

**Underscore InOut** Inspiration through  
integration even in extreme conditions





# Light First. Made in Italy.

## It's in the process

Underscore InOut was born out of a specific requirement: to provide an extremely reliable straight or curved line of light for outdoor applications, even at extreme temperatures. The material selection was the beginning of the project.

“Often the most innovative technological solutions are the result of empirical observation. Single chip LEDs, those small light emitters about 3/4 inches (19mm) square, are protected from humidity, pressure, UV rays or certain radiations of the spectrum at around 450 nanometres by a special material. If a LED, which is a light source, uses this material to preserve its characteristics, using the same material in a LED product is the next logical step in maintaining the same reliability of the source outdoors. This was the starting point of our research”.

iGuzzini Innovation Lab

The result of our research and laboratory tests is a high-performance polymer. Our structural solutions have transformed the material into a finished product: the innovative Underscore InOut, designed for long-term integration in architecture. Reliability starts in-house: we have invested in a new industrial process to produce Underscore InOut.

This ensures that we have complete control, from design to production.

Underscore InOut: designed and produced in Recanati, Italy.

[iguzzini.com/lightfirst](http://iguzzini.com/lightfirst)



A hand is shown holding a curved, illuminated LED strip against a white background. The strip is glowing with a warm, orange light. The hand is positioned at the top right of the frame, with fingers gripping the strip. The strip curves downwards and to the left. The background is a plain, light-colored surface.

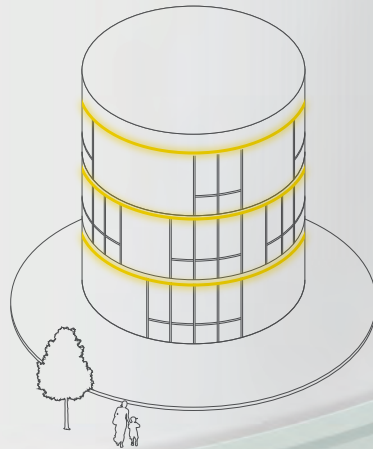
## Underscore InOut

Inspiration through integration,  
even in extreme conditions.

Underscore is a tool for creativity with light. Underscore InOut extends the brilliance of Underscore to exteriors, guaranteeing maximum reliability, even in extreme conditions. Light gives architecture a special rhythm, turning buildings into living organisms in a pulsating urban scene. Underscore InOut is a solution that liberates light and turns it into an artist's brushstroke that outlines, highlights and even colours outdoor architecture with a palette of RGB tones. Facades of any size or shape become exquisite canvases, and special details and features communicate with light. Underscore InOut has been patented to guarantee its correct operation even at extreme temperatures.

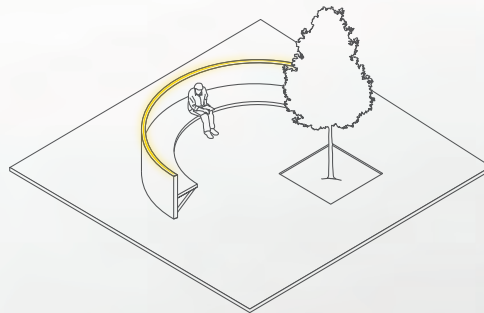
The device's high-performance polymer material is the result of intense laboratory research and testing, and is extremely resistant to both thermal stress and external agents, such as UV rays. This guarantees constant long-term LED performance in terms of both efficiency and colour temperature. Absolute protection is guaranteed against the temporary submersion of the IP68 rating product and connectors, which are also highly reliable in the event of fire. Underscore InOut is a long-lasting, graphic stroke of light.

### Top Bend



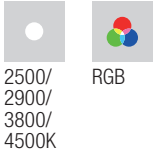
### Side Bend

straight and curved lines  
on flat surfaces with the  
SIDE BEND version  
(3/8 - 5/8 inches  
- 10mm - 16mm)

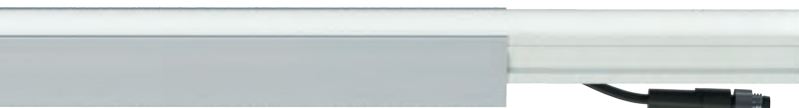


# Overview

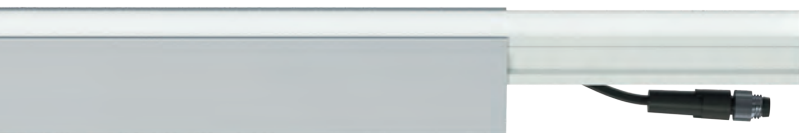
## Top Bend



With mounting clip  
Curvature radius:  
10 inches (25cm)

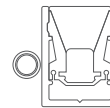


With low profile mounting extrusion



With high profile mounting extrusion

## Top Bend 16



Underscore InOut includes a Top Bend version, with a 5/8 inches (16mm) wide emission surface and a Side Bend versions, with 2 widths: 3/8 and 5/8 inches (10 and 16mm). The long lasting installation is rendered even more secure with two fixing supports: the aluminum profile, used to accompany the straight lines, or the aluminum or stainless steel clips used to secure the product by following curved shapes.

The construction of Underscore InOut places the output cable at the rear or side, in order to achieve a seamless continuous line of light between the profiles. This is why there are two different heights of the aluminum profiles, respectively high profile (rear cable) and low profile (side cable). The minimum curvature radiuses vary based on the different versions.

## Underscore InOut

### Side Bend



2500/  
2900/  
3800/  
4600K

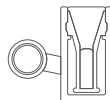


RGB



Turntable  
White

#### Side Bend 10

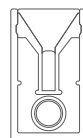
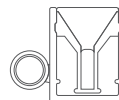


Curvature radius with clip:  
5-7/8 inches (15cm)

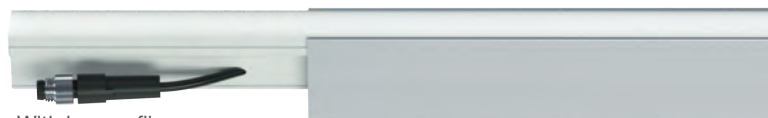


With low profile

#### Side Bend 16



With clip  
Curvature radius: 5-7/8 inches (15cm)



With low profile



With low profile

- Dimensions from 10 inches to 23' (254mm - 7004mm). 21 possible combinations
- Extrusion (straight lines) or clip (curved lines) installation
- CRI 80
- Real Colour Temperature 2500K; 2900K; 3800K; 4500K

- LM-70 :>50000h at Ta 77°F / LM-79
- LM-80 Tested
- IP68
- DMX interface for RGB
- Average figures 290 lm/m, 8.5W/m (2.58W/ft and 90lm/ft)

Profile Lengths:

#### High extrusion

L= 3'-3" / 6'-7" (1000mm / 2000mm)

#### Low extrusion

L= 10" / 1'-8" / 3'-3" / 6'-7"  
(250mm / 500mm / 1000mm / 2000mm)

#### Intermediate low extrusion

L= 3'-3" / 5'-10" / 6'-7"  
(998mm / 1787mm / 1997mm)

#### Caps with slot for side exit of the connectors

L= 4" (104mm)

**Underscore InOut**  
Main Features



Leifur Eiriksson International Airport  
Reykjavik, Iceland



# Reliability.

## High performance even in extreme conditions.

There are no application limits to Underscore InOut. The quality of the high-performance polymer maintains its flexibility characteristics even at -22°F (-30°). A comparative test in a climatic chamber has revealed that other products, which use different materials, such as PVC, stiffen at 32°F (0°C), limiting their installation at these temperatures. Underscore InOut can meet the most demanding installation requirements, from -22°F to 113°F (-30°C to +45°C).

The product remains operational even if temporarily submerged. The fitting and connectors both have the IP68 rating for a safe and long lasting installation (secure block system – page 15).

### Flexibility test -22°F (-30°C)

Underscore InOut maintains its flexibility even after being subjected to a temperature of -22°F (-30°C).



**-22°F**  
**(-30°C)**



**113°F**  
**(45°C)**

### Performance levels you can trust even at extreme temperatures

Climate chamber tests (conducted in an IMQ/UL/CQCC certified laboratory) show that Underscore InOut operates even at extreme temperatures, from -22°F to 113°F (-30°C to +45°C) with no thermal shrinkage or expansion when installed with either a clip or profile. It also maintains maximum flexibility even at -22°F (-30°C).

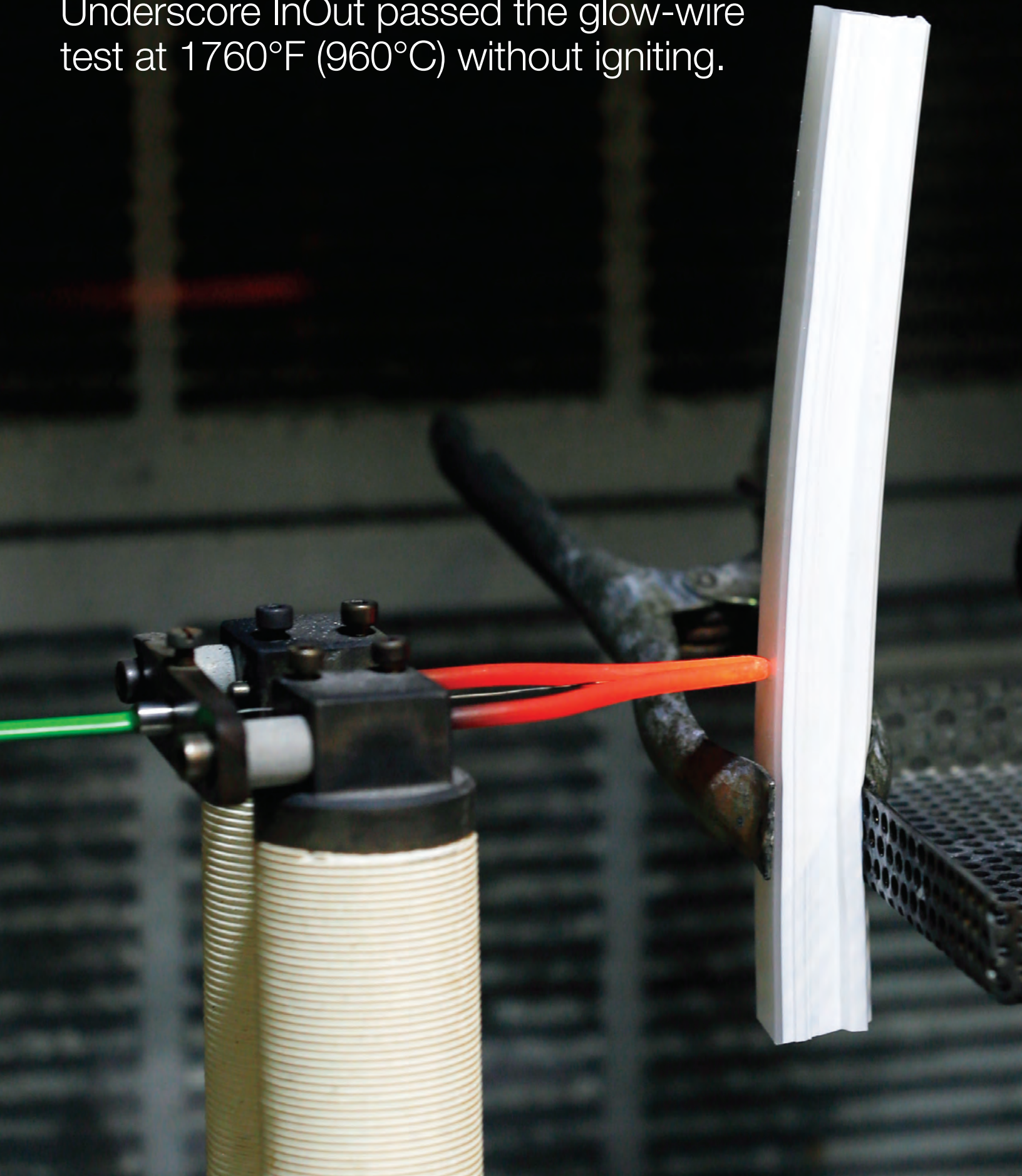
### IP68

### Reliable performance even if submerged

IP68 protection on the product and the continuous line system with IP68 connectors.

\*The product is not suitable for use in swimming pools and fountains.

Underscore InOut passed the glow-wire test at 1760°F (960°C) without igniting.



# Reliability.

## High resistance to flammability.

Safety is fundamental. Fittings are increasingly integrated with the architecture and become part of the fabric of the building itself. The propagation of flames inside and outside a building can occur through irradiation, convection, transport of material or direct contact. For us it's important to make sure that the materials perform very well from this point of view too. We ensure that the material used is flame resistant and that it does not produce spontaneous combustion in any possible

condition. We tested Underscore InOut alongside similar products on the market with the glow-wire\* test, in compliance with the strictest standards of countries that, such as France, set the flammability limit at 1562°F (850°C) (in certain environments) for buildings higher than 92ft (28m). Underscore InOut complied up to 1760°F (960°C), while other materials, such as polyurethane resins, ignited at 1562°F (850°C).

### Company A – Polyurethane

does not comply at 1562°F (850°C)



### iGuzzini – Underscore InOut

complies at 1760°F (960°C)



### Company B – Polyurethane

does not comply at 1562°F (850°C)

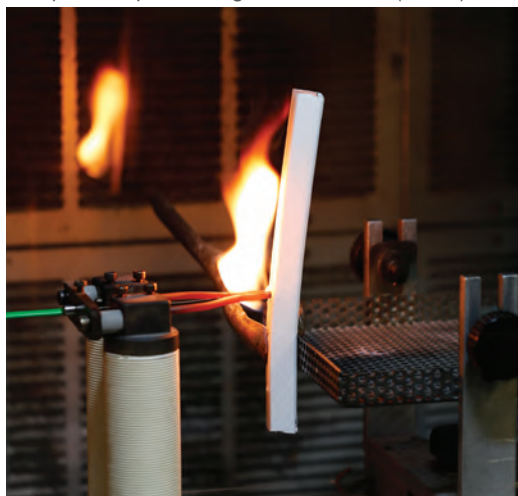


### Company C – PVC

does not comply at 1760°F (960°C)




Competitors' products ignited at 1562°F (850°C).



### \*Glow-wire test a 1760°F (960°C) Reliability in case of fire/ flammability

standard EN 60598-1:2015  
Underscore InOut is extremely reliable even in the event of fire, and complies with glow plug tests at 1760°F (960°C). Similar products in polyurethane or PVC, on the other hand, do not comply at 1562°F (850°C). Whereas all products comply with standard requirements at 1202°F (650°C).

A photograph of a person standing in a modern, curved architectural space. The space is characterized by smooth, flowing lines and a warm, reddish-brown color palette. The lighting is soft and directional, creating a sense of depth and highlighting the curves of the walls and ceiling. The person is silhouetted against the light, standing on a light-colored floor with circular patterns. The overall atmosphere is one of sophisticated design and architectural elegance.

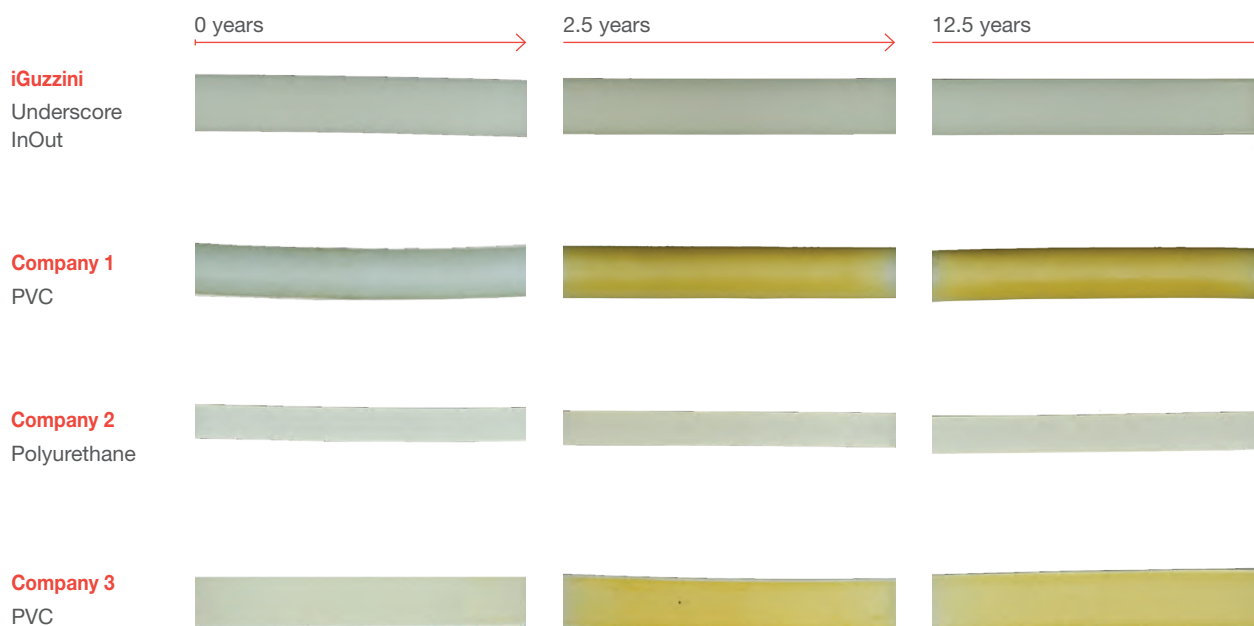
Underscore InOut ensures long lasting finish,  
colour temperature and efficiency.

## Reliability.

No yellowing, no colour-temperature shift, no efficiency drops.

Underscore InOut is a fitting designed to live outdoors. The resistance to atmospheric agents is therefore fundamental to maintain the aesthetic qualities and functionality of the product. A third party certifying body subjected our fitting, along with other similar products

made of different materials, such as PVC or polyurethane, to the UV test\*. They exposed the products to sunlight and humidity. Underscore InOut, after 12 years, did not have any alterations to the finish and maintained the same colour temperature and flux.



### \* UV Test

Reliability of the material  
The European Quality Institute has tested Underscore InOut and other similar products constructed with other materials. After 2 years of exposure to sunlight the PVC yellowed. Our material, after 12 years, maintained the same finish, efficiency and colour temperature standard ISO 11507:2007



VERDE  
VERDE LED  
PROFESSIONAL LIGHTING SOLUTIONS

# Reliability.

## Long and safe life.

We have patented the splint system, which absorbs and contrasts the mechanical and thermal stresses, typical of fittings subject to bending, torsion and yield tensions or thermal expansion and contraction. Two lateral steel wires support the external body of the fitting, without affecting the electronic operation during installation and use.

The LED circuit is housed inside an air chamber, in the coextruded polymer. The LED strip is free to move

and is not affected by the external stresses, maintaining long lasting life and performance conditions. The strength and structural stratification and the quality of the LEDs selected, allow us to be sure of the life span data stated. This is a unique aspect of this type of fittings, which ensures safety and long-term planning of the final application.

High performance polymer with double white/opal finish

IP68 connector with secure block

Air chamber

**Splint System** – featuring a metal sheath to reduce mechanical stress  
**Stress resistance reliability**

LED circuit free and protected from thermal and mechanical stresses

Version	L70 B20 (ta25°)	L70 B20 (ta40°)	L80 B20 (ta25°)	L80 B20 (ta40°)
TOP White	> 100.000	> 100.000	> 50.000	> 50.000
SIDE White	49.000	32.500	32.000	25.000
TOP RGB**	60.000	43.000	45.000	32.000
SIDE RGB**	67.000	35.000	49.000	24.000

### L80 B20

#### LED Durability

Underscore InOut guarantees the declared life with B20: e.g. Underscore InOut White Top Bend has a life of 53000h L80B20 (ta 77°F - 25°C) and 47000h L80B20 (ta 4104°F - 40°C).

\*\* Value for the color with the lowest life, calculated with the individual RGBs on at the same time at maximum intensity. On request we can supply the values of the individual lives of each RGB color or the average value of the three.

## Underscore InOut

### Main Features

### RGB

#### Control systems

Underscore InOut can be controlled with a single DMX IP20 interface

26 ft (8 m)

3 ft (1 m)

13 ft (4 m)

26 ft (8 m)

40 ft (12 m)

52 ft (16 m)



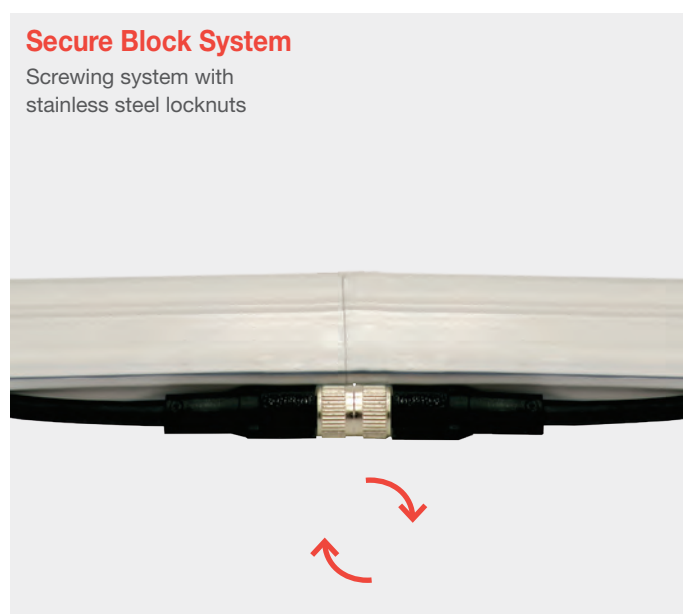
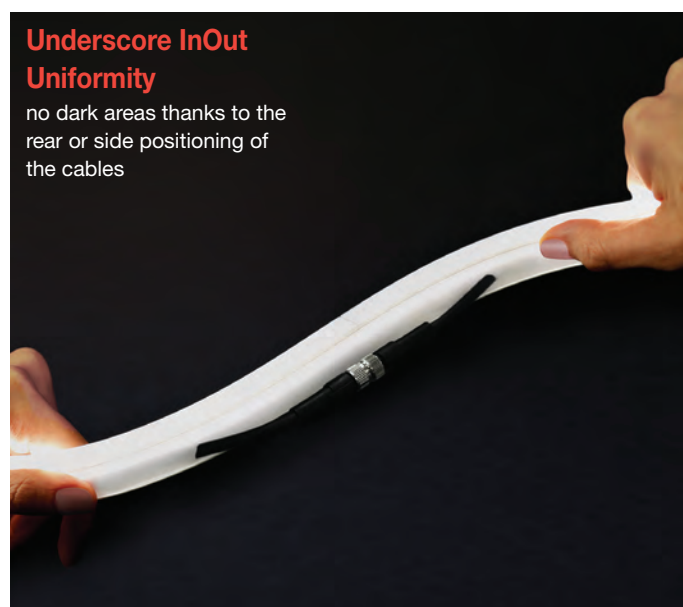


# Uniformity.

## Uniformity and light continuity.










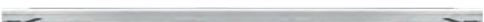


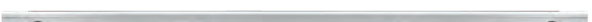
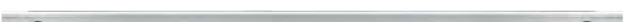




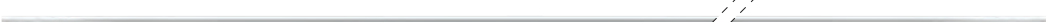


The co-extruded polymer consists of two parts: the external, thicker part and the completely transparent internal part. This limits the light diffusion in the lateral/rear part and directs it mainly towards the front, with its opaline diffusing finish, guaranteeing maximum uniformity along the whole emission surface. The use of an electronic device controls the light intensity, ensuring a constant flow along the whole line. This also ensures the best use of the LEDs and therefore a better and

long-lasting performance. The rear or side connection of the cables is independent of the joining of the profiles and guarantees an absence of dark areas even at a distance of one metre. The installation is finally protected and guaranteed over time by the secure-block system, which secures the connection with a screwing motion and stainless steel locknuts. Long lasting uniformity across all viewing scales.



# Infinite options.

21 available lengths let you create custom lines of light.

<b>10 in</b>	(254mm)	
<b>1 ft</b>	(304mm)	
<b>1'-2"</b>	(354mm)	
<b>1'-3"</b>	(404mm)	
<b>1'-5"</b>	(454mm)	
<b>1'-7"</b>	(504mm)	
<b>1'-8"</b>	(554mm)	
<b>2'</b>	(604mm)	
<b>2'-1"</b>	(654mm)	
<b>2'-3"</b>	(704mm)	
<b>2'-5"</b>	(754mm)	
<b>2'-6"</b>	(804mm)	
<b>2'-8"</b>	(854mm)	
<b>3'</b>	(904mm)	
<b>3'-1"</b>	(954mm)	
<b>3'-3"</b>	(1004mm)	
<b>6'-6"</b>	(2004mm)	
<b>9'-9"</b>	(3004mm)	
<b>13'-1"</b>	(4004mm)	
<b>16'-4"</b>	(5004mm)	
<b>23'</b>	(7004mm)	

## Maximum system flexibility

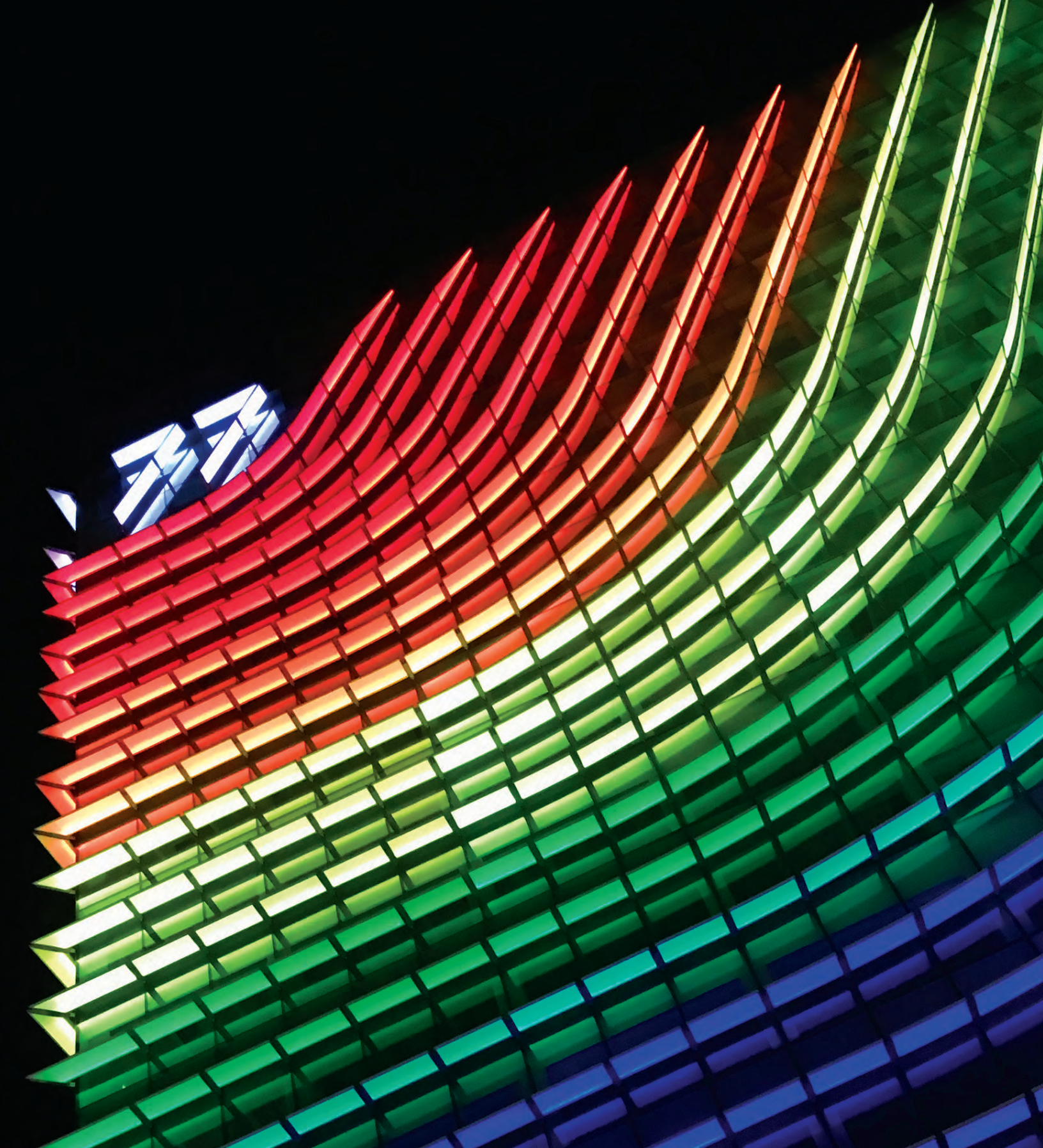
The polymer co-extrusion process allows us to obtain sections up to 23 inches (7 meters) long. This results in less connections and lower costs. There are 21 ready to use sizes and an infinite number of possible combinations.

## Underscore InOut Configurator

In just a few steps we help you create the set-up that best satisfies your project requirements, including defining the code list and correct installation procedure.



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