LIGHTING SOLUTIONS

Indoor & Outdoor 2015–2016

FAGERHULT

Contents

Light is everything

What is light? It helps us to see and discover, it wakes us up in the morning and keep us attentive during the day. Light also raises emotions. The feeling of security in a well-lit exterior space, alert in a workspace or energised in the staff room.

With smart control and energy efficient fixtures, we produce lighting that complements the natural light, that steps in when the sun is absent. Our research shows that artificial light and ambient light can provide the same alertness as the sun. In the workplace or in a classroom offering great opportunities for creating creative environments where people thrive. By using efficient and comfortable LED solutions we can also achieve a sustainable lit environment.

With light and human needs in focus, we create indoor and outdoor lighting solutions for the present and the future. Because light is our passion and our drive.

References of light

Fagerhult has supplied lighting solutions for a variety of public environments around the world. Here we proudly present some of them. Be inspired and see more lighting possibilities on our website.

Photo: Sini Pennanen

Finnair Headquarters, Helsinki, Finland

The new Finnair Headquarters was built with a firm focus on energy performance, resulting in an LEED Gold certificate. Presence and daylight controls contributed towards an ultra-efficient workplace, where nine suspended Freedoms provided the centre-piece of the design.

Microbiology Laboratory & Pathology, Hengelo, the Netherlands

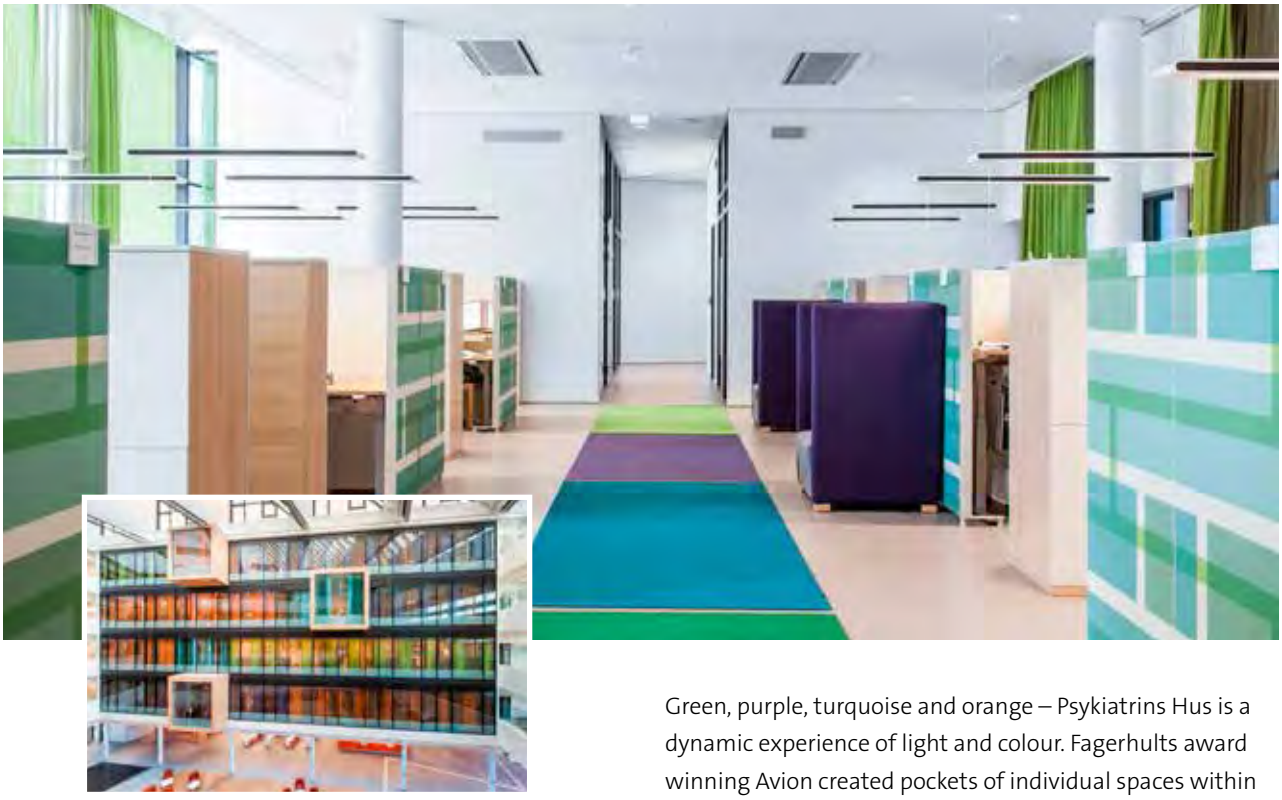
The Microbiology Laboratory & Pathology in Hengelo wanted an exterior lighting solution which would add a decorative element to building while still providing functionality and security within the parking yard, realised through a combination of Rondo and Conledo.

The Bünting Group, Nortmoor, Germany

The Bünting Group's new central building in Germany houses approximately 400 workspaces within 16 000 square meters of office space across three floors. The lighting experience from 568 Appareos, provides both ambient and task lighting, complemented with automatic light controls fulfills the requirements for efficiency as well as ergonomics.

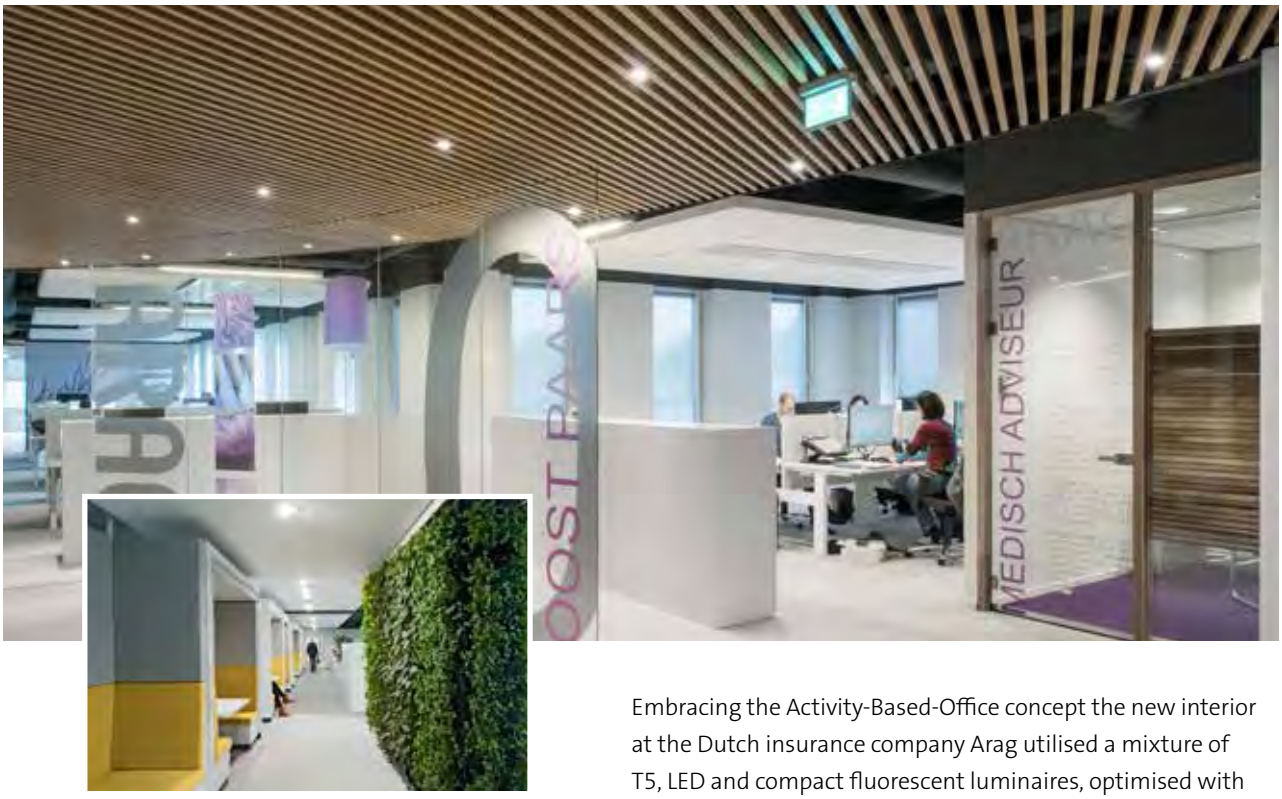
Western Transit Shed, London, the United Kingdom

Leading M&E consultants Hoare Lea's multi-award winning new office, in the new Kings Cross Central development, is an ideal showcase for their approach to aesthetic sustainable lighting design. Tibi pendants add a touch of glamour to their meet-and-greet spaces with the offices lit by iTrack Dual for a flexible and glare-free lighting solution.



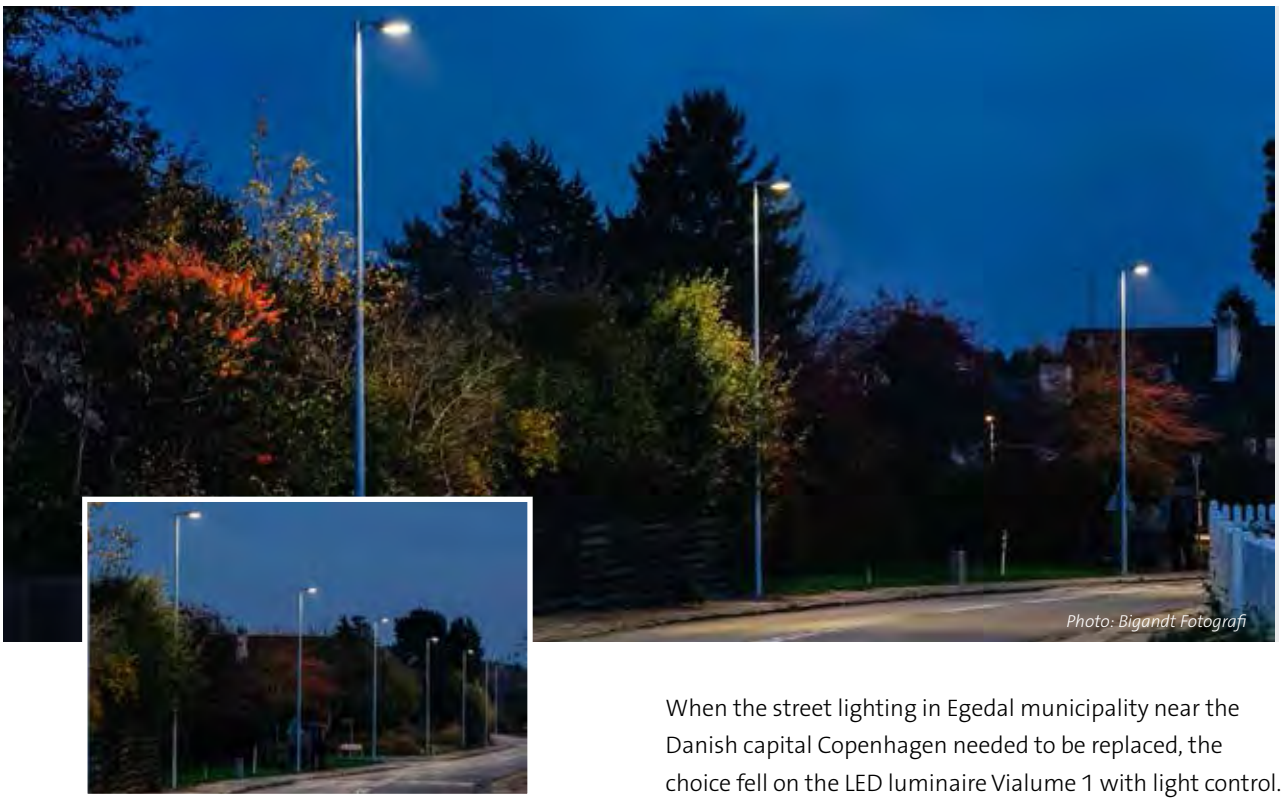
Psykiatrins Hus, Uppsala, Sweden

Green, purple, turquoise and orange – Psykiatrins Hus is a dynamic experience of light and colour. Fagerhults award winning Avion created pockets of individual spaces within the open-plan office environment.



Arag Legal Expenses Insurance,
Leusden, the Netherlands

Embracing the Activity-Based-Office concept the new interior at the Dutch insurance company Arag utilised a mixture of T5, LED and compact fluorescent luminaires, optimised with DALI, for an efficient and easily adaptable lighting solution.

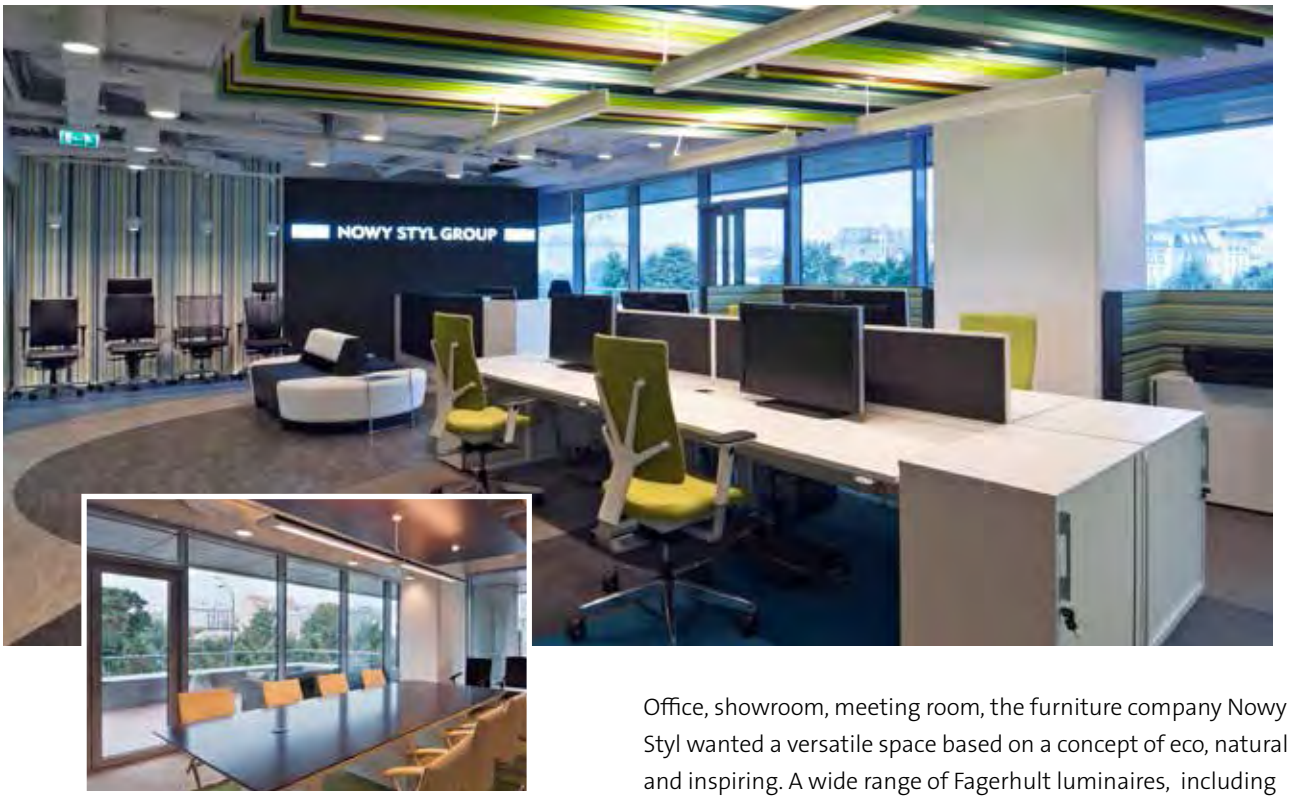


Egedal, Copenhagen, Denmark

When the street lighting in Egedal municipality near the Danish capital Copenhagen needed to be replaced, the choice fell on the LED luminaire Vialume 1 with light control. The Nordic design, the visual comfort and the energy efficiency were of great importance to the customer.

Thales Nederland B.V., Hengelo, the Netherlands

The renovation of the Thales Netherlands headquarters has complimented the buildings striking design. Colour and indirect lighting was an essential aspect of the concept, developed through a close collaboration between the architects, technicians and Fagerhult. By using a mixture of Tigris, Pleiad G3 and Tibi luminaires an exciting, playful and natural building was created.



Nowy Styl, Moscow, Russia

Office, showroom, meeting room, the furniture company Nowy Styl wanted a versatile space based on a concept of eco, natural and inspiring. A wide range of Fagerhult luminaires, including Avion and Wrap, are controlled by motion sensitive DALI which enhances the showroom experience.

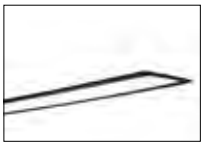
Tågaborgs School, Helsingborg, Sweden

Tågaborgs school is located in a long established residential area. For the outdoor lighting the requirements on Fagerhult as a supplier were glare-free lighting that not only lights up the schoolyard, but also withstands rough play during day-time. For the facades and entrances, Rondo G2 Power were chosen. For a homogeneous impression, Rondo G2 Power post top fittings were installed on the schoolyard.

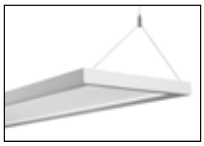
Notor
Photo: Adam Mørk

Pendant/Surface

Luminaires for suspended and surface mounted installation



Appareo
IP 20 *p. 12–15*

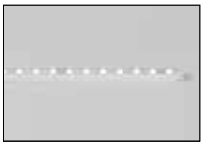


Combilume
IP 20 *p. 16–21*

Lento
IP 20 *p. 106–108*

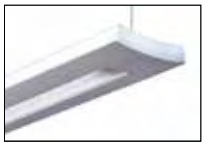
Sektor
IP 20 *p. 105*

Avion
IP 20 *p. 40–46*



Diva II
IP 20 *p. 109*

Loop Light
IP 20 *p. 78–89*



Ten° Line
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Basic T5
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DTI
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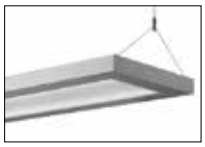
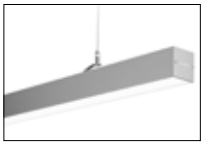
Notor G2
IP 20 *p. 34–39*



Tigris
IP 20 *p. 75–77*

Classic
IP 20 *p. 28–29*

Excis
IP 20 *p. 96–98*



Notor LED
IP 20 *p. 30–33*

Vidi
IP 20 *p. 100–104*

Closs
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Indigo Clivus
IP 44 *p. 93–95*

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Wrap
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Combiform
IP 20 *p. 90–92*

Appareo

Designed by Howl Design Studio

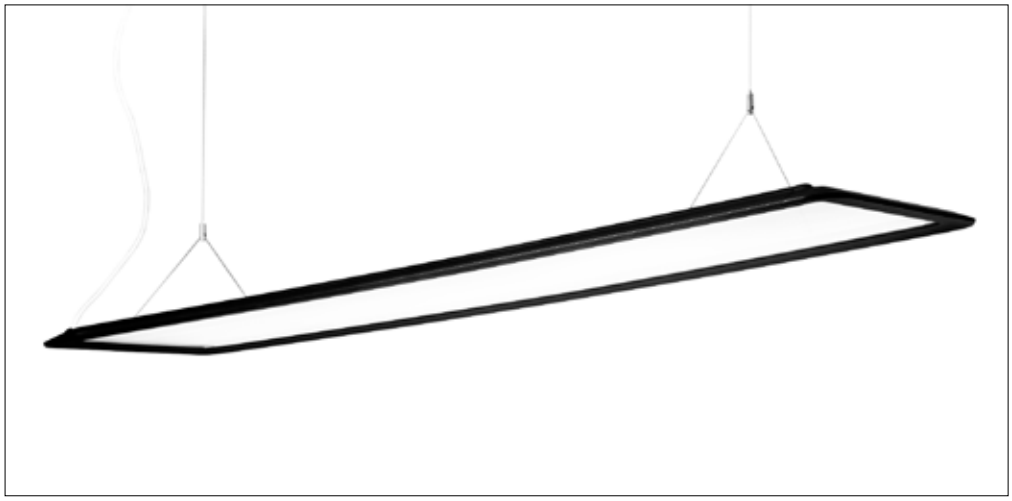
The luminaire is lit but where is the light source? Appareo is a suspended luminaire which maximises the design flexibility offered by LED's – without compromising on the requirements for efficiency and ergonomics.

The starting point was a new type of prismatic acrylic diffuser which acts as both the reflector and the louvre. The light is distributed indirectly towards the ceiling and directly down towards the work surface, providing the ambient and task lighting levels demanded in contemporary office spaces.

Unlit the transparent acrylic screen is housed with a slender aluminium frame for the height of discretion. When lit, the LEDs positioned across the slide of the luminaire bring the screen to life, increasing the opacity and guiding the light for an optimal visual experience. The result is a fresh, crisp light that does not dazzle.

reddot design award
winner 2013

Appareo



Luminaire

System, W	Colour temp., K	Light distr.	Luminous flux, lm	Efficiency, lm/W	kg	White	Black	
65	4000	40/60	5210	80	4.7	**11070-**	**11071-**	☐

Luminaire must be completed with desired function. See table with suffix codes.
For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐	**-402** DALI/Phase-pulse control
☐	**-442** e-Sense ActiLume single luminaire

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Two-point wire pendant. Wire suspension and friction lock included with luminaire. Balanced. External driver box is mounted directly to ceiling or placed loosely above ceiling.

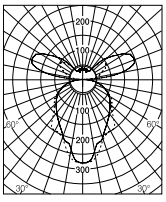
Connection
Luminaire is connected via remote LED driver, 230 V. Cable entry on top or through the knockout in the side. Snap-in terminal block 5 × 2.5 mm², 1-phase through-wiring possible. The luminaire is equipped with a 1.5 m mains cable 3 × 0.75 mm² between the luminaire and the external driver box.

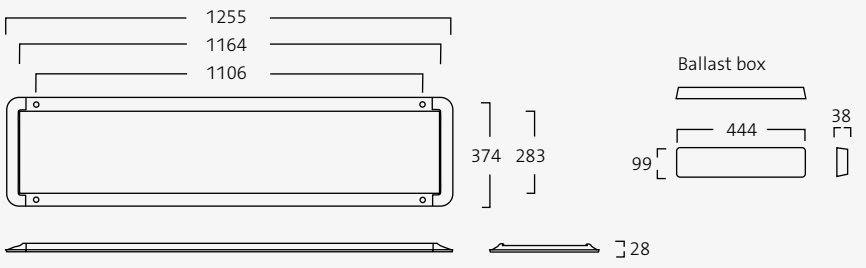
Design
Luminaire body in extruded aluminium and ends in cast metal. The luminaire is lacquered in black (RAL 9005) structured or white (RAL 9016) structured. Driver box in plastic.

Louvre
Edge-lit clear prismatic acrylic diffuser (PMMA). Average luminance <3000 cd/m².

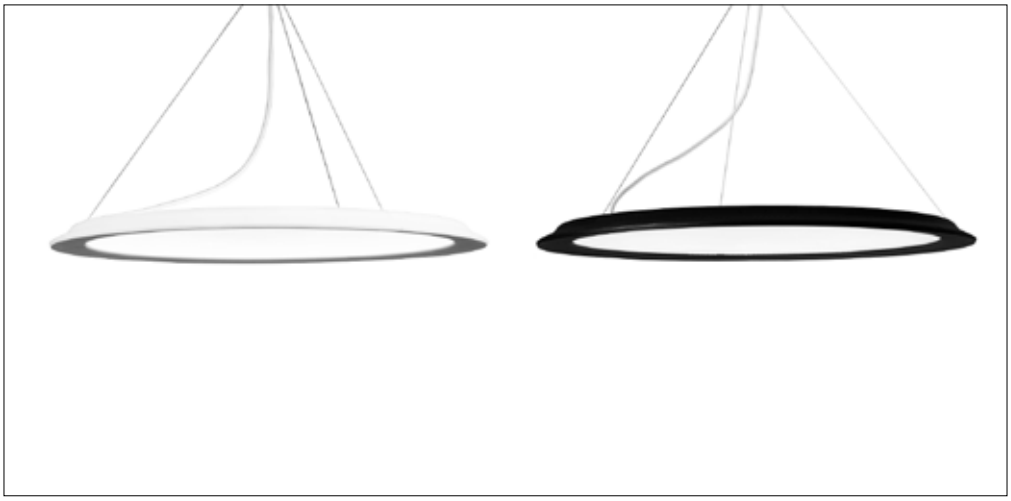
Dimming
DALI or e-Sense ActiLume as standard.

Miscellaneous
Appareo has side-emitting LEDs, as a result the luminaire's acrylic diffuser is completely transparent when switched off and provides an evenly luminated surface when lit. The distance between the luminaire and the driver can be increased to 10 metres if required.





e-Sense ActiLume is integrated into the ends of the luminaire.



Luminaire

System, W	Colour temp., K	Light distr.	Luminous flux, lm	Efficiency, lm/W	kg	White	Black
55	4000	40/60	4747	86	4.6	**53751-402**	**53752-402**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Installation
Wire suspension (4 m) with ceiling bracket and friction lock, is included with the luminaire. External driver box is mounted directly to ceiling or placed loosely above ceiling.

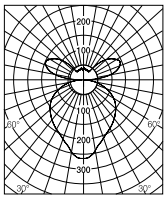
Connection
Luminaire is connected via remote LED driver, 230 V. Cable entry on top or through the knockout in the side. Snap-in terminal block 5 × 2.5 mm², 1-phase through-wiring possible. Supplied with a 3 m white fabric cord between luminaire and external driver box.

Design
Luminaire body in cast aluminium. The luminaire is lacquered in black (RAL 9005) structured or white (RAL 9016) structured. Driver box in plastic.

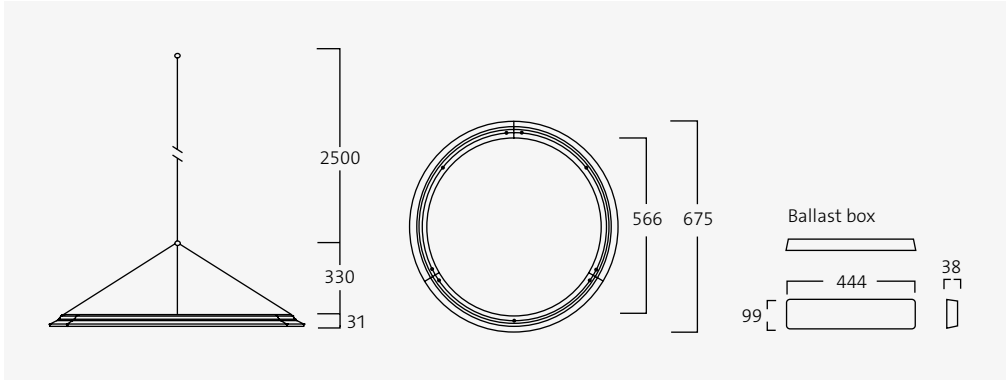
Louvre
Edge-lit clear prismatic acrylic diffuser (PMMA). Average luminance <3000 cd/m².

Dimming
DALI/Phase-pulse control as standard.

Miscellaneous
Appareo has side-emitting LEDs, as a result the luminaire's acrylic diffuser is completely transparent when switched off and provides an evenly luminated surface when lit. The distance between the luminaire and the driver can be increased to 10 metres if required.



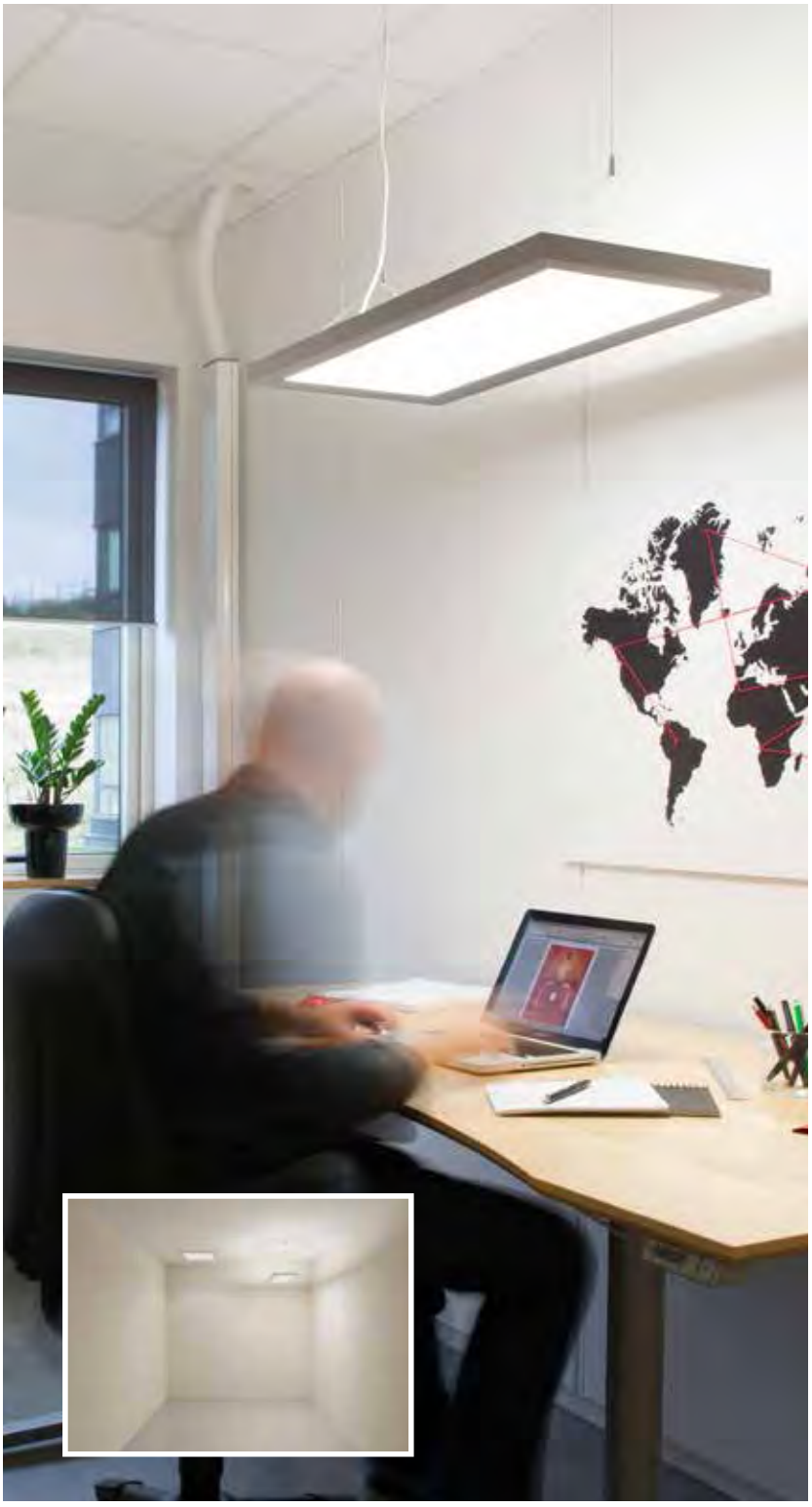
Driver boxes can be placed above ceilings or surface mounted directly to the ceiling.



When switched off, the diffuser is completely transparent.

Combilume

Combilume is an inventive family of large surface area luminaires designed so you can develop imaginative light settings. Combilume is available in wall, ceiling or pendant versions, with direct or indirect light, in a number of sizes. Combine them together in creative clusters or use each one as a separate light feature.



In Combilume, LED technology is really in its element. The modern light technology and side-emitting light diodes result in pleasant, even surfaces both for individual office work stations and for large rooms where people come together.

Combilume

Installation
Wire suspended via friction locks secured to the luminaire. Wire suspension ordered separately, see Accessories.
Connection
Connections are made at the end of the luminaire, see the dimensional drawing. 5-way snap-in terminal block at one end of the luminaire, 1-phase through-wiring possible.
Design
Luminaire body of extruded aluminium in white (RAL 9016) or alu-grey (RAL 9006) textured enamel.
Louvre
Delta – microprism louvre in acrylic (PMMA) with good optical characteristics.
Miscellaneous
Combilume uses side emitting LED technology for a glare-free light. Luminaire with Tunable White (2700–6500 K) is equipped with driver DALI Device type 8.

Luminaire

System, W		Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	White	Alu-grey	
50	300×800	4000	4700	94	4.0	**11908**	**11928**	☐
63	300×800	2700–6500			4.0	**11950**	**11951**	

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

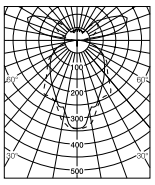
Suffix code

- ☐ **-402** DALI/Phase-pulse control
- ☐ **-448** e-Sense ActiLume single luminaire with 1 pull dim-cord
- ☐ **-449** DALI/Phase-pulse control, with 1 pull dim-cord
- ☐ **-458** e-Sense Connect
- ☐ **-457** e-Sense Connect with sensor
- ☐ **-459** e-Sense ActiLume master luminaire

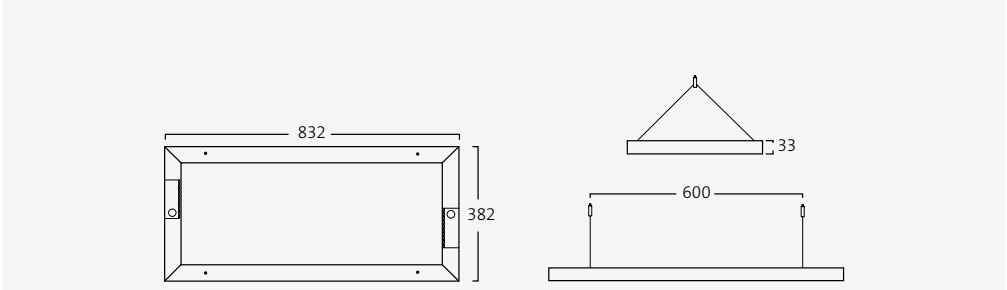
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Complete wire suspension, ceiling cup and mains cable 3×1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**94301**
Large ceiling cups, white/pair	**94444**
Small + large ceiling cup for T-bars 25 mm, white/pair	**94302**
Large ceiling cups for T-bars 25 mm, white/pair	**94445**
Complete wire suspension, ceiling cup and mains cable 5×1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**91691**
Large ceiling cups, white/pair	**91692**
Small + large ceiling cup for T-bars 25 mm, white/pair	**91693**
Large ceiling cups for T-bars 25 mm, white/pair	**91694**

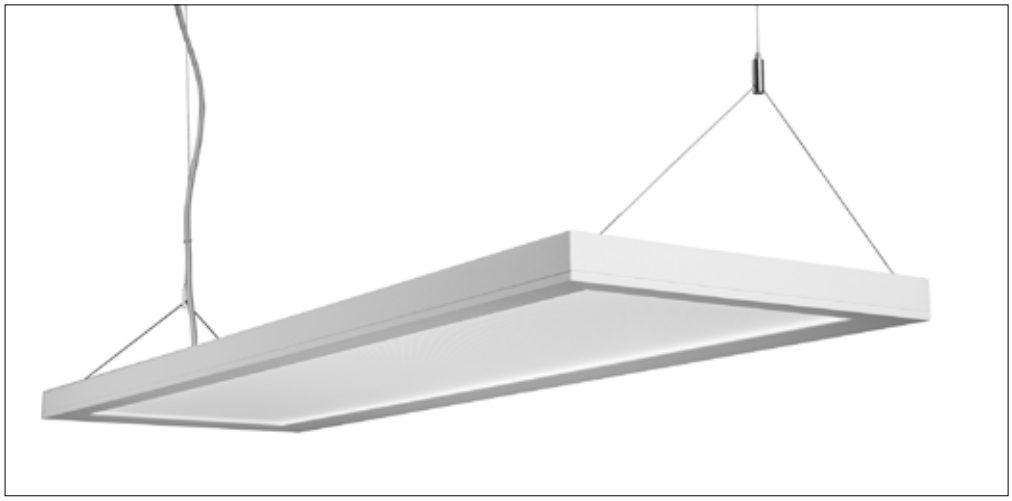


Delta 300×800



Combilume Direct/indirect achieves the required for 3000 cd/m² as per the EN 12464-1 standard.

Despite its compact dimensions, the technical solution is contained within the frame.



Installation
Wire suspended via friction locks secured to the luminaire. Wire suspension ordered separately, see Accessories.
Connection
Connection is made at the end of the luminaire, see the dimensional drawing. 5-way snap-in terminal block at one end of the luminaire, 1-phase through-wiring possible.
Design
Luminaire body of extruded aluminium in white (RAL 9016) or alu-grey (RAL 9006) textured enamel.
Louvre
Delta – microprism louvre in acrylic (PMMA) with good optical characteristics.
Opal – plate in frosted acrylic (PMMA).
Miscellaneous
Combilume uses side emitting LED technology for a glare-free light.

Luminaire

System, W		Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	White	Alu-grey
Opal							
53	300×1200	3000	4400	83	8.0	**11934**	**11944** ■
53	300×1200	4000	4400	83	8.0	**11904**	**11924** ■
53	600×600	3000	4500	83	7.6	**11935**	**11945** ■
53	600×600	4000	4500	83	7.6	**11905**	**11925** ■
Delta							
55	300×1200	3000	4700	86	8.0	**11937**	**11947** ■ ●
55	300×1200	4000	4700	86	8.0	**11907**	**11927** ■ ●

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

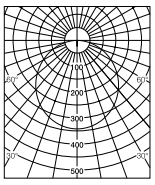
Suffix code

■	**-402** DALI/Phase-pulse control
●	**-448** e-Sense ActiLume single luminaire with 1 pull dim-cord
●	**-458** e-Sense Connect
●	**-457** e-Sense Connect with sensor
●	**-459** e-Sense ActiLume master luminaire

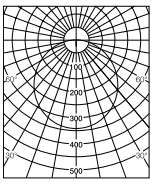
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

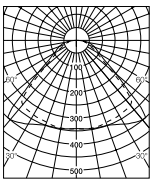
Continuous coupler	**91136**
Cluster connector for 4 pcs 600×600 luminaires	**91137**
Complete wire suspension, ceiling cup and mains cable 3×1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**94301**
Large ceiling cups, white/pair	**94444**
Small + large ceiling cup for T-bars 25 mm, white/pair	**94302**
Large ceiling cups for T-bars 25 mm, white/pair	**94445**
Complete wire suspension, ceiling cup and mains cable 5×1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**91691**
Large ceiling cups, white/pair	**91692**
Small + large ceiling cup for T-bars 25 mm, white/pair	**91693**
Large ceiling cups for T-bars 25 mm, white/pair	**91694**



Opal 300×1200



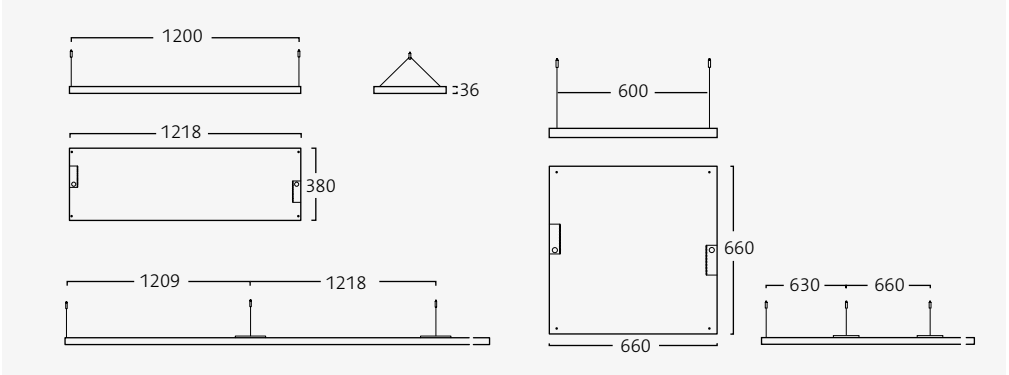
Opal 600×600



Delta 300×1200

Combilume can be continuously mounted.

The luminaire's position can be easily adjusted via friction locks.



Installation
Surface mounted.
Connection
Connection is made at the end of the luminaire, see the dimensional drawing. Option of cable entry in the end caps and middle of the luminaire. 5-way snap-in terminal block at one end of the luminaire, 1-phase through-wiring possible.
Design
Luminaire body of extruded aluminium in white (RAL 9016) or alu-grey (RAL 9006) textured enamel.
Louvre
Delta – microprism louvre in acrylic (PMMA) with good optical characteristics.
Opal – plate in frosted acrylic (PMMA).
Miscellaneous
Combilume uses side emitting LED technology for a glare-free light.

Luminaire

System, W		Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	White	Alu-grey
Opal							
28	300×600	3000	2300	81	4.5	**11931**	**11941** ■
28	300×600	4000	2300	81	4.5	**11901**	**11921** ■
53	300×1200	3000	4400	83	9.9	**11932**	**11942** ■
53	300×1200	4000	4400	83	9.9	**11902**	**11922** ■
53	600×600	3000	4500	83	9.0	**11933**	**11943** ■
53	600×600	4000	4500	83	9.0	**11903**	**11923** ■
Delta							
55	300×1200	3000	4700	86	9.9	**11936**	**11946** ■ ●
55	300×1200	4000	4700	86	9.9	**11906**	**11926** ■ ●

For current information on output and luminous flux, please refer to our website.

Information LED

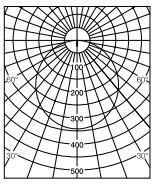
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

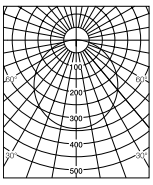
Suffix code

■ **-402** DALI/Phase-pulse control
● **-458** e-Sense Connect
● **-457** e-Sense Connect with sensor
● **-459** e-Sense ActiLume master luminaire

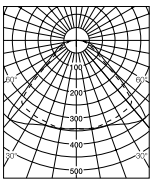
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



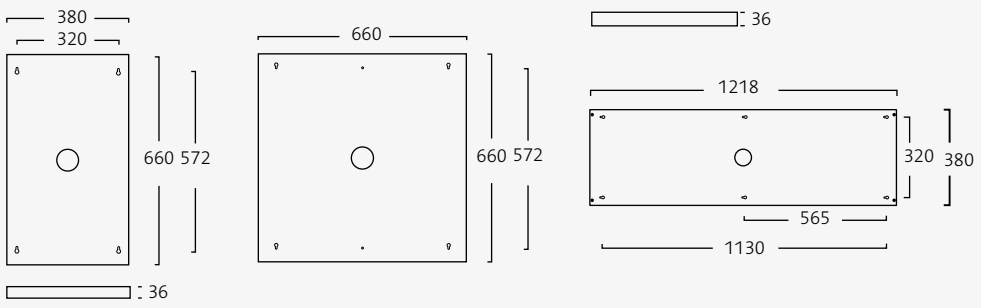
Opal 300×1200



Opal 600×600

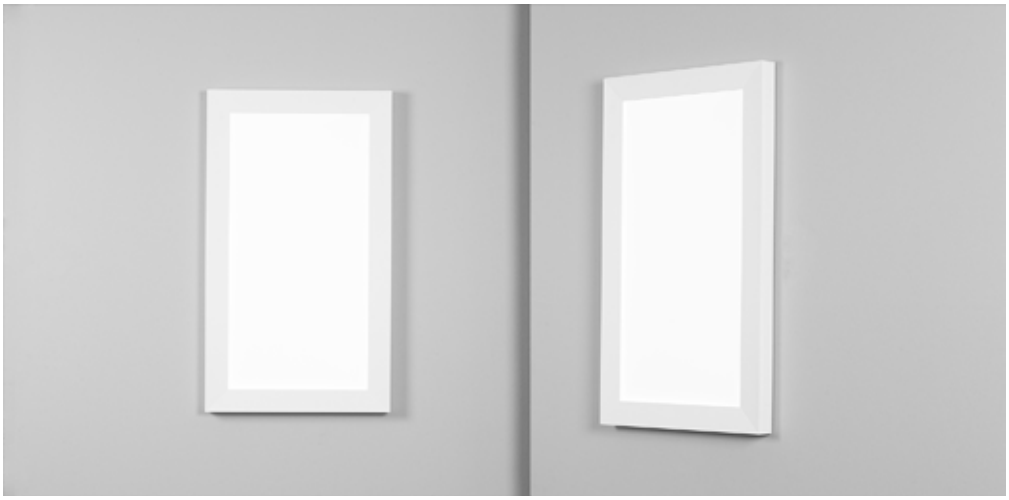


Delta 300×1200



Combilume ceiling mounted with Delta louvre .

Surface mounted connection cable entry is possible at the side of the luminaire .



Installation
For wall installation.
Connection
Connection is made at the end of the luminaire, see the dimensional drawing. Optional cable entry in the end caps or middle of the luminaire. 5-way snap-in terminal block at one end of the luminaire. Option of 1-phase through-wiring.
Design
Luminaire body of extruded aluminium in white (RAL 9016) or alu-grey (RAL 9006) textured enamel.
Louvre
Opal – plate in frosted acrylic (PMMA).
Dimming
DALI/Phase-pulse control as standard.
Miscellaneous
Combilume uses side emitting LED technology for a glare-free light.

Luminaire

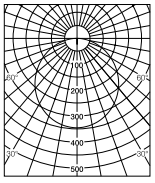
System, W		Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	White	Alu-grey
13	300×600	4000	1100	84	6.0	**11909-402**	**11929-402**
20	600×600	4000	1800	91	9.0	**11910-402**	**11930-402**

For current information on output and luminous flux, please refer to our website.

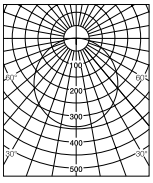
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

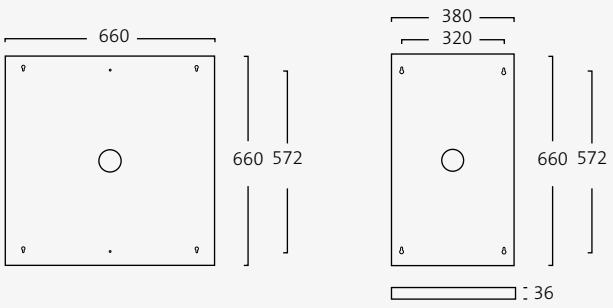
For further information on LEDs, please refer to the Technical Information chapter.

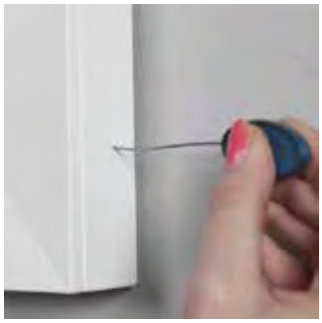


Opal 300×600



Opal 600×600





The frame is easily removed via an insertion on the side.

Wrap

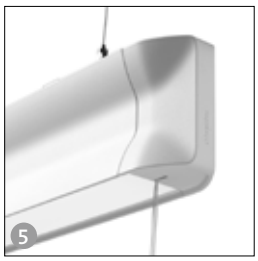
Designed by Ola Granlund and Leif Igelström

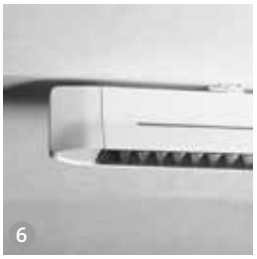
To replicate the experience of being in daylight you need a luminaire that releases light from all direction. At the same time we should be able to influence the intensity of the light, since we all see in different ways and have different tasks to complete. Wrap addresses both of these requirements.

Wrap is an ideal solution for both general and working environments and other public spaces. The suspended version provides the desired combination of direct and indirect light, either through separate T5 light sources or LED. The luminaire can be controlled, making it easy for the user to adjust the light to their own requirements.

Wrap is also available in a ceiling model for areas where a pendant solution is not viable. Both pendant and ceiling luminaires are available as either single or tandem models with three different choices of louvre, depending on the light source selected.

reddot design award
winner 2011





1. Wrap is a range of luminaires available in a variety of styles. The direct version has light slots on the sides to create incidental light – a detail that provides visual comfort.

2. The T5 luminaire can be equipped with three different louvre types; Beta, Lamell and Delta. The LED version is Lamell only.

3. Wrap is mounted via sliding brackets. Both Wrap Direct and Wrap Direct/indirect have these flexible mounting points.

4. All connections take place in the end-caps of the luminaire, facilitating easy installation without needing to open or take the luminaire apart.

5. Wrap is available with Fagerhult's lighting control system, e-Sense. Choose between single or master luminaires depending on the design and complexity of the installation. Wrap can also be supplied with a variety of different control options.

6. The Wrap Direct version can be mounted on T-bars via a special adapter which is ordered as an accessory – highlighted on the product page.

Installation
Wire suspended via friction locks secured to the luminaire. The bracket slides along the luminaire for flexible pendant spacing.
Connection
Connections are made at the end of the luminaire and are concealed by the end-cap. 5-way snap-in terminal block at one end of the luminaire.
Design
Body in extruded aluminium and end-caps in cast metal. White (RAL 9016) structured finish. Opal acrylic plastic cover on top of the luminaire.
Louvre
Lamell – lamell louvre in grey enamelled sheet steel.
Miscellaneous
Wrap LED has a specially developed lamell louvre with excellent mechanically shielding, avoiding glare from the diodes at certain angles.

Luminaire

System, W	Colour temp., K	Light dist.	Luminous flux, lm	Efficiency, lm/W	kg	
48	4000	30/70	3840	80	4.4	**16870** ☐

For current information, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

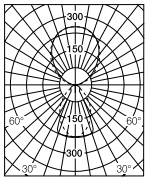
Suffix code

☐ **-16**	With one pull-cord
☐ **-402**	DALI/Phase-pulse control
☐ **-448**	e-Sense ActiLume single luminaire, 1 pull dim-cord
☐ **-449**	DALI/Phase-pulse control, 1 pull dim-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

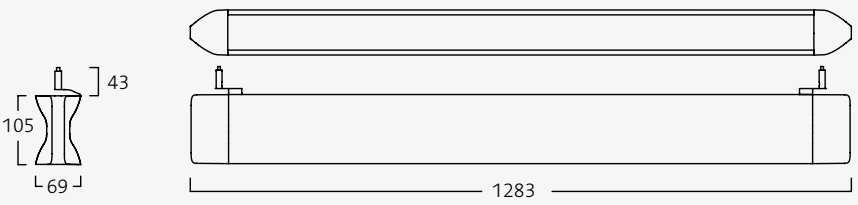
Accessories

Complete wire suspension, ceiling cup and mains cable 3 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**94301**
Large ceiling cups, white/pair	**94444**
Small + large ceiling cup for T-bars 25 mm, white/pair	**94302**
Large ceiling cups for T-bars 25 mm, white/pair	**94445**
Complete wire suspension, ceiling cup and mains cable 5 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**91691**
Large ceiling cups, white/pair	**91692**
Small + large ceiling cup for T-bars 25 mm, white/pair	**91693**
Large ceiling cups for T-bars 25 mm, white/pair	**91694**



Lamell

Wrap LED has an average luminance of 3000 cd/m², fulfilling the lighting standard EN 12464-1.



Wrap is suspended via flexible brackets which allows sideways movement. The bracket is supplied with the luminaire.

Luminaire

FDH	Beta	Lamell	Delta	
1×25/28/50/54	**16811**	**16801**	**16806**	■ ●[1)]
1×32/35/45/49	**16813**	**16803**	**16808**	■ ●[1)]

[1)] e-Sense can only be supplied in the Beta version.

Luminaire tandem

FDH	Beta	Lamell	Delta	
2×1×25/28/50/54	**16812**	**16802**	**16807**	■
2×1×32/35/45/49	**16814**	**16804**	**16809**	■

Suffix code

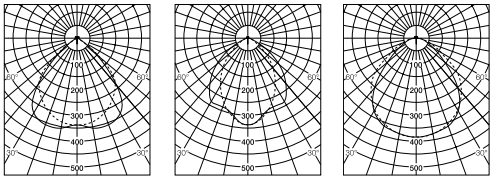
■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
■	**-409** Phase-pulse control, one pull-cord
●	**-367** e-Sense ActiLume master luminaire
●	**-384** e-Sense ActiLume single luminaire pull dim-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Complete wire suspension, ceiling cups and mains cable 3×1.0 mm². L=1.0 m. [1)]	
Small + large ceiling cup, white/pair	**94301**
Large ceiling cups, white/pair	**94444**
Small + large ceiling cup for T-bars 25 mm, white/pair	**94302**
Large ceiling cups for T-bars 25 mm, white/pair	**94445**
Complete wire suspension, ceiling cups and mains cable 5×1.0 mm². L=1.0 m. [1)]	
Small + large ceiling cup, white/pair	**91691**
Large ceiling cups, white/pair	**91692**
Small + large ceiling cup for T-bars 25 mm, white/pair	**91693**
Large ceiling cups for T-bars 25 mm, white/pair	**91694**
Bracket for direct mounting on T-bars	
Bracket for T-bars 25 mm.	**94050**

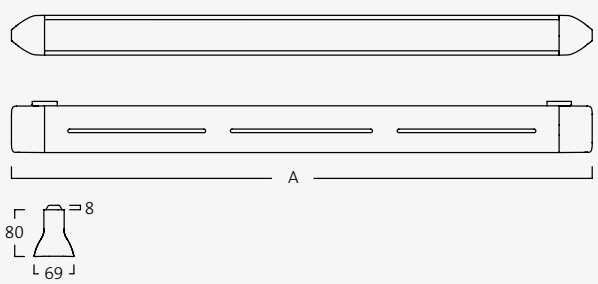
[1)] Requires wire lock (94329/pair) to complete set.



Beta Lamell Delta

W A
25/28/50/54 1283
32/35/45/49 1583

Tandem
W A
25/28/50/54 2452
32/35/45/49 3052



Installation
For surface mounting or wire suspension via friction locks secured to the luminaire. The bracket slides along the luminaire for flexible pendant spacing.

Connection
Connections are made at the end of the luminaire and are concealed by the end-cap. 5-way, snap-in terminal block in one end of the luminaire with the possibility of further connections.

Design
Body in extruded aluminium and end-caps in cast metal. White (RAL 9016) structured finish.

Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed.
Lamell – lamell louvre in grey enamelled sheet steel.
Delta – diffused micro-prism in acrylic TPb (PMMA) with good optical characteristics.

Reflector
Beta – the louvre acts as a reflector.
Lamell, *Delta* – reflector in metallised aluminium.

Miscellaneous
Wrap is equipped with a multi-ballast.

Wrap direct is equipped with light slots on the sides of the luminaire to create a decorative, incidental light around the luminaire.

Connections are made in the luminaire end-cap.

Luminaire				
FDH	**Beta**	**Lamell**	**Delta**	
2×25/28/50/54	**16831**	**16821**	**16826**	□ ●
2×32/35/45/49	**16833**	**16823**	**16828**	□ ●
Separate lighting				
2×25/28/50/54	**16845**	**16841**	**16843**	□ ▲
2×32/35/45/49	**16846**	**16842**	**16844**	□ ▲

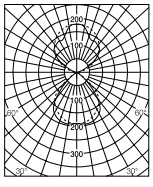
Luminaire tandem				
FDH	**Beta**	**Lamell**	**Delta**	
2×2×25/28/50/54	**16832**	**16822**	**16827**	□
2×2×32/35/45/49	**16834**	**16824**	**16829**	□

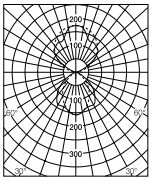
Suffix code	
□	**-368** DALI/Phase-pulse control
□	**-436** DALI/DSI/switchDIM
●	**-16** With one pull-cord
●	**-367** e-Sense ActiLume master luminaire
●	**-384** e-Sense ActiLume single luminaire pull dim-cord
●	**-409** Phase-pulse control, one pull-cord
▲	**-17** With two pull-cords
▲	**-410** Phase-pulse control, two pull-cords

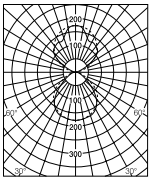
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Complete wire suspension, ceiling cups and mains cable 3×1.0 mm². L=1.0 m	
Small + large ceiling cup, white/pair	**94301**
Large ceiling cups, white/pair	**94444**
Small + large ceiling cup for T-bars 25 mm, white/pair	**94302**
Large ceiling cups for T-bars 25 mm, white/pair	**94445**
Complete wire suspension, ceiling cups and mains cable 5×1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**91691**
Large ceiling cups, white/pair	**91692**
Small + large ceiling cup for T-bars 25 mm, white/pair	**91693**
Large ceiling cups for T-bars 25 m, white/pair	**91694**

Installation
Wire suspended via friction locks secured to the luminaire. The bracket slides along the luminaire for flexible pendant spacing.
Connection
Connections are made at the end of the luminaire and are concealed by the end-cap. 5-way snap-in terminal block at one end of the luminaire.
Design
Body in extruded aluminium and end-caps in cast metal. White (RAL 9016) structured finish. Transparent acrylic plastic cover on top of the luminaire.
Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed.
Lamell – lamell louvre in grey enamelled sheet steel.
Delta – diffused micro-prism in acrylic TPb (PMMA) with good optical characteristics.
Reflector
Beta – the louvre acts as a reflector.
Lamell, *Delta* – reflector in metallised aluminium.
Miscellaneous
Wrap is equipped with a multi-ballast.

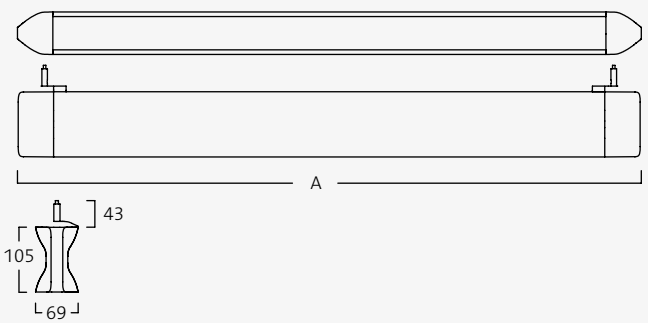

Beta


Lamell


Delta

W	A
25/28/50/54	1283
32/35/45/49	1583

Tandem	
W	A
25/28/50/54	2452
32/35/45/49	3052




Wrap is suspended via flexible brackets which allows sideways movement. The bracket is supplied with the luminaire.


Fagerhult's lighting control system e-Sense is discreetly integrated in the end-cap.

Wrap

Classic

By combining the latest in light sources with innovative solutions, Classic is a luminaire with superior efficiency and optimal lighting comfort.

Classic has been developed to meet the need for working and general light in offices and schools, where the focus is on creativity and well-being, without compromising economic and environmental requirements.

A double parabolic reflector louvre, a well-balanced light pattern and a maximised light yield from the diodes are the three factors that combine to produce a very viable payback time. With a measured effect of around 110 lm/W, it is also possible, in certain cases, to reduce the number of luminaires required to light a space. Variable suspension spacing facilitates both planning and installation.

Luminaire

System, W	Colour temp. K	Luminous flux, lm	lm/W	
60	3000	6400	107	**16006** ☐
60	4000	6400	107	**16007** ☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

- ☐ **-16** One pull-cord
- ☐ **-402** DALI/Phase-pulse control
- ☐ **-448** e-Sense ActiLume single luminaire, one pull-cord
- ☐ **-449** DALI/Phase-pulse control, one pull-cord
- ☐ **-457** e-Sense Connect with sensor
- ☐ **-458** e-Sense Connect
- ☐ **-459** e-Sense ActiLume master luminaire

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Wire suspension with white ceiling cups. L=1.5 m.	
Small ceiling cups, pair	**94414**
Small ceiling cups for T-bars 25 mm, pair	**94415**

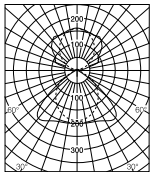
Installation
Installation via wire suspension. Luminaire bracket with friction lock included with the luminaire. The bracket slides along the luminaire for flexible pendant spacing.

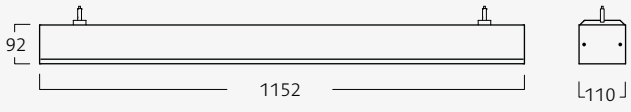
Connection
The luminaire is equipped with a 2.4 m mains cable 3×1.0 mm² and an earthed plug. The connecting mains cable comes out on the same side as the pull cord. Additional suffix codes -402 and -459 indicate that the luminaire is delivered with a 2.4 m mains cable 5×0.75 mm² excl. plug.

Design
Body in white (RAL 9016) extruded aluminium. The upper side is covered by a lined diffuser that serves as a light distributor and a dust cover.

Louvre
Beta LED – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with an integrated opal lined diffuser that minimises the risk of uncomfortable glare from the diodes.

Reflector
Reflector made of enamelled aluminium, giving wide light distribution of the indirect light.





Classic LED has a flexible mount for wire suspension, which can easily be adjusted lengthways.

Notor

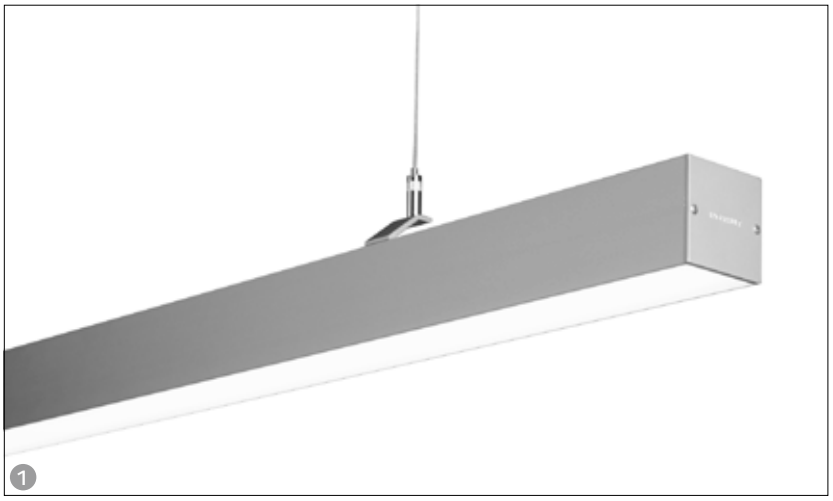
Designed by Julle Oksanen and Vesa Honkonen

LED or T5, Notor's expansive range spans suspended, surface mounted and recessed variations, offering the flexibility to maintain a consistent aesthetic across numerous applications.

Notor is characterised by discretion. Its minimalist style and clean line design is constructed of aluminium with a natural anodised finish. In continuous runs Notor provides an unbroken line of light in the ceiling while the L-coupler offers the scope to create more varied installations. The LED variation is lit all the way to the end-caps of the luminaire housing, further enhancing its visual appeal with illuminated corners.

The luminaires can be connected using a snap-in connector for safe and efficient installation, while providing additional protection to the light sources and other technology during installation.

Notor recessed, p. 126–137.



1. Notor LED utilises the benefits of LEDs. The luminaire has an exceptional level of uniformity in the diffuser and a high luminous efficacy. Notor LED can be surface mounted or suspended via a wire pendant.

2. The system is connected via the end-cap of the start luminaire which hides the wiring. The start luminaire can also be used in a single installation.

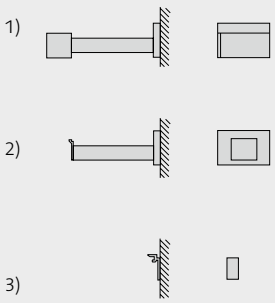
3. For continuous and system installations, through-wiring is achieved via a snap-in connection: the luminaires are clicked together and then secured with a screw joint. Each luminaire unit has an integrated ballast.

4. The continuous luminaires have an unbroken line of light without dark fields at the transition between the luminaire units.

5. The L-joints provide full lighting, creating an aesthetically pleasing transition in corners.

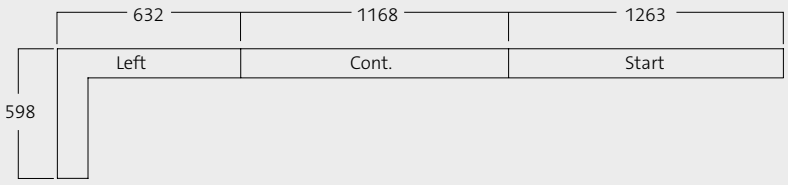
6. The LEDs are protected against contact by a plastic cover which prevents external influences.

Notor LED wall bracket



1) Wall bracket with connecting part, left
2) Wall bracket
3) Wall mount

Notor LED system dimension



Luminaire

Modular length	Colour temp., K	System, W	Luminous flux, lm	Efficiency, lm/W	kg	Start/single	Continuous	
Straight luminaire								
600	4000	10	880	91	2.0	**26310**	**26313**	☐
600	3000	10	780	80	2.0	**26316**	**26319**	☐
1200	4000	18	1850	102	3.0	**26311**	**26314**	☐
1200	3000	18	1650	90	3.0	**26317**	**26320**	☐
2400	4000	36	3700	101	6.0	**26312**	**26315**	☐
2400	3000	36	3300	90	6.0	**26318**	**26321**	☐
Illuminated corner								
Right								
600×600	4000	18	1760	96	3.0	**26332***	**26330**	☐
600×600	3000	18	1560	85	3.0	**26336***	**26334**	☐
Left								
600×600	4000	18	1760	96	3.0	**26333***	**26331**	☐
600×600	3000	18	1560	85	3.0	**26337***	**26335**	☐

** Only for suspension and in closed systems.*

For current information on output and luminous flux, please refer to our website.

Information LED

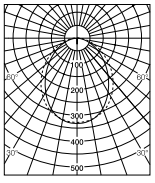
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

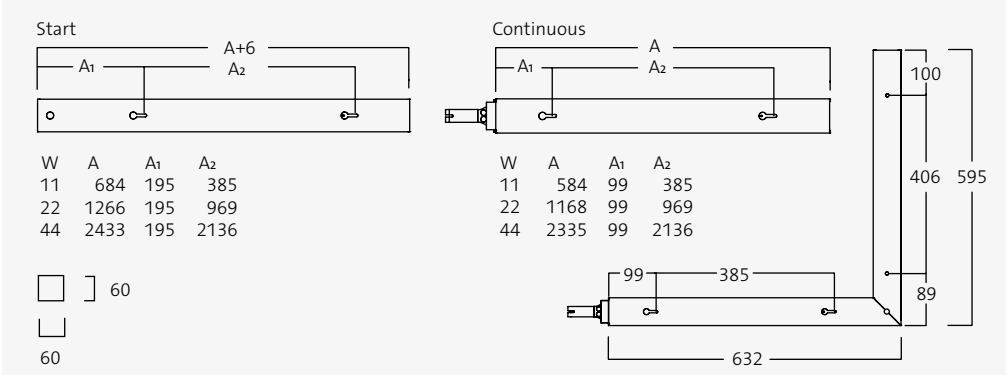
Suffix code

☐ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function.



All versions



Installation
Designed for single or continuous installation. Surface mounted or suspended via a wire pendant and special loops that give flexible c/c spacing. Can also be mounted on the wall via the wall bracket, see accessories.

Connection
The luminaire is equipped with an access hole for cabling on the top. A special short end with cable entry is used for a surface mounted mains cable, see accessories. The luminaire unit is equipped with a through-wiring cable (5×1.5 mm²) and a snap-in connection in each end-cap. In a continuous installation, the luminaire row should always begin with a start luminaire.

Design
Luminaire body in natural anodised, extruded aluminium finish.

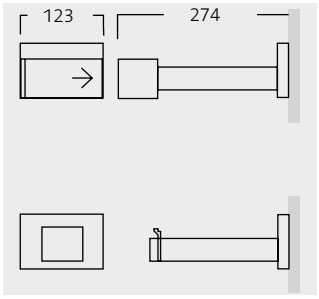
Louvre
Opal – plate in frosted acrylic (PMMA).

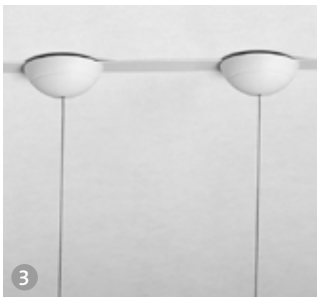
Accessories
Assembly fittings and supplementary components, see accessories.

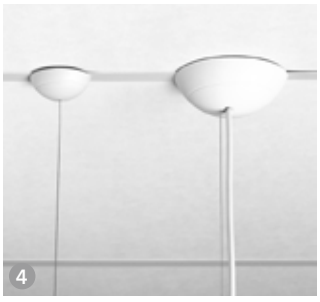
Miscellaneous
Illuminated corners with wiring option can only be suspended. The illuminated corners can be used as a start luminaire and are equipped with through-wiring and quick connection in one end. The corners can only be used in closed systems.

With continuous installation, all wiring needed is performed in the start luminaire, which provides a safe and efficient installation.

LED provides uniform luminance and completely illuminated corners.







1. Wall bracket for direct- and direct/indirect lighting luminaire	
Wall bracket	**92468**
Wall bracket with connection part (to the left)	**92469**

2. Wall socket	
Wall socket	**91962**

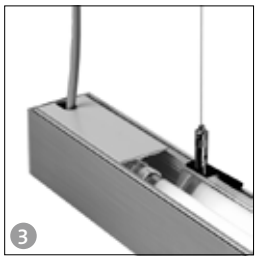
End-cap	
End-cap, with connection part/each	**92470**
End-cap with hole for surface mounted cable to ceiling luminaire/each	**92471**

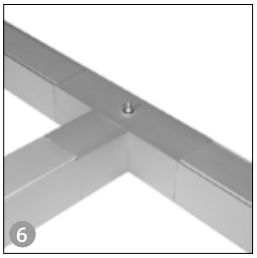
Wire bracket incl. wire lock	
Wire bracket incl. wire lock, alu grey (excl. wire)/pair	**91960**

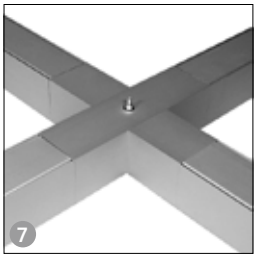
3. Wire suspension with alu-grey wire bracket and ceiling cups. L=1.5 m.	
Small ceiling cups, white/pair	**91980**
Small ceiling cups, grey/pair	**91982**
Small ceiling cups for T-bars 25 mm, white/pair	**91981**
Small ceiling cups for T-bars 25 mm, grey/pair	**91983**

4. Complete wire suspension, ceiling cups and mains cable 3 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**94760**
Small + large ceiling cup, grey/pair	**94761**
Large ceiling cups, white/pair	**94762**
Large ceiling cups, grey/pair	**94763**

Complete wire suspension, ceiling cups and mains cable 5 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**94766**
Small + large ceiling cup, grey/pair	**94767**
Large ceiling cups, white/pair	**94768**
Large ceiling cups, grey/pair	**94769**







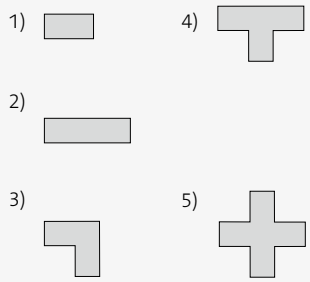
1. The range is provided with connections integrated into the luminaires. The opening on the luminaire runs to the opposite end-cap instead of terminating with a connection module.

2–3. The connection takes place at the end of the start luminaire and is concealed by a cover plate on the bottom.

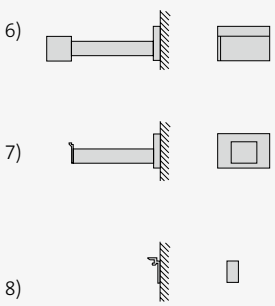
4–5. Continuous mounting can provide aesthetic and practical advantages. The continuous mounting is made completely without any visible details, the screw fixing gives the mechanic stability. Continuous- or system mounting always start with a connection luminaire that connects to continuous luminaires. Continuous connecting creates an unbroken line of light.

6–7. Notor G2 also offers possibilities to mount a system using L-, T- or X-connections. If you want to mix direct and indirect luminaires in the system, you can use an exchange unit.

Notor G2 system connections

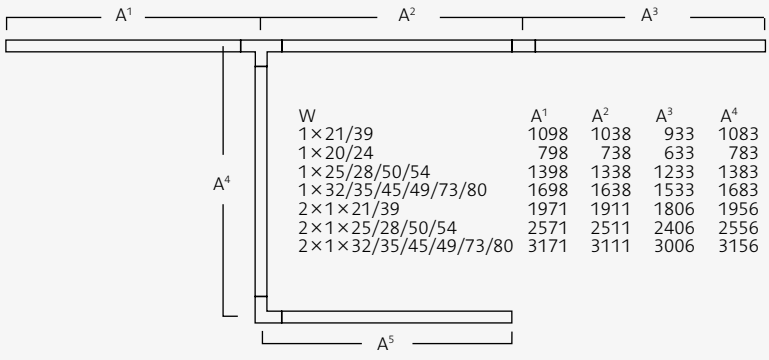


Notor G2 wall holdings



1) Exchanger, direct/indirect
2) emLED-unit
3) L-connection
4) T-connection
5) X-connection
6) Wall bracket with connection, left
7) Wall bracket
8) Wall socket

Notor G2 system dimensions



W	A1	A2	A3	A4	A5
1×21/39	1098	1038	933	1083	978
1×20/24	798	738	633	783	678
1×25/28/50/54	1398	1338	1233	1383	1278
1×32/35/45/49/73/80	1698	1638	1533	1683	1578
2×1×21/39	1971	1911	1806	1956	1851
2×1×25/28/50/54	2571	2511	2406	2556	2451
2×1×32/35/45/49/73/80	3171	3111	3006	3156	3051

Notor G2
Direct

Luminaire Lamell

FDH	kg	Start/Single	Continuous	
1×20/24	1.7	**26902**	**26912**	☐
1×21	2.0	**26901**	**26911**	☐
1×25/28	2.3	**26903**	**26913**	☐
1×32/35	2.6	**26904**	**26914**	☐
1×39	2.0	**26905**	**26915**	☐
1×45/49	2.6	**26770**	**26772**	☐
1×50/54	2.3	**26906**	**26916**	☐
1×73/80	2.6	**26907**	**26917**	☐
2×1×21	3.7	**26921**	**26931**	☐
2×1×25/28	4.3	**26923**	**26933**	☐
2×1×32/35	4.9	**26924**	**26934**	☐
2×1×39	3.7	**26925**	**26935**	☐
2×1×45/49	4.9	**26771**	**26773**	☐
2×1×50/54	4.3	**26926**	**26936**	☐
2×1×73/80	4.9	**26927**	**26937**	☐

Luminaire Opal

FDH	kg	Start/Single	Continuous	
1×21	2.0	**26998**	**26990**	☐
1×25/28	2.3	**26938**	**26939**	☐
1×32/35	2.6	**26948**	**26949**	☐
1×45/49	2.6	**26774**	**26776**	☐
2×1×21	3.7	**26958**	**26959**	☐
2×1×25/28	4.3	**26968**	**26969**	☐
2×1×32/35	4.9	**26978**	**26979**	☐
2×1×45/49	4.9	**26775**	**26777**	☐

Suffix code

☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Designed for single or continuous installation using wire pendant and special loops that give flexible c/c spacing. Can also be wall mounted with special brackets, see Accessories.

Connection
The single luminaire is equipped with 2.4 m connection cable 3×1.5 mm². The luminaire unit is equipped with through-wiring cable (5×1.5 mm²) and a snap-in terminal block at each end. Luminaries for dimming, suffix -436 and -368, are delivered with 5-core. In a continuous installation the luminaire row should always begin with a start luminaire.

Design
Luminaire body in natural anodized, extruded aluminium finish.

Louvre
Lamell – lamell louvre in grey enamelled sheet steel.
Opal – opal acrylic diffuser (PMMA).

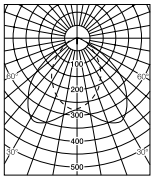
Reflector
Lamell – reflector of metallised aluminium.
Opal – reflector of white enamelled sheet steel.

Light distribution
Symmetrical.

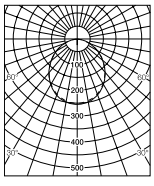
Emergency lighting
There is a unit with integrated emLED available for Notor G2, see Accessories.

Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
Installation fittings and supplementary details, see Accessories.



Lamell

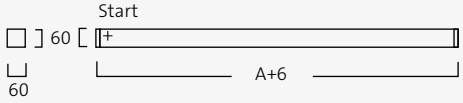


Opal

Wire suspension permits flexible c/c spacing along the length of the luminaire unit.

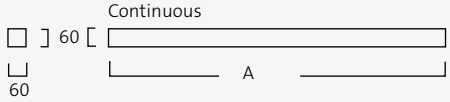
W Start	A
1×21/39	993
1×20/24	693
1×25/28/50/54	1293
1×32/35/45/49/73/80	1593
2×1×21/39	1866
2×1×25/28/50/54	2466
2×1×32/35/45/49/73/80	3066

Start



W Continuous	A
1×21	873
1×20/24	573
1×25/28/50/54	1173
1×32/35/45/49/73/80	1473
2×1×21	1746
2×1×25/28/50/54	2346
2×1×32/35/45/49/73/80	2946

Continuous



Start/single luminaire.

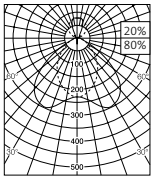
Notor G2
Direct/indirect

Luminaire				
FDH	kg	Start/Single	Continuous	
1×25/28	2.3	**26881**	**26891**	☐
1×32/35	2.6	**26882**	**26892**	☐
1×45/49	2.6	**26883**	**26893**	☐
1×50/54	2.3	**26884**	**26894**	☐
1×73/80	2.6	**26885**	**26895**	☐

Suffix code	
☐	**-368** DALI/Phase-pulse control
☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

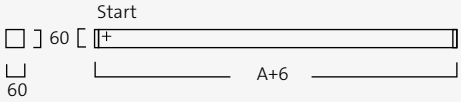
Installation
For single or continuous installation using wire suspension and special loops that give flexible c/c spacing. Can also be wall mounted with special bracket, see Accessories.
Connection
The single luminaire is equipped with 2.4 m connection cable 3×1.5 mm². The luminaire unit is equipped with through-wiring cable (5×1.5 mm²) and a snap-in terminal block at each end. Luminaires for dimming, suffix -436 and -368, are delivered with 5-core. In a continuous installation the luminaire row should always begin with a start luminaire.
Design
Luminaire body in natural anodised, extruded aluminium finish.
Louvre
Lamell – lamell louvre in grey enamelled sheet steel.
Reflector
Metallised aluminium reflector.
Light distribution
Symmetrical
Emergency lighting
There is a unit with integrated emLED available for Notor G2, see Accessories.
Dimming
Most models can also be equipped with other ballasts for dimming.
Accessories
Installation fittings and supplementary details, see Accessories.



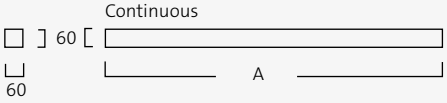
All versions

Notor G2 can be combined with accessories. Here wall bracket 91962.

W	A
Start	
1×25/28/50/54	1293
1×32/35/45/49/73/80	1593



W	A
Continuous	
1×25/28/50/54	1173
1×32/35/45/49/73/80	1473



Notor G2 direct/indirect provides the indirect light through slots on the top.

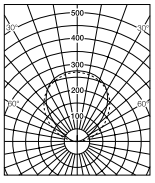
Notor G2
Indirect

Installation
For single or continuous installation using wire suspension and special loops that give flexible c/c spacing.
Connection
The single luminaire is equipped with 2.4 m connection cable 3×1.5 mm². The luminaire unit is equipped with through-wiring cable (5×1.5 mm²) and a snap-in terminal block at each end. Luminaires for dimming, suffix -436 and -368, are delivered with 5-core. In a continuous installation the luminaire row should always begin with a start luminaire.
Design
Luminaire body in natural anodised, extruded aluminium finish.
Reflector
Metallised aluminium reflector.
Emergency lighting
There is a unit with integrated emLED available for Notor G2, see Accessories.
Dimming
Most models can also be equipped with other ballasts for dimming.
Accessories
Installation fittings and supplementary details, see Accessories.

Luminaire				
FDH	kg	Start/Single	Continuous	
1×20/24	1.7	**26842**	**26852**	☐
1×21	2.0	**26841**	**26851**	☐
1×25/28	2.3	**26843**	**26853**	☐
1×32/35	2.6	**26844**	**26854**	☐
1×39	2.0	**26845**	**26855**	☐
1×45/49	2.0	**26778**	**26780**	☐
1×50/54	2.3	**26846**	**26856**	☐
1×73/80	2.6	**26847**	**26857**	☐
2×1×21	3.7	**26861**	**26871**	☐
2×1×25/28	4.3	**26863**	**26873**	☐
2×1×32/35	4.9	**26864**	**26874**	☐
2×1×39	3.7	**26865**	**26875**	☐
2×1×45/49	4.9	**26779**	**26781**	☐
2×1×50/54	4.3	**26866**	**26876**	☐
2×1×73/80	4.9	**26867**	**26877**	

Suffix code
☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



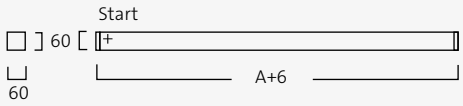
All versions

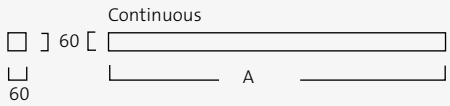
The wire suspension permits flexible c/c spacing. We recommend a black wire bracket to limit the luminance.

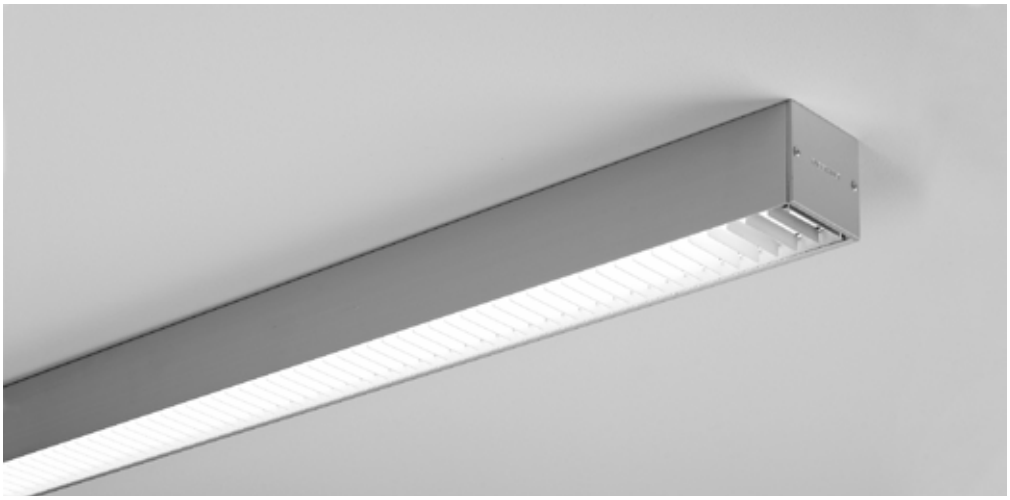
The light opening is covered by an acrylic plastic diffuser. Supplied with the luminaire.

W Start	A
1×21/39	993
1×20/24	693
1×25/28/50/54	1293
1×32/35/45/49/73/80	1593
2×1×21/39	1866
2×1×25/28/50/54	2466
2×1×32/35/45/49/73/80	3066

W Continuous	A
1×21	873
1×20/24	573
1×25/28/50/54	1173
1×32/35/45/49/73/80	1473
2×1×21	1746
2×1×25/28/50/54	2346
2×1×32/35/45/49/73/80	2946







Installation
Surface mounted.
Connection
Cable entries fitted with blanking grommets on top. A special short end with cable entry is used for a surface mounted mains cable, see accessories. The luminaire unit is equipped with through-wiring cable (5×1,5 mm²) and a snap-in terminal block at each end. In a continuous installation the luminaire row should always begin with a start luminaire.
Design
Luminaire body in natural anodised, extruded aluminium finish.
Louvre
Lamell – lamell louvre in grey enamelled sheet steel.
Opal – opal acrylic diffuser (PMMA).
Reflector
Lamell – reflector of metallised aluminium.
Opal – reflector of white enamelled sheet steel.
Emergency lighting
There is a unit with integrated emLED available for Notor G2, see Accessories.
Dimming
Most models can also be equipped with other ballasts for dimming.
Accessories
Installation fittings and supplementary details, see Accessories.

Luminaire Lamell

FDH	kg	Start/Single	Continuous	
1×20/24	1.7	**26942**	**26952**	☐
1×21	2.0	**26941**	**26951**	☐
1×25/28	2.3	**26943**	**26953**	☐
1×32/35	2.6	**26944**	**26954**	☐
1×39	2.0	**26945**	**26955**	☐
1×45/49	2.6	**26782**	**26784**	☐
1×50/54	2.3	**26946**	**26956**	☐
1×73/80	2.6	**26947**	**26957**	☐
2×1×21	3.7	**26961**	**26971**	☐
2×1×25/28	4.3	**26963**	**26973**	☐
2×1×32/35	4.9	**26964**	**26974**	☐
2×1×39	3.7	**26965**	**26975**	☐
2×1×45/49	4.9	**26783**	**26785**	☐
2×1×50/54	4.3	**26966**	**26976**	☐
2×1×73/80	4.9	**26967**	**26977**	

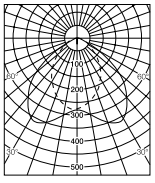
Luminaire Opal

FDH	kg	Start/Single	Continuous	
1×21	2.0	**26898**	**26899**	☐
1×25/28	2.3	**26838**	**26839**	☐
1×32/35	2.6	**26848**	**26849**	☐
1×45/49	2.6	**26786**	**26788**	☐
2×1×21	3.7	**26858**	**26859**	☐
2×1×25/28	4.3	**26868**	**26869**	☐
2×1×32/35	4.9	**26878**	**26879**	☐
2×1×45/49	4.9	**26787**	**26789**	☐

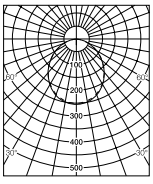
Suffix code

☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



Lamell

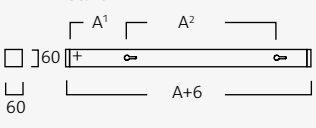


Opal

The ceiling luminaire is equipped with keyhole slots for easy installation.

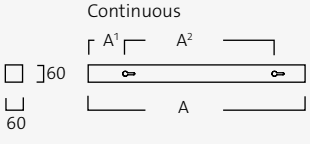
W Start	A	A^1	A^2
1×21/39	993	220	670
1×20/24	693	200	410
1×25/28/50/54	1293	220	970
1×32/35/45/49/73/80	1593	220	1270
2×1×21/39	1866	220	1543
2×1×25/28/50/54	2466	220	2143
2×1×32/35/45/49/73/80	3066	220	2743

Start

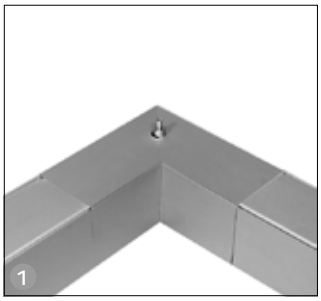


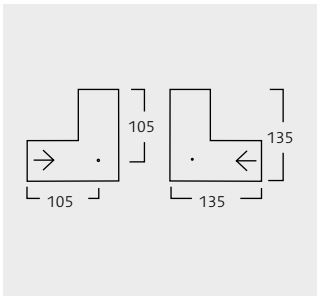
W Continuous	A	A^1	A^2
1×21	873	100	670
1×20/24	573	80	410
1×25/28/50/54	1173	100	970
1×32/35/45/49/73/80	1473	100	1270
2×1×21	1746	100	1543
2×1×25/28/50/54	2346	100	2143
2×1×32/35/45/49/73/80	2946	100	2743

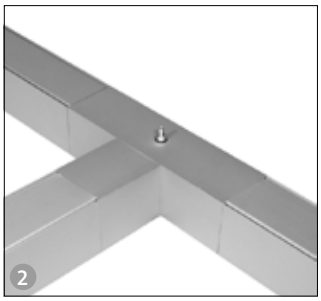
Continuous

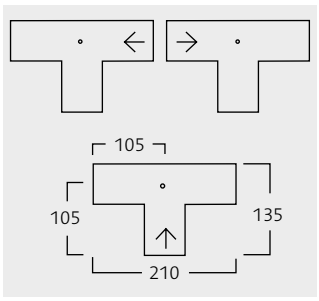


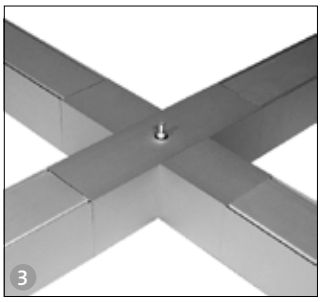
Unbroken light opening in continuous installation.

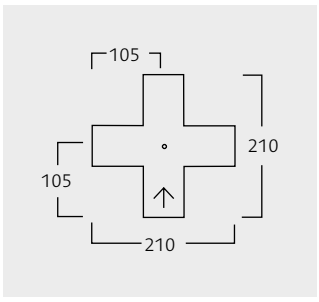


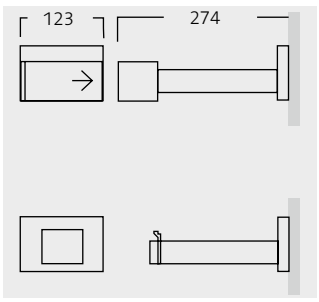


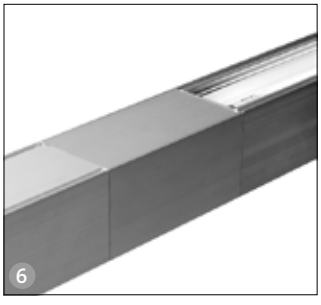


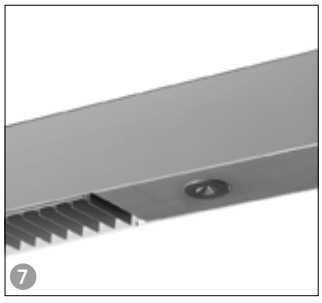












1. L-coupler for direct- and direct/indirect lighting luminaire, incl. wire lock	
L-coupler left, direct	**92453**
L-coupler right, direct	**92454**
L-coupler for luminaire surface mounted	
L-coupler left, surface mounted	**92448**
L-coupler right, surface mounted	**92449**
L-coupler for indirect lighting luminaire, incl. wire lock	
L-coupler left, indirect	**92455**
L-coupler right, indirect	**92456**
2. T-coupler for direct- and direct/indirect lighting luminaire, incl. wire lock	
T-coupler connecting left, direct	**92457**
T-coupler connecting right, direct	**92458**
T-coupler connecting centre, direct	**92459**
T-coupler for indirect lighting luminaire, incl. wire lock	
T-coupler connecting left, indirect	**92460**
T-coupler connecting right, indirect	**92461**
T-coupler connecting centre, indirect	**92462**
3. X-coupler for direct- and direct/indirect lighting luminaire, incl. wire lock	
X-coupler	**92451**
X-coupler for indirect lighting luminaire, incl. wire lock.	
X-coupler	**92452**
4. Wall bracket for direct and direct/indirect lighting luminaire. Used in combination with continuous luminaires. End-caps included.	
Wall bracket with connection part (to the left)	**92467**
Wall bracket	**92468**
5. Wall socket	
Wall socket	**91962**
6. Alternating unit	
Changes between direct and indirect luminaire, L=120 mm	**92450**
7. emLED-unit, only in combination with HF-standard	
emLED-unit for direct lighting luminaire, L=210 mm	**92466**
emLED-unit for indirect lighting luminaire, L=210 mm	**92463**
End-cap	
End-cap/each	**92464**
End-cap with hole for surface mounted cable to ceiling luminaire/each	**92465**
Wire suspension bracket incl. wire lock (excl. wire)	
Anodised/pair	**91960**
Black/pair	**91961**
Wire suspension with alu wire bracket L=1.5 m with plastic ceiling cups ⌀ 57 mm	
Small ceiling cups, white/pair	**91980**
Small ceiling cups, grey/pair	**91982**
Small ceiling cups for T-bars 25 mm, white/pair	**91981**
Small ceiling cups for T-bars 25 mm, grey/pair	**91983**
Wire suspension for indirect lighting luminaire with black wire bracket and ceiling cup. L=1.5 m. L=1.5 m.	
Small ceiling cups, white/pair	**91984**
Small ceiling cups, grey/pair	**91986**
Small ceiling cups for T-bars 25 mm, white/pair	**91985**
Small ceiling cups for T-bars 25 mm, grey/pair	**91987**

Avion

Avion has a delicate beauty masking a robust design. An elegant flow of light which creates an impression of weightlessness, designed to act as a striking solitary luminaire, or to form a system where its long dimensions create a fascinating linear interaction.

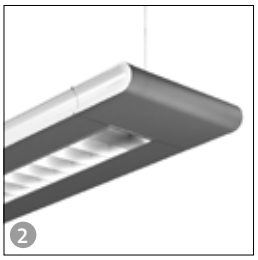
Avion is an extensive range of pendant luminaires. Behind the clean lines hides an innovative design and advanced lighting technology. The assortment comprises of four different combinations of direct and indirect light distributions. Efficiency and visual comfort are ensured via Fagerhults Lamell and Beta r5 louvres.

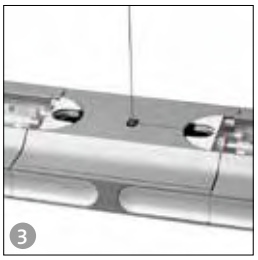
The light source for the indirect distribution are discreetly positioned in a subtle elevation at the top of the luminaire, while the thin lines and the concaved edges provide the essence of the design. The distinctive colour contrasts along the side attracts attention and enhances its form.

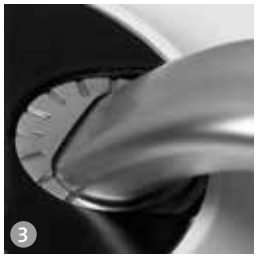
Avion can be continuously installed, seamlessly integrated via continuous connectors. The addition of flexible connectors offers the potential to create curved lines, with variations at each connection point.

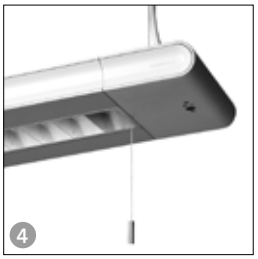
Avion achieved an honourable mention in the 2009 red dot design awards.

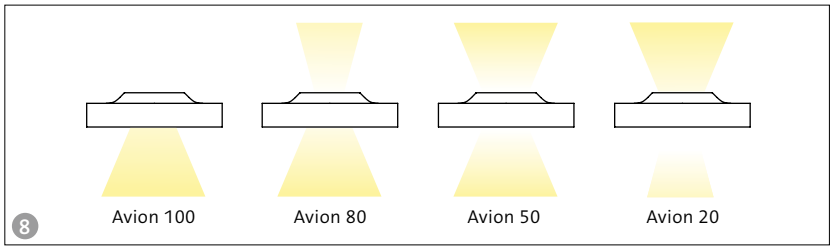
reddot design award
honourable mention 2009











1. The body of the luminaire is finished in two contrasting colours – adding to the visual appeal. All parts are manufactured in aluminium, giving Avion a robust construction behind its delicate appearance.

2. Avion is available with two different louvres – Lamell and Beta r5.

3. Avion is designed for both single and continuous installation. The range includes two accessories for continuous mounting, a straight connector or Avion Flex for a varied system design. The protractor on the flexible coupling makes adjustment of system assemblies easy.

4. With Fagerhult's system for light control, e-Sense, the sensor is integrated discreetly at the luminaire's end-cap – offering an aesthetic and flexible solution.

5. All Avion models with an indirect light distribution are equipped with a dust cover for the light opening on top – helping to keep the luminaire and louvre clean.

6. Avion has a special lamp holder which significantly simplifies re-lamping.

7. Avion can be supplied fully assembled with a protective plastic cover, simplifying installation and protecting the luminaire against dirt during the construction process.

8. With its large selection of light distributions, Avion is a luminaire range that satisfies most needs in a lighting project. Each luminaire is named after its proportion of direct light, making it easy to identify which one to select.

Avion 100
Beta, Lamell

Luminaire, single installation incl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
1×25/28	6.6	**29021**	**29051**	■
1×32/35	8.1	**29022**	**29052**	■
1×45/49	8.1	**29023**	**29053**	■
1×50/54	6.6	**29024**	**29054**	■
2×25/28	6.6	**29026**	**29056**	■ ●
2×32/35	8.1	**29027**	**29057**	■ ●
2×45/49	8.1	**29028**	**29058**	■
2×50/54	6.6	**29029**	**29059**	■
Lamell				
1×25/28	6.6	**29001**	**29031**	■
1×32/35	8.1	**29002**	**29032**	■
1×45/49	8.1	**29003**	**29033**	■
1×50/54	6.6	**29004**	**29034**	■
2×25/28	6.6	**29006**	**29036**	■ ●
2×32/35	8.1	**29007**	**29037**	■ ●
2×45/49	8.1	**29008**	**29038**	■
2×50/54	6.6	**29009**	**29039**	■

Luminaire, continuous installation excl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
1×25/28	6.5	**29332**	**29341**	■
2×25/28	6.5	**29337**	**29346**	■
1×32/35	8.0	**29333**	**29342**	■
2×32/35	8.0	**29338**	**29347**	■
1×45/49	8.0	**29334**	**29343**	■
2×45/49	8.0	**29339**	**29348**	■
1×50/54	6.5	**29335**	**29344**	■
2×50/54	6.5	**29340**	**29349**	■

Suffix code

- ■ **-368** DALI/Phase-pulse control
- ■ **-409** Phase-pulse control, one pull-cord
- ■ **-436** DALI/DSI/switchDIM
- ● **-218** e-Sense smartSWITCH absence detector
- ● **-219** e-Sense smartSWITCH on/off
- ● **-220** e-Sense smartSWITCH pull dim-cord
- ● **-367** e-Sense ActiLume master luminaire
- ● **-384** e-Sense ActiLume single luminaire, pull dim-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension via wire lock secured directly to the luminaire. Balanced.

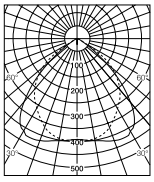
Connection
Single installation – the luminaire is equipped with a 2.4 m mains cable 3×0.75 mm² and an earthed plug as standard. Luminaires ordered with switchDIM or DALI are equipped with 2.4 m mains cable 5×0.75 mm² excl. plug.
Continuous installation – 5-way snap-in terminal block at each end and 3×1.5 mm² through-wiring as standard. With dimming, 5-way snap-in terminal block,1-phase through-wiring possible.

Design
Body in extruded aluminium and end-caps in cast aluminium. The luminaire is finished in a white/black (RAL 9016 structured/RAL 9005) or alu-grey/white (RAL 9006 structured/ RAL 9016) design. The top cover is transparent acrylic plastic. Luminaires for continuous installation require end-caps – must be ordered separately.

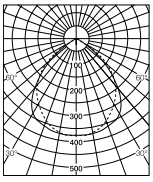
Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed.
Lamell – lamell louvre in grey enamelled sheet steel.

Reflector
Reflector material of metallised aluminium with satin matt surface.

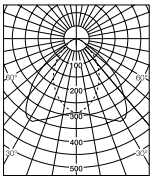
Accessories
Assembly fittings and supplementary components, see Accessories.



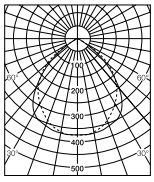
1×32/35 W, Beta



2×32/35 W, Beta

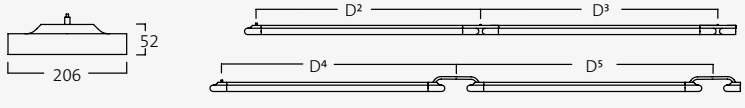


1×32/35 W, Lamell



2×32/35 W, Lamell

W	D¹	D²	D³	D⁴	D⁵	D⁶
25/28	1200	1275	1350	1330	1460	1335
32/35	1500	1575	1650	1630	1760	1635
45/49	1500	1575	1650	1630	1760	1635
50/54	1200	1275	1350	1330	1460	1335



Avion 100 is for direct lighting only. The aluminium cover adds to the solid appearance of the luminaire.

The Beta louvre provides excellent efficiency and a controlled luminance.

Avion 80
Beta, Lamell

Luminaire, single installation incl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
1×25/28	6.5	**29081**	**29111**	■
1×32/35	8.0	**29082**	**29112**	■
1×45/49	8.0	**29083**	**29113**	■
1×50/54	6.5	**29084**	**29114**	■
2×25/28	6.5	**29086**	**29116**	■ ● ●
2×32/35	8.0	**29087**	**29117**	■ ● ●
2×45/49	8.0	**29088**	**29118**	■
2×50/54	6.5	**29089**	**29119**	■
Lamell				
1×25/28	6.5	**29061**	**29091**	■
1×32/35	8.0	**29062**	**29092**	■
1×45/49	8.0	**29063**	**29093**	■
1×50/54	6.5	**29064**	**29094**	■
2×25/28	6.5	**29066**	**29096**	■ ●
2×32/35	8.0	**29067**	**29097**	■ ●
2×45/49	8.0	**29068**	**29098**	■
2×50/54	6.5	**29069**	**29099**	■

Luminaire, continuous installation excl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
1×25/28	6.4	**29300**	**29311**	■
1×32/35	7.9	**29301**	**29312**	■
1×45/49	7.9	**29302**	**29313**	■
1×50/54	6.4	**29303**	**29314**	■
2×25/28	6.4	**29305**	**29316**	■
2×32/35	7.9	**29306**	**29317**	■
2×45/49	7.9	**29307**	**29318**	■
2×50/54	6.4	**29308**	**29319**	■

Suffix code

- ■ **-368** DALI/Phase-pulse control
- ■ **-409** Phase-pulse control, one pull-cord
- ■ **-436** DALI/DSI/switchDIM
- ● **-218** e-Sense smartSWITCH absence detector
- ● **-219** e-Sense smartSWITCH on/off
- ● **-220** e-Sense smartSWITCH pull dim-cord
- ● **-367** e-Sense ActiLume master luminaire
- ● **-384** e-Sense ActiLume single luminaire, pull dim-cord
- ● **-427** e-Sense Connect
- ● **-428** e-Sense Connect with sensor

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension via wire lock secured directly to the luminaire. Balanced.

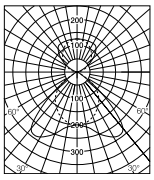
Connection
Single installation – the luminaire is equipped with a 2.4 m mains cable 3×0.75 mm² and an earthed plug as standard. Luminaires ordered with switchDIM or DALI are equipped with 2.4 m mains cable 5×0.75 mm² excl. plug.
Continuous installation – 5-way snap-in terminal block at each end and 3×1.5 mm² through-wiring as standard. With dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

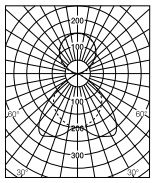
Design
Body in extruded aluminium and end-caps in cast aluminium. The luminaire is finished in a white/black (RAL 9016 structured/RAL 9005) or alu-grey/white (RAL 9006 structured/ RAL 9016) design. The top cover is transparent acrylic plastic. Luminaires for continuous installation require end-caps – must be ordered separately.

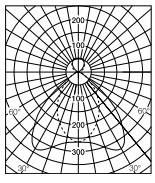
Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt, metallised aluminium with very good reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed.
Lamell – lamell louvre in grey enamelled sheet steel.

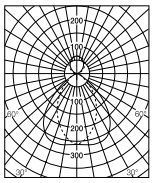
Reflector
Reflector material of metallised aluminium with satin matt surface.

Accessories
Assembly fittings and supplementary components, see Accessories.

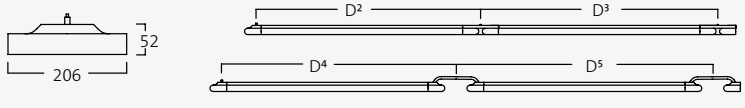

1×32/35 W, Beta


2×32/35 W, Beta


1×32/35 W, Lamell


2×32/35 W, Lamell

W	D¹	D²	D³	D⁴	D⁵	D⁶
25/28	1200	1275	1350	1330	1460	1335
32/35	1500	1575	1650	1630	1760	1635
45/49	1500	1575	1650	1630	1760	1635
50/54	1200	1275	1350	1330	1460	1335




Avion Flex – an aesthetic way to create system luminaires with angles.


Avion with e-Sense – the sensor is discretely integrated into the end-cap.

Avion 50
Beta, Lamell

Luminaire, single installation incl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
1×25/28	6.5	**29141**	**29171**	■
1×32/35	8.0	**29142**	**29172**	■
1×45/49	8.0	**29143**	**29173**	■
1×50/54	6.5	**29144**	**29174**	■
2×25/28	6.5	**29146**	**29176**	■ ● ●
2×32/35	8.0	**29147**	**29177**	■ ● ●
2×45/49	8.0	**29148**	**29178**	■
2×50/54	6.5	**29149**	**29179**	■
Lamell				
1×25/28	6.5	**29121**	**29151**	■
1×32/35	8.0	**29122**	**29152**	■
1×45/49	8.0	**29123**	**29153**	■
1×50/54	6.5	**29124**	**29154**	■
2×25/28	6.5	**29126**	**29156**	■ ●
2×32/35	8.0	**29127**	**29157**	■ ●
2×45/49	8.0	**29128**	**29158**	■
2×50/54	6.5	**29129**	**29159**	■

Luminaire, continuous installation excl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
1×25/28	6.4	**29241**	**29251**	■
1×32/35	8.0	**29242**	**29252**	■
1×45/49	8.0	**29243**	**29253**	■
1×50/54	6.4	**29244**	**29254**	■
2×25/28	6.4	**29246**	**29256**	■
2×32/35	8.0	**29247**	**29257**	■
2×45/49	8.0	**29248**	**29258**	■
2×50/54	6.4	**29249**	**29259**	■

Suffix code

- ■ **-368** DALI/Phase-pulse control
- ■ **-409** Phase-pulse control, one pull-cord
- ■ **-436** DALI/DSI/switchDIM
- ● **-218** e-Sense smartSWITCH absence detector
- ● **-219** e-Sense smartSWITCH on/off
- ● **-220** e-Sense smartSWITCH pull dim-cord
- ● **-367** e-Sense ActiLume master luminaire
- ● **-384** e-Sense ActiLume single luminaire, pull dim-cord
- ● **-427** e-Sense Connect
- ● **-428** e-Sense Connect with sensor

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension via wire lock secured directly to the luminaire. Balanced.

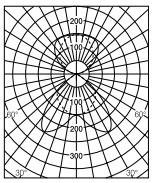
Connection
Single installation – the luminaire is equipped with a 2.4 m mains cable 3×0.75 mm² and an earthed plug as standard. Luminaires ordered with switchDIM or DALI are equipped with 2.4 m mains cable 5×0.75 mm² excl. plug.
Continuous installation – 5-way snap-in terminal block at each end and through-wiring cable 3×1.5 mm² as standard. With dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Body in extruded aluminium and end-caps in cast aluminium. The luminaire is finished in a white/black (RAL 9016 structured/RAL 9005) or alu-grey/white (RAL 9006 structured/ RAL 9016) design. The top cover is transparent acrylic plastic. Luminaires for continuous installation require end-caps – must be ordered separately.

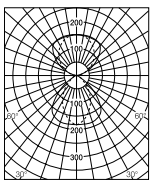
Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt, metallised aluminium with very good reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed.
Lamell – lamell louvre in grey enamelled sheet steel.

Reflector
Reflector material of metallised aluminium with satin matt surface.

Accessories
Assembly fittings and supplementary components, see Accessories.

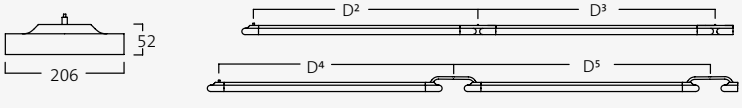


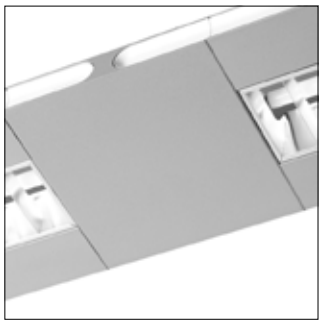
2×32/35 W, Beta



2×32/35 W, Lamell

W	D¹	D²	D³	D⁴	D⁵	D⁶
25/28	1200	1275	1350	1330	1460	1335
32/35	1500	1575	1650	1630	1760	1635
45/49	1500	1575	1650	1630	1760	1635
50/54	1200	1275	1350	1330	1460	1335

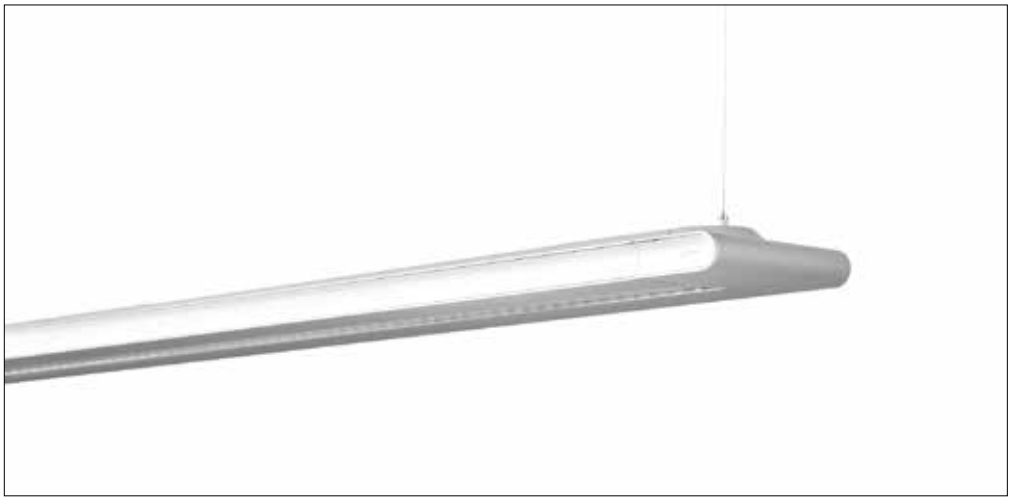




A continuous coupler is available as an accessory.

The removable end-caps partially conceal the friction lock from view.

Avion 20
Beta, Lamell



Luminaire, single installation incl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
3×25/28	6.6	**29191-**	**29211-**	☐
3×32/35	8.1	**29192-**	**29212-**	☐
3×45/49	8.1	**29193-**	**29213-**	☐
Lamell				
3×25/28	6.6	**29181-**	**29201-**	☐
3×32/35	8.1	**29182-**	**29202-**	☐
3×45/49	8.1	**29183-**	**29203-**	☐

Luminaire must be completed with desired function. See table with suffix codes.

Suffix code

☐ **-17**	With two pull-cords, separate direct/indirect
☐ **-218**	e-Sense smartSWITCH absence detector
☐ **-219**	e-Sense smartSWITCH on/off
☐ **-220**	e-Sense smartSWITCH pull dim-cord
☐ **-368**	DALI/Phase-pulse control
☐ **-384**	e-Sense ActiLume single luminaire, pull dim-cord
☐ **-410**	Phase-pulse control, two pull-cords, separate direct/indirect
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension via wire lock secured directly to the luminaire. Balanced.

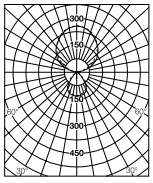
Connection
The luminaire is equipped with a 2.4 m mains cable 3×0.75 mm² and an earthed plug as standard. Luminaires ordered with switchDIM or DALI are equipped with 2.4 m mains cable 5×0.75 mm² excl. plug.

Design
Body in extruded aluminium and end-caps in cast aluminium. The luminaire is finished in a white/black (RAL 9016 structured/RAL 9005) or alu-grey/white (RAL 9006 structured/RAL 9016) design. The top cover is transparent acrylic plastic.

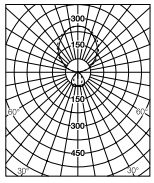
Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed.
Lamell – lamell louvre in grey enamelled sheet steel.

Reflector
Reflector material of metallised aluminium with satin matt surface.

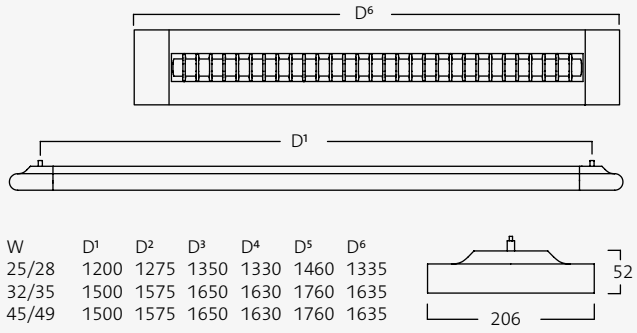
Accessories
Assembly fittings and supplementary components, see Accessories.



3×45/49 W, Beta

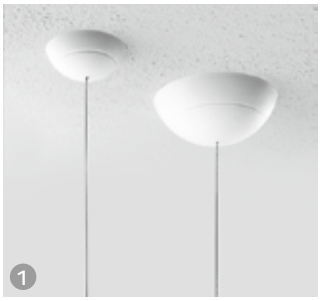


3×45/49 W, Lamell



W	D¹	D²	D³	D⁴	D⁵	D⁶
25/28	1200	1275	1350	1330	1460	1335
32/35	1500	1575	1650	1630	1760	1635
45/49	1500	1575	1650	1630	1760	1635

Avion 20 can be equipped with two pull-cords that control the direct and indirect light respectively.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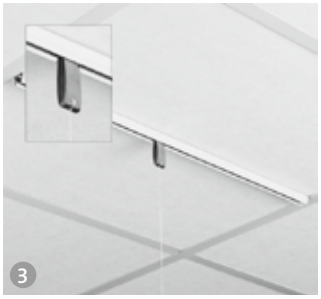
2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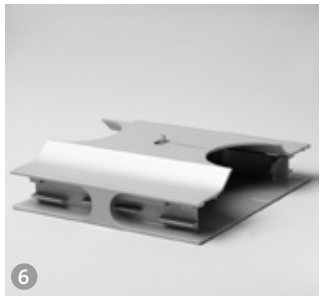
4


4


5


6


7


8

Single installation

1. Complete wire suspension, white ceiling cup. L=1.0 m	
Excluding the mains cable (included with luminaire).	
Small ceiling cup/pair (94327+ 94327)	**94414**
Small ceiling cup for T-bar 25 mm/pair (94880 + 94880)	**94415**
2. Discreet ceiling bracket with wire suspension and cable bushing	
Wire suspension L=1.5 m, ceiling bracket chrome/pair	**91696**
3. Support rails for visible T-bars	
L=600 mm, T-bar: 25/15, max load: 75 N/pair	**90017**
Wire suspension to support rails 90017	**91426**
4. Accessories e-Sense Connect	
Control unit	**86300**
Remote control (for grouping)	**86301**
Connection cable between control unit and controller	**86303**

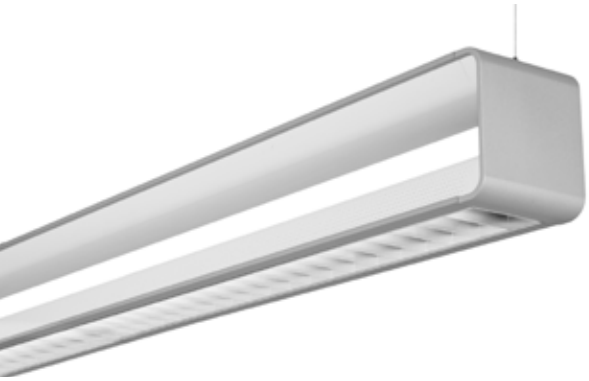
Continuous installation

1. Wire suspension with single wire and white ceiling cup. L=1,0 m	
Small ceiling cup/each	**94327**
Large ceiling cup/each	**94296**
Small ceiling cup/each for T-bar 25 mm	**94880**
Large ceiling cup/each for T-bar 25 mm	**94881**
5. Wire suspension with single wire, white ceiling cup and the mains cable 3 × 1.0 mm². L=1.0 m.	
Large ceiling cup/each	**94588**
Large ceiling cup/each for T-bar 25 mm	**94589**
Wire suspension with single wire, white ceiling cup and the mains cable 5 × 1.0 mm². L=1.0 m	
Large ceiling cup/each	**91701**
Large ceiling cup/each for T-bar 25 mm	**91703**
6. Continuous coupler – straight	
Continuous lighting installation is supplemented with end-caps and wire suspension.	
Continuous coupler incl. friction locks, white/black/each	**94992**
Continuous coupler incl. friction locks, grey/white/each	**94993**
7. Continuous coupler – flexible	
Continuous lighting installation is supplemented with end-caps and wire suspension.	
Continuous coupler incl. friction locks/each	**94994**
8. End-cap	
End-cap, white/black/pair	**94990**
End-cap, grey/white/pair	**94991**
Transparent diffuser	
Transparent diffuser in acrylic, spare part – included in the luminaire.	
Transparent diffuser 25/28/50/54 W	**94995**
Transparent diffuser 32/35/45/49 W	**94996**

Avion

Open Box

FAGERHULT | art of light



Open Box is a classic combination of direct and indirect light with a twist. Instead of enclosing the light sources in a conventional luminaire housing, the space between them is accentuated. The lower long side of the luminaire has been perforated so that the light forces its way through as small elements and illuminates the whole of the inner space.

Available in two lengths Open Box can be equipped with different types of louvre. The active Beta louvre is ideal for large, open plan areas where the risk of glare is greater. The unobtrusive Lamell louvre works well in smaller rooms and above individual workplaces.

Open Box can be equipped with Fagerhult's intelligent light control system e-Sense. The luminaires are supplied with their own sensor permitting each luminaire to think for itself, or act as one system.

SWEDISH DESIGN AWARD

reddot design award
winner 2007 – best of the best

Open Box
Beta, Lamell

Luminaire HF-std

FDH	kg	Alu-grey	Black	
Beta				
1×28/54+1×28/54	5.5	**19941-**	**19931-**	■
1×35/49/80+1×35/49/80	6.7	**19944-**	**19934-**	■
Lamell				
1×28/54+1×28/54	5.5	**19961-**	**19951-**	■
1×35/49/80+1×35/49/80	6.7	**19964-**	**19954-**	■

Luminaire must be completed with desired function. See table with suffix codes.

Luminaire e-Sense

FDH	kg	Alu-grey	Black	
Beta				
1×28+1×28	5.5	**19940-**	**19930-**	●
1×35+1×35	6.7	**19942-**	**19932-**	●
1×49+1×49	6.7	**19943-**	**19933-**	●
1×54+1×54	5.5	**19941-**	**19931-**	●
1×80+1×80	6.7	**19944-**	**19934-**	●

Luminaire must be completed with desired function. See table with suffix codes.

Suffix code

■ **-17**	With two pull-cords, separate direct/indirect
■ **-368**	DALI/Phase-pulse control
■ **-410**	Phase-pulse control, two pull-cords, separate direct/indirect
■ **-436**	DALI/DSI/switchDIM
● **-309**	e-Sense smartSWITCH absence detector
● **-314**	e-Sense smartSWITCH on/off
● **-315**	e-Sense smartSWITCH via a pull-cord
● **-385**	e-Sense ActiLume single luminaire, pull dim-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension via wire lock secured directly to the luminaire. Balanced.

Connection
The luminaire is equipped with 2.4 m fabric covered connection cable (3×1 mm²) and for dimming with external control 5×1 mm².

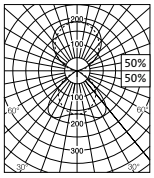
Design
Body of aluminium and sheet steel. The luminaire's outside is enamelled in alu-grey (RAL 9006) structured or black matt (RAL 9005) and inside in white (RAL 9016).

Louvre
Beta – double parabolic reflector louvre with satin matt side and cross blades, metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit.
Lamell – lamell louvre in grey enamelled sheet steel.

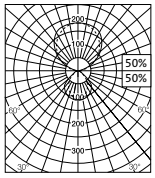
Reflector
Metallised aluminium reflector; providing a wide distribution of indirect light.

Dimming
Some models are available with other ballasts for dimming, and equipped with Fagerhult's light control system – e-Sense.

Miscellaneous
The luminaire is supplied with wire suspension. HF-std luminaires are supplied with a multi-ballast which permits the use of lamps with different outputs, but of the same length, within the same fitting.



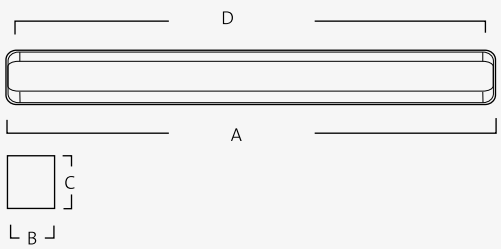
Beta



Lamell

Pull-cords are placed at the same end as the mains cable. For aesthetical reasons both use the same hole.

W	A	B	C	D
28/54	1246	120	132	1200
35/49/80	1546	120	132	1500



The perforated holes along the inside of the luminaire produce an aesthetic light spill.

Closs

Designed by Epsilon

Closs is a series of compact, decorative luminaires, boasting exceptional efficiency. Their slender measurements and square angles reflect a neat minimalist style, making Closs the given choice in rooms where you aim for simplicity in design.

The thinking behind the design of Closs was to combine the T5-light source with specifically developed components in a luminaire that satisfies the most stringent demands on form and function.

Closs, with an r5-mini louvre, has a clean, simple design with a cross-section of 55×125 mm for both single and twin lamp luminaires. Closs 2-cell luminaire has a slightly larger version of the same louvre which is available in designs with several cells for increased efficiency.

The luminaire is available in a white or alu grey structured enamelled finish with three different louvres, single parabolic Terazza, double parabolic Beta and micro-prismatic Delta, and a direct or indirect/direct light distribution.

1. Closs is available with a Beta , Delta or Terazza louvre, Closs 2-cell luminaire available with Beta louvre. Closs has the same louvre cell in both the one and two lamp variations. Closs 2-cell luminaire offers models with one lamp in each louvre cell.

2. The louvre snaps into the luminaire using clips. When re-lamping, the louvre remains attached to the luminaire with the help of the earth cable.

3. Closs has different suspension options with colour coordinated ceiling cups and mains cables.

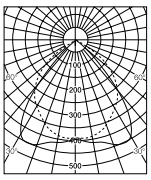
4. Closs can be continuously installed via couplers which are designed in the same finish as the luminaire.

5. Closs with e-Sense-solutions have the sensor installed in the louvre's first cell.

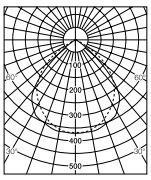
Luminaire				
FDH	kg	White	Alu-grey	
1-cell luminaire				
1×25/28	3.3	**26605**	**26625**	■ ●
1×32/35	4.0	**26607**	**26627**	■ ●
1×45/49	4.0	**26615**	**26635**	■
1×50/54	3.3	**26613**	**26633**	■ ●
1×73/80	4.0	**26617**	**26637**	■ ●
2×25/28	3.4	**26606**		■ ● ●
2×25/28	3.4		**26626**	■ ●
2×32/35	4.1	**26608**		■ ● ●
2×32/35	4.1		**26628**	■ ●
2×45/49	4.1	**26616**	**26636**	■
2×50/54	3.4	**26614**	**26634**	■
2-cell luminaire				
2×13/14	3.1	**29501**		■
2×25/28	4.2	**29503**		■ ●
2×32/35	5.9	**29505**		■ ●
2×45/49	5.9	**29507**		■
2×50/54	4.6	**29509**		■
1-cell luminaire asymmetrical				
1×25/28	3.3	**26580**	**26584**	■
1×32/35	4.0	**26581**	**26585**	■
1×45/49	4.0	**26582**	**26586**	■
1×50/54	3.3	**26583**	**26587**	■

Suffix code	
■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-309** e-Sense smartSWITCH absence detector
●	**-314** e-Sense smartSWITCH on/off
●	**-427** e-Sense Connect
●	**-428** e-Sense Connect with sensor

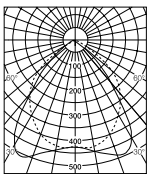
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



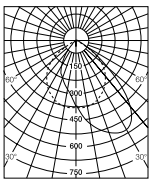
1-lamp, 1-cell



2-lamp, 1-cell

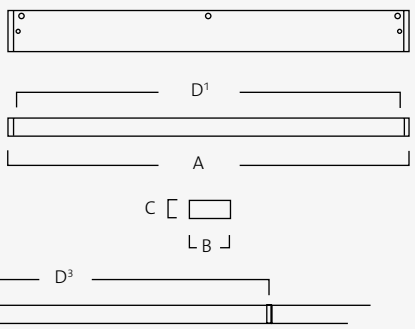


2×32/35 W, 2-cell



1×25/28 W, 1-cell asymmetrical

W	A	B	C	D¹	D²	D³
1-cell						
25/28	1217	125	55	1200	1208	1217
32/35	1517	125	55	1500	1508	1517
50/54	1217	125	55	1200	1208	1217
45/49	1517	125	55	1500	1508	1517
73/80	1517	125	55	1500	1508	1517
2-cell						
2×13/14	614	258	67	600	607	614
2×25/28/50/54	1214	258	67	1200	1207	1214
2×32/35/45/49	1514	258	67	1500	1507	1514



Installation
Surface mounted or suspended via a wire pendant. Wire installation uses friction locks on the luminaire. Luminaires with wire suspension need a counterbalance of a 1-cell luminaire (for wire suspension and counterbalance, see Accessories). 2-cell luminaire, supplied ready-balanced.

Connection
Three ∅ 19 mm cable entries fitted with blanking grommets on the top of the luminaire, see dimension chart. Knock-outs at each end for surface mounted mains cable. 3-way snap-in terminal block in the centre of the luminaire. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Luminaire body in sheet steel and end-caps of die-cast aluminium in a white (RAL 9016) structured or alu-grey (RAL 9006) structured finish.

Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross blades, with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
The louvre acts as a reflector. The luminaire is also fitted with a top reflector.

Emergency lighting
Some variants are available with emLED. emLED is placed in the first louvre cell. A 300 mm blank module is required for conventional emergency for housing the battery and invertor.

Dimming
Most models can on request be equipped with other ballasts for dimming.

Closs with e-Sense; the sensor unit is placed in the luminaire body.

The louvre is earthed and is fitted in the length of the luminaire. This function simplifies installation and cleaning.

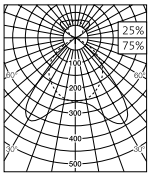
Closs Beta
Direct/indirect

Installation
Wire suspension via wire lock secured directly on the luminaire. Balanced.
Connection
Two Ø 19 mm cable entries fitted with blanking grommets on the top of the luminaire, see dimension chart. 3-way snap-in terminal block at each end. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.
Design
Luminaire body in sheet steel and end-caps of die-cast aluminium in a white (RAL 9016) structured or alu-grey (RAL 9006) structured finish.
Louvre
Beta – double parabolic reflector louvre with side and cross blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.
Reflector
The louvre acts as a reflector.
Emergency lighting
Some variants are available with emLED. emLED is placed in the first louvre cell. A 300 mm blank module is required for conventional emergency for housing the battery and invertor.
Dimming
Most models can also be equipped with other ballasts for dimming.

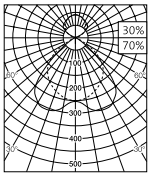
Luminaire				
FDH	kg	White	Alu-grey	
1-cell luminaire				
1×25/28	3.2	**26645**	**26665**	■ ●
1×32/35	3.9	**26647**	**26667**	■ ●
1×45/49	3.9	**26655**	**26675**	■
1×50/54	3.2	**26653**	**26673**	■ ●
1×73/80	3.9	**26657**	**26677**	■ ●
2×25/28	3.3	**26646**		■ ● ●
2×25/28	3.3		**26666**	■ ●
2×32/35	4.0	**26648**		■ ● ●
2×32/35	4.0		**26668**	■ ●
2×45/49	4.0	**26656**	**26676**	■
2×50/54	3.3	**26654**	**26674**	■
2×73/80	4.0	**26658**	**26678**	
2-cell luminaire				
2×25/28	4.1	**29519**		■ ●
2×32/35	4.5	**29521**		■ ●
2×45/49	4.5	**29523**		■
2×50/54	4.1	**29525**		■

Suffix code	
■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-309** e-Sense smartSWITCH absence detector
●	**-314** e-Sense smartSWITCH on/off
●	**-427** e-Sense Connect
●	**-428** e-Sense Connect with sensor

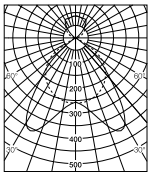
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



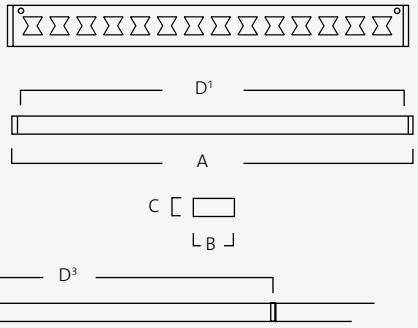
1-lamp. 1-cell



2-lamp, 1-cell


2×45/49 W, 2-cell

W	A	B	C	D¹	D²	D³
1-cell						
25/28	1217	125	55	1200	1208	1217
32/35	1517	125	55	1500	1508	1517
50/54	1217	125	55	1200	1208	1217
45/49	1517	125	55	1500	1508	1517
73/80	1517	125	55	1500	1508	1517
2-cell						
2×25/28/50/54	1214	258	67	1200	1207	1214
2×32/35/45/49	1514	258	67	1500	1507	1514




Closs can be continuously mounted via a coupler. Please note that the luminaire is delivered without through-wiring.


The luminaire can be completed with an opal diffuser.

Installation
Surface mounted or suspended via a wire pendant. Wire suspension via wire lock secured directly on the luminaire. Luminaires for wire suspension need a counterbalance (wire suspension and counter-balance, ordered separately).

Connection
Three ∅ 19 mm cable entries fitted with blanking grommets on the top of the luminaire, see dimension chart. Knock-outs at each end for surface mounted mains cable. 3-way snap-in terminal block in the centre of the luminaire. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Luminaire body in sheet steel and end-caps of die-cast aluminium in a white (RAL 9016) structured or alu-grey (RAL 9006) structured finish. Luminaires for wire suspension need a counterbalance.

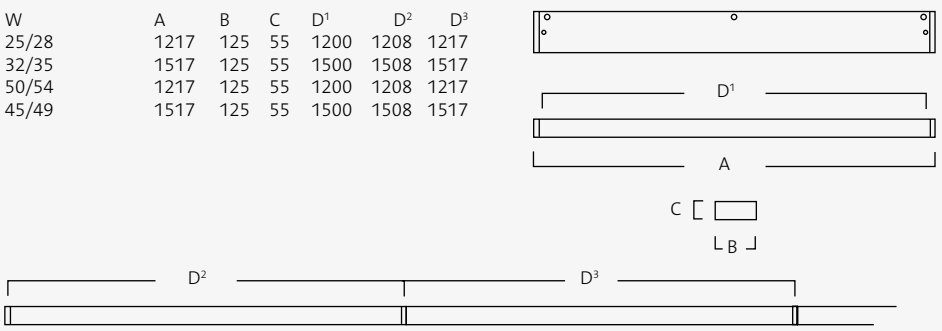
Louvre
Delta – diffused micro-prism in acrylic TPb (PMMA) with good optical characteristics.

Luminaire				
FDH	kg	White	Alu-grey	
1-cell luminaire				
1×25/28	3.3	**26060**	**26068**	☐
1×32/35	4.0	**26061**	**26069**	☐
1×45/49	4.0	**26062**	**26070**	☐
1×50/54	3.3	**26063**	**26071**	☐
2×25/28	3.4	**26064**	**26072**	☐
2×32/35	4.1	**26065**	**26073**	☐
2×45/49	4.1	**26066**	**26074**	☐
2×50/54	3.4	**26067**	**26075**	☐

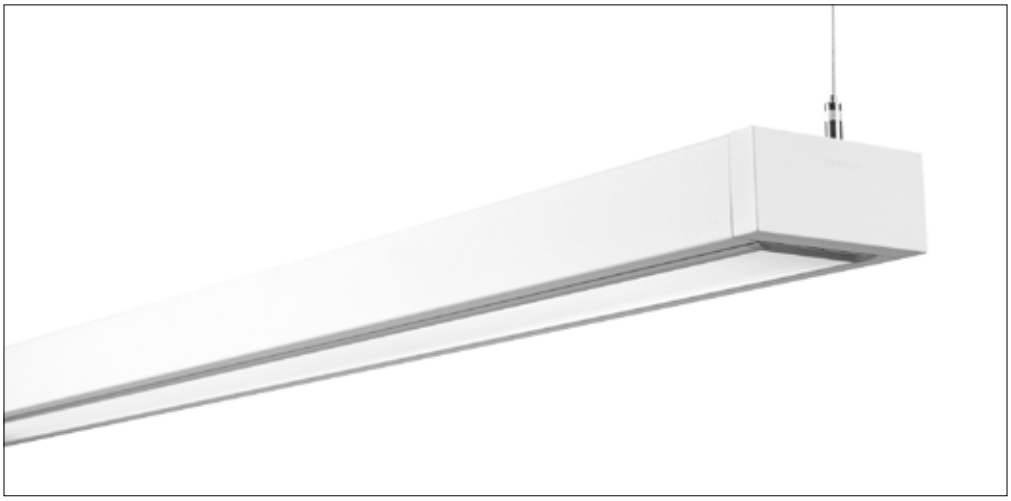
Suffix code	
☐	**-368** DALI/Phase-pulse control
☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

W	A	B	C	D^1	D^2	D^3
25/28	1217	125	55	1200	1208	1217
32/35	1517	125	55	1500	1508	1517
50/54	1217	125	55	1200	1208	1217
45/49	1517	125	55	1500	1508	1517



Closs Delta
Direct/indirect

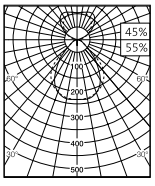


Installation
Wire suspension via wire lock secured directly on the luminaire. Balanced.
Connection
Two ∅ 19 mm cable entries fitted with blanking grommets on the top of the luminaire, see dimension chart. 3-way snap-in terminal block at each end. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.
Design
Luminaire body in sheet steel and end-caps of die-cast aluminium in a white structured (RAL 9016) or alu-grey structured (RAL 9006) finish.
Louvre
Delta – diffused micro-prism in acrylic TPb (PMMA) with good optical characteristics.

Luminaire				
FDH	kg	White	Alu-grey	
1-cell luminaire				
1×25/28	3,2	**26078**	**26086**	☐
1×32/35	3,9	**26079**	**26087**	☐
1×45/49	3,9	**26080**	**26088**	☐
1×50/54	3,2	**26081**	**26089**	☐
2×25/28	3,3	**26082**	**26090**	☐
2×32/35	4,0	**26083**	**26091**	☐
2×45/49	4,0	**26084**	**26092**	☐
2×50/54	3,3	**26085**	**26093**	☐

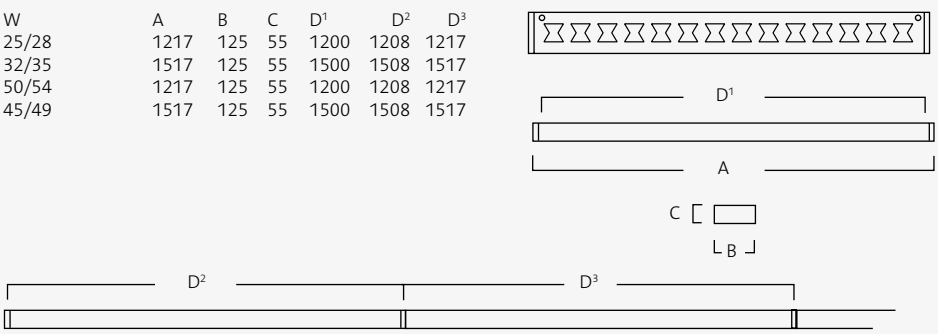
Suffix code
☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

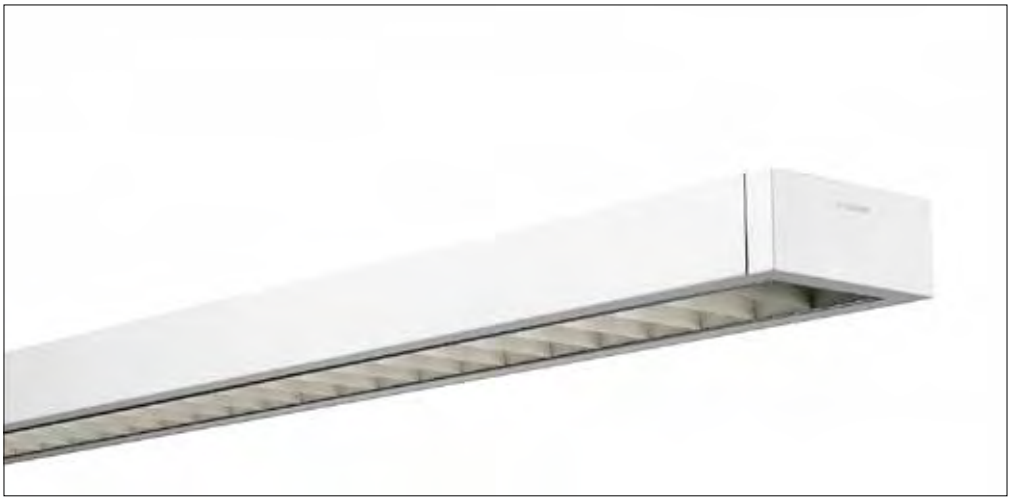


2-lamp

W	A	B	C	D¹	D²	D³
25/28	1217	125	55	1200	1208	1217
32/35	1517	125	55	1500	1508	1517
50/54	1217	125	55	1200	1208	1217
45/49	1517	125	55	1500	1508	1517



Closs Terazza
Direct



Luminaire

FDH	kg	White	Alu-grey	
1×25/28	3.4	**26685**	**26705**	☐
1×32/35	4.1	**26687**	**26707**	☐
1×45/49	4.1	**26695**	**26715**	☐
1×50/54	3.4	**26693**	**26713**	☐
1×73/80	4.1	**26697**	**26717**	☐
2×25/28	3.5	**26686**	**26706**	☐
2×32/35	4.2	**26688**	**26708**	☐
2×45/49	4.2	**26696**	**26716**	☐
2×50/54	3.5	**26694**	**26714**	☐

Suffix code

☐ **-368** DALI/Phase-pulse control

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Surface mounted or suspended via a wire pendant. Wire suspension via wire lock secured directly on the luminaire. Luminaires for wire suspension need a counterbalance (wire suspension and counter-balance, ordered separately).

Connection
Three ∅ 19 mm cable entries fitted with blanking grommets on the top of the luminaire, see dimension chart. Knock-outs at each end for surface mounted mains cable. 3-way snap-in terminal block in the centre of the luminaire. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

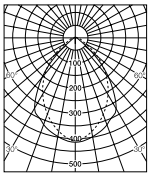
Design
Luminaire body in sheet steel and end-caps of die-cast aluminium in a white (RAL 9016) structured or alu-grey (RAL 9006) finish. Luminaires for wire suspension need a counterbalance.

Louvre
Terazza – satin matt, metallised aluminium reflectors with excellent reflection characteristics (> 92 %) and aluminium enamelled cross blades integrated into a single unit. The louvre remains attached when lowered. Earthed.

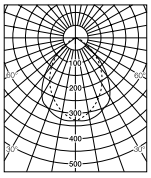
Reflector
The louvre acts as a reflector. The luminaire is also fitted with a top reflector.

Emergency lighting
Some variants are available with emLED. emLED is placed in the first louvre cell. A 300 mm blank module is required for conventional emergency for housing the battery and invertor.

Dimming
Most models can also be equipped with other ballasts for dimming.

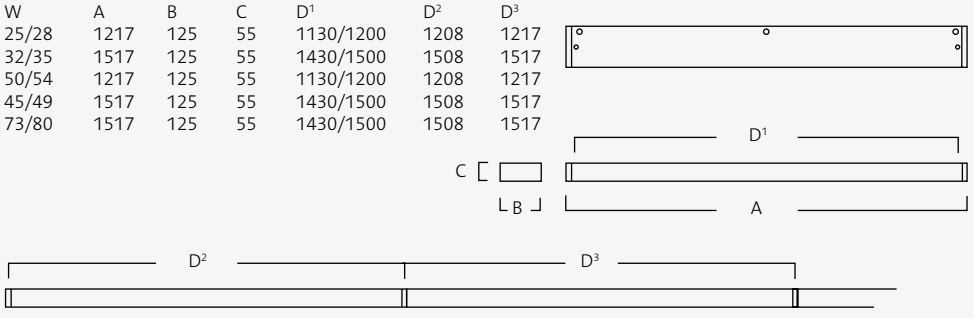


1-lamp



2-lamp

W	A	B	C	D^1	D^2	D^3
25/28	1217	125	55	1130/1200	1208	1217
32/35	1517	125	55	1430/1500	1508	1517
50/54	1217	125	55	1130/1200	1208	1217
45/49	1517	125	55	1430/1500	1508	1517
73/80	1517	125	55	1430/1500	1508	1517



Knock-outs at each end allow connection using surface mounted cables. Please note that the cable entry is not central due to lack of space.

Closs Terazza

Direct/indirect

Installation
Wire suspension via wire lock secured directly on the luminaire. Balanced.

Connection
Two Ø 19 mm cable entries fitted with blanking grommets on the top of the luminaire, see dimension chart. 3-way snap-in terminal block at each end. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Luminaire body in sheet steel and end-caps of die-cast aluminium in a white (RAL 9016) structured or alu-grey (RAL 9006) structured finish.

Louvre
Terazza – satin matt, metallised aluminium reflectors with excellent reflection characteristics (> 92 %) and aluminium enamelled cross-blades integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
The louvre acts as a reflector.

Emergency lighting
Some variants are available with emLED. emLED in the first louvre cell is required for conventional emergency. A 300 mm blank module is required for housing the battery and invertor.

Dimming
Most models can also be equipped with other ballasts for dimming.

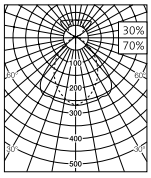
Luminaire

FDH	kg	White	Alu-grey	
1×25/28	3.4	**26725**	**26745**	☐
1×32/35	4.1	**26727**	**26747**	☐
1×45/49	4.1	**26735**	**26755**	☐
1×50/54	3.4	**26733**	**26753**	☐
1×73/80	4.1	**26737**	**26757**	☐
2×25/28	3.5	**26726**	**26746**	☐
2×32/35	4.2	**26728**	**26748**	☐
2×45/49	4.2	**26736**	**26756**	☐
2×50/54	3.5	**26734**	**26754**	☐
2×73/80	4.2	**26738**	**26758**	

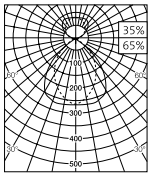
Suffix code

☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

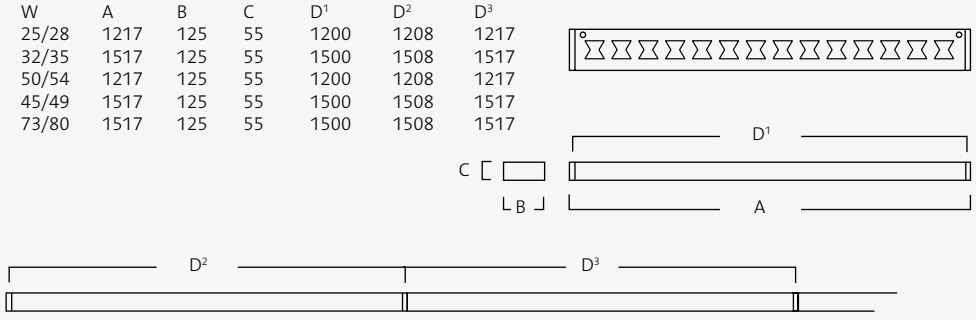


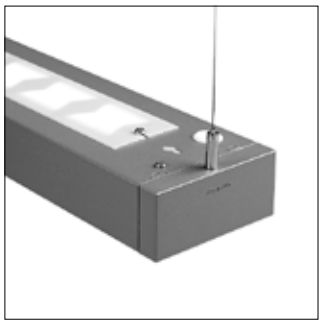
1-lamp



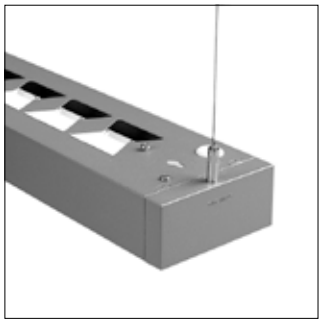
2-lamp

W	A	B	C	D¹	D²	D³
25/28	1217	125	55	1200	1208	1217
32/35	1517	125	55	1500	1508	1517
50/54	1217	125	55	1200	1208	1217
45/49	1517	125	55	1500	1508	1517
73/80	1517	125	55	1500	1508	1517

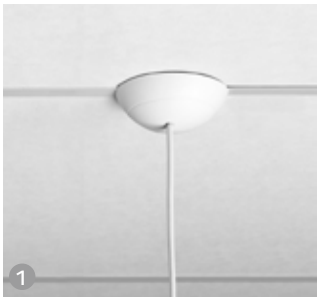


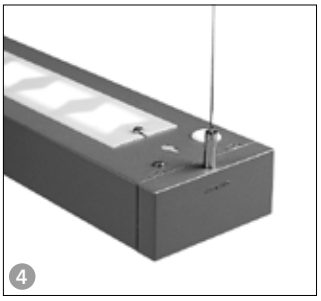


The luminaire can be completed with an opal diffuser.



Specially designed uplight slots give a large and balanced ceiling luminance.





1-cell luminaire, single installation

1. Wire suspension set with ceiling cups, single wire and pendant cable 3x1.0 mm². L=2.0 m.	
For direct luminaire.	
Large ceiling cups, white/pair	**94308**
Large ceiling cups for T-bars 25 mm, white/pair	**94310**

Wire suspension set with single wire, ceiling cups and pendant cable 3 × 1.0 mm². L=1.0 m.	
For direct/ indirect luminaire.	
Large ceiling cups, white/pair	**94485**
Large ceiling cups for T-bars 25 mm, white/pair	**94487**

Wire suspension set with single wire, ceiling cups and pendant cable 5 × 1.0 mm². L=2.0 m.	
For direct/ indirect luminaire.	
Large ceiling cups, white/pair	**94501**
Large ceiling cups for T-bars 25 mm, white/pair	**94503**

Balance weight	
Balance weight for luminaire	**91972**

2. Accessories e-Sense Connect	
Control unit	**86300**
Remote control	**86301**
Connection cable between control unit and controller	**86303**

1-cell luminaire, continuous installation

1. Wire suspension with single wire and ceiling cups. L= 1.5 m.	
Small ceiling cups, white/pair	**94481**
Small ceiling cups for T-bars 25 mm, white/pair	**94483**

2. Wire suspension set with ceiling cups, single wire and pendant cable 3 × 1.0 mm². L=2.0 m.	
For direct luminaire.	
Large ceiling cups, white/pair	**94308**
Large ceiling cups for T-bars 25 mm, white/pair	**94310**

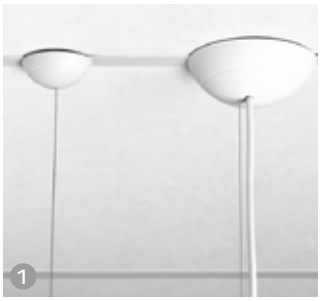
Wire suspension set with single wire, ceiling cups and pendant cable 3 × 1.0 mm². L=1.0 m.	
For direct/ indirect luminaire.	
Large ceiling cups, white/pair	**94485**
Large ceiling cups for T-bars 25 mm, white/pair	**94487**

Wire suspension set with single wire, ceiling cups and pendant cable 5 × 1.0 mm². L=2.0 m.	
For direct/ indirect luminaire.	
Large ceiling cups, white/pair	**94501**
Large ceiling cups for T-bars 25 mm, white/pair	**94503**

3. Continuous coupler	
Continuous coupler including friction locks – white/each	**91969**
Continuous coupler including friction locks – grey/each	**91970**

4. Opal diffuser	
Opal diffuser, 1 × 25/28/50/54 W	**94191**
Opal diffuser, 1 × 32/35/45/49 W	**94193**

Balance weight	
Balance weight for luminaire	**91972**



2-cell luminaire, single installation

1. Complete wire suspension[1], ceiling cups and pendant cable 3 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair (94327+94588)	**94301**
Small + large ceiling cup for T-bars 25 mm, white/pair (94880+94589)	**94302**

Complete wire suspension[1], ceiling cups and pendant cable 5 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair (94327+91701)	**91691**
Small + large ceiling cup for T-bars 25 mm, white/pair (94880+91703)	**91693**

[1] Direct luminaire must be supplemented with friction locks 94437/pair.

2-cell luminaire, continuous installation

2. Wire suspension[1] with single wire and ceiling cup. L=1.0 m.	
Small ceiling cup, white/each	**94327**
Small ceiling cup for T-bars 25 mm, white/each	**94880**

Wire suspension[1] with single wire, ceiling cup and pendant cable 3 × 1.0 mm². L=1.0 m.	
Large ceiling cup, white/each	**94588**
Large ceiling cup for T-bars 25 mm, white/each	**94589**

Wire suspension[1] with single wire, ceiling cup and pendant cable 5 × 1.0 mm². L=1.0 m.	
Large ceiling cup, white/each	**91701**
Large ceiling cup for T-bars 25 mm, white/each	**91703**

3. Opal diffuser	
Opal diffuser, 1 × 25/28/50/54 W	**94192**
Opal diffuser, 1 × 32/35/45/49 W	**94194**

4. Continuous coupler	
Continuous coupler including friction locks – white/each	**91969**

[1] Direct luminaire must be supplemented with friction locks 94437/pair.

DTI

Designed by Yellon

With its three combinations of direct and indirect light distributions, DTI is well suited to a range of office and public environments. From installation to on-going ergonomics and energy efficiency, DTI delivers value throughout a projects lifecycle.

Available in either surface mounted or pendant variants this luminaire's subtle design is shaped by the rounded sides. The distinctive end caps visibly reduce the size of the fitting, adding aesthetics to its flexibility.

DTI can be equipped with Fagerhult's light control solution e-Sense and emergency lighting system emLED. An example of industrial design at its best – functional and aesthetic.


1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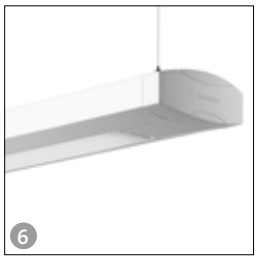
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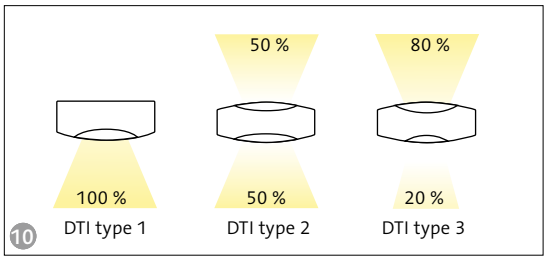


10

1. The DTI series has been developed to solve most lighting requirements in commercial and academic environments. Its clean, discreet design, straightforward assembly, excellent lighting comfort and high degree of efficiency ensures DTI is a comprehensive and economic solution.

2–3. DTI is available with Beta, Terazza, and Lamell louvres. In type 1 and type 2 there is also a double cell design option.

4–5. The installation and connection of the luminaire is easily made via the end-cap on both pendant luminaires and on surface mounted models. In DTI type 1 (for surface mounted installation) there is a knock-out in the end-cap for a surface mounted cable.

6. Pendant luminaires type 2 and type 3 are equipped with friction locks that simplify assembly and adjustment of the wire suspension.

7–8. DTI is available with e-Sense and emLED. The pictures show these equipped with a Beta louvre.

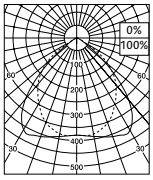
9–10. The marking on the end-cap, indicating the luminaires's light distribution, also creates an interesting and attractive detail.

Luminaire			
FDH	kg		
1-cell luminaire			
1×13/14	2.6	**28801**	■
1×25/28	2.8	**28807**	■ ●
1×32/35	3.0	**28809**	■ ●
1×45/49	3.0	**28813**	■
1×50/54	2.8	**28815**	■
1×73/80	3.0	**28817**	■
2×13/14	2.6	**28802**	■
2×25/28	2.8	**28808**	■ ● ●
2×32/35	3.0	**28810**	■ ● ●
2×45/49	3.0	**28814**	■
2×50/54	2.8	**28816**	■
2×73/80	3.0	**28818**	
2-cell luminaire			
2×25/28	3.8	**28835**	■ ●
2×32/35	4.0	**28836**	■ ●
1-cell luminaire asymmetrical			
1×25/28	2.8	**28971**	■
1×32/35	3.0	**28972**	■
1×45/49	3.0	**28973**	■
1×50/54	2.8	**28974**	■

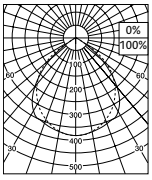
Suffix code	
■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-309** e-Sense smartSWITCH absence detector
●	**-314** e-Sense smartSWITCH on/off
●	**-382** e-Sense ActiLume master luminaire
●	**-427** e-Sense Connect
●	**-428** e-Sense Connect with sensor

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

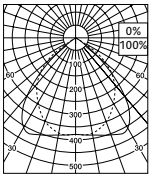
Installation
Surface mounted.
Connection
Connections are made at the end of the luminaire and are concealed by the end-cap, with the option of cable entry via the end-caps and centre of the luminaire. 5-way snap-in terminal blocks at each short end with the possibility of 1-phase through-wiring – excluding luminaires supplied with e-Sense.
Design
Body of enamelled sheet steel in white (RAL 9016) finish. End-caps of polypropylene plastic.
Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed.
Reflector
The louvre acts as a reflector, the luminaire is also equipped with a top reflector.
Light distribution
Symmetrical.
Emergency lighting
Some models are available with emLED positioned in the first cell on the louvre.
Dimming
Most models can also be equipped with other ballasts for dimming.



1×32/35 W, 1-cell



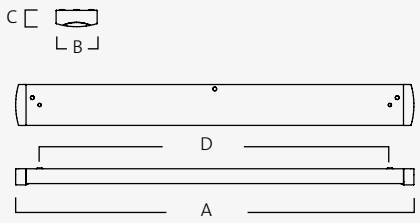
2×32/35 W, 1-cell



2×32/35 W, 2-cell

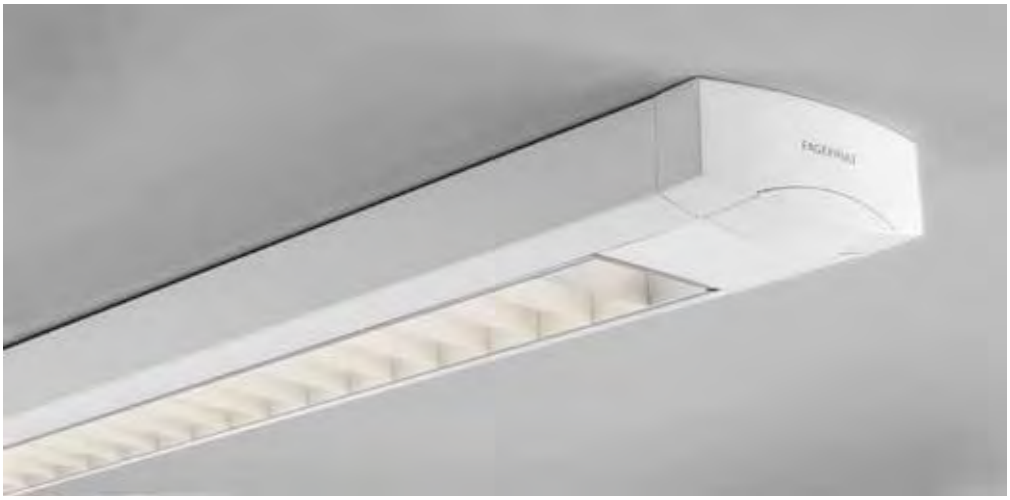
When appropriate the sensor or emLED unit is positioned in the first cell of the louvre.

	W	A	B	C	D
	13/14	765	141	59	600
	25/28	1365	141	59	1200
	32/35	1665	141	59	1500
	45/49	1665	141	59	1500
	50/54	1365	141	59	1200
	73/80	1665	141	59	1500
	25/28	1365	228	63	1200
	32/35	1665	228	63	1500



DTI in 2-cell design (1 lamp per louvre) conforms to the requirements in EN 12464-1.

DTI type 1
Terazza

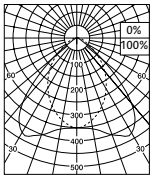


Installation
Surface mounted.
Connection
Connections are made at the end of the luminaire and are concealed by the end-cap, with the option of cable entry via the end-caps and centre of the luminaire. 5-way snap-in terminal blocks at each short end with the possibility of 1-phase through-wiring.
Design
Body of enamelled sheet steel in white (RAL 9016) finish. End-caps of polypropylene plastic.
Louvre
Terazza – satin matt, metallised aluminium reflectors with excellent reflection characteristics (> 92 %) and aluminium enamelled cross-blades integrated into a single unit. The louvre remains attached when opened. Earthed.
Reflector
The louvre acts as a reflector, the luminaire is also equipped with a top reflector.
Light distribution
Symmetrical.
Emergency lighting
Some models are available with emLED positioned in the first cell on the louvre.
Dimming
Most models can also be equipped with other ballasts for dimming.

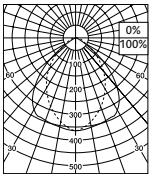
Luminaire			
FDH	kg		
1-cell luminaire			
1×13/14	2.6	**28901**	☐
1×25/28	2.8	**28907**	☐
1×32/35	3.0	**28909**	☐
1×45/49	3.0	**28913**	☐
1×50/54	2.8	**28915**	☐
1×73/80	3.0	**28917**	☐
2×13/14	2.6	**28902**	☐
2×25/28	2.8	**28908**	☐
2×32/35	3.0	**28910**	☐
2×45/49	3.0	**28914**	☐
2×50/54	2.8	**28916**	☐
2×73/80	3.0	**28918**	

Suffix code	
☐	**-368** DALI/Phase-pulse control
☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



1×32/35 W



2×32/35 W

W	A	B	C	D
13/14	765	141	59	600
25/28	1365	141	59	1200
32/35	1665	141	59	1500
45/49	1665	141	59	1500
50/54	1365	141	59	1200
73/80	1665	141	59	1500

Opening the end-cap provides easy access for connections. DTI type 1 has 1-phase through-wiring as standard.

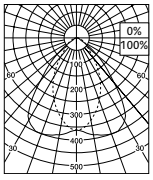
DTI type 1
Lamell

Installation
Surface mounted.
Connection
Connections are made at the end of the luminaire and are concealed by the end-cap, with the option of cable entry via the end-caps and centre of the luminaire. 5-way snap-in terminal blocks at each short end with the possibility of 1-phase through-wiring – excluding luminaires supplied with e-Sense.
Design
Body of enamelled sheet steel in white (RAL 9016) finish. End-caps of polypropylene plastic.
Louvre
Lamell – lamell louvre in grey enamelled sheet steel.
Reflector
Metallised aluminium reflectors for symmetrical distribution.
Light distribution
Symmetrical.
Emergency lighting
Some models are available with emLED placed in the body.
Dimming
Most models can also be equipped with other ballasts for dimming.

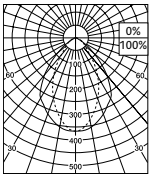
Luminaire			
FDH	kg		
1-cell luminaire			
1×13/14	2.5	**28781**	■
1×25/28	2.7	**28783**	■ ●
1×32/35	2.9	**28785**	■ ●
1×45/49	2.9	**28787**	■
1×50/54	2.7	**28789**	■
2×13/14	2.5	**28782**	■
2×25/28	2.7	**28784**	■ ●
2×32/35	2.9	**28786**	■ ●
2×45/49	2.9	**28788**	■
2×50/54	2.7	**28790**	■

Suffix code	
■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-218** e-Sense smartSWITCH absence detector
●	**-219** e-Sense smartSWITCH on/off
●	**-367** e-Sense ActiLume master luminaire

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

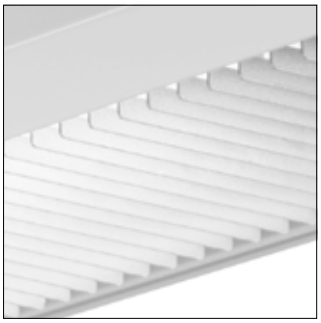


1×32/35 W



2×32/35 W

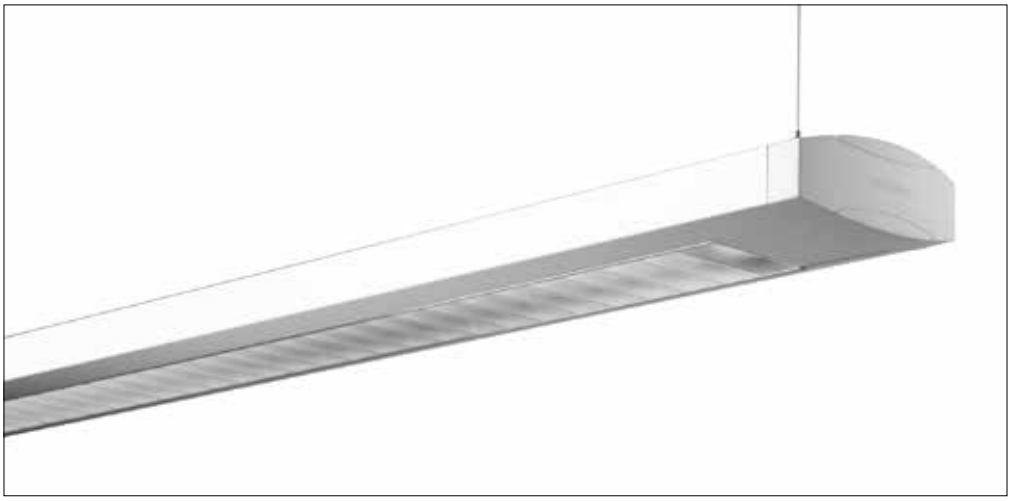
The luminaire is equipped with 1-phase through-wiring. There is a knock-out in the end for a surface mounted mains cable.



The grey enamelled lamell louvre provides a pleasant luminance.

W	A	B	C	D
13/14	765	141	59	600
25/28	1365	141	59	1200
32/35	1665	141	59	1500
45/49	1665	141	59	1500
50/54	1365	141	59	1200

DTI type 2
Beta



Luminaire, single installation incl. end-caps

FDH	kg		
1-cell luminaire			
1×25/28	2.8	**28821**	□ ● ▲
1×32/35	3.0	**28823**	□ ● ▲
1×45/49	3.0	**28829**	□ ▲
1×50/54	2.8	**28825**	□ ▲
1×73/80	3.0	**28827**	□ ▲
2×25/28	2.8	**28822**	□ ● ▲ ▼
2×32/35	3.0	**28824**	□ ● ▲ ▼
2×45/49	3.0	**28830**	□ ▲
2×50/54	2.8	**28826**	□ ▲
2×73/80	3.0	**28828**	
2-cell luminaire			
2×25/28	3.1	**28838**	□ ● ▲
2×32/35	3.1	**28839**	□ ● ▲

Luminaire, continuous installation excl. end-caps

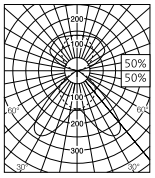
FDH	kg		
1-cell luminaire			
1×25/28	2.8	**29901**	□
1×32/35	3.0	**29903**	□
1×45/49	3.0	**29909**	□
1×50/54	2.8	**29905**	□
1×73/80	3.0	**29907**	□
2×25/28	2.8	**29902**	□
2×32/35	3.0	**29904**	□
2×45/49	3.0	**29910**	□
2×50/54	2.8	**29906**	□
2×73/80	3.0	**29908**	

Couplers and end-caps are required for continuous installation and are ordered separately, see Accessories page 69.

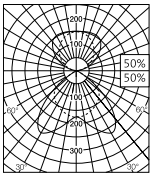
Suffix code

□	**-368** DALI/Phase-pulse control
□	**-436** DALI/DSI/switchDIM
●	**-309** e-Sense smartSWITCH absence detector
●	**-314** e-Sense smartSWITCH on/off
●	**-315** e-Sense smartSWITCH via a pull-cord
●	**-382** e-Sense ActiLume master luminaire
●	**-385** e-Sense ActiLume single luminaire pull dim-cord
▲	**-409** Phase-pulse control, one pull-cord
▼	**-427** e-Sense Connect
▼	**-428** e-Sense Connect with sensor
▼	**-321** e-Sense ActiLume Connection Box master luminaire
▼	**-325** e-Sense ActiLume Connection Box slave luminaire

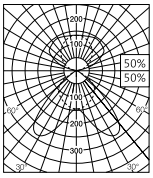
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



1×32/35 W, 1-cell

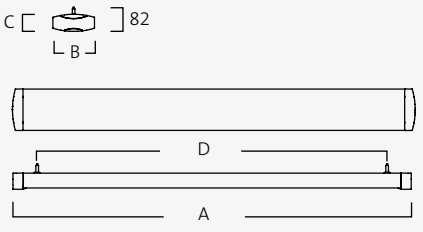


2×32/35 W, 1-cell



2×32/35 W, 2-cell

	W	A	B	C	D
⌒	25/28	1365	141	58	1200
	32/35	1665	141	58	1500
	45/49	1665	141	58	1500
	50/54	1365	141	58	1200
	73/80	1665	141	58	1500
⌒⌒	25/28	1365	229	66	1200
	32/35	1665	229	66	1500



Installation
Wire suspension via friction locks on the luminaire. Wire suspension ordered separately, see Accessories.

Connection
Single – connections are made at the end of the luminaire and are concealed by the end-cap. 5-way snap-in terminal block at one end. *Continuous installation* – 5-way snap-in terminal block at each end and through-wiring cable 3×1.5 mm² as standard. With dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Body of enamelled sheet steel with white (RAL 9016) finish. End-caps of polypropylene plastic. When continuous installation is required the luminaire is supplemented with continuous couplers and end-caps, see Accessories.

Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. Re-lamping is performed from the top, without removing the louvre. Earthed.

Reflector
The louvre acts as a reflector.

Light distribution
Symmetrical.

Emergency lighting
Some models are available with emLED positioned in the first cell on the louvre.

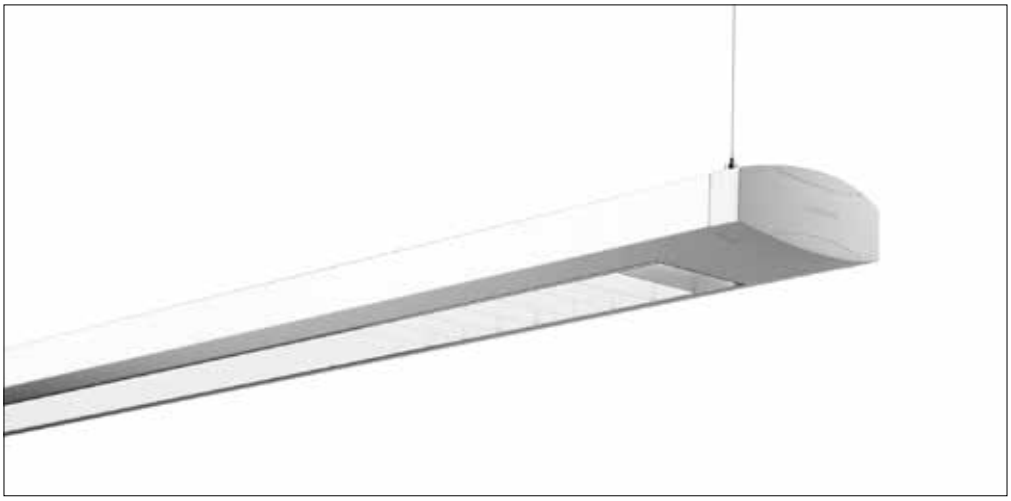
Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
Installation accessories, see Accessories.

DTI with double louvre cells conforms to the requirements set out in EN 12464-1.

DTI with phase-pulse control (-409) has a pull-cord for dimming. HF-std luminaires are available on special order.

DTI type 2
Terazza



Luminaire, single installation incl. end-caps

FDH	kg			
1-cell luminaire				
1×25/28	2.8	**28921**	■	▲
1×32/35	3.0	**28923**	■	▲
1×45/49	3.0	**28929**	■	▲
1×50/54	2.8	**28925**	■	▲
1×73/80	3.0	**28927**	■	▲
2×25/28	2.8	**28922**	■	▲
2×32/35	3.0	**28924**	■	▲
2×45/49	3.0	**28930**	■	▲
2×50/54	2.8	**28926**	■	▲
2×73/80	3.0	**28928**		

Luminaire, continuous installation excl. end-caps

FDH	kg		
1-cell luminaire			
1×25/28	2.8	**29921**	■
1×32/35	3.0	**29923**	■
1×50/54	2.8	**29925**	■
1×73/80	3.0	**29927**	■
2×25/28	2.8	**29922**	■
2×32/35	3.0	**29924**	■
2×50/54	2.8	**29926**	■
2×73/80	3.0	**29928**	

Couplers and end-caps are required for continuous installation and are ordered separately, see Accessories page 69.

Suffix code

■ **-368**	DALI/Phase-pulse control
■ **-436**	DALI/DSI/switchDIM
▲ **-409**	Phase-pulse control, one pull-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension via friction locks on the luminaire. Wire suspension ordered separately, see Accessories.

Connection
Single – connections are made at the end of the luminaire and are concealed by the end-cap. 5-way snap-in terminal block at one end. *Continuous installation* – 5-way snap-in terminal block at each end and through-wiring cable 3×1.5 mm² as standard. With dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Body of enamelled sheet steel with white (RAL 9016) finish. End-caps of polypropylene plastic. When continuous installation is required the luminaire is supplemented with continuous couplers and end-caps; see Accessories.

Louvre
Terazza – satin matt, metallised aluminium reflectors with very good reflection characteristics (> 92 %) and aluminium enamelled cross-blades integrated into a single unit. Re-lamping is performed from the top, without removing the louvre. Earthed.

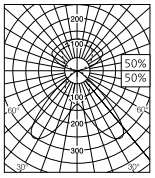
Reflector
The louvre acts as a reflector.

Light distribution
Symmetrical.

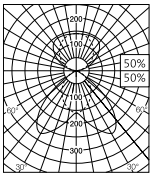
Emergency lighting
Some models are available with emLED positioned in the first cell on the louvre.

Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
Installation accessories, see Accessories.

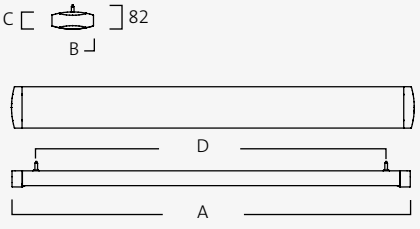


1×32/35 W

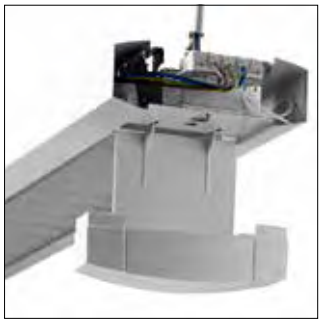


2×32/35 W

W	A	B	C	D
25/28	1365	141	58	1200
32/35	1665	141	58	1500
45/49	1665	141	58	1500
50/54	1365	141	58	1200
73/80	1665	141	58	1500

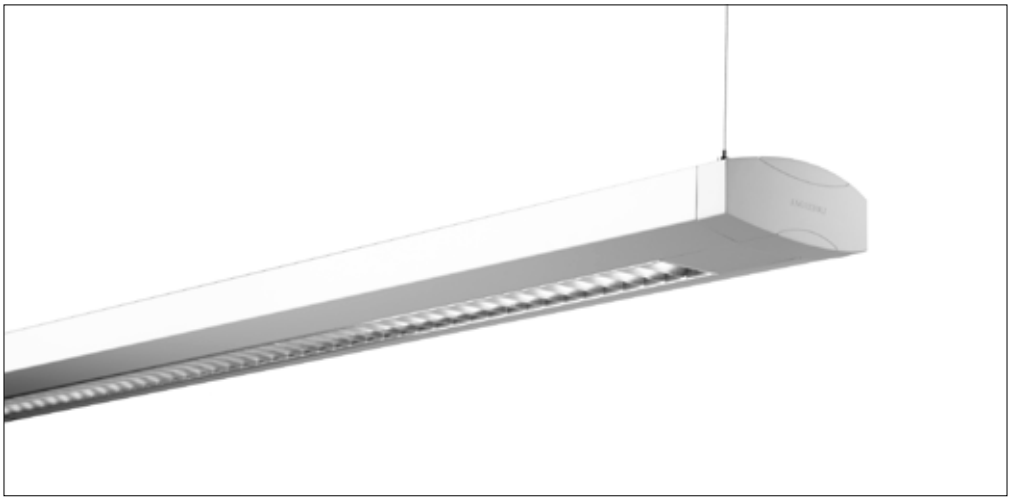


A continuous coupler for DTI is available as an accessory.



Opening the end-caps provides easy access for connections.

DTI type 3
Beta



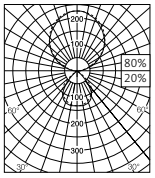
Luminaire			
FDH	kg		
1-cell luminaire			
3×25/28	2.7	**28831-**	☐
3×32/35	2.9	**28832-**	☐
3×45/49	2.9	**28833-**	☐

Luminaire must be completed with desired function. See table with suffix codes.

Suffix code	
☐ **-17**	With two pull-cords, separate direct/indirect
☐ **-218**	e-Sense smartSWITCH absence detector
☐ **-219**	e-Sense smartSWITCH on/off
☐ **-220**	e-Sense smartSWITCH via a pull-cord
☐ **-368**	DALI/Phase-pulse control
☐ **-410**	Phase-pulse control, two pull-cords, separate direct/indirect
☐ **-436**	DALI/DSI/switchDIM

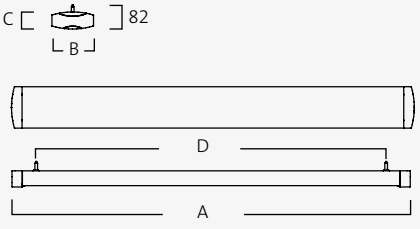
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension via friction locks on the luminaire. Wire suspension ordered separately, see Accessories.
Connection
The luminaire is equipped with a 2.4 m mains cable 3×1.0 mm² and an earthed plug. Luminaire with the additional suffix -436 and -368 are supplied with a 2.4 m main cable 5×0.75 mm² excl. plug.
Design
Body of enamelled sheet steel with white (RAL 9016) finish. End-caps of polypropylene plastic. Transparent acrylic diffuser on the top side.
Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. Re-lamping is performed from the top, without removing the louvre. Earthed.
Reflector
Separate reflectors for indirect and direct light distribution. Reflector material of metallised aluminium with satin matt surface.
Light distribution
Symmetrical.
Emergency lighting
Some models are available with emLED, positioned at the short end of the luminaire.
Dimming
Most models can also be equipped with other ballasts for dimming.
Accessories
Installation accessories, see Accessories.



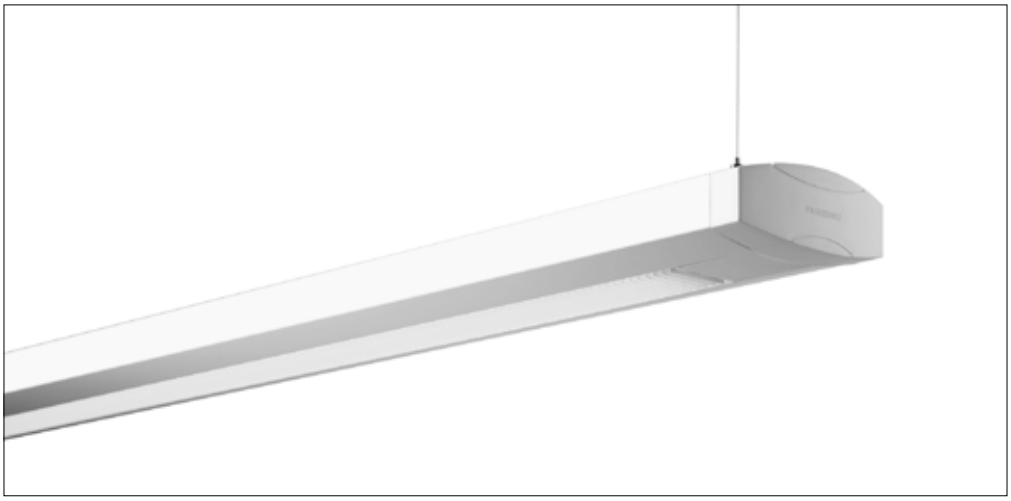
3×32/35 W

W	A	B	C	D
25/28	1365	141	58	1200
32/35	1665	141	58	1500
45/49	1665	141	58	1500



DTI type 3 with r5-Micro Beta louvre combines good light treatment with high efficacy.

DTI type 3
Lamell



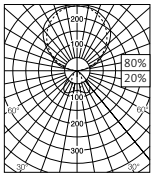
Luminaire		
FDH	kg	
1-cell luminaire		
3×25/28	2.7	**28881-** ☐
3×32/35	2.9	**28882-** ☐
3×45/49	2.9	**28883-** ☐

Luminaire must be completed with desired function. See table with suffix codes.

Suffix code	
☐ **-17**	With two pull-cords, separate direct/indirect
☐ **-218**	e-Sense smartSWITCH absence detector
☐ **-219**	e-Sense smartSWITCH on/off
☐ **-220**	e-Sense smartSWITCH via a pull-cord
☐ **-368**	DALI/Phase-pulse control
☐ **-410**	Phase-pulse control, two pull-cords, separate direct/indirect
☐ **-436**	DALI/DSI/switchDIM

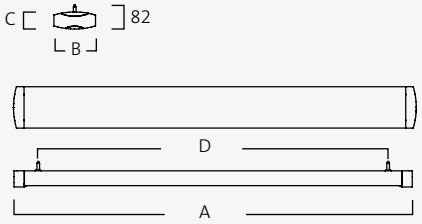
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension via friction locks on the luminaire. Wire suspension ordered separately, see Accessories.
Connection
The luminaire is equipped with a 2.4 m mains cable 3×1.0 mm² and an earthed plug. Luminaire with the additional suffix -436 and -368 are supplied with a 2.4 m main cable 5×0.75 mm² excl. plug.
Design
Luminaire body in white (RAL 9016) enamelled sheet steel, end-caps of polypropylene plastic. Transparent plastic diffuser on the top side.
Louvre
Lamell – lamell louvre in grey enamelled sheet steel. Re-lamping is performed from the top, without removing the louvre.
Reflector
Separate reflectors for indirect and direct light distribution. Reflector material of metallised aluminium with satin matt surface.
Light distribution
Symmetrical.
Emergency lighting
Some models are available with emLED, positioned at the short end of the luminaire.
Dimming
Most models can also be equipped with other ballasts for dimming.
Accessories
Installation accessories, see Accessories.



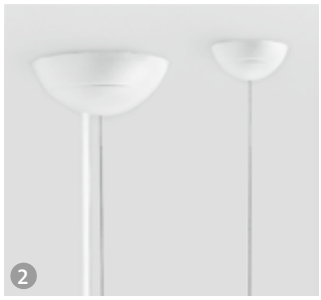
3×32/35 W

W	A	B	C	D
25/28	1365	141	58	1200
32/35	1665	141	58	1500
45/49	1665	141	58	1500




1


1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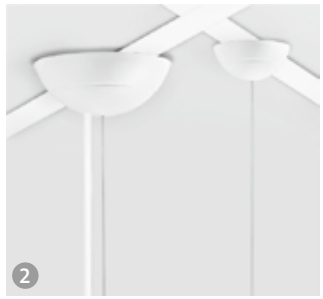
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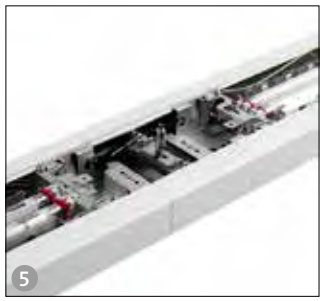
3


4


5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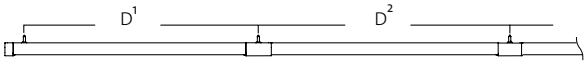
6


7

Continuous installation



W	D^1	D^2
25/28	1297	1394
32/35	1597	1594
45/49	1597	1594
50/54	1297	1394
73/80	1597	1594

DTI type 1

1. Accessories e-Sense Connect	
Control unit	**86300**
Remote control (for grouping)	**86301**
Connection cable between control unit and controller	**86303**

DTI type 2 – Single installation

2. Complete wire suspension. White ceiling cup. Incl. mains cable 3 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup (94327+94588)	**94301**
Large ceiling cups (94296+94588)	**94444**
Small + large ceiling cup for T-bars 25 mm (94880+94589)	**94302**
Large ceiling cups for T-bars 25 mm (94881+94589)	**94445**

Complete wire suspension. White ceiling cup. Incl. mains cable 5 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup (94327+91701)	**91691**
Large ceiling cups (94296+91701)	**91692**
Small + large ceiling cup for T-bars 25 mm (94880+91703)	**91693**
Large ceiling cups for T-bars 25 mm (94881+91703)	**91694**

Transparent diffuser	
Transparent acrylic diffuser for DTI type 2.	
Transparent diffuser 25/28/50/54 W	**91687**
Transparent diffuser 32/35/45/49/73/80 W	**91688**

1. Accessories e-Sense Connect	
Control unit	**86300**
Remote control (for grouping)	**86301**
Connection cable between control unit and controller	**86303**

DTI type 2 – Continuous installation

3. Wire suspension with single wire and ceiling cup. L=1.5 m.	
Small ceiling cup, white/each	**94327**
Large ceiling cup, white/each	**94296**
Small ceiling cup for T-bars 25 mm, white/each	**94880**
Large ceiling cup for T-bars 25 mm, white/each	**94881**

4. Wire suspension with single wire, ceiling cup and mains cable 3 × 1.0 mm². L=1.0 m.	
Large ceiling cup, white/each	**94588**
Large ceiling cup for T-bars 25 mm, white/each	**94589**

Wire suspension with single wire, ceiling cup and mains cable 5 × 1.0 mm². L=1.0 m.	
Large ceiling cup, white/each	**91701**
Large ceiling cup for T-bars 25 mm, white/each	**91703**

5. Continuous coupler for DTI type 2	
Continuous lighting installation is supplemented with end-caps and wire suspension	
Continuous coupler incl. wire lock, white/each	**91681**

6. End-cap for continuous lighting installation	
End-cap, white/each	**91683**

Transparent diffuser	
Transparent acrylic diffuser for DTI type 2.	
Transparent diffuser 25/28/50/54 W	**91687**
Transparent diffuser 32/35/45/49/73/80 W	**91688**

DTI type 3 – Single installation

Wire suspension with ceiling cups. L=1.5 m.	
Excluding mains cable (included with luminaire).	
Small ceiling cups, white/pair	**94414**
Small ceiling cups for T-bars 25 mm, white/pair	**94415**

7. Support rails for visible T-bars	
L=600 mm, T-bars: 25/15, max load: 75 N/pair	**90017**
Wire suspension for support rails 90017	**91426**

Ten° Line

Designed by Ola Granlund

Ten° Line is a luminaire for dynamic environments and stimulating meetings in the modern office. The restrained, modern aesthetic of Scandinavian design tradition combined with intelligent control functions create the platform for an excellent lighting solution.

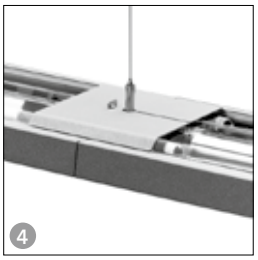
Its name comes from the 10° angle on the sides of the luminaire. The inclined edges capture the reflected ceiling light, making the luminaire brighter and enhance its elegant appearance.

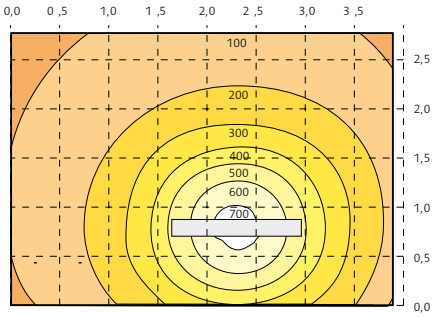
1. Ten° Line helps to achieve lighting comfort. At the same time its indirect, glare-free light is ideal for working in front of computer monitors.

2. Standard installation is made using a single wire. The top is covered with a clear acrylic plastic diffuser, protecting against dust and providing a decorative feature when viewed from the side of the luminaire.

3. Ten° Line can be fitted with a bracket for flexible c/c if necessary.

4. Continuous installation of Ten° Line is made via a continuous coupler. The mains cable is used for through-wiring between luminaires.





The Isolux diagram shows an office with Ten° Line Lamell 3×28 W.
The calculations were made on the following conditions:
Room dimensions: 3.9×2.8×2.7 m.
Room reflection: ceiling 80 %, walls 60 %, floor 30 %.
The recorded values are reduced by 15 % from new values.
Measurement plane: 0.85 m above the floor.

Luminaire				
FDH	kg	White	Alu-grey	
1×25/28	3.6	**26231**	**26232**	□ ▲
1×32/35	4.7	**26241**	**26242**	□ ▲
1×50/54	3.6	**26271**	**26272**	□ ▲
2×25/28	3.7	**26233**	**26234**	□ ● ▲ ●
2×32/35	4.8	**26243**	**26244**	□ ● ▲ ●
2×50/54	3.7	**26273**	**26274**	□ ▲
3×25/28	4.1	**26235-**[1)]	**26236-**[1)]	□ ● ▼
3×32/35	5.2	**26245-**[1)]	**26246-**[1)]	□ ● ▼

[1)] Luminaire must be completed with desired function. See table with suffix codes.

Suffix code	
□	**-17** With two pull-cords, separate direct/indirect
□	**-368** DALI/Phase-pulse control
□	**-436** DALI/DSI/switchDIM
●	**-309** e-Sense smartSWITCH absence detector
●	**-314** e-Sense smartSWITCH on/off
●	**-315** e-Sense smartSWITCH via a pull-cord
●	**-382** e-Sense ActiLume master luminaire
●	**-385** e-Sense ActiLume single luminaire pull dim-cord
▲	**-409** Phase-pulse control, one pull-cord
▼	**-410** Phase-pulse control, two pull-cords, separate direct/indirect
●	**-427** e-Sense Connect
●	**-428** e-Sense Connect with sensor

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension. The wire pendant can be secured directly to the body or via a bracket. Wire lock mounted in the luminaire body. Continuous coupler available as an accessory.

Connection
The luminaire is fitted with a 2.4 m mains cable 3×1 mm² and an earthed plug. The mains cable enters on the same side as the pull-cord, if fitted. Luminaires with additional suffix codes -436 and -368 are delivered with a 2.4 m mains cable 5×0.75 mm² excl. plug.

Design
Sheet steel luminaire body in white (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The top is covered using an acrylic plastic diffuser.

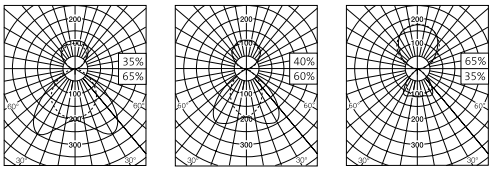
Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. Re-lamping is performed from the top, without removing the louvre. Earthed.

Reflector
Reflectors of specular anodised aluminium. The three lamp design has separate reflectors for direct respective indirect lighting. The reflector for indirect lighting gives wide light distribution. (1 and 2 lamp designs do not feature separate reflectors for indirect lighting.)

Emergency lighting
Some variants available with emLED.

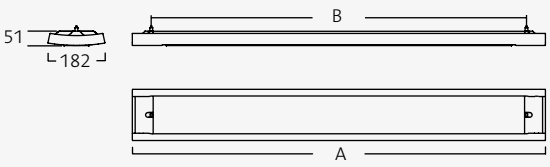
Dimming
Most models can also be equipped with other ballasts for dimming.

Miscellaneous
The luminaire can on request be equipped in a 45/49 W design.



1-lamp 2-lamp 3-lamp

W	A	B
25/28	1322	1200
32/35	1622	1500
50/54	1322	1200



Luminaire with flexible bracket.

Luminaire

FDH	kg	White	Alu-grey			
1×25/28	4.2	**26111**	**26112**	■		▲
1×32/35	5.4	**26121**	**26122**	■		▲
1×50/54	4.2	**26151**	**26152**	■		▲
2×25/28	4.3	**26113**	**26114**	■	●	▲
2×32/35	5.5	**26123**	**26124**	■	●	▲
2×50/54	4.3	**26153**	**26154**	■		▲
3×25/28	4.6	**26115-** [1]	**26116-** [1]	■	●	▼
3×32/35	5.8	**26125-** [1]	**26126-** [1]	■	●	▼

[1] *Luminaire must be completed with desired function. See table with suffix codes.*

Suffix code

■	**-17**	With two pull-cords, separate direct/indirect
■	**-368**	DALI/Phase-pulse control
■	**-436**	DALI/DSI/switchDIM
●	**-218**	e-Sense smartSWITCH absence detector
●	**-219**	e-Sense smartSWITCH on/off
●	**-220**	e-Sense smartSWITCH via a pull-cord
▲	**-409**	Phase-pulse control, one pull-cord
▼	**-410**	Phase-pulse control, two pull-cords, separate direct/indirect

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire suspension. The wire pendant can be secured directly to the body or via a bracket. Wire lock mounted in the luminaire body. Continuous coupler available as an accessory.

Connection
The luminaire is fitted with a 2.4 m mains cable 3×1 mm² and an earthed plug. Luminaires with additional suffix codes -436 and -368 are delivered with a 2.4 m mains cable 5×0.75 mm² excl. plug.

Design
Sheet steel luminaire body in white (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The top is covered using a clear acrylic plastic diffuser.

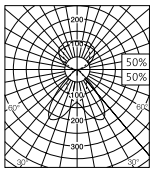
Louvre
Lamell – lamell louvre in grey enamelled sheet steel. The louvre is fixed to the body. Re-lamping is performed from the top, without removing the louvre. Earthed.

Reflector
Reflectors of specular anodised aluminium. The three lamp design has separate reflectors for direct respective indirect lighting. The reflector for indirect lighting gives wide light distribution.

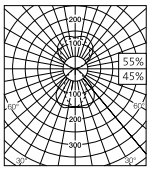
Emergency lighting
Some variants available with emLED.

Dimming
Most models can also be equipped with other ballasts for dimming.

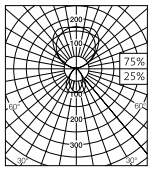
Miscellaneous
The luminaire can on request be equipped in a 45/49 W design.



1-lamp

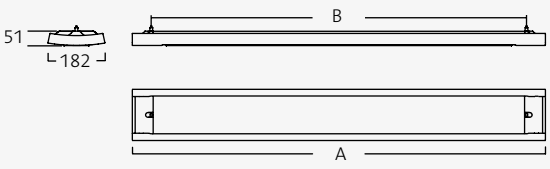


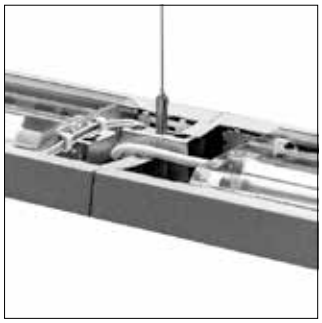
2-lamp



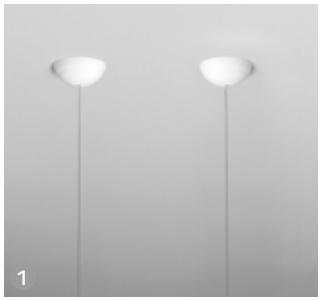
3-lamp

W	A	B
25/28	1322	1200
32/35	1622	1500
50/54	1322	1200





Luminaire with connection cable.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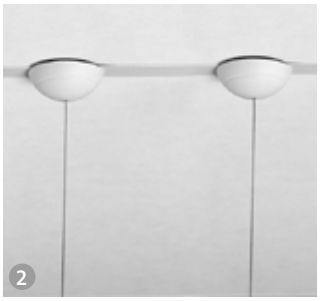
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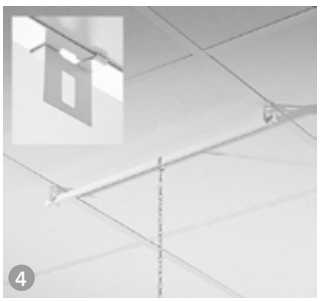
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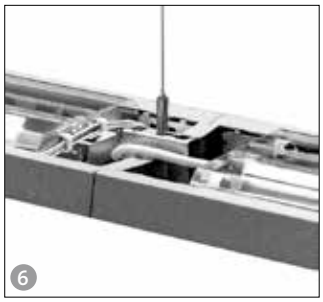
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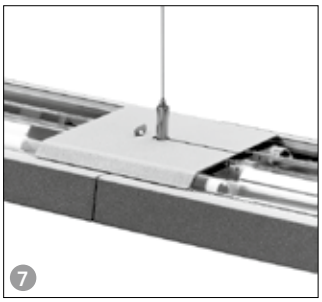

7


8


8

1–2. Wire suspension sets (single wire) for singly installed luminaires. L=1.5 m.

Not including the mains cable (included with luminaire).	
Small ceiling cups, white/pair	**94414**
Small ceiling cups, grey/pair	**94416**
Small ceiling cups for T-bars 25 mm, white/pair	**94415**
Small ceiling cups for T-bars 25 mm, grey/pair	**94417**

3. Bracket set for variable c/c. Wire lock moved from the luminaire to the bracket.

Bracket white/pair	**91930**
Bracket alu-grey/pair	**91931**
Bracket white, incl. wire. White ceiling cups/pair	**91940**
Bracket alu-grey, incl. wire. grey ceiling cups/pair	**91941**
Bracket white, incl. wire. White ceiling cups for T-bars 25 mm/pair	**91942**
Bracket alu-grey, incl. wire. grey ceiling cups for T-bars 25 mm/pair	**91943**

4–5. Support rail for visible T-bars incl. wire suspension and clips clips that run on the support rail.

Length/Module	T-bars	Max load	
600/625	25	75 N	**94067**
1200/1250	25	120/30 N	**94068**
600/625	15	75 N	**90015**
1200/1250	15	120/30 N	**90016**
600	25/15	75 N	**90017**
Wire suspension (single wire) 1.5 m for installation combined with bracket/pair.			**91426**

6–7. Continuous coupler including screw joint

Wire lock is moved from the luminaire to the continuous coupler. The mains cable is used for through-wiring between luminaires. Connected to the terminal block at one end.	
Continuous coupler, white/each	**91932**
Continuous coupler, alu-grey/each	**91933**

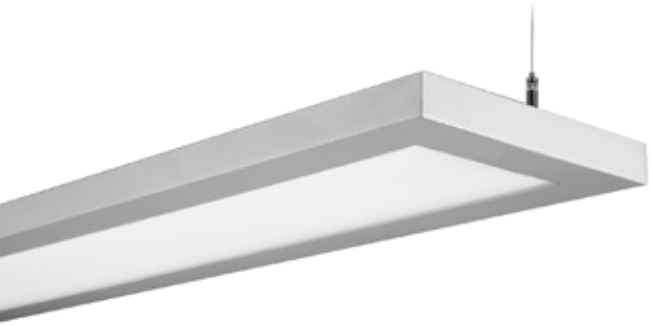
Wire suspension for continuous luminaire

Wire suspension with single wire and ceiling cup. L=1.5 m.	
Small ceiling cup, white/each	**94327**
Small ceiling cup, grey/each	**94440**
Small ceiling cup for T-bars 25 mm, white/each	**94880**
Small ceiling cup for T-bars 25 mm, grey/each	**94442**

8. Accessories e-Sense Connect

Control unit to e-Sense Connect	**86300**
Remote control (for grouping) to e-Sense Connect	**86301**
Connection cable between control unit and controller to e-Sense Connect	**86303**

Tigris



Tigris is a hybrid of aesthetics and technical expertise. Its compact, minimalist design is complemented with advanced reflector technology for an energy efficient solution which brings a refined appeal to the space.

Tigris is available in two versions; with Beta double parabolic louvre, type r5-micro, which provides a greater share of direct lighting, and with Fagerhults micro-prismatic Delta louvre.

Tigris Delta's large uninterrupted light opening showcases the visual qualities of its micro-prism louvre. The light sources and reflectors have been moved to run along the long sides of the luminaire, avoiding shadows on the surface, with an additional opal film to further balance the luminance. The light is reflected upwards through a semi-transparent dust cover, with a percentage being filtered down, through the Delta louvre, to light the workplace. The direction-free lighting creates a comfortable ambience without sharp contrasts and reduces the risk of glare on computer screens.

Luminaire			
FDH	kg		
3×25/28	6.0	**26810-**	☐
3×32/35	7.0	**26811-**	☐
3×50/54	7.0	**26812-**	☐

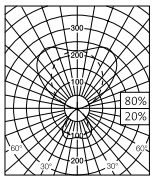
Luminaire must be completed with desired function. See table with suffix codes.

Suffix code	
☐ **-17**	With two pull-cords, separate direct/indirect
☐ **-368**	DALI/Phase-pulse control
☐ **-384**	e-Sense ActiLume single luminaire, one pull dim-cord
☐ **-410**	Phase-pulse control, two pull-cords, separate direct/indirect
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

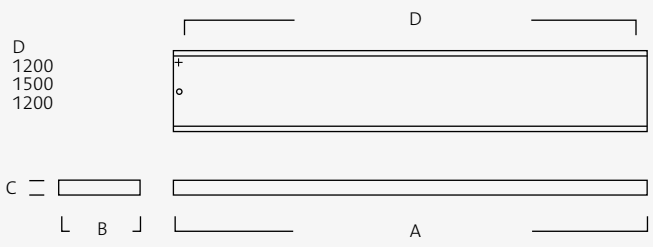
Accessories	
Wire suspension with ceiling cup. L=1.5 m.	
Small ceiling cups, white	**94414**
Small ceiling cups for T-bars 25 mm, white	**94415**
Small ceiling cups, grey	**94416**
Small ceiling cups for T-bars 25 mm, grey	**94417**
Wire suspension incl. ceiling bracket alt. T-bars 25 mm	
Wire suspension L=1.5 m, ceiling bracket in chrome/pair	**91696**

Installation
Wire suspension. Friction locks included with luminaire. Balanced.
Connection
The luminaire is equipped with a 2.4 m mains cable 3×1.0 mm² and an earthed plug. The connecting mains cable comes out on the same side as the pull-cord. Luminaires for dimming, suffix -436 and -368, are delivered with a 5-way mains cable excl. plug.
Design
Body of enamelled sheet steel, alu-grey (RAL 9006) structured finish. Transparent acrylic diffuser on top of the luminaire.
Louvre
Beta – double parabolic reflector louvre with side and cross blades of satin matt, metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre is fixed to the body. Re-lamping is performed from the top of the luminaire. Earthed.
Reflector
Separate reflectors for indirect and direct light distribution. Reflector material in satin matt finish.
Emergency lighting
Some variants available with emLED.
Dimming
Most models can also be equipped with other ballasts for dimming.
Accessories
Wire suspension, see Accessories. Special continuous connector available on request.

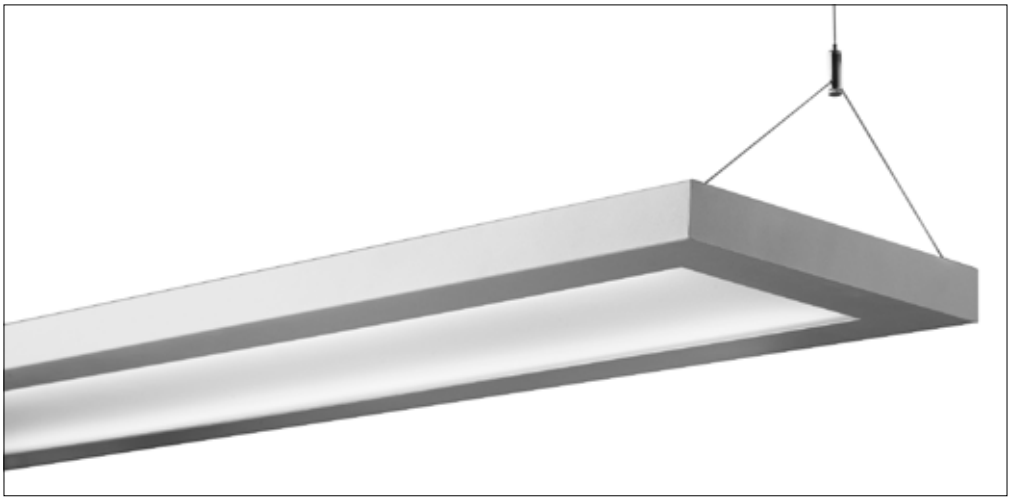


All versions

W	A	B	C	D
25/28	1253	215	39	1200
32/35	1553	215	39	1500
50/54	1253	215	39	1200



Tigris with Beta louvre.



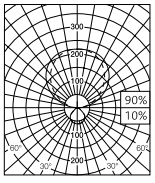
Installation
Two point wire suspension via locks secured directly on the luminaire. Balanced.
Connection
The luminaire is equipped with a 2.4 m mains cable 3×1.0 mm² and an earthed plug. Luminaires for dimming, suffix -436 and -368, are delivered with a 5-way mains cable excl. plug.
Design
Body of sheet steel in white (RAL 9016) structured or alu-grey (RAL 9006) finish. Diffused acrylic plastic dust cover on top of the luminaire.
Louvre
Delta – diffused microprism in acrylic TPb (PMMA) with good optical characteristics. Re-lamping is performed from the top of the luminaire.
Reflector
Reflectors of metallised aluminium.
Emergency lighting
Some variants available with emLED.
Accessories
Wire suspension, see Accessories.

Luminaire				
FDH	kg	White	Alu-grey	
2×25/28	5.7	**26820**	**26830**	■ ●
2×32/35	7.7	**26821**	**26831**	■ ●
2×45/49	7.7	**26822**	**26832**	■
2×50/54	5.7	**26823**	**26833**	■

Suffix code	
■ **-368**	DALI/Phase-pulse control
■ **-409**	Phase-pulse control, one pull-cord
■ **-436**	DALI/DSI/switchDIM
■ **-219**	e-Sense smartSWITCH on/off
■ **-220**	e-Sense smartSWITCH via a pull-cord
● **-384**	e-Sense ActiLume single luminaire, one pull dim-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Wire suspension with ceiling cup. L=1.5 m.	
Small ceiling cups, white	**94414**
Small ceiling cups for T-bars 25 mm, white	**94415**
Small ceiling cups, grey	**94416**
Small ceiling cups for T-bars 25 mm, grey	**94417**
Wire suspension incl. ceiling bracket alt. T-bars 25 mm	
Wire suspension L=1.5 m, ceiling bracket in chrome/pair	**91696**



All versions

The luminaire can be equipped with a pull-cord located on the same side as the mains cable.

W	A	B	C	D
25/28	1224	297	39	1200
32/35	1524	297	39	1500
45/49	1524	297	39	1500
50/54	1224	297	39	1200

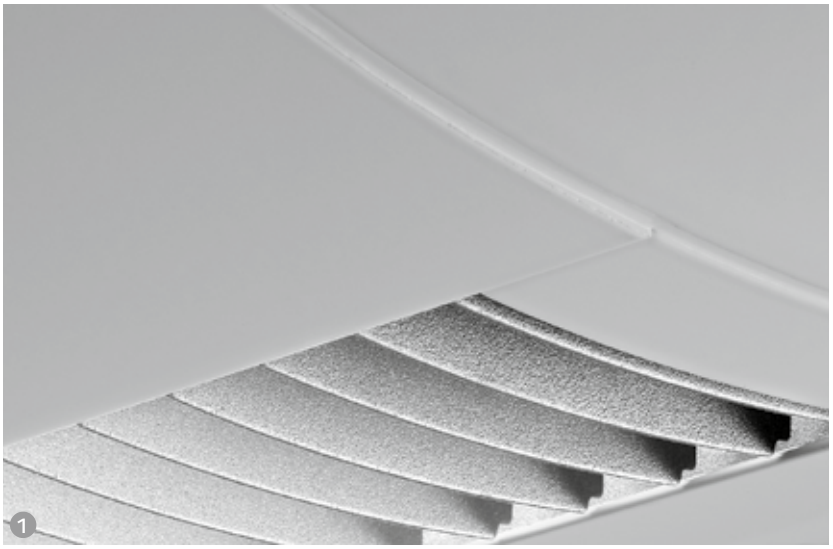
The top of the luminaire is covered by an opal dust cover.

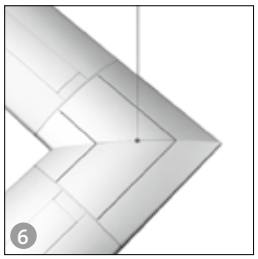
Loop Light

Designed by PLH Design/PLH Arkitekter

Loop Light will not only light up the whole room but also enhance it with its presence. This hanging light sculpture changes character as daylight comes and goes, while its slender dimensions reflect the latest technical possibilities.

Its name was as carefully chosen as its design. It was inspired by organic and aerodynamic forms. A design without unnecessary decoration, where each part plays a well defined role. A simple, symmetrical, flowing design, without sharp edges or ends. The name Loop also alludes to the possibility of choosing direct lighting only, full indirect lighting or a combination of both – thereby gaining another type of light distribution and lighting conditions without Loop changing its appearance.





1. Supplied with fitted end-caps, Loop Lights clean line design has neither edges nor ends. There is no unnecessary decoration and each shape and component has a well-thought out function. The design interacts with advanced technology to create a luminaire that is as suitable for offices as demanding production environments.

2. Loop Light can be equipped with a range of louvers: a single-parabolic Lamell or the active double-parabolic Beta and Gamma louvres.

3. Installation and connection on Loop Light takes place from the outside, which saves time.

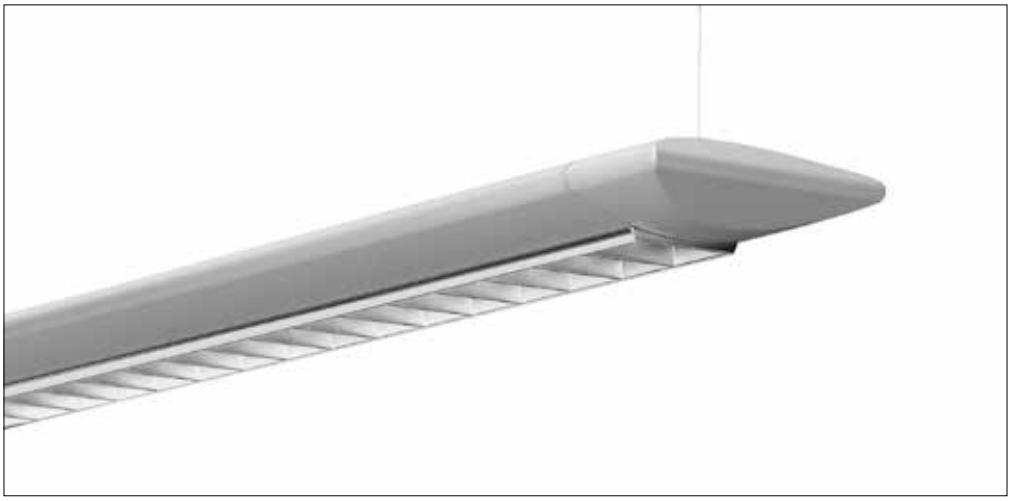
4. The bracket for suspension does not come with the luminaire – the bracket comes with the suspension. Wire adjustments are made with friction wirelocks.

5. The range includes several optical accessories. Transparent diffuser, light directing lined diffuser or a cover plate when 100 % direct and indirect light is required from the luminaire.

6. The Loop Light range contains various different coupler types for continuous installation.

7. Loop Light can be equipped with Fagerhult's e-Sense sensors placed in the end-cap. To upgrade an existing Loop Light installation, we can offer a replacement end-cap with e-Sense smartSWITCH sensor to HF standard luminaires. The function will be e-Sense smartSWITCH on/off.

Loop Light
Beta



Luminaire, single installation incl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.8	**19243**	**19263**	■
1×32/35	5.6	**19244**	**19264**	■
1×45/49	5.6	**19245**	**19265**	■
1×73/80	5.6	**19257**	**19277**	■
2×25/28	4.9	**19248**	**19268**	■ ● ▲
2×32/35	5.7	**19249**	**19269**	■ ● ▲
2×45/49	5.7	**19250**	**19270**	■
2×73/80	5.7	**19182**	**19183**	

Luminaire, continuous installation excl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.4	**19543**	**19563**	■
1×32/35	5.2	**19544**	**19564**	■
1×45/49	5.2	**19545**	**19565**	■
2×25/28	4.5	**19548**	**19568**	■
2×32/35	5.3	**19549**	**19569**	■
2×45/49	5.3	**19550**	**19570**	■

Suffix code

■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-218** e-Sense smartSWITCH absence detector
●	**-219** e-Sense smartSWITCH on/off
●	**-220** e-Sense smartSWITCH via a pull-cord
●	**-367** e-Sense ActiLume master luminaire
●	**-384** e-Sense ActiLume single luminaire, one pull dim-cord
▲	**-409** Phase-pulse control, one pull-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire or tubular suspension, see Accessories.

Connection
Connection is made at one end, from the outside. Installation is concealed by the end-cap. 3-way through-wiring 3×1.5 mm² and snap-in terminal block at each end. 5-way through wiring on special request. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Extruded aluminium body and cast metal end-caps. White (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The row of luminaires should be fitted with end-caps in continuous installation, see Accessories.

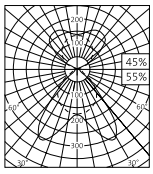
Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
The louvre acts as a reflector.

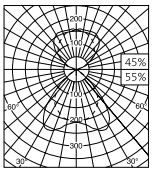
Emergency lighting
Some variants available with emLED.

Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
For required installation and connection components, please see Accessories.

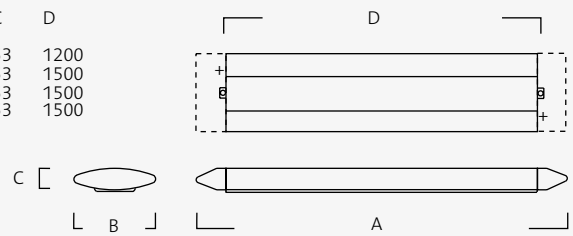


1×25/28/32/35/
45/49 W



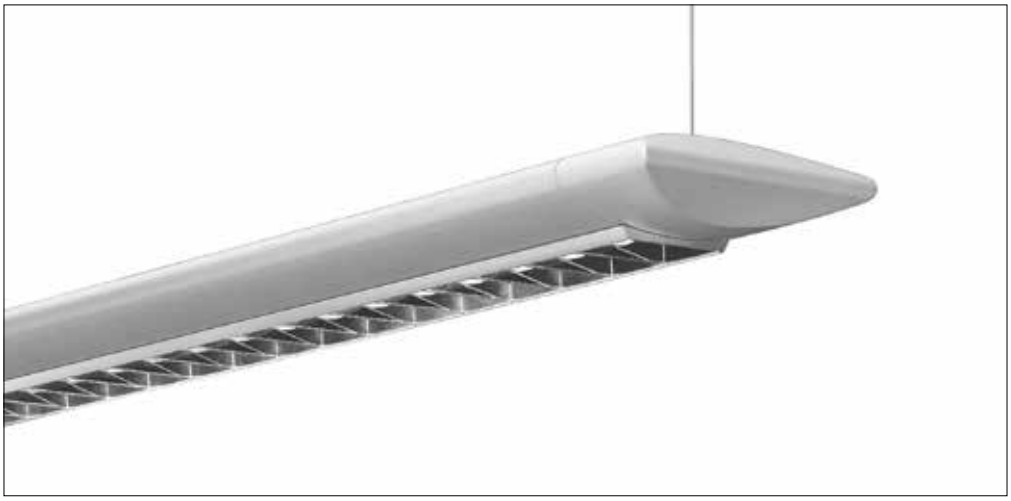
2×25/28/32/35/
45/49 W

W	A	B	C	D
25/28	1320	200	53	1200
32/35	1620	200	53	1500
45/49	1620	200	53	1500
73/80	1620	200	53	1500



Loop Light is suitable for continuous installation.

Loop Light
Gamma



Luminaire, single installation incl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.8	**19283**	**19303**	■
1×32/35	5.6	**19284**	**19304**	■
1×45/49	5.6	**19285**	**19305**	■
1×73/80	5.6	**19297**	**19317**	■
2×25/28	4.9	**19288**	**19308**	■ ● ▲
2×32/35	5.7	**19289**	**19309**	■ ● ▲
2×45/49	5.7	**19290**	**19310**	■
2×73/80	5.7	**19184**	**19185**	■

Luminaire, continuous installation excl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.4	**19583**	**19603**	■
1×32/35	5.2	**19584**	**19604**	■
1×45/49	5.2	**19585**	**19605**	■
2×25/28	4.5	**19588**	**19608**	■
2×32/35	5.3	**19589**	**19609**	■
2×45/49	5.3	**19590**	**19610**	■

Suffix code

■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-218** e-Sense smartSWITCH absence detector
●	**-219** e-Sense smartSWITCH on/off
●	**-220** e-Sense smartSWITCH via a pull-cord
●	**-384** e-Sense ActiLume single luminaire, one pull dim-cord
▲	**-409** Phase-pulse control, one pull-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire or tubular suspension, see Accessories.

Connection
Connection is made at one end from the outside. Installation is concealed by the end-cap. 3-way through-wiring 3×1.5 mm² and snap-in terminal block at each end. 5-way through wiring on special request. Luminaires for dimming. 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Extruded aluminium body and cast metal end-caps. White (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The row of luminaires should be fitted with end-caps in continuous installation, see Accessories.

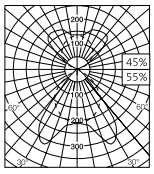
Louvre
Gamma – double parabolic reflector louvre with specular, metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
The louvre acts as a reflector.

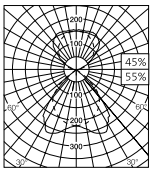
Emergency lighting
Some variants available with emLED.

Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
For required installation and connection components, please see Accessories.

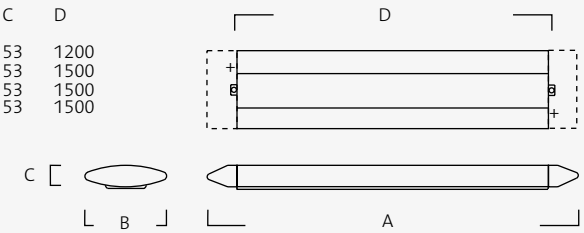


1×25/28/32/35/
45/49 W



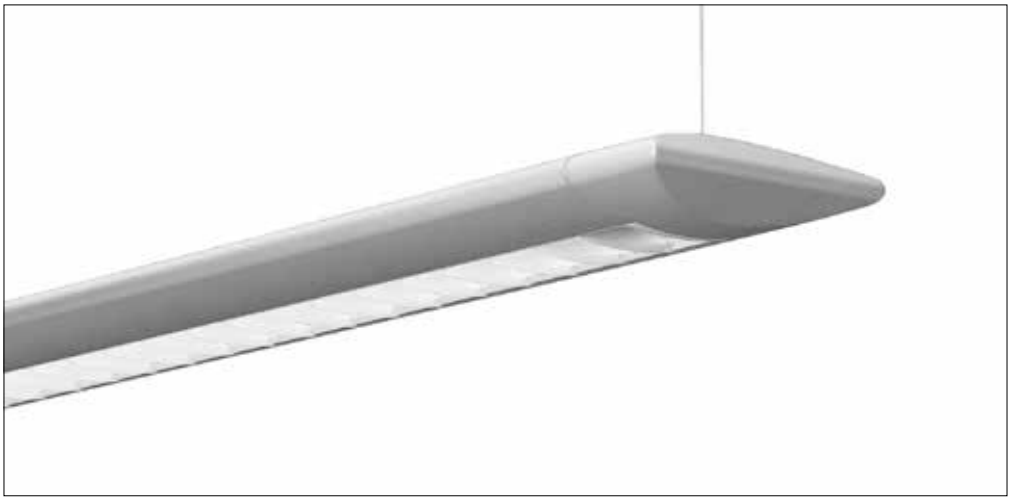
2×25/28/32/35/
45/49 W

W	A	B	C	D
25/28	1320	200	53	1200
32/35	1620	200	53	1500
45/49	1620	200	53	1500
73/80	1620	200	53	1500



Double parabolic reflector Gamma louvre.

Loop Light
Terazza



Luminaire, single installation incl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	5.0	**19203**	**19223**	■
1×32/35	5.8	**19204**	**19224**	■
1×45/49	5.8	**19205**	**19225**	■
1×73/80	5.6	**19217**	**19237**	■
2×25/28	5.1	**19208**	**19228**	■ ● ▲
2×32/35	5.9	**19209**	**19229**	■ ● ▲
2×45/49	5.9	**19210**	**19230**	■
2×73/80	5.9	**19180**	**19181**	

Luminaire, continuous installation excl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.6	**19503**	**19523**	■
1×32/35	5.4	**19504**	**19524**	■
1×45/49	5.4	**19505**	**19525**	■
2×25/28	4.7	**19508**	**19528**	■
2×32/35	5.5	**19509**	**19529**	■
2×45/49	5.5	**19510**	**19530**	■

Suffix code

■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-218** e-Sense smartSWITCH absence detector
●	**-219** e-Sense smartSWITCH on/off
●	**-220** e-Sense smartSWITCH via a pull-cord
●	**-384** e-Sense ActiLume single luminaire, one pull dim-cord
▲	**-409** Phase-pulse control, one pull-cord

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire or tubular suspension, see Accessories.

Connection
Connection is made at one end, from the outside. Installation is concealed by the end-cap. 3-way through-wiring 3×1.5 mm² and snap-in terminal block at each end. 5-way through wiring on special request. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Extruded aluminium body and cast metal end-caps. White (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The row of luminaires should be fitted with end-caps in continuous installation, see Accessories.

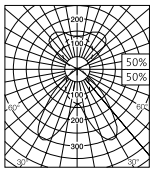
Louvre
Terazza – satin matt, metallised aluminium reflectors with excellent reflection characteristics (> 92 %) and aluminium enamelled cross-blades integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
The louvre acts as a reflector.

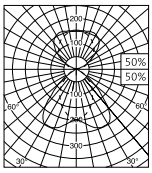
Emergency lighting
Some variants available with emLED.

Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
For required installation and connection components, see Accessories.

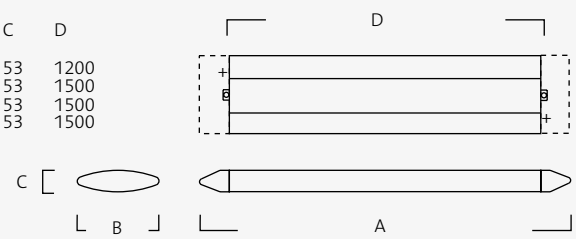


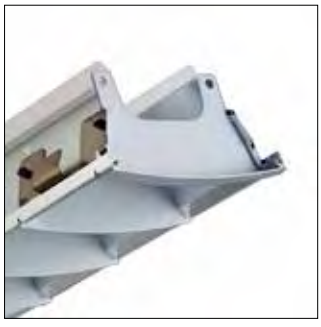
1-lamp



2-lamp

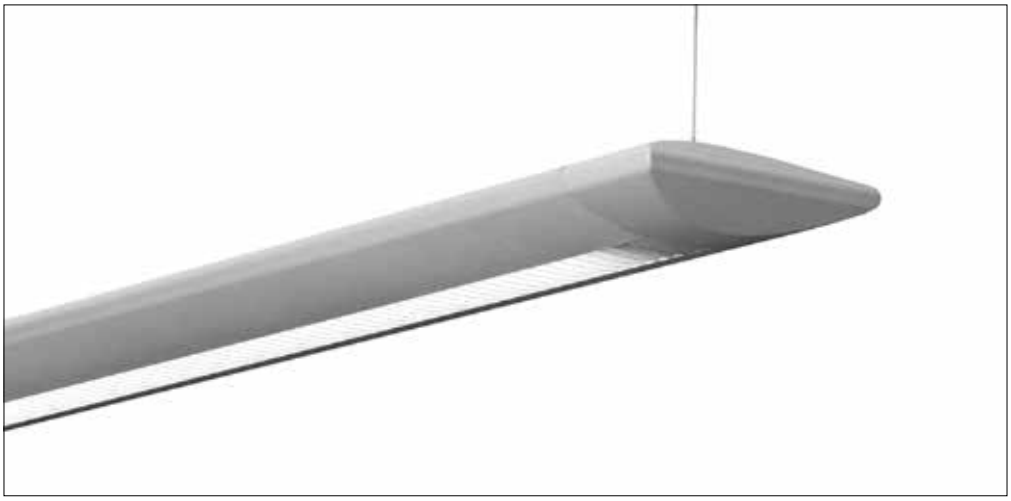
W	A	B	C	D
25/28	1320	200	53	1200
32/35	1620	200	53	1500
45/49	1620	200	53	1500
73/80	1620	200	53	1500





Terazza louvre.

Loop Light
Lamell



Luminaire, single installation incl. end-caps

FDH	kg	White	Alu-grey		
1×25/28	4.8	**19323**	**19343**	□	▲
1×32/35	5.6	**19324**	**19344**	□	▲
1×73/80	5.6	**19337**	**19357**	□	▲
2×25/28	4.9	**19328**	**19348**	□	▲
2×32/35	5.7	**19329**	**19349**	□	▲
2×73/80	5.7	**19186**	**19187**	□	▲
3×25/28	5.6	**19332-** [1]	**19352-** [1]		▼
3×32/35	6.5	**19333-** [1]	**19353-** [1]		▼

[1] *Luminaire must be completed with desired function. See table with suffix codes.*

Luminaire, continuous installation, excl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.4	**19043**	**19063**	□
1×32/35	5.2	**19044**	**19064**	□
2×25/28	4.5	**19048**	**19068**	□
2×32/35	5.3	**19049**	**19069**	□

Suffix code

□ **-368**	DALI/Phase-pulse control
□ **-436**	DALI/DSI/switchDIM
▲ **-409**	Phase-pulse control, one pull-cord
▼ **-17**	With two pull-cords, separate direct/indirect
▼ **-410**	Phase-pulse control, two pull-cords, separate direct/indirect

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire or tubular suspension, see Accessories.

Connection
Connection is made at one end, from the outside. Installation is concealed by the end-cap. 3-way through-wiring 3×1.5 mm² and snap-in terminal block at each end. 5-way through-wiring on special request. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Extruded aluminium body and cast metal end-caps. White (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The row of luminaires should be fitted with end-caps in continuous installation, see Accessories.

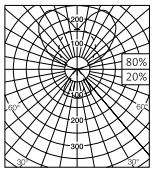
Louvre
Lamell – lamell louvre in grey enamelled sheet steel.

Reflector
Metallised aluminium reflector. Wide light distribution of indirect lighting.

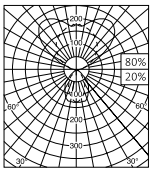
Emergency lighting
Some variants available with emLED.

Dimming
Most models can also be equipped with other ballasts for dimming.

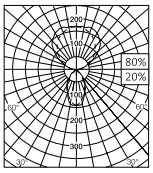
Accessories
For required installation and connection components, see Accessories.



1×25/28/32/35 W

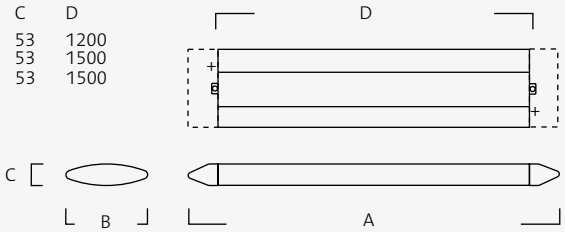


2×25/28/32/35 W



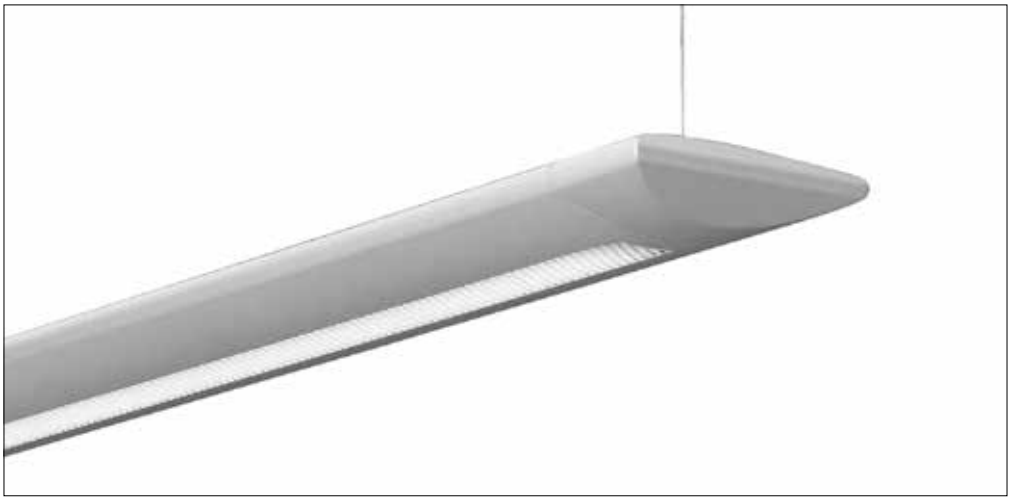
3×25/28/32/35 W

W	A	B	C	D
25/28	1320	200	53	1200
32/35	1620	200	53	1500
73/80	1620	200	53	1500



Loop Light with double pull-cord.

Loop Light
Honeycomb



Luminaire, single installation incl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.5	**19363**	**19383**	□ ▲
1×32/35	5.1	**19364**	**19384**	□ ▲
2×25/28	4.6	**19368**	**19388**	□ ▲
2×32/35	5.3	**19369**	**19389**	□ ▲
3×25/28	5.4	**19372-**[1)]	**19392-**[1)]	□ ● ▼
3×32/35	6.2	**19373-**[1)]	**19393-**[1)]	□ ● ▼

[1)] Luminaire must be completed with desired function. See table with suffix codes.

Luminaire, continuous installation, excl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.1	**19083**	**19103**	□ ▲
1×32/35	4.7	**19084**	**19104**	□ ▲
2×25/28	4.2	**19088**	**19108**	□ ▲
2×32/35	4.9	**19089**	**19109**	□ ▲

Suffix code

□ **-368**	DALI/Phase-pulse control
□ **-436**	DALI/DSI/switchDIM
● **-218**	e-Sense smartSWITCH absence detector
● **-219**	e-Sense smartSWITCH on/off
● **-220**	e-Sense smartSWITCH pull dim-cord
● **-384**	e-Sense ActiLume with single luminaire 1 pull dim-cord
▲ **-409**	Phase-pulse control, one pull-cord
▼ **-17**	With two pull-cords, separate direct/indirect
▼ **-410**	Phase-pulse control, two pull-cords, separate direct/indirect

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Wire or tubular suspension, see Accessories.

Connection
Connection is made at one end, from the outside. Installation is concealed by the end-cap. 3-way through-wiring 3×1.5 mm² and snap-in terminal block at each end. 5-way through-wiring on special request. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

Design
Body of extruded aluminium and end-caps of cast metal. White (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The row of luminaires should be fitted with end-caps in continuous installation, see Accessories.

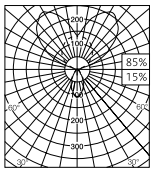
Louvre
Honeycomb – grey enamelled aluminium louvre with hexagonal mesh.

Reflector
Metallised aluminium reflector. Wide light distribution of indirect lighting.

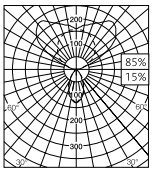
Emergency lighting
Some variants available with emLED.

Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
For required installation and connection components, see Accessories.

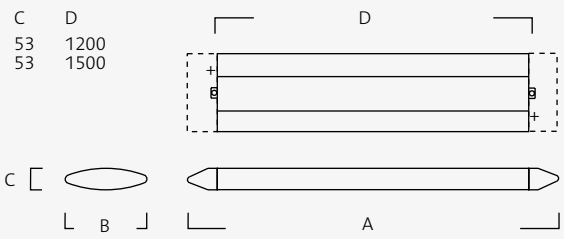


1-lamp



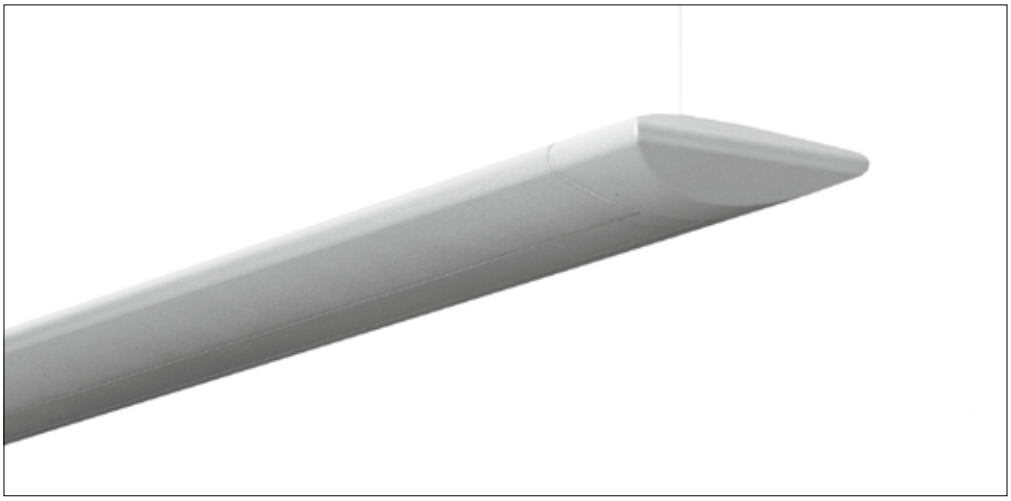
2-lamp

W	A	B	C	D
25/28	1320	200	53	1200
32/35	1620	200	53	1500



Loop Light Honeycomb mounted with transparent diffuser.

Loop Light
Indirect



Installation
Wire or tubular suspension, see Accessories.
Connection
Connection is made at one end. 3-way through-wiring 3×1.5 mm². Snap-in terminal block at each end. 5-way through-wiring on request. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.
Design
Body of extruded aluminium and cast metal end-caps. White (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The row of luminaires should be fitted with end-caps in continuous installation, see Accessories.
Reflector
Metallised aluminium reflector for wide distribution of the indirect light.
Emergency lighting
Some variants available with emLED.
Dimming
Most models can also be equipped with other ballasts for dimming.
Accessories
For required installation and connection components, see Accessories.

Luminaire, single installation incl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.6	**19410**	**19416**	☐
1×32/35	5.3	**19411**	**19417**	☐
1×45/49	5.3	**19412**	**19418**	☐
2×25/28	4.7	**19413**	**19419**	☐
2×32/35	5.4	**19414**	**19420**	☐
2×45/49	5.4	**19415**	**19421**	☐

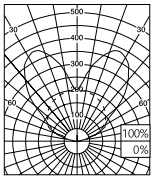
Luminaire, continuous installation excl. end-caps

FDH	kg	White	Alu-grey	
1×25/28	4.2	**19422**	**19428**	☐
1×32/35	4.9	**19423**	**19429**	☐
1×45/49	4.9	**19424**	**19430**	☐
2×25/28	4.3	**19425**	**19431**	☐
2×32/35	5.0	**19426**	**19432**	☐
2×45/49	5.0	**19427**	**19433**	☐

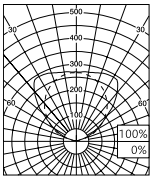
Suffix code

☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

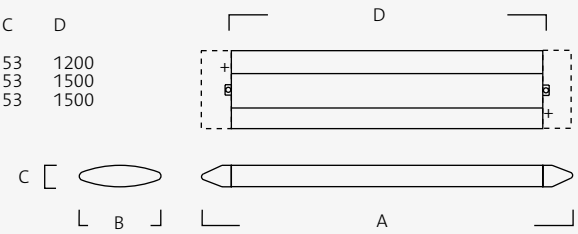


1-lamp

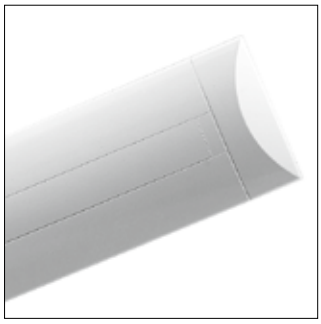


2-lamp

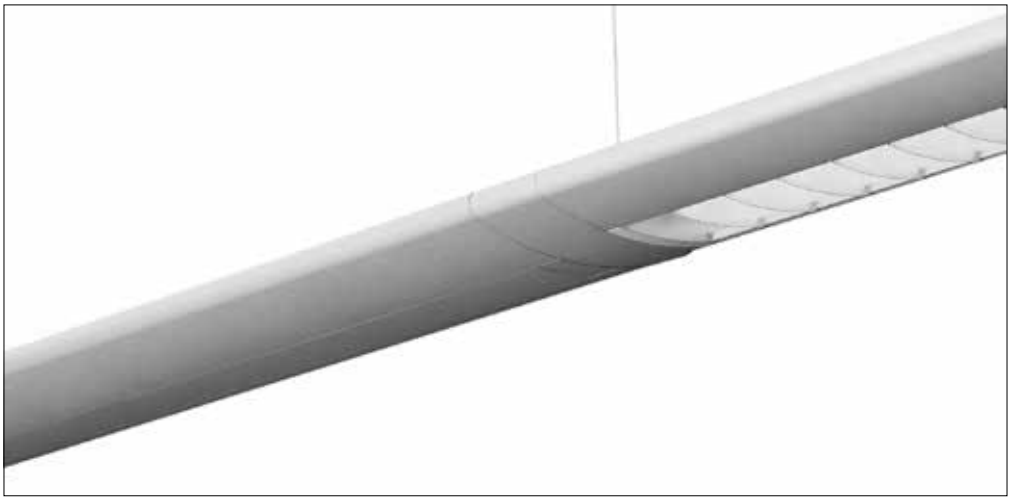
W	A	B	C	D
25/28	1320	200	53	1200
32/35	1620	200	53	1500
45/49	1620	200	53	1500



Loop Light Indirect is fitted with reflector for wide distribution.



Loop Light Indirect installed with cover plate.

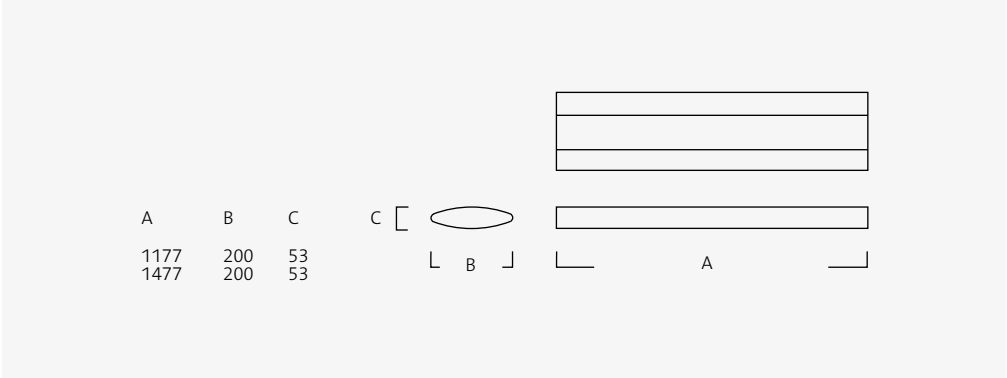


Installation
For integration using the continuous, L, T or X connectors.
Connection
Spacer equipped with 5-way through-wiring 1.5 mm² for connection with adjacent luminaires (i.e. no terminal block in this unit).
Design
Extruded aluminium body and cast metal end-caps. White (RAL 9016) or alu-grey (RAL 9006) structured enamelled finish. The opening on top of the profile is sealed with a plastic cover plate to protect against dust in the profile.
Accessories
Continuous connector and connectors, see Accessories.
Miscellaneous
Other lengths than those specified on this page are available on request. The inset measurement required should be stated on the specification (not the physical measurement).

Spacers

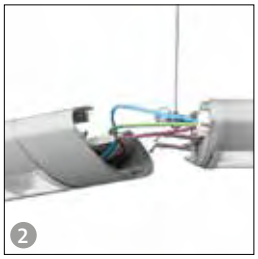
mm	kg	White	Alu-grey
1200	3.5	**19440**	**19442**
1500	4.1	**19441**	**19443**

The inside of the spacer is accessible from above. A plastic cover is included, which acts as a dust cover.



5-way through-wiring included in the spacer.

Loop Light
System installation



Loop Light has an extensive range of accessories. This allows you to align the luminaires in rows, at an angle or in squares to offer an aesthetic alternative to individually installed luminaires. Additional information for some accessories can be found below.

1. For continuous installation luminaire “1” is equipped with a continuous connector and is suspended via a wire. Through-wiring is connected.

2. Luminaire “2” is fitted with the extra bracket included with the connector and the through-wiring is connected before joining.

3. By tightening the vertically located screws, the luminaire units and the connector are joined seamlessly.

4. The connected installation gives a mechanical and aesthetically solid solution.

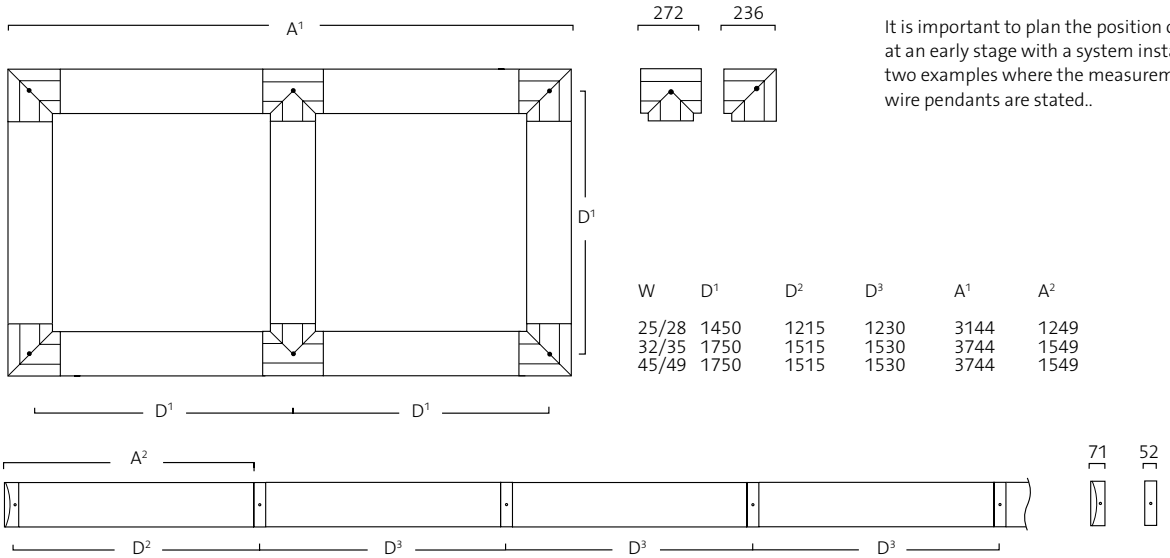
The principle of building systems with L, X or T connectors is the same as those of a continuous installation. Due to their stability wire suspension can be made directly to the couplers, reducing the number of installation points.

5. The connector is suspended via a wire pendant.

6. Luminaire “1” is fitted with the supplied extra bracket and is connected to the connector by means of a snap-on catch. Through-wiring is connected.

7. Luminaire “2” is equipped with an identical bracket to luminaire “1” and is adjusted on the connector using the snap-on catch. The through-wiring cable is connected. The entire installation takes place without the use of tools.

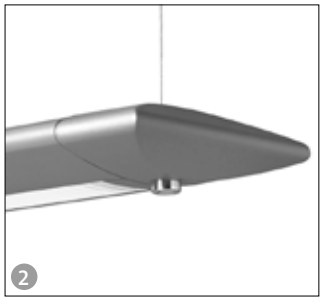
8. Complete installation, which joins the luminaire units, without unnecessary visible fittings, into an aesthetically solid unit.



W	D^1	D^2	D^3	A^1	A^2
25/28	1450	1215	1230	3144	1249
32/35	1750	1515	1530	3744	1549
45/49	1750	1515	1530	3744	1549

It is important to plan the position of the wire pendants at an early stage with a system installation. Here are two examples where the measurements between the wire pendants are stated..


1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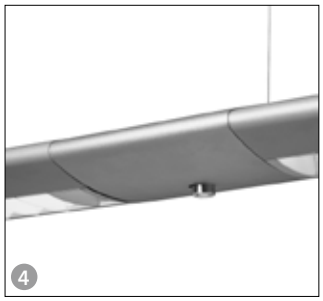
3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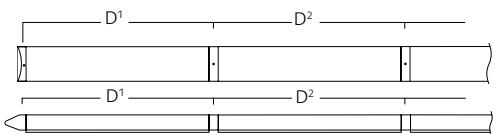
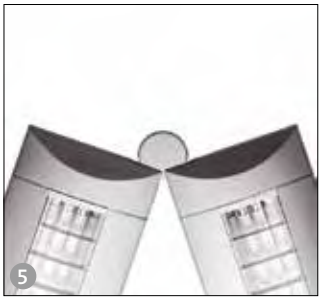


W	D^1	D^2
25/28	1215 mm	1230 mm
32/35	1515 mm	1530 mm
45/49	1515 mm	1530 mm

4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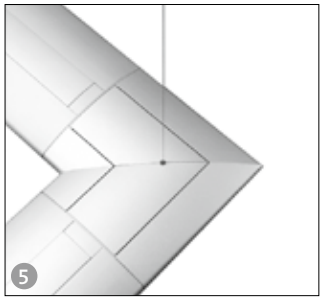
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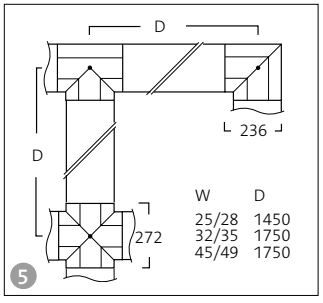
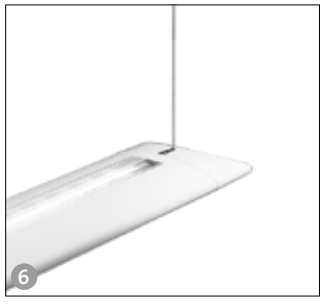


W	D
25/28	1450
32/35	1750
45/49	1750

5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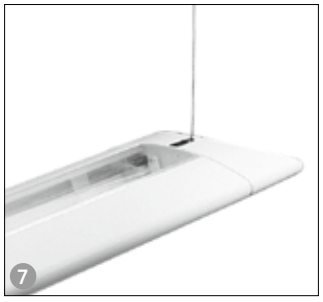

7


8

1. End-caps

End-caps white/pair	**91807**
End-caps alu-grey/pair	**91817**

2. End-caps emLED

End-caps emLED white/pair (incl. one standard cap)	**91215**
End-caps emLED alu-grey/pair (incl. one standard cap)	**91216**

3. Continuous connector

Continuous connector white/each	**91808**
Continuous connector alu-grey/each	**91818**

4. Continuous connector emLED

Continuous connector emLED white/each	**91217**
Continuous connector emLED alu-grey/each	**91218**

5. Couplers

Loop Light flexled white/each	**91809**
Loop Light flexled alu-grey/each	**91810**
Loop Light L-coupler white/each	**91811**
Loop Light L-coupler alu-grey/each	**91812**
Loop Light T-coupler white/each	**91813**
Loop Light T-coupler alu-grey/each	**91814**
Loop Light X-coupler white/each	**91815**
Loop Light X-coupler alu-grey/each	**91816**

L-coupler with cable entry and strain relief.

Loop Light L-coupler for mains cable, white/each	**91876**
Loop Light L-coupler for mains cable, alu-grey/each	**91877**

6. Lined diffuser

Acrylic plastic, for distributing and diffusing the indirect light. To be used in combination with Beta, Gamma or Terazza. Also provides dust protection.

Loop Light lined diffuser, 25/28 W	**94858**
Loop Light lined diffuser, 32/35/45/49/73/80 W	**94859**

7. Transparent diffuser

Acrylic plastic. Only used with Honeycomb and Lamell or when the luminaire is supplemented with a cover plate for just indirect lighting. Also provides dust protection.

Loop Light transparent diffuser 25/28 W	**94862**
Loop Light transparent diffuser 32/35/45/49/73/80 W [1)]	**94863**

[1)] Not suitable for Loop Light indirect 2×45/49 W.

8. Cover plate

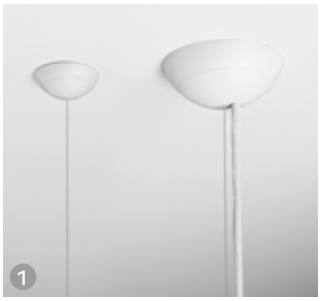
Cover plate of extruded aluminium, only for direct light distribution. Used in combination with Beta, Gamma or Terazza.

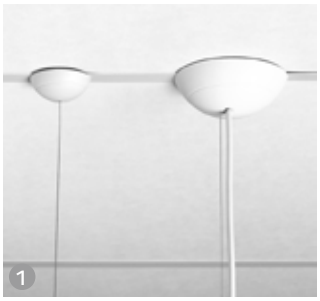
Cover plate white 25/28 W	**94868**
Cover plate white 32/35/45/49/73/80 W	**94870**
Cover plate alu-grey 25/28 W	**94869**
Cover plate alu-grey 32/35/45/49/73/80 W	**94871**

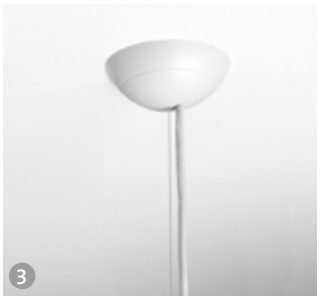
End-caps smartSWITCH

Replacement end-cap with e-Sense smartSWITCH-sensor for supplementing an already installed HF-std-luminaire. Gives the function e-Sense smartSWITCH On/Off

End-caps e-Sense smartSWITCH white/each	**91225**
End-caps e-Sense smartSWITCH alu-grey/each	**91226**







Single installation

1. Complete wire suspension, ceiling cups and mains cables 3 × 1.0 mm². L=1.0 m.	
Small + large ceiling cup, white/pair (94327+94588)	**94301**
Small + large ceiling cup, grey/pair (94440+94888)	**94904**
Large ceiling cups, white/pair (94296+94588)	**94444**
Large ceiling cups, grey/pair (94441+94888)	**94909**
Small + large ceiling cup for T-bars 25 mm, white/pair (94880+94589)	**94302**
Small + large ceiling cup for T-bars 25 mm, grey/pair (94442+94889)	**94914**
Large ceiling cups for T-bars 25 mm, white/pair (94881+94589)	**94445**
Large ceiling cups for T-bars 25 mm, grey/pair (94443+94889)	**94919**

Complete wire suspension, ceiling cups and mains cables 5 × 1.0 mm².L=1.0 m.	
Small + large ceiling cup, white/pair (94327+91701)	**91691**
Small + large ceiling cup, grey/pair (94440+91702)	**91151**
Large ceiling cups, white/pair (94296+91701)	**91692**
Large ceiling cups, grey/pair (94441+91702)	**91152**
Small + large ceiling cup for T-bars 25 mm, white/pair (94880+91703)	**91693**
Small + large ceiling cup for T-bars 25 mm, grey/pair (94442+91704)	**91153**
Large ceiling cups for T-bars 25 mm, white/pair (94881+91703)	**91694**
Large ceiling cups for T-bars 25 mm, grey/pair (94443+91704)	**91154**

Continuous installation

2. Wire suspension with single wire and ceiling cup. L=1.5 m.	
Small ceiling cup, white/each	**94327**
Small ceiling cup, grey/each	**94440**
Large ceiling cup, white/each	**94296**
Large ceiling cup, grey/each	**94441**
Small ceiling cup for T-bars 25 mm, white/each	**94880**
Small ceiling cup for T-bars 25 mm, grey/each	**94442**
Large ceiling cup for T-bars 25 mm, white/each	**94881**
Large ceiling cup for T-bars 25 mm, grey/each	**94443**

3. Wire suspension with single wire, ceiling cup and mains cables 3 × 1.0 mm². L=1.0 m.	
Large ceiling cup, white/each	**94588**
Large ceiling cup, grey/each	**94888**
Large ceiling cup for T-bars 25 mm, white/each	**94589**
Large ceiling cup for T-bars 25 mm, grey/each	**94889**

Wire suspension with single wire, ceiling cup and mains cables 5 × 1.0 mm². L=1.0 m.	
Large ceiling cup, white/each	**91701**
Large ceiling cup, grey/each	**91702**
Large ceiling cup for T-bars 25 mm, white/each	**91703**
Large ceiling cup for T-bars 25 mm, grey/each	**91704**

4. Tubular suspension with white enamelled pendant tube Ø 13 mm. White ceiling cup. Combine luminaire bracket with required pendant length.	
Tubular bracket with mains cable, 3-way/each	**91843**
Tubular bracket/each	**91823**
Tube pendant, length 300 mm/each	**91096**
Tube pendant, length 400 mm/each	**91097**
Tube pendant, length 500 mm/each	**91098**
Tube pendant, length 600 mm/each	**91099**
Tube pendant, length 700 mm/each	**91100**
Tube pendant, length 800 mm/each	**91101**
Tube pendant, length 900 mm/each	**91102**
Tube pendant, length 1000 mm/each	**91103**

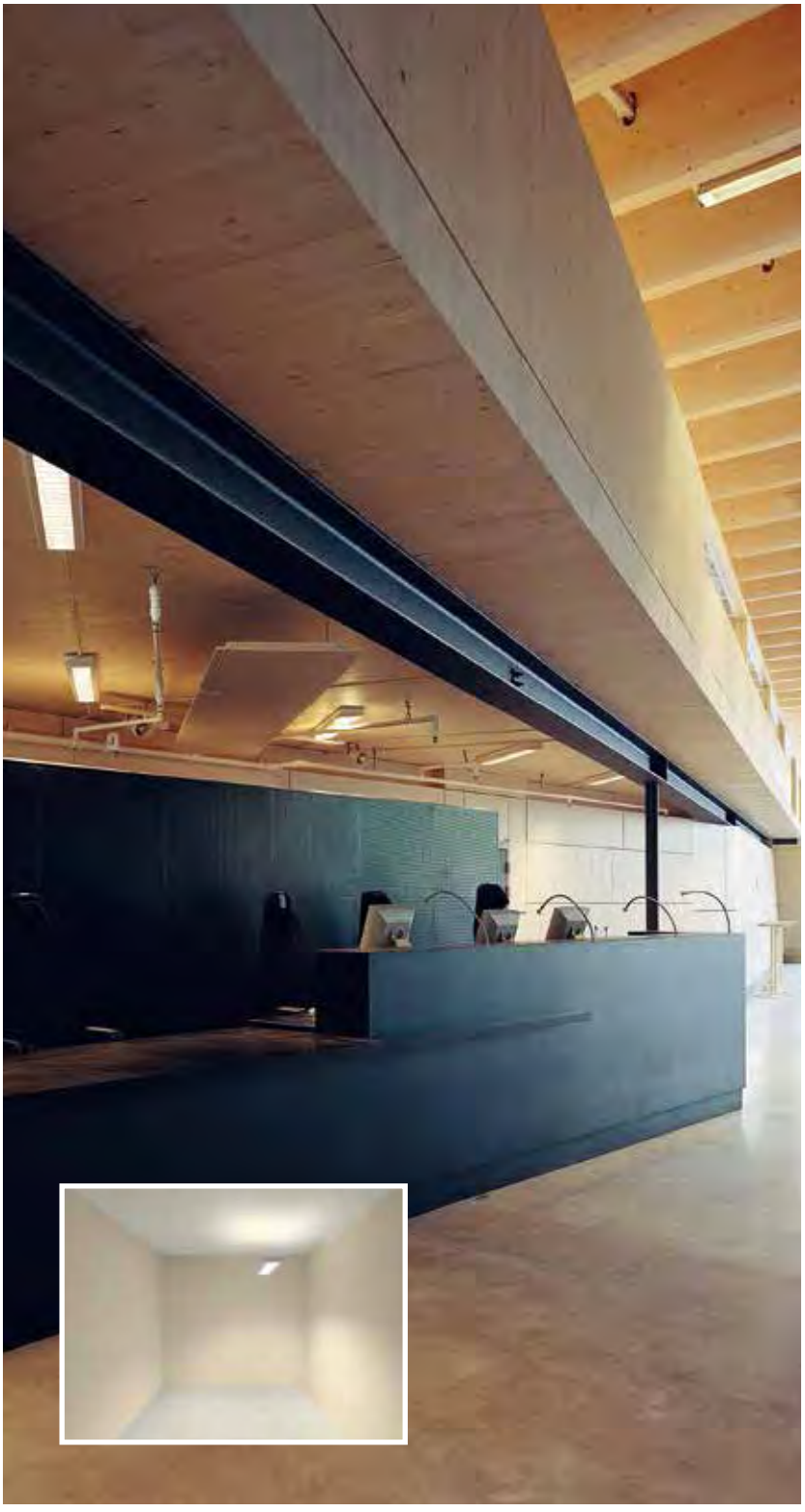
5. Support rail for visible T-bars	
L=600 mm, T-bars: 25/15, Max Load: 75 N/pair	**90017**
Wire suspension to support rail 90015, 90016, 90017, 94052, 94067, 94068.	**91426**

6. Luminaire bracket with wire lock and strain relief for the connection cable. Included when ordering the wire suspension.	
Luminaire bracket/pair, spare part	**91846**

Cutters for outlet in ceiling cups with surface mounted mains cable.	
Cutters/each	**94248**

Combiform

Combiform is, in many ways, a unique luminaire. The elegant and gentle lines fulfil its function without stealing all the attention in the room. Based on the T5 fluorescent lamp, its reduced dimensions have not been at the expense of the lighting technology.



Combiform is designed for external mounting or recessed in suspended ceilings with visible T-bars. The depth of the recessed version doesn't exceed the height of a normal T-bar of 38 mm. The total height of the luminaire is no more than 58 mm, when recessed the height is divided so that 38 mm is concealed in the suspended ceiling while 20 mm is visible below the ceiling.

Luminaire

FDH	kg		
1×13/14	3.5	**20430**	☐
1×25/28	4.3	**20432**	☐
1×32/35	5.3	**20434**	☐
1×45/49	5.3	**20436**	☐
2×13/14	4.8	**20431**	☐
2×25/28	6.0	**20433**	☐
2×32/35	7.3	**20435**	☐
2×45/49	7.3	**20437**	☐

Suffix code

☐	**-436** DALI/DSI/switchDIM
☐	**-368** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Surface mounted, wire suspension or semi-recessed in suspended ceilings with visible T-bars, section width 25 mm. (Note the width of the luminaire does not correspond with the ceilings modular measurements.) Semi-recessed depth only 38 mm. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Three ∅ 19 mm cable entries fitted with blanking grommets on the top of the luminaire. Knock-outs placed at each end and three on the top of the luminaire. 5-way snap-in terminal block. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.

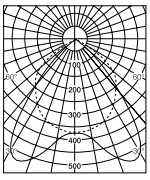
Design
Body in enamelled sheet steel with die cast aluminium end-caps (RAL 9016). Luminaire must be supplemented with balance weights for pendant installation, see Accessories.

Louvre
Beta – double parabolic reflector louvre with side and cross blades of satin matt metalised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

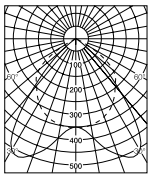
Reflector
The body is equipped with a top re. ector of metallised aluminium.

Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
Semi-recessed installation in suspended ceilings needs support profiles along the luminaire. In those cases this has not been prepared at the installation of the suspended ceiling, supplement with secondary profiles is necessary. One or two depending on whether the luminaire is installed to the side or in the centre of the module. Pendant suspension; see Accessories.

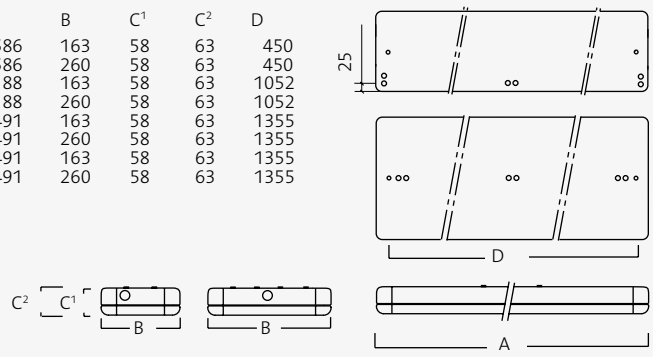


1-lamp



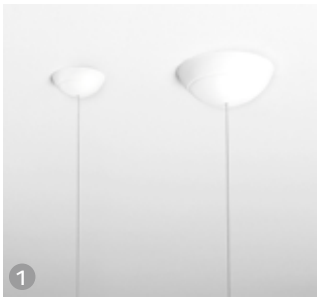
2-lamp

W	A	B	C¹	C²	D
1×13/14	586	163	58	63	450
2×13/14	586	260	58	63	450
1×25/28	1188	163	58	63	1052
2×25/28	1188	260	58	63	1052
1×32/35	1491	163	58	63	1355
2×32/35	1491	260	58	63	1355
1×45/49	1491	163	58	63	1355
2×45/49	1491	260	58	63	1355



Combiform can be used semi-recessed in suspended ceilings.


1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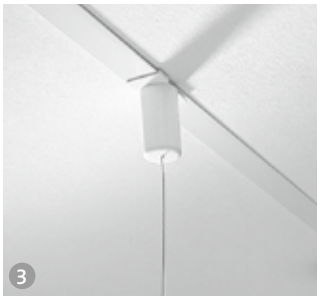
2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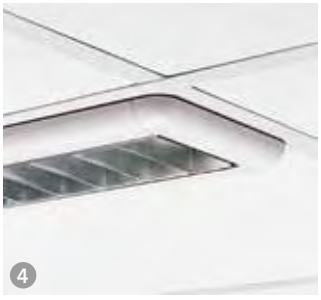

4


4


5


5


6

1. Wire suspension	
Single wire and wire lock. Length 1.5 m. 2× white plastic ceiling cup.	
Wire suspension/pair	**91910**
Wire suspension with bracket for T-bars 25 mm/pair	**91911**
2. Wire suspension set for singly installed luminaires	
Wire suspension incl. 2× ceiling cup and pendant cable 3×10 mm². L=1.0 m.	
Small + large ceiling cup, white/pair	**91920**
Large ceiling cups, white/pair	**91924**
3. Wire suspension with wire lock	
Wire suspension 1.5 m bracket (white) for visible T-bars 25 mm/pair	**91627**
4. Secondary profiles	
Secondary profiles, module 600 mm/each	**94473**
Secondary profiles, module 1200 mm/each	**94475**
5. Balance weight	
For pendant luminaires with direct distribution only.	
Balance weight for luminaire 1×13/14 W	**94468**
Balance weight for luminaire 2×13/14 W	**94469**
Balance weight for luminaire 1×25/28 W	**94470**
Balance weight for luminaire 2×25/28 W, 1×32/35 W and 1×45/49 W	**94471**
Balance weight for luminaire 2×32/35 W and 2×45/49 W	**94472**
6. Mains cable	
White mains cable 3×1.0 mm² with earthed lamp plug. Including strain relief clamp for installation in 19 mm holes.	
RKK, L=2.5 m, earthed plug	**91184**
RKK, L=2.5 m, earthed plug	**91160**
RKK, L=5.0 m, earthed plug	**91003**
RKK, L=2.5 m, earthed plug, screened	**91600**
RKK, L=2.5 m, earthed plug, without PVC	**91903**
RKK, L=2.5 m, earthed plug, screened and without PVC	**91900**

Indigo Clivus

Designed by Epsilon

The distinct design with unique wings gives Indigo Clivus its individual character. This striking visual expression and the excellent light treatment make Indigo Clivus an attractive option for many different lighting situations.

Indigo Clivus is a surface mounted luminaire offering light management on a level with other luminaires in the Indigo concept. Despite its slender height of 90 millimetres, Indigo Clivus gives a unique combination of direct and indirect light. The result is a luminaire with a glare free light and high efficiency.

Indigo Clivus is available with two different louvre options; an active Beta or a micro-prismatic Delta for enhanced aesthetics and softer light transition.

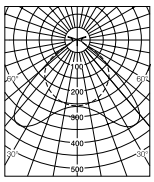
Indigo Clivus
Beta

Luminaire			
FDH	kg		
Module 300×1200			
1×25/28	5.9	**24485**	■ ●
1×50/54	5.9	**24487**	■
2×25/28	6.0	**24486**	■ ●
2×50/54	6.0	**24488**	■
Module 300×600			
1×13/14	4.3	**24481**	■ ●
1×20/24	4.3	**24483**	■
2×13/14	4.4	**24482**	■
2×20/24	4.4	**24484**	■

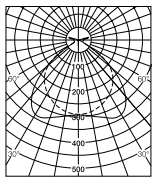
Suffix code	
■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-382** e-Sense ActiLume master luminaire

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Luminaire for surface mounting in suspended ceilings with visible T-bars or fixed ceilings.
Connection
Terminal block 3×1.5 mm², 1-phase through-wiring possible. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.
Design
Body and reflector of enamelled sheet steel with white (RAL 9003) structured finish.
Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.
Emergency lighting
Some variants available with emLED.
Dimming
Most models can also be equipped with other ballasts for dimming.
Miscellaneous
Also available in 32/35 W, special version. Can be equipped on special order with HF-ballasts for dimming. Indigo Clivus is designed to meet EN 12464-1 standards in some lamp options.



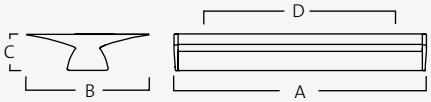
1-lamp, 300×1200



2-lamp, 300×1200

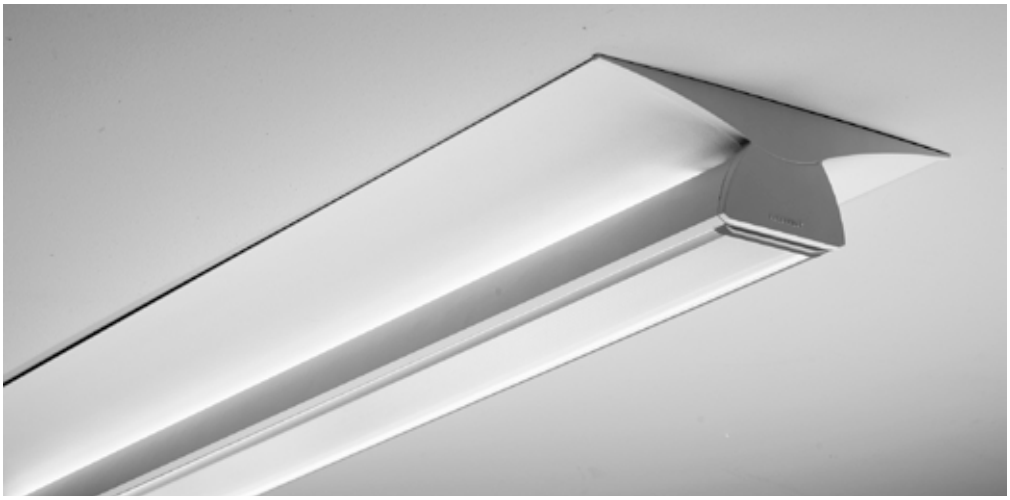
Knock-out in each end for surface mounted cable.

W	A	B	C	D
1/2×13/14/20/24	600	298	89	530
1/2×25/28/50/54	1200	298	89	1000



Easy mounting in suspended ceilings with visible support profile.

Indigo Clivus
Delta

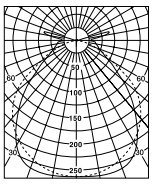


Installation
Luminaire for surface mounting in suspended ceilings with visible T-bars or fixed ceilings.
Connection
Terminal block 3×1.5 mm², 1-phase through-wiring possible. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.
Design
Body and reflector of enamelled sheet steel with white (RAL 9003) structured finish.
Louvre
Delta – diffused microprism in acrylic TPb (PMMA) with good optical characteristics.
Dimming
Most models can also be equipped with other ballasts for dimming.
Miscellaneous
Indigo Clivus is designed to meet EN 12464-1 standards in some lamp options.

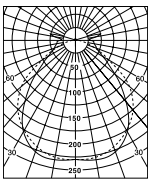
Luminaire			
FDH	kg		
Module 300×1200			
1×25/28	5.9	**24689**	■ ●
1×50/54	5.9	**24691**	■
2×25/28	6.0	**24690**	■ ●
2×50/54	6.0	**24692**	■
Module 300×600			
1×13/14	4.3	**24685**	■ ●
1×20/24	4.3	**24687**	■
2×13/14	4.4	**24686**	■ ●
2×20/24	4.4	**24688**	■

Suffix code
■ **-368** DALI/Phase-pulse control
■ **-436** DALI/DSI/switchDIM
● **-367** e-Sense ActiLume master luminaire

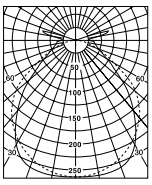
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



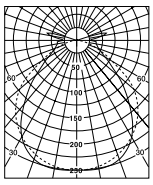
1×13/14 W, 300×600



2×13/14 W, 300×600

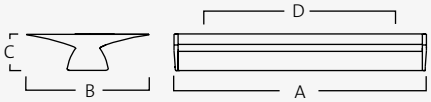


1×25/28 W, 300×1200



2×25/28 W, 300×1200

W	A	B	C	D
1/2×13/14/20/24	600	298	89	530
1/2×25/28/50/54	1200	298	89	1000

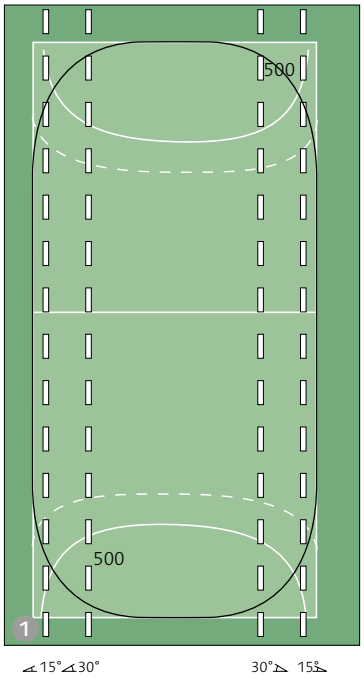


Delta louvre with dimming.

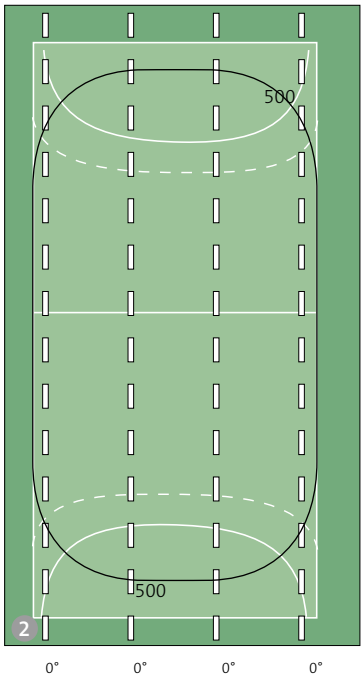
Excis

Excis has been especially designed for use in sport arenas or areas where extra durable luminaires are required. The wire reinforced louvre and the solid steel design makes Excis a luminaire that is extremely strong and able to withstand knocks and tough conditions.

Designed for the T5 light source, Excis achieves the most compact dimensions for this type of luminaire. This, in addition to its rounded edges, helps prevent balls and other elements from being caught in the luminaire.



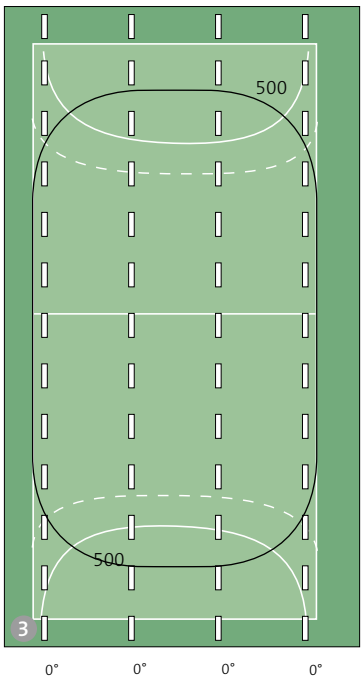
1. Luminaire 18356, 4×49 W, symmetrical light distribution over a handball playing hall. The outer rows of luminaires are turned 15° and the inner rows 30°.



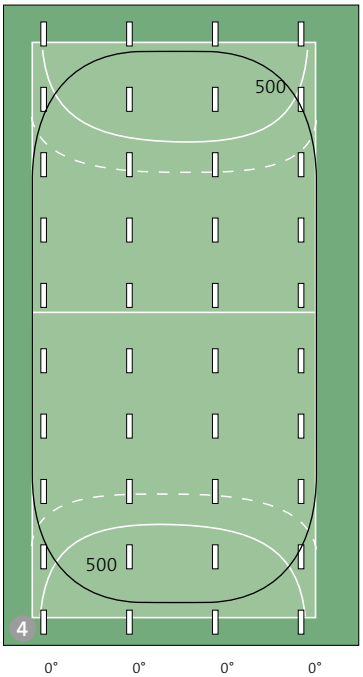
2. Luminaire 18356, 4×49 W, symmetrical light distribution over a indoor handball pitch. The luminaires are not turned.

Building 44×24 m
Height 7 m
Reflections ceiling/walls/floor, 70/50/20 %
Maintenance factor: 80 %
Luminous flux: 4300 lm (design lumen)
Total of luminaires: 56 pcs

The illumination values are calculated at floor level.



3. Luminaire 18351, 4×54 W, symmetrical light distribution over a indoor handball pitch. The luminaires are not turned.



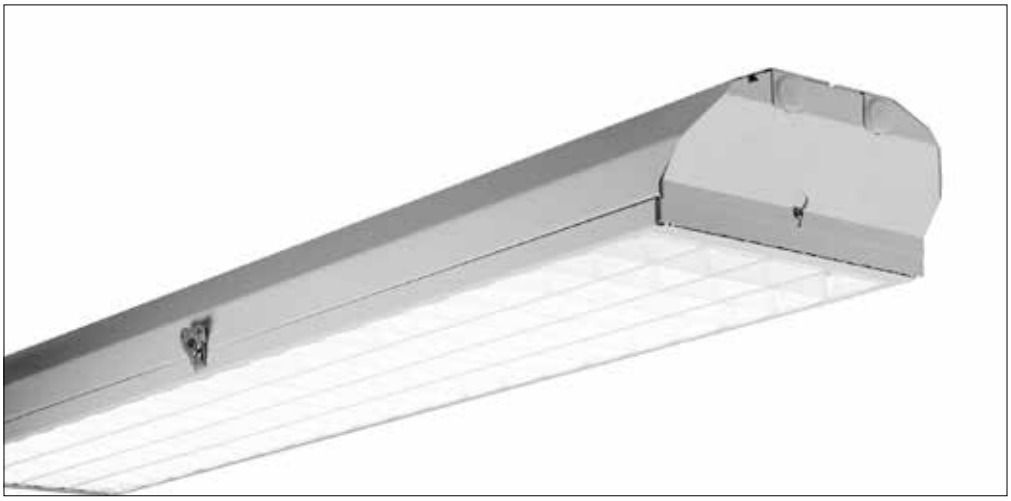
Building 44×24 m
Height 7 m
Reflections ceiling/walls/floor, 70/50/20 %
Maintenance factor: 80 %
Luminous flux: 4450 lm (design lumen)
Total of luminaires: 52 pcs

The illumination values are calculated at floor level.

4. Luminaire 18357, 4×80 W, symmetrical light distribution over a indoor handball pitch. The luminaires are not turned.

Building 44×24 m
Height 7 m
Reflections ceiling/walls/floor, 70/50/20 %
Maintenance factor: 80 %
Luminous flux: 6150 lm (design lumen)
Total of luminaires: 40 pcs

The illumination values are calculated at floor level.



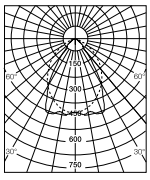
Luminaire			
FDH	kg		
Medium beam			
2×45/49	9.8	**18353**	☐
2×73/80	9.8	**18354**	
4×32/35	10.0	**18355**	☐
4×45/49	10.0	**18356**	☐
4×50/54	8.5	**18351**	☐
4×73/80	10.0	**18357**	
Wide beam			
2×45/49	9.8	**18343**	☐
4×45/49	10.0	**18346**	☐
4×73/80	10.0	**18347**	
Asymmetrical			
4×32/35	10.0	**18365**	☐
4×45/49	10.0	**18366**	☐
4×50/54	8.5	**18361**	☐
4×73/80	10.0	**18367**	

Suffix code
☐ **-101** 1–10 V
☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

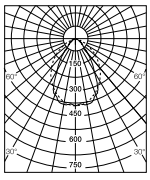
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Wire cable bracket/pair max Ø 10 mm	**91196**
Conduit bracket/pair Ø 45–65	**91198**
Ceiling bracket, H=72 mm, adjustable +- 25°/pair	**91374**
Cover plate to 1200-Luminaire (not 4×54 W)	**94938**
Cover plate to 1500-Luminaire (not 4×80 W)	**94939**

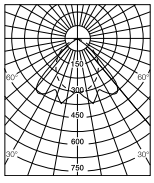
Installation
Surface mounted, tube fitting, wire or adjustable ceiling bracket.
Connection
Four cable entries fitted with blanking grommets, two at each end. Cable entry Ø 23 mm. Through-wiring 5×2.5 mm² with snap-in terminal blocks at each end. In the HF-std design the luminaire with 4 fluorescent lamps is wired for separate starting of 2+2 fluorescent lamps. In the HF-dim design the luminaire is wired to start all the fluorescent lamps.
Design
Body of white enamelled sheet steel (RAL 9016).
Louvre
White enamelled cross-blades with wire reinforcement for mechanical protection of the light source. Mechanical catch between the body and louvre. The louvre opens along the luminaire and remains attached when opened.
Reflector
Symmetrical or asymmetrical satin matt metallised aluminium reflectors with excellent reflection characteristics (> 92 %).
Dimming
Most models can also be equipped with other ballasts for dimming.
Miscellaneous
Excis is available in more wattages outputs than those specified here. Delivered with a 830 light source.



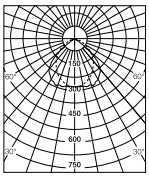
2-lamp, medium beam



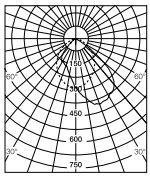
4-lamp, medium beam



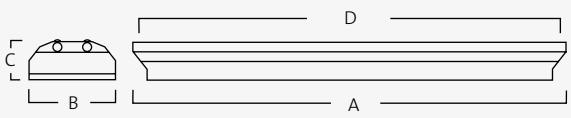
2-lamp, wide beam



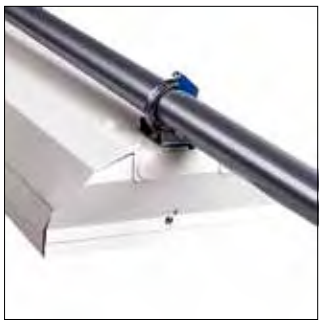
4-lamp, wide beam



4-lamp, asymmetrical



W	A	B	C	D
4×32/35/45/49/73/80	1596	262	122	1563
2×45/49/73/80	1596	262	122	1563
4×50/54	1296	262	122	1263



Excis can be equipped with numerous accessories. An example of tube installation is shown here. All work is performed on the outside of the luminaire.

The louvre remains attached when opened, lengthways; facilitating service and maintenance.

Vidi

Designed by Ola Granlund and Leif Igelström

Vidi is an innovative corridor lighting solution based on providing a greater proportion of incidental light for a more varied experience and a clearer sense of space. Vidi is available in three models; ceiling, corner and wall luminaires, with different light distribution and mounting options. All presented in a contemporary, minimalist design.

The need for glare-free lighting is particularly great in corridors and other transition areas. The concept has been developed for optimal lighting ergonomics and satisfies the EN-12461-1 requirements for ceiling and wall luminance, as well as other visual aspects. A higher proportion of reflected light produces a soft, pleasant lit environment and contributes to a dynamic perception of the room. The increase in the ambient levels ensures the whole area is lit where people are moving about, making it easier to perceive objects and to see the faces of people you encounter

The luminaires in the Vidi-family are characterised by an understated yet stylish design, adding aesthetic qualities to the most diverse environments. The luminaire housing has clean, simple lines and steps away from the traditional corridor lighting – an insightful and proactive way of creating well-lit rooms with human comfort very much at the centre.

1. Vidi is available as a ceiling, corner or wall luminaire. The ceiling luminaire is designed to be mounted in the middle of the ceiling and throw light across the ceiling and towards the wall, allowing it to then be reflected down to the floor. The high proportion of reflected light provides a soft, pleasant light environment and contributes to a dynamic spatial experience. Vidi corner and wall models follow the same basic concepts with some variation in light distribution. The wall luminaire is complemented by a frosted surface that provides further shielding. The corner model is mounted in the angle between the ceiling and the wall and is suitable in situations where you want to avoid mounting directly on the suspended ceiling.

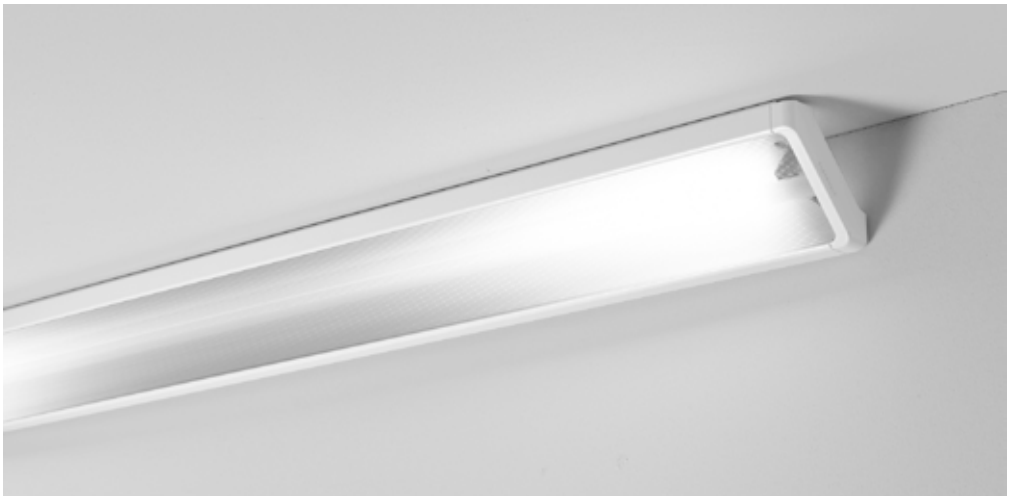
2. The inner end-caps of the Vidi-family are made of opal plastic which gives a comfortable luminance at the end-cap opening instead of a dark surface. This creates a mild brightness when the eye meets the luminaire lengthways.

3. The outer frame of the luminaire is equipped with lock wires. The frame remains in the body when the luminaire opens out, simplifying maintenance and changing fluorescent tubes.

4. Vidi 2 has a special mount so that the luminaire can be mounted easily and quickly on the visible T-bars.

5. Vidi has multiple installation options. Cable entries can be found on the rear and end-caps of the luminaire body.

Vidi 1

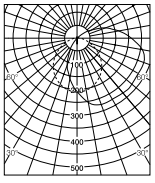


Installation
Normally installed at the junction between the ceiling and wall, or wall mounted.
Connection
Cable entry at both ends and double entry via the back of the luminaire. 5-way snap-in terminal block located in the centre of the luminaire, through-wiring possible.
Design
Louvre frame with sides of extruded aluminium and cast-metal end-caps. Luminaire body of alu-zinc with white finish (RAL 9016).
Louvre
Lined diffuser in PMMA.
Reflector
White enamelled sheet steel.
Miscellaneous
Additional number – 299 DALI contains corridor function.

Luminaire			
FDH	kg		
1×13/14	1.8	**17330**	☐
1×21	2.5	**17331**	☐
1×20/24	1.8	**17332**	☐
1×25/28	3.2	**17333**	☐
1×32/35	3.8	**17334**	☐
1×45/49	3.8	**17335**	☐
1×50/54	3.2	**17336**	☐

Suffix code
☐ **-299** DALI
☐ **-436** DALI/DSI/switchDIM

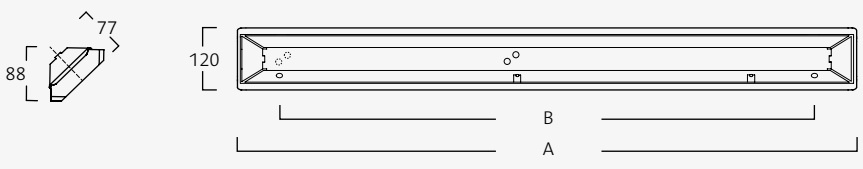
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



1×32/35

Knock-out in the end-cap to allows connection via cables.

W	A	B
13/14/20/24	593	430
21	893	730
25/28/50/54	1193	1030
32/35/45/49	1493	1330



The lined diffuser is designed to create a light spread across the ceiling and the wall

Vidi 2

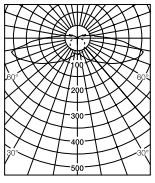
Installation
For surface mounting on fixed or suspended ceilings with visible T-bars.
Connection
Cable entry at both ends and double entry in the middle of the luminaire. 5-way snap-in terminal block located in the centre of the luminaire, through-wiring possible.
Design
Louvre frame with sides of extruded aluminium and cast-metal end-caps. Luminaire body of alu-zinc with white finish (RAL 9016).
Louvre
Lined diffuser in PMMA.
Reflector
White enamelled sheet steel.
Dimming
Additional number – 299 DALI contains corridor function.

Luminaire			
FDH	kg		
1×13/14	2.2	**17340**	■
1×20/24	2.2	**17341**	■
1×25/28	3.7	**17342**	■ ●
1×32/35	4.8	**17343**	■ ●
1×45/49	4.8	**17344**	■ ●
1×50/54	3.7	**17345**	■ ●

Suffix code
■ **-299** DALI
■ **-436** DALI/DSI/switchDIM
● **-367** e-Sense ActiLume master luminaire

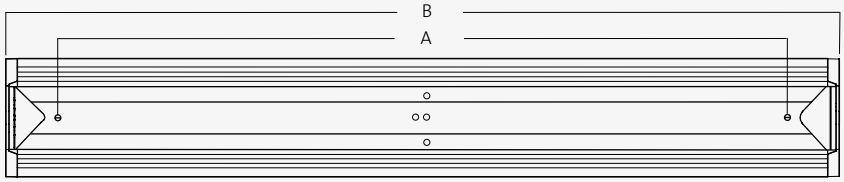
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Bracket for mounting on visible T-bars	**91105**

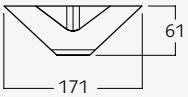


1×32/35

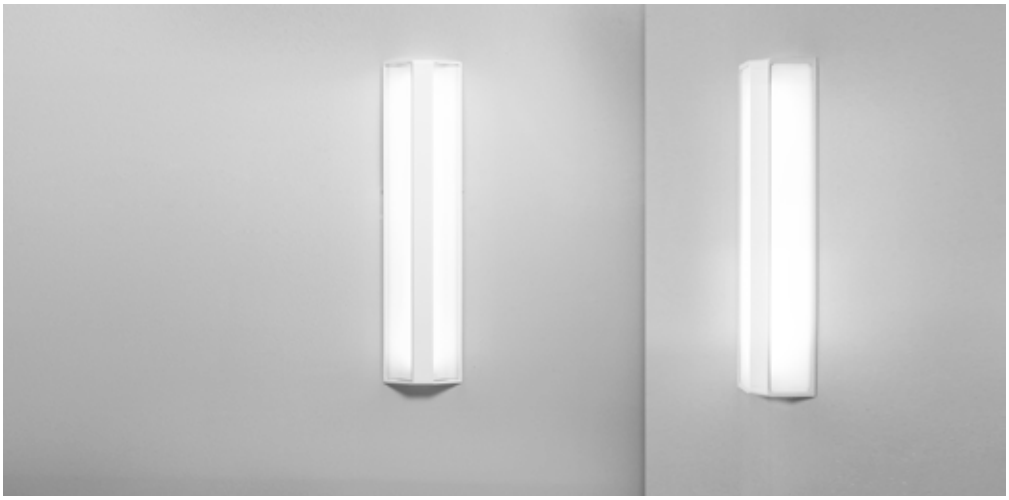
Vidi 2 can be fitted with Fagerhult's lighting control system e-Sense.



W	A	B
13/14/20/24	470	600
25/28/50/54	1050	1200
32/35/45/49	1350	1500
25/28/50/54 e-Sense	1050	1220
32/35/45/49 e-Sense	1350	1520



When mounting on visible T-bars, use accessory 91105.

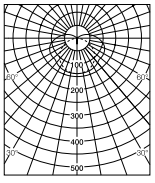


Installation
For mounting horizontally or vertically on the wall.
Connection
Cable entries on each end-cap and a double entry in the back of the luminaire. 5-way snap-in connector block located in the centre of the luminaire, through-wiring possible.
Design
Louvre frame with sides of extruded aluminium and cast-metal end-caps. Luminaire body of alu-zinc. The luminaire is finished in plain white (RAL 9016).
Louvre
Lined diffuser in opal PMMA.
Reflector
White enamelled sheet steel.
Dimming
Additional number – 299 DALI contains corridor function.

Luminaire			
FDH	kg		
1×13/14	2.2	**17350**	☐
1×25/28	3.7	**17351**	☐

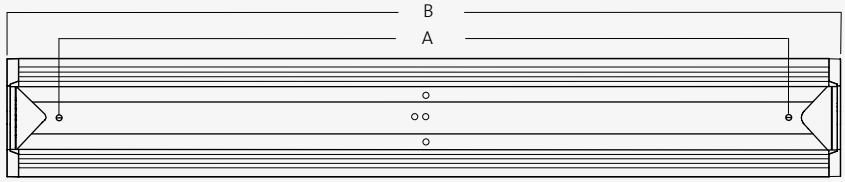
Suffix code
☐ **-299** DALI
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

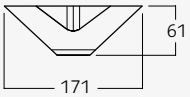


1×25/28

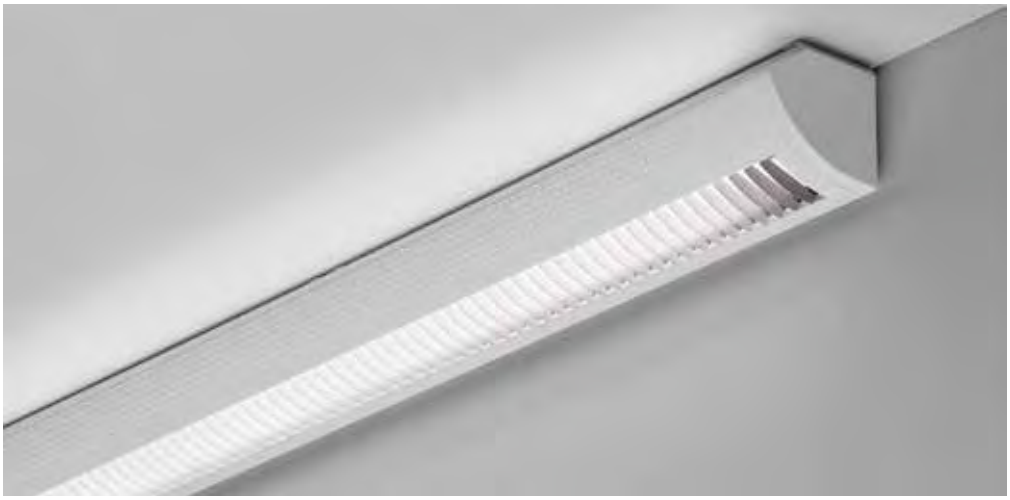
Knock-out in the end-cap allows connection via cables.



W	A	B
13/14	470	600
25/28	1050	1200



The luminaire's lined diffuser is opal to eliminate glare



Luminaire with LED

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
21	3000	1893	91	2.7	**17422** ●
21	4000	1983	92	2.7	**17424** ●
39	3000	3235	83	2.7	**17423** ●
39	4000	3413	87	2.7	**17425** ●

For current information on output and luminous flux, please refer to our website.

Luminaire

FDH	kg	
1×21	1.9	**17401** □
1×25/28	2.4	**17402** □
1×32/35	2.9	**17403** □

Suffix code

● **-402**	DALI/Phase-pulse control
□ **-368**	DALI/Phase-pulse control
□ **-436**	DALI/DSI/switchDIM

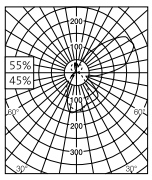
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Information LED

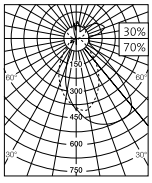
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Installation
For ceiling or wall mounting. Normally installed at the junction between the ceiling and wall.
Connection
Cable entry at both ends, double entry in the middle towards the wall or ceiling. Fitted as standard with a 5-way snap-in terminal block in the centre. Luminaires for dimming, 1-phase through-wiring possible. Knock-out at each end.
Design
Luminaire body and louvre in enamelled sheet steel and end-caps in die-cast aluminium (RAL 9016 structured). Asymmetrical light distribution for direct lighting and light opening (cross-blade louvre) on the front lighting the ceiling and wall.
Louvre
Lamell – lamell louvre in white enamelled sheet steel with perforated front integrated into a single unit (finish as above).
Reflector
Metallised reflector with excellent reflection characteristics (> 92 %) with slightly asymmetrical function, see polar diagram.
Dimming
Most models can also be equipped with other ballasts for dimming.
Miscellaneous
The luminaire can on request be equipped with through-wiring (3-way or 5-way) and block in the end-caps and/or HF-ballast for dimming.

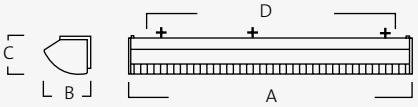


T5



LED

W	A	B	C	D
21	887	95	76	800
25/28	1187	95	76	1100
32/35	1487	95	76	1400
LED	1187	95	76	1100



The perforated front means that the whole surface of the luminaire is illuminated; creating a soft gradient between the luminaire and its closest surroundings.

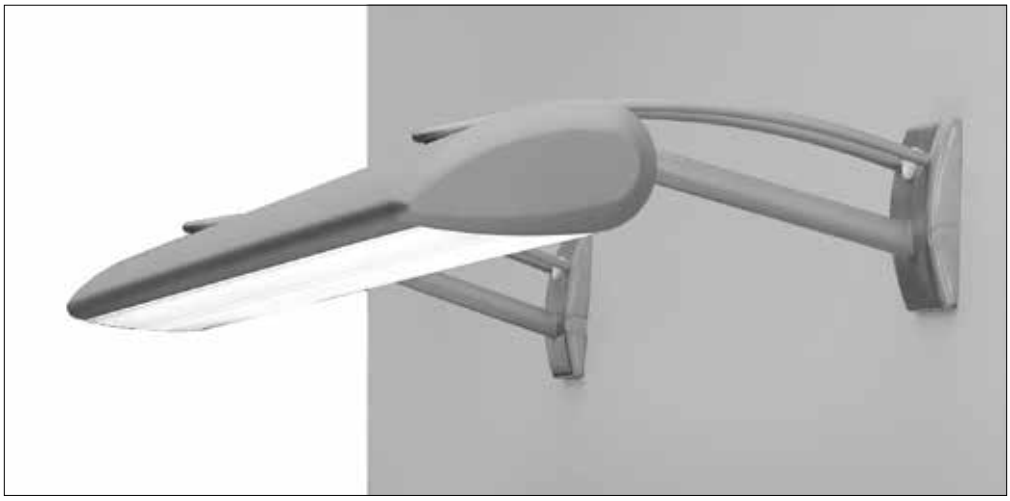
Lento

Designed by Epsilon

Lento is a luminaire suitable for the latest requirements for lighting whiteboards, notice boards and other wall washing applications. Its compact size and stylish design makes it compatible with a wide range of furnishings while the T5 light sources guarantees a highly efficient and long-lasting solution.

Lento's adapted light distribution is assisted by its lined diffuser. This reduces both the indirect reflections on the whiteboard and direct glare towards teachers and pupils, while providing a softer gradient between lit and unlit surfaces.

Lento can be mounted individually or continuously as a system. For whiteboards with a width up to 3.0 m the lighting can be arranged with just a single unit, providing a cost effective and aesthetic solution.



Installation
On the wall using brackets or wire suspension. Flexible c/c, see dimension diagram.
Connection
End connection concealed by end-caps. Three way snap-in terminal block at each end and through-wiring 3×1.5 mm² as standard.
Design
Extruded anodised aluminium body. White enamelled (RAL 9016) or alu-grey (RAL 9006) structured finish. Cast aluminium end-caps, enamelled finish as above.
Louvre
The acrylic lined diffuser directs the light towards the wall.
Reflector
Metallised aluminium with extremely good reflection properties.
Accessories
Wall bracket or wire suspension. With continuous installation, end-caps are specified separately.
Miscellaneous
When installing using the wall bracket option, the installation cable should not be routed through the wall bracket, the cable type "connection cable" should be used instead – max. 8 mm diameter. Luminaires for other outputs within T5 HE + 45/49 W are available on request.

Luminaire, single installation incl. end-caps

FDH	kg	Alu-grey	White	
1×25/28	2.9	**19852**	**19842**	■
1×32/35	3.4	**19853**	**19843**	■
2×1×25/28	5.6	**19870** [1]	**19860** [1]	■
2×1×32/35	6.6	**19871** [1]	**19861** [1]	■

[1] *Fluorescent lamps placed in tandem.*

Luminaire, continuous installation excl. end-caps

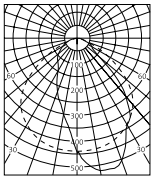
FDH	kg	Alu-grey	White	
1×25/28	2.6	**19812**	**19802**	■ ●
1×32/35	3.1	**19813**	**19803**	■ ●
2×1×25/28	5.3	**19830** [1]	**19820** [1]	■ ●
2×1×32/35	6.3	**19831** [1]	**19821** [1]	■ ●

[1] *Fluorescent lamps placed in tandem.*

Suffix code

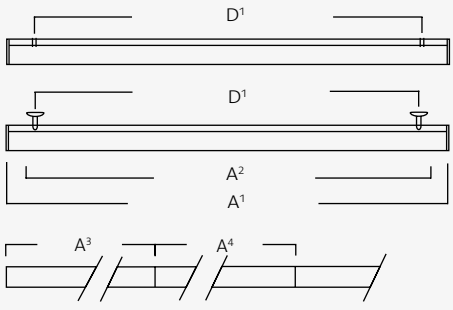
■	**-368** DALI/Phase-pulse control
■	**-436** DALI/DSI/switchDIM
●	**-426** e-Sense Connect on/off

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

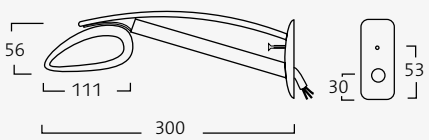


1×25/28 W

Lento can also be mounted by wire suspension. Flexible c/c and groove for locating the cable give practical installation with a neat end result.



W	A1	A2	A3	A4	D1
1×25/28	1248	1200	1224	1200	≤1100
1×32/35	1548	1500	1524	1500	≤1400
Continuous					
2×1×25/28	2448	2400	2424	2400	≤2300
2×1×32/35	3048	3000	3024	3000	≤2900

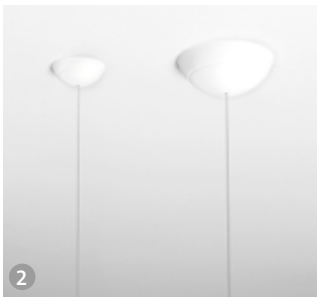


Lento white, mounted on wall brackets.


1


1


2


2

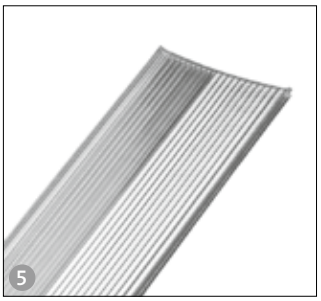

2


3


3


4


4


5


6


6

1. Enamelled wall brackets

For recessed or surface mounted cables with maximum diameter of 8 mm (flexible cable are recommended).

Wall brackets, white/pair	**94430**
Wall brackets, alu-grey/pair	**94431**

2. Wire suspension set for single installed luminaire

Wire suspension set with wire suspension, mains cable 3×1.0 mm², luminaire bracket and ceiling cups. L=1.0 m

Large + small ceiling cup, white/pair	**94910**
Large ceiling cups, white/pair	**94911**
Large + small ceiling cup for T-bars 25 mm, white/pair	**94912**
Large ceiling cups for T-bars 25 mm, white/pair	**94913**
Large + small ceiling cup, grey/pair	**94915**
Large ceiling cups, grey/pair	**94916**
Large + small ceiling cup for T-bars 25 mm, grey/pair	**94917**
Large ceiling cups for T-bars 25 mm, grey/pair	**94918**

Wire suspension with single wire

For continuous installation. Wire suspension with single wire and white or grey plastic ceiling cup. L=1.0 m. To be combined with wire bracket, see below.

Small ceiling cup, white/each	**94327**
Large ceiling cup, white/each	**94296**
Small ceiling cup for T-bars 25 mm, white/each	**94880**
Large ceiling cup for T-bars 25 mm, white/each	**94881**
Small ceiling cup, grey/each	**94440**
Large ceiling cup, grey/each	**94441**
Small ceiling cup for T-bars 25 mm, grey/each	**94442**
Large ceiling cup for T-bars 25 mm, grey/each	**94443**
Luminaire bracket for wire suspension/pair	**94432**

Wire suspension with single wire, ceiling cup and pendant cable 3×1.0 mm². L=1.0 m.

Combined with wire bracket, see below.

Large ceiling cup, white/each	**94588**
Large ceiling cup for T-bars 25 mm, white/each	**94589**
Large ceiling cup, grey/each	**94888**
Large ceiling cup for T-bars 25 mm, grey/each	**94889**
Luminaire bracket for wire suspension/pair	**94432**

Wire suspension with single wire, ceiling cup and pendant cable 5×1.0 mm². L=1.0 m.

Combined with wire bracket, see below.

Large ceiling cup, white/each	**91701**
Large ceiling cup for T-bars 25 mm, white/each	**91703**
Large ceiling cup, grey/each	**91702**
Large ceiling cup for T-bars 25 mm, grey/each	**91704**
Luminaire bracket for wire suspension/pair	**94432**

3. Continuous connector for continuous installation

Complete kit including through-wiring, guide pins and joining strip.

Continuous connector white/each	**94433**
Continuous connector alu-grey/each	**94434**

4. End-caps

End-caps white/pair	**94435**
End-caps alu-grey/pair	**94436**

5. Lined diffuser

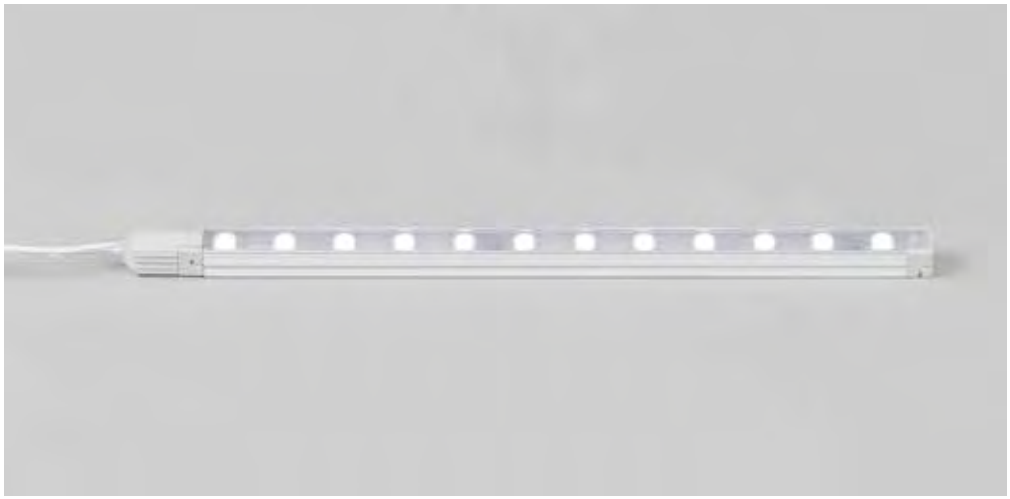
Spare part included as standard with luminaire order.

Lined diffuser for 25/28 W Luminaire	**94885**
Lined diffuser for 32/35 W Luminaire	**94886**

6. Accessories e-Sense Connect

Control unit	**86300**
Remote control (for grouping)	**86301**
Connection cable between control unit and controller	**86303**

Diva II



Installation
Magnet, screw or tape brackets included.
Connection
Connected to LED-driver with operating voltage 24 V. Max 55 W in one line. Possible to install LED-stick continuously direct via supplied snap-in connector or via cable available in various lengths as accessories.
Designed by
Body in aluminium. Diffuser in clear acryl.
Miscellaneous
Diva II HO (High output) produces more light. Diva II and Diva II HO are available in various lengths.

Luminaire					
System, W	Luminous flux, lm	Efficiency, lm/W	Length (A)	3000 K	4000 K
Diva II					
2	150	75	188	**78778**	**78779**
4	300	75	280	**78780**	**79332**
7	525	75	560	**78781**	**78782**
11	825	75	840	**78783**	**79333**
Diva II HO					
3	255	85	140	**79508**	**79513**
6	510	85	280	**79509**	**79514**
12	1020	85	560	**79510**	**79515**
17	1445	85	840	**79511**	**79516**
23	1955	85	1118	**79512**	**79517**

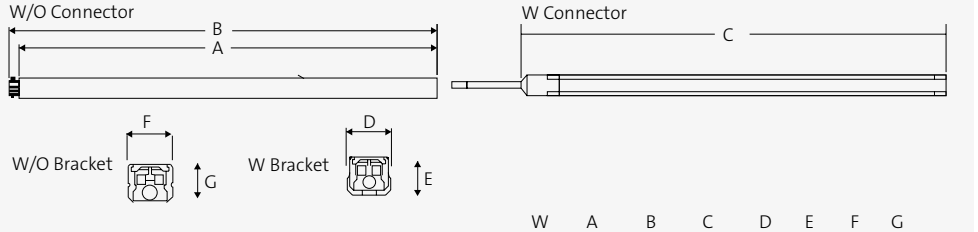
For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 40.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 40.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories	
Diva II linking cable 150 mm	**78787**
Diva II linking cable 300 mm	**78788**
Diva II linking cable 600 mm	**78789**
Diva II linking cable 1200 mm	**78790**
Diva II linking cable 1800 mm	**78791**
Diva II Power cable 2500 mm (between Diva II and 6-way distributor)	**79334**
Diva II HO linking cable 300 mm	**97176**
Diva II HO linking cable 1200 mm	**97177**
Diva II Power cable 2500 mm (between Diva II and 6-way distributor)	**97178**
LED converter 24 V 15 W (1800 mm)	**79335**
LED converter 24 V 30 W (1800 mm)	**78784**
LED converter 24 V 75 W (1800 mm)	**78785**
Dimmable controller 12–24 V, 1–10 V	**78786**

Driver with snap-in connectors.

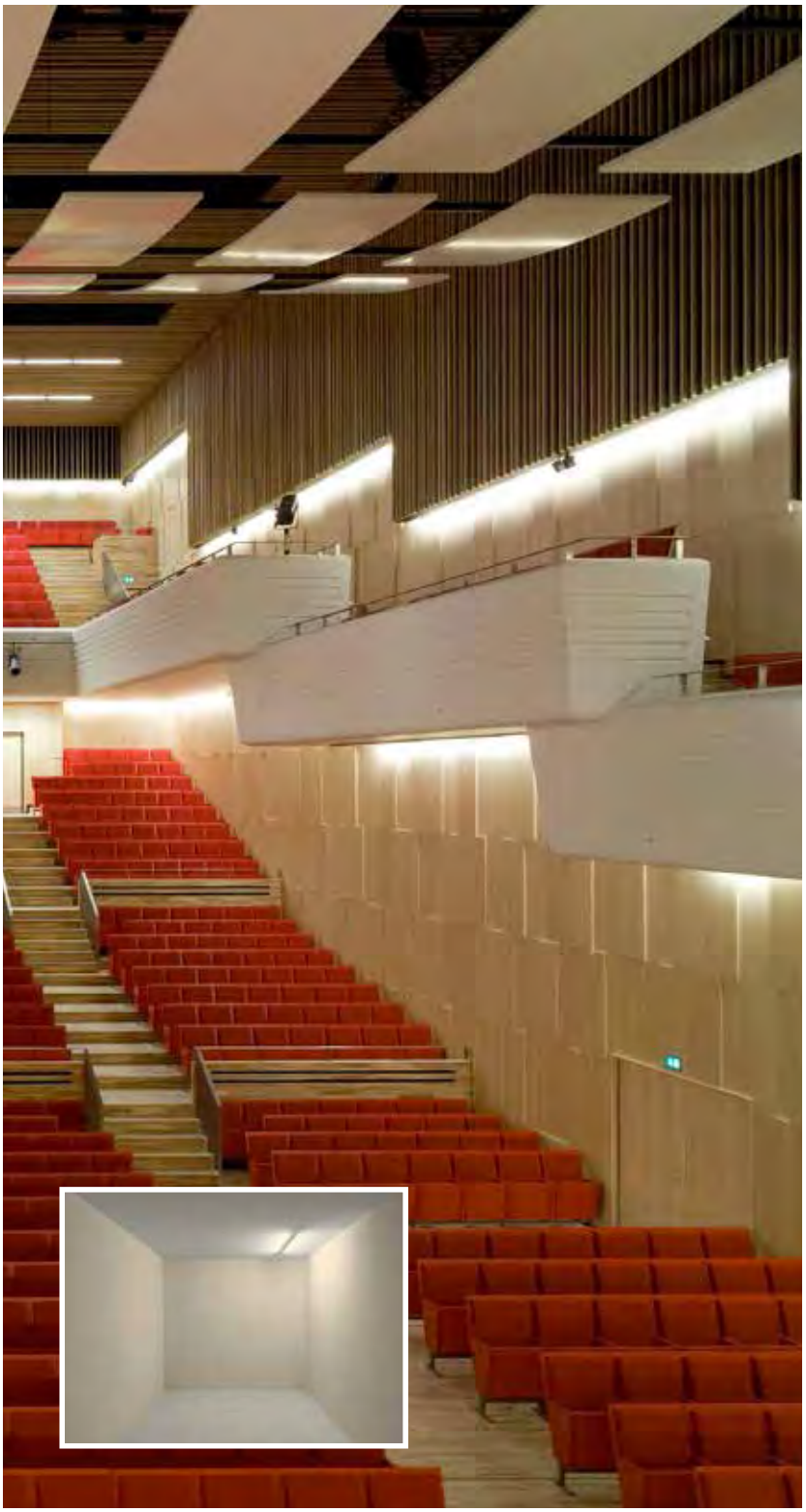


W	A	B	C	D	E	F	G
3	188	193	210	12	11	10.6	9
4	280	285	302	12	11	10.6	9
7	560	565	582	12	11	10.6	9
11	840	845	862	12	11	10.6	9

W	A	B	C	D	E	F	G
3	140	145	162	16	14	15	12.5
6	280	285	302	16	14	15	12.5
12	560	565	582	16	14	15	12.5
18	840	845	862	16	14	15	12.5
24	1118	1123	1140	16	14	15	12.5

Basic T5

Designed for the T5 light source, Basic T5's slim-line dimensions, ease of installation and minimalist style offers a range of possibilities for light planners.



Basic T5 has an elementary and stripped appearance that can be easily adapted to various environments, without affecting lighting performance.

1. Installation using wire suspension. Clips and a friction wire lock facilitate installation.

2. Installation using clips permits flexible centre-to-centre spacing.

3. Basic T5 can also be connected with a surface mounted cable. Knock-outs are positioned at each end. There are several options available for recessed installation, see adjacent diagram.

4. Some variants are offered with Wieland connectors type GST18i3. This option facilitates installation especially in restricted spaces. Other variants than those specified on the product pages are available on special request.

5. Basic T5 can be supplemented with a reflector. The same one can be used for both 1- and 2-lamp luminaires.

6. Basic T5 equipped with a Beta louvre, fixed via clips on the outside.

Installation
Surface or wall mounted. Using special clips (see Accessories), flexible fixing hole spacing or wire suspension.

Connection
Cable entries with blanking grommets. Knock-outs for surface mounted cables at each end. As standard fitted with 3-way through-wiring, 3×1.5 mm² and snap-in terminal block at each end (does not apply to 1×13/14 W). There is a model available with Wieland quick connectors at each end.

Design
Extruded aluminium body with enamelled sheet steel cover and plastic end-caps. White (RAL 9016) or aluminium enamelled (RAL 9006) finish. End-caps are ABS plastic – zero halogen.

Louvre
Beta – double parabolic reflector louvre with satin matt metallised aluminium side and cross-blades with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Unearthed. The louvre is exposed which means light emission occurs. Louvre only available for 1-lamp luminaires.

Reflector
Symmetrical light distribution metallised aluminium with matt surface available as an accessory. Same design for 1- and 2-lamp luminaires.

Dimming
Most models can also be equipped with other ballasts for dimming.

Luminaire

FDH	kg		
1×13/14	0.7	**10801**	□ ● ▲
1×21	1.1	**10803**	□ ● ▲
1×25/28	1.3	**10805**	□ ● ▲
1×32/35	1.6	**10807**	□ ● ▲
1×45/49	1.6	**10808**	□ ● ▲
1×50/54	1.6	**10806**	□ ● ▲
1×73/80	1.6	**10809**	□ ▲
2×21	1.2	**10823**	● ▲
2×25/28	1.4	**10825**	□ ● ▲
2×32/35	1.7	**10827**	□ ● ▲
2×45/49	1.7	**10828**	● ▲

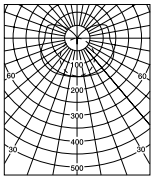
Suffix code

□ **-368** DALI/Phase-pulse control
● **-436** DALI/DSI/switchDIM
▲ **-112** Wieland GST18i3 (3-way). Two outlet sockets.

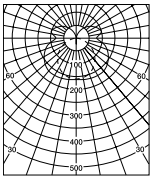
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

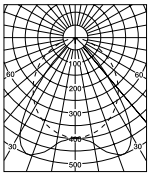
Reflector 13/14 W	**97559**
Reflector 21 W	**97565**
Reflector 25/28 W	**97560**
Reflector 32/35 W, 45/49 W	**97561**
Clips/pair	**91433**
Beta louvre 1×25/28 W	**97554**
Beta louvre 1×32/35, 45/49, 73/80 W	**97555**
Wire suspension for surface mounting L=1.5 m with white ceiling bracket/pair incl. clips	**91504**
Wire suspension for surface mounting L=1.5 m with ceiling cup/pair incl. clips	**91524**
Wire suspension for support rails, L=1.5 m with white bracket/pair incl. clips	**91519**
Wire suspension for support rails, L=1.5 m with ceiling cup/pair incl. clips	**91545**
Connector, female	**91786**
Connector, male	**91787**
Inter-connector with female and male connectors	**91788**
Mains cable, L=2.0 m, female excl. plug	**91789**
Mains cable, L=2.0 m, female with earthed plug	**91790**
Through wiring L=1.0 m with female and male connectors	**91791**
Through wiring L=2.0 m with female and male connectors	**91792**
Through wiring L=3.0 m with female and male connectors	**91793**
Cover plate	**91794**



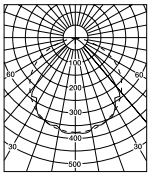
1-lamp, without reflector



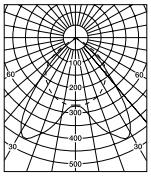
2-lamp, without reflector



1-lamp, with reflector



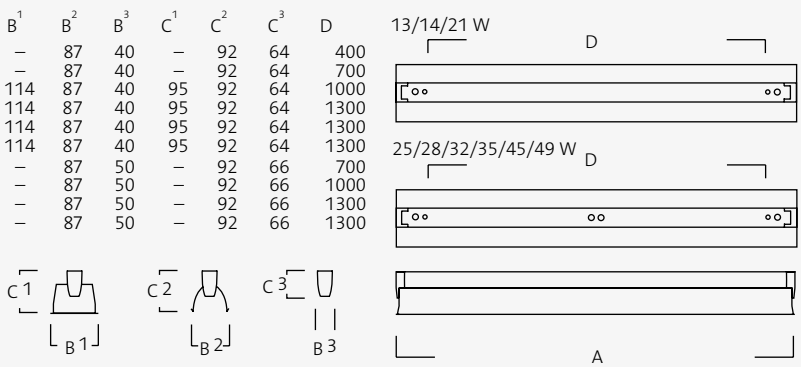
2-lamp, with reflector



1-lamp, with Beta louvre

Basic T5 equipped with Beta louvre.

W	A	B^1	B^2	B^3	C^1	C^2	C^3	D
1×13/14	587	–	87	40	–	92	64	400
1×21	887	–	87	40	–	92	64	700
1×25/28	1187	114	87	40	95	92	64	1000
1×32/35	1487	114	87	40	95	92	64	1300
1×45/49	1487	114	87	40	95	92	64	1300
1×73/80	1487	114	87	40	95	92	64	1300
2×21	887	–	87	50	–	92	66	700
2×25/28	1187	–	87	50	–	92	66	1000
2×32/35	1487	–	87	50	–	92	66	1300
2×45/49	1487	–	87	50	–	92	66	1300



Designed using Wieland quick-connection system for continuous installations.

Multilume Flat

Clarico
IP 20 *p. 114–117*

Indigo Ed2
IP 20 *p. 158–163*

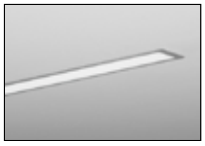
Multilume Dropped
IP 20 *p. 122*

Multilume Free
IP 20 *p. 125*

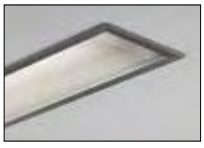
Como
IP 20 *p. 168–169*

Indigo LED
IP 20/40 *p. 150–151*

Multilume Edge
IP 20 *p. 123*



Notor recessed
IP 20 *p. 126–137*



Como Wide
IP 20 *p. 170–171*

MultiFive Basic
IP 20 *p. 144–146*

Multilume Flat
IP 20 *p. 120–121*

Pozzo
IP 20 *p. 172–176*

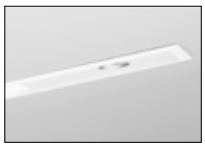
Gondol
IP 20 *p. 177*

MultiFive G2
IP 20 *p. 138–141*

Multilume Flow
IP 20 *p. 124*

Recesso
IP 20 *p. 164–165*

Indigo Combo
IP 20 *p. 152–156*



MultiFive Medical
IP 20 *p. 148–149*

Clarico

Designed by Henning Larsen Architects

Is it possible to create a recessed LED luminaire which distributes a very soft light directly onto the floor, vertically on the wall and indirectly on the ceiling – all at the same time?

Clarico achieves the almost impossible, making it anything but square. The thin, soft and expressive shape gives a new twist on conventional recessed lighting. The technical LED solution is optimised with a combination of an opal surface and a microprismatic louvre which plays on horizontal and vertical lines. This approach enables the luminaire to distribute a comfortable light from different angles, as well as producing ambient light.

Clarico is available in a convex and concave versions, which work well in combination, creating exciting touches in your project.

Clarico

Installation
Recessed mounting in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 mm.
HB – for suspended ceiling with concealed T-bars. Supplement with fixing brackets for fixed suspended ceiling, see Accessories.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connection in driver box. The driver box can be positioned next to the luminaire. Snap-in terminal block 3×1,5 mm² (5×1,5 mm² where dimming is required).

Design
Luminaire body in white enamelled sheet steel (RAL 9016).

Louvre
A combination of microprismatic and frosted opal surfaces in acrylic (PMMA) with a thin opal diffuser (PMMA) on the inside.

Miscellaneous
Enclosure class IP 40 under suspended ceilings and IP 20 above suspended ceilings.

Luminaire

System, W	Module	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg		
Visible T-bars (VTB)							
29	600×600	3000	2861	97	5.0	**23793**	☐
29	600×600	4000	3016	102	5.0	**23795**	☐
39	600×600	3000	3755	96	5.0	**23875**	☐
39	600×600	4000	3928	101	5.0	**23877**	☐
46	600×600	3000	4395	96	5.0	**23813**	☐
46	600×600	4000	4603	100	5.0	**23815**	☐
Concealed T-bars (HB)/D-edge, symmetrical attachment of ceiling boards							
29	600×600	3000	2861	97	5.0	**23794**	☐
29	600×600	4000	3016	102	5.0	**23796**	☐
39	600×600	3000	3755	96	5.0	**23876**	☐
39	600×600	4000	3928	101	5.0	**23878**	☐
46	600×600	3000	4395	96	5.0	**23814**	☐
46	600×600	4000	4603	100	5.0	**23816**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

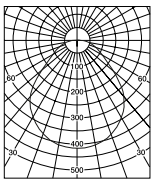
Suffix code

☐ **-03** Connection cable with plug, L=2.5 m.
☐ **-402** DALI/Phase-pulse control

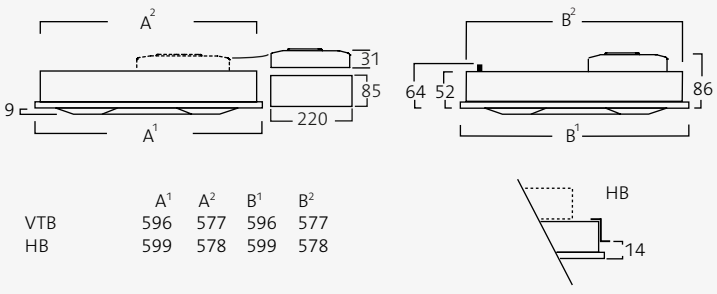
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Fixing brackets/4 pcs. Only for concealed T-bars (HB). **91279**



All versions



	A^1	A^2	B^1	B^2
VTB	596	577	596	577
HB	599	578	599	578

Clarico Down

Installation
Recessed mounting in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 mm.
HB – for suspended ceiling with concealed T-bars. Supplement with fixing brackets for fixed suspended ceiling, see Accessories.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website
Connection
Connection in driver box. The driver box can be positioned next to the luminaire. Snap-in terminal block 3×1,5 mm² (5×1,5 mm² where dimming is required).
Design
Luminaire body in white enamelled sheet steel (RAL 9016).
Louvre
A combination of microprismatic and frosted opal surfaces in acrylic (PMMA) with a thin opal diffuser (PMMA) on the inside.
Miscellaneous
Enclosure class IP 40 under suspended ceilings and IP 20 above suspended ceilings.

Luminaire

System, W	Module	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
Visible T-bars (VTB)						
29	600×600	3000	2922	99	5.0	**23797** ☐
29	600×600	4000	3080	104	5.0	**23799** ☐
39	600×600	3000	3835	98	5.0	**23879** ☐
39	600×600	4000	4012	103	5.0	**23881** ☐
46	600×600	3000	4489	98	5.0	**23817** ☐
46	600×600	4000	4701	102	5.0	**23819** ☐
Concealed T-bars (HB)/D-edge, symmetrical attachment of ceiling boards						
29	600×600	3000	2922	99	5.0	**23798** ☐
29	600×600	4000	3080	104	5.0	**23800** ☐
39	600×600	3000	3835	98	5.0	**23880** ☐
39	600×600	4000	4012	103	5.0	**23882** ☐
46	600×600	3000	4489	98	5.0	**23818** ☐
46	600×600	4000	4701	102	5.0	**23820** ☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

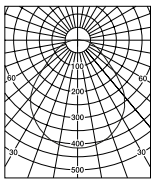
Suffix code

☐ **-03** Connection cable with plug, L=2.5 m.
☐ **-402** DALI/Phase-pulse control

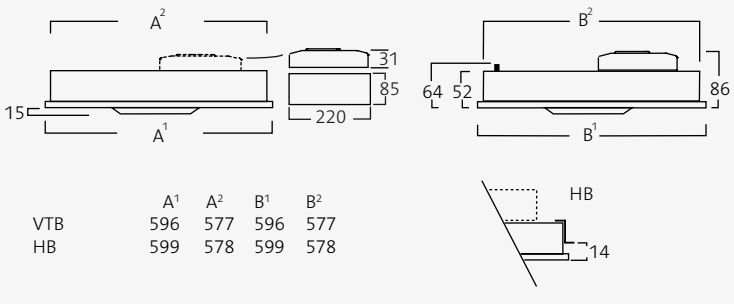
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Fixing brackets/4 pcs. Only for concealed T-bars (HB). **91279**

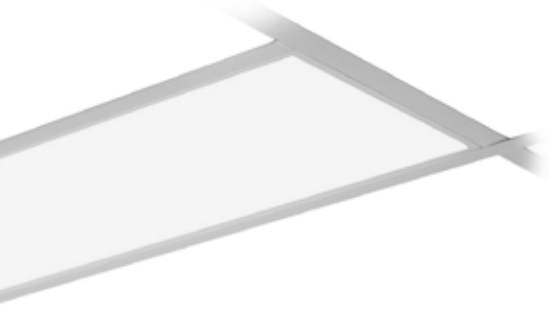


All versions



	A^1	A^2	B^1	B^2
VTB	596	577	596	577
HB	599	578	599	578

Multilume



Multilume is Fagerhult's extensive family of LED luminaires for recessed mounting in suspended ceilings. Choose from different light experiences and shapes and let your own taste and preference determine the impression. With Multilume you can create a room with completely level surfaces or with dynamic shapes which do not dictate where the furnishing goes.

This is a family with lots of different personalities. Multilume Flat has a completely level smooth surface which follows the surface of the ceiling, resulting in a stylish and discreet appearance. Multilume Flow, on the other hand, is an optical illusion. Seen from below, the luminaire is completely level and square, but at a distance it changes shape and the light appears to flow out of it. Multilume Edge and Dropped are characterised by level surfaces which descend from the ceiling, resulting in exciting effects and a pleasant ambient light.

Multilume's balanced work and general lighting delivers excellent light ergonomics, constantly updated with the latest LED technology. Choose from different lumen packages and tailor make your projects light levels. The luminaires are also suitable for daylight sensing and room occupancy control.

Multilume Flat

Multilume Flat
Delta

Installation
Recessed mounting in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 mm. 300×300 also for fixed suspended ceilings.
HB – for suspended ceiling with concealed T-bars. Supplement with fixing brackets for fixed suspended ceiling, see accessories.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connection in driver box. The driver box can be positioned next to the luminaire. Snap-in terminal block 3×1.5 mm² (5×1.5 mm² where dimming is required). Through-wiring possible for 600×600.

Design
Luminaire body in white enamelled sheet steel (RAL 9016).

Louvre
Delta – microprism louvre in acrylic (PMMA) with a thin opal diffuser (acrylic/PMMA) on the inside (PMMA).

Miscellaneous
Enclosure class IP 44 under suspended ceilings and IP 20 above suspended ceilings. Luminaire with Tunable White is equipped with driver DALI Device type 8.

Luminaire

System, W	Module	Ra (CRI)	3000 K, lm	3000 K, lm/W	4000 K, lm	4000 K, lm/W	kg	3000 K	4000 K	
Visible T-bars (VTB)										
13	300×300	≥ 80	1074	82	2209	85	2.0	**23778**	**23780**	■
27	300×600	≥ 80	2321	81	2919	85	2.5	**23757**	**23763**	■
29	300×1200	≥ 80	2996	99	3831	102	5.0	**23911**	**23912**	■
39	300×1200	≥ 80	3901	98	4484	100	5.0	**23913**	**23914**	■
46	300×1200	≥ 80	4572	97	4990	99	5.0	**23915**	**23916**	■
29	600×600	≥ 80	2890	98	3047	103	4.5	**23786**	**23790**	■
39	600×600	≥ 80	3793	97	3968	102	4.5	**23868**	**23872**	■
46	600×600	≥ 80	4440	96	4650	102	4.5	**23806**	**23810**	■
46	600×600	≥ 90	3820	86	3870	85	4.5	**23783**	**23784**	■
Concealed T-bars (HB)/D-edge, symmetrical attachment of ceiling boards										
30	600×600	≥ 80	2890	98	3047	103	4.5	**23788**	**23792**	■
39	600×600	≥ 80	3793	97	3968	102	4.5	**23870**	**23874**	■
46	600×600	≥ 80	4440	96	4650	102	4.5	**23808**	**23812**	■

For current information on output and luminous flux, please refer to our website.

Luminaire, Tunable White

Module	Ra (CRI)	Colour temp., K	kg	
Visible T-bars (VTB)				
600×600	≥ 80	2700–6500	4.5	**23802**

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80/90*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

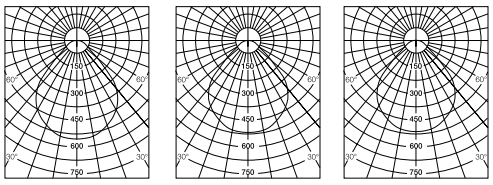
Suffix code

■ **-03**	Connection cable with plug, L=2.5 m.
■ **-402**	DALI/Phase-pulse control

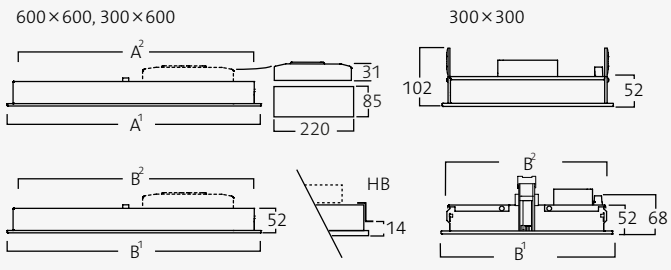
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Frame for surface mounting (600×600)	**41026**
Décor plate, circular, only for VTB	**41793**
Mounting plate (300×300) VTB	**41949**
Fixing brackets/4 pcs. Only for concealed T-bars (HB).	**91279**



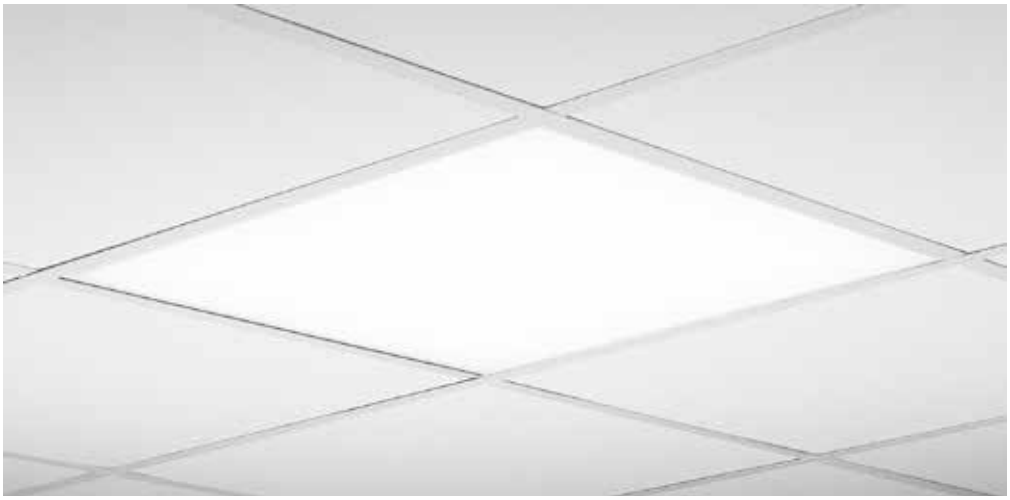
300×300 | 300×600 | 600×600



	A¹	A²	B¹	B²
VTB				
300×300	296	276	296	280
300×600	596	591	296	285
600×600	596	578	596	578
HB				
600×600	599	578	599	578

Multilume Flat Delta 300×1200.

Multilume Flat
Opal



Installation
Recessed mounting in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 mm. 300×300 also for fixed suspended ceilings.
HB – for suspended ceiling with concealed T-bars. Supplement with fixing brackets for fixed suspended ceiling, see Accessories.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Connection
Connection in driver box. The driver box can be positioned next to the luminaire. Snap-in terminal block 3×1.5 mm² (5×1.5 mm² where dimming is required). Through-wiring possible for 600×600.
Design
Luminaire body in white enamelled sheet steel (RAL 9016).
Louvre
Opal – opal plate in frosted acrylic (PMMA).
Miscellaneous
Enclosure class IP 44 under suspended ceilings and IP 20 above suspended ceilings.

Luminaire

System, W	Module	Ra (CRI)	3000 K, lm	3000 K, lm/W	4000 K, lm	4000 K, lm/W	kg	3000 K	4000 K	
Visible T-bars (VTB)										
13	300×300	≥ 80	1177	93	1231	97	2.0	**23777**	**23779**	☐
27	300×600	≥ 80	2487	91	2653	98	2.5	**23755**	**23761**	☐
29	300×1200	≥ 80	3102	105	3207	111	5.0	**23905**	**23906**	☐
39	300×1200	≥ 80	4070	104	4258	109	5.0	**23907**	**23908**	☐
46	300×1200	≥ 80	4778	104	4990	108	5.0	**23909**	**23910**	☐
29	600×600	≥ 80	3220	109	3395	115	4.5	**23785**	**23789**	☐
39	600×600	≥ 80	4225	110	4420	114	4.5	**23867**	**23871**	☐
46	600×600	≥ 80	4960	108	5180	113	4.5	**23805**	**23809**	☐
46	600×600	≥ 90	4162	92	4216	94	4.5	**23781**	**23782**	☐
Concealed T-bars (HB)/D-edge, symmetrical attachment of ceiling boards										
30	600×600	≥ 80	3220	109	3395	115	4.5	**23787**	**23791**	☐
39	600×600	≥ 80	4225	110	4420	114	4.5	**23869**	**23873**	☐
46	600×600	≥ 80	4960	108	5180	113	4.5	**23807**	**23811**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80/90*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

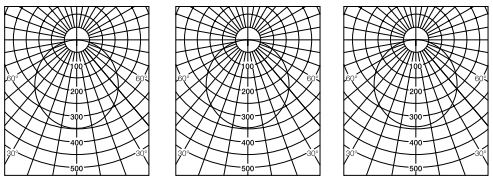
Suffix code

☐ **-03** Connection cable with plug, L=2.5 m.
☐ **-402** DALI/Phase-pulse control

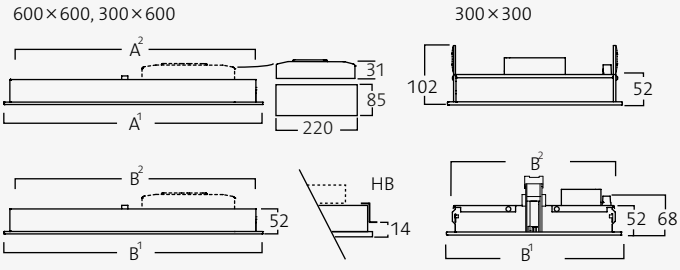
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Frame for surface mounting (600×600)	**41026**
Décor plate, circular, only for VTB	**41793**
Mounting plate (300×300) VTB	**41949**
Fixing brackets/4 pcs. Only for concealed T-bars (HB).	**91279**

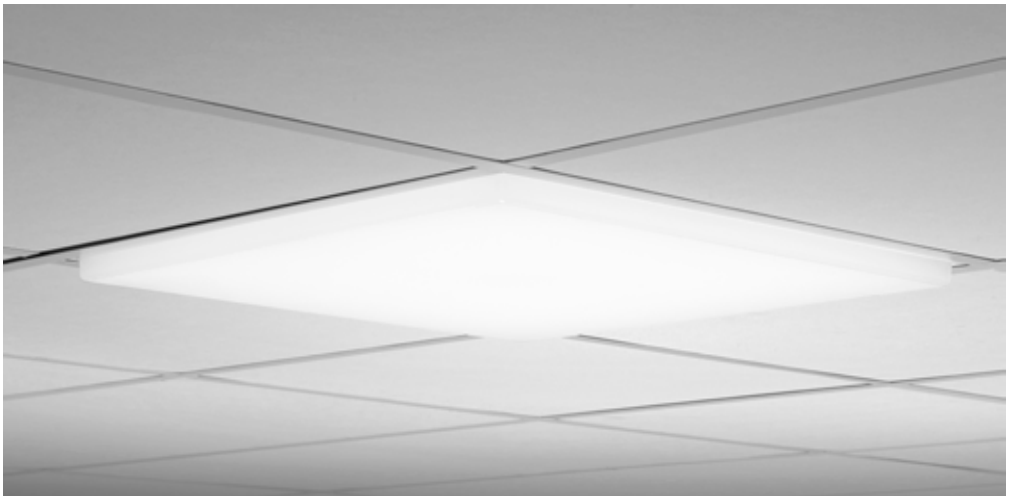


300×300 300×600 600×600



	A¹	A²	B¹	B²
VTB				
300×300	296	276	296	280
300×600	596	591	296	285
600×600	596	578	596	578
HB				
600×600	599	578	599	578

Décor plate for a circular luminous surface is available as an accessory.



Installation
Recessed mounting in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 mm.
HB – for suspended ceiling with concealed T-bars. Supplement with fixing brackets for fixed suspended ceiling, see Accessories.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Connection
Connection in driver box. The driver box can be positioned next to the luminaire. Snap-in terminal block 3×1.5 mm² (5×1.5 mm² where dimming is required). Through-wiring possible.
DesignLuminaire body in white enamelled sheet steel (RAL 9016).
Louvre
Opal plate in frosted acrylic (PMMA).
Miscellaneous
Enclosure class IP 44 under suspended ceilings and IP 20 above suspended ceilings.

Luminaire

System, W	Module	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
Visible T-bars (VTB)						
29	600×600	3000	3400	115	5.0	**23840**
29	600×600	4000	3550	120	5.0	**23842**
39	600×600	3000	4462	114	5.0	**23884**
39	600×600	4000	4657	119	5.0	**23886**
46	600×600	3000	5196	113	5.0	**23844**
46	600×600	4000	5435	118	5.0	**23846**
Concealed T-bars (HB)/D-edge, symmetrical attachment of ceiling boards						
29	600×600	3000	3400	115	5.0	**23841**
29	600×600	4000	3550	120	5.0	**23843**
39	600×600	3000	4462	114	5.0	**23885**
39	600×600	4000	4657	119	5.0	**23887**
46	600×600	3000	5196	113	5.0	**23845**
46	600×600	4000	5435	118	5.0	**23847**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

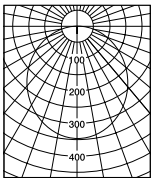
Suffix code

- **-03** Connection cable with plug, L=2.5 m.
- **-402** DALI/Phase-pulse control

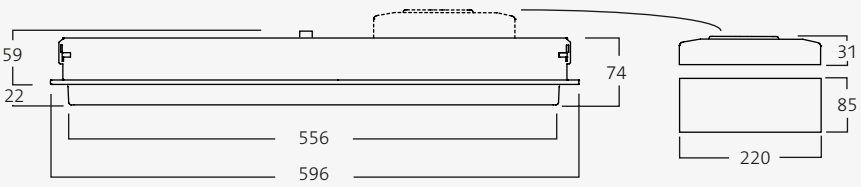
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Fixing brackets/4 pcs. Only for concealed T-bars (HB). **91279**

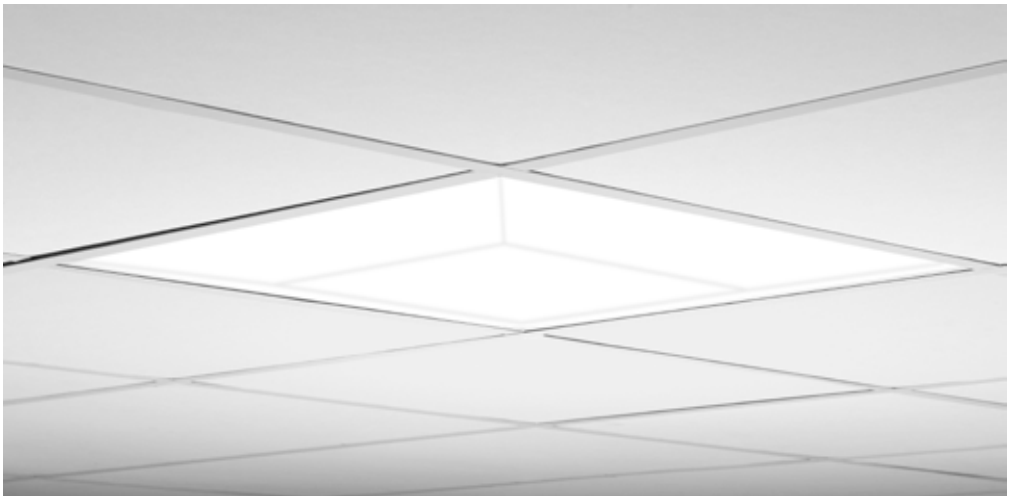


All versions



Assembly springs for quick installation in fixed suspended ceilings.

Multilume Edge



Installation
Recessed mounting in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 mm.
HB – for suspended ceiling with concealed T-bars. Supplement with fixing brackets for fixed suspended ceiling, see Accessories.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connection in driver box. The driver box can be positioned next to the luminaire. Snap-in terminal block 3×1.5 mm² (5×1.5 mm² where dimming is required). Through-wiring possible.

Design
Luminaire body in white enamelled sheet steel (RAL 9016).

Louvre
Opal plate in frosted acrylic (PMMA).

Miscellaneous
Enclosure class IP 44 under suspended ceilings and IP 20 above suspended ceilings.

Luminaire

System, W	Module	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
Visible T-bars (VTB)						
29	600×600	3000	3362	114	5.0	**23858**
29	600×600	4000	3510	119	5.0	**23860**
39	600×600	3000	4419	113	5.0	**23894**
39	600×600	4000	4612	118	5.0	**23896**
46	600×600	3000	5145	112	5.0	**23862**
46	600×600	4000	5382	117	5.0	**23864**
Concealed T-bars (HB)/D-edge, symmetrical attachment of ceiling boards						
29	600×600	3000	3362	114	5.0	**23859**
29	600×600	4000	3510	119	5.0	**23861**
39	600×600	3000	4419	113	5.0	**23895**
39	600×600	4000	4612	118	5.0	**23897**
46	600×600	3000	5145	112	5.0	**23863**
46	600×600	4000	5382	117	5.0	**23865**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

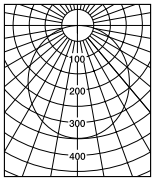
Suffix code

-03	Connection cable with plug, L=2.5 m.
-402	DALI/Phase-pulse control

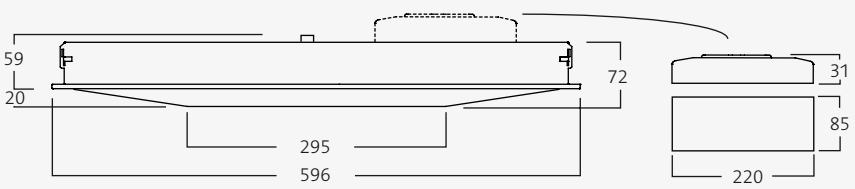
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

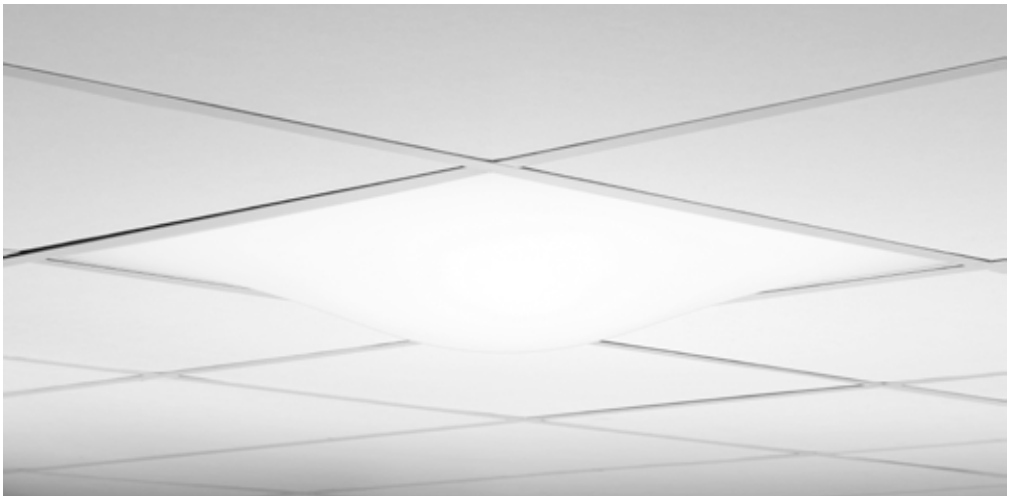
Fixing brackets/4 pcs. Only for concealed T-bars (HB).	**91279**



All versions



Multilume Flow



Installation
Recessed mounting in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 mm.
HB – for suspended ceiling with concealed T-bars. Supplement with fixing brackets for fixed suspended ceiling, see Accessories.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connection in driver box. The driver box can be positioned next to the luminaire. Snap-in terminal block 3×1.5 mm² (5×1.5 mm² where dimming is required). Through-wiring possible.

Design
Luminaire body in white enamelled sheet steel (RAL 9016).

Louvre
Opal plate in frosted acrylic (PMMA).

Miscellaneous
Enclosure class IP 44 under suspended ceilings and IP 20 above suspended ceilings.

Luminaire

System, W	Module	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
Visible T-bars (VTB)						
29	600×600	3000	3364	114	5.0	**23849**
29	600×600	4000	3513	119	5.0	**23851**
39	600×600	3000	4419	113	5.0	**23889**
39	600×600	4000	4612	118	5.0	**23891**
46	600×600	3000	5145	112	5.0	**23853**
46	600×600	4000	5382	117	5.0	**23855**
Concealed T-bars (HB)/D-edge, symmetrical attachment of ceiling boards						
29	600×600	3000	3364	114	5.0	**23850**
29	600×600	4000	3513	119	5.0	**23852**
39	600×600	3000	4419	113	5.0	**23890**
39	600×600	4000	4612	118	5.0	**23892**
46	600×600	3000	5145	112	5.0	**23854**
46	600×600	4000	5382	117	5.0	**23856**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{90} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

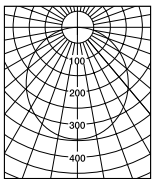
Suffix code

- **-03** Connection cable with plug, L=2.5 m.
- **-402** DALI/Phase-pulse control

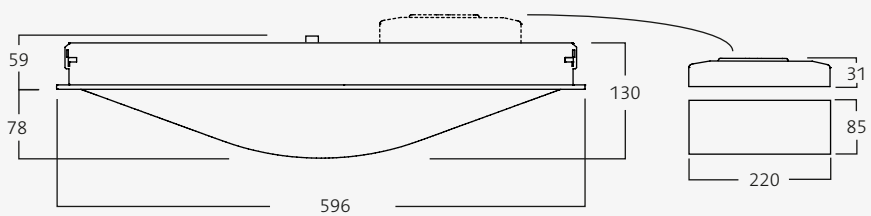
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Fixing brackets/4 pcs. Only for concealed T-bars (HB). **91279**



All versions



Fixing brackets to luminaire for ceilings with concealed T-bars.

Multilume Free

Installation
Luminaire for recessed mounting in ventilated or unventilated ceilings. Only for installation in ceilings with visible T-bars. Do not cover with insulation. For further information please refer to the installation instructions on our website.
Connection
Supplied with 2,5 m connection cable and European plug (class II). Luminaire for dimming supplied with 5-core cable (class I) .
Design
Luminaire body in white PC/ABS-plastic.
Louvre
Opal diffusor in PC+PET.

Luminaire

System, W	Module	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
35	600 x 600	3000	3197	91	2.9	**22180-** ☐
35	600 x 600	4000	3395	98	2.9	**22182-** ☐
47	600 x 600	3000	4050	86	2.9	**22181-** ☐
46	600 x 600	4000	4302	93	2.9	**22183-** ☐

Luminaire must be completed with desired function. See table with suffix codes.
For current information on output and luminous flux, please refer to our website.

Information LED

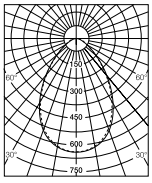
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 5 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

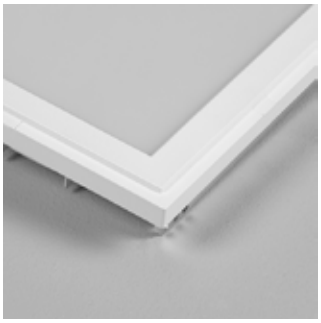
Suffix code

☐ **-03** Connection cable with plug, L=2,5 m
☐ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function Only one suffix can be added.



All versions



Frame with recessed edge for easy fitting into T-bars.

Easily accessible driver on top of the luminaire.

Notor Recessed

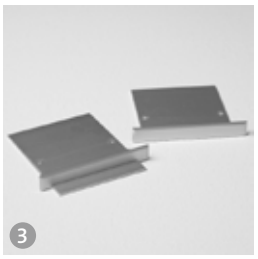
Fagerhults classic Notor G2 luminaire has now been brought right up-to-date using the latest in LED technology. The expansive range spans suspended, surface mounted and recessed variations, offering the flexibility to maintain a consistent aesthetic across numerous applications.

Notor is characterised by discretion. Its minimalist style and clean line design is constructed of aluminium with a natural anodised finish. In continuous runs Notor provides an unbroken line of light in the ceiling while the L-coupler offers the scope to create more varied installations. The LED variation is lit all the way to the end-caps of the luminaire housing, further enhancing its visual appeal with illuminated corners.

The luminaires can be connected using a snap-in connector for safe and efficient installation, while providing additional protection to the light sources and other technology during installation.


1


2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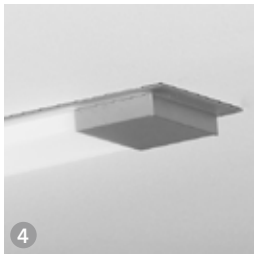
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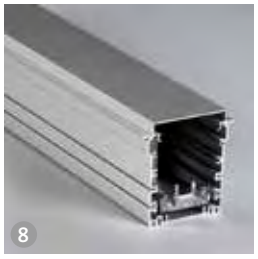
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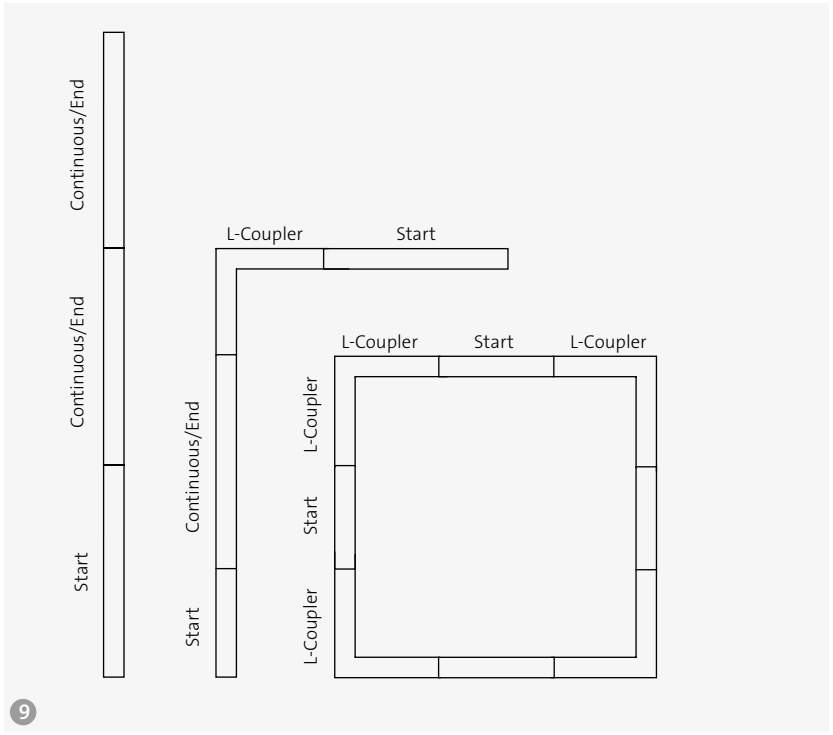


9

1. A coupler bracket is used to connect the luminaires together in a continuous installation by hooking into one luminaire and screwing into the next.

2. The end-caps are secured to the luminaire profile with two screws.

3. Different end-caps are used depending on the louvre. The end-cap for flush opal version follows the profile of the fitting, while the dropped opal end-caps extends beyond the fitting top cover the acrylic diffuser.

4–5. A cover plate is used in the continuous installation of luminaires at the start and end on the installation. This is to prevent gaps as the aluminium bodies and acrylic louvres expand very differently linearly. Cover plate comes with start luminaire.

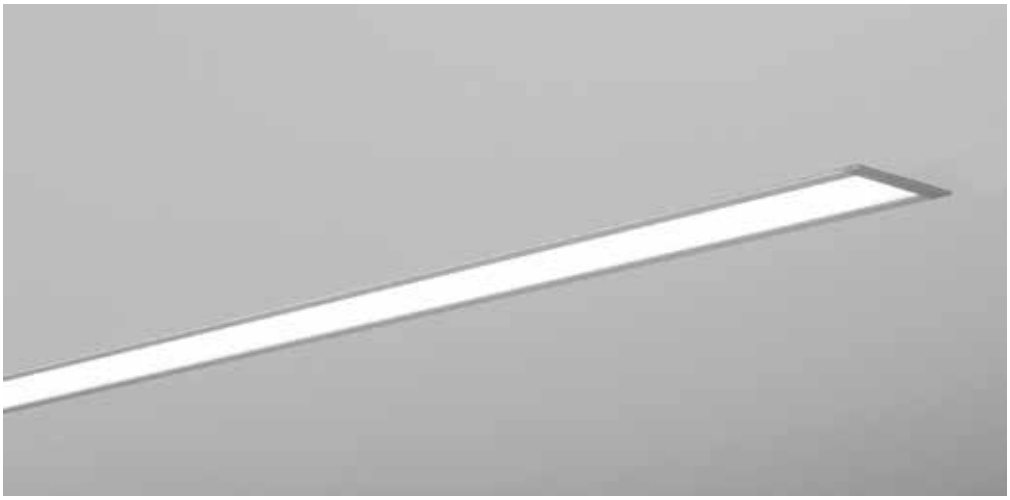
6–7. Suspension fixings are assembled before the luminaire is raised to the ceiling. When the screws are tightened from below, the suspension fixing swings out and locks the luminaire.

8. There is a 600 mm long dummy section that can be cut to length in order for the continuous installation to reach the desired length in instances when the luminaires are not required throughout the run.

9. NOTE! A start luminaire is used after each L-coupling for onward connection. Max continuous installation length 30 m, limited by the linear expansion of the different materials. If a longer continuous installation is required you can start a new installation.

Notor Recessed LED

Opal flush



Straight luminaire

Length	Colour temp., K	System, W	Luminous flux, lm	Efficiency, lm/W	kg	Single	Start	Continuous	
600	3000	10	880	91	1.9	**22609***	**22615**	**22621**	☐
600	4000	10	880	91	1.9	**22612***	**22618**	**22624**	☐
1200	3000	18	1850	101	3.7	**22610**	**22616**	**22622**	☐
1200	4000	18	1850	101	3.7	**22613**	**22619**	**22625**	☐
2400	3000	36	3700	101	7.4	**22611**	**22617**	**22623**	☐
2400	4000	36	3700	101	7.4	**22614**	**22620**	**22626**	☐

** Not possible to be mounted as single luminaire in ceilings with visible T-bars (VTB).*

For current information on output and luminous flux, please refer to our website.

Illuminated corners

Length	Colour temp., K	System, W	Luminous flux, lm	Efficiency, lm/W	kg		
600×600	3000	18	1850	101	3.5	**22632**	☐
600×600	4000	18	1850	101	3.5	**22633**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function.

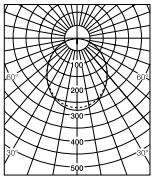
Installation
Luminaire for mounted in ventilated or unventilated suspended ceilings. Installed in suspended ceilings with visible T-bars, VTB (25 or 15 mm) or one-piece suspended ceilings.

Connection
Connection by means of a connection box on top of the luminaire. Wieland Chassis connector 3-way (GST 18i3), with dimming 5-way (GST 18i5). In a continuous installation the luminaire row should always start with a start luminaire. With continuous installation the luminaire units are interconnected with a connection cable in the connection box.

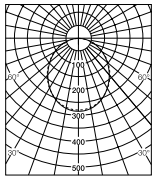
Design
Luminaire body in natural anodised, extruded aluminium. With continuous installation an unbroken line of light is achieved, even via a L-coupling.

Louvre
Opal – plate in frosted acrylic (PMMA).

Miscellaneous
Accessories and cables, see Accessories.

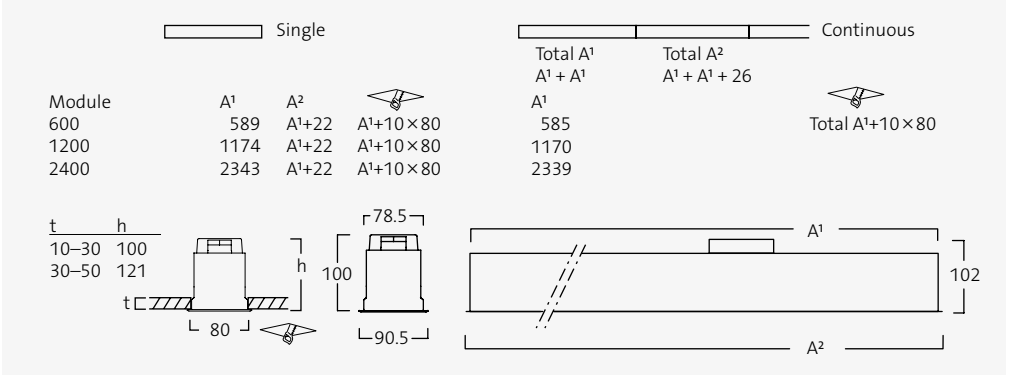


Opal flush, 600 mm



Opal flush, 1200 mm

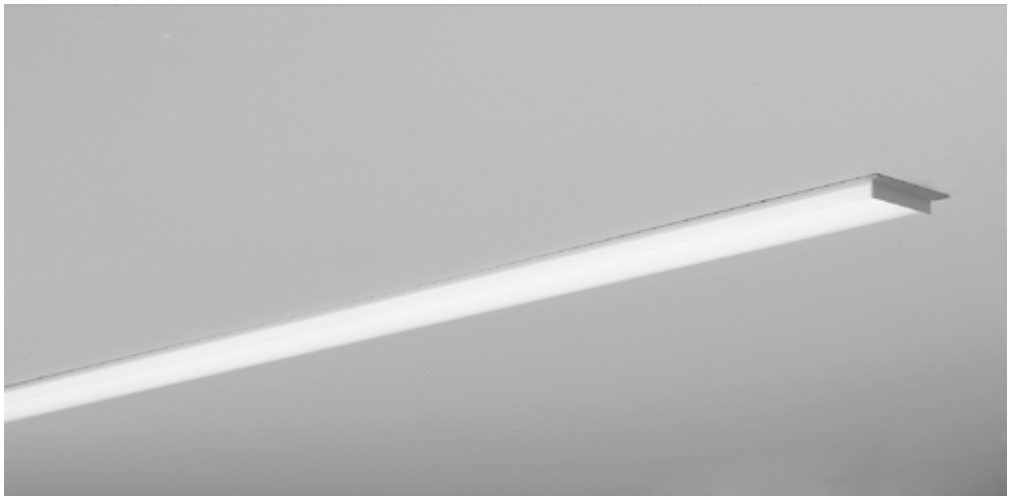
Continuous coupler bends into the frame for a single installation.



The LED board is safeguarded by the transparent contact protection with a lens function.

Notor Recessed LED

Opal dropped



Straight luminaire

Length	Colour temp., K	System, W	Luminous flux, lm	Efficiency, lm/W	kg	Start	Single/Cont./End	
600	3000	10	900	93	1.9	**22963**	**22969***	■
600	4000	10	900	93	1.9	**22966**	**22972***	■
1200	3000	18	1900	104	3.7	**22964**	**22970**	■
1200	4000	18	1900	104	3.7	**22967**	**22973**	■
2400	3000	36	3800	104	7.4	**22965**	**22971**	■
2400	4000	36	3800	104	7.4	**22968**	**22974**	■

** Not possible to be mounted as single luminaire in ceilings with visible T-bars (VTB).*

For current information on output and luminous flux, please refer to our website.

Illuminated corners

Length	Colour temp., K	System, W	Luminous flux, lm	Efficiency, lm/W	kg		
600×600	3000	18	1900	104	3.5	**22630**	■
600×600	4000	18	1900	104	3.5	**22631**	■

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

■ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function.

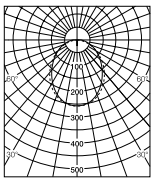
Installation
Luminaire for mounted in ventilated or unventilated suspended ceilings. Installed in suspended ceilings with visible T-bars, VTB (25 or 15 mm) or one-piece suspended ceilings.

Connection
Connection by means of a connection box on top of the luminaire. Wieland Chassis connector 3-way (GST 18i3), with dimming 5-way (GST 18i5). In a continuous installation the luminaire row should always start with a start luminaire. With continuous installation the luminaire units are interconnected with a connection cable in the connection box.

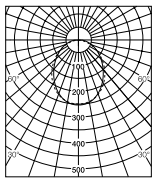
Design
Luminaire body in natural anodised, extruded aluminium. With continuous installation an unbroken line of light is achieved, even via a L-coupling.

Louvre
Opal – plate in frosted acrylic (PMMA). The louvre hangs down 10 mm from the ceiling and provides ambient luminance to ceiling and wall.

Miscellaneous
Accessories and cables, see Accessories. Enclosure class IP 40 under suspended ceilings and IP 20 above suspended ceilings.

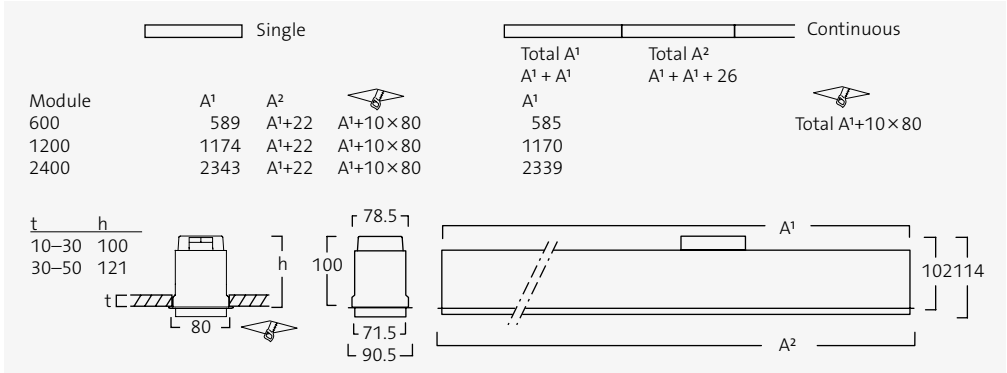


Opal dropped, 600 mm

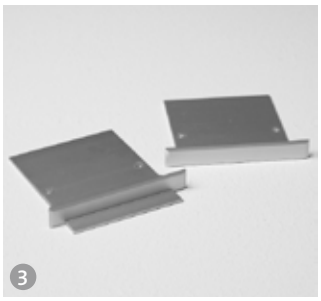


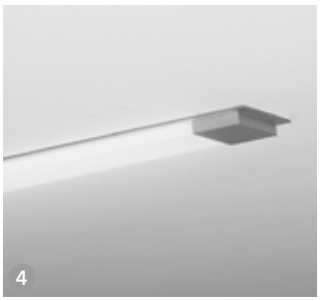
Opal dropped, 1200 mm

Illuminated L-coupling provides light right into the corner.

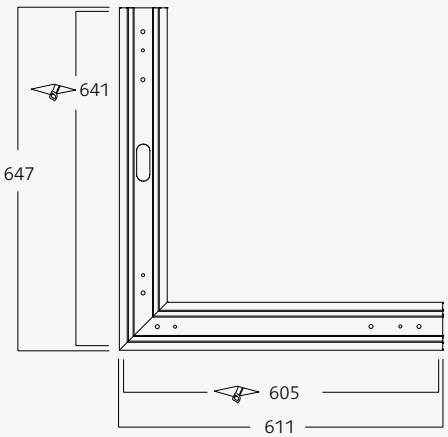


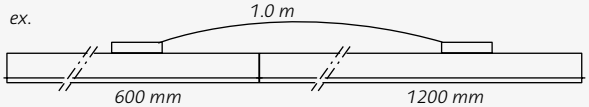
Dummy section.





1. Mounting bracket	
Mounting bracket/pair	**91045**
2. Dummy section	
Dummy section 600 mm, Opal dropped	**91120**
Dummy section 600 mm, Opal flush	**91121**
3. End-cap	
End-cap/pair, Opal flush	**91053**
End-cap/pair, Opal dropped	**91054**
4. Cover plate	
Cover plate/pair provides IP 44 on dropped opal start luminaire used single installation. Cover plate comes with start luminaire.	**91055**
Mains cable	
Connection cable, Wieland connection system.	
L=2.0 m, female excl. plug	**91789**
L=2.0 m, female incl earthed plug	**91790**
L=2.0 m, female excl. plug	**91022**
Connection cables, quick connection system, 3-way	
White connection cable, female + male, cross-section 1.5 mm², 1-phase.	
L=1.0 m with female and male connectors	**91791**
L=2.0 m with female and male connectors	**91792**
L=2.5 m with female and male connectors	**91074**
L=3.0 m with female and male connectors	**91793**
Connection cables, quick connection system, 5-way	
Black connection cable, female + male, cross-section 1.5 mm², 1-phase + dimmable (Wieland GST).	
L=1.0 m with female and male connectors	**91030**
L=2.0 m with female and male connectors	**91076**
L=2.5 m with female and male connectors	**91077**
L=3.0 m with female and male connectors	**91031**



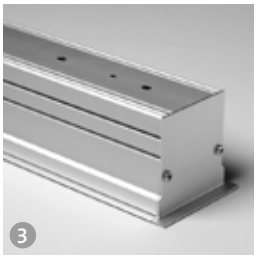


Length	Inter-connecting cable
600+600 mm	1.0 m
600+1200 mm	1.0 m
600+2400 mm	2.0 m
1200+1200 mm	2.0 m
1200+2400 mm	2.0 m
2400+2400 mm	2.5 m

Notor Recessed


1


2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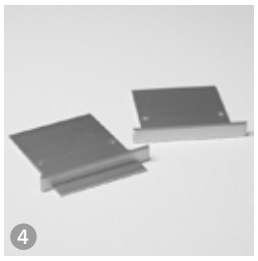
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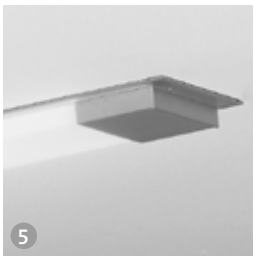
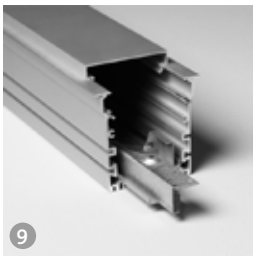

5


6


7


8


9

1–2. A continuous coupler bracket is used to connect the luminaires together in a continuous installation by hooking into one luminaire and screwing into the next.

3. The end-caps are fitted to the luminaire profile with two screws.

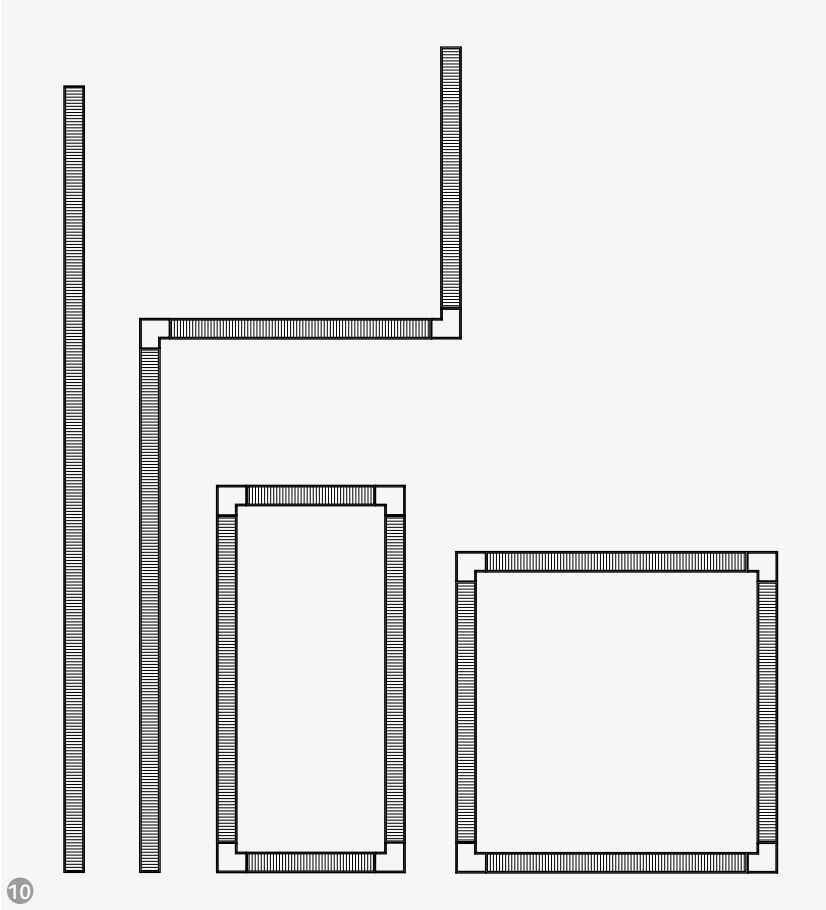
4. Different end-caps are used depending on the louvre. Delta, Lamell and Beta have one end-cap which accompanies the luminaire's frame while Opal has a lip that also covers the form of the acrylic profile.

5–6. A cover plate is used in the continuous installation of Opal and Delta luminaires at the start and end on the installation. This is to prevent gaps as the aluminium bodies and acrylic louvres extend very differently linearly.

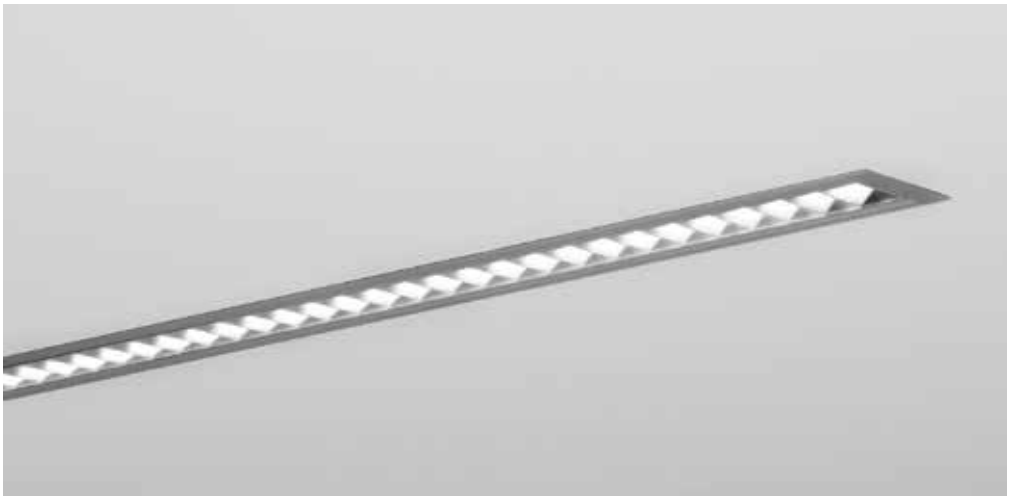
7–8. Suspension fittings are assembled before the luminaire is raised to the ceiling. When the screws are tightened from below, the suspension fitting swings out and locks the luminaire.

9. There is a 600 mm long dummy section that can be cut to length in order for the continuous installation to reach the desired length in instances when the luminaires are not required throughout the run.

10. NOTE! A start luminaire is used after each L-coupling for onward connection. Continuous length:
Delta/Opal – max continuous installation length 20 m. Limited by the linear expansion of the different materials. If a longer continuous installation is required you can start a new installation.
Beta/Lamell – max continuous installation length 40 m. Limited by the start current for the HF-ballasts and the type of fuse. Some outputs can be formed into longer continuous installations. Also see the page Fuse protection of HF luminaires in the Technical Information chapter.


10

Notor Recessed
Beta



Installation
Luminaire for recessed mounting in ventilated or unventilated suspended ceilings. Installed in suspended ceilings with visible T-bars, (25 or 15 mm) or fixed suspended ceilings.
Connection
Connection by means of a connection box on top of the luminaire. Wieland Chassis connector 3-way (GST 18i3), with dimming 5-way (GST 18i5). With continuous installation the luminaire units are interconnected with a connection cable in the connection box.
Design
Luminaire body in natural anodised, extruded aluminium.
Louvre
Beta – double parabolic reflector louvre with side and cross blades of satin matt, metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit.
Reflector
Reflector of metallised aluminium.
Miscellaneous
For connectors and cables see accessories. The same luminaire is used as a single, start, continuous and end luminaire. To calculate how many luminaires and accessories you will need to complete a run, please use our configurator on the website.

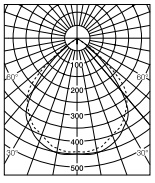
Luminaire

FDH	Length	kg		
1×13/14	600	2.0	**22690**	☐
1×20/24	600	2.0	**22689**	☐
1×21	900	2.8	**22705**	☐
1×25/28	1200	3.6	**22691**	☐
1×50/54	1200	3.6	**22692**	☐
1×32/35	1500	4.9	**22693**	☐
1×45/49	1500	4.9	**22694**	☐
2×1×25/28	2400	6.8	**22695**	☐
2×1×50/54	2400	6.8	**22696**	☐
2×1×32/35	3000	8.3	**22697**	☐
2×1×45/49	3000	8.3	**22698**	☐

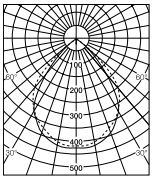
Suffix code

☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

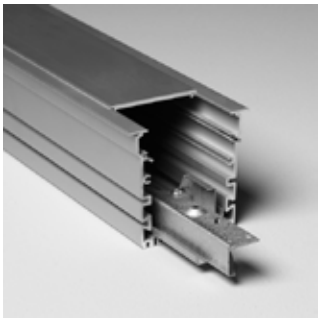
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



1×25/28 W



1×50/54 W



Dummy section 600 mm can be cut to the required length.

Fastening clip for easy installation in fixed ceilings.

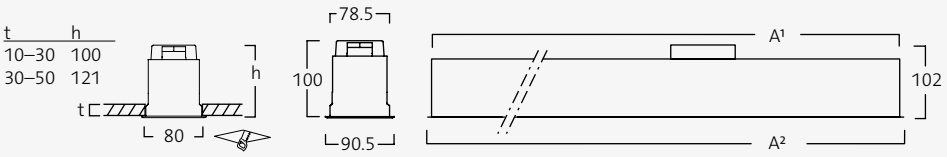
Single

W	A¹	A²	
1×13/14	574	A¹+22	A¹+10×80
1×21	874	A¹+22	A¹+10×80
1×25/28/50/54	1174	A¹+22	A¹+10×80
1×32/35/45/49	1474	A¹+22	A¹+10×80
2×1×25/28/50/54	2343	A¹+22	A¹+10×80
2×1×32/35/45/49	2943	A¹+22	A¹+10×80

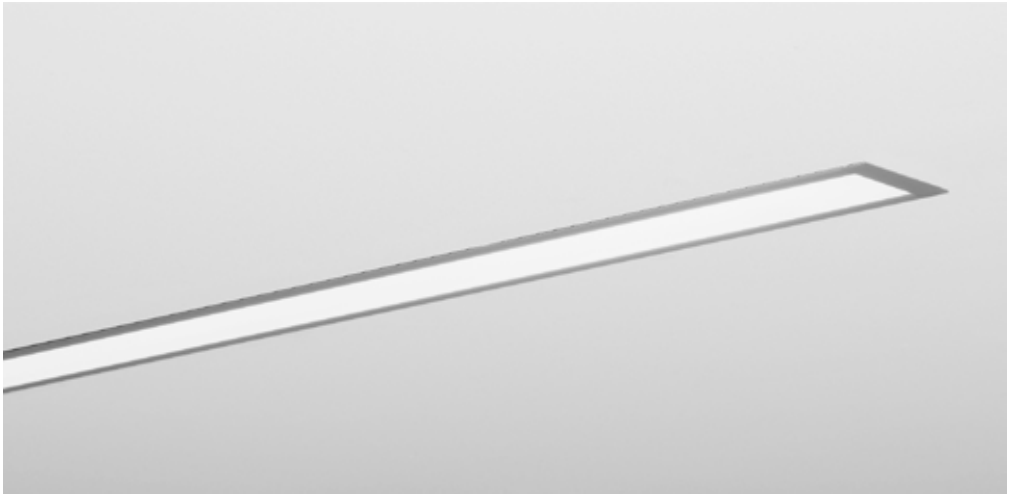
Continuous

Start/Cont./End	Total A¹	Total A²	
570			
870			
1170			
1470			
2339	A¹+A¹	A¹+A¹+26	Total A¹+10×80
2939	A¹+A¹	A¹+A¹+26	Total A¹+10×80

t	h
10–30	100
30–50	121



Notor Recessed
Delta



Installation
Luminaire for recessed mounting in ventilated or unventilated suspended ceilings. Installed in suspended ceilings with visible T-bars, (25 or 15 mm) or fixed suspended ceilings.
Connection
Connection by means of a connection box on top of the luminaire. Wieland Chassis connector 3-way (GST 18i3), with dimming 5-way (GST 18i5). In a continuous installation the luminaire row should always begin with a start luminaire. With a continuous installation the luminaire units are interconnected with a connection cable in the connection box.
Design
Luminaire body in natural anodised, extruded aluminium. The fluorescent lamps in the continuous luminaires overlap, creating an unbroken luminous line.
Louvre
Delta – microprismatic acrylic louvre (PMMA).
Reflector
Reflector of metallised aluminium.
Miscellaneous
For connectors and cables, see Accessories. To calculate how many luminaires and accessories you will need to complete a run, please use the configurator on our website.

Luminaire, single installation

FDH	Length	kg		
1×13/14	600	1.9	**22861**	☐
1×20/24	600	1.9	**22855**	☐
1×21	900	2.8	**22859**	☐
1×25/28	1200	3.5	**22862**	☐
1×50/54	1200	3.5	**22863**	☐
1×32/35	1500	4.8	**22864**	☐
1×45/49	1500	4.8	**22865**	☐
2×1×25/28	2400	6.5	**22871**	☐
2×1×50/54	2400	6.5	**22872**	☐
2×1×32/35	3000	8.1	**22873**	☐
2×1×45/49	3000	8.1	**22874**	☐

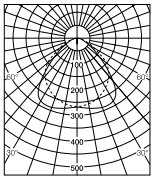
Luminaire, continuous installation

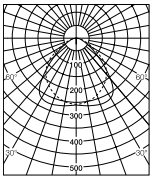
FDH	Length	kg	Start	Continuous/End	
1×13/14	600	1.9	**22866**	**22883**	☐
1×20/24	600	1.9		**22884**	☐
1×25/28	1200	3.5	**22867**	**22898**	☐
1×50/54	1200	3.5	**22868**	**22899**	☐
1×32/35	1500	4.8	**22869**		☐
1×45/49	1500	4.8	**22870**		☐
2×1×25/28	2400	6.5	**22875**	**22879**	☐
2×1×50/54	2400	6.5	**22876**	**22880**	☐
2×1×32/35	3000	8.1	**22877**	**22881**	☐
2×1×45/49	3000	8.1	**22878**	**22882**	☐

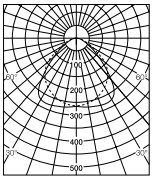
Suffix code

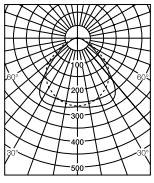
☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

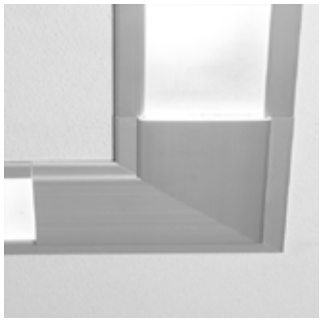
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

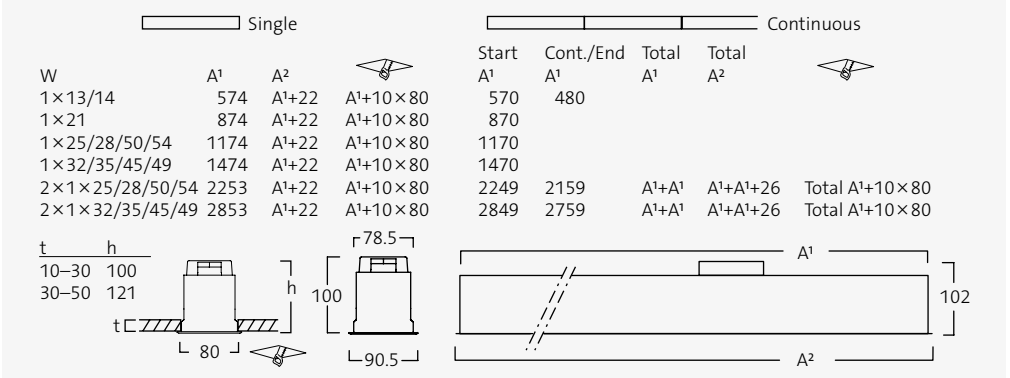

1×25/28 W

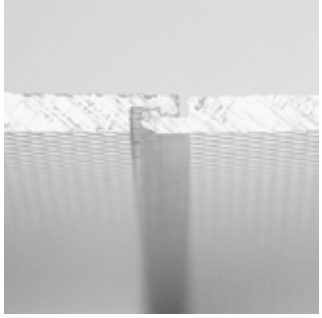

1×50/54 W


1×32/35 W

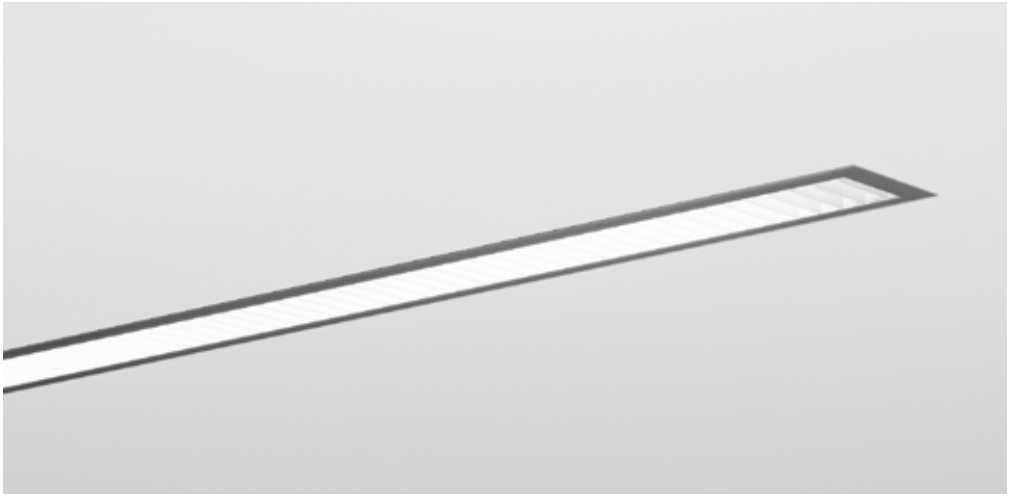

1×45/49 W


L-couplings to make 90° turns.




In the continuous versions the Delta louvres hook into each other to prevent the appearance of unwanted gaps.

Notor Recessed
Lamell



Luminaire, single- or continuous installation

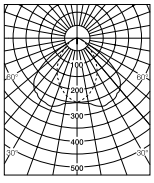
FDH	Length	kg	Single/start	Continuous/End	
1×13/14	600	2.0	**22885**		☐
1×25/28	1200	3.7	**22886**		☐
1×50/54	1200	3.7	**22887**		☐
1×32/35	1500	5.0	**22888**		☐
1×45/49	1500	5.0	**22889**		☐
2×1×25/28	2400	6.9	**22890**	**22894**	☐
2×1×50/54	2400	6.9	**22891**	**22895**	☐
2×1×32/35	3000	8.0	**22892**	**22896**	☐
2×1×45/49	3000	8.0	**22893**	**22897**	☐

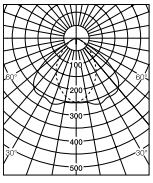
Suffix code

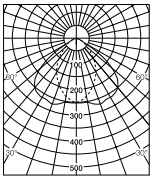
☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Luminaire for recessed mounting in ventilated or unventilated suspended ceilings. Installed in suspended ceilings with visible T-bars, (25 or 15 mm) or fixed suspended ceilings.
Connection
Connection by means of a connection box on top of the luminaire. Wieland Chassis connector 3-way (GST 18i3), with dimming 5-way (GST 18i5). In a continuous installation the luminaire row should always begin with a start luminaire. With a continuous installation the luminaire units are interconnected with a connection cable in the connection box.
Design
Luminaire body in natural anodised, extruded aluminium. The fluorescent lamps in the continuous luminaires overlap, creating an unbroken luminous line.
Louvre
Lamell – lamell louvre in grey enamelled sheet steel.
Reflector
Reflector of metallised aluminium.
Miscellaneous
For connectors and cables, see Accessories. To calculate how many luminaires and accessories you will need to complete a run, please use the configurator on our website.

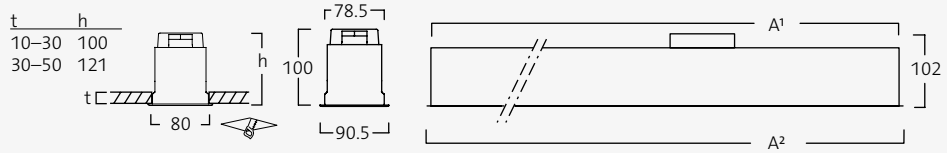

1×13/14 W

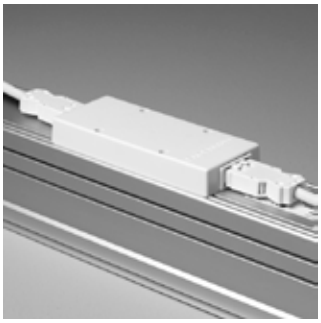

1×32/35 W


1×45/49 W


A fixing bracket holds the luminaires together in a continuous installation.

	Single			Continuous				
W	A¹	A²		Start A¹	Cont./End A¹	Total A¹	Total A²	
1×13/14	574	A¹+22	A¹+10×80	570				
1×25/28/50/54	1174	A¹+22	A¹+10×80	1170				
1×32/35/45/49	1474	A¹+22	A¹+10×80	1470				
2×1×25/28/50/54	2253	A¹+22	A¹+10×80	2249	2159	A¹+A¹	A¹+A¹+26	Total A¹+10×80
2×1×32/35/45/49	2853	A¹+22	A¹+10×80	2849	2759	A¹+A¹	A¹+A¹+26	Total A¹+10×80




In a continuous installation the units are easily interconnected by means of a connection box on top of the luminaire.

Notor Recessed
Opal

Luminaire, single installation

FDH	Length	kg		
1×13/14	600	1.9	**22900**	☐
1×20/24	600	1.9	**22924**	☐
1×21	900	2.8	**22926**	☐
1×25/28	1200	3.5	**22901**	☐
1×50/54	1200	3.5	**22902**	☐
1×32/35	1500	4.8	**22903**	☐
1×45/49	1500	4.8	**22904**	☐
2×1×25/28	2400	6.5	**22905**	☐
2×1×50/54	2400	6.5	**22906**	☐
2×1×32/35	3000	8.1	**22907**	☐
2×1×45/49	3000	8.1	**22908**	☐

Luminaire, continuous installation

FDH	Length	kg	Start	Continuous/End	
1×13/14	600	1.9	**22909**	**22922**	☐
1×20/24	600	1.9	**22923**		☐
1×25/28	1200	3.5	**22910**		☐
1×50/54	1200	3.5	**22911**	**22925**	☐
1×32/35	1500	4.8	**22912**		☐
1×45/49	1500	4.8	**22913**		☐
2×1×25/28	2400	6.5	**22914**	**22918**	☐
2×1×50/54	2400	6.5	**22915**	**22919**	☐
2×1×32/35	3000	8.1	**22916**	**22920**	☐
2×1×45/49	3000	8.1	**22917**	**22921**	☐

Suffix code

☐ **-368** DALI/Phase-pulse control

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Luminaire for recessed mounting in ventilated or unventilated suspended ceilings. Installed in suspended ceilings with visible T-bars, (25 or 15 mm) or fixed suspended ceilings.

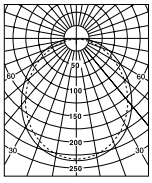
Connection
Connection by means of a connection box on top of the luminaire. Wieland Chassis connector 3-way (GST 18i3), with dimming 5-way (GST 18i5). In a continuous installation the luminaire row should always begin with a start luminaire. With a continuous installation the luminaire units are interconnected with a connection cable in the connection box.

Design
Luminaire body in natural anodised, extruded aluminium. The fluorescent lamps in the continuous luminaires overlap, creating an unbroken luminous line.

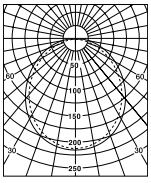
Louvre
Opal – extruded profile in frosted acrylic (PMMA).

Reflector
Reflector of metallised aluminium.

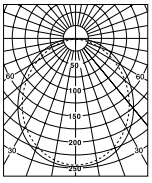
Miscellaneous
A start luminaire used as a single installation is IP 44 from below, when both cover plates are used.
For connectors and cables, see Accessories. To calculate how many luminaires and accessories you will need to complete a run, please use the configurator on our website.



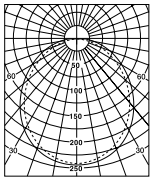
1×25/28 W



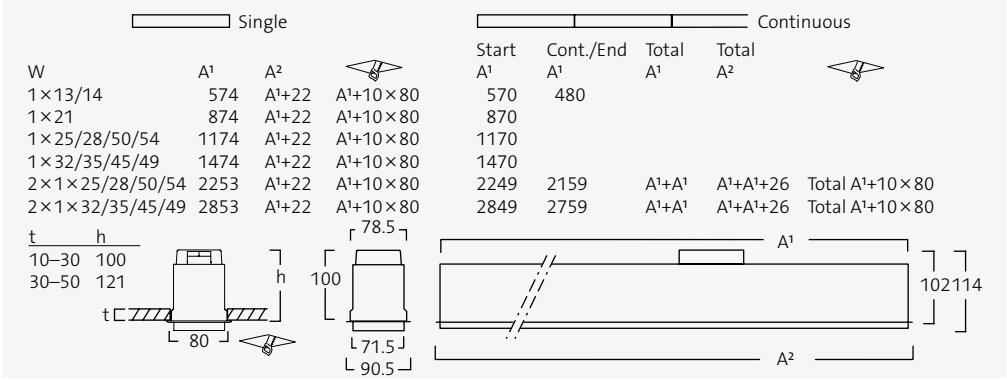
1×50/54 W



1×32/35 W



1×45/49 W

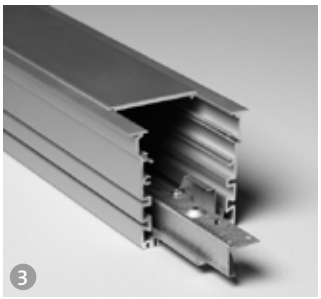


The opal louvres in a continuous installation are held together with magnets to prevent unwanted gaps.

In the Delta, Lamell and Opal continuous variations the fluorescent lamps are overlapped to create an unbroken luminous line.


1


2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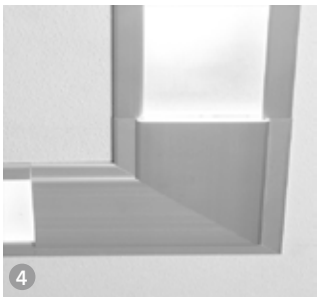
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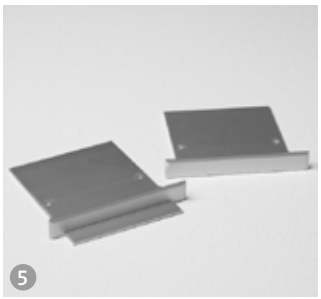
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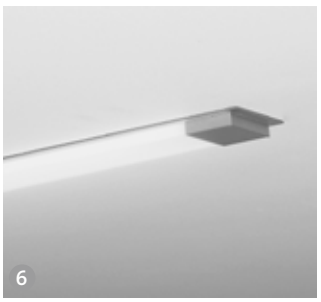
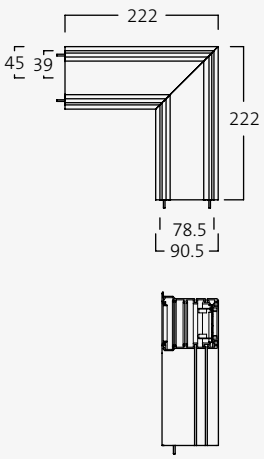
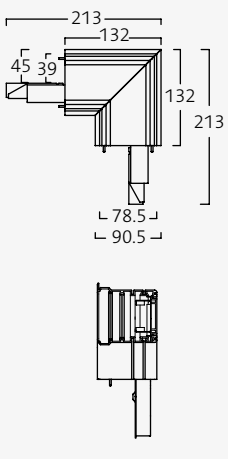

6

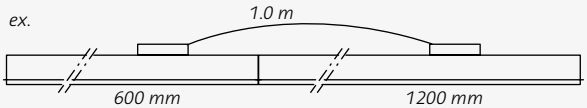
1. Mounting bracket	
Mounting bracket/pair	**91045**
2. Continuous coupler bracket	
Continuous coupler bracket, Delta, Lamell, Opal	**91046**
Continuous coupler bracket, Beta	**91047**
3. Dummy section	
Dummy section 600 mm, Lamell, Delta	**91048**
Dummy section 600 mm, Beta	**91049**
Dummy section 600 mm, Opal	**91057**
4. L-coupling	
L-coupling, Delta, Lamell	**91050**
L-coupling, Beta	**91051**
L-coupling, Opal	**91052**
5. End-cap	
End-cap/pair, Delta, Lamell, Beta	**91053**
End-cap/pair, Opal	**91054**
6. Cover unit, Opal luminaire	
Cover plate/pair provides IP 44 on dropped opal start luminaire used single installation. Cover plate comes with start luminaire.	**91055**
Connection cable	
Connection cable. Wieland connection system.	
L=2.0 m with female excl. plug. 3-way. 1-phase.	**91789**
L=2.0 m with female with earthed plug. 3-way. 1-phase.	**91790**
L=2.0 m with female excl. plug, 5-way. 1-phase + dimming.	**91022**
Through-wiring quick connection system, 3-way	
White connection cable, cross-section 1.5 mm², 1-phase (Wieland GST)	
L=1.0 m with female and male connectors	**91791**
L=2.0 m with female and male connectors	**91792**
L=2.5 m with female and male connectors	**91074**
L=3.0 m with female and male connectors	**91793**
Through-wiring quick connection system, 5-way	
Black connection cable, cross-section 1.5 mm², 1-phase + dimming (Wieland GST)	
L=1.0 m with female and male connectors	**91030**
L=2.0 m with female and male connectors	**91076**
L=2.5 m with female and male connectors	**91077**
L=3.0 m with female and male connectors	**91031**

Beta



Lamell, Opal, Delta

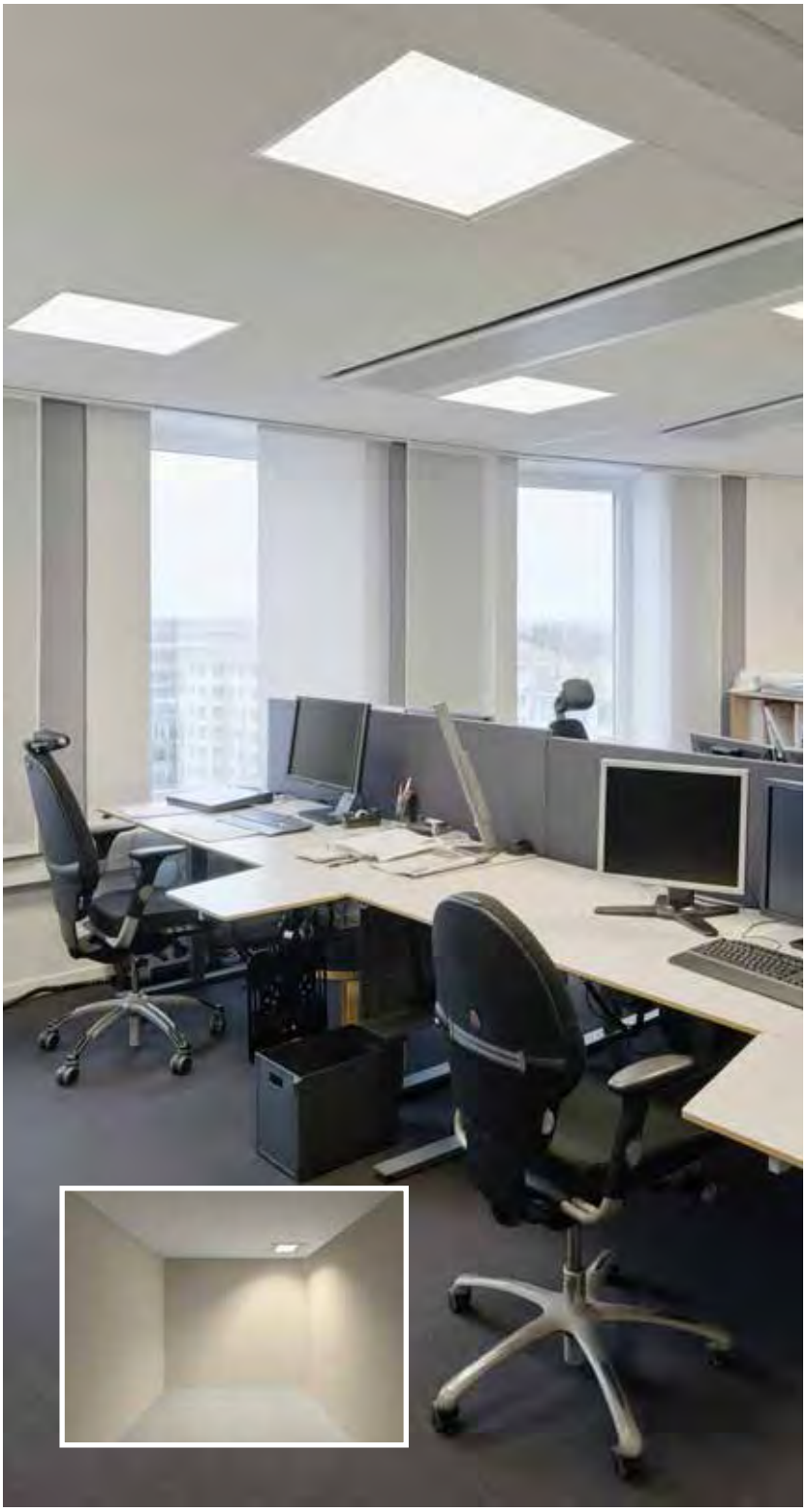




Length *(Beta)*	Inter-connecting cable	Length *(Delta, Opal, Lamell)*	Inter-connecting cable
600+1200 mm	1.0 m	600+1200 mm	2.0 m
600+1500 mm	1.0 m	600+1500 mm	2.5 m
600+2400 mm	2.0 m	1200+2400 mm	2.5 m
600+3000 mm	2.5 m	1200+3000 mm	3.0 m
1200+3000 mm	3.0 m	1500+2400 mm	2.5 m
1500+2400 mm	2.5 m	1500+3000 mm	3.0 m
1500+3000 mm	3.0 m	2400+2400 mm	2.5 m
2400+2400 mm	2.5 m	2400+3000 mm	3.0 m
2400+3000 mm	3.0 m	3000+3000 mm	3.0 m
3000+3000 mm	3.0 m		

MultiFive G2

MultiFive G2 is a recessed luminaire offering excellent comfort and efficiency. Based on an extremely low frame form that hugs close to the suspended ceiling, MultiFive G2 is available with two different louvre options: an Opal disc or the microprism Delta, one of the most efficient of its type on the market.



The luminaire's shallow profile blends into the ceiling, working equally as well in isolation or with a series of luminaires mounted next to each other to form a cluster of light. A selection of different frames opens up numerous possibilities when creating formations or choosing the appearance.

Speed and ease of installation was a major consideration during the development. The installation tabs enable the body of the luminaire to be fitted into a visible T-bar ceiling without the need for brackets. The diffuser is then simply pushed into the body, helping to save valuable time on-site.

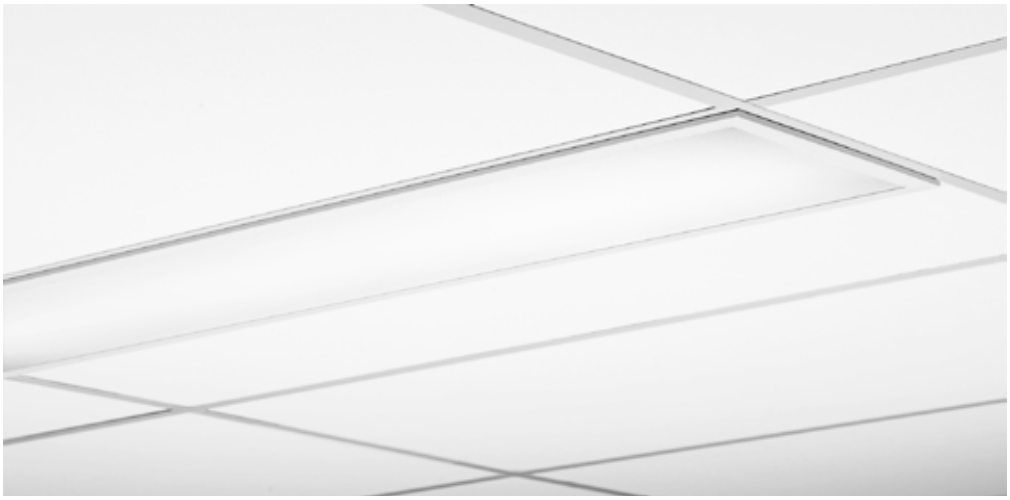
1–2. MultiFive G2 is available in numerous different designs. Choose between Delta and Opal louvre and luminaire widths of 300 or 600 mm.

3. MultiFive G2 is designed for assembly in ceilings with visible or concealed T-bars and plasterboard ceilings. When assembling in ceilings with visible T-bars the luminaire is locked by simply bending a clip over the T-bar.

4–5. When assembling in a plasterboard ceiling Multifive G2 requires an additional suspension fixing which is easily secured using a screw.

6. The louvre frame is snapped into position in the luminaire body using clips. The louvre frame remains attached to the luminaire when re-lamping.

7. The luminaire is available with different types of mains cables or Wieland connectors depending on the design required. Both options are supplied pre-connected to the luminaire.



Installation
Luminaire for recessed mounting in ventilated or unventilated suspended ceilings. Mounting in ceilings with visible T-bars (25 or 15 mm), fixed ceilings and HB-concealed T-bars. Luminaires for concealed T-bars are supplied with fixing brackets, for fixed ceilings the brackets need to be ordered separately, see Accessories. Light sources are fitted in the luminaire.The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Supplied with 2.5 m mains cable and earthed plug, 3-way snap-in terminal block, 2.5 mm². Luminaires for dimming, suffix -368 and -436, are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Can also be equipped with quick connection system Linect.

Design
Luminaire body and frame of white enamelled sheet steel (RAL 9016).

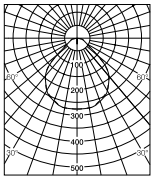
Louvre
Delta – microprism louvre in acrylic TPb (PMMA) with a thin opal diffuser (acrylic/PMMA) inside. Frame with louvres remains attached when opened.

Miscellaneous
For accessories and connection cables to Wieland, see the Technical Information chapter.

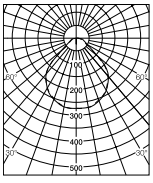
Luminaire				
FDH	Module	**830**	**840**	
Visible T-bars (VTB)/suspended ceiling				
3×13/14	600×600	**22029**	**22114**	☐
4×13/14	600×600	**22026**	**22111**	☐
4×20/24	600×600	**22028**	**22113**	☐
1×25/28	300×1200	**22043**	**22115**	☐
2×25/28	300×1200	**22048**	**22117**	☐
2×50/54	300×1200	**22053**	**22118**	☐
2×32/35	300×1500	**22059**	**22120**	☐
2×45/49	300×1500	**22064**	**22122**	☐
Concealed T-bars (HB)/D-edge, symmetrical mounting ceiling				
4×13/14	600×600	**22161**	**22165**	☐
4×20/24	600×600	**22163**	**22167**	☐

Suffix code	
☐ **-111**	Wieland GST18i3 (3-way). One outlet socket.
☐ **-160**	HF-std. Emergency lighting luminaire.
☐ **-322**	DALI/DSI/switchDIM. Wieland GST18i5 way). One outlet socket.
☐ **-368**	DALI/Phase-pulse control
☐ **-420**	HF-std. Linect (3-way).
☐ **-421**	DALI. Linect (5-way).
☐ **-436**	DALI/DSI/switchDIM

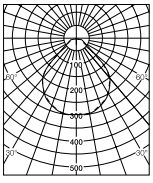
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



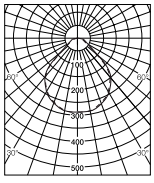
3×13/14 W



4×13/14 W



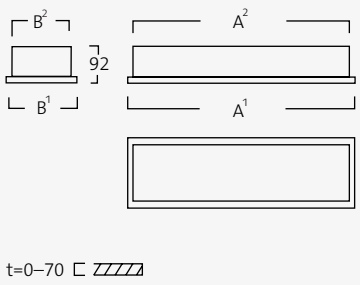
2×25/28 W



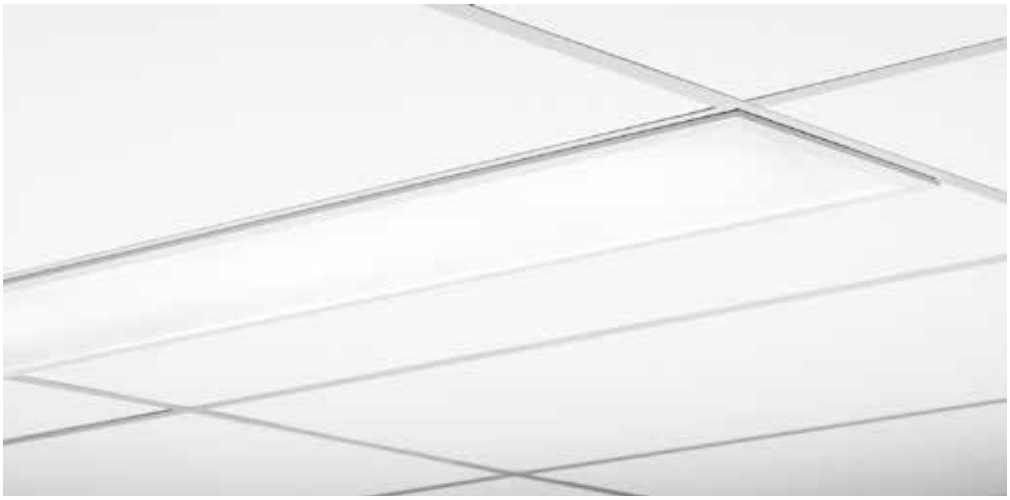
1×25/28 W

Bracket for fixed ceiling.

	W	A^1	A^2	B^1	B^2	A x B
"300 VTB"	1×25/28	1199	1174	299	273	1183×283
	2×25/28	1199	1174	299	273	1183×283
	2×50/54	1199	1173	299	272	1183×283
	2×32/35	1499	1473	299	272	1483×283
	2×45/49	1499	1473	299	272	1483×283
"600 VTB"	3×13/14	599	573	599	572	583×583
	4×13/14	599	573	599	572	583×583
	4×20/24	599	573	599	572	583×583
"600 HB"	4×13/14	598	573	599	546	583×558
	4×20/24	598	573	599	546	583×558



Louvre frame remains attached in the open position.



Luminaire				
FDH	Module	830	840	
Visible T-bars (VTB)/suspended ceiling				
4×13/14	600×600	**22025**	**22110**	☐
4×20/24	600×600	**22027**	**22112**	☐
2×25/28	300×1200	**22105**	**22116**	☐
2×50/54	300×1200	**22106**	**22119**	☐
4×25/28	600×1200	**22148**	**22150**	☐
2×32/35	300×1500	**22107**	**22121**	☐
2×45/49	300×1500	**22108**	**22123**	☐
Concealed T-bars (HB)/D-edge, symmetrical mounting ceiling				
4×13/14	600×600	**22160**	**22164**	☐
4×20/24	600×600	**22162**	**22166**	☐

Suffix code	
☐	**-111** Wieland GST18i3 (3-way). One outlet socket.
☐	**-160** HF-std. Emergency lighting luminaire.
☐	**-322** DALI/DSI/switchDIM. Wieland GST18i5 way). One outlet socket.
☐	**-368** DALI/Phase-pulse control
☐	**-420** HF-std. Linect (3-way).
☐	**-421** DALI. Linect (5-way).
☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

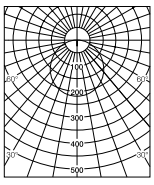
Installation
Luminaire for recessed mounting in ventilated or unventilated suspended ceilings. Mounting in ceilings with visible T-bars (25 or 15 mm), fixed ceilings and HB-concealed T-bars. Luminaires for concealed T-bars are supplied with fixing brackets, for fixed ceilings the brackets need to be ordered separately, see Accessories. Light sources are fitted in the luminaire. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Supplied with 2.5 m mains cable and earthed plug, 3-way snap-in terminal block, 2.5 mm². Luminaires for dimming, suffix -368 and -436, are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Can also be equipped with quick connection system Linect.

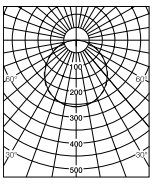
Design
Luminaire body and frame of white enamelled sheet steel (RAL 9016).

Louvre
Opal – disc in frosted acrylic (PMMA). Frame with louvres remains attached when opened.

Miscellaneous
For accessories and connection cables to Wieland, see the Technical Information chapter.



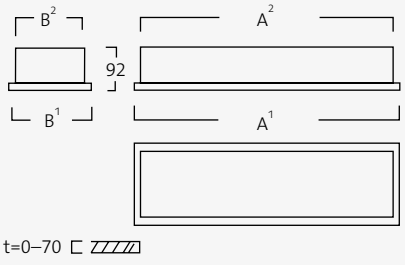
4×13/14 W



2×25/28 W

Bracket for fixed ceiling.

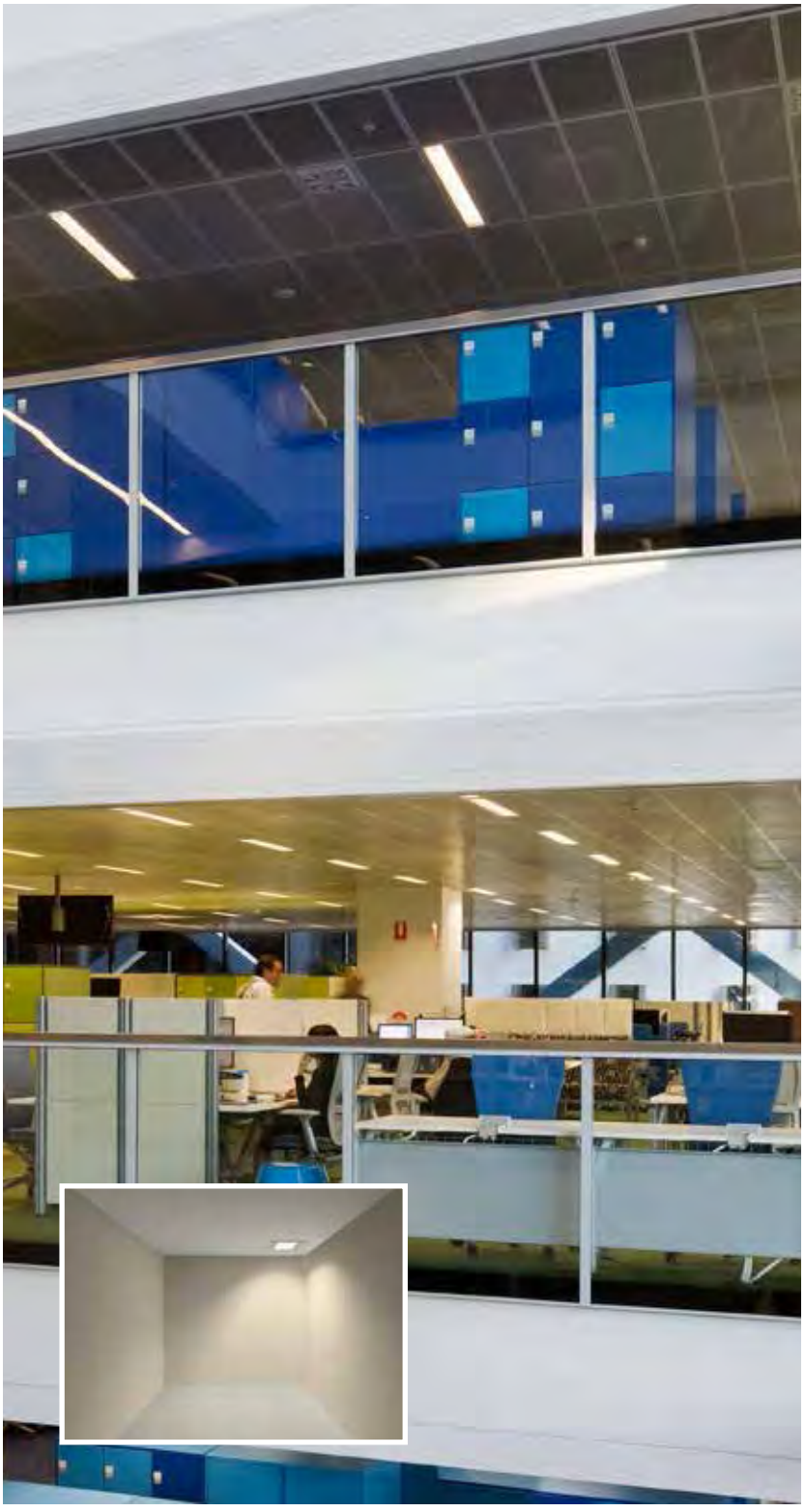
	W	A^1	A^2	B^1	B^2	A×B
"300 VTB"	2×25/28	1199	1173	299	272	1183×283
	2×50/54	1199	1173	299	272	1183×283
	2×32/35	1499	1473	299	272	1483×283
	2×45/49	1499	1473	299	272	1483×283
"600 VTB"	4×13/14	599	573	599	572	583×583
	4×20/24	599	573	599	572	583×583
	4×25/28	1199	1174	599	573	1183×583
"600 HB"	4×13/14	598	573	599	546	583×558
	4×20/24	598	573	599	546	583×558



Double cable entries centre and end.

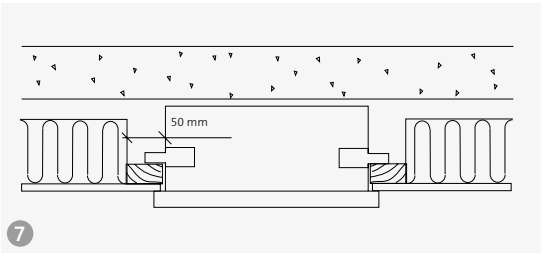
MultiFive Basic

MultiFive Basic is a series of luminaires for recessed mounting. The range is the result of an ambition to combine function, efficiency and good design in a high-quality unit.



The name MultiFive Basic derives from the various possibilities its design presents. Four modules facilitate the creation of a variety of settings; fulfilling high demands requirements in numerous environments.

MultiFive Basic works equally well as a separate luminaire or together in a continuous mounting. The continuous mounting creates a visual perception of a well-composed band of light.



MultiFive Basic
1. Two parallel versions are found throughout the entire range. Single mounting or continuous mounting. Ingeniously designed end pieces on the body and the louvre provides a visual perception of a continuous band of light.

2. In certain versions it has been necessary to fill out the width of the luminaire to match ceiling modules. Such surfaces are decorated using a pattern that, with regard to frequency, is equivalent to the cross blades or cross reflectors of the louvre.

3. For mounting from below, e.g. in plaster-board ceiling, the depth of the recess will be 62 mm only. Suspension fittings are available as accessories. The fittings are installed from the inside of the luminaire and the fittings' "arm" is adjusted via a vertically positioned screw.

4. The T5 technology allows luminaires to be made slimmer than previously. The depth is only 70 mm for mounting in ceilings with visible T-bars. Ensure, however, that there is sufficient space for fitting.

5. In some situations rapid installation and flexibility are prioritised during the actual period of life. MultiFive can be equipped with the Wieland quick connection system GST18.

MultiFive D-edge
6. MultiFive D-edge, Beta in 3-tube execution. For mounting in this type of ceiling the depth is 70 mm only.

7. The measurements stated in the diagrams must be taken into consideration with surrounding building elements.

MultiFive Basic
Beta

Luminaire				
FDH	Module	kg		
Single installation, symmetrical				
1×13/14	150×600	1.6	**25480**	● ▲
2×13/14	200×600	2.0	**25481**	●
2×13/14	300×600	2.9	**25482**	□ ● ▲
3×13/14	600×600	5.3	**25483**	□ ● ▲ ●
4×13/14	600×600	5.4	**25484**	□ ● ▲ ●
1×25/28	150×1200	2.9	**25485**	● ▲ ●
2×25/28	200×1200	3.6	**25486**	●
2×25/28	300×1200	5.3	**25487**	□ ● ▲ ●
1×32/35	150×1500	3.6	**25488**	● ▲
2×32/35	200×1500	4.5	**25489**	●
2×32/35	300×1500	6.7	**25490**	□ ● ▲
1×45/49	150×1500	7.6	**25491**	● ▲
2×45/49	200×1500	4.5	**25492**	●
2×45/49	300×1500	6.7	**25493**	□ ● ▲
Single installation, asymmetrical				
1×13/14	150×600	1.6	**25730**	●
1×25/28	150×1200	2.9	**25731**	●
1×32/35	150×1500	3.6	**25732**	●
1×45/49	150×1500	7.6	**25733**	●

Suffix code	
□	**-420** HF-std. Linect (3-way).
□	**-421** DALI. Linect (5-way).
●	**-111** Wieland GST18i3 (3-way). One outlet socket.
●	**-322** DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
●	**-368** DALI/Phase-pulse control
●	**-436** DALI/DSI/switchDIM
▲	**-309** e-Sense smartSWITCH absence detector
▲	**-382** e-Sense ActiLume master luminaire
●	**-427** e-Sense Connect
●	**-428** e-Sense Connect with sensor

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Fixing brackets/4 pcs	**91277**
Control unit to e-Sense Connect	**86300**
Control unit to e-Sense Connect	**86301**
Connection cable between control unit and controller to e-Sense Connect	**86303**

Installation
Luminaire for recessed mounting in suspended ceiling. Also for ventilated areas. Installed in suspended ceilings with visible T-bars (25 or 15 mm) or fixed suspended ceilings. Supplement with fixing brackets for plasterboard ceiling types. Single installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Supplied with 2.5 m mains cable and earthed plug. 3-way snap-in terminal block 2,5 mm². Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Wieland connection system available on special order. Can also be equipped with quick connection system Linect. For accessories and connection cables to Wieland, please refer to the Technical Information chapter.

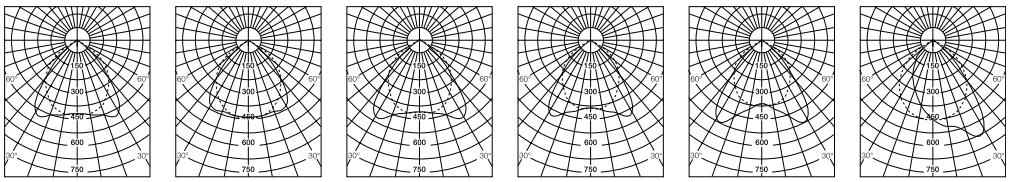
Design
Body of white enamelled sheet steel (RAL 9016). Distinctive, decorative all-round frame. Openings of approximately 40 cm² for air-handling.

Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
Top reflector in the luminaire body, one for each light source.

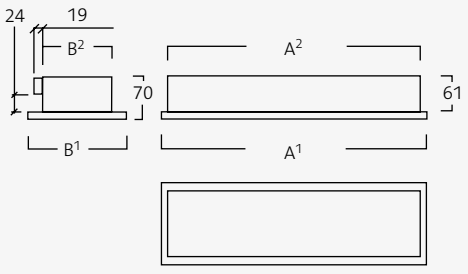
Accessories
Fixing brackets for mounting in fixed ceilings.

Miscellaneous
3×13/14 W version comes with one ballast as standard.



1-lamp, modular width 150 | 2-lamp, modular width 200 | 2-lamp, modular width 300 | 3-lamp, modular width 600 | 4-lamp, modular width 600 | 1-lamp, modular width 150, asymmetrical

	W	A^1	A^2	B^1	B^2	A × B
"150"	13/14	597	575	147	107	580×125
	25/28	1197	1175	147	107	1180×125
	32/35/45/49	1497	1475	147	107	1480×125
"200"	13/14	597	575	197	157	580×175
	25/28	1197	1175	197	157	1180×175
	32/35/45/49	1497	1475	197	157	1480×175
"300"	13/14	597	575	297	257	585×275
	25/28	1197	1175	297	257	1185×275
	32/35/45/49	1497	1475	297	257	1485×275
"600"	13/14	597	575	597	557	585×580



MultiFive Basic Beta in 4-lamp execution. Louvres consists of two 1-lamp louvres and one 2-lamp louvre for the lamps in the middle.

MultiFive Basic
Beta Continuous

Luminaire

FDH	Module	kg		
1×13/14	150×600	1.6	**25540**	☐
1×25/28	150×1200	2.9	**25543**	☐
1×32/35	150×1500	3.6	**25546**	☐
1×45/49	150×1500	3.6	**25549**	☐

Suffix code

☐ **-111**	Wieland GST18i3 (3-way). One outlet socket.
☐ **-322**	DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐ **-368**	DALI/Phase-pulse control
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Fixing brackets/4 pcs.	**91277**
Basic continuous end piece 150/pairs	**91750**

Installation
Luminaires for recessed mounting in suspended ceilings. Also in ventilated ceilings. Mounting in ceilings with visible T-bars (25 or 15 mm) or fixed suspended ceilings. To be complemented with fixing brackets for fixed ceilings. Continuous mounting. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

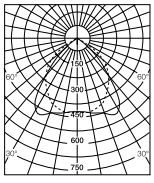
Connection
Supplied with 2.5 m mains cable and continental plug. 3-way snap-in terminal block. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Wieland connection system available on special order. For accessories and connection cables to Wieland, please refer to the Technical Information chapter.

Design
Body of white enamelled sheet steel (RAL 9016). Distinctive, decorative all-round frame. Openings of approximately 40 cm² for air-handling.

Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
Top reflector in the luminaire body, one for each light source.

Accessories
Fixing brackets for mounting in fixed ceilings.

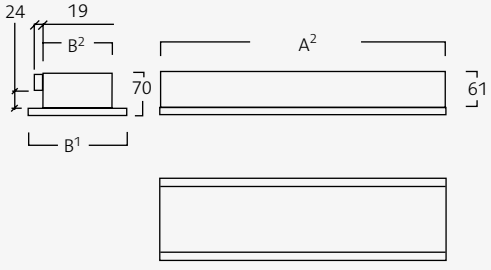


1-lamp

	W	A^2	B^1	B^2	A × B
"150"	13/14	572	147	107	580×125
	25/28	1172	147	107	1180×125
	32/35/45/49	1472	147	107	1480×125

$A^2+A^2+A^2$ +8 mm

$A^2+A^2+A^2$ +21 mm



MultiFive Basic
Beta D-Edge

Luminaire				
FDH	Module	kg		
3×13/14	600×600	5.4	**20917**	☐
4×13/14	600×600	5.5	**20918**	☐

Suffix code	
☐	**-111** Wieland GST18i3 (3-way). One outlet socket.
☐	**-309** e-Sense smartSWITCH absence detector
☐	**-322** DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐	**-368** DALI/Phase-pulse control
☐	**-382** e-Sense ActiLume master luminaire
☐	**-420** HF-std. Linect (3-way).
☐	**-421** DALI. Linect (5-way).
☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Luminaires for recessed mounting in suspended ceilings with hidden bars. Also in ventilated ceilings. Fixing brackets are included. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Supplied with 2.5 m mains cable and continental plug. 3-way snap-in terminal block. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Wieland connection system available on special order. Can also be equipped with quick connection system Linect. For accessories and connection cables to Wieland, please refer to the Technical Information chapter.

Design
Body of white enamelled sheet steel (RAL 9016). Distinctive, decorative all-round frame. Openings of approximately 40 cm² for air-handling.

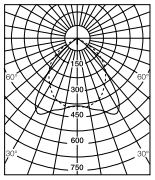
Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
Top reflector in the luminaire body, one for each light source.

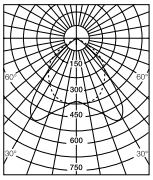
Dimming
Most models can also be equipped with other ballasts for dimming.

Accessories
Fixing brackets for mounting in fixed ceilings.

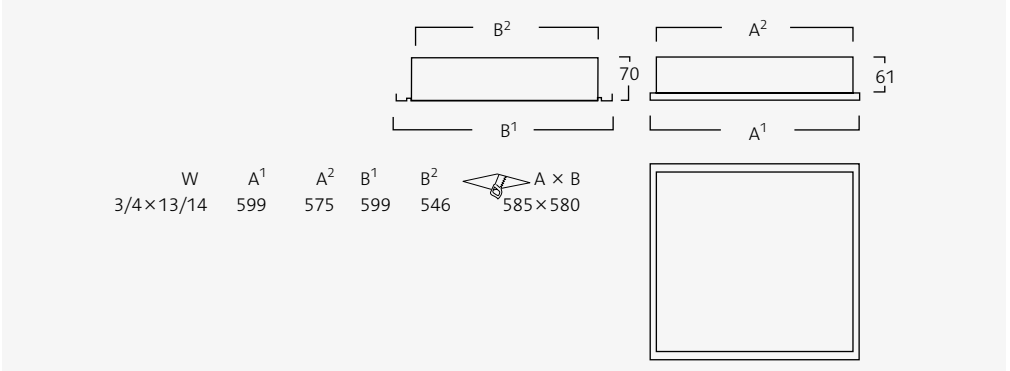
Miscellaneous
For accessories and connection cables to Wieland, see the Technical Information chapter. 3×13/14 W version comes with one ballast as standard.



3-lamp



4-lamp



MultiFive Basic

MultiFive Medical

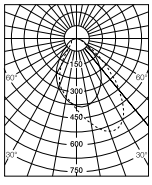
MultiFive Medical is a brand new way of lighting wards, based on a combination of T5 and LED light sources.

Two luminaires are placed in parallel to the bed with the T5 creating an asymmetric examination light over the bed. The angled LED serves as a reading light for the patient.

Luminaire

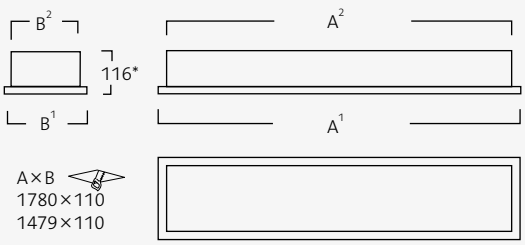
FDH		Length	
1×35/49/80 + 500 lm LED-spot	Left	1800	**23131**
1×35/49/80 + 500 lm LED-spot	Right	1800	**23133**
1×35/49/80		1500	**23135-368**

Installation
Luminaire for recessed mounting in suspended ceilings with suspension fixings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Connection
Connection via 5-way terminal block on the top of the luminaire.
Design
Luminaire body and frame in white enamelled sheet steel.
Louvre
Transparent acrylic (PMMA) and cross-blade louvre.
Reflector
Metallised aluminium with excellent reflection characteristics (> 92 %). Asymmetrical light distribution. LED spotlight 500 lm, 24° distribution angle, 3000 K.
Dimming
DALI as standard.
Miscellaneous
The luminaires are supplied with a multi-ballast which permits the use of lamps with different outputs, but of the same length, within the same fitting.



1×49

The suspension fixings are assembled before the luminaire is raised to the ceiling. When the screw is tightened from below, the suspension fixing swings out and locks the luminaire.



	A^1	A^2	B^1	B^2	A×B
FDH + LED	1794	1777	126	107	1780×110
FDH	1487	1471	126	107	1479×110

* excl. screws for suspension fitting

The terminal block on the top of the luminaire is equipped with touch guard.

Indigo LED

Indigo LED unites LED energy efficiency with good lighting comfort. The pure, simple design makes a clear statement and the combination of direct and indirect light creates comfortable and glare-free working environments with a high proportion of ambient lighting on the walls.

The bevelled transition between the secondary reflector and the ceiling gives Indigo LED a soft visual impression and the entire luminaire expresses uniformity and glare-free lighting, completely without disturbing luminance.

The indirect light is distributed via the secondary reflector and the direct light passes through opal diffusors, providing a lighting solution that is comprehended as balanced and comfortable.

Luminaire

System, W	Module	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg		
Visible T-bars (VTB)							
34	600×600	3000	2701	79	4.9	**24654**	☐
34	600×600	4000	2701	80	4.9	**24655**	☐
54	600×600	3000	3993	74	4.9	**24650**	☐
54	600×600	4000	4076	75	4.9	**24651**	☐
Concealed T-bars (HB)/D-edge, symmetrical attachment of ceiling boards							
34	600×600	3000	2701	79	4.9	**24656**	☐
34	600×600	4000	2701	80	4.9	**24657**	☐
54	600×600	3000	3993	74	4.9	**24652**	☐
54	600×600	4000	4076	75	4.9	**24653**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

- ☐ **-03** Connection cable with plug, L=2,5 m
- ☐ **-111** Wieland GST18i3 (3-way). One outlet socket.
- ☐ **-340** Wago Winsta (3-way). One outlet socket.
- ☐ **-402** DALI/Phase-pulse control
- ☐ **-454** DALI. Wago Winsta (5-way). One outlet socket.
- ☐ **-456** DALI. Wieland GST18i5 (5-way). One outlet socket.

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Fixing brackets for ceiling boards/4 pcs.	**91272**

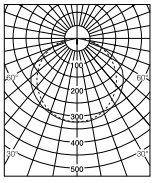
Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs:
VTB – for suspended ceilings with visible T-bars (25 or 15 mm).
HB – for suspended ceilings with concealed T-bars and symmetrical ceiling tiles. Four suspension fittings included for HB ceilings. Supplement with fixing brackets for plasterboard ceiling types.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connected to 2.5 mm² 3-way terminal block with the possibility of through-wiring. Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Can also be supplied with mains cable and earthed plug or chassis mounted snap-in connector.

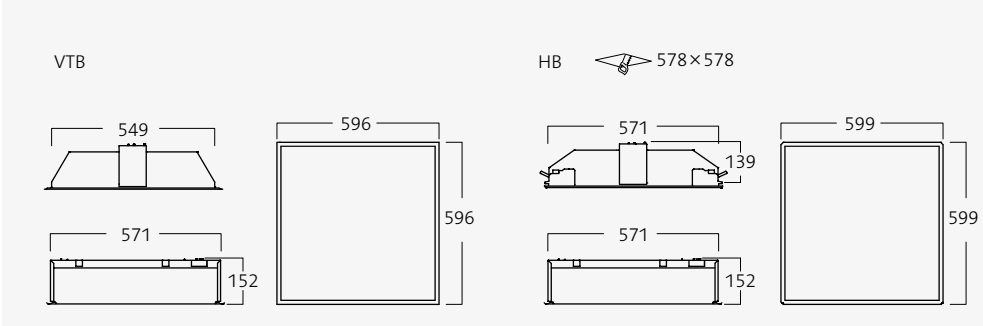
Designed by
Luminaire body of white enamelled (RAL 9016) sheet steel.

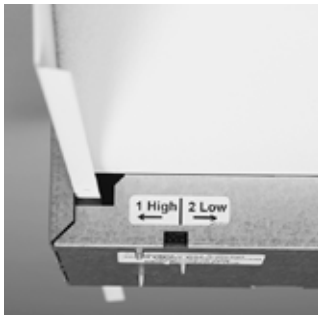
Louvre
Diffuser in opal acrylic.

Miscellaneous
The luminaire has a switch for high/low flow easily accessible at the rear of the luminaire. Always delivered set at high flow.



All versions





The luminaire has a switch for high/low flow easily accessible at the rear of the luminaire.

Indigo Combo

Designed by KHR Arkitekter and Epsilon

The uncomplicated and clean recessed design, combined with high efficiency and technical performance, allows Indigo Combo to create comfortable environments. Indigo Combo is available in square or rectangular designs and in two sizes with one or two louvre cells and up to four light sources.

The active Beta louvre can be combined with an indirect light distribution in the luminaire's secondary reflector. The Delta variation embraces the benefits of micro-prism technology to offer a wider and slightly softer light distribution.

In addition, the Beta luminaire's lined diffuser can be finished in several different colours, offering a decorative indirect light, for exciting and distinctive environments.

Indigo Combo Beta
1-cell

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 or 15 mm.
HB – for suspended ceiling with concealed T-bars. Ceiling type plasterboard, suspended ceilings with edge framing type C or D and for metal cassette suspended ceilings. Four fixing brackets are supplied for luminaire type HB.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
The luminaire is equipped with a 2.4 m mains cable and earthed continental plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Can also be equipped with quick connection system Linect.

Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish.

Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

Reflector
White enamelled sheet steel.

Dimming
Most models can also be equipped with other ballasts for dimming.

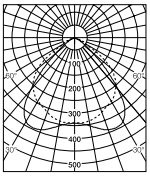
Miscellaneous
Indigo Combo is designed to conform to EN 12 464-1 in its most relevant outputs. Limited average luminance is documented as L_L (Luminaire Luminance).

Luminaire				
FDH	Module	kg		
Visible T-bars (VTB)				
1×25/28	300×1200	6.3	**24855**	□ ●
1×25/28	600×1200	10.6	**24871**	□ ● ▲
1×50/54	300×1200	6.3	**24857**	□ ●
1×50/54	600×1200	10.6	**24873**	□ ● ▲
2×13/14	600×600	6.5	**24862**	□ ● ▲
2×20/24	600×600	6.5	**24864**	□ ▲
2×25/28	300×1200	6.4	**24856**	□ ●
2×25/28	600×1200	10.7	**24872**	□ ● ▲
Concealed T-bars (HB)/D-edge				
1×25/28	300×1200	6.3	**24885**	□ ●
1×25/28	600×1200	10.6	**24901**	□ ● ▲
1×50/54	300×1200	6.3	**24887**	□ ●
1×50/54	600×1200	10.6	**24903**	□ ● ▲
2×13/14	600×600	6.5	**24892**	□ ● ▲
2×20/24	600×600	6.5	**24894**	□ ▲
2×25/28	300×1200	6.4	**24886**	□ ●
2×25/28	600×1200	10.7	**24902**	□ ● ▲

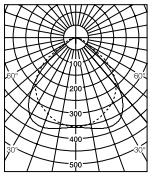
Suffix code	
□	**-368** DALI/Phase-pulse control
□	**-436** DALI/DSI/switchDIM
●	**-309** e-Sense smartSWITCH absence detector
●	**-382** e-Sense ActiLume master luminaire
▲	**-420** HF-std. Linect (3-way).
▲	**-421** DALI. Linect (5-way).

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

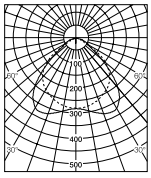
Accessories	600	1200
Lined diffuser. L_L <1500 cd/m²	**91645**	**91646**
Perforated diffuser. L_L <1000 cd/m²	**91590**	**91591**
Colour filter – green	**91394**	**91395**
Colour filter – yellow	**91396**	**91397**
Colour filter – red	**91398**	**91399**
Colour filter – blue	**91392**	**91393**



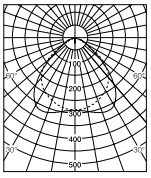
1-lamp, 300×1200
with lined diffuser



2-lamp, 300×1200
with lined diffuser

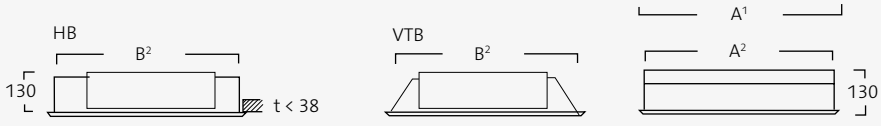


2-lamp, 600×600
with lined diffuser



2-lamp, 600×1200
with lined diffuser

	W	A^1	A^2	B^1	B^2	A×B
VTB						
300×1200	1/2×25/28/50/54	1196	1175	296	265	
600×600	2×13/14/20/24	596	575	596	550	
600×1200	1/2×25/28/50/54	1196	1175	596	550	
HB						
300×1200	1/2×25/28/50/54	1200	1175	300	260	280×1180
600×600	2×13/14/20/24	600	575	600	550	580×580
600×1200	1/2×25/28/50/54	1200	1175	600	550	580×1180



Indigo Combo Beta
2-cell

Luminaire				
FDH	Module	kg		
Visible T-bars (VTB)				
2×1×25/28	600×1200	11.0	**24875**	■ ●
2×1×50/54	600×1200	11.0	**24877**	■
2×2×13/14	600×600	7.2	**24866**	■ ●
2×2×20/24	600×600	7.2	**24868**	■
Concealed T-bars (HB)/D-edge				
2×1×25/28	600×1200	11.0	**24905**	■ ●
2×1×50/54	600×1200	11.0	**24907**	■
2×2×13/14	600×600	7.2	**24896**	■ ●
2×2×20/24	600×600	7.2	**24898**	■

Suffix code	
■	**-368** DALI/Phase-pulse control
■	**-420** HF-std. Linect (3-way).
■	**-421** DALI. Linect (5-way).
■	**-436** DALI/DSI/switchDIM
●	**-309** e-Sense smartSWITCH absence detector
●	**-382** e-Sense ActiLume master luminaire

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	600	1200
Lined diffuser. L_L <1500 cd/m²	**91883**	**91884**
Perforated diffuser. L_L <1000 cd/m²	**91671**	**91672**
Colour filter – green	**91394**	**91395**
Colour filter – yellow	**91396**	**91397**
Colour filter – red	**91398**	**91399**
Colour filter – blue	**91392**	**91393**

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 or 15 mm.
HB – for suspended ceiling with concealed T-bars. Ceiling type plasterboard, suspended ceilings with edge framing type C or D and for metal cassette suspended ceilings. Four fixing brackets are supplied for luminaire type HB.

The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
The luminaire is equipped with a 2.4 m mains cable and earthed plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Can also be equipped with quick connection system Linect.

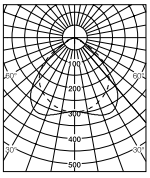
Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish.

Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

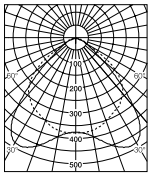
Reflector
White enamelled sheet steel.

Dimming
Most models can also be equipped with other ballasts for dimming.

Miscellaneous
Indigo Combo is designed to conform to EN 12 464-1 in the most relevant outputs. Limited average luminance is documented as L_L (Luminaire Luminance).



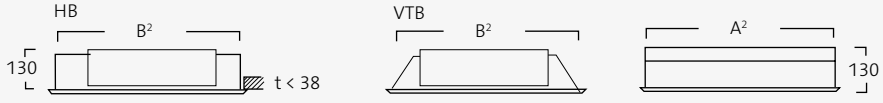
2-lamp, 600×600
with lined diffuser



2-lamp, 600×1200
with lined diffuser

VTB	W	A^1	A^2	B^1	B^2
600×600	4×13/14/20/24	596	575	596	550
600×1200	2×25/28/50/54	1196	1175	596	550

HB	W	A^1	A^2	B^1	B^2	A×B
600×600	4×13/14/20/24	600	575	600	550	580×580
600×1200	2×25/28/50/54	1200	1175	600	550	580×1180



The lined diffuser, placed on the top of the side profiles, broadens the light distribution and acts as a dust cover.

Indigo Combo Delta

1-cell

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 or 15 mm.
HB – for suspended ceiling with concealed T-bars. Ceiling type plasterboard, suspended ceilings with edge framing type C or D and for metal tile suspended ceilings. Four fixing brackets are supplied for luminaire type HB.

The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
The luminaire is equipped with a 2.4 m mains cable and earthed plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Can also be equipped with quick connection system Linect.

Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish.

Louvre
Delta – micro-prism louvre in acrylic TPb (PMMA). Frame with louvres remains attached when opened.

Reflector
White enamelled sheet steel.

Dimming
Most models can also be equipped with other ballasts for dimming.

Miscellaneous
Indigo Combo is designed to conform to EN 12 464-1 in its most relevant outputs. Limited average luminance is documented as L_L (Luminaire Luminance).

Luminaire

FDH	Module	kg		
Visible T-bars (VTB)				
1×25/28	300×1200	7.1	**24910**	■
1×50/54	300×1200	7.1	**24912**	■
2×13/14	600×600	7.3	**24913**	■ ●
2×20/24	600×600	7.3	**24914**	■ ●
2×25/28	300×1200	7.2	**24911**	■
Concealed T-bars (HB)/D-edge				
1×25/28	300×1200	7.1	**24915**	■
1×50/54	300×1200	7.1	**24917**	■
2×13/14	600×600	7.3	**24918**	■ ●
2×20/24	600×600	7.3	**24919**	■ ●
2×25/28	300×1200	7.2	**24916**	■

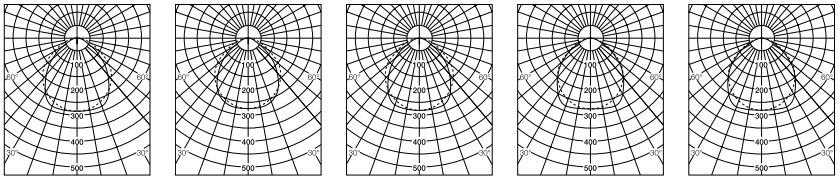
Suffix code

■ **-368**	DALI/Phase-pulse control
■ **-436**	DALI/DSI/switchDIM
● **-420**	HF-std. Linect (3-way).
● **-421**	DALI. Linect (5-way).

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

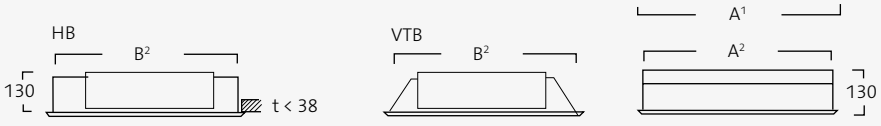
Accessories

	600	1200
Lined diffuser. L_L <1500 cd/m²	**91645**	**91646**
Perforated diffuser. L_L <1000 cd/m²	**91590**	**91591**



1×25/28 W | 2×25/28 W | 1×50/54 W | 2×13/14 W | 2×20/24 W

	W	A^1	A^2	B^1	B^2	A×B
VTB						
300×1200	1/2×25/28/50/54	1196	1175	296	265	
600×600	2×13/14/20/24	596	575	596	550	
HB						
300×1200	1/2×25/28/50/54	1200	1175	300	260	280×1180
600×600	2×13/14/20/24	600	575	600	550	580×580



Visible part of louvre frame in anodised aluminium.

Indigo Combo Delta

2-cell

Luminaire				
FDH	Module	kg		
Visible T-bars (VTB)				
2×2×13/14	600×600	11.8	**24920**	☐
2×2×20/24	600×600	11.8	**24921**	☐
Concealed T-bars (HB)/D-edge				
2×2×13/14	600×600	11.8	**24922**	☐
2×2×20/24	600×600	11.8	**24923**	☐

Suffix code	
☐ **-368**	DALI/Phase-pulse control
☐ **-436**	DALI/DSI/switchDIM
☐ **-420**	HF-std. Linect (3-way).
☐ **-421**	DALI. Linect (5-way).

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	600	1200
Lined diffuser. L_L <1500 cd/m²	**91883**	**91884**
Perforated diffuser. L_L <1000 cd/m²	**91671**	**91672**

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 or 15 mm.
HB – for suspended ceiling with concealed T-bars. Ceiling type plasterboard, suspended ceilings with edge framing type C or D and for metal tile suspended ceilings. Four fixing brackets are supplied for luminaire type HB.

The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
The luminaire is equipped with a 2.4 m mains cable and earthed plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Can also be equipped with quick connection system Linect.

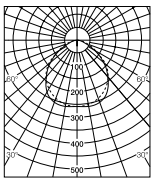
Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish.

Louvre
Delta – micro-prism louvre in acrylic TPb (PMMA). Frame with louvres remains attached when opened.

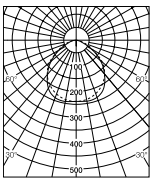
Reflector
White enamelled sheet steel.

Dimming
Most models can also be equipped with other ballasts for dimming.

Miscellaneous
Indigo Combo is designed to conform to EN 12 464-1 in its most relevant outputs. Limited average luminance is documented as L_L (Luminaire Luminance).



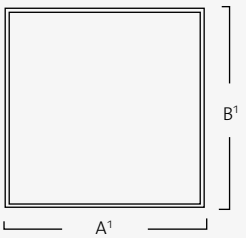
2×2×13/14 W

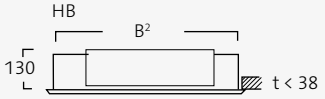


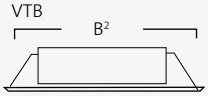
2×2×20/24 W

VTB	W	A^1	A^2	B^1	B^2
600×600	2×2×13/14/20/24	596	575	596	550
HB	**W**	**A^1**	**A^2**	**B^1**	**B^2**
600×600	2×2×13/14/20/24	600	575	600	550

A×B 580×580







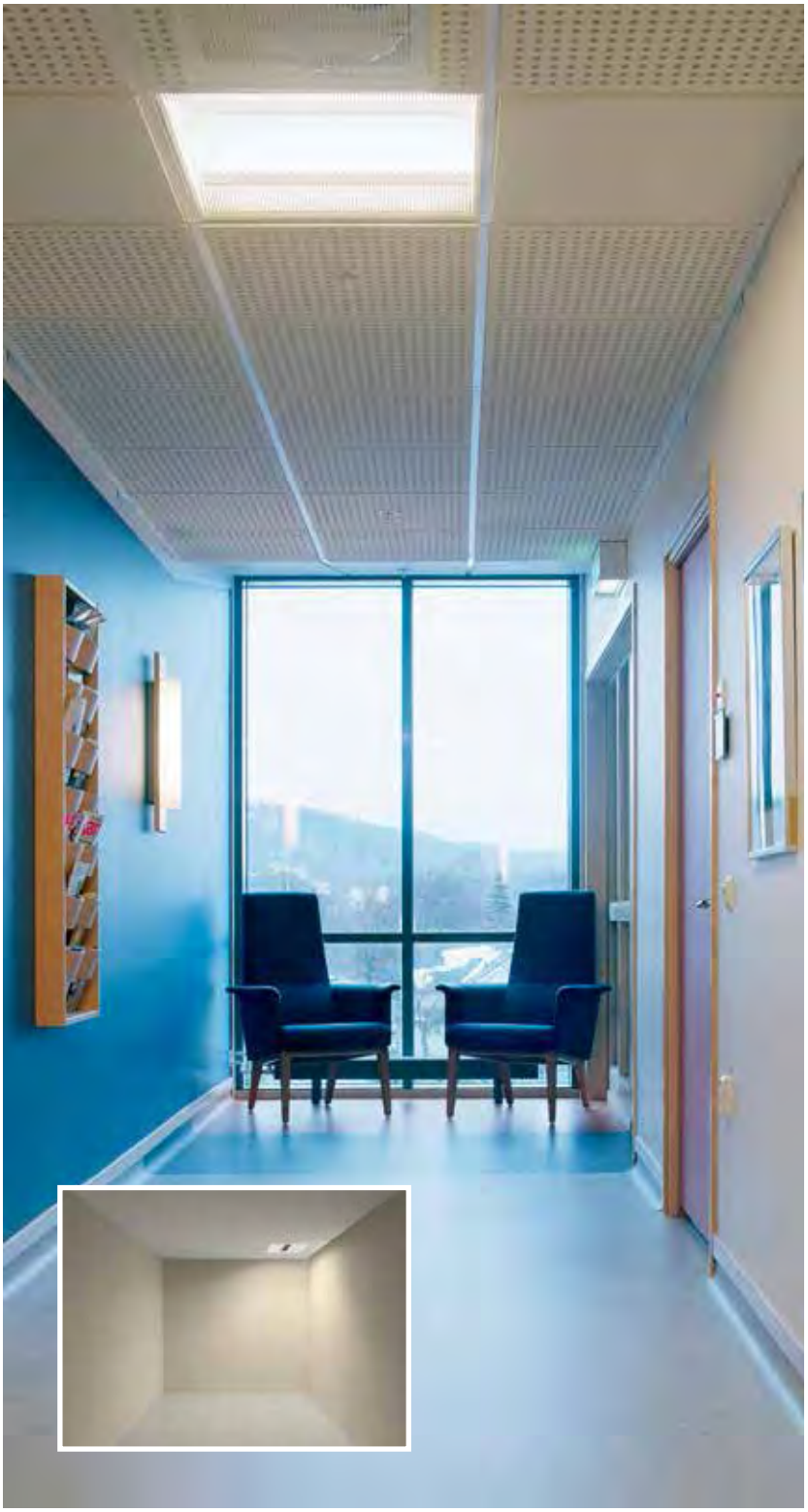
Frame with louvres remains attached when opened.

Indigo Combo

Indigo Ed2

Designed by Epsilon

The clean, simple design of Indigo Ed2 makes a clear statement. Indigo Ed2 is the only luminaire in the Indigo concept with a predominantly indirect light distribution, offering a high degree of visual comfort within the room.



The Indigo Ed2 luminaires are offered in a variety of styles and variations. The indirect light is distributed via the secondary reflector, giving Indigo Ed2 soft light distribution and lighting that is sensed as balanced and comfortable.

New to the family is Indigo Ed2 Hygiene – a luminaire with a full glass cover for easy cleaning.

Indigo Ed2
R1 Perfo

Luminaire				
FDH	Module	kg		
Visible T-bars (VTB)				
2×13/14	600×600	6.8	**24601**	☐
2×20/24	600×600	6.8	**24603**	☐
Concealed T-bars (HB)/D-edge				
2×13/14	600×600	6.8	**24621**	☐
2×20/24	600×600	6.8	**24623**	☐
FSD				
Visible T-bars (VTB)				
1×40	600×600	6.8	**24606**	☐
1×55	600×600	6.8	**24607**	☐
Concealed T-bars (HB)/D-edge				
1×40	600×600	6.8	**24626**	☐
1×55	600×600	6.8	**24627**	☐

Suffix code	
☐	**-368** DALI/Phase-pulse control
☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Light source			
W	*Socket*	*830*	*840*
Fluorescent lamp FDH			
14	*G5*	*81351*	*81347*
24	*G5*	*81372*	*81376*
Compact fluorescent lamp FSD			
40	*2G11*	*81316*	*81472*
55	*2G11*	*81318*	*81473*

For further information on Light source, please refer to the Technical Information chapter.

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 or 15 mm.
HB – for suspended ceiling with concealed T-bars. Ceiling type plasterboard, suspended ceilings with edge framing type C or D and for metal cassette suspended ceilings. Four fixing brackets are supplied with design HB.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

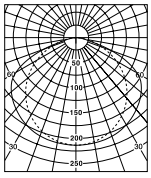
Connection
The luminaire is equipped with a 2.4 m mains cable and earthed plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm².

Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish.

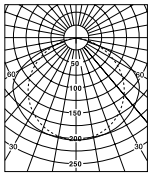
Louvre
Perfo – white enamelled sheet steel (RAL 9016) structured finish with opal plastic diffuser on the inside. Fitted in the body via spring clips at the ends. Earthed.

Reflector
White enamelled sheet steel in shades and finishes as set out above.

Dimming
Most models can also be equipped with other ballasts for dimming.

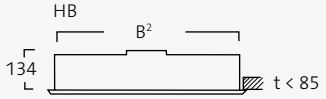


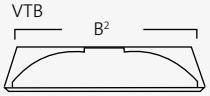
2-lamp, FDH

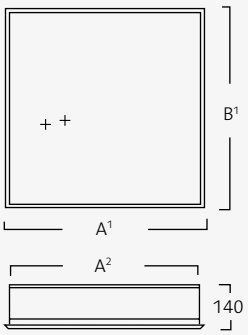


1-lamp, FSD

W	A^1	A^2	B^1	B^2	A×B
VTB					
2×13/14/20/24	596	575	596	560	
1×40/55	596	575	596	560	
HB					
2×13/14/20/24	600	575	600	550	580×580
1×40/55	600	575	600	550	580×580







HB is designed for plasterboard ceilings or other ceilings with concealed support bars. Installation in these ceilings requires side support arms, of which four are supplied with this type of fitting.

VTB means that the luminaire is adapted for visible T-bars, widths 24/25 or 15 mm. The luminaire rests on the bars without fittings.

Indigo Ed2
R1 Slits

Luminaire			
FDH	Module	kg	
Visible T-bars (VTB)			
2×13/14	600×600	6.8	**24641** ☐
2×20/24	600×600	6.8	**24643** ☐
Concealed T-bars (HB)/D-edge			
2×13/14	600×600	6.8	**24661** ☐
2×20/24	600×600	6.8	**24663** ☐
FSD			
Visible T-bars (VTB)			
1×40	600×600	6.8	**24646** ☐
1×55	600×600	6.8	**24647** ☐
Concealed T-bars (HB)/D-edge			
1×40	600×600	6.8	**24666** ☐
1×55	600×600	6.8	**24667** ☐

Suffix code

☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Light source			
W	*Socket*	*830*	*840*
Fluorescent lamp FDH			
14	*G5*	*81351*	*81347*
24	*G5*	*81372*	*81376*
Compact fluorescent lamp FSD			
40	*2G11*	*81316*	*81472*
55	*2G11*	*81318*	*81473*

For further information on Light source, please refer to the Technical Information chapter.

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 or 15 mm.
HB – for suspended ceiling with concealed T-bars. Ceiling type plasterboard, suspended ceilings with edge framing type C or D and for metal cassette suspended ceilings. Four fixing brackets are supplied with design HB.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

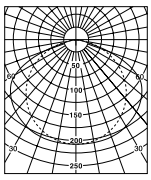
Connection
The luminaire is equipped with a 2.4 m mains cable and earthed plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm².

Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish.

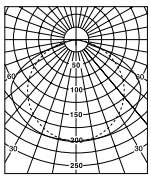
Louvre
Slits – white enamelled sheet steel (RAL 9016) structured finish with opal plastic diffuser on the inside. Fitted in the body via spring clips at the ends. Earthed.

Reflector
White enamelled sheet steel in shades and finishes as set out above.

Dimming
Most models can also be equipped with other ballasts for dimming.

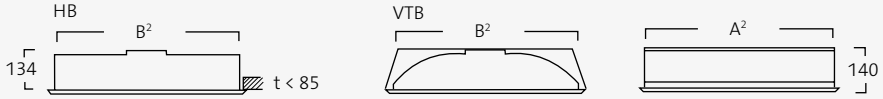


2-lamp, FDH

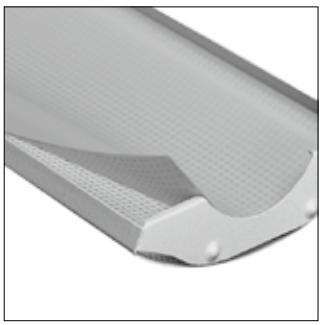


1-lamp, FSD

W	A^1	A^2	B^1	B^2	A×B
VTB					
2×13/14/20/24	596	575	596	560	
1×40/55	596	575	596	560	
HB					
2×13/14/20/24	600	575	600	550	580×580
1×40/55	600	575	600	550	580×580



There are tube supports in opposite ends of the socket for light source FSD.



An opal diffuser is fitted on the inside of the louvre to eliminate direct glare and give balanced luminosity.

Indigo Ed2
R2 Perfo

Luminaire			
FDH	Module	kg	
Visible T-bars (VTB)			
4×13/14	600×600	6.3	**24561** ☐
4×20/24	600×600	6.3	**24563** ☐
Concealed T-bars (HB)/D-edge			
4×13/14	600×600	6.3	**24571** ☐
4×20/24	600×600	6.3	**24573** ☐
FSD			
Visible T-bars (VTB)			
2×40	600×600	6.3	**24565** ☐
2×55	600×600	6.3	**24566** ☐
Concealed T-bars (HB)/D-edge			
2×40	600×600	6.3	**24575** ☐
2×55	600×600	6.3	**24576** ☐

Suffix code
☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Light source			
W	*Socket*	*830*	*840*
	Fluorescent lamp FDH		
14	*G5*	*81351*	*81347*
24	*G5*	*81372*	*81376*
	Compact fluorescent lamp FSD		
40	*2G11*	*81316*	*81472*
55	*2G11*	*81318*	*81473*

For further information on Light source, please refer to the Technical Information chapter.

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 or 15 mm.
HB – for suspended ceiling with concealed T-bars. Ceiling type plasterboard, suspended ceilings with edge framing type C or D and for metal cassette suspended ceilings. Four fixing brackets are supplied with design type HB.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

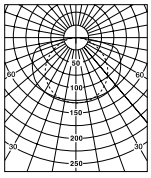
Connection
The luminaire is equipped with a 2.4 m mains cable and earthed plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm².

Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish.

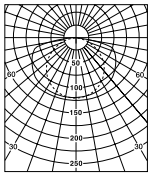
Louvre
Perfo – white enamelled sheet steel (RAL 9016) structured finish with opal plastic diffuser on the inside. Fitted in the body via spring clips at the ends. Earthed.

Reflector
White enamelled sheet steel in shades and finishes as set out above.

Dimming
Most models can also be equipped with other ballasts for dimming.

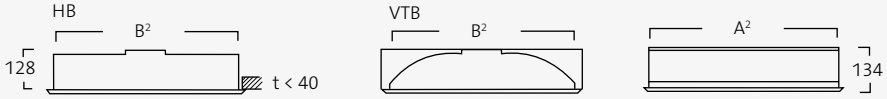


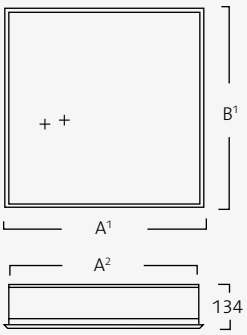
4-lamp, FDH

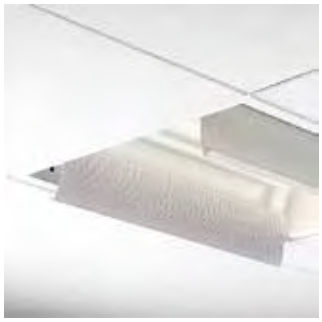


2-lamp, FSD

W	A¹	A²	B¹	B²	A×B
VTB					
4×13/14/20/24	596	575	596	560	
2×40/55	596	575	596	560	
HB					
4×13/14/20/24	600	575	600	550	580×580
2×40/55	600	575	600	550	580×580







The louvre remains attached when opened to facilitate service and maintenance.

Indigo Ed2 fitted in a suspended ceiling with concealed support bars type D-edge.

Indigo Ed2
R2 Slits

Luminaire			
FDH	Module	kg	
Visible T-bars (VTB)			
4×13/14	600×600	6.3	**24581** ☐
4×20/24	600×600	6.3	**24583** ☐
Concealed T-bars (HB)/D-edge			
4×13/14	600×600	6.3	**24591** ☐
4×20/24	600×600	6.3	**24593** ☐
FSD			
Visible T-bars (VTB)			
2×40	600×600	6.3	**24585** ☐
2×55	600×600	6.3	**24586** ☐
Concealed T-bars (HB)/D-edge			
2×40	600×600	6.3	**24595** ☐
2×55	600×600	6.3	**24596** ☐

Suffix code
☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Light source			
W	*Socket*	*830*	*840*
Fluorescent lamp FDH			
14	*G5*	*81351*	*81347*
24	*G5*	*81372*	*81376*
Compact fluorescent lamp FSD			
40	*2G11*	*81316*	*81472*
55	*2G11*	*81318*	*81473*

For further information on Light source, please refer to the Technical Information chapter.

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Two optional designs.
VTB – for suspended ceilings with visible T-bars 25 or 15 mm.
HB – for suspended ceiling with concealed T-bars. Ceiling type plasterboard, suspended ceilings with edge framing type C or D and for metal cassette suspended ceilings. Four fixing brackets are supplied with design type HB.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

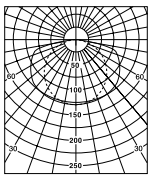
Connection
The luminaire is equipped with a 2.4 m mains cable and earthed plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm².

Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish.

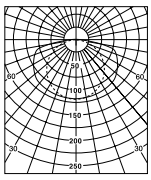
Louvre
Slits – white enamelled sheet steel (RAL 9016) structured finish with opal plastic diffuser on the inside. Fitted in the body via spring clips at the ends.

Reflector
White enamelled sheet steel in shades and finishes as set out above.

Dimming
Most models can also be equipped with other ballasts for dimming.

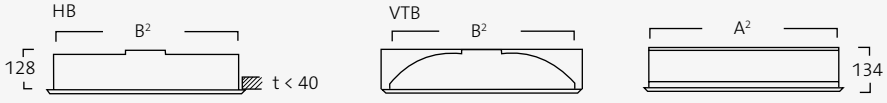


4-lamp, FDH



2-lamp, FSD

W	A¹	A²	B¹	B²	A×B
VTB					
4×13/14/20/24	596	575	596	560	
2×40/55	596	575	596	560	
HB					
4×13/14/20/24	600	575	600	550	580×580
2×40/55	600	575	600	550	580×580



Indigo Ed2 has an all-round bevelled edge. This edge captures a luminance between the ceiling and reflector, and a soft gradient is created.

Installations based on the HB are first installed in a frame like body in the suspended ceiling. The secondary reflector and louvre are then installed in this for light source FSD.

Indigo Ed2
R2 Perfo Hygiene

Installation
Luminaire for recessed installation in ventilated or unventilated suspended ceilings. Installation in suspended ceilings with visible T-bars 25 or 15 mm or fixed suspended ceilings type plasterboard. Four fixing brackets included.
The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
The luminaire is equipped with a 2.4 m mains cable and earthed plug. Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm².

Design
Body and reflector of white enamelled sheet steel (RAL 9016) structured finish. Louvre frame of white enamelled sheet steel fitted with toughened protective glass.

Louvre
Perforated white enamelled sheet steel (RAL 9016) structured finish with opal plastic diffuser on the inside. The louvre remains attached when opened.

Miscellaneous
Light sources to be ordered separately. Most models can also be equipped with other ballasts for dimming. Enclosure class IP 44 beneath suspended ceilings and IP 20 above suspended ceilings.

Luminaire

FDH	Module	kg		
Visible T-bars (VTB)				
4×13/14	600×600	7.3	**24538**	☐
4×20/24	600×600	7.3	**24539**	☐

Suffix code

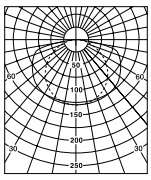
☐ **-368** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function.

Light source

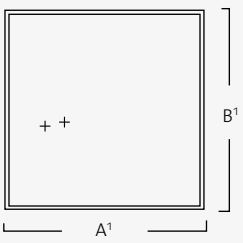
W	*Socket*	*830*	*840*
	Fluorescent lamp FDH		
14	*G5*	*81351*	*81347*
24	*G5*	*81372*	*81376*

For further information on Light source, please refer to the Technical Information chapter.



4-lamp, FDH

W	A^1	A^2	B^1	B^2	A×B
4×13/14/20/24	596	575	596	550	580×580



The louvre frame remains attached when opened.

Recesso

Simplicity is not easy. Frequently it is the standard solutions that have to satisfy the most stringent requirements on economy and flexibility. Recesso has been optimised for recess mounting in suspended ceilings with visible T-bars. A unique design makes ventilation through the luminaire possible without energy intensive light depreciation.

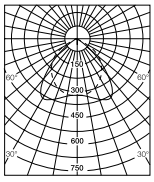
Six different modules allow for flexible planning. During the installation phase Recesso is extremely cost effective. The luminaire is supplied fully fitted with light source and louvre – saving valuable installation time. The protective foil over the louvre opening remains on the luminaire throughout the entire construction period and can be removed during the final cleaning. Simple, small touches that make for an easier life.

Luminaire			
FDH	Module		
1-lamp per cell			
2×13/14	300×600	**25940**	■ ● ▼
3×13/14	600×600	**25944**	■ ● ▼ ●
4×13/14	600×600	**25946**	■ ● ▼ ●
2×20/24	300×600	**25941**	■ ● ▼
3×20/24	300×600	**25945**	■ ● ▼
4×20/24	600×600	**25947**	■ ● ▼
1×25/28	150×1200	**25956**	● ▲ ▼ ●
2×25/28	300×1200	**25950**	■ ● ▼ ●
1×32/35	150×1500	**25955**	● ▲ ▼
2×32/35	300×1500	**25958**	■ ● ▼
1×45/49	150×1500	**25954**	● ▲ ▼ ●
1×50/54	150×1200	**25957**	● ▲ ▼
2×50/54	300×1200	**25951**	■ ● ▼
2-lamp per cell			
2×13/14	300×600	**25942**	● ▲ ▼
4×13/14	600×600	**25948**	■ ▼
2×20/24	300×600	**25943**	● ▲ ▼
4×20/24	600×600	**25949**	■ ▼
2×25/28	300×1200	**25952**	● ▲ ▼
2×50/54	300×1200	**25953**	● ▲ ▼
Asymmetrical, 1-lamp per cell			
1×25/28	150×1200	**25980**	● ▼
1×32/35	150×1500	**25982**	● ▼
1×45/49	150×1200	**25983**	● ▼
1×50/54	150×1500	**25981**	● ▼

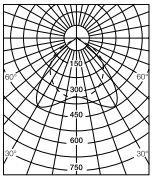
Suffix code	
■	**-330** HF-std. Wieland GST18i3 + T splitter (3-way). One outlet socket.
●	**-322** DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
●	**-436** DALI/DSI/switchDIM
▲	**-198** HF-std. Wieland GST18i3 TT connector (3-way).
▼	**-111** Wieland GST18i3 (3-way). One outlet socket.
▼	**-420** HF-std. Linect (3-way).
▼	**-421** DALI. Linect (5-way).
●	**-427** e-Sense Connect
●	**-428** e-Sense Connect with sensor

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

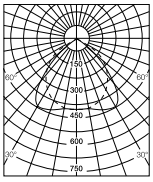
Accessories	
Connection cable to Wieland (GST) quick connection system.	
L=2,0 m with female excl. plug. 3-way. 1-phase.	**91789**
L=2,0 m with female with jordad plug. 3-way. 1-phase.	**91790**
Control unit to e-Sense Connect	**86300**
Remote control to e-Sense Connect	**86301**
Connection cable between control unit and controller to e-Sense Connect	**86303**



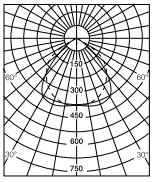
3-lamp, 1-lamp per cell, modular width 600



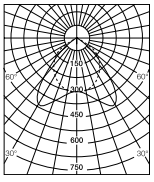
2-lamp, 1-lamp per cell, modular width 300



1-lamp, 1-lamp per cell, modular width 150

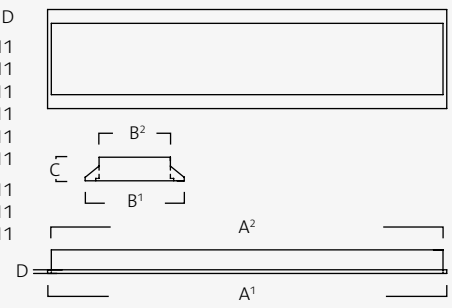


2-lamp, 2-lamp per cell, modular width 300



4-lamp, 1-lamp per cell, modular width 600

	W	A^1	A^2	B^1	B^2	C	D
∩	2×13/14/20/24	597	575	297	214	71	11
	3×13/14/20/24	597	575	597	321	71	11
	4×13/14/20/24	597	575	597	435	71	11
	1×25/28/50/54	1197	1175	147	107	88	11
	2×25/28/50/54	1197	1175	297	214	71	11
	1×32/35/45/49	1497	1475	147	107	88	11
∩∩	2×13/14/20/24	597	575	297	107	88	11
	4×13/14/20/24	597	575	597	214	71	11
	2×25/28/50/54	1197	1175	297	107	71	11



Installation
Luminaire for recessed mounting in suspended ceiling. Only for suspended ceilings with visible T-bars (15 or 25 mm). The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Supplied with 2.5 m mains cable and earthed plug. Snap-in terminal block 3-way 2,5 mm². Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Can also be equipped with the Wieland connection system or quick connection system Linect.

Design
Body of white enamelled sheet steel (RAL 9016). Openings along the entire body, outside the edge of the louvre for air handling.

Louvre
Double parabolic reflector louvre with side and cross-blades of satin matt, metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed. The louvre in its standard design is equipped with protective foil over the light opening. The protective foil is easily removed after final cleaning.

Miscellaneous
The luminaire is equipped with Cold Spot Stabilizer. This stabilises the light flow with flow-through ventilation. This does not have a negative effect in non-ventilated suspended ceilings. Delivered with light source 830. For accessories and connection cables to Wieland, see Technical Information chapter.

Cold spot stabilizer stabilises the light flow with flow-through ventilation.

Recesso is designed for ceilings with visible T-bars, the luminaire is positioned on the bars.

Como

Designed by Tommy Govén / ateljé Lyktan

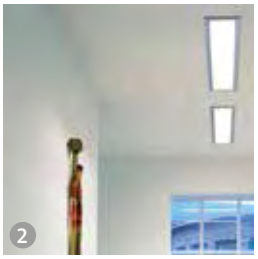
ateljé Lyktan

Combining exceptional technical performance with a refreshing aesthetic appeal, Como is an ideal solution to modern office lighting requirements and other public areas where high visual comfort is of great importance. Como's shallow profile permits greater flexibility for use in restricted ceiling voids.

Como is available in several sizes, with both symmetrical and asymmetrical distributions with grey or white lamell louvre.


1


1


2


3

1. Como is available with two different louvre options, grey lamell for improved mechanical cut-off and white lamell for higher efficiency.
Como's micro-lamell-louvre has been designed with dense cross-blades, 10 mm spacing in the grey louvre and 20 mm spacing in the white. The louvre in combination with the reflector design results in a soft shimmering light that maintains its unique aspect irrespective of the viewing angle.

2. The lamell louvre offers the possibility of an asymmetrical light pattern for a balanced vertical illumination of shelves and walls even if the luminaire is installed close to a wall. The result is a more harmonious light setting.

3. Como with grey lamell louvre conforms to the requirements in EN 12464-1. 1000 cd/m² in the outputs 1×14/28 W, 2×14/28 W and 1×24/54 W, 1500 cd/m² in 2×24/54 W.

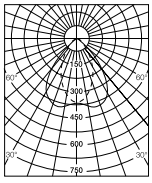
Installation
Luminaire for recessed mounting in ventilated or unventilated ceilings. Two optional designs: plasterboard ceilings or in suspended ceilings with visible T-bars (A- or E-edge).
Connection
Luminaire for HF-std with 2.5 m 3×0.75 mm² mains cable with earthed plug. When dimming, 5-way snap-in terminal block 2.5 mm² with possibility of through-wiring. Two cable entries fitted with blanking grommets ∅ 19 mm on the side of the luminaire (see dimension diagram).
Design
Body of white enamelled sheet steel. Louvre frame in silver grey enamelled aluminium.
Louvre
Lamell – lamell louvre in white or silver grey enamelled sheet steel. The grey lamell louvre has 10 mm blade spacing and the white has 20 mm blade spacing.
Reflector
Reflector in satin matt metallised aluminium.
Dimming
Most models can also be equipped with other ballasts for dimming.
Miscellaneous
The luminaire is supplied with a light source, light colour 830.

Luminaire					
FDH	kg	Length	Width	Fixed ceiling	A/E-edge
Symmetrical, grey lamell louvre					
1×14	3.0	600	200	**206117**	**206006** ☐
2×14	3.2	600	200	**206118**	**206007** ☐
1×24	3.0	600	200	**206120**	**206009** ☐
2×24	3.2	600	200	**206121**	**206010** ☐
Symmetrical, white lamell louvre					
2×14	3.2	600	200	**206318**	**206207** ☐
2×24	3.2	600	200	**206321**	**206210** ☐

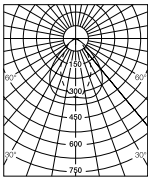
Suffix code

☐ **-436** DALI/DSI/switchDIM

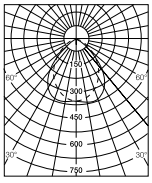
Add suffix code to the end of the luminaire part number to indicate required function.



1×14/24 W, symmetrical, grey lamell louvre

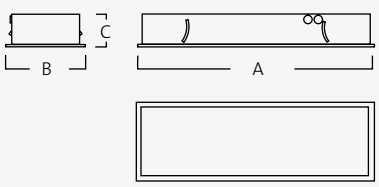


2×14/24 W, symmetrical, grey lamell louvre



2×14/24 W, symmetrical, white lamell louvre

W	A	B	C
1/2×14/24	598	200	82



Como with a grey lamell louvre has 10 mm spacing between blades.

Luminaire

FDH	kg	Length	Width	Fixed ceiling	A/E-edge	
Symmetrical, grey lamell louvre						
1×28	5.3	1200	200	**206100**	**206000**	☐
2×28	5.6	1200	200	**206101**	**206001**	☐
Symmetrical, white lamell louvre						
1×28	5.3	1200	200	**206300**	**206200**	☐
2×28	5.6	1200	200	**206301**	**206201**	☐
1×54	5.3	1200	200	**206303**	**206203**	☐
Asymmetrical, grey lamell louvre						
1×28	5.3	1200	200	**206102**	**206002**	☐
1×54	5.3	1200	200	**206105**	**206005**	☐
Asymmetrical, white lamell louvre						
1×28	5.3	1200	200	**206302**	**206202**	☐
1×54	5.3	1200	200	**206305**	**206205**	☐

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

Installation
Luminaire for recessed mounting in ventilated or unventilated ceilings. Two optional designs: plasterboard ceilings or in suspended ceilings with visible T-bars (A- or E-edge).

Connection
Luminaire for HF-std with 2.5 m 3×0.75 mm² mains cable with earthed plug. When dimming, 5-way snap-in terminal block 2.5 mm² with possibility of through-wiring. Two cable entries fitted with blanking grommets ∅ 19 mm on the side of the luminaire (see dimension diagram).

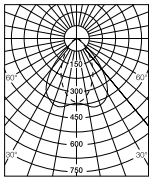
Design
Body of white enamelled sheet steel. Louvre frame in silver grey enamelled aluminium.

Louvre
Lamell – lamell louvre in white or silver grey enamelled sheet steel. The grey lamell louvre has 10 mm blade spacing and the white has 20 mm blade spacing.

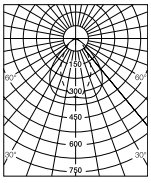
Reflector
Reflector in satin matt metallised aluminium.

Dimming
Most models can also be equipped with other ballasts for dimming.

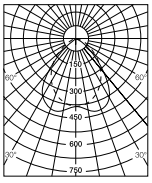
Miscellaneous
The luminaire is supplied with a light source, light colour 830.



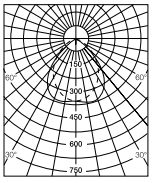
1×28 W, symmetrical, grey lamell louvre



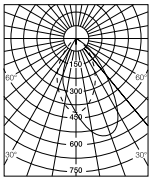
2×28 W, symmetrical, grey lamell louvre



1×28/54 W, symmetrical, white lamell louvre

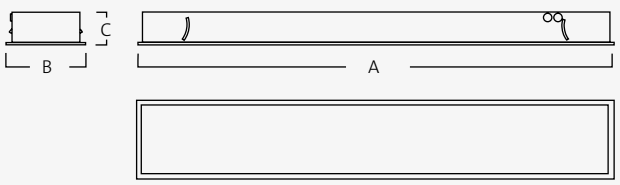


2×28 W, symmetrical, white lamell louvre



1×28/54 W, asymmetrical, grey lamell louvre

W	A	B	C
1/2×28/54	1198	200	82



Como
Wide 1200

Luminaire						
FDH	kg	Length	Width	Fixed ceiling	A/E-edge	
Symmetrical, grey lamell louvre						
2×28	5.9	1200	300	**200620**	**200600**	☐
2×54	5.9	1200	300	**200621**	**200601**	☐
Symmetrical, white lamell louvre						
2×28	5.9	1200	300	**200625**	**200605**	☐
2×54	5.9	1200	300	**200626**	**200606**	☐

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

Accessories

Continuous coupler	**206012**

Installation
Luminaire for recessed mounting in ventilated or unventilated ceilings. Two optional designs: plasterboard ceilings or in suspended ceilings with visible T-bars (A- or E-edge).

Connection
Luminaire for HF-std with 2.5 m 3×0.75 mm² mains cable with earthed plug. When dimming, 5-way snap-in terminal block 2.5 mm² with possibility of through-wiring. Two cable entries fitted with blanking grommets ∅ 19 mm on the side of the luminaire (see dimension diagram).

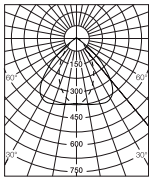
Design
Body of white enamelled sheet steel. Louvre frame in silver grey enamelled aluminium.

Louvre
Lamell – lamell louvre in white or silver grey enamelled sheet steel. The grey lamell louvre has 10 mm blade spacing and the white has 20 mm blade spacing.

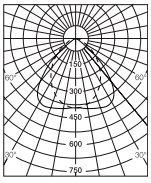
Reflector
Reflector in satin matt metallised aluminium.

Dimming
Most models can also be equipped with other ballasts for dimming.

Miscellaneous
The luminaire is supplied with a light source, light colour 830.

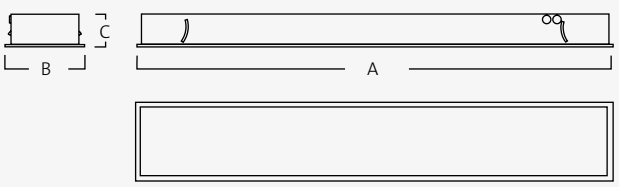


2×28/54 W,
grey lamell louvre



2×28/54 W,
white lamell louvre

W	A	B	C
2×28/54	1198	300	82



Como
Wide 600

Installation
Luminaire for recessed mounting in ventilated or unventilated ceilings. Two optional designs: plasterboard ceilings or in suspended ceilings with visible T-bars (A- or E-edge).

Connection
Luminaire for HF-std with 2.5 m 3×0.75 mm² mains cable with earthed plug. When dimming, 5-way snap-in terminal block 2.5 mm² with possibility of through-wiring. Two cable entries fitted with blanking grommets ∅ 19 mm on the side of the luminaire (see dimension diagram).

Design
Body of white enamelled sheet steel. Louvre frame in silver grey enamelled aluminium.

Louvre
Lamell – lamell louvre in white or silver grey enamelled sheet steel. The grey lamell louvre has 10 mm blade spacing and the white has 20 mm blade spacing.

Reflector
Reflector in satin matt metallised aluminium.

Dimming
Most models can also be equipped with other ballasts for dimming.

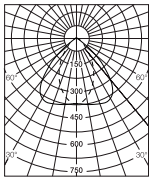
Miscellaneous
The luminaire is supplied with a light source, light colour 830.

Luminaire						
FDH	kg	Length	Width	Fixed ceiling	A/E-edge	
Symmetrical, grey lamell louvre						
2×14	3.4	600	300	**200660**	**200640**	☐
2×24	3.4	600	300	**200661**	**200641**	☐
Symmetrical, white lamell louvre						
2×14	3.4	600	300	**200665**	**200645**	☐
2×24	3.4	600	300	**200666**	**200646**	☐

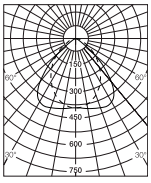
Suffix code	
☐ **-436** DALI/DSI/switchDIM	

Add suffix code to the end of the luminaire part number to indicate required function.

Accessories	
Continuous coupler	**206012**

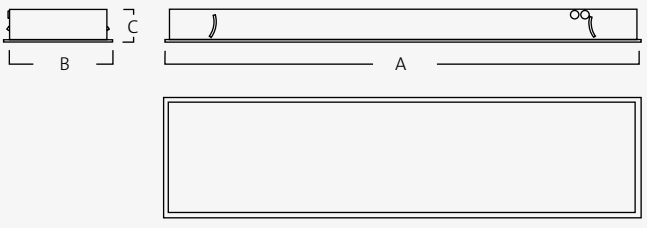


2×14/24 W,
grey lamell louvre



2×14/24 W,
white lamell louvre

W	A	B	C
2×14/24	598	300	82



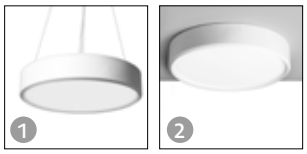
Pozzo

Designed by Örjan Nilsson, Yellon

Pozzo is a little piece of the sky, bringing the feeling of daylight into spaces where there may be limited access to the real thing.

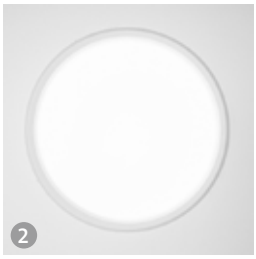
Its design was inspired by natural light and with a number of different sizes available, there is the scope to create a variety of expressions. The diffuser can be either slightly recessed, creating a lightwell effect, or flush with the ceiling, for a large, round beam effect that amplifies the perceived brightness beyond what the lux meter shows.

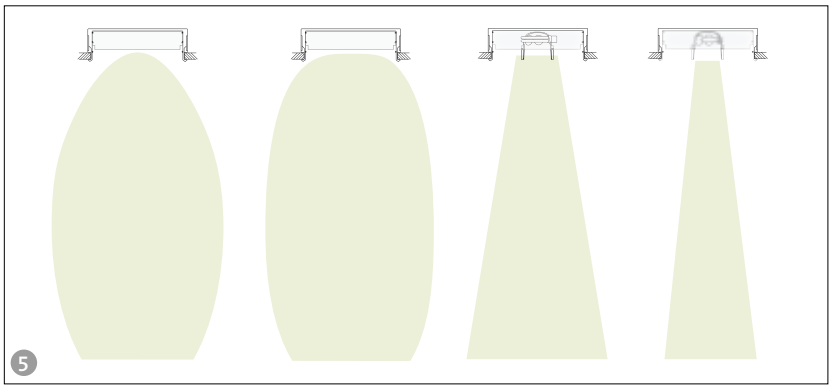
Pozzo can be equipped with either a delta or opal louvre. The microprismatic delta version has an unrivalled even spread across the surface, fulfilling the standard on 3000 cd/m² for working in front of computer screens. At last there is an aesthetic, round recessed lighting solution, compatible with the requirements for workspaces.

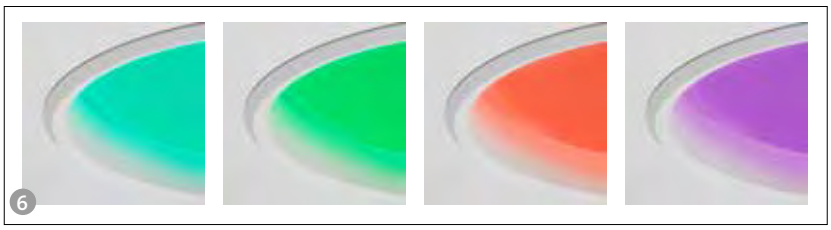


1. Pozzo pendant, p. 305.

2. Pozzo ceiling, p. 306.







1. As a multifunction luminaire Pozzo is unlike any other. The outer edge of the diffuser, which is bevelled in the form of a channel, controls and enhances the light towards the sides to give a softer transition between the luminaire and the darker ceiling. The solution also makes it easy to adjust the position of the shade, or for it to be removed completely when re-lamping. Four spring clips hold the diffuser securely in place.

2. In order to further counteract the contrasts between the luminaire's bright surfaces and the dark ceiling we have developed Soft Frame. A slight bevelling in the intersection with the ceiling creates a comfortable transition and gives the luminaire an added dimension.

3. Pozzo with reflector, equipped with a compact or halogen light source, gives a large share of direct-acting light. The reflector is covered with an opal cylinder that generates a bright area and simultaneously counteracts reflections on the side of the metal. The direct light is therefore never experienced as dazzling when the mechanical cut-off angle ceases.

4. Fixing brackets are always included in the delivery. A mounting plate is recommended with assembly in soft tile ceilings.

5. Pozzo is a complete lighting solution with its three variants. The basic model with opal or a delta diffuser and LED or T5-C light source gives a soft and wide beam general light. Pozzo FSQ and Pozzo MT provide an effective downlight, of which MT is suitable for high ceiling heights that demand more direct lighting and/or brilliance.

6. Pozzo I with RGB.

Pozzo I
Delta

Luminaire with LED

Ø	Colour temp., K	System, W	Luminous flux, lm	Efficiency, lm/W		
350	3000	21	1267	60	**24825**	■
450	3000	33	2315	70	**24826**	■
550	3000	45	3285	71	**24827**	■
350	4000	21	1338	65	**24838**	■
450	4000	34	2515	74	**24839**	■
550	4000	46	3559	75	**24840**	■
450	2700–6500				**24842**	
550	2700–6500				**24843**	

For current information on output and luminous flux, please refer to our website.

Luminaire

FCH	Ø		
1×40	350	**24829**	● ▲
1×55	350	**24830**	● ▲
1×60	450	**24831**	▲
1×60	550	**24832**	▲

Light source included.

Accessories

Assembly plate Ø 350, 600-module visible T-bars	**94982**
Assembly plate Ø 450, 600-module visible T-bars	**94983**
Assembly plate Ø 550, 600-module visible T-bars	**94984**
Assembly plate Ø 350, 625-module visible T-bars	**94986**
Assembly plate Ø 450, 625-module visible T-bars	**94987**
Assembly plate Ø 550, 625-module visible T-bars	**94988**

Information LED

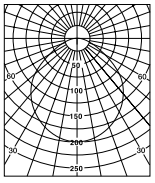
Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3,5 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3,5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

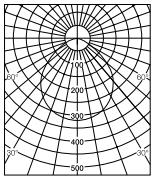
Suffix code

■ **-402** DALI/Phase-pulse control
● **-436** DALI/DSI/switchDIM
▲ **-368** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



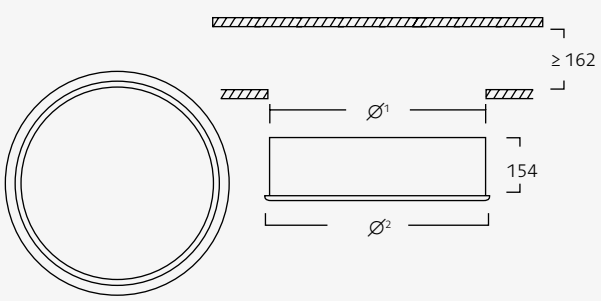
FCH, 1×60 W, Ø 450



LED, 4000 K, Ø 450

Pozzo I

Ø	Ø¹	Ø²
350	355	383
450	455	483
550	555	583
1000	975	1000



Installation
Recessed mounting in ventilated or unventilated ceilings. Fixing brackets included with luminaire. An assembly plate should be used when installing in soft tile ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
The luminaire is equipped with a 2.5 m mains cable and earthed plug. 3-way snap-in terminal block 2.5 mm². Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm².

Design
Luminaire in white (RAL 9016) structured finish. Luminaire housing of enamelled deep drawn aluminium.

Louvre
Delta – microprism louvre in acrylic TPb (PMMA) with a thin opal diffuser (acrylic/PMMA) on the inside.

Miscellaneous
The luminaire's shade is adjustable vertically – to create a light well in the uppermost position or an opal surface in the lowermost position. Enclosure class IP 44 beneath suspended ceilings and IP 20 above suspended ceilings. LED version only IP 20. Pozzo LED Ø 450 and Ø 550 require two addresses for DALI. Luminaire with Tunable White (2700–6500 K) is equipped with driver DALI Device type 8.

The diffuser can be positioned slightly recessed within the fitting, to create a 'light well' effect.

LED strips in different angles for perfect uniformity in the diffuser.

Pozzo I
Opal

Luminaire with LED

Ø	Colour temp., K	System, W	Luminous flux, lm	Efficiency, lm/W	
350	3000	21	1276	61	**24822** ■
450	3000	33	2107	64	**24823** ■
550	3000	45	3068	68	**24824** ■
350	4000	21	1384	66	**24835** ■
450	4000	34	2291	67	**24836** ■
550	4000	46	3255	71	**24847** ■

For current information on output and luminous flux, please refer to our website.

Luminaire

FCH	Ø		
1×40	350	**24780**	● ▲
1×55	350	**24781**	▼ ● ▲
1×60	450	**24782**	▲
1×60	550	**24783**	▲
1×60+LED RGB	450	**24797**	
2×14/24+3×21/39	1000	**24778**	▲

Light source included.

Information LED

Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3,5 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3,5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

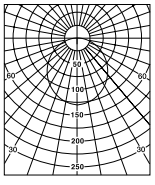
Suffix code

- ■ **-402** DALI/Phase-pulse control
- ▼ **-357** e-Sense Detect on/off
- ● **-436** DALI/DSI/switchDIM
- ▲ **-368** DALI/Phase-pulse control

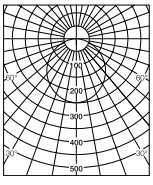
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Assembly plate Ø 350, 600-module visible T-bars	**94982**
Assembly plate Ø 450, 600-module visible T-bars	**94983**
Assembly plate Ø 550, 600-module visible T-bars	**94984**
Assembly plate Ø 350, 625-module visible T-bars	**94986**
Assembly plate Ø 450, 625-module visible T-bars	**94987**
Assembly plate Ø 550, 625-module visible T-bars	**94988**



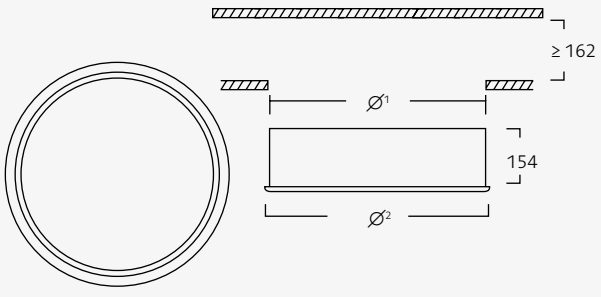
FCH, 1×40 W, Ø 350



LED, 4000 K, Ø 450

Pozzo I

Ø	Ø1	Ø2
350	355	383
450	455	483
550	555	583
1000	975	1000



Installation
Recessed mounting in ventilated or unventilated ceilings. Fixing brackets included with luminaire. An assembly plate should be used when installing in soft tile ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
The luminaire is equipped with a 2.5 m mains cable and earthed plug. 3-way snap-in terminal block 2.5 mm². Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm². Luminaire for LED RGB has separate connection for the coloured light.

Design
Luminaire in white (RAL 9016) structured finish. Luminaire housing of enamelled deep drawn aluminium. Diffuser of opalised acrylic.

Dimming
e-Sense Detect – microwave sensor for on/off function. For further information please refer to the dimming section in the Technical Information chapter.

Miscellaneous
The luminaire's opal shade is adjustable vertically – to create a light well in the uppermost position or an opal surface in the lowermost position. RGB allows setting of a specific colour, alternatively colour sequences, controlled by DALI. Enclosure class IP 44 beneath suspended ceilings and IP 20 above suspended ceilings. LED version only IP 20. Pozzo LED Ø 450 and Ø 550 require two addresses for DALI.

The luminaire housing is easily fitted on the assembly bracket via a keyhole slot in the bottom of the housing – quick and simple.

Pozzo LED RGB gives a possibility to create permanent or colour-alternating sequences that create drama and interest.

Pozzo II
FSQ, MT

Installation
Recessed mounting in ventilated or unventilated ceilings. Fixing brackets included with luminaire. An assembly plate should be used when installing in soft tile ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Connection
The luminaire is equipped with a 2.5 m mains cable and earthed plug. 3-way snap-in terminal block 2.5 mm². Luminaires for dimming are delivered with 5-core, free cable tails, 5-way snap-in terminal block 2.5 mm².
Design
Luminaire in white (RAL 9016) structured finish. Luminaire housing of enamelled deep drawn aluminium. Diffuser of opalised acrylic.
Reflector
FSQ – anodised aluminium reflector with elliptical surface.
MT – anodised aluminium reflector with plannished surface.
Miscellaneous
The luminaire's opal shade is adjustable vertically – to create a light well in the uppermost position or an opal surface in the lowermost position.

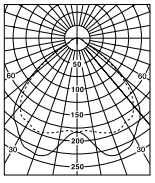
Luminaire			
FSQ-E	∅		
2×26	350	**24785**	☐
2×26	450	**24786**	☐
2×26	550	**24787**	☐
2×26+LED	450	**24798**	
MT			
1×35	350	**24789**	
1×70	450	**24790**	
1×70	550	**24791**	

Light source included.

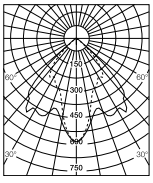
Suffix code	
☐ **-368**	DALI/Phase-pulse control
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Assembly plate ∅ 350, 600-module visible T-bars	**94982**
Assembly plate ∅ 450, 600-module visible T-bars	**94983**
Assembly plate ∅ 550, 600-module visible T-bars	**94984**
Assembly plate ∅ 350, 625-module visible T-bars	**94986**
Assembly plate ∅ 450, 625-module visible T-bars	**94987**
Assembly plate ∅ 550, 625-module visible T-bars	**94988**



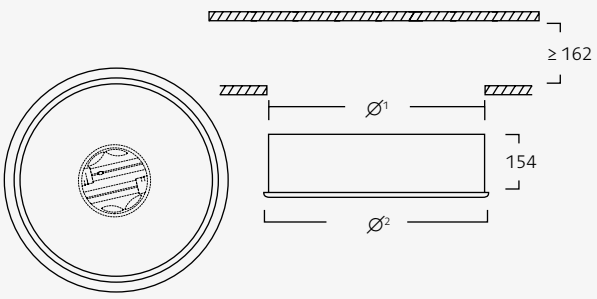
2×26 W, FSQ-E



1×70 W, MT

Pozzo II

W	∅1	∅2
2×26 FSQ	355	383
1×70 MT	355	383
2×26 FSQ	455	483
1×70 MT	455	483
2×26 FSQ	555	583
1×70 MT	555	583



Fixing brackets always included in the delivery. A mounting plate is recommended with assembly in soft tile ceilings.

Gondol

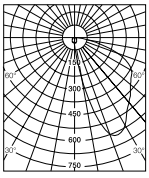
Luminaire			
FDH	kg		
Recessed			
1×25/28	2.5	**17631**	☐
1×32/35	3.1	**17632**	☐
1×45/49	3.1	**17634**	☐
1×50/54	2.5	**17635**	☐
1×73/80	3.1	**17636**	☐
Surface mounted			
1×25/28	2.5	**17891**	☐
1×32/35	2.9	**17892**	☐
1×45/49	2.9	**17894**	☐
1×50/54	2.5	**17895**	☐
1×73/80	2.9	**17896**	☐

Suffix code
☐ **-368** DALI/Phase-pulse control
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Recessing frame, 25/28/50/54 W, hole dimensions = 155×1215	**94568**
Recessing frame, 32/35/45/49/73/80 W, hole dimensions = 155×1515	**94569**
Continuous connector fits surface mounted luminaire	**91434**
Wire suspension surface mounted L=1.5 m with clamp for mounting in ceiling/pair	**91719**

Installation
Recessed mounting – recessed mounting in suspended ceilings with visible T-bars or with accessories in fixed suspended ceilings. Also approved for recessed mounting in ventilated areas. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Surface mounting – surface mounted.
Connection
5-way snap-in terminal block on top of the luminaire.
Design
White enamelled sheet steel (RAL 9016). The inside of the ends are enamelled grey for low luminance.
Louvre
The lamp is concealed in the luminaire and hidden from view with standard installation.
Reflector
Metallised aluminium with satin matt finish. Asymmetrical light distribution for lighting of vertical areas.
Dimming
Most models can also be equipped with other ballasts for dimming.
Accessories
Recessed frame for one piece suspended ceilings for luminaires for recessed mounting.
Miscellaneous
The light source's lamp holder is pivoted so that the light source can be moved into the light opening to facilitate lamping and re-lamping.

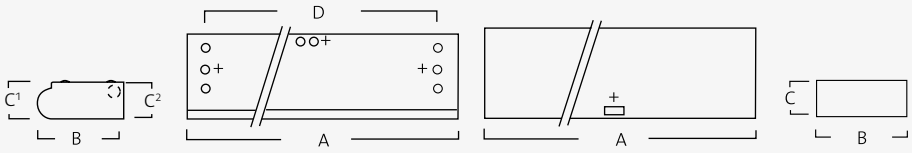


All versions

Gondol for surface mounting. The flat ends make the luminaire ideal for continuous installation.

W	A	B	C¹	C²	D
25/28	1192	138	60	57	1100
32/35	1492	138	60	57	1400
45/49	1492	138	60	57	1400
50/54	1192	138	60	57	1100
73/80	1492	138	60	57	1400

W	A	B	C
25/28	1192	142	60
32/35	1492	142	60
45/49	1492	142	60
50/54	1192	142	60
73/80	1492	142	60



The light source holder is moveable to assist re-lamping.

Pleiad

Downlights

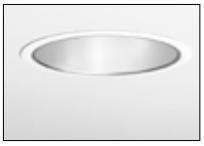
Downlights for recessed or surface mounted installation

Easy
IP 20 *p. 216–219*

Pleiad Evo
IP 20 *p. 180–181*

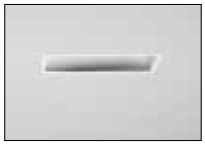
Pleiad SLD G2
IP 20 *p. 194–198*

Sidelight²
IP 20 *p. 220*



Pleiad Comfort G3
IP 20 *p. 183*

Pleiad LED Wallwasher
IP 20 *p. 188–189*



Pleiad Square G2
IP 20 *p. 204–206*

Transformers
p. 221

Pleiad Compact G2
IP 20 *p. 200–203*

Pleiad Power LED
IP 20 *p. 190–192*

Pleiad Square Ice G2
IP 20 *p. 207*

Pleiad Compact G3
IP 20 *p. 184*

Pleiad Robust G3
IP 20 *p. 187*

Pleiad Wallwasher G3
IP 20 *p. 186*

Pleiad Evo

Pleiad Evo is the latest addition to the Pleiad family- offering exceptional light treatment, quick installation and efficiency in terms of both energy and cost.

The extremely light weight design utilises the reflector as the only cooling element within the fixture. One of the factors behind the success of all of our generations of Pleiad is the time-efficient, tool-free installation. The housing needs only be placed in the right position and then installed automatically with the help of gravity technology. The rapid installation, combined with high efficiency and long life, ensures Pleiad Evo is an economical choice with a beneficial pay-off time.

Installation
Recessed mounting in unventilated or ventilated ceilings. Separate ballast and installation clip for easy and tool-free installation supplied as standard. An assembly plate must be used when mounting on soft tile ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on.

Connection
Connections are made to an independent LED driver. The luminaire is delivered with the interconnecting cable.

Design
Luminaire body and visible reflector ring in white PBT plastic (RAL 9003).

Reflector
Reflector in either specular or semi-matt anodised aluminium. Mechanical shielding 25°.

Miscellaneous
The luminaire is supplied with dust protection over the light opening.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Reflector		
13	3000	1172	88	0.4	Specular	**77440**	☐
13	3000	1201	90	0.4	Matt	**77442**	☐
13	4000	1230	94	0.4	Specular	**77444**	☐
13	4000	1268	97	0.4	Matt	**77446**	☐
19	3000	1606	85	0.4	Specular	**77441**	☐
19	3000	1648	87	0.4	Matt	**77443**	☐
19	4000	1691	89	0.4	Specular	**77445**	☐
19	4000	1737	92	0.4	Matt	**77447**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

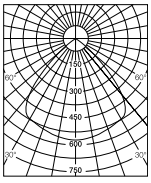
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

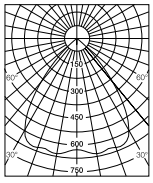
Suffix code

☐ **-03**	Connection cable with plug, L=2.5 m.
☐ **-402**	DALI/Phase-pulse control

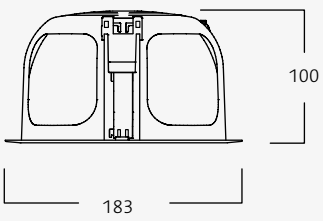
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



Specular reflector



Semi-matt reflector



Rapid installation without tools.

Pleiad G3

Pleiad G3 is the third generation of Fagerhult's successful downlight range - now equipped with LED. In common with its predecessors, the focus was placed upon perfect lighting treatment, quick installation and efficiency. In Pleiad G3 these concept has been taken to the next level, including automatic installation!

The energy efficiency and long lifespan of LEDs come at the price of higher demands on the distribution and shielding as a result of the increased light intensity. To combat these issues Pleiad G3 was developed using an innovative reflector technology which fully exploiting the efficiency of LEDs, without affecting the lighting ergonomics. The family contains numerous options for different light distributions, complemented by an extensive range of practical and decorative accessories.

Speed and ease of installation has long been synonymous with the Pleaid range and Pleiad G3 takes this one step further. The luminaire can be installed without any manual effort. The housing needs only be placed in the right position and then installed automatically with the help of gravity technology. The rapid installation, combined with high efficiency and long life, ensures Pleiad G3 is an economical choice with a beneficial pay-off time.

Pleiad Comfort G3

Installation
Recessed mounting in unventilated or ventilated ceilings. Separate ballast and installation clip for easy and tool-free installation supplied as standard. An assembly plate must be used when mounting on soft tile ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connections are made to an independent LED driver. The luminaire is delivered with the interconnecting cable.

Design
Luminaire body in black cast aluminium. Visible reflector ring in white PC plastic (RAL 9003).

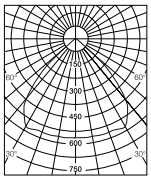
Reflector
Reflector in either specular or matt anodised aluminium. Specular metallised Advanced Anti-Glare Control ring above the LED module. Mechanical shielding 45°.

Miscellaneous
The luminaire is supplied with dust protection over the light opening. Enclosure class IP 44 beneath suspended ceilings and IP 20 above suspended ceilings. Luminaire with Tunable White (2700–6500 K) is equipped with driver DALI Device type 8.

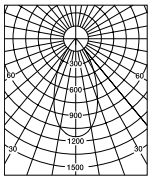
Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Reflector		
Wide beam							
10	3000	758	73	1.5	Specular	**77950**	☐
10	3000	783	75	1.5	Matt	**77951**	☐
10	4000	808	77	1.5	Specular	**77952**	☐
10	4000	833	79	1.5	Matt	**77953**	☐
21	4000	1796	85	1.5	Specular	**77957**	☐
21	4000	1846	88	1.5	Matt	**77958**	☐
23	3000	1729	75	1.5	Specular	**77955**	☐
23	3000	1796	78	1.5	Matt	**77956**	☐
30	2700–6500			1.5	Specular	**77975**	
30	2700–6500			1.5	Matt	**77976**	
32	4000	2427	76	1.5	Specular	**77962**	☐
32	4000	2486	78	1.5	Matt	**77963**	☐
34	3000	2377	70	1.5	Specular	**77960**	☐
34	3000	2436	72	1.5	Matt	**77961**	☐
Medium beam							
10	3000	740	70	1.5	Matt	**77493**	☐
10	4000	790	75	1.5	Matt	**77494**	☐
21	4000	1750	83	1.5	Matt	**77496**	☐
23	3000	1698	74	1.5	Matt	**77495**	☐
32	4000	2390	75	1.5	Matt	**77498**	☐
34	3000	2340	69	1.5	Matt	**77497**	☐

For current information on output and luminous flux, please refer to our website.



Wide beam, specular reflector



Medium beam, matt reflector

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

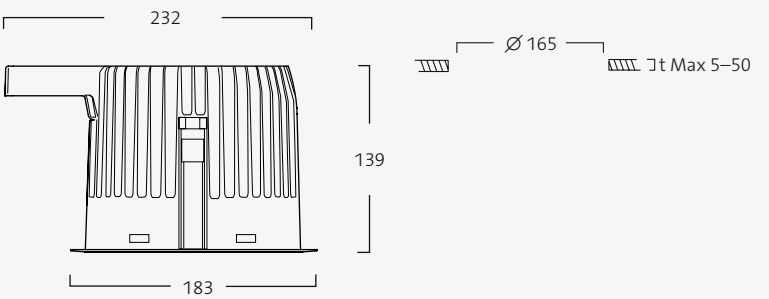
For further information on LEDs, please refer to the Technical Information chapter.

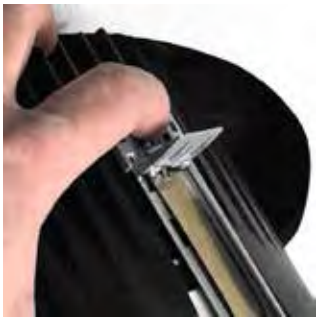
Suffix code

☐ **-03** Connection cable with plug, L=2.5 m.
☐ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Effective glare control mounted to the reflector.





Assembly spring is released via simple operation.

Pleiad Compact G3

Installation
Recessed mounting in unventilated or ventilated ceilings. Separate ballast and installation clip for easy and tool-free installation supplied as standard. An assembly plate must be used when mounting on soft tile ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connections are made to an independent LED driver. The luminaire is delivered with the interconnecting cable.

Design
Luminaire body in black cast aluminium. Visible reflector ring in white PC plastic (RAL 9003).

Reflector
Reflector in either specular or matt anodised aluminium. Specular metallised Advanced Anti-Glare Control ring above the LED module. Mechanical shielding 25°.

Miscellaneous
The luminaire is supplied with dust protection over the light opening. Enclosure class IP 44 under suspended ceilings and IP 20 above suspended ceilings.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Reflector		
10	3000	785	75	1.3	Specular	**77930**	☐
10	3000	802	76	1.3	Matt	**77931**	☐
10	4000	835	80	1.3	Specular	**77932**	☐
10	4000	852	81	1.3	Matt	**77933**	☐
23	3000	1791	78	1.3	Specular	**77935**	☐
23	3000	1826	79	1.3	Matt	**77936**	☐
21	4000	1841	88	1.3	Specular	**77937**	☐
21	4000	1876	89	1.3	Matt	**77938**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

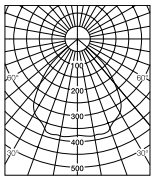
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

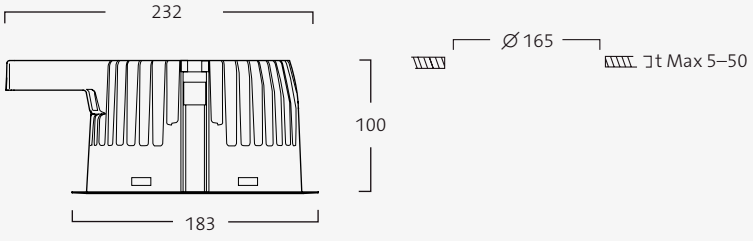
Suffix code

☐ **-03**	Connection cable with plug, L=2.5 m.
☐ **-402**	DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

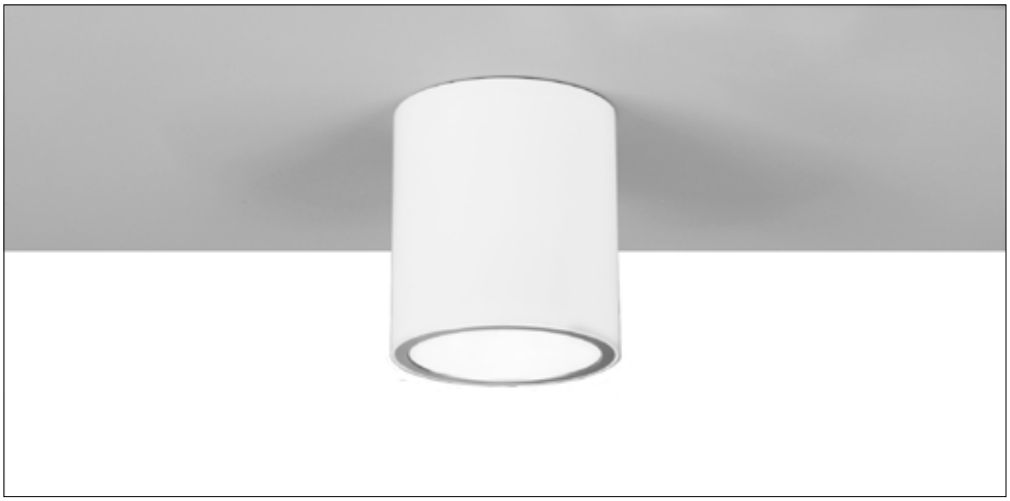


Specular reflector



Assembly spring clamped in position.

Pleiad Comfort G3
Surface mounted



Description
Surface mounted installation. Mounting plate with two securing holes.
Connection
3-way snap-in terminal block 2.5 mm², through-wiring possible. With dimming, 5-way snap-in terminal block, through-wiring possible. Cable entry from the top of the luminaire or via 3 knock-out openings, 90° or 180°.
Design
Luminaire body in white (RAL 9016) cast aluminium.
Reflector
Reflector in either specular or matt anodised aluminium. Specular metallised Advanced Anti-Glare Control ring above the LED module. Mechanical shielding 45°.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Reflector		
10	3000	758	73	3.0	Specular	**72500**	☐
10	3000	783	75	3.0	Matt	**72501**	☐
10	4000	808	77	3.0	Specular	**72502**	☐
10	4000	833	79	3.0	Matt	**72503**	☐
21	4000	1796	85	3.0	Specular	**72506**	☐
21	4000	1846	88	3.0	Matt	**72507**	☐
23	3000	1729	75	3.0	Specular	**72504**	☐
23	3000	1796	78	3.0	Matt	**72505**	☐
32	4000	2427	76	3.0	Specular	**72517**	☐
32	4000	2486	78	3.0	Matt	**72518**	☐
34	3000	2377	70	3.0	Specular	**72515**	☐
34	3000	2436	72	3.0	Matt	**72516**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

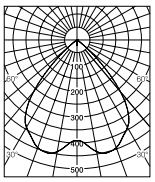
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

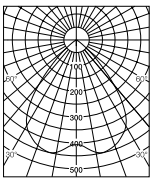
Suffix code

☐ **-402** DALI/Phase-pulse control

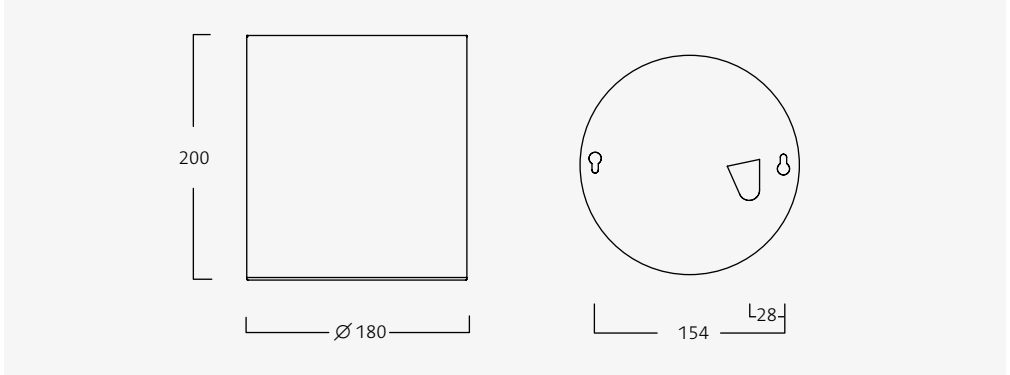
Add suffix code to the end of the luminaire part number to indicate required function.



Specular reflector



Matt reflector



Advanced Anti-Glare Control ring mounted to the reflector.

Pleiad Wallwasher G3

Installation
Recessed mounting in unventilated or ventilated ceilings. Separate ballast and installation clip for easy and tool-free installation supplied as standard. An assembly plate must be used when mounting on soft tile ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connections are made to an independent LED driver. The luminaire is delivered with the interconnecting cable.

Design
Luminaire body in black cast aluminium. Visible reflector ring in white PC plastic (RAL 9003).

Reflector
Metallised PBT in specular aluminium. The reflector has a protective coat of scratch-resistant clear lacquer.

Miscellaneous
The luminaire is supplied with dust protection over the light opening. Luminaire with Tunable White (2700–6500 K) is equipped with driver DALI Device type 8.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Reflector		
15	3000	922	61	1.6	Specular	**77990**	☐
14	4000	889	64	1.6	Specular	**77992**	☐
26	3000	1574	61	1.6	Specular	**77991**	☐
24	4000	1581	69	1.6	Specular	**77993**	☐
30	2700–6500			1.6	Specular	**77994**	
39	3000	2250	58	1.6	Specular	**77995**	☐
38	4000	2380	63	1.6	Specular	**77996**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

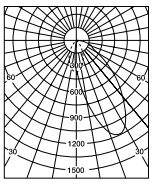
For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

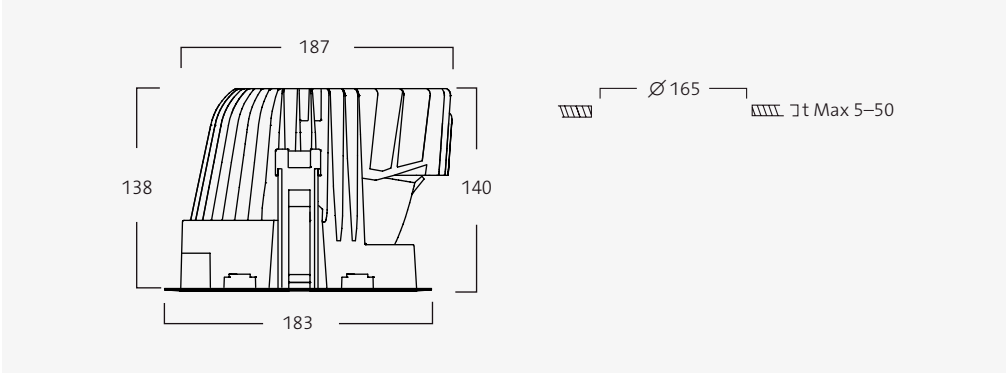
☐ **-03** Connection cable with plug, L=2.5 m.

☐ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



All versions



The reflector design delivers an even luminance across the surface, avoiding the traditional dark spots where the wall and ceiling meets.

Pleiad Robust G3

Pleiad Robust G3 Comfort

System, W	Colour temp., K	Luminous flux, lm	kg	Reflector		
15	3000	787	1.7	Matt	**77425**	☐
14	4000	790	1.7	Matt	**77426**	☐
26	3000	1332	1.7	Matt	**77427**	☐
24	4000	1393	1.7	Matt	**77428**	☐

For current information on output and luminous flux, please refer to our website.

Pleiad Robust G3 Compact

System, W	Colour temp., K	Luminous flux, lm	kg	Reflector		
15	3000	794	1.5	Matt	**77429**	☐
14	4000	767	1.5	Matt	**77430**	☐
26	3000	1337	1.5	Matt	**77431**	☐
24	4000	1350	1.5	Matt	**77432**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐ **-03** Connection cable with plug, L=2.5 m.
☐ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

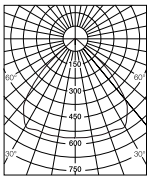
Installation
Recessed mounting in unventilated or ventilated ceilings. Assembly springs for quick, tool-free installation included. An assembly plate should be used when installing in soft tile ceilings. The driver box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connections are made to an independent LED driver. The luminaire is delivered with the interconnecting cable.

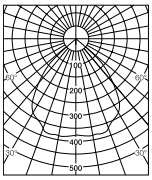
Design
Luminaire body in black cast aluminium. Two-part visible decor ring in aluminium. The luminaire has durable PEGT plates in the light openings between the rings. The luminaire and the rings are locked using tamper-proof torx screws.

Reflector
Reflector in matt anodised aluminium. Specular metallised Advanced Anti-Glare Control ring above the LED module.

Miscellaneous
The luminaire provides the highest mechanical protection beneath international classification IK10. Enclosure class IP 64 beneath suspended ceilings and IP 20 above suspended ceilings.

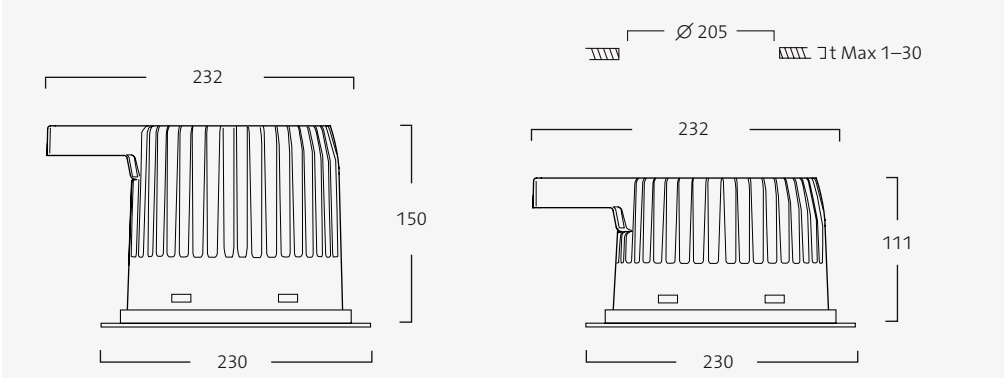


Pleiad Robust G3 Comfort



Pleiad Robust G3 Compact

The ring is mounted using tamper-proof torx security screws.



The light source is protected by a clear plastic PEGT plate which is held by an inner ring.

Pleiad LED Wallwasher

The Pleiad LED Wallwasher makes optimal use of LED technology and throws a cascade of light over the wall. The new reflector design has enabled us to avoid the classic problem of a dark line where the wall meets the ceiling, creating a smooth, soft carpet of light that fills the entire wall.

As the light from Pleiad LED Wallwasher is directed completely towards the wall it is possible to completely avoid glare. The advanced asymmetrical reflector harnesses the full power of the LEDs, for a luminous flux and uniformity that provides a whole new experience when it comes to wall lighting. The light begins to fall right from the join where the ceiling and wall meet, and then washes over the entire surface.

The Pleiad LED Wallwasher is a great way to create varied lighting with a higher proportion of ambient lighting which not only creates a dynamic light environment but may also contribute to improved well-being. It is also possible to adjust the colour temperature of the light – from colder to warmer light – as the day progresses, or as required. By selecting RGB, it is also possible to create more spectacular effects in the form of coloured light.

In view of the luminaire's location relatively close to the wall, the housing has been given a square design from an aesthetic point of view.

Pleiad LED
Wallwasher

Luminaire

System, W	Colour temp, K	Luminous flux, lm	Efficiency, lm/W	
Fortimo				
15	3000	805	53	**77790**
14	4000	949	67	**77791**
26	3000	1701	65	**77795** ■
24	4000	1746	72	**77796** ■
Lexel				
40		RGB		**77792**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000	*≥ 80*	*L_{70} (50.000 h)*	*MacAdam 5 SDCM*
4000	*≥ 80*	*L_{70} (50.000 h)*	*MacAdam 5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

■ **-365** TouchDIM/DALI

Add suffix code to the end of the luminaire part number to indicate required function.

Accessories

Assembly plate	**41957**
Assembly plate with support bars 600 mm	**41953**
Assembly plate with support bars 625 mm	**41954**
Connection cable to Wieland (GST) quick connection system	
L=2.0 m with female excl. plug. 3-way. 1-phase.	**91789**
L=2.0 m with female with earthed plug. 3-way. 1-phase.	**91790**

Installation
Recessed mounting in ventilated or unventilated ceilings. Assembly springs for quick assembly, without tools, supplied as standard. An assembly plate should be used when installing in soft tile ceilings. The driver box is separate, but interconnected to the luminaire. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

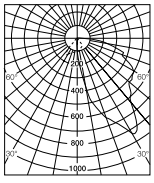
Connection
Supplied with 2.5 m mains cable and earthed plug. 3-way terminal block 2.5 mm². For dimming the luminaire is delivered with a 5-way snap-in terminal block 2.5 mm². RGB supplied with Wieland Chassis connector 3-way (GST 18i3).

Designed
Frame in cast enamelled aluminium white (RAL 9016). Body in Matt black enamelled aluminium. LED systems Fortimo and Lexel from Philips. Fortimo with constant colour temperature, 3000 K or 4000 K.

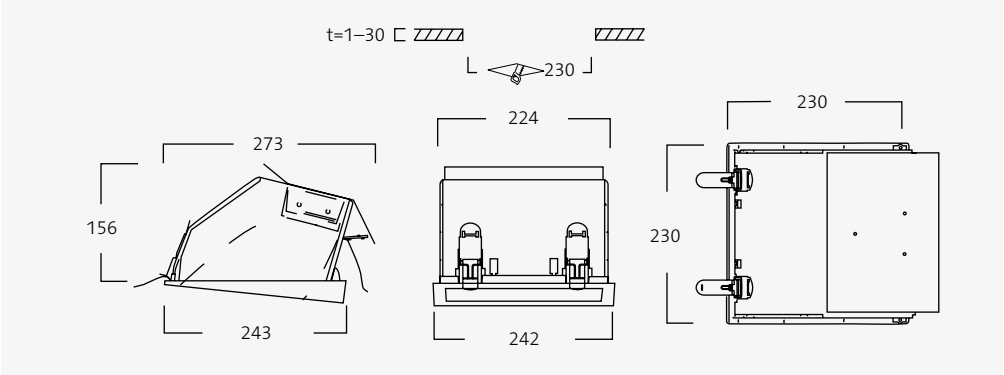
Reflector
Reflector of specular metallised polycarbonate. The reflector has a protective coat of scratch-resistant clear lacquer.

Dimming
The Lexel system permits the colour temperature to be adjusted between 2700 K–6500 K. Coloured light is also possible via RGB. Control and dimming managed via DMX. Luminaire with dimming (-365) can be adjusted between 10–100 %.

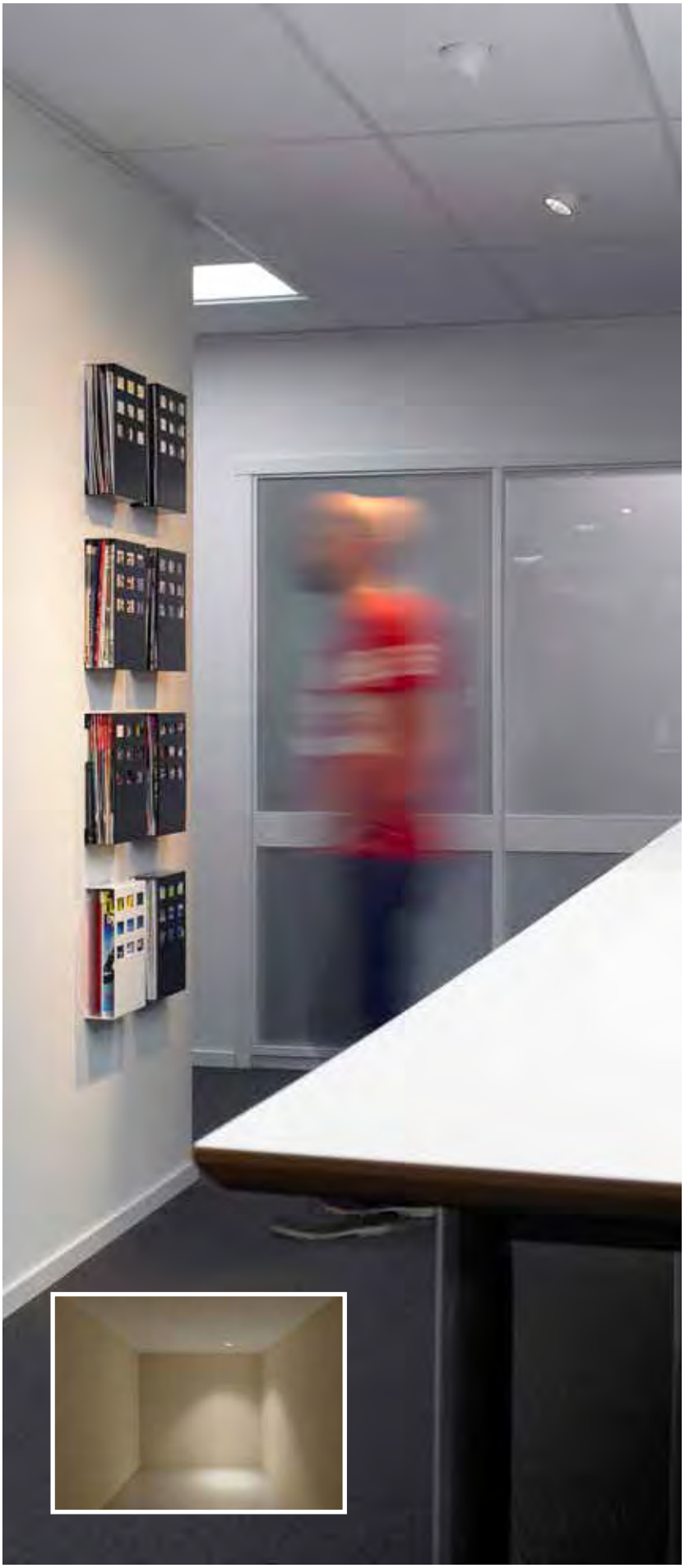
Miscellaneous
Enclosure class IP 44 under suspended ceilings and IP 20 above suspended ceilings.



All versions



Pleiad Power LED



Pleiad Power LED is a powerful downlight which perfectly meets the demands on lighting quality, assembly and maintenance in areas with high ceilings.

An effective reflector and a high degree of efficiency make Pleiad Power LED a powerful solution that resolves lighting needs with less luminaires. For greater control of the lighting environment we recommend Pleiad Power LED Flex which can be tilted 60° and swivelled 355°.

Pleiad Power LED
Fixed

Installation
Recessed mounting in unventilated or ventilated ceilings. Assembly springs for quick, tool-free installation are included. When mounting on soft tile ceilings, the supplied mounts should be used. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Connection
Mains connection made via remote driver. Luminaires are connected using the supplied cable in the driver.
Design
Luminaire body in cast white enamelled aluminium (RAL 9016). Heatsink in black enamelled aluminium.
Reflector
Reflector in specular anodised faceted aluminium.
Miscellaneous
LED driver ordered separately.

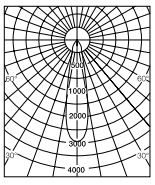
Luminaire				
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	
Medium beam 24°				
18	3000	897	43	**77530**
18	4000	885	43	**77531**
Wide beam 42°				
18	3000	875	43	**77532**
18	4000	864	42	**77533**

For current information on output and luminous flux, please refer to our website.

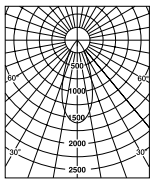
Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 2 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 2 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

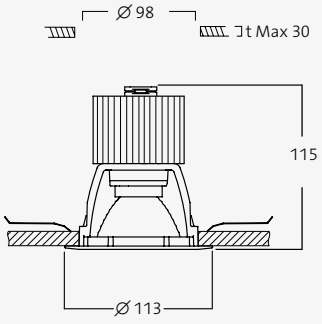
Accessories	
LED-driver 33 W, 500/1000 mA	**82563**
LED-driver 35 W, 1050 mA dimmable via DALI/DSI/switchDIM	**99145**



24°



42°



Assembly springs for fast tool-free installation in ceilings 1–30 mm.

Pleiad Power LED
Flex

Installation
Recessed mounting in unventilated or ventilated ceilings. Assembly springs for quick, tool-free installation are included. When mounting on soft tile ceilings, the supplied mounts should be used. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Connection
Mains connection made via remote driver. Luminaires are connected using the supplied cable in the driver.
Design
Luminaire body in cast white enamelled aluminium (RAL 9016). Heatsink in black enamelled aluminium. The luminaire can rotate through 355° and tilts 60°.
Reflector
Reflector in specular anodised faceted aluminium.
Miscellaneous
LED driver ordered separately.

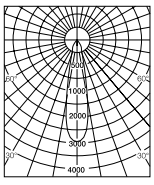
Luminaire					
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Rotate/Tilt	
Medium beam 24°					
18	3000	897	43	355°/ 60°	**77534**
18	4000	885	43	355°/ 60°	**77535**
Wide beam 42°					
18	3000	875	43	355°/ 60°	**77536**
18	4000	864	42	355°/ 60°	**77537**

For current information on output and luminous flux, please refer to our website.

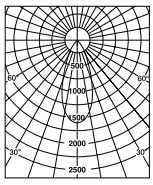
Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 2 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 2 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

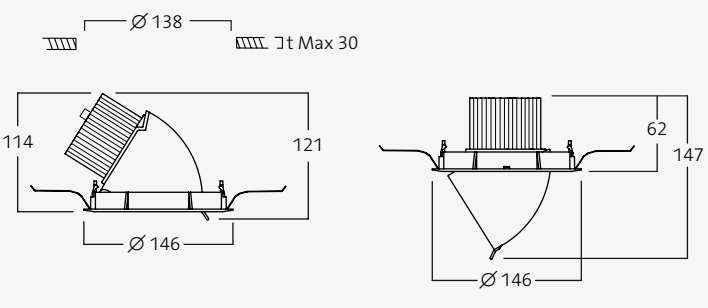
Accessories	
LED-driver 33 W, 500/1000 mA	**82563**
LED-driver 35 W, 1050 mA dimmable via DALI/DSI/switchDIM	**99145**



24°



42°



Effective black lacquered heat-sink.

Pleiad

Pleiad SLD G2

Designed by Wilma Daemen

Pleiad SLD G2's advanced light properties make it an ideal solution for light planning with downlights. Equipped with Fagerhult's SLD reflector it combines flexibility with optimal light treatment. The balanced and glare-free light is well suited to both office and educational environments.

The Pleiad SLD G2 luminaire housing and reflector have been developed to optimise A-classified compact fluorescent lamps; FSM 14 W and 17 W. These light sources can increase efficiency by approximately 20–40 %, offering significant energy savings and the scope to reduce the number of luminaires required.

The reflector technology is unique to this luminaire. Its design creates a rotational symmetric light distribution which is even and directionally independent. This makes it easier to plan lighting in the room and create high level of visual comfort due to the horizontal placement of the light sources and effective mechanical cut-off.

Pleiad SLD G2 165

Luminaire					
FSM-E	Reflector	kg	**830**	**840**	
1×18	Specular	0.4	**77350**	**77450**	☐
1×18	Matt	0.4	**77352**	**77452**	☐

Emergency lighting box		
Type	kg	
Emergency lighting box, 1 h operating time		
Standard	0.9	**98014**
Autotest IV, potential free	0.9	**98015**
Autotest IV, DALI	0.9	**98016**
Emergency lighting box, 3 h operating time		
Standard	0.9	**98017**

For further information on Emergency lighting boxes, please refer to the Emergency lighting chapter.

Suffix code	
☐	**-03** Connection cable with plug, L=2.5 m.
☐	**-111** Wieland GST18i3 (3-way). One outlet socket.
☐	**-205** 1–10 V
☐	**-316** Emergency luminaire DALI/DSI/switchDIM
☐	**-319** HF-std. Emergency lighting luminaire.
☐	**-322** DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐	**-368** DALI/Phase-pulse control
☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick, tool-free installation included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

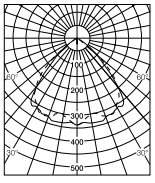
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. The luminaire for emergency lighting has a separate emergency lighting box, which is connected to the luminaire with snap-in connector. All connections are made in the emergency lighting box.

Design
Luminaire body of black PBT plastic (RAL 9004). Visible reflector ring in white PBT plastic (RAL 9003).

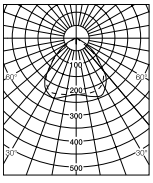
Reflector
Rotational symmetric reflector in metallised PBT in specular or matt aluminium. Cut-off angle 30°. The reflector has a protective coat of scratch-resistant lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with an emergency lighting box.

Miscellaneous
Available as standard with mains cable and earthed plug or Wieland snap-in connector. The luminaire is equipped with dust protection in the light opening.

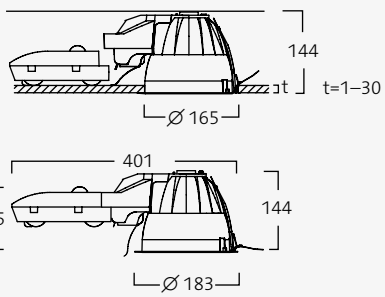


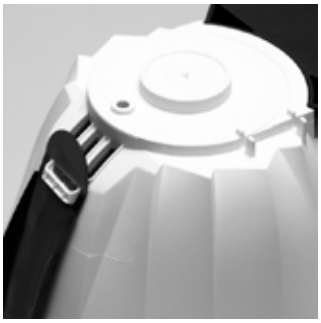
1×18 W, specular



1×18 W, matt

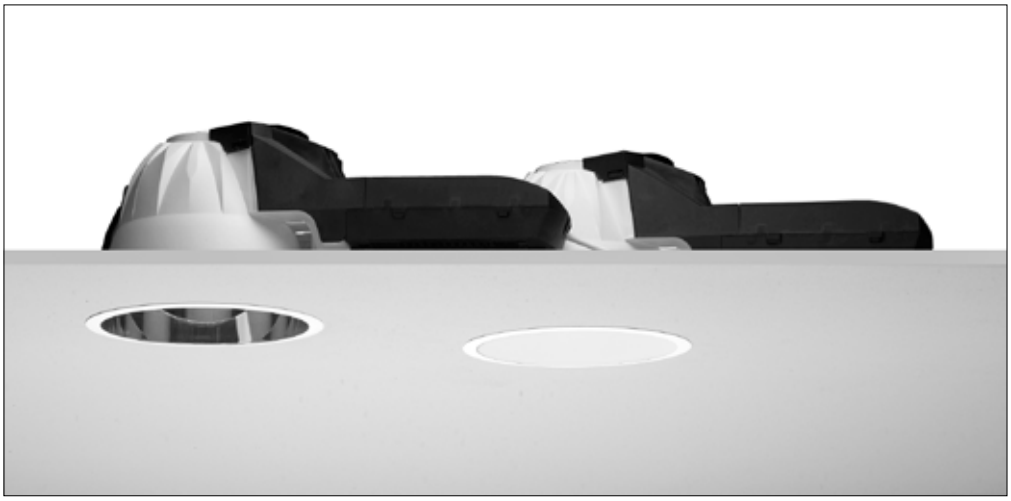
Luminaire with connected emergency lighting box.





Front ventilation opening.

Pleiad SLD G2 205



Luminaire

FSM-E	Reflector	kg	830	840	
1×14	Specular	0.5	**77353**	**77453**	☐
1×14	Matt	0.5	**77354**	**77454**	☐
2×14	Specular	0.5	**77358**	**77458**	☐
2×14	Matt	0.5	**77359**	**77459**	☐
2×18	Specular	0.5	**77355**	**77455**	☐
2×18	Matt	0.5	**77357**	**77457**	☐
1×26	Specular	0.5	**77360**	**77460**	☐
1×26	Matt	0.5	**77362**	**77462**	☐
2×26	Specular	0.5	**77365**	**77465**	☐
2×26	Matt	0.5	**77367**	**77467**	☐
1×32	Specular	0.5	**77370**	**77470**	☐
1×32	Matt	0.5	**77372**	**77472**	☐

Emergency lighting box

Type	kg	
Emergency lighting box, 1 h operating time		
Standard	0.9	**98014**
Autotest IV, potential free	0.9	**98015**
Autotest IV, DALI	0.9	**98016**
Emergency lighting box, 3 h operating time		
Standard	0.9	**98017**

For further information on Emergency lighting boxes, please refer to the Emergency lighting chapter.

Suffix code

☐ **-03**	Connection cable with plug, L=2.5 m.
☐ **-111**	Wieland GST18i3 (3-way). One outlet socket.
☐ **-205**	1–10 V
☐ **-316**	Emergency luminaire DALI/DSI/switchDIM
☐ **-319**	HF-std. Emergency lighting luminaire.
☐ **-322**	DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐ **-368**	DALI/Phase-pulse control
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick, tool-free installation included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

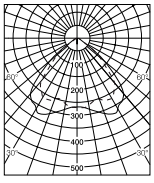
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. The luminaire for emergency lighting has a separate emergency lighting box, which is connected to the luminaire with snap-in connector. All connections are made in the emergency lighting box.

Design
Luminaire body of black PBT plastic (RAL 9004). Visible reflector ring in white PBT plastic (RAL 9003).

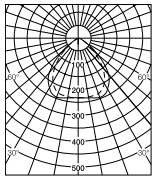
Reflector
Rotational symmetric reflector in metallised PBT in specular or matt aluminium. Cut-off angle 30°. The reflector has a protective coat of scratch-resistant lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with an emergency lighting box.

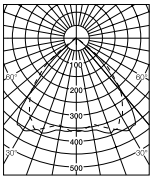
Miscellaneous
Available as standard with mains cable and earthed plug or Wieland snap-in connector. The luminaire is equipped with dust protection in the light opening.



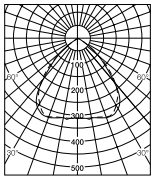
2×14 W, specular



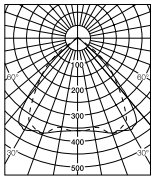
2×14 W, matt



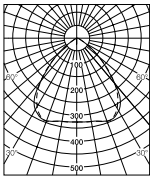
1×26 W, specular



1×26 W, matt

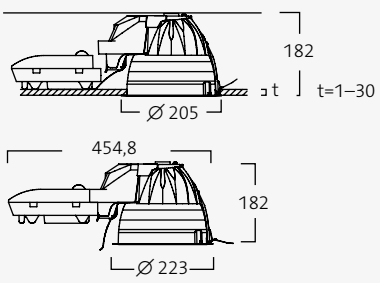


1×32 W,specular



1×32 W, matt

Detached ballast box.



Downward tilted ballast box.

Pleiad SLD G2 245

Luminaire

FSM-E	Reflector	kg	830	840	
1×17	Specular	0.6	**77373**	**77473**	☐
1×17	Matt	0.6	**77374**	**77474**	☐
2×17	Specular	0.6	**77378**	**77478**	☐
2×17	Matt	0.6	**77379**	**77479**	☐
2×32	Specular	0.6	**77375**	**77475**	☐
2×32	Matt	0.6	**77377**	**77477**	☐
1×42	Specular	0.6	**77380**	**77480**	☐
1×42	Matt	0.6	**77382**	**77482**	☐

Emergency lighting box

Type	kg	
Emergency lighting box, 1 h operating time		
Standard	0.9	**98014**
Autotest IV, potential free	0.9	**98015**
Autotest IV, DALI	0.9	**98016**
Emergency lighting box, 3 h operating time		
Standard	0.9	**98017**

For further information on Emergency lighting boxes, please refer to the Emergency lighting chapter.

Suffix code

☐ **-03**	Connection cable with plug, L=2.5 m.
☐ **-111**	Wieland GST18i3 (3-way). One outlet socket.
☐ **-205**	1–10 V
☐ **-303**	Wieland GST 18i3 male, L=3.0 m
☐ **-316**	Emergency luminaire DALI/DSI/switchDIM
☐ **-319**	HF-std. Emergency lighting luminaire.
☐ **-322**	DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐ **-368**	DALI/Phase-pulse control
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick, tool-free installation included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

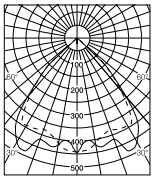
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. The luminaire for emergency lighting has a separate emergency lighting box, which is connected to the luminaire with snap-in connector. All connections are made in the emergency lighting box.

Design
Luminaire body of black PBT plastic (RAL 9004). Visible reflector ring in white PBT plastic (RAL 9003).

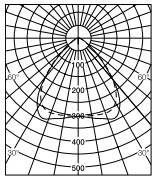
Reflector
Rotational symmetric reflector in metallised PBT in specular or matt aluminium. Cut-off angle 30°. The reflector has a protective coat of scratch-resistant lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with an emergency lighting box.

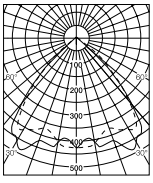
Miscellaneous
Available as standard with mains cable and earthed plug or Wieland snap-in connector. The luminaire is equipped with dust protection in the light opening.



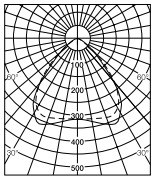
1×17 W, specular



1×17 W, matt

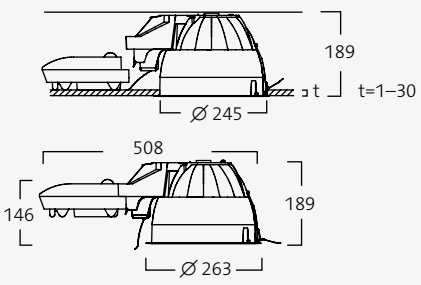


1×42 W, specular



1×42 W, matt

Ventilation duct for the light source.



Front assembly spring.

Pleiad SLD G2 285

Luminaire					
FSM-E	Reflector	kg	**830**	**840**	
1×57	Specular	0.7	**77390**	**77490**	☐
1×57	Matt	0.7	**77392**	**77492**	☐

Emergency lighting box		
Type	kg	
Emergency lighting box, 1 h operating time		
Standard	0.9	**98014**
Autotest IV, potential free	0.9	**98015**
Autotest IV, DALI	0.9	**98016**
Emergency lighting box, 3 h operating time		
Standard	0.9	**98017**

For further information on Emergency lighting boxes, please refer to the Emergency lighting chapter.

Suffix code	
☐	**-03** Connection cable with plug, L=2.5 m.
☐	**-111** Wieland GST18i3 (3-way). One outlet socket.
☐	**-205** 1–10 V
☐	**-322** DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐	**-368** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick, tool-free installation included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

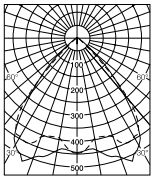
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. The luminaire for emergency lighting has a separate emergency lighting box, which is connected to the luminaire with snap-in connector. All connections are made in the emergency lighting box.

Design
Luminaire body of black PBT plastic (RAL 9004). Visible reflector ring in white PBT plastic (RAL 9003).

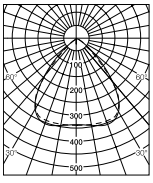
Reflector
Rotational symmetric reflector in metallised PBT in specular or matt aluminium. Cut-off angle 30°. The reflector has a protective coat of scratch-resistant lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with an emergency lighting box.

Miscellaneous
Available as standard with mains cable and earthed plug or Wieland snap-in connector. The luminaire is equipped with dust protection in the light opening.

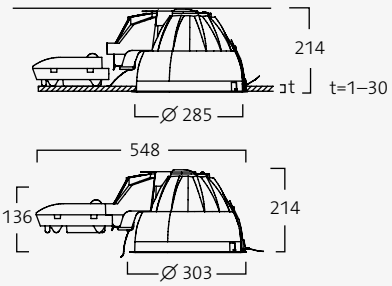


1×57 W, specular



1×57 W, matt

Quick connection terminal with T-splitter for looping in.



Luminaire with IP 21 accessory.

Pleiad
Photo: Sini Pennanen

Pleiad Compact G2

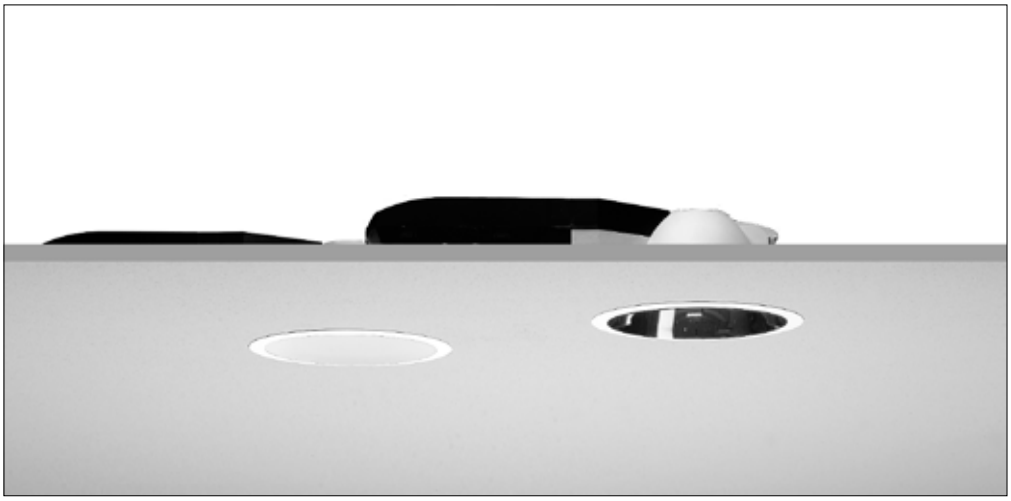
Designed by Wilma Daemen

Pleiad Compact G2 is a quick-to-install downlight that combines minimal dimensions with exceptional lighting comfort. Pleiad Compact G2 is ideal for limited inset depths and has extensive horizontal flexibility. In shopping centres, exhibition halls, production plants or everyday corridors, crowded suspended ceilings are no longer a lighting problem.

Cable ladders, ventilation and sprinkler systems share space in the ceiling with downlights – which are usually the last to be installed. A difficult installation process where there is the opportunity to save a great deal of time and money. Pleiad Compact G2 is designed to handle the overcrowding and can be installed without the need for tools. The detachable ballast box offers flexibility when installing; if something is in the way, the box can be moved around it.

Despite its size, Pleiad Compact G2 offers first class efficiency and the horizontal position of the light source gives good mechanical cut-off in relation to the low assembly heights. All downlights can be installed with the light source facing in the same direction, providing a consistent light pattern on the ceiling.

Pleiad Compact G2 165



Luminaire					
FSQ-E	Reflector	kg			
1×18	Specular	0.6	**77300**	**77400**	☐
1×18	Matt	0.6	**77302**	**77402**	☐

Battery box for emergency luminaire	
Battery box 1 h, L=240, W=73, H=38	**98026**
Battery box 3 h, L=240, W=73, H=38	**98027**

Suffix code	
☐ **-03**	Connection cable with plug, L=2,5 m.
☐ **-111**	Wieland GST18i3 (3-way). One outlet socket.
☐ **-215**	HF-std. Emergency light luminaire for 1 h battery box.
☐ **-216**	HF-std. Emergency light luminaire for 3 h battery box.
☐ **-322**	DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick assembly without tools are included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

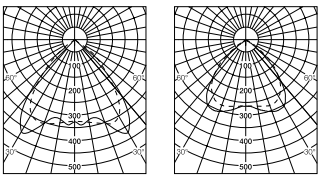
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. Single phase through-wiring is possible on luminaires for HF-dim and emergency lighting. Luminaires for emergency lighting feature a separate battery box. The charge indicator is located in the reflector ring.

Design
Luminaire body of black PBT-plastic (RAL 9004). Visible reflector ring in white PBT plastic (RAL 9003).

Reflector
Metallised PBT in specular or matt aluminium. Cut-off angle 20°. The reflector has a protective coat of scratch-resistant clear lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with a battery box.

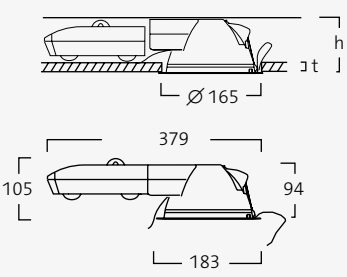
Miscellaneous
Available on special request with mains cable and earthed plug or Wieland snap-in connector. Luminaires supplied with light source fitted.



1×18 W, Specular

1×18 W, Matt

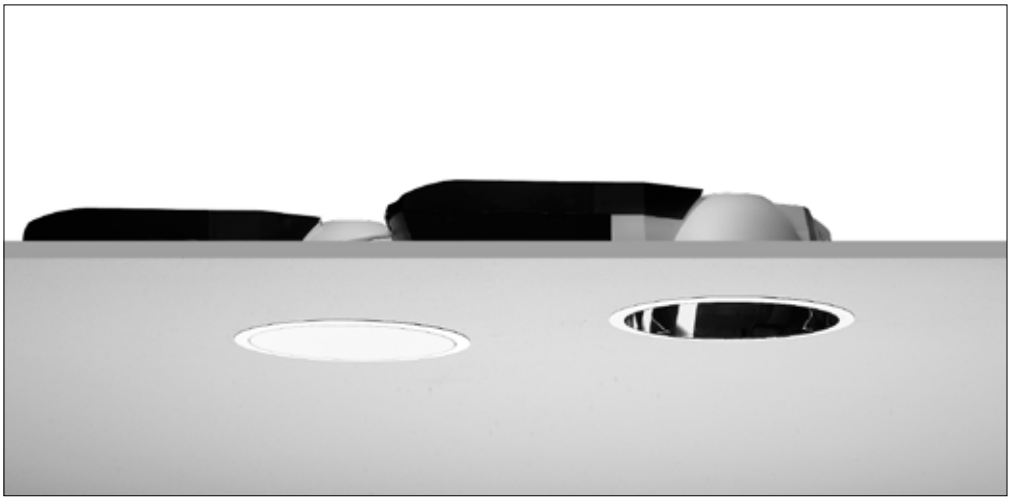
Blue Wieland connector for dimming.



HF	
t	h
1–23	94
24–30	t+71

Luminaire with battery box for emergency lighting.

Pleiad Compact G2 205



Luminaire					
FSQ-E	Reflector	kg	**830**	**840**	
2×18	Specular	0.8	**77305**	**77405**	☐
2×18	Matt	0.8	**77307**	**77407**	☐
1×26	Specular	0.8	**77310**	**77410**	☐
1×26	Matt	0.8	**77312**	**77412**	☐

Battery box for emergency luminaire	
Battery box 1 h, L=240, W=73, H=38	**98026**
Battery box 3 h, L=240, W=73, H=38	**98027**

Suffix code	
☐	**-03** Connection cable with plug, L=2,5 m.
☐	**-111** Wieland GST18i3 (3-way). One outlet socket.
☐	**-215** HF-std. Emergency light luminaire for 1 h battery box.
☐	**-216** HF-std. Emergency light luminaire for 3 h battery box.
☐	**-322** DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick assembly without tools are included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

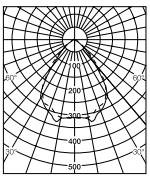
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. Single phase through-wiring is possible on luminaires for emergency lighting. Luminaires for emergency lighting feature a separate battery box. The charge indicator is located in the reflector ring.

Design
Luminaire body of black PBT-plastic (RAL 9004). Visible reflector ring in white PBT plastic (RAL 9003).

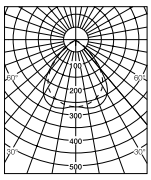
Reflector
Metallised PBT in specular or matt aluminium. Cut-off angle 20°. The reflector has a protective coat of scratch-resistant clear lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with a battery box.

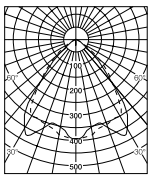
Miscellaneous
Available on special request with mains cable and earthed plug or Wieland snap-in connector. Luminaires supplied with light source fitted.



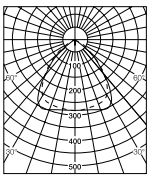
2×18 W, specular



2×18 W, matt

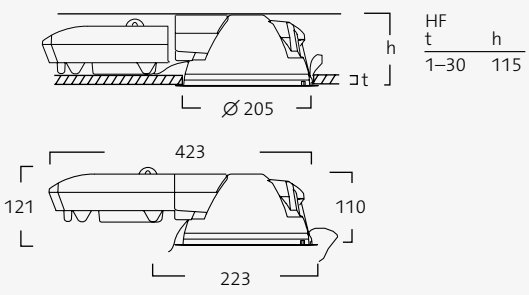


1×26 W, specular



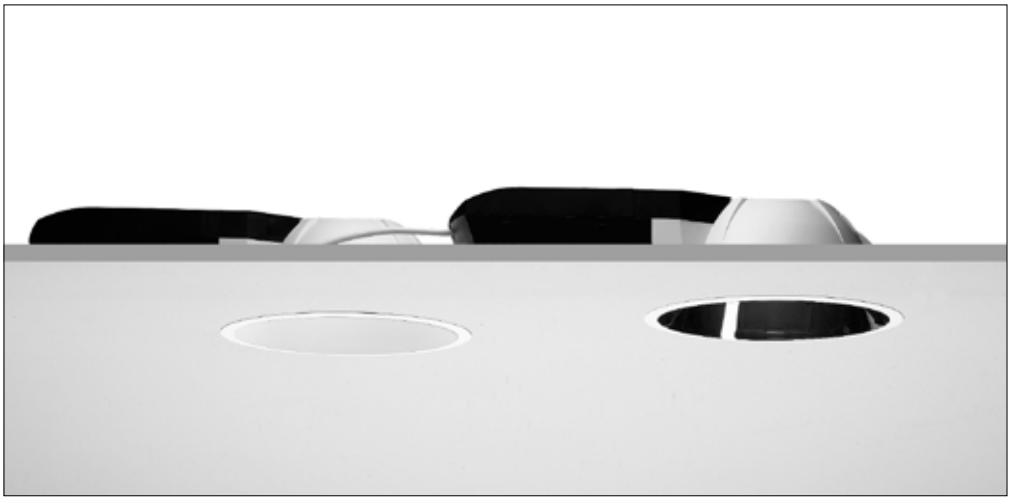
1×26 W, matt

The minimal height of the luminaire is ideal when there is a low ceiling height.



The ballast box is easily detached when there are obstacles in the recessed area.

Pleiad Compact G2 245



Luminaire					
FSQ-E	Reflector	kg	**830**	**840**	
2×26	Specular	1.0	**77315**	**77415**	☐
2×26	Matt	1.0	**77317**	**77417**	☐

Battery box for emergency luminaire		
Battery box 1 h, L=240, W=73, H=38		**98026**
Battery box 3 h, L=240, W=73, H=38		**98027**

Suffix code	
☐ **-03**	Connection cable with plug, L=2,5 m.
☐ **-111**	Wieland GST18i3 (3-way). One outlet socket.
☐ **-215**	HF-std. Emergency light luminaire for 1 h battery box.
☐ **-216**	HF-std. Emergency light luminaire for 3 h battery box.
☐ **-322**	DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick assembly without tools are included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

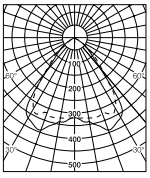
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. Single phase through-wiring is possible on luminaires for emergency lighting. Luminaires for emergency lighting require a separate battery box. The charge indicator is located in the reflector ring.

Design
Luminaire body of black PBT-plastic (RAL 9004). Visible reflector ring in white PBT plastic (RAL 9003).

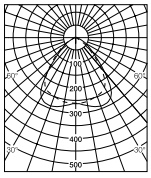
Reflector
Metallised PBT in specular or matt aluminium. Cut-off angle 20°. The reflector has a protective coat of scratch-resistant clear lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with a battery box.

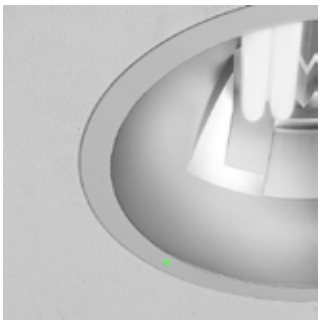
Miscellaneous
Available on special request with mains cable and earthed plug or Wieland snap-in connector. Luminaires supplied with light source fitted.



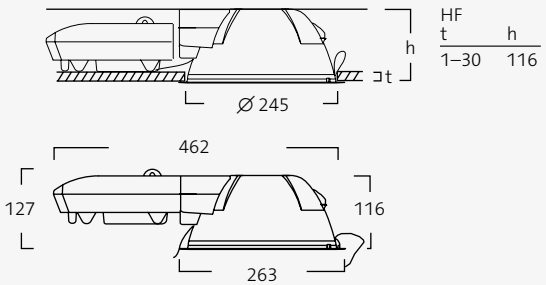
Specular



Matt



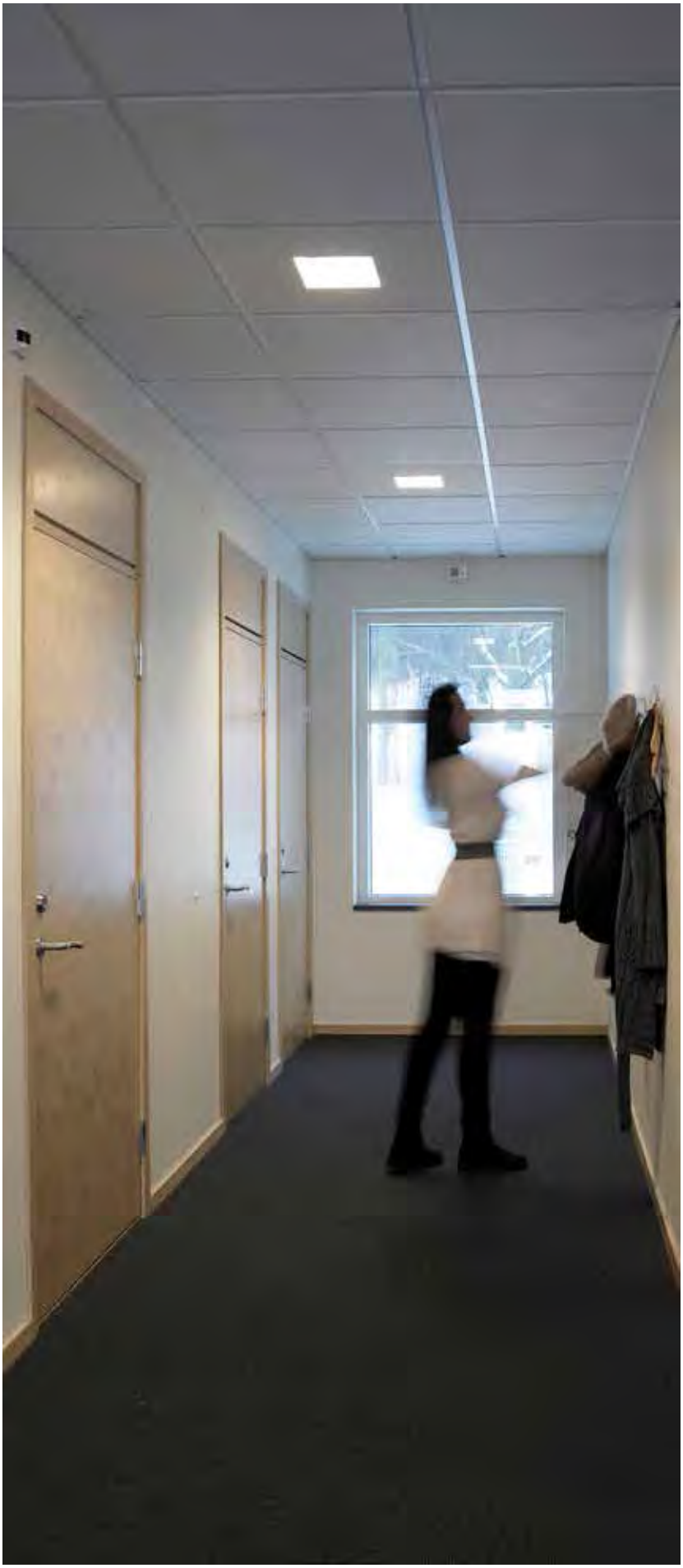
An LED diode indicates charging of the emergency batteries.



The ballast box is detachable to facilitate easy installation.

Pleiad Square G2

Designed by Wilma Daemen



Pleiad Square G2 is a high performance downlight with a square light opening that amplifies the orientation of the room. The shape of the light opening gives a good degree of efficiency and excellent light treatment, making Pleiad Square G2 an imaginative alternative for general lighting in offices, auditoriums and restaurants.

Pleiad Square G2 offers the same advantages as the other luminaires in the Pleiad G2 range: energy efficiency, easy installation and a small frame which gives a discreet transition between the luminaire and ceiling. The horizontal placement of the light source also proves beneficial on account of the square design of the luminaire housing and the reflector. Pleiad Square G2 can be used throughout or combined with other Pleiad luminaires in a project.

Pleiad Square G2 205

Luminaire with HF-std

FSM-E	Reflector	kg	830	840	
1×14	Specular	1.0	**77720**	**77770**	☐
1×14	Matt	1.0	**77721**	**77771**	☐
1×26	Specular	1.0	**77722**	**77772**	☐
1×26	Matt	1.0	**77723**	**77773**	☐
1×32	Specular	1.0	**77724**	**77774**	☐
1×32	Matt	1.0	**77725**	**77775**	☐

Emergency lighting box

Type	kg	
Emergency lighting box, 1 h operating time		
Standard	0.9	**98014**
Self-test IV, potential free	0.9	**98015**
Self-test IV, DALI	0.9	**98016**
Emergency lighting box, 3 h operating time		
Standard	0.9	**98017**

For further information on Emergency lighting boxes, please refer to the Emergency Lighting chapter.

Suffix code

☐ **-03**	Connection cable with plug, L=2,5 m
☐ **-111**	Wieland GST18i3 (3-way). One outlet socket.
☐ **-316**	Emergency luminaire DALI/DSI/switchDIM
☐ **-319**	HF-std. Emergency lighting luminaire.
☐ **-322**	DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐ **-368**	DALI/Phase-pulse control
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick, tool-free installation included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

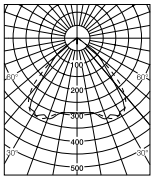
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. The luminaire for emergency lighting has a separate emergency lighting box, which is connected to the luminaire with snap-in connector. All connections are made in the emergency lighting box.

Designed by
Luminaire body of black PBT plastic and reflector with reflector edge of white PBT plastic (RAL 9010).

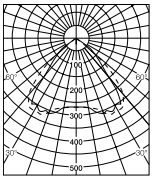
Reflector
Metallised PBT in specular or matt aluminium. Cut-off angle 30°. The reflector has a protective coat of scratch-resistant lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with an emergency lighting box.

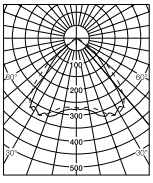
Miscellaneous
Available as standard with mains cable and earthed plug or Wieland snap-in connector. The luminaire is equipped with dust protection in the light opening.



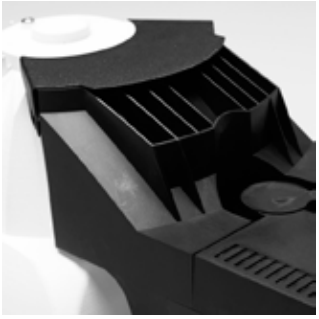
1×14 W, specular



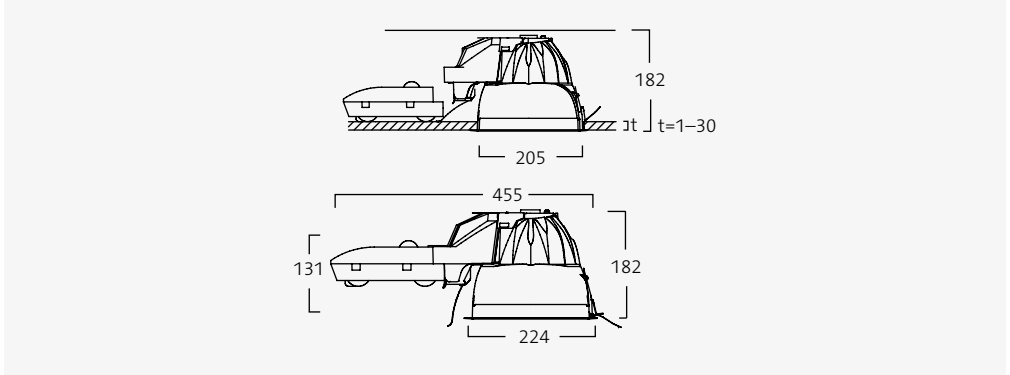
1×26 W, specular

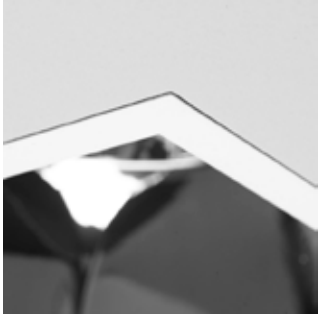


1×32 W, specular



Ventilation between the reflector and ballast box.





Frame, installed in the ceiling.

Pleiad Square G2 245

Luminaire with HF-std

FSM-E	Reflector	kg	830	840	
1×17	Specular	1.0	**77726**	**77776**	☐
1×17	Matt	1.0	**77727**	**77777**	☐
1×42	Specular	1.0	**77728**	**77778**	☐
1×42	Matt	1.0	**77729**	**77779**	☐

Emergency lighting box

Type	kg	
Emergency lighting box, 1 h operating time		
Standard	0.9	**98014**
Self-test IV, potential free	0.9	**98015**
Self-test IV, DALI	0.9	**98016**
Emergency lighting box, 3 h operating time		
Standard	0.9	**98017**

For further information on Emergency lighting boxes, please refer to the Emergency Lighting chapter.

Suffix code

☐ **-03**	Connection cable with plug, L=2,5 m
☐ **-111**	Wieland GST18i3 (3-way). One outlet socket.
☐ **-316**	Emergency luminaire DALI/DSI/switchDIM
☐ **-319**	HF-std. Emergency lighting luminaire.
☐ **-322**	DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
☐ **-368**	DALI/Phase-pulse control
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick, tool-free installation included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

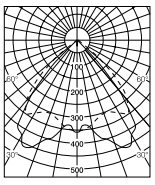
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. The luminaire for emergency lighting has a separate emergency lighting box, which is connected to the luminaire with snap-in connector. All connections are made in the emergency lighting box.

Design
Luminaire body of black PBT plastic and reflector with reflector edge of white PBT plastic (RAL 9010).

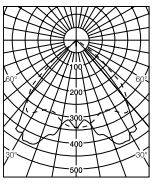
Reflector
Metallised PBT in specular or matt aluminium. Cut-off angle 30°. The reflector has a protective coat of scratch-resistant lacquer.

Emergency lighting
Emergency lighting luminaire must be supplemented with an emergency lighting box.

Miscellaneous
Available as standard with mains cable and earthed plug or Wieland snap-in connector. The luminaire is equipped with dust protection in the light opening.

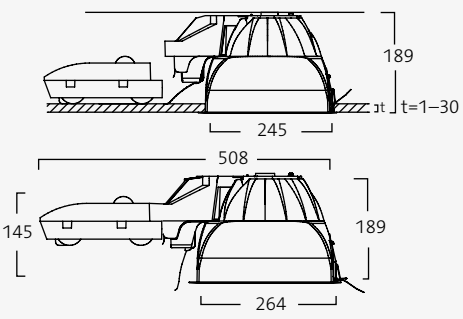


1×17 W, specular



1×42 W, specular

Assembly springs used to install Pleiad Square.



Specular reflector.

Pleiad Square Ice G2

Installation
Suitable for recessed mounting in unventilated or ventilated ceilings. Light sources are fitted in the luminaire. Assembly springs for quick, tool-free installation included. An assembly plate should be used when installing in soft tile ceilings. The ballast box can be detached for flexible installation. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible.

Design
Luminaire body of black PBT plastic and reflector with reflector edge of white PBT plastic (RAL 9010). Glass frame.

Reflector
Metallised PBT in Matt aluminium. Cut-off angle 30°. The reflector has a protective coat of scratch-resistant lacquer.

Miscellaneous
Available as standard with mains cable and earthed plug or Wieland snap-in connector. The luminaire is equipped with dust protection in the light opening.

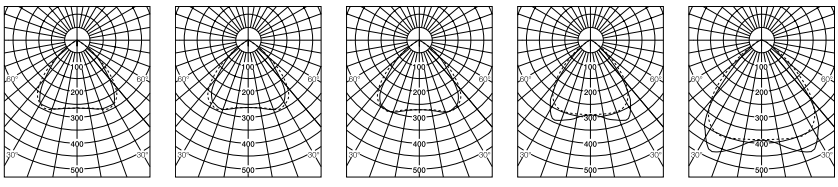
Luminaire

FSM-E	∅	Reflector	830	840	
1×14	205	Matt	**77865**	**77870**	■
1×17	245	Matt	**77868**	**77873**	■
1×26	205	Matt	**77866**	**77871**	■ ●
1×32	205	Matt	**77867**	**77872**	■ ●
1×42	245	Matt	**77869**	**77874**	■ ●

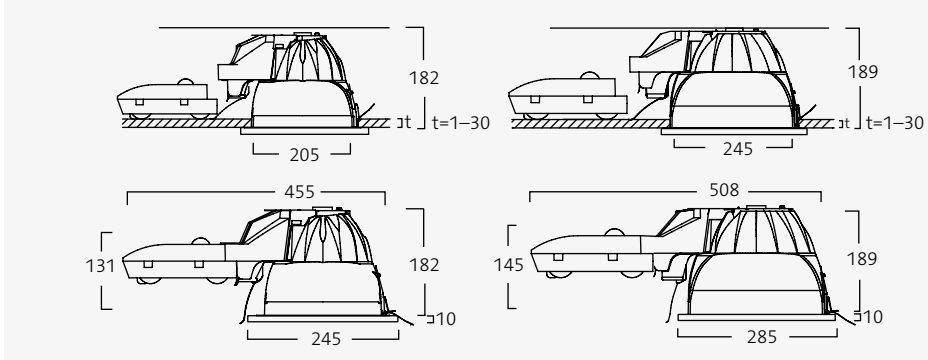
Suffix code

■ **-03**	Connection cable with plug, L=2.5 m.
■ **-111**	Wieland GST18i3 (3-way). One outlet socket.
■ **-323**	DALI. Wieland GST18i5 (5-way). One outlet socket.
■ **-368**	DALI/Phase-pulse control
● **-322**	DALI/DSI/switchDIM. Wieland GST18i5 (5-way). One outlet socket.
● **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



1×14 W | 1×26 W | 1×32 W | 1×17 W | 1×42 W



Edge ring II
The edge ring hides the lower edge of the reflector and is attached with a bayonet fixing. White or grey plastic or matt brushed aluminium surface.

Colour	Ø 165	Ø 205	Ø 245	Ø 285
White (RAL 9016)	**41900**	**41901**	**41902**	**41903**
Grey (RAL 7040)	**41904**	**41905**	**41906**	**41907**
Matt aluminium	**41908**	**41909**	**41910**	**41911**

Edge ring III
The edge ring hides the lower edge of the reflector and is attached with a bayonet fixing. White or grey plastic or matt brushed aluminium surface.

Colour	Ø 165	Ø 205	Ø 245	Ø 285
White (RAL 9016)	**41920**	**41921**	**41922**	**41923**
Grey (RAL 7040)	**41924**	**41925**	**41926**	**41927**
Matt aluminium	**41928**	**41929**	**41930**	**41931**

Cover plate clear IP 64
This accessory consists of Edge ring III and a clear polycarbonate disc.

Colour	Ø 165	Ø 205	Ø 245	Ø 285
White (RAL 9016)	**41840**	**41841**	**41842**	**41843**
Grey (RAL 7040)	**41844**	**41845**	**41846**	**41847**
Matt aluminium	**41848**	**41849**	**41850**	**41851**

Cover plate opal IP 54
This accessory consists of Edge ring III and an opal polycarbonate disc.

Colour	Ø 165	Ø 205	Ø 245	Ø 285
White (RAL 9016)	**41860**	**41861**	**41862**	**41863**
Grey (RAL 7040)	**41864**	**41865**	**41866**	**41867**
Matt aluminium	**41868**	**41869**	**41870**	**41871**

Cover plate delta IP 20
This accessory consists of Edge ring III and a microprism disc in clear acrylic.

Colour	Ø 165	Ø 205	Ø 245	Ø 285
White (RAL 9016)	**42031**	**42032**	**42033**	**42034**
Grey (RAL 7040)	**42035**	**42036**	**42037**	**42038**
Matt aluminium	**42039**	**42040**	**42041**	**42042**

Ring
Opal or coloured ring and white Edge ring III. Matt reflector recommended.

Colour	Ø 165	Ø 205	Ø 245
Opal	**41979**	**41980**	**41981**
Blue	**41970**	**41971**	**41972**
Green	**41976**	**41977**	**41978**

Opus
Opal structured shade and white Edge ring II. Matt reflector recommended.

Colour	Ø 165	Ø 205	Ø 245	Ø 285
White (RAL 9016)	**41745**	**41746**	**41747**	**41748**

Cilindriq rills
Opal structured shade with grooves in the opening and white Edge ring III.

Colour	Ø 165	Ø 205	Ø 245	Ø 285
White (RAL 9016)	**41935**	**41936**	**41937**	**41938**

Ringlight
The Ringlight unit is attached to the luminaire's edge ring with a bayonet fixing. Designed without visible screws. Two blasted glass rings with matt brushed aluminium edge ring or white finished sheet steel. Matt reflector recommended.

Colour	Ø 165	Ø 205	Ø 245	Ø 285
White (RAL 9016)	**41750**	**41751**	**41752**	
Blasted glass	**41754**	**41755**	**41756**	**41757**

Contra
Grey finished cross louvre with intensive coloured centre cone and grey Edge ring III. Matt reflector recommended.

Colour	Ø 165	Ø 205	Ø 245
Blue	**41880**	**41881**	**41882**
Aqua	**41883**	**41884**	**41885**
Green	**41886**	**41887**	**41888**
Alu	**41889**	**41890**	**41891**

Plain
Blasted glass décor. Suspended on the reflector with the help of three wire clips and white Edge ring III. Matt reflector recommended.

Plain	Ø 165	Ø 205	Ø 245
	41698	**41696**	**41697**

Ice
Sandblasted glass ring to be attached to the luminaires edge ring.

Ice	Ø 165	Ø 205	Ø 245
	41315	**41316**	**41317**

Retro-fit kit
This accessory consists of an Edge ring, white enamelled (RAL 9016) steel sheet disc and a mounting plate (included). The accessory fits Pleiad G2 165, all recessed Pleiad G3 and Pleiad Evo. The Retro-fit kit allows the luminaire to be installed in the existing aperture in the ceiling, Ø 165–255 mm.

Retro-fit kit	
	41339

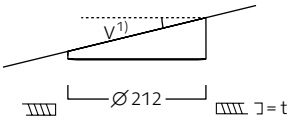
Recess panel
Fits panel ceilings 100- and 200-modules. Assembly plates supplied. Manufactured of white finished (RAL 9016) sheet steel.

Recess panel				
	Ø 165	**Ø 205**	**Ø 245**	**Ø 285**
	41775	**41776**	**41777**	**41778**

Sloping ceiling cylinder Pleiad G3
White enamelled sheet steel. Special brackets are included. Please state required angle. Max sloping ceiling stated below.

Sloping ceiling cylinder	
Pleiad G3	**41638**

[1] Please state required angle V. Standard angles 12–24°.



V	t
24°	13
22°	20
20°	26
15°	40

Assembly plate
For assembly in soft tile ceilings. Stable cardboard. The cardboard has cut-outs to suit all diameters.

Assembly plate	
Pleiad SLD G2, Pleiad Compact G2, Pleiad G3, Pleiad Evo	**41956**

Assembly plate
For assembly in soft tile ceilings. Stable cardboard. The cardboard has cut-outs to suit all diameters.

Assembly plate	
Pleiad Square G2	**41957**

Support
For assembly in soft tile ceilings. Consists of an assembly plate and support bars. The support's profile is adapted for 600 and 625-module.

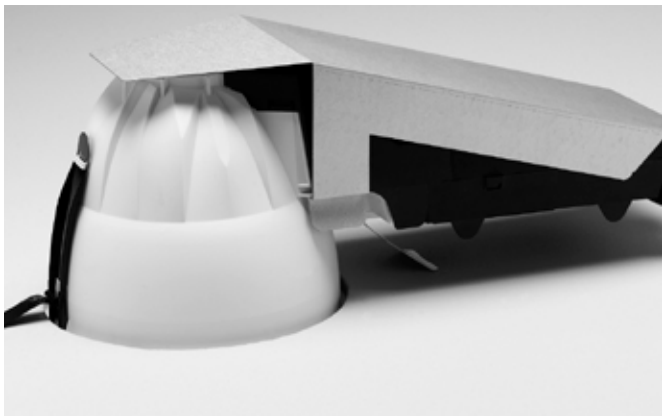
Support		
	600	**625**
Pleiad SLD G2, Pleiad Compact G2, Pleiad G3, Pleiad Evo	**41958**	**41959**
Pleiad Square G2	**41953**	**41954**

Turbin
Louvre of grey enamelled aluminium. Supplied including centre suspension. Improves the mechanical cut-off on Pleiad SLD G2 to 40°.

Turbin				
	Ø 165	Ø 205	Ø 245	Ø 285
Pleiad SLD G2	**41795**	**41796**	**41797**	**41798**

Fitting for metal ceilings
Fittings that are easily secured to the front assembly clip when installing in thin ceilings (metal ceilings). Two fittings required when installing Square.

Fitting for metal ceilings	
Pleiad SLD G2, Pleiad Square G2	**41983**



IP 21 cover
Cover of alu-zinc increases the luminaire's enclosure class to IP 21.

IP 21 cover				
	Ø 165	Ø 205	Ø 245	Ø 285
Pleiad Compact G2	**41700**	**41701**	**41702**	
Pleiad SLD G2	**41703**	**41704**	**41705**	**41706**

Edge frame
The edge frame hides the lower edge of the reflector and is assembled using a mounting frame and magnetic catch.

Colour		
	Ø 205	Ø 245
White (RAL 9016)	**42045**	**42046**
Grey (RAL 7040)	**42047**	**42048**

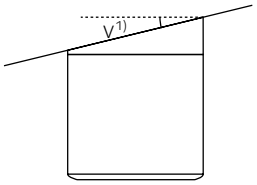
Cover plates
This accessory consists of an edge frame and an plastic disc. Supplied with white edge frame.

Disc		
	Ø 205	Ø 245
Clear polycarbonate disc, IP 54	**42080**	**42083**
Opal polycarbonate disc, IP 54	**42081**	**42084**
Clear microprism disc, IP 20	**42082**	**42085**

Sloping ceiling cylinder
White enamelled sheet steel. Special brackets are included. Sloping ceiling 8°–28°. Please state required angle.

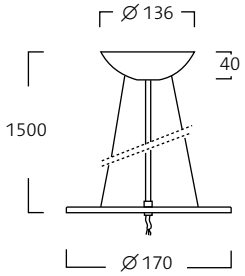
Sloping ceiling cylinder	
Pleiad G3	**41639**

[1] Please state the required V angle

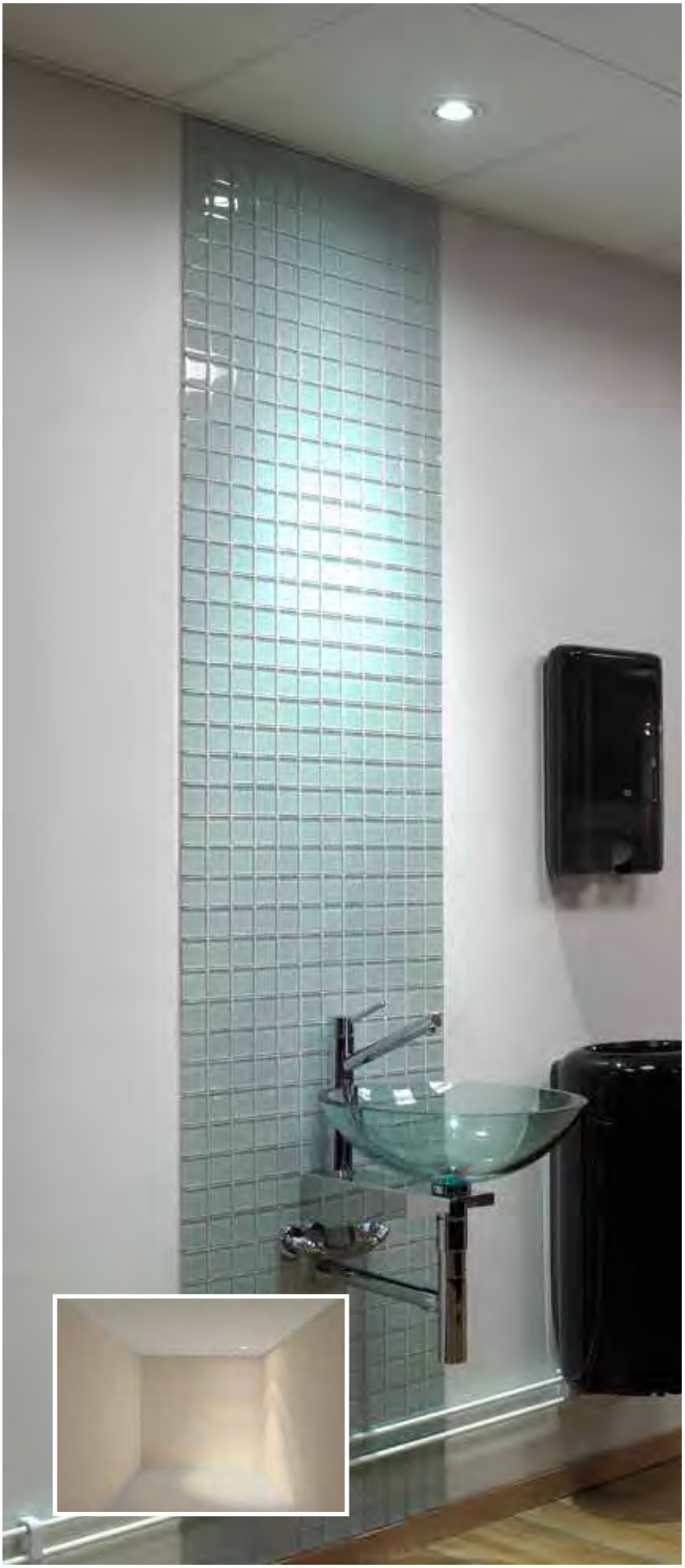


Cable pendant
Ceiling cup of ABS and luminaire disc of white enamelled (RAL 9016) steel sheet. Pendant length 1.5 m, which can easily be parallel adjusted. The ceiling cup and disc have strain relief sleeves to tension the cable. Fits Pleiad Comfort G3.

Cable pendant	
Cable pendant, 3-core for on/off	**41621**
Cable pendant, 5-core for dimming	**41622**



Easy



Easy is manufactured of cast aluminium and is extremely easy to install in most types of suspended ceilings. Available in white or alu-grey, there are three different designs; one fixed and two flexible.

The flexible models can be angled adjusted through 0–90° or 0–30°, both can be swivelled through 355°.

The light distribution for Easy depends on the choice of light source. The halogen lamp HRGI comes in various designs with several different distribution angles.

Easy can be supplemented with a black baffle accessory to increase the mechanical cut-off angle.

Luminaire

HRGI		kg	White	Alu-grey
1×35	0°/0°	0.3	**76726**	**76727**
1×50	355°/30°	0.4	**76728**	**76729**
1×50	355°/90°	0.4	**76730**	**76731**

Transformers

Transformers 70 VA, cable 1×1.0 m	**99070**
Transformers 105 VA, cable 2×1.0 m	**99071**
Transformers 105 VA, cable 3×1.0 m	**99072**
Transformers 105 VA, cable 2×2.0 m	**99074**
Transformers 105 VA, cable 3×2.0 m	**99075**
Transformers 150 VA, cable 2×1.0 m	**99077**
Transformers 150 VA, cable 3×1.0 m	**99078**
Transformers 150 VA, cable 4×1.0 m	**99079**
Transformers 150 VA, cable 3×2.0 m	**99080**
Transformers 150 VA, cable 4×2.0 m	**99081**

Accessories

Black enamelled baffle (only fits fixed 0°).	**41942**
Assembly plate for soft tile ceiling, Ø 75, 95, 107	**41982**
Assembly plate for soft tile ceiling, Ø 110	**41964**
Connection cable, Ensto female, free cable tails, 1 m	**96857**
Connection cable, Ensto female, free cable tails, 2 m	**96858**

Light source

W	*Socket*	*Beam angle*	*3000 K*
Halogen lamp HRGI			
35	*GU 5,3*	*10°*	*81440*
35	*GU 5,3*	*24°*	*81441*
35	*GU 5,3*	*38°*	*81442*
50	*GU 5,3*	*10°*	*81445*
50	*GU 5,3*	*24°*	*81446*
50	*GU 5,3*	*38°*	*81447*
50	*GU 5,3*	*60°*	*81448*

For further information on Light source, please refer to the Technical Information chapter.

Installation
Recessed in unventilated ceilings. Installation springs for quick assembly are included. A mounting plate or support should be used when mounting in soft tile ceiling, see accessories. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

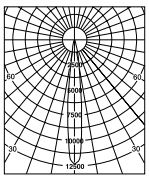
Connection
Connection with cable and class II plug. Snap-in.

Design
Luminaire body of cast aluminium. Assembly arms of spring steel. The luminaire is available in white (RAL 9016) structured or alu-grey (RAL 9006) structured and three designs; fixed, swivelled 355°and tiltable 30°or 90°.

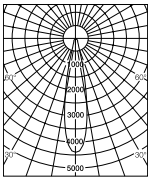
Reflector
Light distribution is dependent on the chosen light source. Halogen light source HRGI is available in several distribution angles.

Accessories
Black baffle to increase the mechanical cut-off angle.

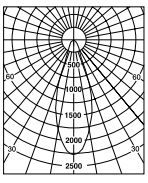
Miscellaneous
A separate 12 V transformer is required. The transformers for Easy have a two-way snap-in connection between luminaire and transformer. Transformers are delivered with cable and class II plug for mains connection. Information about transformers, see Transformers p. 221.



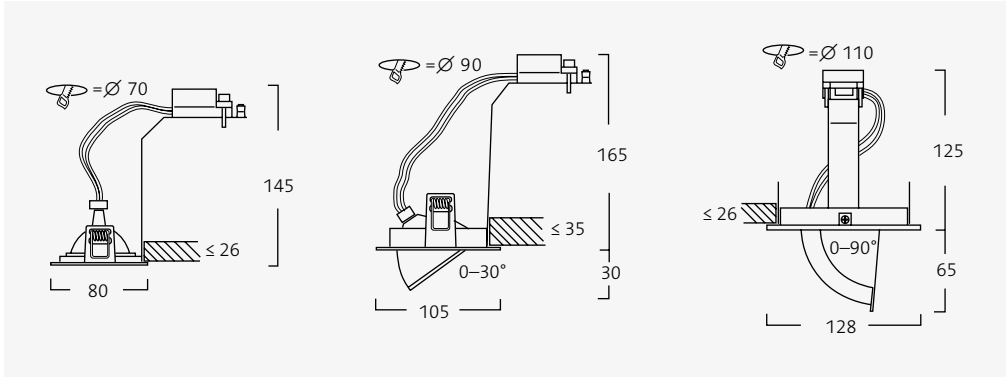
10°



24°



38°



Quick assembly with installation springs.

Installation
Recessed in ventilated or unventilated ceilings. Installation springs for quick assembly included. The assembly plate should be used for installation in soft-tile ceilings- please see accessories.
Connection
The luminaire is supplied with a cable for connecting to the driver. Driver to be ordered separately, see Accessories.
Design
Luminaire body in cast aluminium. Assembly springs in spring steel. White (RAL 9016) or alu-grey (RAL 9006) structured. The luminaire is available in two designs: 30° fixed or tilting, and 355° swivelling.
Miscellaneous
LED-module consists of 7 LEDs fitted with lenses. By default the 98178 driver is dimmable using a 1–10 V potentiometer. Fixed luminaires are protection class IP 44 under suspended ceiling and IP 20 above suspended ceiling.

Luminaire

LED-module, lm, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Turn/Tilt	White	Grey
Spreading angle 24°							
500, 7	3000	493	57	0.3	0°/0°	**76840**	**76844**
500, 7	4000	601	71	0.3	0°/0°	**76841**	**76845**
500, 7	3000	493	57	0.4	355°/30°	**76890**	**76894**
500, 7	4000	601	71	0.4	355°/30°	**76891**	**76895**
Spreading angle 38°							
500, 7	3000	377	44	0.3	0°/0°	**76922**	**76924**
500, 7	4000	449	53	0.3	0°/0°	**76923**	**76925**
500, 7	3000	377	44	0.4	355°/30°	**76926**	**76928**
500, 7	4000	449	53	0.4	355°/30°	**76927**	**76929**
Spreading angle 54°							
500, 7	3000	452	53	0.3	0°/0°	**76842**	**76846**
500, 7	4000	533	63	0.3	0°/0°	**76843**	**76847**
500, 7	3000	452	53	0.4	355°/30°	**76892**	**76896**
500, 7	4000	533	63	0.4	355°/30°	**76893**	**76897**

For current information on output and luminous flux, please refer to our website.

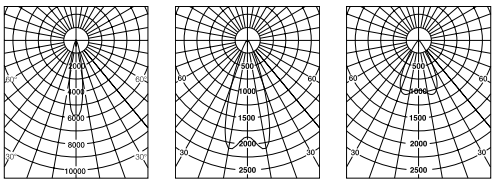
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

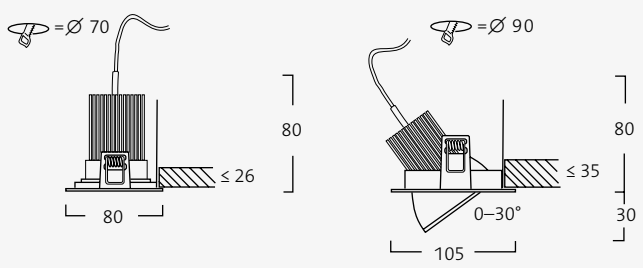
Assembly plate	**41982**
Driver, 9 W, 350 mA, DIM	**98178**
Driver, 15 W, 350 mA, DSI/DALI/switchDIM	**99003**



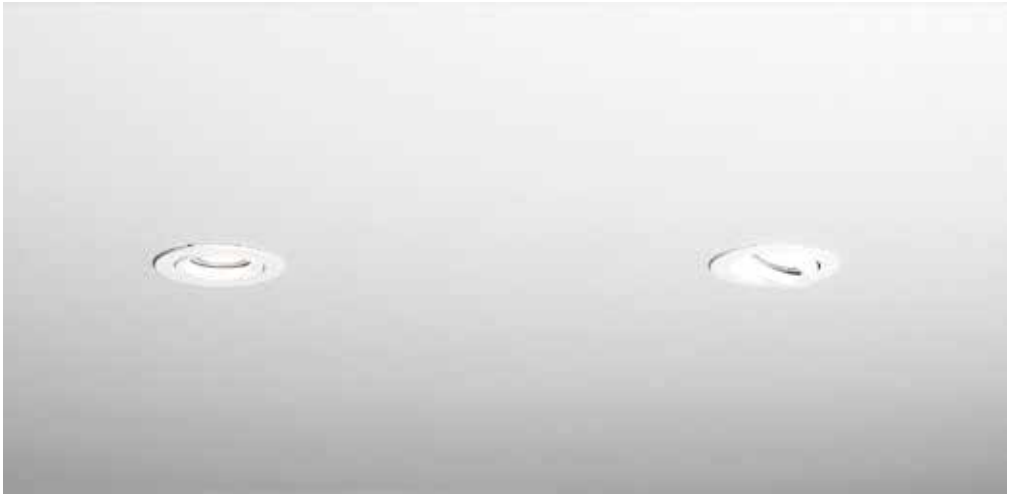
24°

38°

54°



LED-module connected to driver.



Installation
Recessed in unventilated ceilings. Assembly springs for quick assembly included. The assembly plate should be used when mounting in soft ceilings (see accessories).
Connection
Connect to 230 V, terminal block, through-wiring possible. Max outer dimensions of the connection cable 5×8 mm.
Design
Luminaire body of cast aluminium. Assembly springs in spring steel. White (RAL 9016) structured. The luminaire tilts 30°.
Dimming
Dimmable with most of the trailing edge dimmer (type R for incandescent light or type RL for magnetic transformers). The dimmer can be loaded with up to 10 % of their rated power.
Miscellaneous
IP 21 applies under suspended ceilings.

Luminaire		
DR HAGS	Turn/Tilt	**White**
1×6	0°/30°	**76932**

For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
2700 K	*≥ 80*	*L_{70} 40.000 h*	*MacAdam 5 SDCM*
3000 K	*≥ 80*	*L_{70} 40.000 h*	*MacAdam 5 SDCM*

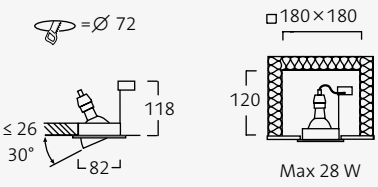
For further information on LEDs, please refer to the Technical Information chapter.

Accessories	
Assembly plate	**41982**

Light source					
DR HAGS	*Light intensity, cd*	*Socket*	*Beam angle*	*2700 K*	*3000 K*
6	*300*	*GU10*	*25°*	*81694*	
6	*300*	*GU10*	*40°*	*81695*	
6	*320*	*GU10*	*25°*		*81696*
6	*320*	*GU10*	*40°*		*81697*

For further information on Light source, please refer to the Technical Information chapter.

230 V LED light source.



Terminal block with strain relief and through-wiring possible.

Installation
For recessed mounting in unventilated or ventilated ceilings. The mounting plate should be used when mounting in soft tile ceilings, see accessories. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
3-way snap-in terminal block, 2.5 mm², 1-phase through-wiring possible. Luminaires for dimming, 5-way snap-in terminal block, 2.5 mm², 1-phase through-wiring possible.

Design
Body and frame of white (RAL 9016) or alu-grey (RAL 9006) enamelled sheet steel. The frame, which is combined with the reflector, is easily fitted in the body using friction springs.

Reflector
Asymmetrical reflector unit of satin matt, anodised aluminium.

Luminaire

FSQ-E	kg	White	Alu-grey	
1×18	1.1	**75930**	**75932**	☐
1×26	1.1	**75931**	**75933**	☐

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

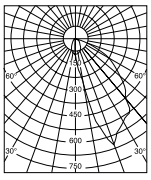
Accessories

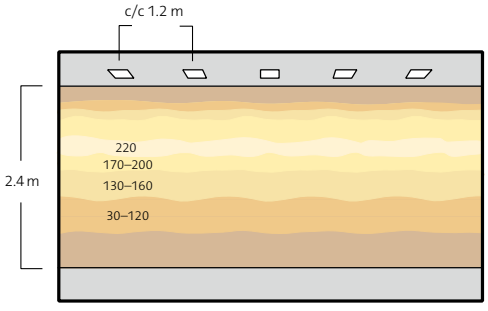
Assembly plate for soft ceilings	**94628**
Recess cassette	**94264**
Mains cable with earthed plug RKK 3×1,0 mm². L=5,0 m.	**91003**
Mains cable with earthed plug RKK 3×1,0 mm². L=2,5 m.	**91160**

Light source

W	*Socket*	*830*	*840*
	Compact fluorescent lamp FSQ-E		
18	*G24q-2*	*81222*	*81435*
26	*G24q-3*	*81223*	*81436*

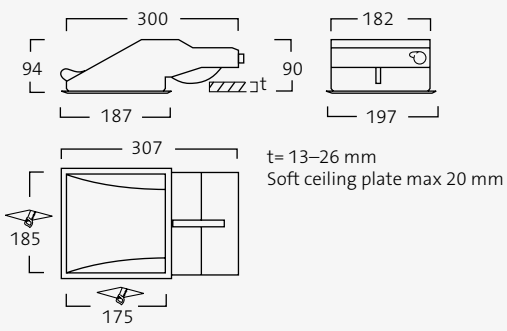
For further information on Light source, please refer to the Technical Information chapter.





The Isolux curve shows vertical lighting (EV) with the row of luminaires placed 1.0 m from the wall. We have assumed 0% reflection and 1200 lm per lamp for the calculations.

Sidelight² is fitted with a HF ballast for standard start or dimming as standard.



t= 13–26 mm
Soft ceiling plate max 20 mm

Assembly plate for mounting Sidelight² in soft tile ceilings.

Electronic transformers
70, 105, 150 and 210 VA
White, impact resistant, with two holes for assembly. Short-circuit protection with automatic restart, overheating protection and thermal overload cut-out with automatic reset. Dimming with transistor dimmer.
150 and 210 VA
For through-wiring (looping) on the primary side on separate 4 mm² screw terminals. Direct connection of 3 luminaires on the secondary side. Protection classification II, IP 20.

Transformers					
	L	W	H	kg	
70 VA	128	37	28	0.1	**98161**
105 VA	128	37	28	0.1	**98162**
150 VA	215	42	41	0.5	**98163**
210 VA	222	53	43	0.5	**98164**

Dimming without a dimmer
Transformers with the possibility of control via DSI, DALI or switchDIM. Using the switchDIM technology, the TE one4all-transformer is controlled directly with an optional number of basic pushbuttons connected in parallel, at the same time the number of transformers is limited by the fuse.

Constant secondary voltages always give 100 % light and at the same time guarantee the nominal service life of the light source. White casing of impact resistant plastic with two fixing holes. Through-wiring (looping) on the primary side. Direct connection of four light sources on TE-150 VA and three on TE-105 VA. Short-circuit protection with automatic restart and integrated thermal and overload protection through reducing the load and automatic return. Protection classification II and IP 20.

Transformers				
	L	W	H	
TE-0105 one4all (20–105 VA)	167	42	31	**98166**
TE-0150 one4all (50–150 VA)	207	46	40	**98167**

iTrack

System & spotlights

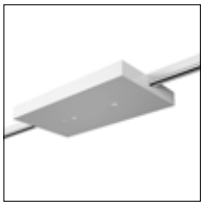
Track and luminaires for system installation and accent lighting

Global Trac Pro
IP 20/44 *p. 260–261*

iTrack Line
IP 20 *p. 238*

iTrack Line narrow
IP 20 *p. 242*

Marathon Recessed
IP 20 *p. 256–258*



Indira
IP 20 *p. 224–228*

iTrack Line asymmetrical
IP 20 *p. 243*

iTrack system
IP 20 *p. 232–233*

Zone Evo
IP 20 *p. 245–247*

iTrack accessories
p. 234–236

iTrack Line medium
IP 20 *p. 241*

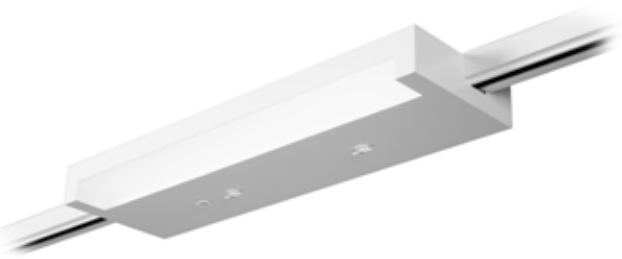
Marathon
IP 20 *p. 250–255*

Zone Evo Recessed
IP 20 *p. 248–249*

iTrack Dual
IP 20 *p. 237*

iTrack Line wide
IP 20 *p. 239*

Indira

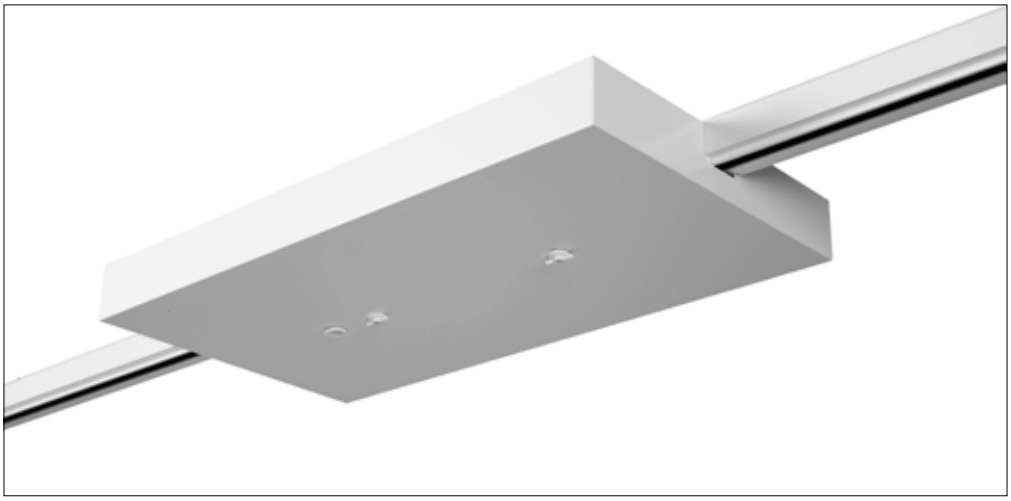


We thrive and perform well in natural light, so why not take that daylight feeling inside? We are challenging the norm and creating space with a lighter experience. The result is Indira, a completely new way of lighting classrooms where all light is indirect.

With Indira, the walls and ceiling act as reflectors for increased, indirect LED light. The luminaires are installed on our flexible iTrack tracks throughout the premises and the lighting can be adjusted as required using different light levels and light regulation. Using indirect light distribution, the whole room can be lit with no glare.

When the ceiling is like the sky, pupils' knowledge increases, and our research shows that a classroom with increased incidental light actually makes pupils feel and perform better. Indira is a step towards a new way of looking at classroom lighting. This is a luminaire which creates and maintains pleasant and energy-efficient study environments.

Indira



Installation
Installed on Fagerhult's iTrack system for mains voltage.
Design
Luminaire body of white enamelled (RAL 9016) sheet steel. Transparent acrylic plastic cover on top of the luminaire.
Dimming
DALI as standard. The iTrack system is easy to equip with multisensors for constant light and presence detection.
Miscellaneous
The luminaire is supplied with a 7-pin adapter with phase selector set at phase 1.

Luminaire

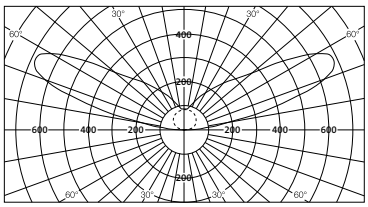
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
100	3000	9600	100	4.0	**35402**
100	4000	9600	100	4.0	**35407**

For current information on output and luminous flux, please refer to our website.

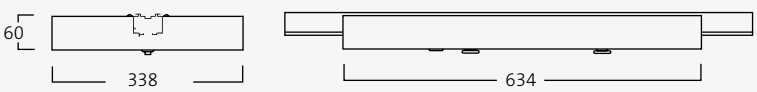
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

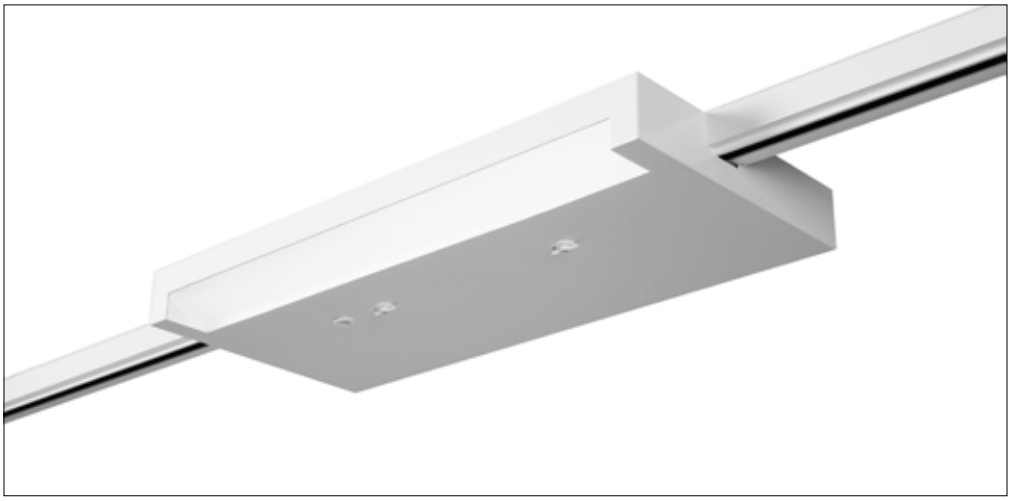


All versions



Indira indirect has an acrylic plastic cover on the top of the luminaire.

Indira
Indirect/Wallwasher



Installation
Installed on Fagerhult's iTrack system for mains voltage.
Design
Luminaire body of white enamelled (RAL 9016) sheet steel. Transparent acrylic plastic cover on top of the luminaire.
Louvre
Wallwasher:
Delta – microprism louvre in acrylic (PMMA) with a thin opal diffuser (acrylic/PMMA) inside.
Dimming
DALI as standard, separately for up and downlight. The iTrack system is easy to equip with multisensors for constant light and presence detection.
Miscellaneous
The luminaire is supplied with a 7-pin adapter with phase selector set at phase 1.

Luminaire

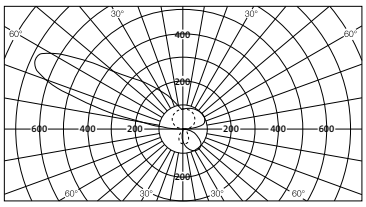
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
63	3000	5850	93	3.6	**35400**
63	4000	5850	93	3.6	**35405**

For current information on output and luminous flux, please refer to our website.

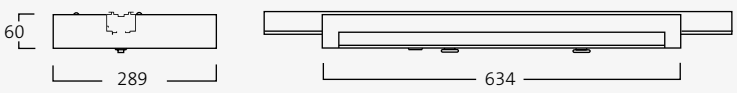
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

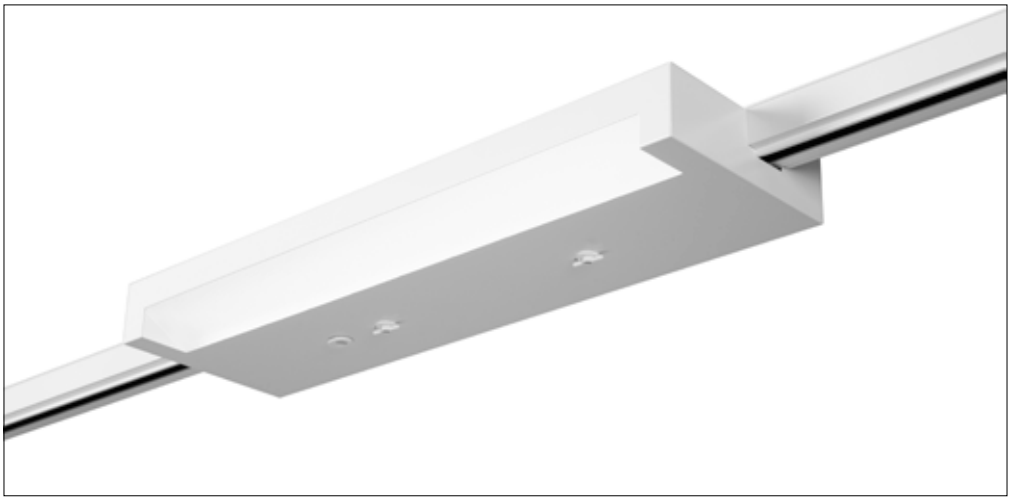


All versions



Indira was developed for integration with Fagerhult's iTrack system.

Indira
Wallwasher



Installation
Installed on Fagerhult's iTrack system for mains voltage.
Design
Luminaire body of white enamelled (RAL 9016) sheet steel.
Louvre
Delta – microprism louvre in acrylic (PMMA) with a thin opal diffuser (acrylic/PMMA) inside.
Dimming
DALI as standard. The iTrack system is easy to equip with multisensors for constant light and presence detection.
Miscellaneous
The luminaire is supplied with a 7-pin adapter with phase selector set at phase 1.

Luminaire

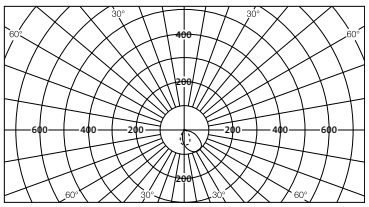
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
13	3000	1050	83	2.5	**35401**
13	4000	1050	83	2.5	**35406**

For current information on output and luminous flux, please refer to our website.

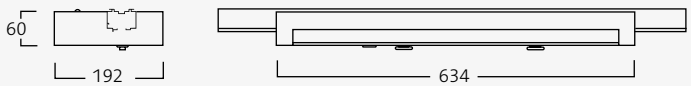
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.



All versions



The Delta louvre controls the indirect light onto the walls.

iTrack
Photo: Redshift Photography

iTrack

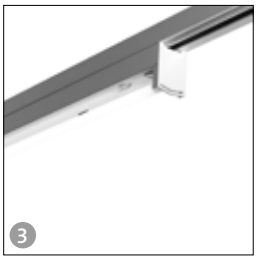
iTrack is a highly flexible, energy efficient track system which combines controls, a full range of luminaires and emergency lighting in one slim, aluminium profile. Developed for easy and logical installation, iTrack helps reduce valuable time onsite and the risk of errors made during the connections.

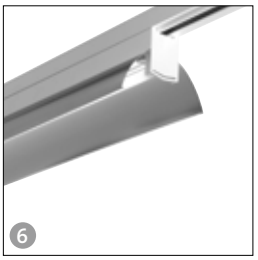
The ability for track systems to permit numerous luminaires to communicate and act in unison lends itself to large areas or longer spaces. From airports and warehouses to factories and showrooms there is an option within the iTrack family for virtually any environment.

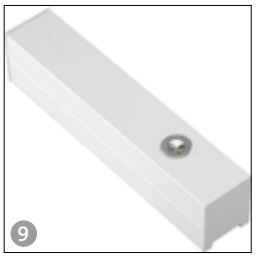
A longstanding restriction of track systems has been the number of circuits; often placing limitations on the number of functions which can be used simultaneously. iTrack is supplied with 12 built in circuits offering the freedom to access three different phases for luminaires, in addition to emergency and lighting control.

iTrack was developed to accommodate 3-phase adaptors, creating a unique open system. The ability to select virtually any spotlight offers the designer greater freedom to choose the lighting solutions they want from across the market.

Should the positioning of the furniture or activities being undertaken within the space change, the installed iTrack system can be easily and quickly adapted accordingly.







1. iTrack track system with 12 conductors in four lengths – 1 m, 2 m, 3 m and 4 m.

2. The luminaire iTrack Dual, 2-lamps with direct/ indirect light distribution.

3. The luminaire iTrack Line, 1-lamp and 2-lamps without reflectors.

4. The luminaire iTrack Line, 1-lamp and 2-lamps with wide beam reflector.

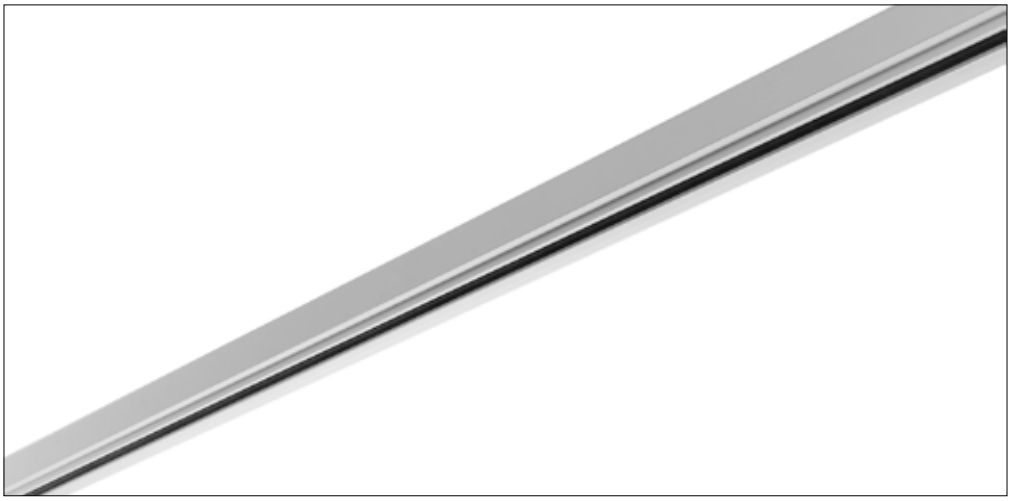
5. The luminaire iTrack Line, 1-lamp and 2-lamps with medium beam reflector.

6. The luminaire iTrack Line, 1-lamp and 2-lamps with narrow beam reflector.

7. The luminaire iTrack Line, 1-lamp and 2-lamps with asymmetrical reflector.

8. iTrack multi-sensor for constant light, occupancy detection and receiver for remote control (IR).

9. iTrack emLED, decentralised design with potential free contact or DALI and centralised design.



Track system

mm	White	Black
1000	**78200**	**78210**
2000	**78201**	**78211**
3000	**78202**	**78212**
4000	**78203**	**78213**

Installation
Surface mounted with a ceiling bracket or suspended from a wire pendant bracket, see the installation accessories.

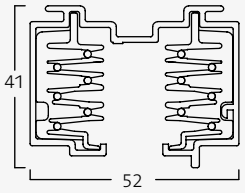
Connection
In a connection unit, see coupling accessories.

Design
White (RAL 9016) or black (9004) finished extruded aluminium with polycarbonate isolation profile. All conductors and earth conductor of 2.5 mm copper. 400 V, 3×16 A. IP 20.

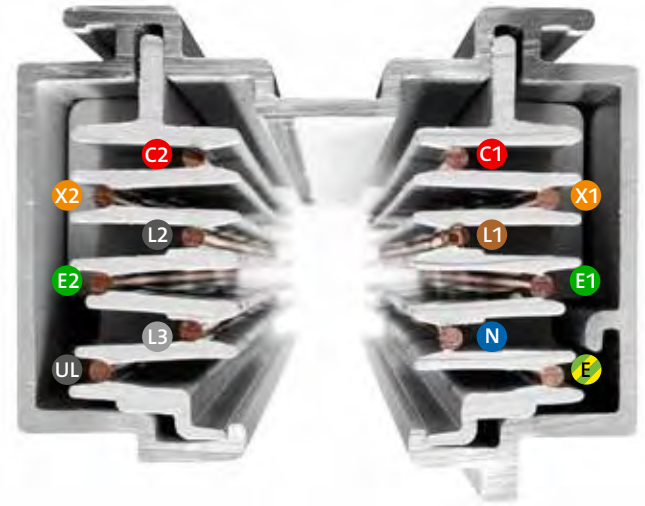
Dimming
iTrack can easily be equipped with a multi-sensor for constant light, occupancy detection and receiver for a remote control (IR), see accessories. The functionality requires luminaires with DALI (-368) and a connected power supply unit.

Adapter
Luminaires connected to the track require iTrack's special adapter. Luminaires are mechanically locked to the track via a fastener on the adapter. Adapters are also equipped with a phase selector for phase 1, 2 or 3. Luminaires supplied with a phase selector are set to phase 1. Spotlights with Multi-adapter XTSA 68 can be connected.

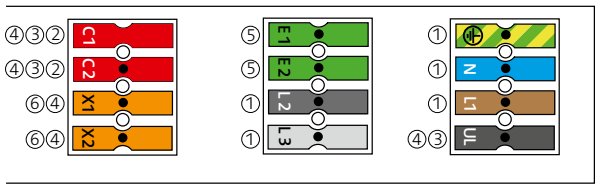
The track is installed via a ceiling bracket 78248.



Connection unit 78220 is fitted to the end of the track.

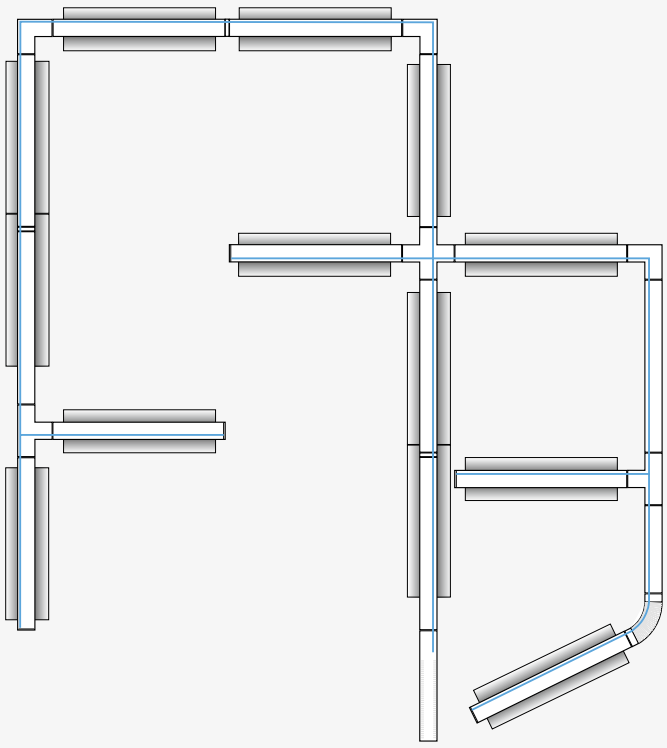


1



① *400 V*
① + ② *400 V+dim (DALI, 1–63 addresses)*
① + ③ *400 V+dim (DALI, 1–63 addresses)+decentralised emergency lighting*
① + ④ *400 V+dim (DALI, 1–63 addresses)+decentralised emergency lighting and monitoring*
① + ⑤ *400 V+centralised emergency lighting*
① + ⑥ *400 V+dim (DALI, 64–126 addresses)*

2



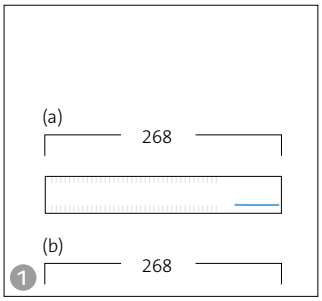
3

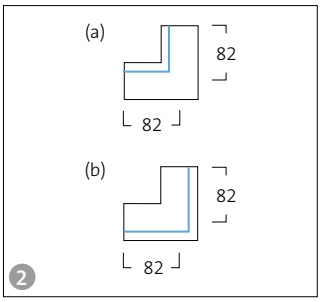
1. The track system contains 12 conductors to meet all the requirements of a modern lighting installation.
Explanation:
E – Earth.
UL – Unbroken cable.
N – Neutral.
L1, L2 and L3 – phases.
C1 and C2 – are used as control cable for e.g. DALI (address 1–63).
X1 and X2 – are used for e.g. DALI (address 64–126) or monitoring with decentralised emergency lighting.
E1 and E2 – are used for operation of centralised emergency lighting.

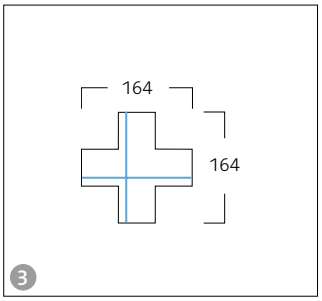
N, L1, L2 and L3 are used with the connection of e.g. a Multi-adapter XTSA 68 at the same time as the adapter is earthed to the top edge of the track.

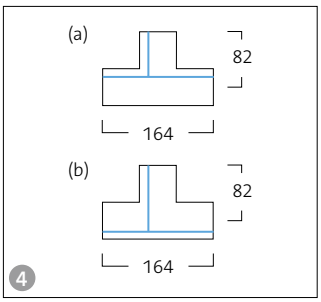
2. Diagram of connections in the connection unit with different types of lighting installations.

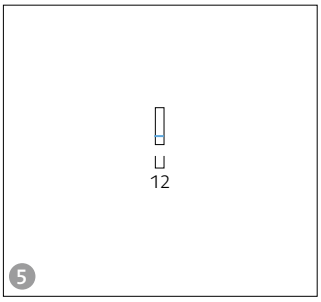
3. The diagram shows an imaginary track assembly as seen from above with all the different available connection details. Note the routing of the neutral in the different connection details (blue line).

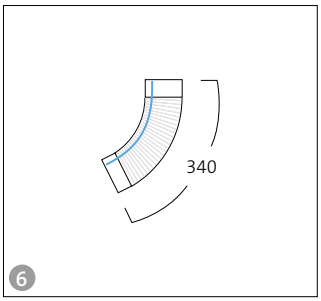












Connectors

1. Connection device with three snap-in terminal blocks 4 × 1.5 mm². The connection device has an outer casing in white (RAL 9016) or black (RAL 9004) polycarbonate.

	White	Black
Connection device	**78220**	**78230**
Connection device, mirror	**78229**	**78239**

2. L-coupler for connecting two tracks, the L-coupler has an outer casing in white (RAL 9016) or black (RAL 9004) polycarbonate.

	White	Black
L-coupler, (a)	**78222**	**78232**
L-coupler, (b)	**78223**	**78233**

3. X-coupler for joining two tracks. The X-coupler has an outer casing in white (RAL 9016) or black (RAL 9004) polycarbonate.

	White	Black
X-coupler	**78226**	**78236**

4. T-coupler for connecting two tracks, the T-coupler has an outer casing in white (RAL 9016) or black (RAL 9004) polycarbonate.

	White	Black
T-coupler, (a)	**78224**	**78234**
T-coupler, (b)	**78225**	**78235**

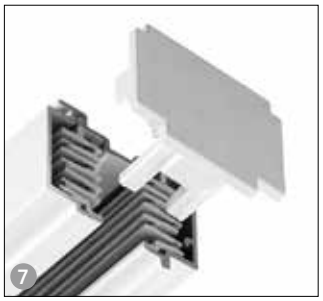
5. I-coupler for joining two tracks. The I-coupler has an outer casing in white (RAL 9016) or black (RAL 9004) polycarbonate.

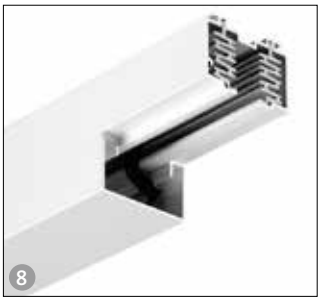
	White	Black
I-coupler	**78221**	**78231**

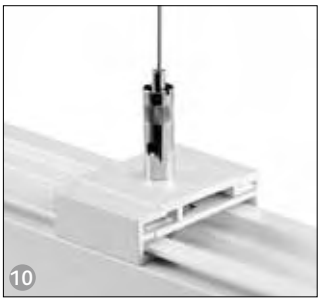
6. Flexible coupler for joining two tracks. The flexible coupler has an outer casing of white polycarbonate (RAL 9016).

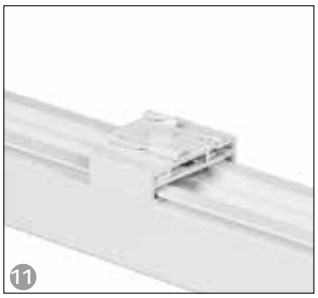
	White
Flexible coupler	**78227**

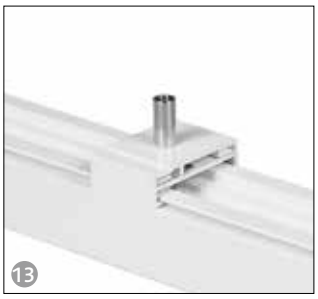
NOTE! The images show components from below, dimensional sketches show components from above with the neutral's placement (blue line).











Connectors

7. End-cap used to terminate the track system. End-cap of white polycarbonate (RAL 9016) or black (RAL 9004).

	White	Black
End-cap	**78228**	**78238**

Cover

8. Cover unit with snap-on fixing to the track. Made of aluminium with a white enamelled finish (RAL 9016). Same height as Dual luminaire and emLED unit.

	White
iTrack cover 1200 mm	**27997**
iTrack cover 1500 mm	**27998**
End-cap	**27996**

Installation accessories

9. Ceiling bracket of white enamelled aluminium with a white finish (RAL 9016) or black finish (RAL 9004). For installation on the ceiling.

	White	Black
Ceiling bracket	**78248**	**78252**

10. Pendant bracket of white aluminium (RAL 9016) or black aluminium (RAL 9004) with wire-lock for suspended installation.

	White	Black
Pendant bracket	**78249**	**78253**
Pendant bracket, adjustable centre	**78245**	**78254**
Wire, 4 m with Gripple clip No. 1		**96838**

11. Pendant bracket of white aluminium (RAL 9016) or black aluminium (RAL 9004) with wire-lock for suspended installation.

Bracket for T-bars 25 mm	**78250**

12. Discreet ceiling bracket with wire suspension and cable bushing

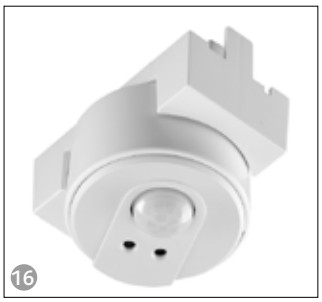
Wire suspension, pair	**91696**

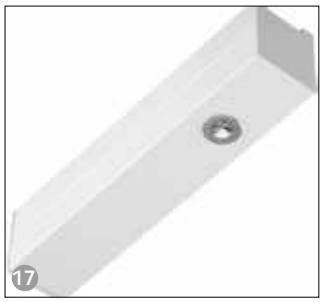
13. iTrack suspension for rod M6. White finish (RAL 9016) or black finish (RAL 9004).

	White	Black
iTrack suspension for rod M6	**78246**	**78273**

14. Cable pipe to connection device

	White
Cable pipe, 1000 mm	**96790**





Luminaire accessories

15. Connection device, pendant

	White	Black
Connector, pendant with 2,5 m cable	**78244**	**78274**
iTrack luminaire fixing/pair	**78257**	

Control accessories

16. Sensor unit of white (RAL 9016) polycarbonate with multi-sensor 312. Supplied with two possible connection options. C1/C2 for 1–63 DALI addresses and X1/X2 for 64–126 DALI addresses.

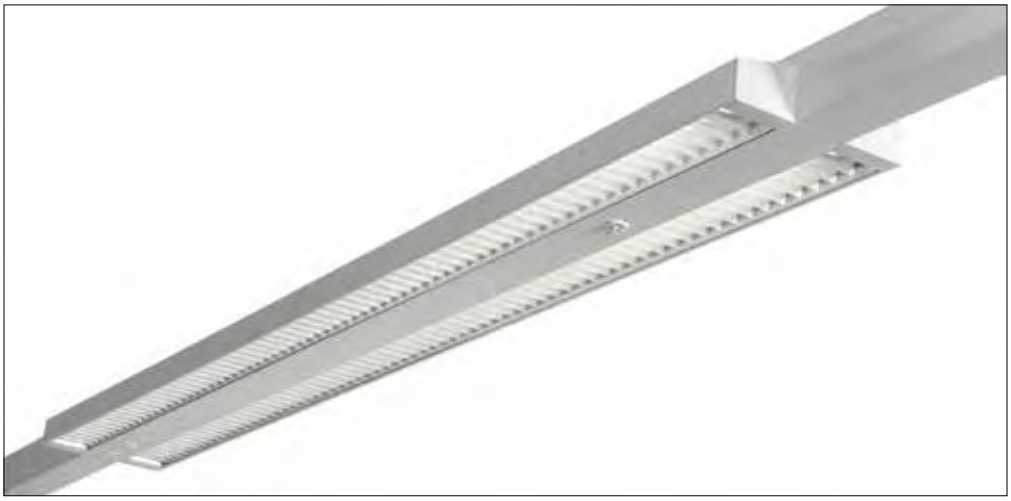
	White
iTrack Sensor	**34955**
IR-remote control (DIGIDIM 303)	**86121**
Power supply unit (DIGIDIM 402)	**86123**

Emergency lighting accessories

17. Emergency lighting unit of aluminium with a white enamelled finish (RAL 9016) and white polycarbonate end-caps.

	White	Black
iTrack emLED potential-free decentralised (for connection to UL). Self test as standard to EN 62034.	**34950**	**34970**
iTrack emLED decentralised (DALI) (for connection to UL and C1/C2 or X1/X2)	**34951**	**34971**
iTrack emLED centralised (for connection to E1/E2)	**34952**	**34972**
iTrack exit sign adapter, exLED Viva G2, exLED 4	**34960**	

iTrack Dual



Installation
Connected to Fagerhult's iTrack via a special 7-way adapter.
Design
Luminaire body of white extruded aluminium in white enamelled finish (RAL 9016) with polycarbonate end-caps.
Louvre
Beta – double parabolic with satin matt metallised aluminium side and cross blades with excellent reflection characteristics (> 92 %).
Delta – diffused microprism in acrylic TPb (PMMA) with good optical characteristics.
Emergency lighting
Most variants can be equipped with emergency lighting (-160).
Dimming
iTrack can be equipped with a multi-sensor for constant light, occupancy detection and receiver for a remote control (IR), see accessories. The functionality requires luminaires with DALI (-368). iTrack Dual can be equipped with other ballasts for dimming on request.
Miscellaneous
The luminaires are supplied with a phase selector set to phase 1. Some variations may require a 12-way adapter configured to suit.

Installation via iTracks 7-way adapter (Earthed, L1, L2, L3, N, C1, C2)

FDH	kg		
Beta			
2×25/28	3.9	**27920**	☐
2×32/35	4.4	**27922**	☐
2×45/49	4.4	**27923**	☐
2×50/54	3.9	**27921**	☐
Delta			
2×25/28	3.9	**27930**	☐
2×32/35	4.4	**27932**	☐
2×45/49	4.4	**27933**	☐
2×50/54	3.9	**27931**	☐

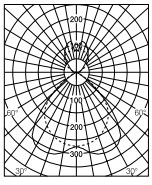
Suffix code

☐ **-368** DALI/Phase-pulse control

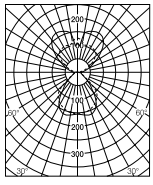
Add suffix code to the end of the luminaire part number to indicate required function.

Accessories

iTrack cover 1200 mm	**27997**
iTrack cover 1500 mm	**27998**

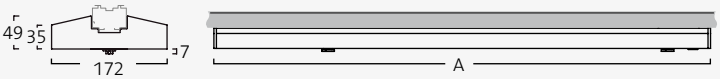


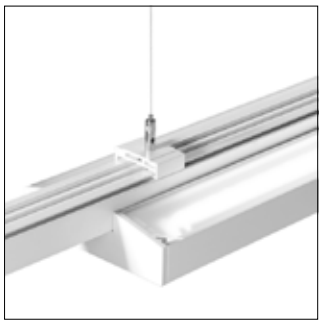
Beta



Delta

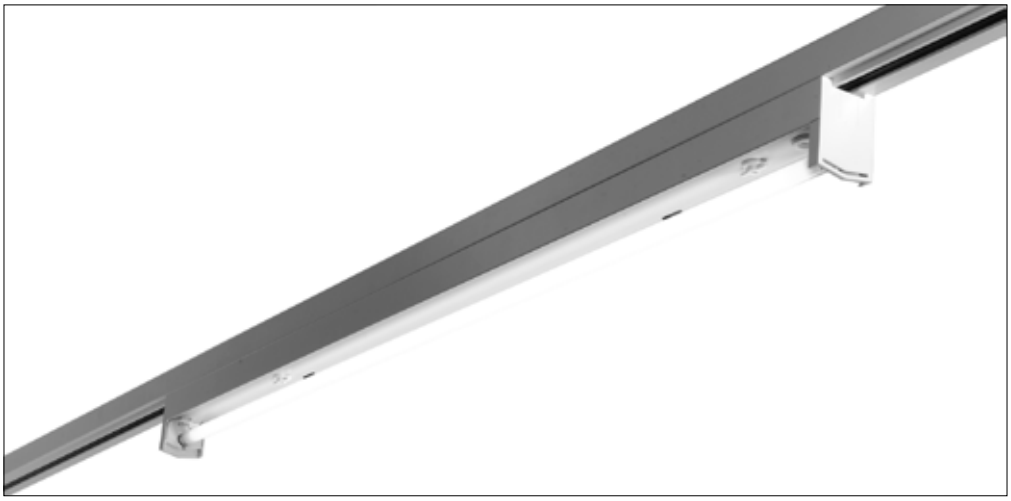
	A
2×25/28/50/54 W	1183
2×32/35/45/49 W	1483





The opening for indirect light is covered by an acrylic plastic diffuser.

iTrack Dual with a Delta microprism louvre.



Installation
Connected to Fagerhult's iTrack via a special 7-way adapter.
Design
Luminaire body of white extruded aluminium in white enamelled finish (RAL 9016) with polycarbonate end-caps.
Emergency lighting
Most variants can be equipped with emergency lighting (-160).
Dimming
iTrack can be equipped with a multi-sensor for constant light, occupancy detection and receiver for a remote control (IR), see accessories. This functionality requires luminaires with DALI (-368). iTrack Line can be equipped with other ballasts for dimming on request.
Miscellaneous
The luminaires are supplied with a phase selector set to phase 1. Some variations may require a 12-way adapter configured to suit.

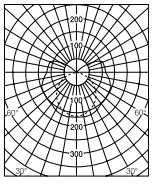
Installation via iTracks 7-way adapter (Earthed, L1, L2, L3, N, C1, C2)

FDH	kg		
1×25/28	1.6	**34900**	■ ●
1×32/35	2.0	**34901**	■ ●
1×45/49	2.0	**34902**	■ ●
1×50/54	1.6	**34903**	■ ●
1×73/80	2.0	**34904**	■
2×25/28	1.7	**34907**	■ ●
2×32/35	2.2	**34908**	■ ●
2×45/49	2.2	**34909**	■ ●
2×50/54	1.7	**34910**	■ ●
2×73/80	2.2	**34911**	■

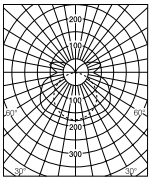
Suffix code

■ **-368** DALI/Phase-pulse control
● **-160** HF-std. Emergency lighting luminaire.

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



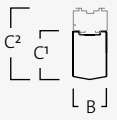
1×32/35 W

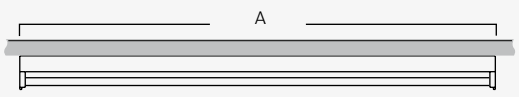


2×32/35 W

iTrack Line is supplied with 7-way adapter.

W	A	B	C¹	C²
25/28/50/54	1172	52	74	110
32/35/45/49/73/80	1472	52	74	110





iTrack Line in a two-lamp design.

iTrack Line
Wide beam

Installation via iTracks 7-way adapter (Earthed, L1, L2, L3, N, C1, C2)

FDH	kg		
1×25/28	1.9	**34820**	■ ●
1×32/35	2.4	**34821**	■ ●
1×45/49	2.4	**34822**	■ ●
1×50/54	1.9	**34823**	■ ●
1×73/80	2.4	**34824**	■
2×25/28	2.0	**34827**	■ ●
2×32/35	2.6	**34828**	■ ●
2×45/49	2.6	**34829**	■ ●
2×50/54	2.0	**34830**	■ ●
2×73/80	2.6	**34831**	■

Suffix code

■ **-368** DALI/Phase-pulse control

● **-160** HF-std. Emergency lighting luminaire.

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Lamell louvre for reflectors equipped with end-cap, 25/28/50/54 W	**89400**
Lamell louvre for reflectors equipped with end-cap, 32/35/45/49/73/80 W	**89402**
Lamell louvre for reflectors without end-cap, 25/28/50/54 W	**89401**
Lamell louvre for reflectors without end-cap, 32/35/45/49/73/80 W	**89403**
Reflector end-caps/pair	**92635**
Reflector joint springs	**92630**

Installation
Connected to Fagerhult's iTrack via a special 7-way adapter.

Design
Luminaire body of sheet steel in a white enamelled finish (RAL 9016) with polycarbonate end-caps.

Louvre
Lamell – lamell louvre in white enamelled aluminium. Available in two designs, one for reflectors with end-cap/caps and one for reflectors without end-caps.

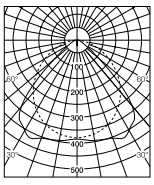
Reflector
Wide beam symmetrical light distribution of satin matt metallised aluminium with very good reflection characteristics (> 92 %).

Emergency lighting
Most variants can be equipped with emergency lighting (-160).

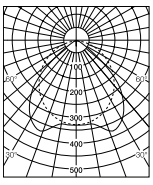
Dimming
iTrack can be equipped with a multi-sensor for constant light, occupancy detection and receiver for a remote control (IR), see accessories. The functionality requires luminaires with DALI (-368). iTrack Line can be equipped with other ballasts for dimming on request.

Accessories
Reflector end-caps of polycarbonate. Joint springs for continuous installation of metallised aluminium. Installed between reflectors.

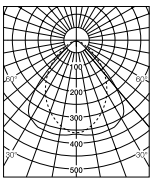
Miscellaneous
The luminaires are supplied with a phase selector set to phase 1. Some variations may require a 12-way adapter configured to suit.



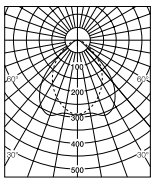
1×32/35 W



2×32/35 W



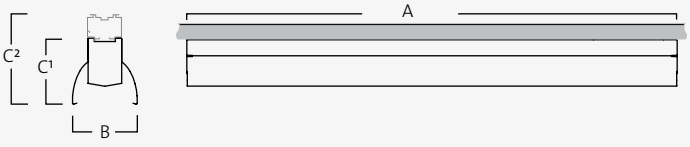
1×32/35 W, Lamell



2×32/35 W, Lamell

Joint springs are easily fitted between the reflectors in a continuous installation.

W	A	B	C¹	C²
25/28/50/54	1172	100	102	138
32/35/45/49/73/80	1472	100	102	138



iTrack Line wide beam can be equipped with end-caps.


Uutta
Uutta
Uutta
Uutta
Tarjous!
13,20
23,90
Tarjous!
11,70
67,90
87,90
14,90
anna

Installation via iTracks 7-way adapter (Earthed, L1, L2, L3, N, C1, C2)

FDH	kg		
1×25/28	1.9	**34840**	■ ●
1×32/35	2.5	**34841**	■ ●
1×45/49	2.5	**34842**	■ ●
1×50/54	1.9	**34843**	■ ●
1×73/80	2.5	**34844**	■
2×25/28	2.1	**34847**	■ ●
2×32/35	2.7	**34848**	■ ●
2×45/49	2.7	**34849**	■ ●
2×50/54	2.1	**34850**	■ ●
2×73/80	2.7	**34851**	■

Suffix code

■ **-368** DALI/Phase-pulse control

● **-160** HF-std. Emergency lighting luminaire.

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Lamell louvre for reflectors equipped with end-cap, 25/28/50/54 W	**89412**
Lamell louvre for reflectors equipped with end-cap, 32/35/45/49/73/80 W	**89413**
Lamell louvre for reflectors without end-cap, 25/28/50/54 W	**89414**
Lamell louvre for reflectors without end-cap, 32/35/45/49/73/80 W	**89415**
Reflector end-caps/pair	**92636**
Reflector joint springs	**92631**

Installation
Connected to Fagerhult's iTrack via a special 7-way adapter.

Design
Luminaire body of sheet steel in a white enamelled finish (RAL 9016) with polycarbonate end-caps.

Louvre
Lamell – lamell louvre in white enamelled aluminium. Available in two designs; one for reflectors with end-caps and one for reflectors without end-caps.

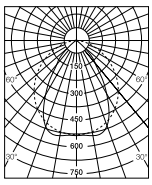
Reflector
Medium beam symmetrical light distribution of satin matt metallised aluminium with very good reflection characteristics (> 92 %).

Emergency lighting
Most variants can be equipped with emergency lighting (-160).

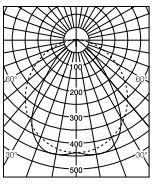
Dimming
iTrack can be equipped with a multi-sensor for constant light, occupancy detection and receiver for a remote control (IR), see accessories. The functionality requires luminaires with DALI (-368). iTrack Line can be equipped with other ballasts for dimming on request.

Accessories
Reflector end-caps of polycarbonate. Joint springs for continuous installation of metallised aluminium. Installed between reflectors.

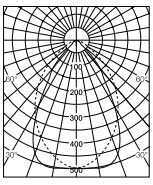
Miscellaneous
The luminaires are supplied with a phase selector set to phase 1. Some variations may require a 12-way adapter configured to suit.



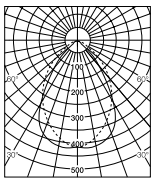
1×32/35 W



2×32/35 W

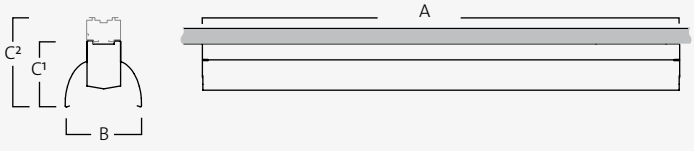


1×32/35 W, Lamell



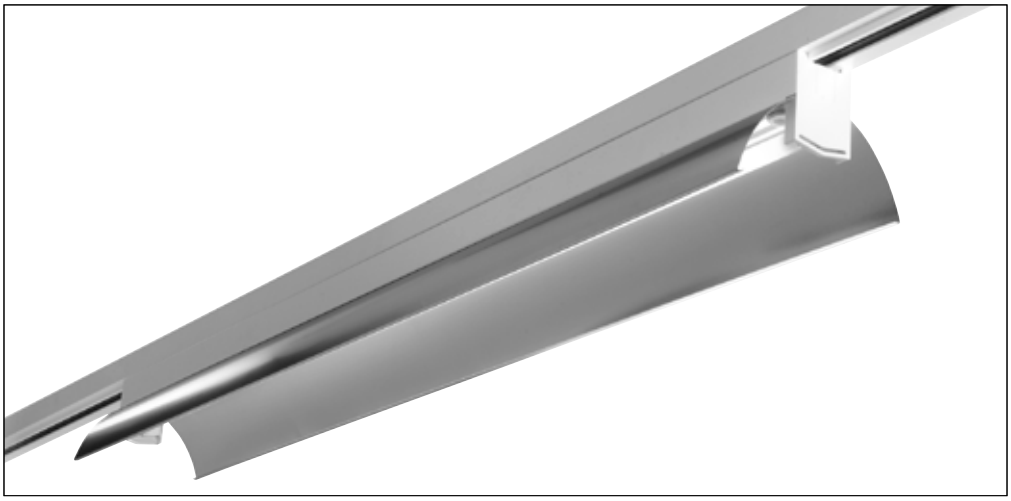
2×32/35 W, Lamell

W	A	B	C¹	C²
25/28/50/54	1172	131	111	147
32/35/45/49/73/80	1472	131	111	147



The design of the springs and louvre provides an unbroken appearance when installed in continuous runs.

The louvre is locked into position with springs, facilitating an easy installation.



Installation
Connected to Fagerhult's iTrack via a special 7-way adapter.
Design
Luminaire body of sheet steel in a white enamelled finish (RAL 9016) with polycarbonate end-caps.
Reflector
Narrow beam symmetrical light distribution of satin matt metallised aluminium with very good reflection characteristics (> 92 %).
Emergency lighting
Most variants can be equipped with emergency lighting (-160).
Dimming
iTrack can be equipped with a multi-sensor for constant light, occupancy detection and receiver for a remote control (IR), see accessories. The functionality requires luminaires with DALI (-368). iTrack Line can be equipped with other ballasts for dimming on request.
Accessories
Reflector end-caps of polycarbonate. Joint springs for continuous installation of metallised aluminium. Installed between reflectors.
Miscellaneous
The luminaires are supplied with a phase selector set to phase 1. Some variations may require a 12-way adapter configured to suit.

Installation via iTracks 7-way adapter (Earthed, L1, L2, L3, N, C1, C2)

FDH	kg		
1×25/28	1.9	**34860**	■ ●
1×32/35	2.5	**34861**	■ ●
1×45/49	2.5	**34862**	■ ●
1×50/54	1.9	**34863**	■ ●
1×73/80	2.5	**34864**	■
2×25/28	2.1	**34867**	■ ●
2×32/35	2.7	**34868**	■ ●
2×45/49	2.7	**34869**	■ ●
2×50/54	2.1	**34870**	■ ●
2×73/80	2.7	**34871**	■

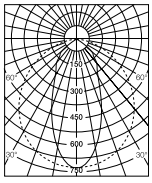
Suffix code

■	**-368** DALI/Phase-pulse control
●	**-160** HF-std. Emergency lighting luminaire.

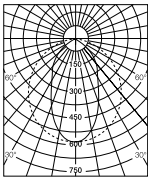
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Reflector end-caps/pair	**92637**
Reflector joint springs	**92632**

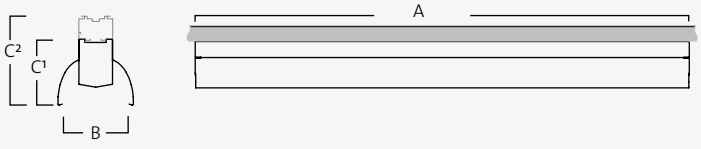


1×32/35 W



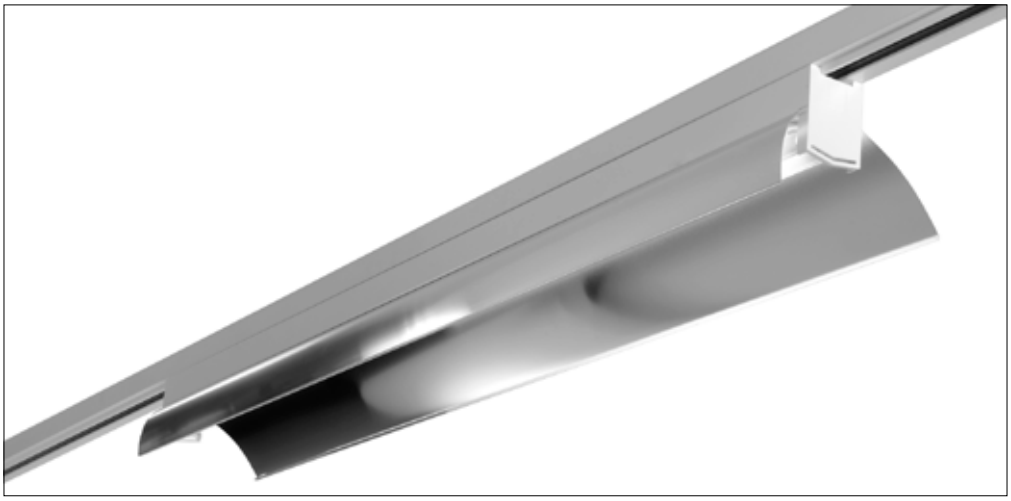
2×32/35 W

W	A	B	C¹	C²
25/28/50/54	1172	151	105	141
32/35/45/49/73/80	1472	151	105	141



The selector function determines which phase will power the luminaire.

iTrack luminaires are locked to the track without the need of additional tools.



Installation via iTracks 7-way adapter (Earthed, L1, L2, L3, N, C1, C2)

FDH	kg		
1×25/28	2.0	**34880**	■ ●
1×32/35	2.5	**34881**	■ ●
1×45/49	2.5	**34882**	■ ●
1×50/54	2.0	**34883**	■ ●
1×73/80	2.5	**34884**	■
2×25/28	2.1	**34887**	■ ●
2×32/35	2.7	**34888**	■ ●
2×45/49	2.7	**34889**	■ ●
2×50/54	2.1	**34890**	■ ●
2×73/80	2.7	**34891**	■

Suffix code

■ **-368** DALI/Phase-pulse control

● **-160** HF-std. Emergency lighting luminaire.

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Lamell louvre for reflectors equipped with end-cap, 25/28/50/54 W	**89408**
Lamell louvre for reflectors equipped with end-cap, 32/35/45/49/73/80 W	**89410**
Lamell louvre for reflectors without end-cap, 25/28/50/54 W	**89409**
Lamell louvre for reflectors without end-cap, 32/35/45/49/73/80 W	**89411**
Reflector end-caps/pair	**92638**
Reflector joint springs	**92633**

Installation
Connected to Fagerhult's iTrack via a special 7-way adapter.

Design
Luminaire body of sheet steel in white enamelled finish (RAL 9016) with polycarbonate end-caps.

Louvre
Lamell – lamell louvre in white enamelled aluminium. Available in two designs, one for reflectors with end-caps and one for reflectors without end-caps.

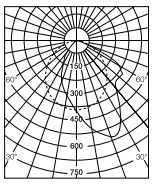
Reflector
Asymmetrical light distribution of satin matt metallised aluminium with very good reflection characteristics (> 92 %).

Emergency lighting
Most variants can be equipped with emergency lighting (-160).

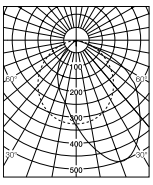
Dimming
iTrack can be equipped with a multi-sensor for constant light, occupancy detection and receiver for a remote control (IR), see accessories. The functionality requires luminaires with DALI (-368). iTrack Line can be equipped with other ballasts for dimming on request.

Accessories
Reflector end-caps of polycarbonate. Joint springs for continuous installation of metallised aluminium. Installed between reflectors.

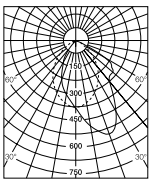
Miscellaneous
The luminaires are supplied with a phase selector set to phase 1. Some variations may require a 12-way adapter configured to suit.



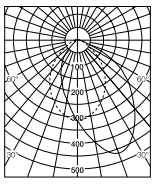
1×32/35 W



2×32/35 W

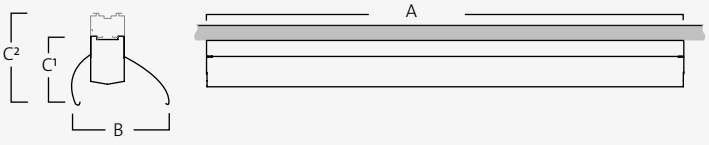


1×32/35 W, Lamell



2×32/35 W, Lamell

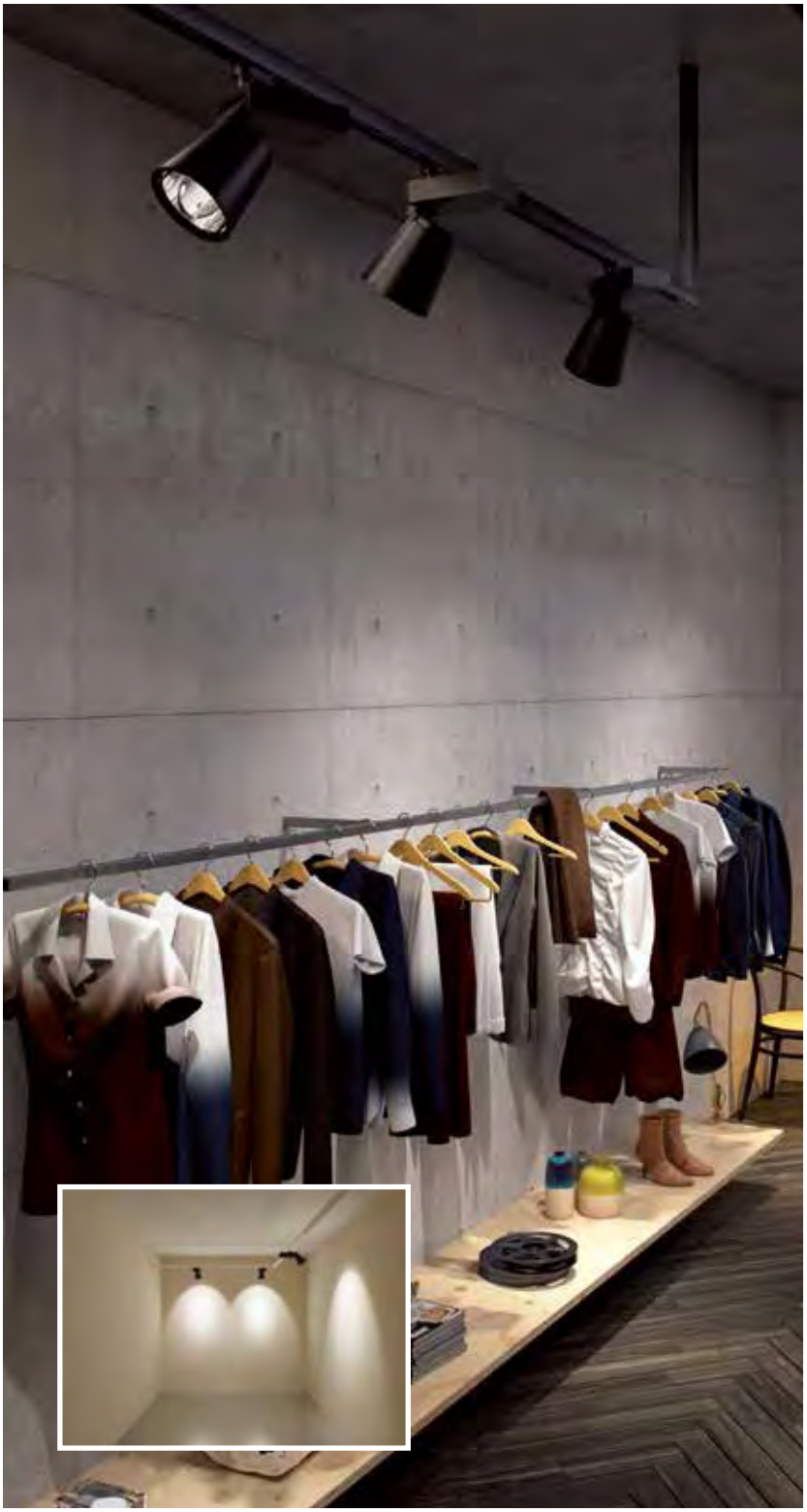
W	A	B	C¹	C²
25/28/50/54	1172	156	102	138
32/35/45/49/73/80	1472	156	102	138



Optional end-caps create an elegant appearance.

Zone Evo

Evolution changes the way things look, and the Zone family has evolved into new models. Zone Evo is equipped with the latest in LED technology, packaged within a stylish conical design, perfectly complimented by its practical rectangular ballast box.



Zone Evo has an effective, segmented reflector giving excellent visual performance. Choose from three sizes and fitting options. The luminaire is also available as a dimmable version for iTrack.

The recessed version means you can work with the same style of design, using both spotlights and recessed spotlights, throughout the project.

Zone Evo I LED

Installation
Fitted to 3-phase track or FixPoint bracket. Universal adapter 3-phase included. Luminaire with addtional suffix code -402 only for iTrack system. iTrack adapter included.
Connection
230 V.
Design
Luminaire housing in lacquered aluminium profile/cast aluminium, white (RAL 9016), grey (RAL 7038) or black (RAL 9005). Front ring in thermoplastic.
Reflector
Metallised aluminium.
Miscellaneous
Can be swivelled through 360° and tilted through 0–90°.

Luminaire

LED-module, lm, W	Ra (CRI)	Colour temp., K	Spread. angle	Luminous flux, lm	Efficiency, lm/W	kg	Grey	White	Black	
Spot										
1100, 19	≥ 80	3000	9°	1273	67	0.8	**59841**	**59835**	**59838**	1)
1100, 20	≥ 90	3000	9°	1070	54	0.8	**59850**	**59844**	**59847**	1)
Medium Spot										
2000, 21	≥ 80	3000	23°	1680	80	0.8	**59859**	**59853**	**59856**	
2000, 20	≥ 80	4000	23°	1780	89	0.8	**59868**	**59862**	**59865**	
Medium										
1100, 19	≥ 80	3000	17°	1159	61	0.8	**59842**	**59836**	**59839**	1)
1100, 20	≥ 90	3000	17°	1030	52	0.8	**59851**	**59845**	**59848**	1)
2000, 21	≥ 80	3000	27°	1600	76	0.8	**59860**	**59854**	**59857**	
2000, 20	≥ 80	4000	27°	1600	80	0.8	**59869**	**59863**	**59866**	
Flood										
1100, 19	≥ 80	3000	36°	1064	56	0.8	**59843**	**59837**	**59840**	1)
2000, 21	≥ 80	3000	41°	1760	84	0.8	**59861**	**59855**	**59858**	
2000, 20	≥ 80	4000	41°	1740	87	0.8	**59870**	**59864**	**59867**	

1) Suffix code -402 is not available for luminaire in grey.
For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

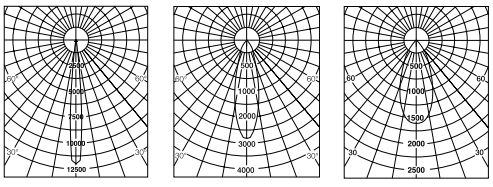
Suffix code

☐ **-402**	DALI (only iTrack system)

Add suffix code to the end of the luminaire part number to indicate required function

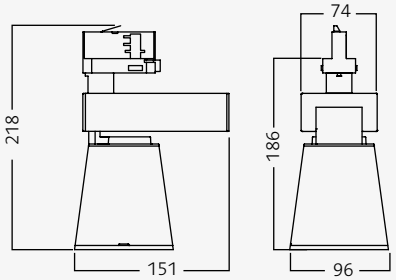
Accessories

	White	Black
Barndoors	**97225**	**96864**
Baffle ring	**59937**	**59938**
Cap cone		**96866**
Honeycomb louvre		**96915**
Mounting plate		**97123**
Mounting plate, double		**97135**

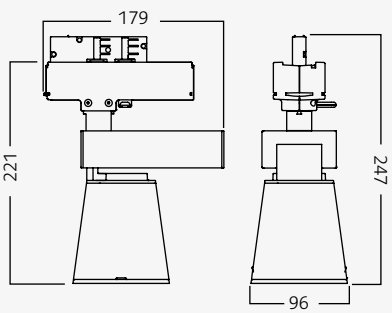


9° 27° 41°

Zone Evo I



Zone Evo I iTrack DALI



Zone Evo II LED

Installation
Fitted to 3-phase track or FixPoint bracket. Universal adapter 3-phase included.
Connection
230 V.
Design
Luminaire housing in lacquered aluminium profile/cast aluminium, white (RAL 9016), grey (RAL 7038) or black (RAL 9005). Front ring in thermoplastic.
Reflector
Reflector of segmented Miro.
Miscellaneous
Can be swivelled through 360° and tilted through 0–90°. Passive/active cooling – for more information, see our website.

Luminaire

LED-module, lm, W	Ra (CRI)	Colour temp., K	Spread. angle	Luminous flux, lm	Efficiency, lm/W	kg	Grey	White	Black
Medium Spot									
3000, 32	≥ 80	3000	16°	2900	91	1.2	**59898**	**59892**	**59895**
3000, 31	≥ 80	4000	16°	2900	94	1.2	**59907**	**59901**	**59904**
3000, 37	≥ 90	3000	16°	2900	78	1.2	**59916**	**59910**	**59913**
4500, 48	≥ 80	3000	16°	4370	91	1.2	**86562**	**86575**	**86559**
4500, 54	≥ 90	3000	16°	4370	81	1.2	**86571**	**86565**	**86568**
Medium									
3000, 32	≥ 80	3000	26°	2760	86	1.2	**59899**	**59893**	**59896**
3000, 31	≥ 80	4000	26°	2760	89	1.2	**59908**	**59902**	**59905**
3000, 37	≥ 90	3000	26°	2760	75	1.2	**59917**	**59911**	**59914**
4500, 48	≥ 80	3000	26°	4140	86	1.2	**86563**	**86576**	**86560**
4500, 54	≥ 90	3000	26°	4140	77	1.2	**86572**	**86566**	**86569**
Flood									
3000, 32	≥ 80	3000	44°	2760	86	1.2	**59900**	**59894**	**59897**
3000, 31	≥ 80	4000	44°	2760	89	1.2	**59909**	**59903**	**59906**
3000, 37	≥ 90	3000	44°	2760	75	1.2	**59918**	**59912**	**59915**
4500, 48	≥ 80	3000	44°	4140	86	1.2	**86564**	**86558**	**86561**
4500, 54	≥ 90	3000	44°	4140	77	1.2	**86573**	**86567**	**86570**

For current information on output and luminous flux, please refer to our website.

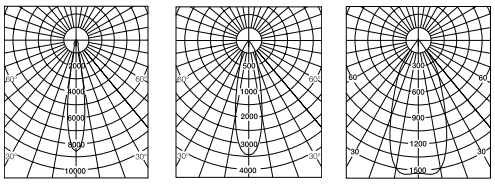
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

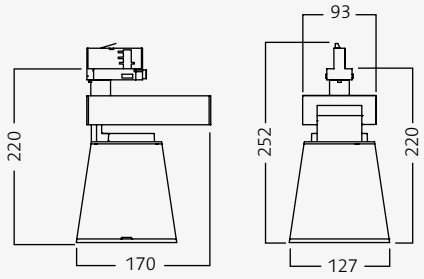
	White	Black
Barndoors	**97226**	**96863**
Baffle ring	**97223**	**97224**
Cap cone		**96865**
Honeycomb louvre		**96914**
Mounting plate		**97124**



16°

26°

44°



Zone Evo III LED

Installation
For mounting in iTrack track. iTrack adapter included.
Connection
230 V.
Design
Luminaire housing in lacquered aluminium profile/cast aluminium, white (RAL 9016) or black (RAL 9005). Front ring in thermoplastic.
Reflector
Reflector of segmented MIRO.
Dimming
DALI dimming, 100–10%, as standard.
Miscellaneous
Can be swivelled through 360° and tilted through 0–90°. Passive/active cooling – for more information, see our website.

Luminaire

LED-module, lm, W	Ra (CRI)	Colour temp., K	Spread. angle	Luminous flux, lm	Efficiency, lm/W	kg	White	Black
Spot								
3000, 32	≥ 80	3000	16°	2900	91	1.3	**59892-402**	**59895-402**
3000, 31	≥ 80	4000	16°	2900	94	1.3	**59901-402**	**59904-402**
3000, 37	≥ 90	3000	16°	2900	78	1.3	**59910-402**	**59913-402**
Medium								
3000, 32	≥ 80	3000	26°	2760	86	1.3	**59893-402**	**59896-402**
3000, 31	≥ 80	4000	26°	2760	89	1.3	**59902-402**	**59905-402**
3000, 37	≥ 90	3000	26°	2760	75	1.3	**59911-402**	**59914-402**
Flood								
3000, 32	≥ 80	3000	44°	2760	86	1.3	**59894-402**	**59897-402**
3000, 31	≥ 80	4000	44°	2760	89	1.3	**59903-402**	**59906-402**
3000, 37	≥ 90	3000	44°	2760	75	1.3	**59912-402**	**59915-402**

For current information on output and luminous flux, please refer to our website.

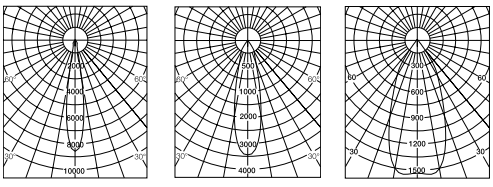
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

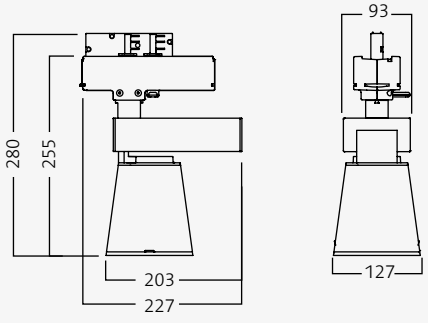
For further information on LEDs, please refer to the Technical Information chapter.

Accessories

	White	Black
Barndoors	**97226**	**96863**
Baffle ring	**97223**	**97224**
Cap cone		**96865**
Honeycomb louvre		**96914**



16° 26° 44°



Zone Evo I Recessed LED

Installation
Recessed mounting in suspended ceilings. Unventilated or ventilated ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Connection
230 V. Comes with a 25 cm cable with SLM snap-in connector.
Design
Luminaire housing in lacquered aluminium profile/cast aluminium, white (RAL 9016) or black (RAL 9005). Front ring in thermoplastic.
Reflector
Metallised aluminium.
Dimming
DALI dimming, 100–10%.
Miscellaneous
Can be swivelled through 360° and tilted from -20° to 90°. Passive/active cooling – for more information, see our website. Drivers are ordered separately.

Luminaire

LED-module, lm, W	Ra (CRI)	Colour temp., K	Spread. angle	Luminous flux, lm	Efficiency, lm/W	kg	White	Black
Spot								
1100, 19	≥ 80	3000	9°	1273	67	0.8	**59943**	**59946**
1100, 20	≥ 90	3000	9°	1070	54	0.8	**59949**	**59952**
Medium								
1100, 19	≥ 80	3000	17°	1159	61	0.8	**59944**	**59947**
1100, 20	≥ 90	3000	17°	1030	52	0.8	**59950**	**59953**
Flood								
1100, 19	≥ 80	3000	36°	1064	56	0.8	**59945**	**59948**
1100, 20	≥ 90	3000	36°	1060	53	0.8	**59951**	**59954**

For current information on output and luminous flux, please refer to our website.

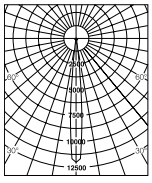
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

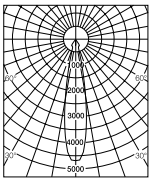
For further information on LEDs, please refer to the Technical Information chapter.

Accessories

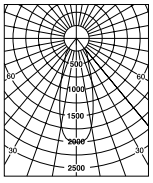
	White	Black
LED Driver 1100 lm, 25 W, ST18 incl. LED mains cable		**97118-3**
LED Driver 1100 lm, DALI, 25 W, ST18 incl. mains cable		**97120-3**
Decor plate, 1 unit	**59933**	**59934**
Decor plate, 2 units	**59935**	**59936**
Barndoors	**97225**	**96864**
Baffle ring	**59937**	**59938**
Cap cone		**96866**
Honeycomb louvre		**96915**



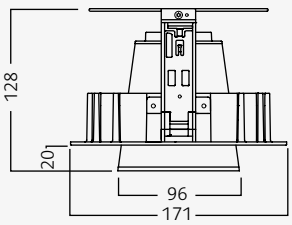
9°



17°



36°



Zone Evo II Recessed LED

Installation
Recessed mounting in suspended ceilings. Unventilated or ventilated ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.**Connection**
230 V. Comes with a 25 cm cable with SLM snap-in connector.
Design
Luminaire housing in lacquered aluminium profile/cast aluminium, white (RAL 9016) or black (RAL 9005). Front ring in thermoplastic.
Reflector
Reflector of segmented Miro.
Dimming
DALI dimming, 100–10%.
Miscellaneous
Can be swivelled through 360° and tilted from -20° to 90°. Passive/active cooling – for more information, see our website. Drivers are ordered separately.

Luminaire

LED-module, lm, W	Ra (CRI)	Colour temp., K	Spread. angle	Luminous flux, lm	Efficiency, lm/W	kg	White	Black
Medium Spot								
3000, 32	≥ 80	3000	16°	2900	91	1.3	**59955**	**59958**
3000, 31	≥ 80	4000	16°	2900	94	1.3	**59961**	**59964**
3000, 37	≥ 90	3000	16°	2900	78	1.3	**59967**	**59970**
4500, 48	≥ 80	3000	16°	4370	91	1.3	**59973**	**59976**
4500, 54	≥ 90	3000	16°	4370	81	1.3	**59979**	**59982**
Medium								
3000, 32	≥ 80	3000	26°	2760	86	1.3	**59956**	**59959**
3000, 31	≥ 80	4000	26°	2760	89	1.3	**59962**	**59965**
3000, 37	≥ 90	3000	26°	2760	75	1.3	**59968**	**59971**
4500, 48	≥ 80	3000	26°	4140	86	1.3	**59974**	**59977**
4500, 54	≥ 90	3000	26°	4140	77	1.3	**59980**	**59983**
Flood								
3000, 32	≥ 80	3000	44°	2760	86	1.3	**59957**	**59960**
3000, 31	≥ 80	4000	44°	2760	89	1.3	**59963**	**59966**
3000, 37	≥ 90	3000	44°	2760	75	1.3	**59969**	**59972**
4500, 48	≥ 80	3000	44°	4140	86	1.3	**59975**	**59978**
4500, 54	≥ 90	3000	44°	4140	77	1.3	**59981**	**59984**

For current information on output and luminous flux, please refer to our website.

Information LED

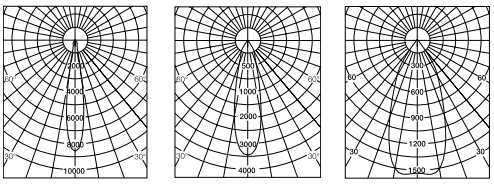
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

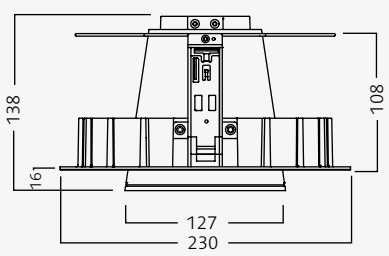
Accessories

LED Driver 3000/4500 lm 50 W ST18 incl. mains cable	**97119-3**
LED Driver 3000/4500 lm TE/DALI 50 W ST18 incl. mains cable	**97121-3**

	White	Black
Decor plate, 1 unit	**59996**	**59997**
Decor plate, 2 units	**59998**	**59999**
Barndoors	**97226**	**96863**
Baffle ring	**97223**	**97224**
Cap cone		**96865**



16° 26° 44°



Marathon

Marathon is a stylish spotlight designed for track systems. Available in three different sizes its cylindrical shape and clean design makes Marathon a spotlight ideal for any setting.

Produced in a dramatic black or subtle white finish, the luminaire housing and ballast are constructed of aluminium and the front ring of thermoplastic.

Positioning the direction of Marathon is made easy, the luminaire can be turned through 360° and the luminaire housing can be angled 0–90°.

The metal halogen versions are available with wide, medium and spot beam, while the light distribution in the HRGI version is determined by the choice of light source. Marathon is supplied as standard with an electronic ballast.

Marathon is also available in several LED versions. Marathon Midi LED iTrack, is a dimmable luminaire optimised for Fagerhult's iTrack system.

Marathon Recessed is a recessed spotlight that gives full flexibility thanks to good tilt and rotation action. It has a classic cylindrical shape together with a minimal front ring. It can be used as a discreet downlight, semi-recessed spotlight or fully extended spotlight. The innovative spring solution ensures quick and easy installation. The LED version is available with dimming.

Marathon Midi LED

Installation
Fitted to 3-phase track or FixPoint bracket. Universal adapter 3-phase included. Luminaire with addtional suffix code -402 only for iTrack system. iTrack adapter included.
Design
Luminaire in white (RAL 9016) or black (RAL 9005). Luminaire housing and driver in extruded/cast aluminium. Baffle of thermoplastic.
Reflector
Metallised reflector.
Miscellaneous
Marathon can be turned through 355° and angled 0–90°. 1100 lm passive cooling. 2000 lm, 3000 lm and 4500 lm active cooling.

Luminaire							
LED-module, lm, W	Ra (CRI)	Colour temp., K	Spread. angle	Luminous flux, lm	Efficiency, lm/W	White	Black
Spot							
1100, 19	≥ 80	3000	9°	1273	67	**79340**	**79343** ☐
1100, 20	≥ 90	3000	9°	1070	53	**59771**	**79561** ☐
Medium Spot							
2000, 21	≥ 80	3000	23°	1720	82	**79597**	**79598**
3000, 29	≥ 80	3000	22°	2580	89	**86530**	**86531** ☐
3000, 37	≥ 90	3000	22°	2610	71	**86520**	**86526** ☐
Medium							
1100, 19	≥ 80	3000	17°	1159	61	**79341**	**79344** ☐
1100, 20	≥ 90	3000	17°	1030	52	**59772**	**79562** ☐
2000, 21	≥ 80	3000	27°	1600	76	**59690**	**79310**
2000, 20	≥ 80	4000	27°	1600	80	**79313**	**79316**
3000, 29	≥ 80	3000	27°	2340	81	**79319**	**79322** ☐
3000, 37	≥ 90	3000	27°	2430	66	**86521**	**86527** ☐
3000, 30	≥ 80	4000	27°	2460	82	**79325**	**79328** ☐
Flood							
1100, 19	≥ 80	3000	36°	1064	56	**79342**	**79345** ☐
2000, 21	≥ 80	3000	41°	1760	84	**59691**	**79311**
2000, 20	≥ 80	4000	41°	1740	87	**79314**	**79317**
3000, 29	≥ 80	3000	41°	2550	88	**79320**	**79323** ☐
3000, 37	≥ 90	3000	41°	2670	72	**86524**	**86528** ☐
3000, 30	≥ 80	4000	41°	2700	90	**79326**	**79329** ☐

For current information on output and luminous, please refer to our website.

Information LED

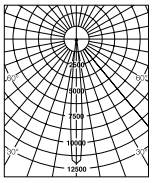
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

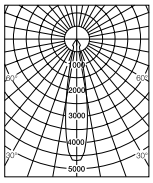
Suffix code

☐ **-402** DALI (only iTrack system)

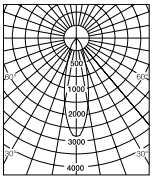
Add suffix code to the end of the luminaire part number to indicate required function



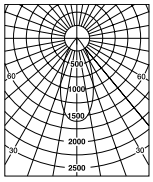
9°



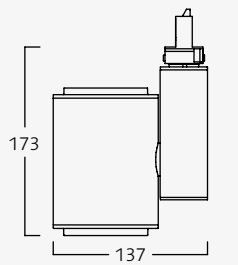
17°



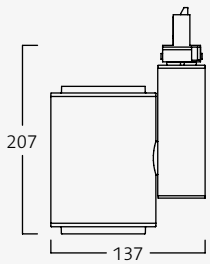
27°



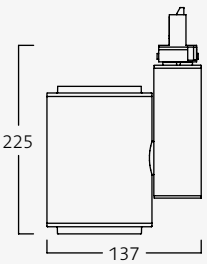
41°



3-phase track/FixPoint



iTrack
1100 lm



iTrack
2000 lm + 3000 lm

Marathon Mini LED

Installation
Fitted to 3-phase track or FixPoint bracket. Universal adapter 3-phase included.
Design
Luminaire in white (RAL 9016) or black (RAL 9005). Luminaire housing and driver in extruded/cast aluminium. Baffle of thermoplastic.
Reflector
Specular anodised reflector in aluminium. 7×1 W with lens optics for different beam angles.
Miscellaneous
Marathon can be turned through 355° and angled 0–90°.

Luminaire

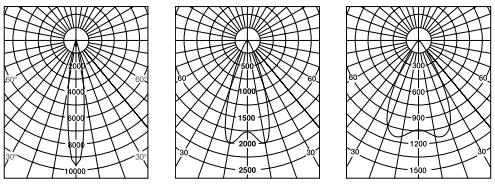
LED-module , lm, W	Colour temp., K	Spread. angle	Luminous flux, lm	Efficiency, lm/W	kg	White	Black
Spot							
500, 7	3000	24°	450	56	0.5	**76687**	**76681**
500, 7	4000	24°	498	62	0.5	**76688**	**76682**
Medium							
500, 7	3000	38°	418	52	0.5	**76689**	**76683**
500, 7	4000	38°	443	55	0.5	**76690**	**76684**
Flood							
500, 7	3000	54°	486	61	0.5	**76691**	**76685**
500, 7	4000	54°	510	64	0.5	**76692**	**76686**

For current information on output and luminous, please refer to our website.

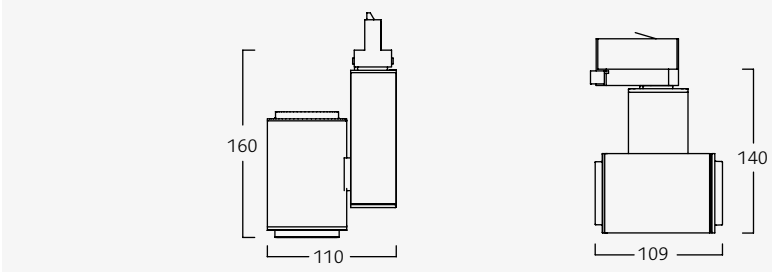
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.



24° 38° 54°



Marathon Maxi MT

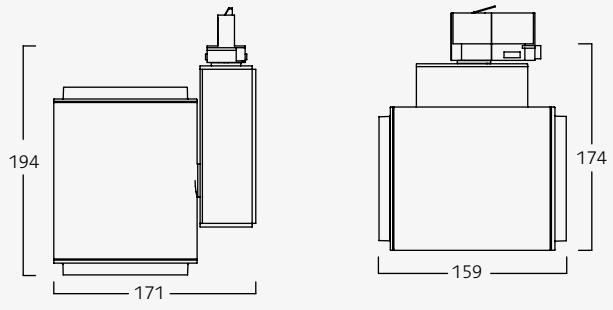
Installation
Fitted to 3-phase track or FixPoint bracket. Universal adapter 3-phase included.
Design
Luminaire in white (RAL 9016) or black (RAL 9005). Luminaire housing and ballast in extruded/cast aluminium. Baffle of thermoplastic.
Reflector
Specular anodised reflector in aluminium with facets. Safety wire.
Miscellaneous
Marathon can be turned through 355° and angled 0–90°. The luminaire is fitted with an electronic ballast.

Luminaire			
MT	Spread. angle	**White**	**Black**
Spot			
1×70	14°	**791600**	**791630**
Medium			
1×70	25°	**791610**	**791640**
Flood			
1×70	34°	**791620**	**791650**

Accessories	
Colour filter, red	**96951**
Colour filter, green	**96952**
Colour filter, blue	**96953**
Colour filter, yellow	**96954**
Louvre, honeycomb	**96959**

Light source			
W	*Socket*	*830*	*930*
Metal halogen MT			
70	*G12*	*81939*	
70 Elite	*G12*		*81930*

For further information on Light source, please refer to the Technical Information chapter.



Marathon Midi MTC

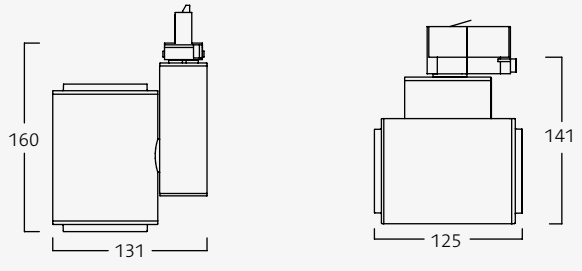
Installation
Fitted to 3-phase track or FixPoint bracket. Universal adapter 3-phase included.
Design
Luminaire in white (RAL 9016) or black (RAL 9005). Luminaire housing and ballast in extruded/cast aluminium. Baffle of thermoplastic.
Reflector
Specular anodised reflector in aluminium with facets. Safety wire.
Miscellaneous
Marathon can be turned through 355° and angled 0–90°. The luminaire is fitted with an electronic ballast.

Luminaire			
MTC	Spread. angle	**White**	**Black**
Spot			
1×35	20°	**791660**	**791690**
Medium Spot			
1×35	23°	**597440**	**597450**
Medium			
1×35	24°	**597470**	**597490**
Flood			
1×35	28°	**791680**	**791710**
MT mini			
Spot			
1×20	13°	**791720**	**791750**
Medium			
1×20	24°	**791730**	**791760**
Flood			
1×20	28°	**791740**	**791770**

Accessories	
Colour filter, red	**96955**
Colour filter, green	**96956**
Colour filter, blue	**96957**
Colour filter, yellow	**96958**
Louvre, honeycomb	**96961**

Light source		
W	*Socket*	*830*
	Metal halogen MTC	
35	*G8,5*	*81932*
	Metal halogen MT mini	
20	*GU6,5*	*81969*

For further information on Light source, please refer to the Technical Information chapter.



Marathon Mini HRGI

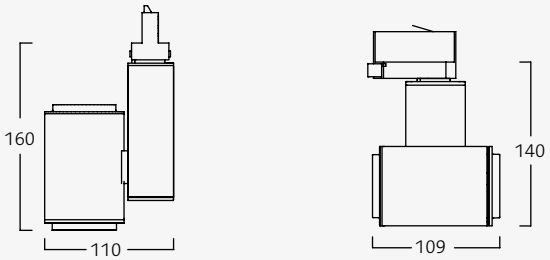
Installation
Fitted to 3-phase track or FixPoint bracket. Universal adapter 3-phase included.
Design
Luminaire in white (RAL 9016) or black (RAL 9005). Luminaire housing and ballast in extruded/cast aluminium. Baffle of thermoplastic.
Reflector
Specular anodised reflector in aluminium with facets. Safety wire.
Miscellaneous
Marathon can be turned through 355° and angled 0–90°. The luminaire is fitted with an electronic ballast. Light source ordered separately.

Luminaire		
HRGI	**White**	**Black**
Max 35	**79668**	**79669**

Accessories	
Colour filter, red	**96962**
Colour filter, green	**96963**
Colour filter, blue	**96964**
Colour filter, yellow	**96965**
Louvre, honeycomb	**96966**

Light source			
W	*Socket*	*Spread. angle*	*2900 K*
Halogen lamp HRGI			
35	*GU5,3*	*10°*	*81871*
35	*GU5,3*	*24°*	*81872*
35	*GU5,3*	*36°*	*81873*
35	*GU5,3*	*60°*	*81874*

For further information on Light source, please refer to the Technical Information chapter.



HRGI: minimum installation height: 2.5 m

Marathon Recessed Midi LED

Luminaire

LED-module, lm, W	Ra (CRI)	Colour temp., K	Spread. angle	Luminous flux, lm	Efficiency, lm/W	kg	White	Black
Spot								
1100, 19	≥ 80	3000	9°	1273	67	1.1	**78794**	**78797**
1100, 20	≥ 90	3000	9°	1070	53	1.1	**86532**	**86533**
Medium Spot								
3000, 29	≥ 80	3000	22°	2580	89	1.1	**86536**	**86537**
3000, 37	≥ 90	3000	22°	2610	71	1.1	**86538**	**86539**
Medium								
1100, 19	≥ 80	3000	17°	1159	61	1.1	**78795**	**78798**
1100, 20	≥ 90	3000	17°	1030	52	1.1	**86534**	**86535**
2000, 21	≥ 80	3000	27°	1600	76	1.1	**78814**	**78816**
2000, 20	≥ 80	4000	27°	1600	80	1.1	**78832**	**78834**
3000, 29	≥ 80	3000	27°	2340	81	1.1	**78806**	**78808**
3000, 37	≥ 90	3000	27°	2430	66	1.1	**86540**	**86541**
3000, 30	≥ 80	4000	27°	2460	82	1.1	**78810**	**78812**
Flood								
1100, 19	≥ 80	3000	36°	1064	56	1.1	**78796**	**78799**
2000, 21	≥ 80	3000	41°	1760	84	1.1	**78815**	**78817**
2000, 20	≥ 80	4000	41°	1740	87	1.1	**78833**	**78835**
3000, 29	≥ 80	3000	41°	2550	88	1.1	**78807**	**78809**
3000, 37	≥ 90	3000	41°	2670	72	1.1	**86542**	**86543**
3000, 30	≥ 80	4000	41°	2700	90	1.1	**78811**	**78813**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80/90*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Assembly plate	**97123**
Assembly plate, double	**97135**
LED-driver 1100/2000 lm, 25 W, ST18 incl. mains cable	**97118-3**
LED-driver 3000 lm, 50 W, ST18 incl. mains cable	**97119-3**
LED-driver 1100/2000 lm, DALI, 25 W, ST18 incl. mains cable	**97120-3**
LED-driver 3000 lm, DALI, 50 W, ST18 incl. mains cable	**97121-3**

Installation
Recessed mounting in unventilated or ventilated ceilings. Installation springs included. An assembly plate should be used when installing in soft-tile ceilings. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Connections are made in separate driver. Luminaires are connected using the supplied cable in the driver.

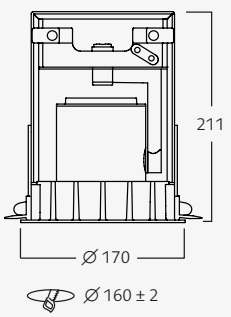
Design
Luminaire in white (RAL 9016) or black (RAL 9005). Luminaire housing and frame in extruded/cast aluminium. Front ring in thermoplastic.

Reflector
Metallised aluminium reflector with spot, medium or flood beam distribution angle.

Dimming
The luminaire is dimmable.

Miscellaneous
The luminaire must be connected to a separate driver. The luminaire can be turned through 355° and angled 0–90°. 1100 lm passive cooling. 2000 lm and 3000 lm active cooling.

Polar diagram, see Marathon Midi LED page 251.



The luminaire can be turned through 355° and angled 0-90°

Marathon Recessed Midi MTC

Installation
Recessed mounting in unventilated or ventilated ceilings. Installation springs included. An assembly plate should be used when installing in soft-tile ceilings. The luminaire must not be covered with insulation.
For further details please refer to the assembly instructions on our website.

Connection
Connections are made in separate ballast. Luminaires are connected using the supplied cable in the ballast.

Design
Luminaire in white (RAL 9016) or black (RAL 9005). Luminaire housing and frame in extruded/cast aluminium. Front ring in thermoplastic.

Reflector
Metallised aluminium reflector with spot, medium or flood beam distribution angle.

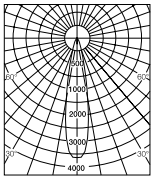
Miscellaneous
The luminaire must be connected to a separate driver. The luminaire can be swivelled through 355° and can be angled from 0–90°. Light source and driver must be ordered separately.

Luminaire				
MTC	Spread. angle	kg	**White**	**Black**
Spot				
1×20/35	20°	1.6	**76694**	**76697**
Medium				
1×20/35	24°	1.6	**76695**	**76698**
Flood				
1×20/35	28°	1.6	**76696**	**76699**

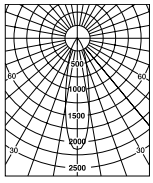
Accessories	
Colour filter, red	**96955**
Colour filter, green	**96956**
Colour filter, blue	**96957**
Colour filter, yellow	**96958**
Louvre, honeycomb	**96961**
Assembly plate	**97123**
Assembly plate, double	**97135**
Electronic ballast 35 W, ST18 incl. mains cable	**96897**
Electronic ballast 20 W, GMF ST18 incl. mains cable	**96826**

Light source			
W	*Socket*	*830*	*930*
	Metal halogen MTC		
20	*G8,5*	*81859*	
35	*G8,5*		*81870*

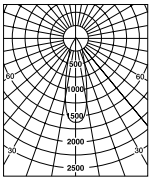
For further information on Light source, please refer to the Technical Information chapter.



35 W, spot

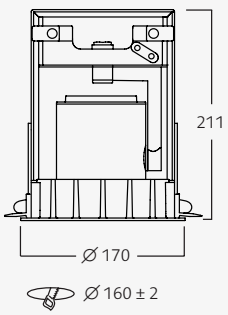


35 W, medium



35 W, flood

Fully extended spotlight.



Above ceiling.

Marathon Recessed Maxi MT

Installation
Recessed mounting in unventilated or ventilated ceilings. Installation springs included. An assembly plate should be used when installing in soft-tile ceilings. The luminaire must not be covered with insulation.
For further details please refer to the assembly instructions on our website.

Connection
Connections are made in separate ballast. Luminaires are connected using the supplied cable in the ballast.

Design
Luminaire in white (RAL 9016) or black (RAL 9005). Luminaire housing and frame in extruded/cast aluminium. Front ring in thermoplastic.

Reflector
Metallised aluminium reflector with spot, medium or flood beam distribution angle.

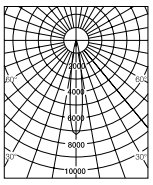
Miscellaneous
The luminaire must be connected to a separate ballast. The luminaire can be swivelled through 355° and can be angled from 0–90°. Light source and ballast must be ordered separately.

Luminaire				
MT	Spread. angle	kg	White	Black
Spot				
1×35/50/70	14°	2.4	**59728**	**59731**
Medium				
1×35/50/70	25°	2.4	**59729**	**59732**
Flood				
1×35/50/70	34°	2.4	**59730**	**59733**

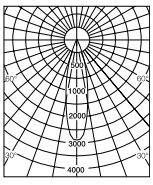
Accessories	
Colour filter, red	**96951**
Colour filter, green	**96952**
Colour filter, blue	**96953**
Colour filter, yellow	**96954**
Louvre, honeycomb	**96959**
Assembly plate	**97124**
Electronic ballast 35 W, ST18 incl. mains cable	**96897**
Electronic ballast 50 W, ST18 incl. mains cable	**97128**
Electronic ballast 70 W, ST18 incl. mains cable	**96898**

Light source			
W	*Socket*	*830*	*930*
	Metal halogen MT		
35	*G12*	*81912*	
50 Elite	*G12*		*81877*
70	*G12*	*81939*	

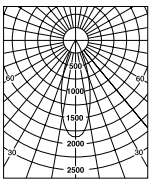
For further information on Light source, please refer to the Technical Information chapter.



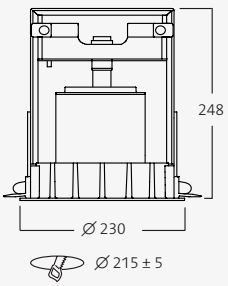
70 W, spot



70 W, medium

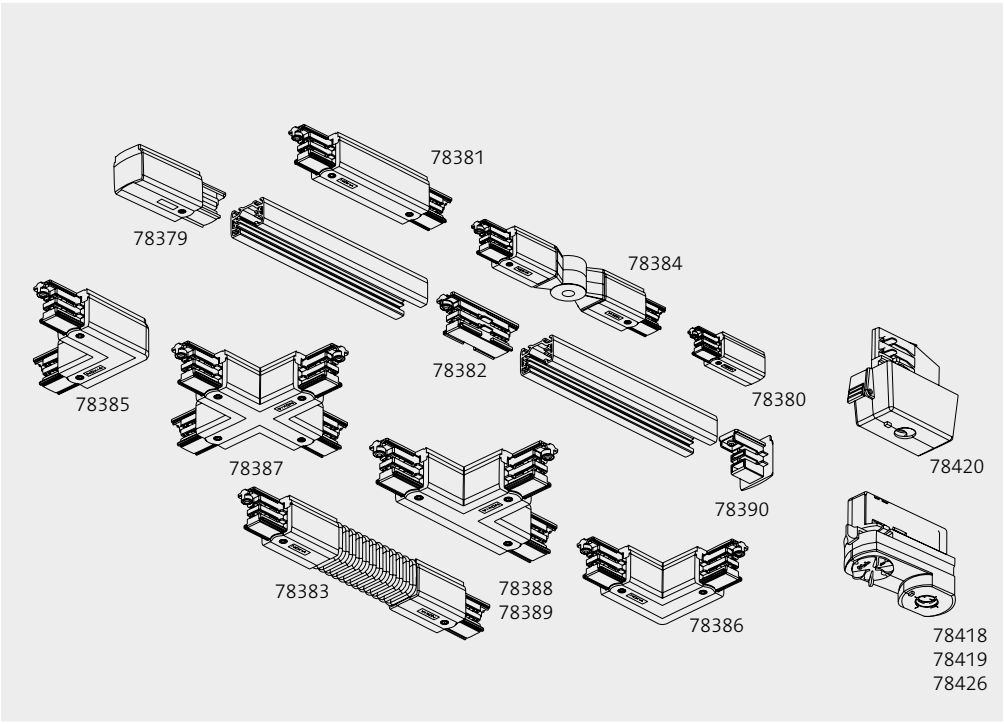


70 W, flood



Used as a discreet downlight.

Marathon recessed



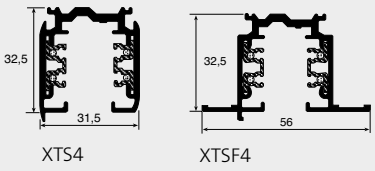
Nordic Aluminium's 3-phase lighting track is intended for 250 V, 3×16 A, load max 3680 W. The track can be surface mounted, suspended from drop rods, wire pendants or mounted on wall brackets.

Rail

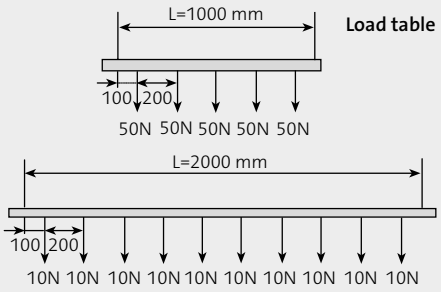
XTS 4, 3-phase track consists of an extruded aluminium section, plastic insulation section, phase and neutral conductors. The extruded aluminium section is enamelled white or natural anodised. The phase and neutral conductors consist of 4 mm² copper. The track's phase and neutral conductors must be bent 90° at both ends in order to be joined with the connection piece. Standard length conductors are supplied ready bent. The white track is supplied in 1, 2, 3 and 4 metre lengths while the anodised track is supplied in 2, 3 and 4 metre lengths These can then be cut to length on-site if necessary, the conductor ends are then bent in, using special tool, 78070.

Adapter

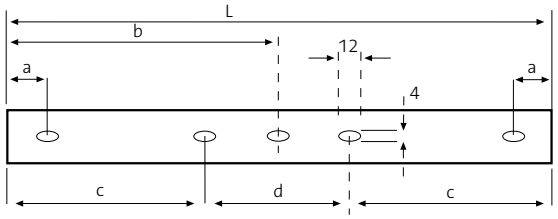
Luminaires are connected to the track using the XTSA 68 adapter. The adapter is locked mechanically to the track using a knob. Thereafter the phase 1, 2 or 3 is selected using the phase selector knob. Multi-adapter XTSA 68 also fits 3-phase lighting track from Nokia, Erco, Staff, iGuzzini, Eutrac and Hoffmeister.



Load table



L	a	b	c	d
1000	250	1000		
2000	250			
3000	250		1000	1000
4000	250		1500	1000



Track equipped with securing holes (4×12 mm) for surface mounting.

Multi-adapter without strain relief

Fits GLOBAL trac, Staff, Erco, iGuzzini, Eutrac, Hoffmeister, NUCO and Concord litespan3. Max load 100 N, 10 A.

XTSA 68-3, white	**78616**
XTSA 68-2, black	**78418**
XTSA 68-1, grey	**78426**

Multi-adapter with strain relief

Max cable ∅ 8 mm. F_{max} 100 N, 10 A.

XTSA 68-3 white	**78415**

Adapter for 3-phase 400 V

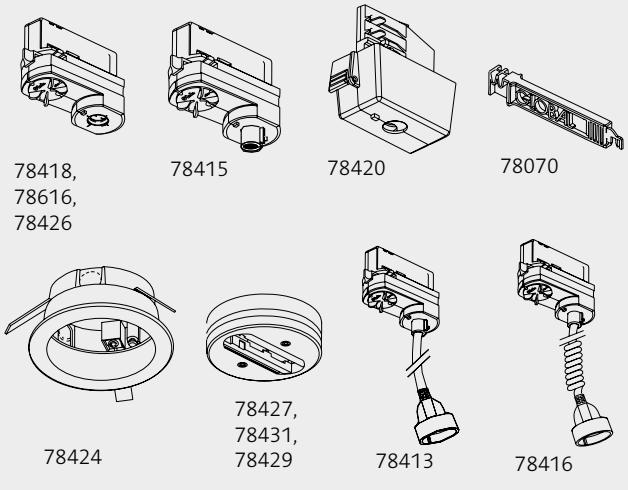
16 A, including strain relief for max 5 conductors. F_{max} 100 N.

XTSA 67-3 white	**78420**

Bending tool

Special tool for bending in cut conductor ends.

XTSV 12	**78070**



FixPoint

Surface mounted wall box with strain relief to which luminaires with 3–phase Multi-adapters can be connected. ∅ 100 mm H=32 mm.

GA70-3, white	**78427**
GA70-2, black	**78431**
GA70-1, grey	**78429**

Recess box for FixPoint

Allows FixPoint to be recessed mounted. Ceiling thickness <30 mm. Holes ∅ 105–114 mm.

XTSA 71-3, white	**78424**

Adapter with earthed socket

Earthed socket and 0,5 m RKK 3×0.75 mm². F_{max} 100 N, 10 A.

XTSA 68-3 white	**78413**

Adapter with earthed socket

Earthed socket and 0.5–2.0 m spiral lead RKK 3×0.75 mm². F_{max} 100 N, 10 A.

XTSA 68-3 white	**78416**

Lighting track, surface mounted

Enamelled white

XTS 4100-3, L=1.0 m	**78370**
XTS 4200-3, L=2.0 m	**78372**
XTS 4300-3, L=3.0 m	**78374**
XTS 4400-3, L=4.0 m	**78376**

Natural anodised.

XTS 4200-1, L=2.0 m	**78373**
XTS 4300-1, L=3.0 m	**78375**
XTS 4400-1, L=4.0 m	**78377**

Lighting track, recessed mounted

Enamelled white

XTSF 4300-3 ,white, L=3.0 m	**78378**

Mains supply unit

For connection at the end of the track

XTS 11-3, white, right	**78379**
XTS 12-3, white, left	**78380**

For connection between two tracks

XTS 14-3, white	**78381**

I-joint

For connecting two tracks

XTS 21-3, white	**78382**

L-joint

For connecting two tracks, mains connection possible.

XTS 34-3, white (0=inner corner)	**78385**
XTS 35-3, white (0=outer corner)	**78386**

T-joint

For connecting two tracks, mains connection possible.

XTS 40-3, white, right	**78388**
XTS 37-3, white, left	**78389**

X-joint

For connecting two tracks, mains connection possible.

XTS 38-3, white	**78387**

Flexible joint

For connecting two tracks and mains connection possible, rotates through 0–360°.

XTS 23-3, white	**78383**

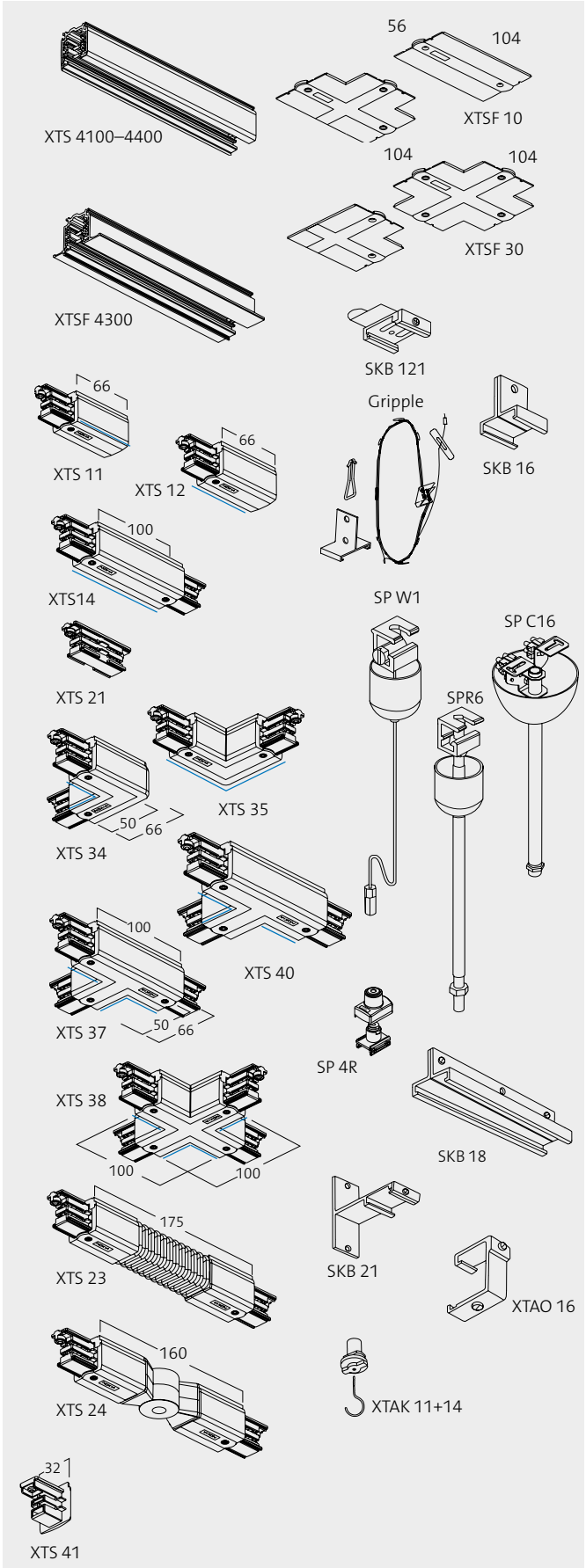
Swivel joint

For connecting two tracks, rotates through 60–300°.

XTS 24-3, white	**78384**

End-cap

XTS 41-3, white	**78390**



Cover for recessed track

For use on mains connections to 78379–78381.

XTSF 10-3, white	**78391**

For use on L-, T- and X-joint, 78385–78389.

XTSF 30-3, white	**78392**

Ceiling bracket

For surface mounting.

SKB 10, white	**78074**
SKB 10, aluminium	**78075**

For mounting on support rails B=25 mm.

SKB 121, white	**85710**

Wire bracket

Bracket for wire mounting.

SKB 16-3, white	**78071**
SKB 16-1, aluminium	**78076**
Gripple with 4.0 m wire	**96838**

Tube pendant L=1.0 m, M16

For mains connection of pendant mounted track. Fits on the pendant brackets 78451–78456.

SP C16-3, white	**78457**

Drop rod L=1.0 m, M6

For installing suspended track. Fits pendant brackets 78451–78456.

SP R6-3	**78458**

Wire pendant L=1.5 m, M6

For installing suspended track. Fits pendant brackets 78451–78456.

SP W1-3, white	**78459**

Pendant bracket

SP 4R-3, white	**78451**

Joint support

For mechanically locking joint connections, should be used on suspended installations.

SKB 18-1, aluminium	**78077**

Wall bracket

SKB 21-1, aluminium	**78078**

Luminaire bracket

Max permitted load = 160 N.

XTAO 16-1, aluminium	**78084**

Decorative hook

Max permitted load = 50 N.

XTAK 11 + 14, white	**78073**

Tibi

Designed by Olle Lundberg

Tibi produces a crisp, radiant light, floating in the space with its distinct form. Its classical super ellipse shape is maximised with advanced LED technology to create a stunning light experience. Its extensive range includes ceiling and wall luminaires which have been optimised to use the most functional control system on the market.

Careful consideration was paid towards the selection of materials and high quality LED units. Its distinctive, contemporary design units the rectangles surface efficiency with the circles aesthetic appeal. The even illuminance across the globe enhances the diffuser, constructed of smooth polished acrylic, reminiscent of glass.

Tibi was developed as a complete luminaire family consisting of pendant, ceiling and wall variations. A suspended luminaire of 800 mm for large rooms is supported by pendant, ceiling and wall luminaires in two sizes – 600 mm and 400 mm. All models are available with aluminium details in two finishes: brushed and clear lacquered aluminium or a polished, black lacquered surface.

The ceiling and wall luminaires are ready for use with the wireless control system e-Sense Move, which lights up each floor as and when someone enters. A perfect solution for stairwells.

Tibi
Pendant

Installation
Two-point suspension, c/c 55–78 mm.
Connection
Snap-in terminal block 5 × 2.5 mm², 1-phase through-wiring possible. Wire length 2.5 m and a 2.5 m white fabric cord. Surface mounted cable possible. Height adjustment is done on the luminaire via a friction lock.
Design
Diffuser in specular opal acrylic. Luminaire body and decorative edge ring in aluminium. Decorative edge ring lacquered in glossy black (RAL 9005) or clear lacquered brushed aluminium. Colour-coordinated ceiling cup.
Dimming
DALI/Phase-pulse control as standard.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire							
System, W	Ø	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	**Brushed aluminium**	**Black**
24	400	4000	1850	77	3.3	**54780-402**	**54785-402**
63	600	4000	5750	91	5.7	**54781-402**	**54786-402**
71	800	4000	6800	96	9.0	**54782-402**	**54787-402**

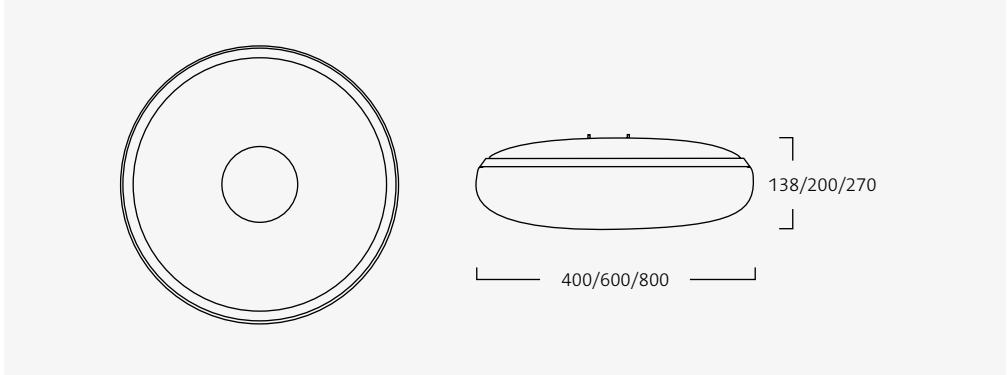
For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories	
Cutters/each	**94248**

Excess wire is inserted into the void in the casting.



Colour-coordinated ceiling cup attached by magnet without visible screws.

Tibi

Tibi
Ceiling/Wall

Installation
Two securing holes for wall mounting. IP 40. IP 41 is available upon request.
Connection
Snap-in terminal block 5×2.5 mm², 1-phase through-wiring possible. Cable entry from top of the luminaire. Surface mounted mains cable possible, through-wiring 180°.
Design
Diffuser in specular opal acrylic. Luminaire body/decorative edge ring in aluminium. Decorative edge ring lacquered in glossy black (RAL 9005) or clear lacquered brushed aluminium.
Dimming
DALI/Phase-pulse control as standard.
e-Sense Detect – microwave sensor for on/off function, or absence dimming with the option of switch-off function.
e-Sense Move – wireless control between luminaires. Microwave sensor for the on/off function, or absence dimming with the option of switch-off function.

Luminaire

System, W	∅	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Brushed aluminium	Black
27	400	4000	1800	67	3.0	**56772-402**	**56777-402**
44	600	4000	3800	86	6.0	**56773-402**	**56778-402**

Other suffix code replace -402.
For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

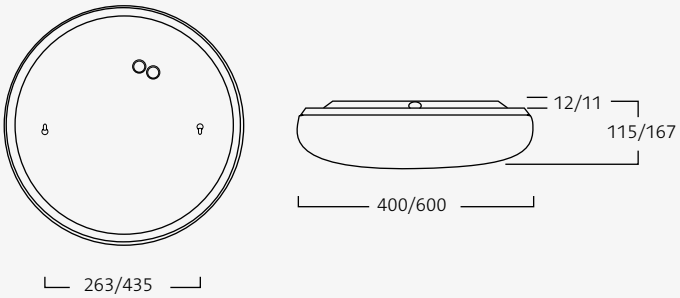
Suffix code

- **-439** e-Sense Detect absence dampening
- **-440** e-Sense Move absence dampening

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Decorative edge ring lacquered in glossy black or clear lacquered brushed aluminium.

Tibi Wall.



Eira

Designed by Speirs + Major

Eira is a unique luminaire developed in conjunction with Speirs + Major to address the need for flexibility in hospital wards. Its slim, glowing form is equally suited to other general applications, adding a touch of practical glamour to areas such as conference rooms and corridors.

Eira provides an excellent general light, with a level of ambient light on the ceiling and wall. The opal shade softly diffuses the light so it's comfortable to view, even at its highest output. Equipped with an innovative performance ring, the same fitting can instantly provide a focused downlight for emergency and examination requirements or as a directed light over counters or conference tables. The high-quality LED modules offer exceptional efficiency and longevity, further enhanced by its dual functionality which reduces the time required for installation and maintenance.

Installation
Two securing holes for ceiling installation. IP 40. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.
Connection
Snap-in terminal block 5 × 2.5 mm², 1-phase through-wiring possible. Cable entry from top of the luminaire.
Design
Diffuser in specular opal acrylic. The ∅ 550 mm version is equipped with a performance ring consisting of high-power LEDs and acrylic lenses.
Dimming
DALI as standard.
Miscellaneous
Performance-ring in ∅ 550 mm 3000 K gives Ra ≥ 90.

Eira surface mounted

System, W	∅	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	
69	550	4000	6876	99	**56780-402**
69	550	3000	5520	80	**56781-402**
40	400	4000	3994	100	**56782-402**
39	400	3000	3612	93	**56783-402**

For current information on output and luminous flux, please refer to our website.

Eira recessed

System, W	∅ incl. recessed box	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	
69	570	4000	6417	92	**56784-402**
69	570	3000	5134	74	**56785-402**
40	420	4000	3536	88	**56786-402**
39	420	3000	3192	82	**56787-402**

For current information on output and luminous flux, please refer to our website.

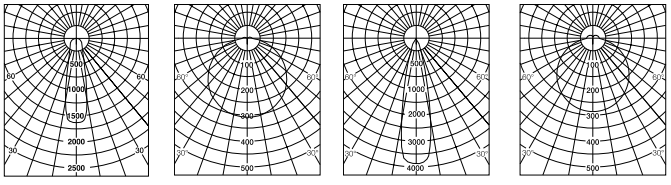
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

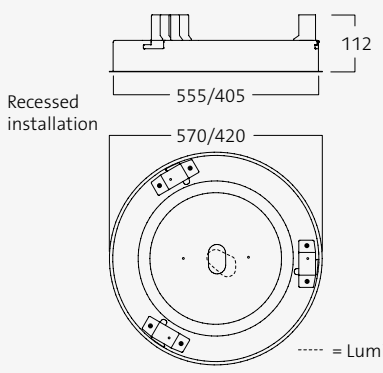
For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Assembly plate ∅ 400, 600-module visible T-bars	**94070**
Assembly plate ∅ 550, 600-module visible T-bars	**94071**



∅ 550, complete luminaire | ∅ 550, opal | ∅ 550, performance ring | ∅ 400, opal



Recessed in the ceiling with separate recessed box for ceiling thickness of 1–46 mm.

Specially made lenses to create a uniform ring of light as well as controlling the light and preventing glare.

Freedom

Designed by Weikko Kotila and Julle Oksanen

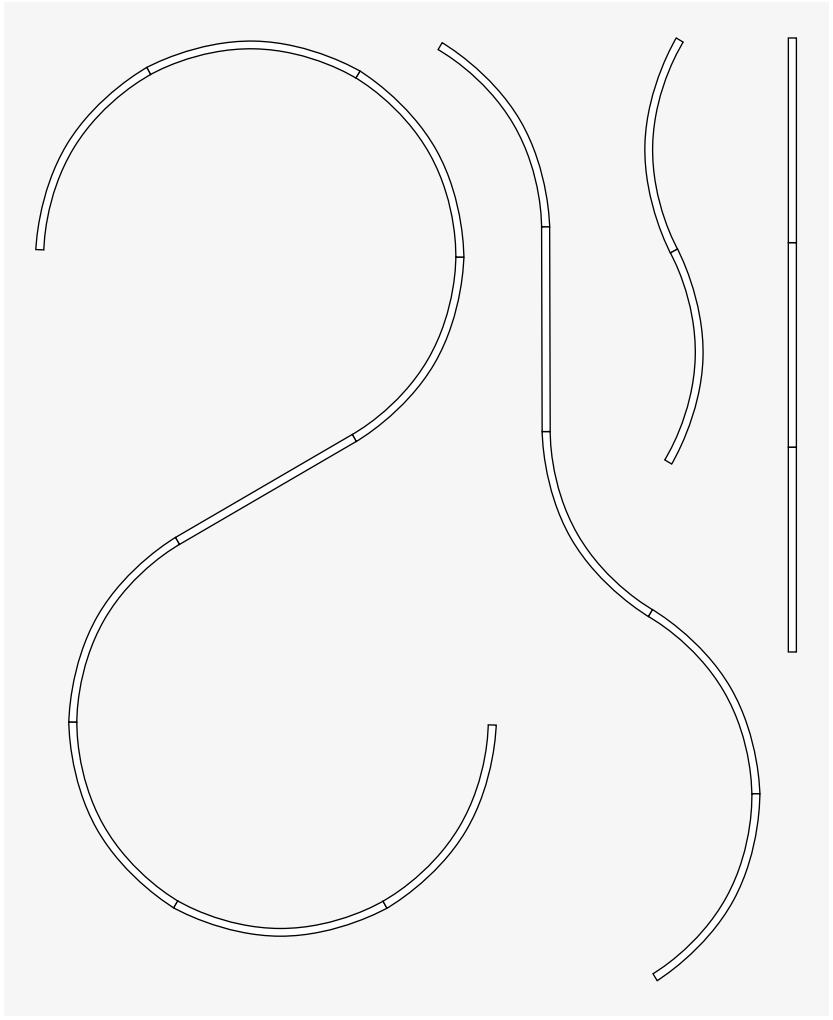
FAGERHULT | art of light

Sketch your own lines with light! Freedom is an innovative LED luminaire that makes it possible to create free forms suspended in the air, on the ceiling and on the wall. With the help of two modules, one straight and one curved, the luminaire can be built up to follow the shape of the room or a creative concept. Offering architects, interior designers and lighting designers full freedom of expression.

Foto: Sini Pennanen

The modules are based on two thin but very sturdy aluminium sections, one of which is bent along a radius of 1200 mm. Using a mixture of straight and curved luminaire modules, combinations can be built where the only limitation is the size of the room. The modules are designed for three different mounting options – suspended, surface or wall mounted– which adds yet another dimension. Particular attention was paid towards toning down the technical solutions for the benefit of aesthetics, with discreet connections between the modules and terminating end-caps. Following the same ambition, the power supply has been made more efficient so that one power feed covers up to six modules. Each wire is capable of carrying multiple modules, which contributes to an even purer expression when the luminaire is suspended.

Freedom sets itself apart with a light treatment that is uncommon in the sector. The luminaire is not only a decorative solution but provides a full general lighting solutions in its own right. LED is the key to the design of Freedom but a great emphasis has also been placed on the lighting technology. Through a combination of an innovative internal reflector and Opal diffuser an even output can be achieved without glare or a blinding light.



1. Accessories, LED driver 300 W/24 V fitted in installation box in white sheet metal. Snap-in terminal block for incoming 230 V and connection cable to the luminaires. Max 6 light fixtures/installation box 300 W. For continuous connections longer than 6 luminaires, connect another installation box.

2. Accessories, two black end-caps made of ABS plastic.

3. Accessories for continuous installation include a continuous coupler bracket for a stable composition, light trap for an absolute black join and +/- cables for through wiring between luminaires.

4. Luminaires are connected continuously without diffuser. Luminaires are supplied with contact protection of the LED circuit board.

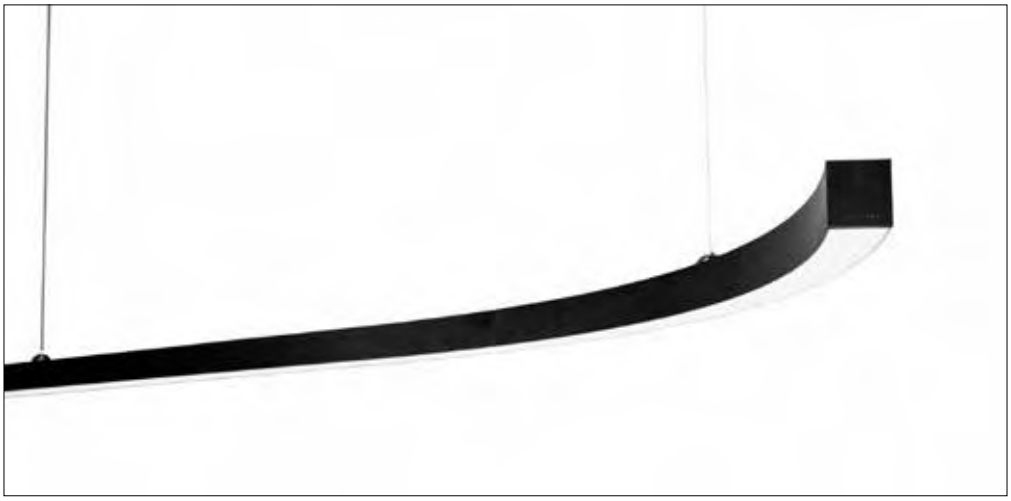
5. Accessories, 4 m transparent connection cabling with two snap-in connectors. Two wires for connection at the beginning or end of the continuous connection, and four cables for connection between the two fixtures. Maximum cable length from the installation box is 10 m. Splicing joins possible with longer distance. Supplied with strain relief, which is attached to the luminaire being connected.

6. Dust and contact protection for indirect lighting in the clear PC.

7. Accessories for pendant installation contain two wires, two frames with friction lock and suspension wire for mounting on the ceiling with T-bars or one piece ceilings.

8. Bracket with flexible c/c. Continuous connections requires mounting one wire per luminaire which is best placed near a join.

9. Opal diffuser with reflector of highly reflective polyester.



Installation
Designed for single or continuous installation via a wire pendant, or alternatively surface mounted to a wall or ceiling via two securing holes in profile. (Wire pendant, end-caps and coupler brackets are ordered separately.)
Connection
Connection cable, see Accessories, connects between luminaire and LED driver. Connect together for longer lengths, max. 7 metres.
Design
Luminaire body in black anodised aluminium. Diffusers made from opal polyester, reflectors made from highly reflective polyester, end-caps made from black ABS plastic. Transparent power cable. Installation box in white enamelled sheet-metal.
Dimming
Up to 6 luminaires can be connected to a PWM dimmer, see Accessories.
Miscellaneous
Also available with coloured lights upon request (via coloured filters in the luminaire).

Luminaire

System, W		Colour temp., K	Luminous flux, lm	Efficiency, lm/W*	kg	
25	Straight, direct/indirect	4000	1310	54	1.5	**16921**
25	Curved, direct/indirect	4000	1310	54	1.4	**16923**
18	Straight, direct	4000	810	45	1.6	**16922**
18	Curved, direct	4000	810	45	1.5	**16924**

** Valid for a system of 6 luminaires connected to driver 98198.*
For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

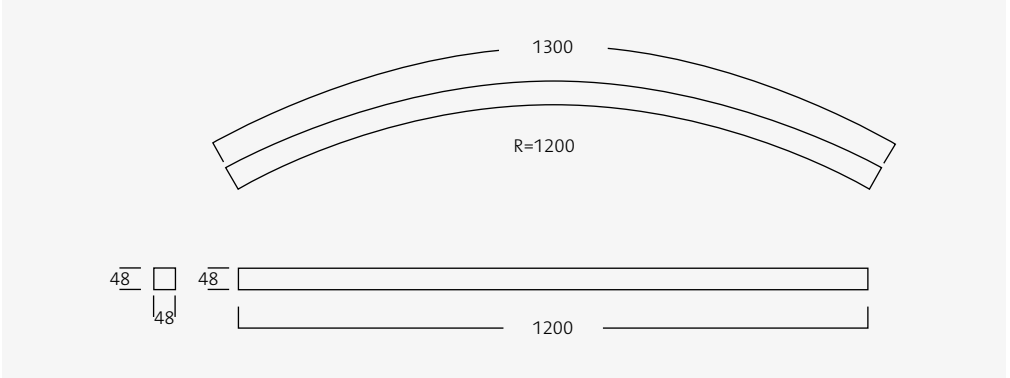
For further information on LEDs, please refer to the Technical Information chapter.

Accessories

LED driver 150 W/24 V.	**98198**
LED PWM dimmer 120 W/24 V D 1–10 V	**99110**
LED PWM dimmer 120 W/24 V D DALI	**99111**
2×wire and wire bracket for pendant installation	**94021**
2×end-caps	**94022**
Continuous coupler bracket, light trap, cable for continuous installation	**94033**
4 m power cable connection 2×conductors	**94034**
4 m power cable connection 4×conductors	**94035**

Please note; luminaires for dimming require a ballast and dimming module, both ordered separately i.e. 98198+99110 or 98198+99111. For further information, please refer to the LED section in the Technical Information chapter.

Wall mounted Freedom.



Suspended direct/indirect luminaire incl. dust and contact protection.

Freedom
Foto: Nibe fotografer

Gaudi

Designed by Claesson Koivisto Rune

With Gaudi new technology meets timeless elegance. A suspended luminaire inspired by classical architectural principles and developed based on LED technology.

The LED light source provides a unique opportunity to produce smaller luminaires than previously possible. Gaudi is one of the first of its kind and is based on a sculptural arch that defines both the room and the direction of the light. The robust body of extruded aluminium takes a different visual guise depending on the selected colour; black or white.

The luminaire is available in two models: Gaudi Linear and Gaudi Circular.

Gaudi Circular is fitted with LEDs and powered via the suspension wires from the driver at the ceiling cup. Gaudi has tailored optics for the latest generation of LEDs that distribute a balanced effective light with an appealing colour temperature.

The new generation of Gaudi Linear has a brilliant opal reflector with a high luminous flux.

The discreet suspension wire and transparent cable creates the impression of an invisible connection to the ceiling.

Installation
Wire suspension. Ceiling bracket, friction lock and wire L=1.5 m, included with the luminaire.
Connection
The luminaire is supplied with transparent mains cable 3×0.75 mm² and ceiling cup with snap-in terminal block 3×2.5 mm². L=1.5 m. Surface mounted mains cable possible.
Design
Body and cover of extruded aluminium, cast end-caps. White (RAL 9016) structured or black (RAL 9005) structured finish. Diffuser of opal acrylic.
Dimming
Dimming via DALI/Phase-pulse control as standard or by external switch.

Luminaire

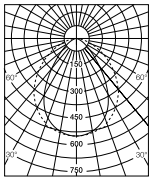
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Length	kg	White	Black
18	4000	1835	66	1500	2.2	**54609**	**54610**

For further information on LEDs, please refer to the Technical Information chapter.

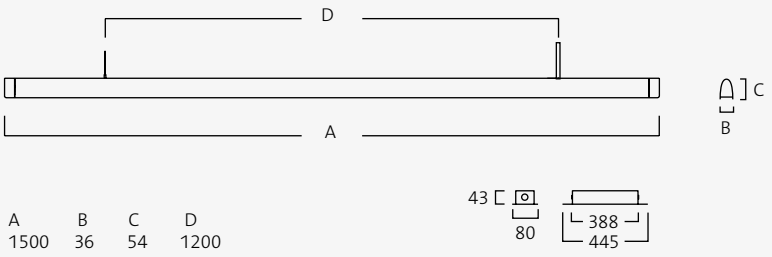
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3,5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.



LED



A	B	C	D
1500	36	54	1200

Installation
Two-point fixing for besa box or surface mounting. Wire suspension 2.0 m with ceiling cup and integrated friction lock for height adjustment.
Connection
Luminaire equipped with three 2.0 m wires, of which two feed the luminaire. Ceiling cup with snap-in terminal block 5×2.5 mm². Driver included in ceiling cup. Surface mounted mains cable possible.
Design
Body of spun aluminium, opal acrylic cover, metal ceiling cup. White (RAL 9016) structured or black (RAL 9005) structured finish.
Dimming
DALI/Phase-pulse control as standard.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	∅		
35	4000	2483	71	2.6	700	White	**54613-402**
35	4000	1523	44	2.6	700	Black	**54614-402**
35	3000	2185	62	2.6	700	White	**54615-402**
35	3000	1340	28	2.6	700	Black	**54616-402**

For current information on output and luminous flux, please refer to our website.

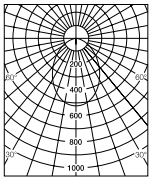
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

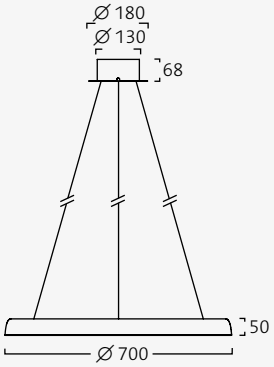
For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Recessed ceiling cup, white	**94042**
Recessed ceiling cup, black	**94043**
Mounting plate, ∅ 175	**41390**



Recessed ceiling cup.



Evenly-lit opal louvre around the whole luminaire.

Gaudi

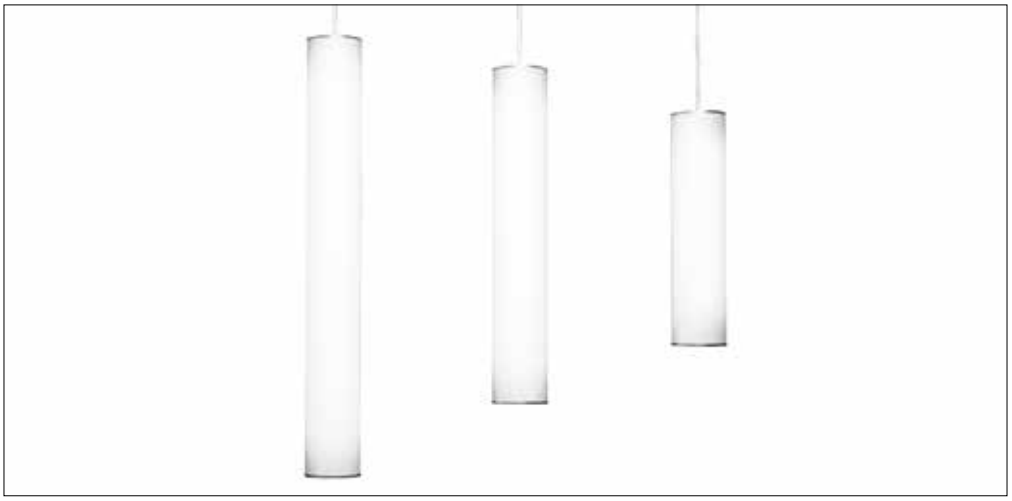
Lepo

Designed by Sabina Grubbe

Lepo is a decorative T5 luminaire which offers a combination of energy efficiency and balanced illuminance. By combining the three different sizes it's possible to create eye catching luminaire clusters.

The centralised ballast houses a light source on either side, creating an even, bright surface without shadows. The opal acrylic shade with a matt structure is enhanced by silver coloured fastening at the top and bottom. Lepo is designed to spread a pleasant general light making it ideal for applications such as lobbies, receptions and cafes. As the light sources are not exposed at any angle it is also an excellent solution for staircases.

Lepo



Installation
Two point suspension c/c 55–78 mm.
Connection
Snap-in terminal block 5×1.5 mm², through-wiring is possible.
Design
Luminaire shade in matt opal acrylic, shade holder of silver finished steel. Supplied with white fabric cord and white specular steel ceiling cup.
Max. pendant length:
2×14 W: 2.0 m.
2×21 W: 3.5 m.
2×28 W: 3.3 m.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire

FDH	Height	kg		
2×13/14	680	2.7	**54580**	☐
2×20/21	980	3.7	**54581**	☐
2×25/28	1280	4.5	**54582**	☐

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

Accessories

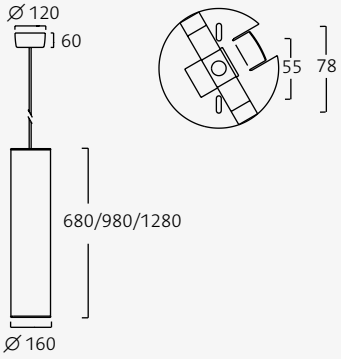
Cutters/each	**94248**

Light source

W	*Socket*	*830*	*840*
Fluorescent lamp FDH			
13 (T5 eco)	*G5*	*81625*	*81626*
14	*G5*	*81351*	*81347*
20 (T5 eco)	*G5*	*81627*	*81628*
21	*G5*	*81353*	*81348*
25 (T5 eco)	*G5*	*81629*	*81630*
28	*G5*	*81355*	*81349*

For further information on Light source, please refer to the Technical Information chapter.

Lepo seen from below.



Steel ceiling cup attached using magnets; avoiding visible screws.

Liverti

Designed by Jesper Design

Liverti is a complete luminaire family that adorns the room with light with its sculptured form and solid materials. The opal shade produces a balanced light without shadows and is complemented by a decorative ring in either cast chrome or grey aluminium.

Liverti is an extensive product family developed with a uniform design and concept in mind. The system approach ensures those taken by the elegance and distinction of the design need not be restrained by concerns of application.

The same possibilities apply to the light; from the subtle efficiency of the compact fluorescent to the dynamics of the metal halide, all models are available with different effects and light sources.

Liverti
Pendant with shade

Installation
Two point suspension, c/c 60–90 mm.
Connection
Snap-in terminal block 5×2.5 mm², through-wiring is possible.
Design
Matt opal acrylic shade. Luminaire body of white sheet metal. Decorative ring and suspension details in cast aluminium, chrome or spray-painted grey (RAL 9006) structured. Opal acrylic shade for the downlight. Shade in grey sheet steel (RAL 9006). Supplied with white fabric cord. White, plastic ceiling cup.
Dimming
Some models are available with other ballasts for dimming.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire

FSD	Ø	Lum. class	kg	Grey	Chrome	
1×18/24	420	B	3.7	**54741**	**54711**	
2×24	520	B	5.2	**54742**	**54712**	
2×36	520	C	5.2	**54744**	**54714**	☐
2×36	620	B	7.4	**54745**	**54715**	
2×55	620	C	7.4	**54747**	**54717**	☐
2×24+35 MR	520	B	5.4	**54743**	**54713**	
2×36+70 MR	620	B	7.6	**54746**	**54716**	☐

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

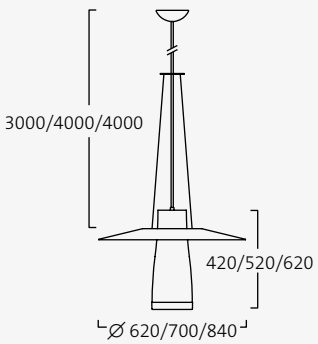
Accessories

Cutters/each	**94248**

Light source

W	*Socket*	*Beam angle*	*830*	*840*
	Compact fluorescent lamp FSD			
18	*2G11*		*81157*	*81470*
24	*2G11*		*81158*	*81301*
36	*2G11*		*81159*	*81471*
55	*2G11*		*81318*	*81473*
	Metal halogen MR			
35	*GX8,5*	*24°/40°*	*81481*	*81482*
70	*GX8,5*	*24°/40°*	*81485*	*81486*

For further information on Light source, please refer to the Technical Information chapter.



Pendant with MR light source as downlight.

Liverti
Pendant without shade

Installation
Two point suspension, c/c 60–90 mm.
Connection
Snap-in terminal block 5 × 2.5 mm², through-wiring is possible.
Design
Matt opal acrylic shade. Luminaire body of white sheet metal. Decorative ring and suspension details in cast aluminium, chrome or spray-painted grey (RAL 9006) structured. Opal acrylic shade for the downlight. Supplied with white fabric cord. White, plastic ceiling cup.
Dimming
Some models are available with other ballasts for dimming.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire

FSD	Ø	Lum. class	kg	Grey	Chrome	
1×18/24	420	B	2.1	**54731**	**54701**	
2×24	520	B	3.3	**54732**	**54702**	
2×36	520	C	3.3	**54734**	**54704**	☐
2×36	620	B	3.6	**54735**	**54705**	
2×55	620	C	3.6	**54737**	**54707**	☐
2×24+35 MR	520	B	3.5	**54733**	**54703**	
2×36+70 MR	620	B	3.6	**54736**	**54706**	☐

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

Accessories

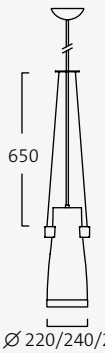
Cutters/each	**94248**

Light source

W	*Socket*	*Beam angle*	*830*	*840*
	Compact fluorescent lamp FSD			
18	*2G11*		*81157*	*81470*
24	*2G11*		*81158*	*81301*
36	*2G11*		*81159*	*81471*
55	*2G11*		*81318*	*81473*
	Metal halogen MR			
35	*GX8,5*	*24°/40°*	*81481*	*81482*
70	*GX8,5*	*24°/40°*	*81485*	*81486*

For further information on Light source, please refer to the Technical Information chapter.

Liverti with subtle grey decorative trim.



Wire suspensions and wire lock.

Installation
Securing holes for assembly on a box or surface mounted. Protection class IP 44.
Connection
Snap in terminal block 5 × 2.5 mm², through-wiring is possible. Cable entry on the top of the luminaire. Surface mounted mains cable using the supplied accessories.
Design
Matt opal acrylic shade. Luminaire body in white enamelled sheet metal (RAL 9016). Decorative ring in cast aluminium, chrome or spray-painted grey (RAL 9006) structure.
Emergency lighting
Luminaire with integrated emergency lighting unit and battery.
Dimming
Some models are available with other ballasts for dimming.
e-Sense Detect – microwave sensor for on/off function, or absence dampening 10–100 %.
e-Sense Move – wireless lighting control between luminaires. Microwave sensor for on/off function, or absence dimming with the option of switch-off function.

Luminaire

FCH	Lum. class	kg	Grey	Chrome	
1 × 40	B	2.4	**56731**	**56711**	●
1 × 55	B	2.4	**56732**	**56712**	■

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code

■	**-357** e-Sense Detect on/off
■	**-359** e-Sense Detect absence dampening
■	**-431** e-Sense Move on/off
■	**-432** e-Sense Move absence dampening
■	**-436** DALI/DSI/switchDIM
●	**-160** HF-std. Emergency lighting luminaire.

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

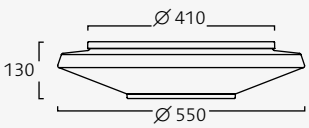
Spacer for surface mounted mains cable	**94985**

Light source

W	*Socket*	*830*	*840*
	Circular fluorescent lamp FCH		
40	*2GX13*	*81393*	*81566*
55	*2GX13*	*81312*	*81567*

For further information on Light source, please refer to the Technical Information chapter.

Decor ring in grey finish.



Chrome decor ring in cast aluminium.

Installation
Two securing holes.
Connection
Snap-in terminal block 5×2.5 mm², through-wiring possible. Cable entry at the rear of the luminaire or for surface mounted, mains cable goes upwards.
Design
Matt opal acrylic shade. Luminaire body of white sheet metal. Decorative ring in cast aluminium, chromed or spray-painted grey (RAL 9006) structured.
Emergency lighting
420 mm luminaires with emLED and battery. 520 mm and 620 mm luminaires with integrated emergency lighting unit and battery.
Dimming
Some models are available with other ballasts for dimming.
e-Sense Detect – microwave sensor for on/off function, or absence dampening 10–100 %.
e-Sense Move – wireless lighting control between luminaires. Microwave sensor for on/off function, or absence dimming with the option of switch-off function.

Luminaire

FSD	Length	Lum. class	kg	Grey	Chrome	
1×18	420	B	1.5	**64721**	**64701**	●
1×24	420	C	1.5	**64722**	**64702**	■
1×24	520	B	2.0	**64723**	**64703**	● ▲
1×36	520	B	2.0	**64724**	**64704**	■
1×36	620		2.5	**64725**	**64705**	
1×55	620		2.5	**64726**	**64706**	■

Suffix code

■	**-436** DALI/DSI/switchDIM
●	**-357** e-Sense Detect on/off
●	**-359** e-Sense Detect absence dampening
▲	**-431** e-Sense Move on/off
▲	**-432** e-Sense Move absence dampening

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Luminaire with emergency lighting

FSD	Length	Lum. class	kg	Grey	Chrome
1×24	420	C	1.5	**64722-203**	**64702-203**
1×36	520	B	2.0	**64724-160**	**64704-160**
1×55	620		2.5	**64726-160**	**64706-160**

For further information on Luminance Classification, please refer to the Technical Information chapter.

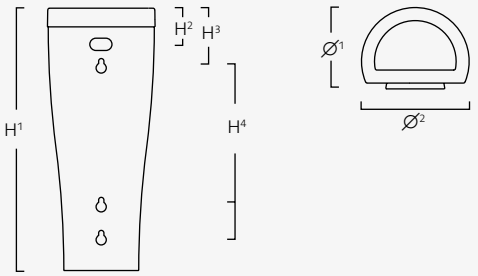
Light source

W	*Socket*	*830*	*840*
	Compact fluorescent lamp FSD		
18	*2G11*	*81157*	*81470*
24	*2G11*	*81158*	*81301*
36	*2G11*	*81159*	*81471*
55	*2G11*	*81318*	*81473*

For further information on Light source, please refer to the Technical Information chapter.

Decor ring in alu-grey.

W	H^1	H^2	H^3	H^4	$Ø^1$	$Ø^2$
18	420	70	90	200	130	170
24	420	70	90	250	130	170
24	520	70	90	290	150	210
36	520	70	90	350	150	210
36	620	70	90	380	170	250
55	620	70	90	455	170	250



Chrome decor ring in cast aluminium.

Terso

Terso and Terso Flat are two powerful pendant luminaires with a simplistic design that is key to catching the onlooker's eye.

Producing a comfortable general light, and available in two different sizes, Terso is an ideal solution for reception desks, entrances and meeting rooms, irrespective of ceiling height. Terso's high gloss surface in black or white is mirrored by the ceiling cup, and is connected via a coloured fabric cable to provide a consist style. To add some additional variety Terso can be produced in an array of different colours to match either a brand or interiors palette.

Terso Flat has a thin and elegant appearance that emphasises any environment with either a matt white or matt black shade. The inside of the luminaire is painted white, which reduced the contrast between the LED light source and the matt shade.

Terso

Installation
Two point suspension, c/c 55–78 mm.
Connection
Snap-in terminal block 5×1.5 mm², through-wiring possible.
Design
The luminaire shade in spun aluminium, specular black or white. Other colours on request. Supplied with colour coordinated fabric cord and specular, steel ceiling cup.
Ø 250 mm: 2.3 m.
Ø 400 mm: 3.8 m.
Dimming
Luminaire with LED is equipped with DALI/Phase-pulse control as standard.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.
Designed by
Sabina Grubbe.

Luminaire with LED

System, W	kg	Ø	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	White	Black
23	2.5	250	3000	1480	64	**54530-402**	**54532-402**
21	2.5	250	4000	1480	70	**54531-402**	**54533-402**
33	3.9	400	3000	2457	74	**54534-402**	**54536-402**
31	3.9	400	4000	2457	79	**54535-402**	**54537-402**

For current information on output and luminous flux, please refer to our website.

Luminaire

FSM-E	kg	Ø	White	Black	
1×18	2.5	250	**54550**	**54560**	
1×26/32	2.5	250	**54551**	**54561**	☐
1×42	3.9	400	**54555**	**54565**	
2×42	3.9	400	**54556**	**54566**	☐
1×57	3.9	400	**54557**	**54567**	☐

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐ **-368** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function.

Accessories

Cutters/each	**94248**

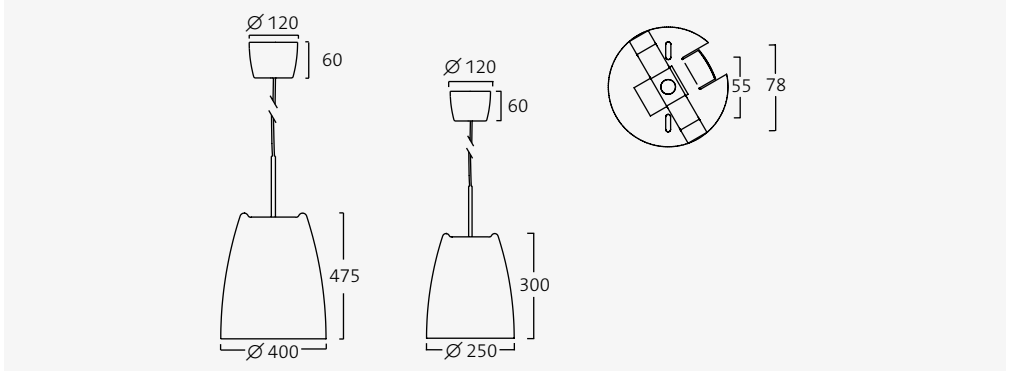
Light source

W	*Socket*	*830*	*840*
	Compact fluorescent lamp FSM-E		
18	*GX24q-2*	*81327*	*81475*
26	*GX24q-3*	*81309*	*81476*
32	*GX24q-3*	*81329*	*81477*
42	*GX24q-4*	*81331*	*81478*
57	*GX24q-5*	*81334*	*81336*

For further information on Light source, please refer to the Technical Information chapter.

Terso is available in other colours on request.

Colour coordinated cable and luminaire.



Terso Flat

Installation
Three-point suspension.
Connection
Snap-in terminal block 5×1.5 mm², through-wiring possible. Connects with 230 V, built-in LED driver.
Design
Luminaire shade in spun steel plate, with either a matt black or white finish. Supplied with 2.3 metre fabric cord in the same colour and white ceiling cup in steel.
Dimming
DALI/Phase-pulse control as standard.
Miscellaneous
Using cutters 94248, a cut-out is made in the ceiling cup for a surface mounted mains cable.
Designed by
Joakim Fihn.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	White	Black
23	3000	1360	59	**54570-402**	**54571-402**
23	4000	1610	70	**54572-402**	**54573-402**

For current information on output and luminous flux, please refer to our website.

Information LED

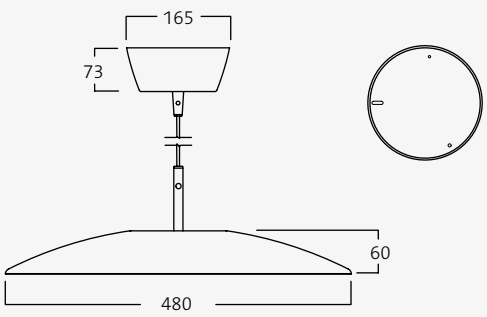
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Cutters, each	**94248**

Common style with Terso.



LED driver integrated in the ceiling cup.

Installation
Two point suspension, c/c 70 mm.
Connection
Snap-in terminal block 3×1.5 mm², 1-phase through-wiring possible. Luminaire for light control (HF-dim) are supplied with snap-in terminal block 5×1.5 mm².
Design
Ceiling cup of white ABS-plastic or specular metal. Luminaire fitting in white (RAL 9003) or chrome plated metal and frosted opal glass globe. Supplied with fabric cord.
Ø 250–300 mm: 2.0 m.
Ø 350–450 mm: 2.5 m.
Dimming
Luminaire with LED is equipped with DALI/Phase-pulse control as standard.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire with LED

System, W	Ø	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	White	Specular
20	300	3000	1800	90	**53583-402**	**53589-402**
20	300	4000	2010	100	**53584-402**	**53590-402**
25	400	3000	2070	84	**53585-402**	**53591-402**
25	400	4000	2320	93	**53586-402**	**53592-402**
29	450	3000	2400	83	**53587-402**	**53593-402**
29	450	4000	2690	93	**53588-402**	**53594-402**

For current information on output and luminous flux, please refer to our website.

Luminaire

IAA/C	Ø	Lum.class	kg	White	Specular	
1×100	250	B	3.1	**53450**	**53430**	
1×150	300	B	4.1	**53451**	**53431**	
FSM-E						
1×18	250	B	3.4	**53452**	**53432**	
1×26	250	B	3.2	**53453**	**53433**	
1×26	300	B	4.3	**53454**	**53434**	
1×26	350	A	5.0	**53455**	**53435**	
1×32	300	B	4.5	**53456**	**53436**	
1×32	350	B	5.0	**53457**	**53437**	☐
1×32	400	A	6.6	**53458**	**53438**	
1×32	450	A	7.8	**53459**	**53439**	
1×42	400	A	6.6	**53460**	**53440**	☐
1×42	450	A	7.6	**53461**	**53441**	☐

For further information on Luminance Classification, please refer to the Technical Information chapter.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

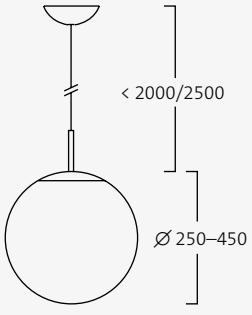
Accessories

Spare glass globe Ø 250 mm	**93242**
Spare glass globe Ø 300 mm	**93218**
Spare glass globe Ø 350 mm	**93263**
Spare glass globe Ø 400 mm	**93264**
Spare glass globe Ø 450 mm	**93214**
Cutters	**94248**

Light source

W	*Socket*	*829*	*830*	*840*
Halogen lamp IAA/C				
70	*E27*	*81651*		
105	*E27*	*81652*		
Compact fluorescent lamp FSM-E				
18	*GX24q-2*		*81327*	*81475*
26	*GX24q-3*		*81309*	*81476*
32	*GX24q-3*		*81329*	*81477*
42	*GX24q-4*		*81331*	*81478*

For further information on Light source, please refer to the Technical Information chapter.



Teres

Designed by Olle Lundberg

Teres is a circular decorative range that includes pendant, ceiling and wall luminaires in six different sizes. The larger models have been developed for ceiling and pendant installation and the smaller models for ceilings and walls.

The range is intentionally expansive in regards to both function and design to facilitate usage in varying environments. Teres is a perfect solution for both small and large rooms.

The sealed design of Teres prevents dust and other dirt from entering the luminaire. It has been developed for compact fluorescent lamps as well as the T5, circular fluorescent lamps.

Teres
Pendant

Installation
Two point suspension, c/c 70 mm.
Connection
Snap-in terminal block 4×1.5 mm² or 5×1.5 mm² with dimming, 1-phase through-wiring possible.
Design
Luminaire body in alu-grey structured aluminium (RAL 9006). Diffuser of matt opal acrylic. Solid design that prevents particles from collecting in the diffuser. Supplied with fabric cord pendant cable and wire: 2.0 m.
Miscellaneous
Shades with bayonet fitting. The height is easily adjusted using the friction lock on the luminaire body. Surface mounted mains cable is possible by using the cutters 94248.

Luminaire

FCH	Ø	Lum. class	kg	
1×60	600	B	4.0	**53518**
FSD				
4×24	600	D	4.0	**53517**
4×36	780	C	6.2	**53519** ☐

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

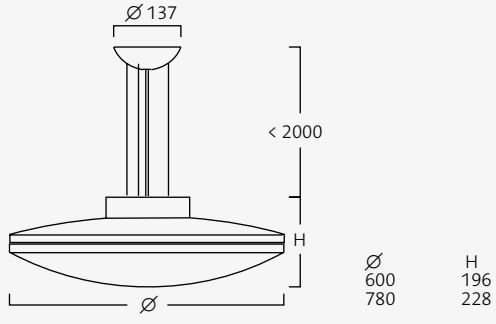
Accessories

Cutters/each	**94248**

Light source

W	*Socket*	*830*	*840*
	Circular fluorescent lamp FCH		
60	*2GX13*	*81397*	*81568*
	Compact fluorescent lamp FSD		
24	*2G11*	*81158*	*81301*
36	*2G11*	*81159*	*81471*

For further information on Light source, please refer to the Technical Information chapter.



Teres Edge
Pendant

Installation
Two point suspension, c/c 70 mm.
Connection
Snap-in terminal block 4×1.5 mm² or 5×1.5 mm² with dimming, 1-phase through-wiring possible.
Design
Luminaire body and decorative edging of grey enamelled structured aluminium (RAL 9006). Shade of matt opal acrylic. Solid design that prevents particles from collecting in the diffuser. Supplied with fabric cord cable and wire: 2.0 m for ∅ 640–820 mm, 5 m for 1252. For model ∅ 1252 mm, ceiling cup can be ordered as accessories separately.
Miscellaneous
Shades with bayonet fitting. Decorative edging is attached to the lower shade. Surface mounted mains cable is possible by using the cutters 94248. The luminaire is equipped with HF-ballast.

Luminaire

FCH	∅	Lum. class	kg		
1×60	640	B	5.2	**53548**	
FSD					
4×24	640	D	5.2	**53547**	
4×36	820	C	7.8	**53549**	☐
4×55	1252		19.0	**53496**	☐

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

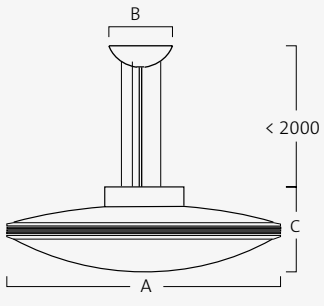
Accessories

Cutters/each	**94248**
Grey ceiling cup with terminal block and wire bracket for Teres ∅ 1252	**91294**

Light source

W	*Socket*	*830*	*840*
	Circular fluorescent lamp FCH		
60	*2GX13*	*81397*	*81568*
	Compact fluorescent lamp FSD		
24	*2G11*	*81158*	*81301*
36	*2G11*	*81159*	*81471*
55	*2G11*	*81318*	*81473*

For further information on Light source, please refer to the Technical Information chapter.



A	B	C
640	137	196
820	137	228
1252	200	290

Teres
Ceiling/wall

Luminaire with direct distribution, surface and wall mounting

FCH	Ø	Lum. class	kg		
1×22	300	D	1.1	**56513**	●
1×40	400	D	2.1	**56516**	● ▼
FSQ-E					
1×18	300	D	1.1	**56512**	
2×13	400	C	2.1	**56514**	
2×18	400	D	2.7	**56515**	□
FSD					
2×24	500	B	2.7	**56506**	● ▲ ▼
3×24	500	B	2.7	**56507**	□

Luminaire, round beam, surface mounting

FCH	Ø	Lum. class	kg	
1×60	600	B	3.6	**56518**
FSD				
4×24	600	D	3.6	**56517**
4×36	780	C	5.8	**56519** □

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code

□	**-436** DALI/DSI/switchDIM
●	**-357** e-Sense Detect on/off
▲	**-359** e-Sense Detect absence dampening
▼	**-431** e-Sense Move on/off
▼	**-432** e-Sense Move absence dampening

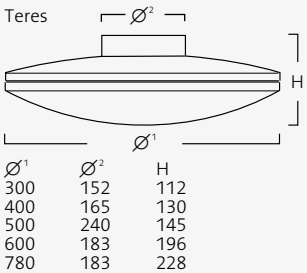
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Light source

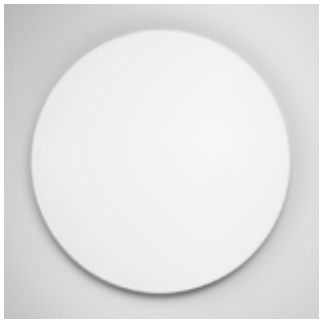
W	*Socket*	*830*	*840*
	Circular fluorescent lamp FCH		
22	*2GX13*	*81391*	*81565*
40	*2GX13*	*81393*	*81566*
60	*2GX13*	*81397*	*81568*
	Compact fluorescent lamp FSQ-E		
13	*G24q-1*	*81221*	*81439*
18	*G24q-2*	*81222*	*81435*
	Compact fluorescent lamp FSD		
24	*2G11*	*81158*	*81301*
36	*2G11*	*81159*	*81471*

For further information on Light source, please refer to the Technical Information chapter.

Installation
Two fixing holes, c/c 70 mm.
Ø 300–500 mm also on wall.
Connection
Snap-in terminal block 3×2.5 mm² on Ø 300–500 mm and 4×2.5 mm² on Ø 600–780 mm, 1-phase through-wiring possible. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible. Cable entry from on top of the luminaire. Surface mounted mains cable possible, through-wiring 180°.
Design
Luminaire body in alu-grey structured aluminium (RAL 9006). Shade of matt opal acrylic. Solid design that prevents particles from collecting in the diffuser. Ø 300– 500 mm, IP 44. Ø 600–780 mm, IP 20.
Dimming
e-Sense Detect – microwave sensor for on/off function, or absence dampening 10–100 %.
e-Sense Move – wireless lighting control between luminaires. Microwave sensor for on/off function, or absence dimming with the option of switch-off function.
Miscellaneous
Shade with bayonet fitting. The luminaire is equipped with HF-ballast.



Ø1	Ø2	H
300	152	112
400	165	130
500	240	145
600	183	196
780	183	228



Teres Edge
Ceiling/wall

Luminaire with direct distribution, surface and wall mounting

FCH	Ø	Lum. class	kg		
1×22	323	D	1.3	**56583**	●
1×40	423	D	2.4	**56586**	● ▼
FSQ-E					
1×18	323	D	1.3	**56582**	
2×13	423	C	2.4	**56584**	
2×18	423	D	3.0	**56585**	□
FSD					
2×24	523	B	2.9	**56656**	● ▲ ▼
3×24	523	B	2.9	**56657**	□

Luminaire, round beam, surface mounting

FCH	Ø	Lum. class	kg	
1×60	640	B	4.8	**56588**
FSD				
4×24	640	D	4.8	**56587**
4×36	820	C	7.4	**56589** □

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code

□	**-436** DALI/DSI/switchDIM
●	**-357** e-Sense Detect on/off
▲	**-359** e-Sense Detect absence dampening
▼	**-431** e-Sense Move on/off
▼	**-432** e-Sense Move absence dampening

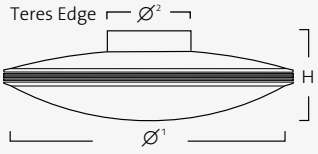
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Light source

W	*Socket*	*830*	*840*
	Circular fluorescent lamp FCH		
22	*2GX13*	*81391*	*81565*
40	*2GX13*	*81393*	*81566*
60	*2GX13*	*81397*	*81568*
	Compact fluorescent lamp FSD		
24	*2G11*	*81158*	*81301*
36	*2G11*	*81159*	*81471*
	Compact fluorescent lamp FSQ-E		
13	*G24q-1*	*81221*	*81439*
18	*G24q-2*	*81222*	*81435*

For further information on Light source, please refer to the Technical Information chapter.

Installation
Two securing holes, c/c 70 mm. Ø 323–523 mm also on wall.
Connection
Snap-in terminal block 3×2.5 mm² on Ø 323–523 mm and snap-in terminal block 4×2.5 mm² on Ø 640–820 mm, 1-phase through-wiring possible. Luminaires for dimming, 5-way snap-in terminal block, 1-phase through-wiring possible. Cable entry from on top of the luminaire. Surface mounted mains cable possible, through-wiring 180°.
Design
Luminaire body and edge ring in alu-grey aluminium (RAL 9006). Shade of matt opal acrylic. Solid design that prevents particles from collecting in the diffuser. Ø 323–523 mm, IP 44. Ø 640–820 mm, IP 20.
Dimming
e-Sense Detect – microwave sensor for on/off function, or absence dampening 10–100 %.
e-Sense Move – wireless lighting control between luminaires. Microwave sensor for on/off function, or absence dimming with the option of switch-off function.
Miscellaneous
Shades with bayonet fitting. Edge ring is attached to the lower diffuser. The luminaire is equipped with HF-ballast.



Ø1	Ø2	H
323	152	112
423	165	130
523	240	145
640	183	196
820	183	228

Isola

Designed by Bertil Harström and Mårten Cyrén

The name Isola is derived from the Italian for Island, reflecting how the luminaire is experienced in the space above the onlooker, viewed in splendid isolation with its striking design.

The circular form makes Isola a luminaire that has no set direction. The spacing between the light sources in the circle results in a very balanced and comfortable luminance. The solution also permits a smaller distance between the luminaire and the ceiling than is usually possible with such large amounts of light.

Isola is an excellent choice for both high and low ceiling heights and also functions well in environments where screen monitors are used.

Installation
Two point suspension, c/c 70 mm.
Connection
Snap-in terminal block 5×1.5 mm², 1-phase through-wiring possible in the ceiling cup.
Design
Luminaire body of white enamelled aluminium (RAL 9016) structured. Supplied with textile cable,
∅ 720: 1.0 m and 1.0 m wire.
∅ 900 mm: 2.0 m and 1.5 m wire.
Reflector
Reflector of metallised aluminium.
Miscellaneous
Crosswise dual switching (2+2) with HF-std. A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire

FSD	∅	kg		
4×24	720	4.7	**53510**	
4×36	720	4.7	**53511**	☐
4×36	900	6.0	**53512**	
4×55	900	6.0	**53514**	☐

Suffix code

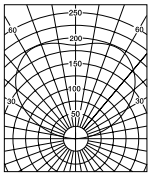
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function

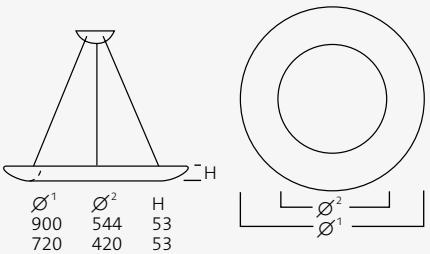
Light source

W	*Socket*	*830*	*840*
	Compact fluorescent lamp FSD		
24	*2G11*	*81158*	*81301*
36	*2G11*	*81159*	*81471*
55	*2G11*	*81318*	*81473*

For further information on Light source, please refer to the Technical Information chapter.



All versions



∅1	∅2	H
900	544	53
720	420	53

Isola Parabol

Installation
Two point suspension, c/c 80 mm.
Connection
Snap-in terminal block 5×1.5 mm², 1-phase through-wiring possible in the ceiling cup.
Design
Parabolic dish and luminaire body of white enamelled aluminium (RAL 9016) structured. Supplied with 4.0 m wire suspension and 5.0 m textile cable.
Reflector
Reflector of metallised aluminium.
Accessories
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.
Miscellaneous
Crosswise dual switching (2+2) with HF-std.

Luminaire

FSD	Ø	kg		
4×36	900	25.0	**53507**	
4×55	900	25.0	**53509**	■

Suffix code

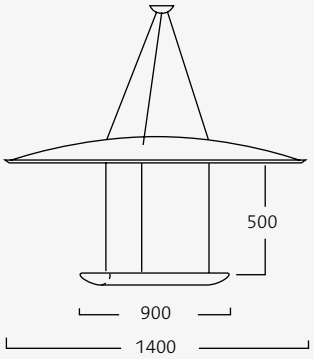
■ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function

Light source

W	*Socket*	*830*	*840*
	Compact fluorescent lamp FSD		
36	*2G11*	*81159*	*81471*
55	*2G11*	*81318*	*81473*

For further information on Light source, please refer to the Technical Information chapter.



Dome

Designed by Wilma Daemen

Dome is a range of decorative luminaires with a distinctive design concept and high lighting comfort, intended for environments with an emphasis on form and image.

The lit effect of Dome is shaped by the choice of reflector. The aluminium version creates an effective and concentrated distribution, while the prismatic glass offers a more decorative, accent lighting alternative. The third option, combining both materials, completes the range.

Dome can be used for both general and accent lighting, with a wide choice of light sources to help create the desired effect.

Dome
Aluminium reflector

Installation
Single point suspension.
Connection
2.5 m grey fabric cord, 3×0.75 mm².
With dimming, 5×0.75 mm².
Design
Grey enamelled aluminium body (RAL 9007) with cast zinc details.
Anodised aluminium reflector.
Supplied with 2.5 m wire pendant.
Luminaire for MT-light source incl. safety glass.
Accessories
Ceiling cup with terminal block and wire bracket, 1-phase through-wiring is possible.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire with electronic ballast

MT	Ø	Height	kg	
1×70	315	474	4.4	**53646**
1×150	315	524	4.7	**53648**

Luminaire with HF-std

FSM-E	Ø	Height	kg		
1×26	315	381	3.3	**53601**	■
1×32	415	595	2.8	**53606**	
1×42	415	595	3.8	**53611**	■

Suffix code

■ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

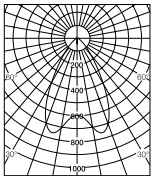
Accessories

Cutters	**94248**
Ceiling cup incl. terminal block (3-way) and wire bracket	**91639**
Ceiling cup incl. terminal block (5-way) and wire bracket	**91644**

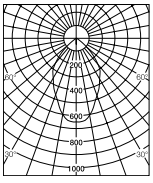
Light source

W	*Socket*	*830*	*840*
Metal halogen MT			
70	*G12*	*81384*	
150	*G12*	*81385*	
Compact fluorescent lamp FSM-E			
26	*GX24q-3*	*81309*	*81476*
32	*GX24q-3*	*81329*	*81477*
42	*GX24q-4*	*81331*	*81478*

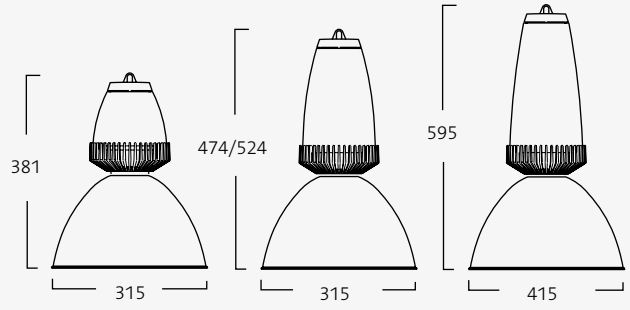
For further information on Light source, please refer to the Technical Information chapter.



70 W, MT



32 W, FSM-E



Dome

Aluminium reflector and glass

Installation
Single point suspension.
Connection
2.5 m grey fabric cord, 3×0.75 mm².
With dimming, 5×0.75 mm².
Design
Grey enamelled aluminium body (RAL 9007) with cast zinc details. Anodised aluminium reflector with matt glass shade. Supplied with 2.5 m wire pendant. Luminaire for MT-light source incl. safety glass.
Accessories
Ceiling cup with terminal block and wire bracket, 1-phase through-wiring is possible.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire with electronic ballast				
MT	Ø	Height	kg	
1×70	315	474	4.9	**53647**
1×150	315	524	5.2	**53649**

Luminaire with HF-std					
FSM-E	Ø	Height	kg		
1×26	315	381	3.9	**53602**	■

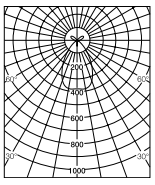
Suffix code	
■ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

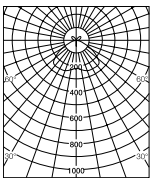
Accessories	
Cutters	**94248**
Ceiling cup incl. terminal block (3-way) and wire bracket	**91639**
Ceiling cup incl. terminal block (5-way) and wire bracket	**91644**

Light source			
W	*Socket*	*830*	*840*
Metal halogen MT			
70	*G12*	*81384*	
150	*G12*	*81385*	
Compact fluorescent lamp FSM-E			
26	*GX24q-3*	*81309*	*81476*

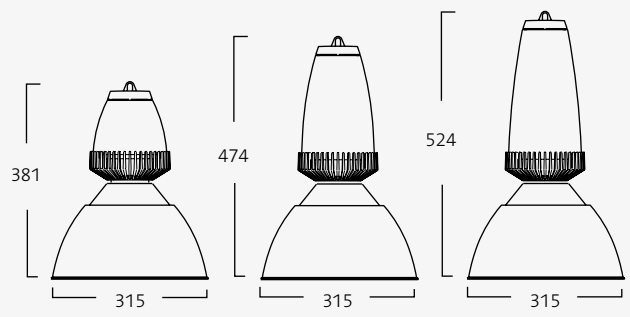
For further information on Light source, please refer to the Technical Information chapter.



70 W, MT



26 W, FSM-E



Dome
Metallised reflector

Installation
Single point suspension.
Connection
2.5 m grey fabric cord, 3×0.75 mm².
With dimming, 5×0.75 mm².
Design
Grey enamelled aluminium body (RAL 9007) with cast zinc details. Metallised lined prismatic acrylic reflector. Supplied with 2.5 m wire pendant. Luminaire for MT-light source incl. safety glass.
Accessories
Ceiling cup with terminal block and wire bracket, 1-phase through-wiring is possible.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire with electronic ballast

MT	Ø	Height	kg	
1×70	315	495	4.9	**53737**
1×150	315	545	5.2	**53739**

Luminaire with HF-std

FSM-E	Ø	Height	kg		
1×26	315	400	3.8	**53712**	☐
1×32	410	490	2.8	**53714**	
1×42	410	590	3.8	**53716**	☐

Suffix code

☐	**-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

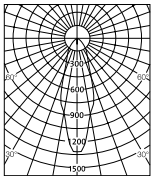
Accessories

Cutters	**94248**
Ceiling cup incl. terminal block (3-way) and wire bracket	**91639**
Ceiling cup incl. terminal block (5-way) and wire bracket	**91644**

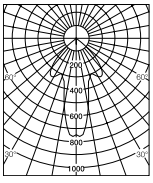
Light source

W	*Socket*	*830*	*840*
	Metal halogen MT		
70	*G12*	*81384*	
150	*G12*	*81385*	
	Compact fluorescent lamp FSM-E		
26	*GX24q-3*	*81309*	*81476*
32	*GX24q-3*	*81329*	*81477*
42	*GX24q-3*	*81331*	*81478*

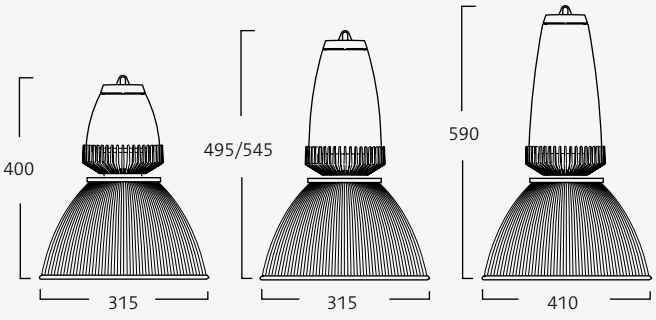
For further information on Light source, please refer to the Technical Information chapter.



70 W, MT



32 W, FSM-E



Dome
Opalic reflector

Installation
Single point suspension.
Connection
2.5 m grey fabric cord, 3×0.75 mm².
With dimming, 5×0.75 mm².
Design
Grey enamelled aluminium body (RAL 9007) with cast zinc details. Opalic acrylic reflector. Supplied with 2.5 m wire pendant. Luminaire for MT-light source incl. safety glass.
Accessories
Ceiling cup with terminal block and wire bracket, 1-phase through-wiring is possible.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire with electronic ballast

MT	∅	Height	kg	
1×70	315	495	4.9	**53736**
1×150	315	545	5.2	**53738**

Luminaire with HF-std

FSM-E	∅	Height	kg		
1×26	315	400	3.8	**53711**	■
1×32	410	590	2.8	**53713**	
1×42	410	590	3.8	**53715**	■

Suffix code

■ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

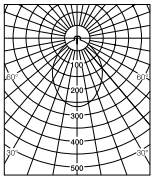
Accessories

Cutters	**94248**
Ceiling cup incl. terminal block (3-way) and wire bracket	**91639**
Ceiling cup incl. terminal block (5-way) and wire bracket	**91644**

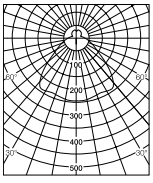
Light source

W	*Socket*	*830*	*840*
Metal halogen MT			
70	*G12*	*81384*	
150	*G12*	*81385*	
Compact fluorescent lamp FSM-E			
26	*GX24q-3*	*81309*	*81476*
32	*GX24q-3*	*81329*	*81477*
42	*GX24q-4*	*81331*	*81478*

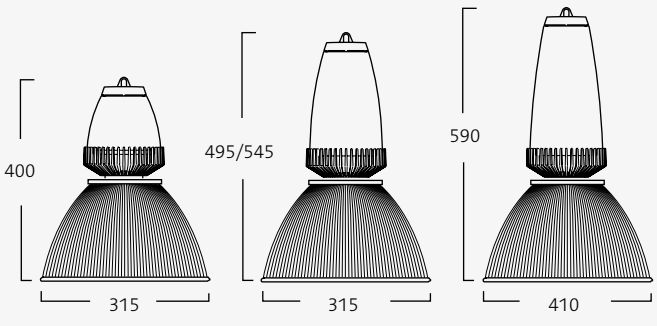
For further information on Light source, please refer to the Technical Information chapter.



70 W, MT



32 W, FSM-E



Dome
Prismatic reflector

Installation
Single point suspension.
Connection
2.5 m grey fabric cord, 3×0.75 mm².
With dimming, 5×0.75 mm².
Design
Grey enamelled aluminium body (RAL 9007) with cast zinc details.
Lined prismatic acrylic reflector.
Supplied with 2.5 m wire pendant.
Luminaire for MT-light source incl. safety glass.
Accessories
Ceiling cup with terminal block and wire bracket, 1-phase through-wiring is possible.e.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire with electronic ballast

MT	Ø	Height	kg		
1×70	315	495	4.9	**53643**	
1×150	315	545	5.2	**53644**	

Luminaire with HF-std

FSM-E	Ø	Height	kg		
1×26	315	400	3.8	**53603**	☐
1×32	410	590	2.8	**53608**	
1×42	410	590	3.8	**53613**	☐

Suffix code

☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

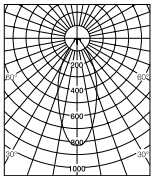
Accessories

Cutters	**94248**
Ceiling cup incl. terminal block (3-way) and wire bracket	**91639**
Ceiling cup incl. terminal block (5-way) and wire bracket	**91644**

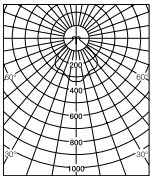
Light source

W	*Socket*	*830*	*840*
Metal halogen MT			
70	*G12*	*81384*	
150	*G12*	*81385*	
Compact fluorescent lamp FSM-E			
26	*GX24q-3*	*81309*	*81476*
32	*GX24q-3*	*81329*	*81477*
42	*GX24q-4*	*81331*	*81478*

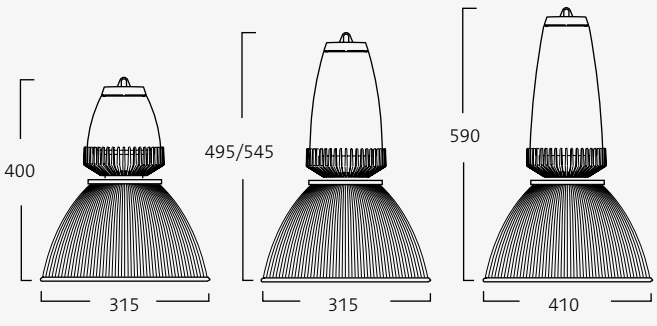
For further information on Light source, please refer to the Technical Information chapter.



70 W, MT



32 W, FSM-E



Pozzo

Designed by Örjan Nilsson, Yellon

Pozzo is a little piece of the sky, bringing the feeling of daylight into spaces where there may be limited access to the real thing.

The surface mounted Pozzo is characterised by its cylindrical white luminaire housing, which channels the light downwards through the opal louvre for an effective yet comfortable visual experience.

Pozzo pendant shares the same visual appearance as the surface mounted version, producing direct only light ideal for surfaces such as tables, receptions and waiting areas. A gentle profile on the top of the luminaire housing softens its appearance and adds to its aesthetic appeal.

Both the pendant and surface mounted luminaires are available in two different sizes and are equipped with LED or T5-C light source.

Pozzo
Pendant

Installation
Two point suspension c/c 53–78 mm.
Connection
Snap-in terminal block 3×1.5 mm² or 5×1.5 mm² when dimming. 1-phase through-wiring possible. Surface mounted mains cable possible. Height adjustment is done on the luminaire using a friction lock. LED luminaire connects via 230 V, built-in LED driver.
Design
Luminaire of deep drawn aluminium. White (RAL 9016) structured finish. Supplied with 2 m wire, 2.3 m white fabric cord and white steel ceiling cup.
Louvre
Opal – opal acrylic diffuser.
Delta – microprism louvre in acrylic (PMMA) with a thin opal diffuser (acrylic/PMMA) on the inside (PMMA).

Luminaire with LED

System, W	Ø	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
Opal						
39	450	3000	2261	57	4.7	**56820** ■
39	450	4000	2396	61	4.7	**56840** ■
50	550	3000	3395	69	6.0	**56822** ■
50	550	4000	3415	69	6.0	**56842** ■
Delta						
39	450	3000	2081	53	4.7	**56821** ■
39	450	4000	2222	56	4.7	**56841** ■
50	550	3000	3010	61	6.0	**56823** ■
50	550	4000	3248	65	6.0	**56843** ■

For current information on output and luminous flux, please refer to our website.

Luminaire

FCH	Ø	kg	
Opal			
1×40	450	4.7	**56850**
1×55	450	4.7	**56851** ▼
1×60	550	6.0	**56852** ▲

Suffix code

■ **-471**	DALI
▲ **-368**	DALI/Phase-pulse control
▼ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

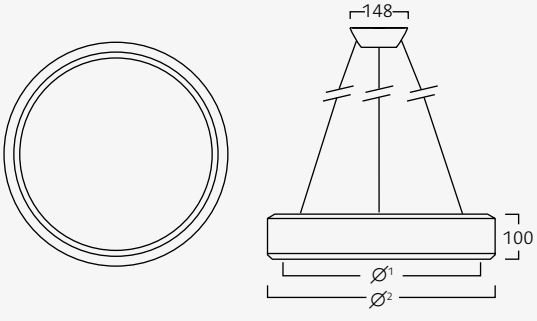
For further information on LEDs, please refer to the Technical Information chapter.

Light source

W	*Socket*	*830*	*840*
Circular fluorescent lamp FCH			
40	*2GX13*	*81393*	*81566*
55	*2GX13*	*81312*	*81567*
60	*2GX13*	*81397*	*81568*

For further information on Light source, please refer to the Technical Information chapter.

Ø1	Ø2
450	490
550	590



Ceiling cup support a ceiling slope of 0–20°. Knock-outs in the ceiling cup for surface mounted cable.

Slightly curved, sealed top with integrated friction locks.

Installation
Securing holes for assembly on a pattress or surface mounted. Protection class IP 44, LED IP 20.
Connection
Snap-in terminal block 5×2.5 mm². 1-phase through-wiring possible. Surface mounted mains cable possible. LED luminaire connects via 230 V, built-in LED driver.
Design
Luminaire of deep drawn aluminium. White (RAL 9016) structured finish.
Louvre
Opal – opal acrylic diffuser.
Delta – microprism louvre in acrylic (PMMA) with a thin opal diffuser (acrylic/PMMA) on the inside (PMMA).
Dimming
e-Sense Detect – microwave sensor for on/off function, or absence dimming 10–100%.
e-Sense Move – wireless control between luminaires. Microwave sensor for the on/off function, or absence dimming with the option of switch-off function.

Luminaire with LED

System, W	∅	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
Opal						
39	450	3000	2261	57	2.9	**56810** ■
39	450	4000	2396	61	2.9	**56830** ■
50	550	3000	3395	69	3.6	**56812** ■
50	550	4000	3415	69	3.6	**56832** ■
Delta						
39	450	3000	2081	53	2.9	**56811** ■
39	450	4000	2222	56	2.9	**56831** ■
50	550	3000	3010	61	3.6	**56813** ■
50	550	4000	3248	65	3.6	**56833** ■

For current information on output and luminous flux, please refer to our website.

Luminaire

FCH	∅	kg	
Opal			
1×40	450	2.9	**56855**
1×55	450	2.9	**56856** ▼
1×60	550	3.6	**56857** ▲

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

■ **-439**	e-Sense Detect absence dampening
■ **-440**	e-Sense Move absence dampening
■ **-471**	DALI
▲ **-368**	DALI/Phase-pulse control
▼ **-436**	DALI/DSI/switchDIM

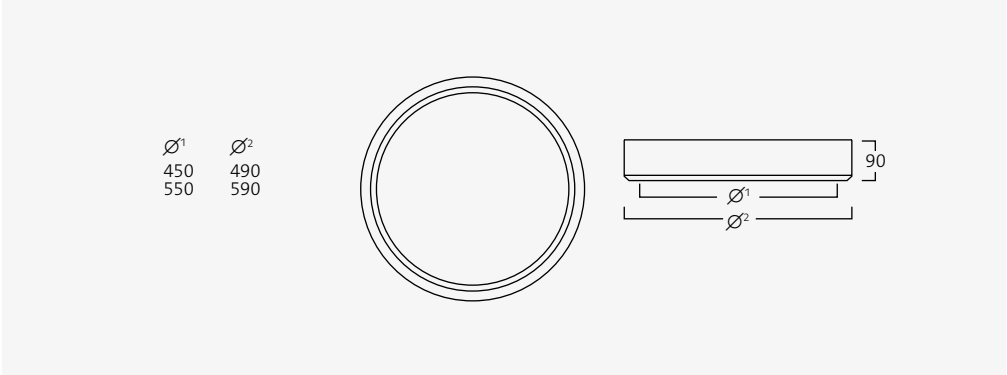
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Light source

W	*Socket*	*830*	*840*
	Circular fluorescent lamp FCH		
40	*2GX13*	*81393*	*81566*
55	*2GX13*	*81312*	*81567*
60	*2GX13*	*81397*	*81568*

More information on light sources can be found in the Technical Information chapter.

Pozzo with Delta louvre.



Common style with Pozzo recessed.

Luminaire							
System, W	Colour temp., K	Ø	Luminous flux, lm	Efficiency, lm/W	kg		
Ceiling/wall							
15	4000	300	1160	77	2.2	**56740**	■
20	4000	400	1824	91	4.2	**56741**	■ ●
Ceiling/wall with background lighting							
27	4000	400	1871	69	4.2	**56742**	■
Recessed							
15	4000	300	1160	77	2.2	**56745**	
20	4000	400	1824	91	4.2	**56746**	●
Robust							
20	4000	400	1824	91	4.2	**56754**	■ ●

For current information on output and luminous flux, please refer to our website.

Emergency lighting luminaire						
System, W	Colour temp., K	Ø	Luminous flux, lm	Efficiency, lm/W	kg	
Ceiling/wall, decentralised 3 h, self-test AT4						
20	4000	400	1824	91	4.2	**56750**
Ceiling/wall, decentralised 3 hours, self-test AT4 + DALI surveillance						
20	4000	400	1824	91	4.2	**56751**
Recessed, decentralised 3 h, self-test AT4						
20	4000	400	1824	91	4.2	**56752**
Recessed, decentralised 3 hours, self-test AT4 + DALI surveillance						
20	4000	400	1824	91	4.2	**56753**

For current information on output and luminous flux, please refer to our website.

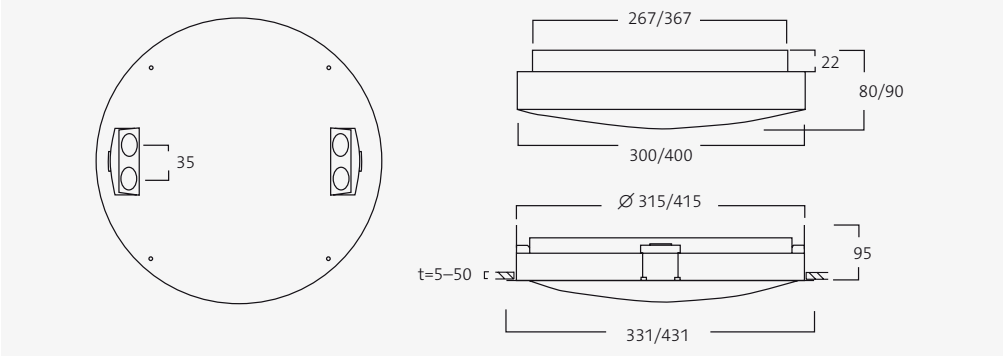
Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code
■ **-357** e-Sense Detect on/off
■ **-439** e-Sense Detect absence dampening
● **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Assembly plate Ø 315	**94080**
Assembly plate Ø 415	**94081**
Battery box 3 h, L=353, W=84, H=44	**98107**



Installation
Four securing holes. For ceiling, wall, or recessed installation. Protection class IP 20 with background lighting. Spring clips and a trim ring for recessed mounting included as standard. An assembly plate should be used when installing in soft tile ceilings.

Connection
Connection via 230 V, in-built LED driver. Snap-in terminal block 3×2.5 mm² or 5×2.5 mm² when dimming. 1-phase through-wiring possible. Cable entry at the rear of the luminaire or via knock-outs for surface mounting.
Recessed luminaire is equipped with a 2.5 metre mains cable and earthed plug. Recessed luminaire for dimming is equipped with a 2.5 metre 5-core mains cable.

Design
White enamelled heat sink in aluminium. White bottom and white trim ring and diffuser in opal polycarbonate.

Dimming
e-Sense Detect – microwave sensor for on/off function, or absence dimming with the option of switch-off function.

Emergency lighting
Emergency lighting luminaire for recessed installation must be supplemented with a battery box. Luminaire supplied with mains cable.

Miscellaneous
Robust luminaire (IK10) with case of PC that seals tight against the ceiling or wall. Four security screws (tamper-proof torx) IP 65.

Background lighting via separate low power LEDs all around the luminaire; snap-in connectors between parts for easier installation.

Nixi Robust gives IK10.

Discovery

Designed by Wilma Daemen

The round beam Discovery family is ideal for many areas of application. Discovery Space is slightly bigger but constructed of similar materials which contributes towards its robust design.

Both sizes can be surface and semi-recessed mounted. Surface mounting gives a decorative trailing light on the wall.

Accessories expand the range further and add a decorative touch to this type of luminaire. Please note that the accessories only fit Discovery.

Discovery Space is also available in an LED version, offering even greater efficiency.

Luminaire for halogen lamp				
IAA	Lum. class	Diffuser	kg	
1×70	C	PC	0.7	**56535**

Luminaire with conventional ballast, phase-compensated				
FSQ-I	Lum. class	Diffuser	kg	
1×13	B	Acrylic	1.3	**56532**
1×13	B	PC	1.3	**56536**
1×18	B	Acrylic	1.3	**56533**
1×18	B	PC	1.3	**56537**
1×26	C	Acrylic	1.3	**56534**
1×26	C	PC	1.7	**56538**

Luminaire with HF-std					
FSQ-E	Lum. class	Diffuser	kg		
1×13	B	Acrylic	1.3	**56532-85**	
1×13	B	PC	1.3	**56536-85**	
1×18	B	Acrylic	1.3	**56533-85**	●
1×18	B	PC	1.3	**56537-85**	●
1×26	C	Acrylic	1.3	**56534-85**	●
1×26	C	PC	1.7	**56538-85**	●
e-Sense smartSWITCH on/off					
1×18	B	PC	1.3	**56662**	
1×26	C	PC	1.7	**56663**	
Emergency light without self-test					
1×26	C	PC		**56668**	

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code
● **-357** e-Sense Detect on/off

Add suffix code to the end of the luminaire part number to indicate required function.

Accessories	
Decor casing, white	**93329**
Recess brackets, 4 pcs	**94605**
Mounting plate for installing in suspended ceilings.	**41963**
Shade, white	**93355**
IP 55-seal	**93394**
Diffuser lock/10 pcs 1 (per luminaire)	**93888**

Light source				
W	*Socket*	*829*	*830*	*840*
Compact fluorescent lamp FSQ-I				
13	*G24d-1*		*81255*	
18	*G24d-2*		*81256*	*81465*
26	*G24d-3*		*81257*	*81466*
Compact fluorescent lamp FSQ-E				
13	*G24q-1*		*81221*	*81439*
18	*G24q-2*		*81222*	*81435*
26	*G24q-3*		*81223*	*81436*
Halogen lamp IAA/C				
70	*E27*	*81651*		

For further information on Light source, please refer to the Technical Information chapter.

Installation
Two fixing holes. Surface or semi-recessed mounted on ceilings or walls. For recessed installation, order recess brackets separately. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. Surface mounted mains cable possible, through-wiring 0° or 180°. Three Ø 16 mm cable entries fitted with blanking grommets on the top of the luminaire.

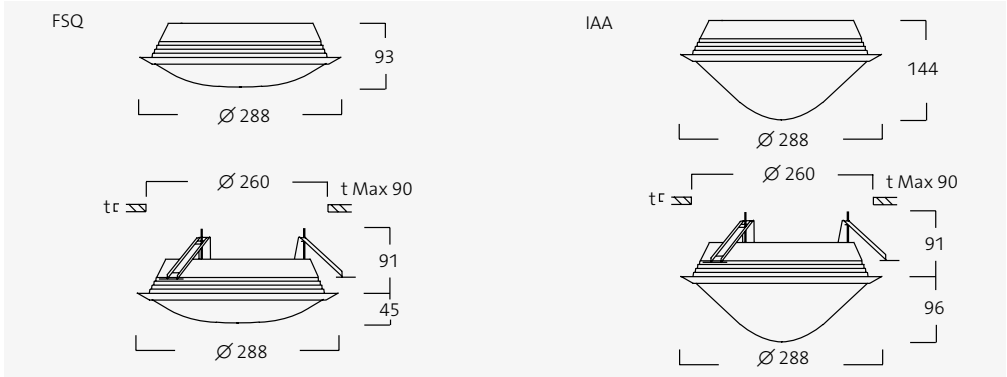
Design
Luminaire body of polycarbonate and diffuser of impact resistant acrylic or polycarbonate.

Emergency lighting
Emergency luminaries have the battery (1 h) in a separate box for recessed or surface installation and emergency unit. Snap-in terminal block 4×2.5 mm².

Dimming
e-Sense smartSWITCH – luminaire with PIR sensor for presence detection on/off. IP 43 in ceiling, IP 20 on wall.
e-Sense Detect – microwave sensor for on/off function.

Accessories
Trim ring, shade and outer casing in white or grey finish (RAL 9006), recessed decor ring in blue or yellow as well as IP 55 seal. Shade does not fit luminaires for IAA.

Luminaire with decor casing.



Discovery with e-Sense smartSWITCH.

Luminaire with HF-std				
FSS-E	Lum. class	Diffuser	kg	
1×28	C	Acrylic	2.0	**56625**
1×28	B	PC	2.0	**56626**
FSQ-E				
2×13	B	Acrylic	1.9	**56602**
2×13	B	PC	1.9	**56606**
2×18	B	Acrylic	1.9	**56603** □ ● ▲
2×18	B	PC	1.9	**56607**
2×26	C	Acrylic	2.0	**56604** ▲
2×26	C	PC	2.0	**56608**
e-Sense smartSWITCH absence dampening				
2×18	B	PC	1.9	**56607-218**
e-Sense smartSWITCH on/off				
2×18	B	PC	1.9	**56665**
2×26	C	PC	2.0	**56666**
Emergency light with self-test				
FSS-E				
1×28	2.8	PC	2.8	**56623**
Emergency light without self-test				
1×28	2.8	PC	2.8	**56624**

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code	
□	**-359** e-Sense Detect absence dampening
□	**-432** e-Sense Move absence dampening
▲	**-357** e-Sense Detect on/off
●	**-431** e-Sense Move on/off

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Recess brackets, 4 pcs	**94605**
Diffuser lock/10 pcs (1 per luminaire)	**93889**
Decor casing, white	**93371**
Robust case, white (gives IP 65, IK10 with PC-diffuser)	**93381**
Mounting plate suits Ø 345 mm	**93370**

Light source				
W	*Socket*	*830*	*835*	*840*
Compact fluorescent lamp FSQ-E				
13	*G24q-1*	*81221*		*81439*
18	*G24q-2*	*81222*		*81435*
26	*G24q-3*	*81223*		*81436*
Compact fluorescent lamp FSS-E				
28	*GR10q*		*81364*	

For further information on Light source, please refer to the Technical Information chapter.

Installation
Four fixing holes. Surface mounted or semi-recessed on ceilings or walls. For recessed installation, order recess brackets separately. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

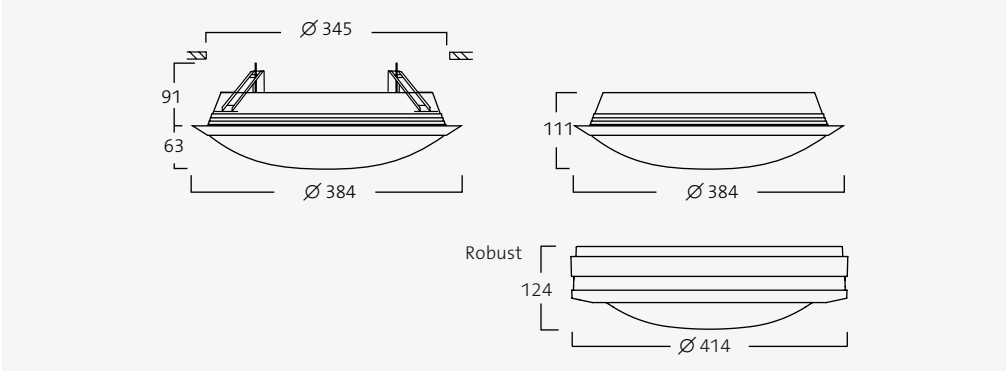
Connection
Snap-in terminal block 5×2.5 mm², 3-phase through-wiring possible. Surface mounted mains cable possible, through-wiring 0° or 180°. Three Ø 16 mm cable entries fitted with blanking grommets on the top of the luminaire.

Design
Polycarbonate luminaire body and impact resistant acrylic or polycarbonate diffuser.

Emergency lighting
Emergency luminaires have a built-in battery (3 h) and emergency unit. Snap-in terminal block 4×2.5 mm².

Dimming
e-Sense smartSWITCH – luminaire with PIR sensor for presence detection on/off or absence dampening 10–100 %. IP 43 in ceiling, IP 20 on wall.
e-Sense Detect – microwave sensor for on/off function or absence dampening 10–100 %.
e-Sense Move – wireless lighting control between luminaires. Microwave sensor for on/off function, or absence dimming with the option of switch-off function.

Accessories
Trim ring and outer casing in white or grey (RAL 9006) aluminium. Robust case of cast aluminium. An aluminium ring seals tight against the ceiling or wall. Four security screws (tamper-proof torx) IP 65. IK 10 in PC. Robust case is not suitable for 2×26 W version. IK – International classification for mechanical protection; IK 10 = highest class. Max 2×18 W with decor casing.



Recessed brackets facilitates easy installation in fixed or suspended ceilings.

Discovery Space LED

Luminaire						
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg		
Acrylic						
11	3000	650	64	1.5	**57701**	
20	3000	1200	60	1.5	**57702**	■
PC						
11	3000	600	59	1.5	**57703**	●
20	3000	1150	58	1.5	**57704**	■ ●

For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code	
●	**-219** e-Sense smartSWITCH on/off
■	**-438** 1–10 V
■	**-357** e-Sense Detect on/off
■	**-439** e-Sense Detect absence dampening
■	**-431** e-Sense Move on/off
■	**-440** e-Sense Move absence dampening

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Recess brackets, 4 pcs	**94605**
Diffuser lock/10 pcs (1 per luminaire)	**93889**
Decor casing, white	**93371**
Robust case gives IP 65, white (IK10 with PC-diffuser)	**93381**

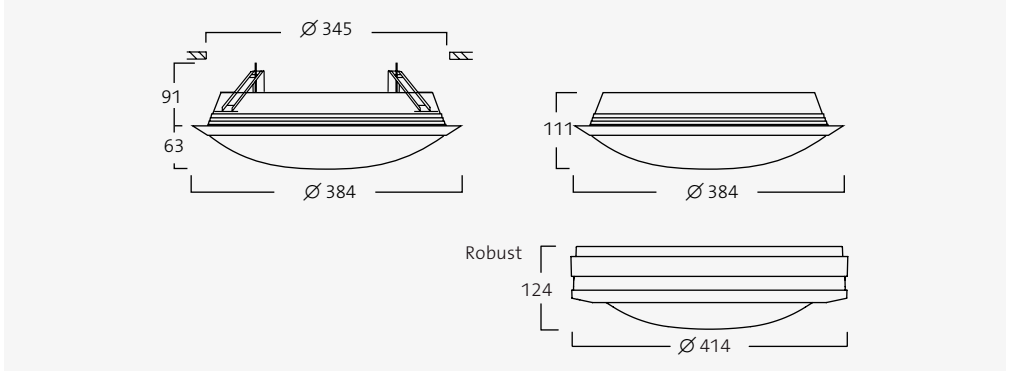
Installation
Four fixing holes. Surface mounted or semi-recessed on ceilings or walls. Brackets for recessed installation ordered separately, please see accessories. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Snap-in terminal block 3×2.5 mm², by dimming 5×1.5 mm², phase through-wiring possible. Surface mounted mains cable possible, through-wiring 0° or 180°. Three Ø 16 mm cable entries fitted with blanking grommets on the top of the luminaire.

Design
Polycarbonate luminaire body and impact resistant acrylic (IK07) or polycarbonate diffuser (IK10).

Dimming
e-Sense smartSWITCH – luminaire with PIR sensor for presence detection on/off. IP 21 in ceiling, IP 20 on wall.
e-Sense Detect – microwave sensor for on/off function, or absence dimming with the option of switch-off function.
e-Sense Move – wireless lighting control between luminaires. Microwave sensor for on/off function, or absence dimming with the option of switch-off function.

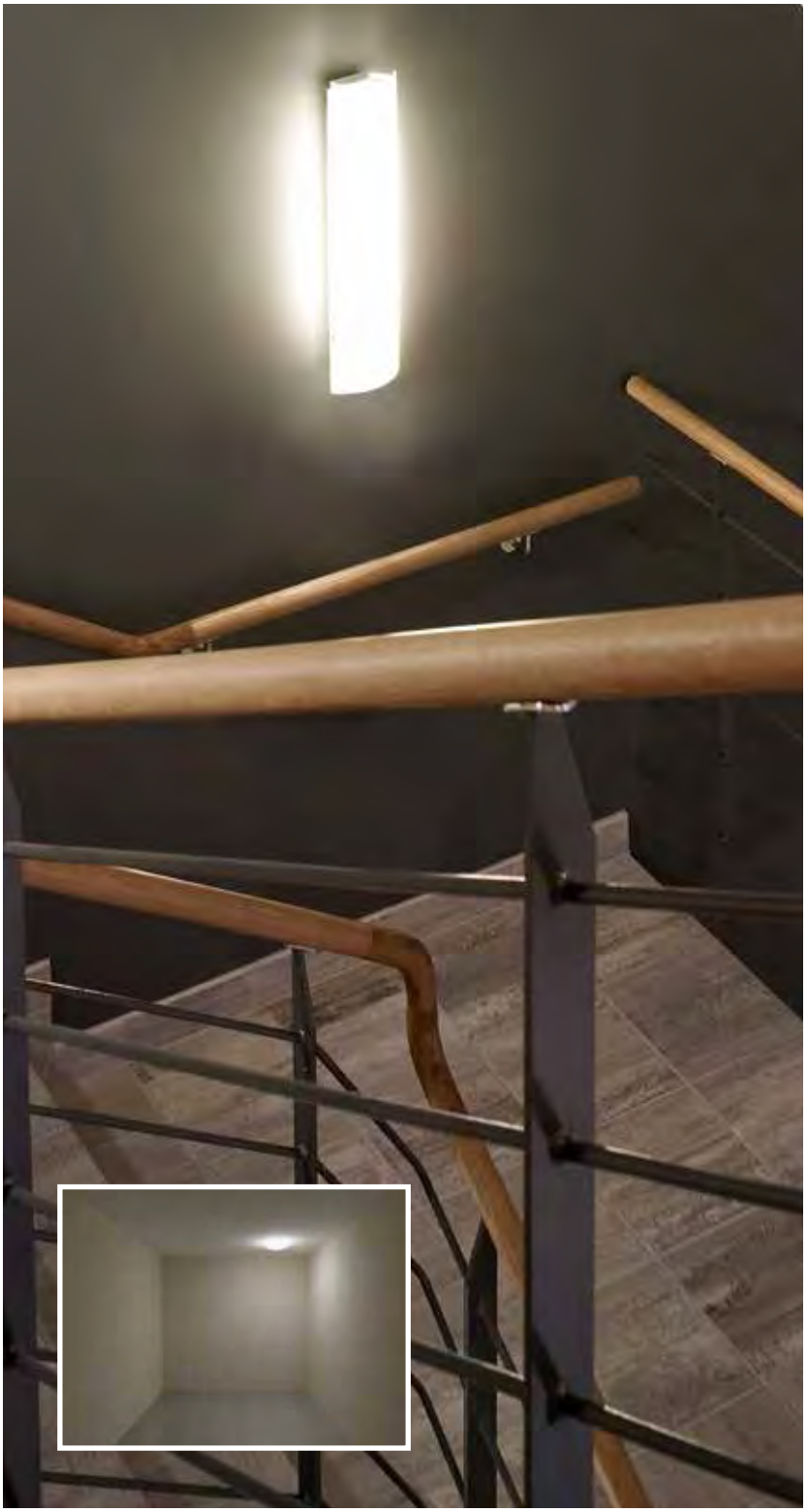
Accessories
Trim ring and outer casing in white aluminium. Robust case of cast aluminium. An aluminium ring seals tight against the ceiling or wall. Four security screws (tamper-proof torx) IP 65. IK10 in PC and IK07 in Acrylic.



Robust case of cast aluminium with security screws.

Zoft

Decorate with light! Real glass and timeless design characterise the Zoft series of luminaires. With its comfortable light and well balanced dimensions, Zoft is suitable for both the home and office. A perfect basic luminaire for interiors that demand quality and feeling.



Zoft is a classic lighting solution, where the emphasis is placed on an easy-to-use, neutral form and good light treatment. All luminaire models have an opal matt glass diffuser and volumes that create extremely good conditions for a diffused and glare-free light. The series of luminaires includes ceiling and wall luminaires that complement each other when lighting, for example, entrances and waiting rooms, dining rooms, stairwells and corridors.

Zoft wall, which is also available in acrylic finish, is well shielded and protected from side-on viewing, which makes it ideal for mounting on staircases. The ceiling luminaire satisfies the requirements for IP 44 and is also suitable for use in bathroom and spa environments.

Zoft
Ceiling/wall

Installation
Surface mounted on ceiling or wall. Protection class IP 44 on the ceiling, IP 20 on the wall.
Connection
Snap-in terminal block 2.5 mm². 1-phase through-wiring possible. Surface mounted mains cable possible. LED luminaire connects via 230 V, built-in LED driver.
Design
Diffuser in hand-blown matt opal glass, sliver enamelled luminaire body in tensile pressed sheet steel.
Dimming
e-Sense Detect – microwave sensor for on/off function or absence dampening 10–100 %.
e-Sense Move – wireless control between luminaires. Microwave sensor for the on/off function, or absence dimming with the option of switch-off function.

Luminaire with LED

System, W	Ø	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg		
19	400	3000	1268	65	3.3	**56300**	■
19	400	4000	1412	73	3.3	**56301**	■
30	520	3000	1993	68	4.6	**56302**	■ ●
30	520	4000	2234	75	4.6	**56303**	■ ●

For current information on output and luminous flux, please refer to our website.

Information LED

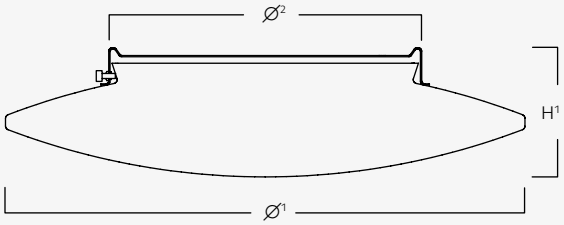
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

■ **-357**	e-Sense Detect on/off
● **-402**	DALI/Phase-pulse control
● **-431**	e-Sense Move on/off
● **-439**	e-Sense Detect absence dampening
● **-440**	e-Sense Move absence dampening

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



Ø1	Ø2	H1
400	240	125
520	355	153

Installation
Luminaire for wall installation. Two fixing holes.
Connection
Snap-in terminal block 3×2.5 mm² or 5×2.5 mm² when dimming. LED luminaire connects via 230 V, built-in LED driver. 1-phase through-wiring possible. Surface mounted mains cable possible.
Design
Luminaire body and rear section of alu-grey sheet steel. Diffuser of opal matt glass. Alu-grey (RAL 9006) structured rear plate. Integrated HF-ballast.
Dimming
LED luminaire can be used as on/off or dimmed with DALI as standard.

Luminaire with LED

System, W	Height	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
Glass						
21	310	3000	1183	57	1.6	**56990** ●
21	310	4000	1367	65	1.6	**56992** ●
24	620	3000	1591	65	2.8	**56994**
24	620	4000	1790	73	2.8	**56996**
Acrylic						
21	310	3000	1218	58	1.6	**56991** ●
21	310	4000	1398	67	1.6	**56993** ●
24	620	3000	1736	71	2.8	**56995**
24	620	4000	1951	80	2.8	**56997**

For current information on output and luminous flux, please refer to our website.

Luminaire

FSQ-E	kg	Height	Lum. class	Glass	Acrylic	
1×10/13	1.6	310	B	**56924**	**56914**	
1×18	1.6	310	B	**56923**	**56913**	
FDH						
1×13/14/20/24	2.8	620	B	**56922**	**56912**	■

Information on Luminance Classification can be found in the Technical Information chapter.

Suffix code

● **-471**	DALI
■ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Wall bracket for corner mounting, 620 mm luminaire	**94884**

Information LED

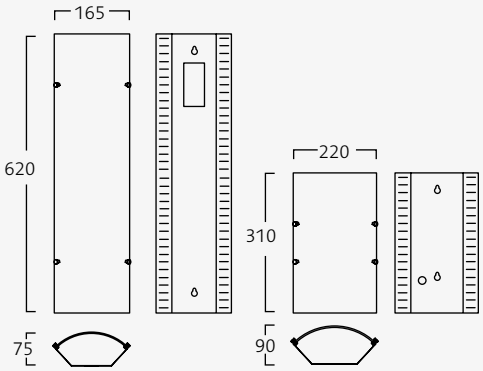
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Light source

W	*Socket*	*830*	*840*
	Fluorescent lamp FDH		
13 (T5 eco)	*G5*	*81625*	*81626*
14	*G5*	*81351*	*81347*
20 (T5 eco)	*G5*	*81627*	*81628*
24	*G5*	*81372*	*81376*
	Compact fluorescent lamp FSQ-E		
10	*G24q-1*	*81304*	
13	*G24q-1*	*81221*	*81439*
18	*G24q-2*	*81222*	*81435*

For further information on Light source, please refer to the Technical Information chapter.



Installation
Surface mounted on ceiling or wall (only without decor ring).
Ø 520 mm – two securing holes, IP 44.
Ø 360/420 mm – three securing holes. T5 IP 21, LED IP 44 with decor ring.

Connection
Snap-in terminal block 1.5 mm². 1-phase through-wiring possible. Surface mounted mains cable possible 180°. LED luminaire connects via 230 V, built-in LED driver.

Design
Luminaire body of matt white sheet steel. Diffuser of opal matt acrylic. Decor edging in white (RAL 9016) or brushed aluminium.

Dimming
e-Sense Detect – microwave sensor for on/off function or absence dampening 10–100 %.
e-Sense Move – wireless control between luminaires. Microwave sensor for the on/off function, or absence dimming with the option of switch-off function.
LED luminaire Ø 520 can be used as on/off or dimmed with phase-pulse control as standard.

Design
Björklund/Orrling.

Luminaire with LED

System, W	Ø	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Without decor ring	White	Brushed aluminium
15	360	3000	1112	74	1.6	**55930**	**55940**	**55950** ●
15	360	4000	1211	81	1.6	**55931**	**55941**	**55951** ●
25	420	3000	1741	70	2.4	**55932**	**55942**	**55952** ■ ●
25	420	4000	1801	72	2.4	**55933**	**55943**	**55953** ■ ●
39	520	3000	2837	72	2.7	**55934**	**55944**	**55954** ■ ●
39	520	4000	2837	74	2.7	**55935**	**55945**	**55955** ■ ●
Emergency lighting luminaire, decentralised 3 hours, self-test AT4								
28	420	3000	1741	70	2.4			**55960** ●
Emergency lighting luminaire, decentralised 3 hours, self-test AT4 + DALI surveillance								
28	420	3000	1741	70	2.4			**55961** ●

For current information on output and luminous flux, please refer to our website.

Luminaire

FCH	Ø	kg	Without decor ring	White	Brushed aluminium
1×22	360	1.6	**56980**	**56940**	**56941**
1×40	420	2.8	**56982**	**56942**	**56943** ● ●
1×55	420	2.8	**56984**	**56944**	**56945** ■ ●
1×55	520	4.6	**56978**	**56938**	**56939** ■ ●
FSD					
3×24	520	4.6	**56976**	**56936**	**56937** ▲

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Light source

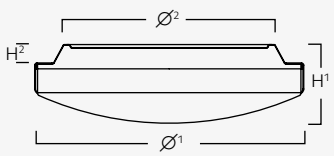
W	*Socket*	*830*	*840*
Circular fluorescent lamp FCH			
22	*2GX13*	*81391*	*81565*
40	*2GX13*	*81393*	*81566*
55	*2GX13*	*81312*	*81567*
Compact fluorescent lamp FSD			
24	*2G11*	*81158*	*81301*

For further information on Light source, please refer to the Technical Information chapter.

Suffix code

- ■ **-359** e-Sense Detect absence dampening
- ■ **-436** DALI/DSI/switchDIM
- ● **-357** e-Sense Detect on/off
- ▲ **-365** TouchDIM/DALI
- ● **-431** e-Sense Move on/off
- ● **-432** e-Sense Move absence dampening
- ■ **-402** DALI/Phase-pulse control
- ■ **-439** e-Sense Detect absence dampening
- ■ **-440** e-Sense Move absence dampening

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.



Ø¹	Ø²	H¹	H²
360	275	100	25
420	340	100	20
520	445	102	22

Nove without decor ring can be mounted on both ceiling and wall.

D63

Designed by Henning Solfeldt, PLH arkitekter

Can a luminaire really be this small? With a diameter of just 63 mm, D63 is the perfect choice for conference rooms, corridors, cafes, restaurants and other applications which focus on furnishing and interior design.

D63 is a complete luminaire family, consisting of pendant, ceiling and wall variations. The ceiling model is semi-recessed for an extra chic impression and a fresh alternative to recessed spotlights. The wall luminaire is IP 44 rated, lending itself bathroom, spar and relaxation environments, not to mention as an eye catching compliment above a mirror.

The effective, glare-free LED unit defies its size with a generous output, while the opal acrylic louvre generates a crisp effect when lit.

D63
Pendant

Installation
Two point suspension.
Connection
Connects with 230 V, built-in LED driver in ceiling cup. Snap-in terminal block 4×2.5 mm². Through-wiring possible. Surface mounted cable possible.
Design
Luminaire body in cast aluminium, grey (RAL 9006) structured finish. Diffuser in opal acrylic. Grey finish ceiling cup. Supplied with a 3 m white cable.
Dimming
Dimming is possible via the trailing edge dimmer. Adjustable LED driver as standard.
Miscellaneous
A cut-out in the ceiling cup is made using cutters 94248 for a surface mounted mains cable.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	
9	3000	506	56	**54801**

For current information on output and luminous flux, please refer to our website.

Information LED

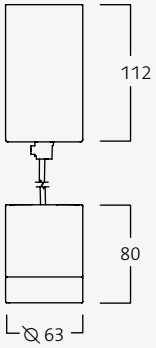
Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

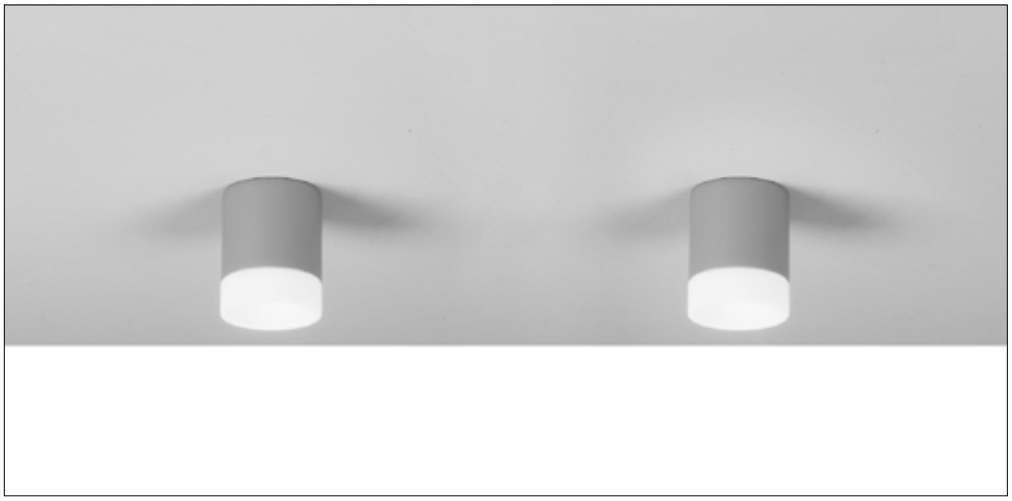
Accessories

Cutters/each	**94248**

Luminaire body in cast aluminium.



Colour-coordinated ceiling cup with integrated LED driver.



Installation
Semi-recessed in unventilated ceilings. Assembly springs for quick assembly included. The mounting plate should be used when mounting in soft tile ceilings, see accessories.
Connection
Connects with 230 V, 2×1.5 mm². LED driver is included and is placed above ceilings.
Design
Luminaire body in cast aluminium, grey (RAL 9006) structured finish. Diffuser in opal acrylic.
Dimming
Dimming possible using a phase-pulse control. Dimmable LED driver as standard.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	
12	3000	664	55	**56801**

For current information on output and luminous flux, please refer to our website.

Information LED

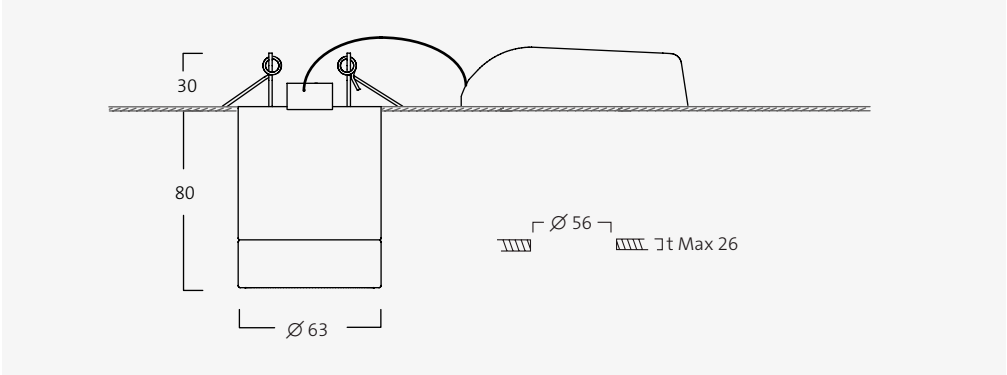
Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

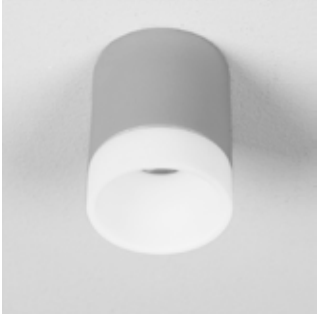
For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Mounting plate for soft tile ceilings	**41982**

Terminal block with strain relief and through-wiring possible.





The diffuser gives light to the ceiling with good mechanical shielding.

D63
Wall

Installation
On walls with two securing holes. Protection class IP 44.
Connection
Connects with 230 V, built-in LED driver. Snap-in terminal block 3×2.5 mm². Through-wiring possible. Cable entry on rear of the luminaire.
Design
Luminaire body in cast aluminium, grey (RAL 9006) structured finish. Diffuser in opal acrylic.

Luminaire

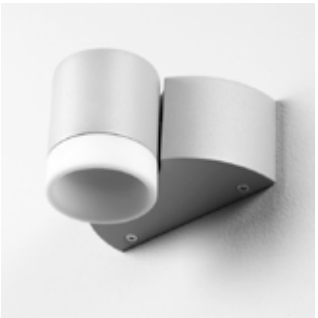
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	
9	3000	506	56	**64801**

For current information on output and luminous flux, please refer to our website.

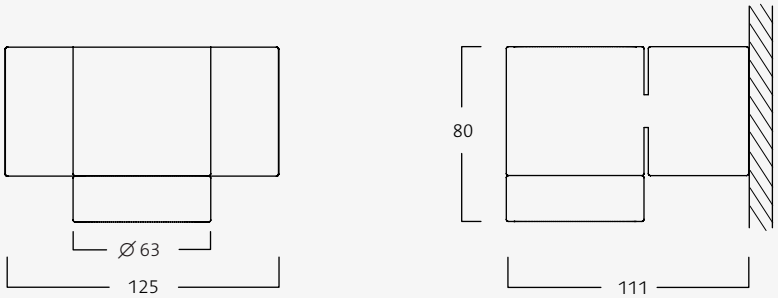
Information LED

Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.



The luminaire provides a comfortable light and a glare-free LED module.



Luminaire body in cast aluminium with integrated LED driver.

Ultra

Designed by Tommy Govén

The Ultra range can be used as either ceiling or wall luminaires, with a choice of square or circular designs in a silver or white finish.

Ultra Circle has a soft distribution providing a gentle light transition and comfortable light. Ultra's low profile is a perfect choice for communication areas such as conference rooms and assembly halls.

Ultra Circle
Ceiling/wall

Installation
Surface mounted, ceiling or wall.
Connection
Snap-in terminal block 3×2.5 mm² or 5×2.5 mm² when dimming. Possibility of through-wiring. 2 cable entries fitted with blanking grommets Ø 19 mm.
Design
Body of white enamelled aluminium. Frame of silver grey structured or white enamelled aluminium.
Louvre
Shade of sand blasted glass or opal acrylic.
Accessories
Spacer cover for surface mounted mains cable.

Luminaire

FCH	Ø	Colour	Acrylic	Glass	
1×22	405	Silver	**205850**	**205870**	■
1×22	405	White	**205860**	**205880**	■
1×40	480	Silver	**205852**	**205872**	
1×40	480	White	**205862**	**205882**	

Suffix code

■ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

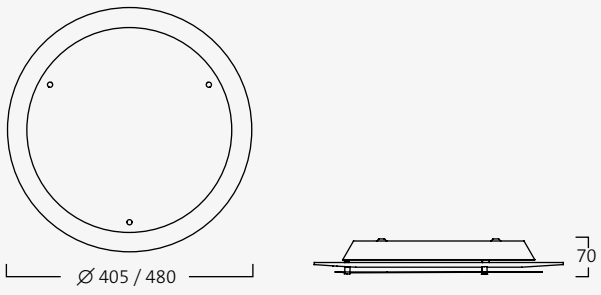
Accessories

Spacer cover for surface mounted mains cable H=18 mm for 22 W	**205857**
Spacer cover for surface mounted mains cable H=18 mm for 40 W	**205858**

Light source

W	*Socket*	*830*	*840*
	Circular fluorescent lamp FCH		
22	*2GX13*	*81391*	*81565*
40	*2GX13*	*81393*	*81566*

For further information on Light source, please refer to the Technical Information chapter.



Installation
Surface mounted, ceiling or wall.
Connection
Snap-in terminal block 3×2.5 mm² or 5×2.5 mm² when dimming. 1-phase through-wiring possible. Opening 40×40 mm for cable grommet. Cable entry via ∅ 15 mm knockouts on the body ends for surface mounted mains cable.
Design
Body of silver grey or white enamelled aluminium. Frame of silver grey structured or white enamelled aluminium.
Louvre
Shade of sand blasted glass or opal acrylic.
Miscellaneous
When the frame has a silver or white structured enamelled aluminium finish the body is also enamelled in this colour.

Luminaire

FSD	Height	Colour	Acrylic	Glass	
1×18	410	Silver	**203877**	**203857**	☐
1×18	410	White	**203873**	**203853**	☐
FDH					
1×24	634	Silver	**203880**	**203860**	☐
1×24	634	White	**203876**	**203856**	☐

Suffix code

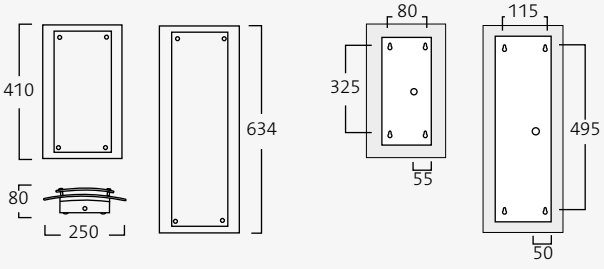
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

Light source

W	*Socket*	*830*	*840*
	Compact fluorescent lamp FSD		
18	*2G11*	*81157*	*81470*
24	*2G11*	*81158*	*81301*
	Fluorescent lamp FDH		
24	*G5*	*81372*	*81376*

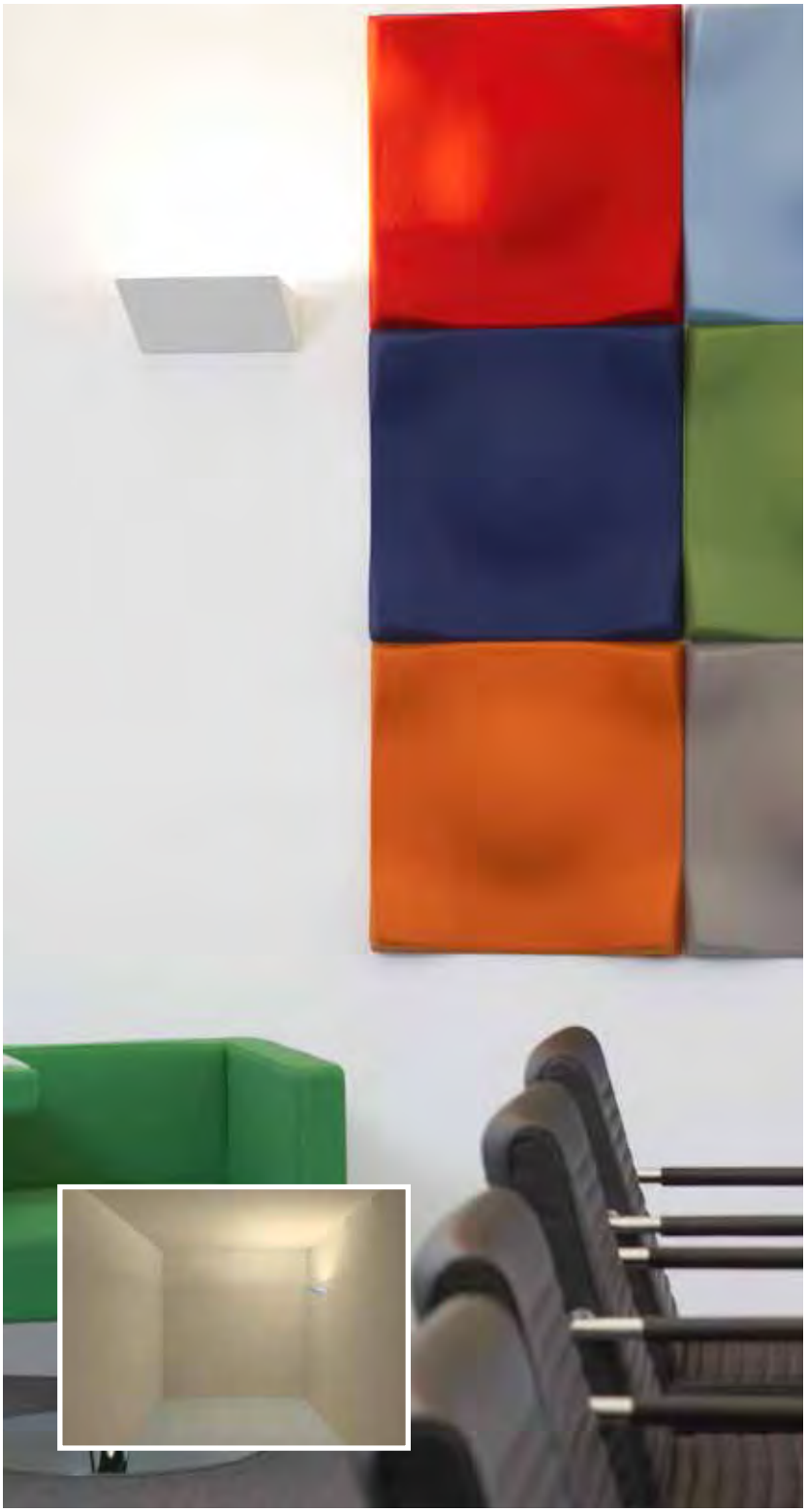
For further information on Light source, please refer to the Technical Information chapter.



Wall

Designed by Claesson Koivisto Rune

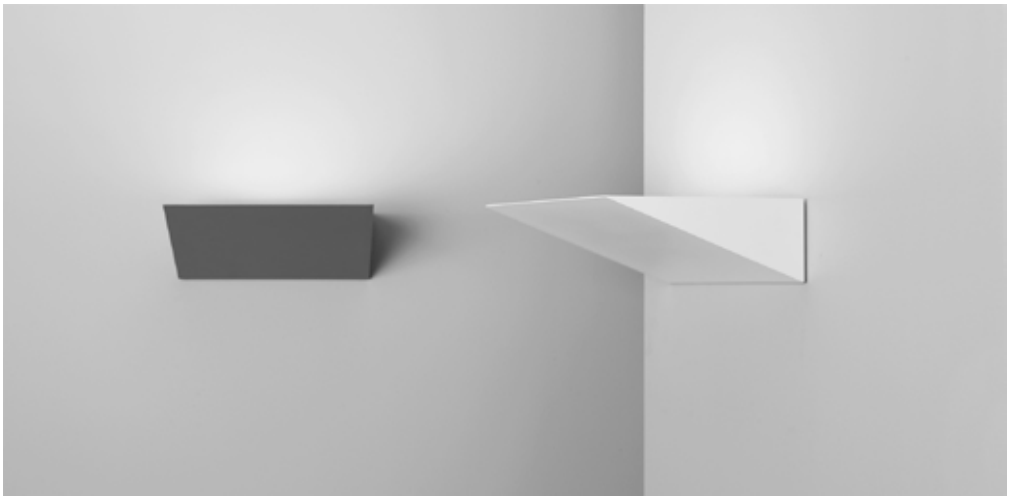
Wall is a complete series of wall luminaires. The design is grounded on precision and meticulous accuracy in every detail; the angles seamlessly interlock without signs of manufacturing producing a luminaire of classic simplicity.



Available in a range of designs and sizes, it is possible to create aesthetic and effective light solutions, complementary to both the architecture and other luminaires.

Wall 1, with its large horizontal position, is available in three separate sizes; 250 mm, 300 mm and 350 mm.

Wall 2 has a smaller horizontal position and is available in two sizes; 250 mm and 300 mm.



Installation
2 securing holes.
Connection
Snap-in terminal block 5×2.5 mm². 1-phase through-wiring possible with recessed cable.
Designed by
Luminaire body in white (RAL 9016) structured or grey (RAL 9006) structured sheet metal. Luminaire for MT and HDG has partially blasted protective glass.
Reflector
Asymmetrical reflector made of metallised aluminium with excellent reflection characteristics (> 92 %). Structured with MT light sources.
Miscellaneous
Central, surface mounted mains cable possible from above, no onward connector.

Luminaire

HDG	Length	kg	White	Alu-grey
1×230	250	2.0	**64404**	**64405**

Luminaire with electronic ballast

MT	Length	kg	White	Alu-grey
1×35	250	2.0	**64402**	**64403**
1×70	300	3.0	**64416**	**64417**
1×150	350	3.5	**64424**	**64425**

Luminaire with HF-std

FSQ-E	Length	kg	White	Alu-grey
1×26	250	2.0	**64400**	**64401**
FSM-E				
1×32	300	3.0	**64410**	**64411**
1×42	300	3.5	**64413**	**64414** ■
1×57	350	3.5	**64420**	**64421** ●

Suffix code

■ **-436** DALI/DSI/switchDIM
● **-368** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

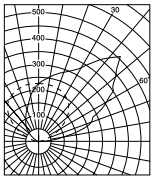
Accessories

Dust cover for 1×26 W FSQ-E	**94975**
Dust cover for 1×32/42 W FSM-E	**94976**
Dust cover for 1×57 W FSM-E	**94977**

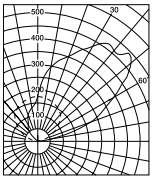
Light source

W	*Socket*	*827*	*830*	*840*
Metal halogen MT				
35	*G12*		*81386*	
70	*G12*		*81384*	
150	*G12*		*81385*	
Halogen 230 V HDG				
230	*R7s*	*81251*		
Compact fluorescent lamp FSQ-E				
26	*G24q-3*		*81223*	*81436*
Compact fluorescent lamp FSM-E				
32	*GX24q-3*		*81329*	*81477*
42	*GX24q-4*		*81331*	*81478*
57	*GX24q-5*		*81334*	*81336*

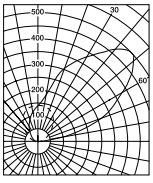
For further information on Light source, please refer to the Technical Information chapter.



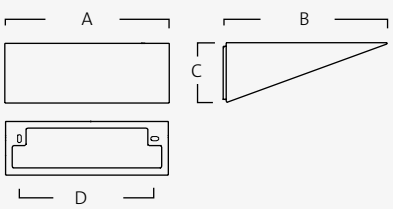
1×32/42 W, FSM-E



1×57/70 W, FSM-E

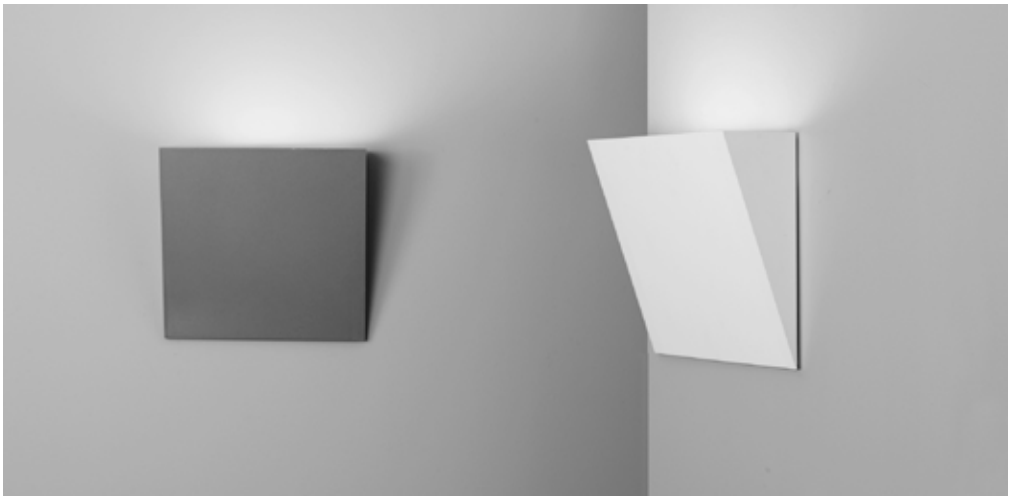


1×50 W, MT



W	A	B	C	D
FSM-E				
1×26, 32, 42	300	287	104	250
1×57	350	334	121	300
FSQ-E				
1×26	250	240	87	200
MT				
1×35	250	240	87	200
1×70	300	287	104	250
1×150	350	334	121	300
HDG				
1×230	250	240	87	200

Wall 2, Wall LED



Wall LED

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Length	kg	White	Alu-grey
8	3000	390	48	150	0,8	**64430**	**64431**

For current information on output and luminous flux, please refer to our website.

Wall 2

HDG	Length	kg	White	Alu-grey
1×150	250	2.0	**64446**	**64447**

Wall 2 with HF-std

FSM-E	Length	kg	White	Alu-grey	
1×32	300	3.0	**64450**	**64451**	
1×42	300	3.0	**64452**	**64453**	■
FSQ-E					
1×26	250	2.0	**64440**	**64441**	■

Wall 2 with electronic ballast

MT	Length	kg	White	Alu-grey
1×35	250	2.0	**64444**	**64445**
1×70	300	3.0	**64454**	**64455**

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

■ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function.

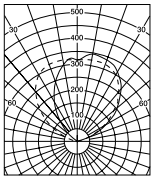
Accessories

Dust cover for 1×26 W FSQ-E	**94978**
Dust cover for 1×32/42 W FSM-E	**94979**

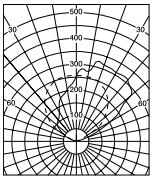
Light source

W	*Socket*	*827*	*830*	*840*
Metal halogen MT				
35	*G12*		*81386*	
70	*G12*		*81384*	
Halogen 230 V HDG				
150	*R7s*	*81488*		
Compact fluorescent lamp FSQ-E				
26	*G24q-3*		*81223*	*81436*
Compact fluorescent lamp FSM-E				
32	*GX24q-3*		*81329*	*81477*
42	*GX24q-4*		*81331*	*81478*

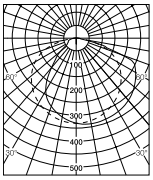
For further information on Light source, please refer to the Technical Information chapter.



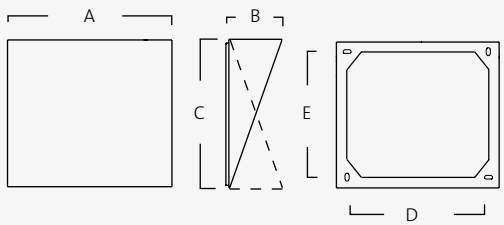
1×32/42 W, FSM-E



1×70 W, MT



LED



W	A	B	C	D	E
FSM-E					
1×32, 42	300	109	282	250	235
FSQ-E					
1×26	250	92	235	200	189
MT					
1×35	250	92	285	200	189
1×70	300	109	282	250	235
HDG					
1×150	250	92	235	200	189
LED	150	55	141	106	

Installation

Wall 2 – 4 securing holes.
Wall LED – 2 securing holes. Suitable for installation over a wall patress. Downward light opening has an IP 44 rating.

Connection

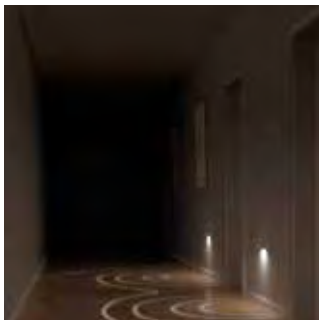
Wall 2 – snap-in terminal block 5×2.5 mm². 1-phase through-wiring possible with recessed cable. Central, surface-mounted mains cable possible from above, no onward connector.
Wall LED – connected with a 230 V, integrated drive unit. Snap-in terminal block 3×1.5 mm². 1-phase through-wiring possible. Surface mounted mains cable not possible.

Design

Luminaire body in white (RAL 9016) structured or grey (RAL 9006) structured sheet metal. Luminaire for MT and HDG has partially blasted protective glass.

Reflector

Wall 2 – asymmetrical reflector made of structured aluminium with excellent reflection characteristics (> 92 %).



Corridor width 2 metres, luminaire height 0.5 metres, luminaire c/c spacing 3 metres.

Corridor width 2 metres, luminaire height 0.5 metres, luminaire c/c spacing 3 metres.

Installation
Two securing holes.
Connection
Connects with 230 V, built-in LED driver. Snap-in terminal block 6 x 2.5 mm ², through wiring possible. Cable entry at the rear of the luminaire.
Design
Luminaire body in white sheet metal. Aluminium mounting plate for the LED module.
Dimming
Luminaire equipped with on/off or phase-pulse control as standard.
Designed by
Joakim Fihn.

Luminaire

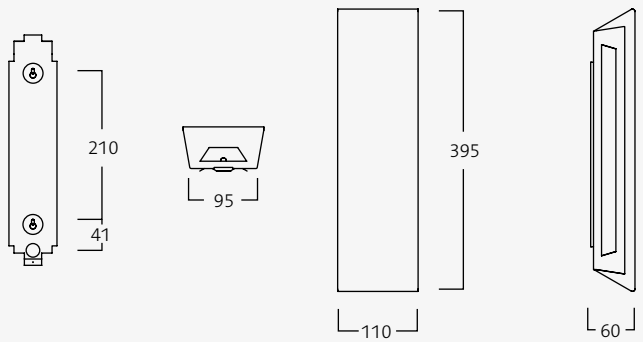
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
13	3000	440	34	1.7	**64841**
13	4000	492	38	1.7	**64842**

For current information on output and luminous flux, please refer to our website.

Information LED

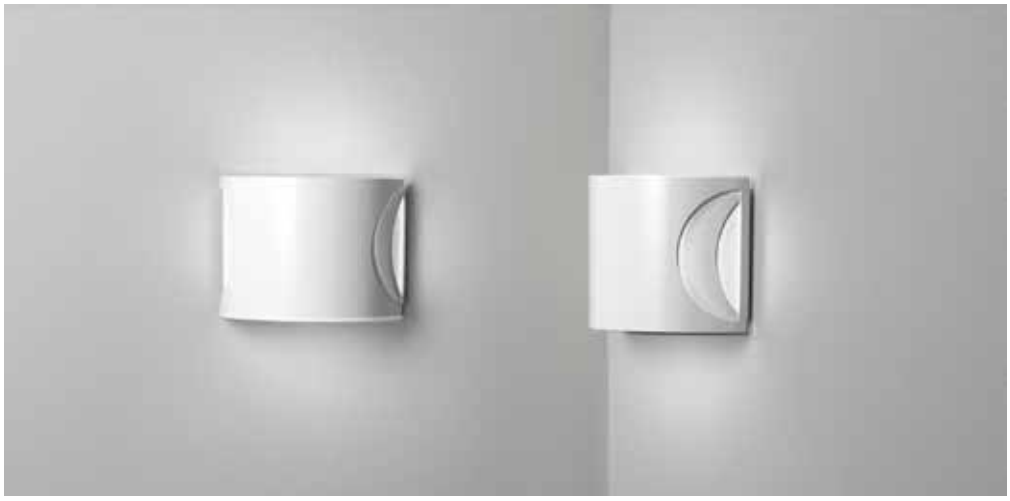
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.



Fasett produces a small amount of light upwards and downwards.

Beetle
Wall



Installation
Two securing holes.
Connection
Connects with 230 V, built-in LED driver. Snap-in terminal block, 3 or 5 × 2.5 mm ², through wiring possible. Cable entry at the rear of the luminaire or surface mounted mains cable possible from above.
Design
Luminaire body in white sheet metal. Mounting plate for the LED module with aluminium. Dust cover in frosted acrylic.
Designed by
Joakim Fihn.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
11	3000	480	44	1.3	**64845** ☐
11	4000	527	48	1.3	**64846** ☐

For current information on output and luminous flux, please refer to our website.

Information LED

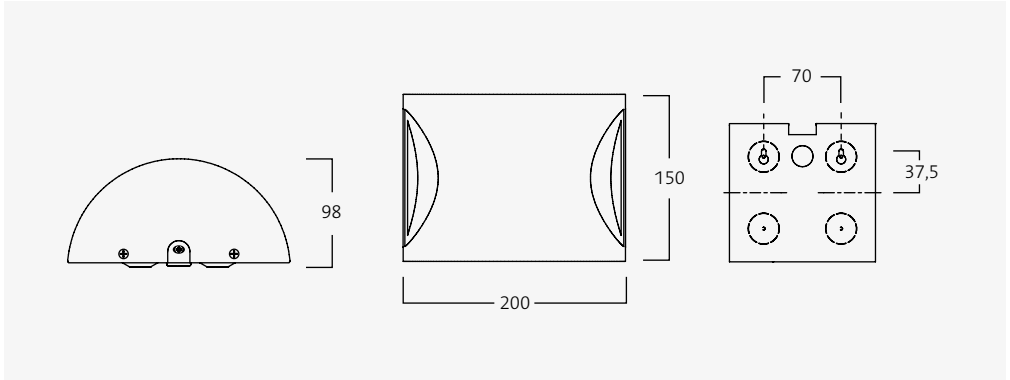
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function.

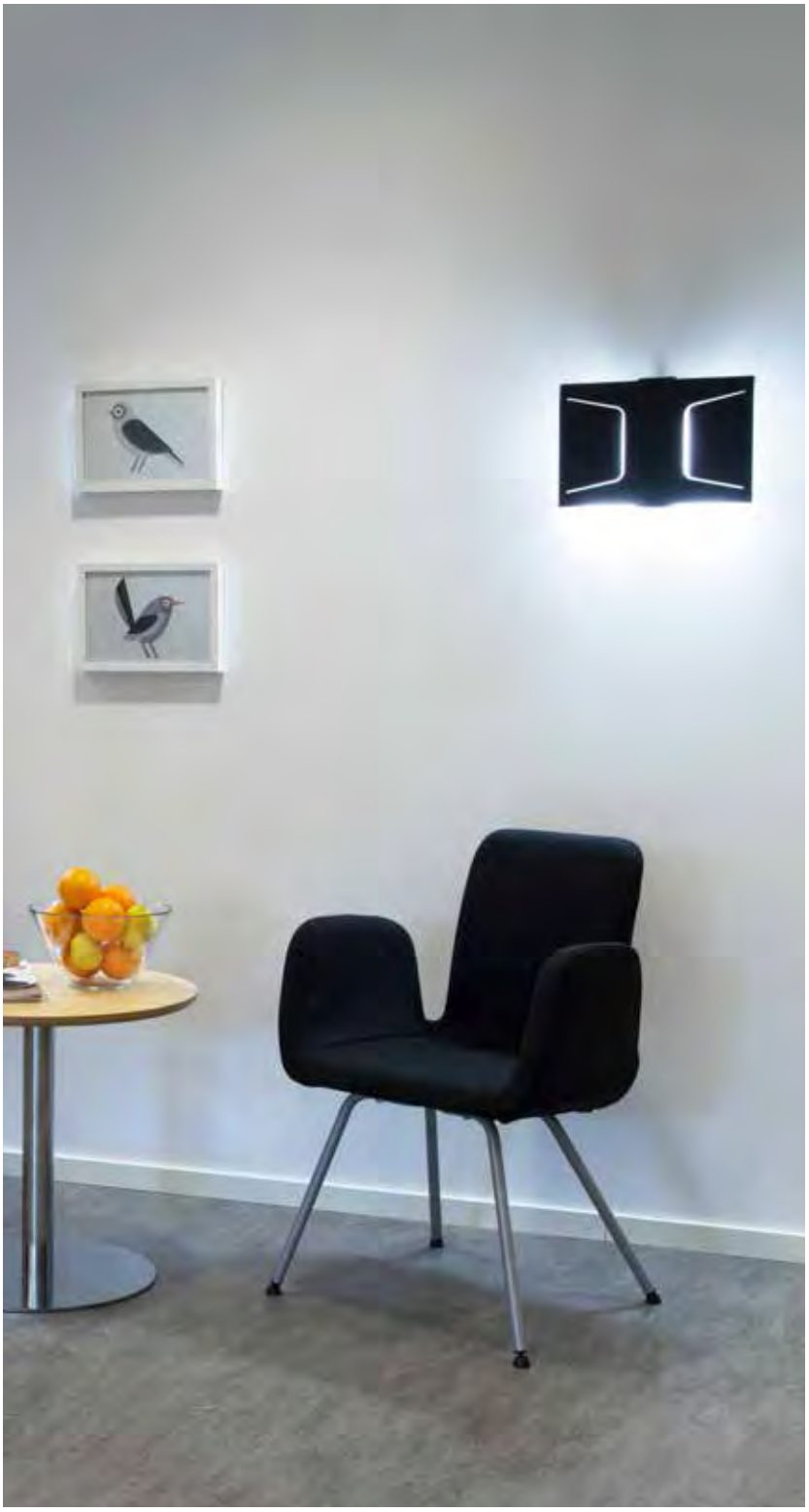


Beetle has a slightly frosted dust cover.

Wallwing

Designed by Ola Granlund and Leif Igelström

Wallwing is a discreet luminaire which enhances the spatial experience in general areas such as corridors and stairwells.



The minimalist, flat design offers the dual functionality of increasing the ambient light levels with a downlight to aid navigation. The large model, with two wings, provides a wide spread of light across the wall, elevating the experience within the space. The smaller version can be engraved with room numbers on the illuminated surface, for an aesthetic and functional alternative to general signage.

Installation
Four securing holes.
Connection
Connection via 230 V, built-in LED driver. Snap-in terminal block 5 × 2.5 mm², through-wiring possible. Cable entry at the rear of the luminaire or surface-mounted mains cable from above.
Design
Luminaire body in aluminium. Shade in matt white or matt black 3 mm laser-cut aluminium sheet. Diffuser in opal acrylic.
Dimming
DALI/phase-pulse control as standard.
Miscellaneous
Letters and numbers can be engraved onto the shade upon request.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	White	Black
Double shade						
22	3000	1375	62	1.5	**64001-402**	**64002-402**
22	4000	1562	71	1.5	**64011-402**	**64012-402**
Single shade						
12	3000	686	57	1.1	**64005-402**	**64006-402**
12	4000	780	65	1.1	**64015-402**	**64016-402**

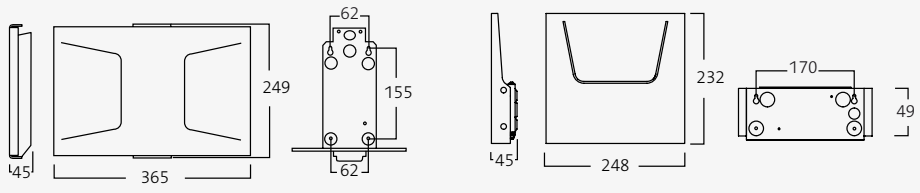
For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Letters and numbers can be engraved on the shade on request.



Double shade

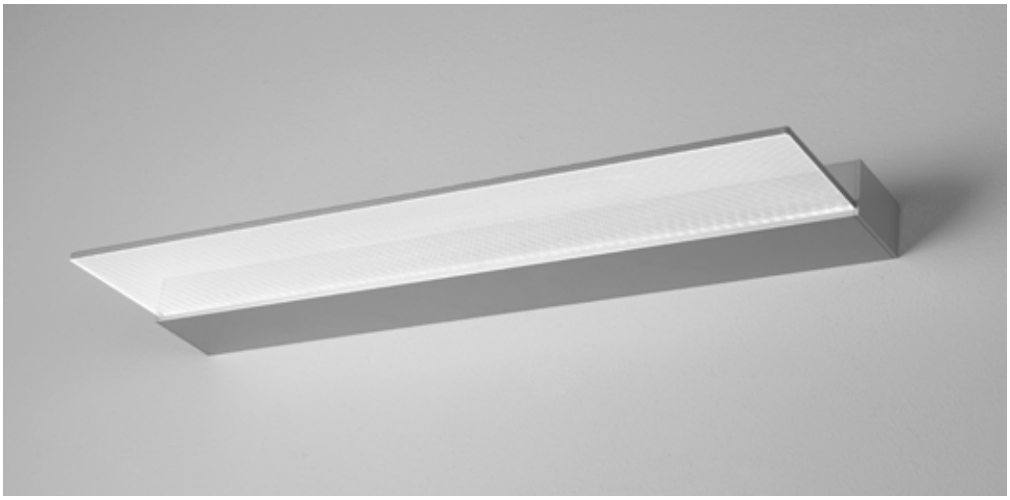
Single shade

Most of the light is directed towards the floor. The luminaire also distributes light in and around the shade.

Shine

Shine is a bathroom luminaire with a clean and neat design without visible screws. Placed over the bathroom mirror, Shine gives the impression of a neat bright disc that is almost growing out of the wall.

When the luminaire is switched off, the acrylic diffuser is transparent, but when the light is released it increases the diffuser's opacity. Using modern side-emitting light techniques, combined with both up and downlights, Shine is a comfortable bright surface without glare.



Installation
Horizontally on walls.
Connection
Connects with 230 V, built-in LED ballast. Connection via 2 blanking grommets Ø 16 mm at the rear of the luminaire or with surface mounted cables from above. Snap-in terminal block 3×2.5 mm².
Design
Cast-metal end-caps and luminaire body of extruded aluminium in silver finish. Edge-lit clear prismatic acrylic diffuser (PMMA).
Dimming
Luminaire available with integrated e-Sense smartSWITCH sensor for occupancy detection off/on. Luminaire with sensor can power a further 1 luminaire. Detection range 100°. NOTE! IP 21 with sensor.

Luminaire

System, W	mm	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
15	600	3000	900	60	2.0	**17300** ●
15	600	4000	1000	67	2.0	**17301** ●
23	900	3000	1350	59	3.0	**17302** ●
23	900	4000	1500	65	3.0	**17303** ●

For current information on output and luminous flux, please refer to our website.

Information LED

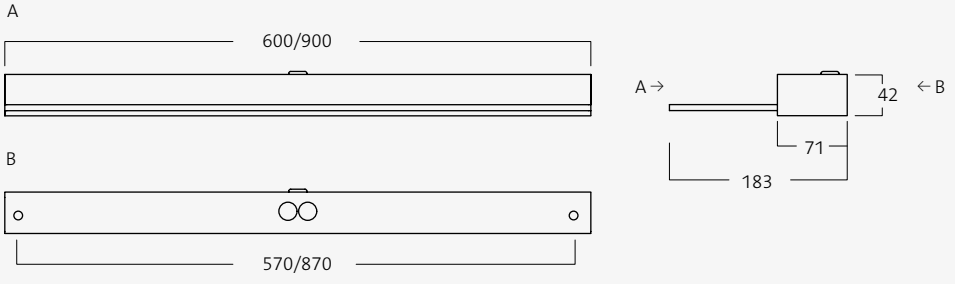
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

● **-219** e-Sense smartSWITCH on/off

Add suffix code to the end of the luminaire part number to indicate required function.



Transparent edge-lit diffuser that distributes the light in a pleasant manner.

Fino

Installation
For horizontal or vertical wall mounting. Protection class IP 44.
Connection
Terminal block 3×2.5 mm².
Design
Diffuser in opal acrylic, luminaire housing in stainless steel, body in zinc plated steel.

Luminaire

System, W	Length	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	
12	630	3000	1280	106	**17985**
12	630	4000	1400	117	**17986**
19	910	3000	1900	100	**17987**
19	910	4000	2100	111	**17988**

For current information on output and luminous flux, please refer to our website.

Luminaire

FDH	Length	
1 13/14	600	**17375**
1×21	900	**17376**

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

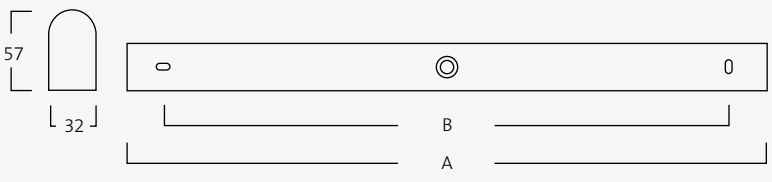
Spare cover 13/14 W	**90345**
Spare cover 21 W	**90346**

Light source

W	*Socket*	*830*	*840*
	Fluorescent lamp FDH		
13 (T5 eco)	*G5*	*81625*	*81626*
14	*G5*	*81351*	*81347*
21	*G5*	*81353*	*81348*

For further information on Light source, please refer to the Technical Information chapter.

	A	B
FDH	600/900	510/810
LED	630/910	510/810



Luminaire body in stainless steel.

Telescope Aqua

Installation
Horizontal or vertical on a wall or ceiling. Protection class IP 44.
Connection
Snap-in terminal block 3×1,5 mm². 1-phase through-wiring possible. Surface mounted mains cable possible.
Design
White body of extruded aluminium (RAL 9016). White wall bracket in aluminium zinc-plated sheet (RAL 9016). Opal acrylic diffuser. End-caps in matt white plastic, attached by means of a magnet.

Luminaire

FDH	Lum. class	kg	
1×13/14	B	1.0	**17380**
1×21	B	1.3	**17381**
1×25/28	B	1.5	**17382**

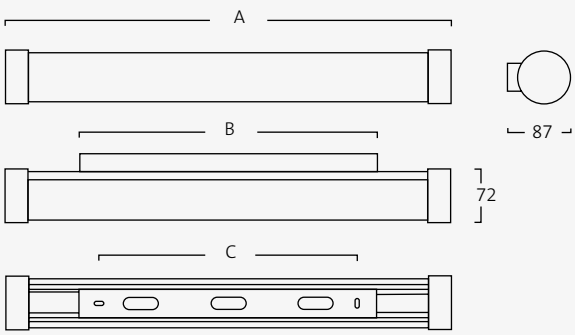
For further information on Luminance Classification, please refer to the Technical Information chapter.

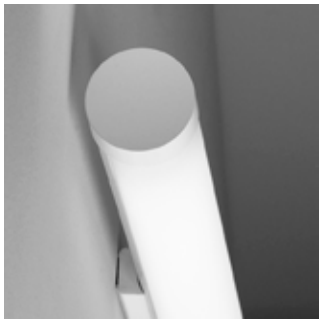
Light source

W	*Socket*	*830*	*840*
	Fluorescent lamp FDH		
13 (T5 eco)	*G5*	*81625*	*81626*
14	*G5*	*81351*	*81347*
21	*G5*	*81353*	*81348*
25 (T5 eco)	*G5*	*81629*	*81630*
28	*G5*	*81355*	*81349*

For further information on Light source, please refer to the Technical Information chapter.

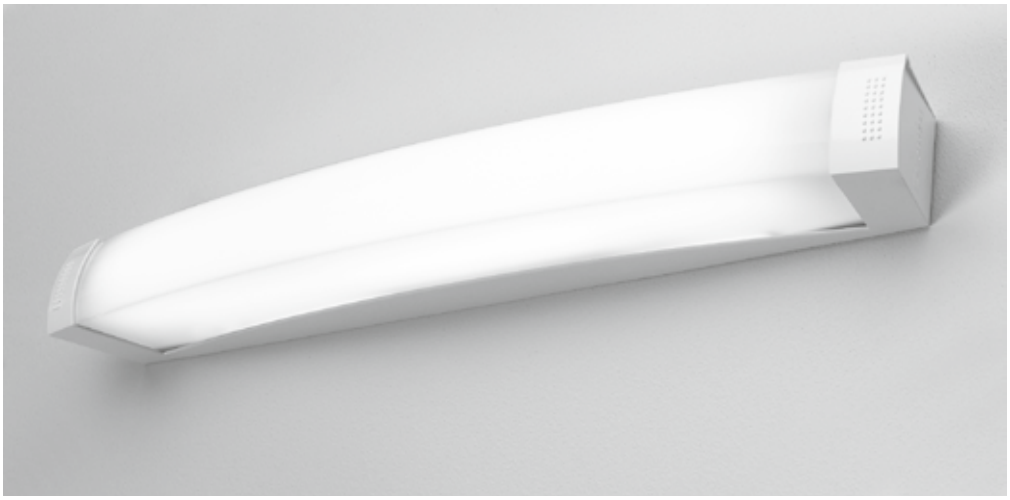
W	A	B	C
1×13/14	600	400	348
1×21	900	400	348
1×25/28	1200	400	348





End-caps secured with magnets. Facilitating easy re-lamping without tools.

Aqua



Installation
Horizontally or vertically mounted on a wall. Luminaire with socket outlet only for horizontal installation. Outlet module can be placed on the right or left-hand side.
Connection
Cable entries for recessed and surface mounted installation fitted with blanking grommets. Positioning see dimension chart. 3-way terminal block. LED luminaire connects via 230 V, built-in LED driver.
Design
Body of white finished polycarbonate. Self-closing cover on the outlet module.
Louvre
Diffuser of opal acrylic plastic. The diffuser can be fitted and removed without the use of tools.
Dimming
Most models can also be equipped with other ballasts for dimming. Available with integrated e-Sense smartSWITCH sensor for occupancy detection on/off. Luminaire with sensor can power a further 1 luminaire. Note: IP 21 with sensor.

Luminaire with LED

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
Without outlet socket					
13	3000	810	62	0.8	**17860** ●
13	4000	825	63	0.8	**17861** ●
With outlet socket					
13	3000	810	62	0.8	**17862** ●
13	4000	825	63	0.8	**17863** ●

For current information on output and luminous flux, please refer to our website.

Luminaire

FDH	Lum. class	kg	White
With outlet socket			
1×13/14	B	0.8	**17881**
1×20/24	C	0.8	**17883**
Without outlet socket			
1×13/14	B	0.8	**17877**
1×20/24	C	0.8	**17879**
With e-Sense smartSWITCH on/off			
1×13/14	B	0.8	**17885**

For further information on Luminance Classification, please refer to the Technical Information chapter.

Suffix code

● **-219** e-Sense smartSWITCH on/off

Add suffix code to the end of the luminaire part number to indicate required function.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

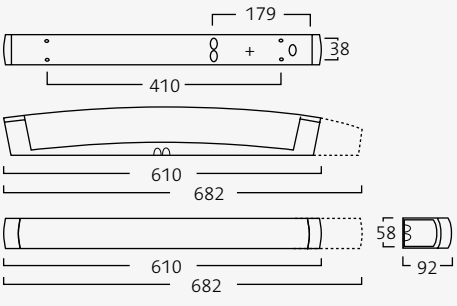
Spare diffuser T5, acrylic	**94477**

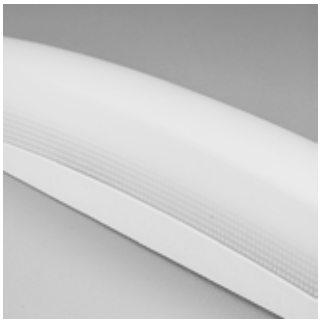
Light source

W	*Socket*	*830*	*840*
Fluorescent lamp FDH			
13 (T5 eco)	*G5*	*81625*	*81626*
20 (T5 eco)	*G5*	*81627*	*81628*
14	*G5*	*81351*	*81347*
24	*G5*	*81372*	*81376*

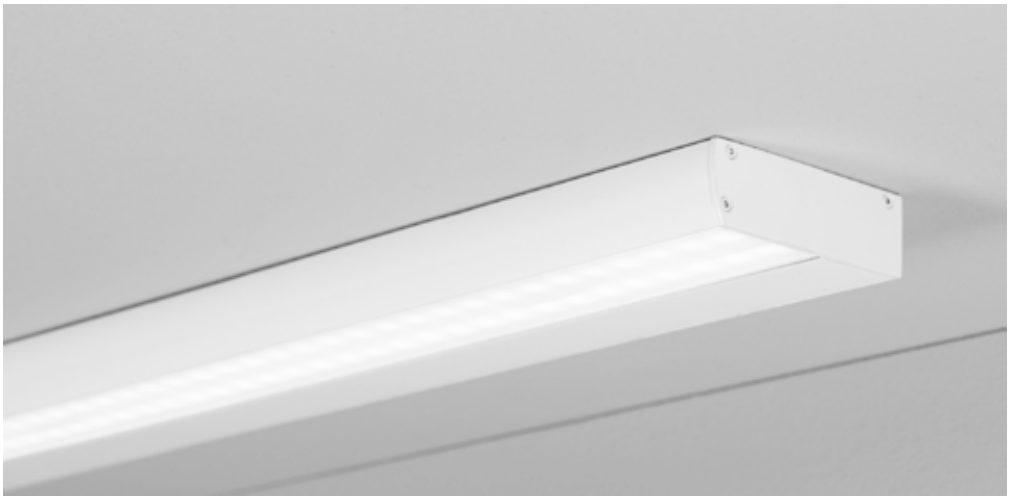
For further information on Light source, please refer to the Technical Information chapter.

Aqua with outlet socket.





LED luminaire diffuser.



Installation
For installation on the underside of top cabinets, shelves and similar applications. Secured via two key-hole slots.
Connection
For permanent connection via 230 V built-in LED driver. Snap-in terminal block 5×1.5 mm². 1-phase through-wiring possible. Cable entry via rear of the luminaire.
Design
White (RAL 9016) enamelled body in extruded aluminium. Diffuser in opal acrylic. Cover plate in extruded plastic. End-caps in white enamelled aluminium.
Dimming
On/off or adjustable via phase-pulse control and momentary pushbutton on the front of the luminaire body or via external momentary pushbutton. With the latter option, there is no switch on the luminaire.

Luminaire

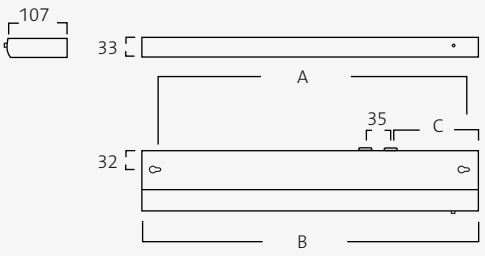
System, W	Length	Colour temp, K	Luminous flux, lm	Efficiency, lm/W	
On/off via push button on the front					
12	600	3000	983	82	**18201**
12	600	4000	1055	88	**18205**
22	1200	3000	1936	88	**18211**
22	1200	4000	2077	94	**18215**
Dimmable via push button on the front					
12	600	3000	983	82	**18202**
12	600	4000	1055	88	**18206**
22	1200	3000	1936	88	**18212**
22	1200	4000	2077	94	**18216**
DALI alt. phase-pulse control without push button					
12	600	3000	983	82	**18203**
12	600	4000	1055	88	**18207**
22	1200	3000	1936	88	**18213**
22	1200	4000	2077	94	**18217**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.



Length	A	B	C
600	550	599	141
1200	1130	1181	430

End-cap in aluminium.

Zest Basic

Installation
Below top cabinets, shelves or the like. Installation via keyhole slots.
Connection
Snap-in terminal block 3×2.5 mm². 1-phase through-wiring possible. Surface mounted mains cable possible.
Design
White enamelled steel body (RAL 9016). Plastic end-caps. Outlet socket unit is reversible and can be placed on the left or right-hand side of the luminaire.

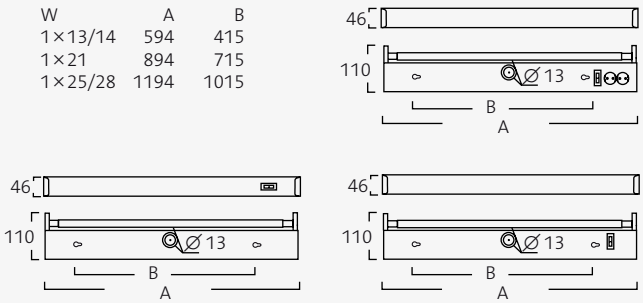
Luminaire		
FDH	kg	
Luminaire with reversible, integrated outlet socket and switch on the underside		
1×13/14	1.2	**18141**
1×21	1.6	**18142**
1×25/28	2.0	**18143**
Luminaire without outlet sockets, switch on the underside		
1×13/14	1.2	**18144**
1×21	1.6	**18145**
1×25/28	2.0	**18146**
Luminaire without outlet sockets, switch on the front		
1×13/14	1.2	**18147**
1×21	1.6	**18148**
1×25/28	2.0	**18149**

Light source			
W	*Socket*	*830*	*840*
Fluorescent lamp FDH			
13 (T5 eco)	*G5*	*81625*	*81626*
14	*G5*	*81351*	*81347*
21	*G5*	*81353*	*81348*
25 (T5 eco)	*G5*	*81629*	*81630*
28	*G5*	*81355*	*81349*

For further information on Light source, please refer to the Technical Information chapter.

Switch placed on the front.

W	A	B
1×13/14	594	415
1×21	894	715
1×25/28	1194	1015



Reversible outlet socket unit with integrated switch.

Installation
Underside of top cabinets, shelves and the like. Installation via keyhole slots.
Connection
For permanent connection with cable entry in the centre of the luminaire. Rocker switch on the back.
Design
Luminaire and outlet socket unit of white enamelled sheet steel (RAL 9016), plastic end-caps. Luminaire with integrated outlet socket available in designs with a timer (30 minutes) connected to the electrical outlet socket.
Louvre
Opal diffuser available as an accessory and ordered separately.
Designed by
Epsilon.

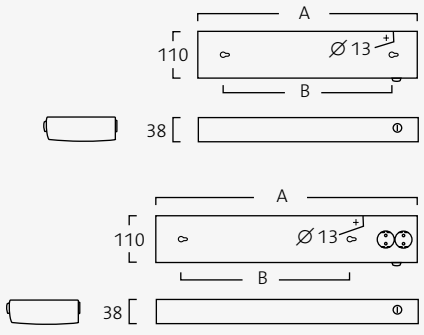
Luminaire		
FDH	kg	
Luminaire for permanent installation		
1×13/14	1.2	**18190**
1×21	1.7	**18191**
1×25/28	2.1	**18192**
Luminaire for permanent installation with integrated outlet socket		
1×13/14	1.5	**18193**
1×21	1.9	**18194**
1×25/28	2.4	**18195**
Luminaire for permanent installation with integrated outlet socket and timer		
1×13/14	1.5	**18196**
1×21	2.0	**18197**
1×25/28	2.4	**18198**

Accessories	
Opal diffuser for 13/14 W luminaire	**90341**
Opal diffuser for 21 W luminaire	**90342**
Opal diffuser for 25/28 W luminaire	**90343**

Light source			
W	*Socket*	*830*	*840*
Fluorescent lamp FDH			
13 (T5 eco)	*G5*	*81625*	*81626*
14	*G5*	*81351*	*81347*
21	*G5*	*81353*	*81348*
25 (T5 eco)	*G5*	*81629*	*81630*
28	*G5*	*81355*	*81349*

For further information on Light source, please refer to the Technical Information chapter.

W	A	B
1×13/14	580	400
1×13/14 ⊙⊙	700	400
1×21	880	500
1×21 ⊙⊙	1000	600
1×25/28	1180	700
1×25/28 ⊙⊙	1300	700



Luminaire with outlet socket and diffuser.

Reading luminaire LED
Robust

Installation
Luminaire for wall installation.
Connection
Connects with 230 V, built-in LED driver. Snap-in terminal block 3×2.5 mm².
Design
Natural anodised body in extruded aluminium. Casing of 1 mm white enamelled (RAL 9016) aluminium. Pushbutton for off/on, protected against damage.
Optics
Curved lens in acrylic. Direction of light 45° downwards. Adjustable 30° in both directions.

Luminaire

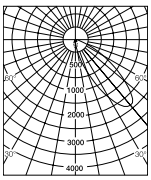
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
5	2700	190	40	0.6	**56933**

For current information on output and luminous flux, please refer to our website.

Information LED

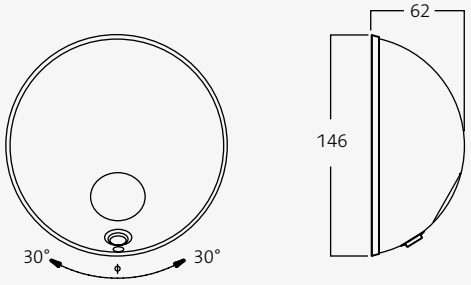
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
2700 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.



5 W

Adjustable 30° in both directions.



Pushbutton for off/on, safe against damage.

Diva II Spot

Installation
Surface mounting – surface mounted with a mount ring, see accessories.
Recessed mounting – recessed with or without mounting spring, see accessories.
Connection
Two luminaire versions:
Type A – linkable.
Type B – single/end unit.
Connects to LED driver 24 V constant voltage (15, 30 or 75 W, see accessories). The LED driver is "plug and play" with a 1.8 m mains cable and connector, and a 6-way splitter for connect multiple luminaires.
Maximum number of connected luminaires per driver:
15 W – 4 pcs.
30 W – 7 pcs.
75 W – 18 pcs.
Design
Luminaire body in white or silver enamelled aluminium.
Dimming
Dimmable via 1–10 V dimming unit, see accessories.

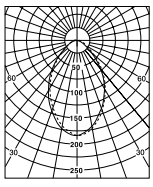
Luminaire						
System, W	Luminous flux, lm	Efficiency, lm/W	∅	kg	**White**	**Silver**
Type A, linkable						
4.3	344	80	76	0.1	**83300**	**83302**
Type B, single/end-unit						
4.3	344	80	76	0.1	**83301**	**83303**

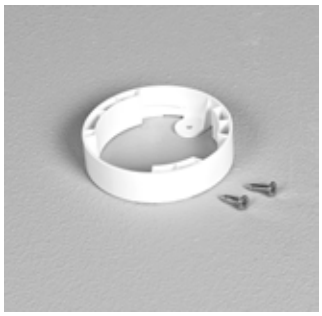
For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 40.000 h*	*MacAdam 4 SDCM*

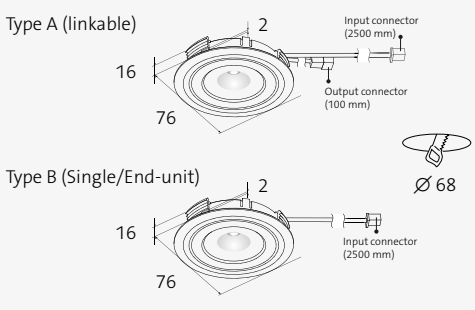
For further information on LEDs, please refer to the Technical Information chapter.

Accessories	
Surface mount ring, white	**70600**
Surface mount ring, silver	**70601**
Assembly spring	**70602**
Extension cable 2.5 m	**70603**
LED driver 24 V 15 W (1800 mm)	**79335**
LED driver 24 V 30 W (1800 mm)	**78784**
LED driver 24 V 75 W (1800 mm)	**78785**
Dimming unit 1–10 V	**78786**



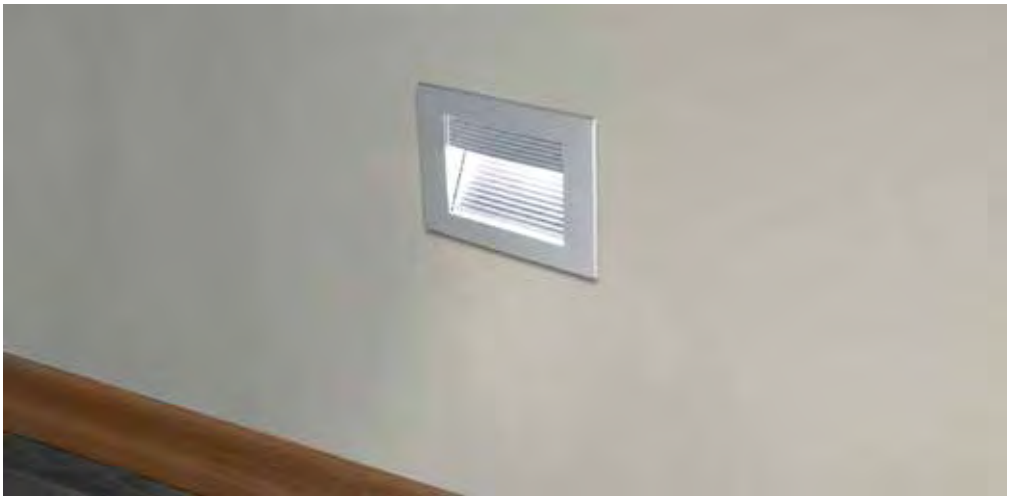


Surface mount ring.



Assembly spring.

LED WL



Installation
Luminaire for recessed mounting in the wall. Assembly springs for quick assembly, without tools, are supplied as standard.
Design
Luminaire in matt anodised aluminium. Assembly springs of spring steel. 30 cm free cable fitted with snap-in connector for the Lyte system (the connector must be cut off when connecting to another driver).
Miscellaneous
Separate 350 mA constant current driver required, see Accessories.

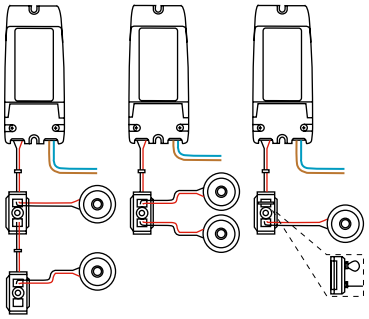
Luminaire		
LED-module, W, mA	Colour temp., K	
1.2, 350	3200	**64470**

For current information on output and luminous flux, please refer to our website.

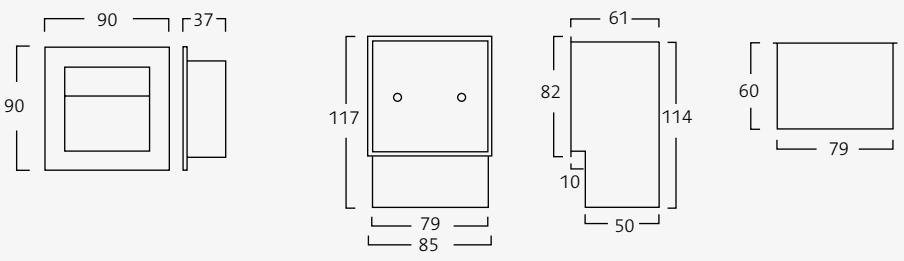
Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3200 K	*≥ 80*	*L_{70} 30.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories	
Recess box for 6 mm plaster	**91235**
LED driver 9 W/350 mA incl. Lynx cabling with the possibility to connect 2 luminaires.	**98007**
Extension cable 1 m	**98008**

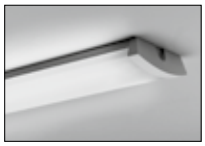


Recess box for LED WL.



LED WL is ideal for lighting stairwells.

Inducon



AllFive
IP 20/44 *p. 348–351*

Induline
IP 23 *p. 362–367*

Multilume Hydro G2
IP 65/50/55 *p. 368–370*

Densus 3000
IP 67 *p. 355*

Kaptur 3000
IP 67 *p. 354*

Parcare
IP 65 *p. 345*

Inducon
IP 20/23 *p. 356–361*

Kaptur LED
IP 65 *p. 353*

Parcare Wallwasher
IP 44 *p. 346*

Parcare

Parcare is a completely new, LED-based concept for car parks and garages. This space-creating combination, comprising a ceiling luminaire and a wall-washer, contributes to a pleasant environment and increased feeling of safety.

Parcare is a space-creating luminaire which builds on a combination of ceiling-mounted luminaires and wallwashers. The ceiling luminaire operates as a light well, much like a skylight or source of daylight. The wallwasher is mounted in the ceiling and distributes light across the walls. In this way the room is more clearly defined and feels lighter and more welcoming. It also makes it easier to spot incidents and other people in the car park.

The area of application is wide, stretching from entire floors in multi-storey car parks to garages and residential parking. A carefully thought-out design combines a high IP rating and robust design with a welcoming and stylish concept. We wanted to create a highly-functional luminaire which fulfilled industrial requirements but was also reminiscent of interior luminaires.

Parcare was developed on the basis of LED technology and has been adapted for the market's leading control system. With the DALI system and presence detectors there are more options for combining increased safety with great energy savings.

Installation
Surface-mounted via two securing holes or via wire pendant, please see accessories.
Connection
Connects with 230 V, built-in LED driver. Snap-in terminal block 3×2.5 mm² or 5×2.5 mm² when dimming. 1-phase through-wiring possible. Cable entry from top of the luminaire. Surface mounted mains cable possible 180°.
Design
Luminaire body in white (RAL 9016) aluminium. Opal acrylic diffuser.
Accessories
The pendant accessory can be cut to the desired length. Max. cable area during pendant installation 5×1.5 mm².

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
40	4000	3200	81	3.5	**33320** ☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

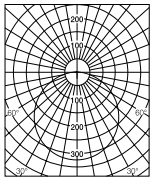
Suffix code

☐ **-402** DALI/Phase-pulse control

Add suffix code to the end of the luminaire part number to indicate required function.

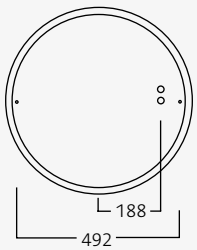
Accessories

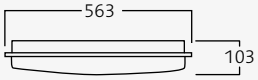
Pendant suspension 600 mm	**91480**



40 W

Parcare in pendant installation.





The diffuser is easy to mount with white springs.

LED | IP44 | IK10

Parcare
Wallwasher

Installation
Surface mounted via two keyholes.
Connection
Connects with 230 V, built-in LED driver. Connection via two blanking grommet ∅ 20 mm or via rubber bushing in the end-caps. Snap-in terminal block 5×2.5 mm²; through-wiring possible.
Design
Luminaire body in white (RAL 9016) aluzinc sheeting. End-caps in cast aluminium. Extruded diffuser in opal polycarbonate with linear prismatic function.
Dimming
DALI/Phase-pulse control as standard.

Luminaire

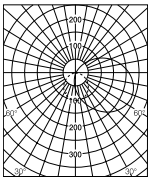
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	
11	4000	900	85	2.7	**33325-402**

For current information on output and luminous flux, please refer to our website.

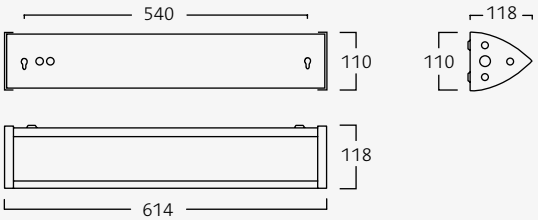
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.



11 W



Additional light on the walls make a clear perception of the room for those moving in the garage.

Opal diffuser with linear prismatic function.

Parcare

AllFive

AllFive is a universal luminaire which is just as suitable for garages and conduits as laundry rooms and kitchens. The neat and carefully thought-out design hides the fact that this is a luminaire which has been developed for industrial use and which can tolerate damp and stress. The new AllFive LED expands this product family with a very energy-efficient option.

AllFive is available in both LED and T5 variants, both with two different louvres: clear or opal.

AllFive LED comes with the superior service life and optimal energy efficiency associated with LED technology. The newly-developed prismatic louvre offers exceptional uniformity, while safeguarding against glare. AllFive LED is also equipped with a smart circuit breaker which makes it possible to switch between two luminous fluxes. A function which makes lighting planning easier and allows for readjustment.

AllFive LED is available in two different lengths and the T5 variant is available in three lengths.

AllFive LED
Clear/opal

Luminaire

System, W	Length	Colour temp., K	Clear, lm	Clear, lm/W	Opal, lm/W	Opal, lm/W	kg		
28	600	3000	2800	100	2400	86	1.3	**33501**	■
28	600	4000	2900	104	2500	89	1.3	**33502**	■
37	1200	3000	4300	116	3500	95	2.3	**33506**	■ ●
38	1200	4000	4500	118	3800	100	2.3	**33507**	■ ●
51	1200	3000	5700	112	4700	92	2.3	**33508**	■ ●
52	1200	4000	6000	115	5000	96	2.3	**33509**	■ ●

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 100.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 100.000 h*	*MacAdam 3 SDCM*

For more information on LEDs, please refer to the Technical Information chapter.

Suffix code

- ■ **-402** DALI/Phase-pulse control
- ■ **-469** e-Sense Detect on/off
- ● **-34** Through-wiring 5×1.5 mm²
- ● **-473** e-Sense Detect absence dampening

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Opal diffuser 600 mm	**90308**
Opal diffuser 1200 mm	**90309**
Spare cover 600 mm	**90318**
Spare cover 1200 mm	**90319**
Cable wire bracket/pair	**91334**
Wire suspension parallel wires incl friction locks/pair	**90305**
Ceiling bracket, flexible c/c/pair	**91213**
Wall bracket, 90°, L=150 mm/each	**91508**

Installation
Surface mounted, cable wire, wire suspension or on a wall. Installation using the seal supplied with the luminaire provides protection classification IP 44. With wall mounting or installation without seals the luminaire is classified IP40.

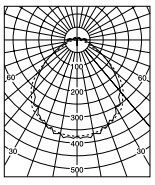
Connection
Connects via 230 V, built-in LED driver. Four ∅ 19 mm access holes with blanking grommets on top of the luminaire and one ∅ 16 mm knock-out in each end. The centrally positioned snap-in terminal block 5×2.5 mm² provides through-wiring. The luminaire is also available with 5×1.5 mm² through-wiring and snap-in terminal blocks at each end (-34).

Design
Body in white enamelled, corrosion resistant aluzinc (RAL 9016). End-caps of ASA plastic.

Louvre
Clear cover of extruded acrylic plastic with prismatic underside and lined sides. Opal diffuser available as an accessory to place in clear cover.

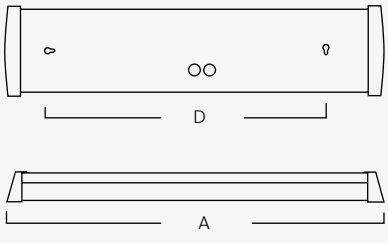
Dimming
e-Sense Detect – microwave sensor for on/off function or absence dampening 10–100 %.

Miscellaneous
Luminaire 1200 mm has a switch for high/low flow. Always delivered set at low flow and need to be adjusted for high flow.



With opal diffuser

A	B	C	D
610	150	50	510
1145	150	50	1050



Opal diffuser is available as an accessory to supplement the clear cover.

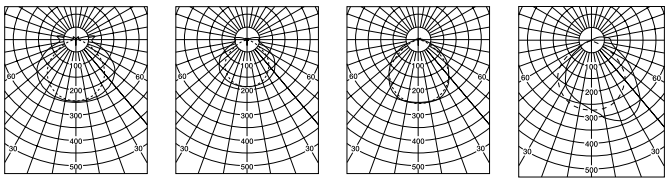
Luminaire			
FDH	kg		
1×13/14	1.3	**33401**	■
1×25/28	2.2	**33403**	■ ▲
1×32/35	2.6	**33405**	■ ▲
1×45/49	2.6	**33407**	■
2×13/14	1.3	**33402**	■
2×25/28	2.3	**33404**	■ ●
2×32/35	2.8	**33406**	■
2×45	2.8	**33409**	■
2×13/14	1.3	**33422-**[1)]	▼
2×25/28	2.3	**33424-**[1)]	▼

[1)] *Luminaire must be completed with desired function. See table with suffix codes.*

Suffix code
■ **-143** HF-std with through-wiring 5×1.5 mm²
▲ **-203** Integrated emLED (self-test)
● **-357** e-Sense Detect on/off
● **-358** e-Sense Detect absence dampening
▼ **-431** e-Sense Move on/off
▼ **-432** e-Sense Move absence dampening

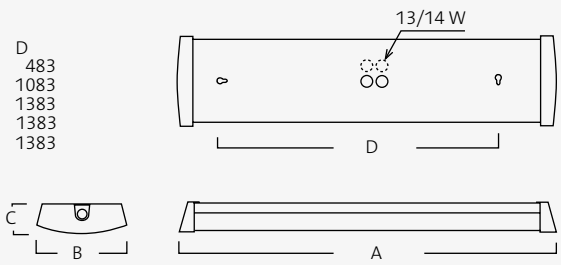
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Reflector 2×13/14 W	**97590**
Reflector 2×25/28 W	**97591**
Reflector 2×32/35/45/49 W	**97592**
Spare cover clear 13/14 W	**90310**
Spare cover clear 25/28 W	**90311**
Spare cover clear 32/35/45/49 W	**90312**
Cable wire bracket/pair	**91334**
Wire suspension parallel wires/pair	**91162**
Shelter bracket/pair	**91210**
Ceiling bracket, flexible c/c/pair	**91213**
Wall bracket, 90°, L=150 mm/each	**91508**



1-lamp | 2-lamp | 2-lamp, symmetrical reflector | 2-lamp, asymmetrical reflector

W	A	B	C	D
1/2×13/14	622	150	50	483
1/2×25/28	1222	150	50	1083
1/2×32/35	1522	150	50	1383
1×45/49	1522	150	50	1383
2×45	1522	150	50	1383



Installation
Surface mounted, cable wire, wire suspension or horizontally on a wall. Installation using the seal supplied with the luminaire provides protection classification IP 44. With wall mounting or installation without seals the luminaire is classified IP40. Single lamp luminaires are not balanced therefore cable wire installations should be avoided.

Connection
Four ∅ 19 mm access holes with blanking grommets on top of the luminaire and one ∅ 16 mm knock-out in each end. The centrally positioned snap-in terminal block 5×2.5 mm² provides through-wiring. The luminaire is also available with 5×1.5 mm² through-wiring and snap-in terminal blocks at each end (-143).

Design
Body in white enamelled, corrosion resistant aluzinc (RAL 9016). End-caps of ASA plastic.

Louvre
Clear cover of extruded acrylic plastic with prismatic underside and lined sides.

Accessories
A reflector of specular anodised aluminium is available as an accessory for the 2-lamp version. Can be installed for a symmetrical or asymmetrical light distribution.

Emergency lighting
AllFive with emLED available in 1×25/28 W and 1×32/35 W. For further information on emLED please refer to the Emergency Lighting chapter. When the seal supplied with the luminaire is used, the protection classification is IP 23. Without seals the luminaire is classified IP 20.

Dimming
e-Sense Detect – microwave sensor for on/off function or absence dampening 10–100 %.
e-Sense Move – wireless lighting control between luminaires. Microwave sensor for on/off function or absence dampening with the option of switch-off function.

Miscellaneous
Reflectors are available as accessories for the two lamp luminaires.

Reflectors are available as accessories for the two tube luminaires.

Luminaire			
FDH	kg		
1×13/14	1.3	**33411**	□
1×25/28	2.2	**33413**	□ ▲
1×32/35	2.6	**33415**	□ ▲
1×45/49	2.6	**33417**	□
2×13/14	1.3	**33412**	□
2×25/28	2.3	**33414**	□
2×32/35	2.8	**33416**	□
2×45	2.8	**33419**	□

Suffix code	
□	**-143** HF-std with through-wiring 5×1.5 mm²
▲	**-203** Integrated emLED (self-test)

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Spare cover opal 13/14 W	**90315**
Spare cover opal 25/28 W	**90316**
Spare cover opal 32/35/45/49 W	**90317**
Cable wire bracket/pair	**91334**
Wire suspension parallel wires/pair	**91162**
Shelter bracket/pair	**91210**
Ceiling bracket, flexible c/c/pair	**91213**
Wall bracket, 90°, L=150 mm/each	**91508**

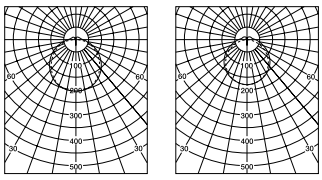
Installation
Surface mounted, cable wire, wire suspension or horizontally on a wall. Installation using the seal supplied with the luminaire provides protection classification IP 44. With wall mounting or installation without seals the luminaire is classified IP40. Single lamp luminaires are not balanced therefore cable wire installations should be avoided.

Connection
Four ∅ 19 mm access holes with blanking grommets on top of the luminaire and one ∅ 16 mm knock-out in each end. The centrally positioned snap-in terminal block 5×2.5 mm² provides through-wiring. The luminaire is also available with 5×1.5 mm² through-wiring and snap-in terminal blocks at each end (-143).

Design
Body in white enamelled, corrosion resistant aluzinc (RAL 9016). End caps of ASA plastic.

Louvre
Opal cover of extruded acrylic plastic.

Emergency lighting
AllFive with emLED available in 1×25/28 W and 1×32/35 W. For further information on emLED please refer to the Emergency Lighting chapter. When the seal supplied with the luminaire is used, the protection classification is IP 23. Without seals the luminaire is classified IP 20.

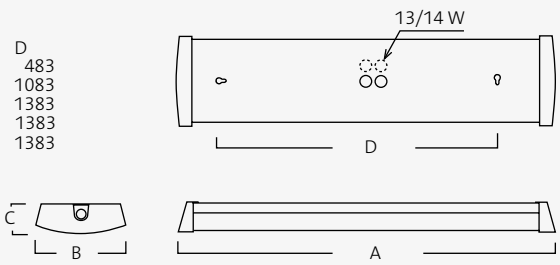


1-lamp

2-lamp

Ceiling bracket for flexible c/c available as accessories.

W	A	B	C	D
1/2×13/14	622	150	50	483
1/2×25/28	1222	150	50	1083
1/2×32/35	1522	150	50	1383
1×45/49	1522	150	50	1383
2×45	1522	150	50	1383



Installation using the supplied seal, gives classification IP 44.

Kaptur

Kaptur is a capped industrial luminaire that fit well in harsh and cold environments.

With protection class IP 65, the fitting is an excellent choice for garages or underground corridors.

Kaptur LED

Installation
Surface mounted, wall, wire and bracket. Multi-suspension, see Awccessories, can be used for installation of surface and wall mounting as well as for chain or wire pendants.
Connection
Two cable entries fitted with blanking grommets Ø 22 mm – one at each end. Snap-in terminal block 5 × 2.5 mm² at each end with 3-phase through-wiring 5 × 2.5 mm².
Design
Body of glass fibre reinforced polyester. Mounting plate made of white enamelled plate.
Louvre
Diffuser made of plastic, acrylic (PMMA, IK02) or polycarbonate (PC, IK09) with stainless steel shade catch. Acrylic shade is pearl patterned and the PC shade has internal, lengthways grooves.
Miscellaneous
Luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90 °C) as set out in the Electrical installation regulations EN 436 40 00.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	mm	kg		
Acrylic							
22	4000	2500	114	673	1.9	**34701**	●
43	4000	4930	115	1283	3.5	**34702**	□ ●
51	4000	5780	113	1583	4.0	**34703**	□ ●
PC							
22	4000	2307	105	673	1.9	**34711**	●
43	4000	4585	107	1283	3.5	**34712**	□ ●
51	4000	5377	105	1583	4.0	**34713**	□ ●

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3,5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

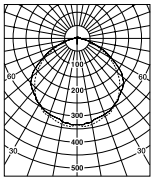
□ **-402** DALI/Phase-pulse control
● **-440** e-Sense Move

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

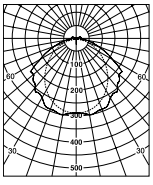
Accessories

Cable wire bracket/pair	**91334**
Multi suspension/pair	**91998**
Conduit bracket/pair	**91198**
Adjustable ceiling bracket	**91374**
Adjustable wall bracket/pair	**91375**
Wall bracket, 135°, L=200 mm/each	**91313**
Wall bracket, 90°, L=150 mm/each	**91508**
Wall bracket, 90°, L=250 mm/each	**91509**

	Acrylic	PC
Spare shade for 22 W	**90192**	**90300**
Spare shade for 43 W	**90194**	**90302**
Spare shade for 51 W	**90196**	**90304**

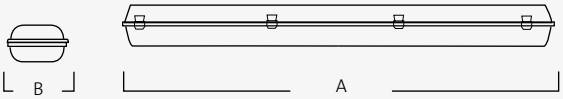


Acrylic



PC

W	A	B	C	D
22	673	161	114	450
43	1283	161	114	660
51	1583	161	114	900



LED-module.

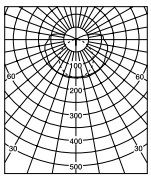
Installation
Surface mounted, on walls, wire and bracket.
Connection
Two cable entries fitted with blanking grommets Ø 22 mm – one at each end. Snap-in terminal block 5×2.5 mm² at each end with 3- phase through-wiring 5×2.5 mm² (18 W – 3×2,5 mm², no through-wiring possible).
Design
Body of polycarbonate. Mounting plate made of white enamelled plate.
Louvre
Diffuser of acrylic (PMMA, IK02) or polycarbonate (PC, IK08) with polyurethane shade catch. Acrylic shade is pearl patterned and the PC shade has internal, lengthways grooves.
Reflector
Reflector of specular anodised aluminium available as an accessory.
Dimming
e-Sense Move – wireless lighting control between luminaires. Microwave sensor for on/off function or absence dampening with the option of switch-off function.
Miscellaneous
In the HF design the luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90°C) as per EN 60598-2-24. Please note: luminaire is not suitable for use in areas with direct sunlight.

Luminaire				
FD	kg	Acrylic	PC	
1×18	1.5	**34500**	**34530**	□
1×36	2.3	**34502**	**34532**	□
1×58	2.7	**34504**	**34534**	□
2×18	1.9	**34501**	**34531**	□
2×36	3.1	**34503**	**34533**	□
2×58	3.7	**34505**	**34535**	□
FDH				
1×25/28	2.3	**34506**	**34536**	
1×32/35	2.7	**34508**	**34538**	
1×45/49	2.7	**34510**	**34540**	
2×25/28	3.1	**34507**	**34537**	●
2×32/35	3.7	**34509**	**34539**	●
2×45/49	3.7	**34511**	**34541**	

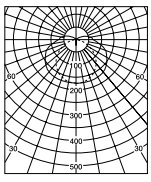
Suffix code	
□	**-29** Conventional ballast
●	**-431** e-Sense Move on/off
●	**-432** e-Sense Move absence dampening

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

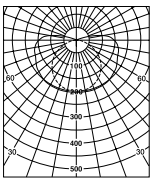
Accessories		
Reflector for 2×25/28/36 W		**99381**
Reflector for 2×32/35/45/49/58 W		**99383**
Reflector for 1×32/35/45/49/58 W		**99382**
Reflector for 1×25/28/36 W		**99380**
Screw-kit for 5 reflectors, fits 99380–99383		**94936**
Cable wire bracket/pair		**91334**
Multi suspension/pair		**91998**
Conduit bracket/pair		**91198**
Adjustable ceiling bracket		**91374**
Adjustable wall bracket/pair		**91375**
Wall bracket, 135°, L=200 mm/each		**91313**
Wall bracket, 90°, L=150 mm/each		**91508**
Wall bracket, 90°, L=250 mm/each		**91509**
	Acrylic	PC
Spare shade for 1×18 W	**90191**	**90299**
Spare shade for 2×18 W	**90192**	**90300**
Spare shade for 1×25/28/36 W	**90193**	**90301**
Spare shade for 2×25/28/36 W	**90194**	**90302**
Spare shade for 1×32/35/45/49/58 W	**90195**	**90303**
Spare shade for 1×32/35/45/49/58 W	**90196**	**90304**



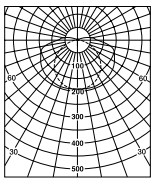
1-lamp, FD, acrylic shade



2-lamp, FD, acrylic shade

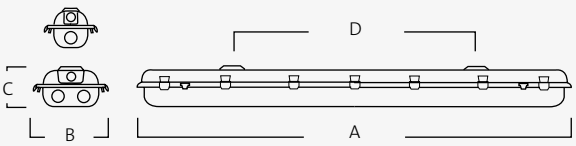


1-lamp, FDH, acrylic shade



2-lamp, FDH, acrylic shade

W	A	B	C	D
FD				
1×18	673	111	110	450
2×18	673	168	114	450
1×36	1283	111	110	660
2×36	1283	168	114	660
1×58	1583	111	110	900
2×58	1583	168	114	900
FDH				
1×25/28	1283	111	110	660
2×25/28	1283	168	114	660
1×32/35/45/49	1583	111	110	900
2×32/35/45/49	1583	168	114	900



Quick and easy installation by snapping the assembly plate onto the body.

Densus 3000

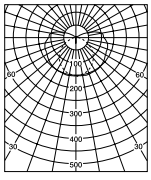
Installation
Surface mounted, wall, wire and bracket.
Connection
Two cable entries fitted with blanking grommets Ø 22 mm – one at each end. Snap-in terminal block 5×2.5 mm² at each end with 3-phase through-wiring 5×2.5 mm² (18 W – 3×2,5 mm², no through-wiring possible).
Design
Body of glass fibre reinforced polyester. Mounting plate made of white enamelled plate.
Louvre
Diffuser made of plastic, acrylic (PMMA) or polycarbonate (PC) with stainless steel shade catch. Acrylic shade is pearl patterned and the PC shade has internal, lengthways grooves.
Reflector
Reflector of specular anodised aluminium, see accessories.
Miscellaneous
In HF design the luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90°C) as per EN 60598-2-24. Please note: luminaire is not suitable for use in areas with direct sunlight.

Luminaire				
FD	kg	Acrylic	PC	
1×18	1.5	**34400**	**34430**	☐
1×36	2.3	**34402**	**34432**	☐
1×58	2.7	**34404**	**34434**	☐
2×18	1.9	**34401**	**34431**	☐
2×36	3.1	**34403**	**34433**	☐
2×58	3.6	**34405**	**34435**	☐
FDH				
1×25/28	2.3	**34406**	**34436**	
1×32/35	2.7	**34408**	**34438**	
1×45/49	2.7	**34410**	**34440**	
2×25/28	3.1	**34407**	**34437**	
2×32/35	3.7	**34409**	**34439**	
2×45/49	3.7	**34411**	**34441**	

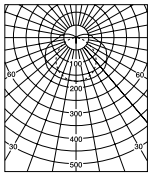
Suffix code	
☐ **-29**	Conventional ballast

Add suffix code to the end of the luminaire part number to indicate required function.

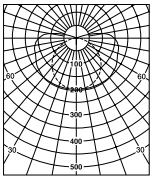
Accessories		
Reflector for 1×25/28/36 W		**99380**
Reflector for 1×32/35/45/49/58 W		**99382**
Reflector for 2×25/28/36 W		**99381**
Reflector for 2×32/35/45/49/58 W		**99383**
Screw-kit for 5 reflectors, fits 99380–99383		**94936**
Cable wire bracket/pair		**91334**
Multi suspension/pair		**91998**
Conduit bracket/pair		**91198**
Adjustable ceiling bracket		**91374**
Adjustable wall bracket/pair		**91375**
Wall bracket, 135°, L=200 mm/each		**91313**
Wall bracket, 90°, L=150 mm/each		**91508**
Wall bracket, 90°, L=250 mm/each		**91509**
	Acrylic	**PC**
Spare shade for 1×18 W	**90191**	**90299**
Spare shade for 2×18 W	**90192**	**90300**
Spare shade for 1×25/28/36 W	**90193**	**90301**
Spare shade for 2×25/28/36 W	**90194**	**90302**
Spare shade for 1×32/35/45/49/58 W	**90195**	**90303**
Spare shade for 1×32/35/45/49/58 W	**90196**	**90304**



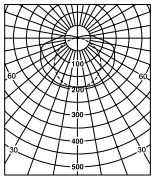
1-lamp, FD, acrylic shade



2-lamp, FD, acrylic shade

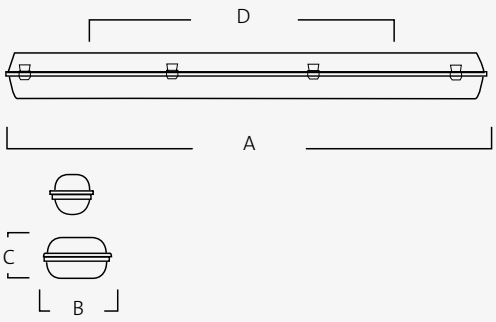


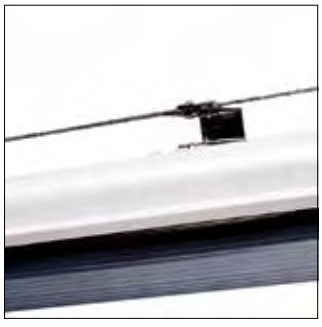
1-lamp, FDH, acrylic shade



2-lamp FDH, acrylic shade

W	A	B	C	D
FD				
1×18	673	111	110	450
2×18	673	161	114	450
1×36	1283	111	110	660
2×36	1283	161	114	660
1×58	1583	111	110	900
2×58	1583	161	114	900
FDH				
1×25/28	1283	111	110	660
2×25/28	1283	161	114	660
1×32/35/45/49	1583	111	110	900
2×32/35/45/49	1583	161	114	900

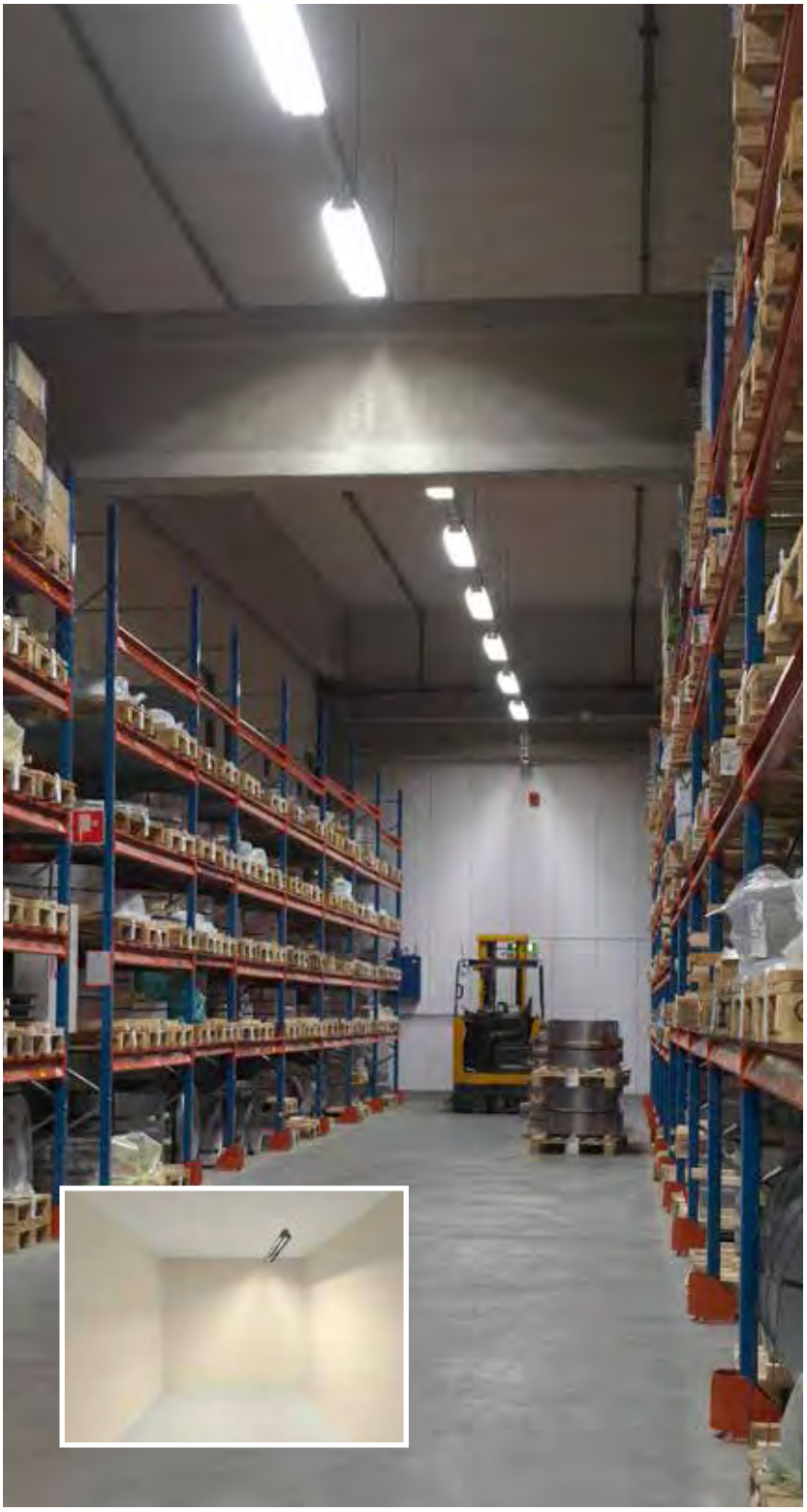




Densus 3000 with cable wire bracket 91334.

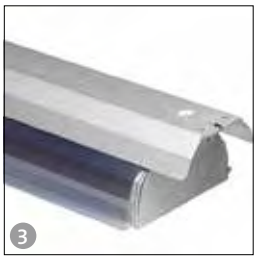
Inducon

Inducon is an industrial lighting system, manufactured with high quality materials which utilise the properties of the T5 light source.



The choice between wide, medium, or narrow beam light distribution provides a good basis for flexible lighting within industrial environments.

A number of the reflectors are made of metallised aluminium with excellent reflection characteristics (> 92 %) to attain the greatest efficiency. The body and end-caps of alu-zinc contribute towards its robust design.

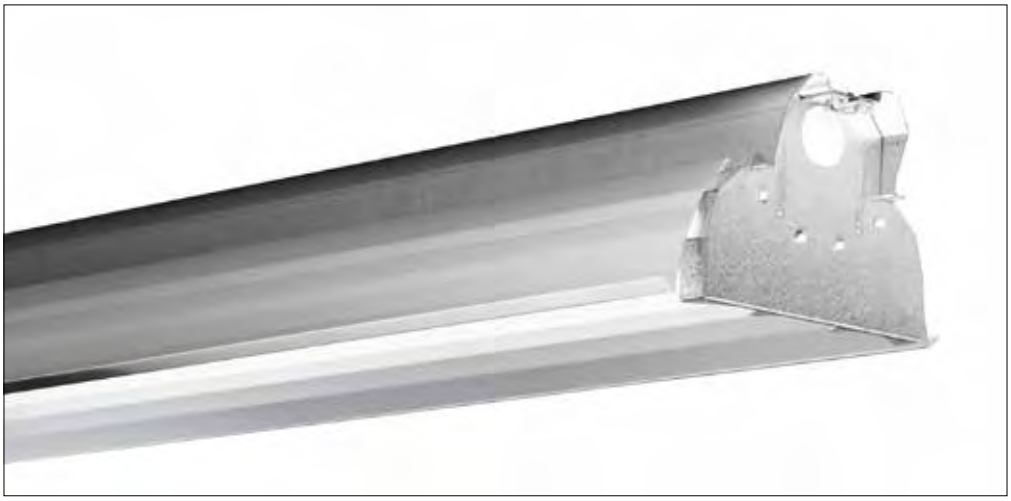


1. Body and end-caps of alu-zinc contribute towards Inducon's stable design. The reflectors are manufactured of satin matt metallised aluminium with excellent reflection characteristics (> 92 %) and the luminaire is available with or without a louvre. The louvre can remain attached when open, facilitating easy maintenance.

2. Inducon has extremely small dimensions compared with other luminaires of the same type. Inducon with a T5 light source also has PVC-free internal wiring. Available with wide, medium, or narrow light distribution. Inducon is mounted on a wire catenary, tube, assembly rail, against the ceiling, or on brackets.

3. Inducon can be supplemented with a cover plate accessory for IP 23 rating.

4. Inducon can be surface mounted without extra accessories. Inducon is also ideal for installation on a wire catenary. The luminaire is suspended from the wire and is easily secured with brackets.



Luminaire

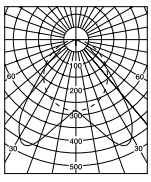
FDH	kg	Reflector		
With square lamell louvre				
2×45/49	3.4	Metallised	**32867**	☐
Without louvre				
2×45/49	2.8	Anodised	**32822**	☐
2×45/49	2.8	Metallised	**32851**	☐

Suffix code

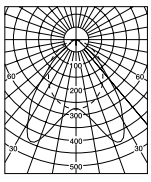
☐ **-320** HF Industry

Add suffix code to the end of the luminaire part number to indicate required function.

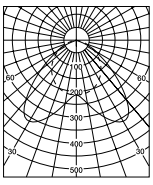
Installation
Surface mounted, wire catenary, tube or assembly rail.
Connection
Two cable entries fitted with blanking grommets Ø 23 mm – one at each end. 3-phase through-wiring 5×2.5 mm². Snap-in terminal block 5×2.5 mm² at each end.
Design
Luminaire body and end-caps of alu-zinc.
Louvre
Square lamell – louvre of anodised aluminium.
Lamell – basic louvre of white enamelled sheet steel (RAL 9016) available as an accessory. The louvre remains attached when opened. The luminaire can be supplemented with a louvre at a later date.
Reflector
Wide beam reflector of satin matt metallised aluminium with excellent reflection characteristics (> 92 %). A model with a reflector made of anodised aluminium is also available.
Accessories
When supplemented with the cover plate IP 23 enclosure class is obtained, see accessories.
Miscellaneous
PVC-free internal wiring. When supplemented with the cover plate IP 23 the luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90 °C).



2×45/49 W,
with square lamell



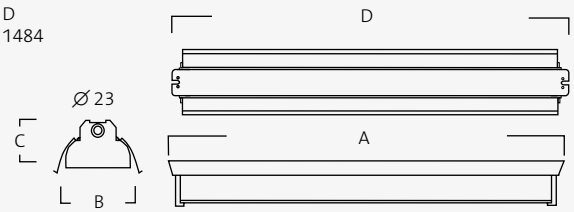
2×45/49 W,
without louvre



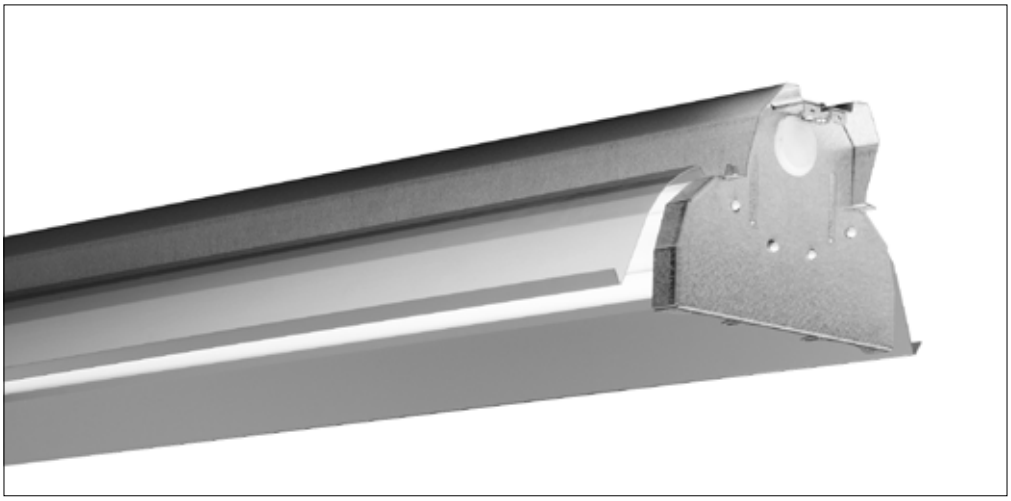
2×45/49 W, without louvre, anodised

Louvre of anodised aluminium.

A	B	C	D
1506	192	120	1484



Tube bracket 91198.

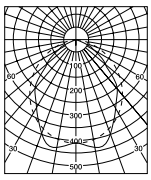


Luminaire			
FDH	kg		
With square lamell louvre			
2×45/49	3.4	**32872**	■
2×73/80	3.4	**32875**	
Without louvre			
2×45/49	2.8	**32856**	■
2×73/80	2.8	**32863**	

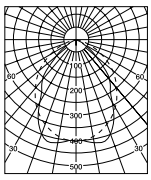
Suffix code
■ **-320** HF Industry

Add suffix code to the end of the luminaire part number to indicate required function.

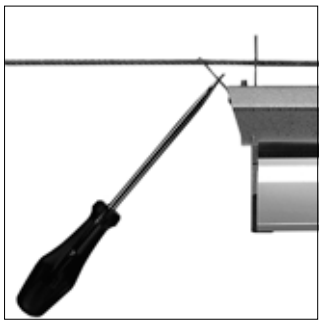
Installation
Surface mounted, wire catenary, tube or assembly rail.
Connection
Two cable entries fitted with blanking grommets Ø 23 mm – one at each end. 3-phase through-wiring 5×2.5 mm². Snap-in terminal block 5×2.5 mm² at each end.
Design
Luminaire body and end-caps of alu-zinc.
Louvre
Square lamell – louvre of anodised aluminium.
Lamell – basic louvre of white enamelled sheet steel (RAL 9016) available as an accessory. The louvre remains attached when opened. The luminaire can be supplemented with a louvre at a later date.
Reflector
Medium beam reflector of satin matt metallised aluminium with excellent reflection characteristics (> 92 %).
Accessories
When supplemented with the cover plate IP 23 enclosure class is obtained, see accessories.
Miscellaneous
PVC-free internal wiring. When supplemented with the cover plate IP 23 the luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90 °C).



Without louvre

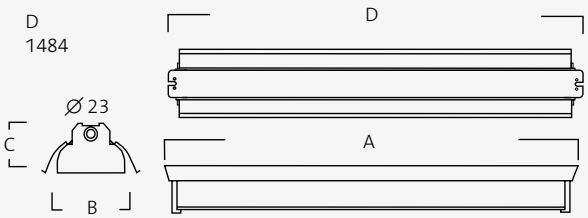


With square lamell



Simple installation of wire bracket 91860.

A	B	C	D
1506	210	115	1484



Surface mounted installation without extra accessories.

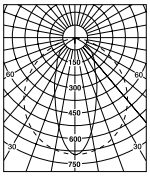
Inducon
Narrow beam

Installation
Surface mounted, wire catenary, tube or assembly rail.
Connection
Two cable entries fitted with blanking grommets ∅ 23 mm – one at each end. 3-phase through-wiring 5×2.5 mm². Snap-in terminal block 5×2.5 mm² at each end.
Design
Luminaire body and end-caps of alu-zinc.
Reflector
Narrow beam reflector of satin matt metallised aluminium with excellent reflection characteristics (> 92 %).
Accessories
When supplemented with the cover plate IP 23 enclosure class is obtained, see accessory table.
Miscellaneous
PVC-free internal wiring. When supplemented with the cover plate IP 23 the luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90 °C).

Luminaire			
FDH	kg		
Without louvre			
2×45/49	2.8	**32861**	☐
2×73/80	2.8	**32864**	

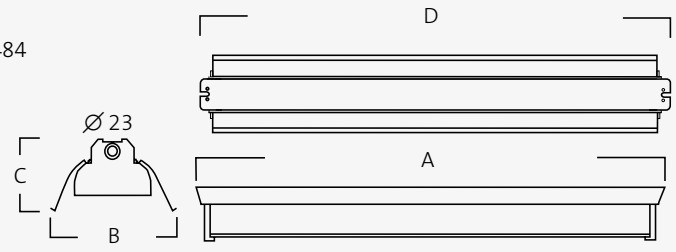
Suffix code
☐ **-320** HF Industry

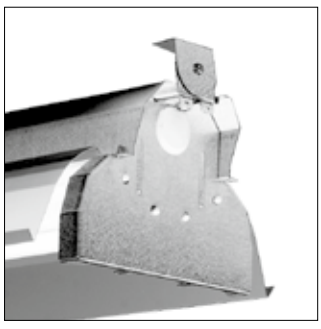
Add suffix code to the end of the luminaire part number to indicate required function.



2-lamp

A	B	C	D
1506	252	133	1484

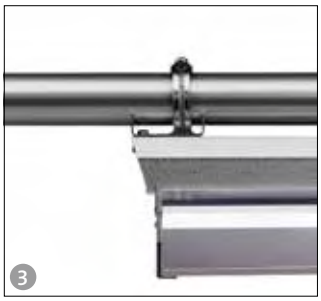




Inducon with ceiling bracket 91374.


1


2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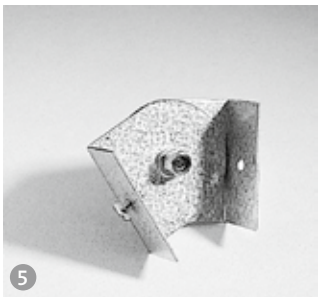
4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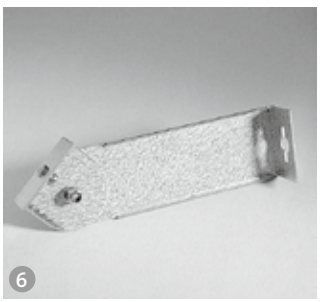

6


7

1. Square lamell louvre

Louvre of anodised aluminium for a wide and medium beam luminaires.
The luminaire can be supplemented with a louvre at a later date.

Square lamell louvre 45/49/73/80 W	**95829**

White lamell louvre basic

A elementary louvre white enamelled sheet steel for a wide and medium beam luminaires. The luminaire can be supplemented with a louvre at a later date.

Louvre, basic, 45/49/73/80 W	**95414**

2. Cover plate

When supplemented with the cover plate IP 23, Inducon satisfies the requirements for D-marking, i.e. limited surface temperature (90 °C).

Cover plate IP 23, 45/49/73/80 W	**90362**

3. Tube bracket

Mounting plate of alu-zinc equipped with hose clamp for tube ∅ 45–65 mm.
The hose clamp can be changed for other dimensions.

Conduit bracket/pair	**91198**

4. Wire bracket of zinc plated sheet

Wire bracket/pair	**91860**

5. Adjustable ceiling bracket

Bracket of zinc plated 2.0 mm plate. Height 72 mm.

Adjustable ceiling bracket/pair	**91374**

6. Adjustable wall bracket

Bracket of zinc plated 2.0 mm plate. Length 235 mm.

Adjustable wall bracket/pair	**91375**

7. Wire pendant

Basic pendant with ceiling bracket.

L=1.5 m surface mounted with clamp/pair	**91862**

Induline

Designed by Epsilon

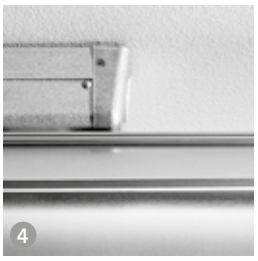
Induline is an industrial luminaire specifically developed for T5. In this range Fagerhult has utilised the benefits of this light source to create a luminaire tailored for industrial usage.

The assortment of wide, medium and narrow light distributions offered by the Induline family enables easier light planning within the industrial sector. All luminaires are equipped with reflectors and louvers of metallised aluminium with excellent reflection characteristics (> 92 %). Induline has been designed with minimal use of material which reduces its impact on the environment.


1


2


3


4

1. All Induline bodies are balanced and consist of an assembly rail of extruded aluminium with end-caps of cast zinc, and an assembly box. The reflector and louvre are then fitted, and together form an effective industrial luminaire.

2. In Induline we have positioned the T5-lamp in a type of trestle position. Material consumption is kept to a minimum and the weight is low. Internal cables are PVC-free in all Fagerhult's T5-luminaires.

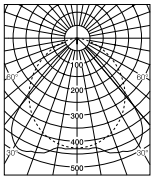
3. Induline is always supplied with sealed ends. This guarantees a good axial cut-off without lowering the light quality and adaptation features.

4. Induline is a versatile luminaire, developed with one of the market's widest range of installation accessories. The picture shows Induline surface mounted.

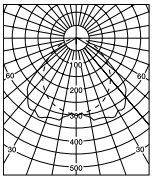
Luminaire		
FDH	kg	
Without louvre		
1×25/28	1.9	**32622**
1×32/35	2.2	**32647**
1×45/49	2.2	**32672**
1×50/54	1.9	**32712**
2×25/28	2.3	**32730**
2×32/35	2.7	**32731**
2×45/49	2.7	**32688**
2×50/54	2.3	**32733**
Beta		
1×25/28	2.2	**32634**
1×32/35	2.6	**32659**
1×45/49	2.6	**32684**
1×50/54	2.2	**32724**
2×25/28	2.7	**32740**
2×32/35	3.1	**32742**
2×45/49	3.1	**32743**
2×50/54	2.7	**32741**

Luminaire		
FDH	kg	
Terazza		
1×25/28	2.3	**32628**
1×32/35	2.7	**32653**
1×45/49	2.7	**32678**
1×50/54	2.3	**32718**
2×25/28	2.9	**32635**
2×32/35	3.4	**32737**
2×45/49	3.4	**32689**
2×50/54	2.9	**32736**

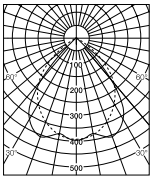
Installation
Surface mounted, wire catenary, chain, wire suspension and assembly rail.
Connection
One Ø 21 mm cable entry fitted with a blanking grommet at each end. Snap-in terminal block 5×2.5 mm², placed in the centre with the possibility of through-wiring.
Design
Ballast box of aluzinc. Assembly rail of extruded aluminium. End-caps of cast zinc.
Louvre
Terazza – louvre with aluminium enamelled cross-blades.
Beta – reflector louvre with double parabolic cross-blades in satin matt metallised aluminium. Luminaires can be supplemented with louvres at a later date.
Reflector
Wide beam reflector of satin matt metallised aluminium with excellent reflection characteristics (> 92 %). Fitted with end-caps of aluzinc. The reflector is easily attached to the luminaire using quick-action lock.
Miscellaneous
Internal cables are PVC-free. The luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90 °C) as per EN 60598-2-24.



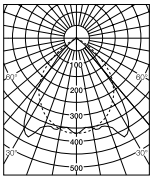
1-lamp, without louvre



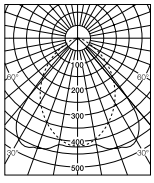
2-lamp, without louvre



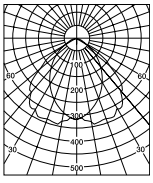
1-lamp, Beta



2-lamp, Beta



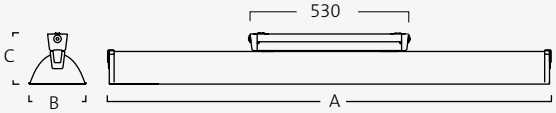
1-lamp, Terazza

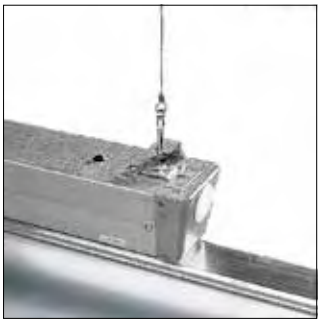


2-lamp, Terazza

Wire or chain suspension with ceiling cup.

W	A	B	C
1×25/28	1192	86	123
2×25/28	1192	133	157
1×32/35	1492	86	123
2×32/35	1492	133	157
1×45/49	1492	86	123
2×45/49	1492	133	157
1×50/54	1192	86	123
2×50/54	1192	133	157

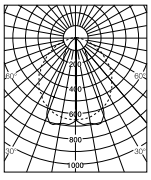




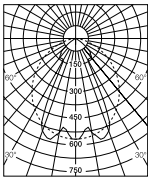
Luminaire with catenary wire.

Installation
Surface mounted, wire catenary, chain, wire suspension and assembly rail.
Connection
One ∅ 21 mm cable entry fitted with a blanking grommet at each end. Snap-in terminal block 5 × 2.5 mm², placed in the centre with the possibility of through-wiring.
Design
Ballast box of aluzinc. Assembly rail of extruded aluminium. End-caps of cast zinc.
Louvre
Terazza – louvre with aluminium enamelled cross-blades. Luminaires can be supplemented with louvres at a later date.
Reflector
Medium beam reflector of satin matt metallised aluminium with excellent reflection characteristics (> 92 %). Fitted with end-caps of aluzinc. The reflector is easily attached to the luminaire using quick-action lock.
Miscellaneous
Internal cables are PVC-free. The luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90 °C) as per EN 60598-2-24.

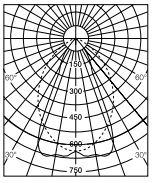
Luminaire		
FDH	kg	
Without louvre		
1×25/28	2.1	**32621**
1×32/35	2.4	**32646**
1×45/49	2.4	**32671**
1×50/54	2.1	**32711**
1×73/80	2.4	**32691**
2×25/28	2.5	**32624**
2×32/35	2.8	**32649**
2×45/49	2.8	**32674**
2×50/54	2.5	**32714**
2×73/80	2.8	**32694**
Terazza		
1×25/28	2.5	**32627**
1×32/35	2.9	**32652**
1×45/49	2.9	**32677**
1×50/54	2.5	**32717**
1×73/80	2.9	**32697**
2×25/28	3.2	**32630**
2×32/35	3.7	**32655**
2×45/49	3.7	**32680**
2×50/54	3.2	**32720**
2×73/80	3.7	**32700**



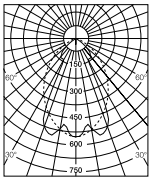
1-lamp,
without louvre



2-lamp,
without louvre

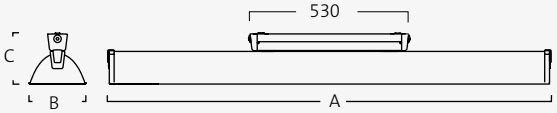


1-lamp,
Terazza



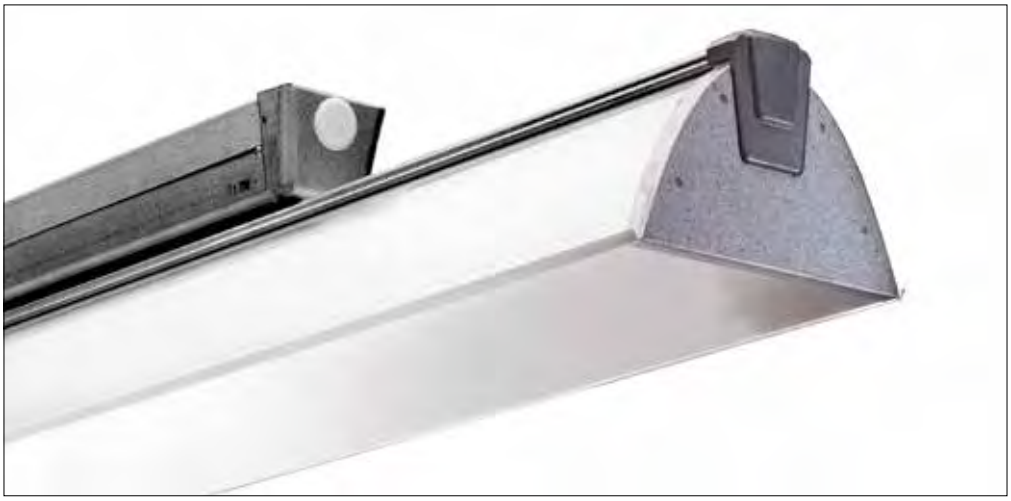
2-lamp,
Terazza

W	A	B	C
1×25/28	1192	120	145
2×25/28	1192	196	170
1×32/35	1492	120	145
2×32/35	1492	196	170
1×45/49	1492	120	145
2×45/49	1492	196	170
1×50/54	1192	120	145
2×50/54	1192	196	170
1×73/80	1492	120	145
2×73/80	1492	196	170



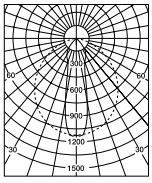
Luminaire with conduit bracket.

Luminaire with adjustable wall bracket.

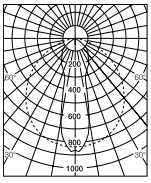


Installation
Surface mounted, wire catenary, chain, wire suspension and assembly rail.
Connection
One ∅ 21 mm cable entry fitted with a blanking grommet at each end. Snap-in terminal block 5 × 2.5 mm², placed in the centre with the possibility of through-wiring.
Design
Ballast box of aluzinc. Assembly rail of extruded aluminium. End-caps of cast zinc.
Reflector
Narrow beam reflector of satin matt metallised aluminium with excellent reflection characteristics (> 92 %). Fitted with end-caps of aluzinc. The reflector is easily attached to the luminaire using quick-action lock.
Miscellaneous
Internal cables are PVC-free. The luminaire satisfies the requirements for D-marking, i.e. limited surface temperature (90 °C) as per EN 60598-2-24.

Luminaire		
FDH	kg	
Without louvre		
1×25/28	2.2	**32620**
1×32/35	2.6	**32645**
1×45/49	2.6	**32670**
1×50/54	2.2	**32710**
1×73/80	2.6	**32690**
2×25/28	2.7	**32623**
2×32/35	3.1	**32648**
2×45/49	3.1	**32673**
2×50/54	2.7	**32713**
2×73/80	3.1	**32693**



1-lamp

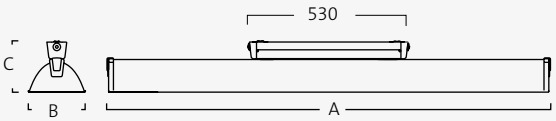


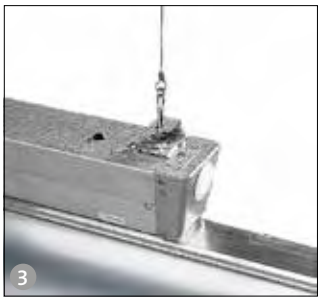
2-lamp

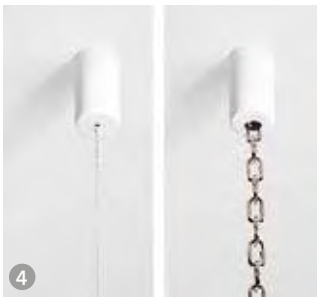
Luminaire with adjustable ceiling bracket.

Luminaire with catenary wire.

W	A	B	C
1×25/28	1192	165	165
2×25/28	1192	260	190
1×32/35	1492	165	165
2×32/35	1492	260	190
1×45/49	1492	165	165
2×45/49	1492	260	190
1×50/54	1192	165	165
2×50/54	1192	260	190
1×73/80	1492	165	165
2×73/80	1492	260	190







1. Wire catenary bracket

Zinc coated sheet steel.

Wire catenary bracket/pair	**91220**

2. Tube bracket

Mounting plate of zinc coated sheet steel equipped with hose clips for tubes ∅ 45–65 mm. Hose clip can be replaced with those of another dimension.

Conduit bracket/pair	**91198**

3. Bracket for wire or chain

Adjustable wall bracket/pair	**91221**

4. Wire suspension

Single suspension with ceiling cup. For surface mounting or bracket for visible T-bars (25 mm).

L=1.5 m, surface mounted/pair.	**91541**

4. Chain suspension

Single suspensions with ceiling cup. For surface mounting or bracket for visible T-bars (25 mm).

Chain suspension L=1 m incl. bracket, surface mounting/pair	**91543**

5. Adjustable ceiling bracket

Bracket of zinc coated 2.0 mm sheet steel. H=72 mm.

Adjustable ceiling bracket/pair	**91374**

6. Adjustable wall bracket

Bracket of zinc coated 2.0 mm sheet steel. L=235 mm.

Adjustable wall bracket/pair	**91375**

Multilume Hydro G2

Environments with stringent hygiene requirements must also have highly effective lighting and Multilume Hydro was specifically developed to address these needs. Not only does it provide professional work lighting, it also simplifies maintenance as it's easy to service and clean.

The luminaire focuses on easy service and cleaning, with no dust traps. All screws, clips and fasteners are placed inside to avoid the collection of dirt.

Multilume Hydro is designed for the T5 fluorescent lamp. This gives a number of lighting advantages including a high light output, an economical service life and the possibility to save energy with an HF ballast.

1. The louvre module is snapped into the luminaire body, frame with protective glass, is secured to the body via safety wires. The louvre module with protective glass remains attached to the body during service and maintenance work.

2. Luminaires for recessed mounting are fitted with suspension attachments that are suitable for fixed ceilings or suspended ceilings with visible T-bars. Ceilings depth from 13 mm to 46 mm. The luminaire is always mounted from the underside. Adjustment and locking of the suspension fittings are carried out from inside the luminaire body, all for easy and quick installation.

Multilume Hydro G2
Beta

Luminaire			
FDH	Module	kg	
Recessed IP 65/50			
3×13/14	600 x 600	9.1	**23228** ☐
4×13/14	600 x 600	9.2	**23229** ☐
4×20/24	600 x 600	9.2	**23230** ☐
2×25/28	300 x 1200	9.4	**23232** ☐
2×50/54	300 x 1200	9.4	**23238** ☐
3×25/28	600 x 1200	14.3	**23234** ☐
4×25/28	600 x 1200	14.5	**23235** ☐
Surface mounted IP 65			
2×25/28	300 x 1200	9.7	**23242** ☐
2×32/35	300 x 1500	12.1	**23243** ☐
2×50/54	300×1200	9.4	**23244** ☐

Suffix code	
☐ **-368**	DALI/Phase-pulse control
☐ **-436**	DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories	
Glass frame suction pad	**94295**

Installation
For recessed or surface mounting. The recessed model is suitable for fixed suspended ceilings or suspended ceilings with visible T-bars. Requisite suspension fittings supplied. Ceiling thickness 13–46 mm. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Cable entry on the top fitted with a blanking grommet. 3-way snap-in terminal block.

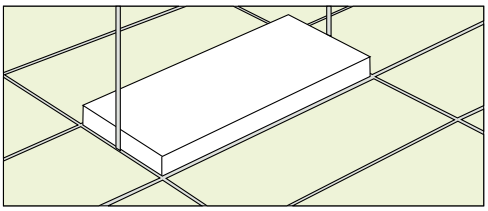
Design
Luminaire body of white enamelled and anti-corrosive treated aluzinc. Louvre frame of extruded aluminium fitted with toughened protective glass. Seal between the frame and protective glass as well as between the frame and body.

Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

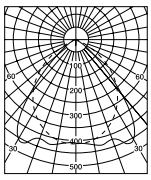
Reflector
The luminaire body is fitted with a top reflector, one for each lamp.

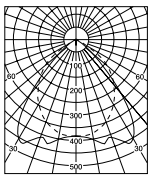
Dimming
Most models can also be equipped with other ballasts for dimming.

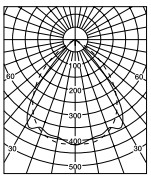
Miscellaneous
The louvre frame has no screws for fastening. The luminaire has been designed with a minimum of dirt collecting surfaces, which facilitates cleaning. When dismantling a glass frame suction pad is recommended. Enclosure class IP 65 under suspended ceilings and IP 50 above suspended ceilings.

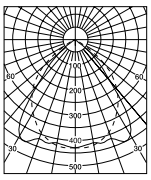


Multilume Hydro has a detachable louvre module held in place by high tension spring clips. Assembling and dismantling of louvre module for maintenance requires some force, so where luminaires are placed with a suspended ceiling system it is recommended that additional support bar hangers are included.

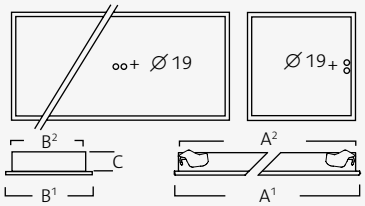

4×13/14 W

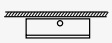

2×25/28/32/35 W


3×25/28 W


4×25/28 W

W	A^1	A^2	B^1	B^2	C
"300"					
25/28	1196	1171	296	270	63
32/35	1496	1471	296	270	63
"600"					
13/14	596	571	596	570	63
25/28	1196	1171	596	570	63

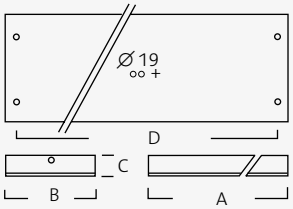




W	A	B	C	D
25/28	1199	296	77	1146
32/35	1499	296	77	1446

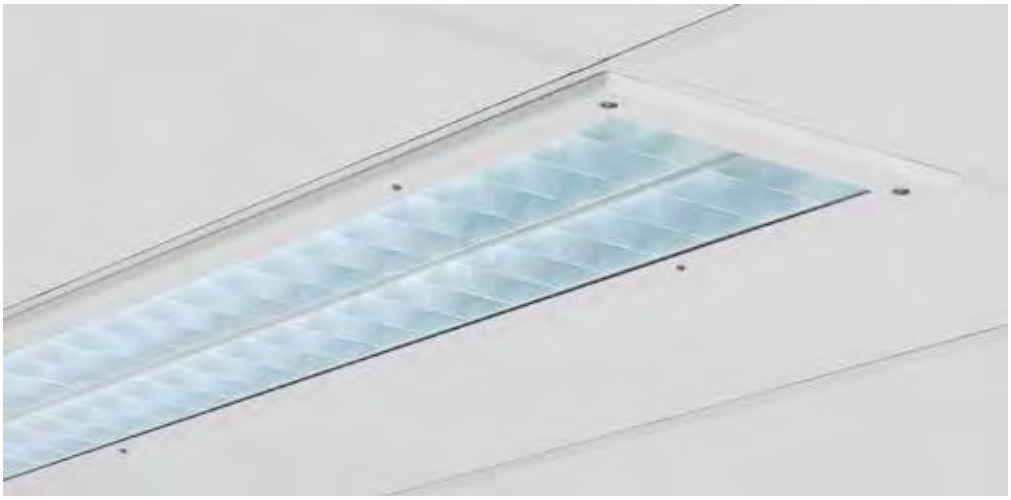
1180×280
1480×280

580×580
1180×580




The louvre module is secured using internal spring clips. The module is pushed up from below into its natural position. A glass frame suction pad is recommended when dismantling.

Multilume Hydro G2
Robust Beta



Installation
For recessed or surface mounting. The recessed model is suitable for fixed suspended ceilings or suspended ceilings with visible T-bars. Requisite suspension fittings supplied. Ceiling thickness from 13–46 mm. The luminaire must not be covered with insulation. For further details please refer to the assembly instructions on our website.

Connection
Cable entries fitted with blanking grommets on the top. 3-way snap-in terminal block.

Design
Luminaire body of white enamelled and anti-corrosive treated steel sheet. Louvre frame of white enamelled and anti-corrosive treated steel sheet fitted with impact resistant PETG plastic protective glass. Seals between the frame and protective glass as well as between the frame and body.

Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt, metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The frame with louvre is screwed to the body using tamper-proof torx screws. The louvre remains attached when opened. Earthed.

Reflector
The luminaire body is equipped with a top reflector, one for each lamp.

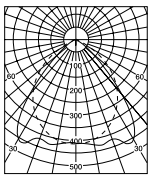
Miscellaneous
The luminaire has been designed with a minimum of dirt collecting surfaces, which facilitates cleaning. Luminaire is IK 10 rated.

Luminaire				
FDH	Module	kg		
Recessed				
3×13/14	600×600	9.1	Clear	**23221** ☐
4×13/14	600×600	9.4	Clear	**23224** ☐
2×25/28	300×1200	9.4	Clear	**23223** ☐
Surface mounting				
2×25/28	300×1200	9.7	Clear	**23225** ☐

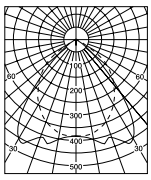
Suffix code

☐ **-205** 1–10 V
☐ **-436** DALI/DSI/switchDIM

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

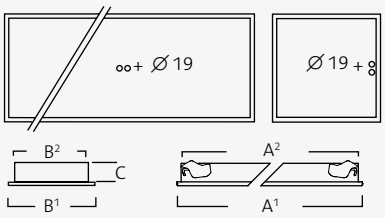


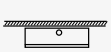
3×13/14 W



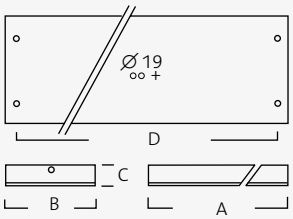
2×25/28 W

W	A^1	A^2	B^1	B^2	C	
"300"						
25/28	1196	1171	296	270	63	1180×280
"600"						
13/14	596	571	596	570	63	580×580





W	A	B	C	D
25/28	1199	296	76	1146



The frame with louvre is screwed to the body using tamper-proof torx screws.

Kaptur

Emergency Lighting

Luminaires and products for emergency lighting solutions

Batteries
p. 387

emLED
IP 30/40 *p. 379–383*

Pleiad emergency box
IP 20 *p. 388*

CPS
p. 389

exLED
IP 20/40 *p. 384–386*

The performance of emergency lighting systems is specified in the standard EN 1838. In the standard, requirements are described for different environments and application areas, evacuation routes, anti-panic lighting and the lighting of high-risk areas.

Evacuation routes

An evacuation route requires at least 1 lx at the floor in the centre of the evacuation route and 0.5 lx in the surrounding area. Changes in direction and/or stairs need to be highlighted with an increased lighting level. Stairways should also be illuminated. In places where rescue equipment is located e.g. fire extinguishers, alarm buttons or first-aid cabinets, the lighting requirement increases to 5 lx.

The ratio of high to low lighting levels should be a maximum of 40:1. Therefore it is unsuitable to use a few strong light-points as emergency lighting in an evacuation route.

Normally, the lighting requirements necessary for an evacuation route cannot rely solely on exit signs. Often a combination of exit signs and correctly placed emergency luminaires is needed with suitable luminous flux in emergency mode.

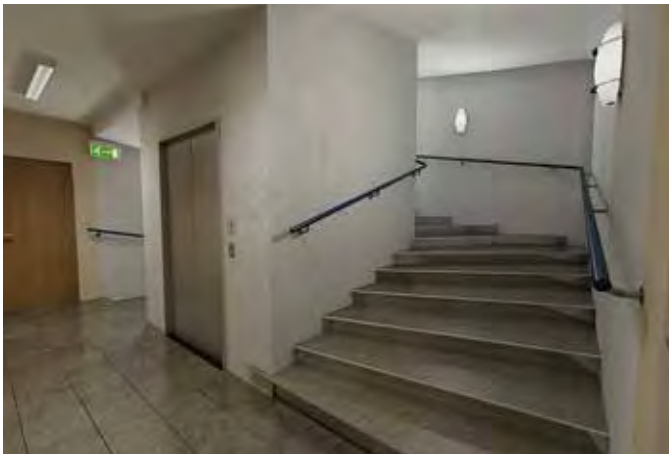
Open areas/anti-panic lighting

Anti-panic emergency lighting is intended to make it easier for people in the premises to find an evacuation route. A lighting level of at least 0.5 lx is required in such areas. Here too the ratio between highest and lowest lighting level must not be greater than 40:1.

High-risk areas

The high-risk area requires considerably more light in emergency mode than evacuation routes and anti-panic areas. The requirement is at least 15 lx or 10 % of the lighting level normally required for the location. The ratio between the highest and lowest lighting level should be a maximum of 10:1. When 1500 lx is required for normal operation on the task area, the lighting level in emergency mode must be at least 150 lx.

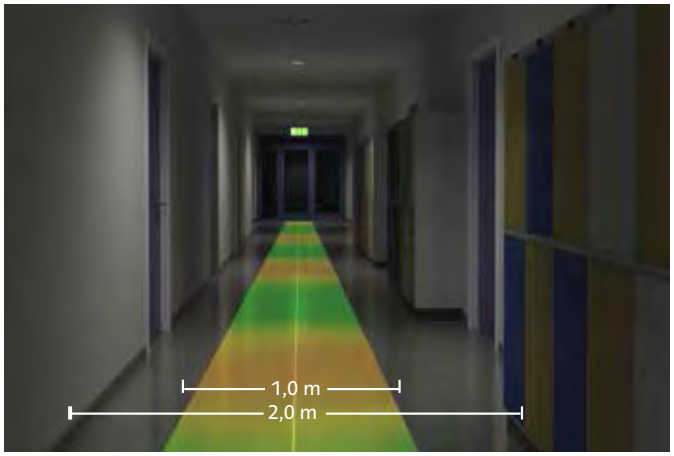
The reason that the requirements are relatively high for this area is that dangerous processes, e.g. industrial robots, must be turned off correctly before rescue personnel can enter the area.

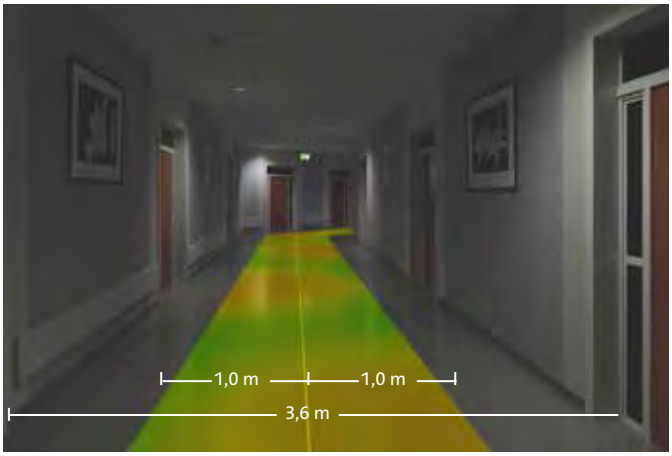


Evacuation routes.

Open area.

High-risk area.





Narrow evacuation route

Evacuation routes up to 2 m wide require horizontal lighting of at least 1 lx along the centre line. Over the rest of the area, excluding a 0.5 m border at the edges, the minimum lighting level should be ≥ 0.5 lx.

The ratio between highest and lowest lighting levels should not exceed 40:1.

When light planning, a "wall zone" can be defined for the calculations, taking into account shadows and obstacles in the form of book shelves, furniture, etc. In a corridor, for example, values do not need to be stated in this wall zone area and the lighting level can be planned as low as 0 lx.

The planning shows that we have at least 1 lx in the centre of the evacuation route (centre line) which corresponds with the requirements in EN 1838.

When planning emergency lighting, the calculation grid must be defined as having 0.2 m between each calculation point.

Wide evacuation route

Wider evacuation routes are best treated as several 2 m wide evacuation routes running parallel, all demanding 1 lx in the centreline and at least 0.5 lx as the minimum lighting level.

Alternatively, a wider evacuation route can be treated as an open area and be provided with anti-panic lighting where the requirement is ≥ 0.5 and the ratio between highest and lowest does not exceed 40:1. See the section about Open areas.

The planning shows that we have at least 1 lx in the centre of each evacuation route, which corresponds with the requirements in EN 1838.

When planning emergency lighting, the calculation grid must be defined as having 0.2 m between each calculation point.

Decentralised emergency lighting system

In a decentralised emergency lighting system, the back-up power is directly placed at the points of use, therefore each emergency lighting unit is provided with its own emergency lighting electronics and a rechargeable battery. The advantage of such a system is that the emergency lighting luminaires are independent of each other and requires neither complicated installations nor the use of fireproof cabling. A disadvantage is that the maintenance costs may be somewhat higher, since it requires servicing in more places instead of a single, centrally placed unit.

The principle of a decentralised (self-contained) emergency lighting luminaire is to convert the existing ballast and lamp to operate under emergency conditions. This consists of a drive unit for the light source, a switch between normal and emergency mode and a battery charger. The parts are integrated into one unit.

During normal operation, when there is access to the mains, the light sources are operated by the normal ballast and the job of the emergency lighting electronics is to ensure that the battery remains well charged.

In emergency mode, i.e. a power failure, the normal ballast is automatically switched over from the circuit and the light source operation is taken over by the emergency lighting electronics.

When the mains power is restored, the circuit automatically switches back to the normal setting. With modern electronics, this switching happens with a short delay (0.5 sec) so that the HF ballast does not receive voltage before the lamp circuit has time to be restored 100 %. If the switching happens too quickly, the HF ballast's monitoring circuit may detect that the fluorescent tube circuit is faulty and go into the standby setting to protect itself. The majority of our HF luminaires can have an integrated emergency lighting function. Since some emergency lighting components, for example batteries, are sensitive to temperature the physical solution varies for each luminaire. Some luminaires require the battery or both the battery and the emergency lighting electronics to be moved outside the luminaire and placed in a separate box (battery and emergency lighting box). For functional reasons, an emergency lighting box containing electronics may not be placed further away from the luminaire than 0.5 m. If the lamp cables become too long, the HF ballast's function is affected or may not work in the emergency lighting mode. The battery box, however, can be placed up to 1 m from the luminaire. The distance may not be greater than 1 m due to the requirements in the current product standard (EN 60598-2-22).

A decentralised emergency lighting luminaire should normally be connected to the mains using a 4-core cable (protective earth, neutral, charge and ignition phase). These cables must also be insulated for 230 V and be considered as mains connected from an installation perspective.

Decentralised emergency lighting luminaires, i.e. luminaires with integrated or closely positioned emergency lighting electronics and batteries, are suitable for use in areas with normal room temperature. Certain light sources may work at somewhat lower temperatures, for instance emLEDs light emitting diodes.

Centralised emergency lighting system

A centralised emergency lighting system consists of a central back-up power unit that starts in the event of a power failure. Parts of the normal lighting or specially intended emergency lighting e.g. an emLED-sc, are connected to the unit.

In rooms where luminaires are placed up high, a centralised emergency lighting system is often preferable. With a decentralised system, the luminous flux is often not sufficient as the light source in such a system is operated with greatly reduced effect. With a central solution there is almost the same luminous flux in emergency mode and in normal operation, and furthermore the risk of difficult battery changes is avoided. Even in high risk areas, where higher lighting levels are important, a central emergency lighting system often works better than a decentralised one.

Centralised emergency lighting systems also work well in cold areas or outdoors, assuming that the central emergency lighting unit is placed at normal room temperature (indoors).

The standard EN 62034 states the minimum requirements for how an automatic test system should work. The Autotest IV self-test system, which Fagerhult can offer in the majority of products, fulfils the requirements in this standard.

The Autotest IV system builds on decentralised intelligence, i.e. emergency lighting units in the system work entirely independently, both of each other and of a centrally monitored system.

Automatic test checks that:

- There is a connection to the mains supply.
- The battery is connected to the electronic unit.
- The battery has sufficient capacity.
- The battery charge is working.
- The light source for emergency lighting is intact.
- The electronic components are working fully and that the emergency lighting circuits themselves are intact.

Installation test

Autotest IV conducts this test automatically as soon as the system is connected to the mains and the battery has been fully charged, which takes 24 hours.

During the test, the installation is placed into emergency mode during its full indicated operating time i.e. one or three hours depending on the choice of product. Then the battery is recharged for 24 hours. Once this process has been completed, and no faults have been indicated, the installation can be put into use.

Monthly test

Each month a shorter function test is carried out which takes 30 seconds.

Annual test

The annual test performs a similar undertaking to the installation test. This is the test where any maintenance requirements of the emergency lighting facility is normally discovered.

Displaying status – status diode

Emergency lighting products are equipped with a two colour LED which switches between green and red light depending on the actual status, as indicated in the chart below. Faults are also indicated via a built-in acoustic signal every 35 minutes (not connected with a DALI connection).

Reset – resetting the self-test system

When the fault has been rectified, the test system must be reset to the normal setting by switching off the mains supply twice within 5 seconds. An automatic short function test is then made. The system can also be reset via a DALI command so the mains is not switched off.

There are two versions of Autotest IV available:

One-way communication – potential free contact

The possibility to connect to an external master system via a potential free alarm contact.

Two-way communication – DALI

Communication via DALI protocol. The system is either connected to a separate DALI panel (e.g. e-touchBOX), to a central PC connected to e-touchPANEL or to a bigger system (e.g. winDIM@net).

Each emergency lighting luminaire in a DALI system receives its own unique address which means that a connected unit can easily be identified/named. Connected units can also be grouped, which makes it possible to carry out a selected test of certain emergency lighting luminaires, e.g. everything in a specific corridor. In such cases the building does not have to be evacuated in connection with the test.

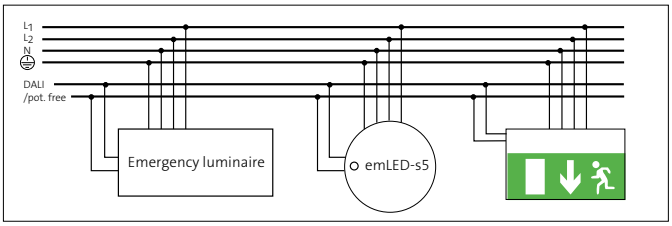
The DALI system provides duplex communication, meaning that unlike the system based on the potential free contact, the cause of fault is visible on the master system. This also applies when initiating the function test via DALI and resetting the test system. Tests are carried out according to an integrated calendar in the emergency lighting units or at time points indicated in the master system.

Disconnected master system – not connected

The emergency lighting units intended for external inspection via potential free contact or via DALI do not depend on having a master system connected or functioning. Necessary tests are still carried out according to the emergency lighting unit's own integrated calendar. This also applies to the DALI version.

Status	Short flash every 10 seconds	Slow flashing (0.5 Hz)	Fast flashing (2.5 Hz)
Normal operation	●		
Installation/annual test in progress		●	
Monthly/function test in progress			●
Battery function defect		●	
Light source defect			●

Emergency lighting products are equipped with a two colour LED which switches between green and red light depending on the actual status. The LED indicates the status according to the table. Faults are also indicated via a built-in acoustic signal every 35 minutes (not connected with a DALI connection). In addition, if the system is based on the use of potential free contacts or DALI communications, an alarm is also received on the monitoring system. The fault indication remains until the fault has been rectified.

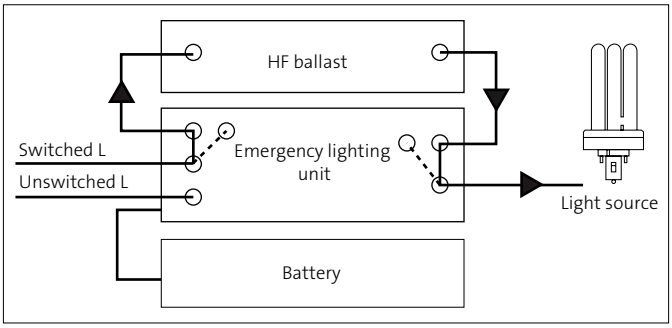


General connection diagram for emergency lighting.
1. Emergency lighting luminaires that work as a normal on/off luminaire in normal operation and as emergency lighting in emergency operation.
2. emLED-s5 which are only operated in emergency mode.
3. Exit signs for continuous operation.

Operation and light source, decentralised system

The light source, often a fluorescent tube, is operated in emergency mode by the emergency lighting unit instead of the normal ballast. The emergency lighting unit is connected between the normal ballast and the light source, and in the event of power failure or test, the emergency lighting unit automatically switches over to emergency mode.

Emergency mode produces a reduced light source output, normally between 5–30 % of the normal output. This puts great demands on the emergency lighting unit's method of operating the light source. Faulty operation can result in the fluorescent lamp wearing out when in use. When the mains supply is fully restored, the tube will not relight since the normal ballast will detect that the fluorescent tube is defective. This problem is eliminated by using a suitable emergency lighting unit.



Schematic construction of a decentralised emergency lighting luminaire.

Compact fluorescent lamp amalgams and T5 light sources
Compact fluorescent lamps using amalgam technology and T5 light sources are produced to give their greatest luminous flux at a higher ambient temperature than mercury type light sources. Compact light sources with amalgam are mainly used in downlights.

The construction of an amalgam light source requires specially adapted emergency lighting electronics. Until it has warmed up sufficiently, a cold amalgam light source needs increased output, referred to as a boost. After several minutes, the output can be reduced to normal levels. Similarly this requires that the temperature in the fluorescent tube cathodes is kept at an acceptable level. The emergency lighting electronics does this by regulating the current through the cathodes. To operate an amalgam light source without this means both dramatically shortened life-span and results in luminous flux not reaching acceptable and usable levels when in emergency mode.

The emergency lighting electronics for amalgam light sources are also suitable for operating mercury lamps.

The T5 light source has a design which, compared with T8 fluorescent lamps, requires better control of how the light source is operated and switched on. In order to minimise the wear on the light source, the emergency lighting electronics must be provided with a function that pre-heats the fluorescent lamp electrodes and which monitors that the light source is being operated within its specifications.

Battery type
With very few exceptions, emergency lighting luminaires use either NiCd or NiMH batteries. Due to their environmental impact, NiCd batteries should not be used unless absolutely necessary for the emergency lighting function. Additionally in a number of countries, an environmental tax is levied on NiCd.

If an emergency luminaire requires NiCd batteries for reasons of temperature, the lighting installation could be supplemented by an installation based on a combination of standard luminaires and a separate emLED emergency lighting system which uses NiMH batteries.

Such a system not only reduces the use of environmentally damaging substances, it also often means a better lighting installation, simpler and cheaper maintenance and increased personal safety.

Battery charging
To optimise the battery's life-span, the charging must be done in a way that is suited to the battery type. With faulty charging, the battery can quickly lose its capacity to store energy.

Changing batteries
The normal life-span for a battery is at least four years. This is assuming however that the product is being used correctly and that the stated tests are carried out. Batteries should be changed quickly as the emergency mode time becomes too short. Our emergency lighting products are designed for battery changes to be as simple as possible.

BLF
The Ballast Lumen Factor (BLF) is used to indicate the lamps lumen output under emergency conditions. Depending on the choice of light source, emergency lighting electronics and associated batteries, different combinations have a different BLF. BLF normally lies within the range 0.05–0.30, i.e. the light source shines in emergency mode with between 5–30 % of its nominal flux.

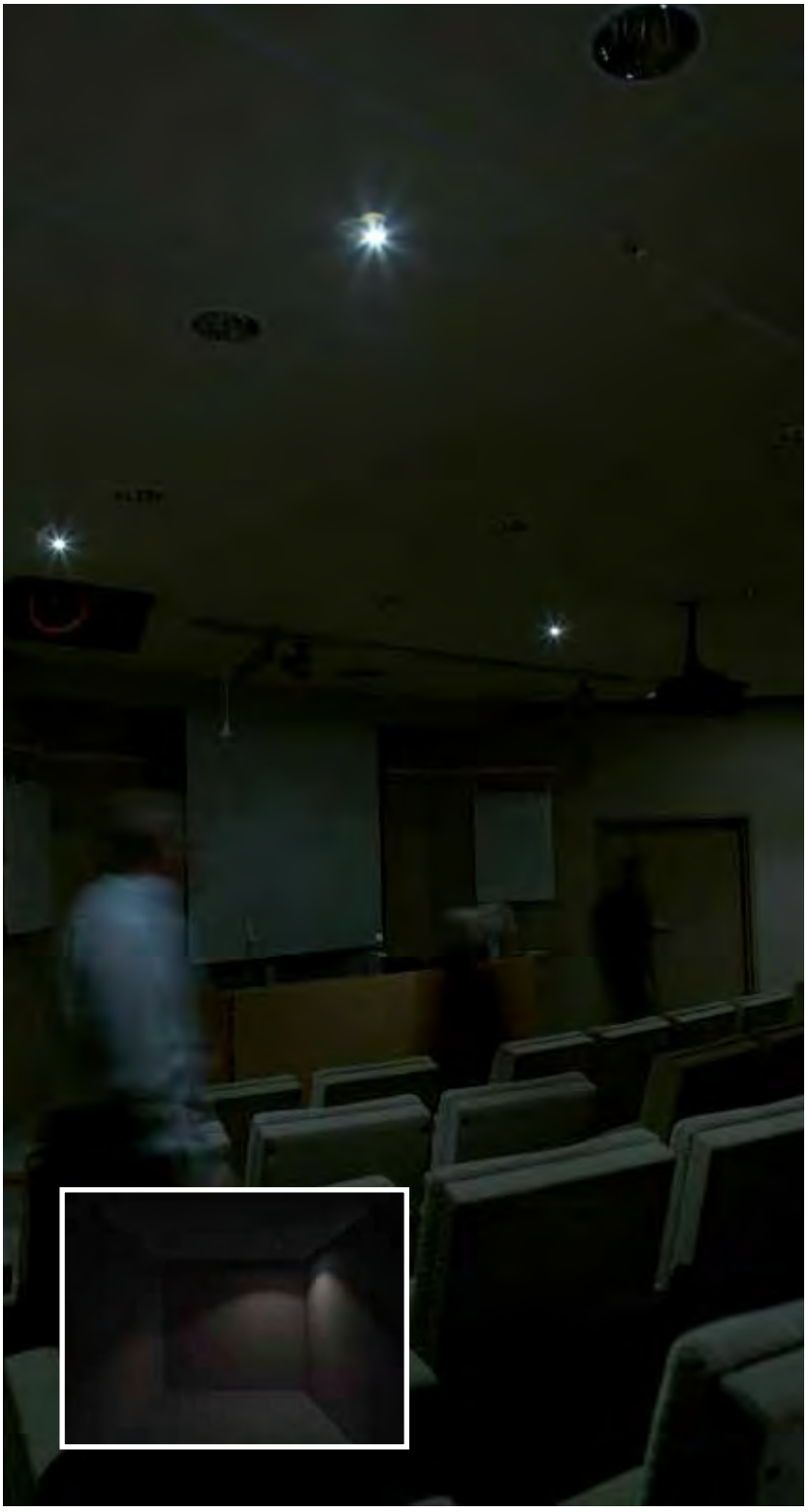
Luminaire construction – electronic life-span
From a construction perspective, emergency lighting electronics are very much like a standard HF ballast, such as being sensitive to high temperatures. When we develop emergency lighting luminaires, we apply the same policy as for products with other forms of electronics. We will have a margin of 5 °C to the reference temperature, t_c, stated by the electronics manufacturer, which is equivalent to 50,000 hours life-span with a maximum of 10 % decline. The temperature and other electrical safety is inspected by our authorised lighting laboratory.

Luminaires for centralised systems
For centralised systems, luminaires must be used that are suited to the voltage and curve form that the central unit generates in emergency mode. This is normally 220–230 V AC or the equivalent DC voltage and the majority of luminaires with HF ballasts can be connected to such installations. An inspection must be made however before the luminaires are energised.

In central systems, light sources with integrated starters may not be used, e.g. 2-pin compact fluorescent lamps. For central systems, we only recommend luminaires equipped with either HF ballasts, LEDs, incandescent lamps or halogen light sources.

emLED

Fagerhult's emLED concept builds on a high intensity LED which is only used for emergency lighting. The LED almost never wears out since it is only used in emergency mode and when the test sequences are run.



The concept increases personal safety considerably by almost eliminating the risk of the emergency light failing to work. In a traditional solution, where the same light source is used in normal operation and emergency mode, there is a risk that the light source may have burned out or ceased to operate when a crisis situation arises.

emLED exists as a stand-alone unit in several different designs. emLED-s4, -s5 and -sc – where the same unit is used for both surface mounted and recessed installation. emLED-µ is a unit for recessed installation where the ballast and batteries are concealed above the ceiling and only the LED visible. During a power failure the emLED-s4, -s5 and -µ are operated by integrated batteries and emLED-sc is operated by a centrally connected emergency lighting system.

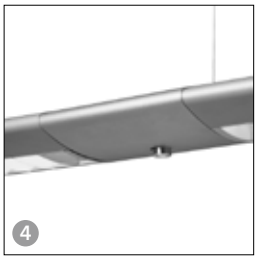
1. Battery – environment and life-span
The emLED uses nickelmetalhydride batteries (NiMH), which are more environmentally friendly than nickelcadmium batteries (NiCd) which have been, traditionally, the most common type of battery. Batteries in emergency lighting need to be replaced regularly. How often depends on several things e.g. how the battery charger is constructed, the ambient temperature, where the batteries sit and how the installation is generally maintained.

In an emLED the ambient temperature in the batteries is very low (< 35 °C), this guarantees a very good life-span. When the NiMH-battery in emLED is fully charged, the charger switches when necessary to maintenance charging mode, in this way the battery always has enough capacity.

2. Maintenance
All stand-alone models are produced with a strong focus on being able to carry out essential maintenance easily. Both battery and electronic units are positioned in separate places that are easy to remove without having to disrupt the voltage; all live parts are contact protected. The battery and electronic units can be easily removed and replaced. As all other units can be operational, personal safety is maintained at a high level even during maintenance. For the maintenance of a conventional installation, the premises must normally be evacuated.

3. Lighting technology
Two lenses are supplied for emLED-s4 and -s5. The first lens gives a symmetrical light distribution and the other a more extended and oval light distribution. The symmetrical lens is suited for the lighting of anti-panic areas and the oval lens for corridors. On emLED-sc and -µ there is a reflector around the LED that creates a broad light distribution.

All emLED's are developed to give an even light distribution with minimal glare. EN 1838 prescribes an uniformity of at least 1:40 for both anti-panic areas and corridors. An emLED system has an uniformity of 1:3 or better. Uniformity is an important property in an emergency lighting installation since the eye constantly tries to adapt to the prevailing light conditions. In a crisis situation, it may be difficult for the eye to distinguish between dark and light sufficiently quickly, which may cause problems to find the way out of a room or the risk of injury caused by an object that does not stand out sufficiently clearly.



4. emLED as an integrated solution
emLED is also available as an integrated solution in many of Fagerhults luminaires. The components – LED, drive unit and battery – require little space and therefore do not affect the luminaire's original design. Previously there have been problems using luminaires that are only for uplighting as emergency lighting luminaires and luminaires with certain light sources, e.g. metal halogen. With an integrated emLED it is possible to have even these with emergency lighting, with only a small space needed for the LED, driver and batteries. The integrated solution can also be used in T5 luminaires where a conventional solution is usual otherwise.

emLED®		98155, emLED-sc Centralised			98195/98196, emLED-µ			99102/99103, emLED -s4/-s5		
Evacuation routes > 1 lx		**Ceiling height (m)**			**Ceiling height (m)**			**Oval light pattern ceiling height (m)**		
Area	Execution	2.4	2.7	3.0	2.4	2.7	3.0	2.4	2.7	3.0
Corridor 3.0 m wide		**Spacing between emLED-sc**			**Spacing between emLED-µ**			**Spacing between emLED-s4/-s5**		
		6.0	6.2	6.2	6.5	6.2	6.2	15.0	15.0	13.3
		Spacing wall to first unit			**Spacing wall to first unit**			**Spacing wall to first unit**		
		2.9	2.8	2.8	2.4	2.4	2.4	3.3	3.1	3.3
Anti-panic > 0,5 lx		**Ceiling height (m)**			**Ceiling height (m)**			**Round light pattern ceiling height (m)**		
Area	Execution	2.4	2.7	3.0	2.4	2.7	3.0	2.4	2.7	3.0
Open area 10.0×10.0 m		**Spacing between emLED-sc**			**Spacing between emLED-µ**			**Antal emLED-s4/-s5**		
		5.4×5.4 4 pcs.	5.8×5.8 4 pcs.	6.0×6.0 4 pcs.	6.5×6.5 4 pcs.	7.0×7.0 4 pcs.	7.4×7.4 4 pcs.	2 pcs.	2 pcs.	2 pcs.
		Spacing wall to first unit			**Spacing wall to first unit**			**Spacing wall to first unit**		
		2.7	2.8	2.9	2.9	3.0	3.0	–	–	–
Anti-panic > 0,5 lx		**Ceiling height (m)**			**Ceiling height (m)**			**Round light pattern ceiling height (m)**		
Area	Execution	2.4	2.7	3.0	2.4	2.7	3.0	2.4	2.7	3.0
Open area 25.0×25.0 m		**Spacing between emLED-sc**			**Spacing between emLED-µ**			**Spacing between emLED-s4/-s5**		
		5.4×5.4 16 pcs.	5.9×5.9 16 pcs.	6.2×6.2 16 pcs.	6.5×6.5 16 pcs.	7.0×7.0 16 pcs.	7.5×7.5 16 pcs.	11.9×11.9 9 pcs.	13×13 9 pcs.	13.2×13.2 9 pcs.
		Spacing wall to first unit			**Spacing wall to first unit**			**Spacing wall to first unit**		
		2.7	2.8	2.9	2.9	3.0	3.0	2.7	2.4	1.8

emLED-s4, emLED-s5

Luminaire			
	kg	Monitoring via	
emLED-s4	0.3	Potential free contact	**99102**
emLED-s5	0.3	DALI	**99103**

Accessories	
Spare battery	**98152**
Assembly plate for soft tile ceiling	**41982**
Relay module	**98158**

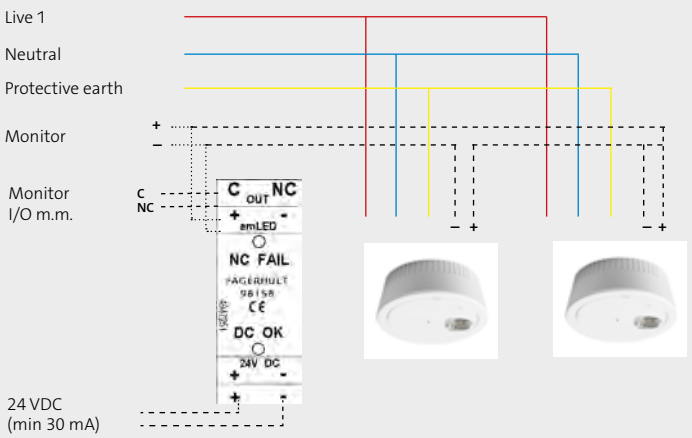
Installation
Optional either surface or recessed mounted. Also for ventilated areas. c/c between securing holes is optional 38, 55, 60, 67 and 78 mm. Recessed mounting requires a ceiling thickness of between 5 and 25 mm.

Connection
Phase, neutral conductor protective earth and monitoring cables. Equipped as standard with a 2-way output for the connection of the master system based on the detection of potential free contact (NC) or communication via DALI. All connections are gathered in the luminaire body in a snap-in, 6-way terminal block. The detachable lower section housing the electronics and battery where applicable is connected to the terminal block in the luminaire body with a "plug-in" connection. Through-wiring of 2.5 mm² cable is possible (all positions). 4×16 mm cable entries fitted with blanking grommets on the top. Strain relief for movable cables with recess mounting supplied.

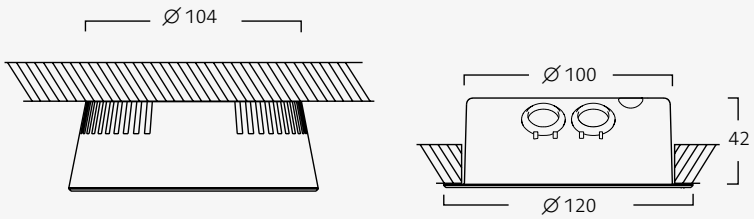
Design
For 230 V AC 50/60 Hz. Enclosure class IP 40, protection class I. Plastic parts of PC/ABS plastic. Spring clips for recess mounting made of stainless spring steel. NiMH battery and two-colour (green/red) status diodes. Equipped with self-test as standard (Autotest IV, see separate section) equivalent to standard EN 62034 and with the possibility of external monitoring either via a potential free contact or DALI dependent on product selection. Equipped with test button for manually starting the short function test.

Miscellaneous
Decentralised emergency light function, 3 hours operation in emergency lighting mode. White LED only works in emergency mode (non-maintained). The product conforms to the requirements set out in IEC 60068-2-6 test FC and IEC 60068-2- 64 test Fh and DNV Cert. Notes No.2.4 April 2006, with requirements including made on products intended for marine use or other environments where the risk of vibrations. Some monitoring systems based on the detection of potential free contact can be sensitive to signal purity. When a large number of 99102 emLED-s4 are connected to a monitoring system an emLED relay module, 98158, is required. The relay module is connected to an external voltage source, 2VV DC, and is designed to be mounted on DIN-rails and has a 1 module width.

Wiring diagram – overview



There is a relay module, 98158, used when a large number of 99102 emLED-s4 connected in monitoring systems. The relay module, should be connected to an external voltage source of 2 VV DC and is designed for mounting on DIN-rails and has a 1-module width.

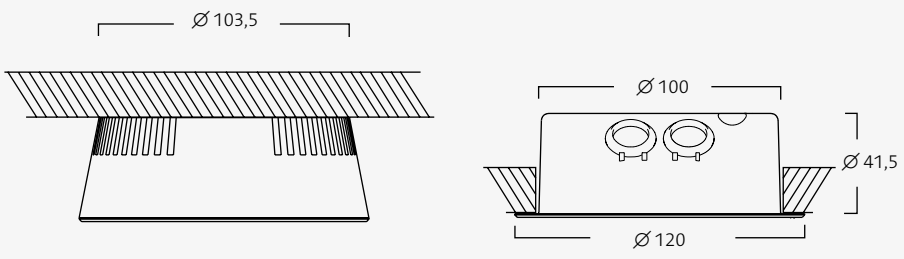


Luminaire				
	kg	V		
emLED-sc for central supply				
emLED-sc	0.2	198–264 V/50–60 Hz alt. 154–276 DC	**98155**

For central supply via e.g. an inverter or another type of uninterrupted power supply (UPS). Is not intended for continual operation.

Accessories	
Assembly plate for soft tile ceiling	**41982**

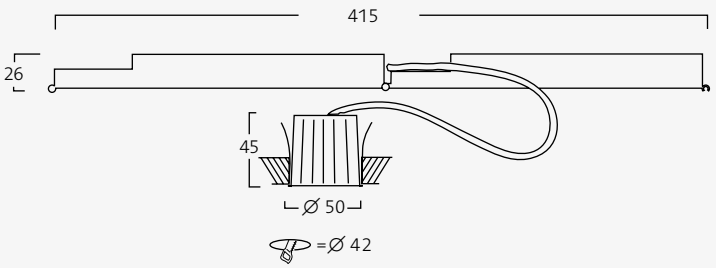
Installation
Optional, either surface or recess mounted in ventilated and unventilated areas. c/c between securing holes is optional 38, 55, 60, 67 and 78 mm. When recessed the product supports a ceiling thickness of between 5 and 25 mm.
Connection
Phase, neutral conductors and possibly a protective earth. The detachable lower section housing the electronics and battery is connected where applicable to the terminal block in the luminaire body with a "plug-in" connection. Through-wiring of 2.5 mm² cable possible (all positions). Cable entries fitted with blanking grommets on the top. Strain relief for movable cables with recess mounting supplied. Also prepared for a surface mounted mains cable. The luminaire is not intended for continual operation.
Design
Degree of protection IP 40 (with permanent installation), protection class II. Plastic parts of PC/ABS plastic. Recess mounting clips of stainless steel.
Miscellaneous
emLED-sc is vibration resistant. The product conforms to the requirements set out in IEC 60068-2-6 test FC and IEC 60068-2- 64 test FV.



Luminaire			
	kg	Monitoring via	
emLED-µ	0.3	Potential free contact	**98195**
emLED-µ	0.3	DALI	**98196**

Accessories	
Relay module	**98158**

Installation
Luminaire for recessed mounting in suspended ceilings. Also for ventilated areas. Hole diameter 42–44 mm. For ceiling thicknesses from 15 up to 35 mm. When the suspended ceiling is 15 mm thick, a minimum of 160 mm free space above the suspended ceiling is required.
Connection
Terminal block 4×2.5 mm² for connecting a fixed phase, neutral and possible control and monitoring system. Through-wiring is not possible.
Design
Lamp housing of aluminium that additionally acts as a heat conductor. Reflector and ballast housing of plastic. Stainless steel spring clips for recessed installation. NiMH-batteries and dual-coloured status LED. Articulated function also permits installation in confined areas where the distance between the suspended ceiling and the one piece ceiling is limited. The whole ballast and battery pack can be installed and removed through the hole made in the ceiling for the lamp housing. Equipped with self-test as standard (Autotest IV) equivalent to standard EN 62034 with the possibility of external supervision via either a potential free contact or DALI (dependent on product selection).
Light distribution
White high-efficiency LED, round beam. Lighting data available via the Fagerhult website or DIALux.
Miscellaneous
Decentralised emergency light function, 3 hours operation in emergency lighting mode. 230 V AC, protection class II, IP 30. Some monitoring systems based on the detection of potential free contact can be sensitive to signal purity. When a large number of 99102 emLED-s4 are connected to a monitoring system an emLED relay module, 98158, is required. The relay module is connected to an external voltage source, 2VV DC, and is designed to be mounted on DIN-rails and has a 1 module width.



The small size of the lamp housing gives a discreet installation. It is also designed with focus on the best cooling of the LED. Good cooling guarantees a good life span and a high luminous efficacy.

exLED

exLED is the collective name for Fagerhults family of emergency exit luminaires. Available in two models; exLED ViVa G2 and exLED 4, efficiency is the common denominator throughout the range, utilising the benefits of LED technology in a system which is easy to install and connect.

The luminaires are available in both centralised and decentralised designs with different sign options. The decentralised versions are equipped with an environmentally friendly battery type NiMH and for 3 hours of operation including integrated self-test with scheduled test cycles.

A potential-free alarm output is standard on the decentralised versions and exLED Viva G2 can also be supplied with monitoring via DALI.

exLED ViVa G2 lends itself to installations which require exit signs with a lower light level; the luminous flux can be lowered while maintaining the contrast.

Test

Decentralised luminaires always have a self-test with scheduled test cycles. A short test takes place once a week with a longer discharge test scheduled every three months. The shorter test is started manually with a short press on the luminaire's test button. A manual test resets previous data about test cycles.

exLED ViVa G2

Installation
Bracket for surface or wall mounting.

Connection
Cable entry from the top of the luminaire (1×14 mm and 1×12 mm) and side (1×12 mm). 3-way snap-in terminal block 3×2.5 mm². (5-way for DALI)

Design
Body and luminaire bracket of anodised aluminium. Acrylic sign. Two viewing distances, 25 mm with single sided and double sided sign and 35 m with single sided sign. 25 m, single sided has 9 LED (0.9 W) and double sided has 14 LED (1.4 W). 35 m, single sided has 15 LED (1.5 W). exLED ViVa G2 is available in decentralised design with potential free alarm output or DALI and in centralised design for external power supply. The decentralised luminaire has an integrated battery (NiMH) that powers the LEDs during emergency operation.

Miscellaneous
Sign symbols in accordance with ISO 7010. Vandal protection in clear PC. Weight 0.8–1.3kg, system power 0.4–1.5w, dependent upon product specification.

Luminaire

Potential free decentralised unit with self-test and integrated battery (3 h), 220–240 V, 50–60 Hz

	15 m	25 m	35 m
Left, single sided	**18840**	**18810**	**18816**
Right, single sided	**18841**	**18811**	**18817**
Up, single sided	**18842**	**18812**	**18818**
Down, single sided	**18843**	**18813**	**18819**
Left/right, double sided	**18844**	**18814**	
Down, double sided	**18845**	**18815**	

Decentralised DALI AT4 with self-test and integrated battery (3 h), 220–240 V, 50–60 Hz

	25 m	35 m
Left, single sided	**18830**	**18836**
Right, single sided	**18831**	**18837**
Up, single sided	**18832**	**18838**
Down, single sided	**18833**	**18839**
Left/right, double sided	**18834**	
Down, double sided	**18835**	

Centralised unit for external supply, 220–240 V, 50–60 Hz

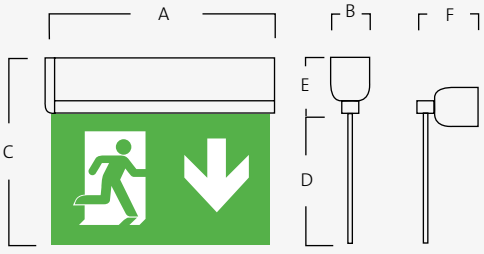
	15 m	25 m	35 m
Left, single sided	**18846**	**18820**	**18826**
Right, single sided	**18847**	**18821**	**18827**
Up, single sided	**18848**	**18822**	**18828**
Down, single sided	**18849**	**18823**	**18829**
Left/right, double sided	**18850**	**18824**	
Down, double sided	**18851**	**18825**	

Accessories

Tubular pendant 800 mm	**99084**
Flag bracket (for luminaire 15 m)	**99067**
Flag bracket (for luminaire 25 m)	**99085**
Flag bracket (for luminaire 35 m)	**99086**
Recess frame (for luminaire 15 m)	**99068**
Recess frame (for luminaire 25 m)	**99087**
Recess frame (for luminaire 35 m)	**99082**
Vandal guard (for luminaire 15 m)	**99069**
Vandal guard (for luminaire 25 m)	**99088**
Vandal guard (for luminaire 35 m)	**99089**
Spare sign, LED included, single sided, 15 m, left	**99484**
Spare sign, LED included, single sided, 15 m, right	**99485**
Spare sign, LED included, single sided, 15 m, up	**99486**
Spare sign, LED included, single sided, 15 m, down	**99487**
Spare sign, LED included, double sided, 15 m, left/right	**99488**
Spare sign, LED included, double sided, 15 m, down	**99489**
Spare sign, LED included, single sided, 25 m, left	**99490**
Spare sign, LED included, single sided, 25 m, right	**99491**
Spare sign, LED included, single sided, 25 m, up	**99492**
Spare sign, LED included, single sided, 25 m, down	**99493**
Spare sign, LED included, double sided, 25 m, left/right	**99494**
Spare sign, LED included, double sided, 25 m, down	**99495**
Spare sign, LED included, single sided, 35 m, left	**99496**
Spare sign, LED included, single sided, 35 m, right	**99497**
Spare sign, LED included, single sided, 35 m, up	**99498**
Spare sign, LED included, single sided, 35 m, down	**99499**
Spare battery, 3 h	**99083**

LED's luminaire status

Orange	Green	Red	
○	●	○	All OK
○	○	✳	Battery fault, flashes slowly
○	○	✳	LED error, flashes quickly
○	○	✳	Both battery and LED error, flashes 1+2 times
✳	○	○	Test in progress



mod.	A	B	C	D	E	F
15 m	172	45	182	100	80	67
25 m	257	45	212	130	80	67
35 m	331	45	257	175	80	67

The profile on the top edge of the sign guides it into the right position.

The same body is used for both wall and ceiling mounting.

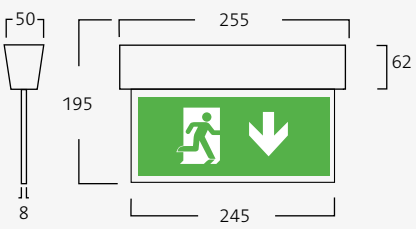
exLED 4

Luminaire	
Decentralised with self-test and integrated battery (3 h), potential free, 220–240 V, 50–60 Hz	
Single or double sided	**18800**
Decentralised with self-test and integrated battery (3 h), DALI, 220–240 V, 50–60 Hz	
Single or double sided	**18801**
Centralised, 220–240 V AC, 50–60 Hz	
Single or double sided	**18802**

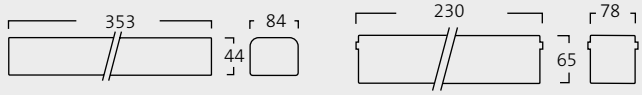
Accessories	
Spare battery 4.8 V 1150 mAh NiMH	**99250**
Vandal guard	**99088**
Flag bracket	**99251**
Recess frame	**99252**

Installation
Surface or wall mounting (bracket included). Flag mounting possible, see Accessories. Recessed via recess frame, see Accessories.
Connection
Cable entry from the top of the luminaire 1×14 mm and knock-out at each end 12 mm. 5 way terminal block.
Design
LED light source. Body of white extruded anodised aluminium (RAL 9010). End in white plastic. Wall bracket in metal (included), acrylic sign. Viewing distance 25 m. Both single and double sided. Pictogram with arrows for left, right, and straight ahead are included and can be chosen when mounted. Decentralised version with integrated battery NiMH, 3 hours. Decentralised with self-test (EN 62034) and potential free alarm plug or with DALI-communication. IP 40, class 1.
Miscellaneous
Through-lit sign. Pictogram in accordance with ISO 7010. System efficiency 2,7 W. Weight 1 kg. Vandal protection in clear PC as accessory (only for wall mounting).

Recess frame.



Pictogram is mounted from the side.



Battery boxes
Battery boxes are intended for use together with specially prepared emergency lighting luminaires. This solution is used when the battery, for space or temperature reasons, cannot be fitted in the luminaire. The battery box may be installed max. 1 m from the luminaire. Each box is fitted with a 2-way terminal block and strain relief. The boxes can be screwed to the suspended ceiling. The cable for the luminaire is not included. The design of the luminaire determines which box is suitable. Contact us before ordering.

Battery boxes			
Battery type	Cells	Dimensions	
Degree of protection IP 20			
NiMH 4 Ah	4	B	**98107**
NiMH 4 Ah	5	B	**98108**
NiMH 4 Ah	6	B	**98109**
Degree of protection IP 67			
NiMH 4 Ah	5	C	**98127**
NiMH 4 Ah	6	C	**98128**

Replacement batteries
When a battery wears out, it is very important that is replaced with one of the same performance to maintain the emergency lighting function. Connecting the wrong type of battery could also destroy the electronics of the emergency lighting. If you have any doubts, please contact us before ordering.

Battery		
Battery type	Cells	
NiCd 4 Ah	2	**98098**
NiCd 4 Ah	3	**98099**
NiMH 4 Ah	5	**98117**
NiMH 4 Ah	6	**98118**

IP20

Pleiad Emergency box

Emergency box				
Type	kg	L×B×H	Battery	
Emergency box, 1 operating time				
Standard	0.9	265×143×42	NiMH	**98014**
Self-test IV, Potential free	0.9	265×143×42	NiMH	**98015**
Self-test IV, DALI	0.9	265×143×42	NiMH	**98016**

Replacement battery to emergency box			
Replacement battery (1 h) to emergency box 98014, 98015, 98016	NiMH		**98028**

Emergency box
Fagerhult's emergency lighting for Pleiad contains both electronic parts and batteries (NiMH). The batteries have 1 or 3 hours operating time. The box is available in three different styles: A standard version without self-test, a potential free version with self-test and a DALI version with self-test. The self-test is in accordance with EN 62034. The boxes are intended to be recessed in unventilated or ventilated ceilings. The diode that indicates the charge/status is connected to the luminaire. The battery has its own space on the side of the box; protecting all heavy current components against unintentional when changing the batteries. The boxes are designed in class II, IP 20.

Connection
The box is supplied with a 15-way multi connector installed on 0.25 m wiring, for simple connection to the intended luminaire. All external connections are made in a separate space in the emergency box. The boxes are prepared for the connection of control cables that allow for dimming. The terminal block is equipped with integrated fuses for incoming phases (ignition and charging phases). If there is a fault in the emergency lighting luminaire, or faulty work in the installation, the fuses create greater safety. Boxes with self-test are also equipped with separate terminal blocks for connecting DALI or supervision systems based on the use of potential free contacts.

Miscellaneous
The emergency boxes require specially prepared luminaires with HF-standard or HF-dim, which are supplied with diodes for charging/status and equipped with the corresponding multi connector as the box. The box can be combined with luminaires with 13–57 W FSQ-E/FSM-E light sources. We recommend mercury type light sources, but amalgam light sources may also be used.

The 15-way multi-connector is connected to the specially adapted emergency lighting luminaire. This solution can reduce installation time and also guarantees that the connection between the box and luminaire is carried out correctly and safely.

PowerLine 5000 Digital.

Reserve power unit		
Max load W	Max cable distance	
PowerLine 5000 Digital		
150	200 m/1.5 mm²	**17955** [1]
300	200 m/2.5 mm²	**17956** [1]
600	200 m/2.5 mm²	**17957** [1]
1200	200 m/2.5 mm²	**17958** [1]
FlexLine 1000 Digital		
50	200 m/2.5 mm²	**17959** [1]

[1] *Burning time 60 min.*

FlexLine 1000 Digital.

Connection
Different light sources such as incandescent lamps and normal or compact fluorescent lamps with HF-ballasts or magnetic ballasts can be connected to the same unit. Cable installation is performed from underneath the enclosure. Terminal blocks are of a screw type and have 2 (FL1000), 6 (PL5110-30) and 12 (PL5140) independent input and outputs.

Design
PowerLine 5000 Digital
A series of MCU supervised reserve power units from Wagfors AB. The units are equipped with automatic testing according to EN 50172, are short-circuit-proof and have integrated load monitoring. Combined these functions create a high level of reliability, performance and security.
FlexLine 1000 Digital
A new model specially designed for small installations where the total output does not exceed 50 W. FL1000 offers the same functionality as the units in the PL5000 series, but its small size also permits placement in confined areas. The unit is also equipped with a dimming outlet (0–10 V), which means the connected luminaires can be run at a reduced output in emergency operations (NOTE: only in combination with dimmable HF-ballasts). This function results in the number of connected luminaires can be increased or that the operating time is extended.

Automatic system
In the event of a power failure the reserve power will automatically switch to battery operation. This takes place in a carefully controlled manner to avoid power surges that can cause damage to the connected load or reserve power unit.

Batteries
The reserve power unit is equipped with maintenance free lead batteries, which are precisely monitored to provide maximum life and capacity. The calculated battery life is 10–12 years under normal operating conditions and an ambient temperature below the recommended 25 °C.

Enclosure
Grey metal enclosure in RAL 7032 (PL5000) and grey plastic box ABS in RAL 7032 (FL1000).

Indication
There are 4 LEDs on the front of the unit that indicate the following functions:
SYSTEM – Unit in standby mode.
LINE – Input voltage.
CHARGE – Battery charging.
EMERGENCY – Battery operation.

Miscellaneous
The reserve power units are third party certified and correspond to the requirements set out in EN 50171.

Specifications	PowerLine 5000 Digital				FlexLine 1000 Digital
Reserve power unit, type	**5110 (17955)**	**5120 (17956)**	**5130 (17957)**	**5140 (17958)**	**1000 (17959)**
Dimension height mm	600	600	600	1200	300
width mm	500	500	600	800	300
depth mm	250	250	250	250	130
Degree of protection	IP 23	IP 23	IP 23	IP 23	IP 44
Weight incl. battery kg	37	51	70	152	10
Max load W	150	300	600	1200	50
Min load W	30	60	120	120	3
Weight battery kg	8	21	29	62	4
Light output	100 %	100 %	100 %	100 %	100 %
Burning time, min	> 60 min	> 60 min	> 60 min	> 60 min	> 60 min
Recharge time	< 15 hours	< 15 hours	< 15 hours	< 15 hours	< 15 hours
Max ambient temp.	25 °C	25 °C	25 °C	25 °C	25 °C


J
611 Tillby Kyrkby 4 min
Danderyds sjukhus
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613
695

Wall/Ceiling

Wall and ceiling luminaires in outdoor environments

Azur ceiling
p. 395

Robust wall/ceiling
p. 402–403

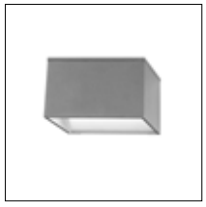
Rondo G2 Visual ceiling
p. 412

Stockholm 2 wall
p. 414–415

Azur wall
p. 394

Rondo G2 Power wall
p. 405

Rondo G2 Visual recessed
p. 410



Tall Lite wall
p. 418–419

Bianca wall/ceiling
p. 396–397

Rondo G2 Power Twin wall
p. 407

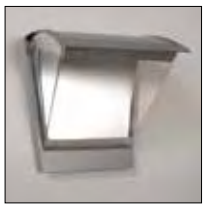
Rondo G2 Visual Twin wall
p. 408

Triton wall
p. 416–417

Cover wall/ceiling
p. 398–399

Rondo G2 Power ceiling
p. 411

Rondo G2 Visual wall
p. 406



Vik wall
p. 420–421

Glenn wall
p. 400–401

Rondo G2 Power recessed
p. 409

Azur

Designed by Tommy Govén

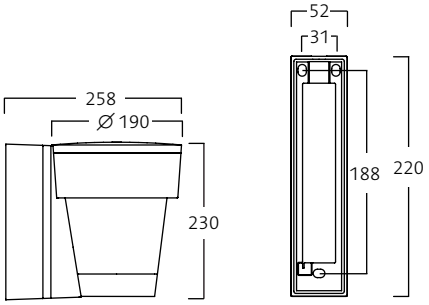
Azur is a luminaire family with a consistent, contemporary design. Bollard, post, ceiling and wall variations are all based on a vertical light for optimal lighting comfort. This indirect light, combined with opal surfaces, creates pleasant contrasts and a dynamic light setting in outdoor spaces.

Azur bollard, p. 425.

Azur post top, p. 445.

Azur

Installation
Luminaire for wall mounting.
Connection
Connection block 3 × 2,5 m². Wall bracket with three fastening points. Surface mounted cable via knockout. For connection from the rear, see dimension diagram. Through-wiring not possible.
Design
Body of cast aluminium with stainless steel details. Diffuser of UV-stabilised, clear polycarbonate with safety wire for re-lamping. Ballast integrated in the luminaire. Fortimo DLM.
Standard colour
Anthracite grey. Other colours are ordered with additional suffix code: Alu-grey (RAL 9006) -236.



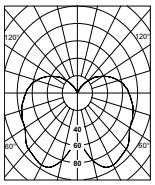
Luminaire					
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	**Anthracite grey**
15	3000	740	49	2.8	**300140**
14	4000	740	49	2.8	**300141**

For current information on output and luminous flux, please refer to our website.

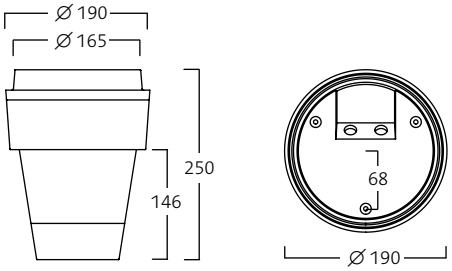
Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Installation
Luminaire for ceiling mounting.
Connection
Terminal block 3x2.5 mm². 3 fastening points. Surface mounted cable, 180°, via knockout. Through-wiring in luminaire. For connection from above, see dimension diagram.
Design
Body of cast aluminium with stainless steel details. Diffuser of UV stabilised, clear polycarbonate with safety wires for re-lamping. Ballast integrated in the luminaire.
Standard colour
Anthracite grey (Gris 900 Sablé). Other colours are ordered with additional suffix code:
Alu-grey (RAL 9006) -236.
Reflector
Reflector of anodised aluminium (for MT).



18 W, FSM-E




Surface mounted cable via knock-out.

Luminaire		
Electronic ballast		
FSM-E (GX24q1, 2)	kg	**Anthracite grey**
1×13	2.8	**300955**
1×18	2.8	**300956**
MT (GU6.5)		
1×20	2.8	**300957**

Light source		
W	*Socket*	*3000 K*
Compact fluorescent lamp FSM-E		
13	*GX24q1*	*81332*
18	*GX24q2*	*81327*
Metal halogen MT		
20	*GU6.5*	*81427*

For further information on Light source, please refer to the Technical Information chapter.

Bianca

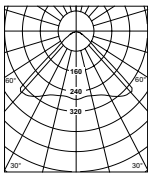
Designed by Tommy Govén

atelje Lyktan

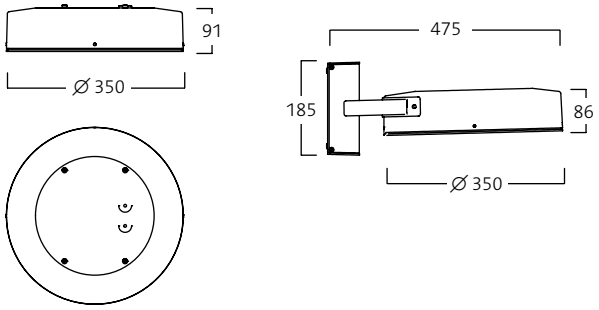
Bianca is a highly visual LED luminaire with a discreet and modern design language that easily blends into exterior environments. Thanks to its unique light properties, Bianca produces a very pleasant and glare-free light in wall, ceiling and post top variations.

Bianca post top, p. 447

Installation
Wall – luminaire for wall mounting via wall arm.
Surface – luminaire for surface mounted or recessed installation in ceilings. The recessed luminaire required a recessing box. 35–37 W is not recessable. Cut-out dimensions ∅ 370–380 mm.
Connection
Terminal block 5×2.5 mm² in luminaire housing. Accessory wall arm supplied with feed cable. Through-wiring possible. Wall arm is necessary and can be ordered separately.
Design
Luminaire housing in die-cast aluminium. Rotationally symmetrical lens with diffuser in circular prismatic acrylic glass.
Standard colour
Anthracite grey (RAL 9023) textured. Other colours with additional suffix code: Alu-grey (RAL 9006) matt textured -236.
Miscellaneous
Accessories will differ according to DALI or not.



2000 lm



Bianca wall

					On/off	DALI
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	**Anthracite grey**	**Anthracite grey**
13	3000	781	60	4.0	**204108-233**	**204112-233**
12	4000	781	65	4.0	**204109-233**	**204113-233**
24	3000	1420	59	4.0	**204110-233**	**204114-233**
22	4000	1420	65	4.0	**204111-233**	**204115-233**
37	3000	2130	58	4.0	**204141-233**	
35	4000	2130	61	4.0	**204142-233**	

For current information on output and luminous flux, please refer to our website.

Bianca ceiling

					On/off	DALI
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	**Anthracite grey**	**Anthracite grey**
13	3000	781	60	1.2	**204100-233**	**204104-233**
12	4000	781	65	1.2	**204101-233**	**204105-233**
24	3000	1420	59	1.2	**204102-233**	**204106-233**
22	4000	1420	65	1.2	**204103-233**	**204107-233**
37	3000	2130	58	1.2		**204149-233**
35	4000	2130	61	1.2		**204150-233**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Wall arm, 185×186×290 mm, On/off, anthracite grey	**204116-233**
Wall arm, 185×186×290 mm, DALI, anthracite grey	**204121-233**
Recessing box, 390×90 mm, anthracite grey	**204119-233**

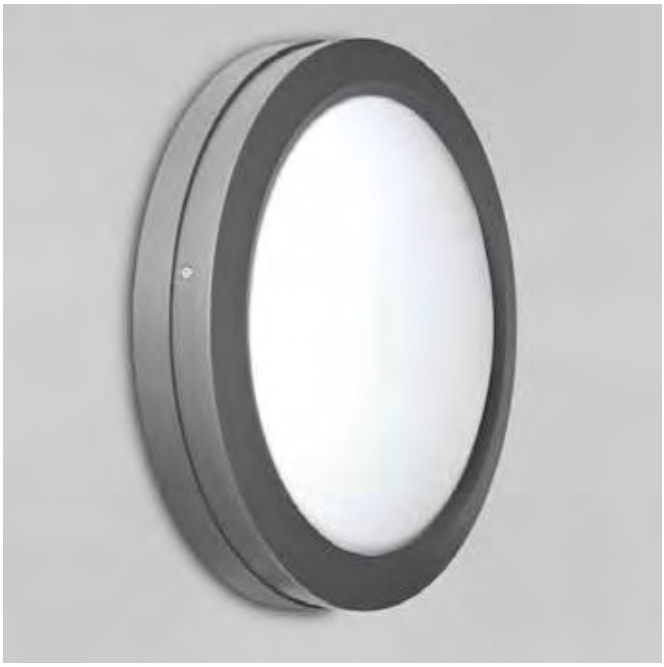
Cover

Designed by White Design – Torbjörn Eliasson and Andreas Sture

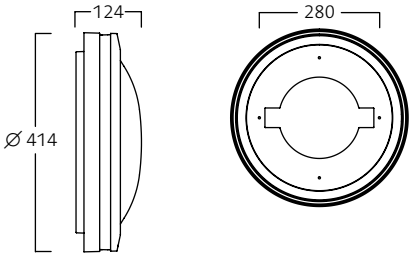
Cover is a wall and ceiling luminaire with a large opal surface. The luminaire provides a soft and comfortable luminance ideal for entrances to public spaces.

LED | IP65 | IK10

Cover
Wall/ceiling



Installation
Luminaire for wall and ceiling mounting.
Connection
Snap-in terminal block 3×2.5 mm². 4 fastening points. Connection from the rear. Surface mounted cable, 180°. Single phase through-wiring possible. Two Ø 16 mm cable entries (0° and 180°).
Design
Body of cast aluminium. Diffuser of UV stabilised polycarbonate or acrylic.
Standard colour
Alu-grey (RAL 9006).
Anthracite grey (Gris 900 Sablé).
White (RAL 9010).



Cover ceiling.

Cover LED, acrylic

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Alu-grey	Anthracite grey	White	
11	3000	650	64	5.1	**303402**	**303401**	**303403**	
20	3000	1200	60	5.1	**303407**	**303406**	**303408**	☐

For current information on output and luminous flux, please refer to our website.

Cover LED, PC

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Alu-grey	Anthracite grey	White	
11	3000	600	59	5.1	**303412**	**303411**	**303413**	
20	3000	1150	58	5.1	**303417**	**303416**	**303418**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐ **-438** 1–10 V

Add suffix code to the end of the luminaire part number to indicate required function.

Glenn

Designed by Olle Andersson

ateljé Lyktan

Glenn is a street light fixture with a modern twist. The family is a sequel to our Stockholm fixture, which was designed in 1990, following a similar principle where the secondary light from the housing allows the luminaire shape to be clearly defined in the evening.

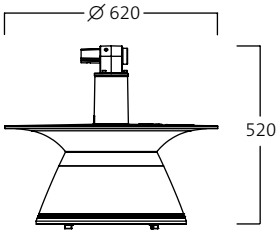
Glenn suitable for all types of urban environments and is available for installation on walls, posts and wires.

Glenn post, p. 455.

Glenn wire, p. 456.

Glenn
Wall

Installation
Luminaire for wall mounting with ∅ 48 mm wall arm.
Connection
Delivered with 10 m connection cable H05RN 3×1.5 mm² connection cable H05RN.
Design
Body cast in one piece and shade in aluminium. Bottom shade in injection moulded acrylic. Toughened plate glass.
Optics
Asymmetric street lighting optics with lenses.
Dimming
Night reduction technology is available with additional suffix code.
Standard colour
Anthracite grey (RAL 9023) and alu-grey (RAL 9006). Top shade available in any colour on request.
Accessories
See Accessories.



Luminaire

System, W		Luminous flux, lm	Efficiency, lm/W	kg	Anthracite grey/Alu-grey	
66	830	4400	67	16.5	**208050**	☐
66	740	5238	69	16.5	**208051**	☐
42	830	2700	64	16.5	**208056**	☐
42	740	3300	79	16.5	**208057**	☐
25	830	1600	64	16.5	**208062**	☐
25	740	2000	80	16.5	**208063**	☐

For furher information, see our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life time*	*Colour quality*
3000 K	*≥ 80*	*L_{80} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 70*	*L_{80} 50.000 h*	*MacAdam 5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

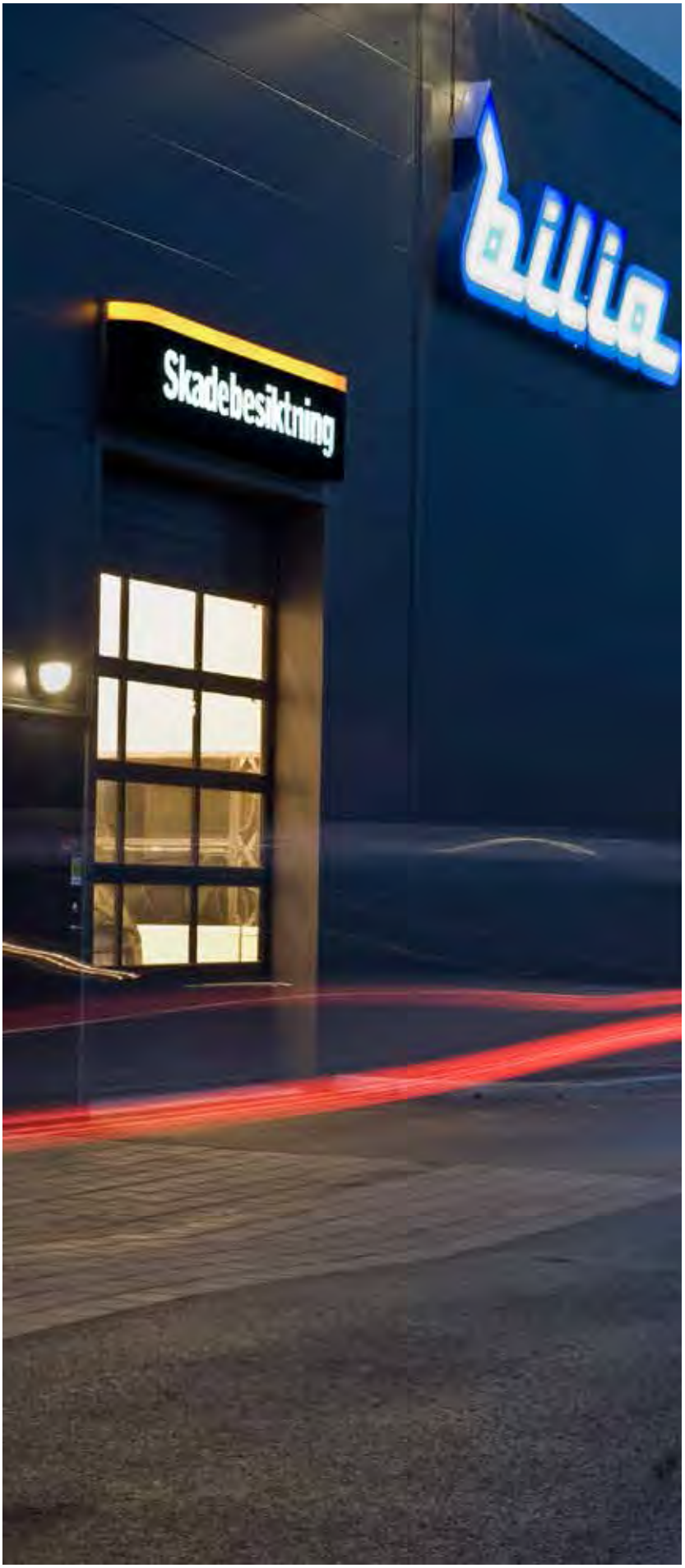
☐	**-466**	Night dimming, scene 1
☐	**-467**	Night dimming, scene 2
☐	**-468**	Night dimming, scene 3

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Wall arm ∅ 48 mm, L 1000 mm, H 260 mm	**205019-233**
Corner arm ∅ 48 mm, L 1000 mm, H 270 mm	**205188-233**

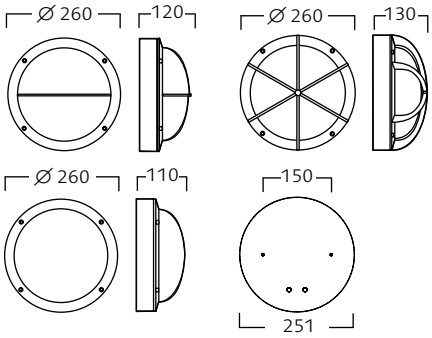
Robust



Classic and discrete luminaire for entrances and walkways. Available in three different styles and can be mounted on both wall and ceiling.

Robust Eyelid.

Installation
Luminaire for ceiling mounting.
Connection
Terminal block 3×4 mm².
Design
Body of aluminium and diffuser of opal UV stabilised polycarbonate.
Ballast integrated in the luminaire.
Surface mounted cable via knock-out (0°, 90°, 180° and 270°).
Standard colour
Alu-grey (RAL 9006).
Black (RAL 9005).
White (RAL 9010).
Accessories
See Accessories.



Robust Grill.

Robust Ring.

Luminaire									
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W		kg	**Alu-grey**	**Anthracite grey**	**Black**	**White**
13.5	3000	392	29	Eyelid	1.7	**300633**	**300630**	**300632**	**300631**
13.5	3000	671	50	Grill	1.6	**300637**	**300634**	**300636**	**300635**
13.5	3000	787	58	Ring	1.5	**300641**	**300638**	**300640**	**300639**

For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories	
Polycarbonate diffuser	**300862**

Rondo G2

Designed by Wilma Daemen

A timeless design makes Rondo a perfect choice for lighting around commercial buildings and school playgrounds.

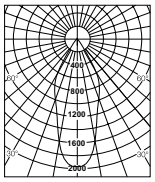
Rondo G2 has been developed exclusively for LED, with a focus on energy and visual comfort. The reflector is very efficient and the luminaire is available in two different versions – "Power" or "Visual". Power gives a uniform appearance while Visual adds another dimension through the frosted glass ring forming the lower part of the luminaire. In the family, we have also provided the luminaire with efficient cooling for LED.

The family contains an expansive mix of post tops, wall fixtures in two variants and ceiling luminaires for surface mounting as well as recessed. The post can also be equipped with both single as double housing.

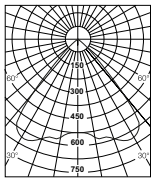
Rondo G2 post top, p. 458–460.

Rondo G2 Power
Wall

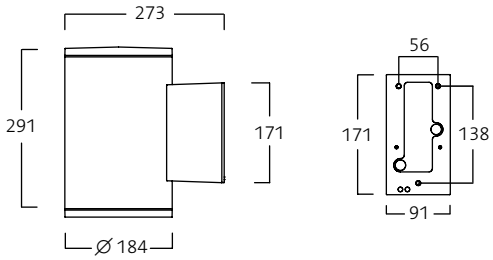
Installation
Luminaire for wall mounting.
Connection
Connection block 5 × 2.5 mm² in wall bracket. Through-wiring possible. Surface mounted cable from the top via knock-out. For connection from behind, see measurement drawing.
Design
Body and wall bracket of extruded aluminium. Glass of PMMA.
Standard colour
Anthracite grey (Gris 900 Sablé).
Order other colours using additional suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.



Medium beam



Wide beam




The luminaire can easily be hooked to the wall bracket during installation.

Luminaire							
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.		kg	**Anthracite grey**
17	3000	1340	79	Medium	DALI	4.4	**303090**
23	3000	2000	87	Wide	DALI	4.4	**303091**
23	3000	2000	87	Medium	DALI	4.4	**303092**
17	4000	1340	79	Medium	DALI	4.4	**303096**
23	4000	2000	87	Wide	DALI	4.4	**303116**
23	4000	2000	87	Medium	DALI	4.4	**303117**

For current information on output and luminous flux, please refer to our website.

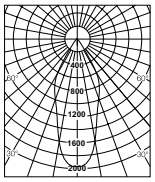
Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

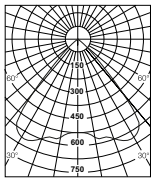
LED | IP65 | IK10

Rondo G2 Visual
Wall

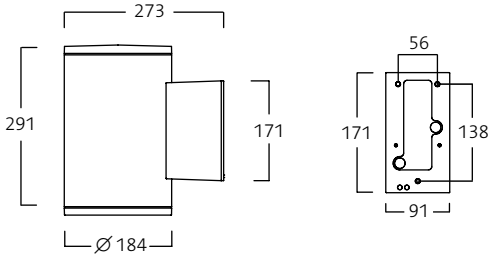
Installation
Luminaire for wall mounting.
Connection
Connection block 5 × 2.5 mm² in wall bracket. Through-wiring possible. Surface mounted cable from the top via knock-out. For connection from behind, see measurement drawing.
Design
Body and wall bracket of extruded aluminium. Partly screen printed acrylic glass.
Standard colour
Anthracite grey (Gris 900 Sablé).
Order other colours using additional suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.



Medium beam



Wide beam



Luminaire							
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.		kg	**Anthracite grey**
17	3000	1340	79	Medium	DALI	4.4	**303093**
23	3000	2000	87	Wide	DALI	4.4	**303094**
23	3000	2000	87	Medium	DALI	4.4	**303095**
17	4000	1340	79	Medium	DALI	4.4	**303097**
23	4000	2000	87	Wide	DALI	4.4	**303118**
23	4000	2000	87	Medium	DALI	4.4	**303119**

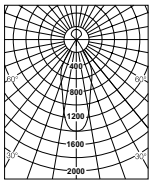
For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

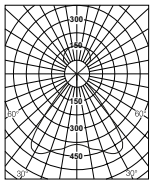
For further information on LEDs, please refer to the Technical Information chapter.

Rondo G2 Power Twin
Wall

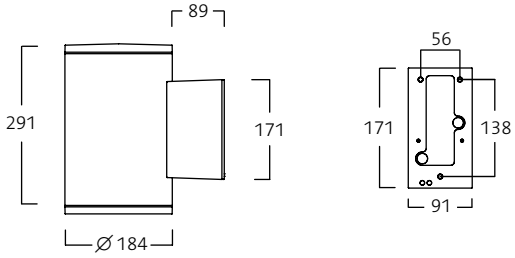
Installation
Luminaire for wall mounting.
Connection
Connection block 5 × 2.5 mm² in wall bracket. Through-wiring possible. Surface mounted cable from the top via knock-out. For connection from behind, see measurement drawing.
Design
Body and wall bracket of extruded aluminium. Glass of PMMA. Top side glass of Margard (T).
Standard colour
Anthracite grey (Gris 900 Sablé).
Order other colours using additional suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.
Miscellaneous
Predominately downlight with a small uplight distribution.



Medium beam



Wide beam



Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.		kg	Anthracite grey
31	3000	2140	69	Medium	DALI	4.4	**303098**
36	3000	2800	78	Wide	DALI	4.4	**303099**
36	3000	2800	78	Medium	DALI	4.4	**303106**
31	4000	2140	69	Medium	DALI	4.4	**303126**
36	4000	2800	78	Wide	DALI	4.4	**303136**
36	4000	2800	78	Medium	DALI	4.4	**303137**

For current information on output and luminous flux, please refer to our website.

Information LED

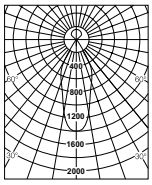
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

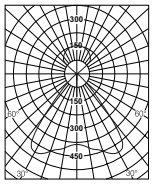
LED | IP65 | IK10

Rondo G2 Visual Twin
Wall

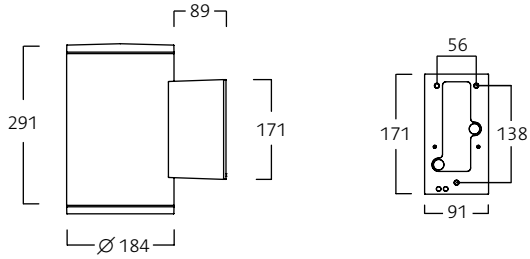
Installation
Luminaire for wall mounting.
Connection
Connection block 5 × 2.5 mm² in wall bracket. Through-wiring possible. Surface mounted cable from the top via knock-out. For connection from behind, see measurement drawing.
Design
Body and wall bracket of extruded aluminium. Partly screen printed acrylic glass. Top side glass of Margard (T).
Standard colour
Anthracite grey (Gris 900 Sablé).
Order other colours using additional suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.
Miscellaneous
Predominately downlight with a small uplight distribution.



Medium beam



Wide beam




Partly screen printed acrylic glass.

Luminaire							
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.		kg	**Anthracite grey**
31	3000	2140	69	Medium	DALI	4.4	**303107**
36	3000	2800	78	Wide	DALI	4.4	**303108**
36	3000	2800	78	Medium	DALI	4.4	**303109**
31	4000	2140	69	Medium	DALI	4.4	**303127**
36	4000	2800	78	Wide	DALI	4.4	**303138**
36	4000	2800	78	Medium	DALI	4.4	**303139**

For current information on output and luminous flux, please refer to our website.

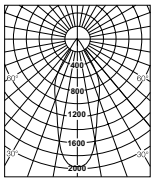
Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

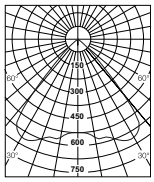
LED | IP65 | IK10

Rondo G2 Power
Recessed

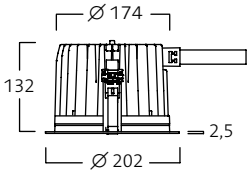
Installation
Luminaire for recessed mounting in the ceiling, thickness 1–50 mm.
Connection
Terminal block 5 × 2.5 mm². With external box for driver. Supplied with cable length (0.5 m). Through wiring possible.
Design
Body of extruded cast aluminium in black for better cooling. Glass of PMMA.
Standard colour
Anthracite grey (Gris 900 Sablé). Order other colours using additional suffic code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.

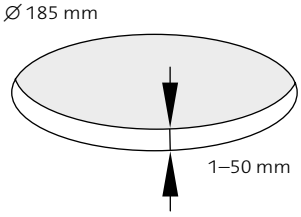


Medium beam



Wide beam






Remote driver for easy and flexible installation and enhanced thermal management.

Luminaire							
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.		kg	**Anthracite grey**
17	3000	1340	79	Medium	DALI	2.8	**303128**
23	3000	2000	87	Wide	DALI	2.8	**303129**
23	3000	2000	87	Medium	DALI	2.8	**303146**
23	4000	2000	87	Wide	DALI	2.8	**303156**
23	4000	2000	87	Medium	DALI	2.8	**303157**
17	4000	1340	79	Medium	DALI	2.8	**303166**

For current information on output and luminous flux, please refer to our website.

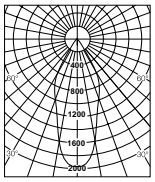
Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

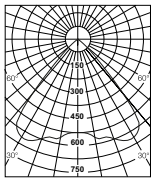
LED | IP65 | IK10

Rondo G2 Visual
Recessed

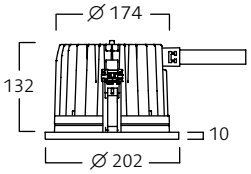
Installation
Luminaire for recessed mounting in the ceiling, thickness 1–50 mm.
Connection
Terminal block 5 × 2.5 mm². With external box for driverw. Supplied with cable length (0.5 m). Through wiring possible.
Design
Body of extruded cast aluminium in black for better cooling. Partly screen printed acrylic glass.
Standard colour
Anthracite grey (Gris 900 Sablé).
Order other colours using additional suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodiserad aluminium.

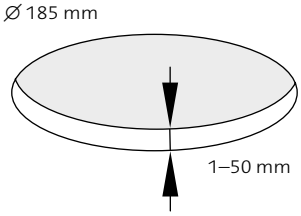


Medium beam



Wide beam





Luminaire							
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.		kg	**Anthracite grey**
17	3000	1340	79	Medium	DALI	2.8	**303147**
23	3000	2000	87	Wide	DALI	2.8	**303148**
23	3000	2000	87	Medium	DALI	2.8	**303149**
23	4000	2000	87	Wide	DALI	2.8	**303158**
23	4000	2000	87	Medium	DALI	2.8	**303159**
17	4000	1340	79	Medium	DALI	2.8	**303167**

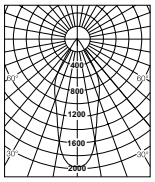
For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

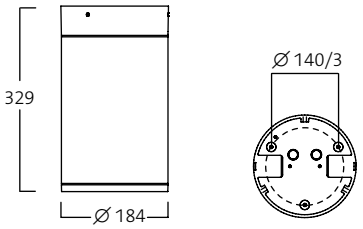
For further information on LEDs, please refer to the Technical Information chapter.

Rondo G2 Power
Ceiling

Installation
Luminaire for surface mounted ceiling installation.
Connection
Terminal block 3×4 mm².
Through-wiring possible, 2 entrances. Surface mounted cable 180° and from the ceiling.
Design
Body of extruded aluminium. Glass of PMMA (acrylic).
Standard colour
Anthracite grey (Gris 900 Sablé).
Order other colours using additional suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.



Medium beam | Wide beam



Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.		kg	Anthracite grey
23	4000	2000	87	Wide	DALI	4.0	**303176**
23	4000	2000	87	Medium	DALI	4.0	**303177**
17	3000	1340	79	Medium	DALI	4.0	**303216**
23	3000	3000	87	Wide	DALI	4.0	**303217**
23	3000	2000	87	Medium	DALI	4.0	**303218**
17	4000	1340	79	Medium	DALI	4.0	**303228**

For current information on output and luminous flux, please refer to our website.

Information LED

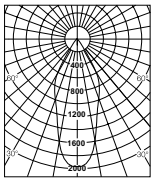
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

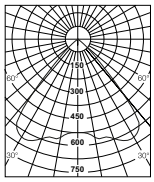
LED | IP65 | IK10

Rondo G2 Visual
Ceiling

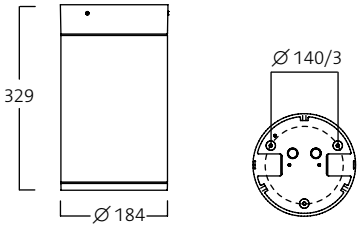
Installation
Luminaire for surface mounted ceiling installation.
Connection
Terminal block 3×4 mm².
Through-wiring possible 2 entrances. Surface mounted cable 180° and from the ceiling.
Design
Body of extruded anodised aluminium. Partly screen printed acrylic glass.
Standard colour
Anthracite grey. Order other colours using additional suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.



Medium beam



Wide beam




Easy to install.

Luminaire							
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.		kg	**Anthracite grey**
23	4000	2000	87	Wide	DALI	4.0	**303178**
23	4000	2000	87	Medium	DALI	4.0	**303179**
17	3000	1340	79	Medium	DALI	4.0	**303219**
23	3000	2000	87	Wide	DALI	4.0	**303226**
23	3000	2000	87	Medium	DALI	4.0	**303227**
17	4000	1340	79	Medium	DALI	4.0	**303229**

For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Rondo G2

Stockholm 2

Designed by Olle Andersson

Stockholm 2 is characterised by classic design. The luminaire body is illuminated, which emphasises the form even in the dark.

Stockholm 2 is a exterior luminaire and is suitable for cycle paths, footpaths, and parking facilities. Available in three different sizes for post top, wire cable and wall installation.

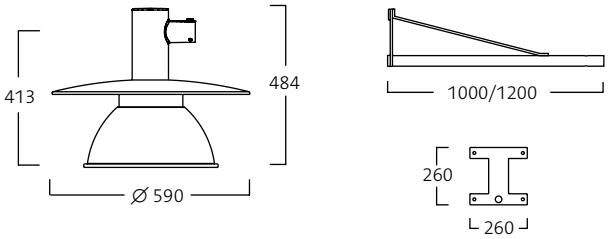
Stockholm 2 post top, p. 462.

Stockholm 2 wire, p. 463.

LED | IP65

Stockholm 2 LED
Wall

Installation
Luminaire for wall mounting with Ø 48 mm wall arm.
Connection
Terminal block, 3×2.5 mm².
Design
Luminaire top of die-cast aluminium. Aluminium shades. Sections between the shades are of opal acrylic glass. Toughened protective plate glass with quick-action catches.
Optics
Asymmetric street lighting optic with lenses.
Dimming
Night reduction technology is available with additional suffix code.
Standard colour
Black (RAL 9005)
Alu-grey (RAL 9006).
Accessories
See Accessories.
Miscellaneous
Possible to select different power / light output if needed. LED module is programmable from the factory. The luminaire is approved for ambient temperatures up to 15 °C.



Luminaire, street optics

System, W		Luminous flux, lm	Efficiency, lm/W	kg	Black/Alu-grey
66	830	4400	67	12.0	**208010**
66	740	5238	79	12.0	**208012**
42	830	2700	64	12.0	**208013**
42	740	3300	79	12.0	**208014**
29	830	1800	62	12.0	**208031**
29	740	2200	76	12.0	**208032**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{80}50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 70*	*L_{80}50.000 h*	*MacAdam 5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

-466	Night dimming, scene 1
-467	Night dimming, scene 2
-468	Night dimming, scene 3

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

Wall arm Ø 48 mm, L 1000 mm, H 260 mm, black	**205019**
Wall arm Ø 48 mm, L 1000 mm, H 260 mm, galvanized	**205019-228**

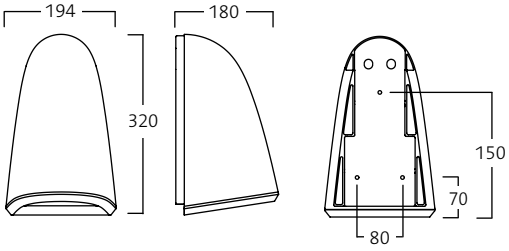
Triton

Designed by White Design – Torbjörn Eliasson and Andreas Sture

With its direct light distribution and exceptional efficiency, Triton is an excellent solutions for entrances to a building.

Equipped with LED and an effective light treatment Triton offers a safe and reassuring lit experience.

Installation
Luminaire for wall mounting.
Connection
3 fastening points. Surface mounted cable possible from above. Cable entry from the wall, see dimension diagram. Snap-in terminal block 3 × 2.5 mm². Through-wiring possible.
Design
Body of cast aluminium with stainless steel details. Toughened protective clear glass. Reflector of anodised aluminium. Re-lamping from below.
Reflector
Reflector of anodised aluminium.
Standard colour
Alu-grey (RAL 9006).
Anthracite grey (RAL 9006).



Easy system for re-lamping.

Luminaire						
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	**Alu-grey**	**Anthracite grey**
15	3000	858	57	4.9	**300895**	**300985**

For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Tall Lite

Designed by Jan and Hans Forsmark

atelje Lyktan

The evolution of the Corten steel Tall bollard which first appeared in the globally acclaimed Tree Hotel. The designers, Jan and Hans Forsmark, went back to the drawing board and created a small family that now included façade and wall luminaires.

Aluminium was selected as the material due to the scope to easily customise the colour choices. The distinct design characteristics and well-shielded light of the original have been transported to Tall Lite, which uses a fully recyclable material which can be powder coated in standard colours of ruby red, aluminium grey and anthracite grey.

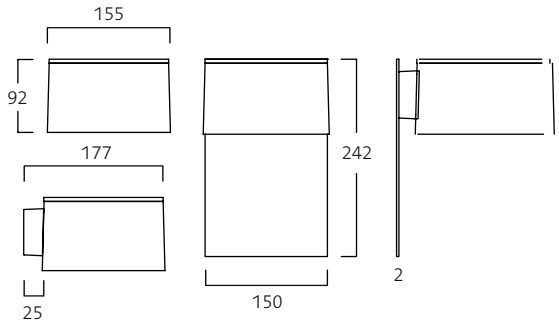
The wall version allows the same artistic expression to be used on façades and at ground level. There are also signboard accessories such as numerals and letters for entrances and doors

Tall Lite bollard, p. 430–431.

Tall Lite
Wall

Installation
Luminaire for wall mounting.
Connection
Terminal block 3×2.5 mm², through-wiring possible.
Design
Frame in cast aluminium. Protective glass in scrape-proof and UV-protected acrylic. Luminaire cover in 5 mm aluminium sheet.
Standard colour
Alu-grey (RAL 9006) structured.
Anthracite grey (RAL 9023) structured.
Ruby red (RAL 3003) structured.
Other colours on request.
Accessories
See Accessories.

Signboard for numerals and letters are available as an accessory.



Luminaire

System, W	Length	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Function	Colour	
8	155	3000	541	68	On/off	Red	**205385**
8	155	3000	541	68	On/off	Antracite grey	**205385-233**
8	155	3000	541	68	On/off	Alu-grey	**205385-236**
8	155	3000	541	68	DALI	Red	**205386**
8	155	3000	541	68	DALI	Antracite grey	**205386-233**
8	155	3000	541	68	DALI	Alu-grey	**205386-236**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3,5 SDCM*

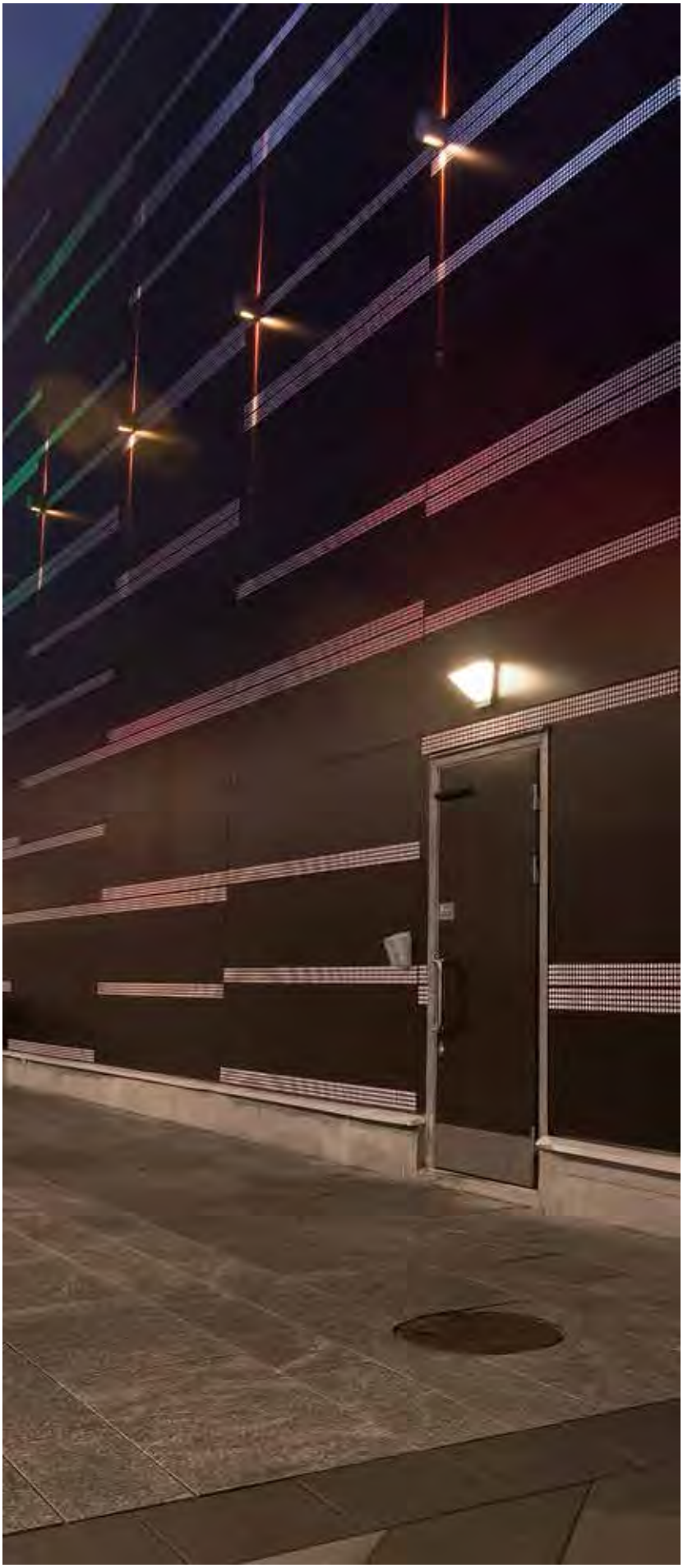
For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Signboard for numerals and letters 150 mm below luminaire, red	**205388**
Signboard for numerals and letters 150 mm below luminaire, antracite	**205388-233**
Signboard for numerals and letters 150 mm below luminaire, alu	**205388-236**
Numerals and letters*, H=60 mm, stainless steel	**205389**

** State on order which numerals and/or letters must be included. Numbers and letters A–D are offered as standard. Letters E–Z are available upon special request.*

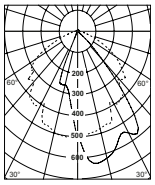
Vik



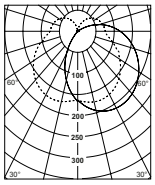
The wall luminaire Vik has a timeless design suitable for most environments. The opal diffuser creates a well balanced luminance on the wall. The clear shade on the offers a more direct light.

Vik is available in two sizes and with accessories such as sign plate for placement at the entrances to buildings.

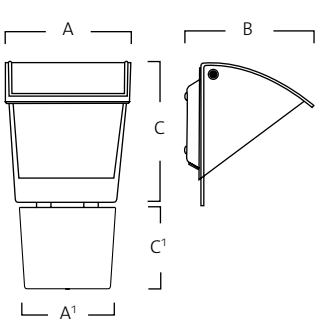
Installation
Luminaire for wall mounting.
Connection
Large version: terminal block 4×2.5 mm².
Small version: 3×2.5 mm².
Design
Body of aluminium. Diffuser of impact resistant opal acrylic.
Standard colour
Grey (NCS 6000).
Accessories
See Accessories.

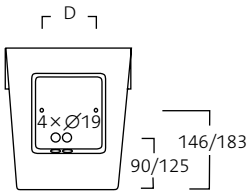


16 W, LED, clear shade



21 W, LED, opal shade





A	B	C	D	A¹	C¹
220	225	244	105	171	120
280	287	310	135	218	120


Vik LED with clear shade.

Luminaire							
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W			kg	**Grey**
16	3000	364	23	Small	Opal shade	2.2	**65620**
21	3000	689	33	Small	Opal shade	2.2	**65621**
16	3000	1006	63	Small	Clear shade	2.2	**65623**
21	3000	1862	89	Small	Clear shade	2.2	**65624**
33	3000	2761	84	Large	Clear shade	4.3	**65626**

For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories	
Opal shade, large	**90039**
Opal shade, small	**90040**
Plate, small	**90041**
Clear shade, large	**90042**
Clear shade, small	**90043**
Plate, large	**90046**
Corner bracket	**90292**

Bollards

Bollards for lighting pathways, entrances and parks

Azur

p. 424–425

Linx

p. 426–427

Tall

p. 428–429

Tall Lite

p. 430–431

Azur

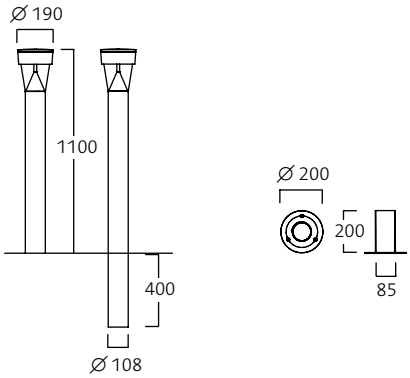
Designed by Tommy Govén

Azur is a luminaire family with a consistent, contemporary design. Bollard, post, ceiling and wall variations are all based on a vertical light for optimal lighting comfort. This indirect light, combined with opal surfaces, creates pleasant contrasts and a dynamic light setting in outdoor spaces.

Azur wall, p. 394.

Azur ceiling, p. 395.

Azur post top, p. 445.



Installation
Luminaire for assembly on foundations. Can also be cast in-situ or mounted on ground plate. Supplement with accessories.
Connection
Terminal block 4×10 mm² + earth to flexible conductors. Terminal block 4×16 mm² + earth to solid or stranded conductors.
Design
Body of cast aluminium with stainless steel details. Shade of UV-stabilised, clear polycarbonate (IK10). Re-lamping from the top. The driver is in the post and fuse insert is integrated in the luminaire.
Standard colour
Anthracite grey (Gris 900 Sablé). Other colours are ordered with additional suffix codes:
Alu-grey (RAL 9006) -236.
Reflector
Reflector of anodised aluminium.
Accessories
Two bollard post options 300944 (1270 mm) and 300945 (870 mm). Ground plate ordered separately.
Miscellaneous
Both the bollard post and luminaire head are required for a complete luminaire.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	Anthracite grey
21	3500	536	26	3.5	**300946**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3500 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Anchor fixing for in-situ-casting Ø 108 mm.	**300608**
Mounting tube for bollard for Ø 108 foundation and in-situ casting (1270 mm)	**300944**
For ground plate (870 mm)	**300945**
Bollard ground plate, Ø 200 h 200 mm.	**300950**

Linx

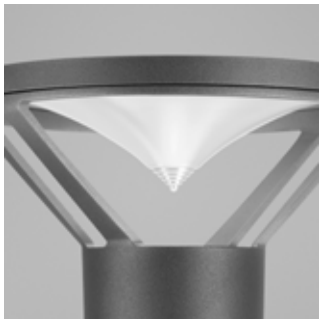
Designed by Olle Lundberg

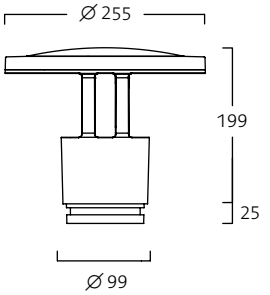
Linx, designed by Olle Lundberg, is based on LED technology complimented with stylish appearance for a truly contemporary expression. Blending seamlessly into the modern landscape Linx also creates an exciting contrast against older and varied architecture.

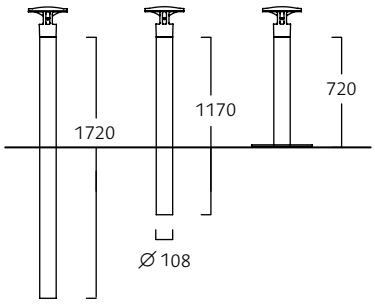
The bollard emits an indirect, shaded light via a semi-diffused reflector. The luminaire is ideal along walkways where symmetric, well-shaded light is strived for.

Linx
Bollard

Installation
Luminaire for assembly on Ø 108 mm foundations, cast in-situ or using a mounting plate.
Connection
Delivered with external driver and fuse insert (class II, IP 44, terminal block 4×16 mm²).
Design
Body of cast aluminium. Reflector in aluminium. Clear protection glass. Stainless steel trim ring around the cover glass. The LED module is recessed in the reflector to avoid glare.
Standard colour
Alu-grey (RAL 9006). Order other colours using additional suffix code: Anthracite grey (RAL 9023) -233. Graphite black (RAL 7016) -337. Other colours on request.







Luminaire						
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W		kg	**Alu-grey**
22	3000	1300	59	On/off	8.8	**209750-236**
22	3000	1300	59	On/off	9.9	**209751-236**
22	3000	1300	59	On/off	9.9	**209752-236**
22	3000	1300	59	DALI	8.8	**209753-236**
22	3000	1300	59	DALI	9.9	**209754-236**
22	3000	1300	59	DALI	9.9	**209755-236**

For current information on output and luminous flux, please refer to our website.

Information LED		
Colour temp. (CCT)	*Ra (CRI)*	*Colour quality*
3000 K	*≥ 80*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Tall

Designed by Jan and Hans Forsmark

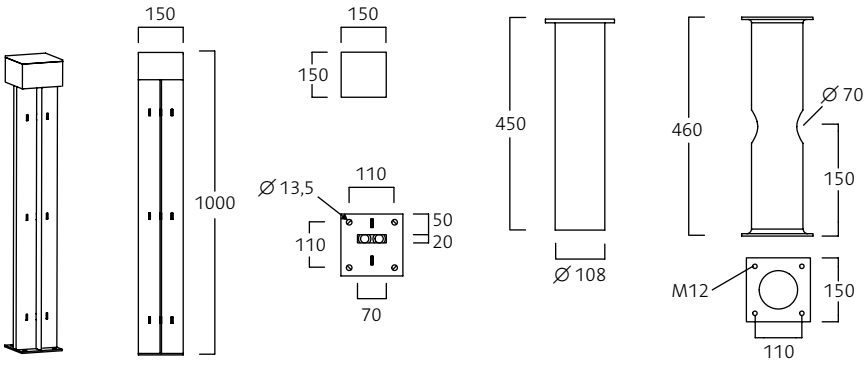
atelje Lyktan

Tall, designed by the brothers Jan and Hans Forsmark, derives its name from the magical pine forests in the north of Sweden, where the bollard was first installed as part of the lighting at the famous Treehotel. Manufactured in Corteen steel the luminaire develops a stable rust-like appearance if left exposed to the weather over a number of years.

Tall has a cruciform stem, crowned at the top by three LED light sources, diffused by the cuboid peak. Two LEDs are placed on the front side of the luminaire and one on the back side. This allows Talls to spread its glare-free light 360 degrees. The light also illuminates the frame of corten steel for good optical guidance.

Tall is ideal for paths and walkways in transitional areas.

Installation
Luminaire for installation on foundation Ø 108 mm or in-situ casting with 4 bolts (M12).
Connection
Cable (max. Ø 13 mm) connects in housing (terminal block 5 × 2.5 mm² in canopy), through-wiring possible. Strain relief for cable in housing.
Design
Frame in Corten steel. Protective glass in scrape-proof and UV-protected PC.
Standard colour
Corten steel. Turns from steel coloured to rusty.
Accessories
See Accessories.



Luminaire					
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	**Corten steel**
3 × 6	3000	450	23	21.2	**205380**

For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories	
For Ø 108 mm foundation	**205381**
For in-situ casting	**205382**

Tall Lite

Designed by Jan and Hans Forsmark

atelje Lyktan

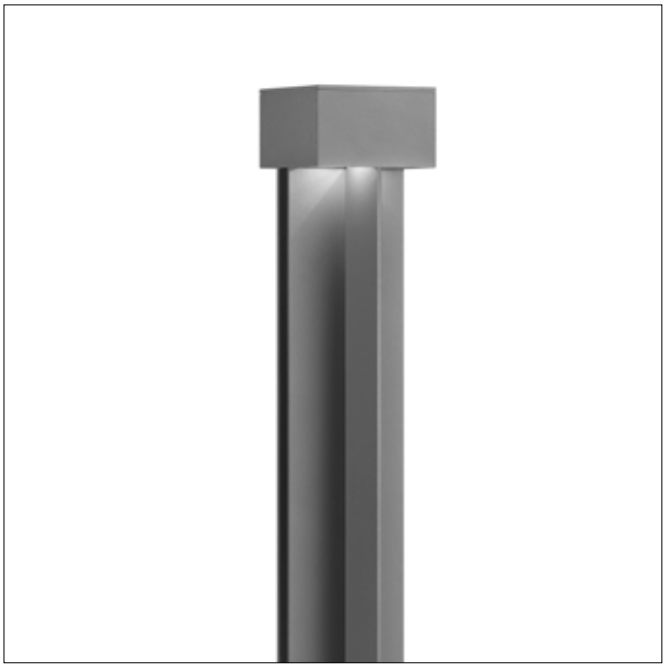
The evolution of the Corten steel Tall bollard which first appeared in the globally acclaimed Tree Hotel. The designers, Jan and Hans Forsmark, went back to the drawing board and created a small family that now included façade and wall luminaires.

Aluminium was selected as the material due to the scope to easily customise the colour choices. The distinct design characteristics and well-shielded light of the original have been transported to Tall Lite, which uses a fully recyclable material which can be powder coated in standard colours of ruby red, aluminium grey and anthracite grey.

The wall version allows the same artistic expression to be used on façades and at ground level. There are also signboard accessories such as numerals and letters for entrances and doors

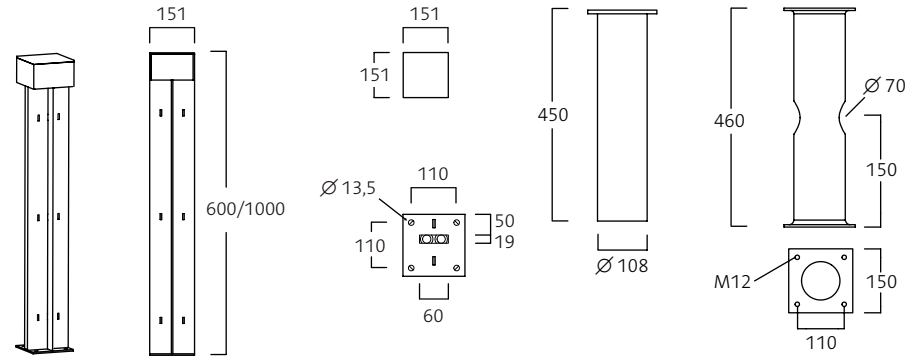
Tall Lite wall, p. 418–419.

Tall Lite
Bollard



Installation
Luminaire for installation on foundation Ø 108 mm or in-situ casting with 4 bolts (M12).
Connection
Cable (max. Ø 13 mm) connects in housing (terminal block 5 × 2.5 mm² in canopy), through-wiring possible. Strain relief for cable in housing.
Designed by
Frame in aluminium. Protective glass in scrape-proof and UV-protected PC.
Standard colour
Alu-grey (RAL 9006) structured.
Anthracite grey(RAL 9023) structured.
Ruby red (RAL 3003) structured.
Other colours on request.
Accessories
See Accessories.

Tall Lite in alu-grey.



Tall Lite

System, W	Length	Colour temp., K	Luminous flux, lm	Efficiency, lm/W		Colour	
11	600	3000	500	45	On/off	Red	**205383**
11	600	3000	500	45	On/off	Anthracite grey	**205383-233**
11	600	3000	500	45	On/off	Alu-grey	**205383-236**
11	1000	3000	500	45	On/off	Red	**205384**
11	1000	3000	500	45	On/off	Anthracite grey	**205384-233**
11	1000	3000	500	45	On/off	Alu-grey	**205384-236**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Mounting for Ø 108 foundation	**205381**
Mounting for in-situ casting	**205382**

Amenity lighting

Post tops and floodlights for illuminating green areas, entrances etc

Azur post top
p. 444–445

Glenn post top
p. 455

PoleLITE
p. 452–453

Stockholm 2 post top
p. 462

Bianca
p. 446–447

Glenn wire
p. 456

Rondo G2 Power post top
p. 459

Stockholm 2 wire
p. 463

Conledo post top
p. 448–449

LED Floodlight
p. 450–451

Rondo G2 Visual post top
p. 460

Vialume 1 post top
p. 434–439

Evolume post top
p. 440–441

Lunova post top
p. 442–443

Vialume 1

Designed by ÅF Lighting and Tuxen Design

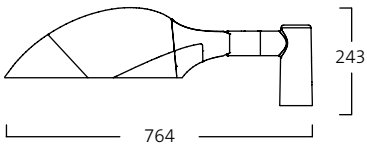
Visual comfort, organic design and energy efficiency – a new Nordic classic is born! Vialume 1 is a post luminaire for walkways, office exteriors and carparks. Its organic form is grounded in Nordic design tradition and as it is equipped with various options.

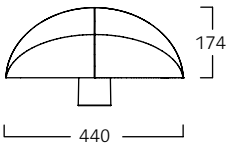
Vialume 1 is the first in a luminaire family developed in close collaboration between Fagerhult and ÅF Lighting. Thanks to our newly-developed AGC technology (Advanced Glare Control) Vialume 1 provides optimal visual comfort. The light is distributed through large lenses which are placed close together, forming an illuminating cluster with minimal risk of glare. This light cluster also illuminates the inner edge of the aperture so that the luminaire can be seen from a distance. The result is both reduced glare and good guidance.

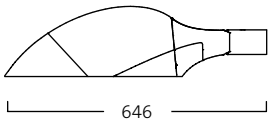
Vialume 1 is optimised in accordance with the requirements of the latest lighting standards and is also very energy-efficient.

LED | IP66 | IK09

Vialume 1 – L1
Post top







Installation
Luminaire for assembly on a post, with post top ∅ 60 mm or post arm ∅ 42–48 mm. Unrestricted tilting function ± 15° for adaptation to different requirements.

Connection
Connection cable 3×1.5 mm² type H05RN-F. Delivered with 6 m cable (4 lenses) or 8 m cable (7 or 9 lenses). Programmable versions come with a 5-pin cable. Halogen free cable on request.

Design
Body, heat sink, tilting module and post bracket in cast aluminium. Stainless steel screws. Driver is built into the fixture. Flat glass (IK09) or acrylic (IK10). 8.5 kg.

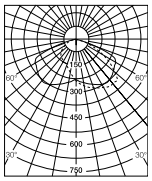
Light distribution
Asymmetric (L1).

Optics
AGC lenses (Advance Glare Control).
4L1 = 4 L1 lenses.
7L1 = 7 L1 lenses.
9L1 = 9 L1 lenses.

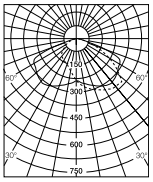
Standard colour
Alu-grey (RAL 9006, semi-gloss). Anthracite grey (Gris 900 Sablé), black (RAL 9005) or white (RAL 9010, semi-gloss) on request.

Accessories
See Accessories.

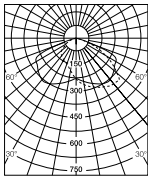
Miscellaneous
Projected wind area 0.07 m².
Equipped with NTC, over-heat protection.



4L1



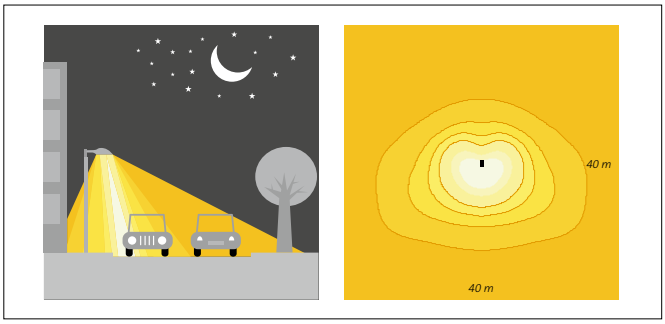
7L1



9L1


Stepless tilting function ± 15º


Lenses



L1: Optimised for class E2. Typical width/height ratio ~ 1.3-1.6.

Vialume 1 – L1 830

System, W	Luminous flux, lm	Efficiency, lm/W	Life	Colour quality	Lens	Protective glass		kg	Alu-grey	
Class I										
17	1520	89	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	4L1	Flat glass		8.5	**303720**	☐
17	1520	89	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	4L1	Acrylic		8.5	**303724**	☐
33	3240	98	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	7L1	Flat glass		8.5	**303750**	☐
33	3240	98	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	7L1	Acrylic		8.5	**303754**	☐
64	6200	97	$L_{80}F_{10}$ 100.000 h	MacAdam 3 SDCM	9L1	Flat glass		8.5	**303780**	☐
64	6200	97	$L_{80}F_{10}$ 100.000 h	MacAdam 3 SDCM	9L1	Acrylic		8.5	**303784**	☐
Class II										
17	1520	89	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	4L1	Flat glass		8.5	**303722**	☐
17	1520	89	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	4L1	Acrylic		8.5	**303726**	☐
33	3240	98	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	7L1	Flat glass		8.5	**303752**	☐
33	3240	98	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	7L1	Acrylic		8.5	**303756**	☐
64	6200	97	$L_{80}F_{10}$ 100.000 h	MacAdam 3 SDCM	9L1	Flat glass		8.5	**303782**	☐
64	6200	97	$L_{80}F_{10}$ 100.000 h	MacAdam 3 SDCM	9L1	Acrylic		8.5	**303786**	☐

Vialume 1 – L1 740

System, W	Luminous flux, lm	Efficiency, lm/W	Life	Colour quality	Lens	Protective glass		kg	Alu-grey	
Class I										
14	1570	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic	On/off	8.5	**303700**	
15	1580	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Flat glass		8.5	**303730**	☐
15	1580	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic		8.5	**303734**	☐
28	3370	120	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic	On/off	8.5	**303704**	
29	3260	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Flat glass		8.5	**303760**	☐
29	3260	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic		8.5	**303764**	☐
52	6300	121	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	9L1	Acrylic	On/off	8.5	**303708**	
54	6280	116		MacAdam 5 SDCM	9L1	Flat glass		8.5	**303790**	☐
54	6280	116		MacAdam 5 SDCM	9L1	Acrylic		8.5	**303794**	☐
Class II										
15	1580	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Flat glass		8.5	**303732**	☐
15	1580	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic		8.5	**303736**	☐
29	3260	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Flat glass		8.5	**303762**	☐
29	3260	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic		8.5	**303766**	☐
54	6280	116		MacAdam 5 SDCM	9L1	Flat glass		8.5	**303792**	☐
54	6280	116		MacAdam 5 SDCM	9L1	Acrylic		8.5	**303796**	☐

Vialume 1 – L1 730

System, W	Luminous flux, lm	Efficiency, lm/W	Life	Colour quality	Lens	Protective glass		kg	Alu-grey	
Class I										
15	1580	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Flat glass		8.5	**303740**	☐
15	1580	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic		8.5	**303744**	☐
29	3260	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Flat glass		8.5	**303770**	☐
29	3260	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic		8.5	**303774**	☐
56	6240	111		MacAdam 5 SDCM	9L1	Flat glass		8.5	**303800**	☐
56	6240	111		MacAdam 5 SDCM	9L1	Acrylic		8.5	**303804**	☐
Class II										
15	1580	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Flat glass		8.5	**303742**	☐
15	1580	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic		8.5	**303746**	☐
29	3260	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Flat glass		8.5	**303772**	☐
29	3260	112	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic		8.5	**303776**	☐
56	6240	111		MacAdam 5 SDCM	9L1	Flat glass		8.5	**303802**	☐
56	6240	111		MacAdam 5 SDCM	9L1	Acrylic		8.5	**303806**	☐

For current information on output and luminous flux, please refer to our website.

Accessories

Flange for ∅ 60 mm post top. Alugrey.	**309901**

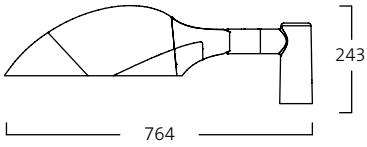
Suffix code

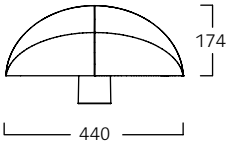
☐ **-461**	DALI and CLO
☐ **-462**	Night dimming 1
☐ **-463**	Night dimming 2
☐ **-464**	CLO and night dimming 1
☐ **-465**	CLO and night dimming 2

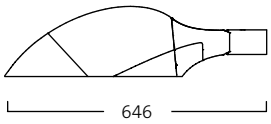
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

LED | IP66 | IK09

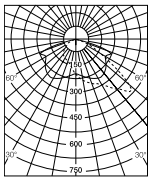
Vialume 1 – L4
Post top



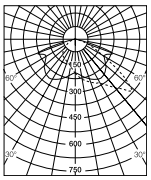




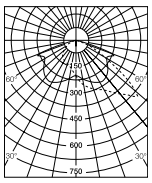
Installation
Luminaire for assembly on a post, with post top ∅ 60 mm or post arm ∅ 42–48 mm. Unrestricted tilting function ± 15° for adaptation to different requirements.
Connection
Connection cable 3 × 1.5 mm² type H05RN-F. Delivered with 6 m cable (4 lenses) or 8 m cable (7 or 9 lenses). Programmable versions come with a 5-pin cable. Halogen free cable on request.
Design
Body, heat sink, tilting module and post bracket in cast aluminium. Stainless steel screws. Driver is built into the fixture. Flat glass (IK09) or acrylic (IK10). 8.5 kg.
Light distribution
Asymmetric plus (L4).
Optics
AGC lenses (Advance Glare Control). 4L4 = 4 L4 lenses. 7L4 = 7 L4 lenses. 9L4 = 9 L4 lenses.
Standard colour
Alu-grey (RAL 9006, semi-gloss). Anthracite grey (Gris 900 Sablé), black (RAL 9005) or white (RAL 9010, semi-gloss) on request.
Accessories
See Accessories.
Miscellaneous
Projected wind area 0.07 m². Equipped with NTC, over-heat protection.



4L4



7L4



9L4


Vialume 1 seen from the front.

L4: Optimised for class M5 (MEW5). Typical width/height ratio ~ 1-1.2

Vialume 1 – L4 830

System, W	Luminous flux, lm	Efficiency, lm/W	Life	Colour quality	Lens	Protective glass		kg	Alu-grey	
Class I										
25	2300	92	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	4L1	Flat glass		8.5	**303721**	☐
25	2300	92	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	4L1	Acrylic		8.5	**303725**	☐
43	4220	98	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	7L1	Flat glass		8.5	**303751**	☐
43	4220	98	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	7L1	Acrylic		8.5	**303755**	☐
62	5990	97	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	9L1	Flat glass		8.5	**303781**	☐
62	5990	97	$L_{80}F_{10}$ 100.000 h	MacAdam 3 SDCM	9L1	Acrylic		8.5	**303785**	☐
Class II										
25	2300	92	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	4L1	Flat glass		8.5	**303723**	☐
25	2300	92	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	4L1	Acrylic		8.5	**303727**	☐
43	4220	98	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	7L1	Flat glass		8.5	**303753**	☐
43	4220	98	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	7L1	Acrylic		8.5	**303757**	☐
62	5990	97	$L_{90}F_{10}$ 100.000 h	MacAdam 3 SDCM	9L1	Flat glass		8.5	**303783**	☐
62	5990	97	$L_{80}F_{10}$ 100.000 h	MacAdam 3 SDCM	9L1	Acrylic		8.5	**303787**	☐

Vialume 1 – L1 740

System, W	Luminous flux, lm	Efficiency, lm/W	Life	Colour quality	Lens	Protective glass		kg	Alu-grey	
Class I										
19	2240	118	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic	On/off	8.5	**303702**	
22	2330	108	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Flat glass		8.5	**303731**	☐
22	2330	108	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic		8.5	**303735**	☐
37	4430	120	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic	On/off	8.5	**303706**	
37	4260	115	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Flat glass		8.5	**303761**	☐
37	4260	115	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic		8.5	**303765**	☐
49	6100	124	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	9L1	Acrylic	On/off	8.5	**303710**	
52	6100	117		MacAdam 5 SDCM	9L1	Flat glass		8.5	**303791**	☐
52	6100	117		MacAdam 5 SDCM	9L1	Acrylic		8.5	**303795**	☐
Class II										
22	2330	108	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Flat glass		8.5	**303733**	☐
22	2330	108	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic		8.5	**303737**	☐
37	4260	115	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Flat glass		8.5	**303763**	☐
37	4260	115	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic		8.5	**303767**	☐
52	6100	117		MacAdam 5 SDCM	9L1	Flat glass		8.5	**303793**	☐
52	6100	117		MacAdam 5 SDCM	9L1	Acrylic		8.5	**303797**	☐

Vialume 1 – L1 730

System, W	Luminous flux, lm	Efficiency, lm/W	Life	Colour quality	Lens	Protective glass		kg	Alu-grey	
Class I										
23	2400	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Flat glass		8.5	**303741**	☐
23	2400	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic		8.5	**303745**	☐
38	4280	113	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Flat glass		8.5	**303771**	☐
38	4280	113	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic		8.5	**303775**	☐
55	6150	111		MacAdam 5 SDCM	9L1	Flat glass		8.5	**303801**	☐
55	6150	111		MacAdam 5 SDCM	9L1	Acrylic		8.5	**303805**	☐
Class II										
23	2400	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Flat glass		8.5	**303743**	☐
23	2400	105	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	4L1	Acrylic		8.5	**303747**	☐
38	4280	113	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Flat glass		8.5	**303773**	☐
38	4280	113	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	7L1	Acrylic		8.5	**303777**	☐
55	6150	111		MacAdam 5 SDCM	9L1	Flat glass		8.5	**303803**	☐
55	6150	111		MacAdam 5 SDCM	9L1	Acrylic		8.5	**303807**	☐

For current information on output and luminous flux, please refer to our website.

Accessories

Flange for ∅ 60 mm post top	**309901**

Suffix code

- ☐ **-461** DALI and CLO
- ☐ **-462** Night dimming 1
- ☐ **-463** Night dimming 2
- ☐ **-464** CLO and night dimming 1
- ☐ **-465** CLO and night dimming 2

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Evolume

Evolume 1 is the first product in a new family of energy-efficient LED luminaires.

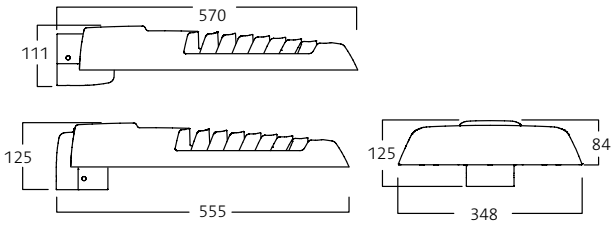
We have combined the excellent qualities of light from our AGC lenses with a modern design that fits in any environment.

Evolume 1 is a cost effective solutionand can, with the aid of light controls, reduce the energy consumption by up to 80 percent – compared to traditional lighting installations.

With Evolume 1 you get great light quality, long life and safer areas – at a low investment cost.

Evolume 1 is suitable for city streets, along with pedestrian and bicycle paths and parking lots.

Evolume
Post top

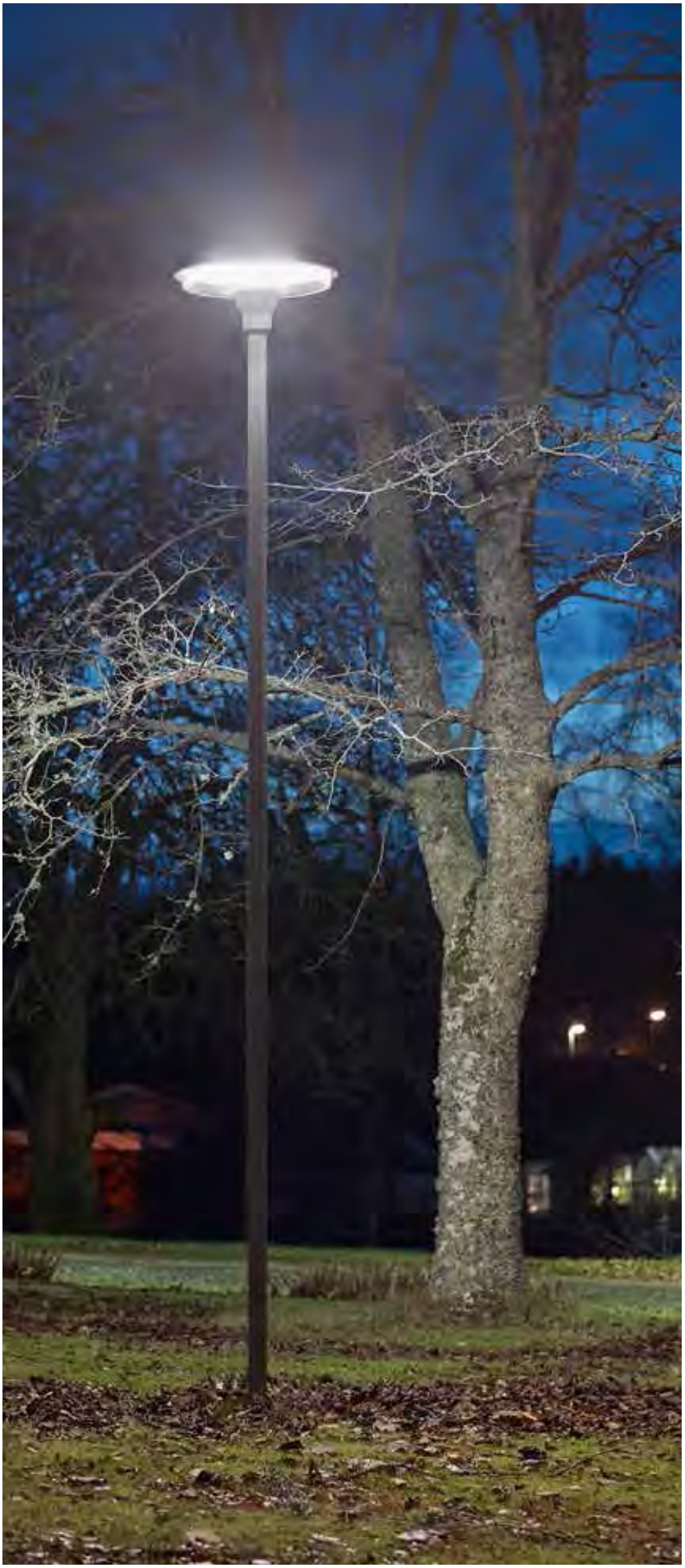


Installation
Luminaire for assembly on a post, with post top ∅ 60 mm or post arm ∅ 48–76 mm. Luminaire on post top can be tilted +5°, +10°, +15° for adaptation to different requirements. Luminaire on post arm can be tilted ±5°, ±10° and ±15°.
Connection
Connection cable 3×1.5 mm² type H05RN-F. Delivered with 6 m cable (4 lenses), 8 m cable (6 or 8 lenses) or 10 m cable (10 or 12 lenses). Programmable versions (class I) come with a 5-pin cable. Programmable versions (class II) come with a 4-pin cable. Halogen free cable on request.
Design
Body and post bracket in cast aluminium. Aluminium-zinc coated screws. Driver is built into the fixture. Screen printed saftey glass.
Standard colour
Alu-grey (RAL 9006, semi-gloss).
Optics
AGC lenses (Advance Glare Control).
Dimming
Available with a number of different light regulation options, for example DALI, CLO and night-time dimming. For more information, see Light controls on our web page.
Miscellaneous
Projected wind area 0.035 m².
Equipped with NTC, over-heat protection.

For information on item numbers and the latest LED-data, please refer to our website.
This information is missing at time of printing of the catalogue.

Lunova

Designed by White Design – Torbjörn Eliasson and Andreas Sture



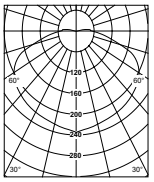
Combining exceptional visual comfort and a classic design with cost-effectiveness, Lunova is the perfect choice when it comes to omnidirectional post luminaires for park and close-to-the-building environments.

Lunova creates outdoor environments in the city which feel safe and secure for inhabitants. People dare to be seen when the lighting is good.

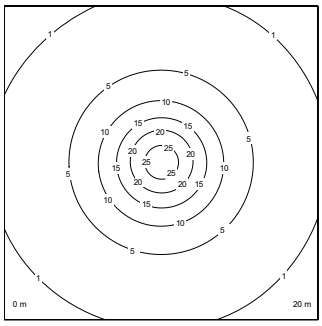
A minimal number of castings in the luminaire head and a diffuser made of injection-moulded acrylic makes Lunova a cost-efficient luminaire. The option of an advanced management system also ensures a long service life and energy-efficient usage. Lunova is quite simply an investment for the future!

Lunova
Post top

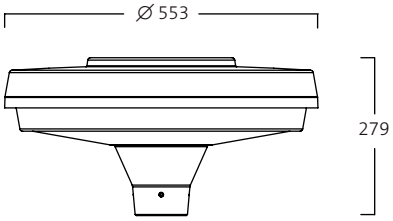
Installation
Luminaire for assembly on a post, with post top Ø 60 mm or Ø 76 mm.
Connection
Supplied with 6 m connection cable (H05RN-F).
Design
Body and heat sink of cast aluminium with stainless steel details. Diffuser of impact and UV-resistant acrylic. Driver integrated in the luminaire.
Standard colour
Anthracite grey (Gris 900 Sablé). Other colours with additional number:
Alugrey (RAL 9006) -236.
Black (RAL 9005) -230.
White (RAL 9010, semi-gloss) -311.
Reflector
Pressure-turned white-enamelled reflector of anodised aluminium.
Dimming
Available with a number of different dimming options. For further information see p. 491–493.
Miscellaneous
Projected wind area 0.086 m².
Equipped with NTC, over-heat protection.



3000 K, 3000 lm



3000 K, 3000 lm



Lunova 830

System, W	Luminous flux, lm	Efficiency, lm/W	Life	Colour quality		kg	Anthracite grey	
Class I								
35	2000	59	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	On/off	10.0	**303601**	
35	2000	59	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM		10.0	**303604**	☐
56	3000	53	$L_{80}F_{10}$ 100.000 h	MacAdam 5 SDCM		10.0	**303605**	☐
Class II								
35	2000	59	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM		10.0	**303607**	☐
56	3000	53	$L_{80}F_{10}$ 100.000 h	MacAdam 5 SDCM		10.0	**303608**	☐

Lunova 740

System, W	Luminous flux, lm	Efficiency, lm/W	Life	Colour quality		kg	Anthracite grey	
Class I								
28	2000	71	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	On/off	10.0	**303611**	
28	2000	71	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM		10.0	**303614**	☐
45	3000	68	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM	On/off	10.0	**303612**	
45	3000	68	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM		10.0	**303615**	☐
Class II								
28	2000	71	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM		10.0	**303617**	☐
45	3000	68	$L_{90}F_{10}$ 100.000 h	MacAdam 5 SDCM		10.0	**303618**	☐

For current information on output and luminous flux, please refer to our website.

Suffix code	
☐	**-461** DALI and CLO
☐	**-462** Night dimming 1
☐	**-463** Night dimming 2
☐	**-464** CLO and night dimming 1
☐	**-465** CLO and night dimming 2

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Azur

Designed by Tommy Govén

Azur is a luminaire family with a consistent, contemporary design. Bollard, post, ceiling and wall variations are all based on a vertical light for optimal lighting comfort. This indirect light, combined with opal surfaces, creates pleasant contrasts and a dynamic light setting in outdoor spaces.

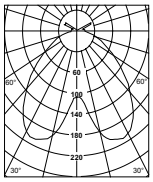
Azur wall, p. 394.

Azur ceiling, p. 395.

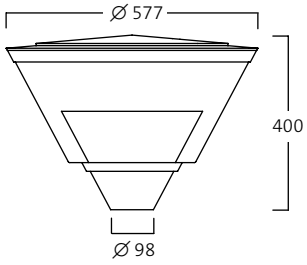
Azur bollard, p. 425.

Azur
Post

Installation
Luminaire for assembly on a post, with post top ∅ 60 mm or ∅ 76 mm.
Connection
Supplied with 5 m cable, 2×1.5 mm².
Designed by
Body of cast aluminium and stainless steel details. Shade of UV-stabilised, clear polycarbonate. Re-lamping from the top. Driver in the luminaire and fuse insert integrated in the post.
Standard colour
Anthracite grey (Gris 900 Sablé). Other colours are ordered with additional numbers:
Alu-grey (RAL 9006) -236.
Louvre
Acrylic louvre.
Reflector
Reflector of anodised aluminium.
Accessories
See Accessories.
Miscellaneous
Projected wind area 0.14 m².



LED



Luminaire

System, W		Luminous flux, lm	Efficiency, lm/W	kg	Anthracite grey
24	840	1051	43	10.5	**300131**
26	830	1051	43	10.5	**300130** ☐
39	830	1576	36	10.5	**300132** ☐

For further information, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Colour quality*
3000 K	*≥ 80*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐ **-402** DALI

Add suffix code to the end of the luminaire part number to indicate required function.

Bianca

Designed by Tommy Govén

atelje Lyktan

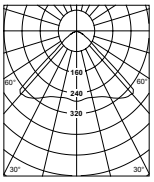
Bianca is a highly visual LED luminaire with a discreet and modern design language that easily blends into exterior environments. Thanks to its unique light properties, Bianca produces a very pleasant and glare-free light in wall, ceiling and post top variations.

Bianca wall, p. 397.

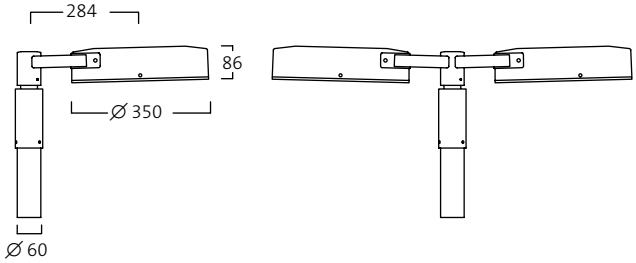
Bianca ceiling, p. 397.

Bianca
Post top

Installation
Luminaire for assembly on a post, with post top Ø 60 mm. Available in both single and double headed versions.
Connection
Terminal block 5×2.5 mm² in luminaire housing. Through-wiring not possible.
Design
Luminaire body in die-cast aluminium. Rotationally symmetrical lens with diffuser in circular prismatic acrylic glass.
Standard colour
Anthracite grey (RAL 9023) textured. Other colours with additional suffix code:
Aluminium grey (RAL 9006) matt textured -236.
Accessories
See Accessories.
Miscellaneous
Projected wind area 0.03 m².



Bianca, 2000 lm



Luminaire

					On/off	DALI
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	**Anthracite grey**	**Anthracite grey**
13	3000	781	60	4.0	**204108-233**	**204112-233**
12	4000	781	65	4.0	**204109-233**	**204113-233**
24	3000	1420	59	4.0	**204110-233**	**204114-233**
22	4000	1420	65	4.0	**204111-233**	**204115-233**
37	3000	2130	58	4.0	**204141-233**	
35	4000	2130	61	4.0	**204142-233**	

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

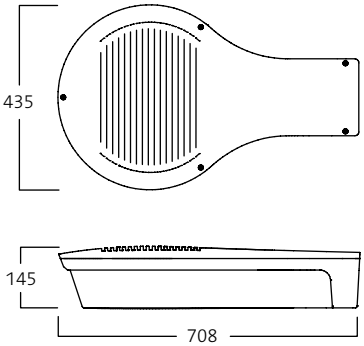
Post arm, single	**204117-233**
Post arm, double	**204118-233**
Post arm, single, DALI	**204122-233**
Post arm, double, DALI	**204123-233**

Conledo

Conledo represents a new approach to exterior lighting with LED; softer, more human, while still maintaining the energy efficiency.

Conledo has been developed from scratch in Fagerhults lighting laboratory with a focus on energy efficiency, economy and visual comfort. We have also used the latest LED technology – Fortimo LLM-modules. These modules have now become so effective that we have been able to develop Conledo with a reflector. When the luminaire is lit the vertical surfaces gets a well-balanced brightness that serves as a backdrop to the clear surface where the LED module is visible. This means the eye gets the chance to adapt comfortably to the light which, in turn, reduces the glare. The light spread also becomes softer and wider.

Conledo is ideal along pedestrian and cycle paths, urban areas and parks.



Installation
Luminaire for assembly on a post with post top ∅ 60 mm, ∅ 76 mm or post arm ∅ 60 mm. Also for wall bracket ∅ 60 mm.

Connection
Luminaire with 1800 lm supplied with 5 m connection cable (2×1.5 mm²). Luminaire with 3000 lm and 4500 lm supplied with 7 m connection cable (4×1.5 mm²).

Design
Frame of cast aluminium and stainless steel details. Impact-stabilised acrylic diffuser. Driver is integrated in the luminaire. Fortimo LLM.

Standard colour
Anthracite grey (Gris 900 Sablé). Other colours with additional suffix code: Alugrey (RAL 9006) -236.

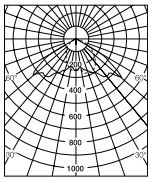
Louvre
Acrylic louvre.

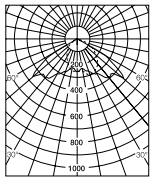
Reflector
Reflector of anodised aluminium.

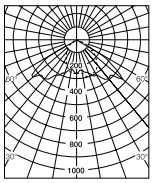
Dimming
Available with a number of different dimming options

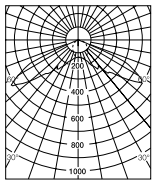
Accessories
See Accessories.

Miscellaneous
Projected wind area 0.09 m². Also available with DALI or Dynadim. Contact your sales representative for more information.


1800 lm, symmetrical


3000 lm, wide beam


4500 lm, symmetrical


4500 lm, wide beam


The LED unit has direct contact with the upper surface, which has been developed for optimised cooling.


Luminaire seen from below.

Luminaire

System, W		Luminous flux, lm	Efficiency, lm/W		Light dist.	Class	kg	Anthracite grey
21	740	1737	83	On/off	Symmetrical	II	10.2	**303001**
21	740	1737	83	Night dimming 1	Symmetrical	II	10.2	**303002**
21	740	1737	83	Night dimming 2	Symmetrical	II	10.2	**303003**
21	740	1737	83	DALI	Symmetrical	II	10.2	**303004**
35	740	2853	82	1–10 V	Symmetrical	II	10.2	**303012**
49	740	4160	85	1–10 V	Symmetrical	I	10.2	**303013**
35	740	2937	85	1–10 V	Wide beam	II	10.2	**303015**
49	740	4405	88	1–10 V	Wide beam	I	10.2	**303016**
35	740	2937	85	DALI	Wide beam	II	10.2	**303017**
49	740	4405	88	DALI	Wide beam	I	10.2	**303018**
35	740	2853	82	DALI	Symmetrical	II	10.2	**303024**
49	740	4160	85	DALI	Symmetrical	I	10.2	**303025**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Colour quality*
4000 K	*≥ 70*	*MacAdam 7 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

Wall bracket, alu-grey	**301015-236**
Wall bracket, anthracite grey	**301015-329**

LED Floodlight

Energy-efficient LED floodlights characterised by a minimalist design that blends into the surroundings while transforming the appearance of facades, structures and whole areas.

The floodlights are available in four different sizes for flexible and versatile use. They are simple to install and need minimal maintenance.

LED Floodlight
Spotlight

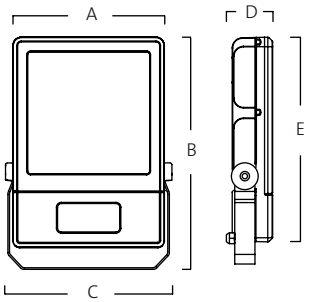
LED Floodlight 4.

Installation
Luminaire for floor standing, suspended or wall installation.
Connection
Supplied with 1.5 m connection cable, 3×1.5 mm².
Design
Cast aluminium housing with 5 mm toughened glass. Rust-free screws. Galvanised steel bracket.
Standard colour
Black.
Optics
Lenses, light distribution: 92°.
Miscellaneous
Projected wind area LED Floodlight 1 0.016 m² (front), 0.04 m² (side). LED Floodlight 2 0.02 m² (front), 0.07 m² (side). LED Floodlight 3 0.03 m² (front), 0.12 m² (side). LED Floodlight 4 0.04 m² (front), 0.18 m² (side).

LED Floodlight 1.

LED Floodlight 2.

LED Floodlight 3.



	A	B	C	D	E	F	G
LED Floodlight 1	175	286	215	63	250	51	-
LED Floodlight 2	220	344	343	70	310	51	110
LED Floodlight 3	300	450	343	80	405	51	180
LED Floodlight 4	360	550	400	80	500	60	205

Luminaire

LED-Module, W, lm	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	kg	**Black**
LED Floodlight 1 (1 diode)					
30, 2530	3000	2395	80	3.5	**582001**
30, 2530	4000	2587	86	3.5	**582002**
LED Floodlight 2 (2 diodes)					
60, 5060	3000	4633	77	6.5	**582003**
60, 5060	4000	4987	83	6.5	**582004**
LED Floodlight 3 (4 diodes)					
110, 10120	3000	9502	86	11.5	**582005**
110, 10120	4000	10277	93	11.5	**582006**
LED Floodlight 4 (5 diodes)					
140, 12650	3000	11350	81	16.0	**582007**
140, 12650	4000	12240	87	16.0	**582008**

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 4 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

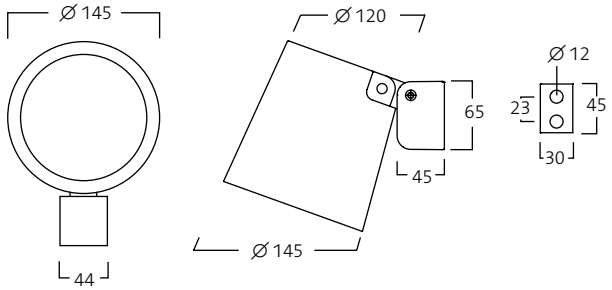
PoleLITE

To be able to increase the sense of security outdoors, good lighting is essential. In many instances it can be difficult to get all the light required from a single post top luminaire. With this in mind, Fagerhult developed PoleLITE – a versatile LED spotlight with a unique bracket that can be mounted on both new and existing posts. All in order to create peace of mind and a beautiful environment, at the same time.

PoleLITE can illuminate playgrounds, parks and squares, as well as single statues, shrubberies and tree crowns. The fixture is easy to install and has a bracket with a double joint that can be rotated to the exact position for your specific project.

PoleLITE gives you endless possibilities!

Installation
Luminaire for assembly on a post.
Connection
Supplied with 5 m connection cable (H05RN-F), 2×1 mm². Class II. DALI on request.
Design
Body of cast aluminium with high corrossion resistance. Clear safety glass, 5 mm. Stainless steel details. Silicone gaskets. UV- and weather resistant polyester powder paint.
Standard colour
Alu-grey (RAL 9006) -236.
Anthracite grey (Gris 900 Sablé).



For information on item numbers and the latest LED-data, please refer to our website.
This information is missing at time of printing of the catalogue.

Glenn

Designed by Olle Andersson

atelje Lyktan

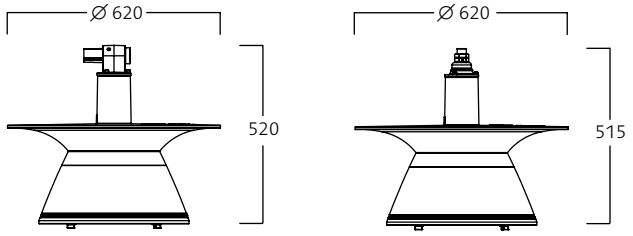
Glenn is a street light fixture with a modern twist. The family is a sequel to our Stockholm fixture, which was designed in 1990, following a similar principle where the secondary light from the housing allows the luminaire shape to be clearly defined in the evening.

Glenn suitable for all types of urban environments and is available for installation on walls, posts and wires.

Glenn wall, p. 401.

Glenn LED
Post top

Installation
Luminaire for installation on a post with post top Ø 60 with Ø 48 mm bracket or using a nipple bracket.
Connection
Terminal block, 3×2.5 mm². A 3×1.5 mm² connection cable measuring 10 m is supplied for nipple brackets.
Design
Body cast in one piece and shade in aluminium. Bottom shade in injection moulded acrylic. Toughened plate glass.
Standard colour
Anthracite grey (RAL 9023) and alu-grey (RAL 9006). Top shade available in any colour on request.
Optics
Asymmetric street lighting optic with lenses.
Dimming
Night reduction technology is available with additional suffix codes.
Accessories
See Accessories.
Miscellaneous
Projected wind area 0.15 m².



Luminaire

System, W		Luminous flux, lm	Efficiency, lm/W		kg	Anthracite grey/Alu grey	
66	830	4400	67	Side entry Ø 48 mm	16.5	**208050**	☐
66	740	5238	69	Side entry Ø 48 mm	16.5	**208051**	☐
66	830	4400	67	Pivoted nipple G 3/4"	16.5	**208054**	☐
66	740	5238	69	Pivoted nipple G 3/4"	16.5	**208055**	☐
42	830	2700	64	Side entry Ø 48 mm	16.5	**208056**	☐
42	830	3300	79	Side entry Ø 48 mm	16.5	**208057**	☐
42	830	2700	64	Pivoted nipple G 3/4"	16.5	**208060**	☐
42	740	3300	79	Pivoted nipple G 3/4"	16.5	**208061**	☐
25	830	1600	64	Side entry Ø 48 mm	16.5	**208062**	☐
25	740	2000	80	Side entry Ø 48 mm	16.5	**208063**	☐
25	830	1600	64	Pivoted nipple G 3/4"	16.5	**208066**	☐
25	740	2000	80	Pivoted nipple G 3/4"	16.5	**208067**	☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{80} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 70*	*L_{80} 50.000 h*	*MacAdam 5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Accessories

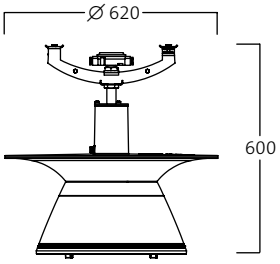
Single bracket for Ø 60 mm post top, L=1000 mm	**205017-233**
Single bracket for Ø 60 mm post top, L=1500 mm	**205018-233**
Double bracket for Ø 60 mm post top, L=2×1000 mm	**205052-233**
Double bracket for Ø 60 mm post top, L=2×1500 mm	**205053-233**

Suffix code

☐ **-466**	Night dimming, scene 1
☐ **-467**	Night dimming, scene 2
☐ **-468**	Night dimming, scene 3

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Installation
Luminaire for installation using a wire cable.
Connection
Terminal block, 3×2.5 mm².
Through-wiring possible.
Design
Body cast in one piece and shade in aluminium. Bottom shade in injection moulded acrylic. Toughened plate glass. Cable fixing in stainless steel.
Standard colour
Anthracite grey (RAL 9023) and alu-grey (RAL 9006). Top shade available in any colour on request.
Optics
Street lighting optic with lenses.
Dimming
Night reduction technology is available with additional suffix codes.
Accessories
See Accessories.
Miscellaneous
Projected wind area 0.15 m².



Luminaire

System, W		Luminous flux, lm	Efficiency, lm/W	kg	Anthracite/Alu-grey
66	830	4400	67	17.5	**208052** ☐
66	740	5238	69	17.5	**208053** ☐
42	830	2700	64	17.5	**208058** ☐
42	740	3300	79	17.5	**208059** ☐
25	830	1600	64	17.5	**208064** ☐
25	740	2000	80	17.5	**208065** ☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{80} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 70*	*L_{80} 50.000 h*	*MacAdam 5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐ **-466**	Night dimming, scene 1
☐ **-467**	Night dimming, scene 2
☐ **-468**	Night dimming, scene 3

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Conledo

Rondo G2

Designed by Wilma Daemen

A timeless design makes Rondo a perfect choice for lighting around commercial buildings and school playgrounds.

Rondo G2 has been developed exclusively for LED, with a focus on energy efficiency and visual comfort. The reflector is very efficient and the luminaire is available in two different versions – “Power” or “Visual”. Power gives a uniform appearance while Visual adds another dimension through the frosted glass ring forming the lower part of the luminaire. In the new family, we have also provided the luminaire with efficient cooling for LED.

The family contains an expansive mix of post tops, wall fixtures in two variants and ceiling luminaires for surface mounting as well as recessed. The post can also be equipped with both single as double housing.

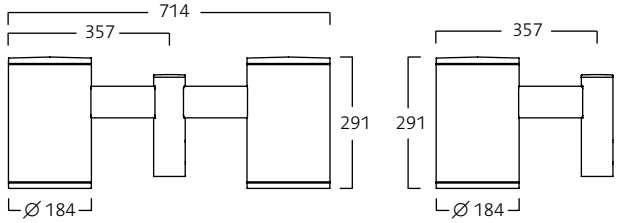
Rondo G2 wall, p. 405–408.

Rondo G2 recessed, p. 409–410.

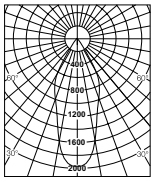
Rondo G2 ceiling, p. 411–412.

Rondo G2 Power

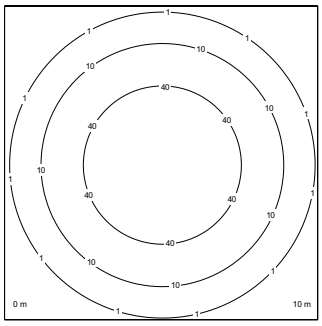
Post top



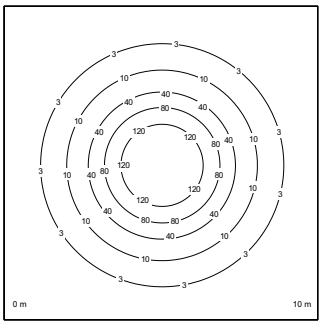
Installation
Luminaire for assembly on a post, with post top Ø 60 mm.
Connection
Supplied with 5 m cable, 2×1.5 mm².
Design
Body of extruded aluminium. Glass of PMMA. Ballast pre-connected to the terminal block.
Standard colour
Anthracite grey (Gris 900 Sablé). Order other colours using suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.
Accessories
See Accessories.
Miscellaneous
Wide and medium beam angle.
Projected wind area (single) 0.07 m².
Projected wind area (double) 0.15 m².



Medium beam | Wide beam



40 W, 4000 K, wide, 4 m.



40 W, 4000 K, medium, 4 m.

Luminaire

System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.			kg	Anthracite grey
23	4000	2000	87	Wide	Single	DALI	4.3	**303206**
23	4000	2000	87	Medium	Single	DALI	4.3	**303207**
2×23	4000	2×2000	87	Wide	Double	DALI	8.6	**303208**
2×23	4000	2×2000	87	Medium	Double	DALI	8.6	**303209**
29	4000	2650	91	Wide	Single	DALI	4.3	**303246**
29	4000	2650	91	Medium	Single	DALI	4.3	**303247**
2×29	4000	2×2650	91	Wide	Double	DALI	8.6	**303248**
2×29	4000	2×2650	91	Medium	Double	DALI	8.6	**303249**
23	3000	2000	87	Wide	Single	DALI	4.3	**303331**
23	3000	2000	87	Medium	Single	DALI	4.3	**303332**
29	3000	2650	91	Wide	Single	DALI	4.3	**303333**
29	3000	2650	91	Medium	Single	DALI	4.3	**303334**
2×23	3000	2×2000	87	Wide	Double	DALI	8.6	**303335**
2×23	3000	2×2000	87	Medium	Double	DALI	8.6	**303336**
2×29	3000	2×2650	91	Wide	Double	DALI	8.6	**303337**
2×29	3000	2×2650	91	Medium	Double	DALI	8.6	**303338**

For current information on output and luminous flux, please refer to our website.

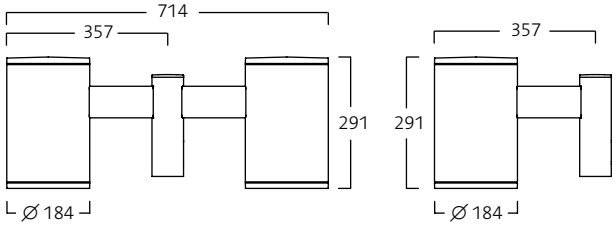
Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70}50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70}50.000 h*	*MacAdam 3 SDCM*

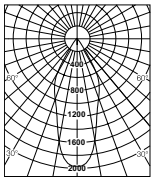
For further information on LEDs, please refer to the Technical Information chapter.

LED | IP65 | IK10

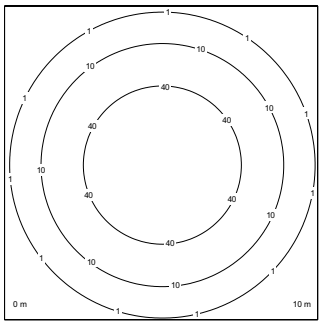
Rondo G2 Visual
Post top



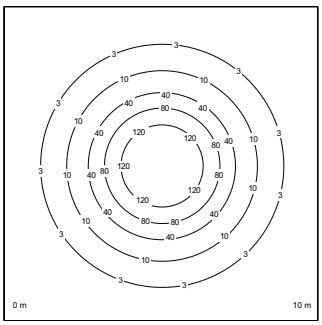
Installation
Luminaire for assembly on a post, with post top Ø 60 mm.
Connection
Supplied with 5 m cable, 2×1.5 mm².
Design
Body of extruded aluminium. Partly screen printed acrylic glass. Ballast pre-connected to the terminal block.
Standard colour
Anthracite grey (Gris 900 Sablé). Order other colours using suffix code:
Alu-grey (RAL 9006) -236.
Black (RAL 9005) -230.
Reflector
Reflector of anodised aluminium.
Accessories
See Accessories.
Miscellaneous
Wide and medium beam angle.
Projected wind area (single) 0.07 m².
Projected wind area (double) 0.15 m².



Medium beam | Wide beam



40 W, 4000 K, Wide, 4 m.



40 W, 4000 K, medium, 4 m.

Luminaire								
System, W	Colour temp., K	Luminous flux, lm	Efficiency, lm/W	Light dist.			kg	**Anthracite grey**
23	4000	2000	87	Wide	Single	DALI	4.3	**303188**
23	4000	2000	87	Medium	Single	DALI	4.3	**303189**
2×23	4000	2×2000	87	Wide	Double	DALI	8.6	**303198**
2×23	4000	2×2000	87	Medium	Double	DALI	8.6	**303199**
29	4000	2650	91	Wide	Single	DALI	4.3	**303236**
29	4000	2650	91	Medium	Single	DALI	4.3	**303237**
2×29	4000	2×2650	91	Wide	Double	DALI	8.6	**303238**
2×29	4000	2×2650	91	Medium	Double	DALI	8.6	**303239**
23	3000	2000	87	Wide	Single	DALI	4.3	**303321**
23	3000	2000	87	Medium	Single	DALI	4.3	**303322**
29	3000	2650	91	Wide	Single	DALI	4.3	**303323**
29	3000	2650	91	Medium	Single	DALI	4.3	**303324**
2×23	3000	2×2000	87	Wide	Double	DALI	8.6	**303325**
2×23	3000	2×2000	87	Medium	Double	DALI	8.6	**303326**
2×29	3000	2×2650	91	Wide	Double	DALI	8.6	**303327**
2×29	3000	2×2650	91	Medium	Double	DALI	8.6	**303328**

For current information on output and luminous flux, please refer to our website.

Information LED			
Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 85*	*L_{70}50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 85*	*L_{70}50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Stockholm 2

Designed by Olle Andersson/ateljé Lyktan

ateljé Lyktan

Stockholm 2 is characterised by classic design. The luminaire is illuminated, which emphasises the design even in the dark.

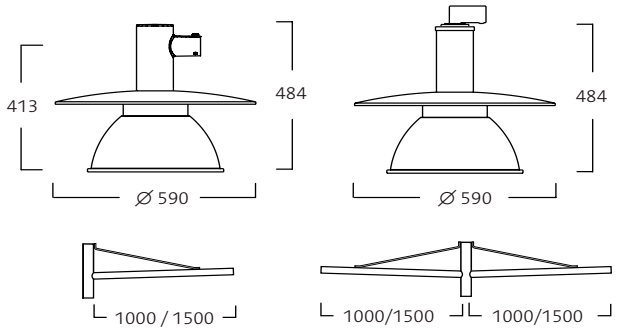
Stockholm 2 is a street lighting luminaire and is suitable for city streets, cycle paths, footpaths, and parking facilities. Available in three different sizes for post top, wire cable and wall installation.

Stockholm 2 wall, p. 413–414.

LED | IP65

Stockholm 2 LED
Post top

Installation
Luminaire for installation on a post with post top Ø 60 with Ø 48 mm bracket or using a nipple bracket.
Connection
Terminal block, 3×2.5 mm².
A 3×1.5 mm² connection cable measuring 10 m is supplied for nipple brackets.
Design
Luminaire top of die-cast aluminium. Aluminium shades. Sections between the shades are of opal acrylic glass. Toughened protective plate glass with quick-action catches.
Standard colour
Black (RAL 9005).
Alu-grey (RAL 9006).
Optics
Asymmetric street lighting optic with lenses.
Dimming
Night reduction technology is available with additional suffix codes.
Accessories
See Accessories.
Miscellaneous
Projected wind area 0.09 m².



Luminaire

System, W		Luminous flux, lm	Efficiency, lm/W		kg	Black/Alu-grey
66	830	4400	67	Side entry Ø 48 mm	12.0	**208010** ☐
66	740	5238	79	Side entry Ø 48 mm	12.0	**208012** ☐
42	830	2700	64	Side entry Ø 48 mm	12.0	**208013** ☐
42	740	3300	79	Side entry Ø 48 mm	12.0	**208014** ☐
66	830	4400	67	Pivoted nipple G 3/4"	12.0	**208025** ☐
66	740	5238	79	Pivoted nipple G 3/4"	12.0	**208027** ☐
42	830	2700	64	Pivoted nipple G 3/4"	12.0	**208028** ☐
42	740	3300	79	Pivoted nipple G 3/4"	12.0	**208029** ☐
29	830	1800	62	Side entry Ø 48 mm	12.0	**208031** ☐
29	740	2200	76	Side entry Ø 48 mm	12.0	**208032** ☐
29	830	1800	62	Pivoted nipple G 3/4"	12.0	**208037** ☐
29	740	2200	76	Pivoted nipple G 3/4"	12.0	**208038** ☐

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{80}50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 70*	*L_{80}50.000 h*	*MacAdam 5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐	**-466**	Night dimming, scene 1
☐	**-467**	Night dimming, scene 2
☐	**-468**	Night dimming, scene 3

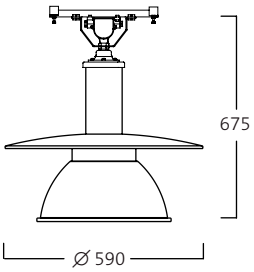
Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Accessories

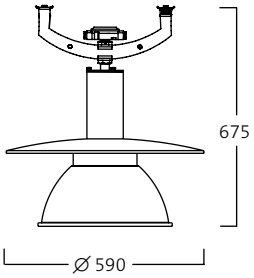
Single bracket for Ø 60 mm post top, L=1000 mm	**205017**
Single bracket, L=1000 mm, hot-dip galvanized for Ø 60 mm post top	**205017-228**
Single bracket for Ø 60 mm post top, L=1500 mm	**205018**
Single bracket, L=1500 mm, hot-dip galvanized for Ø 60 mm post top	**205018-228**
Double bracket for Ø 60 mm post top, L=2×1000 mm, black	**205052**
Double bracket, L=2×1000 mm, hot-dip galvanized for Ø 60 mm post top	**205052-228**
Double bracket for Ø 60 mm post top, L=2×1500 mm, black	**205053**
Double bracket, L=2×1500 mm, hot-dip galvanized for Ø 60 mm post top	**205053-228**
Luminaire top for post arm Ø 48 mm, black	**205160**
Luminaire top for post arm Ø 60 mm, black	**205161**
Luminaire top for post arm Ø 60 mm, 5°, black	**205162**
Transition sleeve Ø 60-Ø 48 mm (for 202162)	**205186**

Stockholm 2 LED
Wire

Installation
Luminaire for installation using a wire cable.
Connection
Terminal block, 3×2.5 mm² for wire cable S and 5×6 mm² for wire cable C. Through-wiring possible.
Design
Luminaire top of die-cast aluminium. Aluminium shades. Sections between the shades are of opal acrylic glass. Toughened protective plate glass with quick-action catches.
Standard colour
Black (RAL 9005)
Alu-grey (RAL 9006).
Optics
Asymmetric street lighting optic with lenses.
Dimming
Night reduction technology is available with additional suffix codes.
Miscellaneous
Projected wind area 0.16 m².



Wire Cable C



Wire Cable S

Luminaire

System, W		Luminous flux, lm	Efficiency, lm/W	kg	Wire Cable C Black/Alu-grey	Wire Cable S Black/Alu-grey	
66	830	4400	67	13.0	**208015**	**208020**	
66	740	5238	79	13.0	**208017**	**208022**	
42	830	2700	66	13.0	**208018**	**208023**	
42	740	3300	79	13.0	**208019**	**208024**	
29	830	1800	62	13.0	**208033**	**208035**	
29	740	2200	76	13.0	**208034**	**208036**	

For current information on output and luminous flux, please refer to our website.

Information LED

Colour temp. (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{80}50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 70*	*L_{80}50.000 h*	*MacAdam 5 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Suffix code

☐	**-466**	Night dimming, scen 1
☐	**-467**	Night dimming, scen 2
☐	**-468**	Night dimming, scen 3

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

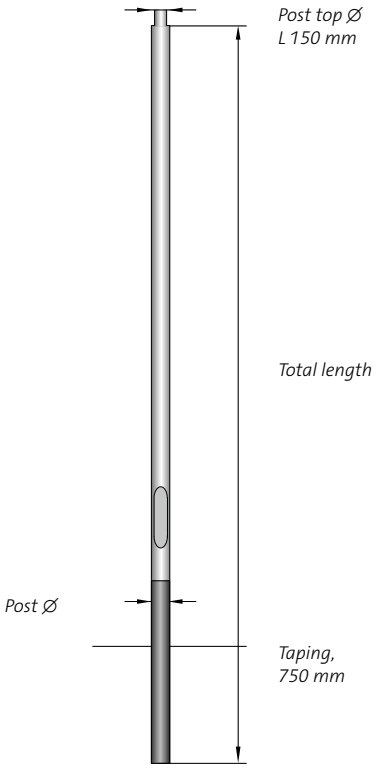
Our posts are supplied in brushed aluminium, alu grey (RAL 9006) or anthracite grey (Gris 900 Sablé) as standard. The posts can also be anodised or painted in any RAL colour on request.

The post is supplied with a welded reinforcement profile type VT5+ and a welded rail with 2 M6×16 sliding nuts and an M8 earthing screw. The hatch is fitted with two triangular 10 mm bolts as standard. The part under the ground is fitted with a 2-layer black or grey PVC anti-corrosion tape on the outside. The posts are supplied with an internal foot ring. Aluminium alloy according to EN AW-6060. Supplied CO_2-neutral.

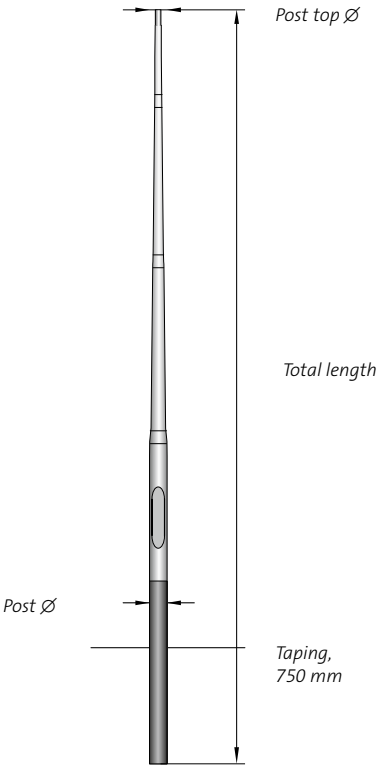
All posts are CE-certified and specified according to EN40-3-3.

Please contact your sales representative for information.

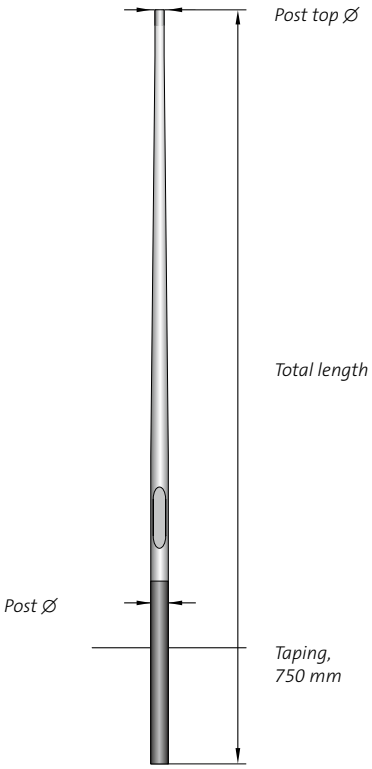
Cylindrical straight post



Cylindrical step post



Conical post



The dimension sketch shows a post mounted in foundation or cast concrete. For post supplied with base plate, the part under the ground disappears. Taping does not occur on posts mounted on base plate.

Aluminium — recyclable, corrosion resistant and durable

Approximately eight percent of the earth's crust consists of aluminium in the form of various minerals.

Aluminium is one of the few metals where access to raw materials is essentially unlimited. Aluminium is currently, after iron, the most commonly used metal, due to a unique combination of properties:

- lightweight
- durable
- malleable
- easy to work with
- corrosion resistant
- easy to mill, drill, cut, punch, bend, weld, glue and tape.

Aluminium can be recycled for the same use time and time again. Unlike many other materials, aluminium does not lose its unique properties. In addition, recycling only requires five percent of the original energy consumption. In principle, aluminium can be recycled for use in new products in an unending cycle, without any loss in quality. What's more, only a tiny percentage is lost on remelting, while the material properties such as low weight in combination with high durability and corrosion resistance contribute to a low environmental impact.

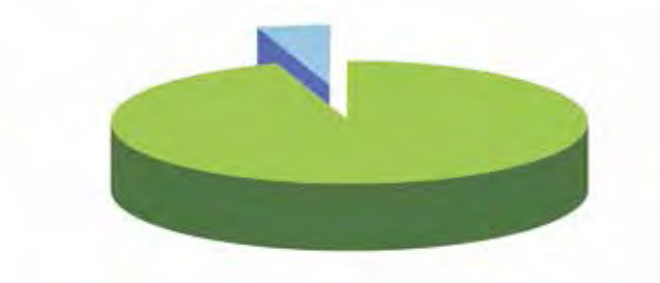
Environmental perspective

Our range of post are manufactured in 95 percent recycled aluminium. The material is 100 percent recyclable and can also be recycled time and time again without the quality suffering. The use of recycled aluminium in the manufacturing process also allows carbon dioxide emissions to be minimised.

The life of an aluminium post is extremely long. If the section of the post underground is in good condition and the post is mounted carefully, it is not unusual for the useful life to reach 45 years. The posts comply with the applicable norms in EN40.

The specific weight of aluminium is 33 percent of the specific weight of steel. The amount of materials consumed during manufacture of aluminium posts is also much less. Due to a patented reinforcement profile (VT5+), posts are also manufactured with a smaller base diameter than other posts on the market. This allows a weight saving of up to 20 percent.

All products are certified to ISO 9001 and ISO 14001 as well as being CE marked.



Our range of posts is manufactured in 95 percent recycled aluminium.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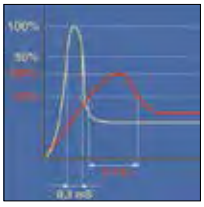

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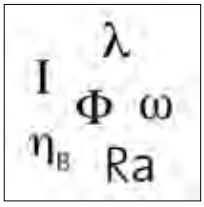

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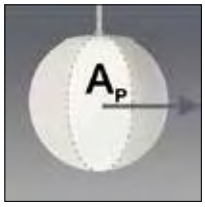

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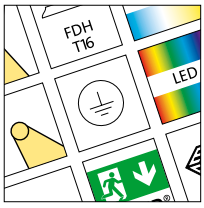

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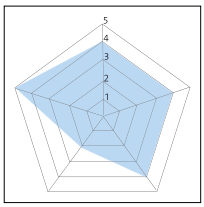

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This section contains a brief summary of the most common light sources contained within this catalogue. The data has been compiled from the light source manufacturers catalogues and, consequentially, may vary and be subject to change.

Compact fluorescent lamp

The advantages are: high luminous efficacy, good colour reproduction at several colour temperatures, extended lamp life and dimming options.

Compact fluorescent lamp FSD/TC-L – powerful compact fluorescent lamp that allows small luminaires to offer high light outputs.

Compact fluorescent lamp FSD/FSQ/FSM/FSS – these are efficient compact fluorescent lamps with 2, 4 or 6 limbs and a 2D design with outputs of up to 120 W. FSM lamps are also available in different geometric shapes and design characteristics. Amalgam lamps are recommended as they give higher luminous efficacy at high ambient temperatures. One limitation with the amalgam lamps is that it takes approximately 5 minutes before reaching full luminous flux. Lamps without amalgam are more suited to outdoor installations as they ignite better and give more light at low temperatures.

Fluorescent lamp

Fluorescent lamp T5 FDH – These fluorescent lamps Ø=16 mm are available in two different designs, HE (High Efficacy) with maximum luminous efficacy or HO (High Output) with maximum luminous flux. All outputs in the HE range have the same fluorescent lamp luminance while it varies in the HO range. Always powered by HF-ballasts, they can also be dimmed using dimmable HF-ballasts.

Fluorescent lamps T5 Eco – T5 Eco is a further development of the T5 fluorescent lamp. The properties of the gas and fluorescent powder have been improved and the pressure optimised. As a result the same light output can be achieved but by using less power. Energy savings also reduces the lighting installation's carbon dioxide emissions. T5 Eco also has a longer operating time – up to 21,000 hours.

Circular fluorescent lamp T5 FC – Fluorescent lamp Ø=16 mm in three standard sizes and four outputs. The lamps are always powered by HF-ballasts.

Fluorescent lamp T8 FD – Fluorescent lamp Ø=26 mm. Traditional light source which nowadays is replaced by either T5 or LED in new installations.

Halogen lamps

Halogen lamps 12 V – have many good characteristics, for example, excellent colour reproduction, relatively inexpensive, long lamp life and can be dimmed. One disadvantage is a relatively poor energy efficiency. These light sources are increasingly being replaced by LED.

Halogen lamps 230 V – have the same advantages as normal incandescent lamps, but are more efficient and have a longer lamp life. One disadvantage is a relatively poor energy efficiency.

Metal halogen lamps

Metal halogen lamps MT/ME/MR/MD – These light sources (Mastercolour) are equipped with a ceramic arc tube, which results in a colour temperature shift of less than ±200 K. The light source's white "sparkling" light is very similar to the 12 V halogen lamps but offers numerous benefits such as energy efficiency and long lamp life. MT-lamps are in UV-block design. Luminaires with explosion protective glass are required for the MT light source. MR-lamps have an integrated reflector available with different distribution angles and dimensions as well as built-in protective glass.

Limitations: Metal halogen lamps cannot generally be dimmed. They have an ignition time of 2–3 minutes. Restart of hot lamps takes up to 15 minutes.

High pressure sodium lamps

"White Son", SDW-T (35–100 W) – The lamp has a colour temperature that lies close to the light from an incandescent lamp and reproduces most colours in an excellent manner. Other advantages are high efficiency and long lamp life.

Limitations: These high pressure sodium lamps cannot be dimmed. They have an ignition time of approx. 4 minutes and the restart of a hot lamp is up to 2 minutes.

Other high pressure sodium lamps normally have a high luminous efficacy in combination with a low colour rendering index.

Limitations: As above.

Luminous efficacy

A light source's luminous efficacy is the relation between its luminous flux and the electrical power used. The luminous efficacy is established for the light source or for the system (light source and ballast). The unit for luminous efficacy is lm/W. Note that the documented value for the luminous efficacy in the tables on the following pages applies to the light source and does not take ballast losses into consideration.

Average mortality rate

The number of burning hours after which half of a large number of controlled light sources have extinguished. Used for incandescent and halogen lamps.

80 % service mortality rate

The time after which 80 % of the lighting installation's original luminous flux remains. The depreciation in luminous flux depends on the reduction in light output as well as spent light sources.

General colour rendering index, Ra

Colour rendering is a measurement of the light source's ability to correctly render eight test colours in relation to a fixed reference light. The Ra-index for indoor lighting ought to be above 80 and for good colour rendering above 90. The value for maximum colour rendering is defined as 100.

Colour temperature, K

The colour temperature denotes the light source's colour appearance and varies in the range 2000–7400 K. 3500–4000 K is considered to be neutral white. Colour temperature lower than 3500 K is experienced as warm and colour temperatures higher than 4000 K are experienced as cold. Equivalent colour temperatures are stated for fluorescent lamps and discharge lamps.

Colour designation

Light source manufacturers state the light source's colour properties using a international colour designation consisting of three digits. The first digit represents the light source's colour rendering and the last two digits stem from the colour temperature in Kelvin, formed by the colour temperature being divided by 100. A light source with the colour designation 830 has a general colour reproduction index of between 80–89 and a colour temperature of 3000 K.

Fluorescent lamp T5

FDH (T16) Service mortality rate: 19 000 h 230 V

Fluorescent lamp Ø 16 mm straight (T5)
Fluorescent lamps, Double-capped linear, High frequency ballast

W	Socket	Flow (lm)[1]	lm/W[2]	cd/cm²[1]	827	830	840	865
14	G5	1200	96	1.5	**81352**	**81351**	**81347**	-
21	G5	1900	100	1.5	**81354**	**81353**	**81348**	-
24	G5	1750	89	2.2	**81335**	**81372**	**81376**	**81607**
28	G5	2600	104	1.5	**81356**	**81355**	**81349**	**81608**
35	G5	3300	104	1.5	**81358**	**81357**	**81350**	**81609**
39	G5	3100	92	2.5	-	**81373**	**81377**	-
49	G5	4300	99	2.0	**81360**	**81359**	**81362**	**81610**
54	G5	4450	93	2.6	**81606**	**81374**	**81378**	**81611**
80	G5	6150	88	2.9	-	**81375**	**81379**	-

FDH (T16) Service mortality rate: 19 000 h 230 V

Fluorescent lamp Ø 16 mm straight (T5)
Fluorescent lamps, Double-capped linear, High frequency ballast

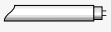
W	Socket	Flow (lm)[1]	lm/W[2]	cd/cm²[1]	940
24	G5	1400	71	1.8	**81461**
49	G5	3550	79	1.6	**81462**
54	G5	3800	75	2.0	**81463**

FDH (T16) Long-life Service mortality rate: 48 000 h 230 V

Long-life Fluorescent lamp Ø 16 mm straight (T5)
Fluorescent lamps, Double-capped linear, High frequency ballast

W	Socket	Flow (lm)[1]	lm/W[2]	cd/cm²[1]	827	830	840
28	G5	2600	104	1.5	-	**81501**	-
35	G5	3300	104	1.5	-	**81502**	-
49	G5	4300	99	2.0	-	**81503**	-
54	G5	4450	93	2.6	-	**81504**	-

FDH (T16) Service mortality rate: 48 000 h 230 V



Long-life Thermo-Fluorescent lamp Ø 26 mm straight (T5)
Fluorescent lamps, Double-capped linear, High frequency ballast

W	Socket	Flow (lm)[1]	lm/W[2]	827	830	840
28	G5	2750	104	-	**81507**	-
35	G5	3400	104	-	**81508**	-

FDH (T16) T5 Eco Service mortality rate: 20 000 h 230 V

Fluorescent lamp Ø 16 mm straight (T5)
Fluorescent lamps, Double-capped linear, High frequency ballast

W	Socket	Flow (lm)[1]	lm/W[2]	cd/cm²[1]	830	840
13	G5	1150	109	1.4	**81625**	**81626**
20	G5	1650	99	2.2	**81627**	**81628**
25	G5	2450	114	1.4	**81629**	**81630**
32	G5	3100	114	1.4	**81631**	**81632**
45	G5	4100	109	2.0	**81633**	**81634**
50	G5	4400	102	2.6	**81635**	**81636**
73	G5	6150	99	2.9	**81637**	**81638**

[1] Nominal luminous flux measured at 25 °C temperature. Maximum luminous flux at 35 °C temperature is approximately 10–14 % greater.
[2] The lamps max. luminous flux is produced at 35 °C, which corresponds to the lamp operating temperature when operating in enclosed luminaires.

Note that the luminous efficacy (lm/W) applies to the light source, and ballast losses have not been taken into consideration.

FDH (T16) T5 Constant Service mortality rate: 18 000 h 230 V

Fluorescent lamp Ø 16 mm straight (T5)
Fluorescent lamps, Double-capped linear, High frequency ballast

W	Socket	Flow (lm)[1]	lm/W[2]	cd/cm²[1]	830	840
80	G5	6800	85	2.9	**81664**	**81665**

Fluorescent lamp T8

FD (T26) Service mortality rate: 12 000 h (Conv), 17 000 h (HF) 230 V

Fluorescent lamp Ø 26 mm straight (T8)
Fluorescent lamps, Double-capped linear

W	Socket	Flow (lm)	lm/W	cd/cm	827	830	840
15	G13	1000	67	1.0	**81230**	**81186**	-
18	G13	1350	75	1.0	**81231**	**81146**	**81225**
36	G13	3350	93	1.25	**81233**	**81147**	**81226**
58	G13	5200	89	1.5	**81234**	**81148**	**81227**

FD (T26) Long-life Service mortality rate: 46 000 h (Conv.), 60 000 h (HF) 230 V

Long-life Fluorescent lamp Ø 26 mm straight (T8)
Fluorescent lamps, Double-capped linear

W	Socket	Flow (lm)	lm/W	cd/cm	827	830	840
36	G13	3350	93	1.25	-	**81505**	-
58	G13	5200	90	1.5	-	**81506**	-

Compact fluorescent lamp

FSD (TC-L) Average mortality rate: (HF) 20 000 – (Conv.) 15 000 h 230 V

Compact fluorescent lamp, 2-limb, 4-pin, long
Fluorescent lamps, Single-capped, Dual-shaped

W	Socket	Flow (lm)	lm/W	cd/cm	830	840
18	2G11	1200	66	2.6	**81157**	**81470**
24	2G11	1800	75	2.3	**81158**	**81301**
36	2G11	2900	80	2.8	**81159**	**81471**
40	2G11	3500	87	2.5	**81316**	**81472**
55	2G11	4800	87	3.4	**81318**	**81473**
80	2G11	6000	75	-	**81338**	**81474**

FSQ-I (TC-D) Average mortality rate: 10 000 h 230 V

Compact fluorescent lamp, 4-limb, 2-pin
Fluorescent lamps, Single-capped, Quad-shaped, Internal starter

W	Socket	Flow (lm)	lm/W	cd/cm	830	840
10	G24d1	600	60	2.8	**81302**	-
13	G24d1	900	69	3.0	**81255**	-
18	G24d2	1200	66	3.6	**81256**	**81465**
26	G24d3	1800	69	4.5	**81257**	**81466**

FSQ-E (TC-DEL) Average mortality rate: 20 000 h 230 V

Compact fluorescent lamp, 4-limb, 4-pin, short
Fluorescent lamps, Single-capped, Quad-shaped, External starter

W	Socket	Flow (lm)	lm/W	cd/cm	830	840
10	G24q1	600	60	2.8	**81304**	-
13	G24q1	900	69	3.0	**81221**	**81439**
18	G24q2	1200	66	3.6	**81222**	**81435**
26	G24q3	1800	69	4.5	**81223**	**81436**

FSM-E (TC-TEL) Mercury Service mortality rate: 19 000 h 230 V

Compact fluorescent lamp, 6-limb, 4-pin
Fluorescent lamps, Single-capped, Multi-limbed, External starter

W	Socket	Flow (lm)	lm/W	830	840
14	GR14q1	1200	80	**81615**	**81616**
17	GR14q1	1450	81	**81617**	**81618**

FSM-E (TC-TEL) Amalgam Average mortality rate: 20 000 h 230 V

Compact fluorescent lamp, 6-limb, 4-pin
Fluorescent lamps, Single-capped, Multi-limbed, External starter

W	Socket	Flow (lm)	lm/W	cd/cm	830	840
18	GX24q2	1200	66	5.5	**81327**	**81475**
26	GX24q3	1800	69	6.5	**81309**	**81476**
32	GX24q3	2400	75	7.4	**81329**	**81477**
42	GX24q4	3200	76	7.7	**81331**	**81478**
57	GX24q5	4300	75	7.8	**81334**	**81336**

FSM-E (TC-TEL) Mercury Average mortality rate : 20 000 h 230 V

Compact fluorescent lamp, 6-limb, 4-pin
Fluorescent lamps, Single-capped, Multi-limbed, External starter

W	Socket	Flow (lm)	lm/W	cd/cm	830	840
13	GX24q1	900	69	5.0	**81332**	-
18	GX24q2	1200	69	5.5	**81323**	**81415**
26	GX24q3	1800	76	6.5	**81411**	**81416**
32	GX24q3	2400	75	7.4	**81412**	**81417**
42	GX24q4	3200	75	7.7	**81413**	**81418**

FSM-I (TC-T) Amalgam Average mortality rate : 10 000 h 230 V

Compact fluorescent lamp, 6-limb, 2-pin
Fluorescent lamps, Single-capped, Multi-limbed, Internal starter

W	Socket	Flow (lm)	lm/W	cd/cm	830	840
18	GX24d2	1200	69	5.5	**81325**	**81455**
26	GX24d3	1800	76	6.5	**81307**	**81456**

FSS-E (TC-DDEL) Average mortality rate: 12 000 h 230 V

Compact fluorescent lamp 2D, 4-pin
Fluorescent lamps, Single-capped, Square-shaped, External starter

W	Socket	Flow (lm)	lm/W	835
28	GR10q	2050	73	**81364**
38	GR10q	2850	75	**81368**

FCH (T-R 16) Service mortality rate: 9 000 h 230 V

Circular fluorescent lamp Ø 16 mm (T5)
Fluorescent lamps, Circular, High frequency ballast

W	Socket	Flow (lm)[1)]	lm/W[2)]	cd/cm²[1)]	827	830	840
22	2GX13	1800	81	2.0	**81390**	**81391**	**81565**
40	2GX13	3300	82	2.6	**81392**	**81393**	**81566**
55	2GX13	4200	76	3.3	-	**81312**	**81567**
60	2GX13	5000	83	3.8	-	**81397**	**81568**

[1)] Nominal luminous flux measured at 25 °C temperature. Maximum luminous flux at 35 °C temperature is approximately 10–14 % greater.
[2)] The lamps max. luminous flux is produced at 35 °C, which corresponds to the lamp operating temperature when operating in enclosed luminaires.

Note that the luminous efficacy (lm/W) applies to the light source, and ballast losses have not been taken into consideration.

Use mercury FSM-lamps for:

When quick ignition of the luminaire is important

Use amalgan FSM-lamps for:

When the luminous efficacy is important

Metal halogen lamp

MT (HIT-CRI) — Average mortality rate: 12 000 h — 230 V

Metal halogen lamp, with plug-in base
Metal halide lamps, Tubular

W	Socket	Flow (lm)	lm/W	Colour temp.	Philips	Osram
35	G8,5	3300	94	3000 K	**81404**	**81433**
70	G8,5	6600	94	3000 K	**81405**	**81434**

MTm (MT/UB-20/30/1B-H-GU6,5-13/57) — Average mortality rate: 12 000 h — 230 V

Metal halogen lamp, with bayonet base
Metal halide lamps, Tubular

W	Socket	Flow (lm)	lm/W	Colour temp.	Osram
20	GU6,5	1700	85	3000 K	**81427**

MT (HIT-CRI) — Average mortality rate: 12 000 h — 230 V

Metal halogen lamp, with plug-in base
Metal halide lamps, Tubular

W	Socket	Flow (lm)	lm/W	Colour temp.	Philips	Osram
35	G12	3300	94	3000 K	**81386**	**81430**
70	G12	6600	94	3000 K	**81384**	**81431**
150	G12	14000	93	3000 K	**81385**	**81432**

MT — Average mortality rate: (45/60 W) 18 000 h, (90/140 W) 30 000 h — 230 V

Metal halogen lamp, with bayonet base
Metal halide lamps, Tubular

W	Socket	Flow (lm)	lm/W	Colour temp.	Philips
45	PGZ12	4300	68	2720 K	**81590**
60	PGZ12	6800	113	2730 K	**81591**
90	PGZ12	10450	116	2880 K	**81592**

MTm (HIT-TC-CE) — Average mortality rate: 12 000 h — 230 V

Metal halogen lamp, with bayonet base
Metal halide lamps, Tubular

W	Socket	Flow (lm)	lm/W	Colour temp.	Philips
20	PGJ5	1650	83	3000 K	**81406**
35	PGJ5	3000	86	3000 K	**81428**

MT (HIT) — Average mortality rate: 20 000 h — 230 V

Metal halogen lamp
Metal halide lamps, Tubular

W	Socket	Flow (lm)	lm/W	Colour temp.	
250	E40	25000	82	4500 K	**81499**
400	E40	35000	87	4500 K	**81500**
1000	E40	110000	110	3350 K	**81701**

MD (HIT-DE) — Average mortality rate: 6 000 h — 230 V

Metal halogen lamp
Metal halide lamps, Double-ended

W	Socket	Flow (lm)	lm/W	Colour temp.	
70	RX7s	6600	94	3000 K	**81204**
70	RX7s	6000	85	4300 K	**81168**
150	RX7s	13200	88	3000 K	**81205**

MD (HIT-DE) — Average mortality rate: 8 000 h — 400 V

Metal halogen lamp
Metal halide lamps, Double-ended

W	Socket	Flow (lm)	lm/W	Colour temp.	
2000	K12s-36	230000	115	4100 K	**81703**

MR (HIPAR 20, HIPAR 30-L) — 230 V

Directed Metal halogen lamp
Metal halide lamps, Aluminised glass reflector

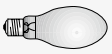
W	Socket		10°	30°	40°
50	E27	Par 20	**81380**	**81381**	**-**
75	E27	Par 20	**81382**	**-**	**81383**
Maximum luminous intensity (cd) directly in front of the lamp:					
W			10°	30°	40°
50			12800	6000	-
75			48000	-	7000

MR — Average mortality rate: 7 500 h — 230 V

Metal halogen lamp
Metal halide lamps, metal reflector

W	Socket	10°	30°	40°
35	GX8,5	**81480**	**81481**	**81482**
70	GX8,5	**81484**	**81485**	**81486**
Maximum luminous intensity (cd) directly in front of the lamp:				
W		10°	30°	40°
35		35000	8500	4000
70		50000	15000	9000

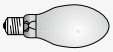
ME (CDM) — Average mortality rate: 20 000 h — 230 V



Metal halogen lamp, elliptical
Metal halide lamps, Elliptical bulb, diffuse coating

W	Socket	Flow (lm)	lm/W	Colour temp.	
250	E40	18000	72	4500 K	**81518**
400	E40	32500	81	4500 K	**81519**

ME (HIE-CE/S) — Average mortality rate: 14 000 h — 230 V



Metal halogen lamp, elliptical
Metal halide lamps, Elliptical bulb, diffuse coating

W	Socket	Flow (lm)	lm/W	Colour temp.	
35	E27	3200	91	3000 K	**81595**
50	E27	4000	80	2800 K	**81528**
70	E27	5600	80	2800 K	**81490**

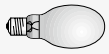
High pressure sodium lamp

STH — Service mortality rate: 9 000 h — 230 V

High pressure sodium lamp "Mini White SON", with plug-in base
Sodium lamps, Tubular, High colour rendering

W	Socket	Flow (lm)	lm/W	Colour temp.	
50	GX12-1	2400	48	2550 K	**81398**
100	GX12-1	4900	49	2550 K	**81399**

SE-E (HSE-E) — Service mortality rate: 16 000 h — 230 V



High pressure sodium lamp
Sodium lamps, Elliptical bulb, diffuse coating,/External ignitor

W	Socket	Flow (lm)	lm/W	Colour temp.	
50	E27	3500	70	2000 K	**81459**
70	E27	5600	80	2000 K	**81460**

ST (HST-MF) — Service mortality rate: 16 000 h — 230 V

High pressure sodium lamp
Sodium lamps, Tubular

W	Socket	Flow (lm)	lm/W	Colour temp.	
250	E40	28000	112	2000 K	**81258**
400	E40	48000	120	2000 K	**81265**
1000	E40	130000	130	2000 K	**81702**

Halogen lamps

HSG/C (QT-tr9, QT-ax9, QT-ax12) Average mortality rate: 3 000 h 12 V

Low voltage halogen lamp
Halogen lamps, Single-ended, General purpose

W	Socket	Flow (lm)	lm/W	Colour temp.	
10	G4	140	14	3000 K	**81207**
20	G4	350	17	3000 K	**81132**
20	GY 6,35	350	17	3000 K	**81198**
35	GY 6,35	650	18	3000 K	**81199**
50	GY 6,35	950	19	3000 K	**81100**
65	GY 6,35	1575	21	3000 K	**81216**

HRGI (QR-CBC 51) Socket GU5,3 Average mortality rate: 4 000 h 12 V

Halogen lamp (mains voltage)
Halogen lamps, dichroic Reflector, General purpose, Integral front cover

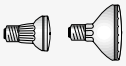
W	Colour temp.	10°	24/25°	36°	38°	60°
20	2900 K	**81192**	**-**	**-**	**81190**	**-**
35	2900 K	**81440**	**81441**	**81873**	**81442**	**81443**
35	2900 K	**81871**	**81872**			**81874**
45	3000 K		**81640**	**81641**	**-**	
50	2900 K	**81445**	**81446**	**-**	**81447**	**81448**
Maximum luminous intensity (cd) directly in front of the lamp:						
W		10°	24/25°	36°	38°	60°
20		6500	-	-	1000	-
35		11000	4400	2200	2200	1100
45		-	5450	2850	-	-
50		15000	5700	-	2800	1400

HMG Socket G53 Average mortality rate: 3 000 h 12 V

Reflector halogen lamp 12 V
Halogen lamps, Metal reflector, General purpose

W	8°	24°
65	**81425**	**81426**
Maximum luminous intensity (cd) directly in front of the lamp:		
W	8°	24°
65	43000	7500

HEGPAR Socket E27 Average mortality rate: 2 000 h 230 V



Directed halogen lamp
Halogen lamps, Aluminised glass reflector, General purpose

W	10°	30°
50	**81294**	**81295**

HDG 230 V

Linear Halogen lamp
Halogen lamps, Double-ended, General purpose

W	Socket	Flow (lm)	
150	R7s	2400	**81488**
230	R7s	5300	**81251**

IAA/C (A60) Average mortality rate: 2 000 h 230 V

Halogen lamp, clear
Incandescent lamps, A=bulb diameter > 45 mm, A=pear shape, /Clear

W	Socket	Flow (lm)	lm/W	Colour temp.	
28	E27	345	12.0	2900 K	**81649**
52	E27	820	15.8	2900 K	**81650**
70	E27	1200	17.1	2900 K	**81651**
105	E27	1980	18.9	2900 K	**81652**

Dimming delivers light in the right place at the right time and in the right quantity. Sensors for occupancy detection deliver optimum energy savings while equally ensuring the very best in lighting comfort. Advanced lighting control for larger installations in properties offers endless possibilities, as well as providing a simple and effective solution for most basic functions. By putting the lighting control in the system you can focus your energy and money on other things.

Fagerhult e-Sense luminaires are equipped with integrated light control. An attractive, simple installation where our aim has been to eliminate all the hidden costs of installation, operation and maintenance.

Fagerhult e-Sense is the quick and easy choice for installation of light control. e-Sense represents ease-of-use, efficiency, ergonomics and economy. Easy to install and use. Efficient when it comes to light treatment and energy consumption. Ergonomic since it compliments your sight and senses. Economy is the sum of all the parts. Read more about Fagerhult e-Sense on the following pages.

Fagerhult have a wide assortment of options for lighting control which can be tailored to meet your needs and requirements. For our complete range, visit our website or contact customer services.

So that you can easily find the control system which suits your project best, we have subdivided our range into different levels, ranging from Basic, which contains the simplest systems, to e-Sense Customised, with fully customised systems. Our aim is that everyone should be able to install and use a smart control system which saves energy and money.

Basic
Our simplest systems which are easy to install and set up.

Medium
Our systems which require some form of simple programming, e.g. setting of daylight level.

e-Sense Customised
Our complete range of customised installations. We help you come up with the parts needed to customise an installation based on your stated needs. We can also help in designing, programming and setting up the installation. For more information, see page 484–490.

e-Sense applications

Application	Solution	Presence control	Daylight control	Manual control	Level
Classroom	e-Sense ActiLume Connection Box	✓	✓	✓	Medium
	e-Sense Connect	✓	✓	✓	Medium
Individual offices	e-Sense ActiLume	✓	✓	✓	Basic
Open office solutions	e-Sense ActiLume (personal light)	✓	✓	✓	Basic
	e-Sense ActiLume (recessed lighting)	✓	✓	✓	Medium
	e-Sense Connect	✓	✓	✓	Medium
Corridors	e-Sense Move	✓	–	–	Medium
	e-Sense with corridor function	✓	–	–	Basic
Stairwell	e-Sense Move	✓	–	–	Medium
	e-Sense Detect	✓	–	–	Basic
Cellars	e-Sense Move	✓	–	–	Medium
Cloakroom	e-Sense Detect	✓	–	–	Basic
Storage area	e-Sense Detect	✓	–	–	Basic
Printer room	e-Sense Detect	✓	–	–	Basic
WC	e-Sense Detect	✓	–	–	Basic
Garage	e-Sense Move	✓	–	–	Medium

Occupancy detector
Presence control switches the lighting on and off. After the last presence detection the light is automatically switched off. The time between detection and switching off is adjustable.

Daylight control
A sensor adapts the lighting output to the amount of incidental light (natural light). If there is no daylight, this function regulates the light output to maintain the required illumination level.

IR-receiver
To control and programme using the remote control if required. The remote control is an accessory.

Absence dampening
The occupancy detector adjusts to a high light level on detection and returns to a low level after a short period of time. No switch off function.

Absence dimming with switch-off
The occupancy detection sensor adjusts to a high light level on detection and returns to a low level after a set time. The sensor can also switch off the light completely based on a further time setting. The low level can be adjusted from 10 to 50%.

Manual control
Full manual control via pull dim in the luminaire or retractive switch on the wall.

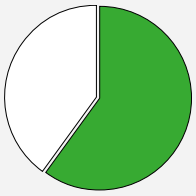
Channel B 30 % offset
Channel B has a 30 % offset, which means that channel B starts to be regulated when channel A drops to 70 %. When channel A is regulated to 10 %, channel B is then set to 40 %. .

Offset
Between group A, B and C are an offset of 15 % to be used for luminaires located further from the window than A. This produces more light further into the room.

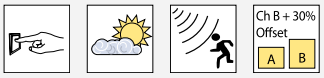
Lux level setting
Setting the threshold value prevents the occupancy detector reacting when daylight is sufficient.

Wireless control
Wireless control simplifies the addition of new lighting within existing, older installations. Total costs are lower because no change in the existing installation is needed.

Energy savings of ≤ 60 %



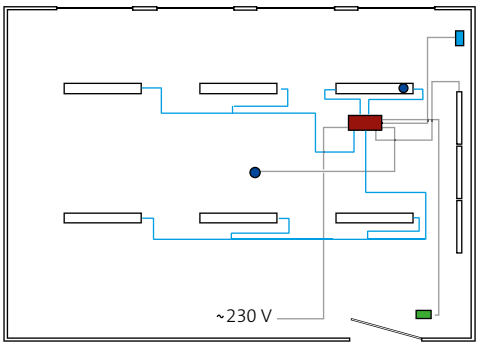
Functions



Advantages

- Quick and easy – all parts included on delivery.
- The control system is ready to use straight away.
- The system's standard setting can be re-programmed as needed.
- Quick connection system minimises the risk of incorrect connection.
- Energy-saving.

Installation example



e-Sense ActiLume Connection Box
Sensor
Impulse switch
Switch

e-Sense ActiLume Connection Box is a quick connection system for control using e-Sense ActiLume. The Box has been designed first and foremost for use in classrooms, but can also easily be used in an office environment or in rooms where the installation can be hidden above the suspended ceiling.

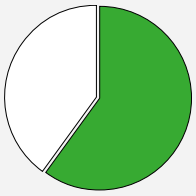
As a control system, the e-Sense ActiLume comes ready-prepared to make initial setting up easy. Minimal effort is required to implement an installation on site, and changes can easily be made using an IR transmitter.

Fagerhult offers a choice of luminaires ready for connection to a purpose built connection box. The box is connected to the mains system, and all luminaires can then be connected one at a time without having to disconnect the power. This reduces the risk of mixing up the connections, which makes for quick and safe installation. All functions can be connected or disconnected without risk.

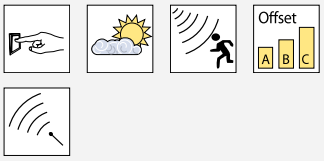
For maintenance work, the power does not need to be disconnected. The luminaire can simply be disconnected from the box or splice connection. During maintenance work, the other luminaires in the room will remain lit to facilitate the work. A luminaire can also be removed and maintenance work on it carried out elsewhere.

Read more about the e-Sense ActiLume Connection Box on our website.

Energy savings of ≤ 60 %



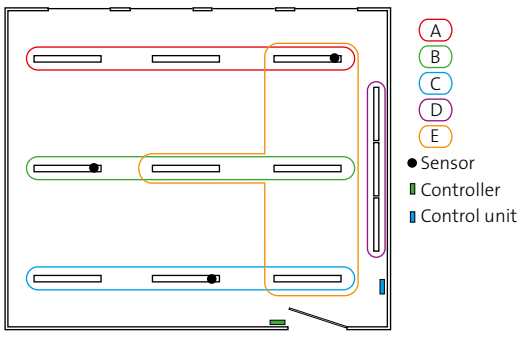
Functions



Advantages

- Quick and uncomplicated – no need to install control cables.
- No structural alterations to the building are necessary.
- Easy to program, create up to seven groups for different needs.
- Complete system with sensors integrated into the luminaire.
- Energy-saving.

Installation example



Example of grouping of luminaires in a lecture room. Group A is situated closest to the windows.
Group B is the middle row.
Group C is the luminaires in the "corridor" row.
Group D is the whiteboard lighting.
Group E is the luminaires that are to be dimmed when a projector is used to increase the contrast of the picture. Other luminaires in the room can still be adjusted using the potentiometer.

Fagerhult e-Sense Connect is a very efficient lighting system with intelligent daylight and occupancy control. Luminaires and sensors communicate wirelessly and, unlike a traditional control system, e-Sense Connect does not require any control cables, a feature which saves time and work.

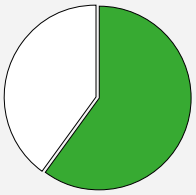
e-Sense Connect is the simple, uncomplicated way to install energy-saving control systems in environments where the need for really good light is often greatest, such as classrooms, lecture halls and open-plan offices.

e-Sense Connect luminaires are only connected to the mains voltage, so no routing of control cables is needed. Nor are external sensors for occupancy and daylight control required, since this function is integrated in the luminaires. For renovation installations the ceilings remain untouched, whole and clean. Programming is performed quickly and easily via a remote control directed towards each luminaire.

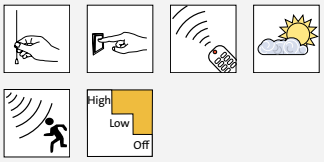
When you no longer have to route cables or spend lots of time making structural alterations, it's easy to make the right decision.

Read more about e-Sense Connect on our website.

Energy savings of ≤ 60 %



Functions



Advantages

- Energy-saving.
- Option of creating a personal lighting level.
- Quick installation – only a mains connection.
- Pre-set lighting scenarios for a customised office.
- All functions integrated in the luminaire.

Fagerhult e-Sense ActiLume luminaires are equipped with integrated light control. An attractive, easy installation without the need for add-on or external sensors. e-Sense ActiLume is the quick and easy way to install light control. No connections – no problems.

The luminaire has a multisensor which detects movement in the room, measures the incidence of daylight and adjusts the output accordingly. Pre-set lighting scenarios can easily be selected on the sensor unit.

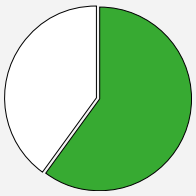
e-Sense ActiLume offers maximum comfort and energy savings up to 60 %, ensuring a quick return on investment. With the system, the user can also adjust the light to the desired level using a momentary switch, pull switch or remote control. The combination of occupancy detector, light sensor and dimmable ballasts gives a vast range of options.

Read more about e-Sense ActiLume on our website.

Open-plan offices with personal light

e-Sense ActiLume

Energy savings of ≤ 60 %



Functions

Advantages

- Possibility of individual control and on/off.
- The luminaires switch off automatically after working hours.
- Controls the lighting level automatically when height-adjustable desks are used.
- All functions integrated in each luminaire.
- Easily programmed via an IR transmitter.

The investment in good lighting in an office is a fraction of the cost of the actual staff. Good lighting and functionality can be combined with effective energy savings. The luminaires have their own intelligent control and do not require a BUS system, making installation a lot easier. e-Sense ActiLume is easily programmed via IR transmitters.

With the correct setting on e-Sense ActiLume you get a constant basic light output of 20 % on all luminaires above unoccupied work stations. Luminaires that have been manually switched off will also switch to to 20 % output after 15 minutes, producing a good light that saves energy and light sources. This avoids the appearance of dark areas in the office when some of the staff have left for the day. Central switch-off after working hours means that no energy is consumed in the form of standby power.

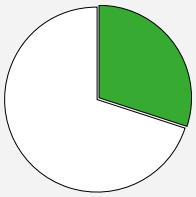
Nowadays many work stations are equipped with adjustable desks. This dramatically alters the illuminance on the work surface when the desks are in the raised position. e-Sense ActiLume automatically regulates the lighting level to match desk position.

Read more about e-Sense ActiLume on our website.

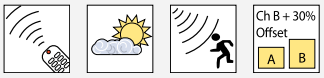
Open-plan offices with recessed lighting

e-Sense ActiLume

Energy savings of ≤ 30 %



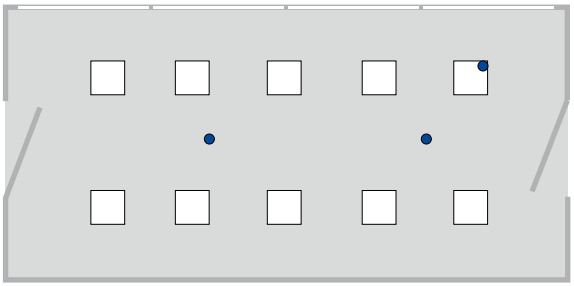
Functions



Advantages

- Even lighting across the whole room, regardless of the amount of daylight.
- Automatic on/off via sensors in the luminaires.
- Manual control via momentary switch if necessary.
- Easy to add external occupancy detectors in larger office areas.
- Offset function.

Installation example

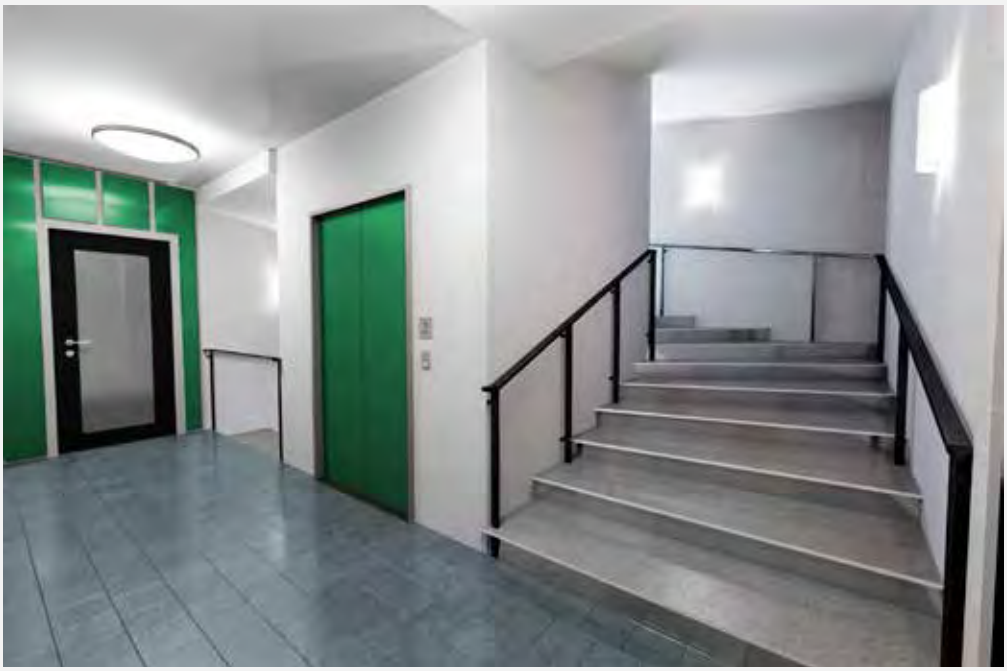


Light on occupancy and adapted to the incidental light. Luminaires placed further into the room are controlled with a 30 % offset. Low light level if no occupancy, but not switched off. Effective control for an open-plan office!

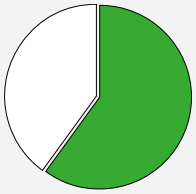
Dividing the lighting into zones, in relation to the windows, ensures you get the right amount of light when working, as well as a solution in line with today's approach to energy. With an e-Sense ActiLume master luminaire positioned next to a window, connected luminaires distributed along the window row (channel A) and other luminaires located more centrally in the room (channel B), compensation is made for reduced availability of daylight further inside the room. When the window row is adjusted to 40 % the inner lighting follows with 70 %, i.e. there is a 30 % offset. This gives an adjustable, but even illumination over the entire area. Daylight control becomes more effective and easier to manage if the detected and adjusted areas are not too different in size.

The lighting zone can cover about eight work stations (depending on the furnishing) and contain 10 luminaires. Occupancy detection within the zone can easily be expanded by extra occupancy detectors connected to the same control signal as the luminaires.

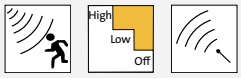
Read more about e-Sense ActiLume on our website.



Energy savings of ≤ 60 %



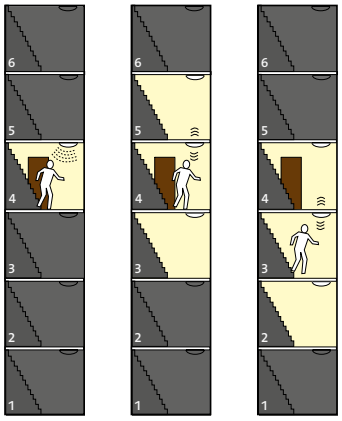
Functions



Advantages

- Light only when and where needed.
- Energy-saving.
- Quick installation.
- Wireless communication between luminaires – no control cables needed.
- Can be individually programmed for optimum utilisation.

Installation example



1. Presence is detected on 4th floor, light turns on.

2. Simultaneously the sensor transmits RF-commands to the closest floors to turn lights on.

3. If a person then moves downwards, the sensors will continue to turn the light on ahead of person being detected.

e-Sense Move is designed primarily for stairwells and is based on microwave technology with multiple luminaires communicating wirelessly with each other. e-Sense Move does not require any control cables.

The system is of duplex design and involves all luminaires acting as both master and slave, depending on which luminaire detects occupancy. When occupancy is detected, information is sent on to one or more luminaires, which light up. Each sensor can actively "listen" to 15 other sensors.

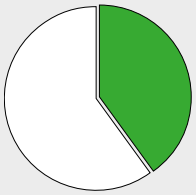
e-Sense Move is excellent for use in stairwells of buildings where there are many floors. In order to optimise energy savings you can choose just to switch on the luminaire on the level above and below the floor where occupancy is detected.

e-Sense Move can also optimise the lighting of areas such as garages, where people might otherwise feel unsafe when the lights are fully off. Individual settings for each luminaire mean that basic lighting can be used in the dark areas of the premises.

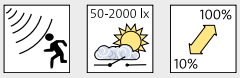
e-Sense Move also has a place in underground passageways, cellars and attic areas, since times and levels can be determined for each luminaire. Settings are performed on the sensor unit in fixed positions.

Read more about e-Sense Move on our website.

Energy savings of ≤ 40 %



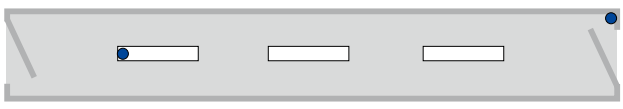
Functions



Advantages

- Ensures area is illuminated before entry; eliminates any sense of disquiet and uncertainty.
- Big potential savings in areas which are rarely frequented.
- Rapid return to low level reduces stress on the light source, electronics and energy.
- Internal sensors can be combined with external standard sensors.

Installation example



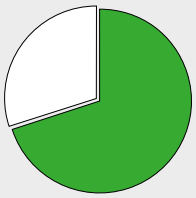
Lighting is usually continuously lit in rarely used corridors and underground passageways, such as hospital underground passageways and corridors in larger building complexes. Using the e-Sense control function with corridor function, big savings can be achieved in these areas, both in terms of the environment and general economy.

If the intention is that the lighting should always be on, you should ensure that the lighting is set at a high level with occupancy and then reduced to a low energy-saving level while awaiting the next instance of detection. With e-Sense with corridor function, the light is constantly at a low level (10 %), but when occupancy is detected, the light level is immediately increased to 100 %.

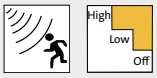
By regulating between high and low levels, instead of simply switching on and off, you can avoid having areas where there is no light on at all, with all the sense of disquiet and uncertainty this entails. In addition, the cathodes do not wear out and fluorescent lamp lifetime is not adversely affected. If luminaires with an LED light source are used, the times for returning to a low level can be significantly reduced.

Read more about e-Sense with corridor function on our website.

Energy savings of ≤ 70 %



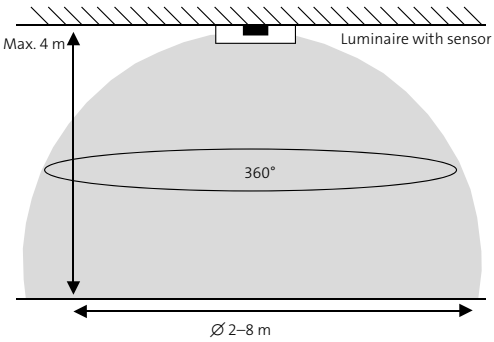
Functions



Advantages

- Can be used for many different environments and needs.
- The sensor is concealed in the luminaire – design and IP class are not affected.
- Multiple luminaires can be connected together using a master/slave function.
- On/off function or absence dimming possible.

Installation example



Ceiling mounting with max. sensitivity. Sensitivity can be adjusted in fixed steps of 20, 30, 50, 75 and 100 %.

Fagerhult e-Sense Detect is the obvious choice for copying and storage rooms, toilets, corridors, cloakrooms and stairwells. The sensor is based on microwave technology which means that the sensor unit can be concealed in the luminaire without affecting its design or insulation class, for instance.

The microwave sensor can detect movement on the other side of, for example, a thin plasterboard wall, which can be an advantage when the luminaire is located in a toilet, as the light will come on before the door is opened. To prevent erroneous detection in other areas, the sensitivity (i.e. the detection range) can be reduced.

The settings for sensitivity and time after last movement are adjusted in fixed steps on the sensor module itself. The relay output can be adjusted in different ways, depending on whether you are switching one or more luminaires, or using the relay to adjust the lighting between various levels – known as absence dimming or corridor function.

Please note that a microwave sensor should not be placed close to ventilation outlets or large metal surfaces. Microwave sensors are extremely sensitive and this may cause nuisance switching.

Read more about e-Sense Detect on our website.

Statoil Regional Office, Oslo

3700 luminaires with integrated function between lighting and ventilation.

245 DALI routers in the network.

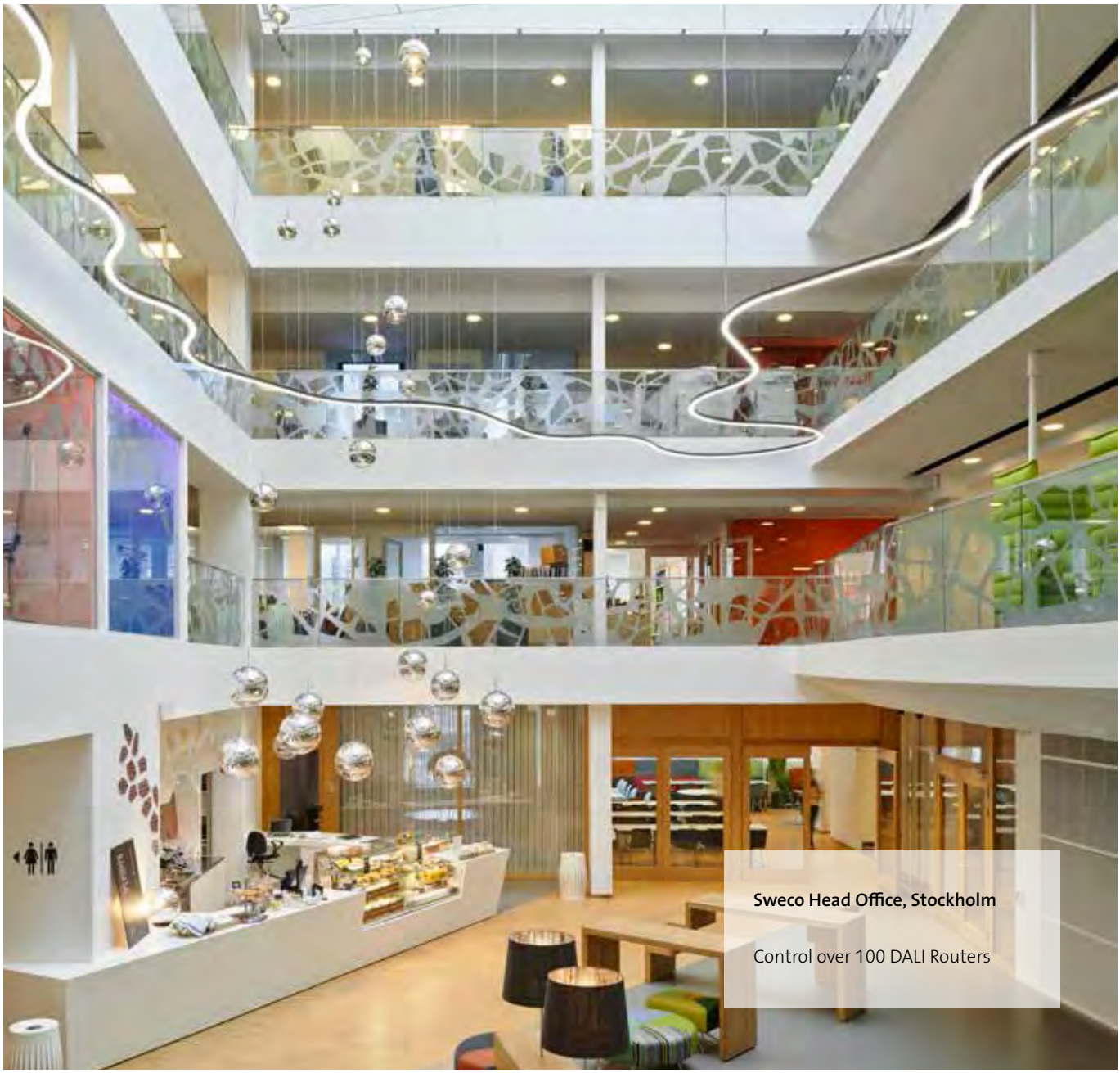
Current technology makes it possible to integrate thousands of luminaires and control functions in just one system, based on a network controlled via DALI routers. In Fagerhult e-Sense Customised we have concentrated all our light-control expertise and experience. We can help with customised solutions in complex projects – from the early design stage through to final programming.

Simple but smart solutions with guaranteed operating function can be used in most environments under normal conditions. But in larger facilities, such as offices and hospitals, the requirements imposed on operating functions are more stringent, demanding more performance and information from the lighting installation. It must be possible to manage energy supply, operating time, fault alarms and light status together with the general building control. Overall control of all functions in a building requires very specific management and competence (OPC).

Few components in complex systems

Despite the complexity and size of lighting installations, only a few components are needed to manage the whole system. Luminaires with ballasts, sensors (multisensors), pushbuttons and input units can deal with most functions that are required. The complexity and freedom comes with the software which is used, both when it comes to initial setting up and future programming. There are few functions, if indeed any at all, which cannot be handled.

e-Sense Customised is our complete range of customised lighting installations. We help you come up with the parts needed to customise an installation based on your stated needs. We can also help in designing, programming and setting up the installation.



Sweco Head Office, Stockholm

Control over 100 DALI Routers

The new router system for DALI uses Ethernet communication as a smooth way of connecting DALI networks together. The modules provide a complete system from single office rooms to large office buildings. The basic functions are available and ready to start without any programming. For advanced functions, the Windows-based software Designer is used. Each individual router can handle two DALI circuits, each with a maximum of 64 control units and load interfaces. The system can be programmed for energy-saving functions such as occupancy detection and constant lighting. Further automatic functions are possible with planned events. The OPC server software activates interfaces with the processing system in the building.

Superb reliability

All data is stored in the system itself, no need for PC control in daily usage. Eliminating the central control arrangement ensures that no single product can cause a breakdown of the system. If necessary, a PC can be connected to the system for diagnostic purposes.

Advantages

- No PC required for daily usage.
- Complete flexibility.
- Standard protocol.
- Simple system layout.

System fundamentals

The router is the central unit in the system providing a smooth connection between a large number of DALI and DIGIDIM products. DIGIDIM systems are programmed using Helvar's Designer software, which can be used on a local or remote-controlled Windows-based PC. Once programming is complete, the PC can be disconnected as it is not required for normal daily system usage. The PC can also be used to monitor and report on the status of the system. All data are stored in flash memory in the DIGIDIM routers, which avoids the need for cumbersome databases and allows the system to be saved to a PC as back-up.

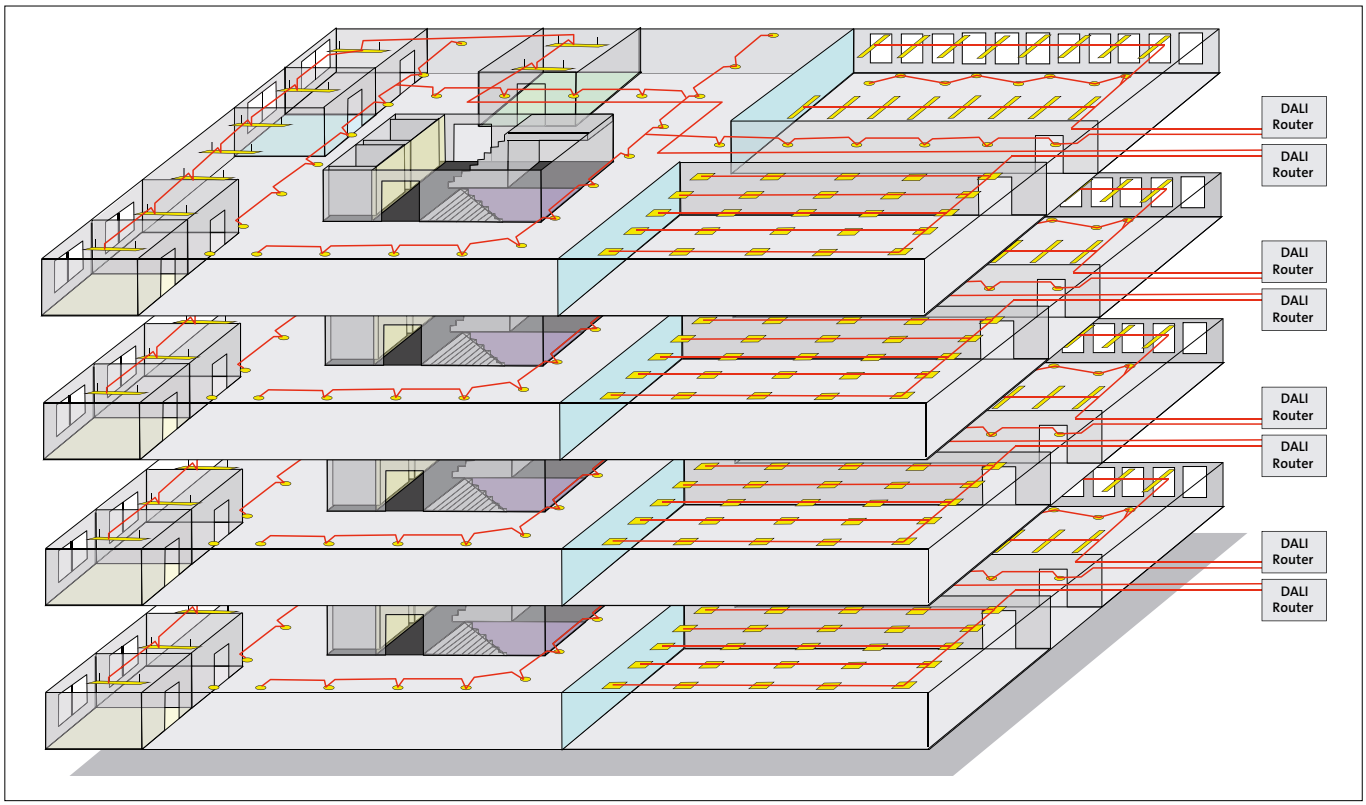
Network of several routers

A large number of routers can be interconnected in a network of standard Ethernet connections. This means it can be used for programming and monitoring. The extent of the system is defined as a work group. A work group is a collection of routers joined via an Ethernet connection.

DALI Router		
Designation	Function	
DALI Router 905	DALI Router 905 1×64 addresses	**86333**
DALI Router 910	DALI Router 910 2×64 addresses	**86195**
DALI Router 920	DALI Router 920 2×64 addresses and DMX	**86178**
DIGIDIM 942	Input unit (for 900 and 910)	**86196**

Accessories DALI Router		
Designation	Function	
SE6060	LAN Switch 5 port DIN	**86215**
SE6070	LAN Switch 8 port DIN	**86216**
SE6095	LAN cable 1,0 m	**86218**

DALI Router 910



i Facts DALI Router

Key figures

- A DIGIDIM router can handle 128 DALI units.
- Each DALI network can have 64 DALI units connected, with a maximum length of 300 metres.
- Integrated 250 mA DALI power supply for each DALI network.
- 10/100 Mbit/s Ethernet connection with Internet protocol (TCP/IP).
- 16.000 groups in Designer software.
- Each router can use 256 groups.
- DALI units work together in groups.
- A maximum of 64 PCs running Helvar's Designer software may be connected at the same time.

Functions

- Manual control (always the option of adjusting the light in person).
- Daylight control (adjustment according to incident daylight. Both open loop and closed loop).
- Occupancy detection (in multi-sensor or external units).
- Lamp status (each DALI unit can provide information).
- Log for life span of light sources (consumption by individual light sources can be logged in a journal).
- Automatic updating when an HF-ballast is changed (information for the removed ballast is updated in the new one).
- Timer functions (automatic on/off or change of functions depending on time).
- Calendar functions (events may occur on specific days of the week).
- Automatic sequence control (e.g. daylight simulation).
- Blocking function for corridor lighting (always corridor lighting when office is occupied).
- Logic functions (AND & NAND-like functions).
- Automatic control of emergency lighting units (meets the DALI standard for the control of emergency lighting units).
- OPC functions (control between property systems and servers).
- Multiple offset controls (constant light adjustment provides higher level of lighting away from windows).

Components from Helvar

Control panels		
Designation	Function	
DIGIDIM 126200	Control panel with 8 controls	**86143**
DIGIDIM 125200	Control panel with 7 controls	**86137**
DIGIDIM 100200	Control panel with rotary controls	**86144**
DIGIDIM 111200	Control panel with 2 sliders	**86145**
DIGIDIM SE6040	Holder, labelling for DIGIDIM-panels double frame	**86166**
DIGIDIM SE6050	Holder, labelling for DIGIDIM-panels single frame	**86165**
Phase regulators		
DIGIDIM 452	Leading and trailing edge control, max 1000 W	**86146**
Sensors		
DIGIDIM 312	Multi-sensor for constant light, with occupancy detection and IR-receiver. Recessed mounting, cut out ∅ 55 mm.	**86122**
DIGIDIM 313	PIR-sensor for wall mounting 313 (16×21 m/7.5×10 m)	**86199**
DIGIDIM 313K	PIR-sensor for mounting 313 K (corridor 30×4 m)	**86197**
Power supply		
DIGIDIM 402	Supplies max 250 mA to the control circuit	**86123**
Remote control		
DIGIDIM 303	IR-remote control	**86121**
Relay & input unit		
DIGIDIM 494	For max 10 A resistive load or 6 A inductive load	**86147**
DIGIDIM 440	DIN mounted input unit for use in DIGIDIM Toolbox installations	**86290**
DIGIDIM 444	Input unit for optional switches or other control	**86148**
DIGIDIM 942	DIN mounted input unit for use in DIGIDIM router installations	**86291**
DIGIDIM 491	Relay unit 1 channel 331026A	**86194**
DIGIDIM 498	Relay unit 8 channels/DIN	**86177**
DIGIDIM 490	Engine control unit for screen/blackout curtain	**86270**
Gateways		
DIGIDIM 472	Converts DALI to 1–10 V DC, DIN rail mounting	**86136**
DIGIDIM 430	For connecting a DALI-system to LonWorks	**86149**
Interface		
DIGIDIM 503	PC interface for AV-connection	**86269**

Note: It is not possible to mix control components from different manufacturers in the same DALI-system.

Components from Fagerhult

Control panels		
Designation	Function	
DALI Touch panel	Programmable DALI panel with pushbuttons.	**18595**

Components from Tridonic

Control panels		
Designation	Function	
DALI GC	Two channel control module. For use with standard momentary heavy current switches from various suppliers. Installed in the same box as the push-button.	**86125**
DALI SC	Control module for four scenes. For use with standard momentary heavy current switches from various suppliers. Installed in the same box as the push-button.	**86126**
Power supply		
DALI PS1	Supplies 200 mA to the control circuit	**86127**
DALI sequence module		
DALI SQM	For automatic sequence control of DALI units, e.g. LEDs with RGB colours.	**86214**
Interface		
DALI SCI	Serial interface for PCs. Used together with the Tridonic winDIM software.	**86129**
DALI USB	Interface for Tridonic software WinDIM and ConfigTool. Connects to the PC's USB port. Replaces the previous DALI SCI except when using the Light Over Time function.	**86182**

Note: It is not possible to mix control components from different manufacturers in the same DALI-system.

Components from Osram

Rotary potentiometer		
Designation	Function	
DALI MCU rotary potentiometer	Rotary potentiometer with integrated power supply for 25 DALI units.	**86212**
Repeater		
DALI-repeater	One DALI-addressable controls 64 DALI HF-ballasts together	**82678**

Note: It is not possible to mix control components from different manufacturers in the same DALI-system.

DALI Touch panel

DIGIDIM 312 multi-sensor

DALI MCU rotary potentiometer

i Facts DALI components

DALI Touch panel
Fagerhult has designed and developed a pushbutton panel offering unique functions and options. Originally the panel was developed to meet the requirements of a hospital environment where the label on each individual pushbutton needs to be easy to read.

DIGIDIM panels
Control panels for assembly in standard pattress boxes. Face of white thermoplastic. The pushbuttons' or controls' functions can be programmed to control an individual luminaire, a luminaire group, a complete DALI-system or recall a pre-set lighting scene.

DIGIDIM frames
Provide an easy way to obtain informative text for DIGIDIM push-button panels and sliders Available for single or double frame. The text area is for plain paper, affixed underneath the container. The frame is placed on the panel's outer frame.

DIGIDIM 452
Digital single channel phase regulator for incandescent and halogen lamps. Leading and trailing edge control can be selected using a switch.

DIGIDIM 312 multi-sensor
Multi-sensor with the functions (selectable) constant light, occupancy detection and receiver for remote control (IR). The unit is recess mounted. Hole diameter 55 mm.

DIGIDIM 313, 313 K
Sensors for wall mounting, e.g. for use in classrooms and corridors. Unlike the 313, the 313 K has a long, narrow detection area, suitable for corridors. It is programmed using the DIGIDIM Toolbox software in the same way as sensor 312.

DIGIDIM 440 input unit
Input unit for DIN mounting with 4 I/O inputs for potential-free connections. Programmable with DIGIDIM Toolbox.

DIGIDIM 444 input unit
The input unit allows the connection of optional switches or other external connections to a DALI system.

DIGIDIM 942 input unit
Input unit for DIN mounting with 8 I/O inputs. Inputs 1–4 can also be used for analogue functions and can be programmed using the specialist Designer software.

DIGIDIM 402 power supply
Power source for DALI. For DIN rail mounting. 250 mA.

DIGIDIM 494 relay unit
Relay unit for DIN fitting. 4 individual potential-free relays, each of 10 A. The unit uses four DALI addresses.

DIGIDIM 491 relay unit
Relay unit in plastic housing, e.g. for building into a luminaire. Relay output 230 V, max. load 3 HF-ballasts. The device uses one DALI address.

DIGIDIM relay unit 498
Relay unit for DIN fitting. 8 individual potential-free relays, each of 10 A. The unit uses eight DALI addresses. The relays can be operated from the front of the unit, with the option of external "override".

DIGIDIM relay unit 490
Relay unit for DIN fitting. For controlling blackout or, for example, screens.
4 potential-free relays in two groups for engine output of max. 550 W. The relays in a group are sealed against each other so that they cannot be drawn simultaneously. Both relays are released after a preset time.

DIGIDIM AV-interface 503
For DIN mounting with screw terminals. Digital link between a DALI system and AV equipment via an rs232 command structure. Ready-made commands are uploaded to communicate in both directions. The unit is powered by the DALI system.

DIGIDIM 303 IR-transmitter
For scene selection and/or channel control. Can also be used as a programming unit on installations with luminaires equipped with a Helvar DIGIDIM system. Requires the system to be equipped with Helvar's wall panel or multi-sensor with IR-receiver.

DALI SQM sequence module
For automatic sequence control of DALI units, e.g. LEDs with RGB colours. The unit alternates light scenes which must be preprogrammed using the DALI DIGIDIM Toolbox or winDiM software. The sequence can be started/stopped by an external function such as a time switch.

DALI SC
Four scene control module for push-button mounted in pattress box.

DALI GC
Two channel control module for push-button mounted in a pattress box.

DALI PS1
Compact and enclosed power source for DALI that can be fitted, for example, in a suspended ceiling. 200 mA.

Rotary potentiometer DALI MCU
Rotary potentiometer with built-in power supply to 25 DALI devices. Connected to 230 V and DALI. Two MCU can be connected to power to a maximum of 50 DALI devices. Four potentiometers can be connected in parallel for control from multiple locations. Potentiometers MCU should not be combined with other DALI controllers.

DALI-repeater
For fitting inside a housing or luminaire, for example. The unit uses one DALI address to control 64 new DALI loads. No individual addresses can be used. Built-in power supply for the new loads.

Subject to alteration.

HTS Compact Passage

Steinel PIR BLS-T

Steinel PIR IS3180

Steinel IS 345 MX High-bay

Esylux PDE 360i/24

Sensor HTS		
Component		
Sensor Compact Passage		**86225**
Flush wall box		**86226**
Protective guard (not used in combination with flush wall box)		**86227**

Sensor Steinel		
Component		
Sensor PIR IS3180	Wall mounting h 2.0 m, detection 8–20 m	**86235**
Sensor PIR IS3360	Ceiling mounting h 2.5 m, detection 10×10 m	**86271**
Sensor PIR IS345	Ceiling mounting, corridor h 3.0 m, detection 20×4 m	**86272**
Sensor IS345 MX Highbay	Microwave sensor, mounting height 12 m, 30×4 m	**86273**
Sensor PIR BLS-T	Ceiling mounting 2.5 m, detection Ø max 4 m. Manual switch-on.	**86274**
Protective guard		**86227**

Sensor Hytronik		
Component		
Sensor HC001/S	Microwave sensor	**86275**
HC-IP65	Housing for the above	**86276**

Sensor Esylux		
Component		
Sensor PDE 360i/24	Ceiling mounting, 2 potential-free relays	**86277**

i Facts – sensors for absence dimming

HTS Compact Passage
PIR occupancy detector for lighting control. Designed for ceiling mounting, recessed in a pattress or surface mounted in a flush wall box. The detection range of this sensor makes it particularly suitable for corridors, though it can also be used in other environments. A separate input allows the lighting connector to be controlled manually via a pushbutton or switch. The occupancy detector is equipped with a 10–1500 lx light relay, while the output is designed to suit HF-ballasts, with current limitation to prevent high start-up currents. The Off delay can be set from 10 seconds to 20 minutes and also features a self-teaching function.
- Occupancy detection.
- Long, narrow detection area.
- On and Off delay.
- Light sensor 10–1500 lx.
- Pushbutton input.

Steinel sensors
Steinel sensors are available in a number of varieties that are adapted for various functions and detection areas. They are easy to install and deploy. It is always important to plan the location of sensors well in advance. It is better to opt for one sensor too many in the installation than to be over-confident about the detection area. All sensors from Steinel can operate in parallel.

HC001/S Sensor
Microwave sensor for mounting inside a housing or luminaire. Settings for sensitivity, lux threshold and off-time in fixed steps. The load over the relay is 400 W HF ballast. The unit uses microwave technology, which makes it possible to detect movement through solid materials, such as ceilings.

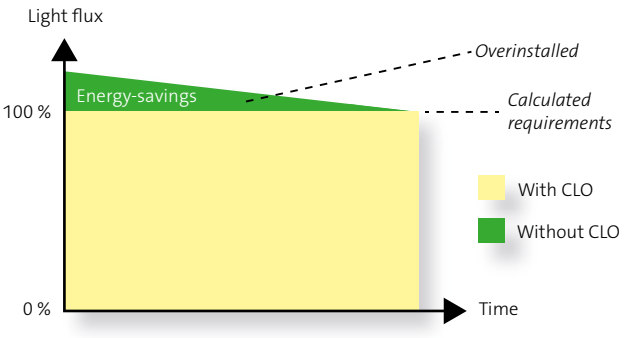
HC-IP 65
Housing for the HC001/S or similar sensors from the same manufacturer. Enclosure class IP 65.

Esylux Sensor
Ceiling mounted Occupancy Sensor with 360° surveillance zone, with a large range of up to 24 m in diameter. For use in offices, classrooms, conference rooms, etc. Particularly suitable for installations of heights up to 10 m, e.g. in sports halls, warehouses, etc. Extra switch for controlling ventilation. Additional button input for individual, manual switching on/off of lighting. Surveillance area can be extended by connecting a slave sensor.

The light flux of LEDs reduces over time as the diode ages, just as with many other light sources. This light depreciation is more or less linear across the diode's service life. The luminaire itself can compensate for the light depreciation. This is called Constant Light Output (CLO).

The luminaire starts its service life at a lower operational current. The current gradually increases over its service life to compensate for the LED's light depreciation. This compensation is automatic, requiring no maintenance resource.

The advantage of CLO is that the installation does not need to be over installed to compensate for future light depreciation from the diodes. Using CLO, you get the correct light from the luminaire for the duration of its service life. CLO also decreases the installation's environmental impact. The operating costs and total installation costs are therefore also lower.



The requirement for light flux is 100 percent according to the calculation. You do not need to over install when using CLO. The luminaire will be constantly illuminated for the duration of its service life. You then avoid luminaire light depreciation.

Controlling the level of light makes it possible to save a lot of energy. There is often less need to have fully lit streets and other outdoor environments late in the evening and during the night. But switching off lights can make people feel unsafe. Using lighting control, major energy savings can be made without the need to switch off lights completely and create a sense of insecurity.

The various systems we use for lighting control outdoors are integrated into each luminaire's electrical ballast and take care of themselves. Nor is there any need for external accessories to make the lighting control work.

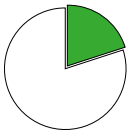
The control units are pre-programmed and maintenance-free. Luminaires with night-time dimming also require no additional investments in or modifications to infrastructure.

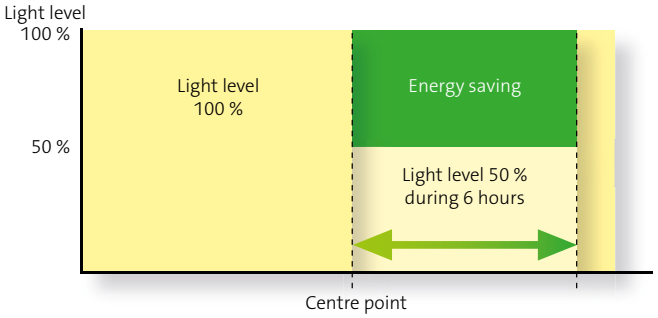
The systems we are talking about have many different names in the industry. We choose to call it what it is – night-time dimming.

Night-time dimming 1
Light levels: 100 % and 50 %.

The system calculates the light cycle's centre point when the installation is on, and then adjusts down from 100 percent to 50 percent over six hours from this centre point. When six hours have passed, the installation is adjusted back up to full level.

Energy savings: up to 20 %.



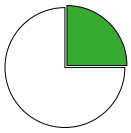


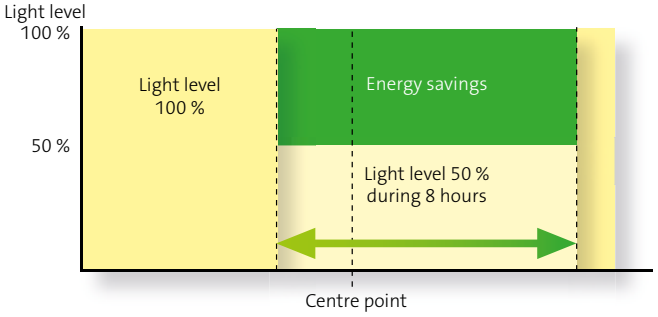
With Night-time dimming 1 the installation is adjusted down from the light cycle's centre point and six hours ahead. When six hours have passed, the installation is adjusted up to full level.

Night-time dimming 2
Light levels: 100 % and 50 %. .

The system calculates the light cycle's centre point when the installation is on. Two hours before the centre point and a total of eight hours ahead, the installation adjusts down from 100 percent to 50 percent. When eight hours have passed, the installation is adjusted back up to full level.

Energy savings: up to 25 %.



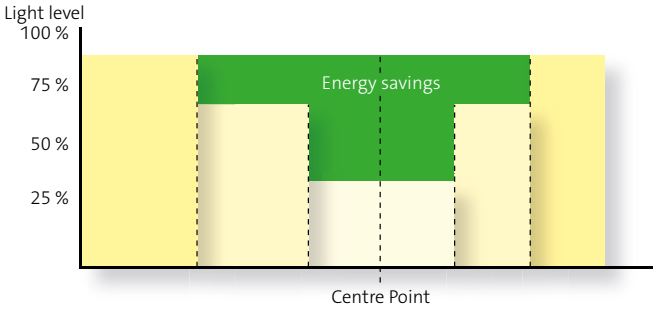


The Night-time dimming 2 system adjusts the output down from two hours before the light cycle's centre point and a total of eight hours ahead. When eight hours have passed, the installation is adjusted up to full level.

Night-time dimming Custom
Light level: dynamic (max. five levels).

The system offers up to five flexible light levels which can be set for optional time periods. This allows for extremely low light levels in the middle of the night, higher light levels when needed and medium light levels during the transition periods. The system works around a centre point that is based on the total time for which the luminaire is lit.

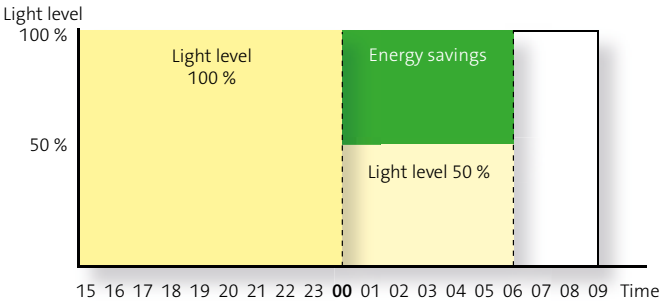
Energy savings depend on light level and time.



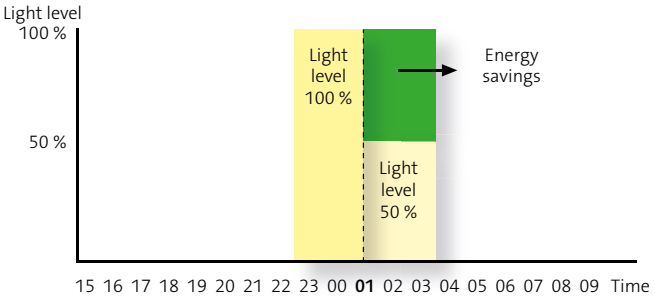
Custom night-time dimming is flexible and can be programmed entirely to suit the customer's wishes. The levels and periods set can, for example, be based on traffic intensity and presence at the location as well as the type of area in which the luminaire is fitted.

Example
The system calculates the light cycle's centre point via a photo-cell in the existing system which measures the brightness of the natural light and determines when the light should be switched on and off. This is then repeated automatically by the system every three days.

December
In December the light installation switches on at 3 pm and switches off at 9 am. This means that the light cycle is 18 hours long. The centre point is therefore midnight. This means that the light level is at 100 percent between 3 pm and midnight. The light is then adjusted down to 50 percent. At 6 am the light installation is adjusted back up to 100 percent until 9 am, when the light installation switches off completely.



June
In June the light installation begins at 10.30 pm and switches off at 3.30 am. This means that the light cycle is five hours long. The centre point in the period is therefore 1 am. This means that the light level is at 100 percent from 10.30 pm until 1 am, when the light is adjusted down to 50 percent. As the total light cycle is not long enough, the upwards adjustment phases are made shorter. The light installation will then switch off completely at 3.30 am without having been adjusted up to 100 percent.



Night reduction technology – ateljé Lyktan

Products from ateljé Lyktan can also be equipped with night-time dimming, or "Night reduction technology".
Following scenes for night reduction technology are available:

Scene 1 (suffix code -466)
From 9 PM power goes down to 70 percent
From 12 AM power goes down to 50 percent
From 4 AM power goes up to 70 percent
From 6 AM power goes up 100 percent

Scene 2 (suffix code -467)
From 9 PM power goes down to 50 percent
From 6 AM power goes up 100 percent

Scene 3 (suffix code -468)
From 12 AM power goes down to 50 percent
From 6 AM power goes up to 100 percent

Please note:
From the time the system is installed, it takes about five days before the system finds the day midpoint that everything starts from.

The system saves the last five days in order to continuously update the day midpoint throughout the year.

The luminaire is dimmed about 10 percent per minute. That means it takes about 5 minutes for the fixture to go from 100 percent to 50 percent. This is to avoid any tolerance differences in the times per module.

On product pages you will find suffix codes for specific functions. Combine the luminaire's catalogue numbers with the required suffix code. Note that only one suffix code is possible. Please contact customer service for your local market, if you need to combine several functions.

Suffix code HF-dim DALI

-368	DALI/Phase-pulse control Make independent. No special functions defined.
-299	Excel one4all. DALI, DSI, switchDIM, smartDIM sensor, corridor function, programmable memory function "E-power" (Power on last level).
-400	iDim HF-ballast. DALI, Switchcontrol, programmable memory function "Power on last level".
-402	DALI/Phase-pulse control for dimmable LED driver.
-449	DALI for dimmable LED driver, 1 pull-cord for dimming.
-471	DALI for dimmable LED driver.

Due to luminaire design additional code varies for the same function.

Suffix code HF-dim DALI/DSI/switchDIM

-436	DALI/DSI/switchDIM TRIDONIC PCA BASIC ballast for dimming 10–100 % .

Suffix code HF-dim phase-pulse control

-409	Phase-pulse control, 1 pull-cord. Make independent.
-410	Phase-pulse control, 2 pull-cords. Make independent.

Suffix code HF-dim 1–10 V

-61	1–10 V
-81	1–10 V
-205	1–10 V. Make independent.

Due to luminaire design additional code varies for the same function.

Suffix code Fagerhult e-Sense ActiLume

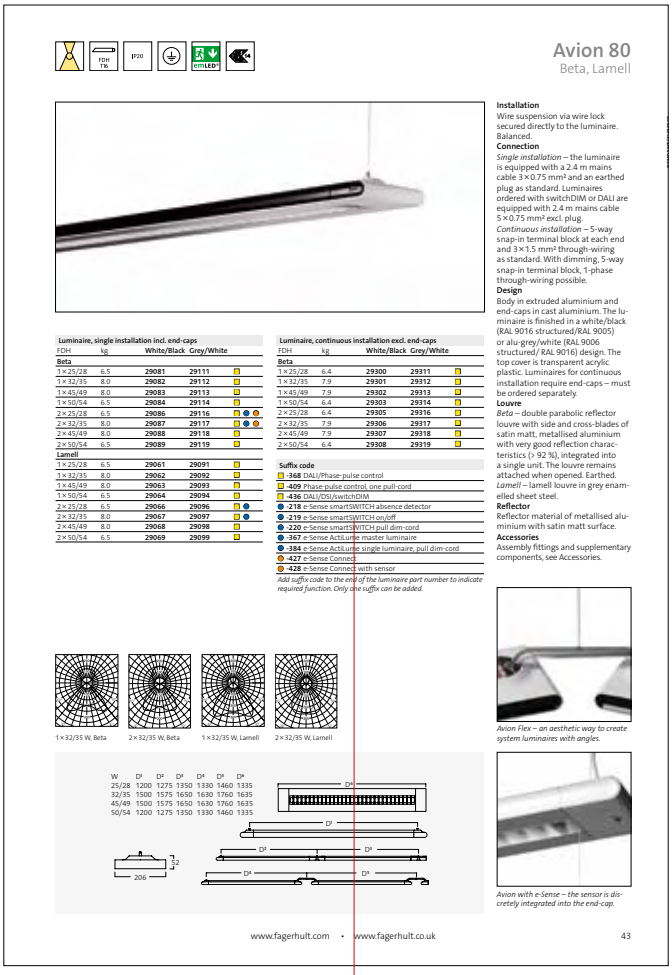
-367	e-Sense ActiLume master luminaire. Sensor installation in the luminaire body. Master luminaire suitable for e.g. classrooms.
-382	e-Sense ActiLume master luminaire. Sensor installation in the Beta louvre. Master luminaire suitable for e.g. classrooms.
-384	e-Sense ActiLume single luminaire. Sensor installation in the luminaire body. 1 pull-cord for dimming.
-385	e-Sense ActiLume single luminaire. Sensor installation in the Beta louvre. 1 pull-cord for dimming.
-217	e-Sense ActiLume with DALI ballast for installation in the luminaire body. Terminal blocks for DALI 1 & DALI 2 outlets. In pendent luminaires equipped with 1 pull-cord for dimming.
-308	As above but for sensor installation in the Beta louvre.
-442	e-Sense ActiLume single luminaire with LED driver. Sensor installation in the luminaire body.
-448	e-Sense ActiLume single luminaire with LED driver. Sensor installation in the luminaire body. 1 pull-cord for dimming.
-459	e-Sense ActiLume master luminaire with LED driver. Sensor installation in the luminaire body. Master luminaire suitable for e.g. classrooms.

Suffix code Fagerhult e-Sense smartSWITCH

-218	e-Sense smartSWITCH absence damping for installation in the luminaire body, dimmable HF-ballast, 4-way terminal block for through-wiring of the control signal.
-309	As above but for sensor installation in the Beta louvre.
-219	e-Sense smartSWITCH on/off for installation in the luminaire body. (HF-ballast, i.e. only on/off =presence detector)
-314	As above but for sensor installation in the Beta louvre.
-220	e-Sense smartSWITCH for installation in the body, dimmable HF-ballast. Dimming via pull-cord for dimming in pendant luminaires. 1 pull-cord (1 ballast) for 1 and 2 lamp luminaires, 2 pull-cords (2 ballasts) for 3 lamp luminaires.
-315	As above but for sensor installation in the Beta louvre.

Suffix code e-Sense Connect

-426	Luminaire with integrated e-Sense Connect unit on/off only.
-427	Luminaire with integrated e-Sense Connect unit for dimming.
-428	Luminaire with integrated sensor and e-Sense Connect unit for dimming.
-457	LED luminaire with integrated sensor and e-Sense Connect unit for dimming.
-458	LED luminaire with integrated e-Sense Connect unit for dimming.



Avion 80
Beta, Lamell

Installation
Wire suspension via wire lock secured directly to the luminaire. Balanced.
Connection
Single installation – the luminaire is equipped with a 2.4 m mains cable 3×0.75 mm² and an earthed plug as standard. Luminaires ordered with switchDIM or DALI are equipped with 2.4 m mains cable 5×0.75 mm² excl. plug.
Continuous installation – 5-way snap-in terminal block at each end and 3×1.5 mm² through-wiring as standard. With dimming, 5-way snap-in terminal block, 1-phase through-wiring possible.
Design
Body in extruded aluminium and end-caps in cast aluminium. The luminaire is finished in a white/black (RAL 9016 structured/RAL 9005) or alu-grey/white (RAL 9006 structured/ RAL 9016) design. The top cover is transparent acrylic plastic. Luminaires for continuous installation require end-caps – must be ordered separately.
Louvre
Beta – double parabolic reflector louvre with side and cross-blades of satin matt, metallised aluminium with very good reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when opened. Earthed.
Lamell – lamell louvre in grey enamelled sheet steel.
Reflector
Reflector material of metallised aluminium with satin matt surface.
Accessories
Assembly fittings and supplementary components, see Accessories.

Luminaire, single installation incl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
1×25/28	6.5	29081	29111	■
1×32/35	8.0	29082	29112	■
1×45/49	8.0	29083	29113	■
1×50/54	6.5	29084	29114	■
2×25/28	6.5	29086	29116	■ ● ●
2×32/35	8.0	29087	29117	■ ● ●
2×45/49	8.0	29088	29118	■
2×50/54	6.5	29089	29119	■
Lamell				
1×25/28	6.5	29061	29091	■
1×32/35	8.0	29062	29092	■
1×45/49	8.0	29063	29093	■
1×50/54	6.5	29064	29094	■
2×25/28	6.5	29066	29096	■ ●
2×32/35	8.0	29067	29097	■ ●
2×45/49	8.0	29068	29098	■
2×50/54	6.5	29069	29099	■

Luminaire, continuous installation excl. end-caps

FDH	kg	White/Black	Grey/White	
Beta				
1×25/28	6.4	29300	29311	■
1×32/35	7.9	29301	29312	■
1×45/49	7.9	29302	29313	■
1×50/54	6.4	29303	29314	■
2×25/28	6.4	29305	29316	■
2×32/35	7.9	29306	29317	■
2×45/49	7.9	29307	29318	■
2×50/54	6.4	29308	29319	■

Suffix code
- ■ **-368** DALI/Phase-pulse control
- ■ **-409** Phase-pulse control, one pull-cord
- ■ **-436** DALI/DSI/switchDIM
- ● **-218** e-Sense smartSWITCH absence detector
- ● **-219** e-Sense smartSWITCH on/off
- ● **-220** e-Sense smartSWITCH pull dim-cord
- ● **-367** e-Sense ActiLume master luminaire
- ● **-384** e-Sense ActiLume single luminaire, pull dim-cord
- ● **-427** e-Sense Connect
- ● **-428** e-Sense Connect with sensor

Add suffix code to the end of the luminaire part number to indicate required function. Only one suffix can be added.

Avion Flex – an aesthetic way to create system luminaires with angles.

Avion with e-Sense – the sensor is discretely integrated into the end-cap.

29061	29091	■
29062	29092	■
29063	29093	■
29064	29094	■
29066	29096	■ ●
29067	29097	■ ●
29068	29098	■
29069	29099	■

Suffix code
- ■ **-368** DALI/Phase-pulse control
- ■ **-409** Phase-pulse control, one pull-cord
- ■ **-436** DALI/DSI/switchDIM
- ● **-218** e-Sense smartSWITCH absence detector
- ● **-219** e-Sense smartSWITCH on/off
- ● **-220** e-Sense smartSWITCH pull dim-cord
- ● **-367** e-Sense ActiLume master luminaire
- ● **-384** e-Sense ActiLume single luminaire, pull dim-cord
- ● **-427** e-Sense Connect
- ● **-428** e-Sense Connect with sensor

Add suffix code to the end of the luminaire part number to indicate

Suffix code e-Sense Detect

-357	e-Sense Detect on/off. Five slave luminaires can be connected.
-358	e-Sense Detect with absence dampening for FDH. More slave luminaires can be connected.
-359	e-Sense Detect with absence dampening for other light sources. More slave luminaires can be connected.
-439	e-Sense Detect for LED driver, absence dampening 100–10–0 %
-469	e-Sense Detect on/off for LED driver. Five slave luminaires can be connected.

Suffix code e-Sense Move

-431	Luminaire with integrated e-Sense Move unit on/off only.
-432	Luminaire with integrated e-Sense Move unit for dimming.
-440	e-Sense Move for LED driver, absence dampening 100–20–0 %

Suffix code Fagerhult Outdoor

-438	1–10 V
-461	DALI and CLO
-462	Night-time dimming 1
-463	Night-time dimming 2
-464	CLO and Night-time dimming 1
-465	CLO and Night-time dimming 2

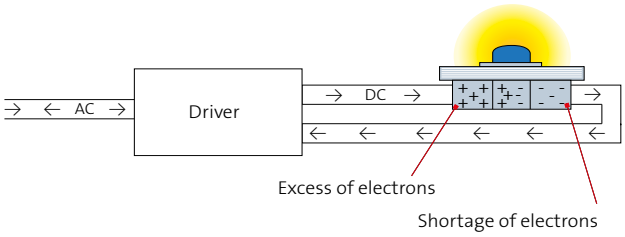
Suffix code ateljé Lyktan Outdoor

-466	Night-time dimming, scene 1
-467	Night-time dimming, scene 2
-468	Night-time dimming, scene 3

Fagerhult are developing luminaires specifically for LEDs, creating viable solutions across the whole spectrum of a lighting project. Drawing on over half a century of lighting know-how and innovation, this approach has focused on softening the intensity of the light to create a harmony between efficiency and comfort.

LED light

An acronym for light-emitting diode, an LED is a semiconductor that radiates light when subjected to electrical impulses – a phenomenon called electroluminescence. An LED runs on direct current (DC) and often requires a separate electrical ballast – a 'driver'. The driver converts the mains voltage to an optimal level for the LED.



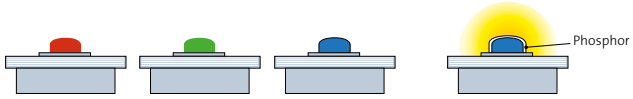
An LED consists of two sections: one with an excess of electrons (n-conducting) and one with a shortage of electrons (p-conducting). The light is generated when these electrons strive to achieve balance. The boundary between these two areas is called the p-n junction or depletion layer, and this is where it all happens. When direct current is connected to the diode, the excess and shortage balance out to create light.

Small and effective

LEDs are very small; the active light-emitting surface is no bigger than 1–2 mm². A single diode can rarely produce enough light for a given lighting situation. For the unit to work, it must be mounted on a circuit board, with multiple LEDs in a cluster to form a LED module (not to be confused with retrofitted light sources). LED modules come in many varieties with specially adapted light flow and design to suit specific types of luminaires.

Coloured light

Usually white light is created by applying a phosphor-based coating to a blue diode, either directly on the diode or on a separate plate over it. Colour shifting in red, green and blue is generally referred to as RGB control. About 65,000 colours can be obtained by mixing and combining these three colours at various strengths. Creating a specific colour requires some type of control unit or interface to a program that communicates via DALI or DMX 512.



Colour shifting in red, green and blue is generally referred to as RGB control. The most common way to create a white light is to apply a phosphor-based coating to a blue diode. The phosphor converts the blue light to white light in a range of colour temperatures.

The environmental alternative

From an environmental stance the energy efficiency and long life span are the two key benefits of LED. At the end of its life an LED module is recycled in the same way as other electronics. Although unlike traditional light sources, such as fluorescent tubes, LED modules contain no mercury, which simplifies waste management and reduces the risk of emissions.

Fagerhult uses only LED's, or LED modules, from recognised manufacturers and pays close attention towards ensuing they are powered for optimal lifespan and efficiency.

To help safeguard against the negative issues related to excessive heat, all components within the Fagerhult range remain within the manufacturers stated levels. An additional safety margin is added when measuring the control temperature (t_c) and when calculating the temperature of the LED (t_j). This policy has been applied to other electronics, such as high-frequency ballasts and emergency lighting, for many years and has helped ensure the stated expected life span is always achieved by a good margin. The design is optimised by using software that stimulates temperatures and a heat camera to test calculations on the luminaire prototypes. During inspections and testing, the luminaire is always installed in the way it is intended to be used by the end customer. By including these processes at the early stage of the design, this additional margin can be included without increasing the cost of the luminaire.

Zhaga

Zhaga is a consortium of companies from throughout the international lighting industry. The organization is developing specfications that will enable the interchangeability of LED light sources made by multiple different manufacturers. Fagerhult is a Regular Member in Zhaga.

i Glossary

Luminaire power
is expressed in watts (W) and the total system output of an LED luminaire.

Luminaire Luminous Flux
the total light output in lumens (lm) for an LED fixture.

Luminaire Luminous Efficacy
is defined as the ratio of the luminaire light output and luminaire efficacy for LED luminaires and stated in lumens per watt (lm/W).

CELMA
The European trade association for luminaire manufacturers .

DALI
(Digital Addressable Lighting Interface) is a standardised digital protocol for dimming.

DMX
A control system that is suitable to use for quick colour changes, RGB for example, intended for effect and scene lighting.

DSI
A system for digital lighting control.

Ballast failure fraction
Failure fraction (Fy) of ballast at nominal service life and is specified in %.
For example, a failure fraction of 15 % is specified as factor F15.

Power factor
Often represented by PFC or λ and is a factor between 0–1. A low PFC leads among other things to greater energy losses in the electricity supply network and LED ballasts with λ > 0.85 should be chosen.

Colour rendering index
is specified as CRI/Ra on a scale of 0–100 and is a measurement of a light source's capability of rendering colours

IP-class
Specifies the degree of protection against live parts and how waterproof and dust proof the luminaire is. Specified as IP followed by two numbers, e.g. IP 23.

Correlated colour temperature
is specified as CCT in kelvins (K) and is a relative unit for colour appearance.

Chromaticity
The light's colour quality.

LED
An acronym for Light Emitting Diode.

Chromaticity tolerance
is a measurement of the spread of chromaticity and is specified as the number of MacAdam ellipses in SDCM and is measured according to a standardised CIE method.

Luminous Intensity Distribution
A luminaire's luminous intensity distribution is measured according to a CIE standard and is specified in cd/1000 lm. Presented in table or using a polar diagram.

Rated life
is defined as the number of burn hours after which a given part of the initial luminous flux remains. Currently the rated life is specified as the number of operating hours when 70 % of the initial luminous flux remains and is represented as L_{70}.

PFC
See power factor.

PWM
Pulse Width Modulation is a recognised technology for dimming and is recommended for LEDs.

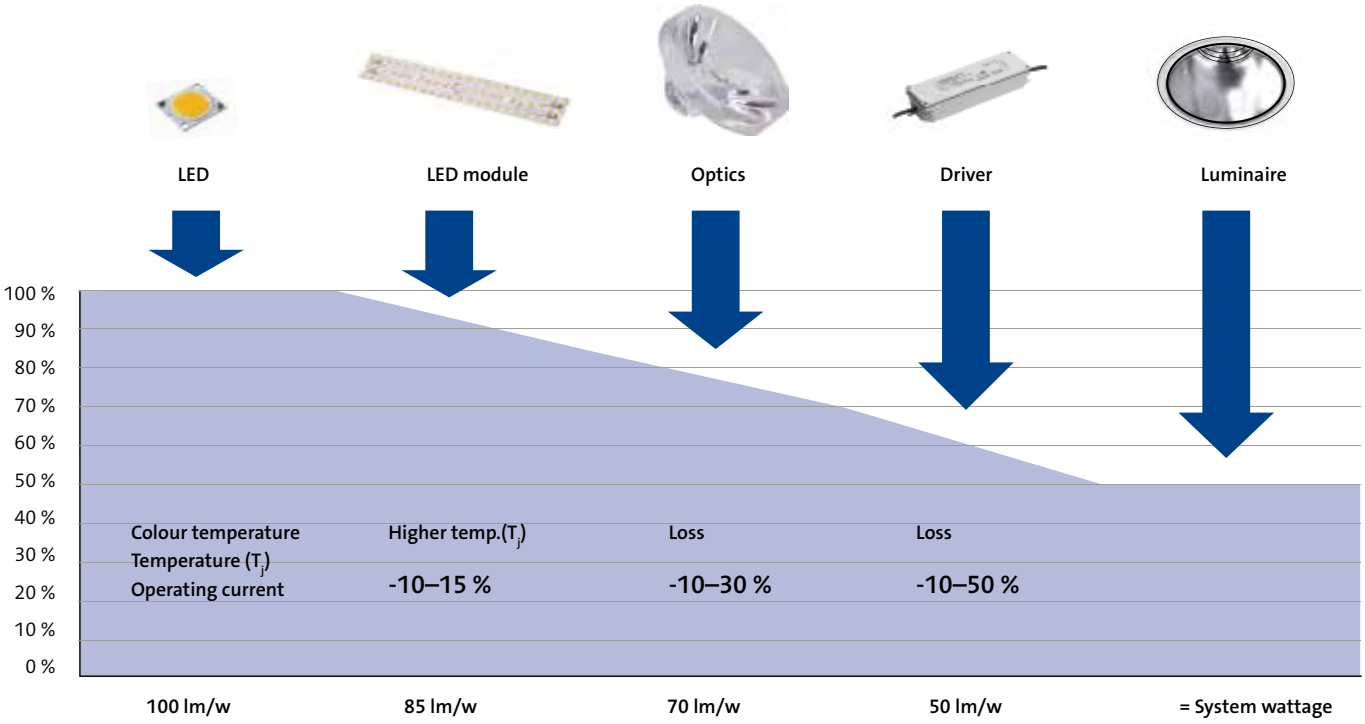
Ra
An index which rates the light source's capacity to render colours, specified on a scale of 0-100 where 100 indicates perfect colour rendering.

RGB-technology
A technology which combines red, green and blue light to create either white light or coloured light with optional colour changes.

T_c
The ballast's maximum temperature at a given metering point according to the manufacturer's specification.

Comparing LED with traditional solutions can easily turn into a matter of apples and oranges. The properties measured in the laboratory of an LED manufacturer cannot be directly linked to how an LED module performs in a luminaire. To get a good idea of the light's capacity, the LED needs to be placed in its specific lighting context.

Calculation of luminous flux



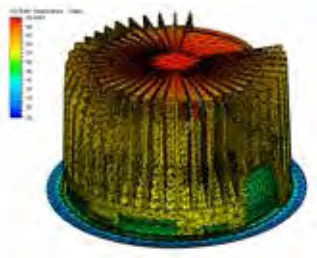
Schematic sketch of losses. This illustration shows the process from the individual LED, through heat losses in the modules (where the diodes heat each other up), to light losses in lenses, reflectors and drivers, to the light that actually radiates from the luminaire. Depending on the design, each loss can be of greater or lesser magnitude.

Light output equals light flow

The energy efficiency of an LED luminaire cannot be defined by light output, because LED modules do not have a standardised nominal luminous flux as fluorescent tubes do. The reason for this is that the whole luminaire, including the LED and the electrical driver, is considered as the reference, with the result that the light output is always 100 %. Instead, the efficiency of an LED luminaire is defined as the ratio of the total measured luminous flux (lm) to the radiant flux including ballast losses (lm/W).

Operating temperature

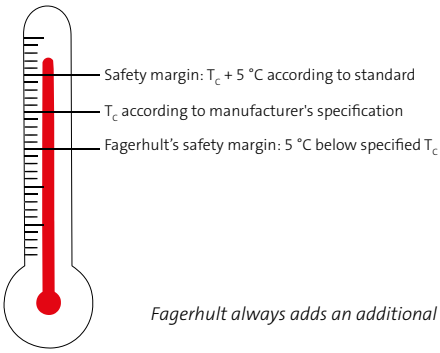
Heat has the greatest negative impact on an LED's life span, luminance and efficiency. This is why Fagerhult makes sure when developing LED luminaires that the temperature of the components remains within the manufacturer's specifications and meets the requirements in our own policy.



During inspections and testing, the luminaire is always installed in the way it is intended to be used by the end customer. By including these processes at the early stage of the design, this additional margin can be included without increasing the cost of the luminaire.

Manufacturers of LED and drivers specify a T_c temperature of x degrees but according to the standard a safety margin of additional +5 °C is added. The Fagerhult policy of staying 5° below the specified T_c, can result in a difference in temperature of up to 10° in the electronics compared to a luminaire of another manufacturer. This has a major impact on life span, colour quality and colour rendition.

An LED very rarely fails although, as with any electronic products, there is a normal failure rate. Rather than failing, an LED generates reduced light flow over time.

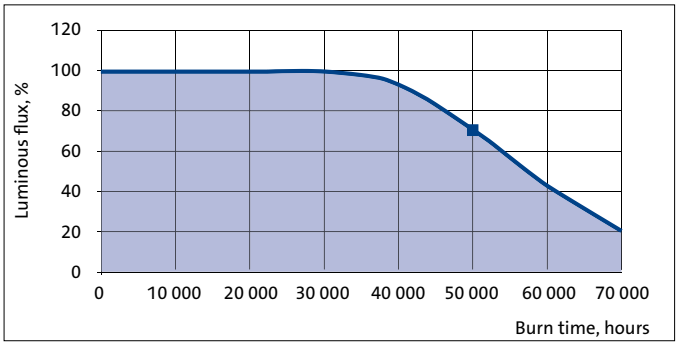


Fagerhult always adds an additional safety margin.

At least 50,000 hours

The expected life depends on a number of factors, including:

- Choice of LED (brand and type).
- How hard the selected LED is driven (how much current it is driven with).
- Luminaire design (in view of the LED or LED module's temperature).
- Choice of ballast (driver).
- The use of the luminaire.
- Other materials used in the design.
- The environment in which the product is installed.



Expected life is defined as the time at which the luminous flux from the luminaire has dropped to 70 % of the initial value – in this case, 50 000 hours.

Expected life is defined as the time at which the luminous flux from the luminaire has dropped to 70 % of the initial value. The life is expressed as L_{70} followed by the number of hours. The standard life for most LED luminaires is L_{70} 50 000 hours, though there are deviations both upwards and downwards.

There are also ballasts with a so-called constant light function which means that the luminous flux is maintained. However, this means that you supply more power and therefore the mean power of the service life must be specified and not the initial value.

Maintenance-free

Outside of standard cleaning, LED luminaires are pretty much maintenance free throughout their lifecycle. As such, larger organisations can save considerable amounts by not having to keep stock of equipment and associated man-power in replacing the light sources.

Optimal alternative for outdoor lighting

In general, LED technology is the optimal alternative for outdoor lighting. These luminaires are subject to the vagaries of weather, temperature, vibrations and human interference. Often the systems are designed so that special equipment is needed to conduct maintenance and replace broken components. The reduced maintenance characteristic of LED technology is both a practical and economic solution. Another advantage of LED lighting in outdoor environments is that cold temperatures actually have a positive effect on the diodes, enhancing light flow and life span. This, when compared with a light source with an aluminium housing , offers extremely

durable, reliable, maintenance-free luminaires that require a minimal amount of electricity in relation to the amount of light they generate.

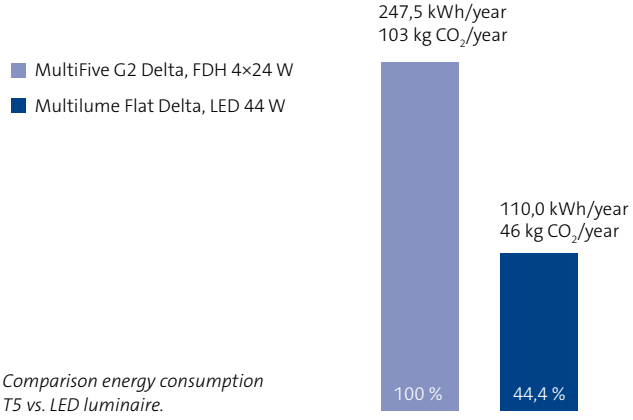
Equipped for mechanical stress

LEDs do not contain any moving or fragile parts. Therefore, a properly designed LED luminaire is well-equipped to handle vibrations and other mechanical stress.

Superior efficiency – less waste

As with all lighting, the greatest impact on the environment is related to the energy used during its use. The large amount of light produced, compared to the energy consumed, makes LED solutions very efficient, this is particular important when the electricity used to power then comes from sources that are not environmentally optimised, such as coal.

However, the environmental impact of an LED luminaire in terms of energy efficiency and life span is always dependent on how the luminaire is designed and what context it is intended to be used in. Thus, it is important to do calculations on each individual project and not blindly trust laboratory tests.

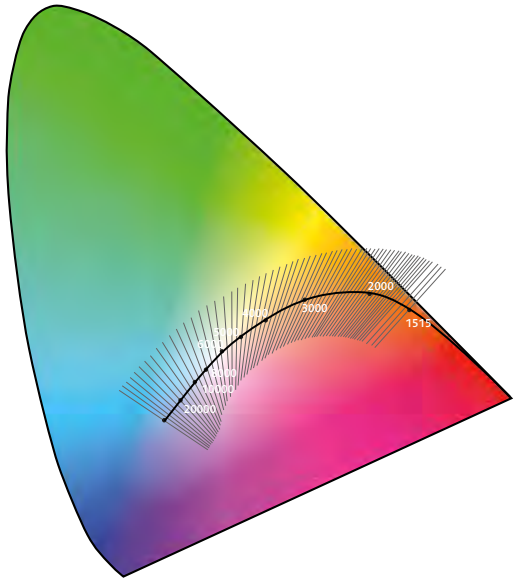


Comparison energy consumption T5 vs. LED luminaire.

Many factors affect the light quality of LED. Colour temperature, colour rendition and colour quality affect both how the light works and how it is perceived. Although the technological properties of LED's and traditional light sources are not directly comparable, the user's demands for how the light from a good luminaire should behave, remains unchanged.

Colour temperature

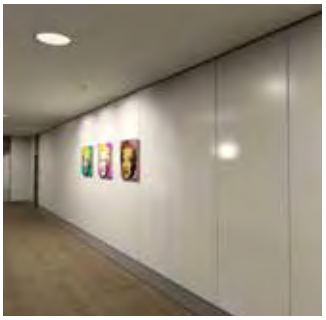
The colour temperature of a light source is given in Kelvin (K). Originally, Kelvin was a measure of the colour of a heated (and therefore glowing) black body. For lamps with a filament, this measure is easy to apply, as the colour temperature in Kelvin is the same as the actual temperature of the filament. For light sources with no filament – such as fluorescent tubes, gas discharge lamps and LEDs – we must calculate a correlated colour temperature (CCT) in Kelvin.



This illustration shows how to calculate a correlated colour temperature: The filled-in curve shows the colour temperature in actual Kelvin degrees. The chromaticity of the light source is measured on one of the isothermal lines and the correlated colour temperature is the point where the line crosses the curve.

Colour temperature may vary from one manufacturer to another even if they report the same measurement. In addition, the colour temperature of an LED can change over time, which means that the value after several thousand hours of use will not be the same as that for a new product.

When LEDs are produced, their colour temperatures and luminous flux vary widely, making it preferable to choose from a limited assortment. Manufacturers sort their products into 'bins' according to their performance. The fewer bins your LEDs are selected from, the more stable the quality of the product. The closer the selection the more the supply decreases and the cost increases, therefore luminaire manufacturers tend to accept diodes from nearby bins as well.



MacAdam 1–3 SDCM
For environments with high demands on equal colour quality, such as the lighting of white walls.

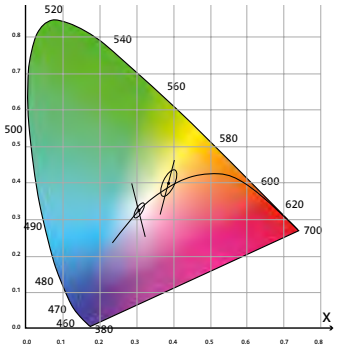
MacAdam 3–5 SDCM
Suitable for most indoor applications.

MacAdam 5–7 SDCM
Mainly for outdoor applications.

Chromaticity

The chromaticity of an LED product – that is, degree of deviation of its colour temperature – is defined in MacAdam ellipses in Standard Deviation of Colour Matching (SDCM) as per the CIE 1964 standard. The MacAdam system originates from the United States and ranks colour quality on a scale of 0 to 10.

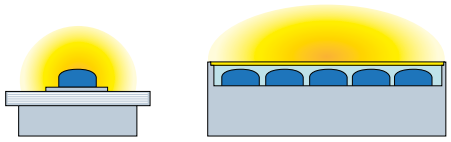
Between 0 and 4 is it difficult to see differences in colour, but further up the scale it can have an obvious and negative disparities.The problems are greatest when lighting a white surface, or placing a LED strip very close to a white wall. The requirements for most other Indoor environments are usually around MacAdam 3–5 SDCM. By comparison, a T5 fluorescent tube from the major manufacturers is about MacAdam 4. For exterior applications, a rating of MacAdam 7 SDCM is perfectly OK.



Large variation in colour quality results in a larger ellipse and a higher MacAdam value. The size of the ellipse is calculated using a formula.

Colour quality

One of the key considerations is how the colour quality of a product changes throughout its lifespan. Some LED's can maintain a very high colour quality for the first thousand hours but then deteriorate rapidly. The design of the luminaire is another critical factor, where insufficient cooling, or the LED being run too hard, can both have a negative impact.



How to create white light from a blue diode, or in the case on the right, from a cluster of diodes. On one individual LED, the phosphor covers the diode; in a module, the phosphor is placed on a plate that covers all the diodes in the module.

Variations in white light

White diodes come in a wide range of colour temperatures, from warm white to very cold (2700–8000 K). Usually white light is created by applying a phosphor-based coating to a blue diode, either directly on the diode or on a separate plate over it. This coating converts some of the blue light to white light of various colour temperatures – a process that is reminiscent of how a standard fluorescent tube works. The quality of the light is determined both by the specification of the blue LED and by how carefully the phosphor is matched to the selected diode.

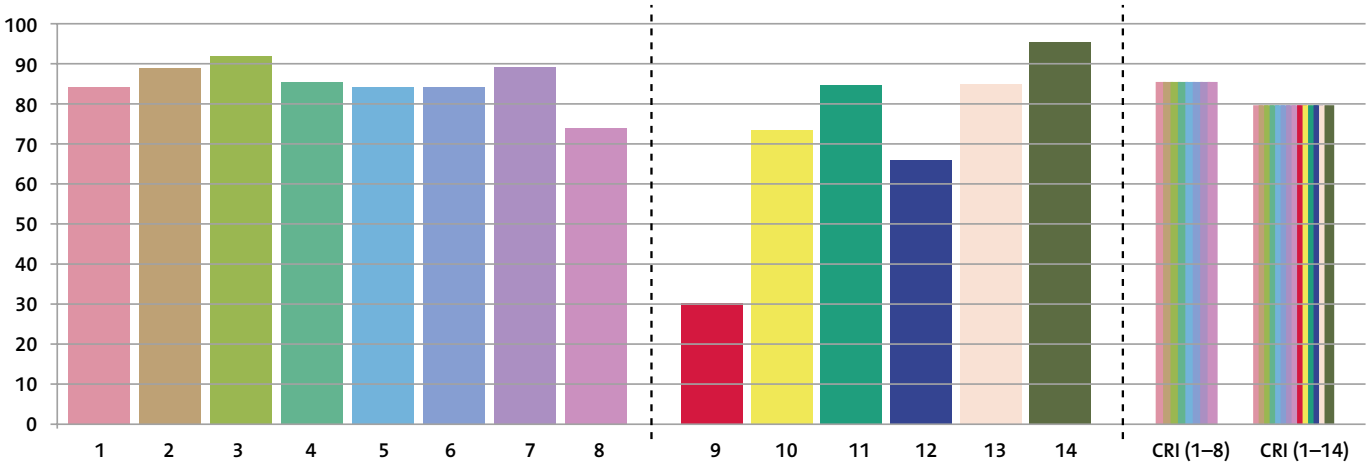
Because a blue LED is the basis of the white light, efficiency is greater for colder colour temperatures. To obtain a warmer colour temperature, the phosphor must convert a larger proportion of the original blue light.

Colour rendition

Colour rendition in LEDs is not exactly the same as in traditional light sources, but it is still described as Ra/CRI. The Ra scale is from 1 to 100 and measures the capacity of the light source to render colours. Depending on your choice of LED, the degree of colour rendition (Ra) normally varies from 60 to 95. A high Ra often produces a somewhat lower luminance.

Normally, colour rendition is measured using the CIE method on a scale of eight colours (see illustration). The Colour Rendering Index (CRI) is given as an average value (Ra), so it is possible for a light source to be good at rendering seven colours but not as good at the eighth. A complementary scale is called CRI 1–14, which contains six more colours. As the illustration shows, this LED cannot render the bright red colour, number nine, in an optimal way. In consequence, the average CRI 1–14 value is lower than the average for CRI 1–8. Regardless of the average value, we can see that the LED does not give an ideal rendering of the red scale.

Colour rendition can vary among LEDs from different manufacturers, but is linked to the spectral distribution of the LED. Therefore, an analysis of the spectral distribution can give us more information about the LED's ability to reproduce colours. It is also worth noting that colour rendition can differ between a new LED and one that has been in use for several thousand hours.



Visual comfort

The great challenge with LEDs is to keep glare within reasonable levels. It is not unusual that diodes and LED modules have a luminance (light intensity) of over 300.000 cd/m². In contrast, a standard T5 fluorescent tube has a luminance of 17.000 cd/m².

Luminaires developed for working environments are a careful balancing act between comfort and economy. From a financial stance, creating a naked LED module with a cooling unit and external driver would deliver the highest lumens to watts ratio. However, this solution would be completely impractical. The greater the efficiency the greater the glare, a factor which should be considered in both the development and selection of luminaires.

In commercial environments the light from an LED or LED module has to be controlled by reflectors, lenses, or some other form of diffusing material. Lenses are usually directly linked to different manufacturers and the type of LED. The choice of reflector material or lens used is crucial to maintaining the luminaire's efficiency while keeping the luminance sufficiently low.

The luminous efficacy of LEDs, lm/W (lumens per watt, a measure of efficiency), is constantly improving and developing rapidly. This means that both the technical lighting data and electrical data are regularly updated. The data we present in printed catalogues should, therefore, always be checked against those we report on our website

This column shows the nominal output and luminous flux of the LED module (driver excluded) or of the system wattage (driver included).

Tables of LED products containing other types of LED solutions start with data tailored to the product in question. Losses in the driver or luminaire design are not included.

Luminaire				
LED-module lm, W	Colour temp, K	Luminous flux, lm	Efficiency, lm/W	
2000, 24	3000	1630	63	**12345**
2000, 22	4000	1560	65	**56789**

For current information on output and luminous flux, please refer to our website.

Luminaire				
System, W	Colour temp, K	Luminous flux, lm	Efficiency, lm/W	
42	3000	3671	88	**12345**
44	4000	4278	97	**56789**

For current information on output and luminous flux, please refer to our website.

The *Luminous flux* and *Efficiency columns* show the measured values, including losses due to temperature development, drivers and optics. If a different driver is used to the one indicated on the product page, the data may change. Since developments in the field of LEDs are occurring extremely rapidly, the most recently measured values can be found on our website.

On each product page featuring LED luminaires there is a table where we show the colour temperature (CCT), Ra index (CRI), estimated life L_{70}, and colour quality of the product, expressed as the *MacAdam SDCM* (Standard Deviation of Colour Matching). If the product is available with different colour temperatures, these are reported separately.

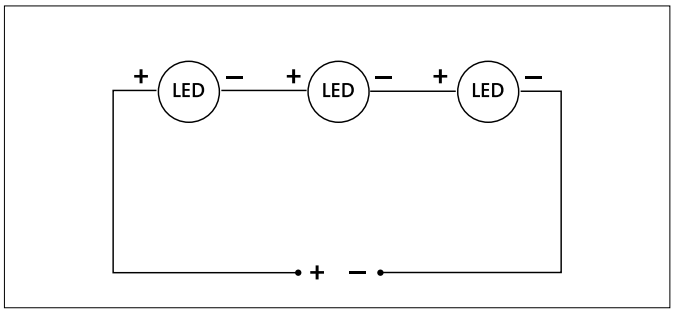
LED information			
Colour temp, (CCT)	*Ra (CRI)*	*Life*	*Colour quality*
3000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*
4000 K	*≥ 80*	*L_{70} 50.000 h*	*MacAdam 3 SDCM*

For further information on LEDs, please refer to the Technical Information chapter.

Drivers

The operation of LEDs or LED modules requires specially adapted drivers. These convert 230 V mains voltage to the appropriate values for the operation of the component. It is important that the ballast is both designed and approved for the operation of LEDs. Although some LEDs can be driven by conventional transformers, these can lack various protective measures, such as protection against short-circuiting, which can cause personal injury. Most custom drivers are also designed as SELV, which ensures the LED or parts of the luminaire do not need to be protected against touch.

There are essentially two different forms of operation of LED modules/luminaires: constant current or constant voltage.

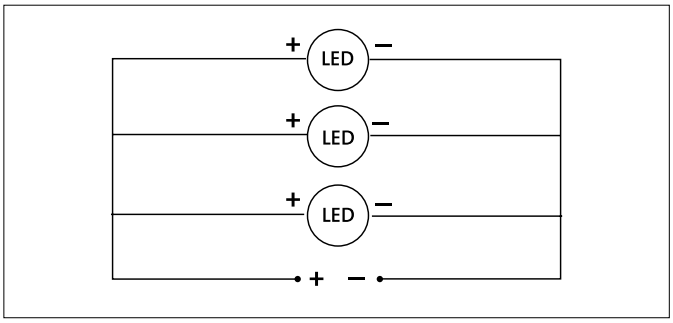


For constant current operation, connected LEDs are connected to the driver in series.

Constant current is when connected diodes are driven by a constant current, which is normally 350, 500, 700 or 1050 mA. The voltage of the circuit depends on the number of series-connected diodes. Each diode has a forward voltage, and with series connection this forward voltage is added, corresponding to the number of diodes

A downlight with 3 diodes, designed to be operated by a driver with constant power, has a secondary voltage of about 9 V DC (3 × 3 V). If several luminaires are connected in series to a common driver, the voltage may be multiplied by the number of luminaires.

SELV limit in EN 60598-1 (luminaire standard): For IP 20 luminaires, a max. of 60 V DC applies, and for luminaires with an enclosure class higher than IP 20, 30 V DC applies. This applies in cases where the diodes can be touched. If they are protected, the permitted voltage is 120 V DC. The certification of the luminaire and the recommended drivers must, however, be taken into consideration.



For constant voltage, connected LEDs are connected to the driver in parallel.

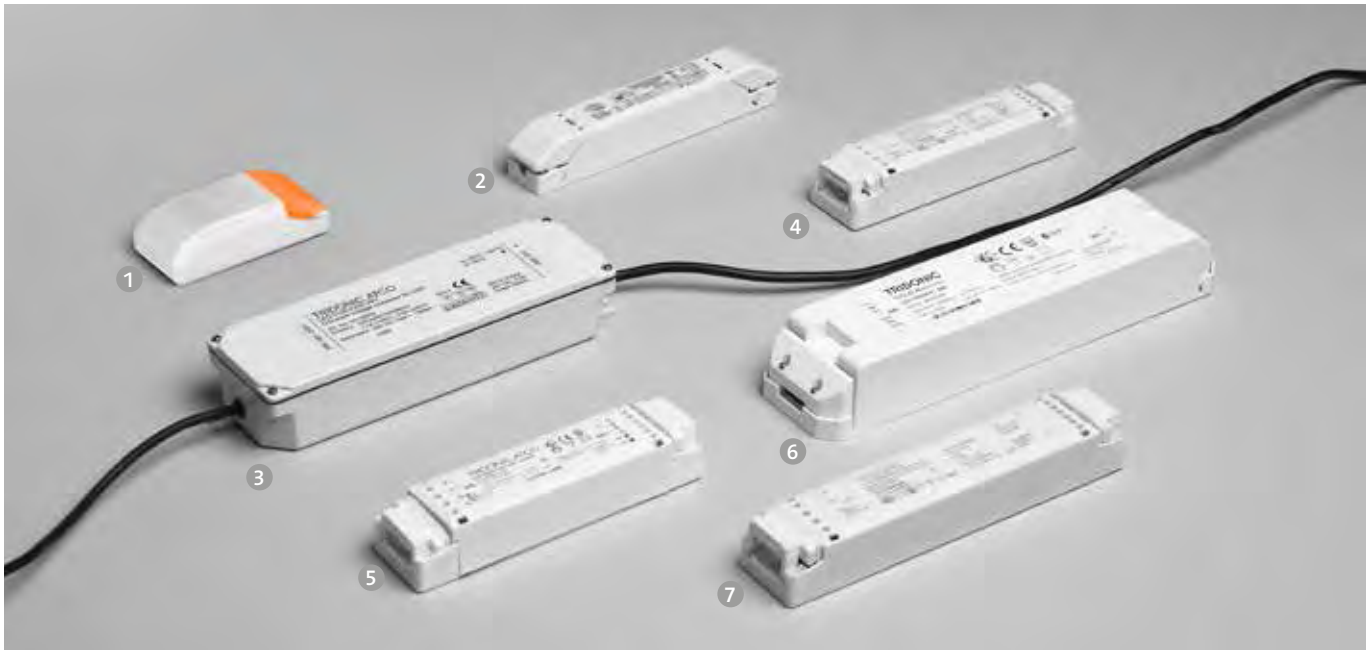
Constant voltage is normally used for LED products with a large number of diodes, e.g. LED strips and LED products featuring a luminous line function. The constant voltage is usually 8, 10, 12, 24 or 48 V DC. A number of LED products can be connected in parallel to a common driver, provided this can manage the connected load. The voltage drop in cables has to be taken into account. This is calculated in the same way as for traditional extra-low voltage installations.

Irrespective of the type of operation, it is important that the driver should be matched correctly to the type of LED luminaire to be powered. The polarity is also important as it is a direct current (DC). An inappropriately selected or engaged ballast can damage or destroy connected LED luminaires.

Light regulation

The regulation of LED light is managed using drivers with pulse-width modulation (PWM). The connected load is run by a technology consisting of a square wave with varying frequency. The load is switched on and off with a high frequency, which gives the impression that the light level changes.

PWM drivers are available with various types of control interfaces, such as DALI, DSI, DMX 512 and switchDIM. Separate PWM units are also available, which can serve as connections between the constant voltage and the load.



Drivers for LEDs

We recommend the following drivers for our LED products. They are well suited to each product, have built-in protection (for example, against short circuits or overload), and have a high efficiency.

LED driver for constant current 350 mA, stand-alone*

Picture	Technical data	Dim	Size (L×W×H)	
Picture 1	350 mA, max 8.5 W Secondary voltage 0–25 V DC	1–10 V alt. potentiometer	108×53×33 mm	**98178**
Picture 2	350 mA, max 33 W Secondary voltage 9–48 V DC Switchable 350/700 mA	No	169×31×32 mm	**99006**
Picture 4	350 mA, max 16 W Secondary voltage –45 V DC	DSI DALI switchDIM	167×42×31 mm	**99003**

LED driver for constant current 700 mA, stand-alone*

Picture	Technical data	Dim	Size (L×W×H)	
Picture 1	700 mA, max 18 W Secondary voltage 2–25 V DC	1–10 V alt. potentiometer	108×53×33 mm	**98179**
Picture 2	700 mA, max 33 W Secondary voltage 9–48 V DC Switchable 350/700 mA	No	169×31×32 mm	**99006**
Picture 7	700 mA, max 30 W Secondary voltage –42.5 V DC	DSI DALI switchDIM	207×42×31 mm	**99004**

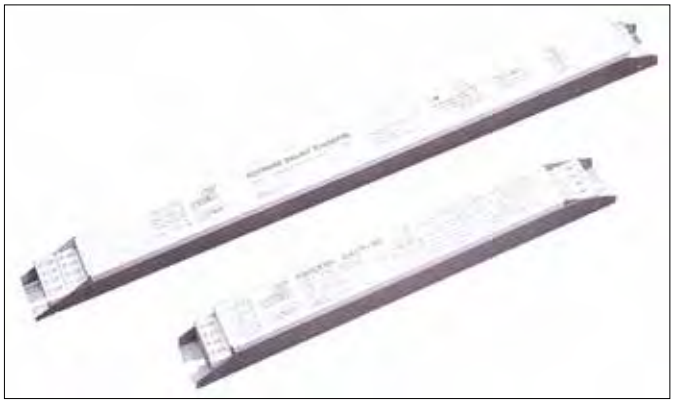
LED driver for constant voltage 24 V DC

Picture	Technical data	Dim	Size (L×W×H)	
Picture 3	24 V DC, max 100 W Stand-alone*, with fixed wiring on primary and secondary side, IP 67	No	210×60×40 mm	**98188**
Picture 6	24 V DC, max 100 W Stand-alone*, IP 20	No	270×63×41 mm	**99005**
Picture 6	24 V DC, max 150 W Stand-alone*, IP 20	No	270×63×41 mm	**98198**
Picture 5	24 V DC, max 25 W IP 20	DSI DALI switchDIM	167×42×31 mm	**98189**

LED dimmers for constant voltage 24 V DC**

	Technical data	Dim	Size (L×W×H)	
	24 V DC, max 120 W Stand-alone*, IP 20	1–10 V	172×42×20 mm	**99110**
	24 V DC, max 120 W Stand-alone*, IP 20	DALI switchDIM	172×42×20 mm	**99111**

**Stand-alone, driver is provided with strain relief on both the primary and secondary side and may be fitted freely.*
*** The dimmer is installed between the LED driver and the luminaire.*



Why HF-ballasts?

Research studies have indicated that people in workplaces where luminaires equipped with HF-ballasts are used feel better, are less tired and achieve more. Not everyone is aware of the flicker from fluorescent lamp luminaires equipped with ordinary ballasts, however the brain still registers the flashing.

As the HF-ballast utilises energy more efficiently, i.e. the installed luminaire output and performance losses are lower, there is also less heat. Thanks to this, cooling and air conditioning equipment can be dimensioned with a reduced output, giving both purchasing and operation cost savings.

Maintenance and service costs are lower due to the increased life of the light sources. When re-lamping you no longer need to change the starter, as the ignition function is integrated in the HF-ballast.

HF-ballasts are the environmental choice

HF-ballasts are environmentally friendly. The HF-ballast makes the greatest contribution towards the environment through energy savings. Another important environmental factor is that the life span of the fluorescent lamp increases on average by 15 %, which reduces the mercury load on the surroundings.

Function

An HF-ballast increases the fluorescent lamp's working frequency to approximately 40 kHz, and in doing so lights the fluorescent lamp completely evenly without flashing. At the same time efficiency is improved by approximately 10 %.

Ignition

An HF-ballast ignites fluorescent lamps in a controlled manner. The warm start means that uneven emissions from the cathodes are avoided, which is considered to extend the life span by up to 50 % where the switching on and off rate is deemed as normal. Using a warm start HF ballast, the cathodes are pre-heated before the fluorescent lamp receives its ignition pulse. In addition, modern high quality HF-ballasts have a function that significantly reduces or completely cuts this pre-heated current once the fluorescent lamp has ignited. An important function when taking energy savings into consideration, but also it means the T5 light source is powered under optimal temperature conditions.

Operation

When discharging starts and the fluorescent lamp ignites, the HF-ballast regulates all unnecessary parameters for an even luminous flux independent of fluctuations in the supply voltage. Furthermore, the HF-ballast monitors the function of the light source and switches it off if defects occur. There are HF-ballasts on the market that can indicate, via the light source, that a mains voltage fault has occurred, for example, over voltage.

Cable routing

A great deal of thought must be given to cable routing when designing luminaires for HF-ballasts.

Internal wiring to the fluorescent lamp must be routed in a way that does not impair functionality. Too long internal wiring to the fluorescent lamp can also cause interference issues (EMC).

Furthermore, the incoming mains cable must be taken into consideration. The mains cable, due to EMC requirements, must not be routed together with internal wiring. For this reason luminaires usually feature a separate channel or row of clips to correctly route these cables.

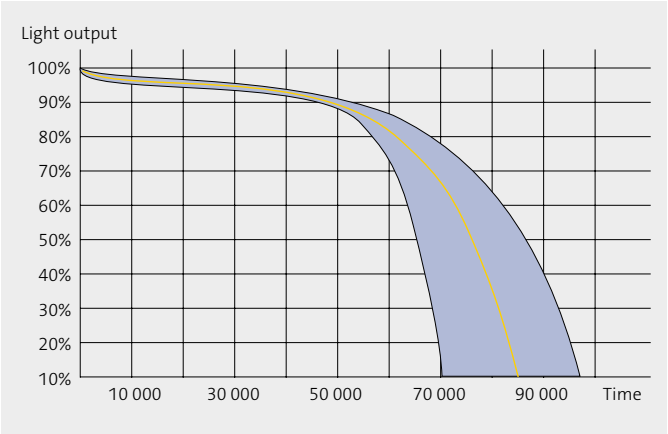
Master–slave

Master-slave solutions, where two interconnected luminaires are fed by a single HF-ballast placed in one of the units, can only be recommended for HF-standard and where internal wiring can be kept shorter than 1 m. Master-slave solutions for HF-dimming are not recommended due to the very high risk of defective functionality (different light levels from the luminaires).

In the master-slave solutions for Dimming, only the control signal from the HF-ballast of the master luminaire should be considered; this then controls the HF-ballast in the slave luminaire, which is not the same procedure as the one described above.

i Advantages of HF-ballasts

- Quick, flicker free ignition.
- Flicker free lighting.
- Very small magnetic field.
- The light source works under optimal conditions and gives the correct luminous flux independent of fluctuations in the supply voltage.
- Extends the life span of the light source.
- Low harmonics (THD).
- Switches off defective fluorescent lamps (no disturbing flashing).
- Save 20 % energy on average. A 60 % saving is possible through dimming, constant light control and/or with occupancy detection.
- Dimming of fluorescent lamps is only possible with HF-ballasts.
- Low thermal loss.
- No stroboscopic effect.



The life span spread of an HF-ballast. After 50.000 hours, at least 90 % of all HF-ballasts work if the temperature of the control gear's t_c-point (reference point) does not exceed the manufacturer's defined value for that life span.

Life span HF-ballasts

The life span of the HF-ballast is, like other electronic equipment, limited. It is determined by, among others, component selection, mains fluctuations, ignition rate and first and foremost the ambient temperature inside the luminaire. The electronic components' fault frequency causes failures on a few HF-ballast during the first hours of operation. HF-ballast faults then occur evenly over a period of time, like fluorescent lamps.

The life span and function can be jeopardised by incorrect handling during installation. The HF-ballast can be destroyed by:

- Incorrect measuring of the insulation resistance.
- Current peaks caused by machinery at the workplace.
- Over temperature, if the luminaire is used in a space with increased temperature (normal temp. > 25 °C). The luminaires' t_a (max permitted ambient temperature) is in most cases 25 °C, but luminaires with heightened ta are available.

The life span of the HF-ballast, as previously described, is dependent in part on the ambient temperature. Normally there is a temperature control point (t_c-point) on the HF-ballast, which should be checked when the ballast is positioned in the product in question. The t_c-max varies between manufacturer and type and defines the highest permitted temperature to prevent damage to the ballast. HF-ballasts with a high t_c-max are not necessarily better than models with a low t_c-max. The HF-ballast manufacturer may have chosen to place the reference point at a cool or warm position on the HF-ballast.

The life span of an HF-ballast is stated at a specific temperature on the tc-point. Sometimes this corresponds with t_c-max, but it can also be stated at a lower temperature. Manufacturers usually state 50.000 hours as the life span with a maximum depreciation of 0.2 %/1000 hours, which corresponds to a 10 % dropout.

The cooler the t_c-temperature, the longer the life span. A rule of thumb is that a 10° reduction in temperature on the t_c-point doubles the life span while a 10° increase in temperature halves this.

HF-ballasts for demanding environments, HF Industry

HF Industry is a ballast designed for use in rugged and demanding environments. Examples are industrial environments where:

- Mains voltage transients are a problem.
- The atmosphere is dustier than normal.
- The atmosphere is slightly more humid than normal.
- Heavy vibrations occur.

The HF-ballasts are designed for a life span of 100.000 hours (10 % depreciation) under the condition that the temperature is kept below specific levels (according to the spec. for the HF-ballast). They are also designed with IVG (Intelligent Voltage Guard) which both warns and protects against overvoltage and undervoltage. The HF-ballasts are also designed to withstand mains voltage transients up to 4 kV. The more robust HF-ballast offers longer maintenance intervals, which reduces maintenance costs to a minimum.

Ballasts are not available in HF-dim or in slimline designs, which means they cannot be used in all luminaires. The ballasts are primarily intended for products in industrial environments, products that are usually equipped with high lamp outputs and where there is physical space for the HF-ballasts. The use of these HF-ballasts in other types of luminaires, for example office luminaires, does not normally give any advantages compared to using HF-std.

For product ranges, please refer to the industrial luminaires chapter.

i Terminology

Warm start
Correctly optimised ignition of fluorescent lamps, where the cathodes at the ends of the lamp are pre-heated to the right temperature, allowing controlled discharging to take place. This creates the best conditions for maximising the fluorescent lamps life span.

Cold start
Igniting fluorescent lamps without pre-heating the cathodes, causes the cathodes' emissions-material to be consumed quicker. The advantage this offers is smaller and less expensive electronic control gear. These are suited only for industrial premises, and places, where fluorescent lamps are not switched on and off more than once or twice a day.

Nominal voltage
The operating voltage is stated on the luminaire label. Normally, HF-ballasts work without problems within ±10 % fluctuation of the nominal voltage. Check the voltage is correct. Too high or too low can damage the electronics. Most HF-ballasts also work with direct voltage. Please contact us for this type of operation.

Harmonics
Harmonics are distortions of the mains voltage's waveform caused by non-linear loads on the mains. Harmonics give rise to distorted currents, high magnetic fields and interference to sensitive electronic apparatus. Computers, frequency converters, standard compensated luminaires are large harmonic producers. The guideline value for computers is approximately 80 % THD, standard luminaires approximately 20 % THD and HF-ballasts about 10 %. Low quality HF-ballasts can be large producers of harmonics.

THD
Total Harmonic Distortion.

Operating frequency
is the discharge current's frequency in the fluorescent lamp. In luminaires with magnetic ballasts this equals the mains frequency 50 Hz. HF-ballasts convert the mains frequency to approximately 25–50 kHz. The luminaire's efficiency is also improved by approximate 10 % in this case. As the operating frequency also modulates light, this can cause problems with infrared detectors used in alarm systems and lighting control. The problem can however be avoided through the right choice of HF-ballast.

Cathode
Also called electrode. The cathodes at each end of the fluorescent lamp are made of tungsten filaments, coated with beryllium oxide. When heated, electrons are released which maintain the lamp's discharging current. Incorrect temperature on the cathodes shortens the lamp's life span. This occurs primarily with dimming when the fluorescent lamp output drops, which can seriously shorten the lamp's life span. This is avoided by using high quality HF-ballasts.

Fagerhult's policy

When designing luminaires we make sure that the temperature of the HF-ballast does not become too high, as this can shorten the life span. When a luminaire is installed and used correctly the life span for the HF-ballast is at least 50.000 hours with a maximum 10 % fault frequency. This applies at an ambient temperature of 25 °C (t_a) unless otherwise stated for the product.

We also employ our own policy where we set more stringent requirements, over and above the t_c-temperatures stated by the HF-ballast manufacturers. We have voluntarily chosen to add a general safety margin of 5° during testing. This margin may be seen to be small, however, it results in an expected longer theoretical life span for our products compared with using the data provided by the HF manufacturers.

The choice of the right HF-ballasts for respective products is also important. Unfortunately at the present time there is no HF-ballast on the market which, in all technical respects, is best. Some ballasts have better EMC-properties than others, some are cooler and some have lower leakage current. There is also a great deal of difference in size between different HF-ballasts. We consider these parameters and then select the ballast that is best suited to the luminaire in question.

Fagerhult only uses high quality HF-ballasts from leading manufacturers in its luminaires.

Temperature example

Examples of temperature margins for a number of typical luminaires are presented in the adjacent table. The stated margins concern luminaires with standard HF. The margin relates to the maximum t_c-temperature stated by the manufacturer to give a life span of at least 50.000 hours with a maximum failure rate of 10 %. Please contact our customer service department if you require data for other products.

Product	Output	Temperature margin
Pendant/surface luminaires		
Loop Light	3×35 W	> 20 °C
Ten° Line	3×28 W	> 15 °C
Closs	2×35 W	> 15 °C
Excis	4×54 W	> 5 °C
Wrap LED		> 25 °C
Recessed luminaires		
MultiFive Basic	2×49 W	> 10 °C
Indigo Clivus	2×54 W	> 5 °C
Indigo Combo	2×28 W	> 20 °C
Pozzo	1×60 W	> 15 °C
Pozzo LED		> 20 °C
Multilume Flat 600×600		> 10 °C
Industry luminaires		
Inducon (t_a35)	2×49 W	> 15 °C
Densus	2×49 W	> 5 °C
AllFive	2×35 W	> 15 °C
Kaptur LED		> 15 °C
Downlights		
Pleiad SLD G2	1×32 W	> 10 °C
Pleiad Compact G2	2×26 W	> 15 °C
Decorative luminaires		
Discovery	1×26 W	> 10 °C
Discovery Space	2×18 W	> 15 °C
Discovery Space LED		> 10 °C
Eira Ø 550		> 5 °C
Eira Ø 400		> 15 °C
Pozzo ceiling		> 10 °C

The system circuit load is the sum of the light source's power consumption and losses in the associated control gear. An installation must be designed to take into account the starting current as well as the total power consumption. Normally it is the starting current, and not the system output, that dictates how many HF-ballasts can be connected to a miniature circuit-breaker (MCB). Information regarding the maximum number of HF-ballasts per miniature circuit-breaker can be found on Fuse Protection page within the technical section.

The system and lamp wattages for a number of different HF-ballasts are presented on the following page. As standard Fagerhult's luminaires are equipped with warm start HF-ballasts, where pre-heating of the cathode is either reduced or ceases completely when the light source is ignited. This function saves energy.

NOTE! – Figures may vary for other HF-ballasts. Our reference values are based on ballasts of known manufacturers such as Philips, Osram, Tridonic and Helvar. The stated values are examples and are rounded to the closest integer. Development of HF-ballasts is ongoing and defined values may be subject to change.

The power factor, cos ϕ, lies between 0.95 and 1.0 for luminaires equipped with HF-ballasts.

T5 Eco				
HF-std	**1×**	**2×**	**3×**	**4×**
Light source	**SW**	**SW**	**SW**	**SW**
13	14	28	42	57
25	27	54	–	–
32	35	68	–	–
20	23	44	66	86
45	49	97	–	–
50	54	104	–	–
73	78	152	–	–
HF-dim	**1×**	**2×**	**3×**	**4×**
Light source	**SW**	**SW**	**SW**	**SW**
13	16	29	44	57
25	30	57	–	–
32	36	72	–	–
20	25	47	–	–
45	53	106	–	–
50	59	116	–	–
73	82	161	–	–

T5C	
HF-std	**1×**
Light source	**SW**
22	26
40	41
22+40	67
55	60
60	65

T5				
HF-std	**1×**	**2×**	**3×**	**4×**
Light source	**SW**	**SW**	**SW**	**SW**
14	16	29	47	60
21	23	46	67	–
28	31	61	–	–
35	38	74	–	–
24	25	47	76	99
39	41	81	–	–
49	53	106	–	–
54	58	116	–	–
80	85	170	–	–
HF-dim	**1×**	**2×**	**3×**	**4×**
Light source	**SW**	**SW**	**SW**	**SW**
14	17	33	48	62
21	24	46	–	–
28	32	62	–	–
35	39	74	–	–
24	26	51	–	–
39	43	83	–	–
49	55	108	–	–
54	59	117	–	–
80	86	170	–	–

T8				
HF-std	**1×**	**2×**	**3×**	**4×**
Light source	**SW**	**SW**	**SW**	**SW**
18	19	35	52	70
36	35	67	–	–
58	53	106	–	–
HF-dim	**1×**	**2×**	**3×**	**4×**
Light source	**SW**	**SW**	**SW**	**SW**
18	20	38	67	82
36	36	70	–	–
58	55	110	–	–

FSM-E		
HF-std	**1×**	**2×**
Light source	**SW**	**SW**
14	16	32
17	19	38
18	19	36
26	27	51
32	32	64
42	44	85
57	59	121
HF-dim	**1×**	**2×**
Light source	**SW**	**SW**
14	17	32
17	21	38
18	19	36
26	27	52
32	35	68
42	44	89
57	61	–

FSQ-E		
HF-std	**1×**	**2×**
Light source	**SW**	**SW**
13	15	28
18	19	36
26	27	51
HF-dim	**1×**	**2×**
Light source	**SW**	**SW**
13	14	27
18	19	36
26	27	52

FSD-H		
HF-std	**1×**	**2×**
Light source	**SW**	**SW**
18	18	36
24	26	49
36	35	68
40	45	90
55	59	116
80	86	175
HF-dim	**1×**	**2×**
Light source	**SW**	**SW**
18	18	37
24	25	49
36	36	70
40	42	82
55	59	115
80	88	165

MTm/MT/MD/MR	
Electronic ballast	**1×**
Light source	**SW**
20 (MTm)	25
35 (MTm)	41
35	43
70	79
100	110
150	159

- SW = System W
- - = at present there is no control gear or data available

Miniature Circuit Breakers

Miniature circuit breakers for groups of luminaires equipped with an HF-ballast should be sized not only according to the rated current but primarily with regard to the inrush current. The initial inrush current that occurs when the luminaires are switched on can cause the miniature circuit breaker to trip if this is sized incorrectly.

The inrush current is caused by the capacitors in the HF-ballast's mains filter. The size of the inrush current is not dependent on the output of the HF-ballast's but its design. The inrush current varies from one HF-ballast manufacturer to another. Due to the characteristics of the inrush current we recommend that miniature circuit breakers with tripping characteristic C are used.

If there is a need to connect more HF-ballasts than that stated in column 1 please contact our customer service for exact data.

As manufacturers continuously develop their products the data on this page is not binding. For the latest data, please check with the manufacturers of individual HF-ballasts.

We reserve the right to make alterations and make reservations for possible printer's errors.

The number of HF-ballasts that can be connected to a circuit, protected with a 16 A miniature circuit breaker of type C, is shown in the table on the next page. We list two different values:
Column 1 – the value indicates the maximum number of HF-ballasts that, independent of brand and type (Osram, Philips, Tridonic, Helvar) which we use, can be connected to the miniature circuit breaker.
Column 2 – the value indicates the maximum number of HF-ballasts that can be fuse protected for certain brands.

The value should be seen as an indication of what is possible. Most brands and types of HF-ballast lie between the values stated in column 1 and in column 2.

Fuse protection of HF-ballasts

T5

Output	HF-std		HF-dim	
	Column 1 All HF-ballasts	Column 2 Some HF-ballasts	Column 1 All HF-ballasts	Column 2 Some HF-ballasts
1×14	47	122	46	150
2×14	22	47	20	78
3×14	44	47	34	47
4×14	42	47	26	47
1×21	47	86	46	120
2×21	22	47	20	60
1×28	47	86	26	83
2×28	22	47	20	48
1×35	22	86	32	76
2×35	22	47	18	34
1×24	44	103	47	150
2×24	20	53	38	52
1×39	44	61	45	76
2×39	20	32	20	32
1×49	22	56	32	48
2×49	20	30	18	32
1×54	38	47	26	76
2×54	20	26	20	32
1×80	20	30	20	38
2×80	16	20	15	20

T8

Output	HF-std		HF-dim	
	Column 1 All HF-ballasts	Column 2 Some HF-ballasts	Column 1 All HF-ballasts	Column 2 Some HF-ballasts
1×18	48	122	47	86
2×18	48	75	20	70
3×18	20	80	24	56
4×18	20	56	20	38
1×36	47	82	45	70
2×36	37	56	20	56
1×58	47	60	40	56
2×58	20	26	20	30
1×70	34	47	-	-
2×70	18	20	-	-

T5C

Output	HF-std		HF-dim	
	Column 1 All HF-ballasts	Column 2 Some HF-ballasts	Column 1 All HF-ballasts	Column 2 Some HF-ballasts
1×22	33	74	24	54
1×22+1×40	22	56	-	-
1×40	33	74	24	54
1×55	47	50	20	34
1×60	47	47	20	20

- = no current data available.

T5 Eco

Output	HF-std		HF-dim	
	Column 1 All HF-ballasts	Column 2 Some HF-ballasts	Column 1 All HF-ballasts	Column 2 Some HF-ballasts
1×13	47	122	47	150
2×13	22	47	20	78
3×13	44	47	38	38
4×13	42	47	26	42
1×20	44	103	47	150
2×20	20	53	38	52
1×25	47	86	26	83
2×25	28	47	20	48
1×32	47	86	38	76
2×32	28	47	18	33
1×45	44	56	38	48
2×45	20	26	18	26
1×50	38	47	25	76
2×50	20	26	20	30
1×73	20	30	20	38
2×73	16	20	15	20

FSD

Output	HF-std		HF-dim	
	Column 1 All HF-ballasts	Column 2 Some HF-ballasts	Column 1 All HF-ballasts	Column 2 Some HF-ballasts
1×18	48	74	40	56
2×18	38	56	16	38
1×24	47	103	27	86
2×24	20	56	12	52
1×36	47	56	47	70
2×36	44	56	20	34
1×40	47	74	47	70
2×40	20	38	20	30
1×55	32	50	40	56
2×55	18	22	18	26
1×80	30	30	20	47
2×80	16	16	15	18

FSQ

Output	HF-std		HF-dim	
	Column 1 All HF-ballasts	Column 2 Some HF-ballasts	Column 1 All HF-ballasts	Column 2 Some HF-ballasts
1×13	34	82	40	40
2×13	34	56	60	60
1×18	35	82	38	70
2×18	35	80	26	47
1×26	33	74	38	70
2×26	20	38	20	46

FSM

Output	HF-std		HF-dim	
	Column 1 All HF-ballasts	Column 2 Some HF-ballasts	Column 1 All HF-ballasts	Column 2 Some HF-ballasts
1×13	34	118	40	40
2×13	34	116	60	60
1×14	47	94	47	47
2×14	47	94	47	47
1×17	47	94	47	47
2×17	47	94	47	47
1×18	35	152	38	70
2×18	35	128	26	48
1×26	33	144	38	70
2×26	20	102	20	46
1×32	33	124	38	50
2×32	20	64	20	26
1×42	33	124	38	50
2×42	20	54	12	26
1×57	31	85	22	38
2×57	17	17	-	-

- = no current data available.

i Note

Additional comments

- With fuse protection of luminaires, consideration should also be taken of the inrush current as well as the combined rated current for the groups' luminaires, the cable's cross-section and the average length of the group's cabling.
- The figures listed in the above tables assume a simultaneous ignition (same switch) at the mains voltage peak value.
- The values in the tables apply for 1-pole miniature circuit breakers. When using multi-pole miniature circuit breakers the number of luminaires should be reduced by 20 %.
- When using 16 A miniature circuit breakers with B characteristics the size of the groups should be reduced by half. For 10 A miniature circuit breakers with C characteristic the size of the group should be reduced by approximately 40 %. For exact sizing please contact our customer service team.

Most luminaires are designed to give the best performance at normal room temperature. In certain store spaces or freezer rooms, the ambient environment for the luminaire is very different. Many industrial luminaires are suitable for use in this situation, but there are a number of parameters to bear in mind in order to choose the right luminaires.

The selection of the luminaire and its placement in the room are governed by:

- What is the room temperature?
- What IP-class is required?
- Where are the chilled beams or conditioning units placed? Is the luminaire exposed to air currents?
- Should the luminaires be on continuously or are they switched on/off at specific intervals/days?

General

Open reflector luminaires are designed so that the maximum luminous flux is obtained at a normal room temperature of 25 °C. When this kind of luminaire is placed in a cold space the luminous flux and the ignition ability are affected. The lower luminous flux must be taken into consideration during light planning.

On the other hand, luminaires with a degree of protection equal to IP 44 and upwards can operate, from a luminous flux standpoint, better when placed in a colder environment as the light source's ambient temperature is usually a little too high when the luminaire is at normal room temperature. In this situation, the luminous flux increases, up to a certain point, as the ambient temperature drops.

Ballasts

It is important to use the right ballast to ensure the luminaire also ignites at low temperatures. The temperature specifications vary for different manufacturers and ballast.

Light sources

The T5 light source emits its maximum luminous flux at an ambient temperature (around the lamp) of 35 °C. The temperature around the light source is controlled by the design of the luminaire. For luminaires with a degree of protection equal to IP 44 and upwards the light source can heat the space around itself even when the ambient temperature around the actual luminaire is low. This is why T5 luminaires can work very well even in cold surroundings.

The T8 light source is slightly different compared to the T5. It has its maximum luminous flux at a lower temperature, 25 °C. Consequently, the T8 light source emits a higher luminous flux than T5 at certain, lower, ambient temperatures.

Thermo-lamps

In some locations the use of thermo-lamps maybe required. Thermo-lamps have an extra outer glass that insulates (thermal principle). The disadvantage of these lamps is that they have a larger diameter, which can cause problems in some luminaires. Thermo-lamps are available in both T5 and T8 designs, though not in all outputs. Please refer to the light sources chapter.

Placement

Luminaires should not, if possible, be placed too close to chilled beams or air conditioning units. The cold air currents can have a very negative effect on the luminous flux. This also applies to enclosed luminaires or when using thermo-lamps.

Actual luminous flux

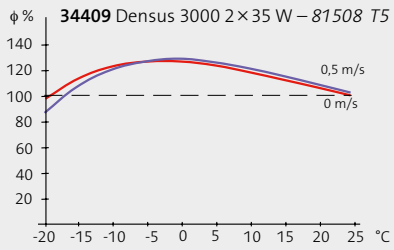
The graphs below show how the luminous flux is affected by ambient temperature for a number of typical industrial luminaires. The red curve indicates the luminous flux with no air movement and the blue indicates the flux with an air flow of 0.5 m/s. As a reference value the luminous flux at +25 °C with no air movement is used.

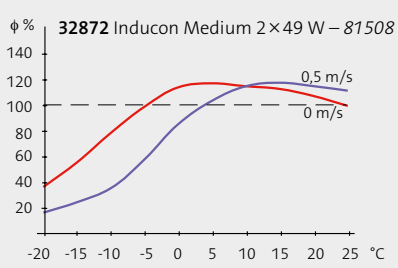
Text and order numbers in italics denote the light source.

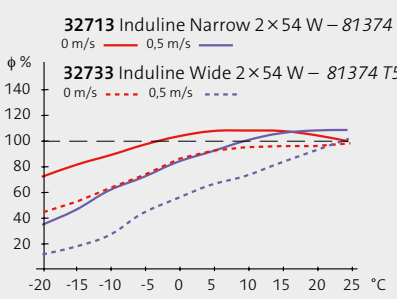
The stated values are intended as a guide only and not an absolute value. Please factor in a good margin when designing.

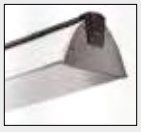
LED in cold spaces

LEDs are also temperature sensitive but not in the same way as discharge lamps (fluorescent lamps). As a general guide the light flow and life expectance improves at lower temperatures. As such, LED's are well suited to cold areas but the gear is normally rated for a minimum temperature of -20 °C (variations exist). When planning the lighting design, the files use the normal lumen outputs. If you require information on the lumen output at lower temperatures, please contact us for guidance.









CE-marking

In order for a luminaire to be marketed in the EU/EES region it must be equipped with a CE-mark.

The CE-marking, which is compulsory, means that the manufacturer certifies to the authorities that the product conforms to relevant safety requirements within the EU. Impartial testing for most products is not required.

Third party certification – for your safety

Fagerhult has chosen, despite third party certification no longer being required, to continue with this procedure for its basic range. This is to ensure that the customer receives products that conform to all current safety requirements with the added reassurance of being inspected by an independent body.

Variants of the basic range, for example, products with HF-dim or with emergency light functionality, are not usually certified by a third party. However, the safety levels on these designs are just as high as for other products.

We collaborate with Intertek ETL Semko for third party certification. This is a company that has vast experience within testing as with a good reputation across Europe.

The collaboration means our products can be given an S- or ENEC-mark. S- or ENEC-marking indicates objective testing and inspection of the electrical component´s safety for:

- Fire
- Electric shock
- Mechanical damage
- Radiation and burn injuries
- Environment impact with respect to:
  - Intended or expected usage
  - Intended or expected usage period
  - Expected fault conditions
  - Expected, reasonable incorrect use

ENEC-marking

The S-mark has been well known for many years. In recent times it has also been possible to ENEC-mark luminaires. ENEC stands for European Norms Electrical Certification.

The ENEC system currently encompasses some 22 different countries. The ENEC mark has the same value as each member country's own approval symbol. A separate agreement with the supervising national body is required in order to ENEC-mark luminaires, in our case Intertek Semko AB, and to certify that the quality system in production corresponds to the requirements set out in ISO 9002.

SMTA-agreement – laboratory accreditation

Our laboratory, Technical Centre, has had an SMTA-agreement with Intertek Semko AB since 1993. An SMTA-agreement, Supervised Manufacturers Testing Authorisation, means that we have permission to carry out all requisite testing for S- as well as ENEC-marking. The results from these tests form the basis for certification. The agreement means that Intertek Semko AB has inspected and approved our test equipment and quality system as well as the expertise of our personnel. In addition to annual audits, Intertek Semko AB also has the right to visit our laboratory at any time or call in products for comparison tests.

The Technical Centre is also very well equipped with equipment to perform other tests on luminaires. Equipment of the highest quality and accuracy are in place to inspect the product's EMC-properties (in accordance with EN 55015), to verify lighting performance and other quality tests.

Standardisation

We also participate in standardisation work within the field of luminaires via our membership of the Swedish Electrical Commission team TK34 and TK89. At the international level we are represented in the team WG1 LUMEX within the IEC (International Electrotechnical Commission). This team discusses proposals for amendments to testing standards. Consequently, we have the possibility to influence new standards as well as keeping ourselves well informed about future amendments.

Our laboratory, Technical Centre, has had an SMTA-agreement with Intertek Semko AB since 1993.

A product's EMC-properties (according to EN 55015), lighting performance and other quality properties are tested at the Technical Centre.

Die casting

Die casting of metal is a method of production that produces strong parts, a high quality finish and a lot of integrated functionality. With zinc the parts are ready for use immediately after leaving the moulding room. For aluminium the remains from the stub will, generally, need to be shaped. The parts are normally rolled to remove burrs and soften the edges.

Die casting of aluminium

Aluminium is moulded at high pressure, which requires the tooling to have exact tolerances and good sealing surfaces to contain the material being moulded which has a consistency like water. There are advantages to die cast aluminium parts, such as a high strength to weight ratio. The most common aluminium alloy used by Fagerhult is AlSi8Cu3.

Another advantage of aluminium is that it can be readily recycled. Recycling uses a fraction of the energy required to manufacture virgin material.

Die cast aluminium is used in parts such as outer and inner caps, continuous couplers and various types of bracket.

Die casting of zinc

Zinc is a corrosion-resistant material with good mechanical properties. The main difference between zinc and aluminium is the weight: zinc is 2.5 times heavier, but has inferior heat resistant properties and a lower creep strength. The advantages of zinc are that it is easier to mould, melts at a lower temperate and is therefore gentler on the tool. A properly made zinc tool can handle close to 1 million cycles with good quality results and high repetition precision.

With zinc it possible to produce thin products with a high finish on the surfaces, important for the treatment of visible surfaces such as chrome or nickel-plating. The parts are usually ready for use immediately following die casting with no further shaping required except, occasionally, for rolling.

The areas of application are the same as for aluminium, but zinc is better suited for applications which require a significantly higher measurement tolerance or finer requirements for the surfaces.

Extrusion

Extrusion is a process that can be done with both aluminium and plastic. The method is cost-effective and provides options for integrating functions and fine detail. It is possible to combine extruded plastic and aluminium parts.

Extrusion of aluminium

The material, which at the start is called bloom, is heated and moulded at great force through a profile tool. Depending on the size of the profile and capacity of the machine, it may be necessary or desirable to manufacture several profiles at the same time. However a single profile is more usual.

Following moulding the profile is stretched, causing it to straighten. The material is then tempered in a furnace; in this state, the profiles are normally a good 6 metres in length. Cross-cutting, shaping and anodising are additional processes that can be performed if required.

Anodising involves adding a protective oxide layer to the surface using an electrolytic process that provides a hard, sealed surface. Natural anodising is most common and various different colours can be introduced.

Extrusion of plastic

The materials PC and PMMA are the most frequently used plastics in the lighting industry and are mainly used in a transparent form for shades and covers. The process allows the cost-effective production of parts in long designs and with a high degree of precision. It is also possible to combine materials to produce clear and opal surfaces, or to combine the strength of polycarbonate with the good UV resistance of acrylic.

The parts expand as they become warmer, so this must be taken into consideration when developing new products. Cross-cutting tolerances on shades should allow for tolerances of other parts they are to be used with. This, as standard, can result in gaps being visible at the ends of luminaires.

Sheet metal

Sheet metal, in various qualities, hardness's, thickness's and surface treatments, is widely used in light fittings. The material provides a good balance between function and cost. Sheet metal has the advantage that it can be formed quickly in constant production, allowing the final product to be completed at a later stage, facilitating flexible production. From the raw material (sheet metal), it is possible to run through the processes of punching, bending, welding and painting to final fitting instantly, with the only restrictions being the capacity of the manufacturer.

Certain parts may require the use of so-called deep drawing quality (soft sheet) metal, i.e. sheet metal stretched so intensely that ordinary sheet metal qualities would break.

Black sheet

Black sheet, also referred to as iron plate, is an untreated sheet metal that is extremely prone to rusting, at different rates depending on the composition of the external environment. To avoid corrosion, the sheet plate is surface treated (powder coated, for example), usually using an epoxy-polyester mixture. The coating process is free of aromatic solvents and heavy metals.

This quality is most frequently used for lighting luminaires designed for use in a normal environment such as offices, corridors, classrooms, etc.

Aluminium-zinc coated sheet metal

Coating sheet metal with aluminium-zinc is a very effective way of preventing corrosion. Aluzink® coated sheets are made in the same way as hot-dip galvanised sheet metal but, instead of using zinc, a mixture of approximately 55 % aluminium and 43% zinc is used to coat the surface. Parts made of Aluzink® are immediately ready for use following shaping, welding and bending. It is therefore cost-effective as, in some cases, the need for lacquering can be avoided. When welding and cutting, the cut surfaces self-seal to restore rust protection.

The moiré effect of Aluzink® makes it aesthetically pleasing. The sheet is normally used in industrial luminaires as a casing or end piece. Other applications include brackets and other sheet metal parts that are not normally visible but which require protection against rust.

White rust can occur in some humid or otherwise extreme environments. Aluzink® is a registered trademark of SSAB.

Stainless steel

Stainless (rust less) steel is, as the name suggests, steel that cannot rust. This, however, is a fact that requires qualifying, as stainless steel can rust even though its resistance to corrosion is good. Perhaps, instead, it should be called rust-resistant steel. In order to retain the rust protection of steel, acid must be allowed to come into contact with the surface. This makes it important to keep the surface of the sheet properly cleaned.

The steel gains its properties through various alloys, including chrome, nickel and molybdenum. Depending on its composition, it is possible to have magnetic steel that can be hardened or non-magnetic steel that cannot be hardened. Its non-rusting qualities are very well suited for use in springs and Fagerhult also makes casings and brackets in stainless steel where suitable.

Acid-proof stainless steel

Acid-proof stainless steel has even greater resistance to corrosion than stainless steel. The steel gains its properties through various alloys, including chrome, nickel, manganese, titanium, niobium and molybdenum.

This is the highest level of protection offered by Fagerhult and is normally associated with luminaires designed for external environments, such as industrial activities which handle acids, salts and other corrosive substances. An installation that is close to the coast can also put a strain on normal light fixtures. Acid-proof stainless steel can still corrode if the surface becomes coated in dirt and acid is not able to penetrate down to the surface of the material.

Usually, acid-proof stainless steel is combined with other equally hardy materials such as glass rather than plastic so as to ensure the best possible encapsulation.

Aluminium with good light-reflecting properties

For good light-reflecting properties, it is important to use extremely clean materials. Allowing the degree of cleanliness to fall by a tenth of a per cent can cause a significant loss in efficiency. There are compositions of sheet metal (plated) where the base material is "impure" and is covered with a layer of pure aluminium. The surface is then chemically anodised to make it resistant to oxidation by contact with acid or other substances. Plated materials offer one solution for combining good performance with low cost.

Other ways of producing effective reflective sheet surfaces (factor > 92 %) are to use a layer of oxide and to vacuum metallise the surface. See the section on louvres and reflectors.

Various impressions can be made in the sheet surface to provide a structure that disperses or collects the light in a deliberate way.

Plastic

Plastic is a modern material that is being constantly developed offering a range of benefits. The scope for designing with this material is improving, several functions can be used for integration and the designs can also be made lighter compared with metal alternatives. Production efficiency is good, since plastic parts rarely require additional shaping. Right from the start, the part has the correct surface structure and colour without the needing to be cleaned or trimmed.

From an environmental stance, plastic uses significantly less energy in the production of plastic parts compared to metal parts. The total amount of oil used in the manufacture of plastic parts is significantly smaller, too. Additionally plastic can be reused, either recycled as new products or used for energy.

A number of Fagerhult's markets place particular fire classification requirements on products inclusive of plastic. This may require the use of flame-retardant plastics in our parts to reduce the risk of fire starting or spreading via our luminaires. Fagerhult abides by the RoHS Directive, which prohibits the use of mercury, cadmium, lead, hexavalent chrome and the flame-retarding agents PBB and PBDE. A good choice of materials and good design solutions can avoid the need for flame-retardant agents (including the less harmful ones).

As stated above, there are many advantages to using plastic, but at the same time it places great demands on design and choice of materials. Depending on the area of application for the product and other specifications, tests and simulations must be constantly carried out during the development phase to ensure that all requirements are met without jeopardising safety and quality.

There is a whole host of different plastics available on the market. Each has been produced to meet the demands made of the products. A selection of plastics is given below.

PVC (polyvinyl chloride)
PVC is a polymer that consists of several vinyl chloride molecules bonded together. It is a thermoplastic produced by adding chlorine to ethylene and is often used in the construction industry, for pipes, plastic mats and insulation of cables/wires, for example. A material consisting solely of polyvinyl chloride is quite stiff, and for this reason softeners (phthalates) are generally added to make it easier to handle and more durable. The material has good chemical and weather resistance properties.

When PVC burns, hydrochloric acid and chlorinated hydrocarbons are formed because of the plastic's chlorine content. The smoke produced when burning is aggressive, attacking metals and electronic equipment in the building. The associated clean up cost following such a fire causes many customers to prefer other alternatives instead.

The softeners are constantly given off and can migrate to and attack other plastic materials. They are also considered to be damaging to the environment and injurious to health and they can adversely affect reproduction.

Fagerhult products are connected internally using PVC-free wires and the mains cable can also be supplied to special order in a PVC-free design. Otherwise, PVC is not a material that is found in our products.

PC (polycarbonate)
Polycarbonate is both a transparent and a coloured thermoplastic with very high strength, including at low temperatures. It is often used in applications that require resistance to knocks, blows and kicks, including visors, machinery protection, CDs and other products that need to be durable and/or transparent. The material is available in various forms with varying self-extinguishing properties. When designing, it must be ensured that the material is not exposed to continuous tension as this will ultimately lead to cracks forming.

Polycarbonate can be cold bent (roughly like sheet metal), extruded lengthways or injection moulded. In lighting, it is used to insulate lamp holders and bodies as well as for shades, reflectors and dust protection. PC is often the material of choice for plastic luminaires sold as vandal proof.

Polycarbonate is sensitive to rippling and has limited resistance to UV light, which turns the material yellow. For this reason, where applicable UV stabilisers are added, or the surface is coated with a UV block (for example, the glass for car headlights). It is also sensitive to chemical attack, especially by bases, oxidising acids, methanol, aromatic chlorinated hydrocarbons and ammonium. A mild soap solution should be used for the maintenance/cleaning of shades, plastic end pieces and dust protectors. PC is also suitable for metallising.

PBT (polybutylene terephthalate)
PBT is a rigid material with good durability and chemical resistance. It also has good electrical properties, making PBT suitable for use as a lamp holder or body, etc. It can be used at higher temperatures, and fibreglass reinforced PBT provides even better heat resistance. PBT has good UV and weather resistance and also good sliding properties, which means it is often found in cars. The material is suitable for metallising. The above properties mean that PBT is suitable for products such as downlights, where high temperatures occur and there is a need for metallised reflective surfaces.

PET (Polyethylene terephthalate)
PET is often used in luminaire components such as lamp holders, etc. where an even higher degree of thermal stability than PBT is desired.

PETG (Polyethylene terephthalate glycol-modified)
PETG is becoming more prevalent in luminaires and in less demanding applications as an alternative to PC and PMMA for indoor use. The material can be completely transparent and is impact-resistant. However, PETG has a limited thermal stability, approx. 60 °C.

PMMA (Polymethyl methacrylate)

PMMA, also known under the trade name Plexiglas®, is acrylic plastic. It offers a very high light transmission and is, therefore, ideal for optical uses. It has a high degree of sheen on the surface and rigidity. PMMA is easy to shape, strong and offers limitless opportunities for colouring. PMMA is UV stable and has very good weather resistance, making it suitable for outdoor use. The electrical properties are also good. The material is not affected by alkaline solutions, diluted acids or oils, but is attacked by strong acids, acetone and alcohols. PMMA has relatively low heat resistance and should be used in situations where the temperature does not exceed 55 °C. It is possible to make PMMA more impact-resistant, but this is at the expense of its good optical properties. In the field of lighting, PMMA is normally used for shades and cover plates, as well as for outdoor signs, windows, contact lenses, etc.

PMMA is brittle, and where microscopic notches are present it can easily break. Just like PC, it is also sensitive to being under tension, which can lead to cracks forming over time.

Plexiglas® is a trademark of Röhm.

PS (Polystyrene)

Polystyrene has a high degree of stiffness and hardness. It has excellent optical properties and good dimensional tolerance. Other good properties are its high surface shine, low water absorption and excellent electrical properties. Among its disadvantages we can note poor impact resistance and low chemical resistance, especially to solvents. Polystyrene does not tolerate strong acids and dissolves in aromatic solvents. It also has low UV resistance and is prone to yellowing. The operating temperature is maximised to approx 70 °C. UV stabilising properties have recently been produced which widens the operating temperature. In certain indoor applications the material may be used in the hunt for low material costs.

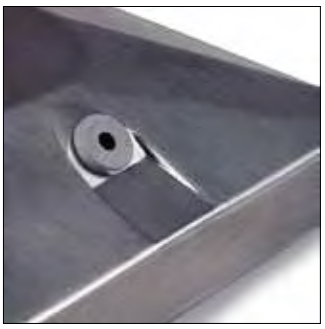
PP (Polypropene)

Polypropene, also called Polypropylene, is one of the most common thermoplastics. The advantages of PP are its low density and high strength. Above all, PP has great fatigue strength, which makes it very suitable for hinge designs. The material can tolerate relatively high temperatures without losing its properties. Conversely, it copes less well at low temperatures, which means that in cold winter weather it is prone to becoming brittle and breaking. Another drawback of PP is that it is broken down by UV radiation unless stabilised with the help of additives. PP is used, among other places, in the end caps of luminaires.

PC/ABS

Sometimes, it is necessary to mix different plastics in order to obtain the properties required for the parts of the product. PC/ABS is one such combination of materials; it is rigid and has high tensile and bending strength and at the same time is impact resistant. The material is also dimensionally stable, with good weather resistance. It is customary to use PC/ABS where high demands are made for fittings, and at higher temperatures. The material is often used in electronics boxes, end pieces, instrument panels, etc.

Rubber



Rubber parts are most commonly found as packing material of various types. Normally, this is for sealing edges along the periphery of the luminaire against a glass disc, for instance. It is also found in insert seals for cables. More recently, plastic qualities (elastomers) which are reminiscent of rubber have taken over a number of these applications. They are cheaper to produce and can be made with greater precision. They also provide a more aesthetically pleasing surface than rubber.

EPDM rubber

Ozone and weather resistant. Good cold resistance. A certain resistance to oxidising acids and chemicals, animal and vegetable oils. Not resistant to mineral oils. Temperature range -40 °C to +100 °C.

Chloroprene rubber Neoprene (CR)

This material doesn't deteriorate over time with very good weather resistance. Good strength against oils, it expands in mineral oils but is not destroyed and offers very good mechanical properties. Found only in black mixtures. It crystallises at cold temperatures. Temperature range -20 °C to +100 °C.

Reflector and louvre material

The reflectors and active louvres in the Fagerhult range are designed for maximum efficiency and controlled light distribution. This makes it possible to plan lighting for energy efficient solutions.

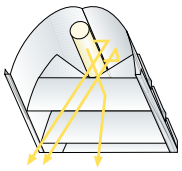
A significant factor in obtaining efficient luminaires is the choice of reflector and louvre material. Fagerhult carefully selects the best material available on the market.

The louvres and reflectors fitted in Fagerhults T5 luminaires are constructed from the most effective aluminium available. Many products for T8 fluorescent lamps and compact fluorescent lamps come equipped with reflectors and louvres featuring highly reflective material. All done with improved energy efficiency and a lower environmental impact in mind. The r5-louvre is available as r5, r5 mini and r5 micro.

r5-louvres

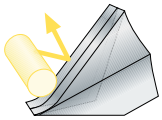
Fagerhult's double parabolic r5-louvre has been developed for the T5-fluorescent lamp and gives the best effectiveness with regard to light distribution and efficiency. High efficiency is directly linked to energy efficiency.

The r5-louvre consists of a double parabolic louvre and a top reflector, which maximises the optical efficiency and controls the luminance in all directions around the luminaire.

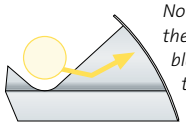


The r5 louvre effectively guides out the light even from the back of the fluorescent lamp.

Thin cross blades give larger light openings and increase efficiency.



Sealed top eliminates light loss.



No reflections from the top of the cross blades are visible in the side reflectors.

The r5-louvre has the following advantages:

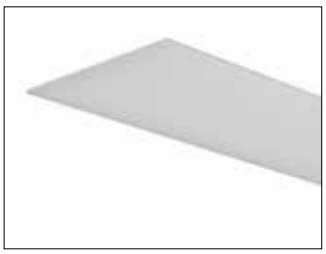
- The reduction in the thickness of the cross-blades means that the light opening's area has been enlarged by approximately 4 %.
- Sealing the top of the cross-blades minimises light losses.
- The curved tops of the cross-blades eliminate unwanted reflections on the side reflector and gives good mechanical cut off in all directions.
- Metallised aluminium.
- Fixed top reflector of specular metallised aluminium.

Beta
Double parabolic reflector louvre with side and cross-blades of satin matt metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

Gamma
Double parabolic reflector louvre with side and cross-blades of specular, metallised aluminium with excellent reflection characteristics (> 92 %), integrated into a single unit. The louvre remains attached when lowered. Earthed.

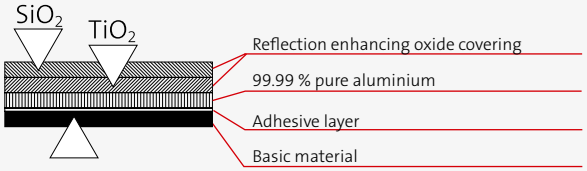
Terazza
Satin matt, metallised aluminium reflectors with excellent reflection characteristics (> 92 %) and aluminium enamelled cross-blades integrated into a single unit. The louvre remains attached when lowered. Earthed.

Lamell
Lamell louvre of sheet steel.



Delta
Microprismatic acrylic louvre. The Delta cover is composed of small prismatic cones that create a unique glare-free effect. The cover provides a highly efficient, soft, opal-like appearance to the luminaire.

i Reflector technology



Advantages:

- Reflection factor up to 95 %.
- Reflection factor 10 % better than anodised aluminium.
- Better controlled beam path.
- Total lack of colour shifting on surfaces.
- Reduction in unwanted diffused beam path.
- The manufacturing process impacts less on the environment than anodising.

Many of our luminaires come with mains cables of varying designs fitted as standard. The design depends on the luminaire and its integrated functions, ranging from 3-core cables with plugs to open-ended 5-core cables with some form of snap-in connector, such as the Wieland.

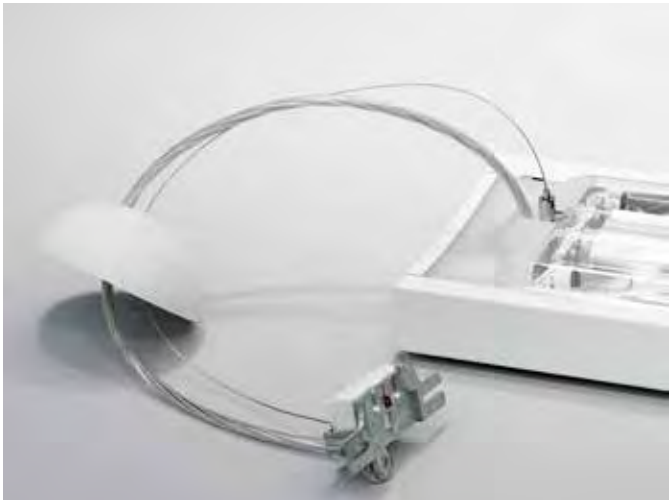
For luminaires supplied without mains cables, we can offer a wide range of different mains cables, from simple 3-core cables with earthed plugs to various fixed connections. Our range includes cables in various lengths and designs, suitable for varying aesthetic or functional requirements. Fagerhult products are connected internally using PVC-free wire and the mains cable can also be supplied to order in a PVC-free design.

Transparent mains cables

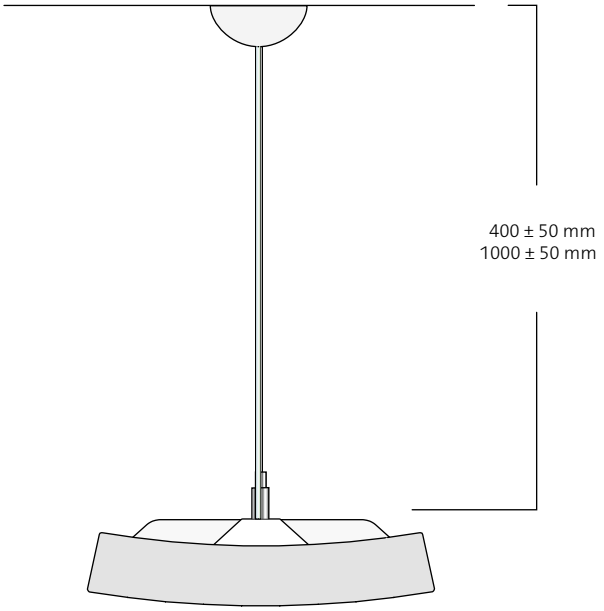
We can also supply transparent 3-core and 5-core mains cables. These are more often than not chosen for aesthetic reasons. In order to pass approval, products with a transparent mains cable must be supplied fully connected by us because of the weak colour marking. This means we supply the luminaire with the mains cable connected both in the luminaire and the terminal block of the ceiling cup. The ceiling cup has a screwless terminal block and is intended for fixed installation. Ceiling cups are available for both fixed ceilings and ceilings with visible T-bars. The ceiling cup can be supplied in grey or white. The length of the mains cable should be specified when ordering. We have chosen to offer two lengths as standard, 400 and 1000 mm. In both cases, the length is ± 50 mm, depending on the location of the luminaire and terminal block. Note that transparent cables contain PVC.

Read more about the properties of PVC on page 516.

Wire suspension with single wire, mains cable 5×1.0 mm² and ceiling cup for use together with luminaires having some form of external dimmer function.



For luminaires with a transparent mains cable, the connections in the luminaire and the terminal block of the ceiling cup are completed at the factory. Available as 3-core and 5-core with ceiling cup.

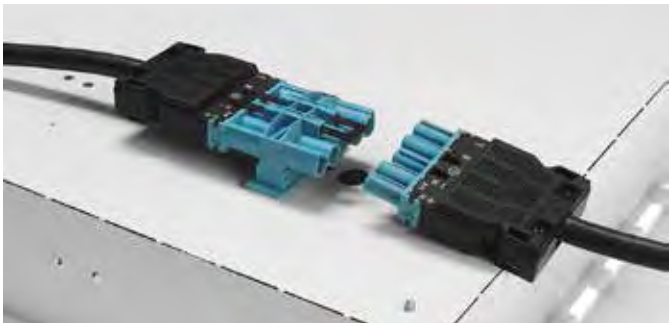


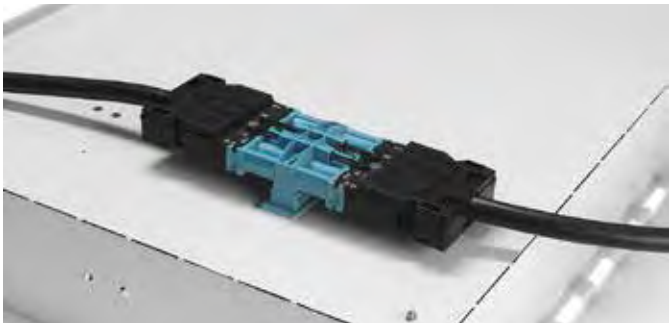
Different makes and models of quick connectors can be used to simplify the installation of luminaires. The main benefit of quick connection systems is the reduction in installation times for large or continuous lighting systems. These systems allow a certain degree of flexibility, as it might be easier to move already-connected products without affecting the fixed installation.

In order to avoid incorrect connection that could, in a worst-case scenario, result in connected products becoming damaged or even dangerous, it is important for the quick connection systems available on the market to be used correctly, i.e. in the manner intended and designed for by the manufacturer. For example, a 5-way connector system intended for 3-phase installation must not be used instead for 1-phase + control cable for dimming. Other connector types must be used for such systems to prevent incorrect connection due to mistakes.

Fagerhult offers a range of products with integrated quick connectors. These connectors can either be chassis-mounted or the luminaire can be supplied with the cable and quick connector ready-fitted. All connectors are fitted with locking devices. For products with quick connectors, refer to the relevant product page.

Parts of our range can on request be supplied with Linect connectors. Linect is an international open standard that with use of interface connectors can be connected to different manufactures of quick connector systems.





Luminaire equipped with chassis connector and T-connector. Power and connection cables can be fastened after installation using plastic clips. A tool (e.g. screwdriver) is required to loosen the connectors.

Power cables	**Winsta**	**Wieland**
1-phase system, 3-way connector.		
Length 2 m, female	**91060**	**91789**
Length 2 m, female + earthed plug	**91061**	**91790**
1-phase system + 5-way dimming connector, blue		
Length 2 m, female	**91064**	**91022**

Connection cables, quick connection system		
1-phase system, 3-way connector, white cable with white connectors, female + male, cable cross section 3×1.5 mm²		
Length 1 m	**91062**	**91791**
Length 3 m	**91063**	**91793**
1-phase system + dimming (1–10 V, DALI/DSI/switchDIM), 5-way connectors, black cable with blue connectors, female + male, cable cross section 5×1.5 mm²		
Length 1 m	**91065**	**91030**
Length 3 m	**91066**	**91031**

T-connector for branching directly to the chassis connector on the luminaire		
1-phase system, 3-way, white	**91067**	**91025**
1-phase system + dimming (1–10 V, DALI/DSI/switchDIM), 5-way, blue	**88226**	**91026**

H-connector for branching directly to the chassis connector on the luminaire	
1-phase system, 3-way, white	**91068**
1-phase system + dimming (1–10 V, DALI/DSI/switchDIM), 5-way, blue	**91069**

Bracket for H-connector	
Bracket for 3-way H-connector, white	**91070**
Bracket for 5-way H-connector, white	**91071**

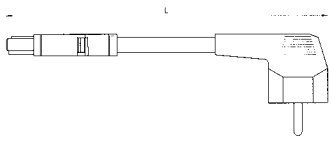
Linect T-connector		
1-phase system, 3-way, white	**91108**	**91110**
1-phase system + dimming (1–10 V, DALI/DSI/switchDIM)	**91109**	**91111**

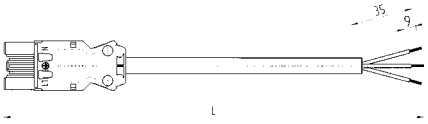
Connection cable.

T-connector.

Connection cable.

T-connector.





Luminaire installation

Familiarise yourself with the supplied installation instructions and follow them during installation.

When testing the insulation of an installation, luminaires equipped with HF-ballasts should have the phase and neutral conductors interconnected. Measurement may only be made between the interconnected phase neutral conductors and the protective earth with maximum 500 V direct voltage. Once measuring is complete do not forget to disconnect the phase and neutral conductors before reconnecting these correctly to the terminal blocks.

i What should be done if...

1. The fluorescent lamp does not ignite or the luminaire stays in standby mode?
- First check that there is a voltage supply to the luminaire and that there are no short circuits.
- Check that all the luminaire's fluorescent lamps are working.
- If the mains voltage is too low the fluorescent lamp will not ignite. Do not continuously under run a luminaire, as this can damage the HF-ballast.
- Component properties can change drastically in the cold, to a point where the HF-ballast no longer functions reliably, the fluorescent lamp doesn't ignite safely, or the HF-ballast immediately enters standby mode. Check the luminaire functions at room temperature.

2. The fluorescent lamp flashes, does not ignite or goes out haphazardly?
- Check if there is a fluorescent lamp in the luminaire with the wrong output or wrong HF-ballast.
- Continuous over voltage. Measure the luminaire's mains voltage.
- A conductor is disconnected or is loose. Check the connections.
- In cold surroundings both the HF-ballast's and the fluorescent lamp's properties change, to the point where the fluorescent lamp cannot continue to burn.
- Internal wiring between HF-ballasts and lamp holder too long.

3. The fluorescent lamp's cathode glows, but the lamp doesn't ignite?
- Mains voltage too low. Measure the voltage on the luminaire.
- The starter in a luminaire with a conventional ballast could be defective.
- There is a fluorescent lamp in the luminaire with the wrong output/type or wrong HF-ballast.

4. The fluorescent lamp's ends darken or the cathodes flash?
- Check that the fluorescent lamp is intact as set out in point 1.
- A conductor is disconnected or is loose. Check the connections as set out in point 1.
- It is recommended for some HF-ballasts intended for dimming, that the fluorescent lamp is burnt in for 100 hours before dimming is allowed.
- Note that it is perfectly normal for a fluorescent lamp's ends to darken after a long period of use, when it approaches the end of its normal service life.

5. There is a reduced fluorescent lamp life?
- Is the luminaire switched on regularly during the day? A fluorescent lamp's nominal life span is based on a three hours burning interval (eight ignitions per day). If, with a conventional ballast you have significantly more ignitions, the fluorescent lamp's life span is shortened appreciably.
- There is a fluorescent lamp in the luminaire with the wrong output/type or wrong HF-ballast.
- A bad contact in the power circuit can shorten the life span of the fluorescent lamp.

6. The luminaire gives less light than normal?
- The mains voltage is too low. Measure the voltage on the luminaire.
- When used in the cold the fluorescent lamps luminous efficacy decreases greatly, at the same time, the HF-ballast's properties change.

7. The earth-fault breaker or fuse trips when the lighting is igniting?
- There could be an earth fault or short circuit in the luminaire group.
- Too many luminaires in the same circuit.
- A measurement instrument connected incorrectly to the power circuit can trip an earth-fault breaker.

8. There is a problem with the dimming system?
- Always check before connecting that the luminaires are intended for the control unit used.
- Connections for 1–10 V control circuits are marked (+) and (-). Check the polarity.
- If the number of luminaires is large or the control circuit is long, a signal amplifier in the control circuit may be necessary. Control circuits for digitally controlled HF-ballasts have a maximum length of 250 m.

i Checklist of actions when the fluorescent lamp does not ignite or work correctly in luminaires with HF-ballasts.

1. Voltage supply
- Check that there is a voltage supply to the luminaire. Measure the supply voltage to confirm it is at the correct level. On a luminaire with a dimmable HF-ballast, also check the control voltage level, if applicable (analogue 1–10 V DC). Disconnect the control circuit and check whether the lamp ignites (100 %).
- Always disconnect the voltage for safety reasons when making the following checks. On a luminaire with a dimmable HF-ballast even the control circuits should be disconnected.

2. Light sources
- Check that the fluorescent lamps wattage and type correspond with that on the luminaire label. Check that the HF-ballast type corresponds with the type stated on the luminaire label.
- Check that the fluorescent lamp is fitted correctly in the lamp holders (that the fluorescent lamp has been turned and fully inserted in the right position). Check the lamp holders at the same time, making sure that the fluorescent lamp makes good contact (the holders should be well secured to the luminaire). If necessary remove dust, dirt, grease, etc.
- Replace a fluorescent lamp that does not ignite with a new lamp that is known to work (even a new fluorescent lamp can be defective) and switch on the voltage. In 2-lamp luminaires both fluorescent lamps should be replaced using fluorescent lamps known to work.

3. Connections
- If the fluorescent lamp does not ignite, switch off and check the cables for loose connections. Make sure there is no insulating layer between the connections' contact surfaces. Loose connections are usually evident through blackening or soot.

4. Ballast
- Disconnect the supply voltage to the control gear for about 20 seconds and switch it on again. The HF-ballast is generally designed to disconnect when it senses a defective fluorescent lamp or a break in the fluorescent lamp circuit (point 5). The same applies, if the fluorescent lamp has not been turned in the lamp holder, to the right position (point 4) or if there is a bad contact in the fluorescent lamp circuit (points 4 and 6). No HF-ballasts from any manufacturer can sense that a fluorescent lamp has been replaced with a new one without the voltage being disconnected and reinstated.

i Cleaning luminaires

Luminaires should normally be cleaned in conjunction with re-lamping. Reflective surfaces ought to be cleaned when dust and other grime is discovered.

Electrical components or cabling must not be exposed to cleaning agent or water. It is important to always disconnect the voltage before cleaning the luminaire body.

We stock appropriate cleaning kits. These can be used on all materials, both for normal and heavy contamination.

A cleaning kit (Cat. no 94759) includes:
- 1 litre of concentrated general purpose cleaning agent (sufficient for about 200 litres of mixed solution).
- 6 general cleaning cloths for wet cleaning.
- 1 cleaning leather for wiping off.
- Cleaning instructions (can also be ordered separately from us).

This symbol denotes the luminaire's light distribution, direct, direct/indirect, asymmetrical, round beam, etc. Several symbols next to the same luminaire indicate that the luminaire is available in different designs.

Denotes which light source/light sources that can be supplied with the luminaire. Several symbols next to the same luminaire indicate that the luminaire is available in different designs.

Denotes that the luminaire is equipped with white LEDs, LED with a colour temperature shift or with RGB switching.

Denotes the luminaire's IP classification. If several figures are stated, the luminaire can also have a classification between these figures, or can be adapted to the higher classification. See also the table at the bottom of the page.

Class I
Appliances with functioning insulation. Equipped with an earth termination.

Class II
Appliance with double insulation. Complete insulation of all parts without earth termination. The appliance should be marked with the symbol.

Class III
Appliance is designed to be supplied from a separated/safety extra-low voltage (SELV) power source. The appliance should be marked with the symbol.

Signifies that some or all variants of the luminaire are available with emLED.

Signifies that some or all variants of the luminaire are available with conventional emergency lighting operation.

Indicates that the surface temperature of the luminaire is limited in accordance with the demands set out in EN 60598-2-24 (max. 90 °C on the luminaire's upward turned surfaces under normal operation).

t_a

States the maximum normal ambient temperature for the luminaire. Unless otherwise stated, 25 °C applies. Labels on luminaires intended for temperatures exceeding 25 °C carry a separate t_a-marking stating the maximum temperature.

A large number of our products function well at higher temperatures, for inquiries about this please contact our customer service for more information.

The luminaire must not be covered with insulation.

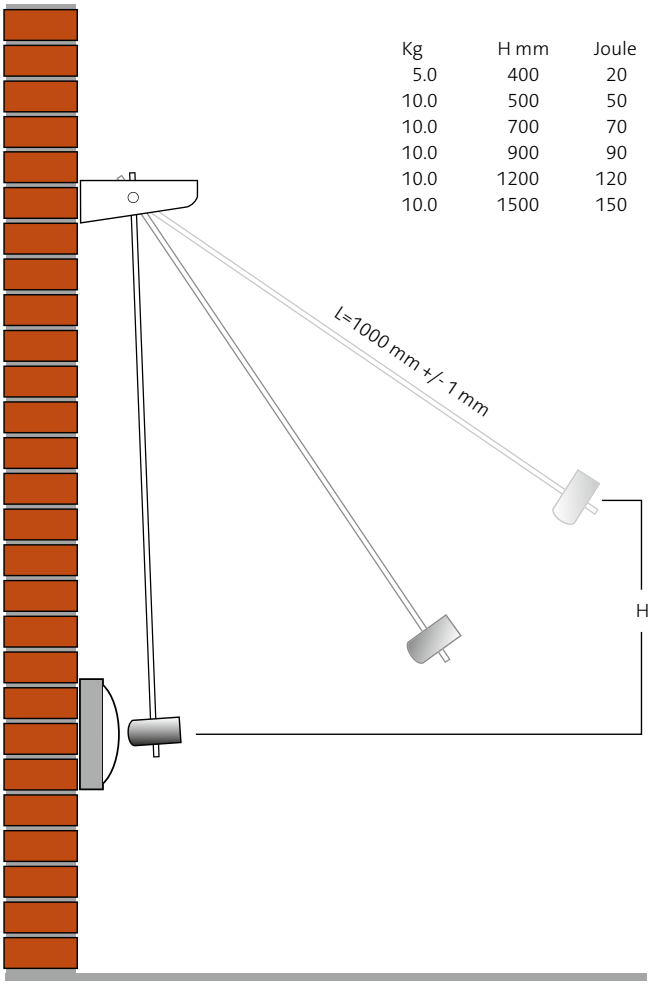
The F-symbol which used to indicate that the luminaire could be mounted on normally combustible surfaces has been removed from the EN 60598-1 product standard for luminaires. According to the latest edition of the standard, the luminaire must only be marked if the product does not meet the requirements for recessing in the ceiling void or mounting on normally combustible surfaces or for covering with insulation.

All Fagerhult luminaires meet the requirements for recessing in the ceiling void or mounting on normally combustible surfaces. Where certain luminaires must not be covered with insulation, this will be specified in Fagerhult's product information and assembly instructions.

Degree of protection (IP-classes)

Luminaires are given an IP-classification. The IP-classification consists of a two digit code that describes the degree of protection against solid objects as well as moisture and water. Standard luminaires will have an IP classification of IP 20 or higher. The table below describes respective IP-classifications. The IP-class is stated in plain text on the luminaire's label. Symbols as set out below can also be used in combination with the text. Note that IP 20 luminaires do not need to be marked. IP is an abbreviation of Ingress Protection.

Design according to first number	**Design according to the second number**						
	Unprotected	Drip proof	Rain proof	Splash proof	Jet proof	Water-tight	Submersible
Unprotected	IP 00	IP 01					
Protected	IP 10	IP 11	IP 13				
Protected	IP 20	IP 21	IP 23				
Protected	IP 40	IP 41	IP 43	IP 44	IP 45		
Dust-proof				IP 54	IP 55		
Dust-proof					IP 65	IP 67	IP 68



Kg	H mm	Joule
5.0	400	20
10.0	500	50
10.0	700	70
10.0	900	90
10.0	1200	120
10.0	1500	150

IK classification

IK classification is an international system signifying a luminaire's impact resistance against external effects such as bumps and knocks. A luminaire's IK class can vary on the scale IK00–IK10 where IK00 does not have any special protection against vandalism. A luminaire that has IK10 on the other hand will withstand a direct impact of 20 joules (see table below).

20 joules may sound a lot but in practice this is only equivalent to a 2 kg ball being dropped from a metre high. The force of a baseball bat or other weapon is much stronger than this. This is why Fagerhult's products have been tested to withstand forces up to 150 joules, therefore considerably higher than what the standard requires.

In accordance with the standard, the test takes place using an impact pendulum (see diagram below) where the height and weight of the pendulum vary. The standard states that a luminaire must withstand three repeated impacts to the same spot, and that the impacts must occur where it is most likely that damage would occur in practice. The impact is normally tested towards the centre of the luminaire.

IK01: 0.14 J.
IK03: 0.35 J.
IK05: 0.70 J.
IK06: 1 J.
IK07: 2 J.
IK08: 5 J.
IK09: 10 J.
IK10: 20 J.

EC directive

An EC directive is binding for each member state it is directed to, but the member state may decide itself the form and procedure for implementation.

According to the EC treaty, directives can be adopted by the European Parliament and the Council, solely by the Council or by the Commission. Within the civil collaboration it is more common to use an ordinance than a directive. When an EC directive has been adopted it is to be implemented by each of the member states, that is to say, transformed into national legislation.

On the one hand, there are minimum Directives, where Member States are free to choose a higher level of ambition than the Directive's wording. Then, on the other hand, there are harmonised directives, to be implemented equally by the Member States. This usually applies to requirements for products. The EU can also decide on a so-called Framework Directive, which contains no detailed rules. The Framework Directive is then introduced in national legislation, but supplemented by more detailed provisions. This is done by the Commission after approval by the European Parliament in the form of regulations that apply equally in all Member States.

Common standards

Work to produce common European standards that specify the new methodology on the directives demands on health, safety and the environment is carried out by the European standardisation bodies CEN, Cenelec and ETSI.

CEN stands for Comité Européen de Normalisation, i.e. the European standardisation committee. CEN manages virtually all sectors within the industry. CEN, with its headquarters in Brussels, Belgium, has 31 member countries, including associated countries. Representatives from the European commission and Efta also participate in the work to draw up standards.

European standards

EN 1837	Safety on machinery – Integral lighting of machines.
EN 1838	Emergency lighting.
EN 12193	Sports Lighting.
EN 12665	Basic terms and criteria for specifying lighting requirements.
EN 12464-1	Lighting of work places – Part 1: Indoor work places.
EN 12464-2	Lighting of work places – Part 2: Outdoor work places.
EN 13861	Safety of machinery – Guidance for application of ergonomics standards in design of machinery.
EN 13032-1	Measurement and presentation of photometric data of lamps and luminaires – Part 1: Measurement and file format.
EN 13032-1	Measurement and presentation of photometric data of lamps and luminaires – Part 1: Addendum Part 1-ADD: Measurement procedure for T5 Lamps.
EN 13032-2	Measurement and presentation of photometric data of lamps and luminaires – Part 2: Presentation of data for indoor and outdoor work places.
EN 13032-3	Measurement and presentation of photometric data of lamps and luminaires – Part 3: Presentation of data for emergency lighting of work places.
CEN/TR 13201	Road lighting - Part 1: Selection of lighting classes.
EN 13201	Road Lighting – Part 2: Performance requirements.
EN 13201	Road Lighting – Part 3: Calculation of performance.
EN 13201	Road Lighting – Part 4: Methods of measuring lighting.
EN 14255-1	Measurement and assessment of personal exposures to incoherent optical radiation – Part 1: Ultraviolet radiation emitted by artificial sources in the workplace.
EN 14255-2	Measurement and assessment of personal exposures to incoherent optical radiation – Part 2: Visible and infrared radiation emitted by artificial sources in the workplace.
EN 14255-3	Measurement and assessment of personal exposures to incoherent optical radiation – Part 3: UV-Radiation emitted by the sun.
EN 14255-4	Measurement and assessment of personal exposures to incoherent optical radiation – Part 4: Terminology and quantities used in UV-, visible and IR-exposure measurements.
EN 15193	Energy performance of Buildings – Energy requirements for lighting.
EN 16237	Classification of non-electrical sources of incoherent optical radiation.
EN 16268	Performance of reflecting surfaces for luminaires.
EN 50172	Emergency escape lighting systems.
ISO CIE 8995-3	Lighting of Outdoor workplaces - Lighting requirements for safety and security.

Energy labelling

Directive 2010/30/EU on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products has now received a supplement whereby all types of lamp, both for household and professional purposes, are included in the mandatory energy labelling. Forthcoming requirements will be added in two stages.

Stage 1 – 1 September 2013

The Directive places requirements on energy labelling and product information for light sources;

a) filament lamps
b) fluorescent lamps
c) high-pressure lamps
d) LED lamps and LED modules

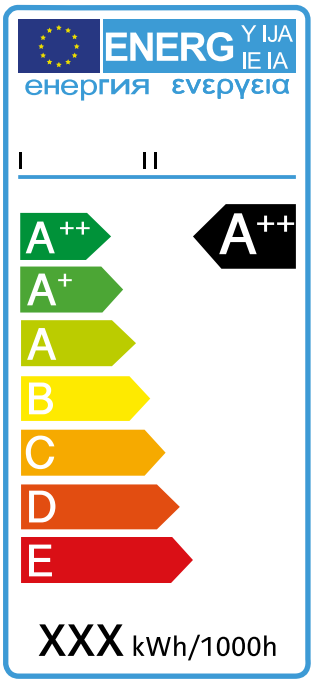
Various transitional regulations for different products.

Non-directional lamp:

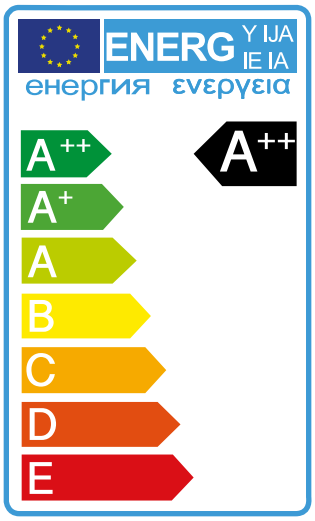
- New energy classes A+ and A++, removal of classes F and G.
- The total number of classes will be limited to seven.
- The limit values for class A and lower will be maintained.
- New A+ class and for future LEDs, A++.
- Not limited to household lamps but also intended for lamps that are mainly used in professional applications such as high-pressure lamps.

Directional lamp:

- New energy efficiency classes A++ to E.
- Must be labelled in the same class as equivalent light sources within non-directional lamps.
- The classification is based on different values.



Example of labelling.



Example of label for electrical lamps.

i Energy classes

Energy class A++
This class is currently empty, apart from certain low-pressure sodium lamps which are used for street lighting. It will soon include the best LED lamps.

Energy class A+
The best LED lamps 2012, the best straight fluorescent lamps, fluorescent lamps and high-pressure lamps.

Energy class A
Average LED lamps 2012, average fluorescent lamps and poor straight fluorescent lamps, and poor high-pressure lamps (the latter two will be phased out between 2010 and 2017).

Energy class B
Good halogen lamps with IRC technology.

Energy class C
Good halogen lamps.

Energy class D
Less energy efficient halogen lamps (NOTE! Only certain outputs are permitted).

Energy class E
Clear incandescent bulbs. (NOTE! Only certain outputs are permitted).

Stage 2 – 1 March 2014

Product information and energy labelling of luminaires that are intended for end users, where it is envisaged that a person buys a luminaire that is not intended for use in their commercial or business enterprise.

Luminaire for end user:

- The luminaire's label provides information on the lamp's compatibility with the luminaire and the energy efficiency of the light source, if this is included with the luminaire.
- If the luminaire contains LED modules which the end user cannot replace, the label provides this information to the end user.
- The label on the luminaire provides no information on the energy efficiency of the luminaire.
- The label must be visible on the luminaire and this is not included as a packaging requirement.

Certain exceptions apply to the following products, among others:

a) Lamps and LED modules that have a luminous flux less than 30 lumen.

b) Lamps and LED modules marketed for battery operation.

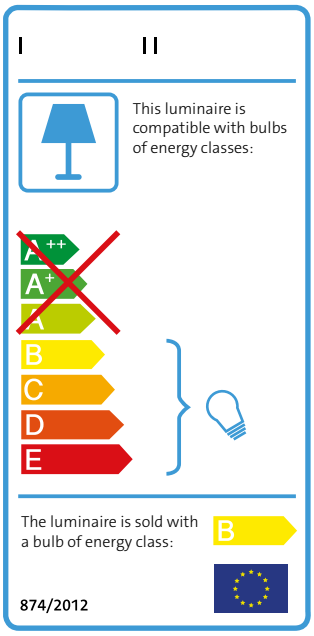
c) Lamps and LED modules marketed for applications where their primary purpose is not lighting, for example video projectors, emission of light as an agent in chemical and biological processes such as polymerisation, horticulture, signalling (such as airfield lamps).
NOTE! These lamps and LED modules are not covered by the exception when marketed for lighting purposes.

d) Lamps and LED modules marketed as part of a luminaire and that are not intended to be separated from the luminaire by the end user.

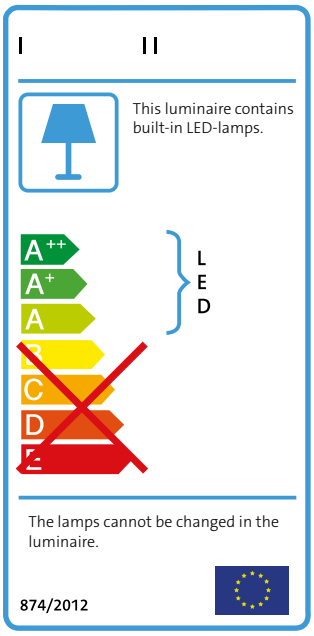
e) Lamps and LED modules marketed as part of a product the primary purpose of which is not lighting.

f) Lamps and LED modules that do not satisfy the requirements that will apply in 2013 and 2014 in accordance with regulations and Council Directive 2009/125/EC.

g) Luminaires that are solely intended for operating lamps and LED modules specified in paragraphs a–c.



Luminaire with replaceable light source



Luminaire with LED light source that is not replaceable.

Directives concerning environmentally hazardous substances

The WEEE directive and the RoHS directive

The environment and luminaires

In recent years Fagerhult has been a major player in a dramatic technical development. We developed lighting systems for HF-operation as early as the end of the Eighties. In the middle of the Nineties we took the next step with the development of luminaires for the T5 fluorescent lamp. The T5 venture also gave us the possibility to develop more efficient reflectors and louvres.

Component part technologies have advanced like our knowledge of how we can distribute light more efficiently. Through our work and our innovations we can contribute towards reduced energy consumption. 90 percent of a lighting installation's environmental impact occurs during operation through the energy it consumes. Our contribution to tomorrow's environment is to develop more efficient luminaires. As a market leader we take our responsibility seriously.

Despite our focus on energy, as a producer, we still face demands about environment aspects concerning lighting products and component parts.

WEEE directive

The directive 2002/96/EC concerns WEEE (Waste Electrical and Electronic Equipment) which deals with the manufacturer's responsibility for electronic and electrical products. The aim is for electrical and electronic products to be designed and manufactured in a manner so that waste is prevented and reuse and recycling are increased.

Manufacturers and importers shall pay for the recycling of the products and ensure that collection and environmentally correct recycling is carried out.

What is included in *Product category 5 – Lighting equipment*:
Goods or equipment manufactured to normally be used:
– as a light source,
– to distribute or control lighting, or
– as a tool to distribute or control lighting.

The product category does not include luminaires manufactured for use in the home and incandescent lamps.

RoHS directive

Directive 2002/95/EC is also known as the RoHS directive (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment). This directive prohibits the use of mercury, cadmium, lead, hexavalent chromium and flame retardants PBB and PBDE in electrical and electronic products released on the market from July 1, 2006. The products embraced by this directive are category 1 to 7 and 10 in the aforementioned WEEE directive

These acts are the first that seriously focus on the electronic industry's products. Of those substances banned by RoHS it is primarily lead that has required changes as this is found in most soldered joints, but also in many products.

Exemption

Exemption has been granted, for example, for mercury in fluorescent lamps and lead in optic glass. Batteries are covered by a specific directive. Furthermore, spare parts intended for the repair of electrical and electronic products that have been released on to the market before July 1, 2006 are not included. Products that are a part of a product not embraced by the WEEE directive are not included in the demands of the RoHS directive.

How does Fagerhult conform to the requirements in RoHS?

Our purchasers have asked our suppliers and received written assurances from them. We have also scrapped old outgoing models of HF-ballasts. From 2013, the RoHS Directive will be included in the CE marking.

EuP directive

Directive 2005/32/EC, the EuP (Energy Using Products) directive, was adopted on 6th July 2005 and constitutes the framework for drawing up the requirement specifications within Eco-design for energy using products.

This directive applies, among other things, to electrical and electronic products and will be implemented in the previous directives, WEEE and RoHS. The directive covers all products that require energy for their function with the exception of means of transport for people and goods.

The intention of the EuP directive is to force industry to design the products of tomorrow to consume less energy, both during manufacture and their life cycle.

In Sweden, the Eco-Design Act came into force on 1 May 2008. The Act means that manufacturers must take energy use and other environmental factors into consideration when designing and producing the product. Products that do not meet the requirements will not qualify for the CE label and cannot be marketed within the EU. Until now, product requirements among others have been voted through in the Regulatory Committee (representatives from the affected authorities in the various EU countries) regarding the following:

- Standby power.
- Street and office lighting.
- Simple digital boxes.
- External mains power units.
- Domestic lighting.

Once the proposals have been voted through on the Regulatory Committee, the proposal is forwarded to the EU parliament (Council of Ministers), who may approve or reject the proposal. This came into force in February 2009.

Regulation 244

For domestic lighting (EuP – regulation on domestic lighting products) the following was voted through on the Regulatory Committee on 8 December 2008 (see info box).

Regulation 245

For products within the professional lighting industry – street and office lighting, there is a regulation, Commission Regulation 245 of 18 March 2009 (EC 245/2009), amended by the Commission Regulation of 21 April 2010 (EC 347/2010) establishing Eco-design requirements for fluorescent lamps without integrated ballasts, for High Intensity Discharge lamps, and ballast and luminaires able to operate such lamps, voted through in Regulatory Committee. This (*EuP – regulation on tertiary sector lighting products*) was adopted by the EU parliament in March 2009 and is based on three steps. The proposal relates to eco-design requirements for fluorescent lamps without an integrated ballast, high pressure discharge lamps and drive units and luminaires for these light sources (see info box).

In addition to the previous page Directives, some examples of additional laws and regulations are listed below:

The REACH directive

is a piece of chemical legislation that replaces large sections of the rules that applied to chemicals before 1 June 2007 in the EU and Sweden. The Swedish Chemicals Agency is responsible for this in Sweden.

The Low Voltage directive

EU Directive 2006/95/EC LVD is designed to protect people and property from injury and damage caused by electrical products. This includes protection against electromagnetic fields, fire and electric shock. The responsible authority in Sweden is the National Electrical Safety Board.

Directive on electromagnetic compatibility (EMC)

The National Electrical Safety Board is also the responsible authority for this Directive, 2004/108/EC, which aims to ensure that radio and telecommunications equipment and other electrical devices are not impaired due to electromagnetic interference. The protection requirements on the one hand seek to limit the interference from the products and, on the other, to determine how much interference they are able to tolerate.

i Stages in regulation 244

Stage 1 – 1 September 2009
- All clear incandescent bulbs > 950 lm (≈ 80 W) and all non-clear incandescent bulbs are to be phased out. Clear bulbs are to be replaced by Energy Class C bulbs. Frosted bulbs are to be replaced by Energy Class A bulbs.

Stage 2 – 1 September 2010
- All clear incandescent bulbs > 725 lm (≈ 65 W) are to be phased out and replaced by Energy Class C bulbs.

Stage 3 – 1 September 2011
- All clear incandescent bulbs > 450 lm (≈ 45 W) are to be phased out and replaced by Energy Class C bulbs.

Stage 4 – 1 September 2012
- All clear incandescent bulbs > 60 lm (≈ 7 W) are to be phased out and replaced by Energy Class C bulbs.

Stage 5 – 1 September 2013
- Increased quality requirements.

Review
- It is expected that there will be a review of the requirements in 2014.

Stage 6 – 1 September 2016.
- All clear incandescent bulbs > 60 lm (≈ 7 W) are to be phased out and replaced by Energy Class B bulbs.

i Stages in regulation 245

Stage 1 – one year after implementation (2010)
- For light sources, T8 halophosphate fluorescent lamps and fluorescent lamps (T8 and T5) with a colour rendering index < Ra 80 will be phased out. In addition, the manufacturer must supply product information about high pressure discharge lamps and fluorescent lamps online and in the technical documentation.
- Ballasts – a mandatory EEI (Energy Efficiency Index) label must be placed on all fluorescent lamp ballasts. Electromagnetic ballasts included in table 16 must comply with at least EEI class B2. Electronic ballasts must at least comply with Class A2 and electronic ballasts for regulation at least Class A1. Those not included in table 16 must comply with EEI class A3. The standby power of fluorescent lamp ballasts must be less than 1 W.
- Luminaires – 18 months after stage 1 comes into force (the second half of 2010), the mandatory information regarding the contents of luminaires for fluorescent lamps and high pressure discharge light sources (> 2000 lumen) must be available online and in the product documentation. The information must also include maintenance instructions and directions for the removal of scrap products for recycling. In addition, the same standby limits apply to luminaires as to ballasts.

Stage 2 – three years after implementation (2012)
- Light sources – T10 and T12 halophosphate fluorescent lamps are to be phased out. Other light sources to be phased out are the least efficient high pressure sodium and metal halogen light sources (with E27, E40 and PGZ12 sockets). Five years after this comes into force (2015), mercury light sources will also be phased out.
- Introduction of minimum ballast efficiency requirements for ballasts for high pressure discharge lamps. In addition, mandatory EEI (Energy Efficiency Index) labelling is being introduced on all ballasts. The standby power of fluorescent lamp ballasts must be less than 0.5 W.
- Luminaires – the requirement is that luminaires with integrated ballasts must be compatible with the third stage requirements for ballasts, except in luminaires with an encapsulation class of at least IP 4X. The mandatory information for all luminaires must be available online and in the product documentation. In addition, the same standby limits apply to luminaires as to ballasts.

Stage 3 – taken eight years after implementation (2017)
- As far as light sources are concerned, the majority of metal halogen light sources are to be phased out (≤ 405 W with sockets E27, E40 and PGZ12). 2-pin compact fluorescent lamps are also being phased out.
- Ballasts – class B1, B2 and A3 ballasts for fluorescent lamps are being phased out. In addition, there are requirements for the efficiency of the ballast, depending on the power of the light source.
- Luminaires with ballasts must meet the third stage requirements for ballasts. Permitted classes for ballasts are A2 and A2 BAT, and for adjustable ballasts A1 BAT.

On January 4th, 2006 a new EU directive – Energy Performance of Buildings, 2002/91/EC (EC stands for European Communities) came into force. This has now been revised and replaced by Directive 2010/31/EU. The directive means buildings must be declared with regard to the total energy consumption. The building's energy consumption must be calculated and declared in advance and applies to all energy consumption – lighting, heating, cooling, ventilation, etc.

The aim is to promote an improvement in the energy performance in buildings within the EU and in doing so reduce the discharge of climate-influencing gases, exactly as stated in the Kyoto agreement. At the same time a reduction in the use of energy is also sought.

The directive has been drawn up to promote improvements related to energy performance at the same time as local conditions are taken into consideration. Southern Europe, for instance, does not face the same conditions as the Northern Europe.

The directive aims to improve the efficiency of energy usage in Europe as a part of the EU's measures to satisfy the Kyoto Agreement concerning the reduction of greenhouse gases.

In England and Wales the implementation of the directive started in April 2006 with the amendment to Part L of the building regulations. Further amendments came into force in 2010.

The EC directive means that "all" properties are to be declared with regard to energy consumption. The requirement for energy declarations came into force on 1 January 2009. The directive stipulates that affected buildings will be classified and consideration must be taken of all types of energy, daylight, ventilation etc. The directive necessitates that consideration must be paid to how the installed output is used over time with the value to be declared in kWh/m² per year.

The standard EN 15193

Common standards are created to produce common calculation methodology. Different standards are drawn up to calculate the different energy consumers in the building.

Lighting is included as an important part of the energy usage in a building. Standard EN 15193, Energy performance of Buildings – Energy requirements for lighting, describes a harmonised method of calculating energy usage for interior lighting. The lighting's energy efficiency in the building must be evaluated with an index; Lighting Energy Numeric Indicator (LENI).

The LENI-number must be shown for the entire building and can be used to compare the energy expended on lighting. The comparison can be made between different buildings with the same function but of a different size and design.

The indicator for the energy efficiency of the lighting

The energy consumption for lighting must be declared via the an Lighting Energy Numeric Indicator (LENI) and is expressed in kWh/m², year.

LENI an indicator of a building's total energy usage for indoor lighting, but can also be used as an indicator for a specific space within the building. At the same time the lighting shall conform to current standards and recommendations for indoor lighting (EN 12464-1).

$\mathbf{W_{total}}$ is the total annual energy usage for lighting.

A is the building's total interior area (m²).
The area is calculated inside the external walls excluding non-used cellar areas and unlit rooms.

The calculation of the LENI number for the building is performed using the formula:

$$\mathbf{LENI}_{\mathbf{calculated}} = \mathbf{W}_{\mathbf{total}} / \mathbf{A} \quad \text{(kWh/m², year)}$$

The LENI number can be calculated in two different ways, a quick and a comprehensive

The quick method

This method is used to give an estimate of the building's annual energy usage, applicable for just a number of common building types. The standard includes tables where the annual standard data for different types of buildings can be read to aid calculation via the quick method. These are offices, buildings for tuition, hospitals, hotel, restaurants, sports centres, department stores and retail shops and manufacturing industries.

The quick method also includes a standard value for the parasitic energy (Wparasitic) which is stated as 6 kWh/m² a year and which should be used when applicable. It is distributed over 1 kWh/m² year for charging emergency lighting and 5 kWh/m² year for standby energy for the ballast. The quick method should not be used for more accurate calculations of energy usage as it usually yields higher LENI values.

The formula for calculating the energy usage according to the quick method:

$$\mathbf{LENI = W_{light} + W_{parasitic} / A} \quad \text{(kWh/m², year)}$$

The comprehensive method

This method permits an exact determination of the energy used as the method is based on actual values for each room. Unlike the quick method, the comprehensive method can be used for all types of buildings, even at different geographical positions. As the comprehensive method is based on actual values it gives a lower LENI number than a calculation with the quick method. Calculations provided by Fagerhult, and those via DIALux, are based on the comprehensive method.

Using the comprehensive method you can calculate for a selected period (not only the whole year) under the condition that you can get an estimation of the presence and availability of daylight.

The formula for calculating the energy usage according to the comprehensive method:

$$\mathbf{LENI = W_{light} + W_{parasitic} / A} \quad \text{(kWh/m², time*)}$$

*** Using the comprehensive method you can calculate on an annual, monthly or time basis.*

The total energy consumed for lighting is calculated according to the formula and is stated kWh/year:

$$W_{total} = W_{light} + W_{parasitic}$$

W_{light} is the estimated energy consumption used to power the lighting in the building during a given period. All light sources and ballasts included.

$W_{parasitic}$ is the estimated energy used when the lighting is extinguished. That is to say, the energy used by the ballast in standby mode or for charging emergency luminaires.

i Factors affecting the lighting's output in operation, W_{light}

P_n is the total installed lighting output within a room or zone, measured in watts ($P_n = \sum P_i$).

F_C is a correction factor for constant illuminance in a room or a zone.
F_C is affected by:
- Maintenance factor (β).
- Maintenance plan.

When constant light control is used:
F_C=(1+maintenance factor)/2, otherwise the standard value 0.9 is used.

F_D is a correction factor for daylight. F_D relates use of the total lighting output to the availability of daylight in the building.
F_D is affected by:
- The daylight factor (amount of daylight). See below under the header "Access to daylight".
- Illuminance.
- Type of control.
- Utilisation time (t_D).

F_O is a correction factor depending on presence. F_O relates use of the total lighting output to the presence time in the building.
F_O is affected by:
- Presence/absence.
- The type of control.
- Total utilisation time (t tot) day+night ($t_N + t_D$).

The formula to calculate the energy consumption:

$$\mathbf{W_{light} = [\sum(P_n \times F_C) \times [(t_D \times F_D \times F_O) + (t_N \times F_O)]] / 1000} \text{ (kWh/year)}$$

i Factors affecting the lighting's output when it is extinguished, $W_{parasitic}$

Emergency lighting system		Control system	
P_{em}	charging power for emergency lighting within the building.	**$P_{light\text{-}off}$**	parasitic "standby"power for control equipment when the lighting is in the"off position".
t_{em}	is the charging time for emergency lighting (standard value for t_{em} is 8760 h/year).	**$t_{light\text{-}off}$**	when the lighting is in the "off position" $[t_Y - (t_D + t_N)]$ (standard value for t_Y is 8760 h/year).

The formula to calculate the parasitic energy:

$$\mathbf{W_{parasitic} = [\sum P_{pc,\ Light\text{-}off} \times t_{Light\text{-}off} + (P_{em} \times t_{em})] / 1000} \text{ (kWh/year)}$$

Availability of daylight

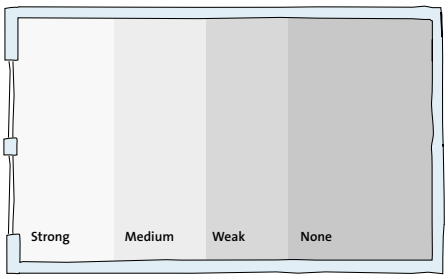
Daylight must be included within the calculations to give a correct value. The availability of daylight divides the room into different zones. The different zones describe a specific daylight interval, divided by a daylight factor: *Strong, Medium, Weak* or *None*. Luminaires located in the stronger zone can utilise a larger devaluation of the utilisation, which reduces the total power consumption.

The daylight factor is obtained by making a light measurement of indoor illuminance and expressing the measurement result as a relation to the outdoor illuminance at the same time.

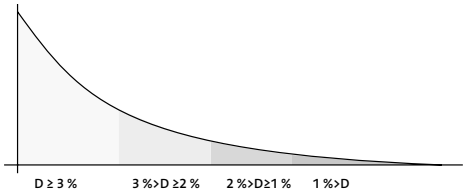
The formula becomes

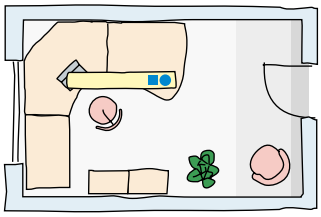
$$D(\%)=E_{indoors} \times 100/E_{outdoors}$$

The daylight factor is defined as the ratio between the illuminance at a point on a given plane, caused by light directly or indirectly from a sky of assumed or known luminance distribution, and the illuminance on a horizontal plane caused by an unshielded hemisphere of the same sky. Contributions from direct sunlight to both illuminances are excluded.



The room contains zones with different daylight intervals. The availability of daylight is dependent on the room's glazed area and window placement.





In this room there are potential savings of over 60 % with the use of daylight and absence control.

Quantity/Concept	Designation	Unit	Formula	Definition/Explanation
Luminous intensity (of a light source, in a given direction)	I	candela (cd)	$I=d\Phi/d\Omega$ $cd = lm \cdot sr^{-1}$	The ratio between the luminous flux dΦ that leaves the light source within the solid angle element dΩ containing the given direction, by the solid angle element (unit: $cd = lm \cdot sr^{-1}$). Note: luminous intensity is the intensity of the light in a given direction – luminous flow per unit solid angle (ω).
Illuminance (at one point on a surface) (E)	E	lx	$E= \Phi/A$	The ratio between the luminous flux dΦ incident on an element of the surface, containing the point, and the surface dA of that element (unit: $lx = lm/m^2$). Note: Illuminance refers to the luminous flux that hits a given area – luminous flux per unit area (m^2).
Cylindrical illuminance	E_z	lx	$E_z = (1/\pi) \int L \sin \varepsilon d\omega / 4\ \pi sr$	The total luminous flux on the curved surface of a very small cylinder placed at a specified point, divided by the surface area of the cylinder (unit: lx). Note: cylindrical illuminance (at one point, for one direction) (E_z) quantity defined by the formula $E_z = (1/\pi) \int L \sin \varepsilon d\omega$ $4\ \pi sr$ where: $d\omega$ is the solid angle of each elementary beam passing through the given point L is its luminance at that point ε is the angle between it and the given direction – unless otherwise stated, the direction is vertical.
Modulation	E_z / E_h	-	E_z / E_h	The ratio between the cylindrical and horizontal illumination at a point. Note: the balance between diffuse and directional light. A value between 0.3 and 0.6 is usually an indication of good modelling.
Luminance (light density)	L	(cd/m^2)	$L = I/A$ $(L = I/A\cos\alpha)$	The luminance in a given direction, at a given point on a real or imaginary surface Note: luminance is also known as light density, and is defined as the light density in a specific direction on a predetermined point/surface on a light source/luminaire or illuminated surface.
Luminous flux	Φ	lumen (lm)		The total luminous energy emitted from a light source, defined as the luminous energy obtained when the radiant luminous flux of the light source is evaluated against the eye's sensitivity in daytime (photopic) vision (ISO/CIE 10527).
Light output ratio (of a luminaire) (Light Output Ratio – LOR)	η_A			Ratio between the total flux from the luminaire, measured under specified practical conditions with its own light sources and equipment, and the total individual luminous flux from the same light sources operating outside the luminaire using the same equipment, under specified conditions
Ballast Lumen Factor	BLF	–	–	Defines the ratio in luminous flux from a reference light source measured using a commercial ballast or a reference ballast at an ambient temperature of 25 °C.
Colour temperature	T_c	kelvin (K)	CIE 17.4	The temperature of a Planckian (black body) radiator whose radiation has the same chromaticity as the given stimulus. (unit: K) Note: Colour temperature describes the colour impression of a light source, which is normally perceived as hot at < 4000 K and cold at > 4000 K. Colour temperature is expressed as an absolute temperature or in respect of absolute zero, which is defined as 0 K = –273.17 °C or 0 °C= +273.17 K
Correlated colour temperature	T_{cp}	kelvin (K)	CIE 17.4	The temperature of the Planckian (black body) radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified observation conditions. (Unit: K)
Colour rendering index	CRI	R_a	CIE 17.4	CIE 1974 general colour rendering index for a specified set of 8 colour samples Note: is a measurement of a light source's ability to render colour compared to a reference light source at a predetermined colour temperature. An Ra index is used for graduation which, according to CIE, can be at most 100 and which should, for lighting work premises, be a minimum of 80.
Colour tolerance				Is a measurement of the spread of chromaticity from a light source or luminaire. This is specified as the number of MacAdam ellipses as SDCM or as specific values in x and y coordinates, and is measured according to CIE 1931.
Luminous efficacy of a light source	η	(lm/W)	$\eta=\Phi/P$	The ratio between the emitted luminous flux and the power consumed by the light source. Note: luminous efficacy can be described as a measurement of the efficiency of the light source.
Luminous efficacy – systems (light source + ballast)	η c	(lm/W)	$\eta=\Phi/P$	The ratio between the luminous flux emitted by a light source and the electrical power that it consumes, incl. ballast losses.
Luminous efficacy – luminaire (light source + ballast)	l /LLE	(lm/W)	$\eta=\Phi/P$	The ratio between the luminous flux emitted from a luminaire and the electric power that it consumes with the light source, incl. ballast losses.
Glare		-	CIE- 31, 112, 117	Visual conditions where discomfort or a reduced ability to see details or objects occurs, caused by inappropriate distribution or levels of luminance, or by extreme contrasts. Note: glare is normally subdivided into discomfort glare (UGR/NB) and disability glare (TI/GR).
Discomfort glare	UGR_L	-	CIE- 117	Discomfort glare can be expressed with the help of a "psychometric scale"derived from psychophysical experiments. If it is expressed by means of a"unified glare rating", the following UGR values should be used (see CIE 117): 10; 13; 16; 19; 22; 25; 28. Note: verified UGR data reported in accordance with the tabular method described in CIE publication 117 are available for an array of luminaire manufacturers. Manufacturers who publish UGR tables calculated using a different distance-to-height ratio than that which is described in CIE publication 117 must state this fact.
Uniformity **– illuminance** **– luminance**	U_o		E_{min}/E_{mean} L_{min}/L_{mean}	The ratio between the lowest value and the average (mean) value over a specific surface, unless otherwise stated.
Daylight factor	D			The ratio between the illuminance at a point on a given plane, caused by direct or indirect light from a sky of assumed or known luminance distribution, and the illuminance on a horizontal plane caused by an unshielded hemisphere of the same sky. The contribution from direct sunlight is excluded from both illuminances.

Quantity/Concept	Designation	Unit	Formula	Definition/Explanation
Luminaire luminance	L_{ave}	cd/m²	L=I/A (L=I/Acosα)	The average (mean) luminance of the illuminating parts of the luminaire or solid angle.
Luminaire luminance – limit values (for working at a monitor)	L_{ave}	cd/m²	L=I/A (L=I/Acosα)	The average (mean) luminance of a luminaire's illuminating parts must be measured and/or calculated in the C-plane at 15° intervals, starting at 0°, and the elevation at γ angles 65°, 75° and 85°. Note: should normally be provided by the luminaire manufacturer based on the maximum (light source/luminaire) efficacy. The values should not exceed the limit values specified in Table 4 (see also EN 13032-1 and EN 13032-2).
Shielding angle for luminaire's light source		degrees	–	The angle between the horizontal plane and the first line of sight, at which parts of the light sources in the luminaire become directly visible.
Optical cut-off angle; Cut-off angle for luminaires		degrees	–	The angle, measured upwards from the nadir, between the vertical axis and the first visual direction at which the light sources and surfaces with high luminance are not visible.
Solid angle	ω	steradian (sr)	ω=A/r²	The ratio between the cut out area A on the sphere caused by a beam of light on the surface and the square of the sphere's radius r.
Median life – light sources	–	hours (h)	–	The median life is defined as the time after which 50% of a sizeable sample of light sources have discharged (normally indicated for incandescent lamps, halogen lamps and fluorescent lamps).
Service life – light sources	–	hours (h)	–	The service mortality rate is defined as the point at which 80 % of the lighting installation's original luminous flux remains. The depreciation in luminous flux depends on the reduced luminous flux and spent light sources.
Economic life – light sources	–	hours (h)	–	The economic mortality rate is defined as the point at which 70 % of the lighting installation's original luminous flux remains. The depreciation in luminous flux depends on the reduced luminous flux and spent light sources.
Calculation Points	p		$p = 0{,}2 \times 5^{\log d}$	A grid with a defined set of calculation and data points in each direction on the measurement plane. Note: note that the distance and location of the calculation points should not coincide with the distance between luminaires. A grid that approaches the shape of a box or square is to be preferred, and the ratio between the distance of the length and width of the grid should be kept within the range 0.5–2 (see also EN 12193). The maximum distance between the calculation points in the grid will be: $p = 0{,}2 \times 5^{\log d}$ where; $p \leq 10$ d is the longer length of the surface p is the maximum distance between the calculation points (m). The number of points for the longer distance is determined to the nearest odd integer of d/p.
LENI		kWh/m², year		Lighting Energy Numeric Indicator: The numeric indicator of the lighting's annual energy consumption within a building or a specific area in accordance with EN 15193 (see instructions under separate section). Note: the LENI number can be used as a comparison of lighting energy efficiency between different buildings and places with the same function and activities.
Working area				The area in which the job is carried out. Note: refers to the lighting requirements of EN 12464-1 and EN 12464-2.
Immediate surroundings				A band/area around the working area within the field of view, with a width of at least 0.5 m. Note: refers to EN 12464-1 and EN 12464-2.
Peripheral surroundings				The peripheral surroundings refer to a band/area of at least 3 m around the immediate surroundings. Where the peripheral surroundings touch a wall, the area of the peripheral surroundings is restricted by a zone 0.5 m from the walls of the room. The illuminance within the peripheral surroundings must be at least 1/3 of the illumination within the immediate surroundings. Note: refers to the next edition of EN 12464-1.
Maintenance factors				Formula LLMF × LSF × LMF × RSMF. See the tables in the section dealing with lighting planning.
Lamp Lumen Maintenance Factor	LLMF			The ratio between the luminous flux from a light source at a given time during its life, and the initial luminous flux.
Lamp Survival Factor	LSF			The proportion of the total number of light sources that still work at a given time under defined conditions and ignition frequency.
Luminaire Maintenance Factor	LMF			The ratio between operational efficiency of a luminaire at a given time and the initial operational efficiency.
Room Surface Maintenance Factor	RSMF			The ratio between the reflectance of the room surfaces at a given time and their initial reflectance. Note: maintenance factor for the room surfaces, dependent on room contamination.
Emergency Ballast Lumen Factor	EBLF			The ratio between the light source's luminous flux, measured with a ballast during testing, at the lowest voltage that can occur during emergency lighting operation following a power failure (at the recommended start-up time for the application's demands) and in the case of continued emergency lighting for a specified time, and the luminous flux from the same light source in operation with a reference ballast at the rated voltage and frequency. $EBLF = BLF \times F_{min}$ where: EBLF is the luminous flux factor of the emergency ballast; BLF is the luminous flux factor for the ballast; F_{min} /is the emergency lighting factor/worst case for the reduction factors during emergency lighting operation. Note: the light source is operated during emergency lighting by an emergency lighting unit instead of the regular ballast. Emergency lighting operation works at a reduced light source output, normally between 5 and 30% of the normal output.

For standardised definitions and further clarification of magnitudes, units and concepts, see EN 12 665 – Basic terms and criteria for specifying lighting requirements. (EN 12 665 – Basic terms and criteria for specifying lighting requirements).

Planning the lighting of indoor workplaces

From May 2003 companies in European CEN-countries, have a mutual standard for the planning of lighting of indoor workplaces.

The standard EN 12464-1:2011 – Lighting of work places – Part 1, has been developed by the technical committee CEN/TC 169 "Light and Lighting".

EN 12464-1 applies to the following countries : Belgium, Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, FYR Macedonia, Greece, Hungary, Ireland, Iceland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Switzerland, Spain, United Kingdom, Sweden, The Czech Republic, Turkey, Germany and Austria.

The standard for indoor workplaces was introduced in 2003 and was revised in 2011.

Lighting of indoor workplaces

The following text is an interpretation of the main guidelines in the European standard for the lighting of indoor workplaces EN 12464-1:2011.

The standard does not cover all aspects of planning a lighting installation, and reference should also be made to the SLL code for lighting.

Workplace lighting

The European standard EN 12464-1 highlights the minimum illuminance requirements of an actual working area rather than the entire room. The guidelines recommend that the lighting outside the working area should be adapted to the conditions that apply inside the working area. The values stated in the collection of tables, refer to the lowest illuminances in the workspace of a visual object, that can be either horizontal, vertical or placed at an angle. The illuminances documented consider the lowest average values for working under normal conditions. However, the illuminances can be adjusted by the increments set out below if the visual conditions deviate from the normal conditions

20–30–50–75–150–200–300–500–750–1000–1500–2000–3000–5000 lx

The demands on illuminances used in the workplace, should be regularly reviewed to overcome the following situations; difficult working conditions, activities that demand great accuracy or high productivity, impairment of visual efficiency, viewing objects with fine detail or in low contrasts of light or the use of DSE terminals for long periods of time.

In practice, the specified illumination can be reduced under the following conditions; when visual objects have an abnormally large size and high contrast or when visual work is in progress for short periods.

In workplaces with continuous occupancy the illuminance must not drop below 200 lx. Continuous occupancy refers to work that is performed for more than two hours.

The recommended values assume that the employees have normal sight. If a greater number of people have some form of sight impairment, this should be taken into consideration when designing a lighting installation.

Lighting the visual object

The main principle is that the light falls in such a manner that the greatest possible contrast is placed on the visual object, which may have a horizontal, vertical or sloping position. It can also consist of varied structures or have different combinations of surface characteristics, matt, bright etc,resulting in varied reflective characteristics.

A basic prerequisite for good visual comfort in the workplace, is that the work object's position and shape, in relation to the direction of light, does not cause any form of unpleasant glare or glare that impairs the vision e.g. dazzling luminaires or disturbing reflections.

Principles for establishing the working area and surrounding calculation surfaces

Lighting of the working area

The working area is defined, according to EN 12464-1, as the area of the workplace where tasks are performed. For areas where the size and/or placement of the working area is unknown, the area where the tasks may be performed is to be considered as the working area

The working area is usually made up of the entire workplace/workstation. For example, in an office workplace, the working area is made up of a small surface where paper work is carried out. Work with a monitor and keyboard usually demands a lower illuminance than when paper work is performed. The illuminance level needs to be adjustable for work with monitors and to help achieve a suitable balance with the surrounding area. Adjust relative to the surrounding areas illuminance.

In an office where paper work is carried out the workspace can be made up of an entire work table. In industry, the size of the working area can be harder to define e.g. workplaces for work involving microelectronics or a production line for assembling cars.

When the exact size of the working area is unknown, it is normally taken as 0.6 m x 0.6 m for an office workplace. In this case the working area is thought to be located directly in front of the person's normal position and at the front edge of the desk. The vari-

ation of the illuminance, i.e. the ratio between the lowest illuminance in relation to the average illuminance on the working area, should be as small as possible and not fall below 0.6.

The tables the latest revision of EN 12464-1:2011 outline the requirements for uniformity separately for each type of work task or activity.

Lighting of the immediate surroundings

The lighting of the immediate surrounding area should relate to the lighting level within the working area and additionally create the conditions for a well-balanced luminance distribution within the normal field of vision. Extensive changes to the lighting level around the working area can cause visual stress and discomfort.

The immediate surrounding area is defined as an area around the working area with a width of at least 0.5 metres. The size of the immediate surroundings should be determined by the planner and may need to be increased to a width greater than 0.5 metres, for specific types of workplaces.

The size of the immediate surroundings can be increased:
- When the size of the working area is small.
- If the illuminance within the working area is high.
- With active work.

The illuminance in the immediate surrounding area can be lower than within the working area, but should not fall below the values stated in the table to the right.

The variation of the illuminance, i.e. the ratio between the lowest illuminance in relation to the average illuminance in the immediate surroundings, should be as small as possible and not fall below 0.4.

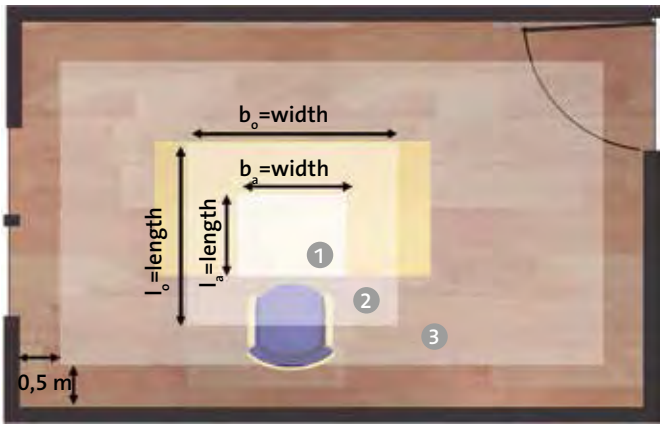
Lighting of the peripheral surroundings

There are no defined demands on the illuminance within the peripheral surrounding areas in the EN 12464-1, i.e. the area outside of the immediate surrounding area. This area is defined as the area outside the immediate surrounding areas, to a distance of 0.5 metres from the room's walls, or to a band around the immediate surroundings with a width of at least 3 m. Exceptions should be made for rooms smaller than 5 m^2, and for rooms where one section is less than 2 m. In these instances, only a zone of 0.1 m from the walls of the room should be used. The illuminance within the peripheral surroundings must be at least a third of the illuminance in the immediate surroundings.

The illuminance variation, i.e. the difference between the lowest illuminance and the average (mean) illuminance of the peripheral surroundings, should be as small as possible. Uniformity, i.e. the ratio between E_{min} / E_{ave} must not be less than 0.1.

If, for example, demands on the illuminance within the working area are 500 lx on the workplace and 300 lx for the immediate surroundings, then the illuminance of the peripheral surroundings must not be less than 100 lx. The minimum illuminance shall be calculated within a zone outside the immediate surroundings to 0.5 m from the walls of the room, or to a band around the immediate surroundings with a width of at least 3 m.

Example of the workspace for a typical workplace.



1. Working area ($l_a \times w_a$)
– size and position are established by the lightplanner.

2. Immediate surrounding area ($l_o \times w_o$)
– The size to be established by the light planner. (l_a+2 × ≥0.5 m) × (W_a+2 × ≥ 0.5 m).

3.Peripheral surrounding area
– 0.5 metres from the room's walls.

The lighting around the working area should contribute towards good visual adaptation, as recommended in the luminance distribution and luminance limitations section of the report.

As a rule, in work areas with bright walls, the relation between the illuminance within the working area and the average illuminance on the room´s walls should not exceed 3:1. For instance, in offices and classrooms the ratio should be at least 2:1.

Illuminance in the working area	Illuminance within the immediate surroundings	Illuminance within the peripheral surroundings in relation to the immediate surroundings
≥ 750	500	1/3
500	300	1/3
300	200	1/3
200	$E_{working\ area}$	1/3
150	$E_{working\ area}$	1/3
100	$E_{working\ area}$	1/3
≤ 50	$E_{working\ area}$	1/3

Uniformity within the working area depending on the visual task and activity. Uniformity in the immediate surroundings: min/avg at least 0.4. Uniformity in the peripheral surroundings: min/avg at least 0.1.

Glare

Glare occurs when part of an interior space is significantly brighter than the room's luminosity. In these instances the eyes are exposed to a more intense light than they are normally adapted to. The most common cause of glare occurs when the luminaire and window can be seen directly or via reflections, within the normal field of vision.

Elderly people are usually more irritated by glare than young people. This is mainly due to the increased clouding of the eyes lens experienced with age as well as a reduction in the ability to adapt. The light's spectral distribution and colour temperature can also affect the degree of glare.

Glare can be divided into two different types; disability glare and discomfort glare.

Sight impairment glare and discomfort glare can occur simultaneously or separately.

Disability glare

Disability glare usually occurs when an object in the vicinity of the normal line of sight, has a significantly higher luminosity or luminance than that which usually occurs in the field of vision. If an eye is exposed to a continuous intense light, the eye's adaptation can be affected negatively and cause deterioration in visibility, or what is known as contrast reduction.

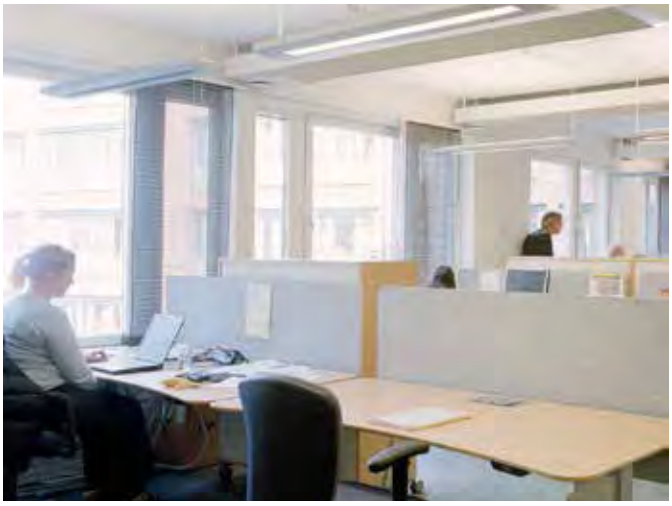
This contrast reduction can be sufficient to make words and images barely visible and in doing so make it difficult to carry out the visual task. Alternatively, if the light source causing the glare is directly in the line of sight this can cause noticeable after-images. The most common source of sight impairment glare internally, is the sun and sky viewed from a window or a badly shielded light source observed directly or via reflection.

Disability glare should therefore be prevented through using luminaires that effectively shield the light source (see table).

Lowest shielding angle for the light source's luminance

Light source's luminance [kcd/m²]	Minimum shielding angle
20 to < 50	15°
50 to < 500	20°
≥ 500	30°

The values in the table do not include indirect luminaires or luminaires that are installed below normal eye level.



Calculation of the glare index

The degree of discomfort glare for indoor installations can be estimated by calculating the glare index according to the UGR method. Following the introduction of the latest EN 12464-1, UGR will replace the previous European calculation method (NB-method). The demands on the glare index documented in EN 12464-1 refer to the highest average value for the lighting. The UGR-method (Unified Glare Rating) is described in CIE's publication no 117-1995.

The UGR glare index for discomfort glare is ranked on a scale, which in practice runs from 13 to 28 where the higher the glare index the higher the level of glare. The smallest change in the glare index denoting a significant difference is 3.

The glare number should be calculated according to the 'table method' to check whether the recommended glare index in the standard's tables is met by a specific lighting installation. (The method is described in CIE's publication no 117-1995). However, this method assumes that the luminaires in the room are positioned symmetrically and feature symmetrical light distribution across and along the luminaire.

Luminaire manufacturers provide information/table data as a part of the luminaire's photometric data to calculate the lighting installation's glare index.

For LED luminaires, however, the UGR numbers should be used with a certain amount of caution as an LED luminaire can provide a very high degree of luminance at an individual angle without this showing in the specified UGR number, which is a mean value. Instead use for example the luminaire's luminance table in order to determine a luminaire with LEDs.

Discomfort glare from electric light

Discomfort glare is an immediate occurrence and arises from light sources or luminaires whose luminance is greater than the eye can adapt to. It can also become noticeable after a period of time.

The degree of discomfort glare depends on several factors; the luminance and the size of the glare source, the position of the glare source in relation to the line of sight and the background luminance against which the glare source is viewed.

Consequently, when light planning the luminaire's luminance should always be considered in relation to the background luminance. The closer the dazzling surface is to the eye, the greater the risk of discomfort glare. In open luminaires, especially those for compact and other intense light sources with high luminous flux, it is generally the light source itself or a mirror image in the specular reflector that causes the glare effect. One way to reduce discomfort glare is to use satin matt reflectors and luminaires with a larger surface area.

Discomfort glare can also be reduced by increasing the luminosity on walls and ceiling of a room. This can be achieved in different ways:

- Using luminaires with an uplight component.
- Positioning the luminaire closer to the walls in the room.
- The walls can be lit separately or the luminosity increased by choosing higher reflection factors on the wall surfaces.
- Use light sources with suitable spectral distribution and colour temperature.

Walls that appear brighter in relation to the visual object can create adaptation problems. The luminosity of the room surfaces should therefore be adapted to the visual conditions and be limited as described in the Luminance distribution and luminance limitations chapter.

Discomfort glare from windows

An awkward and unpleasant glare arises when a person looks out of a window in the direction of the sun, or when direct sunlight falls against surfaces within the normal field of vision. In these situations even discomfort in the form of increased heat radiation can also occur. Thus sun screening in some form is necessary in most buildings.

Screening can be achieved through the design of the building, external sun screens, low transmitting glass (sun glass windows) or through Venetian blinds or curtains. Glare can also occur from a diffuse sky viewed through a window. This form of glare can usually be reduced by choosing lighter colours for the walls near the window or by increasing the luminosity of the walls with separate lighting.

Examples of discomfort glare from a window:

- Reflective glare.
- Reflections on visual objects or their surroundings can completely impair sight.

Even if glare does not occur from a luminaire or other highly reflective surfaces, it can occur in the form of reflection. Polished and reflective materials should not be placed in areas where glare can arise, especially in work areas. If polished surfaces cannot be avoided lighter surfaces are more preferable than darker surfaces. An example is a computer monitor screen surface where reflections are usually perceived as more disturbing on monitors with dark backgrounds and light text, than on monitors with light backgrounds and dark text.

Reflections from reflective materials or reflective glare can usually be prevented with the following actions:

- Suitable luminaire positioning.
- Selecting luminaires with low luminous intensity and effective screening.
- Selecting matt materials for reflective surfaces.
- Selecting luminaires with a larger surface area.
- Select light colours for ceilings and walls.

Recommended luminance conditions between the working area and the room's surfaces

The luminance ratio between the working area and the wall should not be less than 5:1.

With indirect lighting the average luminance on the ceiling should not exceed 500 cd/m².

The luminance from the room's surfaces must be relative to the luminance from the working plane, in order to conform to EN 12464-1 demands. For example, when using low luminance luminaires and downlights, there is a risk that the tops of the walls and the ceiling, may be too dark.

The difference in luminance can be calculated or measured as a relation between different surface luminances. The following luminance conditions are recommended for the workplace:

- The working area (inner field of vision) – immediate surroundings (the near field) 3:1.
- The working area (inner field of vision) – surroundings (adjacent walls within the field of vision) 5:1.
- The working area (inner field of vision) – periphery wall surfaces (background) 10:1.

Later studies, however, show that the luminance relationship between the working area and the normal field of view (ambient area = wall/ceiling) should be 2:1 with an illumination level in the working area of 500 lx. This approach pays consideration to the visual, emotional and biological effects or artificial light and requires that the vertical illumination in work premises should exceed 250 lx.

The latest edition of EN 12464-1 is the first time there has been a requirement for vertical illuminance and illuminance in the ceiling. There are also requirements regarding cylindrical illuminances. In the standard, the requirement for minimum average (mean) illuminance on the walls is a minimum of 50 lx, with a uniformity (min/avg) ≥ 0.1. For ceilings, the values should be at least 30 lx, with a uniformity (min/avg) ≥ 0.1

For premises such as offices, educational premises, medical treatment rooms and communications areas such as entrance halls, corridors and staircases, walls and ceilings will have to be of greater brightness. In these premises, a higher, maintained illuminance is recommended, and the main surfaces should have the following values:
Walls – average (mean) illuminance at least 75 lx with uniformity ≥ 0.1.
Ceilings – average (mean) illuminance at least 50 lx with uniformity ≥ 0.1.

In order to achieve good visual comfort within an area, the average luminance on the room's walls, as a general rule, should not fall below 30 cd/m². It is normal practice to translate luminance conditions to relative illuminance, as illuminances are used as guide values in light planning. Nevertheless, in this context it should be pointed out that today's computerised calculation programs allow the calculation and documentation of different luminances for room surfaces. The table below provides information about recommended relative illuminances between the workspace and room surfaces for a typical area.

Luminance conditions with indirect lighting

With indirect lighting the average luminance on the ceiling should not exceed 500 cd/m², with a maximum acceptable luminance of 1500 cd/m². The luminance transition should vary gradually across the surface being lit to avoid the lighting from being distracting and uneven. The luminance balance (L_{min}/L_{ave}) should not exceed 1:10.

For the background lighting on the walls the maximum luminance should be limited to 1000 cd/m².

However, studies show that, with a horizontal illuminance on the working area of 500 lx, a luminance on the ceiling of 250–500 lx is perceived as comfortable. Thus, the ratio between the ceiling and the working area should be 1:1 or 1:2. Meanwhile, studies also show that a 50–50 distribution of light from the luminaire if often preferred. By this is meant a luminaire with 50 % direct light and 50 % indirect light.

Luminance limitation for luminaires that can be reflected in the monitor

High luminance monitors	High luminance monitors L > 200 cd/m²	Medium luminance monitors L < 200 cd/m²
Type A (positive polarity and normal requirements with respect to colour detail properties of the displayed information – as, for example, in an office, educational establishment, etc.)	≤ 3000 cd/m²	≤ 1500 cd/m²
Type B (negative polarity and/or higher requirements with respect to colour detail properties of the displayed information – as, for example, for CAD work, inspection of colours, etc.)	≤ 1500 cd/m²	≤ 1000 cd/m²

Note: High luminance monitors (Screen High State Luminance – see also ISO 9241-302) – describes the maximum luminance of the white surface of the screen that normally can be obtained from the manufacturer of the monitor.

Explanation: In the proposed new standard, higher luminance levels are accepted as indicated in the table above for luminaires in premises with high luminance monitors (bright monitors with a background luminance of more than 200 cd/m²). To find out the luminance of a monitor in the white part, use the suppliers' stated values.

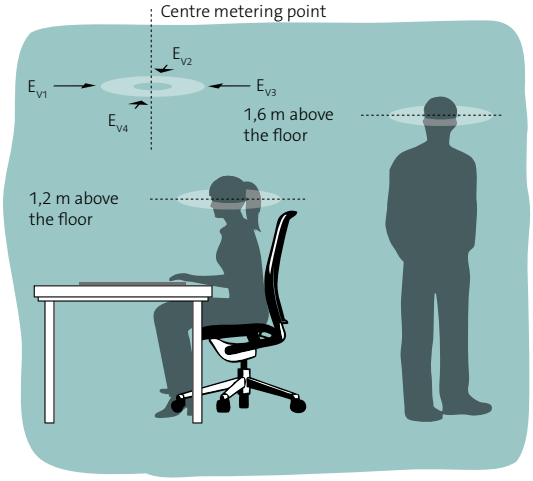
Room surface	Recommended reflectance	Relative illuminance
Ceiling	0.7–0.9	0.2–1.5
Walls	0.5–0.8	0.2–0.8
Window wall	> 0.6	0.3–0.8[1)]
Workspaces	0.2–0.7	1.0–
Floor	0.2–0.4	

[1)] The values apply in daylight – without daylight the relative illuminance should not exceed 0.2 provided that the glazed surfaces do not have bright curtains.

Requirements for cylindrical illuminance

Good visual communication and recognition requires a sufficient level of brightness on objects and, above all, on people's faces. Therefore, the surfaces and "spaces" in which people move or work have to be sufficiently illuminated. This wish can be fulfilled by ensuring sufficient levels of average (mean) cylindrical illuminance. For indoor activity areas, the average (mean) cylindrical illuminance must be at least 50 lx, and uniformity (min/avg) ≥ 0.1, calculated calculated 1.2 m above the floor for sitting work and 1.6 m above the floor for standing work.

For surfaces where the demand for visual communication is especially important, for example in offices and educational establishments, the maintained average (mean) cylindrical illuminance should not be less than 150 lx, with uniformity (min/avg) ≥ 0.1.



The cylindrical illuminance can in practice be measured and calculated according to:
$E_{VZ} = (E_{V1} + E_{V2} + E_{V3} + E_{V4})/4$

Modelling

Modelling is the balance between diffuse and directional lighting, and is a property of light whereby an illuminated object is made to look natural, neither too flattened nor too hard or sharply illuminated. The general appearance of an interior is reinforced when its structural features, as well as people and objects in the room, are illuminated so that the shape and texture appear clear and pleasant.

This occurs when the light comes predominantly from one direction. The shadows that are necessary for good modelling are then formed without confusion.

Lighting should not usually be excessively directional as this may give rise to sharp, harsh shadows. It should also not be too diffuse, because the objects and space are then perceived as too dull and bland, and it becomes difficult to perceive the room and its details.

In order to achieve a good result for modelling, the ratio between cylindrical and horizontal illuminance at the reference plane needs to be controlled. A value between 0.3 and 0.6 provides a rough indication of good modelling.

The values for the cylindrical and horizontal illuminance must be calculated and checked at the same measurement points.

Requirements for good colour rendering

For the visual experience, and for performing a visual task and assessing colours in the best possible way, it is of great importance that the colours on surfaces, objects and human skin should be reproduced in a natural and accurate way. This also affects our safety and well-being. Requirements for the levels of colour rendering, the so-called Ra index, are given for each type of work task under EN 12464-1 in the table of lighting requirements.

Variation of light intensity and colour temperature throughout the day

Through research, we know that light affects us not only visually, but also biologically and emotionally. Light is important for our health and well-being, and it affects our level of alertness. It can also adapt and stimulate our biological clock as well as our psychological state. Variations over time in lighting conditions, in terms of intensity, illumination levels, distribution, ambient lighting and colour temperature, can stimulate people's alertness and well-being in a positive way. The recommended levels of these variations are being evaluated.

Number of calculation points

EA grid of calculation points should be created to calculate and check the average (mean) illuminance and uniformity of illuminance in the working area, the immediate surroundings and the peripheral surroundings.

The minimum number of calculation points to be used can be calculated using the formula shown below.

Note that the distances and location of the calculation points should not coincide with the distance between the luminaires in the room. A grid that approaches the shape of a box or square is to be preferred, and the relationship between the distance of the length and width of the grid should be kept within the range 0.5–2.

The formula for calculating the maximum distance between calculation points in the grid is as follows:

$P = 0.2 \times 5 \log d$

Where $p < 10$

d – is the longer length of the surface

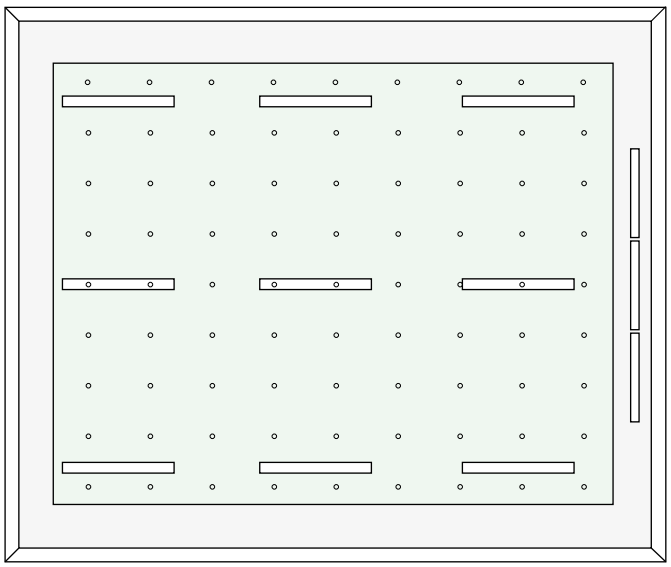
p – is the maximum distance between the calculation points

A band of 0.5 meters from each external wall can be excluded from the calculation except when a working area falls within this zone. The size of the grid for walls and ceilings is calculated in a similar way, and here, too, a band of 0.5 m can be excluded from the respective outer edge. Exceptions should be made for rooms smaller than 5 m^2, and for rooms where one section is less than 2 m. In these instances, only a zone of 0.1 m from the walls of the room should be used.

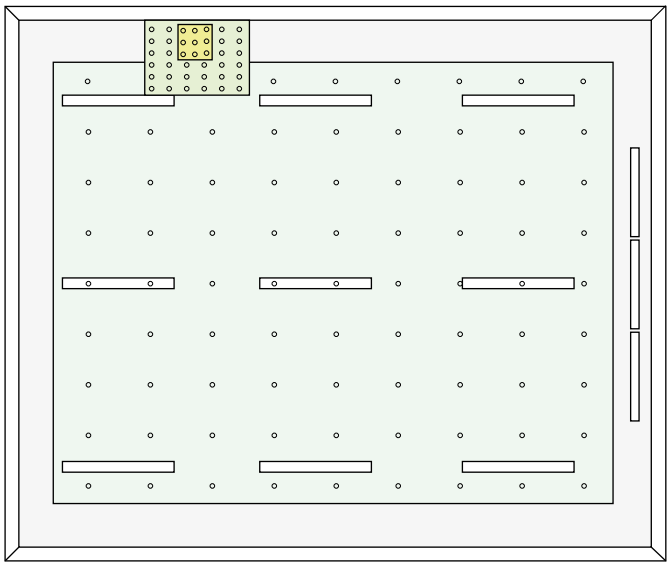
Below is a list of examples of maximum distances between calculation points according to the above formula, based on the size and length of the working area.

Length of the surface	Maximum distance between calculation points
0.40 m	0.15 m or at least 3 points
0.60 m	0.20 m or at least 3 points
1.00 m	0.20 m or at least 5 points
2.00 m	0.30 m or at least 6 points
5.00 m	0.60 m or at least 8 points
10.00 m	1.00 m or at least 10 points
25.00 m	2.00 m or at least 12 points
50.00 m	3.00 m or at least 17 points
100.00 m	5.00 m or at least 20 points

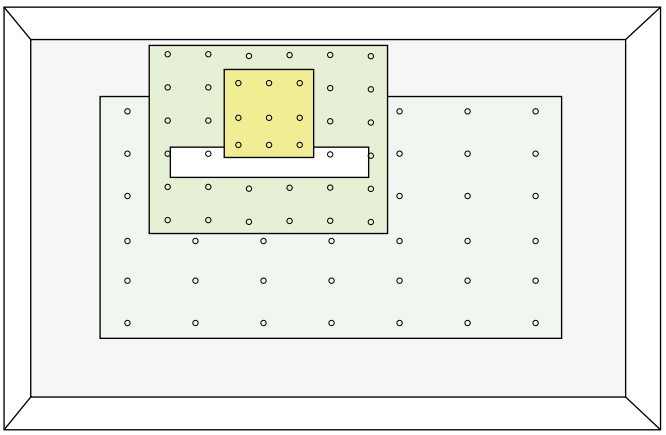
Examples of the number of calculation points for the control of illuminance and uniformity in classrooms and office workplaces



Working area in a standard classroom, without workplaces next to walls.



Supplement with a separate working area within the wall zone. The working area and immediate surroundings should be checked.



Defined working area of 0.6 m in a cellular office with immediate surroundings as a band around the working area with a width of at least 0.5 m. In addition to this, peripheral surroundings as a band of at least 3 m around the immediate surroundings, except that where the peripheral surroundings touch a wall, the area of the peripheral surroundings is restricted by a zone 0.5 m from the walls of the room.

Flow chart for light planning

1. Analysis of the planning objective

- Define the activities and different visual work that may be performed in the premises at different times of the day.
- Define the lighting demands with regard to safety, visual needs and the visual experience.
- Examine the need for emergency lighting. Define the aims for energy consumption, environment and maintenance of the lighting installation.

2. Analysis of planning conditions

- Define applicable provisions, standards, recommendations as well as special demands from the client and users.
- Define the conditions for lighting the room, the type of workplace and it's working area, etc.
- Investigate the conditions for the premises' design, furnishings, type of monitors, flexibility, daylight and the character of the premises.
- Establish the economic prerequisites for the installation and the maintenance conditions for the lighting installation.

3. Overall planning

- Investigate the conditions for interaction between electric light and natural daylight. Check the possibility of daylight screening.
- Investigate which light sources, luminaires and lighting systems best satisfy the demands aims and conditions.
- Investigate the possibilities for lighting control to increase comfort and improve energy usage.
- Investigate the overall co-ordination with other installations, colour setting and furnishings.

4. Detailed planning

- Evaluate the different lighting systems; technically, visually and economically.
- Establish the lighting system's optimal maintenance factors taking the maintenance conditions into consideration.
- Make a financial evaluation by calculating the life cycle costs based on the investment, operation and maintenance.
- Compare the selected lighting systems with regard to other installations, colour setting, furnishings and the chosen equipment.

5. Documentation

- Should be prepared as shown to the right with supplements according to the client's wishes.
- Include Installation drawings, control and assembly instructions as well as associated lists of light sources and luminaires.
- Lighting calculations and visualisations that verify under which conditions the system operates to the specified demands.
- Present calculation prerequisites and the lighting system's maintenance plan (see instructions in the Lighting template).

Interpretation of the calculation result

1. Scrutinise carefully

- To prevent glare – check the luminance conditions in the room.

2. Maintenance factor

- Has the maintenance factor been adapted to a maintenance plan for the lighting installation?

NOTE! The maintenance factor affects the lighting system's energy consumption.

3. Calculation conditions

- Have the conditions for the lighting calculations been checked?
- Has the size of the working area and immediate surroundings been established?
- Has the calculation area for the peripheral area been defined?
- Have the room surfaces' reflectance values been checked?
- Has the luminaire's average luminance been checked in rooms used for monitor work?

4. Uniformity demands

- When calculating the illuminance uniformity i.e. the ratio between the minimum value and the average value in the working area and the immediate surroundings and for the peripheral surroundings, it is important that the distance between the calculation points is documented. For normal working areas in offices a maximum spacing of 0.2–0.3 m between calculation points applies.

5. Significance of the gradient

- Excessively large differences in illuminances and luminances within the normal field of view can cause visual difficulties. Therefore, the scales for changes in illuminances and luminances indicated in standard EN 12464-1 should be used.

6. Limit values of luminaire luminance for working at a monitor

- Verify that the luminaire luminance does not exceed the limit value according to EN 12464-1.

7. UGR-glare index

- Check, where appropriate, that the system's average glare index conforms to the value stated in the standard.

8. Energy efficiency

- Are the energy requirements of the Part L building regulations and EN 12464-1 being complied with?

Checking the lighting installation

1. Scope

- What should be evaluated? Electric lighting, emergency lighting, daylight conditions, functionality and control, maintenance plan, electrical efficiency, etc.

2. Conditions

- Regarding the control of new systems, which conditions applied when planning?
- Evaluation of existing systems?
- Evaluation with or without daylight?
- Are the measured values new values or maintained values?

3. Implementation/checks with light measurement

- Illuminances – mean value/uniformity for the working area, immediate surroundings and the lowest illuminance within peripheral areas.
- Luminaires' mean luminances.
- Calculate where appropriate the UGR-glare index.
- Luminance conditions in the premises.
- Luminaire's cut-off angle.
- Light sources' colour reproduction and colour temperature.
- Perform visual evaluation and interview personnel.
- Perform a functional check.
- Check the calibration, burn-in time and prevailing operating conditions before light measurement.

Energy efficiency in lighting installations

A lighting installation needs to confirm to the various requirements stipulated for its specific area, without compromising on energy efficiency or visual comfort. This necessitates that careful consideration is paid towards the selection of the appropriate lighting system, equipment, control systems and the use of daylight. A measurement of efficiency in a lighting installation is the installed output, in W/m², that is required to meet defined demands.

In addition to a low installed output, energy usage should be limited in an installation with the help of different control systems so the lighting can be adapted to requirements and used as efficiently as possible.

A better method of assessing the energy efficiency of a lighting system is to evaluate the annual energy consumption. This method is described in the EN 15193 standard, which is linked to the Energy Directive, see separate section. More precise calculations can also be performed in DIALux, or similar calculation programs. Here, you can take into account the reduction factors for control depending on presence/absence – light and constant light control.

General advice

The following points should be considered in order to create low energy usage in a lighting installation:

- Selection of light sources with optimal luminous efficacy for the required colour reproduction.
- Energy efficient lighting system with installed lighting output suitable for the required task.
- Efficient luminaires with the correct light distribution and good cut-off properties.
- Efficient utilisation of daylight.
- Efficient utilisation of artificial and natural light through the selection of a light interior colour scheme.
- Control of lighting through presence detection.
- Possibility of localised control by the individual.
- High frequency operation with dimming.
- Well planned maintenance of the lighting installation to obtain a high maintenance factor.

Example of installed lighting outputs

Installation type	Installed lighting output	Required illuminance while operational (lx)	Notes.
Corridors	5–10 W/m²	100 lx	
Corridors	10 W/m²	200 lx	
General public areas	10–12 W/m²	300 lx	
Workplaces	10–12 W/m²	300 lx	*)
Workplaces	10–15 W/m²	500 lx	*)
Workplaces	15–30 W/m²	1000 lx	*)

**) Required illuminance within the working zone according to EN 12464-1. The lower value normally presupposes a localised lighting system adapted to the working area in the workplace.*

The maintenance factor affects energy consumption

The new standards give light planners greater responsibility for the system, as the installation's maintenance factor has a direct effect on the energy consumption. To select a high maintenance factor a great deal of care must be exercised when choosing light sources, luminaires and the lighting system. The choice of T5 luminaires gives the best conditions for achieving a high maintenance factor.

For further information on calculating the maintenance factor, refer to the SLL Code for Lighting.

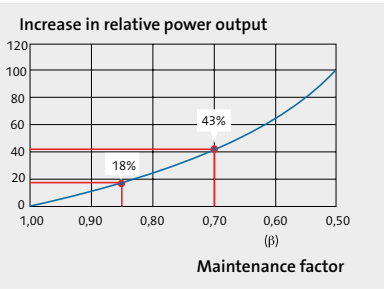


Table 1. Proportion of the maintenance factor corresponding to the contamination of the luminaire, taking into account the luminaire type, surroundings and cleaning interval

Number of years between group cleanings	2.0		3.0		4.0		5.0	
Luminaire type	Surroundings		Surroundings		Surroundings		Surroundings	
	Clean	Dirty	Clean	Dirty	Clean	Dirty	Clean	Dirty
Open luminaire – LMF	0.96	0.85	0.94	0.77	0.92	0.72	0.90	0.66
Closed luminaire – LMF	0.98	0.87	0.96	0.84	0.94	0.78	0.92	0.71
Indirect uplight luminaire – LMF	0.91	0.68	0.84	0.54	0.77	0.40	0.71	0.29

Table 1 is an adaptation of CIE 97:2005 2nd Edition to Swedish conditions. If other factors are used, the method by which these have been calculated must be reported. Contact your supplier to obtain more accurate information concerning factors for luminaires and light sources.
Tables 1 and 2 must be used together to calculate a maintenance factor.
Normal formula for maintenance factor = LLMF × LSF × LMF × RSMF (see explanation on the page of Quantities, units and their meanings)

Table 2. Examples of light sources

	Low light depreciation factor (LLMF at LSF 90 %)
Straight fluorescent lamps with barrier layer for low light depreciation and high pressure sodium lamps	0.90
Other fluorescent lamps, compact fluorescent lamps and best metal halogen lamps	0.85
Metal halogen lamps other	0.75
LEDs	0.85

For comparable calculations, the values of maintenance factors (MF) can be used from table 3 below. These values are based on the assumption that the replacement of extinguished light sources is carried out.

Table 3. Quick reference

Premises	MF for various light sources in typical environments			
	Straight fluorescent lamps with a barrier layer for low light depreciation and high pressure sodium lamps	Other fluorescent lamps, compact fluorescent lamps and newer metal halogen lamps [1]	Metal halogen lamps [2]	LED modules without constant light function [3]
Office	0.85	0.80	0.65	0.80
School	0.85	0.80	0.65	0.80
Hotel	0.85	0.80	0.65	0.80
Restaurant	0.85	0.80	0.65	0.80
Hospital	0.85	0.80	0.65	0.80
Store	0.85	0.80	0.65	0.80
Superstore	0.80	0.75	0.60	0.75
Sport hall	0.80	0.75	0.60	0.75
Industrial	0.80	0.75	0.60	0.75

LED modules with constant light function maintain 100 % luminous flux but corrections must nevertheless be made for a certain degree of contamination. NOTE! The mean power of the LED module must be used in energy calculations. The formula to calculate this is: $P_m = P_n$ initial value + P_n lowest operating value / 2 where P_m is the mean power and P_n the system power for initial value or at the end of the specified service life. P_n initial value and P_n lowest operating value is controlled by the luminaire manufacturer/the supplier.

[1] Newer metal halogen lamps refer to the lamps with ceramic burners that have a light depreciation on a par with good compact fluorescent lamps.
[2] Included in the group are other metal halogen lamps with ceramic burners or burners made from quartz glass.
[3] The service life of LED modules is often related to 70 % maintained luminous flux. The table is based on a maintained luminous flux LLMF of 80 %.

Example 1
Closed luminaire for fluorescent lamps
Clean environment
2 years between group cleanings,
Maintenance factor = 0.90 × 0.98
Total maintenance factor 0.88

Example 2
Open luminaire for mercury
Dirty environment
3 years between group cleanings,
Maintenance factor = 0.85 × 0.77
Total maintenance factor 0.65

Evaluation of a lighting system

Visual ergonomic aspects of the workplace's design are important for a stimulating working environment. There is an excellent method called "visual evaluation" available to review and assess a room with an installed lighting system, which is simply based on describing what you see in the room.

Evaluate the room visually through its lighting system, colours and design. These factors affect each other and are difficult to assess individually. The room colours should not be distorted, and visual work should be possible without the discomfort of glare or reflections.

The room's visual quality governs, to a large extent, your health and your performance capacity. It is therefore important that you do not completely rely on computer calculated results. Try to make a visual evaluation of your own workplace using the adjacent table. Rank the opposite pairs on a scale of 1–5.

Concept	Description	Evaluation
Light level	– is it dark or light in the room?	dark – light
Light distribution	– how is the light distributed in the room?	varied – equally
Light colour	– is the light colour experienced as warm or cold?	warm – cold
Colour	– how are the colours and objects viewed?	distorted – natural
Glare	– does unpleasant glare occur?	troublesome – not noticeable
Shadows	– whether they are hard or soft?	hard – soft
Reflections	– whether they are intense or diffuse?	intense – diffuse

Light, or light radiation, not only affects our visual cortex but also the whole of our alertness, wellbeing and performance. Our circadian rhythm and seasonal variation are genetically fixed, but they are regulated to a certain extent by our surroundings, above all by light. Nerve pathways from the eye's retina signal to cells in the brain to stop secreting the hormone melatonin, which is believed to control our circadian rhythm. Interruptions to the circadian rhythm, due to a lack of daylight during the winter months, is considered to be the primary cause of seasonal affective disorder (SAD).

The effect of light on humans

New research has shown that light also affects a recently identified third receptor as well as both the rods and cones. A discovery which has been identified as the missing link between how our health and wellbeing are connected to light.

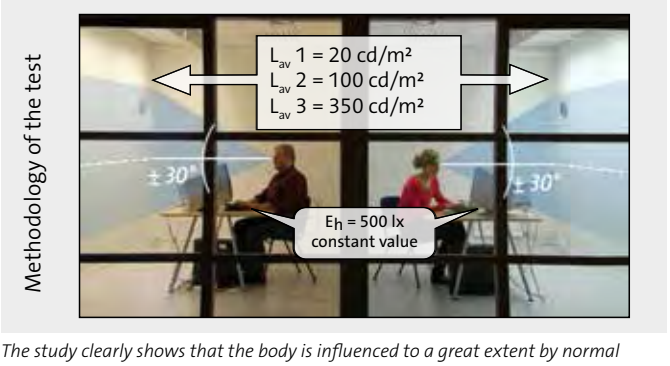
This receptor affects different hormones in the brain such as the secretion of the sleep hormone melatonin, which is produced at lower light levels or in the dark. Conversely, at higher light levels, the stress hormone cortisol is produced. For 150 years, we have focused on the visual effects of light, but with the discovery of the new receptors we must also in future take into account the biological and emotional effects of light on man.

Increased demands on lighting planning

In order to gain a greater understanding of how light in our surroundings effects our wellbeing Fagerhult's Lighting Technology Manager Tommy Govén, in conjunction with Professor Thorbjörn Laike from the Department of Architecture and Built Environment at Lund University, have conducted an application study on the subject.

The study shows that the body is influenced to a great extent by normal ambient light at ± 30° in the horizontal line of vision. The most positive effects with regards to human alertness, wellbeing and performance are observed at approx. 100 cd/m² on walls with a horizontal illuminance of 500 lx.

100 cd/m² seems to be an optimal level for vertical ambient light – something which poses questions about current lighting levels in offices, which is usually three to four times lower (20–30 cd/m²). The study also showed that ambient light influences the stress hormones in the body and alertness in a relatively short time. It is therefore possible, by using algorithmic lighting controls, to change our biological clock over time. For example, in the morning during the dark months of the year, increase activity with more ambient light.



The study clearly shows that the body is influenced to a great extent by normal ambient light at ± 30° in the horizontal line of vision. The most positive effects with regards to human alertness, wellbeing and performance are observed at approx. 100 cd/m² on walls with a horizontal illuminance of 500 lx.

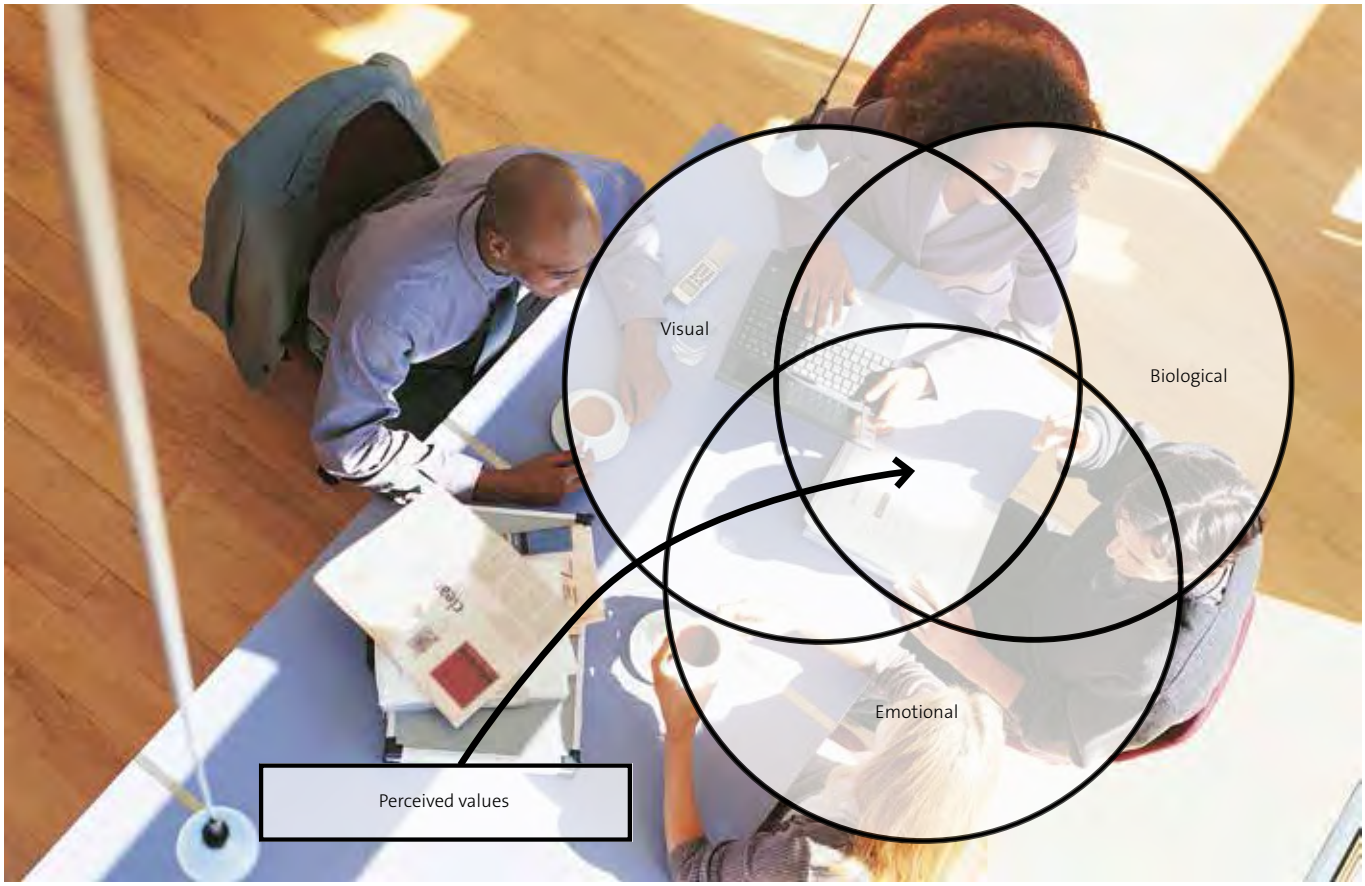
How is lighting planning affected?

The discovery that certain elements of light radiation also affect our wellbeing will influence the future design and evaluation of lighting in our rooms.

This may lead to a greater focus on the lighting of our surroundings but also on varying light and its colour over time. This will be especially important in rooms that do not have a supply of natural daylight. Within healthcare, light has long been used for the medical treatment of skin conditions and in order to reduce the effects of SAD (seasonal affective disorder). In the future, lighting planning will be more focused on visual, biological and emotional aspects.

In order to develop future lighting systems based on energy efficiency and a high level of visual, biological and emotional light quality, Fagerhult, along with Lund University, is currently investing a lot of resources in lighting research that focuses on people. There is currently research taking place in the following areas:

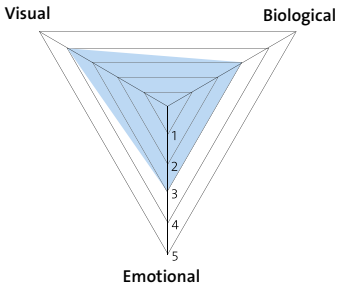
- The significance of new light sources to levels of alertness, well-being and performance – LEDs vs. T5 fluorescent lamps.
- Evaluation of staff's experiences and use of various types of modern control systems for more efficient lighting energy usage.
- Outdoor LED lighting in multi-residential areas: outputs for energy usage, lighting experience, and perceived security and accessibility.
- Development of a holistic method for the evaluation of future and existing lighting systems.
- Pickhurst Junior School – a study carried out in cooperation between Fagerhult and Lund University, where the visual, biological and emotional aspects of the ambient lighting were examined. The study also took account of lighting quality in relation to the control system and reduced energy consumption. A final report was presented in conjunction with CIE's 27th assembly in July 2011. The study showed that increased ambient lighting has a positive effect on the well-being of the pupils, while at the same time the pupils' study results can be improved. The study also shows that the use of lighting control is critical and provides significant energy savings, while improving the quality of light in the classroom. A new study where LED is compared with T5 has been performed in a secondary school in 2013. The results from this school study will be presented in 2014.
- LED vs T5. One study performed shows that ambient light from LEDs are is perceived as brighter than T5 fluorescent lamps and provides increased light quality up to levels of 300 cd/m². A final report was presented at CIE's mid term-meeting in Paris 2013 and at PLDC in Copenhagen 2013.

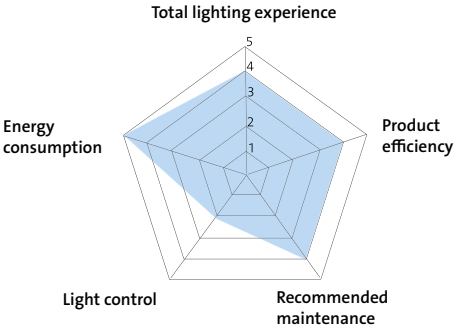


In the future, lighting planning will be more focused on visual, biological and emotional aspects.

VBE- and AQ-index

Human index for the room's lighting experience and the lighting's total quality index





The parameters for the VBE index are presented in a triangle. Each parameter is valued on a scale of 1–5, where 3 corresponds to the normal value. The total VBE index can therefore be a maximum of 15. The higher the total index, or the filling of the triangle, the better the total lighting experience. As an example for workplaces – work surfaces – the visual aspects have the greatest significance.

The criteria for the AQ index is shown in a pentagon. Each criterion is valued according to a scale of 1–5. The higher the total index, or the filling of the pentagon, the better the system solution's index for the room. The Lighting Concept Tool shows how the AQ index changes when wall lighting and lighting control is added.

VBE index

Through research we now know that light affects us not just visually, but also non-visually. Traditionally lighting quality was only described visually within a space by stating the illuminance within the working area and its immediate surroundings. However, research has shown that ambient lighting, the lighting of walls and the ceiling, has a significant effect on us both biologically and emotionally (non-visually). The level of ambient light is important for our alertness and therefore our ability to perform over time.

The VBE index is a model that describes a way to interpret the lighting experience within a room visually, biologically and emotionally. The aim of the VBE index is to describe the subjective lighting experience – where all parameters have significance and can be weighted differently depending on the type of room and the activity. The model aims to be a support and communication tool in the dialogue between the buyer and the lighting planner and can be used for different types of environment, e.g. work, restaurant and care environments. The template can also be used as a basis for evaluating the existing facility.

The model for the evaluation of the quality of the lighting solution, with man in the centre, is based on a subjective evaluation of the visual, biological and emotional aspects where the overall perception of a lighting solution is taken into consideration. The different parts are individually evaluated and the sum gives a total VBE index through the use of certain assumed parameters and the value of these. The better the correspondence with the input parameters, the higher the overall points for VBE.

i Aspects of the VBE index

The visual aspects
include the more traditional fundamental values such as the visibility of an object, visual comfort, contrast, glare etc. over time.

The biological aspects
are primarily due to our biological clock – the body's endocrinal hormone secretion and its influence on our alertness, wellbeing and performance both during the day and for the different seasons. Research shows that the body is mainly affected by the level of ambient light and its spectral composition.

The emotional aspects
are the most subjective – how we generally perceive the light in a room, the colour of surroundings and the light's colour, dynamic and comfort over time.

AQ index

There are ever increasing demands on the reduction of energy consumption, for both economic and environmental reasons. The need to be able to value the overall light quality in a room, both with respect to the lighting experience and the operating cost, was the inspiration behind the AQ index.

The AQ index (Application Quality Index) is a model that describes a way to interpret the lighting experience together with parameters which show energy consumption and operating costs for a specific room.

The lighting solution's quality index is based on five different parameters with the aim of showing the total quality of a lighting installation for a specific room. The operating cost parameter takes the energy consumption, product efficiency, illumination and the recommended maintenance of the lighting within a room into consideration.

The value of all the parameters is based on the different criteria, which are shown in the form of a table. The final presentation which appears in the pentagon should be seen as a value of system solutions within the room – the room's lighting experience together with the energy consumption and operating cost of the lighting. The evaluation is normally made by a lighting planner at the design stage, but can also be carried out by an inspector on an existing installation.

i Parameters for evaluation of the total AQ index

Lighting experience
is based on the total VBE index, i.e. a subjective evaluation of the visual, biological and emotional parameters within the room.

Energy consumption
describes the energy consumption and is valued according to the room's calculated LENI figure in accordance with EN 15193. The calculated LENI index describes the room's energy consumption expressed in kWh/m² per year.

Product efficiency
for luminaires including light sources – stated as an LLE index for all luminaires in the room. The calculated LLE value is expressed in lm/W.

Lighting control
describes which type of control system is used in the room.

Recommended maintenance
is the interval for maintenance of the lighting in the room, with regards to cleaning, servicing and changing light sources, recommended by the lighting planner.

Light measurement

The luminaire's light distribution is measured on several C-planes around the luminaire, at intervals of at least 15°. First measurement plane (C=0°) is across the lamps' longitudinal axis. γ-angles – several angles are measured, at least every 5 degrees (see figure).

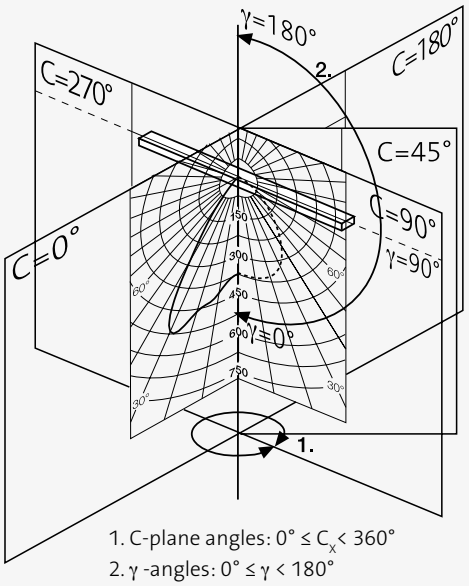
Light distribution curve

The light distribution curve drawn in a polar diagram denotes the luminaire's luminous intensity in different directions as a function of viewing angle in one or more planes. It is usually represented by an unbroken line that indicates the light distribution perpendicular to the light source's longitudinal axis and with a dashed line that indicates the light distribution in direction of the longitudinal axis. The values of the light distribution curves are scaled to correspond to 1000 lm from the light source (cd/1000 lm, cd/klm). This is why it is often possible to show luminaires with different outputs on a common polar diagram.

Isolux diagram

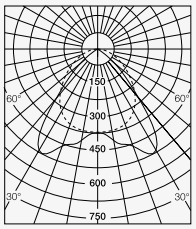
The diagram shows, using curves (or scales) a predefined area, inside which the horizontal illuminance exceeds the curve's lux value. The position of the luminaire is usually indicated on the diagram. Alternatively, the isolux diagram can be represented by a 3D diagram, which is best suited for showing the uniformity of the lighting installation. The calculation points' illuminance values can be introduced onto the premises' layout drawing and the results given in table form. The results are available in all the above mentioned forms in DIALux.

i Light measurement

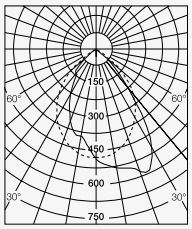


1. C-plane angles: 0° ≤ C_χ < 360°
2. γ -angles: 0° ≤ γ < 180°

i Light distribution curve

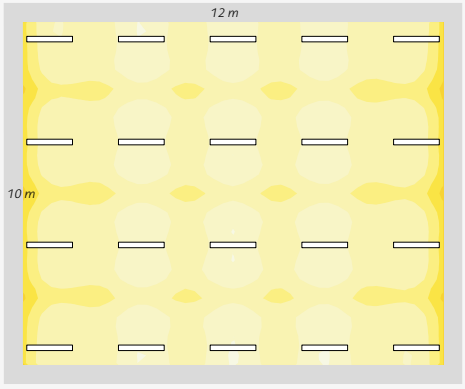


Symmetrical light distribution
A 28 W fluorescent lamp (2600 lm) gives, directly beneath it, approximately 375 cd/klm.



Asymmetrical light distribution
At a maximum luminous intensity angle of 25° a 28 W fluorescent lamp gives approximately 580 cd/klm.

i Isolux diagram



IEC, International Electrotechnical Commission, has produced proposals for reporting photometric data for LED luminaires.

Electric and photometric data
Recommended luminaire documentation is based on the standard IEC/PAS 62722 – LED luminaires for general lighting, which also contains relevant measurement methods. Shown below are the parameters that can be transferred directly, without measurement, from LED modules' specifications to luminaire specifications if the LED module used has been tested and documented according to the standard IEC/PAS 62717 – LED modules for general lighting. Presentation of photometric data is updated on Fagerhult's website.

Light measurement (general):
- The light measurement of the LED luminaires' photometric performance must take place using the luminaire's own ballast which is required in order to operate all light sources in the luminaire.
- The LED luminaire's total luminous flux, light intensity and light distribution must be measured in a stabilised operating condition (normally after approx. 1–2 hours).
- The LED luminaire's total power in stabilised operating condition. (normally after approx. 1–2 hours).

Rated power input
- is specified in watts (W) and refers to the total system power. Measurement takes place in conjunction with the light measurement. For luminaires with separate ballasts, the values are specified for the ballast that is used during light measurement.

Luminaire Luminous Flux
- is the total luminous flux in lumens (lm) the luminaire emits.

LED Luminous Efficacy
- is defined as the quotient between the luminaire luminous flux and the rated power input and is specified in lumens per watts (lm/W). This parameter replaces the luminaire's light output ratio for LED luminaires, as it is a better indicator of the luminaire efficiency.

Photometric code
If the LED module is tested and documented according to IEC/PAS 62717 – LED modules for general lighting – the following parame-

ters can be taken from the LED module's specification. However, this applies provided that the luminaire only contains one type of LED module and that optics and similar do not knowingly change the light colour. Examples of this are coloured reflectors or filters.
NOTE! If a luminaire is equipped with an LED module that has not been tested and documented according to IEC/PAS 62717, the luminaire manufacturer must perform their own measurements.

Correlated Colour Temperature
- is specified as CCT in kelvin (K).

Rated Colour Rendering Index
- is specified as an Ra value, firstly, the initial value, and then after the number of burn hours that correspond to 25 % of the service life (or 6.000 hours max. if greater, and no lower than 2.000).

Chromaticity tolerance
- is a measurement of the spread of chromaticity and is specified as SDCM as number of MacAdam ellipses and is measured according to CIE 1931.
- is specified as an SDCM value, firstly, the initial value, and then after the number of burn hours that correspond to 25 % of the service life (or 6.000 hours max. if greater, and no lower than 2.000).

For an exact value, a measurement is required in the actual luminaire. Until the measurement methods have been defined, this value must be taken with sufficient accuracy from the LED module's specification. At present the new value is specified but in all likelihood there will be a requirement that this must also be reported after a certain number of burn hours.

It is recommended that the photometric code for the LED module, reported in accordance with IEC/PAS 62717 – LED modules for general lighting, is displayed on the luminaire packaging and in the product documentation.

The measurement method – measurement angle – must be specified in the documentation.

Lumen maintenance – Lx
The luminaire's lumen output is initially set at 100 %. After the number of burn hours that correspond to 25 % of the service life (or 6.000 hours max. if greater), the lumen is calculated and specified as a percentage of the initial lumen.

Rated life of LED module and the associated lumen maintenance – L_x
- is defined as the number of burn hours (h) after which a given percentage of the initial luminous flux (x) remains and is designated L_x. Specified together with the failure fraction (F_y) for the ballast.

Failure fraction – F_y
- is defined as the number of burn hours when a given percentage of the ballasts (y) have failed and is designated F_y.
- for separate ballasts the failure fraction as a percentage per 1.000 operating hours at a given T_C temperature of the ballast.

Recommended values for L_x and F_y in the luminaire documentation

	L_xF_y					
x	70		80		90	
y	10	50	10	50	10	50

Ambient temperature – tq
- is defined as the ambient temperature for the luminaire which is related to the luminaire specification data. If no other temperature is specified, this is 25°C.
- It is possible to specify a luminaire for several different ambient temperatures.

NOTE! It is important that tq is in accordance with the ambient temperature in actual applications in order for the luminaire specification to apply.

Luminous Intensity Distribution
- is measured and reported according to applicable CEN standards and is specified as cd/1000 lm. (The CEN standard EN 13032, which concerns the presentation and reporting of photometric data is under revision specifically for LED modules and LED luminaires. During the revision of EN 13032-4, particular focus will be placed on the results of the ongoing revision within IEC for LED modules and LED luminaires).

Luminance classification of decorative luminaires with opal surfaces

In order to facilitate the selection of luminaires with luminous opal surfaces, Fagerhult has developed a classification system that documents the average luminance for this type of luminaire.

The affected luminaire types are pendant, ceiling and wall as well as any other luminaire with opal luminous surfaces. Luminance classification should be used as a reference to assess the desired luminaire in relation to the luminance of the surroundings and how they are experienced.

The luminance values documented in the tables have been measured square to the luminaire and make up an average value for the luminaire's luminous surfaces. A luminaire range can be classified in several luminance classes depending on the output of the light source that the luminaire is fitted with.

Luminance classes for luminaires with opal surfaces

Luminance class [1)]	Average luminance	Considerations:
A	< 1000 cd/m²	The luminaire has a low average luminance and can be used in rooms with high anti-glare requirements e.g. offices with ordinary monitor work.
B	1000–3500 cd/m²	The luminaire has relatively low average luminance and can generally be used in most situations. Against a light background the risk of glare is small.
C	3500–5000 cd/m²	The luminaire has a relatively high average luminance and should therefore be used in bright surroundings to avoid glare.
D	> 5000 cd/m²	The luminaire has a high average luminance. The risk of glare can be large even if the luminaire is used in very light surroundings. The luminaire should therefore be avoided in rooms within the normal field of vision.

Key to the table

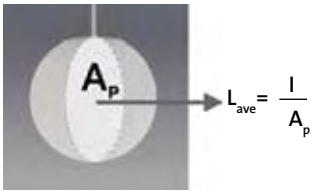
[1)] If the luminaire's luminance balance exceeds 4:1 this is denoted with the additional designation – example B*. The luminance balance is defined here as L_{max} / $L_{average}$.*

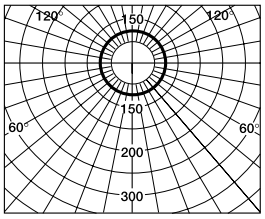
The surroundings can be regarded here as light if the average value of the background luminance exceeds 20 cd/m² within a normal field of vision of ±20 degrees from a horizontal visual plane.

In order for the background luminance to exceed 20 cd/m² , the average vertical illuminance should exceed approx. 75 lx against a light wall. Investigations show that the relationship between the luminaire's average luminance and background luminance should not exceed 40:1.

Light measurement and calculation of documented table values

Luminaire's average luminance (cd/m²) – calculated from the luminaire's technical data.





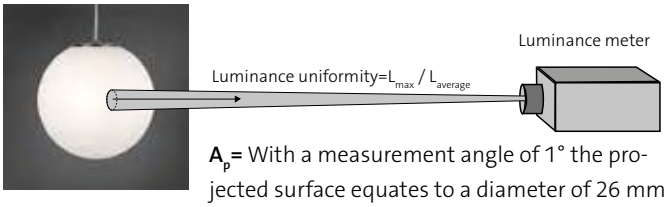
Polar diagram cd/1000 lm

I = the luminaire's luminous intensity square to the luminaire's luminous surface (cd).

$\mathbf{A_p}$ = luminaire's projected luminous surface (m²).

$\mathbf{L_{average}}$ = luminaire's average luminous intensity (cd/m²).

The luminaire's maximum surface luminous intensity (cd/m²) – measured using a luminance meter with a measurement angle of 1°.



A_p= With a measurement angle of 1° the projected surface equates to a diameter of 26 mm (500 mm²) at a distance of 1.5 m.

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The light planning software DIALux provides information on the luminaires technical performance, size and light distribution.

The DIALux software and the Fagerhult luminaire database can be downloaded from our website.

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PRODUCED BY FAGERHULTS BELYSNING AB

Fagerhult develops, manufactures and markets professional lighting systems for public environments. Our operations are run with a constant focus on design, function, flexibility and energy saving solutions.

Fagerhult is part of the Fagerhult Group, one of Europe's leading lighting groups with operations in more than 15 different countries. AB Fagerhult is listed on the NASDAQ OMX Nordic Exchange in Stockholm.

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