



SINCE 1998



2024/25

**SMARTER
LIGHTING
CHOICES**



Technical reference data,
supplementary product data
and product application
information.

Common FAQ's for **general lighting topics**



What does this symbol mean?

The RCM mark is a mandatory certification label for in-scope products, where the manufacturer certifies their product meets all relevant safety and performance standards.

• **Is SAL National registered as a responsible supplier of ERAC?**

Yes, SAL's responsible supplier registration number is E1387.

• **Efficacy vs Efficiency – what is the difference?**

Luminous Efficacy is a measure of how well a light source produces visible light ie: the ratio of luminous flux to power. The value is recorded as lumens per watt (lm/W). Where Efficiency of a luminaire is the ratio of the light output from the fixture over the light output of the (light) source eg: LED lamp or LED chips. The value is recorded as a percentage (%).

• **HID and Halogen lighting verses LED lighting solutions, are LEDs so much better?**

The simple answer is YES, current LED technology consistently delivers solutions that provide higher efficacy performance and improved efficiency when compared to traditional HID and Halogen lamp sources. This means, lower installed circuit power, longer and more reliable service life, lower maintenance costs and this is in addition to the availability of a comprehensive selection of LED dimming options. As a quick guide, traditional MR16 lamps used for interior downlights, consumed approximately 35 watts (17lm/W), providing an average service life (L70) of 5000 hours, where the current LED equivalent consumes 8 watts (100lm/W) providing an average service life (L70) of >50,000 hours, or traditional HID lamps used for highbay installations, consumed approximately 400 watts (55lm/W), provided an average service life (L70) of 12000 hours, where the current LED equivalent consumes 150 watts (140lm/W) and an average service life (L70) of >50,000 hours.



What is an electrical CLASS I lighting product?

This is a product that requires the installation of a protective earth to be compliant to AS/NZ 3000.



What is an electrical CLASS II lighting product?

This is a product that does not require the installation of a protective earth to be compliant to AS/NZ 3000.



What is the definition of Lumen output?

Lumen (lumen lm) is the total light out of a light source measured as (initial lumens) representing the base or NEW lamp source lumens. (Rated lumens) is then measured after 100 hours usage for traditional lamp sources and LED sources are represented by L70 or L90 ratings. All lumen outputs quoted in this catalogue are the total SYSTEM output (lm).

• **What is the definition of Lux?**

Lux (lx) is the unit measure for how much luminous flux (lumens lm), which in street terms is LIGHT falling on a given surface. Lux can be accurately measured by a calibrated Light meter.

TC SELECTABLE COLOUR

What is the definition of Colour temperature?

Si (K) denotes the colour temperature of a light source referenced against a black body radiator. In street terms colour temperature is how warm or cool you see the light source. eg : warm colours are typically 2700-3000K, which would generally be used in residential interior spaces. Cool colours are typically around 4000K-5000K, which would generally be used in office interior spaces. cold colours (daylight) are typically 5000-6000K, which would generally be used in exterior spaces. NOTE: It is very important to only change the CCT selection when the power is OFF.



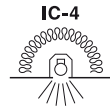
What is the definition of an Emergency maintained fitting?

This is a designated emergency light that can either be switched ON/OFF or unswitched-permanently ON. During a supply failure the fitting will remain ON and remains ON for the designated time and value as per AS 2293. Maintained lights are typically (but not limited to) EXIT signs.

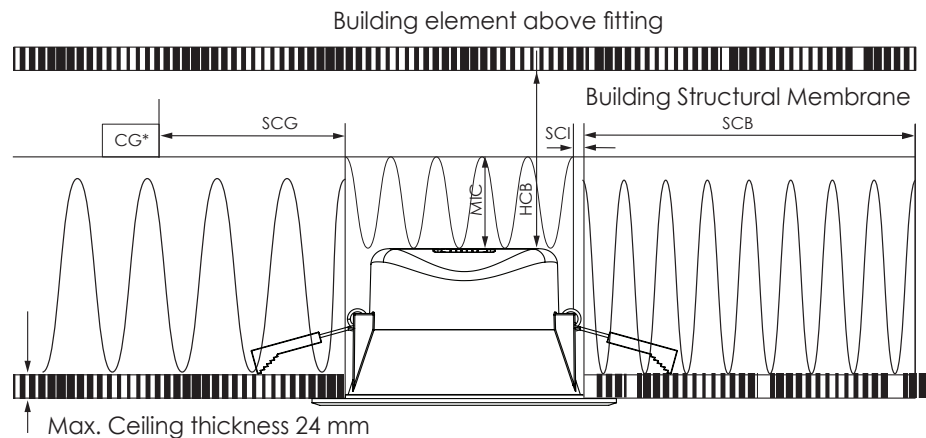


What is the definition of an Emergency non-maintained fitting?

A non-maintained emergency light is one that is only used (on) for emergency lighting, hence in the event of a mains (supply) failure, the emergency light source will be activated.



If I have an IC rated downlight, does it mean the same IC rating applies to the remote driver? No, unless the driver has an equal IC rating. It is important to read the manufacturers installation instructions for the placement of the driver in these environments, which generally prohibit the driver from being covered by thermal insulation.



What is the cause of nuisance flicker, seen in LED lighting?

Nuisance flicker sometimes observed in LED products, can be caused by numerous influences, such as dimming device compatibility, conflicts with minimum connected loads, adverse interference from appliances with inductive loads and off-peak ripple control signals injected by Energy providers to remotely control off-peak hot water and utility lighting services, found more commonly in NSW and QLD.

For compatibility and load issues, these conditions are typically displayed consistently throughout all times of the product use. With these experiences it is recommended that you consult with the manufacturer of the dimming device to validate if your chosen LED is compatible, which may entail exchanging the LED and or the dimming device to achieve the designed functionality.

Now dependent upon the appliance and location, symptoms for installations experiencing off-peak ripple control interference are typically minor buzzing for fans and flickering for LED light sources for the duration of the signal pulse, which is generally in the order of up to 30 seconds and then repeated within 60 minutes. These experiences are typically seen during the late evening (commonly known as off-peak time), however dependent upon your location and the schedule of your electrical provider, these (time) experiences may differ significantly.

Although ripple injection signal schedules have been around for many years, it has become more apparent with the mass introduction of electronic LED products, which due to the very nature of their construction (electronics), being more sensitive to electrical variations and associated interference.

If your installation is subject to off-peak ripple induced flicker, you should strongly consider the use of circuit filtering products, or for interior downlight installations, the use of products designed to block the signal interferences, such as the SAL rippleSHIELD series.



What is the definition of Colour rendering index?

(CRI) in street talk is a measure of how an illuminated object appears to the eye. As a guide the higher the CRI rating, the closer the illuminated object is when compared to standardized daylight. Typical CRI value available are: CRI>70 for outdoor recreational sports, CRI>80 for interior task areas, CRI>90 clinical or retail display tasks.



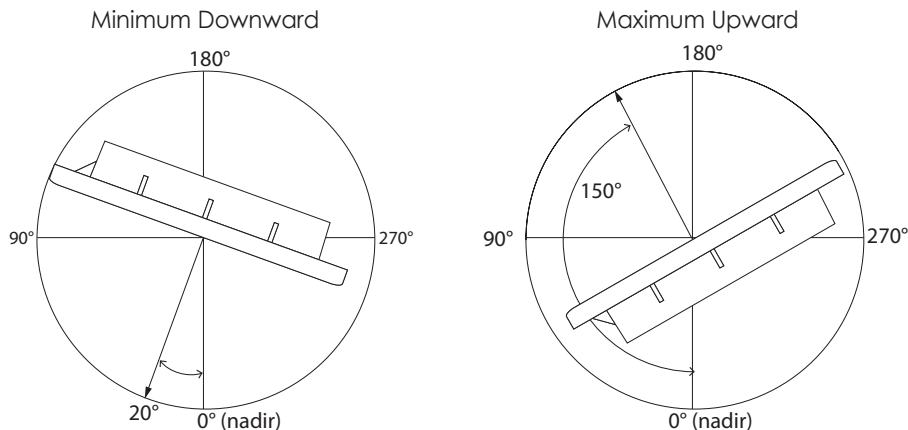
What is a ta rating?

(thermal ambient) is the recommended maximum environmental thermal limit for the safe continued operation of an electrical device. The ta rating can be found on the rating label and installation sheet, which is located on the relevant product web page. Typically, you will find ta ratings of 25°C for Interior products, where ta ratings of up to 50 degree C can be found for exterior products. Operating products beyond their designed ta limit is not recommended as it will stress the product components beyond their rated limits, resulting in reduced product performance or premature failure.



Is aiming orientation important for exterior products?

Absolutely, careful attention is required when installing exterior products to ensure the designated aiming orientation is correct and allows for the natural cleaning of debris/dust from the glass visor surface, in particular when aimed in an upward direction. Products aimed in an upward direction can result in a build-up of dirt on the glass visor, which in turn can thermally stress the product if it is not routinely cleaned. Any aiming restrictions can be found with the installation instructions located in the product carton and or on the relevant product web page.



IK ratings , why are they important?



An IK rating of a lighting product is covered by BS EN 62262 (AS62262:2023) and is a measure of the impact resistance of a product.

The test process measures a products mechanical impact (impact energy joules) limits, against a known mass and varied distances.

As a guide, the higher the IK rating: IK10, the higher the products ability to withstand impact forces. For example, an IK10 rated product would be seen in harsh environments, such as vandal prone installations or correctional centres.

IK RATING CHART	
No protection	Protected against 0.7 joules of impact (equivalent of a 0.25 kg object dropped from a height of 280mm).
Protected against 0.14 joules of impact (equivalent of a 0.25 kg object dropped from a height of 56mm).	Protected against 1 joules of impact (equivalent of a 0.25 kg object dropped from a height of 400mm).
Protected against 0.2 joules of impact (equivalent of a 0.25 kg object dropped from a height of 80mm).	Protected against 2 joules of impact (equivalent of a 0.5 kg object dropped from a height of 400mm).
Protected against 0.35 joules of impact (equivalent of a 0.25 kg object dropped from a height of 140mm).	Protected against 5 joules of impact (equivalent of a 1.7 kg object dropped from a height of 300mm).
Protected against 0.5 joules of impact (equivalent of a 0.25 kg object dropped from a height of 200mm).	Protected against 10 joules of impact (equivalent of a 5.0 kg object dropped from a height of 200mm).
	Protected against 20 joules of impact (equivalent of a 5.0 kg object dropped from a height of 400mm).

Why is the IP rating of a luminaire so important?

IP (Ingress Protection) ratings are found in AS60529 and simply define the ability of an electrical product to seal & protect against the intrusion of foreign objects & water.



How does the rating system work?

Two numerals determine the rating, the first numeral stands for **(I)** intrusion of a foreign object, where the second numeral stands for **(P)** penetration of water.

As a guide **IP20** rated products would be found in interior spaces with no requirement for protection against the elements, where an **IP65** product would be found in an exterior application, which requires substantial protection against the elements.

First Digit	Intrusion Protection	Second Digit	Water Protection
0	No specific protection	0	No specific protection
1	Protected against solid objects over 50mm, e.g. accidental contact of hands	1	Protected against vertically falling drops of water
2	Protected against solid objects over 12mm, e.g. contact with finger	2	Protected against direct sprays of water up to 15 degrees from the vertical
3	Protected against solid objects over 2.5mm, e.g. tools & wires	3	Protected against direct sprays of water up to 60 degrees from the vertical
4	Protected against solid objects over 1mm, e.g. wires & nails	4	Protected against water splashed from all directions, limited ingress permitted
5	Protected against dust limited ingress, no harmful deposits	5	Protected against low pressure jets of water from all directions
6	Totally protected against dust	6	Protected against strong jets of water
		7	Protection from temporary immersion
		8	(water tight), protection from continuous submersion
		9K	Protection against close range, high pressure and high temperature spray

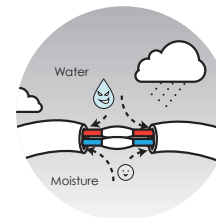


Guide to outdoor lighting conductor termination

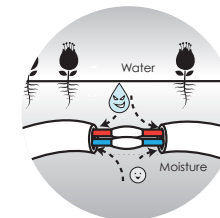
The following guide addresses a common water ingress fault, where moisture and air enters through the cable structure with IP65/IP66/IP67/IP68 lighting products.

So what is the problem?

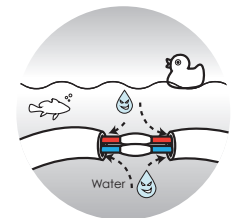
Well it is all in the science. When a luminaire operates, the inside temperature increases and when it is turned off, the temperature naturally returns to its original static position. This process in turn creates thermal expansion and contraction, resulting in a difference between the inside and outside air pressure of the product. Thus creating a siphon effect, resulting in moisture and air infiltrating the luminaire housing, commonly through the cable structure when the internal air pressure is lower than the external environment.



Exposed open Air

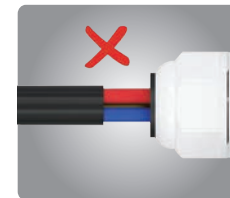


Underground



Underwater

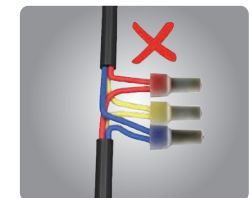
Common examples of incorrect terminations



single insulation exposed

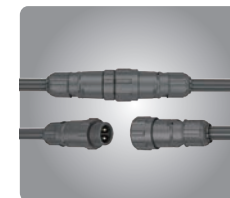


using water-proof tape

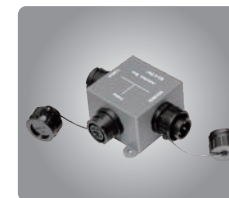


terminations exposed

What is the solution? easy, use a water-proof connector, which maintains the products **designated IP rating** as follows.



Plug and play inline




Plug & play boxes




Multi port boxes

For safety, all electrical work should be conducted by an authorised electrical installer.



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