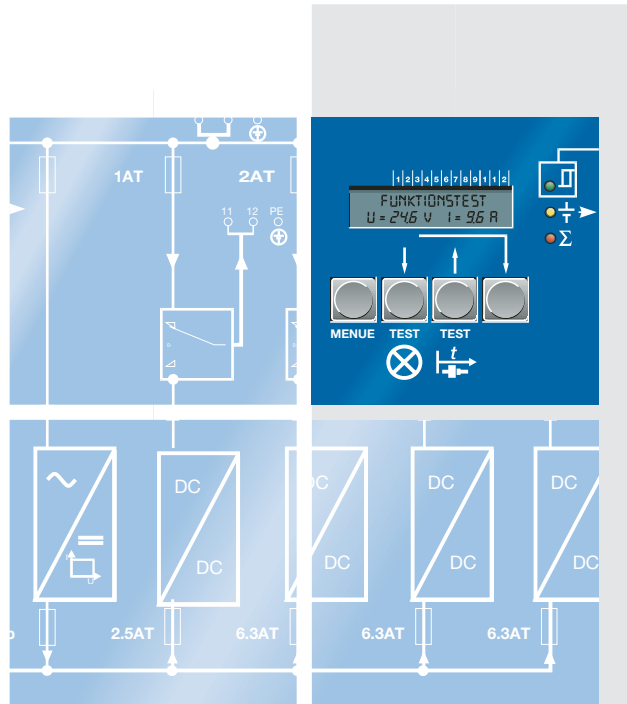


Emergency Lighting Supply Unit CeaGuard 48



CeaGuard 48 Advantages



The CeaGuard 48 emergency lighting supply unit is exceptionally suited for use in areas that must be installed per segregated fire zone.

Due to their compact dimensions, the covers can easily be installed. When using CEAG exit and emergency luminaires with the CEWA GUARD monitoring station, a cost-cutting emergency lighting system at very low maintenance cost can be realized. The CEWA GUARD individual monitoring system tests all functions of the cover and of the connected emergency luminaires fully automatically so that the operativeness of the emergency lighting systems is reliably ensured at all times. The picture of an optimized and low cost emergency lighting system is rounded off by central monitoring facilities to which, depending on the design, up to 256 CeaGuard 48 emergency lighting supply units can be connected and monitored.

- High safety level due to decentralized configuration
- Display texts adapted to the respective national language
- Installation per segregated storey or fire zone
- Fully automatic CEWA GUARD function monitoring system
- Emergency luminaires with CEWA GUARD monitoring
- Freely programmable control module
- Energy-saving and favourable cost due to optimized lighting engineering in conjunction with maximum possible monitoring
- Patented charge monitoring

Assets of the Automatic Individual Monitoring for Emergency Lighting Systems



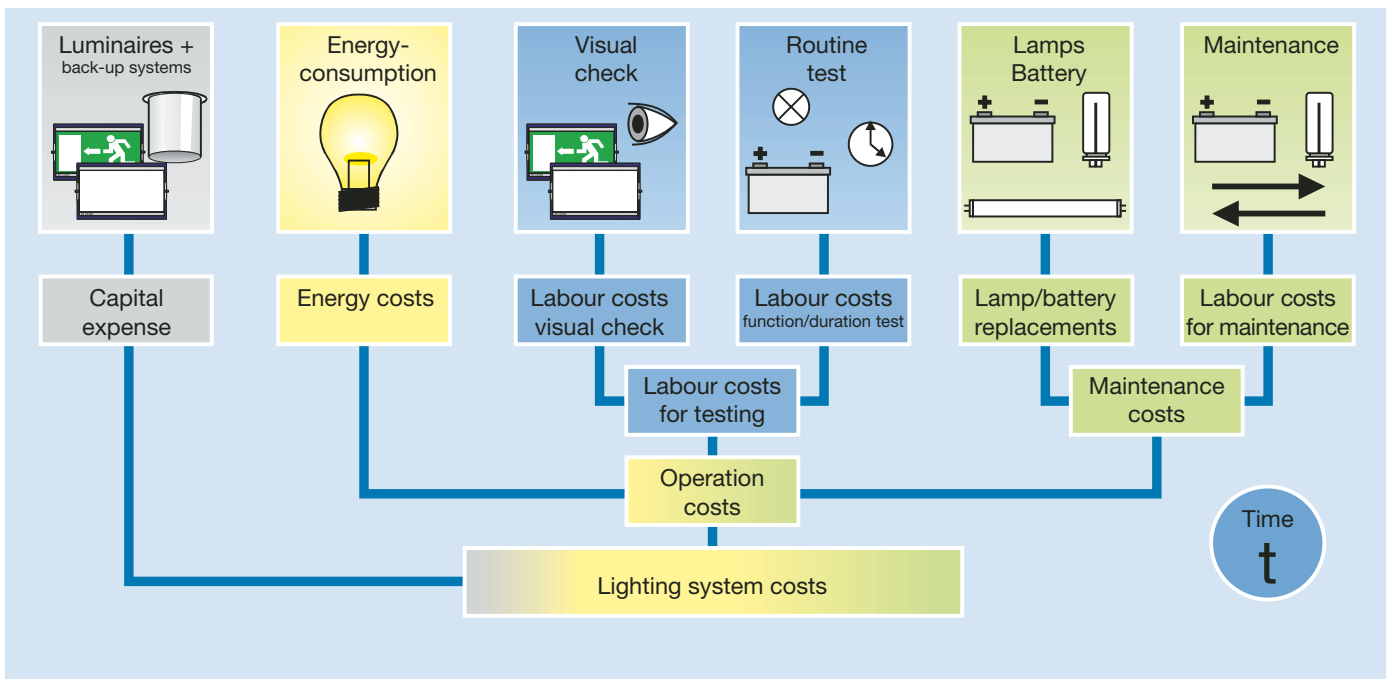
Burj Al Arab, Dubai

Emergency lighting requires a well thought-out planning. CEAG's experience and know-how are at your disposal.

Emergency lighting costs

Reliable light in an emergency situation or a mains fail condition! That feature of an emergency lighting system means a more to safety. But nobody is ready to accept unreasonably high costs to meet that requirement. And the costs of emergency lighting can be quite considerable. You do not only have to consider the initial spendings, but also the operating costs that are generally even higher in the long-term (see graph). They depend on the national regulations concerning tests, inspection and maintenance. Apart from the national requirements, considerations concerning the most favourable solution to a project should take into account another two major cost factors, namely **energy costs** and the **combined service, maintenance and inspection requirements**.

5



FT = Function test
DT = Duration test

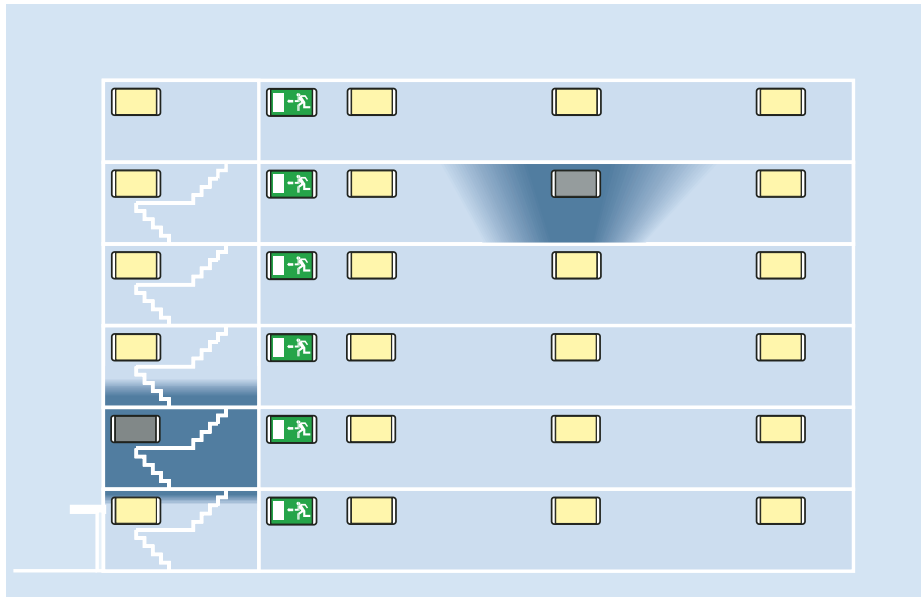
Assets of the Automatic Individual Monitoring for Emergency Lighting Systems



Energy costs

All CEAG emergency luminaires and systems are designed so that a reliable and optimum illumination is achieved at a minimized energy consumption. State-of-the-art electronics and microprocessors permit the use of electronic high-frequency ballasts in all emergency luminaires. The graph below illustrates the ratio of the energy consumption with conventional ballasts (KVG) (WG) and electronic high-frequency ballasts (EVG). Due to the savings in energy costs (approx. 35 %) and other assets of the high-frequency ballasts (burn-in tested, min. 100,000 service hours, prolonged lamp service life, no stroboscopic effect, low power loss in mains operation), this solution has become the standard for all emergency lighting applications.

CEAG luminaires with high-frequency ballasts reduce energy costs in mains and battery operation.



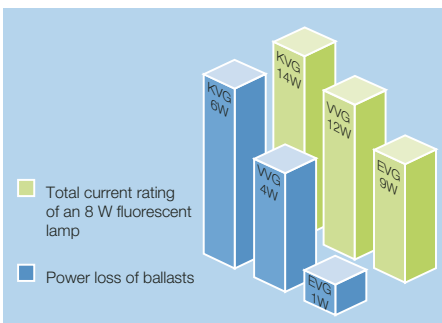
Each emergency luminaire is important. It protects life and health.

Service, maintenance and inspection

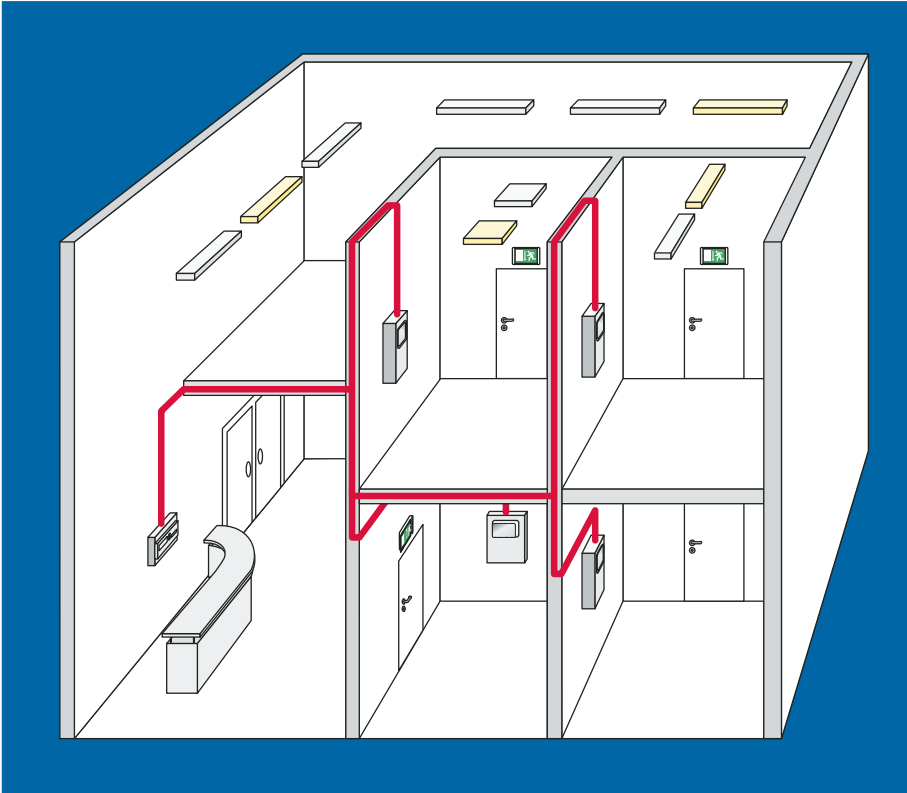
When an emergency lighting system is put into operation, it is in perfect condition. What, however, counts more, is its reliable functioning in case of emergency, regardless of whether that happens after 4 weeks or 5 years. Maintenance, service and inspection are the prerequisite for that reliability. That is, of course, expensive. Lamps and batteries must be replaced. Apart from regular visual checks, all luminaires must be submitted to function and duration Tests. Test data and system-related information must be documented in a log book. CEAG emergency power supply systems with **CEWA GUARD** functions considerably simplify maintenance, service and inspection and thereby provide for a distinct reduction of costs.

Maintained mode	Non-maintained mode
Would that luminaire operate in case of a mains failure?	

Approx. 75 % of all luminaires installed operate in non-maintained mode.



What CeaGuard 48 Stands for



CEWA GUARD is a self-testing and monitoring system. The concept that was developed in 1979, has continually been updated to reflect the most recent technical standards. It has a long successful track record.

To make this system as efficient as possible and to minimize costs during installation, we have adopted the 2L CG (two-wire CEWA GUARD) technology.

That means only one cable for:

- AC 230/240 V, 50/60 Hz power supply
- DC 220 V power supply
- data transmission

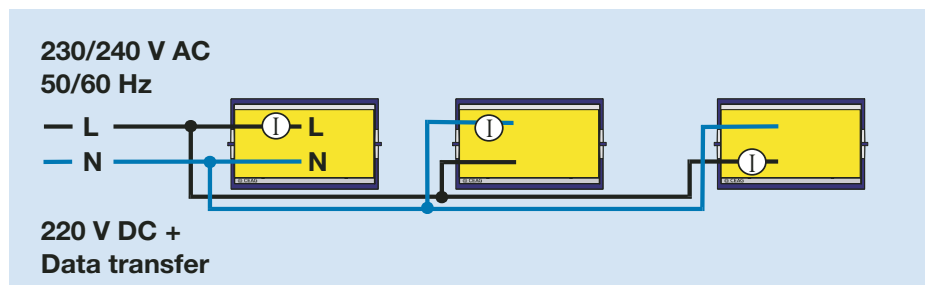
No additional shielded cables are required to operate the system. The short-circuit-proof L/N connection provides for a safe and reliable functioning of the system.

The backbone and brain of the system is a microprocessor which controls and monitors all functions, stores any

changes of the status and passes information to an overriding monitoring and display system.

Some of the CEWA GUARD functions that are incorporated in our CeaGuard 48 system:

- continuous monitoring of charging unit and battery
- periodical function test of all components (e. g. lamps, high-frequency electronic ballasts)
- periodical duration tests (e. g. yearly)
- Display of any function failures
- Display of all relevant status information
- Logging and/or printout of all system-related data (failures, tests, status)



What CeaGuard 48 Stands for

The CEWA GUARD system is flexible with regard to the number and type of luminaires and to the back-up system. Our emergency luminaires with CEWA GUARD monitoring functions comply with the directives of EN 60598-2-22 and 89/336/EEC EMC.

Luminaires that are connected to the mains supply via the back-up system, operate as completely self-contained and independent system components. The mains connected processor regularly checks the voltage of the battery set. It checks the battery and charging unit circuit every minute and displays any failure immediately.

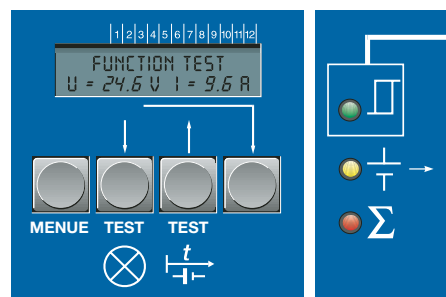
A function test of all luminaires connected to the system is automatically released by the processor and repeated periodically, e. g. once per month. During the function test (FT) the mains supply will be interrupted, and all connected luminaires will be fed from the battery of the supply

system, for example the CeaGuard 48. The test confirms the faultless operation of lamps, charging unit and batteries. The results are displayed via LEDs and a two-line LCD display in plain text. The duration or battery test (BT) is generally automatically performed once a year.

The time reached and a duration below the required value are displayed. Failure displays are helpful to the maintenance staff, since they reduce the time for troubleshooting considerably, and simultaneously increase the safety level. In larger buildings the individual test of the CeaGuard 48 emergency power supply units does not make sense for reasons of time and costs.

In such circumstances, the use of a central monitoring station which checks and logs each luminaire and each CeaGuard 48, is far more economical.

For such use, options like the controller and the CG monitoring and programming facility are available.



Supply and fully automatic function monitoring of max. 48 CEAG emergency luminaires (SL/RZ) 4-8 Watt from one panel.

Optimal 1, 2 or 3 h operation.

Automatic display of faulty luminaires.

The CeaGuard 48 emergency supply unit represents the first fully monitored emergency supply system with low power consumption of small compact design, which, despite its small dimensions, offers all assets of the large systems.

Installation and maintenance

- No additional data cable required
- Minimized installation, service and maintenance effort
- The replacement of one battery block saves replacing up to 48 single NiCd accumulators.

Savings

- Electronic ballasts reduce the energy consumption also in mains operation
- Specific maintenance due to automatic central failure message
- No additional installation effort required (2-wire technique)
- Extended lamp service life
- No elaborate manual checks
- Automatic function and duration tests

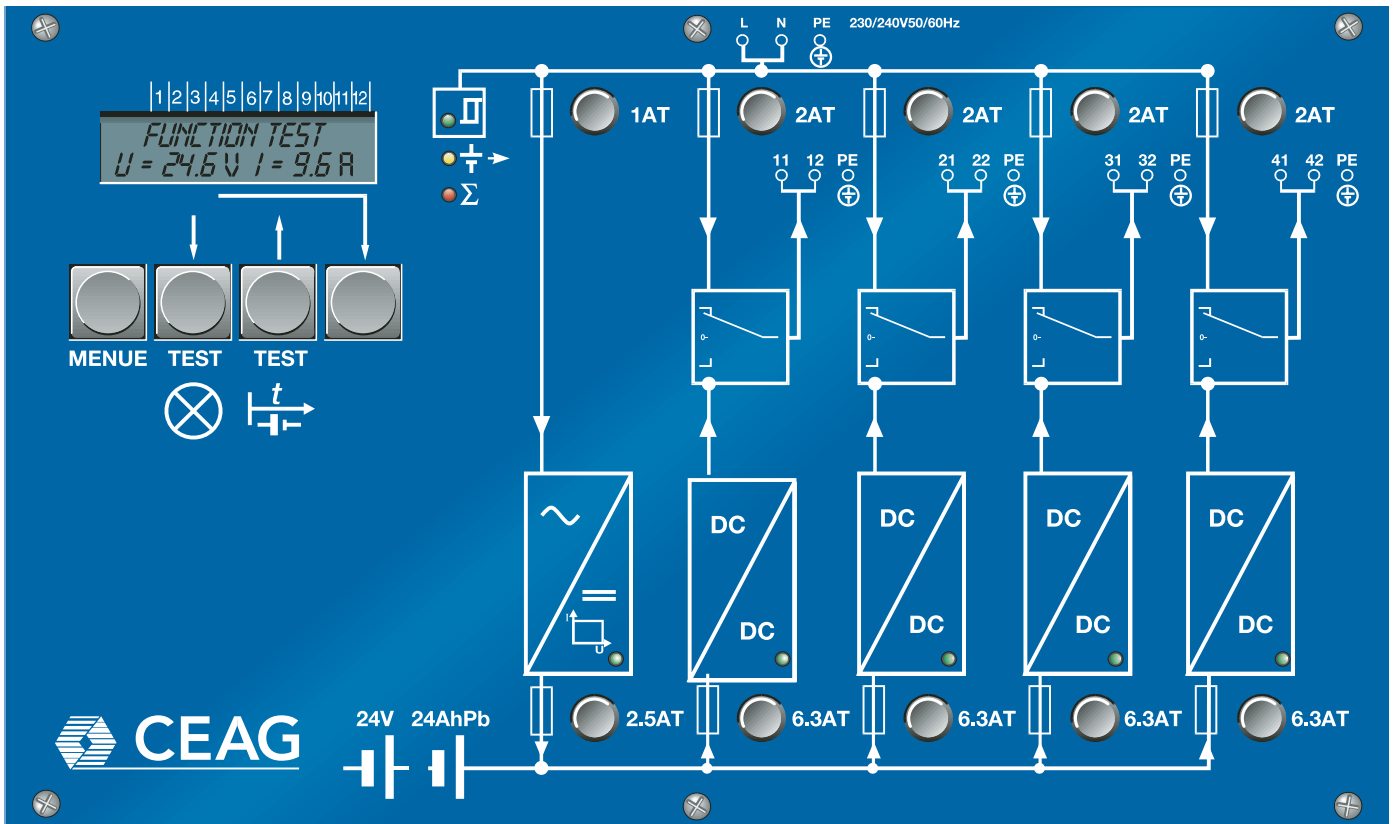
Completely monitored

- Down to the last luminaire
- Automatic function test of each luminaire
- Failures are displayed at one central point and can be eliminated immediately
- System failures are reported so that the operativeness of the whole system is ensured at all times.

Environmental protection and emergency lighting

- Standard NiCd accumulators used with the self-contained luminaires can increase environmental pollution.
- It makes more sense to use maintenance-free lead accumulators with a recycling rate of >96 %.

Motherboard with Control Module, Charging Module and Changeover Facilities



The freely programmable control module with two-line liquid crystal display and constant memory back-up has two main functions:

- monitoring and control of all test cycles and functions
- display in plain text of the panel and luminaire functions (operation or failure)

The two-line display indicates:

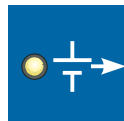
- battery voltage
- battery charge current
- battery discharge current during the test run or emergency operation
- charge failure
- luminaire failure

In the event of a mains fail condition or a summary failure, an integrated acoustic alarm can be activated.

LEDs indicate the following operational states:



Mains voltage



Battery operation



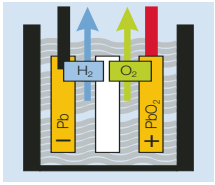
Luminaire or system failure



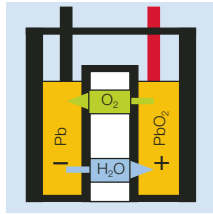
The automatic function test which is generally performed every seven days, and the duration test which is generally performed every 12 months, can be freely programmed depending on the respective national regulation.



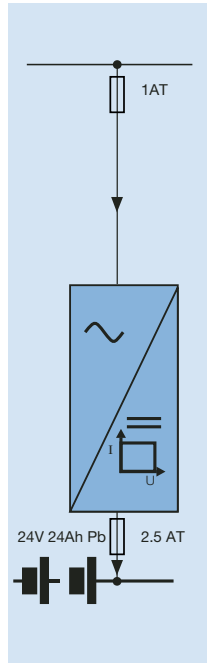
Battery and Charging Technology



When a traditional lead-acid accumulator with flooded electrolyte is overcharged, the water will be electrolytically separated and be converted into oxygen on the positive electrode and into hydrogen on the negative electrode. The lost water must be replaced at regular intervals in order to prevent the battery's drying out.

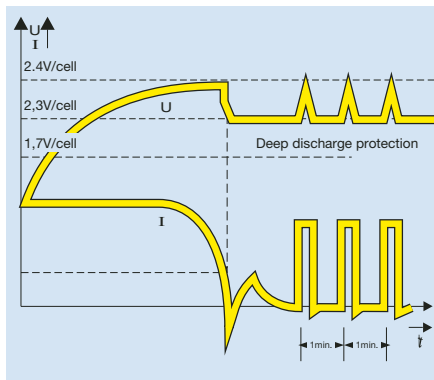


The absorption cells with extremely low gassing are designed so that the positive plate is fully charged prior to the negative one so that the oxygen set free diffuses to the negative plate. There it reacts with the lead and is converted into lead oxide which then reacts with the sulphuric acid electrolyte and thereby produces lead sulphate and water. Thus, a loss of water is completely prevented.



Environmentally friendly battery technology

- Battery service life > five years
- with immobilized electrolyte
- wholly sealed
- extremely low gassing
- maintenance-free over the whole service life
- operating with low internal pressure
- IATA certified for air transportation
- Safety vents
- Maintenance-free terminals



Patented charge monitoring method

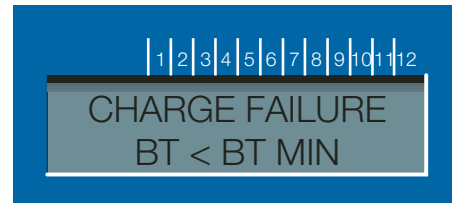
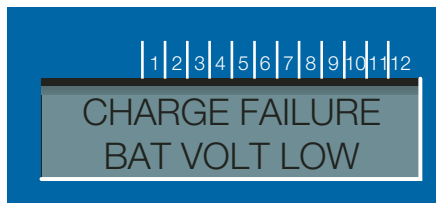
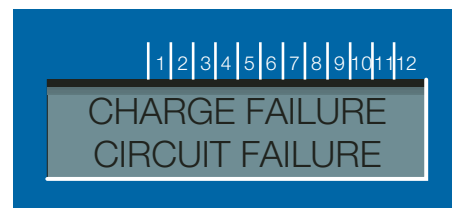
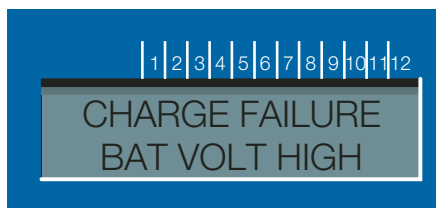
for the fault recognition in the battery circuit in the event of:

- blown fuse
- a defective charging unit
- battery over-/undervoltage
- falling short of the duration test time
- missing battery

Constant potential charge acc. to I/U characteristic.

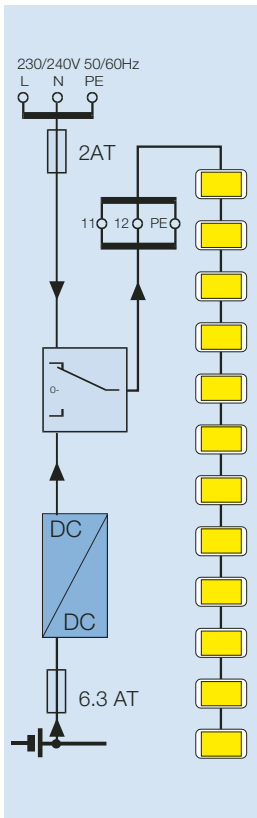
Boost charge depending on the consumed energy and time-controlled trickle charge.

Recharge period: 10 h - 24 Ah
20 h - 65 Ah



System Modes

Each change-over device of the CeaGuard 48 can be operated in different system modes.



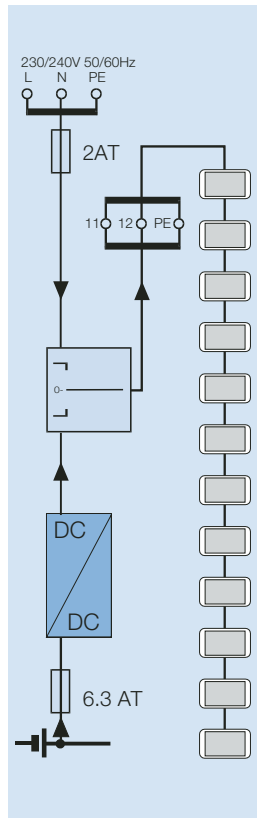
Maintained light

Emergency luminaires in "maintained light" mode light

– in any operational state.

In mains operation, the luminaire is supplied with 230/240 V 50/60 Hz via the terminals 11/12 of an L/N change-over device.

In the event of a mains failure, the 24 V battery voltage will be converted into a higher DC voltage. The connected luminaires will be supplied via the change-over device.



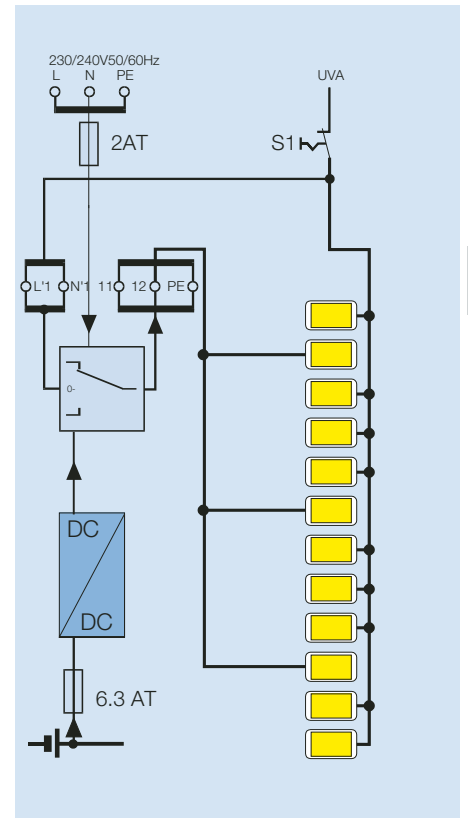
Non-maintained light

Emergency luminaires switched in "non-maintained" mode light

- when the normal lighting fails (mains failure)
- during a manually or automatically released duration test

In a mains fail condition, the control module switches over to battery operation.

The DC voltage is now fed via the DC-DC converter and the change-over device and supplies the luminaires, until the mains are restored or the deep discharge protection level has been reached.



Switched maintained light

Emergency luminaires switched in "switched maintained" mode, light

- when the general lighting is switched on
- when the general lighting fails
- during a manually or automatically released duration test.

This system mode permits emergency lighting to blend in with the general lighting.

Technical Data / Ordering Details



① CeaGuard 48 (24 Ah)

CeaGuard 48

The CeaGuard 48 is designed for the supply and monitoring of 48 emergency luminaires with CEWA GUARD monitoring in maintained, non-maintained or switched maintained light mode.

The CeaGuard system features a maintenance-free, completely sealed lead-acid battery for 1 or 3 h duration of emergency lighting. The batteries are gently charged according to an I/U charging characteristic. Due to a patented charge monitoring method, a failure in the battery circuit is immediately indicated.

Max. four inverters supply and monitor max. 12 CEAG emergency luminaires each in mains and battery operation. The control module with 2-line display indicates any changes in the operating state of the whole emergency lighting system. Via potentialfree indicator contacts or an E/G/A data interface, the status messages can be transmitted to a central monitoring station.

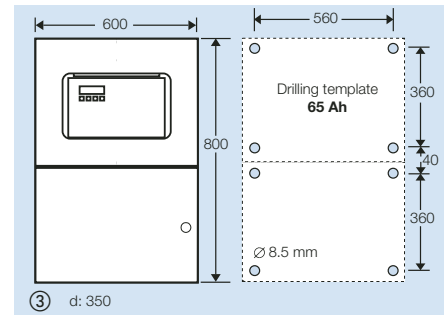
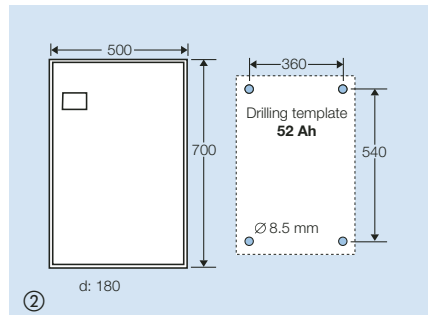
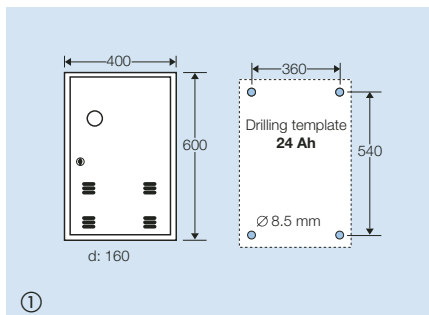
Technical Data

Mains voltage		230/240 V 50/60 Hz
Input filter		250 V/3 A, 50/60 Hz, Temp. = 40 °C
Output voltage	in mains operation	230/240 V 50/60 Hz
	in battery operation	220 V DC
Degree of protection	① 24 Ah version	IP 20 (elektronik-battery compartment)
	② 52 Ah version	IP 54 (electronics compartment), IP 21 (battery compartment)
	③ 65 Ah version	IP 54 (electronics compartment), IP 21 (battery compartment)
Insulation class		I
Battery	① 24 Ah version	2 x 12 V 24 Ah OGIV
	② 52 Ah version	2 x 12 V 52 Ah OGIV
	③ 65 Ah version	2 x 12 V 65 Ah OGIV
Weight apx.	① 24 Ah version	29 kg incl. batteries
	② 52 Ah version	61 kg incl. batteries
	③ 65 Ah version	85 kg incl. batteries
Dimensions (mm) w x h x d	① 24 Ah version	400 x 600 x 160
	② 52 Ah version	500 x 700 x 180
	③ 65 Ah version	600 x 800 x 350
Mounting		Wall mounting
Cable entry		Metall-flange plate, top
No. of luminaires per circuit		12 pcs. (dep. from luminaire load)
No. of circuits per cover		4 pcs.
Total no. of luminaires		max. 48 pcs.

Ordering details

Type	Scope of supply	Enclosure colour	Order No.
① CeaGuard 48/24	Battery 24 Ah/4 circuits	RAL 7032	4 0071 341 105
② CeaGuard 48/52	Battery 52 Ah/4 circuits	RAL 7032	4 0071 346 755
③ CeaGuard 48/65	Battery 65 Ah/4 circuits	RAL 7032	4 0071 346 195


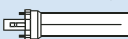
Dimensions (mm)



Power Consumption Max. No. of Lamps per Converter

Electronic ballasts: EVG 13.2 CG-S

Current 75 % luminous flux and 20 °C ambient temperature on the luminaire

Type of lamp No. of lamps	T 16 				TC-SEL/DEL (4-pin) 					
	4 W	6 W	8 W	13 W	5 W	7 W	9 W	10 W	11 W	13 W
1	0.18	0.24	0.30	0.53	0.29	0.32	0.41	0.49	0.41	0.53
2	0.36	0.48	0.60	1.06	0.59	0.64	0.82	0.99	0.82	1.06
3	0.54	0.72	0.90	1.59	0.88	0.95	1.24	1.48	1.24	1.59
4	0.72	0.96	1.20	2.12	1.18	1.27	1.65	1.98	1.65	2.12
5	0.90	1.20	1.50	2.65	1.47	1.59	2.06	2.47	2.06	2.65
6	1.08	1.44	1.80	3.18	1.76	1.91	2.47	2.96	2.47	3.18
7	1.24	1.68	2.10	3.71	2.06	2.22	2.88	3.45	2.86	3.71
8	1.44	1.92	2.40	4.24	2.35	2.54	3.29	3.95	3.29	4.24
9	1.62	2.16	2.70		2.65	2.86	3.57		3.71	
10	1.80	2.40	3.00		2.94	3.18	3.71		4.12	
11	1.98	2.64	3.30		3.24	3.49	4.12			
12	2.16	2.88	3.60		3.53	3.81				

Max. battery current complete

Batt.	Operating duration	
	1 h	3 h
24 Ah	14.4 A	6.4 A
52 Ah	17.0 A	13.8 A
65 Ah	17.0 A	17.0 A

Note! Battery current per converter: 4.25 A

Electronic ballasts: N-EVG CG-S, EVG 18 ...

Current at 20 °C ambient temperature on the luminaire

Type of lamp	TC-DEL/TC-TEL 18 W	T 26/TC-L / TC-F 18 W	TC-DEL / TC-TEL 26 W	T 26 36 W		
Type of EVG	EVG 18 C CG-S	EVG 18 CG-S	EVG 126 CG-S	EVG 136 CG-S		
No. of lamps	luminous flux 100 %		luminous flux 100 % 50 %		luminous flux 100 % 50 %	
1	0.99		1.68	1.17	2.17	1.19
2	1.86		3.24	2.22	4.25	2.26
3	2.74			3.27		3.33
4	3.61					

Options



Three-phase monitor

Three-phase monitor

Should one phase fail, a relay contact will be switched and the 24 V current loop of the CeaGuard 48 cover will be interrupted. Thereby, the connected emergency luminaires are switched over to battery operation.

Simultaneously, the potentialfree indicator contact of the three-phase monitor provides the possibility to exactly localize the voltage failure. If more than one subsidiary distribution board is to be monitored, it is possible to interlink several three-phase monitoring modules.

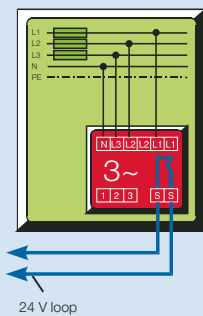
Technical data

Dimensions (mm) (h x w x d)	85 x 52.5 x 65
Enclosure	Plastic
Connection terminals	2.5 mm ² rigid and flexible
Type of mounting	DIN rail
Contact 1, 2, 3, S, S	0.5 A/24 V AC DC

Ordering details

Type	Scope of supply	Order No.
Three-phase monitor	Module	4 0071 343 430

Substation with 3-phase monitoring



24 V loop



F3 remote indication

F3 remote indication

The CEAG F3 remote indication indicates the status of a CeaGuard 48 cover. The following is indicated via three potentialfree indicator contacts:

- mains operation
- battery operation
- system failure

Backed up by an own battery supply of the CeaGuard 48 cover, these indicators are also displayed in a mains fail condition.

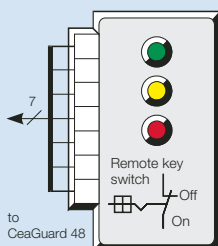
The connected CeaGuard 48 cover can be put out of operation by means of a built-in key-operated switch.

Technical Data

Connection terminals	2.5 mm ² rigid and flexible
Switching capacity of the contacts	11/12, 21/22, 31/32 0.5 A/24 V AC/DC
Dimensions (mm) (h x w x d)	180 x 80 x 55

Ordering details

Type	Scope of supply	Order No.
F3 remote indication	Module	4 0071 338 497



Options



Controller CG 48

Controller CG 48

Micro-computer controlled controller for the recording and remote control of max. 32 CeaGuard 48 covers.

All messages and commands are transmitted via the serial data bus (3-wire) between the controller and the CeaGuard 48 covers.

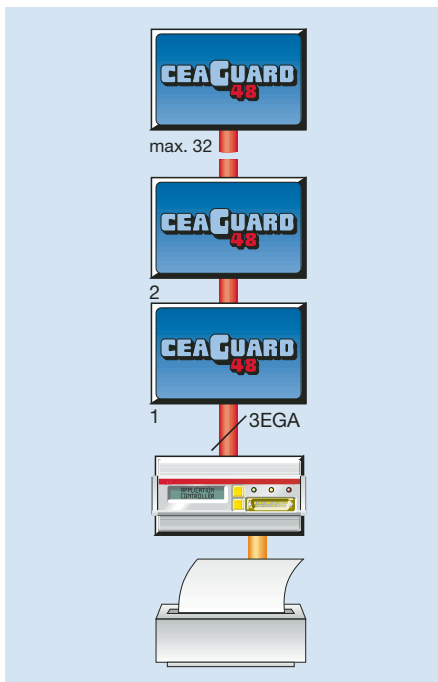
Technical data

Dimensions (mm) l x w x h	175 x 85 x 75
Enclosure	Plastic
Connection terminals	2.5 mm ² rigid and flexible
Printer interface	DB 25
Printer driver for	IBM Proprinter, HP Deskjet
Type of mounting	DIN rail

Ordering details

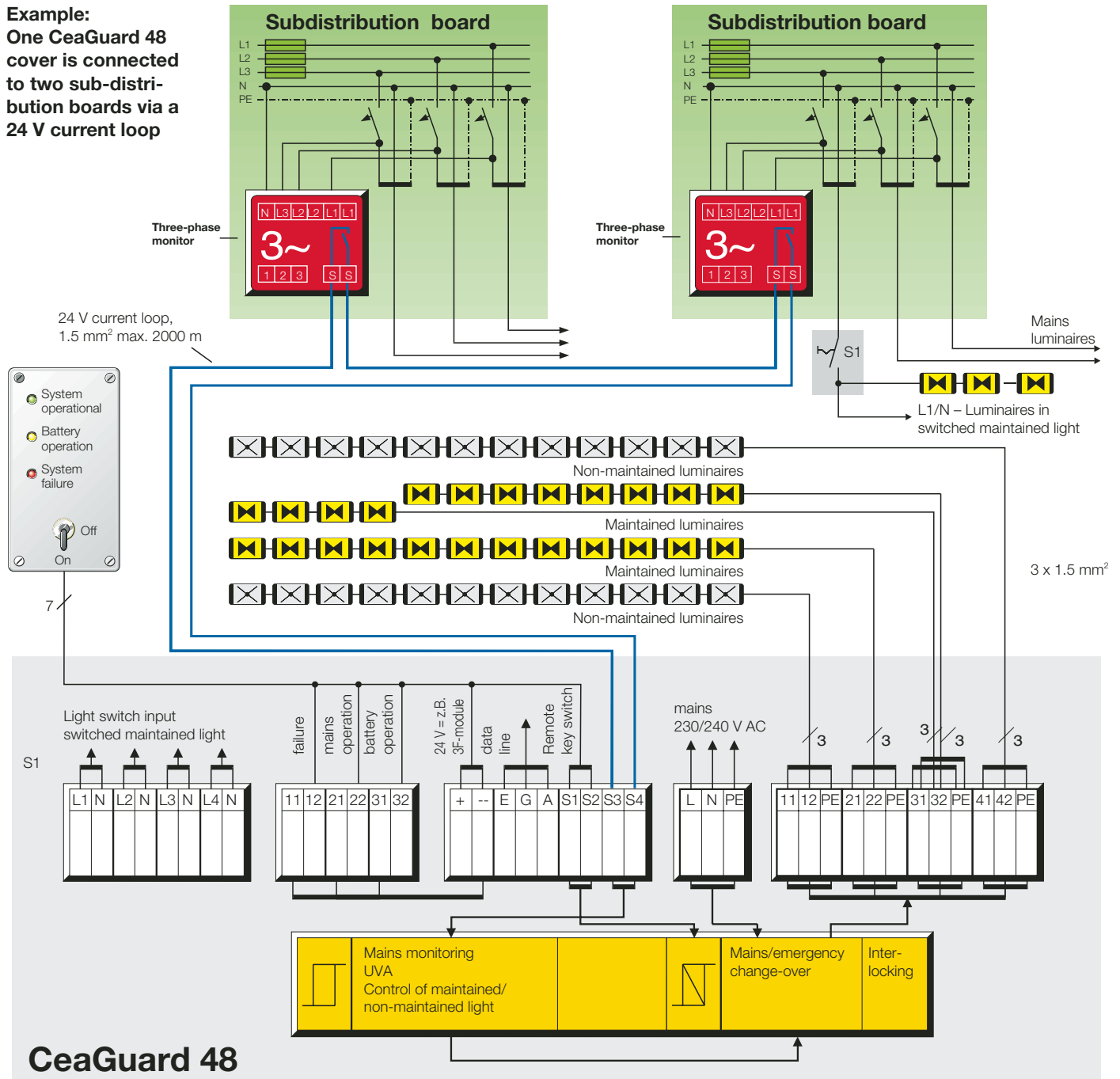
Type*	Scope of supply	Order No.
Controller CG 48	ready to be mounted, for max. 32 CG 48 covers	4 0071 346 062

*state-system when ordering



Installation Example with F3 remote indication Terminals and Connection Possibilities

Example:
One CeaGuard 48
cover is connected
to two sub-distribution
boards via a
24 V current loop



CeaGuard 48

potentialfree indicator contacts: max. 24 V, 3 A AC/DC, external supply

	11/12	21/22	31/32
Mains operation	open	closed	open
Mains supply	open	open	closed
Charging failure	closed	open	open
Inverter fault	closed	open	open
Sam failure	closed	open	open
Deep discharge protection	closed	open	open
Function test	open	open	closed
Duration test	open	open	closed

EGA data line

max. cable run	1000 m at 3 x 0.5 mm ²
	2000 m at 3 x 1.0 mm ²
	2500 m at 3 x 1.5 mm ²
	6000 m at 3 x 2.5 mm ²

Remote switch

S1/S2	Closed emergency function possible
	Open system blocked

Installation Example with CG Annunciator Cover and Printer

Every single luminaire failure is displayed on the monitor and printed out.

