



Lighting optimised for energy efficiency, safety and aesthetics



Powering Business Worldwide

Technical

Glossary of Terms

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'Éclairage, 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.

Technical

Glossary of Terms

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. See lighting design guide, page 532.

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 $PF = (\text{active power}) / [(\text{rms voltage}) \times (\text{rms current})]$. 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 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 (SHR_{max}) 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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