

Choosing the Correct **LED Step Lighting** **System**



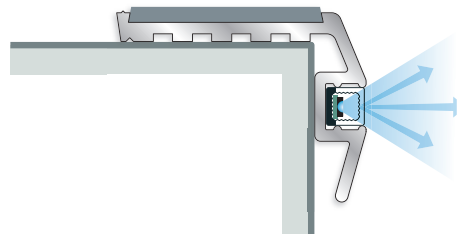
GRADUS

Step 1

Select the right profile

Intended purpose

Select the correct stair nosing for the shape of the step – this should be a tight fit to the step to ensure that the profile does not lift or rock during use. Gradus LED Step Profiles are suitable for square steps (see right).



Profile gauge

The gauge (thickness) of the Step Lighting Profile should be a flush finish to the floorcovering to avoid a trip hazard being created. When used with soft floorcoverings such as carpet and carpet tile, the gauge should achieve a flush finish with the compressed thickness of the floorcovering.

Gradus offers a range of gauges to suit the majority of commercial floorcoverings (see below).

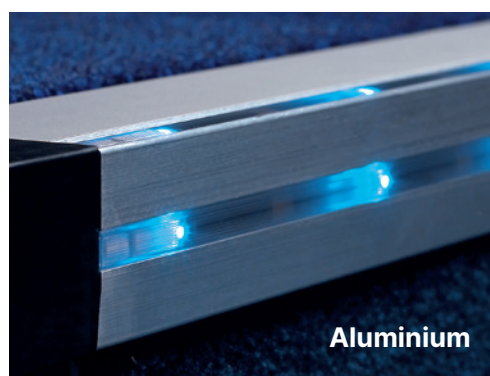
Gauge	Typically used with
Ramp back	No floorcoverings / Resilient floorcoverings – install profile on top of the floorcovering to ensure a safe fit
5mm - 6mm	Carpet / Carpet Tile
10mm - 12mm	Carpet / Stone / Marble

Type of profile

The type of profile selected can impact how the light is projected. Gradus offers a range of PVC-u and Aluminium Step Lighting Profiles designed to offer a wide range of lighting effects.



- Clear PVC-u design allows light to be projected through the profile.
- Illuminated stair edging is visible when ascending and descending the staircase.



- Light is projected directly from the tube or diffuser cover.
- The angle at which the illumination is visible depends on the profile design.

Step 2

Achieve the correct slip-resistance for the conditions

Specification Guidelines

BS 8300-2:2018, BS 5395-1:2010 and BS 9266:2013 refers to the slip-resistance of surface finishes on stairs. A pendulum test is used to assess slip-resistance and a Pendulum Test Value (PTV) of greater than 36 is required in both dry conditions and when the stairs are at risk of becoming wet through walked in moisture and spillages.

Slip-resistance & Performance



An insert provides a surface that creates friction between the sole of the shoe and the step edge, hence providing slip-resistance and reducing the risk of slips on stairs. All Gradus inserts are tested for slip-resistance.

Ensure the required level of slip-resistance is achieved to reduce the risk of slips and falls on stairs by **selecting the correct insert for the environment**:

- **Interior installations** – not always dry conditions. Consider whether there is a risk of the stair nosing becoming wet and select the correct insert accordingly.
- **Safety flooring** – select an insert that matches or improves the slip-resistant qualities of the flooring.

Insert Type	Conditions	Applications	Material
Xtra-grip	Interior Wet Interior Dry	Increased surface roughness where the stair edging may become wet e.g. stairs close to entrances or where safety flooring is used. Areas where health and safety are a priority e.g. schools and hospitals.	Pvc with mineral aggregate.
Xtra-grip Plus	Interior Wet Interior Dry	As Xtra-grip, with the addition of an enhanced insert bond system for areas subject to more frequent cleaning e.g. catering and food preparation areas.	Pvc with mineral aggregate.
Interior	Interior Dry	Areas where there is no risk that the stairs will be contaminated by moisture.	Pvc with mineral inclusion - standard or grained surface.

Step 3

Defining the step edge in normal and low-light conditions

For any project featuring LED Step Lighting, it is important to always achieve the correct **visual & tonal contrast** between the profile and surrounding floorcoverings in normal lighting conditions.

In addition to the above, when selecting an LED Step Profile the **lighting position & direction** will need to be considered, especially as this may be the only means for a building user to identify the step edge in dark or low-light conditions.

Visual & tonal contrast

Specification Guidelines

BS 8300-2:2018, BS 5395-1:2010, BS 9266:2013 & Approved Documents M (ADM) & K (ADK) of The Building Regulations 2010 highlight the need to ensure there is sufficient visual contrast at the step edge, providing a safe environment for all building users. Project Rainbow and ADM recommend that there is at least a 30 point difference between the LRVs of the stair nosing and floorcovering to achieve a suitable contrast.

Visual Contrast

All Gradus stair nosing channel and insert colours are measured for LRVs in accordance with BS 8493:2008+A1:2010 to help achieve this difference. Our RXT1218L PVC-u Step Lighting Profile can be selected with the riser and insert in the same colour to provide sufficient visual contrast with the floorcovering fitted to the tread and riser of the step (picture 1).



Good Visual Contrast

Installed with Gradus Stair Nosings
picture 1



Poor Visual Contrast

No Stair Nosings – Don't Take the Risk
picture 1

Tonal Contrast

It is important to achieve a tonal contrast between the floorcovering and the stair nosing as people with visual impairments may not be able to see some or all colours but can perceive light and dark. Colour contrast (picture 1) visible to fully-sighted people may not always offer a tonal contrast (picture 2) for partially-sighted people.



Fully-sighted People

Tonal Contrast
picture 1



Partially-sighted People

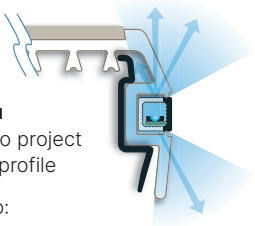
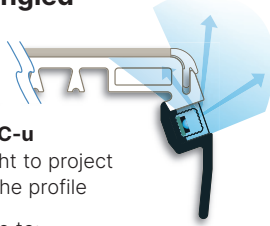
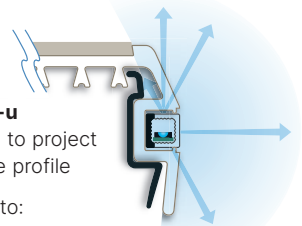
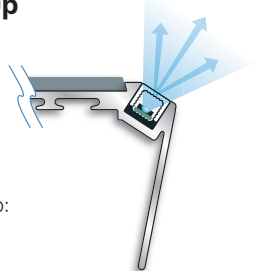
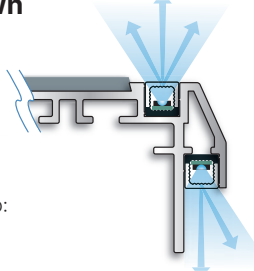
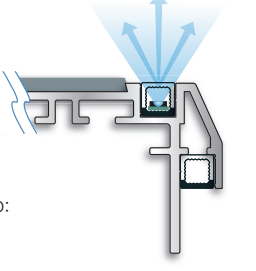
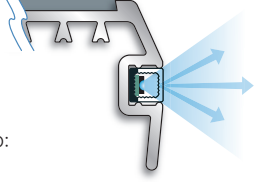
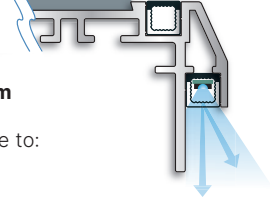
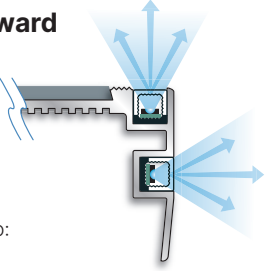
Poor Tonal Contrast
picture 2

Lighting position and direction

Due to the nature of the environments that our LED Step Lighting is typically installed within, coupled with constantly evolving lighting technology, there are likely to be occasions when the ambient lighting is either dimmed or switched off. In all cases, it is important to follow the **visual & tonal contrast guidance** outlined on the previous page to achieve the recommended 30 point LRV difference. However, it should also be noted that less light will be reflected when ambient light levels are reduced.

For instances where dark or low-light conditions are to be expected, building users will find it difficult to see steps that are not illuminated, and would therefore benefit from the use of LED Step Lighting. Choosing an LED Step Profile that projects the light in an upwards direction will ensure that it highlights the step edge effectively to create a safe solution.

The diagrams featured below provide examples of the different lighting positions and directions available across our range of LED Step Profiles.

Pvc Profiles		
Up & Down  Clear PVC-u allows light to project through the profile Applicable to: RNT1218L RNT718L	Up & Angled  Clear PVC-u allows light to project through the profile Applicable to: RXT1218L	Up, Forward & Down  Clear PVC-u allows light to project through the profile Applicable to: RNT1218L RNT718L
Aluminium Profiles		
Angled Up  Aluminium Applicable to: ATNG71L ELAF5150 ELAF2350	Up & Down  Aluminium Applicable to: ATD121L ATD71L	Up  Aluminium Applicable to: ATD121L ATF71L ATD71L
Forward  Aluminium Applicable to: AT718L AS1106L ATF71L	Down  Aluminium Applicable to: ATD121L ATD71L	Up & Forward  Aluminium Applicable to: ATF71L

Step 4

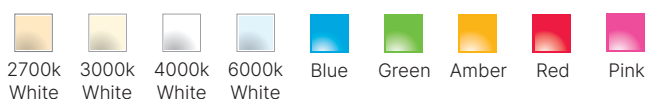
Select an LED Lighting System and LED colour

Gradus offer a choice of 3 main lighting systems to combine with our Step Lighting Profiles, as follows.



Gradus Impression

Features LED tapes to produce a continuous lighting effect that provides a wash of light for a modern finish. Ideal for enhancing safety in medium to well-lit spaces where there is added focus on visual design.



RGB Colour Changing

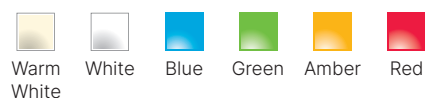


Dual-White CCT
(Create any shade of white within colour temperature range of 2700k-6000k)



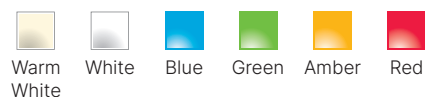
Gradus Continuity™

A continuous linear lighting effect that provides clear definition in low-light spaces. Created using a fibre optic rod that is illuminated at each end with low-watt LEDs.



Gradus Interlok Advance™

A pinpoint lighting effect that can be easily cut to size without causing reduction in brightness. LEDs spaced at 100mm intervals as standard, 50mm intervals also available on request.



Step 5

Combine with control equipment for increased flexibility

It is important to evaluate the level of functionality required to ensure that the overall package is tailored to suit your individual project needs.

Below are just some of the key considerations when selecting control equipment for your lighting solution.



What functionality is required?



Adjusting
LED brightness



Adjusting
LED colour

What type of remote control is preferred?



Hand held
remote control



Wall mounted
remote control

How many areas are you looking to control from a single remote?



Single zone

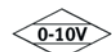


Multi-zone

Compatibility with communication protocols required?



Triac



Note: More options available upon request

Once you've identified your preferences, book an appointment with one of our specification consultants

This enables us to fully understand your requirements to help us put together a lighting package that is right for your project.

To book an appointment call 01625 428922

Gradus also supplies wiring, power supplies and connections as well as offering a **supply and fit service** for extra peace of mind.



GRADUS

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