

CEAG LP-STAR

Mounting and operating instructions compact emergency power supply CEAG LP-STAR

Target group part 1: Qualified electrician acc. to DIN VDE 0105, part 1
Target group part 2: Electrical instructed persons



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Powering Business Worldwide

Contents Part 1

Important information	3
1 General	3
1.1 Key to symbols	3
1.2 Information on the operating manual	3
1.3 Applicable documents	3
1.4 Liability and warranty	3
1.5 Copyright	3
1.6 Replacement parts	3
1.7 Disposal	4
2 Safety	5
2.1 Use as intended	5
2.2 Contents of the operating manual	5
2.3 Changes and alterations to the equipment	5
2.4 Responsibility of the operator	5
2.5 Personnel requirements	5
2.6 Work safety	6
2.7 Personal protective equipment	6
3 Construction and function	6
3.1 Technical data	6
3.2 Assembly of the equipment	7
3.3 Setting up the equipment	7
3.4 Product description	8
3.5 Operating modes	8
3.6 Overview of the structural components	9
3.6.1 Control unit	9
3.6.2 CSU 500	12
3.6.3 F3 remote display	13
3.6.4 Web module	14
3.6.5 Bus technology CG-S bus	15
3.7 LP-STAR name plate	15
3.8 LP-STAR installation example	16
4 Transport, packaging and storage	18
4.1 Safety instructions	18
4.2 Transport inspection	18
4.3 Packaging	18
4.4 Storage	18
5 Setting up and installation	19
5.1 Safety instructions	19

5.2 Mains connection	20
5.3 Connecting the batteries	20
5.4 CEAG 3-phase monitor with 24V current loop	21
5.5 Completion of assembly	22
6 Commissioning and subsequent work	22
6.1 Safety instructions	22
6.2 Control of the connections	22
6.3 Voltage measurements	22
6.4 Insulation measurements	22
6.5 Checking / replacing fuses	23
6.6 Checking the fuses	23

Contents Part 2

7 Operating	24
7.1 Safety instructions	24
7.2 General information on instructions for use	24
7.3 Operating and display elements	24
7.4 Operating the control unit	25
7.4.1 Menu 1: "Test & Statusmenu"	28
7.4.2 Menu 2: "Block & Reset Alarms"	30
7.4.3 Menu 3: "Basic setup"	31
7.4.4 Menu 4: "Circuit setup"	37
7.4.5 Menu 5: "Luminaire setup"	39
7.4.6 Menu 6: "Memory card"	41
8 Maintenance / checks	42
8.1 Safety instructions	42
8.2 General information on maintenance / checks	42
8.3 Enabling of end circuits with maintenance work	43
8.4 Switch-off batteries for maintenance service	44
8.5 Deinstallation of battery blocks	44

Appendix A: VDE requirements for remote alarm contact and buzzer	45
Appendix B: Location plan for the luminaires	46
Appendix C: Installation examples monitoring modules	47

Important information

1 General

1.1 Key to symbols

Important technical safety information in this operating manual is designated by symbols.

These stated notes have to be observed essentially.

WARNING! DANGER! DANGER OF INJURY OR DEATH!

This symbol represents information that must be complied with, otherwise it could result in health impairment, injury, permanent physical damage or death.

ATTENTION! PROPERTY DAMAGE!

This symbol represents information that must be complied with, otherwise it could result in damage to property or even the total failure of the system.

NOTE!

This symbol denotes tips and information on the operating procedure or dealing with the described appliances and plant components that are important for smooth operations.

1.2 Information on the operating manual

This operating manual describes how to handle the device safely and correctly. The safety instructions and information provided as well as the local accident prevention measures for the area of operation and general safety measures must be complied with.

Please read the operating manual in full, in particular the chapter on safety and the relevant safety instructions before beginning any work on the equipment.

The illustrations and circuit diagrams in this manual are partly for the purpose of illustrating the descriptions. Everywhere where

- exact measurements
- or precise illustrations and circuit diagrams tailored to the specifics of the location are required,

the illustrations and plans that have been specially drawn up for the lighting installation must be followed exactly.

1.3 Applicable documents

Components from other manufacturers are included in the equipment (e. g. batteries). These additional component parts are subject to the manufacturer's risk assessments. The compliance of these constructions with the valid European and national regulations has been certified by the manufacturers of these components.

1.4 Liability and warranty

All the information and instructions in this operating manual were drawn up in accordance with the valid provisions, the latest state of technology and our long-term knowledge and experience.

The operating manual must be kept in the immediate proximity of the central battery system, where it must be accessible to everyone who works on or with the system.

The operating manual must be read carefully before starting **any** work on or with the LP-STAR device!

CEAG Notlichtsysteme GmbH accepts no liability and/or warranty for any faults that could arise with the delivery and installation of CEAG emergency lighting systems and luminaires based on other norms and regulations that are prescribed in the complete installation package in connection with CEAG products. In addition please observe all laws, norms and guidelines of the country in which the equipment is being set up and operated.

CEAG accepts no liability or warranty for damage or consequential damage that is caused

- by improper use,
- non-compliance with the regulations and behavioural safeguards for the safe operation of the equipment,
- non-authorized changes or changes carried out by non-specialists to the connections and settings of the equipment or to the programming,
- operation of unauthorised or inappropriate devices or groups of devices with the LP-STAR device.

1.5 Copyright

All the material information, texts, drawings, pictures and other illustrations are protected within the meaning of copyright law.

1.6 Replacement parts

Only use the manufacturer's original replacement parts.

ATTENTION!

Incorrect or faulty replacement parts can result in the damage, malfunctioning or complete breakdown of the equipment.

In the event of the use of unauthorised replacement parts all the guarantee, service, compensation and liability claims become null and void.

1.7 Disposal

Packaging materials are not waste material but valuable assets that can be used again or recycled.



CEAG has been awarded the recycling certificate issued by INTERSEROH GmbH. The contract number is 85405. This guarantees that all registered packaging material is reused and all the requirements of the Packaging Ordinance are fulfilled.

INTERSEROH collection points are obliged to dispose of CEAG packaging free of charge.

Batteries and electrical components contain materials that can lead to damage to health and to the environment if they are not disposed of correctly. Please observe the national guidelines and regulations for the disposal of old batteries and electronic components.

2 Safety

At the time of its development and completion the LP-STAR device was manufactured in accordance with the recognised technical rules and is deemed to be operationally safe.

However, the equipment could be dangerous if is not used by specially trained personnel, if it is used for purposes for which it is not intended or if it is used incorrectly.

WARNING!

When planning a lighting system using an LP-STAR system check in advance whether the planned electrical installations are sufficient for the application environment. Special environmental requirements (e. g. potentially explosive atmospheres or areas with aggressive atmospheres) require special set-ups and installations.

Only use the equipment and the associated component parts in a technically faultless condition, taking into account

- the safety and hazard information in the assembly and operating instructions,
- the operating and safety instructions for the operator of the equipment
- the installation and operating data set out under "3 Technical data" and the CEAG catalogue "Emergency lighting and emergency lighting systems"

Faults that could inhibit the functioning or safety of the equipment must be reported to the relevant management units immediately and must be rectified (within two weeks at the latest). However, this does not release the operator from the duty to take immediate measures.

2.1 Use as intended

The LP-STAR devices are used exclusively for the surveillance and steering of a lighting system with general and emergency lighting. Operations are steered by a programme. Parametrisation is carried out exclusively by specialist personnel with special knowledge about the legal and technical principles for the assembly and operation of a lighting system.

Operational safety is guaranteed only in the case of the proper use of the systems.

ATTENTION!

Any use that exceeds the purpose of the equipment and/or is another type of use of the equipment is prohibited and is deemed to be improper use.

The automatic test system of the LP-STAR devices complies with the requirements of the EN 62034 and is classified as type PERC.

ATTENTION!

Please observe the Installation conditions in chapter 5 „Setting up and installation“.

2.2 Contents of the operating manual

Every person who is authorised to carry out work on or with the equipment must have read and understood the operating manual before commencing work on the battery unit. This also applies if the person concerned has worked with the same or similar batteries in the past or was trained by the manufacturer.

2.3 Changes and alterations to the equipment

In order to avoid any risks and to ensure optimum performance, no changes or alterations may be made to the LP-STAR device that have not been expressly authorised by the manufacturer.

In the event of enhancements, modifications or the implementation of works that are due, that are not described in this manual, specifically trained specialists and service personnel (either from CEAG as the manufacturer or sales and service companies authorised by CEAG) remain reserved!

2.4 Responsibility of the operator

This operating manual must be kept in the direct vicinity of the equipment and must always be accessible to people working on or with the equipment.

The device may be operated only if it is in an exemplary and operationally safe condition. The integrity of the LP-STAR device must be checked every time before it is put into operation.

The operating instructions as set out in the manual must be complied with in full!

2.5 Personnel requirements

Only authorised trained electricians may carry out work on the open device. These personnel must have been trained in possible hazards that may occur.

A specialist is deemed to be a member of staff who, based on his/her training, expertise and experience as well as his/her knowledge of the relevant provisions, is able to assess the work that he/she has been given and to identify any potential hazards.

If the personnel do not have the necessary knowledge,

- appropriate professional training must be carried out,
- the tasks and activities must be precisely defined and understood,
- the activities must be carried out under the supervision of specialists and experts.

2.6 Work safety

By following the safety information and instructions provided in this operating manual injury to persons and damage to materials can be avoided during work on and with the equipment.

However, the following organisational measures must be recorded in writing and observed:

- Duty of information and registration (start, duration, end of the work)
- Safety measures whilst carrying out the work, e. g. standby lighting system powersupply and safeguards ensuring the system cannot be switched back on (e. g. removal of the fuses, key actuators, signs)
- protection and safety devices for the personnel working on the equipment (see point 2.7)
- protection and safety devices to protect against hazards that originate from the adjacent equipment (e. g. safety grilles, barriers, safeguarding of traffic routes)

ESD protection must be observed when working on the equipment!

The work and safety provisions can be found in this assembly and operating manual as well as

- the organisational measures issued by management (see above for examples)
- and from the general and specialist guidelines and provisions governing health and safety.

2.7 Personal protective equipment

When working on and with the equipment the following must fundamentally be worn:

Protective clothing



Close fitting work clothing (low resistance to tearing, narrow sleeves, no rings or other jewellery, etc.).

Safety shoes



Electrostatically conductive shoes in accordance with Norm EN 345 that protect against any heavy falling objects.

3 Construction and function

3.1 Technical data

Input	
Rated voltage AC	400/230 V
Rated frequency	50/60 Hz
Max. rated current AC	5.5 A
Rated voltage DC	19.2- 28.8 V
Battery	VRLA, 2x6 cells in series, 20 °C

Terminals	Max. connection capacity
Battery terminal	0.2- 2.5 mm ² solid 0.2- 2.5 mm ² stranded
Mains terminals	0.2- 2.5 mm ² solid 0.2- 2.5 mm ² stranded
Bus, relais, DLS input terminals	0.2- 2.5 mm ² solid 0.2- 2.5 mm ² stranded

Output	
Rated voltage AC	220-240 V AC / 220 V DC constant
Total current	4.7 A AC / 2.45 A DC
Total power	1080 VA / 540 W
Circuit power	345 VA / 330 W
Rated breaking capacity	1500 A @ 300 V DC
Max. rated power	6 W
24 V auxiliary voltage	

Terminals	Max. connection capacity
Final circuit terminal	0.2- 10 mm ² solid 0.2- 6 mm ² stranded
Earth wire	1.5- 16 mm ² fixed
Connection terminals	1.5- 10 mm ² flexible

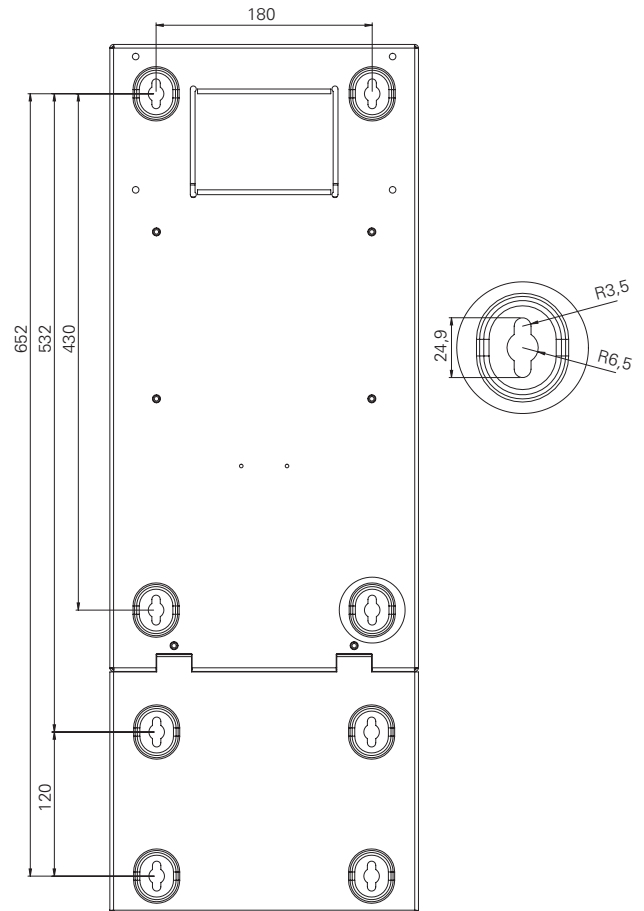
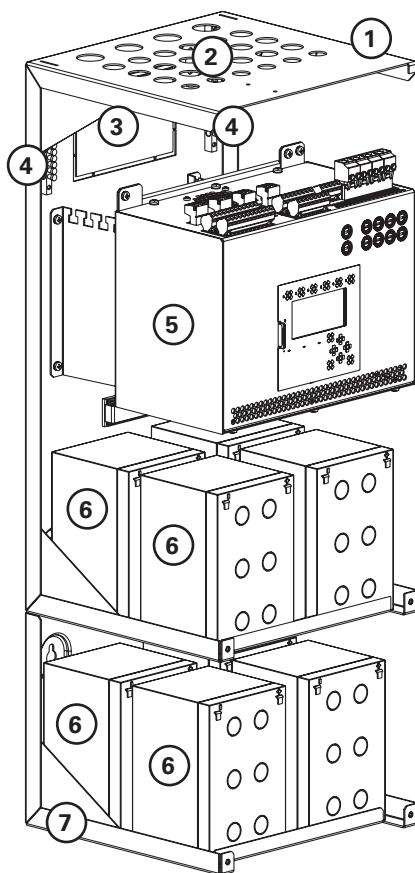
Type	LP-STAR 4-12	LP-STAR 4-24
Circuits	4	4
Max. battery size (AhK10; 1.8 V/Z, +20 °C)	2 x 12 V / 12 Ah	4 x 12 V / 12 Ah
Dimensions (H x W x D)	550 x 260 x 260 mm	
Max. ambient temperature	For storage: -20 °C to + 40 °C, For operation*: -5 °C to + 35 °C	
Sound pressure level at mains operation / emergency mode (converter operation)	0 dB / 50 dB	
Housing colour	RAL 7035	
Degree of protection / insulation class	IP20 / I	
Weight (approx.) without battery	17 kg	

* Maximum Design Lifetime at +20 °C: 10 years

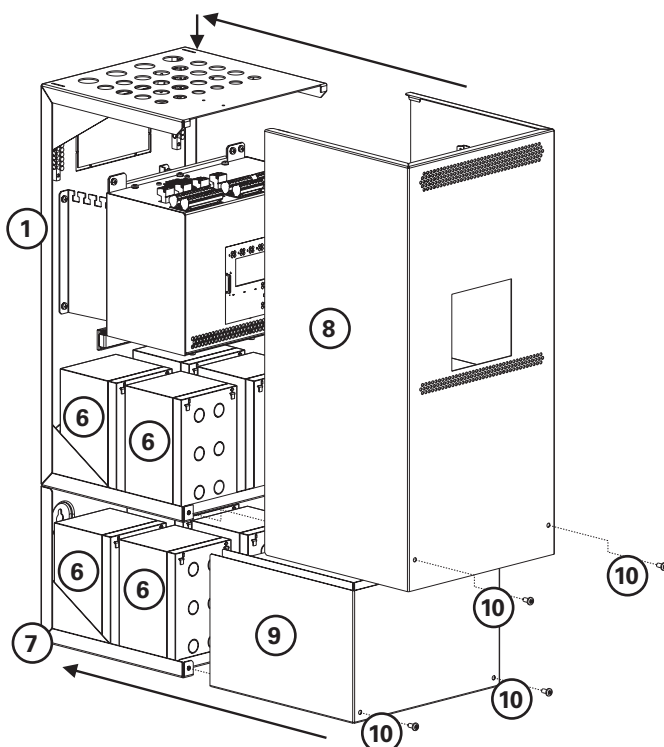
Type	LP-STAR-4-36	LP-STAR-4-48
Circuits	4	4
Max. battery size (AhK10; 1.8 V/Z, +20 °C)	6 x 12 V / 12 Ah	8 x 12 V / 12 Ah
Dimensions (H x W x D)	730 x 260 x 260 mm	
Max. ambient temperature	For storage: -20 °C to + 40 °C, For operation*: -5 °C to + 35 °C	
Sound pressure level at mains operation / emergency mode (converter operation)	0 dB / 50 dB	
Housing colour	RAL 7035	
Degree of protection / insulation class	IP20 / I	
Weight (approx.) without battery	21 kg	

* Maximum Design Lifetime at +20 °C: 10 years

3.2 Assembly of the equipment



3.3 Setting up the equipment



- ① Wall cabinet
- ② Aluminium cable entry
- ③ Back wall cable entry
- ④ Protective earth conductor connector
- ⑤ CSU box
- ⑥ Battery string 1-4
- ⑦ Optional battery compartment
- ⑧ Cover
- ⑨ Cover battery
- ⑩ Cabinet lock

Mounting procedure

- 1) Disassemble ⑧, ⑨ the cover.
- 2) Mount ① wall casing (drill template see above).
- 3) Mount optional battery compartment ⑦ (if available).
- 4) Insert and strip cables.
- 5) Install and connect batteries ⑥.
- 6) Switch device on and check it.
- 7) Mount ⑧, ⑨ the cover and bolt together ⑩.

3 Construction and function

3.4 Product description

The LP-STAR device is a compact emergency power supply that is used as part of the tried-and-tested STAR technology. STAR stands for:

SWITCHING TECHNOLOGY ADVANCED REVISION

The major advantages of this technology are that

- within a final circuit, the different methods of connection
 - the standby lighting (emergency lighting is switched on in the event of the failure of the general lighting or in the event of a manually or automatically triggered function and duration test)
 - the maintained light (emergency lighting is always switched on) and
 - the switched maintained light (such as standby lighting, additional emergency lighting steered by switch retrieval (two entries per power circuit))can be realised in mixed-flow mode per each emergency luminary,
- every escape and exit sign luminaire is freely programmable without additional data cables,
- and subsequent changes to the different methods of connection without intervention in the existing lighting installation are possible.

The functions of the emergency luminaires are defined by means of user-friendly parametrisation.

The prerequisite is the use of ballasts / modules (EVGs) of the CG-S design build.

All the settings are stored in a non-volatile memory and are therefore not lost even in the case of a complete shut-down (230V mains and battery power supply).

In addition, the parametrisation and the designation of all the connected circuits and luminaires as well as the test log book entries can be stored. Thus the archiving as well as the (optional) external parametrisation and transfer to the control units of the LP-STAR devices is possible.

Sealed batteries in accordance with EN 60896-2 provide the energy to operate the emergency lighting in the event of a power failure in the general 230V mains supply. During normal operations the LP-STAR device monitors the state of the batteries and if required it recharges them gently.

The LP-STAR device was developed and manufactured in conformity with the following EC guidelines:

- Low Voltage Directive 2006/95/EC
- Guideline 2004/108/EC on electromagnetic compatibility

Details on the national (DIN), European (EN) and international (IEC) norms that must be complied with can be found in the CE conformity declaration for the device.

3.5 Operating modes

Depending on the local requirements different system configurations can be used. These standardised configurations have designations, e. g.

LP-STAR-4-12

for the operation of a maximum of 4 circuits with a maximum of 20 luminaires per circuit and a total rated power of 133 W/1 h; 24 W/3 h.

LP-STAR-4-24

for the operation of a maximum of 4 circuits with a maximum of 20 luminaires per circuit and a total rated power of 303 W/1 h; 86 W/3 h; 16 W/8 h.

LP-STAR-4-36

for the operation of a maximum of 4 circuits with a maximum of 20 luminaires per circuit and a total rated power of 468 W/1 h; 149 W/3 h; 38 W/8 h.

LP-STAR-4-48

for the operation of a maximum of 4 circuits with a maximum of 20 luminaires per circuit and a total rated power of 540 W/1 h; 212 W/3 h; 66 W/8 h.

All of the devices follow a modular design. Charging technology, switching technology and monitoring technology form units that operate independently from each other so that the possibility of interactions is excluded. Thanks to the modular construction flexible, high quality processing is guaranteed. The protection objective of the emergency lighting system is to supply the connected safety lighting system in the event of the general power failure of the primary external power supply. Furthermore, an important function of the emergency lighting system is to ensure the permanent operational capability of all the connected escape and exit sign luminaires via automatic monitoring.

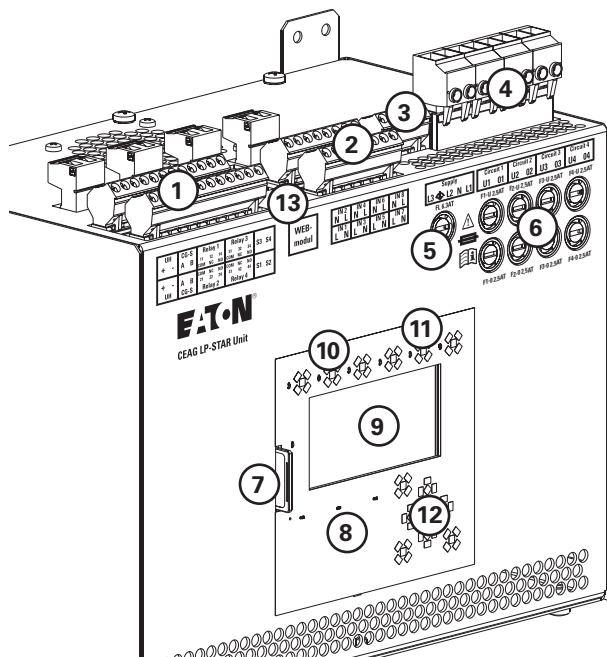
3.6 Overview of the structural components

3.6.1 Control unit

Connections

- Plug connector clips for easy assembly/disassembly. All the connections are carried out using the plug connector clips (see page ??, detailed view, as well as Appendix A: "Connections")
- Bus lines
4 x 2 x 0.8 mm² type: JY(ST)Y, twisted pair shielded (minimum requirement).
- Connection for potential-free signalling contact, 24V 0.5 A:
4 relays with own potential, each 1x switch-over contact. Every potential-free contact can have one or more of 11 different alerts assigned to it. Freely programmable, DIN VDE specification retrievable at any time as default setting.

The terminal units on the module serve to simplify the assembly and disassembly of the module; the connections are positioned on plug in screw terminals.



- ① CG-S bus connector CGVision, 24V supply voltage, potential-free signalling contacts, 24V current loop for external voltage gauges*
- ② 8 freely assignable 230V digital inputs
- ③ 3-phase feeding into the network with integrated phase monitoring function.
- ④ Four end circuits depending on the model of the device for the connection of the emergency lighting.
- ⑤ Mains fuse 6.3 AT
- ⑥ Circuit fuse 2.5 AT
- ⑦ SD card slot
- ⑧ Status LED display

- ⑨ 128 x 64 Pixel graphic display, back-lit, contrast and brightness adjustable via the program
- ⑩ 3 keys for: Test (power failure, battery operations), function test, duration test
- ⑪ 3 freely assignable function keys
- ⑫ 7 steering keys for user-friendly navigation
- ⑬ Connection for optional web module

*Connection for potential-free signalling contact, 24V 0.5 A (SELV):

4 relays with own potential, each 1x switch-over contact. Every potential-free contact can have one or more of 11 different alerts assigned to it. Freely programmable, DIN VDE specification retrievable at any time as default setting.

Freely programmable control unit

with non-volatile program memory for programming and user-specific parametrisation.

Internal log book recording

The control unit records the log book (max. 3,000 entries) in accordance with the specifications of DIN VDE 0108. External storage via the memory card is possible.

Operation

- at the front of the device
The device and the lighting system are operated on a menu-supported basis via
 - the keyboard and
 - 128 x 64 Pixel graphic display, back-lit, contrast and brightness adjustable via the program, (see Chapter 7).

Configuration

- at the front of the device
via keyboard and graphic display There are numerous possibilities for user-defined settings via menu operated parametrisation (see Chapter 7).
- by means of data exchange
via memory card, e. g. for the transfer of the settings between similar LP-STAR devices.
- external configuration of the control unit is possible by means of
 - a standard PC and
 - PC programming software

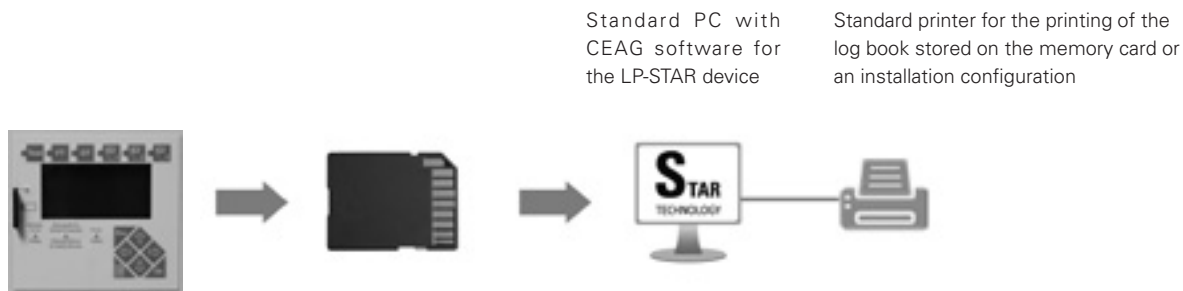
3 Construction and function

Communication and steering

- Data exchange with installed V-CG-S components and V-CG-S-compatible EVGs (via the cable systems for the end circuits)
- External CG-S bus connection (CEAG bus protocol) for data exchange with an overriding building control system.

Data exchange and storage

- Internal via non-volatile memory in the control unit
- External via a memory card reader, type of memory card used: SD card / CEAG item no. 40071347911 (pre-programmed)
- The SD adaptor enables data exchange and security with standard PC and CEAG software for the LP-STAR device




Connections

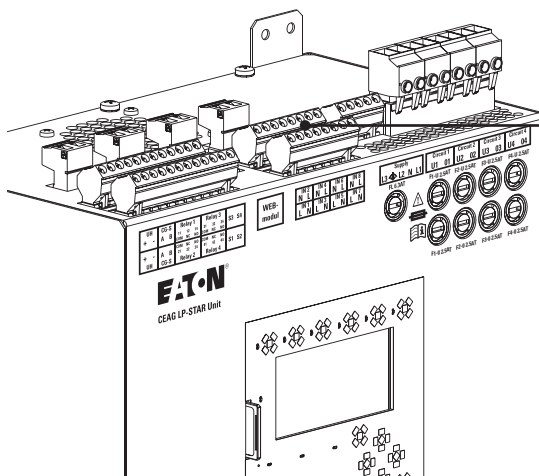
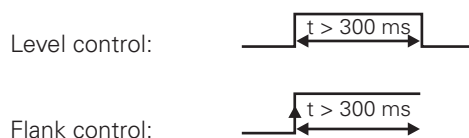
- Plug connector clips for easy assembly disassembly. All the connections are carried out using the plug connector clips (see page ??, detailed view, as well as Appendix A: "Connections")
- Bus lines
4 x 2 x 0.8 mm² type: JY(ST)Y, twisted pair shielded (minimum requirement).
- Connection for potential-free signalling contact, 24v 0.5 A:
4 relays with own potential, each 1x switch-over contact. Every potential-free contact can have one or more of 11 different alerts assigned to it. Freely programmable, DIN VDE specification retrievable at any time as default setting.

Connection for 230V digital inputs

8 freely assignable 230V inputs for, e.g. external switch inverted, switch, start / cancel function test, start / cancel duration test, manual reset, switch maintained light on/off, switch emergency lighting on as corridor lighting.

Tabelle 1: Optional inputs Z1 - Z8

	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Comments
No function					–				Factory setting
External switch				Level control via switch 230 V AC = ON 0 V = OFF					Works as switch and switches the circuit or LED(s) with "S" function.
External switch inverted				Level control via switch 230 V AC = OFF 0 V = ON					
Manual reset									To reset the switch type "Manual reset".
Reset DeepDischarge									Reset the total discharge protection.
Start functiontest									Trigger function test.
Start durationtest									Trigger duration test.
Cancel function test / duration test									Cancel function test and duration test.
Block device				Flank control via a button LOW – HIGH 					Block mains / emergency light function during operational rest periods.
Switch off maintained light									All LEDs / electric circuits that were previously programmed in maintained light mode are switched off.
Switch standby lighting on									All luminaires / electric circuits that were previously programmed in standby lighting mode are switched on.
Ventilator monitoring									Offsets a charge fault from the CG IV /CG V relay module and CG Vision via the potential-free signalling contact in the control unit, insofar as there are 0V.
External ISO monitor				Level control via switch 230V AC = OK 0 V = disruption					
External battery monitor									
External monitor									



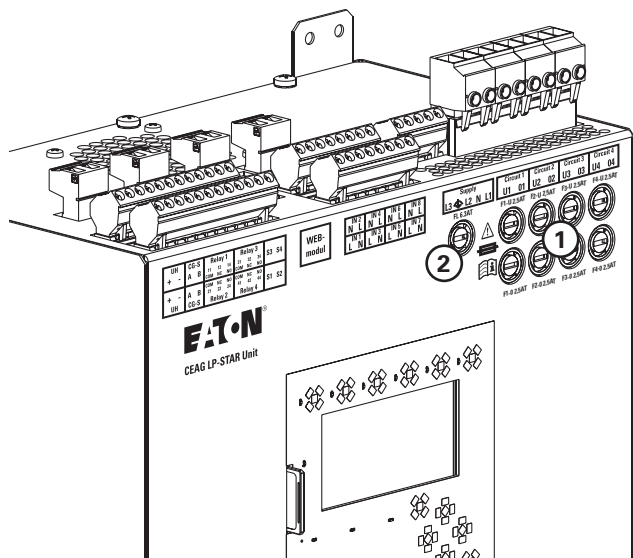
Connection for digital inputs:

8 freely assignable 230V digital inputs for:

- Switch
- Switch inverted
- Start / exit function test
- Start / cancel duration test
- Block / unblock system
- Manual reset
- Switch maintained light on/off

! ATTENTION!

Only the authorised CEAG Notlichtsysteme GmbH fuses may be implemented.



3.6.2 CSU 500

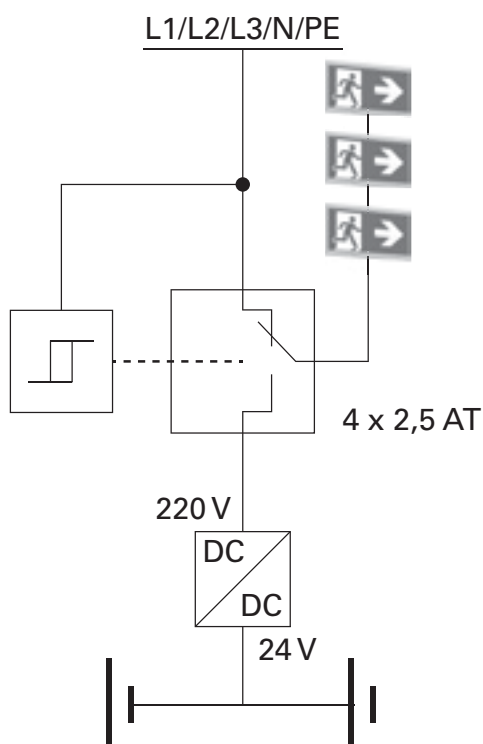
Fuses

On the front plate of the unit box can be found

- ① Downstream fuses 2,5 AT / 250V (2 per circuit) fuse dimensions: 5 mm x 20 mm, sand filled, order number 40071361235 (packaging unit: 10)
- ② Mains input fuse 10 AT / 250V fuse dimensions: 5 mm x 20 mm, sand filled, order number 40071361234 (packaging unit: 10)

Additional features

- Freely programmable mixed operations between maintained light, standby lighting and switched maintained light within a circuit by using CEAG EVGs/modules with CG-S designation without additional data cables
- Individual monitoring of a maximum of 20 luminaires per circuit
- Easily accessible fuses
- Connected load per circuit: max. 330 W / max. 345 VA
- Power surge per circuit 250 A each circuit
- Typical switch-over time: AC to DC = 450 ms



3.6.3 F3 remote display

Connection of the remote switch

Connection is made in accordance with the illustration and in accordance with the plans and drawings for the installation on site.

The power supply for the CEAG F3 remote switch is provided via the 24V power supply of the LP-STAR device.

! ATTENTION!

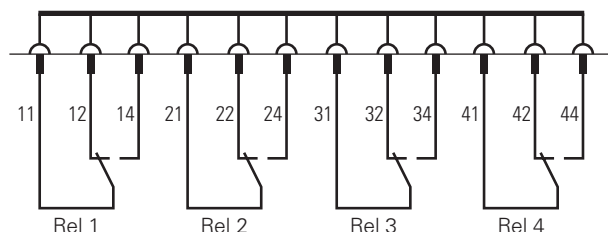
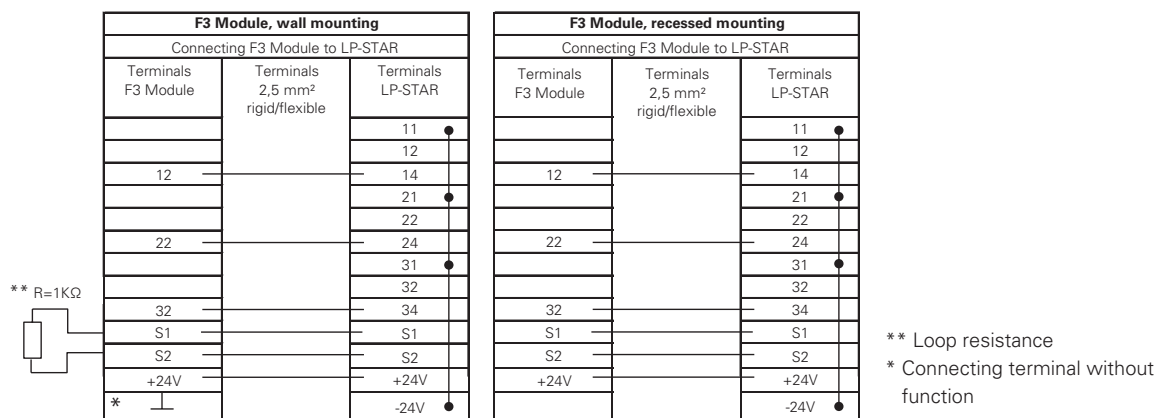
Do not use any external 24V power supply!

i NOTE!

Always observe the national guidelines and provisions for information and reporting behaviour when installing a remote switch and/or remote display for emergency lighting systems.

Always observe the manufacturer's instructions in the technical documentation regarding the CEAG F3 remote display.

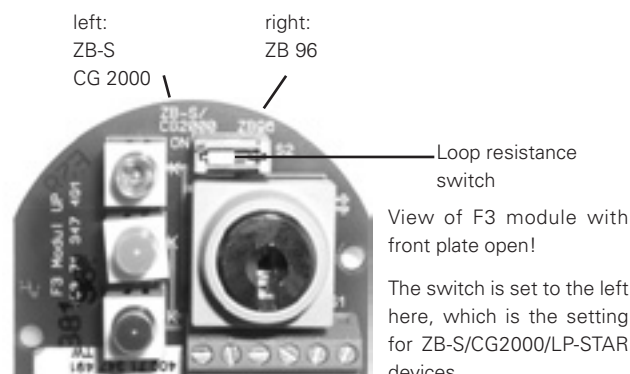
Connecting the F3 module



Loop resistance switch

The F3 UP module has an interior switch for loop resistance.

This view shows the circuit board, the lettering on which shows the selection of the position of the switch according to device.



3 Construction and function

3.6.4 Web module

The web module conforms with standard EN 60950-1 and has been developed, manufactured and checked in accordance with DIN EN ISO 9001.

Technical data:

Input voltage:	24 V DC
Power input:	< 1.5W
Connection:	RJ 45
Insulation class:	III, degree of protection in accordance with EN 60529: IP20
Ambient temperature:	-10 °C ... +55 °C
Connecting terminal:	1.5 mm ²
Weight:	approx. 0.1 kg
Dimensions:	90 x 35 x 58 mm

Application

The web module serves for the visualisation and monitoring of the local ethernet (LAN) with a standard web browser (e. g. Internet Explorer™). Integrated mail client for comfortable, event-related error reporting for up to 5 email recipients. Parameter-enabled access accounts with password protection.

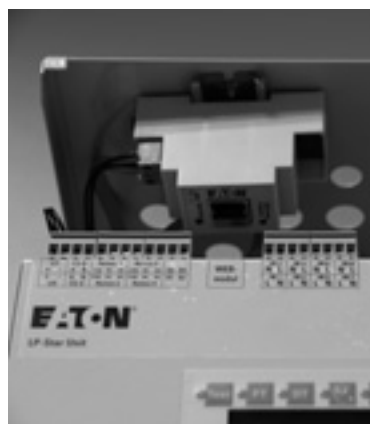
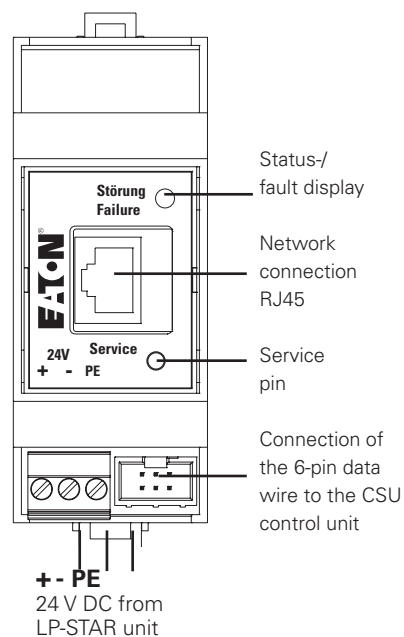
Assembly

It is important to monitor unacceptable temperatures at the place of installation during operations. The ambient temperatures for the module must not exceed 55°C.

The module is assembled on DIN rail mounting (2TE) and must be carried out in the casing. External mounting outside the LP-STAR casing is not permitted.

Web module connection

Connect the ribbon cable included with the web module here.



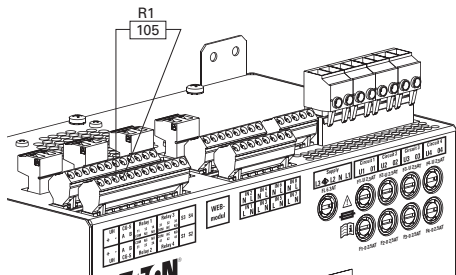
Placing the web module in the casing



Connecting the web module

3.6.5 Bus technology CG-S Bus

In order to connect the LP-STAR device to a CGVision visualisation a CG-S Bus Interface must be integrated.



NOTE!

The parallel connection of data cables is not permitted and does not extend the permitted length of the cables.

For the power supply to the module, wires within the shield can be connected in parallel.

ATTENTION!

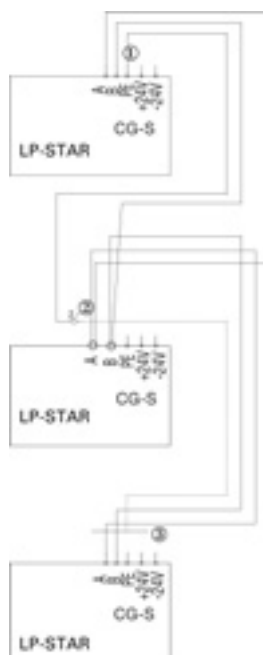
The CG-S Bus Interface is optional and cannot be retrofitted on site. If the function is required retrospectively the complete CSU box must be exchanged.

Bus topology: linear, double terminated (no spur connections permitted). The mandatory termination resistors are positioned in the unit.

Type of control cables (minimum requirement): IY(ST)Y 4 x 2 x 0.8 mm² (twisted pair, shielded) – the shield for the cables must be through-connected and may only be earthed once.

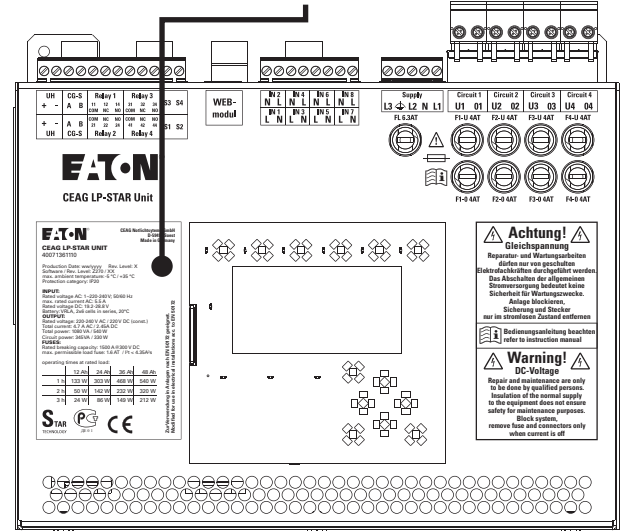
Only one pair of wires can be used as a data line within the shield- bundling several data lines within one shielded cable is not permitted!

CG-S bus

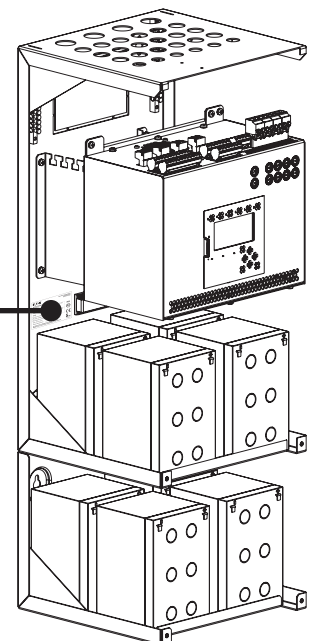
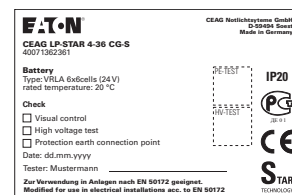


3.7 LP-STAR name plate

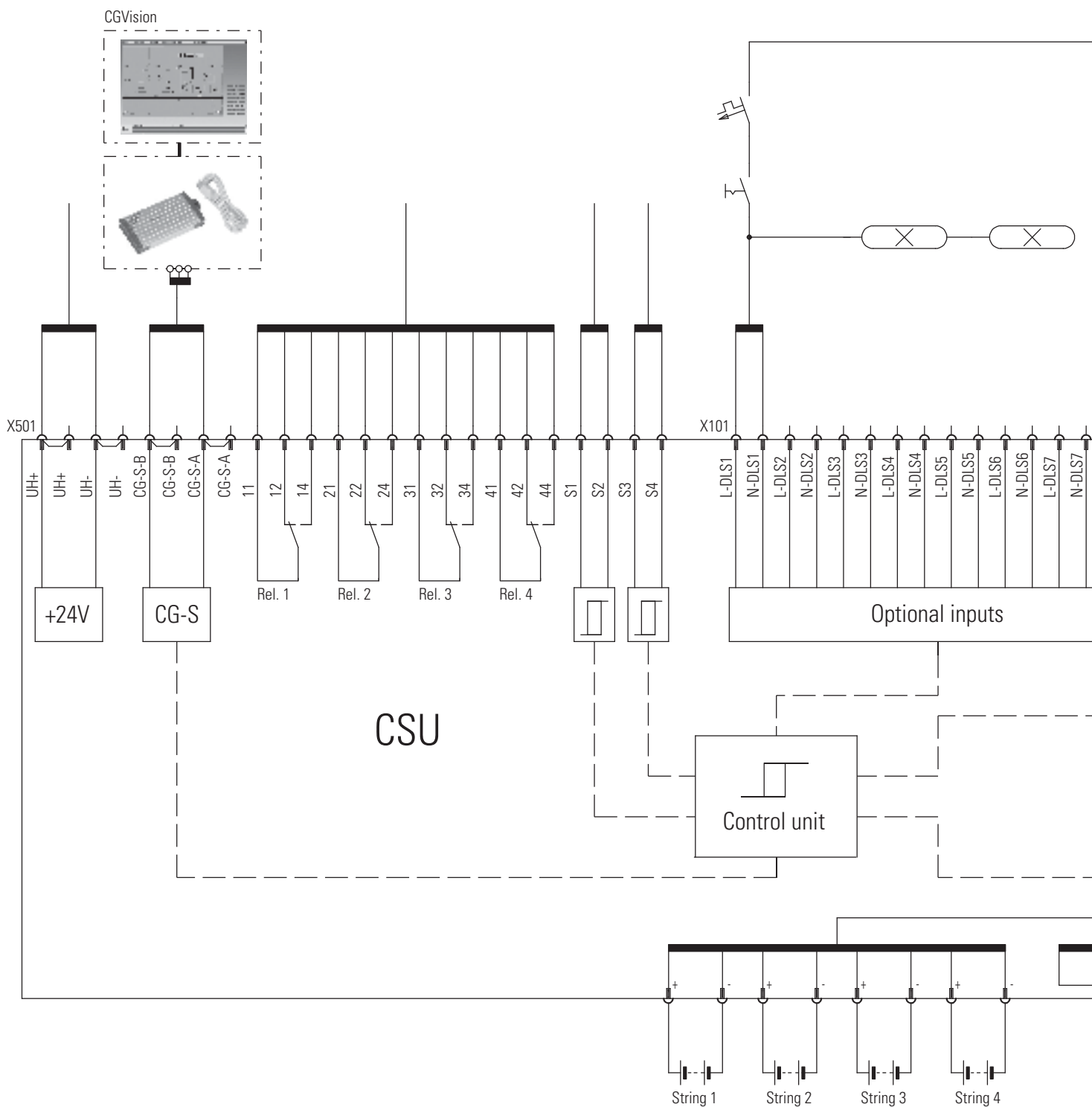
You will find the name plate for the CSU box on the left hand side next to the control unit in the interior of the device.

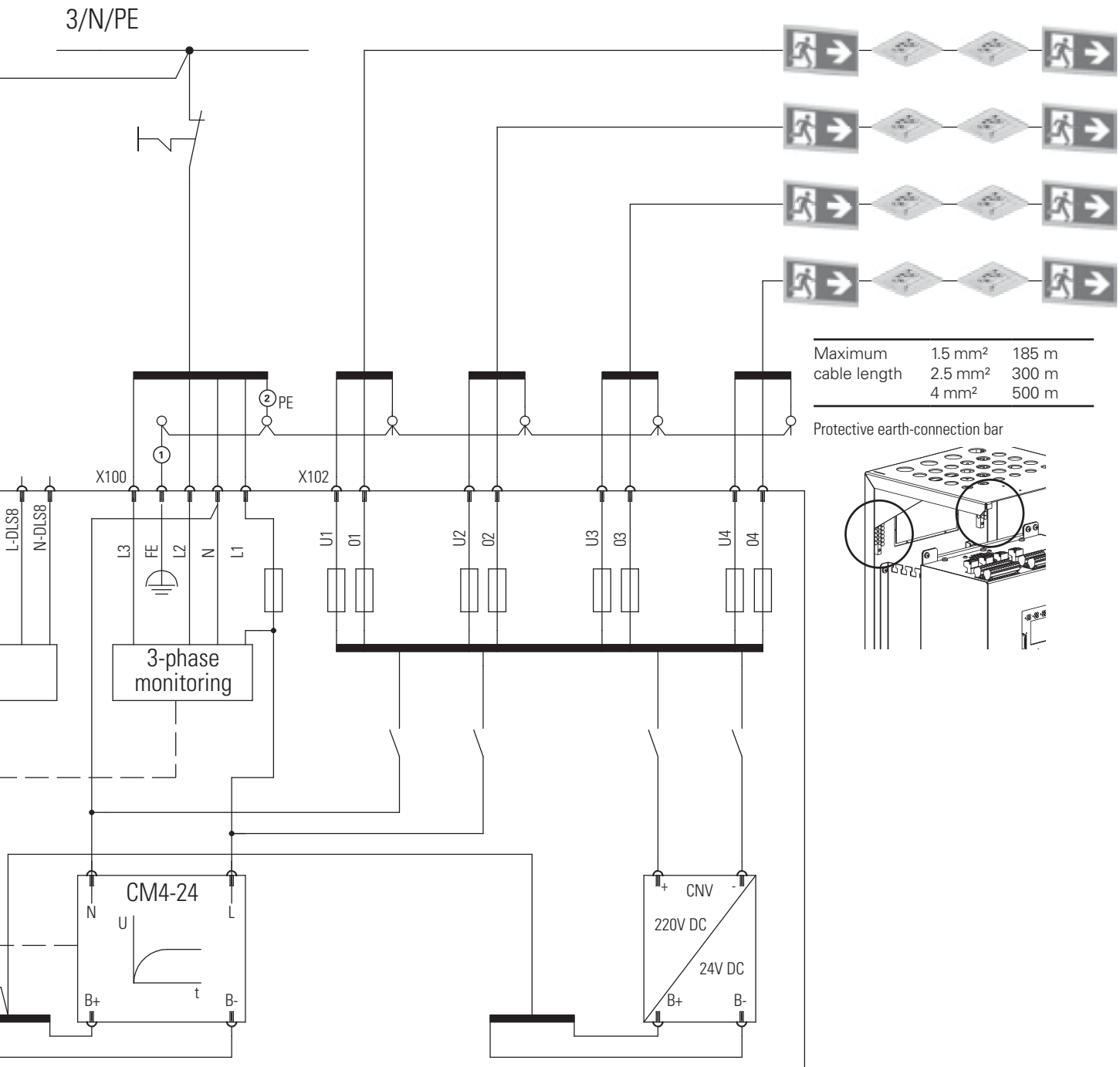


The test certificate is on the inside back wall of the casing:



3.8 LP-STAR installation example





- ① Funktional earth, factory-wired

! ATTENTION!

- ② Protective earth of the power supply line has to be connected to the protective earth-connection bar.

4 Transport, packaging and storage

4.1 Safety instructions

! ATTENTION!

Property damage! The device can be damaged or destroyed if it is not transported correctly.

The following safety instructions must therefore always be observed:

- Always move the device with extreme care and attention.
- Avoid any contact with dust and moisture during transport.

Batteries

Always observe the manufacturer's instructions when transporting and storing the batteries.

4.2 Transport inspection

Immediately check the delivery upon receipt for completeness and any transport damage. In the event of clearly identifiable external transport damage do not accept the delivery or only accept it under reserve.

4.3 Packaging

If no take-back agreement for the packaging has been concluded, separate the materials according to type and size and place them in the recycling container.

! ATTENTION!

Always dispose of the packaging material in an environmentally sound manner and in accordance with the valid local waste disposal regulations. If necessary consult a recycling company.

Always observe the handling instructions on the packaging!

4.4 Storage

Store packages unopened until assembly and according to the orientation and storage markings on the outside.

Only store packages under the following conditions:

- Never store outside
- Always store in a dry, dust-free place
- The storage space should be clean and organised
- The storage time should be as short as possible in the interests of the user (FIFO method)
- The stacking of pallets or devices is not permitted

When storing batteries the following must be observed:

- When storing batteries as replacement parts the instructions in the assembly and operating manual must be observed.
- If the power supply for the LP-STAR device is interrupted for several days the battery circuit must be activated (remove battery protection). This must be carried out by a qualified electrician.

5 Setting up and installation

5.1 Safety instructions

WARNING! DANGER OF INJURY!

Incorrect assembly and installation can result in serious injury to persons or damage to property. This work may only be carried out by authorised, trained personnel who are familiar with the operation of the equipment and in compliance with all the safety regulations.

- Ensure sufficient room for movement
- Ensure that the workspace is clean and organised. Loose components and tools lying around can cause accidents!
- Ensure there is sufficient cooling for the system
- Comply with the environmental requirements in accordance with the type and class of protection (regarding safeguarding against moving current-carrying components and the ingress of dust, foreign bodies or moisture)
- Cable lengths in an illumination circuit may not exceed the permitted length up to the last luminaire in the circuit
- Ensure there is sufficient strain relief in the installed cables.
- In accordance with IEC 60364-5-56:2009 (DIN VDE 0100-560 Part 5-56), no more than 20 luminaires must be fed from an end circuit with a total load of not more than 60% of the rated current of the overcurrent protective device.

The devices illustrated in this assembly and operating manual can differ in the module system due to the factory defaults. Special customised features are described in the project documentation that must be ordered separately.

WARNING!

Work on the general power supply and moving the load, signal and control lines as well as the connection of the battery power supply may only be carried out by trained electricians with special knowledge of the legal and technical principles for setting up and operating emergency lighting systems. This also applies for the first commissioning or re-commissioning of the emergency lighting system.

Ensure you have complied with all the health and safety measures!

As well as compliance with all the general specialist standards and procedures it is also important to pay attention to Chapters 1+2 in particular and to observe all the special notes and instructions.

NOTE!

Moving the connection cables may only be carried out in accordance with the mandatory electrical engineering guidelines and norms (e. g. standard series DIN VDE 100).

In addition please observe all the national guidelines and provisions of the country in which the equipment is being set up and operated.

Secure all the cable openings in the control cabinet with the M screw connections provided or with rubber seals to protect against mechanical damage to the cables or the entry of moisture.

ATTENTION!

At the exits for the emergency lighting/end circuit only EVGs and luminaires for a rated voltage of 230 V AC (50 Hz) and 220 V DC may be connected!

If it is necessary to activate the device for security reasons or to protect the device, the procedures described in this operating manual must be observed.

The control software and its last switch status is stored in a non-volatile memory.

DANGER!

If the batteries are used incorrectly this can result in injury or loss of life.

It is essential that the instructions in this manual are observed for the removal or connection of the batteries (see "Connection of the Battery Power Supply").

Ensure the correct polarity of the batteries!

ATTENTION!

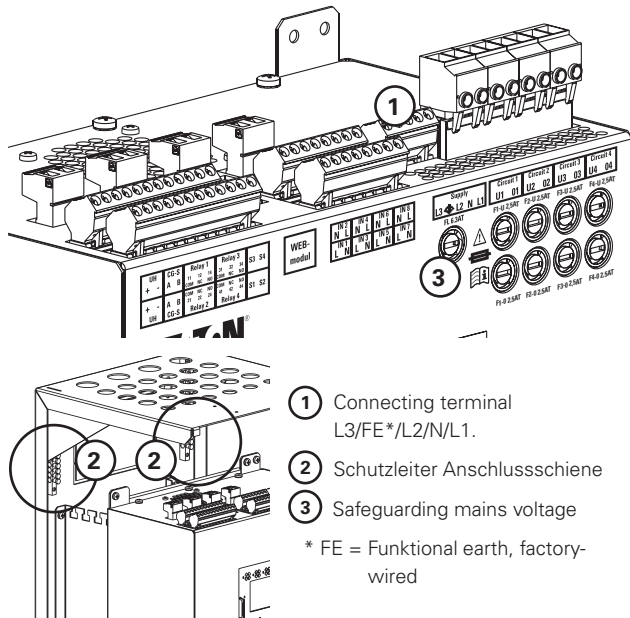
In the event of interference in the electrics (e. g. connection of control or signal cables) or electronics (e. g. removal or fitting of modules in the control cabinet) ESD protection must be observed.

Never switch the mains or battery power supply on or off when on load. In both cases the system must have been blocked in advance by the control section.

Please note that the LP-STAR device is not suitable for use in IT mains systems.

5.2 Mains connection

As in practice one part of the emergency lighting is often not switched to maintained light, the mains surveillance of the general lighting is guaranteed at the same time via the 3-phase supply of the LP-STAR devices without the need for additional external phase monitoring relays. However, the supply of the emergency lighting circuit is carried out on a 1-phase basis.



NOTE!

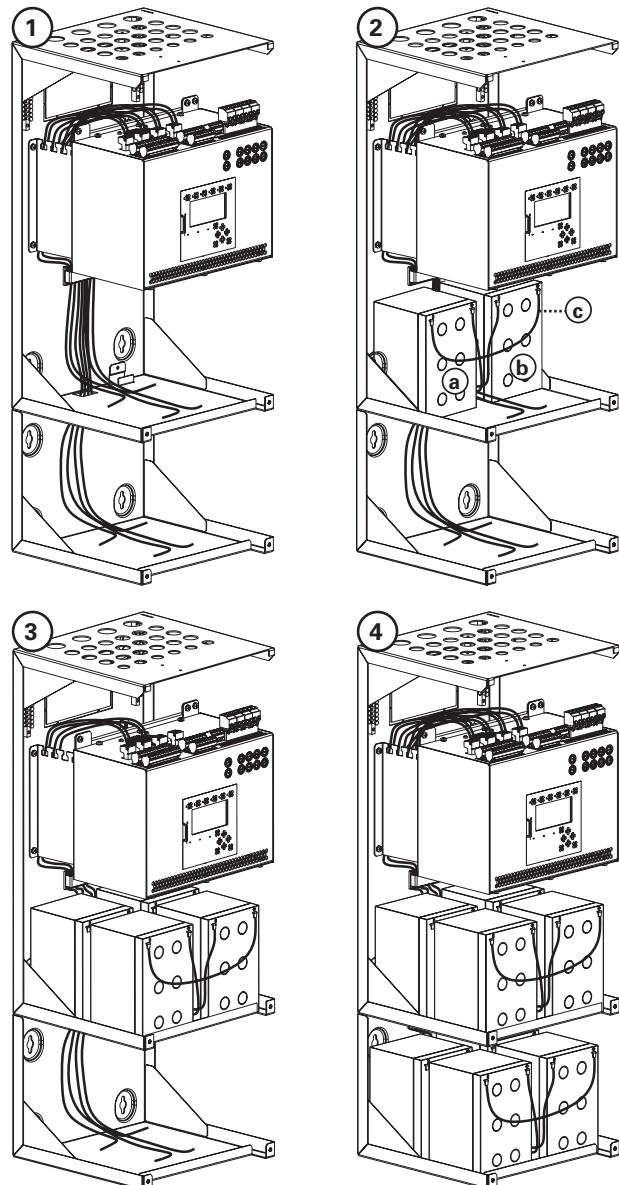
For 1-phase operations only an on-load current cable L1 and the input terminals are connected L2 and L3 are bridged.

Please install a circuit breaker with min. 10 A and charakteristik K (according to DIN EN 60947-2) or alternatively a fuse with melting integral > 200 A²s for the power cable.

Please note: The circuit breaker or fuses must also have a separator function for the power cable. Easily accessibility is necessary.

Please connect the protective earth of the mains cable to the protective earth-connection bar.

5.3 Connecting the batteries



NOTE!

Sequence for connecting battery string 1:

- Connect the cable marked with "+" to the plus pole of the battery (a) an (string 1 in the picture (2)).
- Connect the cable marked with "-" to the minus pole of the battery (b).
- Finally close the bridge (c).
- Then connect the other battery strings in the same way, see pictures (3) and (4).

When disconnecting the battery power supply the same sequence applies in reverse.

Max. battery discharge power [W] ¹⁾

Rated operating time	P-Batt min 12 Ah	P-Batt min 24 Ah	P-Batt min 36 Ah	P-Batt min 48 Ah
1.0 h	133 W (7.6 A)	303 W (15.2 A)	468 W (22.8 A)	540 W (27.1 A)
1.5 h	81 W (5.2 A)	204 W (10.5 A)	320 W (15.7 A)	437 W (21.0 A)
2.0 h	50 W (3.9 A)	142 W (7.8 A)	232 W (11.7 A)	320 W (15.6 A)
3.0 h	24 W (2.7 A)	86 W (5.3 A)	149 W (8.0 A)	212 W (10.7 A)
8.0 h	-	16 W (2.2 A)	38 W (3.3 A)	66 W (4.4 A)

1) Values incl. converter efficiency

() = Discharge current

Important note: The aging provision for batteries (25 %) is included.

Evaluation of aeration and deaeration of electrical service rooms according to DIN EN 50272-2

Capacity	12	24	36	48
Air volume flow required for the aeration of the location room [l/h], calculated for boost charge*	57.6	115.2	172.8	230.4
Vent cross-section of the air inlets and outlets of the place of installation [cm ²], calculated for boost charge*	1.6	3.2	4.8	6.5
Air volume flow required for the aeration of the location room [l/h], calculated for trickle charge*	7.2	14.4	21.6	28.8
Vent cross-section of the air inlets and outlets of the place of installation room [cm ²], calculated for trickle charge*	0.2	0.4	0.6	0.81

* If boost charge is not frequently used (for example once a month), the air flow rate can be calculated based on the trickle charge current.

Battery

Nominal capacity AhK10, 1.8 V/Z, +20 °C	Dimensions of one battery L x B x H (mm)	Number of batteries U _B = 12 V unit	Total weight of all the batteries (kg)
10 J: 12 Ah	152 x 98 x 102	max. 8	4 units: 15.25 8 units: 30.50

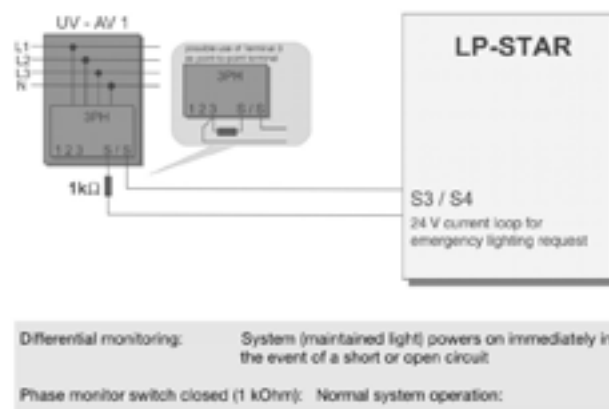
Battery order details

Type	Version	Order no.
12 V/12 Ah	Battery block, 10-year life	40066071147

Information on battery life at a max. battery temperature of +20 °C

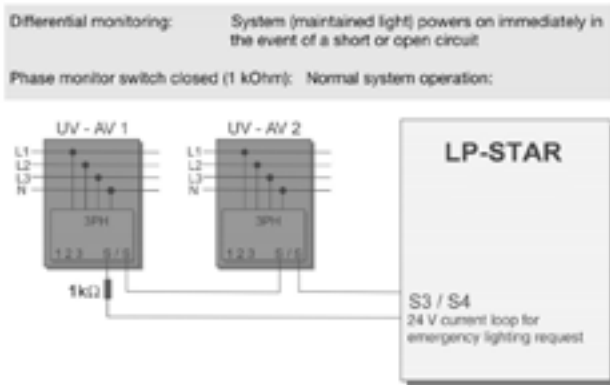
5.4 CEAG 3-phase monitor with 24V current loop

Connection is made via the connecting terminal X 501 (S3 and/or S4).



Block diagram for a CEAG 3-phase monitor with a 24V current loop for the requirements of emergency lighting with differential loop monitoring to identify short-circuits and wire breakages

5 Setting up and installation



Block diagram for the connection of several CEAG 3-phase monitors



CEAG 3-phase monitor

NOTE!

If several sub-distributors are being monitored, more devices must be connected and switched on with the other devices in a 24 V loop.

If fewer than 3 phases are monitored by a 3-phase monitor, the excess entries for the 3-phase monitor must be bridged.

5.5 Completion of assembly

- Finally check all the connections that have been carried out against the on-site plans and drawings for the installation.
- Check that all the connections are tight.
- Remove all cabling, insulation and mounting materials that have not been used as well as all tools and packaging materials.

6 Commissioning and subsequent work

6.1 Safety instructions

WARNING!

DANGER OF INJURY! Never switch the mains or battery power supply on or off when on load (i.e. when end circuits are switched on).

The following applies for battery power supply: Never remove or attach mains cables from/to the battery when on load.

6.2 Control of the connections

Before switching the emergency lighting on:

- Check whether the device is active and ensure that it is shut down. Only switch the power supply back on when all the work has been completed.
- Check all the connections and cables in accordance with the drawings and plans for the emergency lighting supply as well as the execution of the installation work in compliance with the norms and guidelines.
- Check that all the connections and screw fastenings are tight.
- Check all the cable inlets are tight and properly sealed.

6.3 Voltage measurements

- Measurements of the supply voltage and the end circuits may only be carried out by qualified electricians!
- Please note the specific risks when measuring multi-phase power supplies!
- Only use measuring devices that have sufficient dielectric strength and/or can deal with high currents!
- All measurements in the area of internal installations are reserved for CEAG service personnel alone!

6.4 Insulation measurements

Check whether the whole system has been deactivated and ensure that it is shut down. Only switch the power supply back on when all the work has been completed.

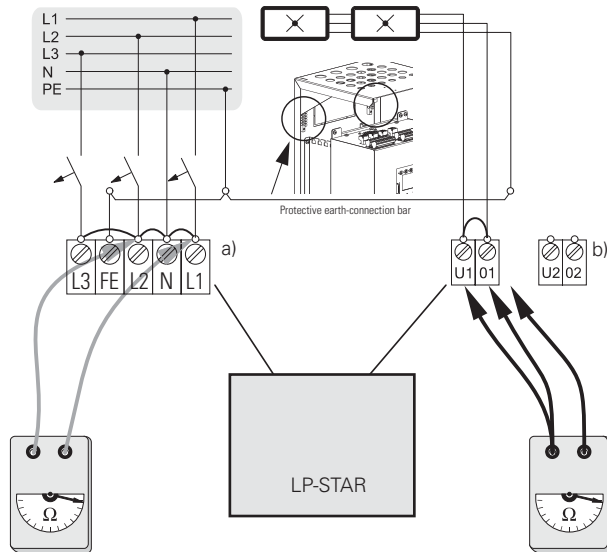
DANGER!

Insulation measurements may only be carried out between the protective conductor PE and the outer conductor L1, L2 and/or L3 and between the protective conductor PE and the neutral conductor N. If the circuits contain electronic equipment, the outer and neutral conductors must be bound together during the measurement.

Measuring voltage max. 500V DC, measuring current 1 mA! Only use measuring devices for this that fulfil the requirements of DIN VDE 0413.

- Disconnect the cables for the mains and battery power supply.

- Bridge the connections L1, L2, L3 and N.
- Carry out the insulation measurement in accordance with the following image for connections for mains power supply L1, L2, L3 und N towards PE.
- Bridge the connections U1/O1, etc. at the output terminals of the final circuit and carry out the insulation measurement for the final circuit U1/O1 and/or U2/O2 towards PE.
- Once the insulation measurements have been carried out remove the bridges at the connection terminals.
- Reconnect the disconnected cables and check the PE connection of the cover.



a: Insulation measurement at power supply (mains)

b: Insulation measurements at final circuits

NOTE!

By bridging active electronic components and luminaires (EVGs) are protected against any possible damage!

6.5 Checking / replacing fuses

The fuses for the mains power supply and final circuits are on the front next to the display. The final circuits are individually fused.

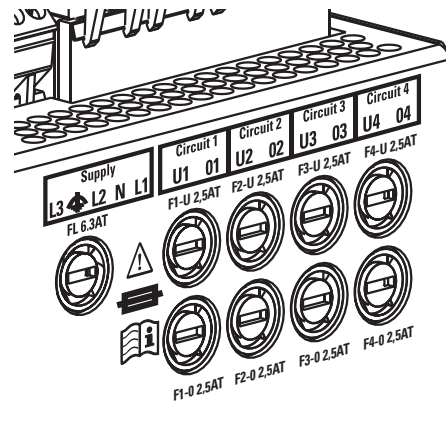
! ATTENTION!

Never remove the fuses when on load.

6.6 Checking the fuses

For safety reasons the system should first be disconnected from the mains, by blocking the control unit.

The procedure for checking and replacing is described under 7.5.2.



Fuse locations

! ATTENTION!

Only the authorised CEAG Notlichtsysteme GmbH fuses may be implemented.

7 Operating

7.1 Safety instructions

WARNING!

DANGER OF INJURY! Incorrect operation can result in serious injury to persons or damage to property. The device may only be serviced by authorised, trained personnel who are familiar with the operation of the equipment and in compliance with all the safety regulations.

Before starting work:

- Check device for completeness and that it is in a technically faultless condition,
- Ensure sufficient room for movement

During operations:

- In the case of faults first switch device off and then ensure that it cannot be turned back on.

7.2 General information on instructions for use

Operations are carried out at several levels. A distinction must first be made between:

- **handling and control** during operations (test operations or normal operations)
- and **setting up** with the specifications (parametrisation) for the emergency lighting circuit and the freely assignable functions and function keys of the control unit.

Handling and control of the system during operations can be carried out via

- the keys and the LED display,
- remote display
- F3 module or via a building control system (GLT).

The setting up (and changes to the parametrisation) can be carried out

- directly at the control unit
- or via the memory card as a transfer medium by means of a standard PC with CEAG configuration software.

Function test / duration test

Functional inspection must be implemented at least once monthly. Repeated tests with batteries may cause loss of capacity. The total duration of testing times should not exceed 10% of measuring duration in each month.

NOTE!

The following descriptions are not an integral part of this manual, as comprehensive instructions within the technical documentation on these systems is required:

- Handling and control of the system via the F3 module or the building control system (GLT)
- Software supported set-up of the system via memory card

The handling and control of the system in the aforementioned specified scope during operations (test operations or normal operations) presupposes knowledge of

- operating the control unit
- the key functions and the LED display and
- the use of some hardware components (control and replacing of fuses).

7.3 Operating and display elements

Red LEDs signal that the allocated function is faulty or a malfunction has occurred. If none of the luminaires are lit it is possible that the power supply has been interrupted.

NOTE!

The control unit has numerous diagnostic functions and user menus for the analysis and repair of operating faults. First explore all these possibilities before you take action. The following information must be observed!

WARNING!

Work on the electrical installations may only be carried out by qualified electricians who have been trained in lighting and emergency lighting systems. This also applies for the control and replacement of fuses.

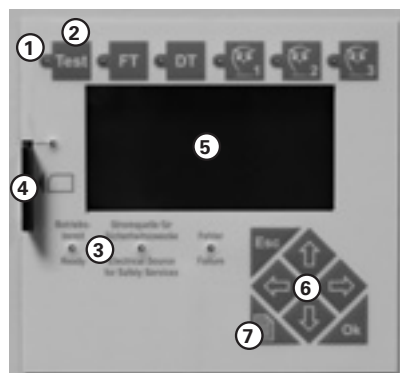
Replacement fuses must be the same type and strength as in the module or as prescribed in the technical documentation!

For example there is the risk of a light arc if a in the battery string is opened before the the device has been properly blocked and disconnected from the mains supply.

In addition there is the danger of electric shocks or short circuits if work is carried out on the final circuits that have not been deactivated in advance.

Also consider the possible impact on the lighting in other parts of the building if you disconnect the power supply for final circuits.

7.4 Operating the control unit



LEDs (1) in the upper row signal current functions that are triggered by the function keys (2) next to them.

The 3 left-hand keys trigger prescribed functions in the control software for the control unit:

- <Test> activates a simulated power failure for as long as it is depressed, so that the emergency lighting systems can be checked. After the button is briefly pressed there is a simulated power failure of at least 5 seconds.
- <FT> activates the menu point start / cancel function test
- <DT> A duration test is carried out via the control software the course and results of which are shown in the display (5).

A function test is carried out via the control software, the course and results of which are shown in the display (5). In the case of a function test the final circuits and the luminaires connected to them are checked. You will find further information on this in the description of the associated program function in the following text.

A duration test checks whether the connected batteries guarantee the parametrised, legally prescribed minimum service life for the emergency lighting in the event of a power failure. Further details on the operating condition and disruptions to the system can be accessed under the Test and Statusmenu.

The right-hand 3 function keys can be allocated functions via the parametrisation of the control unit; for example the first button can be allocated the manual reset function.

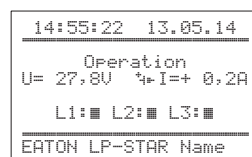
The other LEDs (3) signal:

- The operational readiness of the system
- Supply feed from the power source for safety purposes (battery operations in the event of mains power failure or function test / duration test),
- Faults that can be further analysed via the menu in the control unit.

Using the control keys in the keypad (6) the program functions for the control software can be called up and/or their parametrisation can be changed.

Using the key (7), designated with <Menu> in the current text, the main menu for the control software is called up from the default display.

In addition, by using this key it is possible to return to the previous menu level, until the default display (5) is once again shown in the graphic display.

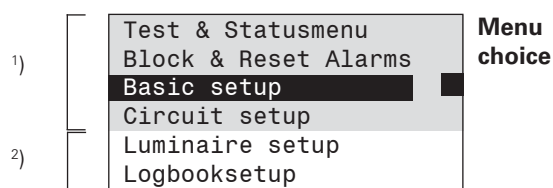


Graphic display (default display during trouble-free operations)

Starting point: **Default display**

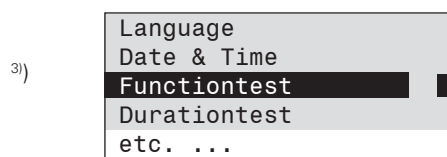
<Menu> **Selection of main menu:**

↑ / ↓: Selection of Basic setup in main menu



<Menu>-key: back to default display (cancel)

<ok> button: Confirm selection, display of menu selected (with the function test selection)



1) visible area of the main menu (with screen roll (scroll) function)

2) currently non-visible area

3) Identification of a choice

The selection is confirmed with the <ok> key. By clicking the Menu button the current menu point is exited and the changes are recorded in the non-volatile memory in the control unit; the control software generally returns to the next-higher menu level.

By clicking the <ESC> key the changes entered in a menu are discarded; the control software returns to the next higher menu level without saving the changes. The selection within a menu for the control software is carried out using the cursor key ↑ ↓ ⇐ ⇒ on the keypad.

- Using the ↓ ↑ keys you can select the direction (up/down) in a menu line and/or change between input fields.
- Using the keys ⇐ ⇒ you can select settings, or parameters with a specific change value (increment) can be increased or decreased. Such selection options are marked with the symbol ⇄ in the graphic display (5).

By clicking the keys several times the action is triggered; by holding the key down (more than approx. 1 second) the function is accelerated.

On the next two pages there is an overview of the basic menu structure and further information on use and parametrisation.

Main menu

1. Test & Statusmenu
2. Block & Reset Alarms
3. Basic setup
4. Circuit setup
5. Luminaire setup
6. Logbooksetup
7. Send ServicePinMsg *

*) Only appears with integrated CG-S Bus Interface

Password protection

In order to protect the device from unauthorised access all active functions are password protected. The password is activated at delivery and is 123123 and can be reprogrammed.

- If password protection is activated only the Basic setup and the menu points "1 Test and Statusmenu" and "2 Block & Reset Alarms" in the main menu are accessible without a password.
- If a password is not entered within 180 seconds the control software returns to the Basic setup automatically.
- If a password is not entered within 180 seconds the background lighting for the graphic display is switched to dark. By clicking on any key the background lighting for the graphic display becomes bright once again.
- Contrast and brightness (background lighting for the graphic display) can be changed in the Basic setup by clicking the <ok> key.

☞ ↑ / ↓ + <ok>: Contrast settings
☞ ← / → + <ok>: Brightness settings

The setting for this parameter is also possible via a menu point "3.10 Display Setup" in the menu "3 Basic setup" The parameters can be determined numerically in percentages here.

1 Test & Statusmenu

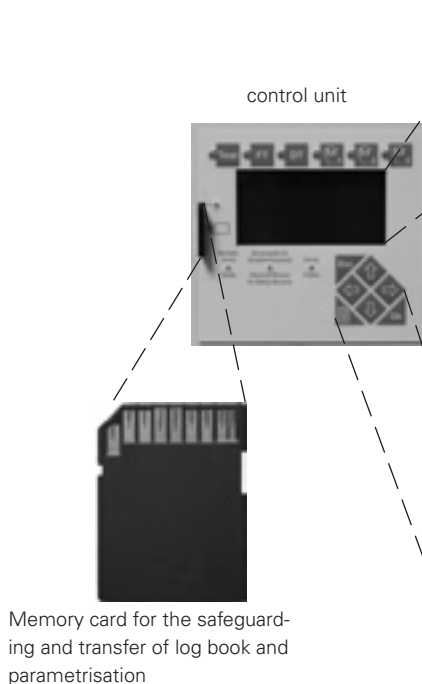
- 1.1 Start functiontest
- 1.2 Start durationtest
- 1.3 Cancel durationtest
- 1.4 ISO monitor test
- 1.5 Sum failure info
- 1.6 Circuit-state
- 1.7 Luminaire-state
- 1.8 DLS/TLS/3Ph-state
- 1.9 Charging-/Bat.state
- 1.10 Relay-state
- 1.11 Substationstate

Main screen (example)

```
14:55:22 13.05.14
-----
Operation
U= 27,8V I= 0,2A
L1: L2: L3:
EATON LP-STAR Name
```

With display of

- Time and date (line 0)
- Operating status (line 1)
- Current voltage and current value (line 2)
- Fault information (line 3)
- Status of mains voltage for control unit (line 4)
- Name of device (line 5)



Memory card for the safeguarding and transfer of log book and parametrisation



Keypad
ESC button <ESC>
Menu key ☰ ok key <ok> and cursor key
↑ ↓ ← →

❗ MULTI-MASTER MODE M3:

In multi-master mode it is possible to trigger the following functions from each control unit:

- Sub-station status (display)
- Date/time (set)
- Automatic function test (set)
- Automatic duration test (set)

First the sub-station must have been identified in the menu "Basic setup/Sub-station Setup"

Before a command is carried out in multi-master mode a question appears asking whether the command applies just for this device number or for all the devices in a particular group.

The M3 function can only be triggered if all the control units are bundled via the CG-S bus and CGVision is not being used.

2 Block & Reset Alarms

- 2.1 Block device
- 2.2 Release device
- 2.3 Manual reset
- 2.4 Reset DeepDischarge
- 2.5 Reset ISO-failure

3.15
Function keys

3.16
Optional inputs

3.17
Serialnumber & Type

3.18
Password protection

3.19
Daylight saving time

3.20
Service info

5 Luminaire setup

5.1
Add/Remove

5.2
Luminaire search

5.3
Text-assignment

5.4
Switch assingnment

3 Basic setup

- 3.1 Language
- 3.2 Date & time
- 3.3 Functiontest
- 3.4 Durationtest
- 3.5 Delaytime Mains Ret.
- 3.6 Manual reset
- 3.7 Relay setup
- 3.8 Buzzer setup
- 3.9 Display setup
- 3.10 Charger setup
- 3.11 Webserver-Setup
- 3.12 Timer setup
- 3.13 Substation setup
- 3.14 Connection to BMS

4 Circuit setup

4.1
Monitoring Mode

4.2
Switch assingnment

4.3
Text-assignment

4.4
get nrew rated Value

6 Logbooksetup

6.1
Search logbook

6.2
Delete logbook

6.3
Save configuration

6.4
Load configuration

7 Send ServicePinMsg

7.4.1 Menu 1: "Test & Statusmenu"

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg
```

```
Start functiontest
Start durationtest
Cancel durationtest
ISO monitor test
etc.
```

☞ <ok>

Menu 1.1:

☞ <ok> triggers a function test for the linked final circuit:

The default message "Function Test" appears in the LC display.

After programmable mains period (15 s to 900 s) a battery test is carried out (approx.

3 min.). If a fault is registered an error message appears in the default display.

In the following sub-menus in the Test & Statusmenu ("1.4 Sum failure info" etc.) further information can be found.

Menu 1

```
Start functiontest
Start durationtest
Cancel durationtest
ISO monitor test
Sum failure
Circuit-state
Luminaire-state
DLS/TLS/3Ph-state
Charging-/Bat.state
Relay-state
Substationstate
```

```
Start functiontest
Start durationtest
Cancel durationtest
ISO monitor test
etc.
```

☞ <ok>

Menu 1.2:

☞ <ok> triggers a duration test:

The default message "Durationtest" and the duration of the test (up to a programmed nominal operating time) appear in the graphic display. (see Menu 3.17 <<Serialnumber & Type>>)

If the programmed nominal operating time (see Menu 3.17 "Serialnumber & Type") is not reached, the message "Load/Battery Fault" appears in the default display.

In this case the battery pack must be checked and changed if necessary!

☞ Selection of the menu points with the keys ↓↑

☞ <ok>:

confirm selection

☞ <Menu>: Exit

and return to

previous menu

(with input of any

changes made)

☞ <ESC>: Exit

and return to

previous menu

(without input

of any changes

made)

■ flashing input

prompt

```
Start functiontest
Start durationtest
Cancel durationtest
ISO monitor test
etc.
```

☞ <ok>

Menu 1.3:

☞ <ok> triggers the termination of the current duration test:

The default display appears once again with information on the current system operations.

```
Start durationtest
Cancel durationtest
ISO monitor test
Sum failure
etc.
```

☞ <ok>

Menu 1.4:

☞ <ok> the following text appears if the device is in battery mode:

```
ISO monitor test
ISO-Failure +
ISO-Failure -
```

By pushing the OK button in the respective line, an appropriate failure is generated, which is displayed as „Isolation failure“ in the last line. If the test fails, the text „ISO monitor failure“ is displayed in the last line.

```
ISO monitor test
not possible at
actual state !!!
Continue With MENU
```

If this display appears, the battery mode has to be started by the operator (e.g. FT, DT, mains failure).

```
Start durationtest
Cancel durationtest
ISO monitor test
Sum failure info
etc.
```

☞ <ok>

Menu 1.5: Shows the list of error messages

☞ Step-by-step questioning with ↓↑

If several error messages these can be displayed in the graphic display on a step-by-step basis.

```
Sum failures
Fault 1
Fault 2
Fault 3,
etc.
```


Overview:

Main menu

```

Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg

```

Menu 1

```

Start functiontest
Start durationtest
Cancel durationtest
ISO monitor test
Sum failure
Circuit-state
Luminaire-state
DLS/TLS/3Ph-state
Charging-/Bat.state
Relay-state
Substationstate

```

Selection of the menu points with the keys $\downarrow \uparrow$

<ok>: confirm selection

<Menu>: Exit and back to previous menu (with input of any changes made)

<ESC>: Exit and back to previous menu (without input of any changes made)

Flashing input prompt

```

Start durationtest
Cancel durationtest
ISO monitor test
Sum failure info
Circuit-state
etc.

```

<ok>
Menu 1.6:

```

Circuit: 1
Normal operation
FT-current 0,0 A
Circuit 1

```

Line 2: Possible status messages:

Circuit blocked
Battery operation
Normal operation
Function test process
Functiontest
Mains emergency service

Selection of the entry field with $\downarrow \uparrow$

Selection of the circuit with $\leftarrow \rightarrow$

Exit and back to Menu 3 with <Menu> or <ESC>

Line 3: Display of additional information "FT-Current 1,2 A"

```

Start durationtest
Cancel durationtest
ISO monitor test
Sum failure info
Circuit-state
Luminaire-state
etc.

```

<ok>
Menu 1.7:

```

Circuit: 1
.... 5 .... 10 .... 15 .... 20
Luminaire name

```

Select entry fields/lines with $\downarrow \uparrow$

Select circuit with $\leftarrow \rightarrow$

In line 3 the current settings for the luminaire addresses for the power circuit selected are shown (1 ... 20):

☐ Luminaire off (pos. 1)
☒ Luminaire on (pos. 2)
☐ Luminaire faulty (pos. 3)
– no luminaire parametrised (pos. 4) (see "6 Luminaire Setup")

Select luminaire (line 2) with $\leftarrow \rightarrow$

The name of the luminaire appears in line 4 (see "6.2 Text-assignment")

```

Start durationtest
Cancel durationtest
ISO monitor test
Sum failure info
Circuit-state
Luminaire-state
DLS/TLS/3Ph-state
etc.

```

<ok>
Menu 1.8:

```

Optional inputs
1 2 3 4 5 6 7 8
☐ ☐ ☐ ☐ ☐ ☒ ☒ ☒

```

In lines 2/3 the current status of the optional input is shown

```

Cancel durationtest
ISO monitor test
Sum failure info
Circuit-state
Luminaire-state
DLS/TLS/3Ph-state
Charging-/Bat.state
etc.

```

<ok>
Menu 1.9:

```

U=26,8 V I = +0,2A
T= +18.0°C BT:03:00h
Load status 95%
Message line

```

The current load and battery status is shown (see adjacent example display):

U : current battery power

I : current load current /

discharge current

Duration test : last attainable operating duration in hours

Display of current battery load status in line 3 based on 3.11 "Charger Setup"

Messages are only shown in line 4 if there is an operating fault. $\leftarrow \rightarrow$ can be used for selection in the case of several faults. Battery string faults will be displayed after a function test.

```

Cancel durationtest
ISO monitor test
Sum failure info
Circuit-state
Luminaire-state
DLS/TLS/3PhW-state
Charging-/Bat.state
Relay-state
Substationstate

```

<ok>
Menu 1.10:

```

Relay: 1
Status: switched

```

Note:
Also see menu point 3.7 "Relay setup" in Menu 3 "Basic setup"

Line selection (lines 1 / 3) with $\downarrow \uparrow$

Selection of a relay in line 1 with $\leftarrow \rightarrow$

The current relay status is shown in line 4

Select either "switched" or "non-switched" in line 3 (e. g. for test purposes) with $\leftarrow \rightarrow$

```

Luminaire-state
DLS/TLS/3PhW-state
Charging-/Bat.state
Relay-state
Substationstate

```

<ok>
Menu 1.11:

```

Systemaddress: 1
Status message
Fault information
Name of station

```

Select a station in line 1 with $\leftarrow \rightarrow$

The current operating status for the ZB-S station is shown in line 2 via multi-master mode M3.

7.4.2 Menu 2: “Block & Reset Alarms”

Overview:

Main menu

```

Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg

```

Menu 2

```

Block device
Release device
Manual reset
Reset DeepDischarge
Reset ISO-failure

```

☞ Selection of the menu points with the keys ↓↑

☞ <ok>: confirm selection

☞ <Menu>: Exit and return to previous menu (with input of any changes made)

☞ <ESC>: Exit and return to previous menu (without input of any changes made)

■ flashing input prompt

```

Block device
Release device
Manual reset
Reset DeepDischarge

```

☞ <ok>
Menu 2.1:

```

Blocked (Menu)
U= 20,5V      I= 0,2A
Error message
L1:      L2:      L3:

```

☞ Use key ↓↑ to select from the options shown.

☞ <ok> triggers the function:

All functions are aborted;

All exits are switched voltage free!

There is no battery operation in the event of mains power failure.

During maintenance work at final circuits they must also be disconnected. (see 8.3 Enabling of end circuits with maintenance work)

```

Block device
Release device
Manual reset
Reset DeepDischarge

```

☞ <ok>
Menu 2.2:

```

Normal operation
U= 20,5V      I= 0,2A
Error message
L1:      L2:      L3:

```

☞ <ok> triggers the function:

The selected stations are unblocked and resume operations.

```

Block device
Release device
Manual reset
Reset DeepDischarge

```

(Menu 2.3: only direct to the station)

☞ <ok> triggers the function, if this option has been activated under menu point 3 “Basic setup”:

If the option “Manual Reset (On)” has been activated (Menu “Basic setup/ Manual Reset”) there is no automatic resumption of normal operations following power

recovery after a power failure.

This ensures that the emergency lighting remains on until it has been confirmed that, for example, in a cinema, the normal lighting has been reactivated.

```

Block device
Release device
Manual reset
Reset DeepDischarge

```

(Menu 2.4: only direct to the station)

☞ <ok> triggers the function:

After the error message “Deep Discharge Protection” in the default display, receipt of the message is acknowledged with this menu point.

The controls return to normal operations if there are no further error messages.

After the error message “Deep Discharge Protection” in the default display the batteries must be checked and changed if necessary.

```

Release device
Manual reset
Reset DeepDischarge
Reset ISO-failure

```

(Menu 2.5: only direct to the station)

☞ <ok>

Upon confirmation the controls for the LP-STAR station return to normal operations if there are no further error messages.

7.4.3 Menu 3: "Basic setup"

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg
```

Menu 3

```
Language
Date & Time
Functiontest
Durationtest
Delaytime Mains Ret.
Manual reset
Relay setup
Buzzer setup
Display setup
Charger setup
Webserver-Setup
Timer setup
Substation setup
Connection to BMS
Function keys
Optional input
Serialnumber & Type
Password protection
Daylight saving time
Service info
```

- ☞ Selection of the menu points with the keys $\uparrow\downarrow$
- ☞ $\langle\text{ok}\rangle$: confirm selection
- ☞ $\langle\text{Menu}\rangle$: Exit and return to previous menu (with input of any changes made)
- ☞ $\langle\text{ESC}\rangle$: Exit and return to previous menu (without input of any changes made)
- flashing input prompt

```
Language
Date & Time
Functiontest
Durationtest
etc....
```

☞ $\langle\text{ok}\rangle$ Menu 3.1: The current language set Language is shown¹⁾

- ☞ Use key $\uparrow\downarrow$ to chose the language
- ☞ Exit and return to Menu 3 with $\langle\text{Menu}\rangle$

²⁾ Switch only possible if memory card inserted.

- ☞ Select date and time positions with $\uparrow\downarrow$
- ☞ Changes with $\leftarrow\rightarrow$
- ☞ Exit with $\langle\text{Menu}\rangle$. The following prompt appears:

synchronize
Substations?

Menu = No OK = Yes

```
Language
Date & Time
Functiontest
Durationtest
etc....
```

☞ $\langle\text{ok}\rangle$ Menu 3.2: Date & Time We 11.01.12 12:00

Date & Time
We 11.01.12 12:00

Sync. Master: Yes

Setting the system time (current date and time) for the internal clock in the control unit.

Note: If the device is put out of operation for more than 30 days, the time must be checked.

```
Language
Date & Time
Functiontest
Durationtest
etc. ...
```

☞ $\langle\text{ok}\rangle$ Menu 3.3: F-Test Date & Time We 11.12.02 12:00

F-Test Date & Time We
11.12.02 12:00

FT-lead time 300s $\leftarrow\rightarrow$
Days between FT: 07

Determine the start time (date and time) for the first function test and the interval (1 to 14 days) for the following function test. (Factory setting: every 7 days)

Determine the function test lead time in 15 s-steps (factory setting: 300 s) for all luminaires with End of Life (EoL) shut-off.

```
Language
Date & Time
Functiontest
Durationtest
etc. ...
```

☞ $\langle\text{ok}\rangle$ Menu 3.4: D-Test Date & Ttime We 11.12.02 12:00

D-Test Date & Ttime We
11.12.02 12:00

Duration test end
Months between DT: 12

Determine the start time (date and time) for the first duration test, of Nominal operating duration and the interval (1 ... 12 months) for the following duration test.

After moving the cursor onto the 'Duration test end' line and pressing OK, the following submenu is displayed:

Duration test end
Nominal operating duration 3h $\leftarrow\rightarrow$

- ☞ Select the input position for date, time, of Nominal operating duration and interval (in months) with $\uparrow\downarrow$
- ☞ Changes with $\leftarrow\rightarrow$
- ☞ Close with $\langle\text{Menu}\rangle$

The end of a duration test can be modified with arrow left, arrow right in the yellow line:

Duration test end
Total discharge protection $\leftarrow\rightarrow$
Duration test end
Limit operating duration 67% $\leftarrow\rightarrow$
Total discharge protection
U= 23,6V $\leftarrow\rightarrow$

Meanings:

End of duration test = nominal operating duration: the duration test runs until the set nominal operating duration, i.e. 1h, 2h, 3h or 8h

End of duration test = total discharge protection: the duration test runs until total discharge protection (but to maximum of 99h and 59min)

End of duration test = limit operating duration: the duration test runs until the set percentage of nominal operating duration (i.e. 40 minutes at 1h and 67%)

With the limit operating duration the evaluation voltage may also be entered. When therefore battery voltage at the end of the limit operating duration is lower than the evaluation voltage, a capacity error is displayed. If the nominal operating duration is modified in the Series number and type menu, the preset evaluation voltage also changes analog to the battery types approved by us. Other evaluation voltages may also be used via the above-specified parameters. As such, a duration test to 50% would be feasible, with a correspondingly higher evaluation voltage in accordance with the battery data sheet. The values can only be set on the device, not via CG-Vision or the PC software.

```
Date & Time
Functiontest
Durationtest
Delaytime Mains Ret.
etc. ...
```

☞ $\langle\text{ok}\rangle$ Menu 3.5: Delaytime after mains return in minutes: 10 $\leftarrow\rightarrow$

Delaytime after
mains return in
minutes: 10 $\leftarrow\rightarrow$

Determine the time (1...99 minutes), that the emergency lighting remains on once mains power has been restored.

- ☞ Select 1 ... 99 minutes with the keys $\leftarrow\rightarrow$
- ☞ Exit and return to Menu 3 with $\langle\text{Menu}\rangle$

7 Operating

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg
```

```
Functiontest
Durationtest
Delaytime Mains
Ret.
Manual reset
etc. ...
```

☞ <ok>
Menu 3.6:

Manual reset
deactivated

Activation or deactivation of the "Manual Reset" option

(see Menu 2.3 "Manual Reset")

☞ Switch between "activated" and "deactivated" with ⇌

☞ Exit and return to Menu 3 with <Menu>

Menu 3

```
Language
Date & Time
Functiontest
Durationtest
Delaytime Mains Ret.
Manual reset
Relay setup
Buzzer setup
Display setup
Charger setup
Webserver-Setup
Timer setup
Substation setup
Connection to BMS
Function keys
Optional input
Serialnumber & Type
Password protection
Daylight saving time
Service info
```

```
Delaytime Mains
Ret.
Manual reset
Selective
emergency light
Relay setup
etc. ...
```

☞ <ok>
Menu 3.7:

Relay: 3⇌
Mains operation
Mains failure *
Mains failure subDB*
Charging failure
Circuit failure
Luminaire fault
Sum failure
DeepDischargeProtect.
Isolation failure
Functiontest
Durationtest
DB-FÜB
Device failure
Invert relaycontact
Load default values

Determine for which systems and/or error messages the relays 1 to 4 switch for the signal contacts 1 to 4 (switch status "switched" and "non-switched").

Using these settings it is possible for information on the system operating status to be transmitted to a control system (e. g. with CEAG F3 remote display).

Standard settings in accordance with DIN VDE (see Appendix A) can be entered using the "Load default values" option at the end of this menu.

☞ Select the relay no. (1 to 4) with the keys ⇌

☞ Select the events with the keys ↑↓

☞ Selection between relay switches (*) and relay does not switch (no *) with <ok>

☞ Exit and return to Menu 3 with <Menu>

☞ Selection of the menu points with the keys ↑↓

☞ <ok>: confirm selection

☞ <Menu>: Exit and return to previous menu (with input of any changes made)

☞ <ESC>: Exit and return to previous menu (without input of any changes made)

■ flashing input prompt

Note:

Also see menu point 1.9 "Relay-state" in Menu 1 "Test & Statusmenu".

```
Manual reset
Selective
emergency light
Relay setup
Buzzer setup
etc. ...
```

☞ <ok>
Menu 3.8:

Buzzer setup
Mains operation
Mains failure *
Mains failure subDB*
Charging failure
Circuit failure ■
Luminaire fault
Sum failure
DeepDischargeProt.
Isolation failure
Functiontest
Durationtest
DB-FÜB
Device failure
Load default values

Determine for which systems and/or error messages the buzzers installed in the control cabinet will be activated.

Standard settings in accordance with DIN VDE (see Appendix A) can be entered using the "Load default values" option at the end of this menu.

☞ Select the events with ↑↓

☞ Select either buzzer "ON" (*) or buzzer "OFF" (no *) with the keys ⇌

☞ Exit and return to Menu 3 with <Menu>

i NOTE!

The continuous signal (following the occurrence of the event determined here) can be switched off by clicking on any button.

Overview:

Main menu

Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg

Selective
emergency light
Relay setup
Buzzer setup
Display setup
etc. ...

<ok>
Menu 3.9:

Display setup
Contrast 50%
Brightness on: 100%
Brightness off: 10%

Setting contrast and brightness (background lighting) for the graphic display in the control unit
 Line selection (2 to 4) with $\uparrow\downarrow$
 value settings (0 to 100%) with the keys $\leftarrow\rightarrow$
 Exit and return to Menu 3 with <Menu>

Menu 3

Language
Date & Time
Functiontest
Durationtest
Delaytime Mains Ret.
Manual reset
Relay setup
Buzzer setup
Display setup
Charger setup
Webserver-Setup
Timer setup
Substation setup
Connection to BMS
Function keys
Optional input
Serialnumber & Type
Password protection
Daylight saving time
Service info

Relay setup
Buzzer setup
Display setup
Charger setup
etc. ...

<ok>
Menu 3.10:

Charger setup
Battery capacity 12Ah

Information on control cabinet fittings
 Change the settings with $\leftarrow\rightarrow$
– Line 2: Battery capacity in Ah selectable between 12 and 48
 Exit and back to Menu 3 with <Menu>

Selection of the menu points with the keys $\uparrow\downarrow$

<ok>: confirm selection

<Menu>: Exit and return to previous menu (with input of any changes made)

<ESC>: Exit and back to previous menu. (without input of any changes made)

Flashing input prompt

Charger setup
Printer setup
Relay module setup
Webserver-Setup
etc. ...

<ok>
Menu 3.11:

Installed
DHCP: ????
IP: ????.????.???.
MASK: ????.????.???.

Once the power supply has been connected the web module requires approx. 1.5 minutes to reboot. After it has booted the red service LED on the web module starts flashing.

The service pin must be activated for approx. 1 s to register with the control unit. The "Webserver-Setup" menu appears automatically. An automatic link is then established which is shown in the display with a lot of question marks. After approx. 3-5 s the network settings for the web module appear on the control unit display screen. The web module is now automatically registered with the control unit. This is signalled by the lighting up of the red LEDs on the control unit and the web module. After approx. 1-2 minutes this process is concluded and the web module is operational.

Printer setup
Relay module setup
Webserver-Setup
Timer setup
etc. ...

<ok>
Menu 3.12:

Timer deactivated
00:00 - 23:59
Mo Tu We Th Fr Sa Su
X X X X X X X

Selection of Timer 1, Timer 2 or Timer 1&2 with the keys $\leftarrow\rightarrow$
An X appears under the weekday abbreviation, thus the luminaires are on at the programmed time for this day.

7 Operating

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg
```

Menu 3

```
Language
Date & Time
Functiontest
Durationtest
Delaytime Mains Ret.
Manual reset
Relay setup
Buzzer setup
Display setup
Charger setup
Webserver-Setup
Timer setup
Substation setup
Connection to BMS
Function keys
Optional input
Serialnumber & Type
Password protection
Daylight saving time
Service info
```

Selection of the menu points with the keys ↓↑

<ok>: confirm selection

<Menu>: Exit and return to previous menu (with input of any changes made)

<ESC>: Exit and return to previous menu (without input of any changes made)

flashing input prompt

```
Relay module setup
Webserver-Setup
Timer setup
Substation setup
etc. ...
```

<ok>
Menu 3.13:

```
Search Substations ...
Groupnumber: 07
Substations
S1/S2-Mode: Slave
S3/S4-Mode:-----*
```

<Menu> ends the entry; the following message appears:

```
Device address: 01
Version Z410C
ND 00 09 73 72 96 00
Name of station
```



The selection in the (second) menu serves to display the sub-stations available. Only sub-stations with a pre-set group number are selected; otherwise the error message "Transmission Fault" appears. Using the selection "S1/S2 mode: Master" the whole group can be switched to "Blocked" mode using the F3 switch in the master control unit. The display in the master control unit then shows "Blocked S1/S2" - the message "Blocked LON" then appears on the screens of the control units in the sub-stations

Possible settings:

S1/S2: Slave or Master or ———
S3/S4: Slave or Master or ———

Explanation:

Slave: obeys Master
——: does not obey Master

Master: sends to Slaves and is simultaneously Slave

```
Webserver-Setup
Timer setup
Substation setup
Connection to BMS
etc. ...
```

<ok>
Menu 3.14:

```
Systemaddress: 1
LON-switches No
NID00 05 94 75 52 00
Name of station
```

Using this menu the system is activated and connected to a superior monitoring system via CG-S bus or by using the M3 function.

Line selection (1 to 2) with ↓↑

Select a device (bus) address (1 ... 32) in line 1 with the keys ←→ (display—: no connection)

Select No/Yes in line 2 for the LON switch option with ←→

Line 4: Name of the station can be freely defined. See text-assignment 4.3

Exit and return to Menu 3 with <Menu>

Note:

The entries in lines 3 and 4 serve as Information for the systems integrator.

```
Timer setup
Substation setup
Connection to BMS
Function keys
etc. ...
```

<ok>
Menu 3.15:

```
Function key 1
No function
Switch
Block device *
Sim.mainsfailuresubDB
Reset ISO-failure
Manual reset
Reset DeepDischarge
FT without forerun
Show sumfailures
Maintained off
non maintained on
```

Using this menu point the function keys (F1 ... F3 in the control unit) can be allocated to functions that are immediately carried out when the relevant key is clicked.

Naturally, one function only can be assigned to a key; the asterisk disappears if a different function is allocated to a key.

Selection of function key (1 to 3) with the keys ←→

Select the function with ↓↑

Select the function (*) with the <ok> key

Exit and return to Menu 3 with <Menu>

Overview:

Main menu

Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg

Substation setup
Connection to BMS
Function keys
Optional inputs
etc. ...

<ok>
Menu 3.16

Optional input 1
No function
Switch
Inverted switch*
Manual reset
Reset DeepDischarge
Start functiontest
Start durationtest
Cancel FT/DT
Block device
maintained off
non-maintained on
Ventilatormonitor.
Ext. ISO Monitor
Ext. Battery Monitor
Ext. Monitor

Using this menu point the digital 230 V input (IN1 ... IN8) can be allocated to functions which are immediately carried out when the relevant 230 V digital inputs are controlled.

One function only can be assigned to one input; the asterisk disappears if a different function is allocated to an input.

- ☞ Select the optional input (1 to 8) with the keys ↵
- ☞ Select the events with ⬆
- ☞ Select the function (*) with the <ok> key
- ☞ Exit and return to Menu 3 with <Menu>

Menu 3

Language
Date & Time
Functiontest
Durationtest
Delaytime Mains Ret.
Manual reset
Relay setup
Buzzer setup
Display setup
Charger setup
Webserver-Setup
Timer setup
Substation setup
Connection to BMS
Function keys
Optional input
Serialnumber & Type
Password protection
Daylight saving time
Service info

- ☞ Selection of the menu points with the keys ⬆

☞ <ok>:
confirm selection

☞ <Menu>: Exit and return to previous menu (with input of any changes made)

☞ <ESC>: Exit and return to previous menu (without input of any changes made)

■ flashing input prompt

Connection to BMS
Function keys
Optional inputs
Serialnumber & Type
etc. ...

<ok>
Menu 3.17:

Type: LP-STAR
Rated duration 3h
Min. duration 100%
Serialnr.:1234567/02

- ☞ Line selection (1 - 3) with ⬆
- ☞ Selection of nominal operating time (1, 2, 3 or 8h) and operating limit (10 to 100%) with the keys ↵. The nominal operating time and the operating limit form the basis for the service life test.

☞ Exit and return to Menu 3 with <Menu>

❗ IMPORTANT INFORMATION!

The functions "Switch", "Switch Inverted", "Ventilator Monitoring", "Ext. ISO Monitor", "Ext. Battery Monitor" and "Ext. Monitor" require a 230 V level control. All other functions require an edge triggered signal from LOW to HIGH.

Notes:

- 1) The "Switch" assignment enables integration in the switch assignment (see Menu points 4.2 and 5.4 "Switch Assignment" in the menus 4 "Circuit Setup" and 5 "Luminaire Setup" respectively).
- 2) The allocation "Inverted Switch" triggers the function when the digital inputs are inverted.

❗ NOTE!

Factory setting = 100%

A change to this setting to the operating limit must be carried out by customer services.

7 Operating

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg
```

Menu 3

```
Language
Date & Time
Functiontest
Durationtest
Delaytime Mains Ret.
Manual reset
Relay setup
Buzzer setup
Display setup
Charger setup
Webserver-Setup
Timer setup
Substation setup
Connection to BMS
Function keys
Optional input
Serialnumber & Type
Password protection
Daylight saving time
Service info
```

```
Function keys
Optional inputs
Serialnumber & Type
Password protection
etc. ...
```

<ok>
Menu 3.18:

```
Password protection
deactivated
Password: (6 digits)
```

Selection of the settings
"Deactivated" and "Activated" with
the keys ↔

If "Activated" is selected the password
prompt also appears:

```
Password protection
activated
Password: (6 digits)
Password: 1 2 3 1 2 3
```

Enter password (entry of numbers
only possible using keys F1, F2 or F3)
Exit and return to Menu 3 with
<Menu>

Note:

If password protection is activated this prompt is only accessible if the current valid password has already been entered. This password prompt appears if a blocked (sub) menu was selected in the main menu. The password is entered using the keys F1=1, F2=2, F3=3; a flashing square marks the current entry position.

```
Password: 1
```

The selection of the input position is
carried out via the keys ↔

In the case of activated password protection all the menus except status menus are blocked for use without a password.

Selection of the
menu points
with the keys ↓↑

<ok>:
confirm
selection

<Menu>: Exit
and back to
previous
menu
(with input of
any changes
made)

<ESC>: Exit
and return to
previous menu
(without input
of any changes
made)

flashing input
prompt

```
DLS/TLS/3Ph-state
Serialnumber & Type
Password protection
Daylight saving
time
Service info
```

<ok>
Menu 3.19:

```
Daylight saving time
(Sunday / Month)
Start: 0 /03
End: 0 /10
```

Selection of the setting with the
keys ↔

Time to be set is the sunday of the
month where the change over of
summertime to wintertime effects.

Selection of the entry field with ↓↑

Exit and return to Menu 3 with
<Menu>

Note:

5 corresponds to the last Sunday
of the month.

```
Serialnumber & Type
Password protection
Daylight saving
time
Service info
```

<ok>
Menu 3.20:

```
ATMega 128: Z270.0
ATMega 168: Z272.0
Neuron FTT10A: Z271.0
Continue with MENU
```

This is a display for Information about the
status of the control software installed (e. g.
required for queries from CEAG customer
services)

7.4.4 Menu 4: "Circuit setup"

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg
```

Menu 4

```
Monitoring Mode
Switch assingnment
Text-assignment
get nrew rated Value
```

- ☞ Selection of the menu points with the keys ↓↑
- ☞ <ok>: confirm selection
- ☞ <Menu>: Exit and return to previous menu (with input of any changes made)
- ☞ <ESC>: Exit and back to previous menu (without input of any changes made)
- Flashing input prompt

```
Monitoring Mode
Switch assingnment
Text-assignment
get nrew rated Value
```

Menu 4.1:
☞ <ok>

```
Circuit:2 ↕
current monitoring ↕
max. deviation 20% ↕
Circuit name
```

- ☞ Selection of lines 1, 2, 3 and/or the input fields in line 1 with ↓↑
- ☞ step-by-step power circuit selection with ↕. The name of the power circuit appears in line 4 (see Menu 5.2)
- ☞ Selection of a monitoring type with the keys ↕
- ☞ Exit and return to Menu 4 with <Menu>

Notes:

The above display shows as an example the selection of "Current Monitoring" for power circuit 2.

The following modes can be selected in line 2:

- CG monitoring
- Current monitoring
- Reserve circuit

A prerequisite for the surveillance mode "CG Monitoring" is CG-S EVGs/modules and addressable luminaires from the CEAG programme.

In the case of other luminaires a function check can be carried out with the "Current Monitoring" mode based on the current flow of power in an entire lamp circuit (see the settings under "4.4 get nrew rated Value").

With the selection of "Current Monitoring" the permissible deviation (1 ... 20%) which was determined from the reference value under "4.4 get nrew rated Value" and from which no error message is generated in a function test, is requested in line 3. In order that the failure of the weakest luminaire in an end power circuit can be registered, the following should be selected:

$$\text{perm. dev.} < \frac{P_{\min}}{P_{\text{ges}}} \times 100 \quad (P_{\min} = \text{output of the smallest luminaire})$$

$$(P_{\text{ges}} = \text{output of all installed luminaires})$$

```
Monitoring Mode
Switch assingnment
Text-assignment
get nrew rated Value
```

Menu 4.2:
☞ <ok>

```
Circuit:2 ↕
by luminaire setup ↕
Circuit name
```

- ☞ Selection of lines 1, 2, 3 and/or the input fields in line 1 with ↓↑
- ☞ step-by-step selection of (end) power circuit with ↕
- In line 4 the message "Circuit Text" or a circuit name appears
- ☞ Selection of the settings in lines 2 and 3 with the keys ↕
- ☞ Exit and return to Menu 4 with <Menu>

In addition the optional inputs 1 ... 8 can be declared switches (see Menus 3.16 under "Basic setup").

7 Operating

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Logbooksetup
Send ServicePinMsg
```

Menu 4

```
Monitoring Mode
Switch assingnment
Text-assignment
get nrew rated Value
```

- ☞ Selection of the menu points with the keys ↓↑
- ☞ <ok>: confirm selection
- ☞ <Menu>: Exit and return to previous menu (with input of any changes made)
- ☞ <ESC>: Exit and back to previous menu (without input of any changes made)
- ☞ Flashing input prompt

```
Monitoring Mode
Switch assingnment
Text-assignment
get nrew rated Value
```

Menu 4.3:

☞ <ok>

```
Text-assignment
Circuit:2↔
Circuit name
```

Notes:

Using this menu power circuits can be given names or their names can be altered, without any need to change the configuration.

It is necessary to carry this out e. g. when the device is first commissioned.

Circuit names are saved to the memory card and displayed in the graphic display menu as an operational tool. If no memory card has been installed, no text assignments can be made via CU CG-S!

- ☞ Selection of lines 2 or 4 and/or the input fields in line 2 with ↓↑
- ☞ step-by-step selection of power circuit with ↔
- ☞ Change circuit name:
 - Select line 4 with ↓↑
 - Selection of input position with ↔
 - Using the cursor ↓↑ all the alphanumeric characters possible are displayed as a cycle.
 - If the name has been entered in full, the entry can be confirmed with <ok>. The remaining characters behind the actual position of the cursor are deleted
- ☞ Exit and return to Menu 4 with <Menu>

```
Monitoring Mode
Switch assingnment
Text-assignment
get nrew rated Value
```

Menu 4.4:

☞ <ok>

```
All circuits
Circuit:
Monitoring mode
Circuit name
```

Once the procedure has been concluded the control unit returns to "Circuit Setup" in Menu 4.

A premature abort is possible by clicking the <ESC> or <Menu> keys.

Notes:

By confirming your selection with <ok>, the "get nrew rated Value" procedure is started. The duration of this procedure depends on the number of circuits installed.

Successively a reference current value is determined and stored for all the power circuits in battery operations where the Monitoring Mode has been set "Current Value Surveillance" (see 4.1 "Monitoring Mode"). This value then serves as the basis for the diagnosis of malfunctions (e. g. malfunction of luminaires).

All the luminaires included must be installed and fully operational!

7.4.5 Menu 5: "Luminaire setup"

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Memory card
Send ServicePinMsg
```

Menu 5

```
Add/Remove
Luminaire search
Text-assignment
Switch assignment
```

☞ Selection of the menu points with the keys ↓↑

☞ <ok>: confirm selection

☞ <Menu>: Exit and return to previous menu (with input of any changes made)

☞ <ESC>: Exit and back to previous menu (without input of any changes made)

■ Flashing input prompt

```
Add/Remove
Luminaire search
Text-assignment
Switch assignment
```

☞ <ok>
Menu 5.1:

```
Circuit:          2↔
....5....10....15...2
□-□-□-□-...□□-...
Luminaire text
```

Notes:

In the positions 1 to 20 only "Available" (□) or "Not Available" (–) is displayed. This means that even individual luminaires can be removed (not available) in a very targeted manner.

Functionality and/or switching status can be queried in Menu 1.6 "Luminaire-state" for CG-S LEDs.

☞ Selection of line 1 and/or the input fields in line 1 with ↓↑

☞ step-by-step selection of (end) power circuit with ↔

In line 3 the current settings for the luminaires (1 to 20) in the power circuit selected are displayed:

□ Luminaire is available (pos. 1)

– no luminaire parametrised (pos. 2)

☞ Selection of a luminaire (line 2) with ↔ (e.g. flashing cursor in position 3)

In line 4 the luminaire text (name, if already entered) is shown.

Using the <ok> key a luminaire is placed in or removed from the position selected.

```
Add/Remove
Luminaire search
Text-assignment
Switch assignment
```

☞ <ok>
Menu 5.2:

```
All circuits
Circuit:          2↔
Circuit name
```

☞ Selection of lines 1 and 2 and/or the input fields in line 2 with ↓↑

☞ step-by-step selection of (end) power circuit with ↔

☞ All connected luminaires incl. the addresses of a device are automatically sought and displayed. Please note that luminaires with double addresses in a circuit are only recognised as 1 address. If necessary correct your luminaire addresses in the relevant circuit.

```
Add/Remove
Luminaire search
Text-assignment
Switch assignment
```

☞ <ok>
Menu 5.3:

```
Circuit:          2↔
....5....10....15...2
□-□-□-□-...□□-...
Luminaire text
```

☞ Selection of lines 1, 2, 4 and/or the input fields in line 1 with ↓↑

☞ Step-by-step selection of the final circuit with ↔

☞ In line 3 the current settings for the luminaires (1 to 20) are displayed in the circuit selected Luminaire is available (pos.1) – no luminaire parametrised (pos. 2)

☞ Select luminaire (line 2) with ↔ (e.g. flashing cursor in position 3) In line 4 the message "Luminaire Text", for example, is displayed either as a default setting or, if already defined, as a luminaire name.

Notes:

Using this menu luminaire layouts can be viewed and luminaire names given or changed, without the need to change the luminaire configuration.

It is necessary to carry this out e. g. upon first commissioning or after the addition/removal of luminaires.

These luminaire names are saved to the memory card and displayed in the graphic display menu as an operational tool. If no memory card has been installed, no text assignments can be made!

☞ Change the luminaire name:

Select line 4 with ↓↑

Selection of input position with ↔

Using the cursor ↓↑ all the alphanumeric characters possible are displayed as a cycle. If the name has been entered in full, the entry can be confirmed with <ok>. The remaining characters behind the actual position of the cursor are deleted

7 Operating

Overview:

Main menu

```
Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Memory card
Send ServicePinMsg
```

Menu 5

```
Add/Remove
Luminaire search
Text-assignment
Switch assignment
```

☞ Selection of the menu points with the keys $\uparrow\downarrow$

☞ <ok>: confirm selection

☞ <Menu>: Exit and return to previous menu (with input of any changes made)

☞ <ESC>: Exit and back to previous menu (without input of any changes made)

■ Flashing input prompt

```
Add/Remove
Luminaire search
Text-assignment
Switch assignment
```

☞ <ok>
Menu 5.4:

```
Circuit:2
....5....10....15...2
Line 3
Luminaire text
```

- ☞ Line selection (lines 2 and 3) with $\uparrow\downarrow$
- ☞ Selection of a luminaire in line 2 with the keys $\leftarrow\rightarrow$ (In line 4 "Not Installed" or the luminaire name is displayed)
- ☞ Possible selections in line 3 with the keys $\leftarrow\rightarrow$ (see following table)
In the event of two switch assignments in line 3, it is possible to switch between these displays using the keys $\uparrow\downarrow$.
- ☞ Exit and return to Menu 5 with <Menu>

Table of selection options in line 3 for an installed CG-S luminaire

"Without CG-S Function"	The luminaire is not individually monitored and not switchable
"non maintained"	The CG-S luminaire is individually monitored and in normal operations it is switched off
"Maintained light"	The CG-S luminaire is individually monitored and in normal operations it is switched on
"Query1 / Query2"	The CG-S luminaire is individually monitored and it has been allocated a specific switch configuration. It can be allocated 2 switches: "OptInp x $\leftarrow\rightarrow$ OptInp x" Or linkage It can be allocated with 1 timer and a switch: "Timer 1 $\leftarrow\rightarrow$ OptInp x $\leftarrow\rightarrow$ " "Timer 2 $\leftarrow\rightarrow$ OptInp x $\leftarrow\rightarrow$ " "Timer 1&2 $\leftarrow\rightarrow$ OptInp x $\leftarrow\rightarrow$ "

7.4.6 Menu 6: "Memory card"

Overview:

Main menu

Test & Statusmenu
Block & Reset Alarms
Basic setup
Circuit setup
Luminaire setup
Memory card
Send ServicePinMsg

Menu 6

Search logbook
Delete logbook
Save configuration
Load configuration

Menu 7

Function is started
directly from main
menu by clicking on
<ok>

Selection of the menu
points with the keys ↓↑

<ok>:
confirm selec-
tion

<Menu>: Exit
and return to
previous menu
(with input of
any changes
made)

<ESC>: Exit
and back to
previous menu
(without input
of any changes
made)

Flashing input
prompt

Search logbook
Delete logbook
Save configuration
Load configuration

<ok>

Menu 6.1:

11.05.12 12:30:00
Event
Line 3
Line 4

In lines 3 and 4 poss. further information
is displayed regarding the event displayed
in line 2:

In the event of an LED disruption under CG
surveillance e. g.:

Line 3: "Circuit No."

Line 4: Address(es) of the faulty luminaire(s):

□□-□□□□□□-□□□□□□-□□□□

In the example shown the luminaires 6, 13
and 14 are faulty- the luminaires 3, 10 and
16 to 20 are not installed.

selection of the log book entries with ↵

- In line 1: Display of date and time for
the event displayed

- In line 2: Report on type of event
e. g. "Luminaire failure" with more
information in lines 3 and 4

- If, when leafing through the log book
entries the end or the beginning were
reached once again, a corresponding
note must be made.

Exit and return to Menu 6 with
<Menu>

Search logbook
Delete logbook
Save configuration
Load configuration

<ok>

Menu 6.2:

Do you really wish
to delete
the logbook?
Menu = No OK = Yes

<Menu>: **No deletion** and return to
Menu 7 "Memory Card"

<Enter>: **All the log book entries on
the memory card are deleted!**
Return to Menu "6 Memory Card"

IMPORTANT INFORMATION!

Deleted log book entries cannot be retrieved!

Search logbook
Delete logbook
Save configuration
Load configuration

<ok>

Menu 6.3:

Save configuration on
MemoryCard?
Menu = No OK = Yes

<Menu>: **No storage** and return to
Menu "7 Memory Card"

<Enter>: **All entries on the memory
card are deleted and overwritten with
the current device configuration!**
Return to Menu 6 "Memory Card"

Search logbook
Delete logbook
Save configuration
Load configuration

<ok>

Menu 6.4:

Load configuration
from memory card?
Menu = No OK = Yes

<Menu>: **The existing device
configuration is maintained** and
return to Menu 6 "Memory Card"

<Enter>: **The existing device
configuration is overwritten with
the entries on the memory card!**
A new start-up is then carried out.
Return to default display

IMPORTANT INFORMATION!

The current configuration will be irretrievably
overwritten by the new configuration!

8 Maintenance / checks

8.1 Safety instructions

WARNING!

Danger of injury! Incorrect maintenance work can result in serious injury to persons or damage to property. This work may therefore only be carried out by authorised, trained personnel who are familiar with the operation of the device and in compliance with all the safety regulations.

- Before the work is started the device must be switched off and safeguarded against reconnection.

8.2 General information on maintenance / checks

The inspections and safety checks prescribed by law and guidelines must be carried out on a regular basis. The organisation and monitoring of this work is the responsibility of the operator of the emergency lighting system!

The following must be recorded in writing and must be available at all times:

- Type and scope of the work
- Documentation of the work results
- Responsibilities and authorisation for the execution of the work
 - Which persons may carry out what work?
 - Which persons are responsible for monitoring the work?
- Reporting duties (e. g. in the case of incidents or function tests)
- Organisational measures for work on the emergency lighting system, e. g.
 - Information and reporting duties regarding the start, duration and end of the work
 - Safety measures whilst carrying out the work, e. g. Replacement lighting, disconnection of the power supply and safeguards ensuring that it cannot be reconnected (e. g. removal of the fuses, key actuators, signs)
 - Protection and safety devices for the personnel working on the equipment (e. g. appropriate safety clothing and personal safety equipment)
 - Protection and safety equipment to protect against hazards that originate from the adjacent equipment
 - (e. g. safety grilles, barriers, safeguarding of traffic routes)

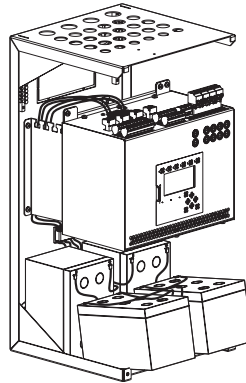
The maintenance and repair work on your emergency lighting system can be carried out by the Customer Services team at CEAG Notlichtsysteme GmbH at any time. (see Customer Services Service Agreement in the appendix).

Our Customer Services locations can be found throughout Germany. Please refer to the "Locations: CEAG Customer Services" in the appendix.

In addition, in order to simplify your organisation we can also offer you a maintenance contract for your safety lighting!

This maintenance contract includes an annual maintenance check and the following work:

- Check the mains/emergency lighting switch function for the devices
- Visual inspection of the electrical components and the batteries in all the devices
- Mechanical inspection of the devices
- Check the charging current and the charging current regulation
- Annual measurement of the battery voltage at load start i.e. the measurement of the cell voltage.



In order to be able to measure the block voltage of the furthest battery blocks, the front battery blocks must be removed as illustrated.

- Functionality check of the other electronic components
- Inspection of the lights only for luminaires with CG monitoring
- Rated operating time check (capacity test) of the accumulators

Faults and disruptions must be rectified after two weeks at the latest. However, this does not release the operator from the duty to take immediate measures.

The annual system check with measurements of the battery voltage is a requirement in accordance with EN 50171.

During the nominal operating time check the ambient temperature of the batteries must be recorded.

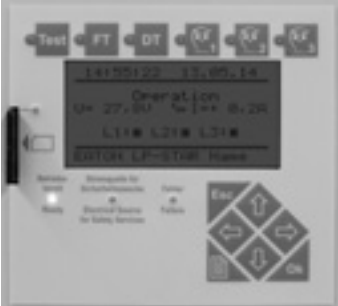
The maintenance work does not include repairs and/or overhauls, in particular the replacement of faulty electronic components or faulty lights.

NOTE!

In the event of returns you need an RMA number from us. You will find more information about this on our website at www.ceag.de!

8.3 Enabling of end circuits with maintenance work

Block the device via the control unit (illustration). (Menu point 7.4.2)



Overview:

Main menu

Test & Statusmenu

Block & Reset Alarms

Basic setup

DLS/TLS setup

Circuit setup

Luminaire setup

Memory card

Send ServicePinMsg

Menu 2

Block device

Release device

Manual reset

Reset DeepDischarge

Reset ISO-failure

Search for ISO failure

Selection of the menu points with the keys $\uparrow \downarrow$

$\langle \text{ok} \rangle$

Block device

Release device

Manual reset

Reset DeepDischarge

$\langle \text{ok} \rangle$

Menu 2.1:

U=26.8 V

I1= +0.5A I= +0.00A

Error message

Message line

L1:L2: L3

$\langle \text{ok} \rangle$ triggers the function:
All functions are aborted; All exits are switched voltage free!
There is no battery operation in the event of mains power failure.

Block device

Release device

Manual reset

Reset DeepDischarge

$\langle \text{ok} \rangle$

Menu 2.2:

U=26.8 V

I1= +0.5A I= +0.00A

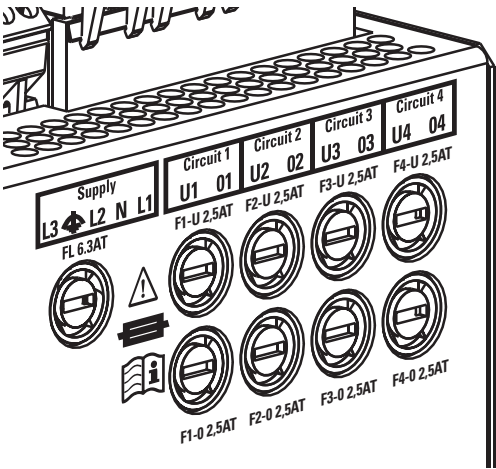
Error message

Message line

L1:L2: L3

$\langle \text{ok} \rangle$ triggers the function:
The selected stations are unblocked and resume operations.

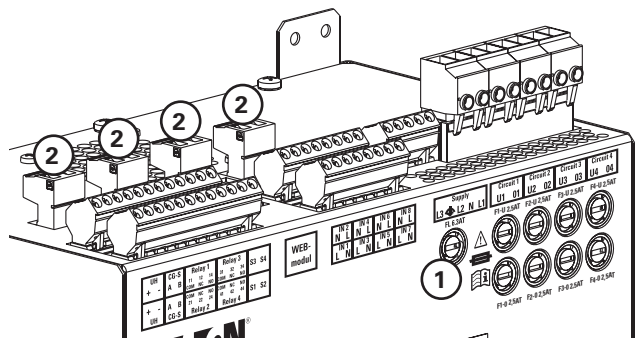
Before starting the maintenance work in the final circuit this must be disconnected at all phases. The final circuit fuses must be removed.



Once the maintenance work has been completed reverse the procedure and lift the blocking of the control unit.

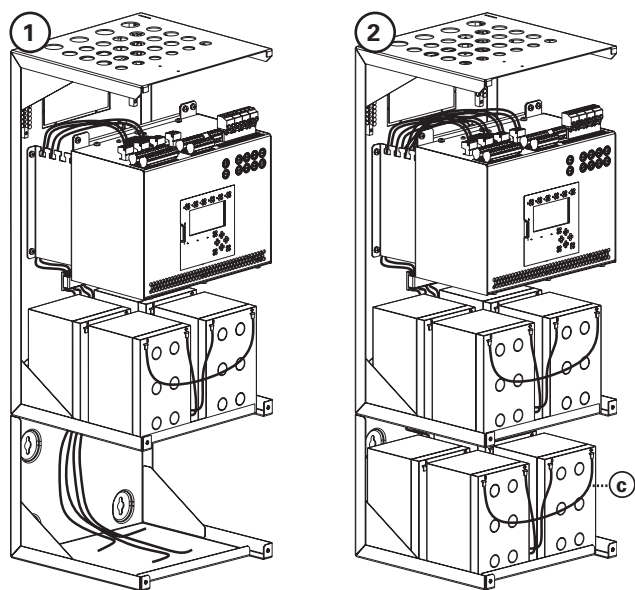
8.4 Switch-off batteries for maintenance service

Please block at first the emergency function to avoid discharging of the batteries. To block the emergency function see menu 2 "Blocking / Reset". After blocking please remove the mains fuse (1) and the battery line terminals (2).



- ① Mains fuse
- ② Battery line terminals

8.5 Deinstallation of Battery blocks



NOTE!

Steps for deinstallation of batteries in string 4:

- Please deinstall at first wire ③ (pic. 2)
- Please deinstall the minus cable.
- At last the plus cable.
- If necessary repeat the procedure for the other battery strings.

To install the batterie please use the steps reverse. See chapter 5.3.

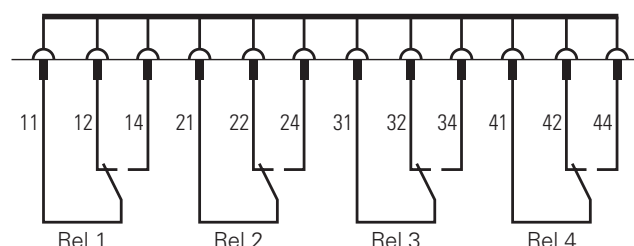
Appendix A: VDE requirements for remote alarm contact and buzzer

Designation	Default settings				Buzzer	Notes / comments
	Relay 1 11/12/14	Relay 2 21/22/24	Relay 3 31/32/34	Relay 4 41/42/44		
Mains operation		x				Mains operations means: LP-STAR not blocked and no power failure identified in device
Mains failure	x		x			Mains failure means: Mains failure identified in device
Mains failure UV	x					Mains failure UV means: mains failure via external phase S3/S4 current loop identified
Charging fault	x					Charging fault means <ul style="list-style-type: none"> • Charging module disruption • Fault in the battery temperature sensor • Battery circuit interrupted • Battery capacity too low (following duration test) • Ventilation fan disruption (identified via Z1-Z4) • Transmission fault to charging module • Battery voltage too high • Battery voltage too low
Circuit fault	x					Circuit fault means: <ul style="list-style-type: none"> • Circuit fuse defective • Overload • Circuit ISO error (following manual ISO error search) • Current value < nominal value (with current value monitoring)
Luminaire fault	x					Luminaire fault means: Faulty luminaire
Sum failure	x					Sum failure is active for every kind of disruption, e.g. luminaire fault, charge module fault, transmission fault, substation fault, etc.
Deep discharge protection	x					Deep discharge protection is active when the deep discharge level is not reached, it can only be confirmed via the menu function "Confirm deep discharge protection"
ISO fault	x					ISO fault means: Insulation fault in battery circuit
Function test		x				Function test means: Test to check functionality of luminaires
Duration test		x				Duration test means: Test to check battery capacity
Device fault						Device fault means: Transmission fault, sub-station fault, memory card fault, fault identified via Z1-Z4 for external monitoring devices

Fixed configuration to buzzer operations (analogous to internal buzzer)

NOTE!

Always observe the national guidelines and provisions for information and reporting behaviour when installing a remote switch and/or remote display for emergency lighting systems.



Contact assignment:

11/14: NO 21/24: NO 31/34: NO 41/44: NO
11/12: NC 21/22: NC 32/32: NC 41/42: NC

Note:

NO = Normal Open (closed contact)
NC = Normal Closed (open contact)

The device has 4 potential-free signalling contacts (relay outputs) and one buzzer.

The signalling contacts can be freely parametrised:
4 x changers 24V; 0.5A (SELV)

Appendix B: Location plan for the luminaires

Date: _____

Decice address: _____

Time: _____

Name of the system: _____

Luminaire	20
Switch 1	
Switch 2	
Luminaire	19
Switch 1	
Switch 2	
Luminaire	18
Switch 1	
Switch 2	
Luminaire	17
Switch 1	
Switch 2	
Luminaire	16
Switch 1	
Switch 2	
Luminaire	15
Switch 1	
Switch 2	
Luminaire	14
Switch 1	
Switch 2	
Luminaire	13
Switch 1	
Switch 2	
Luminaire	12
Switch 1	
Switch 2	
Luminaire	11
Switch 1	
Switch 2	



Luminaire	10
Switch 1	
Switch 2	
Luminaire	9
Switch 1	
Switch 2	
Luminaire	8
Switch 1	
Switch 2	
Luminaire	7
Switch 1	
Switch 2	
Luminaire	6
Switch 1	
Switch 2	
Luminaire	5
Switch 1	
Switch 2	
Luminaire	4
Switch 1	
Switch 2	
Luminaire	3
Switch 1	
Switch 2	
Luminaire	2
Switch 1	
Switch 2	
Luminaire	1
Switch 1	
Switch 2	

Circuit name: _____

Switch 1: _____

Switch 2: _____

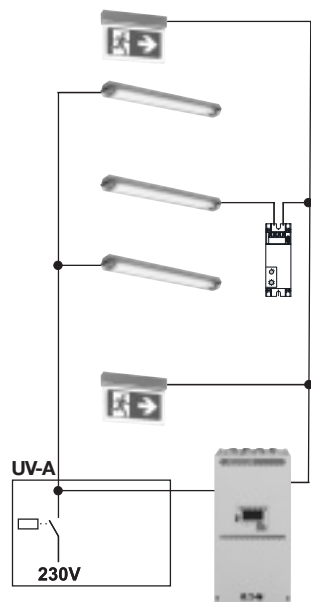
Monitoring mode: _____

Installed wattage [W]: _____

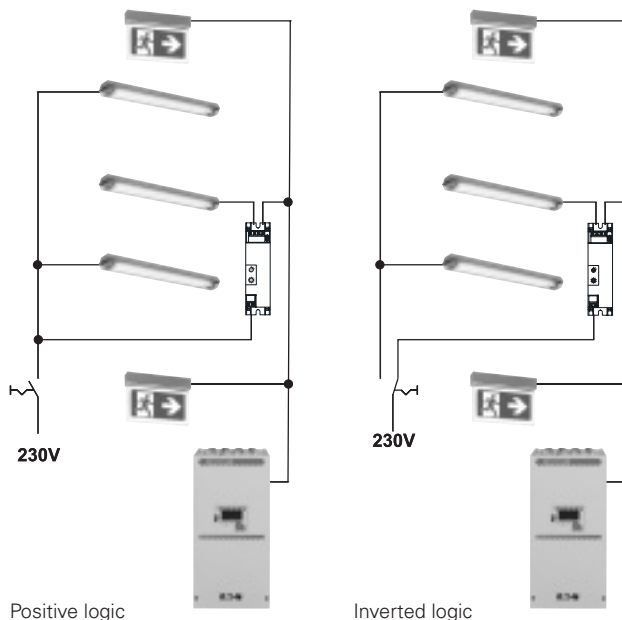
Installed load [VA]: _____

Appendix C: Installation examples monitoring modules

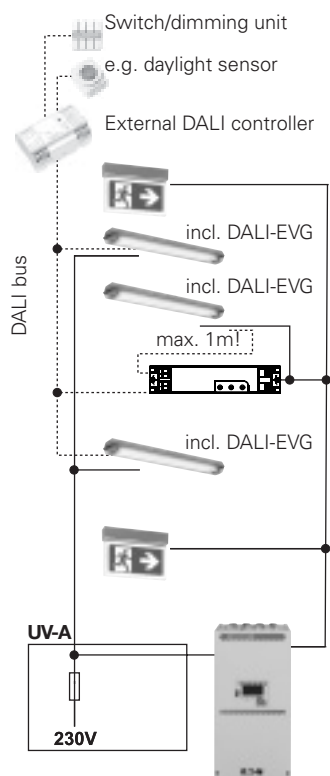
V-CG-S 4 – 400 W
Monitoring module



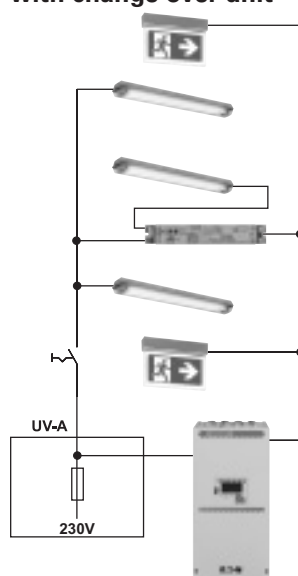
V-CG-SE 4 – 400 W
Monitoring module with control input



V-CG-SB monitoring module
with DALI control input



V-CG-SUW monitoring module
with change over unit



! IMPORTANT NOTICE:

When using standard EVGs it must be ensured that the functionality of the EVG is faultless, even in the DC voltage range. We recommend to ask the supplier of the ballast for an appropriate certification.

At Eaton, we're energized by the challenge of powering a world that demands more. With over 100 years experience in electrical power management, we have the expertise to see beyond today. From groundbreaking products to turnkey design and engineering services, critical industries around the globe count on Eaton.

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