

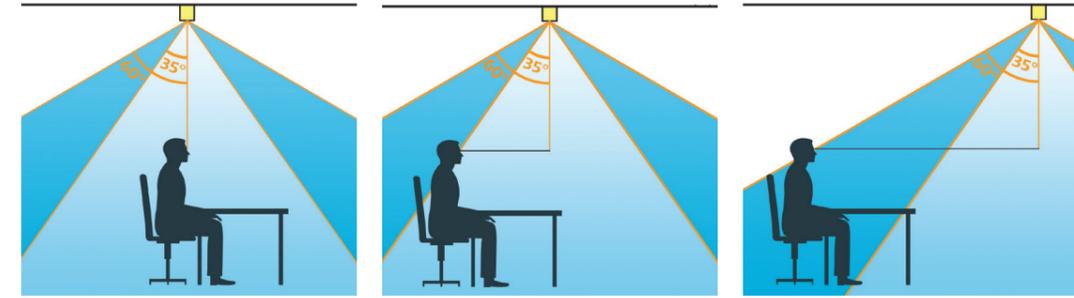
Darkline





Office and work environments are the places where we spend most of our time. Especially with the introduction of computers and other digital devices into the working life, we spend a significant part of our time looking at a screens. The direct and indirect glare of lighting in these environments has a great effect on eye health. Afterwards, people have indirect consequences such as headache and unwillingness. Again this type of study leads to an increase in psychiatric disorders such as depression and aggression. Lighting has great importance at this point. Especially the control of the light and the elimination of the discomforts in the eye will not only improve the physical effects such as headache on the eye, but also the psychological effects on the person, thus making the employees happier, more peaceful and more productive.

Direct Glare



Inside the beam, unless looking upwards, you can't see the luminaire. if the beam is +35° glare is not an issue. You can see the luminaire. Can't see the light source but you can see the luminaire (darklight).

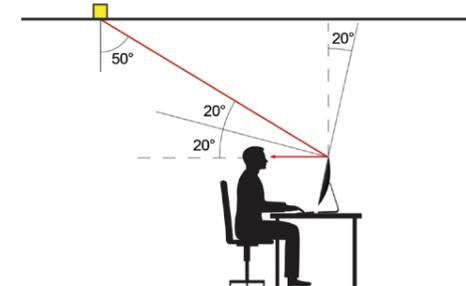
Reflected Glare



Reflection is when light bounces off an object. If the surface is smooth and shiny, like glass, water or polished metal, the light will reflect at the same angle as it hit the surface. Reflected glare on paper or reading matter is assessed by using Contrast Rendering Factor(CRF), which can be calculated by special software. In standart office work, a mean value of 0.7 CRF is abundant. But for works involving high-gloss materials calls for a higher value.

Veiling reflection occurs when the incident light that partially or totally obscures the details to be seen on a surface by reducing the contrast. These surfaces can be visual display unit screens, items of furniture or glossy paper. To avoid reflected glare, it is necessary to look at not only the type and arrangement of luminaires in the room but also the materials and finishes of the office furniture and the positioning of monitors. Also it could be arranged with a Polarizer or Lens Hood

VDU Workstations

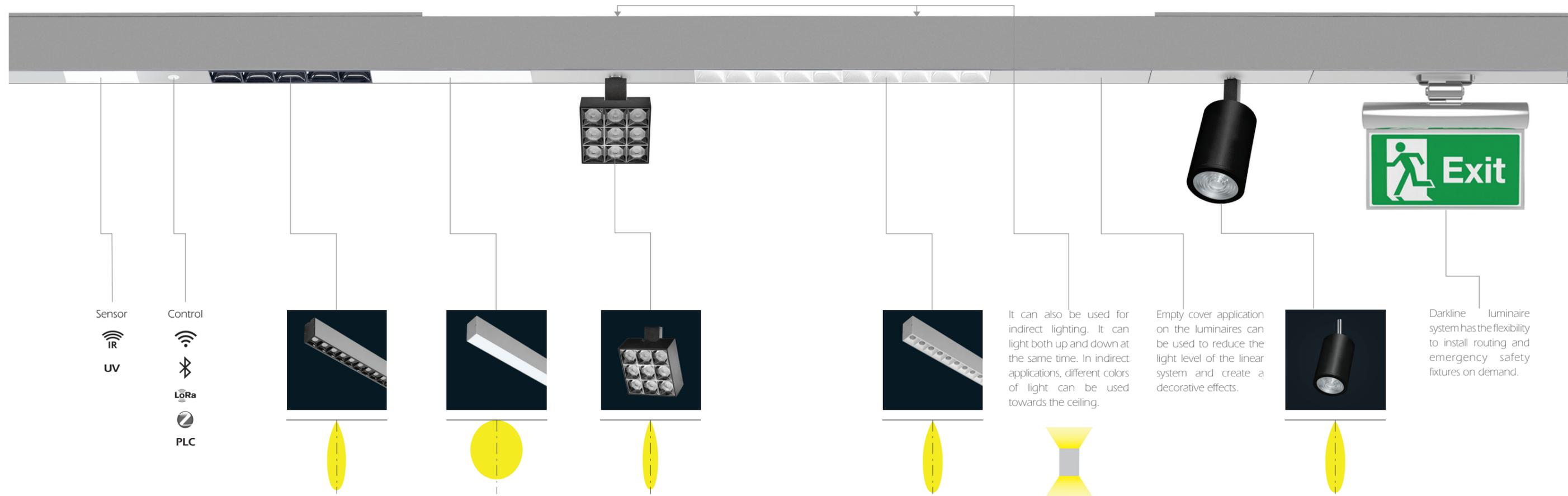


In bigger rooms where visual display unit screens are tilted at 20°, critical angles are between 50° to the vertical and the ceiling plane, so the maximum radiation angle of luminaires used for constant VDU work must not exceed $\gamma_{max}=50^\circ$.

Guidelines and recommendations for lighting in offices with VDU workplaces

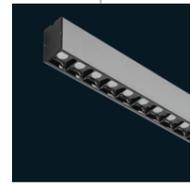
Type of room or activity	Nominal illuminance En lx	Direct glare limitation quality class for the next highest En value	Limitation of reflected glare on screen; recommended maximum radiation angle of luminaires	
			VDU workstations with 20° screen tilt	Workplace with VDU facilities with 15° screen tilt
Offices with daylight-oriented workplaces positioned close to windows	300	1 for En = 500 lx	$L \leq 200 \text{ cd/m}^2$ $\gamma_G = 50^\circ$	$L \leq 200 \text{ cd/m}^2$ $\gamma_G = 60^\circ$
Offices	500	1 for En = 750 lx	$L \leq 200 \text{ cd/m}^2$ $\gamma_G = 50^\circ$	$L \leq 200 \text{ cd/m}^2$ $\gamma_G = 60^\circ$
Open plan offices with high reflectance levels: ceiling at least 0.7, walls/partitions at least 0.5	300	1 for En = 1000 lx	$L \leq 200 \text{ cd/m}^2$ $\gamma_G = 50^\circ$	$L \leq 200 \text{ cd/m}^2$ $\gamma_G = 60^\circ$
Open plan offices with medium reflectance levels	1000	1 for En = 1500 lx	$L \leq 200 \text{ cd/m}^2$ $\gamma_G = 50^\circ$	$L \leq 200 \text{ cd/m}^2$ $\gamma_G = 60^\circ$

Veiling Reflection or Reflected Glare on visual display unit screens is the everyday cause of complaints. It is effectively avoided where monitors are arranged in such a way that bright surfaces such as windows, luminaires and bright walls cannot be reflected on screens. Where such an arrangement is not possible, the luminance of the surfaces reflected on screens needs to be reduced. For luminaires, DIN EN 12464 sets out luminance limits, which depend on the type and anti-glare design of the computer screen used and apply to all emission angles over 60° to the vertical all around the vertical axis.

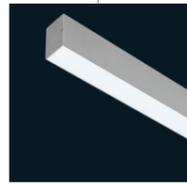


Sensor
IR
UV

Control
Wi-Fi
Bluetooth
LoRa
PLC



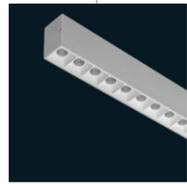
Thanks to Dark optics specially developed for high light control, we achieve high light control without reducing the luminaire efficiency. CAT1 (Darklight) lighting is provided by these special optics.



The opal diffusers developed by Litpa combine the spaciousness of diffuse light with efficiency due to its high permeability. It is a good solution for different architectural quests with its continuous production in desired length and creating soft environments.



For both general lighting needs and store lighting needs, Litpa offers a new understanding of dark-spots. Dark-Spots offers an understanding with its unique appearance, highly controlled optical structure and high efficiency.



The White - Dark optical structure, which is especially used by Litpa, combines the concepts of high light control and spacious environment in harmony, which are very difficult to come together. On top of that, it provides high efficiency.

It can also be used for indirect lighting. It can light both up and down at the same time. In indirect applications, different colors of light can be used towards the ceiling.



Empty cover application on the luminaires can be used to reduce the light level of the linear system and create a decorative effects.



One of the most important elements that complete the lighting system is spot lighting. This is especially important in places designed with dark-light lighting logic. Dark-light's plain and simple structure will meet this need perfectly with its controlled optics and efficiency.

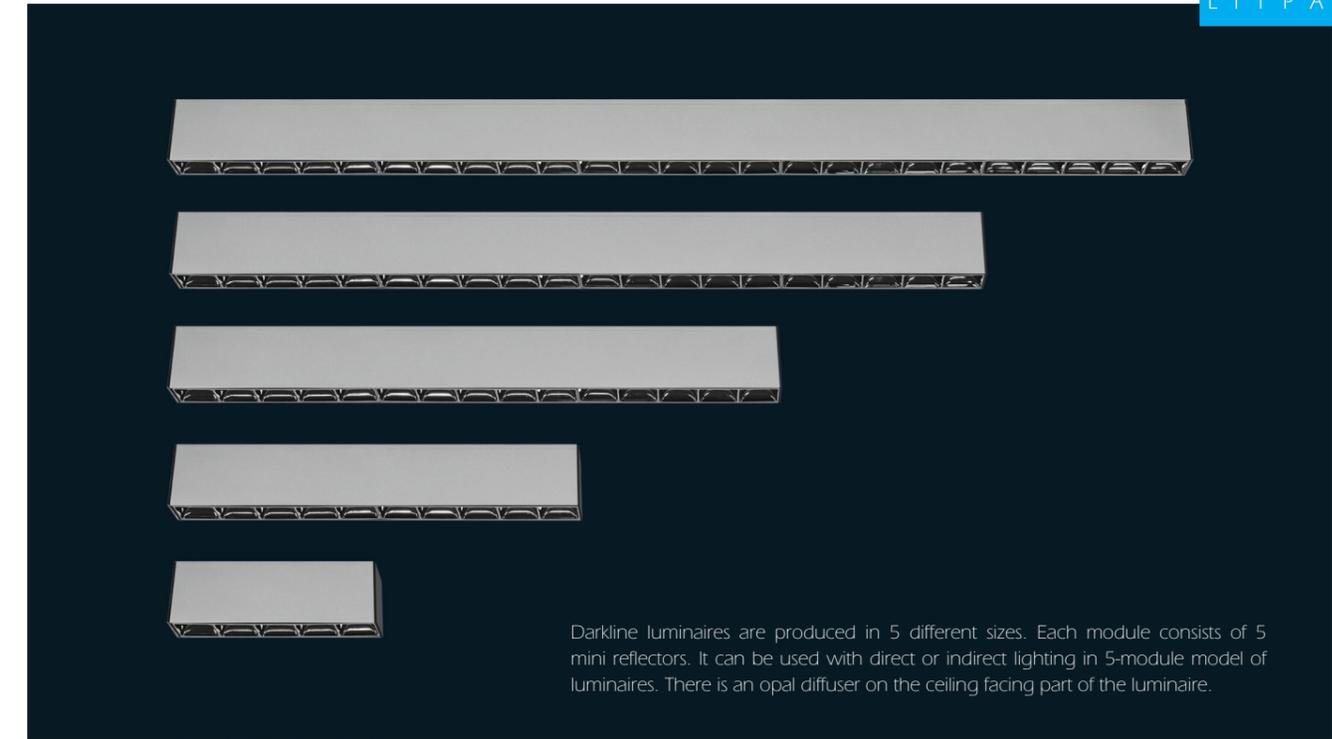
Darkline luminaire system has the flexibility to install routing and emergency safety fixtures on demand.

A wide variety of optical elements can be attached on the body produced by extrusion method of aluminum material. It provides high comfort in offices with its anti-glare reflector structures. It is possible to use black and white reflector options on the same body. Opal diffuser option gives the spaces an aesthetic and modern atmosphere by keeping the comfort of view at the highest level. Thanks to the flexibility of the system, it solves the lighting needs of the environments on a single system with spot and emergency safety and guidance fixture that can be coupled on the body. This ensures the integrity of the space design.

The optical elements used in the luminaires meet the CAT2 light distribution norms and are ready for use as an indispensable lighting element for glare-free environments. It can be used in many areas and project types by adding opal prismatic diffuser option to black and white reflectors. Particularly by solving glare problems in office and similar environments, the performance degradation due to eye fatigue is prevented. In this way, it is quite successful in increasing work efficiency. The modules to be used on the system are selected according to the conditions required by the environment and the fixture is assembled.



Darkline system has 2 different mounting types, surface and pendant. Both applications can be performed easily. In surface mounted model, the fixture base is mounted on the ceiling and the body is easily joined by pressing on the base. In the pendant model, the distance of the luminaire to the ceiling can be made without using tools thanks to the switch-type wire holders.



Darkline luminaires are produced in 5 different sizes. Each module consists of 5 mini reflectors. It can be used with direct or indirect lighting in 5-module model of luminaires. There is an opal diffuser on the ceiling facing part of the luminaire.

Surface mounted or Pendant



Direct Lighting (DLD)

Pendant



Direct-Indirect Lighting (DLE)

Modul Length

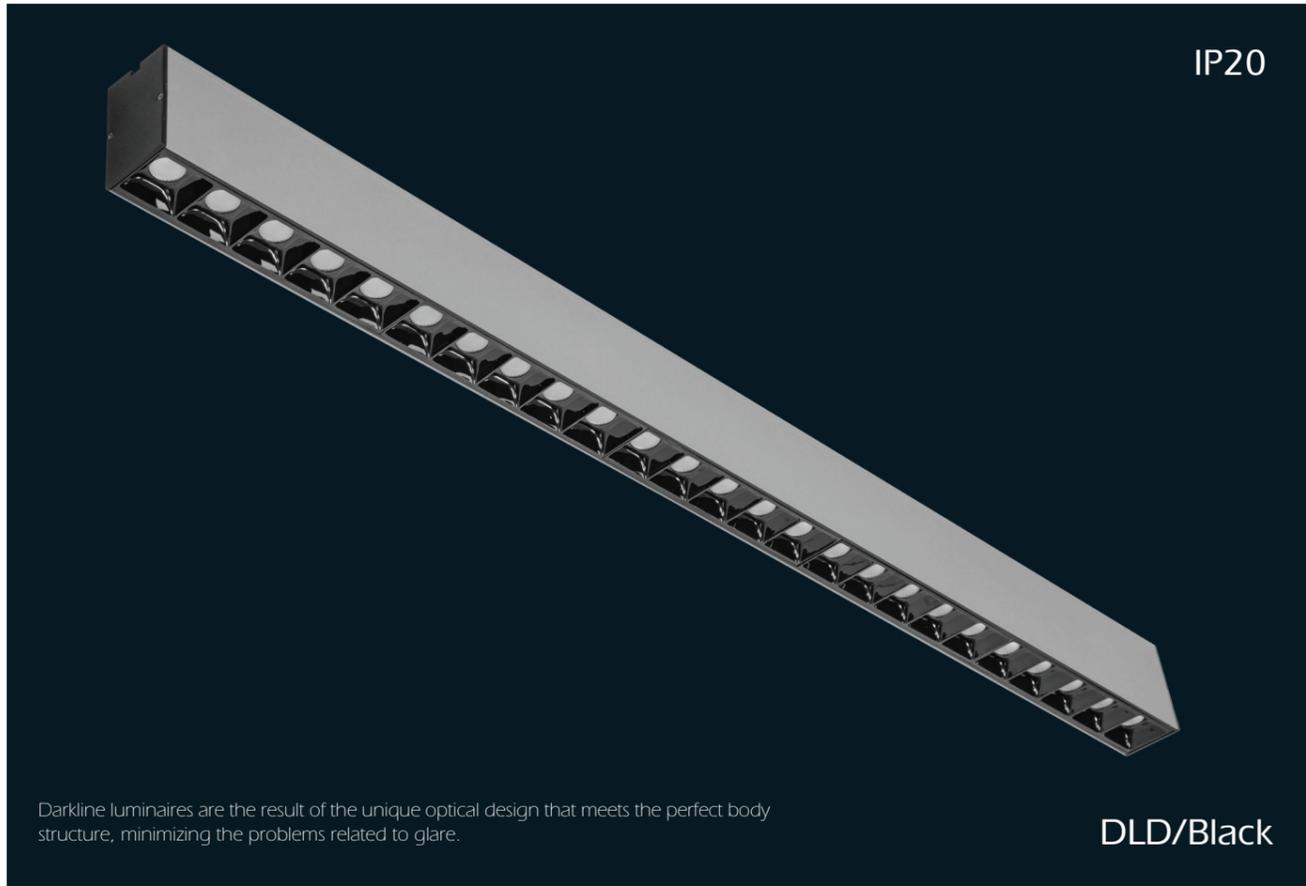
x1		250mm	
x2		485mm	
x3		720mm	
x4		955mm	
x5		1190mm	

Code							
	B	W	O	C	K	Y	E
	Black Reflector	White Reflector	Opal Diffuser	Alu Blank Cover	Spot	Spot	Exit

Darkline is produced in 5 different sizes. 7 different types of lighting elements (modules) can be installed on the luminaire. Modules used in luminaires can meet different optical requirements. (B) Black reflector, (W) White reflector, (O) Opal diffuser, (C) Aluminum blank cover, (K&Y) Spot, (E) Exit module can be installed on the fixture body in the desired sequence.

SAMPLE VARIATIONS

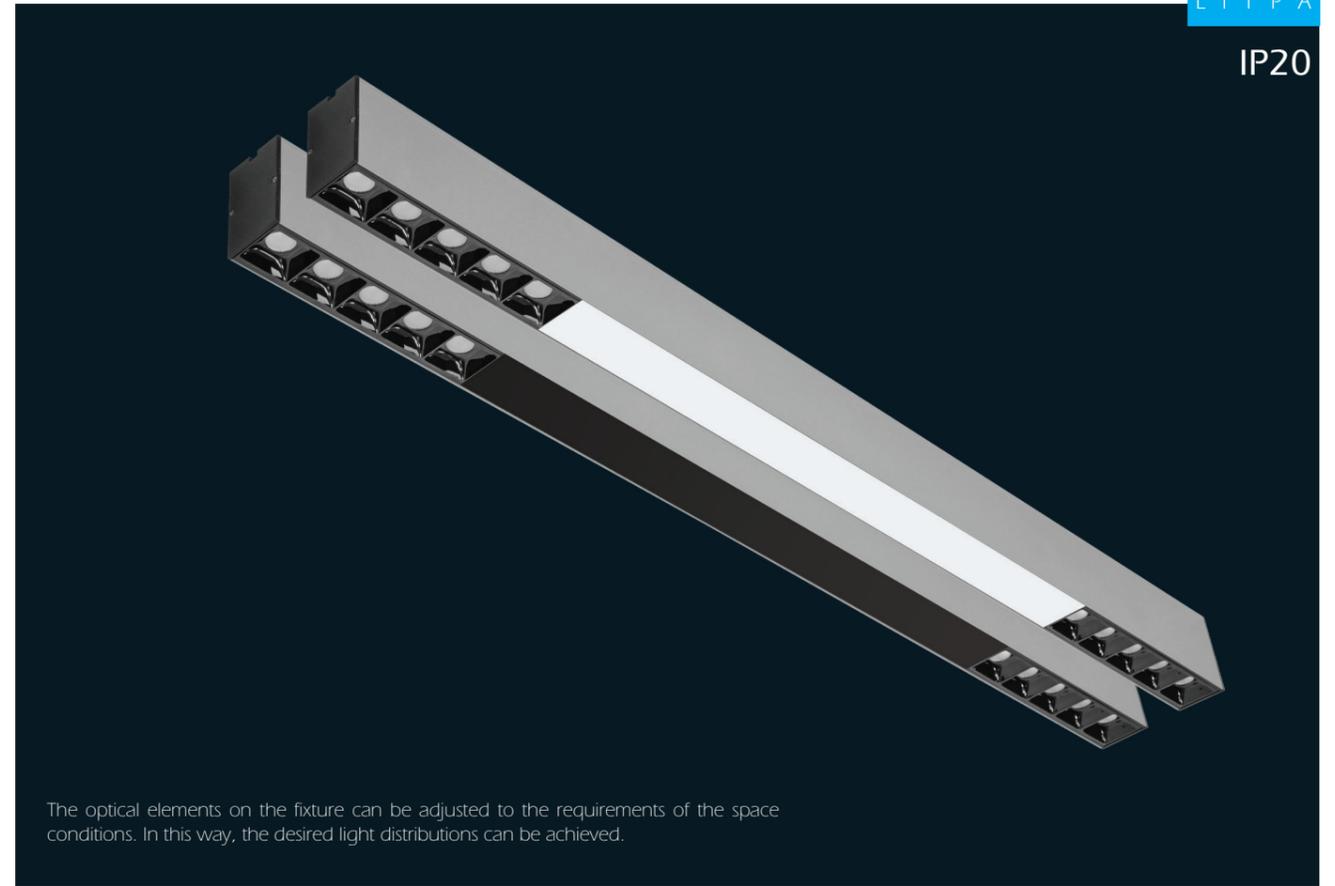
1	DLD		
		B O K O B	
		Code: DLD/BOKOB	
2	DLE		
		W O C O E	
		Code: DLE/WOCOE	
3	DLD		
		B O B	
		Code: DLD/BOB	



Darkline luminaires are the result of the unique optical design that meets the perfect body structure, minimizing the problems related to glare.

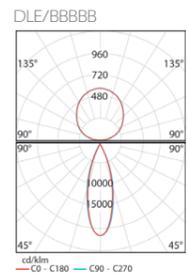
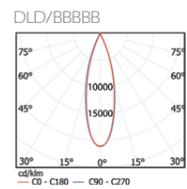
DLD/Black

Black reflectors are the most successful optical elements in controlled environments where light escape is required and reflector reflections are to be minimized. Office, laboratory and so on. These are the types of luminaires that can be the best solution for environments.



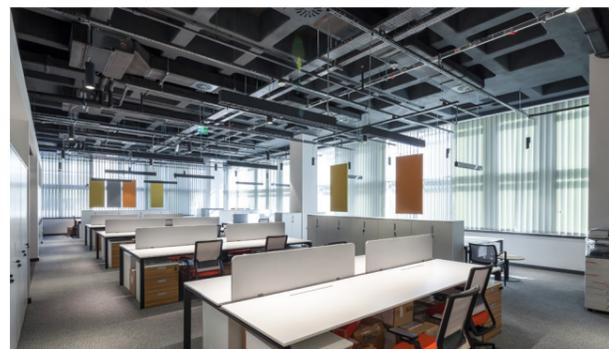
The optical elements on the fixture can be adjusted to the requirements of the space conditions. In this way, the desired light distributions can be achieved.

It is a very sensitive issue that the luminaires can be customized in terms of ideal conditions and the luminaires show a harmonious appearance to the decoration. Darkline luminaires easily handle such situations.



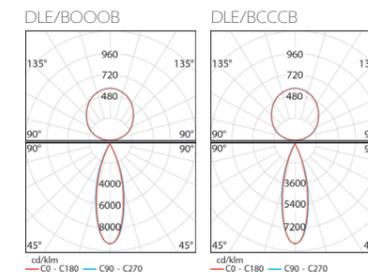
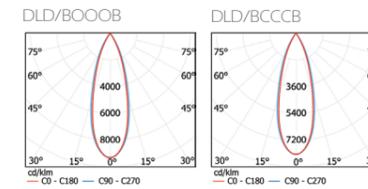
Code	Light Direction	Power	Luminous Flux	Colour	Weight
DLD/BBBBB	Direct	55W	6.100lm	Gray	3.6kg
DLE/BBBBB	Direct-Indirect	65W	6.700lm	Gray	3.3kg

Note: Suspension apparatus should be requested when used as a pendant.



SPECIFICATIONS

- Aluminum extrusion body
- Aluminum injection end cap
- Polycarbonate reflector
- Midpower Led
- 3.000 - 4.000 - 5.000 K



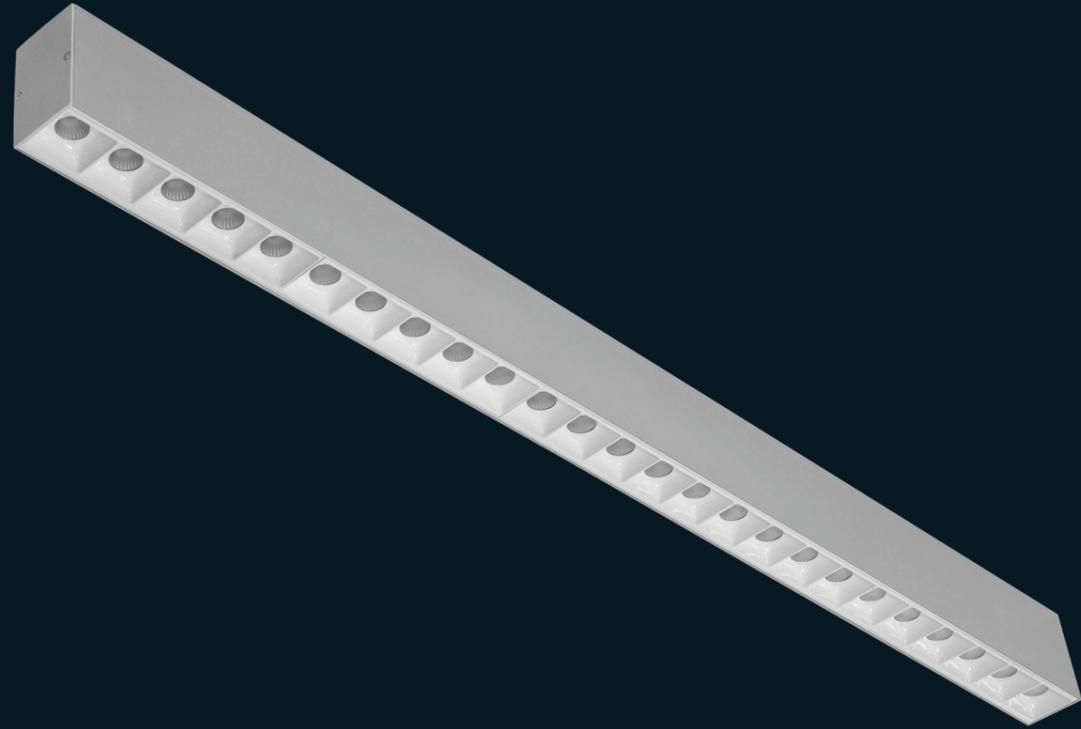
Code	Light Direction	Power	Luminous Flux	Colour	Weight
DLD/BOOOB	Direct	55W	4.350lm	Gray	3.6kg
DLE/BOOOB	Direct-Indirect	65W	4.900lm	Gray	3.3kg
DLD/BCCCB	Direct	22W	2.450lm	Gray	3.6kg
DLE/BCCCB	Direct-Indirect	32W	3.000lm	Gray	3.3kg

Note: Suspension apparatus should be requested when used as a pendant.

SPECIFICATIONS

- Aluminum extrusion body
- Aluminum injection end cap
- Polycarbonate reflector
- Midpower Led
- 3.000 - 4.000 - 5.000 K

IP20

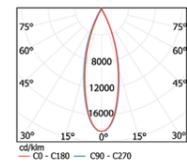


Darkline luminaire series, where the modern design concept meets in a simple and elegant way ... Glare-free environment is guaranteed in all module types used.

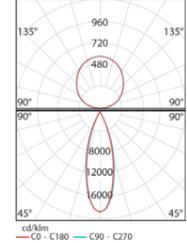
DLD/White

White reflectors are used successfully in environments where light escape is required in a controlled manner and reflector reflections are required to a minimum. These are the types of luminaires that can be the best solution for Office, laboratory and so on.

DLD/WWWWW



DLE/WWWWW



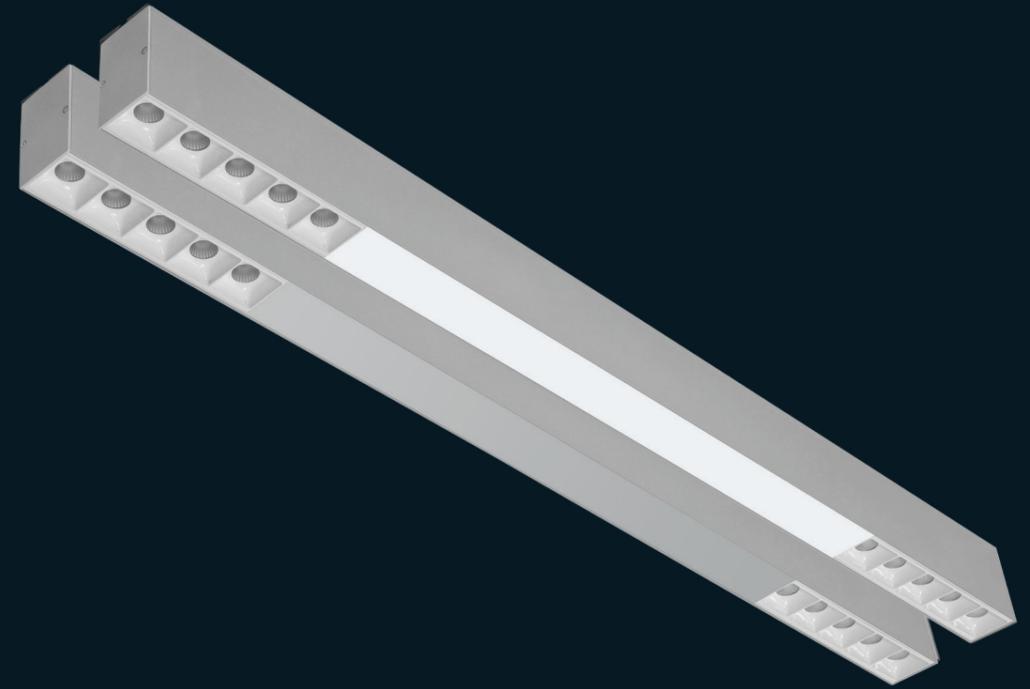
Code	Light Direction	Power	Luminous Flux	Colour	Weight
DLD/WWWWW	Direct	55W	6.100lm	Gray	3.6kg
DLE/WWWWW	Direct-Indirect	65W	6.800lm	Gray	3.3kg

Note: Suspension apparatus should be requested when used as a pendant.

SPECIFICATIONS

- Aluminum extrusion body
- Aluminum injection end cap
- Polycarbonate reflector
- Midpower Led
- 3.000 - 4.000 - 5.000 K

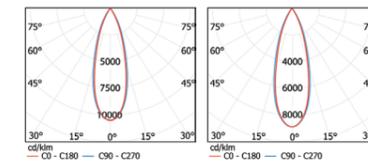
IP20



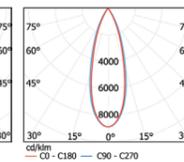
The optical elements on the fixture can be arranged according to the requirements of the space conditions. In this way, the desired light distributions can be achieved.

It is a very sensitive issue that the luminaires can be customized in terms of ideal conditions and the luminaires show a harmonious appearance to the decoration. Darkline luminaires easily handle such situations.

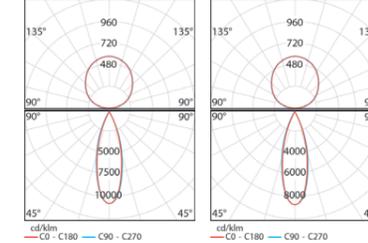
DLD/WOOOW



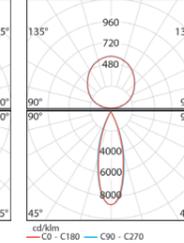
DLD/WCCCW



DLE/WOOOW



DLE/WCCCW

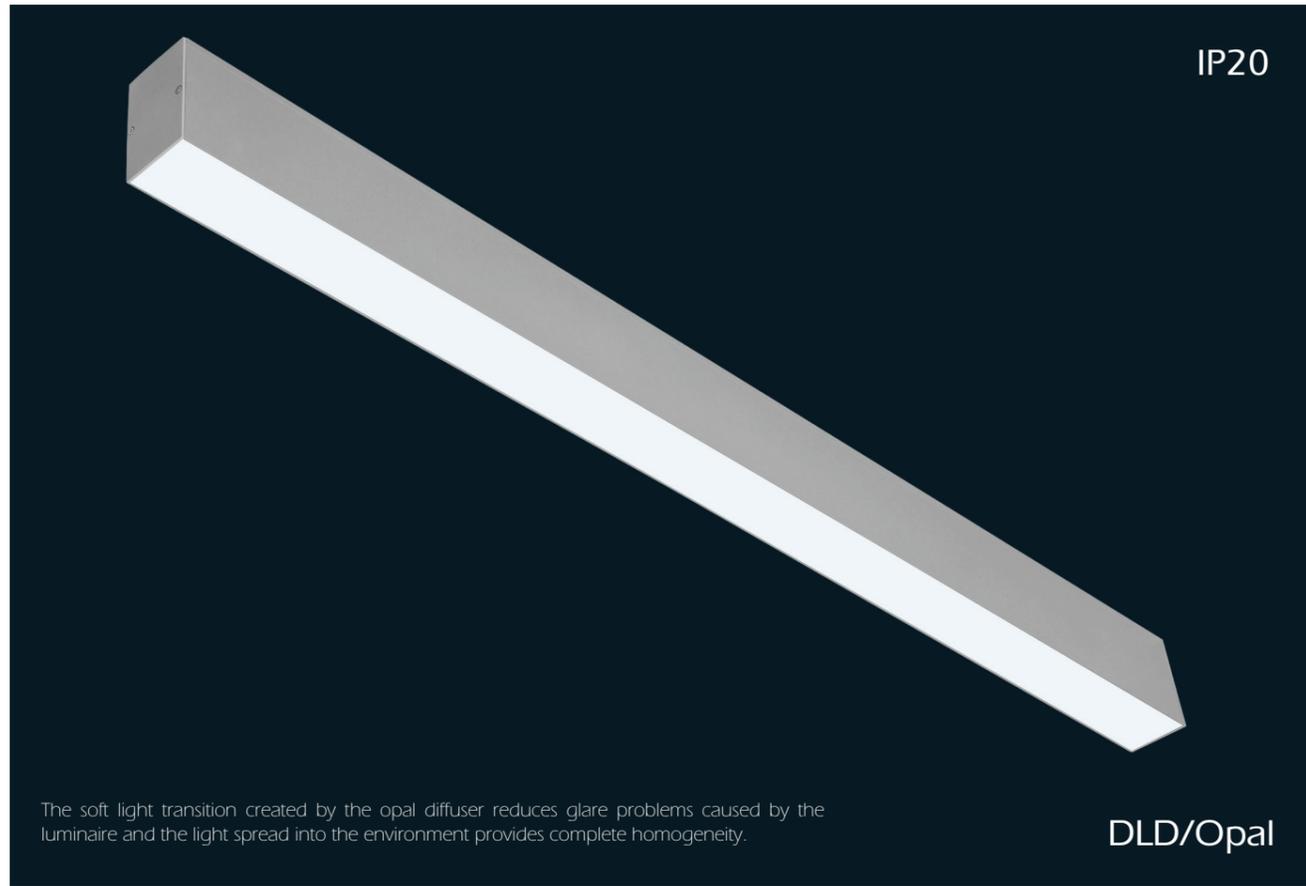


Code	Light Direction	Power	Luminous Flux	Colour	Weight
DLD/WOOOW	Direct	55W	4.350lm	Gray	3.6kg
DLE/WOOOW	Direct-Indirect	65W	4.900lm	Gray	3.3kg
DLD/WCCCW	Direct	22W	2.450lm	Gray	3.6kg
DLE/WCCCW	Direct-Indirect	32W	3.000lm	Gray	3.3kg

Note: Suspension apparatus should be requested when used as a pendant.

SPECIFICATIONS

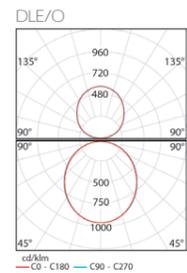
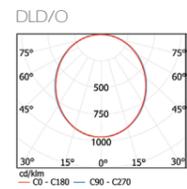
- Aluminum extrusion body
- Aluminum injection end cap
- Polycarbonate reflector
- Midpower Led
- 3.000 - 4.000 - 5.000 K



The soft light transition created by the opal diffuser reduces glare problems caused by the luminaire and the light spread into the environment provides complete homogeneity.

DLD/Opal

Optimal solution is to use luminaires with opal diffusers to softly distribute light in environments. Depending on the color temperature to be used in the luminaires, the effect and feeling can be created as desired in the spaces.



SPECIFICATIONS

- Aluminum extrusion body
- Aluminum injection end cap
- Opal diffuser
- Midpower Led
- 3.000 - 4.000 - 5.000 K



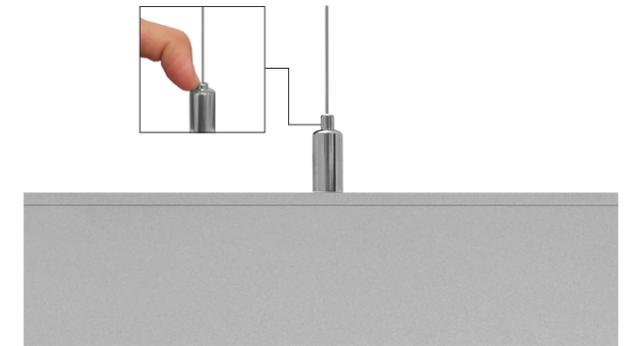
Code	Light Direction	Power	Luminous Flux	Colour
DLD/O	Direct	35W	2.470lm	Gray
DLE/O	Indirect	50W	3.650lm	Gray

Note: Suspension apparatus should be requested when used as a pendant.

Pendant Apparatus



The possibility of faulty connection is low due to smart apparatus. It easily adapts to the existing system. If desired, the luminaire can be suspended from the ceiling with the optional suspension wire. In addition, direct ceiling mounts are available.



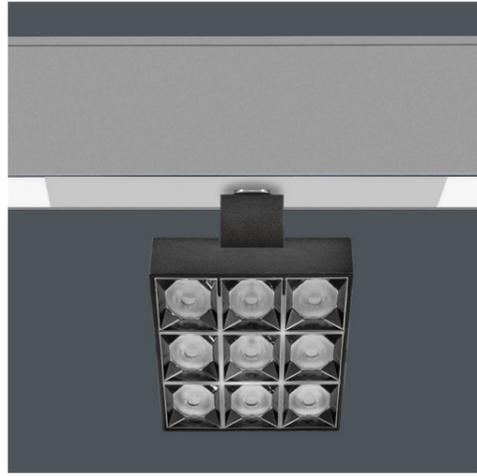
You can release the wire by gently pressing the switchblade with the nail tip. In this way, the pendant length can be easily adjusted to the desired level.

Emergency Kit



The emergency safety kit can optionally be installed in the luminaire. It can power the luminaire from 1 hour to 3 hours.

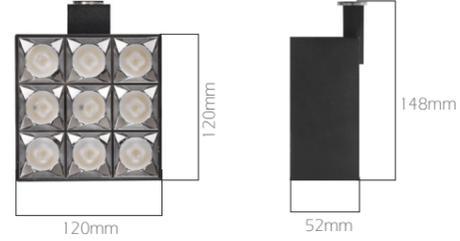
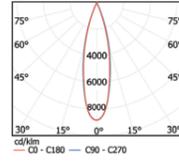
Accessory



SPOT (K)

SPECIFICATIONS

Aluminum body
High Power Led
3.000 - 4.000 - 5.000 K



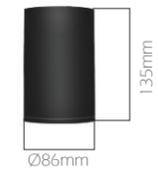
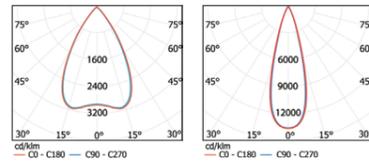
Accessory	Code	Power	Luminous Flux	Color Temperature
SPOT	(K)	25W	1.710lm	3.000 - 4.000 - 5.000K



SPOT (Y)

SPECIFICATIONS

Aluminum extrusion body
Aluminum frame
%99 pure aluminum reflector
3mm thick tempered glass
COB Led



Accessory	Code	Power	Luminous Flux	Color Temperature
SPOT	(Y)	13W	1.350lm	3.000 - 4.000 - 5.000K

Accessory



EXIT (E)

SPECIFICATIONS

Plexiglass diffuser
Aluminum extrusion body
Midpower Led
220V - 50Hz
24hrs charging time
Up to 3hrs discharging time
1.2Vdc 1000mAh Ni-Cd
Visibility 30m



Accessory	Code	Power	Luminous Flux	Color Temperature
EXIT	(E)	3W	95lm	5.000K - 6.500K

LİTPA LIGHTING

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