

# Premium performance in the office

Linea freestanding LED luminaire



# Elegance and performance in the office

Linea is an elegant freestanding luminaire for office environments. It has a lean yet strong, rounded pole and stylish aluminium lamp head with a height of no more than 25 mm. The slim head is made possible by Linea's use of modern LED technology, which takes very little space while providing light of exceptional quality.

Linea is equipped with efficient reflectors and dual layer prism optics, which provide excellent asymmetric light output and minimum glare. The powerful uplight component contributes to the general lighting in the room, while the downlight illuminates the desk in accordance with the European standard for workstation lighting, EN 12464-1.

## **Individual light control**

Linea is fully dimmable. It is also available with separate light control for the uplight and downlight components. Individually adjustable lighting means maximum flexibility, and ensures that all users have complete control of the light levels at their own workstation.

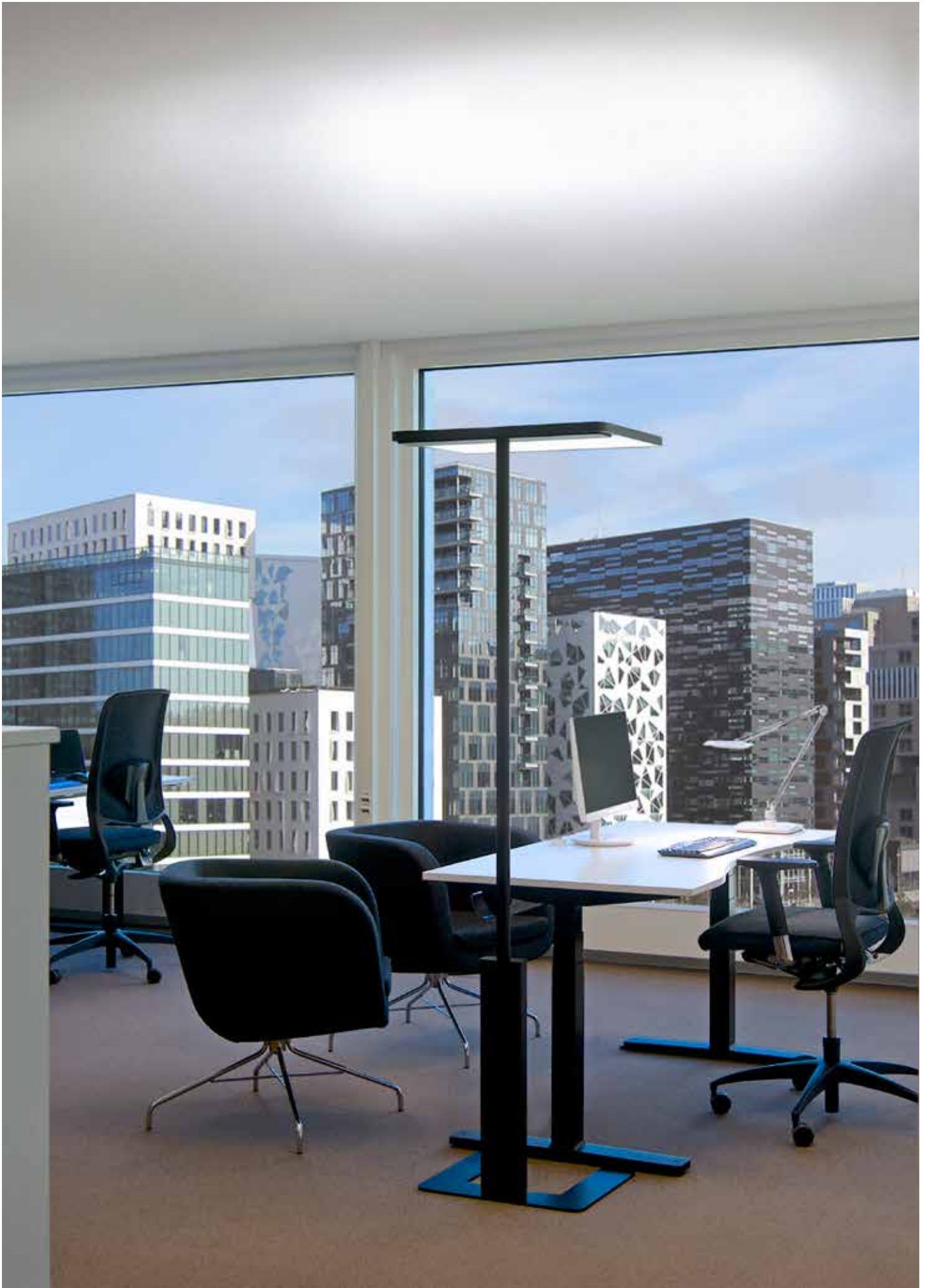
## **Available with sensors and wireless communication**

Linea is available with built-in sensors for combined presence and daylight regulation, and is also offered with a system for wireless communication between groups of up to 50 Linea luminaires. This system offers maximum comfort and automatic energy savings, particularly in open plan offices.

## **Adjustable colour temperature**

Linea is available with adjustable colour temperature, for increased comfort and productivity. Studies show that humans benefit from variations between cool and warm light during the day. We offer Linea with an advanced "tunable white" lighting system which can support the human circadian rhythm, enhance concentration, prevent sleeping disorders and improve overall well-being.





# LED – light source of the future

With the introduction of LED, the international lighting industry has gained a new light source that is more energy efficient than fluorescent tubes and other conventional light sources.

The efficiency and life span of LED continues to improve, and LED luminaires are virtually maintenance free. This means that buildings with LED lighting will have lower operating costs than buildings with conventional luminaires.

The initial investment of the LED installation may be higher than that of a traditional lighting installation, but the LED's lower energy consumption and maintenance cost means that the difference in price is quickly paid off.



Linea is available in black, white or silver grey structured paint. Other colours are available on request.

Design:

## Oskar Daniel and Emil Marklund

Swedish designers Oskar Daniel and Emil Marklund are prominent members of Gothenburg's vibrant design scene. They have collaborated on several lighting projects, and worked on the development of Linea as a team.

"Linea is designed to be as thin and light as possible, in order to create a calm and unobtrusive addition to the office environment," says Oskar Daniel. "With its rational design, thin head and minimalistic shape, you could say that it portrays the LED technology it contains. Crafting the parts out of aluminium reduces weight and makes heat dissipation efficient."

Oskar Daniel and Emil Marklund both have degrees in industrial design from prominent Swedish universities. They have worked on a

wide variety of projects during their careers, ranging from lawn mowers and sporting equipment to ship construction and wood burning stoves. This diversity of work has landed them with a fundamental belief in functionality and aesthetics:

"We strive for unpretentious products with a personality," says Emil Marklund. "The challenge is to reduce the design to the point of obviousness, while being aesthetically pleasing, functional and rational to produce."









**Dual layer prism optics**  
Linea is equipped with dual layer prism optics for excellent asymmetric light output and minimum glare.



**Individual light control**  
Linea is fully dimmable, and is available with separate light control for uplight and downlight.



**Wireless communication**  
As an option, Linea is offered with a system for wireless communication between groups of Linea luminaires. This version has a dark acrylic panel covering the wireless transmitter.



**Solid base**  
Linea's slim U-shaped base of solid steel will easily fit under most desks.

**Freedom to move!**

In companies with changing dynamics, office layouts are regularly altered. A freestanding luminaire like Linea is easy to install and move around, and can easily be positioned to suit the needs of each individual. Simply plug it in and turn it on. This is perfect for dynamic organizations.

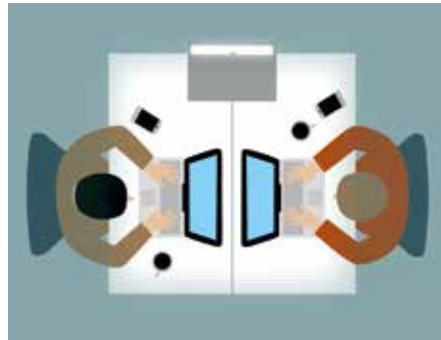


# Premium performance

Requirements for good workspace lighting are laid down in the international standard for indoor workplace lighting, EN 12464-1. Linea complies with – and exceeds – these requirements on all counts. One Linea luminaire will fulfill the requirements for one or two workstations, while two Linea luminaires will fulfill the requirements for a group of up to four workstations.



One workstation



Two workstations



Four workstations

	Statutory requirements	Linea's performance
Lumen output	No requirements	10000 lm
Light distribution	No requirements	25% down, 75% up
Efficacy	No requirements	110 lm/W
Colour temperature (range)	No requirements	3000 K, 4000 K, 3000-6000 K
Colour Rendering Index (CRI)	Min. 80	Min. 80
Unified Glare Rating (UGR <sub>i</sub> )	Max. 19	Max. 15
MacAdam steps	No requirements	3 SDCM
Max luminance at 65°	Max. 3000 cd/m <sup>2</sup>	Max. 2700 cd/m <sup>2</sup>

Statutory requirements (EN 12464-1)		Linea's performance		
		1 workstation*	2 workstations**	4 workstations***
Average illuminance $E_{m, \tau}$ , task area (A2)	Min. 500 lux	739 lux	536 lux	677 lux
Uniformity $U_0 (E_{min}/E_{m, \tau})$ , task area (A2)	Min. 0,6	0,8	0,76	0,83
Average illuminance $E_{m, \tau}$ , immediate surrounding area	Min. 300 lux	642 lux	458 lux	619 lux
Uniformity $U_0 (E_{min}/E_{m, \tau})$ , immediate surrounding area	Min. 0,4	0,49	0,43	0,60
Average illuminance $E_{m, \tau}$ , background area	Min. 100 lux	333 lux	302 lux	484 lux
Ceiling illuminance $E_m$ (recommended level)	Min. 50 lux	605 lux	450 lux	675 lux
Wall illuminances (recommended level)	Min. 75 lux	Min. 114 lux	Min. 96 lux	Min. 208 lux
Cylindrical illuminance $E_{z, 1,2m}$	Min 150 lux	N/A	172 lux	280 lux

The calculations presented here are based on the following parameters: Reflectances 80/50/20, maintenance factor 0,7, ceiling height 2,7m, work plane height: 0,75m, room sizes \*4,2x2,4m, \*\*4,8x4,2m \*\*\*5,0x4,8m.

## Comfortable and energy saving light control

Sensor technology and modern light management systems save energy and make it possible to create different zones and settings in a dynamic office environment. Linea is available with built-in sensors for combined presence and daylight regulation, and is also offered with a system for wireless communication between groups of Linea luminaires. This system offers maximum comfort and automatic energy savings.



Daylight and presence detection sensors built into the luminaire are cost-effective, and do not require complicated installation.



### Presence detection

Presence detectors turn off the light when a work station is vacated, normally after 5 to 15 minutes. This is particularly effective in cell offices, where savings of more than 50% can be documented. Presence detection is also an efficient energy saving measure in open plan offices and in areas that are not in constant use.



### Daylight dependent regulation

Daylight is our optimal source of light. Daylight detection sensors dim the light when the sun is shining through the windows, and increase the amount of light when it gets dark outside. Automatic dimming through daylight detection is a real money saver in any commercial building!



### Wireless communication between groups of luminaires

While presence detection saves a lot of money it can leave unoccupied office space dark and uninviting. Groups of up to 50 Linea luminaires can be equipped with wireless communication, which means that the luminaires in the group do not turn completely off when a work station is vacated, but are dimmed and set to a background light level. In an open plan office this will be much more comfortable for those still working in the room, and will ensure that they will not be looking into completely dark areas. Only when the last work station in the group is vacated will all the lights go out. The system will also switch the entire group of luminaires automatically on, based on occupancy, and dim them when enough daylight enters the area.



3000K



3500K



4000K



4500K



5000K



5500K



6000K

#### Colour temperature

Linea with individually adjustable colour temperature has a separate button for regulating the colour temperature between 3000K (warm light) and 6000K (cool light) in seven convenient predetermined steps. We also offer automated "tunable white" solutions for groups of luminaires connected to a DALI system.

# Adjustable colour temperature offers increased comfort and productivity

Light has a great effect on us humans. Not only does it allow us to see. Light stimulates us, and influences our moods and activity levels.

Because our physiological response to light depends on the light's characteristics such as intensity and colour temperature, the characteristics of the artificial light in our surroundings will be of significance if we spend a lot of time indoors. Human Centric Lighting solutions can support the human circadian rhythm, enhance concentration, prevent sleeping disorders and improve our overall well-being.

## Human Centric Lighting

Human Centric Lighting solutions in office environments can bring increased energy and motivation to employees. For example can a cool white light with high intensity in the beginning of the workday shift our sleep phase forward and help reset our biological clock. For countries with little daylight during the winter months, "tuneable white light" luminaires may reduce winter depressions and other seasonal affective disorders.

Linea is available with adjustable colour

temperature, for increased comfort and productivity. Studies show that users appreciate full control over their personal lighting. We offer Linea with a convenient "tuneable white" lighting system which allows each user to regulate the colour temperature of the luminaire.

## Group solutions

We also offer automated solutions for groups of Linea luminaires. Studies show that humans benefit from variations between cool and warm light during the day. Typically the light in the morning should be cool in order to provide extra energy. The warmer and cozier light settings would be ideal towards the end of the work day.

To achieve this, automatic programming of the light sequence is necessary. This may be done by connecting a group of Linea luminaires to a DALI system and upload the light sequence into the DALI gateway or the system's "brain".





# Technical details

## Light source

LED 10000lm, 3000K or 4000K  
CCT version 7000lm, 3000-6000K  
CRI >80  
Light distribution: 75% up, 25% down

## Ballast

HFDd – Dimmable as standard

## Connection

Delivered as standard with 2,5m cable with plug.

## Material & colour

Aluminium body and pole. Foot made of steel.  
Black, white or silver grey structured paint.

## Switch

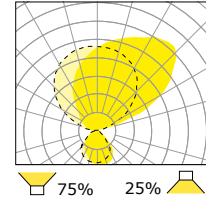
Standard: One switch on/off and dim  
Separate up/down: Two switches with on/off and dim  
CCT: Two switches, on/off and dim + CCT in 7 steps  
(3000/3500/4000/4500/5000/5500/6000K)

## Optic

MC/MP  
Combination of micro cone (MC) diffuser for asymmetric light and micro prismatic (MP) diffuser for glare control.

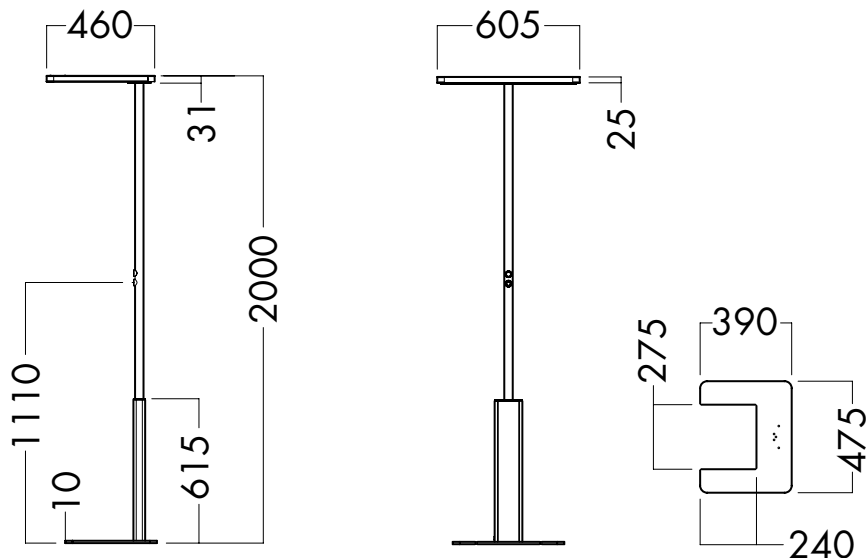
## Sensor

D-SEN (Daylight and presence sensor)  
DW-SEN (Wireless sensor for daylight and presence )



## Excellent light output

The powerful uplight component contributes to the general lighting in the room, while the downlight illuminates the desk in accordance with the European standard for workstation lighting, EN 12464-1.



# Caring for the environment

The ergonomic and energy saving features of our LED luminaires contribute to a better environment – and to a better office environment. We also strive to ensure that production at our factories is carried out according to the strictest environmental regulations.

Our products satisfy the RoHS Directive (Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), which aims to restrict the use of hazardous substances in electrical and electronic equipment. We achieve this through our careful choice of electronic components and suppliers. Our products also satisfy the WEEE Directive (Waste Electrical and Electronic Equipment) which requires products to be developed and designed to facilitate materials and energy recovery. Environmental considerations are an integrated part of our business: Linea is manufactured at a factory which holds the ISO 14001 environmental approval.

All components in this product are recyclable.







## Glamox Luxo Lighting

Glamox Luxo Lighting is a leading supplier of lighting solutions to the professional building market, offering complete product ranges for schools, healthcare facilities, commercial and industrial buildings, retail facilities, hotels and restaurants.

Our products and solutions are developed and tested by our engineers at our own research and testing facilities, and manufactured and certified in accordance with all relevant quality and environmental standards. They are based on the latest technology and expertise – and generations of experience.

