AE-CU Adaptive Escape Routing
for Emergency Lighting



From static to adaptive escape routing

Powering Business Worldwide



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EATON

Powering Business Worldwide

We make what matters work.







From static to adaptive escape route guidance

System-technical measures for ensuring self-rescue in cases of evacuation have top priority in dynamic hazard situations. AE-CU technology in combination with GuideLed DXC exit sign luminaires enable dynamic danger situations such as in cases of fire, attacks or natural catastrophes to be actively responded to. The shortest route out of a building is not always the safest.

The AE-CU system reliably triggers up to 240 adaptive exit sign luminaires via a short circuit and open circuit resistant loop bus.

The hazard scenario can be freely assigned to each adaptive exit sign luminaire via the AE-CU.

The control unit with nonvolatile program memory and large touch display automatically monitors and controls all components in the AE-CU system as well as the functionality of the connected adaptive luminaires. Faults occurring are shown on the display, forwarded via signal contacts and saved to an inspection book.

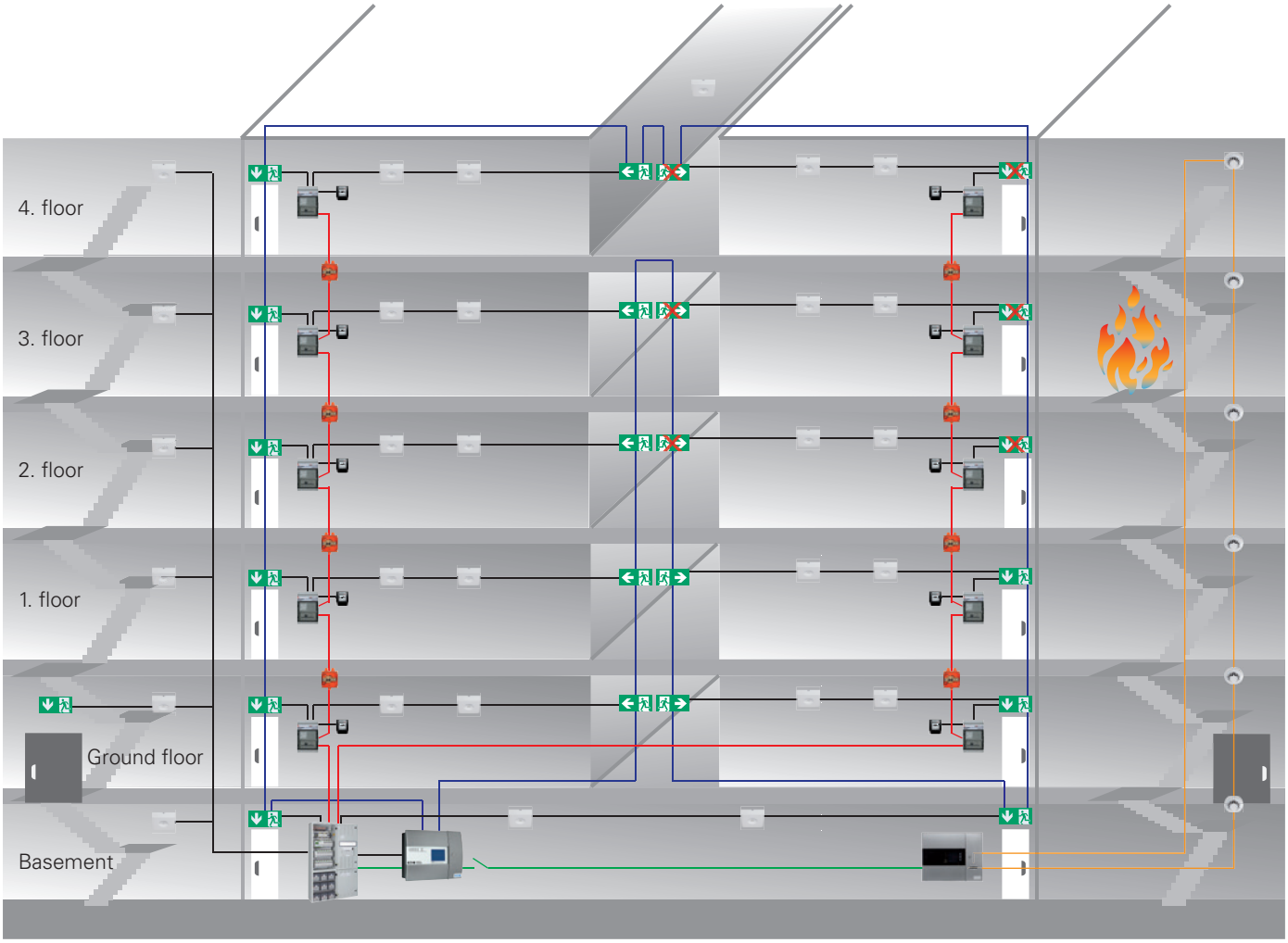
An integrated search function automatically detects all GuideLed DXC exit sign luminaires connected up during installation. Connection of central visualization is possible via an interface.

Features:

Short circuit and open circuit resistant loop bus technology. This means no E30 cable routing of the loop bus line is required because these are fail-safe with the first fault case.

- Adaptive actuation upon modification of the hazard situation. This provides increased levels of safety when a building is evacuated.
- Decentral configuration of the AE-CU for up to 240 GuideLed DXC exit sign luminaires. This enables flexible, low-cost planning.
- Due to separate cable routing of the 230V end circuits and 24V loop bus line to the adaptive GuideLed DXC exit sign luminaires, the hybrid operation of static and adaptive exit sign luminaires and the integration of escape luminaires and luminaires for general lighting is possible in the same circuit.
- Separate operating units for safety lighting and for the programming of scenarios provides increased safety with subsequent modifications.
- Networking the AE-CU with EATON fire detection technology provides system integrity between alerting and evacuation.
- Self-addressing of the connected DXC luminaires simplifies the process for installation and commissioning.

Adaptive evacuation – installation examplel



* Due to simplifocation, only one circuit is shown pro fire zone/staircase/flat


= adaptive exit sign luminaire


= active adaptive exit sign luminaire


= escape luminaire


= central fire alarm system


= fire detector


= meter reader

= Luminaire circuit*

= loop bus

= fire detection bus

= E30 cable

= detection scenario

Adaptive escape sign luminaires for building evacuation as a supportive system-technical measure.

In hazard situations caused by e.g. fire, attacks, technical plant faults (e.g. gas accidents) and natural catastrophes, only safe escape routes should be used.

Static escape route guidance:
Exit sign luminaires designate the escape route out of the building always in the same direction, **independently** of a danger situation.

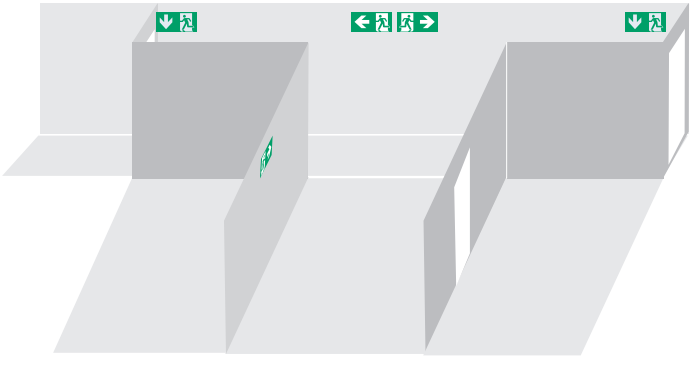
Dynamic escape route guidance:
Exit sign luminaires **block** unsafe escape routes in evacuation situations, thereby guiding those fleeing out of the building via the safe escape routes.

Adaptive escape route guidance:
Exit sign luminaires **block** unsafe escape routes and **release these as soon as they become safe again**.
This enables dynamic hazard situations (e.g. in case of fire or attacks) to be flexibly responded to.

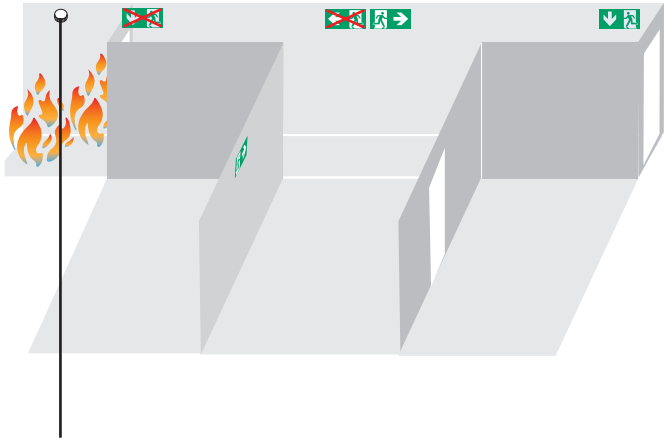
Aim of protection:
Safe self-rescue to ensure that rescue forces can take care of injured or disabled persons.



Before the occurrence:



During the occurrence:



Alarm e.g. via:

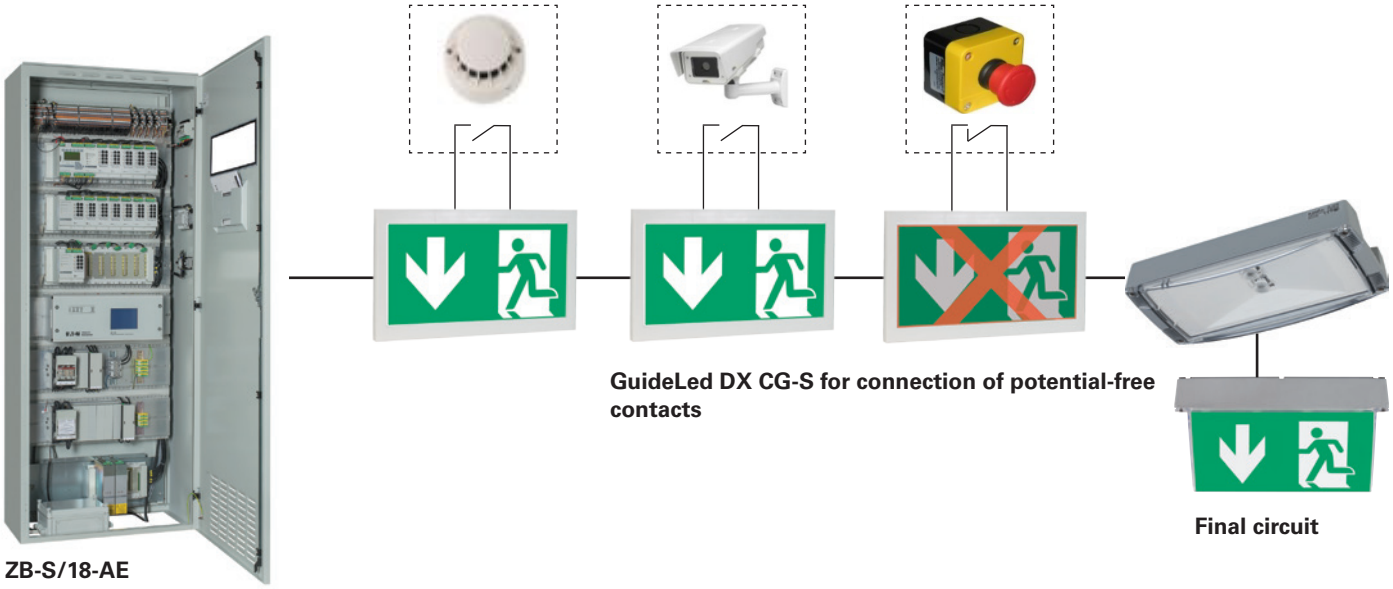
Fire detector,
video monitoring,
locking systems,
evacuation systems

AE-CU with loop bus technology

Application example

Application example:
Triggering of GuideLed DX luminaires via potential-free contacts:

Potential-free signal contacts of fire detectors, CCTV or key switches to indicate areas as „locked, blocked or unsafe". As an example for areas where entry is forbidden for a specific time due to constructi-on measures. Parallel connection of the DX inputs is not possible.



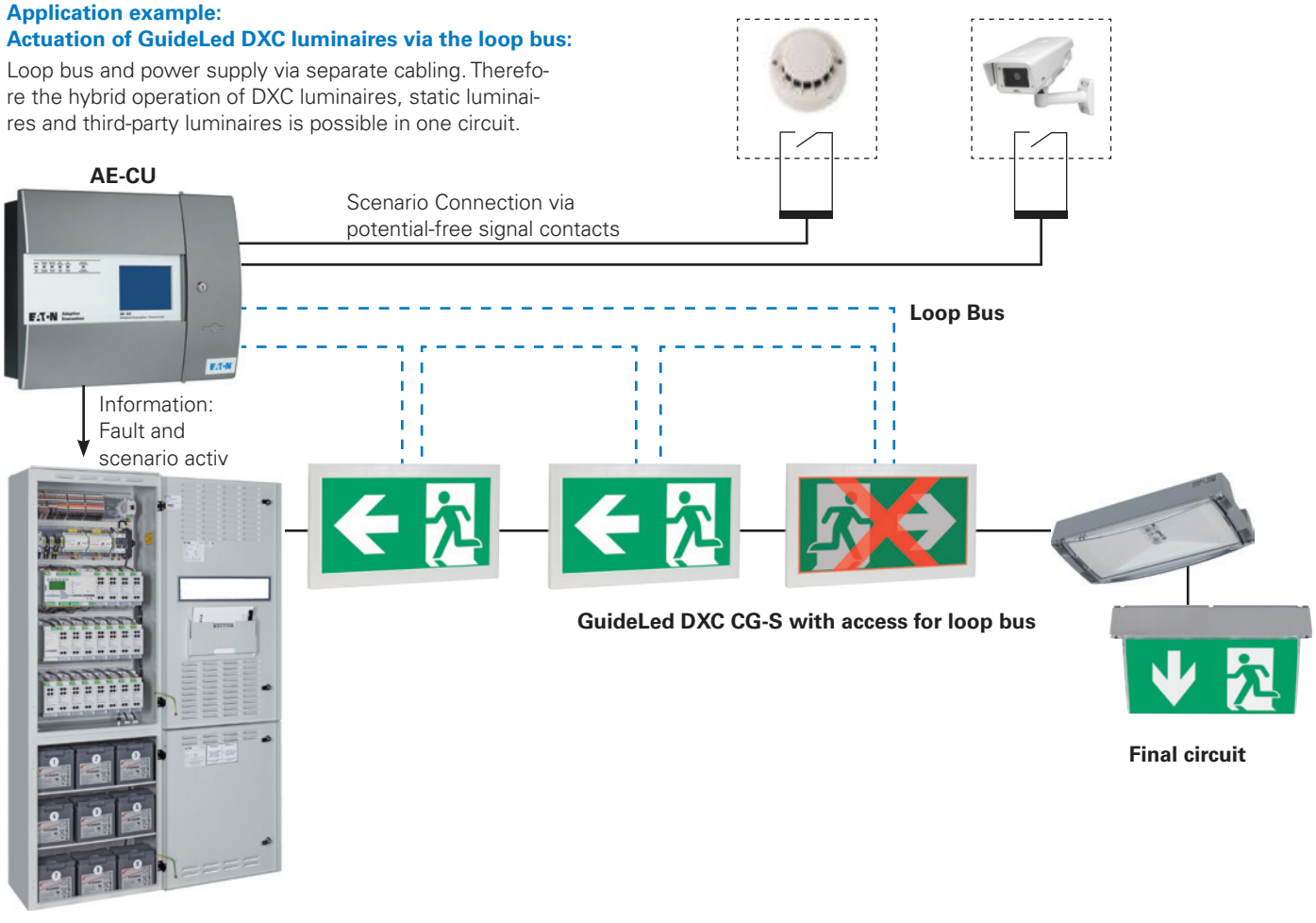
ZB-S/18-AE

GuideLed DX CG-S for connection of potential-free contacts

Final circuit

Application example:
Actuation of GuideLed DXC luminaires via the loop bus:

Loop bus and power supply via separate cabling. Therefo-re the hybrid operation of DXC luminaires, static luminai-res and third-party luminaires is possible in one circuit.



ZB-S/18 C3

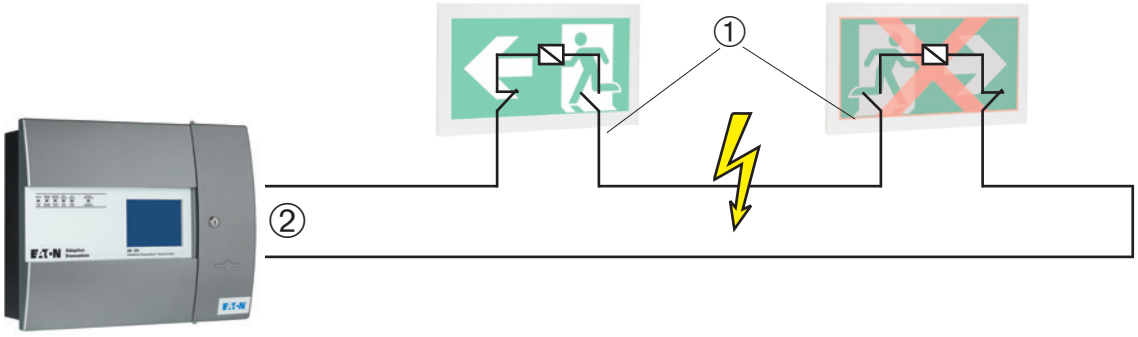
GuideLed DXC CG-S with access for loop bus

Final circuit

Application example:
Short circuit and open circuit resistant loop bus technology

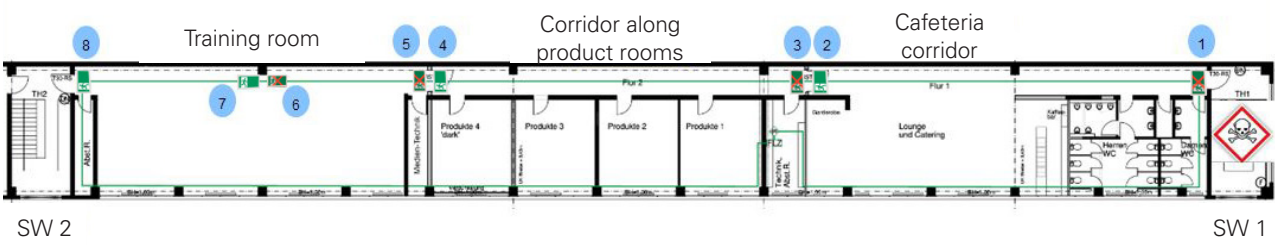
① short circuit-isolated separation

② **still** safeguarded via loop communication
after isolation of the short circuit



AE-CU control matrix

Example: Client training center at a workplace



No.	Luminaire description:	Scenario:	SW 1 blocked	Corridor 1 + Cafeteria blocked	Corridor 2 + product rooms blocked	Training room blocked	SW 2 blocked
①	Corridor 1, at door to SW 1		X				
②	Corridor 1, at door to corridor 2				X	X	X
③	Corridor 2, at door to corridor 1		X	X			
④	Corridor 2, at door to training room					X	X
⑤	Training room at door to corridor 2		X	X	X		
⑥	Training room middle direction corridor 2		X	X	X		
⑦	Training room middle direction SW 2						X
⑧	Training room at door to SW 2						X





GuideLed 10011 DX CG-S

Wall mounting

GuideLed 10011 DX CG-S

- Escape sign luminaire with LED Lightguide technology for wall-mounting.
- Additional function: Displaying a red 'X' to signify an area as closed or blocked
- Activated by a switching input on the supply module.
- GuideLed 10011DX: connection to local input, e.g. smoke detector or panic switch via potential free contact
- Increased visibility in bright surroundings possible via additional selectable function modes, e.g. flashing red 'X'.
- Very good perceptibility on account of high luminance of the white contrasting colour > 500 cd/m² in keeping with standard ISO 3864-1 and high uniformity Lmin/Lmax > 0.8
- Reduced battery costs on account of especially low power consumption
- Minimum service requirement due to high service life of the LEDs (50 000 hours)
- Installation of the LED pictogram without tools on the mounting set.
- Without power supply: still visible pictogramm

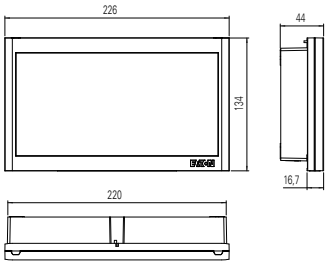
GuideLed 10011 DX CG-S

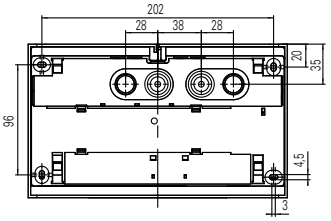




Viewing distance	20 m
Luminous Φ_E/Φ_N at the end of rated operating time	100 %
Housing material	PC, PMMA
Housing colour	Light grey RAL 7035
Weight	0.65 kg
Type of mounting	Wall mounting
Connection terminal	Mains 3 x 2 x 2.5 mm² Switch input 2 x 2 x 1.5 mm²
Connection voltage	220 - 240 V AC, 50/60 Hz 176 V - 275 V DC
Current consumption - battery operation (220 V)	16 mA
Power consumption mains operation (apparent power / effective power)	8.0 VA / 3.9 W
Permissible ambient temperature	-20 °C to +40 °C
Light source	LED batten

Dimensions in mm





Please observe a distance of 10 mm above for mounting!

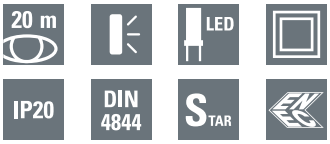
Ordering details - fastening set

Type	Scope of supply (LED pictograms must ordered seperate)	Order No.
GuideLed 10011 DX CG-S	Wall mounting set for GuideLed 10011 DX CG-S, Surface mounting, including LED supply with additional switching input and CG-S technology (20 addresses)	40071354646

Ordering details - LED pictograms (fastening set required)

Type	Scope of supply	Order No.
PL acc. ISO 7010 [1]	LED-Piktogramm für GuideLed 10011 DX CG-S, Pfeil links (PL) gem. ISO 7010, 20 m	40071354681
PR acc. ISO 7010 [1]	LED-Piktogramm für GuideLed 10011 DX CG-S, Pfeil rechts (PR), gem. ISO 7010, 20 m	40071354682
PU acc. ISO 7010 [1]	LED-Piktogramm für GuideLed 10011 DX CG-S, Pfeil unten (PU), gem. ISO 7010, 20 m	40071354683
PO acc. ISO 7010 [1]	LED-Piktogramm für GuideLed 10011 DX CG-S, Pfeil oben (PO), gem. ISO 7010, 20 m	40071354684

[1] with additional option: red X



GuideLed 10011 DXC CG-S

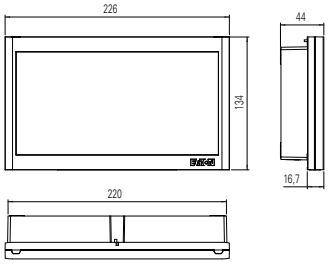
- Escape sign luminaire with LED Lightguide technology for wall-mounting.
- Additional function: Displaying a red 'X' to signify an area as closed or blocked
- Activated by a switching input on the supply module.
- GuideLed 10011DXC: connection to Eaton's Adaptive Evacuation with use of the EATON AE-CU via integrated bus interface
- Increased visibility in bright surroundings possible via additional selectable function modes, e.g. flashing red 'X'.
- Very good perceptibility on account of high luminance of the white contrasting colour > 500 cd/m² in keeping with standard ISO 3864-1 and high uniformity Lmin/Lmax > 0.8
- Reduced battery costs on account of especially low power consumption
- Minimum service requirement due to high service life of the LEDs (50 000 hours)
- Installation of the LED pictogram without tools on the mounting set.
- Without power supply: still visible pictogramm

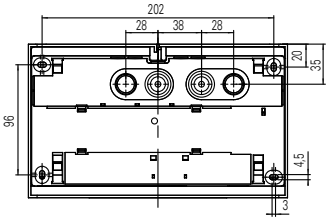
GuideLed 10011 DXC CG-S





Dimensions in mm





Please observe a distance of 10 mm above for mounting!

Viewing distance	20 m
Luminous Φ_E/Φ_N at the end of rated operating time	100 %
Housing material	PC, PMMA
Housing colour	Light grey RAL 7035
Weight	0.65 kg
Type of mounting	Wall mounting
Connection terminal	Mains 3 x 2 x 2.5 mm² bus interface 2 x 2 x 1.5 mm²
Connection voltage	220 - 240 V AC, 50/60 Hz 176 V - 275 V DC
Current consumption - battery operation (220 V)	16 mA
Power consumption mains operation (apparent power / effective power)	8.0 VA / 3.9 W
Permissible ambient temperature	-20 °C to +40 °C
Light source	LED batten

Ordering details - fastening set

Type	Scope of supply (LED pictograms must ordered seperate)	Order No.
GuideLed 10011 DXC CG-S	Wall mounting set for GuideLed 10011 DXC CG-S, Surface mounting, including LED supply and CG-S technology (20 addresses), with integrated bus interface for connection to an AE-CU	40071355085

Ordering details - LED pictograms (fastening set required)

Type	Scope of supply	Order No.
PL acc. ISO 7010 [1]	LED-Piktogramm für GuideLed 10011 DX CG-S, Pfeil links (PL) gem. ISO 7010, 20 m	40071354681
PR acc. ISO 7010 [1]	LED-Piktogramm für GuideLed 10011 DX CG-S, Pfeil rechts (PR), gem. ISO 7010, 20 m	40071354682
PU acc. ISO 7010 [1]	LED-Piktogramm für GuideLed 10011 DX CG-S, Pfeil unten (PU), gem. ISO 7010, 20 m	40071354683
PO acc. ISO 7010 [1]	LED-Piktogramm für GuideLed 10011 DX CG-S, Pfeil oben (PO), gem. ISO 7010, 20 m	40071354684

[1] with additional option: red X

AE-CU mit Loop Bus Technologie

Overview device variants

AE-CU-W

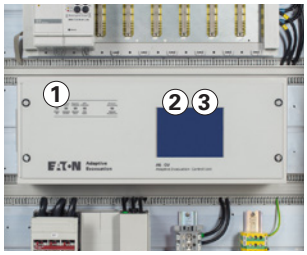


AE-CU

- AE-CU for the adaptive control of up to 240 GuideLed DXC luminaires
- Four short circuit and open circuit resistant loop lines each with 60 GuideLED DXC luminaires
- Two scenarios freely programmable for building evacuation, factory provided integrated
- More than two scenarios on request
- A maximum of six ZB-S/US-S systems can be connected per AE-CU. More than six ZB-S systems on request
- Automatic software address-setting of all GuideLed DXC luminaires for scenario control

AE-CU-E for integration in ZB-S/18-AE







1 LED displays:

Power On, Scenario Active, General Fault, CPU Fault, Power Fault, General Disablement

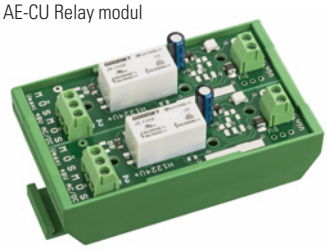
2 Touch display, operating messages:

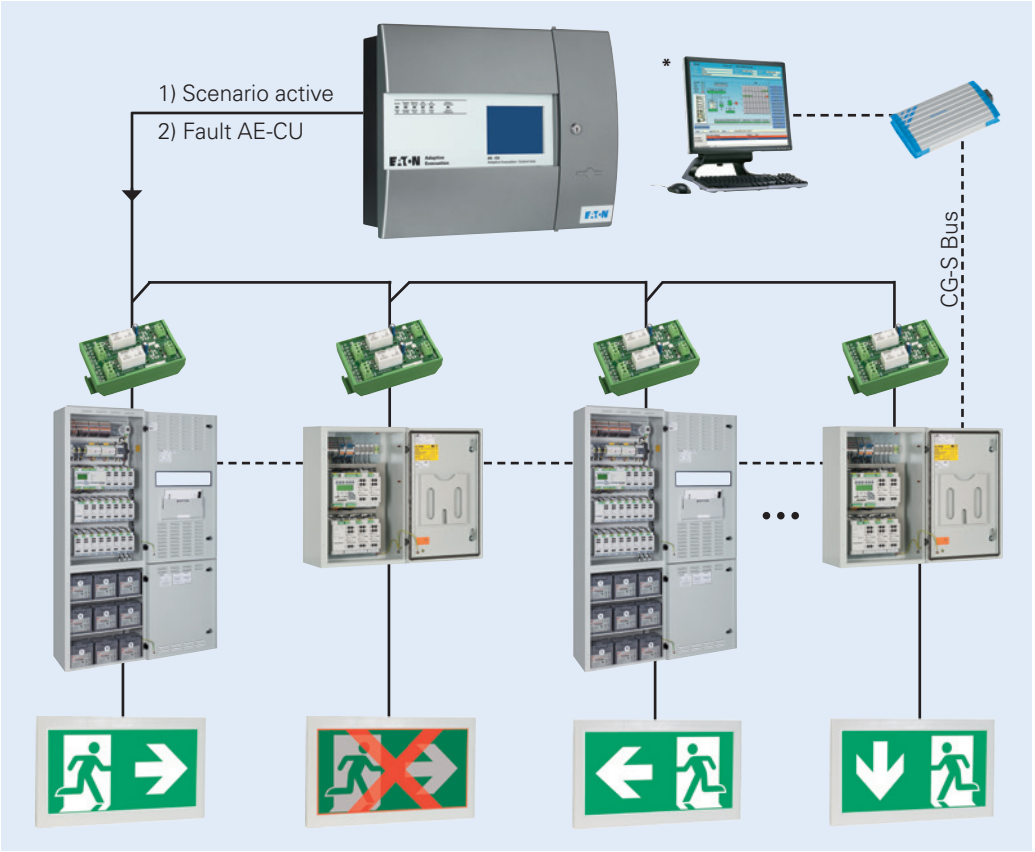
Scenario Active, Fault, Disablement

3 Fault messages:

Battery fault (AE-CU wall assembly), double address, earth fault, loop short circuit, charge fault, mains fault, loop communication fault, loop driver fault, trouble fault relay, CPU fault, loop overload, loop break at address, break-loop +loop

AE-CU Relay modul





* At connection of a CGVision the messages „Scenario active“ and „sum failure AE-CU“are shown on the control unit of the systems and on the CGVision. This messages are also listed in the test book with date and time.

AE-CU-W



AE-CU-W

Adaptive Evacuation Control Unit for wall mounting with integrated battery-supported power supply using loop technique for controlling addressable adaptive exit sign luminaires with 230V / 216V AC/DC technology for safety lighting systems acc. to DIN VDE 0100-560, DIN EN 50172 and V DIN V VDE 0108-100. With automatic testing device and monitoring of loop bus communication and individual display of condition and name of loop BUS connection per GuideLed DXC luminaire.

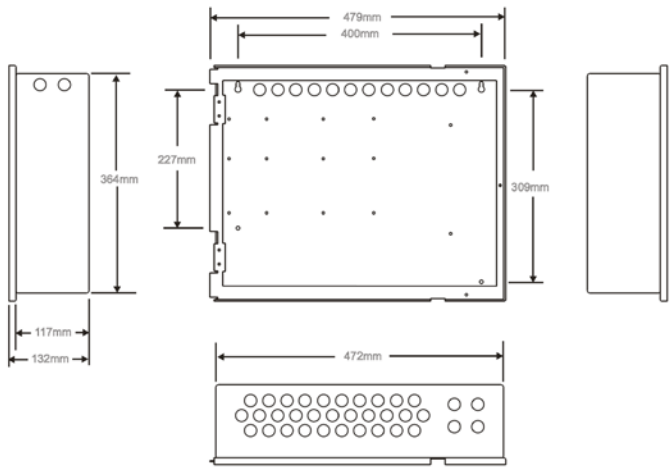
Primary rated voltage	230 V AC +10%,-15%
Primary rated current	75 mA
Nominal frequency	50 Hz
Protection rating	IP 30
Insulation class	I
Ambient temperature	-5°C to+40°C
Secondary rated voltage	18,5 V- 29,5 V
Battery	2 x 12 V / 12 Ah
Max. battery current	3.5 A
Charge characteristic	Constant voltage temperature-compensated
Min. backup power time	30 h
Weight with battery	14 kg
Dimensions (HxWxD in mm)	395 x 495 x 180
Basic housing material	Sheet steel, powder-coated
Material of front	Plastic
Inputs	
Addressable loop line	4
Scenario active inputs	2 (more on request)
Maximum ring length	2,000 m / I(ST)Y 4 x 2 x 0.8 mm
Maximum number of GuideLed DX/ DXC luminaires per loop	60
Outputs	
Zero-potential changeover contact	2
Contact load	24 V / 1 A
Fuse	1.35 A

Ordering details

Type	Scope of supply	Order No.
* AE-CU-W	Surface-mount / flush wall housing	40071361359

*note: not suitable for AT-S+ and LP-STAR systems

Dimensions in mm



AE-CU with loop bus technology

AE-CU 19" recessed housing / relay modul

AE-CU-E



AE-CU-E

Adaptive Evacuation Control Unit for assembly in ZB-S/18-AE units using loop technique for controlling addressable adaptive exit sign luminaires with 230V / 216V AC/DC technology for safety lighting systems acc. to DIN VDE 0100-560, DIN EN 50172 and V DIN V VDE 0108-100. With automatic testing device and monitoring of loop bus communication and individual display of condition and name of loop BUS connection per GuideLed DXC luminaire.

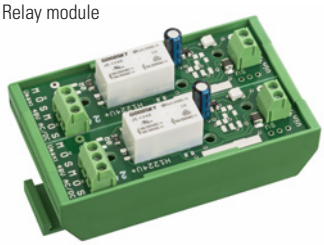
Primary rated voltage	28.5 V/DC
Primary rated current	4.2 A
Protection rating	IP 20
Insulation class	I
Ambient temperature	-5°C to+40°C
Secondary rated voltage	18.5 V- 29.6 V
Weight	8 kg
Dimensions (HxWxD in mm)	200 x 500 x 190
Material	Sheet steel, powder-coated
Inputs	
Addressable loop line	4
Scenario active inputs	2 (more on request)
Maximum ring length	2,000 m / I(ST)Y 4 x 2 x 0.8 mm
Maximum number of GuideLed DX/ DXC luminaires per loop	60
Outputs	
Zero-potential changeover contact	2
Contact load	24 V / 1 A
Fuse	1.35 A

Ordering details

Type	Scope of supply	Order No.
*AE-CU-E	Installation variant for ZB-S/18-AE	40071361360

*note: not suitable for AT-S+ and LP-STAR systems

Relay module



Relay module

Information units ‚scenario active' and ‚fault' are reported to the ZB-S by the AE-CU via the relay module (installed in a ZB-S/US-S). Six ZB-S/US-S can be connected per AE-CU. More on request.

Ordering details

Type	Scope of supply	Order No.
Relay module	Relay module connection set for use per ZB-S/US-S for connection to a AE-CU	40071361422

AE-CU-W



AE-CU-W

Adaptive Evacuation Control Unit AE-CU-W for wall mounting with integrated battery-supported power supply using loop technique for controlling addressable adaptive exit sign luminaires with 230V / 216V AC/ DC technology for safety lighting systems acc. to DIN VDE 0100-560, DIN EN 50172 and V DIN V VDE 0108-100. With automatic testing device and monitoring of loop bus communication and individual display of condition and name of loop BUS connection per GuideLed DXC luminaire.

Developed, manufactured and tested according to ISO 9001.

Pre-equipped for connection of 4 short circuit-resistant and open circuit resistant, faile-safe loop lines each for control of 60 adaptive exit sign luminaires and recording of two scenarios (more scenarios on request).

Free assignment of two scenarios for each individual adaptive exit sign luminaire via RS 232 interface and Windows-based configuration software.

Touchscreen display for display of operating states and operation of the controller.

Slot for network card

2 monitored outputs for scenario active for BMS connection

1 potential-free changeover contact General fault for BMS connection

1 x RS 232 interface

1 interface for optional protocol printer

Earth fault monitoring

Technical data:

Mains voltage: 230 V AC / 50 Hz

Power supply unit: 24 V DC / 3.0 A

Emergency power supply: 2 x 12 V / 12 Ah

Dimensions: W 497 x H 397 x D 180 mm

Type: CEAG AE-CU-W

Manufacturer: EATON

AE-CU-E



AE-CU-E

Adaptive Evacuation Control Unit AE-CU-E for assembly in ZB-S/18-AE units using loop technique for controlling addressable adaptive exit sign luminaires with 230V / 216V AC/ DC technology for safety lighting systems acc. to DIN VDE 0100-560, DIN EN 50172 and V DIN V VDE 0108-100. With automatic testing device and monitoring of loop bus communication and individual display of condition and name of loop BUS connection per GuideLed DXC luminaire.

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Earth fault monitoring

Technical data:

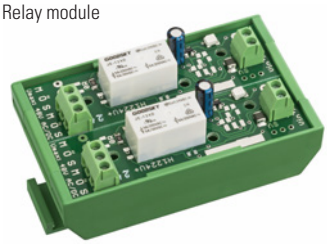
Supply voltage: 28,5 V DC

Dimensions: W 500 x H 200 x D 180 mm

Type: CEAG AE-CU-E

Manufacturer: EATON

Relay module



Relay module

Relay module for top hat rail installation, for connection of a central battery system of type ZB-S to the AE-CU via two zero-potential changeover contacts. With LED display for switching state of the relay.

Technical data:

Operating voltage: 22 V DC to 26 V DC

Current consumption: 7- 9 mA

Ambient temperature: -0°C to +55°C

SELV protection

Material: PCB material, PC for the plastic parts

Maximum of four relay modules per AE-CU

Dimensions: H 77 x W 45 x D 40 mm

Type: CEAG Relay module

Manufacturer: EATON

Programming, commissioning and instruction

Programming and commissioning of the AE-CU by CEAG Service after successful installation by the electrical contractor and presentation of the scenario control matrix. Instruction of operating personnel regarding AE-CU device functionality.

Type: Programming, commissioning and instruction

Manufacturer: EATON

AE-CU with loop bus technology

GuideLed 10011 DX CG-S

GuideLed 10011 DX CG-S





GuideLed 10011 DX CG-S

One-sided LED exit sign luminaire in keeping with German / European standards EN 60598-1, DIN EN 60598-2-22, DIN 4844-1 and DIN EN 1838 with additional function for displaying a red 'X' to signify an area as closed or blocked. With wall surface mounting set.

Exit sign in LED lightguide technology for especially uniform and

bright illuminationof the pictogram:

Lm >= 500 cd/m² of the white contrasting colour and

Lm >= 200 cd/m² across the entire pictogram

Uniformity Lmin/Lmax > 0.8.

Additional lightguide for displaying a red 'X'.

Increased visibility possible in bright surroundings with complex visual distractions via additional selectable function modes, e.g. flashing red 'X'. Additionally, the escape sign will be dimmed during display of red 'X'.

High service life ensured by optimised LED operating conditions.

Increased safety ensured by use of high life time LEDs and optimized LED operating conditions.

Minimum service requirement due to high service life of the LEDs (50 000 hours).

With high light efficiency > 110 lm/W for reduced connected load.

Reduced battery costs on account of especially low power consumption.

Without power supply: still visible pictogramm.

Slender design with low mounting height of only 44 mm including pictogram and mounting set.

Installation of the LED pictogram without tools on the surface mounting set.

Special LED converter with integrated monitoring module for single luminaire monitoring with 20-digit address switches and additional switch input for connection to Eaton's Adaptive Evacuation with use of the EATON AE-CU, dataline and bus module or connection to local input, e.g. smoke detector.

Mixed operation of the connection systems (maintained light, non-maintained light and switched maintained light within a circuit without additional data or actuating cables to the luminaires is possible in combination with suitable group or central battery systems with STAR technology.

Viewing distance: 20 m

Luminous flux at the end of the rated service time: 100%

Housing material: PC, PMMA

Housing colour:
light grey RAL 7035

Connection terminal:
Mains 3 x 2 x 2.5 mm²
Switch input 2 x 2 x 1.5 mm²

Supply voltage:
220- 240 VAC, 50/60 Hz /
176- 275 VDC

Current consumption-
battery operation:
16 mA

Power consumption- mains operation: 8,0 VA / 3,9 W

Protection Class: II

Degree of protection: IP 20

Permissible ambient temperature:
-20° Celsius to +40° Celsius

Dimensions including wall mounting set:
W = 226, H = 134, D = 44

Type: CEAG GuideLed 10011 DX CG-S

Manufacturer: EATON

GuideLed 10011 DXC CG-S





GuideLed 10011 DXC CG-S

One-sided LED exit sign luminaire in keeping with German / European standards EN 60598-1, DIN EN 60598-2-22, DIN 4844-1 and DIN EN 1838 with additional function for displaying a red 'X' to signify an area as closed or blocked.

With wall surface mounting set. Integrated bus interface for connection to an AE CU controller.

Exit sign in LED lightguide technology for especially uniform and bright illuminationof the pictogram:

Lm >= 500 cd/m² of the white contrasting colour and

Lm >= 200 cd/m² across the entire pictogram

Uniformity Lmin/Lmax > 0.8.

Additional lightguide for displaying a red 'X'.

Increased visibility possible in bright surroundings with complex visual distractions via additional selectable function modes, e.g. flashing red 'X'. Additionally, the escape sign will be dimmed during display of red 'X'.

High service life ensured by optimised LED operating conditions.

Increased safety ensured by use of high life time LEDs and optimized LED operating conditions.

Minimum service requirement due to high service life of the LEDs (50 000 hours).

With high light efficiency > 110 lm/W for reduced connected load.

Reduced battery costs on account of especially low power consumption.

Without power supply: still visible pictogramm.

Slender design with low mounting height of only 44 mm including pictogram and mounting set.

Installation of the LED pictogram without tools on the surface mounting set.

Special LED converter with integrated monitoring module for single luminaire monitoring with 20-digit address switches and additional bus interface for connection to Eaton's Adaptive Evacuation with use of the EATON AE-CU.

Mixed operation of the connection systems (maintained light, non-maintained light and switched maintained light within a circuit without additional data or actuating cables to the luminaires is possible in combination with suitable group or central battery systems with STAR technology.

Viewing distance: 20 m

Luminous flux at the end of the rated service time: 100%

Housing material: PC, PMMA

Housing colour:
light grey RAL 7035

Connection terminal:
Mains 3 x 2 x 2.5 mm²

Bus interface 2 x 2 x 1.5 mm²

Supply voltage:
220- 240 VAC, 50/60 Hz /
176- 275 VDC

Current consumption- battery operation: 16 mA

Power consumption- mains operation: 8,0 VA / 3,9 W

Protection Class: II

Degree of protection: IP 20

Permissible ambient temperature:
-20° Celsius to +40° Celsius

Dimensions including wall mounting set:
W = 226, H = 134, D = 44

Type: CEAG GuideLed 10011 DXC CG-S

Manufacturer: EATON

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