individual inputs.

Features:
- Monitoring of primary lighting switches or functioning asa phase loss sensor
- Programmable inversion of the action logic of individual inputs
- Possibility of monitoring individual primary lighting protections
- Programmable recovery delay time
- Service pin
- Fault and module status indicators
- Input status indicators

Technical specifications	
Power supply	24 V DC ± 5V
Protection class	I
Ingress protection	IP21
Operating temperature range	-10°C to + 40°C
Potential inputs	Three isolated inputs
Phase loss control	Monitoring of up to 3 phases
Recovery delay	from 1 s to 1 h
Data transmission	LON
Number of addresses	1-32
Switching threshold	as per 60598-2-22
Dimensions (LxWxD) mm	55x90x60
Connectors	2,5mm²

CENTRAL BATTERY SYSTEM

CZF-01 PHASE LOSS SENSOR

The quick-acting phase loss sensor is used for voltage monitoring in primary lighting switchboards to energise specific circuits or the whole system for emergency operation.

The switching threshold is as specified in PN-EN60598-2-22.

Features:
- Phase loss detection
- Switch activation detection
- Switchover threshold as per PN-EN 60598-2-22
- Delay time <200 ms
- Mounting in DIN-3 rail

Technical specifications	
Power supply	230V, 50Hz, 176V-275V DC
Switchover thresholds	As per PN-EN 60598-2-22
Mounting	DIN-3 rail (TH35)
Delay time	< 200ms
Connectors	2,5mm2
Contact	230V/50Hz 0,5A NO

ETA 2 SWITCHING MODULE

ETA-2 is an external module supplied from the central battery system (CBS). It is used for switching single luminaires or a group of luminaires connected to outputs OUT1 and OUT2. If a phase loss sensor and a 216V DC emergency lighting switch are triggered, the module always activates both outputs. In other circumstances, the activation of those outputs depends on the manually set up operating modes. In the case of a 230V AC power supply, OUT2 is activated depending on the settings of a CS or BUS mode. In the CS mode, OUT2 is activated by a switch. In the BUS mode, the output is always active to enable controlling external luminaires, for example by means of a DALI controller.

The OUT1 can be set up to work in three operating modes: always ON (maintained operation), always OFF (non-maintained operation) or depending on the status of the switch. Luminaires connected to OUT1 can also be controlled by an external controller operating in the BUS mode when the output is always active.

Features:
- Phase loss detection
- Switch activation detection
- Emergency mode detection
- Fault indication by relay closure
- Multiple operating modes: relay outputs activated depending on switch settings

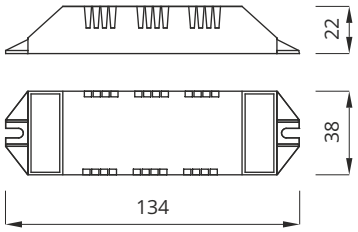
Technical specifications	
Power supply	220 - 240V 50-60Hz, 216V DC ± 20%
Ingress protection	IP20
Protection class	I
Max. power	920 VA
Potential outputs	1x1A, 1x4A
Wire terminals	max. 2,5mm^2
Temperature range	-10^{o}C to +40^{o}C
Mounting	DIN rail
Dimensions (LxWxD)	88x90x58mm
Weight	0,1kg

CENTRAL BATTERY SYSTEM

ADN ADDRESS MODULE

The ADN address module is used for monitoring and controlling (emergency) luminaires. The control is provided by a freely programmable control group. The module supports luminaires with LED, fluorescent or incandescent light sources. It is designed for use in circuits with luminaire monitoring and a mixed mode of operation: continuous, intermittent and switched. The module is also equipped with a control input for the monitoring of a local switch.

Dimensions [mm]:



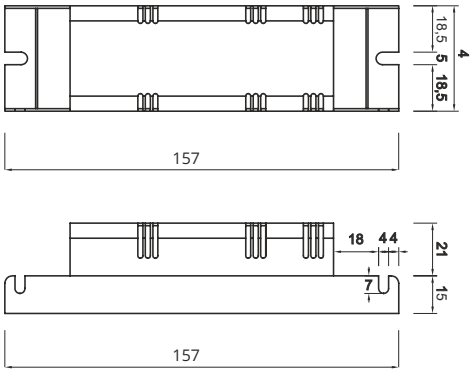
Technical specifications	
Power supply	230V 50Hz , 216V DC ± 20%
Ingress protection	IP20
Max. power	120W
Light source	1-120W
Max. Ambient temperature range	-20°C to +50°C
Mounting	Inside the luminaire
Weight	0,1kg

CENTRAL BATTERY SYSTEM

MP 500 SWITCHING MODULE

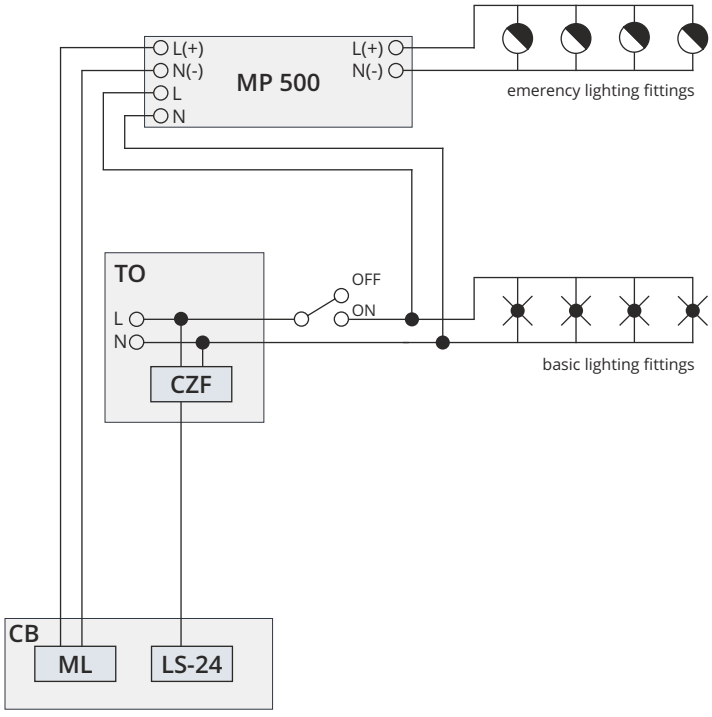
The MP500 is used for activating the mains supply mode of a luminaire of a group of luminaires by means of a primary lighting switch. The module enables application of primary lighting luminaires as emergency luminaires.

Module dimensions in mm



Technical specifications	
Power supply	230V 50Hz, 216V DC ± 20%
Ingress protection	IP20
Max. power	500 VA
Wire terminals	3x2,5mm^2
Max. Ambient temperature range	-10°C to +40°C
Mounting	Inside the luminaire
Weight	0,1kg

PHASE LOSS	ON / OFF	POWER TO	POWER CB		
NO	ON	~230V AC	0V	ON	ON
NO	OFF	~230V AC	0V	OFF	OFF
YES	ON	~0V	~230V DC	ON	OFF
YES	OFF	~0V	~230V DC	ON	OFF



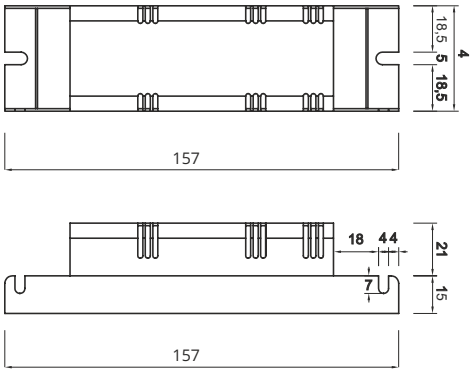
CB – Central battery
ML – Linear module input
CZF – Phase loss sensor
TO – Basic lighting switch board
MP500 - switching module
LS-24 – Potential free input module

CENTRAL BATTERY SYSTEM

MP 4A SWITCHING MODULE

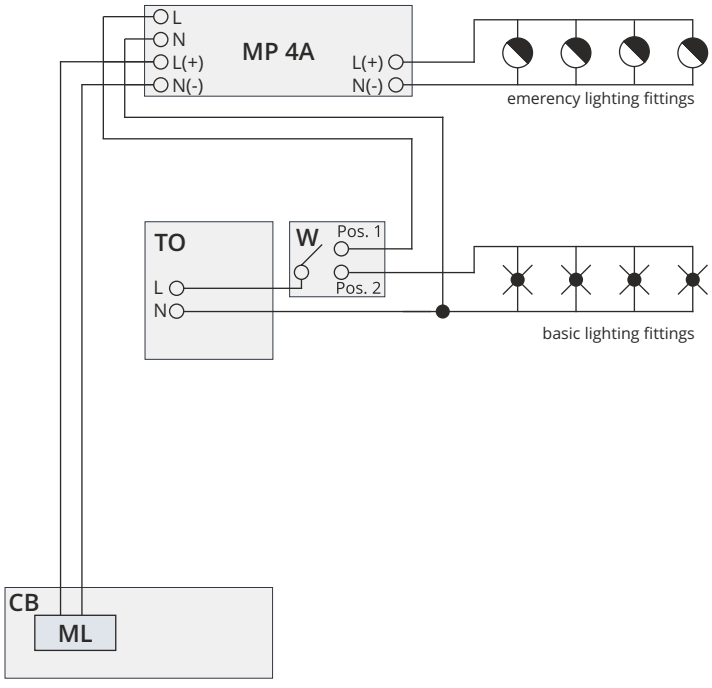
The MP 4A is used for activating the mains supply mode of a luminaire of a group of luminaires by means of a primary lighting switch. Thanks to the applied logic (see Fig. below) of the control input, when the primary lighting fails all luminaires in this group are switched to the emergency mode.

Module dimensions in mm



Technical specifications	
Power supply	230V 50Hz, 216V DC ± 20%
Ingress protection	IP20
Max. load	4A
Wire terminals	3x2,5mm^2
Max. Ambient temperature range	-10°C to +40°C
Mounting	Inside the luminaire
Weight	0,1kg

PHASE LOSS	Pos. 1 / Pos. 2	CB POWER SUPPLY	◔	✳
NO	Pos. 1	230V AC	ON	OFF
NO	Pos. 2	230V AC	OFF	ON
YES	Pos. 1	230V DC	ON	OFF
YES	Pos. 2	230V DC	ON	OFF



CB – Central battery
ML – Linear module input
CZF – Phase loss sensor
TO – Basic lighting switch board
MP 4A - switching module
W - single-pole double-throw switch

CENTRAL BATTERY SYSTEM

PZS LON MODULE

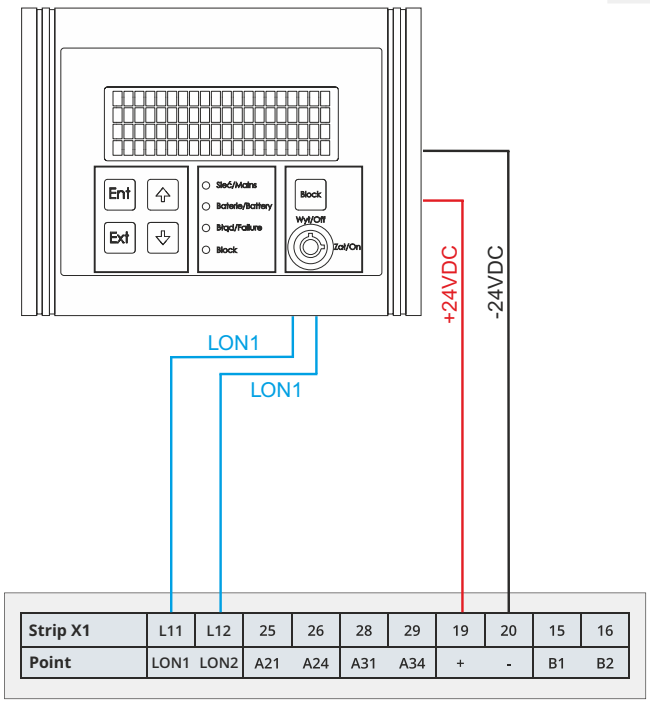
The PZS LON module is used for monitoring of Central Battery Systems connected via LON buses. Thanks to the PZS LON module the user can check the name and the status of the connected system. Additionally, all faults and errors that have occurred in each of the connected systems can be viewed.

The module has an LCD display and LEDs indicating: AC operation, DC operation, Lock, Fault; the panel is equipped with 5 push-buttons and a key.

Features:

- Reading and viewing the current status of all systems connected to the module
- Plug & Play device – no configuration required
- System monitoring within a single group (up to 10 systems); selection of 1-4 groups
- Possibility of locking all connected system components by pushing the Block button
- Configurable lock for selected systems (not all systems have tobe locked by the module; monitoring only possible)
- Configuration is saved when the power supply is interrupted
- Loss of communication is notified by the module (timeout)
- Loss of communication with the system removes any previously applied locks
- Acoustic signalling of system faults or errors (can be postponed for a specific time)
- LED indicators on the front panel: AC supply mode, DC supply mode, Lock, Fault
- LED status depends on all monitored systems

Technical specifications	
Power supply	24 V DC ± 5V
Protection class	I
Ingress protection	IP21
Operating temperature range	-10°C to +40°C
Number of monitored systems	from 1 to 10
Data transmission	LON
Connectors	1,5mm²
Max. dimensions (HxWxD)	130x100x40mm
Mounting	Wall-mounted



Strip X1	L11	L12	25	26	28	29	19	20	15	16
Point	LON1	LON2	A21	A24	A31	A34	+	-	B1	B2

CENTRAL BATTERY SYSTEM

PZS MODULE

This panel enables remote checking of some basic operating statuses of the system, such as: stand-by (mains operation), battery operation or fault.

A built-in key can be used to lock continuous and emergency operation. This prevents the system from unauthorized tampering.

Technical specifications	
Connectors	1,5mm^2
Max. dimensions (HxWxD)	82x80x55mm
Mounting	Wall-mounted

Connection of the PZS module

Switch ON	– lock applied
Switch OFF	– lock removed
Loop control	– lock is removed in case of a short or open circuit

SD MEMORY CARD

An SD memory card enables saving the event log and subsequent opening and printing it on a PC with standard word processing software.

Using the card, the system configuration can also be stored and the firmware can be updated.

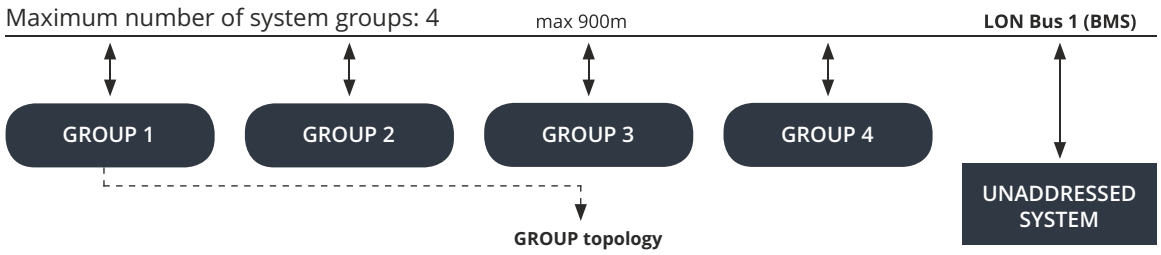
Data saved on the card:
- Text description of the system
- Description of each circuit
- Description of each luminaire
- Description of each control mode
- Description of each control group
- Complete configuration of the system
- Event log
- Firmware

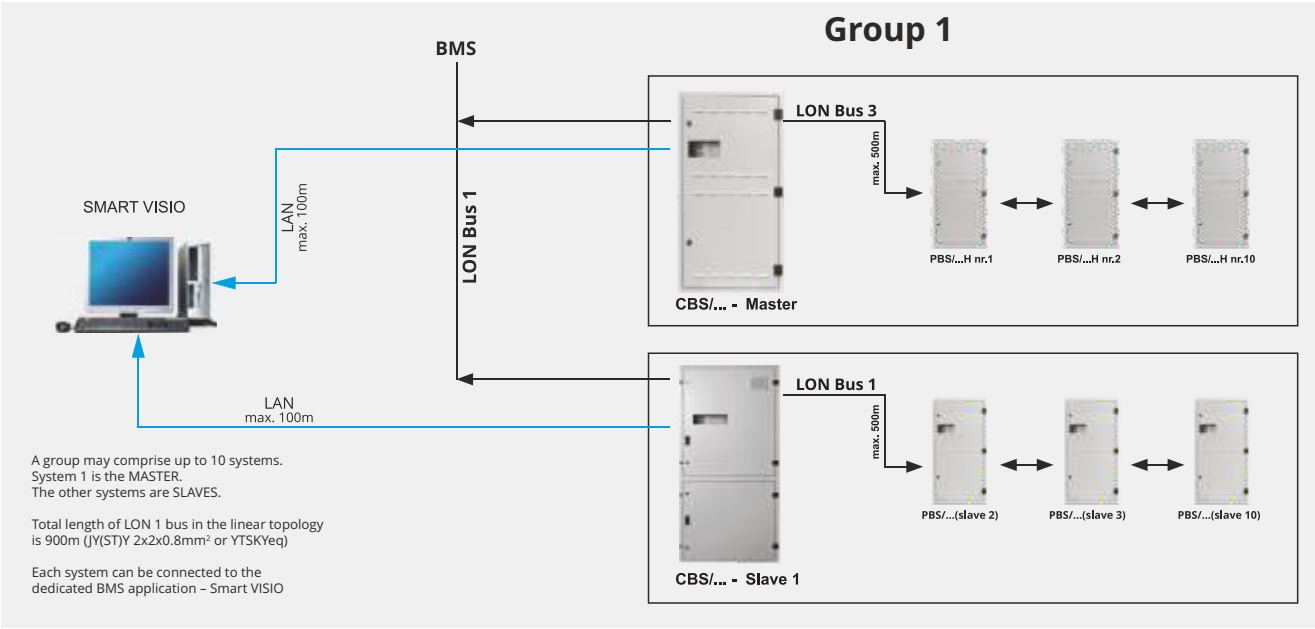
CENTRAL BATTERY SYSTEM

SYSTEM STRUCTURE

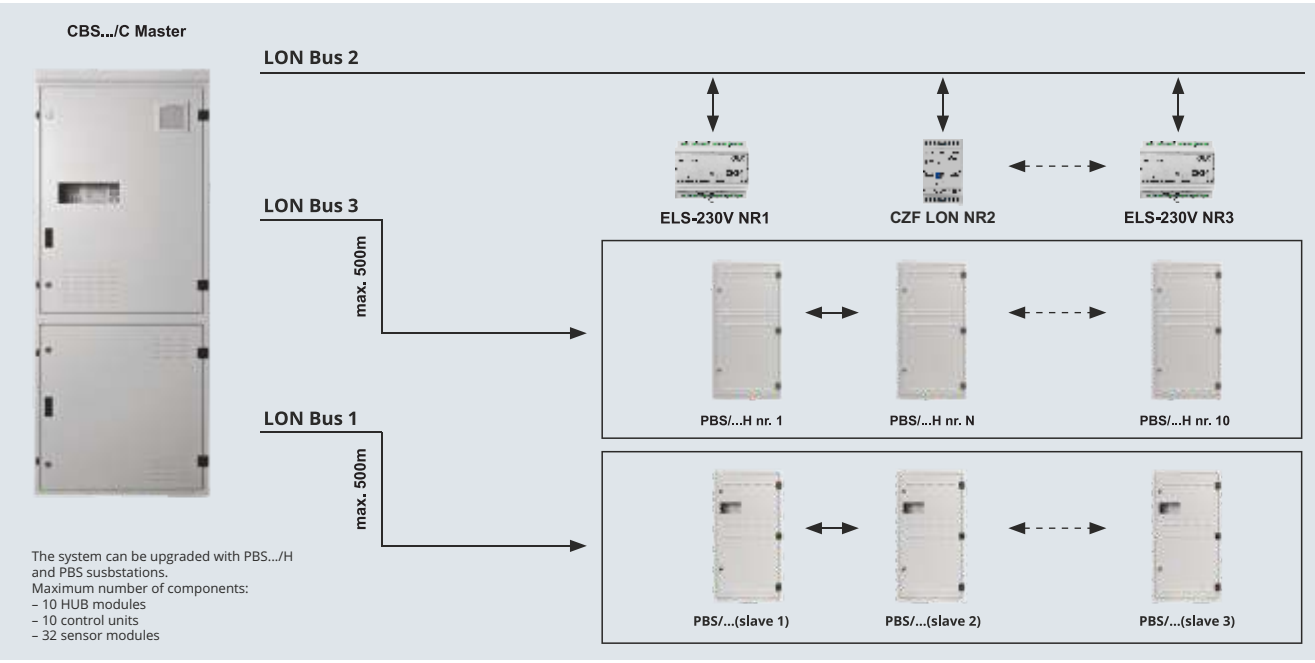
Communication with ELS 230V external modules, substations with a controller and substations with a HUB module (remote cabinets) is based on the LonTalk communication protocol. Three LonTalk interfaces are implemented in the controller. The first – LON1 – is used for communication between systems with a controller and BMS type systems. The LON2 interface is intended for communication with external sensor modules of the ELS 230 type, whereas LON3 is reserved for substations equipped with a HUB module.

Central battery system communication diagram



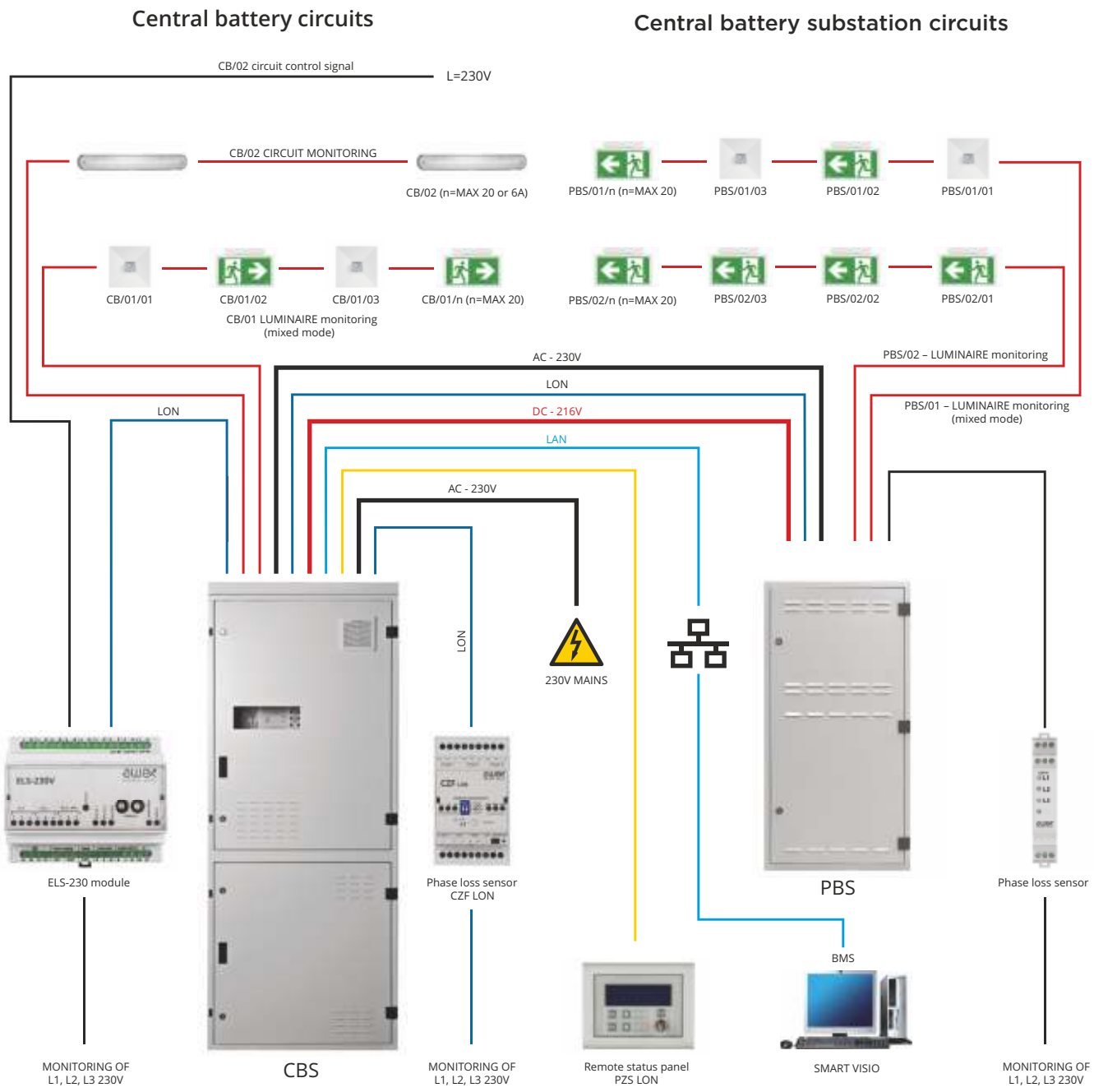


SYSTEM topology



CENTRAL BATTERY SYSTEM

SAMPLE SYSTEM DIAGRAM



CENTRAL BATTERY SYSTEM

COMPARISON OF CBS SYSTEMS CABINETS

	CBS/32L-E	CBS/80L-E	CBS/40C-E	CBS/48C-E	CBS/72R-E	CBS/48R-E	CBS/32C-E
Power supply parameters							
Mains voltage (3PH or 1PH)	400V/230V	400V/230V	400V/230V	400V/230V	400V/230V	400V/230V	230V
Frequency	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz
Earthing system	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT
Technical parameters							
Dimensions (HxWxD) [mm]	2050x800x400	2050x800x400	2050x800x400	2050x800x400	1200x800x400	1200x800x400	1800x600x350
Material	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Colour	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035
Door type	Right hand	Right hand	Right hand	Right hand	Right hand	Right hand	Right hand
Cabinet base	NO*(1)	NO*(1)	NO*(1)	NO*(1)	NO	NO	NO*(1)
Door lock	single-sided	single-sided	single-sided	single-sided	single-sided	single-sided	Single-sided
Electrical parameters							
Ingress protection	IP21	IP21	IP21	IP21	IP21	IP21	IP21
Protection class	I	I	I	I	I	I	I
Cable glands	top & bottom	top & bottom	top	top	top	top	top
Max. number of substations*(3)	6/2	6/2	2/ -	2/ -	2/ -	2/ -	1/ -
Mains power connection size	35mm²	35mm²	16mm²*(2)	16mm²*(2)	16mm²*(2)	16mm²*(2)	16mm²*(2)
Battery connection size	35mm²	35mm²	16mm²*(2)	16mm²*(2)	16mm²*(2)	16mm²*(2)	16mm²
Substation power supply connection size	16mm²	16mm²	10mm²*(2)	10mm²*(2)	10mm²*(2)	10mm²*(2)	10mm²
Max. size of branch circuit connection	4mm²	4mm²	4mm²	4mm²	4mm²	4mm²	4mm²
Max. length of branch circuit				600m			
Power parameters							
Max. system power	20kW	20kW	5,5kW	5,5kW	5,5kW	5,5kW	5,5kW
Max. main protection [A]	100	100	25	25	25	25	25
Max. substation protection [A]	63	63	10	10	10	10	10
Max. battery protection [A]	100	100	50	50	50	50	50
Equipment							
System controller	1	1	1	1	1	1	1
Power supply system 24V DC	1	1	1	1	1	1	1
Charging controller	1	1	1	1	1	1	1
Booster 430 W	1	1	1	1	1	1	1
Max. number of booster modules	16	9	2	2	4	2	1
Max. number of modules	5	12	7	7	11	7	6
Max. Number of circuits	32	80	40	48	72	48	32
Compact size	NO	NO	YES	YES	NO	NO	YES

CENTRAL BATTERY SYSTEM

PBS/80-E	PBS/56-E	PBS/32-E	PBS/40-E	PBS/24-E	PBS/48H-E*(4)	PBS/32H-E	PBS/16H-E	LPS/24-E*(5)
400V/230V	400V/230V	230V	400V/230V	230V	230V	230V	230V	230V
50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz
TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT	TN-S-C/IT
2050x800x400	1200x800x400	1200x800x400	1000x600x350	700x570x300	1000x600x350	700x570x300	500x420x300	1200x600x350
Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Stal
RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035
Right hand	Right hand	Right hand	Right hand	Right hand	Right hand	Right hand	Right hand	Right hand
NO*(1)	-	-	-	-	-	-	-	-
Single-sided	Single-sided	Single-sided	Single-sided	Single-sided	Single-sided	Single-sided	Single-sided	Single-sided
IP21	IP21	IP21	IP21	IP21	IP21	IP21	IP21	IP21
I	I	I	I	I	I	I	I	I
top & bottom	top	top	top	top	top	top	top	top
-	-	-	-	-	-	-	-	-
35mm^2	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)
35mm^2	16mm^2	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)	16mm^2*(2)
-	-	-	-	-	-	-	-	-
4mm^2	4mm^2	4mm^2	4mm^2	4mm^2	4mm^2	4mm^2	4mm^2	4mm^2
600m								
17kW	11kW	11kW	11kW	8kW	11kW	8kW	5,5kW	1,5kW
80	-	-	-	-	-	-	-	16
-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	25
1	1	1	1	1	2xHUB	1xHUB	1xHUB	1
1	1	1	1	1				1
-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-
12	9	6	7	4	8	5	3	4
80	56	32	40	24	48	32	16	24
-	-	-	-	-	-	-	-	YES

(*1) Optionally, cabinets may be supplied with a 10 cm or 20 cm base

(*2) Special execution of a cabinet enables larger diameter connections with a reduced number of substations

(*3) Option; the number of substations depends on the type of power supply (1PH/3PH)

(*4) Remote cabinet, without a controller, equipped with a Lon HUB module

(*5) Optional execution of: LPS/4-E, LPS/8-E, LPS/16-E, LPS/24-E

CENTRAL BATTERY SYSTEM

EMERGENCY ESCAPE LUMINAIRES

AXN CBS series

Luminaire type	Surface-mounted, ceiling, wall, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W or 6W
IP Rating	IP42 lub IP65

AXNC, AXNR, AXNO, AXNU, AXNA

220-240V AC 50-60Hz | 175-275V DC | LED | IP42 | IP65

AXP CBS series

Luminaire type	Recessed-mounted, ceiling, wall, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W or 6W
IP Rating	IP20 or IP65/20

AXPC, AXPR, AXPO, AXPU, AXPA

220-240V AC 50-60Hz | 175-275V DC | LED | IP20 | IP65/20

LOVATO II CBS series

Luminaire type	Surface-mounted, ceiling, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP41

LV2C, LV2R, LV2O, LV2U, LV2A

220-240V AC 50-60Hz | 175-275V DC | LED | IP41

LOVATO P CBS series

Luminaire type	Recessed-mounted, ceiling, C, R, O, U, A optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20

LVPC, LVPR, LVPO, LVPU, LVPA

220-240V AC 50-60Hz | 175-275V DC | LED | IP20

EYE LED CBS series

Luminaire type	Recessed-mounted,ceiling, R and U optics
Light source	PowerLED 1W, 2W, 3W
IP Rating	IP20

EY, EYR, EYU, EYK, EYKR, EYKU

220-240V AC 50-60Hz | 175-275V DC | LED | IP20

SPY II CBS series

Luminaire type	Inside primary luminaire
Light source	LED 1W, 2W, 3W
IP Rating	IP20

SP2

220-240V AC 50-60Hz | 175-275V DC | LED | IP20

MICRO SPOT CBS series

Luminaire type	Inside primary luminaire, R or U optics
Light source	LED 1W, 2W, 3W
IP Rating	IP20

MSU, MSR

220-240V AC 50-60Hz | 175-275V DC | LED | IP20

OUTDOOR LED CBS series

Luminaire type	Surface-mounted, wall
Light source	LED 3x1W
IP Rating	IP66

ODB

220-240V AC 50-60Hz | 175-275V DC | LED | IP66

EXIT CBS series

Luminaire type	Surface/Recessed-mounted,ceiling, wall
Light source	LED 1W, 2W, 3W, 6W
IP Rating	IP65

ETS, ETE, ETL

220-240V AC 50-60Hz | 175-275V DC | LED | IP65

HELIOS CBS series

Luminaire type	Surface-mounted,ceiling, wall
Light source	LED 3W, 3x1W, 6x1W, LFL 8W, 11W, 18W
IP Rating	IP42/IP65

H, HL, HHP, HW

220-240V AC 50-60Hz | 175-275V DC | LED | T5 G5 | IP42 | IP65

TIGER CBS series

Luminaire type	Surface/Recessed-mounted,ceiling, wall
Light source	LED 3W, LFL 8W
IP Rating	IP22

TG, TL

220-240V AC 50-60Hz | 175-275V DC | LED | T5 G5 | IP22

CENTRAL BATTERY SYSTEM

SK-8 CBS series

Luminaire type	Surface-mounted,ceiling, wall
Light source	LED 3W
IP Rating	IP44

SK–8

220-240V AC 50-60Hz | 175-275V DC | LED | IP44

INFINITY II CBS series

Luminaire type	Surface-mounted, wall
Light source	LED 3W
IP Rating	IP40

IF2BWD

220-240V AC 50-60Hz | 175-275V DC | LED | IP40

ARROW N CBS series

Luminaire type	Surface-mounted, ceiling, O or C optics
Light source	LED 1W, 2W, 3x1W
IP Rating	IP40

ARNO, ARNC, ARNS

220-240V AC 50-60Hz | 175-275V DC | LED | IP40

ARROW P CBS series

Luminaire type	Recessed-mounted, ceiling, O or C optics
Light source	LED 1W, 2W, 3x1W
IP Rating	IP40

ARPO, ARPC, ARPS

220-240V AC 50-60Hz | 175-275V DC | LED | IP40

EDGE R CBS series

Luminaire type	Surface-mounted, wall, ceiling
Light source mains mode	LED 12W, 18W, 24W
Light source emergency mode	LED 1W, 3W
IP Rating	IP54

EDRE

220-240V AC 50-60Hz | 175-275V DC | LED | IP54

EDGE S CBS series

Luminaire type	Surface-mounted, wall, ceiling
Light source mains mode	LED 12W, 18W, 24W
Light source emergency mode	LED 1W, 3W
IP Rating	IP54

EDSE

220-240V AC 50-60Hz | 175-275V DC | LED | IP54

*current list of CNBOP fire protection approvals is available at www.awex.eu
**current list of products with Kitemark and ENEC is available at www.awex.eu

CENTRAL BATTERY SYSTEM

ESCAPE ROUTE LUMINAIRES

SK–8 CBS series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 1W, 2W
IP Rating	IP44

SK–8

220-240V AC 50-60Hz | 175-275V DC | LED | IP44

ARROW N CBS series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 1W, 2W
IP Rating	IP40

ARN

220-240V AC 50-60Hz | 175-275V DC | LED | IP40

ARROW P CBS series

Luminaire type	Recessed-mounted, ceiling
Light source	LED 1W, 2W
IP Rating	IP40

ARP

220-240V AC 50-60Hz | 175-275V DC | LED | IP40

TWINS CBS series

Luminaire type	Surface-mounted, wall, ceiling
Light source	LED 1W, 2W
IP Rating	IP41

TW

220-240V AC 50-60Hz | 175-275V DC | LED | IP41

PLEXI LED CBS series

Luminaire type	Recessed-mounted, ceiling
Light source	LED 1W, 2W
IP Rating	IP20

PL

220-240V AC 50-60Hz | 175-275V DC | LED | IP20

ESCAPE CBS series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1W, 2W
IP Rating	IP20

EL

220-240V AC 50-60Hz | 175-275V DC | LED | IP20

TIGER CBS series

Luminaire type	Surface/Recessed-mounted, wall
Light source	LED 1W, LFL 8W
IP Rating	IP22

TL, TG

220-240V AC 50-60Hz | 175-275V DC | LED | T5 G5 | IP22

TIGER DS CBS series

Luminaire type	Surface/Recessed-mounted, ceiling
Light source	LED 1W, LFL 8W
IP Rating	IP22

TSL, TGS

220-240V AC 50-60Hz | 175-275V DC | LED | T5 G5 | IP22

SCREEN CBS series

Luminaire type	Surface-mounted, wall
Light source	LED 3x1W, 3W, 2x3W
IP Rating	IP40

SC30, SC40, SC60

220-240V AC 50-60Hz | 175-275V DC | LED | IP40

SCREEN DS CBS series

Luminaire type	Surface-mounted, ceiling
Light source	LED 3x1W, 3W, 2x3W
IP Rating	IP40

SCS30, SCS40, SCS60

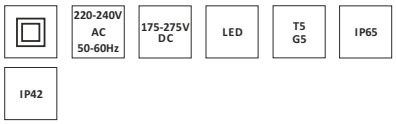
220-240V AC 50-60Hz | 175-275V DC | LED | IP40

CENTRAL BATTERY SYSTEM

HELIOS CBS series

Luminaire type	Surface-mounted, wall
Light source	LED 1W, LFL 8W
IP Rating	IP42/IP65

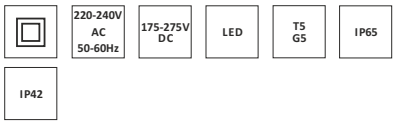
H, HL



HELIOS DS CBS series

Luminaire type	Surface-mounted, ceiling
Light source	LED 1, LFL 8W
IP Rating	IP42/IP65

HD, HDL

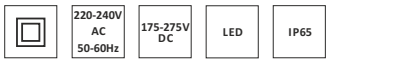


EXIT CBS series

Luminaire type	Surface/Recessed-mounted*, wall, ceiling**
Light source	LED 1W, 2W
IP Rating	IP65

*requires an accessory for Recessed mounting
**requires an accessory – plexi glass

ETS+ETS/PLX, ETE+ETE/PLX, ETL+ETL/PLX

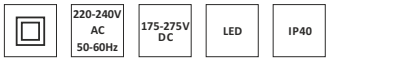


INFINITY II A CBS series

Luminaire type	Surface/Recessed-mounted*, ceiling
Light source	LED 1W, 2W
IP Rating	IP40

*requires an accessory for Recessed mounting

IF2ACS

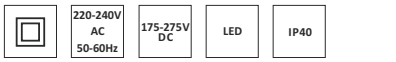


INFINITY II A CBS series

Luminaire type	Surface/Recessed-mounted*, wall
Light source	LED 1W, 2W
IP Rating	IP40

*requires an accessory for Recessed mounting

IF2AWS

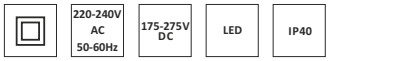


INFINITY II A CBS series

Luminaire type	Surface/Recessed-mounted*, ceiling
Light source	LED 1W, 2W
IP Rating	IP40

*requires an accessory for Recessed mounting

IF2ALS

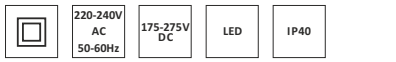


INFINITY II B CBS series

Luminaire type	Surface/Recessed-mounted*, wall
Light source	LED 1W, 2W
IP Rating	IP40

*requires an accessory for Recessed mounting

IF2BWS

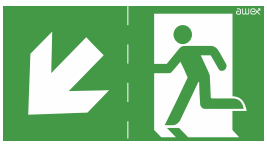


*current list of CNBOP fire protection approvals is available at www.awex.eu
**current list of products with Kitemark and ENEC is available at www.awex.eu

USER INFORMATION

PICTOGRAMS – STICKERS

Pictograms (compliant with PN-EN ISO 7010:2012)


22


23


24


25


26


27

Additional pictograms

28


61


29

CODE	PSxx	PNxx	PMxx	PBxx	PVxx	PWxx
Dimensions [mm]	100x300	100x200	125x250	150x300	200x400	300x600
Compatible with:	TL, TG, TGS, TLS	ETS	ETE, HL, HEL, HDL, HDEL, ARN, ARP, EL	TW, IF2, SK8, ETL	SC40, SCS40	SC60, SCS60

Legend:
xx – pictogram ID number (see the photos above)

Versatile pictogram sets (compliant with PN-EN ISO 7010:2012)


31


32


34


33

CODE	PU31	PU32	PU33	PU34
Dimensions [mm]	125x250 (125x375)*	150x300 (150x450)*	100x300 (150x600)*	100x200 (100x300)*
Compatible with:	ETE, HEL, HL, HDL, HDEL, ARN, ARP, EL	TW, IF2, SK8, ETL	TL, TG, TGS, TLS	ETS

***overall size**

Arrow signs (compliant with PN-EN ISO 7010:2012)


41 42 43 44 47 48

CODE	PU41, PU42	PU43, PU44	PU47, PU48
Dimensions [mm]	125x125	150x150	100x100
Compatible with:	ETE, HL, HEL, HDL, HDEL, ARN, ARP	TW, IF2, SK8, ETL	ETS

PICTOGRAMS – FOIL

Compliant with PN-EN ISO 7010:2012

CODE	PSxxF	PDxxF	PLxxF
Dimensions [mm]	125x250	150x300	150x300
Compatible with:	ARN, ARP	IF2	ETL

USER INFORMATION

SYMBOLS USED

The current list of valid CNBOP fire protection approvals is available at www.awex.eu

Product complies with applicable European Directive requirements

220-240V AC 50-60Hz — Allowable range of AC input voltage

176-275v DC — Allowable range of DC input voltage

24V DC — Safe voltage (SELV)

Protection class I

LED — Light source type – LED

T5 G5 — Light source type – T5 fluorescent lamp

IPxx — Ingress protection e.g. IP65

Protection class II

Protection class III

Current list of products with Kiteramk and ENEC is available at www.awex.eu

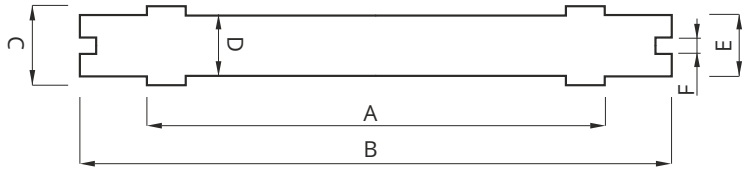
STANDARD LED INDICATIONS IN RU MODULES*

LED indication

COLOUR	State	Description
○ ○	Off	No power, no battery connected, test or emergency mode
● ○	Green on	Conversion kit powered / Battery is fully charged
○ ●	Red on	Battery fault
✳ ○	Green flashing	Conversion kit powered / Battery in charging mode
○ ✳	Red flashing	Communication or luminaire fault

*Indications may vary depending on the module type.

CODE	CAPACITY [mAh]	VOLTAGE [V]	DIMENSIONS [mm] A x B x C x D x E x F	WEIGHT [Kg]
Ni-Cd	1000	3.6	153x179x18x15x14x4	0,076
	1500		136x162x25x22x18x4	0,14
	2500		152x178x30x26x20x4	0,21
	4000		189x210x30x33x25x4	0,352
Ni-Cd	1500	4.8	175x202x25x22x18x4	0,184
	2500		202x228x30x26x20x4	0,288
	4000		245x270x36x33x25x4	0,452
Ni-Cd	1500	6.0	218x244x25x22x18x4	0,228
	2500		248x275x30x26x20x4	0,354
	4000		303x329x36x33x25x4	0,574
Ni-MH	1500	3.6	153x179x18x15x14x4	0,088
	2500		136x162x25xx22x18x4	0,172
	4000		152x179x30x26x20x4	0,26
Ni-MH	1500	4.8	202x228x18x15x14x4	0,114
	2500		175x202x25x22x18x4	0,22
	4000		202x228x30x26x20x4	0,338
Ni-MH	1500	6.0	251x276x18x15x14x4	0,14
	2500		220x246x26x23x18x4	0,268
	4000		251x276x30x26x20x4	0,398
$LiFePO_4$	1000	6.4	105x135x31x19x20x4	0,09
	1500		135x165x31x19x20x4	0,112
	3000		140x170x31x27x20x4	0,197
$LiFePO_4$	1500	9.6	203x233x31x19x20x4	0,152



Photographs and parameters of the products shown in this catalogue are for reference only and cannot be relied upon as a legal offer. Certain parameters of supplied products may differ from the parameters of the products described in this catalogue. The appearance of actual products may slightly differ from the photographs and drawings contained in this catalogue. P.P.H.U AWEX reserves the right to discontinue products shown in this catalogue or to modify their parameter without notice.

USER INFORMATION

STANDARDS AND REGULATIONS

SCOPE OF APPLICATION

Emergency lighting systems should be designed for all civil structures where a power cut or mains supply failure may cause a risk of injury or death to the public, a major environmental hazard or substantial property damage (Regulation of the Minister of Infrastructure of 12 April 2002). Journal of Laws No. 75, Item 690, as amended; Regulation of the Minister of Infrastructure of 12 March 2009, Journal of Laws No. 56, Item 461 and Regulation of the Minister of Infrastructure of 10 December 2010, Journal of Laws No. 239, Item 1597).

According to the law, emergency lighting is required:

1. In enclosed spaces of:
   • cinema, theatre and concerts halls, as well as other venues
   • conference rooms, lecture theatres, entertainment establishments and sports halls for more than 200 people,
   • exhibition rooms in museums,
   • areas exceeding 1000 m2 in car parks provided with artificial source of light only.

2. In escape and exit routes:
   • in the rooms and areas specified in Section 1 above,
   • provided with artificial sources of light only,
   • at hospitals and similar facilities, as well as other buildings intended for people with a limited ability to move,
   • in multi-storey and high-rise public buildings and residential buildings.

3. In temporary buildings and structures, if intended as entertainment venues or other places of assembly.

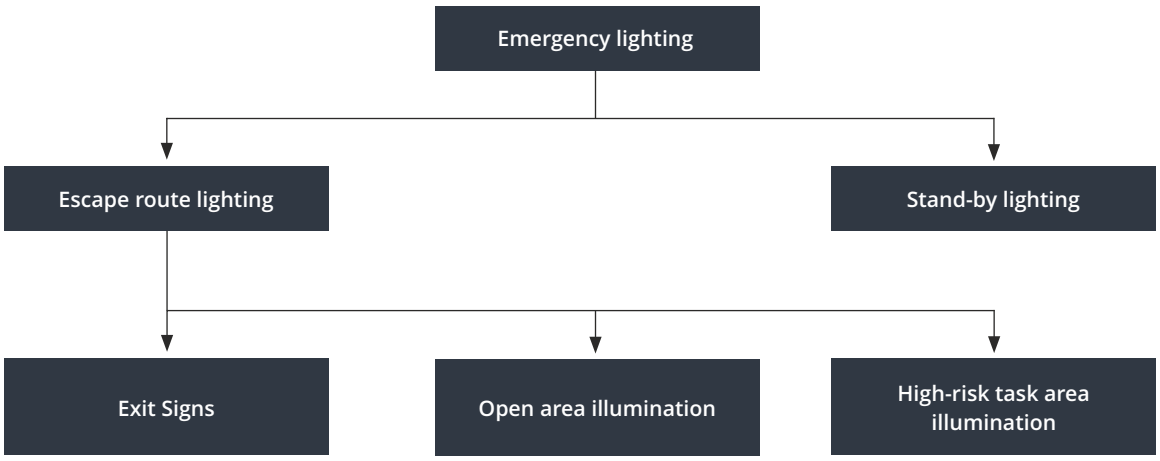
4. In air-supported structures, if used as temporary production or storage facilities, where the fire load density of the fire zone does not exceed 1000MJ/m².

5. In temporary structures (tents) intended as entertainment venues.

6. control rooms and technical rooms at gas compressor stations (and elsewhere on the premises of such stations).

ELEMENTARY PROBLEMS OF EMERGENCY LIGHTING DESIGN

Emergency lighting is designed for use when mains-supplied primary lighting luminaires fail. For this reason, emergency lighting luminaires have to be supplied from an independent source of electric power.



Emergency lighting must comply with the requirements and parameters specified in PN-EN 1838 and PN-EN 50172. The main purpose of emergency lighting is to enable safe exit or evacuation of the premises where the mains supply fails.

As the efficiency of light sources tends to decrease with operation time, the luminaires get dirty and other factors affect the overall performance, it is recommended to design the luminous intensity at least at 1.25 times the level recommended in applicable standards. For the calculation of the luminous intensity of emergency escape lighting only direct illumination of the surface should be considered, without any light reflected in floors, walls or ceilings.

For normal activities to be carried out as usual stand-by lighting is provided.

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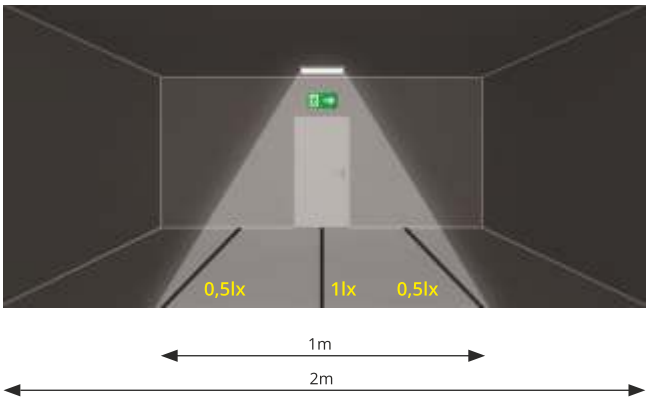
If stand-by lighting is used as emergency escape lighting, the system should be compliant with the above-mentioned standards and any other standards applicable to the products and wiring used. If the illuminance provided by stand-by lighting is lower than the minimum illuminance level achieved with primary lighting, such lighting should only be used to ensure proper completion or interruption of activities.

ESCAPE ROUTE ILLUMINATION

The purpose of illumination of an escape route is to ensure safe evacuation or exit of people from the area and to enable them to locate fire protection and suppression equipment.



In the case of escape routes up to 2m wide, the average illuminance level on the floor along the centre line of the route should be at least 1 lx, and in the central band of the route, covering at least a half of the width, it should be at least 50% of the value.

Wider escape routes can be treated as a number of 2m strips or they should meet the requirements for open areas. The ratio of the maximum illuminance to the minimum illuminance along the centre line of the es cape route should not exceed 40:1.

OPEN AREA ILLUMINATION (ANTI-PANIC)

The purpose of anti-panic illumination of open areas is to reduce the likelihood of panic and to enable safe movement of people towards escape routes and exits by providing enough visibility to reach a place from where the escape route or exit can be located. It is recommended that escape routes or open areas should be illuminated by light falling directly onto the relevant surface; any obstructions located up to 2m above the surface should be il-luminated as well.

Open area illumination is used in zones with unspecified escape routes: large rooms, halls or buildings with floor area exceeding 60 m2 or less, if a greater number of people gathered there may cause an extra risk.

The minimum illumination provided by emergency escape lighting in an open area should be at least 0.5 lx at the floor level across a free core area, except for an outer rim of 0.5m excluded from the area. The ratio of the maximum illuminance to the minimum illuminance of the open area should not exceed 40:1.

HIGH RISK TASK AREAS

The purpose of illumination of high risk task areas is to increase the safety of persons involved in potentially dangerous processes or situations and to allow safe and correct completion or interruption of activities in such areas. In high risk task areas, the operating level of illuminance at the reference plane should not be lower than 10% of the normal illuminance required for given activities, however no less than 15 lx. The stroboscopic effect must be eliminated. The uniformity of illuminance in a high risk task area should not exceed 10:1.

The minimum duration of emergency lighting should be as long as the safety hazards exist.

High risk task area lighting should ensure full and continuous illuminance required at once or within 0.5 s, depending on the application.

The luminance of each colour area of a safety sign should be at least 2 cd/m2 in all viewing directions which are important for safety.

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PLACEMENT OF EMERGENCY ESCAPE LUMINAIRES

In order to ensure correct visibility, allowing safe evacuation, it is recommended to place emergency lighting luminaires at least 2m above floor level.

For appropriate luminance, emergency luminaires should be situated close to each exit door and where necessary to highlight potential danger or safety equipment. Emergency escape luminaires should be placed as shown below:

at each emergency exit door

at stairs, with each step receiving direct light

close to firefighting equipment or fire alarm call points

at each change of direction

close to each change of floor level

at each intersection of corridors

outside and close to each final exit

close to each first aid point

mandatory at all exit doors and safety signs

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If first aid points or firefighting equipment and fire alarm call points are not situated on the escape route or within the open area, they should be illuminated so that the illuminance level of at least 5 lx is ensured on the floor close to these points.

NOTE: According to the applicable standard, 'close to' means within at a distance of 2m measured horizontally.

Emergency lighting should also be provided in other hazardous areas and the areas that should be accessible if primary lighting fails.
Such areas include the following:

- Lift cars,
- Escalators and moving walkways,
- Toilets, lobbies, changing rooms, cloakrooms and locker rooms larger than 8 m^2 and rooms intended for use by the disabled,
- Technical rooms where escape route lighting should meet the requirements for the open area lighting or high risk task areas, as applicable,
- Covered car parks,
- Hospitals – the illuminance of escape route lighting at ICUs and operating theatres should be at least as required for primary lighting in those areas (unless stand-by lighting is available).

SAFETY SIGNAGE

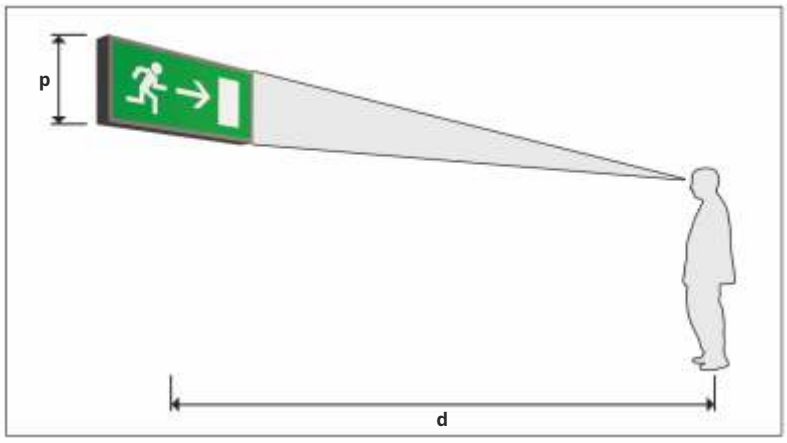
Signs placed at all emergency exits along escape routes should be so illuminated as to indicate the direction to a place of safety in an unambiguous manner. [PNEN1838:2005]

Exit and direction signs should be clearly visible from anywhere along the escape route. All signs indicating emergency exits and escape routes should be in the same colour and format, whereas their minimum illuminance should be 2 cd/m^2.

As people in the building may not be familiar with its layout, internally illuminated, permanently powered safety signs are recommended.

Note that internally illuminated safety signs are visible from a greater distance than the same size signs illuminated from the outside.

$$d=s*p$$



where:
d [m] – viewing distance (maximum distance at which a sign is visible and recognizable)
p [m] – height of sign
s – constant value: 100 for externally illuminated signs and 200 for internally illuminated signs.

USER INFORMATION

1. EMERGENCY LIGHTING SYSTEMS

Power to an emergency escape lighting system should be supplied immediately, automatically and for enough time to ensure illumination of specific areas if the primary lighting fails.

An escape lighting system should fulfil the following functions:
- Illuminate escape and exit route signs,
- Provide adequate illuminance along escape routes to ensure safe movement towards the final exit,
- Ensure easy location and use of fire alarm call devices and firefighting equipment distributed along escape routes,
- Enable performing safety measures.

Emergency escape lighting should be activated not only in the event of a total blackout or failure of the primary lighting, but also if a local failure occurs, such as a damage to a branch circuit. All applicable scenarios should be considered at the emergency lighting system design phase, in order to make sure that the emergency lighting will operate correctly if the power supply of primary lighting should fail in a given zone.

An emergency lighting system is to comprise all equipment and components within a facility which are interconnected to fulfil the purposes of emergency lighting. This applies, in particular, to the duration and adequate illuminance of emergency lighting, the application of primary or night time lighting, reporting events and the safety of operation and activities of rescue teams, also in the event of fire.

The following equipment and components make up an emergency lighting system:

- Emergency lighting systems with a central power supply or self-contained luminaires (with internal batteries),
- Emergency luminaires designed for use with a CPS system or internal batteries, including their equipment (ballasts, switching and address modules in the case of CPS or inverters, address modules and batteries in the case of self-contained luminaires),
- Cables and wires for the connection of emergency lighting system with luminaires,
- Cable trays, cable glands, suspension brackets and mechanical fixing systems to make connections in emergency lighting systems,
- Additionally designed emergency lighting system devices and equipment, such as remote controllers, computer connection modules, monitoring systems for luminaire supply circuits, systems used for operation with fire protection equipment and other components used in emergency lighting systems.

2. EVENT LOG AND TESTING OF EMERGENCY LIGHTING SYSTEMS

As-fitted drawings of the completed emergency lighting system should be submitted and stored on the relevant premises. The drawings should include all luminaires and primary components installed. The data should be updated whenever any changes are made to the system. The drawings should be signed by a competent person who verifies the design in terms of compliance with the applicable standard.

In addition, an event log should be maintained to record routine reports, tests, modifications and damages.

The records should be available in a hand-written form or as printouts from an automatic testing device.

The event log should be kept on the premises in the custody of an appropriate person appointed by the owner/leaseholder; the log should be available for inspection by authorized parties.

The event log should be used for recording the following information:
- System order date, including a certificate of any modifications,
- Date of each routine test and inspection,
- Date and a concise description of each service and inspection activities, or of performed tests,
- Date and a concise description of each defect or damage and performed repairs,
- Date and a concise description of each change to the emergency lighting system,
- Description of basic characteristics and operating modes of an automatic testing device, if used.

Regular maintenance and repairs are essential. The property owner/leaseholder should appoint a competent person to supervise the provision of maintenance services. The supervisor should have sufficient competences to ensure that any necessary maintenance and repair work is correctly performed on the system.

If an automatic testing device is used, its reports should be recorded every month. In the case of all other system types, tests should be performed according to PN-EN 50172 and the results should be recorded in the log.

Tests and inspections of emergency lighting equipment

As there is a risk of primary lighting power supply failure shortly after an emergency lighting system test or during subsequent charging of batteries, emergency duration tests should be performed, if possible, at the time when the risk is low. This should allow safe recharging of the batteries. Alternatively, short tests of the emergency lighting system can be performed until the full capacity of batteries is restored.

Daily inspection

The purpose of visual inspection is to verify that the central power supply system is in good working condition and to identify the need for any tests. The inspection involves visual checking of system indicators.

Monthly test

If automatic testing devices are used, the results of short tests should be recorded.

In the case of all other systems, a monthly test involves checking the functionalities of the emergency lighting system by simulating a mains power supply failure. The test is to verify if all specified emergency luminaires and illuminated safety signs switch into emergency mode and resume their normal operating state when the mains supply is restored.

The duration of the test should be sufficient to check the functioning of the luminaires within the tested zone. During the test all respective luminaires and signs should be checked to confirm that they are present, clean and function correctly.

Annual test

If automatic testing devices are used, the results of full rated emergency duration tests should be recorded.

In the case of all other systems, an annual test involves checking the functionalities of the emergency lighting system by simulating a mains power supply failure. The test is to verify if all specified emergency luminaires and illuminated safety signs switch into emergency mode and resume their normal operating state when the mains supply is restored. The duration of the test should be sufficient to check the expected emergency duration of the system as specified by the manufacturer.

During the test all respective indicator lamps or devices should be checked to confirm that their indications are correct. It is recommended to check the correct operation of the charging system.

3. EMERGENCY ESCAPE LUMINAIRES AND CENTRAL POWER SUPPLY SYSTEMS

Emergency escape luminaires should be designed and manufactured according to PN-EN 60598-2-22:2004/AC Luminaires – Part 2-22: Particular requirements. Emergency lighting luminaires should be specified according to their intended place of installation. Luminaires used in Ex-zones should comply with relevant standards and the ATEX directive (94/9/EC).

Starters for emergency lighting luminaires should comply with PN-EN 61347:2005 (multi-part document) Lamp controlgear – Part 2-7: Particular requirements for DC supplied electronic ballasts for emergency lighting. Due to the amount of output power, the starting pulse current load and duration are important parameters of the starters. These parameters should be specified so that they do not cause damage of power supply circuit contacts (e.g. fuse bases, relay contacts etc.).

Central power supply systems for emergency lighting should be designed and manufactured according to PN-EN 50171:2007 Central power supply systems. Safety requirements for batteries should comply with PN-EN 50272-2:2007 Safety requirements for secondary batteries and battery installations – Part 2: Stationary batteries.

Due to a variety of internal designs and operating modes of safety equipment, a description of different types of central power supply systems for emergency lighting is not required. CPS systems should work in the IT earthing system with insulation monitoring in order to allow safe operation of rescue teams. Automatic emergency lighting test systems should be designed, manufactured and installed according to relevant requirements of national standards and regulations.

4. LUMINAIRE ENCLOSURE CLASSIFICATION AND PROTECTION CLASSES

Classification of luminaire enclosures

The resistance of electrical equipment and devices to harmful effects of the weather and environment, as well as the protection against accidental contact with live parts depend on the execution of enclosures and guards.

This kind of protection is referred to as ingress protection and denominated by the so-called IP ratings. According to this classification, electrical enclosures are marked with a two-digit code preceded by the letters IP (PN-EN 60529:2003).

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Classification of luminaire enclosures

IP LEVEL	First number		Second number
	Protection of people against contact with live and moving parts	Protection of the device against intrusion of solid objects	Protection against water
0	No protection	No protection	No protection
1	Protection against accidental contact with the back of a hand	Protection against intrusion of solid objects with a diameter of 50mm or larger	Vertically falling drops (condensation)
2	Protection against contact with a finger	As above but 12mm or larger	Vertically falling drops on enclosures tilted up to 15° from their normal position
3	Protection against contact with shoes and tools with a diameter of 2.5mm or larger	As above but 2.5mm or larger	Spraying water at an angle up to 60° from the vertical from every side
4	As above but 1mm or larger	As above but 1mm or larger	Spraying water from any direction
5	As above	Protection against intrusion of dust in a quantity to interfere with the operation of the equipment or reducing its safety	Water jets from any direction
6	As above	Complete protection against the intrusion of dust	Powerful water jets from any direction
7			Short-term immersion under standard conditions; no ingress of water in any harmful quantity
8			Continuous immersion in specified conditions, more severe than for level 7 above
9			Flooding with a stream of water under a pressure of 80 to 100 bar at a temperature of up to +80°C

Protection classes

AC electric appliances operating at a rated voltage of up to 440V and the voltage to ground not exceeding 250V, depending on the applicable electric shock protection measure, are divided into the following protection classes:

Protection class 0 – Protection against electric shock relies on basic insulation only.

If the insulation is damaged, electric shock protection should be ensured by favourable conditions, such as: placing out of reach, isolation of the workplace, no earthed devices, systems or structural elements within arm's reach.

In Poland, the use of Class 0 equipment is permitted as long as there is no simultaneous contact with the appliance and earth potential or if the contact is rare.

Protection class I – Protection against electric shock by indirect touch is ensured by connecting a protective conductor terminal with a PE or PEN conductor, or directly with the earthing system.

This is to ensure:

- Fast enough activation of relevant protective devices and disconnection of the power supply, or
- Limitation of touch voltage to values which do not exceed the permissible limits under specific conditions.

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Protection class II – In the appliances of this class electric shock protection is ensured by the application of suitable insulation – double or reinforced – whose damage is very unlikely.

Protection class	CLASS 0	CLASS 1	CLASS 2	CLASS 3
Symbol	None			
Characteristic execution features	Basic insulation only No protection terminal	Basic insulation only Protection terminal for a PE or PEN conductor	Double or reinforced insulation No protection terminal	Low voltage power supply system SELV or PELV
Specific requirements for the execution of electric shock protection	Isolation of the workplace to prevent simultaneous contact with two different conductive parts	Connection to a PE or PEN conductor of a protection terminal	None	None
Application scope	Rooms with insulated walls and floors, without neutral earth electrodes and structures (isolated workplaces)	Residential, industrial and similar rooms, unless specific requirements for particular places or rooms restrict the use of this class of appliances	In all rooms and any conditions, unless specific requirements for particular places or rooms restrict the use of this class of appliances	In all rooms and any conditions
Application examples	Luminaires (chandeliers)	Motors, metal switchgear, washing machines, refrigerators, electric cookers, dishwashers	Coffee grinders, hairdryers, electric shavers and other handheld power tools	Toys, portable lamps, certain handheld power tools

5. LEGISLATION AND REGULATIONS

Regulations and standards concerning emergency lighting:

1. Regulation of the Minister of Infrastructure of 12 April 2002 on technical specifications for buildings and their location. Regulation of the Minister of Infrastructure of 12 April 2002 Journal of Laws No. 75, Item 690, as amended; Regulation of the Minister of Infrastructure of 12 March 2009, Journal of Laws No. 56, Item 461 and Regulation of the Minister of Infrastructure of 10 December 2010, Journal of Laws No. 239, Item 1597.

2. Regulation of the Minister of Interior and Administration of 7 June 2010 on fire protection of buildings, other civil structures and lands (Journal of Laws No. 109, Item 719).

3. Regulation of the Minister of Interior and Administration of 27 April 2010 on the specification of products used to assure public safety or the protection of health, life and property, and rules for issuance of certificates of admittance for these products (Journal of Laws No. 85, Item 553).

4. PN-EN 50172:2013 – Emergency escape lighting systems.

5. PN-EN 1838:2005 Lighting applications. Emergency lighting.

6. MLAR guidelines (standard guidelines adopted by a conference of ministers of construction regarding requirements for technical aspects of fire protection of electrical wiring systems), taking into consideration the requirements of the European Parliament included in the guidelines of Directive 98/24/EC of 11 June 1998, amended by the guidelines of Directive 98/48/EC of 20 July 1998 (Official Journal of the EC, No. L 217, p. 18).

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Additional standards to be followed when designing emergency lighting systems:

- PN-EN 60598-2-22: 2004/AC Luminaires – Part 2-22: Particular requirements - Luminaires for emergency lighting.
- HD 384/HD 60364 PN-IEC 60364:1999 (multi-part document) Electrical installations for buildings.
- PN-EN 13032-1:2005 Light and lighting. Measurement and presentation of photometric data of lamps and luminaires. Part 1: Measurement and file format.
- PN-EN 13032-2:2005 Light and lighting. Measurement and presentation of photometric data of lamps and luminaires. Part 2: Presentation of data for indoor and outdoor workplaces.
- PN-EN 12464-1:2004 Light and lighting – Lighting of workplaces.–Part 1: Indoor workplaces
- PN-EN 50171:2007 Central power supply systems
- PN-EN 50272-2:2007 Safety requirements for secondary batteries and battery installations – Part 2: Stationary batteries.
- PN-EN 60529:2003 Degrees of protection provided by enclosures (IP Code)
- PN-EN 61347:2005 (multi-part document) Lamp controlgear – Part 2-7: Particular requirements for DC supplied electronic ballasts for emergency lighting.
- PN-EN 60617-11:2004 Graphical symbols for diagrams – Part 11: Architectural and topographical installation plans and diagrams.
- PN-N-01256-5:1998 Safety signs. Rules for placement of safety signs along escape routes and fire access roads.
- PN-N-01255:1992 Safety colours and safety signs.

NOTES

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