Lighting solutions 2018/19
Product catalogue

Lighting optimised for energy efficiency, safety and aesthetics.

Powering Business Worldwide

Powering business worldwide

As a global power management company, we help customers worldwide manage the power needed for buildings, aircraft, trucks, cars, machinery and businesses.

Eaton's innovative technologies help customers manage electrical, hydraulic and mechanical power more reliably, efficiently, safely and sustainably.

EATON

Powering Business Worldwide

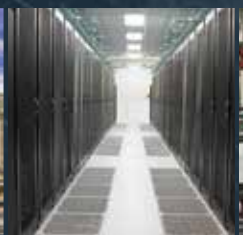



We deliver:

- **Electrical solutions** that use less energy, improve power reliability and make the places we live and work safer and more comfortable
- **Hydraulic and electrical solutions** that enable machines to deliver more productivity without wasting power
- **Aerospace solutions** that make aircraft lighter, safer and less costly to operate, and help airports operate more efficiently
- **Vehicle drivetrain and powertrain solutions** that deliver more power to cars, trucks and buses, while reducing fuel consumption and emissions

We provide energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably.

With 2017 sales of $20.4 billion, Eaton has approximately 96,000 employees and sells products to customers in more than 175 countries.




Eaton's electrical business

Eaton is a global leader with expertise in:

- Power distribution and circuit protection
- Backup power protection
- Solutions for harsh and hazardous environments
- Lighting and security
- Structural solutions and wiring devices
- Control and automation
- Engineering services

Eaton is positioned through its global solutions to answer today's most critical electrical power management challenges. With 100 years of electrical experience behind us, we're energized by the challenge of powering up a world that demands twice as much energy as today. We're anticipating needs, engineering products and creating solutions to energize our markets today and in the future.

We are dedicated to ensuring that reliable, efficient and safe power is available when it's needed most.

Eaton.com

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At Eaton, we help meet the challenging demands of modern commercial buildings...

Design and build lit environments optimised for comfort and aesthetics

A building's infrastructure is the foundation of any business – maximising the functional use of space, increasing energy efficiency and keeping people safe are all critical considerations. Eaton's breadth of lighting products and services make us the ideal partner for meeting the challenges of today's commercial buildings. Our energy efficient products and innovative technologies help lower operating and maintenance costs, as well as reducing a building's carbon footprint to improve environmental credentials. Meanwhile, our custom design solutions help you to maximise the use of space and enhance the user experience, whilst ensuring compliance with all relevant safety legislation.

Lower risk with on-time project execution and expertise

Keeping projects on time and on budget is a big task – from design to build and installation. So at Eaton, we have experienced, dedicated sales, project management and customer service teams to provide accurate and timely information, helping you stay on-schedule and on-budget, and allowing you to focus on your customers.

Our global business footprint also means we can partner with your business, wherever it operates, offering local support and custom solutions. At Eaton, we always lead with the latest technologies to push beyond today and ensure you reduce risk tomorrow.

Protect people, assets and reputation for business continuity

At Eaton, we provide reliable and compliant solutions for all of your lighting needs. Emergency lighting in particular gives rise to very specific needs that place a significant burden on the designated 'responsible person' of a building, and Eaton have the expertise to advise you on the latest standards and regulations, ensuring compliance of your installation.

We offer a wide range of support services to ensure your lighting installation meets not only basic operational and safety standards on day one, but will continue to do so throughout its lifetime - allowing you to focus on running your business.

… and provide a solution to source with confidence

We promise that:

• Every product we sell is tested and has passed the relevant standards using our in house, calibrated laboratory equipment.

• All performance data quoted is as measured from a production product using calibrated photometric equipment in real life conditions.

• All products are backed by a comprehensive warranty with the minimum amount of limitations and restrictions in the small print.

• In the event something goes wrong, our technical and service support staff will be there to sort out the problem.

The alternative, of course, is to source via Eaton - your trusted partner for lighting

Bespoke Solutions

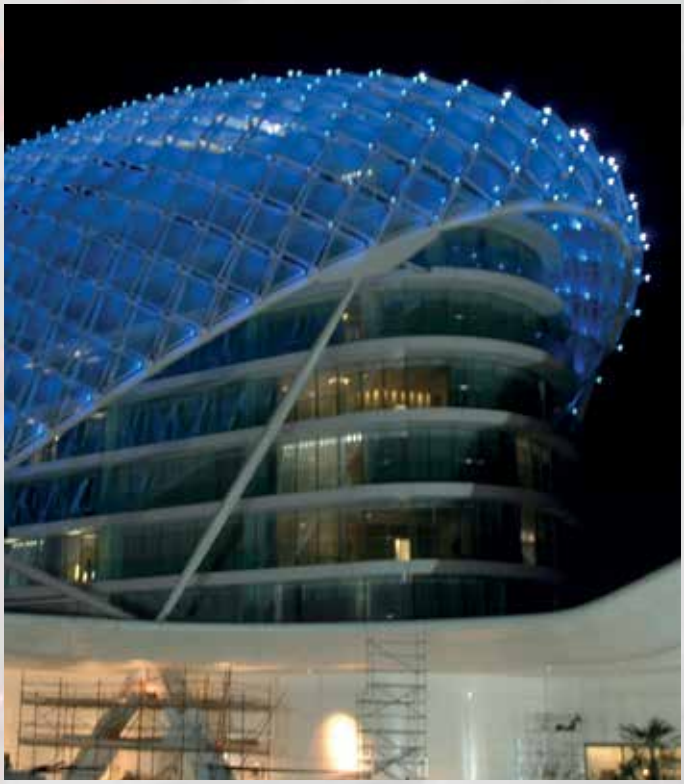
Eaton are a market leader in bespoke lighting solutions, with the expertise contained within our in-house product design team allowing us to respond to a customer's specific project needs. From modifications to standard products to meet particular specifications, through to complete bespoke solutions – where there's a business challenge, you need Eaton.

Yas Viceroy Hotel, Abu Dhabi

One of the most recognised and unique hotels in the world, Yas Viceroy Abu Dhabi Hotel forms the stunning backdrop to the Yas Marina F1 circuit – with the iconic 217-metre expanse of sweeping, curvilinear glass and steel, known as the gridshell, arching over the track.

After an initial introduction to the demanding product brief, a meeting was held with lighting consultants ARUP in New York to work through the specifics of the design. Details were sent back to Eaton's in-house design team and within two weeks, a fully working prototype was completed.

Just a few weeks later, after thorough optical and endurance testing, a full working mock-up consisting of 12 fixtures was built in the gruelling Abu Dhabi desert for final approval. As the glass panels on the hotel are mounted at different angles, each fixture was fitted with one of five micro-prismatic controllers to ensure accurate and even illumination across the 5,800 diamond shaped panes that make up the outer shell. With some subtle design changes to optimise the illumination of the glass panels, the product was ready to go into production at Eaton's Doncaster facility.



One and Two New Ludgate, City of London, UK

One and Two New Ludgate is a prestigious development offering 345,555sq ft. of prime office space and 26,000sq ft. of retail and restaurant space within a few hundred metres of St Pauls Cathedral, formally completed and opened in 2015.

Eaton's challenge was to create a linear LED solution that could be incorporated uniformly into ceiling tiles throughout the office areas to provide a consistently high quality of light.

In response, Eaton designed the Priam LED family of fittings, based on an innovative 'cassette-style' concept that would enable simple installation options in harmony with the sweeping curves that characterised the layout of the buildings. By integrating the luminaires into the ceiling tiles, they become almost unnoticeable when switched off. Incorporating the latest LED technology and micro-polymer materials, the Priam LED offers even distribution of light while eliminating the need for traditional louvred fittings that could detract from the sleek appearance of the interior.

Energy efficiency was another key requirement of the brief and the Priam LED was designed to deliver more than 100 luminaire lumens per circuit watt, which is around 30 per cent better than a typical fluorescent alternative.

Quality and expertise you can rely on

Eaton are committed to providing products and services that meet or exceed customer expectations by anticipating your needs and requirements. Our Doncaster manufacturing facility implements a quality system that has been designed and developed to satisfy the requirements of ISO9001, targeting continuous improvement of sound engineering practices and high standards of quality and service, that will satisfy the overall requirements of its customers, employees and shareholders.

All employees are responsible, within their own area of work, for ensuring that the required quality standards are maintained at all times and that high levels of quality are achieved first time.

Management ensure that the requirements of this system are implemented and adhered to at all levels within the organisation to ensure your experience of working with Eaton is a positive one.

Scope

The company is registered to ISO9001 and the scope of registration covers:

- The design and manufacture of general and emergency lighting and control systems
- The conversion of luminaires to emergency lighting
- The design and manufacture of central battery systems
- The design and manufacture of fire systems and products
- The commissioning and service of lighting, central battery and fire systems

5 Year Warranty

We are confident in the high quality and reliability of our products, which is why a 5 year warranty is now offered as standard throughout our luminaire and central battery system ranges.

Key features include:

- 12 months parts and labour with an additional 48 months on parts
- No annual hours usage restrictions
- No need to register your product

Terms and conditions apply, please see our website for full details.

1. Standard Warranty

1.1. All Supplies shall be covered by the 12 (twelve) month Warranty set out in Eaton's standard terms and conditions available at the following link (for the relevant country from which Eaton sells such Supplies):

http://www.eaton.eu/Europe/TermsConditions/index.htm

(the "**Standard Eaton Terms**").

1.2. Defined terms used but not defined herein shall bear the meanings assigned to them in the Standard Eaton Terms.

1.3. In cases where the Warranty set out in the Standard Eaton Terms applies and where Supplies are **installed at heights of more than 5 (five) meters or where any form of special access equipment may be required to enable access** to such Supplies, the **Buyer shall ensure that any equipment required to access the Supplies will be available to Eaton at the Buyer's cost.**

2. Extended Warranty for Mains Lighting

2.1. In addition to the Warranty and only in relation to Eligible Supplies (as this term is defined below), Eaton warrants that, with effect from the expiry of the 12 (twelve) month period of the Warranty, the Supplies shall be free from Defects under normal use for an additional period of 48 (forty eight) months (the "**Extended Warranty**").

2.2. The provisions of the Warranty set out in the Standard Eaton Terms shall, subject to the provisions of clause 2.3, continue to apply in full during the term of the Extended Warranty.

2.3. The following provisions shall apply to the Extended Warranty:

2.3.1. the Buyer must notify Eaton in writing of any Defect within 7 (seven) days of the date that the relevant Defect is discovered by or notified to the Buyer, with such notice providing details in full of the part number(s), date code(s), location(s), observed failure mode and any related information in respect of the Defect in the relevant Supplies;

2.3.2. the Buyer must immediately cease using or operating the Supplies in respect of which any Defect is discovered;

2.3.3. any Supplies covered by the Extended Warranty in respect of which a Defect is discovered must be returned to Eaton after acknowledgment by Eaton in writing of receipt of the notice contemplated in clause 2.3.1 to such location as Eaton may reasonably determine at the risk and cost of the Buyer;

2.3.4. upon receipt of Supplies returned to Eaton under the Extended Warranty, Eaton shall inspect such Supplies and shall, in its discretion, repair or replace any Supplies in respect of which a Defect is discovered. In the event that no Defect is discovered in such Supplies, Eaton shall be entitled to invoice the Buyer for any costs incurred by Eaton in respect of such investigation;

2.3.5. the unexpired term of the Extended Warranty shall apply in respect of any Supplies repaired or replaced by Eaton under the Extended Warranty, the term of which shall not be extended pursuant to such repair or replacement;

2.3.6. the Extended Warranty shall not apply:

2.3.6.1. if any Supplies are used, operated or installed in any manner not in accordance with the specifications or instructions supplied by Eaton in relation to such Supplies or which have been changed, modified or amended in any manner subsequent to being supplied by Eaton;

2.3.6.2. if the temperature and/or voltage specifications set out in the installation instructions for such Supplies are exceeded in any manner;

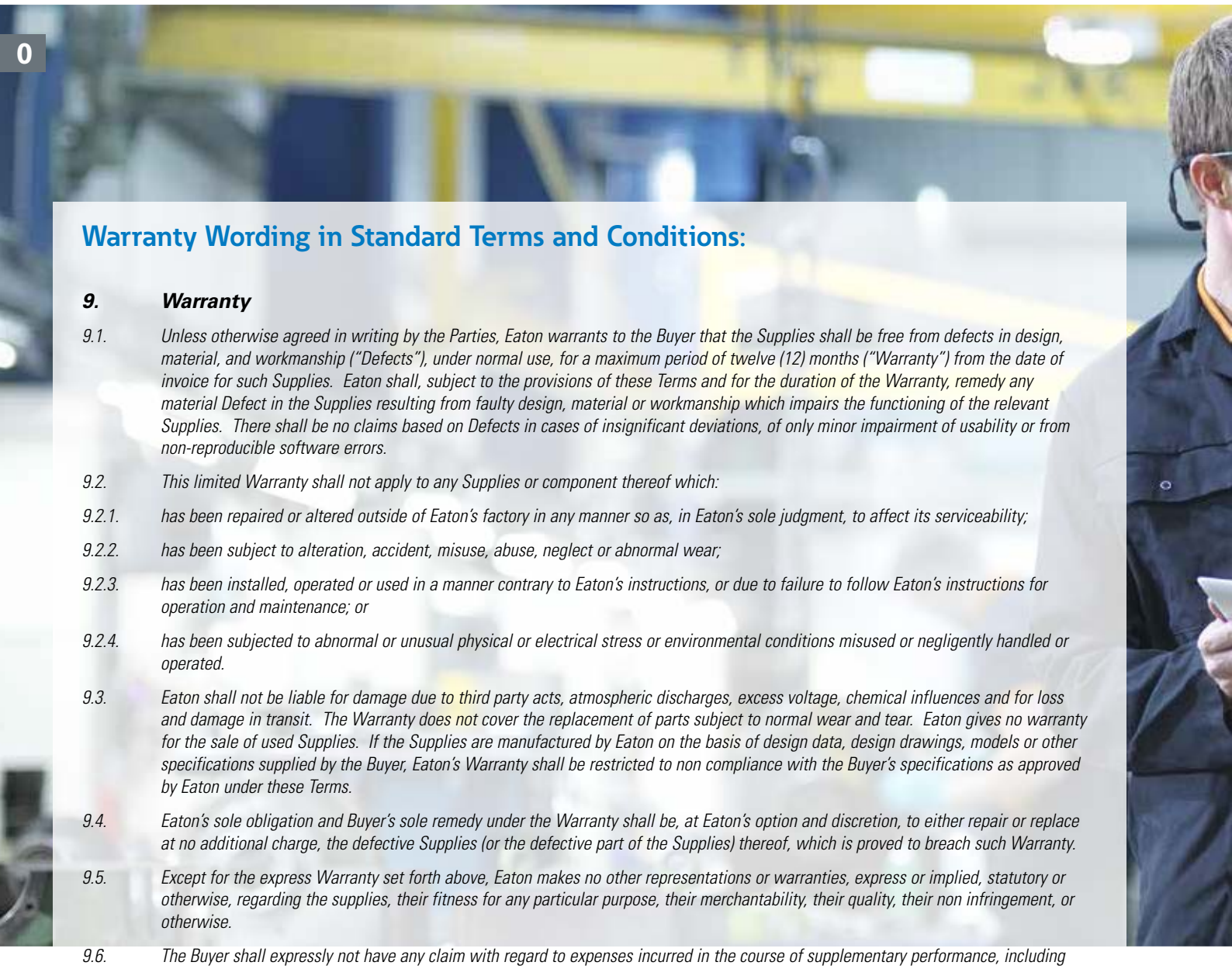
2.3.6.3. in respect of light-emitting diodes ("**LEDs**"), in excess of or in addition to the expected lifetime performance published by the relevant LED chip manufacturer's data or specifications;

2.3.6.4. to any third party luminaires converted for emergency operation; and

2.3.6.5. any consumables or parts of the Supplies that are consumables, including (but not limited to) lamps, starters and batteries.

2.4. For purposes of this Extended Warranty, "**Eligible Supplies**" means the luminaires listed in the version of Eaton's lighting solutions catalogue for mains lighting products which is current at the time that such Supplies are purchased by the Buyer and excludes (i) the display ranges listed as DXL and GXR in such catalogue; and (ii) any bespoke or non-standard products specifically produced or designed for the Buyer and/or for any specific application or project.

2.5. Project specific extended warranties may be discussed by the Parties and will apply only where agreed in writing by Eaton, with such agreement to be recorded during the project quotation process prior to any order for any goods and/or services being placed.



Warranty Wording in Standard Terms and Conditions:

9. Warranty

9.1. *Unless otherwise agreed in writing by the Parties, Eaton warrants to the Buyer that the Supplies shall be free from defects in design, material, and workmanship ("Defects"), under normal use, for a maximum period of twelve (12) months ("Warranty") from the date of invoice for such Supplies. Eaton shall, subject to the provisions of these Terms and for the duration of the Warranty, remedy any material Defect in the Supplies resulting from faulty design, material or workmanship which impairs the functioning of the relevant Supplies. There shall be no claims based on Defects in cases of insignificant deviations, of only minor impairment of usability or from non-reproducible software errors.*

9.2. *This limited Warranty shall not apply to any Supplies or component thereof which:*

9.2.1. *has been repaired or altered outside of Eaton's factory in any manner so as, in Eaton's sole judgment, to affect its serviceability;*

9.2.2. *has been subject to alteration, accident, misuse, abuse, neglect or abnormal wear;*

9.2.3. *has been installed, operated or used in a manner contrary to Eaton's instructions, or due to failure to follow Eaton's instructions for operation and maintenance; or*

9.2.4. *has been subjected to abnormal or unusual physical or electrical stress or environmental conditions misused or negligently handled or operated.*

9.3. *Eaton shall not be liable for damage due to third party acts, atmospheric discharges, excess voltage, chemical influences and for loss and damage in transit. The Warranty does not cover the replacement of parts subject to normal wear and tear. Eaton gives no warranty for the sale of used Supplies. If the Supplies are manufactured by Eaton on the basis of design data, design drawings, models or other specifications supplied by the Buyer, Eaton's Warranty shall be restricted to non compliance with the Buyer's specifications as approved by Eaton under these Terms.*

9.4. *Eaton's sole obligation and Buyer's sole remedy under the Warranty shall be, at Eaton's option and discretion, to either repair or replace at no additional charge, the defective Supplies (or the defective part of the Supplies) thereof, which is proved to breach such Warranty.*

9.5. *Except for the express Warranty set forth above, Eaton makes no other representations or warranties, express or implied, statutory or otherwise, regarding the supplies, their fitness for any particular purpose, their merchantability, their quality, their non infringement, or otherwise.*

9.6. *The Buyer shall expressly not have any claim with regard to expenses incurred in the course of supplementary performance, including costs for travel, transport, labour, and material, to the extent that expenses are increased because the subject-matter of the Supplies has subsequently been brought to another location than the place of delivery.*

9.7. *All drawings, descriptive matter, specifications and advertising issued by Eaton and any descriptions or illustrations contained in Eaton's catalogues or brochures are issued or published for the sole purpose of giving an approximate idea of the Supplies described in them. They will not form part under these Terms in general or this Warranty specifically. Eaton may make any changes in the specifications, design or materials of the Supplies which are required to conform with any applicable safety or other statutory requirements, or where the Supplies are to be supplied to Eaton's specifications, which do not in Eaton's reasonable opinion materially affect the quality or performance of the Supplies.*

9.8. *The Buyer shall only have a claim for damage based on Defects within the limits set forth in these Terms.*

Eaton's full standard terms and conditions are available at the following link (for the relevant country from which Eaton sells such Supplies): **http://www.eaton.eu/Europe/TermsConditions/index.htm**

(the "**Standard Eaton Terms**").

Manufacturing Standards

Our products are designed and developed under systems that meet the requirements of the most stringent quality standards including ISO 9001. In addition, all relevant dedicated emergency luminaires meet ICEL (Industry Committee for Emergency Lighting) registration requirements.

ICEL

To achieve this approval, the product must carry a Kitemark (or equivalent), be manufactured in an ISO 9001 facility and have independently verified photometric performance information.

ICEL 1004

Eaton's Doncaster facility incorporates an ICEL 1004 approved environment, accredited for conversion of mains lighting luminaires to emergency use. This ensures quality assured workmanship using approved components and that relevant safety, thermal and EMC performance requirements have been achieved.

Training for you and your business

In the highly competitive world we now live, businesses and individuals alike have the constant drive to cut cost whilst delivering more than ever before. In addition to these daily grinds there is the need to be fully aware and actively practice a host of legislative and health and safety policies. This is where Eaton can help you and your business strive to be the best at what you do. Our current accredited lighting CPDs include:

- De-energising the office
- Emergency lighting
- Central battery systems
- The meaning of life - LED lighting

For full information about our training courses, including those from other areas of Eaton, visit:

electricalsector.eaton.com/TrainingUK

0 Commercial building solutions

Eaton is a leading global power management company, providing innovative solutions globally that help buildings to be more functional, efficient and safe.

Backup power protection:
uninterruptible power systems, automatic transfer switches and central battery systems

Lighting and controls:
functional, decorative and exterior lighting and controls

Emergency lighting and fire safety

Structural supports:
strut systems, pipe hangers, seismic bracing, cable ladder and pre-fabricated assemblies

Transformers

Wiring devices:
plugs, connectors, wallplates, switches and receptacles

Motor control and protection:
contactors, variable frequency drives and motor control centres

Life safety and mass notification:
signals, alarms and security

Monitoring and communications:
facility power management, metering and monitoring

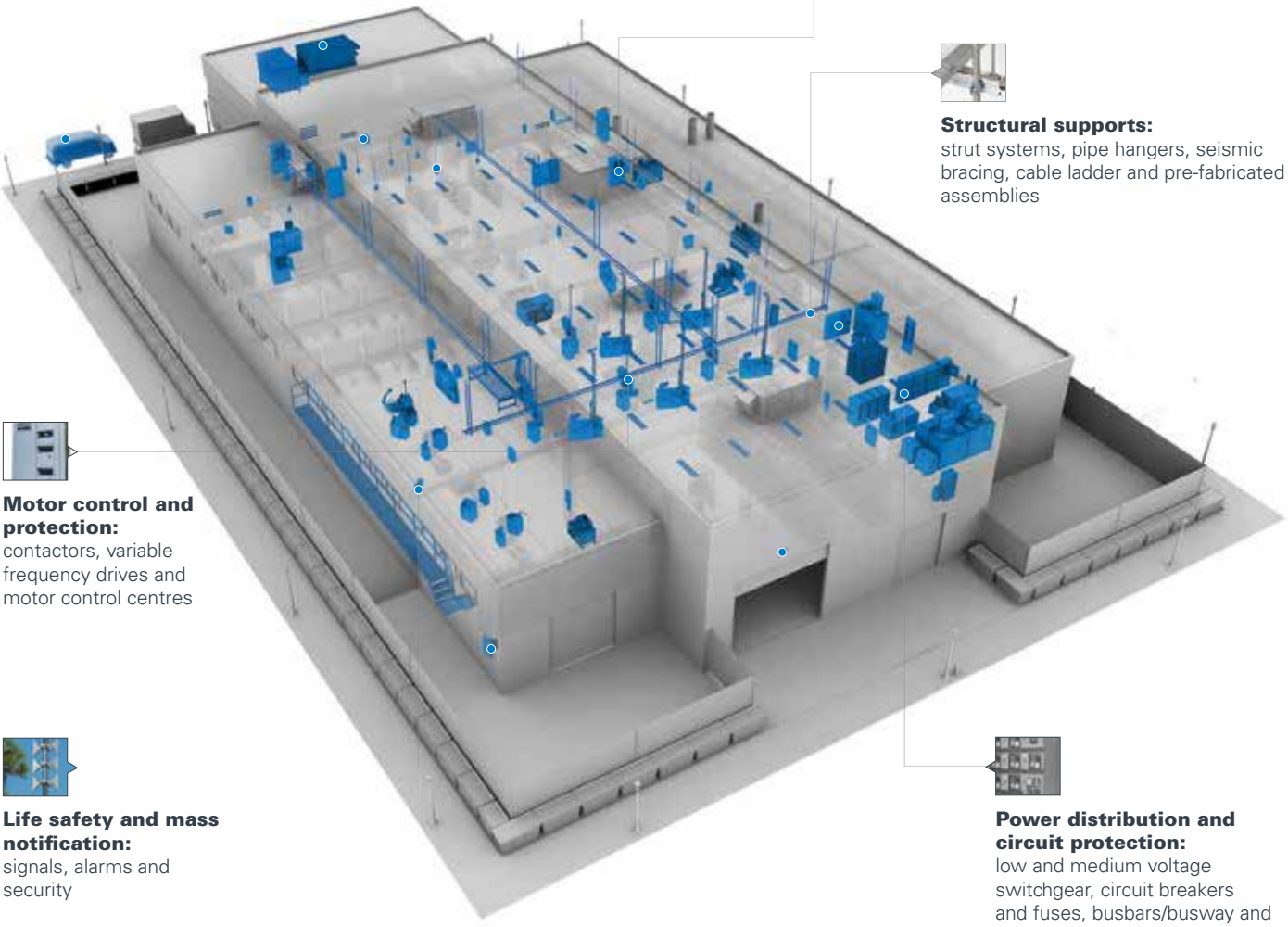
Services:
engineering, training, project management and product life extension offerings

Power distribution and circuit protection:
low and medium voltage switchgear, circuit breakers and fuses, busbars/busway and distribution boards

Fittings and enclosures:
commercial fittings, conduit bodies, outlet boxes and enclosures

Commercial

Protect your people and reputation by increasing operational efficiencies, reducing energy usage and designing for functionality, well-being and productivity.



Services:
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Transformers

Backup power protection:
uninterruptible power systems, automatic transfer switches and central battery systems

Lighting and controls:
functional, decorative and exterior lighting and controls

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Power distribution and circuit protection:
low and medium voltage switchgear, circuit breakers and fuses, busbars/busway and distribution boards

Wiring devices:
plugs, connectors, wallplates, switches and receptacles

Emergency lighting and fire safety

Monitoring and communications:
facility power management, metering and monitoring

Industrial

Be more productive by maximising the functional use of the space, while increasing energy efficiency and managing operational risk.

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Icon Key - Mains Lighting


British Standard Kitemark

ICEL registered luminaire


Do not cover

Ingress Protection code


Class I insulated - earth required


Class II insulated - double insulated no provision for earth required


Class III - safety extra low voltage

LED colour

LED beam angle

5 year warranty applies to product

Luminaire available with CGLine+ testing and monitoring functionality

Luminaire available with EasiCheck testing functionality


Luminaire available with Intellem functionality

Luminaire uses LED light source

Luminaire available with dimming control gear

Suitable for use with controls options


CE certified

Product fully complies with standard indicated

Atex certified hazardous area luminaire with product classification indicated

Impact protection rating of luminaires


UGR ≤ 19, suitable for classroom, office and conference applications

Icon Key - Emergency Lighting

Viewing distance: 20m


Light output, single sided

Luminaire uses LED light source


Class I insulated - earth required


Class II insulated - double insulated no provision for earth required

Ingress Protection code

Degree of mechanical impact resistance IK10


Luminaire with limited surface temperature


Outdoor version available


CE certified

According to EN605982-22

According to EN1838


Suitable for use in food processing industry e.g acc. HACCP of IFS


ENEC certified

With Lithium-ion battery

Available with CGLine technology

Auto test versions available

Rest mode


0 replacement of spare parts for 10 years

Ingress Protection

The International Protection code, sometimes called the Ingress Protection code, classifies the protection given by an enclosure against the touching of live parts, contact with moving parts and protection against the ingress of foreign solid bodies. It additionally specifies protection against the harmful ingress of moisture or liquids. Two digits are used to describe its protection rating, called the IP code.

First Digit - Protection against solid objects		**Second Digit - Protection against liquids**
No protection	0	No protection
Protection against large sized bodies e.g, hands	1	Protection against vertically falling drops of water
Protection against medium sized bodies e.g, fingers	2	Protection against drops of water up to 15° from the vertical (drip proof)
Protection against small bodies, 2.5mm dia. or greater e.g, tools, wires	3	Protection against rain falling up to 60° from the vertical (rain proof)
Protection against very small bodies, 1mm dia. or greater	4	Protection against splashed water from any angle (splash proof)
Protection against harmful deposits of dust (dust proof)	5	Protection against jets of water from any angle (jet proof)
Complete protection against deposits of dust (dust tight)	6	Protection against water from heavy seas e.g, water tight for marine deck use
	7	Protected against immersion for a defined period
	8	Protected against immersion for an indefinite period

IK code

The IK code when applied to a luminaire indicates the degree of protection against mechanical impact. The range of IK runs from IK00 (no protection) up to IK10 protection to 20 joules. A joule is the unit of work energy. A newton is the unit of force that causes an acceleration of 1m/s/s to a mass of 1kg. 1J = 1N x 1m.

1K		Protection
00		No Protection
01		Impact Energy 0.150J
02		Impact Energy 0.200J
03		Impact Energy 0.350J
04		Impact Energy 0.500J
05		Impact Energy 0.700J
06		Impact Energy 1.00J
07		Impact Energy 2.00J
08		Impact Energy 5.00J
09		Impact Energy 10.00J
10		Impact Energy 20.00J

Lighting Portfolio

Mains lighting - Crompack LED

Emergency lighting - Self contained. CrystalWay

Emergency lighting - Centrally powered systems. ZB-S

Up to date product data, installation sheets, lumdat files, BIM files and other product resources can be found online at **UK.Eaton.com**

Mains lighting

Crompack LED - Surface and Suspended

Litex Elite - Industrial

Penumbra - Exterior

1.0 Mains lighting

Emergency Lighting - self contained

Micropoint 2 - Safety luminaire - Indoor

i-P65+ - Safety luminaires - high degree of protection

CrystalWay - exit signs - indoor

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Emergency Lighting - centrally powered systems

ZB-S

Loadstar AC/AC

AT-S

8.0 Centrally powered systems

Introduction

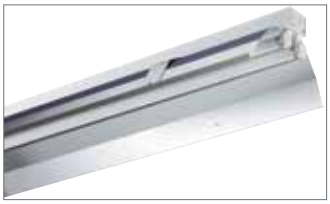
Product thumbnails

1.0 Recessed

2.0 Surface and suspended

2.0 Surface and suspended continued

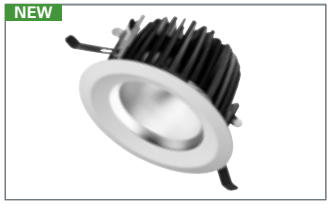




3.0 Decorative wall and ceiling

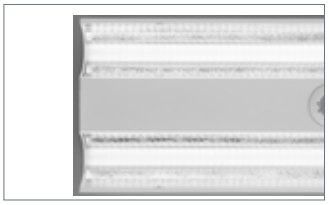


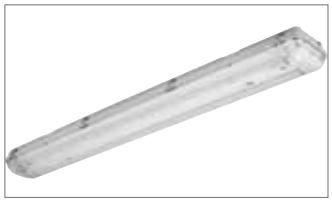

4.0 Downlights





5.0 Industrial and hazardous area

6.0 Exterior

7.0 Emergency

Emergency lighting design guide

Safety luminaires - Indoor

Safety luminaires - High degree of protection

Safety & exit signs - Indoor

Safety & exit signs - High degree of protection


Exit signs - Indoor





Exit signs - High degree of protection

Beam lights


Portable lamps and converters


0 Systems

8.0 Centrally Powered Systems

9. Lighting controls

1 and 2 New Ludgate
London

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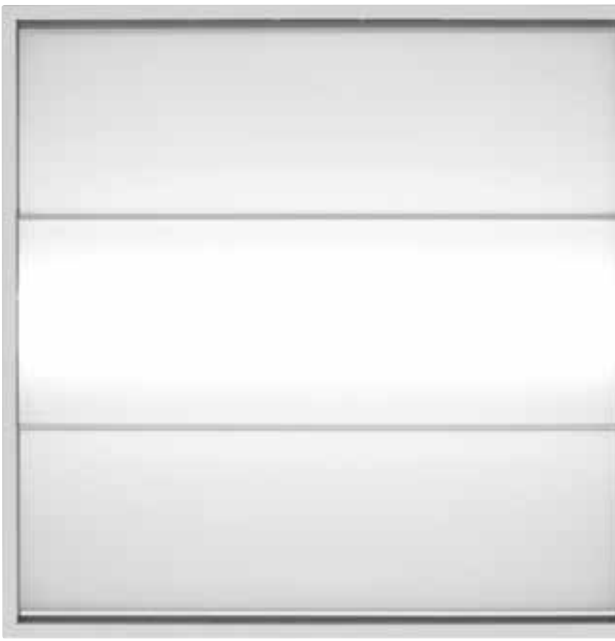
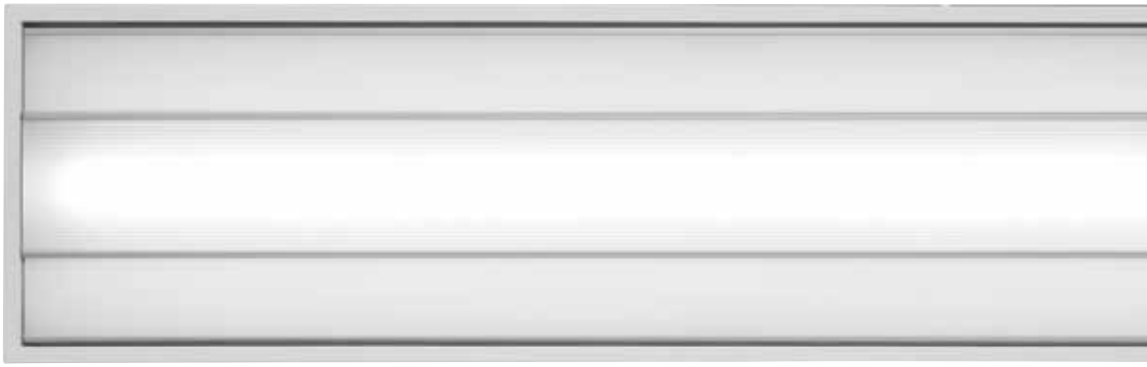
Recessed Lighting

Recessed

Contents

Terzetto™





The office is redefined by Eaton's Terzetto™ range of luminaires. Performance leading efficiency combined with clean looks makes this adaptable range of LED luminaires the perfect choice in today's demanding office environment.

The unique combination of optical control achieved by OptoUndulant™ technology and up to 110 luminaire lumens per circuit watt allow maximum energy savings without sacrificing lighting quality.

Fully adaptable in exposed 'T' and metal pan ceilings, Terzetto™ integration is guaranteed in a wide range of applications. Available in three body combinations and with a low profile footprint, Terzetto™ redefines the office.

- Maximum utilised efficiency in LED technology
- Integrates in exposed 'T' and metal pan ceilings as standard
- Revolutionary emergency operation reduces the number of installed points
- Contemporary materials and minimalist design compliment the clean lines of Terzetto™
- Integrated emergency versions with automatic testing available

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Light Engine and Control Gear Options

- LED - high output, high efficiency LED chip set optimised for maximum efficacy
- Energy efficient fixed output control gear as standard

Materials

- Diffuser - OptoUndulant™ and opalised diffusers - high transmission, TPa rated and building regulations part B compliant
- Anodised aluminium frame detail for strength and modern aesthetic looks
- Housing - mild steel construction for rigidity, powder coated RAL9016 (other colours on application)
- Internal balanced white diffuse reflector for even output

Installation Notes

- Fully adaptable luminaires suitable for exposed 'T' and lay-in applications
- For ceiling compatibility refer to installation guide on page 66
- Order side support arms for 'draw up' applications (ordered separately) e.g. MSBKX bearer bracket (external fixing access required)
- Optional brackets allow for direct mounting in metal pan ceiling types such as SAS330
- Standard bearer arms accommodate 20mm to 62mm supporting grid heights
- Refer to technical support for further information on bracket options and ceiling compatibility
- Bypass air handling slots as standard
- Terminal block with 2 x 2.5mm² cable capacity per termination
- Louvre/Panel frame assembly retained by positive locating frame and spring steel clips, fitted with hanging strap for hands free re-lamping (T5)
- Supplied complete with lamps
- Fused as standard
- Aids lighting scheme design to comply with BS EN 12464-1

Options

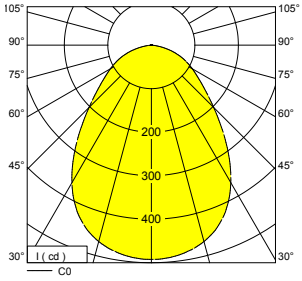
- Fully integral LED emergency conversion, 3 hour duration
- EasiCheck and Intellem self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements
- Intelligent lighting system controls with mini sensor head and DALI ballast (ISM part code prefix added to DALI variants)
- Air handling with air bypass slots do not compromise performance whilst allowing a capacity of up to 25 l/s
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

To specify state: Recessed LED luminaire, of full box welded construction with post coat powder paint, RAL9016 finish, for lay-in and draw up installations, with Opto-undulant™ panel centre optic, retained on spring clips, hinged opalised TPa rated polycarbonate optical side panels and high efficiency LED modules, LED emergency option with unique lens optic delivering 10m x 10m distribution, Eaton's Terzetto™ range part no _____

Photometric data

Cat. No. TER133004KZ



LO 3189lm
31W

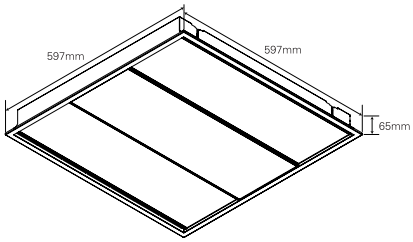
Utilisation factors /TM5

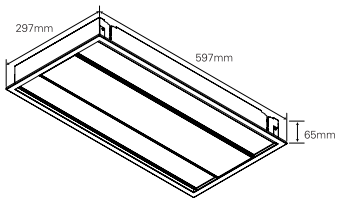
Reflectances			Room index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
0.7	0.5	0.2	65	74	81	86	92	96	99	103	106
0.7	0.3	0.2	58	68	75	80	87	92	95	100	103
0.7	0.1	0.2	53	63	70	75	82	88	91	97	100
0.5	0.5	0.2	63	72	79	83	89	93	96	99	101
0.5	0.3	0.2	57	67	73	78	84	89	92	96	99
0.5	0.1	0.2	53	62	69	74	81	86	89	94	97
0.3	0.5	0.2	62	71	76	81	86	90	92	96	98
0.3	0.3	0.2	57	66	72	76	82	87	89	93	96
0.3	0.1	0.2	52	61	68	73	79	84	87	91	94
0.0	0.0	0.0	50	59	65	70	76	80	83	87	89
BZ-class			3	3	3	3	3	3	3	3	3

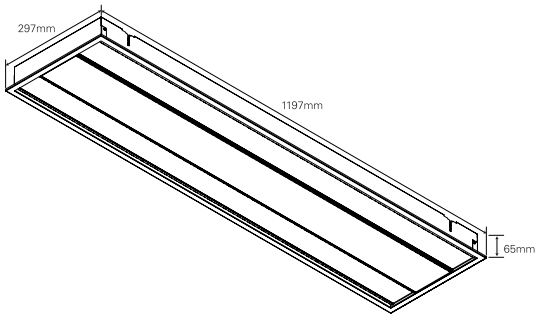
SHR nom: 1.25
SHR max: 1.399

See page 468 for design guide

Dimensions







Catalogue Numbers

LED

Variant	Lumen Output	Wattage (w)	Llm/cW	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)
600x600							
4000	4644	44.4	104.4	TER664004KZ	5.1	ELTER664004KZ	5.5
3000	3437	31.7	108.4	TER663004KZ	5.1	ELTER663004KZ	5.5
2000	2246	20.4	110.0	TER662004KZ	5.1	ELTER662004KZ	5.5
600x300							
2500	2249	25.3	88.9	TER632504KZ	3.2	ELTER632504KZ	3.6
2000	2114	23.6	89.7	TER632004KZ	3.2	ELTER632004KZ	3.6
1500	1558	17.1	91.4	TER631504KZ	3.2	ELTER631504KZ	3.6
1200x300							
4000	4061	41.6	97.5	TER134004KZ	7.1	ELTER134004KZ	7.5
3000	3189	31.8	100.1	TER133004KZ	7.1	ELTER133004KZ	7.5
2000	2072	20.5	101.0	TER132004KZ	7.1	ELTER132004KZ	7.5

For DALI Dimming option replace character Z with **DD**, e.g. TER664004K**Z** becomes TER664004K**DD**

For DALI EM PRO emergency options add character **P** as a suffix, e.g. ELTER664004KDD becomes ELTER664004DD**P**

Emergency versions also available with automatic test functionality, e.g. CGLine+

For further information, contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Llm/cW = luminaire lumens per circuit watt

Module 600

	600 x 600		600 x 300		1200 x 300	
LED (OptoUndulant™)	44w	4644lm	25w	2249lm	41w	4061lm
LED (OptoUndulant™)	31w	3437lm	23w	2114lm	31w	3189lm
LED (OptoUndulant™)	20w	2246lm	17w	1558lm	20w	2072lm

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/recessed-ceiling-lights-terzetto-eaton.html

1 Cornell

Cornell is an exciting new recessed lighting development which breaks the conventional mold. Using innovative materials and geometry, Cornell brings a new approach to office and area lighting design. Its unique Dynamic Aspect™ diffuser system brings life and vitality to every space. With its seemingly 'variable' geometry effect, excellent luminance and glare control compliance, it is now the optimum solution.

Connections are all external, saving valuable time on site and maintaining internal integrity. Cornell is also available with optional side brackets for pull-up applications, making it truly adaptable for a wide range of ceilings.
Emergency operation, via a discrete LED, is optically controlled with an advanced lens making exceptional spacing possible.

- Outstanding 'quality of light' optical performance
- Backlit construction for even lighting distribution and thermal efficiency
- High efficacies of up to 114 Llm/cW which exceed the requirements of UK Building Regulations: Part L and Section 6 (Scotland)
- Dynamic Aspect™ diffuser combination may contribute to EN124641 requirements for scheme compliance
- Quick and simple installation with a lay-in or pull up (additional brackets required) solution complete with plug/socket mains and DALI connection
- Close colour tolerance: MacAdam 3 SDCM
- 3 hour maintained emergency versions available
- Exceptional spacing from the integral LED emergency reduces the number of emergency luminaires required

Light Engine and Control Gear Options

- High output, high efficacy LED chip set optimised for recessed panel options
- >80 CRI 4000°K
- Energy efficient fixed output control gear as standard
- Dimming option - DALI

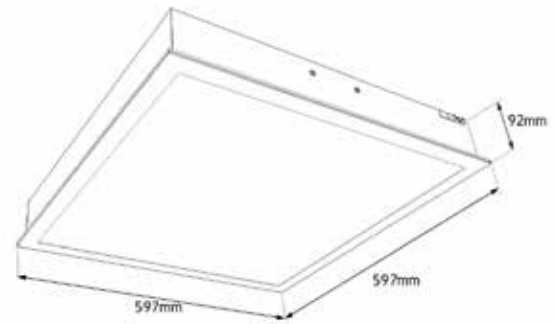
Materials

- Body - welded, full box steel construction, powder coated in RAL9016 finish
- Panel optic - Dynamic Aspect™ diffuser combination with 65° cut-off angle characteristics
- Panel frame - monolithic seamless steel construction, powder coated in RAL9016 finish

Installation Notes

- Suitable for exposed 'T' and some "half tee" metal pan ceilings
- Order side support bracket set for 'draw up' applications **(ordered separately)** CNLPBK
- Rear socket and plug (included) for rapid installation
- Emergency variants are fused as standard
- May aid lighting scheme design to comply with BS EN 12464-1

Dimensions



Options

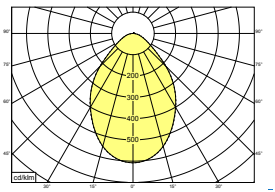
- Fully integral LED emergency conversion, 3 hour duration
- CG Line+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

To specify state: Recessed back-lit LED luminaire, of full box welded construction with post coat powder paint, RAL9016 finish, for lay-in installations, with Dynamic Aspect™ diffuser and high efficiency LED modules, LED emergency option with unique lens optic delivering up to 10m x 10m coverage distribution, Eaton's Cornell range part no _____

Photometric Data

Cat. No: CNL66344KZ



LO 3525 lm
SHR nom: 1.00
SHR max: 1.183

Utilisation factors / TM5

Reflectances			Room index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
0.7	0.5	0.2	66	76	82	87	93	97	100	104	106
0.7	0.3	0.2	60	70	76	81	88	93	96	100	103
0.7	0.1	0.2	55	65	72	77	84	89	93	98	101
0.5	0.5	0.2	65	74	80	84	90	94	97	100	102
0.5	0.3	0.2	59	69	75	80	86	90	93	97	100
0.5	0.1	0.2	55	64	71	76	82	87	90	95	98
0.3	0.5	0.2	64	72	78	82	87	91	93	96	98
0.3	0.3	0.2	58	67	74	78	84	88	91	94	96
0.3	0.1	0.2	54	64	70	74	81	85	88	92	95
0.0	0.0	0.0	52	61	67	72	78	81	84	88	90
BZ-class			2	2	3	3	3	2	3	3	3

See page 468 for design guide

Catalogue Numbers

Variant	Lumen Output	Wattage (w)	Llm/cW	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)
3400 lm	3376	29.4	114.8	CNL66344KZ	4.5	ELCNL66344KZ	5.0
4400 lm	4337	39.6	109.5	CNL66444KZ	4.5	ELCNL66444KZ	5.0

For DALI Dimming option replace character Z with DD, e.g. CNL66344KZ becomes CNL66344KDD

For Sensor option add the characters ISM, e.g. CNL66344KZ becomes ISMCNL66344KZ

Emergency versions also available with automatic test functionality, e.g. CG Line+

For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Llm/cW = luminaire lumens per circuit watt

Accessories

Description	Cat No
CORNELL BEARER KIT (2 bearer brkts)	CNLPBK

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/cornell-recessed.html

1 Caton

Caton offers an alternative form for commercial lighting applications. High efficiency distribution and sleek curves give form and function in one package.

A uniquely constructed polycarbonate tri-extruded diffuser combines a precision Microprism centre panel with Opaline blend side elements to produce a vibrant yet comfortable effect.

Emergency operation, via a discrete LED, is optically controlled with an advanced lens making exceptional spacing possible.

Rapid installation is a key benefit thanks to the side mounted plug and socket arrangement, connections are all external to save valuable time on site.

- Tri-extruded diffuser with soft organic modelling
- Contemporary aesthetics and space integration
- High efficacies of up to 100 Llm/cW which exceeds the requirements of UK Building Regulations: Part L and Section 6 (Scotland)
- May contribute to EN12464-1 requirements for scheme compliance across all variants
- Close colour tolerance: MacAdam 3 SDCM
- Quick and simple installation with a lay-in solution complete with plug/socket mains and DALI connection
- 3 hour maintained emergency versions available
- Exceptional spacing from the integral LED emergency reduces the number of emergency luminaires required

Light Engine and Control Gear Options

- High output, high efficacy LED chip set optimised for controlled recessed lighting applications
- Energy efficient high frequency control gear as standard
- Dimming option - DALI

Materials

- Body - welded, full box steel construction, powder coated in RAL9016 finish 60% gloss
- Optic - Polycarbonate UV stable tri-extruded diffuser
- Outer bezel frame – monolithic seamless steel construction, powder coated in RAL9016 finish

Installation Notes

- Suitable for exposed 'T', concealed fix and some metal pan ceilings
- Suitable for UGR <19 applications
- Order side support bracket set for 'draw up' applications (ordered separately) CTNPBK
- Rear socket and plug (included) for rapid installation
- Emergency variants are fused as standard
- May aid lighting scheme design to comply with BS EN 12464-1 - refer to the lighting design guide on page 468 (Lighting Solutions)

Options

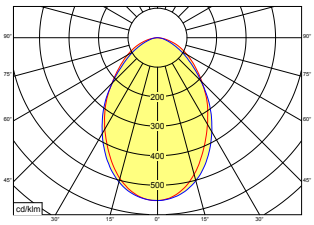
- Fully integral LED emergency conversion, 3 hour duration
- CGLine+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

To specify state: Recessed architectural luminaire, of full box welded construction with post coat powder paint, RAL9016 finish, for lay-in / pull up installations. Complete with organic tri-extruded diffuser and high efficiency LED modules. LED emergency option with unique lens optic delivering up to 10m x 10m coverage distribution, Eaton's Caton range part no _____

Photometric Data

Cat No: CTN66404KZ



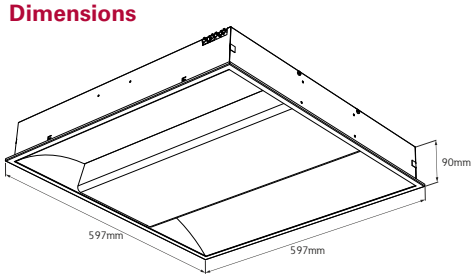
SHR nom: 1.00
SHR max: 1.181

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
0.7	0.5	0.2	63	73	79	84	91	95	99	103	105
0.7	0.3	0.2	56	66	73	78	85	90	94	99	102
0.7	0.1	0.2	50	60	68	73	81	86	90	96	99
0.5	0.5	0.2	61	71	77	82	88	92	95	99	101
0.5	0.3	0.2	55	65	71	76	83	88	91	96	98
0.5	0.1	0.2	50	60	67	72	79	84	88	93	96
0.3	0.5	0.2	60	69	75	79	85	89	92	95	97
0.3	0.3	0.2	54	63	70	75	81	85	89	93	95
0.3	0.1	0.2	50	59	66	71	78	82	86	90	93
0	0	0	48	57	63	68	74	79	82	86	89
BZ –class			3	3	3	3	3	3	3	3	3

See page 468 for design guide

Dimensions



Catalogue Numbers

Variant	Lumen Output	Wattage	Llm/cW	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)
3400 lm	3315	33	100.4	CTN66344KZ	4.73	ELCTN66344KZ	5.13
4000 lm	4030	40	100.8	CTN66404KZ	4.73	ELCTN66404KZ	5.13

For DALI Dimming option replace character Z with DD , e.g. CTN66404KZ becomes CTN66404KDD

For Sensor option add the characters ISM, e.g. CTN66404KZ becomes ISMCTN66404KZ

Emergency versions also available with automatic test functionality, e.g. CG Line+

For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Llm/cW = luminaire lumens per circuit watt

Accessories

Description	Cat No
CATON BEARER KIT (2 bearer brkts)	CTNBK

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/caton-recessed-ceiling.html

1 Taliska P

Taliska P brings together clean aesthetics with compliance enhancing features. The optical design and materials are a key feature to its appeal.

Designed with a Microprism and dispersal diffuser combination, luminance and glare limits required in office and other applications may be realised. Taliska P offers a very versatile solution to many lighting applications

Simple installation is a key benefit thanks to the side mounted plug and socket arrangement. Connections are all external, saving valuable time on site and maintaining internal integrity. Taliska P is also available with optional side brackets for pull-up applications, making it truly adaptable for a wide range of ceilings.

Emergency operation , via a discrete LED , is optically controlled with an advanced lens making exceptional spacing possible.

- Outstanding 'quality of light' optical performance
- Backlit construction for even lighting distribution and thermal efficiency
- High efficacies of up to 103 Llm/cW which exceed the requirements of UK Building Regulations: Part L and Section 6 (Scotland)
- Microprism and dispersal diffuser combination may contribute to EN124641 requirements for scheme compliance
- Quick and simple installation with a lay-in or pull up (additional brackets required) solution complete with plug/socket mains and DALI connection
- Close colour tolerance: MacAdam 3 SDCM
- 3 hour maintained emergency versions available
- Exceptional spacing from the integral LED emergency reduces the number of emergency luminaires required

Light Engine and Control Gear Options

- High output, high efficacy LED chip set optimised for recessed panel options
- >80 CRI 4000°K
- Energy efficient fixed output control gear as standard
- Dimming option – DALI

Materials

- Body - welded, full box steel construction, powder coated in RAL9016 finish
- Panel optic – acrylic microprism and dispersal diffuser combination with 65° cut-off angle characteristics
- Panel frame – monolithic seamless steel construction, powder coated in RAL9016 finish

Installation Notes

- Suitable for exposed 'T' and some "half tee" metal pan ceilings
- Suitable for UGR <19 applications
- Order side support bracket set for 'draw up' applications **(ordered separately)** TALPBK
- Rear socket and plug (included) for rapid installation
- Emergency variants are fused as standard
- May aid lighting scheme design to comply with BS EN 12464-1

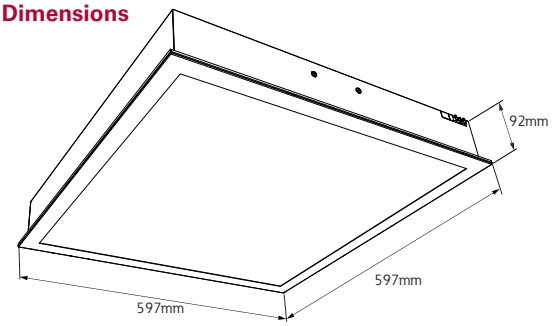
Options

- Fully integral LED emergency conversion, 3 hour duration
- CGLine+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

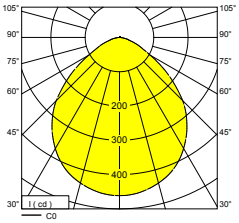
To specify state: Recessed back-lit LED luminaire, of full box welded construction with post coat powder paint, RAL9016 finish, for lay-in installations, with acrylic microprism and dispersal diffuser combination and high efficiency LED modules, LED emergency option with unique lens optic delivering up to 10m x 10m coverage distribution, Eaton's Taliska range part no _____

Dimensions



Photometric Data

Cat. No: TALP66344KZ



LO 3355 lm
SHR nom: 1.50
SHR max: 1.53

Utilisation factors /TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
70	50	20	70	78	84	88	94	98	101	104	107
70	30	20	63	71	78	83	90	94	97	101	104
70	10	20	59	67	74	79	86	90	94	98	102
50	50	20	68	76	82	86	91	95	97	101	103
50	30	20	62	70	77	81	87	91	94	98	100
50	10	20	58	66	73	77	84	88	91	96	98
30	50	20	67	74	80	84	89	92	94	97	99
30	30	20	62	69	75	80	85	89	91	95	97
30	10	20	58	65	72	76	82	86	89	93	95
0	0	0	56	63	69	74	79	83	85	89	91
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

Catalogue Numbers

Variant	Lumen Output	Wattage (w)	Llm/cW	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)
2400 lm	2428	23.6	102.8	TALP66244KZ	4.5	ELTALP66244KZ	5.0
3400 lm	3355	33.9	98.7	TALP66344KZ	4.5	ELTALP66344KZ	5.0
4200 lm	4231	45.3	95.1	TALP66424KZ	4.5	ELTALP66424KZ	5.0

For DALI Dimming option replace character Z with DD , e.g. TALP66244KZ becomes TALP66244KDD

For Sensor option add the characters ISM, e.g. TALP66244KZ becomes ISMTALP66244KZ

Emergency versions also available with automatic test functionality, e.g. CG Line+

For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

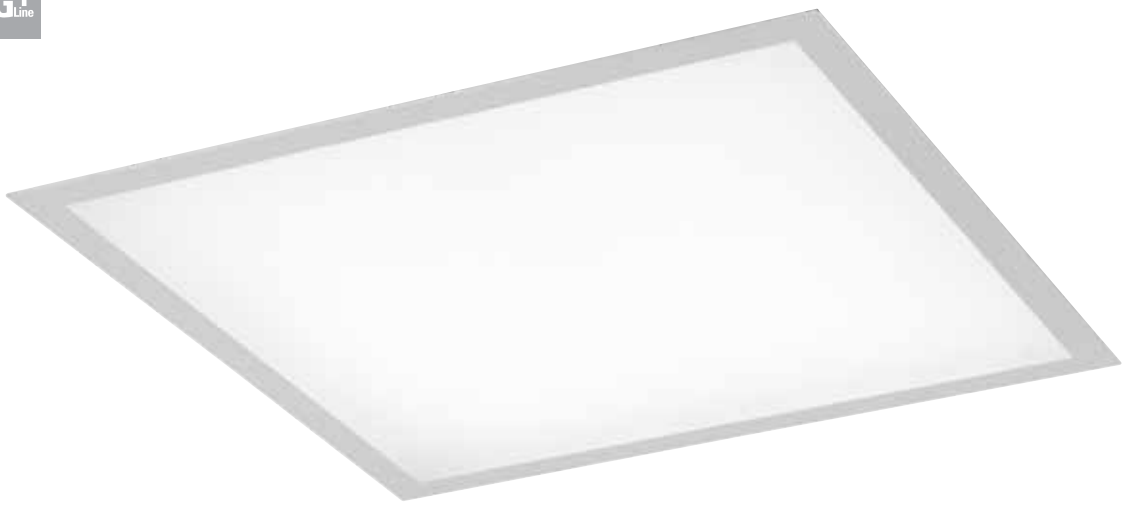
Llm/cW = luminaire lumens per circuit watt

Accessories

Description	Cat No
TALISKA P BEARER KIT (2 bearer brkts)	TALPBK

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/taliska-p.html

1 Taliska



Taliska is the next step in modular LED lighting. With an innovative backlit construction, clean minimalist lines and high efficiency, Taliska provides a new alternative for conventional general lighting applications. Rapid installation is a key benefit thanks to the side mounted plug and socket arrangement, connections are all external to save valuable time on site.

An opaline acrylic diffuser gives an evenly lit appearance across the whole face.

Emergency operation, via a discrete LED, is optically controlled with an advanced lens making exceptional spacing possible.

- High efficacies of up to 120 LIm/cW which exceed the requirements of UK Building Regulations: Part L and Section 6 (Scotland)
- Close colour tolerance: MacAdam 3 SDCM
- Quick and simple installation with a lay-in solution complete with plug/socket mains and DALI connection
- 3 hour maintained emergency versions available
- Exceptional spacing from the integral LED emergency reduces the number of emergency luminaires required

Light Engine and Control Gear Options

- High output, high efficacy LED chip set optimised for recessed panel options
- Energy efficient fixed output control gear as standard
- Dimming option - DALI

Materials

- Body - full box steel construction, powder coated in RAL9016 finish
- Panel optic - Acrylic UV stable opaline panel
- Panel frame – monolithic seamless steel construction, powder coated in RAL9016 finish

Installation Notes

- Suitable for exposed 'T' ceilings
- Rear socket and plug (included) for rapid installation
- Emergency variants are fused as standard
- May aid lighting scheme design to comply with BS EN 12464-1

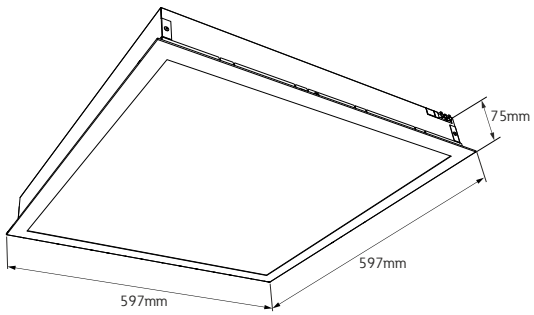
Options

- Fully integral LED emergency conversion, 3 hour duration
- CGLine+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

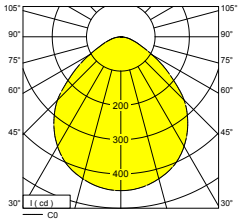
To specify state: Recessed back-lit LED luminaire, of full box welded construction with post coat powder paint, RAL9016 finish, for lay-in installations, with opaline acrylic panel diffuser and high efficiency LED modules, LED emergency option with unique lens optic delivering up to 10m x 10m coverage distribution, Eaton's Taliska range part no _____

Dimensions



Photometric Data

Cat. No: TAL166324KZ



LO 3192 lm
SHR nom: 1.50
SHR max:1.54

Utilisation factors /TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
70	50	20	69	77	83	88	94	98	100	104	106
70	30	20	62	70	77	82	89	93	96	101	103
70	10	20	58	65	73	78	85	89	93	98	101
50	50	20	67	75	81	85	91	94	97	100	102
50	30	20	61	69	76	80	87	91	94	97	100
50	10	20	57	65	72	76	83	87	91	95	98
30	50	20	66	73	79	83	88	91	94	96	98
30	30	20	61	68	74	79	84	88	91	94	97
30	10	20	57	64	71	75	81	86	89	92	95
0	0	0	55	62	68	73	78	82	85	88	90
BZ-class			2	2	2	2	2	2	3	3	3

See page 468 for design guide

Catalogue Numbers

Variant	Lumen Output	Wattage (w)	Llm/cW	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)
2800 lm	2869	23.9	120	TAL166284KZ	4.3	ELTAL166284KZ	4.8
3200 lm	3192	28.8	119	TAL166324KZ	4.3	ELTAL166324KZ	4.8
3800 lm	3774	32.6	115.5	TAL166384KZ	4.3	ELTAL166384KZ	4.8

For DALI Dimming option replace character Z with DD , e.g. TAL66284KZ becomes TALP66284KDD

Emergency versions also available with automatic test functionality, e.g. CG Line+

For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Llm/cW = luminaire lumens per circuit watt

For more information on the installation requirements and product specifications, please visit our website:https://uk.eaton.com/content/gb/en/products/product-catalog/taliska.html

1 Modulay LG

The Modulay LG is a high performance IP20 LED 600x600 flat panel luminaire with a prismatic diffuser to reduce glare and increase visual comfort.

Sleek minimalist design, with even lit appearance the Modulay LG is a perfect alternative to a traditional fluorescent solution with reduced energy consumption.

Suitable for a wide range of applications where a slim line low glare lay-in solution is desired.

- Helps towards low glare solutions
- Complies with display screen equipment luminance requirements per EN12464-1
- Easy to clean IP20 wipeable surface
- 3400 lumen output
- 4000K colour temperature
- Simple installation, low profile lay-in solution with a plug and socket (twist and lock) driver connection
- Efficacy of 93 Llm/cW
- ENEC driver, DALI option
- Surface mount box accessory available

Light Engine and Control Gear Options

- 4000K high output, high efficiency optimised LED panel illumination, >80CRI
- Fixed output LED driver (ENEC) as standard, DALI option available
- Emergency, 3hr duration option available

Materials

- Housing back plate – steel
- Panel frame – extruded aluminium in white finish
- Panel optic – Prismatic polystyrene

Installation Notes

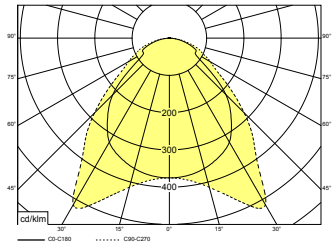
- Suitable for exposed 'T' ceilings, lay-in installation
- Suitable for UGR <19 applications
- Remote driver on plug and socket (twist and lock) connection
- Mains connection is direct to the driver as standard
- The luminaire panels and driver are IP20 rated

Specification

To specify state; Flat panel edge lit LED, IP20 rated, with prismatic polystyrene panel, extruded aluminium in white finish, plug and socket (twist and lock) connection mains to ENEC driver (IP20) as Eaton's Modulay LG range, part no _____

Photometric Data

Cat. No: MLGUGR66344KZ

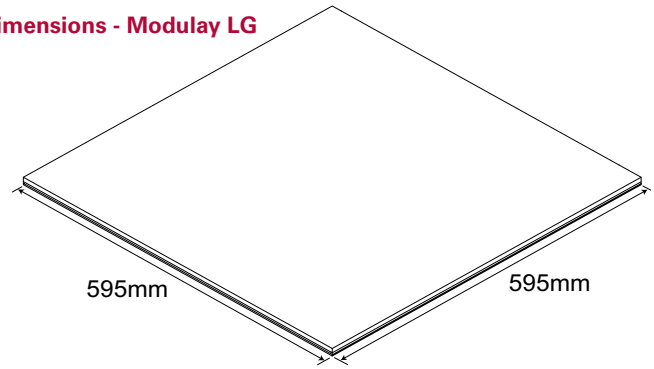


Utilisation factors

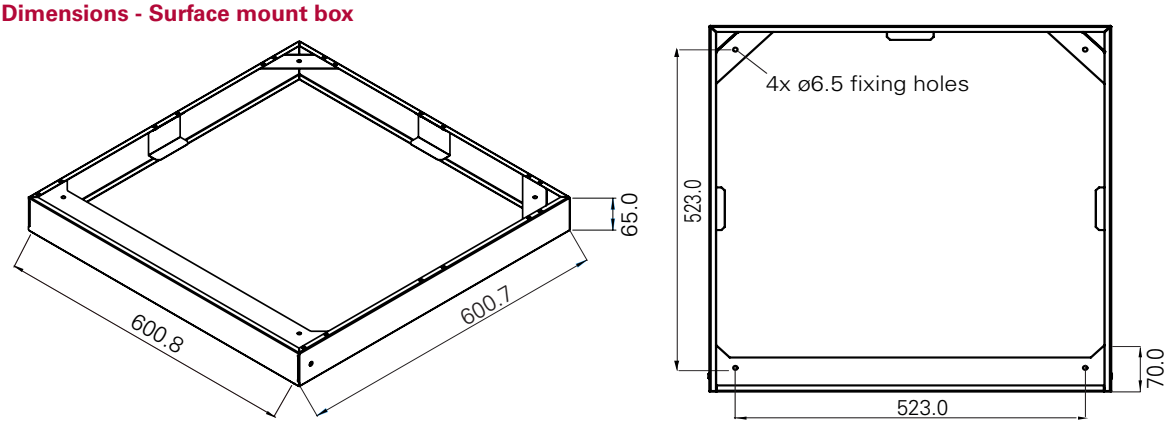
Reflectances			Room Index							
C	W	F	0.75	1.0	1.25	1.5	2	2.5	3.0	4.0	5.0
0.7	0.5	0.2	61	71	78	83	90	95	98	102	105
0.7	0.3	0.2	53	64	71	77	84	90	93	98	101
0.7	0.1	0.2	48	58	66	72	80	85	89	95	99
0.5	0.5	0.2	59	69	76	80	87	91	94	98	100
0.5	0.3	0.2	52	63	70	75	82	87	90	95	98
0.5	0.1	0.2	47	58	65	70	78	83	87	92	95
0.3	0.5	0.2	58	67	73	78	84	88	91	94	97
0.3	0.3	0.2	52	62	68	73	80	85	88	92	94
0.3	0.1	0.2	47	57	64	69	77	81	85	90	92
0	0	0	45	55	62	67	73	78	81	85	88
BZ-class			4	4	4	4	4	4	4	4	4

See page 468 for design guide

Dimensions - Modulay LG



Dimensions - Surface mount box



Catalogue Numbers

Cat No	Description	Nominal Lumens	Circuit Watts (W)	Lumen output	Luminaire Efficiency (Llm/cW)	Colour Temperature °K	Power Factor	Weights (kg)
MLGUGR66344KZ	Modulay LG 3400lm 4000K	3400	36	3350	93	4000K	>.95	2.28
MLGSUSKIT	Modulay LG Suspension kit	-	-	-	-	-	-	
MLG60SMK	Modulay LG Surface mount box	-	-	-	-	-		1.60

*For emergency option add characters **ER** in from of the Cat No, example MLGUGR66344KZ becomes **ER**MLGUGR66344KZ*

*For DALI option replace characters **KZ** with **KDD** example MLGUGR66344**KZ** becomes MLGUGR66344**KDD***

*For Emergency with DALI dim option the part number would be **ER**MLGUGR66344K**DD***

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/modulay-lg-recessed-ceiling.html

1 VersaPanel

The VersaPanel is a high performance IP44 LED 600x600 flat panel luminaire that offers significant energy and maintenance savings.

Sleek minimalist design, the VersaPanel is a direct equivalent to a traditional fluorescent solution with reduced energy consumption.

Suitable for a wide range of applications where cost effective slim line lay-in solution is desired.

- Even lit appearance
- Easy to clean IP44 wipeable surface
- 3400 nominal lumen output
- 4000K colour temperature options
- Simple installation, low profile lay-in solution with plug/socket driver connection
- Efficacy of 93 Llm/cW
- ENEC driver, DALI option

Light Engine and Control Gear Options

- 4000K high output, high efficiency optimised LED panel illumination, >80CRI
- Fixed output LED driver (ENEC) as standard
- Emergency, 3hr duration option available

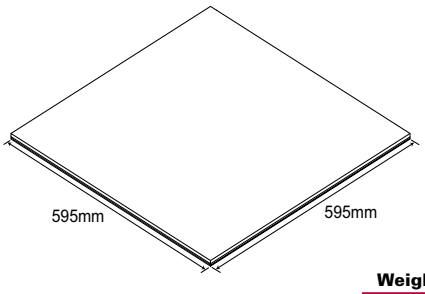
Materials

- Housing back plate – steel
- Panel frame – extruded aluminium in white finish
- Panel optic – polystyrene

Installation Notes

- Suitable for exposed 'T' ceilings, lay-in installation
- Remote driver on plug and socket connection
- Mains connection is direct to the driver as standard
- The luminaire panels are IP44 rated. Please note the driver and gearbox are IP20 rated

Dimensions - LED Panel



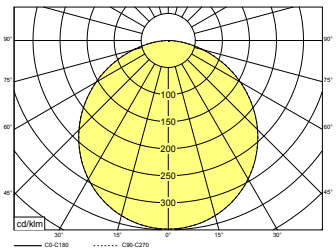
Weight (kg)	Depth (mm)
2.28	8

Specification

To specify state; Flat panel edge lit LED, IP44 rated, with diffuse opal panel, extruded aluminium in white finish, plug/socket connection mains to ENEC driver (IP20) as Eaton's VersaPanel range, part no _____

Photometric Data

Cat. No: VSTPP66344KZ



LOR 100%
DLOR 100%
ULOR 0%
SHR max 1:1.46
SHR nom 1-1.25

Utilisation factors /TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	56	67	74	79	87	92	95	100	103
0.7	0.3	0.2	48	59	66	72	80	86	90	96	99
0.7	0.1	0.2	42	53	61	67	75	81	86	92	96
0.5	0.5	0.2	54	64	71	77	84	88	92	96	99
0.5	0.3	0.2	47	58	65	70	78	84	87	92	96
0.5	0.1	0.2	42	52	60	66	74	79	84	89	93
0.3	0.5	0.2	53	63	69	74	81	85	88	92	95
0.3	0.3	0.2	47	57	64	69	76	81	85	89	92
0.3	0.1	0.2	42	52	59	65	72	78	82	87	90
0	0	0	40	49	56	61	69	74	78	82	86
BZ-class			5	5	5	5	5	5	5	5	5

See page 468 for design guide

Catalogue Numbers

Cat No	Description	Nominal Lumens	Max Wattage (W)	Lumen output	Efficiency (Llm/cW)	Colour Temperature °K	Weight	Power Factor
VSTPP66344KZ	VersaPanel LED 3400lm 4000K	3400	36	3350	93	4000K	2.28Kg	>.95
VST60SMK	VersaPanel LED surface mount box	-	-	-	-	-	1.60Kg	-

For emergency option add characters EL in from of the Cat No, example VSTPP66345KZ becomes ELVSTPP66345KZ
For DALI option replace characters KZ with DD example VSTPP66345KZ becomes VSTPP66345DD
DALI Emergency option would be ELVSTPP66345DD

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/VersaPanel-recessed.html

1 Leat

Leat is the latest linear LED lighting system from Eaton. With an innovative uniform construction, clean minimalist lines and high efficiency, Leat provides a new alternative for conventional general lighting applications and to emphasize spaces. Simple installation is a key benefit, thanks to the positive coupled connector system which ensures tight true lines are achieved.

Available in an Opaline acrylic diffuser gives an evenly lit appearance across the whole face.

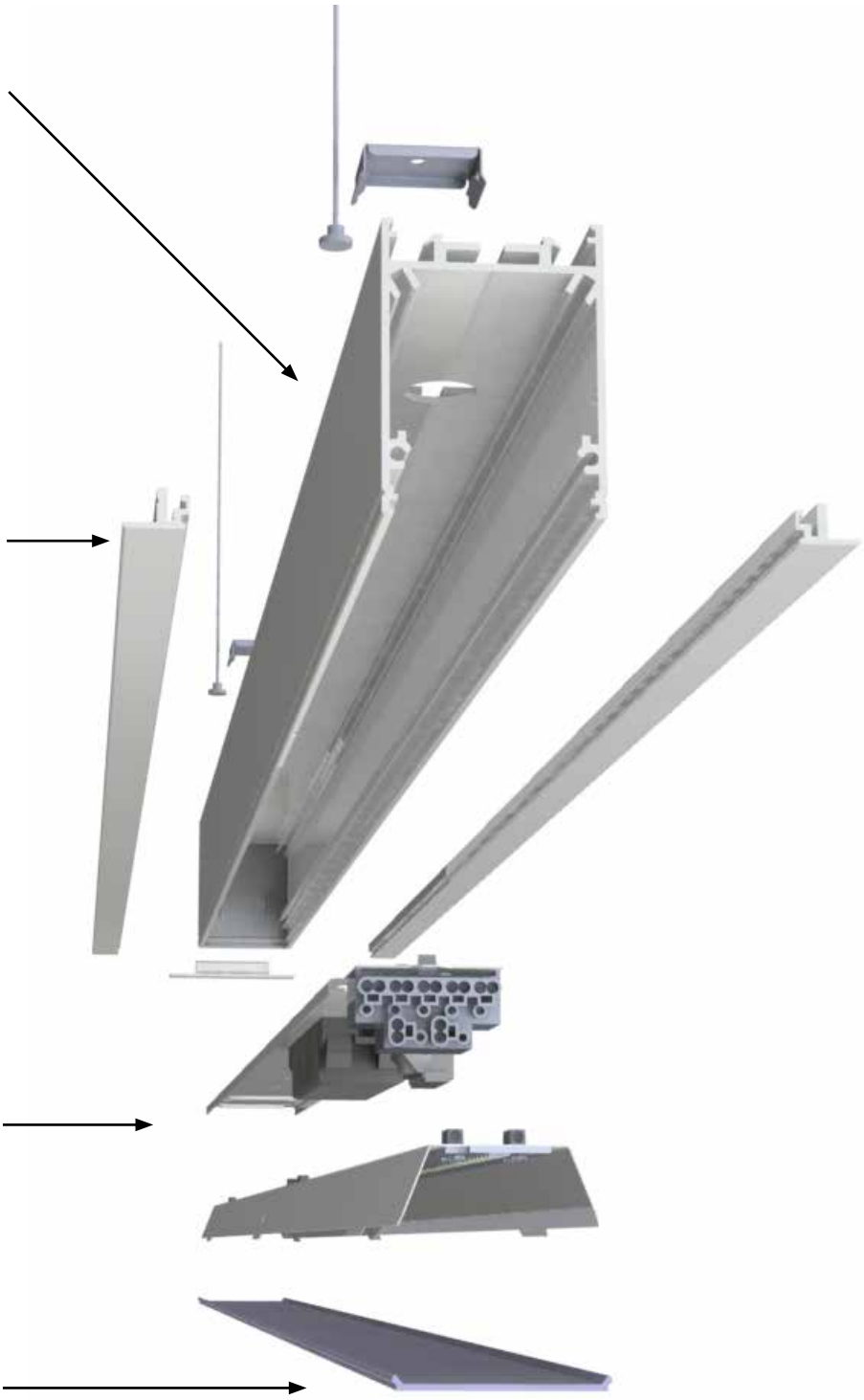
Emergency operation is integral to 1 metre variants as an option, making for a seamless visual integration.

- Suitable for recessed, surface and suspended applications
- High efficacies of up to 122 Llm/cW which exceeds the requirements of UK Building Regulations: Part L and Section 6 (Scotland)
- Three preset lumen output options per length – total design freedom
- Close colour tolerance: MacAdam 3 SDCM
- 3 hour maintained emergency versions available in the 1 metre modules
- Ideal for stand alone and continuous applications

Construction

Body

- The strength and accuracy of Leat comes from the precision manufacture of its extruded body. For continuous installation, the dedicated three axis coupled connector system ensures no deviation about the X, Y and Z axis.
- Continuous and standalone models use the same channelled extrusion, reducing complexity and allowing for a coordinated look to a space where mixed applications are required.



Ceiling integration

- For recessing applications where a defined edge is required, the trim kits provide a simple solution. Available in up to 3 metre lengths, it can provide a seamless finish.
- Solid ceilings and plasterboard finishes are accommodated with dedicated fixing brackets.

LED and Drivers

- Dedicated PCB's designed exclusively for Leat give a closely defined continuous light effect, negating the 'dark spot' joint effect in conventional systems. Continuous variants include through wiring for simple and positive interconnection.
- A choice of three outputs per length allow for total design freedom and precise lighting effect, matched to the installations environment.
- Continuous runs should not mix outputs as this may lead to a variance in perceived luminance between sections.

Diffuser

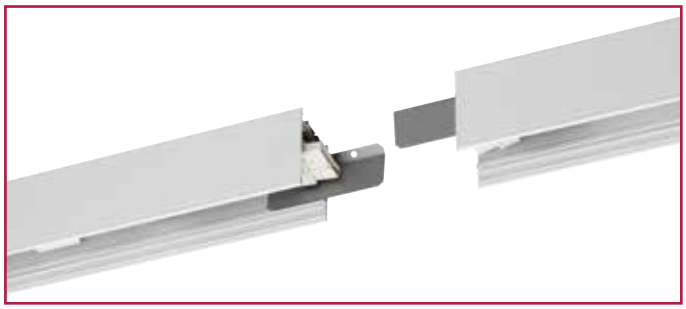
- The flexible Polycarbonate diffuser is available to suit preset lengths of 1 metre, 1.5 metre, 2 metre and 3 metre to suit use in continuous type installations. In addition a 10 metre continuous roll is available to give a truly seamless lit effect over long runs.
- Standalone models come complete with diffusers and end caps fitted.

1

Construction

Leat continuous is simple to install, a coupled connector aligns sections accurately and consistently to create a precision installation. With the flexibility to have installations with incremental lengths of 500mm, Leat gives uniform lighting realization for many applications.

1. Insert coupled connector plates



2. Join sections together and secure coupled connector plates

3. Insert integrated gear trays and connect electrically

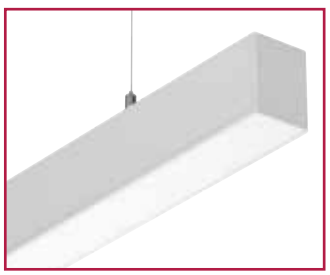
4. Install diffuser

Installation Options

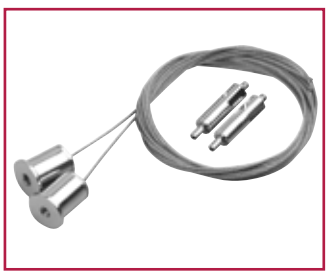
Recessed

Surface

Suspended



Suspended kit

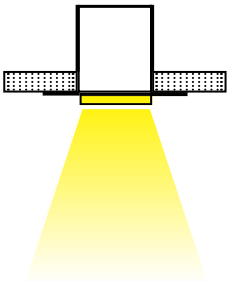


Design freedom

- Leat is available in a choice of three lumen outputs per unit length, allowing for the most energy efficient choices to be made within the design process. All Leat models are also available with DALI control gear to offer ultimate light volume and effect in the control of the space.
- The three output settings are designed to allow multiple length selections to be made on one or series of configurations. Each maintain the same lumen output per metre, giving a uniform effect and appearance across the array.

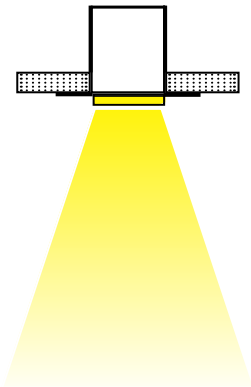
Low Output

≈ 1500 Lumen / Linear metre



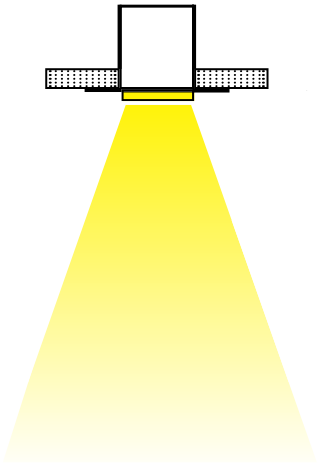
Medium Output

≈ 2200 Lumen / Linear metre



High Output

≈ 3000 Lumen / Linear metre



Performance

	Part No.	Length	Lumen output (lm)	Wattage (W)	Efficacy (Llm/cW)
Low output	LEAC10154KZ	1000	1531	12.9	118.7
	LEAC15224KZ	1500	2382	21.4	111.3
	LEAC20304KZ	2000	3152	26.7	118.1
	LEAC30454KZ	3000	4811	39.4	122.1
Medium output	LEAC10224KZ	1000	2297	19.6	117.2
	LEAC15334KZ	1500	3331	29.6	112.5
	LEAC20444KZ	2000	4432	38.9	113.9
	LEAC30664KZ	3000	6760	58.2	116.2
High output	LEAC10304KZ	1000	3033	26.7	113.6
	LEAC15454KZ	1500	4584	42.9	106.9
	LEAC20604KZ	2000	6035	54.6	110.5
	LEAC30904KZ	3000	9211	81.4	113.2

Note: Continuous runs should not mix outputs as this may lead to a variance in perceived luminance between sections.

1

Light Engine and Control Gear Options

- High output, high efficacy LED chip set optimised for recessed panel options
- Close pitched PCB ensures homogenous continuous effect
- Energy efficient fixed output control gear as standard
- Dimming option - DALI

Materials

- Body – Aluminium extrusion coated in RAL9016 - 60% gloss finish
- Diffuser optic - Polycarbonate UV stable Opaline high transmission flexible diffuser
- Internal reflector – Steel construction, powder coated in RAL9016 white finish its provide a simple solution. Available in up to 3 metre lengths, it can provide a seamless finish.
- Solid ceilings and plasterboard finishes are accommodated with dedicated fixing brackets.

Installation Notes

- Suitable for recessed, surface and suspended applications
- Suitable for exposed 'T' ceilings using the trim accessories, stand alone and continuous applications
- Appropriate for Plasterboard and solid ceilings using the accessories
- Suitable for installation in pendant applications using the suspension accessories
- Emergency variants are fused as standard

Options

- Fully integral LED emergency conversion, 3 hour duration
- CGLine+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

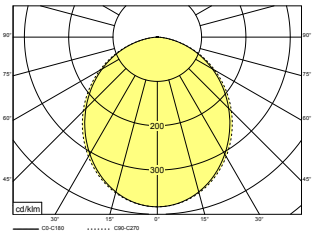
To specify state: Modular back-lit LED luminaire, of aluminium extrusion construction with post coat powder paint, RAL9016 finish, for lay-in installations, solid ceilings and other applications with Opaline Polycarbonate high transmission diffuser and high efficiency LED modules. LED emergency option via integral conversion as Eaton's Leat range part no

_____

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/Leat-recessed-LED-ceiling-lights.html

Photometric Data

Cat no: LEAC20444KZ.LDT



SHRnom : 1.25 SHRmax : 1.401

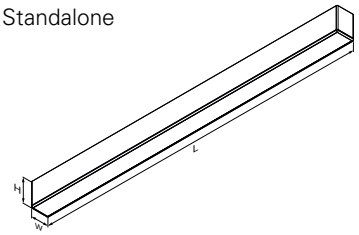
Utilisation factors / TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	58	68	75	81	88	93	96	101	104
0.7	0.3	0.2	50	61	68	74	82	87	91	97	100
0.7	0.1	0.2	45	55	63	69	77	83	87	93	97
0.5	0.5	0.2	56	66	73	78	85	89	93	97	99
0.5	0.3	0.2	49	59	67	72	80	85	89	94	97
0.5	0.1	0.2	44	54	62	67	75	81	85	91	94
0.3	0.5	0.2	55	64	71	75	82	86	89	93	96
0.3	0.3	0.2	49	58	65	71	78	82	86	90	93
0.3	0.1	0.2	44	54	61	66	74	79	83	88	91
0	0	0	42	51	58	63	71	75	79	84	87
BZ-class			5	4	4	4	4	4	4	4	4

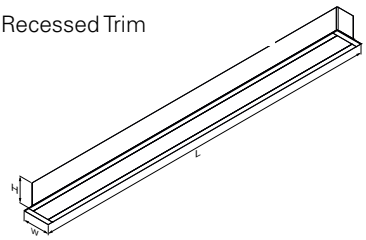
See page 468 for design guide

Dimensions

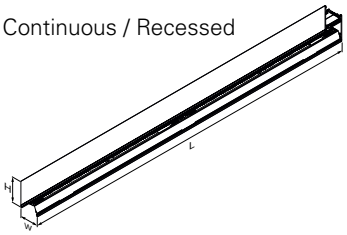
Standalone



Recessed Trim



Continuous / Recessed



	L (mm)	H (mm)	W (mm)
Standalone			
1000	1006	75	55
1500	1506	75	55
2000	2006	75	55
3000	3006	75	55
Recessed Trim			
1000	1030	80	79
1500	1530	80	79
2000	2030	80	79
3000	3030	80	79
Continuous			
1000	1000	1000	55
1500	1500	1500	55
2000	2000	2000	55
3000	3000	3000	55

Catalogue Numbers

		Part No.	Description	Weight (Kg)
Continuous	**Continuous Fixed Output**			
	Low output	LEAC10154KZ	Leat Continuous 1 metre,1500 lm FO	2.51
		LEAC15224KZ	Leat Continuous 1.5 metre, 2200 lm FO	3.64
		LEAC20304KZ	Leat Continuous 2 metre, 3000 lm FO	4.69
		LEAC30454KZ	Leat Continuous 3 metre, 4500 lm FO	6.80
		ELLEAC10154KZ	Leat Continuous 1 metre, 1500 lm FO Emergency variant	2.80
	Medium output	LEAC10224KZ	Leat Continuous 1 metre, 2200 lm FO	2.51
		LEAC15334KZ	Leat Continuous 1.5 metre, 3300 lm FO	3.64
		LEAC20444KZ	Leat Continuous 2 metre, 4400 lm FO	4.69
		LEAC30664KZ	Leat Continuous 3 metre, 6600 lm FO	6.80
		ELLEAC10224KZ	Leat Continuous 1 metre, 2200 lm FO Emergency variant	2.80
	High output	LEAC10304KZ	Leat Continuous 1 metre, 3000 lm FO	2.51
		LEAC15454KZ	Leat Continuous 1.5 metre, 4500 lm FO	3.64
		LEAC20604KZ	Leat Continuous 2 metre, 6000 lm FO	4.69
		LEAC30904KZ	Leat Continuous 3 metre, 9000 lm FO	6.80
		ELLEAC10304KZ	Leat Continuous 1 metre, 3000 lm FO Emergency variant	2.80
	Continuous DALI	For DALI Dimming option replace the character Z with DD, e.g. LEAC10304KZ becomes LEAC10304KDD		
	Diffusers for Continuous modules	LEAOP10	Leat Continuous diffuser 1 metre	0.10
		LEAOP15	Leat Continuous diffuser 1.5 metre	0.15
		LEAOP20	Leat Continuous diffuser 2 metre	0.20
		LEAOP30	Leat Continuous diffuser 3 metre	0.30
		LEAOP50	Leat Continuous diffuser 5 metre	0.50
		LEAOP100	Leat Continuous diffuser 10 metre	1.00
	Recessing frame	LEARE10	Recessing frame side rail kit 1 metre - set of 2	0.32
		LEARE15	Recessing frame side rail kit 1.5 metre - set of 2	0.47
		LEARE20	Recessing frame side rail kit 2 metre - set of 2	0.63
		LEARE30	Recessing frame side rail kit 3 metre - set of 2	0.95
		LEAREETK	Recessing frame end trim kit - set of 2	0.02
		LEAPL10	Plaster in kit 1 metre	0.45
		LEAPL15	Plaster in kit 1.5 metre	0.45
		LEAPL20	Plaster in kit 2 metre	0.45
		LEAPL30	Plaster in kit 3 metre	0.68
Standalone	**Standalone Fixed Output**			
	Low output	LEAS10154KZ	Leat Standalone 1 metre, 1500 lm FO	2.46
		LEAS15224KZ	Leat Standalone 1.5 metre, 2200 lm FO	3.48
		LEAS20304KZ	Leat Standalone 2 metre, 3000 lm FO	4.51
		LEAS30454KZ	Leat Standalone 3 metre, 4500 lm FO	6.56
		ELLEAS10154KZ	Leat Standalone 1 metre, 1500 lm FO Emergency variant	2.75
	Medium output	LEAS10224KZ	Leat Standalone 1 metre, 2200 lm FO	2.46
		LEAS15334KZ	Leat Standalone 1.5 metre, 3300 lm FO	3.48
		LEAS20444KZ	Leat Standalone 2 metre, 4400 lm FO	4.51
		LEAS30664KZ	Leat Standalone 3 metre, 6600 lm FO	6.56
		ELLEAS10224KZ	Leat Standalone 1 metre, 2200 lm FO Emergency variant	2.75
	High output	LEAS10304KZ	Leat Standalone 1 metre, 3000 lm FO	2.46
		LEAS15454KZ	Leat Standalone 1.5 metre, 4500 lm FO	3.48
		LEAS20604KZ	Leat Standalone 2 metre, 6000 lm FO	4.51
		LEAS30904KZ	Leat Standalone 3 metre, 9000 lm FO	6.56
		ELLEAS10304KZ	Leat Standalone 1 metre, 3000 lm FO Emergency variant	2.75
	Standalone DALI	For DALI Dimming option replace the character Z with DD, e.g. LEAS10304KZ becomes LEAS10304KDD		

Accessories

Part No.	Description	Weight (Kg)
LEAEC	Leat end caps - set of 2	0.02
LEA15SU	Leat Suspension 1.5 metre - set of 2	0.09
LEA50SU	Leat Suspension 5 metre - set of 2	0.15
LEAMC	Leat Surface Mounting clips - set of 2	0.01

1 Moduseal 2

For a diverse range of applications which call for a high level of ingress protection, Moduseal 2 offers a complete solution.

Moduseal 2 is protected to IP65 from below in a choice of recessed and surface bodies. The clean lines of the diffusers and frames offer greater control of the LED modules for maximum energy efficiency. An integrated LED emergency option gives a highly efficient design solution, minimising installation points.

- IP65 dust tight and water jet proof from below – IP54 rear body
- Surface versions are IP65 throughout
- Minimalist extruded frame with fixtureless mounting
- Easily wiped down diffuser assemblies for hygiene
- All diffusers are TPa and can be used within emergency exit routes
- Integrated emergency optic for high performance design solutions
- Recessed body options are suitable for a wide range of ceiling integration including prepared apertures
- Integrated emergency options with automatic testing available

Light Source and Control Gear Options

- LED – high output, high efficiency LED chip set optimized for maximum efficiency
- Energy efficient LED drivers

Options

- Fully integrated LED emergency conversion with optic lens, 3 hour duration
- Suitable for use on defined escape routes
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Materials

- Body – welded, full box steel construction, powder coated RA9016 white
- IP65 frame – extruded aluminium, chromate pretreated and powder coated RAL 9016 white
- LED panel – TPa rated opal material
- Surface mounted body – welded, full box steel construction, powder coated RA9016 white

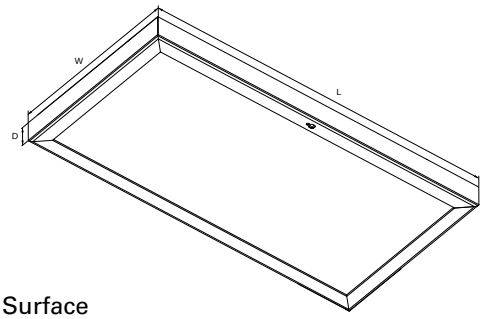
Installation notes

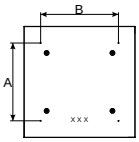
- For ceiling type compatibility refer to the installation guide on page 66
- Contact Eaton's technical support team for compatibility with other ceilings
- May be used with prepared aperture ceilings which are suitably reinforced – see the diagram below for details
- Terminal block with a 2 x 2.5mm² cable capacity per termination
- Fixtureless frame retention can be removed with supplied tool or diffuser frame removal tool MS2RST
- MS2RST not suitable for prismatic T5 versions, use the supplied tool only

Specification

To specify state: Modular recessed luminaire, IP65/IP54 full box welded construction body with post coat powder paint, prismatic lens, TPa clear polycarbonate panel / TPa opal in extruded aluminium frame with RAL9016 finish, securely fixed and with gaskets to achieve IP65/IP54 from below ceiling/ IP65 surface mounted. LED emergency option with unique lens optic delivering up to 10m x 10m distribution, as Eaton's Moduseal range, part no. _____

Dimensions

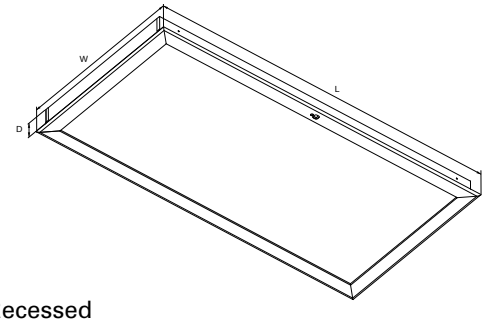


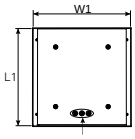


NOTE: Drill desired cable entry hole (where marked 'X') from the inside of the fitting out. Entry points are spaced 40mm equally about the centre line and 82.2mm from the edge

Surface

Variant	L (mm)	W (mm)	D (mm)	A (mm)	B (mm)
LED					
3600/4800lm	600	600	75	420	420
3800/5600lm	1200	300	75	1044	186





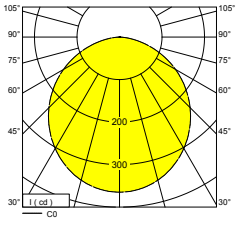
Cable entry gland holes.
Entry points are spaced 40mm equally about the centre line and 57mm from the edge

Recessed

Variant	L (mm)	W (mm)	D (mm)	A (mm)	B (mm)	Prepared aperture L1 (mm)	Prepared aperture W1 (mm)
LED							
3600/4800lm	598	598	75	576	576		
3800/5600lm	1198	298	75	1176	276		

Photometric Data

Cat. No. MS2R364Z



SHR nom: 1.50
SHR max: 1.555
LO 3636 lm

Utilisation factors / TM5

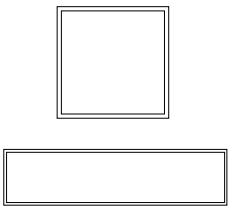
Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	61	69	77	82	89	93	97	101	104
70	30	20	53	62	69	75	83	88	92	97	100
70	10	20	48	56	64	70	78	84	88	94	97
50	50	20	59	67	74	79	86	90	93	97	100
50	30	20	53	61	68	73	81	85	89	94	97
50	10	20	48	56	63	69	76	82	86	91	94
30	50	20	58	65	72	76	83	87	90	93	96
30	30	20	52	59	67	72	78	83	86	91	94
30	10	20	47	55	62	68	75	80	83	88	91
0	0	0	45	53	60	65	71	76	79	84	87
BZ-class			4	4	4	4	4	4	4	4	4

See page 468 for design guide

1

Catalogue Numbers

LED



Variant	Cat No	Lumen Output	Wattage (W)	Llm/cW	Weight (kg)	Emergency Cat No	Weight (kg)
600 x 600							
3600	MS2R364KZ	3636	40	90.9	7.0	ELMS2R364KZ	7.5
4800	MS2R484KZ	4824	55	87.7	7.0	ELMS2R484KZ	7.5
1200 x 300							
3800	MS2R384KZ	3539	48	73.7	7.9	ELMS2R384KZ	8.4
5600	MS2R564KZ	5608	81	69.2	7.9	ELMS2R564KZ	8.4

Accessories

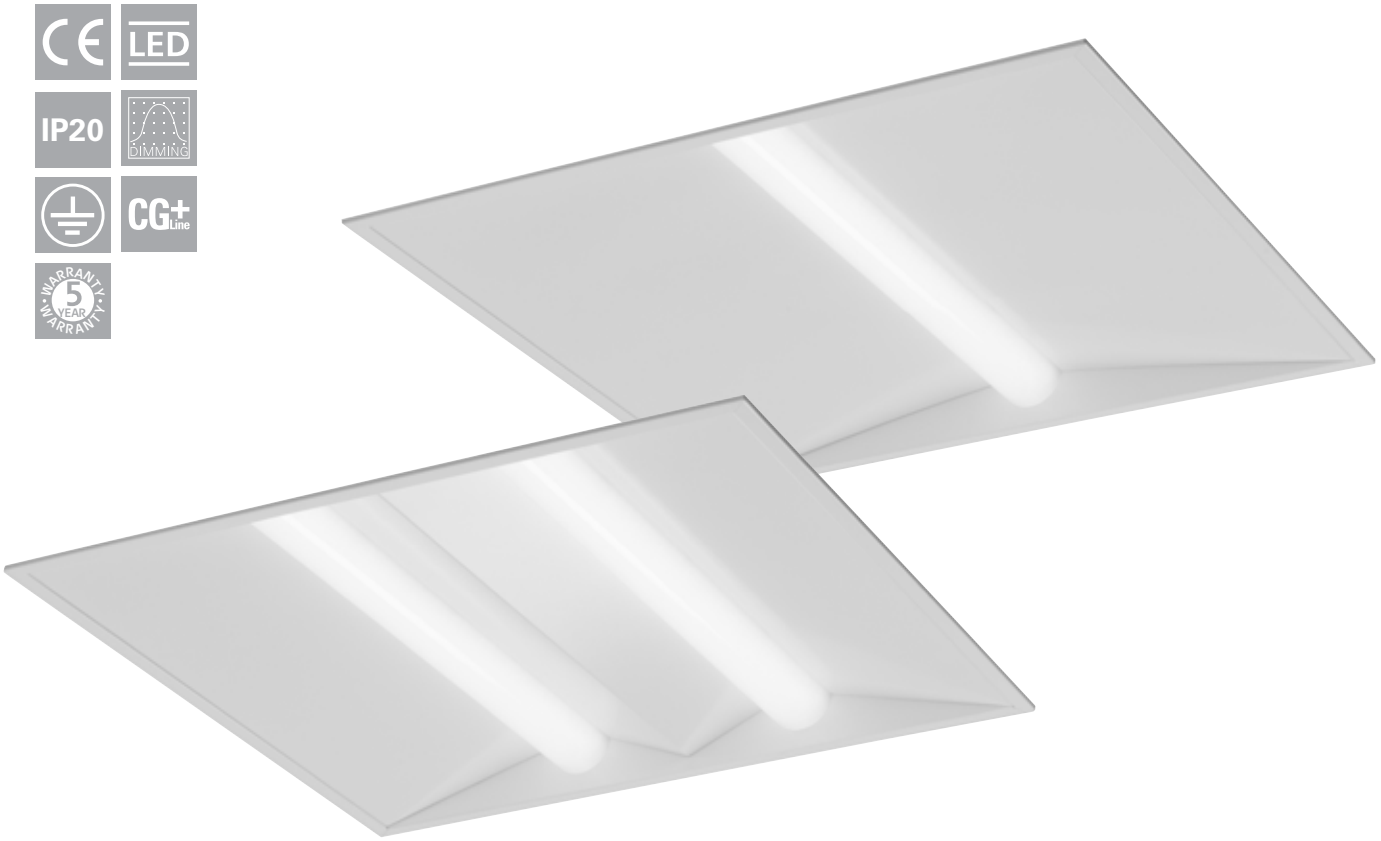
Description	Cat No
Diffuser frame removal tool	MS2RST

Surface Mounted

Surface mounted versions are to be ordered complete only. Recessed variants cannot be upgraded to surface mounted
For surface mounted versions replace character R with S, e.g. MS2S364KZ
For DALI Dimming option replace character **Z** with **DD**, e.g. MS2R364K**Z** becomes MS2R364K**DD**
For DALI EM PRO emergency options replace add character P as a suffix, e.g. ELMS2R364KDD becomes ELMS2R364KDDP
Emergency versions also available with automatic test functionality.
For further information, contact our technical support and application department on 01302 303240
or email LightingTechnicalUK@Eaton.com
Llm/cW = luminaire lumens per circuit watt

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/recessed-ceiling-lights-moduseal-2-eaton.html

Balka



Balka brings together a modern architectural contoured appearance with an efficiency performance that is at home amongst the class leaders in the market. Performance figures reaching 142 Llm/cW make this a very attractive proposition in today's market to meet the demanding energy saving targets many customers are specifying to.

With the choice of single and twin versions in the Balka line, and outputs ranging from 2250 - 7200lm; these products can service a wide range of end users from commercial office space up to high output retail applications.

- High efficacies of up to 142 Llm/cW
- Close colour tolerance: MacAdam 3 SDCM
- Excellent light transmission and LED source obscurity via the reeded opal diffuser
- Choice of 2 aesthetic profiles to suit a range of preferences and applications
- Fully integral LED emergency, powered via main LED strip
- Ceiling depth: 50mm
- Quick and simple installation with lay-in option

1

Light Engine and Control Gear Options

- High output, high efficacy LED chip set optimised for recessed panel options
- Energy efficient fixed output control gear as standard
- Dimming option - DALI

Materials

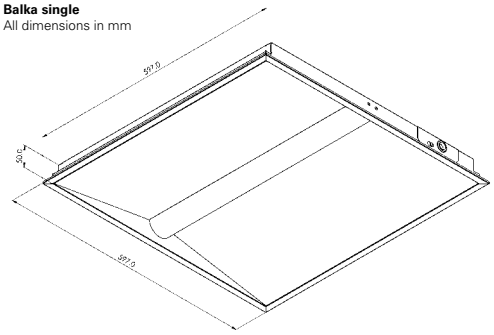
- Body - Full steel box construction powder coated in RAL9016 finish
- Diffuser - UV stabilised opal polycarbonate

Installation Notes

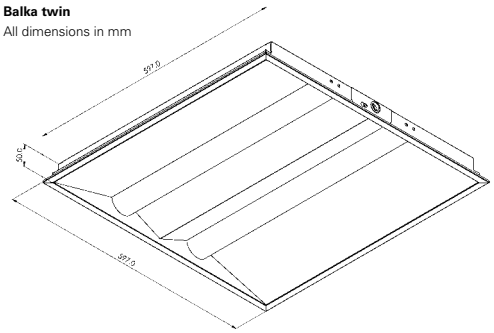
- Suitable for exposed 'T' ceilings, lay-in only
- Side cat flap for ease of access to electrical terminations for rapid installation
- Terminal block with 2 x 2.5mm² cable capacity
- Fused as standard
- May aid lighting scheme design to comply with BS EN 12464-1

Dimensions

Balka single
All dimensions in mm



Balka twin
All dimensions in mm



Options

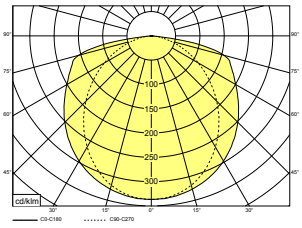
- Fully integral LED emergency conversion, 3 hour duration
- CG Line+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements

Specification

To specify state: Recessed aesthetic profile LED luminaire, of full box welded construction with post coat powder paint, RAL9016 finish, for lay-in installations, with UV stabilised opal polycarbonate diffuser and high efficiency LED modules, Eaton's Balka range part no _____

Photometric Data

Balka single
Cat. No: BLKS66224KZ



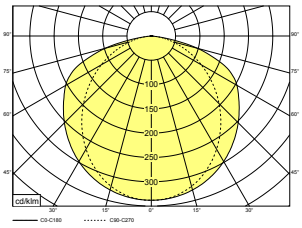
LOR 100%
DLOR 100%
ULOR 0%
SHR Nom 1:1.25
SHR Max 1:1.44

Utilisation factors /TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	54	65	72	77	85	90	94	99	102
0.7	0.3	0.2	46	57	64	70	78	84	88	94	98
0.7	0.1	0.2	40	50	58	64	73	79	84	90	95
0.5	0.5	0.2	53	62	69	74	82	87	90	95	98
0.5	0.3	0.2	46	55	63	68	76	81	86	91	94
0.5	0.1	0.2	40	50	57	63	71	77	82	88	92
0.3	0.5	0.2	51	61	67	72	79	83	87	91	94
0.3	0.3	0.2	45	54	61	66	74	79	83	88	91
0.3	0.1	0.2	40	49	56	62	70	75	80	85	89
0	0	0	38	47	54	59	66	72	75	81	84
BZ-class			5	5	5	5	5	5	5	5	5

See page 468 for design guide

Balka twin
Cat. No: BLKT66724KZ



LOR 100%
DLOR 100%
ULOR 0%
SHR Nom 1:1.25
SHR Max 1:1.47

Utilisation factors /TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	55	65	73	78	86	91	95	100	103
0.7	0.3	0.2	47	57	65	71	79	85	89	95	99
0.7	0.1	0.2	41	51	59	65	74	80	85	91	96
0.5	0.5	0.2	53	63	70	75	83	88	91	96	98
0.5	0.3	0.2	46	56	64	69	77	83	87	92	95
0.5	0.1	0.2	41	51	58	64	72	78	83	89	93
0.3	0.5	0.2	52	61	68	73	80	84	88	92	95
0.3	0.3	0.2	45	55	62	67	75	80	84	89	92
0.3	0.1	0.2	40	50	57	63	71	77	81	86	90
0	0	0	38	48	55	60	68	73	77	82	85
BZ-class			5	5	5	5	5	5	5	5	5

See page 468 for design guide

Catalogue Numbers

Variant	Cat No	Lumen Output (lm)	Wattage (W)	Efficacy (Llm/cW)	Weight (kg)	Emergency Cat No	Weight (kg)
Single 2250	BLKS66224KZ	2268	18.9	120.0	3.41	ELBLKS66224KZ	4.11
Single 3000	BLKS66304KZ	2973	23.8	124.7	3.41	ELBLKS66304KZ	4.11
Twin 2500	BLKT66254KZ	2436	17.2	141.6	3.57	ELBLKT66254KZ	4.27
Twin 3200	BLKT66324KZ	3147	22.7	138.9	3.57	ELBLKT66324KZ	4.27
Twin 4500	BLKT66454KZ	4494	33.9	132.6	3.57	ELBLKT66454KZ	4.27
Twin 6000	BLKT66604KZ	6074	48.7	124.6	3.57	ELBLKT66604KZ	4.27
Twin 7200	BLKT66724KZ	7196	61.1	117.9	3.57	ELBLKT66724KZ	4.27

For DALI Dimming option replace character Z with DD , e.g. BLKS66224KZ becomes BLKS66224KDD

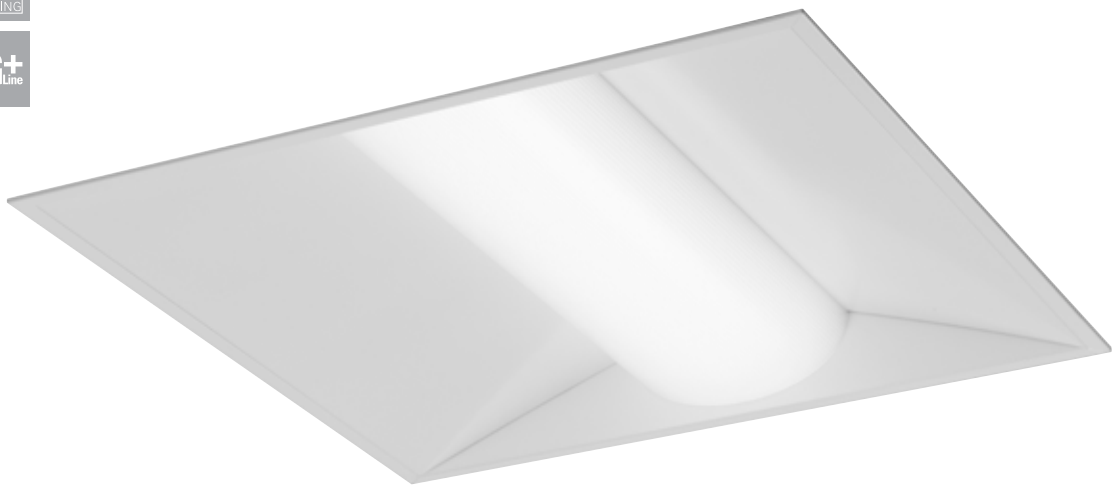
Emergency versions also available with automatic test functionality, e.g. CG Line+

For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Llm/cW = luminaire lumens per circuit watt

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/Balka.html

Rengo



Rengo provides a modern architectural contoured appearance, providing a striking modular fixture and building depth into Eaton's recessed offering.

Class leading efficacy performance levels are displayed, with performance figures reaching 120Llm/cW, making this a very attractive proposition in todays' market to meet the demanding energy saving targets many customers are specifying to.

With the excellent distribution of light from the bespoke diffuser, and outputs ranging from 2500 - 7200; these products can service a wide range of end users from commercial office buildings up to high output retail applications.

- High efficacies of up to 120 Llm/cW
- Close colour tolerance: MacAdam 3 SDCM
- Excellent light transmission & LED source obscurity via the bespoke diffuser
- Fully integral LED emergency, powered via main LED strip
- Ceiling depth: 80mm
- Quick and simple installation with lay-in and draw up option
- High energy efficiency and optical performance delivers ECA compliant variants and reduced cost of ownership

1

Light Engine and Control Gear Options

- High Output, high efficacy LED chip set optimised for recessed panel options
- Energy efficient fixed output control gear as standard
- Dimming option - DALI

Materials

- Body - Full steel box construction powder coated in RAL9016 finish
- Diffuser - TPa rated, fire retardant, UV stabilised polycarbonate

Installation Notes

- Suitable for exposed 'T' ceilings, concealed fix
- Order side support arms for 'draw up' applications (ordered separately) e.g. MSBKX bearer bracket (external fixing access required)
- Standard bearer arms accommodate 20mm to 62mm supporting grid heights
- Refer to technical support for further information on bracket options and ceiling compatibility
- Side cat flap for ease of access to electrical terminations for rapid installation
- Terminal block with 2 x 2.5mm² cable capacity
- Fused as standard
- May aid lighting scheme design to comply with BS EN 12464-1 - refer to lighting design guide on page 468

Options

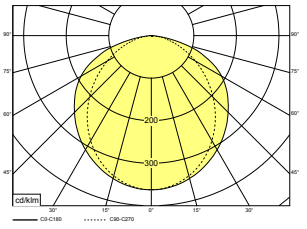
- Fully integral LED emergency conversion, 3 hour duration
- CG Line+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements

Specification

To specify state: Recessed aesthetic profile LED luminaire, of full box welded construction with post coat powder paint, RAL9016 finish, for lay-in and draw up installations, with UV stabilised polycarbonate diffuser and high efficiency LED modules, Eaton's Rengo range part no _____

Photometric Data

Cat. No: REN66254KZ



LOR 100%
DLOR 100%
ULOR 0%
SHR Nom 1:1.25
SHR Max 1:1.42

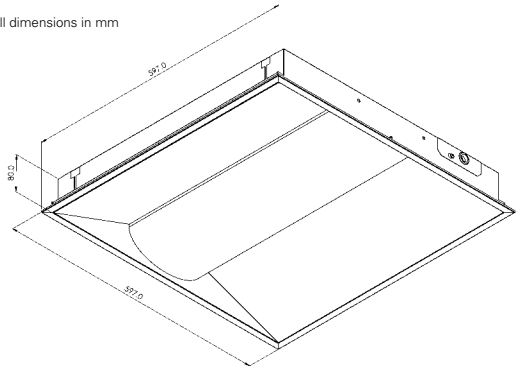
Utilisation factors /TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	57	67	74	80	87	92	96	100	103
0.7	0.3	0.2	49	59	67	73	81	86	91	96	100
0.7	0.1	0.2	43	53	61	67	76	82	86	92	97
0.5	0.5	0.2	55	65	72	77	84	89	92	96	99
0.5	0.3	0.2	48	58	65	71	79	84	88	93	96
0.5	0.1	0.2	43	53	60	66	74	80	84	90	93
0.3	0.5	0.2	53	63	70	74	81	85	89	93	95
0.3	0.3	0.2	47	57	64	69	76	81	85	90	93
0.3	0.1	0.2	42	52	59	65	73	78	82	87	91
0	0	0	40	50	57	62	69	74	78	83	86
BZ-class			5	5	5	5	5	5	5	4	4

See page 468 for design guide

Dimensions

All dimensions in mm



Catalogue Numbers

Variant	Cat No	Lumen Output (lm)	Wattage (W)	Efficacy (Llm/ cW)	Weight (kg)	Emergency Cat No	Weight (kg)
Standard 2500	REN66254KZ	2715	23.9	113.6	4.09	ELREN66254KZ	4.79
Standard 3300	REN66334KZ	3431	31.9	107.4	4.09	ELREN66334KZ	4.79
Standard 4500	REN66454KZ	4572	38.3	119.5	4.09	ELREN66454KZ	4.79
Standard 6000	REN66604KZ	6121	54.7	112	4.09	ELREN66604KZ	4.79
Standard 7200	REN66724KZ	7270	69.4	104.8	4.09	ELREN66724KZ	4.79

For DALI Dimming option replace character Z with DD , e.g. REN66254KZ becomes REN66254KDD

Emergency versions also available with automatic test functionality, e.g. CG Line+

For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

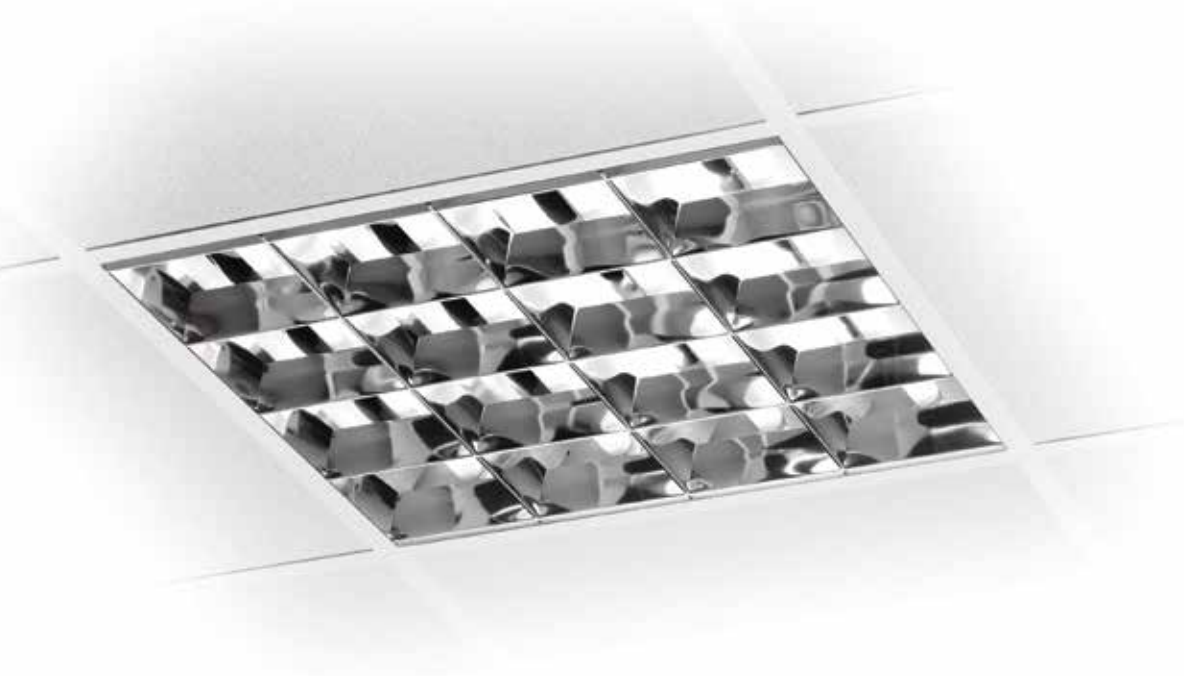
Llm/cW = luminaire lumens per circuit watt

Accessories

Description	Cat No
Draw-up - External fix side support arms	MSBKX

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/Rengo.html

Modulay



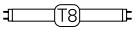
The Modulay range has ingenious design features popular for all types of installations where high quality, competitive luminaires are demanded. The full box, fully enclosed body construction gives additional strength, whilst reducing light spill into the void, important for open cell ceilings. The housing offers enhanced attachment retention and cleverly maintains the compatibility with both 15mm and 24mm exposed 'T' ceilings, including the higher Armstrong Peakform style.

The range is offered with a choice of switch start or high frequency control gear and with or without triphosphor lamps. There is also a choice of louvre types and prismatic panel material options.

- Fully enclosed body, reducing light spill into the void
- Luminaire fits 15 and 24mm exposed 'T' ceiling grids
- Choice of 65°- 1000 cd/m² or general purpose louvres or prismatic controllers
- Fully integral emergency options
- Available with a choice of triphosphor or less lamp options

1

Lamp and Control Gear Options



- 18W, 36W T8 fluorescent 4000°K - G13 cap
- 14W, 28W (HE), 54W (HO) T5 fluorescent 4000°K - G5 cap
- High frequency or switch start control gear as standard
- DSI digital dimming also available

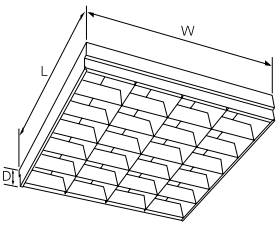
Materials

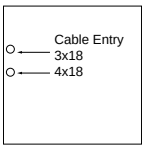
- Body - full box steel construction, powder coated in RAL9016 finish
- Louvres - high grade specular aluminium
- Prismatic controller - TPa flame retardant, UV stable PVC. TPb UV stable styrene

Installation Notes

- Designed for exposed 'T' ceilings with 15mm and 24mm tees
- Compatible with 'T' up-stands up to and including the 43.5mm high Armstrong Peakform system
- Luminaire lies onto table of tee
- Louvre and prismatic controllers fitted by lifting and tilting in and out of body. Louvre supported on hanging straps for hands free re-lamping
- High frequency control gear used in conjunction with triphosphor lamps are recommended for the most energy efficient results
- Supplied either less lamp or complete with triphosphor lamps

Dimensions





Lamp Rating	L (mm)	W (mm)	D (mm)
3/4 x 18W/14W	611	593	90
3/4 x 36W/28W/54W	1221	593	90

Options

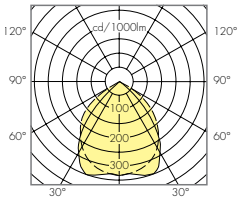
- Intellem self-test emergency versions available
- Suitable for use on defined escape routes with louvre and TPa attachment
- Available fitted with pre-wired socket to suit Connect rapid wiring system. Add suffix 'CX' to catalogue number
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

To specify state: Lay-in recessed luminaire, of full box construction with post coat powder paint, RAL9016 White, for both 15mm and 24mm tees, for use with 65°-1000 cd/m² mirror finish/ ribbed cross blade general purpose louvre/prismatic controller in TPa/TPb material, as Eaton's Modulay range, part no. _____

Photometric Data

Cat. No. ML418ZT/MLV418



LOR: 0.62
ULOR: 0.00
DLOR: 0.62

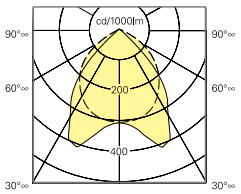
SHR nom: 1.50
SHR max: 1.557

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	48	53	56	59	62	63	65	66	67
	30		45	50	53	56	59	61	63	65	66
	10		43	47	51	54	57	60	61	63	65
50	50	20	48	52	55	57	60	61	63	64	65
	30		45	49	52	55	58	60	61	63	64
	10		43	47	51	53	56	58	60	62	63
30	50	20	47	51	54	56	58	60	61	62	63
	30		44	48	52	54	57	58	59	61	62
	10		42	47	50	52	55	57	58	60	61
0	0	0	41	45	49	51	53	55	56	57	58
BZ-class			1	1	1	1	1	1	1	1	1

See page 468 for design guide

Cat. No. ML414ZT/MLDFR66



LOR: 0.68
ULOR: 0.00
DLOR: 0.68

SHR nom: 1.50
SHR max: 1.66

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	46	53	58	61	65	68	69	72	73
	30		42	49	54	57	62	65	67	70	71
	10		38	46	51	54	59	62	65	68	70
50	50	20	45	52	56	59	63	65	67	69	70
	30		41	48	53	56	60	63	65	67	69
	10		38	45	50	53	58	61	63	66	68
30	50	20	44	51	55	57	61	63	65	67	68
	30		41	48	52	55	59	61	63	65	67
	10		38	45	50	53	57	60	62	64	66
0	0	0	37	44	48	51	55	57	59	61	62
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

Catalogue Numbers

Lamp Rating	Lamp Type	Modular Size	Gear Option	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)
Body - supplied with triphosphor lamps - order attachment separately							
3 x 18W	T8	600 x 600	High Frequency	ML318ZT	3.1	EBML318ZT	4.1
4 x 18W	T8	600 x 600	High Frequency	ML418ZT	3.2	EBML418ZT	4.2
3 x 36W	T8	600 x 1200	High Frequency	ML336ZT	5.7	EBML336ZT	6.7
4 x 36W	T8	600 x 1200	High Frequency	ML436ZT	5.9	EBML436ZT	6.9
3 x 14W	T5	600 x 600	High Frequency	ML314ZT	3.1	EBML314ZT	4.1
4 x 14W	T5	600 x 600	High Frequency	ML414ZT	3.2	EBML414ZT	4.2
3 x 28W	T5	600 x 1200	High Frequency	ML328ZT	5.7	EBML328ZT	6.7
4 x 28W	T5	600 x 1200	High Frequency	ML428ZT	5.9	EBML428ZT	6.9
3 x 54W	T5	600 x 1200	High Frequency	ML354ZT	5.7	EBML354ZT	6.7
4 x 54W	T5	600 x 1200	High Frequency	ML454ZT	5.9	EBML454ZT	6.9
3 x 18W	T8	600 x 600	DSI Digital Dim	ML318RDT	3.3	EBML318RDT	4.3
4 x 18W	T8	600 x 600	DSI Digital Dim	ML418RDT	3.4	EBML418RDT	4.4
3 x 36W	T8	600 x 1200	DSI Digital Dim	ML336RDT	5.9	EBML336RDT	6.9
4 x 36W	T8	600 x 1200	DSI Digital Dim	ML436RDT	6.1	EBML436RDT	7.1
3 x 14W	T5	600 x 600	DSI Digital Dim	ML314RDT	3.3	EBML314RDT	4.3
4 x 14W	T5	600 x 600	DSI Digital Dim	ML414RDT	3.4	EBML414RDT	4.4
3 x 28W	T5	600 x 1200	DSI Digital Dim	ML328RDT	5.9	EBML328RDT	6.9
4 x 28W	T5	600 x 1200	DSI Digital Dim	ML428RDT	6.1	EBML428RDT	7.1
3 x 54W	T5	600 x 1200	DSI Digital Dim	ML354RDT	5.9	EBML354RDT	6.9
4 x 54W	T5	600 x 1200	DSI Digital Dim	ML454RDT	6.1	EBML454RDT	7.1
3 x 18W	T8	600 x 600	Switch Start	ML318ST	3.8	EBML318ST	4.8
4 x 18W	T8	600 x 600	Switch Start	ML418ST	3.9	EBML418ST	4.9
3 x 36W	T8	600 x 1200	Switch Start	ML336ST	7.5	EBML336ST	8.5
4 x 36W	T8	600 x 1200	Switch Start	ML436ST	7.7	EBML436ST	8.7
Body - supplied without lamps - order attachment separately							
3 x 18W	T8	600 x 600	High Frequency	ML318ZX	2.8	EBML318ZX	3.8
4 x 18W	T8	600 x 600	High Frequency	ML418ZX	2.8	EBML418ZX	3.8
3 x 36W	T8	600 x 1200	High Frequency	ML336ZX	5.1	EBML336ZX	6.1
4 x 36W	T8	600 x 1200	High Frequency	ML436ZX	5.1	EBML436ZX	6.1
3 x 18W	T8	600 x 600	DSI Digital Dim	ML318RDX	3.0	EBML318RDX	4.0
4 x 18W	T8	600 x 600	DSI Digital Dim	ML418RDX	3.0	EBML418RDX	4.0
3 x 36W	T8	600 x 1200	DSI Digital Dim	ML336RDX	5.3	EBML336RDX	6.3
4 x 36W	T8	600 x 1200	DSI Digital Dim	ML436RDX	5.3	EBML436RDX	6.3
3 x 18W	T8	600 x 600	Switch Start	ML318SX	3.5	EBML318SX	4.5
4 x 18W	T8	600 x 600	Switch Start	ML418SX	3.5	EBML418SX	4.5
3 x 36W	T8	600 x 1200	Switch Start	ML336SX	6.9	EBML336SX	7.9
4 x 36W	T8	600 x 1200	Switch Start	ML436SX	6.9	EBML436SX	6.9

Lamp Rating	Modular Size (mm)	Louvres 65°-1000cd/m²	Louvres Gen Purpose	Weight (kg)
Louvre attachment - order body separately				
3 x 18W	600 x 600	MLV318	MLG318	0.8
4 x 18W	600 x 600	MLV418	MLG418	0.8
3 x 36W	600 x 1200	MLV336	MLG336	1.7
4 x 36W	600 x 1200	MLV436	MLG436	1.7

Lamp Rating	Modular Size (mm)	TPa PVC	TPb Styrene	Weight (kg)
Prismatic Controller - order body separately				
3 x 18W	600 x 600	MLDFR66	MLD66	0.6
4 x 18W	600 x 600	MLDFR66	MLD66	0.6
3 x 36W	600 x 1200	MLDFR612	MLD612	1.2
4 x 36W	600 x 1200	MLDFR612	MLD612	1.2

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/recessed-ceiling-lights-modulay-eaton.html

1 Priam

Priam offers an alternative form for commercial lighting applications. Designed exclusively for use in a multitude of linear tile applications in a contemporary setting.

A selection of tuned lumen outputs combined with a Microprism diffuser produce working spaces with vitality and comfort.

Emergency operation, via a discrete LED, is optically controlled with an advanced lens making exceptional spacing possible.

Rapid installation is a key benefit, thanks to the side mounted plug and socket arrangement. Connections are all external to save valuable time on site.

- Equally lit photometrically controlled diffuser for homogenous light at high angles
- Minimalist features to complement the surroundings
- Designed to fit seamlessly in to SAS 300 type ceilings with equal proportions and radii
- High efficacies of up to 106 Llm/cW which exceed the requirements of UK Building Regulations: Part L and Section 6 (Scotland)
- May contribute to EN12464-1 requirements for scheme compliance across all variants
- Close colour tolerance: MacAdam 3 SDCM
- Quick and simple installation with a lay-in solution complete with plug/socket mains and DALI connection / Pull up via bracket accessories – see bracket details
- 3 hour maintained emergency versions available
- Exceptional spacing from the integral LED emergency reduces the number of emergency luminaires required.

Light Engine and Control Gear Options

- High output, high efficacy LED chip set optimised for controlled recessed lighting applications
- Energy efficient fixed output control gear as standard
- Dimming option - DALI

Materials

- Body - welded, full box steel construction, powder coated in RAL9016 finish 60% gloss (SAS 330 available in RAL9010 to closely match ceiling tiles)
- Optic - Polycarbonate UV stable Microprism combination
- Outer bezel frame – monolithic seamless steel construction, powder coated in RAL9016 finish (SAS 330 available in RAL9010 to closely match ceiling tiles)

Installation Notes

- Suitable for a number of ceiling systems, including;
  - Exposed Tee 15mm
  - Exposed Tee 24mm
  - Alugrid 15/08
  - Alugrid 15/16
  - SAS 330 150 C Profile
  - SAS 330 100 C Profile
- Refer to the ceiling compatibility table for more details
- Suitable for UGR <19 applications
- Order side support bracket set for 'draw up' applications (ordered separately) PRMBHTBS – refer to the ceiling compatibility table for more details
- Rear socket and plug (included) for rapid installation
- Emergency variants are fused as standard
- May aid lighting scheme design to comply with BS EN 12464-1 - refer to the lighting design guide on page 468

Options

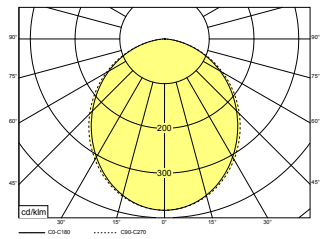
- Fully integral LED emergency conversion, 3 hour duration
- CG Line+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

To specify state: Recessed architectural luminaire, of full box welded construction with post coat powder paint, RAL9016 finish, for lay-in / pull up installations. Complete with Microprism combination and high efficiency LED modules. LED emergency option with unique lens optic delivering up to 10m x 10m coverage distribution, Eaton's Priam range part no _____

Photometric Data

Cat no: PRM123404KZ.LDT



SHRnom : 1.00 SHRmax : 1.191

Utilisation factors /TM5

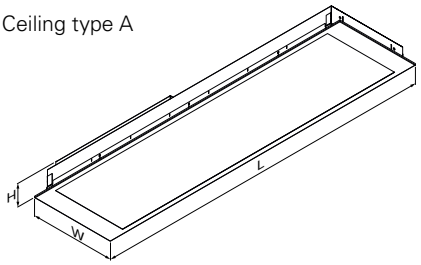
Reflectances			Room index							
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	64	74	81	86	92	97	100	104	106
0.7	0.3	0.2	57	68	75	80	87	92	96	100	103
0.7	0.1	0.2	52	63	70	75	83	88	92	97	101
0.5	0.5	0.2	63	72	79	83	89	93	96	100	102
0.5	0.3	0.2	56	66	73	78	85	89	93	97	99
0.5	0.1	0.2	52	62	69	74	81	86	90	94	97
0.3	0.5	0.2	61	70	77	81	87	90	93	96	98
0.3	0.3	0.2	56	65	72	77	83	87	90	94	96
0.3	0.1	0.2	52	61	68	73	80	84	88	92	94
0	0	0	50	59	65	70	76	81	84	87	90
BZ-class			3	3	3	3	3	3	3	3	3

See page 468 for design guide

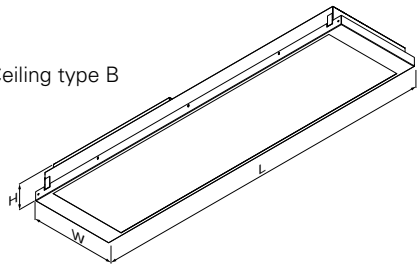
Dimensions

Product	L (mm)	H (mm)	W (mm)
Ceiling type A	1197	113	297
Ceiling type B	1183	113	283
Ceiling type C	1348	113	298

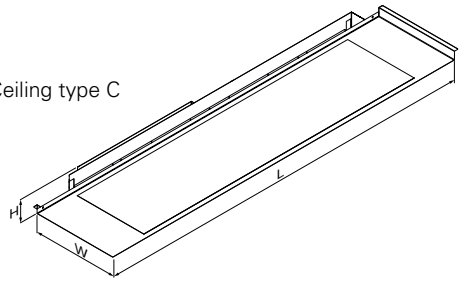
Ceiling type A



Ceiling type B



Ceiling type C



1 Catalogue Numbers

Part No	Weight (kg)	Emergency Part No	Weight (kg)	Description	Lumen Output	Wattage	Llm/cW
Priam							
PRM123254KZ	6.0	ELPRM123254KZ	6.7	Priam 1200 2500lm 4K FO	2535	24	105.6
PRM123354KZ	6.0	ELPRM123354KZ	6.7	Priam 1200 3500lm 4K FO	3557	34	104.6
PRM123404KZ	6.0	ELPRM123404KZ	6.7	Priam 1200 4000lm 4K FO	3954	38	104.1
PRM123454KZ	6.0	ELPRM123454KZ	6.7	Priam 1200 4500lm 4K FO	4529	44	102.9
Priam - Type A							
PRM123254KZA	6.1	ELPRM123254KZA	6.8	Priam 1200 2500lm 4K FO Ceiling type A	2535	24	105.6
PRM123354KZA	6.1	ELPRM123354KZA	6.8	Priam 1200 3500lm 4K FO Ceiling type A	3557	34	104.6
PRM123404KZA	6.1	ELPRM123404KZA	6.8	Priam 1200 4000lm 4K FO Ceiling type A	3954	38	104.1
PRM123454KZA	6.1	ELPRM123454KZA	6.8	Priam 1200 4500lm 4K FO Ceiling type A	4529	44	102.9
Priam - Type B							
PRM123254KZB	6.7	ELPRM123254KZB	7.4	Priam 1200 2500lm 4K FO Ceiling type B	2535	24	105.6
PRM123354KZB	6.7	ELPRM123354KZB	7.4	Priam 1200 3500lm 4K FO Ceiling type B	3557	34	104.6
PRM123404KZB	6.7	ELPRM123404KZB	7.4	Priam 1200 4000lm 4K FO Ceiling type B	3954	38	104.1
PRM123454KZB	6.7	ELPRM123454KZB	7.4	Priam 1200 4500lm 4K FO Ceiling type B	4529	44	102.9
Priam - Type C							
PRM123254KZC	6.9	ELPRM123254KZC	7.5	Priam 1200 2500lm 4K FO Ceiling type C	2535	24	105.6
PRM123354KZC	6.9	ELPRM123354KZC	7.5	Priam 1200 3500lm 4K FO Ceiling type C	3557	34	104.6
PRM123404KZC	6.9	ELPRM123404KZC	7.5	Priam 1200 4000lm 4K FO Ceiling type C	3954	38	104.1
PRM123454KZC	6.9	ELPRM123454KZC	7.5	Priam 1200 4500lm 4K FO Ceiling type C	4529	44	102.9

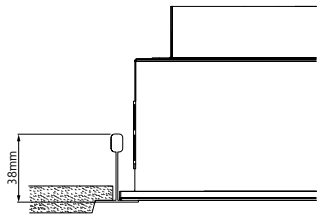
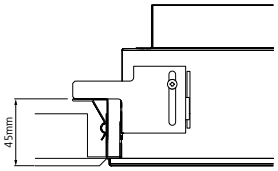
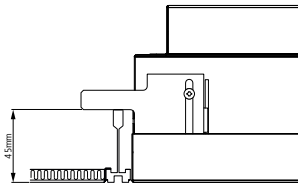
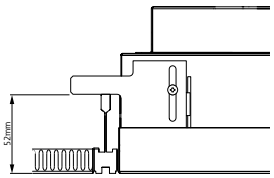
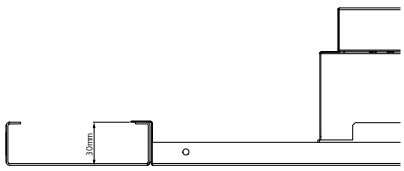
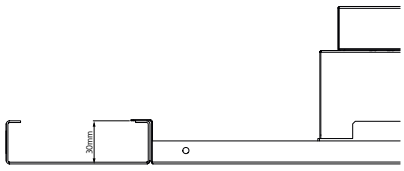
Accessories

Part No.	Description	Weight (Kg)
PRMBHTBS	Priam Bracket Set (4)	0.1

For DALI Dimming option replace character Z with DD , e.g. PRM123254KZ becomes PRM123254KDD
Emergency versions are also available with automatic test functionality, e.g. CG Line+
For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@Eaton.com
Llm/cW = luminaire lumens per circuit watt

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/priam-recessed.html

Ceiling Compatibility

Priam ceiling type	Manufacturers reference	Installation method	Body size	Bearer bracket	Note
	Exposed 'T' 15mm	Lay in only	1197 x 297 x 113	N/A	Not suitable for draw-up applications
	Exposed 'T' 24mm	Lay in only	1197 x 297 x 113	N/A	Not suitable for draw-up applications
	Burgess half tee clip in	Draw up only	1197 x 297 x 113	PRMBHTBS	Set of 4 brackets - suitable for one luminaire
A 	Alugrid 15/08	Draw up only	1183 x 285 x 113	Included with the luminaire	Set of 4 brackets - suitable for one luminaire
A 	Alugrid 15/16	Draw up only	1183 x 285 x 113	Included with the luminaire	Set of 4 brackets - suitable for one luminaire
B 	SAS 330 1350 x 300	Lay in only	1348* x 298 x 113	N/A	Not suitable for draw-up applications
	150mm C-Profile		*Dimension within the tile aperture		
C 	SAS 330 1400 x 300	Lay in only	1398* x 298 x 113	N/A	Not suitable for draw-up applications
	100mm C-Profile		*Dimension within the tile aperture		

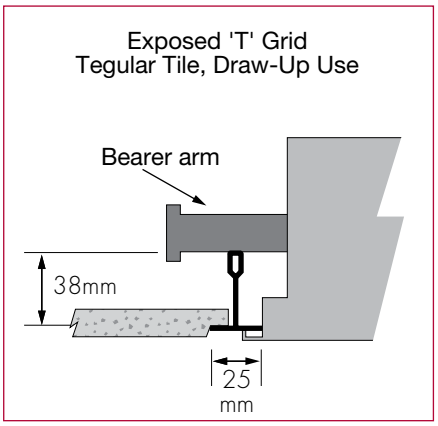
Support bracket PRMBHTBS

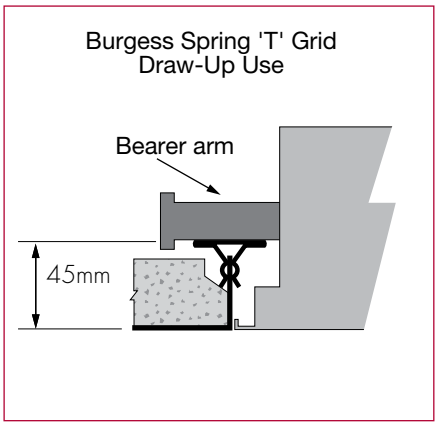
SAS 330 150mm C profile Body

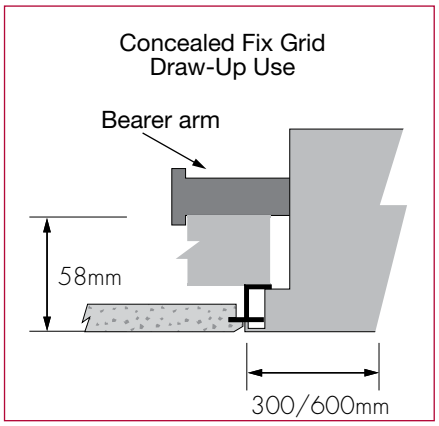
1

The following cross sectional diagrams show typical examples of how recessed luminaires fit to differing ceiling systems.

Draw-up application examples



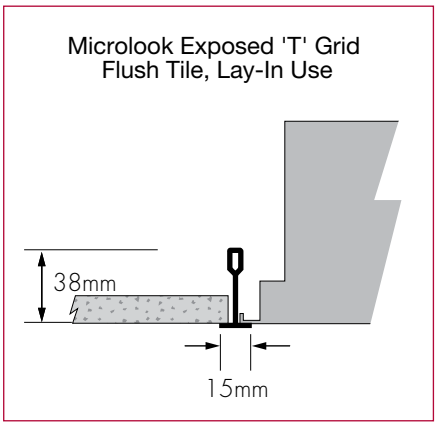


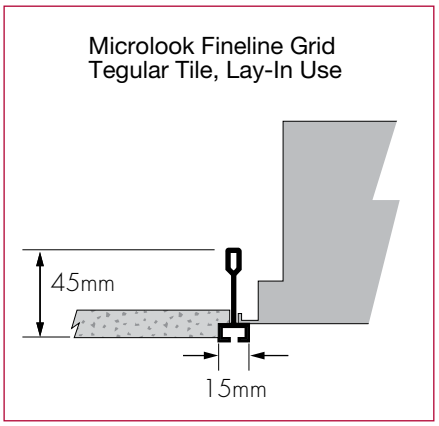


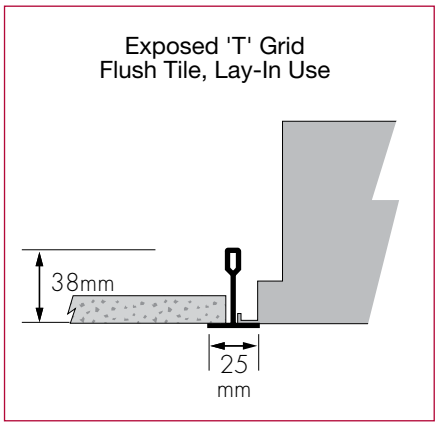
Note: luminaires will typically have 1.5mm clearance between the edge of the luminaire return and the centre line of a ceiling grid system e.g. grid centres 600mm x 600mm luminaire dimensions 597mm x 597mm.

High lift versions of the side support arms are available to accommodate high grid heights such as the SAS 150 grid with 67mm high grid - refer to MSBKXH and MSBKHTS.

Lay-in application examples







For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

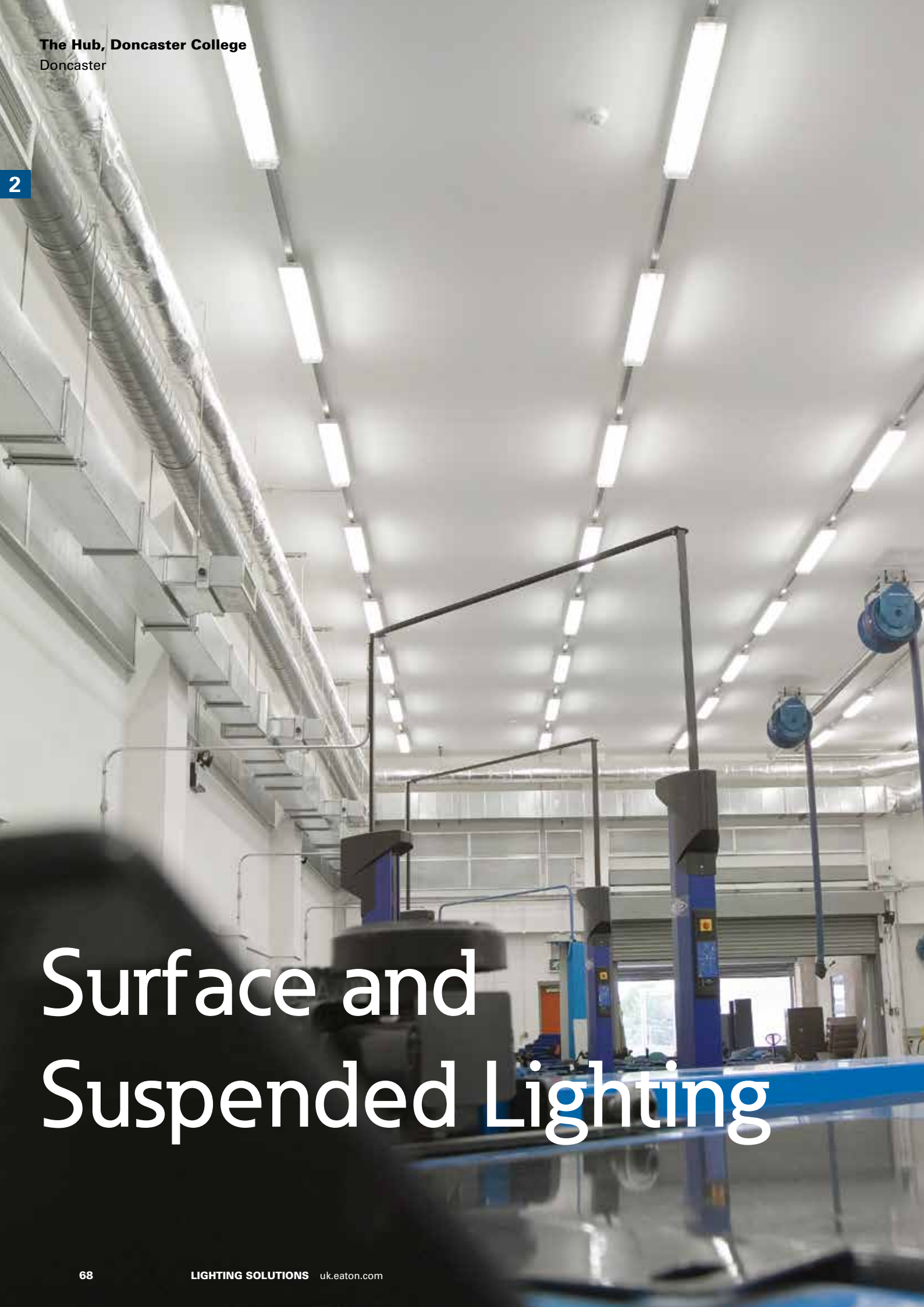
The table below indicates the bearer bracket kit required with each of the recessed luminaire ranges.

		MSBK Standard side support arms	MSBKX External fix side support arms	MSBKXH External fix - high clearance	MSBKT5 T5 side support arms	MSBKHT5 T5 side support - high clearance	MSBK612 End support arms	MSBKP Plasterboard support arms
Luminaire	**Arms included**							
Terzetto™	No		√					
Moduseal 2	Yes							
Modulay	No	Lay-in applications only						
VersaPanel	No	Lay-in applications only						
Modulay LG	No	Lay-in applications only						

For the Priam Recessed Ceiling Compatibility, please see page 65 for further details.

The Hub, Doncaster College
Doncaster

2



Surface and Suspended Lighting

Surface and Suspended

Contents

2

Pello

Pello is the latest generation decorative pendant luminaire. Combining efficiency with the minimalist design provides an architectural solution in suspended applications for both ambient and accent lighting. With two lumen options, dimming and emergency functions, the performance of the Pello can be customised to your needs. In all options the luminaire control gear is housed internally, eliminating any obtrusive remote housings and ensuring that the look and feel of the space is not compromised.

The precision spun aluminium housing is available in RAL 9016 white as standard, with bespoke colour options on request. The product has a single point suspension method as standard for a striking minimalist effect. Key design considerations through development have collectively made this a truly versatile fitting. With a high end finish and excellent lighting characteristics, which can be used across many applications to positively impact the built environment.

- Simple and visually striking
- Sleek curved aesthetic profile
- Single point suspension as standard - 3 point suspension kit available to order
- Excellent light transmission and LED source obscurity via the bespoke diffuser
- Close colour tolerance: MacAdam 3 SDCM
- High efficacies of up to 123 Llm/cW which exceed the requirements of UK Building Regulations: Part L and Section 6 (Scotland)
- 3 hour emergency version available
- Bespoke colour options available on special request

Light Engine and Control Gear Options

- High output, high efficacy LED chip set optimised for decorative pendant option.
- Energy efficient fixed output control gear as standard
- Dimming option - DALI

Materials

- Body - Spun aluminium painted housing
- Diffuser - Acrylic, UV stabilised

Installation Notes

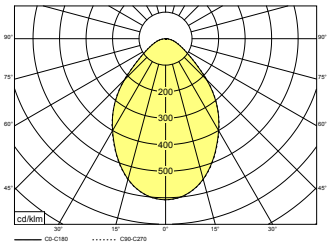
- Suitable for ceiling mounting using the defined suspension kits
- Supplied with diffuser and light engines pre-fitted, no need to remove during installation
- Supplied with 3m flexible cable and suspension cord

Specification

To specify state: Suspended aesthetic LED pendent, spun aluminium painted housing, with UV stabilised diffuser as Eaton's Pello part number _____

Photometric Data

Cat. No: PELWTOO84K8Z



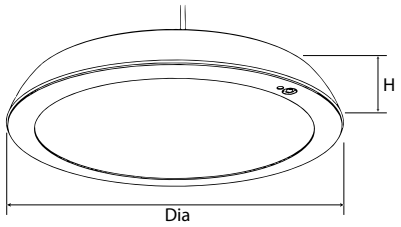
LOR 100%
SHR max 1440
SHR nom 1.125

Utilisation factors / TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	56	67	74	79	87	92	95	100	103
0.7	0.3	0.2	48	59	67	72	80	86	90	96	99
0.7	0.1	0.2	43	53	61	67	75	81	86	92	96
0.5	0.5	0.2	55	65	72	77	84	88	92	96	99
0.5	0.3	0.2	48	58	65	70	78	83	87	92	96
0.5	0.1	0.2	42	52	60	66	74	79	84	89	93
0.3	0.5	0.2	53	63	69	74	81	85	88	92	95
0.3	0.3	0.2	47	57	64	69	76	81	85	89	92
0.3	0.1	0.2	42	52	59	65	72	78	81	87	90
0	0	0	40	49	56	62	69	74	77	82	85
BZ-class			5	5	5	5	5	5	5	5	5

See page 468 for design guide

Dimensions



Dia (mm)	H (mm)
450mm	60mm

Top view without cover plate

Top view with cover plate (PELBP)

View from below

With integrated emergency module

Catalogue Numbers

Variant	Cat No	Lumen Output	Wattage (W)	Llm/ cW	Weight (kg)	Emergency Cat No	Weight (kg)
Standard 4000	PELWTO44K8Z	4312	35	123.2	3	ELPELWTO44K8Z	3.3
Standard 8000	PELWTO84K8Z	7847	74	106	3	ELPELWTO84K8Z	3.3

Bespoke colour options are available, subject to terms and conditions - please contact LightingSalesUK@Eaton.com for a quotation

For DALI Dimming option replace character Z with DD , e.g. PELWTO44K8Z becomes PELWTO44K8DD

Llm/cW = luminaire lumens per circuit watt

Accessories

Description	Cat No
Aesthetic back cover plate accessory	PELBP
3 point suspension kit	PEL3P

For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Back cover plate (PELBP)

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/pello-suspended.html

Kachina

Kachina is a new way of thinking for suspended lighting applications. Designed solely to maximise the performance of the latest generation of LED light sources, Kachina offers a leap in performance from conventional solutions.

A versatile system approach allows the designer maximum benefits from a multitude of arrangement possibilities.

Its connected design and flexibility make compliant lighting design possible even in the most challenging situations. A dedicated wiring channel adds to the possibilities to incorporate data, control and fire cabling to minimise installation time and complexity.

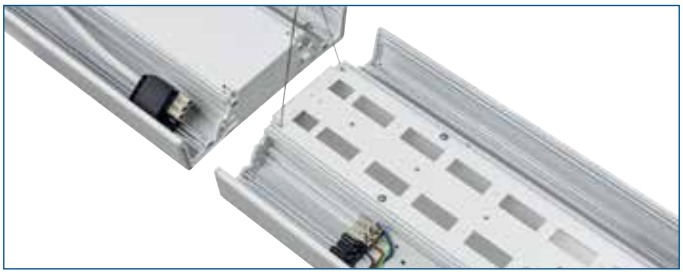
Kachina is tuned for the right balance between up and downlighting components to ensure well lit, balanced and inviting spaces.

- Prime utilisation of LED light source technology allows for an energy efficient product, up to 114 Llm/cW
- 3000 cd/m^2 models for EN12464-1 compliance
- Available in two colour options - RAL 9016 white finish, and RAL 9006 silver finish
- Three lumen outputs per variant, two variant lengths - 1200mm and 1500mm
- Auxiliary cable channel, 25cm^2 capacity
- DALI dimming options available for increased lighting control
- 5 year warranty as standard

Continuous configuration

Kachina can be connected to produce linear runs where needed. Connection flexibility of luminaires in a continuous run or a combination of luminaires and dedicated infill sections allow the lighting designer complete control and creativity. All continuous components contain pre-wired through wiring, either 4 or 6 core dependant on the variant.

Specifically designed to allow the designer and planner the ability to centre luminaires at exactly 3000mm to match building grid lines and to aid in the subdivision of floorplates. This also reduces the need for special cut lengths, speeding up and simplifying both design and installation.



Pre-wired for connectivity (continuous variants)

A dedicated through wiring channel with a capacity of 25cm^2 further enhances the performance.

Suitable for a multitude of cabling applications, Kachina offers a clean and neat containment capability.

Note - subject to a maximum weight of cable of 5kg per section, a counterweight accessory is available to order when appropriate.

Through wiring channel

Light Engine and Control Gear

- High efficacy linear LED light engines
- >80 CRI 4000°K
- Energy efficient fixed output control gear as standard
- DALI dimmable options available

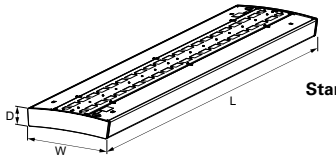
Materials

- Body – aluminium extrusion and steel - RAL 9016 white finish (RAL 9006 silver version available)
- Diffuser – acrylic microprism and dispersal diffuser combination

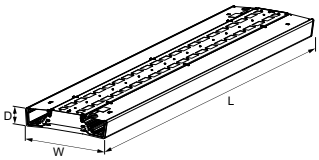
Installation Notes

- Suitable for ceiling mounting using the defined suspension kits
- Fitted with quick fix male and female socket for rapid installation (continuous versions)
- Supplied with diffuser and light engines pre-fitted, no need to remove during installation
- Fused as standard
- Supplied with 1.5m flexible cable 4C/6C (stand alone versions)

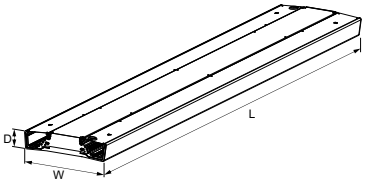
Dimensions



Stand Alone



Continuous



Infill Section

Version	(L) Length	(W) Width	(D) Depth
1200 Stand Alone	1191	292	68
1500 Stand Alone	1491	292	68
1200 Continuous	1176	292	68
1500 Continuous	1476	292	68
1500 Infill Section	1524	292	68
1800 Infill Section	1824	292	68

Options

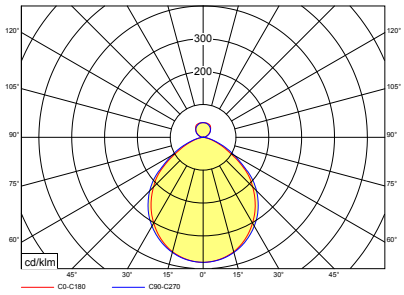
- Two luminaire lengths – 1200mm and 1500mm
- Three lumen outputs per luminaire length
- Fully integral emergency conversion, 3 hour duration
- Emergency versions available with automatic test functionality available to special order, reducing maintenance costs and offering ease of compliance with testing requirements
- Suitable for use on defined escape routes
- Lighting control and emergency management options including integrated occupancy and daylight detectors

Specification

To specify state: Suspended single / continuous, luminaire system, extruded aluminium construction with post coat powder paint finish, high performance up down distribution with high output light engines and integrated emergency / sensor options, as Eaton's Kachina range, part no._____

Photometric Data

Cat. No. KCAWS12254Z



LO: 2441 lm
ULOR: 0.15
DLOR: 0.85

SHR nom: 1.25
SHR max: 1.37

See page 468 for design guide

Performance

Cat No.	Lumen Output	Wattage (W)	Llm/cW
KCAWS12254Z	2441	21.3	114.6
KCAWS12354Z	3194	28.4	112.4
KCAWS12604Z	5922	59.9	98.86
KCAWS15254Z	2509	22.3	112.4
KCAWS15454Z	4697	45.1	104.0
KCAWS15704Z	7009	76.11	92.1

Catalogue Numbers

Variant Length	Cat No.	Weight (Kg)	Emergency Cat No.	Weight (Kg)
Standard Luminaires (White finish - complete with two end caps and two 1.5M suspensions)				
1200mm	KCAWS12254Z	8.2	ELKCAWS12254Z	9.6
1200mm	KCAWS12354Z	8.2	ELKCAWS12354Z	9.6
1200mm	KCAWS12604Z	8.2	ELKCAWS12604Z	9.6
1500mm	KCAWS15254Z	9.5	ELKCAWS15254Z	10.2
1500mm	KCAWS15454Z	9.5	ELKCAWS15454Z	10.2
1500mm	KCAWS15704Z	9.5	ELKCAWS15704Z	10.2
Continuous Luminaires (White finish – complete with one 1.5M suspension)				
1200mm	KCAWC12254Z	8.1	ELKCAWC12254Z	9.5
1200mm	KCAWC12354Z	8.1	ELKCAWC12354Z	9.5
1200mm	KCAWC12604Z	8.1	ELKCAWC12604Z	9.5
1500mm	KCAWC15254Z	9.4	ELKCAWC15254Z	10.1
1500mm	KCAWC15454Z	9.4	ELKCAWC15454Z	10.1
1500mm	KCAWC15704Z	9.4	ELKCAWC15704Z	10.1
Infill Section (White finish – complete with one 1.5M suspension)				
1500mm	KCAWC15DS			
1800mm	KCAWC18DS			
For DALI dimming option, replace part number character **Z** with **DD**, e.g. KCAWC12254K**Z** becomes KCAWC12254K**DD**				
For Silver finish – RAL 9006 – replace part number character **W** with **S**, e.g. KCA**W**C12254KZ becomes KCA**S**C12254KZ				

Accessories

Description	Cat No.	Weight (kg)
Kachina End Caps – White RAL 9016 set of two	KCAWEPS	0.32
Kachina End Caps – Silver RAL 9006 set of two	KCASEPS	0.32
Kachina Suspension Kit – Single 1500mm	KCA1500SK	0.05

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/kachina-suspended-linear-ceiling-light.html

Varsity LED

The popular and well proven Varsity range now offers more performance and choice with the introduction of new LED options. Integrated emergency and energy efficient control gear options define the versatility of the range. In line with the intention of EN12464-1, the high performance satin diffusers with translucent ends allow additional light to fall onto the mounting surface.

The satin polycarbonate diffuser ensures Varsity can be specified with confidence on emergency escape routes. The attractive, contemporary styling and clean lines virtually eliminate dust traps, Varsity is IP40 rated when surface mounted. Varsity offers an excellent lighting solution for a multitude of applications. With secure tamper resistant end caps and diffuser to help prevent unauthorised removal.

- Sleek profile for easy cleaning
- High output, high efficiency LED light engines
- IP40 rated when surface mounted
- Internal gear cover as standard, increasing performance and improving the appearance
- Energy efficient fixed output drivers as standard
- Polycarbonate diffuser as standard for use on defined escape routes
- Secure, tamper resistant end caps and robust diffuser
- Available with lighting control and energy management options to maximise energy efficiency

Lamp and Control Gear Options

- High efficacy LED linear light engines 4000°K
- Fixed output control gear as standard

Materials

- Body and gear cover - sheet steel, powder coated in RAL9016 white finish
- End cap - injection moulded ABS, colour matched finish
- Attachment - TPa rated flame retardant UV stabilised satin polycarbonate

Options

- DALI dimming option
- Fully integrated independent emergency option, 3 hour duration
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

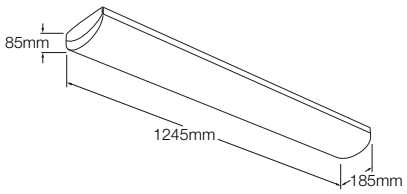
Installation Notes

- Suitable for direct fix or conduit mounting
- Central BESA cable entry position on rear
- Additional fixing brackets available separately to provide 600mm BESA fixing centres
- Terminal block with 2 x 2.5mm² cable capacity per termination
- Fused as standard
- Snap fix positive location of the diffuser allows quick attachment installation/removal
- Diffusers are retained by screws for tamper resistance

Specification

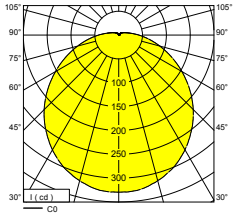
To specify state: IP40 surface LED luminaire, with flush attachment, retained by screws for tamper resistance, injection moulded end caps and high quality, durable post coat powder paint finish, as Eaton's Varsity LED range, part no. _____

Dimensions



Photometric Data

Cat. No. VYLP304KZ



LO: 2991lm
ULOR: 0.05
DLOR: 0.0.95

SHR nom: 1.50
SHR max: 1.578

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	58	66	73	78	85	90	93	98	101
70	30	20	50	58	66	71	79	84	88	93	97
70	10	20	45	53	60	66	74	79	83	89	93
50	50	20	56	63	70	75	81	86	89	93	95
50	30	20	49	57	64	69	76	81	84	89	92
50	10	20	44	52	59	64	71	77	81	86	90
30	50	20	54	61	67	72	78	82	84	88	91
30	30	20	48	55	62	67	73	78	81	85	88
30	10	20	44	51	57	62	69	74	78	83	86
0	0	0	41	48	54	59	65	70	73	77	80
BZ-class			4	5	5	5	5	5	5	5	5

See page 468 for design guide

Catalogue Numbers

Cat No	Lumen Output	Wattage	Llm/cW	Weight (kg)	Emergency Cat No	Weight (kg)
VYLP904KZ	9343	103.00	90.71	4.10	ELVYLP904KZ	4.45
VYLP804KZ	8310	88.83	93.54	4.10	ELVYLP804KZ	4.45
VYLP704KZ	7322	76.38	95.98	4.10	ELVYLP704KZ	4.45
VYLP504KZ	5113	58.60	87.25	3.65	ELVYLP504KZ	3.90
VYLP404KZ	4009	43.35	92.47	3.65	ELVYLP404KZ	3.90
VYLP304KZ	2991	28.91	103.47	3.65	ELVYLP304KZ	3.90

For DALI dimming option, replace part number character **Z** with **DD**, e.g. VYLP904**KZ** becomes VYLP904K**DD**

Accessories

Description	Cat No	Weight (kg)
Additional BESA Mounting Kit	VYBMK	0.25

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/varsity-led-linear-surface-mount-led-ceiling-lights.html

Chevin LED

The popular and well proven Chevin family is now enhanced by LED variants with the addition of Chevin LED.

The sleek low profile housing is available in 2 widths and lengths to match existing fluorescent luminaires, making it ideal for retrofit applications, and incorporates a retained opal polycarbonate optical panel, retained for hands free installation.

Options include; 3 hour combined non-maintained emergency functionality, dimmable control gear and integrated lighting controls options to maximise energy savings, user comfort and control.

With a comprehensive range of lumen outputs from the linear LED light engines, Chevin LED delivers choice and flexibility to suit a wide range of applications where a cost effective direct surface mounted or suspended solution is required.

- Nominal 4' and 5' formats, in narrow and wide housings, ideal for both new and retro fit applications
- Slim and attractive profile to blend into most environments
- Integrated lighting control options to maximise energy saving, user comfort and control.
- Integral 3hr combined non-maintained functionality option
- High efficacy luminaire performance to exceed building regulation requirements with lumen packages to match and exceed traditional fluorescent technology with reduced energy consumption

Light Source and Control Gear

- High efficacy linear LED light engines
- >80CRI, 4000°K
- Energy efficient fixed output control gear as standard
- DALI dimmable control gear option

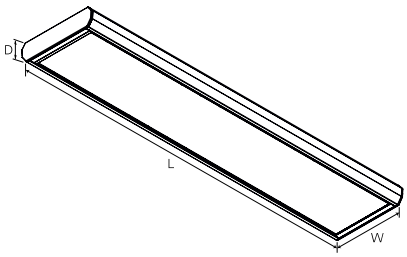
Materials

- Body and gear tray– Sheet steel, powder coated in RAL9016 white finish
- End caps – injection moulded ABS, colour matched to the body
- Diffuser – TPa rated, fire retardant, UV stabilised polycarbonate (single/narrow versions only) TPb, rated for twin/wide versions

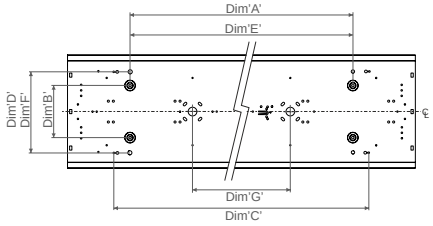
Options

- DALI dimming option
- Intelligent light and energy management options:
  - End mounted IP20 rated sensor with switching or dimming function, with/without photocell.
- 'Corridor Function' control available to special order with the 'CO' suffix
- Fully integral combined non-maintained emergency, 3 hour duration. Suitable for use on defined escape routes.
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and maximise the lifespan of your lighting equipment.

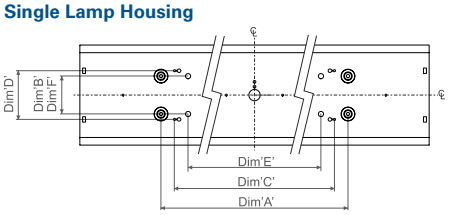
Dimensions



Twin Lamp Housing



Single Lamp Housing



Lamp Rating	Surface Mounted		Suspended		8mm Drop Rod		Besa Entry	L (mm)	W (mm)	D (mm)
Option	**A**	**B**	**C**	**D**	**E**	**F**	**G**			
Single 4ft	900	70	850*	90*	800	70	n/a	1212	185	65
Twin 4ft	900	125	977	180*	900	180	600	1212	271	65
Single 5ft	900	70	850*	90*	800	70	n/a	1512	185	65
Twin 5ft	900	125	977	180*	900	180	600	1512	271	65

Feature width "D" given for reference, please note suspension wire is mounted on centre line at the mounting surface.

Installation Notes

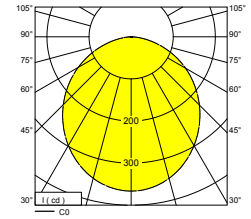
- Suitable for direct fix or suspended mounting (suspension kits contain a pair of drop wires and must be ordered as separate items)
- BESA fixings available on the rear of the wide 'twin' housing at 600mm centres. (central cable entry hole in BESA may be covered on some versions depending on control gear, outer fixing holes remain accessible)
- Terminal block with 2 x 2.5mm² cable capacity per termination
- Gear tray and optical panel hang from the body for ease of install

Specification

To specify state: Slim profile surface/suspended LED luminaire, 65mm deep with retained opal diffusor panel, as Eaton's Chevin LED range, part no._____

Photometric Data

Cat. No. CHP4W384KZ - Single



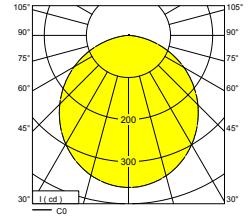
SHR nom: 1.50
SHR max: 1.534

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	61	69	77	82	89	93	97	101	104
70	30	20	53	62	69	75	83	88	92	97	100
70	10	20	48	56	64	70	78	84	88	94	98
50	50	20	59	67	74	79	86	90	93	97	100
50	30	20	53	61	68	73	81	85	89	94	97
50	10	20	48	56	63	69	76	82	86	91	94
30	50	20	58	65	72	76	83	87	90	93	96
30	30	20	52	59	67	72	78	83	86	91	94
30	10	20	47	55	62	68	75	80	84	88	92
0	0	0	45	53	60	65	71	76	80	84	87
BZ-class			4	4	4	4	4	4	4	4	4

See page 468 for design guide

Cat. No. CHP5W684KZ - Twin



SHR nom: 1.50
SHR max: 1.580

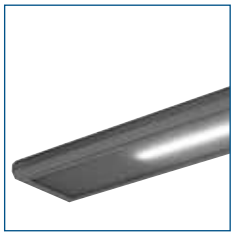
Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	61	69	76	82	89	93	97	101	104
70	30	20	53	62	69	75	83	88	92	97	101
70	10	20	48	56	64	70	78	84	88	94	98
50	50	20	59	67	74	79	86	90	93	97	100
50	30	20	52	60	68	73	81	85	89	94	97
50	10	20	48	55	63	69	76	82	86	91	94
30	50	20	58	65	72	76	83	87	90	93	96
30	30	20	52	59	67	72	78	83	86	91	94
30	10	20	47	55	62	67	75	80	84	88	92
0	0	0	45	52	60	65	71	76	80	84	87
BZ-class			4	4	4	4	4	4	4	4	4

See page 468 for design guide

Chevin LED twin open

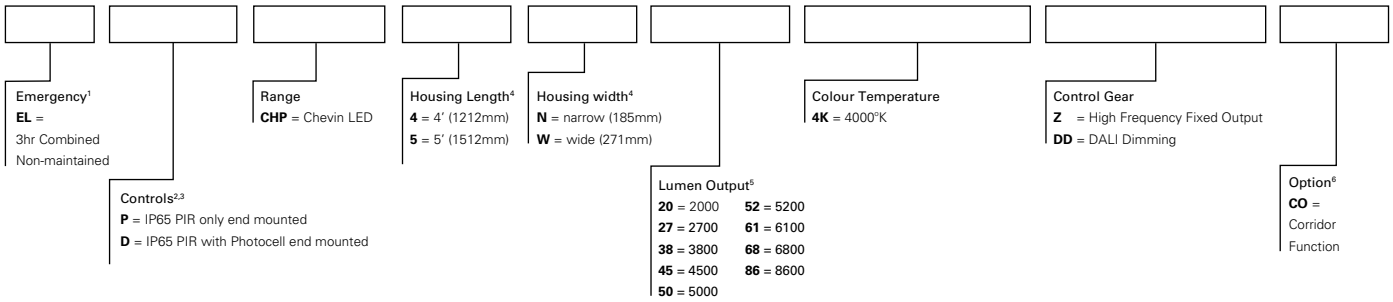
Chevin LED twin linear LED boards showing



Chevin LED twin in emergency mode

Chevin LED batten fit IP20 sensor

Catalogue Numbers



1 Emergency versions use a dedicated LED which operates only when in emergency mode

2 The 'P' prefix sensor is a switching PIR only for use on fixed output control gear (unless in-conjunction with DD and CO for Corridor Function)
The 'D' prefix sensor is a switching PIR with photocell, the control gear option dictates the sensor type i.e:
Switching with a threshold sensor for HF gear, DALI digital dimming gear uses a regulating photocell version

3 'P' and 'D' prefix sensors are mounted in the end of the luminaire, they are IP20 rated and suitable for upto 5m mounting heights

4 Please refer to the dimension table and diagram for exact dimensions

5 The lumen output values are not all available in all lengths, please refer to HF catalogue listing

6 'Corridor Function' is a Tridonic specific option available with their dimmable control gear, this 'CO' suffix must be added to ensure the correct drives is used. Add the 'CO' after the DD suffix.

Luminaire Example

Cat No	Description
ELDCHP5W454KDD	Chevin LED 5', 4500lm, wide housing, 4000K, DALI, with integral combined non-maintained emergency functionality and fitted with end mounted IP20 PIR/photocell DALI sensor

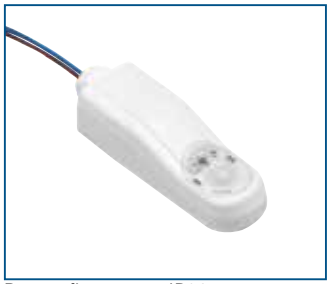
Catalogue Numbers

Cat No	Description	Lumen Output (lm)	Circuit Watts (W)	Efficacy (Llm/cW)	Weight (kg) Standard	Weight (kg) EL
Standard Fixed Output						
CHP4N204KZ	Chevin LED 2000 4000K HF 1.2m single	2018	19.89	101.5	3.78	4.12
CHP4N374KZ	Chevin LED 3700 4000K HF 1.2m single	3734	40.99	91.1	3.78	4.12
CHP4W384KZ	Chevin LED 3800 4000K HF 1.2m twin	3899	32.67	119.4	5.19	5.53
CHP4W504KZ	Chevin LED 5000 4000K HF 1.2m twin	5133	44.69	114.9	5.19	5.53
CHP5N274KZ	Chevin LED 2700 4000K HF 1.5m single	2728	25.97	105.0	4.58	4.92
CHP5N454KZ	Chevin LED 4500 4000K HF 1.5m single	4592	48.51	94.7	4.58	4.92
CHP5W524KZ	Chevin LED 5200 4000K HF 1.5m twin	5230	43.02	121.6	6.48	6.82
CHP5W614KZ	Chevin LED 6100 4000K HF 1.5m twin	6189	52.20	118.6	6.48	6.82
CHP5W684KZ	Chevin LED 6800 4000K HF 1.5m twin	6889	59.29	116.4	6.48	6.82
CHP5W864KZ	Chevin LED 8600 4000K HF 1.5m twin	8626	78.03	110.6	6.48	6.82

Accessories

Description	Cat No	Weight (kg)
Chevin Suspension Kit, 1.5m drop wire (pair)	CHPSKIT	0.10

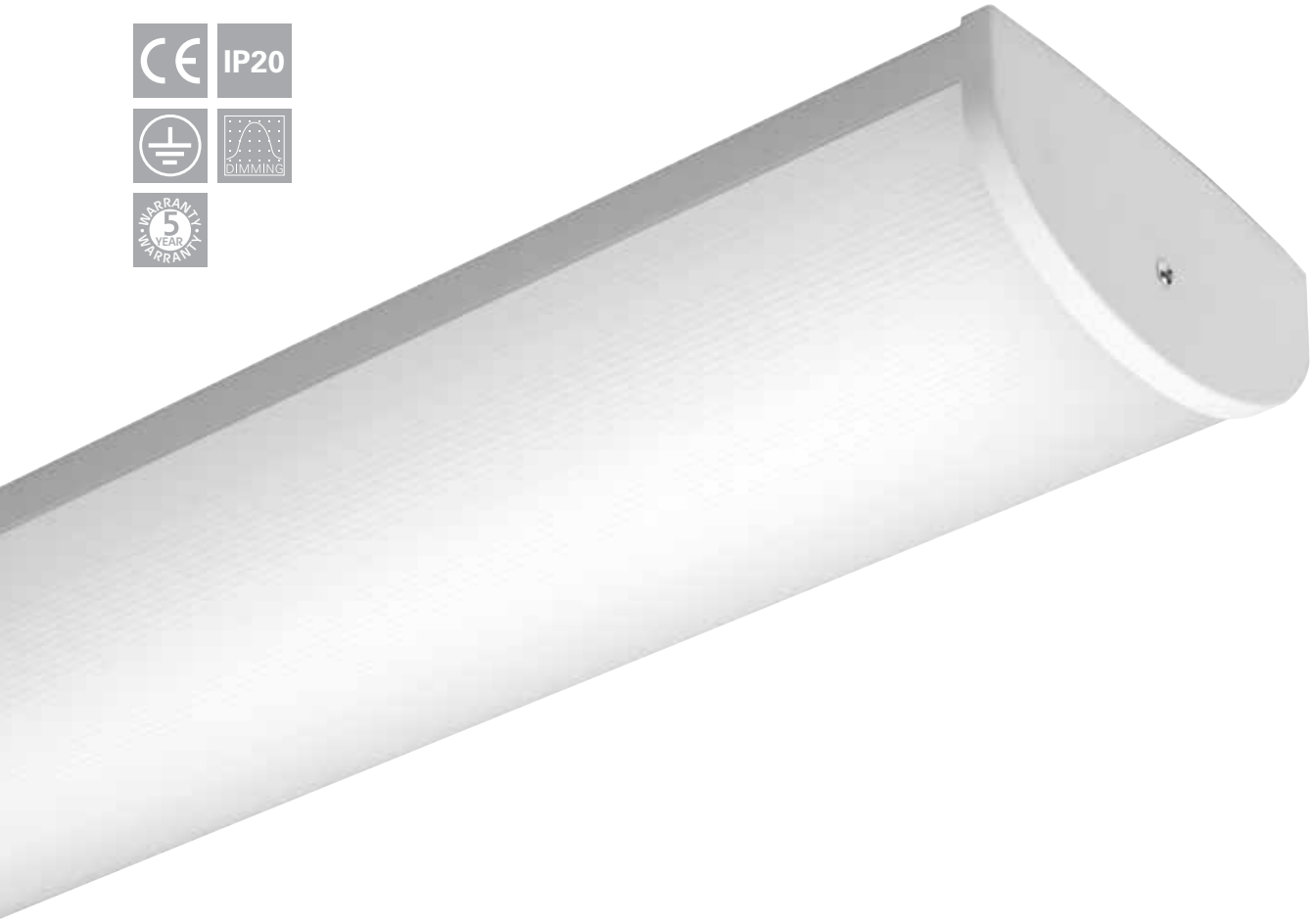
For Emergency versions please add the EL prefix, e.g. CHP5N454KZ becomes ELCHP5N454KZ.
For Emergency versions the circuit watts will increase by 1.5W to account for the charging circuit.
For DALI dimmable options please replace the **Z** suffix with **DD** e.g. CHP5N454K**Z** becomes CHP5N454K**DD**
Refer to the Catalogue number matrix for other options.
For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com



Batten fit sensor - IP20 sensor

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/chevin-led-linear-surface-mount-led-ceiling-light.html

Wavelite LED



The popular and well proven Wavelite family is now enhanced by LED variants with the addition of Wavelite LED.

The clean lines of the housing profile, available in the familiar 1.2m, 1.5m and 1.8m lengths to match existing fluorescent luminaires, making it ideal for new or retro fit applications.

The reeded opal polycarbonate diffuser offers good impact resistance and LED diffusion for a pleasant lit appearance. The diffuser is secured requiring tooled access making it ideal for public spaces where anti-tamper is a consideration.

Options include; 3 hour combined non-maintained emergency functionality, dimmable control gear and integrated lighting controls options to maximise energy savings, user comfort and control.

With a comprehensive range of lumen outputs from the linear LED light engines, Wavelite LED delivers choice and flexibility to suit a wide range of applications where a cost effective direct surface mounted or suspended solution is required.

- Nominal 1.2m, 1.5m and 1.8m length formats, ideal for both new and retro fit applications
- Slim and attractive profile with robust opal diffuser to blend into most environments
- Surface or suspended mounting option via suspension kit accessory
- Integrated lighting control options to maximise energy saving, user comfort and control.
- Integral 3hr combined non-maintained functionality option
- High efficacy luminaire performance to exceed building regulation requirements with lumen packages to match and exceed traditional fluorescent technology with reduced energy consumption

Lamp and Control Gear Options

- High efficacy linear LED light engines
- >80CRI, 4000°K
- Energy efficient fixed output control gear as standard
- DALI dimmable control gear option

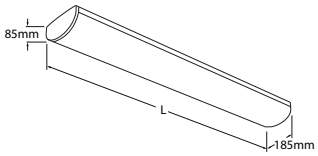
Materials

- Body and gear tray– Sheet steel, powder coated in RAL9016 white finish
- End caps – injection moulded ABS, colour matched to the body
- Diffuser panel – TPa rated, fire retardant, UV stabilised polycarbonate

Options

- DALI dimming option
- Intelligent light and energy management options:
  - End mounted IP20 rated sensor with switching or dimming function, with/without photocell
- 'Corridor function' control available to special order with the 'CO' suffix
- Fully integral combined non-maintained emergency, 3 hour duration. Suitable for use on defined escape routes.
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and maximise the lifespan of your lighting equipment.

Dimensions



Length	L (mm)	Width (mm)	Height (mm)
1.2m	1245	185	85
1.5m	1545	185	85
1.8m	1809	185	85

Installation Notes

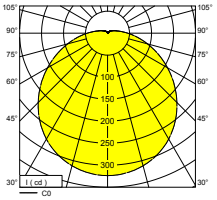
- Suitable for direct fix or suspended mounting (suspension kits contain a pair of drop wires and must be ordered as separate items)
- Suitable for direct fix via the BESA or embossed fixing points.
- Terminal block with 2 x 2.5mm² cable capacity per termination
- Hinged gear tray for ease of installation
- Diffusers are retained by screws for tamper resistant tooled access
- IP40 rating applies when installed flush to a flat mounting surface, not when suspended

Specification

To specify state: Architectural linear surface/suspended/wall mount luminaire, 56mm wide, 115mm deep suitable for individual or end to end mounting with extruded aluminium body and UV stable polycarbonate diffuser as Eaton's LSN range, part no._____

Photometric Data

Cat. No. WL2P228ZX



SHR nom: 1.50
SHR max: 1.598

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	57	65	73	78	85	89	93	97	100
70	30	20	50	58	65	71	78	84	88	93	96
70	10	20	44	52	60	65	73	79	83	89	93
50	50	20	55	63	70	74	81	85	88	93	95
50	30	20	49	56	63	68	75	80	84	89	92
50	10	20	44	51	58	63	71	76	80	86	89
30	50	20	54	60	67	71	77	81	84	88	91
30	30	20	48	55	61	66	73	77	81	85	88
30	10	20	43	50	57	62	69	74	77	82	86
0	0	0	41	47	54	58	65	69	72	77	80
BZ-class			4	5	5	5	5	5	5	5	5

See page 468 for design guide

Wavelite LED with high performance linear LED

Rear suspended option (order kit separately)

Catalogue Numbers

Emergency[1] **EL** = 3hr Combined Non-maintained	Controls[2,3] **P** = IP20 PIR Only End Mounted **D** = IP65 PIR with Photocell End Mounted	Range **WL2** = Wavelite LED	Housing Length[4] **4** = 4' (1245mm) **5** = 5' (1545mm) **6** = 6' (1809mm)	Lumen Output[5] **27** = 2700 **28** = 2800 **36** = 3600 **37** = 3700 **45** = 4500 **49** = 4900 **54** = 5400 **60** = 6000 **68** = 6800 **76** = 7600 **88** = 8800	Colour Temperature **4K** = 4000°K	Control Gear **Z** = High Frequency Fixed Output **DD** = DALI Dimming	Option[6] **CO** = Corridor Function

1 Emergency versions use a dedicated LED which operates only when in emergency mode

2 The 'P' prefix sensor is a switching PIR only for use on fixed output control gear (unless in-conjunction with DD and CO for Corridor Function)
The 'D' prefix sensor is a switching PIR with photocell, the control gear option dictates the sensor type i.e:
Switching with a threshold sensor for fixed output control gear, DALI digital dimming gear uses a regulating photocell version

3 'P' and 'D' prefix sensors are mounted in the end of the luminaire, they are IP20 rated and suitable for up to 5m mounting heights

4 Please refer to the dimension table and diagram for exact dimensions

5 The lumen output values are not all available in all lengths, please refer to HF catalogue listing

6 'Corridor Function' is a Tridonic specific option available with their dimmable driver, this 'CO' suffix must be added to ensure the correct driver is used. Add the 'CO' after the DD suffix.

Luminaire Example

Cat No	Description
ELDWL25374KDD	Wavelite LED 5', 3700lm, 4000K, DALI, with integral combined non-maintained emergency functionality and fitted with end mounted IP20 PIR/photocell DALI sensor

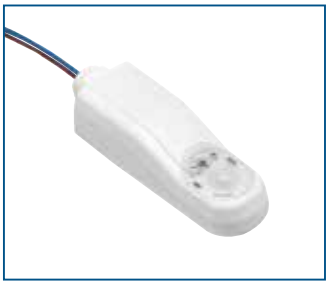
Catalogue Numbers

Cat No	Description	Lumen Output (lm)	Circuit Watts (W)	Efficacy (Llm/cW)
Standard Fixed Output				
WL24274KZ	Wavelite LED 4' 2700lm 4K HF	2772	22.6	122.5
WL24364KZ	Wavelite LED 4' 3600lm 4K HF	3671	31.2	117.6
WL24454KZ	Wavelite LED 4' 4500lm 4K HF	4587	41.0	111.9
WL24604KZ	Wavelite LED 4' 6000lm 4K HF	6008	53.1	113.1
WL25284KZ	Wavelite LED 5' 2800lm 4K HF	2874	22.1	129.7
WL25374KZ	Wavelite LED 5' 3700lm 4K HF	3728	28.4	126.8
WL25494KZ	Wavelite LED 5' 4900lm 4K HF	4966	41.1	120.8
WL25684KZ	Wavelite LED 5' 6800lm 4K HF	6809	61.2	111.2
WL25764KZ	Wavelite LED 5' 7600lm 4K HF	7660	72.0	106.5
WL26544KZ	Wavelite LED 6' 5400lm 4K HF	5438	42.6	127.7
WL26884KZ	Wavelite LED 6' 8800lm 4K HF	8854	77.7	114.0

Accessories

Description	Cat No	Weight (kg)
Wavelite Suspension Kit, 1.5m drop wire (pair)	WLTSKIT	0.10

For Emergency versions please add the EL prefix, e.g. WL25374KZ becomes ELWL25374KZ.
For Emergency versions the circuit watts will increase by 1.5W to account for the charging circuit.
For DALI dimmable options please replace the **Z** suffix with **DD** e.g. WL25374K**Z** becomes WL25374K**DD**
Refer to the catalogue number matrix for other options.
For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com



Batten fit sensor - IP20

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/wavelite-led-linear-surface-suspended-led-ceiling-light.html

Crompack LED

The all new Crompack LED delivers a comprehensive range of linear LED luminaires incorporating a range of lumen outputs across 3 luminaire lengths. Options include dimmable control gear and a range of integrated controls options to maximise energy savings.

Available with 3 hour combined non-maintained emergency functionality delivering excellent spacing and uniformity.

The simple 2 part housing facilitates quick and simple installation, a first fix plate allows mechanical mounting and electrical connections to be made, the optic unit then connects on a plug and socket and snap fits to the base, with 2 retained screws adding additional integrity to the installation ensuring tooled access only.

Optical control and performance generate high efficacies and deliver ECA compliance.

- Excellent light transmission and LED source obscurity from the reeded opal diffuser
- Nominal 4', 5' and 6' length formats, ideal for both new installations and retro fit applications
- The range offers outputs to 10,000lm delivering efficacies of up to 150Llm/cW
- High efficiency LED strip technology and driver combinations, with purpose designed optics and thermal management, maximise the LED and control gear life and performance
- Long LED life and no lamps to change particularly in 24/7 operations and inaccessible areas
- Integrated controls options providing occupancy detection and daylight harvesting to maximise energy saving, user comfort and control
- Integral 3hr combined non-maintained functionality variants
- First fix base and plug and socket housing connection for rapid installation
- IK07 impact protection

Lamps and Control Gear Options

- High efficacy linear LED light engines
- >80CRI
- Fixed output control gear as standard
- DALI dimmable control gear option
- L70 - 90,000 hours

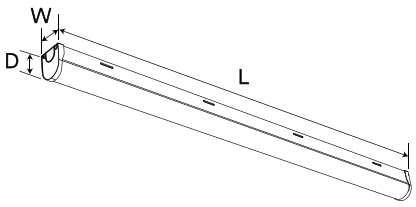
Materials

- First fix plate and heatsink – steel, powder coated in RAL9016 white finish
- End caps – injection moulded ABS, UV stabilised and fire retardant, colour matched white finish
- Emergency/controls cover pod - injection moulded ABS, UV stabilised and fire retardant, colour matched white finish
- Diffuser – UV stabilised opal polycarbonate

Installation Notes

- Suitable for direct fix, trunking, conduit or chain/wire suspension
- BESA entry points central and at 600mm centres (one of the 600mm BESA cable entry holes may be covered on some versions, the 4 fixing holes around the cable entry hole remain accessible)
- Terminal block with 2 x 2.5mm² wire capacity per termination
- Plug and socket connection between first fix plate and optic unit for rapid installation
- 20mm conduit entry feature in both ends with clearance feature that can be removed in the end cap (Note: end mounted 'batten fit' sensor options would use the cable entry at one end)
- Integral emergency and sensor versions have a longer housing though the major mounting features remain the same in the first fix plate

Dimensions



Nominal Lengths	Length (mm) Standard	Length (mm) Emergency/Sensor	W (mm)	H (mm)	Weight (Kg) Standard	Weight (Kg) Emergency
4'	1163	1318	62	76	1.9	2.4
5'	1463	1618	62	76	2.3	2.8
6'	1728	1883	62	76	2.7	3.2

Options

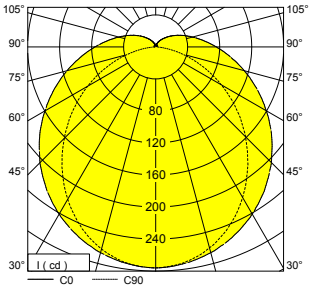
- Intelligent light and energy management options:
  - Integrated mini-sensor with PIR and photocell to suit DALI control gear
  - End mounted 'batten fit' sensor with switching or dimming function, with/without photocell
- 'Corridor Function' control available to special order with the 'CO' suffix
- Fully integral self-contained 3 hour duration emergency option
- Lumen packages and length options to suit the application

Specification

To specify state: Linear LED batten with steel channel profile with durable powder coat RAL9016 white finish and reeded opal polycarbonate diffuser IK07. Embossed snap-fit feature optical unit with plug and socket connection and screw-secured colour matched and textured ABS end caps (optional integral controls and emergency functionality), as Eaton's Crompack LED, part no._____

Photometric Data

Cat. No. CXL4704KZ



Utilisation factors / TM5

Reflectances C	W	F	Room Index 0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	53	61	68	73	80	85	89	93	96
70	30	20	46	53	61	66	73	79	83	88	92
70	10	20	40	47	55	60	68	74	78	84	88
50	50	20	51	58	64	69	75	80	83	87	90
50	30	20	44	51	58	63	70	75	78	83	87
50	10	20	39	46	53	58	65	70	74	80	83
30	50	20	48	55	61	65	71	75	78	81	84
30	30	20	42	49	55	60	66	71	74	78	81
30	10	20	38	44	51	55	62	67	71	75	79
0	0	0	35	40	46	51	57	61	64	69	72
BZ-class			5	5	5	5	5	5	5	5	5

See page 468 for design guide

LOR: 1.00
ULOR: 0.12
DLOR: 0.88

SHR nom: 1.50
SHR max: 1.63

Catalogue Numbers

2

Emergency[1]	Controls[2,3,4]	Range	Length[5]	Lumen Output[6]	Colour Temperature	Control Gear	Option[7]
EL = 3hr Combined Non-maintained	**ISM** = Mini Sensor **P** = IP65 PIR Only End Mounted **D** = IP65 PIR with Photocell **IM** = Microwave Occupancy Sensor	**CXL** = Crompack LED	**4** = 4' **5** = 5' **6** = 6'	**25** = 2500 **30** = 3000 **40** = 4000 **45** = 4500 **50** = 5000 **55** = 5500 **60** = 6000 **65** = 6500 **70** = 7000 **75** = 7500 **85** = 8500 **100** = 10000	**4K** = 4000°K	**Z** = Fixed Output **DD** = DALI Dimming	**CO** = Corridor Function

1 Emergency versions use a dedicated LED which operates only when in emergency mode

2 The 'P' prefix sensor is a switching PIR only for use on fixed output control gear (unless in conjunction with DD and CO for Corridor Function)
The 'D' prefix sensor is a switching PIR with photocell, the control gear option dictates the sensor type i.e:
'P' sensor off delay fixed at 20mins, D sensor off delay more flexible
Switching with a threshold sensor for fixed output gear, DALI digital dimming gear uses a regulating photocell version

3 'P' and 'D' prefix sensors are mounted in the end of the luminaire and suitable for up to 5m mounting heights

4 ISM mini head sensor for use with DALI control gear only, also suits BUS Loop Communication - see lighting solution controls

5 The length character gives the generic luminaire length, please refer to the dimension table for exact dimensions

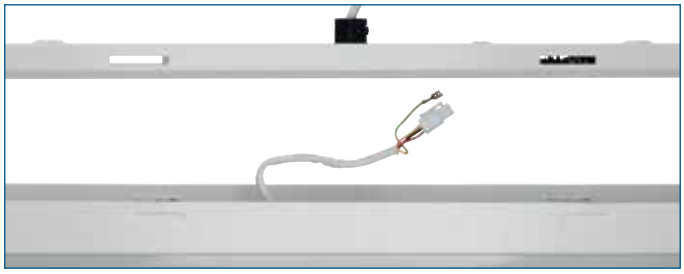
6 The lumen output values are not all available in all lengths, please refer to HF catalogue listing

7 'Corridor Function' is a Tridonic specific option available with their dimmable control gear, this 'CO' suffix must be added to ensure the correct drives is used. Add the 'CO' after the DD suffix.

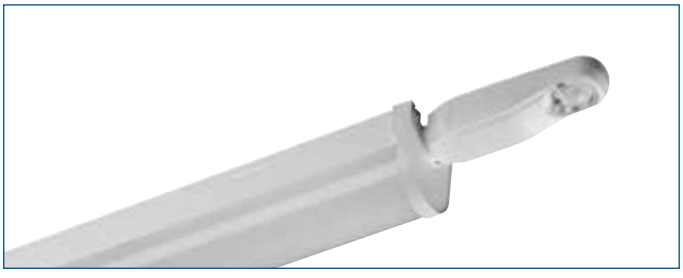
Luminaire Example

Cat No	Description
ELISMCXL5454KDD	Crompack LED 5' 4500lm, 4000K, DALI with integral mini sensor and integral 3hr combined non-maintained emergency functionality

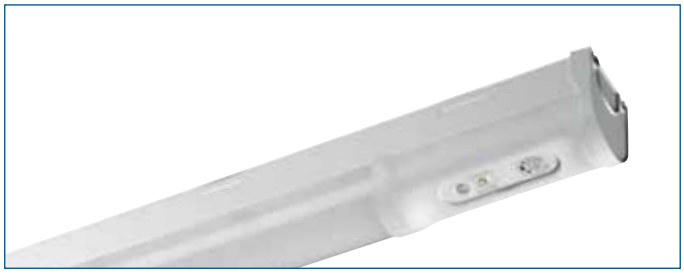
First fix backplate with optical unit suspended on safety cords



Rapid fit plug and socket



End mounted PIR/photocell



Lighting control sensor and integral emergency LED

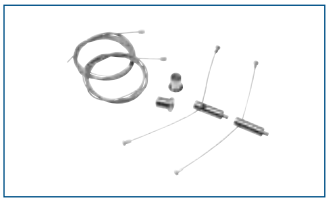
Catalogue Numbers

Cat No	Description	Lumen Output (lm)	Circuit Watts (W)	Efficacy (Llm/cW)
Standard Fixed Output				
CXL4254KZ	Crompack LED 2500 4000K HF 1.2m	2518	16.8	149.9
CXL4304KZ	Crompack LED 3000 4000K HF 1.2m	3266	21.93	148.9
CXL4404KZ	Crompack LED 4000 4000K HF 1.2m	4136	28.69	144.2
CXL4454KZ	Crompack LED 4500 4000K HF 1.2m	4621	32.44	142.4
CXL4504KZ	Crompack LED 5000 4000K HF 1.2m	5310	38.07	139.5
CXL4604KZ	Crompack LED 6000 4000K HF 1.2m	6257	46.41	134.8
CXL4704KZ	Crompack LED 7000 4000K HF 1.2m	7352	57.42	128.0
CXL5404KZ	Crompack LED 4000 4000K HF 1.5m	4167	28.87	144.3
CXL5454KZ	Crompack LED 4500 4000K HF 1.5m	4626	32.5	142.3
CXL5504KZ	Crompack LED 5000 4000K HF 1.5m	5340	38.15	140.0
CXL5604KZ	Crompack LED 6000 4000K HF 1.5m	6286	46.49	135.2
CXL5704KZ	Crompack LED 7000 4000K HF 1.5m	7118	54.5	130.6
CXL6554KZ	Crompack LED 5500 4000K HF 1.8m	5456	36.38	150.0
CXL6654KZ	Crompack LED 6500 4000K HF 1.8m	6575	44.85	146.6
CXL6754KZ	Crompack LED 7500 4000K HF 1.8m	7599	52.97	143.5
CXL6854KZ	Crompack LED 8500 4000K HF 1.8m	8522	60.83	140.1
CXL61004KZ	Crompack LED 10000 4000K HF 1.8m	10287	77.32	133.0
Emergency Fixed Output				
ELCXL4254KZ	Crompack LED 2500 4000K HF 1.2m Emergency	2518	16.8	149.9
ELCXL4304KZ	Crompack LED 3000 4000K HF 1.2m Emergency	3266	21.93	148.9
ELCXL4404KZ	Crompack LED 4000 4000K HF 1.2m Emergency	4136	28.69	144.2
ELCXL4454KZ	Crompack LED 4500 4000K HF 1.2m Emergency	4621	32.44	142.4
ELCXL4504KZ	Crompack LED 5000 4000K HF 1.2m Emergency	5310	38.07	139.5
ELCXL4604KZ	Crompack LED 6000 4000K HF 1.2m Emergency	6257	46.41	134.8
ELCXL4704KZ	Crompack LED 7000 4000K HF 1.2m Emergency	7352	57.42	128.0
ELCXL5404KZ	Crompack LED 4000 4000K HF 1.5m Emergency	4167	28.87	144.3
ELCXL5454KZ	Crompack LED 4500 4000K HF 1.5m Emergency	4626	32.5	142.3
ELCXL5504KZ	Crompack LED 5000 4000K HF 1.5m Emergency	5340	38.15	140.0
ELCXL5604KZ	Crompack LED 6000 4000K HF 1.5m Emergency	6286	46.49	135.2
ELCXL5704KZ	Crompack LED 7000 4000K HF 1.5m Emergency	7118	54.5	130.6
ELCXL6554KZ	Crompack LED 5500 4000K HF 1.8m Emergency	5456	36.38	150.0
ELCXL6654KZ	Crompack LED 6500 4000K HF 1.8m Emergency	6575	44.85	146.6
ELCXL6754KZ	Crompack LED 7500 4000K HF 1.8m Emergency	7599	52.97	143.5
ELCXL6854KZ	Crompack LED 8500 4000K HF 1.8m Emergency	8522	60.83	140.1
ELCXL61004KZ	Crompack LED 10000 4000K HF 1.8m Emergency	10287	77.32	133.0

For DALI dimming option, replace part number character **Z** with **DD**, eg. CXL5454K**Z** becomes CXL5454K**DD**

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Cat No	Description	Weight (kg)
SWKITP15SY	Suspension Wire Kit, 1.5m, Short Yoke (Pair)	0.1
If greater than 1.5m suspension is required, use VTX50005K		
CXLNW	Crompack LED Coupling strap	0.04



Suspension Kit - SWKITP15SY (ordered separately)

Painted Mild Steel Crompack LED Coupling strap for continuous mount applications

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/crompack-led-batten-surface-suspended-led-ceiling-light.html

Crompack LED Reflectors

IP20

Crompack LED reflectors are designed to further enhance the power of LED technology by re-directing light onto the working area in general lighting applications. Thus improving the efficiency of the installation.

The reflectors have a sturdy construction made with highly reflective semi-specular anodised aluminium.

Available with wide and narrow light distribution.

- Wide and Narrow light distribution options
- Anodised finish for long service life
- Low glare
- Ease of installation and retrofit

Materials

- Reflector - high reflectivity, semi-specular anodised aluminium
- Clips and brackets -zinc plated steel

Installation Notes

- Reflectors attached quickly via bracket with slots
- Easy to clean, high quality reflector material

Specification

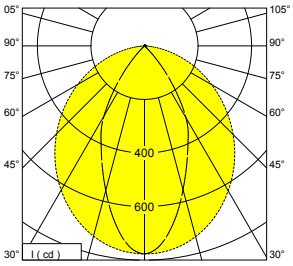
To specify state: Batten reflector in high purity, high reflectance, semi-specular anodised aluminium, as Eaton's Crompack LED Reflector CXL range, part no. _____

Dimensions

Nominal Lengths	Light distribution	W (mm)	D (mm)	L (mm)	Weight (kg)
4'	Narrow	212	140	1157	0.5
5'	Narrow	212	140	1457	0.65
6'	Narrow	212	140	1722	0.75
4'	Wide	274	131	1157	0.61
5'	Wide	274	131	1457	0.72
6'	Wide	274	131	1722	0.83

Photometric Data

Cat. No. CXLN4A



LOR: 1.1
ULOR: 1.1
DLOR: 0.0

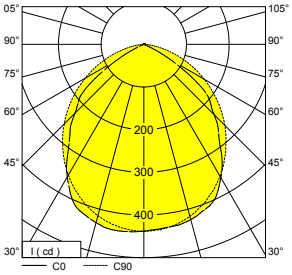
SHR nom: 1.1
SHR max: 1.03

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
0.7	0.5	0.2	68	77	84	88	94	98	101	104	107
0.7	0.3	0.2	61	71	78	83	90	94	97	101	104
0.7	0.1	0.2	57	66	73	78	86	90	94	991	02
0.5	0.5	0.2	66	75	81	86	91	95	97	101	102
0.5	0.3	0.2	61	70	76	81	87	91	94	98	100
0.5	0.1	0.2	56	66	72	77	84	88	91	96	98
0.3	0.5	0.2	65	74	79	83	88	92	94	97	99
0.3	0.3	0.2	60	69	75	79	85	89	91	95	97
0.3	0.1	0.2	56	65	71	76	82	86	89	93	95
0	0	0	54	63	69	73	79	83	85	89	91
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

Cat. No. CXLW4A



LOR: 1.1
ULOR: 1.1
DLOR: 1.1

SHR nom: 1.25
SHR max: 1.46

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
0.7	0.5	0.2	63	74	81	86	92	97	100	104	106
0.7	0.3	0.2	56	67	74	80	87	92	96	100	103
0.7	0.1	0.2	51	62	70	75	83	88	92	97	101
0.5	0.5	0.2	62	72	79	83	89	93	96	100	102
0.5	0.3	0.2	55	66	73	78	85	90	93	97	99
0.5	0.1	0.2	51	61	69	74	81	86	90	94	97
0.3	0.5	0.2	60	70	76	81	87	90	93	96	98
0.3	0.3	0.2	55	65	72	76	83	87	90	94	96
0.3	0.1	0.2	51	61	68	73	80	84	88	92	94
0	0	0	48	58	65	70	76	81	84	87	90
BZ-class			3	3	3	3	3	3	3	3	3

See page 468 for design guide

Catalogue Numbers

Nominal Lengths	Light distribution	Cat No	Weight (kg)
4'	Narrow	CXLN4A	0.5
5'	Narrow	CXLN5A	0.65
6'	Narrow	CXLN6A	0.75
4'	Wide	CXLW4A	0.61
5'	Wide	CXLW5A	0.72
6'	Wide	CXLW6A	0.83

Crompack LED Lumen Value W/O Reflector				Crompack LED Lumen Values with Reflector Options					
Crompack LED Base Cat No.	Wattage	Lumens	LL/cW	Narrow Reflector Cat No. (CXLNXA)	Lumens	LL/cW	Wide Reflector Cat No. (CXLWXA)	Lumens	LL/cW
CXL4254KZ	20.1	2663	132.5	CXLN4A	2559	127.3	CXLW4A	2626	130.6
CXL4304KZ	25.5	3308	129.7	CXLN4A	3179	124.7	CXLW4A	3262	127.9
CXL4404KZ	32.8	4105	125.2	CXLN4A	3945	120.3	CXLW4A	4047	123.4
CXL4454KZ	40.1	4808	119.9	CXLN4A	4620	115.2	CXLW4A	4741	118.2
CXL4504KZ	40.7	5185	127.4	CXLN4A	4982	122.4	CXLW4A	5112	125.6
CXL4604KZ	49.1	6054	123.3	CXLN4A	5817	118.5	CXLW4A	5969	121.6
CXL4704KZ	63.6	7366	115.8	CXLN4A	7078	111.3	CXLW4A	7263	114.2
CXL5404KZ	32.9	4308	130.9	CXLN5A	4140	125.8	CXLW5A	4248	129.1
CXL5454KZ	36.9	4750	128.7	CXLN5A	4564	123.7	CXLW5A	4683	126.9
CXL5504KZ	40.8	5162	126.5	CXLN5A	4960	121.6	CXLW5A	5090	124.7
CXL5604KZ	49.2	6031	122.6	CXLN5A	5795	117.8	CXLW5A	5946	120.9
CXL5704KZ	61.6	7131	115.8	CXLN5A	6852	111.2	CXLW5A	7031	114.1
CXL6554KZ	45.1	5775	128.0	CXLN6A	5549	123.0	CXLW6A	5694	126.3
CXL6654KZ	53.6	6616	123.4	CXLN6A	6358	118.6	CXLW6A	6523	121.7
CXL6754KZ	59.4	7651	128.8	CXLN6A	7352	123.8	CXLW6A	7544	127.0
CXL6854KZ	70.8	8800	124.3	CXLN6A	8456	119.4	CXLW6A	8677	122.6
CXL61004K	91.7	10526	114.8	CXLN6A	10115	110.3	CXLW6A	10378	113.2

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/crompack-led-reflectors.html

Ready Steady Store
Doncaster

2

Crompack 5

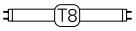
If versatility, exceptional build quality and value for money are paramount, Crompack 5 provides the ideal solution to your lighting needs. The wide range of attachments allows Crompack to be used almost anywhere and ensures peace of mind with years of reliable service.

The range has now been enhanced to include energy saving T5 lamp options. If intelligent energy management is required, the options provide optimised control of light levels and energy saving features. Millions of Crompack 5 battens have been installed over the years, testimony to the design and quality of this ubiquitous luminaire.

- T5 lamp versions offering greater energy savings
- Integral controls options provide enhanced energy management to reduce running costs
- Wide range of control gear including integral emergency
- Comprehensive range of attachments covers most applications
- Available complete with triphosphor lamps or less lamp for user choice

2

Lamp and Control Gear Options



- Triphosphor 18W, 36W, 58W and 70W, T8 fluorescent 4000°K - G13 cap
- 14W, 28W, 35W (HE), 24W, 49W, 54W and 80W - (HO) T5 fluorescent, 4000°K - G5 cap
- High frequency control gear as standard
- DALI dimming options

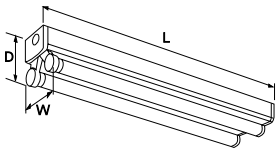
Materials

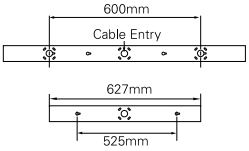
- Body - rigid steel channel, powder coated in RAL9016 white finish
- End cap - injection moulded, colour matched to body

Installation Notes

- Suitable for direct fix, trunking, conduit or chain suspension
- BESA entries (except 14/18/24W). Central and at 600mm fixing centres
- End cable entry only on T5 14/24W versions
- Keyhole slots for screw fixing at 600mm centres (14/24W - 435mm,18W - 525mm)
- Can be continuously mounted, aligned using interlocking end caps
- 20mm knockout in end caps
- Angled 2 x 2.5mm² terminal block
- All versions are high power factor corrected (except 18W)
- Supplied complete with lamps or less lamp as required
- 80W must not be used with diffusers and emergency versions of 80W must have reflectors fitted

Dimensions





Lamp Rating	L (mm)	W (mm)	D (mm)
T8 lamps			
1x18W	627	58	92
1x36W	1238	58	92
1x58W	1538	58	92
1x70W	1802	58	92
2x18W	627	89	92
2x36W	1238	89	92
2x58W	1538	89	92
2x70W	1802	89	92
T5 lamps			
1x14/24W	627	58	80
1x28/54W	1238	58	80
1x35/49/80W	1538	58	80
2x14/24W	627	58	80
2x28/54W	1238	58	80
2x35/49/80W	1538	58	80

Options

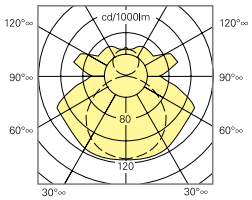
- Intelligent light and energy management options (refer to controls guide on page 343
- Fully integral emergency conversion (18W is fully remote, 28/54W have remote batteries), 3 hour duration
- Intellem and EasiCheck self-test emergency versions available
- Suitable for use on defined escape routes, batten only and all reflectors or wire guards

Specification

To specify state: Linear batten luminaire, manufactured from rigid rolled steel channel profile, with high quality, durable post coat powder paint finish and secure, screw fixed cover plate, as Eaton's Crompack 5 range, part no. _____

Photometric Data

Cat. No. CP42ZT



LOR: 0.96
ULOR: 0.31
DLOR: 0.65

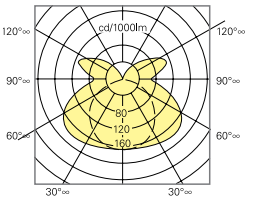
SHR nom: 1.75
SHR max: 1.87

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	-	52	59	63	70	75	78	83	86
	30		-	45	51	56	64	69	73	78	81
	10		-	39	46	51	58	64	68	74	78
50	50	20	-	47	52	56	62	66	69	73	76
	30		-	41	46	51	57	61	65	69	73
	10		-	36	42	46	53	57	61	66	70
30	50	20	-	42	46	50	55	58	61	64	67
	30		-	37	42	45	51	55	58	62	64
	10		-	33	38	42	47	52	55	59	62
0	0	0	-	27	31	34	39	42	45	48	51
BZ-class			-	6	6	6	6	6	6	6	6

See page 468 for design guide

Cat. No. CP235Z



LOR: 0.95
ULOR: 0.25
DLOR: 0.70

SHR nom: 1.75
SHR max: 1.97

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	N/A	53	60	65	71	76	79	84	87
	30		N/A	46	52	58	65	70	74	79	83
	10		N/A	40	47	52	60	65	69	75	79
50	50	20	N/A	49	54	59	65	69	72	76	78
	30		N/A	42	48	53	59	64	67	72	75
	10		N/A	38	44	48	55	60	64	69	72
30	50	20	N/A	44	49	53	58	62	65	68	70
	30		N/A	39	44	48	54	58	61	65	68
	10		N/A	35	40	45	51	55	58	63	66
0	0	0	N/A	30	34	38	43	47	50	53	56
BZ-class			1	6	6	6	6	6	6	6	6

See page 468 for design guide

T8 versions

Catalogue Numbers

Lamp Rating	Gear Option	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)		Cat No	Weight (kg)
T8 Triphosphor Lamps							**Less Lamps**	
1 x 36W	High Frequency	CP41ZT	2.1	EBCP41ZT	3.0		CP41ZX	2.0
2 x 36W	High Frequency	CP42ZT	2.7	EBCP42ZT	3.5		CP42ZX	2.6
1 x 58W	High Frequency	CP51ZT	2.3	EBCP51ZT	3.6		CP51ZX	2.2
2 x 58W	High Frequency	CP52ZT	3.1	EBCP52ZT	4.0		CP52ZX	3.0
1 x 70W	High Frequency	CP61ZT	2.9	EBCP61ZT	4.5		CP61ZX	2.8
2 x 70W	High Frequency	CP62ZT	4.0	EBCP62ZT	5.6		CP62ZX	3.9
T5 High Efficiency - C/W Lamps								
1 x 14W	High Frequency	CP114Z	1.3	-	-			-
2 x 14W	High Frequency	CP214Z	1.4	-	-			-
1 x 28W	High Frequency	CP128Z	2.1	EMCP128Z	3.9	Ⓡ		
2 x 28W	High Frequency	CP228Z	2.7	EMCP228Z	4.5	Ⓡ		
1 x 35W	High Frequency	CP135Z	2.3	EBCP135Z	3.6			
2 x 35W	High Frequency	CP235Z	3.1	EBCP235Z	4.0			
T5 High Output – C/W Lamps								
1 x 24W	High Frequency	CP124Z	1.3	-	-			-
2 x 24W	High Frequency	CP224Z	1.4	-	-			-
1 x 54W	High Frequency	CP154Z	2.1	EMCP154Z	3.9	Ⓡ		
2 x 54W	High Frequency	CP254Z	2.7	EMCP254Z	4.5	Ⓡ		
1 x 49W	High Frequency	CP149Z	2.3	EBCP149Z	3.6			
2 x 49W	High Frequency	CP249Z	3.1	EBCP249Z	4.0			
1 x 80W	High Frequency	CP180Z	2.3		3.7			
2 x 80W	High Frequency	CP280Z	3.1		4.1			

For DALI dimming option, replace part number character **Z** with **DD**, e.g. CP52**Z**T becomes CP52**DD**T

Emergency versions available with automatic test functionality.

Ⓡ Remote emergency conversion/battery pack

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/crompack-5-batten-fluorescent-linear-ceiling-light.html

Crompack Diffuser

2

IP20

The Crompack range of diffusers perfectly complement the extensive choice of battens, providing brightness control and improved light distribution. The clear prismatic controller is ideal for general commercial interior applications, efficiently directing more light towards the task area, whilst still gently illuminating the ceiling. If a softer diffuse effect is preferred, then the opal prismatic diffuser provides excellent general control of the lamp image.

- Clear prismatic or opal finish aids user choice
- Smart design matching with batten profile
- Easy to attach with anti-lift support
- Long life, UV stabilised material

Materials

- Prismatic controller - UV stabilised styrene with side and base prisms in clear or opal material
- End cap - injection moulded, colour matched

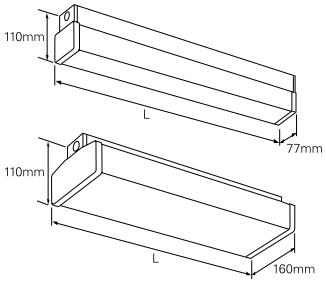
Installation Notes

- Support device fits onto cover plate via keyhole slot design
- Anti-lift design to prevent rattling or displacement of diffuser
- End caps push fix onto diffuser
- Use coupling strap for continuous mount applications

Specification

To specify state: Clear prismatic controller/opal diffuser, constructed from long life UV stabilised styrene and attached to batten using quick fix support device with anti-lift design feature, as Eaton's Crompack 5 CPC/CPD range, part no. _____

Dimensions



Lamp Rating	L (mm)	Lamp Rating	L (mm)
1 x 14/18W	634	2 x 18W	634
1 x 28/36W	1245	2 x 36W	1245
1 x 35/58W	1545	2 x 58W	1545
1 x 70W	1809	2 x 70W	1809

Note - all T5 lamp battens use single lamp width diffusers

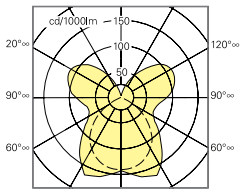
Catalogue Numbers

Lamp Rating T8/T12	Lamp Rating T5	Prismatic Cat No	Weight (kg)	Opal Cat No	Weight (kg)
1 x 18W	1/2 x 14/24W	CPC21	0.36	CPD21	0.31
2 x 18W	-	CPC22	0.61	CPD22	0.52
1 x 36W	1/2 x 28/54W	CPC41	0.61	CPD41	0.52
2 x 36W	-	CPC42	1.10	CPD42	0.95
1 x 58W	1/2 x 35/49W	CPC51	0.76	CPD51	0.66
2 x 58W	-	CPC52	1.37	CPD52	1.17
1 x 70W	-	CPC61	0.85	CPD61	0.73
2 x 70W	-	CPC62	1.62	CPD62	1.39

Coupling Strap	Cat No	Weight (kg)
All single lamp width diffusers	CDC1	0.04
All twin lamp width diffusers	CDC2	0.08

Photometric Data

Cat. No. CP41ZT/CPC41



LOR: 0.81
ULOR: 0.32
DLOR: 0.49

SHR nom: 1.50
SHR max: 1.74

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	39	45	51	54	59	63	65	69	71
	30		34	40	45	49	54	58	61	65	68
	10		29	35	40	44	50	54	58	62	65
50	50	20	35	40	45	48	52	55	57	60	62
	30		31	36	40	43	48	51	54	57	60
	10		27	32	37	40	45	48	51	55	57
30	50	20	31	36	39	42	45	48	50	52	54
	30		28	32	36	38	42	45	47	50	52
	10		25	29	33	36	40	43	45	48	50
0	0	0	20	23	27	29	32	34	36	38	40
BZ-class			5	5	5	5	5	5	5	6	6

See page 468 for design guide

Coupling strap for continuous mount applications

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/diffuser-for-crompack-5-fluorescent-ceiling-lights.html

Crompack Reflectors and Guards

Crompack reflectors are designed to re-direct light onto the work area in general lighting applications, improving the efficiency of the installation. Available with symmetrical or asymmetrical light distribution, the reflectors have a sturdy construction with a highly reflective, long life paint finish. The angled reflector is particularly suitable for classrooms or simple wall washing effects.

For installations where the lamp may be vulnerable to damage, such as gymnasiums or industrial plant areas, robust wire guard attachments can be specified.

- Tough and sturdy construction for a long durable life
- High reflectivity, long life paint finish for maximum efficiency
- Wire guards hinge for easy and rapid maintenance
- Reflectors can be continuously mounted

Materials

- Reflector - sheet steel, powder coated in RAL9016 white finish
- Wire guard - heavy gauge welded steel, powder coated in white finish
- Clips and brackets - zinc plated steel

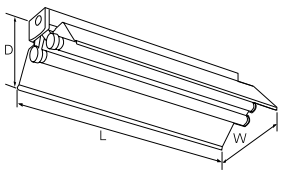
Installation Notes

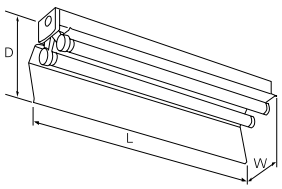
- Reflectors replace cover plate on T8 luminaires (not T5), attached quickly via keyhole slots
- Wire guards hinge down for rapid, easy maintenance
- When fitted with direct wire guards or reflectors with wire guards, Crompack battens cannot be continuously mounted

Specification

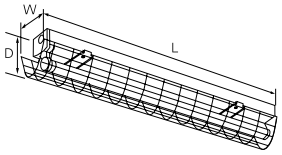
To specify state: Sturdy steel reflector and tough, welded and hinging wire guard, with high quality, durable post coat powder paint finish, as Eaton's Crompack 5 CR/CRG/CPG range, part no. _____

Dimensions





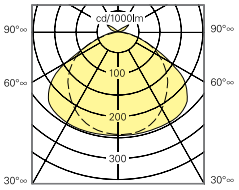
Lamp Rating		L (mm)	W (mm)	D (mm)	L (mm)	W (mm)	D (mm)
T8	T5	Standard Reflector			Angled Reflector		
1/2 x 36W	1/2 x 28/54W	1238	195	130	1238	120	16
1/2 x 58W	1/2 x 35/49/80W	1538	195	130	1538	120	165
1/2 x 70W	-	1802	195	130	1802	120	165
		Standard and Wire Guard			Angled and Wire Guard		
1/2 x 36W	1/2 x 28/54W	1280	195	160	1280	130	188
1/2 x 58W	1/2 x 35/49/80W	1580	195	160	1580	130	188
1/2 x 70W	-	1835	195	160	1835	130	188



Lamp Rating		L (mm)	W (mm)	D (mm)
T8	T5	Direct Mount Wire Guard		
1 x 18W	-	661	109	114
2 x 18W	-	661	159	114
1 x 36W	1 x 28/54W	1270	109	114
2 x 36W	2 x 28/54W	1270	159	114
1 x 58W	1 x 35/49/80W	1575	109	114
2 x 58W	2 x 35/49/80W	1575	159	114
1 x 70W	-	1829	109	114
2 x 70W	-	1829	159	114

Photometric Data

Cat. No. CP41ZT/CR4



LOR: 0.87
ULOR: 0.04
DLOR: 0.83

SHR nom: 1.75
SHR max: 1.89

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	-	58	64	69	75	80	83	86	89
	30		-	52	58	63	70	75	78	83	86
	10		-	47	53	59	66	71	75	80	83
50	50	20	-	56	62	66	72	76	79	82	84
	30		-	50	56	61	68	72	75	79	82
	10		-	46	52	57	64	69	72	77	80
30	50	20	-	54	59	63	69	72	75	78	80
	30		-	49	55	59	65	69	72	76	78
	10		-	45	51	56	62	66	70	74	76
0	0	0	-	42	48	52	58	62	65	69	71
BZ-class			-	4	4	4	4	4	4	4	4

See page 468 for design guide

Catalogue Numbers

Lamp Rating	Standard Reflector	Weight (kg)	Standard Wire Guard	Weight (kg)	Angled Reflector	Weight (kg)	Angled Wire Guard	Weight (kg)
Standard Reflector with Wire Guard for T8 Lamps								
1 or 2 x 36W	CR4	1.45	CRG4	1.11	CRA4	1.65	CRGA4	1.05
1 or 2 x 58W	CR5	1.79	CRG5	1.29	CRA5	2.06	CRGA5	1.31
1 or 2 x 70W	CR6	2.05	CRG6	1.47	CRA6	2.40	CRGA6	1.50
Standard Reflector with Wire Guard for T5 Lamps								
1 or 2 x 28/54W	CR4T5	1.45	CRG4	1.11	CRA4	1.65	CRGA4	1.05
1 or 2 x 35/49/80W	CR5T5	1.79	CRG5	1.29	CRA5	2.06	CRGA5	1.31

Luminaire Lamp Rating	Single Wire Guard	Weight (kg)	Luminaire Lamp Rating	Twin Wire Guard	Weight (kg)
Direct Mount Wire Guard for T5 and T8 Lamps					
1 x 14/18W	CPG21	0.45	2 x 14/18W	CPG22	0.50
1 x 28/36/54W	CPG41	0.75	2 x 28/36/54W	CPG42	0.75
1 x 35/49/58/80W	CPG51	0.91	2 x 35/49/58/80W	CPG52	1.15
1 x 70W	CPG61	1.05	2 x 70W	CPG62	1.32

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/reflectors-and-guards-for-crompack-5-fluorescent-ceiling-lights.html

Crompack Rack Reflectors

IP20

Warehouse racking aisles often present a lighting problem, balancing the need for illumination at all levels of the rack face with minimised glare to operatives. Crompack rack lighting reflectors have a precision designed optical assembly, concentrating the light flux down in a narrow beam, ensuring lower rack faces and floor are correctly illuminated.

At the same time, the semi-specular reflector material gently disperses light uniformly on the upper rack faces and significantly reduces glare for truck operatives. A twin lamp option provides a practicable option for medium to high open area lighting.

- High efficiency parabolic reflector
- Anodised finish for long service life
- Low glare for comfort of warehouse operatives
- Twin lamp option for high open area lighting
- High output T5 lamp versions where maximum light levels are required

Materials

- Reflector - high reflectivity, semi-specular anodised aluminium
- Clips and brackets - zinc plated steel

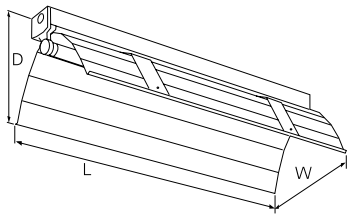
Installation Notes

- Reflectors attached quickly via bracket with keyhole slots
- Can be continuously mounted
- Easy to clean, high quality reflector material

Specification

To specify state: Rack lighting reflector in high purity, high reflectance, semi-specular anodised aluminium, as Eaton's Crompack 5 RLR range, part no. _____

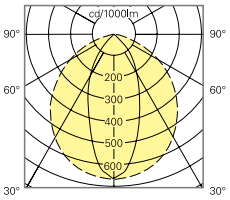
Dimensions



Lamp Rating	L (mm)	W (mm)	D (mm)
1 x 58W	1538	226	193
2 x 58W	1538	276	160
1 x 70W	1802	266	193
2 x 70W	1802	276	160

Photometric Data

Cat. No. CP51ZT/RLR51B



LOR: 0.82
ULOR: 0.00
DLOR: 0.82

SHR nom: 0.75
SHR max: 0.77

Utilisation factors / TM5

Reflectances			Room Index							
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	60	67	71	75	79	82	84	86	88
	30		55	62	67	71	75	79	81	84	86
	10		52	59	64	67	72	76	78	82	84
50	50	20	59	65	70	73	77	79	81	83	85
	30		54	61	66	69	74	76	79	81	83
	10		51	58	63	66	71	74	77	80	81
30	50	20	58	64	68	71	74	77	78	80	81
	30		54	60	65	68	72	75	76	79	80
	10		51	58	62	65	70	73	75	77	79
0	0	0	50	56	60	63	67	70	72	74	75
BZ-class			1	1	1	1	1	1	1	1	1

See page 468 for design guide

Catalogue Numbers

Lamp Rating	Cat No	Weight (kg)
Rack Reflector for Single/Twin T5 Lamps, Single T8 and Twin T8 Lamps		
1 or 2 x 35/49/80W	RLR51B	1.70
1 x 58W	RLR51B	1.70
2 x 58W	RLR52B	1.73
1 x 70W	RLR61B	1.77
2 x 70W	RLR62B	1.80

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/rack-reflectors-for-crompack-5-fluorescent-ceiling-lights.html

Institute of Mental Health
Nottingham, UK

3

Decorative Wall and Ceiling Lighting

Decorative Wall and Ceiling

Contents

3

Caius

For a wide range of applications where flexibility needs to be married to performance, the Caius range offers a complete solution. Caius combines practical attributes with contemporary clean lines and form. Although at home in most interior applications, Caius offers ingress protection to IP65 so suits a wide range of locations. Caius gives a highly efficient design solution, minimising installation points.

High output LED sets offer high levels of efficacy combined with class leading emergency operation helping to reduce the number of installed points whilst maintaining compliant lighting designs.

- Polycarbonate lens and ABS body for durability
- TPa material means compliance with the requirements for escape routes
- Opal diffuse lens for homogenous light output
- Choice of two complimentary body sizes
- Fully integral emergency versions
- Microwave option
- Corridor control function option (DALI only)
- IP65 dust tight and water jet proof
- Balanced looks maximise the efficiency and output of Caius
- Installation friendly design reduces on site costs

Light source and Control Gear Options

- LED – high output, high efficiency LED chip set optimised for maximum efficiency
- Energy efficient LED drivers - high frequency as standard
- DALI option

Materials

- Body – ABS structurally strong and impact resistant
- Lens – TPa polycarbonate opal

Installation Notes

- Terminal block with a 2 x 2.5mm² cable capacity per termination

Options

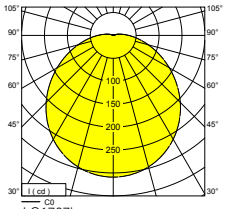
- Fully integrated LED emergency conversion, 3 hour duration
- Microwave sensor inbuilt option
- Corridor function control option (only available on DALI)
- Suitable for use on defined escape routes
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

To specify state: Surface mounted luminaire, IP65 with polycarbonate lens and ABS construction body. White trim with 3 / 4 point closures. High efficiency LED and fully integrated emergency gear, as Eaton's Caius range, part no. _____

Photometric Data

Cat. No. CBHS174KZ



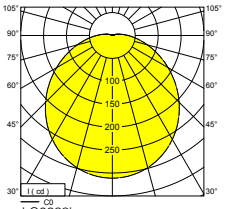
LO1707lm
20W

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	56	64	71	77	84	88	92	96	100
70	30	20	49	56	64	69	77	82	86	92	95
70	10	20	43	51	58	64	71	77	82	88	92
50	50	20	54	62	68	73	80	84	87	92	94
50	30	20	47	55	62	67	74	79	83	88	91
50	10	20	42	50	57	62	69	75	79	84	88
30	50	20	52	59	66	70	76	80	83	87	90
30	30	20	46	53	60	65	71	76	79	84	87
30	10	20	42	49	55	60	67	72	76	81	84
0	0	0	39	46	52	57	63	68	71	76	79
BZ –class			5	5	5	5	5	5	5	5	5

See page 382 for design guide

Cat. No. CBHL234KZ



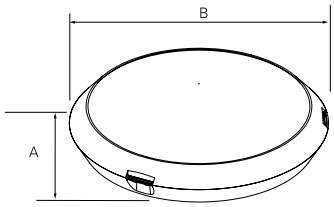
LO2388lm
28W

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	56	64	71	77	84	88	92	96	100
70	30	20	48	56	64	69	77	82	86	92	95
70	10	20	43	50	58	63	71	77	82	88	92
50	50	20	54	62	68	73	80	84	87	92	94
50	30	20	47	55	62	67	74	79	83	88	91
50	10	20	42	49	57	62	69	75	79	84	88
30	50	20	52	59	66	70	76	80	83	87	90
30	30	20	46	53	60	65	71	76	79	84	87
30	10	20	42	49	55	60	67	72	76	81	85
0	0	0	39	46	52	57	63	68	71	76	79
BZ –class			5	5	5	5	5	5	5	5	5

See page 382 for design guide

Dimensions



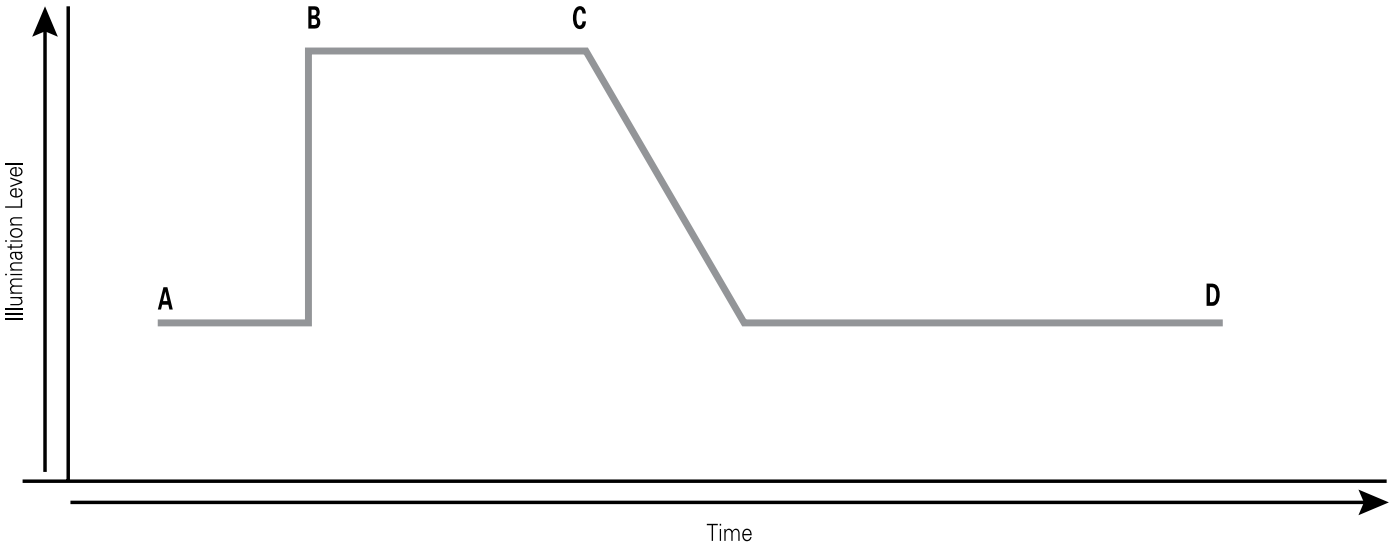
Variant	A (mm)	B (mm)
Small	125	350
Large	135	430

Captive diffuser and LED board for ease of installation

Corridor Function

Caius is available with a DALI corridor function option for applications where comfort, path finding and safety are considerations. Typically used in transit areas, corridor function allows the safe passage of people by utilising local detection to switch products on rapidly either adjacent to detection, or in some cases ahead of the direction of movement. Caius can be used to trigger this by means of the optional built in microwave detector or by linking to remotely mounted devices.

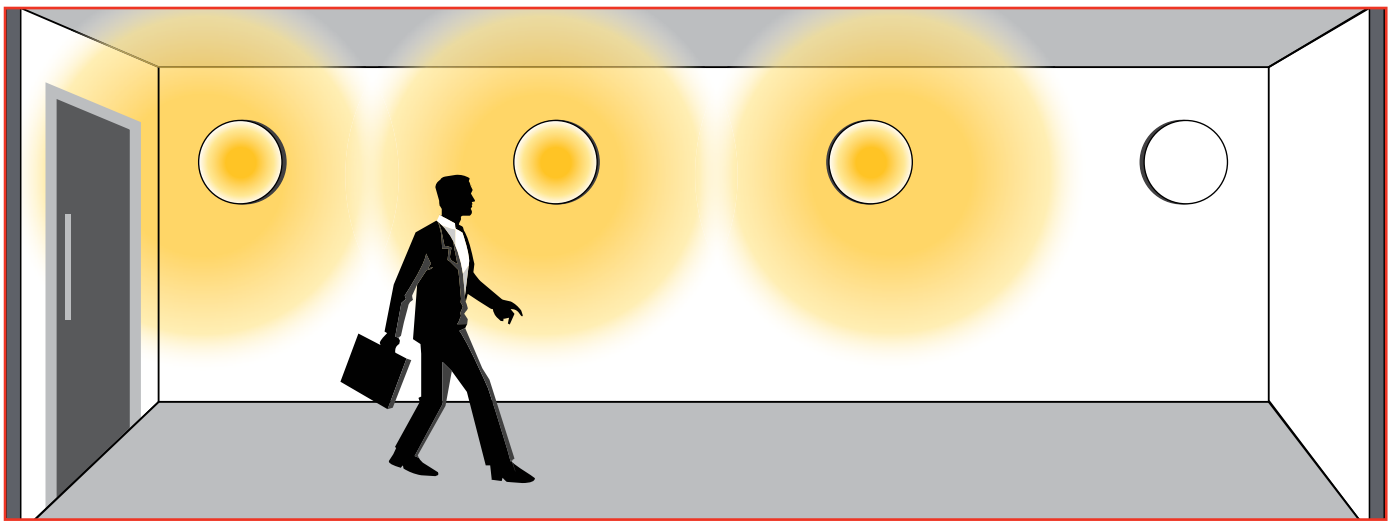
Operation



A - Set-back illumination level - typically 10%
B - Presence detected - rapid rise to full illuminance level
C - Gradual dimming after presence no longer detected
D - Set-back illumination level

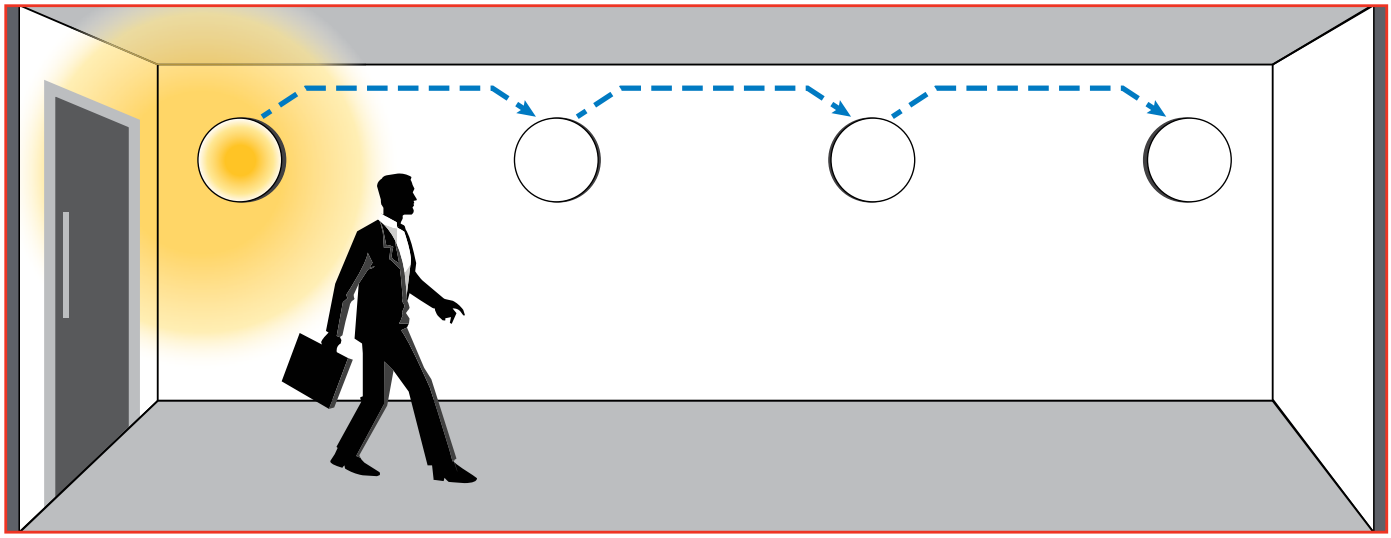
Corridor Function - individual internal control

In this scenario, each luminaire is individually controlled and offers a 'pathway' effect as progress is made along a route. Gradual dimming takes place as the individual leaves the detection zone.



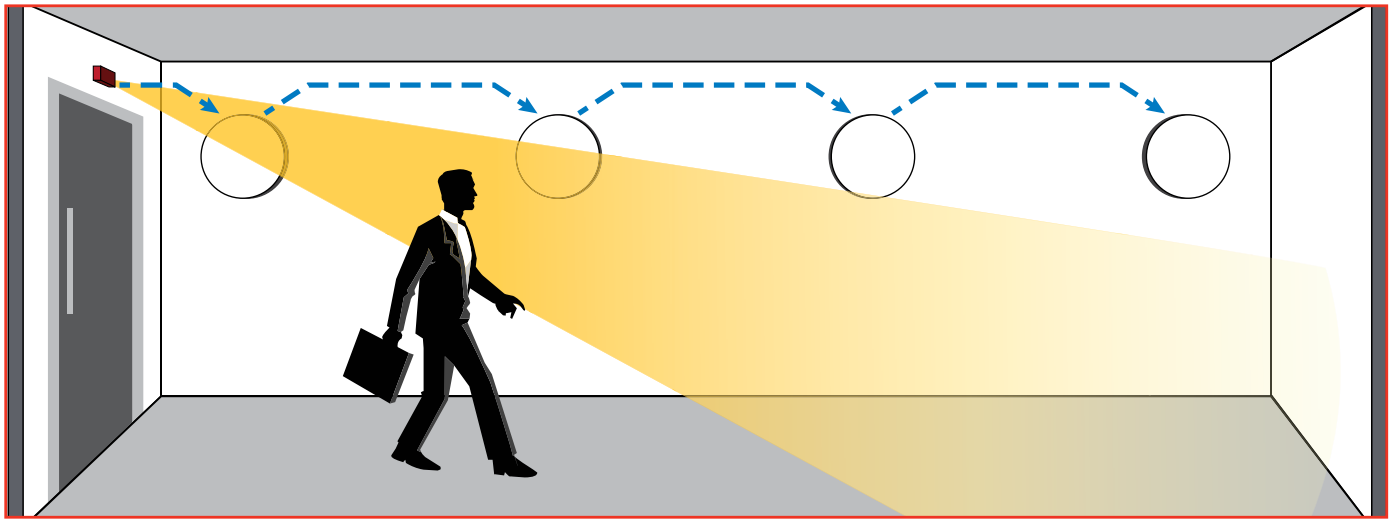
Corridor Function – single internal microwave in master / slave configuration

In this scene, an individual luminaire operates as a master and other slaves are linked. All luminaires operate at the same time.



Corridor Function – remote detection control

Remote device may also be used to control luminaires in corridor function. This may be appropriate where the detection position and luminaire position may not be the same.



Catalogue Numbers

Variant	Cat No	Lumen Output	Wattage (W)	Llm/ cW	Weight (kg)	Em Cat No	Weight (kg)
Small	CBHS174KZ	1856	18	103.1	1.3	ELCBHS174KZ	2.2
Large	CBHL234KZ	2516	24.13	104.3	1.9	ELCBHL234KZ	2.8

For DALI Dimming option replace character **Z** with **DD**, e.g. CBHS174K**Z** becomes CBHS174K**DD**

Emergency versions also available with automatic test functionality.

For corridor function, add the suffix CO, e.g. CBHS174KDD becomes CBHS174KDDCO

Note - corridor function is only available as an option on DALI products, not on HF variants

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/caius-decorative-led-wall-lights.html

Bijou LED

Bijou IP54 is a decorative low profile surface luminaire using low energy LED technology. Supplied complete with a white bezel as standard the aesthetics can be further enhanced using optional bezels in a variety of finishes. The base and diffuser are both manufactured from a grade of polycarbonate that meets the emergency glow wire test. This means that versions available as 3 hour maintained emergency options are ideal for both open areas and defined escape routes. The diffuser is attached using a twist and lock type action onto an internal gasket which gives an IP54 rating and this secure fixing has the additional benefit of making the luminaire suitable for wall and ceiling mounting.

- Decorative low profile luminaire c/w white bezel as standard
- Optional bezels in polished chrome, polished brass or satin silver finish
- Can be wall or ceiling mounted
- IP54 rated with a high protection to solid objects and wet conditions
- Twist and lock diffuser offers tool free lamp replacement
- Fully integral emergency option
- LED for high efficacy and low maintenance
- LED life 35,000 hours to L70

Lamp Options

- 14W LED 4000°K

Materials

- Base, diffuser and bezel - injection moulded fire retardant polycarbonate

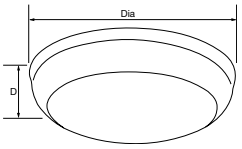
Installation Notes

- Suitable for direct fix onto normally flammable surfaces
- The twist and lock diffuser allows for a tool free lamp replacement making maintenance straightforward
- Supplied with lamp

Options

- High frequency control gear as standard
- Fully integral emergency conversion, 3 hour duration
- Supplied complete with white bezel as standard
- Polished brass, polished chrome and satin silver finish bezels as accessory

Dimensions



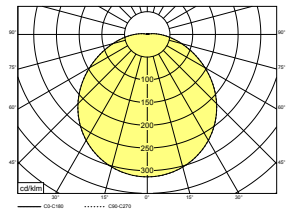
Lamp Type	Dia (mm)	D (mm)
LED	335	107
Large Bezel	335	57
Large Bezel	335	57
Large Bezel	335	57

Specification

To specify state : Low profile LED luminaire for ceiling or wall surface mounting with integral emergency option. IP54 rated with injection moulded polycarbonate opal diffuser and housing and a range of coloured accessory bezels, as Bijou IP54 range, part no _____

Photometric Data

Cat. No. BJ804KZ



LOR: 0.38
ULOR: 0.01
DLOR: 0.37

SHRnom : 1.25
SHRmax : 1.488

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
0.7	0.5	0.2	53	64	71	76	83	89	92	97	100
0.7	0.3	0.2	45	55	63	68	77	82	86	92	96
0.7	0.1	0.2	39	49	57	63	71	77	82	88	92
0.5	0.5	0.2	52	61	68	73	80	85	88	92	95
0.5	0.3	0.2	44	54	61	66	74	79	83	89	92
0.5	0.1	0.2	39	49	56	61	69	75	79	85	89
0.3	0.5	0.2	50	59	65	70	76	81	84	88	91
0.3	0.3	0.2	43	53	59	64	72	77	80	85	88
0.3	0.1	0.2	38	48	55	60	67	73	77	82	86
0	0	0	36	45	52	57	64	69	72	77	80
BZ-class			5	5	5	5	5	5	5	5	5

See page 468 for design guide

Polished brass

Satin silver

Polished chrome

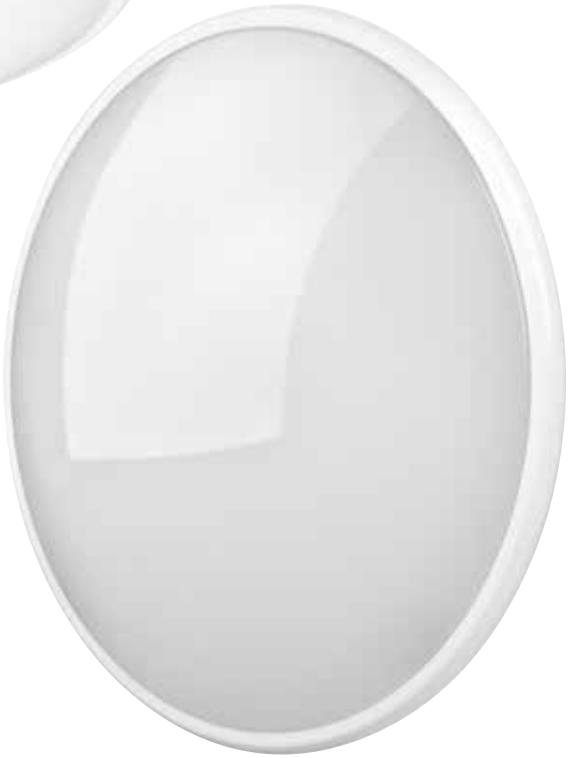
Catalogue Numbers

Cat No	Lumen Output	Wattage	Efficacy (Llm/cW)	Weight (kg)	Emergency cat no	Weight (kg)
BJ804KZ	1111	14.0	79.3	1.1	ELBJ804KZ	1.9

Accessory	Size Dia (mm)	Cat No	Colour	Weight (kg)
Large Bezel	335	BJLBSIL	Satin Silver	0.2
Large Bezel	335	BJLBPC	Polished Chrome	0.2
Large Bezel	335	BJLBPB	Polished Brass	0.2

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/decorative-wall-and-ceiling-lights-bijou-ip54-and-led-eaton.html

Cercla LED



Cercla LED is a high specification, surface mounted luminaire designed to provide ambient lighting in any interior application. From prestigious reception areas through to corridors and stairwells, Cercla's timeless design makes it a truly classic luminaire. For added versatility, an optional IP44 kit and tamper resistant kit make an attractive proposition for a variety of applications.

Embracing the latest energy saving LED technology, Cercla LED offers a choice of lumen outputs for ultimate design flexibility.
Integrated articulated captive geartray for safety and ease of installation.

- Classic slim profile design to suit a variety of décor
- Smooth opal diffuser for optimum uniformity
- Tamper resistant and IP44 sealing kits make Cercla ideal for public areas and washrooms
- Fully integral emergency versions Microwave sensor option(fixed output only)
- Self-test and CGLine+ emergency monitoring options ensure compliance with testing requirements without disruption to the workspace

Lamp and Control Gear Options

- Fixed output control gear as standard
- DALI dimming options available

Materials

- Body - spun steel, powder coated in RAL9016 white
- Diffuser - opal UV stabilised polycarbonate
- IP44 gasket - silicon (optional accessory)

Installation Notes

- Suitable for ceiling or wall mounting
- BESA cable entry on rear with separate screw fixing points
- Terminal block with 2 x 2.5mm² cable capacity per termination
- Diffuser retained by internal spring clips
- Tamper resistant fixing kit available
- Simple IP44 upgrade also provides tamper resistant fixing
- Articulated captive geartray for safety and ease of installation

Options

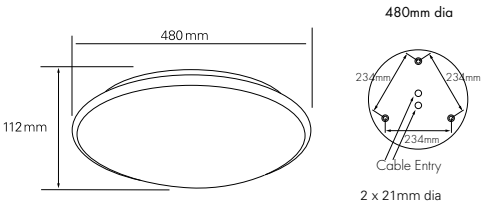
- Fully integral emergency conversion, 3 hour duration
- Suitable for use on defined escape routes
- Microwave sensor inbuilt option
- Automatic self-test emergency versions available
- IP44 sealing kits include the tamper resistant fixings as standard
- Lighting controls and energy management options (refer to controls guide on page 429)
- We offer a range of product support to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Cercla LED side view

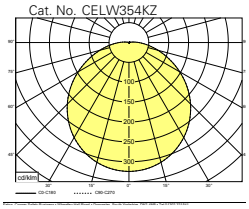
Specification

To specify state: Shallow profile compact LED luminaire for ceiling or wall surface mounting, with rigid spun steel body finished white, efficient uniformly flashed opal diffuser and emergency versions with fully integral control gear, as Eaton's Cercla LED range, part no. _____

Dimensions



Photometric Data



SHR nom: 1.25
SHR max: 1.474

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
0.7	0.5	0.2	54	64	71	77	84	89	93	98	101
0.7	0.3	0.2	46	56	64	69	77	83	87	93	97
0.7	0.1	0.2	40	50	58	63	72	78	83	89	93
0.5	0.5	0.2	52	62	69	74	81	85	89	93	96
0.5	0.3	0.2	45	55	62	67	75	80	84	89	93
0.5	0.1	0.2	40	50	57	62	70	76	80	86	90
0.3	0.5	0.2	51	60	66	71	77	82	85	89	92
0.3	0.3	0.2	44	54	60	66	73	78	81	86	89
0.3	0.1	0.2	39	49	56	61	69	74	78	83	87
0	0	0	37	46	53	58	65	70	73	78	82
BZ –class			5	5	5	5	5	5	5	5	5

See page 468 for design guide

Catalogue Numbers

Cat no.	Lumen output	Wattage (W)	LIm/cW	Weight (kg)	Emergency cat. no.	Weight (kg)
CELW154KZ	1567	13.7	114.4	3.18	EBCELW154KZ	3.75
CELW224KZ	2245	19.0	118.1	3.18	EBCELW224KZ	3.75
CELW354KZ	3632	31.0	117.2	3.18	EBCELW354KZ	3.75

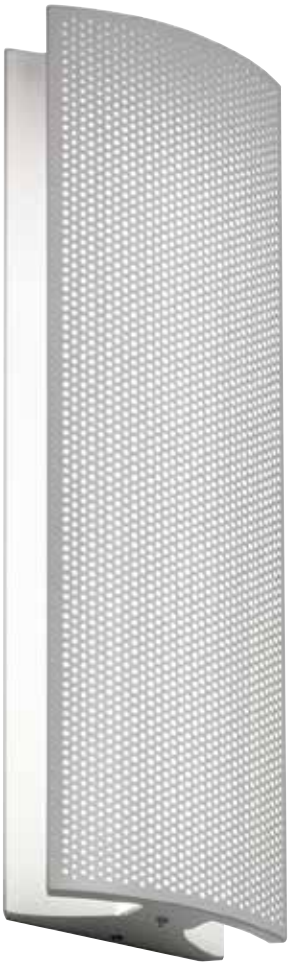
For DALI Dimming option replace character Z with DD , e.g. CELW154KZ becomes CELW154KDD
Microwave variants have the suffix M, e.g. CELW154KZM (Fixed output versions only)
Emergency versions also available with automatic test functionality, e.g. EasiCheck 2 and CG Line+

Accessories

Description	Cat No	Weight (Kg)	
IP44 sealing kit - 480 dia	CEIP480	0.06	(Note: Includes tamper resistant fixings as standard)
Tamper resistant fixing kit	CETRK	0.03	
For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com			

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/decorative-wall-and-ceiling-lights-cercla-led-eaton.html

Waveform Wall



Waveform Wall provides an energy efficient solution for wall mounted applications. Designed with leading performance both in general operation and in emergency mode, it allows the designer freedom to use it in many situations. A neat architectural profile offers an attractive design orientated look to diverse spaces.

Using advanced LED technology, the Waveform Wall not only offers energy efficiency and long life, but provides an ideal emergency lighting solution for stairwells and corridors where other products fail to meet today's stringent emergency lighting standards.

- Aids lighting scheme design to comply with LG7 and BS EN 12464-1
- Attractive architectural profile
- Indirect illumination
- Soft, comfortable lighting effect
- Fully integral emergency version
- Simple to install with plug and socket mains connection minimising installation time
- High lumen output in emergency operation mode

Decorative Wall and Ceiling

Waveform Wall

Light Engine and Control Gear Options

- LED - high output, high efficiency LED chip set optimised for maximum efficacy - 4000°K as standard
- High frequency control gear as standard
- DALI dimming options available

Materials

- Body and perforated panel - steel, powder coated in RAL9016
- Diffusing panel - flame retardant diffusing medium

Installation Notes

- Suitable for wall mounting (vertically or horizontally)
- Direct screw fix via 2 x key hole slots
- Open rear access for ease of cable entry
- Plug and socket mains connection with 2 x 2.5mm² cable capacity per termination
- Fused as standard
- Aids lighting scheme design to comply with LG7 and BS EN 12464-1

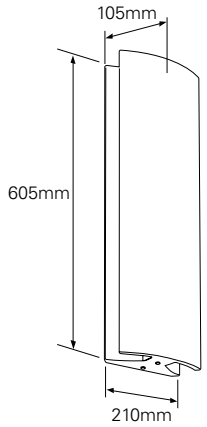
Options

- Fully integral emergency conversion, 3 hour duration
- Suitable for use on defined escape routes
- Emergency versions available with automatic test functionality

Specification

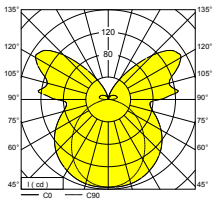
To specify state: Architectural wall mounted luminaire with dispersive wing reflector, curved perforated diffuser and fire retardant diffusing medium as Eaton's Waveform Wall range part no. _____

Dimensions



Photometric Data

Cat. No. WAW174KZ
LED



LO 1699 lm

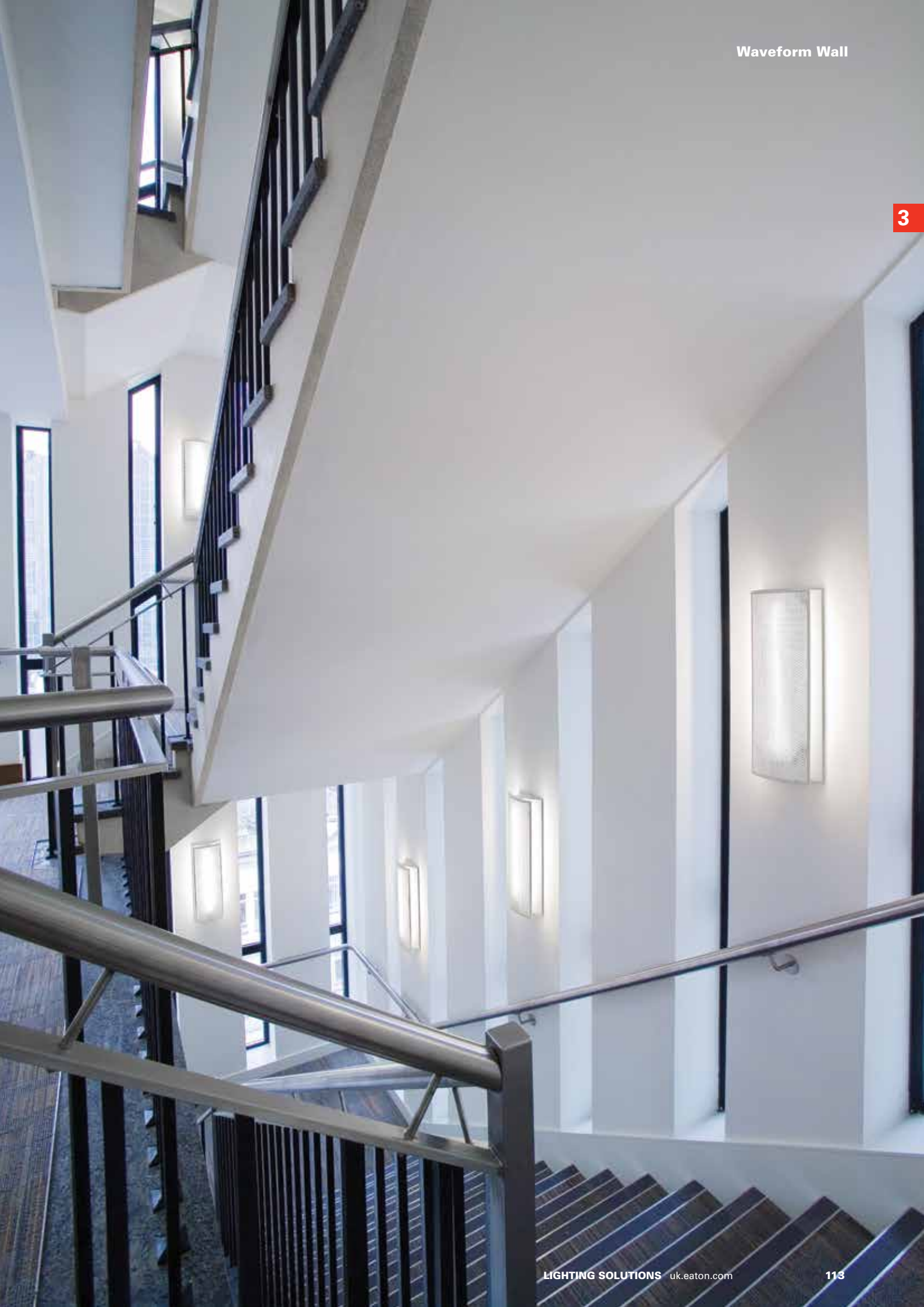
Catalogue Numbers

Cat No	Lumen Output	Wattage	Efficacy (Llm/cW)	Weight (kg)	Emergency cat no	Weight (kg)
WAW174KZ	1699	21.2	79.9	3.2	ELWAW174KZ	3.9
WAW274KZ	2714	35.6	76.2	3.2	ELWAW274KZ	3.9

For DALI dimming option, replace part number character **Z** with **DD**, eg WAW155**Z** becomes WAW155**DD**

Emergency versions available with automatic test functionality

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com



Norwich Hostry
Norwich, UK

4

Downlight Lighting

Downlights

Contents

4

RXS3

The RXS3 is the latest generation in the RXS family, It builds on the RXS pedigree with continued evolution of proven technology and innovation.

The RXS3 has class leading efficiencies, aesthetics and quality, it is the intelligent choice where performance and value are key.

Offering a wide range of outputs, the RXS3 allows precision design choices to be made, delivering maximum energy benefit for the chosen space.

The RXS3 provides design choices from 1000 lumens to 3000 lumens, all in complimentary and matched forms.

Innovative design and inherent energy conservation gives the RXS3 efficacies up to 125Llm/cW, whilst the bespoke reflector design utilises more of the available light and provides a more attractive transition building surfaces.

- Available in 3000K and 4000K correlated colour temperature options at 80CRI
- Two size options, 95mm and 165mm cut out
- Four nominal lumen options, 1000, 1500, 2000, 3000 lumens
- High colour consistency achieved through MacAdam 3 SDCM
- Maximised energy savings with class leading efficiencies of up to 125Llm/cW
- Designed to facilitate UGR compliance to EN12464-1
- Maximised LED lifetime, 100,000hrs @L80 B50
- Available with fixed output or DALI dimming control gear
- Easy installation, with plug and play connection for larger variant
- IP65 bezel option with easy to clean profile
- Decorative ‘drop cylinder’ attachment option

Lamp and Control Gear Options

- Available in 3000K, 4000K, >80 CRI
- Multi-die LED technology
- Close colour tolerance: MacAdam 3 SDCM
- DALI dimming option

Specification

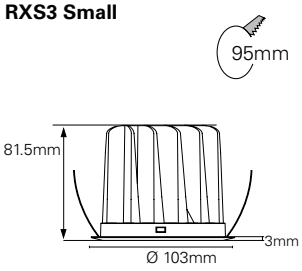
To specify state: A recessed RXS LED Downlight with high performance passive thermal management . IP20/IP65 bezel in white RAL9016 finish. Correlated colour temperature is 3000/4000K with CRI >80 and LED lifetime 100,000hrs @ L80 B50. Eaton's RXS3 range part no _____

Materials

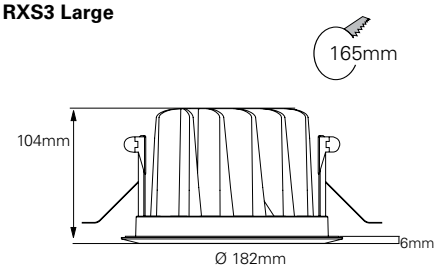
- Housing / heatsink - die cast aluminium, polycarbonate cable clamp
- First fix bezel - die cast aluminium, polycarbonate inserts (Large version only)
- Bezel - injection moulded polycarbonate RAL9016 finish
- IP65 bezel - injection moulded polycarbonate RAL9016 finish with clear centre lens
- Reflector - high grade satin anodised aluminium
- Drop cylinder attachment - injection moulded polycarbonate

Dimensions

RXS3 Small



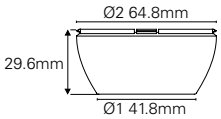
RXS3 Large



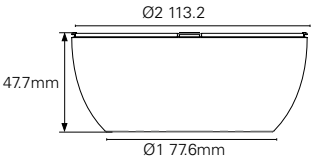
Installation Notes

- Shallow profile to suit low ceiling voids, allow 25mm clearance above housing. Do not cover with insulation
- Allow 100mm clearance around the luminaire, with the sides free of any insulation to allow for suitable air flow
- Pre-wired driver to luminaire head minimising installation time
- Luminaire retained securely with tool-less spring clips
- Large variant has first fix bezel into which the housing twist and locks for simple installation
- RXS3 ceiling spring clips accommodate ceilings up to 30mm thickness
- Drop cylinder has simple snap fit into the IP20 trim bezel of the large and small versions - not compatible with IP65 variants

RXS3 Small decorative cylinder



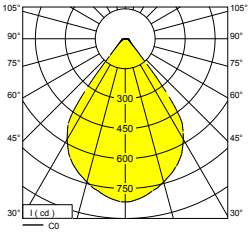
RXS3 Large decorative cylinder



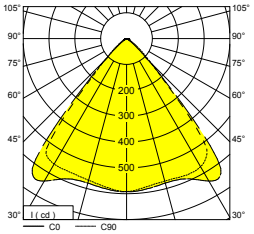
Options

- Fully integral LED emergency conversion, 3 hour duration
- Drop cylinder decorative attachment option for IP20 versions
- IP65 option available, order as complete luminaire
- CGLine+ self-test emergency versions available on special request

Photometric Data



Cat. No. RXS3S15004KZ
RXS3 Small



Cat. No. RXS3L150044Z
RXS3 Large

Catalogue numbers

Description	Cat No.	Lumens (Lms)	Circuit Watts (W)	Luminaire Efficacy (Llm/cW)	Height (mm) H	Diameter (mm) Ø1	Diameter (mm) Ø2	Cut out size (mm)	Weight (Kg)	Colour Temperature (K)
RXS3 Small 1000LM 3000K	RXS3S10003KZ	1063	9.5	111.9	79	103		95	0.5	3000
RXS3 Small 1000LM 4000K	RXS3S10004KZ	1072	9.5	112.8	79	103		95	0.5	4000
RXS3 Small 1500LM 3000K	RXS3S15003KZ	1564	14.8	105.7	79	103		95	0.5	3000
RXS3 Small 1500LM 4000K	RXS3S15004KZ	1582	14.8	106.9	79	103		95	0.5	4000
RXS3 Large 1500LM 3000K	RXS3L15003KZ	1480	12.1	122.3	98	182		165	1.8	3000
RXS3 Large 1500LM 4000K	RXS3L15004KZ	1514	12.1	125.1	98	182		165	1.8	4000
RXS3 Large 2000LM 3000K	RXS3L20003KZ	2137	17.6	121.6	98	182		165	1.8	3000
RXS3 Large 2000LM 4000K	RXS3L20004KZ	2118	17.6	120.3	98	182		165	1.8	4000
RXS3 Large 3000LM 3000K	RXS3L30003KZ	3029	25.7	117.8	98	182		165	1.8	3000
RXS3 Large 3000LM 4000K	RXS3L30004KZ	3122	25.7	121.5	98	182		165	1.8	4000
RXS3 Small decorative cylinder	RXS3SDC				29.6	41.8	64.8			
RXS3 Large decorative cylinder	RXS3LDC				47.7	77.6	113.2			

For emergency option add ER in front of catalogue number. e.g. RXS3S10003KZ becomes ERXS3S10003KZ
For DALI dimming option replace character Z with DD. e.g. RXS3S10003KZ becomes RXS3S10003DD
For IP65 bezel option (Drop cylinder not compatible) add the characters 65 after the colour temperature e.g. RXS3S10003KZ becomes RXS3S10003K65Z
For further product specifications, please see our website.


WELCOME TO
YORK BARBICAN
AUDITORIUM
CLIFFORD LOUNGE
TOILETS
FOYER/BALCONY BARS
FISHERGATE RESTAURANT
MEETING ROOMS
LIFT TO BALCONY
MERCHANDISE
TICKET MACHINES

RXS mini

The RXS Mini is a high performance specification downlight which is part of the RXS family of luminaires.

Multi-die LED chip technology is utilised to provide a highly efficient solution which is versatile and discreet, allowing it to fit into most designs. RXS Mini offers an efficacy in excess of 60 Llm/cW allowing the product to reduce the overall energy footprint of a project while still providing a high quality light source.

The range offers a selection of lumen outputs, colour temperatures and beam angles. This allows the requirements of the desired application to be accommodated for giving more control and better results.

- Low profile housing with a range of lumen packages available
- Efficient thermal management maximises LED output, efficacy and overall life
- IP65 as standard with an easy to clean profile
- Available with fixed output, 1-10V or DALI dimmable control gear to maximise the energy savings
- 3000K, 4000K colour temperature options, all >80 CRI
- 90 minute fire rated to BS EN 1365-2:2000

LED and Control Gear Options

- Multi-die LED technology
- 3000K warm white, 4000K neutral white >80 C.R.I.
- Close colour tolerance: MacAdam 3 SDCM

Materials

- Housing/heatsink – die cast aluminium, polycarbonate cable clamp
- IP65 bezel – injection moulded polycarbonate RAL9016 finish with clear centre lens
- Reflector – high grade anodised aluminium

Installation Notes

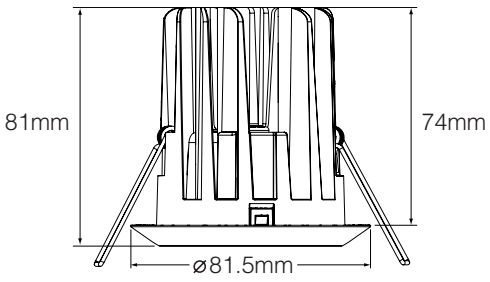
- Shallow profile to suit low ceiling voids, allow 25mm clearance above housing. Do not cover with insulation
- Allow 100mm clearance around the luminaire's sides free of any insulation to allow for suitable air flow
- Pre-wired driver to luminaire head minimising installation time
- Control gear fits through ceiling cut out to suit solid ceilings
- Luminaire retained securely with tool less spring clips
- Ceiling spring clips accommodate up to 27mm ceiling thickness
- 90 minute fire rated to BS EN 1365-2:2000

Specification

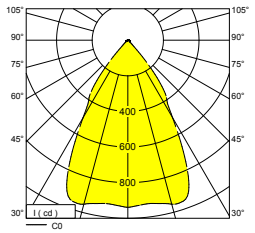
To specify state: Multi-die LED downlight with high performance passive thermal management, 81.0mm overall height, round 81.5mm diameter IP65 bezel in white RAL9016 finish as Eaton's RXS Mini range part no _____

Dimensions

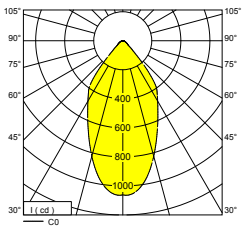
RXS Mini



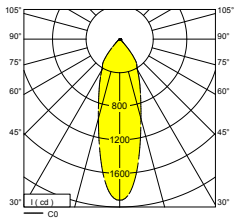
Photometric Data



SHR nom: 1:1
SHR max: 1:1.04
RXS Mini - WW Wide



SHR nom: 1.1
SHR max: 1:1.02
RXS Mini - WW Medium



SHR nom: 0.5:1
SHR max: 1:0.6
RXS Mini - WW Narrow

Catalogue Numbers

RXS1 Mini

Description	Cat No.	Lumens (Lms)	Circuit Watts (W)	Luminaire Efficacy (Llm/cW)	Height (mm) H1	Height (mm) H2	Diameter (mm) Ø1	Diameter (mm) Ø2	Cut out size (mm)	Weight (Kg)	Colour Temperature (K)
RXS1 Mini 1000LM 3000K, Wide reflector (61˚)	RXS1M-1WWWZ	983	16	61	74	81	85.5		65	0.31	3000
RXS1 Mini 1000LM 4000K, Wide reflector (61˚)	RXS1M-1NWWZ	1081	16	67	74	81	85.5		65	0.31	4000
RXS1 Mini 1000LM 3000K, Medium reflector (54˚)	RXS1M-1WWMZ	877	16	55	74	81	85.5		65	0.31	3000
RXS1 Mini 1000LM 4000K, Medium reflector (54˚)	RXS1M-1NWMZ	948	16	59	74	81	85.5		65	0.31	4000
RXS1 Mini 1000LM 3000K, Narrow reflector (31˚)	RXS1M-1WWNZ	939	16	59	74	81	85.5		65	0.31	3000
RXS1 Mini 1000LM 4000K, Narrow reflector (31˚)	RXS1M-1NWNZ	1014	16	63	74	81	85.5		65	0.31	4000

For DALI Dimming option replace character **Z** with **DD**, e.g. RXS1M-1WWW**Z** becomes RXS1M-1WWW**DD**

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/rxs-mini-led-downlights.html

Solstar Disk

The Solstar Disk is a slim, solid die cast aluminium downlight ideal for small ceiling cavities.

This highly aesthetic recessed luminaire is available in four lumen output versions, available with 3 hour maintained emergency options.

Made with high quality die cast aluminium construction.

The Solstar Disk has a back lit LED array with opal polycarbonate diffuser for high quality uniform lit appearance.

The Solstar Disk is a highly efficient LED luminaire with delivered lumens of up to 110 Llm/cW.

- Available in 3000K and 4000K CCT options
- Wide range of nominal lumen values:
  - — 1000 Lumen
  - — 1600 Lumen
  - — 1900 Lumen
  - — 3000 Lumen
- Available with fixed output or DALI dimmable control gear to maximise energy savings
- 3 size options, all low profile
  - — ø140mm x 22.5mm (ø125mm cut out)
  - — ø180mm x 24mm (ø165mm cut out)
  - — ø230mm x 24mm (ø210mm cut out)

LED and Control Gear Options

- High output, efficient LED array, 80CRI
- Available in: 3000K, 4000K, >80 CRI
- Energy efficient fixed output control gear as standard
- DALI Dimming option

Materials

- Opal polycarbonate diffuser
- Die cast aluminium housing
- Steel spring retention clips

Installation Notes

- Shallow profile to suit low ceiling voids
- Allow 25mm clearance above housing
- Do not cover with insulation
- Allow 100mm clearance around the luminaire's sides free of any insulation to allow for suitable air flow
- IP44 luminaire head and IP20 LED driver
- Luminaire retained securely with toolless spring clips

Options

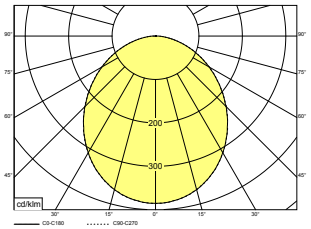
- 1000, 1600, 1900, 3000 nominal lumen options
- ø140mm x 22.5mm
- ø180mm x 24mm
- ø230mm x 24mm
- 3hr maintained emergency functionality*

Specification

To specify state: Recessed low profile, back lit LED Downlight with HF / DALI gear with plug and socket connection, Aluminium body and bezel, As Eaton's Solstar Disk range, part no _____

Photometric Data

Cat. No. SLK19004KZ



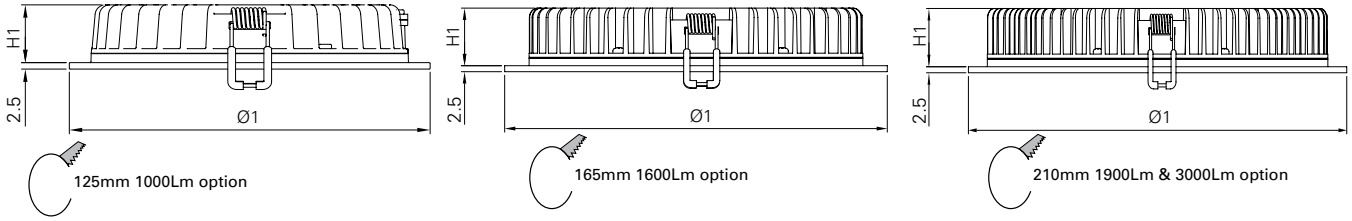
SHR nom: 1.25:1
SHR max: 1.389:1

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2	2.5	3.0	4.0	5.0
0.7	0.5	0.2	58	68	75	81	88	93	96	100	103
0.7	0.3	0.2	50	61	68	74	82	87	91	96	100
0.7	0.1	0.2	45	55	63	68	77	82	87	93	97
0.5	0.5	0.2	56	66	73	78	85	89	92	96	99
0.5	0.3	0.2	50	60	67	72	79	84	88	93	96
0.5	0.1	0.2	44	54	62	67	75	81	85	90	94
0.3	0.5	0.2	55	64	71	75	82	86	89	93	95
0.3	0.3	0.2	49	58	65	70	77	82	85	90	93
0.3	0.1	0.2	44	54	61	66	74	79	82	88	91
0	0	0	42	51	58	63	70	75	78	83	86
BZ-class			5	4	4	4	4	4	4	3	3

See page 468 for design guide

Dimensions



Catalogue Numbers

Description	Cat No.	Lumens (Lms)	Circuit Watts (W)	Luminaire Efficacy (Llm/cW)	Height (mm) H1	Diameter (mm) Ø1	Cut out size (mm)	Weight (Kg)	Colour Temperature (K)
Solstar Disk 1000LM 3000K	SLK10003KZ	1069	11.2	95.6	22.5	140	125	0.3	3000
Solstar Disk 1000LM 4000K	SLK10004KZ	1123	11.2	100	22.5	140	125	0.3	4000
Solstar Disk 1600LM 3000K	SLK16003KZ	1594	15.0	106.2	24	180	165	0.47	3000
Solstar Disk 1600LM 4000K	SLK16004KZ	1653	15.1	109.5	24	180	165	0.47	4000
Solstar Disk 1900LM 3000K	SLK19003KZ	1846	18.6	99.1	24	230	210	0.7	3000
Solstar Disk 1900LM 4000K	SLK19004KZ	2016	18.3	110.5	24	230	210	0.7	4000
Solstar Disk 3000LM 3000K	SLK30003KZ	2899	28.2	102.7	24	230	210	0.7	3000
Solstar Disk 3000LM 4000K	SLK30004KZ	3021	28.4	106.5	24	230	210	0.7	4000

For DALI dimming option replace character Z with DD. e.g. SLK16003KZ becomes SLK16003KDD
For emergency option add EL in front of catalogue number. e.g. SLK16003KZ becomes ELSLK16003KZ
*Emergency option is not available for the 1000LM versions.

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/downlight-solstardisk-eaton.html

VersaLux

VersaLux is a new range of LED downlights designed with both new build and retrofit projects in mind.

Available in four lumen output versions, 3 hour maintained emergency option available on higher output.

The VersaLux is a simple highly versatile LED downlight that delivers an appealing recessed aesthetic.

Designed with simplicity in mind the VersaLux is easy to install, complete with an integrated driver for direct mains connection.

Suggested use; corridors, reception areas, offices. schools.

- Available in 3000K & 4000K CCT options to suit many environments
- Highly versatile, with a wide range of nominal lumen options and cut out sizes;
  - 800 lumen, ø100mm cut out
  - 1100 lumen, ø150mm cut out
  - 1500 lumen, ø150mm cut out
  - 2000 lumen, ø200mm cut out

LED and Control Gear Options

- High output, efficient LED array, 80 CRI
- Energy efficient fixed output control gear as standard

Materials

- Opal polycarbonate diffuser
- Polycarbonate driver housing
- Aluminium bezel and built in reflector
- Steel spring retention clips

Installation Notes

- Allow 25mm clearance above housing. Do not cover with insulation
- Allow 100mm clearance around the luminaire's sides free of any insulation to allow for suitable air flow
- IP20 luminaire head
- Mains directly wired into luminaire terminal block
- Spring clip retention

Options

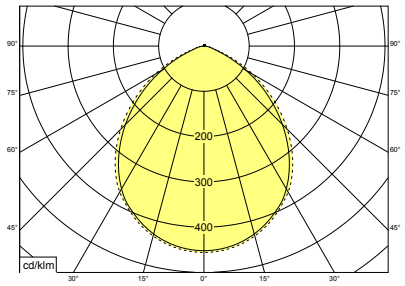
- 3000K, 4000K colour temperature
- 800, 1100, 1500, 2000 lumen options
  - 800Lms variant: ø100mm cut out
  - 1100Lms and 1500Lms variants: ø150mm cut out
  - 2000Lms variant: ø200mm cut out
- 3hr maintained emergency functionality

Specification

To specify state: Recessed LED downlight with integrated fixed output LED driver, aluminium body and bezel. As Eaton's VersaLux range, part no. _____

Photometric Data

Cat. No. VSX15004KZ



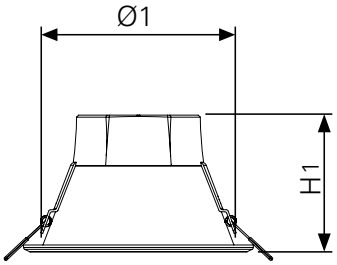
SHR nom: 1.25:1
SHR max: 1.34:1

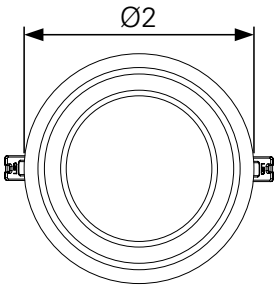
Utilisation factors / TM5

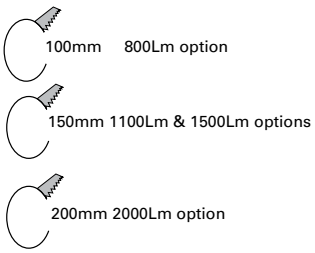
Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2	2.5	3.0	4.0	5.0
0.7	0.5	0.2	64	74	81	86	93	97	100	104	106
0.7	0.3	0.2	57	68	75	80	87	92	96	100	103
0.7	0.1	0.2	52	63	70	76	83	88	92	97	101
0.5	0.5	0.2	62	72	79	83	89	93	96	99	102
0.5	0.3	0.2	56	66	73	78	85	90	93	97	99
0.5	0.1	0.2	52	62	69	74	81	86	90	94	97
0.3	0.5	0.2	61	70	77	81	87	90	93	96	98
0.3	0.3	0.2	55	65	72	77	83	87	90	94	96
0.3	0.1	0.2	51	61	68	73	80	84	87	92	94
0	0	0	49	59	66	70	76	81	83	87	89
BZ-class			3	3	3	3	3	2	3	3	3

See page 468 for design guide

Dimensions







Catalogue Numbers

Description	Cat No.	Lumens (Lms)	Circuit Watts (W)	Luminaire Efficacy (Llm/cW)	Height (mm) H1	Diameter (mm) Ø1	Diameter (mm) Ø2	Cut out size (mm)	Weight (Kg)	Colour Temperature (K)
VersaLux 800LM 3000K	VSX8003KZ	800	9	89	88	99	117	100	0.18	3000
VersaLux 800LM 4000K	VSX8004KZ	800	9	89	88	99	117	100	0.18	4000
VersaLux 1100LM 3000K	VSX11003KZ	1100	12	92	100	142	167	150	0.26	3000
VersaLux 1100LM 4000K	VSX11004KZ	1100	12	92	100	142	167	150	0.26	4000
VersaLux 1500LM 3000K	VSX15003KZ	1500	16	94	100	142	167	150	0.26	3000
VersaLux 1500LM 4000K	VSX15004KZ	1500	16	94	100	142	167	150	0.26	4000
VersaLux 2000LM 3000K	VSX20003KZ	2000	21	95	110	193	217	200	0.36	3000
VersaLux 2000LM 4000K	VSX20004KZ	2000	21	95	110	193	217	200	0.36	4000

For emergency option add EL in front of catalogue number. e.g. - VSX1103KZ becomes ELVSX11003KZ.
Emergency option not available on the 800LM option

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/versalux-downlights.html

Solstar LED

Solstar LED is a high performance range of LED downlights designed with both new build and retrofit projects in mind. Many new LED downlights have reduced the housing diameter to suit the LED source, however, the traditional dimensions of the two sizes in this range are ideal for retrofit/upgrade situations due to the large cut out diameter left by the existing product.

Available in four light output versions, all are backed up by a 3 hour maintained emergency option. Solstar LED is highly versatile and suits most internal applications. The die-cast aluminium front bezel can be substituted for an ever popular haloglass attachment by retrofitting in a simple twist and lock motion.

- Energy saving of 75% when compared to already low energy fluorescent models
- Twist and lock attachment for ease of installation and clean aesthetics
- Cut out diameter designed to match most compact fluorescent types, which makes Solstar LED an ideal upgrade product
- Highly versatile with a wide range of lumen outputs and 3 hour maintained emergency versions to suit many applications
- DALI dimmable option increases potential energy savings and provides additional user comfort and control

LED and Control Gear Options

- High performance LED array and LED driver system
- 4000K, Ra +80

Materials

- Housing - die cast aluminium
- Bezel - die cast aluminium in white finish
- Bezel optic - diffused white finish, opal polycarbonate (TPa rated)

Installation Notes

- The luminaire head is IP44 rated, the remote control gear is IP20 rated
- The integrated ceiling clamp screws are accessed during installation by removing the twist and lock bezel
- The ceiling clamps suit ceiling depths of up to 45mm large, 30mm small
- The haloglass accessory attachment is retained with a twist and lock action and replaces the standard bezel
- Allow a minimum of 100mm clearance around the downlight and 35mm above to allow adequate air flow
- Haloglass accessories reduce the lumen output by approx 6.3%. Photometric data files are available on request or via Relux and Dialux

Options

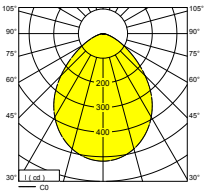
- Haloglass accessory - ordered separately
- Integrated 3hr maintained emergency functionality

Specification

To specify state: Recessed LED downlight with twist and lock die-cast aluminium bezel. HF/DALI control gear with plug and socket connection as Eaton's Solstar LED range, part no. _____

Photometric Data

Solstar LED Small
Cat. No. SLD100KZ



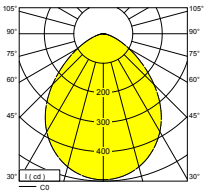
SHR nom: 1.29:1
SHR max: 1.25:1

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	67	77	83	88	94	98	101	104	107
70	30	20	61	71	77	82	89	94	97	101	104
70	10	20	56	66	73	78	85	90	94	98	102
50	50	20	66	75	81	85	91	95	97	101	103
50	30	20	60	69	76	81	87	91	94	98	100
50	10	20	55	65	72	77	84	88	91	96	98
30	50	20	64	73	79	83	88	92	94	97	99
30	30	20	59	68	75	79	85	89	91	95	97
30	10	20	55	65	71	76	82	86	89	93	95
0	0	0	53	62	69	73	79	83	85	89	91
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

Solstar LED Large
Cat. No. SLD260KZ



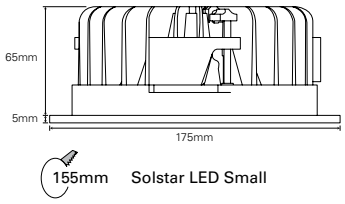
SHR nom: 1.29:1
SHR max: 1.25:1

Utilisation factors / TM5

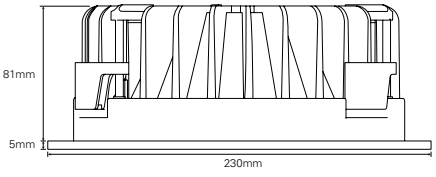
Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	66	76	83	87	93	98	100	104	106
70	30	20	59	69	76	81	88	93	96	101	103
70	10	20	54	65	72	77	84	89	93	98	101
50	50	20	65	74	80	85	90	94	97	100	102
50	30	20	59	68	75	80	86	90	93	97	100
50	10	20	54	64	71	76	86	87	91	95	98
30	50	20	63	72	78	82	88	91	93	97	98
30	30	20	58	67	74	78	84	88	91	94	97
30	10	20	54	63	70	75	81	85	88	92	95
0	0	0	52	61	67	72	78	82	84	88	90
BZ-class			2	3	3	3	3	2	3	3	3

See page 468 for design guide

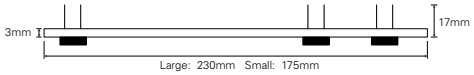
Dimensions



155mm Solstar LED Small



205mm Solstar LED Large



Haloglass Attachment (optional)

Catalogue Numbers

Description	Cat No.	Lumens (Lms)	Circuit Watts (W)	Luminaire Efficacy (Llm/cW)	Height (mm) H1	Height (mm) H2	Diameter (mm) Ø1	Diameter (mm) Ø2	Cut out size (mm)	Weight (Kg)	Colour Temperature (K)
Solstar LED Small 1000LM 4000K	SLD100KZ	966lm	10	96.6	65	65	175		155	0.6	4000
Solstar LED Small 1450LM 4000K	SLD145KZ	1433lm	15	95.5	65	65	175		155	1.2	4000
Solstar LED Small drop glass	SLDSHGLASS				3	17	175			0.24	4000
Solstar LED Large 1950LM 4000K	SLD195KZ	1921lm	18	106.7	81	81	230		205	1.2	4000
Solstar LED Large 2600LM 4000K	SLD260KZ	2608lm	27	96.6	81	81	230		205	1.2	4000
Solstar LED Large drop glass	SLDLHGLASS				3	17	230			0.54	4000

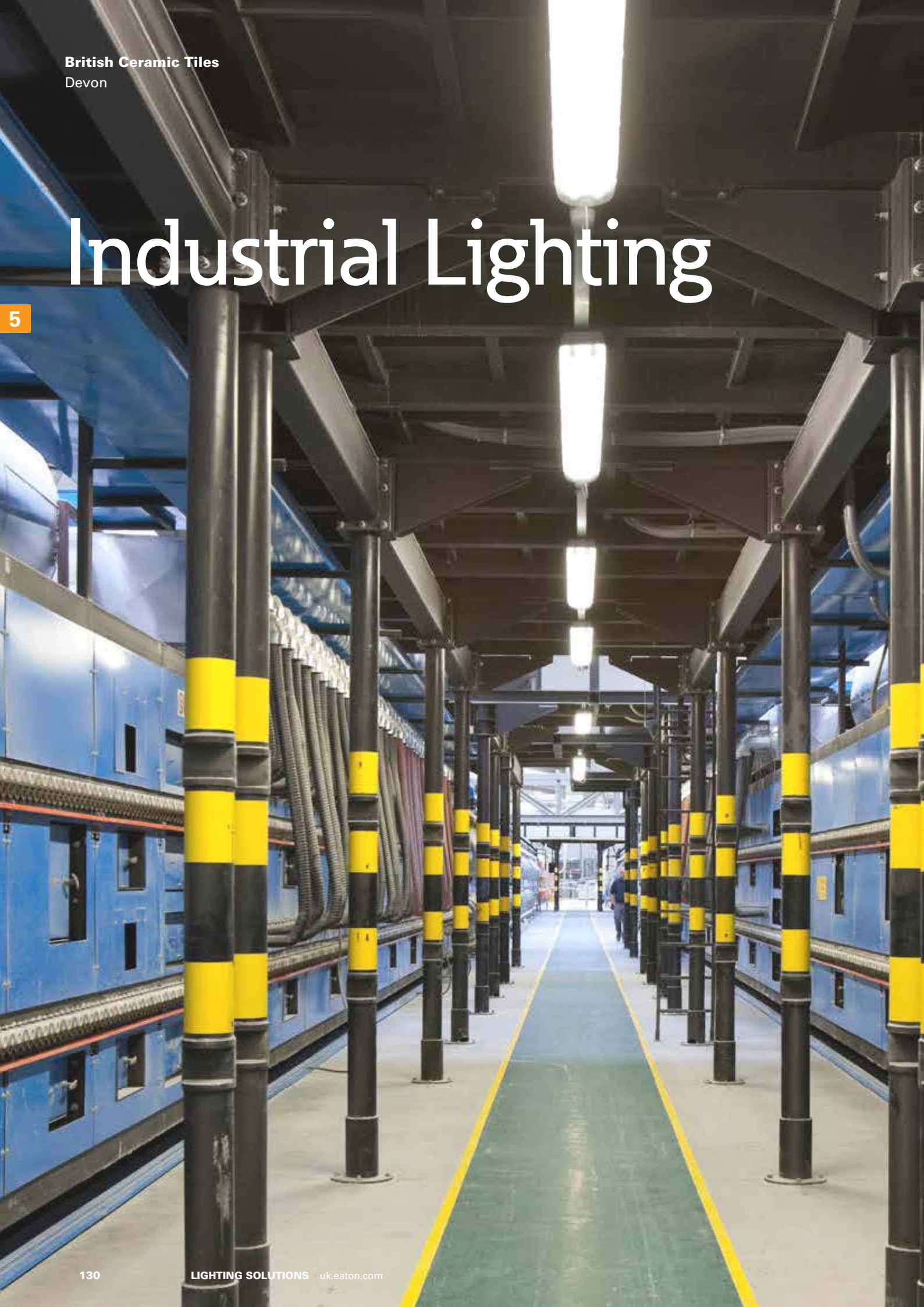
Note: Standard versions are Class II double insulated
Emergency versions are Class I and must be earthed
For DALI dimmable options, replace the Z with **DD**, e.g. SLD260KZ becomes SLD260**DD**

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/solstar-led-downlights.html

British Ceramic Tiles
Devon

Industrial Lighting

5



Discover our Industrial LED Lighting Solutions at:

Eaton.com/LightingLargeSpaces

Litex Elite

Up to 170Llm/cW

LED | IP65 | IK10 | -40°C to +50°C | 5000°K Ra +80 | DIMMING | CONTROLS | EM | CG+ Line | 5 YEAR WARRANTY

Litex Elite is the next generation IP65 Litex LED, and a performance leading luminaire in its class. Designed for high efficiencies, the Litex Elite delivers massive energy savings (ECA compliant) and rapid capital investment payback.

Available with a wide range of enabling options - 15K, 22K and 35K lumens, a selection of optical distributions, IP65 PIR sensor and integrated emergency. Litex Elite is the most complete and flexible high bay available.

Built to industrial specifications - IP65, 0 and extended operating temperature - Litex Elite is the perfect luminaire for industrial applications such as maintenance sheds, cold store, and a wide range of manufacturing, warehouse and amenity locations.

- 170Llm/cW – class leading luminaire efficiency
- Energy savings – over 65% vs metal halide and T5 fluorescent
- IP65 – dust and low pressure jet wash protection
- – robust, impact protection, 20 joule rating
- -40ºC to +50ºC extended operating temperature – suitable for a wide range of sites, including cold storage
- Integral emergency option – lower costs with reduced requirement for separate EM installation
- Sensor options – PIR, occupancy and daylight control
- DALI Dimming – allows for control of light levels to maximize savings
- Long life LED – in excess of L80 85,000 hours
- High quality white light (5000K, Ra80) – ideal for high activity areas and excellent colour recognition
- Rapid install – plug and play connector, suspension and surface mount bracket options
- 5 year warranty as standard – no registration of product required

LED and LED Driver

- High performance linear LED strip and LED driver system
- Leading efficiency LEDs
- 5000K, Ra +80

Materials

- IP65, IK10 luminaire
  - Sealed body mild steel housing - powder coated RAL9016
  - Impact resistant TPa Polycarbonate cover
- Aluminium gear tray, for optimised LED thermal management
- Anodised aluminium reflectors for maximum optical efficiency
- IP65 Plug and Play panel mounted connector
- Versatile mild steel mounting brackets

Installation Notes

- Mounting bracket options - BESA and suspended
- No requirement to access IP65 sealed unit
- Plug and play connection with IP65 panel mount connector supplied
- Fused as standard

Specification

To specify state: IP65 LED highbay luminaire with wide and narrow optic versions. High output high efficacy 5000K Ra 80 LED chip with high efficiency fixed output or DALI LED driver as standard with plug and socket connection to the end, as Eaton's Litex Elite, part no: _____

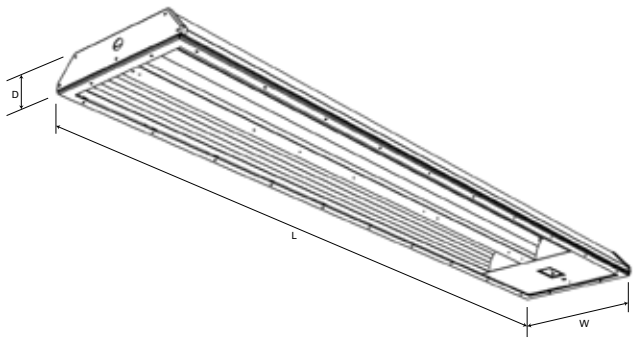
LED Lifetime Performance Data

Litex Elite luminare life values from TM21 calculator

Drive Current	Ambient Temp	LED Tc point	Operating hours to: L90	L80	L70
500mA	25ºC	47	55,000	120,000	195,000
500mA	45ºC	65	48,000	100,000	160,000
700mA	45ºC	73	40,000	85,000	140,000

Note: using the TM21 algorithm for extrapolation of lifetime expectancy way beyond 6x tested duration has risks. Please contact the Eaton technical team for further info.

Dimensions



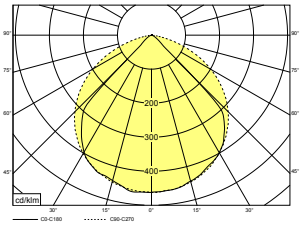
	Length (L)	Width (W)	Depth (D)	Weights (Kg)
4 foot standard	1205mm	295mm	65mm	7.3
4 foot standard with emergency	1405mm	295mm	65mm	8.4
6 foot standard	1766mm	295mm	65mm	10.9
6 foot standard with emergency	1881mm	295mm	65mm	12
Sensor unit add on	150mm	-	-	0.15

Options

- Nominal lumen and wattage
  - 15000 lumens , 93W
  - 22500 lumens , 142W
  - 35000 lumens, 222W
- Optical distribution - wide and narrow
- Fixed output or DALI LED driver
- Emergency
  - IP65 fully integrated conversion
  - 3 hour duration
  - High-bay option - narrow-beam reflector 'ELH' variant for up to 26 metres
  - Mid-bay option - wide-beam optic 'EL' variant for up to 14 metres
- Fully integrated IP65 PIR sensor module options for presence, occupancy and daylight control up to 20m
- Wireless control solution available upon request
- Polycarbonate impact resistant front cover, acrylic upon request

Photometric Data

Area distribution
Cat. No: LTEA1505KZ



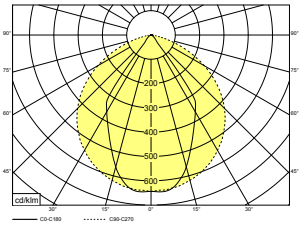
LOR 100%
Total flux 15945lm
SHRnom 1.25
SHRmax 1.379

Utilisation factors / TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	67	77	84	88	94	99	101	105	107
0.7	0.3	0.2	60	71	78	83	90	94	97	102	104
0.7	0.1	0.2	55	66	73	78	86	91	94	99	102
0.5	0.5	0.2	65	75	81	86	92	95	98	101	103
0.5	0.3	0.2	59	69	76	81	88	92	95	98	101
0.5	0.1	0.2	55	65	72	77	84	89	92	96	99
0.3	0.5	0.2	64	73	79	83	89	92	94	97	99
0.3	0.3	0.2	59	68	75	79	85	89	92	95	97
0.3	0.1	0.2	55	65	71	76	83	87	90	94	96
0	0	0	53	62	69	73	79	83	86	89	91
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

Narrow distribution
Cat. No: LTEN1505KZ



LOR 100%
Total flux 15684lm
SHRnom 1.00
SHRmax 1.141

Utilisation factors / TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	70	79	85	90	96	100	102	105	108
0.7	0.3	0.2	63	73	80	85	91	95	98	102	105
0.7	0.1	0.2	59	69	75	80	87	92	95	100	103
0.5	0.5	0.2	68	77	83	87	93	96	99	102	103
0.5	0.3	0.2	63	72	78	83	89	93	96	99	101
0.5	0.1	0.2	58	68	75	79	86	90	93	97	100
0.3	0.5	0.2	67	76	81	85	90	93	95	98	100
0.3	0.3	0.2	62	71	77	81	87	90	93	96	98
0.3	0.1	0.2	58	67	74	78	84	88	91	94	97
0	0	0	56	65	71	75	81	84	87	90	92
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

Emergency options

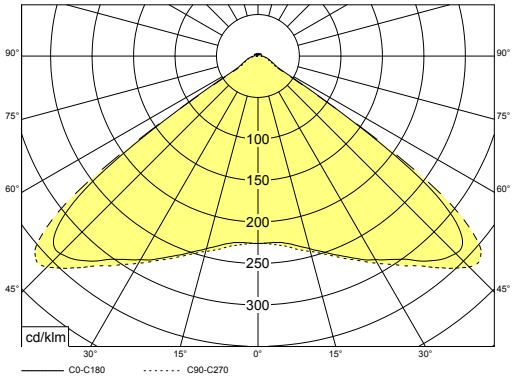
- Litex Elite has the option of an IP65 fully integral emergency unit built into the body of the luminaire
- Utilising Eaton's efficient optical system, capital and installation costs are reduced with class leading spacings
- High-bay and mid-bay variants allow the luminaire to be tailored to the application requirements
  - The high-bay (narrow-beam reflector) 'ELH' option is especially suitable for higher rack or aisle areas and escape routes up to 26 metres
  - The mid-bay (wide-beam optic) 'EL' option provides a square light distribution. It is most suitable for illuminating open areas up to 14 metres

Note, use of the Litex Elite Emergency option reduces the certified operating temperature from -40ºC - +50ºC to 0 to 25ºC .

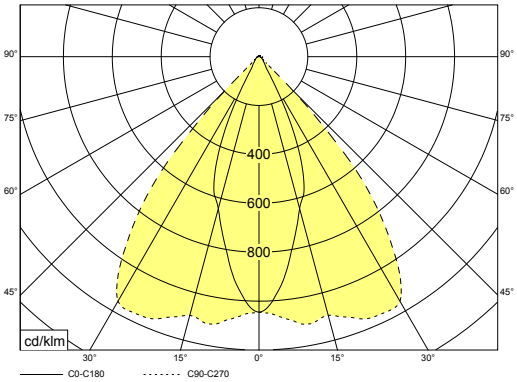
Please contact our technical support team for further details on 01302 303240 or email LightingTechnicalUK@Eaton.com

Detail showing integrated wide beam emergency module (distribution illustrated below)

Detail showing integrated narrow beam emergency module (distribution illustrated below)



Mid-bay emergency - wide-beam optic
Based on Factors K 0.85 S 0.95



High-bay emergency- narrow-beam reflector
Based on Factors K 0.85 S 0.95

	Mounting Height (m)	Lux Level Directly under	Escape route - 1 lux		Open Area - 0.5 lux			
Highbay	6	9.92	5.8	12.1	5.5	11.6	7.3	3.7
	7	7.30	6.4	13.8	6.2	13.2	8.2	4.0
	8	5.61	7.1	15.4	7.1	14.9	9.0	4.1
	9	4.48	7.8	16.9	7.8	16.5	9.7	4.2
	10	3.65	8.2	18.3	8.5	18.1	10.4	4.3
	17	1.26	6.4	24.7	10.5	27.7	14.4	5.0
	20	0.91	--	--	10.0	31.0	16.0	4.5
	25	0.58	--	--	7.3	36.0	16.2	2.5
	26	0.54	--	--	6.5	35.6	16.2	1.7
Midbay	6	2.91	7.3	16.6	7.6	15.8	15.8	7.6
	7	2.12	7.5	18.4	8.5	18.1	18.1	8.5
	8	1.6	6.5	19.3	9.3	20.4	20.4	9.3
	9	1.27	4.7	19.1	10.0	22.5	22.5	10.0
	10	1.04	--	--	10.5	24.4	24.4	10.5
	14	0.54	--	--	4.6	27.0	27.0	4.6

Controls

Energy saving is key to sustainable buildings and businesses. By adopting a clear strategy for managing the occupancy and daylight, significant energy savings may be achieved.

Application dependent, energy savings against constant illumination can be up to 70%.

IP65 PIR Sensor

The Litex Elite is available with a high sensitivity IP65 PIR detector suitable for high bay applications, such as warehouses and factories.

The Litex Elite sensor has exceptionally sensitive and long range detection, sensing movement up to 40m at a 15m mounting height, making it suitable for high bay applications.

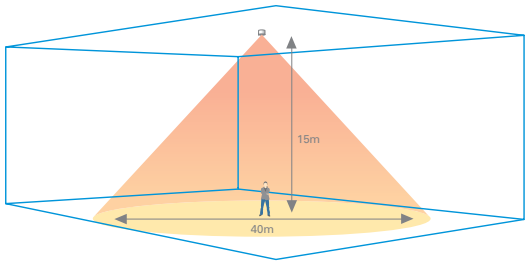
The sensor is supplied with masking shields that allow the pattern to be modified to suit the requirement. Simply click into the lens body and mask areas of the lens that are not required.

All functionality is fully programmable via an infrared handset.

Features:

- Presence, occupancy and daylight harvesting
- Maximum mounting height up to 20m
- Detection range of up to 40m at 15m mounting height
- Supplied with masking shields to focus detection
- Operating temperatures between -10˚c to +50˚c
- Infrared handset control for quick and easy set up

Range:



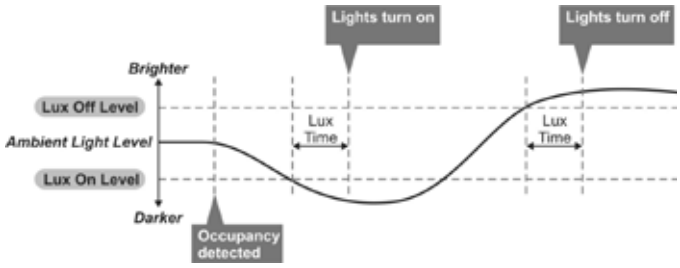
Maximum mounting height 20m

Detection mode

Presence

When movement is detected the load will automatically turn on. When the area is no longer occupied the load will automatically switch off after an adjustable time period.

Sensitivity to movement of the PIR sensor can be adjusted using the sensitivity parameter.



Occupancy detection:

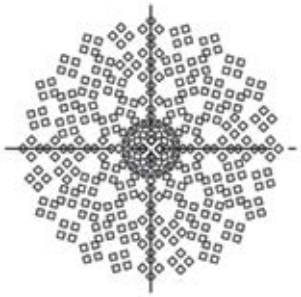
Can be made dependant on the ambient light level using the Lux On Level and Lux Off Level parameters.

Maintained Illuminance (daylight harvesting) - DD variants only

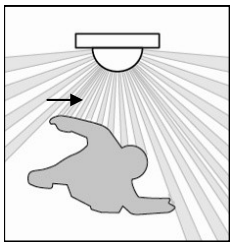
The detector measures the overall light level in the detection area and calculates the correct output for the luminaires, to achieve a pre-set lux level (maintained illuminance or daylight harvesting).

Sensor Details cont.

Detection pattern

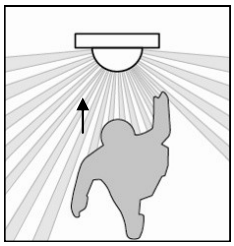


Walk Through



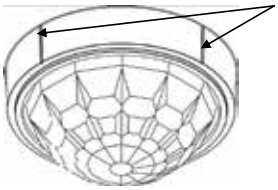
Range	Diameter
15m	40m
10m	26m
6m	16m
3m	9m

Walk Towards



Range	Diameter
15m	30m
10m	20m
6m	12m
3m	8m

Alignment Marks



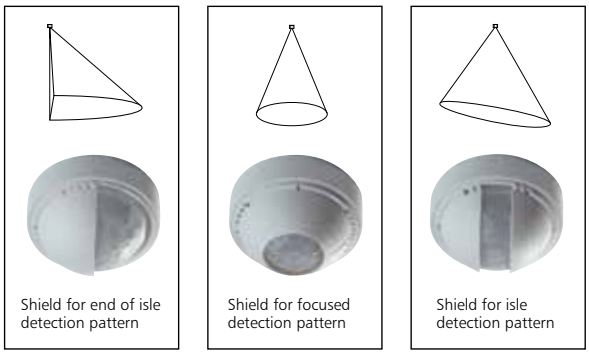
The sensor head has 4 alignment marks. These correspond to the 4 outer passive infrared sensors under the lens. Use these marks to align with aisles and corridors to ensure the best detection characteristics.

Masking Shields

The sensor includes two clip-on masking shields to allow for precise masking of the detection shape.

The masks can be easily shaped to produce detection patterns suitable for application such as aisles and corners and for the narrowing of the detection diameter.

Before shield use, please refer to sensor installation leaflet supplied, or contact our technical support team on 01302 303240 or email LightingTechnicalUK@Eaton.com.



Typical Detection permutations (illustrative purposes only)

Luminaire Efficiency

Option	Lumen Output (lm)	Wattage (W)	Efficiency (LIm/cW)
Wide area reflector	15945	93.41	170.7
Narrow reflector	15684	93.45	167.8
Wide area reflector	23803	141.6	168.1
Narrow reflector	23097	141.6	163.1
Wide area reflector	35417	222	159.5
Narrow reflector	34434	222	155.1

Catalogue Numbers

Cat No.	Nominal Lumen Output (lm)	Optic	Length (mm)
LTEA1505KZ	15000lm	Wide area reflector	1205
LTEN1505KZ	15000lm	Narrow reflector	1205
LTEA2255KZ	22500lm	Wide area reflector	1766
LTEN2255KZ	22500lm	Narrow reflector	1766
LTEA3505KZ	35000lm	Wide area reflector	1766
LTEN3505KZ	35000lm	Narrow reflector	1766

For DALI dimming option,replace catalogue number character **Z** with **DD**, e.g. LTEA1505K**Z** becomes LTEA1505K**DD**
For IP65 sensor option add **S** in front of catalogue number e.g. - LTEA1505KZ becomes **S**LTEA1505KZ (20m)
For Emergency Mid Bay (up to 14m) option add **EL** in front of catalogue number, e.g. - LTEA1505KZ becomes **EL**LTEA1505KZ
For Emergency High Bay (up to 26m)option add **ELH** in front of catalogue number, e.g. - LTEA1505KZ becomes **ELH**LTEA1505KZ

Accessories

Cat No.	Description
LTEMB1	Suspension mounting brackets (Pair)
LTEMB2	BESA Mounting brackets (Pair)
SLTEC	Commissioning handset[1]
SLTEPC	Professional commissioning handset[2]

SLTEC Infrared Handset for most basic programming operations.

SLTEPC Infrared Handset (with LCD) for advanced programming features.

For full commissioning and programming information please refer to the manufacturer installation notes which are supplied or please contact our technical support team for further details on 01302 303240 or email LightingTechnicalUK@Eaton.com

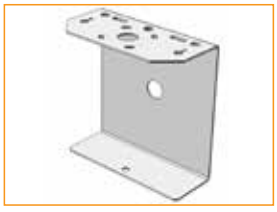
For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/litex-elite.html

Plug and play connection

IP65 PIR sensor

Programming handset - SLTEC

Suspension brackets - LTEMB1



BESA mounting bracket - LTEMB2

Linergy LED

Eaton's commitment to supplying energy saving innovative products is the driving force behind Linergy LED. Linergy LED follows in the tradition of our highly efficient large space luminaires which have the performance and flexibility for today's multi-use, multi occupancy locations.

Offering both a range of lumen outputs and light distribution, Linergy LED variants can be used seamlessly alongside each other to give a complete solution in complex spaces.

High lumen outputs and corresponding class leading efficacies, when combined with occupancy and daylight sensors offer the real possibility of substantial energy savings for the end user.

Three light distribution models, wide area, narrow and rack, means the highest utilisation of light, where it is most effective.

- Utilisation of LED light engine technology allows for an increased energy efficiency - up to 135Llm/cW
- Excellent light transmission and LED source obscurity from opal diffuser
- Enhanced Capital Allowance (ECA) Compliance across the complete range
- Three reflector options allowing complete flexibility for the required application
- Integral emergency available which allows mounting to a maximum height of 20m
- Low, mid and high bay integral programmable occupancy detector variants available to maximise performance and coverage
- DALI dimming options available for increased comfort, lighting control and energy savings
- Wire guard option for increased security in environments where impact resistance is needed

LED and Control Gear Options

- High efficacy linear LED light engines
- >80 CRI 4000K
- Energy efficient control gear as standard
- DALI dimmable options available

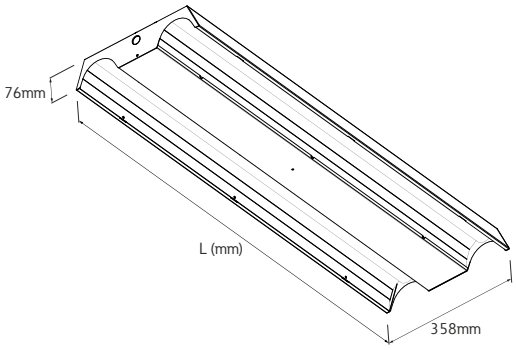
Materials

- Body – full box steel construction powder coated in RAL 9016 white finish
- Reflectors – faceted finish (wide area) and satin finish (Narrow and Rack) zero iridescence anodised aluminium
- Wire guard – heavy duty zinc plated steel, 25mm grid size

Installation Notes

- Suitable for ceiling, conduit, chain, rod and trunking mounting
- Optional quick fit mounting brackets for surface mounting (LNLMB)
- Supplied with diffuser and light engines pre-fitted, no need to remove during installation
- Access flap on the rear of housing to aid wiring during installation
- Fused as standard
- Wire guard is a retrofit accessory secured by screws, hangs for ease of maintenance

Dimensions



Nominal Lengths	Length (L)
1200mm	1142mm
1800mm	1704mm

Integral Emergency and Sensor Option

Options

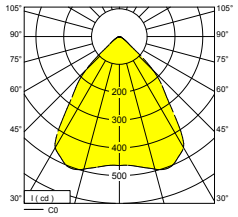
- Fully integral emergency conversion, 3 hour duration
- Emergency versions available with automatic test functionality as an option, reducing maintenance costs and offers ease of compliance with testing requirements
- Suitable for use on defined escape routes
- Wide area, narrow and rack reflector options provide efficient utilisation for specific applications
- Lighting control options including integrated occupancy and daylight detectors for mounting up to 16m
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

To specify state: Surface mounted, LED high/low bay luminaire, of full box welded construction with post coat powder paint finish, high performance faceted/satin reflectors for Wide Area/Narrow/Rack with high output light engines and integrated emergency sensor/wire guard options, as Eaton's Linergy LED range, part no. _____

Photometric Data

Cat. No. LNLA1504KZ



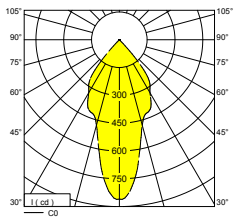
LO: 15065lm
SHR nom: 1.25
SHR max: 1.341

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	69	79	85	90	95	99	102	105	107
70	30	20	63	73	79	84	91	95	98	102	105
70	10	20	58	68	75	80	87	92	95	100	103
50	50	20	67	77	83	87	93	96	98	101	103
50	30	20	62	72	78	83	89	93	95	99	101
50	10	20	58	67	74	79	85	90	93	97	99
30	50	20	66	75	81	85	90	93	95	98	100
30	30	20	61	71	77	81	87	90	93	96	98
30	10	20	57	67	73	78	84	88	91	94	96
0	0	0	55	65	71	75	81	84	87	90	92
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

Cat. No. LNLR1504KZ



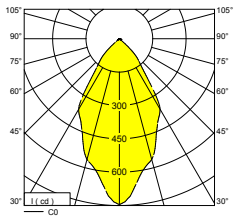
LO: 23032lm
SHR nom: 0.50
SHR max: 0.673

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	67	77	84	88	95	99	101	105	107
70	30	20	60	70	78	83	90	94	98	102	104
70	10	20	55	66	73	78	86	91	94	99	102
50	50	20	65	75	81	86	92	95	98	101	103
50	30	20	59	69	76	81	88	92	95	99	101
50	10	20	55	65	72	77	84	89	92	96	99
30	50	20	64	73	79	83	89	92	95	97	99
30	30	20	59	68	75	79	86	89	92	95	98
30	10	20	55	64	71	76	83	87	90	94	96
0	0	0	53	62	69	73	79	83	86	89	91
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

Cat. No. LNLN1504KZ



LO: 15309lm
SHR nom: 1.00
SHR max: 1.098

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	70	80	86	90	96	100	102	105	108
70	30	20	64	74	80	85	91	96	99	102	105
70	10	20	59	69	76	81	88	92	95	100	103
50	50	20	69	78	84	88	93	96	99	102	103
50	30	20	63	73	79	83	89	93	96	99	101
50	10	20	59	69	75	80	86	90	93	97	100
30	50	20	67	76	81	85	90	93	95	98	100
30	30	20	62	72	77	82	87	91	93	96	98
30	10	20	59	68	74	78	84	88	91	94	97
0	0	0	57	66	72	76	81	85	87	90	92
BZ-class			2	2	2	2	2	2	2	2	2

See page 468 for design guide

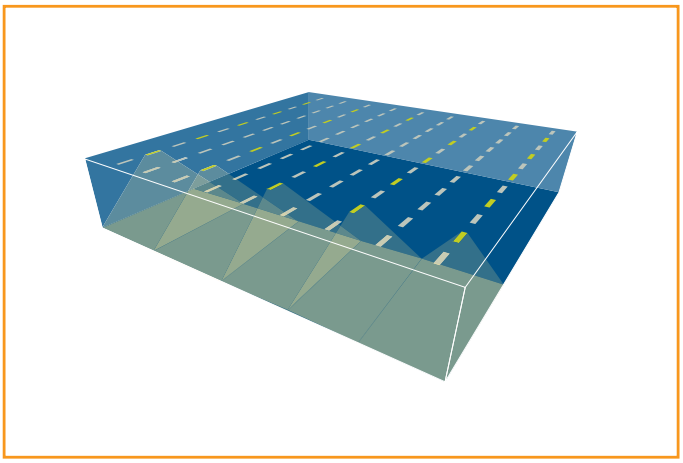
Emergency Operation

Linergy LED has the option of an integral emergency light built centrally into the body of the luminaire. Utilising the efficient Eaton optical system, capital and installation costs are reduced with class leading spacings achievable. Two variants allow for maximised performance in the space, up to 10m mounting height and up to 20m mounting height.

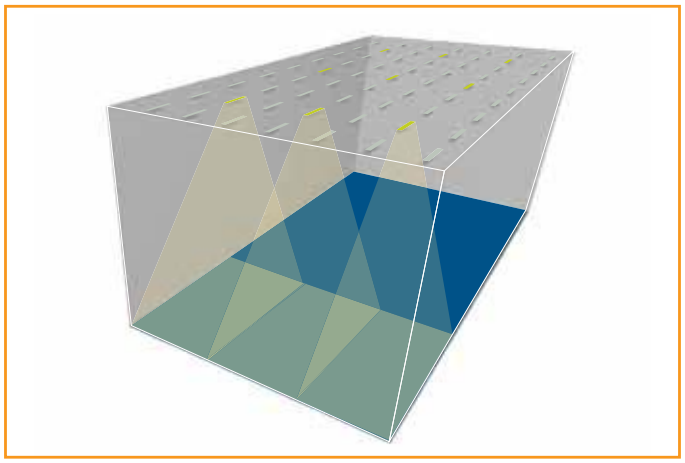
For applications up to 10m mounting height, the optic distribution is a square footprint allowing the designer scope for achieving compliance with reduced quantities of emergency points.

For applications with mounting heights above this, up to 20m, the optic is designed to be elongated in one plane. This allows optimum spacing, following the linear installation direction.

For application mounting heights of up to 10m the standard variant should be used, the prefix is 'ELL'. Emergency operation for mounting heights up to 20m, the prefix 'ELH' should be used. See the catalogue numbers for more detail.



10m mounting height - square distribution



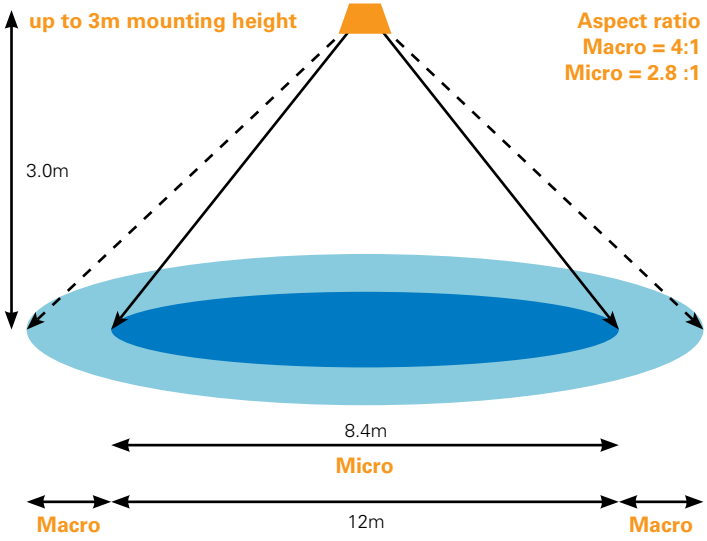
20m mounting height - elongated linear distribution

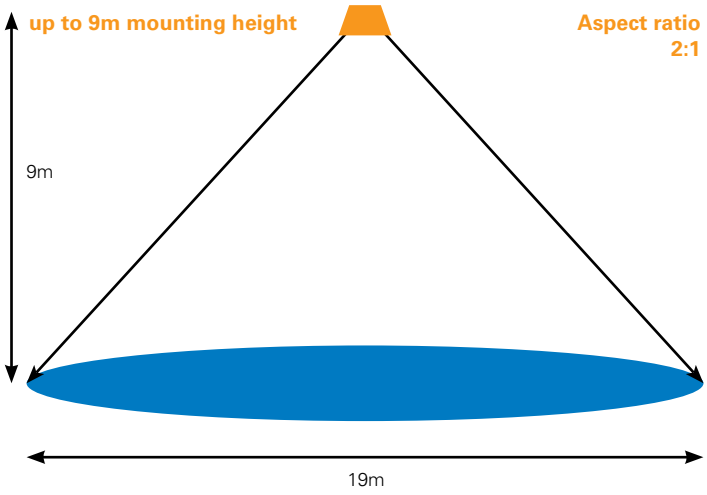
Detection

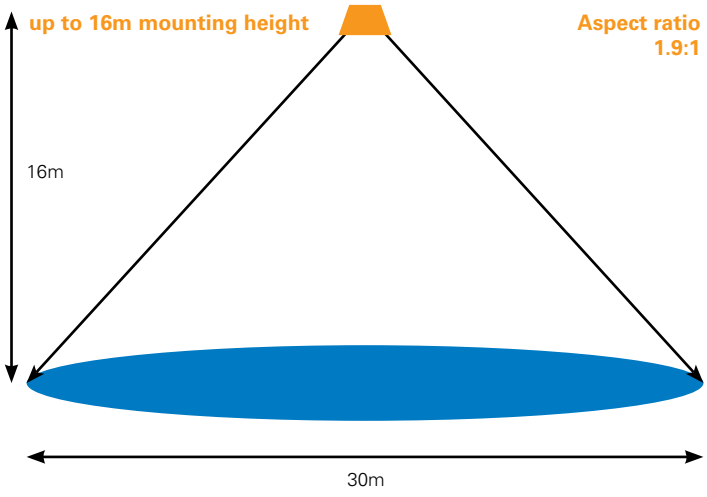
Energy saving is key to sustainable buildings and businesses. By adopting a clear strategy for managing the occupancy and absence in a space, significant savings may be achieved in energy usage. Application dependent, savings against constant illumination can be up to 70%.

Standard high frequency PIRs have a daylight linking function, with thresholds determinable by the user, as well as a switching function. In DALI luminaires, the PIRs have a daylight linking function, with thresholds determinable by the user, as well as a full dimming function.

Linergy LED offers three standard options for PIR detection mounting heights. Up to 3 metres, 9 metres and 16 metres. The 3m detector boasts a high sensitivity micro detection range. The aspect ratios and coverage are shown on the diagrams to aid in scheme design.







Accessories

Catalogue Numbers

Description	Cat No
Wire guard - 1200mm	LNLWG4
Wire guard - 1800mm	LNLWG6
Infrared user controller	LCSQC
Infrared programmer	LCSQS
Digital 2 way programmer	LCSQSP
Rear mounting brackets	LNLMB

Luminaire Efficacy

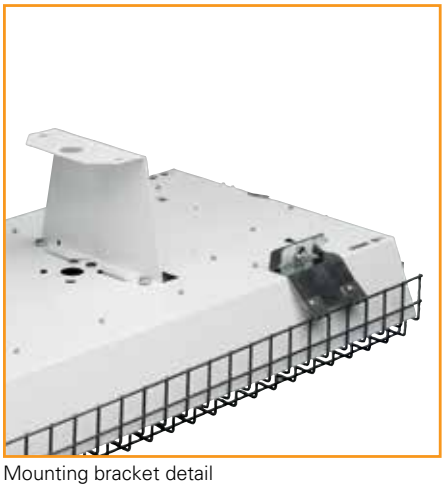
Variant	Lumen output (lm)	Wattage (w)	Efficacy (Llm/cW)
Wide Area			
LNLA1504KZ	16145	119	135.7
LNLA2254KZ	23591	178	132.5
Narrow			
LNLN1504KZ	16136	119	135.6
LNLN2254KZ	23845	178	134
Rack			
LNLR1504KZ	16146	119	135.7
LNLR2254KZ	23947	178	134.5


Digital 2 way programmer


Infrared programmer


Infrared user controller


Wire guard


Mounting bracket detail


Rear mounting brackets

Catalogue Numbers

Nominal Length	Optic	Cat No.	Weight (Kg)	Emergency Cat No.	Weight (Kg)
Standard Luminaires (Emergency versions up to 10m)					
1200mm	Wide Area Reflector	LNLA1504KZ	5.5	ELLNLA1504KZ	6.2
1800mm	Wide Area Reflector	LNLA2254KZ	8.1	ELLNLA2254KZ	9.0
1200mm	Narrow Reflector	LNLN1504KZ	5.5	ELLNLN1504KZ	6.2
1800mm	Narrow Reflector	LNLN2254KZ	8.1	ELLNLN2254KZ	9.0
1200mm	Rack Reflector	LNLR1504KZ	5.7	ELLNLR1504KZ	6.4
1800mm	Rack Reflector	LNLR2254KZ	8.2	ELLNLR2254KZ	9.1
Emergency Luminaire - for mounting heights up to 20m					
1200mm	Wide Area Reflector	-	-	ELHLNLA1504KZ	6.2
1800mm	Wide Area Reflector	-	-	ELHLNLA2254KZ	9.0
1200mm	Narrow Reflector	-	-	ELHLNLN1504KZ	6.2
1800mm	Narrow Reflector	-	-	ELHLNLN2254KZ	9.0
1200mm	Rack Reflector	-	-	ELHLNLR1504KZ	6.4
1800mm	Rack Reflector	-	-	ELHLNLR2254KZ	9.1
Luminaire with switching low level sensor (up to 3m mounting height)					
1200mm	Wide Area Reflector	CLNLA1504KZ	5.7	ELCLNLA1504KZ	6.4
1800mm	Wide Area Reflector	CLNLA2254KZ	8.5	ELCLNLA2254KZ	9.4
1200mm	Narrow Reflector	CLNLN1504KZ	5.7	ELCLNLN1504KZ	6.4
1800mm	Narrow Reflector	CLNLN2254KZ	8.5	ELCLNLN2254KZ	9.4
1200mm	Rack Reflector	CLNLR1504KZ	5.9	ELCLNLR1504KZ	6.6
1800mm	Rack Reflector	CLNLR2254KZ	8.6	ELCLNLR2254KZ	9.5
Luminaire with switching medium level sensor (up to 9m mounting height)					
1200mm	Wide Area Reflector	MLNLA1504KZ	5.7	ELMLNLA1504KZ	6.4
1800mm	Wide Area Reflector	MLNLA2254KZ	8.5	ELMLNLA2254KZ	9.4
1200mm	Narrow Reflector	MLNLN1504KZ	5.7	ELMLNLN1504KZ	6.4
1800mm	Narrow Reflector	MLNLN2254KZ	8.5	ELMLNLN2254KZ	9.4
1200mm	Rack Reflector	MLNLR1504KZ	5.9	ELMLNLR1504KZ	6.6
1800mm	Rack Reflector	MLNLR2254KZ	8.6	ELMLNLR2254KZ	9.5
Luminaire with switching high level sensor (up to 16m mounting height)					
1200mm	Wide Area Reflector	ULNLA1504KZ	5.7	ELHULNLA1504KZ	6.4
1800mm	Wide Area Reflector	ULNLA2254KZ	8.5	ELHULNLA2254KZ	9.4
1200mm	Narrow Reflector	ULNLN1504KZ	5.7	ELHULNLN1504KZ	6.4
1800mm	Narrow Reflector	ULNLN2254KZ	8.5	ELHULNLN2254KZ	9.4
1200mm	Rack Reflector	ULNLR1504KZ	5.9	ELHULNLR1504KZ	6.6
1800mm	Rack Reflector	ULNLR2254KZ	8.6	ELHULNLR2254KZ	9.5

For DALI dimming option, replace part number character **Z** with **DD**, e.g. LNLA1504K**Z** becomes LNLA1504K**DD**

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/linergy-led-high-bay-industrial-lighting.html

Montaine Circular

The Montaine Circular high bay is a highly efficient LED luminaire ideally suited to a wide range of industrial applications, for both new install and retrofit applications.

The heavy duty aluminium die-cast construction, combined with the latest LED chip technology and extended operating temperatures, provide the ruggedness and high performance required for modern industrial, warehousing and commercial spaces.

Montaine Circular provides energy savings of up to 50%+ against existing HID high-bays, with single point suspension making it easy to retrofit.

The long life 50,000 hour LED light source also provides significant maintenance cost savings.

- 2 output options:
  - 150W (18000lm)
  - 200W (24000lm)
- Superior efficacy of 120Llm/cW
- Easy retrofit from existing HID installations
- 50,000+ hour life (at L70)
- Leading high flux LED chips
- 120 degree beam angle
- IP65 ingress protection rating
- Extended operating temperature range -40°C to +50°C
- Heavy duty aluminium die-cast construction with textured paint finish and stainless steel fixings
- Microwave sensor versions available
- Compact form factor
- Reflectors offered as accessory providing 90 degree beam angle
- 5 year Eaton warranty

LED Options

- 150W or 200W high flux LED
- 5000K colour temperature, Ra 80

Materials

- Die-cast aluminium housing
- High transparency polycarbonate optic
- Textured black paint

Installation Notes

- Prewired supply cable
- Stainless steel fixings

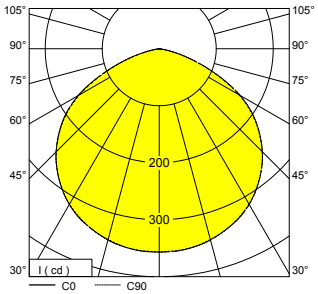
Options

- Microwave sensor versions available
  - Detection area, time delay and daylight threshold can be precisely set via DIP switch
  - 12m mounting height, 16m area detection range

Specification

To specify state: Montaine Circular IP65 single suspension point high bay luminaire, 5000K Ra 80 120Llm/cW. Available in 18000lm and 24000lm (L70 50000hrs), as Eaton's Montaine IP65 Circular range part no _____

Photometric Data

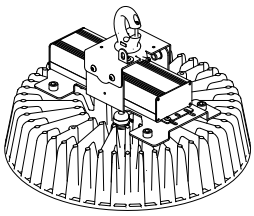


Cat No. HB150BLK5KP

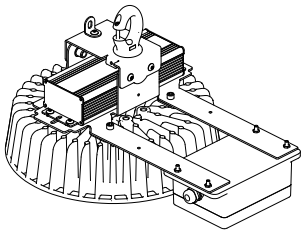
LOR 100%
DLOR 100%
ULOR 0%

SHR Nom 1:1.5
SHR Max 1:1.64

Configurations

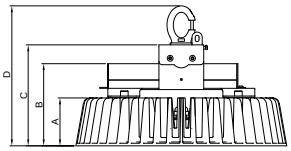


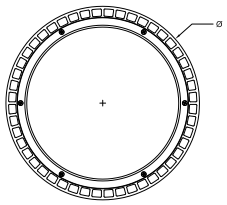
Stand alone



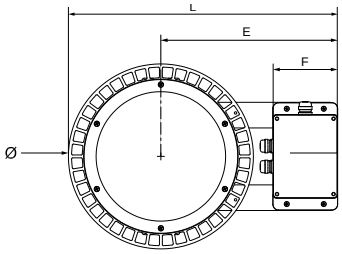
With microwave motion sensor

Dimensions





Stand alone



With microwave motion sensor

Stand Alone							With motion sensor:			
Version	Diameter Ø (mm)	Depth A (mm)	Depth B (mm)	Depth C (mm)	Depth D (mm)	Weight (kg)	Total length (L) (mm)	Length E (mm)	Length F (mm)	Weight (kg)
150W	Ø330	75	128	158	219	5.8	446	236	91	6.25
200W	Ø400	76	129	159	220	7.9	520	275	91	8.4

Catalogue Numbers

Cat no.	Lumen output variant (lm)	Wattage (W)	Efficacy (Llm/cW)	Cat no. including motion sensor
HB150BLK5KP	18000	150	120	HB150BLK5KMSP
HB200BLK5KP	24000	200	120	HB200BLK5KMSP

Accessories

Cat no.	Diameter (mm)	Depth (mm)	Beam angle
REFLEC150	Ø441	120	90 degree
REFLEC200	Ø553	170	90 degree

Montaine Circular shown with reflector

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/montaine-circular.html

Typhoo Tea
Merseyside, UK

Tufflite LED

Tufflite LED is a versatile general purpose, IP66 rated, luminaire. It is supplied with fast fit mounting clips for ease of installation, avoiding the need to drill the housing. Options include; 3 hour combined non-maintained emergency functionality, dimmable control gear and integrated lighting controls options to maximise energy savings, user comfort and control.

Linear LED light engines and efficient control gear provide class leading performance; they are protected by a GRP (glass reinforced polymer) base and polycarbonate diffuser with a high impact resistance rating of IK08.

With a comprehensive range of lumen outputs across 3 luminaire lengths, Tufflite LED delivers choice and flexibility to suit a wide range of applications such as warehousing, plant rooms, car parks, loading/storage spaces and assembly areas where high ingress protection and robust construction are required.

- Nominal 4', 5' and 6' formats, in narrow and wide housings, ideal for both new and retro fit applications
- Impact and heat resistant opal polycarbonate diffuser and GRP base housing construction, IK08 rated, and secured with anti-tamper diffuser clips
- Deep poured continuous polyurethane gasket to maintain IP66 rating
- Class leading LED luminaire performance and efficacy with lumen packages to match and exceed traditional fluorescent technology with reduced energy consumption
- Integrated lighting control options to maximise energy saving, user comfort and control
- Integral 3 hour combined non-maintained functionality option
- Fast fix stainless steel mounting clips for rapid installation. (No need to drill the housing avoiding a potential ingress path)

LED and Control Gear

- High efficacy linear LED light engines
- >80CRI, 4000K
- Energy efficient fixed output control gear as standard
- DALI dimmable control gear option

Materials

- Body – polyester GRP in RAL7035 grey with integrated gear tray supports and deep poured polyurethane gasket
- Diffuser – UV stabilised fire retardant polycarbonate
- Diffuser clips – polyamide - offering strength and integral locking screw function
- Gear tray – sheet steel, white finish
- Mounting brackets – stainless steel (grade 501)

Installation Notes

- Surface/suspension mount rear brackets supplied, removing the need to drill the housing base
- 20mm cable entry knockouts at each end, supplied complete with sealing plugs
- Terminal block with 2 x 2.5mm² cable capacity per termination
- Through wiring kits available
- Geartray hangs on the body for ease of install, locates in final position with tool free clips
- Simple to use diffuser clips, 4 of which have security screws to lock them in the closed position as an anti-tamper feature and ensures access only through tooled entry to the luminaire.
- This luminaire is IP66 rated, this rating only applies when the luminaire is installed observing the correct orientation and must not be positioned in direct sunlight.
- This luminaire has an ambient temperature of -25˚C to +25˚C for the non-emergency version.
- For Emergency variants, this luminaire has an ambient temperature range of -5˚C to +25˚C to ensure the batteries work correctly.

In exterior applications, it is recommended the luminaires are protected under a canopy or cover. The housing is not suitable for mounting with the base directly on a vertical surface in the horizontal orientation.

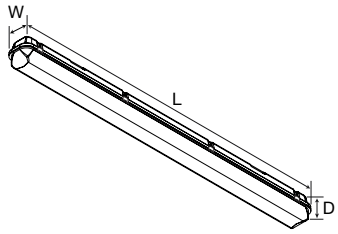
Options

- DALI dimming option
- Intelligent light and energy management options:
  - End mounted IP65 rated sensor with switching or dimming function, with/without photocell
- 'Corridor Function' control available with the 'CO' suffix
- Fully integral combined non-maintained emergency, 3 hour duration. Suitable for use on defined escape routes.
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and maximise the lifespan of your lighting equipment.

Specification

To specify state: General purpose IP66 rated luminaire with GRP base and reeded opal polycarbonate light controller, secured by tamper resistant hinged latches and removable geartray retained by tool free clips, as Eaton's Tufflite LED range, part no. _____

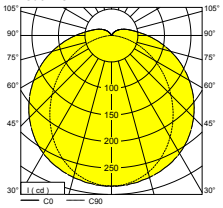
Dimensions



Cat No	W (mm)	D (mm)	L (mm)
TXL4N254KZ	101	101	1282
TXL4N344KZ	101	101	1282
TXL4N474KZ	101	101	1282
TXL4W644KZ	145	101	1282
TXL5N274KZ	101	101	1578
TXL5N364KZ	101	101	1578
TXL5N514KZ	101	101	1578
TXL5W554KZ	145	101	1578
TXL5W754KZ	145	101	1578
TXL5W904KZ	145	101	1578
TXL6N534KZ	101	101	1840
TXL6W954KZ	145	101	1840
TXL6W1124KZ	145	101	1840

Photometric Data

Cat. No. TXL4N474KZ



Luminaire Output = 4738 lumens
SHR nom: 1.50
SHR max: 1.667

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	54	62	69	74	81	86	90	94	98
70	30	20	46	54	62	67	75	80	84	90	93
70	10	20	41	48	56	61	69	75	79	85	90
50	50	20	52	59	66	70	77	81	84	89	92
50	30	20	45	52	59	64	71	76	80	85	88
50	10	20	40	47	54	59	66	72	76	81	85
30	50	20	49	56	62	67	73	77	80	83	86
30	30	20	43	50	57	61	68	72	76	80	83
30	10	20	39	46	52	57	64	69	72	77	81
0	0	0	36	42	48	53	59	63	67	71	74
BZ-class			5	5	5	5	5	5	5	5	5

See page 468 for design guide

Chemical Resistance

Chemical Agent	Body (Polyester)	Diffuser (Poly-carbonate)
Acetic acid 10%	●	●
Acetone	○	X
Alcoholic beverages	●	●
Aluminium sulphate	●	●
Ammonia 5%	○	X
Aniline	○	X
Arsenic acid 20%	○	●
Benzene	X	X
Bencylic alcohol	X	X
Bromine	X	X
Calcium chloride	●	●
Calcium nitrate	●	●
Carbon tetrachloride	X	X
Carbonic acid	●	X
Caustic potash 5%	X	X
Cement	●	●
Hydrochloric acid 1-5%	○	●
Chlorine liquids (vapours)	X	X
Chloroform	X	X
Chromic acid	X	○
Citric acid 20%	●	●
Copper sulphate	●	●
Diesel-naphta oil	●	○
Ethyl alcohol 30%	●	●
Ethyl chloride	X	X
Ethyl ether	●	X
Food oils and fats	●	X
Formic acid 10%	○	●
Glycerine	●	●

Chemical Agent	Body (Polyester)	Diffuser (Poly-carbonate)
Hexane	○	●
Iodine	●	X
Iron chloride	●	●
Isopropylic alcohol	●	○
Lubricating oil	●	●
Magnesium sulphate	●	●
Methanol	●	X
Mineral oils	●	●
Nitric acid 20%	X	○
Oxygen	●	●
Ozone	●	●
Perchloric acid 10%	X	●
Petrol	●	X
Phenol	○	X
Pothassium bromide	●	●
Pothassium nitrate	●	●
Pothassium permanganate	●	●
Sea climate	●	●
Silicon oils	●	●
Soda bleach 15%	●	X
Sodium chloride	●	●
Sodium hydroxide 5%	●	X
Sodium sulphate	●	●
Sugar	●	●
Sulphur	●	●
Sulphuric acid 30%	X	●
Toluene	X	X
Trichloroethylene	X	X
Zinc sulphate	●	●

● Resistant ○ Relatively Resistant X Non-Resistant

Type	L(mm)	W(mm)	D(mm)	Fixing Centres (mm)	Weight (kg) LED	LED Emerg	DALI	DALI Emerg
4' single	1282	101	101	800	3.05	3.40	3.15	3.50
4' twin	1282	145	101	800	4.27	4.62	4.35	4.70
5' single	1578	101	101	1100	3.75	4.10	3.95	4.30
5' twin	1578	145	101	1100	5.35	5.70	5.30	5.60
6' single	1840	101	101	1540	4.85	5.20	5.10	5.40
6' twin	1840	145	101	515/1545	6.45	6.80	6.70	7.10

Catalogue Numbers

Emergency[1]
EL =
3hr Combined
Non-maintained

Controls[2,3]
P = IP65 PIR only end mounted
D = IP65 PIR with Photocell end mounted

Range
TXL = Tufflite LED

Housing Length[4]
4 = 4' (1285mm)
5 = 5' (1578mm)
6 = 6' (1840mm)

Housing width[4]
N = narrow (101mm)
W = wide (145mm)

Lumen Output[5]

25 = 2500	**55** = 5500
27 = 2700	**64** = 6400
34 = 3400	**65** = 6500
36 = 3600	**75** = 7500
38 = 3800	**78** = 7800
46 = 4600	**90** = 9000
48 = 4800	**95** = 9500
51 = 5100	**112** = 11200
53 = 5300	

Colour Temperature
4K = 4000°K

Control Gear
Z = Fixed Output
DD = DALI Dimming

Option[6]
CO =
Corridor
Function

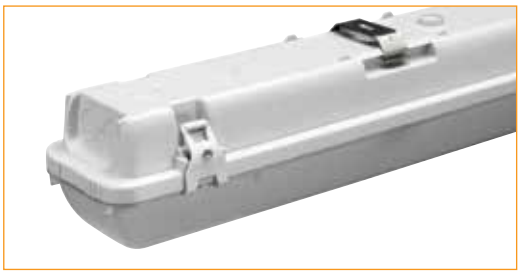
1 Emergency versions use a dedicated LED which operates only when in emergency mode
2 The 'P' prefix sensor is a switching PIR only for use on fixed output control gear (unless in-conjunction with DD and CO for Corridor Function) The 'D' prefix sensor is a PIR with photocell, the control gear option dictates the sensor type i.e: Switching with a threshold sensor for FO gear, DALI digital dimming gear uses a regulating photocell version
3 'P' and 'D' prefix sensors are mounted in the end of the luminaire, they are IP65 rated and suitable for up to 5m mounting heights - note. The type 'P' and 'D' sensors are only suitable for temperature ranges of 0°C to 25°C
4 Please refer to the dimension table and diagram for exact dimensions
5 The lumen output values are not all available in all lengths, please refer to HF catalogue listing
6 'Corridor Function' is a Tridonic specific option available with their dimmable control gear, this 'CO' suffix must be added to ensure the correct driver is used. Add the 'CO' after the DD suffix.

Luminaire Example

Cat No	Description
ELDTXL5W754KDD	Tufflite LED 5' 4000K, DALI, with integral combined non-maintained emergency functionality and fitted with end mounted IP65 PIR/photocell DALI sensor

Twin width housing

Narrow width housing



Narrow width rear quick fit bracket and tamper proof clip

Twin width rear quick fit bracket and tamper proof clip

Catalogue Numbers

Cat No	Description	Lumen Output (lm)	Circuit Watts (W)	Efficacy (Llm/cW)
Standard Fixed Output				
TXL4N254KZ	Tufflite LED 2500 4000K FO 1.2m single	2540	21.4	118.8
TXL4N344KZ	Tufflite LED 3400 4000K FO 1.2m single	3433	29.9	115.0
TXL4N474KZ	Tufflite LED 4700 4000K FO 1.2m single	4707	42.0	112.0
TXL4W644KZ	Tufflite LED 6400 4000K FO 1.2m twin	6400	57.5	111.5
TXL5N274KZ	Tufflite LED 2700 4000K FO 1.5m single	2792	22.6	123.6
TXL5N364KZ	Tufflite LED 3600 4000K FO 1.5m single	3618	29.8	121.4
TXL5N514KZ	Tufflite LED 5100 4000K FO 1.5m single	5154	45.0	114.7
TXL5W554KZ	Tufflite LED 5500 4000K FO 1.5m twin	5514	44.6	123.6
TXL5W754KZ	Tufflite LED 7500 4000K FO 1.5m twin	7518	63.3	118.8
TXL5W904KZ	Tufflite LED 9000 4000K FO 1.5m twin	9033	79.2	114.1
TXL6N534KZ	Tufflite LED 5300 4000K FO 1.8m single	5304	42.9	123.5
TXL6W954KZ	Tufflite LED 9500 4000K FO 1.8m twin	9571	82.9	115.4
TXL6W1124KZ	Tufflite LED 11200 4000K FO 1.8m twin	11200	100.7	111.2

For emergency versions please add the **EL** prefix, e.g. TXL5N554KZ becomes **EL**TXL5N554KZ
For emergency versions the circuit watts will increase by 1.5W to account for the charging circuit
For DALI dimmable options please replace the **Z** suffix with **DD** e.g. TXL5N554K**Z** becomes TXL5N554K**DD**
Refer to the catalogue number matrix for other options
For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com
For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/tufflite-led-ip66-impact-resistant-led-industrial-lighting.html

Batten fit sensors (IP20 rated), 0°C - 25°C ambient

Tufflite TFW IP66

The Tufflite TFW range is a versatile general purpose IP66 rated weatherproof luminaire. It is supplied with fast fit mounting clips as standard for ease of installation and available with high frequency control gear, T5 and T8 lamp options and integral emergency variants.

Stainless steel diffuser clips and through wiring kits are also available as separate accessories. The polycarbonate diffuser provides excellent impact resistance and married with the GRP (glass reinforced polymer) base and contemporary aesthetics, the TFW range provides a strong, fully enclosed luminaire designed for use in wet or dusty areas such as shower areas, plant rooms, under canopies, car parks, loading bays and sign lighting.

- IP66, dust tight and water jet proof for stay clean operation
- Vandal and heat resistant GRP (glass reinforced polymer) body, polycarbonate diffuser and polyamide clips
- Deep poured gasket seal for consistent and reliable sealing
- Prismatic diffuser for optimum light distribution and glare reduction
- Fast fit mounting clips avoid the need for drilling the housing on installation
- Microwave sensor option for greater lighting control
- IP65 rated PIR and photocell sensor options to maximise control and energy saving

Lamp and Control Gear Options

- 18W, 36W, 58W and 70W T8 fluorescent 4000°K - G13 cap 

- 28W, 35W (HE), 49W, 54W (HO) T5 fluorescent 4000°K - G5 cap 

- High frequency
- DALI dimming options available

Materials

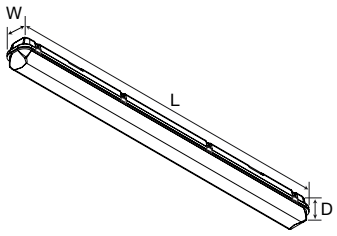
- Body - glass reinforced polyester (GRP) RAL7035
- Gasket - polyurethane
- Diffuser - UV stabilised, fire retardant prismatic polycarbonate
- Clips - fire retardant polyamide (501 stainless steel accessory kits available)
- Geartray - sheet steel, white finish

Installation Notes

- Ceiling fixing brackets supplied, removing the need to seal fixing holes
- 20mm cable entry knockouts at each end, supplied complete with sealing plugs
- 3/4 screw terminal block
- Through wiring kits available
- Geartray hangs on body for ease of install, locates in position with tool free clips
- Simple to use diffuser clips
- Supplied excluding lamps
- This luminaire is IP66 rated, this rating only applies when the luminaire is mounted observing the correct orientation and must not be positioned in direct sunlight.

In exterior applications it is recommended the luminaires are protected under a canopy or cover. The housing is not suitable for mounting with the base directly on a vertical surface in the horizontal orientation.

Dimensions



Lamp	L (mm)	W (mm)	D (mm)	Fixing Centres
1 x 18W	665	101	101	390
1 x 28/54/36W	1282	101	101	800
1 x 35/49/58W	1578	101	101	1100
1 x 70W	1839	101	101	1540
2 x 18W	665	145	101	390
2 x 28/54/36W	1282	145	101	800
2 x 35/49/58W	1578	145	101	1100
2 x 70W	1858	145	101	515 / 1545

Options

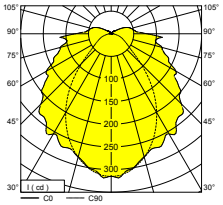
- Stainless steel diffuser clips, available separately
- T5 and T8 single and twin lamp versions available
- Through wiring kits available for all lengths
- Fully integral emergency conversion, 3 hour duration
- Intellem self-test emergency versions available
- Suitable for use on defined escape routes
- Microwave sensor option ('IM' prefix)
- PIR and photocell option available ('D' prefix)
- DALI option available ('DD' suffix)

Specification

To specify state: Weatherproof luminaire, sealed to IP66, with GRP body and polycarbonate prismatic light controller, secured by hinged latches and removable geartray retained by tool free clips, as Eaton's Tufflite TFW range, part no. _____

Photometric Data

Cat. No. TFW6236Z



LOR: 0.72
ULOR: 0.13
DLOR: 0.59

SHR nom: 1.5
SHR max: 1.66

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	35	41	46	49	54	58	61	64	66
70	30	20	29	35	40	44	49	53	56	60	63
70	10	20	25	30	36	40	45	49	53	57	60
50	50	20	33	38	42	46	50	54	56	59	61
50	30	20	28	33	38	41	46	50	52	56	59
50	10	20	24	29	34	37	43	46	49	53	56
30	50	20	31	35	39	42	47	49	52	54	56
30	30	20	27	31	35	39	43	46	49	52	54
30	10	20	23	28	32	35	40	44	46	50	52
0	0	0	21	25	29	31	36	39	41	44	46
BZ-class			6	6	6	6	6	6	6	6	6

See page 468 for design guide

Chemical Resistance

Chemical Agent	Body (Polyester)	Diffuser (Polycarbonate)
Acetic acid 10%	●	●
Acetone	○	X
Alcoholic beverages	●	●
Aluminium sulphate	●	●
Ammonia 5%	○	X
Aniline	○	X
Arsenic acid 20%	○	●
Benzene	X	X
Bencylic alcohol	X	X
Bromine	X	X
Calcium chloride	●	●
Calcium nitrate	●	●
Carbon tetrachloride	X	X
Carbonic acid	●	X
Caustic potash 5%	X	X
Cement	●	●
Hydrochloric acid 1-5%	○	●
Chlorine liquids (vapours)	X	X
Chloroform	X	X
Chromic acid	X	○
Citric acid 20%	●	●
Copper sulphate	●	●
Diesel-naphta oil	●	○
Ethyl alcohol 30%	●	●
Ethyl chloride	X	X
Ethyl ether	●	X
Food oils and fats	●	X
Formic acid 10%	○	●
Glycerine	●	●

Chemical Agent	Body (Polyester)	Diffuser (Polycarbonate)
Hexane	○	●
Iodine	●	X
Iron chloride	●	●
Isopropylic alcohol	●	○
Lubricating oil	●	●
Magnesium sulphate	●	●
Methanol	●	X
Mineral oils	●	●
Nitric acid 20%	X	○
Oxygen	●	●
Ozone	●	●
Perchloric acid 10%	X	●
Petrol	●	X
Phenol	○	X
Pothassium bromide	●	●
Pothassium nitrate	●	●
Pothassium permanganate	●	●
Sea climate	●	●
Silicon oils	●	●
Soda bleach 15%	●	X
Sodium chloride	●	●
Sodium hydroxide 5%	●	X
Sodium sulphate	●	●
Sugar	●	●
Sulphur	●	●
Sulphuric acid 30%	X	●
Toluene	X	X
Trichloroethylene	X	X
Zinc sulphate	●	●

● Resistant ○ Relatively Resistant X Non-Resistant

Catalogue Numbers

Lamp Rating	Gear Option	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)
TFW - GRP body and polycarbonate diffuser, for T5 lamps (not supplied)					
1 x 28W	High Frequency	TFW6128Z	2.7	EBTFW6128Z	4.1
2 x 28W	High Frequency	TFW6228Z	4.5	EBTFW6228Z	5.9
1 x 35W	High Frequency	TFW6135Z	3.6	EBTFW6135Z	5.0
2 x 35W	High Frequency	TFW6235Z	6.2	EBTFW6235Z	7.6
1 x 49W	High Frequency	TFW6149Z	3.6	EBTFW6149Z	5.0
2 x 49W	High Frequency	TFW6249Z	6.2	EBTFW6249Z	7.6
1 x 54W	High Frequency	TFW6154Z	2.7	EBTFW6154Z	4.1
2 x 54W	High Frequency	TFW6254Z	4.5	EBTFW6254Z	5.9
TFW - GRP body and polycarbonate diffuser, for T8 lamps (not supplied)					
1 x 18W	High Frequency	TFW6118Z	1.8	-	-
2 x 18W	High Frequency	TFW6218Z	2.1	-	-
1 x 36W	High Frequency	TFW6136Z	2.7	EBTFW6136Z	4.1
2 x 36W	High Frequency	TFW6236Z	4.5	EBTFW6236Z	5.9
1 x 58W	High Frequency	TFW6158Z	3.6	EBTFW6158Z	5.0
2 x 58W	High Frequency	TFW6258Z	6.2	EBTFW6258Z	7.6
1 x 70W	High Frequency	TFW6170Z	4.3	EBTFW6170Z	5.7
2 x 70W	High Frequency	TFW6270Z	7.9	EBTFW6270Z	9.3

For microwave sensor control prefix HF part number with **IM**, e.g. TFW6149Z becomes **IM**TFW6149Z
For microwave with corridor function prefix DD part number with **IM** eg TFW6149DD becomes **IM**TFW6149DD
For switching PIR sensor control prefix HF part number with **D**, e.g. TFW6149Z becomes **D**TFW6149Z
For PIR sensor with photocell function prefix RD part number with **D**, e.g. TFW6149RD becomes **D**TFW6149RD
For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/tufflite-tfw-ip66-impact-resistant-industrial-lighting.html

Accessories	Cat No	Weight (kg)
Stainless steel clip kit, 12 x steel clips	TF6SCKIT12	0.1
Plastic clip kit, 12 x plastic clips	TF6PCKIT12	0.2
Rear mounting bracket (pair)	TF6RMBKT2	0.5
Through wire kit for 600mm, 18W	TF6TWKIT600	0.2
Through wire kit for 1200mm, 28/54/36W	TF6TWKIT1200	0.4
Through wire kit for 1500mm, 35/49/58W	TF6TWKIT1500	0.5
Through wire kit for 1800mm, 70W	TF6TWKIT1800	0.6

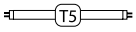
Tufflite TFC IP66

The Tufflite TFC range is an IP66 rated luminaire, manufactured with a robust glass reinforced polyester base and an acrylic controller secured with stainless steel clips. This provides a polycarbonate free luminaire ideal for use in areas where corrosive chemicals may be present such as industrial plants, workshops, food factories and maintenance areas. It is supplied with fast fit mounting clips as standard for ease of installation and high frequency control gear, T5 and T8 lamp options and integral 3 hour maintained emergency variants. Through wiring kits are also available as separate accessories adding to the versatility of the range.

- IP66, dust tight and water jet proof for stay clean operation
- Vandal and heat resistant GRP body, acrylic diffuser and stainless steel clips
- Deep poured gasket seal for consistent and reliable sealing
- Prismatic diffuser for optimum light distribution and glare reduction
- Fast fit mounting clips avoid the need for drilling the housing on installation
- Microwave sensor option for greater lighting control
- IP65 rated PIR and photocell sensor options to maximise control and energy saving

Lamp and Control Gear Options

- 18W, 36W, 58W and 70W T8 fluorescent 4000°K - G13 cap 

- 28W, 35W (HE), 49W, 54W (HO) T5 fluorescent 4000°K - G5 cap 

- High frequency
- DALI options available)

Materials

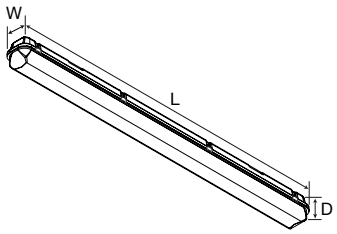
- Body - glass reinforced polyester (GRP), RAL 7035
- Gasket - polyurethane
- Diffuser - UV stabilised prismatic acrylic
- Clips - 501 stainless steel
- Geartray - sheet steel, white finish

Installation Notes

- Ceiling fixing brackets supplied, removing the need to seal fixing holes
- 20mm cable entry holes at each end, supplied complete with sealing plugs
- 3/4 screw terminal block
- Through wiring kits available
- Geartray hangs on body for ease of install, locates in position with tool free clips
- Simple to use stainless steel diffuser clips
- Supplied excluding lamps
- This luminaire is IP66 rated, this rating only applies when the luminaire is mounted observing the correct orientation and must not be positioned in direct sunlight.

In exterior applications it is recommended the luminaires are protected under a canopy or cover, the housing is not suitable for mounting with the base directly on a vertical surface in the horizontal orientation.

Dimensions



Lamp	L (mm)	W (mm)	D (mm)	Fixing Centres
1 x 18W	665	101	101	390
1 x 28/54/36W	1282	101	101	800
1 x 35/49/58W	1578	101	101	1100
1 x 70W	1839	101	101	1540
2 x 18W	665	145	101	390
2 x 28/54/36W	1282	145	101	800
2 x 35/49/58W	1578	145	101	1100
2 x 70W	1858	145	101	515 / 1545

Options

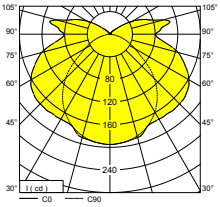
- T5 and T8 single and twin lamp versions available
- Through wiring kits available for all lengths
- Fully integral emergency conversion, 3 hour duration
- Intellem self-test emergency versions available
- Suitable for use on defined escape routes
- Microwave sensor option ('IM' prefix)
- PIR and photocell option available ('D' prefix)
- DALI option available ('DD' suffix)

Specification

To specify state: Weatherproof luminaire, sealed to IP66, with GRP body and acrylic prismatic light controller, secured by hinged stainless steel latches and removable geartray retained by tool free clips, as Eaton's Tufflite TFC range, part no. _____

Photometric Data

Cat. No. TFC6235



LOR: 0.86
ULOR: 0.15
DLOR: 0.71

SHR nom: 1.50
SHR max: 1.73

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	42	49	55	59	66	70	73	77	80
70	30	20	35	42	48	53	59	64	68	73	76
70	10	20	30	37	43	48	54	60	63	69	73
50	50	20	39	45	51	55	61	64	67	71	74
50	30	20	33	39	45	49	56	60	63	68	71
50	10	20	29	35	41	45	51	56	59	64	68
30	50	20	37	42	47	51	56	59	62	65	68
30	30	20	32	37	42	46	52	56	59	63	65
30	10	20	28	33	39	43	48	53	56	60	63
0	0	0	25	29	34	38	43	47	49	53	56
BZ-class			6	6	6	6	6	6	6	6	6

See page 468 for design guide

Chemical Resistance

Chemical Agent	Body (Polyester)	Diffuser (Acrylic)
Acetic acid 10%	●	●
Acetone	○	X
Alcoholic beverages	●	●
Aluminium sulphate	●	●
Ammonia 5%	○	●
Aniline	○	○
Arsenic acid 20%	○	●
Benzene	X	X
Bencylic alcohol	X	X
Bromine	X	X
Calcium chloride	●	●
Calcium nitrate	●	●
Carbon tetrachloride	X	X
Carbonic acid	●	X
Caustic potash 5%	X	●
Cement	●	●
Hydrochloric acid 1-5%	○	●
Chlorine liquids (vapours)	X	X
Chloroform	X	X
Chromic acid	X	○
Citric acid 20%	●	●
Copper sulphate	●	●
Diesel-naphta oil	●	●
Ethyl alcohol 30%	●	●
Ethyl chloride	X	X
Ethyl ether	●	X
Food oils and fats	●	●
Formic acid 10%	○	●
Glycerine	●	●

Chemical Agent	Body (Polyester)	Diffuser (Acrylic)
Hexane	○	●
Iodine	●	X
Iron chloride	●	●
Isopropylic alcohol	●	○
Lubricating oil	●	●
Magnesium sulphate	●	●
Methanol	●	X
Mineral oils	●	●
Nitric acid 20%	X	○
Oxygen	●	●
Ozone	●	●
Perchloric acid 10%	X	●
Petrol	●	●
Phenol	○	X
Pothassium bromide	●	●
Pothassium nitrate	●	●
Pothassium permanganate	●	●
Sea climate	●	●
Silicon oils	●	○
Soda bleach 15%	●	●
Sodium chloride	●	●
Sodium hydroxide 5%	●	●
Sodium sulphate	●	●
Sugar	●	●
Sulphur	●	●
Sulphuric acid 30%	X	●
Toluene	X	X
Trichloroethylene	X	X
Zinc sulphate	●	●

● Resistant ○ Relatively Resistant X Non-Resistant

Catalogue Numbers

Lamp Rating	Gear Option	Cat No	Weight (kg)	Emergency Cat No	Weight (kg)
TFC - GRP body and acrylic diffuser, for T5 lamps (not supplied)					
1 x 28W	High Frequency	TFC6128Z	2.7	EBTFC6128Z	4.1
2 x 28W	High Frequency	TFC6228Z	4.5	EBTFC6228Z	5.9
1 x 35W	High Frequency	TFC6135Z	3.6	EBTFC6135Z	5.0
2 x 35W	High Frequency	TFC6235Z	6.2	EBTFC6235Z	7.6
1 x 49W	High Frequency	TFC6149Z	3.6	EBTFC6149Z	5.0
2 x 49W	High Frequency	TFC6249Z	6.2	EBTFC6249Z	7.6
1 x 54W	High Frequency	TFC6154Z	2.7	EBTFC6154Z	4.1
2 x 54W	High Frequency	TFC6254Z	4.5	EBTFC6254Z	5.9
TFC - GRP body and acrylic diffuser, for T8 lamps (not supplied)					
1 x 18W	High Frequency	TFC6118Z	1.8	-	-
2 x 18W	High Frequency	TFC6218Z	2.1	-	-
1 x 36W	High Frequency	TFC6136Z	2.7	EBTFC6136Z	4.1
2 x 36W	High Frequency	TFC6236Z	4.5	EBTFC6236Z	5.9
1 x 58W	High Frequency	TFC6158Z	3.6	EBTFC6158Z	5.0
2 x 58W	High Frequency	TFC6258Z	6.2	EBTFC6258Z	7.6
1 x 70W	High Frequency	TFC6170Z	4.3	EBTFC6170Z	5.7
2 x 70W	High Frequency	TFC6270Z	7.9	EBTFC6270Z	9.3

For microwave sensor control prefix FO part number with IM, e.g. TFC6149Z becomes IMTFC6149Z
For microwave with corridor function prefix DD part number with **IM** eg TFC6149DD becomes **IM**TFC6149ZDD
For switching PIR sensor control prefix FO part number with D, e.g. TFC6149Z becomes DTFC6149Z
For PIR sensor with photocell function prefix RD part number with D, e.g. TFC6149RD becomes DTFC6149RD
For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/tufflite-tfc-ip66-ip66-impact-resistant-industrial-lighting.html

Accessories	Cat No	Weight (kg)
Stainless steel clip kit, 12 x steel clips	TF6SCKIT12	0.1
Plastic clip kit, 12 x plastic clips	TF6PCKIT12	0.2
Rear mounting bracket (pair)	TF6RMBKT2	0.5
Through wire kit for 600mm, 18W	TF6TWKIT600	0.2
Through wire kit for 1200mm, 28/54/36W	TF6TWKIT1200	0.4
Through wire kit for 1500mm, 35/49/58W	TF6TWKIT1500	0.5
Through wire kit for 1800mm, 70W	TF6TWKIT1800	0.6

VersaLite

VersaLite is a versatile general purpose, IP65 rated, weatherproof luminaire. It is supplied with fast fit surface mounting clips for ease of installation, avoiding the need to drill the housing. Options include 3 hour integral emergency functionality and DALI dimmable control gear.

Linear LED light engines and efficient control gear provide class leading performance; they are protected by a polycarbonate housing and opal diffuser delivering a uniform lit appearance.

Nominal 4', 5' and 6' formats in narrow and wide housing, 3 hour combined non-maintained emergency functionality.

With a comprehensive range of lumen outputs across 3 luminaire lengths, VersaLite delivers choice and flexibility to suit a wide range of applications such as warehousing, plant rooms, car parks, loading/storage spaces and assembly areas where high ingress protection and robust construction are required.

- IP65 rated ingress protection
- Uniform lit appearance, no shadowing
- Nominal 4', 5'and 6' formats, in narrow and wide housings, ideal for both new and retro fit applications
- 4000K or 5000K colour temperature, CRI 80
- Impact and heat resistant opal polycarbonate diffuser secured with anti-tamper diffuser clips
- Class leading LED luminaire performance and efficacy with lumen packages to match and exceed traditional fluorescent technology with reduced energy consumption
- Integral 3 hour combined non-maintained functionality option
- Fast fix mounting clips for rapid installation (no need to drill the housing avoiding a potential ingress path)
- Fixture level L70 50,000hrs

LED and Control Gear

- High efficacy linear LED light engines
- >80 CRI, 4000K or 5000K colour temperature
- DALI dimmable control gear

Materials

- Housing material - Polycarbonate with integrated gear tray support
- Diffuser - Polycarbonate opal diffuser delivering a uniform lit appearance
- Diffuser clips - Stainless steel offering strength and integral locking screw function
- Gear tray - Sheet steel, white finish

Installation Notes

- Surface mount rear brackets supplied, removing the need to drill the housing base
- Gear tray hangs on the body for ease of install, locates in final position with tool free clips
- 1x 20mm cable entry hole in housing end, supplied with IP gland and sealing bung
- Simple to use diffuser clips with security screws to lock them in the closed position as anti -tamper feature and ensures access only through tooled entry to the luminaire
- This luminaire is IP65 rated, this rating only applies when the luminaire is installed observing the correct orientation and must not be positioned in direct sunlight.
- In exterior applications it is recommended the luminaires are protected under a canopy or cover, the housing is not suitable for mounting with the base directly on a vertical surface in the horizontal orientation.

Options

- DALI dimming option
- Nominal 4', 5' and 6' formats in narrow and wide housing
- 3 hour combined non-maintained emergency functionality

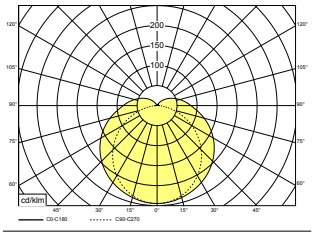
Specification

To specify 4000K state: General purpose IP65 rated LED luminaire 4000K, Polycarbonate, Opal (uniform) diffuser, polycarbonate housing, secured by tamper resistant stainless steel hinged latches and removable geartray, as Eaton's VersaLite range, part no_____

To specify 5000K state: General purpose IP65 rated LED luminaire 5000K, Polycarbonate, Opal (uniform) diffuser, polycarbonate housing, secured by tamper resistant stainless steel hinged latches and removable geartray, as Eaton's VersaLite range, part no_____

Photometric Data

Cat. No: VSLN425005Z



LOR 100%

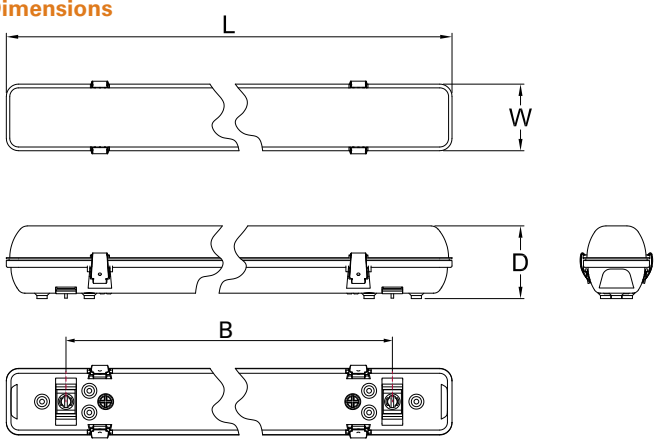
SHR Nom 1.50
SHR Max 1.547

Utilisation factors / TM5

Reflectances			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.7	0.5	0.2	51	59	66	71	78	83	87	92	95
0.7	0.3	0.2	43	51	58	63	71	77	81	87	90
0.7	0.1	0.2	37	45	52	57	66	71	76	82	87
0.5	0.5	0.2	48	55	62	67	73	78	81	85	88
0.5	0.3	0.2	41	48	55	60	67	72	76	81	85
0.5	0.1	0.2	36	43	50	55	62	68	72	78	81
0.3	0.5	0.2	46	52	58	62	68	72	75	79	82
0.3	0.3	0.2	40	46	52	57	63	68	71	76	79
0.3	0.1	0.2	35	41	48	53	59	64	68	73	77
0	0	0	32	37	43	47	54	58	61	66	69
BZ-class			6	6	6	6	6	6	6	6	6

See page 468 for design guide

Dimensions



Model	Length (L) (mm)	Width (W) (mm)	Depth (D) (mm)	B (mm)	# Clips
4ft single	1265	105	110	907	8
4ft twin	1265	165	110	907	8
5ft single	1565	105	110	907	10
5ft twin	1565	165	110	907	10
6ft single	1865	105	110	1170	12
6ft twin	1865	165	110	1170	12

Chemical Resistance

Chemical Agent	(Poly-carbonate)
Acetic acid 10%	●
Acetone	X
Alcoholic beverages	●
Aluminium sulphate	●
Ammonia 5%	X
Aniline	X
Arsenic acid 20%	●
Benzene	X
Bencylic alcohol	X
Bromine	X
Calcium chloride	●
Calcium nitrate	●
Carbon tetrachloride	X
Carbonic acid	X
Caustic potash 5%	X
Cement	●
Hydrochloric acid 1-5%	●
Chlorine liquids (vapours)	X
Chloroform	X
Chromic acid	○
Citric acid 20%	●
Copper sulphate	●
Diesel-naphta oil	○
Ethyl alcohol 30%	●
Ethyl chloride	X
Ethyl ether	X
Food oils and fats	X
Formic acid 10%	●
Glycerine	●

Chemical Agent	(Poly-carbonate)
Hexane	●
Iodine	X
Iron chloride	●
Isopropylic alcohol	○
Lubricating oil	●
Magnesium sulphate	●
Methanol	X
Mineral oils	●
Nitric acid 20%	○
Oxygen	●
Ozone	●
Perchloric acid 10%	●
Petrol	X
Phenol	X
Pothassium bromide	●
Pothassium nitrate	●
Pothassium permanganate	●
Sea climate	●
Silicon oils	●
Soda bleach 15%	X
Sodium chloride	●
Sodium hydroxide 5%	X
Sodium sulphate	●
Sugar	●
Sulphur	●
Sulphuric acid 30%	●
Toluene	X
Trichloroethylene	X
Zinc sulphate	●

● Resistant ○ Relatively Resistant Non-Resistant

Catalogue Numbers

Cat No	Description	Lumen output (lm)	Circuit Watts (W)	Efficacy (Llm/cW)
Standard Fixed output				
VSLN425004Z	VersaLite IP65 2500lm 4000K FO 1.2m single	2682	27	100.1
VSLW449004Z	VersaLite IP65 4900lm 4000K FO 1.2m twin	5242	51	103.3
VSLN536004Z	VersaLite IP65 3600lm 4000K FO 1.5m single	3921	38	104.3
VSLW571004Z	VersaLite IP65 7100lm 4000K FO 1.5m twin	7725	76	102.0
VSLN648004Z	VersaLite IP65 4800lm 4000K FO 1.8m single	5345	51	106.1
VSLW695004Z	VersaLite IP65 9500lm 4000K FO 1.8m twin	10614	100	106.4

For emergency versions please add the EL prefix, e.g. VSLN425004Z becomes **EL**VSLN425004Z

For emergency versions the circuit watts will increase by 1.5W to account for the charging circuit

For DALI dimmable options please replace the Z suffix with DD e.g. VSLN425004**Z** becomes VSLN425004**DD**

Emergency mode: output for all luminaires in emergency mode is 192 lumens

Cat No	Description	Lumen output (lm)	Circuit Watts (W)	Efficacy (Llm/cW)
Standard Fixed output				
VSLN425005Z	VersaLite IP65 2500lm 5000K FO 1.2m single	2731	27	101.1
VSLW449005Z	VersaLite IP65 4900lm 5000K FO 1.2m twin	5338	51	104.7
VSLN536005Z	VersaLite IP65 3600lm 5000K FO 1.5m single	3993	38	105.1
VSLW571005Z	VersaLite IP65 7100lm 5000K FO 1.5m twin	7867	76	103.5
VSLN648005Z	VersaLite IP65 4800lm 5000K FO 1.8m single	5443	51	106.7
VSLW695005Z	VersaLite IP65 9500lm 5000K FO 1.8m twin	10808	100	108.1

For emergency versions please add the EL prefix, e.g. VSLN425005Z becomes **EL**VSLN425005Z

For emergency versions the circuit watts will increase by 1.5W to account for the charging circuit

For DALI dimmable options please replace the Z suffix with DD e.g. VSLN425005**Z** becomes VSLN425005**DD**

Emergency mode: output for all luminaires in emergency mode is 192 lumens

VersaLite twin

VersaLite single

VersaLite cut-out LED strips detail

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com
For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/versalite-industrial.html

Patriot 2

Strength, durability and ease of installation are amongst the key attributes designed into the latest version of our popular Patriot range. An all polycarbonate housing and diffuser provides a high level of vandal resistance and when coupled with the wide variety of finishes and lamp options available allows Patriot 2 to be used for most external and internal applications.

Rated at IP65 this dust tight and water jet proof luminaire can be accessed via rear or side cable entry points and installation is simplified through the use of quick release gear trays. 3 hour maintained emergency versions, which pass the 850°C glow wire test, are available as standard making this range suitable for use in defined escape routes as well as open areas. Energy saving models using high frequency control gear form our primary offer but a full complement of switch start versions remain available if required.

LED supplements the choice of the very latest energy efficient and long life technologies.

- Energy efficient bulkhead for interior and exterior use
- Vandal resistant polycarbonate construction for a durable long life
- IP65 dust tight and water jet proof for stay clean operation
- Quick release geartray for easy installation
- LED for a high efficacy, low maintenance option

Lamp Options

- LED - 4000°K

Materials

- Base - polycarbonate, white
- Diffuser - opal polycarbonate
- Geartray - sheet steel, white finish

Installation Notes

- Suitable for ceiling or wall mounting
- BESA drill points on rear, and alternative drill points for screw fixing
- Central cable entry point
- 3 way, 2 x 1.5mm² terminal block
- Diffuser retained by captive screws
- Supplied complete with lamp

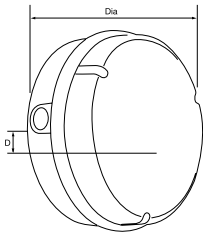
Options

- Fully integral emergency conversion, 3 hour duration
- Suitable for use on defined escape routes

Specification

To specify state: Round IP65 vandal resistant compact LED luminaire, white polycarbonate base, opal polycarbonate diffuser and quick release geartray as Eaton's Patriot 2 range, part no. _____

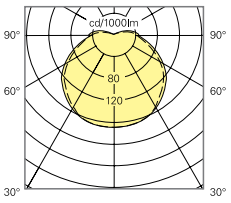
Dimensions



Lamp Rating	L (mm)	W (mm)	Dia (mm)	D (mm)
Round Major (LED)	-	-	280	95

Photometric Data

Cat. No. P2RWO804KZ



LOR: 0.74
ULOR: 0.10
DLOR: 0.64

SHR nom: 1.5:1
SHR max: 1.7:1

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	37	43	48	52	58	61	64	68	70
	30		31	37	42	46	52	57	60	64	67
	10		27	32	38	42	48	52	56	61	64
50	50	20	35	40	45	49	54	57	60	63	65
	30		30	35	40	44	49	53	56	60	63
	10		26	31	36	40	46	50	53	57	60
30	50	20	33	38	43	46	50	53	56	59	61
	30		29	33	38	42	47	50	53	56	59
	10		25	30	35	38	43	47	50	54	57
0	0	0	23	27	31	35	39	43	45	49	51
BZ-class			6	6	6	6	6	6	6	6	6

Round LED

Catalogue Numbers

Cat No	Lumen Output	Wattage (w)	Efficacy (Llm/cW)	Weight (kg)	Emergency Cat No	Weight (kg)
Patriot 2 LED						
P2RWO804KZ	1240	14	89	1.0	ELP2RWO804KZ	1.4

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/patriot-2-led-vandal-resistant-industrial-led-wall-light.html

Norwich Fire Station
Norwich

Exterior Lighting

6

Aethon

Aethon represents a new generation in area floodlighting. Along with a striking aesthetic, Aethon gives the designer real choice when considering a multitude of applications and scenarios. Pressure cast aluminium provides a robust housing and frame and also acts as an excellent heat sink, ensuring optimum performance from the LED chip array at both low and high ambient temperatures.

Careful design and light shielding helps avoid light trespass helping to alleviate potential planning issues. The Aethon advantage is the suite of optical distributions available combined with multiple outputs gives total design flexibility and scheme efficacy.

- High efficacies of up to 111 Llm/cW which exceed the requirements of UK Building Regulations: Part L and Section 6 (Scotland)
- Operating temperatures of -40°C to +50°C
- Close colour tolerance: MacAdam 3 SDCM
- Complete with ready fixed brackets for efficient installation times
- A choice of three optical distributions means controlled lighting to suit many applications
- NEMA socket included with shorting plug (Large only)
- Low upward distribution element helps in ‘dark sky’ locations and where light trespass is to be avoided
- IP67 certified

Light Engine and Control Gear Options

- High output, high efficacy LED array optimised for precision floodlights
- Energy efficient fixed output control gear
- 5000°K Ra 80 LED array

Materials

- Body - Pressure die cast aluminium housing, heat sink and frame. Chromate conversion coating with powdercoat paint finish, RAL 9005
- Lens - Clear flat glass
- Brackets - Steel / Pressure cast aluminium (dependent on option)

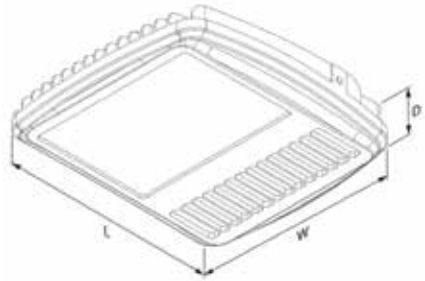
Installation Notes

- Complete with pre-attached bracket - select at order stage
- Includes 300mm 3 core 1.5mm² flexible flying lead - easily demountable internally

Photometric Data

Aethon offers the choice of three optical distributions, based on the IESNA standard patterns of light distribution, these are defined as Type 1, Type 3 and Type 5 - see next page for details

Dimensions



Aethon Small Bracket		L (mm)	W (mm)	D (mm)
		382.6	335.0	91.0
A		491.0	335.0	147.6
B		487.2	335.0	91.0
C		463.5	339.0	91.0
D		521.3	335.0	91.0
E		404.4	335.0	91.0

Aethon Large Bracket		L (mm)	W (mm)	D (mm)
		561.9	395.0	110.8
A		700.9	395.0	147.6
B		666.6	395.0	110.8
C		674.2	403.0	110.8
D		701.0	395.0	110.8

Brackets

Type A – Mounting Arm

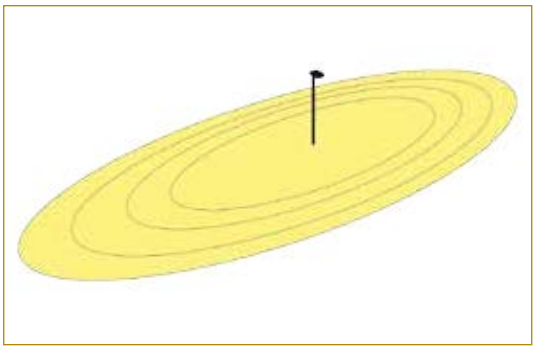
Type B – Pole Mount Arm

Type C – Large Yoke

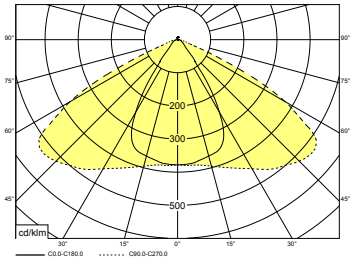
Type D – Two Piece Bracket

Type E – Easy Hang Wall Plate (Aethon Small only)

Type 1



Type 1
Cat. No: AET1S865KAZ

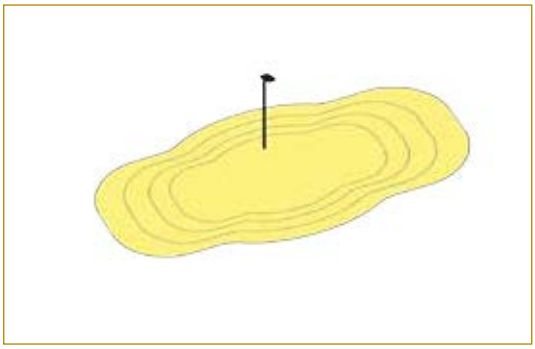


LO 9308 lumens

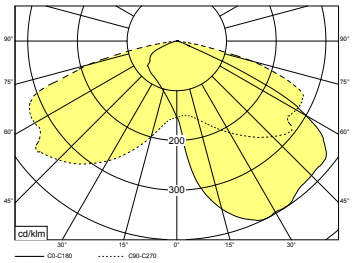
The lighting distribution is generally narrow and symmetrical in two directions. Its application lends itself to perimeter lighting either on a post or fixed to the side of a building. This distribution is efficient and puts light where it is needed allowing for greater linear spacing potential than wholly symmetrical floodlights.

Application – pedestrian paths, perimeter security zones, unadopted narrow roads within private premises.

Type 3



Type 3
Cat. No: AET3S865KAZ



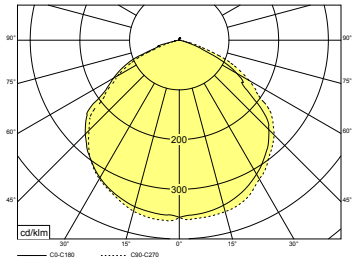
LO 8338 Lumens

This pattern of distribution is used where a greater throw of light is required directly in front of the mounting position as well as maintaining some light distribution to the sides.

Application – general area floodlighting, unadopted twin carriageway roads within private premises, car parks, marshalling yards.

Type 5

Type 5
Cat. No: AET5S865KAZ



LO 9220 Lumens

Having a symmetrical distribution in all directions, this type of pattern gives good general lighting characteristics where a broad beam is required. This may be mounted on a post, wall or can be used to highlight architectural features.

Application – general areas, car parks, highlighting building, art and structures, marshalling yards, industrial installations.

Catalogue Numbers

Part No	Distribution type	Bracket type	Lumen output	Wattage	Llm/cW	Weight (kg)	Windage
Aethon Small 86Watt							
AET5S865KAZ	5	A	9220	86.0	107.2	6.2	0.072M²
AET5S865KBZ	5	B	9220	86.0	107.2	6.0	0.044M²
AET5S865KCZ	5	C	9220	86.0	107.2	6.5	0.042M²
AET5S865KDZ	5	D	9220	86.0	107.2	6.7	0.047M²
AET5S865KEZ	5	E	9220	86.0	107.2	5.9	0.037M²
AET3S865KAZ	3	A	8338	86.0	97.0	6.2	0.072M²
AET3S865KBZ	3	B	8338	86.0	97.0	6.0	0.044M²
AET3S865KCZ	3	C	8338	86.0	97.0	6.5	0.042M²
AET3S865KDZ	3	D	8338	86.0	97.0	6.7	0.047M²
AET3S865KEZ	3	E	8338	86.0	97.0	5.9	0.037M²
AET1S865KAZ	1	A	9308	86.0	108.2	6.2	0.072M²
AET1S865KBZ	1	B	9308	86.0	108.2	6.0	0.044M²
AET1S865KCZ	1	C	9308	86.0	108.2	6.5	0.042M²
AET1S865KDZ	1	D	9308	86.0	108.2	6.7	0.047M²
AET1S865KEZ	1	E	9308	86.0	108.2	5.9	0.037M²
Aethon Small 120Watt							
AET5S1205KAZ	5	A	12784	121.0	105.7	6.2	0.072M²
AET5S1205KBZ	5	B	12784	121.0	105.7	6.0	0.044M²
AET5S1205KCZ	5	C	12784	121.0	105.7	6.5	0.042M²
AET5S1205KDZ	5	D	12784	121.0	105.7	6.7	0.047M²
AET5S1205KEZ	5	E	12784	121.0	105.7	5.9	0.037M²
AET3S1205KAZ	3	A	11229	120.0	93.6	6.2	0.072M²
AET3S1205KBZ	3	B	11229	120.0	93.6	6.0	0.044M²
AET3S1205KCZ	3	C	11229	120.0	93.6	6.5	0.042M²
AET3S1205KDZ	3	D	11229	120.0	93.6	6.7	0.047M²
AET3S1205KEZ	3	E	11229	120.0	93.6	5.9	0.037M²
AET1S1205KAZ	1	A	12534	121.0	103.6	6.2	0.072M²
AET1S1205KBZ	1	B	12534	121.0	103.6	6.0	0.044M²
AET1S1205KCZ	1	C	12534	121.0	103.6	6.5	0.042M²
AET1S1205KDZ	1	D	12534	121.0	103.6	6.7	0.047M²
AET1S1205KEZ	1	E	12534	121.0	103.6	5.9	0.037M²
Aethon Large 177Watt							
AET5L1775KAZ	5	A	19916	178.0	111.9	12.6	0.103M²
AET5L1775KBZ	5	B	19916	178.0	111.9	12.0	0.075M²
AET5L1775KCZ	5	C	19916	178.0	111.9	13.4	0.075M²
AET5L1775KDZ	5	D	19916	178.0	111.9	12.7	0.078M²
AET3L1775KAZ	3	A	17538	178.0	98.5	12.6	0.103M²
AET3L1775KBZ	3	B	17538	178.0	98.5	12.0	0.075M²
AET3L1775KCZ	3	C	17538	178.0	98.5	13.4	0.075M²
AET3L1775KDZ	3	D	17538	178.0	98.5	12.7	0.078M²
AET1L1775KAZ	1	A	19217	178.0	108.0	12.6	0.103M²
AET1L1775KBZ	1	B	19217	178.0	108.0	12.0	0.075M²
AET1L1775KCZ	1	C	19217	178.0	108.0	13.4	0.075M²
AET1L1775KDZ	1	D	19217	178.0	108.0	12.7	0.078M²

Catalogue Numbers (cont.)

Part No	Distribution type	Bracket type	Lumen output	Wattage	Llm/cW	Weight (kg)	Windage
Aethon Large 281Watt							
AET5L2815KAZ	5	A	30745	276.0	111.4	12.6	0.103M²
AET5L2815KBZ	5	B	30745	276.0	111.4	12.0	0.075M²
AET5L2815KCZ	5	C	30745	276.0	111.4	13.4	0.075M²
AET5L2815KDZ	5	D	30745	276.0	111.4	12.7	0.078M²
AET3L2815KAZ	3	A	27357	276.0	99.1	12.6	0.103M²
AET3L2815KBZ	3	B	27357	276.0	99.1	12.0	0.075M²
AET3L2815KCZ	3	C	27357	276.0	99.1	13.4	0.075M²
AET3L2815KDZ	3	D	27357	276.0	99.1	12.7	0.078M²
AET1L2815KAZ	1	A	28826	268.0	107.6	12.6	0.103M²
AET1L2815KBZ	1	B	28826	268.0	107.6	12.0	0.075M²
AET1L2815KCZ	1	C	28826	268.0	107.6	13.4	0.075M²
AET1L2815KDZ	1	D	28826	268.0	107.6	12.7	0.078M²

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/aethon-exterior-light.html

Galaxy LED

Galaxy LED is a new low energy solution to a varied range of applications. High efficiency is a key part of its appeal and with a wide range of outputs, is ideal in a multitude of applications.

Galaxy LED is rated to IP65, dust tight and low pressure water jet proof, with a robust die-cast aluminium body.

- High efficacy LED
- Die-cast aluminium construction for a long durable life
- IP65 dust tight and water jet proof for stay clean operation
- Inbuilt inclinometer aids aim and set up
- Outstanding optical performance reduces installed points
- Supplied with three core 1m flying lead
- 10W and 30W versions are available with integrated PIR as an option

LED Options

- Five lumen packages
- >70 CRI
- L70 30,000 hours
- 5000K cool white

Materials

- Body - die-cast aluminium powder coated black
- Lens - toughened glass
- Reflector - high purity, high reflectance, anodised aluminium
- Stirrup - steel powder coated in black finish

Installation Notes

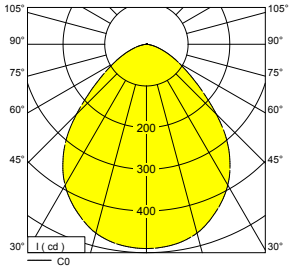
- Suitable for column, wall and floor mounting
- Stirrup bolts directly to vertical surface for area floodlighting or to floor for façade lighting
- 3 way, 1 x 2.5mm² terminal block
- Aimed by slackening side bolts and positioning angle using inclinometer on stirrup
- Front lens secured by latching clip
- Supplied complete with 1m 3 core 1mm² lead

Specification

To specify state: Die cast aluminium floodlight, with symmetrical reflector and toughened safety glass. Finished in black paint finish and dust tight and water jet proof to IP65, as Eaton's Galaxy LED range, part no. _____

Photometric Data

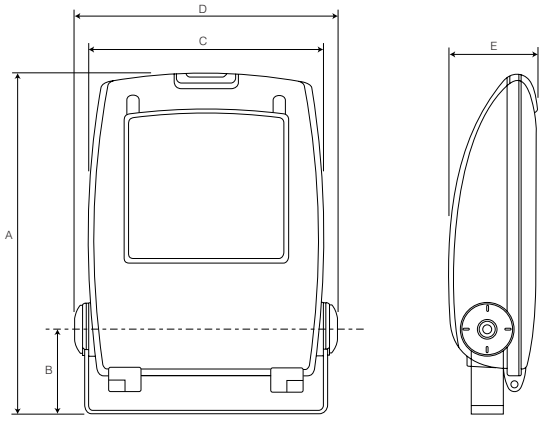
Cat. No. GLL1005KZ



LO 7817 Lumens

Galaxy LED with PIR Sensor

Dimensions



	A	B	C	D	E
GLL105KZ (10W)	220	83	147	172	55
GLL105KZPIR (10W + PIR)	220	83	147	172	106
GLL305KZ (30W)	314	78	218	243	80
GLL305KZPIR (30W + PIR)	314	78	218	243	131
GLL505KZ (50W)	395	103	291	231	106
GLL1005KZ (100W)	456	119	336	380	112
GLL2005KZ (200W)	620	195	432	482	158

Catalogue Numbers

Part No	With PIR	Lumen Output	Wattage	Llm/cW	Weight (kg)	Weight + PIR (kg)
GLL105KZ	GLL105KZPIR	838	11.85	70.70	1.10	1.22
GLL305KZ	GLL305KZPIR	2655	32.80	81.30	2.97	2.99
GLL505KZ	-	4410	51.50	85.50	5.21	-
GLL1005KZ	-	7817	101.40	77.10	7.32	-
GLL2005KZ	-	17495	220.00	79.30	14.08	-

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/galaxy-led-exterior-lighting-floodlight.html

Chatham

Aluminium - Domed top

Stainless Steel – Domed top

The Chatham range provides a classic and durable solution for a wide variety of outdoor applications. The housing is constructed from either extruded and die cast aluminium or 316 marine grade stainless steel with a tough UV stabilised polycarbonate lens protecting the optical section. Externally rated to IP65 the Chatham range is suited to many environments.

All versions are also available with a three hour maintained emergency option where required. The emergency module is housed securely in an internally mounted IP44 rated chamber.

In addition to the supplied tri-frame mounting bolts, there is a further choice of sturdy mounting options including a root mount post for soft ground and an extended base section for added stability in certain applications.

- A classical slim design that blends into most environments
- Robust aluminium construction for a long durable life – stainless steel option available
- Low glare distribution from the directionally mounted LED array
- A shielded LED array means a very low upward light distribution. This helps towards 'dark sky' environments
- Choice of dome or flat top versions for architectural integration (aluminium only)
- High lumen output from the energy efficient LED system
- All variants are complete with tri-frame mounting bolts – these must be cast in and used as a minimum standard mounting method. For soft ground the alternative Root Mounting Post must be installed
- Operating temperatures of -40°C to +40°C (EM variants +5°C to +35°C)

Light Engine and Control Gear

- High efficacy linear LED light engines
- >80 CRI 5000°K
- Energy efficient LED system

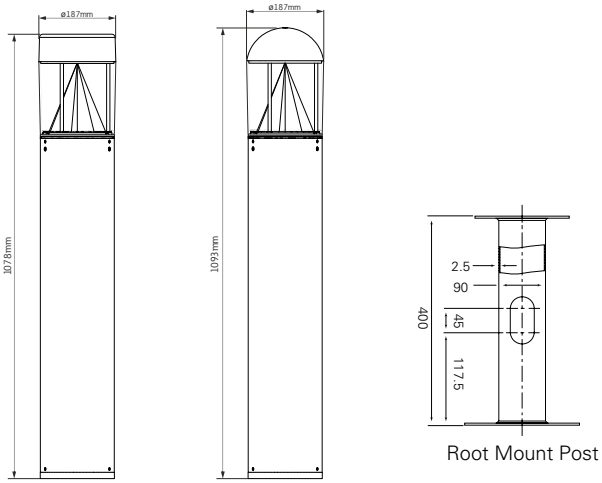
Materials

- Extruded and die cast aluminium, Black powder coated RAL 9005 / 316L Stainless Steel body
- Polycarbonate UV stabilised lens

Installation Notes

- All variants are complete with tri-frame mounting bolts – these must be cast in and used as a minimum standard mounting method below hard standing or compacted sub-layer.
- A minimum of 0.02m³ cast concrete shall be used in conjunction with the tri-frame mounting bolts. The concrete shall be to a minimum depth of 300mm allowing 70mm of thread above finished level
- For soft ground the alternative Root Mounting Post (CHARMP) must be installed
- It is recommended that the base of all bollards are filled with 300mm of sharp sand or other desiccate to inhibit condensation.
- All ground mounted luminaires are liable to some condensation. Condensation may be visible in the Chatham lens area when switched off and will dissipate in use

Dimensions



Root Mount Post

Options

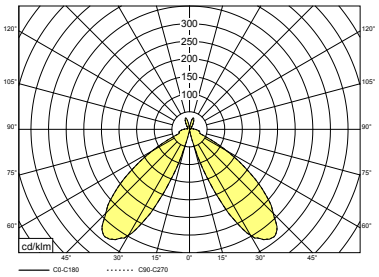
- 3 hour maintained emergency versions
- Additional Support Collar for added stability in challenging environments
- Root Mounting Post for soft ground installations, for added stability and durability
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

Specification

To specify state: Chatham range, extruded aluminium construction with powder coat paint finish, / 316 Stainless Steel. High performance low glare distribution with high output light engines. Dust tight and water jet proof to IP65 with IP44 internal chamber for 3 hour integrated emergency versions, as Eaton's Chatham range, part no._____

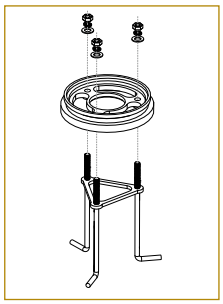
Photometric Data

Cat. No: CHAF17144ZBA

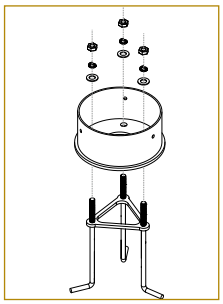


Performance

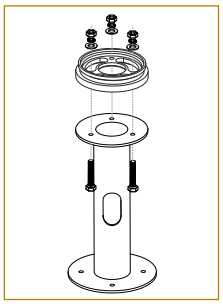
Description	Lumen Output (lm)	Wattage (W)	Efficacy (Llm/cW)
Chatham bollard	1320	17.4	75.8



Tri-frame mounting bolts



Support collar with tri-frame mounting bolts



Root mounting post

Catalogue Numbers

Description	Cat No.	Weight (kg)	Emergency Cat No.	Weight (kg)
Flat top black aluminium	CHAF17145KZBA	5.8	EBCHAF17145KZBA	7.5
Domed top black aluminium	CHAD17145KZBA	5.6	EBCHAD17145KZBA	7.3
Domed top Stainless Steel	CHAD17145KZSS	9.0	EBCHAD17145KZSS	10.7

Accessories

Description	Cat No	Weight (kg)
Root mounting post	CHARMP	4.2
Support collar	CHASUC	2.4

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/chatham-exterior.html

Penumbra

The Penumbra luminaire offers an energy saving alternative to traditional light sources for amenity area and perimeter lighting applications.

The multi-die LED arrays deliver a long 50,000 hour life and eliminates the need for lamp changes, minimising through life operating and maintenance costs.

A complex cutoff device keeps stray light to the minimum and helps provide a 'Darksky' environment and negates light trespass. The IP65 robust cast aluminium base and safety glass lens offer good impact resistance ideally suited to a variety of applications.

Installation is made simple with integrated features such as the side mount cable glands and rear BESA cable entry options.

- Robust aluminium construction for a long durable life
- Chromate coating - suitable for use in 'near marine" environments
- Low glare distribution from the directionally mounted LED array
- A shielded LED array means a very low upward light distribution. This helps towards 'dark sky' environments
- High lumen output from the energy efficient LED system
- Operating temperatures of -25°C to +40°C
- Not suitable for mounting as an uplighter

Light Engine and Control Gear Options

- High output, high efficacy COB chip sets optimised for demanding applications
- Energy efficient fixed output control gear as standard
- 4000°k Ra 80 LED array

Materials

- Body – Pressure die cast aluminium housing components. Chromate conversion coating with powder coat paint finish, RAL9005
- Lens – clear flat glass

Installation Notes

- Not suitable for mounting as an uplighter
- Complete with 20mm conduit entries and rear BESA type drill starts
- Emergency variants are fused as standard

Options

- Fully integral LED emergency conversion, 3 hour duration in Penumbra G variants
- CGLine+ self-test emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements
- We offer a range of product support contracts to aid commissioning, reduce your maintenance costs, comply with legislative test requirements and increase the lifespan of your lighting equipment

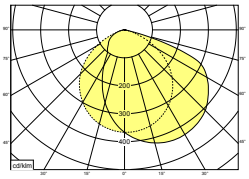
Specifications

- To specify state: Robust wall mounted LED luminaire, of full die cast aluminium construction, Chromate conversion coating with powder coat paint, RAL9005. Dust tight and water resistant to IP65. Asymmetric distribution with no upward light, as Eaton's Penumbra range part no _____

Integral Photocell option

Photometric Data

Cat. No. PEG654KZ



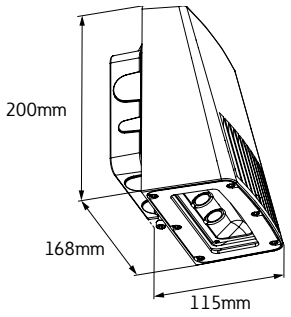
SHRnom : 1.25
SHRmax : 1.357

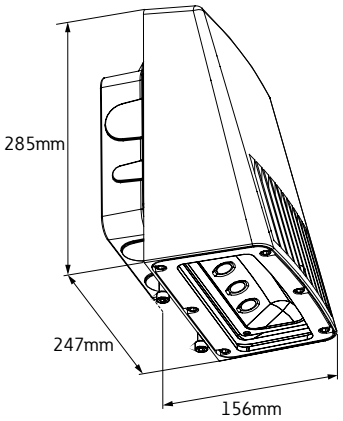
Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
0.7	0.5	0.2	57	67	75	80	88	93	96	101	104
0.7	0.3	0.2	49	60	67	73	82	87	92	97	100
0.7	0.1	0.2	43	54	62	68	77	83	87	94	98
0.5	0.5	0.2	55	65	72	78	85	89	93	97	100
0.5	0.3	0.2	48	58	66	72	80	85	89	94	97
0.5	0.1	0.2	43	53	61	67	75	81	85	91	94
0.3	0.5	0.2	54	63	70	75	82	86	89	93	96
0.3	0.3	0.2	47	57	65	70	77	82	86	91	94
0.3	0.1	0.2	43	53	60	66	74	79	83	88	92
0	0	0	40	50	57	63	70	75	79	84	87
BZ –class			5	5	5	4	4	4	4	4	4

See page 468 for design guide

Dimensions





Catalogue Numbers

Part number	Weight (kg)	Emergency part number	Weight (kg)	Description	Lumen output	Wattage	Llm/cW
Penumbra P							
PEP284KZ	1.9	-	-	Penumbra P 2800 lumen FO	2890	28.3	102.1
PEP284KZPC	2.0	-	-	Penumbra P 2800 lumen FO with integral Photocell	2890	28.3	102.1
PEP404KZ	2.1	-	-	Penumbra P 4000 lumen FO	3879	37.5	103.4
PEP404KZPC	2.2	-	-	Penumbra P 4000 lumen FO with integral Photocell	3879	37.5	103.4
Penumbra G							
PEG624KZ	4.3	EBPEG624KZ	5.1	Penumbra G 6200 lumen FO	6215	54.5	114.0
PEG624KZPC	4.4	EBPEG624KZPC	5.2	Penumbra G 6200 lumen FO with integral Photocell	6215	54.5	114.0

Emergency versions also available with automatic test functionality, e.g. CG Line+
For further information, contact our Technical Support and Application department on 01302 303240 or email LightingTechnicalUK@eaton.com
Llm/cW = luminaire lumens per circuit watt

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/penumbra-exterior-eaton.html

Spirit

Coming soon...

Spirit is a new linear lighting system designed to accentuate architecture and space. Available in modular runs with design flexibility at its heart, the Spirit supports RGBW colour change with DMX control, in 'Solid White' with fixed output or DALI control.

Available to order in 2018, details will appear soon in the online product catalogue at **uk.eaton.com.**

Yas Island
Abu Dhabi

Floodlighting Columns

Designed specifically for the full range of floodlights, these columns and brackets offer a high quality product for most types of application. Floodlights can vary considerably in weight, area projected towards the wind and fixing details. Geographical location also needs to be taken into account when selecting the style and design of column.

In order to simplify selection, floodlighting columns have been carefully chosen to meet the needs of installers when using Aethon and Galaxy LED floodlights. A comprehensive range of brackets complement the columns, providing easy selection for all but exposed locations.

- Extensive range of 4m to 10m columns
- Comprehensive range of mounting brackets
- Simple to select compatibility charts
- Specifically matched systems for safety
- Quality hot dip galvanised steel construction

Luminaire Options

- Galaxy LED
- Aethon

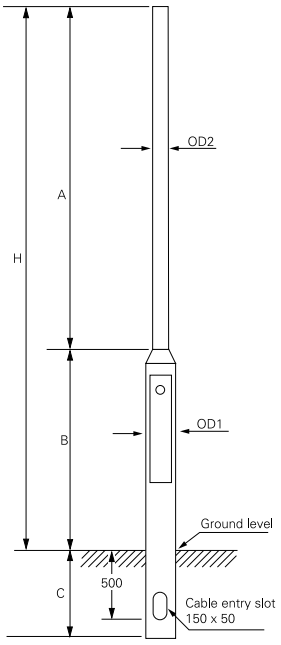
Materials

- Columns - hot dip galvanised tubular steel, bitumen coated root and treated wooden backboard
- Brackets - hot dip galvanised steel

Installation Notes

- Suitable for root mounting, placed into excavated hole in ground
- Support column perpendicular in hole, placing cable duct into entry slot, and backfill with concrete suitable for site conditions
- Alternatively, column can be placed into buried vertical pipe supported by appropriate mass of concrete, grouting gap to give firm fix
- Installer to supply and fit gland plate and fused cut-out to backboard in base compartment
- Access door has tamper resistant lock (key supplied)
- Brackets fitted internally or externally by grub screws
- Column drilled, tapped and supplied with grub screws for internally mounting brackets
- Cable exit points provided on brackets

Dimensions



Note - Actual height is marginally less than nominal height. Addition of brackets and luminaires provides optical centre of approx H

Column Ref	H Nominal	OD1 (mm)	OD2 (mm)	A (mm)	B (mm)	C (mm)
COL476GS	4m	140	76	3000	1000	800
COL576GS	5m	140	76	4000	1000	800
COL676GS	6m	140	76	5000	1000	1000
COL889	8m	168	89	6750	1250	1200
COL8140	8m	194	140	6750	1250	1200
COL10114	10m	168	114	8750	1250	1500
COL10140	10m	194	140	8750	1250	1500

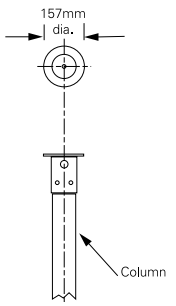
Options

- Columns and bracket combinations listed have been matched specifically to the Eaton brand luminaires listed. Contact us for other options, including exposed locations (installations at altitude or on the coast)
- Columns, when used with floodlight combinations shown, are to BS 5649
- K factor for columns up to and including 8m = 1.8
- K factor for 10m columns = 2.5
- Galvanising to BS729

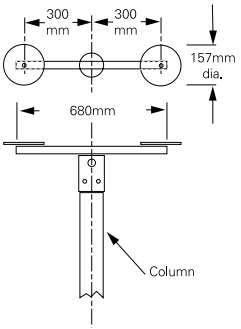
Specification

To specify state: Hot dip galvanised steel root mounted column, with bitumen coated root, single base compartment, tamper resistant lock, key provided, earth terminal and wooden treated backboard. When used with floodlighting brackets system, complies with the requirements of BS 5649, as Eaton's Floodlighting Columns range, part no. _____

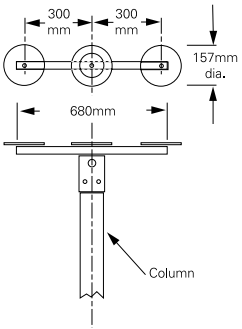
Floodlight bracket 1 way



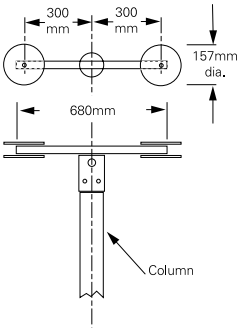
Floodlight bracket 2 way

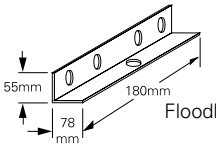


Floodlight bracket 3 way



Floodlight bracket 4 way





Floodlight bracket COLDHVB

Catalogue Numbers

		Floodlighting Bracket and Accessories Cat Nos			
Column Height	**Column Cat No**	**1 Flood**	**2 Floods**	**3 Floods**	**4 Floods**
Galaxy					
4m	COL476GS	COLFB176I	COLFB276I	COLFB376I	COLFB476I
5m	COL576GS	COLFB176I	COLFB276I	COLFB376I	COLFB476I
6m	COL676GS	COLFB176I	COLFB276I	COLFB376I	COLFB476I

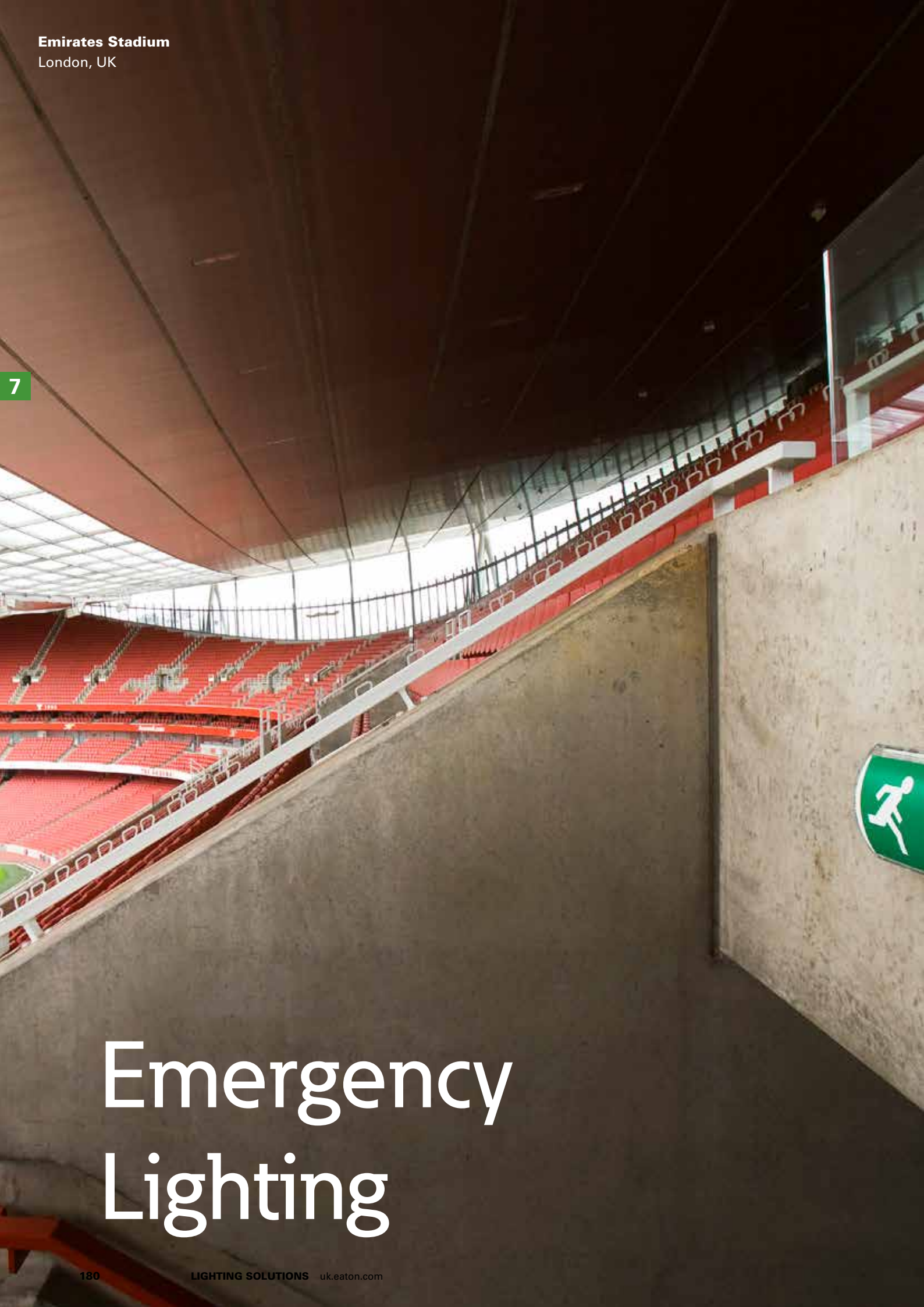
Catalogue Numbers

Columns	Cat No	Weight (kg)
4m rooted column, shaft with grub screws	COL476GS	34
5m rooted column, shaft with grub screws	COL576GS	38
6m rooted column, shaft with grub screws	COL676GS	43
8m rooted column, standard duty	COL889	80
8m rooted column, heavy duty	COL8140	117
10m rooted column, standard duty	COL10114	130
10m rooted column, heavy duty	COL10140	178

Note - Please refer to Strada section for details of columns and brackets for spheres

Floodlight Brackets	Cat No	Weight (kg)
Single 76mm internal fix	COLFB176I	5
Twin 76mm internal fix	COLFB276I	12
Triple 76mm internal fix	COLFB376I	14
Quad 76mm internal fix	COLFB476I	16
Single 89mm external fix	COLFB189E	5.5
Twin 89mm external fix	COLFB289E	12.5
Triple 89mm external fix	COLFB389E	14.5
Quad 89mm external fix	COLFB489E	15.5
Single 114mm external fix	COLFB1114E	6.0
Twin 114mm external fix	COLFB2114E	13.0
Triple 114mm external fix	COLFB3114E	15.0
Quad 114mm external fix	COLFB4114E	16.0
Triple 140mm external fix	COLFB3140E	15.5
Quad 140mm external fix	COLFB4140E	17.0
Horizontal to vertical stirrup plate	COLDHVB	1.1

For more information on the installation requirements and product specifications, please visit our website: https://uk.eaton.com/content/gb/en/products/product-catalog/exterior-lighting-floodlight-columns.html



Emirates Stadium
London, UK

7

Emergency Lighting

Emergency lighting design guide

Safety luminaires - Indoor

Safety luminaires - High degree of protection

Safety & exit signs - Indoor

Safety & exit signs - High degree of protection


Exit signs - Indoor





Exit signs - High degree of protection

Beam lights


Portable lamps and converters

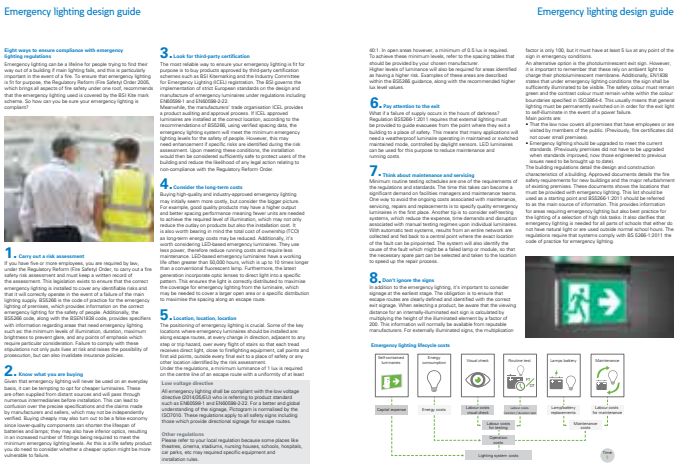

Systems

How to read ?

Emergency lighting design guide

The opening pages of this catalogue have been developed to share our expertise regarding the main standards, regulations, and technologies related to emergency lighting. They will support you in choosing the most appropriate solutions to meet your project requirements.

Page no. 186 & 197



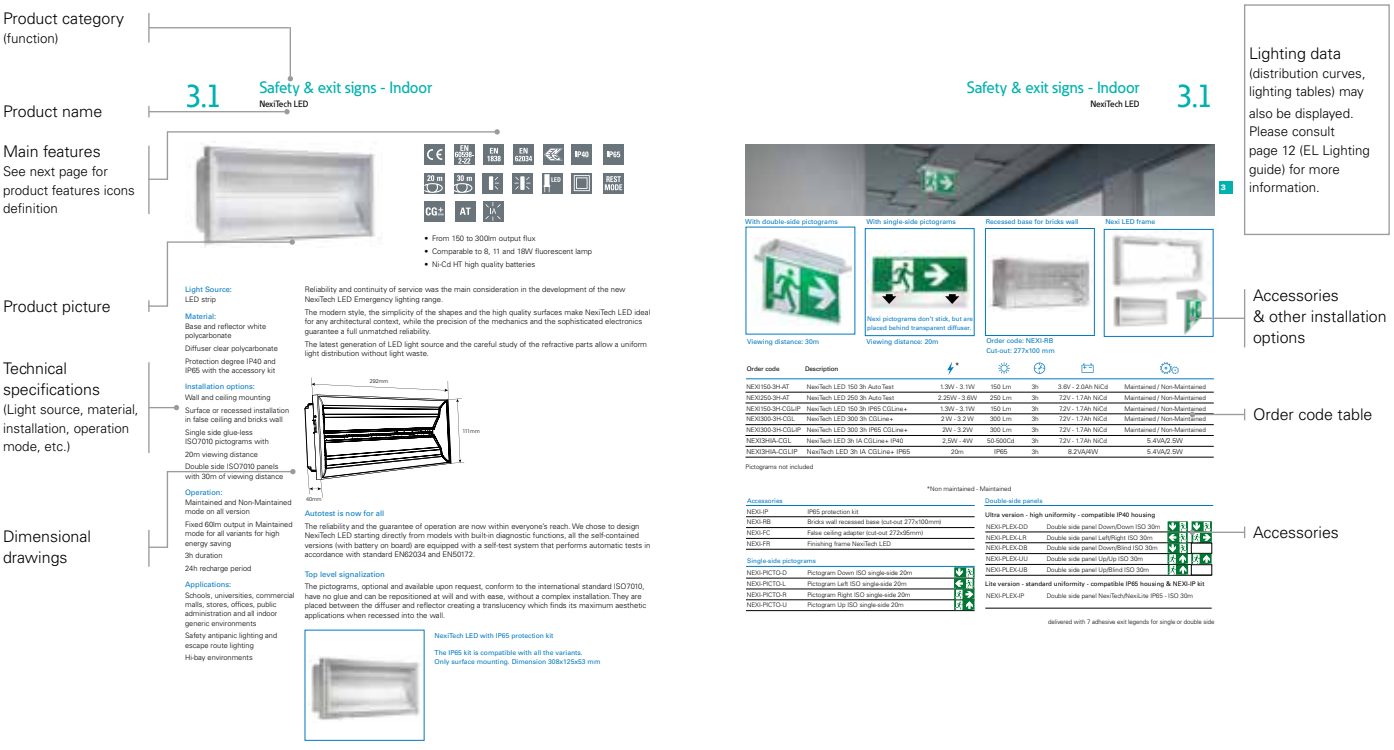
Selection guides

These double pages introducing some catalogue sections provide a quick overview of our product portfolio and enable simple product selection. You can base your choice on multiple criteria, including technology type, product features or applications.

	Page	Performance	Global Features: Aesthetic	One box solution*	No replacement parts for 10 years	Low consumption / Eco-friendly	Protection Degree	Viewing distance	Operation: Maintained	Non-Maintained	Technology: Stand alone	Auto test	Monitored (CGLine+)	Battery	Installation: Wall	Ceiling	Recessed	Suspended	Applications: Healthcare	Hotels	Cinemas / Theatres	Commercial centers	Stadia / Arenas	Offices	Industrial	Warehouse	Best use
5.1 CrystalWay	65	★★★	●	●	●	●	42	20 30	●	●		●	●	Li-Ion	●	●	●	●	●	●	●	●	●	●			Aesthetic range for easy integration in differently-sized environments. Accessories and pictograms included for a wall & ceiling surface mounting.
5.2 GuideLed	67	★★★			●	●	40 41	20 30	●	●		●	●	Li-Ion	●	●	●	●	●	●	●	●	●	●			Versatile mounting options enable the use in many applications and the design can be the same in the whole building.
5.3 Britesign 2	71						20	33	●		●	●	●	Ni-Cd													
5.4 Velos	72	★★					20	30 40	●		●	●		Ni-Cd	●	●	●	●	●	●	●	●	●	●			
5.5 Exit cube	76	★★					40	20	●	●		●	●	Li-Ion		●		●				●			●	●	3-sided exit signage for large areas like warehouses or supermarkets
5.6 Via 8	78	★					20	24			●			Ni-Cd		●		●				●		●			
5.7 Exit SE	80						20	41 34	●		●			Ni-Cd													

Product pages

For better readability and understanding, our product pages are all built using the same model, making it easy to find the information you are looking for (dimensional drawings, order codes, etc.). If you require any further technical information, feel free to contact us.



In order to help you to find solutions you need, we created a set of icons presented on each product page of this catalogue. This way, you will be able to identify the main characteristics of the product in one quick look.

This catalogue doesn't show the exhaustive list of emergency lighting self-contained luminaires developed by Eaton but a selection of them.

Please note that most of our emergency lighting luminaires are also available for central battery systems.

Please contact us for further information.

Definitions of key feature icons

Icon	Definition
20 m	Viewing distance, here: 20 m
	Light output, here: single-sided
LED	LED light source
	Protection class 1
	Protection class 2
IP20	Degree of protection, here: IP20
IK10	Degree of mechanical impact resistance, here: IK10
	Luminaire with limited surface temperature
	Available version suitable for outdoor use
	0 replacement of spare parts for 10 years

Icon	Definition
CE	CE certified
EN 60598-2-22	According to EN60598-2-22
EN 1838	According to EN 1838
	Suitable for use in food processing industry e.g. acc. HACCP or IFS
ENEC	ENEC certified
Li-Ion	With Lithium-ion battery
CG+ Line	Available with CGLine+ technology
AT	Auto test versions available
REST MODE	Rest mode
IA	Increased Affordance technology: page 280

Eight ways to ensure compliance with emergency lighting regulations

Emergency lighting can be a lifeline for people trying to find their way out of a building if main lighting fails, and this is particularly important in the event of a fire. To ensure that emergency lighting is fit for purpose, the Regulatory Reform (Fire Safety) Order 2005, which brings all aspects of fire safety under one roof, recommends that the emergency lighting used is covered by the BSI Kite mark scheme. So how can you be sure your emergency lighting is compliant?

1. Carry out a risk assessment

If you have five or more employees, you are required by law, under the Regulatory Reform (Fire Safety) Order, to carry out a fire safety risk assessment and must keep a written record of the assessment. This legislation exists to ensure that the correct emergency lighting is installed to cover any identifiable risks and that it will correctly operate in the event of a failure of the main lighting supply. BS5266 is the code of practice for the emergency lighting of premises, which provides information on the correct emergency lighting for the safety of people. Additionally, the BS5266 code, along with the BSEN1838 code, provides specifiers with information regarding areas that need emergency lighting such as: the minimum levels of illumination, duration, maximum brightness to prevent glare, and any points of emphasis which require particular consideration. Failure to comply with these stipulations not only puts lives at risk and raises the possibility of prosecution, but can also invalidate insurance policies.

2. Know what you are buying

Given that emergency lighting will never be used on an everyday basis, it can be tempting to opt for cheaper luminaires. These are often supplied from distant sources and will pass through numerous intermediaries before installation. This can lead to confusion over the precise specifications and the claims made by manufacturers and sellers, which may not be independently verified. Buying cheaply may also turn out to be a false economy since lower-quality components can shorten the lifespan of batteries and lamps; they may also have inferior optics, resulting in an increased number of fittings being required to meet the minimum emergency lighting levels. As this is a life safety product you do need to consider whether a cheaper option might be more vulnerable to failure.

3. Look for third-party certification

The most reliable way to ensure your emergency lighting is fit for purpose is to buy products approved by third-party certification schemes such as BSI Kitemarking and the Industry Committee for Emergency Lighting (ICEL) registration. The BSI governs the implementation of strict European standards on the design and manufacture of emergency luminaires under regulations including EN60598-1 and EN60598-2-22.
Meanwhile, the manufacturers' trade organisation ICEL provides a product auditing and approval process. If ICEL approved luminaires are installed at the correct location, according to the recommendations of BS5266, using verified spacing data, the emergency lighting system will meet the minimum emergency lighting levels for the safety of people. However, this may need enhancement if specific risks are identified during the risk assessment. Upon meeting these conditions, the installation would then be considered sufficiently safe to protect users of the building and reduce the likelihood of any legal action relating to non-compliance with the Regulatory Reform Order.

4. Consider the long-term costs

Buying high-quality and industry-approved emergency lighting may initially seem more costly, but consider the bigger picture. For example, good quality products may have a higher output and better spacing performance meaning fewer units are needed to achieve the required level of illumination, which may not only reduce the outlay on products but also the installation cost. It is also worth bearing in mind the total cost of ownership (TCO) as long-term energy costs may be reduced. Additionally, it's worth considering LED-based emergency luminaires. They use less power, therefore reduce running costs and require less maintenance. LED-based emergency luminaires have a working life often greater than 50,000 hours, which is up to 10 times longer than a conventional fluorescent lamp. Furthermore, the latest generation incorporate optic lenses to direct light into a specific pattern. This ensures the light is correctly distributed to maximise the coverage for emergency lighting from the luminaire, which may be needed to cover a larger open area or a specific distribution to maximise the spacing along an escape route.

5. Location, location, location

The positioning of emergency lighting is crucial. Some of the key locations where emergency luminaires should be installed are: along escape routes, at every change in direction, adjacent to any step or trip hazard, over every flight of stairs so that each tread receives direct light, close to firefighting equipment, call points and first aid points, outside every final exit to a place of safety or any other location identified by the risk assessment.
Under the regulations, a minimum luminance of 1 lux is required on the centre line of an escape route with a uniformity of at least

Low voltage directive

All emergency lighting shall be compliant with the low voltage directive (2014/35/EU) who is referring to product standard such as EN60598-1 and EN60598-2-22. For a better and global understanding of the signage, Pictogram is normalised by the ISO7010. These regulations apply to all safety signs including those which provide directional signage for escape routes.

Other regulations

Please refer to your local regulation because some places like theatres, cinema, stadiums, nursing houses, schools, hospitals, car parks, etc may required specific equipment and installation rules.

40:1. In open areas however, a minimum of 0.5 lux is required. To achieve these minimum levels, refer to the spacing tables that should be provided by your chosen manufacturer.
Higher levels of luminance will also be required for areas identified as having a higher risk. Examples of these areas are described within the BS5266 guidance, along with the recommended higher lux level values.

6. Pay attention to the exit

What if a failure of supply occurs in the hours of darkness? Regulation BS5266-1:2011 requires that external lighting must be provided to guide evacuees from the point where they exit a building to a place of safety. This means that many applications will need a weatherproof luminaire operating in maintained or switched maintained mode, controlled by daylight sensors. LED luminaires can be used for this purpose to reduce maintenance and running costs.

7. Think about maintenance and servicing

Minimum routine testing schedules are one of the requirements of the regulations and standards. The time this takes can become a significant demand on facilities managers and maintenance teams. One way to avoid the ongoing costs associated with maintenance, servicing, repairs and replacements is to specify quality emergency luminaires in the first place. Another tip is to consider self-testing systems, which reduce the expense, time demands and disruption associated with manual testing regimes upon individual luminaires. With automatic test systems, results from an entire network are collected and fed back to a central point where the exact location of the fault can be pinpointed. The system will also identify the cause of the fault which might be a failed lamp or module, so that the necessary spare part can be selected and taken to the location to speed up the repair process.

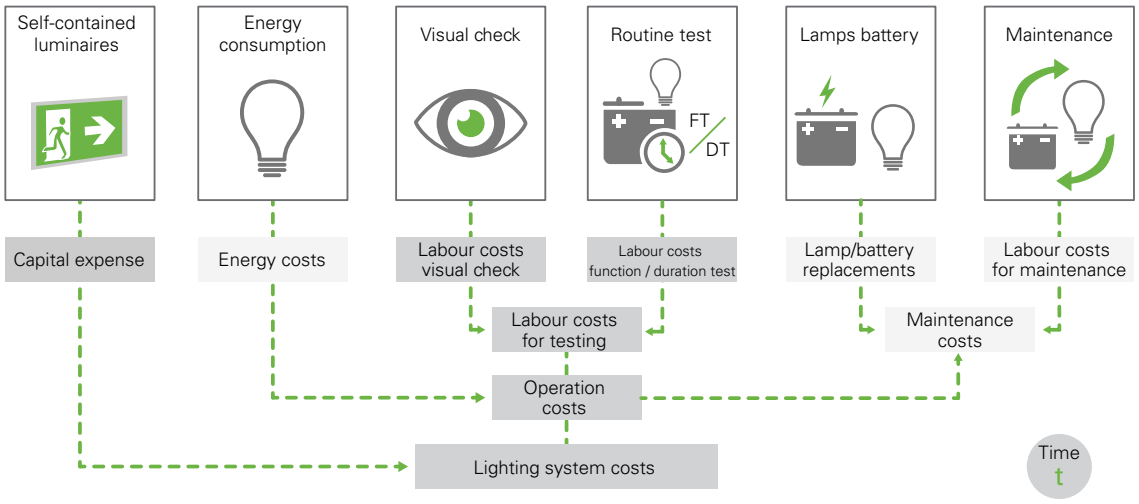
8. Don't ignore the signs

In addition to the emergency lighting, it's important to consider signage at the earliest stage. The obligation is to ensure that escape routes are clearly defined and identified with the correct exit signage. When selecting a product, be aware that the viewing distance for an internally-illuminated exit sign is calculated by multiplying the height of the illuminated element by a factor of 200. This information will normally be available from reputable manufacturers. For externally illuminated signs, the multiplication factor is only 100, but it must have at least 5 lux at any point of the sign in emergency conditions.
An alternative option is the photoluminescent exit sign. However, it is important to remember that these rely on ambient light to charge their photoluminescent membrane. Additionally, EN1838 states that under emergency lighting conditions the sign shall be sufficiently illuminated to be visible. The safety colour must remain green and the contrast colour must remain white within the colour boundaries specified in ISO3864-4. This usually means that general lighting must be permanently switched on in order for the exit light to self-illuminate in the event of a power failure.

Main points are:
- That the law now covers all premises that have employees or are visited by members of the public. (Previously, fire certificates did not cover small premises).
- Emergency lighting should be upgraded to meet the current standards. (Previously premises did not have to be upgraded when standards improved, now those engineered to previous issues need to be brought up to date).

The building regulations detail the design and construction characteristics of a building. Approved documents details the fire safety requirements for new buildings and the major refurbishment of existing premises. These documents shows the locations that must be provided with emergency lighting. This list should be used as a starting point and BS5266-1:2011 should be referred to as the main source of information. This provides information for areas requiring emergency lighting but also best practice for the lighting of a selection of high risk tasks. It also clarifies that emergency lighting is needed for all parts of schools that either do not have natural light or are used outside normal school hours. The regulations require that systems comply with BS 5266-1:2011 the code of practice for emergency lighting.

Emergency lighting lifecycle costs



The Fire Safety Order 2005 (cont'd)

The Government has produced 11 guides for individual applications to help employers to conduct their assessments and gives guidance on the safety equipment required.

The guides make it clear that occupants have to be protected from risks in the event of the normal supply failing. To assist users they advise that:

- Emergency lighting is likely to be required where any escape routes are internal and without windows or if the premises are used during darkness (including early darkness in winter).
- The assessment should cover the location of employees and any visitors (including information on those persons with disabilities) to the site to assist in determining the areas requiring emergency lighting.
- The guidance gives detailed requirements for the suitability of escape routes and calls for the installation of emergency lighting to be in accordance with BS 5266-1.
- The risk assessment should identify any areas that require additional emergency lighting provision. BS5266-1:2011 lists examples of these areas detailing the required levels, duration, and the plane to be illuminated, as examples, a school chemical laboratory which may be smaller than 60m^2 but still need emergency lighting, as combustible materials and sources of ignition would be present, or commercial kitchens.
- It recommends that advice on the installation should be given by a competent person who specialises in emergency lighting systems.
- Continued maintenance and testing must be correctly carried out to comply with the directive.
- One way of ensuring the competence of your provider would be registration of a reputable scheme such as the BAFE (British Approvals for Fire Equipment) SP203-4 scheme.
- The equipment used must be capable of being demonstrated as of adequate quality. Compliance with the appropriate British Standard, or other approved third party scheme, gives evidence of this. The standard for luminaires is BS EN 60598-2-22. ICEL 1001 registration endorses the spacing data of these luminaires. The standard for central battery systems is BS EN 50171.

Note: When the premises are being assessed for risk, shortcomings in other areas of fire protection can be compensated for by improved levels of emergency lighting and fire alarms.

The Health & Safety (Safety Signs & Signals) Regulations 1996

These regulations bring into force the EC Safety Signs Directive (92/58/EEC) on the provision and use of safety signs at work. From 2012 the new ISO 7010 Pictogram signs will also be legal but should not be mixed with other formats on an installation.

These regulations apply to all safety signs including those which provide directional signage for escape routes.

Other Regulations

In addition to fire safety legislation, some workplaces require a licence from the Local Authority, including theatres and cinemas, sport stadiums and premises for public entertainment, music, dancing, gambling and the sale of alcohol. Other premises must be registered with the Local Authority and be inspected by the Fire Authority, including nursing homes, children's homes, residential care homes and independent schools. Both licensed and registered premises have to pass a fire inspection to confirm that they have systems complying with BS 5266-1 for the emergency lighting and BS 5839 for fire equipment. Records of a system are now essential to maintain the validity of approvals and licences.

Emergency Lighting - System Design

This section provides guidance on system design to meet BS 5266 Parts 1 and EN1838 and so achieve compliance with legislation.

Design Objective

BS 5266-1:2011 gives recommendations and guidance on the factors that need to be considered in the design of, and the installation and wiring of, electrical emergency escape lighting systems. This provides the lighting performance needed for safe movement of people in the event of the supply to normal lighting failing. It also gives recommendations for lighting in areas with fixed seating. From this it can be seen that you should ensure the following provisions are fulfilled.

a) Indicate clearly and unambiguously the escape routes.
b) Provide illumination along such routes to allow safe movement towards and through the exits provided.
c) Ensure that fire alarm call points and fire fighting equipment, provided along escape routes can be readily located.
d) To ensure that any area requiring special consideration as identified by the risk assessment have the necessary level of emergency illumination.
e) To permit operations concerned with safety measures.

BS 5266-1 recommends that discussions should be held prior to commencing the design, to establish the areas to be covered, the method of operation, the testing regime and the most suitable type of system. These discussions should include the owner or occupier of the premises, the system designer, the installer and the supplier of the equipment.

At this stage the provision of plans should be made available to identify:

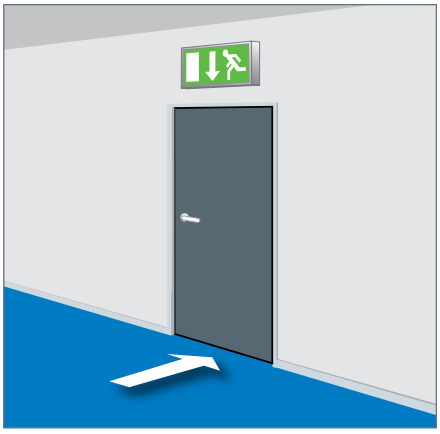
a) escape routes
b) open areas
c) high risk task areas
d) safety equipment, including fire safety equipment, safety signs and any other aspects identified by risk assessment
e) details of normal lighting and its control system
f) The latest edition of BS5266 now identifies the additional option of "stay put" safety lighting, this allows the option of people being allowed to stay in a location for a defined period of time in the event of a power outage with no safety risks. This option should be reviewed by risk assessment and special provisions would need to be implemented to use this option. This option may require a higher level of illumination than the current minimum used for escape lighting.

Note: BS 5266 was revised in 2011. For up to date information visit our website at www.eaton.eu. Alternatively visit the British Standards Institute website, at www.bsi-global.com

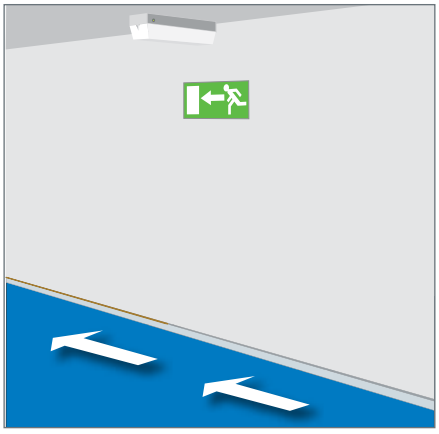
Locate luminaires at mandatory "Points of Emphasis"

Initial design is conducted by situating luminaires to reveal specific hazards and highlight safety equipment and signs, care should be taken to ensure the correct illumination level is achieved, in addition to providing illumination to assist safe travel along the escape route. This should be performed regardless of whether it is an emergency escape route or an open (anti-panic) area. Only when this is accomplished should the type of luminaire or its light output be considered. BS EN 1838: 2013 requires that the luminaires sited at points of emphasis must comply with BS EN 60598-2-22.

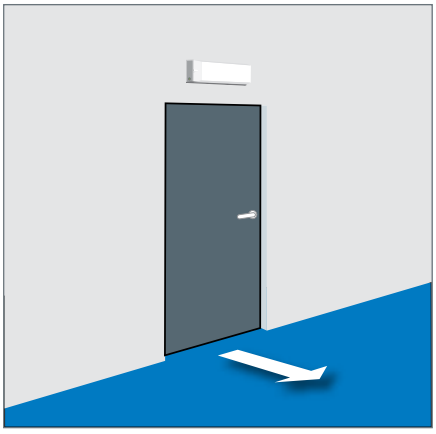
Specific locations where a luminaire must be provided are:



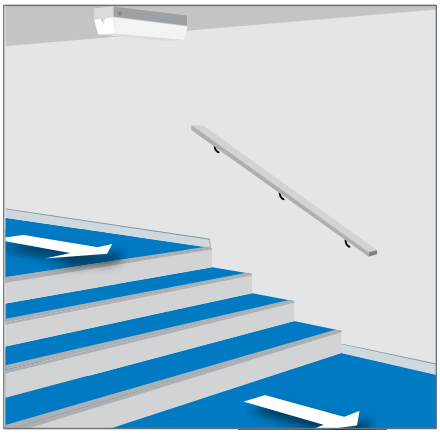
At each exit door



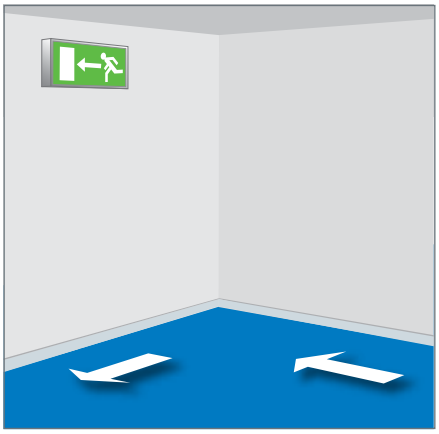
All safety exit signs



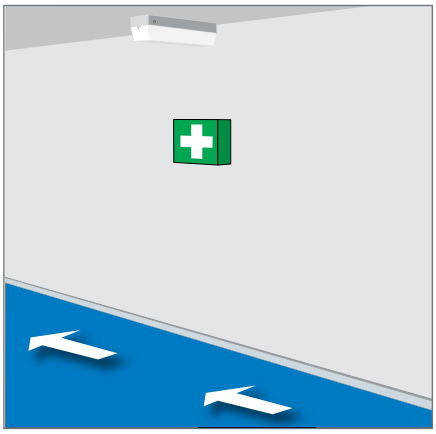
Outside the final exits and to a place of safety



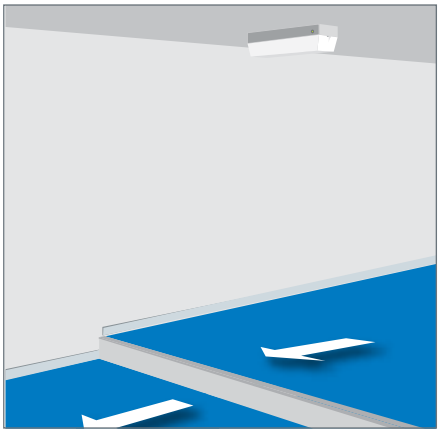
Near stairs so that each tread receives direct light



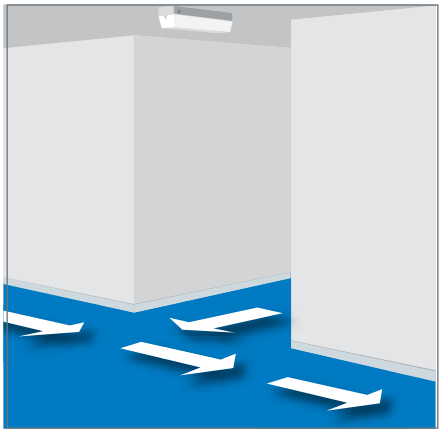
At each change of direction



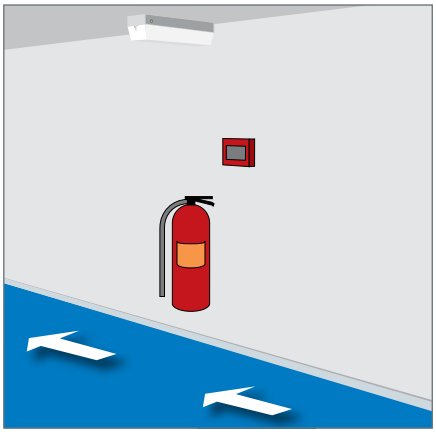
Near each first aid post



Near any other change of floor level



At each intersection of corridors



Near each piece of fire fighting equipment and call point

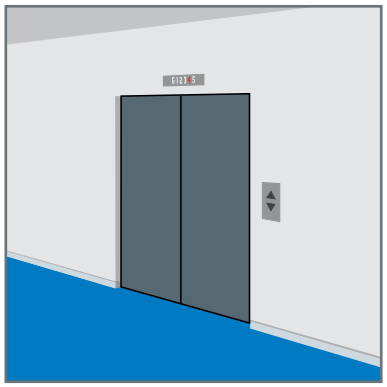
Locate luminaires at the following essential areas in the buildings

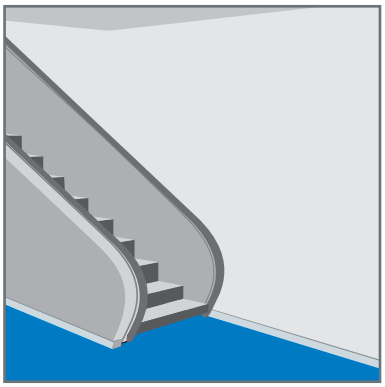
These locations are not part of the escape route but because of their risk they require protection by emergency lighting. Some of these areas are specifically defined in BS 5266-1:2011. Others are likely to be hazard areas defined by the risk assessment.

a) Lift cars - although only in exceptional circumstances will they be part of the escape route, they do present a problem in that the public may be trapped in them in the event of a supply failure.

b) Toilets - all toilets for the disabled and facilities exceeding 8m² floor area or without borrowed lights. Note the current issue of BS 5266-1: 2011 now excludes the en suite facilities in hotels.

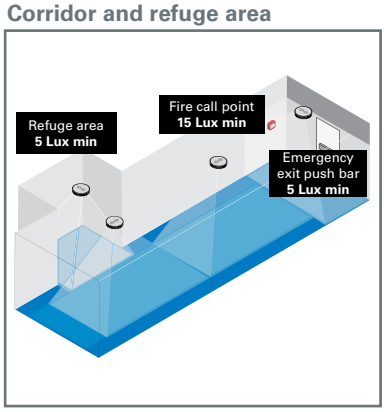
c) Escalators - to enable users to get off them safely.



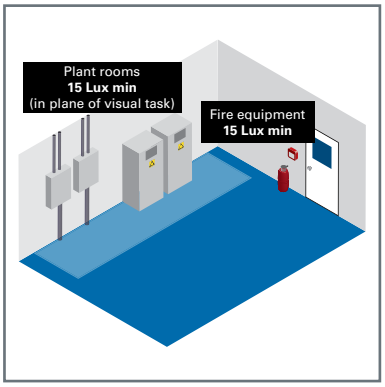


Some high risk areas, requiring a higher lux level, are also stated in BS 5266-1:2011, including:

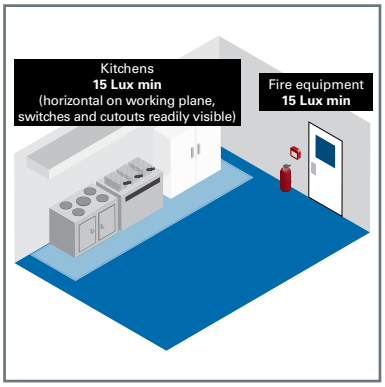
Corridor and refuge area



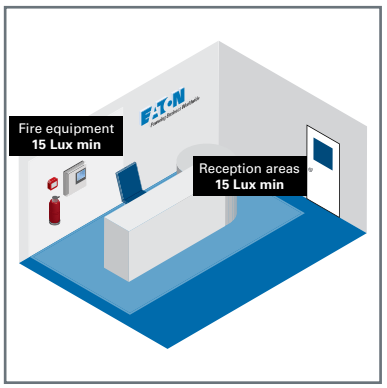
Plant room



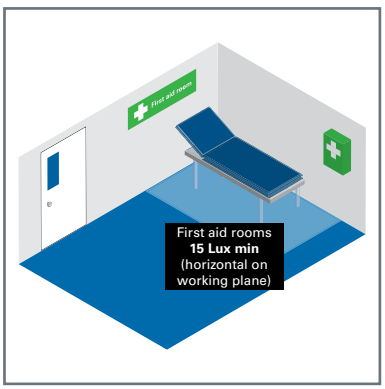
Kitchen



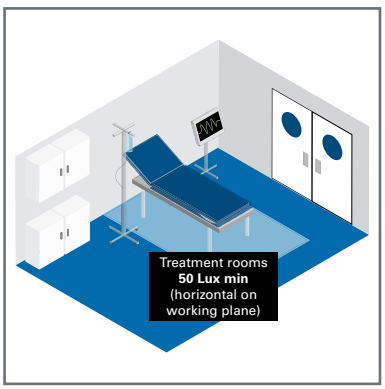
Reception areas



First aid rooms



Treatment rooms



These areas may also be considered as high risk:

Kitchens - Sudden failure of lighting while staff are cooking hot food is potentially dangerous. Currently these areas would need an emergency light over the extinguisher but emergency lighting is also needed over the area for hot food preparation. Employees need to be able to locate and turn off machinery/ovens/hobs etc. to ensure that they do not turn on once the supply is re-instated and cause a possible unsafe condition.

First aid and treatment rooms - Currently the requirement is for the light level needed for the safety of the individual, however system designers need to consider the light level response and duration times of emergency lighting of first aid rooms where treatment is to be given.

Refuge areas for disabled people - In these areas fire wardens will now have to go and collect disabled persons, often transferring them into rescue sleds to enable them to be safely taken downstairs. Consideration should be given to the light level response and duration times of emergency lighting in refuges.

Fire equipment - In a fire condition, users must inspect and act on the condition of fire alarm panels and repeaters. The light must be of a sufficient level to the correct plane of visual task to enable displays to be read accurately. The staff will also have to contact the fire brigade so they must have sufficient illumination for the number to be dialled correctly in the emergency condition.

Panic bars and pads - The emergency lighting must provide adequate direct illumination on crash bars on exit doors to enable them to be easily seen and operated, consider using exit signs above with downward light panels.

Motor generator, control or plant rooms - Require battery supplied emergency lighting to assist any maintenance or operating personnel in the event of failure.

Covered car parks - The normal pedestrian routes should be provided with non-maintained luminaires of at least 1 hour duration.

Further information regarding duration and emergency illumination levels are shown in BS5266-1: 2011.

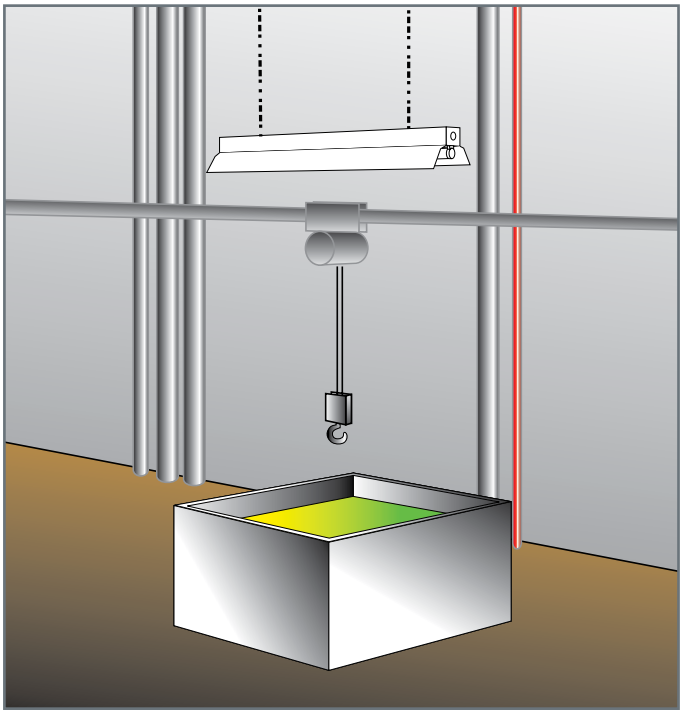
High risk task area Lighting

The risk assessment carried out will have identified a number of locations needing special consideration. These may be areas in which plant and production lines are deemed to have a high risk or control rooms managing dangerous processes.

EN 1838: 2013 defines that in areas of high risk the maintained illuminance on the reference plane shall not be less than 10% of the required maintained illuminance for that task, however it shall not be less than 15 lux.

Design procedures

In order to reach this enhanced level of emergency illumination it is important to consider all options, which may include converted luminaires, either operated from integral batteries or the use of luminaires supplied from a central emergency unit. These versions in most instances would have higher Ballast Lumen Factors (BLF). It is also important to consider the emergency response time which may require that the emergency luminaires are operated in maintained mode, or possibly require the use of tungsten projector units. If these are used it is important to maintain a reasonable level of uniformity.



Ensure the exit signs are of correct format and size

Section 4.1 of BS EN 1838: 2013 states that "Signs which are provided at all exits intended to be used in an emergency and along escape routes shall be illuminated to indicate unambiguously the route of escape to a point of safety". Where direct sight of an emergency exit is not possible, an illuminated directional sign (or series of signs) shall be provided to assist progression towards the emergency exit.

Sign formats should not be mixed

BS 2560: 197
Old-style signs now obsolete. Should have been replaced by December 1998.

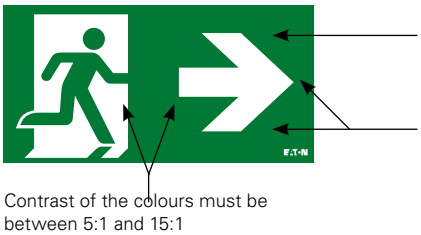
BS 5499 Pt 1
Signs are still acceptable, if they are already in the building.

European Signs Directive Format
This came into force on 1st April 1996, under The Signs Directive.

ISO 7010
In 2011, it was decided by many of the National Standards bodies to consider adoption of a single pictogram format as detailed in ISO 7010. This format was adopted by BSI in the latest edition of BS5266-1: 2011 which is considered to be the 'de-facto' emergency lighting standard in the UK - BS 5499 has also adopted this format.

Illumination Requirements

The sign must conform to the colours of ISO 3864, which defines that exit and first aid signs must be white with green as the contrast colour. The ratio of luminance of the white colour to the green colour must be between 5:1 and 15:1. The minimum luminance of any 10mm patch area on the sign must be greater than 2cd/m² and the ratio of maximum to minimum luminance shall be less than 10:1 for either colour.



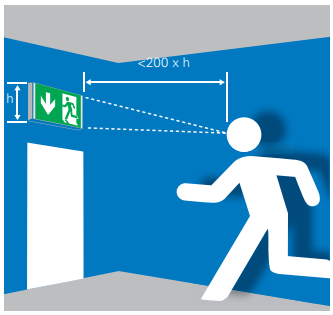
Note: Internally illuminated exit signs are pre-tested to ensure they meet these requirements, provided that they comply with BS EN 60598-2-22. If the sign is designed to be externally illuminated, considerable care must be taken by the system designer to see that these conditions are met. Even though an emergency luminaire must be sited within 2 metres from the sign (see stage 1) calculations should still be made to check that the sign is illuminated to 5 lux on any part of the face in emergency conditions.

Maximum viewing distances

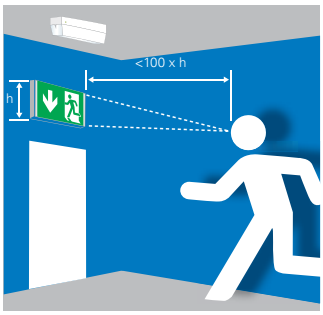
For all formats of safety signs, the maximum viewing distances and luminance conditions are given in EN 1838: 2013. Signs can be either internally illuminated, such as exit boxes or edge lit emergency luminaires with a screened sign that have a controlled illuminance, or painted signs.

Maximum viewing distances are:

Internally illuminated signs - 200 x the panel height



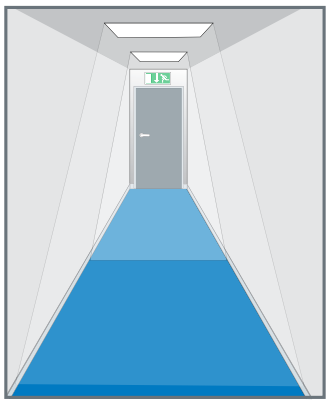
Externally illuminated signs - 100 x the panel height



Escape Route Lighting

When the points of emphasis have been covered, it is essential to provide any additional luminaires to ensure that minimum illuminance levels are met to enable the routes to be used safely. In addition, every compartment on the escape route must have at least two luminaires, to provide some light in the event of luminaire failure.

- **Lighting Level Requirements**
  EN 1838: 2013 4.2 calls for a minimum of 1 lux anywhere on the centre line of the escape route for normal risks. A uniformity ratio of 40:1 maximum to minimum must not be exceeded. This illuminance must be provided for the full duration and life of the system. 50% of the illuminance must be available within 5 seconds and the full value within 60 seconds of supply failure.

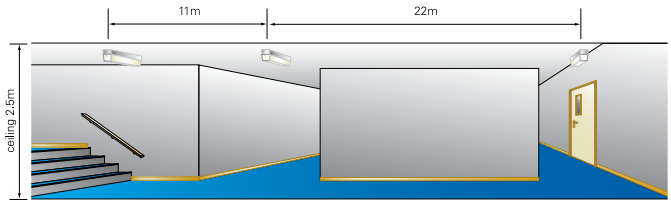


- **Photometric Design**
  Emergency Escape Routes
  The use of authenticated spacing tables or a suitable computer program provides the information to determine whether luminaires are needed in addition to those for the points of emphasis (see data section), to provide the minimum required level of illumination on the escape routes. To ensure that the design will meet the required levels at all times the data is de-rated, as required by the standard, to cover the following factors:
  i. Reduction in light as the battery voltage reduces during discharge
  ii. Ageing of lamps in maintained circuits
  iii. The effects of dirt

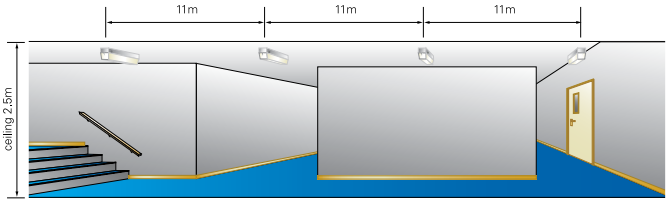
Photometric Data

Mode	Mounting height (m)	Lux level directly under	Escape route 2m wide 1 lux min				Open (anti-panic) area 0.5 lux min			
Self-contained										
NM	2.5	3.28	3.9	11.3	4.0	2.0	4.0	12.0	6.0	1.9
	4.0	1.28	2.1	9.6	5.6	1.2	3.3	14.8	7.2	1.9
	6.0	0.57	-	-	-	-	1.6	12.4	7.4	0.8
M	2.5	2.75	3.3	10.7	5.2	1.8	3.7	11.7	5.8	1.8
	4.0	1.07	1.5	8.0	5.0	0.7	3.5	14.2	7.0	1.7
	6.0	0.48	-	-	-	-	-	-	-	-

Example - luminaire spacing along escape route

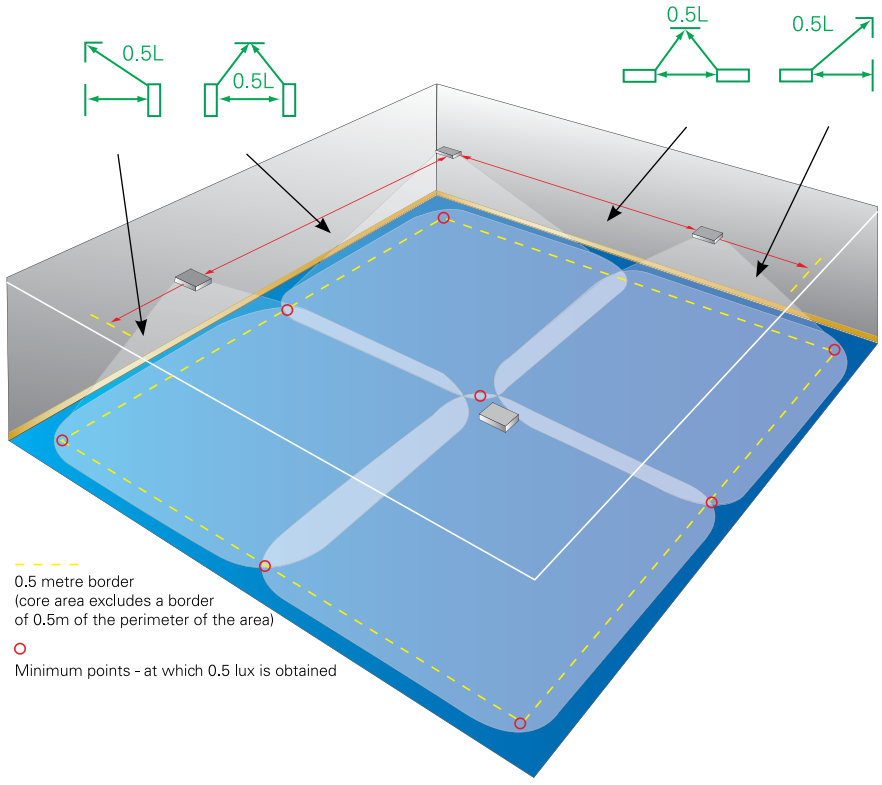


Locate luminaires at mandatory "Points of emphasis"



Add additional luminaire to achieve 1 lux minimum

Luminaire spacing in open (anti-panic) core areas



Open (anti-panic) core areas

Open areas with an escape route passing through them, or hazards identified by the building risk assessment all require emergency lighting. The current standard is easy to design for and to verify, promoting systems that provide good uniformity rather than ones that use a few large output luminaires.

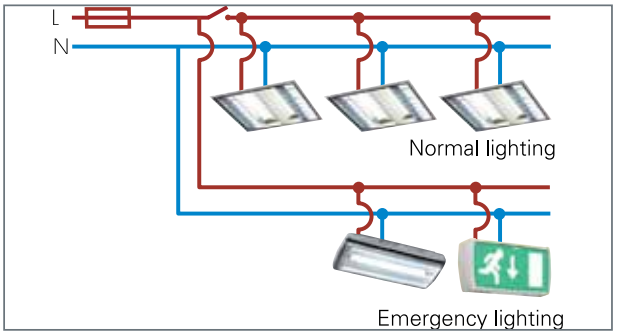
- **Light level requirements**
  EN 1838:2013 - 4.3 calls for 0.5 lux minimum of the empty core area, which excludes a border of 0.5m of the perimeter of the area. Spacing tables or a suitable computer program provide simple and accurate data that can easily be used. The spacing tables for 0.5 lux are de-rated on the same basis as those for escape routes. They can also be used as a guide for initial selection of the location of luminaires when using a computer program.

- **Spacing data**
  Specific data is available for self-contained dedicated emergency luminaires. This can be found on each of the individual product entries in this catalogue.
  If using standard mains luminaires fitted with an emergency conversion kit, you should use one of the available computer programs to calculate the layout of the luminaires. Using the actual distribution of the luminaire ensures that the correct emergency lumen value is used with the relevant depreciation factors.

Control

Non-maintained luminaires must be activated by failure of supply to the normal lighting. They must therefore be connected to an un-switched live taken from the local normal lighting final circuit.

It is important at this stage to ensure that the luminaires used in the design process are not changed without a full assessment of the lumen output and distribution of any alternative proposal. Failure to validate the performance could lead to a non-compliant installation.



Testing and log book

Local regulation requires that appropriate testing is performed to maintain compliance of the system. The system should include adequate facilities for testing and recording the system condition. These need to be appropriate for the specific site and should be considered as part of the system design. Discussions with the user or system designer should identify:

- The calibre and reliability of staff available to do the testing
- The level of difficulty in performing the test
- If discharge tests need to be done outside normal working hours, or phased so only alternate luminaires are tested in buildings that are permanently occupied

The testing requirements in the code of practice are:

- **Function Test**
  All emergency luminaires should be tested by breaking the supply to them and checking that they operate satisfactorily. The supply must then be restored and the charging indicators must be seen to be operating correctly. This test must be performed at least once per month and the results logged.

- **Discharge Test**
  The luminaires must be tested for their full rated duration period and checked for satisfactory operation. The supply must then be restored and the charging indicators rechecked. This test must be performed at least once annually and the results logged.

If manual testing is utilised, the following points should be considered:

- Is a single switch to be used? Unless the whole building is to be switched off, a separate switch should be used for each final circuit. As the feed to non-maintained circuits must be taken from the switch, this will probably mean that the building will have to be walked around twice, once to check the luminaires and once to check that they are recharging.
- With manual testing it is difficult to correctly validate that the emergency luminaires illuminated within the specified time and at the correct level. Validation is also required that all emergency luminaires meet the minimum duration. Again, this would be difficult to validate for all locations.
- Are luminaires to be individually switched? In practice, only a single walk around the building will be needed. However, the test switches could spoil the décor of the building and they must be of a type that is tamper proof.
- After the tests, the performance of the luminaires must be logged.

Commissioning certificate

European Standard requires written declarations of compliance to be available on site for inspection. These consist of:

1. Installation quality
   IEE regulations must have been conformed with and non-maintained fittings fed from the final circuit of the normal lighting in each.

2. Photometric performance
   Evidence of compliance with light levels has to be supplied by the system designer. Therefore copies of the spacing data in this catalogue provides the verification required.

3. Declaration of a satisfactory test of operation
   A log of all system tests and results must be maintained. System log books, with commissioning forms, testing forms and instructions are available from Eaton.

Maintenance

Finally, to ensure that the system remains at full operational status, essential servicing should be defined. This normally would be performed as part of the testing routine, but in the case of consumable items such as replacement lamps, spares should be provided for immediate use.

Automatic test systems

Legislation demands that emergency lighting systems are regularly tested and maintained in full working order. To avoid the cost and disruption of manual testing, automatic test systems should be considered. Eaton offer alternative testing systems, each optimised for different building types:

- **Autotest**
  Designed for use with self-contained emergency luminaires, Autotest is a stand alone self-test system for small installations. The testing module self calibrates and carries out testing at predetermined intervals. Faults are precisely reported by the flashing sequence of the LED indicator.

- **CGLine+**

CGLine+ is an automatic testing and monitoring device for up to 800 self-contained luminaires, giving information regarding their functionality and status. There are many ways in which you can monitor the status and event information of the system.

Each CGLine+ controller has an inbuilt web browser which can be accessed to view the status of the luminaires and system events, there are a number of LEDs used to signal system status and multiple controllers can be connected in a network allowing the ability to monitor of up to 25,600 emergency luminaires on one system. If site IT infrastructure allows, the system can be accessed remotely and can be configured to distribute email alerts from selectable alarm conditions. Alternatively a USB stick can be used to upload the event log and luminaires configuration and status.

CGLine+, simply the most flexible single screen system, offers enhanced safety by providing reliable efficient monitoring of your emergency evacuation lighting.

In order to support facility managers in their effort of monitoring and targeting energy consumption, improve life safety, save time and money during maintenance, Eaton enables its CGLine+ systems to communicate with their BMS through an OPC server.
(See more page 284)

Key regulations

IEC 60364-5-56 (2009-07) Ed. 2
Low-voltage electrical installations - Part 5-56: Selection and erection of electrical equipment - Safety services
560.5: General
560.5.4: Regarding control and bus systems, a failure in the control or bus system of a normal installation shall not adversely affect the function of safety services.
560.7 Circuits of safety services
560.7.1 Circuits of safety services shall be independent of other circuits.

NOTE: This means that an electrical fault or any intervention or modification in one system must not affect the correct functioning of the other. This may necessitate separation by fire-resistant materials or different routes or enclosures.

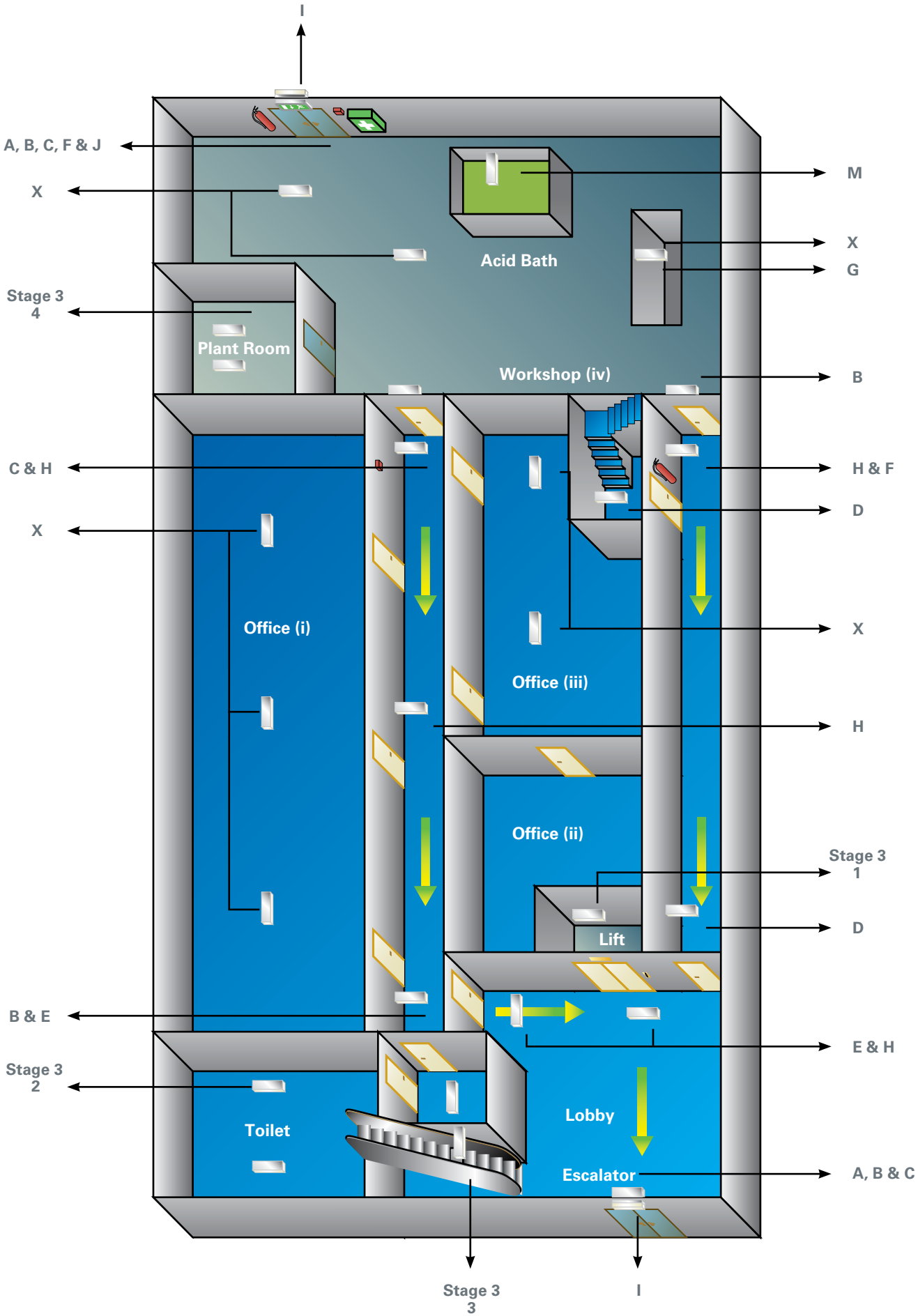
560.9 Emergency escape lighting applications
560.9.8 Control and bus systems for safety illumination shall be independent of control and bus systems for general illumination; coupling of both systems is permitted only with interfaces that ensure a decoupling/ isolation of both busses from each other. A failure in the control and bus system of the general illumination shall not influence the proper function of the safety illumination.

IEC 62034 (2012-02) Ed. 2
Automatic test systems (ATS) for battery powered emergency escape lighting

4.4.5 Systems parts compatibility
It shall be the responsibility of the system designer to ensure ATS component and procedure compatibility. The manufacturer of ATS components/ system shall provide details of compatible system components (…)
The manufacturer shall declare: (…) the justification of compatibility between any part within the ATS

4.4.6 Electromagnetic immunity of the ATS
Compliance is checked by the tests of IEC 61547 applying the requirements and compliance criteria for emergency lighting luminaires.
Note: Some requirements are specific to emergency lighting luminaires.

IEC62386-202 (2009-06) Ed 1.0
Digital Addressable Lighting Interface
Part 202: Particular requirements for control gear - Self-contained emergency lighting


I
A, B, C, F & J
X
M
X
G
Acid Bath
Stage 3
4
Plant Room
Workshop (iv)
B
C & H
H & F
D
X
Office (i)
X
Office (iii)
H
Office (ii)
Stage 3
1
D
Lift
B & E
E & H
Stage 3
2
Toilet
Lobby
Escalator
A, B & C
Stage 3
3
I

Example of System Design

Stage 1

Locate luminaires at points of emphasis on escape route

A At each exit door
B To illuminate exit and safety signs
C Near call points (some covered by a.)
D Near each staircase
E Change of direction (some covered by b.)
F Near fire fighting equipment (some covered by a.)
G Change of floor level
H Near intersection of escape routes
I Outside final exits
J Near first aid points

Following this, ensure that the escape route also meets the 1 lux minimum.

Stage 2

Exit sign location is covered by Stage 1, but it is important to check that maximum viewing distances are not exceeded and that if the normal lighting is dimmed, e.g. in cinemas, the exit signs must be permanently illuminated while the building is occupied (maintained lighting).

Stage 3

Other areas, which require emergency lighting but are not on the escape route area.

1 Lift car
2 Toilet (above 8m² floor area)
3 Escalators
4 Plant room

Stage 4

Check minimum illuminance levels on the escape routes. After selecting a suitable luminaire, consulting the spacing table shows the number of fittings needed to provide a minimum of 1 lux on the centre line of the escape routes.

Stage 5

Anti-panic open areas (X) apply to any areas over 60m² floor area, or that have an escape route passing through them.

(i) Office over 60m²
- 3 x Micropoint 2

(ii) Office under 60m²
- no requirement

(iii) Under 60m², but part of escape route from office
- 2 x Micropoint 2 fittings, either as compartment of escape route or an open anti-panic area

(iv) Workshop 4m high
- 3 x i-P65 + maintained Alfalux High-bay LED unit for high risk (m)

Stage 6

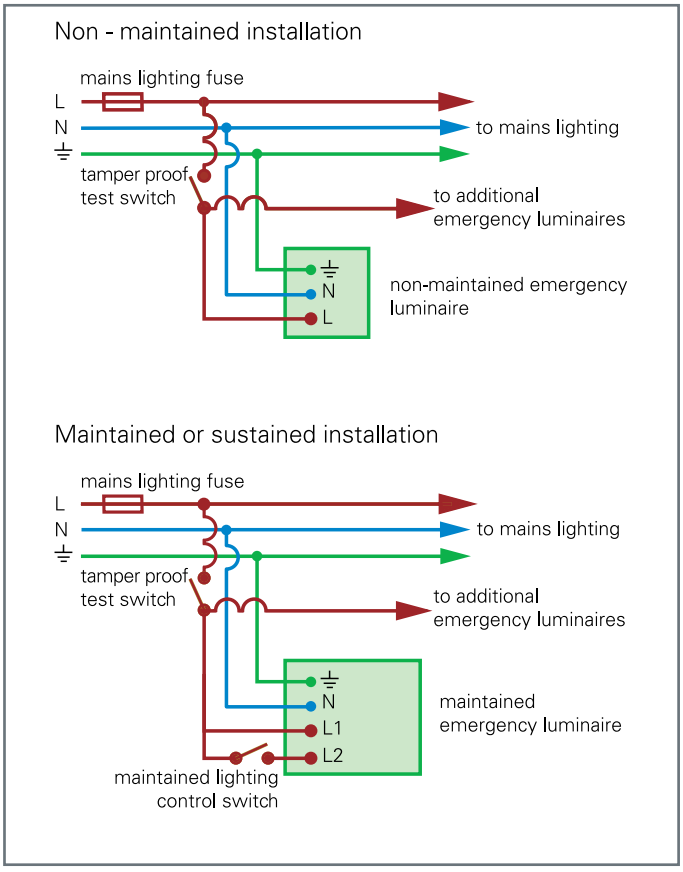
High risk lighting requirement for an acid bath (M) is included in the design for stage 6.

Wiring Installation

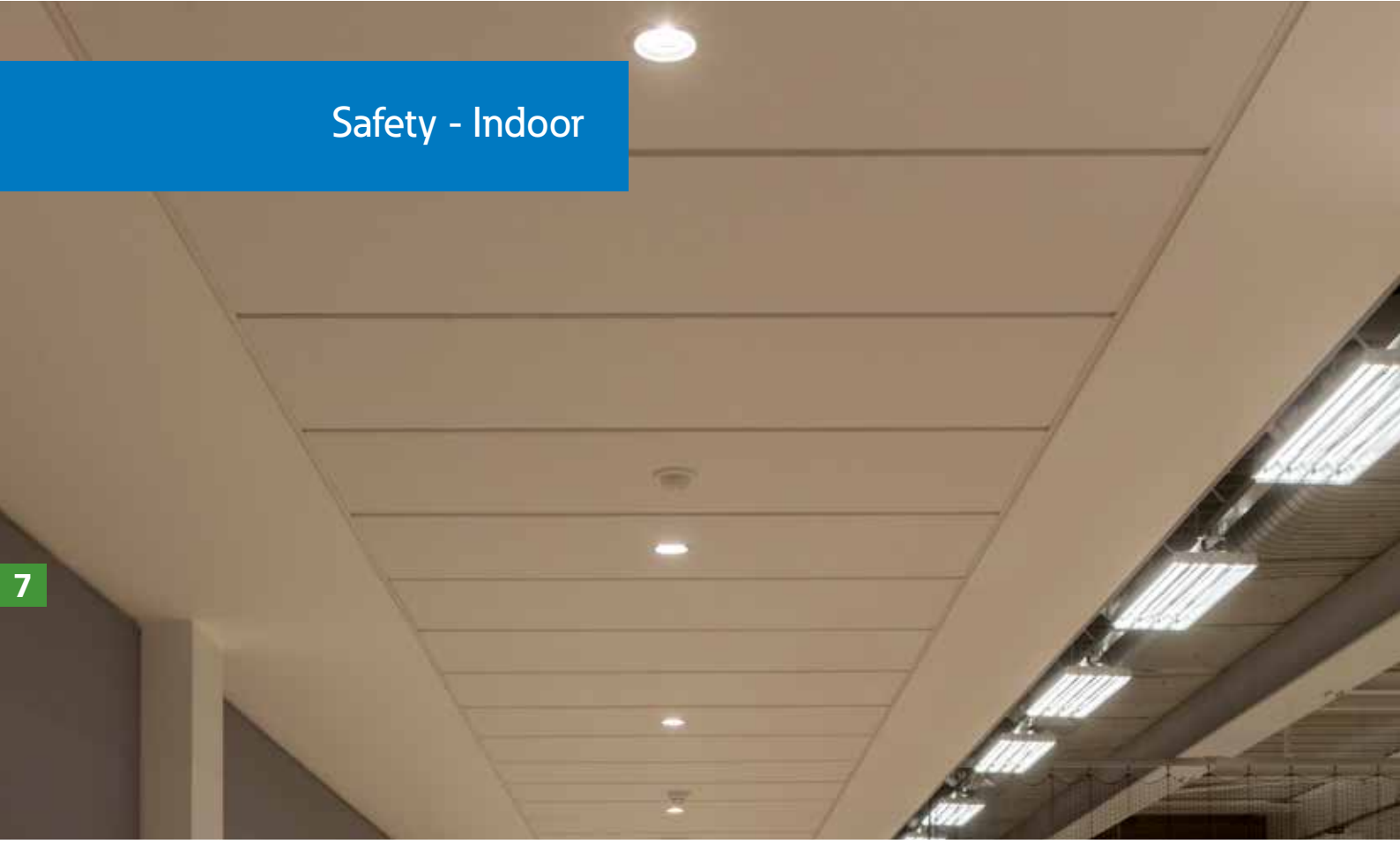
The wiring of emergency luminaires should generally be in accordance with normal wiring practice (I.E.E. Wiring Regulations), statutory requirements applicable to the type of building, local by-laws and regulations. The supply for self-contained luminaires should be taken from the unswitched local light source.

Cabling used when installing self-contained emergency luminaires should be of a similar type to that used for the normal mains light. In the event of a fire, if the cabling used for the emergency luminaires has greater protection, there may be a chance of the normal lighting failing and the emergency lighting remaining in the normal mode (i.e. inoperative). Hence it is recommended that self-contained emergency luminaires are wired in PVC insulated cable.

The supply to self-contained luminaires should be such as to prevent unauthorised disconnection, but should incorporate suitable means for simulating a mains failure for test purposes. The source of supply should be from the same local fuse as the normal lighting, so that in the event of a fuse failure causing the normal lighting to be extinguished, the emergency lighting is brought into operation in the same locality.

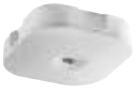


Wiring details



Safety - Indoor

7

	Page	Performance	Aesthetic	No replacement parts for 10 years	Low consumption / Eco-friendly	Protection Degree	Maintained	Non-Maintained	Stand alone	Auto-test	Monitored (CGLine+)	Battery
			General features				Operation		Technology			
1.1 Micropoint 2 Recessed 	200	★★★	●			44	●	●	●	●	●	Ni-Cd
1.2 Micropoint 2 Surface 	202	★★★	●			44	●	●	●	●	●	Ni-Cd
1.3 Micropoint 2 High Output 	204	★★★	●			20		●	●	●	●	Ni-Cd
1.4 Halo-pack 2 	205	★				20		●	●			Ni-Mh

	Installation			Applications								Best use
	Wall	Ceiling surface	Ceiling recessed	Healthcare	Hotels	Cinemas / Theaters	Commercial centers	Stadia / Arenas	Offices	Service room	Warehouse	
1.1			●	●	●	●	●		●			With asymmetric and symmetric optics especially designed for typical mounting heights between 2.5 and 3.5m, Micropoint 2 shows excellent spacing values of more than 19m.
1.2		●		●	●	●	●		●			With asymmetric and symmetric optics especially designed for typical mounting heights between 2.5 and 3.5m, Micropoint 2 shows excellent spacing values of more than 19m.
1.3			●	●	●	●	●	●			●	The high output version of Micropoint 2 was designed for higher illuminance requirements e.g. 10.8 lx acc. to NFPA standard. It can also be used for areas with high ceiling of up to 15m.
1.4			●							●		

- Versatile multi functional use (escape and open area anti-panic)
- Low power consumption reducing cost of ownership
- Excellent spacing reducing the quantity of fittings required
- 60.000 hour life LED for reduced maintenance

Light Source:
1 x 1W LED

Materials:
Luminaire body: Aluminum, luminaire Head: Polycarbonate, remote gear pod: flame retardant ABS
Battery - NiCd

Installation:
Flush mounting

Spring retaining clips for surface installation (install from below ceiling)

Plug and play socket for mains supply

No disassembly required during installation

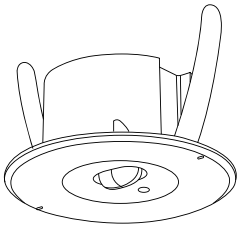
Operation:
Maintained luminaire can be operated in Non-Maintained mode

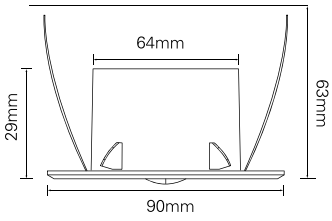
Can be used as security light with 3 preset light levels

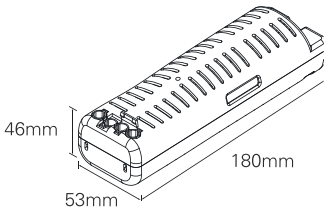
Applications:
Healthcare, hotels, offices, cinemas, theaters, museums, commercial centers

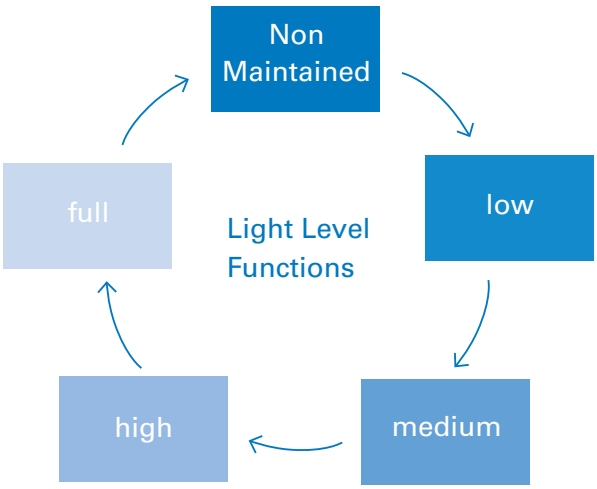
Micropoint 2 is a high specification competitively priced emergency LED luminaire. Micropoint 2 utilises the latest LED and optic technology to provide an unobtrusive, high quality, high performance luminaire for indoor use where aesthetics are of prime importance.

The Micropoint 2 has been designed for ease of installation, reduced power consumption, minimal maintenance, reducing the TCO (total cost of ownership) without compromising on aesthetics. The innovative optic design used in the Micropoint 2, developed and produced by Eaton's Safety business utilises light efficiently from the LED to provide a uniform distribution in either an escape route or open area anti-panic emergency lighting, improving the performance and reducing the electrical power consumption.



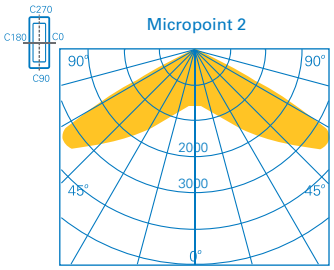


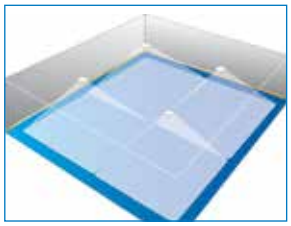




Preset light levels can be adjusted in Maintained mode to operate as security light, adjustable using touch sensitive button on luminaire fascia.

The high power, high efficiency LED light source provides uniform illumination with asymmetric and symmetric light patterns for escape or open area use.

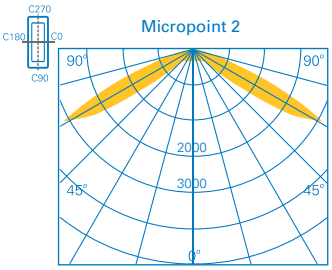


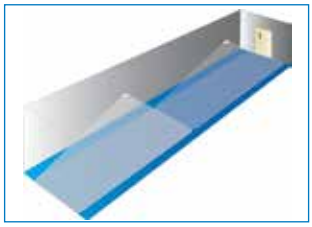


Open Area (Symmetric 0.5 Lux)

Model	Height (m)	Distance for 1 Lux			
MP2O3H (Open Area Anti-Panic)					
	02.50	04.30	09.40	01.70	09.40
	02.80	03.30	09.30	01.40	09.30
	03.00	03.20	09.20	01.20	09.20

Micropoint 2 advanced optics with rectangular distribution
Luminaire with 'no' optics require overlap to eliminate dark spots





Escape Route (Asymmetric 1 Lux)

Model	Height (m)	Distance for 1 Lux (escape route 2m wide)			
MP2E3H (Escape Route)					
	02.50	-	-	07.80	17.10
	02.80	-	-	08.40	18.60
	03.00	-	-	08.60	19.60

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Order code	Description					
MP2O3H	Micropoint 2 Open Area	3.6VA/2.5W-6.9VA/5W	153 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2E3H	Micropoint 2 Escape Route	3.6VA/2.5W-6.9VA/5W	148 Lm	3h	48V - 2Ah NiCd	Maintained / Non-Maintained
MP2SO3HIS	Micropoint 2 Surface Open Area Auto-Test	3.6VA/2.5W-6.9VA/5W	144 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2SE3HIS	Micropoint 2 Surface Escape Route Auto-Test	3.6VA/2.5W-6.9VA/5W	145 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2O3HCGL	Micropoint 2 Open Area CGLine+	3.6VA/2.5W-6.9VA/5W	153 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2E3HCGL	Micropoint 2 Escape Route CGLine+	3.6VA/2.5W-6.9VA/5W	148 Lm	3h	48V - 2Ah NiCd	Maintained / Non-Maintained
MP2OS230	Micopoint 2 230V Mains Slave Open Area					
MP2OS230EC	Micopoint 2 230V Mains Slave Open Area EasiCheck					
MP2OS230CGS	Micopoint 2 230V CEAG Slave Open Area					
MP2ES230CGS	Micopoint 2 230V CEAG Slave Escape Route					

*Non-maintained - Maintained

- Versatile multi functional use (escape and open area anti-panic)
- IP44 ingress protection suitable for bathrooms and wet environment
- First fix base for ease of installation
- 60,000 hour life LED for reduced maintenance

Light Source:

1 x 1 W LED

Materials:

Luminaire Enclosure
Polycarbonate
Battery - NiCd

Installation:

Flush & Surface mount

20mm Conduit entry on all four sides

BESA box entry on base

Operation:

Self-contained Maintained luminaire can be operated in Non-Maintained mode

Can be used as security light with 4 pre-set light levels

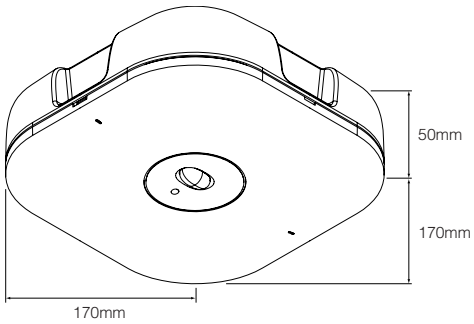
Applications:

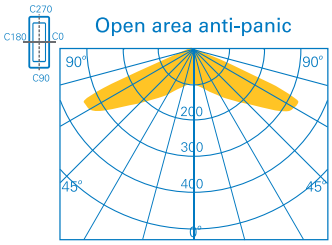
Healthcare, hotels, offices, cinemas, theatres, museums, commercial centers

Micropoint 2 is a high specification competitively priced surface mounted emergency LED luminaire utilising the latest LED and optic technology to provide an unobtrusive, high quality, high performance luminaire for indoor use where aesthetics are prime importance.

The Micropoint 2 has been designed for ease of installation, reduced power consumption, minimal maintenance, reducing the TCO (total cost of ownership) without compromising aesthetics. The innovative optic design used in the Micropoint 2 utilises light efficiently from the LED to provide a uniform distribution in either an escape route or open area anti-panic emergency lighting, improving the performance and reducing the electrical power consumption.

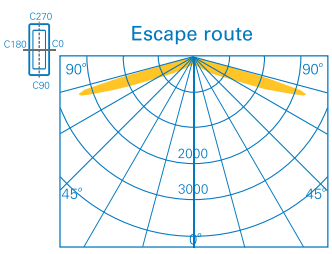
Micropoint 2 uses a touch sensitive keypad to improve ingress protection against water and dust.





Open area (Symmetric)

Mode	Mount height (m)	Lux level directly under	Open area 1 Lux min			
Self contained						
	02.50	01.70	04.30	09.40	04.30	09.40
	02.80	01.40	03.30	09.30	03.30	09.30
	03.00	01.20	03.20	09.20	03.20	09.20



Escape optic (Asymmetric)

Mode	Mount height (m)	Lux level directly under	Escape route 2m wide, 1 Lux min			
Self contained						
	02.50	02.70	-	-	07.50	16.60
	02.80	02.20	-	-	08.10	18.10
	03.00	01.90	-	-	08.30	19.10

Safety luminaires - Indoor

Micropoint 2 Surface

Order code	Description					
MP2SO3H	Micropoint 2 Surface Open Area	3.6VA/2.5W-6.9VA/5W	144 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2SE3H	Micropoint 2 Surface Escape Route	3.6VA/2.5W-6.9VA/5W	145 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2SO3HIS	Micropoint 2 Surface Open Area Auto-Test	3.6VA/2.5W-6.9VA/5W	144 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2SE3HIS	Micropoint 2 Surface Escape Route Auto-Test	3.6VA/2.5W-6.9VA/5W	145 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2SO3HCGL	Micropoint 2 Surface Open Area CGLine+	3.6VA/2.5W-6.9VA/5W	144 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2SE3HCGL	Micropoint 2 Surface Escape Route CGLine+	3.6VA/2.5W-6.9VA/5W	145 Lm	3h	4.8V - 2Ah NiCd	Maintained / Non-Maintained
MP2SOS230	Micropoint 2 Surface 230V Mains Slave Open Area					
MP2SES230	Micropoint 2 Surface 230V Mains Slave Escape Route					
MP2SOS230EC	Micropoint 2 Surface 230V Mains Slave Open Area EasiCheck					
MP2SES230EC	Micropoint 2 Surface 230V Mains Slave Escape Route EasiCheck					
MP2SOS230CGS	Micropoint 2 Surface 230V CEAG Slave Open Area					
MP2SES230CGS	Micropoint 2 Surface 230V CEAG Slave Escape Route					

*Non-maintained - Maintained

- Versatile multi-functional use (high ceiling, NFPA 101 escape route and specific locations as stated within BS 5266-1:2011)
- Low power consumption reducing cost of ownership
- Excellent spacing reducing the quantity of fittings required
- 60,000 hour life LED for reduced maintenance

Light Source:
1 x 2,5W LED

Consumption 7.2VA/3,9W

2.5W and 3.9W

Materials:
Luminaire body: polycarbonate

Remote gear pod - flame retardant ABS

Battery box– steel powder coated in RAL9016

Battery – NiCd

Installation:
Flush mount

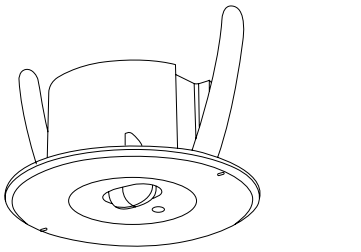
Spring retaining clips for surface installation (install from below ceiling)

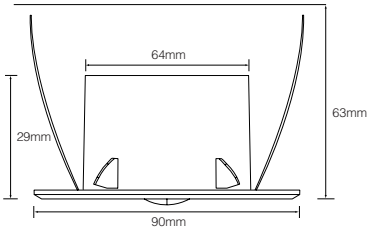
Operation:
Non-Maintained luminaire

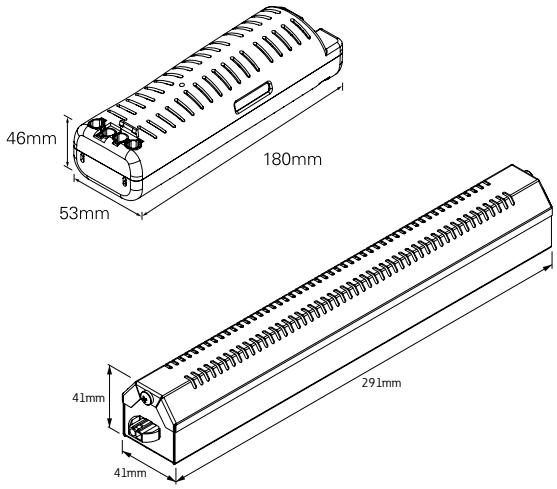
Applications:
All recessed high risk indoor applications

Micropoint 2 high output is an extension to the current Micropoint 2 range.

It remains a high specification competitively priced emergency LED luminaire. Micropoint 2 high output utilises the latest LED and optic technology to provide an unobtrusive, high quality luminaire for indoor use where aesthetics and high performance are of prime importance. Designed for high ceiling applications, it meets the requirements of the NFPA 101 standards for 10.8lux (average) in an escape route application and for the specific locations as stated within BS 5266-1:2011. Micropoint 2 high output has been designed for ease of installation, reduced power consumption and minimal maintenance, reducing the TCO (total cost of ownership) without compromising on aesthetics.







Model	Height (m)	Lux level directly under	Escape route 2m wide, 1 Lux min	
Self contained				
	15.50	01.00	04.10	22.70
	14.00	01.30	06.40	22.70
	12.00	01.70	07.90	22.10
	10.00	02.50	08.00	21.00
	8.00	04.40	07.70	19.70
	6.00	07.00	07.00	18.00

Order code	Description					
MP2HI3H	Non-maintained 3 Hour self-contained	7.2VA/3.9W	298 Lm	3h	4.8V - 4Ah NiCd	Non-Maintained
MP2HI3HIS	Non-maintained 3 Hour self-contained AT	7.2VA/3.9W	298 Lm	3h	4.8V - 4Ah NiCd	Non-Maintained
MP2HI3HCGL	Non-maintained 3 Hour self-contained CGLine+	7.2VA/3.9W	298 Lm	3h	4.8V - 4Ah NiCd	Non-Maintained
MP2HI230	Mains Slave 230V					
MP2HI230CGS	230V CEAG Slave					
MP2HI230EC	Mains Slave 230V EasiCheck					

- Suitable for both solid and exposed grid ceilings as the gear pod fits through the head unit installation aperture
- Adapter plate for retrofit and shallow ceiling applications
- Up to 50,000 hour life LED for reduced maintenance
- Low power consumption reducing cost of ownership
- Environmentally friendly NiMH battery

Light Source:

1 x 3W LED

Materials:

Luminaire head, remote gear and adaptor plate - polycarbonate and ABS blend

Battery - NiMH

Installation:

Flush mounting

Spring retaining clips for surface installation (install from below ceiling)

Plug and play socket for mains supply

No disassembly required during installation

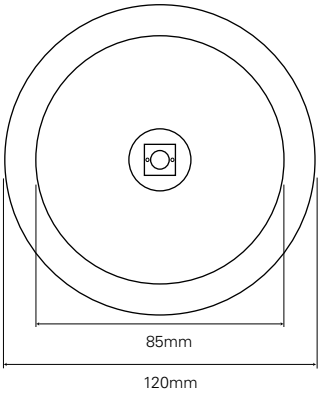
Operation:

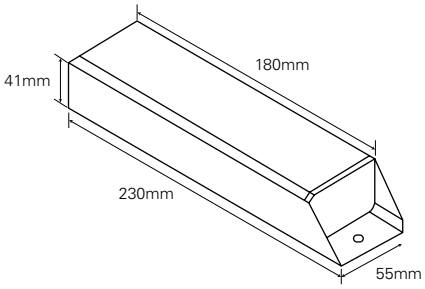
Non-Maintained operation

Applications:

All recessed indoor applications

Halo-Pack 2 combines the latest in LED technology with an ultra-low profile, providing emergency lighting where aesthetics and reliability are of prime importance. Installation into an existing ceiling is fast and simple to complete.





For retrofit and/or shallow ceiling applications an optional adapter plate is provided as standard

Model	Height (m)	Lux level directly under		Escape route 2m wide, 1 Lux min		Open (anti-panic) area 0.5 Lux min				
HPLED3H										
02.50	05.32	03.20	08.70	03.20	08.70	03.60	09.70	03.60	09.	70
02.80	05.00	03.30	09.00	03.30	09.00	03.70	10.00	03.70	10.	00
03.00	04.36	03.30	09.10	03.30	09.10	03.80	10.20	03.80	10.	20
04.00	02.40	03.10	09.30	03.10	09.30	03.90	11.30	03.90	11.	30
05.00	01.08	01.09	08.50	01.00	08.50	03.60	12.50	03.60	12.	50

Order code	Description					
HPLED3H	Halo Pack 2	4 W	170 Lm	3h	6x1.5Ah AA NiMH	Non-Maintained

Safety & exit signs

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	Page	Performance	General features: Aesthetic	General features: No replacement parts for 10 years	General features: Low consumption / Eco-friendly	General features: Protection Degree	Operation: Maintained	Operation: Non-Maintained	Technology: Stand alone	Technology: Autotest	Technology: Monitored (CGLine+)	Battery
2.1 i-P65+ 	208	★ ★ ★				65	●	●		●	●	Ni-Cd
2.2 Outdoor Wall 	210	★ ★ ★			●	65	●	●		●	●	Li-Ion
2.3 DRG 	211	★				65	●	●	●	●		Ni-Cd
2.4 AG LED Bulkhead 	213	★				65	●	●	●			Ni-Cd

Installation			Applications								Best use
Wall	Ceiling surface	Ceiling recessed	Healthcare	Hotels	Cinemas / Theaters	Commercial centers	Stadia / Arenas	Offices	Industrial	Warehouse	
	●								●	●	High lumen output combined with special optics for highest spacing for large areas and high ceilings. Can be used at 40°C permanent ambient temperature.
●			●	●	●	●	●	●	●	●	Especially made for outdoors above the exit door and escape routes alongside the building. With battery heater suitable for down to -20°C.
●	●								●	●	
●	●								●	●	

- Robust design with IK08
- i-P65+ L: with wide-beam symmetrical lens
- i-P65+ H: with narrow-beam reflector
- High lumen output for high spacing and high ceilings
- Minimum maintenance effort and increased safety via use of LEDs with high service life (up to 60,000 h)

Light Source :
COB LED 6.5W

Materials:
Impact-resistent polycarbonate
Die-Cast Aluminiumoptional

Operation:
Maintained / Non-maintained
3h duration

Applications:
Factories, warehouses

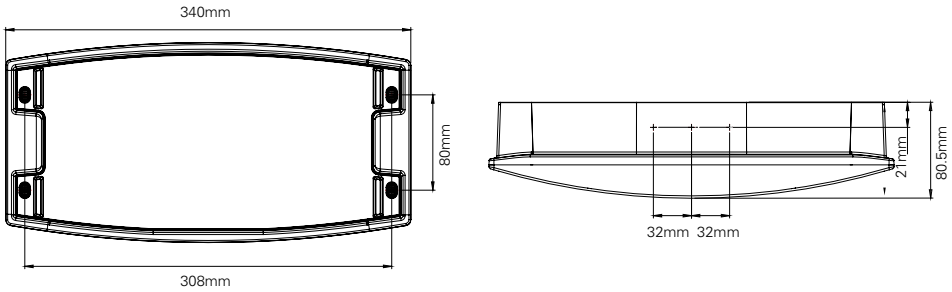
The i-P65+ was developed specifically for requirements in industrial environments.

With a combination of high-efficiency LEDs and special optics, the i-P65+ provides optimum performance for a variety of applications.

The housing construction features an IP65 protection rating and IK08 impact resistance, making it ideal for ambient conditions in the industrial sector. The photometric and electronic components including batteries are designed for reliable functionality with continuous ambient temperatures up to 40°C. The luminaires can therefore be reliably used in halls where machines or processes cause increased temperatures.

Because of the high light output – also with battery operation – the i-P65+ is also suitable for applications in which more than 1 lx is required, e.g. for high risk task areas workstations where according to EN 1838 at least 15 lx or 10 % of general lighting is required, or in emergency lighting systems where a mean illuminance of 10.8 lx is specified by the North American NFPA 101 standard.

The i-P65+ is of course also available with EATON CGLine+ technology for highly convenient and reliable monitoring of the lighting system.

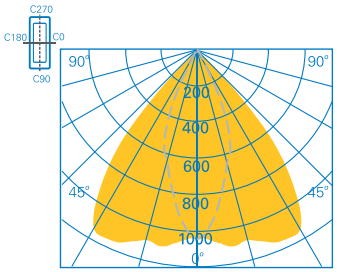


Order code	Description					
Polycarbonate enclosure						
iP65PLP3H	i-P65 Plus L 3H	21.7 VA/10.7 W	510 Lm	3h	4.8V-4Ah NiCd	Maintained / Non Maintained
iP65PHP3H	i-P65 Plus H 3H	21.7 VA/10.7 W	380 Lm	3h	4.8V-4Ah NiCd	Maintained / Non Maintained
iP65PLP3HIS	i-P65 Plus L 3H, Auto-Test	21.7 VA/10.7 W	510 Lm	3h	4.8V-4Ah NiCd	Maintained / Non Maintained
iP65PHP3HIS	i-P65 Plus H 3H, Auto-Test	21.7 VA/10.7 W	380 Lm	3h	4.8V-4Ah NiCd	Maintained / Non Maintained
iP65PLP3HCGL	i-P65 Plus L 3H, CGLine+	21.7 VA/10.7 W	510 Lm	3h	4.8V-4Ah NiCd	Maintained / Non Maintained
iP65PHP3HCGL	i-P65 Plus H 3H, CGLine+	21.7 VA/10.7 W	380 Lm	3h	4.8V-4Ah NiCd	Maintained / Non Maintained
Aluminiumenclosure						
iP65PLA3HCGL	i-P65 Plus L 3H, CGLine+	21.7 VA/10.7 W	510 Lm	3h	4.8V-4Ah NiCd	Maintained / Non Maintained
iP65PHA3HCGL	i-P65 Plus H 3H, CGLine+	21.7 VA/10.7 W	380 Lm	3h	4.8V-4Ah NiCd	Maintained / Non Maintained
230VAC Slave High-Bay						
IP65PHP230	i-P65 Plus 230V AC Mains Slave (Polycarbonate)					
IP65PHA230	i-P65 Plus 230V AC Mains Slave (Aluminum)					
IP65PHP230EC	i-P65 Plus 230V AC Mains Easicheck Slave (Polycarbonate)					
IP65PHA230EC	i-P65 Plus 230V AC Mains Easicheck Slave (Aluminum)					

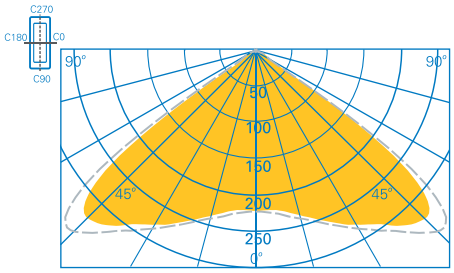
Accessories

iP65PSUSPB	Mounting bracket for chain suspension or for mounting at trunking systems or similar

230VAC Slave Mid-Bay	
IP65PLP230	i-P65 Plus 230V AC Mains Slave (Polycarbonate)
IP65PLA230	i-P65 Plus 230V AC Mains Slave (Aluminum)
IP65PLP230EC	i-P65 Plus 230V AC Mains Easicheck Slave (Polycarbonate)
IP65PLA230EC	i-P65 Plus 230V AC Mains Easicheck Slave (Aluminum)
CEAG High-Bay	
IP65PHPCGS	i-P65 Plus 230V CEAG Slave (Polycarbonate)
IP65PHACGS	i-P65 Plus 230V CEAG Slave (Aluminum)
CEAG Mid-Bay	
IP65PLPCGS	i-P65 Plus 230V CEAG Slave (Polycarbonate)
IP65PLACGS	i-P65 Plus 230V CEAG Slave (Aluminum)



i-P65+ H
Asymmetric reflector
Narrow-beam
reflector technology



i-P65+ L
Wide-beam
Symmetrical lens

Luminaire type	Height (m)	Distance for 1 Lux				
3 h	Ceiling mounting	03.00	03.10	06.60	02.00	05.10
	Escape route centre	04.00	04.10	08.50	02.40	05.60
		05.00	04.90	10.30	02.80	06.20
		06.00	05.70	12.10	03.20	07.10
		07.00	06.40	13.80	03.60	07.90
		08.00	07.10	15.50	03.90	08.70
		09.00	07.70	17.00	04.10	09.50
		10.00	08.20	18.40	04.20	10.20
		15.00	08.80	23.70	02.80	11.70
		16.00	08.00	24.30	02.20	11.60

Luminaire type	Height (m)	Distance for 1 Lux				
3 h	Ceiling mounting	03.00	04.40	09.20	04.40	09.30
	Escape route centre	04.00	05.60	11.80	05.50	11.80
		05.00	06.60	14.30	06.50	14.20
		06.00	07.20	16.60	07.00	16.40
		07.00	07.40	18.50	07.00	18.10
		08.00	06.40	19.50	06.10	19.00
		09.00	04.60	19.50	04.50	18.90
		10.00	-	15.50	-	15.00
3 h	Ceiling mounting	03.00	04.20	08.20	04.10	08.10
	Room illumination	04.00	05.20	10.50	05.20	10.50
		05.00	05.90	12.80	05.90	12.80
		06.00	06.30	14.90	06.40	15.00
		07.00	06.80	16.90	06.80	16.90
		08.00	05.00	18.50	05.40	18.40
		09.00	03.60	18.20	03.70	18.20
		10.00	00.50	16.00	00.50	16.00
		15.00	00.50	15.70	00.50	15.60
		18.00	00.50	09.40	00.50	09.40

The lens optic emits almost square light distribution over a very large area. This makes it especially suitable for large halls where no fixed escape route can be defined due to changing uses, meaning the complete area must be illuminated. A maximum spacing of up to 23 m between luminaires reduces the number of required light points. An application range up to 17 m enables mounting at the normally occurring heights.

The reflector solution was specifically developed for extreme mounting heights in combination with tight escape routes, e.g. with highbay racking applications, where in the case of wrong light distribution more light is distributed into the shelving than for safety along the escape routes. Here mounting heights to 28 m and luminaire spacing to 30 m are possible. This reduction in the quantity of luminaires needed leads to reduced installation- and operating costs.

- For indoor and outdoor use
- Robust construction from Aluminium diecast and high impact resistant cover made of polycarbonate
- Optional with self-regulating battery heater for use at low temperature down to -20°C

Light Source:
2 × 1.6 W LED

Materials:
Diecast Aluminium housing
Polycarbonate lens

Installation:
Wall mounting above exit door or along escape routes

Operation:
For maintained and non-maintained operations CGLine+ (Without working in AT mode)

Manual test with magnet

Applications:
Factories, warehouses, underground car parks, workshops, tunnel

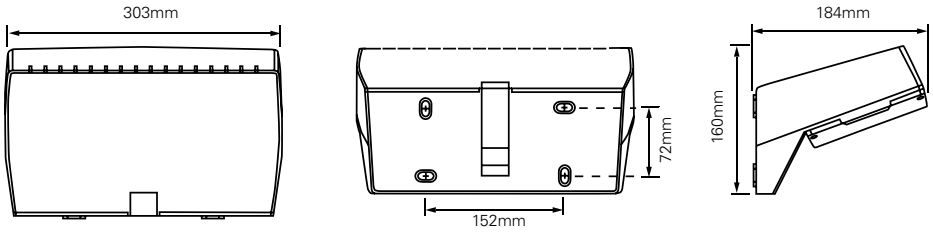
Installation on emergency exits inside and outside buildings

The durable cast Aluminium along with the high degree of protection (IP65) makes this outdoor wall unit particularly suitable for industrial areas, underground car parks and tunnels.

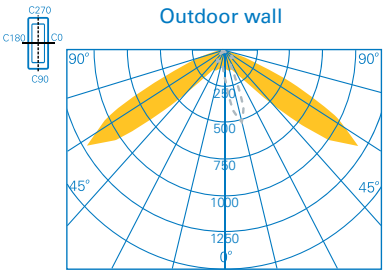
Outdoor Wall has been developed to be mounted on the wall above the safety exits of a building both inside and outside, thanks to the special design which allows 90° installation and ensures the uniform illumination level required by law.

The optical asymmetric lens are optimally designed to spread light in corridors and escape routes.

For application with low ambient temperature down to -20°C, e.g. outdoors, the Outdoor LED is available also with a self-regulating battery heater.



Outdoor wall



Outdoor LED light coverage

Order code	Description					
40071354874	Outdoor Wall 1-8h CGLine+	7.2 VA/7.0 W	225lm	1 - 3 - 8 h	3.7V / 4Ah	Maintained / Non-Maintained
40071354879	Outdoor Wall 1-8h CGLine+ H (with battery heater)	9.2 VA/9.3 W	225lm	1 - 3 - 8 h	3.7V / 4Ah	Maintained / Non-Maintained

Safety - High degree of protection

DRG

- Heavy duty vandal resistant construction
- IP65 weatherproof rating
- Attractive and functional grille and pattress, allowing flush fixing over conduit
- Tamper resistant security screws
- Intellem self-test option
- Matching mains version
- Supplied with lamp

Lamp Options

28W 2D compact fluorescent, 3500°K - GR10q-4 cap

Materials

Base - die cast Aluminum, powder coated in white finish

Pattress kit - die cast Aluminum, powder coated in light grey finish

Diffuser - opal polycarbonate

Geartray - steel, powder coated in RAL9016 finish

Batteries NiCd

Installation

Suitable for ceiling or wall mounting

BESA entry drill outs on rear, alternative drill outs for screw fixing

Optional grille and pattress kit adds side conduit entry options

Pattress fits flush over surface conduit and BESA box

Geartray retained by screws

Diffuser retained by allen key security screws

Supplied complete with lamp

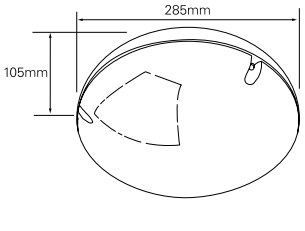
Options

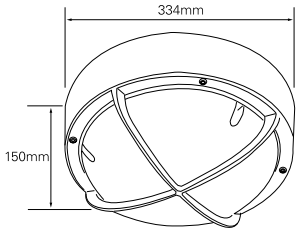
Maintained and non-maintained operation, 3 hour duration

Optional die cast grille and pattress accessory

Intellem self-test option

A strong die cast base and tough, tamper resistant polycarbonate diffuser affords the DRG range an extremely high level of vandal resistance. Yet whilst robust, DRG is also stylish and attractive and will blend into a variety of contemporary and period applications, both interior and exterior. The style and resilience is further enhanced by an optional die cast Aluminium grille and pattress kit, which has functional security screws and special channels on the back, allowing the kit to fit flush over surface conduit. DRG is available with the latest in self-test technology and a matching mains only version for attractive, efficient general illumination.





Options	Dia (mm)	D (mm)
Standard DRG	285	105
DRG with grille/pattress	334	150

Luminaire Type	Mounting height (m)	Escape route 2m wide 1 lux min				Open (anti-panic) area 0.5 lux min			
Self-contained									
NM	2.5	2.4	6.5	6.5	2.4	3.2	7.5	7.5	3.2
	3.0	2.4	6.8	6.8	2.4	2.3	8.2	8.2	2.3
	4.0	1.9	6.8	6.8	1.9	2.3	8.9	8.9	2.3
M	2.5	2.3	5.2	5.2	2.3	2.1	7.2	7.2	2.1
	3.0	2.1	5.0	5.0	2.1	2.2	7.7	7.7	2.2
	4.0	1.4	6.1	6.1	1.4	2.1	8.4	8.4	2.1
Slave									
AC/DC	2.5	3.6	9.5	9.5	3.6	3.2	10.3	10.3	3.2
	4.0	3.9	10.5	10.5	3.9	3.7	12.0	12.0	3.7
	6.0	3.2	10.8	10.8	3.2	3.8	14.0	14.0	3.8
AC/AC	2.5	5.5	13.6	13.6	5.5	4.7	15.4	15.4	4.7
	4.0	6.4	16.4	16.4	6.4	5.7	18.2	18.2	5.7
	6.0	7.0	18.4	18.4	7.0	6.4	20.7	20.7	6.4

Pattress kit, detailing channels for surface conduit

Order code	Description				
DRG283230240	DRG 28W 2D Non-maintained 3HR IP65	150 lm	3h	Ni-Cd	Non-Maintained
DRG283M	DRG 28W 2D Maintained 3HR IP65 lamp	150 lm	3h	Ni-Cd	Maintained
DRG283IS	DRG NM3 28W 2D Self test Module IP65	150 lm	3h	Ni-Cd	Intellem self-test - non-maintained
DRG283MIS	DRG M3 28W Self test module IP65	150 lm	3h	Ni-Cd	Intellem self-test - maintained

Safety - High degree of protection

AG LED Bulkhead

- BSI kitemarked for peace of mind
- ICEL registered with verified light performance
- Competitive and versatile range
- Weatherproof, heavy duty vandal resistant construction
- Matching 11W PL mains version
- Tamper resistant diffuser ideal for public areas
- Self-contained, slave, and addressable testing options
- Available in self-contained, AC/DC and AC mains slave versions
- Supplied with lamp
- Long life 50,000 hour LED version available (selfcontained only)

Lamp Options

High output
16 LED strip

Materials

Base - die cast Aluminum, powder coated in RAL9016 finish

Diffuser - opal polycarbonate

Geartray - steel, powder coated in RAL9016 finish

Recessing trim plate - steel, powder coated in RAL9016 finish

Batteries (self-contained versions) - NiCd

Installation Notes

Suitable for ceiling or wall mounting

BESA entry drill-out on rear

20mm conduit entry on each end, with blanking plugs

Geartray hinged, retained in closed position by single screw

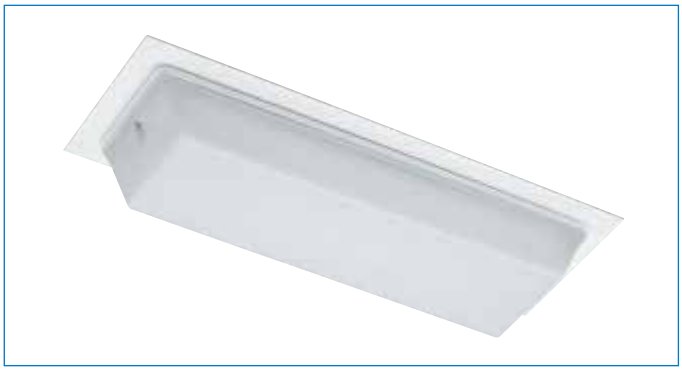
Diffuser retained by allen key security screws

Options

Maintained and non-maintained operation, 3 hour duration

Semi-recessing trim plate accessory

AG Bulkhead is a competitively priced exterior emergency bulkhead that does not compromise on quality. The compact and tough die cast construction, vandal resistant diffuser, IP65 weatherproof rating and time saving installation features make AG Bulkhead excellent value for money for a variety of applications, from public buildings and car parks to industrial facilities. A high output mains version, using an high output LED strip, allows this versatile luminaire to also be used for the general lighting of circulation areas, both exterior and interior, such as stairwells. A useful semi-recessing trim plate enhances the appearance of the AG range when mounted into canopies or in corridors.



Specification

Self contained - To specify state: BSI Kitemarked and ICEL registered, IP65 vandal resistant self-contained emergency luminaire, die cast Aluminiumbase with BESA drill-out, 2 x conduit entries with blanking plugs, hinged geartray with plug and socket terminal block and tamper resistant opal diffuser, as AG Bulkhead range, part no. _____

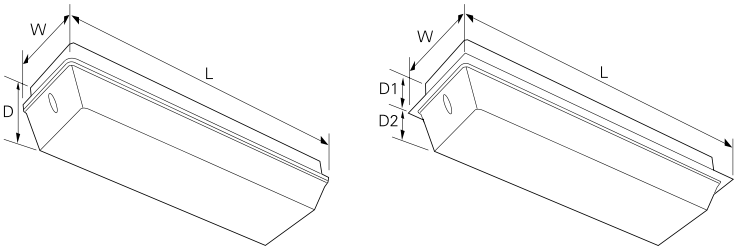
Photometric Data

Escape Optics (Asymmetric) Escape Route 2M wide 1 lux min to centre line

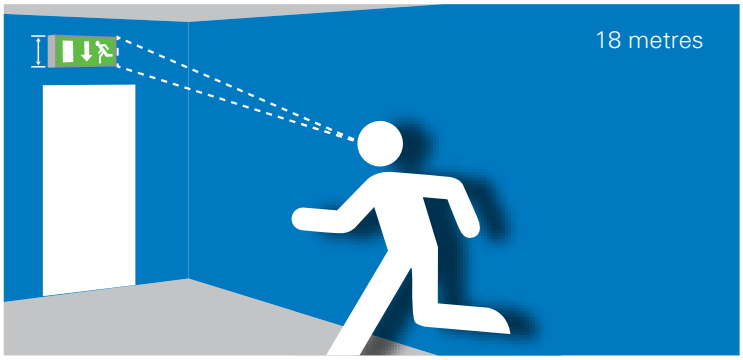
Luminaire Type	Mounting height [m]					0.5L	0.5L	0.5L	0.5L
LED									
Self-contained									
M	2.5	2.6	7.1	6.5	2.4	3.4	7.4	7.0	2.8
	2.8	2.6	7.2	6.7	2.4	3.5	8.0	7.3	2.9
	3.0	2.6	7.3	6.8	2.4	3.5	8.5	7.5	2.9
	4.0	2.2	7.4	6.1	2.0	3.4	9.4	8.5	3.0

7

Dimensions



Options	L (mm)	W (mm)	D1 (mm)	D2 (mm)	Cut out (mm)
Surface mounted	390	110	90	-	-
Semi-recessed	430	150	27	63	380 x 102



Accessories

Cat No	Description	Weight (kg)
Legend Kit		
LEXSAM	European Format Self-Adhesive Legend Kit	0.05
LEXSAM-ISO	ISO7010 Format Self-Adhesive Legend	0.05
Trim Plate		
AG8FM	Semi-recess plate	0.1

Catalogue Numbers

Cat No	System Mode	Weight (kg)
LED		
AGL3M	Maintained/ Non maintained 3Hr	1.5
AG8230CG	230V CeaGuard Slave	0.9
AG8230	230V AC Mains Slave	1.5
AG8230EC	230V AC Mains Slave EasiCheck	1.6
AG850	50V AC/DC Central System Slave	1.5
AG8110	110V AC/DC Central System ve	1.5

Safety - High degree of protection

Safety & exit signs

7

	Page	Performance	Aesthetic	One box solution*	No replacement parts for 10 years	Low consumption / Eco-friendly	Protection Degree	Viewing distance	Maintained	Non-Maintained	Stand alone	Autotest	Monitored (CGLine+)	Battery
			Global Features						Operation		Technology			
3.1 NexiTech LED 	218	★★	●			●	40 65	20 30*	●	●		●	●	Ni-Cd
3.2 NexiLite 	222	★					40 65	20 30*	●	●	●			Ni-Cd
3.3 Zeta 4 	224	★					42 65	20 30	●	●	●			Ni-Cd
4.1 Atlantic LED 	228	★★★				●	65	24	●	●		●	●	Li-ion
4.2 i-P65 	230	★★					65	20	●	●	●	●	●	Ni-Cd

*double side panels available for 30m viewing distance

Indoor

High degree of protection

Installation				Applications								Best use
Wall	Ceiling	Recessed	Suspended*	Healthcare	Hotels	Cinemas / Theaters	Commercial centers	Stadia / Arenas	Offices	Industrial	Warehouse	
●	●	●		●	●	●	●	●	●		●	
●	●	●		●	●	●	●		●			
●	●	●		●	●	●	●		●			
	●							●		●	●	Very robust solution with IK10 for industrial and public buildings like car parks . With battery heater suitable for down to -20°C.
	●									●	●	Versatile multi-functional use and designed to support agressive environment

*See pure exit sign section for suspended luminaires

- From 150 to 300lm output flux
- Comparable to 8, 11 and 18W fluorescent lamp
- Ni-Cd HT high quality batteries

Light Source:
LED strip

Material:
Base and reflector
white polycarbonate

Diffuser clear polycarbonate

Protection degree IP40 and
IP65 with the accessory kit

Installation options:
Wall and ceiling mounting

Surface or recessed installation
in false ceiling and bricks wall

Single side glue-less
ISO7010 pictograms with

20m viewing distance

Double side ISO7010 panels
with 30m of viewing distance

Operation:
Maintained and
Non-Maintained mode
on all version

Fixed 60lm output in Maintained
mode for all variants for high
energy saving

3h duration

24h recharge period

Applications:
Schools, universities, commercial
malls, stores, offices, public
administration and all indoor
generic environments

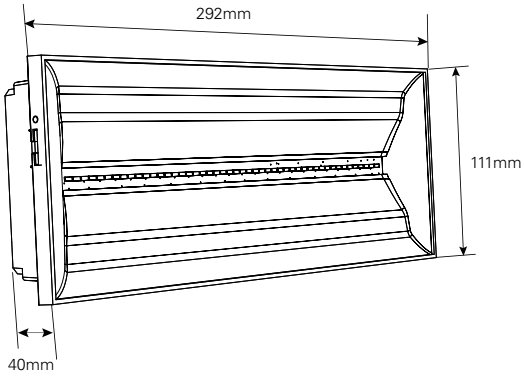
Safety antipanic lighting and
escape route lighting

Hi-bay environments

Reliability and continuity of service was the main consideration in the development of the new NexiTech LED Emergency lighting range.

The modern style, the simplicity of the shapes and the high quality surfaces make NexiTech LED ideal for any architectural context, while the precision of the mechanics and the sophisticated electronics guarantee a full unmatched reliability.

The latest generation of LED light source and the careful study of the refractive parts allow a uniform light distribution without light waste.



Autotest is now for all

The reliability and the guarantee of operation are now within everyone's reach. We chose to design NexiTech LED starting directly from models with built-in diagnostic functions, all the self-contained versions (with battery on board) are equipped with a self-test system that performs automatic tests in accordance with standard EN62034 and EN50172.

Top level signalization

The pictograms, optional and available upon request, conform to the international standard ISO7010, have no glue and can be repositioned at will and with ease, without a complex installation. They are placed between the diffuser and reflector creating a translucency which finds its maximum aesthetic applications when recessed into the wall.

NexiTech LED with IP65 protection kit

The IP65 kit is compatible with all the variants.
Only surface mounting. Dimension 308x125x53 mm

With double-side pictograms

Viewing distance: 30m

With single-side pictograms

Nexi pictograms don't stick, but are placed behind transparent diffuser.

Viewing distance: 20m

Recessed base for bricks wall

Order code: NEXI-RB
Cut-out: 277x100 mm

Nexi LED frame

Order code	Description					
NEXI150-3H-AT	NexiTech LED 150 3h Auto Test	1.3W - 3.1W	150 Lm	3h	3.6V - 2.0Ah NiCd	Maintained / Non-Maintained
NEXI250-3H-AT	NexiTech LED 250 3h Auto Test	2.25W - 3.6W	250 Lm	3h	7.2V - 1.7Ah NiCd	Maintained / Non-Maintained
NEXI150-3H-CGL-IP	NexiTech LED 150 3h IP65 CGLine+	1.3W - 3.1W	150 Lm	3h	7.2V - 1.7Ah NiCd	Maintained / Non-Maintained
NEXI300-3H-CGL	NexiTech LED 300 3h CGLine+	2 W - 3.2 W	300 Lm	3h	7.2V - 1.7Ah NiCd	Maintained / Non-Maintained
NEXI300-3H-CGL-IP	NexiTech LED 300 3h IP65 CGLine+	2W - 3.2W	300 Lm	3h	7.2V - 1.7Ah NiCd	Maintained / Non-Maintained
NEXI3HIA-CGL	NexiTech LED 3h IA CGLine+ IP40	2.5W - 4W	50-500Cd	3h	7.2V - 1.7Ah NiCd	Maintained
NEXI3HIA-CGLIP	NexiTech LED 3h IA CGLine+ IP65	2,5W - 4W	50-500Cd	3h	7,2V- 1,7Ah NiCd	Maintained

Pictograms not included

*Non maintained - Maintained

Accessories

NEXI-IP	IP65 protection kit
NEXI-RB	Bricks wall recessed base (cut-out 277x100mm)
NEXI-FC	False ceiling adapter (cut-out 272x95mm)
NEXI-FR	Finishing frame NexiTech LED

Single-side pictograms

NEXI-PICTO-D	Pictogram Down ISO single-side 20m
NEXI-PICTO-L	Pictogram Left ISO single-side 20m
NEXI-PICTO-R	Pictogram Right ISO single-side 20m
NEXI-PICTO-U	Pictogram Up ISO single-side 20m

Delivered with 7 adhesive exit legends for single or double side

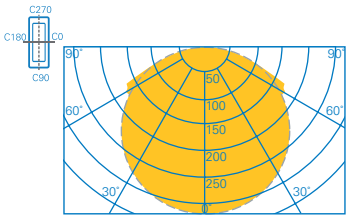
Double-side panels

Ultra version - high uniformity - compatible IP40 housing

NEXI-PLEX-DD	Double side panel Down/Down ISO 30m
NEXI-PLEX-LR	Double side panel Left/Right ISO 30m
NEXI-PLEX-DB	Double side panel Down/Blind ISO 30m
NEXI-PLEX-UU	Double side panel Up/Up ISO 30m
NEXI-PLEX-UB	Double side panel Up/Blind ISO 30m

Lite version - standard uniformity - compatible IP65 housing & NEXI-IP kit

NEXI-PLEX-IP	Double side panel NexiTech/NexiLite IP65 - ISO 30m



NexiTech, 150 lm

Escape route 2m wide 1 lux min

Mounting height [m]	Lux level directly under				
2.5	6.0	3.2	8.5	8.5	3.2
2.8	5.0	3.3	8.7	8.7	3.3
3.0	4.4	3.4	8.8	8.8	3.4
4.0	2.7	3.4	9.4	9.4	3.4
5.0	1.7	2.8	9.1	9.1	2.8
6.0	1.1	1.8	8.7	8.7	1.8
7.0	N/A	N/A	N/A	N/A	N/A

Open (anti-panic) area 0.5 lux min

Mounting height [m]	Lux level directly under				
2.5	6.0	3.6	8.0	8.0	3.6
2.8	5.0	3.7	8.5	8.5	3.7
3.0	4.4	3.8	9.8	9.8	3.8
4.0	2.7	4.4	9.2	9.2	4.4
5.0	1.7	4.0	11.0	11.0	4.0
6.0	1.1	3.8	11.6	11.6	3.8
7.0	0.8	3.5	12.1	12.1	3.5

Mounting height for 5 lux below 2 meters

NexiTech, 250 lm

Escape route 2m wide 1 lux min

Mounting height [m]	Lux level directly under				
2.5	10.1	3.9	10.0	10.0	3.9
2.8	8.4	4.0	10.6	10.6	4.0
3.0	7.4	4.1	10.8	10.8	4.1
4.0	4.5	4.3	10.8	10.8	4.3
5.0	2.8	4.0	11.3	11.3	4.0
6.0	1.9	3.7	11.4	11.4	3.7
7.0	1.4	2.9	11.2	11.2	2.9

Open (anti-panic) area 0.5 lux min

Mounting height [m]	Lux level directly under				
2.5	10.1	4.0	9.4	9.4	4.0
2.8	8.4	4.2	9.9	9.9	4.2
3.0	7.4	4.3	10.3	10.3	4.3
4.0	4.5	4.7	11.8	11.8	4.7
5.0	2.8	4.8	12.7	12.7	4.8
6.0	1.9	4.9	13.6	13.6	4.9
7.0	1.4	4.9	14.4	14.4	4.9

Mounting height for 5 lux below 3.9 meters

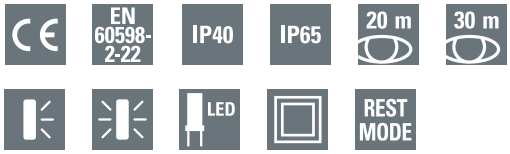
Open (anti-panic) area 10.8 lux min NEXI 300 CGL

Mounting height [m]				
2.5	2.0	6.0	2.0	6.0
3.0	2.0	5.0	2.0	5.0
4.5	2.0	4.0	2.0	4.0

NexiTech IA

NexiTech LED™ was created with the aim of simplifying the work of the installer. No tools are needed to open or close the product and installation is further simplified by the presence of a quick plug-in screwless terminal block.

NexiTech LED™ can be installed on walls, ceilings, recessed walls or false recessed ceilings. Although it is particularly suitable for interiors such as offices, schools, universities and hospitals, NexiTech LED™ can be quickly turned into an outdoor unit with the simple addition of an IP65 protection kit. This kit makes it possible to use NexiTech LED™ even in humid and dusty environments such as underground car parks and light industrial plants.



- Latest generation LED light source
- 150 and 250lm output flux
- 3h duration
- Compact dimensions: 290x110x40mm

Light Source:
LED strip

Material:
Base and reflector white polycarbonate

Diffuser clear polycarbonate

Protection degree IP40 and IP65 with the accessory kit

Operation:
Maintained and Non-Maintained mode on all version

Fixed 60lm output in Maintained mode for all variants for high energy saving

3h duration

24h recharge period

Applications:
Schools, universities, commercial centers, stores, offices, public administration and all indoor generic environments

Safety antipanic lighting and escape route lighting

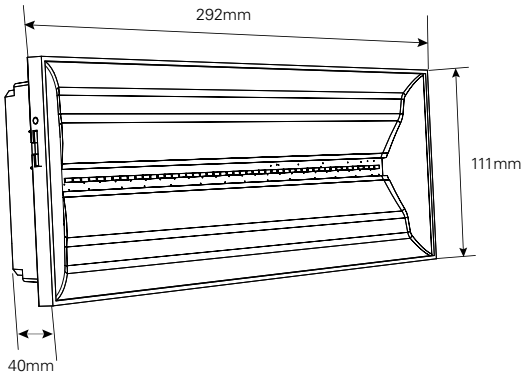
Exit sign with single and double side signalization

Thanks to the latest generation LED light source NexiLite is able to provide an high output flux up to 250lm.

With his compact and modern design, NexiLite can be used in any architectural context, the wide range of accessories allows installation on a wall, ceiling, surface or recessed in indoor and outdoor environments, thanks to IP65 protection kit.

The quality of the raw materials, the high technology of the electronic circuitry, together with the latest generation light sources put make it unique for performance and reliability.

NexiLite is available in non maintained NM and maintained M mode with 3 hours duration.



The right accessory at the right time

NexiLite is equipped with a wide range of accessories to meet any installation requirement.

The standard versions, with degree of protection IP40 are suitable to be installed indoors, but thanks to the IP65 kit are transformed into outdoor luminaires for use in wet and dusty environments.

For escape sign lighting, NexiLite is equipped with a series of single side pictograms and double side panels in accordance with International Standard ISO7010 with visibility distance of 20 and 30m (EN1838).

NexiLite's single side pictograms are different from those adhesives commonly used since are positioned between the reflector and the diffuser, are free of glue and can be repositioned as desired without the formation of unsightly defects.

NexiLite LED with IP65 protection kit

The IP65 kit is compatible with all the variants.
Only surface mounting. Dimension 308x125x53 mm

With double-side pictograms

Viewing distance: 30m

With single-side pictograms

Nexi pictograms don't stick, but are placed behind transparent diffuser.

Viewing distance: 20m

Recessed base for bricks wall

Order code: NEXI-RB
Cut-out: 277x100 mm

Nexi LED frame

Order code	Description					
NXL150-3H	NexiLite 150Lm 3h M	3.1 W	150 Lm	3h	3.6V - 2.0Ah NiCd	Maintained / Non-Maintained
NXL250-3H	NexiLite 250Lm 3h M	3.6 W	250 Lm	3h	7.2V - 1.7Ah NiCd	Maintained / Non-Maintained

Accessories

NEXI-IP	IP65 protection kit
NEXI-RB	Bricks wall recessed base (cut-out 277x100mm)
NEXI-FC	False ceiling adapter (cut-out 272x95mm)
NEXI-FR	Finishing frame NexiTech LED

Single-side pictograms

NEXI-PICTO-D	Pictogram Down ISO single-side 20m	
NEXI-PICTO-L	Pictogram Left ISO single-side 20m	
NEXI-PICTO-R	Pictogram Right ISO single-side 20m	
NEXI-PICTO-U	Pictogram Up ISO single-side 20m	

Please see NexiTech for spacing table.

Double-side panels

Ultra version - high uniformity - compatible IP40 housing

NEXI-PLEX-DD	Double side panel Down/Down ISO 30m	
NEXI-PLEX-LR	Double side panel Left/Right ISO 30m	
NEXI-PLEX-DB	Double side panel Down/Blind ISO 30m	
NEXI-PLEX-UU	Double side panel Up/Up ISO 30m	
NEXI-PLEX-UB	Double side panel Up/Blind ISO 30m	

Lite version - standard uniformity - compatible IP65 housing & NEXI-IP kit

NEXI-PLEX-IP	Double side panel NexiTech/NexiLite IP65 - ISO 30m delivered with 7 adhesive exit legends for single or double side

- Multi-functional usability (escape route, open-area and exit signage)
- Exit sign with 20m & 30m viewing distance options available
- IP65 ingress protection suitable for indoor and out-door applications (small version only)
- Maintained and non-maintained configurable
- 60,000 hour life LED (L80) for reduced maintenance costs

Lamp Options

8 x 0.6W (small) and 12 x 0.6W (large) LED

Power Consumption

Maintained – 6.5 VA/5.5W

Non-maintained – 5.5 VA/4.25W

Materials

Luminaire body – white polycarbonate RAL9003

Battery - NiCd

Installation Notes

Surface ceiling or wall mount

BESA entry drilling template on rear

Cable entry to top, bottom and rear

Lens snap fits into position

Three screw less terminals (L, N, L2)

Terminals take wire up to 2 x 2.5mm²

IP65 rating is achievable with sealing plugs included. (Small version only)

Large version is IP42 rated.

Options

Switch-maintained or non-maintained

Can be used as an emergency luminaire or exit sign

Optional double sided diffuser accessory is available for use as a double sided exit luminaire (Legend Kit purchased separately)

Continuing the success of the Zetalite family of products is the improved and upgraded Zeta 4.

The aesthetics have been enhanced to create a more modern and discreet appearance which is suitable for most project applications.

By utilising the latest LED technology the result is increased spacing performance while still maintaining low energy usage.

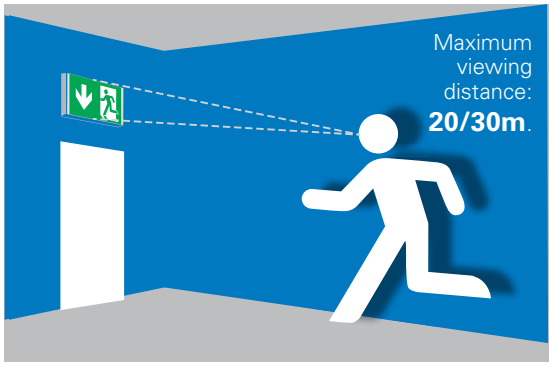
Zeta 4 is suitable for use as an Escape route and open area luminaire, while providing extra versatility as an exit sign via the application of an optional adhesive legend kit.

Specification

Self-Contained (Small Version) – To specify: IP65 self-contained emergency luminaire, suitable for use as an emergency luminaire or 20m viewing distance exit sign by application of a self-adhesive legend, NiCd battery, as per Zeta 4 range, part no. _____

Self-Contained (Large Version) – To specify: IP65 self-contained emergency luminaire, suitable for use as an emergency luminaire or 30m viewing distance exit sign by application of a self-adhesive legend, NiCd battery, as per Zeta 4 range, part no. _____

Maximum Viewing Distance



Double side cone diffuser:

Used to do ceiling signage, double or single side (blind picto inside).
In accordance with EN1838 standard.
Exit pictograms comply with ISO7010. Compatible with IP42 and IP65 luminaire versions.
Could be associated with recessed base. Adhesives pictograms have to be ordered separately (or re use ones delivered with luminaires).

Double side plexi diffuser:

Used to do ceiling signage, double or single side.
Exit pictograms comply with ISO7010.
Select order code according to signage configuration requested.
Compatible with IP42 and IP65 luminaire versions.
Could be associated with recessed base.

Recessed base:

Option used for full recessed mounting in false ceiling.
Compatible with IP42 and IP65 luminaire versions.
Could be associated with double side diffuser and panel signage.

Order code	Viewing distance (m)	IP	IK	Duration (h)	Lum in emergency	Lum in mains	Operation	Consumption NM VA	Consumption NM W	Consumption M VA	Consumption M W	Battery		Weight (kg)	Adhesive Exit Legend included
ZE42ML3	20	65	07	3	150	60	MNM	3.2	2.5	3.8	3.2	3.6 V	1.7 Ah	0.7	ISO (L, R, D)
ZE43ML3	30	65	07	3	150	60	MNM	3.2	2.5	3.8	3.2	3.6 V	1.7 Ah	0.9	ISO (L, R, D)

7

Accessories

Wire guard - ensures high degree of protection

SL2PG	Zeta 4 20m, Wire guard
O-EL-GRID	Zeta 4 30m, Wire guard

Recessed base - For full recessed mounting, compatible IP42 & IP65 variants, can be associated to double side diffusers

SL2RB	Zeta 4 20m, RecesBase
SL3RB	Zeta 4 30m, RecesBase

Recessed box

SL2WB	Zeta 4 20m, Wall Base

Double side cone diffuser - compliant with EN1838

ZE42DB	Zeta 4 small, 20m viewing distance double sided cone diffuser
ZE42DB	Zeta 4 large, 30m viewing distance double sided cone diffuser

**Pictograms have to be ordered separately (or re use ones delivered with luminaires).*

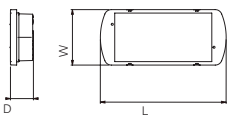
Set of adhesive exit legends

ZE42LEG	20m viewing distance (Small) Euro legend kit
ZE42LEG-ISO	20m viewing distance (Small) SO7010
ZE43LEG	30m viewing distance (Large) Euro legend kit
ZE43LEG-ISO	30m viewing distance (Large) ISO7010 legend kit

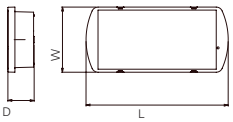
Dimensions

Type	Width (mm)	Depth (mm)	Length (mm)
ZE42ML3	119	49	270
ZE43ML3	170	69	371

ZE42ML3 - Zeta 4 Small



ZE43ML3 - Zeta 4 Large

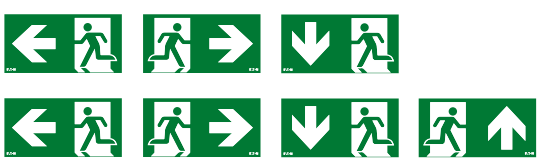


Catalogue Numbers

System Mode	Cat No	Weight (kg)
Maintained/Non maintained 3Hr Small	ZE42ML3	0.5
Maintained/Non maintained 3Hr Large	ZE43ML3	0.9

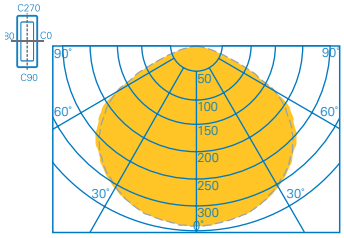
Legend Kits

20m viewing distance (Small) Euro legend kit	ZE42LEG	0.03
20m viewing distance (Small) ISO7010 legend kit	ZE42LEG-ISO	0.03
30m viewing distance (Large) Euro legend kit	ZE43LEG	0.06
30m viewing distance (Large) ISO7010 legend kit	ZE43LEG-ISO	0.06



Accessories

20m viewing distance (Small) double sided diffuser	ZE42DB	0.2
20m viewing distance (Small) double sided diffuser	ZE43DB	0.5



Light distribution curve

Escape Optics (Asymmetric) Escape Route 2M wide 1 lux min to centre line

	Mounting height [m]	Lux level directly under				
Self-Contained Small	2.5	5.7	3.1	7.8	7.7	3.1
	2.8	4.6	3.2	8.2	8.0	3.1
	3.0	4.0	3.2	8.4	8.2	3.1
	3.5	2.9	3.2	8.8	8.5	3.1
	4.0	2.2	3.0	8.9	8.6	3.0
	4.5	1.8	2.8	8.9	8.7	2.8
	5.0	1.4	2.5	8.8	8.6	2.4
	5.5	1.2	1.9	8.5	8.4	1.8
	6.0	N/A	N/A	N/A	N/A	N/A
	6.5	N/A	N/A	N/A	N/A	N/A
	7	N/A	N/A	N/A	N/A	N/A
	7.5	N/A	N/A	N/A	N/A	N/A
	8	N/A	N/A	N/A	N/A	N/A

Open area optics (symmetric) Open (anti panic) area 0.5 lux min

	Mounting height [m]	Lux level directly under				
Self-Contained Small	2.5	5.7	3.3	7.7	8.0	3.3
	2.8	4.6	3.4	8.6	8.6	3.3
	3.0	4.0	3.5	8.9	8.8	3.4
	3.5	2.9	3.6	9.7	9.7	3.5
	4.0	2.2	3.7	10.1	10.0	3.6
	4.5	1.8	3.7	10.5	10.3	3.6
	5.0	1.4	3.6	10.7	10.6	3.6
	5.5	1.2	3.6	11.0	10.9	3.5
	6.0	N/A	3.4	11.4	11.2	3.3
	6.5	N/A	3.2	11.4	11.4	3.1
	7	N/A	3.0	11.5	11.6	2.9
	7.5	N/A	2.7	11.6	11.9	2.6
	8	N/A	2.2	11.6	12.1	2.1

Escape Optics (Asymmetric) Escape Route 2M wide 1 lux min to centre line

	Mounting height [m]	Lux level directly under				
Self-Contained Large	2.5	5.2	3.0	7.5	7.5	2.9
	2.8	4.2	3.0	8.0	7.8	3.0
	3.0	3.6	3.1	8.3	8.0	3.0
	3.5	2.7	3.0	8.5	8.2	2.9
	4.0	2.1	2.8	8.6	8.4	2.8
	4.5	1.6	2.6	8.5	8.4	2.5
	5.0	1.3	2.1	8.3	8.2	2.0
	5.5	1.1	1.2	8.0	7.9	1.2
	6.0	N/A	N/A	N/A	N/A	N/A
	6.5	N/A	N/A	N/A	N/A	N/A
	7	N/A	N/A	N/A	N/A	N/A
	7.5	N/A	N/A	N/A	N/A	N/A
	8	N/A	N/A	N/A	N/A	N/A

Open area optics (symmetric) Open (anti panic) area 0.5 lux min

	Mounting height [m]	Lux level directly under				
Self-Contained Large	2.5	5.7	3.4	7.4	7.3	3.4
	2.8	4.6	3.5	7.9	7.8	3.4
	3.0	4.0	3.5	8.3	8.2	3.4
	3.5	2.9	3.5	9.2	9.1	3.4
	4.0	2.2	3.6	9.9	9.6	3.5
	4.5	1.8	3.6	10.5	9.9	3.5
	5.0	1.4	3.5	10.8	10.3	3.5
	5.5	1.2	3.4	10.8	10.5	3.4
	6.0	N/A	3.3	10.8	10.6	3.3
	6.5	N/A	3.0	10.9	10.8	3.0
	7	N/A	2.7	10.9	10.8	2.7
	7.5	N/A	2.2	10.9	10.8	2.2
	8	N/A	1.3	10.9	10.8	1.3

- For indoor and outdoor use
- Robust construction from Aluminium diecast and high impact resistant cover made of polycarbonate
- Optional with self-regulating battery heater for use at low temperature down to -20°C

Light Source:
2 × 1.6W LED

Materials:
Aluminium die-cast housing

White polycarbonate reflector

Clear polycarbonate diffuser

Operation:
For maintained and non-maintained operations

CGLine+ (Without bus working in AT mode)

For 1h, 3h or 8h operation

Installation:
Wall and ceiling installations

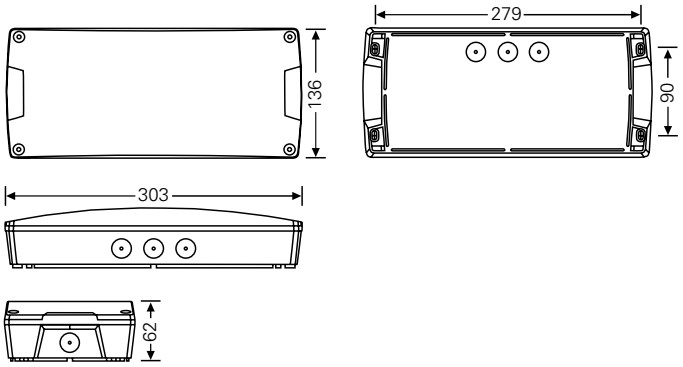
Applications:
Factories, warehouses, underground car parks, workshops, tunnel

Escape routes, corridors

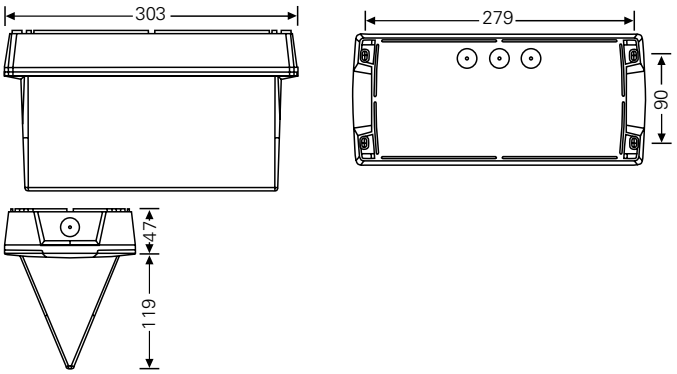
The Atlantic LED CGLine+ luminaire series fulfills protection rating IP65, and with UV-resistant materials and an especially tough construction, it is ideal for use in outdoor areas or in industrial applications.
Atlantic LED R and Atlantic LED O are also suitable for use in food processing industry in accordance with standards IFS and HACCP.

The range includes safety luminaires with different optics for Escape route or antipanic illumination and single sided or double sided exit signs. Optimal perceptibility of the exit signs due to high luminance of the white contrasting colour (>500 cd/m2).

Drawings for Atlantic LED R, O and S



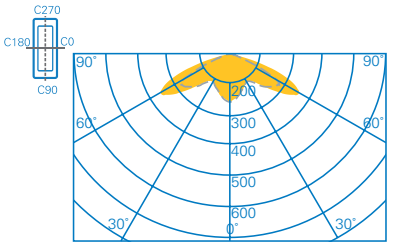
Atlantic LED S - Single sided exit sign



Atlantic LED D - Double sided exit sign

Accessories

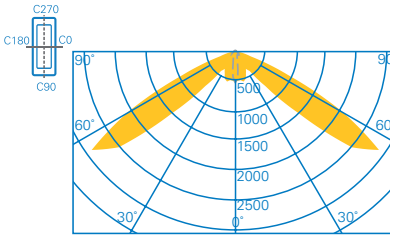
Pictograms for Atlantic LED S					
155-000-011	Pictogram RIGHT		155-000-013	Pictogram DOWN	
155-000-012	Pictogram LEFT				
Pictograms for Atlantic LED D (2 × required)					
155-000-211	Pictogram RIGHT, ISO		155-000-213	Pictogram DOWN, ISO	
155-000-212	Pictogram LEFT, ISO		155-000-209	Pictogram BLIND	



Atlantic O CGLine+
with symmetric optics

Planning help for Atlantic LED O – symmetric optics for E = 1.0 lx
Measurement level: 0.02 m, maintenance factor MF = 80 %, battery operation

Duration of emergency operation	Mounting height in metres	Mounting types	L1	L2	L3	L4	Mounting types	L1	L2	L3	L4
1 h	2.5	Ceiling mounting	4.5	10.7	3.8	8.9	Ceiling mounting	3.9	9.6	2.9	7.2
	3.0	Escape route centre	4.7	11.7	4.1	9.9	Room illumination	3.4	10.6	3.1	8.1
	3.5		4.9	12.5	4.1	10.8		3.4	11.6	3.1	8.8
	4.0		4.3	13.2	4.1	11.4		3.4	12.5	2.8	9.4
	5.0		1.9	13.1	1.9	10.4		1.9	12.1	0.8	11.1
	6.0		1.1	7.0	1.1	7.3		1.2	11.8	0.5	10.5
3 h	2.5	Ceiling mounting	3.8	9.6	3.3	8.1	Ceiling mounting	3.4	8.9	2.4	6.5
	3.0	Escape route centre	3.8	10.4	3.3	8.9	Room illumination	3.4	9.7	2.5	7.3
	3.5		1.9	10.8	1.9	9.4		2.0	10.5	2.0	7.9
	4.0		1.6	10.6	1.5	8.4		1.4	9.7	0.9	9.0
	4.5		1.2	10.0	1.2	7.6		1.0	9.4	0.6	8.8



Atlantic R CGLine+
with asymmetric optics

Planning help for Atlantic LED R – asymmetric optics for E = 1.0 lx
Measurement plane: 0.02 m, maintenance factor MF = 80 %, battery operation

Duration of emergency operation	Mounting height in metres	Mounting types	L1	L2	L3	L4
1 h	2.5	Ceiling mounting	6.0	13.0	2.0	6.1
	3.0	Escape route, centre	6.8	15.0	1.7	6.1
	3.5		7.5	16.8	1.4	5.6
	4.0		8.3	18.5	1.2	5.0
	5.0		9.6	21.5	1.1	3.9
	6.0		10.8	24.4	1.0	3.3
	7.0		3.5	21.9	1.0	3.3
	8.0		3.3	22.0	0.9	3.1
3 h	2.5	Ceiling mounting	5.6	12.4	1.3	4.9
	3.0	Escape route, centre	6.3	14.2	1.0	4.2
	3.5		7.1	15.8	0.9	3.7
	4.0		7.7	17.2	0.9	3.2
	5.0		8.9	20.1	0.8	2.6
	6.0		2.7	17.6	0.8	2.6
	7.0		2.4	18.3	0.6	2.4

Order code	Description				
40071354870	Exit sign luminaire Atlantic LED S, single sided, CGLine+	7.2 VA / 7.0 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained / Non-Maintained
40071354871	Exit sign luminaire Atlantic LED S, double sided, CGLine+	7.2 VA / 7.0 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained / Non-Maintained
ATLM	Atlantic LED Maintained 3HR	7.2 VA / 7.0 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained
ATLMIS	Atlantic LED Maintained 3HE self test	7.2 VA / 7.0 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained
ATLS230	Atlantic LED 230V AV Mains Slave				
40071354872	Safety luminaire Atlantic LED R CGLine+, with asymmetric optics	7.2 VA / 7.0 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained / Non-Maintained
40071354873	Safety luminaire Atlantic LED O CGLine+, with symmetric optics	7.2 VA / 7.0 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained / Non-Maintained
40071354875	Exit sign luminaire Atlantic LED S, single sided, CGLine+ H, with battery heater for low ambient temperature down to -20°C	9.2 VA / 9.3 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained / Non-Maintained
40071354876	Exit sign luminaire Atlantic LED S, single sided, CGLine+ H, with battery heater for low ambient temperature down to -20°C	9.2 VA / 9.3 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained / Non-Maintained
40071354877	Safety luminaire Atlantic LED R CGLine+ H, with asymmetric optics, with battery heater for low ambient temperature down to -20°C	9.2 VA / 9.3 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained / Non-Maintained
40071354878	Safety luminaire Atlantic LED O CGLine+ H, with symmetric optics, with battery heater for low ambient temperature down to -20°C	9.2 VA / 9.3 W	1 - 3 - 8h	Li-Ion 3.7V / 4Ah	Maintained / Non-Maintained

2 × cable glands 20mm included

- Versatile multi functional use (escape, open area and exit sign use)
- Low power consumption reducing cost of ownership
- Ease of installation, reducing installation time and cost
- 60.000 hour life LED for reduced maintenance
- Autotest emergency versions available, reducing maintenance costs and offering ease of compliance with testing requirements

Light Source:
2 x 1W LED

Materials:
Luminaire Body: Polycarbonate

Gear Tray: Polycarbonate

Battery: NiCd

Base RAL7035

Operation:
Maintained luminaire can be operated in Non-Maintained model

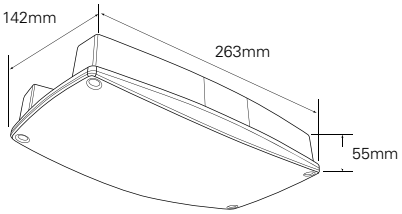
Optional ISO7010 or Euro pictogram exit legends

Temperature controlled battery heater kit for optimised performance in low ambient temperatures

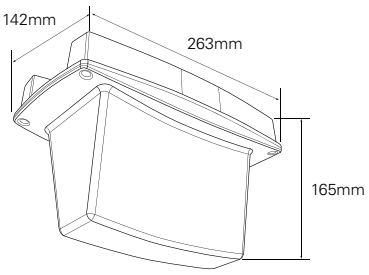
Applications:
Hotels, cinemas, theaters, schools and hospitals

i-P65 is a high specification competitively priced emergency LED bulkhead utilising the latest LED and optic technology to provide an attractive, good quality, functional luminaire for indoor and outdoor use. Boasting numerous features and benefits, the i-P65 can be used to provide escape route lighting, single sided exit sign or optional double sided exit sign with a common look and feel where aesthetics are a primary concern.

The i-P65 has been designed for ease of installation, reduced power consumption, minimal maintenance, reducing the TCO (total cost of ownership) with a compact attractive appearance. The innovative optic design used in the i-P65 utilises light from the LED source to provide uniform lighting distribution. For both escape route and open area antipanic emergency lighting applications, performance is improved and electrical power consumption is reduced.



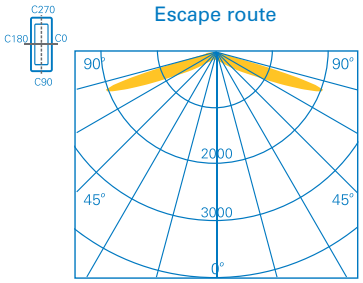
IP65LEDEX3H



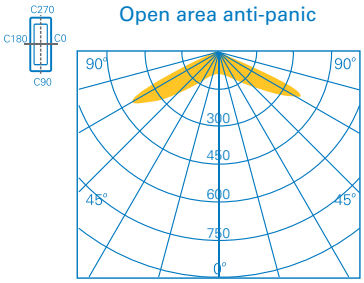
IP65LEDO3H

Safety & exit signs - High protection
i-P65

IP65LEDE
Escape route



IP65LEDO
Open area anti-panic



Model	Height (m)	Distance for 1 Lux			
Escape optic	02.50			07.80	17.10
	02.80			08.40	18.60
	03.00			08.60	19.60

Model	Height (m)	Distance for 1 Lux			
Open area optic	02.50	05.30	10.50	05.30	10.50
	02.80	05.70	11.50	05.70	11.50
	03.00	05.90	12.20	05.90	12.20
	04.00	04.90	12.60	04.90	12.60

Order code	Description					
IP65LEDO3H	i-P65, 3h, open area	2.9VA/2.0W-7.6VA/5.75W	153 Lm	3h	4,8V-1,6Ah Ni-Cd	Maintained / Non-Maintained
IP65LEDE3H	i-P65, 3h, escape route	2.9VA/2.0W-7.6VA/5.75W	148 Lm	3h	4,8V-1,6Ah Ni-Cd	Maintained / Non-Maintained
IP65LEDO3HIS	i-P65, 3h, open area Auto-test	2.9VA/2.0W-7.6VA/5.75W	153 Lm	3h	4,8V-1,6Ah Ni-Cd	Maintained / Non-Maintained
IP65LEDE3HIS	i-P65, 3h, escape area Auto-test	2.9VA/2.0W-7.6VA/5.75W	148 Lm	3h	4,8V-1,6Ah Ni-Cd	Maintained / Non-Maintained
IP65LEDEX3H	i-P65, double side exit sign, 3h	2.9VA/2.0W-7.6VA/5.75W		3h	4,8V-1,6Ah Ni-Cd	Maintained / Non-Maintained
IP65LEDEX3HIS	i-P65, double side exit sign, 3h, Auto-test	2.9VA/2.0W-7.6VA/5.75W		3h	4,8V-1,6Ah Ni-Cd	Maintained / Non-Maintained
IP65LEDO3HCGL	i-P65, 3h, open area CGLine+	7.6VA/5.75W	153 Lm	3h	4,8V-1,6Ah Ni-Cd	Maintained
IP65LEDE3HCGL	i-P65, 3h, escape route CGLine+	7.6VA/5.75W	148 Lm	3h	4,8V-1,6Ah Ni-Cd	Maintained
IP65LEDEX3HCGL	i-P65, double side exit sign, 3h CGLine+	7.6VA/5.75W		3h	4,8V-1,6Ah Ni-Cd	Maintained
IP65LEDO230	i-P65, 230V Mains Slave open area**					
IP65LEDE230	i-P65, 230V Mains Slave escape route**					
IP65LEDO230EC	i-P65, 230C Mains Slave open area EasiCheck**					
IP65LEDE230EC	i-P65, 230V Mains Slave escape route EasiCheck**					
IP65LEDO230CG	i-P65, 230V CEAG Slave open area**					
IP65LEDE230CG	i-P65, 230V CEAG Slave escape route**					
IP65LEDO110	i-P65, 110V Slave open area**					
IP65LEDE110	i-P56, Double sided, 110V Slave escape route**					
IP65LEDEX230	i-P65, Double sided, 230V Mains Slave**					
IP65LEDEC230EC	i-P65, Double sided, 230V Mains Slave EasiCheck**					
IP65LEDEX230CG	i-P65, Double sided, 230V CEAG Slave**					

Accessories

IP65LEG	Single side legend kit, European format
IP65LEG7010	ISO7010 single side legend kit
IP65DBLLEG7010	Double side legend panel kit, ISO7010
IP65DBLLEG	European format double side legend kit
IP65CONDHEAT	Low temperature battery heater

*Non-maintained - Maintained

** (not including pictogram)

† Allows luminaire to be used in low ambient temperatures

Exit signs

7

	Page	Performance	Global Features						Operation		Technology			Battery
			Aesthetic	One box solution*	No replacement parts for 10 years	Low consumption / Eco-friendly	Protection Degree	Viewing distance	Maintained	Non-Maintained	Stand alone	Autotest	Monitored (CGLine+)	
5.1 CrystalWay	235	★ ★ ★	●	●	●	●	42	20 30	●	●		●	●	Li-Ion
5.2 GuideLed	237	★ ★ ★			●	●	40 41	20 30	●	●		●	●	Li-Ion
5.3 Britesign 2	241						20	33	●		●	●	●	Ni-Cd
5.4 Velos	242	★ ★					20	30 40	●		●	●		Ni-Cd
5.5 Exit Cube	246	★ ★					40	20	●	●		●	●	Li-Ion
5.6 VIA 8	248	★					20	24			●			Ni-Cd
5.7 Exit SE	250						20	41 34	●		●			Ni-Cd

* One box solution : delivered with set of pictograms and acessories for wall or ceiling surface mounting

Indoor

High Degree of Protection

Installation				Applications								Best use
Wall	Ceiling	Recessed	Suspended	Healthcare	Hotels	Cinemas / Theaters	Commercial centers	Stadia / Arenas	Offices	Industrial	Warehouse	
●	●	●	●	●	●	●	●	●	●			Aesthetic range for easy integration in differently-sized environments. Accessories and pictograms included for a wall & ceiling surface mounting.
●	●	●	●	●	●	●	●		●			Versatile mounting options enable the use in many applications and the design can be the same in the whole building.
●				●	●	●	●		●			
●	●	●	●	●	●	●	●		●			
	●		●				●			●	●	3-sided exit signage for large areas like warehouses or supermarkets
	●		●				●		●			
●						●	●		●			

CrystalWay IA

The CrystalWay design combines LED Lightguide technology with a highly transparent frame. Also thanks to optimal illumination, this achieves excellent recognition of the escape sign and a concise, discreet appearance. The standard scope of supply for CrystalWay already contains all accessories for mounting to walls or ceilings and a pictogram set. For planning and purchasing, a differentiation must only be made between viewing distances of 20 m and 30 m.

Further accessories are also available for additional mounting methods such as recessed ceiling or cable suspension.

The CrystalWay incorporates high performance components and the newest Lithium-Ion battery technology to create a low profile yet robust emergency lighting solution which performs to a high standard while providing a long operating life.

Exit signs - Indoor
CrystalWay

CE | EN 60598-2-22 | EN 1838 | EN 62034 | EK | IP42 | IK04 | 20 m | 30 m | LED | Li-Ion | CG+ Line | AT | IA

- Unit with innovative LED technology
- Lithium Batteries 10 years
- Selectable autonomy of 1h, 3h and 8h
- Wall, ceiling, suspension
- Version 20m and 30m visibility
- Available for ceiling mounting and recessed applications

Light Source:

LED strip

Materials:

Polycarbonate

Operation:

Maintained (M)

Adjustable brightness function, standing at 100 % at 1 h; 45 % at 3 h; 25 % at 5 h; 18 % at 8 h

Duration selectable 1h, 3h and 8h

Installation possibilities: Wall, ceiling, recessed, suspended

Maintenance costs reduced, no replacement of spare-parts needed for 10 years

Applications:

Hotels, restaurants, meeting rooms, offices, shops, cinemas, theaters, museums

CrystalWay is a new range of aesthetics self-contained luminaires which fully comply with the latest regulatory requirements and standards.

Its pure forms, the perfectly homogeneous illumination of the pictogram, the small housing and flexible mounting options ensure that CrystalWay's design for an evacuation device is perfect for any project.

Indeed, it can be integrated harmoniously within the architecture of the building, whether it is a large facility (airport, concert hall, etc.) or a smaller one (retail store, sales office, etc.).

The use of LEDs, low consumption, long life components, automatic testing and monitoring devices (CGLine+) significantly reduce the operating and maintenance costs of the installation.

The CrystalWay devices have benefited from an eco-design in order to meet the latest environmental standards.

All devices are supplied with all the accessories and pictograms for a wall or ceiling mounting with single sided signage and most of the usual double sided signage configurations. Consequently, the management of supplies and inventory as well as the necessary studies have been simplified considerably.

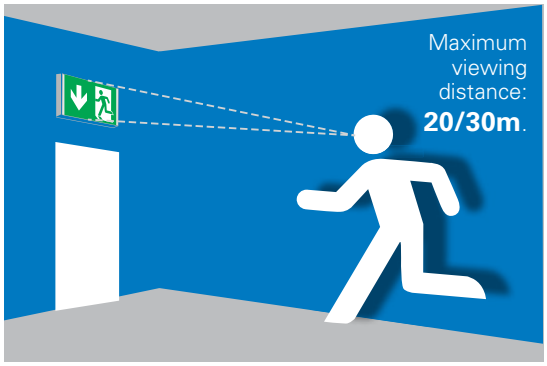
The CrystalWay range has been developed to optimize the installation of the products whilst ensuring a flawless finish.

New :

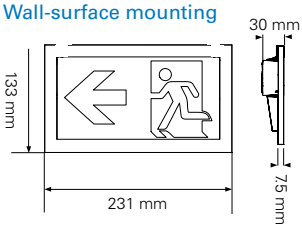
It is now possible to use an Eaton magnet (part number: 40071352379) in order to:

- carry out manual tests
- configure the level of light output in mains mode (30%, 70% or 100%)

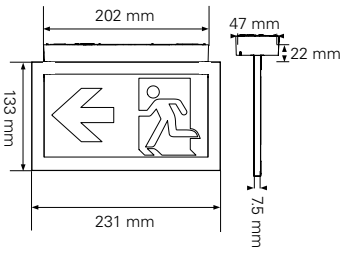
Viewing distance



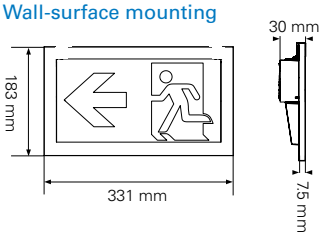
CrystalWay 20m
Wall-surface mounting



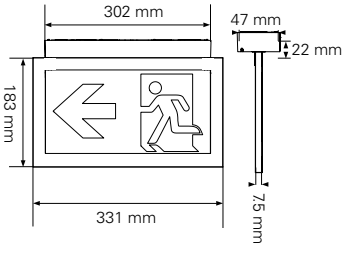
Ceiling-surface mounting 20m



CrystalWay 30m
Wall-surface mounting



Ceiling-surface mounting 30m



Ceiling-surface mounting

Recessed mounting option

Suspension kit option

Flag mounting

Wall-surface mounting

7

Order code	Description	*				
LUM17122U	CrystalWay 20m CGLine+ 4 Exit legends**	0.45W	2.3W	1-3-5-8h	3.6V-0.6 Ah Li-Ion	Maintained / Non Maintained
LUM17124U	CrystalWay 30m CGLine+ 4 Exit legends**	0.7W	4W	1-3-5-8h	3.6V-1.2 Ah Li-Ion	Maintained / Non Maintained
40071777000	CrystalWay 19821 CGLine+ IA	2.3W	4.1W	1-3-5-8h	3.6V-1.2 Ah Li-Ion	Maintained / Non Maintained
40071777001	CrystalWay 19822 CGLine+ IA	2.5W	5.8W	1-3-5-8h	3.6V-1.2 Ah Li-Ion	Maintained / Non Maintained
LUM22212U	CrystalWay 230V Mains Slave 20m viewing distance					
LUM22214U	CrystalWay 220/230V Mains Slave CG-S 20m viewing distance					
LUM22213U	CrystalWay 230V Mains Slave 30m viewing distance					
LUM22215U	CrystalWay 230V Mains Slave CG-S 30m viewing distance					

*50cd - 500cd
** Exit legends : ISO format - Right, left, down, up

Accessories

CrystalWay 20 m	CrystalWay 30m	Description
40071352379	40071352379	Magnet
LUM10560	LUM10560	Wire suspension kit
LUM10561	LUM10562	Recessed base
LUM10563	LUM10564	Recessed base with cover
LUM10563S	LUM10564S	Recessed base with cover for suspension kit
LUM10565	LUM10566	Recessed box for concrete
LUM10567		Base for optional cable access
LUM10573	LUM10587	Pictogram Arrow DOWN, ISO
LUM10574	LUM10588	Pictogram Arrow LEFT, ISO
LUM10575	LUM10589	Pictogram Arrow RIGHT, ISO
LUM10577	LUM10591	Pictogram Arrow UP , ISO
LUM10584	LUM10592	Vertical pictogram Arrow DOWN, ISO
LUM10585	LUM10593	Vertical pictogram Arrow LEFT, ISO
LUM10586	LUM10594	Vertical pictogram Arrow RIGHT, ISO

Spare parts

Order code	Description
LUM10568	Battery pack Li-Ion 3.6 V/650 mAh for CrystalWay 20m
LUM10569	Battery pack Li-Ion 3.6 V/1300 mAh for CrystalWay 30m
LUM10570	Diffuser kit 24 LEDs for CrystalWay 20m
LUM10571	Diffuser kit 38 LEDs for CrystalWay 30m
LUM10572	Set of 4 hooks for CrystalWay 20m & CrystalWay 30m diffusers

Exit signs - Indoor
GuideLed

- Perfectly illuminated exit sign with by use of innovative light guide technology
- Versatile mounting options: Wall, ceiling, recessed Surface, supended
- Available in 20 and 30 m viewing distance
- Duration selectable 1 h, 3 h, 8 h
- Environmental friendly Li-Ion battery technology

Light Source:

LED Strip

Materials:

Housing unit in light grey polycarbonate

Panel PMMA

Aluminiumtubes for suspension

Operation:

For maintained and non-maintained operations

CGLine+ (Without bus working in AT mode)

Adjustable brightness function, standing at 100%, 30% and 10%

Duration selectable 1h, 3h and 8h

Installation options: wall, ceilings and recessed

Ceiling, recessed, tube suspension and cable versions

External push button for manual execution of test

Applications:

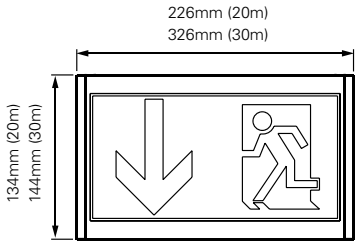
Hotels, restaurants, meeting rooms, offices, shops, cinemas, theaters, museums

GuideLed demonstrates that compliance with regulations and multiple mounting options does not exclude an exemplary design.It has been developed in accordance with the provisions of ISO 3864-1, including the requirement of 500cd/m² within the white surface, ensuring optimal recognition and a high level of safety.

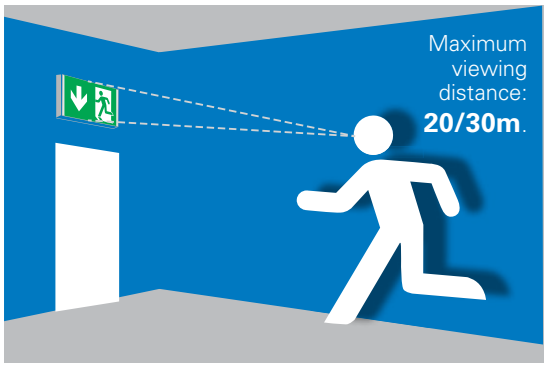
The highly developed Lightguide technology transforms the high point-sourced luminance of an LED into an illuminated surface with absolute uniform brightness. The LEDs used in this process ensure a high level of operational safety and with a service life of 50.000 hours, significantly reduce maintenance efforts.

Its minimised power consumption of up to 60% below a comparable luminaire with fluorescent lamp also ensures a distinct reduction in operating cost.

The wide variety of versions available make the GuideLed escape sign luminaire a versatile solution. Featuring viewing distances of 20m or 30m, single-sided or double-sided options and multiple mounting types, they are ideal for a variety of room sizes and applications. Concealed connections and a slim-line construction also offer users an innovative solution and design.



Viewing distance



LEDs for increased safety

Longevity, instant start up, high efficiency and compact size are the features that make LEDs especially suitable for emergency and safety lighting. Precise matching along with low temperatures and low operating current guarantees high luminous efficiency with maximum service life.

1 LED Lightguide technology

- Perfect, standard compliant illumination
- Low energy requirements
- LEDs for increased safety with 50,000 hours service life

2 CGLine+ LED electronics

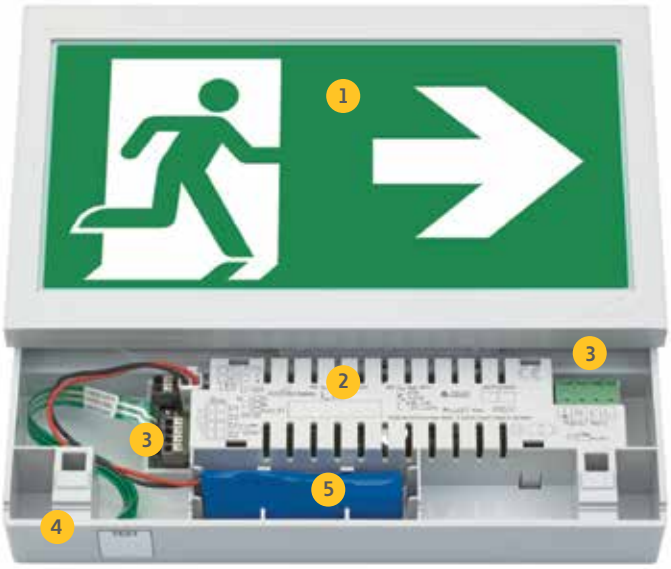
- Can be used for Maintained mode and Non-Maintained mode
- Fully automatic function test (weekly) or duration test (every 6 months)
- 1 minute switch-back delay to normal operation after mains return
- Blocking function prevents unintentional discharge during idle operating times (via CGLine+ webcontroller)
- Convenient and concise central monitoring in combination with CGLine+ webcontroller or CG Vision visualisation Software

3 Optimised connection technology

- Spacious insertion areas
- Equipped for through-wiring of mains cable and CGLine bus live double terminals and 4 cable terminals

4 Display and test unit

- Testing button for manual triggering of function test and duration test
- Simple fault analysis with bicolor LED (light source charging or battery fault) and status display (operation, function test, duration test)
- Setting of dimming level in mains operation (100%, 30%, 10%)



5 Innovative Lilon technology

- Large capacity with compact design
- 1 version for 1h, 3h and 8h emergency lighting operation
- No memory effect
- Environmental friendly: no heavy metals and energy-optimized charging process due to low self-discharge
- Simple replacement via polarity reversal protected plug-in contacts and snap mounting

Lightguide technology for optimal illumination

The highly developed Lightguide technology converts the high point-sourced luminance of the LED into an illuminated surface with absolute uniform brightness, with luminance of over 500 cd/m² on white surface. Therefore the escape sign always remains easily recognisable even with poor visibility conditions or in bright surroundings.

Despite the very good photometric values, the new Lightguide technology with particularly efficient LEDs requires up to 60% less energy compared to previous escape sign luminaires with fluorescent lamps.

Photometric requirements for escape sign
DIN 4844-1 (2005-05) and ISO 3864-1 (2002):
$L_m \geq 500$ cd/m² (white surface)
For applications in bright ambient conditions (mains operation)

ISO 30061 (2007):
$L_{min} = 10$ cd/m² (green surface)
In smoky conditions. The luminaires should be suspended by at least 0.5m

EN 1838 (2013):
$L_{min} = 2$ cd/m² (green surface)
Emergency lighting operation

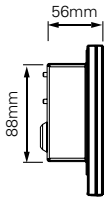
Badly illuminated escape sign

GuideLed

Wall Mount

GuideLed 10811 - 20m
GuideLed 11811 - 30m

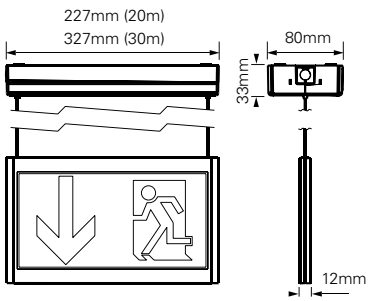
Wall Recessed



GuideLed 10812 - 20m
GuideLed 11812 - 30m

Order code	Description				
40071353260	Wall mounting set for GuideLed, 20m and 30m, CGLine+	20 m : 4.8 VA / 4,1 W 30 m : 5.3 VA / 4.7 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353261	Wall Recessed mounting set for GuideLed, 20m, CGLine+	4.8 VA / 4.1 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353262	Wall Recessed mounting set for GuideLed, 30m, CGLine+	5.3 VA / 4.7 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071354500	LED pictogram LEFT, 11x11/11x12, 20m				
40071354501	LED pictogram RIGHT, 11x11/11x12, 20m				
40071354502	LED pictogram DOWN, 11x11/11x12, 20m				
40071354530	LED pictogram LEFT, 11x11/11x12, 30m				
40071354531	LED pictogram RIGHT, 11x11/11x12, 30m				
40071354532	LED pictogram DOWN, 11x11/11x12, 30m				

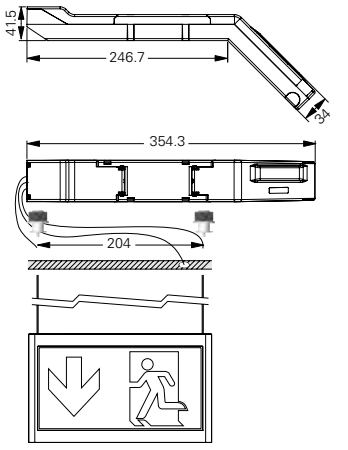
Ceiling mounted Suspended

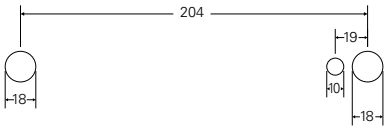


GuideLed 10825 - 20m
GuideLed 11825 - 30m

Ceiling recessed mounted Suspended

GuideLed 10826 - 20m
GuideLed 11826 - 30m



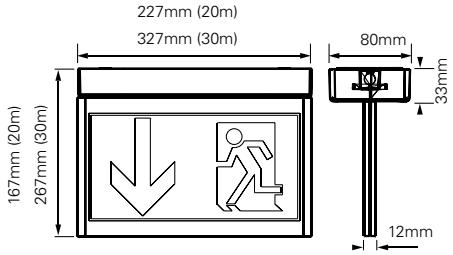


Wire installation with ceiling wire holders, LED supply for mounting in cavity ceiling

Order code	Description				
40071353268	Wire suspension set 10825, with canopy, 20m, CGLine+	5.6 VA / 5.1 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353273	Wire suspension set 11825, with canopy, 30m, CGLine+	6.6 VA / 6.3 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353263	Wire suspension set 10826/11826, with ceiling holders, 20/30m	20 m: 5.6 VA / 5.1 W 30 m: 6.6 VA / 6.3 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071354510	LED pictogram (left/right), 10x25/10x26 (wire), 20m				
40071354540	LED pictogram (left/right), 11x25/11x26 (wire), 30m				
40071354511	LED pictogram (down/down), 10x25/10x26 (wire), 20m				
40071354512	LED pictogram (left/blank), 10x25/10x26 (wire), 20m				
40071354513	LED pictogram (right/blank), 10x25/10x26 (wire), 20m				
40071354514	LED pictogram (down/blank), 10x25/10x26 (wire), 20m				
40071354541	LED pictogram (down/down), 11x25/11x26 (wire), 30m				
40071354542	LED pictogram (left/blank), 11x25/11x26 (wire), 30m				
40071354543	LED pictogram (right/blank), 11x25/11x26 (wire), 30m				
40071354544	LED pictogram (down/blank), 11x25/11x26 (wire), 30m				

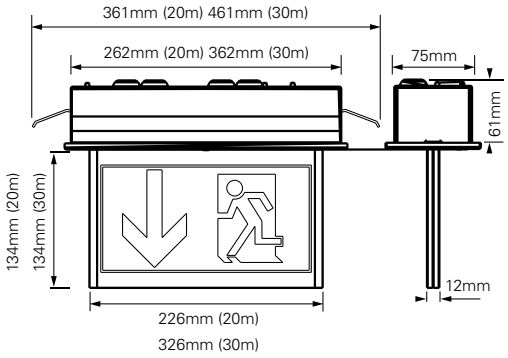
Ceiling Mounting

GuideLed 10821 - 20m
GuideLed 11821 - 30m



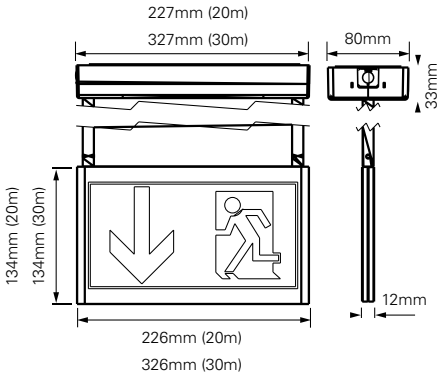
Ceiling recessed

GuideLed 10824 - 20m
GuideLed 11824 - 30m



Ceilling tube suspended

GuideLed 10822 - 20m - pendant tube 0.5m
GuideLed 11822 - 30m - pendant tube 0.5m
GuideLed 10823 - 20m - pendant tube 1.5m
GuideLed 11823 - 30m - pendant tube 1.5m



Order code	Description	⚡	🕒	🔋	⚙
40071353264	Ceiling mounting set 10821, with canopy 20m	5.6 VA / 5.1 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353265	Ceiling mounting set 10822, with canopy and 0,5m pendant tube, 20m	5.6 VA / 5.1 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353266	Ceiling mounting set 10822, with canopy and 0,5m pendant tube, 20m	5.6 VA / 5.1 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353267	Ceiling mounting set 10824, ceiling recessed housing, 20m	5.6 VA / 5.1 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353269	Ceiling mounting set 11821, with canopy 30m	6.6 VA / 6.3 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353270	Ceiling mounting set 11822, with canopy and 0,5m pendant tube, 30m	6.6 VA / 6.3 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353271	Ceiling mounting set 11822, with canopy and 1,5m pendant tube, 30m	6.6 VA / 6.3 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071353272	Ceiling mounting set 11824, ceiling recessed housing, 30m	6.6 VA / 6.3 W	1h-3h-8h	Lilon 3.7 / 2Ah	Maintained / Non-Maintained
40071354503	LED pictogram (left/right), 10x21/10x22, 10x23, 10x24, 20m				
40071354504	LED pictogram (down/down), 10x21/10x22, 10x23, 10x24, 20m				
40071354505	LED pictogram (left/blank), 10x21/10x22, 10x23, 10x24, 20m				
40071354506	LED pictogram (right/blank), 10x21/10x22, 10x23, 10x24, 20m				
40071354507	LED pictogram (down/blank), 10x21/10x22, 10x23,10x24,20m				
40071354508	LED pictogram (left/right), 10x21/10x22,10x23,10x24, 20m vertical				
40071354509	LED pictogram (left/right), 10x21/10x22, 10x23, 10x24, 20m vertical				
40071354533	LED pictogram (left/right), 11x21/11x22,11x23, 11x24, 30m				
40071354534	LED pictogram (down/down), 11x21/11x22,11x23, 11x24 30m				
40071354535	LED pictogram (left/blank), 11x21/11x22,11x23, 11x24, 30m				
40071354536	LED pictogram (right/blank), 11x21/11x22,11x23, 11x24, 30m				
40071354537	LED pictogram (down/blank), 11x21/11x22,11x23, 11x24, 30m				
40071354538	LED pictogram (left/right), 11x21/11x22,11x23, 11x24, 30m vertical				
40071354539	LED pictogram (left/right), 11x21/11x22,11x23, 11x24, 30m vertical				

Exit signs - Indoor
Britesign 2

- ICEL registered with verified light performance
- Ultra low profile design
- 50,000 hour LED source for minimum maintenance
- EN1838 compliant legend panel
- Bezel colour options on request
- Self-contained, slave, self-test and addressable testing options

Light Source:

High intensity 3W white LED strip

Materials:

Housing - steel, powder coated in RAL9016 finish

Bezel - die cast Aluminum, satin anodised or powder coated in RAL9016 finish

Legend panel - clear acrylic with screen print legend

Batteries NiCd

Installation:

Suitable for wall mounting

First fix body with rear BESA entry and 20mm conduit entry on top face

Direct fix via keyhole slots

Bezel assembly screwed securely to base

Supplied with LED strip

Operation:

Maintained, Autotest and monitored models available

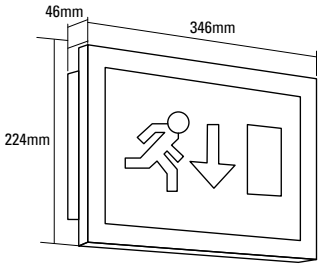
Autonomy of 3h

Applications:

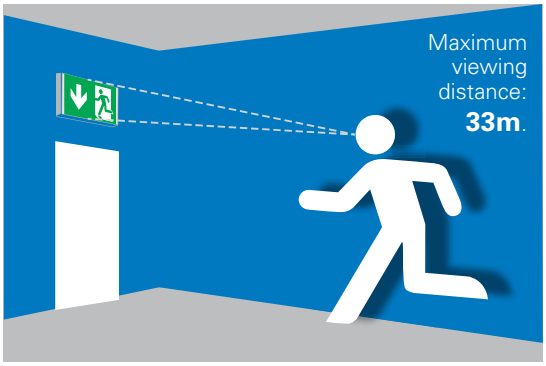
Schools, universities, public administration, commercial environments

Hotels, restaurants, meeting rooms, offices, shops, cinemas, theaters, museums

Using the latest in LED technology Britesign 2 has been remodelled to suit most prestigious installations and commercial interiors. It has an ultra low profile of 40mm and the stepped bezel creates an even slimmer appearance which makes this LED exit sign blend unobtrusively into almost any environment. The picture frame style die cast Aluminiumbezel is available in satin anodised finish as well as the ever popular white and houses a 33m viewing distance legend panel. The 50,000 hour long life LED source provides outstanding savings in lamp replacement and maintenance costs when compared to a traditional 8W lamp.



Viewing distance



Order code	Description				
BS2M	Maintained 3Hr, White Finish	2.3W, 3.5VA / 5.0W, 7.1VA	3h	4.8V - 1.6Ah NiCd	Maintained
BS2MA	Maintained 3Hr, Aluminium Finish	2.3W, 3.5VA / 5.0W, 7.1VA	3h	4.8V - 1.6Ah NiCd	Maintained
BS2MIS	Maintained 3Hr self-test, White Finish	2.3W, 3.5VA / 5.0W, 7.1VA	3h	4.8V - 1.6Ah NiCd	Maintained
BS2MAIS	Maintained 3Hr self-test, Aluminium Finish	2.3W, 3.5VA / 5.0W, 7.1VA	3h	4.8V - 1.6Ah NiCd	Maintained
BS2MCGL	Maintained 3Hr CGL+	2.3W, 3.5VA / 5.0W, 7.1VA	3h	4.8V - 1.6Ah NiCd	Maintained
BS2S230CG	230V CeaGuard Slave White Finish				
BS2SA230CG	230V CeaGuard Slave Aluminium Finish				
BS2S230	230V AC Mains Slave White Finish				
BS2SA230	230V AC Mains Slave Aluminium Finish				
BS2S230EC	230V AC Mains Slave EasiCheck White Finish				
BS2SA230EC	230V AC Mains Slave EasiCheck Aluminium Finish				

Accessories I

BSAU	Legend Up
BSAD	Legend Down
BSAL	Legend Left
BSAR	Legend Right
BSAU - ISO	Legend Up
BSAD - ISO	Legend Down
BSAL - ISO	Legend Left
BSAR - ISO	Legend Right

- Unit with innovative LED technology certified family of emergency exit signs in accordance to EN 60598-2-22
- 3rd party certification
- Nickel Metal Hydride Batteries
- Push button for test operation
- Ceiling, wall, suspension, recessed and lateral installation
- Models of 30m and 40m visibility
- Test functions

Light Source:

LED Strip with a lifetime of more than 60,000 hours

24 LEDs producing 140 lumens

Materials:

Base and reflector unit in white Polycarbonate

Operation:

Maintained, slave and CBS models available

Autonomy from 3h

Adjustable brightness function to 50% in mains operation

Functional test button

Telecommand, Inhibition operation

Autotest and Slave models available

Installation:

Ceiling, wall, recessed, suspended through rope or metal pipe and lateral installation

No special tools required

Applications:

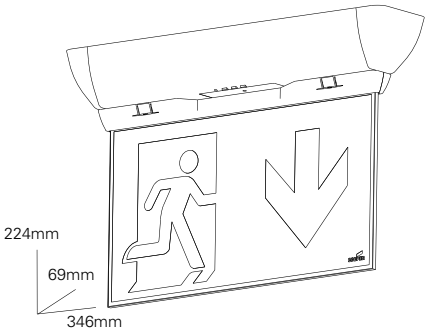
Schools, universities, public administration, commercial environments

Hotels, restaurants, meeting rooms, offices, shops, cinemas, theaters, museums

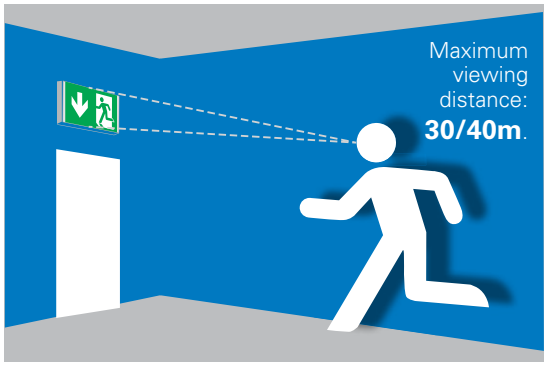
Areas with large heights and long distance view requirements

The Velos family of emergency lighting is designed and equipped with technical solutions that make it suitable for a wide range of applications. A complete range of accessories such as the recessed base for false ceiling installations, lateral and back base as well as suspension options allow for a variety of mounting positions.

Together with the choice of ISO and EURO exit sign labels, the Velos LED range is appropriate for emergency lighting requirements in multiple of places such as offices, restaurants, hotels, hospitals and general commercial applications.



Viewing distance



Distance view of 30 / 40 meters provides the ability to use fewer products and less power consumption per coverage area of an application.

Power Supply Unit

1 • Easy to install with no use of special tools required.
- Environmentally friendly: no heavy metals and energy-optimized charging process due to low self-discharge.

2 • Easy to connect power cables via screwless connectors for up to 2.5mm² cables.

3 • Multiple entrance points for power cables through base and main body of the power supply unit.
- Construction Material: Polycarbonate.
- Large capacity NiMH batteries with small construction size for compact luminaire design.

4 Velos electronics

- Fully automatic function test (weekly) or duration test (every 10 weeks).
- Testing button for manual triggering of function test.
- Autotest models available with simple fault analysis with two LED indication of battery / LED test and status display (operation, function test, duration test, failure).
- Easily set the level in mains operation to 50% or 100%.
- Increased product reliability with LED matrix orientation. By groups of 3, if one of the 24 LEDs fails, the intact LEDs will illuminate more brightly.

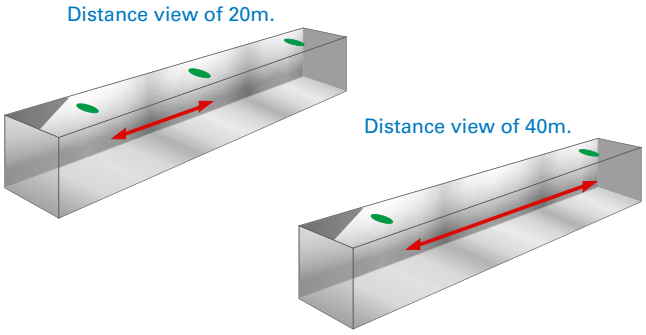
5 Velos Exit Sign

- Design life time: exceeding 60.000 hours lifetime expectancy using an EN1838 standard plate of 4mm thickness with 24 LED producing 140lm with minimum 240 cd/m² on white surface.

6 • Simple parts clicking with each other ensuring fast installation.

Velos distance view

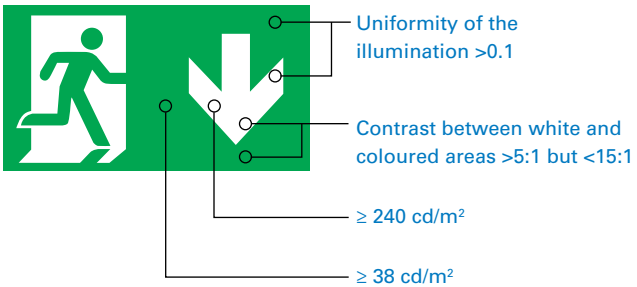
- Velos provides a solution regarding distance view and emergency exit signs
- Distance view from 30 up to 40 meters, minimizing the number of lights into an installation, reducing the energy consumption of the emergency lighting in a building and installation and maintenance cost.
- Various accessories for ease of installation aiming to accommodate all possible applications and areas, with recessed base, wall mounting accessories, lateral direction base, suspended from ceiling either with rope or metal pipes.



Velos optimal illumination

The exit sign plate used in Velos converts the high luminance of the LED into an illuminated surface with homogeneous brightness, with luminance of over 38 cd/m² on the white surface. As such the escape sign always remains easily recognisable even with poor visibility conditions or in bright surroundings.

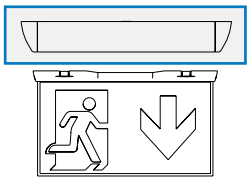
Velos LEDs illuminate with a high efficiency of more than 112lm/W.



Photometric requirements for escape sign

EN 1838 (1999), Emergency lighting operation:
Lmin = 2 cd/m² (green surface) Lgreen ≥ 2 cd/m²
Lwhite ≥ 10 cd/m²
5 ≤ Lwhite / Lgreen ≤15

ISO 30061 (2007), When smoke is prime consideration:
Lgreen ≥ 10 cd/m²
Lwhite ≥ 50 cd/m²

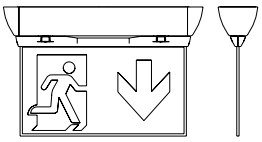


PSU unit of Velos (order separately)

Order code	Description		
O-ESC-3H	Velos PSU 3h	3h	4VTCs NiCd 1600mA
O-ESM-AT-3H	Velos PSU 3h Auto Test	3h	4VTCs NiMH 2000mA
O-ESC-3H-CGL	Velos PSU, 3h, CGL+	3h	4VTCs NiCd 1600mA
O-ESMAINS	Velos 230V Mains Slave		
O-ES-CG-S	Velos 220/230V Mains Slave CG-S		

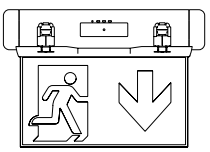
7

Ceiling mount



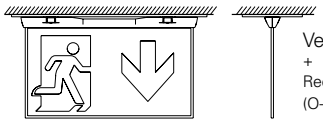
PSU + Exit Sign ➔ Velos

Wall mount



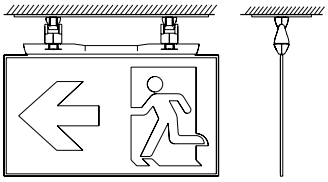
Velos
+
Wall FLEXI Joint
(O-ESA-FLEX)

Recessed (30m)



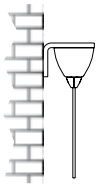
Velos
+
Recessed Base
(O-ESA-RB)

Recessed (40m)



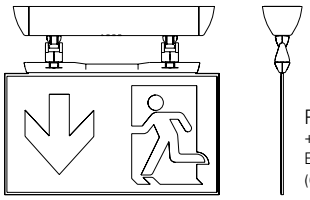
Velos
+
PSU
+
Recessed Base
(O-ESA-RB)
+
Exit sign 40m
(O-ESP40-ILR)

Back wall mount



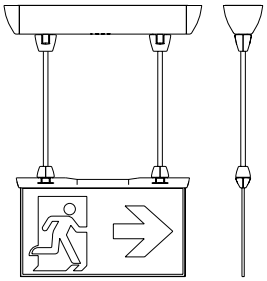
Velos
+
Back mounting Base
(O-ESA-BMB)

Ceiling mount (40m)



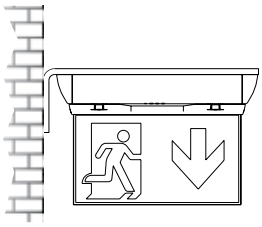
PSU
+
Exit sign 40m
(O-ESP40-IDD)

Suspended with metal pipes



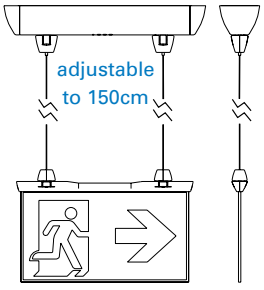
Velos
+
Pipe Suspension
48cm (ISO30061)
(O-ESA-PS30)

Lateral mount



Velos
+
Lateral Base
(O-ESA-LMB)

Suspended with adjustable rope

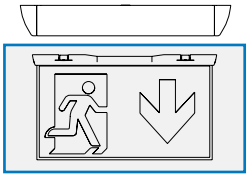


Velos
+
Velos Wire
suspension
adjustable 150cm
(O-ESA-RSA)

Accessories

Order code	Description
O-ESA-RB	Velos Recessed base
O-ESA-FLEX	Velos Wall FLEXI Joint
O-ESA-RSA	Velos Wire suspension adjustable 150cm
O-ESA-RSA-5M	Velos Wire suspension adjustable 5m
O-ESA-PS30	Velos Pipe Suspension 48cm (ISO30061)
O-ESA-LMB	Velos Lateral Mounting Base
O-ESA-BMB	Velos Back Mounting Base

Exit signs - Indoor
Velos



Exit sign of Velos

Order code	Description		Dimensions	
O-ESP-ILR	Velos pictogram ISO LEFT/RIGHT 30m	24 LEDs	288x165	
O-ESP-ID	Velos pictogram ISO DOWN/BLANK 30m	24 LEDs	288x165	
O-ESP-IDD	Velos pictogram ISO DOWN/DOWN 30m	24 LEDs	288x165	
O-ESP-IU	Velos pictogram ISO UP/BLANK 30m	24 LEDs	288x165	
O-ESP-IUU	Velos pictogram ISO UP/UP 30m	24 LEDs	288x165	
O-ESP-I2R	Velos pictogram ISO Lateral to Room	24 LEDs	288x165	
O-ESP-I2W	Velos pictogram ISO Lateral to Wall	24 LEDs	288x165	
O-ESP-H	Velos Hydrant pictogram 30m	24 LEDs	288x165	
O-ESP-FHD	Velos Fire hose down 30m	24 LEDs	288x165	
O-ESP-FH-EXT	Velos Fire hose & extinguisher 30m	24 LEDs	288x165	
O-ESP-WIRL	Velos pictogram Wheel ISO LEFT/RIGHT 30m	24 LEDs	288x165	
O-ESP-WIDD	Velos pictogram Wheel ISO DOWN/DOWN 30m	24 LEDs	288x165	

Order code	Description		Dimensions	
O-ESP40-ILR	Velos pictogram ISO LEFT/RIGHT 40m	24 LEDs	370x220	
O-ESP40-IDD	Velos pictogram ISO DOWN/DOWN 40m	24 LEDs	370x220	
O-ESP40-WILR	Velos pictogram Wheel ISO LEFT/RIGHT 40m	24 LEDs	370x220	
O-ESP40-WIDD	Velos pictogram Wheel ISO DOWN/DOWN 40m	24 LEDs	370x220	

CE | EN 60598-2-22 | EN 62034 | 20 m | LED | IP40 | IK07 | Li-Ion | AT | CG+ Line

- Modular design of the polycarbonate cube for simple and safe mounting by just sliding cube onto installed luminaire
- Easy and flexible mounting options with space to land cables- ceiling,wall, cable and chain
- Robust design with impact-resistance of IK07

Light Source:
4x 1W LED

Materials:
Cube: Polycarbonate;
Enclosure: Stainless steel

Housing White RAL9010

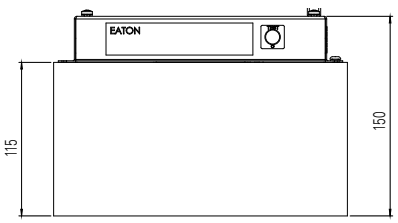
Installation:
Easy and flexible mounting options (ceiling, wall, cable and chain)

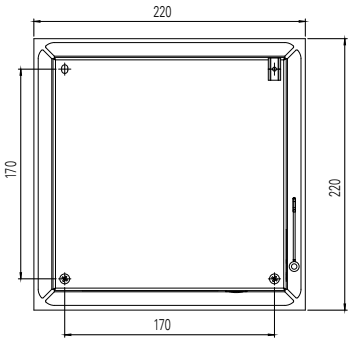
Operation :
Universal use for maintained and non-maintained operation and for 1 h, 3 h or 8 h operation

Applications:
Large wide areas, warehouses, retail areas

The Exit Cube with LED Technology has three-sided illumination, making it suitable for large, wide areas, for example warehouses or retail areas. Optimal perceptibility due to high luminance of the white contrasting colour (>500 cd/m²).

Easy and flexible mounting options are possible (ceiling, wall, cable and chain) by just sliding the cube onto the installed luminaire. In addition, high efficiency LEDs with a service life of 50,000 hours ensure high operational safety and also significantly minimise effort for maintenance.





Lithium ion battery technology
Lithium ion batteries require much less space than NiCd or NiMh cells of equal capacity, allowing more space in a compact design for cable routing. The Lithium ion batteries also don't suffer from the so-called memory effect associated with NiCd and NiMh cells.

Permanent safety
Capacity losses from ageing have been considered by corresponding dimensioning of the cells. A multiple protective circuit, integrated in the batteries ensures safe operation and high reliability. NiCd and NiMh batteries have a significantly higher self-discharge and are therefore permanently charged. This is no longer necessary with the new GuideLed luminaries, saving additional energy costs.

Equipped for all situations
With all GuideLed luminaries, selection can be made between Maintained and Non-Maintained mode of operation as well as 1h, 3h and 8h emergency light duration as standard. As such, all accommodation establishments and homes can be equipped with self contained luminairies.

Exit signs - Indoor
Exit Cube

Order code	Description					
40071353420	Exit Cube 33822 1-8h/D LED CGLine+: Enclosure and exit sign cube, including silkscreened pictograms (arrow left, right, down) acc. to ISO		8.8 VA/8.3 W	1h, 3h, 8h	Li-Ion 3.7V/4Ah	Maintained / Non-Maintained

Replacement escape sign cube

Wall bracket

Cable mounting kit

Chain mounting kit

Accessories

40071353444	Wall bracket incl. attachments	
40071353457	Chain mounting kit with 4 eyelets (chain not included)	
40071353443	Cable mounting kit with 4 fasteners and cables, ajustable hanging height (max. 1.5m)	
40071354450	Replacement escape sign cube (20 m viewing distance) silkscreened pictograms (arrow left, right, down) acc. to ISO	

- Modern contemporary styling
- 50,000 hour LED source for minimum maintenance
- Easy to install
- Luminaire and legend supplied as one unit
- Adjustable height (up to 70cm)

Light Source:
LED strip

Materials:
Body and housing ABS white finish

Legend clear acrylic with pre applied legend

Batteries sealed nickel cadmium NiCd

Installation:
Suitable for ceiling mounting

Screwless snap together assembly

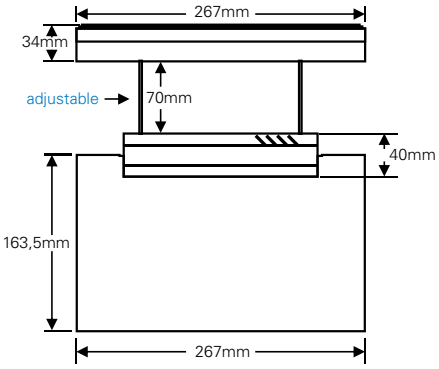
Legend panel has self locking mechanism to prevent malicious removal

Luminaire and legend supplied together

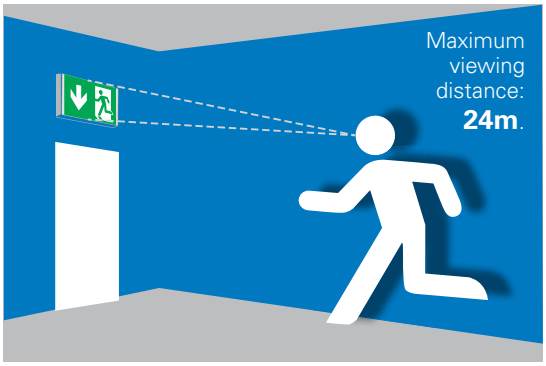
Applications:
Commercial malls, cinemas and theaters, hotels, restaurants, conference areas, hospitals

Contemporary styling and high quality materials blend together perfectly to produce the attractive VIA range of pendant exit signs.

Injection moulded parts help reduce weight and provide a distinctive sculptured appearance suitable for a wide variety of interiors and applications. Via also benefits from a frameless modern design of legend panel that offers a maximum viewing distance of 24m. The long life LED strip provides an excellent uniform illumination of the legend comfortably meeting the requirements of EN1838. Via has an LED source with a rated life of 50,000 hours ensuring reliable operation and minimising onsite maintenance costs



Viewing distance



Order code (EURO)	Order code (ISO)	Description				
VIA8U	VIA8-ISO	VIA8 Up arrow, Double	2.6VA/2.3W	3h	2.4V - 1.5Ah	Maintained
VIA8D	VIA8D-ISO	VIA8 Down arrow, Double	2.6VA/2.3W	3h	2.4V - 1.5Ah	Maintained
VIA8LR	VIA8LR-ISO	VIA8 Left / Right arrow, Double	2.6VA/2.3W	3h	2.4V - 1.5Ah	Maintained

Exit signs - High degree of protection

Exit SE

- BSI kitemarked for peace of mind
- ICEL registered with verified light performance
- Large format, ideal for open plan areas
- Robust construction
- Self-contained, slave and addressable testing options
- Long life 50,000 hour LED version available

Light Source:

8W T5 fluorescent, 3500°K - G5 cap

High output 8 LED strip

Materials:

Body and gear cover - steel, powder coated in RAL9016 white finish

Legend panel - clear acrylic with rear screen printing

Downlight panel - opal polycarbonate (fluore-scent version only)

Batteries NiCd

Installation:

Suitable for wall mounting

Supplied with LED strip, with large downlight panel

Operation:

Maintained, Autotest and monitored models available

Autonomy of 3h

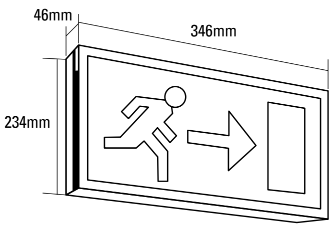
Applications:

Schools, universities, public administration, commercial environments

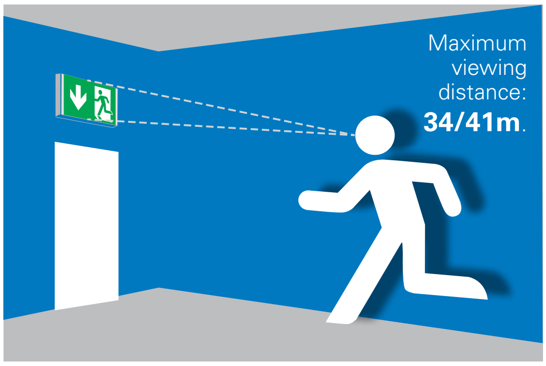
Traditionally styled, Exit SE is a large format exit sign that is ideally suited to large, open plan areas, such as shopping centres, call centres and function rooms.

Robustly constructed from steel, the luminaire features a screw fixed frame that retains the legend panel securely.

The exit legend is screen printed on the inner surface of the panel providing a high degree of resistance from cleaning abrasion or accidental scratching. Exit SE is therefore suitable for public spaces where such damage may occur. Good threshold illumination is obtained via the large opal downlight panel, offering improved indication of escape routes during mains power failure.



Viewing distance



Order code	Description	Power	Autonomy	Battery	Mode
SE83ICEL	Non Maintained 3Hr	2.3W, 3.5VA	3h	2.4V - 4Ah NiCd	Non-Maintained
SE83MICEL	Maintained 3Hr	3.0W, 3.28VA	3h	2.4V - 4Ah NiCd	Maintained
SELM3	Maintained/ Non maintained 3 Hr LED	3.0W, 3.28VA	3h	3.6V - 1.7Ah NiCd	Maintained/ Non maintained

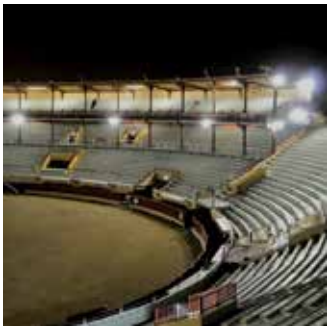
Accessories

SEAU	Up arrow
SEAD	Down arrow
SEAL	Left arrow
SEAR	Right arrow

Beam lights

7

	Page	Performance	General features: Aesthetic	General features: No replacement parts for 10 years	General features: Low consumption / Eco-friendly	General features: Protection Degree	Operation: Maintained	Operation: Non-Maintained	Technology: Stand alone	Technology: Autotest	Technology: Monitored (CGILine+)	Battery
7.1 Beamlite 	254	★ ★				20 65		●	●	●	●	Lead
7.2 Gemini Junior LED 	255	★				20		●	●			Ni-Cd



Installation			Applications								Best use
Wall	Ceiling	Recessed	Healthcare	Hotels	Cinemas / Theaters	Commercial centers	Stadia / Arenas	Offices	Industrial	Warehouse	
●						●	●		●	●	
●									●	●	

- High light output
- Robust construction with a long durable life
- Hinged front access door eases maintenance
- Multi-directional lamp heads for on site flexibility
- Weatherproof IP55 option
- Easy to install, with snap-on lens

Light Source:

12V, 21W tungsten BA15d cap

Materials:

Body IP20 sheet steel, powder coated in white/black finish

Body IP55 sheet steel, powder coated in grey finish

Lamp heads polycarbonate, finished black with clear front lens

Installation:

Suitable for wall mounting

Cable entry on rear and top

Direct screw fixed with keyhole slots

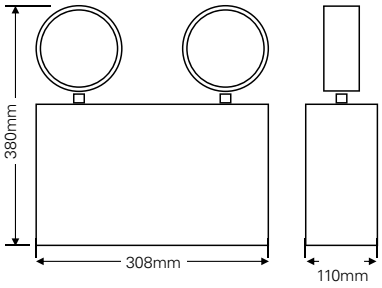
Weatherproof version drilled on site for fixing and entry holes

Lamp heads swivel and tilt, locked in position by screws

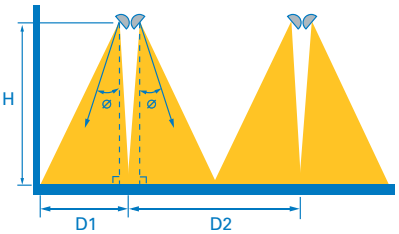
Applications:

Cinemas, theatres, factories, warehouses, shopping malls, industrial units and stadiums

Beamlite can be used for a wide variety of interior emergency lighting applications, particularly for warehouses and high ceiling commercial areas. The high intensity light source provides efficient illumination of long, narrow escape routes, but can also provide general coverage to a specific area where higher illumination is required. Beamlite has keyhole slot screw fixing holes and a hinged front access door providing ease of installation, whilst the standard twin LED indicator lamps give separate early warning of failure of each lamp, in addition to mains and charging status. For wet or dusty areas, an IP55 weatherproof version is available.



BEN3



Model	Height (m)	Angle	D1(m)	D2(m)
BEN3 (2X21W)				
	04.00	35°	04.30	09.30
	06.00	15°	03.10	08.00
	08.00	12°	03.40	07.30
	10.00	11°	03.70	08.10
	15.00	8°	03.50	08.90

Notes:
1. Spacing achieves 1 lux min on centre line of escape route
2. Aiming angle at 4m height restricted by glare cut-off restriction

Order code	Description					
BEN3	Beamlite, 2x21W, IP20	24 VA	600 lm	3h	Lead 2x12V-7.2Ah	Non-Maintained
BEN3W	Beamlite, 2x21W, IP55	24 VA	600 lm	3h	Lead 2x12V-7.2Ah	Non-Maintained
BEN3CGL	Beamlite, 2x21W,3h, IP20, CGLine+	24 VA	600 lm	3h	Lead 2x12V-7.2Ah	Non-Maintained
BEN3CGLW	Beamlite, 2x21W,3h, IP55, CGLine+	24 VA	600 lm	3h	Lead 2x12V-7.2Ah	Non-Maintained

- Competitive LED beam projector unit to suit most budgets
- Exceptional performance
- Can be used for high risk task area applications
- NiCd batteries for reduced weight and carry handle for ease of install
- 20mm knock out on both sides for cable entry
- Multi-direction lamp heads for application flexibility
- Twin indicator LEDs covering individual lampfailure, in additional to mains and charging status

Light Source:

2 × 3 off 3W LED (2 x 9W)

Materials:

Body - Sheet steel, powder coated in white finish

Lamp heads - Polycarbonate

Gemini Junior LED is a competitively priced, easy to install LED twinspot, combines flexibility and ease of installation, suitable for a wide variety of installations, and is an excellent choice for factory and high ceiling applications. Lamp heads have a multi-directional swivel and tilt facility ensuring that exactly the right aiming angle is achieved.
Internal components are easily accessed via the hinged front cover, allowing for easy installation and maintenance.

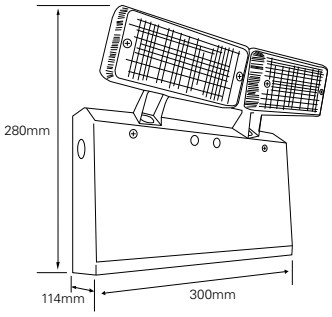
Installation:

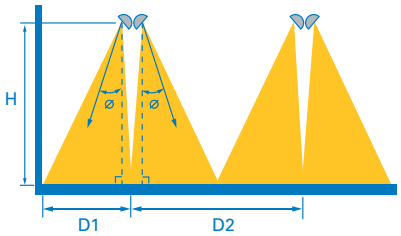
Suitable for wall mounting

Cable entry on both sides

Direct screw fixed with keyhole slots

Lamp heads swivel and tilt, locked in position by screws





Model	Height (m)	Angle	D1(m)	D2(m)
	04.00	45°	07.00	17.00
	06.00	40°	08.00	19.50
	08.00	30°	07.50	18.50
	10.00	25°	07.50	19.00
	12.00	20°	07.50	18.50
	14.00	20°	08.00	20.00

Notes:
1. Spacing achieves 1 lux min on centre line of escape route
2. Aiming angle at 4m height restricted by glare cut-off restriction
3. K factor of 0.55 and S factor of 0.8 have been applied

Order code	Description					
GMRJLNM	Gemini Junior LED twinspot	6W	250 Lm	3h	9.6V - 2.5Ah Ni-Cd	Non-Maintained

Conversion kits

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IP20

- Utilise mains luminaires as emergency lighting
- Simple single or multiple luminaire control
- Controls up to 750VA
- Ultra compact profile for ease of integration or remote mounting
- Meets switching thresholds of EN 60598-2-22
- Rated to switch 480V

Materials:

Module case - polycarbonate, white finish

Remote enclosure - steel, white finish

Options

EasiCheck addressable testing system compatible versions available

Available with a variety of easy connect plugs (POA)

Installation:

Suitable for fitting integral to host luminaire, where EMC test results permit

Modules can control single or multiple luminaires

A maximum load of 750VA can be controlled by one module, providing all luminaires are fed from the same switched supply in mains healthy mode.

Requires unswitched mains supply (permanent live)

Heavy duty terminals

Available in remote mounting box (ACM1ENC)

Changeover device can switch 480V, permitting feed from inverter and local switched supply to be on different phases.

Operates luminaire at full lumen output. When performing photometric designs the K and S lumen reduction factors of 0.95 and 0.85 respectively should be applied.

Applications:

Universities, supermarkets, warehouses, offices and where emergency lighting is required.

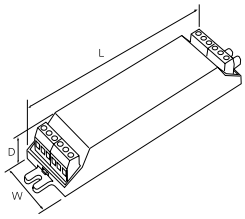
Lighting of escape routes and open areas.

Discreet emergency lighting, without purchasing and installing additional luminaires can be achieved by utilising suitable standard mains luminaires operated via a static inverter system.

Normally there is a requirement for local switching under normal mains healthy conditions. ACM1 modules automatically override this during a mains failure, providing failsafe illumination of the emergency luminaires.

Easy to use, the module is ultra compact allowing easy integration into luminaires chosen for emergency operation from a 230V AC static inverter system. Alternatively it can be mounted in a remote enclosure to control a load of up to 750VA, if fed from a common switched mains supply. Rated to switch 480V, the ACM1 delivers reliable, high integrity performance.

Dimensions

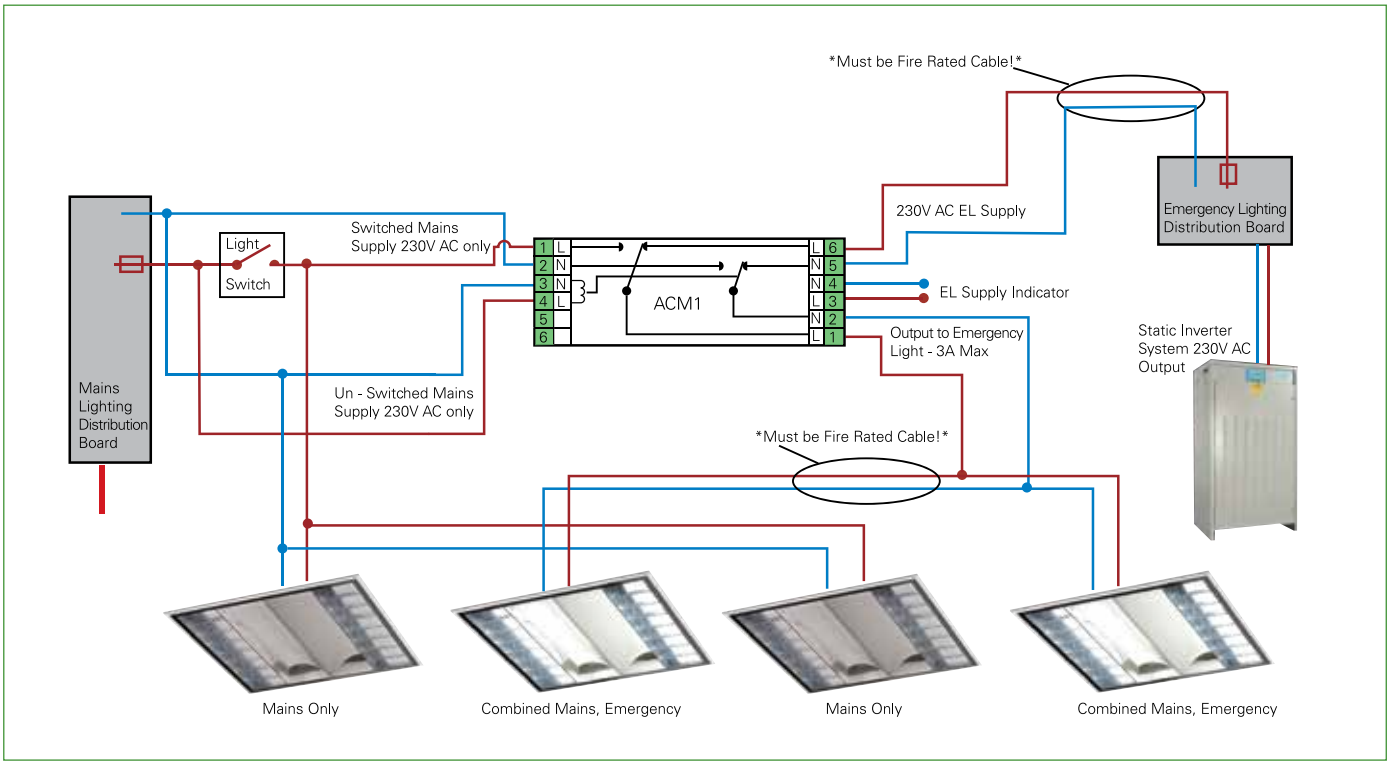


Description	L (mm)	W (mm)	D (mm)	Fixing Centres (mm)
ACM1	158	38	33	147
ACM1ENC	285	100	55	-

Specification

To specify state: Static inverter system control module for fluorescent lamps, in low profile case, providing changeover from switched mains supply to emergency supply, with 480V switch rating and conforming to switching thresholds of EN 60598-2-22, controlling individual luminaires or multiple loads up to 750 VA, for use with 230V AC/AC static inverter systems, as Active Control Module range, part no. ACM1

Order code	Description
ACM1	Active Control Module (max 730VA)
ACM1ENC	Active Control Module (max 730VA) in remote enclosure



Typical ACM1 schematic diagram

IP20

- Monitors local unswitched mains supply
- New 230V AC/AC low BLF option for static inverters significantly reduces the load on the inverter
- Unobtrusive emergency lighting
- Simple single luminaire conversion
- Rapid conversion service available

Light Source:

Series compatible with most fluorescent lamps (linear and compact)

Materials:

Module case - galvanised steel

Remote enclosure - steel, white finish

Operation:

Non-Maintained

Autonomy of 1h and 3h

Installation:

Suitable for fitting integral to host luminaire, where electromagnetic test results permit

Designed to convert a single fluorescent luminaire only

Requires unswitched mains supply

Remote mounting box available (order separately)

Modules should be sited within 300mm of luminaire when mounted remotely (maximum allowable is 1000mm)

See selection table for ballast lumen factors.

Applications:

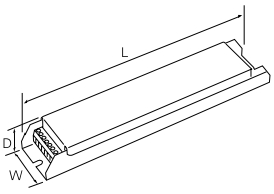
Universities, supermarkets, warehouses, offices and where emergency lighting is required.

Lighting of escape routes and open areas.

Central power systems utilising converted mains luminaires offer economical emergency lighting, with no additional luminaires to purchase and install. Converted luminaires automatically change over to the central supply in the event of normal mains failure, operating one lamp at a reduced output.

A 230V AC/AC module is ideal for installations with narrow distribution luminaires or smaller applications using compact static inverter. Traditional static inverter systems operate all lamps at full power in an emergency luminaire. The 230V module operates only one lamp and at a significantly reduced output, eliminating excessive, wasted light and dramatically reducing the rating, size and cost of the static inverter system required.

Dimensions



Description	L (mm)	W (mm)	D (mm)	Fixing Centres (mm)
Modules 110V	216	40	45	205
Modules 230V	300	43	35	289
Remote Box	380	145	52	-

Conversion Service

To ensure satisfactory operation, a full conversion service is offered by Eaton. This gives complete peace of mind that the conversion is carried out and certified to all required standards, providing:

- Total warranty of converted luminaire
- CE marking of converted luminaire.

Note: It is a legal requirement to remove the existing and re-apply a new CE mark to the luminaire after it has been converted and compliance with CE requirements established

- Conversion in a facility that is BS EN ISO9001 approved

Specification

To specify state: Central system emergency conversion modules for fluorescent lamps, with low profile case, suitable for use with 110V AC/DC central battery systems/230V AC/AC static inverter systems, one module per luminaire, as SMCB range,
part no. _____

Ballast Lumen Factor Table

Lamp Type / Voltage	110V
K Factor	0.70
S Factor	0.85
Compact Fluorescent	
16W 2D	0.65
28W 2D	0.40
38W 2D	0.33
9W TC	0.71
11 TC	0.70
13W TC	0.63
18 TC-D	0.37
18W TC-L	0.37
24W TC-L	0.40
36W TC-L	0.35
Linear Fluorescent	
18W T8	0.44
36W T8	0.33
58W T8	0.24
70W T8	0.18

Notes: 1. When performing photometric designs, the K and S lumen reduction factors should be applied.
2. Ballast Lumen factors for 230V AC/AC SMCB modules available on application.

Order code	Description
SMCB110HF	System voltage 110V AC/DC
SMCB230	System voltage 230V AC/AC
FMENCA	Remote enclosure

Systems

7

All safety luminaires are important. They help protect the life and health of people.

7

Emergency lighting must be fully functional to provide protection in case of failure of the general lighting.

Even if a single safety luminaire or exit sign luminaire fails, depending on the particular local conditions, there is a significant risk of accidents, for example in a stairway. For this very reason legislation requires continuous testing of the emergency lighting. The operation of the luminaires in battery mode for example (function test) must be verified at least once a week.

Self-contained luminaires without an automatic test function

The function test is performed in case of single self-contained luminaires by pressing a button on the luminaire, and the result must be recorded by hand in a log book. An additional duration test for the duration of the rated operating time (1, 3 or 8 hours) must be performed once a year. This test checks whether there is still sufficient battery capacity available. All log book entries must be kept on file for 4 years. If there are a large number of luminaires, manual testing is an extremely laborious process and therefore involves significant costs.

Automatic testing simplifies the process

Eaton has implemented automatic test functions in all CGLine+ self-contained luminaires. A microprocessor monitors and controls all functions of the luminaires automatically. The required tests, the function test and the duration test, are performed automatically. The test results are shown on site on the luminaire by a status indicator. Without a central monitoring device, the results must be recorded by hand in the log book and kept on file in paper form for at least 4 years.

LUX Awards 2016 WINNER

Self-contained exit sign luminaire CrystalWay, Emergency Lighting Product of the Year (Lux Awards 2016)

Central controller provides more safety

The CGLine+ Web-Controller initiates the tests, displays the results centrally and stores them with ease in a paperless form in an electronic log book. The electronic log book can be printed off and shown on demand. This process ensures the safe operation of the building, and the building operator meets his duty of documentation.

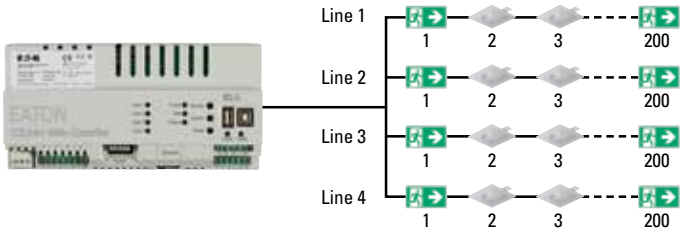
CGLine+: More luminaires. More convenience. More safety!

The new CGLine+ Web-Controller

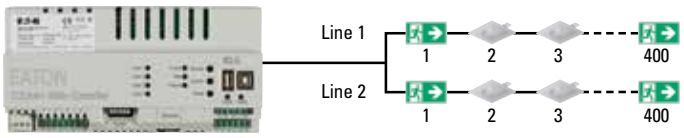
The tried and tested self-contained luminaire system CGLine 400 has been used since 2004 for the safe monitoring of self-contained luminaires. The new CGLine+ system is a more powerful system to make the operation of self-contained luminaire systems safer and even more convenient.

Now up to 800 luminaires monitored

The new CGLine+ Web-Controller can visualise a total of 800 CGLine+ luminaires (four lines of maximum 200 luminaires each or two lines of maximum 400 luminaires each). The number of luminaires is doubled as compared to the monitoring capacity of a controller of the CGLine 400 system. This lowers investment costs for larger-scale projects.



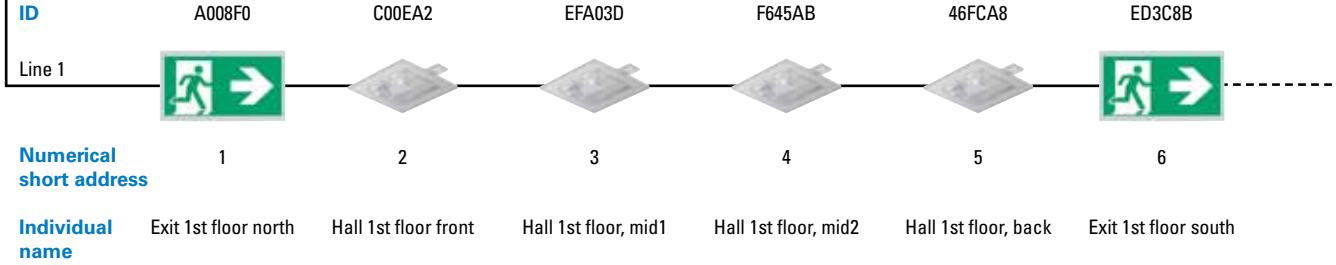
Typical installation with max. 4 lines of 200 luminaires each (above) or 2 lines of 400 luminaires each (below).



Addressing CGLine+ luminaires

Luminaires do not need to be manual addressed in the CGLine+ system. CGLine+ luminaires are fitted with a unique address by the manufacturer consisting of a six-digit ID number in hex code format. Using this address the Web-Controller identifies the luminaires automatically when the system is launched.

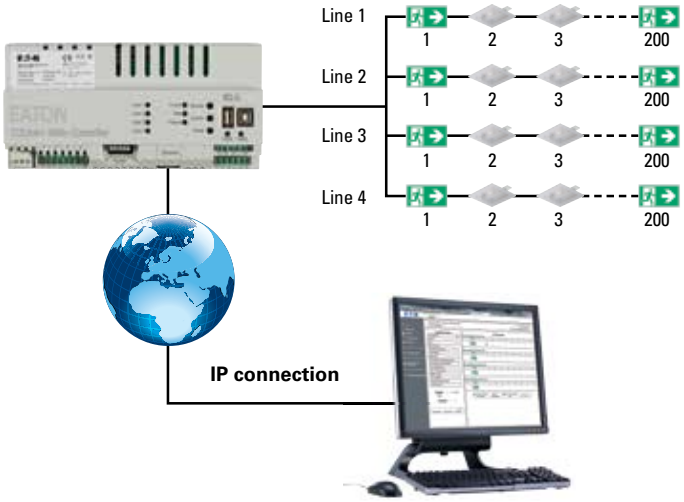
In addition, each luminaire can be configured to receive a short digital address and an individual name with a maximum of 20 characters. Hence it is possible to use a name which corresponds to the name of the location according to the planning documents. This simplifies the localisation of luminaires in the building and additional repair procedures can even be remotely planned in case of failure.



7

Safety under control worldwide

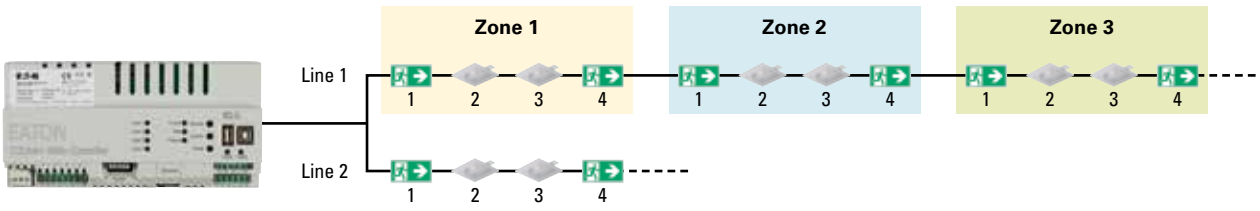
An integrated web server is available for convenient visualization, control and monitoring of all connected CGLine+ luminaires. The controller can be accessed from any PC with an IP connection and a regular web browser without requiring any special software. The controller provides an overview of faulty luminaires, regardless of where the maintenance personnel are located. Safety issues caused by failed luminaires can be evaluated and the relevant correct measures can be implemented. Regardless of location, completed maintenance works can then be conveniently checked. This means greater efficiency for the building operator, making it simpler to meet his obligations to eliminate any safety hazards as quickly as possible.



Presentation of zones on the first page in a browser view

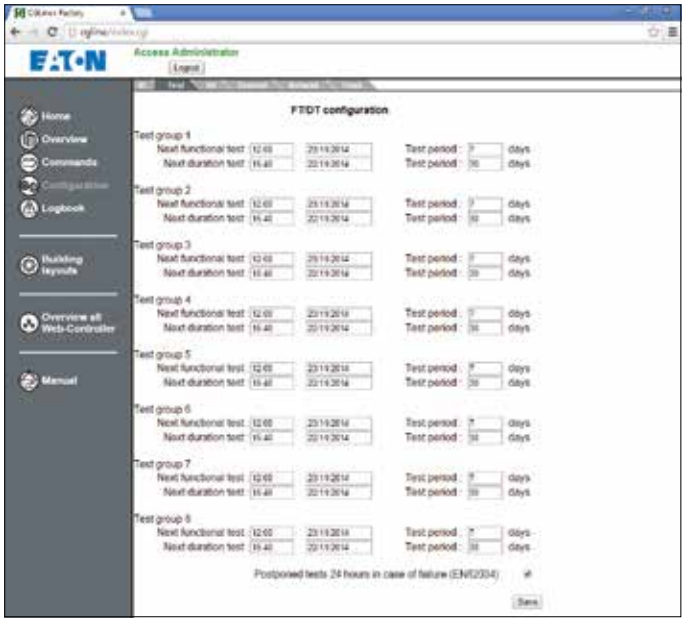
Maintain an overview: Allocate the luminaires to zones

Maintaining an overview is important if there are a large number of luminaires. Luminaires of each line can be allocated to up to 8 zones (up to 16 zones in case of installing only two lines). The zones can be areas where the luminaires need be brought together, for example on a floor, in an area or in a room. The exit sign luminaires can be switched off or blocked in different parts of a building which are not being used at certain times. By doing this, energy costs are reduced. By blocking the signs, unintentionally discharging batteries when the mains power is switched off is avoided, for example when maintenance work is being carried out. The zone can be used immediately after turning on the mains power, because batteries have not been discharged and the luminaires can perform their safety function immediately being unblocked.

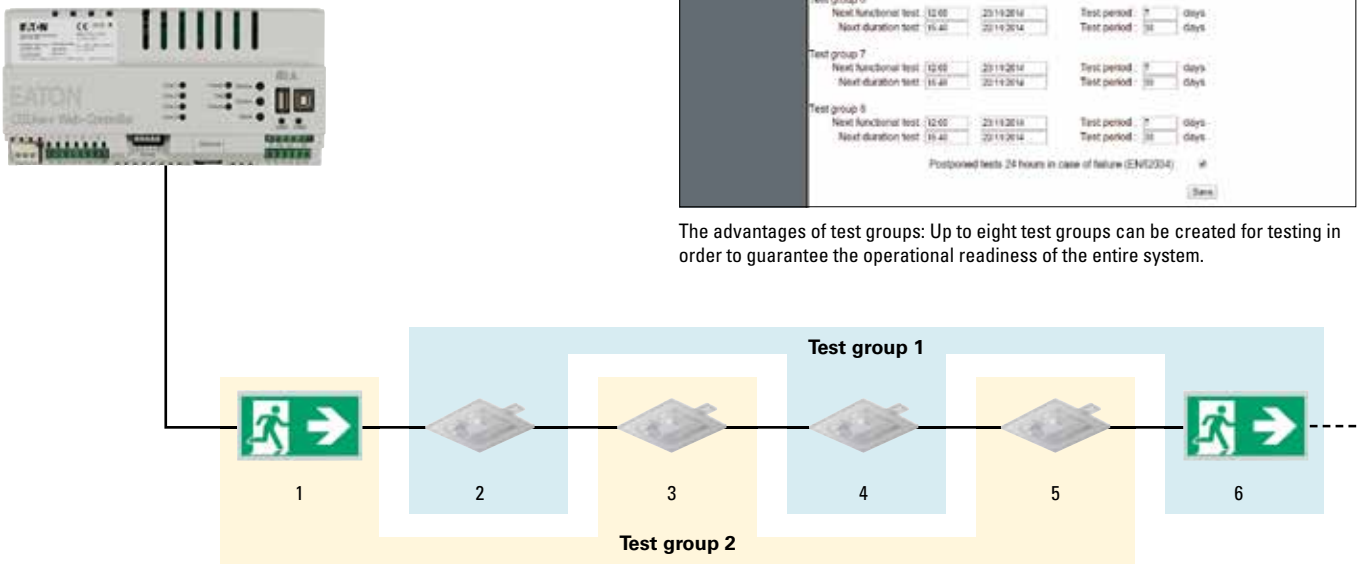


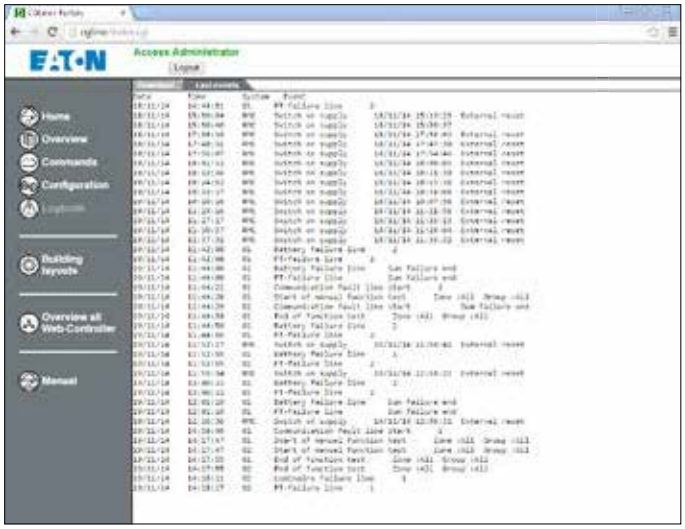
Tests are not forgotten, and are carried out at the right intervals for maximum safety

The timing and the intervals of regular function and duration tests can be conveniently and precisely set down to the minute, ensuring that the equipment is ready for operation at any time during the operating hours of the building. This allows luminaires to be grouped into up to eight test groups for this purpose, for example to ensure that duration testing of luminaires installed next to each other is not started at the same time. The image below shows the luminaires of a floor allocated into two test groups. The period between tests is completely adjustable.



The advantages of test groups: Up to eight test groups can be created for testing in order to guarantee the operational readiness of the entire system.





The log book is available at any time using a web browser. Data are stored for at least four years in compliance with standards.

The electronic log book saves the need for manual logging

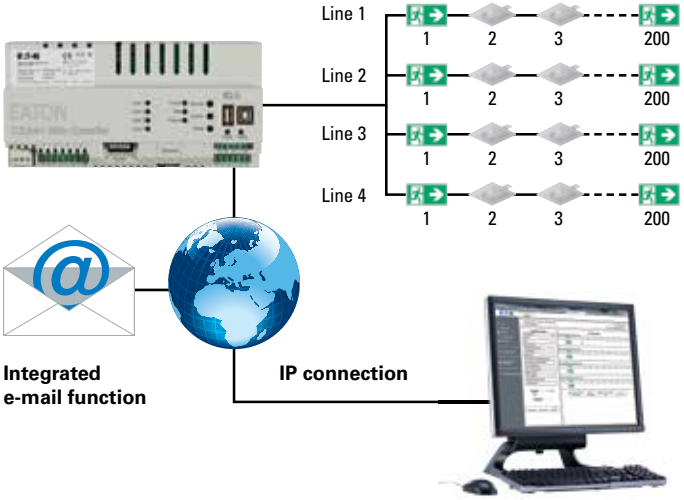
All test results are stored in the electronic log book for at least four years, in compliance with standards. The data is available directly using a web browser. The log book can be downloaded directly from the controller through a web server for further analysis of the log book in TXT or DAT file format. The DAT file can then be stored and transported using a regular USB memory stick. The CGLine+ PC software is used for reading the log book in DAT format, providing efficient and convenient analysis of the test results.

The electronic log book simplifies the requirement for the building operator to provide documentation, and it removes the need for laborious, manual logging.

Automatic e-mail notification in case of faults

The integrated e-mail service automatically sends e-mails to up to ten recipients in case of allocatable events, for example in case of a luminaire failure being detected following an automatic function test. The aim of this function is to actively notify without delay those persons responsible for building safety about any faults, even if they have no direct connection with the controller at that point in time.

E-mail addresses can be divided into two groups to implement hierarchical escalation. This ensures that when a recipient in the first group is unexpectedly absent, other people are informed to ensure the safety of visitors of the building.



Selective assignment of commands

The web browser interface is useful for

- Blocking/unblocking instructions
- Manual starting/stopping the function test and duration tests
- Switching on/off maintained light

This can be done in detail for all luminaires, for a line, for a zone and down to individual luminaires.

Furthermore this view offers a system status overview with the most important status messages and the operating condition of the input and output contacts.

Keep your bearings in complex buildings

The programming of building layout function offers new opportunities. Building layouts can be loaded in the program to display the status of luminaires at the installation location on the floor. Up to 30 different building layouts can be displayed for each controller. Luminaires are displayed with colour codes according to their current status. By touching a luminaire with the mouse pointer, a status window opens up with more information about the luminaire.

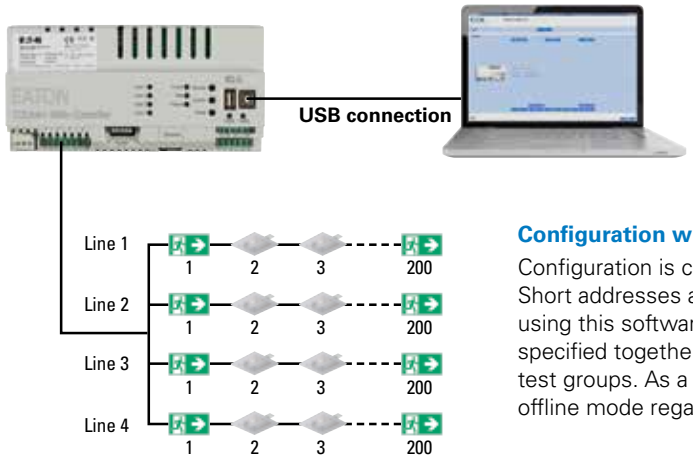
The overview helps provide better orientation in the building. The situation can be judged more effectively and repairs better prioritised.

Compatibility with the CGLine 400 System

The comprehensive functionality of the CGLine+ controller can only be used in conjunction with CGLine+ luminaires. But of course CGLine+ luminaires and CGLine 400 luminaires can be connected to the CGLine+ controller in a straightforward manner in a mixed setup . In this set-up the controller operates in CGLine 400 mode only. The extended CGLine+ functions can be used only when only unmixed CGLine+ luminaires are installed. The new CGLine+ luminaires can also be used together with the proven CG controller CGLine 400 in CGLine 400 mode.

	CGLine+ luminaires	CGLine 400 luminaires
CGLine+ Controller	CGLine+ mode	CGLine 400 mode
CGLine 400 Controller	CGLine 400 mode	CGLine 400 mode

Comprehensive CGLine+ functions using CGLine+ luminaires connected to a CGLine+ controller



Configuration with PC software

Configuration is carried out using the CGLine+ PC software. Short addresses and unique names of luminaires can be assigned using this software; the time and interval of automatic tests are specified together with the zone assignment and the definition of test groups. As a result, the entire system can be configured in offline mode regardless of whether the IT network is available.

CGLine+ Bus

The communication of all data and commands takes place using the CGLine+ bus installed in a free topology using a two-wire unshielded cable. Should there be a possible break in the bus cable, the additional integrated test function of each CGLine+ luminaire ensures that the tests required are performed automatically, and this is displayed on site at the luminaire. The required cross-section of the bus cable depends on the length of the wire.

Cable length of a line

Cross-section	Length	For 4 lines in total
0.5 mm²*	330 m	1.320 m
1.0 mm²	660 m	2.640 m
1.5 mm²	1.000 m	4.000 m

* e.g. J-Y(ST)Y 2x2x0,8

Electrical data per line/bus

Supply voltage Bus	Max. allowable voltage drop	Bus current
25 V DC	14 V	400 mA

Set-up of the CGLine+ Web-Controller

1 LEDs for line 1 to line 4: It signals the sending or receiving of data between the CGLine+ Web-Controller and the CGLine+ self-contained luminaires.
- Green LED = Receiving of data by the Web-Controller
- Yellow blinking LED = Sending data to the luminaires

2 Power LED: The green light is lit as soon as the controller is connected to the 230V/AC supply voltage.

Test LED:
- Rapid green blinking if at least 1 luminaire is undergoing a function test
- Rapid green blinking if at least 1 luminaire is undergoing an duration test

LED failure: Showing a sum failure. Red LED light is lit if at least 1 luminaire is faulty, for example the battery has failed

3 Button:
- Service = Starts a function test for example
- System = Starts a USB connection using the USB2 port
- Reset = Hardware reset of the device

4 USB1 port (Host) for connecting a regular USB memory stick

5 USB2 port (Device), for connecting to a PC

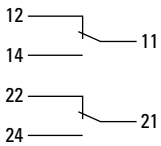
6 PE/N/L 230V 50/60Hz

7 Connections for the CGLine+ bus, line 1 to line 4

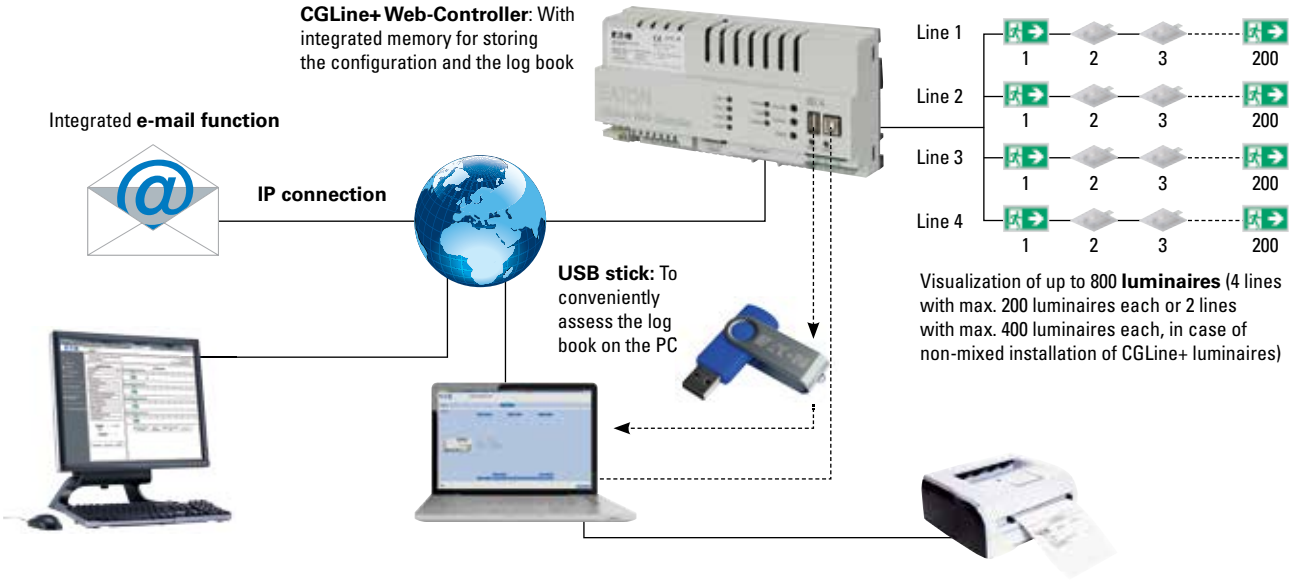
8 RS485

9 LAN (RJ45) with LED display
- yellow = connected (link)
- green = data transfer (traffic)

10 Digital inputs and outputs:
- S1/S2 = Blocking input
- In1, In2 = 2 x digital inputs
- 11, 12, 14 / 21, 22, 24 = 2 x relay outputs



CGLine+ in operation



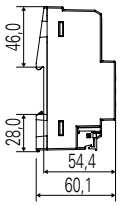
PC connected to the network or an optional CGLine+ Wireless Monitoring Set: Access using the integrated web interface

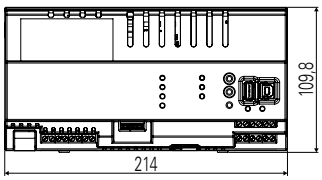
CGLine+ PC software for configuration

Printer: Printing out the log book

CGLine+ Web-Controller with integrated web server

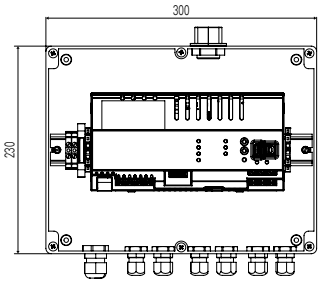
Dimensional drawings, data in mm

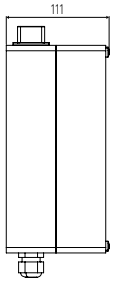




CGLine+ Web-Controller connection box

Dimensional drawings, data in mm





CGLine+ Web-Controller

- For connecting up to 800 luminaires in max. 4 lines
- The integrated web server enables there to be convenient visualization, control and monitoring
- Unique ID per luminaires assigned by the manufacturer
- Automatic luminaire search function requiring no manual addressing
- Simple sorting using unrestricted short address assignment
- Unrestricted entry of target location names for the luminaires with up to 20 characters
- Clearly-shown allocation of luminaires to up to 8 zones per line
- Automatic function test and duration test
- Up to 8 test groups per luminaire can be defined for the function test (FT) and duration test (DT)
- Electronic log book storage for a period of minimum 4 years
- E-mail service for sending automatic e-mail in case of malfunctions to up to 10 e-mail addresses, assignable to 2 escalation groups
- Blocking the emergency lighting function during non-operational periods (all / per bus line/ per zone / per luminaire)
- Luminaires in maintained mode switchable (all / per bus line / per zone / per luminaire)
- Password protected access as an administrator or user
- Visualization of luminaires in up to 30 different building layouts
- Efficient and convenient analysis of the log book using the CGLine+ PC software

Dimensions	214 x 109.8 x 60.1 mm
Housing type	For DIN rail 12 TE
Power supply	230 V AC, 50/60 Hz
Power consumption	< 4 W in standby, < 21 W at full load
Connection terminals	max. 2.5 mm²
Permissible ambient temperature	0 °C to 35 °C
Storage temperature	-20 °C to 70 °C
Degree of protection	IP20

Ordering details

Type	Scope of supply	Order No.
CGLine+ Web-Controller	Module in installation housing for DIN rails	40071361055

Accessories

Type	Scope of supply	Order No.
CGLine+ PC software	on CD-ROM	40071361178
CGLine+ Web-Controller connection box	CGLine+ Web-Controller in wall-mounted housing	40071361184

CGLine+ Wireless Monitoring Set

The CGLine+ Wireless Monitoring Set enables wireless visualization of CGLine+ Web-Controllers on a tablet via an integrated web browser. Access by other WiFi devices including notebooks and smartphones can be done with ease. This practical solution has the advantage of accessing the status and detailed information of every luminaire, easily and at any time using the CGLine+ Intranet, regardless of its installed location. This way, a wired network connection close to the luminaire is no longer required.

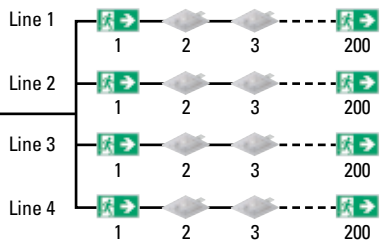
This clearly makes maintenance work easier. After repairing a luminaire, a function test for the relevant luminaire can be started on site to directly check that the luminaire is operative. Because the result is recorded directly in the electronic log book, paper-based protocols can be dropped.

Installation example

Current status indicator of all CGLine+ luminaires at all times in the web browser of a tablet or smartphone

WiFi (wireless network connection)

CGLine+ web interface and preconfigured WiFi access point incl. 24V/ DC mains adapter



CGLine+ WiFi connection box + iPad* Air

+

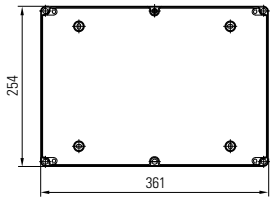
CGLine+ Wireless Monitoring Set

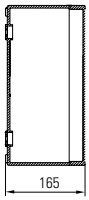
- Wireless visualization of up to 800 CGLine+ self-contained luminaires – no wired network connection close to the luminaire required
- Accessing detailed information of every luminaire – regardless of its installed location
- Function test can be started on site to directly check that the luminaire is operative
- Location-independent access to the electronic workbook
- Integrated WiFi access point
- Convenient operation via a web browser and touchscreen
- Apple iPad* Air, 32 GB, WiFi, grey included in the monitoring set

CGLine+ WiFi connection box

Dimensions in mm (H x W x D)	360 x 255 x 165
Housing type	Plastic wall-mounted housing
Power supply	230 V AC, 50/60 Hz
Power consumption	< 8.5 Watts standby < 25.5 Watts full load
Connection terminals	max. 2.5 mm²
Permissible Ambient temperature	0°C to 35°C
Storage temperature	-20°C to +70°C
Degree of protection	IP54

Dimensional drawing connection box, data in mm





Ordering details

Type	Scope of supply	Order No.
CGLine+ WiFi connection box	CGLine+ Web-Controller + WiFi access point in a wall-mounted housing	40071361275
CGLine+ Wireless Monitoring Set	CGLine+ WiFi connection box + iPad* Air, 32 GB, WiFi, grey	40071361274

* iPad is a registered trademark of Apple Inc., registered in the USA and other countries.

CGLine+ Touchscreen Controller

The CGLine+ Touchscreen Controller combines the Web Controller and a 10-inch touchscreen in a single housing.

This product combines the power of the Web-Controller (monitoring of up-to 800 self-contained luminaires) with the ease of using an intuitive touchscreen interface.

This enables visualisation of the status of all luminaires connected to the system.

There are three Touchscreen Controller packages available:

1. CGL+ CGVision Touchscreen S/Controller

- CGLine+ Web-Controller
- 10.1 Inch Touchscreen
- CGVision Touchscreen Software

This Touchscreen package allows full configuration and visualisation of a single CGLine+ system.

2. CGL+ CGVision Touchscreen G/Controller

- CGLine+ Web-Controller
- Ethernet connection
- 10.1 Inch Touchscreen
- CGVision Touchscreen software

This Touchscreen package allows full configuration and visualisation of the intergrated CGLine+ Web-Controller and up-to 9 external Web-Controllers via ethernet.

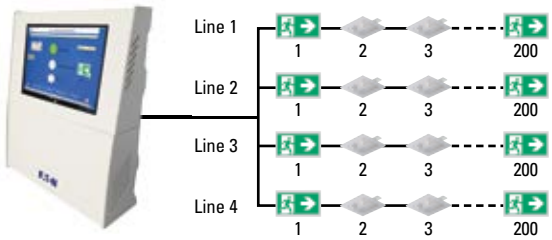
3. CGL+ Web Touchscreen Controller

- CGLine+ Web-Controller
- Ethernet connection
- 10.1 Inch Touchscreen
- Embedded Web-browser

This Touchscreen package is compatible with central CGVision software and allows full configuration and visualisation of the integrated CGLine+ Web-Controller and up-to 32 external Web-Controllers via Ethernet.

Building layouts can be uploaded for enhanced identification of luminaires.

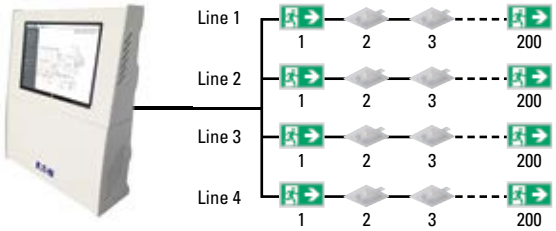
1. Stand-alone visualisation



CGL+ CGVisionTouchscreen S/Controller

- Visualisation with CGVision Touchscreen software

or



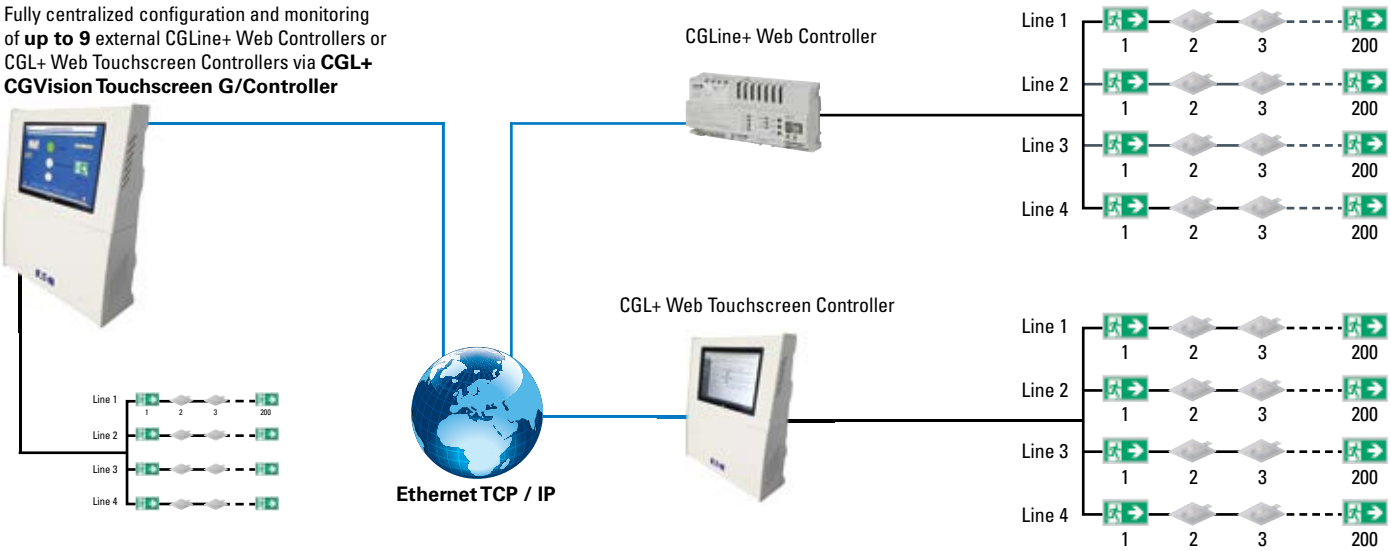
CGL+ Web Touchscreen Controller

- Web based visualisation
- Building layout functionality

7

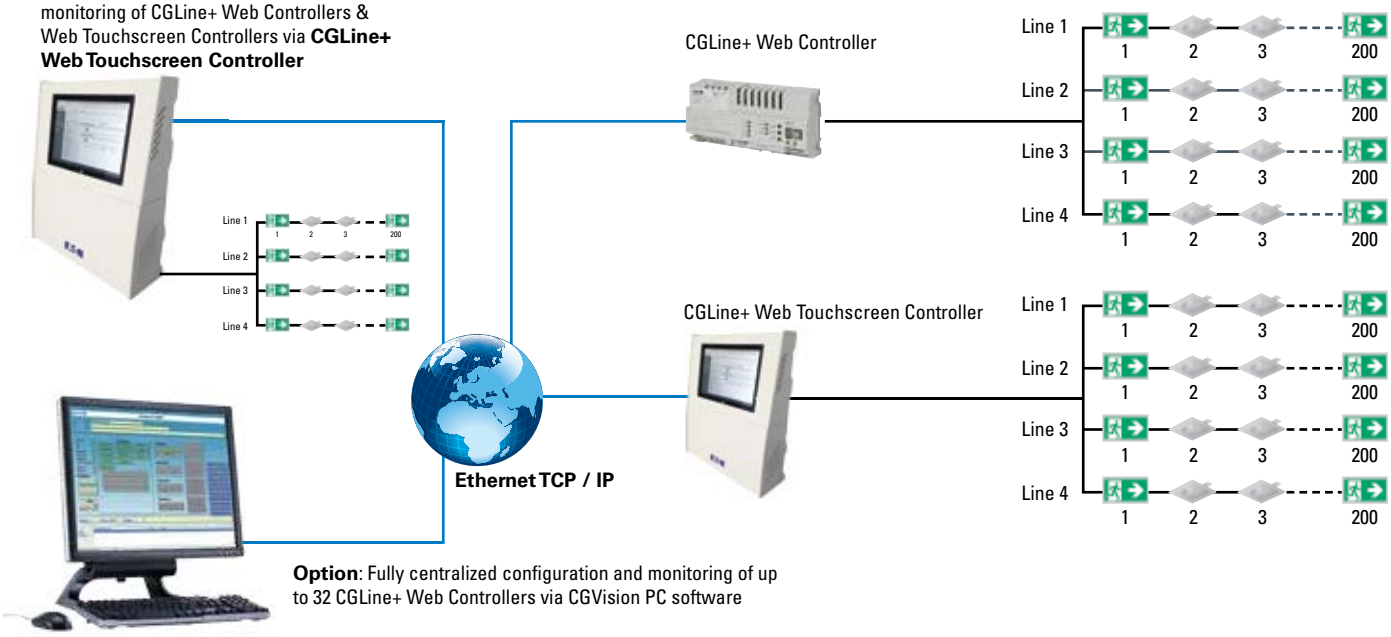
2. Group visualisation with CGL+ Touchscreen G/Controller

Fully centralized configuration and monitoring of **up to 9** external CGLine+ Web Controllers or CGL+ Web Touchscreen Controllers via **CGL+ CGVision Touchscreen G/Controller**



3. Web-based group visualisation with CGLine+ Web Touchscreen Controller

Fully centralized configuration and monitoring of CGLine+ Web Controllers & Web Touchscreen Controllers via **CGLine+ Web Touchscreen Controller**



Option: Fully centralized configuration and monitoring of up to 32 CGLine+ Web Controllers via CGVision PC software

CGLine+ Web-based visualisation

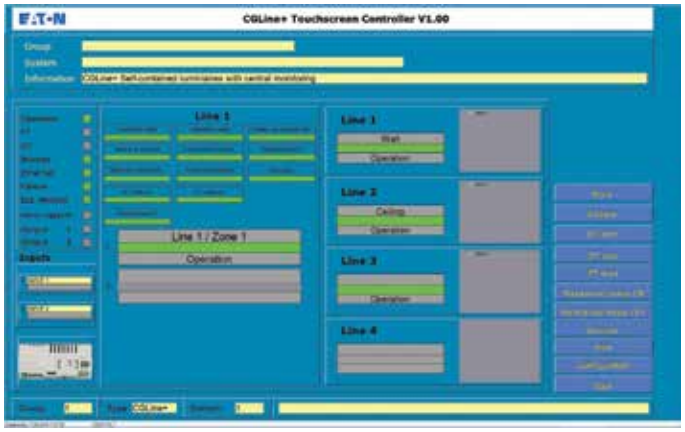
Fully centralized monitoring of up to 10 CGLine+ Web Controllers and Web Touchscreen Controllers:

- Secure access with username and password
- Building layout display
- Blocking / Rest mode function for all luminaires
- Manual function and duration tests (all, group or single luminaire)
- Logbook stores events and test results for a minimum of 4 years in compliance with standards.
- Customisable automatic E-Mail dispatch if faults occur

CGVision Touchscreen software

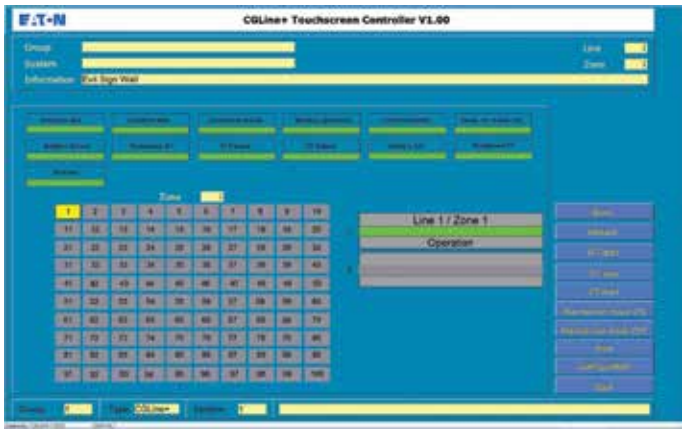
Home screen:

- Sum status display of up to 10 CGLine+ Web-Controller and all luminaires (Operation, Battery operation, Sum Failure)
- Blocking / Rest mode function for all luminaires with PIN code protection
- Manual function and duration test of all luminaires
- Logbook stores events and test results for a minimum of 4 years in compliance with standards.
- Easy selection between 19 user languages



System screen:

- Overview of the system

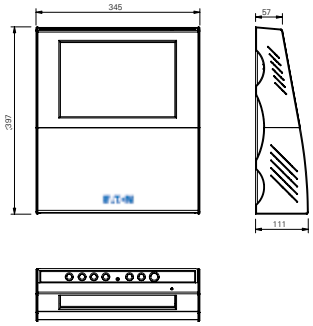


Zone screen:

- Overview of the zone

CGLine+ Touchscreen Controller

Dimensional drawing Controller, data in mm



CGLine+ Touchscreen Controllers

- 10,1 inch Touchscreen IPS display with WIN10
- For connecting up to 800 luminaires in max. 4 lines
- Unique ID per luminaire assigned by the manufacturer
- Automatic luminaire search function requiring no manual addressing
- Simple sorting using unrestricted short address assignment
- Unrestricted entry of target location names for the luminaires with up to 20 characters
- Clearly-shown allocation of luminaires to up to 16 zones per line
- Automatic function and duration test of luminaires, with customisable time/date settings
- Up to 8 test groups per luminaire can be defi ned for the function test (FT) and duration test (DT)
- Electronic log book storage for a period of minimum 4 years
- Blocking the emergency lighting function during non-operational periods (all / per bus line/ per zone / per luminaire)
- Luminaires in maintained mode switchable (all / per bus line / per zone / per luminaire)
- Password protected access as an administrator or user
- Visualization of luminaires in up to 30 different building layouts
- Efficient and convenient analysis of the log book using the CGLine+ PC software

CGL+ CGVision Touchscreen S/Controller - Specific features :

• CGVision Touchscreen Software allows full configuration and visualisation of the integrated CGLine+ Web Controller.

CGL+ CGVision Touchscreen G/Controller - Specific features :

• Ethernet connection
• CGVision Touchscreen Software allows full configuration and visualisation of the integrated CGLine+ Web Controller and up to 9 external controllers/installations via ethernet.
• E-mail service for sending automatic e-mail in case of malfunctions to up to 10 e-mail addresses, assignable and 2 escalation groups

CGLine+ Web Touchscreen Controller - Specific features :

• Ethernet connection
• Web-browser allows a visualisation of the integrated CGLine+ Web Controller and up to 9 external connected CGLine+ Web Controller via ethernet.
• Easy access web-based visualisation
• Building layouts could be loaded and used to localized faulty luminaires.
• Compatible with central CGVision software.
• E-mail service for sending automatic e-mail in case of malfunctions to up to 10 e-mail addresses, assignable and 2 escalation groups

Dimensions in mm (H × W × D)	345 × 397 × 111
Housing type	Plastic, wall-mounted housing
Power supply	230 V AC, 50/60 Hz
Power consumption	< 12 watts standby < 38 watts full load
Connection terminals	max. 2.5 mm² flexible
Permissible Ambient temperature	0 ° to 35 °C
Storage temperature	0 ° to 35 °C
Degree of protection	IP 20

Ordering details

Type	Scope of supply	Order No.
CGLine+ Web Touchscreen Controller	Web-based visualisation via integrated web-browser of any no. of networked CGL+ Web Touchscreen Controller or CGLine+ Web Controller. A networked CGVision PC allows a full configuration and monitoring of up to 32 CGline+ Controllers	40071361056
CGL+ CGVision Touchscreen S/Controller	CGL+ CGVision Touchscreen S/Controller: Stand alone operation with full configuration and monitoring	40071361083
CGL+ CGVision Touchscreen G/Controller	CGL+ CGVision Touchscreen G/Controller: Group visualisation with full configuration and monitoring of up to 9 external CGL+ Controllers	40071361084

Accessory

Type	Scope of supply	Order No.
CGLine+ PC software	on CD-ROM	40071361178

CGVision in the CGLine+ Web-Controller

The Web-Controller can be connected to CGVision, the powerful visualization software, to create the largest configuration level of the CGLine+ system. In this set-up, up to 32 CGLine+ Web-Controllers can be visualised at once.

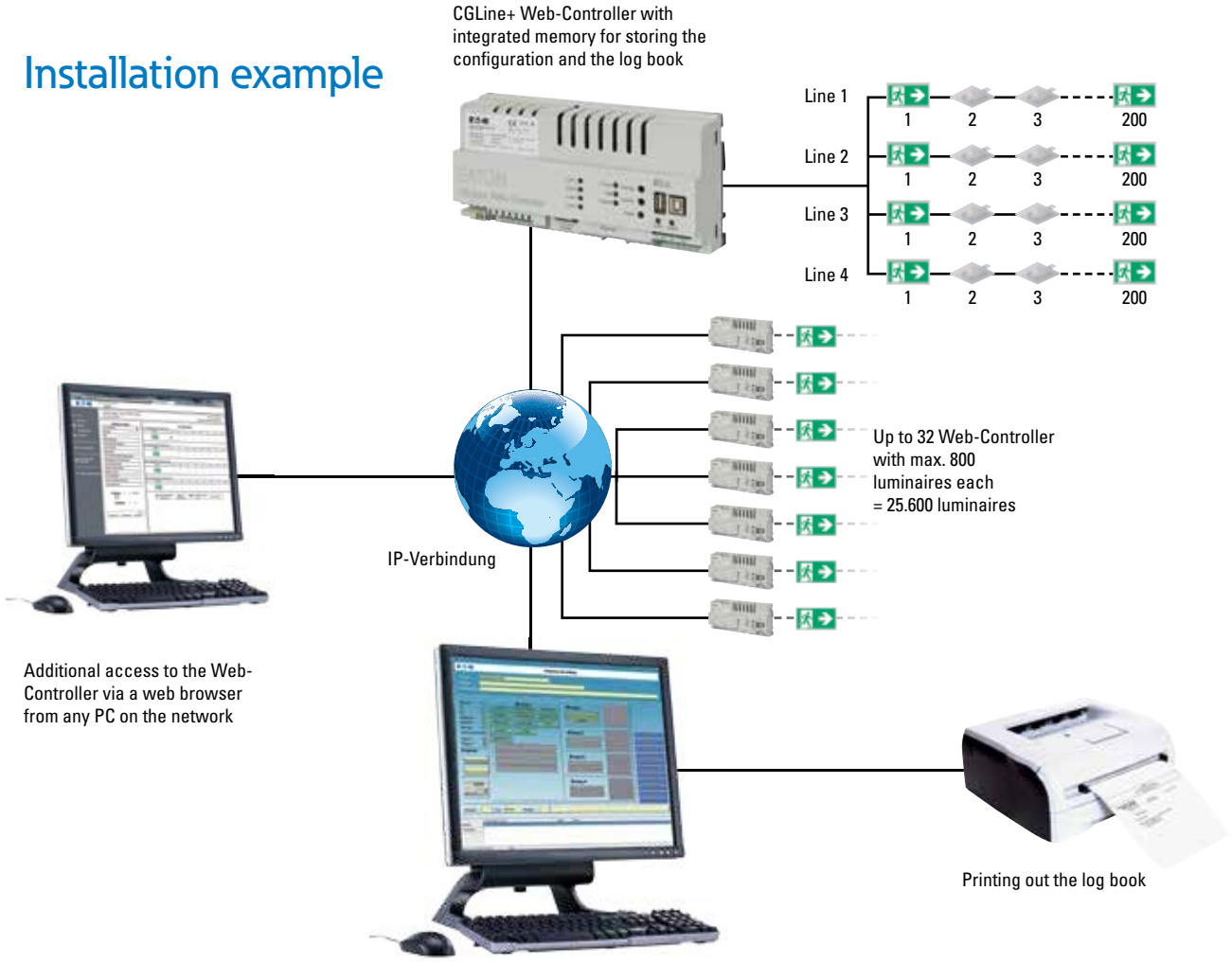
Using CGVision both CGLine+ luminaire systems and other emergency lighting systems (for example ZB-S, LP-STAR, AT-S+) can be monitored with a single software. There is no difficulty in extending an existing system.

CGVision takes over all the control and test functions, and it generates a comprehensive electronic log book for all connected systems - and does so completely automatically.

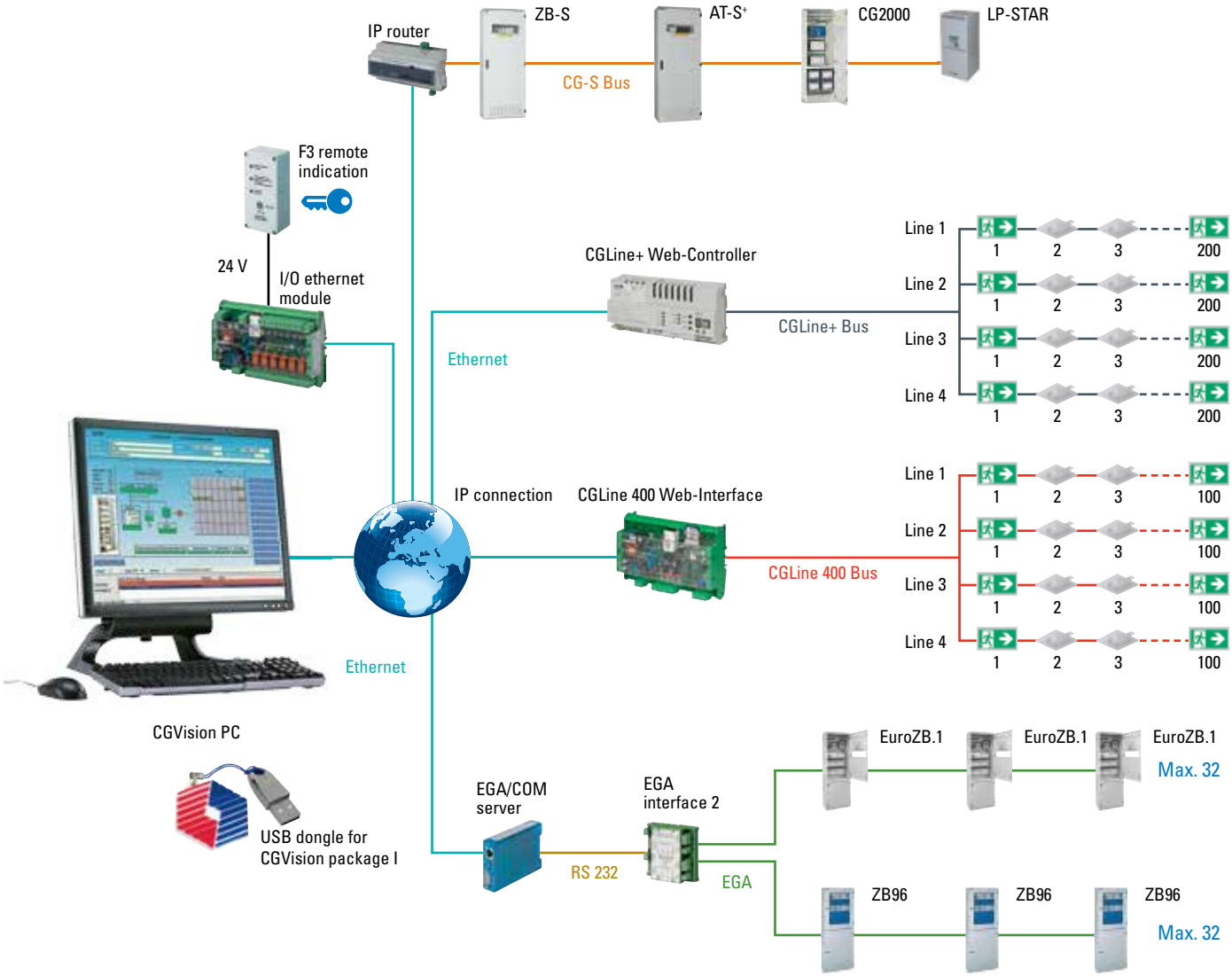
In order to keep an eye on a large amount of equipment, for example at a large plant or an airport, the state of the individual emergency lighting systems can be presented on an aerial photo or a site plan. The building layout helps visualise individual luminaires.

Access of any PC via the web server of the CGLine+ Web-Controller can also be carried out if it is connected to CGVision. Thus for example, large, multi-building facilities can be configured and monitored centrally using CGVision. Additionally service technicians can have an overview of areas of interest to them using the Web-Controller.

Installation example



Example for use of CGVision Package I



CGVision ordering details

Scope of supply	Order No.
CGVision Basic Package I (with CG-S/IP interface)	40071361020
CGVision Basic Package II (EGA components to be ordered separately)	40071361022
CGVision Basic Package III (with CG-S/USB interface, EGA components to be ordered separately)	40071361024
CGVision Pro Package I (including CG-S/IP interface and visualization in a building layout)	40071361021
CGVision Pro Package II (including visualization in a building layout, EGA components to be ordered separately)	40071361023
CGVision Pro Package III (including CG-S/IP-Interface and visualization in a building layout, EGA components to be ordered separately)	40071361025
PC-Anywhere remote maintenance software, 2nd licence 1 x host, 1 x remote	40071347151

For a detailed description and ordering information, see section CGVision in the emergency lighting main catalogue.

WorkSafe

Protect people and property

Risk management for commercial buildings is evolving rapidly. Facing a growing diversity of threats in an urbanised and complex environment, the owners and managers of buildings are re-evaluating the way they protect people, property and business continuity. It is not only a legal obligation but a moral, financial and reputational imperative. In emergencies involving fire, terrorism and civil unrest, it is essential that hazards can be detected, occupants alerted and evacuations expedited. The safe and timely completion of this process is dependent on planning, equipment, training and infrastructure. Special consideration must be given to situations in which occupants are unfamiliar with layout and procedures, and particularly if they are in large, densely populated, high-risk or complex premises such as railway stations, shopping centres, airports, stadia, government buildings or leisure facilities.

Building upon decades of expertise in the delivery of life safety systems, and particularly emergency lighting technologies, Eaton's solutions enable faster, safer and more agile evacuations.

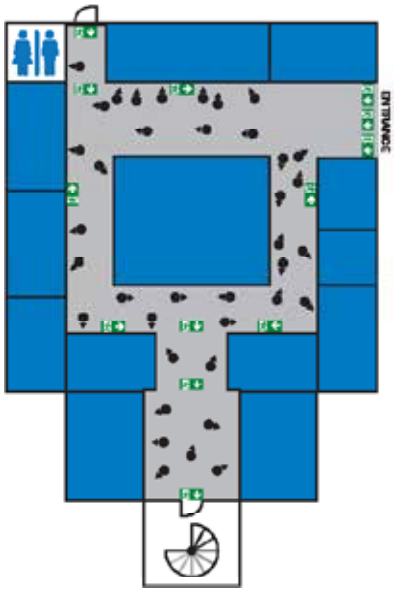
Increased affordance

The evacuation of commercial buildings can be inhibited by people's failure to recognise standard emergency exit signs.

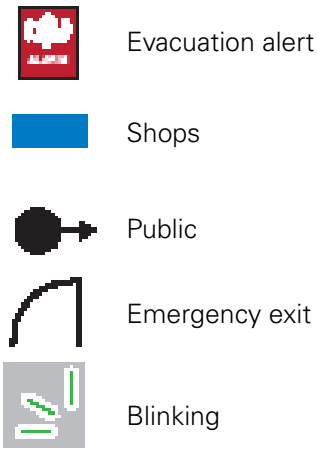
To improve the visibility of signs, Eaton has introduced an Increased Affordance capability to its emergency lighting range, which enables exit signs to flash or pulse when activated manually or through automated connection to other evacuation triggers.

How does increased affordance help ?

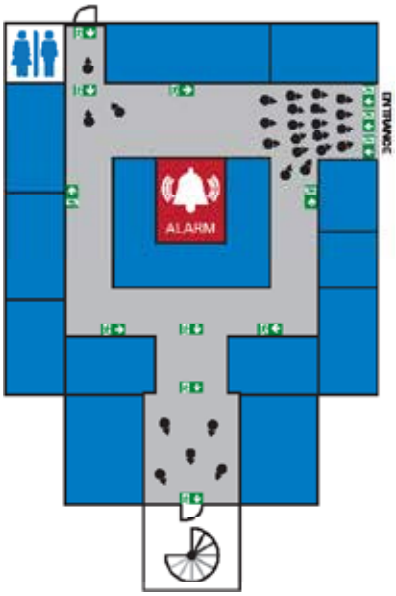
1. Normal situation



In a standard configuration, the exit signs positioned in accordance with the rules are showing the way to the next exit route.



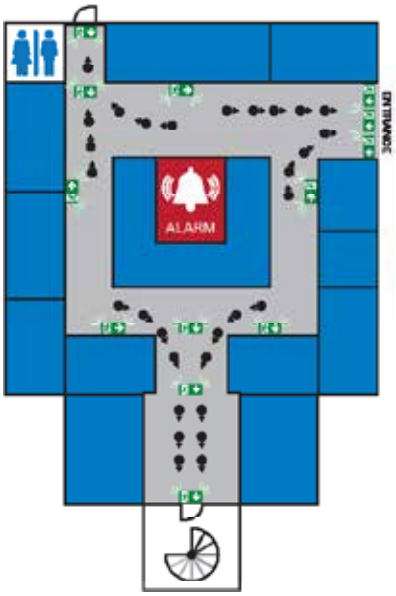
2. Evacuation without IA



The ability of the public to recognise emergency exit signs is crucial in emergency situations requiring evacuation of a building. However, research has shown that only 38 per cent of people may see conventional exit signs during evacuation from an unfamiliar environment . Furthermore, the proliferation of branding, advertising and informational signage in buildings such as shopping centres and airports can distract attention away from exit signs.

As a result, occupants may become confused or be inclined to return to the point where they entered the building, which can lead to overcrowding, congestion and delayed evacuation.

3. Evacuation with IA



Eaton has developed a new system to increase the visibility of exit signs, whereby the emergency luminaire that illuminates the sign can flash on and off or pulse more softly.

Bearing in mind the two-sense principle for emergency notification, the challenge of recognising exit signs is exacerbated for people with hearing disabilities who may not hear any accompanying vocal instructions or alarms. In their normal mode, the luminaires offer excellent visibility thanks to a high level of luminance that exceeds the minimum requirement in most countries. When activated, Increased Affordance enables even better recognition by flashing or pulsing but never dipping below the minimum level of luminance that is established in industry standards, thus achieving full compliance.

Increased affordance portfolio

The Increased Affordance functionality has been added to selected emergency luminaires within Eaton's lighting range, including CrystalWay and NexiTech.

This fully programmable function can be activated manually or automated to respond to a preset trigger such as a fire alarm, panic button or other system. Eaton's Increased Affordance solution has been developed and tested by an engineering team with decades of expertise in emergency lighting.

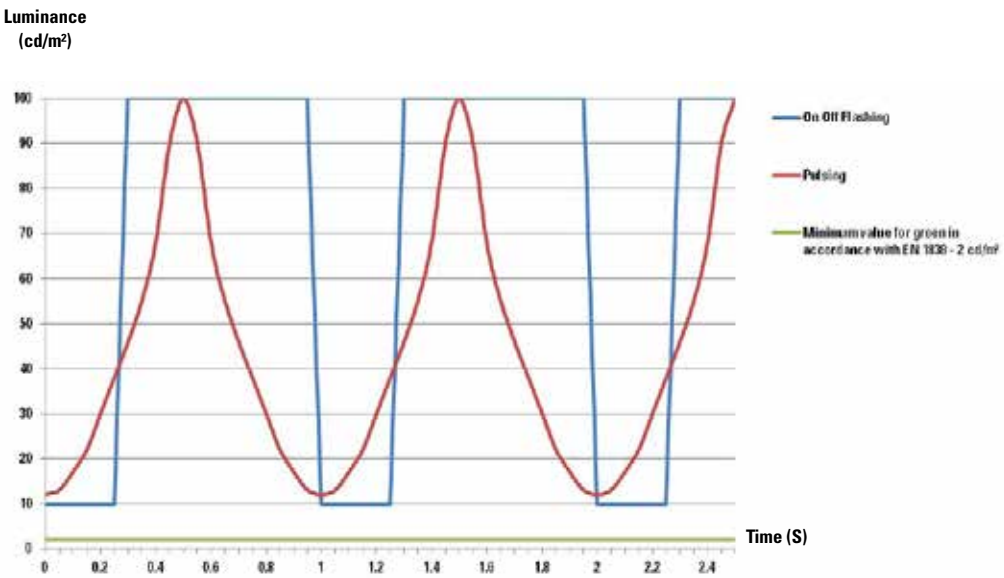
When connected to Eaton's monitoring and control system for emergency lighting, CGLine+, the exit sign luminaires are able to provide either soft pulsing or on-and-off flashing. In their normal mode, the luminaires offer excellent visibility thanks to a high level of contrast that exceeds the minimum requirement in most countries. When activated, Increased Affordance enables even better recognition by flashing or pulsing but never dipping below the minimum level of luminescence that is established in industry standards, thus achieving full compliance. The IA function can be started either in normal maintained mode or in emergency lighting mode because an evacuation is not necessarily linked to a mains failure. The IA function will remain activated for 30 minutes (typical evacuation times are lower) before the luminaire switches back to normal operation.

CGLine+ Web-Controller

CGLine+ Touchscreen Web-Controller

TL CGline+

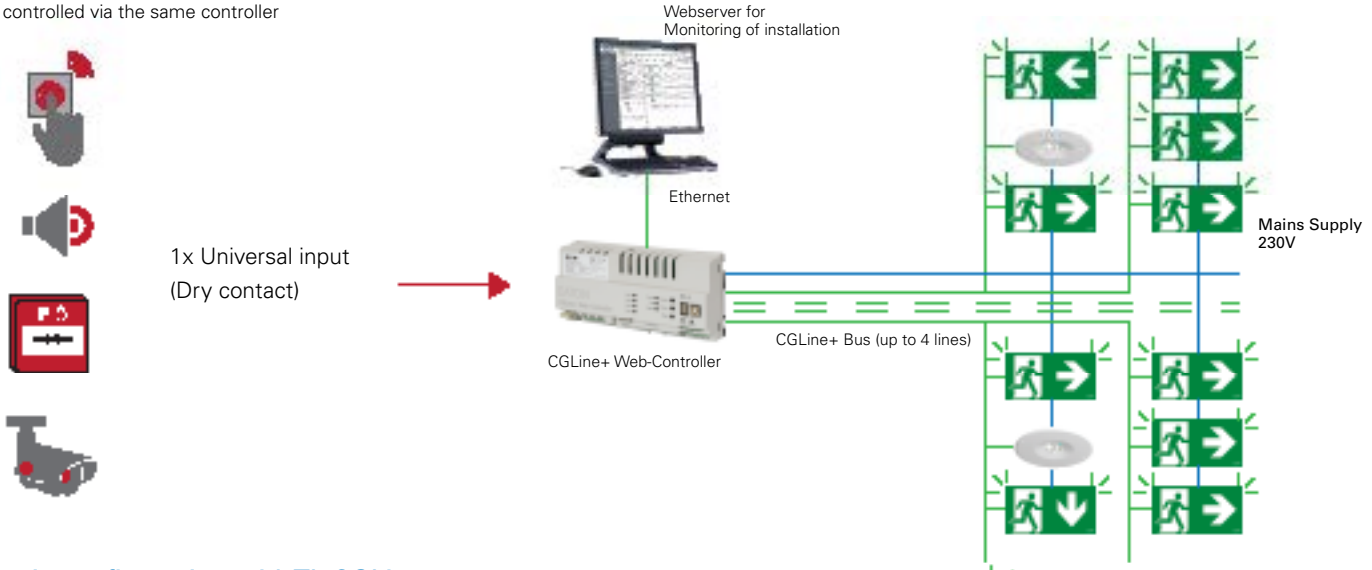
Luminance in the green zone of an IA luminaire (flashing or pulsing) compared with the minimum luminance in battery mode defined by EN1838:



Increased affordance system configurations

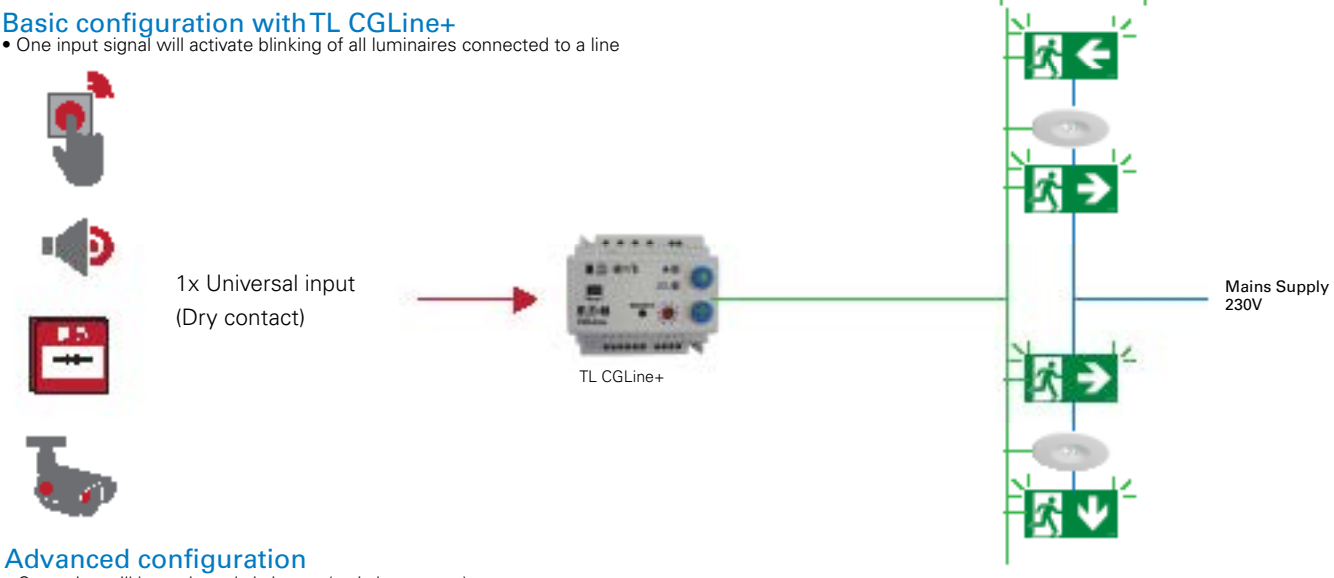
Basic configuration with Controller

- One input signal will activate blinking of all luminaires connected to a line
- Select activation of all lines or single lines
- One controller for both: Standard CGLine+ and IA luminaires can be controlled via the same controller



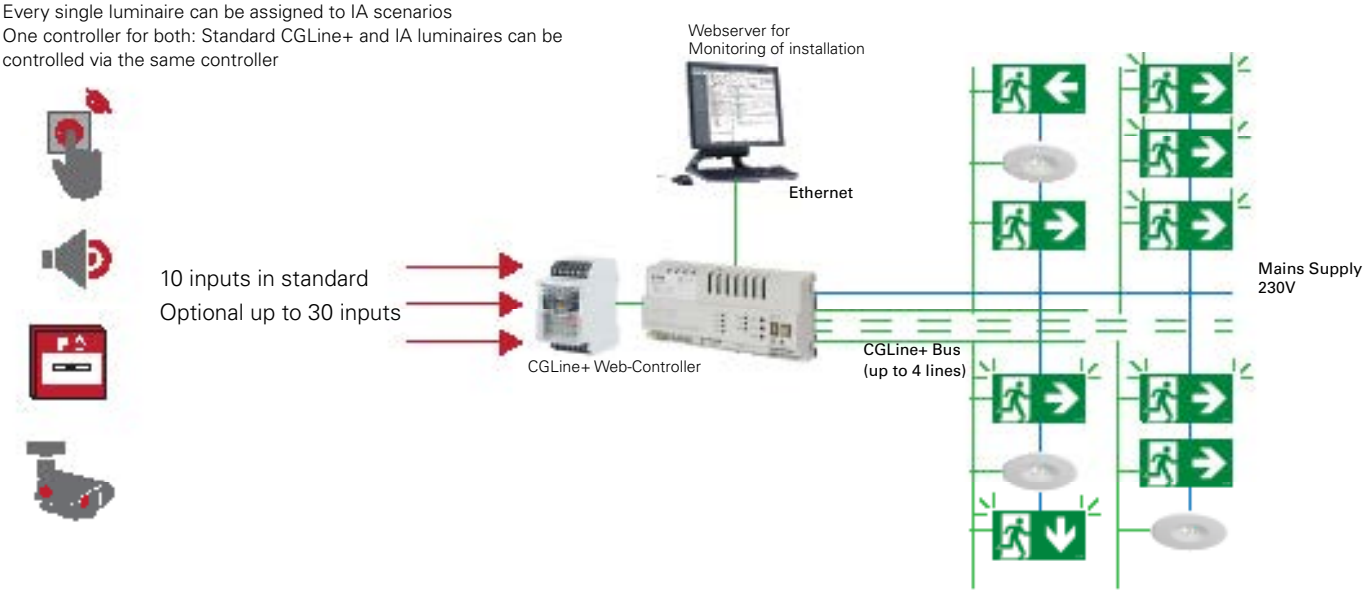
Basic configuration with TL CGLine+

- One input signal will activate blinking of all luminaires connected to a line



Advanced configuration

- Scenarios will be activated via inputs (switch contacts)
- The programming will be via the PC Software
- Every single luminaire can be assigned to IA scenarios
- One controller for both: Standard CGLine+ and IA luminaires can be controlled via the same controller



OPC Server for BMS
For easy facility management

A building management system (BMS) is a computer-based control system usually installed in large buildings in order to control and monitor the building's mechanical and electrical equipement such as ventilation, power systems, fire systems, lighting, etc. BMS systems are a critical component to managing energy consumption and improve reliability and life safety.

In order to support facility managers in their effort of monitoring and targeting energy consumption, improve life safety, save time and money during maintenance, Eaton enables its CGLine+ systems to communicate with their BMS through an OPC server.

Features:

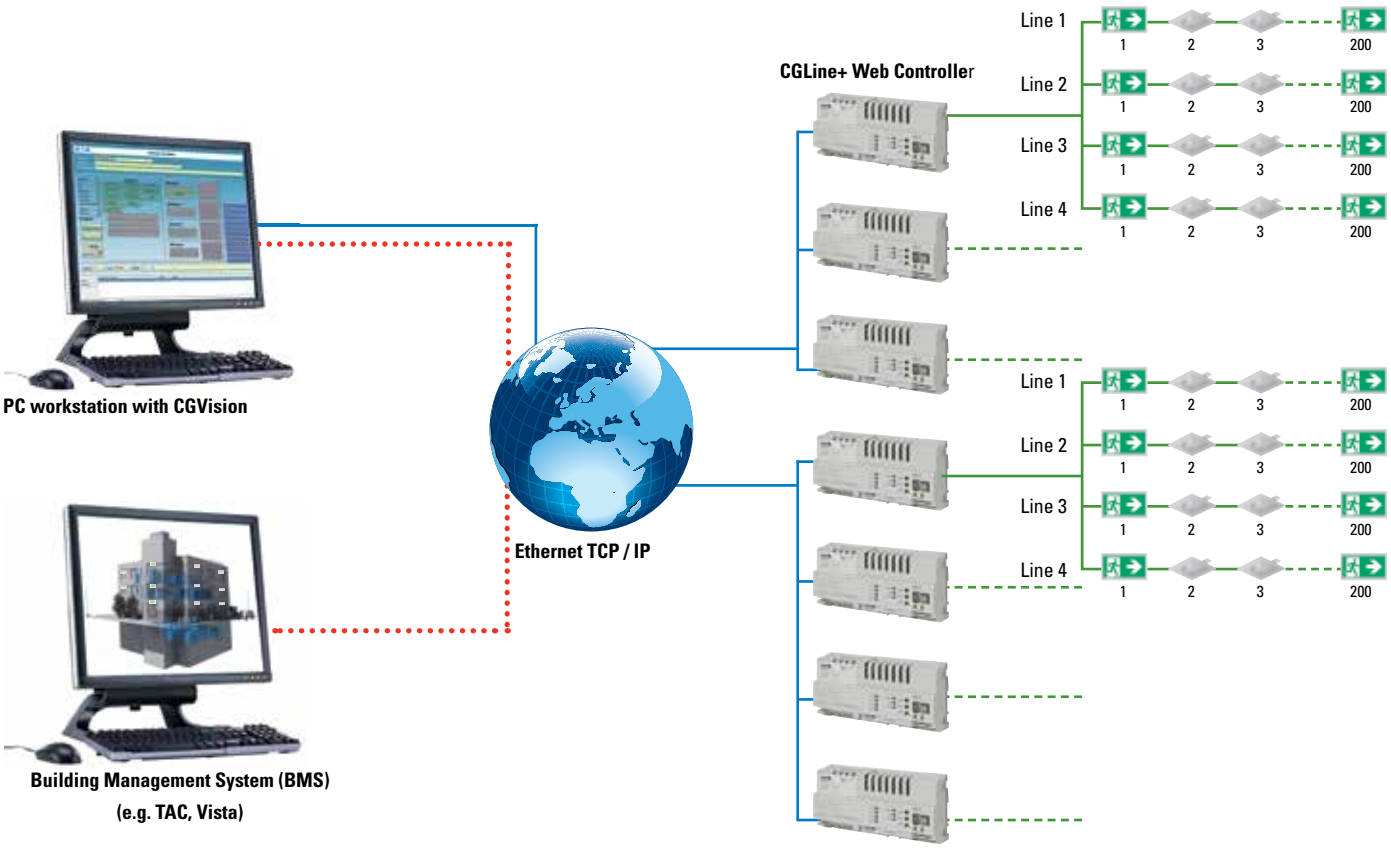
- Easy BMS connection via IP based OPC DA2.0
- One OPC-Server for up to 32 CGLine+ Web-Controller
- 20 sum status information of each CGLine+ Web-Controller
- 10 commandos from BMS to each CGLine+ Web-Controller
- Definition of up to 8 function test groups & 8 duration test groups
- 20 sum status information of each single lines 1-4
- 20 sum status information of each single zone 1-16
- 16 status information of each single luminaire 1-800

Scematic overview:

LAN (RJ45)

LAN connection between PC with CGVision and PC with BMS Software

CGLine+ Bus



Custom-made products for your projects

To be completely integrated into a project, it is necessary to know how to merge in the universe of a creator while adapting itself to the particular architectural requirements.

Eaton created a range of custom-made accessories to echo the diversity of your talents and the needs of your customers, without altering the certified characteristics of the products:

- Colored self-contained and CBS emergency lighting luminaires
- Colored recessed bases
- Specific integrating or fastening systems
- Specific pictograms

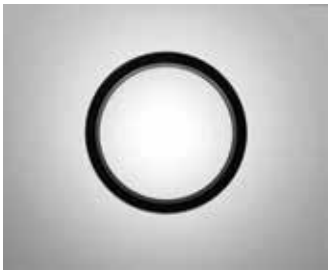
We stay at your disposal to study any specific need for customized accessories or finishing.

A core range of specific pictograms (max. 24 versions) has been developped for CrystalWay, NexiTech, Velos product families.

The housing and recessed base of CrystalWay, NexiTech and Velos products can also be customised. The following standard colours have been defined :

- Silver gloss : RAL9007
- Black mat : RAL9005
- Dark Grey mat : RAL7015

Other colors can be supplied on demand.



Emergency Lighting - Centrally powered systems

Centrally Powered Systems

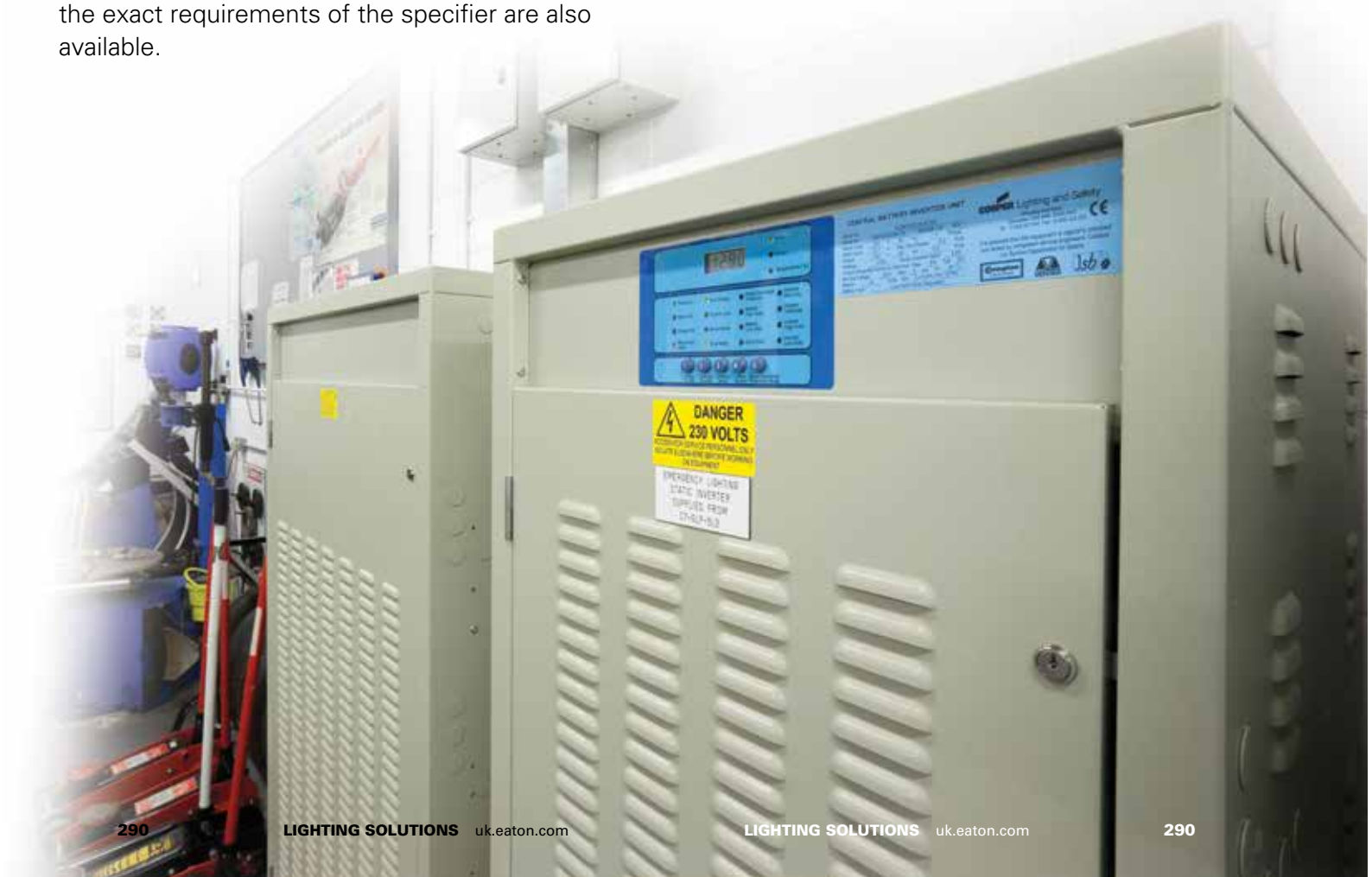
Contents

Central battery system based emergency lighting is ideal for medium to large installations. For projects where central control and testing is desirable, a central battery system is a viable and cost effective alternative to self-contained emergency lighting products. The main advantages of central battery systems over self-contained systems are:

- Testing and maintenance is much easier to carry out
- Battery replacement is much quicker and less disruptive
- Battery life is generally 10 years or more
- Luminaires can be centrally controlled
- High light levels can easily be achieved
- The emergency lighting system can be completely unobtrusive

Eaton manufactures a wide range of central battery emergency lighting systems. Standard products include AC/AC static inverter systems, with the addition of a new compact, competitively priced unit for smaller installations. A comprehensive range of traditional AC/DC systems are also available, including an economy range designed for use in small premises. Bespoke systems to suit the exact requirements of the specifier are also available.

To complement the range of central battery systems, Eaton also offers a wide selection of slave luminaires and conversion modules for mains fluorescent luminaires. EasiCheck automatic self-testing can be readily incorporated into central systems.



LIGHTING SOLUTIONS uk.eaton.com 290

Loadstar AC/AC Systems

IP21

BS EN50171

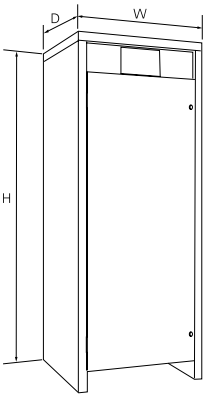
The Loadstar range of AC/AC static inverter units offer the opportunity to create a discreet emergency lighting system, utilising suitable standard mains luminaires without modification. Small or decorative compact fluorescent luminaires can also be easily incorporated. Loadstar AC/AC systems offer many benefits, including higher light levels in emergency mode, as all lamps in the luminaire are usually energised by the emergency supply. Mains voltage and lower currents enable cables of smaller cross sectional area to be used with low voltage AC/DC systems, without unacceptable levels of voltage drop. The proven and reliable modular design ensures a cost effective emergency lighting solution.

- BSI Kitemarked for peace of mind
- Cost effective modular design
- Standard mains luminaires used for emergency lighting
- Fully complies with BS EN50171:2001
- Digital display to clearly indicate system status
- EasiCheck compatible versions available
- Low maintenance
- Low running cost due to passive stand-by operation
- Three phase systems available

System Operation

- In mains healthy condition, the system charges the batteries and stores power, ready for emergency operation
- In mains healthy condition, the power to luminaires designated for emergency use is supplied from the normal mains, via a by-pass contactor inside the cubicle. This may be switched, using a "maintained lights" switch (optional extra) or by use of a remote switch connected to terminals provided
- Local change-over switching can be achieved using an ACM1 module, controlling single or multiple luminaires (if fed from common switched mains supply - max load 750VA). The system will then supply normal mains power or emergency power via the inverter, dependant on status of mains supply at the static inverter
- In the event of a mains failure, the system provides emergency power to dedicated mains slave or designated standard mains luminaires, until mains power is restored (or for the rated duration of the system in the event of extended mains failure)
- Output voltage, from the system via the inverter, is 230V AC nominal
- Standard mains luminaires require no modification to operate with the static inverter (unless ACM1 change-over module is fitted integrally). All lamps in multi-lamp luminaires will be lit during mains failure, unless separate control gear is provided for individual lamps
- Sub-circuit monitoring and hold off relays can be added to the system to energise the emergency luminaires in the event of a localised mains circuit failure, if the ACM1 module is not used

Dimensions



Cubicle Ref	H (mm)	W (mm)	D (mm)
931	1200	715	755
932	1800	715	755
934	1800	1015	755

Depth of 931/2/4 includes a 75mm spacer fitted to back, to ensure ventilation grilles are not obstructed. Dimensions are for guidance only and may be subject to change.

Energy Efficient Standby Operation

The Loadstar range of AC/AC static inverter systems are designed specifically for long term sustainability, reduced carbon footprint and reduced running cost without compromising on the products performance criteria. Due to the passive stand-by operation of the inverter only operating when required, the quiescent running power is minimised while maximising equipment lifetime and reduced running cost.

Standard Specification

- Cubicles
- 1.6mm zinc coated steel panels with powder coat RAL7032 light pebble grey finish
- Plinth base feature to prevent build up of moisture/corrosive materials and aid mechanical handling by fork or pallet truck - 3 standard size cubicles, for combined charger/inverter/battery, charger/inverter only or battery only
- Small systems require only one cubicle. Larger systems housed in multiple sets (see selection tables)
- Electrical control gear and battery compartments are segregated, with lockable access door(s)
- Battery compartments supplied, where appropriate with separate tiered sections, to enable ease of electrolyte level inspection
- Separate fixed facia panel for mounting control/display panel
- Option of open battery racks on larger systems

- Battery Charger
- Solid state, constant voltage charge control module
- Fully automatic
- Full recharge within 24 hours of a rated discharge
- Recharge to 80% capacity within 12 hours, complying with BS EN 50171:2001
- Manual boost switch on systems with vented battery cells
- Current limit facility, preventing overcharging or damage to the system in the event of battery failure or fault
- Outputs have low AC ripple currents for maximum battery life and in compliance with BS EN 50171:2001
- Input protection by MBC to BS 3871 Part 1 or BS 4752 Part 1

- Battery
- Systems can be specified with:
  - Valve regulated lead acid
  - Vented nickel cadmium
  - High performance plante
- See selection tables/guides for battery characteristics

- Fusegear
- Removable industrial HRC fuses, complying with BS 88

- Input Circuits
- Cable entry via removable gland plate on top of cubicle
- Single phase 230V ± 10% AC 50Hz supply. Other input voltages on request
- Input terminals and MBC's DIN-rail mounted and easily accessible

- Load Circuits
- Substantial DIN rail mounted output terminals
- Option of integral distribution board (MCB or HRC fuses)

- Output
- Systems are available in single phase and true three phase (three phase + neutral) output
- Standard systems offered are designed to 0.85 power factor, however unity power factor systems are available on request
- Option for 50Hz or 60Hz

Standard Specification cont'd

- Monitoring Circuits
- Terminals provided for connection of remote monitors and controls

- Cables
- Compliant with BS 6231

- Transformer
- Double wound with earth screen to BS 171

- Rectifier
- Full wave controlled thyristor/diode bridge

- Contactor
- Mains failure contactor to BS5424 Part 1

- Temperature Compensation
- All lead acid cell systems supplied with transducer to monitor battery compartment temperature
- Chargers pre-set for optimum performance in 20°C ambient
- Charging voltage automatically adjusted to optimise battery life

- Low Battery Voltage Disconnect Circuit
- Automatically shuts down the inverter when battery voltage falls below pre-set level, during extended periods of mains supply failure
- Helps prevent potential damage from deep discharge
- Indicator remains lit until mains power restored and reset pressed

- Inverter
- Extensively proven and reliable modular design
- Systems with ratings up to 4 kVA incorporate a single module rated at 1.25 kVA, 2.5 kVA or 4 kVA
- Larger systems utilise multiple modules in parallel to provide a single common output, equal to sum of individual ratings
- Complies fully with BS EN50171:2001
- Modules can be quickly and easily removed/replaced, aiding installation and maintenance
- See table for detailed technical specification

- Test Push Button
- Simulates a mains failure

- Frequency
- 50 Hz +/- 0.01% (60 Hz option)

- Metering and Display Panel

  Simple and easy to read status display
- LCD meter indicating battery voltage, battery current or battery compartment temperature. Voltage is default, others displayed using push buttons. Display mode indicated by LED:
  - Volts
  - Amps
  - Temperature - lead acid batteries only
- Charger indication LEDs
  - Power On
  - Maintained Lights (maintained systems only)
  - Float Mode
  - Current Limit
  - Full Charge
  - Boost mode (vented battery systems only)
- Alarm indication LEDs
  - Mains Fail
  - Charge Fail
  - Battery High Volts
  - Battery Low Volts
  - DC Earth Fault
  - Deep Discharge Protection (protection circuit has operated)
- Inverter indication LEDs
  - Inverter Running
  - Inverter Overload (optional alarm package)
  - Inverter High Volts (optional alarm package)
  - Inverter Low Volts (optional alarm package)
- Audible alarm fitted internally, with mute button on display plus common volt free contacts for remote signalling of a fault condition and terminals for optional remote alarm unit

Inverter Technical Specification

Output Voltage	Pre-settable in the range 220-240V AC. Default setting is 230V AC. Voltage tolerance is 2% on loads of 0-100% of system rating
Frequency	50 or 60Hz. ±0.01%. Standard setting 50Hz. Waveform: Sinusoidal
Voltage Regulation	Static 2%, dynamic 6%
Isolation	2kv rms between input and output terminals
Total Harmonic Distortion	Less than 3% into a linear load
Power Factor	Will supply loads in the 0.3 lag - 0.3 lead range
Overload voltage	200% for 10 seconds, 125% for 20 minutes without reduction in output
Start-up time	Standard 30mS soft start
Noise Level	Less than 55dBA at 1 metre
Efficiency	85 - 89%
Protection	DC input and AC output MCBs DC input reverse polarity protection Short circuit protection Pre-charge protection fuse Reverse-fed mains proof
Low Voltage Shut down	Inverter module(s) automatically shut down when battery discharges to a pre-set level. Re-set is following a combination of the restoration of the mains supply and an increase in battery voltage above the disconnect threshold level
	Residual current drain when the disconnect circuit has operated is less than 1mA per module
Inhibit	An inhibit switch to control the inverter is fitted on a user control pcb in the cubicle
Technology	Pulse width modulation with high frequency switching

Installation Notes

- Note - BS EN 60598-2-22 prohibits the use of glow starters in fluorescent luminaires used for emergency lighting.
- A full set of installation, operating and maintenance instructions is supplied with each system to assist the installer carry out the work efficiently and safely
- Adequate ventilation has been provided in the cubicle to allow a safe dispersal of gases but it is important to remember that when choosing where to locate systems, particularly those with large batteries, attention must be paid to ensuring a build-up of potentially explosive gases is avoided
- Please refer to the system design (see page 298) section for details of ventilation calculations
- Warning notices should be displayed on entry doors to battery rooms:

  BATTERY ROOM. EXTINGUISH ALL NAKED LIGHTS BEFORE ENTERING. NO SMOKING

System Design

- To ensure a suitably rated system is selected, list the luminaires to be used, with their characteristics, to determine the wattage and VA power rating of the required inverter
- Where possible, utilise luminaires with high frequency control gear, compact fluorescent luminaires with high power factor correction, or dedicated 230V AC mains slave luminaires, to minimise the required VA rating of the inverter
- Using uncorrected compact fluorescent luminaires with poor power factor, will increase the size of inverter module required, leading to increased capital cost and space requirements
- See page 299 for an example of determining the required inverter rating
- For details of static inverter systems with ratings above those listed, please contact our central systems technical sales department
- It should be noted that multiple smaller units can often be more cost effective than a single large system. Distribution costs can be substantially reduced by locating units throughout a large building
- BS EN 60598-2-22 prohibits the use of glow starters in fluorescent luminaires used for emergency lighting
- Note - systems specified for emergency lighting use should not have other services connected to them

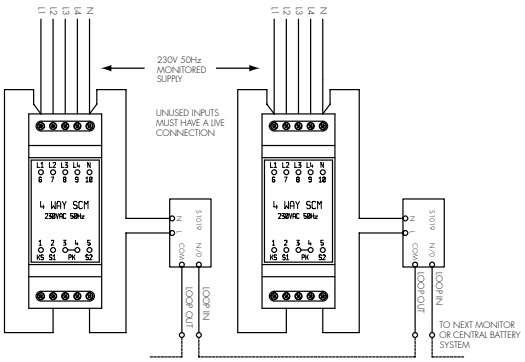
Factory Fitted Options

- 3 Phase Failure Monitor
- Detects phase failure and energises the inverter from the battery supply
- Suffix - PM

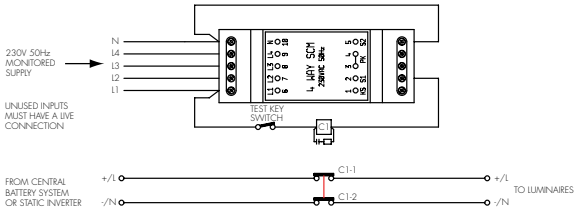
- Multi-way Sub Circuit Monitor
- Detects mains lighting circuit failure and energises the inverter from the battery supply
- Monitoring relays fitted inside cubicle and require supply from each mains lighting circuit
- Suffix - xMPF (x = number of circuits)

Remote Alarm Unit

Typical sub-circuit monitor arrangement



Typical hold off relay arrangement



Remote Mounted Options

- Remote Alarm Unit
- Visual and audible indication of system fault
- Sounder mute facility
- Surface mounting dimensions: H114 x L114 x D25mm
- Catalogue Number - RAU-2V1

- Sub Circuit Monitor
- Non load switching
- Monitors mains lighting circuits. Provides signal to central battery unit in the event of a sub circuit failure
- Standard units available to monitor 4, 8 or 12 sub circuits
- Multiple units can be used if more than 12 circuits require monitoring
- A keyswitch can be fitted if required to enable simple testing by authorised user
- Unit dimensions: (H)250 x (L)265 x (D)130mm

- Hold Off Relay Monitors
- Load switching
- Used to hold off maintained output from static inverter unit, providing non-maintained luminaire operation
- Monitors mains lighting circuits. In the event of a sub circuit failure, contactor drops out, allowing the maintained supply to energise the emergency luminaires
- Standard units available to monitor 4, 8 or 12 sub circuits, however monitors are available with up-to 24 circuits
- A keyswitch or supply healthy indicator can be fitted if required to enable simple testing by authorised user and visual indication of the supply condition
- Unit dimensions: H250 x L265 x D130mm

Catalogue Numbers

Number of ways monitored	Cat No of Sub Circuit Monitor	Cat No of Hold Off Relay Monitor
4	1SCM4	1HOR4
8	1SCM8	1HOR8
12	1SCM12	1HOR12

Use suffix /TS for addition of a test keyswitch, /NI for addition of supply healthy indicator, /RT for addition of run on timer.

SCM and HOR units are designed to accept a single common neutral per enclosure, all monitored circuits connected to an individual unit must share a common neutral.

Selection Table: AC/AC SLR Range, 0.85 Power Factor

System Reference 230V in / 230V out	Inverter Power Rating (kVA)	Output Watts (W)	1 Hour Autonomy	Cubicle Arrangement 2 Hr Autonomy	3 Hr Autonomy
AC1KVA/850/SLR*	1	850	931CBI	931CBI	931CBI
AC2KVA/1700/SLR*	2	1700	931CBI	932CBI	932CBI
AC2.5KVA/2125/SLR*	2.5	2125	931CBI	932CBI	932CBI
AC3KVA/2550/SLR*	3	2550	932CBI	932CBI	932CBI
AC4KVA/3400/SLR*	4	3400	932CBI	932CBI	934CBI
AC5KVA/4250/SLR*	5	4250	934CBI	934CBI	934CBI
AC6KVA/5100/SLR*	6	5100	934CBI	934CBI	932CI + 932B3
AC7.5KVA/6375/SLR*	7.5	6375	934CBI	932CI + 932B3	932CI + 934B2
AC8KVA/6800/SLR*	8	6800	934CBI	932CI + 932B3	932CI + 934B3
AC9KVA/7650/SLR*	9	7650	932CI + 932B3	932CI + 934B2	932CI + 934B3
AC10KVA/8500/SLR*	10	8500	932CI + 932B3	932CI + 934B2	932CI + 934B3
AC11KVA/9350/SLR*	11	9350	932CI + 932B3	932CI + 934B3	932CI + 2 x 932B3
AC12KVA/10200/SLR*	12	10200	932CI + 932B3	932CI + 934B3	932CI + 2 x 932B3
AC13KVA/11050/SLR*	13	11050	932CI + 932B3	932CI + 934B3	932CI + 932B3 + 934B3
AC14KVA/11900/SLR*	14	11900	932CI + 932B3	932CI + 934B3	932CI + 932B3 + 934B3
AC15KVA/12750/SLR*	15	12750	932CI + 932B3	932CI + 2 x 932B3	932CI + 932B3 + 934B3
AC16KVA/13600/SLR*	16	13600	932CI + 934B2	932CI + 2 x 932B3	932CI + 2 x 934B3
AC17.5KVA/14875/SLR*	17.5	14875	934CI + 934B2	934CI + 934B3 + 932B1	934CI + 3 x 932B3
AC18KVA/15300/SLR*	18	15300	934CI + 934B2	934CI + 934B3 + 932B3	934CI + 3 x 932B3
AC19KVA/16150/SLR*	19	16150	934CI + 934B2	934CI + 934B3 + 932B3	934CI + 2 x 934B3
AC20KVA/17000/SLR*	20	17000	934CI + 934B3	934CI + 2 x 934B2	934CI + 932B3 + 2 x 934B3
AC21KVA/17850/SLR*	21	17850	934CI + 932B3 + 932B1	934CI + 2 x 934B2	934CI + 932B3 + 2 x 934B3
AC22KVA/18700/SLR*	22	18700	934CI + 932B3 + 932B1	934CI + 3 x 932B3	934CI + 932B2 + 2 x 934B3
AC23KVA/19550/SLR*	23	19550	934CI + 932B3 + 932B1	934CI + 3 x 932B3	934CI + 932B2 + 2 x 934B3
AC24KVA/20400/SLR*	24	20400	934CI + 934B3	934CI + 3 x 932B3	934CI + 2 x 934B3 + 932B2
AC25KVA/21250/SLR*	25	21250	934FC + 932I + 934B3	934FC + 932I + 3 x 932B3	934FC + 932I + 2 x 934B3 + 932B3

System Reference 400V in / 400V out	Inverter Power Rating (kVA)	Output Watts (W)	1 Hour Autonomy	Cubicle Arrangement 2 Hr Autonomy	3 Hr Autonomy
AC26KVA/22100/SLR*/TPN4W	26	22100	934FC + 934I + 2 x 932B3	934FC + 934I + 2 x 934B3	934FC + 934I + 2 x 934B3 + 2 x 932B3
AC28KVA/23800/SLR*/TPN4W	28	23800	934FC + 934I + 934B3 + 932B1	934FC + 934I + 2 x 934B3 + 932B3	934FC + 934I + 3 x 934B3
AC30KVA/25500/SLR*/TPN4W	30	25500	934FC + 934I + 2 x 932B3	934FC + 934I + 2 x 934B3 + 932B2	934FC + 934I + 4 x 934B3
AC32KVA/27200/SLR*/TPN4W	32	27200	934FC + 934I + 934B3 + 932B3	934FC + 934I + 2 x 934B3 + 932B2	934FC + 934I + 4 x 934B3
AC34KVA/28900/SLR*/TPN4W	34	28900	934FC + 934I + 934B3 + 932B3	934FC + 934I + 2 x 934B3 + 932B3	934FC + 934I + 4 x 934B3 + 934B1
AC36KVA/30600/SLR*/TPN4W	36	30600	934FC + 934I + 934B3 + 932B3	934FC + 934I + 2 x 934B3 + 932B3	934FC + 934I + 4 x 934B3 + 934B1
AC38KVA/32300/SLR*/TPN4W	38	32300	934FC + 2 x 932I + 934B3 + 932B3	934FC + 2 x 932I + 3 x 934B3	934FC + 2 x 932I + 4 x 934B3 + 934B1
AC40KVA/34000/SLR*/TPN4W	40	34000	934FC + 2 x 932I + 2 x 934B3	934FC + 2 x 932I + 3 x 934B3	934FC + 2 x 932I + 5 x 934B3
AC42KVA/35700/SLR*/TPN4W	42	35700	934FC + 2 x 932I + 3 x 932B3	934FC + 2 x 932I + 4 x 934B3	934FC + 2 x 932I + 3 x 934B3 + 3 x 932B3
AC44KVA/37400/SLR*/TPN4W	44	37400	934FC + 2 x 932I + 3 x 932B3	934FC + 2 x 932I + 4 x 934B3	934FC + 2 x 932I + 5 x 934B3
AC46KVA/39100/SLR*/TPN4W	46	39100	934FC + 2 x 932I + 3 x 932B3	934FC + 2 x 932I + 4 x 934B3 + 934B1	934FC + 2 x 932I + 3 x 934B3 + 3 x 932B3
AC48KVA/40800/SLR*/TPN4W	48	40800	934FC + 2 x 932I + 2 x 934B3 + 932B3	934FC + 2 x 932I + 4 x 934B3 + 934B1	934FC + 2 x 932I + 6 x 934B3
AC50KVA/42500/SLR*/TPN4W	50	42500	934FC + 934I + 932I + 2 x 934B3 + 932B3	934FC + 934I + 932I + 4 x 934B3 + 934B1	934FC + 934I + 932I + 6 x 934B3
AC52KVA/44200/SLR*/TPN4W	52	44200	934FC + 934I + 932I + 2 x 934B3 + 932B3	934FC + 934I + 932I + 4 x 934B3 + 934B1	934FC + 934I + 932I + 4 x 934B3 + 4 x 932B3
AC54KVA/45900/SLR*/TPN4W	54	45900	934FC + 934I + 932I + 2 x 934B3 + 932B2	934FC + 934I + 932I + 4 x 934B3 + 934B1	934FC + 934I + 932I + 4 x 934B3 + 4 x 932B3
AC56KVA/47600/SLR*/TPN4W	56	47600	934FC + 934I + 932I + 2 x 934B3 + 932B2	934FC + 934I + 932I + 5 x 934B3	934FC + 934I + 932I + 4 x 934B3 + 4 x 932B3
AC58KVA/49300/SLR*/TPN4W	58	49300	934FC + 934I + 932I + 2 x 934B3 + 932B2	934FC + 934I + 932I + 4 x 934B3 + 934B1	934FC + 934I + 932I + 4 x 934B3 + 4 x 932B3
AC60KVA/51000/SLR*/TPN4W	60	51000	934FC + 934I + 932I + 2 x 934B3 + 932B3	934FC + 934I + 932I + 4 x 934B3 + 934B1	934FC + 934I + 932I + 4 x 934B3 + 4 x 932B3

* Denotes the system autonomy i.e. AC1KVA/850/SLR3 = 3Hr Backup Autonomy

≈ Denotes cubicles size/quantity information is available on application

NOTE: The above solutions may change dependant on batteries availability

Selection Table: AC/AC SLR Range, Unity Power Factor

System Reference	Inverter Power Rating (kVA)	Output Watts (W)	Cubicle Arrangement 1 Hour Autonomy	2 Hr Autonomy	3 Hr Autonomy
AC1KVA/1000/SLR3*	1.0	1000	≈	≈	≈
AC2KVA/2000/SLR*	2.0	2000	≈	≈	≈
AC2.5KVA/2500/SLR*	2.5	2500	≈	≈	≈
AC3KVA/3000/SLR*	3.0	3000	≈	≈	≈
AC4KVA/4000/SLR*	4.0	4000	≈	≈	≈
AC5KVA/5000/SLR*	5.0	5000	≈	≈	≈
AC6KVA/6000/SLR*	6.0	6000	≈	≈	≈
AC7.5KVA/7500/SLR*	7.5	7500	≈	≈	≈
AC8KVA/8000/SLR*	8.0	8000	≈	≈	≈
AC9KVA/7650/SLR*	9.0	9000	≈	≈	≈
AC10KVA/1000/SLR*	10.0	10000	≈	≈	≈
AC11KVA/11000/SLR*	11.0	11000	≈	≈	≈
AC12KVA/12000/SLR*	12.0	12000	≈	≈	≈
AC13KVA/13000/SLR*	13.0	13000	≈	≈	≈
AC14KVA/14000/SLR*	14.0	14000	≈	≈	≈
AC15KVA/15000/SLR*	15.0	15000	≈	≈	≈
AC16KVA/16000/SLR*	16.0	16000	≈	≈	≈
AC17.5KVA17500/SLR*	17.5	17500	≈	≈	≈
AC18KVA/18000/SLR*	18.0	18000	≈	≈	≈
AC19KVA/19000/SLR*	19.0	19000	≈	≈	≈
AC20KVA/20000/SLR*	20.0	20000	≈	≈	≈
AC21KVA/21000/SLR*	21.0	21000	≈	≈	≈
AC22KVA/22000/SLR*	22.0	22000	≈	≈	≈
AC23KVA/23000/SLR*	23.0	23000	≈	≈	≈
AC24KVA/24000/SLR*	24.0	24000	≈	≈	≈
AC25KVA/25000/SLR*	25.0	25000	≈	≈	≈
AC26KVA/26000/SLR*	26.0	26000	≈	≈	≈
AC28KVA/28000/SLR*	28.0	28000	≈	≈	≈
AC30KVA/30000/SLR*	30.0	30000	≈	≈	≈
AC32KVA/32000/SLR*	32.0	32000	≈	≈	≈
AC34KVA/34000/SLR*	34.0	34000	≈	≈	≈
AC36KVA/36000/SLR*	36.0	36000	≈	≈	≈
AC38KVA/38000/SLR*	38.0	38000	≈	≈	≈
AC40KVA/40000/SLR*	40.0	40000	≈	≈	≈
AC42KVA/42000/SLR*	42.0	42000	≈	≈	≈
AC44KVA/44000/SLR*	44.0	44000	≈	≈	≈
AC46KVA/46000/SLR*	46.0	46000	≈	≈	≈
AC48KVA/48000/SLR*	48.0	48000	≈	≈	≈
AC50KVA/50000/SLR*	50.0	50000	≈	≈	≈
AC52KVA/52000/SLR*	52.0	52000	≈	≈	≈
AC54KVA/54000/SLR*	54.0	54000	≈	≈	≈
AC56KVA/56000/SLR*	56.0	56000	≈	≈	≈
AC58KVA/58000/SLR*	58.0	58000	≈	≈	≈
AC60KVA/60000/SLR*	60.0	60000	≈	≈	≈

* Denotes the system autonomy i.e. AC1KVA/850/SLR3 = 3Hr Backup Autonomy

≈ Denotes cubicles size/quantity information is available on application

Systems with Valve Regulated Lead Acid Batteries

- Compact
- Reliable
- Cost effective
- Maintenance free, 10 year design life batteries
- Low battery voltage disconnect circuit fitted as standard
- Charger temperature compensation fitted as standard

Systems with Vented Nickel Cadmium Batteries

- Extremely robust over a wide temperature range
- Reliable, with a 25 year service life
- Good "through life" costs
- Resistant to electrical and mechanical abuse
- Can be stored in any state of discharge without damage
- Automatic and manual boost circuits fitted as standard

Systems with High Performance Plante Batteries

- 20 year service life
- Reliable
- Retains virtually full capacity throughout design life
- Low battery voltage disconnect circuit fitted as standard
- Charger temperature compensation fitted as standard

Selection Guide: AC/NC Range

System Reference	Inverter Power Rating (kVA)	Inverter Wattage
AC/NC Series	1.0 - 25.0	500 - 21250

This guide provides only an overview of possible system configurations. Contact our central systems technical sales department for full details, including cubicle arrangement. 1, 2 or 3 hour autonomy systems available

Selection Guide: AC/HP Range

System Reference	Inverter Power Rating (kVA)	Inverter Wattage
AC/HP Series	1.0 - 25.0	500 - 21250

This guide provides only an overview of possible system configurations. Contact our central systems technical sales department for full details, including cubicle arrangement. 1, 2 or 3 hour autonomy systems available

Easton College
Nolfolk

Compact AC/AC

IP21

5 YEAR WARRANTY

BS EN50171

Many features normally only associated with larger units are included in the standard specification of the Compact AC/AC static inverter system. The inverter has a rated output of 500VA/400W or 600VA/510W and benefits from 4 independently fused outputs, battery deep discharge protection, automatic temperature compensation and a clear, informative system status display panel. The unit also fully complies with the latest BS EN 50171:2001 standard. An output voltage of 230V AC permits any suitable, unmodified mains luminaires to be operated at full output in emergency mode.

- Competitive 500VA or 600VA static inverter system
- Compact - ideal for smaller installations
- Fully complies with BS EN 50171:2001
- Four separately fused outputs
- Digital display to clearly indicate system status
- EasiCheck compatible version available

System Operation

- In mains healthy condition, the system charges the batteries and stores power, ready for emergency operation
- In mains healthy condition, the power to luminaires designated for emergency use is supplied from the normal mains via a by-pass contactor inside the cubicle
- In the event of a mains failure, the system provides emergency power to dedicated mains slave or designated standard mains luminaires, until mains power is restored (or for the rated duration of the system in the event of extended mains failure)
- Output voltage, from the system via the inverter, is 230V AC nominal
- Local change-over switching can be effected using an ACM1 module, controlling single or multiple luminaires (if fed from common switched mains supply)
- Suitable standard mains luminaires* require no modification to operate with the static inverter (unless ACM1 change-over module is integral). All lamps in multi-lamp luminaires will be lit during mains failure, unless separate control gear is provided for individual lamps.
  *High inrush LED or compact fluorescent may not be suitable
- Sub-circuit monitoring and hold off relays can be added to the system to energise the emergency luminaires in the event of a localised mains circuit failure, if the ACM1 module is not used
- Full details of modes of operation is shown on pages 294 - 297

Metering and Display Panel

- Simple and easy to read status display
- LCD meter indicating battery voltage or current reading mode indicated by LED:
  - Volts
  - Amps
- Indication LEDs
  - Power On
  - Charge Fail
  - Battery High/Low Volts
  - Deep Discharge Protection (protection circuit has operated)
  - Inverter Running

Remote Mounted Options

- Remote Alarm Unit
- Sub Circuit Monitor
- Hold Off Relay Monitor
- ACM1s

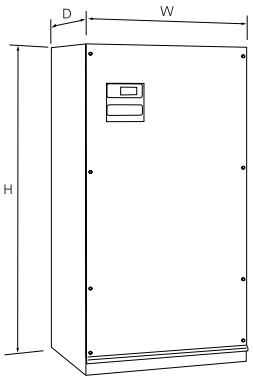
Full details of these options can be found on page 295

Design and Installation Notes

- To ensure the system is suitably rated, list the luminaires to be used, with their characteristics, to ensure the wattage and VA power rating of the inverter is not exceeded
- Using fluorescent luminaires with poor power factor will increase the VA load
- Note - BS EN 60598-2-22 prohibits the use of glow starters in fluorescent luminaires used for emergency lighting.
- A full set of installation, operating and maintenance instructions is supplied with each system to assist the installer carry out the work efficiently and safely
- Adequate ventilation has been provided in the cubicle to allow a safe dispersal of gases but it is important to remember that when choosing where to locate systems, particularly those with large batteries, attention must be paid to ensuring a build-up of potentially explosive gases is avoided
- Please refer to the system design (see page 298) section for details of ventilation calculations
- Warning notices should be displayed on entry doors to battery rooms:

  BATTERY ROOM. EXTINGUISH ALL NAKED LIGHTS BEFORE ENTERING. NO SMOKING

Dimensions



H (mm)	W (mm)	D (mm)
970	530	400

Catalogue Numbers

System Reference	Inverter Output Rating (VA)	Output Watts	Standby Time	Weight (kg)
AC500VA/M3	500	400	3 Hours	135.0
AC600VA/M3	600	510	3 Hours	136.00

Specification

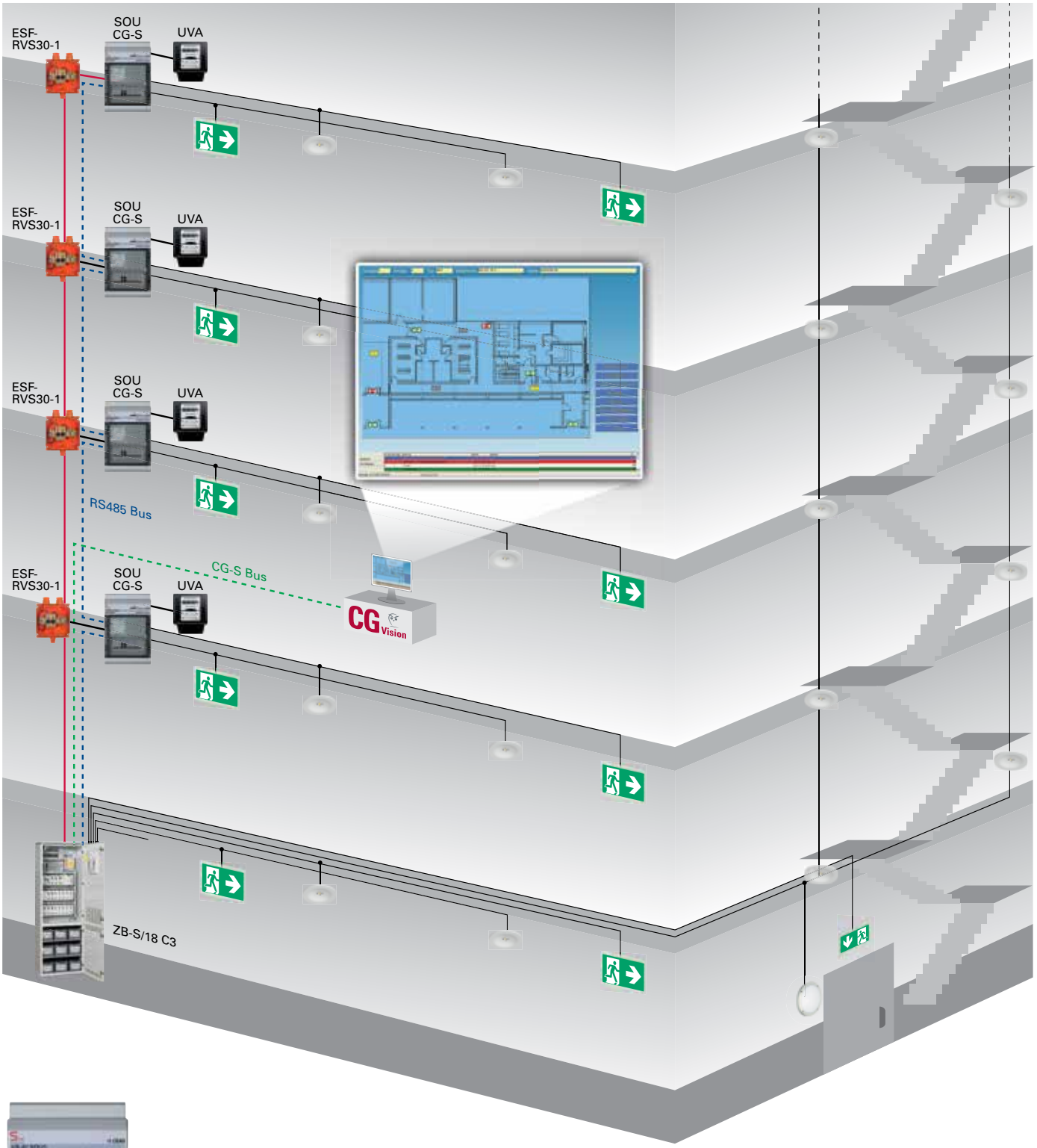
General	
Cubicle	1.6mm zinc coated steel panels with powder coat RAL7032 light pebble grey finish. Removable cover retained by screws. Cable entries via removable top gland plate
Batteries	Valve regulated lead acid, 10 year design life
Charger and controls	
Mains supply	230V ± 10% AC single phase supply, 50 Hz
Input control	MCB to BS3871 Pt 1, or BS4752 Pt 1
Fusegear	HRC type to BS88
Terminals	DIN-rail mounted near to cable entry
Transformer	Double wound with earth screen to BS171
Rectifier	Full wave controlled thyristor/diode bridge
Contactor	Standard contactors comply with requirements of BS5424
Charger	Constant voltage, current limited type with electronic solid state controller. Voltage controlled to within 2% of setting at up to 10% mains supply variations. Full recharge within 24 hours. 80% capacity within 12 hours. Current limit facility
Deep discharge protection	Fitted as standard. Automatic shut down of inverter when battery voltage falls below pre-set level, during extended periods of mains supply failure
Cables	Compliant with BS6231
Load circuits	4 independent fused output circuits
Monitoring circuits	Terminals provided for connection of remote monitors and controls
Temperature compensation	Fitted as standard. Charger voltage is automatically adjusted with reference to ambient temperature to optimise charging and battery life. Pre-set for optimum performance at 20°C
Test push button	Simulates mains failure
Display panel	Composite fascia with LCD display and LED indicators
Alarm warning	Audible alarm fitted internally plus common volt free contacts for remote signalling of a fault condition and terminals for remote alarm unit option
Inverter	
Output voltage	Pre-settable in the range 220-240V AC. Default setting is 230V AC. Voltage tolerance is 2% on loads of 0-100% of system rating
Frequency	50Hz. ±0.1%. Waveform: Sinusoidal
Voltage regulation	Static 2%, dynamic 6%
Isolation	1kv rms between input and output terminals
Total harmonic distortion	Typically 3% or better. Max. 10%
Power factor	Will supply loads in the 0.7 lag - 0.7 lead range
Overload	200% for 10 seconds, 125% for 20 minutes without reduction in output voltage
Start-up time	Standard 300mS. Soft start
Noise level	Effectively silent on both charge and discharge
Efficiency	83% nominal. Typically 82-85%
Protection	DC input protection. AC output fuses DC input reverse polarity protection Short circuit protection Pre-charge protection fuse
Low voltage shut down	Inverter module automatically shuts down when battery discharges to a pre-set level. Re-set is automatic following the restoration of the mains supply
Inhibit	An inhibit switch to control the inverter is fitted on the main PCB in the cubicle
Technology	Pulse width modulation with high frequency switching

Central battery system ZB-S with single luminaire monitoring and STAR technology

Centrally Powered Systems

Central battery system ZB-S with STAR technology - Installation example

Please note the country-specific regulations and guidelines for planning and realisation.



US-S/ SOU1

Distribution board for area by area installation
allows electricity costs allocation per rental area

Centrally Powered Systems

Central battery system ZB-S with STAR technology - Features

As well as providing a dependable supply of power (230V AC/220 V DC) to safety and exit luminaires, the central battery system ZB-S tests itself automatically and individually monitors each CG-S luminaire (up to 20 per circuit), and it does all this using the power supply cable alone.

The new type of STAR technology allows the switching mode of every connected CG-S luminaire to be freely programmed within a 50 or 60 Hz supply network using the central battery system's controller. This means that maintained light, switched maintained light and non-maintained light modes can be combined in one and the same circuit – there is no need for separate data cables!

The control module with its nonvolatile program memory and large graphic display monitors and controls the central battery system. It automatically tests all functions of the devices and emergency luminaires connected to it, and reports any faults that occur.

An integral search function automatically detects all system-dependent luminaires and modules that are assigned an address during installation. A central monitoring device can be connected via an interface.

Properties:

- Shortened inspection effort due to CEWA GUARD technology; automatic function monitoring of up to 20 luminaires per circuit
- Reduced installation expenditures by STAR-technology; freely programmable mixed operation of the switching modes per luminaire in one circuit
- Less installation costs as no data line is required to the luminaires
- Automatic luminaire search function
- Plain text display on the control module down to the last luminaire
- Flexible data storage for test log and system configuration with memory card
- Modular charging technology in the range of 5.5 to 1,000 Ah
- Energy-saving and increased service life via alternating switching of the charging modules and optimised efficiency

STAR TECHNOLOGY

S = **Switching**
T = **Technology**
A = **Advanced**
R = **Revision**

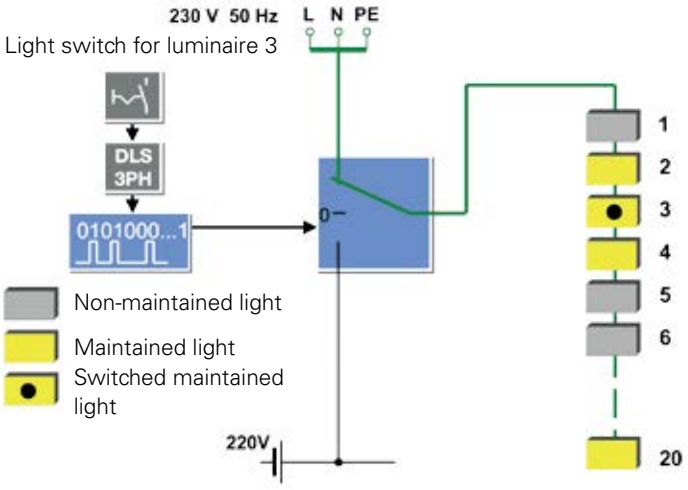
Switch to safety!

The continuing development of the CEWA GUARD monitoring system has led to the creation of the

Switching
Technology
Advanced
Revision,

or **STAR** for short. This **CG-STAR**-technology allows different switching modes to be implemented in one and the same circuit, and the switching mode of each individual luminaire can be re-programmed at any time.

As a result, this technology offers not just the proven CEWA Guard safety when it comes to operating a safety lighting system, it also gives planners the confidence and flexibility of knowing that the system can respond and adapt at any time to any changes that are made to a building and its use.



Operation of the STAR technology

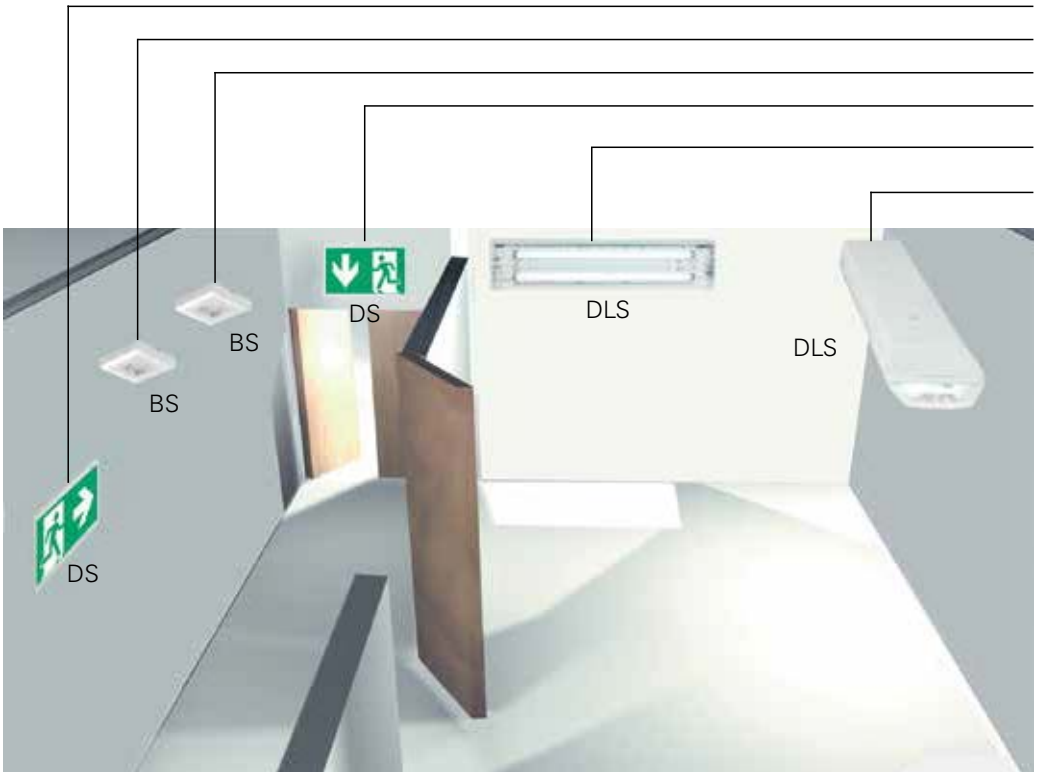
Your Advantages:

The number of outgoing circuits needed can be sharply reduced, since continuously operating, stand-by and switchable permanent lighting can be realised in one common circuit.

This allows the use of shorter cable distances, reduces installation costs and minimises the effects of burning materials. Any mode of operation can be assigned at a later date – **without encroachment in the lighting installation.** This enables simple project planning without having to take all possible types of operation into account.

As with CEWA GUARD technology, the patented STAR technology requires no additional data cable to the luminaires.

STAR TECHNOLOGY



Conventional Installation:

Maintained light 1 (DS)

Non-maintained light 1 (BS)

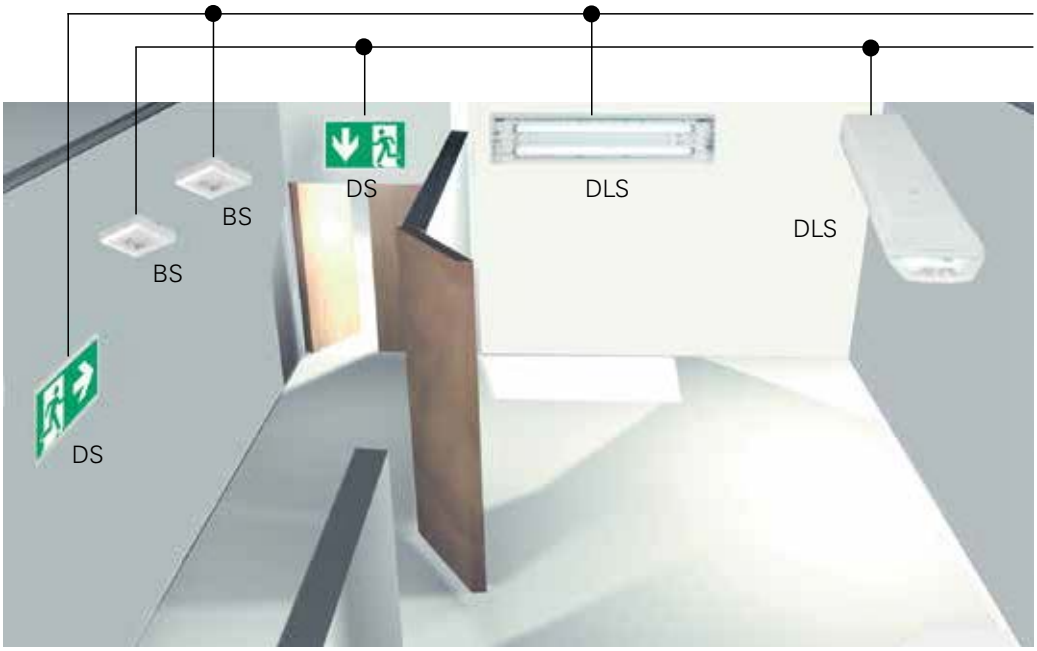
Non-maintained light 2 (BS)

Maintained light 2 (DS)

Switched maintained light 1 (DLS)

Switched maintained light (DLS)

- Each type of switching mode requires two circuits
- Only one type of switching mode is possible per circuit
- Any later modifications involve a large amount of work and expense

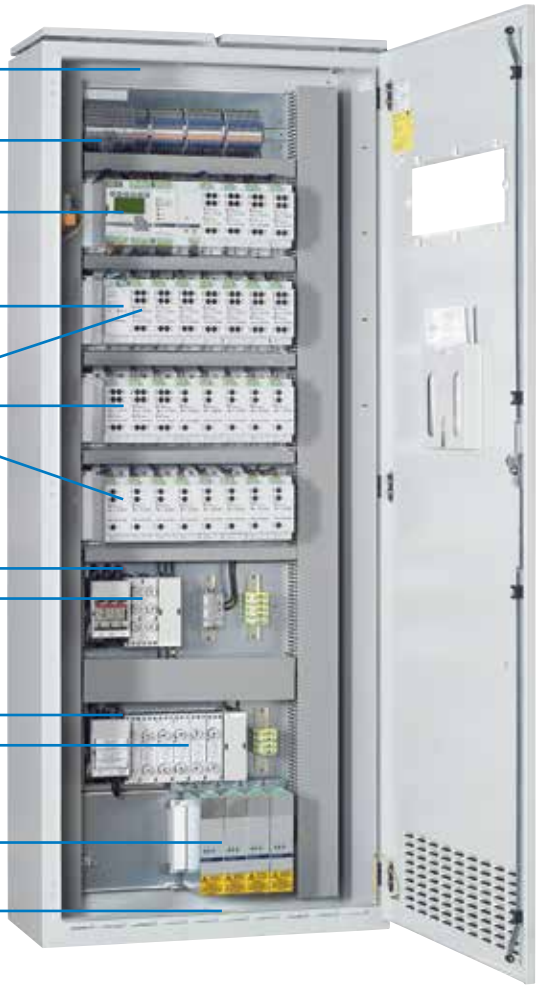


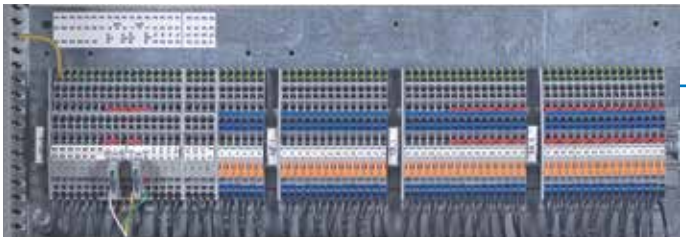
ZB-S Installation with STAR-Technology:

All types of switching modes

All types of switching modes

- Only two outgoing circuits for all types of switching modes
- Maintained light, non-maintained light and switched maintained light are possible in one common circuit
- Later circuit modifications do not pose any problems





Plenty of connection space for convenient wiring

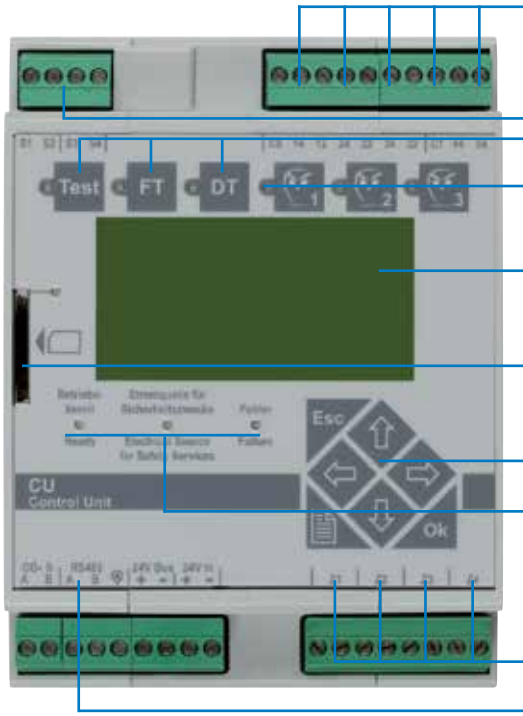
All connections are run to 3-level neutral disconnect terminals at the top of the switch cabinet.

The wiring of the control module and the battery control module is standard. Wiring of the SKUs to 4 mm² triple deck installation terminals with spring connection and N disconnect terminal is optional.

Charge modules CM 3.4 A each with a charging current of 3.4 A

The battery control module (BCM) drives up to 32 Charge modules CM 3.4 A to which the standby power batteries with a rated capacity of up to 1,000 Ah that are installed outside the switch cabinet are connected.

Freely programmable control module



Three potential-free alarm contacts, freely assignable, two potential-free alarm contacts with definite assignment

Connections for phase monitor and blocking switch with differential loop monitoring

separate keys for
- Test (emergency function)
- Function test
- Duration test

three function keys, freely assignable

128 x 64 pixel graphic display, backlit, contrast and brightness adjustable

Test book and device configuration easily stored on SD-Card. Easy programming from PC using SD-card-reader and CEAG's software.

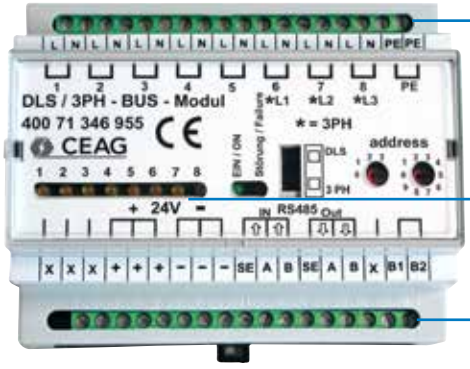
Seven control buttons for user-friendly navigation

LEDs for operation display

four 24 V-inputs, freely allocated

Terminals for data bus

External DLS/3PH-Bus-Module for common switching of safety- and general lighting



Freely programmable assignment of independent DLS inputs (2.5 mm2) per emergency lighting circuit or per light

8 DLS-inputs with LED display

can be used as phase monitor module and for light switch monitoring

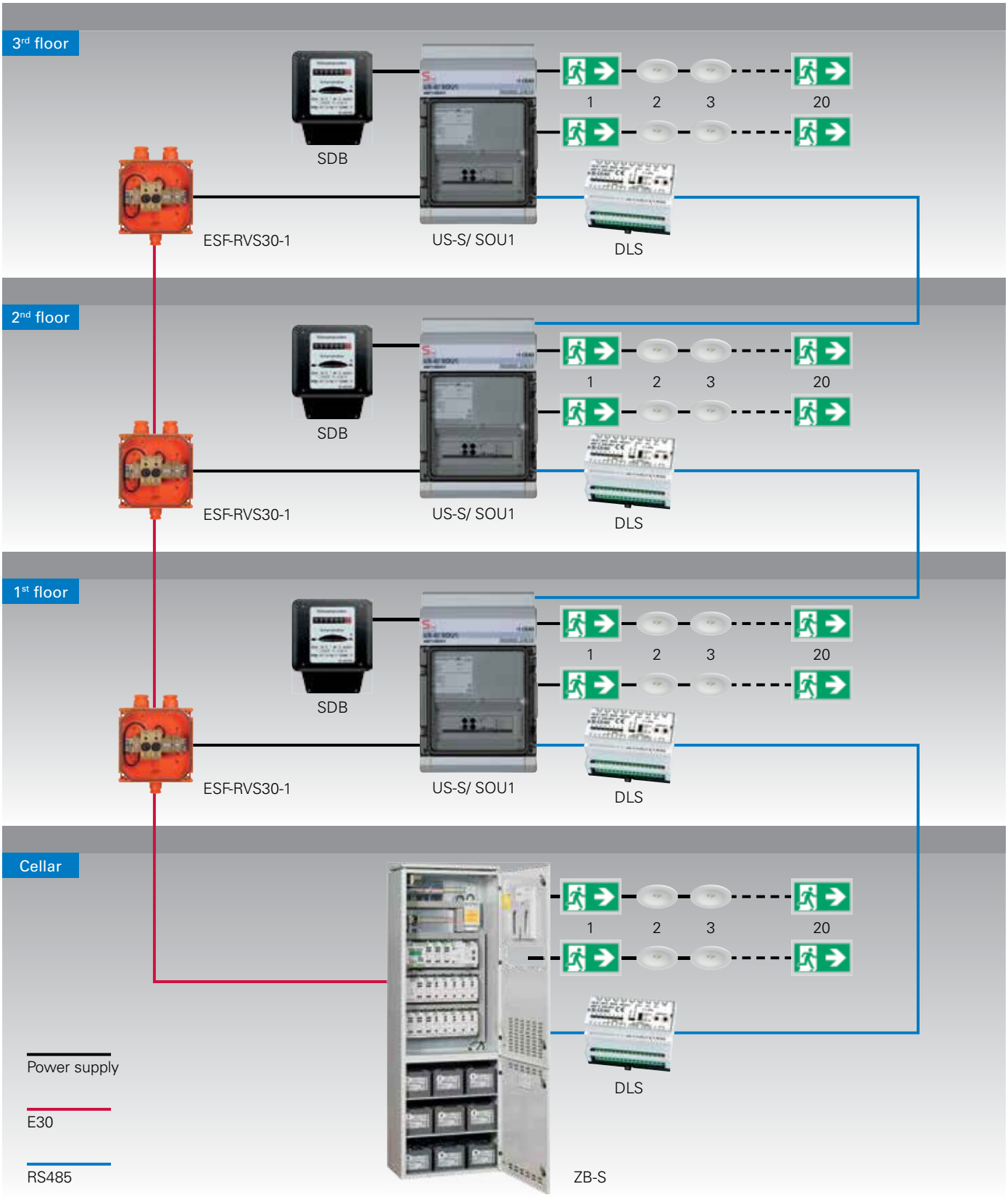
Circuit change-over module SKU CG-S 2 x 3 A

separate fuse protection for mains- and battery operation (two-pole) fuses on front side of the module, easily accessible

LED display for operation/ON and failure of each circuit

Service key for direct display in clear text at the control module of the change-over module status

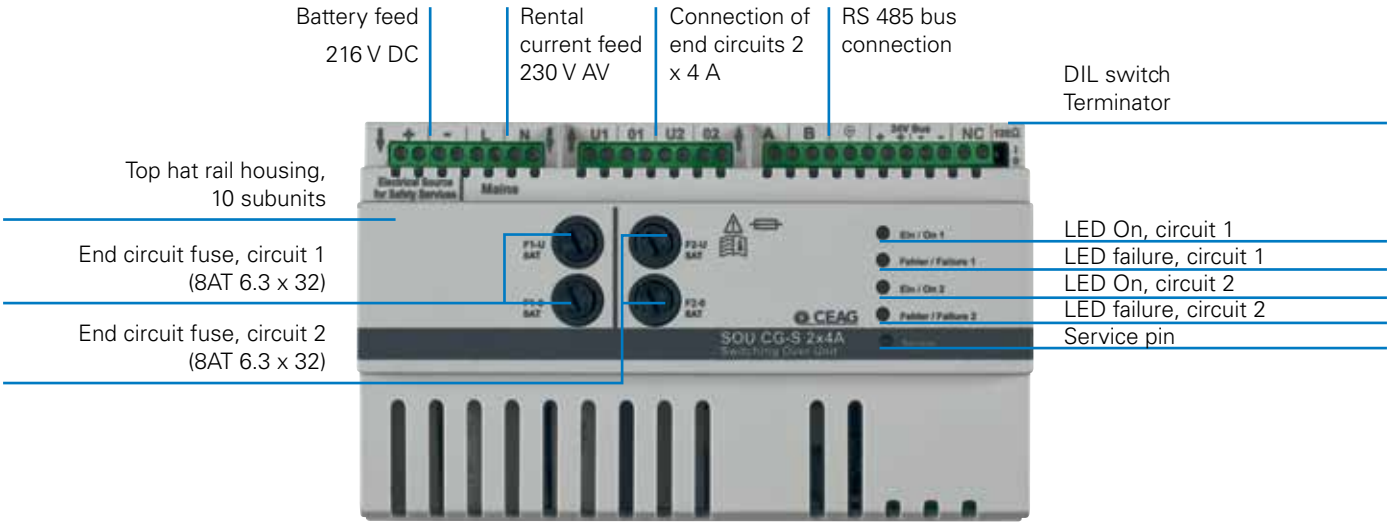
Installation example Emergency lighting system ZB-S with distribution board US-S/ SOU1.
Please note the country-specific regulations and guidelines for planning and realisation.



Distribution Board US-S/ SOU1

- Area by area installation
- Electricity costs allocation per rental area
- Maintained light, non-maintained light and switched maintained light are possible in one common circuit
- Later circuit modifications do not pose any problem

Switching over unit SOU CG-S 2 x 4 A



Safe operation under the most extreme environmental conditions

There are different types of sub-distributors available for compliance with the requirements on functional integrity of MLAR 11/2005.

ESF-E30/13-S

Sub-distributor in sheet steel housing

In accordance with the model guideline on fire protection requirements pertaining to wire systems (MLAR specimen guideline on wire systems), version 11/2005, verified by a National Material Testing Office.

Approved by the Deutsches Institut für Bautechnik (DIBT - German Institute for Civil Engineering) as an electrical distributor with functional integrity, including electrical equipment and technical air ventilation with approval number: Z-86-2-1.

Electric distributor with functional integrity

Experimental design for application as an electrical distributor with functional integrity. The functioning of all the installed electronic components was tested in a fire test.

US-S ESF30 13-P

Sub-distributor in Priodec housing

In accordance with the model guideline on fire protection requirements pertaining to wire systems (MLAR specimen guideline on wire systems), version 11/2005, verified by a National Material Testing Office.

Approved by the Deutsches Institut für Bautechnik (DIBT - German Institute for Civil Engineering) as an empty enclosure for fire protection with a fire resistance rating of minimum 30 minutes in case of external fire exposure, approval number of the empty enclosure: Z-86.1-46

Functional integrity exceeding 30 minutes is certified in an expert opinion, based on a fire test.

Please scan the following QR code for direct access:

Fire test in a video documentation

Please watch the video documentation of the fire test of the types of enclosures presented here:
http://youtu.be/dk8qieMSiTI

ESF30 SOU2

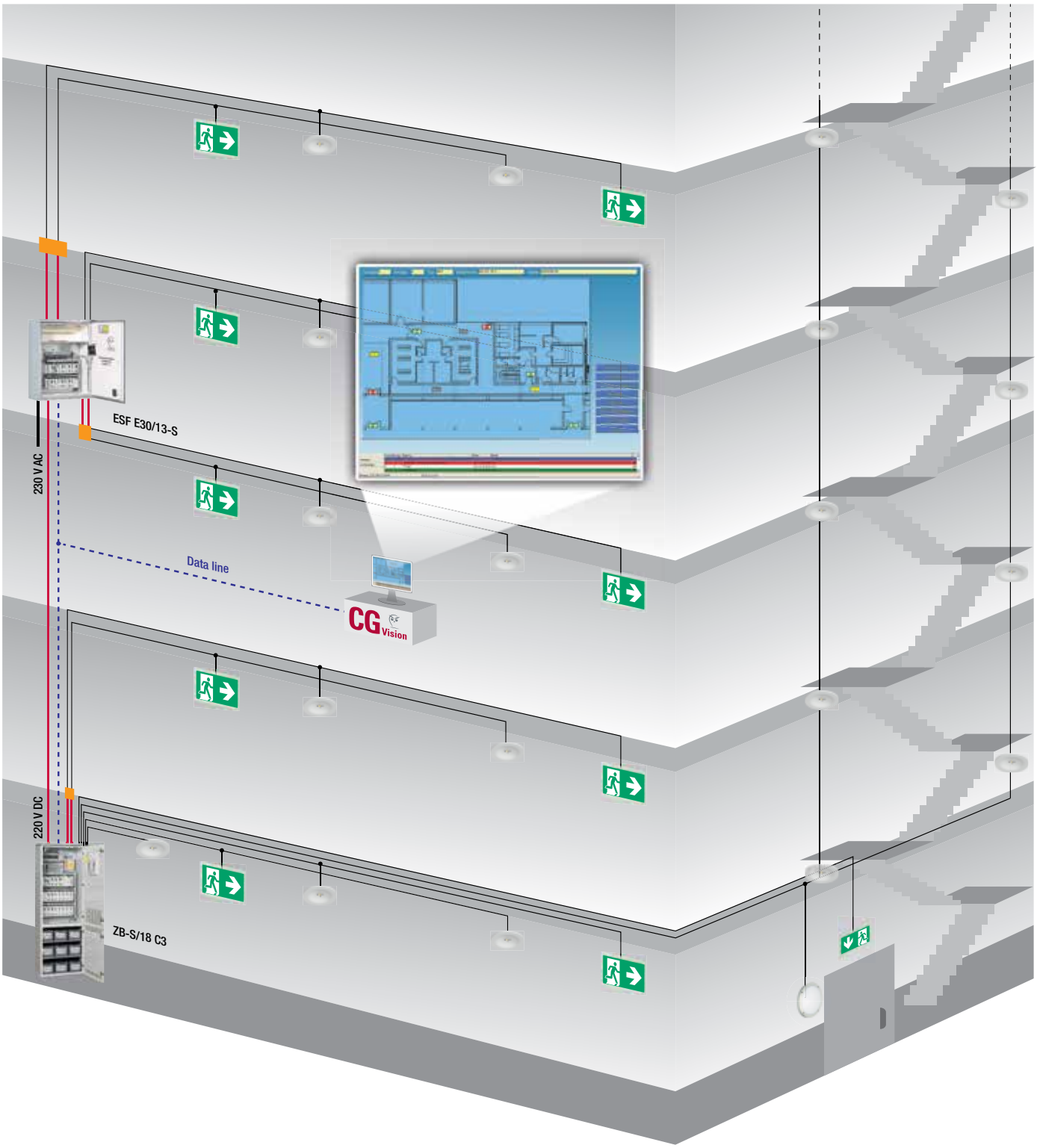
Small distributor

In accordance with the model guideline on fire protection requirements pertaining to wire systems (MLAR specimen guideline on wire systems), version 11/2005, verified by a National Material Testing Office.

Tested by a Material Testing Office (MPA) as an empty fire protection enclosure with a fire resistance rating of minimum 30 minutes in case of an external fire exposure, with fire test number: No. 210006480-01.

Functional integrity exceeding 30 minutes is certified by a VDE certificate, together with an expert opinion relating to the electrical equipment based on a fire test.

Please note the country-specific regulations and guidelines for planning and realisation.



Controle module

A freely programmable control module with non-volatile program memory and 4-line alpha-numeric graphic display monitors and controls the central battery system. All functions such as charging, mains/ emergency lighting selection and deep discharge protection of the devices and the emergency luminaires are tested automatically. Any faults that occur are signalled immediately. An interface enables a central monitoring facility to be connected. In the event of a short circuit or open circuit in current loops, differential monitors immediately power on the system (maintained light) or put the system in readiness.

- Non-volatile memory
- Automatic luminaire search function
- Individual luminaire monitoring
- Automatic DLS/TLS search function
- Selective manual reset/circuit
- Selective emergency light/circuit
- Password function
- Final circuit fuse monitoring
- Module-selective battery operation
- Control module with multi-master mode M³

Sealed keypad with 3 keys for:

- Test (mains failure - battery operation)
- Function test start / cancel
- Operating duration test start / cancel

3 freely assignable function keys for:

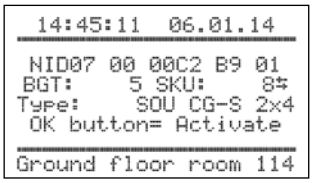
- System disable/enable
- Manual reset
- Cancel function test
- Show fault list
- Maintained light off/on
- Power on complete safety lighting system (continuity lighting)
- Mains failure simulation UV-A (emergency operation)
- Reset deep discharge protection
- Find insulation failure
- Service Pin Message

7 control keys

for user-friendly navigation

LED indicators for:

- Ready
- Electrical Source for Safety Services
- Failure



Graphic display:

128 x 64 pixel, backlit, program adjustable contrast and brightness.

Displays include:

- Date/Time
- Charging malfunction
- Deep discharge protection
- Battery voltage/charge current (+)
- Battery discharge current in test or failure (-)
- Manual reset
- Test mode
- Delay-time on mains return (remaining time in min.)
- Luminaire failure with location label
- Insulation fault with circuit indication
- Failure mains sub DB (with location label)
- Failure/programming information

Connections

- **Connection for disable switch:**
  Control loops for blocking the installation during factory shutdowns with differential loop monitoring for short-circuit and open circuit detection. Differential monitoring: Short-circuit or open circuit result in readiness for operation of the system.

- **Connection for phase monitor:**
  24V current loop for requesting emergency lighting using differential loop monitoring for the detection of short-circuit and open circuits. Differential monitoring: Short-circuit or open circuit result in immediate power on (maintained light) of the system.

- **Connection for floating signalling contacts and buzzer:**
  3 relays with common root, each 1x switch-over contact, 24 V 0,5 A.
  2 relays with common root, each 1 x make contact, 24V 0.5A;
  Buzzer
  One or several of 12 various messages can be freely assigned to the three zero-potential contacts and buzzer. DIN VDE specification can be called up at any time as a pre-setting.

- **Connection for analogue inputs:**
  4 of freely assignable 24 V analogue inputs, can be programmed negated and non-negated, e.g. for start / cancel function test, start / cancel operating duration test, disable / enable system, manual reset, maintained light on / off, power on safety lighting as continuity lighting.

Display	128 x 64 pixel graphic display, program adjustable contrast
Ilumination	backlighting, program adjustable brightness
Keypad	sealed, with 6 function and 7 control keys
Readout	Battery voltage Battery charge current (+) Battery discharge current in test or failure (-) Charge fault Luminaire failure with location label Deep discharge protection Manual reset Delay-time on mains return Failure mains sub DB (with location label) Test mode Date/Time Insulation fault with circuit label Failure information Programming information
Status	– Ready – Electrical Source for Safety Services – Failure

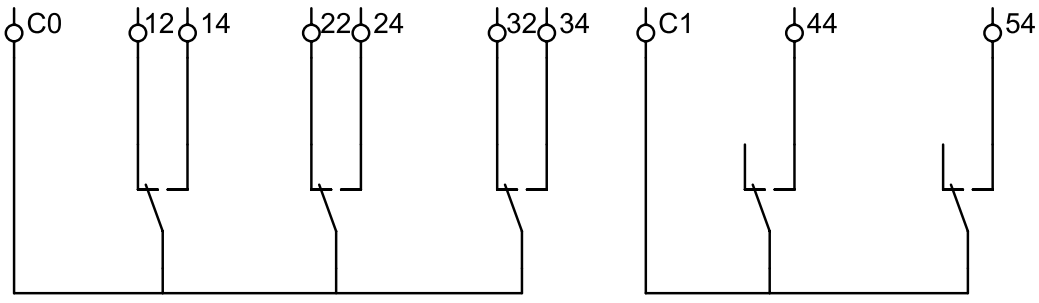
Potential-free signal contacts, buzzer

3 relays with common potential, 1 x switching contact each, Free programmable, VDE requirement can be called at any time as a preset.

2 relays with common potential, 1 x normally open contact each, 24 V 0.5 A; buzzer.

ZB-S default setting

Designation	Relay 1 C0/14/12	Relay 2 C0/24/22	Relay 3 C0/34/32	Relay 4 C1/44	Relay 5 C1/54	Buzzer
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						



Ordering details

Type	Model	Order No.
Control module ZB-S for SD-card	Plug-in module	40071360300

SD Card

SD card reader

Secure-Digital-Card

Flexible data storage for system and log book configuration, e.g. of the mandatory archiving of log book information for a minimum of 4 years.

The system can also be programmed at any PC using optional SD-card reader and CEAG software. Texts can also be entered on the control module in the switch cabinet.

Storage of:

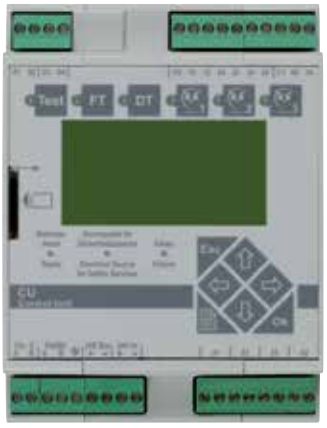
- 360,000 log book entries
- Location texts for the luminaires (20 characters per luminaire)
- Location texts of external modules such as phase monitor, DLS, TLS (20 characters per module)
- Circuit names (20 characters per circuit)
- System name (20 characters)

Ordering details

Type	Model	Order No.
SD card	SD card formatted for ZB-S	40071347911
SD card reader	SD card reader for USB-Port	40064070561
Software	Software for external programming of the ZB-S via PC	40071347152

8

Basic information about the SD card (Secure-Digital-Card)



Removable configuration and log book storage SD

PC with CEAG software for SD programming and analysis

Programming

- Easy system programming with an office PC according to installation plans
- System configuration can be stored in the PC

DC-DC converter.2 (DCM)

DC/DC-Converter.2 (DCM)

The DC/DC converter.2 converts the 220 V DC battery voltage to 24 V DC and 6 V DC to supply the modules and processor.

After more than 13 SKU CG-S 4 x 1.5 A or 26 SKU CG-S 2 x 3 A / 1 x 6 A a second DC/DC converter is needed. Please observe that all DC/ DC converters are operated on the same module assembly frame next to each other:

- Supplies 26 SKUs CG-S 2 x 3 A/1 x 6 A or 13 SKUs 4 x 1.5 A
- Incoming supply can be run via AC/AC
- Gear tray mounting

24 V external	20 W continuous rating Outgoing circuit with front panel connector Isolated voltage
24 V internal	100 W continuous rating 140 W peak rating (20 ms)

Ordering details

Type	Order No.
DC/DC-converter.2 (DCM)	70071347071

AC-Module

AC-Module

Together with the DC/DC converter.2, the optional AC module supplies the internal system voltage when the battery supply is isolated, e. g. for maintenance.

Constructed to	EN 61558/VDE 570
Rated voltage	230 V 50 Hz
Nominal power	240 VA
Fusing	1.6 A

Ordering details

Type	Scope of supply	Order No.
AC-Module	external transformer module AC/AC-module 240 VA incl. mounting adapter	40071347162

SKU CG-S 4 x 1,5 A

SKU CG-S 4 x 1,5 A

Hybrid operation of maintained light, non-maintained light and switched maintained light per module can be programmed with no additional data cable.

- Up to 20 luminaires can be monitored individually
- AC/DC switching per module
- Easy access to fuses
- LED indicates fault and Run/ON for each circuit
- Supplies electronic ballast and LED luminaires
- Service-friendly modular units are wired up and ready to connect to 3-tier 4 mm² disconnect neutral terminals (optional)
- Gear tray mounting

Fusing	2.5 AT / 6.3 x 32
Continuous current rating	1.5 A per circuit
Max. inrush current*	60 A per circuit/240 A per module
Typical switch over time	AC/DC approx. 450 ms
Own consumption	7.7 W

* Example: For two circuits => 120 A per circuit
For one circuits => 60 A per circuit

Ordering details

Type	Scope of supply	Order No.
SKU	Circuit change over module SKU CG-S 4 x 1.5 A	40071347840
Spare part	Fuse 2.5 AT (6.3 x 32), PU: 10 pcs.	40071070716

SKU CG-S 2 x 3 A

SKU CG-S 2 x 3 A

Hybrid operation of maintained light, non-maintained light and switched maintained light in a single circuit can be programmed with no additional data cable.

- Up to 20 luminaires can be monitored individually
- AC/DC switching per each circuit
- Separate fusing for mains and battery operation
- Easy access to fuses
- LED indicates fault and Run/ON for each circuit
- Supplies electronic ballast and LED-luminaires
- Service-friendly modular units are wired up and ready to connect to 3-tier 4 mm² disconnect neutral terminals (optional)
- Gear tray mounting

Fusing	5 AT / 6.3 x 32
Continuous current rating	3 A per circuit
Max. inrush current	250 A per circuit
Typical switch over time	AC/DC approx. 450 ms
Own consumption	3.85 W

Ordering details

Type	Scope of supply	Order No.
SKU	Circuit change over module SKU CG-S 2 x 3 A	40071347051
Spare part	Fuse 5.0 AT (6.3 x 32), PU: 10 pcs.	40071689047

SKU CG-S 1 x 6 A

SKU CG-S 1 x 6 A

Hybrid operation of maintained light, non-maintained light and switched maintained light in a single circuit can be programmed with no additional data cable.

- Up to 20 luminaires can be monitored individually
- Separate fusing for mains and battery operation
- Easy access to fuses
- LED indicates fault and Run/ON for each circuit
- Supplies electronic ballast and LED luminaires
- Service-friendly modular units are wired up and ready to connect to 3-tier 4 mm² disconnect neutral terminals (optional)
- Gear tray mounting

Fusing	10 AT / 6.3 x 32
Continuous current rating	6 A per circuit
Max. inrush current	250 A per circuit
Typical switch over time	AC/DC approx. 450 ms
Own consumption	3.85 W

Ordering details

Type	Scope of supply	Order No.
SKU	Circuit change over module SKU CG-S 1 x 6 A	40071347345
Spare part	Fuse 10 AT (6.3 x 32), PU: 10 pcs.	40071070715

SOU CG-S 2 x 4 A

SOU CG-S 2 x 4 A

Hybrid operation of maintained light, non-maintained light and switched maintained light in a single circuit can be programmed with no additional data cable.

- Up to 20 luminaires can be monitored individually
- AC/DC switching per module
- Separate AV-feed for rental current
- Easy access to fuses
- LED indicates fault and Run/ON for each circuit
- Supplies electronic ballast and LED luminaires
- Service-friendly modular units are wired up and ready to connect to 3-tier 4 mm² disconnect neutral terminals (optional)
- DIN rail mounting

Fusing	8 AT / 6.3 x 32
Continuous current rating	4 A per circuit
Max. inrush current	250 A per circuit
Typical switch over time	AC/DC approx. 450 ms
Own consumption	≤ 9 W (for 2 x 4 A)
Dimensions	178 x 108 x 60

Ordering details

Type	Scope of supply	Order No.
SOU CG-S 2 x 4 A	Switching over unit SOU CG 2 x 4 A	40071360430
Spare part	Fuse 8 AT (6.3 x 32), PU: 10 pcs.	40071360484

SKU CG 2 x 3 A

SKU CG 2 x 3 A

Change-over module SKU, module without STAR Function

- Up to 20 luminaires can be monitored individually
- AC/DC switching per each circuit
- Separate fusing for mains and battery operation
- Easy access to fuses
- LED indicates fault and Run/ON for each circuit
- Supplies electronic ballast and LED-luminaires
- Service-friendly modular units are wired up and ready to connect to 3-tier 4 mm² disconnect neutral terminals (optional)
- Gear tray mounting

Fusing	5 AT / 6.3 x 32
Continuous current rating	3 A per circuit
Max. inrush current	120 A per circuit
Typical switch over time	AC/DC approx. 450 ms
Own consumption	3.85 W

Ordering details

Type	Scope of supply	Order No.
SKU	Circuit change over module SKU CG 2 x 3 A	40071347290
Spare part	Fuse 5 AT (6.3 x 32), PU: 10 pcs.	40071689047

SKU CG 1 x 6 A

SKU CG 1 x 6 A

Change-over module SKU, module without STAR Function

- Up to 20 luminaires can be monitored individually
- Separate fusing for mains and battery operation
- Easy access to fuses
- LED indicates fault and Run/ON
- Supplies electronic ballast and LED luminaires
- Service-friendly modular units are wired up and ready to connect to 4 mm² 3-tier disconnect neutral terminals (optional)
- Gear tray mounting

Fusing	10 AT / 6.3 x 32
Continuous current rating	6 A per circuit
Max. inrush current	180 A per circuit
Typical switch over time	AC/DC approx. 450 ms
Own consumption	3.85 W

Ordering details

Type	Scope of supply	Order No.
SKU	Circuit change over module SKU CG 1 x 6 A	40071347346
Spare part	Fuse 10 AT (6.3 x 32), PU: 10 pcs.	40071070715

SWR 150 sinus inverter supplies

SWR 150

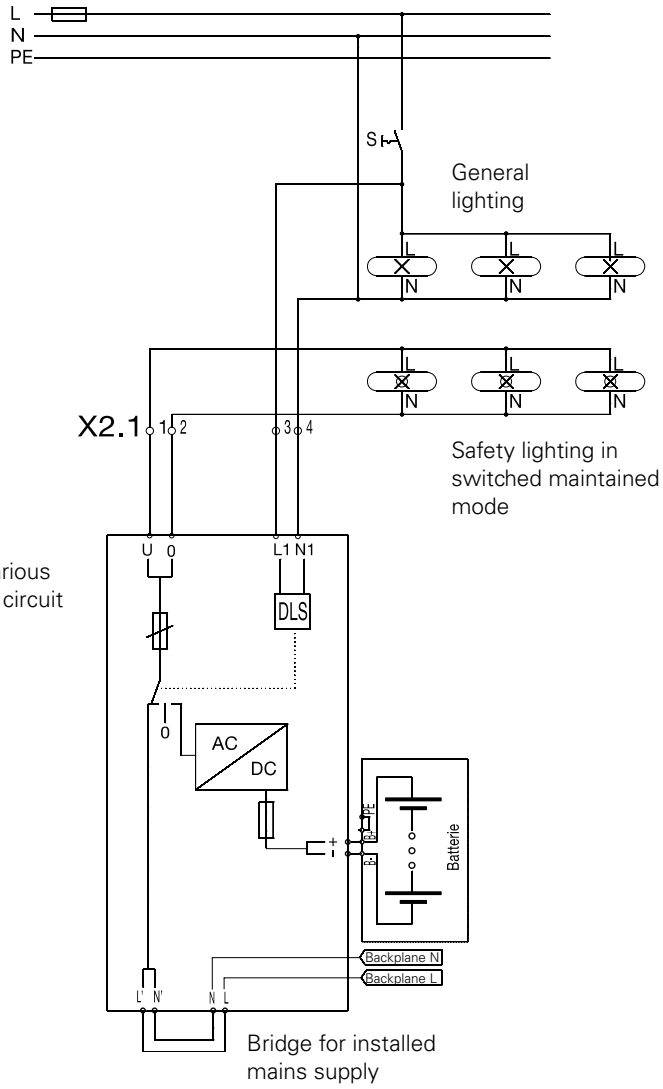
The SWR 150 sinus inverter supplies and monitors emergency luminaires with conventional ballasts. In battery operation, the sinus inverter supplies a sinus voltage of 230 V AC. By altering the frequency of the output sinus voltage, the luminous flux of emergency luminaires with conventional ballast can be regulated in emergency lighting operation so that an optimum utilization of the available power is ensured. The functioning of a connected luminaire is checked by circuit monitoring.

- Gear tray mounting

Slots		1
Fusing	G-Fuse 5 x 20	1.6 AT
Max. rated current AC		0.65 A
Max. rated current DC		1.00 A
Max. connection terminals		150 VA
for luminaire		KVG
Rated power DC/DC-converter		2.3 W
Distortion factor		< 5 %

Ordering details

Type	Scope of supply	Order No.
SWR 150	Indicate light source and luminous flux ratio	40071347960



Attention:
Parallel switching of various lamp wattages on one circuit is not possible.

Table 1. Battery current consumption values (A) dependent upon number of luminaires and luminous flux ratio (LV%) at 20°C ambient temperature at the luminaire.

International description	**T5**		
Base	**G5**		
Lamp power (W)	**8W-VVG**		
Luminous flux ratio (%)	**100**	**51**	**35**
Switch setting	**0**	**4**	**9**
Number of luminaires / Current consumption from the battery / Apparent power	[A] [VA]	[A] [VA]	[A] [VA]
1	0.175 / 36	0.123 / 19	0.118 / 12
2	0.258 / 72	0.150 / 37	0.090 / 24
3	–	0.213 / 56	0.120 / 36
4	–	0.246 / 74	0.157 / 48
5	–	0.276 / 92	0.192 / 60
6	–	0.322 / 110	0.220 / 71
7	–	–	0.240 / 83
8	–	–	0.260 / 94
9	–	–	0.280 / 105

Table 2. Battery current consumption values (A) dependent upon number of luminaires and luminous flux ratio (LV%) at 20°C ambient temperature at the luminaire.

International description	**T26**																					
Base	**G13**																					
Lamp power (W)	**58**		**58**		**58**		**36**		**36**		**36**		**36**		**18**		**18**		**18**		**18**	
Luminous flux ratio (%)	**100**		**48**		**32**		**100**		**75**		**54**		**32**		**100**		**87**		**54**		**36**	
Switch setting	**0**		**5**		**9**		**0**		**2**		**4**		**8**		**0**		**1**		**5**		**9**	
Number of luminaires / Current consumption from the battery / Apparent power	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]
1	0.62	147	0.37	84	0.35	81	0.47	107	0.34	80	0.31	71	0.30	70	0.37	85	0.31	72	0.26	60	0.26	60
2	–	–	–	–	–	–	–	–	0.59	137	0.47	109	0.36	83	–	–	0.56	121	0.33	75	0.29	67
3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.47	108	0.35	82

Table 3. Battery current consumption values (A) dependent upon number of luminaires and luminous flux ratio (LV%) at 20 °C ambient temperature at the luminaire.

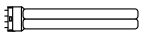
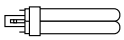
International description	TC-L 																					
Base	**2G11**																					
Lamp power (W)	**36**		**36**		**36**		**24**		**24**		**24**		**24**		**18**		**18**		**18**		**18**	
Luminous fluxverhältnis (%)	**100**		**59**		**43**		**100**		**73**		**57**		**46**		**100**		**71**		**52**		**47**	
Switch setting	**0**		**5**		**9**		**0**		**3**		**6**		**9**		**0**		**3**		**7**		**9**	
Number of luminaires / Current consumption from the battery / Apparent power	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]
1	0.47	108	0.30	70	0.29	68	0.38	89	0.28	64	0.27	62	0.27	65	0.39	90	0.26	60	0.26	60	0.25	60
2	–	–	0.43	96	0.33	76	–	–	0.42	99	0.34	79	0.32	74	–	–	0.42	98	0.31	70	0.28	65
3	–	–	0.58	135	0.44	103	–	–	0.61	136	0.44	103	0.37	86	–	–	0.57	135	0.40	94	0.34	80
4	–	–	–	–	–	–	–	–	–	–	0.56	130	0.47	105	–	–	–	–	0.50	117	0.46	104

Table 4. Battery current consumption values (A) dependent upon number of luminaires and luminous flux ratio (LV%) at 20 °C ambient temperature at the luminaire.

International description	TC-D 																					
Base	**G24Q1. G24Q2**																					
Lamp power (W)	**26**		**26**		**26**		**26**		**18**		**18**		**18**		**18**		**13**		**13**		**13**	
Luminous flux ratio (%)	**100**		**71**		**61**		**47**		**100**		**79**		**63**		**48**		**100**		**77**		**63**	
Switch setting	**0**		**3**		**5**		**9**		**0**		**2**		**5**		**9**		**0**		**2**		**4**	
Number of luminaires / Current consumption from the battery / Apparent power	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]	[A]	[VA]
1	0.36	85	0.28	63	0.27	61	0.27	64	0.30	51	0.26	37	0.24	29	0.23	24	0.26	60	0.26	49	0.21	49
2	–	–	0.39	93	0.35	80	0.33	76	0.47	87	0.35	64	0.29	47	0.28	37	0.39	90	0.30	68	0.28	63
3	–	–	0.54	126	0.45	104	0.36	80	0.65	114	0.48	86	0.36	65	0.32	48	0.53	121	0.41	91	0.32	73
4	–	–	–	–	0.57	132	0.43	97	–	–	0.60	106	0.44	81	0.34	62	–	–	0.53	110	0.38	87
5	–	–	–	–	–	–	–	–	–	–	0.71	125	0.53	94	0.40	73	–	–	0.57	130	0.48	103
6	–	–	–	–	–	–	–	–	–	–	–	–	0.60	108	0.44	83	–	–	–	–	0.52	120
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.59	136

0.21	49	0.25	58	0.21	49	0.20	44
0.29	66	0.39	90	0.26	58	0.26	62
0.30	71	0.54	125	0.31	74	0.30	70
0.38	87	0.32	74	–	–	0.38	88	0.32	72
0.48	103	0.33	76	–	–	0.47	104	0.36	75
0.38	87	–	–	0.54	121	0.40	81
0.42	94	–	–	0.59	137	0.45	94

PD 3 printer

PD 3 printer

The printer logs and memorizes all function tests and mains failures of a ZB-S cover or a substation. After the performance of an automatic function test, the results are printed out in plain text stating also the time and date. The printing is automatic with each entry into the log book of the control module. A mains failure is also logged with time and date. The printer documents the operational state of emergency luminaires of a emergency lighting supply system. By means of the printer, the information on possible failures of the luminaires (e. g. defective lamp) can be printed out in detail.

- Gear tray mounting

Printing paper	Woodfree printer paper
Paper width	57.5 mm
Max. diameter of the paper roll	61 mm
Plug-in module	12 mm

Ordering details

Type	Scope of supply	Order No.
PD 3	Plug-in module	40071347316
Spare part	1 roll printing paper	40078079666
Spare part package	1 colour ribbon and 1 roll printing paper	40071346042

CG IV relay modules

CG V relay modules

CG IV / CG V relay modules

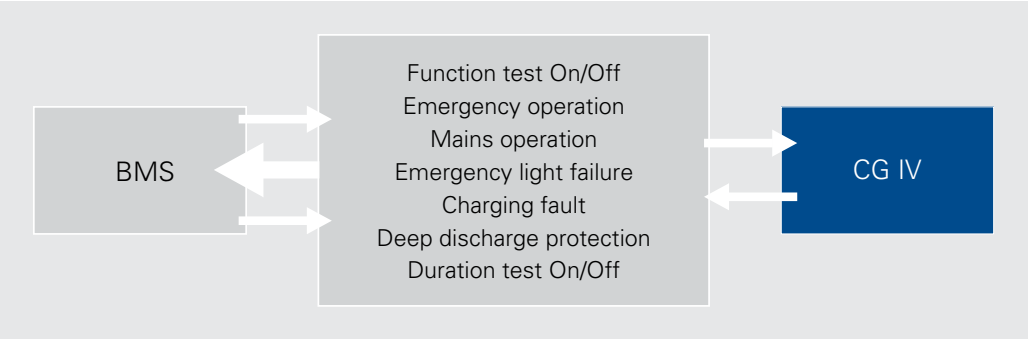
The bipolar CG IV relay module transmits data and operational states of the covers/substations to a central building management system.

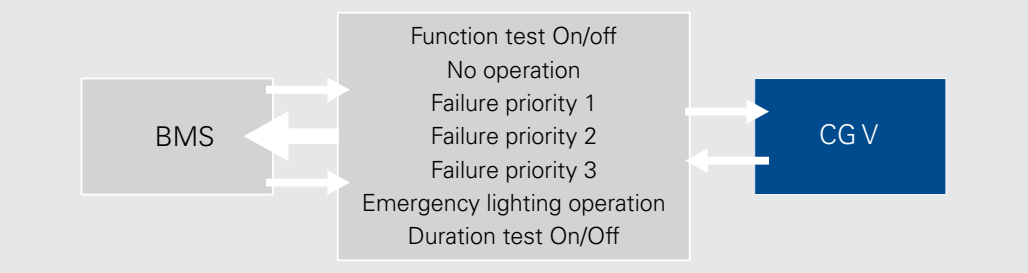
- Gear tray mounting

Connection terminals/Clamp terminals	2.5 mm² rigid and flexible
Switching capacity of the contacts	24 V/0.5 A AC DC

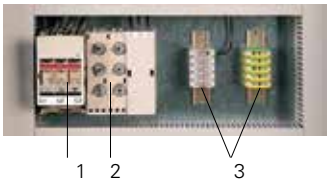
Ordering details

Type	Scope of supply	Order No.
CG IV	Plug-in module	40071343971
CG V	Plug-in module	40071347800





Mains distribution board



Mains distribution board

The mains supply to a ZB-S/26 or ZB-S/18 system comes via a modular mains distribution board. This includes a size 00C load disconnector (1) with a maximum conductor size of 50 mm² and allows the connection of up to 6 slave stations to modular size D02-E18 outgoing mains circuits (2) with the necessary terminals for neutral and ground (3).

The same mains distribution boards must also be used three-phase for feeders to powerful slave-stations (accommodates up to 2 slave stations in this case). The components are simply plugged on from the front and securely contacted.

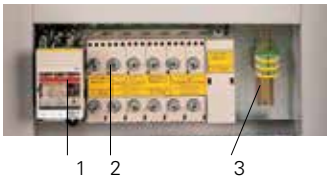
Mains distribution module D02-E18

Current rating	63 A
Rated operating voltage	400 V
Box terminal for circulator conductor	to 16 mm²
Material	Polyamide (PA 6.6), 30 % glass-fibre-reinforced
Scope of supply	incl. 3 pcs. screw caps E18 and 3 pcs. D02-fuse inserts 25 A

Ordering details

Type	Scope of supply	Order No.
Mains distribution module for track mounting	incl. 3 pcs. screw caps E18 and 3 pcs. D02-fuse inserts 25 A	40071347160

Battery distribution board



Battery distribution board

The battery supply to a ZB-S/26 or ZB-S/18 system comes via a modular battery distribution board. This includes a size 00C load disconnector (1) with a maximum conductor size of 50 mm² and allows the connection of up to 6 slave stations to modular size D02-E18 outgoing battery circuits (2) with related terminals for ground (3). The components are simply plugged on from the front and securely contacted.

Battery distribution module D02-E18

Current rating	63 A
Rated operating voltage	400 V
Box terminal for circulator conductor	to 16 mm²
Material	Polyamide (PA 6.6), 30 % glass-fibre-reinforced
Scope of supply	incl. 2 pcs. screw caps E18 and 2 pcs. D02-fuse inserts 25 A

Ordering details

Type	Scope of supply	Order No.
Battery distribution module for track mounting	incl. 2 pcs. screw caps E18 and 2 pcs. D02-fuse inserts 25 A	40071347161

Cover strip

Busbar guard: Cover strip for clip-mounting to the trunking section. Ready-cut to module width.

Material: Hard PVC.

Ordering details

Type	Scope of supply	Order No.
Busbar cover strip	Cover strip in module width for clip mounting at the trunking section	40071347192

Battery Control Module (BCM)

Battery Control Modul (BCM)

The BCM battery control module is for control of the CM 1.7 A and CM 3.4 A charging modules via the Charge Control Bus (CCB). 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 the battery + and PE or battery – and PE.

For simulating a battery isolation fault there are two buttons: ISO+ and ISO

Charging characteristics		IU
Terminals		2.5 mm² rigid and flexible
End-of-charge voltage (factory setting for +20°C)	boost charge trickle charge	259 V DC 248 V DC
Deep discharge protection		183.6 V DC
Potential-free signal contacts		0.5 A/24 V AC/DC

Ordering details

Type	Scope of supply	Order No.
BCM	Battery Control Module for installation on gear tray	40071360330

Charging module CM 1.7 A

Charging modules CM 1.7 A and CM 3.4 A

To realise the recharging duration for planned battery sets, the quantity of required charge modules should be used as specified in Table 3 (in this section).

Charging current CM 1.7 A	1.7 A
Charging current CM 3.4 A	3.4 A
Control of the charging modules (32 max.) via the Battery Control Module and the CCB.	
To save energy and extend service life of the charge modules, these are alternatively switched with the float charge.	

Ordering details

Type	Scope of supply	Order No.
Charging module CM 1,7 A	For installation on gear tray	40071360340
Charging module CM 3.4 A	For installation on separate gear tray	40071360370

Charging module CM 3.4 A

Charging module rack 4-way

Charging module rack 2-way

Charging module rack

A 4-way Charging module rack with 3-phase supply is mounted in system types ZB-S/26 and ZB-S/18. For supplying the CM 3.4 A boost chargers only!

The optional 2-way Charging module rack can be used to expand the system to 6 slots.

Connection voltage	400 V AC/220 V DC
Slots 3-phase split	
Conductor size	max. 4 mm²

Ordering details

Type	Scope of supply	Order No.
Charging module rack 4-way	Unit accommodates 4 charging modules CM 3.4 A for ZB-S/26 and ZB-S/18	40071347043
Charging module rack 2-way	Unit accommodates 2 additional charging modules CM 3.4 A for ZB-S/26 and ZB-S/18 (only in conjunction with 40071347043)	40071347130

Charging module rack
1-way, compact

Charging module rack, compact

The compact version of the Charging module rack is intended for use in ZB-S compact systems. The single and double compact Charging module racks have been designed for system types ZB-S/10 C and ZB-S/10 C6 respectively. These are for supplying CM 3.4 A boost chargers only!

Connection voltage	230 V AC/220 V DC
Conductor size	max. 2.5 mm²

Ordering details

Type	Scope of supply	Order No.
Charging module rack 1-way	Unit accommodates 1 charging module CM 3.4 A compact for ZB-S/10 C	40071347167
Charging module rack 2-way	Unit accommodates 2 charging modules CM 3.4 A compact for ZB-S/10 C6	40071347130

Connection terminals

Connection terminals

Standard terminals up to 4 mm², rigid or flexible, are provided for connecting the external phase monitors, monitoring equipment and control units. Optional terminals up to 4 mm² on DIN rail for rigid or flexible cables are provided for connecting the final circuits. The terminals are designed as 3-level neutral disconnect terminals.

Three-phase monitoring

Three-phase monitoring

The 3-phase monitoring is for monitoring of general lighting distributors.
When one phase fails, the module switches a relay contact and interrupts the standard electronic 24 V current loop. The emergency luminaires in non-maintained mode are switched to mains operation, if the mains voltage still applies to the ZB-S cover.

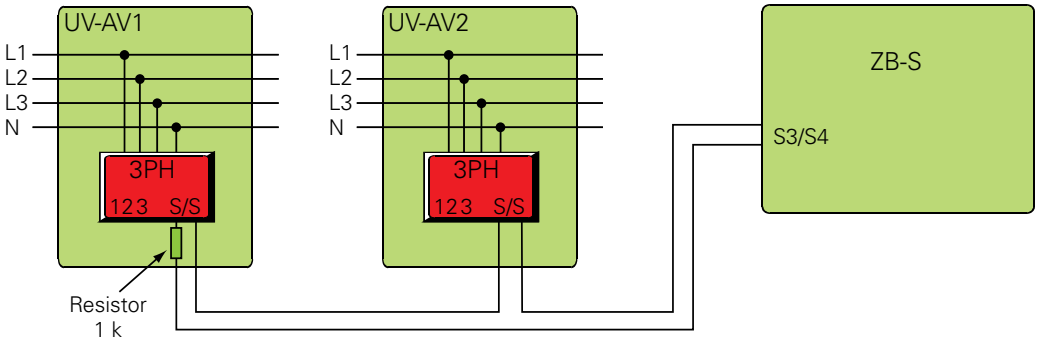
Dimensions mm (H x W x D)	85 x 52.5 x 65, 3 subunits
Enclosure	Plastic, red
Connection terminals	2.5 mm² rigid and flexible
Type of mounting	DIN mounting rail
Contact	0.5 A/24 V AC/DC, 1 x open contact, 1 x changeover contact
Trigger threshold	U< 85 % U_N

Ordering details

Type	Scope of supply	Order No.
Three-phase monitoring	Module ready for mounting	40071343430

Current loop

24 V current loop for emergency lighting request using differential loop monitoring for short-circuit and open circuit detection.



Differential monitoring:	A short or open circuit causes the system to energise immediately (maintained light).
Phase monitor switch closed (1 kΩ):	Normal system mode

F3 remote indication

F3 remote indication
for flush-mounting

F3 remote indication

The F3 remote indication ensures display of the most important installation functions via battery supply also with mains power failure. Blocking of emergency lighting operation is possible via a key switch during idle operation times. Blocking of emergency operation does not affect battery maintenance charging. Differential loop monitoring leads to operational readiness of the system with short circuits or wirebreak detection. LED displays: system readiness, source for safety services, failure. As such the F3 remote indication fulfills the requirement that remote switching is only permissible when operation by unauthorized persons is not possible.

Connection terminals wall surface-mounting	2.5 mm² rigid and flexible
Dimensions mm (H x W x D)	160 x 80 x 55
Connection terminals for flush-mounting	1.5 mm² rigid or 1 mm² flexible
Dimensions mm (H x W x D)	80 x 80 x 55
Colour enclosure	sim. RAL 7035 Light grey

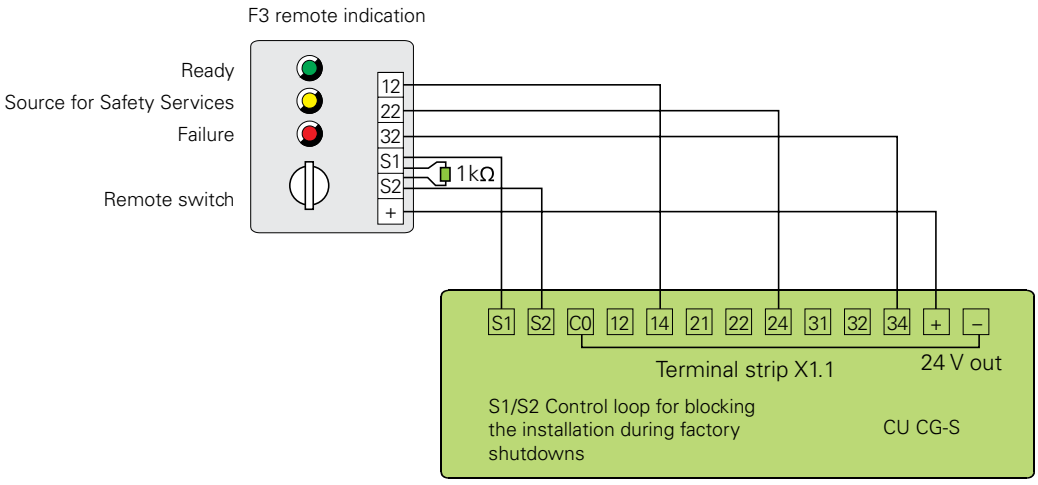
8

Ordering details

Type	Scope of supply	Order No.
F3 remote indication	Module surface-mounting	40071338497
F3 remote indication recessed	Performance for installation in the flush-mounted switch or empty space box acc. to DIN VDE 0606	40071347490

Remote switch

Control loop for blocking the installation during factory shutdowns with differential loop monitoring for short-circuit and open circuit detection.



Differential monitoring:	A short-circuit or open circuit causes the system to be enabled.
F3 switch closed:	System ready
F3 switch open (1 kΩ):	System blocked

External DLS/3PH-Bus Module

External DLS/3PH-Bus Module

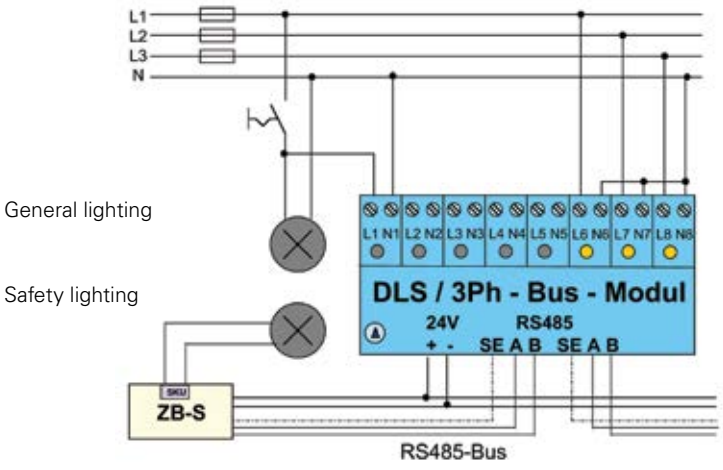
The DLS/3PH bus module can be used as a phase monitor and for light switch polling for the common switching of safety and general lighting systems. Switch cables to the safety luminaires are not required. The housing is suitable for DIN rail mounting. The module has a service button, an RS 485 bus port (integral 120 Ohm bus load resistor) with 24 V module supply, and is addressed with encoding switches. Coloured LEDs indicate fault, ON status and operation.

Freely programmable assignment of independent DLS inputs per emergency light circuit or luminaire and individual name per bus module in control unit. With use a 3-phase monitor, detailed phase failure display with location of failed sub-distribution for general lighting via clear text display in control unit.

Supply voltage device	24 V DC (min. 19 V, max. 30 V)
Current consumption (all 8 channel connected)	20 mA ± 5 mA
Degree of protection	IP20
Insulation class	I
Ambient temperature	– 10 ° to + 40 °C
Input channels 8 DLS (channel 1-8) or DLS (channel 1-5) and 3Ph (channel 6-8)	U_N = 230 V > 195 V -> ON < 138 V -> OFF > 195 V -> ON < 138 V -> OFF
Number of light switch inputs	8 pcs. with LED display or 5 pcs. with 3-phase-monitor (selector)
Monitoring threshold	60 - 85 % U_{Nom} (meets DIN VDE 0100-718)
Data bus	RS 485
Address range	1-25
Weight	0.2 kg
Dimensions (L x W x H) mm	105 x 85 x 60
Mounting	DIN-rail
Connection terminals/Clamp terminals	2.5 mm² rigid and flexible

Ordering details

Type	Scope of supply	Order No.
DLS/3Ph-Bus-Module	Module for DIN rail mounting	40071346955
DLS/3Ph-Bus-Module inverse	Module for DIN rail mounting with inverse switching logic	40071347455
DIN mounting rail	4 pcs. DIN-rails for mounting external modules in the cabinet incl. mounting accessories	40071347125



External TLS-Bus Module

External TLS-Bus Module

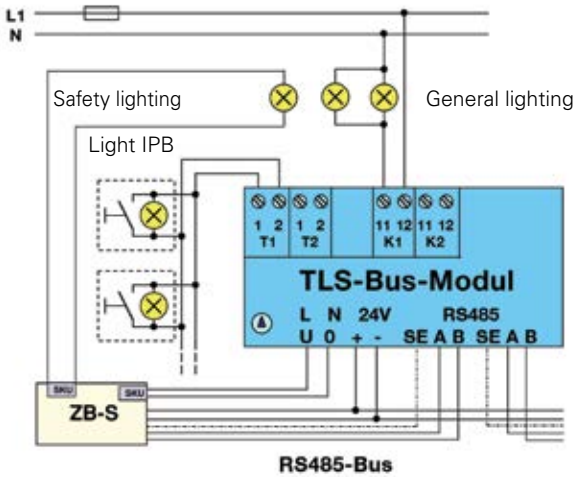
The TLS bus module is used to poll stairwell light switches, to supply the glow lamps in mains and emergency operation and for the common switching of safety and general lighting. The housing is suitable for DIN rail mounting. General and safety luminaires can be controlled via the same push buttons with use of a TLS switching module (installation in light distributor).

The module has a service button, an RS 485 bus port (integral 120 Ohm bus load resistor), 24 V module supply, and generates the glow lamp voltage. It also has a glow lamp flash function (30 s before On-time timeout). The TLS bus module is addressed with encoding switches. Coloured LEDs indicate fault, ON status and operation. Freely programmable assignment of independent TLS inputs per emergency light circuit and individual name per bus module in control unit.

Supply voltage device	24 V DC (min. 19 V, max. 30 V)
Current consumption at 24 V	Standby 10 mA ± 3 mA 1 pushed push-button 35 mA ± 5 mA 2 pushed push-button 60 mA ± 6 mA
Degree of protection	IP20
Insulation class	I
Ambient temperature	– 10 °C to + 40 °C
Connection T1/T2	max. 50 mA each z. B. 50 push-button with glow lamp 1 mA
Connection K1/K2	10 A/250 V AC starting current max. 120 A
Data bus	RS 485
Address range	1-25
Weight	0.2 kg
Dimensions (L x W x H) mm	105 x 85 x 60
Mounting	DIN-rail
Connection terminals/Clamp terminals	2.5 mm² rigid and flexible
Number of button inputs	2 pcs. incl. supply the glow lamp (max. 50 mA)
Load circuits for general lighting	2 pcs. (10 A/120 A/ms)
Variable on-time	1 to 15 min.

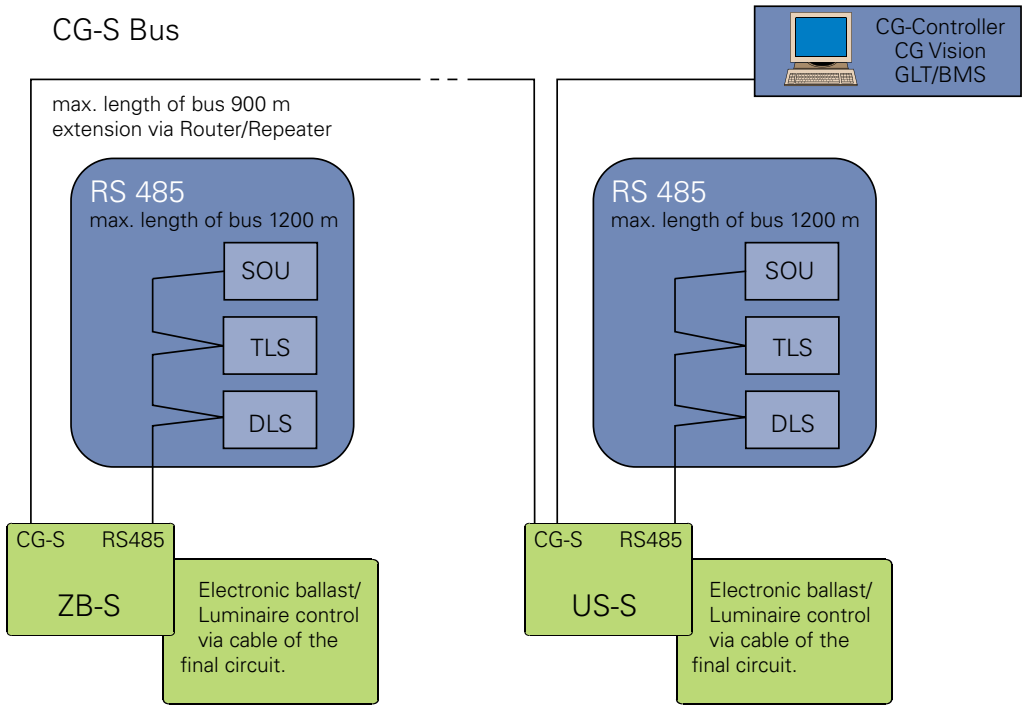
Ordering details

Type	Scope of supply	Order No.
TLS-Bus-Module	Module for DIN rail mounting	40071346965
DIN mounting rail	4 pcs. DIN-rails for mounting external modules in the cabinet incl. mounting accessories	40071347125

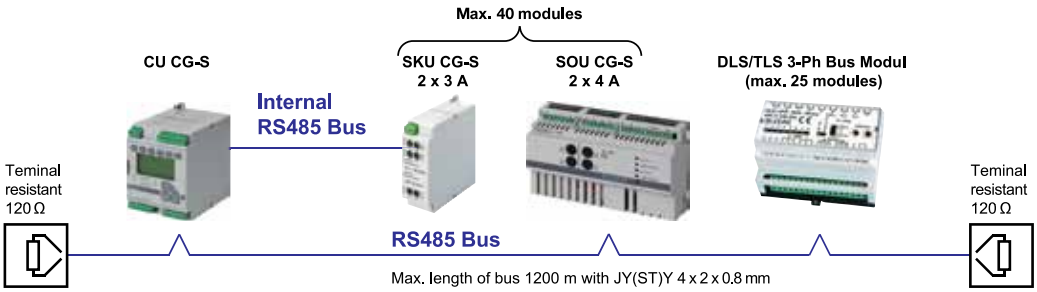


Bus technology according to RS 485

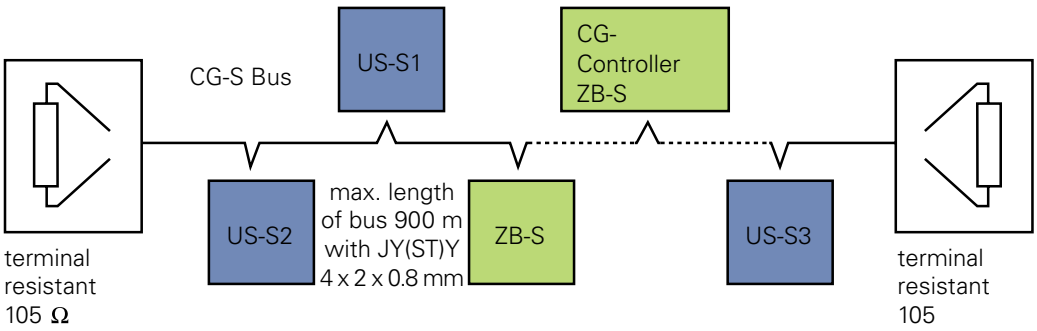
An RS 485 bus is used for data communication with external bus modules (DLS/3PH or TLS). A connection to a central building services management system (BMS) can be made with the CG-S bus. An isolated 24V/0.5 A power supply (SELV) is available for the external modules. The maximum line length depends on the required power and the conductor size.



Overall structure of the bus system for communication with external switching modules and master control system.



RS485 bus for communication with external modules (DLS/3PH-, TLS or SOU CG-S bus module). The terminating resistor (120, 0.5 W) can be connected in the modules. The ZB-S control cabinet also includes a resistor. This must be mounted in the ZB-S system if only one cable is laid.



CG-S bus for communication by ZB-S or US-S systems with a CG controller ZB-S.

Notes:

Bus topology: linear, double terminated (no spur lines allowed)
The absolutely essential terminating resistors are supplied in a plastic pack in the control cabinet.
Cable type (minimum requirement): JY(ST)Y 4 x 2 x 0.8 mm (twisted pair, screened).
The conductor size required for the 24 V bus voltage will depend on the line length and the number of bus modules (Umin = 19 V DC).

DLS = external maintained light switching module (DLS/3PH bus module)
TLS = external stairwell light switching module
BMS = Building Management System

CG-controller ZB-S

SD card

SD card reader

CG-Controller ZB-S

For the central monitoring of ZB-S, the CEAG CG Controller offers a variety of new features:

- Housing: degree of protection IP65
- Control and monitoring of up to 32 emergency supply systems
- SD-card for the storage of systems configuration, luminaire designation and log book
- Programming of the CG Controller via PC preprogrammed memory card via SD can be realized using an SD-card reader
- LED displays: operation, test and fault
- Log book for a period of 4 years
- Storage of luminaire designation for 6400 luminaires with 20 digits
- Functions:
  - · Start functional test, test period can be freely defined
  - · Start operational duration test, test period can be freely defined
  - · Abort operational duration test
  - · Continuous status query of devices
  - · Recording of individual fault messages
  - · Query of current assignment
- Volt-free contact freely programmable for:
  - · charging fault, · luminaire fault, · ISO failure, · power failure or, · battery operation
- With universal retainer for trunking systems or wall surface-mounting

Dimensions mm (H x W x D)	184 x 240 x 112
Enclosure	Plastic RAL 7035, with transparent panel
Degree of protection (IEC 529)	IP65
Supply voltage	230 V 50/60 Hz/24 V DC
Insulation class	II
Ambient temperature	-5 °C to + 40 °C
Connection terminals/Clamp terminals	2.5 mm^2 rigid and flexible
Display	Illuminated display, alphanumeric 4 x 20 characters
Keyboard	Membrane keypad 4 x 4
Contact	1 x UM, 24 V 0.5 A; freely programmable

Ordering details

Type	Scope of supply	Order No.
CG controller ZB-S	Controller in enclosure incl. CG-S BUS-interface	40071347900
SD card	SD card formated for CG-controller ZB-S	40071347871
SD card reader	SD card reader for USB-Port	40064070561
CG-S BUS component	2-way router for CG-S BUS DIN rail mounting	40071347142
CG-S BUS component	2-way repeater for CG-S BUS DIN rail mounting	40071347143

PC programming software for ZB-S

Programming software for preset memory cards for the quick pre-programming via PC and simple reading and editing of the logbook. For documentation all files are saveable on memory card and hard disk.

Prints for documentation: Detailed prints of the programmed system configuration with the following details:

- individual name of the device
- the date and time of automatic battery duration tests, incl. distance
- the date and time of automatic function tests, incl. distance
- manual reset: yes/no
- delay on mains return: 0-15 min
- selective emergency light: yes/no
- Lon switch: yes/no
- capacity in Ah
- quantity of booster
- rated operation time in h
- min. operation time in %
- assignments of the 3 relays
- assignments of the 3 function keys
- assignments of the 4 option inputs
- number, type and individual name of the bus modules

Detailed print of the programmed electrical circuits (line diagram) with the following details per electrical circuit:

- electrical circuit / SKU number and type
- individual electrical circuit name
- type of monitoring
- switching mode of the electrical circuit
- number of luminaires
- address and individual name per luminaire
- switching mode of each luminaire

Logbook prints with the following options:

- fault event (35 different fault events, separate or completely generic)
- time period of the logbook (date and time)
- individual comment per print
- luminaire failure: Detail of the individual luminaire and electrical circuit names

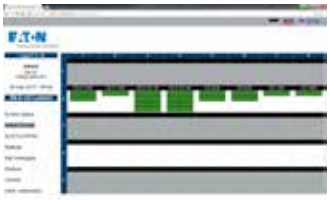
Ordering details

Type	Scope of supply	Order No.
Software	PC-Software for ZB-S, for alternative programming of the system configuration on PC	40071347152

Webmodule CG-S

Example: AT-S+-Device status

Example: SKU-Status



Webmodule CG-S (ZB-S/AT-S+)

Webmodule ZB-S/AT-S+ for visualisation and monitoring of a central battery system, type ZB-S/US-S via a local ethernet (LAN) or internet (WWW) with a conventional WEB browser. Access to the web-module via internet (WWW) must be administrated from an IT department on-site. Integrated mail-client for comfortable, event orientated failure information, for up to 5 E-mail recipients. Access via administrator account or guest account, with password protection.

- Easy menu structure
- Any type of display devices can be used with a WEB browser, for example notebook, tablet PC, IPad or smartphone
- Full visualisation and monitoring of a ZB-S (central battery system) via ethernet (LAN) with conventional WEB browser (e.g. Internet Explorer, Firefox etc.)
- Display of all actual operation modes
- Local failure information of each emergency circuit and luminaires with destination information in plain text
- Permanent actual information of the charging unit and battery
- Parallel access to the web module from different workstations possible (max. 8)
- Integrated mail client for comfortable failure notification via encrypted mail
- Type of different failures for the mail transmission is selectable
- Up to 5 mail recipients programmable
- Actualisation cycle of the web browser via the web module is adjustable
- Encrypted transmission
- Authenticated access via administrator account with password protection
- Adjustable guest account with restricted access with password protection
- Static or dynamic (DHCP) IP-addressing possible
- Supports IPv4/IPv6 (Internet Protocoll version 4/version 6)
- Any number of modules can be operated in parallel
- Overview display of all active web modules in local ethernet with status display and hyperlink function

Supply voltage device	24 V DC
Rated power	< 1.5 W
Connection	RJ45
Degree of protection	IP20
Weight	0.1 kg
Dimensions	90 x 35 x 58
Enclosure	Polycarbonate

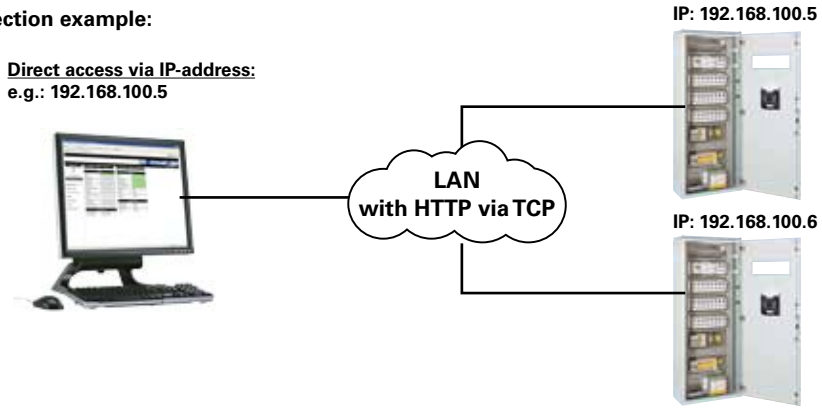
Ordering details

Type	Scope of supply	Order No.
Webmodule CG-S (ZB-S/AT-S+)	Module for DIN-rail mounting, incl. connection without patch line RJ45	40071361383

Notes:

If a webmodule integrated in the ZB-S is supplied by the DC/DC.2 converter (external 24 V), a maximum of 20 DLS/3-phase modules or TLS bus modules can be connected.

Connection example:



Ordering details

Type	Scope of supply	Order No.
Central battery system ZB-S/26	Central battery system type ZB-S/26 incl. CU CG-S, BCM and DC/DC.2, 26 free module slots*[1]	40071362905
Central battery system ZB-S/18	Central battery system type ZB-S/18 incl. CU CG-S, BCM and DC/DC.2, 18 free module slots*[1]	40071362906
Central battery system ZB-S/LAD	Central battery system type ZB-S/LAD incl. CU CG-S, BCM and DC/DC.2, (2 free module slots possible)	40071347099
Central battery system ZB-S/10 C	Central battery system type ZB-S/10 C, incl. CU CG-S, BCM and DC/DC.2, 10 free module slots*[1]	40071362900
Central battery system ZB-S/26 C6	Central battery system type ZB-S/26 C6 incl. CU CG-S, BCM and DC/DC.2, 26 free module slots*[1]	40071689064
Central battery system ZB-S/18 C6	Central battery system type ZB-S/18 C6 incl. CU CG-S, BCM and DC/DC.2, 18 free module slots*[1]	40071362904
Central battery system ZB-S/10 C6	Central battery system type ZB-S/10 C6 incl. CU CG-S, BCM and DC/DC.2, 10 free module slots*[1]	40071362903
Central battery system ZB-S/18 C3	Central battery system type ZB-S/18 C3, incl. CU CG-S, BCM and DC/DC.2, 19 free module slots	40071362902
Central battery system ZB-S/10 C3	Central battery system type ZB-S/10 C3, incl. CU CG-S, BCM and DC/DC.2, 11 free module slots	40071362901
Central battery system ZB-S/2 C3	Central battery system type ZB-S/2 C3, incl. CU CG-S, BCM and DC/DC.2, 3 free module slots	40071360201
Substation US-S/36	Substation type US-S/36 incl. CU CG-S and DC/DC.2, 36 free module slots	40071362907
Substation US-S/28	Substation type US-S/28 incl. CU CG-S and DC/DC.2, 28 free module slots	40071362908
Substation US-S/21	Substation type US-S/21 incl. CU CG-S and DC/DC.2, 21 free module slots	40071347088
Substation US-S/13	Substation type US-S/13 incl. CU CG-S and DC/DC.2, 13 free module slots	40071347089
Substation US-S/5	Substation type US-S/5 incl. CU CG-S and DC/DC.2, 5 free module slots	40071347090
Substation US-S/ SOU2	Substation type US-S/ SOU2 **incl.** 2 x SOU CG-S 2 x 4 A	40071360510
Substation US-S/ SOU1	Substation type US-S/ SOU1 **incl.** 1 x SOU CG-S 2 x 4 A	40071360511
E30 junction box ESF-RVS30-1	For small cabinets type US-S/SOU with 2 NEOZED fuses inside	40036071032
Substation ESF-E30/13-S	Substation type ESF-E30/13-S incl. control module ST-S, DC/DC.2-converter, 13 free module slots	40071347710
Substation ESF-E30/28-S	Substation type ESF-E30/28-S, incl. control module ST-S, DC/DC.2-converter, 28 free module slots	40071347780
Substation US-S ESF30 28-P	Substation type US-S ESF30 28-P incl. control module CU CG-S and DC/DC.2, with space reserve for final assembly up to max. 60 final circuits, however accepts max. 28 variable change-over modules	40071360738
Substation US-S ESF30 13-P	Substation type US-S ESF30 13-P incl. control module CU CG-S and DC/DC.2, with space reserve for final assembly up to max. 40 final circuits, however accepts max. 13 variable change-over modules	40071360737
Substation US-S ESF30 SOU5	Small distribution board US-S ESF30 SOU5, incl. 5 switching over units SOU CG-S 2 x 4 A	40071360734
Substation US-S ESF30 SOU3	Small distribution board US-S ESF30 SOU3, incl. 3 switching over units SOU CG-S 2 x 4 A	40071360732
Substation US-S ESF30 SOU2	Small distribution board US-S ESF30 SOU2, incl. 2 switching over units SOU CG-S 2 x 4 A	40071360729
Substation US-S ESF30 SOU1	Small distribution board US-S ESF30 SOU1, incl. 1 switching over unit SOU CG-S 2 x 4 A	40071360726
ESF-RVS30	E30 junction box ESF-RVS30 for ESF-E30 with 4 Neozed fuse inside	40071347920
Reduction	Reduction M32 to M20 cable glands for E30 junction boxes incl. M20 cable gland	40071071033

*[1] Plus max. two additional slots in correlation of CM 1.7 A and CM 3.4 A placement.

Ordering details

Type	Scope of supply	Order No.
EBR-S 1800	Electrical Service Room inclusive cable- and ventilation bulkhead for self assembling. For installation of safety power supply systems with max dimensions (mm) H=1800, W=600, D=300	40036071110
EBR-S-M 1800	Electrical Service Room inclusive cable- and ventilation bulkhead complete mounted. For installation of safety power supply systems with max dimensions (mm) H=1800, W=600, D=300	40036071111
EBR-S 2050	Electrical Service Room inclusive cable- and ventilation bulkhead for self assembling. For installation of safety power supply systems with max dimensions (mm) H=2050, W=800, D=600	40036071112
4 pcs. DIN-mounting rail	incl. mounting accessories	40071347125
3 pcs. C-section rail	incl. mounting accessories	40071347126
Base 200 mm	for ZB-S, depth 400 mm	40071361216
Base 100 mm	for ZB-S, depth 400 mm	40071361215
Base 200 mm	for ZB-S/18C3 and 10C3, depth 330 mm	40071360049
Base 800 x 600 x 200 mm	for ZB-S/10C6-18C6 and 26C6	40017361219
3-piece baseplate	for ZB-S, depth 400 mm, mouse-proof	40071347124
Cable support rail		40071347123
Metal flange plate	undrilled for battery cabinet ZB-S	40071346225
Flange plate	for foam rubber for battery cabinet ZB-S	40036070164
Fireproof dowel M10	for E30 substation, Set of = 12 pcs., for installation in concrete walls	40036070298
Optional wall mounting plate for wall mounting for ESF-E30/13-S		40071347726
Door with left hinge for ZB-S/18 and ZB-S/26		40071689081
Door with left hinge for ZB-S/10C3		40071361325
Door with left hinge for ZB-S/10C and ZB-10C6		40071361326
Door with left hinge for battery cabinet		40071689085

Type	ZB-S/26	ZB-S/18	ZB-S/LAD	ZB-S/10 C
Modules:				
Control module: CU CG-S	1	1	1	1
DC/DC.2-converter (DCM)*5	1	1	1	1
BCM	1	1	1	1
Circuit module SKU CG-S*5	0-26*8	0-18*8	0-2*2	0-10*8
Maximum number of SWR 150 due to 100% luminous flux and max. rated power	7	7	2	7
Charging module 1,7 A	0-2	0-2	0-2	0-2
Charging module 3,4 A	0-6*1	0-6*1	0-8	0-1*3
Electrical cabinet construction:				
Rated voltage	400/230 V	400/230 V	400/230 V	230 V
Rated frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Conductor order and system of earthing in mains power operation/battery operation	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT
Max. ambient temperature*9	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C
Insulation class	1	1	1	1
Degree of protection	IP20	IP20	IP20	IP20
Max. current rating mains [∑ L1, L2, L3] [A]	80	80	100	60
Max. rated power mains [KW]	18.4	18.4	23	13.8
Max. current rating battery [A]	80	80	100	35
Max. rated power battery [KW]	17.3	17.3	21.6	7.6
Three-phase distribution	yes	yes	yes	no
Conductor size for mains and battery supply	50 mm^2	50 mm^2	50 mm^2	16 mm^2
Outgoing circuits	0 - 6 Feeders	0 -6 Feeders	0 - 15 Feeders	1 Feeder
Conductor size	16 mm^2	16 mm^2	16 mm^2	35 mm^2
Max. conductor size final circuits	4 mm^2	4 mm^2	4 mm^2	4 mm^2
Max. number of final circuit terminals	80	68	8	40
Mechanical cabinet construction:				
Dimensions H x W x D (mm)	2050 x 800 x 400	2050 x 800 x 400	2050 x 800 x 400	2050 x 800 x 400
Material / Design	Sheet steel / Cabinet	Sheet steel / Cabinet	Sheet steel / Cabinet	Sheet steel / Compact cabinet
Door stop	right	right	right	right
Outer coating	Textured powder paint	Textured powder paint	Textured powder paint	Textured powder paint
Colour	RAL 7035	RAL 7035	RAL 7035	RAL 7035
Partial viewing door	Yes	Yes	No	Yes
Lock	3 mm Two-way	3 mm Two-way	3 mm Two-way	3 mm Two-way
Cable entry from above	yes	yes	yes*7	yes
Cable entry from below	yes	yes	yes*7	no
Base (optional)	100/200	100/200	100/200	200
Weight (without batteries)	approx. 180 kg	approx. 170 kg	approx. 170 kg	approx. 155 kg
Battery capacity, installed in:				
Compact cabinet	–	–	–	23.3-53.7 Ah
Battery cabinet	23.3-245 Ah	23.3-245 Ah	23.3-308 Ah	–
Battery rack	23.3-245 Ah	23.3-245 Ah	23.3-308 Ah	–

Other battery sizes on application

*1 When 6 charging modules CM 3,4 A are fitted an additional charging module rack 2-way is necessary.

*2 Max. 8 charging modules are possible when 2 SKUs are fitted.

*3 When 1 charging module CM 3,4 A is fitted an additional charging module rack 1-way is necessary.

*4 When 2 charging modules CM 3,4 A are fitted an additional charging module rack 2-way is necessary. (>240 Ah Special design)

*5 After more than 13 SKU CG-S 4 x 1.5 A or 26 SKU CG-S 2 x 3 A / 1 x 6 A a second DC/DC converter is needed.
Please observe that all DC/DC-converters are operated on the same module assembly frame next to each other.

ZB-S/26 C6	ZB-S/18 C6	ZB-S/10 C6	ZB-S/18 C3	ZB-S/10 C3	ZB-S/2 C3
1	1	1	1	1	1
1	1	1	1	1	1
1	1	1	1	1	1
0-26*8	0-18*8	0-10*8	0-19	0-11	0-3
7	7	7	7	7	2
0-2	0-2	0-2	0-2	0-2	1
0-2*3*4	0-2*3*4	0-2*3*4	–	–	–
400/230 V	400/230 V	230 V	230 V	230 V	230 V
50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
TN-C-S / IT	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT
-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C
1	1	1	1	1	1
IP20	IP20	IP20	IP20	IP20	IP20
63	63	63	25	25	15
14.5	14.5	14.5	5.8	5.8	3.5
63	63	63	25	25	12
13.6	13.6	13.6	5.4	5.4	2.6
yes	yes	no	no	no	no
35 mm^2	35 mm^2	16 mm^2	16 mm^2	16 mm^2	16 mm^2
2 Feeders	2 Feeders	1 Feeder	1 Feeder	1 Feeder	–
35 mm^2	35 mm^2	35 mm^2	16 mm^2	16 mm^2	–
4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2
60	60	40	50	40	12
2250 x 800 x 600	2050 x 800 x 600	2050 x 800 x 600	1800 x 600 x 350	1800 x 600 x 350	1000 x 600 x 300
Sheet steel / Compact cabinet	Sheet steel / Compact cabinet	Sheet steel / Compact cabinet	Sheet steel / Compact cabinet	Sheet steel / Compact cabinet	Sheet steel / Compact cabinet
right	right	right	right	right	right
Textured powder paint	Textured powder paint	Textured powder paint	Textured powder paint	Textured powder paint	Textured powder paint
RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035
Yes	Yes	Yes	Yes	Yes	No
3 mm Two-way	3 mm Two-way	3 mm Two-way	3 mm Two-way	3 mm Two-way	3 mm Two-way
yes	yes	yes	yes	yes	yes
no	no	no	no	no	no
–	–	–	200	200	–
approx. 250 kg	approx. 205 kg	approx. 206 kg	approx. 120 kg	approx. 115 kg	approx. 50 kg
5.5-89.4 Ah	5.5-89.4 Ah	5.5-89.4 Ah	5.5-23.3 Ah	5.5-23.3 Ah	5.5-14 Ah
–	–	–	–	–	–
–	–	–	–	–	–

*6 Higher battery capacities =>118 Ah are achieved by connecting several battery sets in parallel.

*7 Please indicate the cable entry when planning the system.

*8 Plus max. two additional slots in correlation of CM 1.7 A and CM 3.4 A placement.

*9 Optimal ambient battery temperature +20 °C.

Type	US-S/36	US-S/28	US-S/21	US-S/13
Modules:				
Control module: CU CG-S	1	1	1	1
DC/DC.2-converter (DCM)*1	1	1	1	1
Circuit module SKU CG-S*1	0-36	0-28	0-21	0-13
Maximum number of SWR 150 due to 100% luminous flux and max. rated power	7	7	–	–
Electrical cabinet construction:				
Rated voltage	400/230 V	400/230 V	230 V	230 V
Rated frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Conductor order and system of earthing in mains power operation/battery operation	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT
Max. ambient temperature	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C
Insulation class	1	1	1	1
Degree of protection	IP20	IP20	IP50	IP20
Max. current rating mains [∑ L1, L2, L3] [A]	80	80	50	50
Max. rated power mains [KW]	18.4	18.4	11.5	11.5
Max. current rating battery [A]	80	80	50	50
Max. rated power Battery [KW]	17.3	17.3	10.8	10.8
Three-phase distribution	yes	yes	no	no
Conductor size for mains and battery supply	35 mm^2	35 mm^2	35 mm^2	16 mm^2
Outgoing circuits	–	–	–	–
Max. conductor size final circuits	4 mm^2	4 mm^2	4 mm^2	4 mm^2
Max. number of final circuit terminals	80	80	52	24
Mechanical cabinet construction:				
Dimensions H x W x D (mm)	2050 x 800 x 400	2050 x 800 x 400	1200 x 600 x 300	800 x 600 x 250
Material / Design	Sheet steel / Cabinet	Sheet steel / Cabinet	Sheet steel / Wall cabinet	Sheet steel / Wall cabinet
Door stop	right	right	right	right
Outer coating	Textured powder paint	Textured powder paint	Textured powder paint	Textured powder paint
Colour	RAL 7035	RAL 7035	RAL 7035	RAL 7035
Partial viewing door	Yes	Yes	No	No
Lock	3 mm Two-way	3 mm Two-way	3 mm Two-way	3 mm Two-way
Cable entry from above	yes	yes	yes	yes
Cable entry from below	yes	yes	no	no
Base (optional)	100/200	100/200	300	–
Weight (without batteries)	approx. 170 kg	approx. 165 kg	approx. 110 kg	approx. 75 kg

Other battery sizes on application

*1 After more than 13 SKU CG-S 4 x 1.5 A or 26 SKU CG-S 2 x 3 A / 1 x 6 A a second DC/DC converter is needed. Please observe that all DC/DC-converters are operated on the same module assembly frame next to each other.

*2 With admittance no. Z-86.2-1. The supply cabinets ESF-E30 must be mounted on a solid wall with fire resistance of at least 30 minutes.

*3 The housing has insulation class II. The earth conductor must however be routed in the housing.

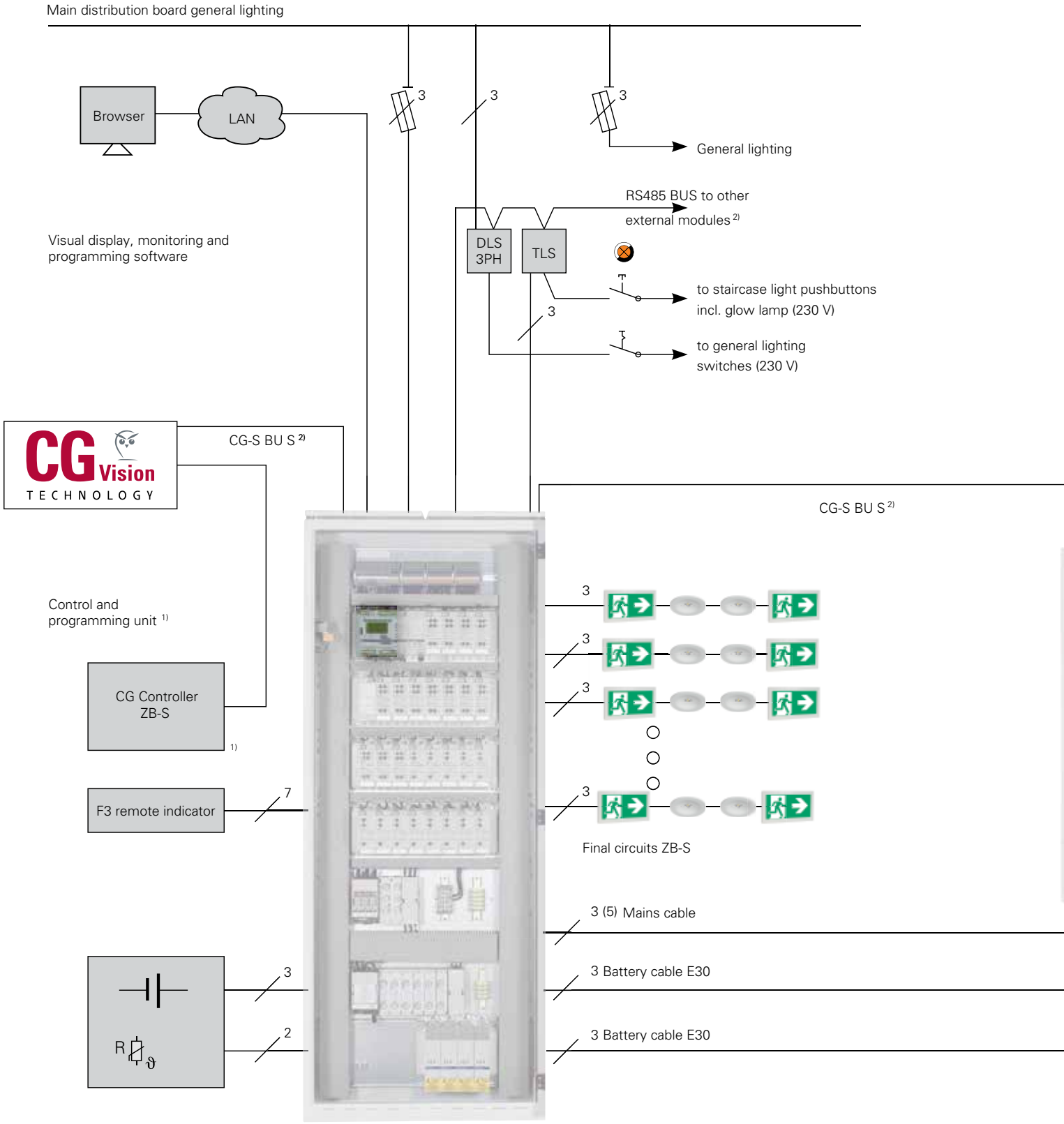
*4 IP54 with optional IP54 hood.

US-S/5	US-S/ SOU2	US-S/ SOU1
1	–	–
1	–	–
0-5	inkl. 2 x SOU CG-S 2 x 4 A	incl. 1 x SOU CG-S 2 x 4 A
–	–	–
–	–	–
230 V	230 V	230 V
50/60 Hz	50/60 Hz	50/60 Hz
TN-C-S / IT	TN-C-S / IT	TN-C-S / IT
-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C
1	2*3	2*3
IP20	IP65	IP65
30	16	8
6.9	3,6	1,8
30	16	8
6.5	3.4	1.7
no	no	no
16 mm^2	10 mm^2	10 mm^2
–	–	–
4 mm^2	4 mm^2	4 mm^2
20	4	2
600 x 400 x 250	583 x 295 x 129	458 x 295 x 129
Sheet steel / Wall cabinet	Plastic / Small distribution board	Plastic / Small distribution board
right	right	right
Textured powder paint	–	–
RAL 7035	RAL 7035	RAL 7035
No	Yes	Yes
3 mm Two-way	On request	On request
yes	yes	yes
no	no	no
–	–	–
approx. 42 kg	approx. 8.8 kg	approx. 7.5 kg

Type	ESF-E30/13-S	ESF-E30/28-S	US-S ESF30 13-P	US-S ESF30 28-P
Modules:				
Control module: CU CG-S	1	1	1	1
DC/DC.2-converter (DCM)*1	1	1	1	1
Circuit module SKU CG-S 1 x 6 A	0-13	0-28	0-13	0-28
Circuit module SKU CG-S 2 x 3 A	0-13	0-28	0-13	0-28
Circuit module SKU CG-S 4 x 1.5 A	–	–	0-13*3	0-28*4
Switching over unit SOU CG-S 2 x 4 A	–	–	–	–
Maximum number of SWR 150 due to 100% luminous flux and max. rated power	–	–	–	–
Interface module DLS/TLS	2	2	2	2
Web module	–	–	1	1
Electrical cabinet construction:				
Rated voltage	230 V	400/230 V	230 V	400/230 V
Rated frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Artificial ventilation, sound pressure level (dB)	46	60	55	55
Conductor order and system of earthing in mains power operation/battery operation	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT
Max. ambient temperature	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +30 °C
Insulation class	1	1	I	I
Degree of protection	IP20	IP20	IP42	IP42
Maximal permitted heating power loss [W]	50	105	45	90
Maximal rated power [A] depending on the ambient temperature				
+25 °C	35	50	35 (30)*6	40 (45)*6
+30 °C	35	50	17.3 (30)*6	20 (45)*6
+35 °C	35	50	11 (30)*6	– (45)*6
Maximal rated power [kW] depending on the ambient temperature				
+25 °C	7.6	10.8	7.5 (6.4)*6	8.6 (9.7)*6
+30 °C	7.6	10.8	3.7 (6.4)*6	4.3 (9.7)*6
+35 °C	7.6	10.8	2.3 (6.4)*6	– (9.7)*6
Three-phase distribution	no	yes	no	yes
Conductor size for mains and battery supply	16 mm²	16 mm²	35 mm²	35 mm²
Max. conductor size final circuits	4 mm²	4 mm²	4 mm²	4 mm²
Max. number of final circuit terminals	26	56	40	60
Mechanical cabinet construction:				
Dimensions H x W x D (mm)	1150 x 885 x 405	2190 x 885 x 405	1278 x 918 x 496	2278 x 918 x 604
Material / Design	Sheet steel / func. endurance 30 min. / Wall cabinet	Sheet steel / func. endurance 30 min. / Stand alone cabinet	Coated plaster board / Wall cabinet	Coated plaster board / Wall cabinet
Door stop	right	right	right	right
Colour	RAL 7035	RAL 7035		
Cable entry	from above*7	from above*7	from above	from above*7
Base (optional)	–	–	–	– only with base
Weight (without batteries)	approx. 235 kg	approx. 390 kg	approx. 169 kg	approx. 330 kg
Certification / Verification				
ABZ housing including modules	yes	yes	Requested	Requested
ABZ housing without modules	–	–	yes	yes
Fire test fire protection test report short form MPA NRW	–	–	yes	yes
VDE certificate	–	–	–	–
Declaration of expert	–	–	yes	yes

*1: After more than 13 SKU CG-S 4 x 1.5 A or 26 SKU CG-S 2 x 3 A / 1 x 6 A a second DC/DC converter is needed.
Please observe that all DC/DC-converters are operated on the same module assembly frame next to each other.
*2: Protective isolated acc. to VDE 0106
*3: Max. 40 circuits. Attention: Please note the maximum rated power!
*4: Max. 60 circuits. Attention: Please note the maximum rated power!
*5: Please note: Each DLS module reduces the possible number of SOU modules.
*6: (...) = Plannings with SKU CG-S 2 x 3 A and SKU CG-S 1 x 6 A modules.
*7: Cable entry from below on request

US-S ESF30 SOU5	US-S ESF30 SOU3	US-S ESF30 SOU2	US-S ESF30 SOU1
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
5	3	2	1
–	–	–	–
2*5	1*5	1	–
–	–	–	–
230 V	230 V	230 V	230 V
50 or 60 Hz	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz
–	–	–	–
TN-C-S / IT	TN-C-S / IT	TN-C-S / IT	TN-C-S / IT
-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C	-5 °C to +35 °C
I*2	I*2	I*2	I*2
IP65	IP65	IP65	IP65
–	–	–	–
33 28 16	20 17 10	15 12 9	8 6 5
7.1 6.0 3.4	4.3 3.6 2.1	3.2 2.5 1.3	1.7 1.2 1.0
no	no	no	no
10 mm²	10 mm²	10 mm²	10 mm²
4 mm²	4 mm²	4 mm²	4 mm²
10	6	4	2
1135 x 396 x 230	835 x 396 x 230	685 x 396 x 230	535 x 396 x 230
Coated plaster board / Wall cabinet	Coated plaster board / Wall cabinet	Coated plaster board / Wall cabinet	Coated plaster board / Wall cabinet
left	left	left	left
from above	from above	from above	from above
–	–	–	–
approx. 81 kg	approx. 61 kg	approx. 51 kg	approx. 34 kg
Requested Requested yes yes yes	Requested Requested yes yes yes	Requested Requested yes yes yes	Requested Requested yes yes yes



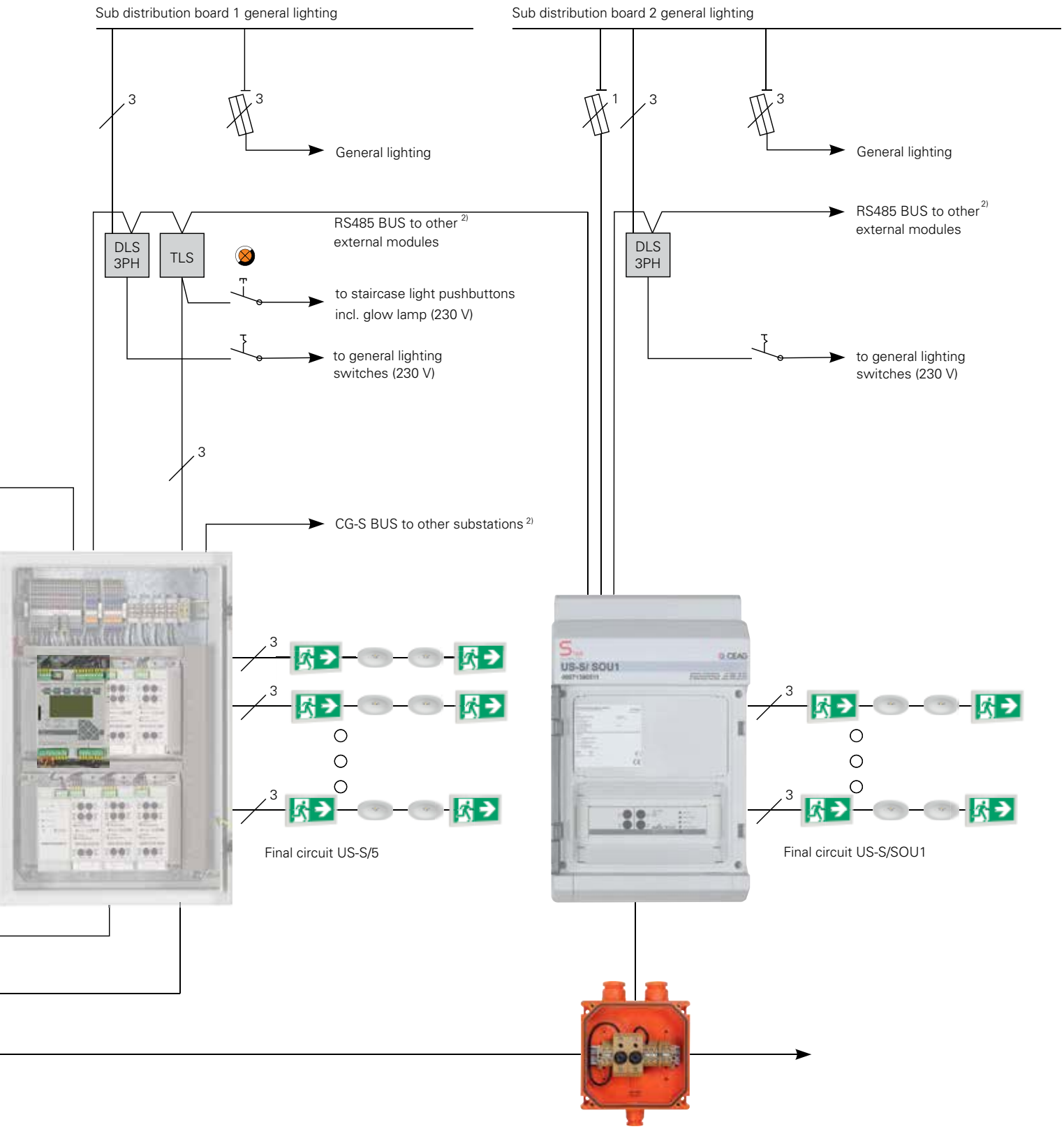
Central Battery system ZB-S

1) Operation CG-Controller ZB-S in combination with CG Vision only in observer mode possible. In this operation mode the CG-Controller does not provide the functions log book, next FT and next DT.

2) Bus specifications see page ZB-S bus technology

Centrally Powered Systems

ZB-S with STAR technology - Installation example



Substation US-S/5

Substation US-S/SOU1

Based on the data given in the tables, planning the ZB-S central battery system can easily and quickly be carried out.

We recommend the following procedure:

• Calculation of required battery capacity

The number of required emergency luminaires is known from the emergency lighting design with the engineering guides included in part 1 of this catalogue.

Example:
The following number of luminaires has been calculated for the emergency lighting of a meeting hall (3 h rated duration and 12 h recharge period).

Amount	Type	Current consumption per luminaire	Current consumption in total
100	55021 CG-S	0.03 A	3.00 A
250	55011 CG-S	0.03 A	7.50 A
100	EVG 13.3	0.05 A	5.00 A
		Total:	15.50 A

Based on table 2a and depending on the required rated duration (1 h, 3 h and 8 h), the battery capacity (C10; **1.8V/Z;** +20° C) is to be calculated, depending on the maximum discharge current that has been determined on the basis of the total current drawn from the battery by all consumers.

According to EN 50171, batteries with a lifetime of 10 years at +20° C will have to be installed.

In the above example with the required rated duration of 3 h the 53.70 Ah battery (C10; 1.8V/Z; +20° C) is to be selected from the table 2a.

The maximum discharge current for a 3 h discharge according to table 2a is at 15.80 A.

• Calculation of required additional booster.

According to EN 50171, 80 % of capacity must be loaded within 12 h into the discharged battery. In the calculation of the required booster the ageing factor of 25 % must not be considered.

Example:

Current consumption battery	=	15.80 A at 3 h discharge
Required number of boosters 1 x CM 1.7 A and 1 x 3.4 A acc. to table 3	=	2 pcs.

• Calculation of required battery capacity including ageing factor according to table 2a

As a lead-acid battery has a capacity loss of 2.5% each year (25% in 10 years) at intended operation this capacity loss has to be included in the battery appointment acc. to EN 50171.

The end of the lifetime is reached when the rated voltage of the battery at full load falls below 90%.

Example:

Current consumption battery 15.50 A + 25% ageing factor	=	19.38 A
U_N battery	=	216 V
90% U_N battery (108 battery) = 194.4 V	=	**1,8 V per battery**

In this example the battery capacity has to be increased from 53.70 Ah to 85.70 Ah.

The maximum discharge current for a 3h discharge is at 23.10 A.

Attention!

In the calculation of the required booster the ageing factor of 25% must not be considered.

• Fuse protection of the mains input

In order to determine the fuse in the main distribution board of the general power supply, you must know the total connected load of the ZB-S system. This is made up of the sum of mains connected loads of the individual luminaires and consumers (see table 1) and of the ratings of the charging booster CM 1.7 A and CM 3.4 A.

Example:

100 pcs. 55021 CG-S	à 16 VA	=	1.60 kVA
250 pcs. 55011 CG-S	à 16 VA	=	4.00 kVA
100 pcs. EVG 13.3			
for 13 W TC-DEL	à 23 VA	=	2.30 kVA
		=	7.90 kVA
Booster CM 1.7 A P_{zu} 0.72 kVA		=	0.72 kVA
Booster CM 3.4 A P_{zu} 0.98 kVA		=	0.98 kVA
Total connected load		=	9.60 kVA

N-EVG 54 W V-CG-S

Rated value N-EVG ... V-CG-S for mains and battery operation

Term	T5	T5	T5	T5	T5	T5
Lamp cap	**G5**	**G5**	**G5**	**G5**	**G5**	**G5**
Type N-EVG ... V-CG-S	**14 / 21 / 28 / 35 W**	**14 / 21 / 28 / 35 W**	**14 / 21 / 28 / 35 W**	**14 / 21 / 28 / 35 W**	**24/39 W**	**24/39 W**
Lamp load [W]	**14**	**21**	**28**	**35**	**24**	**39**
Current consumption [A] at 220 V battery operation, setting (Luminous flux F_E/F_N in %)						
100 %	0.08	0.11	0.15	0.18	0.13	0.19
90 %	0.07	0.10	0.13	0.16	0.12	0.17
80 %	0.064	0.09	0.12	0.14	0.10	0.15
70 %	0.057	0.08	0.11	0.13	0.09	0.13
60 %	0.051	0.07	0.10	0.11	0.08	0.12
50 %	0.045	0.062	0.09	0.10	0.07	0.11
40 %	0.040	0.055	0.08	0.09	0.066	0.10
30 %	0.036	0.050	0.07	0.08	0.059	0.09
Power consumption [A] at 230 V mains operation	0.08	0.11	0.14	0.17	0.12	0.18
Power factor l	0.96	0.96	0.98	0.98	0.98	0.98
Inrush current [A]	10	10	10	10	10	10
System power lamp + ECG acc. to EN 50294 [W]	16	23	30	37	25	41

N-EVG 58 W V-CG-S

Term	T5	T5	T5	T8	T8
Lamp cap	**G5**	**G5**	**G5**	**G13**	**G13**
Type N-EVG ... V-CG-S	**49W**	**54W**	**80W**	**36W**	**58W**
Lamp load [W]	**49**	**54**	**80**	**36**	**58**
Current consumption [A] at 220 V battery operation, setting (Luminous flux F_E/F_N in %)					
100 %	0.24	0.26	0.38	0.17	0.25
90 %	0.21	0.23	0.34	0.15	0.22
80 %	0.19	0.21	0.30	0.14	0.20
70 %	0.17	0.18	0.27	0.12	0.18
60 %	0.15	0.16	0.24	0.11	0.16
50 %	0.14	0.15	0.21	0.10	0.14
40 %	0.12	0.13	0.19	0.09	0.13
30 %	0.11	0.12	0.17	0.08	0.11
Power consumption [A] at 230 V mains operation	0.24	0.25	0.37	0.16	0.24
Power factor l	0.98	0.98	0.98	0.98	0.98
Inrush current [A]	10	10	12	10	10
System power lamp + ECG acc. to EN 50294 [W]	52	57	84	34	53

Depending on the luminous flux (30% ... 100%) the corresponded battery current has to be projected.
Dim operation permitted by 30% up to 10°C, 60% up to 0°C only.
For outdoor use set 100 % only!

EVG 13.3

EVG 13.3 V-CG-S

EVG 18 V-CG-S

EVG 18C V-CG-S

Table 1.2
Rated value of EVG 13.3 V-CG-S, EVG 18 V-CG-S and EVG 18C V-CG-S for mains and battery operation

International term	Lamp cap	EVG-type EVG...	Lamp load in [W]	Power consumption at battery operation [A]1	Power consumption in [VA]	Inrush current [A]	Power factor
T16 / T5	G 5	13.3 V-CG-S	4	0.020	8	3	0.6
		13.3 V-CG-S	6	0.025	12	3	0.6
		13.3 V-CG-S	8	0.030	16	3	0.6
		13.3 V-CG-S	13	0.050	23	3	0.6
TC-SEL	2 G 7	13.3 V-CG-S	5	0.020	10	3	0.6
		13.3 V-CG-S	7	0.025	13	3	0.6
		13.3 V-CG-S	9	0.030	16	3	0.6
		13.3 V-CG-S	11	0.040	18	3	0.6
TC-DEL	G 24 q-1	13.3 V-CG-S	10	0.035	16	3	0.6
		13.3 V-CG-S	13	0.050	23	3	0.6
	G 24 q-2	18C V-CG-S	18	0.070	30	8	0.6
TC-TEL	GX 24 q-1	13.3 V-CG-S	13	0.050	23	3	0.6
	GX 24 q-2	18C V-CG-S	18	0.070	30	8	0.6
T 26 / T8	G 13	18 V-CG-S	18	0.070	30	8	0.6
TC-F	2 G 10	18 V-CG-S	18	0.070	30	8	0.6
TC-L	2 G 11	18 V-CG-S	18	0.070	30	8	0.6

[1] Luminous flux Φ_E/Φ_N = 75 %

Table 1.3
Current ratings of incandescent and tungsten halogen lamps

220 V incandescent lamps (AGL)		12 V tungsten halogen lamps with 220 V electronic transformer			
	Φ rated	Current consumption from the battery	Lamp rating	Current rating from the battery	Mains connected load
7 W	30 lm	30 mA	20 W	115 mA	33.6 VA
15 W	90 lm	70 mA	35 W	200 mA	58.0 VA
25 W	230 lm	110 mA	50 W	285 mA	84.0 VA
40 W	430 lm	180 mA	75 W	420 mA	72.6 VA
60 W	730 lm	270 mA	100 W	570 mA	168.0 VA
75 W	960 lm	340 mA			
100 W	1380 lm	450 mA			

Table 2a

Calculation of the battery capacity of maintenance free OGiV batteries acc. to EN 50171 (higher capacities on request).

Battery capacity C10 at 1.8 V/C and +20°C	Ah	5.5	8.5	12.0	14.0	23.3	32.0	39.8	50.4	53.7	66.2	85.7	89.4	106.0 1 x 39.8 1 x 66.2	118.0	143.1 1 x 89.4 1 x 53.7	155.6 1 x 89.4 1 x 66.2	178.8 2 x 89.4	195.4 1 x 89.4 1 x 66.2 1 x 39.8	245.0 2 x 89.4 1 x 66.2	268.2 3 x 89.4	308.0 3 x 89.4 1 x 39.8	357.6 4 x 89.4
max. discharge current [A] with operating time [h], 1.8 V per cell and +20°C ambient temperature	1.0	3.2	4.5	6.09	9.3	15.4	20.2	24.1	30.7	37.9	49.2	52.6	63.8	73.3	85.1	101.7	113.0	127.6	137.1	176.8	191.4	215.5	255.2
	1.5	2.5	3.4	4.71	6.9	11.9	15.0	19.0	22.7	27.6	34.5	38.3	46.1	53.5	60.0	73.7	80.6	92.2	99.6	126.7	138.3	157.3	194.7
	2.0	2.1	2.9	3.82	5.7	9.2	12.3	14.6	18.5	21.5	26.3	31.0	36.0	40.9	46.9	57.5	62.3	72.0	76.9	98.3	108.0	122.6	144.0
	3.0	1.5	2.1	2.98	4.1	6.9	9.1	11.0	13.6	15.8	18.2	23.1	26.5	29.2	33.3	42.3	44.7	53.0	55.7	71.2	79.5	90.5	106.0
	8.0	0.7	1.0	1.37	1.7	2.8	3.7	4.8	5.9	6.6	7.9	10.3	11.0	12.7	14.2	17.6	18.9	22.0	23.7	29.9	33.0	37.8	44.0

Important note: The aging provision for batteries (25 %) is not included.

Table 3a

Number of 1.7 A and 3.4 A booster acc. to DIN EN 50171 for recharging of:

Battery capacity C10 at 1.8 V/C and +20°C	h	A	5.5	8.5	12.0	14.0	23.3	32.0	39.8	50.4	53.7	66.2	85.7	89.4	106.0	118.0	143.1	155.6	178.8	195.4	245.0	268.2	308.0	357.6
12 hours / 80 %	1.0	1.7	1	1	1	1	1	1	0	0	0	1	1	1	0	0	1	0	0	1	1	1	1	0
		3.4	0	0	0	0	0	0	1	1	1	1	1	1	2	2	2	3	3	3	4	4	5	6
	1.5	1.7	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	1	1	0	0	1
		3.4	0	0	0	0	0	1	1	1	1	1	1	2	2	2	3	3	3	3	4	5	6	6
	2.0	1.7	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	0	1	0	0	1	0	0
		3.4	0	0	0	0	0	1	1	1	1	1	1	2	2	2	3	3	3	4	5	5	6	7
	3.0	1.7	1	1	1	1	1	0	0	0	1	1	1	0	1	1	0	1	0	0	0	0	1	1
		3.4	0	0	0	0	0	1	1	1	1	1	1	2	2	2	3	3	4	4	5	6	6	7
	8.0	1.7	1	1	1	1	0	0	0	1	1	1	0	0	1	0	1	0	1	1	0	1	1	1
		3.4	0	0	0	0	1	1	1	1	1	1	2	2	2	3	3	4	4	4	6	6	7	8

Table 4

Number of battery cabinets; battery weight

Battery capacity C10 at 1.8 V/C and +20°C	5.5	8.5	12.0	14.0	23.3	32.0	39.8	50.4	53.7	66.2	85.7	89.4	106.0	118.0	143.1	155.6	178.8	195.4	245.0	268.2	308.0	357.6
No. of battery cabinets (weight approx. 150 kg) per cabinet	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3	3	3	4	4
Total weight per battery set approx. kg	45	65	68	100	180	243	252	351	405	499	527	594	612	900	1000	1093	1296	1354	1687	1782	1782	2376

Table 5.1

Calculation of ventilation of electrical rooms acc. to DIN EN 50272-2 (calculated for boost charge):

Battery 216 V	5.5	8.5	12.0	14.0	23.3	32.0	39.8	50.4	53.7	66.2	85.7	89.4	106.0	118.0	143.1	155.6	178.8	195.4	245.0	268.2	308.0	357.6
Air volume flow req. for the ventilation of the place of installation [m^3/h]	0.24	0.37	0.50	0.60	1.01	1.38	1.72	2.18	2.32	2.86	3.70	3.86	4.58	5.10	6.18	6.72	7.72	8.44	10.58	11.59	13.31	15.45
Vent cross-section of the air inlets and outlets of the place of installation [cm^2]	6.65	10.28	14.03	16.93	28.18	38.71	48.14	60.96	64.96	80.08	103.66	108.14	128.22	142.73	173.09	188.21	216.28	236.36	296.35	324.41	372.56	432.55

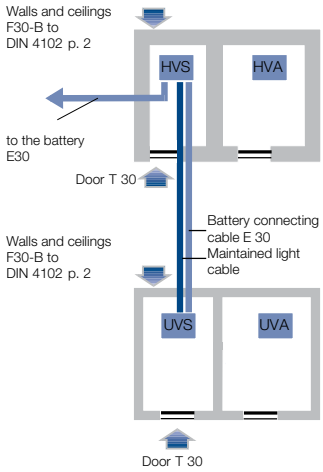
Table 5.2

Calculation of ventilation of electrical rooms acc. to DIN EN 50272-2 (calculated for float charge)*:

Battery 216 V	5.5	8.5	12.0	14.0	23.3	32.0	39.8	50.4	53.7	66.2	85.7	89.4	106.0	118.0	143.1	155.6	178.8	195.4	245.0	268.2	308.0	357.6
Air volume flow req. for the ventilation of the place of installation [m^3/h]	0.03	0.05	0.06	0.08	0.13	0.17	0.21	0.27	0.29	0.36	0.46	0.48	0.57	0.64	0.77	0.84	0.97	1.06	1.32	1.45	1.66	1.93
Vent cross-section of the air inlets and outlets of the place of installation [cm^2]	0.83	1.29	1.75	2.12	3.52	4.84	6.02	7.62	8.12	10.01	12.96	13.52	16.03	17.84	21.64	23.53	27.03	29.54	37.04	40.55	46.57	54.07

* If a boost charge only occurs occasionally (e.g. monthly), the float charge current can be used for calculation of the air volume current of ventilation.

Example 1

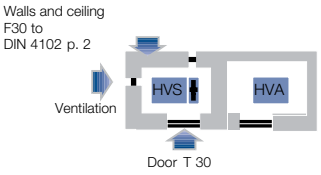


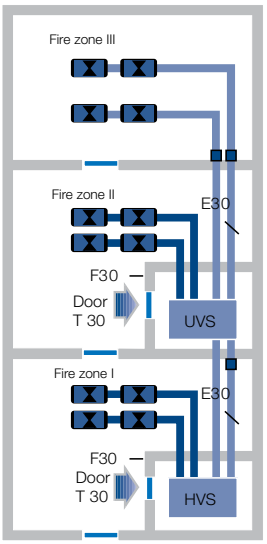
A number of rules and regulations apply to the accommodation of central battery systems, in particular the EltBauVo, DIN EN 50272-2, MLAR and LBO.
Depending on the constructional circumstances, the following accommodation possibilities result from these rules and regulations.

Example 1:
Main distribution board of the general lighting power supply (MDB) and main distribution board of the emergency lighting power supply (ZB) in an electrical room.
In case of accommodation acc. to example 1, attention must be paid that the MDB and ZB are isolated from each other so that arcing is safely prevented.

Example 2:
Main distribution board of the emergency lighting power supply (ZB) including the battery, in a separate electrical room.

Example 2





Example for the possible accommodation of a ZB-S and laying of cables which, however, depend on the building's use.

Ventilation of electrical rooms

Dimensioning of the ventilation acc. to DIN EN 50272-2. The ventilation of rooms, cabinets or containers in the inside of which batteries are operated, is considered sufficient, if a min. air volume flow is ensured that has been calculated according to the following formula:

$Q = 0.05 \times n \times I_{gas} \times CN \times 10^{-3}$ [m³/h]

Q = needed air volume flow, in m³/h

0,05 = fixed factor

n = no. of accumulator cells

I_{gas} = current in mA per Ah, fits 8 mA per Ah for Iboost with VRLA batteries
C_N = capacity C_{10} for lead acid at 20 °C

Example of calculation for required airflow of a ZB-S with closed 155.6 Ah lead acid battery:

$Q = 0.05 \times n \times I_{gas} \times CN \times 10^{-3}$

$Q = 0.05 \times 108 \times 8 \times 155.6 \times 10^{-3}$ m³/h

$Q = 6.72$ m³/h

In order to ensure the air volume flow of 6.72 m³/h, the air inlets and outlets in the electrical distribution room must have the following minimum cross-sections acc. to DIN EN 50272-2.

Vent cross-section of the air inlets and outlets:

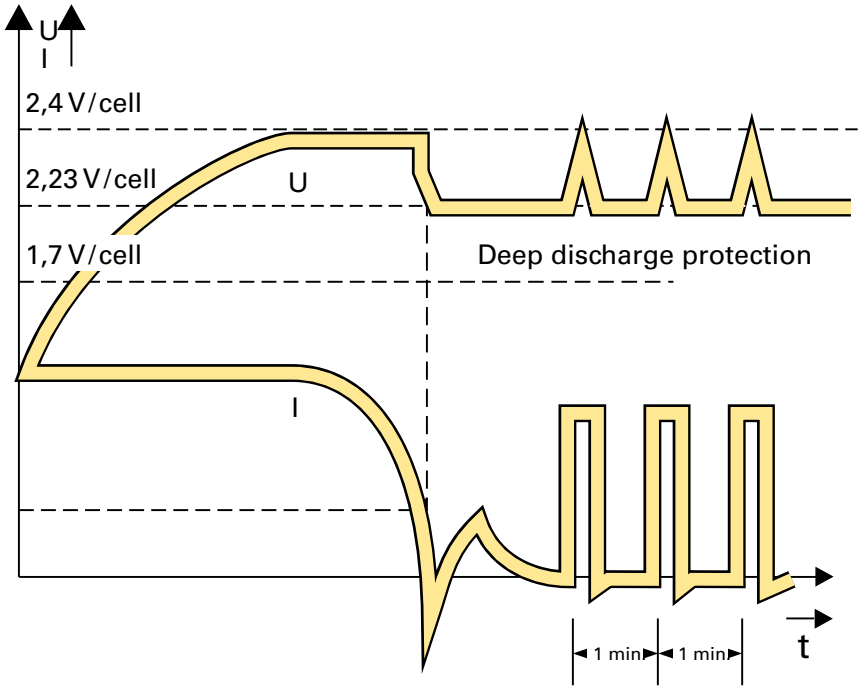
$A \geq 28 \times Q$

$A \geq 28 \times 6{,}72$ m³/h

$A \geq 188{,}21$ cm²

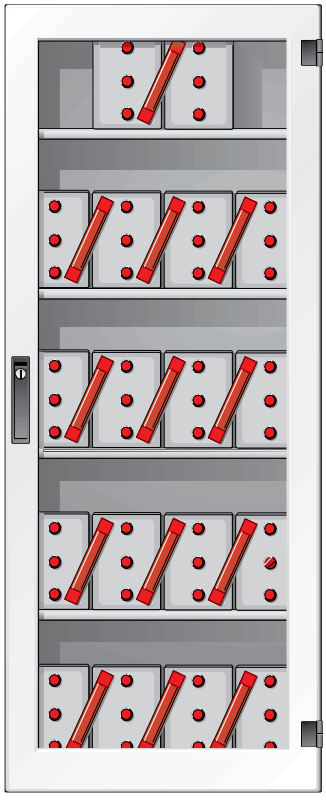
The required vents in the F90 walls must be guarded by fire protection measures, e. g. F90 fire shutters. As the calculation shows, the use of even the largest battery does not require an elaborate technical ventilation (e.g. explosion protected fans).
Due to the installed low maintenance of sealed lead acid gas recombination batteries, no further special constructional requirements such as a floor resistant to electrolyte or a floor covering (tiles) etc. have to be met.

VRLA valve regulated lead acid monobloc batteries can operate in any position. Exception on top.



Properties of environmentally friendly battery technology:

- low-maintenance, leak-proof gas recombination battery block
- extremely low gassing due to antimony-free alloys and an internal recombination of the generated oxygen
- service life: 10 years
- density of acid between 1.24 kg/l and 1.26 kg/l
- design according to DIN
- electrolyte and aerial oxygen proof pole bushing
- low self-discharge, therefore the possibility of long rest periods during transport and storage



The patented CEAG charge monitoring method enables the recognition of:

- a blown fuse
- a failure in the charging circuit
- a faulty charging unit
- missing batteries
- battery voltage monitoring

Central Battery System ZB-S

CEAG Central Battery System ZB-S

Central battery system ZB-S complies with

EN 50171 and BGV A3 to supply power to 230V/216V AC/DC safety and exit luminaries. Suited for Emergency escape lighting systems complies with DIN VDE 0100-718, DIN EN 50172 and E DIN VDE 0108-100. With automatic test device and individual status and name monitoring each luminaire in conjunction with system-dependent electronic ballasts including monitoring module, without additional data cable.

The switching mode of each of the safety and exit luminaires with system-dependent electronic ballasts or monitoring modules can be programmed as required in the control module of the central battery system. An additional data cable to the luminaires is not required.

The CEAG STAR technology greatly reduces the number of final circuits, as it is now possible to combine operation of maintained light, switched maintained light and non-maintained light in a single common circuit.

Assignment of all operating modes is via the control unit without encroaching in the luminaire installation. Selection of the non-maintained light or maintained light operating modes via possibly slide switch, coding switch or jumpers on the monitoring module or ECG / LED supply module is not permitted. Surplus costs to installation lines caused by use of devices from other manufacturers or additional components cannot be made valid.

Electronic assemblies in service-compatible module design wired ready for connection to triple deck installation terminals with N isolating terminal 4 sq. mm (AWG 11) and PE connection. The assemblies are simple to install and replace with rapid connections. Simple connection method via pluggable terminal connection to the assemblies.

Connection compartments from above or below on touch-protected connection terminals. With optionally installed distribution box for battery supply and mains supply to the substations including fusing. Design with modular plug technology.

Bus technologies

CG-S bus technology based on LONWorks® - technology

The 2-pole, bi-directional CG-S data bus in series integrated in the control module is used for data communication between the Central Battery System and connected substations or monitoring devices like CG-Controller or CG-Vision (visualisation software).

With an optional available interface-box each Building Management System which is based on LONWorks® - technology can communicate with the systems via the CG-S – bus.

Alternative each Building Management System which is OPC compatible can be connected to the CG-S – bus via an optional available OPC – Server and interface-box.

So the CG-S-Bus has the possibility to call off voluminous status messages and control commands without additional modules.

The following data can be communicated in this way:

- Output data, e.g., system blocked, deep discharge protection, battery open circuit, battery voltage, current and temperature, insulation fault, charger / booster malfunction, bus communication error, mains failure, circuit malfunctions etc.
- Input commands, e.g., start function test, start and cancel operating time test, manual reset, block and release device

16 virtual input switches enable via external LON-sensors to switch independently circuits or even separate luminaires.

Networking of all ZB-S distribution boards with different media. For example fiber optic cable, Ethernet and LAN by optional components possible.

Status and error messages of individual luminaires are recallable.

External units such as the DLS/3PH bus module, DLS/3PH bus module inverse and TLS bus module are connected with the RS485 bus.

Only the power supply cable is required for communication with the system-dependent luminaires.

The central system uses a search function to automatically find the system-dependent luminaires and modules that were addressed when the system was installed.

Control module

A user-programmable control module with non-volatile program memory and 4-line alphanumeric graphic display monitors and controls the central battery system. All functions such as charging, mains/emergency lighting selection and deep discharge protection of the devices and the emergency luminaires are tested automatically. Any faults that occur are signalled immediately.

An interface enables a central monitoring facility to be connected.

In the event of a short circuit or open circuit in current loops, differential monitors immediately power on the system (maintained light) or put the system in readiness.

Graphic display:
4 x 20 characters, backlit, program adjustable contrast and brightness

Readouts:
Battery voltage, battery charge current (+), battery discharge current during test or in case of fault (-), charging malfunction, luminaire fault indicating the location in plain text, deep discharge protection, manual reset, time-delayed emergency light (remaining time in minutes), test operation, date/time, insulation fault indicating the faulty circuit, UV-AV failure (indicating the location in plain text), fault information, programming information, logbook.

LED indicators: Ready for operation, power source for safety purposes, fault.

Sealed keypad:

- separate keys for system test, function test, operating duration test
- 3 programmable function keys for e.g.: system disable/enable, manual reset, maintained light On/Off, show fault list, through lighting On/Off, mains failure simulation UV
- 7 control keys for user-friendly navigation in polling and programming mode.

Each module also has its own service button which can be used to view directly the current module status in the display.

Programming possibilities:
individual luminaire monitoring, current value monitoring, individual name per device, circuit, luminaire and bus-module, device address, selective manual reset, delay on mains return (1-15 min.), selective emergency light, LON switch, timer function, automatically function and battery duration test, selection of menu language.

Connection for disable switch:
Control loop for disabling the installation during factory shutdowns with differential loop monitoring for short-circuit and open circuit detection.

Differential monitoring: Short-circuit or open circuit result in readiness for operation of the system.

Connection for phase monitor:
24 V current loop for requesting emergency lighting using differential loop monitoring for the detection of short and open circuits.

Differential monitoring: Short-circuit or open circuit result in the immediate power on (maintained light) of the system.

3 floating relays with common potential.
One or more of 11 different signals can be assigned to each floating contact or to the buzzer. Freely programmable, DIN VDE requirement can be called at any time as a preset.

2 floating relays with common potential (permanently programmed).

Connection for 24V inputs:
4 off user-assignable 24V inputs, can be programmed negated or non-negated for, e.g.

Function test start/cancel, operating duration test start/cancel, system disable/enable, manual reset, maintained light On/Off, power on safety lighting as through lighting.

Memory Card:
Storage card for archiving the device configuration and mandatory test log information for at least 2 years.

Provides storage for:

- 300,000 test log entries
- Location texts for the luminaires (20 characters per luminaire)
- Location texts of external modules such as phase monitor, DLS, TLS (20 characters per module)
- Names of the circuits (20 characters per circuit)
- System name (20 characters)

Can be programmed offline on a PC using optional CEAG software.

Charging technology

The completely sealed, low-maintenance lead batteries are carefully charged using a microprocessor-controlled I/U charging characteristic with temperature control. Depending on the charge state of the batteries, boost charging is activated to allow the batteries to be charged without exceeding the gassing voltage. The patented charge monitoring process continuously checks the charge and immediately signals faults such as battery open circuit, a faulty charging module or a high-resistance cell.

- With insulation tester to DIN VDE0100 Part 410
- Depending on battery size, with additional charging modules
- LED indicators for charging module on, boost charging on, insulation fault, charging malfunction, mains present
- Floating contacts for charging malfunction, boost charging, insulation fault
- Temperature sensor built into battery cabinet
- Alternate activation of charging modules at trickle charge

Circuit modules for installation on gear tray

The circuit changer supplies and monitors emergency luminaires with electronic ballasts for DC operation and incandescent lamps. The CEWA GUARD monitor checks the function of the luminaires that are connected to the system.

- Up to 20 luminaires can be monitored per circuit with individual status display
- Combined operation of maintained light, switched maintained light and non-maintained light within one circuit is possible. An additional data cable to the luminaires is not required.
- Output voltage in battery mode: 216V DC
- Typical mains / battery switchover time: 450ms,
- User programming for maintained light, switched maintained light or non-maintained light,
- Fuses easily accessible on the front of module,
- permanent monitoring of the fuses.
- LED indicates fault and Run/ON for each circuit
- service button, used to view directly the current module status in the display
- at 3phase feeding selective mains- / battery switchover per phase / module carrier
- automatically luminaire search function

Circuit modules DIN rail mounting

The circuit changer supplies and monitors emergency luminaires with electronic ballasts for DC operation and incandescent lamps. The CEWA GUARD monitor checks the function of the luminaires that are connected to the system. Separate AC feed for rental current. Decentral arrangement and connection via the RS485 bus for fire protection section-related supply of the safety lighting.

- Up to 20 luminaires can be monitored per circuit with individual status display
- Combined operation of maintained light, switched maintained light and non-maintained light within one circuit is possible. An additional data cable to the luminaires is not required.
- Output voltage in battery mode: 216V DC
- Typical mains / battery switchover time: 450ms,
- User programming for maintained light, switched maintained light or non-maintained light,
- Fuses easily accessible on the front of module,
- permanent monitoring of the fuses.
- LED indicates fault and Run/ON for each circuit
- service button, used to view directly the current module status in the display
- automatically luminaire search function

Sinus Inverter

The sinus inverter supplies and controlled emergency luminaires with conventional ballasts and bulbs. With rotary encoder switch for adjustment of the luminous flux in range of 25% to 100% in battery mode.

- monitoring each module,
- 230V AC sinus voltage in mains and battery mode,
- Adjustable luminours flux in range of 25% up to 100% in battery mode,
- Typical switch over time mains / battery 450ms,
- Alternative mains input each module or via back plane with mains power failure notification,
- 3-phase mains incoming selective mains / battery switch over each phase / back plane,
- Additional light switch polling (DLS) for the common switching of safety and general lighting,
- free programming for maintained, non maintained and switched maintained mode,
- Fuses easily accessible on the front of module,
- permanent monitoring of the fuses,
- service button, used to view directly the current module status in the display

External DLS/3Ph Bus Module

The external DLS/3PH bus module for installation in sub-distribution boards for the general lighting can be used as a phase monitor and for light switch polling (DLS) for the common switching of safety and general lighting systems.

8 DLS inputs (2.5 sqmm) with LED indicators or 5 DLS inputs combined with 3 phase monitor inputs can be activated by a selector switch.

Monitoring thresholds comply with DIN EN 60598-2-22: 60-85% UNOM.

Connection of RS485 bus and 24 V module supply.

Addressable by decode switch, LEDs for Fault, ON status and Run.

Enclosure for DIN rail mounting.

User-programmable assignment of independent DLS inputs for each emergency light circuit or luminaire as well as individual name per bus-module in the control module.

When using as a 3 phase monitor the detailed phase failure information with location of the mains distribution board will be displayed in the control module.

External DLS/3Ph Bus Module inverse

The external DLS/3PH bus module inverse for installation in sub-distribution boards for the general lighting can be used as a phase monitor and for light switch polling (DLS) with inverse switching logic for the common switching of safety and general lighting systems or for the control of the circuit-breaker.

8 DLS inputs inverted (2.5 mm2) with LED indicators or 5 DLS inputs inverse combined with 3 phase monitor inputs can be activated by a selector switch.

Monitoring thresholds comply with DIN EN 60598-2-22: 60-85% UNOM.

Connection of RS485 bus and 24 V module supply.

Addressable by decode switch, LEDs for Fault, ON status and Run.

Enclosure for DIN rail mounting.

User-programmable assignment of independent DLS inputs for each emergency light circuit or luminaire as well as individual name per bus-module in the control module.

When using as a 3 phase monitor the detailed phase failure information with location of the mains distribution board will be displayed in the control module.

External TLS Bus Module

The external TLS bus module is used to poll stairwell light pushbuttons and to supply the glow lamps in both mains and emergency mode. General and safety luminaires can be controlled with the same pushbuttons by using a TLS switching module (installed in the lighting distribution system).

2 pushbutton inputs (2.5 mm2) including supply of glow lamps, max. 50 mA per TLS input.

2 load circuits for general lighting (2.5 mm2), max. 10 A per circuit (120 A/ms).

Variable ‚on' time ranging from 1 to 15 minutes, including glow lamp flash function 30 s before the end of the preset on time.

Connection of RS485 bus, 24 V module power supply and supply cable from final circuit for the generation of the glow lamp voltage.

Addressable by decode switch, LEDs for Fault, ON status and Run.

Enclosure for DIN rail mounting.

User-programmable assignment of independent TLS inputs for each emergency light circuit or luminaire as well as individual name per bus-module in the control module.

Event printer PD3

- For logging and storage of operating states on a ZB-S installation or US-S substation
- With built in 4-needle-printmechanism.

Relay module CG IV

Relay module for signalling the following operating states using potential-free contacts:

Emergency/mains operation, emergency lighting/ charging failure, deep discharge

protection, function test on/off, operating time test on/off.

8 pcs. LED indicators for indications given above

Relay module CG V

Relay module for signalling the following operating states using potential-free contacts:

Contact "No operation" is closed during: Unit blocked, deep discharge protection, relay module voltfree,

Contact "Failure priority 1" is closed during: Charger and booster failure, battery failure.

Contact "Failure priority 2 is closed during: Circuit fuse defect.

Contact "Failure priority 3 is closed during: Luminaire failure.

Contact "Emergency Lighting Operation" is closed during: Mains failure, delay on mains return, manual reset, function- and duration test.

Webmodul

Webmodul ZB-S for visualisation and monitoring of a central battery system, Type ZB-S via a local ethernet (LAN) or internet (WWW) with a usual WEB-Browser. An access to the webmodule via internet (WWW) must be administrated from an IT-department at site!

Integrated mail-client for a comfortable, event orientated failure information, for up to 5 E-mail recipients. Access via administrator account or guest account, with password protection.

- Easy menu structure
- Full visualisation and monitoring of a ZB-S (central battery system) via ethernet (LAN) with usual WEB-Browser (e.g. Internet Explorer, Firefox etc.)
- Display of all actual operation modes
- Local failure information of each emergency circuit and luminaires with destination information in plain text
- Permanent actual information of the charging unit and the battery
- Parallel access to the webmodule from different workstations possible (max. 8)
- Integrated mail-client for comfortable failure notification via mail
- Type of different failures for the mail transmission selectable
- Up to 5 mail-recipients programmable
- Actualisation cycle of the web browser via the webmodule adjustable
- Authenticated access via administrator-account with password protection
- Adjustable guest account with restricted access with password protection
- Static or dynamic (DHCP) IP-addressing possible
- Any number of web modules can be operated in parallel
- Overview display of all active web modules in intranet with status display and hyperlink function

Supply voltage: 24V DC

Power consumption: < 1,5W

LAN connection: RJ45

Housing: Polycarbonat for DIN-rail mounting, 2TE

Dimensions: L=90 mm, W=35 mm, H=58 mm

Weight: approx. 100 g

Degree of protection: IP20

216V OGiV Battery Block

Only low-maintenance- sealed leak-proof OGiV block batteries are used. Nominal operating time 1, 3 or 8 h.

- Extremely low gassing
- Service life 10 years at 20 °C
- Low self-discharge
- Designed to IEC 896-2 requirements
- Battery post bushings sealed against electrolyte and atmospheric oxygen

CEAG is a member of the ‚Stiftung Gemeinsames Rücknahmesystem Batterien (GRS)', a battery take back scheme operated jointly by German battery manufacturers.

Under this scheme, batteries undergo proper and complete recycling, thus allowing materials that may be environmentally harmful to be recovered and used to make new products.

The ‚Specification for Tender' on the following pages is based on CEAG supplied products. These products must be offered for comparability. The bidder may offer a different supplier of equivalent design in an additional offer (the bidder must show equivalence). The tender must be supported by detailed product descriptions to allow equivalence to be assessed:

Source of supply:

CEAG Notlichtsysteme GmbH
Senator-Schwartz-Ring 26
D-59494 Soest/Germany

Telefon +49 (0) 2921 69-870
Telefax +49 (0) 2921 69-617

Internet www.ceag.de
e-mail info-n@eaton.com

Furthermore, the evidence of a ISO 9001 Certification has to be provided.

Manufacturer without ISO 9001 certification are not admitted.

LONWorks®: registered trademark of Echelon Corporation

Table 2b

Calculation of the battery capacity of maintenance free OGiV batteries not acc. to EN 50171
(higher capacities on request)

Battery capacity C10 at 1.8 V/C and +20°C	**Ah**	**5.5**	**8.5**	**12.0**	**14.0**	**23.3**	**32.0**	**39.8**	**50.4**	**53.7**	**66.2**	**85.7**	**89.4**	**106.0**	**118.0**	**143.1**	**155.6**	**178.8**	**195.4**	**245.0**	**268.2**	**308.0**	**357.6**
														1 x 39.8 1 x 66.2		**1 x 89.4 1 x 53.7**	**1 x 89.4 1 x 66.2**	**2 x 89.4**	**1 x 89.4 1 x 66.2 1 x 39.8**	**2 x 89.4 1 x 66.2**	**3 x 89.4**	**3 x 89.4 1 x 39.8**	**4 x 89.4**
max. discharge current [A] with operating time [h], 1.7 V per cell and +20°C ambient temperature	1.0	3.4	4.7	6.57	9.7	16.7	20.8	26.2	31.7	40.9	52.6	55.3	66.8	78.8	90.0	107.7	119.4	133.6	145.6	186.2	200.4	226.6	267.2
	1.5	2.6	3.5	5.08	7.3	12.3	15.5	19.8	23.5	29.4	37.2	40.5	47.7	57.0	65.1	77.1	84.9	95.4	104.7	132.6	143.1	162.9	190.8
	2.0	2.2	3.0	4.12	6.1	9.8	12.7	16.0	19.2	22.8	28.6	32.9	37.2	44.6	51.7	60.0	65.8	74.4	81.8	103.0	111.6	127.6	148.8
	3.0	1.6	2.2	3.12	4.4	7.2	9.3	11.8	14.1	16.6	19.5	24.5	27.2	31.3	35.4	43.8	46.7	54.4	58.5	73.9	81.6	93.4	108.8
	8.0	0.7	1.0	1.41	1.8	3.0	3.9	5.1	6.1	6.8	8.2	10.8	11.2	13.3	14.9	18.0	19.4	22.4	24.5	30.6	33.6	38.7	44.8

Important note: The aging provision for batteries (25 %) is not included.

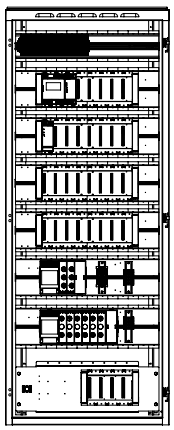
Table 3b

Number of 1.7 A and 3.4 A booster **not acc. to EN 50171** for recharging of 10 h and 20 h:

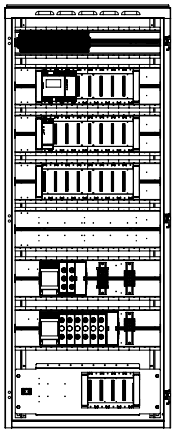
Recharging cycle [h]	**h**	**A**	**5.5**	**8.5**	**12.0**	**14**	**23.3**	**32**	**39.8**	**50.4**	**53.7**	**66.2**	**85.7**	**89.4**	**106**	**118**	**143.1**	**155.6**	**178.8**	**195.4**	**245**	**268.2**	**308**	**357.6**
10	**1.0**	**1.7**	1	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0
		3.4	0	0	0	0	0	1	1	1	1	1	2	2	2	2	3	3	3	4	4	5	6	7
	1.5	**1.7**	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1	0	0	0	1	1	1
		3.4	0	0	0	0	0	1	1	1	1	1	2	2	2	2	3	3	4	4	5	5	6	7
	2.0	**1.7**	1	1	1	1	1	0	0	1	1	1	0	0	1	0	1	1	0	1	1	0	0	0
		3.4	0	0	0	0	0	1	1	1	1	1	2	2	2	3	3	3	4	4	5	6	7	8
	3.0	**1.7**	1	1	1	1	0	0	0	1	1	0	1	1	0	0	1	0	1	0	0	0	1	2
		3.4	0	0	0	0	1	1	1	1	1	2	2	2	3	3	3	4	4	5	6	7	7	8
	8.0	**1.7**	1	1	1	1	0	0	1	1	1	0	1	1	0	1	0	1	0	1	0	1	1	0
		3.4	0	0	0	0	1	1	1	1	1	2	2	2	3	3	4	4	5	5	7	7	8	10
20	**1.0**	**1.7**	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	0	0	1	1	0	1
		3.4	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	3	3
	1.5	**1.7**	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	0	0	0	1	0	1	0
		3.4	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	3	3	4
	2.0	**1.7**	1	1	1	1	1	1	1	0	0	0	0	0	1	1	0	0	0	1	0	0	1	0
		3.4	0	0	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4
	3.0	**1.7**	1	1	1	1	1	1	1	0	0	0	1	1	1	1	0	0	1	1	0	1	0	1
		3.4	0	0	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	3	3	4	4
	8.0	**1.7**	1	1	1	1	1	1	0	0	0	0	1	1	1	0	0	1	1	0	1	0	1	0
		3.4	0	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	3	3	4	4	5

Central battery systems

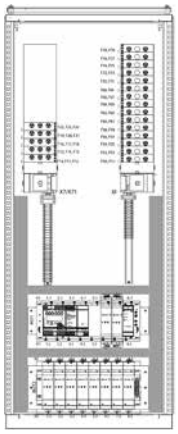
ZB-S/26



ZB-S/18



ZB-S/LAD



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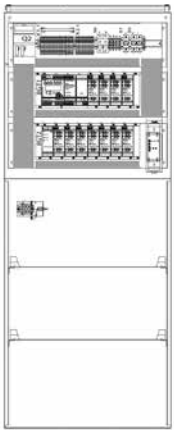

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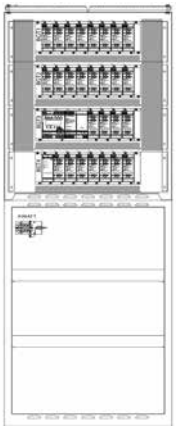

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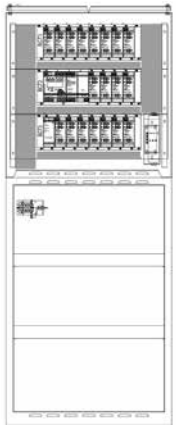

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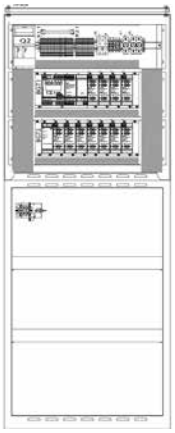

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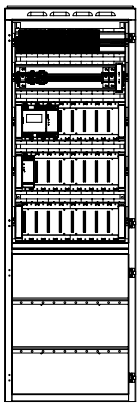

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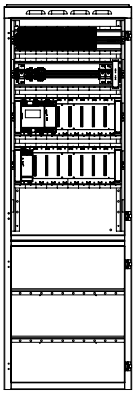

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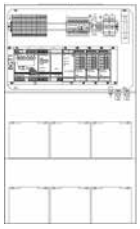
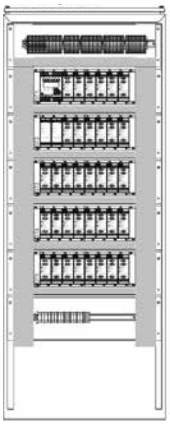


Centrally Powered Systems

ZB-S with STAR technology - Appendix overview cabinets

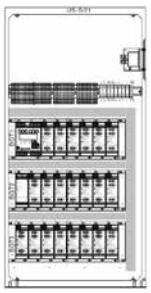
Substations

US-S/36



US-S/28

US-S/21



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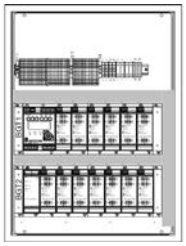
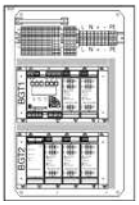


US-S/5



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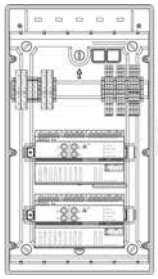
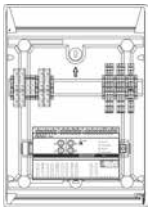
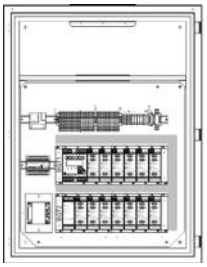


US-S/SOU1

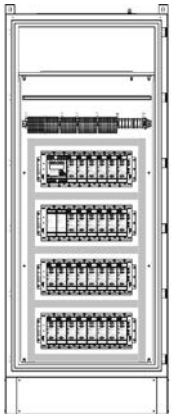


Substations with functional integrity

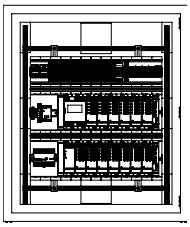
ESF-E30/13S



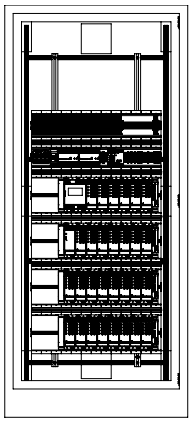
ESF-E30/28S



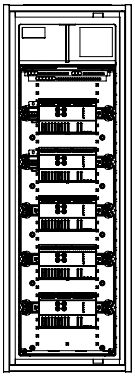
US-S ESF30 13-P



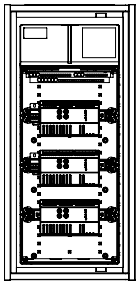
US-S ESF30 28-P



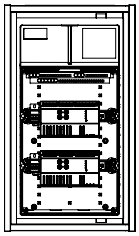
US-S ESF30 SOU5



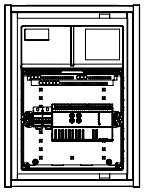
US-S ESF30 SOU3



US-S ESF30 SOU2



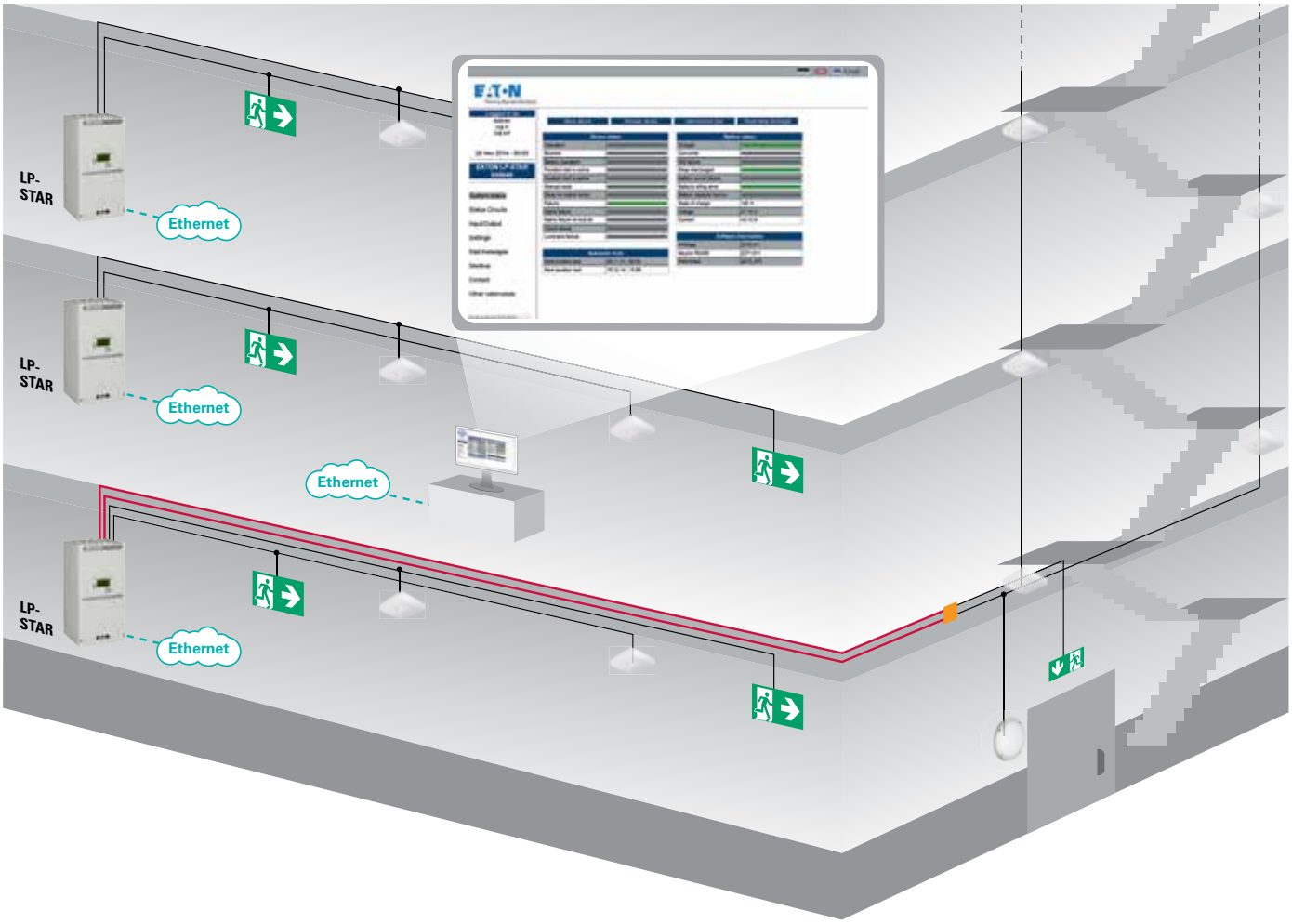
US-S ESF30 SOU1



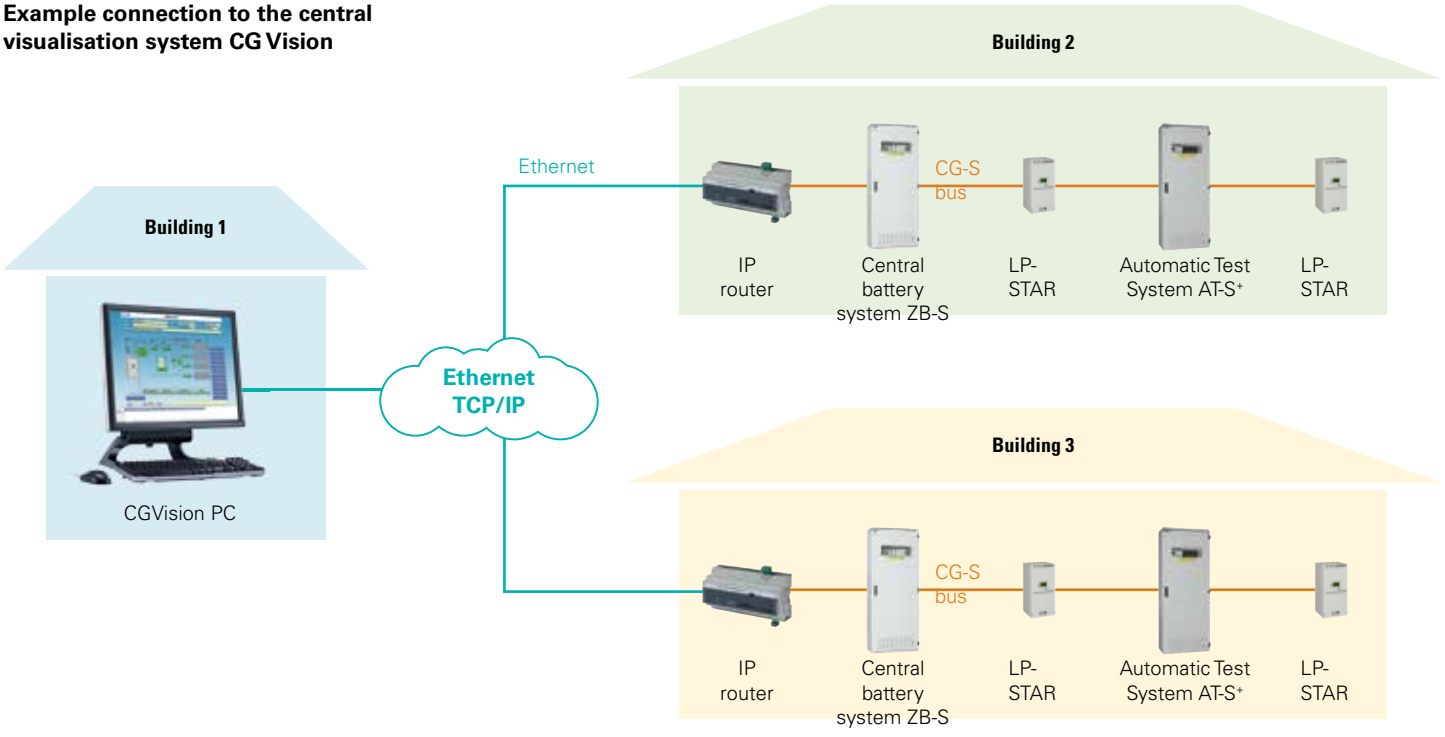
LP-STAR: Safe and cost efficient operation with installation per area

Centrally Powered Systems

LP-STAR emergency lighting power supply in a compact design - Installation example



Example connection to the central visualisation system CG Vision



Simple installation and reliable power supply

LP-STAR is especially recommended in case of the separate supply of emergency lighting systems of individual fire areas to save on installation costs incurred by installing E30 cabling to cover different fire areas.

The LP-STAR System supplies reliable power to the escape luminaires and exit sign luminaires (230V AC/220 V DC) according to EN 50171 and BGV A3. It is suitable for emergency lighting systems according to DIN VDE 0100-718, DIN EN 50172 and E DIN VDE 0108-100.

The system performs an automatic self-check and monitors all CG-S luminaires connected (up to 20 luminaires per circuit) simply through a feed line. The circuit type of each connected CG-S luminaire can be programmed freely in the 50 Hz or 60 Hz supply network with the control module based on the STAR technology. This means that the same power circuit is used for mixed operation including maintained light, switched maintained light and non-maintained light, all this without an additional data cable!

The control module including a non-volatile program memory as well as a big graphical display that monitors and controls the LP-STAR device and checks all functions of the connected emergency luminaires according to EN 62034 and it reports the operating states of the entire system. The integrated search function detects all luminaires addressed during installation automatically. A central monitoring system can be connected using the optional bus interface.

The main scope for the protection of electrical rooms is the protection of the environment against the hazards involved with technical devices, transformer stations and switching stations of over 1 kV. At the same time, for example in case of fire, the operation of safety-relevant systems, central battery systems and fixed power generators must be maintained for a specific period of time.

The LP-STAR System was designed to meet the requirements concerning batteries and these have been verified according to EN 60950 and EN 50272-2.

Features

- No special requirements concerning the housing on functionality in case of installation in separate fire areas
- Cost savings as E30 wiring is not required because devices are installed in separate fire areas
- Natural ventilation is generally sufficient due to the closed form and low capacity of batteries
- Additional safety even in case of fire due to the decentralised arrangement of systems
- Simple operation and commissioning based on a smart programming and operating plan
- 230V AC / 220V DC supply voltage selectable to power the escape luminaires and exit sign luminaires to comply with architectural issues
- Standard integrated phase monitor for monitoring general power supply conditions
- Additional phase monitor input including line monitoring for an external phase monitor
- Standard eight digital 230 V input channels for switching each luminaire separately, for example, freely programmable
- Optional webmodule for the automatic monitoring of LP-STAR according to EN 62034
- Optional CG-S interface for connecting to the CG-S bus for CGVision or master/slave operation for connecting several LP-STAR devices
- Shorter inspection time using the CEWA GUARD technology, automatic function monitoring of up to 20 luminaires per circuit
- Reduced installation costs due to the STAR technology, freely programmable mixed operation of switching modes per luminaire in a single circuit without an additional data cable
- Automatic luminaire search function
- Plain text display at the control module for all luminaires
- Flexible data memory for the test log and device configuration using the Secure Digital card
- Absence of retroactive effect of different circuits in case of a short-circuit due to the automatic, selective shut-off function
- EoL shut-off, programmable as standard

Centrally Powered Systems

LP-STAR emergency lighting power supply in a compact design - What is STAR?

STAR TECHNOLOGY

S = Switching
T = Technology
A = Advanced
R = Revision

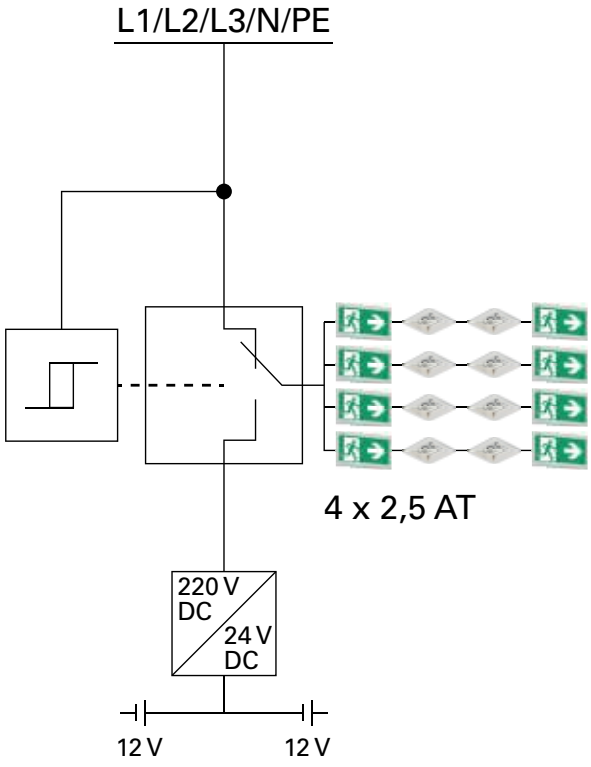
Switch to safety!

The continuing development of the CEWA GUARD monitoring system has led to the creation of the

Switching
Technology
Advanced
Revision,

or **STAR** for short. This **CG-STAR**-technology allows different switching modes to be implemented in the same circuit, and the switching mode of each individual luminaire can be re-programmed at any time.

As a result, this technology offers not just the proven CEWA Guard safety when it comes to operating a safety lighting system, it also gives planners the confidence and flexibility of knowing that the system can respond and adapt at any time to any changes that are made to a building and its use.



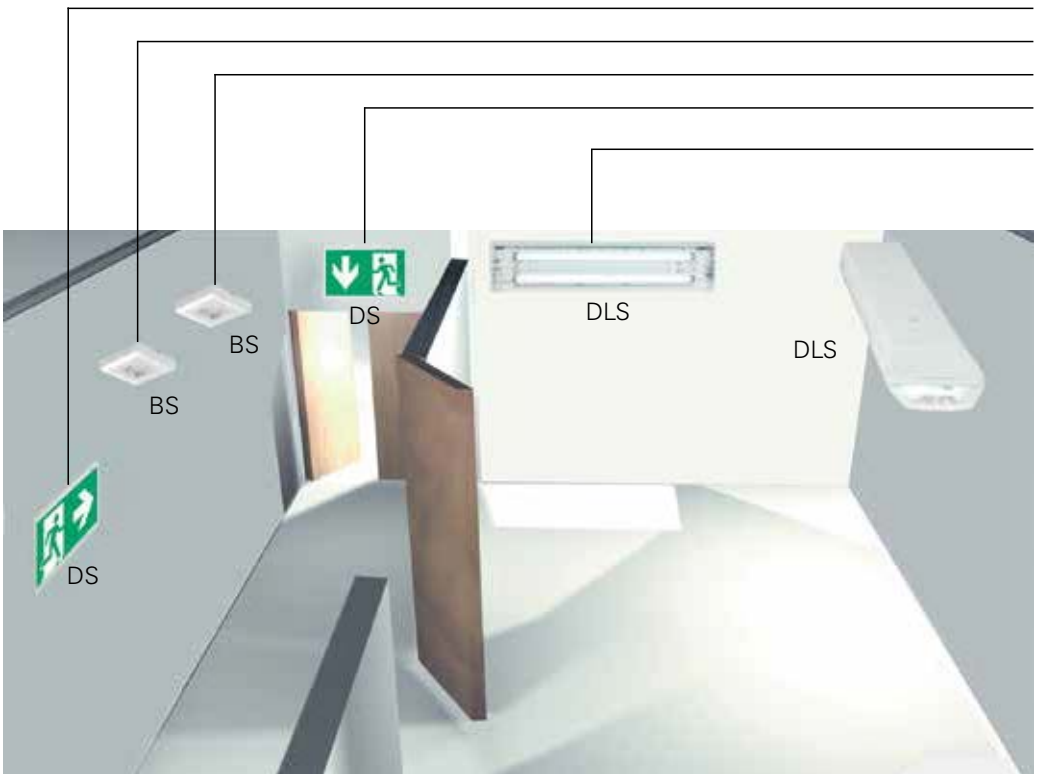
Your Advantages:

The number of outgoing circuits needed can be sharply reduced, since continuously operating, stand-by and switchable permanent lighting can be realised in one common circuit.

This allows the use of shorter cable distances, reduces installation costs and minimises the effects of burning materials. Any mode of operation can be assigned at a later date – **without encroachment in the lighting installation.** This enables simple project planning without having to take all possible types of operation into account.

As with CEWA GUARD technology, the patented STAR technology requires no additional data cable to the luminaires.

STAR TECHNOLOGY



Conventional Installation:

Maintained light 1 (DS)

Non-maintained light 1 (BS)

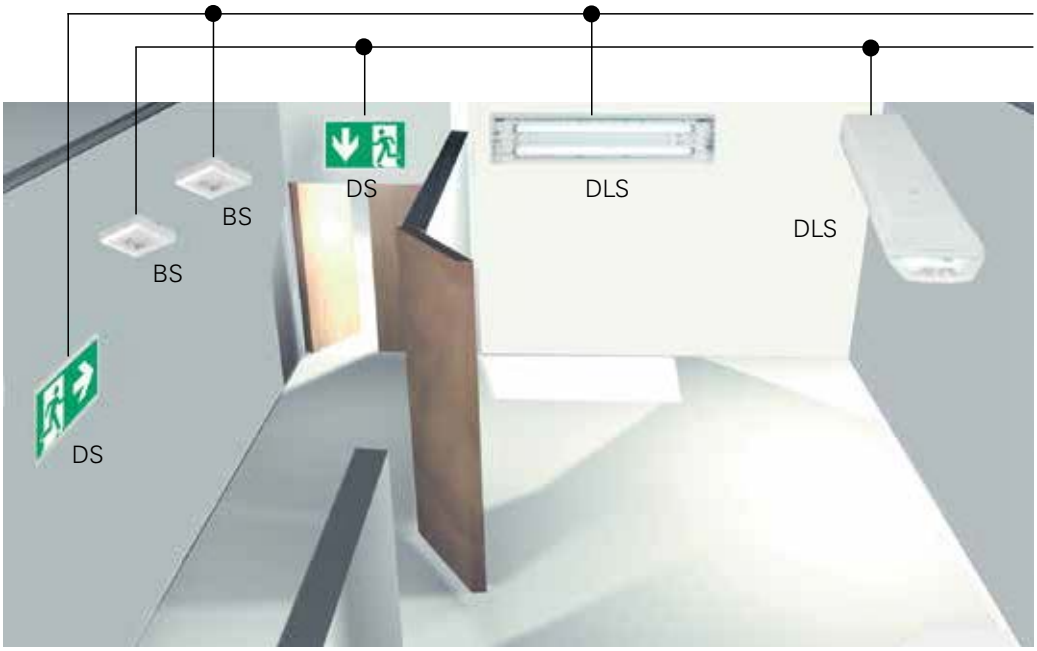
Non-maintained light 2 (BS)

Maintained light 2 (DS)

Switched maintained light 1 (DLS)

Switched maintained light (DLS)

- Each type of switching mode requires two circuits
- Only one type of switching mode is possible per circuit
- Any later modifications involve a large amount of work and expense



ZB-S Installation with STAR-Technology:

All types of switching modes

All types of switching modes

- Only two outgoing circuits for all types of switching modes
- Maintained light, non-maintained light and switched maintained light are possible in one common circuit
- Later circuit modifications do not pose any problems

Overview of connections

1 Grid connection terminal

3-phase feed-in incl. phase monitoring function

2 Connection for end circuits

Double assignment, 2.5 mm² solid/flexible

3 Connection for disable switch

Control loop for disabling the system during operating downtimes with differential loop monitoring for short circuit and wire breakage detection. Differential monitoring: Short circuit or interruption lead to the system going into standby.

4 24 V connection for external phase monitors

24 V power loop for the emergency luminaires with differential loop monitoring for short circuit and wire breakage detection. Differential monitoring: Short circuit or interruption lead to the system switching on (maintained light) immediately.

5 Connection for potential-free indicator contacts and buzzer

4 relays with a separate root, each 1x changeover contact, 24 V 0.5 A.

The four potential-free contacts and the buzzer can be assigned freely to one or several of 12 different messages. The DIN VDE specification can be loaded any time and used as a default setting.

6 Connection for digital inputs

8 freely assignable inputs 230V, programmable as inverted and non-inverted for example start/stop function test, start/stop duration test, block/release device, manual reset, turn on/off maintained light, turn on emergency lighting as corridor lighting, for light switch query and switching emergency lighting depending on the general lighting conditions (DLS function).

7 Optional interface (factory-installed)

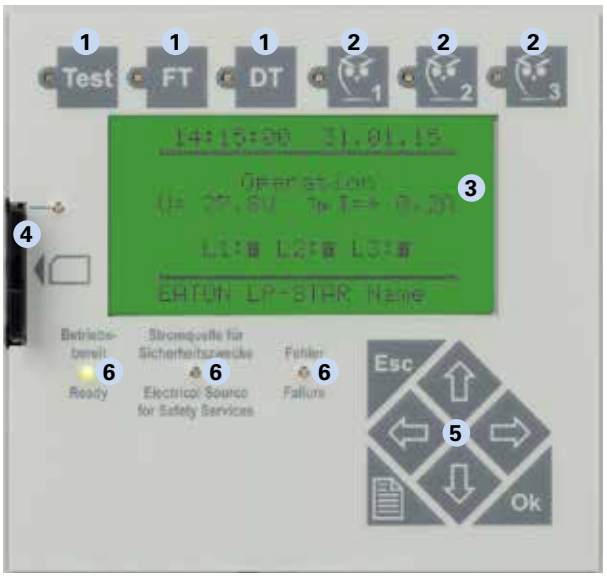
The interface for connecting to a CGVision can be installed on site, see page 13.

8 Webmodule connection

9 Battery connection, wires 1-4

Maximum 4 sets per 2 battery blocks, 12 V.

Freely programmable control module



1 Separate buttons for:

- Test (emergency luminaire function)
- Function test
- Duration test

2 Three freely assignable function keys

3 128 x 64 pixel graphical display

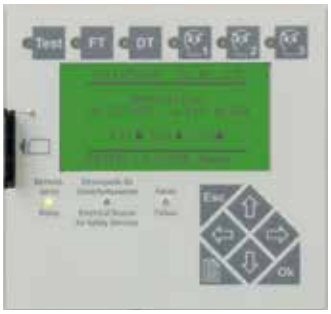
Back-lit, adjustable contrast and brightness

4 Log book and device configuration

Save the log book and device configuration comfortably on the memory card. Easily programmable on the PC using an SD card reader and the CEAG software.

5 Seven control buttons for a user-friendly navigation

6 Function display using LEDs



Control module

A freely programmable control module with a non-volatile program memory and 4-lines, alphanumeric, graphic display monitors and controls the LP-STAR system. All functions such as loading, mains/emergency switch-over and deep discharge protection of devices and the connected emergency luminaires are automatically inspected. The errors are reported immediately. A central monitoring system can be connected using the interface. In case of a short circuit or interruption of control current loops, differential monitoring leads to the system immediately switching on (maintained light) or to the system being put in standby.

- Non-volatile program memory
- Automatic luminaire search function
- Single luminaire monitoring
- Manual reset
- Password function
- Fuse monitoring of the end circuits
- Control module with master/slave function

Display includes:

- Date/time
- Charge fault
- Deep discharge protection
- Battery voltage/charge current (+)
- Battery discharge current in test or failure (-)
- Manual reset
- Test mode
- Delay-time on mains return (remaining time in minutes)
- Luminaire failure with location label
- Insulation fault
- Power failure UV-AV (target location information)
- Failure/programming information

Sealed keypad with 3 buttons for:

- Test (mains failure - battery operation)
- Start/stop function test
- Start/stop duration test

3 freely assignable function keys for:

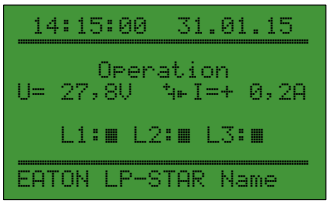
- Block/release device
- Manual reset
- Stop function test
- Display error list
- Turn on/off maintained light
- Turn on complete emergency lighting (continuity lighting)
- Power failure simulation UV-A (emergency operation)
- Confirm deep discharge protection

7 control keys

for a user-friendly navigation

LED indicators for:

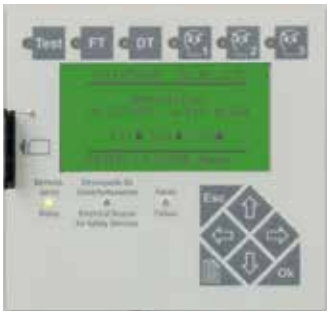
- Ready
- Operation through the electrical source for safety services
- Failure



Graphic display:

128 x 64 pixels, back-lit, program adjustable contrast and brightness.

Control module



Graphical display	128 x 64 pixel adjustable contrast
Illumination	Adjustable background luminosity
Keypad	Sealed, with 6 function and 7 control keys
Readout	Battery voltage Battery charge current (+) Battery discharge current in test or by failure (–) Charge Fault Luminaire failure with location label Deep discharge protection Manual reset Delay-time on mains return Fault UV-AV (location label) Test mode Date/time Insulation fault with circuit label Failure information Programming information
Status	• Ready • Electrical source for safety services • Failure

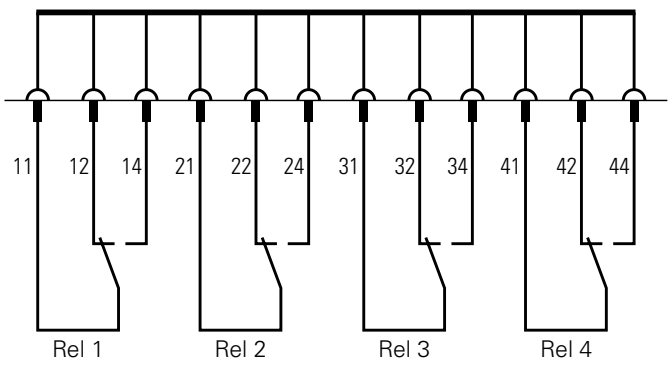
Potential-free signal contacts, buzzer

4 relays with a common potential, 1x switching contact each, 24 V 0.5 A.

The three potential-free contacts and the buzzer can be assigned freely to one or several of 12 different messages. The DIN VDE specification can be loaded any time and used as a default setting.

Default settings LP-STAR

Name	Relay 1	Relay 2	Relay 3	Relay 4	Buzzer
Mains operation		X			
Mains failure	X		X		
UV mains failure	X				
Charge fault	X				
Circuit fault	X				
Luminaire fault	X				
Common system fault	X				
Total discharge protection	X				
ISO fault	X				
Function test		X			
Duration test		X			
Device fault					



Note:

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

The device is fitted with 4 potential-free signal contacts (relay outputs) and an integrated buzzer.

Signal contacts freely programmable including:
1 x changeover contact
1 x 24 V; 0.5 A capacity

SD card

SD card reader

Secure Digital card

Flexible memory for device and inspection log book configuration, for example for archiving the device configuration and the prescribed inspection log book information over a minimum of 4 years.

The device can be programmed using any PC with the optional SD card reader and the CEAG software. The text messages can be introduced also using the control module.

Storing of:

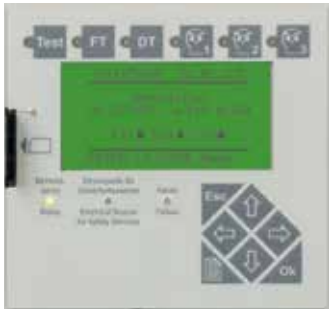
- 360.000 log book entries
- Luminaire target location texts (20 characters per luminaire)
- Circuit names (20 characters per circuit)
- LP-STAR name (20 characters)

Ordering details Replacement SD-Card

Type	Model	Order No.
SD card	SD card formatted for LP-STAR	40071347911
SD card reader	SD card reader for USB port	40064070561

8

SD card (Secure Digital Card)



Removable SD card with configuration and inspection log book data

PC with CEAG software for programming and evaluating the SD card data

Programming

- Simple device programming with a PC at the office based on the installation designs
- Device configuration can be saved on the PC

Centrally Powered Systems

LP-STAR emergency lighting power supply in a compact design - Technical Data

LP-STAR 4-24

LP-STAR 4-48

LP-STAR IP54

Input	
Rated voltage AC	1 ~ 220-240 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

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 current 24 V auxiliary voltage	6 W

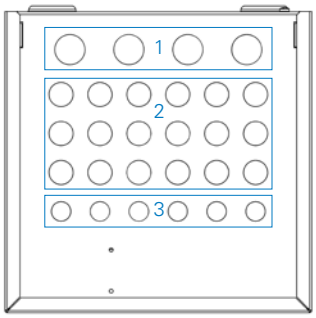
	LP-STAR 4-12	LP-STAR 4-24	LP-STAR-4-36	LP-STAR-4-48
Circuits	4	4	4	4
Max. battery size (C10; 1.8 V/Z, +20 °C)	2 x 12 V / 12 Ah	4 x 12 V / 12 Ah	6 x 12 V / 12 Ah	8 x 12 V / 12 Ah
Dimensions (W x H x D)	550 x 260 x 260 mm		730 x 260 x 260 mm	
Max. ambient temperature	For storage: -20 °C to + 40 °C, For 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	17 kg		21 kg	

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

Battery

Rated capacity AhK10, 1.8 V/Z, +20 °C	Dimensions of one battery L x W x H (mm)	Number of batteries U_B = 12 V pieces	Total weight of all batteries (kg)
10 Y: 12 Ah	152 x 98 x 102	max. 8 pieces	4 pieces: 15.25 8 pieces: 30.50

Pre-cut cable entries LP-STAR (11)



1 = 4 x M25
2 = 18 x M20
3 = 6 x M16

LP-STAR 4-24 (1) (2)

LP-STAR 4-48 (3) (4)

Optional Webmodule LP-STAR, for expansion (6)

LP-STAR

Ordering details

	Type	Model	Order No.	Selection
1	LP-STAR 4-12	LP-STAR-4-12, incl. control module, 1 charging unit, 4 circuits and battery packs 2 x 12 V / 12 Ah	40071362120	☐
2	LP-STAR 4-24	LP-STAR-4-24, incl. control module, 1 charging unit, 4 circuits and battery packs 4 x 12 V / 24 Ah	40071362240	☐
3	LP-STAR 4-36	LP-STAR-4-36, incl. control module, 1 charging unit, 4 circuits and battery packs 6 x 12 V / 36 Ah	40071362360	☐
4	LP-STAR 4-48	LP-STAR-4-48, incl. control module, 1 charging unit, 4 circuits and battery packs 8 x 12 V / 48 Ah	40071362480	

Construction group ordering details

	Type	Model	Order No.	Selection
5	Webmodule LP-STAR	Module for DIN Rail Mounting, incl. connection line without patch cable RJ45, factory fitted	40071361188	☐
6	Webmodule LP-STAR	Module for DIN Rail Mounting, incl. connection line without patch cable RJ45, for expansion	40071361187	☐
7	CG-S Bus Interface* **Attention:** Installation must factory-provided happened	Inerface* for connection on CGVision or for MasterSlave operation (Connection of more LP-STAR over the CG-S Bus)	40071071178	

* **Attention:** The installation of the CG-S Bus Interface must factory-provided happened. A expansion of the module locally is only possibe with exchange of the full CSU module. MasterSlave and CGVision operation isn´t possible.

Battery ordering details

	Type	Model	Order No.	Selection
8	12 V/12 Ah	Battery block, period of use: 10 years	40066071147	
	Period of use specified for a max. battery temperature of +20 °C			

Fuse ordering details

	Type	Model	Order No.	Selection
9	Final circuit fuses	2.5 AT / 250 V (packaging unit 10 pieces)	40071361235	
10	Mains feed-in circuits	6.3 AT / 250 V (packaging unit 10 pieces)	40071361234	

Accessories ordering details

	Type	Model	Order No.	Selection
11	Clamping gland set, 28 pieces	4 x M25, 18 x M20, 6 x M16	40071361159	

Centrally Powered Systems

LP-STAR emergency lighting power supply in a compact design - Technical Data

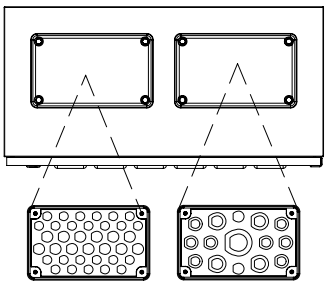
LP-STAR 4-24/IP 54

LP-STAR IP54

Input	
Rated voltage AC	1 ~ 220-240 V
Rated frequency	50/60 Hz
Max. rated current AC	5,5 A
Rated voltage DC	19.2 - 28.8 V
Battery	VRLA, 2 x 6 cells in series, 20 °C

Output	
Rated voltage AC AC	220-240 V AC / 220 V DC konstant
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 current 24 V auxiliary voltage	6 W

Pre-cut cable entries LP-STAR



24 x M16
13 x M20

1 x M50/32
4 x M32/20
8 x M25/16
2 x M20

	LP-STAR 4-12 / IP54	LP-STAR 4-24 / IP54	LP-STAR-4-36 / IP54	LP-STAR-4-48 / IP54
Circuits	4	4	4	4
max. battery size (C10; 1,8 V/Z, +20 °C)	2 x 12 V / 12 Ah	4 x 12 V / 12 Ah	6 x 12 V / 12 Ah	8 x 12 V / 12 Ah
Dimensions (W x H x D)	815 x 600 x 300 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 / 30 dB			
Housing colour	RAL 7035			
Degree of protection electronic area	IP54			
Degree of protection battery box	IP21			
Degree of protection / insulation class	I			
Weight (approx.) without battery	17,5 kg			

* Maximum Design Life Time at +20 °C: 10 years

Battery

Rated capacity AhK10, 1.8 V/Z, +20 °C	Dimensions of one battery L x W x H (mm)	Number of batteries U_B = 12 V	Total weight of all batteries (kg)
10 J: 12 Ah	152 x 98 x 102	max. 8 pieces	4 pieces: 15,25 8 pieces: 30,50

LP-STAR 4-48/IP54 (1)

Optional Webmodule LP-STAR, for expansion (3)

LP-STAR IP54

Ordering details

	Type	Model	Order No.	Selection
1	LP-STAR 4-12/IP54	LP-STAR-4-12/IP54, incl. control module, 1 charging unit, 4 circuits, CG-S Bus Interface and battery packs 2 x 12 V / 12 Ah	40071362124	☐
1	LP-STAR 4-24/IP54	LP-STAR-4-24/IP54, incl. control module, 1 charging unit, 4 circuits, CG-S Bus Interface and battery packs 4 x 12 V / 24 Ah	40071362244	☐
1	LP-STAR 4-36/IP54	LP-STAR-4-36/IP54, incl. control module, 1 charging unit, 4 circuits, CG-S Bus Interface and battery packs 6 x 12 V / 36 Ah	40071362364	☐
1	LP-STAR 4-48/IP54	LP-STAR-4-48/IP54, incl. control module, 1 charging unit, 4 circuits, CG-S Bus Interface and battery packs 8 x 12 V / 48 Ah	40071362484	☐

Construction group ordering details

	Type	Model	Order No.	Selection
2	Webmodule LP-STAR	Module for DIN Rail Mounting, incl. connection line without patch cable RJ45, factory fitted	40071361188	☐
3	Webmodule LP-STAR	Module for DIN Rail Mounting, incl. connection line without patch cable RJ45, for expansion	40071361187	☐

Battery ordering details

	Type	Model	Order No.	Selection
4	12 V/12 Ah	Battery block, period of use: 10 years	40066071147	☐
	Period of use specified for max. battery temperature of +20 °C			

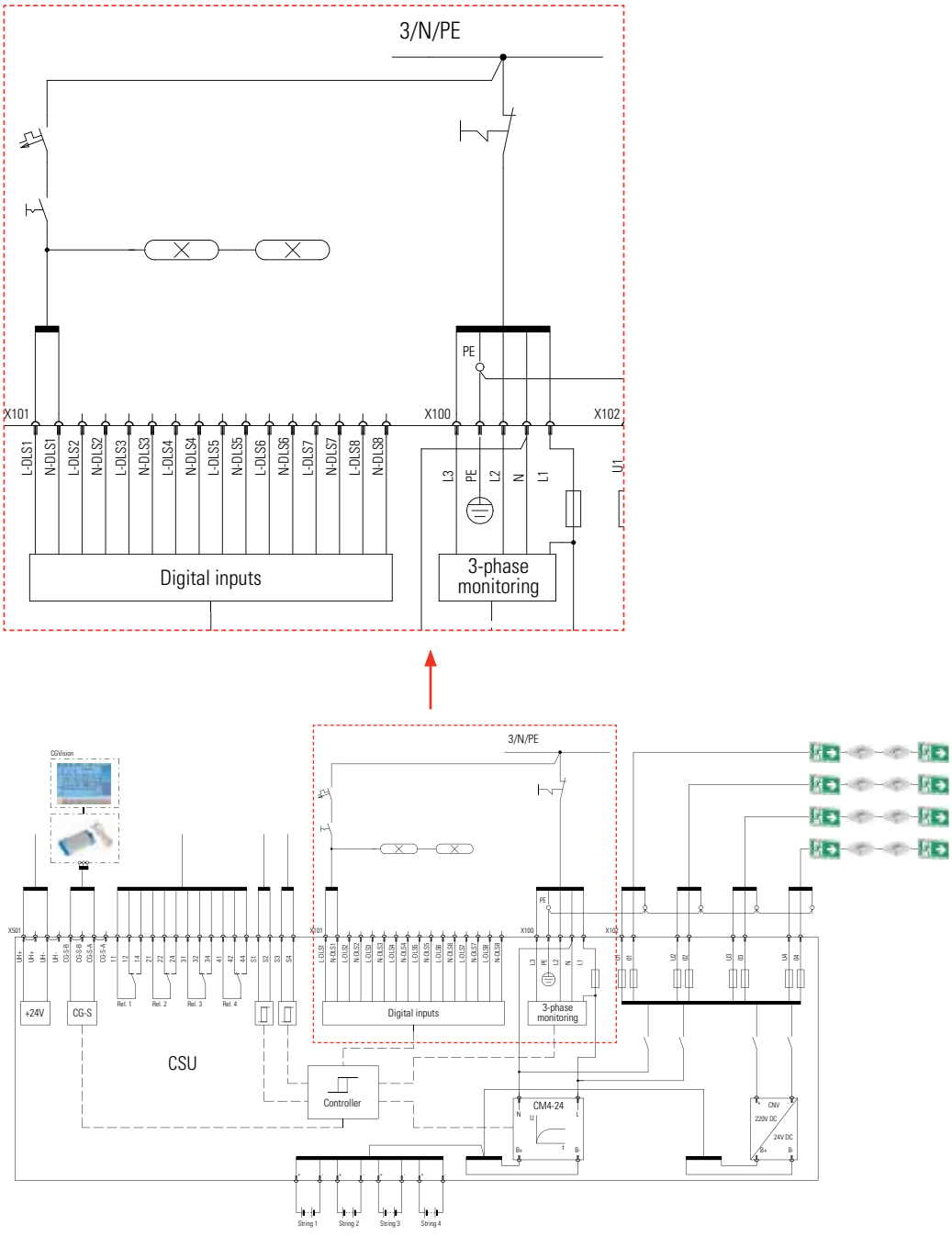
Fuse ordering details

	Type	Model	Order No.	Selection
5	Final circuit fuses	2.5 AT / 250 V (packaging unit 10 pieces)	40071361235	☐
6	Mains feed-in circuits	6.3 AT / 250 V (packaging unit 10 pieces)	40071361234	☐

Digital inputs, for example light switch query

The standard 8 digital inputs (two for each circuit) can be used to query the switch for the combined switching of emergency and general lighting.

Schematic diagram



Three-phase monitoring

Three-phase monitoring

Three-phase monitoring is used for monitoring the distributors of general lighting systems. In case of a phase failure, the component switches a relay contact and interrupts the standard electronic 24 V power loop in the LP-STAR device.

The emergency luminaires in non-maintained mode are switched to mains operation as long as the LP-STAR system is supplied by mains voltage.

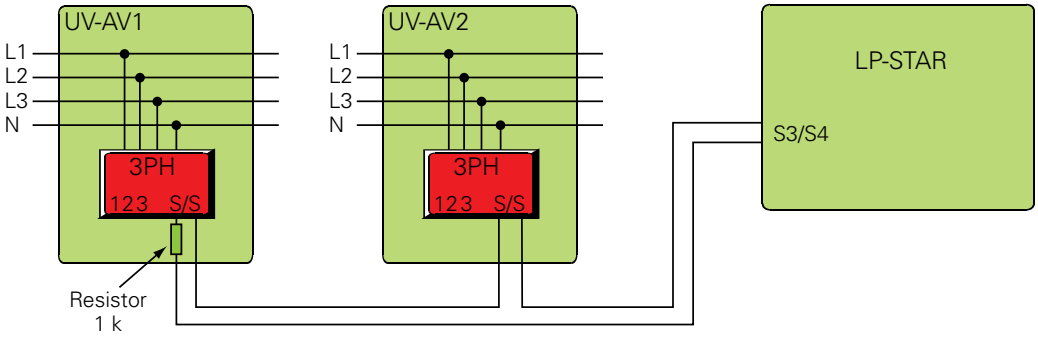
Dimensions in mm (W x H x D)	85 x 52.5 x 65, 3 subunits
Housing	Plastic, red
Connection terminals	2.5 mm² rigid or flexible
Type of mounting	DIN mounitng rail
Contact	0.5 A/24 V AC/DC, 1 x open contact, 1 x change-over contact
Trigger threshold	U< 85 % UN
Grid size	3 units

Ordering details

Type	Scope of supply	Order No.
Three-phase monitoring	Module ready for mounting	40071343430

Current loop

24V current loop for emergency lighting request with differential loop monitoring for short circuit and wire breakage detection.



Differential monitoring:	Short circuit or interruption lead to the system immediately switching on (maintained light)
Phase monitor switch closed (1 kΩ):	Normal system mode

F3 remote indication

F3 remote indication for flush-mounting

F3 remote indication

The F3 remote indication ensures that the most important device functions are displayed even in case of a power failure based on its battery supply. The emergency lighting operation can be blocked during operating downtimes with a key switch. The battery maintenance charging is not affected by blocking the emergency operation. A differential loop monitoring leads to the system going into standby in case of short circuit or breakage detection. LED displays: System readiness, source for safety services, failure. The F3 remote indication thus meets the requirement that remote operation is only possible if it cannot be activated by unauthorized persons.

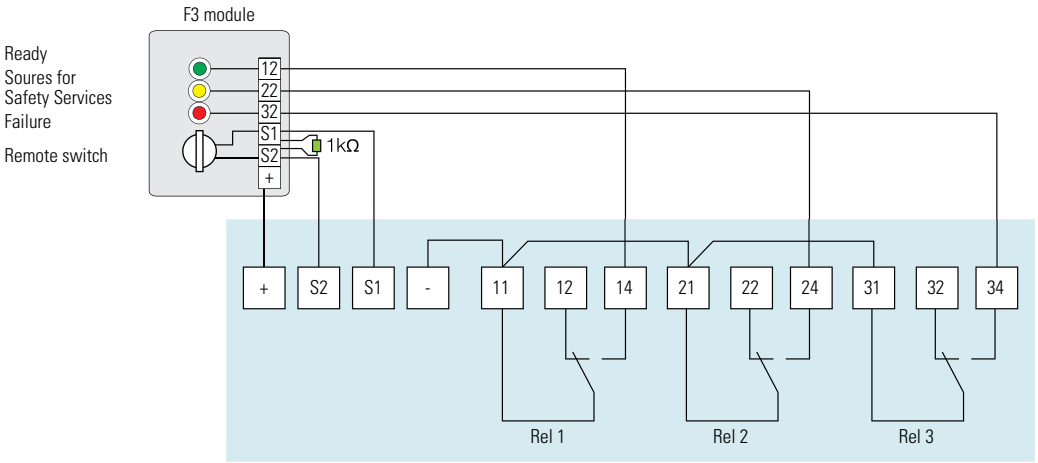
Connection terminals wall surface-mounting	2.5 mm² solid or flexible
Dimensions in mm (W x H x D)	160 x 80 x 55
Connection terminals for flush-mounting	1.5 mm² rigid or 1 mm² flexible
Dimensions in mm (W x H x D)	80 x 80 x 55
Housing colour	similar to RAL 7035 light grey

Ordering details

Type	Scope of supply	Order No.
F3 remote indication	Module surface mounting	40071338497
F3 remote indication recessed	Performance for installation in the flush-mounted switch or empty space box according to DIN VDE 0606	40071347490

Remote switch

Control loop for blocking LP-STAR during operating downtimes with differential loop monitoring for short circuit and wire breakage detection.



Differential monitoring: Short circuit or interruption lead to unlock LP-STAR
F3 switch closed: Device ready
F3 switch open (1 kΩ): Device blocked

Webmodule LP-STAR

Example: Device status

Example: Circuit status

Webmodule CG-S (LP-STAR)

Webmodule LP-STAR for visualisation and monitoring an LP-STAR device on the local Ethernet (LAN) or Internet (WWW) with a conventional WEB browser. Access to the webmodule via internet (WWW) must be appropriately administered and set up on site by a competent IT department. Integrated mail program for convenient, event-related error notification via email, for up to 5 email recipients. 1 web-module is required for each LP-STAR device.

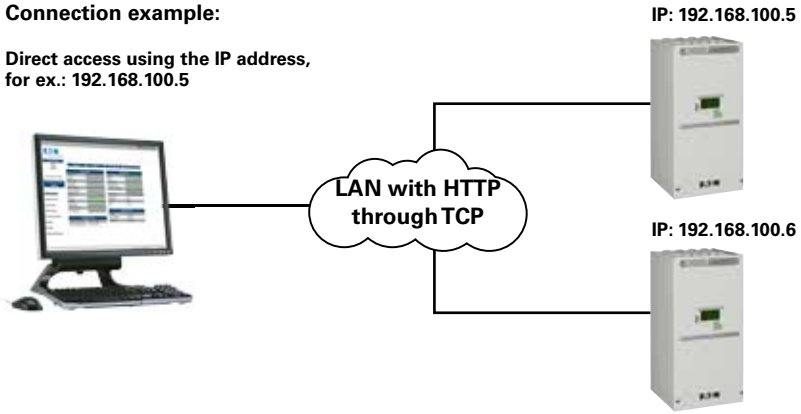
- Simple menu navigation
- Any type of display devices can be used with a WEB browser, for example notebook, tablet PC, IPad or smartphone
- Complete visualisation and monitoring of an LP-STAR device through the local Ethernet (LAN) with a regular WEB browser, no additional software required for all functions
- Retrieving and indicating all current operating states
- Localised fault indicators for every emergency luminaire circuit and luminaires with target location information in plain text connected to a function test
- Continuous up-to-date information on charging unit and battery
- Parallel access from various PC workstations to a webmodule possible (max. 8)
- Integrated email program for each webmodule for convenient error notification via email
- Encrypted, adjustable email dispatch acc. to type of error or function test
- Up to 5 email recipients programmable
- Adjustable update cycle for web browser via the webmodule
- Encrypted transmission
- Authenticated access via administrator account with password protection
- Configurable guest account for restricted access with password protection
- Static or dynamic (DHCP) IP addressing possible
- Supports IPv4/IPv6 (Internet Protocoll version 4/version 6)
- Any number of webmodules operable in parallel
- Overview of all active webmodules on the local Ethernet with status display and hyperlink function
- Independent parallel operation of a CGVision visualisation possible

Device supply voltage	24 V DC
Rated power	< 1.5 W
Connection	RJ45
Degree of protection	IP20
Weight	0.1 kg
Dimensions	90 x 35 x 58
Housing	Polycarbonate

Ordering details

Type	Scope of supply	Order No.
Webmodule CG-S (LP-STAR intern)	Module for DIN rail mounting, incl. connection without RJ45 patch cable, mounted ex works	40071361450
Webmodule CG-S (LP-STAR)	Module for DIN rail mounting, incl. connection without RJ45 patch cable, for retrofitting	40071361449

Connection example:



CGVision Package III

CGVision Package III (Basic or Pro) includes the CG-S/USB interface (USB box), for connecting the CG-S bus-based emergency luminaire systems like the LP-STAR, ZB-S and AT-S+ to the CGVision visualisation software using a standard bus cable and an optional CG-S Bus Interface.

Up to 480 devices of the LP-STAR, ZB-S or AT-S+ systems can be connected, even in mixed mode. However, systems must be assigned to their own device groups in CGVision.

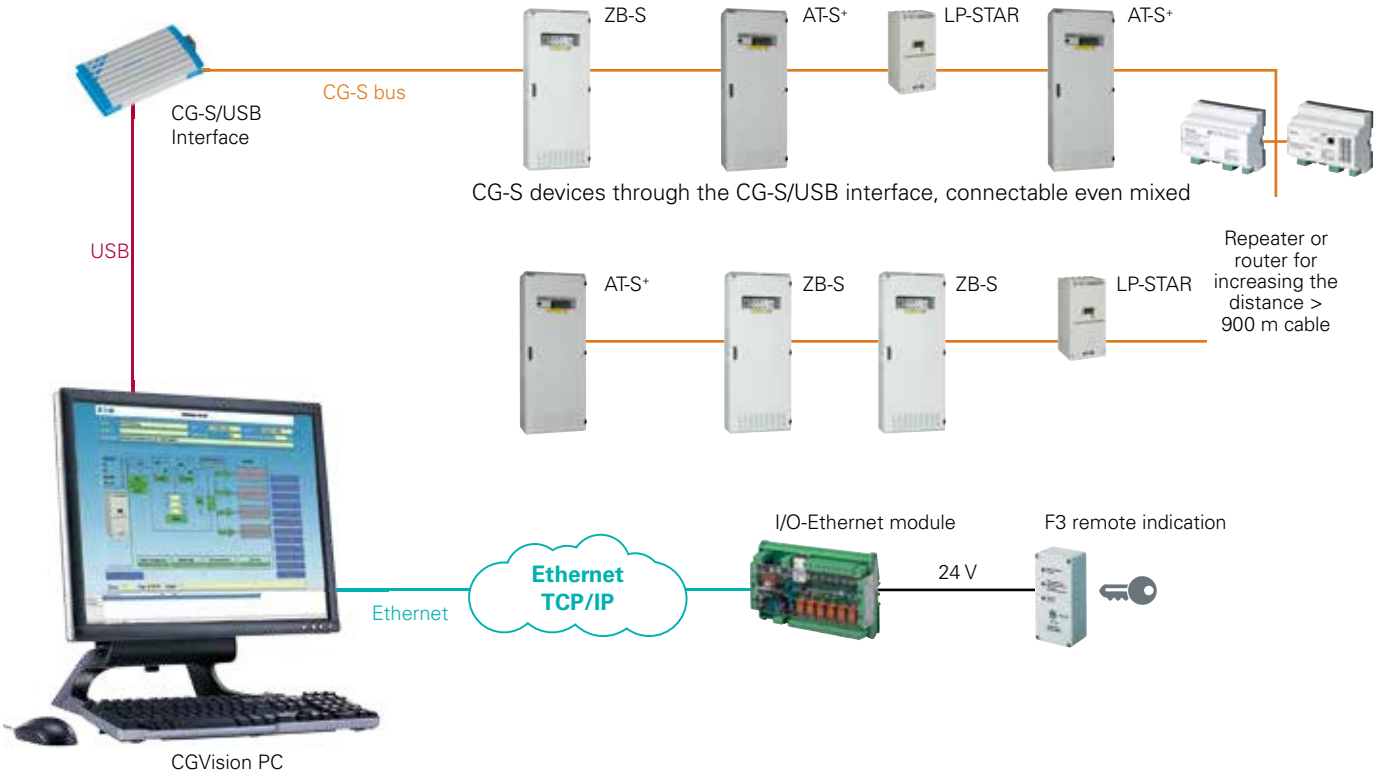
The bus cable can be extended with an optionally available repeater or router.

The CGVision Package III also includes all dongle licences for EGA devices (ZB96, EuroZB.1, GVL24.1, CG48 or ZVL220), CGLine or Ethernet I/O module on CGVision.

CG-S bus

- Max. bus length: 900 m
- The bus length can be extended using a router/repeater
- Double terminated Bus
- No stub lines allowed
- Recommended cable: JY (ST) Y 4 x 2 x 0.8 mm² Ø twisted pair (double twisted pair), shielded
- Termination resistor: 105 Ω on both sides

CGVision Package III application example



Ordering details

Type	Scope of supply	Order No.
CG-S Bus Interface	Plug-in card*	40071071178

* **Attention:** The CG-S Bus Interface must be installed by the manufacturer. The module can be installed later on site only with the replacement of the entire CSU module.

PC programming software LP-STAR

Programming software for pre-configured LP-Star memory cards for quick pre-programming on the PC and for easy reading and processing of the inspection log book memory.
All data can be saved on the memory card and hard disk for documentation.

Prints for documentation:
Detailed prints of programmed system configuration with the following information:

- Individual device name (20 characters) + 100 characters of additional information
- Date and time of automatic duration test incl. Distance in months
- Date and time of automatic function test incl. Distance in days
- Manual reset: Yes/No
- Delay in mains return: 0-99 min
- LON switch: Yes/No
- Capacity in Ah
- Rated operating time in h
- Operating limit time in %
- Assignments of the 4 relays
- Assignments of the 3 function keys
- Assignments of the 8 optional inputs

Detailed print of the programmed circuits (wiring diagrams)
with the following information for each circuit:

- Circuit/ SKU number and type
- Individual circuit name
- Monitoring type for circuit
- Switch type for circuit
- Number of luminaires
- Address and individual name of each luminaire
- Circuit type for each luminaire

Print of inspection log book with following options:

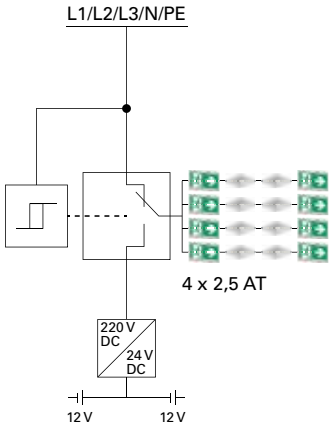
- Fault events (35 various fault events selectable separately or fully)
- Inspection log book period (from – to for date and time)
- Individual comment per print
- For luminaire failure: Information on individual luminaire and circuit names

Ordering details

Type	Scope of supply	Order No.
Software	PC software for LP-STAR for alternative programming of the system configuration on PC	40071347152

Centrally Powered Systems

LP-STAR emergency lighting power supply in a compact design - Technical Data



Circuit change-over module

The circuit change-over module supplies 230 V AC in mains operation and 220 V DC in emergency lighting operation to the luminaires of the emergency lighting system according to EN 60598-2-22.

The CEWA GUARD monitoring checks the operation of the connected luminaires. Up to 20 luminaires can be connected.

Mechanical structure	Circuit board
Fuse	2,5 AT / 250 V 5 x 20 mm
Max. operating time in battery operation	Maximum 330 W per circuit and total maximum 540 W for all circuits
Max. power in mains operation	Maximum 345 VA per circuit and total maximum 1080 W for all circuits
Max. inrush current transformer output	250 A
Output voltage	220 V constant
For the luminaires	EVG

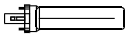
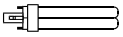
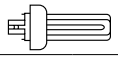
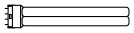
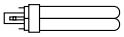
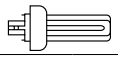
Luminaire series	Luminaire type	Power consumption battery operation [W]*	Power consumption mains operation [VA]*	Inrush current [A]
GuideLed	10011 ... 10026 CG-S	1.9	4.0	1.5
	10021 ... 10026 CG-S	2.9	5.5	
	11011 ... 11026 CG-S	2.6	5.0	
	11021 ... 11026 CG-S	4.1	7.1	
	10011 ... 10013 CG-S FSL	4.0	7.2	
	13011.1 ... 13022.1	3,9	8,0	
	13051 ... 13052	5,0	8,5	
	13091.1 ... 13092.1	3,9	8,0	
	13032 ... 13042	5,0	8,5	
	13031 ... 13041	5,0	8,5	
CrystalWay	19021	1,6	3,5	
	19022	3,7	6,5	
Style LED	22011 LED CG-S	4.4	7.6	
	22021 LED CG-S	5.8	9.5	
	51011, 51021 LED CG-S	5.8	9.5	
Spirit LED	Spirit LED 16	1.7	3.8	
	Spirit LED 28	3.7	6.6	
Brillant LED	1503 ... 1803 LED CG-S	2.9	5.5	
	1504 ... 1804 LED CG-S	4.1	7.1	
	1903 LED CG-S	3.0	5.5	
Aluminium housing	70011 LED CG-S	2.0	4.36	
	70021 LED CG-S	3.1	5.8	
	71011 LED CG-S	3.1	5.8	
	71021 LED CG-S	5.8	9.5	
Escape luminaires	3503.1 LED CG-S	4.4	7.6	
	3604.1 LED CG-S	5.8	9.5	
Atlantic	Atlantic LED S CG-S	5.0	8.5	
	Atlantic LED D CG-S	5.0	8.5	
	Atlantic LED R/O/Wand CG-S	5.0	8.5	
i-P65+	i-P65+ L CG-S, i-P65+ H CG-S	9,3	15,6	
46011 LED	46011 LED CG-S	10,3	17,1	
	46011 LED HYG CG-S	10,3	17,1	
	46011 LED LT CG-S	10,5	11,0	

* Power consumption of the luminaires during battery or mains operation in case of an ambient temperature of +20 °C.

Centrally Powered Systems

LP-STAR emergency lighting power supply in a compact design - Technical Data

Connection cable/W for the luminaires with:

International term	Lamp cap	EVG Type EVG ...	Lamp load in [W]	Battery operation P [W] at a luminous flux $_{E}/_{Rated}$ = 75 %	Mains operation S [VA]	Inrush current [A]
T 16	G5	13.3 ...	4	4.4	8	3
		13.3 ...	6	5.5	12	3
		13.3 ...	8	6.6	16	3
		13.3 ...	13	11.0	23	3
TC-SEL	2G7	13.3 ...	5	4.4	10	3
		13.3 ...	7	5.5	13	3
		13.3 ...	9	6.6	16	3
		13.3 ...	11	8.8	18	3
TC-DEL	G24q-1	13.3 ...	10	7.7	16	3
		13.3 ...	13	11.0	23	3
TC-TEL	GX24q-1	13.3 ...	13	11.0	23	3
						
T 26	G13	18 ...	18	15.4	30	8
TC-F	2G10	18 ...	18	15.4	30	8
						
TC-L	2G11	18 ...	18	15.4	30	8
						
TC-DEL	G24q-2	18C ...	18	15.4	30	8
						
TC-TEL	GX24q-2	18C ...	18	15.4	30	8
						

Continuous output = start output

N-EVG 54 W V-CG-S

Rated value N-EVG ... V-CG-S in case of mains and battery operation

Term	T5	T5	T5	T5	T5	T5
Lamp cap	G5	G5	G5	G5	G5	G5
Type N-EVG ... V-CG-S	14 / 21 / 28 / 35 W	14 / 21 / 28 / 35 W	14 / 21 / 28 / 35 W	14 / 21 / 28 / 35 W	24/39 W	24/39 W
Lamp load [W]	14	21	28	35	24	39
Battery operation, incl. converter efficiency [W] in switch position (luminous flux $_{E}/_{Rated}$ in %)						
100 %	18	24	33	40	29	42
90 %	15	22	29	35	26	37
80 %	14	20	26	31	22	33
70 %	13	18	24	29	20	29
60 %	11	15	22	24	18	26
50 %	10	14	20	22	15	24
40 %	9	12	18	20	15	22
30 %	8	11	15	18	13	20
Power consumption [VA]	18	25	32	39	28	41
Inrush current [A]	10	10	10	10	10	10
System power lamp + EVG acc. EN 50294 [W]	16	23	30	37	25	41

Centrally Powered Systems

LP-STAR emergency lighting power supply in a compact design - Technical Data

N-EVG 58 W V-CG-S

Term	T5	T5	T5	T8	T8
Lamp cap	**G5**	**G5**	**G5**	**G13**	**G13**
Type N-EVG ... V-CG-S	**49W**	**54W**	**80W**	**36W**	**58W**
Lamp load [W]	**49**	**54**	**80**	**36**	**58**
Power consumption [A] at 220 V battery operation in switch position (luminous flux $_{E}$/ $_{Rated}$ in %)					
100 %	53	57	84	37	55
90 %	46	51	75	33	48
80 %	42	46	66	31	44
70 %	37	40	59	26	40
60 %	33	35	53	24	35
50 %	31	33	46	22	31
40 %	26	29	42	20	29
30 %	24	26	37	18	24
Power consumption [VA]	55	58	85	37	55
Inrush current [A]	10	10	12	10	10
System power lamp + EVG acc. EN 50294 [W]	52	57	84	34	53

The required battery current is determined based on luminous flux conditions (30% ... 100%).
Dim mode 30% only down to 10°C, 60% only down to 0°C allowed.
When used outdoors, the 100% setting should only be used.

Calculation example

The following luminaires should be connected to one power circuit:

8 pieces of GuideLed 10011 CG-S RZ
4 pieces of 35 W/T5 with N-EVG 54 W V-CG-S, luminous flux 40 %
2 pieces of GuideLed 13011 CG-S SL

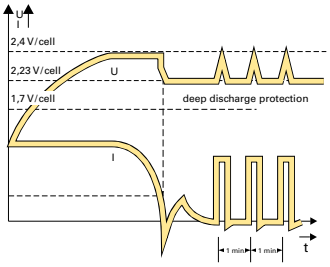
There are the following conditions:

Battery operation:			**Mains operation:**
max. cont. output:		330 W	max. 345 VA apparent power max. inrush current 250 A
max. output:			
10011 CG-S: 8 x 1.9 W	=	15.2 W	
35 W/T5: 4 x 40 W (100 %)	=	160.0 W	
13011 CG-S: 2 x 5 W	=	10 W	
Total	=	185.2 W	**< 330 W --> OK**
max. inrush current:			
10011 CG-S: 8 x 1.5 A	=	12.0 A	
35 W/T5: 4 x 10 A	=	40.0 A	
13011 CG-S: 2 x 1.5 A	=	3.0 A	
Total	=	55.0 A	**< 250 A --> OK**
max. mains power:			
10011 CG-S: 8 x 4 VA	=	32.0 VA	
35 W/T5: 4 x 39 VA	=	156.0 VA	
13011 CG-S: 2 x 8.5 VA	=	17.0 VA	
Total	=	205.0 VA	**< 345 VA --> OK**

Attention!

The connected load of all circuits in total may not exceed **540 W** and **1080 VA** per LP-STAR device.

When conecting external modules to the 24 V auxiliary supply, consider power consumption with battery sizing.

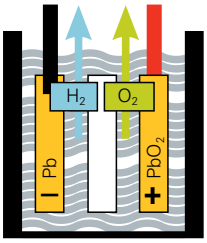


CM 4-24

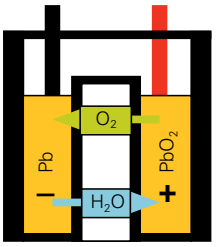
The completely sealed lead batteries are charged gradually based on an IU0U charging curve in function of temperature. Boost charge is activated in function of the battery charge level to ensure that the batteries are charged without exceeding the gassings voltage.

The charge monitoring procedure verifies the charging process continuously and it reports any faults immediately, including interruption of the battery circuit, faulty charging unit or a high impedance battery cell.

End-of-charge voltage boost charge at +20 °C	28.8 V
End-of-charge voltage trickle charge at +20 °C	27.6 V
Deep discharge protection [1.6 V/Z]	20.4 V
Maximum charging current	4 A
Maximum rated power at boost charge	130 VA
Maximum rated power at trickle charge	10 - 120 VA



In conventional lead-acid batteries with free electrolyte, water is broken down into oxygen at the positive plate and hydrogen at the negative plate in case of overcharging the battery. To protect the battery from drying, this loss of water must be compensated for at regular intervals.



The extremely low gas emission absorption cells are designed to ensure that the positive plate is charged completely before the negative plate and consequently the released oxygen diffuses to the negative plate. On the negative plate it reacts with the lead to form lead-oxide which in turn reacts with the sulphuric acid electrolyte and forms lead-sulphate and water to prevent any loss of water.

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
[C)] = Discharge current

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

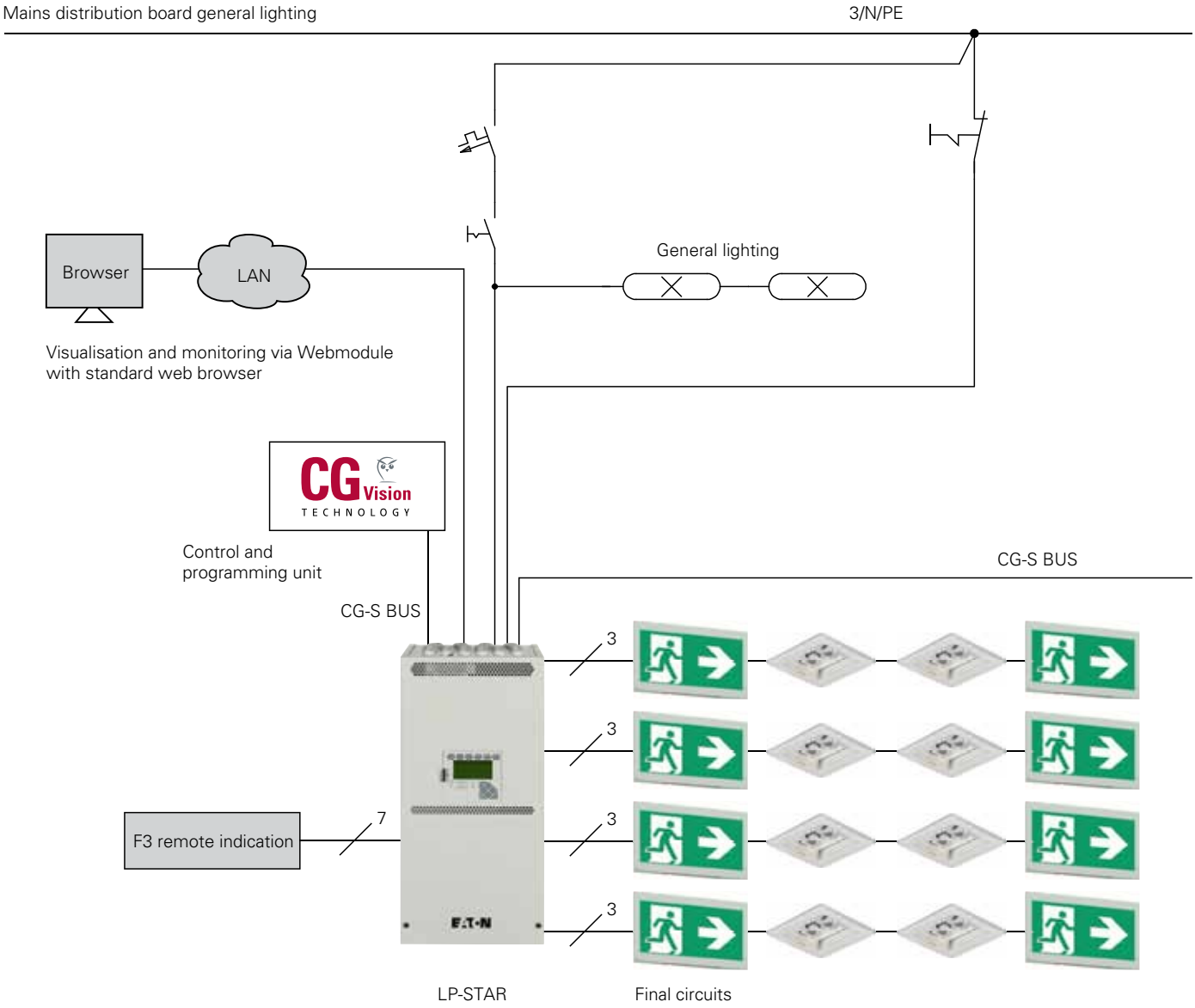
Evaluation of aeration and deaeration of electrical service rooms according to DIN EN 50272-2

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 [cm²], 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 [cm²], 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.

Centrally Powered Systems

LP-STAR emergency lighting power supply in a compact design - Installation example



LP-STAR

LP-STAR emergency lighting power supply in a compact design

Low Power System according to EN 50171 and BGV A3 for the power supply of escape luminaires and exit sign luminaires 230V / 216V AC/DC. It is suitable for emergency lighting systems according to DIN VDE 0100-718, DIN EN 50172 and V DIN V VDE 0108-100. With an automatic test device and monitoring and displaying the state and name of individual luminaires connected to system-specific EVG/LED supply module including a monitoring component without an additional data cable.

The switching operation of each escape luminaire and exit sign luminaire with system-specific EVG/LED supply module or monitoring component is programmed freely in the control module without an additional control cable to the luminaires.

The CEAG STAR technology results in a severe reduction of end circuits, because the mixed operation including maintained light, switched maintained light and non-maintained light is implemented in a single circuit.

The control module assigns the different operating modes without any modification of the luminaire installation. The operating modes: non-maintained light or maintained light cannot be selected at the monitoring module or EVG/LED supply module using slide switches, coding switches or jumpers respectively. The additional costs incurred due to the use of parts made by other manufacturers or additional components on the installation lines cannot be claimed.

Simple connection technology using plug-in, back of hand proof clamp connections.

Bus technologies

CG-S bus technology based on LONWorks® technology

For data communication a 2-pole, bidirectional CG-S data bus, is integrated optimally in the control module of LP-STAR.

Using the optionally available CG-S Bus Interface, any building control systems based on the LONWorks® technology can communicate with the system on the CG-S bus.

Alternatively, any OPC compatible building control system can be connected to the optionally available OPC server and the Interface-Box using the CG-S bus.

Thus extensive status messages and commands can be queried through the CG-S bus.

The following data can thus be directly communicated:

- Status messages such as device disabled, deep discharge protection, battery interruption, battery voltage, current and temperature, insulation error, charging unit fault, bus communication error, mains failure, circuit faults etc.
- Input commands such as Start function test, Start and cancel duration test, Manual reset, Disable and release system.

16 virtual switching inputs can be used to directly and independently switch circuits or even individual luminaires via external LON sensors.

Interconnection of all LP-STAR distribution boards also possible via various media such as fibre optic cables, Ethernet and LAN using optional components.

Status and error messages can be retrieved for each individual luminaire.

Communication with system-oriented luminaires takes place only through the connected power line.

Using the search function, the luminaires connected to the system addressed during installation are automatically detected.

Control module

A freely programmable control module with a non-volatile program memory and alphanumeric graphic display monitors and controls the LP-STAR system. All functions such as loading, mains/emergency switch-over and deep discharge protection of devices and the connected emergency luminaires are automatically inspected. Errors arising will be reported immediately.

An interface provides a connection to a central monitoring device.

In case of a short circuit or interruption of control current loops, differential monitoring leads to the system immediately switching on (maintained light) or to the system being put in standby.

Graphical display:
128 x 64 pixels, back-lit, program-adjustable contrast and brightness.

Display values:
battery voltage, battery charge current (+), battery charge current in test mode or in case of fault (–), charge fault, luminaire fault with location information in plain text, deep discharge protection, manual reset, delayed emergency light (remaining time in minutes), test mode, date/time, insulation fault, UV-AV fault, fault information, programming information, test log book.

LED displays:
System readiness, supply from the source for safety services, failure.

Sealed keypad:

- individual buttons for device test, function test and duration test.
- 3 freely programmable function keys for example: Lock/unlock device, manual reset, turn on/off maintained light, display fault list, turn on/off continuity lighting, simulation mains failure UV.
- 7 control buttons for user-friendly navigation in query and programming mode.

Programming options:
Individual luminaire monitoring, circuit monitoring, individual name (20 characters) per device, circuit, luminaire, device address, selective manual reset, delayed emergency light (1-15 min.), LON switch, timer function, automatic function and duration test, selection of menu language, automatic daylight savings time setting, password protection.

Connection for disable switch:
Control loop for disabling the system during operating downtimes with differential loop monitoring for short circuit and wire breakage detection.

Differential monitoring: Short circuit or interruption lead to the system going into standby.

Connection for phase monitor:
24V current loop for emergency light requirement with differential loop monitoring for short circuit and wire breakage detection.

Differential monitoring: Short circuit or interruption lead to the system switching on (maintained light) immediately.

Connection for potential-free indicator contacts, buzzer:
4 potential-free indicator contacts with a separate root. Every potential-free contact can have one or more of the 11 different alerts assigned to it. Freely programmable, DIN VDE specification retrievable at any time as default setting.

Connection for 230 V digital inputs without phase monitor function: 8 freely assignable inputs 230V, programmable as inverted and non-inverted for example for start/stop function test, start/stop duration test,

manual reset, turn on/off maintained light, turn on emergency lighting as continuity lighting.

Memory card:
Memory card for archiving the device configuration and the mandatory inspection log book information over a minimum of 4 years.

Storing:

- 360.000 inspection log book entries
- Luminaire target location texts (20 characters per luminaire)
- Circuit names (20 characters per circuit)
- Device name (20 characters)

Using the device can be programmed offline on a PC using the optional CEAG software.

Charging technology

The sealed maintenance-free lead batteries are charged gradually based on an microprocessor-controlled IU charging curve in function of temperature. Force charge is activated in function of the battery charge level to ensure that the batteries are charged without exceeding the gas development voltage. The charge monitoring procedure verifies the charging process continuously and it reports any faults immediately, including interruption of the battery circuit, faulty charging unit or a high impedance battery cell.

- with ISO test device according to DIN VDE0100 Part 410
- LED displays for charging unit on, boost charge on, insulation fault, charge fault, mains available
- potential-free contacts charge fault, boost charge, insulation fault
- Temperature sensor built into the battery compartment

Circuit components

The circuit switch-over supplies and monitors emergency luminaires with electronic ballasts for DC operation. The CEWA GUARD monitoring checks the operation of the connected luminaires.

- Monitoring of up to 20 luminaires per circuit with individual status display
- Mixed operation of continuous lighting, switched maintained light and non-maintained light within a single circuit. (an additional data line to the luminaires is not required)
- Output voltage in battery operation: 220 V DC
- Typical switch-over time mains/battery: 450 ms
- freely programmable for maintained light, switched maintained light or maintained mode
- fuses easily accessible on the front part of the component
- permanent monitoring of fuses
- automatic luminaire search function

Webmodule

Webmodule for visualising and monitoring a LP-STAR device on the local Ethernet (LAN) or Internet (WWW) with a regular WEB browser. Access to the webmodule via internet (WWW) must be appropriately administered and set up on site by a competent IT department.

Integrated email program for convenient, event-related error notification via email, for up to 5 email recipients.

- Simple menu navigation
- Complete visualisation and monitoring of an LP-STAR through the local Ethernet (LAN) with a regular WEB browser
- Retrieving and indicating all current operating states
- Localised fault indicators for every emergency luminaire circuit and luminaires with target location information in plain text connected to a function test
- Continuous up-to-date information on charging device and battery
- Parallel access from various PC workstations to a web-module possible (max. 8)
- Integrated email program for a convenient error notification via email
- Adjustable email dispatch acc. to type of error or function test
- Up to 5 email recipients programmable
- Adjustable update cycle for web browser via the webmodule
- Authenticated access via administrator account with password protection
- Configurable guest account for restricted access with password protection
- Static or dynamic (DHCP) IP addressing possible
- Any number of webmodules operable in parallel
- Overview of all active web-modules on the Intranet with status display and hyperlink function

Supply voltage:	24V DC
power consumption:	< 1.5W
Connection:	RJ45

Housing made of polycarbonate for installation on DIN rail, 2TE

Dimensions (L x W x H): 90 mm x 35 mm x 58 mm Weight: ca. 100 g Protection rating: IP20

24V OGiV block battery

Only closed and non-spillable OGiV batteries are used. Rated operating time 1, 3 and 8 hours respectively

- extremely low gas emissions
- Period of use: 10 years at 20°C
- low self-discharge
- Design according to IEC60896-21/-22
- electrolyte and air oxygen sealed terminals

CEAG is a member of the "Stiftung Gemeinsames Rücknahmesystem Batterien [joint battery recycling programme] (GRS)".

In this manner batteries undergo a controlled and complete recycling cycle. This means that possible polluting materials are recovered and reused for new products.

Specifications have been quoted based on CEAG products. Specifications can be compared based on this product. The tenderer can submit a tender based on a variant solution including an equivalent product (proof by the tenderer). Detailed product descriptions must be attached to the offer for the evaluation of equivalence:

References

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Fax	+49 (0) 2921/69-617
Internet	www.ceag.de
Email	info-n@ceag.de

A ISO 9001 certification must be further provided as proof.

Manufacturers without the ISO 9001 certification are not permitted.

LONWorks®: Registered trademark of the Echelon Corporation


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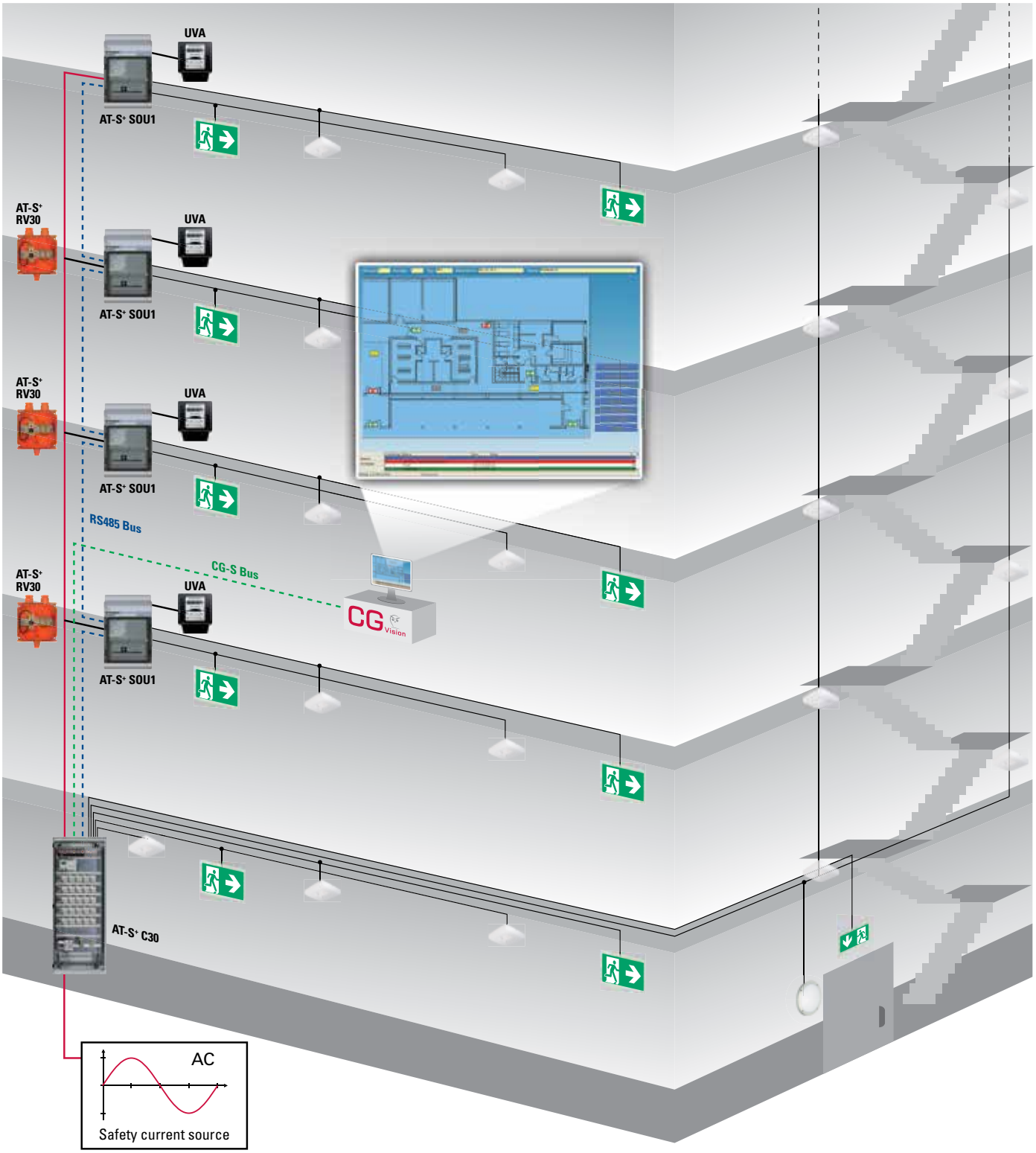
Reliable STAR technology for AC safety power sources

Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology - Fire compartment-specific installation example



AT-S+ SOU1

Distribution box for area by area installation allows electricity costs allocation per rental area

Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology - Features

AT-S+ offers all the known benefits of our STAR technology, now also for AC safety power sources. It is the perfect symbiosis of CEWA GUARD and STAR technology.

The Automatic Test System AT-S+ individually moniitor seach CG-S luminaire (up to 20 per circuit), and it does all this using the power supply cable alone.

The new STAR+ technology allows the switching mode of every connected V-CG-S luminaire to be freely programmed within a 50 or 60 Hz supply network using the system's controller.

This means that maintained light, switched maintained light and non-maintained light modes can be combined in one and the same circuit – there is no need for separate data cables!

The control module with its nonvolatile program memory and large graphic display automatically monitors and controls all components of the test system as well as emergency luminaires connected to it. Faults occurring are shown by the display, forwarded via freely configurable signal contacts and saved to an inspection book.

An integral search function automatically detects all system-dependent luminaires and modules that are assigned an address during installation. A central monitoring device can be connected via an interface.

Features:

- Shortened inspection effort due to STAR+ technology; automatic function monitoring of up to 20 luminaires per circuit
- Reduced installation expenditures by STAR+ technology; freely programmable mixed operation of the switching modes per luminaire in one circuit
- Less installation costs as no data line is required to the luminaires
- Automatic luminaire search function
- Plain text display on the control module down to the last luminaire
- Flexible data storage for test log and system configuration with memory card
- 30 minutes functionality in compliance with model directive for fire protection requirements on electrical wiring systems (MLAR model conduit systems directive), version 11/2005, tested by national material testing office

S+TAR TECHNOLOGY

S = Switching
T = Technology
A = Advanced
R = Revision
+ = AC single luminaire monitoring

Identify STAR+ market requirements and consistently implement them!

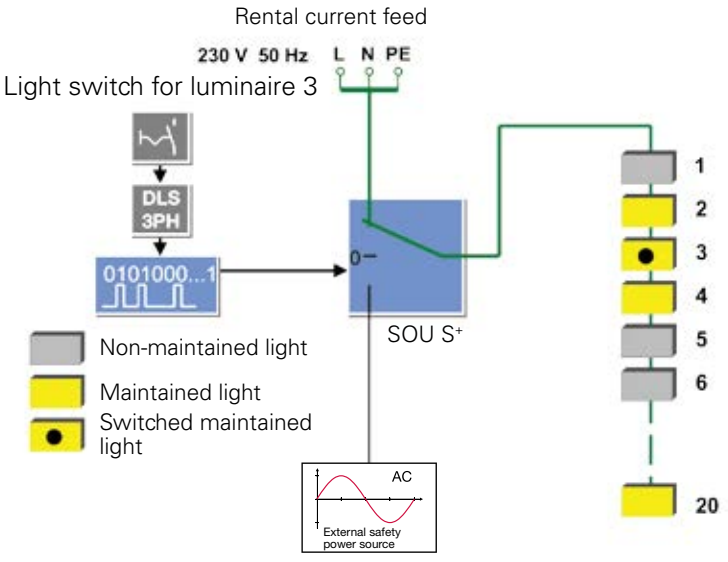
The continuing development of the CEWA GUARD monitoring system has led to the creation of the

Switching
Technology
Advanced
Revision,

or **STAR** for short. This **CG-STAR** technology allows different switching modes to be implemented in one and the same circuit, and the switching mode of each individual luminaire can be re-programmed at any time.

As a result, this technology offers not just the proven CEWA Guard safety when it comes to operating a safety lighting system, it also gives planners the confidence and flexibility of knowing that the system can respond and adapt at any time to any changes that are made to a building and its use.

We have united both forms of technology to STAR+ to take advantage of CEWA GUARD and STAR technology in projects in which batteries as power sources for safety services are not needed, but where generators, dual systems (secondary power supply) or central converter systems are used. This now gives you a highly flexible test system with all the familiar benefits.

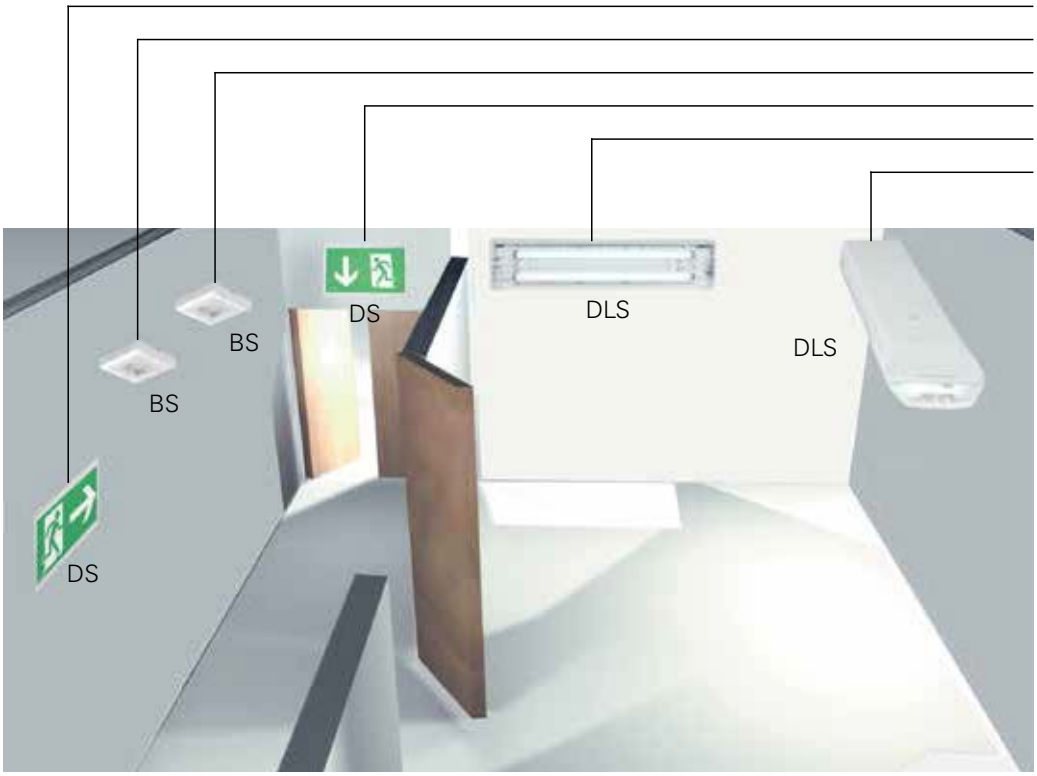


Operation of the STAR+ technology

Your Advantages:

The number of outgoing circuits needed can be sharply reduced, since continuously operating, stand-by and switchable permanent lighting can be realised in one common circuit.
This allows the use of shorter cable distances, reduces installation costs and minimises the effects of burning materials. Any mode of operation can be assigned at a later date – without encroachment in the lighting installation. This enables simple project planning without having to take all possible types of operation into account.

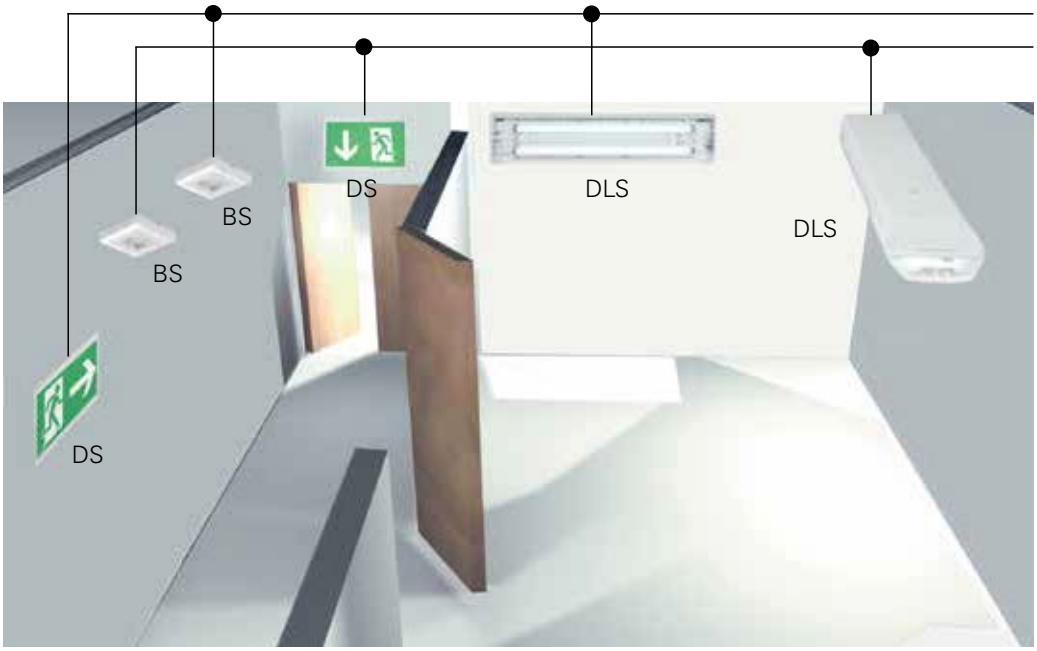
With symbiosis of CEWA GUARD technology and the patented STAR technology to STAR+ technology, no supplementary data line to the luminaires is needed even with use of an AC power source for safety services.



Conventional Installation:

Maintained light 1 (DS)
Non-maintained light 1 (BS)
Non-maintained light 2 (BS)
Maintained light 2 (DS)
Switched maintained light 1 (DLS)
Switched maintained light 2 (DLS)

- Each type of switching mode requires two circuits
- Only one type of switching mode is possible per circuit
- Any later modifications involve a large amount of work and expense



AT-S+ Installation with STAR+ Technology:

All types of switching modes
All types of switching modes

- Only two outgoing circuits for all types of switching modes
- Maintained light, non-maintained light and switched maintained light are possible in one common circuit
- Later circuit modifications do not pose any problems

AT-S+ cabinet

Cable infeed from above

Triple deck tension spring installation terminal with neutral wire disconnect terminal

Control unit CU S+

DC/DC converter.2

AC module

Fuse circuit breaker D02 25 A per field

Circuit switching modules SU S+ 2 x 6 A

Fuse circuit breaker

6-fold mains distribution box (optional)

Cable infeed from below

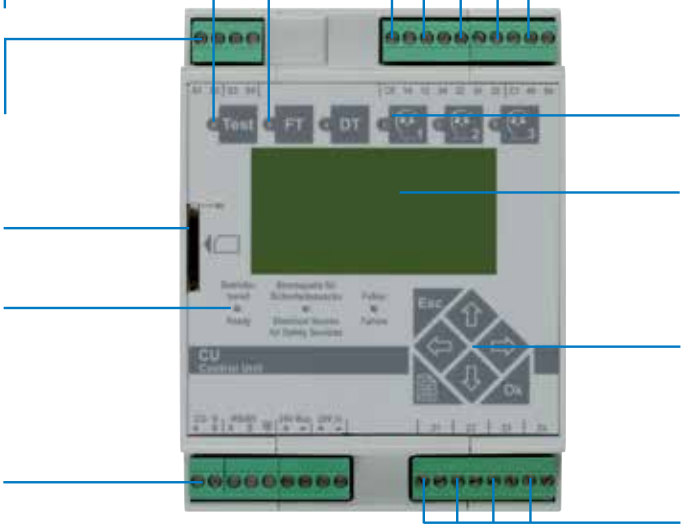
Large connection compartment for convenient wiring

All connections on triple deck installation terminals in the upper part of the central unit.

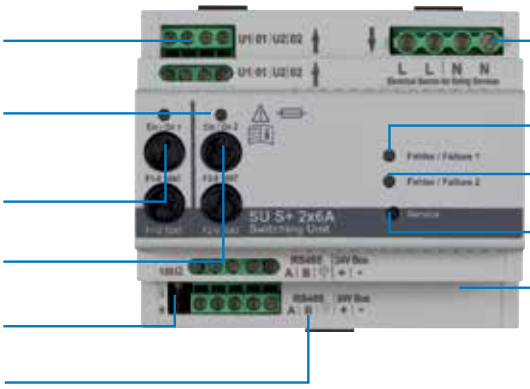
The control unit, DC/DC converter and the AC module are wired at terminal as standard.

Wiring of the SU-S+ modules at terminals is optional.

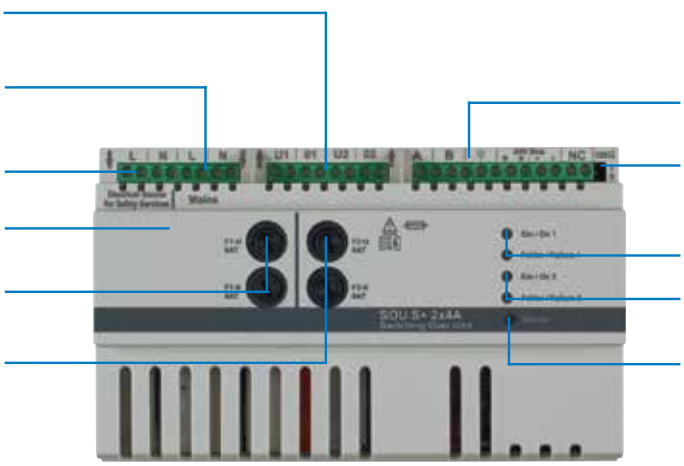
Freely programmable control unit



Switching unit SU S+ 2 x 6 A



Switching over unit SOU S+ 2 x 4 A



Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology - Distribution box SU1 and SOU1

AT-S+ SU1

Type plate

Sighting window

Circuit designation field

Cable infeed from above

Power source feed for safety service

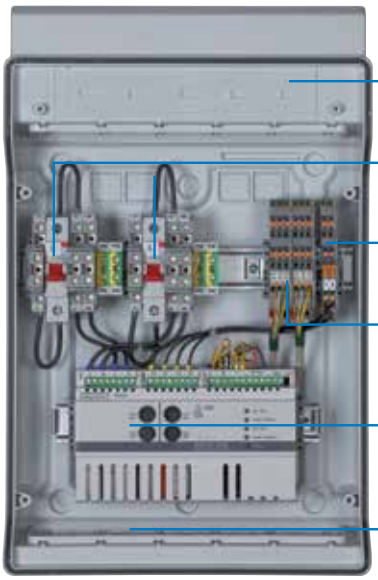
End circuit terminals

RS 485 bus connection

Switching unit SU S+ 2 x 6 A

Cable infeed from below

AT-S+ SOU1



Type plate

Sighting window

Circuit designation field

Cable infeed from above

Two feeders (rental current and power source for safety service)

End circuit terminals

RS 485 bus connection

Switching over unit SOU S+ 2 x 4 A

Cable infeed from below

Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology - Distribution box ESF30 SU2 and ESF30 SOU2

AT-S+ ESF30 SU2

AT-S+ ESF30 SOU2

Safe operation under the most extreme environmental conditions

There are different types of sub-distributors available for compliance with the requirements on functional integrity of MLAR 11/2005.

AT-S+ ESF30 C10-P

Sub-distributor in sheet steel housing

In accordance with the model guideline on fire protection requirements pertaining to wire systems (MLAR specimen guideline on wire systems), version 11/2005, verified by a National Material Testing Office.

Approved by the Deutsches Institut für Bautechnik (DIBT - German Institute for Civil Engineering) as an electrical distributor with functional integrity, including electrical equipment and technical air ventilation with approval number: Z-86-2-1.

Electric distributor with functional integrity

Experimental design for application as an electrical distributor with functional integrity. The functioning of all the installed electronic components was tested in a fire test.

Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology - Substations with functional integrity of 30 minutes

AT-S+ ESF30 SOU2

Sub-distributor in Priodec housing

In accordance with the model guideline on fire protection requirements pertaining to wire systems (MLAR specimen guideline on wire systems), version 11/2005, verified by a National Material Testing Office.

Approved by the Deutsches Institut für Bautechnik (DIBT - German Institute for Civil Engineering) as an empty enclosure for fire protection with a fire resistance rating of minimum 30 minutes in case of external fire exposure, approval number of the empty enclosure: Z-86.1-46

Functional integrity exceeding 30 minutes is certified in an expert opinion, based on a fire test.

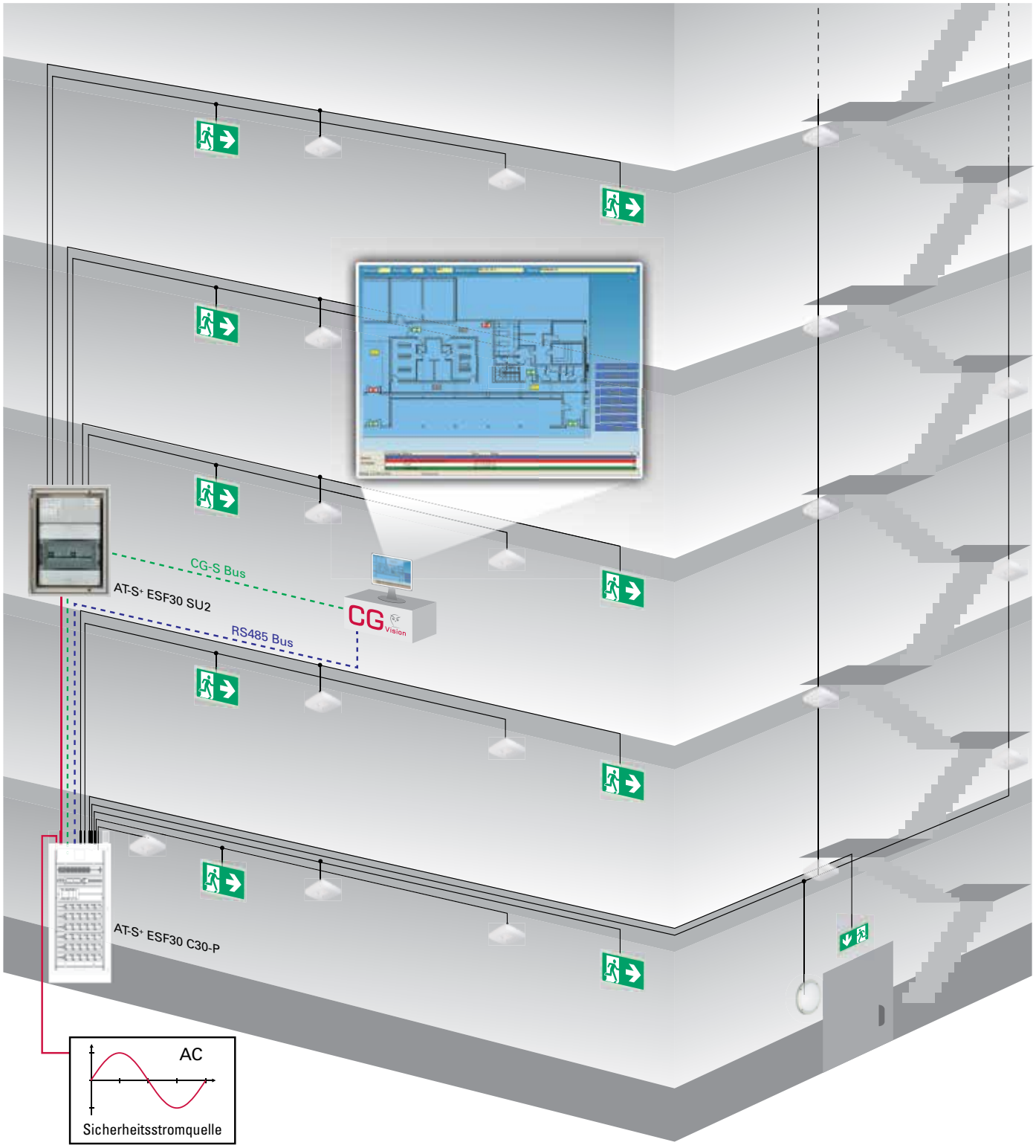
Please scan the following QR code for direct access:

Fire test in a video documentation

Please watch the video documentation of the fire test of the types of enclosures presented here:
http://youtu.be/dk8qieMSiTI

Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology -
Across fire compartments-specific installation example



AT-S+ ESF30 SU2
Distribution box for across fire compartments-specific installation

Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology - Components and options

Control module

A freely programmable control module with non-volatile program memory and graphic display monitors and controls the test system.

All functions such as mains/emergency light switching of the devices and the emergency luminaires are tested automatically. Any faults that occur are signalled immediately. An interface enables a central monitoring facility to be connected.

In the event of a short circuit or open circuit in current loops, differential monitors immediately power on the system (maintained light) or put the system in readiness.

- Non-volatile memory
- Automatic luminaire search function
- Individual luminaire monitoring
- Automatic DLS/TLS search function
- Selective manual reset/circuit
- Selective emergency light/circuit
- Password function
- Final circuit fuse monitoring
- Control module with multi-master mode M3

Sealed keypad with 2 keys for:

- Test (mains failure)
- Function test start / cancel (Key DT without function)

3 freely assignable function keys for:

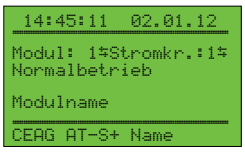
- System disable/enable
- Manual reset
- Cancel function test
- Show fault list
- Maintained light off/on
- Power on complete safety lighting system (continuity lighting)
- Mains failure simulation UV-A (emergency operation)

7 control keys

for user-friendly navigation

LED indicators for:

- Ready
- Electrical Source for Safety Services
- Failure



Graphic display:

128 x 64 pixels, backlit, program adjustable contrast and brightness.

Displays include:

- Date/Time
- Power source for safety services ready for operation
- Infeed of safety lighting from power source for safety services
- Power source for safety services faulty
- Manual reset
- Test mode
- Delay-time on mains return (remaining time in min.)
- Luminaire failure with location label
- UV-AV failure (location specification)
- Failure/programming information

Connections

- **Connection for disable switch:**
  24V control loops for blocking the installation during factory shutdowns with differential loop monitoring for short-circuit and open circuit detection. Differential monitoring: Short-circuit or open circuit result in readiness for operation of the system.

- **Connection for phase monitor:**
  24V current loop for requesting emergency lighting using differential loop monitoring for the detection of short-circuit and open circuits. Differential monitoring: Short-circuit or open circuit result in immediate power on (maintained light) of the system.

- **Connection for zero-potential signal contacts and buzzers:**
  Connection for zero-potential signal contacts, 24 V 0.5 A:
  3 relays with common potential, 1 x switching contact each,
  One or several from 11 different messages can be assigned to each zero-potential contact. Freely programmable, DIN VDE specification can be called up at any time as a pre-setting.

  2 relays with common potential, 1 x open contact each with fixed assignment.

- **Connection for analog inputs:**
  4 of freely assignable 24 V analog inputs, switch function can be programmed negated and non-negated, e.g. for start / cancel function test, disable / enable system, manual reset, maintained light on / off, power on safety lighting as continuity lighting.

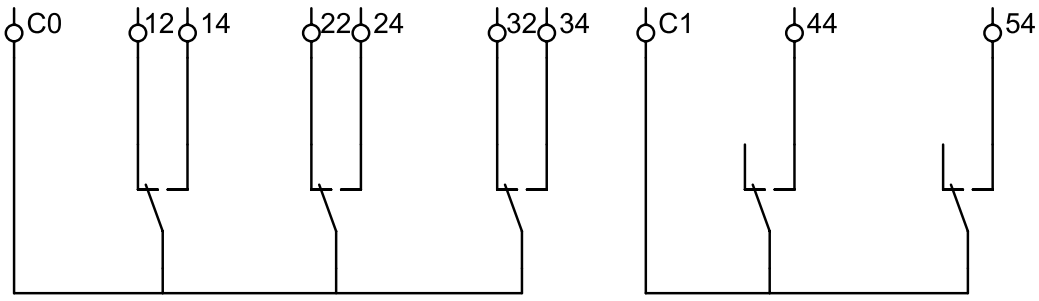
Display	128 x 64 pixel graphic display, program adjustable contrast
Ilumination	backlighting, program adjustable brightness
Keypad	sealed, with 6 function and 7 control keys
Readout	Infeed of safety lighting from power source for safety services Power source for safety services ready for operation AC isolation fault External fan fault Luminaire failure with location label Manual reset Delay-time on mains return UV-AV failure (location specification) Test mode Date/Time Failure information Programming information
Status	– Ready – Electrical Source for Safety Services – Failure

Potential-free signal contacts, buzzer

3 freely configurable relays with common potential, 1 x switching contact each, 2 relays with fixed assignment and common potential, 1 x open contact each, 24 V 0.5 A; buzzer. Freely programmable, DIN VDE specification can be called up at any time as a pre-setting.

Default setting AT-S+

Designation	Relay 1 C0/14/12	Relay 2 C0/24/22	Relay 3 C0/34/32	Relay 4 C1/44	Relay 5 C1/54	Buzzer
Ready for operation		X			Permanently configured for control of a technical cabinet ventilation. Default setting >40°C ON < 35°C OFF.	
Mains failure S3/S4	X					
Mains failure DLS/3PH	X					
Ext. source error	X					
Circuit fault	X					
Luminaire fault	X					
Device fault	X					
Ext. source active			X			
ISO error	X					
Function test				X (permanent-ly configured)		
Invert contact		X				



Ordering details

Type	Model	Order No.
Control module CU-S+ with SD	Plug-in module	4 0071 360 371

SD card

SD card reader

Secure-Digital-Card

Flexible data storage for system and log book configuration, e.g. of the mandatory archiving of log book information for a minimum of 4 years.

The system can also be programmed at any PC using optional SD-card reader and CEAG software. Texts can also be entered on the control module in the switch cabinet.

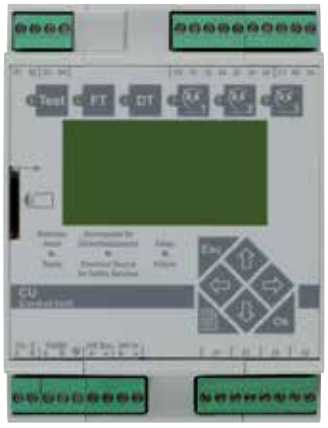
Storage of:

- 360,000 log book entries
- Location texts for the luminaires (20 characters per luminaire)
- Location texts of external modules such as phase monitor, DLS, TLS (20 characters per module)
- Circuit names (20 characters per circuit)
- System name (20 characters)

Ordering details

Type	Model	Order No.
SD card	SD card formatted for AT-S+	40071347911
SD card reader	SD card reader for USB-Port	40064070561
Software	Software for external programming of the AT-S+ via PC	40071347152

SD-Card (Secure-Digital-Card)



Removable configuration and log book storage SD

PC with CEAG software for SD programming and analysis

Programming

- Easy system programming on an office PC from installation plans
- System configuration can be stored in the PC

DC/DC-Converter.2

DC/DC-Converter.2

The DC/DC converter.2 converts the 240 V AC from the AC supply with galvanic isolation in 24 V DC and 6 V DC for supply of the CU S+ control unit.

24 V external	20 W continuous rating Outgoing circuit with front panel connector Isolated voltage
24 V internal	100 W continuous rating 140 W peak rating (20 ms)

Ordering details

Type	Order No.
DC/DC-Wandler.2	70071347071

AC module

AC module

The AC supply in combination with the DC/DC converter.2 assumes supply of the internal system voltage.

Ordering details

Type	Order No.
AC module	40071346311

Mains distribution board

Mains distribution board

The mains supply to a AT-S+ C30 or AT-S+ C16 system comes via a modular mains distribution board. This includes a size 00C load disconnector (1) with a maximum conductor size of 50 mm² and allows the connection of up to 6 distribution terminals for slave stations to modular size D02-E18 outgoing mains circuits (2) with the necessary terminals for neutral and ground (3).
The same mains distribution boards must also be used three-phase for feeders to powerful slave-stations (accommodates up to 2 slave stations in this case). The components are simply plugged on from the front and securely contacted.

Mains distribution module D02-E18

Current rating	63 A
Rated operating voltage	400 V
Box terminal for circulator conductor	to 16 mm²
Material	Polyamide (PA 6.6), 30 % glass-fibre-reinforced
Scope of supply	incl. 3 pcs. screw caps E18 and 3 pcs. D02-fuse inserts 25 A

Ordering details

Type	Scope of supply	Order No.
Mains distribution module for track mounting	incl. 3 pcs. screw caps E18 and 3 pcs. D02-fuse inserts 25 A	40071347160

SU S+ 2 x 6 A

Switching unit SU S+ 2 x 6 A

- Up to 20 luminaires can be monitored individually
- Easy access to fuses
- LED indicates fault and Run/ON for each circuit
- Supplies ballast and LED luminaires
- Service-friendly modular units are wired up and ready to connect to 3-tier 4 mm² disconnect neutral terminals

Hybrid operation of maintained light, non-maintained light and switched maintained light per module can be programmed with no additional data cable.

Fusing	10 AT/250 V, 5 x 20
Continuous current rating	6 A per circuit
Max. inrush current	250 A/ms per circuit
Switching time	450 ms
Own consumption	10.5 W (max.)
Module width	6 subunits (H x W x D = 107 x 90 x 58 mm)

Ordering details

Type	Scope of supply	Order No.
SU S+ 2 x 6 A	Switching untit SU S+ 2 x 6 A	40071360350
Spare part	Fuse 10 AT (5 x 20) 250 V (PU 10 pcs.)	40071360483

SOU S+ 2 x 4 A

Switching over unit SOU S+ 2 x 4 A

- Up to 20 luminaires can be monitored individually
- Separate AV-feed for rental current
- Easy access to fuses
- LED indicates fault and Run/ON for each circuit
- Supplies ballast and LED luminaires
- Service-friendly modular units are wired up and ready to connect to 3-tier 4 mm² disconnect neutral terminals inside the distribution box

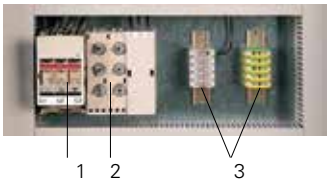
Hybrid operation of maintained light, non-maintained light and switched maintained light in a single circuit can be programmed with no additional data cable.

Fusing	8 AT/250 V, 6.3 x 32
Continuous current rating	4 A per circuit
Max. inrush current	250 A/ms per circuit
Switching time	450 ms
Own consumption	9 W (max.)
Module width	10 subunits (H x W x D = 178 x 108 x 60 mm)

Ordering details

Type	Scope of supply	Order No.
SOU S+ 2 x 4 A	Switching over unit SOU S+ 2 x 4 A	40071360461
Spare part	Fuse 8 AT (6.3 x 32) 250 V (PU 10 pcs.)	40071360484

Mains distribution board



Mains distribution board

The mains supply to a ZB-S/26 or ZB-S/18 system comes via a modular mains distribution board. This includes a size 00C load disconnector (1) with a maximum conductor size of 50 mm² and allows the connection of up to 6 slave stations to modular size D02-E18 outgoing mains circuits (2) with the necessary terminals for neutral and ground (3).

The same mains distribution boards must also be used three-phase for feeders to powerful slave-stations (accommodates up to 2 slave stations in this case). The components are simply plugged on from the front and securely contacted.

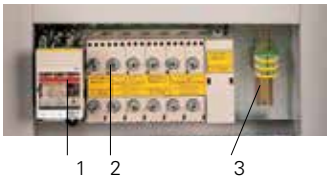
Mains distribution module D02-E18

Current rating	63 A
Rated operating voltage	400 V
Box terminal for circulator conductor	to 16 mm²
Material	Polyamide (PA 6.6), 30 % glass-fibre-reinforced
Scope of supply	incl. 3 pcs. screw caps E18 and 3 pcs. D02-fuse inserts 25 A

Ordering details

Type	Scope of supply	Order No.
Mains distribution module for track mounting	incl. 3 pcs. screw caps E18 and 3 pcs. D02-fuse inserts 25 A	40071347160

Battery distribution board



Battery distribution board

The battery supply to a ZB-S/26 or ZB-S/18 system comes via a modular battery distribution board. This includes a size 00C load disconnector (1) with a maximum conductor size of 50 mm² and allows the connection of up to 6 slave stations to modular size D02-E18 outgoing battery circuits (2) with related terminals for ground (3). The components are simply plugged on from the front and securely contacted.

Battery distribution module D02-E18

Current rating	63 A
Rated operating voltage	400 V
Box terminal for circulator conductor	to 16 mm²
Material	Polyamide (PA 6.6), 30 % glass-fibre-reinforced
Scope of supply	incl. 2 pcs. screw caps E18 and 2 pcs. D02-fuse inserts 25 A

Ordering details

Type	Scope of supply	Order No.
Battery distribution module for track mounting	incl. 2 pcs. screw caps E18 and 2 pcs. D02-fuse inserts 25 A	40071347161

Cover strip

Busbar guard: Cover strip for clip-mounting to the trunking section. Ready-cut to module width.

Material: Hard PVC.

Ordering details

Type	Scope of supply	Order No.
Busbar cover strip	Cover strip in module width for clip mounting at the trunking section	40071347192

F3 remote indication

F3 remote indication
for flush-mounting

F3 remote indication

The F3 remote indication ensures display of the most important installation functions. Blocking of emergency lighting operation is possible via a key switch during idle operation times.

Differential loop monitoring leads to operational readiness of the system with short circuits or wirebreak detection.

LED displays: system readiness, source for safety services, failure. As such the F3 remote indication fulfills the requirement that remote switching is only permissible when operation by unauthorized persons is not possible.

Connection terminals wall surface-mounting	2.5 mm² rigid and flexible
Dimensions mm (H x W x D)	160 x 80 x 55
Connection terminals for flush-mounting	1.5 mm² rigid or 1 mm² flexible
Dimensions mm (H x W x D)	80 x 80 x 55
Colour enclosure	sim. RAL 7035 Light grey

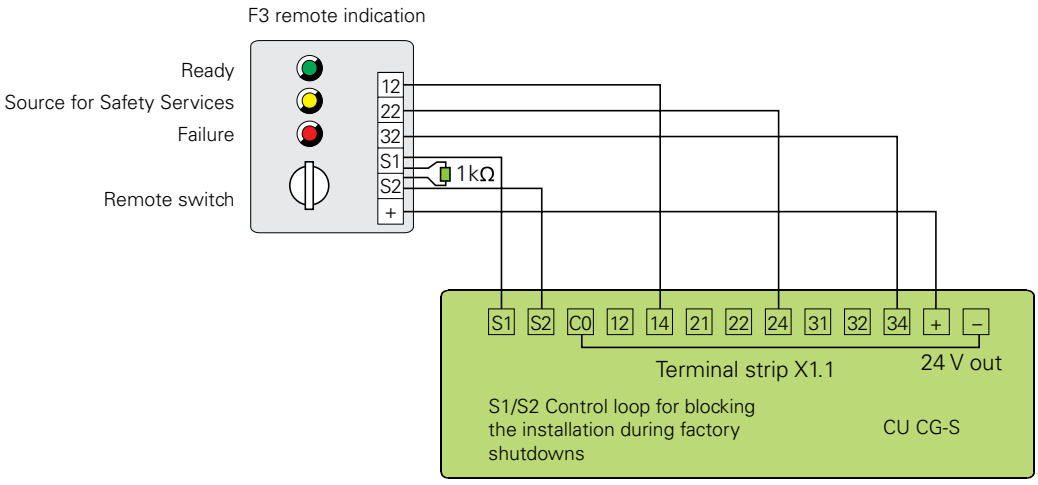
8

Ordering details

Type	Scope of supply	Order No.
F3 remote indication	Module surface-mounting	40071338497
F3 remote indication recessed	Performance for installation in the flush-mounted switch or empty space box acc. to DIN VDE 0606	40071347490

Remote switch

Control loop for blocking the installation during factory shutdowns with differential loop monitoring for short-circuit and open circuit detection.



Differential monitoring:	A short-circuit or open circuit causes the system to be enabled.
F3 switch closed:	System ready
F3 switch open (1 kΩ):	System blocked

External DLS/3PH-Bus Module

External DLS/3PH-Bus Module

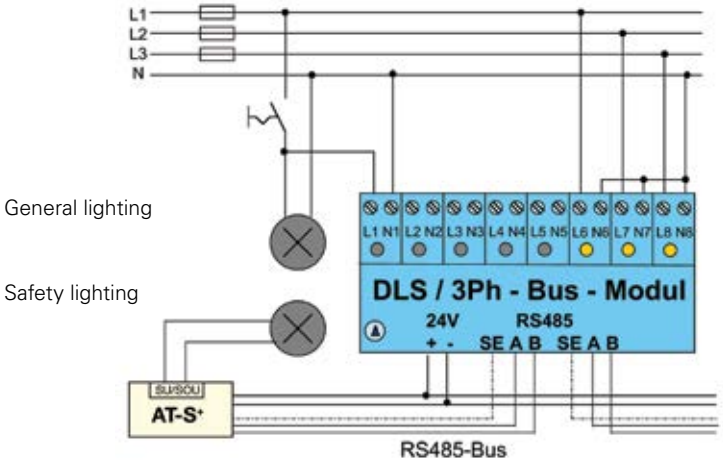
The DLS/3PH bus module can be used as a phase monitor and for light switch polling for the common switching of safety and general lighting systems. Switch cables to the safety luminaires are not required. The housing is suitable for DIN rail mounting. The module has a service button, an RS 485 bus port (integral 120 Ohm bus load resistor) with 24 V module supply, and is addressed with encoding switches. Coloured LEDs indicate fault, ON status and operation.
Freely programmable assignment of independent DLS inputs per emergency light circuit or luminaire and individual name per bus module in control unit. With use a 3-phase monitor, detailed phase failure display with location of failed sub-distribution for general lighting via clear text display in control unit.

Supply voltage device	24 V DC (min. 19 V, max. 30 V)
Current consumption (all 8 channel connected)	20 mA ± 5 mA
Degree of protection	IP 20
Insulation class	I
Ambient temperature	– 10 ° to + 40 °C
Input channels 8 DLS (channel 1-8) or DLS (channel 1-5) and 3Ph (channel 6-8)	U_N = 230 V > 195 V -> ON < 138 V -> OFF > 195 V -> ON < 138 V -> OFF
Number of light switch inputs	8 pcs. with LED display or 5 pcs. with 3-phase-monitor (selector)
Monitoring threshold	60 - 85 % U_{Nom} (meets DIN VDE 0100-718)
Data bus	RS 485
Address range	1-25
Weight	0.2 kg
Dimensions (L x W x H) mm	105 x 85 x 60
Mounting	DIN-rail
Connection terminals/Clamp terminals	2.5 mm² rigid and flexible

External DLS/3Ph-Bus-Module inverse

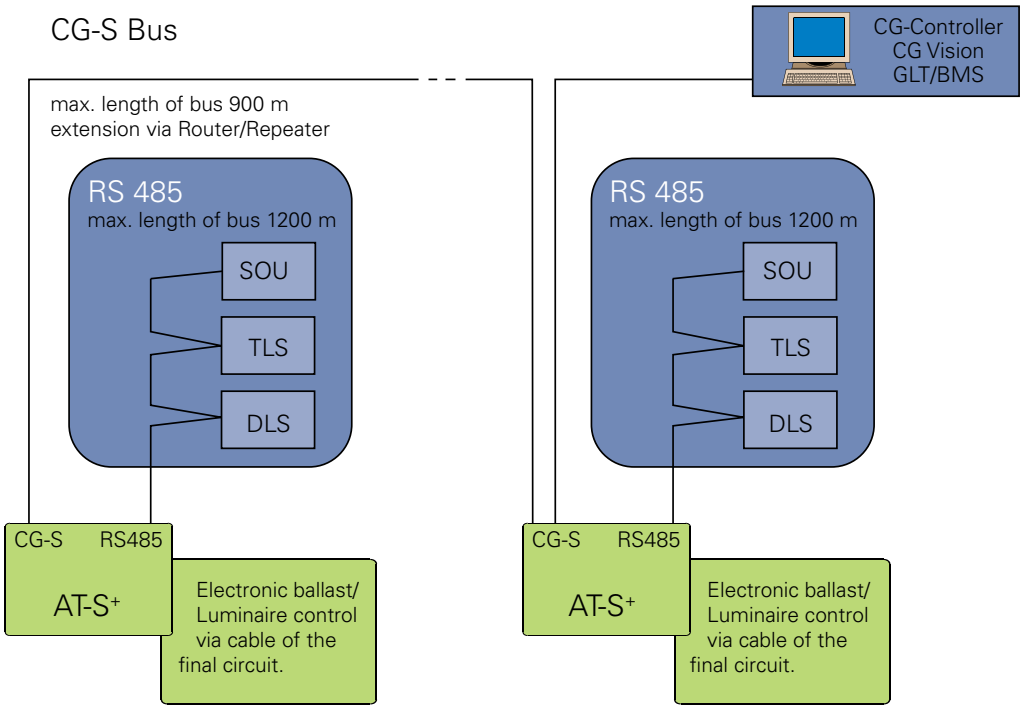
Ordering details

Type	Scope of supply	Order No.
DLS/3Ph-Bus-Module	Module for DIN rail mounting	40071346955
DLS/3Ph-Bus-Module inverse	Module for DIN rail mounting with inverse switching logic	40071347455
DIN mounting rail	4 pcs. DIN-rails for mounting external modules in the cabinet incl. mounting accessories	40071347125

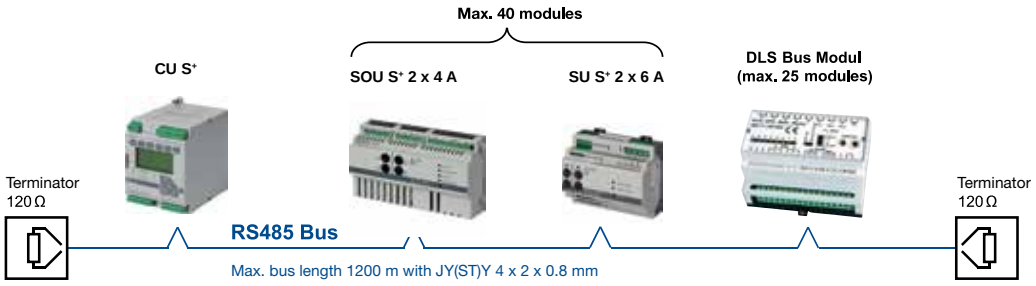


Bus technology according to RS 485

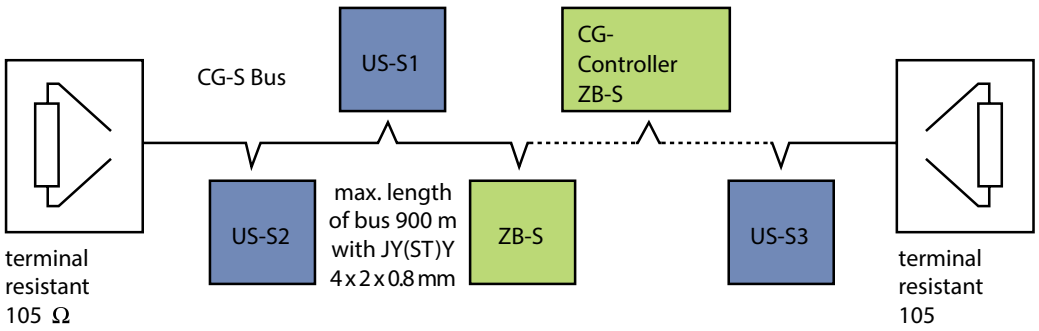
An RS 485 bus is used for data communication with external bus modules (DLS/3PH).
A connection to a central building services management system (BMS) can be made with the CG-S bus. An isolated 24V/0.5 A power supply (SELV) is available for the external modules.
The maximum line length depends on the required power and the conductor size.



Overall structure of the bus system for communication with external switching modules and master control system.



CG-S Bus for communication by AT-S+ systems



RS485 bus for communication with external AT-S+ modules (DLS/3PH bus module). The terminating resistor (120, 0.5 W) can be connected in the modules. The AT-S+ control cabinet also includes a resistor. This must be mounted in the AT-S+ system if only one cable is laid.

Notes:

Bus topology: linear, double terminated (no spur lines allowed)
The absolutely essential terminating resistors are supplied in a plastic pack in the control cabinet. Cable type (minimum requirement): JY(ST)Y 4 x 2 x 0.8 mm (twisted pair, screened). The conductor size required for the 24 V bus voltage will depend on the line length and the number of bus modules (Umin = 19 V DC).

DLS = external maintained light switching module (DLS/3PH bus module)
SOU S+ = switching over unit
SU S+ = switching over unit
CGVision = visualisation software

PC programming software AT-S+

Programming software for preset memory cards of the AT-S+ for the quick pre-programming via PC and simple reading and editing of the logbook.

For documentat on all files are saveable on memory card and hard disk.

Prints for documentation: Detailed prints of the programmed system configuration with the following details:

- individual name of the device
- the date and time of automatic function tests, incl. distance
- manual reset: yes/no
- delay on mains return: 0-15 min
- selective emergency light: yes/no
- Lon switch: yes/no
- assignments of the 5 relays
- assignments of the 3 function keys
- assignments of the 4 option inputs
- number, type and individual name of the bus modules

Detailed print of the programmed electrical circuits (line diagram) with the following details per electrical circuit:

- electrical circuit / module number and type
- individual electrical circuit name
- type of monitoring
- switching mode of the electrical circuit
- number of luminaires
- address and individual name per luminaire
- switching mode of each luminaire

Logbook prints with the following options:

- fault event (35 different fault events, separate or completely generic)
- time period of the logbook (date and time)
- individual comment per print
- luminaire failure: Detail of the individual luminaire and electrical circuit names

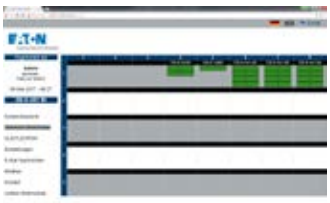
Ordering details

Type	Scope of supply	Order No.
Software	PC-Software for AT-S+, for alternative programming of the system configuration on PC	40071610233

Webmodule CG-S

Example: AT-S+-Device status

Example: SKU-Status



Webmodule CG-S (ZB-S/AT-S+)

Webmodule ZB-S/AT-S+ for visualisation and monitoring of a central battery system, type ZB-S/US-S via a local ethernet (LAN) or internet (WWW) with a conventional WEB browser. Access to the webmodule via internet (WWW) must be administrated from an IT department on-site.

Integrated mail-client for comfortable, event orientated failure information, for up to 5 E-mail recipients. Access via administrator account or guest account, with password protection.

- Easy menu structure
- Any type of display devices can be used with a WEB browser, for example notebook, tablet PC, IPad or smartphone
- Full visualisation and monitoring of a AT-S+ (automatic test system) via ethernet (LAN) with conventional WEB browser (e.g. Internet Explorer, Firefox etc.)
- Display of all actual operation modes
- Local failure information of each emergency circuit and luminaires with destination information in plain text
- Permanent actual information of the charging unit and battery
- Parallel access to the web module from different workstations possible (max. 8)
- Integrated mail client for comfortable failure notification via encrypted mail
- Type of different failures for the mail transmission is selectable
- Up to 5 mail recipients programmable
- Actualisation cycle of the web browser via the web module is adjustable
- Authenticated access via administrator account with password protection
- Encrypted transmission
- Adjustable guest accounts with restricted access with password protection
- Static or dynamic (DHCP) IP-addressing possible
- Supports IPv4/IPv6 (Internet Protocoll version 4/version 6)
- Any number of modules can be operated in parallel
- Overview display of all active web modules in local ethernet with status display and hyperlink function

Supply voltage device	24 V DC
Rated power	< 1.5 W
Connection	RJ45
Degree of protection	IP20
Weight	0.1 kg
Dimensions	90 x 35 x 58
Enclosure	Polycarbonate

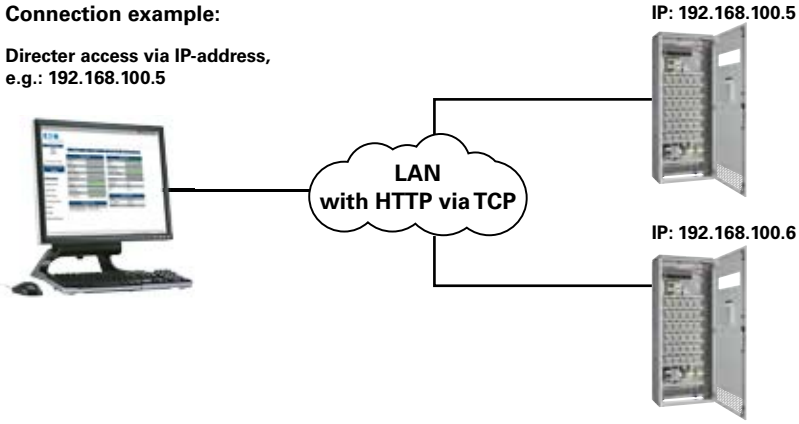
Ordering details

Type	Scope of supply	Order No.
Webmodule CG-S (ZB-S/AT-S+)	Module for DIN-rail mounting, incl. connection without patch line RJ45	40071361383

Notes:

If a webmodule integrated in the AT-S+ is supplied by the DC/DC.2 converter (external 24 V), a maximum of 20 DLS/3-phase modules or TLS bus modules can be connected.

Connection example:



Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology - Ordering overview of wall and floor-standing cabinets

AT-S+ C30

Ordering details

Type	Scope of supply	Order No.
Automatic Test System AT-S+ C30	Automatic Test System type AT-S+ C30 incl. CU-S+, DC/DC.2 and AC module 30 free module slots	40071360500
Automatic Test System AT-S+ C16	Automatic Test System type AT-S+ C16 incl. CU-S+, DC/DC.2 and AC module 16 free module slots	40071360501
Automatic Test System AT-S+ C4	Automatic Test System type AT-S+ C4 incl. CU-S+, DC/DC.2 and AC module 4 free module slots	40071360502
Automatic Test System AT-S+ C0	Automatic Test System type AT-S+ C0 incl. CU-S+, DC/DC.2 und AC module no free module slot	40071360503
Distribution box AT-S+ SU4	Distribution box type AT-S+ SU4 incl. 4 switching units SU S+ 2 x 6 A	40071360504
Distribution box AT-S+ SU2	Distribution box type AT-S+ SU2 incl. 2 switching units SU S+ 2 x 6 A	40071360505
Distribution box AT-S+ SU1	Distribution box type AT-S+ SU1 incl. 1 switching unit SU S+ 2 x 6 A	40071360506
Distribution box AT-S+ SOU2	Distribution box type AT-S+ SOU2 incl. 2 switching over units SOU S+ 2 x 4 A	40071360508
Distribution box AT-S+ SOU1	Distribution box type AT-S+ SOU1 incl. 1 switching over unit SOU S+ 2 x 4 A	40071360509
Distribution box AT-S+ RV30	Distribution box type AT-S+ RV30	40071360507

Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology
Ordering overview of wall and floor-standing cabinets with functional integrity

AT-S+ ESF30 C10-P

Ordering details

Type	Scope of supply	Order No.
Automatic Test System AT-S+ ESF30 C30-P	Cabinet for automatic test system with 30 minutes functionality, incl. CU S+ control unit, DC/DC.2 converter, AC supply with space reserve for expansion to max. 60 end circuits, but maximum of 30 SU-S+ 2 x 6 A circuit assemblies	40071360723
Automatic Test System AT-S+ ESF30 C10-P	Cabinet for automatic test system with 30 minutes functionality, incl. CU S+ control unit, DC/DC.2 converter, AC supply with space reserve for expansion to max. 20 end circuits, but maximum of 10 SU-S+ 2 x 6 A circuit assemblies	40071360722
Automatic Test System AT-S+ ESF30 SU5	Distribution box for automatic test system with 30 minutes functionality, incl. 5 SU-S+ 2 x 6 A circuit assemblies	40071360730
Automatic Test System AT-S+ ESF30 SU4	Distribution box for automatic test system with 30 minutes functionality, incl. 4 SU-S+ 2 x 6 A circuit assemblies	40071360727
Automatic Test System AT-S+ ESF30 SU2	Distribution box for automatic test system with 30 minutes functionality, incl. 2 SU-S+ 2 x 6 A circuit assemblies	40071360724
Automatic Test System AT-S+ ESF30 SOU5	Distribution box for automatic test system with 30 minutes functionality, incl. 5 SOU-S+ 2 x 4 A circuit assemblies	40071360733
Automatic Test System AT-S+ ESF30 SOU3	Distribution box for automatic test system with 30 minutes functionality, incl. 3 SOU-S+ 2 x 4 A circuit assemblies	40071360731
Automatic Test System AT-S+ ESF30 SOU2	Distribution box for automatic test system with 30 minutes functionality, incl. 2 SOU-S+ 2 x 4 A circuit assemblies	40071360728
Automatic Test System AT-S+ ESF30 SOU1	Distribution box for automatic test system with 30 minutes functionality, incl. 1 SOU-S+ 2 x 4 A circuit assemblies	40071360725
ESF-RVS30	E30 junction box AT-S+RVS30-1 for small cabinets type AT-S+/SU with 1 Neozed fuse inside	40036071031
Reduction	Reduction M32 to M20 cable glands for E30 junction boxes incl. M20 cable gland	40071071033

Type	AT-S+ C30	AT-S+ C16	AT-S+ C4	AT-S+ C0
Modules:				
Control module: CU-S+	1	1	1	1
DC/DC.2-converter	1	1	1	1
AC module	1	1	1	1
Switching unit SU S+ 2 x 6 A	0-30	0-16	0-4	–
Switching over unit SOU S+ 2 x 4 A	–	–	–	–
Safety load disconnector mains feed	yes	yes	yes	–
Load disconnector mains feed	–	–	–	yes
No. of branching distributors	6	6	4	–
Electrical cabinet construction:				
Rated voltage	400/230 V	400/230 V	400/230 V	230 V
Rated frequency	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz
AC network	TN-C-S	TN-C-S	TN-C-S	TN-C-S
Insulation class	1	1	1	1
Degree of protecton	IP20	IP20	IP54	IP54
Max. current rating mains [∑ L1, L2, L3] [A]	90	74	48	–
Max. rated power mains [KVA]	20.7	17	11	–
Three-phase distribution	yes	yes	yes	no
Connection cross-section for mains supply	50 mm²	50 mm²	50 mm²	4 mm²
Connection cross-section for branching distributors	16 mm²	16 mm²	16 mm²	–
Max. conductor size final circuits	4 mm²	4 mm²	4 mm²	4 mm²
Max. number of final circuit terminals	60	32	8	–
Mechanical cabinet construction:				
Cabinet height (max.)	2050	1800	800	600
Cabinet width (max.)	800	600	600	400
Cabinet depth (max.)	400	400	250	250
Material	Sheet steel	Sheet steel	Sheet steel	Sheet steel
Design	Cabinet	Cabinet	Wall cabinet / surface mounted	Wall cabinet / surface mounted
Door stop	right	right	right	right
Outer coating	Textured powder paint	Textured powder paint	Textured powder paint	Textured powder paint
Colour	RAL 7035	RAL 7035	RAL 7035	RAL 7035
Partial viewing door	yes	yes	yes	yes
Lock	3 mm two-way	3 mm two-way	3 mm two-way	3 mm two-way
Cable entry from above	yes	yes	yes	yes
Cable entry from below	yes	yes	no	no
Base (optional)	100/200	100/200	–	–

*1 housing has insulation class II. The earth conductor must however be routed in the housing.

AT-S+ SU4	AT-S+ SU2	AT-S+ SU1	AT-S+ SOU2	AT-S+ SOU1
–	–	–	–	–
–	–	–	–	–
–	–	–	–	–
4	2	1	–	–
–	–	–	2	1
–	–	–	–	–
yes	yes	yes	yes	yes
–	–	–	–	–
230 V	230 V	230 V	230 V	230 V
50 or 60 Hz	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz
TN-C-S	TN-C-S	TN-C-S	TN-C-S	TN-C-S
2*1	2*1	2*1	2*1	2*1
IP65	IP65	IP65	IP65	IP65
25	16	10	25	10
5,7	3,7	2,3	5,7	2,3
no	no	no	no	no
10 mm²	10 mm²	10 mm²	10 mm²	10 mm²
–	–	–	–	–
4 mm²	4 mm²	4 mm²	4 mm²	4 mm²
8	4	2	4	2
583	458	458	583	458
295	295	295	295	295
129	129	129	129	129
Plastic	Plastic	Plastic	Plastic	Plastic
Wall cabinet / surface mounted	Wall cabinet / surface mounted	Wall cabinet / surface mounted	Wall cabinet / surface mounted	Wall cabinet / surface mounted
right	right	right	right	right
–	–	–	–	–
RAL 7035	RAL 7035	RAL 7035	RAL 7035	RAL 7035
yes	yes	yes	yes	yes
on request	on request	on request	on request	on request
yes	yes	yes	yes	yes
yes	yes	yes	yes	yes
–	–	–	–	–

Type	AT-S+ ESF30 C30-P	AT-S+ ESF30 C10-P	AT-S+ ESF30 SU5
Modules:			
Control module: CU-S+	1	1	-
DC/DC.2-converter	1	1	-
AC module	1	1	-
Switching unit SU S+ 2 x 6 A	30	10	5
Switching over unit SOU S+ 2 x 4 A	-	-	-
No. of branching distributors	0	0	0
Electrical cabinet construction:			
Rated voltage	400/230 V	230 V	230 V
Rated frequency	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz
AC network	TN-C-S*1	TN-C-S*1	TN-C-S*1
Insulation class	I*2	I*2	I*2
Degree of protection	IP42	IP42	IP65
Max. total rated current [A] depends on ambient temperature at 230 V, 50 or 60 Hz:			
+25 °C	50	35	26
+30 °C	50	27	20
+35 °C	40	20	14
Max. rated power mains [KVA] depends on ambient temperature at 230 V, 50 or 60 Hz:			
+25 °C	11.50	8.05	5.98
+30 °C	11.50	6.20	4.60
+35 °C	9.20	4.60	3.22
Three-phase distribution	Yes	Yes	No
Max. connection cross-section for mains supply [qmm]	35	35	10
Max. conductor size final circuits [qmm]	4	4	4
Max. number of final circuit terminals	60	20	10
Mechanical cabinet construction:			
Dimensions [mm]:			
height (max.),	2253 (incl. fan)	1253 (incl. fan)	835
width (max.),	918	918	396
depth (max.)	596	496	230
Weight [kg] approx.	330	169	61
Material / version:	Coated gypsum fibre-board / floor-standing cabinet	Coated gypsum fibre-board / floor-standing cabinet	Coated gypsum fibre-board / wall cabinet
Type of mounting	Wall mounting*3	Wall mounting*3	Wall mounting*3
Door stop	Right	Right	Left
Colour RAL	7035	7035	7035
Cable entry	From above*4	From above*4	From above
Base (optional)	Yes	-	-
Approvals / Verifications			
ABZ housing incl. components Z-86.2 ...	Applied for	Applied for	Applied for
ABZ empty housing Z-86.1 ...	Yes	Yes	Applied for
Fire test for functional integrity, short report MPA NRW	Yes	Yes	Yes
VDE certificate	-	-	Yes
Specialised company declaration	Yes	Yes	Yes

***1: Further networks on request**

***2: Protective insulation acc. to VDE 0106**

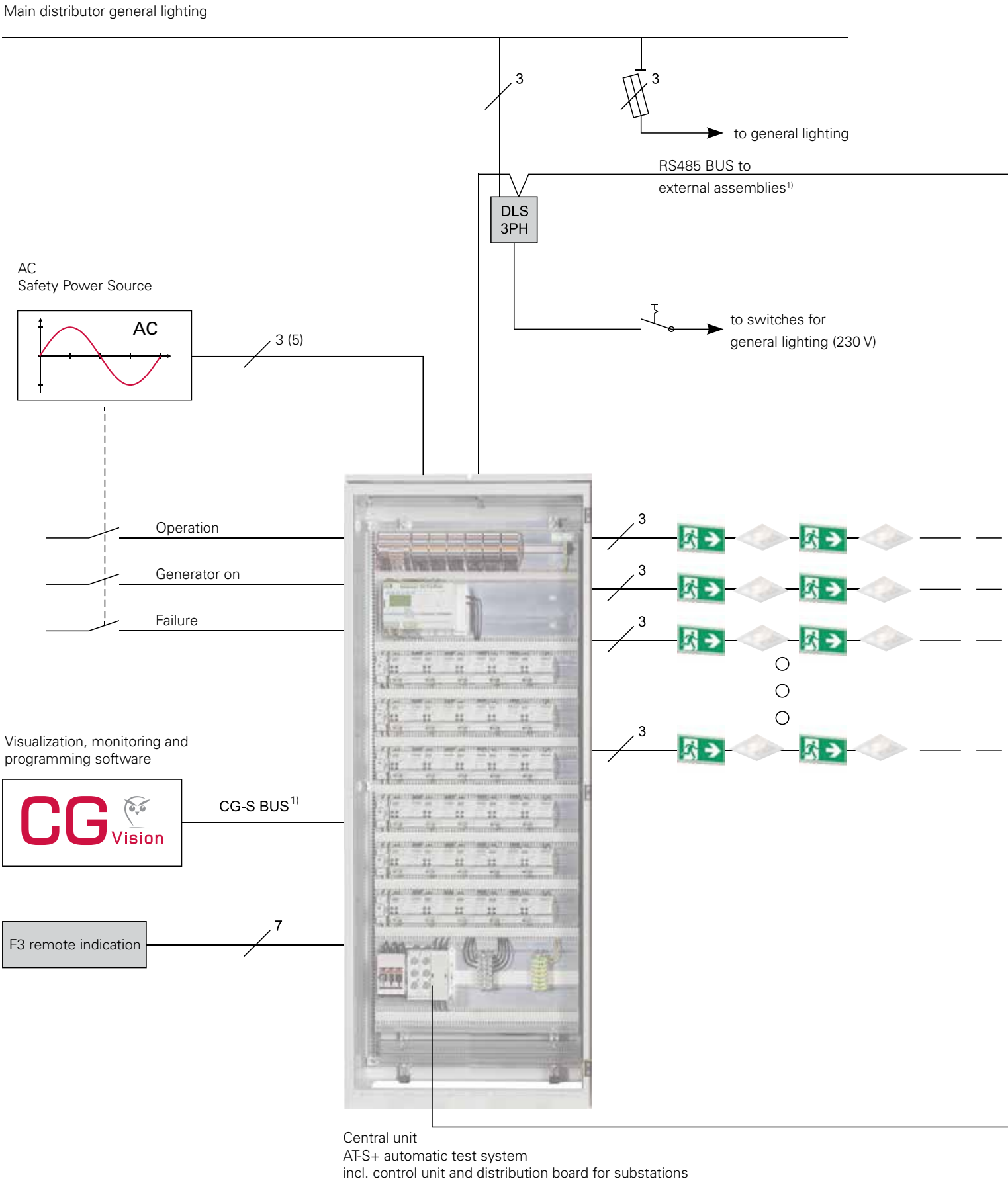
***3: Housings must be adapted to the masonry so that the housing is horizontal.
The masonry must be designed for functional integrity of at least 30 minutes.
The functional integrity of the masonry must not be impaired by the installation.**

***4: Cable infeed from below on request**

Centrally Powered Systems

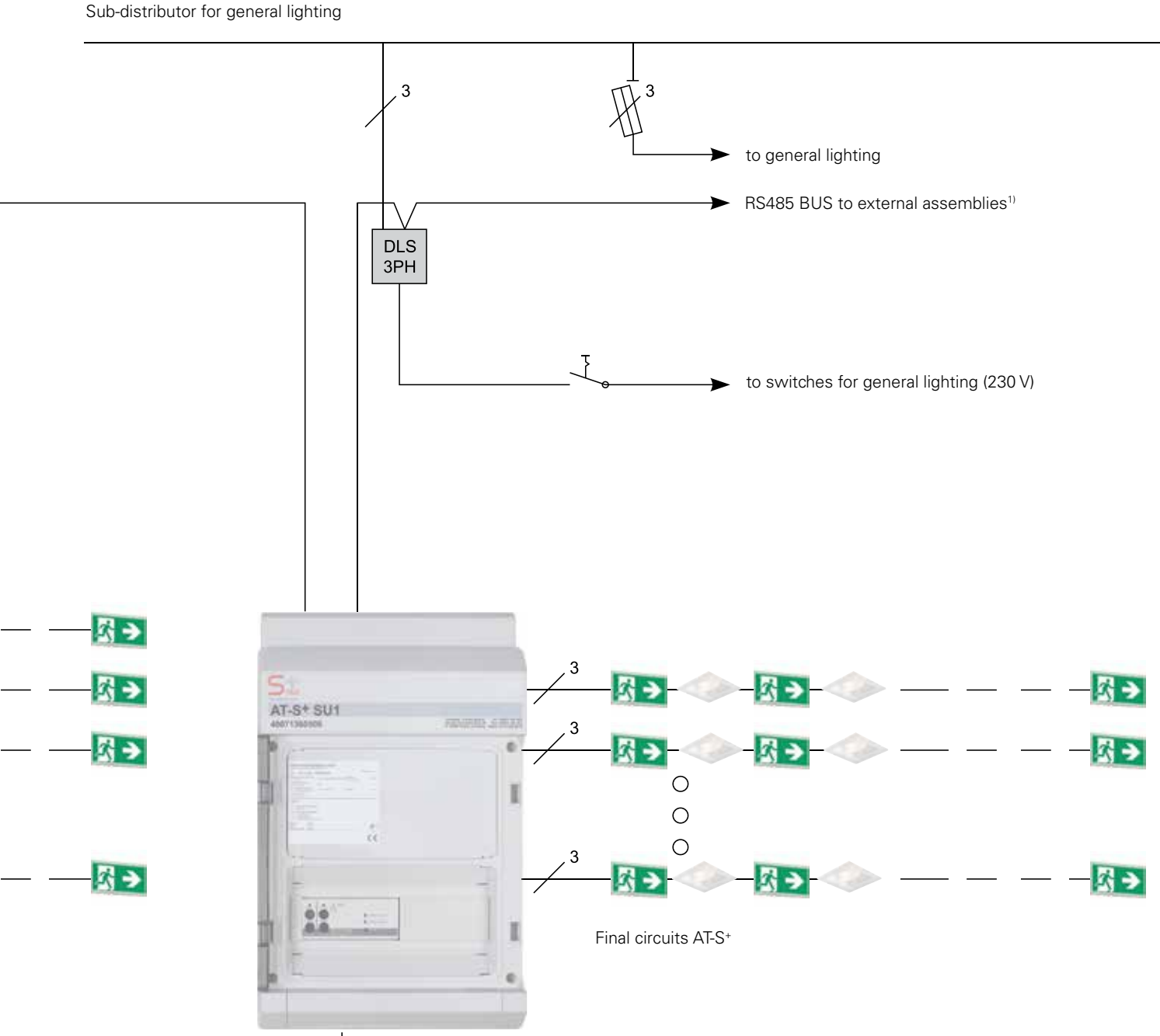
Automatic Test System AT-S+ with STAR+ Technology - Technical data

AT-S+ ESF30 SU4	AT-S+ ESF30 SU2	AT-S+ ESF30 SOU5	AT-S+ ESF30 SOU3	AT-S+ ESF30 SOU2	AT-S+ ESF30 SOU1
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
4	2	-	-	-	-
-	-	5	3	2	1
0	0	0	0	0	0
230 V	230 V	230 V	230 V	230 V	230 V
50 or 60 Hz	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz
TN-C-S[*1]	TN-C-S[*1]	TN-C-S[*1]	TN-C-S[*1]	TN-C-S[*1]	TN-C-S[*1]
I[*2]	I[*2]	I[*2]	I[*2]	I[*2]	I[*2]
IP65	IP65	IP65	IP65	IP65	IP65
21 16 11	18 14 11	33 28 16	20 17 10	15 12 9	8 6 5
4.83 3.68 2.53	4.14 3.22 2.53	7.59 6.44 3.68	4.60 3.91 2.30	3.45 2.76 1.53	1.725 1.380 1.150
No	No	No	No	No	No
10	10	10	10	10	10
4	4	4	4	4	4
8	4	10	6	4	4
685 396 230	535 396 230	1135 396 230	835 396 230	685 396 230	535 396 230
51	32.7	81	61	51	34
Coated gypsum fib-re-board / wall cabinet	Coated gypsum fib-re-board / wall cabinet	Coated gypsum fib-re-board / wall cabinet	Coated gypsum fib-re-board / wall cabinet	Coated gypsum fib-re-board / wall cabinet	Coated gypsum fib-re-board / wall cabinet
Wall mounting[*3]	Wall mounting[*3]	Wall mounting[*3]	Wall mounting[*3]	Wall mounting[*3]	Wall mounting[*3]
Left	Left	Left	Left	Left	Left
7035	7035	7035	7035	7035	7035
From above	From above	From above	From above	From above	From above
-	-	-	-	-	-
Applied for Applied for Yes Yes Yes	Applied for Applied for Yes Yes Yes	Applied for Applied for Yes Yes Yes	Applied for Applied for Yes Yes Yes	Applied for Applied for Yes Yes Yes	Applied for Applied for Yes Yes Yes


Main distributor general lighting
3
3
to general lighting
RS485 BUS to
external assemblies1)
DLS
3PH
AC
Safety Power Source
AC
3 (5)
to switches for
general lighting (230 V)
Operation
Generator on
Failure
3
3
3
3
Visualization, monitoring and
programming software
CG Vision
CG-S BUS1)
F3 remote indication
7
Central unit
AT-S+ automatic test system
incl. control unit and distribution board for substations

Centrally Powered Systems

Automatic Test System AT-S+ with STAR+ Technology - Installation example



Distribution board automatic test system
without control unit for accommodation of circuit switching modules
Type SU S+ 2 x 6A

1) bus specifications see page
AT-S+ bus technology

Automatic Test System AT-S+

Automatic Test System AT-S+

AT-S+ automatic test system for 230V / AC safety and escape sign luminaires.
Suitable for safety lighting systems with an AC power source for safety purposes according to DIN VDE 0100-718, DIN VDE 0100-560, DIN EN 50172 and V DIN V VDE 0108. With automatic testing device and single luminaire monitoring with individual display of state and name per luminaire in connection with system-connected ECG including monitoring module without supplementary data line.

Developed, manufactured and tested according to ISO 9001.

The switching mode of each safety and escape sign luminaire with system-connected ECG or monitoring module is freely programmed in the control unit of the test system without a supplementary control line.

The CEAG STAR+ technology enables the number of end circuits to be strongly reduced as the mixed operation of maintained light, switched maintained light and non-maintained light is implemented in a common circuit.

Assignment of all operating modes is via the control unit without encroaching in the luminaire installation.

Selection of the non-maintained light or maintained light operating modes via possibly slide switch, coding switch or jumpers on the monitoring module or ECG is not permitted. Surplus costs to installation lines caused by use of devices from other manufacturers or additional components cannot be made valid.

Electronic assemblies in service-compatible module design wired ready for connection to triple deck installation terminals with N isolating terminal and PE connection.

Connection compartments from above or below on touch-protected connection terminals. With optionally installed mains distribution box for mains cable feed to the substations including fusing. Design with modular plug technology.

Bus technologies

CG-S bus technology based on LONWorks® technology.

For data communication of the test system with the connected substations or monitoring facilities such as CGVision (visualisation software), the 2-pole bidirectional CG-S data bus is used, integrated as standard in the AT-S+ control unit.

Via an optionally available interface box, all types of building management technology based on LONWorks® can communicate with the systems via the CG-S bus.

Alternatively, all OPC-compatible building management technologies can be connected via the CG-S bus with an optionally available OPC server and the interface box.

As such the CG-S bus enables direct calling up of extensive status messages and control commands without supplementary modules.

16 virtual switching inputs via external LON sensors enable circuits or even single luminaires to be independently switched directly.

Networking of all AT-S+ distributors control unit also possible via differing media such as optical waveguide, ethernet and LAN via optionally available components.

Status and error messages can be called up per single luminaire.

External assemblies such DLS/3PH bus module, DLS/3PH inverted bus module and TLS bus module are connected via the RS485 bus.

Communication with the system-connected luminaires is exclusively via the connected energy line.

The central system automatically detects the assemblies addressed during installation and the system-connected luminaires via a search function.

Control unit

A freely programmable control unit with non-volatile program memory and graphic display monitors and controls the test system. All functions such as mains/emergency switching of the devices and connected emergency luminaires are tested automatically. Errors occurring are reported immediately.

An interface enables connection of a central monitoring facility.

Differential monitoring with short circuiting or interruption of control current loops leads to immediate switching on (maintained light) of the system or operational readiness of the system.

Display:
128 x 64 pixel, backlit, contrast and brightness settable via program

Displays:
Power source for safety purposes ready for operation, infeed of safety lighting from power source for safety purposes, power source for safety purposes faulty, manual resetting, follow-on emergency light (residual time in mins.), test operation, date / time, uV-AV failure with location specification in plain text, error information, programming information, inspection book.

LED displays: Ready for operation, power source feed for safety purposes, error

Foil keyboard:
- separate keys for system test, function test.
- 3 freely programmable function buttons for e.g.: Block/release system, manual resetting, switch on / off maintained light, display fault list, switch on / off corridor lighting, mains failure UV simulation
- 7 control buttons for user-friendly navigation in querying and programming mode.

Furthermore, each assembly has a separate service button for directly showing the current assembly status in the display (immediate analysis).

Programming options:
Single luminaire monitoring, individual name (20 characters) per device, circuit, luminaire and bus module, device address, selective manual resetting, follow-on emergency light (1-60 mins.) selective emergency light, LON switch, timer fun-

ction, automatic function test, menu language selection

Connection for blocking switch: Control loop for blocking system during idle operating times with differential loop monitoring for short circuit and wirebreak detection.

Differential monitoring: Short circuit or interruption lead to operational readiness of the system.

Connection for phase monitor: 24V current loop for emergency light request with differential loop monitoring for short circuit and wirebreak detection.

Differential monitoring: Short circuit or interruption lead to immediate switching on (maintained light) of the system.

Connection for zero-potential signal contacts, buzzers: 5 potentional free relais contacts, each 3 x changeover contact, 2 x normally open contact. 30V DC/AC, 0,5A, buzzer

One or several from 11 different messages can be assigned to each contact. Freely programmable, DIN VDE specification as presetting can be called up at any time.

Connection for 24 inputs: 4 freely assignable 24V inputs, can be programmed either inverted or non-inverted for e.g.: Power source for safety purposes ready for operation, infeed of safety lighting from power source for safety purposes, power source for safety purposes faulty, start/abort function test, block/release system, manual resetting, switch on/off maintained light, switch on safety lighting as corridor lighting, external AC isolation fault, external fan fault.

Memory card: Memory card for archiving of device configuration and specified inspection book information over at least 4 years.

Saving of:

- 300,000 inspection book entries
- Target location texts of luminaires (20 characters per luminaire)
- Target location texts of external modules such as phase monitors, DLS, TLS (20 characters per module)
- Circuit names (20 characters per luminaire)
- System name (20 characters)

With optional CEAG software, programming is possible offline via PC.

Circuit modules

The circuit modules monitored emergency luminaires with electronic ballasts for AC operation. The STAR+ monitoring tests functionality of the connected luminaires.

- Monitoring of up to 20 luminaires per circuit with individual status display via the control unit
- Mixed operation within one circuit for maintained light, switched maintained light and non-maintained light (A supplementary data line to the luminaires is not required).
- Typical switching over time mains/safety source: 450ms
- Free programming for maintained light, switched maintained light or non-maintained operation
- Fuses on the front of the assembly are easily accessible
- Permanent monitoring of fuses
- LED displays for fault and operation/ON per circuit
- Service button for configuration
- Housing for DIN rail mounting
- Automatic luminaire search function

External DLS/3PH bus module

The external DLS/3PH bus module for installation into the sub-distribution of the general lighting can be used as phase monitor and light switch query (DLS) for the general switching of safety and general lighting.

8 DLS inputs (2.5 sq.mm) with LED display or 5 DLS inputs in combination with 3 phase monitor inputs can be activated via selector switch.

Monitoring thresholds acc. to DIN EN 60598-2-22: 60-85% U_{NOM}.

Connection of RS485 bus and 24V module supply.

Addressable via coding switch, LED displays for fault, switching state on, operation.

Housing for DIN rail mounting

Freely programmable assignment of independent DLS inputs per emergency light circuit or luminaire and individual name per bus module in control unit.

With use a 3-phase monitor, detailed phase failure display with location of failed sub-distribution for general lighting via clear text display in control unit.

External DLS/3PH bus module inverted

The external DLS/3PH bus module inverted for installation into the sub-distribution of the general lighting can be used as phase monitor and light switch query (DLS) with inverted switching logic for the common switching of safety and general lighting or for monitoring of automatic cutouts.

8 inverted DLS inputs (2.5 sq.mm) with LED display or 5 inverted DLS inputs in combination with 3 phase monitor inputs can be activated via selector switch.

Monitoring thresholds acc. to DIN EN 60598-2-22: 60-85% U_{NOM}.

Connection of RS485 bus and 24V module supply.

Addressable via coding switch, LED displays for fault, switching state on, operation.

Housing for DIN rail mounting.

Freely programmable assignment of independent inverted DLS inputs per emergency light circuit or luminaire and individual name per bus module in control unit.

With use a 3-phase monitor, detailed phase failure display with location of failed sub-distribution for general lighting via clear text display in control unit.

Supplier information:

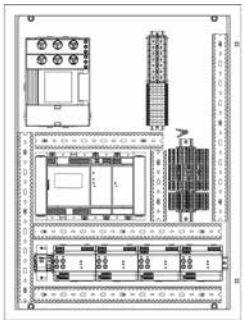
CEAG Notlichtsysteme GmbH
Senator-Schwartz-Ring 26
D-59494 Soest/Germany
Telefon +49 (0) 2921/69-870
Telefax +49 (0) 2921/69-617
Internet www.ceag.de
e-mail info-n@ceag.de

ISO 9001:4500 certification must also be verified.

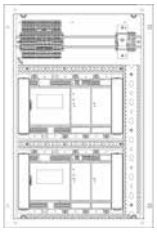
Manufacturers without ISO 9001:4500 certification are not permitted.

LONWorks®: registered trademark of Echelon Corporation

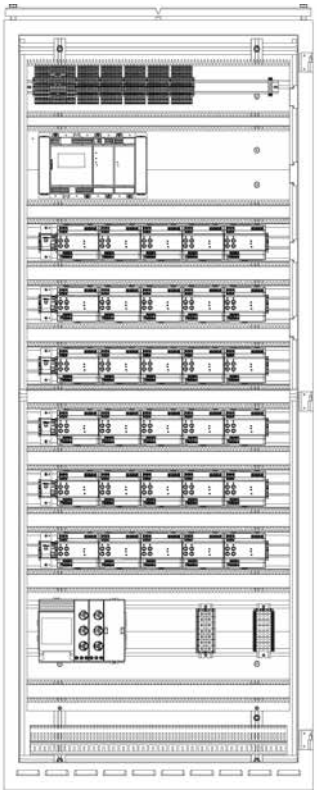
AT-S+ C4



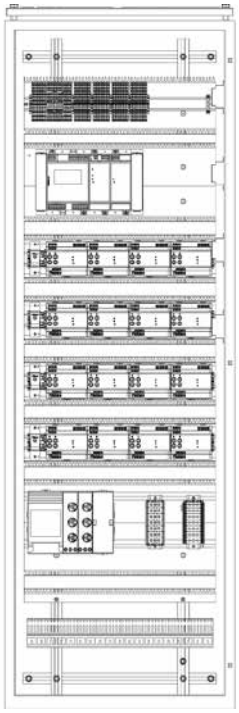
AT-S+ C0



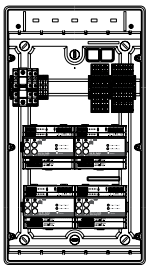
AT-S+ C30



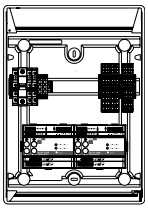
AT-S+ C16



AT-S+ SU4



AT-S+ SU2



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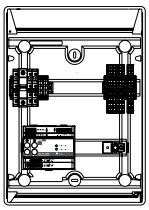

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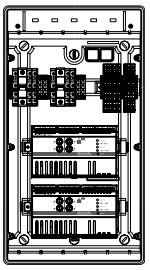

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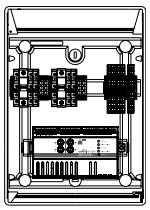

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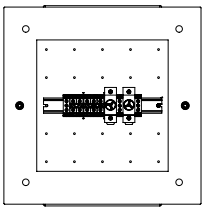

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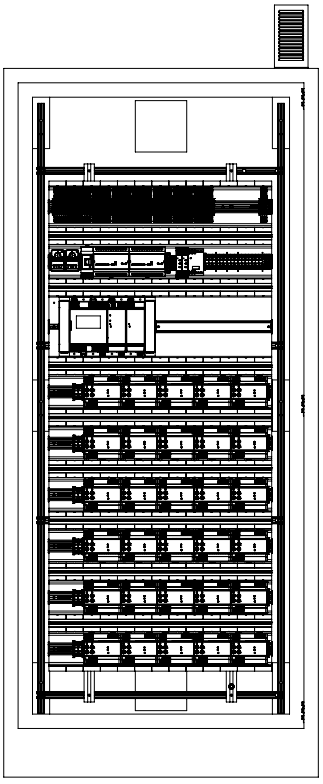

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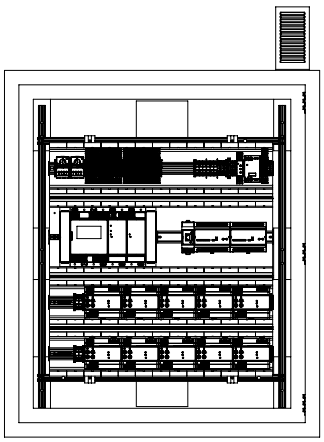

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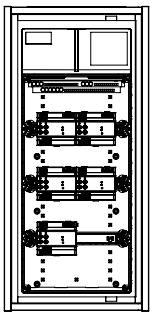

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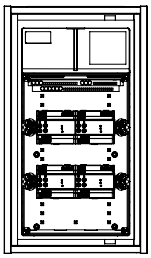

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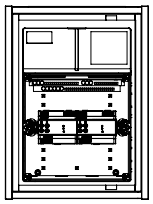

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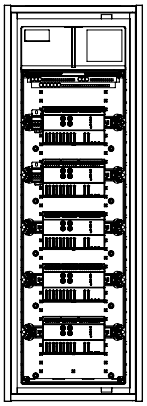

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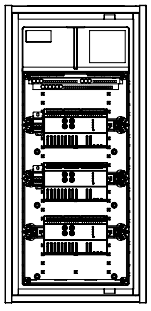

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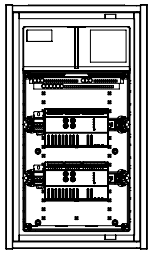

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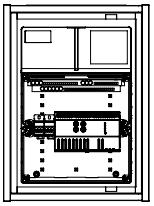


Centrally Powered Systems

Flying Scotsman Medical Centre
Doncaster, UK

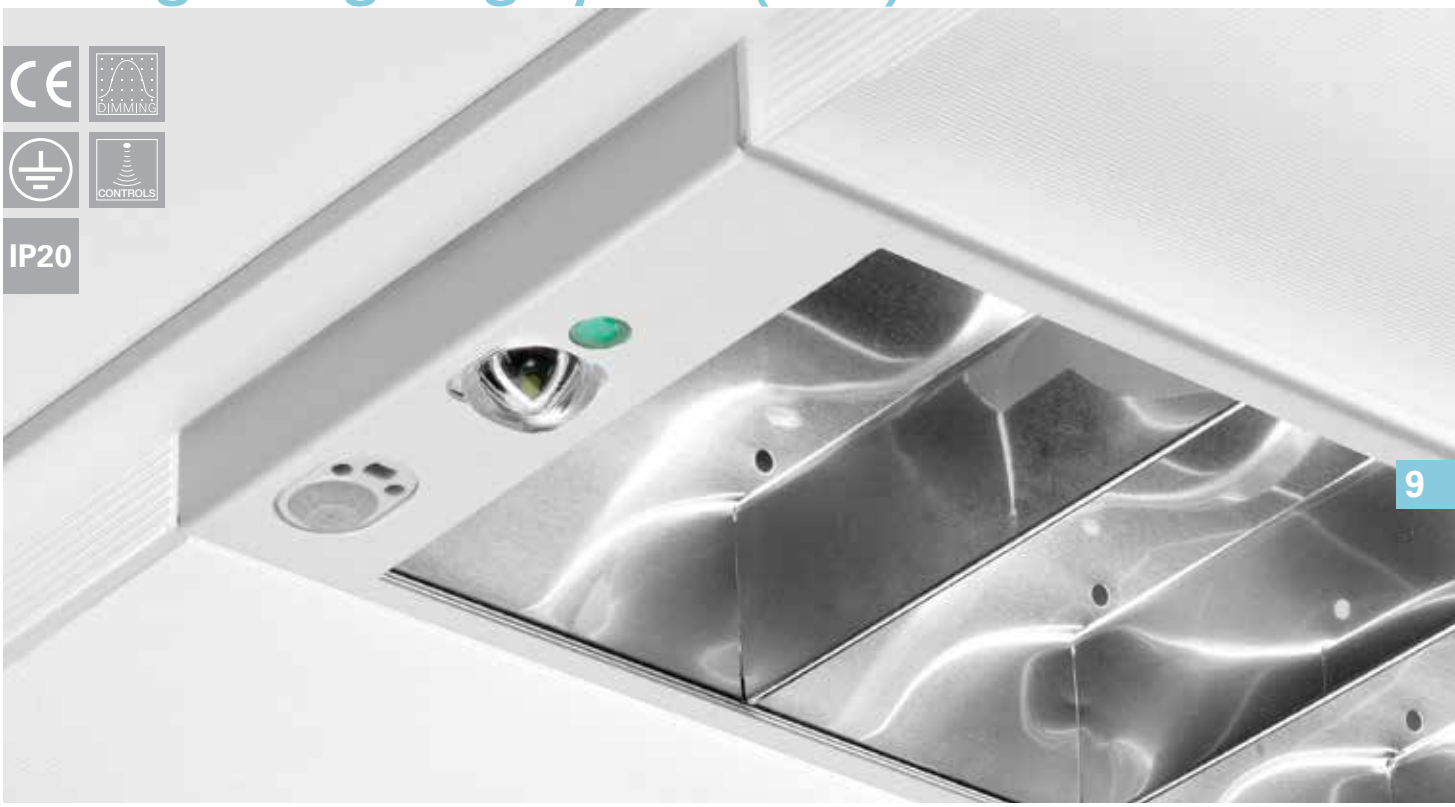
9

Lighting Controls

Contents

Wey Technology
London

Intelligent Lighting System (BUS)



The Intelligent Lighting System (ILS) is one of the most advanced lighting and energy management systems available today. System intelligence is built into every luminaire, monitoring and reacting to occupancy, pre-selected light levels and changes in ambient daylight levels. Absence functionality is incorporated to maximise energy saving and controls factor compliance with building regulations.

The result is a highly efficient and intelligent system, which is easily re-configured as room layout or usage changes, via a simple hand-held infra-red programmer. Importantly, ILS fully considers the human dimension. Luminaires communicate with each other, allowing selected fittings to switch on together offering a pleasant, safe and correctly illuminated environment. A handy infra-red override unit also provides local control for individuals on a temporary basis. Whatever the application, ILS delivers automatic energy savings combined with outstanding flexibility.

- Energy saving - typically between 50% and 70%
- Occupancy detection, daylight linking and constant illumination
- Absence functionality (manual on, auto off) maximises energy saving and compliance with building regulations and ECA control factors
- Flexible programming via a hand-held unit
- Luminaire communication for high light quality via BUS communication loop
- User infra-red override facility for local control
- Simple to install and set up
- Easy to re-configure when office layout changes
- Groups can be created and controlled together
- Choice of standard 50mm ‘cube’ or mini head sensor to best suit the chosen luminaire or application
- Designed for use with DALI dimming control gear (DSI or Analogue 1-10V versions to special order)

Standard System Features

ILS is a highly sophisticated and advanced lighting and energy management tool. However, it is easy to install, set up and re-configure, to accommodate the needs of the modern working environment. Intelligence is built into every luminaire, with a wide range of set-up parameters available to configure the system to the exact needs of the installation. All features are set-up via a hand held infra-red master programmer and can be summarised as follows:

- Absence function
- Occupancy detection
- Luminaire communication
- Daylight linking
- Constant illumination
- Illumination control
- System set-up
- Group dimming

Absence Function

Many lighting control systems historically worked on presence detection and would activate the luminaires whenever occupancy was detected. This meant that although the system may have daylight monitoring and account for natural daylight and dim or brighten fittings accordingly, they would be on when in some cases they may not need to be.

Absence detection, as it is often referred to, requires the user to manually demand the lights on, usually by means of a simple wall switch. This can result in further energy savings as the luminaires will only be switched on when they are needed, regulate accordingly during operation, then switch off following the pre set time delay after the sensor last detected occupancy.

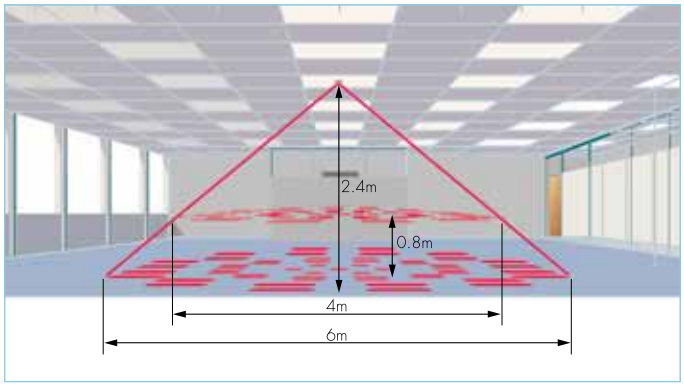
Absence is now an acknowledged energy saver and has been integrated into recommendations for many energy related incentive schemes. The manual 'on' command can be activated by a number of inputs. Please contact our technical department for further information on 01302 303240 or email LightingTechnicalUK@Eaton.com.

Presence / Absence Detection

In a typical office environment, people are away from their workstations between 20% and 40% of the time, during which period luminaires could generally be switched off. ILS uses a passive infra-red (PIR) presence detection system fitted within each luminaire, which turns on the luminaire while people are present, but off shortly after they leave. This can be programmed for absence functionality.

PIR detectors have a sophisticated lens which divides the area into three dimensional zones. Crossing from one zone to another triggers the device. Generally, the closer the person is to the PIR, the closer the zones and therefore a smaller movement is needed to trigger the device.

ILS uses a 360° lens which has a high zone density immediately beneath the luminaire to detect small movements, ensuring the luminaire remains lit when reading or writing at a desk. Further away, larger movements are required. As luminaires are usually spaced less than 3 metres apart, people are almost always working in detection zones of high sensitivity.



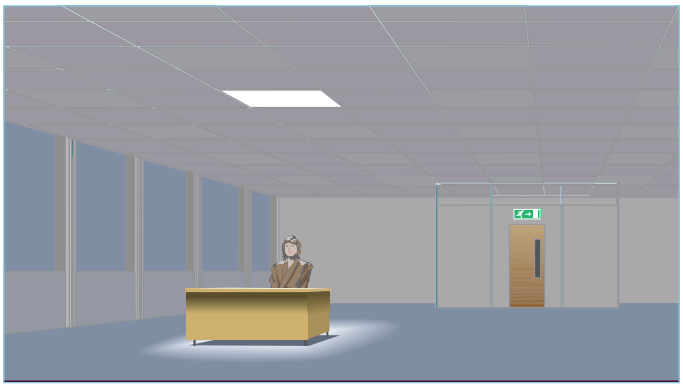
PIR coverage

Luminaire Communication System

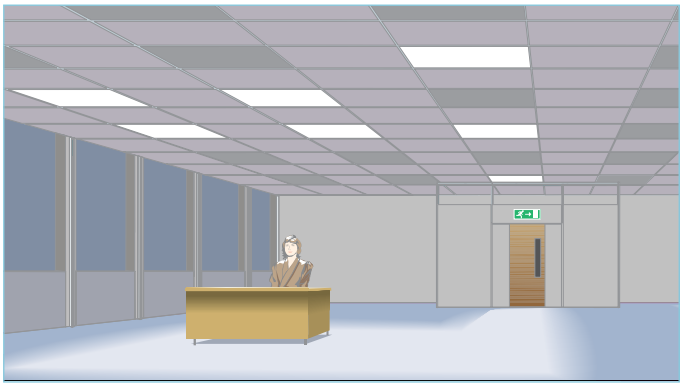
Most commercially available presence detection luminaires act independently and turn off if no one is directly under them. Whilst providing energy savings, it can lead to intimidating circumstances. In addition, individual luminaires generally do not provide the correct illumination level or adequate uniformity. Staff working late could be left sitting in a pool of light, surrounded by intimidating darkness or have to negotiate a dark corridor, where luminaires only switch on as the person passes under them.

ILS solves this problem by enabling luminaires to communicate with each other. Every luminaire can be programmed with up to 4 of 100 available address numbers. When a luminaire is activated, by detecting presence beneath it, a signal is sent out via the 2 wire communication BUS to every other luminaire.

Any sharing the same address number will switch on. As a result selected surrounding luminaires can be instructed to remain on, along with chosen luminaires on a notional walkway or by doors. This ensures the correct level of illumination and recommended uniformity wherever people are working, along with essential circulation lighting.



Luminaires which don't communicate cause small pools of light surrounded by intimidating darkness



ILS luminaires communicate with each other, providing a pleasant, safe and energy saving environment

An additional feature is common zone addresses. Any luminaire can have a common zone address allocated, as one of the 4 addresses. If designated with a common zone address, that luminaire will switch on or stay illuminated if any other luminaire on the BUS is activated. This feature is useful to instruct selected areas, e.g. stairway luminaires to stay on if any person is in the building. Additionally 2 corridor zones can be created to activate a corridor or area triggered by another occupied space.

As building layout or usage is changed, the address numbers allocated to any luminaire can be simply re-programmed via the infra-red master programmer, effortlessly accommodating the ever increasing churn rate experienced in commercial buildings.

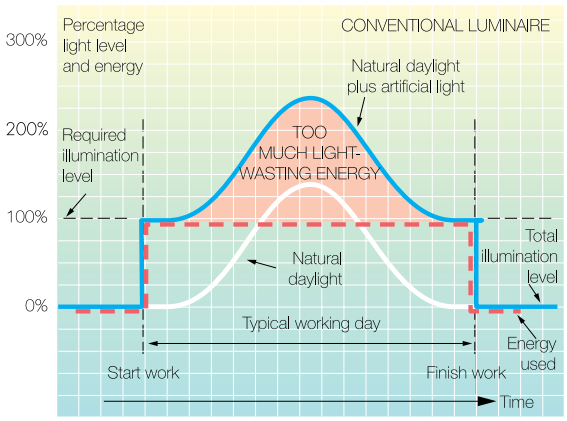
For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com.

Daylight Linking

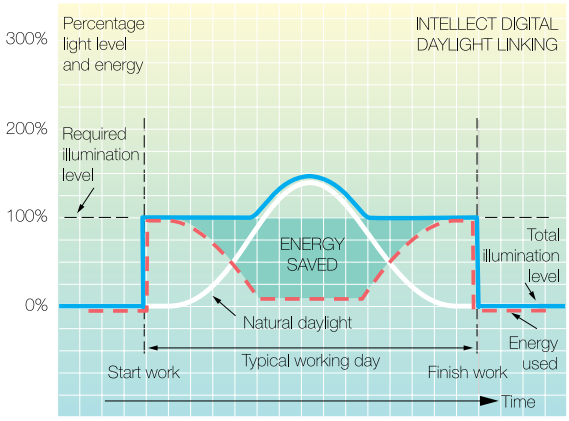
Natural daylight can often provide either sufficient or a significant contribution to workplace illumination, particularly in the 5 metre area next to windows known as the window zone. Potential savings due to daylight alone are typically between 50% and 70%, dependent on the size, position and compass direction of windows. However, most people will not turn off the lights and the perceived difference between 100% on and switched off appear to be large. Additionally, turning the lights off will affect everybody, including some who may still require illumination.

ILS overcomes this by having a built-in light sensitive cell that monitors daylight levels and adjusts lamp output accordingly, so that the pre-set light level is maintained. As daylight becomes available, the luminaires react by dimming the lamps, continuing until minimum output is reached. With continuing or sustained daylight availability, the luminaires can be instructed to stay on and continue to operate at low levels of output, or switch off after a timed period. If daylight decreases, lamps are automatically brightened to maintain the pre-selected light level.

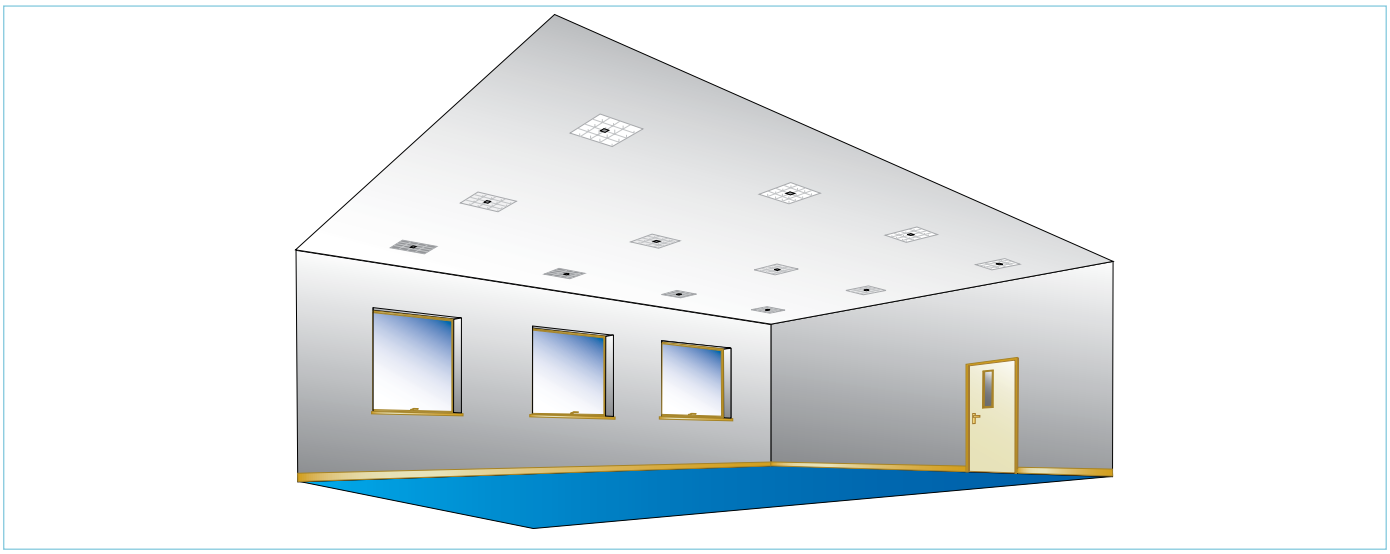
Each luminaire reacts independently, to take into account that the further away from the window it is installed, the influence of daylight decreases. ILS automatically compensates for light received from other luminaires and the use of window blinds or curtains. It also has a built in time delay so that it is unaffected by temporary changes in level due to reflections or clouds passing over the sun. The luminaire provides light according to the actual conditions directly beneath it.



Using a conventional luminaire, artificial light is needed at the start and end of the day, but provides too much light for most of the day (because of daylight) thus wasting energy



ILS daylight linking feature reduces light output and energy used but ensures that the installation has enough light

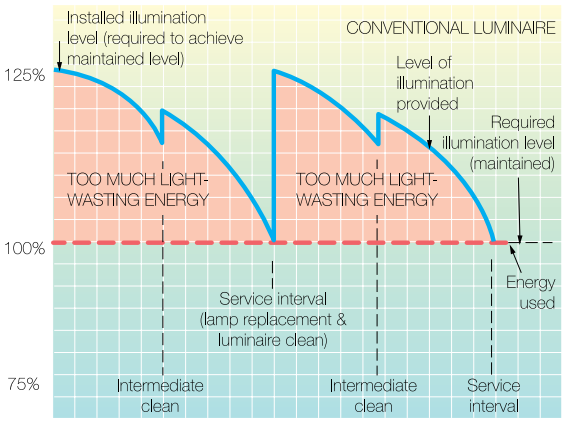


Typical office showing luminaires by the window automatically dimmed to low level but increasing in brightness when moving away from the windows, delivering even illumination

Constant Illumination

Light output from all luminaires reduces over time, as lamps age and the optics get dirty. Room surfaces also accumulate dust and dirt. Standard lighting design practice compensates for this depreciation by increasing initial illumination levels, according to maintenance and cleaning plans. When the installation is new or following maintenance and re-lamping, this leads to overlighting and energy wastage with conventional luminaires.

ILS automatically compensates for this, dimming the lamps initially so that the designed, pre-set level is achieved when lamps are new. As lamps age and optics accumulate dirt, the luminaire automatically increases power to the lamps to maintain the desired illumination level. This delivers substantial energy savings over a conventional installation, typically between 10% and 20% dependent on maintenance intervals. A further benefit is improved visual comfort, as over lighting is eliminated.



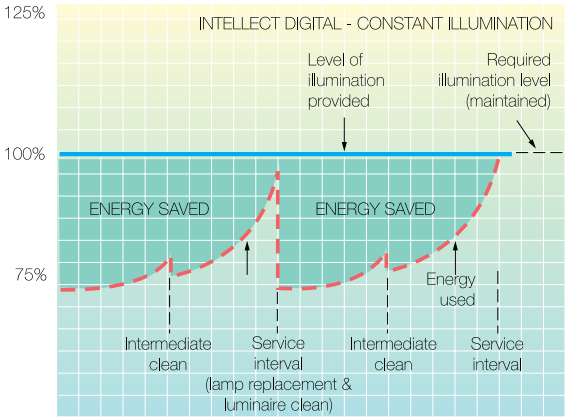
Conventional luminaires overlight to allow for luminaire or lamp depreciation, causing discomfort and wasting energy

Illumination Control

The problem with most conventional lighting systems is that:

- They deliver a fixed illumination level
- They are expensive to reconfigure if the office layout or use changes
- They cannot be dimmed if the light level is higher than required
- They cannot be brightened if more light is required

These problem areas are solved by using ILS luminaires, as they can be set to operate at any light output within their range, either individually or as a whole. This is set up using the infra-red master programmer, to provide illumination that achieves the recommended level to perform general or specific tasks. Light levels can be accurately set, as the programmer can instruct each luminaire to operate at any value setting between minimum and maximum output of the ballast. If the usage of an area changes on a long term basis, the master programmer can be used to quickly re-configure the pre-set level. The luminaires will then continue to react automatically to changes in ambient daylight and compensate for lamp ageing, to maintain the set level.



ILS provides only the level of light required, thus saving energy and still allowing for luminaire or lamp depreciation

Temporary dimming or brightening of luminaires can be achieved by a simple push button, hand held controller or switch plate on the BUS loop. They can be used to individually dim luminaires for presentations, or to brighten levels for detailed work. Luminaires can also be turned on or off. Adjustment using these controllers fixes the light level and prevents automatic regulation. When the area is vacated, the luminaire switches off and automatically returns to its original settings. Luminaires can also be reset into automatic mode by pressing one button on the controller.

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com.

System Set-up

System set-up is carried out after installation. A portable infra-red programmer is required, which transmits all set-up instructions to a receiver within the luminaire. Once programmed, the luminaire will retain its settings, even in the event of a power failure. Re-programming is easy - new instructions are simply transmitted to the luminaire. Eaton provide a commissioning service, during which the programming procedure is demonstrated to the designated individual responsible for adjustments to system settings after the installation is complete. A full specification of required settings is needed prior to commissioning.

The following parameters can be set:

- Light Levels
  Luminaires can be set to the same or different levels according to the task needs. They then automatically compensate for contribution from daylight and surrounding luminaires.

- Luminaire Communication
  Up to 4 addresses can be programmed, from 100 available channel numbers. Luminaires with common addresses are all turned on if any one luminaire with the same address detects presence via the built-in PIR detector.

  Up to 2 common zones can also be programmed addresses within the maximum of 4 addresses which turn on the luminaire if any other sensor connected to the BUS is activated, which is useful for corridors, toilets and circulation areas.

  Common zone 1 can operate across the communication spine between BUS power supplies. Common zone 2 is local to one BUS power supply only.

- Time Delay
  Sets time span between last detected movement and luminaire switch off. Adjustable between 30 seconds (for testing) and 96 hours. Continuous operation can also be selected, requiring a means of isolation or use of a hand-held controller to switch on or off.

- Background Light Mode
  Normally when an area is vacated, luminaires switch off after a selected period of time. This can lead to poor lighting quality and unacceptable uniformity for anybody left working alone in the area, particularly in open plan offices. At night this can also be intimidating, if sat in a pool of light surrounded by darkness.

  The background light mode overcomes these issues offering a choice of states for the luminaire to adopt once occupancy is no longer detected. The options are to switch off or:

  1) Dim to the ballast minimum
  2) Go to a specific level by selecting ‘scene 6’ (default 5% but can be re programmed)
  3) Regulate to a maximum of 25% of ballast output

  For each of the 3 options above, the luminaire can remain at that state, or remain at this level for 3 hours (some sensors remain at the level for 3x the preset time delay, not 3 hours) then switch off, or maintain that level until the building is vacated (ILS or ISM communicating version only)

- Power up mode
  Instructs luminaires to either turn on when power is first applied, or remain off until movement is detected. Important for large installations, to reduce start-up load following power failure, whilst allowing selected luminaires to power up immediately, such as on stairways or in circulation areas.

System set-up is carried out using the Infra-Red Master Programmer

- Bright-out Mode
  If bright-out is selected, the luminaire switches off if the ambient daylight levels rise to 25% or more of the pre-programmed required light level. The PIR continues to monitor movement, so that when ambient levels fall, the luminaire switches back on if the area is still occupied. Bright-out has active priority, so if anyone enters an area with sufficient natural light, the luminaire will not come on until daylight falls to the level set in the luminaire by the programmer. If bright-out is not selected, luminaires will remain at minimum output during periods of occupancy and high ambient levels.

System Components

- Luminaires
  All ILS luminaires are supplied with digital high frequency dimming control gear and a built-in ILS detector, which contains all system controls and intelligence in an unobtrusive housing. Product pages indicate if ILS variants are available.

- 2-Way Digital Programmer: LCSQSP
  Hand held commissioning device with key pad and LCD display. Required for performing all programming functions, by authorised personnel. Menus are accessed and data selected using the previous, next and select buttons, prompted by clear screen messages. Send button used to programme luminaire with selected functions. Read button to interrogate and download luminaires settings. A timesaving feature is the ability to upload or download all setting parameters in one go allowing settings to be copied from one sensor to the next.

LCSQSP

- Infra-Red Controller: LCSQC
  The LCSQC hand held controller can be used to set basic parameters on the Intelligent Lighting System. It is also compatible with the stand alone sensors. It provides simple day-to-day actions such as on/off override and light level adjustment.

LCSQC

- Quick Set Remote Controllers: LCSQS
  Compact ergonomically designed unit with soft-touch push buttons. Provides users with on, off and dim, brighten functions for individual and groups of luminaires. Additional buttons allow for changing of time delay settings on absence or presense detection.

LCSQS

- BUS Communication Cable

  A standard mains insulated 2 core unscreened twisted pair cable of 1.5mm^2 cross-sectional area is recommended. Installed between all luminaires to provide communication link. The cable may be run in a radial, star, tee or ring format. A ring circuit provides a higher degree of integrity, with communication fully retained if a single point of interruption is experienced. Cable length should not exceed 1500m, subject to topology. Polarity must be observed when connecting the BUS cable to each luminaire.

- BUS Power Supply
  There is a choice of power supplies to drive the BUS loop, the larger BPS200 can power up to 200 devices on the loop, with the smaller BPS100 unit operating up to 100 devices. On larger systems the BPS200 can be linked to another BUS loop powered by a second BPS200.

BPS100

BPS200

- Wall Plate
  The manual wall plate LCSWP3S is a useful addition to the system enabling local control of those luminaires assigned to the same zone address as the wall plate.

  It connects to and draws its power from the BUS loop and occupies 2 device nodes on the system.

  3 pre-set scenes can be selected as well as providing the ability to dim, brighten and switch off the luminaires as required.

Wall Plate LCSWP3S

Lighting Controls

Intelligent Lighting System - with BUS communicator

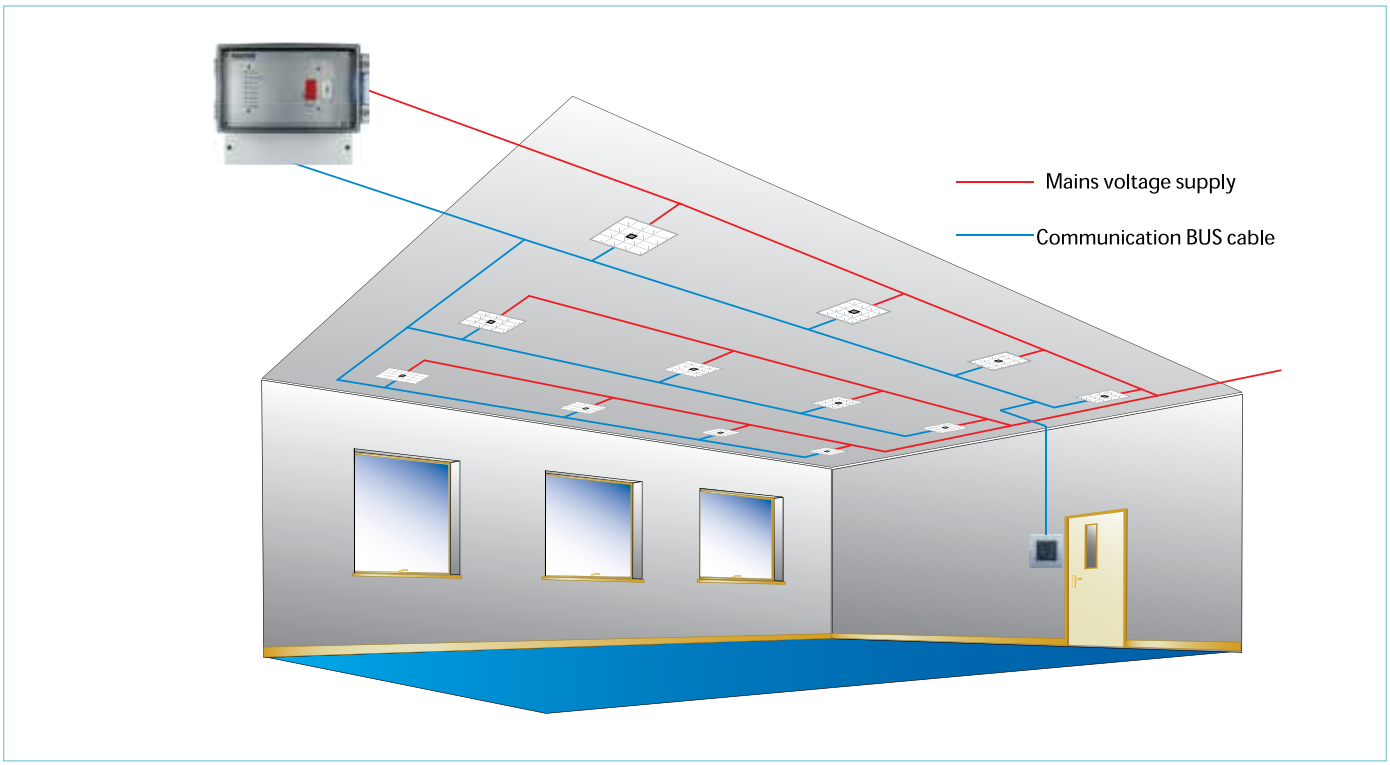
System Design and Installation

- ILS lighting design is carried out exactly as a conventional system would be, selecting available luminaires fitted with ILS controls. Page 429 indicates the ranges available with the intelligent lighting system.
- A recognised means of isolation is required to facilitate maintenance and re-lamping.
- A mains power supply is connected in the normal way to luminaires and the BUS power supply.
- An additional 2 core BUS cable is required to allow luminaires to communicate with each other. Although only a low voltage signal (15V) is carried, a 1.5mm² mains voltage insulated unscreened twisted pair cable is recommended, for complete electrical safety and to allow the cable to share trunking or conduit with mains voltage supply cables. Polarity must be observed when connecting the BUS cable to each luminaire.
- When using the BUS communication cable to link the sensors, any switchplates or the accessories on the loop, a Bus Power Supply is required. Two power supply options are available. (See system components section).
- The luminaires are set-up after installation, using the hand held Infra-Red Master Programmer.
- Eaton can offer a full commissioning service, including a full demonstration of programming to a designated individual.
- Contact our technical support and application department for advice on design or system application, on LightingTechnicalUK@Eaton.com

Luminaire Compatibility

Luminaire ranges particularly suited to this integrated mini-sensor and BUS communication include recessed, surface and continuous systems such as: Lechenti, Combiform, Laserline, Synthesis, ACoustic SYStem, Crompack 5 and other fluorescent luminaires requiring a small sensor with the features described.

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com.



Simple wiring schematic

Groupmaster Detectors

IP20

This range of sensors are able to control a number of compatible luminaires and replace the previous 'Intellect' Groupmaster units. Groupmaster provides the opportunity to utilise intelligent lighting controls where it is not possible to use individual intelligent luminaires, perhaps for reasons of budget constraints. Groupmaster provides the benefits and set up features of the ILS 'Intelligent lighting system', but with reduced equipment costs. Supplied as a stand alone unit, each Groupmaster can operate a number of luminaires fitted with switching or digital dimming control gear, sharing light level and on/off control signals. Although offering less flexibility than using individual intelligent luminaires, as special features such as communication or background light mode are shared, Groupmaster provides a cost effective solution.

- Competitive energy management package
- Energy saving - typically between 50% and 70%
- Group operation of on/off and light level control
- Presence/absence detection, daylight linking and constant illumination
- Easy to set-up minimising installation time
- Absence functionality via manual wall switch or hand held override maximising energy efficiency
- Individual sensors or communicating versions linked by BUS wiring loop

Standard System Features

Groupmaster Detectors are supplied as a stand alone control unit, for surface or recessed mounting into ceiling systems. System features depend on the exact sensor selected the may include:

Groupmaster Functions (variant dependent)

- Absence function
- Occupancy detection
- Daylight linking
- Constant illumination
- Illumination control
- Infra-red system set-up
- Stand alone operation or BUS loop communication
- Background light mode

System Components

- Groupmaster Sensor
  Take care to select appropriate switching or dimming variant.
- Luminaires
  Compatible luminaires fitted with digital high frequency dimming or switching control gear. A comprehensive list of luminaires suitable for use with Groupmaster can be provided by contacting our technical support and application department.

System Design and Installation

- Groupmaster system lighting design is carried out exactly as a conventional system would be, selecting compatible luminaires that are available fitted with high frequency dimming or switching control gear
- Light switches are not essential, although a recognised means of isolation is required to facilitate maintenance and re-lamping
- Groupmaster units should be located in the most appropriate position for detection purposes.

  In large areas this is generally in the centre of each group.

  In small areas, it is likely to be more beneficial over the task area
- A mains power supply is connected to the luminaires and Groupmaster units
- An additional 2 core communication BUS cable is required to link control units in ILS Groupmaster installations. Polarity must be observed when connecting the BUS cable to each Groupmaster unit
- Where ILS Groupmaster sensors are linked with a BUS wiring loop a BUS power supply will be required
- The sensors are set up using the 2-way digital programmer (LCSQSP)
- We recommend that you contact our technical support and application department for advice on design and system application as Groupmaster is highly project specific

LCSQSP

LCSQC

LCSQS

BPS100

BPS200

Wall Plate LCSWP3S

Stand Alone High Level PIR Detectors

These high level PIR and photocell detector are a superb addition to the range for the control of luminaires in high ceiling applications such as warehouses, factories and large retail premises.

Available as a flush fit recessed unit or with a surface mount housing, the detector can be mounted remotely or integrated onto the appropriate luminaire and is available in DSI or DALI digital dimming compatible format as well as a simple 6A switching variant.

For high mounting heights the detection pattern has a 1 to 1 ratio of detection beam diameter to mounting height, such that at 16m mounting height the detection zone diameter on the floor is 16m.

For mid range mounting heights there is a family of sensors with a lens suitable for up to 12m heights with a detection cone diameter of 1.75 x height.

Flush mount option

Surface mount option

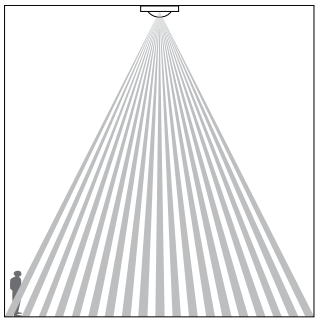
These detectors can be used to control up to 15 or 25 (model dependent) digital dimming ballasts. It is supplied with factory default settings which may suit the majority of installations however it has the facility for the time delay, light level and other commissioning parameters to be set via the 2-way digital programmer (LCSQSP).

This sensor can be supplied integrated onto the Linergy range of high efficiency T5 luminaires, simply add the 'IHP' prefix to the luminaire part number, the luminaire control gear suffix will dictate the DSI, DALI or Switched option.

Please contact your local Eaton representative or our sales team for further information on the controls and their compatibility with other luminaire ranges.

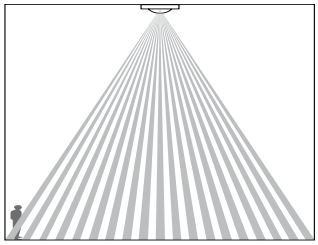
The DALI versions now have a default 100 hour lamp burn in period to operate the lamp at 100%. This can be reactivated following lamp changes with the I.R. master programmer.

Maximum recommended mounting height 16m



360° cone shaped detection pattern diameter at floor = 1 x height

Maximum recommended mounting height 12m



360° cone shaped detection pattern diameter at floor = 1.75 x height

Mains Voltage Detectors

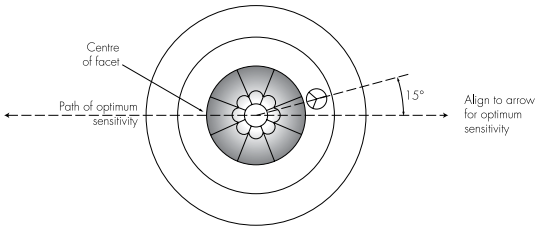
A selection of standard mounting height microwave and PIR sensors with and without photocells are also available. Please refer to the catalogue part number table on page 441.

The maximum recommended mounting height for these is 3m, producing a detection diameter from the PIRs of 2.4 x mounting height at the floor level.

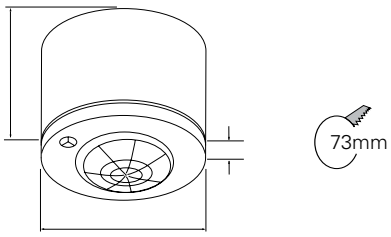
These are mains voltage sensors with the facility for manual dimming override on the digital dimming variants via a retractive switch.

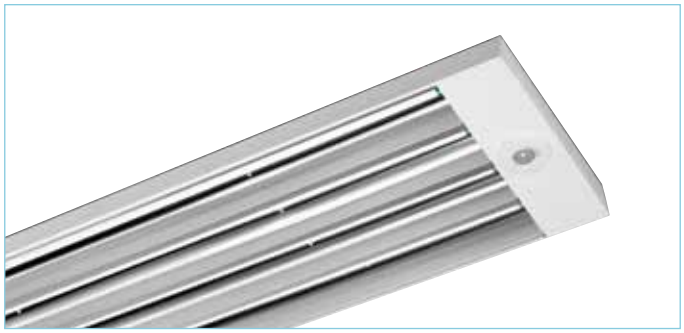
Refer to the manual dimming function operation on page 442.

A latching switch may also be placed in parallel to override the occupancy detection.



Dimensions





Linergy II with Integral Sensor

Accessories

Catalogue Numbers

Description	Cat No
Digital 2 way programmer	LCSQSP
Infrared user controller	LCSQC
Infrared programmer	LCSQS

Catalogue Numbers

Cat No	Description
Control BUS Loop Components and Accessories	
BPS200	BUS Power supply 200 Device Capacity
BPS100	BUS Power supply 100 Device Capacity
LCSWP3S	Wall Plate override switch 3 scenes, Dim/Brighten, Off
Groupmaster Detectors	
Stand Alone Mains Rated Sensors: High Mounting Height up to 16m	
IHPRDF	PIR and Photocell High Level 230V DSI Flush Mount
IHPRDS	PIR and Photocell High Level 230V DSI Surface Mount
IHPDDF	PIR and Photocell High Level 230V DALI Flush Mount
IHPDDS	PIR and Photocell High Level 230V DALI Surface Mount
IHPSF	PIR and Photocell High Level 230V 6A Switching Flush Mount
IHPSS	PIR and Photocell High Level 230V 6A Switching Surface Mount
ILSIHPDDF	PIR and Photocell High Level 230V DALI Flush Mount with BUS loop connectivity
ILSIHPDDS	PIR and Photocell High Level 230V DALI Surface Mount with BUS loop connectivity
Stand Alone Mains Rated Sensors: Mid Mounting Height up to 12m	
IMPRDF	PIR and Photocell Mid Level 230V DSI Flush Mount
IMPRDS	PIR and Photocell Mid Level 230V DSI Surface Mount
IMPDDF	PIR and Photocell Mid Level 230V DALI Flush Mount
IMPDDS	PIR and Photocell Mid Level 230V DALI Surface Mount
IMPSF	PIR and Photocell Mid Level 230V 6A Switching Flush Mount
IMPSS	PIR and Photocell Mid Level 230V 6A Switching Surface Mount
ILSIMPDDF	PIR and Photocell Mid Level 230V DALI Flush Mount with BUS loop connectivity
ILSIMPDDS	PIR and Photocell Mid Level 230V DALI Surface Mount with BUS loop connectivity
Stand Alone Mains Rated Sensors: Standard Mounting Height, up to 3m	
IPRDF	PIR and Photocell 230V DSI Flush Mount
IPRDS	PIR and Photocell 230V DSI Surface Mount
IPDDF	PIR and Photocell 230V DALI Flush Mount
IPDDS	PIR and Photocell 230V DALI Surface Mount
IPSF	PIR and Photocell 230V 6A Switching Flush Mount
IPSS	PIR and Photocell 230V 6A Switching Surface Mount
IMDS	Microwave and Photocell 230V DSI surface/semi-rec mount
IMSS	Microwave and Photocell 230V 10A Switching surface/semi-rec mount
ILSIPDDF	PIR and Photocell 230V DALI Flush Mount with BUS loop connectivity
ILSIPDDS	PIR and Photocell 230V DALI Surface Mount with BUS loop connectivity

Inrush current on LED luminaires can limit the number of luminaires that can be linked to a switching sensor
For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Manual Dimming

IP20

Simple on/off and dimming control is often required in many types of application, particularly in areas where audio-visual presentations are conducted. The Manual Dimming System achieves this without the need of complicated controls or dimming racks, simply by using momentary push buttons plus Eaton luminaires fitted with digital regulating control gear. Installation is straightforward, with luminaires only requiring a standard power supply and an additional switched live, via the push button.

No complicated set up is required, just push and hold the button down until the desired illumination is reached. Precision control is easily achieved by using the Manual Dimming System.

- Simple dim/brighten control
- Easy to install and use
- Silent, stable, precision control
- Soft on/off feature
- Comprehensive range of compatible luminaires

System Operation

- Luminaires to be controlled should be fitted with digital high frequency regulating control gear.
- Each luminaire requires a standard, permanent live mains power supply, plus a switched live supply and neutral reference via a momentary push button switch.
- Luminaires are switched on or off by a short push of the switch. Luminaires will switch on at their previous light level.
- Pushing and holding the switch will dim the luminaires. Releasing and then holding again will increase the luminaire brightness. Operation will toggle between on/off or dim/brighten each time the switch is pressed or held on.

System Components

- Switch
  Momentary push button fitted in a white single gang switch plate.
- Luminaires
  Compatible luminaires fitted with digital high frequency regulating control gear. To specify luminaires, change the 'S' or 'Z' suffix to 'RD'. A comprehensive list of luminaires suitable for use with the Manual Dimming System can be provided by contacting our technical support and application department.

Options

Emergency converted luminaires can be used with this system, specifying the appropriate luminaire to be used complete with digital high frequency regulating control gear.
Contact technical support for full details on 01302 303240 or email LightingTechnicalUK@Eaton.com.

Specification

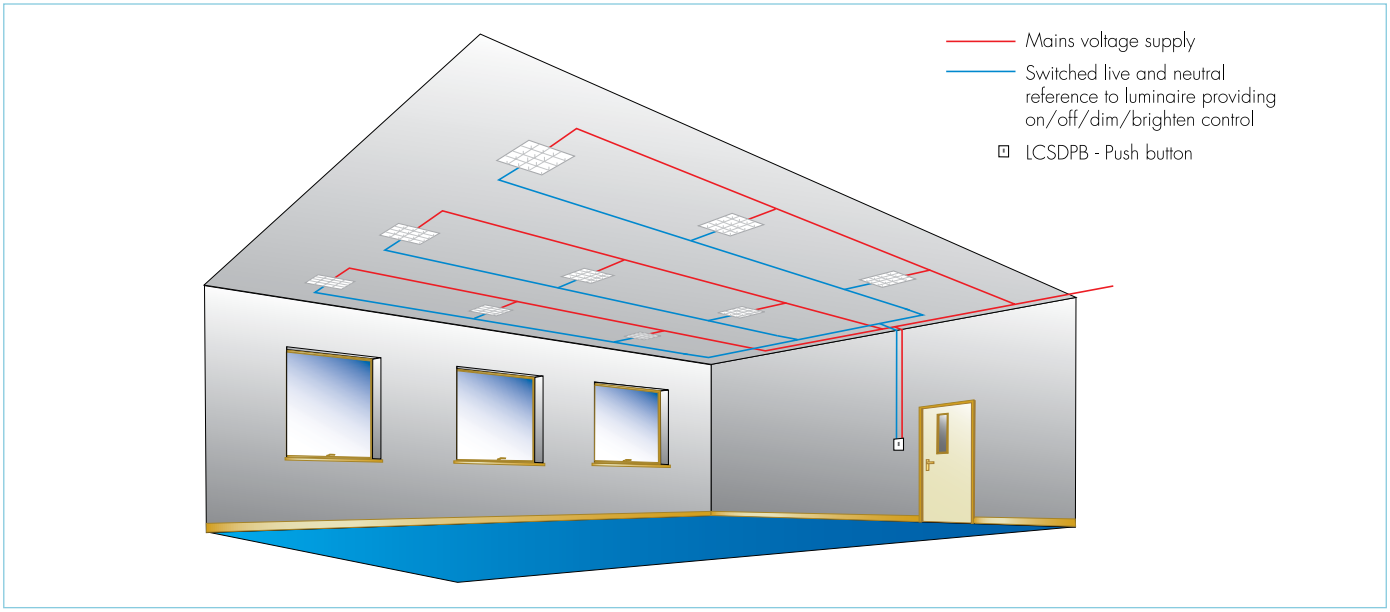
To specify state: Dimming system providing manual on/off/dim/brighten functionality, using digital high frequency regulating luminaires controlled by momentary push button switch, as Eaton's Manual Dimming System, part no. _____

System Design and Installation

- Lighting design is carried out exactly as a conventional system would be, to determine the quantity of luminaires required.
- System designed for up to 10 luminaires.
- Specify the luminaires to be fitted with digital high frequency regulating control gear.
- Connect all luminaires to a permanent live mains supply. It is recommended that a suitable means of isolation is provided for routine maintenance purposes.
- An additional momentary switched live supply via a push button switch is required for on/off/dim/brighten control.
- The luminaire ballast also requires a common neutral connection. This can be taken from the unswitched mains supply. However, to allow flexibility and permit other controls to be connected in the future, it is recommended that an additional neutral is run alongside the switched live supply.
- On/off and dim/brighten control is manually accessed by a short press or press and hold of the push button.
- Additional control switches can be added for two way switching etc. Any additional push buttons should be connected in parallel.

Catalogue Numbers

Cat No	Description
LCSDPB	Momentary push button switch - on/off/dim/brighten control



Typical Manual Dimming System wiring schematic

Integrated IP Sensor

IP20

Integrated Occupancy and Photocell Sensors

With the lighting load of a commercial building accounting for around 30% of the energy to run it, reducing the lighting load through controls and daylight harvesting can have a significant effect in reducing the energy consumed. This is a win win where the building operator reduces running costs, the occupant receives an improved lighting scheme and it is also of benefit to the environment.

Full dimming and daylight harvesting functions are provided by the Intelligent Lighting System described on page 429 and the LCM on page 448.

Standard Height Integrated IP Sensor

The IP sensor provides basic PIR occupancy detection and a photocell for daylilght threshold switching.

The daylight threshold is set so the sensor will hold off the luminaire if there is sufficient ambient light.

If there is insufficient ambient light and occupancy is detected by the PIR the luminaire will be switched on. The luminaire will remain on while occupancy is detected and then for the set time delay after no further occupancy.

Setting the time delay and light level threshold is achieved by 2 rotary potentiometer on the sensor head.

The standard sensors have a recommended mounting height of up to 3m and create a detection cone with a diameter of 2 x mounting height on the floor for seated activity, 2.4 x mounting height for walking towards the sensor and up to 4 x mounting height for walking across the detection zone.

Common Features of the Standard and Integrated 'IP' Sensors:

- Elegant sensor head linked to a slimline control module via RJ plug for simple integration into luminaires
- The sensor heads are retained by simple spring clips in the requisite hole cut out of ~ 28mmØ
- A photocell for threshold light level switching control with adjustment from 10 to 2000 lux via the rotary potentiometer on the sensor head
- They can be stand alone within a luminaire or operate as master/slaves with appropriate wiring (available on request)
- The master slave arrangement takes the lux reading of the master only, the slaves operate on occupancy only

  It is recommended to position the master furthest from the natural light so as not to cause slave luminaires to be over dimmed
- The time delay can be set between 15 seconds and 30 minutes using the rotary potentiometer on the sensor head
- The ambient temperature range is -25° to +50° (luminaire ambient range may differ)

Luminaire Range Compatibility

The 'IP' sensor is a standard option on Crompack 5 battens and Modulay recessed luminaires used with louvre accessories.

It provides switching with occupancy on HF control gear and can invoke "corridor function" when used with compatible dimming control gear.

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Standard height IP sensor

Rotary potentiometers on sensor head

Furnival Building, Sheffield Hallam University
Sheffield, UK

Microwave Sensor

IP20

This discrete microwave detector is supplied already integrated into our luminaires to provide occupancy/motion detection with simple adjustment of detection range, time out and switching light level.

- Simple set up and operation
- Up to 360° detection (subject to mounting orientation)
- 1m to 5m diameter detection range, up to 8m diameter
- 2 to 30 lux switching for twilight operation subject to mounting and luminaire compatibility
- 5 sec to 25 minute time delay

Integrated Microwave Detector

Function

An HF or microwave detector operates differently to a Passive Infra-Red detector (PIR), it is important to understand the main operational differences to ensure the correct device is used for the application.

Unlike motion detectors with PIR technology, this high frequency (HF) motion detector emits a 5.8 GHz signal.

Movement is detected by a change in frequency of waves reflected by a moving object within the detection zone. Vibration or moving machinery may also trigger the device.

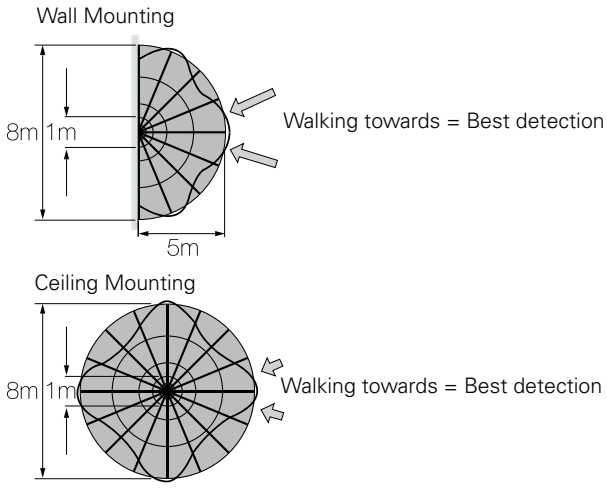
The HF detectors are almost temperature-independent, whereas temperature is the basis for the PIR motion detectors temperature measuring process.

Infra-red waves from a PIR detector do not pass through walls, but high frequency waves can do. As a consequence, it may not be possible to have the clear boundary of a room wall when using an HF occupancy detector. Therefore, movement of people or machinery in adjacent rooms may also be detected and activate the device, resulting in lights activating unnecessarily.

The HF sensor is ideally suited to integration within luminaires with panels or diffusers through which a PIR's detection and functionality may be impaired.

The sensor is often set to daylight to deactivate the photocell to avoid false switching due to proximity to the lamps.

Detection Zone

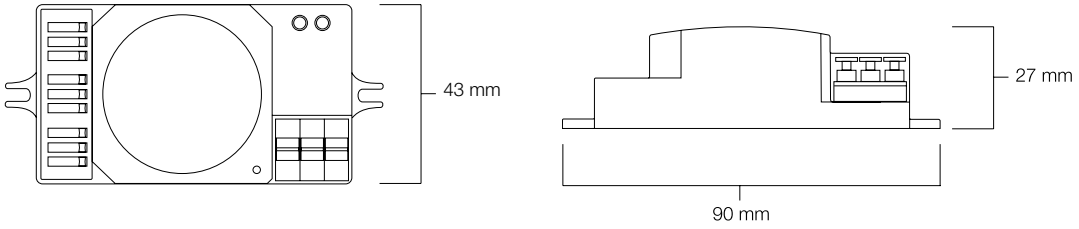


Range/Sensitivity

Detection

Range and sensitivity can be set by the 3 dip switches.
The chosen range can be varied from 1 to 5m. Avoid locating the device near a heating or air conditioning source.

Dimensions

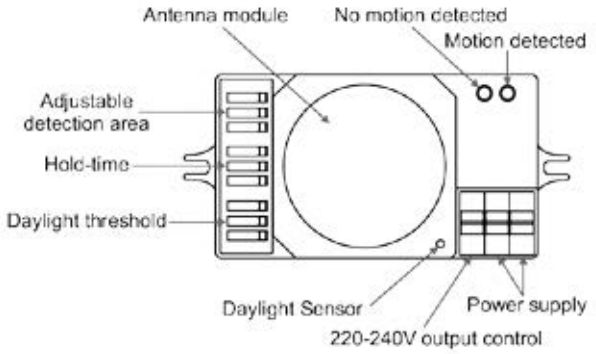


Set up and Operation

Please read all the information contained in these directions prior to any set up or servicing.

Isolate the device from the mains power supply before carrying out any installation, maintenance or servicing.

The device will generally be pre installed into a luminaire ready for set up with no additional installation or connection required.



Light Level Setting

The chosen light response threshold can be infinitely varied from approx. 2 to 30 lux or disabled using the dip switches.

Time Setting

The light can be set to stay ON for any period of time between approx. 5 seconds and a maximum of 25 minutes using the dip switches

Any movement detected before this time elapses will re-start the timer.

There will be no twilight evaluation (daytime operation) for as long as the motion detector is switched on.

Note: After the light switches OFF, it takes approx. 1 second before it is able to start detecting movement again.

Test Setting

In order to adjust the detection range during the day, the light level value must be set to daylight and time should be set to the minimum (approx. 5 seconds). The sensor is often set to daylight to deactivate the photocell to avoid false switching due to proximity to the lamps.

Note: When initialising the detector into operation or after a power failure, the motion detector will switch on for the duration of the set time-value.

Connections

Connect power supply as indicated in the terminal connection:

Phase = L

Connected phase = L'

Neutral conductor = N

Technical Data

Power Supply:	230V (+6%/-10%) 50/60Hz
Maxload:	400W Inductive
Power consumption:	<1W
HF transmitter output:	5.8GHz <10mW ISM Band
Range:	Up to 5m
Photo electric switch:	2 to 30 lux
Time setting:	5 sec to 25 min
Ambient temperature range:	-10 to + 50°C (The luminaire ambient operating temperature may be more restricted)
Housing material:	UV stable Polycarbonate

Luminaire Range Compatibility

The device is designed for integration into our luminaires and is not available as a stand alone device.

Luminaire ranges particularly suited to the integrated microwave sensor include: Tufflite, Crompack 5, Cercla, Modulay with panels, Varsity and Wavelite 2. The 'IM' prefix on compatible luminaires indicates inclusion of the microwave detector. Please contact your local Eaton sales engineer to discuss your requirements.

Trouble Shooting Guide

Malfunction Cause Remedy	Cause	Remedy
The load will not work	Incorrect light-control setting selected Load faulty Mains switch OFF	Adjust setting Replace load Switch ON
The load is always on	Continuous movement in the detection zone	Check zone setting
The load is on without any identifiable movement	The sensor is not mounted for reliably detection movement Movement occurred, but not identified by the sensor (movement behind wall, movement of small object in immediate lamp vicinity etc.)	Securely mount enclosure Check zone setting
The load will not work despite movement	Rapid movements are being suppressed to minimise malfunctioning or the detection radius is too small	Check zone setting

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Lighting Control Module

IP20

Energy conservation and the resulting cost savings are key drivers in the increasing demand for lighting controls. This new range of intelligent marshalling boxes and accessories offers a simple and easily configured system with all the components necessary to distribute power, detector inputs and switch commands to the connected luminaires.

The range includes a series of programmable Lighting Control Modules and a choice of PIR and microwave detectors each with photocells for daylight harvesting. Controls enhance any lighting scheme, helping to create a comfortable lit environment as well as optimising energy efficiency.

Lighting controls can provide energy savings in excess of 50%. Where controls are taken into account, they can aid compliance with the energy efficiency requirements of the Building Regulations and energy efficiency incentives such as the Enhanced Capital Allowance scheme.

- Energy saving through occupancy detection and daylight harvesting
- PIR and microwave detector options, all with photocells and absence functionality
- Quick and simple plug and play connection minimising installation time
- 12 luminaire connections, via 6-pole locking connectors, across 6 channels
- The 6 channels can be independently controlled or linked in any configuration
- Compatible with digital DSI or DALI dimming protocol
- Multiple SELV switch and detector inputs
- Commissioning via easy to use PC based software, subsequent operation and parameter changes via infra-red handset

Marshalling Boxes

There are 4 marshalling box variants offering different functionality and compatibility with the range of accessories.

LCMB12W is the switching only variant that offers configurable channel outputs and is ideal for areas where a simple light level offset and time delay provides sufficient control of luminaires.

LCMB12WD is the digital dimming variant, compatible with both DSI and DALI ballasts, this allows daylight harvesting to trigger dimming to regulate the luminaire output relative to the commissioned light level setting.

LCMB12WB has an integrated communication BUS interface to facilitate connection to a BUS loop enabling interaction with a wider lighting control system. (This variant does not have the dimming function) The BUS has mains voltage protection via a replaceable BUS card to prevent damage to the remainder of the box should mains be applied to the BUS loop in error. (The recommended cable for the BUS is 1.5mm² unscreened twisted pair).

LCMB12WDB combines both the dimming functionality and communication BUS interface to produce the most versatile marshalling box option.

If two or more LCMs are to be linked via a BUS loop then a BUS power supply will be needed. For BUS power supply options please refer to page 429.

The marshalling boxes have a modular construction and can be upgraded to add the BUS or Dimming functionality described above if required.

All of the marshalling boxes have the following features:

Construction

Robust VO rated polycarbonate housing finished grey with dedicated mounting points at 240mm centres and numerous cable entry points

Luminaire Connections

12 x 6-pole luminaire connections which are split across 6 different channels as follows:

- 2 channels control 3 luminaire connections each
- 2 channels control 2 luminaire connections each
- 2 channels control 1 luminaire connector each

The maximum recommended load per channel is 6A (with a maximum recommended total load of 16A for the box).

The recommended maximum number of digital dimming ballasts per channel is 8, with a maximum of 20 digital dimming ballasts for the box in total.

Luminaires can be supplied fitted with corresponding 6-pole connectors that will lock to the marshalling box, ensuring positive mechanical connection and prevents accidental disconnection.

Detector Inputs

Each box is fitted with 5 x SELV RJ45 detector input sockets, this allows quick and simple connection of the detectors via RJ45 patch leads (available as separate accessories), minimising install time and removing the chance of incorrect hardwiring. The maximum recommended cable length between a detector and the box is 100m.

Switch Inputs

Each box is fitted with 5 x 3-pole SELV switch input sockets. These connections are a pluggable terminal block with a common and two returns with normally open contacts. The function of each switch input can be attributed to one or more of the luminaire channels. These inputs have the potential to allow up to 10 functions to be attributed to them and could be used to create scene setting functionality.

The recommended cable for use with the SELV switch inputs is 3-core 0.75mm² 300/500V to CMA ref 3183Y (or 3183B for LSOH cable).

The maximum recommended cable length between a switch device and the box is 100m.

Each LCM is supplied with 2 switch input plugs. A pack of 5 is available if more are needed (LCMCP).

Mains supply

The box requires a 230/240V 50Hz electrical supply.

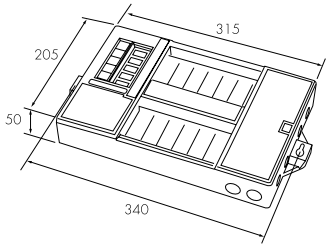
The mains input terminal is 4-pole with cable capacity of 2 x 2.5mm² or 1 x 4.0mm² per termination.

The box is supplied with a link between the permanent and switched live terminals, this can be removed where a permanent live supply is to be connected for emergency luminaires.

The permanent live input is common to all channels so a single key switch will drop the permanent supply to all 6 channels.

Dimensions

Depth	50mm (108mm with 6-pole plug and lead fitted)
Length	315mm (361mm including fixing feet)
Width	205mm
Weight	1.85kg
Fixing centres	340mm



Sensors

There are 3 different detectors available for direct connection to the marshalling box. Up to five detectors in total can be connected to the box via the RJ45 patch leads, available separately. The maximum recommended patch lead length is 100m. Identify which sensors are to provide the daylight signal on each channel to avoid any conflict of 2 photocells on one channel trying to compete with each other.

LCMBMS is a corner mount microwave occupancy detector with integrated photocell.

This device is supplied with surface or semi recessing bezels and is designed to sit below the ceiling line and detect occupancy across a room when ideally sited in the opposite corner to the point of entry to the room.

At maximum sensitivity the detection range extends 20m from the flat face of the detector.

This type of detector is ideal in open areas benefiting from its large detection range.

LCMBMF is a 360° ceiling mount microwave occupancy detector with integrated photocell.

This device is designed to be mounted in the plane of the ceiling and has a conical detection pattern vertically below the detector. The detection cone diameter at the floor is 2.8 x the mounting height.

LCMBPIRF is a 360° ceiling mount PIR occupancy detector with integrated photocell.

This device is designed to be mounted in the plane of the ceiling and has a conical detection pattern vertically below the detector. The detection cone diameter at the floor is 2.4 x the mounting height.

Care should be taken with the fixing and location of the microwave detectors to ensure the detection pattern is not blocked by solid obstructions or may perhaps detect movement in an adjacent room through windows or lightly constructed partitions. Note vibration or moving machinery may also trigger the microwave.

Accessories

To complete the Lighting Control Module system there are a number of wiring accessories to make connection and integration quick and easy saving valuable time.

Patch leads to link the sensors to the box are available in 3m and 5m lengths, these are supplied fitted with an RJ45 termination at each end.

Luminaire connection leads can be supplied pre fitted to the majority of the Eaton luminaire ranges, allowing simple out-of-the-box connection of the luminaires directly to the chosen marshalling box. This makes specification of the full lighting system quick and easy.

These are available in 6-pole 3m and 6-pole 5m length options using the G63 and G65 luminaire suffix codes respectively. Alternatively the latching connectors can be purchased as separate accessories.

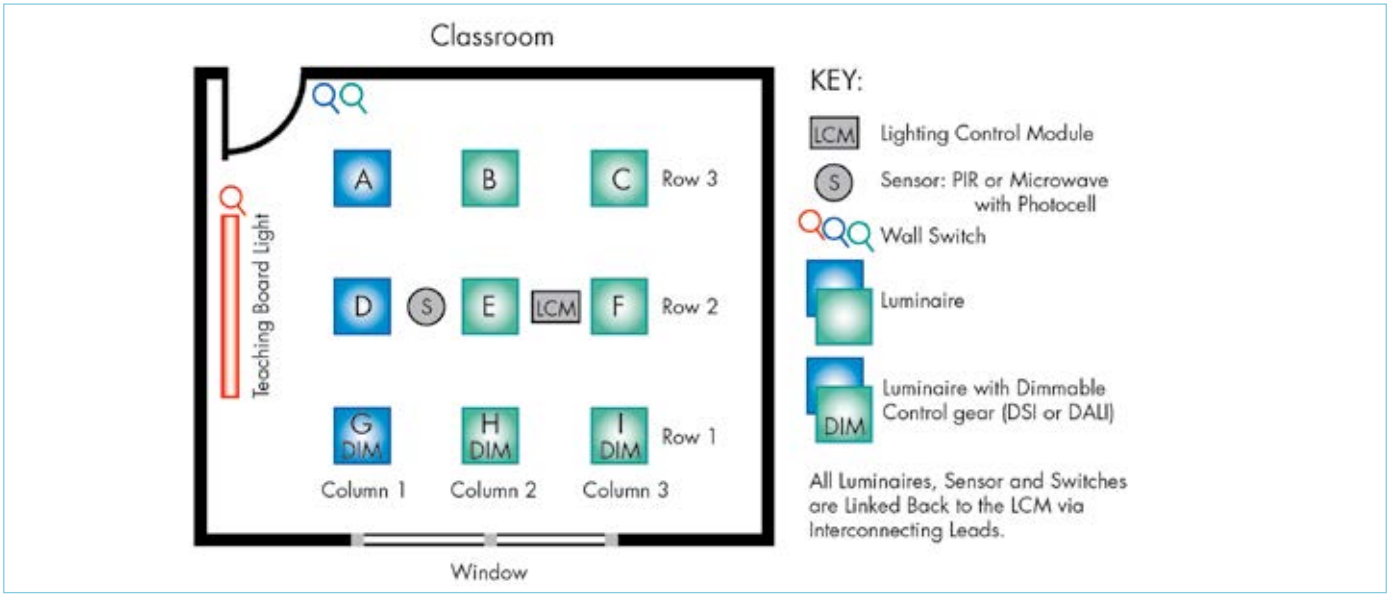
LCM commissioning is via PC based software. Commissioning is a service Eaton offer for the LCM. Please contact us for further details.

Subsequent simple parameter changes can then be achieved with the hand held master programmer (LCSQSP).

Refer to page 434 and 441 for handset details.

Typical Room Configuration

The following example shows a typical classroom scenario, demonstrating the application of the marshalling box and accessories.



9 luminaires are used for the main space with an additional task luminaire over the teaching board.

These luminaires are connected to the following channels on the box to enable the necessary functions to be assigned to those channels:

Channel 1 has C and F connected
Channel 2 has H and I connected
Channel 3 has the teaching board light connected
Channel 4 has G connected
Channel 5 has A and D connected
Channel 6 has B and E connected

3 independent wall switches, each connected to a separate SELV switch input on the box are assigned to the relevant channels on commissioning to operate the following luminaires:

a. The teaching board light
b. Luminaires A, D and G closest to the board, enables them to be switched off for projected presentations etc
c. Luminaires B, C, E, F, H and I to the rear of the room

A combined PIR with integrated photocell (LCMBPIRF), shown positioned between Luminaires D and E, is connected via a patch lead to one of the RJ45 SELV sensor inputs on the box. All channels are assigned on commissioning to act on occupancy detected by the sensor.

Luminaires G, H and I forming the window row are dimmable and channels 2 and 4 used for these luminaires are assigned on commissioning to act on the photocell for daylight harvesting.

In absence mode the luminaires will not come on until manually switched even if occupancy is detected.

In presence mode all the luminaires will come on as soon as occupancy is detected, with the window row regulating according to the detected natural light.

Luminaires will automatically turn off after the commissioned time delay following the last detected occupancy (default is 20 minutes).

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

Catalogue Numbers

Cat No	Description
Lighting Control Module	
LCMB12W	LCM 12 way 6 channel Switching only
LCMB12WD	LCM 12 way 6 channel Digital Dimming
LCMB12WB	LCM 12 way 6 channel Switching and BUS connection
LCMB12WDB	LCM 12 way 6 channel Digital Dimming and BUS connection

Cat No	Description
Sensors for the LCM	
LCMBMS	Microwave detector and Photocell surface/ semi-recessed mount
LCMBMF	Microwave detector and Photocell flush mount
LCMBPIRF	PIR detector and Photocell flush mount
LCM Accessories	
LCMPL3RJ45	Patch Lead 3m CAT5 c/w RJ45 connectors
LCMPL5RJ45	Patch Lead 5m CAT5 c/w RJ45 connectors
LCM6PGL	6-Pole Black/Grey GST latching Male connector
LCMCP	LCM switch input connectors - pack of 5

Connect Wiring System

IP20

Ideal for today's fast paced project requirements, the Connect Wiring System offers a simple to use solution that saves time and cuts the cost of installation, whilst providing future maintenance and flexibility benefits.

Each luminaire specified with the Connect system is fitted with an integral panel mounted socket. A pre-fabricated lead kit, consisting of a T-connector plus 3 or 5 metres of 4 core LSOH cable fitted with a connector at each end, rapidly links standard or emergency converted luminaires together. Future maintenance or reconfiguration is straightforward, with luminaires simply plugged in and out of the circuit. If time and cost is paramount, the Connect Wiring System is an indispensable option.

- Reduced installation time
- Plug and lead kits with T-connector
- LSOH cable as standard
- Safe, self locking connectors
- Suitable for standard and emergency converted luminaires

Materials

- Plug and T-connector - injection moulded thermoplastic material, finish black, with nickel plated brass contacts
- Cable - 4 core, 1.5mm^2 low smoke zero halogen (LSOH) sheathed, finished white

Installation Notes

- Panel mounted 4 pole male GST plug is fitted to each luminaire specified with Connect Wiring System
- Each luminaire is also fitted internally with a terminal block to facilitate mains power connection for start of run. Alternatively, a lead kit can be used to supply mains power from a proprietary connection box (by others)
- Pre-fabricated lead kits are available with 3m or 5m of cable, with GST 4 pole male and female connector plugs fitted at either end. Kit also contains a GST T-connector with 4 pole male connector input and 2 x 4 pole female connector outputs
- T-connector is plugged into socket on luminaire
- 3m or 5m lead is plugged into T-connector on first luminaire and linked to T-connector on next luminaire, etc
- T-connector and plug have self-latching lock mechanism to prevent accidental disconnection. Requires tool to unlatch
- The final luminaire on the circuit can have the lead plugged directly into the luminaire socket, or a T-connector can be fitted to aid future expansion
- T-connectors, plugs, sockets and cable are rated for a maximum load of 16A
- System components are rated to be plugged in or out under load

Connect lead with plugs and 'T' connector

Options

- Suitable for use with compatible Eaton's recessed fluorescent standard mains and emergency converted luminaires, as a standard option
- Connect Wiring for dimming or intelligent lighting systems are available on request. Contact our technical support and application department for details

System Components

- Luminaires

  Compatible recessed fluorescent standard mains and emergency converted luminaires fitted with an integral panel mounted socket. To specify luminaires, add the suffix 'CX'. A comprehensive list of luminaires suitable for use with the Connect Wiring System can be provided by contacting our technical support and application department

- Plug and Lead Kit

  Interconnecting kit, comprising 3m or 5m x 4 core, 1.5mm^2 LSOH cable fitted with 2 plugs, plus T-connector

Specification

To specify state: Rapid fit, 4 pole luminaire wiring system, featuring panel mount socket fitted integral to luminaire and interconnecting lead kits, comprising LSOH cable with plug in connectors at each end plus luminaire T-connector for continuous wiring, with self latching lock mechanism, as Eaton's Connect Wiring System, part no. _____

Catalogue Numbers

Description	Cat No	Weight (kg)
Connect System Accessories		
3m lead with 4 pole plugs and 'T' connector	CL43	0.45
5m lead with 4 pole plugs and 'T' connector	CL45	1.15

LED Driver Selection

Why is a driver module required?

An LED (Light Emitting Diode) is a solid state device, or semiconductor, which converts electricity passed through it into visible light. To maintain the light output, colour, efficiency and maximise the life of an LED, three factors must be controlled:

1. The manufacturing process and composition of the LED itself
2. Thermal management of the heat generated by the LED
3. The electrical supply to the LED

The driver is the device used to control the electrical supply to the LED. The majority of luminaires in the Eaton's LED ranges require an LED driver. Some luminaires are supplied complete with the appropriate driver, whilst others indicate on the product pages if a driver is needed.

Driver Types

There are essentially two basic types of driver, those supplying a constant current and those supplying a constant voltage. These are then subdivided by other capabilities such as dimming or colour changing.

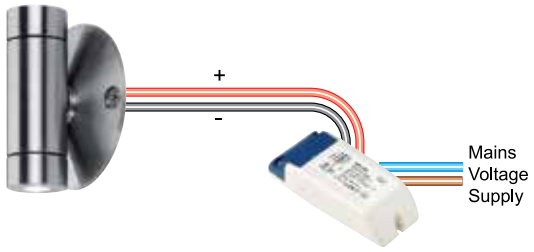
Within the Eaton range there is a wide selection of drivers offering different features and characteristics to provide the right product for the application. There is a choice of constant current or voltage outputs, different levels of ingress protection, dimming methods and colour changing versions as well as different physical sizes.

Constant Current Drivers

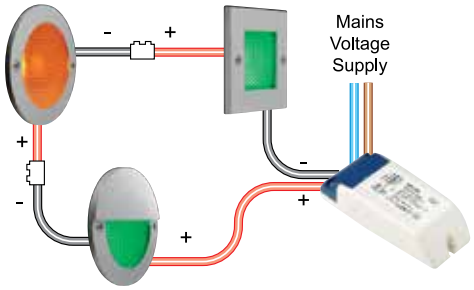
The majority of luminaires operate on a constant current, however not all constant current LEDs operate on the same current. It is therefore important to note the recommended current for the luminaire and select the appropriate driver. It is possible to operate luminaires at a lower current than recommended though this will reduce the light output and can affect the efficiency. If the current is too high it may cause premature failure of the LED.

When connecting multiple luminaires to the constant current drivers they must be wired in series.

Individual Connection



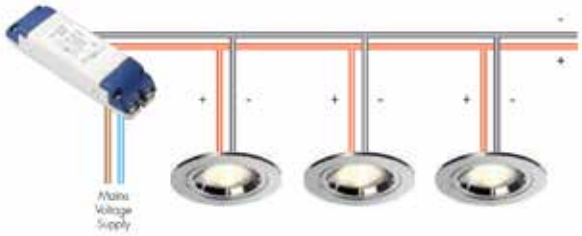
Series Connection



Constant Voltage Power Supply Units

Some of the LED luminaires require a constant voltage, usually 12V DC or 24V DC. When connecting luminaires to these constant voltage drivers they are wired in parallel.

Parallel Connection



Dimming Drivers

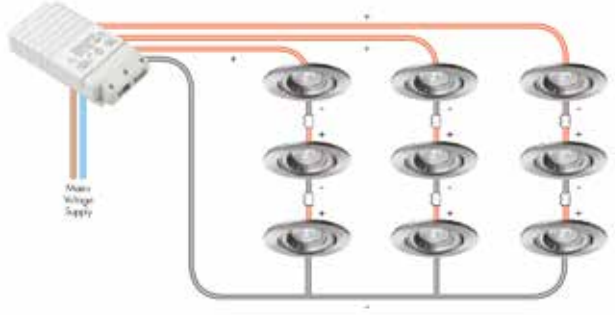
A selection of constant current dimming drivers are available with different switching modes and control language protocol, e.g. retractive switch, 1-10V, DMX and DALI

Colour Change Drivers

LEDs are often associated with colour options and the ability to change the colour emitted from the same luminaire. This is achieved by mixing the output from an array of individual red, green and blue LEDs or specialist 'Tri-chip' LEDs to generate any colour of the visible spectrum. These products are referred to as having the 'RGB' colour option. Several such drivers are included in the range for various budgets, most are DMX compatible. 'DMX' is the type of software protocol used. (Not all luminaires are offered with RGB colour change options).

Some drivers are multi-channel, typically 3 channel. For RGB products each channel is dedicated to a colour, red, green, blue. For fixed colour product the number of luminaires connected should be split evenly between each channel, e.g. for LS-PBX27 the maximum number of 1W LEDs it will operate is 27, split 9 per channel.

3 Channel fixed output multiple connection



Driver Selection

Each range has a recommended driver listed against it though some installations may require different characteristics, for example, particular dimensional requirements or capable of operating more than one luminaire.

The following tables list the range of drivers on offer, supported with technical data and a column indicating the number of 1W LEDs they are capable of driving.

This step by step guide will aid selection of the required driver(s).

1. From the information on the product page note the following details:
   - LED type and LED quantity within the luminaire.
   - The recommended drive current or voltage
   - Any dimensional constraints related to the installation, e.g. the cut out aperture of the luminaire.

2. Find the appropriate section of the table for the type of driver required:
   - Constant current - fixed output
   - Constant current - dimmable
   - High ingress protection
   - Colour changing
   - Constant voltage - fixed output
   - Constant voltage - dimmable

3. Look at the input current or voltage column to find those drivers matching that required by the luminaire.

4. Cross check the number of LEDs the driver can operate is sufficient for the product(s)
   - Note some drivers have a minimum load requirement. For example the LS-PD312 needs a minimum of three 1W LEDs to be connected to it for it to operate correctly.

5. Check the driver is dimensionally suited to the application.

6. This process may show several drivers are suitable for the chosen luminaire. Refine the selection by checking the other characteristics such as IP rating or power factor and also refer to the latest price list to compare the cost.

Driver Selection Examples

Example 1

Four fixed colour GR5-3K2-CW45C in-ground luminaires, with all four to be driven by one fixed output driver.

Each luminaire contains three 1W LEDs and requires a 350mA drive current. Assuming the driver is to be mounted indoors remotely from the product with no dimensional or Ingress Protection constraints.

This produces the following selection results:

LS-PD312 will run up to 12 x 1W LEDs at 350mA so will run the four GR5-3K2 luminaires

LS-PBX27 will run up to 27 x 1W LEDs at 350mA (split over 3 channels) so will run up to nine GR5-3K2 luminaires

In this case the LS-PD312 may be the best choice as it is smaller and lower cost than the LS-PBX27.

Example 2

The same GR5-3K2-CW45C as example 1 but with one driver per luminaire with the driver being installed beneath the fitting assuming in an application where IP40 is suitable protection results in the following option:

LS-MN03 will run up to 3 x 1W LEDs at 350mA so will run one GR5-3K2 luminaire and with its small physical size will fit easily through the cut out and sit within the ground sleeve beneath the luminaire.

Eaton's specialist LED team are able to provide support and assistance with project design and specification. For further details contact our LED technical support and application department on 01302 303240 or to arrange a visit from your local specialist sales engineer, contact our customer care centre on 01302 303303.

LED Driver Selection Guide

	Cat No	1W LED Quantity	Dimensions L	W	H	Weight (kg)	pf	IP Rating	Drive Current (mA)	Mains Supply voltage	Strain Relief	Features
Constant Current Non-Dimmable												
	LS-MN01	1	59	42	20.0	0.03	0.6	IP40	350	190-265	Yes	Small size
	LS-MN03	2-3	59	42	20.0	0.03	0.6	IP40	350	190-265	Yes	Small size
	LS-MN04	1	59	42	20.0	0.03	0.6	IP40	700	190-265	Yes	Small size
	LS-MN09	1	59	42	20.0	0.03	0.6	IP40	900	190-265	Yes	Small size
	LS-DPL110	1-9	117	50	28.0	0.075	0.6	IP40	350	90-250	Yes	Loop-in/out
	LS-DPL304	1-4	117	50	28.0	0.075	0.6	IP40	700	90-250	Yes	Loop-in/out
	LS-PD312	3-12	138	40	28.5	0.11	0.6	IP40	350	190-265	Yes	Loop-in/out
	LS-PD309	3-9	138	40	28.5	0.11	0.6	IP40	700	190-265	Yes	Loop-in/out
	LS-PD316	3-9	138	40	28.5	0.11	0.6	IP40	1000	190-265	Yes	Loop-in/out
	LS-PBX27	3-27 (9 per channel)	147	75	29.0	0.26	0.85	IP40	350	190-265	Yes	3 channel

	Cat No	1W LED Quantity	Dimensions L	W	H	Weight (kg)	pf	IP Rating	Drive Current (mA)	Mains Supply voltage	Strain Relief	Features
Constant Current Dimmable												
	LS-DBX27	3-27 (9 per channel)	147	75	29	0.26	0.85	IP40	350	190-265	Yes	3 channel, retractive switch control
	LS-AD-16	1–16 @ 350mA 1–8 @ 700mA	110	52	24	0.105	-	IP40	350/700	230-240	Yes	0-10V dimming
	LS-MD-16	1–9 @ 350mA 1–4 @ 700mA	99	39	23.5	0.07	-	IP40	350/700	230-240	Yes	Mains dimming (via trailing adge dimmer)
	LED18CC700D	4-12 @ 350mA	153	40	30.5	0.3	0.9	IP67	350	100-265	-	1-10V dimming Flying Leads
	LED36CC700D	8-24 @ 350mA 4-12 @ 700mA	153	40	30.5	0.3	0.9	IP67	700	100-265	-	1-10V dimming Flying Leads

	Cat No	1W LED Quantity	Dimensions L	W	H	Weight (kg)	pf	IP Rating	Drive Current (mA)	Mains Supply voltage	Strain Relief	Features
IP Rated Constant Current - (Non-Dimming)												
	LS-MPL01IP	1	82	85	22	0.05	0.6	IP67	350	190-265	Yes	Small size
	LS-MPL03IP	2-3	82	85	22	0.05	0.6	IP67	350	190-265	Yes	Small size
	LED10CC350	1-8	97	40	23	0.15	>0.9	IP67	350	-	-	450mm flying leads
	LED18CC350	4-12	153	40	30.5	0.3	>0.9	IP67	350	-	-	450mm flying leads
	LS-MPL04IP	1	82	85	22	0.05	0.6	IP67	700	190-265	Yes	Small size
	LED18CC700	1-6	153	40	30.5	0.3	>0.9	IP67	700	-	-	450mm flying leads
	LED36CC700	4-12	153	40	30.5	0.3	>0.9	IP67	700	-	–	450mm flying leads
	LS-MPL09IP	1	82	85	22	0.05	0.6	IP67	900	190-265	Yes	Small size

	Cat No	1W LED Quantity	Dimensions L	W	H	Weight (kg)	pf	IP Rating	Drive Current (mA)	Mains Supply voltage	Strain Relief	Features
Colour changing												
	LS-RGB27	3-27 (9 per channel)	147	75	29	0.26	0.85	IP40	350	190-265	Yes	3 channel, retractive switch control
		Maximum load Watts							Drive Voltage (V DC)			
	LS-RGB50	50W	147	75	39	0.29	0.95	IP40	24V DC	190-265	Yes	3 channel, retractive switch control DMX compatible
	LS-RGB-DMX-LV-MINI	200W	125	52	40	0.3	0.95	IP20	12-24V DC	12-24V DC	-	3 channel, DMX compatible. Requires LS-24V200W PSU
	LS-RGB24V-350W	350W	235	145	113	1.4	-	IP44	24V DC	230-240	-	3 channel, DMX compatible.

	Cat No	Maximum Load Watts	Dimensions L	W	H	Weight (kg)	pf	IP Rating	Drive Voltage (V DC)	Mains Supply voltage	Strain Relief	Features
Constant Voltage												
	LS-12V20W	20	138	40	28	0.11	0.6	IP20	12V	190-265	Yes	
	LS-12V50W	50	206	51	36	0.41	0.95	IP20	12V	88-264	-	
	LS-12V100W	100	230	65	42	0.66	0.93	IP20	12V	85-264	-	
	LS-24V20W	20	138	40	28.5	0.11	0.6	IP40	24V	190-265	Yes	
	LS-24V60W	60	206	51	36	0.22	0.96	IP20	24V	190-265	Yes	
	LS-24V100W	100	230	65	42	0.66	0.93	IP20	24V	85-264	-	
	LS-24V150W	150	199	99	50	0.76	0.93	IP20	24V	85-264	-	
	LS-24V200W	200	199	99	50	0.85	0.93	IP20	24V	85-264	-	
	LS-24V320W	320	215	115	50	1.1	0.95	IP20	24V	88-264	-	
	LS-24V600W	600	170	120	93	1.9	0.95	IP20	24V	88-264	-	

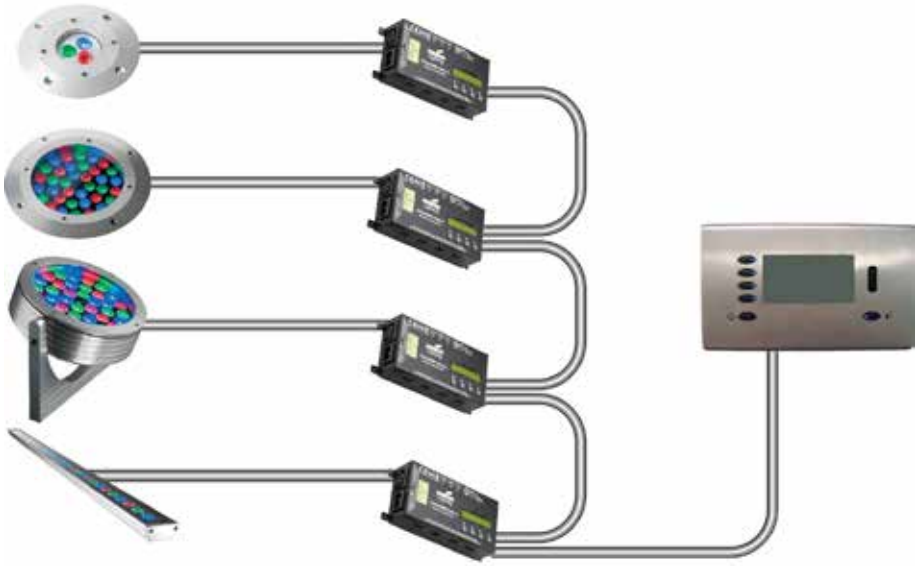
1 -10V dimmable versions available

For further information contact our technical support and application department on 01302 303240 or email LightingTechnicalUK@Eaton.com

LED Controls

A whole new dimension in lighting is now available with LEDs. The ability to dynamically change colour enables the designer to create effects never seen or experienced before. As the colour is generated at source there is no need for filters which absorb the light. Combining different coloured LEDs provides the ability to generate any colour in the spectrum, both fixed and dynamically changing. The possibilities are endless.

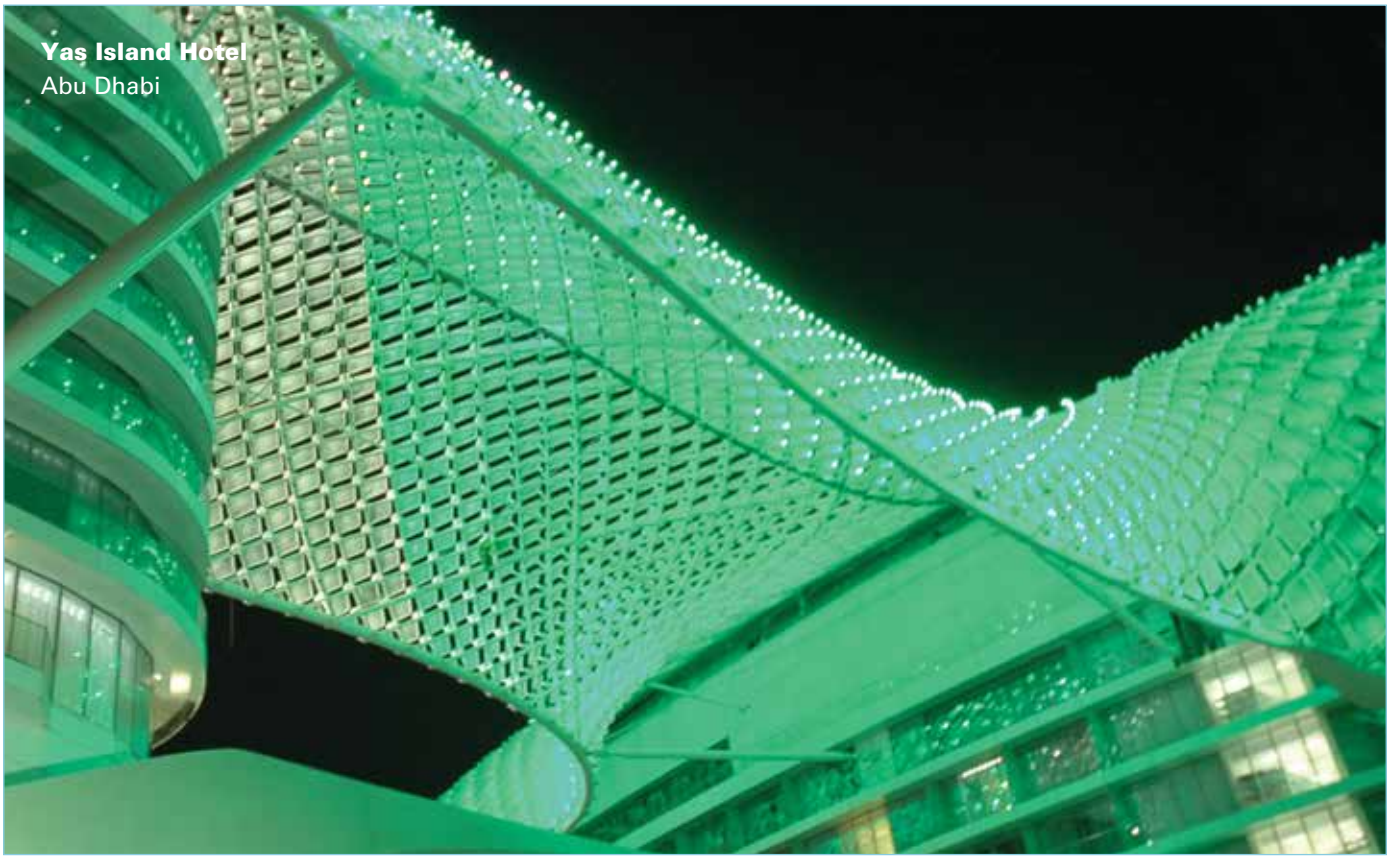
Eaton's specialist LED team are able to provide support and assistance with project design and specification. For further details contact our lighting technical support and application department on 01302 303240 or to arrange a visit from your local specialist sales engineer, contact our customer care centre on 01302 303303.



RGB Luminaires
A wide range of Eaton's architectural luminaires integrate red, green and blue LEDs to provide colour change capability.

Colour Change Driver
All RGB luminaires are supplied complete with RJ45 plug for simple connection into a colour change driver.

User Control
A powerful yet user friendly control unit provides multiple default scenes and shows with the ability to programme bespoke colours and effects.



Yas Island Hotel
Abu Dhabi

Yas Island Hotel
Abu Dhabi

Colour Change Drivers

3 Channel Driver

- Drives up to 48 LEDs across 3 independent channels
- Universal Mains input 110V AC - 240V AC
- Dynamic power control and pulse amplitude modulation
- Backlit 16 x 1 LCD display menu system
- 350mA, 500mA and 700mA max. LED forward current per channel
- 8-bit control with 8-bit master channel current resolution
- Wide output DC voltage range (1V to 48V DC)
- DMX-512A protocol support
- Multiple channel bonding to create high current outputs >2.1A
- Real time LED current, voltage and status monitoring
- Linear and smooth dimming selectable on each channel
- As the LED forward voltage demand goes down, the maximum forward current can be pushed up
- Over 81,000 internal programme scene options
- DMX master/slave options

Technical Data

Input	
Input Voltage Range:	110 - 240V AC
Input Frequency:	50 - 60Hz
Consumption:	1 - 55W
Power Factor:	0.88/230V AC, 0.9/115V AC @ full load
Efficiency:	85% at full load input
Connection:	Standard IEC mains filter
Standby Power:	<5W (total)
Inrush Current:	<9A
Output	
Output Power:	1-33W per channel, max 55W
Output Current:	0 - 500mA @ 48V DC per channel 0 - 700mA @ 24V DC per channel
Voltage Range:	1 - 48V DC per channel
LED Connection:	8 Pin Molex terminal connector
Thermistor Connection:	Included in the LED connector
Control Input	
Dimming control:	DMX-512A or RDM
Connection:	RJ45 Connector
Dimming Range:	0 - 100%
DMX Address Range:	001 - 510 via Menu system
Programs:	See user manual for all pre-sets
Master / Slave Arrangement:	See user manual
Thermal Feedback Control:	Thermistor control – 4 options
Dimming Resolution:	8-bit and Master Dim PAM
Environmental	
Operating Ambient Temperature:	-10°C to + 50°C
Storage Ambient Temperature:	-20°C to + 70°C
Case Temperature:	+ 75°C
Relative Humidity:	80%
Protection	
Over Voltage, Over Temperature, Overload, Short Circuit, Open Circuit	

Catalogue Numbers

Cat No	Description
LS-CLMX-VAR-3	3 channel LED driver

Colour Change Drivers

24 Channel rack mount driver

- 19 inch rack mounted driver system - 1U
- High power density model - 672W output power
- Drives up to 384 LEDs across 24 independent channels
- Universal mains input 110V AC - 240V AC
- Dynamic power control and pulse amplitude modulation
- Backlit 16 x 2 LCD display menu system
- 100mA to 1A LED forward current per channel in 50mA steps
- 8-bit control with 8-bit master channel current resolution to prove up to 4 billion colours in 3 Channels
- Wide output DC voltage range (1V to 48V DC)
- Intelligent rack management system for easy rack plug and play system configuration
- DMX or RDM protocol support
- Multiple channel bonding to create high current outputs >6A
- 8 individual temperature measurement sensor inputs for dynamic lighting fixture protection
- Configures as 8 outputs of 3 channels or 6 outputs of 4 channels
- 672W solution can drive up to 1000mA per channel; either 12 channels @ 48V DC or 24 channels @ 24V DC
- Linear and smooth dimming selectable on each channel
- As the DC voltage demand goes down, the maximum forward current can be pushed up
- Real time LED current, voltage and status monitoring
- Over 81,000 internal programme scene options
- DMX Master/slave options
- Takes standard S pin XLR connectors
- Alternatively has an RJ4S connection in the back of the driver

Technical Data

Construction	
Mounting:	Standard 19" - 1U Rack System
Material:	Steel case
Weight:	5 kg
Dimensions:	Main body - 435 x 370 x 44mm Front panel - 483 x 44mm
Input	
Input Voltage Range:	110 - 240V AC
Input Frequency:	50 - 60Hz
Consumption:	1 - 700W
Power Factor:	0.95/230V AC, 0.99/115V AC @ full
Efficiency:	>85% at full load input
Connection:	Standard IEC mains filter
Standby Power:	<1W total
Inrush Current:	70A/115V AC, 140A/230V AC
Output	
Output Power:	1 - 48W per channel, max 672W
Output Current:	0 - 500mA @ 48V DC per channel 0 - 1000mA @ 24V DC per channel
Voltage Range:	1 - 48V DC per channel
LED Connection:	8 Pin terminal connectors
Thermistor Connection:	Pin terminal connectors
Control Input	
Dimming control:	DMX-512A or RDM
Connection:	5 - Pin XLR
Dimming Range:	0 - 100%
DMX Address Range:	001 - 510 via Menu system
Programs:	See user manual for all pre-sets
Master / Slave Arrangement:	See user manual
Thermal Feedback Control:	Thermistor control - 4 options
Dimming Resolution:	8-bit and Master Dim PAM
Environmental	
Operating Ambient Temperature:	10°C to + 50°C
Storage Ambient Temperature:	-20°C to + 70°C
Case Temperature:	+ 75°C
Relative Humidity:	80%
Protection	
Over voltage, over temperature, overload, short circuit, open circuit, will withstand 300V AC surge input for 5 seconds	

Catalogue Numbers

Cat No	Description
LS-CLMX-VAR-24	19" 1U 24 channel rack mount LED driver

User Control

- Stand-alone operation
- Intuitive setup and operation
- Multi-lingual LCD information screen
- Master brightness and speed control
- Smooth digital dimming
- Sound activation for light and sound synchronised effects
- Built-in real-time astronomical clock
- TCP/IP Ethernet connectivity
- Twin full DMX 512 universes
- Range of plate finishes available
- Fits into a standard 47mm UK back box

Technical Data

Specification	
Power Supply:	15V DC 0.3A, PSU supplied
DMX Outputs:	2 x 512 channels, fully configurable
Ethernet:	10/100 on RJ-45 socket
I/O:	Up to 3 Volt-free contact closure inputs Up to 3 0-10V outputs
User Interface:	RGB buttons, scroll wheel
Time Functions:	RTC + Astronomical clock built-in
LCD display:	128 x 64 pixel mono graphic display, user configurable
Networking:	Web server built-in, library of telnet commands
Audio In:	Line-level beat triggering audio input. Note audible converter maybe required, contact technical support for details
Dimensions:	146 x 87 x 35mm. 47mm deep standard UK twin back-box recommended
Weight:	0.23kg

Catalogue Numbers

Cat No	Description
LS-CS512-SS	DMX wall mount controller with stainless steel fascia
LS-CS512-W	DMX wall mount controller with white fascia

Inrush Limiter

It is important to understand that the control gear (drivers) used for LEDs do not have the same characteristics as conventional control gear used with traditional light sources.

The short term inrush current of some modern LED drivers can be significantly higher than that of conventional high frequency control gear. This can cause problems with nuisance tripping within the circuit protection (MCBs) and can damage devices used to control/switch the lighting load. Therefore it is important that the electrical circuit design is appropriate for the luminaires and the circuit has the required electrical protection. This is especially important when looking to replace existing traditional luminaires.

Electrical characteristics vary dependent on the luminaire type and LED driver used. Our recommendations for the selection of the maximum number of luminaires which can be connected to different circuit breaker types are available on request.

It should be noted that although figures are listed for type B and C breakers, we would recommend that C type breakers are used.

With the need for protection against excessive inrush currents to protect against circuit breaker tripping and damage to switching devices, we have taken the proactive step to introduce a new device, the PCL16A inrush peak current limiter.

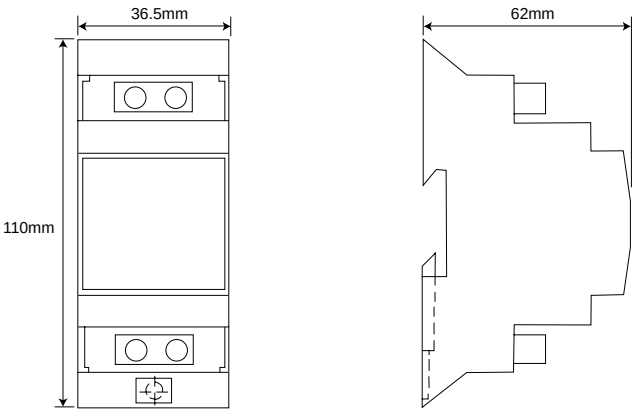
This device can be easily installed as part of the final distribution components, it is simply connected between the supply circuit breaker and the load (i.e. luminaire circuit). It protects the circuit from inductive and capacitive loads. Rated at 16A for continuous operation, it allows a circuit to be loaded to 16A with inrush surges then managed by the device.

The PCL16A device is available as an individual Din-rail mount component or with up to 3 supplied pre-fitted into a remote enclosure to further simplify installation.

Features

- The peak inrush limiter protects circuits and allows more luminaires to be installed on existing circuit breakers reducing installation costs
- Circuit switching/control devices do not have to be overated to be able to control the high inrush load
- Simple to install with surface mount screw holes and DIN-rail mounting feature
- Available with up to three units pre-fitted into an enclosure to minimise installation time
- Integrated thermal protection to prevent overheating
- Very low power consumption

Dimensions



Specification

Device:	Peak / RMS Current Limiter
Voltage:	184-265V AC range 230V AC continuous
Current Rating:	16A Continuous
Capacity Load:	1.500uf (max)
Frequency:	16.33Hz to 440Hz
Mounting:	DIN-rail TS35mm EN60715 (TS35/7.5 and TS35/15) or 2 screw holes for surface mounting. (Do not mount the unit on its side, only with the unit vertical or base down on a horizontal surface)
Terminals:	Spring Type: 0.5-6mm^2 / 21-10AWG
Housing:	ABS UL94V-0 IP20 Rated, with Ventilation Slots
Ambient Temperature:	-40°C to +70°C with Integrated Temperature Protection

Catalogue Numbers

Description	Cat No	Weight (kg)
1 x 16A peak inrush current limiter - unit only	PCL16A	0.12
1 x 16A peak inrush current limiter - c/w enclosure	PCL16A-ENC1	0.72
2 x 16A peak inrush current limiter - c/w enclosure	PCL16A-ENC2	0.84
3 x 16A peak inrush current limiter - c/w enclosure	PCL16A-ENC3	0.96

Huddersfield Leisure Centre
Huddersfield, UK

Technical and Index

10

Technical and Index

Designing a basic lighting scheme requires the consideration of many factors, not just the achievement of a desired lighting level. Basic objectives must first be established, such as:

– What sort of tasks will be performed in the area?
– What 'mood' needs to be created?
– What type of lighting will create a comfortable environment?

There are also standards and legislation that need to be complied with. For example:

– How energy efficient must the lighting be?
– How will Building Regulations affect the design?
– Is emergency lighting required?

When all of these objectives and requirements have been established, they can be expressed as a series of lighting criteria in order to facilitate a quality lighting design. Criteria that would normally be considered are:

- **Level of illumination**
  Illumination levels for a wide variety of environments and tasks can be found in BS EN 12464-1: 2011 and the society of light and lighting's code for lighting. The levels stated are maintained illuminance, which is the minimum average illumination level that should be achieved at the point of scheduled maintenance.

- **Uniformity and Ratios of Illuminance**
  The combination of luminaires selected should evenly illuminate the working plane and appropriately illuminate walls and ceilings in relation to the task illumination, so that a pleasant and comfortable environment is achieved. In specific areas, increased directional lighting may be required to create a defined or more intimate environment.

- **Glare**
  The acceptable level of glare should be established as appropriate for the application, using information in BS EN 12464-1: 2011 and the SLL code for lighting.

- **Colour and Room Reflectance**
  The colour appearance of the lamps should be chosen for the application and complement the interior colour scheme, which should be chosen with an appreciation of the reflectance values that will be achieved. Lamps should be selected with appropriate colour rendition properties as detailed in EN12464-1 and for colour discrimination and reduction of eye fatigue.

- **Energy Efficiency**
  Luminaires should be selected that meet the requirements of the Building Regulations Part L. The distribution characteristics should also match the requirements of the criteria above.

- **Special Considerations**
  Certain applications require additional considerations, such as the addition of display lighting, the arduous nature of the environment or the use of Display Screen Equipment. Luminaires should be selected and the design completed with these elements in mind, where appropriate.

  After these criteria have all been considered, a lighting scheme calculation can be undertaken. The most popular method of establishing the quantity of luminaires required, the illumination level achieved and the luminaire layout, is to use computer software created specifically for lighting design. It is important to remember that all the criteria above must still be considered prior to using computer software, if a satisfactory scheme is to be produced.

Lighting design can also be achieved using published photometric data, such as that included on the product pages of this catalogue. Average illumination via the lumen method of calculation can provide fast results that can then be assessed and facilitate more detailed design of the most appropriate option if required.

Lumen Method Calculations

This method uses the utilisation factor tables created from photometric measurement of each luminaire. Firstly, the Room Index (K) of the space must be calculated, which is the relationship and measure of the proportions of the room:

$$K = \frac{L \times W}{(L + W) \times Hm}$$

Where:
L = length of room
W = width of room
Hm = height of luminaire above working plane

The result is used in conjunction with room reflectance values to obtain a specific utilisation factor for the surface illuminated from the tables.

This can then be used as part of the calculation to determine the average illuminance level, using the following formula:

$$E = \frac{F \times n \times N \times MF \times UF}{A}$$

Where:
E = average illuminance
F = initial lamp lumens
n = number of lamps in each luminaire
N = number of luminaires
MF = maintenance factor
UF = utilisation factor
A = area

The maintenance factor is a multiple of factors and is determined as follows:

MF = LLMF x LSF x LMF x RSMF

Where:
LLMF = lamp lumen maintenance factor - the reduction in lumen output after specific burning hours
LSF = lamp survival factor - the percentage of lamp failures after specific burning hours
LMF = luminaire maintenance factor - the reduction in light output due to dirt deposited on or in the luminaire
RSMF = room surface maintenance factor - the reduction in reflectance due to dirt deposition in the room surfaces

With increased use of LED luminaires the calculation of MF becomes more important. As many LED luminaires will have non replacable light sources the design of the installation will be based more as to the level of illumination at a specific point in time which should be agreed with the customer.

Guidance on calculating each of these factors is provided in the SLL code for lighting. Alternatively, contact our Technical Support and Application Department for advice.

Finally, the luminaires must be spaced in the room such that acceptable uniformity is achieved. The maximum spacing to height ratio, SHRmax, provides the maximum spacing permissible between luminaires in both transverse and axial directions, in comparison to the mounting height and should not be exceeded if acceptable uniformity is to be achieved.

Using Photometric Data

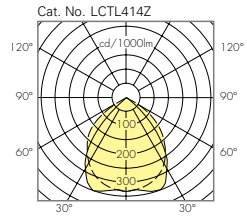
This catalogue includes a number of different formats of photometric data, to assist in lighting design.

Polar Intensity Curves

This illustrates the distribution of luminous intensity, in cd/1000 lm, for the transverse (solid line) and axial (dashed line) planes of the luminaire. The curve provides a visual guide to the type of distribution expected from the luminaire, e.g. wide, narrow, direct, indirect etc, in addition to intensity. Utilisation factors show the proportion of the luminous flux from the lamp that reaches the working plan. This is for the specific luminaire and allows for surface reflectivity and Room Index. The UF is used in average lumen calculations to calculate the average illumination level for an area with a specific luminaire.

Illuminance Cone Diagrams

Usually used for spotlights or lamps with reflectors, the diagram indicates the maximum illuminance, E lux, at different distances, plus the beam angle of the lamp over which the luminous intensity drops to 50%. The beam diameter at 50% peak intensity, relative to distance away, is also shown.

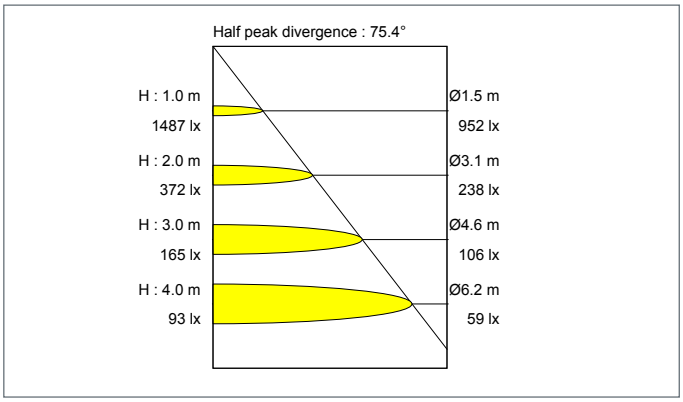


LOR: 0.86
ULOR: 0.09
DLOR: 0.85

SHR nom: 1.75
SHR max: 1.79

Utilisation factors / TM5

Reflectances			Room Index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	N/A	66	72	76	81	85	87	90	92
70	30	20	N/A	60	66	71	77	81	84	87	90
70	10	20	N/A	56	62	67	73	78	81	85	88
50	50	20	N/A	64	70	73	79	82	84	87	89
50	30	20	N/A	59	65	69	75	78	81	84	86
50	10	20	N/A	56	61	66	72	76	78	82	85
30	50	20	N/A	63	68	71	76	79	81	83	85
30	30	20	N/A	58	64	68	73	76	78	82	83
30	10	20	N/A	55	61	65	70	74	76	80	82
0	0	0	N/A	53	58	62	67	71	73	76	78
BZ-class			1	2	2	2	2	2	3	3	3

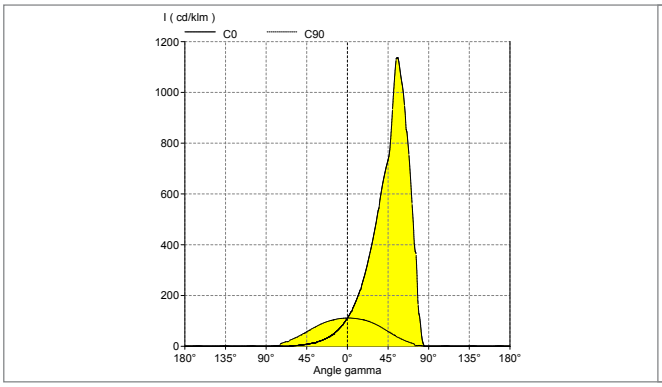


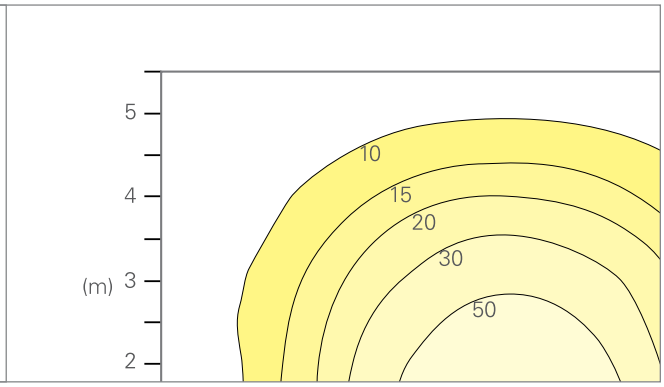
Cartesian Diagrams

Generally used for floodlights, this indicates the distribution of luminous intensity, in cd/1000 lm, for the horizontal (solid line) and vertical (dashed line) planes of the luminaire. The diagram provides a visual guide to the type of distribution expected from the luminaire e.g. narrow or wide beam etc, in addition to intensity. The associated data illustrates the beam angle to 10% peak intensity.

Isolux Diagrams

The contours provide the points of equal illuminance, in lux, on the floor or wall plane, from a specific stated mounting position. The diagram can be used to assess the distribution characteristics of the luminaire in addition to determining lighting levels.





The society of light and lighting produce a number of design guides (LG) for specific applications which offer useful design advice for best practice approach to illuminating these areas. A sample of the available guides are: Lighting Guide 02: Hospitals and Healthcare Buildings, Lighting Guide 04: Sports Lighting, Lighting Guide 05: Light for Education, Lighting Guide 07: Office Lighting and Lighting Guide 08: Lighting for Museums and Art Galleries.

Useful Website Addresses

www.sll.org.uk - The Society of Light and Lighting
www.cibse.org - The Chartered Institution of Building Services Engineers
www.bsi-global.com - British Standards

There is a wide range of lighting application standards and guides available to aid the designer in creating a comfortable and efficient working space.

The recent updated edition of BS EN 12464-1:2011, which not only sets a standard for illumination levels for specific tasks but, also provides advice on how to achieve a lighting solution to meet the human need. Also the SLL lighting design guides provides a very good source of guidance for the design of working spaces, and can be considered as best practice. Lighting guide (LG) 7 is possibly the one most commonly referred to, but it is often misunderstood being used to specify luminaires rather than the total environment of the space.

LG7 was written to supersede the original LG3 which had very restrictive cut off criteria for the luminance of luminaires. With the development of improved and flatter VDT screens this could be relaxed, allowing for higher luminance values from the luminaire. The increase being 3000 cd/m^2 or 200 cd/m^2 if the screen type is unknown. This can be increased up to 1500 cd/m^2 and 500 cd/m^2 respectively if positive polarity software only is used. LG7 also recommends values for the wall and ceiling illuminance, which are based on a direct percentage of the working plane level.
The intention being to alleviate the "cave like" appearance that the single use of the original Category 2 cut off luminaires produced.

The LG7 lighting guide for office lighting was amended in 2012 to align with EN12464-1. This changed the recommendation for the wall and ceiling illuminances to be a percentage of that of the working plane to specific levels of illumination (lux) with a minimum uniformity.

In addition the recommended range for the cd/m^2 for luminaires at the relevant cut off angle was changed and now has a range of 1000-1500 cd/m^2 for screens having luminances (brightness) of less than 2000 cd/m^2 which increases to 3000 cd/m^2 for screens with higher luminances.

It must be stated that LG7 is often referred to as being guidance for luminaires but it was written as a complete guide for lighting of the office environment, taking into account the total need of the occupants to create pleasant working space.

- **Recommendation for Wall and Ceiling Illuminance**

  The guide provides recommendations to address the dark and gloomy effect that can be created by 'categorised' louvres, including the sharp wall cut off and bright scalloping. To avoid this, walls and the ceiling should be lit as follows:

  - The average wall illuminance above the working plane should be at least 75 lux with a uniformity of >0.1
  - The ceiling average illuminance should be at least 50 lux with a uniformity of >0.1

The other misconception is that office lighting is all about creating a uniform lighting level across the whole space. What is needed is uniform lighting across each task area, which normally consists of relatively small areas on each desk. The lighting in the wider office space can, and indeed should, vary somewhat to create visual interest. Even the most dedicated office worker looks up from his or her work from time to time, and when they do they need to see an interestingly lit office space and, ideally, a more distant view out of a window.

If the building and the visual requirements of the users of an office space are understood and all possible lighting options are considered, a lit environment can be created for each office space that not only provides the required levels of lighting for each task but also provides an interesting and stimulating lit environment for people to work in.

This is a direct quote from the introduction of LG7 which goes on to discuss the whole design process. The overall intention of the guide has not been fully utilised by the majority of users and the reliance on a "single luminaire solution" has still been widely requested. The single luminaire approach when used in regular arrays to produce a high level of uniformity across the whole working space can be in contradiction to the original intent.

If designing to LG7 the certificate of conformity should be used to show the criteria of the design.

- **Certificate of Conformity**

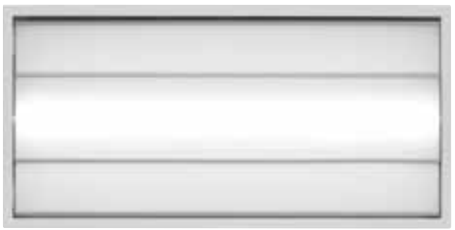
  The guide requires that the designer and installer of the installation complete and sign a Certificate of Conformity to demonstrate that all known visual and ergonomic criteria were fully considered during the design process and installed as specified.

  Due to the regular development of these guides, Eaton recommends you visit CIBSE on www.cibse.org to ensure the latest guides are being referred to.

- **EN12464-1:2011**

  The lighting design standards detailed in EN12464-1:2011 break the design process into a number of key elements to aid the design process. It however is not intended to provide specific solutions, nor restrict the designer from exploring new techniques or restrict the use of innovative equipment. Daylight, as well as artificial light, should also be fully utilised for both quality and to reduce energy.

Terzetto



- **EN12464-1:2011 (cont'd)**
  - Luminous environment
  - Luminance distribution
  - Illuminance
  - Glare
  - Lighting in the interior space
  - Colour aspects
  - Flicker and stroboscopic effects
  - Maintenance factor
  - Energy efficiency
  - Additional benefits of daylight
  - Variability of light

- **Luminous Environment**

  For good lighting it is essential that as well as the required illumination level being achieved, it is important that the requirements of the occupant are considered. Lighting should meet the three basic human needs:

  - Visual comfort
  - Visual performance
  - Safety

  By meeting these basic requirements the lighting scheme will offer a feeling of wellbeing and allow all tasks to be safely and efficiently carried out.

- **Luminance Distribution**

  The distribution of the source of illumination is important as this will have a direct effect on the individual and it is critical to ensure that the level of adaption is balanced throughout the space.

  This will increase visual acuity and contrast, as positive aspects, but good distribution will reduce the risk of excess levels of brightness which in turn can lead to glare causing fatigue and poor performance. However a good level of contrast is important so as to create an interesting environment for people.

  A well balanced luminous environment can only be achieved by taking into consideration the reflectances and illuminance of all surfaces. To avoid a gloomy environment and to raise the level of comfort in the building it is highly desirable to have bright interior surfaces particularly walls and ceilings. The recommendations are:

  - Ceilings; 70-90%
  - Walls; 50-80%
  - Floor; 20-40%

  Additionally the reflectance of any major items of fixed equipment or furniture should be in the range of 20-70%. The standard states the minimum levels of wall and ceiling illumination along with the maximum uniformity of these surfaces:

  - Walls and major vertical surfaces: Em > 50 Lux
  - Ceilings: Em > 30 Lux

  For offices these should be increased to:

  - Walls and major vertical surfaces: Em > 75 Lux
  - Ceilings: Em > 50 Lux

- **Illuminance**

  The recommendations for minimum illumination levels are detailed for specific task areas based on the following factors:

  - Comfort and well being
  - Actual task requirements
  - Functional safety
  - Economy

  The standard is based on illuminating the task area and not the total space with references to areas referred to as "immediate surround" with a minimum band width of 0.5 metres, and "background area" with illumination ratios to the task and each other. The standard also details the uniformities of the respective areas in place of the whole work space.

  Typically if the task is illuminated to 500 lux the immediate surround should be at least 300 lux, whilst the background should be illuminated to a 1/3 the value of the immediate surround.

- **Glare**

  Glare must be limited to avoid errors, fatigue and accidents. Glare can be experienced as either:

  - Discomfort glare
  - Disability glare

  If the limits of discomfort glare are met, disability glare is not usually a problem. The glare rating for a scheme should be calculated using the Unified Glare Rating (UGR) tabular method and must be below the rating listed for the application.

  It should be noted that high brightness reflections in the visual task should be avoided and these can be prevented by correct arrangement of work spaces, choice of finishes, control of luminances and bright ceiling and wall surfaces.

  Minimum shielding angles for bright light sources are also specified for a range of lamp luminances.

Terzetto

- **Lighting in the Interior Space**

  It is important to ensure that illumination of the space fully considers the human need and ensures that the lighting solution provided has a good level of cylindrical illumination. This is important in environments where good inter-personal communication is required. Additionally the appearance of a space can be enhanced by providing a degree of modelling by controlled use of directional lighting. EN12464 offers good advice on achieving a balanced environment.

- **Colour Appearance and Colour Rendering**

  The colour appearance of the lamps refers to the apparent colour (chromaticity) of the light emitted, and the colour used should suit what is deemed as natural for the application, e.g. relative to wall colours, furniture, climate etc.

  For visual performance and a feeling of comfort and wellbeing lamps with a suitable colour rendering index should be selected. Lamps with a colour rendering index value of Ra 80 must be the minimum used where people work or stay for long periods. For special applications, colour rendering may be acceptable with a lower index, but for other areas such as healthcare and retail, a higher value may be appropriate.

- **Flicker and Stroboscopic Effects**

  Lamp flicker and stroboscopic effects, which create discomfort and dangerous situations, should be avoided. This can be achieved by use of high frequency control gear in typical applications.

  It should be noted that LED drivers generally operate from a rectified AC supply and a DC ripple will be present with LED luminaires, the frequency of this flicker will be 100Hz and the percentage can vary based on the quality of the driver circuit, it is however unlikely that this flicker will be perceived by the normal human eye but may be visible by some CCT systems. Advice should be sort if CCT or special requirements are required.

- **Energy Efficiency**

  Lighting should be designed to meet the lighting requirements of a particular task or space in an energy efficient way; however it is important not to compromise the visual aspects of the lighting scheme just to reduce energy usage. The use of relevant lighting controls should be considered in any design to take account of daylight, occupancy patterns, and by using dimming control gear the benefit of maintained illuminance.

  A procedure for estimating the energy requirements for a lighting installation is given in BS EN15193 Lighting Energy Numeric Indicator. (LENI).

  (LENI), as this is based on a complete building and as such it should only be used as guidance if used for single rooms.

RXS Mini

- **Additional Benefits of Daylight**

  A good lighting design should also utilise any available daylight which can have a beneficial effect on the occupants. Creating variance in lighting level, direction and spectral composition throughout the day creates a feeling of wellbeing and comfort, it is however important to ensure that windows and skylights do not cause visual or thermal discomfort, or a loss of privacy. Additionally the use of natural daylight is beneficial in reducing the overall total lighting energy for the installation.

- **Variability of Light**

  Light is important to health and wellbeing as it can affect the mood, emotions and general alertness, so it is important to create a lighting solution that is not just a design by "numbers", but one which truly takes into account the person.

- **Practical Scheme Design**

  In order to comply with the wide-ranging requirements of the SLL guides and BS EN 12464-1 (interior), each element briefly described should be carefully considered before choosing the luminaires to achieve the desired effect for the installation. It is unlikely that one luminaire type alone will meet the requirements in full and provide a satisfactory result. Each installation will also differ in design, as each application varies in terms of surface colours, furniture, ergonomics, task, limiting glare requirements, available daylight etc.

  These documents aim to encourage the designer to look more closely at the working environment required and to create a comfortable and balanced lighting solution. It should take into consideration the factors listed, rather than reverting to a default luminaire or single light source suitable for all applications. It is therefore more likely that schemes that successfully achieve the standard and guidance documents whilst creating a feeling of wellbeing will consist of a combination of luminaire types.

  The combination of luminaires can include:

  - Recessed or surface direct downlight luminaires
  - Semi-recessed or recessed direct/indirect luminaires
  - Suspended direct/indirect luminaires
  - Wall washer luminaires
  - Wall mounted or floor standing uplighters

  The resultant installation will provide efficient illumination of the task area, whilst walls and ceilings are evenly illuminated to provide a visually comfortable lit environment.

  This catalogue provides data on lamp colour rendering and appearance properties. Further information and advice on the application of SLL lighting guides, BS EN 12464-1 (Light and lighting - lighting of the work place), BS EN 15193 (Energy performance of buildings - Energy requirements for lighting) and many other standards and guides is available from our technical support and application department. They are also able to offer guidance on selecting the appropriate luminaires for the application from the Eaton's range of mains and emergency luminaires.

To enable photometric designs to be performed as required by BS 5266 pts 1 and BS EN 1838, the following factors need to be used to ensure that the worst case conditions are designed for.

Initial lamp lumens of the lamp must be de-rated by:

- Ballast lumen factor (for emergency circuits, these are independently tested and their % value is shown)
- K Factor for the effect of reduction in supply voltage as the battery discharges, and of cable voltage drop on central systems
- S Factor to compensate for the ageing of lamps during service life

The effect of dirt on the diffuser must also be allowed for, so an allowance for 20% as recommended by ICEL has been built into these spacing tables. If the design is being produced on a computer, similar allowance should be made.

System lumen reduction factors used in the following lumens chart are:

System Type	Self-Contained	24 Volt Slave	50 & 110 Volt Slave	230 Volt Inverter Slave
K Factor	0.85	0.65	0.7	0.95
S Factor	0.85	0.85	0.85	0.85

When applied with the appropriate K Factors the following Emergency Lighting Design Lumens (ELDL) for typical fluorescent lamps which can be used for calculations:

Note that lamp lumen depreciation (S factor and factors for Luminaire Maintenance Factor LMF should be applied to the calculation)

			QX Range		50 and 110 Volt Slave		230 Volt Inverter Slave
Watt	Lumen	Type	BLF	ELDL	BLF	ELDL	ELDL
Linear Lamps							
14	1200	BQX14	0.14	142	0.43	516	1140
21	1900	HC1	0.10	161	0.43	817	1805
24	1750	HE1	0.08	119	0.30	525	1662
28	2600	HD2	0.08	178	0.41	1066	2470
35	3300	HE1	0.10	280	0.38	1254	3135
49	4300	HE1	0.07	255	0.28	1204	4085
54	4450	HE1	0.05	189	0.23	1023	4227
80	6550	-	0.04	222	0.18	1179	6222
18	1350	BQX	0.10	115	0.44	504	1282
36	3350	BQX	0.09	256	0.33	939	3182
58	5200	CQX	0.06	265	0.24	1060	4940
70	6550	DQX	0.05	278	0.18	1002	6222
Compact Lamps							
16-2D	1050	BQX	0.13	100	0.65	892	997
28-D	2050	-	-	-	0.4	1742	1947
38-2D	2850	-	-	-	0.33	2422	2070
13-TCD	900	BQX	0.14	107	0.63	567	855
18-TCD	1200	BQX	0.07	71	0.37	1020	1140
26-TCD	1800	HD1	0.06	91	0.42	756	1710
32-TCD	2200	HD1	0.06	112	0.45	990	2090
42-TCD	3200	HD1	0.06	163	0.41	1312	3040
40-TCL	3500	EH	0.05	149	0.25	875	3325
55-TCL	4800	EH	0.04	151	0.21	1008	4560

Design procedure for Converted Mains Lighting Luminaires

When normal mains luminaires are converted and utilised for emergency use, the procedure below should be followed:

1. The table of emergency lighting design lumens (above), should be consulted to determine the minimum emergency lamp output for the particular lamp/circuit required, for use with either spacing tables or a computer design program.

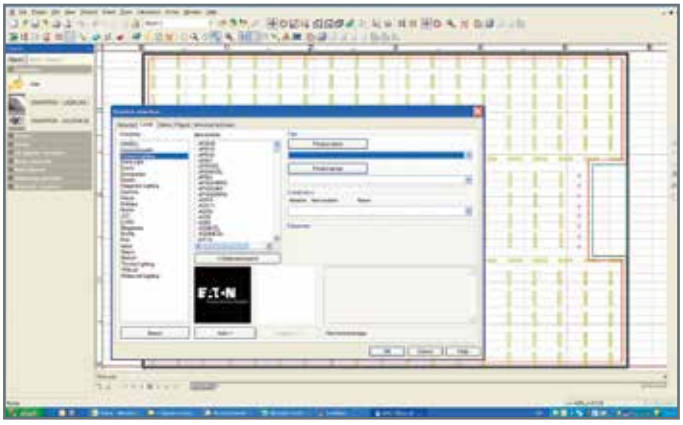
Use of Spacing Tables with Computer Programs

Computer programs can provide accurate values for specific applications, using data for the exact luminaire, at the precise mounting height and with the actual emergency lamp output, for any luminaire configuration a design can be carried out or validated against BS5266-1: 2011 and EN1838: 2013.

Professional lighting design requires detailed luminaire photometric and product design data. Eaton's advanced photometric facility produces accurate performance data for all product types and light sources, including LEDs.

Eaton provides its customers with this information in partnership with the leading lighting design software packages to enable accurate and detailed design to be created.

RELUX®
light simulation tools



Relux is a simple and intuitive lighting design software package which enables you to produce designs efficiently and accurately.

Construction of rooms, structural elements and the positioning of luminaires, objects and furniture, is done by a simple library driven menu system. A comprehensive selection of materials and textures can be allocated to your design elements, adding a realistic touch to rendered outputs including the facility to show effective walk through visualisations of your projects. For more complex designs the import and export functions for 2D dxf and dwg files significantly reduce your design time.

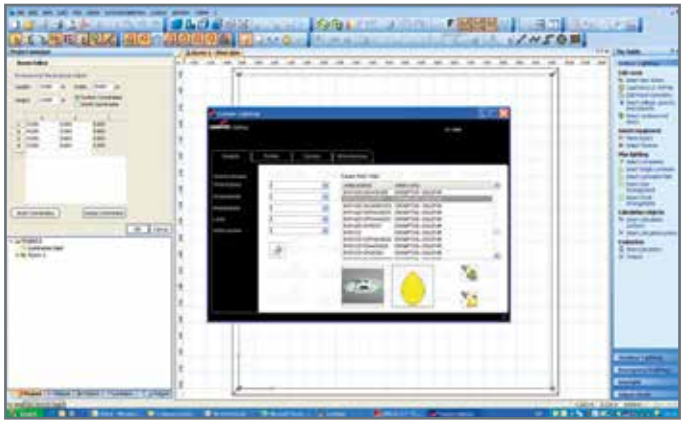
Detailed artificial light simulations can be created for interior and outdoor projects based on BS EN 12464-1 and -2, emergency lighting designs based on EN 1838, roads based on EN 13201, and sports grounds and daylight based on CIE.

Additionally with the Relux energy unit you are able to calculate the energy performance of the lighting scheme to EN15193 (LENI).

A comprehensive results list enables you to construct reports exactly to your client's needs, from simple basic calculations to full rendered imagery and results tables.

For more information and free download of the Relux software, visit **www.relux.com/en/**

DIALux



With simple to use features and powerful photo realistic visualisations, DIALux is a popular lighting design tool used around the world.

DIALux can import the CAD data from other architecture programmes to support your design and produce wild camera runs through your visualisation.

The software package also determines the energy your light solution requires and supports you in complying with the respective national and international regulations.

For more information and free download of the DIALux software, visit **www.dial.de**

Revit Files

Eaton is able to offer Revit® friendly Building Information Modelling (BIM) models for a wide range of our products. Architects, design-build contractor and surveyors, consulting engineers, and others are able to integrate Eaton equipment into their drawings with ease, and without cost. These product models from Eaton bring seamless integration to your building plan. These are available directly from the resources section on each product page on our website.

For more information and free download of the Revit files, visit the product pages on **uk.eaton.com**


M3D 分布光度计 GONIOPHOTOMETER
atents Pending

Fluorescent Control Gear Selection

Most fluorescent luminaires detailed in this catalogue are available with a choice of control gear. There are four main electrical circuits to choose from, each with its own particular advantages.

Switch Start

This is the simplest circuit and therefore most economical to purchase where the capital cost of the installation has to be kept to a minimum. The circuit consists of magnetic copper/iron ballast, a capacitor and a glow starter canister. It is very important to replace defective starters to prevent gear overheating and damage. It is recommended that the starter is replaced whenever a new lamp is installed. This circuit type is available for many of the luminaires listed in this catalogue.

High Frequency

This circuit uses the latest electronic technology to give substantial benefits to the user. It provides all the benefits of electronic start, flicker free soft starting, extended lamp life, improved lumen maintenance and automatic shutdown of failed lamps. In addition the lamp is driven at high frequency, offering an instant energy saving of approximately 20% over the other circuits, using exactly the same lamps. High frequency circuits run at near unity power factor, reducing VA load and therefore cutting the electricity costs of users on maximum demand tariffs. Additionally, the light is perfectly flicker free. Flicker free lighting greatly reduces the incidence of headaches and eye strain, eliminates distractions and thus improves workplace quality and productivity. For production areas, high frequency lighting prevents the dangerous stroboscopic effects often experienced with switch start and electronic start circuits, when using rotating machinery. High frequency lighting is also completely silent in operation.

1-10 Volt Analogue

This circuit has all the advantages of high frequency, but with the added benefit of being able to dim and brighten (regulate) the lamps. The light regulation is by a separate pair of conductors which can regulate the lamp lumen output by either supplying a 1-10 volt signal or by a potentiometer. This circuit can therefore be used for lighting and energy management systems. As lamps are dimmed, either manually or automatically, such as in response to an increase in daylight detected by a photocell, the ballast energy consumption is reduced. Therefore, further energy saving cost benefits can be realised.

Digital High Frequency Regulating

This circuit has all the advantages of high frequency, but with the added benefit of being able to dim and brighten (regulate) the lamps. This circuit is therefore used for lighting and energy management systems. As lamps are dimmed, either manually or automatically such as in response to an increase in daylight detected by a photocell, the ballast energy consumption is reduced. Therefore, further energy saving cost benefits can be realised. Digital regulating ballasts also provide precision control of light output, superior to that experienced with conventional analogue regulating ballast types.

DALI

This circuit has the advantages of digital high frequency dimming but with the additional advantages that each ballast can be individually addressed allowing lighting control systems to communicate commands to individual luminaires. It is also possible for the lighting control system to interrogate and receive feedback from each individual ballast.

DALI circuits are able to have a maximum of 64 DALI components on any single loop and a maximum cable length of 300 metres.

Note: Switch/electronic start control gear should not be mixed on the same circuit as high frequency gear, as damage can result to the high frequency ballasts.

Note: Luminaires supplied with dedicated controls may be dependent on the specific controls used, fitted with either digital high frequency regulating or DALI control gear.

LED Drivers

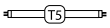
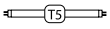
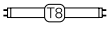
LED luminaires require control devices referred to as drivers. These can provide a constant current to the LED or can be constant voltage. These drivers are electronic circuits and care should be taken to ensure that the correct type of driver is used. It is also important to ensure that a driver with the correct drive current and voltage is selected to ensure optimum operation of the LED.

LED Drivers can be supplied with fixed output, DALI, and 1-10 volt operations.

Please contact our technical support and applications department for further information on + 44 (0) 1302 303 240 or email LightingTechnicalUK@Eaton.com..

Furnival Building - Sheffield Hallam University
Sheffield

Fluorescent Lamps

	Cat	Designation ILCOS	ZVEI	Watts (W)	Nominal Dimensions (mm)	Cap	Colour Temp (K)	Colour Appearance	Colour Rendering Index/Group	Initial Lumens (lm)	Rated Life (50% Survivors)	Lumen Maintenance. At Rated Life
	T5 High Efficiency (HE)											
	T5	FDH	T16	14	L 550 x Dia 16	G5	4000	Cool white	85/1B	1200	16000 hr	95%
	T5	FDH	T16	21	L 850 x Dia 16	G5	4000	Cool white	85/1B	1900	16000 hr	95%
	T5	FDH	T16	28	L 1150 x Dia 16	G5	4000	Cool white	85/1B	2600	16000 hr	95%
	T5	FDH	T16	35	L 1450 x Dia 16	G5	4000	Cool white	85/1B	3300	16000 hr	95%
	T5 High Output (HO)											
	T5	FDH	T16	24	L 550 x Dia 16	G5	4000	Cool white	85/1B	1750	16000 hr	95%
	T5	FDH	T16	39	L 850 x Dia 16	G5	4000	Cool white	85/1B	3100	16000 hr	95%
	T5	FDH	T16	49	L 1450 x Dia 16	G5	4000	Cool white	85/1B	4300	16000 hr	95%
	T5	FDH	T16	54	L 1150 x Dia 16	G5	4000	Cool white	85/1B	4450	16000 hr	95%
	T5	FDH	T16	80	L 1450 x Dia 16	G5	4000	Cool white	85/1B	6150	16000 hr	95%
	T5	FDH	T16	73	L 1450 X Dia 16	G5	4000	Cool white	85/1B	6550	21000 hr	95%
	T5 Circular											
	T5	FCH	T16R	22	Dia 230	2GX13	4000	Cool white	85/1B	1800	16000 hr	95%
	T5	FCH	T16R	40	Dia 300	2GX13	4000	Cool white	85/1B	3300	16000 hr	95%
	T5	FCH	T16R	55	Dia 300	2GX13	4000	Cool white	85/1B	4400	16000 hr	95%
	T8 Triphosphor											
	T8	FD	T26	18	L 600 x Dia 26	G13	4000	Cool white	85/1B	1350	14000 hr	95%
	T8	FD	T26	36	L 1200 x Dia 26	G13	4000	Cool white	85/1B	3350	14000 hr	95%
	T8	FD	T26	58	L 1500 x Dia 26	G13	4000	Cool white	85/1B	5200	14000 hr	95%
	T8	FD	T26	70	L 1800 x Dia 26	G13	4000	Cool white	85/1B	6550	14000 hr	95%

Compact Fluorescent Lamps

	Cat	Designation ILCOS	ZVEI	Watts (W)	Nominal Dimensions (mm)	Cap	Colour Temp (K)	Colour Appearance	Colour Rendering Index/Group	Initial Lumens (lm)	Rated Life (50% Survivors)	Lumen Maintenance At Rated Life
	COMPACT FLUORESCENT 2D Type											
	2D	FSS	TC-DD	16	140 x 140	GR10q-4	2700	Tungsten white	82/1B	1050	10000 hr	75%
	2D	FSS	TC-DD	28	205 x 205	GR10q-4	3500	White	82/1B	2050	10000 hr	75%
	2D	FSS	TC-DD	38	206 x 205	GR10q-4	3500	White	82/1B	2850	10000 hr	75%
	2D	FSS	TC-DD	55	207 x 205	GR10q-4	3500	White	82/1B	3900	10000 hr	75%
	D Type											
	TC-D	FSQ	TC-D	13	L 131 x W 27	G24d-1	4000	Cool white	85/1B	900	10000 hr	80%
	TC-D	FSQ	TC-D	18	L 146 x W 27	G24d-2	4000	Cool white	85/1B	1200	10000 hr	80%
	TC-D	FSQ	TC-D	26	L 165 x W 27	G24d-3	4000	Cool white	85/1B	1800	10000 hr	80%
	D/E Type											
	TC-D	FSQ	TC-DEL	13	L 131 x W 27	G24q-1	4000	Cool white	85/1B	900	12000 hr	80%
	TC-D	FSQ	TC-DEL	18	L 146 x W 27	G24q-2	4000	Cool white	85/1B	1200	12000 hr	80%
	TC-D	FSQ	TC-DEL	26	L 165 x W 27	G24q-3	4000	Cool white	85/1B	1800	12000 hr	80%
	T/E Type											
	TC-T	FSM	TC-TEL	32	L 142 x W 56	GX24q-3	4000	Cool white	85/1B	2200	12000 hr	80%
	TC-T	FSM	TC-TEL	42	L 159 x W 56	GX24q-4	4000	Cool white	85/1B	3200	12000 hr	80%
	L Type											
	TC-L	FSD	TC-L	18	L 217 x W 38	2G11	4000	Cool white	85/1B	1250	10000 hr	80%
	TC-L	FSD	TC-L	24	L 317 x W 38	2G11	4000	Cool white	85/1B	1800	10000 hr	80%
	TC-L	FSD	TC-L	36	L 411 x W 38	2G11	4000	Cool white	85/1B	2900	10000 hr	80%
	TC-L	FSD	TC-L	40	L 533 x W 38	2G11	4000	Cool white	85/1B	3500	10000 hr	80%
	TC-L	FSD	TC-L	55	L 533 x W 38	2G11	4000	Cool white	85/1B	4850	10000 hr	80%

LED light sources

Unlike conventional lamps it is normal for LED luminaires to use "absolute" photometry, this means that the light from the luminaire will be stated in lumens and the light output ratio (LOR) ratio of the luminaire will be 100%. Care should be taken to ensure that if comparing LED luminaires that "like for like" data format is used, or allowed for in assessing the performance of the luminaire.

Additionally LED life can often be misunderstood as LED life is not normally based on failure, but the level of lumen reduction for a certain period in time. This is referred to as (Lx) at a stated operational period. Unless stated this will mean that 50% of the LEDs in a batch will be greater than this level of lumen depreciation.

An example would be L70B50 at 50,000 hours, meaning that at 50,000 hours 50% of the LEDs in a batch will have an output equal to or greater than 70% of the initial lumen value.

Note: That all Eaton LED luminaires are tested and published as absolute photometry.

Speedo Head Office
Nottingham

The International Protection code, sometimes called the Ingress Protection code, classifies the protection given by an enclosure against the touching of live parts, contact with moving parts and protection against the ingress of foreign solid bodies.

It additionally specifies protection against the harmful ingress of moisture or liquids. Two digits are used to describe its protection rating, called the IP code.

First Digit - Protection against solid objects		**Second Digit - Protection against liquids**
No protection	0	No protection
Protection against large sized bodies e.g, hands	1	Protection against vertically falling drops of water
Protection against medium sized bodies e.g, fingers	2	Protection against drops of water up to 15° from the vertical (drip proof)
Protection against small bodies, 2.5mm dia. or greater e.g, tools, wires	3	Protection against rain falling up to 60° from the vertical (rain proof)
Protection against very small bodies, 1mm dia. or greater	4	Protection against splashed water from any angle (splash proof)
Protection against harmful deposits of dust (dust proof)	5	Protection against jets of water from any angle (jet proof)
Complete protection against deposits of dust (dust tight)	6	Protection against water from heavy seas e.g, water tight for marine deck use
	7	Protected against immersion for a defined period
	8	Protected against immersion for an indefinite period

The IK code when applied to a luminaire indicates the degree of protection against mechanical impact. The range of IK runs from IK00 (no protection) up to IK10 protection to 20 joules. A joule is the unit of work energy. A newton is the unit of force that causes an acceleration of 1m/s/s to a mass of 1kg. 1J = 1N x 1m.

1K		Protection
00		No Protection
01		Impact Energy 0.150J
02		Impact Energy 0.200J
03		Impact Energy 0.350J
04		Impact Energy 0.500J
05		Impact Energy 0.700J
06		Impact Energy 1.00J
07		Impact Energy 2.00J
08		Impact Energy 5.00J
09		Impact Energy 10.00J
10		Impact Energy 20.00J

When specifying luminaires, legislation, as defined by the Building Regulations, must be considered to ensure that the installation meets with current requirements. The two most relevant pieces of legislation contained within the Building Regulations are:

- Conservation of fuel and power, which includes limits on the energy efficiency of lighting in domestic and non-domestic buildings.

- Fire Safety, which includes the requirements for emergency lighting and provisions for the use of thermoplastic materials, such as luminaire diffusers. Included below is a brief guide to each of these documents.

It should be noted that these documents are specific for each part of the UK, England, Scotland, Wales and Ireland, and you should refer to the relevant versions for the project.

The latest information and requirements can be obtained by contacting our technical support and application department. A list of recommended websites is also included below.

Consideration of fuel and power

This requires that energy efficient lighting be used in all buildings. The regulations currently apply to all new buildings and refurbishments of over 100m^2 floor area. The document provides design information in non-domestic buildings.

The 2014 version now provides two ways to provide the energy information during the design stage.

Option 1 is based on the installed load and uses the metric of luminaire lumens per circuit Watts for office, industrial and storage areas. Lamp lumens per circuit Watts are used for all other areas. There is a small allowance for display lighting where relevant.

Option 2 is a simplified version of EN15193 known as LENI (Lighting Energy Numeric Indicator). This is based on an energy consumption model with actual usage targets for a selection of areas and operating hours in Kwh/m^2 per annum.

The requirements can be met by selecting an efficient lamp, control gear and luminaire performance combination, along with lighting controls that make maximum use of daylight and avoid unnecessary lighting during times when spaces are unoccupied.

Solutions include using high frequency dimmable control gear linked to photocells to provide constant illumination and daylight linking. Intelligent luminaires, such as Intellect, provide a straightforward solution to providing lighting control with user selectable functionality.

It is strongly recommended that reference be made to the current edition of Approved Document L, to ensure compliance with the latest requirements. Full details of Part L can be found on www.communities.gov.uk, or alternatively, a direct web address would be www.gov.uk/building-regulations-approval.

Fire safety regulations

Includes the fire safety requirements for emergency lighting and the use of thermoplastic materials. The impact on emergency lighting of Approved Documents defines the provisions that apply to the use of luminaire diffusers, which form part of the ceiling. It should be noted that surface mounted and suspended luminaires are not currently covered by the regulations.

Luminaire with diffusers must not be used in fire protecting or fire resisting ceilings, unless satisfactorily tested as part of the ceiling system.

The following information is provided on the limitation of use of thermoplastic (TP) materials in other ceiling types (except protected stairways):

- Diffusers classified as TPa construction have no restriction on extent of use
- Diffusers classified as TPb construction have limitations on size, total area coverage and spacing between diffusers

In areas with general ceiling types, except protected stairways, the requirements can be met most simply by specifying TPa classification diffusers when using recessed luminaires. TPb materials can be used, but will require careful reference to Part B and calculation to ensure the regulations are complied with in full. All recessed luminaires with diffusers in this catalogue have TPa classification materials as standard or as an option.

It is strongly recommended that reference be made to the current edition of Approved Documents, to ensure compliance with the latest requirements. Information is available online from the relevant authority.

Additional Considerations

There are many schemes both nationally and locally in operation, offering advice and financial support to end users, such as the Carbon Trust Implementation Scheme. This can provide full surveys, introductions to approved designers and installers and facilitate finance through the scheme.

Enhanced Capital Allowances (ECA)

This allows companies to claim 100% first year capital allowances on investments that meet the ECA product criteria.

Product groups eligible for ECAs are published in the Energy Technology List at www.gov.uk/guidance/energy-technology-list.

Currently Lighting products are listed in three categories, however it is planned to incorporate LED in to the HELU:

- HELU High Efficient Lighting Units
- Lighting Controls
- White LED

Luminaires must meet minimum efficiency standards calculated as luminaire lumens per circuit watts, as these minimum values are subject to variation the latest information should be checked on the ECA Scheme website https://etl.beis.gov.uk/.

Luminaire efficiency ratings for Eaton luminaires are available by contacting our technical support and application department.

Note: that due to the wide variation in luminaires these are not individually listed as products but are self-certified against the energy criteria calculation.

Useful Website Addresses

www.communities.gov.uk	-	Building Regulations
https://etl.beis.gov.uk/	-	Enhanced Capital Allowances
www.carbontrust.com/	-	Promotion of low carbon technologies/energy efficiency
www.defra.gov.uk	-	Climate Change Levy
www.bis.gov.uk	-	Department of Business, Energy and Industrial Strategy

Absolute Photometry

Absolute photometer treats the luminaire as the effective light source, this means that the light output ratio of the luminaire will always be 100% and it will be the value of the actual lumens which will be stated.

Activity Area

Area within which a specific activity is carried out.

Anti-Panic (Open) Area Lighting

The part of Emergency Escape Lighting provided to avoid panic and provide illumination allowing people to reach a place where an escape route can be identified.

Background Area

Area adjacent to the immediate surrounding area.

BAFE

British Approvals for Fire Equipment. Single registration scheme for each product or service within the fire protection industry. SP203-4 is a modular scheme for the design installation commissioning and maintenance of emergency lighting systems.

Ballast

The component that controls the operation of a lamp from a specified low or high voltage AC or DC source (Typically between 12 and 240 volts).

Ballast Lumen Factor

The ratio of the light output of the lamp in emergency operation compared with the light output of the same lamp operated by a reference ballast at its rated voltage and frequency.

Battery

Secondary cells providing the source of power during mains failure.

Battery - Recombination

A battery that is designed to recombine the electrolyte, constructed so that no provision is made for replacement of electrolyte (sometimes called sealed).

Battery - Vented

A battery that requires replacement of electrolyte at regular intervals.

Battery Capacity

The discharge capability of a battery, being a product of average current and time, expressed as Ampere-hours (Ah) over a stated duration. Note: At fast rates of discharge the full ampere hour capacity of the battery is not available.

Borrowed Light

Light obtained from an adjacent reliable source that is expected to be available at all material times.

Candela (cd)

The unit of luminous intensity.

Central Battery System

A system in which the batteries for a number of emergency luminaires are housed in one location. Usually for all the emergency luminaires on one lighting sub-circuit, but sometimes for all emergency luminaires in a complete building.

Centrally Supplied Emergency Luminaire

Luminaire for maintained or non-maintained operation which is energized from a central emergency power system that is not contained within the luminaire.

CIE

Abbreviated as CIE from its French title Commission Internationale de l'Eclairage, the International Commission on Illumination is a technical, scientific, and cultural organization devoted to international cooperation and exchange of information among its member countries on matters relating to the science and art of lighting.

Class 0 Luminaire (Applicable To Ordinary Luminaires Only)

Luminaire in which protection against electric shock relies upon basic insulation. This implies that there are no means for the connection of accessible conductive parts, if any, to the protective conductor in the fixed wiring of the installation, reliance in the event of a failure of the basic insulation being placed on the environment.

Class I Luminaire

Luminaire in which protection against electric shock does not rely on basic insulation only, but which includes an additional safety precaution in such a way that means are provided for the connection of accessible conductive parts to the protective (earthing) conductor in the fixed wiring of the installation in such a way that accessible conductive parts cannot become live in the event of a failure of the basic insulation.

Class II Luminaire

Luminaire in which protection against electric shock does not rely on basic insulation only, but in which additional safety precautions such as double insulation or reinforced insulation are provided, there being no provision for protective earthing or reliance upon installation conditions.

Class III Luminaire

Luminaire in which protection against electric shock relies on supply at safety extra-low voltage (SELV) and in which voltages higher than those of SELV are not generated.

Colour Rendering Index (CRI)

A measure of the degree to which the appearance of a surface colour under a given light source compares to the same surface under a CIE reference source. The index has a maximum value of 100.

Colour Shift

The change in a lamp's correlated color temperature (CCT) at 40% of the lamp's rated life, in Kelvin (K).

Colour Stability

The ability of a lamp or light source to maintain its color rendering and color appearance properties over its life. The color properties of some discharge light sources may tend to shift over the life of the lamp

Colour Temperature (CCT)

All materials emit light when heated (e .g, metal glows red through to white as the temperature increases). The temperature to which a full radiator (or 'black body') would be heated to achieve the same chromaticity (colour quality) of the light source being considered, defines the correlated colour temperature of the lamp, quoted in degrees Kelvin.

Combined Emergency Luminaire

A luminaire containing two or more lamps, at least one of which is energised from the emergency supply and the remainder from the normal supply (If the emergency lamp is only illuminated in a mains failure condition this luminaire is regarded for fire authority approval as non-maintained).

Competent Person

A person having suitable knowledge, qualifications and experience to undertake the required role.

Compound Self-contained Emergency Luminaire

Self-contained luminaire providing maintained or non-maintained emergency lighting and also providing emergency supply for operating a satellite luminaire.

Design Voltage

The voltage declared by the manufacturer to which all the ballast characteristics are related.

Disability Glare

Glare produced directly or by reflection, that obscures or impairs vision of an object, but does not necessarily cause any discomfort.

Discomfort Glare

Glare which causes visual discomfort.

Downward Light Output Ratio (DLOR)

The ratio of luminaire light output below the horizontal, compared with total lamp light output.

Extra Low Voltage (ELV)

Voltage which does not exceed 50 V a.c. r.m.s. or 120 V ripple free d.c. between conductors, or between any conductor and earth (voltage band I of IEC 60449).

Emergency Ballast Lumen Factor (EBLF)

Ratio of the luminous flux of the lamp, operated with ballast under test, at the lowest voltage which may occur during emergency mode, after failure of the normal supply (for the appropriate start time for the application requirement) and continuously to the end of rated duration of operation, to the luminous flux of the same lamp operated with the appropriate reference ballast supplied at its rated voltage and frequency.

Emergency Exit

The way out of a building, which is intended to be used at any time whilst the premises are occupied.

Emergency Lighting

The lighting provided for use when the supply to the normal mains lighting installation fails.

Emergency Safety Lighting (Stay-put Emergency Lighting)

The part of emergency lighting that provides illumination for the safety of people staying in a premises when the supply to the normal lighting fails.

Emergency Luminaire Rated Luminous Flux

Lumen output as claimed by the luminaire manufacturer, 60s (0.5s for high-risk task-area luminaires) after failure of the normal supply, and continuously maintained to the end of rated duration of operation.

Escape Route Lighting

Lighting provided to ensure that the means of escape can be effectively identified and safely used when a location is occupied.

Final Exit

The terminal point of an escape route, beyond which point persons are no longer in danger from fire or any other hazard requiring evacuation of the building.

Glare

The discomfort or disability that occurs when there is an excessive change of luminance in the field of vision.

High Risk Task Area Lighting

Emergency lighting provided to ensure the safety of people involved in a potentially dangerous process or situation and to enable proper shut down procedures for the safety of the operator and other occupants of the premises.

Housing 850°C Test

Mandatory test for emergency luminaires used on escape routes, to establish that materials do not burn at given temperature.
Self-extinguishing grades of plastic must be used, or alternatively glass and/or steel.

ICEL 1001 Registration

The industry standard for the approval of photometric performance and claimed data of emergency lighting equipment, which is tested by the British Standards Institute.

Impact Protection

Number classification of the degree of protection a luminaire provides against mechanical impact.

Immediate Surrounding Area

Band surrounding the task area within the field of visual field.

Ingress Protection (IP) Number

Number Classification of the degree of protection a luminaire provides against the entry of solid foreign bodies and moisture.

Isolux Diagram

Diagram showing contours of equal illuminance.

K Factor

The ratio of the light output from the lamp in its worst condition, normally at end of discharge and with any cable volt drop, to the output at nominal voltage.

Lamp Life

The number of hours at which half of a large group of lamps have failed when operated under standard testing conditions.

Lamp Lumen Depreciation (LLD)

The reduction in lamp light output that progressively occurs during lamp life.
Lamp Lumen Maintenance Factor (LLMF)
The proportion of light output of a lamp after a stated period, compared with initial lumen output.

Lamp Survival Factor (LSF)

The proportion of functioning lamps in an installation after a stated period .

LED Bin

Is a restricted range of LED performance characteristics used to delimit a subset of LED dies or LED packages near a nominal LED performance as identified by chromaticity, photometric, radiometric and/or electrical characteristics?

LED module

LED light source having no cap, incorporating one or more LED package(s) on a printed circuit board, and possibly including one or more of the following: electrical, optical, mechanical, and thermal components, interfaces and control gear.

LENI

Lighting Energy Numeric Indicator (EN15193) standard for determining the energy requirements for lighting.

Lighting control system

A system consisting of devices that control the supply of electrical energy to the lighting installation to adjust the light output.

Light Loss Factor (LLF)

See Maintenance Factor

Light Output Ratio (LOR)

The ratio of the total light output of a luminaire, compared with total lamp light output.

LM-79

The approved method by IES for making photometric measurement of LED light products. LM-79 measures total luminous flux, luminous intensity distribution, electrical power, efficacy and color characteristics (chromaticity, CCT, and CRI).

LM-80

A measurement standard developed by IES which allows user to evaluate and compare the lumen maintenance of LED components from different manufacturer at standard operating condition. LED packages, arrays or LED modules can be tested at three junction temperatures typically at 55°C, 85°C & manufacturer specified temperature for 6000 hours. The approved method of measuring lumen maintenance is only for LED light source not complete luminaire.

Lumen (lm)

The unit of luminous flux used to describe the quantity of light emitted by a source or received by a surface.

Luminaire

Apparatus which distributes the light given by a lamp or lamps, including all the items necessary for fixing and protecting the lamps and for connecting them to the electrical supply .

Luminaire Maintenance Factor (LMF)

The proportion of light output from a luminaire with dirt deposition after a stated period, compared with the initial light output when clean.

Luminance (cd/m2)

The perceived brightness of a surface, measured by the intensity of light emitted or reflected from a surface area in a given direction.

Luminous Efficacy (lm/W)

The ratio of light emitted, to the power consumed by a lamp.

Luminous Flux (lm)

The total light emitted by a lamp, measured in lumens.

Luminous Intensity (cd)

The power of a light source or illuminated surface to emit light in a given direction, measured in candela

Lux

The unit of illuminance, equal to one lumen per square metre (lm/m2).

MacAdam Ellipse

Is an elliptical region on the CIE chromaticity diagram, the boundaries of the ellipse containing all the colours that look to the average human eye identical to the center point of the ellipse? By viewing the adjacent ellipses which just show a difference it is possible to define a number of steps from the center of the first ellipse an acceptable level of "colour variation" to the average human eye. These slight colour differences in the appearance are measured in MacAdam ellipses or steps, typically for good colour consistency 3 steps would be typical required.

Maintained Emergency Luminaire

A luminaire containing one or more lamps, all of which operate from the normal supply or from the emergency supply at all material times.

Maintenance Factor (MF)

The ratio of the illuminance provided by an installation at a stated period, compared to the installation when new. Calculated as a product of lamp lumen, lamp survival, luminaire and room surface maintenance factors.

Mounting Height

The vertical distance between the luminaire and the working plane. Note: For emergency lighting the floor is always taken to be the working plane.

Non-Maintained Emergency Luminaire

A luminaire containing one or more lamps, which operate from the emergency supply only upon failure of the normal mains supply.

Photopic

Vision mediated essentially or exclusively by the cones. It is generally associated with adaptation to a luminance of at least 3.4 cd/m2.

Place of Safety

Place in which persons are in no danger.

Power Factor

The ratio of active power (in watts) to apparent power (in rms volt-amperes), power factor is a measure of how effectively an electric load converts power into useful work. Power factor (PF) is calculated using the equation PF = (active power) / [(rms voltage) x (rms current)]. Phase displacement and current distortion both reduce power factor. A power factor of 0.9 or greater indicates a high power factor.

Practical Emergency Lamp Flux (PELF)

Lowest luminous flux of the lamp observed during the rated duration of the emergency mode (unit: lumens).

Pulse-Width Modulation

Operating a light source by very rapidly (faster than can be detected visually) switching it on and off to achieve intermediate values of average light output; the frequency and the duty cycle (percentage of time the source is switched on) are important parameters in the modulation.

Rated Duration

The manufacturers declared duration for a battery operated emergency lighting unit, specifying the time for which it will operate after mains failure. This may be for any reasonable period, but is normally one or three hours (when fully charged).

Rated Load

The maximum load which may be connected to the system which will be supplied for the rated duration

Rated median useful life

The length of time during which 50% (B50) of a population of operating LED luminaires of the same type have parametrically failed, under d=standard test conditions as declared by the manufacture.

Re-charge Period

The time necessary for the batteries to regain sufficient capacity to achieve their rated duration.

Relative Photometry

Relative photometry measures the total lumen output of the bare test lamp, this/these lamps are then installed in to the luminaire to be measured and the ratio of the lumen output between the bare lamp(s) and the luminaire is the Light Output Ratio. Fluorescent manufacturers commonly test conventional light sources as relative photometry as it cannot be predicted what ballast and light source will be installed. Some LED manufacturers will also quote efficacies at chip level, which can be misleading.

Remote Inhibiting Mode

State of a self-contained emergency luminaire which is inhibited from operating by a remote device while the normal supply is on and in case of a normal supply failure the luminaire does not change-over to emergency mode.

Responsible Person

Delegated individual who is responsible for provision and operation of appropriate emergency escape lighting.

Rest Mode

State of a self-contained emergency luminaire that has been intentionally extinguished while the normal supply is off and that, in the event of restoration of the normal supply, automatically reverts to normal mode.

Room Index

Index defining the relationship between the height, length and width of a room. Used for illuminance calculations.

Room Surface Maintenance Factor (RSMF)

The proportion of illuminance provided by a lighting installation with dirt deposition on the room surfaces after a stated period, compared with the illuminance when the room was clean.

Safety Extra Low Voltage (SELV)

ELV in a circuit which is insulated from the mains supply by an insulation not less than that between the primary and secondary circuits of a safety isolating transformer according to IEC 61558-2-6 or equivalent

Self-Contained Emergency Luminaire

A luminaire or sign providing maintained or non-maintained emergency lighting, in which all the elements such as battery, the lamp and the control unit are contained within the housing or within 1 metre of the housing .

Slave Luminaire

An emergency luminaire without its own batteries, which is designed to work in conjunction with a central battery system.

Spacing to Height Ratio (SHR)

The ratio of the distance between luminaire centres in relation to their height above the working plane. Maximum spacing to height ratio (SHRmax) is the maximum spacing of an array of luminaires that will achieve a ratio of min/max direct illuminance of at least 0 7 .

Standby Lighting

The part of emergency lighting which may be provided to enable normal activities to continue in the event of a mains supply failure.

Standby Power

The electrical power from the mains supply consumed by the luminaire under normal operating conditions with the light source switched off via a control signal.

Sustained Emergency Luminaire

See combined emergency luminaire.

Uniformity

The ratio between minimum illuminance (or luminance) to average illuminance (or luminance), usually measured at the working plane.

Upward Light Output Ratio (ULOR)

The ratio of luminaire light output above the horizontal, compared with total lamp light output.

Utilance (U)

The proportion of luminous flux emitted by a luminaire which reaches the working plane.

Utilisation Factor (UF)

The proportion of luminous flux emitted by a lamp (or lamps) which reaches the working plane.

Visual Display Terminal (VDT)

Computer monitors.

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York University
York, UK

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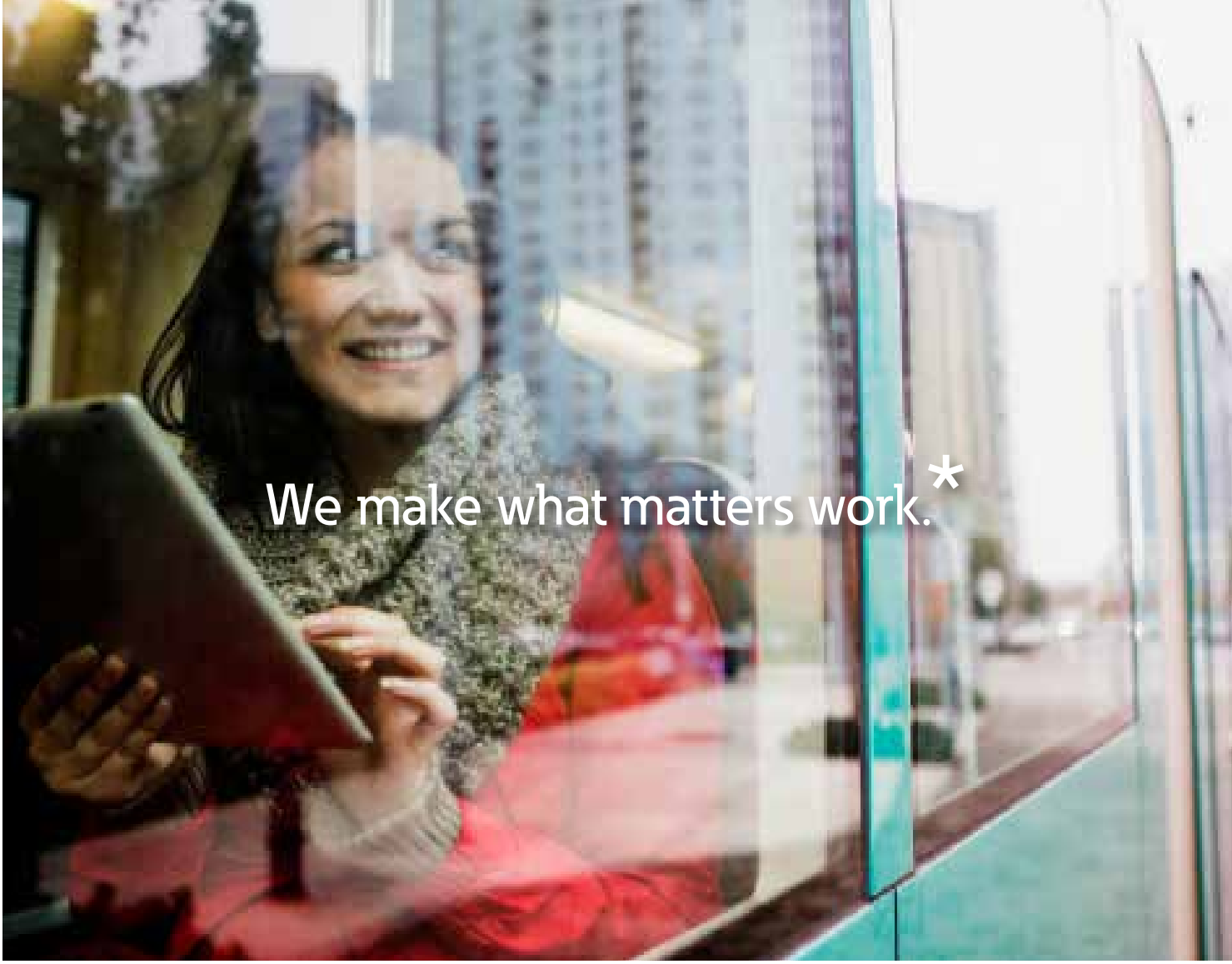

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