GRADUS

November 2012

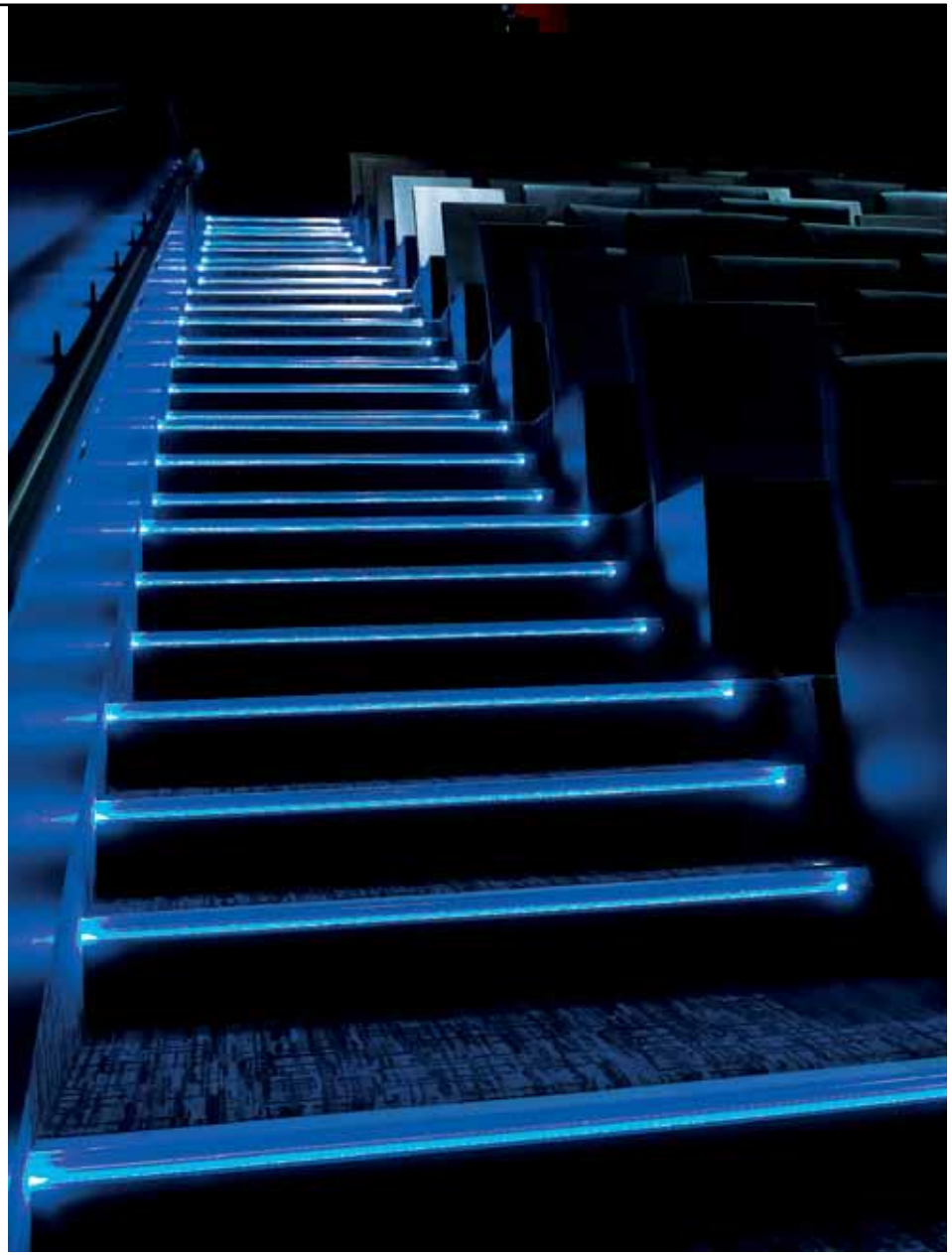
Uniclass L7473	OmniClass 23-35 47 11 11 19
CI/SfB (63) X	

LED Lighting Systems

Accessories | step, aisle & wall lighting

1 First Edition

Contents



Corporate

LED Lighting Systems

Gradus offers a range of LED low voltage, decorative and safety lighting products including:

- step lighting
- aisle lighting
- row identification
- wall lighting
- seat lighting
- bespoke options

Système de Balisage Lumineux

Gradus propose une large gamme de produits de balisage décorative et sécuritaire, à base de leds à basse tension

- nez de marche
- balisage au sol
- identification de rang
- balisage mural
- éclairage de fauteuils

LED Beleuchtungssysteme

Gradus bietet eine Reihe von LED Niedervolt-, Dekorations- und Sicherheitsbeleuchtungsprodukten an. Darunter auch folgende Produkte:

- treppenbeleuchtungen
- gangbeleuchtungen
- sitzreihen-kennzeichnung
- wandbeleuchtungen
- sitzbeleuchtungen
- massgeschneiderte optionen bzw. lösungen

Sistemas De Iluminacion LED

Gradus ofrece una gama de productos para iluminación decorativa y de seguridad con sistema LED de bajo voltaje que incluye:

- iluminación de bordes de escaleras
- iluminación de pasillo y suelos
- identificación de fila
- iluminación de la pared
- iluminación de asiento
- opciones hechas a medida

LED 照明系统

葛雷德斯提供的产品含有一系列的低电压LED, 装饰和安全的照明产品,包括:

- 楼梯照明灯
- 走廊照明灯
- 行列照明灯
- 墙面照明灯
- 座位照明灯
- 定制选项

ISO 9001 : FM 10763
ISO 14001 : EMS 59511

BS OHSAS 18001
IV 18/18493

Client Details

Cinema Groups

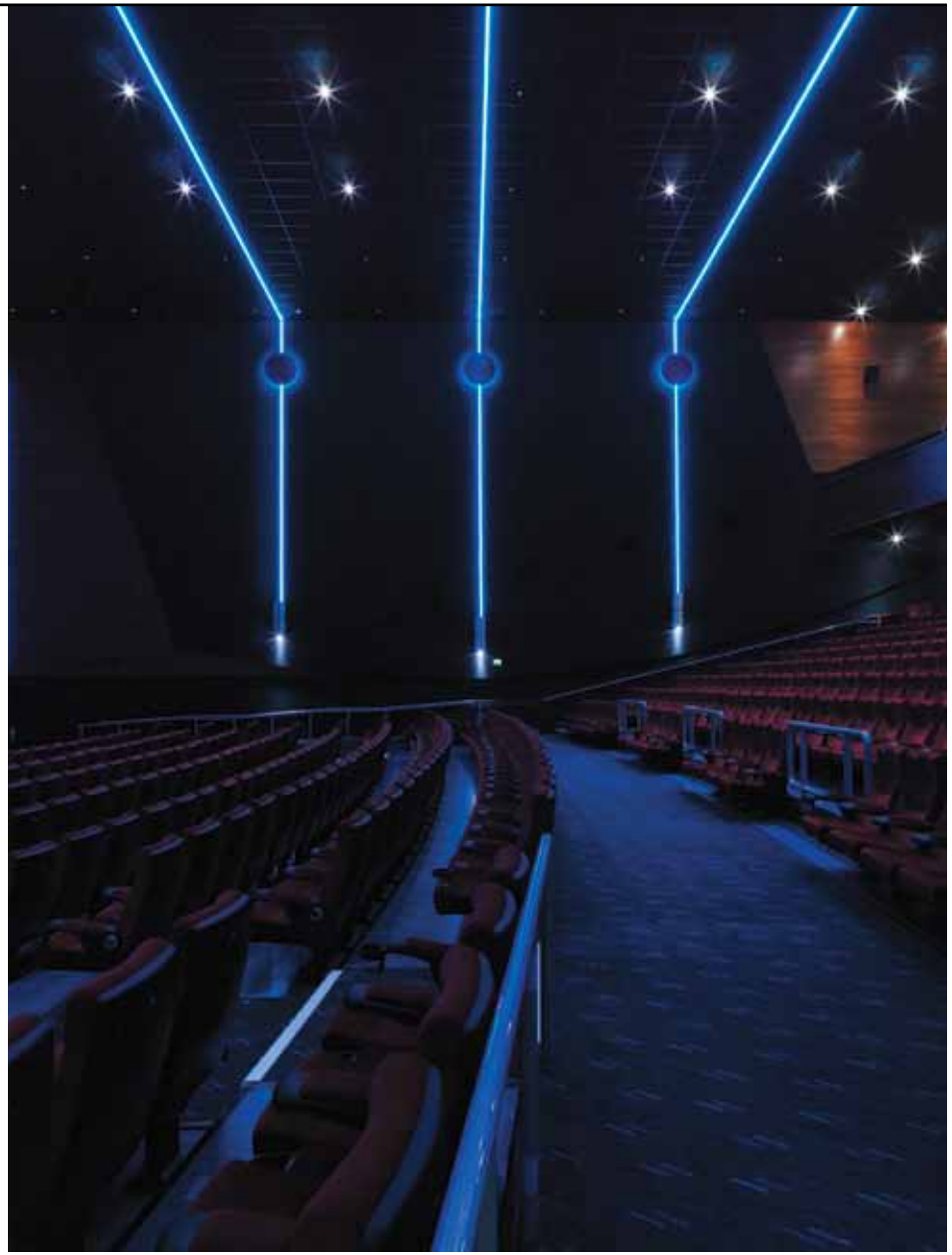
Cineworld
Vue Entertainment
Odeon
Showcase
City Screen
Reel Cinemas
Empire
Omniplex Cinema Group
WTW Cinemas
The Light Cinemas
Village Cinemas
Pathé
The Space Cinema
Zon Lusomundo
Cinestar
New Lineo Cinemas
JT Bioscopen
Auditorium Reel Cinemas
Grand Cinemas
Cathay Cineplexes

Education

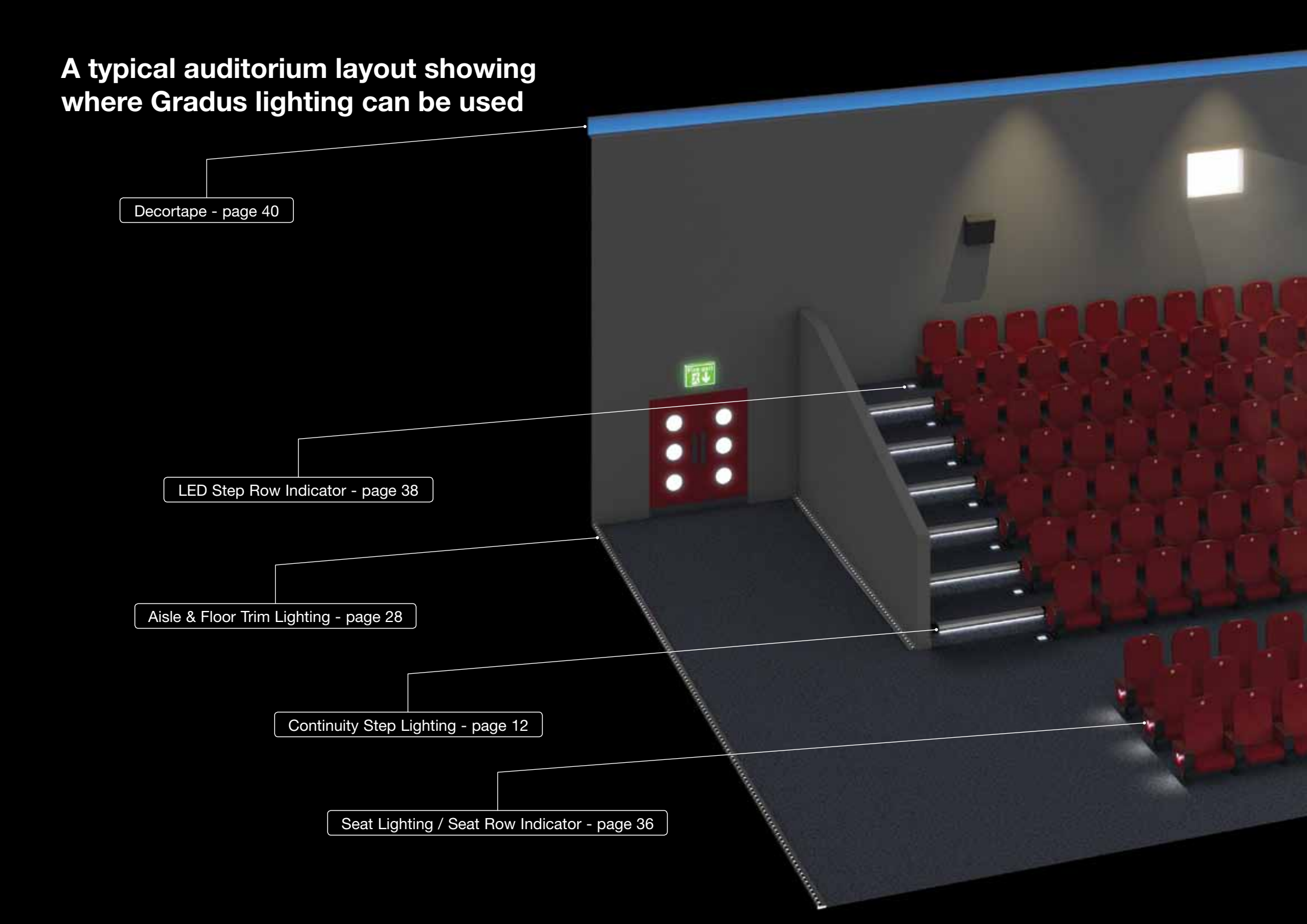
The University of Manchester
University of Reading
Newcastle University
Durham University
University College London
University of Salford
Queen Mary, University of London
University of Bath
Anglia Ruskin University
Bangor University
American University of Sharjah
Hong Kong Baptist University
The Hong Kong Institute of Education
French International School of London

Leisure

Stringfellows
Madame JoJo's
Gracie's Sports Grille & Pizza
The Regency Club
Hippodrome, Colchester
Strawberry Moons
Broadway Boulevard
Carnival Cruise Lines
P&O Cruises
Royal Caribbean International
Princess Cruises
Grimaldi Lines
Dubai Marina
Marina Bay Sands Casino
Fusionopolis, Singapore
Headingley Experience



A typical auditorium layout showing where Gradus lighting can be used



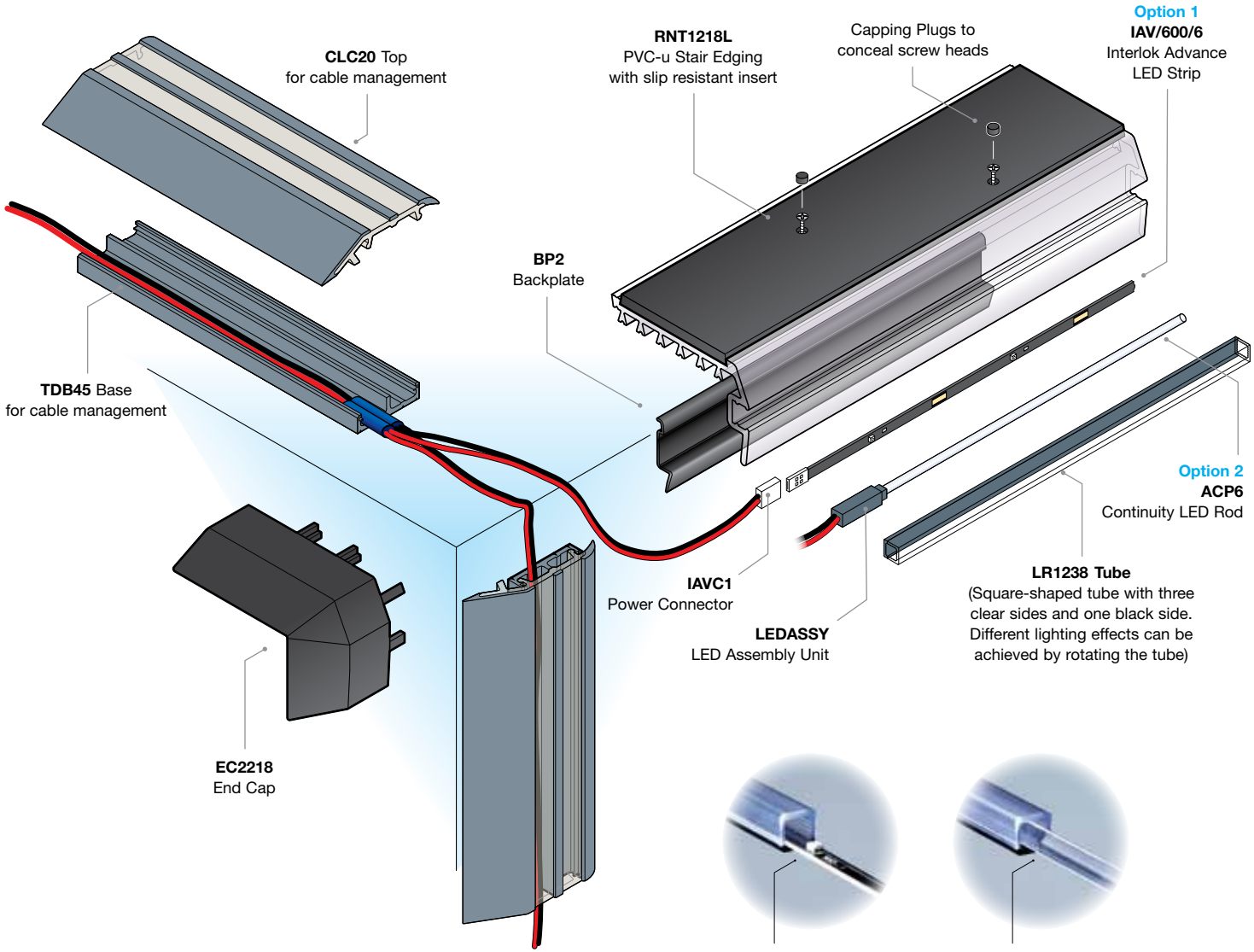
Decorflex - page 32

Interlok Advance Step Lighting - page 13

Wall Lighting LED System - page 34

For Power Supply Units see page 41

Illustration of a step system



Illuminated Stair Edgings

A range of safety and decorative lighting profiles for stairs that have been designed specifically to suit interior environments such as auditorium, where light is required for safety to protect the public from slips, trips and falls.

Continuity™ 12v DC LED Lighting System

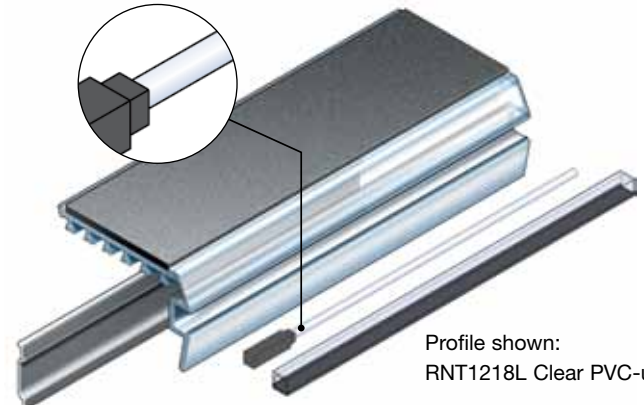
Description

Continuity™ is an LED lighting system that provides a continuous linear lighting effect for a streamlined modern finish.

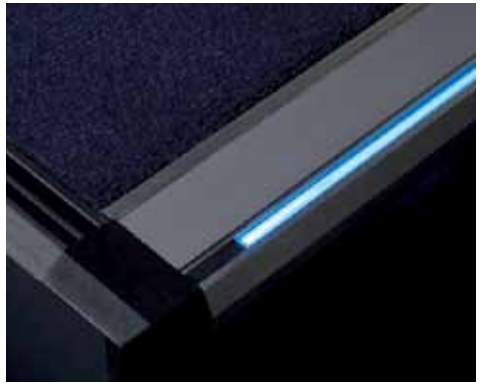
- Continuous lighting effect
- LED housed in polycarbonate assembly unit projected through the fibre optic rod
- Sealed LED system provides resistance to moisture ingression e.g. soft drink spillage
- Supplied per metre
- LED lifetime of up to 50,000 hours
- Power consumption of 0.3 watts per LED
- Dimming options available see page 41
- For power supply units see page 41

LEDs available in			
Blue		Red	
Green		White	

Typical Example



Profile shown:
RNT1218L Clear PVC-u



Interlok Advance™ 12v DC LED Lighting System

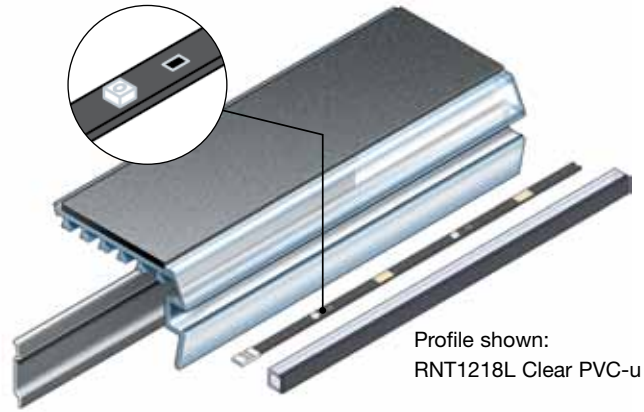
Description

Interlok Advance™ is an LED lighting system that offers a pin point lighting effect.

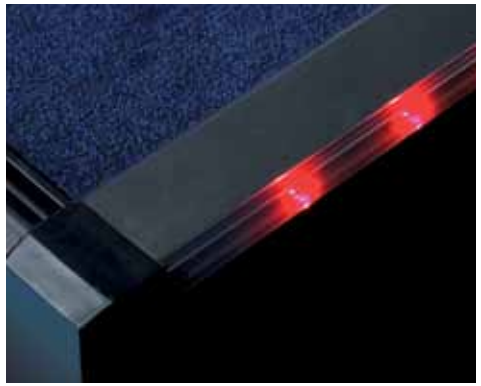
- Pin point light effect
- LEDs are surface mounted onto strips
- Strips can be cut to desired length without causing any reduction in brightness (600mm strips)
- LED lifetime of up to 50,000 hours
- Power consumption of 0.3 watts per strip
- LEDs are spaced at 100mm intervals
- Dimming options available see page 41
- For power supply units see page 41

LEDs available in			
Blue		Red	
Green		White	
Amber			

Typical Example



Profile shown:
RNT1218L Clear PVC-u



Step Lighting Effects

Description

Gradus lighting offers a range of aluminium and PVC-u stair edging profiles with a choice of slip resistant inserts, which incorporate LED lighting systems that are designed to provide a wide choice of lighting effects. By altering the position of the Interlok Advance LED strips or by rotating the PVC LR1238 tube (PVC tube with three clear sides and one black side as seen in diagrams opposite), within the profile, a variety of different lighting effects can be achieved (see opposite).

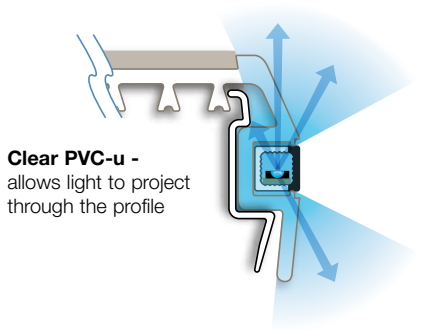
PVC-u

- Clear profile allows light to project through the profile
- Illuminated stair edging is visible when ascending & descending the staircase (see page opposite)

Aluminium

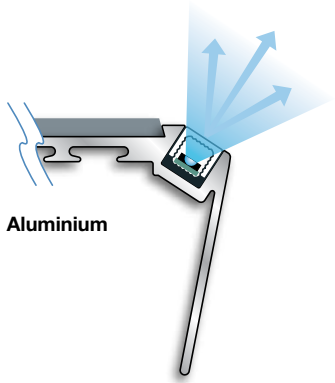
- Light is projected directly from the tube
- The angle at which the illumination is visible depends on the profile design (see opposite)

Up & Down



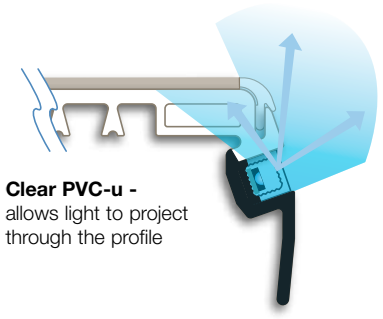
Step lighting effect available in the following profiles:
RNT1218L - pg18, RNT718L - pg18

Angled Up



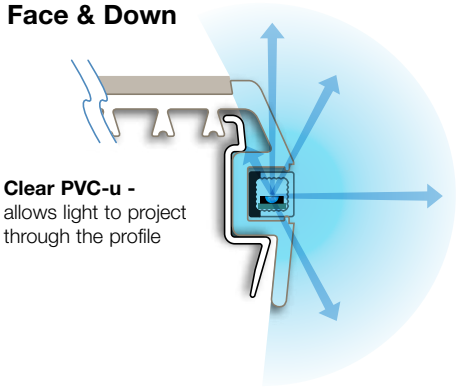
Step lighting effect available in the following profiles:
ATNG71L - pg20, ELAF230 - pg22

Up & Angled



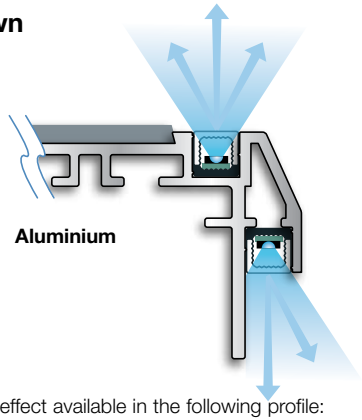
Step lighting effect available in the following profile:
RXT1218L - pg16 & 18

Up, Face & Down



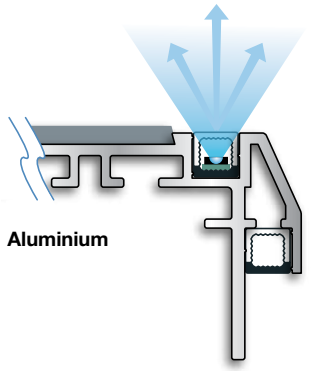
Step lighting effect available in the following profiles:
RNT1218L - pg18, RNT718L - pg18

Up & Down



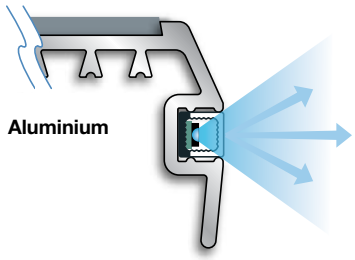
Step lighting effect available in the following profile:
ATD121L - pg20

Up



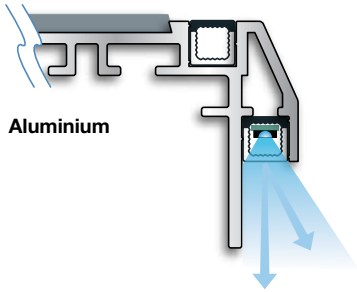
Step lighting effect available in the following profile:
ATD121L - pg20, ATF71L - pg22

Face



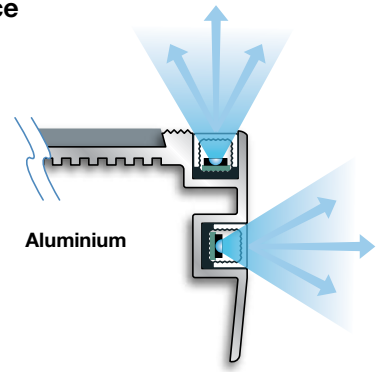
Step lighting effect available in the following profiles:
AT718L - pg20, AS1106L - pg22

Down



Step lighting effect available in the following profile:
ATD121L - pg20

Up & Face



Step lighting effect available in the following profile:
ATF71L - pg22

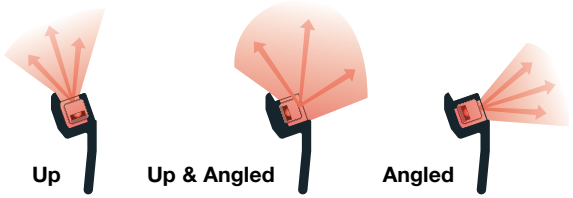
PVC-u XT™ Stair Edging Profile

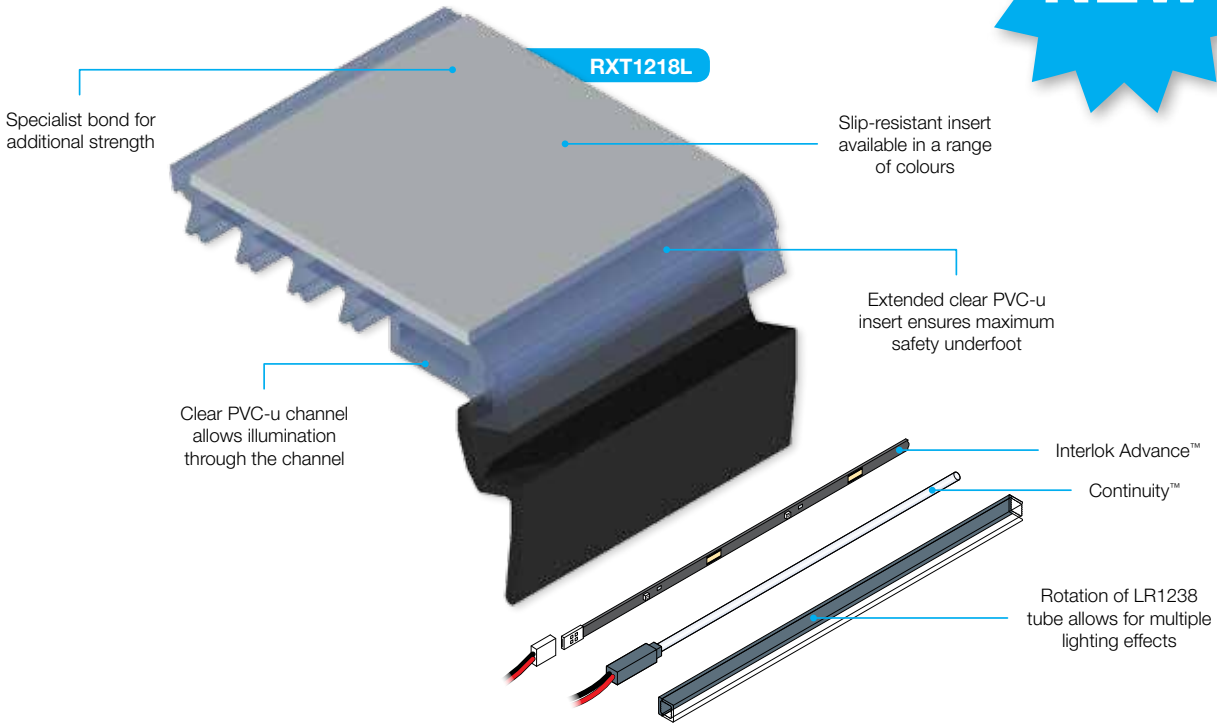
NEW

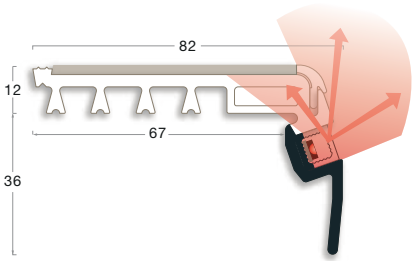
Description

The RXT1218L stair edging profile offers the ultimate solution to help reduce the risk of slips, trips and falls on stairs in most applications.

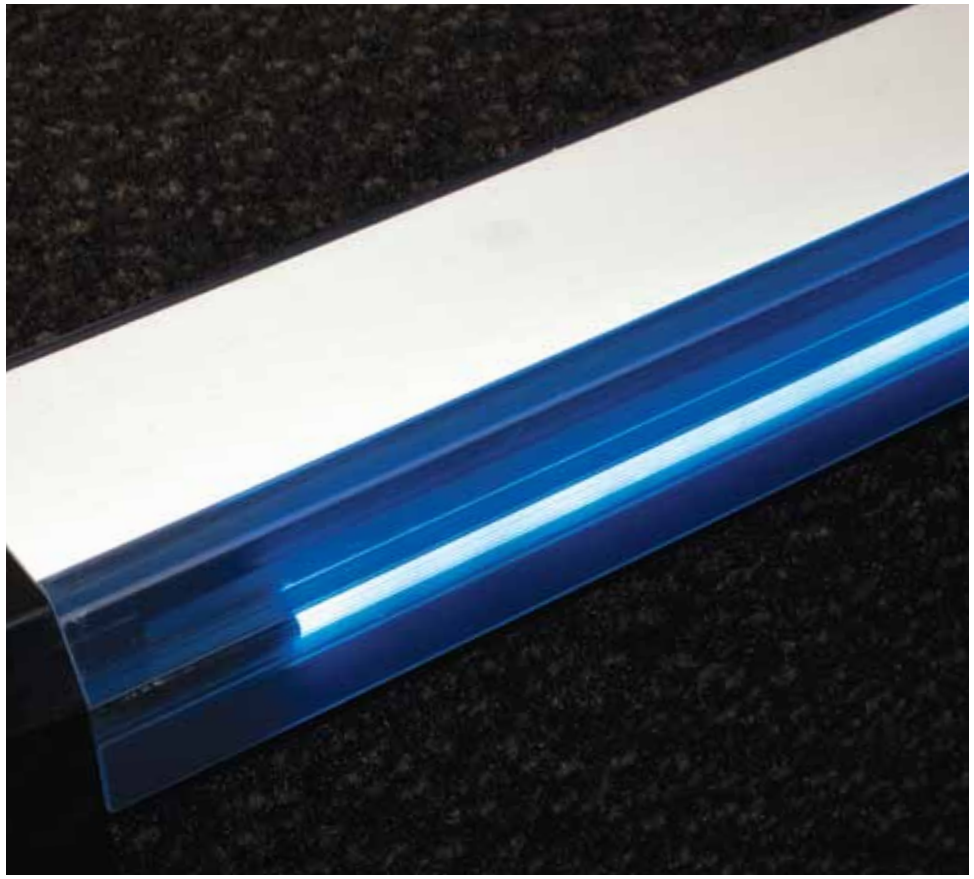
This profile also gives the option of multiple lighting effects, simply by rotating the position of the LR1238 tube.

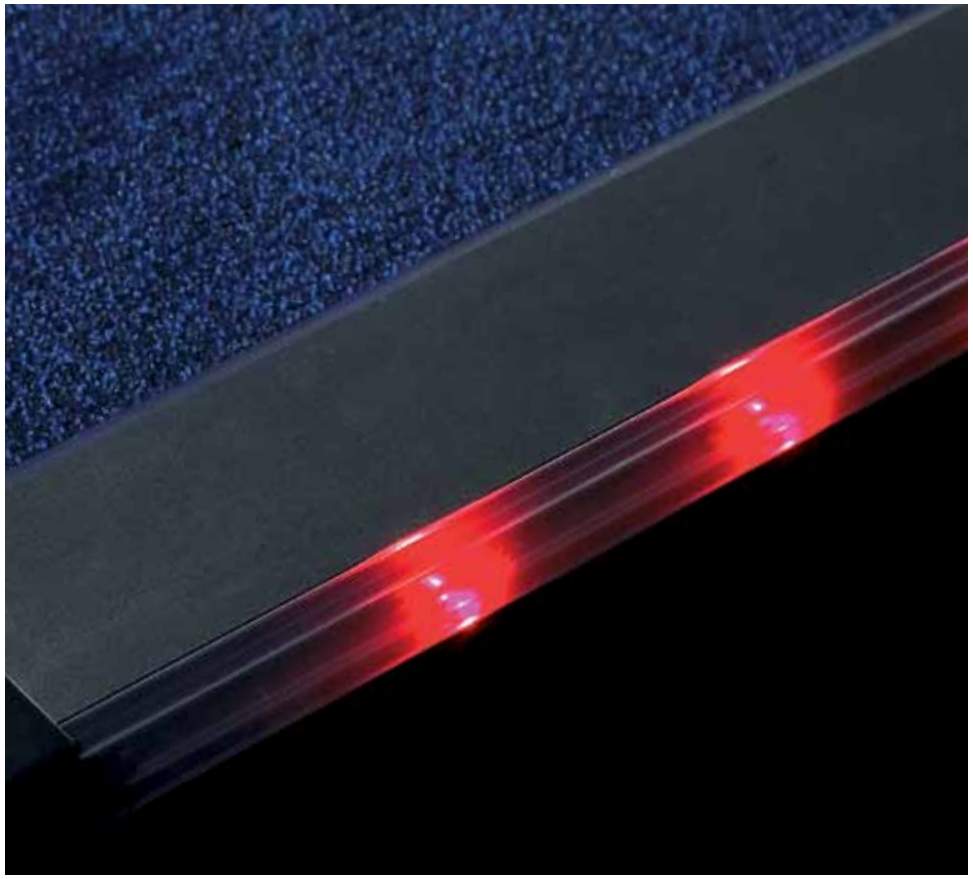




					CONTINUITY™	INTERLOK ADVANCE™
CODE / PROFILE	DESCRIPTION	DETAILS	LENGTH	INSERT AVAILABILITY	LED COLOUR AVAILABILITY	
RXT1218L 	Clear/Black PVC-u Channel Up & Angled Illumination	For use with carpet floor finishes	2.44m 2.75m 3.2m	Interior	Blue Red Green White	Blue Red Green White Amber

For insert selection see pages 24-25. Illustrations are 50% size in mm. Products subject to minor design alterations without notice.





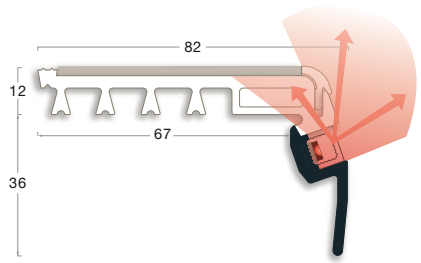
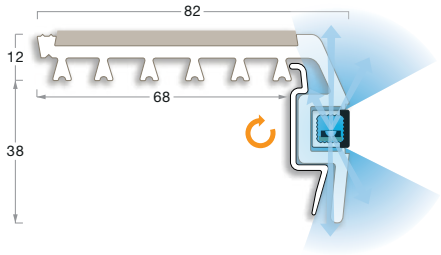
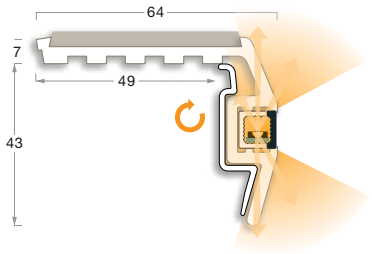
CONTINUITY™

LED	FIBRE OPTIC ROD	TUBES/COVERS	END CAP	BACKING PLATE
				n/a
LEDASSY	ACP6	LR1238	EC3218	

INTERLOK ADVANCE™

LED	CONNECTOR	TUBES/COVERS	END CAP	BACKING PLATE
				n/a
IAV/600/6	IAVC1	LR1238	EC3218	

For power supply units see page 41.

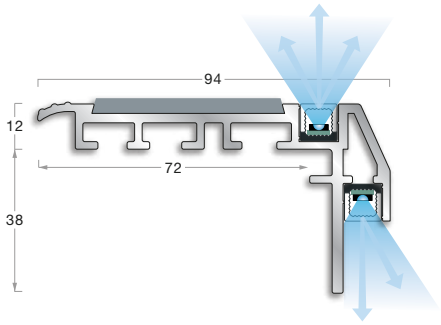
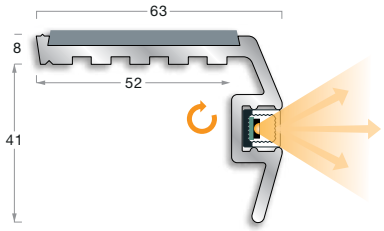
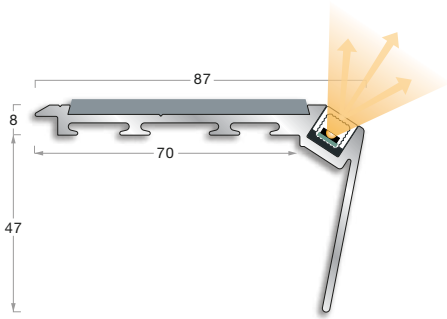
CODE / PROFILE	DESCRIPTION	DETAILS	LENGTH	INSERT AVAILABILITY	CONTINUITY™ LED COLOUR AVAILABILITY	INTERLOK ADVANCE™ LED COLOUR AVAILABILITY
RXT1218L NEW *See page 16* 	Clear/Black PVC-u Channel Up & Angled Illumination	For use with carpet floor finishes	2.44m 2.75m 3.2m	Interior	Blue Red Green White	Blue Red Green White Amber
RNT1218L 	Clear PVC-u Channel Illumination on front gives all round visibility	For use with carpet floor finishes	2.44m 2.75m 3.2m	Xtra-grip Xtra-grip Plus Interior	Blue Red Green White	Blue Red Green White Amber
Profile can be curved subject to approval of template						
RNT718L 	Clear PVC-u Channel Illumination on front gives all round visibility	For use with carpet floor finishes	2.44m 2.75m 3.2m	Xtra-grip Xtra-grip Plus Interior	Blue Red Green White	Blue Red Green White Amber

For insert selection see pages 24-25. Illustrations are 50% size in mm. Products subject to minor design alterations without notice.

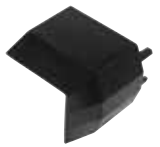
CONTINUITY™					INTERLOK ADVANCE™				
LED	FIBRE OPTIC ROD	TUBES/COVERS	END CAP	BACKING PLATE	LED	CONNECTOR	TUBES/COVERS	END CAP	BACKING PLATE
				n/a					n/a
LEDASSY	ACP6	LR1238	EC3218		IAV/600/6	IAVC1	LR1238	EC3218	
									
LEDASSY	ACP6	LR1238	EC2218	BP2	IAV/600/6	IAVC1	LR1238	EC2218	BP2
									
LEDASSY	ACP6	LR1238	ECT718L	BP3	IAV/600/6	IAVC1	LR1238	ECT718L	BP3

For power supply units see page 41.

Aluminium Stair Edging Profiles

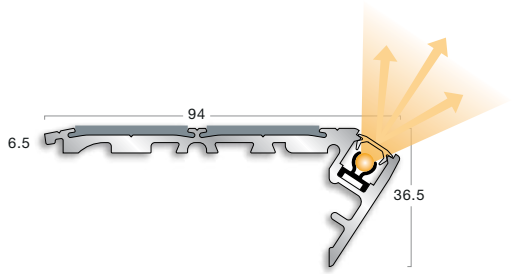
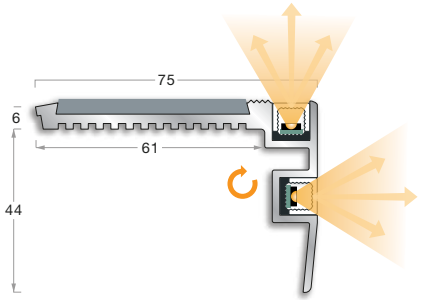
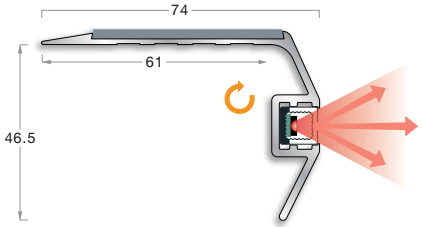
					CONTINUITY™	INTERLOK ADVANCE™
CODE / PROFILE	**DESCRIPTION**	**DETAILS**	**LENGTH**	**INSERT AVAILABILITY**	**LED COLOUR AVAILABILITY**	
ATD121L 	Aluminium Channel (can also be supplied anodised) Illumination on tread and riser	For use with carpet floor finishes	2.44m 2.75m 3.2m	Xtra-grip Xtra-grip Plus Interior	Blue Red Green White	Blue Red Green White Amber
AT718L  *Profile can be curved subject to approval of template*	Aluminium Channel (can also be supplied anodised) Illumination from front of profile	For use with carpet floor finishes	2.44m 2.75m 3.2m	Xtra-grip Xtra-grip Plus Interior	Blue Red Green White	Blue Red Green White Amber
ATNG71L 	Aluminium Channel (can also be supplied anodised) Angled illumination on tread/riser	For use with carpet floor finishes	2.44m 2.75m 3.2m	Xtra-grip Xtra-grip Plus Interior	Blue Red Green White	Blue Red Green White Amber

For insert selection see pages 24-25. Illustrations are 50% size in mm. Products subject to minor design alterations without notice.

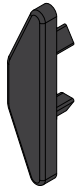
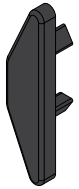
CONTINUITY™					INTERLOK ADVANCE™				
LED	FIBRE OPTIC ROD	TUBES/COVERS	END CAP	BACKING PLATE	LED	CONNECTOR	TUBES/COVERS	END CAP	BACKING PLATE
				n/a					n/a
LEDASSY	ACP6	LR1238	ECTD121L		IAV/600/6	IAVC1	LR1238	ECTD121L	
				n/a					n/a
LEDASSY	ACP6	LR1238	ECT718L		IAV/600/6	IAVC1	LR1238	ECT718L	
				n/a					n/a
LEDASSY	ACP6	LR1238	ECNG71L		IAV/600/6	IAVC1	LR1238	ECNG71L	

For power supply units see page 41.

Aluminium Stair Edging Profiles

CODE / PROFILE	DESCRIPTION	DETAILS	LENGTH	INSERT AVAILABILITY	CONTINUITY™ LED COLOUR AVAILABILITY	INTERLOK ADVANCE™ LED COLOUR AVAILABILITY
ELAF230 	Aluminium Channel Angled Illumination on tread and riser Available in black anodised/black powder coated on request	For use with carpet floor finishes	2.44m 2.75m 3.2m	Interior (ELINS30 insert sold separately)	Blue Red Green White	Blue Red Green White Amber
ATF71L 	Aluminium Channel (can also be supplied anodised) Illumination on tread and riser	For use with carpet floor finishes	2.44m 2.75m 3.2m	Xtra-grip Xtra-grip Plus Interior	Blue Red Green White	Blue Red Green White Amber
Profile can be curved subject to approval of template						
AS1106L 	Aluminium Channel (can also be supplied anodised) Illumination from front of profile	For use with vinyl/ hard floor finishes	2.44m 2.75m 3.2m	Xtra-grip Xtra-grip Plus Interior	Blue Red Green White	Blue Red Green White Amber

For insert selection see pages 24-25. Illustrations are 50% size in mm. Products subject to minor design alterations without notice.

CONTINUITY™					INTERLOK ADVANCE™				
LED	FIBRE OPTIC ROD	TUBES/COVERS	END CAP	CARRIER	LED	CONNECTOR	TUBES/COVERS	END CAP	BACKING PLATE
									
LEDSLEEVE	ACP6	IC10CL	ECELAF	CRH5	IAV/600/6	IAVC1	IC10CL	ECELAF	IS9
				n/a					n/a
LEDASSY	ACP6	LR1238	ECF71L		IAV/600/6	IAVC1	LR1238	ECF71L	
				n/a					n/a
LEDASSY	ACP6	LR1238	EC1106L		IAV/600/6	IAVC1	LR1238	EC1106L	

For power supply units see page 41.

Insert colour availability for stair edging profiles

Xtra-grip™ and Xtra-grip Plus™

▲ Carbon* ■ Raven
LRV: 5.01 NCS: 8502-B

▲ Deepsea ■ Navy
LRV: 5.94 NCS: 8010-R70B

▲ Truffle ■ Conker
LRV: 7.85 NCS: 8010-Y50R

▲ Rock* ■ Marl
LRV: 10.91 NCS: 7005-R50B

▲ Pebble* ■ Cliff
LRV: 27.61 NCS: 4500-N

▲ Pampas ■ Vine
LRV: 53.04 NCS: S2005-G

▲ Breeze ■ Meltwater
LRV: 51.13 NCS: S1515-R90B

▲ Vapour ■ Lunar
LRV: 39.74 NCS: 2502-B

▲ Oat ■ Bone
LRV: 50.66 NCS: 2005-Y30R

▲ Zest* ■ Sulphur
LRV: 51.11 NCS: 1070-Y

▲ Iceberg ■ Diamond
LRV: 81.58 NCS: 0500-N

Key

▲ Xtra-grip
■ Xtra-grip Plus

* ELINS30 colour availability

For samples

For enquiries in the UK & Eire
Tel: 01625 428922
For enquiries outside the UK & Eire contact Gradus International
Tel: +44 (0)1625 613780
Visit: www.gradusworld.com

Please note: Due to the limitations of the printing process, colours within this leaflet should not be relied upon for colour matching.
An accurate colour match can only be achieved by requesting the relevant product sample(s).

Interior Standard Finish

Jet*
LRV: 4.56 NCS: 8502-B

Ink
LRV: 4.96 NCS: 8010-R70B

Midnight
LRV: 6.56 NCS: 6030-R80B

Burgundy
LRV: 5.70 NCS: 6030-R10B

Evergreen
LRV: 6.69 NCS: 7020-B70G

Coffee*
LRV: 6.05 NCS: 8010-Y50R

Nutmeg
LRV: 8.15 NCS: 6020-Y80R

Ocean
LRV: 8.00 NCS: 6020-R90B

Lead*
LRV: 12.77 NCS: 7005-R50B

Steel*
LRV: 26.99 NCS: 4500-N

Glacier
LRV: 42.09 NCS: 2502-B

Canvas
LRV: 53.27 NCS: 2005-Y30R

Linen
LRV: 38.59 NCS: 3010-Y30R

Buttercup
LRV: 55.54 NCS: 1070-Y

Snowdrift*
LRV: 83.77 NCS: 0500-N

Cloud
LRV: 28.57 NCS: 4010-R70B

Poppy
LRV: 10.39 NCS: 2070-R

Duckegg[1]
LRV: 47.72 NCS: S2010-B10G

Clay[1]
LRV: 47.97 NCS: S2502-Y

Sky[1]
LRV: 52.63 NCS: S1515-R90B

Jade[1]
LRV: 53.98 NCS: S2005-G

[1] RXT1218L Profile only. * ELINS30 colour availability

Interior Grained Finish

Black
LRV: 6.47 NCS: 7502-B

Brown
LRV: 12.13 NCS: 6010-Y70R

Granite
LRV: 13.44 NCS: 6502-R

Dove
LRV: 23.40 NCS: 5000-N

Light Reflectance Value (LRV)

All colours have been measured for light reflectance/visual contrast (LRV using CIE Y value). For details on LRV's visit www.gradusworld.com or call technical support on 01625 428922

NCS Colour References

Gradus is a member of NCS (Natural Colour System) and utilises the NCS reference codes shown above each colour. NCS is a user friendly colour language and is the only colour system that describes colour exactly as we see it. NCS is used by professionals as a tool for precise colour communication, selection and specification. For further information visit the NCS website - www.ncscolour.co.uk 'See www.ncscolour.co.uk for NCS-standard samples'.

How to select the correct insert

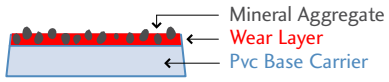
Gradus Inserts:

- Provide slip-resistance at the step edge to reduce the risk of slips, trips and falls on stairs
- Are designed and tested to ensure optimum performance throughout the life of the product
- Are measured for Light Reflectance Values (LRVs) to provide a visual contrast to ensure the step edge is clearly visible

Pendulum Test Value (PTV)	Slip Potential
0 - 24	High Slip Potential
25 - 35	Moderate Slip Potential
36+	Low Slip Potential

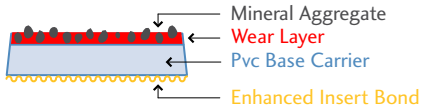
Wear Classification* - All Gradus inserts achieve wear classifications of: Group T - Class 34 - Commercial Very Heavy; Group T - Class 43 - Light Industrial Heavy.
* Interior (standard & grained) tested to BS EN 660-2:1999 and assessed against the requirements of BS EN 649:1997
Xtra-grip and Xtra-grip Plus tested to BS EN 13845:2005 - 50,000 cycles

Xtra-grip™



- Suitable for interior steps that may become wet
- Pvc insert incorporating a slip-resistant aggregate
- Low slip risk in both wet & dry conditions
- PTV rating: Dry - Low (PTV Av. 70) Wet - Low (PTV Av. 64)

Xtra-grip Plus™



- 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
- PTV rating: Dry - Low (PTV Av. 70) Wet - Low (PTV Av. 64)

Interior
(standard or grained)

- Suitable for interior dry conditions
- Pvc material with slip-resistant properties
- PTV rating: Dry - Low (PTV Av. 68)

Floor Trim Lighting Systems

A comprehensive range of PVC-u and aluminium aisle and floor trims that are designed for use as cable management systems to work with the stair edging illuminated profiles, or to illuminate floors, walkways, aisles and exit/entrance routes.

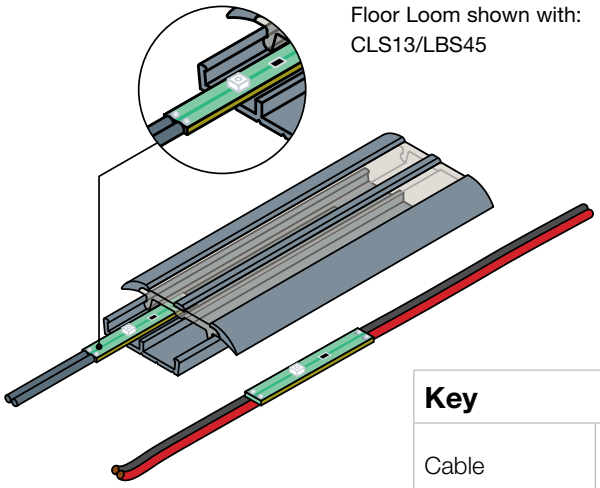
Aisle & Floor Trim Lighting

Description

Gradus offers a comprehensive range of PVC-u and aluminium aisle and floor trims that are designed for use as cable management systems to work with the stair edging illuminated profiles or to illuminate floors, walkways, aisles and exit/entrance routes.

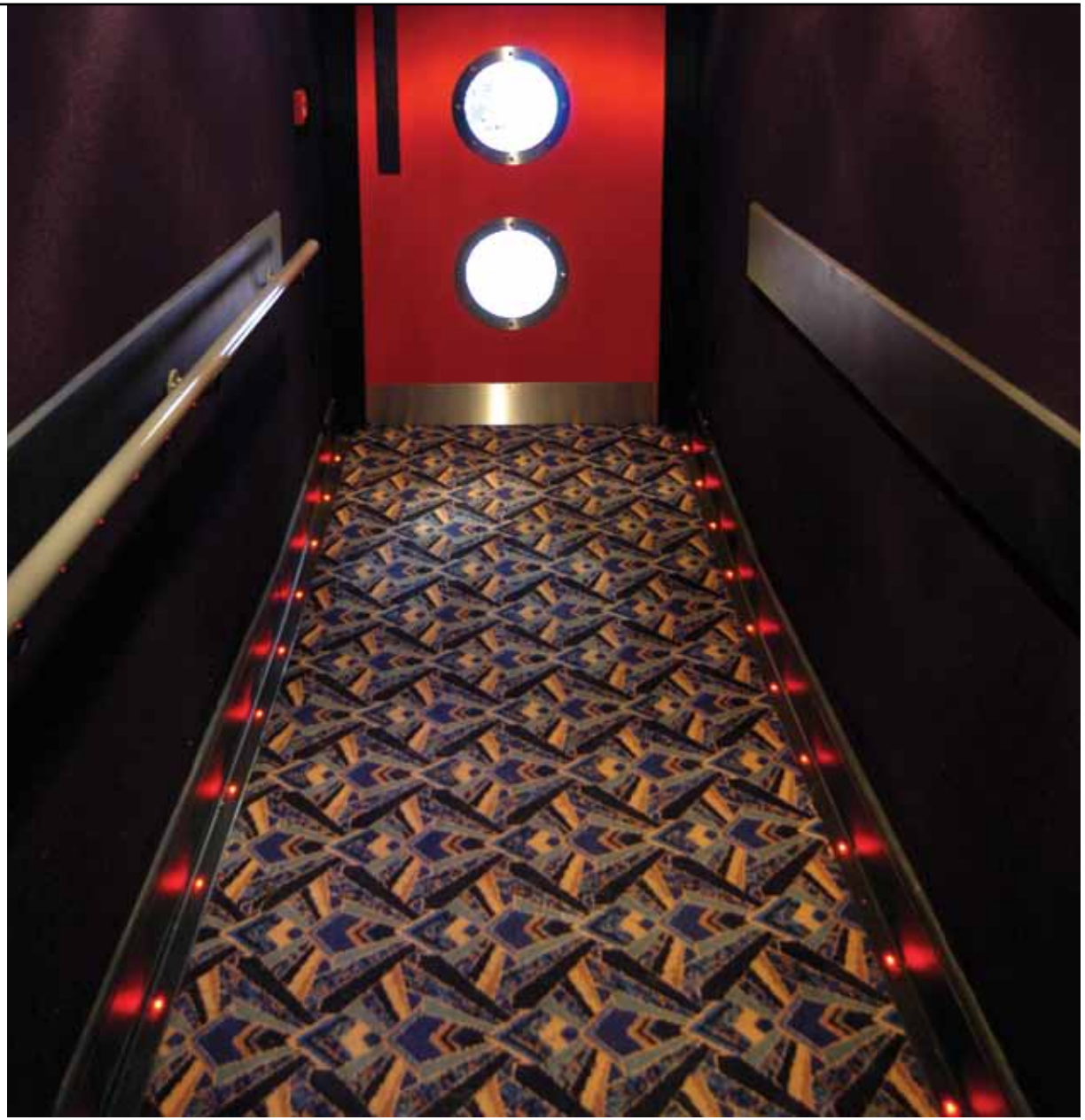
- LEDs are spaced at 300mm intervals
- Easy to install and can be cut to required length
- Can be supplied in 1 to 50 metre coils
- LED lifetime of up to 50,000 hours
- Power consumption of 0.9 watts per metre

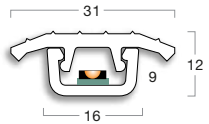
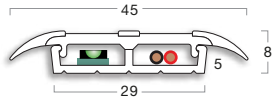
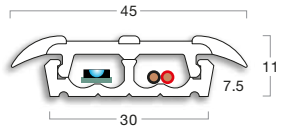
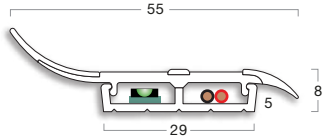
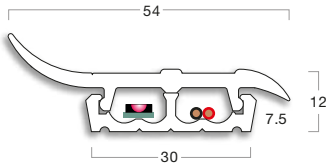
Typical Example



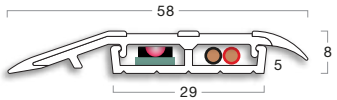
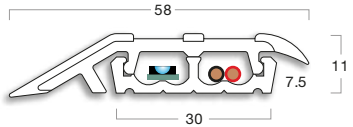
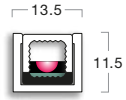
Floor Loom shown with:
CLS13/LBS45

Key	
Cable	
Lighting Loom	



					LIGHTING LOOM
CODE / PROFILE	DESCRIPTION	DETAILS	LENGTH	PROFILE COLOUR	LED COLOUR AVAILABILITY
CL05/LB10 	PVC-u floor trim	Carpet to Carpet	2.5m	Smoked/Black Clear Translucent	Blue Red Green White Amber
CLS13/LBS45 	PVC-u floor trim/cable management system	Carpet to Carpet	2.5m	Smoked/Black Clear Translucent	Blue Red Green White Amber
CLC13/TDB45 	PVC-u floor trim/cable management system	Carpet to Carpet	2.5m	Smoked/Black Clear Translucent	Blue Red Green White Amber
CLS16/LBS45 	PVC-u floor trim/cable management system	Carpet to Wall	2.5m	Smoked/Black Clear Translucent	Blue Red Green White Amber
CLC16/TDB45 	PVC-u floor trim/cable management system	Carpet to Wall	2.5m	Smoked/Black Clear Translucent	Blue Red Green White Amber

For power supply units see page 41. Illustrations are 70% size in mm. Products subject to minor design alterations without notice.
Key - see page 28 (Cable & Lighting Loom shown for illustrative purposes only)

CODE / PROFILE	DESCRIPTION	DETAILS	LENGTH	PROFILE COLOUR	LIGHTING LOOM LED COLOUR AVAILABILITY
CLS20/LBS45 	PVC-u floor trim/cable management system	Vinyl to Carpet	2.5m	Smoked/Black Clear Translucent	Blue Red Green White Amber
CLC20/TDB45 	PVC-u floor trim/cable management system	Vinyl to Carpet	2.5m	Smoked/Black Clear Translucent	Blue Red Green White Amber
DLA45 	Aluminium U section	Suitable for floor, wall or ceiling mounting	3.1m	Aluminium - Mill finish Can also be supplied anodised on request	Blue Red Green White Amber

For power supply units see page 41. Illustrations are 70% size in mm. Products subject to minor design alterations without notice.
Key - see page 28 (Cable & Lighting Loom shown for illustrative purposes only)

Lighting Systems

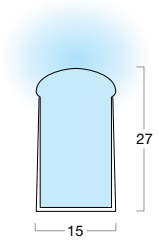
Systems that can be used to visually enhance any leisure application whilst providing guidance to the public & creating a safe environment. Bespoke products and adaptations of existing products can be produced to create specific light effects for customised applications.

Decorflex™

Description

Decorflex™ LED flexible lighting offers an excellent alternative to neon lighting for both interior and exterior applications.

- Extra low voltage alternative to neon lighting (24v DC)
- Low Power consumption – 5.25 -9.18 watts/metre dependant on colour
- Lifecycle – effective up to 50,000 hours
- Flexibility allows designers to create bespoke designs
- Easily shaped and installed on site – shock and vibration proof
- Flexible up to a minimum radius of 40mm
- Low heat output means it is safe in use

PROFILE	ENVIRONMENT	VOLTAGE	SIZE	ACCESSORIES	LED COLOUR AVAILABILITY
 Sleeved (Forward Beam)	Interior & Exterior	24v DC	Standard Coil 50m Cut sizes available on request	Mounting Profile, Mounting Clips, End Caps, Connector	Blue Red Green White Orange Yellow Warm White

Illustrations are 70% size in mm. Products subject to minor design alterations without notice.

MOUNTING PROFILE	MOUNTING CLIPS	END CAP	CONNECTOR
			
CH17C	**DFLX-M/CLIP**	**CDFLX EC**	**CDFLX INPUT**

For power supply units see page 41.

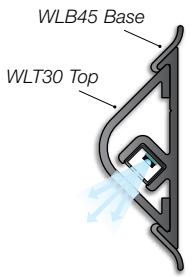
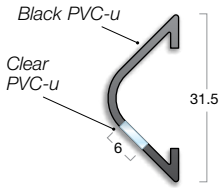
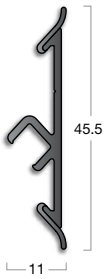
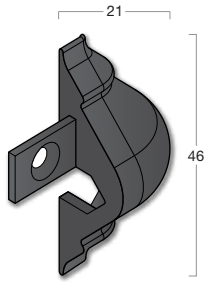
Wall Lighting 24v DC LED System

Description

Gradus LED wall lighting has been designed to provide soft illumination way finding for auditoria access during showings or performances without distracting from the primary function of the installation.

Specification

Environment	Interior
Description	PVC-u base PVC-u cover
Details	Incorporates a clear window for light to shine downwards
Length	2.5m
Profile Colour	Black
LED Colour	Green, Red, Blue, White, Amber
Accessories	End cap - ECWLB45
Lighting System	Interlok Advance™ 50mm spaced 24v DC

PROFILE	TOP	BASE	END CAP
			
WLT30	**WLT30 TOP**	**WLB45 BASE**	**ECWLB45**

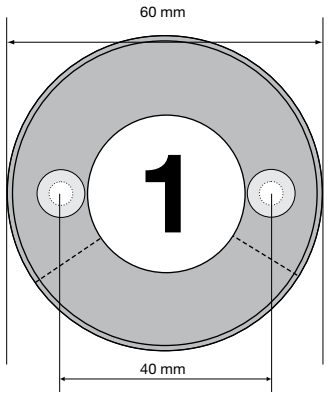
Illustrations are 70% size in mm. Products subject to minor design alterations without notice.

Seat Lighting / Seat Row Indicator

Description

Gradus seat row indicators are used to identify the location of seating rows, to provide illumination for guidance (e.g. by emergency exits) or to illuminate the floor for safe movement around auditoria when the main lighting is dimmed.

- The profiles are installed into seating at the end of rows and are ideal for use in auditoria
- Circular in design, the profile offers a twin lighting effect - row indication plus down-lighting
- Seat row indicators can incorporate alphabetical or numerical formats
- Can be used without numbers/letters to provide an alternative way of illuminating the steps below
- Low power consumption - 50 mA per unit - cost-effective to operate

PROFILE	SYSTEM	DESCRIPTION	DETAILS	DIMENSIONS	PROFILE COLOUR	LED COLOUR
	12v DC	Circular aluminium profile that offers a twin lighting effect - row indication plus down-lighting	Alphabetical or numerical format	60mm (diameter) x 20mm (depth)	Clear Anodised Aluminium Black Anodised Aluminium Gold Anodised Aluminium	Blue Red Green White

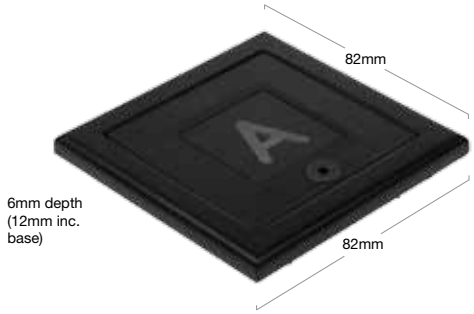
For power supply units see page 41. Illustrations are 70% size in mm. Products subject to minor design alterations without notice.

LED Step Row Indicator

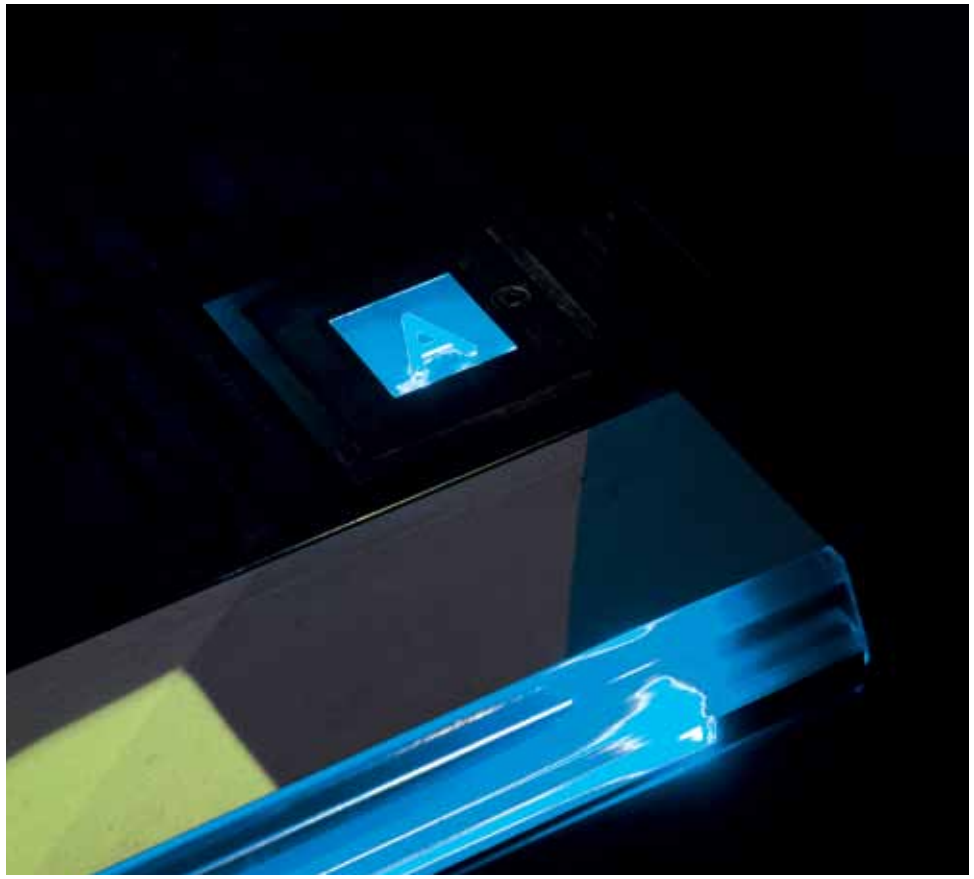
Description

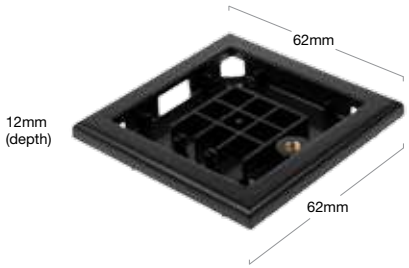
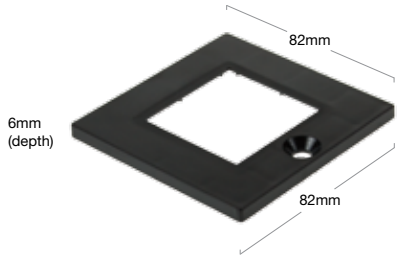
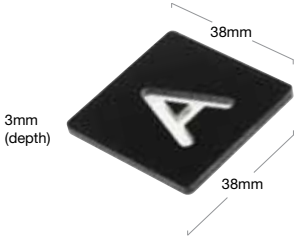
Gradus step row indicators are used to identify seating rows in auditoria, such as cinema, theatres and lecture theatres in darkened conditions.

- The step row indicator is supplied in three parts - base, frame with window and indicator tile
- The step row indicator features a 12mm base suitable for installing with carpets that have a compressed thickness of 12mm. It can be installed into the surrounding floorcoverings on either the step tread or the riser
- The profile can incorporate alphabetical or numerical formats, or can be produced in graphical format for directional signage or to denote particular areas eg. wheelchair access points
- Extra low voltage (12v DC) for safe installation and use
- Low power consumption - 25mA per indicator - so it is cost effective to operate

PROFILE	SYSTEM	DESCRIPTION	DETAILS	DIMENSIONS	PROFILE COLOUR	LED COLOUR
	12v DC	System supplied in 3 parts: PVC-u frame PVC-u base Tile Gauge: 12mm	Alphabetical, numerical or graphical format	82mm (width) x 82mm (height) x 12mm (depth)	Black	Blue Red Green White Amber Yellow *(subject to minimum order quantity)*

Images are not to scale in mm. Products subject to minor design alterations without notice.



LED	BASE	FRAME	TILE
			
IAV/3			

For power supply units see page 41.

Decortape

NEW

Description

Decortape is a flexible LED lighting tape that allows bespoke design lighting in most commercial applications.

- Adhesive taped back means Decortape can be mounted to any surface
- Available with splash proof coating, making this product suitable for use in wet areas
- Flexibility allows designers to create bespoke designs
- Provides a crisp light instantly on start-up

PROFILE	ENVIRONMENT	VOLTAGE	SIZE	ACCESSORIES	LED COLOUR AVAILABILITY
	Interior	12v DC or 24v DC	10mm (width) x 5m (length)	LED Driver	Blue Red Green White Warm White

For power supply units see page 41.

Power Supply Units

A range of direct current power supply units to provide a safe and efficient power source to low level lighting systems.

Power Supply Units

NEW

Description

Gradus power supply units are designed to transform power from the mains to a 12v/24v DC system, thereby providing a safe and efficient power source to a low level lighting system.

Safety

- Interlok Advance and Continuity LEDs operate on extra low voltages and, therefore, when used correctly, do not represent a safety hazard
- Always ensure that Gradus systems are connected to a Gradus power source or other approved unit. They must never under any circumstance be connected directly to the mains supply

Visit **www.gradusworld.com** for power supply diagram.

PSU Loadings

Code	Input Voltage	Output Voltage	Current	IAV Strips 0.15A / metre	Continuity LED 0.025A / unit	Aisle Loom 0.075A / metre	Row Indicator 0.025A / metre	Seat Light 0.05A / metre	Decorflex 0.33A / metre
PSU30/12v	200-240v AC	12v DC	2.5A	9.6m / 16 units	100 units	33m	100 units	50 units	n/a
PSU30/24v	200-240v AC	24v DC	1.25A	n/a	n/a	n/a	n/a	n/a	3.5m
PSU75/12v	200-240v AC	12v DC	6.25A	24m / 40 units	250 units	80M	250 units	175 units	n/a
PSU75/24v	200-240v AC	24v DC	3.125A	n/a	n/a	n/a	n/a	n/a	9m
PSU150/12v	90-295v AC	12v DC	12.5A	48m / 80 units	500 units	160m	500 units	250 units	n/a
PSU150/24v	90-295v AC	24v DC	6.25A	n/a	n/a	n/a	n/a	n/a	18m
PSU240/12v	90-264v AC	12v DC	20A	78m / 130 units	800 units	260m	800 units	400 units	n/a
PSU240/24v	90-264v AC	24v DC	10A	n/a	n/a	n/a	n/a	n/a	30m
PSU320/12v	90-305v AC	12v DC	26.6A	105m / 175 units	1060 units	350m	1060 units	530 units	n/a
PSU320/24v	90-305v AC	24v DC	13.3A	n/a	n/a	n/a	n/a	n/a	40m
PSU/DIMMER	12v /24v DC	12v / 24v DC	10A	Use with loadings of 10A or below, in conjunction with a 1-10v dimming controller and PSU					

Where there is a mixed load the total current must be found and the correct power supply used, e.g; 20M of IAV strips, 50M of aisle loom and 60 row indicators = (34 * 0.15 for 20M of IAV strips you would need 34 units) + (50 * 0.075 for the aisle loom) + (60 * 0.025 for the row indicators) = 5.1 + 3.75 + 1.5 = 10.35A, therefore the PSU150/12v would be a suitable power supply. **For LED strips the maximum single continuous run is 10M. For Aisle loom the maximum single continuous run is 20M. For Continuity lighting 10M is the maximum single continuous run.** Dimming LEDs due to volt drop can be compensated for by wiring the circuit in a ring, or splitting the load over 2 circuits.

Technical Services / Specification Guidelines

This section contains details on the Technical Services offered by Gradus and information on the most relevant Building Regulations and British Standards and how they impact upon Gradus LED lighting specification.

Technical Services

- Gradus offers a complete supply and fit package, ensuring a convenient and reliable service throughout the specification, survey and installation process.
- Specially trained specification consultants can provide face to face advice when specifying lighting, ensuring that the products selected are matched to the specific requirements of the environment.
- A complete estimating service is available on a supply only basis or for both supply and installation. Gradus also have on-line project collaboration capabilities.
- Site surveys are carried out and Gradus liaises with other trades to ensure complete peace of mind for the customer.
- Gradus Contracts manages the entire process to tailor the order to specific customer requirements.
- Trained and experienced technicians carry out the installations in line with Gradus quality system, in accordance with current standards and guidance stated in B8300:2009+A1:2010.
- To take advantage of the supply and fit service, contact Gradus' specification consultants who will undertake an evaluation of the requirements from which a detailed quote can be prepared. Details of specification consultants are available from Gradus Technical Support on +44 (0) 1625 428922.

Applicable to UK & Eire only.

Specification Guidelines

The Building Regulations and British Standards specifying the right Gradus product

The Building Regulations and British Standards are designed to ensure the optimum specification of products through a combination of legislative requirements and guidance. The following extracts have been taken from The Building Regulations 2000 and British Standard BS 8300:2009+A1:2010 and show how Gradus products can be used to help satisfy these requirements, and help achieve an inclusive environment in line with the Equality Act 2010. For further details on this or any other aspect of The Building Regulations and British Standards contact Gradus Technical Support on 01625 428922.

Extracts shown below represent examples of good practice.

BS 8300:2009+A1:2010

Design of buildings and their approaches to meet the needs of disabled people. Code of practice.

This standard provides guidance or good practice in the design of domestic and non-domestic buildings and their approaches so that they are convenient to use by disabled people. Gradus advice and recommendations are shown in blue text.

Guidance on Stair Edgings

5.9.5 Identification and slip resistance of nosings

Each step nosing should incorporate a permanently contrasting continuous material for the full width of the stair on both the tread and the riser to help blind and partially sighted people appreciate the extent of the stair and identify individual treads [1]. The material should be 50 mm to 65 mm on the tread and 30mm to 55mm on the riser, and should contrast visually with the remainder of the tread and riser [2].

NOTE 1 A nosing that wraps around the riser might assist blind or partially sighted people [3].

NOTE 2 A proprietary nosing can provide a durable solution that satisfies both visual contrast and slip resistance criteria (see BRE IP 15/03 [13]) [3].

The whole tread or the nosing should incorporate slip-resistant material, starting as close as practicable to the front edge of the nosing and extending the full width of the tread [3].

NOTE 3 Guidance on slip resistance of surfaces is given in Annex E.

[1] All Gradus stair edging insert colours have been measured to provide Light Reflectance Values (LRVs)* in order to provide the specifier with information to ensure that suitable contrast is achieved with the surrounding stair material.

* These values have been determined using the CIE Y value, in accordance with BS 8493:2008+A1:2010. Details of how LRVs can be used to assess visual contrast and can be found in Annex B of BS 8300:2009+A1:2010.

[2] The profile dimensions stated are guidance only and other factors should be taken into consideration when specifying stair edgings such as step dimension and type and frequency of traffic.

[3] The RXT1218L stair edging profile features a slip-resistant pvc insert that extends around the leading edge of the profile to ensure that foot contact is always made with the slip-resistant element of the stair edging, providing the ideal solution for reducing the risk of slips, trips and falls on stairs in line with BRE.

5.9.8 Artificial lighting on a stepped access route

Each flight and landing of a stepped access route should be well illuminated, providing a clear distinction between each step and riser. The illuminance at tread level should be at least 100 lux.

Lighting that will cause glare (such as poorly located wall lights, spotlights, floodlights or low-level light sources) should be avoided.

Gradus provides a range of step and aisle lighting systems that in dark conditions, where light levels are below 100 lux on the step, will illuminate the edge of the step and provide a means of identifying the changes in level.

8 Vertical circulation
8.1 Internal steps and stairs
8.1.5 Surface finishes

The surface materials used for internal steps and stairs should be chosen to be easy to maintain and as slip-resistant as possible, especially if surfaces are likely to become wet due to location or use, or if spillage occurs.

NOTE Advice and further references on slip resistance of surfaces is given in Annex E.

A choice of slip-resistant insert materials is available for all Gradus illuminated stair edgings. Xtra-grip and Xtra-grip Plus inserts have been specifically designed to reduce the risk of slip in internal wet areas or where spillages are likely to occur.

Annex E Slip potential characteristics of treads, ramp surfaces and floor finishes

E.2 Slip resistance

The following indices are used to indicate the slipperiness of surfaces:

a) pendulum test values (PTVs) obtained using a pendulum tester in line with BS 7976-2;
b) surface micro-roughness (Rz) measurements using a stylus instrument in accordance with BS 1134-1.

E.5 Step nosings

Where slip resistance is required for nosings and treads, the slip resistance needs to be the equivalent to that expected for level surfaces. A PTV greater than 36 is considered to be suitable, as pushing and turning are unlikely on stairs. On existing nosings, the slip resistance of step nosings are generally expressed by their Rz roughness value as PTV is difficult to measure. In such cases a roughness Rz value of 20 µm is recommended.

All Gradus stair edging inserts are independently tested for slip-resistance by the Health & Safety Laboratory using the pendulum test – all inserts have a low slip potential (inserts measured in dry conditions - PTV of between 68 and 70; inserts measured in wet conditions – PTV of 64). All inserts are also tested for wear, surface roughness, chemical resistance and bacterial/fungal resistance.

The Building Regulations, British Standards and Cinema Exhibitors Association specifying the right Gradus product

The Building Regulations 2000 - Approved Document M

The Building Regulations and British Standards are designed to ensure the optimum specification of products through a combination of legislative requirements and guidance. The following extracts have been taken from The Building Regulations 2000 and British Standard BS8300:2009+A1:2010 and show how Gradus products can be used to help satisfy these requirements, and help achieve an inclusive environment in line with the Equality Act 2010. For further details on this or any other aspect of The Building Regulations and British Standards contact Gradus Technical Services on 01625 428922.

Approved documents are intended to provide guidance and much of the guidance in Approved Document M is based on BS8300:2009+A1:2010. The main points relating to stair and stepped access in Approved Document M are shown below, with supporting recommendations by Gradus shown in blue text.

Stepped Access

1.27 People with impaired sight risk tripping or losing their balance if there is no warning that steps provide a change in level.
Use of a stair edging with LED lighting will make the steps highly visible when the ambient light levels are reduced.

1.29 Materials for treads should not present a slip hazard when the surface is wet.
Gradus illuminated stair edgings are available with a range of slip-resistant inserts for interior use, both in dry conditions and where there is a risk of the steps becoming wet.

1.30 People should easily be able to appreciate where to place their feet by highlighting nosings and avoiding open risers.
Use of a stair edging that contrasts with the surrounding tread/riser materials will help to clearly define the step edge in lit conditions. LED lighting will highlight the edge of the step when the general lighting is dimmed or off.

If light levels in an area are low, people entering the area from a well lit area will find it very difficult to see steps that are not fitted with step lighting.

Stair edging inserts should vary by 30 points in Light Reflectance Value (LRV) from the tread and riser materials, but less light will be reflected in low ambient light conditions, therefore the use of illuminated stair edgings will ensure the step remains visible when overhead lighting is dimmed or off.

The colour, light and contrast manual

Keith Bright and Geoffrey Cook

Powered way-guidance systems include electroluminescent strips and tracks formed using miniature incandescent light-sources or LED's. Studies of powered way-guidance systems have shown that although they do not provide high illuminance in themselves, the contrast they provide with the surrounding area, and the fact the tend to delineate a route to be taken rather than a general area, mean they are generally preferred by all users, including those with poor vision. They also enhance the speed at which people escape from a space (Wright et al., 2001a).

There is also evidence to suggest that low-mounted way-guidance systems are often more effective than overhead emergency lighting in situations where smoke encroaches into the escape route (Cook et al.,1999b).

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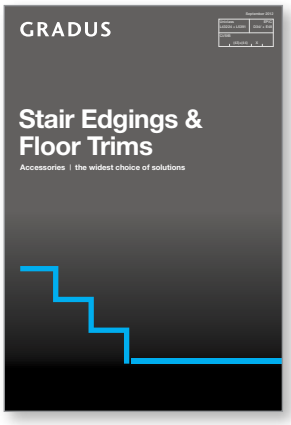
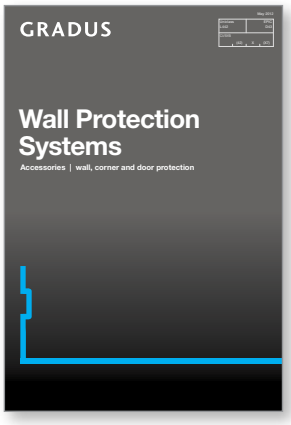
Other Gradus Product Ranges:

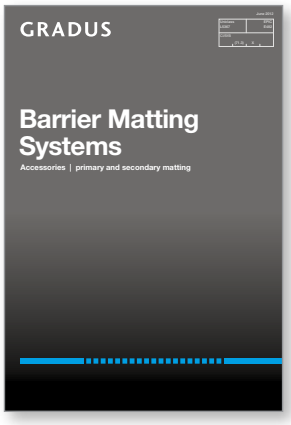
Stair Edgings & Floor Trims



Wall Protection Systems



Barrier Matting Systems



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