

LED LINEAR™

A Fagerhult Group Company



ULTIMA-S

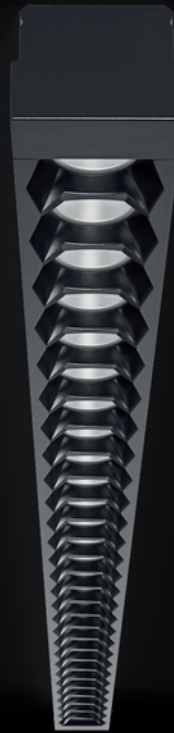
The perfect blend of
miniaturisation and functionality

ULTIMA-S

NANO optics asymmetrical



NANO optics symmetrical



Opal cover



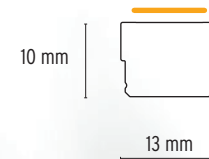
INVINCIBLE BY SKILL. INVISIBLE BY DESIGN.

THE PERFECT BLEND OF MINIATURISATION
AND FUNCTIONALITY.

ULTIMA represents a ground breaking step for lighting integration into architecture or furniture. Its miniaturised design and low glare makes it blend into any building structure and nearly disappear from sight. Thanks to numerous options it can be used in many different lighting applications and is even powerful enough to handle general lighting.

The ULTIMA-S is the most compact version of its family. Its cross section of 10 mm x 13 mm (H x W) makes it an ideal candidate for finesse integrations into architecture, furniture or other confined spaces.

Likewise the miniaturisation brings down its environmental footprint by using less raw materials - a 1 meter long luminaire with Nano optics weighs just 133 g. It outputs up to more than 20 Lumen per gram of luminaire weight (without PSU).



Scale: 1:1





KEY FEATURES

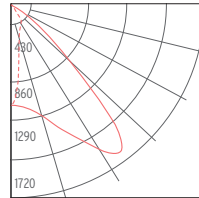
INVISIBLE BY DESIGN



10 x 13 mm

Smallest form factor

INVINCIBLE BY SKILL



7 Different optics
Up to 2330 lm/m
Spot (15°), Spot wide (25°),
Mid flood (40°), Wide flood (60°),
Opal, Batwing, Asymmetrical

HIGH VISUAL COMFORT



UGR < 13

Very low glare rate

RECYCLABLE



90% All of the
nonelectrical
components can be recycled

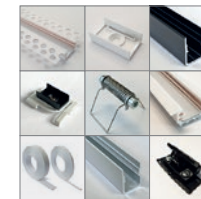
SUSTAINABLE & ENVIRONMENTALLY MINDFUL



133 g/m

Low raw material
consumption

VERSATILE MOUNTING



8 Mounting options
with accessories for
any installation situation

SUSTAINABILITY



SMALL WONDERS, BIG IMPACT

ULTIMA has been designed with
sustainability in mind.

OUR SUSTAINABLE STRATEGY

At LED Linear™, sustainability is our driving force. We are committed to minimizing our impact on the planet and to respond to our social responsibilities. Through our comprehensive strategy, we aim to minimize our ecological footprint, foster an inclusive workplace, and promote economic resilience. Explore our initiatives and join us in creating a brighter future.



WE CONTRIBUTE TO SUSTAINABLE DEVELOPMENT



The **UN Sustainable Development Goals (SDGs)** provide a comprehensive roadmap for sustainable development in social, economic, and environmental aspects. As a lighting manufacturer, we make a significant contribution to the development of sustainable cities and their infrastructure on one hand, while on the other, we continuously reduce our carbon footprint as a manufacturing company and responsibly manage resources.

We are committed to fulfilling the Paris Agreement and participating in efforts to limit global warming to well **below 2°C** above pre-industrial levels.

SMALL APPROACH, BIG AMBITION

We follow the triple bottom line principle as a guidance for our sustainability journey. Our strategic efforts aim to balance and further develop the three essential pillars toward a sustainable future: Social, Governance and Environment.

SOCIAL

Embracing diversity, providing a healthy and safe environment for our employees and external partners, living and nurturing our values.

GOVERNANCE

Ensuring ethical business and relationship, enforcing a zero corruption policy. The Fagerhult Group code conduct pave the way of our business and operations.

ENVIRONMENT

Minimizing the ecological impact of our operations as well as our lighting solutions throughout the entire life cycle: cradle to cradle / grave.

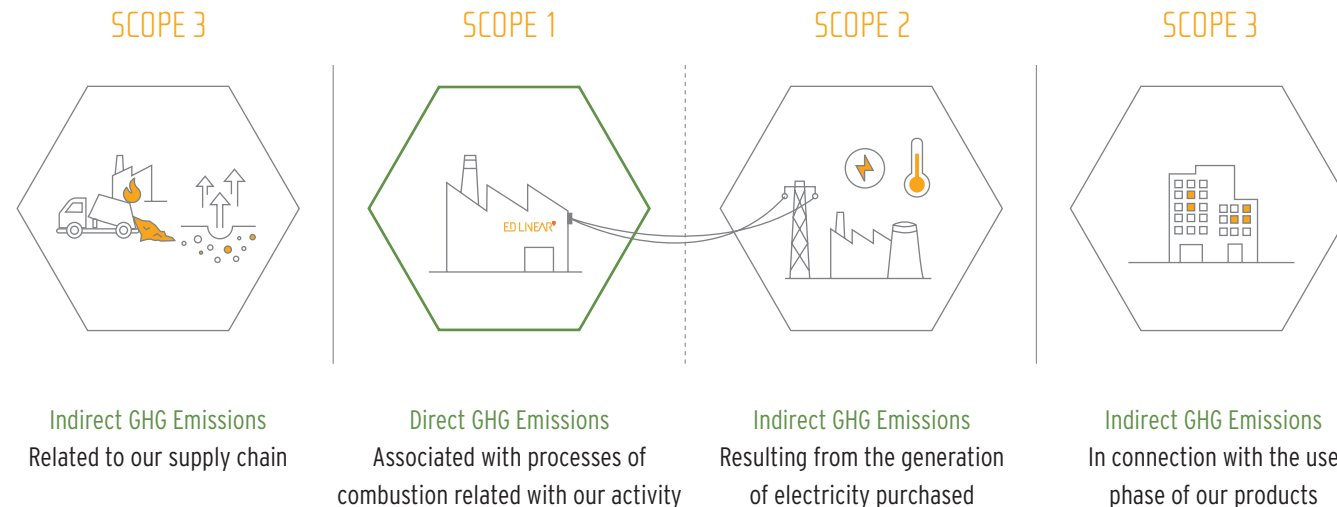


OUR COMMITMENT

To ensure our success and to quantify the impact of our actions, we have formulated our climate goals within the Science Based Targets initiative (SBTi).



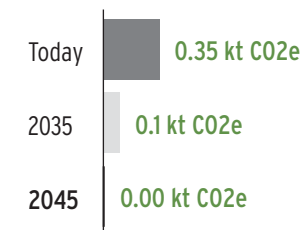
The SBTi offers a clear scope and framework to reduce the greenhouse gas (GHG) footprint in order to reach the Paris Agreement goals. We commit on reducing our GHG impact of our operations (Scope 1 & Scope 2) but also throughout the entire life cycle from the supply chain until the decommissioning of our products.



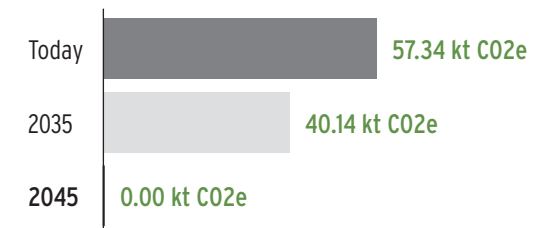
The near- and long-term goals of our sustainability initiatives are to:

- ✓ reduce direct and indirect GHG emissions (Scope 1 and Scope 2) by 70 per cent by 2030, compared with 2021,
- ✓ reduce other direct and indirect GHG emissions (Scope 3) by more than 30 per cent by 2030, compared with 2021,
- ✓ to achieve net-zero by 2045.

Scope 1 and Scope 2 (factory direct and indirect)



Scope 3 (supply chain, use phase & end of life)

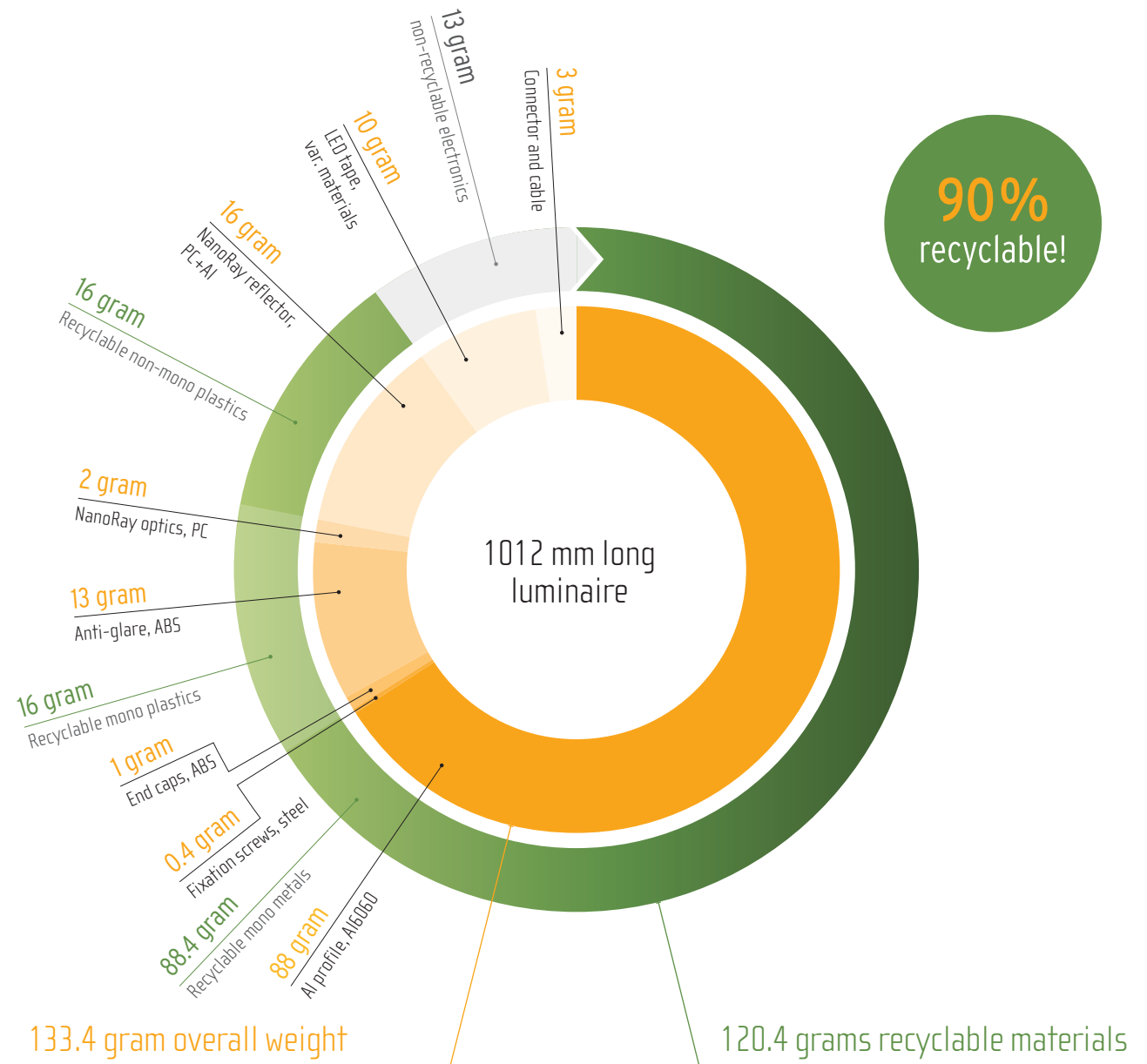


SUSTAINABILITY

ENVIRONMENTALLY MINDFUL

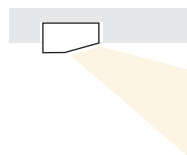
Outputs more than 20 Lumen/gram of luminaire weight (without PSU)

Thanks to the process of miniaturisation the ULTIMA only uses a minimum of materials - **a 1 meter long luminaire with NANO optics weighs just 133 g**. It outputs up to **more than 20 Lumen per gram** of luminaire weight (without PSU). All of the nonelectrical components can be recycled, 87% of which are highly purified mono materials. The electrical components make up only 13 g per fixture meter.

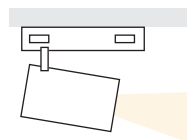


SIGNIFICANT REDUCTION OF WEIGHT

up to
-95% Compared to
wall washer



up to
-90% Compared to
spotlight



up to
-90% Compared to
architectural
light line



ULTIMA's design aims to deliver unprecedented functionality and lighting quality while drastically reducing the quantity of raw materials compared to existing lighting solutions. This drastic cut of material, and therefore weight, also reduces the overall carbon footprint required for transport.

- 1 Anti-glare
- 2 NanoRay optics
- 3 NanoRay reflector
- 4 Flexible light engine
- 5 Profile

1

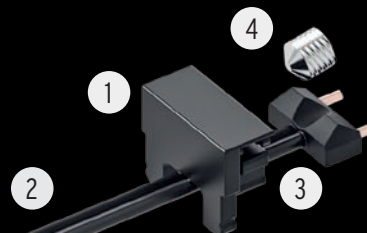
2

3

4

5

- 1 End cap
- 2 Cable
- 3 Strain relief
- 4 Grub screw



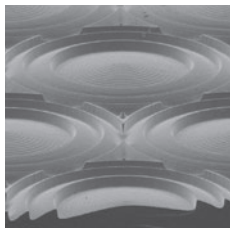
MASTER TECHNOLOGIES

ULTIMA DELIVERS PRECISE AND CRISP LIGHTING SOLUTIONS THANKS TO ...

ULTIMA was designed with miniaturisation, integration and sustainability in mind. It is based on three master technologies: CSP LEDs, NanoRay optics and anti-glare. The result is an extremely small luminaire that offers the same optical options as much larger systems without compromising on light quality, as illustrated by an UGR < 13 and a high color consistency over angle.

1 | NanoRay

The NanoRay 2.0 optics feature more than 220,000 nano lenses in each LED cell. The lens details, smaller than 1 nm, accurately guide each light beam and ensure a proper mixing of all wavelengths. The result, sharp light distributions and homogeneous color over the whole lighting scene.



Electron microscope image of nano optics

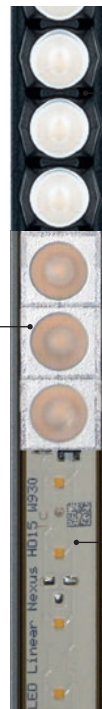
This square would contain more than
1,000,000,000
nano details.

2 | Glare control

The glare control is ensured by an elegant louver, a result of multiple optimizations to conceal the light source within a minimal height.

3 | Chip scale LED

ULTIMA features the only Chip Scale Package (CSP) LED tape world wide offering prime color rendition and sound thermal performances out of a minimalistic luminaire. 1 mm x 1 mm LEDs positioned with a 100 µm precision.

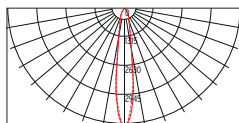


OPTICAL EXCELLENCE

You can choose from 7 different lighting optics, covering elliptical light distribution from 15° to 60°, an asymmetrical and a batwing optic plus an opal diffusor.

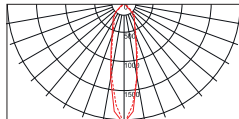


NANO OPTICS SYMMETRICAL



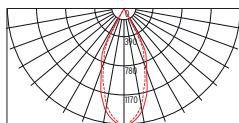
Spot (15°)

Color over Angle = +/- 110 K
UGR = 13 (B); 16 (W)



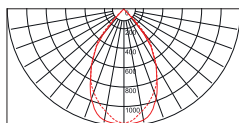
Spot wide (25°)

Color over Angle = +/- 25 K
UGR = 13 (B); 16 (W)



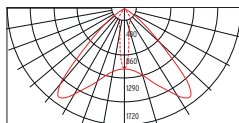
Mid Flood (40°)

Color over Angle = +/- 55 K
UGR = 14 (B); 16 (W)



Wide Flood (60°)

Color over Angle = +/- 75 K
UGR = 17 (B); 20 (W)

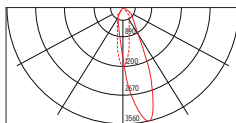


Batwing

Color over Angle = +/- 90 K
UGR = 27



NANO OPTICS ASYMMETRICAL



Asymmetric

Color over Angle = +/- 70 K

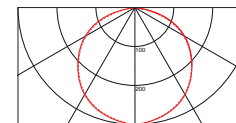


NANORAY 2.0

The second generation of LED Linear's nano optics reveals the full potential of this new technology by granting ULTIMA with a complete set of crisp lighting distributions from spot, medium flood, batwing and asymmetrical with outstanding color homogeneity over all angles.

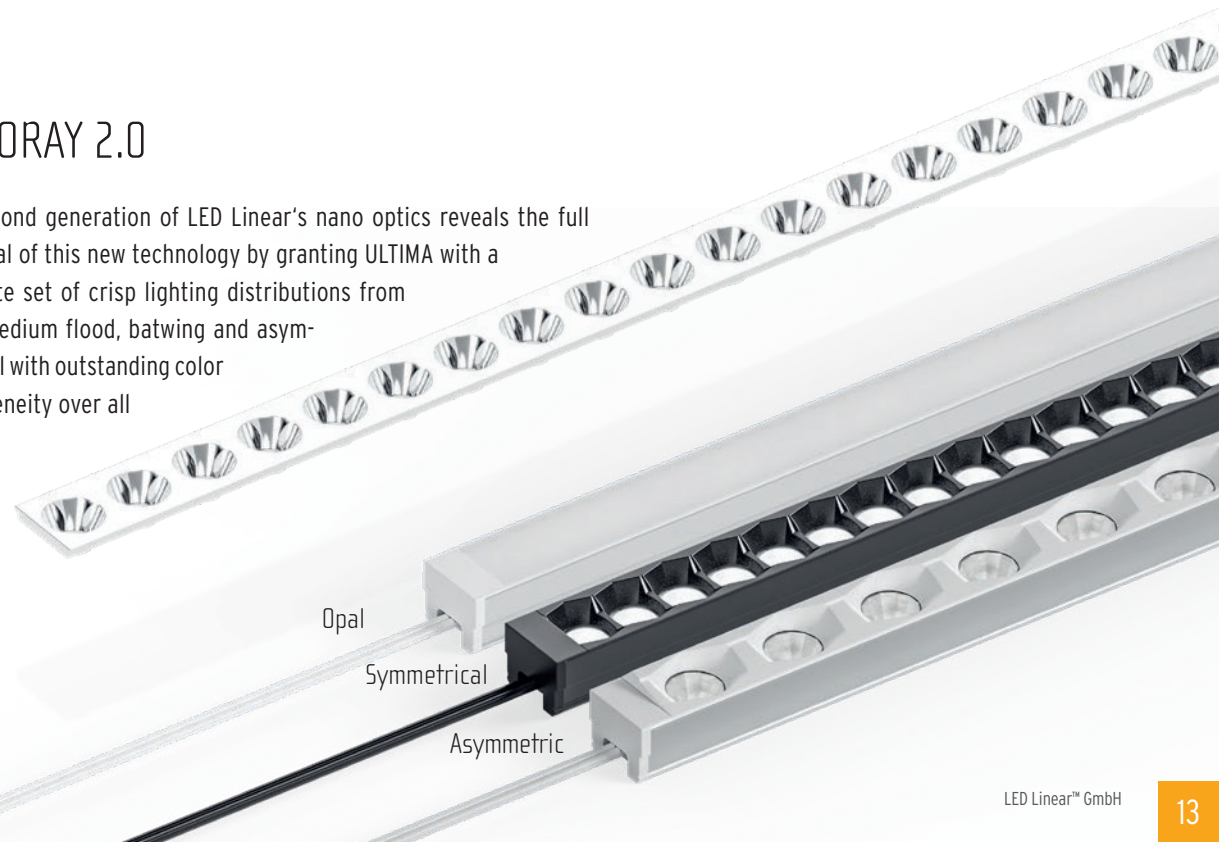


OPAL COVER



Opal

Color over Angle = +/- 15 K
UGR = 25 (B); 26 (W)

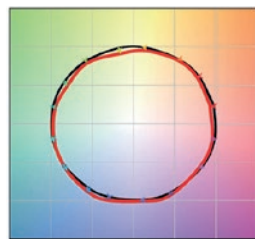


COLOR RENDITION / TEMPERATURES

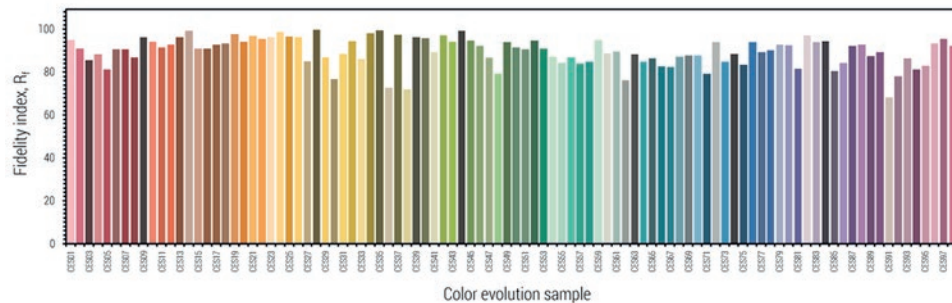
CRI 95 R9 75 R_f 93 R_g 101

COLOR RENDITION (@ 3,000 K)

Color vector graphic



— Reference Source
— Test source



COLOR TEMPERATURES

2200 2700 3000 3500 4000 5000* Kelvin

* on demand

BINNING

3 SDCM with a binning tolerance of +/- 0.003 (True 3 step MacAdams)

SHINE BRIGHT SILENTLY

Despite its extremely slim design, ULTIMA achieves lumen outputs from 300 lm/m reaching up to 2,330 lm/m making it suitable for general, task, decorative, accent and ambient lighting. A glare reduction louver offers an elegant finish while keeping the light source concealed.

LUMEN OUTPUT (@ 4,000 K)

NANO Symmetrical

Intensity

From 480 lm/m up to 2,340 lm/m @ 4,000 K

5 Power Levels

6 W/m, 10 W/m, 15 W/m, 20 W/m and 25 W/m

NANO Asymmetrical

Intensity

From 440 lm/m up to 2,230 lm/m @ 4,000 K

4 Power Levels

5 W/m, 10 W/m, 15 W/m and 25 W/m

Opal

Intensity

From 480 lm/m up to 1,970 lm/m @ 4,000 K

4 Power Levels

6 W/m, 10 W/m, 15 W/m and 25 W/m

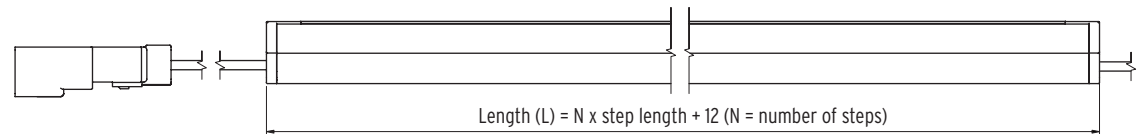
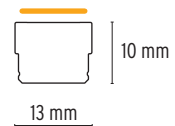




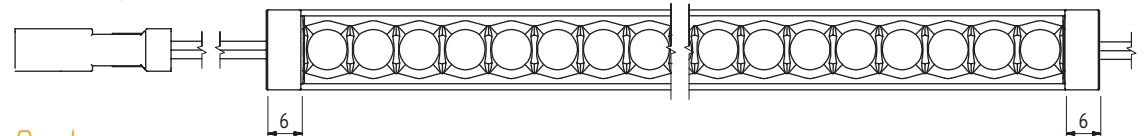
DIMENSIONS

The length is likewise freely choosable which, combined with the minimal cross section of 10 mm x 13 mm (H x W), makes it an ideal candidate for integrations or confined spaces.

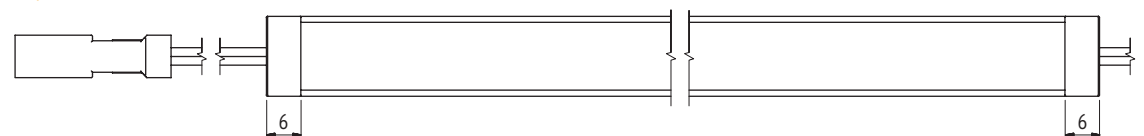
SYMMETRICAL



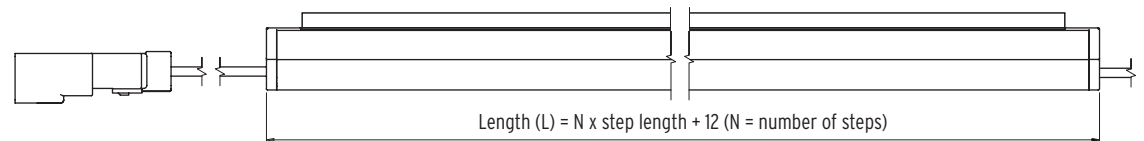
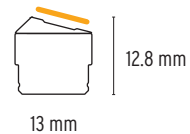
NANO optics



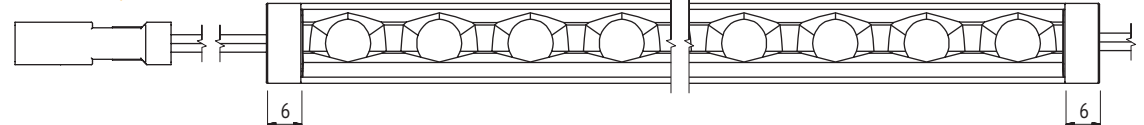
Opal cover



ASYMMETRICAL



NANO optics



APPLICATIONS

General lighting



General & Task lighting



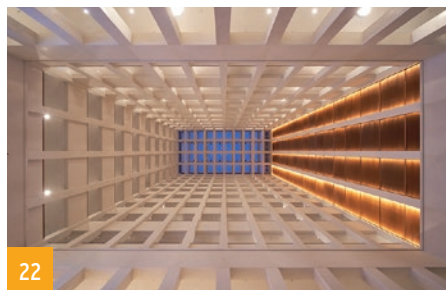
Orientation lighting



Ceiling uplight



Grazer



Grazer



Wall wash



Shopping window lighting



Shelf lighting

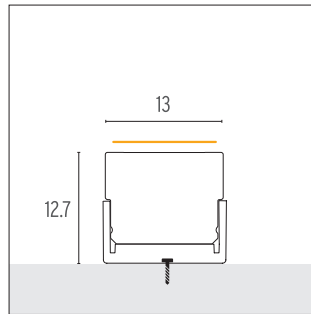


Shelf lighting



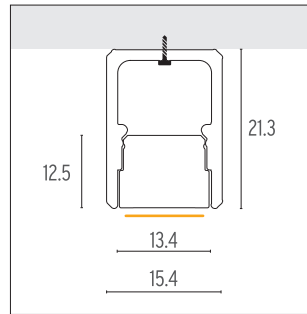
MOUNTING OPTIONS

Plastic clip, surface-mounted



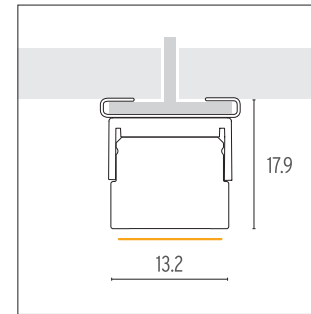
Surface mounted with plastic clips screwed to the surface.

High mounting profile



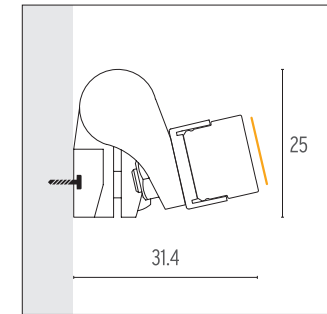
Mounting profile with sufficient space inside to place connectors behind luminaire. Ideal for tidy serial connections.

Grid ceiling clip



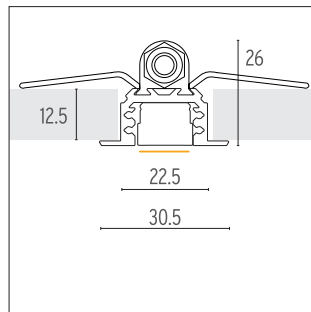
Grid clips are twisted onto T-bars of suspended ceiling. A very practical solution for retrofits.

Adjustable mounting clip



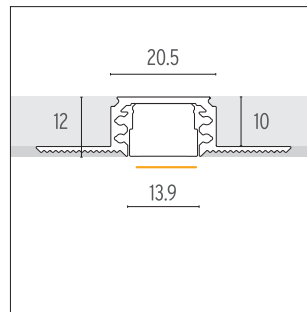
Adjustable clips can be screwed to any surface and used to freely aim the luminaire from 0° to ca. 125°.

Recessed with trim



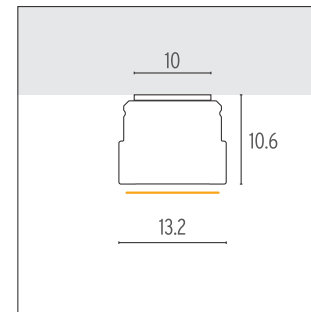
Recessed installation with trim of individual luminaires in plasterboard ceiling or other boards.

Recessed trimless



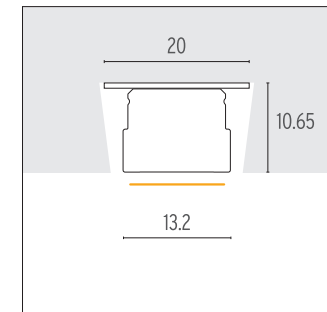
Recessed installation of individual luminaires in plasterboard ceiling, subsequently plastered in.

Magnetic, surface-mounted



Surface mounted with magnets directly on suitable steel structure or with the help of an additional steel strip.

Magnetic, recessed



Recess mounted with magnets into swallowtail groove cut into wooden board, fitted with additional steel strip, e.g. in furniture.

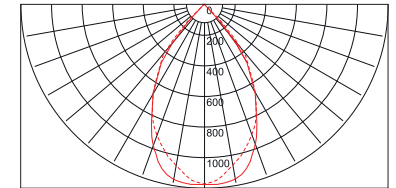
All dimensions in mm.

General lighting

Wide flood (60°)

Color over angle = ± 75 K

UGR = 17 (B); 20 (W)

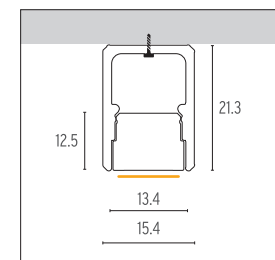


Here ULTIMA-S demonstrates what it does really well - integrate and disappear in the architecture.

The high mounting profile is placed amid the wooden lamellas and the inserted luminaires with 60° optics provide the general lighting in the corridor.

High mounting profile

Mounting profile with sufficient space inside to place connectors behind luminaire. Ideal for tidy serial connections.



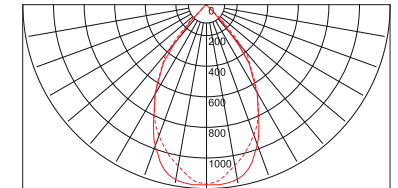
All dimensions in mm.

General & Task lighting

Wide flood (60°)

Color over angle = +/- 75 K

UGR = 17 (B); 20 (W)

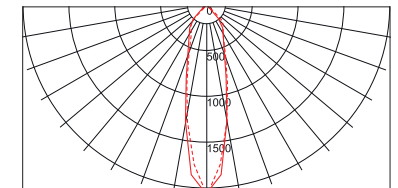


Fixtures with 60° optics were used to provide overall luminance in the room.

Spot width (25°)

Color over angle = +/- 25 K

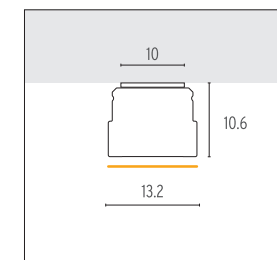
UGR = 13 (B); 16 (W)



To add further light on individual tables extra luminaires with 25° optics were placed above them.

Magnetic, surface-mounted

Surface mounted with magnets directly on suitable steel structure or with the help of an additional steel strip.



All dimensions in mm.

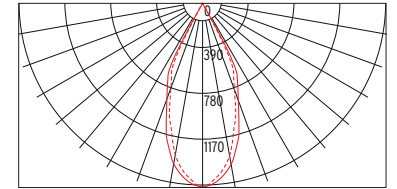
LED Linear™ GmbH

Orientation lighting

Mid flood (40°)

Color over Angle = +/- 55 K

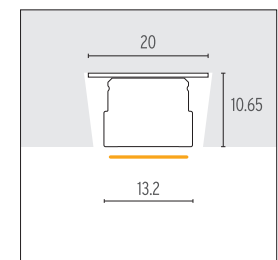
UGR = 14 (B); 16 (W)



ULTIMA-S is used to supply the light on the stairs necessary for orientation. It is integrated into a groove in the wooden handrail and fixed there by means of magnets and an inserted steel strip.

Magnetic, recessed

Recess mounted with magnets into swallow-tail groove cut into wooden board, fitted with additional steel strip, e.g. in furniture.



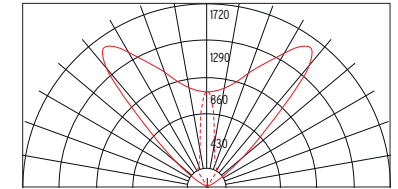
All dimensions in mm.

Ceiling uplight

Batwing

Color over Angle = +/- 90 K

UGR = 27

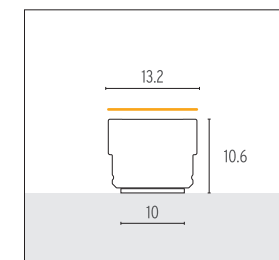


To illuminate the beautiful historical ceiling paintings the batwing optic was chosen for its reach and even result.

ULTIMA-S was mounted without tools by magnets on a steel profile.

Magnetic, surface-mounted

Surface mounted with magnets directly on suitable steel structure or with the help of an additional steel strip.



All dimensions in mm.

LED Linear™ GmbH

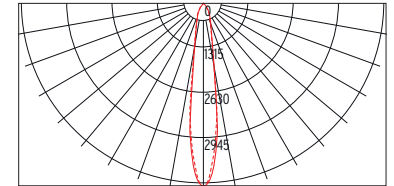
Sacristy at Fraumünster | Zurich, Switzerland

Grazer

Spot (15°)

Color over angle = +/- 110 K

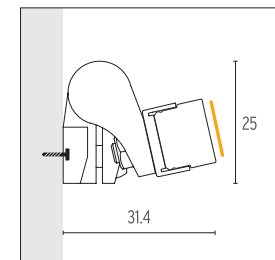
UGR = 13 (B); 16 (W)



The high light wall consists of 72 individual panels made of expanded copper mesh. These are made to glow with a grazing light, using the 15° optics, creating a uniform surface across the wall thanks to NanoRay optics.

Adjustable mounting clip

Adjustable clips can be screwed to any surface and used to freely aim the luminaire from 0° to ca. 125°.



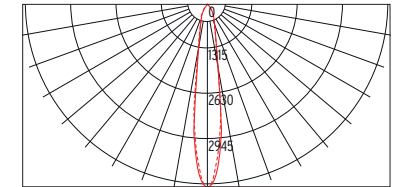
All dimensions in mm.

Grazer

Spot (15°)

Color over angle = +/- 110 K

UGR = 13 (B); 16 (W)

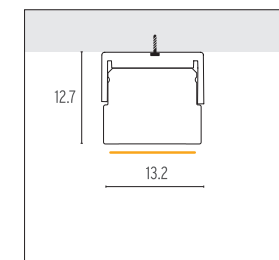


To stage the reception backdrop grazing was chosen to create contrast on the eyecatcher.

The 15° optics provide targeted light control combined with minimal glare.

Plastic clip, surface-mounted

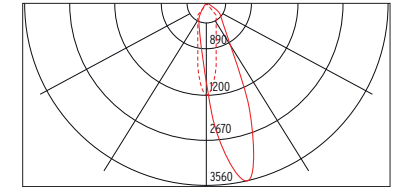
Surface mounted with plastic clips screwed to the surface.



Wall wash

Asymmetric

Color over Angle = $\pm 70^\circ$ K

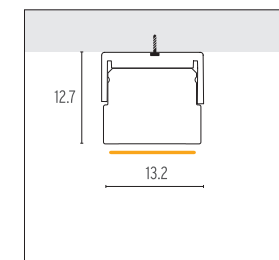


The lighting of the exhibit walls was realised with the ULTIMA-S with asymmetrical optics.

They put the exhibits in the spotlight, creating a contrast with the lower light levels in the general space.

Plastic clip, surface-mounted

Surface mounted with plastic clips screwed to the surface.

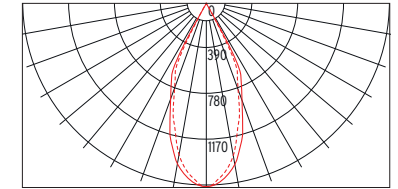


All dimensions in mm.

Shopping window lighting

Mid flood (40°)

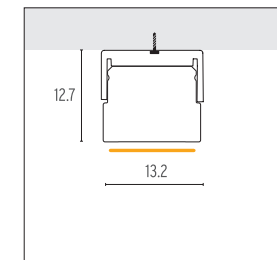
UGR = 14 (B); 16 (W)



To provide illumination in the shopping window a groove set into its mirror ceiling was equipped with two parallel lines of luminaires with 40° optics. One line provides warm white light, the other cold white, to grant maximum flexibility coupled with a high CRI for the presentation of the displayed merchandise.

Plastic clip, surface-mounted

Surface mounted with plastic clips screwed to the surface.



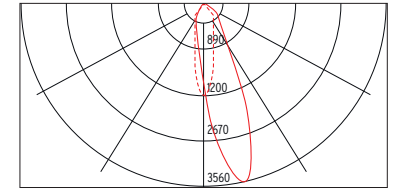
All dimensions in mm.

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Shelf lighting

Asymmetric

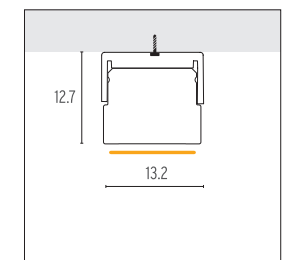
Color over Angle = ± 70 K



To cast light on the documents stored on the shelves, an ULTIMA-S with asymmetrical optics was used, integrated into a bespoke metal construction to both position and hide it. The luminaires are simply attached with magnets to the cantilevered shields.

Plastic clip, surface-mounted

Surface mounted with plastic clips screwed to the surface.



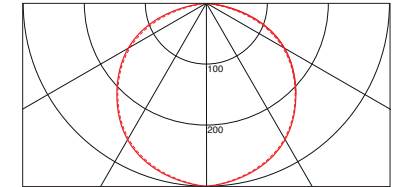
All dimensions in mm.

Shelf lighting

Opal

Color over Angle = +/- 15 K

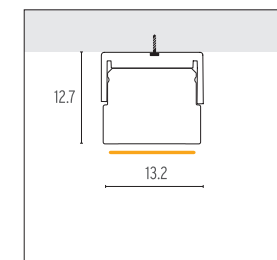
UGR = 25 (B); 26 (W)



To provide very soft light on the displayed objects, an ULTIMA-S with opal optics was used. With its absolutely homogeneous light surface it is pleasing to look at in direct view. It is integrated into the sides as double vertical lines.

Plastic clip, surface-mounted

Surface mounted with plastic clips screwed to the surface.



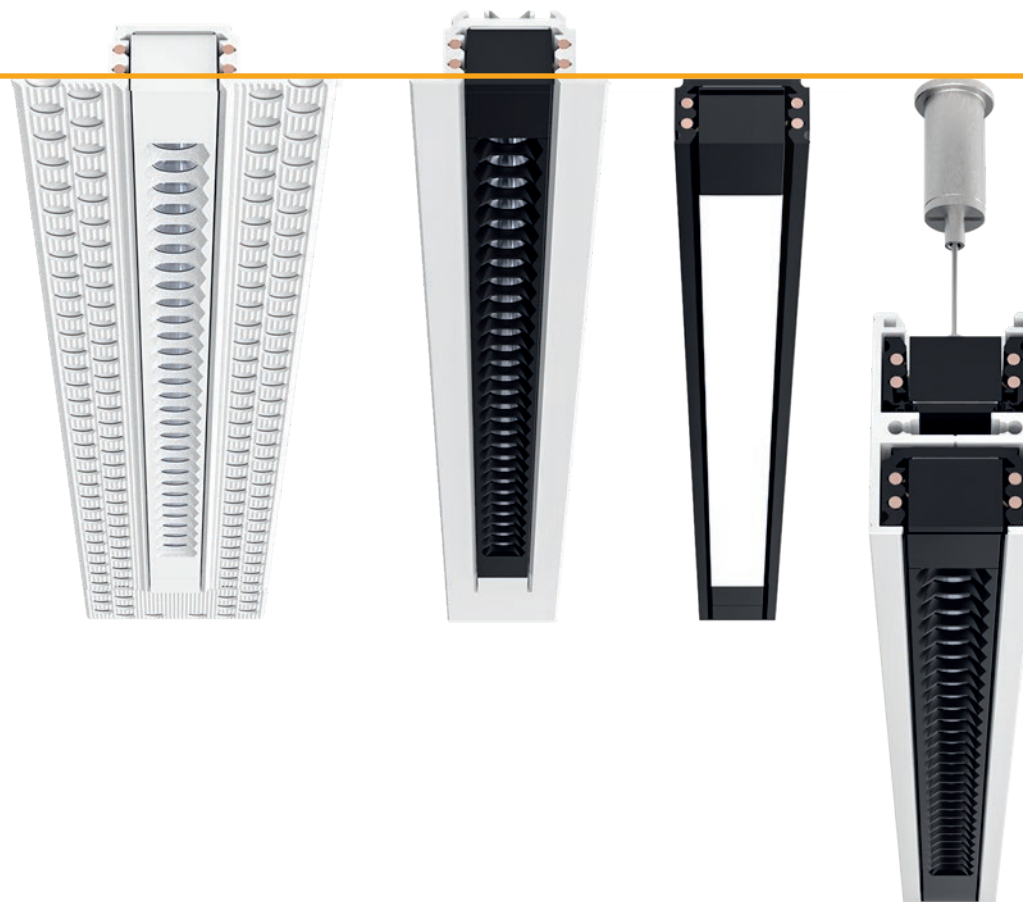
All dimensions in mm.

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ULTIMA-T

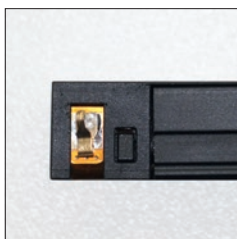
TAILORED FOR ARCHITECTURAL LIGHTING

Ideal for gallery & museum lighting or spaces requiring multiple lighting effects with strong structural restrictions. ULTIMA-T can be placed anywhere in the recessed trimless, recessed with trim or surface / pendant track systems.

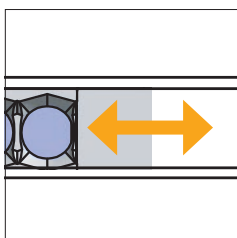


NANO
RAY 2.0

UGR
<13



ULTIMA-T embeds electrical contact at its ends for a simple contacting in the track. Just click the ULTIMA-T module in the pre-installed track system without having to worry about complex cabling.



Each light module can be freely positioned in the track to provide full flexibility necessary in dynamic places such as galleries or show-rooms.



Thanks to the 4 x 2.4 mm² copper lines in each track, runs up to 10 m are possible. They also enable the control of two different lighting scenes by connecting ULTIMA-T modules to two independent channels.



www.led-linear.com/ultima-t



ULTIMA-P

MINIMAL PENDANT LUMINAIRE

NANO
RAY 2.0

UGR
<14



Ideal for pendant task lighting over workdesks, counters and smaller meeting room tables.



Extremely small for a pendant luminaire, especially when considering the built-in optical technology and an output of up to 1,840 lm/m.



NanoRay 2.0 optics offer precise beam and glare control with minimal color over angle.



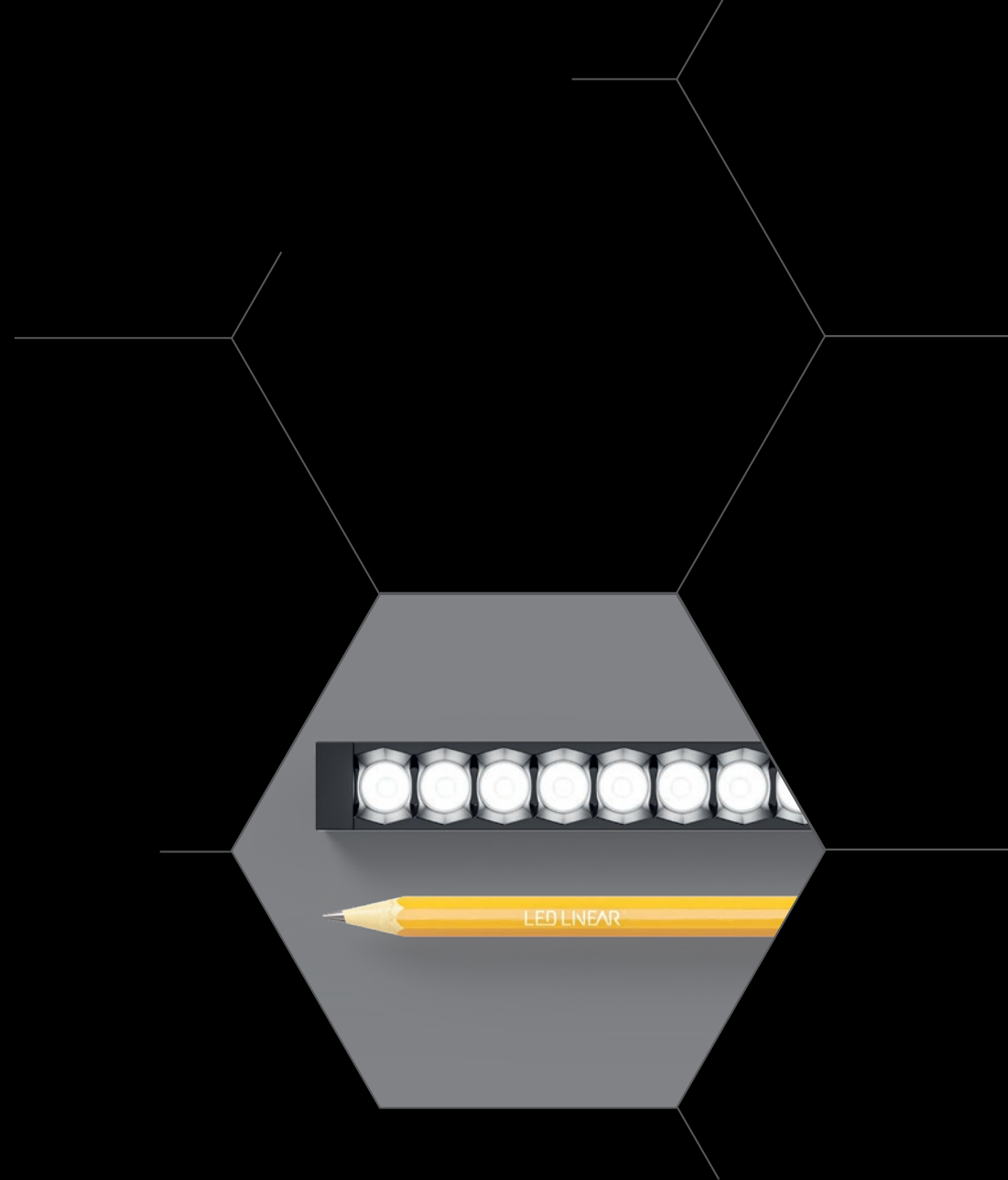
Standard includes multiple variations like 40° or 60°, Batwing and opal optics; 4 different color temperatures as well as 6 different housing/anti-glare color combinations.



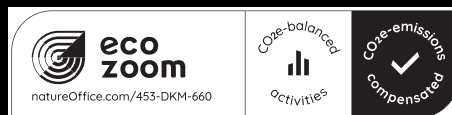


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