

# BS 5266-1

## Pocket guide to emergency lighting



# One Panel – Many Options

For any type of installation, all you need is our one emergency light testing panel. A single panel can support up to 996 devices and be locally networked with up to 200 panels or an unlimited number via our LuxCloud service.

Our system can also interchangeably work as a hybrid in any of these scenarios and offers a huge amount of flexibility and scalability that will suit almost any requirement.



## Retrofit

Do you have pre-existing emergency luminaires? No problem – our intelligent PLUs can be retrofitted to almost any existing luminaire. Just by adding our PLUs to your devices and a simple data cable, your system can become a centralised, automatic testing system without having to replace your existing devices.

## Conversion

If you don't want the hassle of converting devices yourself, simply send them to us and we can convert your lights for you. Not only will we ensure your devices are returned to you ready to plug into your new system, we will also take over the warranty of the device for your peace of mind.

## Ultra-Low Voltage

EasySafe is our next generation of emergency luminaires that require no mains power connection. They are fast to install and maintain, using a first-fix base and a 'twist & click' install method. EasySafe devices draw their power directly from the data cable and are perfect for anyone who needs minimal disruption during installation and maintenance, whilst also providing an energy-saving solution.

## Standalone Devices

We have a range of high-quality standalone LED luminaires and exit signs that come pre-installed with our PLU devices. These reliable devices are made to order in our world-class UK manufacturing site and are ready to be installed straight out of the box.

## Central Battery/Static Inverters

Our system works well alongside existing or new central battery or static inverter systems. Our PLUs and panel can monitor luminaires connected to either system type and provide centralised testing for all your devices as well as interlinking with central batteries via our addressable input/output unit or our 230V hold-off relays.

This guide is written for individuals and organisations carrying out the design, installation, commissioning and maintenance of emergency lighting systems.

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# What is an emergency lighting system?



Escape routes are clearly marked with mains lighting.



In the event of a power failure, a total blackout can cause panic and confusion.



Exit signs and escape route lighting helps prevent panic and supports the safe, efficient evacuation of occupants by marking emergency exits, pathways, obstacles and changes of direction.

**Emergency lighting is a range of backup lights that will operate fully automatically in the event of a power failure. It provides sufficient illumination to enable all occupants of a building to evacuate the premises safely during a blackout.**

**There are four main types of emergency lighting:**

**Escape route lighting:** Helps reduce panic and identify evacuation routes and obstacles in emergency situations such as a fire or security incident. It ensures that the means of escape out of the premises is effectively identified, sufficiently illuminated and can be safely used by the occupants of the building.

**Open area lighting:** Often referred to as anti-panic lighting, this ensures there is sufficient lighting to enable building occupants to reach a place where an escape route can be identified. Open area lighting applies to floor areas larger than 60m<sup>2</sup>.

**High-risk task area lighting:** This provides higher levels of illumination to allow potentially dangerous processes to be shut down or stopped prior to evacuation, for example turning off major machinery equipment.

**Stay put/emergency safety lighting:** Occupants will be allowed to stay in the premises until there is less than 1-hour duration left in the emergency lighting. The system then allows them to be directed or escorted to a low risk location. It must be clear how long occupants can stay and how the end of the 'stay put' period will be indicated. The plan should also make clear what happens at the end of the emergency duration and how will occupants be directed to safe refuges.

# Why do we need emergency lighting?



## Life safety first

When the power in a building fails or in the case of a fire or other emergency, emergency lighting helps occupants evacuate the building safely.



## To minimise panic

A well-lit exit route enables people to identify a means of escape and will allow them to exit the building in a timely and sensible manner.



## To help first responders

They may not be familiar with the layout of the building, so emergency lighting will help them reach their targets safely.



## Compliance

Emergency lighting is required to comply with current standards of health and safety in the workplace. It is a legal requirement to prove that you comply with the standards.

# Legislation

UK legislation requires that both new and existing buildings meet the Workplace Directive (89/654). Fire certificates are no longer issued or used to demonstrate compliance for fire safety.

Emergency lighting is covered by various pieces of legislation and regulations including:

- Building Regulations 2000 which define the size of rooms that must have emergency lighting
- The Construction Products Directive. This is implemented by building control officers. Requirements are given in Approved Document B Fire Safety (Statutory)
- Regulatory Reform Order (Fire Safety) 2005 (Statutory) – England & Wales
- The Fire (Scotland) Act 2006
- Fire & Rescue Services (Northern Ireland) Order 2006
- The Signs Directive (90/664) implemented in the UK by Statutory Instrument 341 (Statutory)
- The Management of Health and Safety at Work Regulations 1999 (Statutory)

## Regulatory Reform (Fire Safety) Order 2005

The Fire Safety Order 2005 applies to the majority of non-domestic premises and outlines who is responsible for compliance:

### Past responsibility (pre 2005)

#### Fire authority: Fire certificate

- Inspects property
- Instructs what must be done
- Issues fire certificate

### New responsibility

#### Owner/occupier: Risk assessment

- Responsible for own risk assessment
- Decides level of protection required
- Responsible for own fire certification

Under the Regulatory Reform (Fire Safety) order:

- The responsible person may be the employer, the building owner or the occupier.
- The responsible person must carry out a full risk assessment.
- Responsibility includes the provision and ongoing maintenance of the 'appropriate' fire fighting and fire detection equipment.
- The building must always be safe. If occupants are to remain on site during a supply failure, they require suitable protection.
- If the building has five or more occupants, a written fire risk assessment is required.
- Compliance to BS 5266-1:2016 (Code of Practice for the emergency lighting of premises) is required.
- Compliance to BS 5839-6:2019 (Code of Practice for fire detection and fire alarm systems for buildings) is required.
- Fire and rescue services remain the enforcing authority.
- Failure to comply is an offence and can result in a fine or imprisonment.

## Risk assessment

Consultations and/or risk assessments are vital in ensuring that the emergency lighting is suitable and fit for purpose.

Responsibilities of the risk assessor include:

- Assessing and managing risks
  - Identifying potential fire hazards
  - Identifying location and persons who are at risk
  - Reducing the risks
  - Evaluating the risks – categorising them as high, normal or low.
- Providing appropriate protection systems (such as fire alarms and emergency lighting).
- Developing a suitable policy.
- Implementing procedures, providing training and conducting drills.



Find out more at:  
[www.gov.uk/workplace-fire-safety-your-responsibilities/  
fire-risk-assessments](http://www.gov.uk/workplace-fire-safety-your-responsibilities/fire-risk-assessments)

# BS 5266-1:2016

BS 5266-1 is a code of practice giving detailed guidance on the application and practice of emergency lighting.

## It includes guidance on:

- Design and installation
- Minimum duration
- Response times
- Requirements for maximum to minimum ratio of illuminance, disability glare and colour
- The design procedure
- Installation and wiring of emergency lighting systems
- Commissioning and testing requirements
- Certificates, log books and maintenance

## Compliance with BS 5266-1:2016

In the UK, it is a fire safety legislation requirement that emergency lighting is provided in the following premises\*:

- Offices and shops
- Premises that provide care
- Community halls
- Pubs, clubs and restaurants
- Schools
- Tents and marquees
- Hotels and hostels
- Factories and warehouses
- Common areas in houses with multiple occupants

## Product Conformity

All emergency luminaires must be engineered to the correct standard. The following European emergency lighting product standards cover safety and performance for emergency luminaires and conversion modules:

- EN 60598-2-22:1999
- EN 60924
- EN 60925

Emergency lighting luminaires used on escape routes are required to be fire retardant (850°C hot wire tested). Luminaires can be registered for product compliance through the ICEL Product Registration Scheme which assures compliance with this requirement.



It also assures the user that the products have been certified to EN 60598-2-22:1999 and are manufactured in a facility that operates a scheme of quality assurance approved to BS EN ISO 9001 or BS EN ISO 9002.

Find out more at: [www.thelia.org.uk](http://www.thelia.org.uk).

\* This is not an exhaustive list

# Failure to comply has serious consequences

Recent surveys from sources such as the Lux Review reveal that:

- **More than 50%** of emergency lighting schemes **won't work in an incident**.
- **70% of building managers** see maintenance as a 'tick box' exercise.
- **56% of businesses fail to keep their safety systems up to date** after an internal refurbishment e.g. emergency lighting is not altered to suit a change in building layout.
- Electricians reported **64%** of visited sites' emergency **lighting logbooks are not up to date**.
- **55% of survey respondents reported that customers are more concerned with initial expenditure** than ongoing maintenance costs and that once the emergency lighting system is fitted, it is forgotten about.

The consequences of not complying with the law range from fines of £100,000 to businesses being forcibly closed and prison sentences.

## 18-month prison sentence for breaching the Fire Safety Order

A hotelier in Blackpool was **sentenced to 18 months in prison** due to exit routes being blocked, smoke alarms disabled and no proper emergency lighting.

## Landlord fined £50,000 over lack of emergency lighting

A Hertfordshire landlord was **fined £50,000** for the lack of emergency lighting and other failings at two rented properties.

## £0.4M fine over lack of emergency lighting

A landlord was **fined a record £0.4M** over the lack of emergency lighting, faulty standard lighting, risk of electrocution & other breaches of fire and health and safety legislation.

## Hotelier fined £50,000 over emergency lighting

The owner of a hotel in Yorkshire, England, was **fined over £50,000** for fire safety offences, including a failure to monitor and maintain the emergency lighting.

## Tata fined £200,000 after lights fail during steel plant accident

The lights at a Tata Steel factory in Wales failed 'completely' during an accident in which 300 tonnes of molten metal was spilled.

## Restaurant chain prosecuted over emergency lighting

The restaurant owner was **fined £13,452** and **ordered to pay £1,962 costs** at Worthing Magistrates Court after pleading guilty to four charges under the Regulatory Reform (Fire Safety) Order 2005.

# System summary



The table below highlights the key features of LuxIntelligent

	LuxIntelligent by Advanced
Maximum loops per standard size panel	4
No. of mains-powered lights per loop	249
No. of mains-powered lights per panel	996
No. of low-voltage lights per loop	50
No. of low-voltage lights per panel	200
Total no. of supportable devices	996
Hybrid of low-voltage and mains-powered emergency lighting?	Yes
Compatible with central battery systems / static inverters?	Yes
Data cable voltage	32V DC
Remote cloud service?	Yes
Secondary interface panel required?	No
Separate stepdown transformer required?	No
Event memory	1000 events
Maximum networkable panels	200
Able to convert non-emergency lights to emergency lights?	Yes
Able to work with pre-existing emergency lights?	Yes
Light spacing between low voltage open-area devices – 2m height	7.40m
Light spacing between low voltage corridor lens devices – 2m height	13.00m
No. of low voltage corridor devices needed for 2m high, 500m long corridor?	39
Adjustable corridor lens alignment after installation?	Yes
Battery type	NIMH
Power consumption of luminaires whilst charging	0.4W
Battery supplied or sold separately?	Supplied with devices
Designed to comply with BS EN 60598-2.22 (4 year battery life)?	Yes
First fix, common base?	Yes
Adjustable emergency exit sign angle?	Yes

# LuxIntelligent product and system information

LuxIntelligent by Advanced makes emergency light testing and compliance easier and more cost effective, whatever the size of your site.

It comes with optional cloud-driven, mobile and desktop monitoring and management. Most importantly, it provides demonstrable proof of compliance to BS 5266-1.

- **Easy installation:** A LuxIntelligent system is easy to install and manage.
- **Testing:** Built-in testing and monitoring of your emergency lighting to BS 5266-1, EN 50172 and beyond. No engineer time required.
- **Flexibility:** A LuxIntelligent single panel can support up to 996 devices and works with almost any light.
- **Scaleable:** A cabled LuxIntelligent network can support 200 panels. Alternatively you can link and manage an unlimited number of panels via our 'cable free' cloud networking.
- **Retrofitting:** Our intelligent PLUs can be retrofitted to almost any existing luminaire.
- **Easy conversion:** Keep your existing wiring and luminaires and convert them to our addressable protocol. Send your devices to us and we can convert them for you.
- **Low voltage:** Our ultra-low voltage EasySafe emergency luminaires require no mains power connection.
- **Save costs:** Try our online savings calculator to see the cost savings that a LuxIntelligent system brings.
- **Proof of compliance:** Live status and test reporting available on your phone, tablet or PC.

Find out more at [luxintelligent.com](http://luxintelligent.com)

## Emergency lighting design checklist

### Emergency lighting design checklist:

- ✓ Consider relevant information about the premises from drawings, a site survey or the building's responsible person
- ✓ Examine the risk assessment
- ✓ Consider the duration of the emergency lighting
- ✓ Identify emergency escape routes and take account of potential hazards
- ✓ Identify the locations of fire alarm call points, fire fighting equipment and fire safety signs
- ✓ Determine the type of emergency lighting system required
- ✓ Consider the means of isolation for testing and/or maintenance
- ✓ Coordinate/interface with luminaire manufacturers where the main luminaires are to be converted into emergency lighting luminaires
- ✓ Identify the exit sign requirements
- ✓ Identify any high risk areas
- ✓ Identify any open floor areas larger than 60m<sup>2</sup>
- ✓ Identify any requirement for external illumination outside final exit doors and on a route to a place of safety

## Emergency lighting checklist

### Emergency lighting checklist:

- ✓ Escape routes – **minimum 1 lux** on the centre line.
- ✓ **Open areas.** Any room above 60m/sq. 0.5 lux in core area.
- ✓ Emergency lighting **is compulsory** in toilets larger than 8m<sup>2</sup>, or in disabled toilets.
- ✓ Exit signs **do not** count towards emergency lighting levels.
- ✓ Exit signs without internal illumination **must be** illuminated (to 5 lux).
- ✓ Escape routes **must contain a minimum** of 2 emergency luminaires (not including signs).
- ✓ Exit signs **must meet** maximum viewing distance requirements.
- ✓ Final exit signs **are recommended to be of maintained type.**
- ✓ Not all emergency fittings are the same. Lower cost = more fittings required. **Check spacing tables.**
- ✓ Fire extinguishers, fire call points, fire alarm panels, door panic bars, refuge points, first aid signs – **all need illuminating.**
- ✓ **Testing is mandatory** and must be logged monthly and annually.

# Emergency lighting products

## Escape signage

Escape signs should be placed:

- At all normal exits
- At all emergency exits
- Along escape routes
- Anywhere else if the route to the nearest exit is not clear

The format of emergency escape signs has changed over the years. Below are the four most common signs in use today.

The current internationally-recognised format has a pictogram and arrow, and the wording is optional. **It is not permitted to mix the different designs.**

- Escape sign types should not be mixed within a building
- Older types of sign formats may still be used for existing buildings
- New buildings should use the ISO 7010 format as referenced in BS 5266

## The four most common signs in use today



Signs directive  
(Allowed)



BS 5499 format  
(Also allowed)



Text only  
Illegal



ISO 7010  
(Correct)

Please note that 'arrow up' is straight on for the ISO 7010 standard and not 'arrow down'.



Sign types should not be mixed within a building.

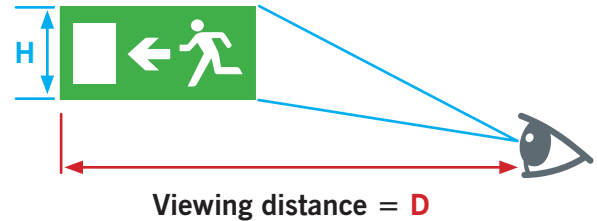
Older types of sign formats may still be used for existing buildings.

New buildings should use ISO 7010 format as referenced in BS 5266.



## Escape sign viewing distances

Viewing distances specified in BS 5266 part 7:



Maximum viewing distance **D**:  
for **INTERNALLY** illuminated signs **200 x H**  
for **EXTERNALLY** illuminated signs **100 x H**

## Examples

- **Internally-illuminated sign 175mm high**  
The maximum viewing distance is 35,000mm or 35 metres  
(175mm x 200 = 35 metres)
- **Externally-illuminated sign 175mm high**  
The maximum viewing distance is 17,500 mm or 17.5 metres  
(175mm x 100 = 17.5 metres)



## Escape sign illumination

Escape signs may be either externally or internally illuminated to ensure they are conspicuous and legible. Externally-illuminated signs should be illuminated to no less than 5 lux.

Photoluminescent, self-adhesive or perspex signs must be illuminated to 100 lux in a mains-healthy condition.



## Escape sign luminance

### Minimum luminance

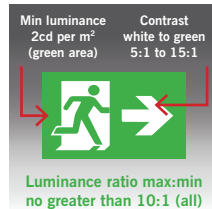
The luminance of any area of the [green] safety colour of the sign must be at least 2 candela/metres<sup>2</sup> in all relevant viewing directions (see Annex A in BS 5266-7).

### Luminance ratio

The ratio of the maximum luminance within either white or the safety colour must not be greater than 10:1 (i.e. in all areas and colours).

### Contrast

The ratio of the luminance  $L_{white}$  to the luminance  $L_{colour}$  must not be less than 5:1 or greater than 15:1.



## Maintained and non-maintained exit signs

As there may be local regulations applying to the premises, the relevant authorities should be consulted regarding exit signs. This is particularly important for licensed premises, places of entertainment, or places with sleeping accommodation including hospitals or residential care homes.

### It is important to:

- Research any local regulations.
- Establish the use of the premises.

Note: Where there are only a few visitors, they would be guided by or follow the majority and therefore maintained exit signs are less important.

## Maintained and non-maintained luminaires

A maintained luminaire operates when either normal lighting or emergency lighting is required.

A non-maintained luminaire only operates when the normal supply to the mains lighting fails.

A combined (or sustained) luminaire has two or more lamps, with one lamp dedicated to emergency use which operates when the mains fails.



# Where to place emergency lighting

## Escape route areas



5 lux

Every exit door



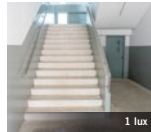
5 lux

Non-illuminated exit signs



1 lux

Outside final exits



1 lux

At stairs so each step receives direct light



1 lux

Any change of direction



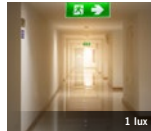
5 lux

Near each first aid point



1 lux

Any change of floor level



1 lux

Any corridor intersection



5 lux

Near each place of fire-fighting equipment



5 lux

Manual call point

Note: The term 'near' is normally considered to be within 2 metres measured horizontally. These positions need to be illuminated to 5 lux minimum at the reference plane.

## Additional non-escape route areas



15 lux

Kitchens



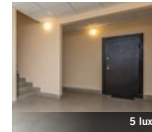
15 lux

First aid rooms



50 lux

Treatment rooms



5 lux

Areas of refuge



15 lux

Fire alarm control and indicating equipment



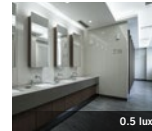
5 lux

Lifts\*



0.5 lux

Disabled toilets



0.5 lux

Toilets >8m<sup>2</sup> without borrowed light



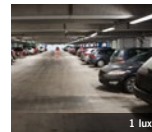
1 lux

Escalators to enable users to safely disembark



15 lux

Plant rooms for generators and control equipment



1 lux

Pedestrian routes in covered car parks



15 lux

Reception areas



5 lux

Near any safety signs

\* Emergency lighting is only required for lifts when they are part of the evacuation plan in the risk assessment.

## Escape equipment

Emergency lighting luminaires must be installed near escape equipment, refuge points and communication call points.

## Toilets

Facilities exceeding an 8m<sup>2</sup> gross area, including any cubicle(s), should be provided with emergency lighting as if they are open areas. Toilets for disabled use, and any multiple toilet facilities without borrowed (or indirect) light, should have emergency illumination from at least one luminaire.



### Emergency lighting recommended



Toilets in en-suite bedrooms for disabled user

Toilet



Multiple toilets up to 8m<sup>2</sup> – no borrowed light (at least one luminaire)



All toilets for the disabled (one luminaire)



Toilets >8m<sup>2</sup> with or without borrowed light  
**0.5 lux minimum**  
(more than one luminaire may be required to achieve 0.5 lux)

### Emergency lighting NOT recommended



Toilets in en-suite bedrooms for able-bodied

Toilet



Toilets less than 8m<sup>2</sup> with borrowed light during operational hours



Single toilets for able-bodied

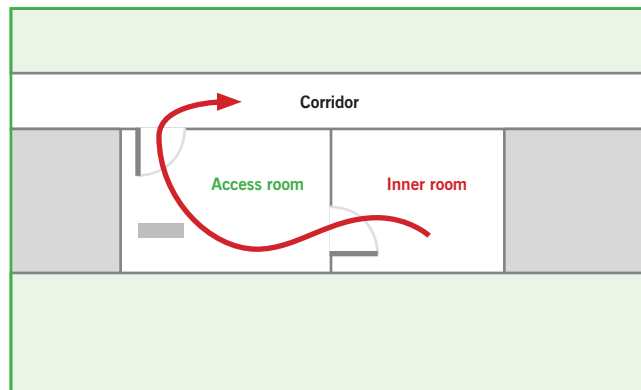
## Inner rooms

An **inner room** is defined in the Guide to the Building Regulations, Approved Document B (200) as:

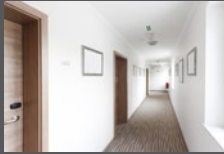
**A room from which escape is possible only by passing through another room (the access room).**

This means that the access room would be the escape route from the inner room and should have emergency lighting.

An exception might be if the access room was quite small and the wall and/or door to the escape corridor outside was visible through a clear panel or window. This would be subject to a risk assessment which would highlight if there were any obstructions to the light.



# Emergency light levels



## Escape Routes

- Routes occupants must follow to evacuate the premises
- 1 lux minimum
- At least 2 luminaires per compartment



## Open Core Areas

- Areas >60m<sup>2</sup>
- 0.5 lux minimum (excluding 0.5m border at edge of area)
- If escape route runs through open area, escape route still 1 lux



## High-risk Task Areas

- Done on case-by-case basis as part of site risk assessment
- 10% of light required for the task
- Never less than 15 lux

## 1 lux = one lumen per square metre.

In photometry, this is used as a measure of the intensity, as perceived by the human eye, of light that hits or passes through a surface. Lux can be measured by specific handheld devices, or it can be calculated at the design stage using specific 3D software suites.

# Specific illuminance and response times

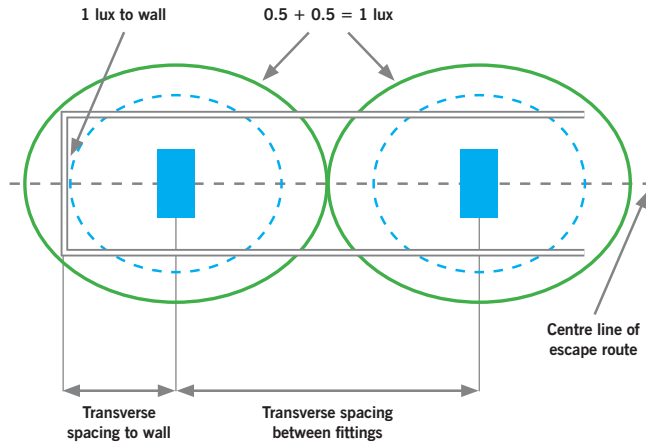
Location	Response time(s)	Minimum illuminance (lux)	Minimum duration (min)	Reference plane
Kitchens	0.5	15	30 min	Horizontal on working plane, switches and cut-outs readily visible
First Aid rooms	5	15	30 min	Horizontal on working plane
Treatment rooms	0.5	50	30 min	Horizontal on working plane
Refuge areas	5	5	180 min	Horizontal on floor; vertical at wall-mounted communication devices and signs
Plant rooms, switch rooms and emergency winding facilities for lifts	5	15	180 min	In plane of visual task
Fire alarm control and indicating equipment	5	15	180 min	In plane of visual task
Reception areas	5	15	180 min	In plane of visual task
Panic bars and pads or security devices	5	5	180 min	Horizontal on plane of panic bar/pad. Vertical at vertically-mounted/wall-mounted security devices
Swimming pool surrounds and diving areas	0.5	5	180 min	Horizontal on floor and treads

# Spacing of luminaires

## Escape routes

Emergency luminaires should be sited in addition to the points of emphasis:

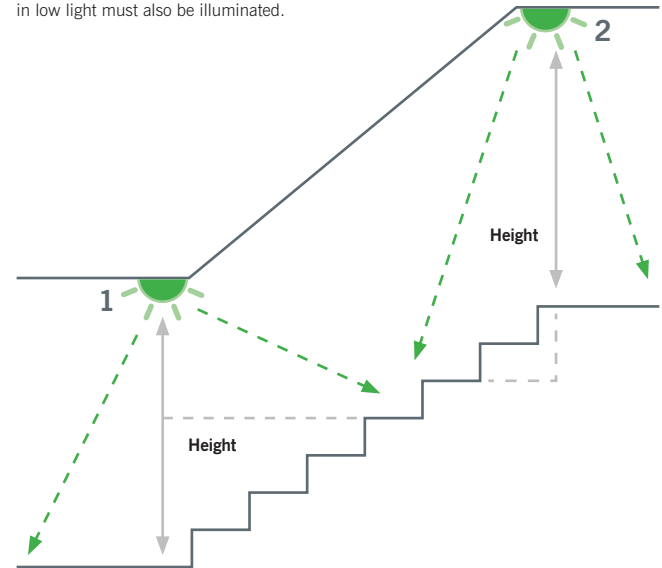
- On escape routes up to 2m wide – 2 lux minimum on the centre line.
- On escape routes that may be used by the young, elderly, physically impaired or partially sighted – a minimum of 1 lux on the centre line.



## Staircases

There must be even distribution of illuminance throughout the escape route. When placing luminaires near stairs, they must be located so that each tread receives direct light.

Other changes of level that can cause tripping hazards in low light must also be illuminated.



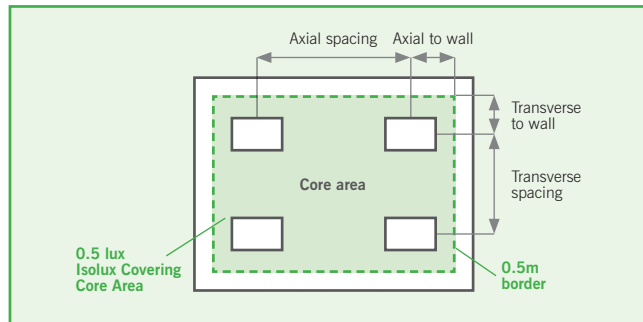
# Photometric data and spacing tables

## Open areas

Emergency luminaires should be sited in open areas used as escape routes and in open areas larger than 60 m<sup>2</sup>, to 0.5 lux minimum. Only the core area is considered because people do not often move through the outer 0.5m perimeter border.

Note that the transverse and axial orientation may be more efficient in using luminaires. Some open area luminaires have a circular light distribution, so the transverse and axial would be identical.

In open areas, moveable desks, chairs and other furniture can be ignored for emergency lighting. However, where there is a fixed partition, the 0.5m border follows the shape of the partition and the emergency lighting must be designed around it.



## External areas adjacent to final exits

If the area outside the building has hazards in darkness such as a riverbank or steep stairs, the fire risk assessment should determine if further emergency luminaires are needed to reach a place of safety. This might involve placing emergency lighting outside a building adjacent to the final exit door.

If street lighting is available and adequate, it may be used with the agreement of the fire authority but could be affected by a local mains failure. The availability of street lights would need to be assessed to make sure they are illuminated at all times the building is occupied.

How you achieve the required illuminance levels is dependent on the position and orientation of the luminaires.

The simplest form of photometric data is spacing tables. These provide the information to help you decide whether additional luminaires are needed besides those required for the points of emphasis.

Most luminaires have been independently tested to prove their photometric performance, and the data has been third-party inspected. Manufacturers construct their own spacing tables for designers and installers to use.

### Example spacing data for EasySafe open area downlighter to 0.5 lux

Ceiling mounting height (m)	Spacing to wall (m)	Spacing between (m)
2.0	2.3	7.4
2.5	2.4	8.1



### Example spacing data for Mor-LED bulkhead

Mounting height (m)	Trans. to wall	Trans. to trans.	Axial to trans.	Axial to axial	Axial to wall	
2.5	1.6	5.9	4.3	3.0	1.0	1 lux min. at centre
4.0	1.1	4.7	3.6	2.6	0.4	
2.5	2.6	8.7	7.2	4.7	1.2	0.5 lux min. (open)
4.0	1.9	8.5	7.0	4.5	0.6	

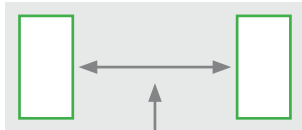


## Photometric data files

Lumidat (LDT) files for use in 3D light design software are available for all LuxIntelligent luminaires on our website.

# Mounting positions

## Transverse mounting positions

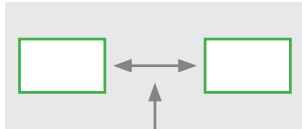


Transverse to transverse

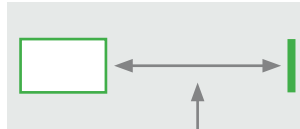


Transverse to wall

## Axial mounting positions



Axial to axial



Axial to wall



The Emergency Lighting System from Advanced



Scan to download our product brochure

# Battery backup

The battery backup of the emergency lighting system will depend on the use of the building and the evacuation strategy.

- 3-hour duration if evacuation is not immediate, or where early re-occupation may be required.
- 1-hour duration may be acceptable if evacuation is immediate and re-occupation is delayed until the system has recharged.

Premises requiring 3-hour duration	Premises used as sleeping accommodation	Hospitals, care homes, guest houses, colleges, boarding schools
	Non-residential premises used for treatment or care	Special schools, clinics
	Non-residential premises used for recreation	Theatres, cinemas, concert and exhibition halls, sports halls, pubs, restaurants
	Non-residential public premises	Town halls, libraries, shops, shopping malls, art galleries, museums
Premises requiring 1-hour duration	Non-residential premises used for teaching or offices	Schools, colleges, technical institutes, laboratories
	Industrial premises used for the manufacture, processing or storage of products	Factories, warehouses

# Typical Standard Lux Levels

Please note that these are a guide only.

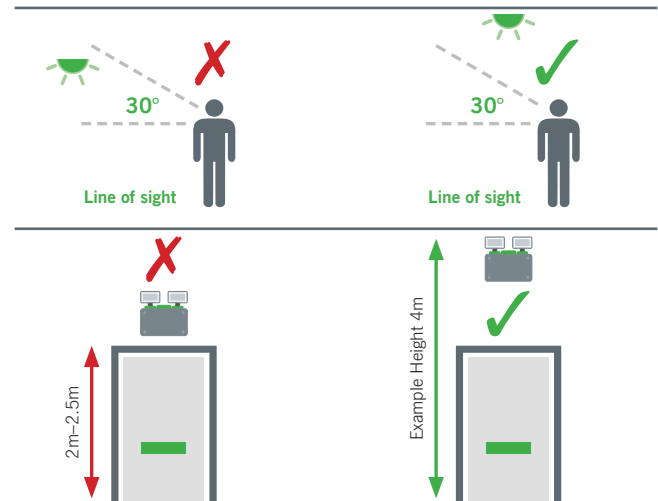
Offices			
General	500 lux	Drawing office	500 lux
Computer work stations	300 – 500 lux	Drawing boards	750 lux
Filing rooms	300 lux	CAD design areas	300 – 500 lux
Print rooms	300 lux		
Retailing			
Small retail outlets	500 lux	DIY superstore	1000 lux
Supermarkets	750 lux	Garden centres	500 lux
Hypermarkets	1000 lux	Showrooms	500 – 750 lux
Kitchens			
Serving/washing up areas	300 lux	Food stores	150 lux
Food preparation/cooking	500 lux		
Circulation areas			
Lifts	100 lux	Atria	50 – 200 lux
Corridors and stairs	100 lux	Atria with plants	500 – 3000 lux
Escalators/Conveyors	150 lux	Entrances/Exits	200 lux
Distribution and storage			
Loading bays	150 lux	Trade counter	500 lux
Unpacking and sorting	200 lux	Warehouse/Bulk Stores	100 lux
Large item stores	100 lux	Packing and dispatch	300 lux
Small-item stores	200 lux	Cold stores	300 lux
Engineering			
Tool shops	300 – 750 lux	Heavy machine assembly	300 lux
Arc welding	300 lux	Inspection and testing	500 – 2000 lux
Spot welding	500 – 1000 lux		
Banks and building societies			
Counter offices	500 lux	Public areas	300 lux
Staff areas			
Changing rooms and toilets	100 lux	Restaurants and canteens	200 lux
Restrooms	150 lux		
General areas			
Entrance halls and lobbies	200 lux	Gatehouses	200 lux
Enquiry desks	500 lux		
Communication			
Switchboards	300 lux	Post rooms	500 lux
Building services areas			
Boiler house	100 lux	Mechanical plant rooms	150 lux
Control rooms	300 lux	Electrical plant rooms	100 lux

# Disability Glare

BS 5266 defines a bright glare caused by a mains luminaire in line of sight as “Discomfort Glare”.

If the same issue occurs during an evacuation, this is considered to be “Disability Glare”.

This can cause hazardous egress, increasing the risk of tripping and falling, especially near steps and any changes of level. BS 5266 states that glare must be limited by siting luminaires between a person's line of sight and 30 degrees of that line of sight. This rule is particularly important for final exit points and it is recommended that luminaires are placed at a higher level, for example at 3.5 or 4m.



The example above shows disability glare. To be compliant, the luminaire should be mounted higher – above and beyond the 30 degree rule.

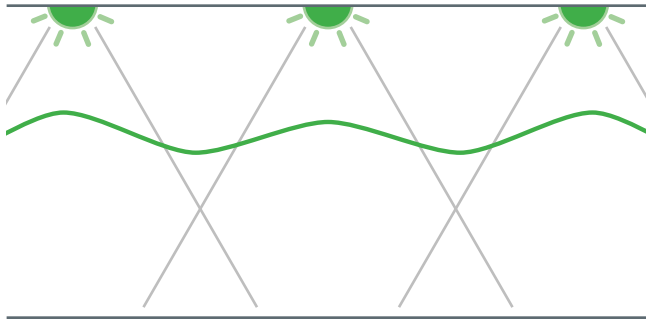


# Uniformity Rule

The uniformity rule is 40:1 (10:1 for high-risk areas).

BS 5266-1 refers to the uniformity rule found in BS EN 1838/BS 5266-7. This rule defines the ratio between the maximum and minimum light levels from emergency lighting and must not exceed 40:1. This means that the brightest area of emergency lighting cannot be greater than 40 times that of the lowest level of emergency lighting.

Where mains power lighting is available, light levels along a route are fairly uniform as luminaires are generally spaced at frequent intervals. All luminaires are powered and there is little variance between the brightest and darkest areas.

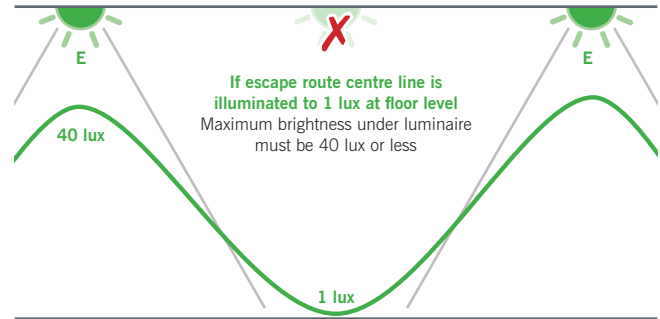


# Emergency Condition

In emergency mode, the total number of emergency luminaires illuminated is often less than the total number of mains luminaires.

The light level uniformity is now affected as there are fewer luminaires in a given space providing light.

The uniformity rule defines the maximum ratio between the brightest and dimmest spots along a route in an emergency condition to ensure that there are no dark spots that could cause dangerously low visibility and slow down evacuation times.



Levels scale as long as they follow the 40:1 ratio. For example, if the centre line is 5 lux, the maximum brightness becomes 200 lux. This ratio is tightened to 10:1 for high risk areas, since these areas are inherently more dangerous, and the risk of dark spots needs to be minimised for tasks that need higher visibility.

# System design

Every system design must correctly locate luminaires to reveal specific hazards and highlight safety equipment and signs – known as points of emphasis – whether it is for an emergency escape route or open (anti-panic) area.

## Key:

-  Exit signs
-  External emergency lighting
-  Open area emergency lighting
-  Safety luminaire high output
-  Escape route luminaire
-  Safety luminaire high output focussed
-  Call point
-  Fire extinguisher
-  Fire alarm panel
-  Open area identified
-  Escape route identified
-  Areas of hazard identified



The design must also take into account the type of luminaire needed and its light output as detailed by EN 1838:2013 and EN 60598-2-22.

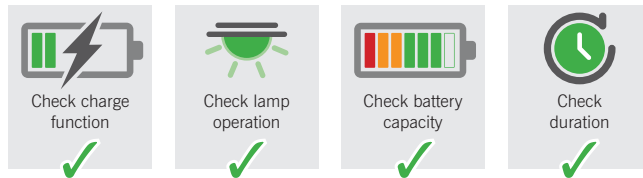
# Emergency light testing

Regular servicing is essential and an emergency lighting system must be regularly tested to ensure its compliance with BS 5266-1 and BS EN 50172.

## Emergency lighting test switches

The use of a miniature circuit breaker (MCB)\* or fuse which isolates the whole lighting circuit is not acceptable as this could introduce a risk of injury when the emergency lights are being tested.

### Testing requirements

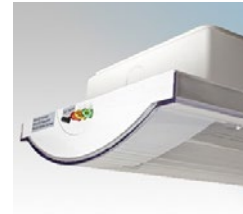


There are three ways to test your system.



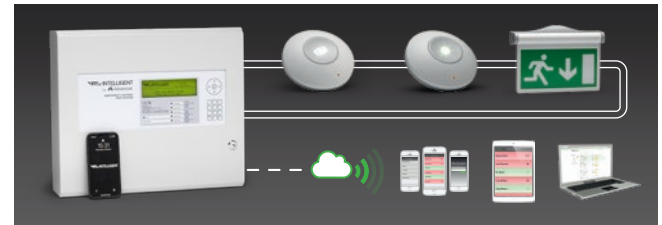
### Manual

- A switch is used to manually isolate luminaires on site.
- The tester walks the site to check functionality and perform a visual check of all lighting.
- Results are recorded and a work schedule created to rectify any issues found.
- This is time consuming, needs to be done out of hours and prone to human error.



### Self-testing

- The luminaire performs its own functionality test and an LED indicator on the device draws attention to any issues.
- This still requires manual checks/physical walk-arounds.
- It also requires manual records and reactive rectification work.



### Automatic addressable testing system

- No need for an engineer to manually check the lights.
- Programmable automatic test times.
- Instantly reports multiple failure types for proactive fixes.
- Test results are automatically recorded electronically.
- Each device has an addressable location.

# Testing schedule and routines

Daily testing is only required if you have a central battery system. In all other cases, each luminaire must have a short functional test every month (typically 10 minutes).

Once a year, a full-rated duration test must be carried out. This can be done in phases throughout the year. All results must be recorded and accessible.

Any failures must be noted and rectified at the earliest opportunity.

**Testing checklist:**

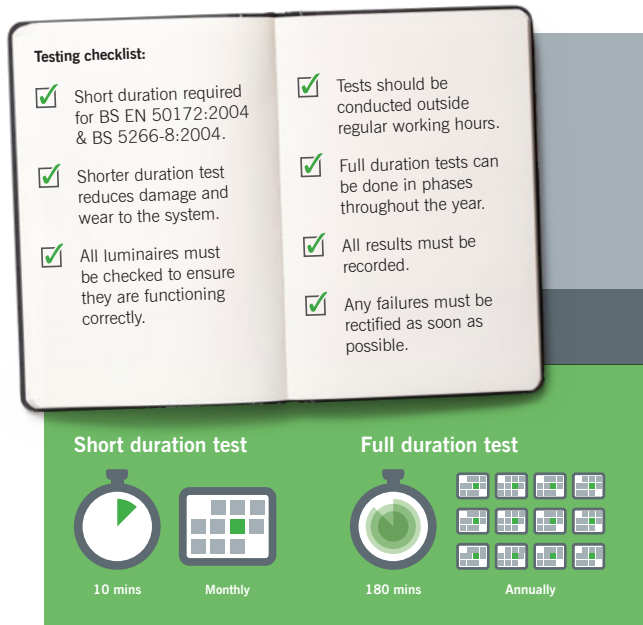
- ✓ Short duration required for BS EN 50172:2004 & BS 5266-8:2004.
- ✓ Shorter duration test reduces damage and wear to the system.
- ✓ All luminaires must be checked to ensure they are functioning correctly.
- ✓ Tests should be conducted outside regular working hours.
- ✓ Full duration tests can be done in phases throughout the year.
- ✓ All results must be recorded.
- ✓ Any failures must be rectified as soon as possible.

**Short duration test**

10 mins      Monthly

**Full duration test**

180 mins      Annually



# Worldwide monitoring in your pocket



The LuxIntelligent cloud stores your test data securely and gives you live status, advisories, reports and monitoring on your smartphone, tablet or computer.

You can monitor all your sites, anywhere in the world down to device level, from one account and share the system elements and reports you want with engineers or maintenance staff.

## Live compliance and monitoring – 3 ways

- On-board keypad and LCD screen for easy navigation, programming and maintenance.
- Comprehensive PC management tool can be connected to the panel directly via RS232. Also modem or GSM connections and LAN via serial to ethernet connectors.
- Cloud service and LuxIntelligent mobile, tablet and desktop apps giving live status and current and historical reports, complete system data, faults and advisories.



# Proof of compliance

## Exportable proof of testing and compliance data

Easily prove you are compliant with BS5266-1 with exportable testing and maintenance data.

LuxIntelligent ensures you will always have exportable proof of your testing and device status.

ENTRANCE LOBBY						20/06/2020
Lighting Panel Report ENTRANCE LOBBY						
Auto Test Results						
Address	Type	Zone	Text	Test Group	Test Commenced	Result
11.0	FULLY MAINTAINED	1	ABOVE CONTROL PANEL	1	12/06/2020 09:00:00	Pass
11.2	FULLY MAINTAINED	1	STAIRS UP CORRIDOR	2	12/06/2020 09:00:00	Pass
11.3	FULLY MAINTAINED	1	ADJACENT LIFTS	1	12/06/2020 09:00:00	Pass
11.4	FULLY MAINTAINED	1	ADJACENT LIFTS ES	2	12/06/2020 09:00:00	Pass
11.5	FULLY MAINTAINED	1	PORTERS LOBBY FB	1	12/06/2020 09:00:00	Pass
11.6	FULLY MAINTAINED	1	TOP OF STAIRS TO LFP	2	12/06/2020 09:00:00	Pass
11.7	FULLY MAINTAINED	1	ADJACENT PORTERS LODGE	1	12/06/2020 09:00:00	Pass
11.8	FULLY MAINTAINED	1	FEMALE LOCKER ROOM	2	12/06/2020 09:00:00	Pass
11.9	FULLY MAINTAINED	1	MALE LOCKER ROOM	1	12/06/2020 09:00:00	Pass
11.10	FULLY MAINTAINED	5	CORRIDOR OUTSIDE GLIS	2	12/06/2020 09:00:00	Pass
11.11	FULLY MAINTAINED	1	MALE W/C	1	12/06/2020 09:00:00	Pass
11.12	FULLY MAINTAINED	1	CORRIDOR TO LECTURE THEATRE	2	12/06/2020 09:00:00	Pass
11.13	FULLY MAINTAINED	1	FEMALE W/C	1	12/06/2020 09:00:00	Pass

Above is an example of an auto-test result: it shows you the device address, type, zone, location, test group, when the test commenced, the test duration and if it passed or not. If it does not pass, then you receive a number of different failure reports.

A few are shown here as examples.

### Fault examples

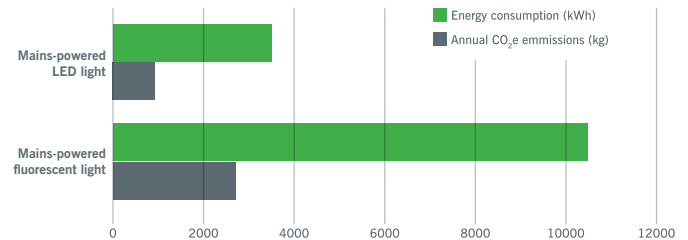
Failed – Bat Low 9.4V	Failed near end of test – replace battery soon	Failed – Lost Comms	Check device wiring – possible loose connection
Failed – Bat Low 0.0V	Battery failed within 1m – replace immediately	Failed – Light Low 51	Light output low – tube or LED failure

# Save lifecycle costs by switching to LED

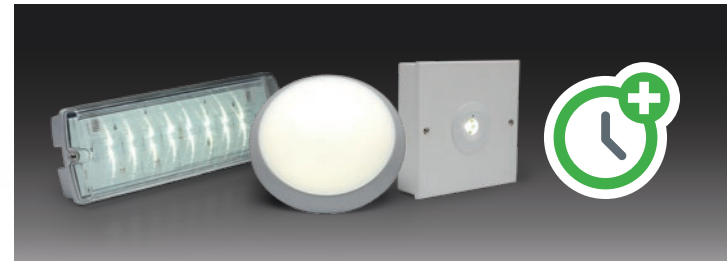
The benefits of switching from fluorescent to LED emergency lighting include:

- More cost effective
- Higher life expectancy
- Smaller battery backup
- Lower power consumption

## A greener solution: A 100 luminaire system



Comparison of traditional mains-powered fluorescent technology against mains-powered LED equivalent on an annual basis





Discover Advanced's complete emergency lighting range



In emergencies

clarity = safety



Recessed

Weatherproof

Surface-mounted

## Safer Escape Lighting – in a Flash

Take a brighter approach to escape lighting with Dynamic Safety Signage from Advanced.

This new evacuation solution is easy to install and proven\* to make building evacuations faster and safer.

Using pulsing LEDs to highlight the safest escape routes as fire situations evolve, dynamic signage supports 3x faster decision-making in emergencies.

With the best exits clearly displayed throughout incidents, evacuation time is minimised, and occupant safety assured – even in crowded and unfamiliar settings.

Dynamic safety signage is part of an extensive luminaire range, compatible with the LuxIntelligent automatic emergency lighting test system.

Ready to make the move to faster, safer building evacuations?  
Call us on **0345 894 7000** or email: [luxintelligent@advancedco.com](mailto:luxintelligent@advancedco.com)

Creating a safer future

\* University of Greenwich research study



## ONE-DAY LUXINTELLIGENT PRODUCT TRAINING



Our comprehensive training course covers a wide range of content including:

- An introduction to emergency lighting and LuxIntelligent
- Our new EasySafe ultra-low voltage lighting range
- Guidance to help you decide how many devices you need, depending on the size of the system
- A live demonstration of the LuxIntelligent panel
- A guide to the key information required for commissioning and essential pre-commissioning checks
- An explanation of the benefits and ease of use of LAN networking and cloud monitoring

The training is delivered online via video conference.

### CPD COURSE:

## THE BEST ROUTE TO COMPLIANCE FOR YOUR EMERGENCY LIGHTING



Our flexible CPD course on emergency light testing includes:

- An overview of BS 5266-1: 2016 (or IS 3217)
- How to comply
- How to be proactive in maintaining and upgrading your emergency lighting
- Emerging technologies



We can deliver the CPD in a variety of ways to suit you. We offer sessions remotely via Zoom, in-person at our Newcastle upon Tyne training centre, or at your premises – over a working lunch or in more extended form with in-depth explanations and time for questions and answers.



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To make a booking for either our CPD or training course or to discuss your requirements, email:


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