

CENTRAL BATTERY SYSTEM: CBS

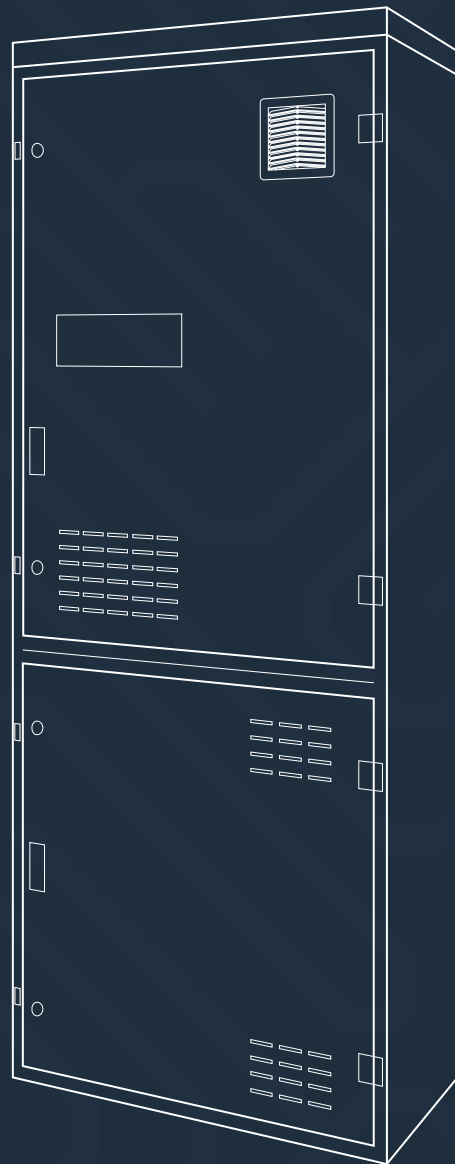
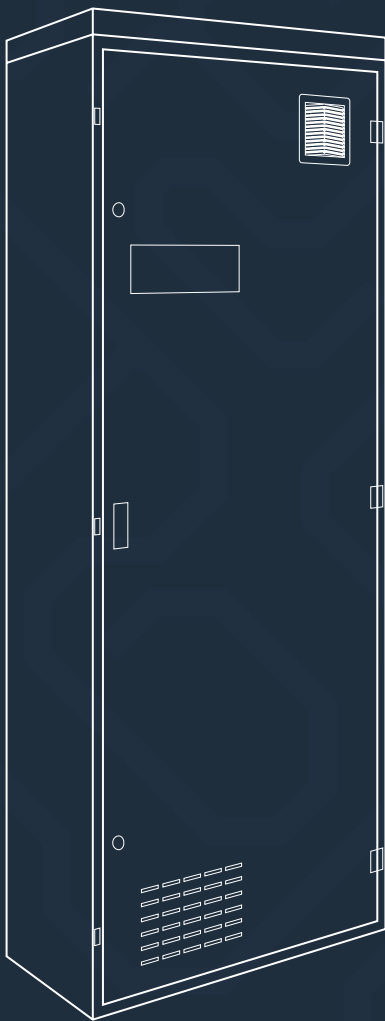


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CENTRAL BATTERY SYSTEM: CBS

The CBS central power supply system is state-of-the-art, reliable and easy-to-operate central battery system constructed in accordance with the requirements of VDE 0108 as well as PN-EN 50171 and PN-EN 50172 standards.

The system is capable of monitoring circuits, luminaires and configuration in mixed layout.

The CBS unit is equipped with a controller to supervise the operation of the entire system and archive any information on the occurred events and system condition. It has an intelligent charger to supervise the entire battery charge process and automatically stop the process in the event when battery is damaged.

Depending on the type of facility, it is possible to connect substations to diversify the central battery system functionalities, thus reducing the installation costs by shortening circuits with installed luminaires.

Damage to the central unit does not result in complete system failure, as substations take control of final circuits and luminaires.

The SD card used in the system allows saving the periodic test results, event log and system configuration. The above-mentioned information is stored in non-volatile memory of the controller.



- Modular system design – quick-assembly system
- Freely programmable mode of operation for each circuit (monitoring of circuits)
- Freely programmable mode of operation for each luminaire, regardless of the circuit
- Monitoring of each luminaire and circuits
- Ability to adjust the system to the layout of fire zones
- Possible text description of each luminaire, circuit and control
- 4 keys with freely programmable functions
- 4 keys with programmed functions
- With shorting of any conductor to the protective one, the battery supply operation is possible by use of separate AC and DC protections

CENTRAL BATTERY SYSTEM: CBS



TECHNOLOGY - SMART SWITCHING METHOD AND REVISION TECHNOLOGY

Conventional installation of systems requires determination of the mode of operation for individual circuits as early as in the design phase. Possible changes or errors may generate additional costs. To eliminate the above-mentioned inconveniences, Garrabridge has introduced a new fully automatic technology to control every luminaire in the circuit:

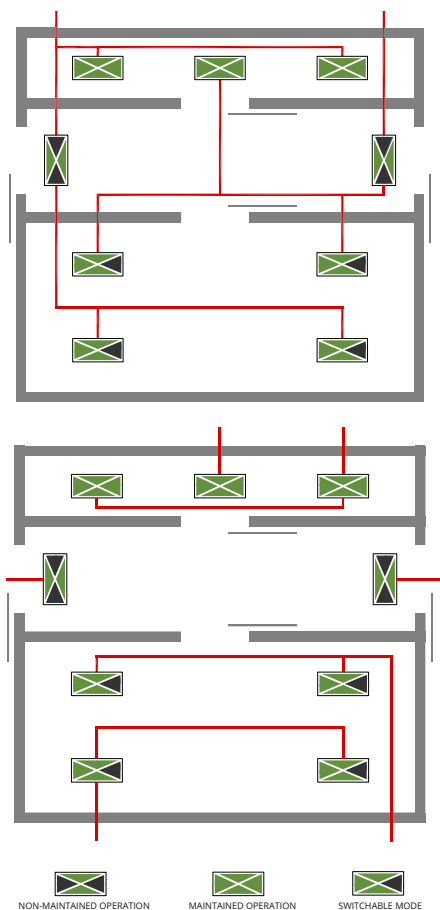
Switching Method And Revision Technology

SMART is a technology which allows the installation of luminaires operating in three modes: continuous, non-continuous and switchable, within a single circuit. Programming as well as control of luminaires takes place through power supply cables, therefore no additional communication cabling is required.

SMART functionality is possible if relevant ADS address modules are used in luminaires.

ADVANTAGES OF SMART TECHNOLOGY

- Installation of luminaires operating in different modes within a single circuit
- Reduced length of cables
- Reduced amount of circuits
- Lower installation costs
- Ability to make later changes in the mode of operation for each lamp



CONVENTIONAL INSTALLATION

The conventional installation shows the following differences as compared to SMART TECHNOLOGY:

- Only one type of luminaire operation in the final circuit
- Higher installation costs
- Higher costs of later changes
- Difficulties in changing the mode of operation

CENTRAL BATTERY SYSTEM: CBS

M-SL CONTROL MODULE

The control module is used to supervise and manage the operation of other modules included in the central battery. The keyboard and LCD display in front panel allow the user to configure and operate the whole system. System configuration may also be carried out using USB interface from PC with service application. Front panel LEDs allow the operating state of the central battery to be evaluated quickly. The module automatically supervises the following: mode of operation – mains/battery power supply, battery charging, system voltage, condition of insulation, protection against deep discharge. Detection of a failure or error is signalled at once and recorded in the event log. The occurrence of short-circuit or break in communication cables results in automatic switch of all circuits into mains power supply. In addition, the module allows automatic searching for and adding all the luminaires connected to the system. The controller allows upgrading firmware of any internal system modules as well as address modules.



Configuration:

- 8 configuration keys
- SD card
- USB connector – service application

System control:

- 4 potential-free 24V inputs, freely programmable, e.g. functional test, battery test, sensor input etc
- 4 function keys
 - lock
 - start of functional test
 - start of battery test
 - reset of deep discharge error
- 4 keys with freely programmable functions:
 - Switching circuits on for AC power supply
 - Switching circuits on for DC power supply
 - Alarm reset: leakage
 - Alarm reset: failover
 - Functional test without warming up
- 3 LON communication buses
- 2 timers
- 3PH phase loss sensor connector
- Remote system lock input

External communication:

- Displaying the current system state
 - LED indicators
 - LCD display
- BMS, website – LON1 bus
- 3 potential free outputs – PZS or BMS

CENTRAL BATTERY SYSTEM: CBS



MS-L CONTROL MODULE

TECHNICAL SPECIFICATION	
Display	Graphic LCD 128x64 resolution
Keyboard	8 function keys and 8 control keys
LED indicators	<ul style="list-style-type: none"> 4 signalling diodes • mains operation • battery operation • failure • deep discharge
Interfaces	<ul style="list-style-type: none"> • SD/MMC cards • USB device • USB host • LON x 3
Potential free inputs	<ul style="list-style-type: none"> • system blockade • phase loss sensor • 4 freely programmable inputs
Outputs	<ul style="list-style-type: none"> • 4 programmable relay outputs 24V/0.5A
Sound signalling	Programmable buzzer
Displayed information	<ul style="list-style-type: none"> • mains voltage • battery voltage • battery charge current (+) • battery discharge current (-) • date and time • type of test performed • disturbance/charge failure • deep discharge • manual reset • recovery delay • insulation fault • circuit fault • circuit overload • safety catch failure • substation failure • circuit and control names • circuit and system parameters • communication failures • event log overview, also in substations • switching station failure
Event log	Stored on an SD card, reading and printing without dedicated software

CENTRAL BATTERY SYSTEM: CBS

L-980 CHARGER

The charger module ensures battery charging based on UI characteristics with temperature compensation according to PN-EN 50-171. The charging algorithm executed by the charger is supervised by the control module. The charger is equipped with internal active PFC module, which provides power factor close to one ($\lambda \approx 1$). The charger is used for charging batteries with rated voltage of 216V. The maximum power of charger is 980W. If there is a need to charge a battery with higher capacity, the BST-980 charge boosters are used.



Features:

- Charging the battery packs in accordance with PN-EN 50-171
- Operation with and control of BST-980 charge boosters
- Monitoring of current leakage in final circuits
- Protection against deep discharge
- Ability to monitor battery voltage symmetry
- Fan control
- 3 measuring junctions for
 - Voltage
 - Current
 - Temperature

External communication:

- Displaying the current charger state
- 4 potential-free outputs, freely programmable
- Battery charge LED indicator
- Service pin

BST-980 BOOSTER



TECHNICAL SPECIFICATION		
Charge voltage	Boost charge Float charge	265V DC 246V DC
Maximum power	Charger Charge amplifier	980W ± 5% 980W ± 5%
Maximum current	Charger Charge amplifier	4.5A ± 5% 4.5A ± 5%
LED indicators (charger)	<ul style="list-style-type: none"> • battery charge level • battery failure • leakage failure • readiness • failure • status 	
Deep Discharge Protection	183.6V DC	
Outputs	4 programmable relay outputs 24V/0.5A	

CENTRAL BATTERY SYSTEM: CBS

ML 4x1A LINEAR MODULE

4x1A module supplies independently up to 4 final circuits.



Features:

- Monitoring of each final circuit
- Free programming of the mode of operation for each circuit
- Independent control of each circuit
- Separate protection of AC mains- and DC battery-power supply
- DC operation possible in the event of shorting to protective conductor
- Error and status indicators for module and each circuit
- Service pin
- Power supply of luminaires with controlgear in compliance with PN-EN 60347-2-7 and luminaires with LED or filament light sources
- Adjustable AC/DC switchover time

TECHNICAL SPECIFICATION	
Number of circuits	4
Continuous current per circuit	1 A
Maximum starting current	250A/ms
Switch-over time	ca. 200ms
Fuses	DC-1.6 AT, AC-2.5 AT / 250V / 6.3x32

ML 2x3A LINEAR MODULE

2x3A module supplies independently up to 2 final circuits.



Features:

- Monitoring of each final circuit
- Free programming of the mode of operation for each circuit
- Independent control of each circuit
- Separate protection of AC mains- and DC battery-power supply
- DC operation possible in the event of shorting to protective conductor
- Error and status indicators for module and each circuit
- Service pin
- Power supply of luminaires with controlgear in compliance with PN-EN 60347-2-7 and luminaires with LED or filament light sources
- Adjustable AC/DC switchover time

TECHNICAL SPECIFICATION	
Number of circuits	2
Continuous current per circuit	3 A
Maximum starting current	250A/ms
Switch-over time	ca. 200ms
Fuses	5AT / 250V / 6.3x32

CENTRAL BATTERY SYSTEM: CBS

ML 1x6A LINEAR MODULE

1x6A module supplies one final circuit.



Features:

- Monitoring of each final circuit
- Free programming of the mode of operation for each circuit
- Independent control of each circuit
- Separate protection of AC mains- and DC battery-power supply
- DC operation possible in the event of shorting to protective conductor
- Error and status indicators for module and each circuit
- Service pin
- Power supply of luminaires with controlgear in compliance with PN-EN 60347-2-7 and luminaires with LED or filament light sources
- Adjustable AC/DC switchover time

TECHNICAL SPECIFICATION	
Number of circuits	1
Continuous current per circuit	6 A
Maximum starting current	250A/ms
Switch-over time	ca. 200ms
Fuses	10AT / 250V / 6.3x32

ML-S 4x3A LINEAR MODULE

4x3A module supplies independently up to 4 final circuits.



Features:

- Control of luminaires in SMART technology
- Monitoring of up to 20 luminaires per circuit
- Free programming of the mode of operation for circuit
- Independent control of each circuit
- Independent control of each luminaire
- Separate protection of AC mains- and DC battery-power supply
- DC operation possible in the event of shorting to protective conductor
- Error and status indicators for module and each circuit
- Service pin
- Power supply of luminaires with controlgear in compliance with PN-EN 60347-2-7 and luminaires with LED or filament light sources
- Adjustable AC/DC switchover time

TECHNICAL SPECIFICATION	
Number of circuits	4
Continuous current per circuit	3 A
Maximum starting current	250A/ms
Switch-over time	ca. 200ms
Fuses	5AT / 250V / 6,3x32

CENTRAL BATTERY SYSTEM: CBS

ML-S 2x3A LINEAR MODULE

2x3A module supplies independently up to 2 final circuits.



Features:

- Control of luminaires in SMART technology
- Monitoring of up to 20 luminaires per circuit
- Free programming of the mode of operation for circuit
- Independent control of each circuit
- Independent control of each luminaire
- Separate protection of AC mains- and DC battery-power supply
- DC operation possible in the event of shorting to protective conductor
- Error and status indicators for module and each circuit
- Service pin
- Power supply of luminaires with controlgear in compliance with PN-EN 60347-2-7 and luminaires with LED or filament light sources
- Adjustable AC/DC switchover time

TECHNICAL SPECIFICATION	
Number of circuits	2
Continuous current per circuit	3 A
Maximum starting current	250A/ms
Switch-over time	ca. 200ms
Fuses	5AT / 250V / 6.3x32

HUB MODULE

Lon Hub module is a sub-assembly of the central battery system. It is installed in PBS-20/H, PBS-40/H substations. Lon Hub module provides communication between M-SL control module and the linear modules installed in substations (remote cabinets). LON3 interface is used for communication with the main cabinet.



Features:

- Communication with up to 5 modules – ML and ML-S linear modules, LS 24 or LS 230 sensor modules
- Service pin
- Address setter to allow setting the HUB module address within the range of 1-10
- Power supply for up to 5 modules
- Built-in communication line termination
- Module error and status indicators
- Push-buttons: add/remove, select module and configure module

TECHNICAL SPECIFICATION	
Number of addresses	1-10
Number of supported modules	5
Connectors	<ul style="list-style-type: none"> • LON in - Lon3 bus input • LON out- Lon3 bus output • Term - for activating Lon3 bus termination

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LS-230 (POT) SENSOR MODULE

The module is equipped with eight 230V AC potential inputs. The potential input module allows the activation of emergency lighting luminaire control groups along with provision of power supply to basic lighting circuits. Inputs are divided into two groups. Within a group, it is possible to reverse the operation logic, i.e. the active input status corresponds to 0V, while non-active input status corresponds to 230V. This functionality allows monitoring of single basic lighting protections. The recovery time of non-active status is set for each group within the range from 1 minute to 1 hour in a program-controlled manner. Altogether up to 10 LS-24 and LS-230 modules can be connected to the system.



Features:

- Monitoring of basic lighting switches
- Programmable reversible operation logic of a group of inputs
- Ability to monitor single basic lighting protections
- Programmable recovery delay time
- service pin
- Module error and status indicators
- Group inversion and input status indicators

TECHNICAL SPECIFICATION	
Number of inputs	8 potential inputs 230V AC
Recovery delay	The recovery delay can be set for every group in the range of 1 min to 1 h.
Number of groups	2 groups, 4 inputs per each. Both groups have the possibility of change of the input operation logic.
Connectors	2.5mm ²

ELS-230 EXTERNAL MODULE

The ELS-230V sensor module is used for monitoring of 230V AC potential signals from basic lighting switches to activate the group controlling the emergency lighting luminaires along with basic lighting. The module has 9 inputs divided into 3 groups. For every group the operation logic can be reversed to monitor single circuit protections, and the third group can act as the phase cancellation sensor. The recovery delay can be assigned to every group in a program-controlled manner. The module is equipped with service pin, rotating trimmers to assign the address, LON connector for data transmission (with built-in terminating resistor), 24V power supply connector. The module is provided with LED indicators to inform about the currently set logic and status of individual inputs.

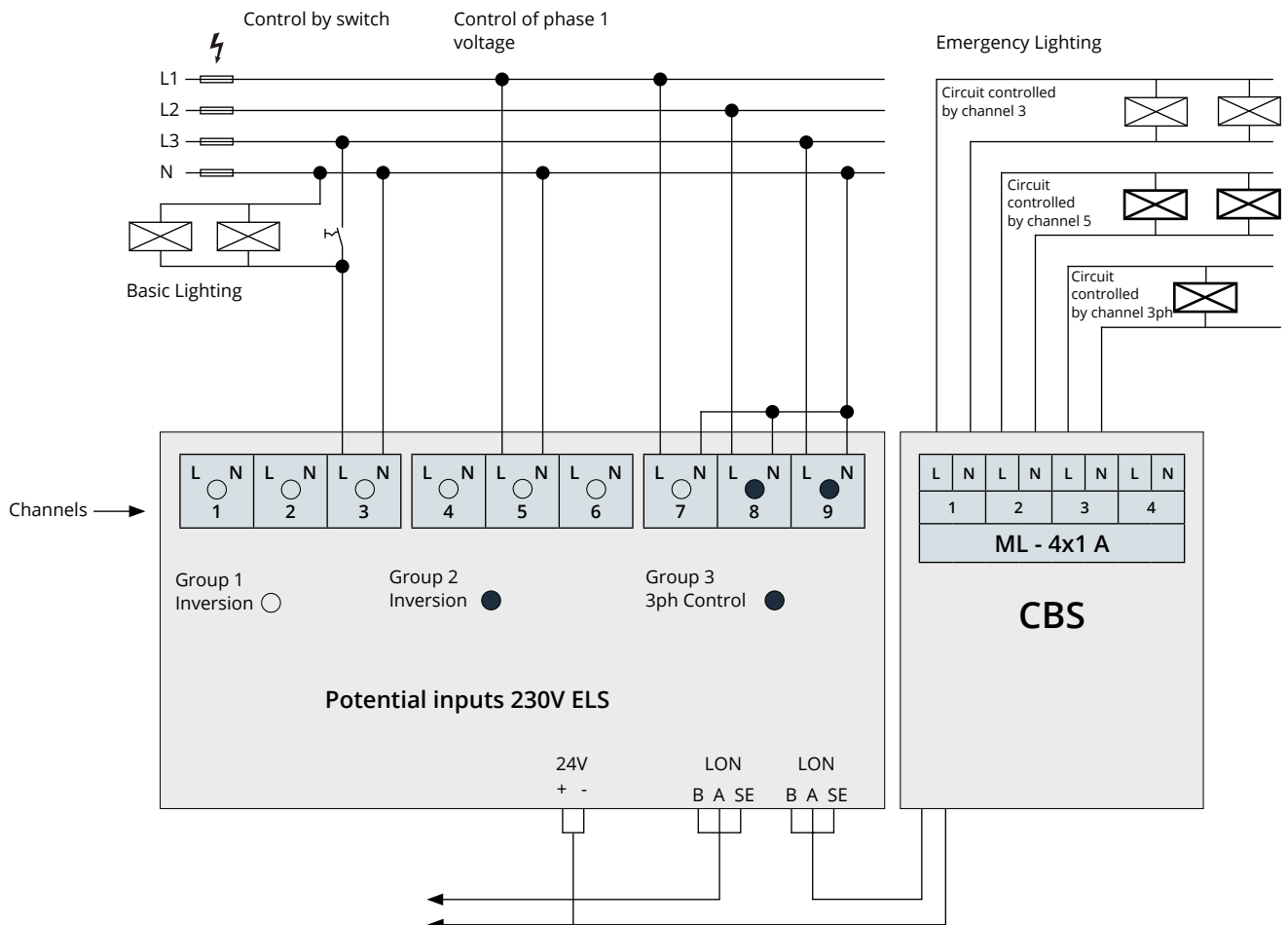


Features:

- Monitoring of basic lighting switches
- Acting as a phase loss sensor
- Programmable inverted operation logic for a group of inputs
- Ability to monitor single protections of basic lighting
- Programmable recovery delay time
- Service pin
- Module error and status indicators
- Group inversion and input status indicators

CENTRAL BATTERY SYSTEM: CBS

TECHNICAL SPECIFICATION	
Power supply	24 V DC ± 5V
Protection class I	I
Protection level	IP 21
Operating temperature	-10°C to + 40°C
Potential inputs	9 separated inputs
Number of groups	3 input groups, 3 control channels per each. Every group has the possibility of program reversal of input operation logic.
Phase loss control Recovery delay	Channels 7- 9, group 3 The recovery delay can be set for every group in the range of 1 min to 1 h.
Data transmission	LON
Number of addresses	1-30
Switch-over threshold	In accordance with the 60598-2-22 standard
Dimensions (LxWxH) mm	105x85x60
Connectors	2.5 mm ²



CENTRAL BATTERY SYSTEM: CBS

EVENT PRINTER

System printer allows printing the ensued system failures, parameter changes, lock activations, power supply failures along with event date and hour. The range of printed events can be modified according to the user's requirements.



Features:

- Locked printing mechanism signal
- Paper run-out signal
- Paper rewinding push-button
- Service pin
- Error and state indicator

TECHNICAL SPECIFICATION

Diagnostic functions	<ul style="list-style-type: none"> • 24V DC power supply voltage monitoring • Monitoring of the communication with the control module • Lack of paper detection • Paper jam detection (a print engine problem)
Paper	standard
Paper diameter	61 mm

LS-24 (NP) SENSOR MODULE

The potential-free input module monitors up to 8 inputs in the 24V current loop. These inputs allow the selective activation of luminaire control groups by assigning the phase cancellation sensors to them. In case of power supply failure in the basic lighting switching station the luminaires with assigned control groups will be switched on. Inputs can also be used as potential-free inputs for BMS management systems to properly switch on the individual control groups. Altogether up to 10 LS-24 and LS-230 modules can be connected to the system.



Features:

- Monitoring of phase loss sensor current loop
- Monitoring of 24V DC current loop
- Ability to control system with BMS via potential-free inputs
- Programmable recovery delay
- Service pin
- Module error and status indicators
- Active group and input indicators

TECHNICAL SPECIFICATION

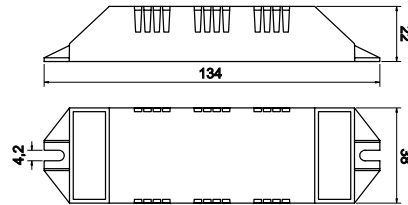
Number of inputs	8 current loop inputs 24V divided into two groups, four inputs each
Recovery delay	The recovery delay can be set for every group in the range of 1 min to 1 h.
Connectors	2.5mm ²

CENTRAL BATTERY SYSTEM: CBS

ADS-20 ADDRESS MODULE

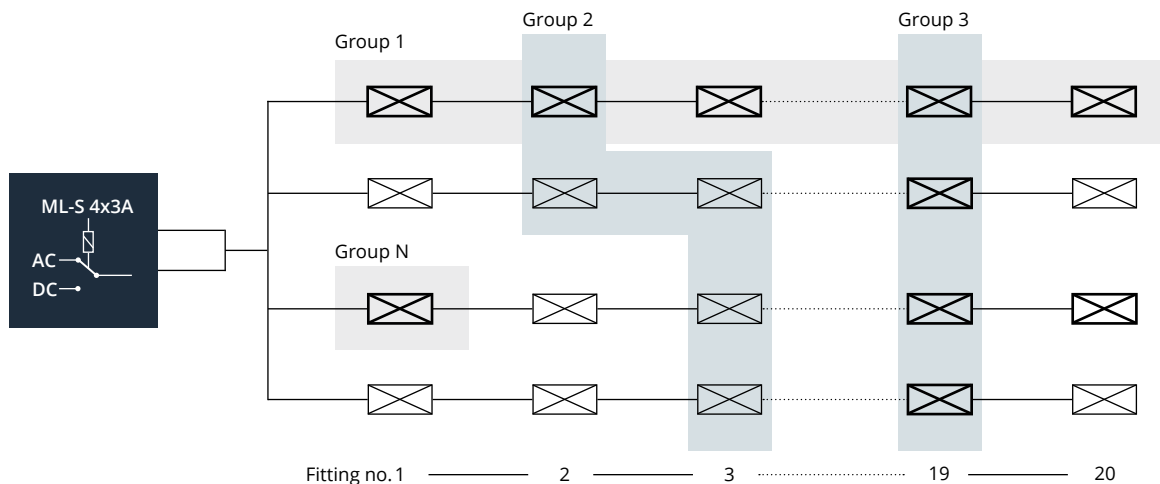
ADS-20 address module is used for monitoring and controlling through the luminaire control group. The module operates with LED, fluorescent and halogen light sources. It is intended for use in circuits with mixed mode of luminaire operation – continuous, non-continuous and switchable. The module is also equipped with control input for monitoring of local switch.

Module dimensions in mm



TECHNICAL SPECIFICATION	
Power supply	230V 50Hz , 220V DC ± 20%
Protection level	IP 20
Max power	160 W
Light sources	1-160W
Max ambient temperature	-20 °C to +50 °C
Mounting method	In fitting
Weight	0.1 kg

Fitting control example

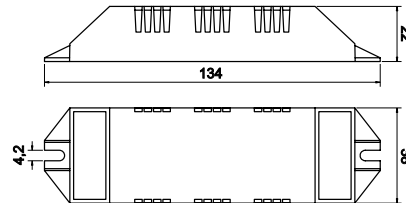


CENTRAL BATTERY SYSTEM: CBS

ADS-DALI ADDRESS MODULE

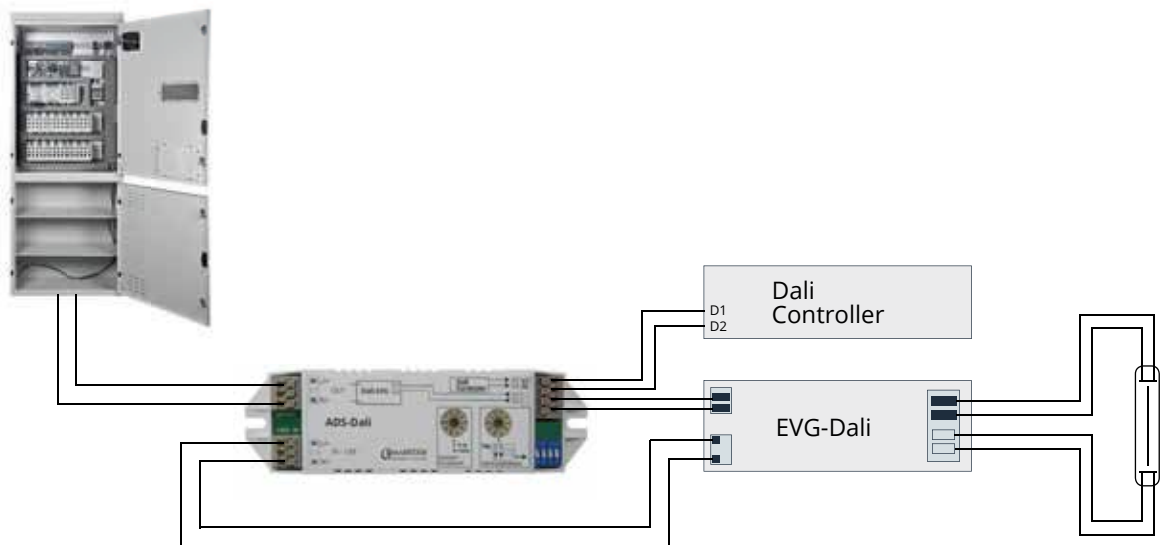
ADS-Dali address module is used for monitoring and controlling of luminaires equipped with EVG-Dali controlgear or power supply unit with DALI interface through the control group. The module operates with LED, fluorescent and halogen light sources. It is intended for use in circuits with mixed mode of luminaire operation - continuous, non-continuous and switchable. The module is equipped with flux setter for DC failover within the range between 10% and 100%.

Module dimensions in mm



TECHNICAL SPECIFICATION	
Power supply	230V 50Hz , 176V-275V DC
Protection level	IP 20
Max power	160 W
Light sources	1-160W
Max ambient temperature	-20 °C to +50 °C
Mounting method	In fitting
Connectors	1.5 mm ²
Light flux during DC operation	controllable, 10%-100% (at every 10%)
Max length of ADS-EVG Dali conductor	1m
Dimensions (LxWxH) mm	22x134x38
Weight	0.1 kg

CBS

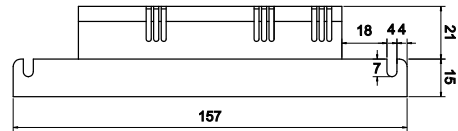
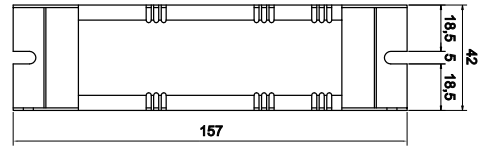


CENTRAL BATTERY SYSTEM: CBS

MP 500 SWITCHING MODULE

The MP 500 module is used for switching on the mains power operation of a luminaire or group of luminaires using the basic lighting switch. The application of this module allows the use of basic lighting luminaires as the emergency lighting luminaires.

Module dimensions in mm



TECHNICAL SPECIFICATION	
Power supply	230V 50Hz, 220V DC ± 20%
Protection level	IP 20
Max power	500 VA
Connecting clips	3x2.5mm ²
Max ambient temperature	-10 °C to +40 °C
Mounting method	In fitting
Weight	0.1 kg

PHASE CANCELLATION	ON		POWER SUPPLY		TO	CB	Emergency lighting fitting	Basic lighting fitting
	ON	OFF	~230V	0V				
NO	ON	~230V	0V	ON	ON	Emergency lighting fitting	Basic lighting fitting	
NO	OFF	~230V	0V	OFF	OFF	Emergency lighting fitting	Basic lighting fitting	
YES	ON	~0V	-230V	ON	OFF	Emergency lighting fitting	Basic lighting fitting	
YES	OFF	~0V	-230V	ON	OFF	Emergency lighting fitting	Basic lighting fitting	

● - emergency lighting fitting

✖ - basic lighting fitting

CB - central battery

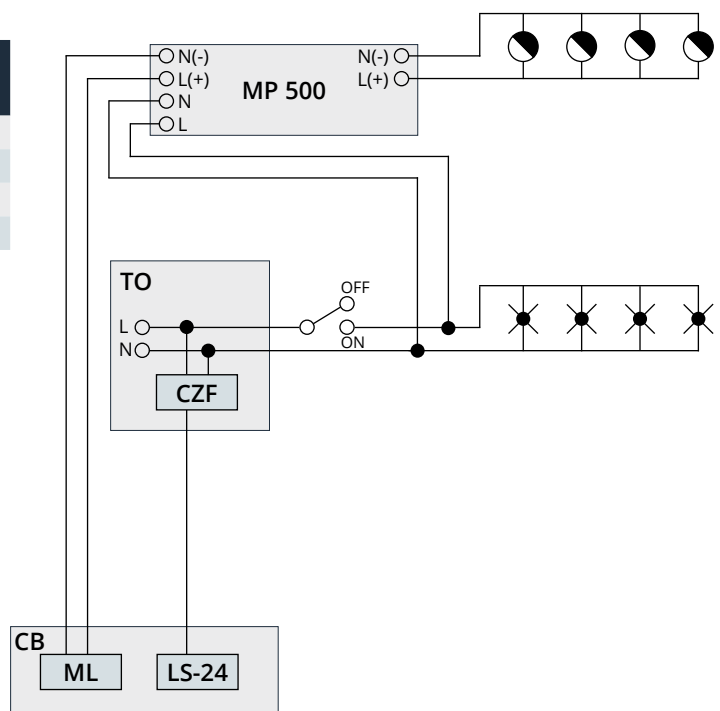
ML - linear module input

CZF - phase loss sensor

TO - basic lighting switch board

LS-24 - potential free input module

MP 500 - switching module

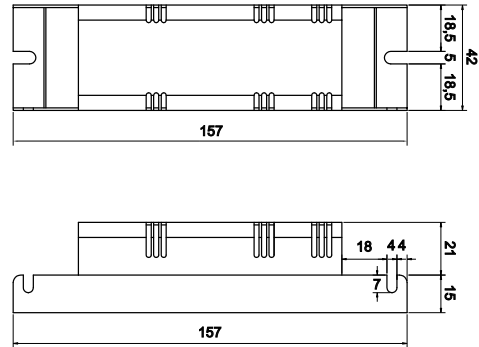


CENTRAL BATTERY SYSTEM: CBS

MP 4A SWITCHING MODULE



The MP 4A module is used for switching on the mains power operation of a luminaire or group of luminaires using the basic lighting switch. Thanks to the control input logic used (see the drawing below), all luminaires in this group will be switched over into the emergency mode when the normal mains power supply fails.

Module dimensions in mm

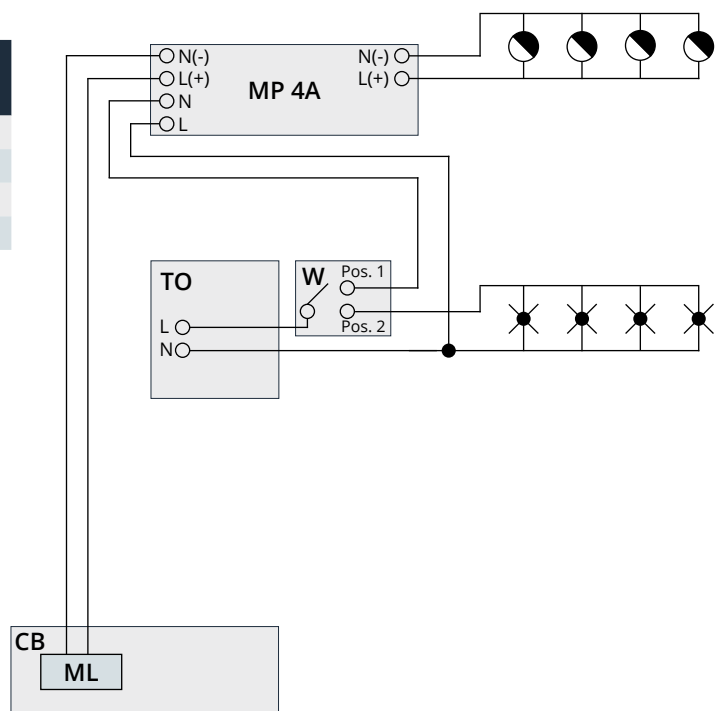


TECHNICAL SPECIFICATION	
Power supply	230V 50Hz, 220V DC ± 20%
Protection level	IP 20
Max load	4 A
Connecting clips	3x2.5mm ²
Max ambient temperature	-10°C to +40 °C
Mounting method	In fitting
Weight	0.1 kg

PHASE CANCELLATION	Pos. 1	Pos. 2	CB POWER SUPPLY	Emergency lighting fitting	Basic lighting fitting
NO	Pos. 1	Pos. 2	230V AC	ON	OFF
NO	Pos. 1	Pos. 2	230V AC	OFF	ON
YES	Pos. 1	Pos. 2	230V DC	ON	OFF
YES	Pos. 1	Pos. 2	230V DC	ON	OFF

-  - emergency lighting fitting
-  - basic lighting fitting

- CB - central battery
- ML - linear module input
- CZF - phase loss sensor
- TO - basic lighting switch board
- MP - switching module
- W - single-pole double-throw switch



CENTRAL BATTERY SYSTEM: CBS

SD MEMORY CARD

The SD memory card allows saving event log records and their readout and printout from PC using standard word processors. In addition, the card allows saving the system configuration and upgrading the firmware.



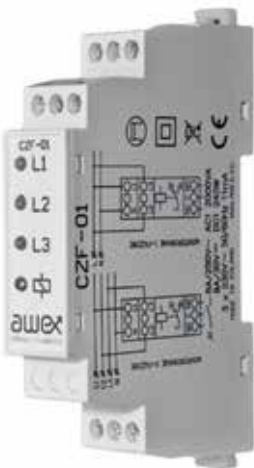
Saved data:

- Text system description
- Description of each circuit
- Description of each luminaire
- Description of each control
- Description of each control group
- Full system configuration
- Event log
- Firmware

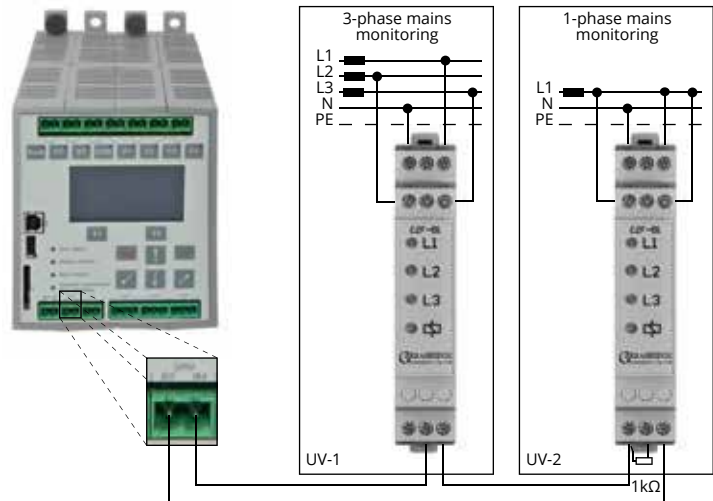


CZF-01 PHASE LOSS SENSOR

The quick-operating phase loss sensor is used for monitoring voltage in basic lighting switching stations to activate relevant circuits or the entire system for emergency operation. The activation threshold is in compliance with PN-EN60598-2-22.



TECHNICAL SPECIFICATION	
Power supply	230V 50Hz, 176V-275V DC
Connection thresholds	In compliance with the PN-EN 60598-2-22 standard
Mounting method	On DIN rail
Dead time	< 200ms
Connectors	2.5 mm ²
Contact	230V/50Hz 0.5A NO



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PZS MODULE

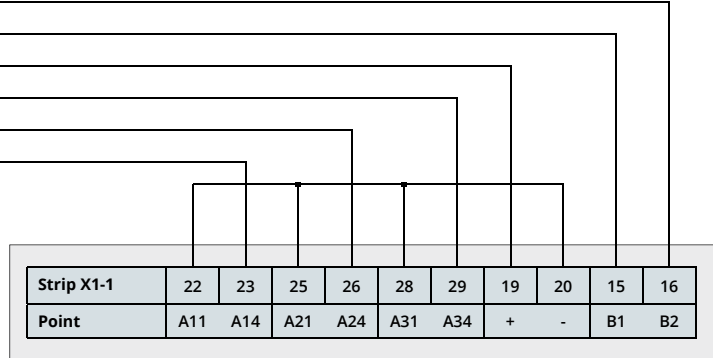
The panel is used for monitoring of the basic system states such as: readiness to operate, battery power supply, failure. The built-in key allows locking the continuous and emergency operation. This solution prevents the system from manipulations by unauthorised persons.



TECHNICAL SPECIFICATION	
Connectors	1.5 mm ²
Maximal dimensions (HxWxD)	71x71x115mm
Mounting	Wall/concealed

Method for connection of PZS module

Switch on	- interlocking on
Switch off	- interlocking off
Loop control	- short circuit or open circuit causes the interlocking to switch off



SMART SERVER

Smart Server enables remote access, control and monitoring of devices. It allows both local and remote control. It can be used as an independent, standalone server or it can be integrated it into a larger control system. Smart Server has many built-in standard protocols, such as LonWorks® by Echelon, Modbus, M-Bus, Web SOAP/XML service, digital input and output connectors, impulse inputs and a variety of drivers.



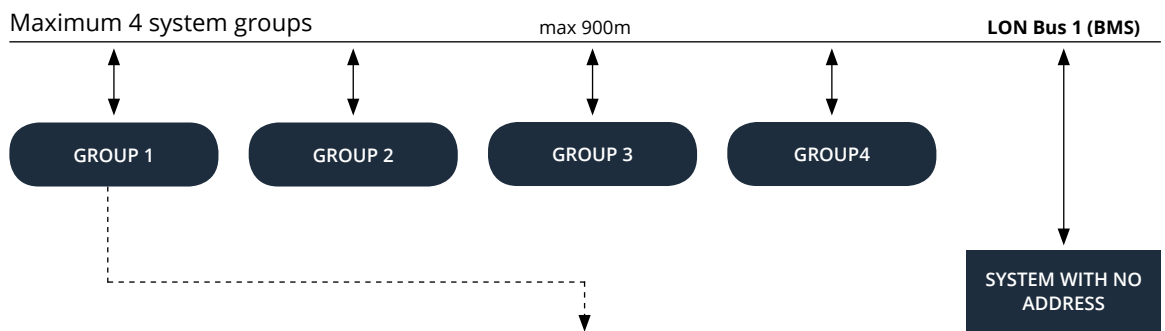
TECHNICAL SPECIFICATION	
Power supply	100 - 240VAC (-6%/+10%), 50/60Hz
Power consumption	<15 W
Control	Service i Reset buttons
Indicators	<ul style="list-style-type: none"> power supply connection to Ethernet activity: <ul style="list-style-type: none"> Ethernet, 10/100 Mb/s LONWORKS Service connected interface indication
Connection and Ethernet port	10/100Base T, auto choice, auto polarity, RJ-45 connectors
Connectors	screw connectors
Mounting	DIN rail
Memory	64MB flash memory, 64MB RAM (FT version) or 128MB RAM (PL version)
Operation temperature	0 to +50°C
Operating Humidity (non-condensing)	FT version: 10 to 90% RH @ 50°C
Dimensions [LxWxH]	140 x 89.4 x 66.1 [mm]

CENTRAL BATTERY SYSTEM: CBS

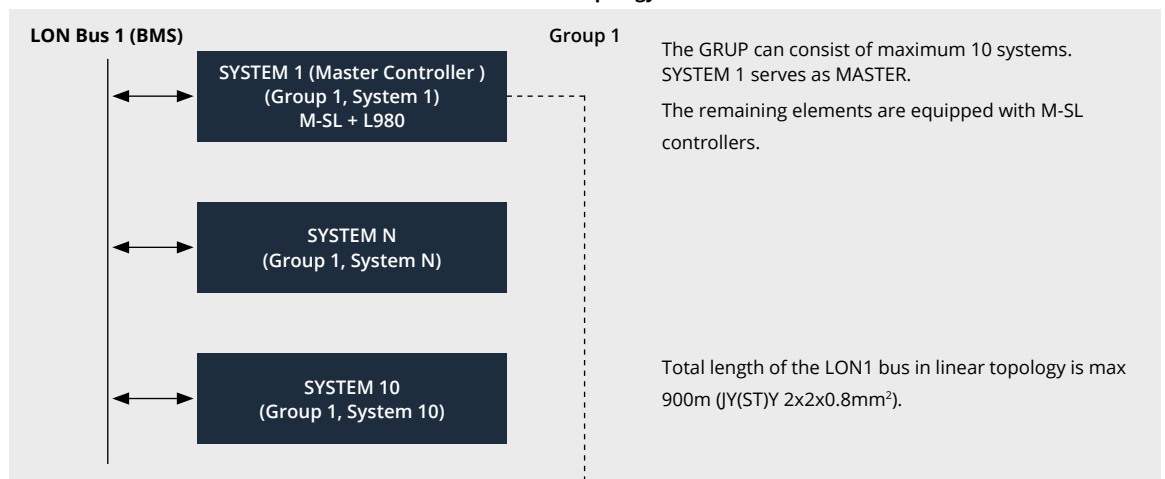
SYSTEM STRUCTURE

Communication with ELS 230V external modules, substations with controller as well as substations with HUB module (remote cabinets) is based on LonTalk communication protocol. 3 LonTalk interfaces are implemented in the controller. The first one, LON1, is intended for communication between systems with controller and supervision systems of BMS type. LON2 interface is intended for communication with external sensor modules of ELS 230 type. Whereas LON3 is reserved for substations equipped with HUB module.

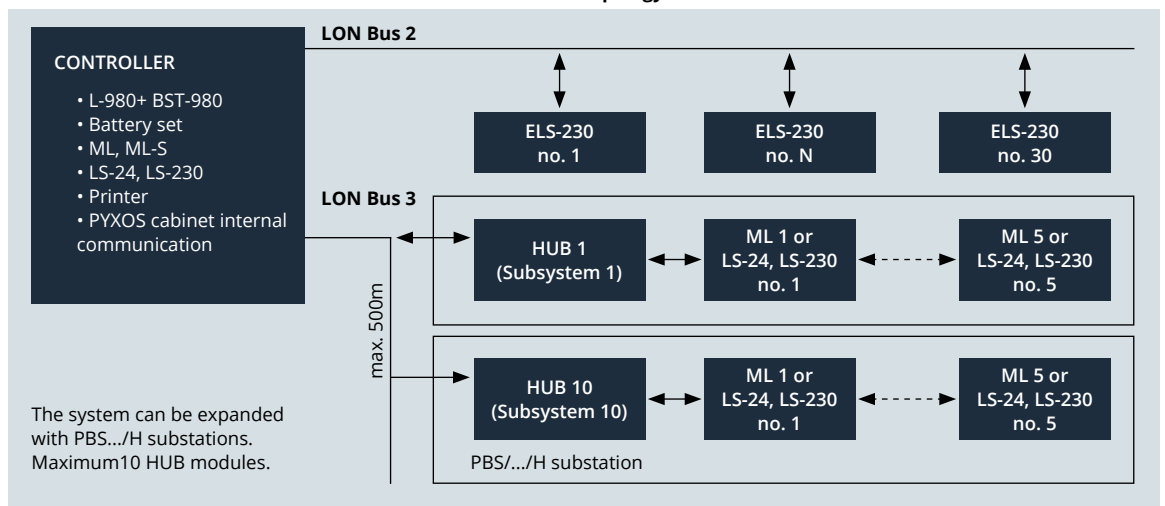
Communication diagram of the central battery system.



GRUP topology



SYSTEM topology



CENTRAL BATTERY SYSTEM: CBS

CABINET COMPARISON

	CBS/24	CBS/40	CBS/56	CBS/20-C	CBS/36-C	CBS/20	CBS/36
Power parameters:							
Mains power voltage	400V/230V	400V/230V	400V/230V	230 V	230V	230 V	230V
Frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Mains system type	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	2050x800x400	1200x800x400	1200x800x400
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	Right	Right	Right	Right	Right	Right
Pedestal	No*(1)	No*(1)	No*(1)	No*(1)	No*(1)	No	No
Door locking	One sided	One sided	One sided	One sided	One sided	One sided	One sided
Electrical parameters:							
Protection level	IP 21	IP 21	IP 21	IP 21	IP 21	IP 21	IP 21
Protection class	I	I	I	I	I	I	I
Cable inlets	Top to bottom	Top to bottom	Top to bottom	From the top	From the top	From the top	From the top
Max number of substations	6*(3)	6*(3)	6*(3)	2*(3)	2*(3)	2*(3)	2*(3)
Section of mains power connector	35mm ²	35mm ²	35mm ²	16mm ² *(2)	16mm ² *(2)	16mm ² *(2)	16mm ² *(2)
Section of battery connector	35mm ²	35mm ²	35mm ²	16mm ² *(2)	16mm ² *(2)	16mm ² *(2)	16mm ² *(2)
Section of substation power connectors	16mm ²	16mm ²	16mm ²	10mm ² *(2)	10mm ² *(2)	10mm ² *(2)	10mm ² *(2)
Max section of tail circuit	4mm ²	4mm ²	4mm ²	4mm ²	4mm ²	4mm ²	4mm ²
Power parameters:							
Max system power	20kW	20kW	20kW	5.5kW	5.5kW	5.5kW	5.5kW
Max main battery protection fuse	100	100	100	25	25	25	25
Max substation protection fuse	63	63	63	10	10	10	10
Max battery protection fuse	100	100	100	50	50	50	50
Equipment:							
System controller	1	1	1	1	1	1	1
Power supply system 24 V DC	1	1	1	1	1	1	1
Charger 980 W	1	1	1	1	1	1	1
Max number of amplifiers	4	4	4	-	-	-	-
Max number of modules	12	20	28	10	18	10	18
Max number of circuits	24	40	56	20	36	20	36
Compact cabinet	NO	NO	NO	YES	YES	NO	NO

CENTRAL BATTERY SYSTEM: CBS

CABINET COMPARISON

CBS/32-C	PBS/60	PBS/44	PBS/28	PBS/40	PBS/16	PBS/40H ^{*(4)}	PBS/20H ^{*(4)}
230V	400V/230V	400V/230V	400V/230V	230V	230V	230V	230V
50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
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
1800x600x350	2050x800x400	1200x800x400	1200x800x400	1000x600x350	700x570x300	1000x600x350	700x570x300
Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035
Right	Right	Right	Right	Right	Right	Right	Right
No ^{*(1)}	No ^{*(1)}	-	-	-	-	-	-
One sided	One sided	One sided	One sided	One sided	One sided	One sided	One sided
IP 21	IP 21	IP 21	IP 21	IP 21	IP 21	IP 21	IP 21
I	I	I	I	I	I	I	I
From the top	Top to bottom	From the top	From the top	From the top	From the top	From the top	From the top
1 ^{*(3)}	-	-	-	-	-	-	-
16mm ² * ⁽²⁾	35mm ²	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾
16mm ²	35mm ²	16mm ²	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾	16mm ² * ⁽²⁾
10mm ²	-	-	-	-	-	-	-
4mm ²	4mm ²	4mm ²	4mm ²	4mm ²	4mm ²	4mm ²	4mm ²
5.5kW	17kW	11kW	11kW	11kW	8kW	11kW	8kW
25	80	-	-	-	-	-	-
10	-	-	-	-	-	-	-
50	80	-	-	-	-	-	-
1	1	1	1	1	1	2xHUB	1xHUB
1	1	1	1	1	1	-	-
1	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
8	30	22	14	10	4	10	5
32	60	44	28	40	16	40	20
YES	-	-	-	-	-	-	-

(*1) - Optionally, the cabinet can be equipped with 10cm or 20cm pedestal

(*2) - The special design of the cabinet will allow for inserting connectors with a larger diameter, at a limited number of substations

(*3) - Optional

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

LIST OF THE FITTINGS SUITABLE FOR CENTRAL BATTERY CBS

Fitting	Code		Light source
HELIOS	H/CB	HE/CB	T5 8W
	HD/CB	HDE/CB	TC-L 11W
	HP/CB		TC-L 18W
HELIOS LED	HL/CB	HEL/CB	LED 1,2W
	HDL/CB	HDEL/CB	
	HPL/CB		
HELIOS TRIPLE LED	HTL/CB	HETL/CB	LED 3,6W
	HDTL/CB	HDET/CB	
	HPTL/CB		
HELIOS POWER LED	HW/CB	HWE/CB	POWER LED 3x1W
HELIOS SUPER POWER LED	HSP/CB		POWER LED 2x3W
	HESP/CB		
TIGER	TG/CB		T5 8W
	TD/CB		
	TP/CB		
TIGER LED	TL/CB		LED 1,2W
	TDL/CB		
	TPL/CB		
TIGER TRIPLE LED	TTL/CB		LED 3,6W
	TDTL/CB		
	TPTL/CB		
LOVATO N	LVNO/CB		POWER LED 1x1W
	LVNC/CB		POWER LED 1x3W
LOVATO P	LVPO/CB		POWER LED 1x1W
	LVPC/CB		POWER LED 1x3W
LOVATO AS	LVNA/CB		POWER LED 1x1W
			POWER LED 1x3W
INFINITY AS	IFAS/CB		LED 3,6W
INFINITY AR	IFAR/CB		LED 3,6W
INFINITY AC	IFAC/CB		LED 3,6W
INFINITY AD	IFAD/CB		LED 3,6W
INFINITY B	IFB/CB		LED 3,6W
LED EYE R	EYR/CB		POWER LED 1x1W
			POWER LED 1x3W
LED EYE S	EYS/CB		POWER LED 1x1W
			POWER LED 1x3W
TWINS	TW/CB		LED 1,2W
			T5 8W
ESCAPE	E/CB		T5 8W
	EL/CB		LED 1,2W
PLEXI LED	PL/CB		LED 1,2W
			T5 8W
EMX	EM/CB		T5 2x8W
			TC-L 18W
			TC-L 24W
			TC-F 36W
PANORAMA	P/CB		T5 8W
			PL-C 11W

EMERGENCY ESCAPE LIGHTING



lovato n



lovato p



led eye r



led eye s



lovato as



helios triple led



helios power led



helios super power led



helios



tiger



square



twister



hermetica



emx

LIST OF THE FITTINGS SUITABLE FOR CENTRAL BATTERY CBS

Fitting	Code	Light source
SKW	SK/CB	T5 8W
SKW LED	SKL/CB	LED 1,2W
SKW DS	SKD/CB	T5 8W
SKW DS LED	SKDL/CB	LED 1,2W
CLASSIC	C/CB	T5 8W
CLASSIC SILVER	CS/CB	T5 8W
CLASSIC FW	CW/CB	T5 8W
DUBLO	DS/CB	T5 8W
QUADRO	Q/CB	TC-L 11W
VIPER R	VR/CB	POWER LED 3x1W
VIPER S	VS/CB	POWER LED 3x1W
SQUARE	SD/CB	TC-L 11W TC-L 2x11W TC-L 18W TC-L 2x18W
TWISTER	TD/CB	TC-L 7W TC-L 9W TC-L 11W TC-L 2x11W TC-L 18W TC-L 2x18W
HERMETICA	HR/CB	T8 18W T8 2X18W T8 36W T8 2x36W T8 58W T8 2x58W

EMERGENCY EXIT SIGNS





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