



Central Battery System ZB-S



Powering Business Worldwide

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Central Battery System ZB-S

Agenda

- New charging technology
- System Configuration
- Internal Modules
- External Modules
- Battery Management System
- PC Software
- CG Vision

Date, Venue

More efficient Solutions for Emergency Lighting Systems



Individual single luminaire monitoring of up to 20 luminaires per circuit without additional data line.



Central monitoring and control of self-contained luminaires including automatic function- and duration test.



Free programmability of switching mode of each individual luminaire per circuit without additional data line.



All well-proven advantages of the STAR and CG Technology, now available for AC safety power sources.



Comfortable visualization software which allows the configuration and monitoring of all CEAG systems.

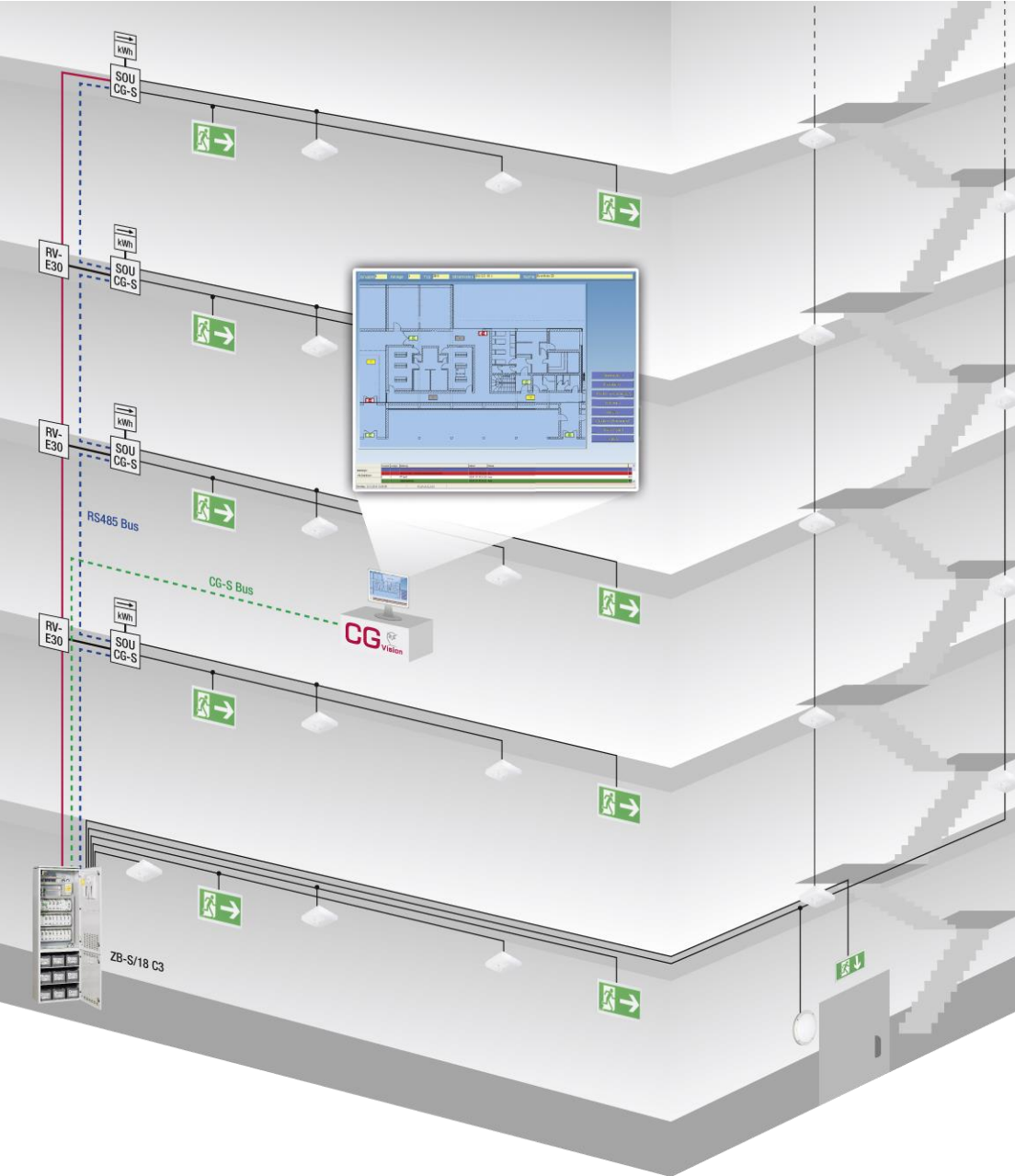
System Benefits

New charging technology

- Increased safety via alternating booster switching
- Less energy consumption of 10 % due to optimized efficiency
- System for automated battery block monitoring
- Maximum 1000 Ah battery capacity
- Up to two supplementary module slots for circuit change-over
- Active control via Charge Control Bus, thus measurement of float charge voltage no longer required
- Individual monitoring of CM charge modules
- Redundant assembly possible as required

Small distribution box US-SOU/2 and US-SOU/1

- Area-specific installation enables electricity cost assignment per rental area
- Reduced installation costs via programmable mixed operation
- No additional data lines to the luminaires.
- Housed in small, plastic distribution box, rated IP54
- Up to 40 SOU modules and up to 25 DLS modules per control unit





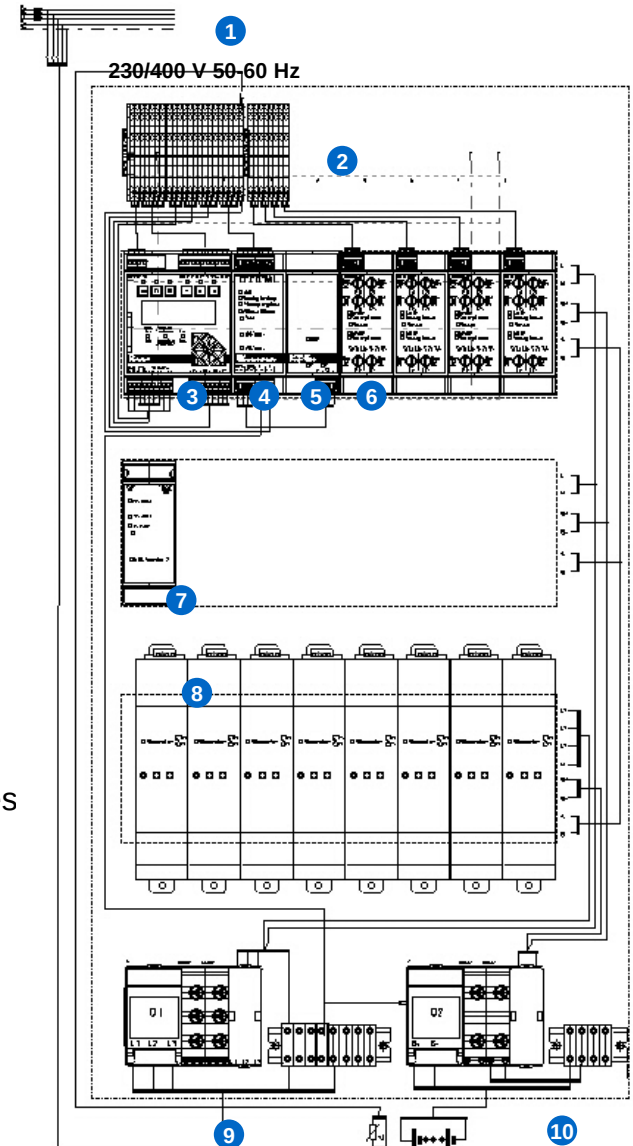
New charging technology



New charging technology

Installation example new charging technology

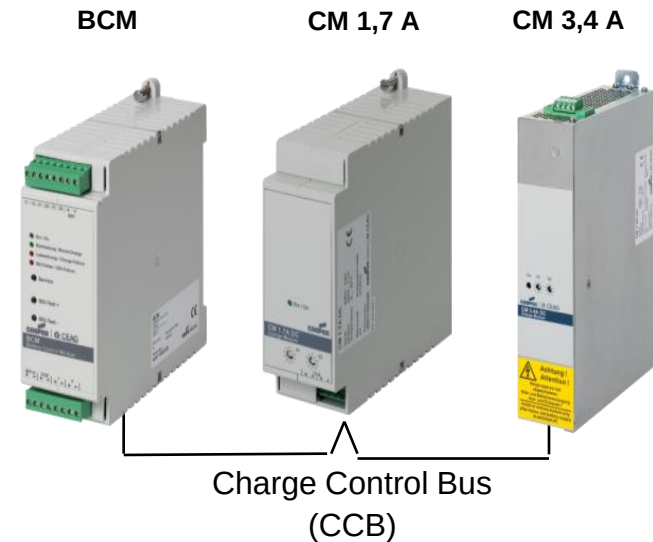
1. Distribution board for general mains
2. Connection terminal X0
3. CU CG-S control unit
4. Battery control module BCM
5. Charge module CM 1.7 A (max. 2 pcs.)
6. Circuit change-overs SKU CG-S 2 x 3 A
7. DC/DC converter.2
8. Charge modules CM 3.4 A (max. 8 pcs., to 32 modules on request)
9. Mains supply
10. Battery supply



New charging technology

CCB bus

- Up to 32 boosters permitted on the bus
- Individual addressing for each booster
- Addressing implemented directly at device with a rotary coding switch
- If the booster is set to address "0" it functions in compatibility mode, i.e. it behaves as booster 2.5 A ZB96
- Transmission rate: 1200 bits/s
- Designation of bus lines is CCB+ and CCB-
- The bus interface is polarity reversal-protected
- No special requirements for cable material as long as BCM and CM 1.7/3.4 A are installed in same cabinet
- CCB connection CM 3,4 A via gear tray (connection terminal at CM 3.4 A for replacement booster 2.5 A)



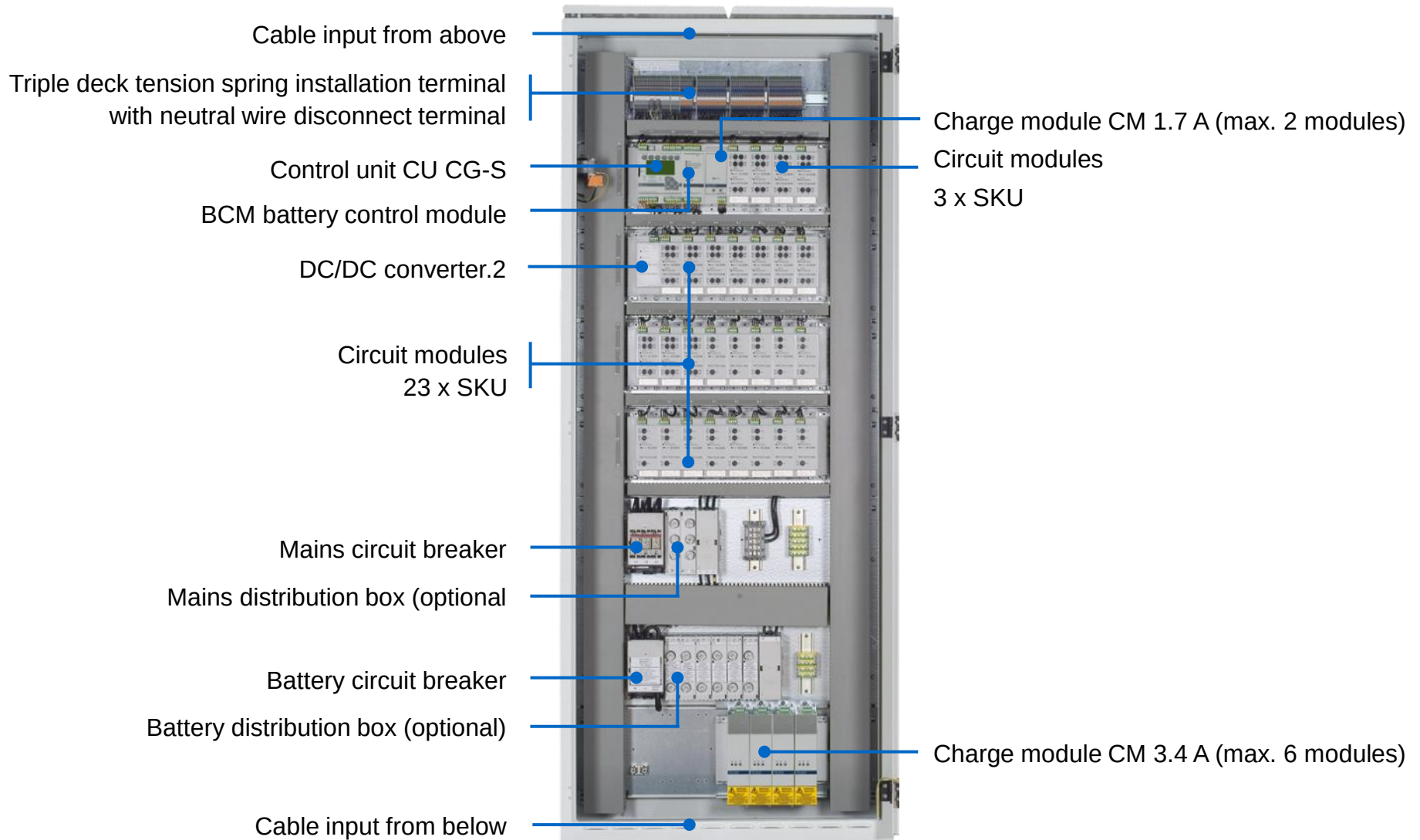


Central Battery System ZB-S

System Configuration

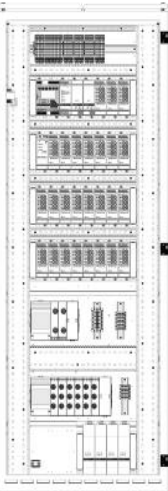
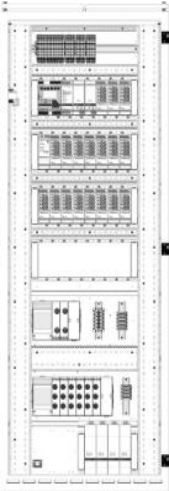
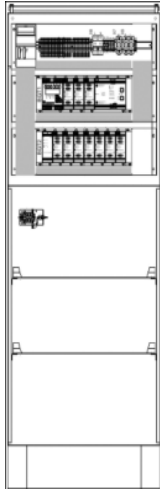
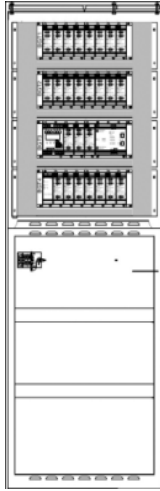
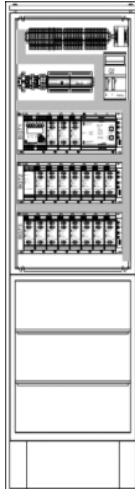


System Configuration



System Configuration

Cabinet variants

Type	ZB-S/26	ZB-S/18	ZB-S/10 C	ZB-S/10/18/26 C6	ZB-S/10/18 C3	ZB-S/2 C3
						
Max. number CM 1.7 A	2	2	2	2	2	1
Max. number CM 3.4 A	6	6	1	2	-	-



Central Battery System ZB-S

Internal Modules



Internal Modules

Control unit CU CG-S

- Graphic display
- Foil keyboard
- Two supplementary signal contacts
- Access to servicing menu and software update via special service SD card
- Displaced SD card slot
- Downwards-compatible to ST-S control unit
- New LED / button designations
- Web connection not directly accessible



Internal Modules

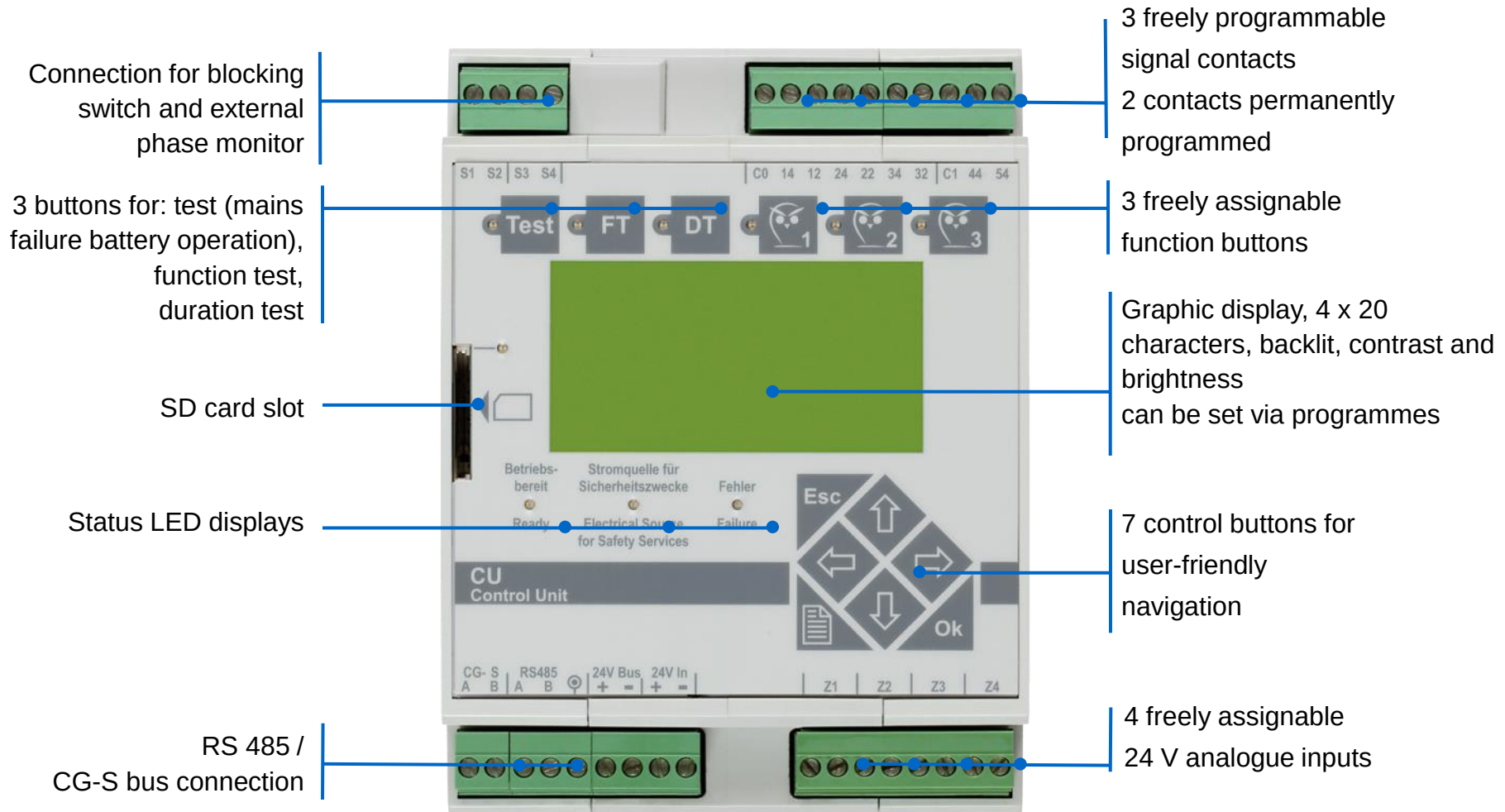
Technical data CU CG-S



Mechanic	
Dimensions (WxHxD)	110 x 170 x 155 mm
Installation	vertical
Degree of protection	IP20
Ambient temperature	-10°C ... +55°C
Relative humidity	10 to 95 % no condensation
Allowed degree of pollution	2
Input voltage (Mains)	220...240 V AC
Input voltage (Battery)	173... 300 V DC
Permissible mains frequency	47...63 Hz
Power consumption	4,4 W
24 V Current loops S1S2 / S3S4	
Range of resistor	S1S2: < 600 Ω or > 3200 Ω released S3S4: < 600 Ω or > 3200 Ω mains failure
Output voltage	≤ 30 V DC, ≤ 10 mA
Relaisausgänge	
Switching voltage	≤ 30 V DC/AC
Continuous current	≤ 0,5 A
Inrush current	≤ 5 A

RS485/CG-S Bus	
Output voltage	≤ 30 V
Polarity	Independent
Optional Inputs Z1-Z4	
Input voltage	≤ 2 V DC → OFF ≥ 12 V DC → ON
Input frequency	≤ 0,5 Hz
Display	
Resolution	128 x 64 Pixel
Colour	monochrome (green-yellow backlight)
Keyboard	
Life cycles	≥ 50.000
Memory Card	
Type	Secure Digital Memory Card
Supply voltage	3...3,6 V DC
Supported capacity	8 MB - 1 GB

Internal Modules

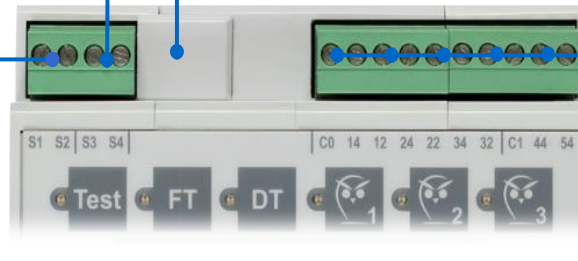


Internal Modules

S3/S4: 24 V monitoring loop
external phase monitors

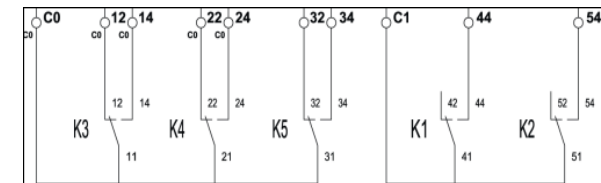
S1/S2: External key-operated
switch, system blocked

CU CG-S



E/G/A connection: from VPS Phase IV

C0/14/12/24/22/34/32/C1/44/54:
5 zero-potential signal contacts,
freely programmable

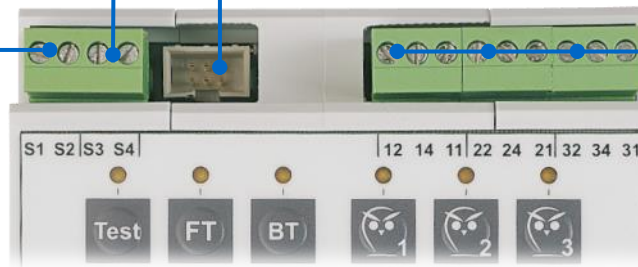


Web module connection

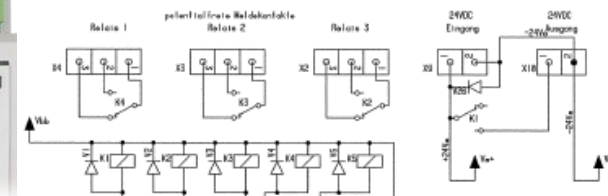
S3/S4: 24 V monitoring loop
external phase monitors

S1/S2: External key-operated
switch, system blocked

ST-S



11/12/14, 21/22/24, 31/32/34:
3 zero-potential signal contacts,
freely programmable

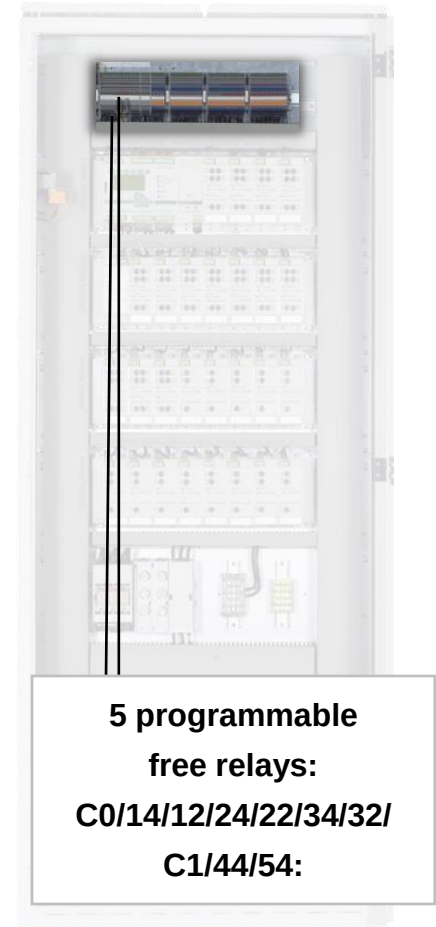


Internal Modules

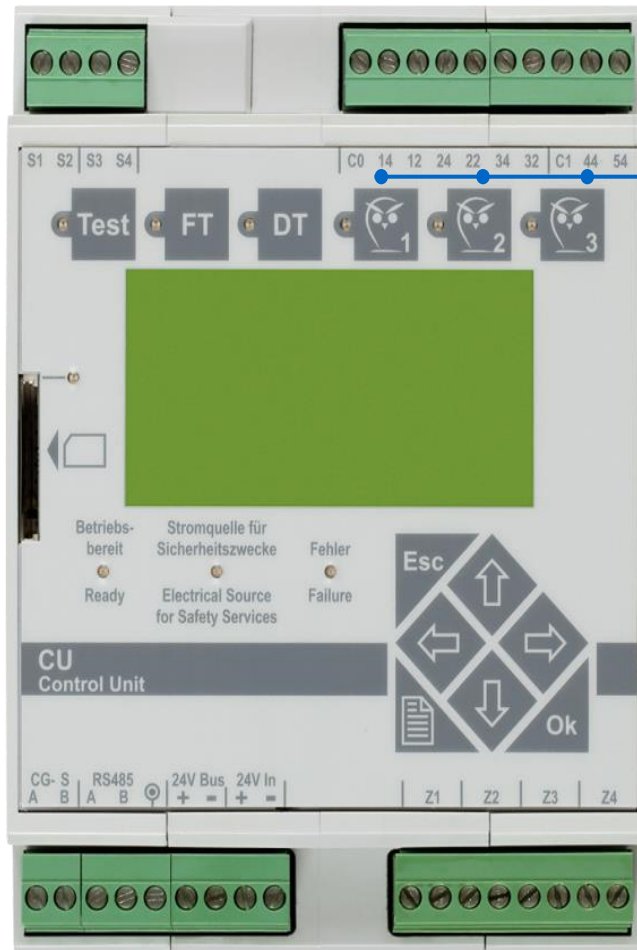
Potential free relays

- The device has 3 floating signaling contacts (relay outputs) and one buzzer inside
- Programmable signaling contacts each 1 x UM; 1 x 24 / 0 V and 0,5 A
- DIN VDE - requirements available as pre-adjustment

ZB-S default setting						
Designation	Relay 1	Relay 2	Relay 3	Relay 4	Relay 5	Buzzer
	C0/14/12	C0/24/22	C0/34/32	C1/44	C1/54	
Mains operation		X		Permanently configured to external buzzer operation (analogue to internal buzzer)	Permanently configured for control of a technical cabinet ventilation. Default setting >40°C ON < 35°C OFF.	
Mains failure	X		X			
Mains failure UV	X					
Charging fault	X					
Circuit fault	X					
Luminaire fault	X					
Common system fault	X					
Total discharge protection	X					
ISO fault	X					
Function test		X				
Continuous operation test		X				
Device fault						



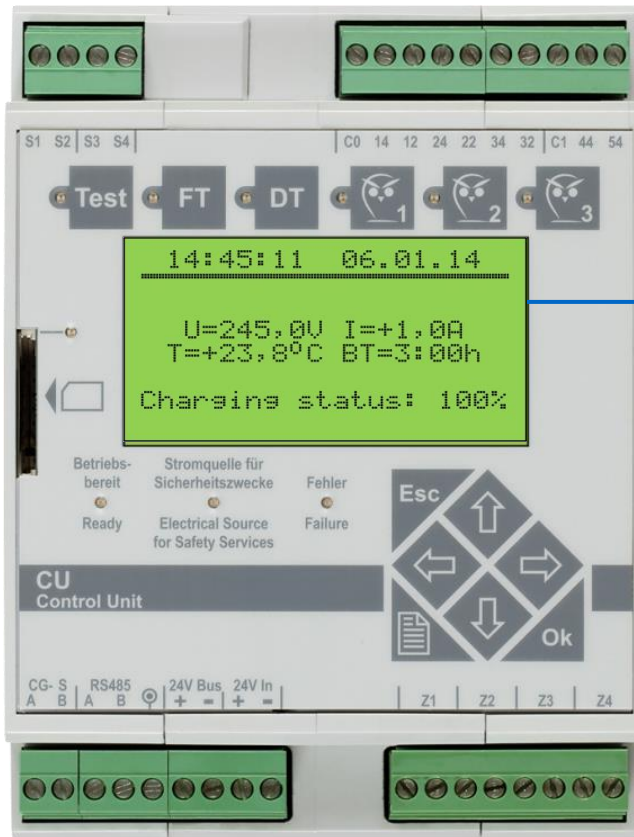
Internal Modules



3 freely assignable function buttons for:

- Block/release system
- Manual reset
- Display error list
- Switch on/off maintained mode
- Switch on complete safety lighting (corridor lighting)
- Simulation of mains failure UV-A (emergency operation)
- Confirm total discharge protection
- Search for ISO error

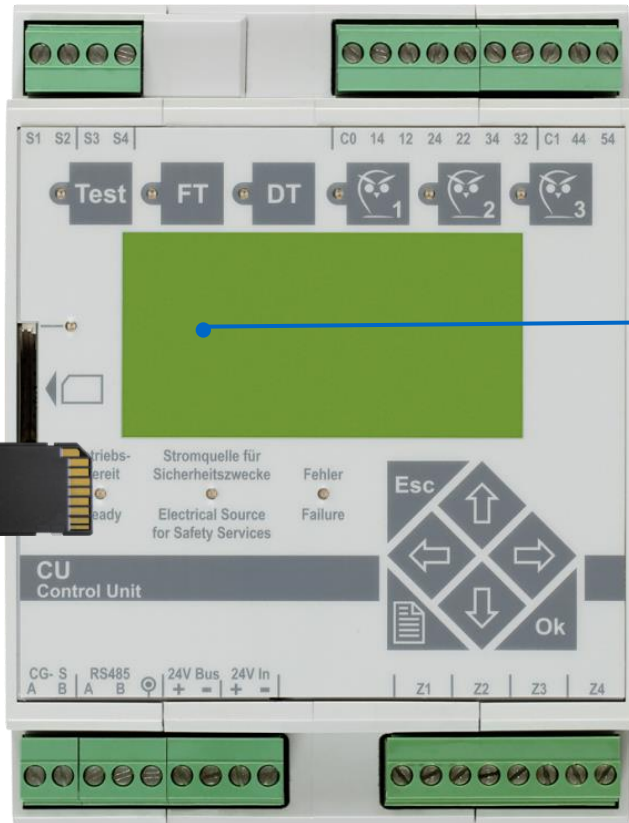
Internal Modules



LCD display, e.g.

- Date/time
- Charging fault
- Total discharge protection
- Battery voltage/charging current (+)
- Battery discharge current in test or error case (-)
- Manual reset
- Test operation
- Delay on mains return
- Luminaire error notification with location specification
- Isolation error with specification of circuit
- UV-AV failure (location specification)
- Error info/programming info.

Internal Modules

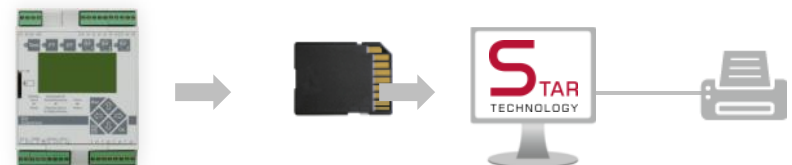


Secure digital card:

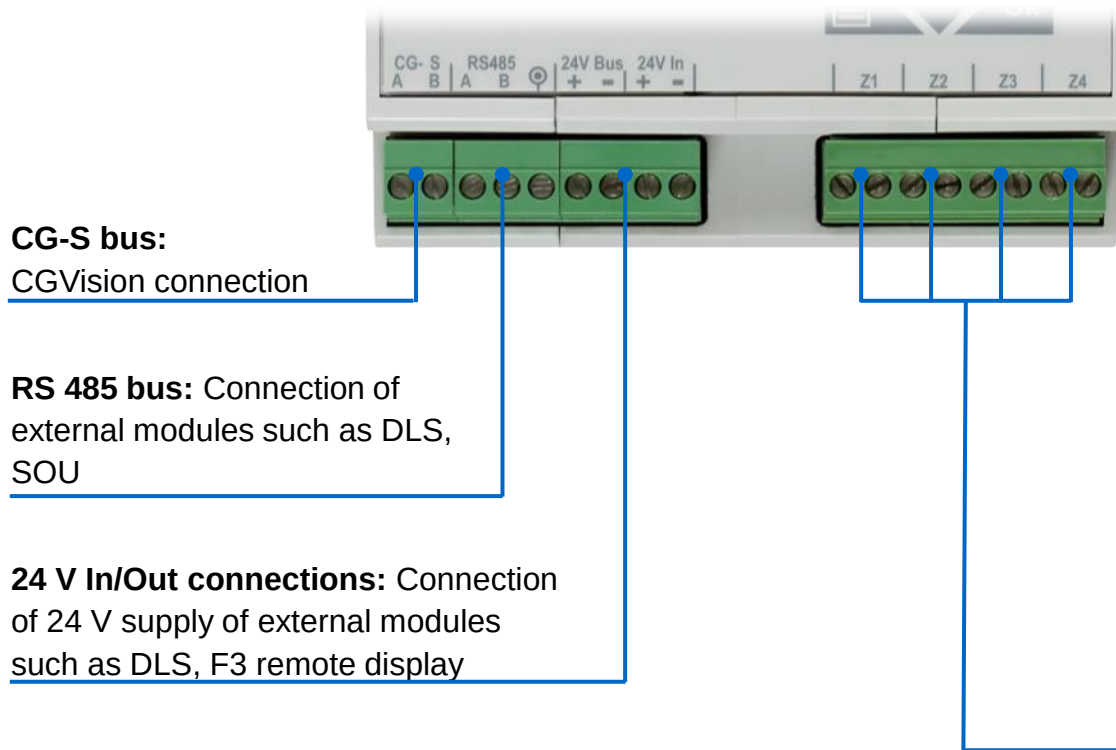
- Flexible data storage for system and log-book configuration, e.g. regulations-compliant archiving of log-book information over at least 4 years
- System programming is on any PC via optional SD card reader and CEAG software. Texts can also be entered at the control unit of the central unit
- Original CEAG SD cards are required
- Software update possible via special service SD card

Data saved:

- 360,000 log-book entries
- Target location indication of luminaires (20 characters per luminaire)
- Target location texts of external modules, such as phase monitors, DLS, TLS (20 characters per module)
- Names of circuits (20 characters per circuit), system name (20 characters)



Internal Modules



- Start / abort function test
- Start / abort duration test
- Block/release system
- Manual reset
- Switch on / off maintained mode
- Switch on safety lighting as corridor lighting
- Ventilation Monitoring
- External ISO Monitoring
- External Battery Monitoring
- External Monitoring

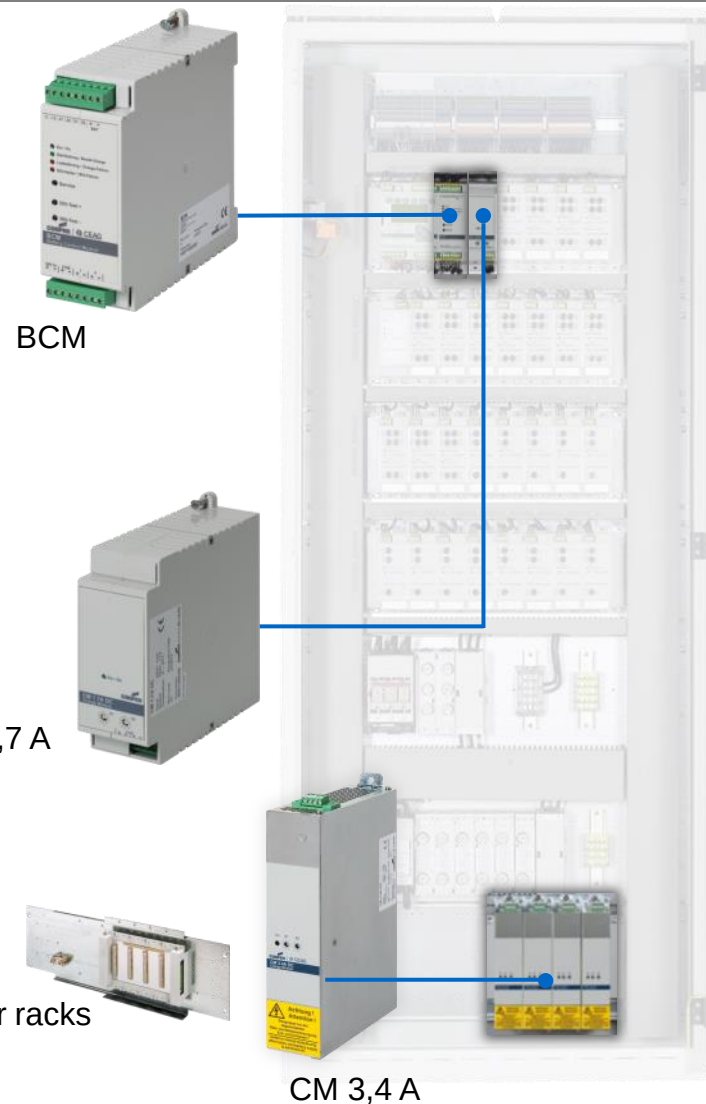
Internal Modules

BCM battery control module

- The BCM battery control module controls the CM 1.7 A and CM 3.4 A charging boosters via the CCB bus.
- Messages, such as fault, isolation fault and boost charge, can be forwarded via the zero-potential signal contacts of the BCM.
- LEDs on the module signal 'boost charge', 'charge fault' and 'isolation fault' between battery + and PE or battery – and PE (Protective Earth).
- For simulating a battery isolation fault (1 M Ω), there are two buttons: ISO + and ISO –.

CM 1.7 A and CM 3.4 A charge modules

- A suitable number of charge modules should be planned for complying with the legislative recharging duration for the planned battery sets.
- See the planning documents for the number of charge modules.
- The CM modules have their own calibrated charge control and also function independently of the BCM.
- Less thermal energy, optimized efficiency (10 %), integrated fan monitoring



Internal Modules

Technical Data BCM

Dimensions (WxHxD)	55 x 170 x 155 mm
Installation	vertical
Degree of protection	IP20
Ambient temperature	-10° C to 55° C
Relative humidity	10 % to 95 % no condensation
Allowed degree of pollution	2
Input voltage battery	173 V DC - 300 V DC
Input voltage 24 VDC	24 V DC
Switching voltage	≤ 30 V DC/V AC
Continuous current	≤ 0,5 A
Inrush current	≤ 5 A
Polarity	Independent



Internal Modules

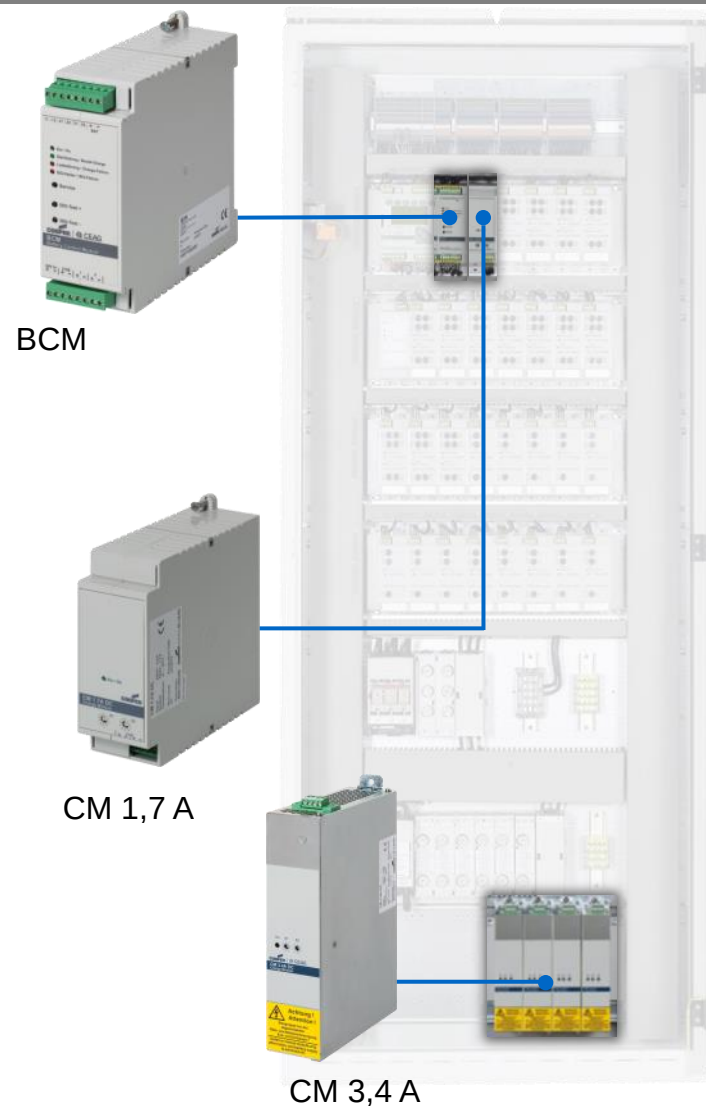
Exchange

2.5 A charging booster for CM 3.4 A charge module

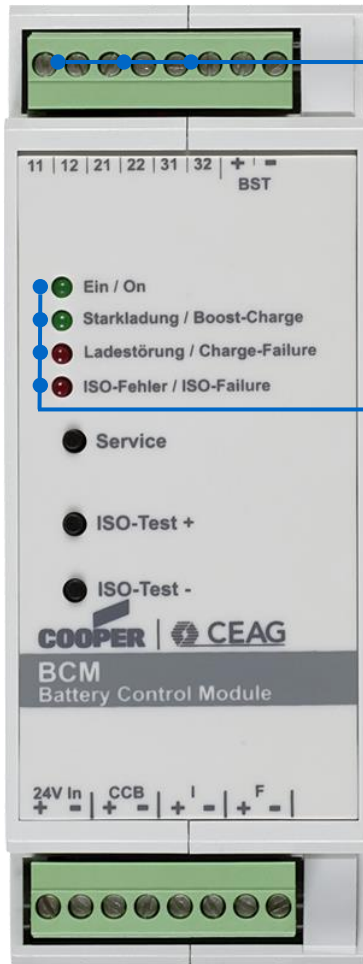
- Activate system
- Set both CM 3.4 A address switches to address 0
- Subsequently the CM 3.4 A behaves exactly as a 2.5 A booster, the charging current is then limited to 2.5 A

Charger.1 2.5 A for BCM and CM 1.7 A

- Log off charger.1 2.5 A at the control unit
- Activate system and disassemble charger. 1 2.5 A
- Install BCM and CM 1.7 A (CM 1.7 A is sufficient to 32 Ah/1 h)
- Set address at CM 1.7 A to 1 (right address switch = 1... addresses, left address switch = 10... addresses).
- Switch on the system
- Briefly press the BCM service pin and confirm installation at control unit
- Set the float charge voltage



Internal Modules



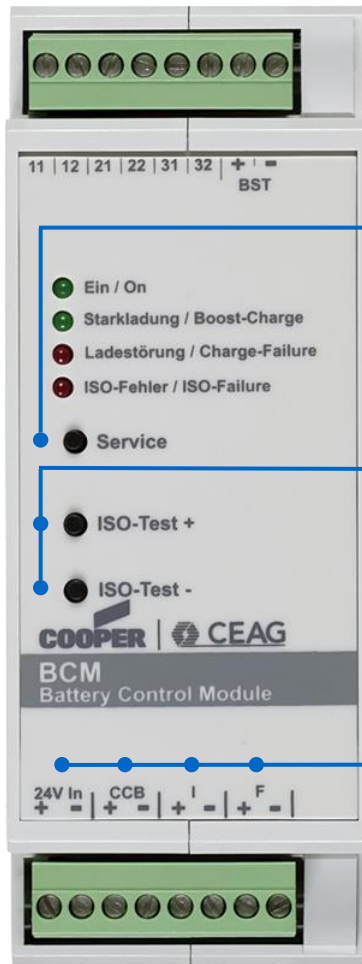
3 zero-potential signal contacts for:

- Contact 11/12 is closed during a fault.
- Contact 21/22 is closed during an isolation fault.
- Contact 31/32, for external fan control (closed during boost charge)

4 LED displays for:

- LED ON
The LED lights up when the BCM is in operation. If the LED does not light up then the BCM is faulty, there is no mains supply or a function test has been triggered.
- Light emitting diode boost charge
The light emitting diode boost charge lights up during boost charging, e.g. after a mains failure or a duration test.
- Light emitting diode charge fault
The light emitting diode charge fault lights up when the BCM, the charge booster CM 1.7 A and CM 3.4 A or the batteries are faulty. Further error messages can be queried via the control unit. With faults of the CM 1.7 and 3.4 A modules, error display relates to the module address.
- Light emitting diode ISO-Failure
The Light emitting diode ISO-Failure lights up when an isolation fault exists in the battery circuit.

Internal Modules



Service Pin:

- short press = register and log off BCM at control unit
- press >8 s = setting of float charge voltage via the ISO + and ISO – buttons

ISO-Test + / ISO-Test - button:

- Simulation of isolation fault

24 V In

- Connection of 24 V power supply for BCM module

CCB

- Connection of charge control bus (Max. 32 addresses)

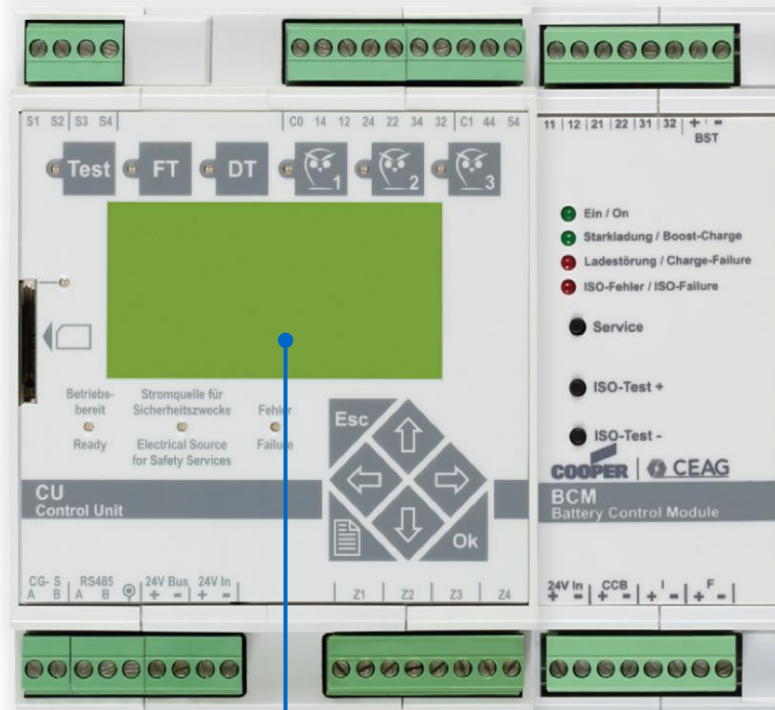
I +/-

- Connection of shunt for measurement of battery current

F +/-

- Connection of external temperature sensor for charging voltage control
- With temperature-independent charging voltage control:
Install fixed resistor 2 K Ω

Internal Modules



Setting of float charge voltage

- Press service pin of BCM >8 s.
 - The display of the CU CG-S control unit shows the current set value (1) and the registered number of charge modules (2).
 - The "On" and "Boost charge" LEDs flash alternately.
1. Set the desired value with the ISO + and ISO – buttons in 1V steps (float charge voltage (1) acc. to manufacturer specification at +20° C)
 2. Press service pin of BCM >8 s. The set value will be saved and the LED On will light up.

```
14:45:11 06.01.14
-----
U=245,0V I=+1,0A
T=+23,8°C BT=3:00h
Charging status: 100%
```



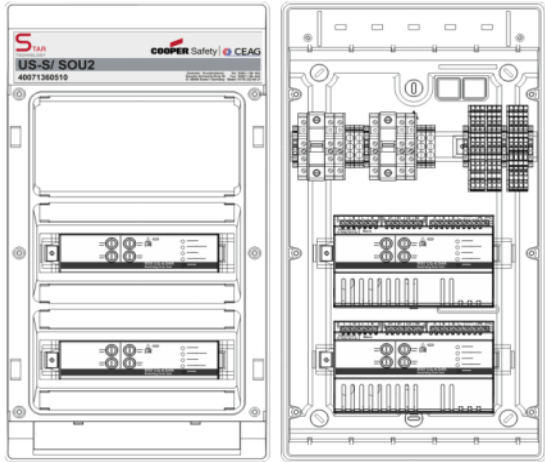
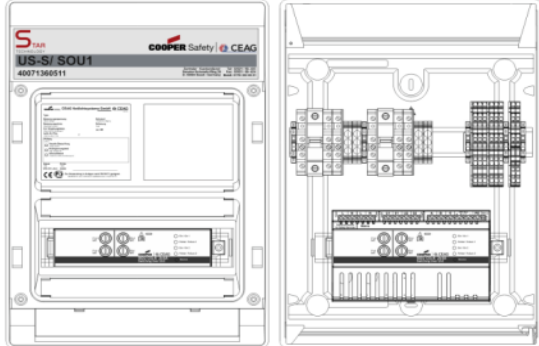
Central Battery System ZB-S

External Modules

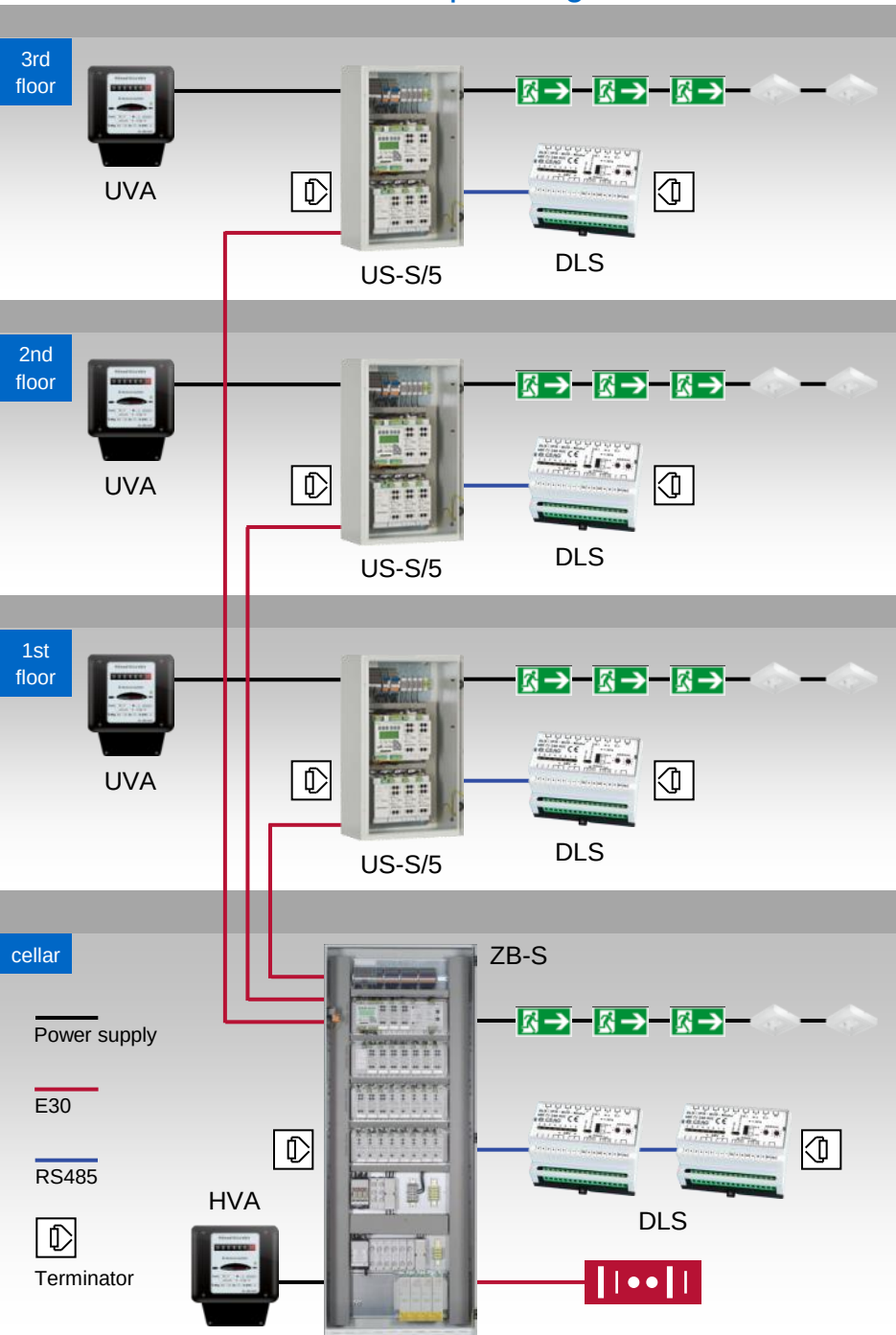


External Modules

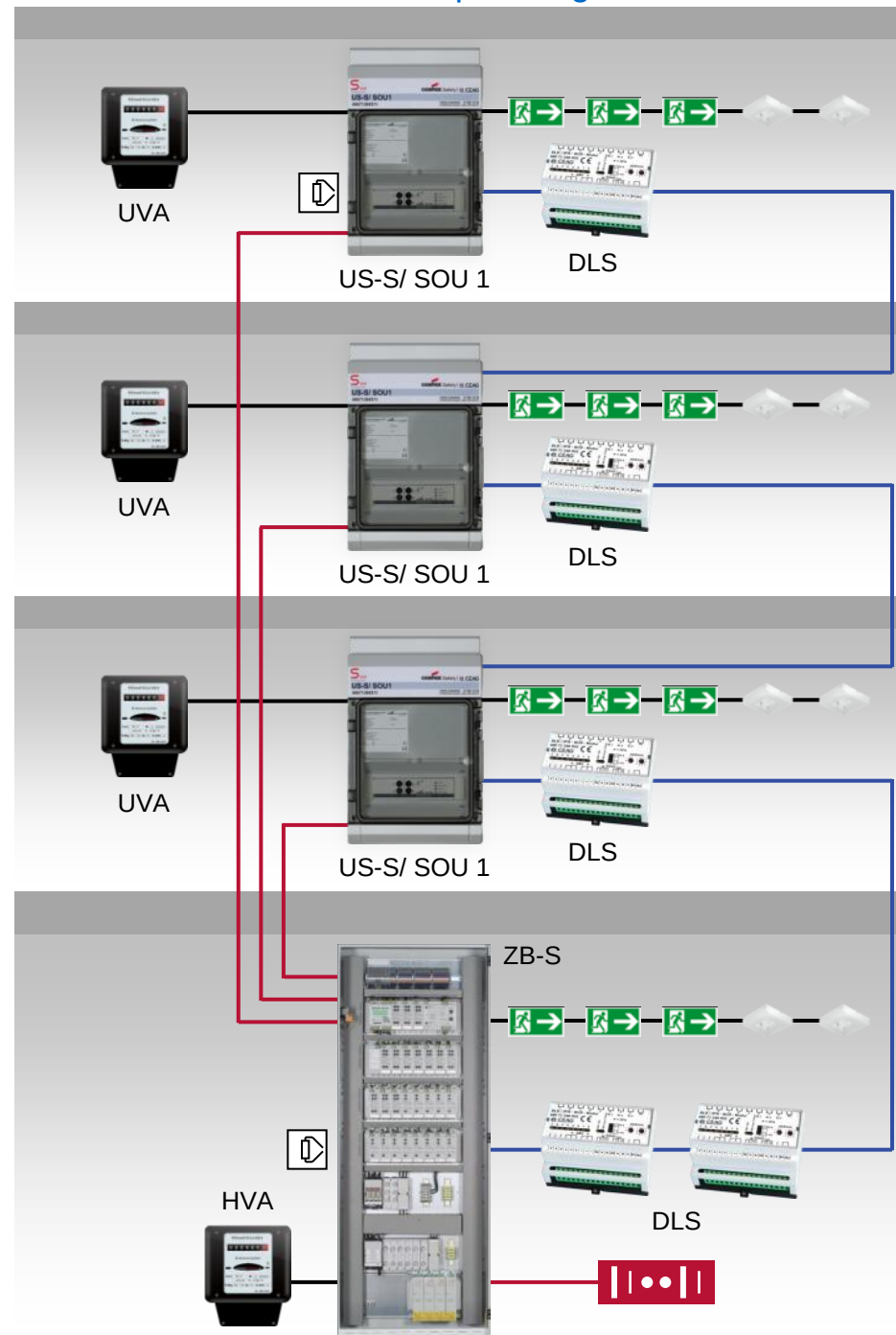
Cabinet variants

Type	US-S/ SOU 2	US-S/ SOU 1
		
Order number	40071360510	40071360511
Max. number of SOU CG-S 2 x 4 A	2	1
Max. number of 4 A circuits	4	2

Current planning



Future planning



Future planning

3rd floor

UVA

US-S/ SOU 1

DLS

2nd floor

UVA

US-S/ SOU 1

DLS

1st floor

UVA

US-S/ SOU 1

DLS

cellar

ZB-S

DLS

HVA

Power supply

E30

RS485

Terminator

Future planning with only one riser

The diagram illustrates four different riser configurations for future planning, all connected to a common red line representing a main power or data bus.

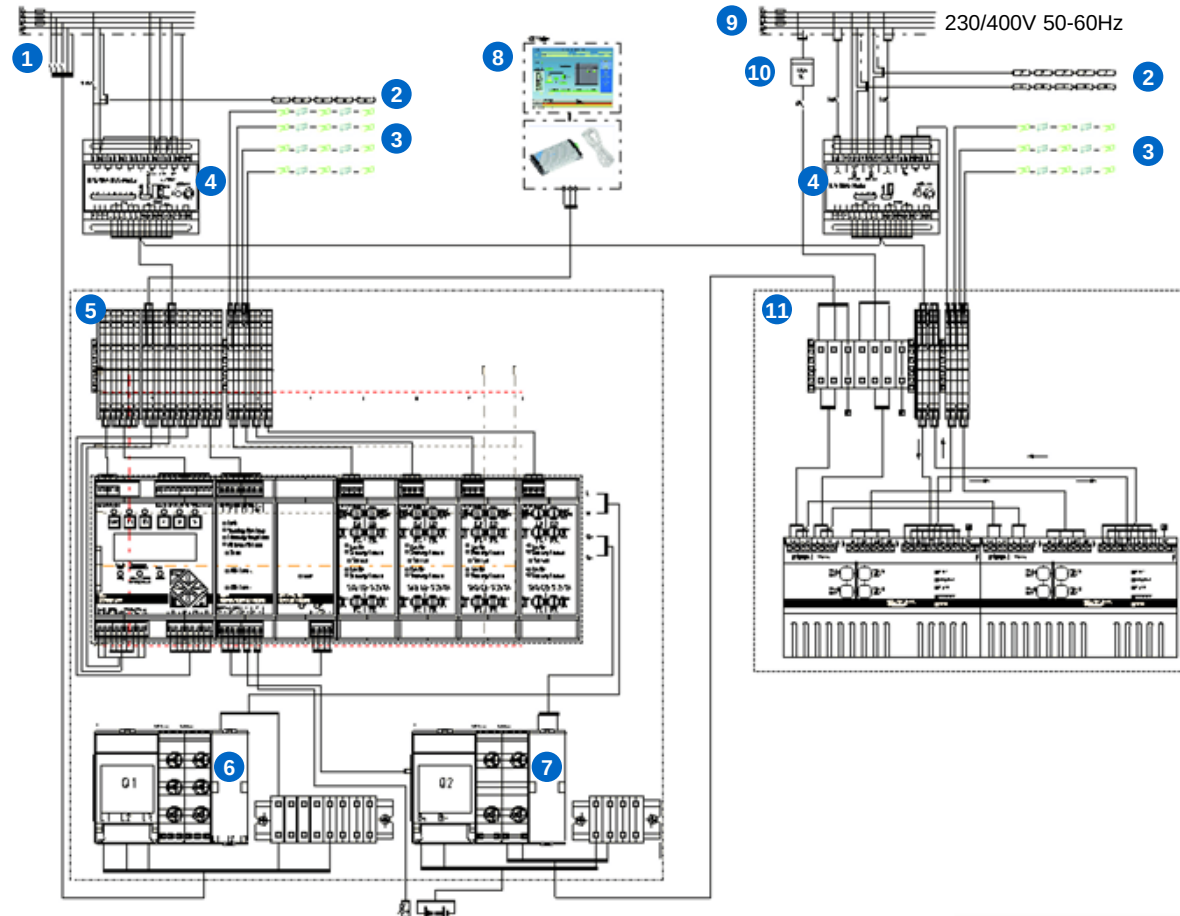
- Configuration 1 (Top):** A riser labeled **RV-E30** is connected to a **UVA** (Uninterruptible Voltage Adapter) and a **US-S/ SOU 1** (Single-Socket Outlet). The **US-S/ SOU 1** is connected to a **DLS** (Data Line Switch) and a **ZB-S** (ZigBee Switch).
- Configuration 2 (Middle):** A riser labeled **RV-E30** is connected to a **UVA** and a **US-S/ SOU 1**. The **US-S/ SOU 1** is connected to a **DLS** and a **ZB-S**.
- Configuration 3 (Bottom):** A riser labeled **RV-E30** is connected to a **UVA** and a **US-S/ SOU 1**. The **US-S/ SOU 1** is connected to a **DLS** and a **ZB-S**.
- Configuration 4 (Bottom):** A riser labeled **HVA** (High Voltage Adapter) is connected to a **US-S/ SOU 1**. The **US-S/ SOU 1** is connected to a **DLS** and a **ZB-S**.

The **DLS** (Data Line Switch) and **ZB-S** (ZigBee Switch) are shown as separate components, indicating they are not integrated into the riser unit in this configuration.

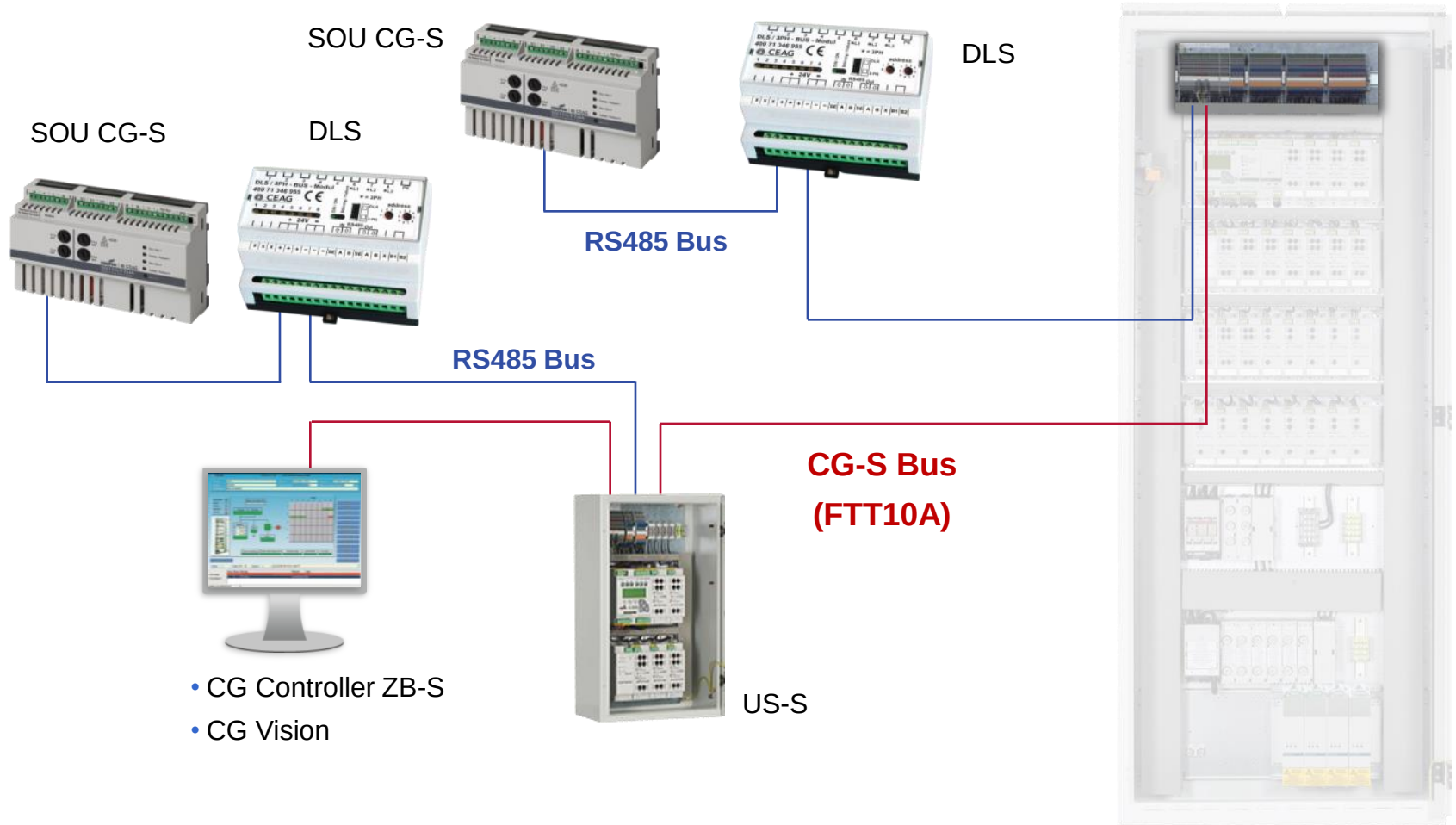
External Modules

Installation example US-SOU/ 2

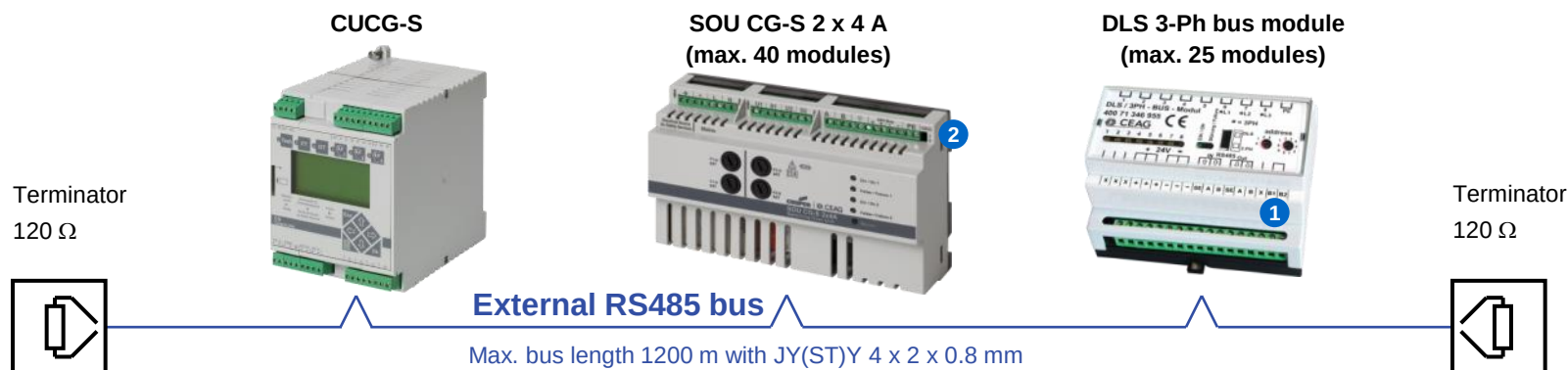
1. Network supply
2. General lighting
3. Emergency luminaires
4. DLS 3-Ph bus module
5. ZB-S system
6. Mains distribution box
7. Battery distribution box
8. CGVision
9. General power supply
10. Rental current meter
11. US-SOU/ 2



External Modules



External Modules



RS 485 Bus

RS 485 bus for communication with external CG-S modules (SOU CG-S module, DLS/3PH and TLS bus module).

The terminator (120 Ω, 0.5 W) can be switched in the DLS/3Ph-, TLS bus module modules by wiring a bridge at the connection terminals B1; B2 (1) and with the SOU modules via a DIL switch (2).

A resistor is also included in the scope of supply of the ZB-S switching cabinet. If only one cable is installed, this must be applied here.

Notes:

Bus topology: linear, double terminated (no branch cables permissible).
The mandatory terminating resistors are contained in the switching cabinet.

Cable type (minimum requirement):

JY(ST)Y 4 x 2 x 0.8 mm (twisted pair, shielded)

The cable cross-section required for the 24 V bus voltage depends on the cable length and number of bus modules ($U_{min} = 19 \text{ V DC}$).

SOU = Switching Over Unit

DLS = external maintained mode switching module
(DLS/3PH bus module)

TLS = external stairway light switching module

External Modules

Logging onto the control unit via the search function

```
14:45:11 06.01.14
-----
Operation
-----
Ground floor room 114
```

CU CG-S



```
14:45:11 06.01.14
-----
Deactivate module
Search ext. modules
Text assignment
Switch assignment
-----
Ground floor room 114
```

1. In the "Circuit setup" submenu, activate search for external SOU's.

```
14:45:11 06.01.14
-----
Activate module:
BGT: 5 SKU: 8*
Type: SOU CG-S 2x4
OK button= Activate
-----
Ground floor room 114
```

2. Assign a module support slot to the assembly (5/8 counting downwards from right to left)

```
14:45:11 06.01.14
-----
NID07 00 00C2 B9 01
BGT: 5 SKU: 8*
Type: SOU CG-S 2x4
OK button= Activate
-----
Ground floor room 114
```

SOU CG-S 2 x 4 A
(up to 40 modules)



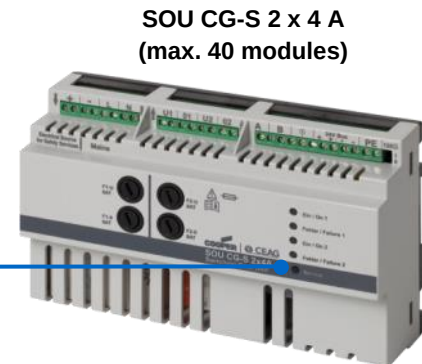
Neuron ID number	Assignment CU CG-S control unit		Installation location	
SOU module	SOU module	Slot	Building/floor	Room number
NID07 00 00C2 B9 01	5	8	1/EG	1105
NID07 00 00C2 B9 02	5	7	1/EG	1105
NID07 00 00C2 B9 03	5	6	1/EG	1105
NID07 00 00C2 B9 04	5	5	1/EG	1105
NID07 00 00C2 B9 05	5	4	1/EG	1105
NID07 00 00C2 B9 06	5	3	1/EG	1106
NID07 00 00C2 B9 07	5	2	1/EG	1106
NID07 00 00C2 B9 08	5	1	1/EG	1106
NID07 00 00C2 B9 09	4	8	1/EG	1106
NID07 00 00C2 B9 10	4	7	1/EG	1106
NID07 00 00C2 B9 11	4	6	1/EG	1107
NID07 00 00C2 B9 12	4	5	1/EG	1107
NID07 00 00C2 B9 13	4	4	1/EG	1107
NID07 00 00C2 B9 14	4	3	1/EG	1107
NID07 00 00C2 B9 15	4	2	1/EG	1107

Note before the configuration
Assign during the configuration

External Modules

Logging onto the control unit via the service pin

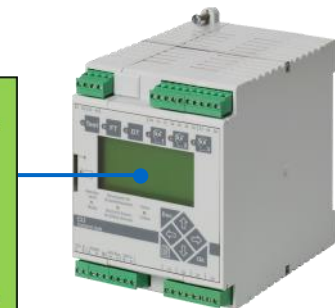
1. Briefly press the service pin.



CU CG-S

2. Assign a module support slot to the assembly 5/8 counting downwards from right to left.

```
14:45:11 06.01.14
-----
Activate module:
BGT: 5 SKU: 8*
Type: SOU CG-S 2x4
OK button= Activate
-----
Ground floor room 114
```



External Modules

Status output with flash code via service pin

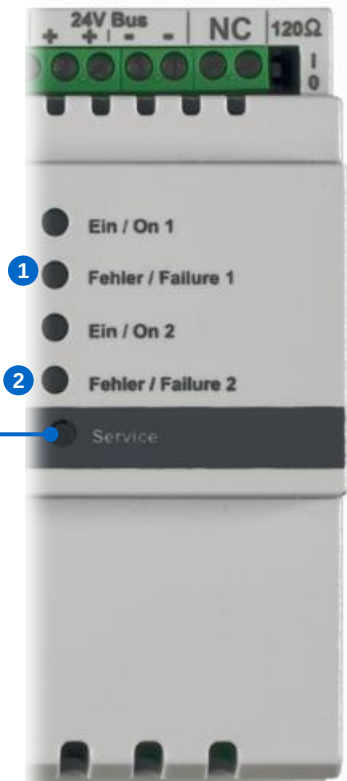
1. Pressing the service pin for at least 5 s activates the flash code.
2. The display mode is shown with alternating flashing with the red LEDs ① , ② .
3. Following 1 s pause (both LEDs off), display of the code for circuit 1 starts.
4. Briefly pressing the service button calls the next fault.

Flash code description:

- 1 flash = luminaire fault
- 2 flash = fuse fault
- 3 flash = overload
- 4 flash = over-temperature

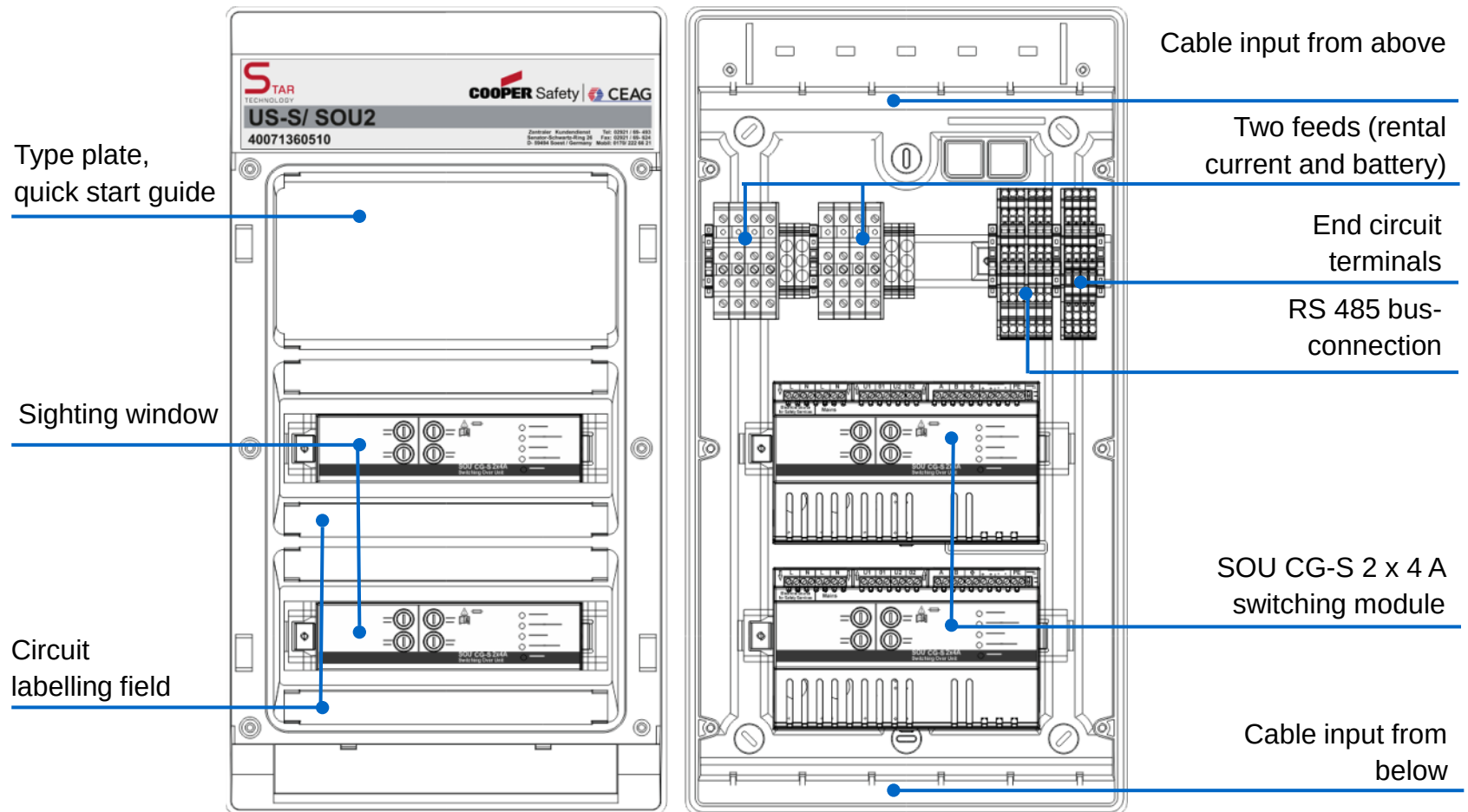
5. This now proceeds with the second circuit (from step 3).

If point 4 is not implemented, normal display is resumed after approx. 30 s.



External Modules

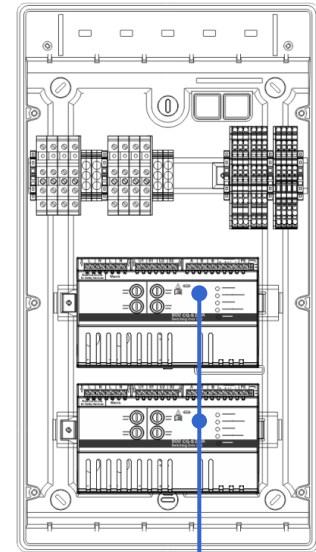
US-S/ SOU2



External Modules

SOU CG-S 2 x 4 A

- Area-specific installation enables electricity cost assignment per rental area
- Reduced installation costs via programmable mixed operation
- **No** additional data lines to the luminaires
- ISO fault search integrated



External Modules

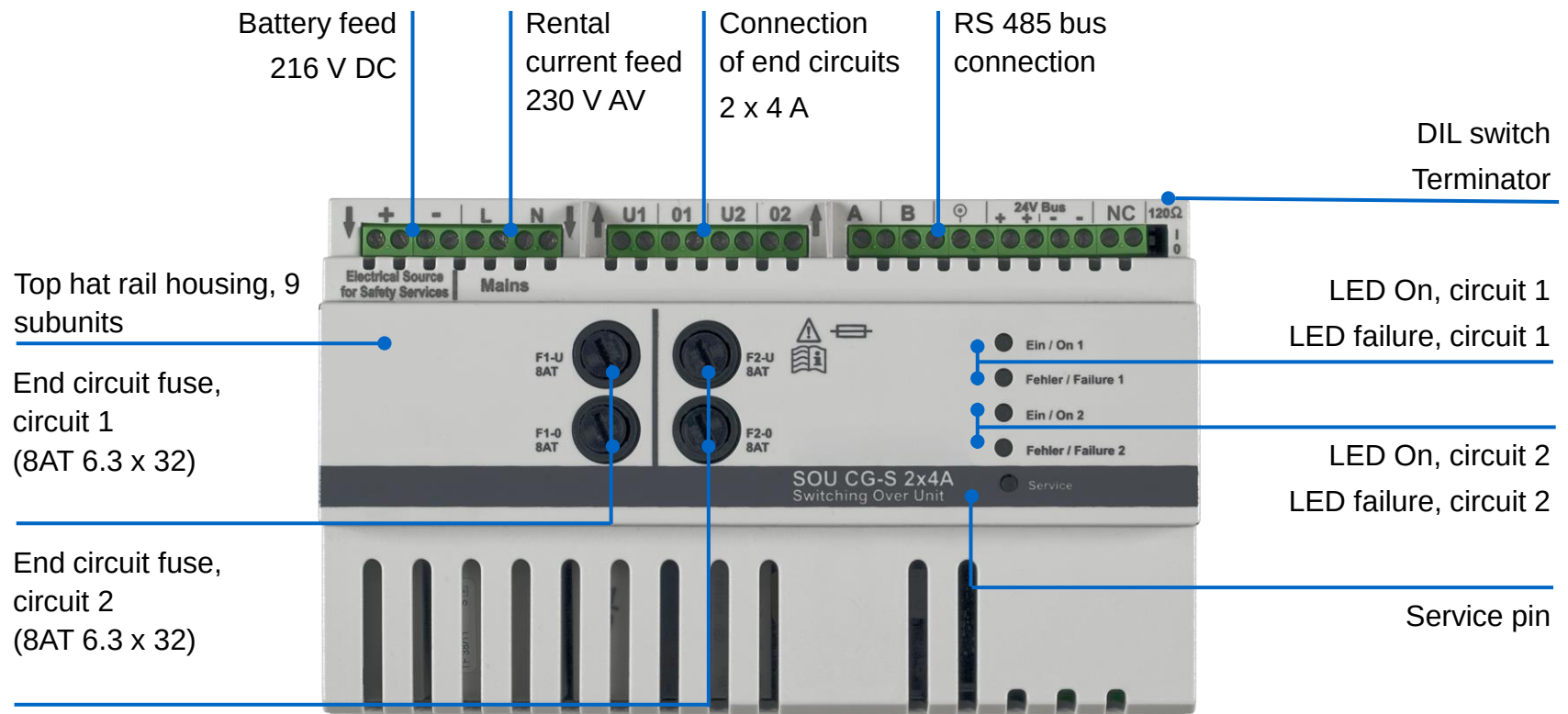
Technical Data SOU CG-S 2 x 4 A

Mechanic	
Dimensions (WxHxD)	178 x 108 x 60 mm
Installation	For top hat rail mounting
Degree of protection	IP20
Climatic conditions	
Ambient temperature	-10 ... +55° C
Relative humidity	10 ... 95 % no condensation
Allowed degree of pollution	2
Electrical Parameter	
Input voltage Mains	220...240 V AC
Input voltage Battery	183...275 V DC
Number of Circuits	2
Continuous current rating	4 A per circuit
Input Fusing	16 A per circuit, fuses 6,3 x 32 mm, Max. high breaking capacity 1500 A DC
Output Fusing	8 AT per circuit, fuses 6,3 x 32 mm, Max. high breaking capacity 1500 A DC



Maximum Inrush current	250 A per circuit
Permissible mains frequency	50 or 60 Hz
Over all power loss	≤ 9 W (at 2 x 4 A)
Luminaire addresses	Up to 20
Connecting terminals	Solid: 0,2...4,0 mm ² Stranded: 0,2...2,5 mm ²
RS485 Bus - LON	
Input/Output voltage	≤ 30 V
Polarity	Independent
24V +/- Bus / In	
Eingangsspannung	22...28,9 V DC
Eingangsstrom	≤ 50 mA
Einschaltstrom	≤ 500 mA

External Modules





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