



Protecting people, property and professional reputation

Stephen Currier November 2017



In and after an emergency



Global electrical supply chain

- CE mark
- Warranty
- ENEC
- BS EN 60598-2-22
- Etc.


LUX
YOUR INDEPENDENT GUIDE TO LIGHTING

ALL RETAIL HOSPITALITY/LEISURE OFFICE EDUCATION HEALTHCARE RESIDENTIAL INDUSTRIAL

HOME HOW TO PRODUCTS JOBS EVENTS WEBINARS LUX LIVE MARKETING LIGHTLOCATOR

25 September 2017 · Gordon Routledge · All regions

Why this high bay is just £12: It could kill you



The high bay light from China purchased by Lux. Under safety testing by the LPS, the unit failed, meaning under certain conditions the casing of the unit becomes live.

EVER received an email offering unbelievable deals on high-performing lighting? We have. And with international safety certifications, long warranties and a stupidly-low price, who could resist a bargain? So, out of curiosity, Lux took up the offer of one email to see just how much of a bargain buyers are getting.

We chose a high bay with UL certification, a CE mark and a three-year warranty.


The price? A mere \$15.80. After a bit of email back and forth to clarify the colour temperature, delivery charges and payment information, we placed the order.

Four weeks later a robust package thudded on the floor of Lux Towers. Ten out of 10 for the quality of the packaging.

On first inspection, the mechanical finish was good.

Details:
\$15.8/pcs
100LM/W
3yrs warranty

Certifications:
CE / RoHS
UL/CUL



How well are we protected?

Tested Product No.1

- No tooled access to high voltage LED – not safe or legal
- Sample not properly earthed
- Claimed performance 45-- Lumens
- Actual performance (measured on calibrated photometer) 3883 Lumens

LED batten



Photo Parameters:

Flux = 3623 lm Eff. : 100.80 lm/W Fe = 11.16 W

Corrected Flux = 3883 lm Corrected Eff = 108 lm/W

Electrical parameters:

V = 241.0 V I = 0.1589 A P = 35.95 W PF = 0.9393

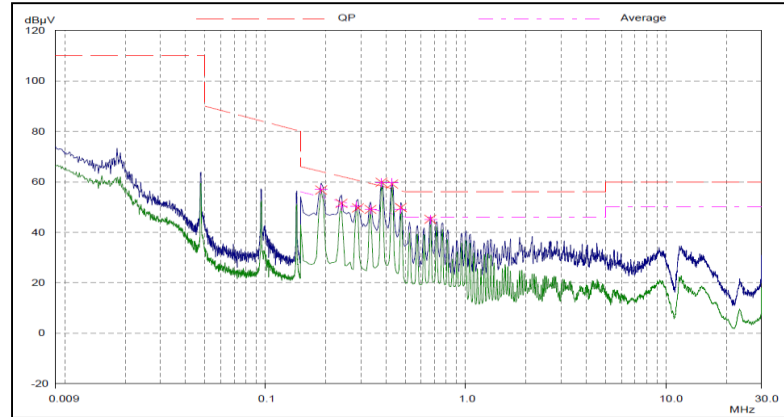
LEVEL: WHITE:ANSI_4000K

Tested Product No. 2

“Weatherproof”



- Specification – Osram 220-240v driver
- Actual driver – low tier FE brand



- Failed EMC – Therefore non compliant

Tested Product No. 3

Edge lit flat panel



Specification:

The range is engineered to deliver a Unified Glare Rating of 19 (UGR19)

glare rating acc. to UGR												
p-ceiling		70	70	50	50	30	70	70	50	50	30	
p-walls		50	30	50	30	30	50	30	50	30	30	
p-floor		20	20	20	20	20	20	20	20	20	20	
room size X Y		crosswise to lamp axis					parallel to lamp axis					
2H	2H	17.2	18.6	17.5	18.8	19.0	17.2	18.5	17.5	18.8	19.0	
	3H	18.7	19.9	19.0	20.2	20.5	18.7	19.9	19.0	20.2	20.5	
	4H	19.2	20.4	19.6	20.7	21.0	19.2	20.3	19.6	20.7	21.0	
	6H	19.6	20.7	19.9	21.0	21.3	19.5	20.6	19.9	21.0	21.3	
	8H	19.7	20.7	20.0	21.0	21.3	19.6	20.6	20.0	21.0	21.3	
	12H	19.7	20.7	20.1	21.0	21.3	19.6	20.6	20.0	21.0	21.3	
4H	2H	17.9	19.0	18.2	19.3	19.6	17.9	19.0	18.2	19.3	19.6	
	3H	19.5	20.5	19.9	20.8	21.2	19.5	20.5	19.9	20.8	21.2	
	4H	20.2	21.1	20.6	21.4	21.8	20.1	21.0	20.5	21.4	21.7	
	6H	20.6	21.4	21.1	21.8	22.2	20.5	21.3	21.0	21.7	22.1	
	8H	20.7	21.5	21.2	21.9	22.3	20.7	21.4	21.1	21.8	22.2	
	12H	20.8	21.4	21.2	21.9	22.3	20.7	21.3	21.1	21.8	22.2	
8H	4H	20.4	21.1	20.9	21.5	22.0	20.4	21.1	20.8	21.5	21.9	
	6H	21.0	21.6	21.4	22.0	22.5	20.9	21.5	21.4	21.9	22.4	
	8H	21.2	21.7	21.6	22.1	22.6	21.1	21.6	21.5	22.0	22.5	
	12H	21.2	21.7	21.7	22.1	22.6	21.1	21.6	21.6	22.0	22.5	
12H	4H	20.4	21.1	20.9	21.5	21.9	20.4	21.0	20.8	21.5	21.9	
	6H	21.0	21.5	21.5	22.0	22.5	20.9	21.5	21.4	21.9	22.4	
	8H	21.2	21.7	21.7	22.1	22.6	21.1	21.6	21.6	22.0	22.5	
variation of observer position												
S =	1.0H	+0.1 / -0.1					+0.1 / -0.1					
	1.5H	+0.2 / -0.4					+0.2 / -0.4					
	2.0H	+0.5 / -0.7					+0.5 / -0.7					
standard-table correction		BK05					BK05					
		3.8					3.7					
corrected glare indices for 3642lm total flux												

Tested Product No. 4

Industrial Highbay



- Claimed performance:
 - 27,--- Lumens
 - 12- LI/cw
- Actual performance: (measured on calibrated photometer and validated at third party test establishment)

Photo Parameters:

Flux = 15960 lm Eff. : 90.42 lm/W Fe = 48.46 W

Corrected Flux = 18879 lm Corrected Eff = 107.0 lm/W

Electrical parameters:

V = 239.6 V I = 0.7585 A P = 176.5 W PF = 0.9717

Emergency tested product

Twin Spot



- Switching thresholds did not conform to EN60598-2-22 Switch over points (60% & 80%)
- Lumen output fell below 80% of the declared lumen value with the 3 Hour autonomy

Bulkhead



- Polycarbonate was not 850DegC Flame retardant
- Performance did not match the spacing tables provided.

All of these products were
purchased over the counter in the
UK from recognised EWS outlets

What is the risk?

- 30% of third party products tested in Eaton laboratory are non compliant – in particular emergency variants
- This puts lives, reputations and credibility of the lighting and electrical industry at risk
- However – lighting is complex and not without warranty issues, even from the most professional business

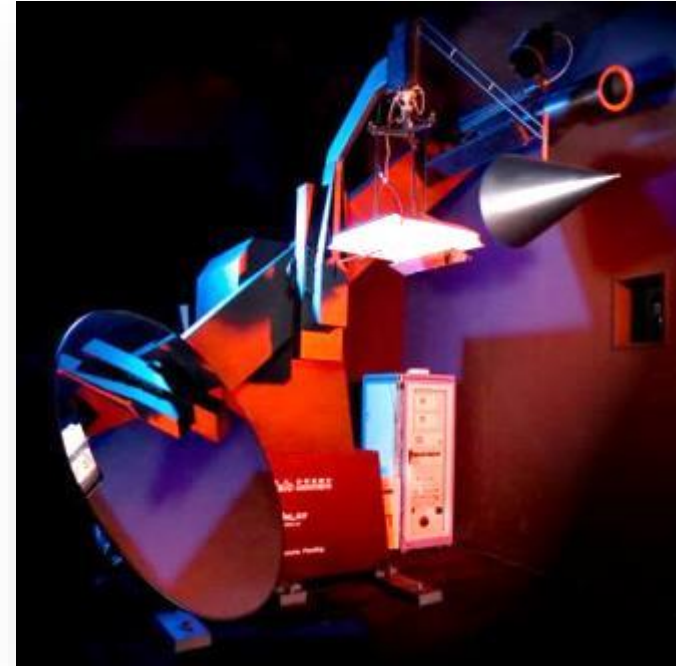
How do I know my lighting supplier is a trusted partner?

The basics

- How long has the supplier been in existence?
- Is the control driver ENEC (or equivalent) approved?
- Is the supplier ISO9001 accredited?
- Does the product carry a CE mark – if so can you have access to the technical files and test reports?
- Does the supplier have a service and technical function in the UK?

Probing Deeper

- Does the supplier possess the necessary laboratory equipment?
- Is it routinely calibrated by a third party approved organisation?
- Is performance data quoted from a production product or theoretical modelling?
- Can I have a third party test?



Probing Deeper

- Is efficacy quoted in luminaire lumens per circuit watt? Beware of suppliers quoting chip efficiency or masking losses in LOR factors?
- Are the LED chips from a known source, are L70 curves available?
- Are emergency versions compliant with BS EN 60598-2-22 in addition to the basic LVD requirements?
- Question warranty terms – run hours, exclusions, expected support?



What other benefits could a trusted partner bring?

Added Value

- Technical training for staff
- CPDs
- Manufacturing and laboratory education visits
- Factory acceptance testing
- Presence on regulatory /legislative bodies and technical committees
- A partner to develop the next generation added value products



Eaton customer training facility - Doncaster

What next generation products
can protect property, people and
reputation?



Changing nature of risk

- Fire: nearly 16,000 fires in non-domestic UK buildings in 2016, 21 deaths and over 1,000 casualties
- Terrorism: of the 34 countries in the OECD area, 21 experienced terrorist attacks in 2015, number of terror related deaths rose by 65 per cent

High-profile incidents involving mass evacuation



**Westfield Stratford
shopping center
evacuated after bomb
scare**



**63-story hotel in
Dubai in flames**



**Concert goers
evacuated after
Bataclan attack**



**Manchester Arena
bombing**



**Ottawa Parliament
shootings**

A photograph of an airport terminal. In the foreground, a female staff member in a dark blue uniform and light blue scarf is smiling and interacting with a family. The family consists of a man, a woman, and two young children. They are all smiling and looking at each other. The background shows the airport's architecture with large glass windows and other passengers in the distance.

Airports

- Complicated layout
- Large glass windows create high ambient light
- Large number of access and exit points
- Long escape routes
- Managing the flow of people (land side vs air side)
- Occupants unfamiliar with surroundings
- High fluctuation in number of people present



Railway stations

- High volumes of people moving in different directions
- Unfamiliar with surroundings
- Mixture of large open spaces, narrow corridors, platforms and ticket barriers that restrict access
- Glass windows create high ambient light, inhibiting recognition of exit signs



Stadia and arena

- Large volumes of people
- Potential for panic to spread quickly
- Unfamiliar with surroundings
- Reputational risk

A background image showing a group of students in a classroom or lecture hall. A man in a blue plaid shirt is in the foreground, looking towards the right. Behind him, a woman is also looking in the same direction. They are sitting at a desk with laptops and a water bottle. The scene is brightly lit, likely from a window on the left.

Universities

- Multiple buildings on a single site
- Large population indoors and outdoors
- Complex escape routes
- High fluctuation in number of people present



Offices

- Buildings increasingly large and complicated, with multiple businesses on premises
- Flexible working creates difficulty in ascertaining employees' whereabouts
- Multi-use facilities, hot desking, gyms and leisure areas with inadequate sign in/sign out system



Shopping malls

- Large buildings, housing retail, leisure, hospitality, entertainment and transport facilities
- Sophisticated layout with various exit points, which may be unknown to visitors
- High potential for congestion at busy times
- Exit wayfinding may be obscured by other illuminated signs



Keep them safe

Specify superior escape route management technology in complex buildings with **Eaton's unique adaptive emergency lighting evacuation system.**

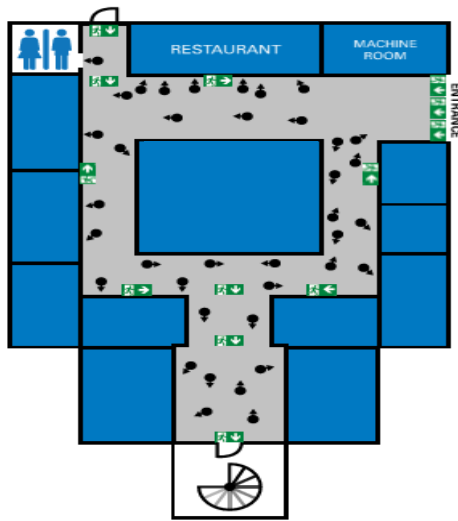


Powering Business Worldwide

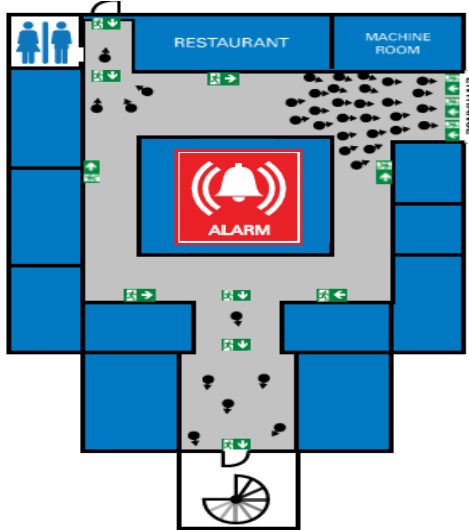
Increased Affordance



Increased Affordance

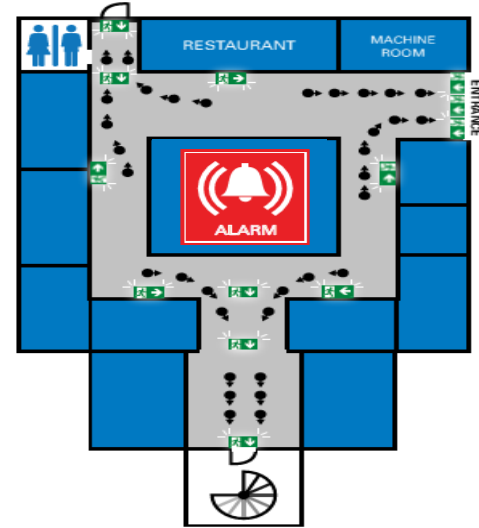


In a standard configuration the Exit signs positioned in the building in accordance with the rules are showing the way to the next exit route.



There are research results showing that people are normally using the entrance where they entered the building. Sometimes the exit signs are overlooked and ignored.

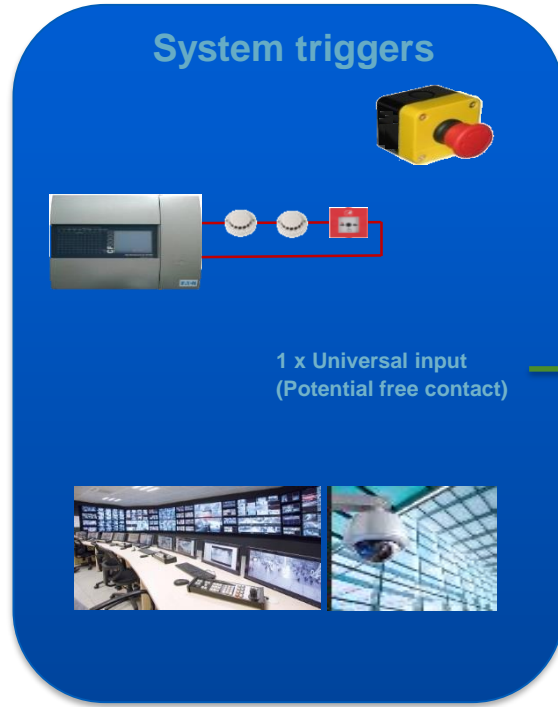
This can lead to overcrowded exit routes.



With the Increased Affordance the exit signs will start to blink and therefore the perceptibility will be increased. People will find all exit routes more easily and with this the evacuation will be quicker and more safe

System IA CGLine+

- Basic configuration with Controller



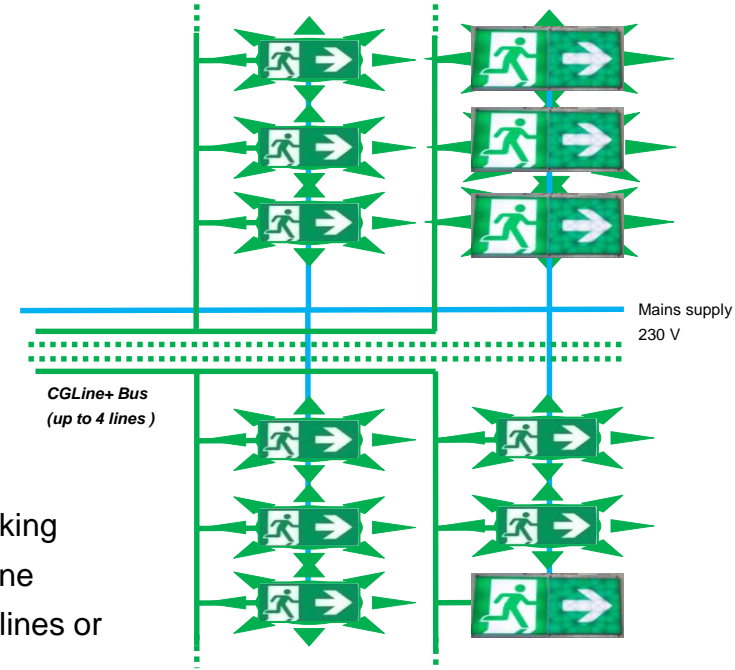
Webserver for
Monitoring of installation



Ethernet



- One Input signal will activate blinking of all luminaires connected to a line
- It can be chosen if it is for single lines or all lines



System IA CGLine+ - Advanced configuration



Webserver for Monitoring of installation



Ethernet

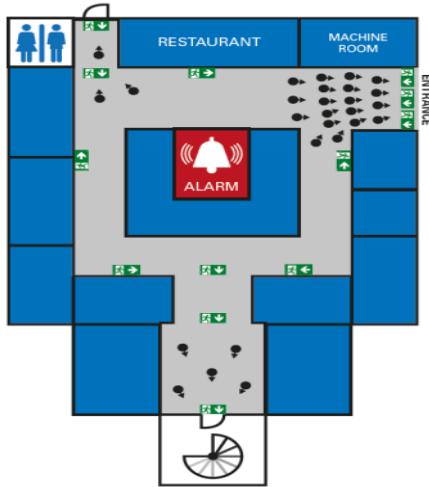
- The configuration is the same like with AE CGLine+
- scenarios will be activated via inputs (switch contacts)
- The programming will be via the PC Software
- Every single luminaire can be assigned to IA scenarios or not
- Standard and IA luminaires can be controlled via the same controller

CGLine+ Bus
(up to 4 lines)

Mains supply
230 V

What is an adaptive evacuation system ?

Adaptive: Capable of changing in responses to changes in the environment



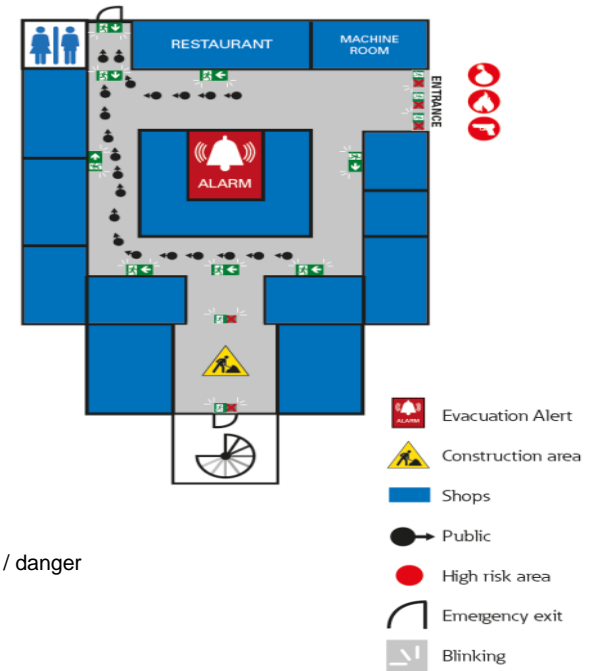
Static Emergency Lighting:

In an emergency situation, many people ignore exit signs → overcrowded exit routes



Adaptive evacuation → Safer & quicker

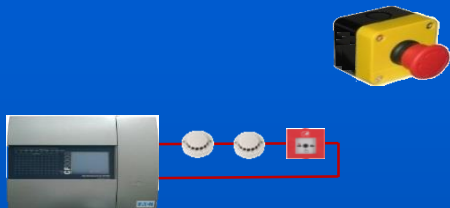
- The system takes in account the exit blocked by works / danger
- Dynamic blinking Exit signs more visible
- Less confusion
- Faster and safer evacuation



- Evacuation Alert
- Construction area
- Shops
- Public
- High risk area
- Emergency exit
- Blinking

System AE CGLine+

System triggers



Universal inputs
(Potential free contact)

10 inputs in standard
Optional up to 30 inputs



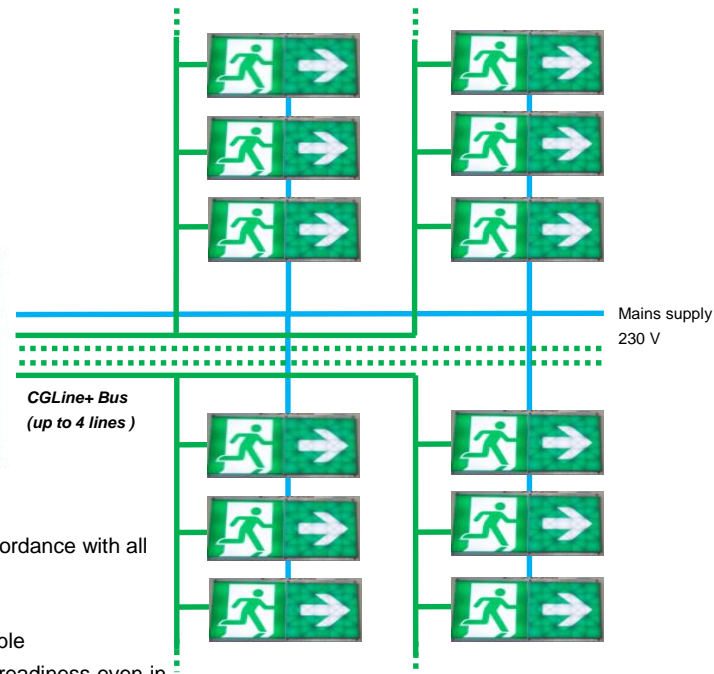
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Ethernet

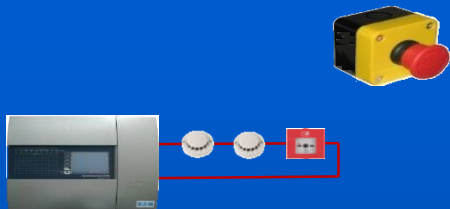


- Monitoring of up to 800 luminaires in accordance with all Emergency standards
- Activation of AE scenarios
- Mix of standard and AE luminaires possible
- Included back-up power supply ensures readiness even in case of mains failure



System AE CGLine+

System triggers



Universal inputs
(Potential free contact)

10 inputs in standard
Optional up to 30 inputs



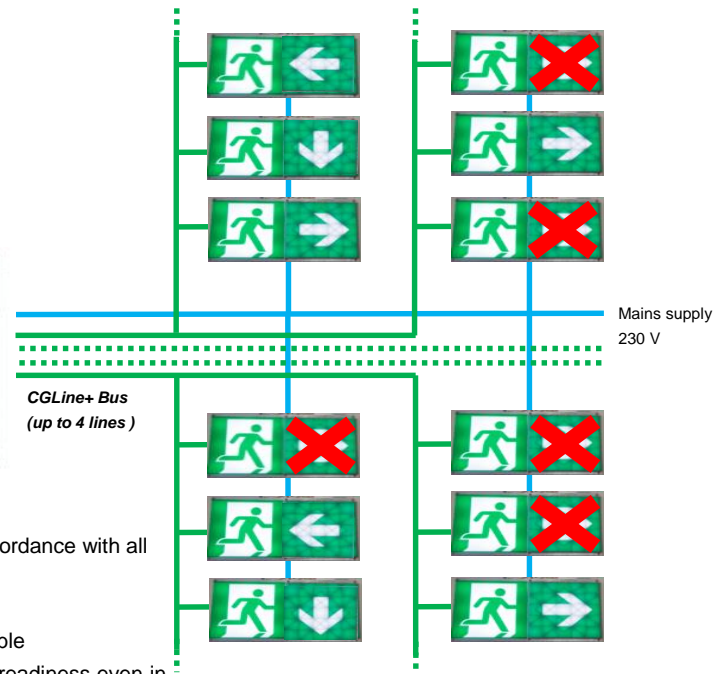
Webserver for Monitoring of installation



Ethernet



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We have a choice?

The choice?

- Non compliant product
- Race to the bottom
- Lives put at risk
- Professional reputation at risk
- Personal liabilities



- Trusted compliant product
- Support and education
- Product development for a changing connected world
- Added value for end users and customers

Eaton - Trusted partner

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.



Powering Business Worldwide