

GROUPE  
**TRATOTLV**

**TRANSPORT & INDUSTRY**

Lighting system  
for Transport and Industry application

Since 1947

## Who are we ?

TRATO-TLV designs, manufactures in France, and markets innovative lighting luminaires worldwide. With 200 employees and a modern production tool, TRATO-TLV became a key player in its job in Europe.

TRATO-TLV offers customized solutions and bases the development of new products on the performance, the low CONSUMPTION and energy savings.

As a leading player in one's market for more than 70 years, TRATO-TLV manufactures architectural and custom-made lighting fittings for the tertiary sector, large-scale distribution and chains of stores, railway, subway, air and maritime transport, parking lots, clinics, hospitals and retirement homes.

## Sustainable development

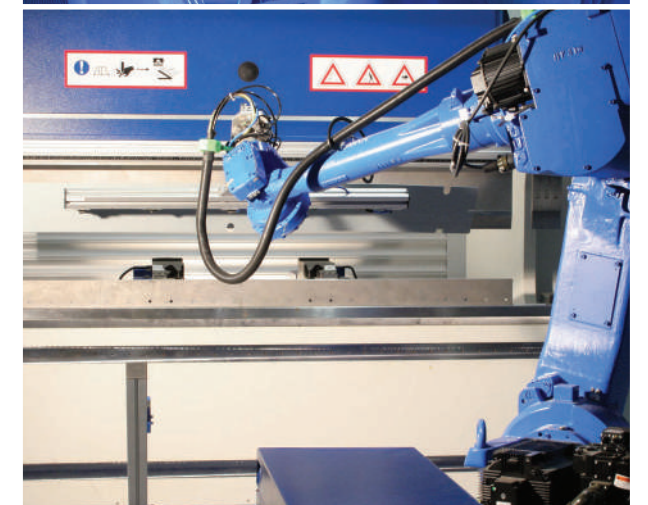
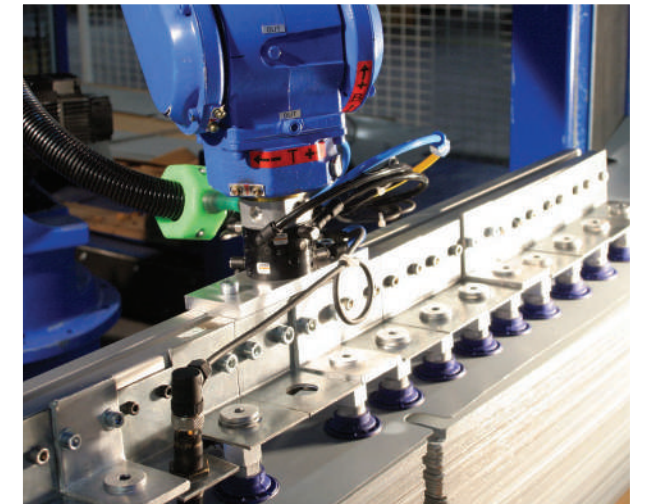
TRATO-TLV lighting's solutions are convincing, because they combine lamps energy efficiency, components and luminaires while creating added aesthetic value. TRATO-TLV involves its entire staff to guarantee to its customers that all its commercial activities are performed with respect for sustainable development, health and safety; these undertakings are our priority.

## Design and innovation

With an R&D department integral to the core of the company, TRATO-TLV uses the most noble and efficient materials to build efficient and high performance appliances. The R&D department is certainly very focused on LED technology as well as optical systems.

## Services

The industrial tool we have in France is an attractive feature to meet any specific request from designers, architects, lighting designers, or end customers. From manufacture, to advice and services provided, TRATO-TLV offers a global solution to its customers.







Interchange Line  
G1.I ← → H.J Exit  
Guangzhou East Railway  
Guangyuan Donglu



Emergency Exit  
Emergency Exit  
Emergency Exit

Emergency Exit  
Emergency Exit  
Emergency Exit



■ LIGHTING SYSTEM FOR TRANSPORT AND INDUSTRY APPLICATION ■ (P. 14 - 39)



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■ WAREHOUSE, LOGISTICS AND INDUSTRIAL ENVIRONMENT ■ (P.42-44)



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CONTENTS

■ ATTACHMENTS

- LED LUMINOUS FLUX TABLE OF TRANSPORT PRODUCTS (MULTIPLE OF 600 MM) - (P32)
- STANDARD NF EN 12464 - (P33)





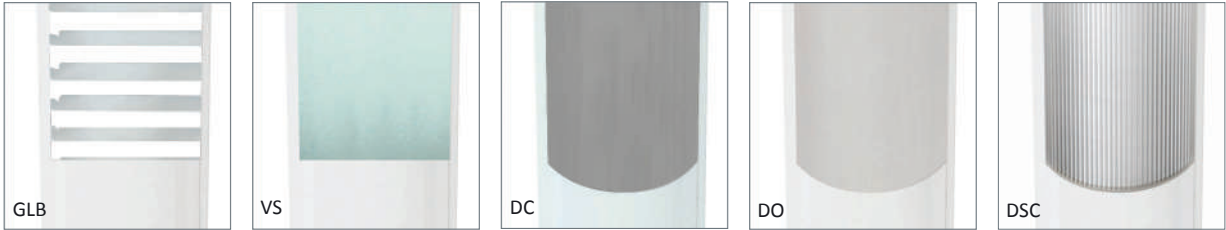






Colour(s)

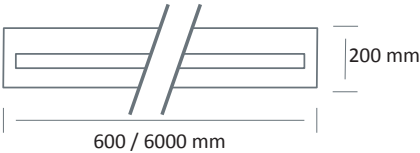
OPTICALS



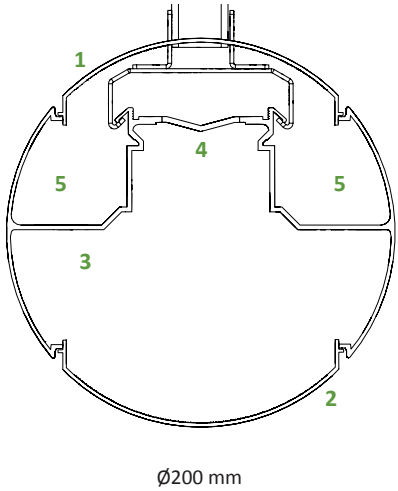
PROFILES ■ LED

- Tubular lighting system with direct and indirect lighting for LINEAR LED module
- Can be mounted continuous row
- Circular section, diameter 200 mm
- Steel white (GLB), aluminium (GLA) louvre, clear (VC), frosted (VS) glass, clear (DC), opal (DO) or grooved and clear (DSC) diffuser made of polycarbonate
- Suspended luminaire by threaded rod for easier Fixing
- Housing made of extruded aluminium profile
- Endcap made of aluminium
- **Driver(s):** Fixed, Dimmable driver DALI (CDIMMDALI)
- **Options:** Lighting sensor and-or movement detector (CEL)

Driver(s)	Standards
<div>FIXED</div>	Class I   from IK07   850°
Efficiency energy class	Profil(s)
A++	<div>IP 20</div> <div>IP 40</div>
Dimensions	Luminaire(s)
	<div>IP 20</div> <div>IP 40</div> <div>IP 54</div> <div>IP 65</div>

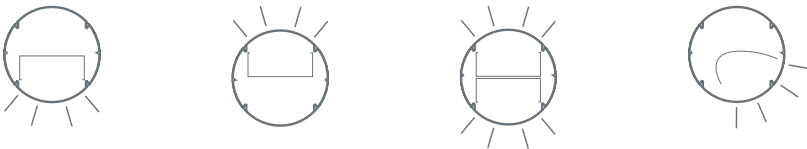


SECTION

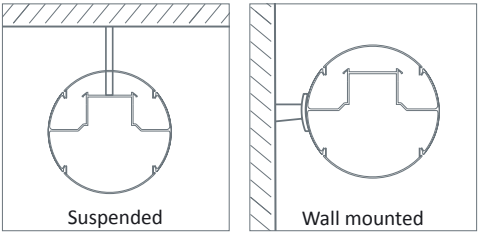


- 1 Body made of extruded aluminium profile
- 2 Extruded aluminium cover or diffuser
- 3 Lighting tray and aluminium reflector
- 4 Lighting wiring
- 5 Cable tray compartment

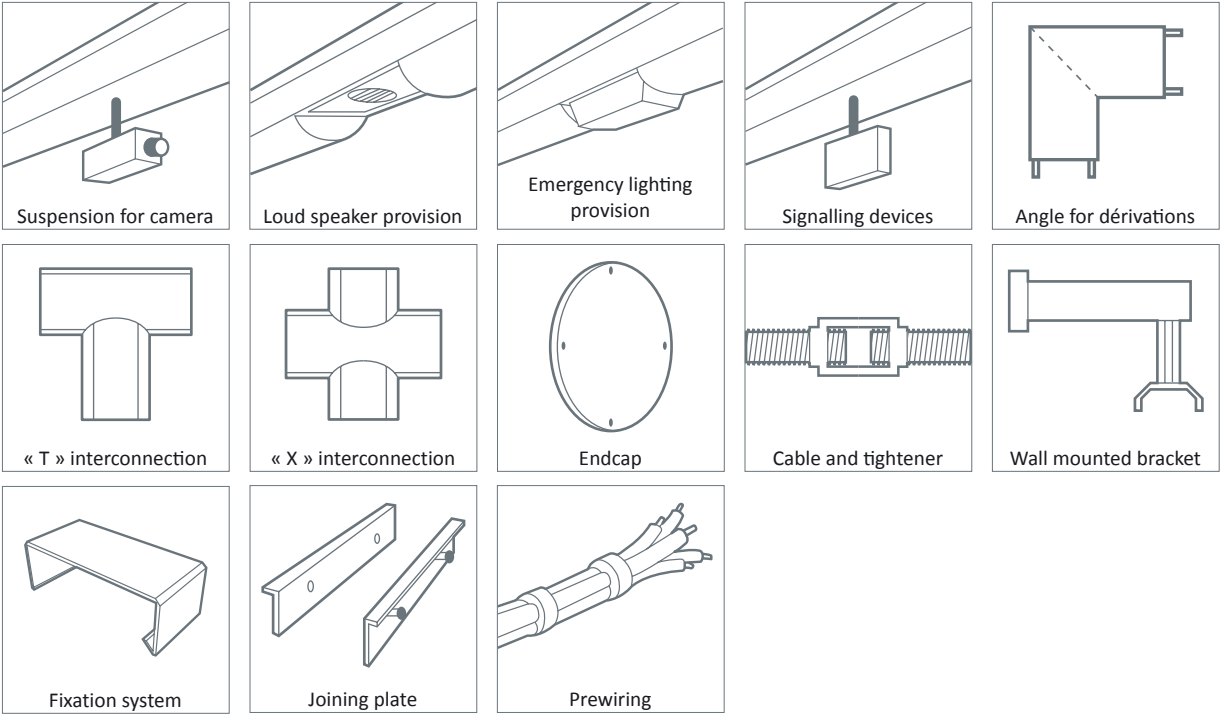
LIGHTING CONFIGURATION



FIXING



ACCESSORIES



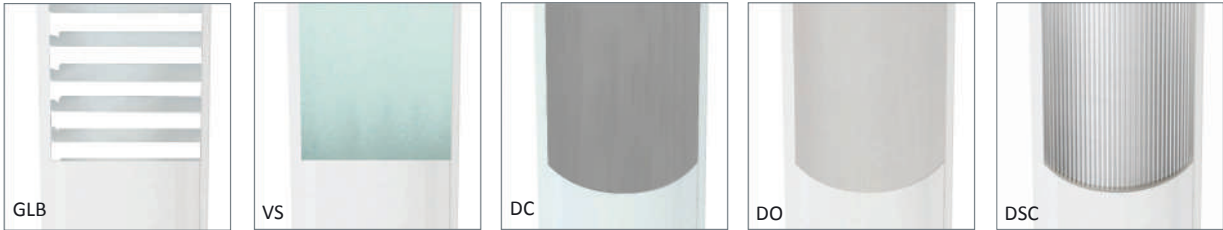
> P32 : Table of powers and luminous flux





Colour(s)

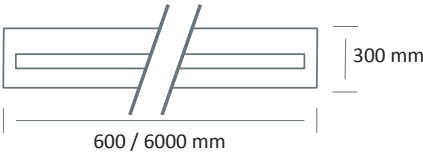
OPTICALS



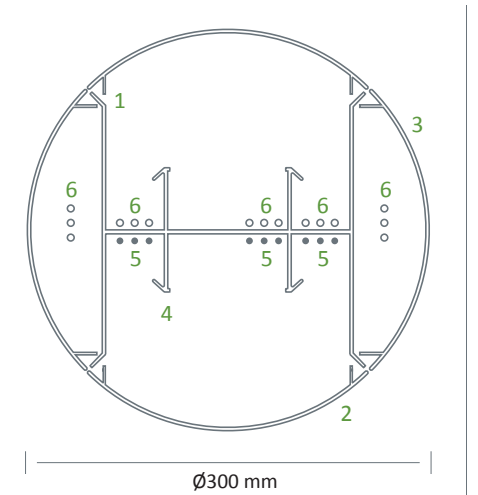
PROFILES ■ LED

- Tubular lighting system with direct and indirect lighting for LINEAR LED module
- Can be mounted continuous row
- Circular section, diameter 300 mm
- Steel white (GLB), aluminium (GLA) louvre, clear (VC), frosted (VS) glass, clear (DC), opal (DO) or grooved and clear (DSC) diffuser made of polycarbonate
- Suspended luminaire by threaded rod for easier installation
- Housing made of extruded aluminium profile
- Endcap made of aluminium
- **Driver(s):** Fixed, Dimmable driver DALI (CDIMMDALI)
- **Options:** Lighting sensor and-or movement detector (CEL)

Driver(s)	Standards
<div>FIXED</div>	Class I   from IK07   850°
Efficiency energy class	Profil(s)
<div>A++</div>	<div>IP20</div> <div>IP40</div>
Dimensions	Luminaire(s)
	<div>IP20</div> <div>IP40</div> <div>IP54</div> <div>IP65</div>

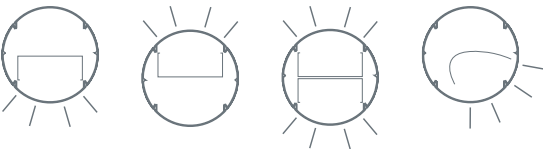


SECTION

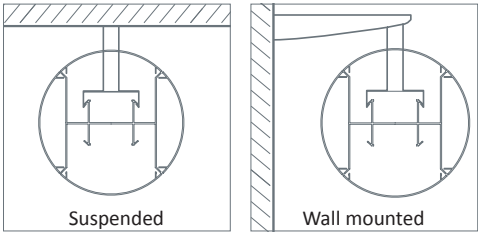


- 1 Body made of extruded aluminium profile
- 2 Extruded aluminium cover or diffuser
- 3 Cover made of extruded aluminium profile
- 4 Lighting tray and aluminium reflector
- 5 Lighting wiring
- 6 Cable tray compartment

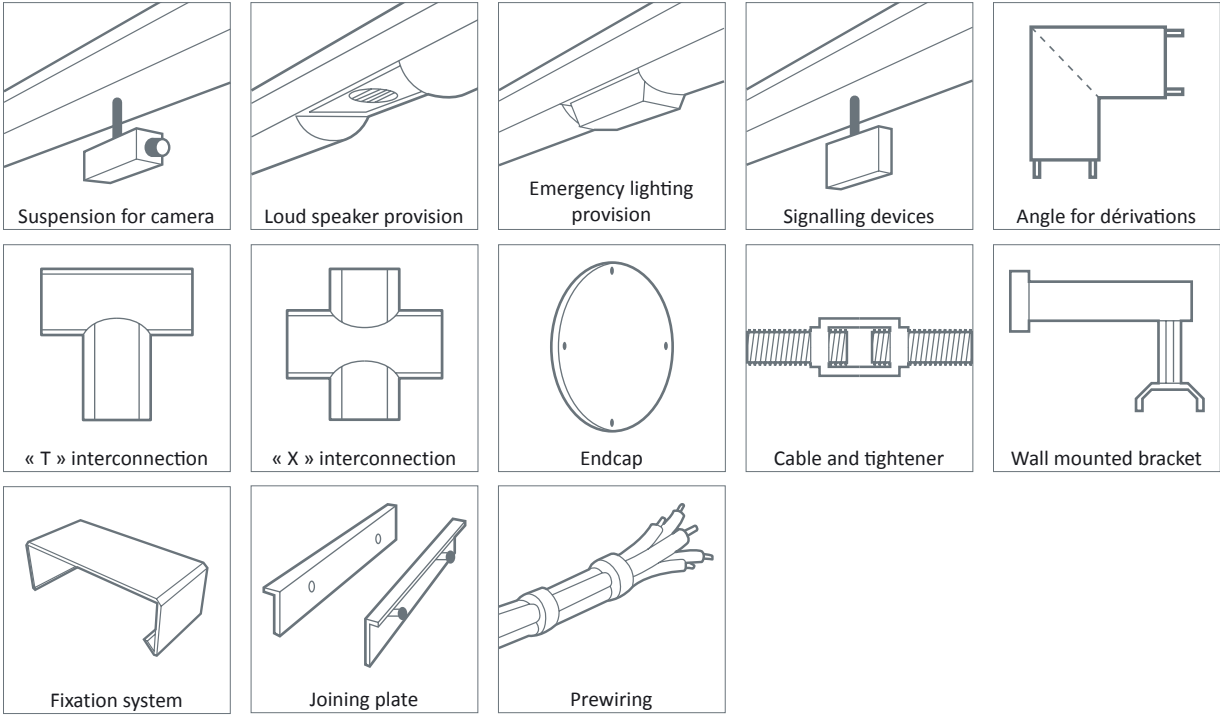
LIGHTING CONFIGURATION



FIXING



ACCESSORIES



> P32 : Table of powers and luminous flux





Colour(s)

PROFILES ■ LED

- Ovoid lighting system with direct and indirect lighting for LINEAR LED module
- Can be mounted continuous row
- Circular section, size 500x320 mm
- Steel white (GLB), aluminium (GLA) louvre, clear (VC), frosted (VS) glass, clear (DC), opal (DO) or grooved and clear (DSC) diffuser made of polycarbonate
- Suspended luminaire by threaded rod for easier installation
- Housing made of extruded aluminium profile
- Endcap made of aluminium
- **Driver(s):** Fixed, Dimmable driver DALI (CDIMMDALI)
- **Options:** Lighting sensor and-or movement detector (CEL)

**Driver(s)**

FIXED

**Standards**

Class I | de IK02 à IK07 | 850°

**Profil(s)**

IP20

IP40

**Dimensions**

**Efficiency energy class**

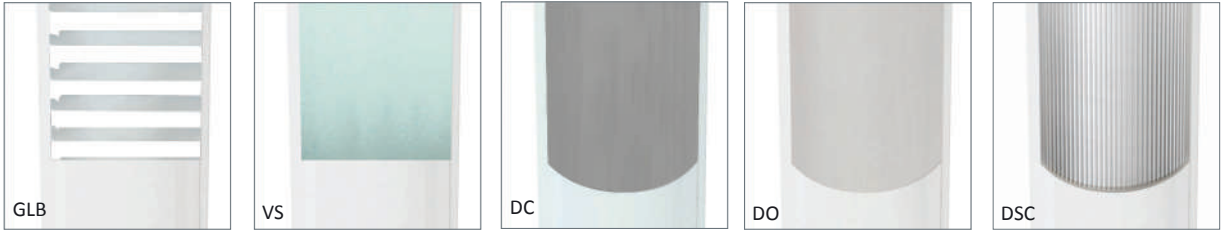
A++

**Luminaire(s)**

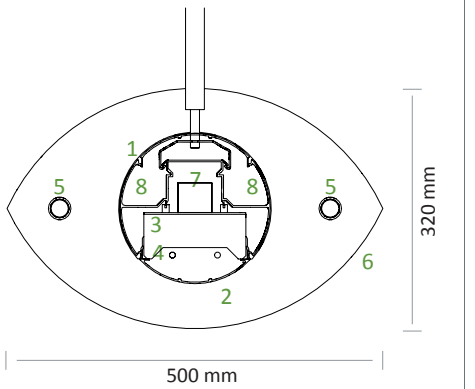
IP20

IP40

OPTICALS

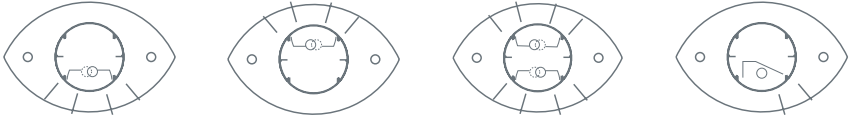


SECTION

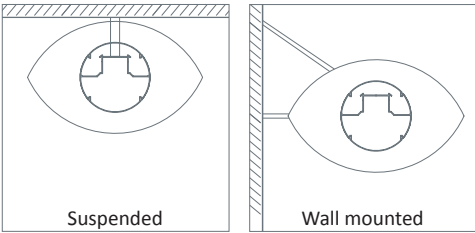


- 1 Body made of extruded aluminium profile
- 2 Extruded aluminium cover or diffuser
- 3 Lighting tray and aluminium reflector
- 4 Aluminium louvre with transverse blades
- 5 Stainless steel tube
- 6 Polished stainless steel sheet
- 7 Lighting wiring
- 8 Cable tray compartment

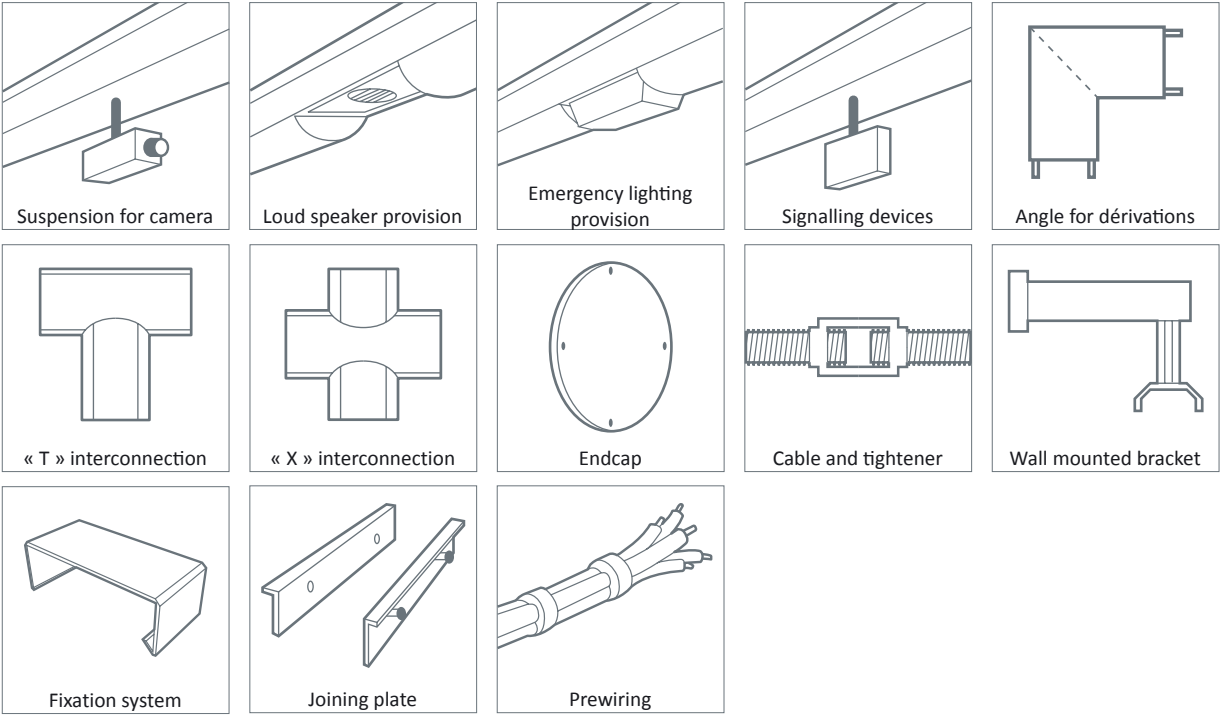
LIGHTING CONFIGURATION



FIXING



ACCESSORIES



> P32 : Table of powers and luminous flux







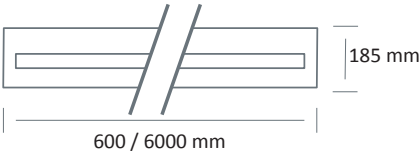


Colour(s)

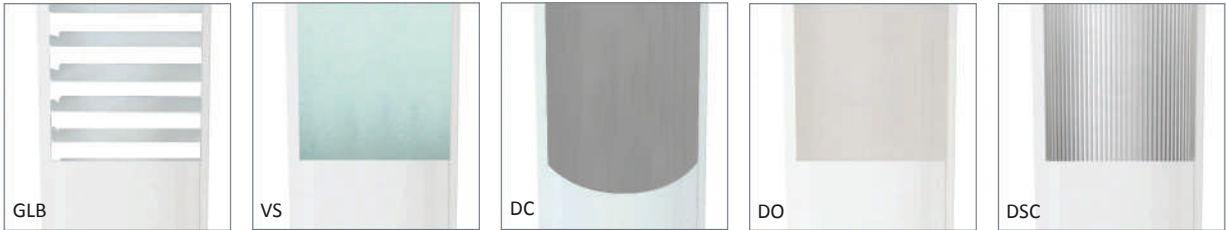
PROFILES ■ LED

- Ovoid lighting system with direct and indirect lighting for LINEAR LED module
- Can be mounted continuous row
- Ovoid section, size 325x185 mm
- Steel white (GLB), aluminium (GLA) louvre, clear (VC), frosted (VS) glass, clear (DC), opal (DO) or grooved and clear (DSC) diffuser made of polycarbonate
- Suspended luminaire by threaded rod for easier installation
- Housing made of extruded aluminium profile
- Endcap made of aluminium
- **Driver(s):** Fixed, Dimmable driver DALI (CDIMMDALI)
- **Options:** Lighting sensor and-or movement detector (CEL)

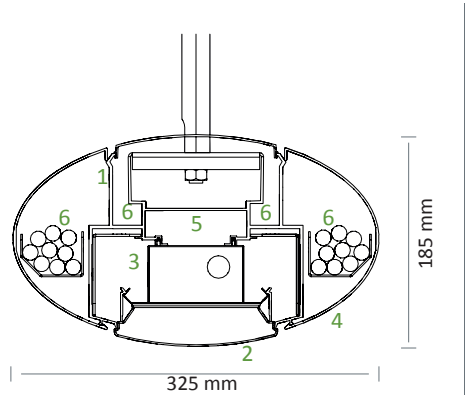
Driver(s)	Standards
	Class I   from IK07   850°
Efficiency energy class	Profil(s)
Dimensions	Luminaire(s)



OPTICALS



SECTION

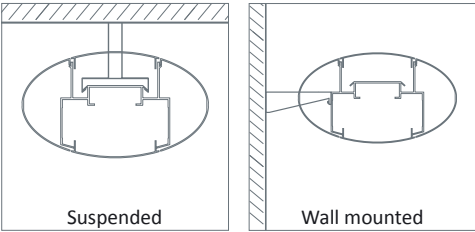


- 1 Body made of extruded aluminium profile
- 2 Extruded aluminium cover or diffuser
- 3 Lighting fixture
- 4 Cover made of extruded aluminium profile
- 5 Lighting wiring
- 6 Cable tray compartment

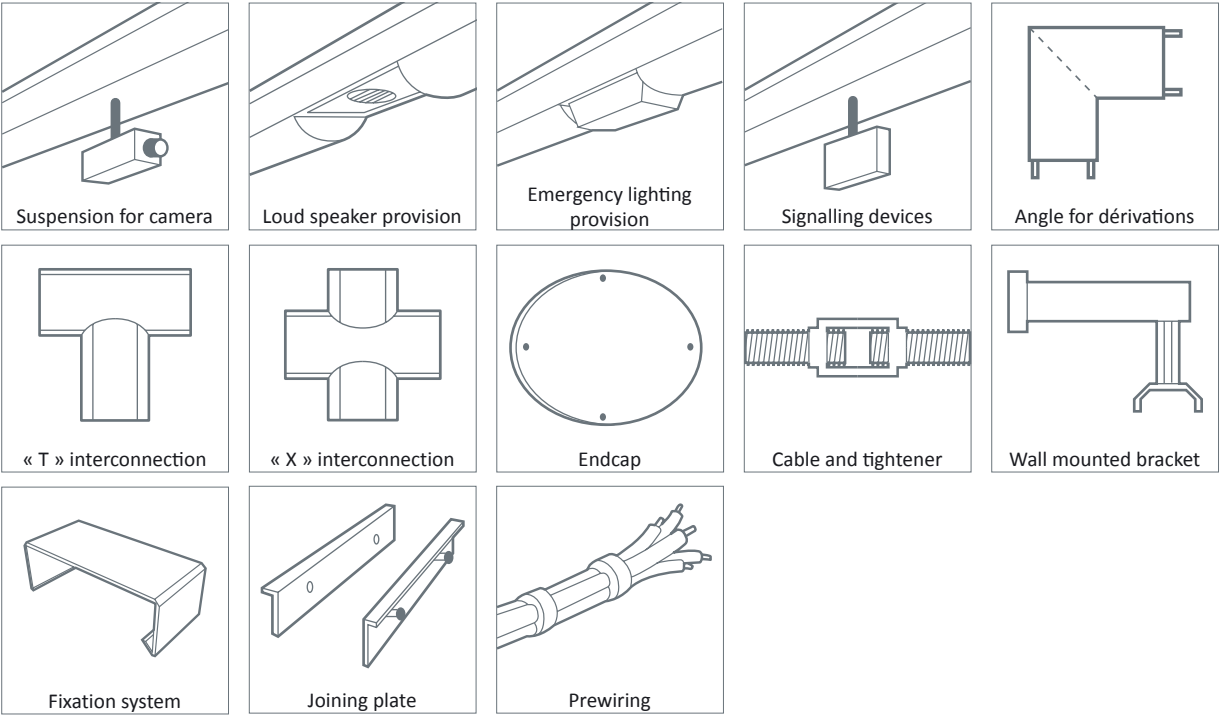
LIGHTING CONFIGURATION



FIXING



ACCESSORIES



> P32 : Table of powers and luminous flux





Colour(s)

OPTICALS



PROFILS ■ LED

- Lighting system with direct and indirect lighting for LINEAR LED module
- Can be mounted continuous row
- Curved section, size 275x45 mm
- Clear (DC), opal (DO) or grooved and clear (DSC) diffuser made of polycarbonate
- Housing made of extruded aluminium profile
- **Driver(s):** Fixed, Dimmable driver DALI (CDIMMDALI)
- **Options:** Lighting sensor and-or movement detector (CEL)

Driver(s)



Standards

Class I | IK07 | 850°

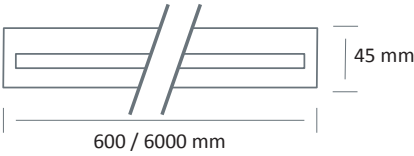
Efficiency  
energy class



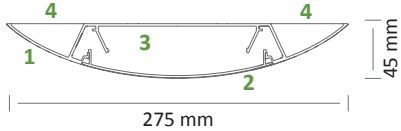
Profil(s)



Dimensions

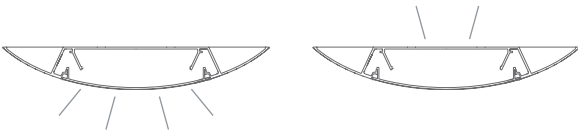


SECTION

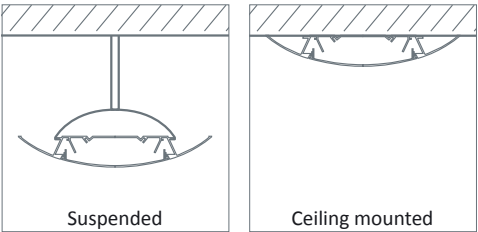


- 1 Body made of extruded aluminium profile
- 2 Extruded aluminium cover or diffuser or louvre
- 3 Lighting wiring
- 4 Cable tray compartment

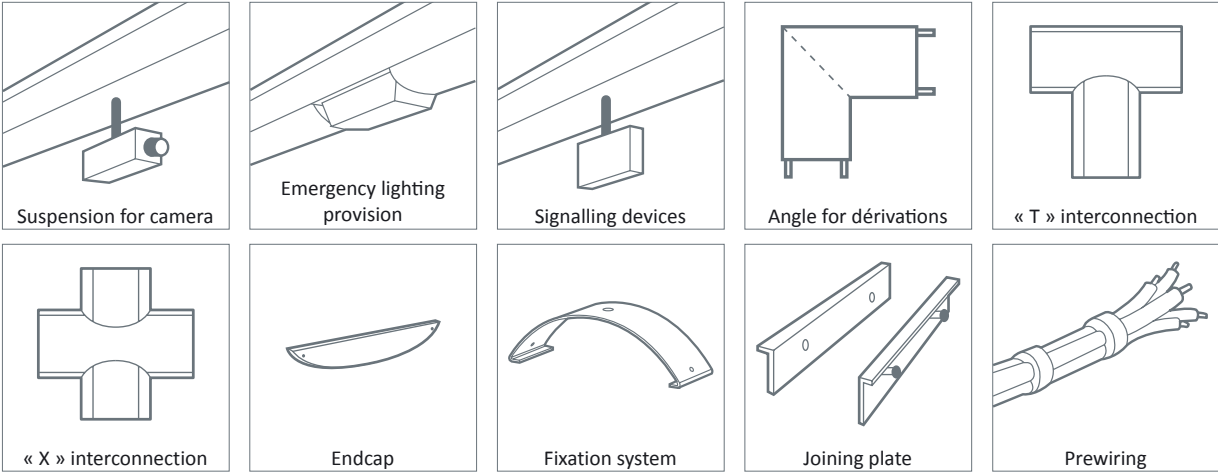
LIGHTING CONFIGURATION



FIXING



ACCESSORIES



> P32 : Table of powers and luminous flux









Colour(s)

PROFILES ■ LED

- Rectangular lighting system with direct lighting for LINEAR LED module
- Can be mounted continuous row
- Rectangular section, size 180x120 mm
- Steel white (GLB), aluminium (GLA) louvre, clear (VC), frosted (VS) glass, clear (DC), opal (DO) or grooved and clear (DSC) diffuser made of polycarbonate
- Housing made of extruded aluminium profile
- Cover and endcap made of aluminium
- **Driver(s):** Fixed, Dimmable driver DALI (CDIMMDALI)
- **Options:** Lighting sensor and-or movement detector (CEL)

Driver(s)



Standards

Class I | from IK07 | 850°

Efficiency  
energy class



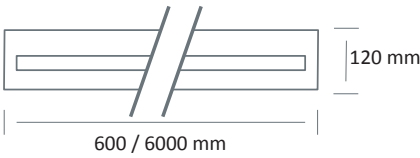
Profil(s)



Luminaire(s)



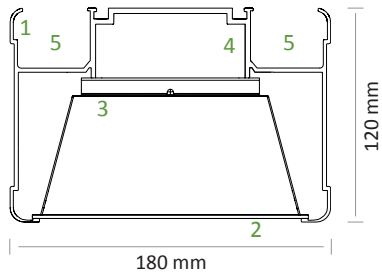
Dimensions



OPTICALS

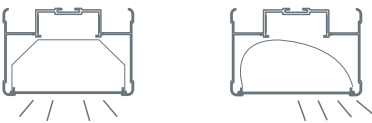


SECTION

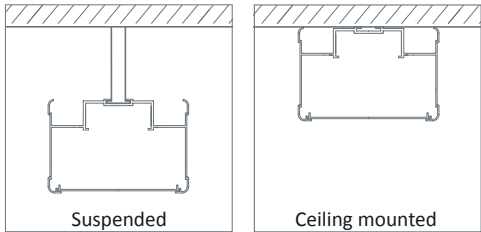


- 1 Body made of extruded aluminium profile
- 2 Aluminium cover
- 3 Lighting tray and aluminium reflector
- 4 Lighting wiring
- 5 Cable tray compartment

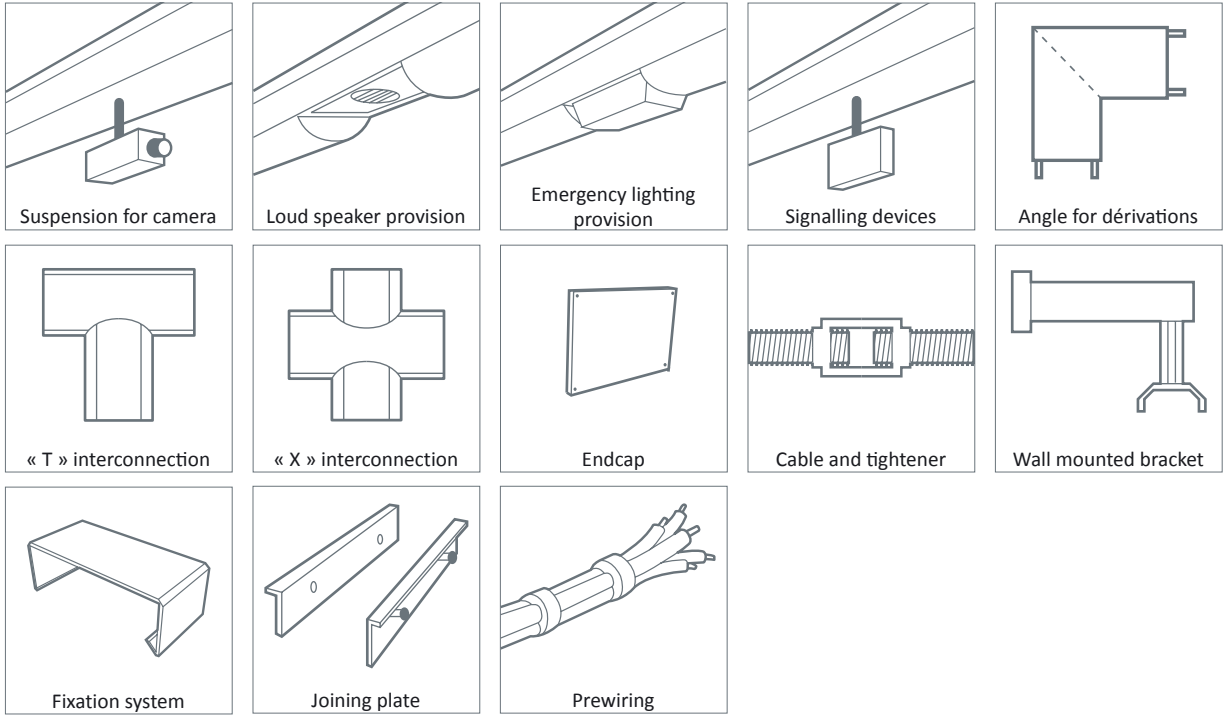
LIGHTING CONFIGURATION



FIXING



ACCESSORIES



P32 : Table of powers and luminous flux





Colour(s)

PROFILES ■ LED

- Tubular lighting system for Philips LED lamps, light beam 300°
- 50 000 hours lamp life
- Luminous efficacy of LED lamp up to 82 lm/W
- Can be mounted continuous row
- Circular section, diameter 130 mm
- Opal (DO) diffuser made of polycarbonate
- Housing made of grey extruded aluminium profile
- Endcaps made of die cast aluminium
- Static heat sink
- **Driver(s):** Fixed, Dimmable driver DALI (CDIMMDALI)

Driver(s)



Standards

Class I | IK10 | 850°

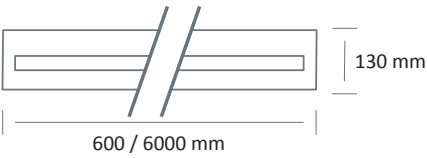
Efficiency  
energy class



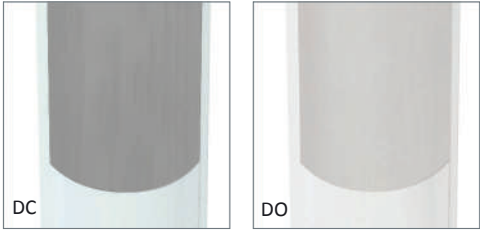
Profil(s)



Dimensions



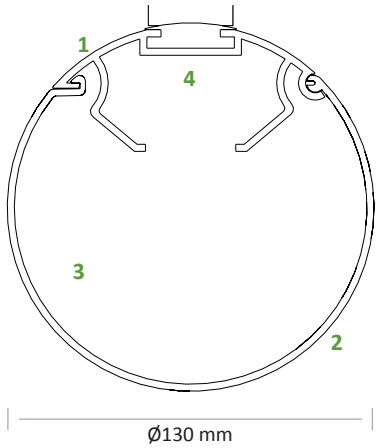
OPTICALS



ACCESSORIES

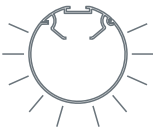


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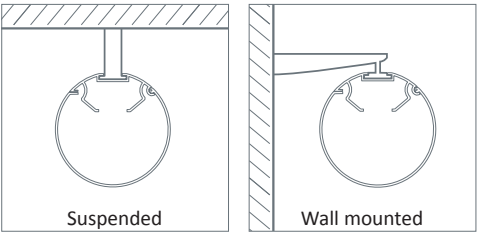


- 1 Body made of extruded aluminium profile
- 2 Opal polycarbonate diffuser
- 3 aluminium or white steel louvre
- 4 Lighting wiring

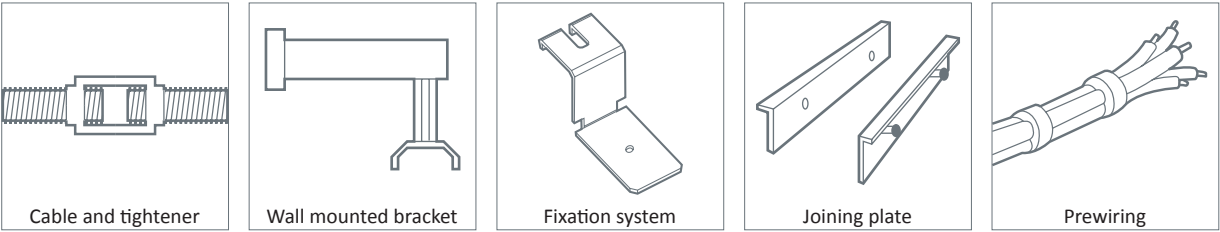
LIGHTING CONFIGURATION



FIXING



ACCESSORIES



> P32 : Table of powers and luminous flux

## TABLE OF POWERS AND LUMINOUS FLUX (multiple of 600 mm)

FLUX MODULE ON 4FT	POWER MODULE / METER	POWER SYSTEM / METER	EFFICIENCY OF THE SYSTEM	TEMPERATURE OF COLOR	CRI
1500 lumens	7,8W	9,3W	162,2 lm/W	4000 K	80
1433,3 lumens	7,8W	9,3W	155,0 lm/W	3000 K	80
2000 lumens	10,5W	11,9W	167,8 lm/W	4000 K	80
1911,7 lumens	10,5W	11,9W	160,4 lm/W	3000 K	80
2500 lumens	13,4W	15,3W	163,9 lm/W	4000 K	80
2377,5 lumens	13,4W	15,3W	155,9 lm/W	3000 K	80
3000 lumens	16,4W	18,5W	162,2 lm/W	4000 K	80
2878,3 lumens	16,4W	18,5W	155,6 lm/W	3000 K	80
3500 lumens	19,6W	22,0W	159,1 lm/W	4000 K	80
3322,5 lumens	19,6W	22,0W	151,0 lm/W	3000 K	80



## NORME NF EN 12464

### Places reserved for transport - Airports

N° Ref.	Zone type, task or activity	$E_m$ lx	$UGR_L$ —	$U_o$ —	$R_A$ —
5.52.1	Halls of arrival and departure, baggage delivery areas	200	22	0,40	80
5.52.2	Correspondence areas	150	22	0,40	80
5.52.3	Information counters, check-in counters	500	19	0,70	80
5.52.4	Customs counters and posts passport control	500	19	0,70	80
5.52.5	Waiting zones	200	22	0,40	80
5.52.6	Luggage delivery halls	200	25	0,40	80
5.52.7	Control and security zones	300	19	0,60	80
5.52.8	Air traffic control tower	500	16	0,60	80
5.52.9	Control and repair hangars	500	22	0,60	80
5.52.10	Test areas of engines	500	22	0,60	80
5.52.11	Hangars for measurements	500	22	0,60	80

### Places reserved for transport - Stations

N° Ref.	Zone type, task or activity	$E_m$ lx	$UGR_L$ —	$U_o$ —	$R_A$ —
5.53.1	Quays totally isolated from the tracks, low number of passengers	100	—	0,40	40
5.53.2	Quays totally isolated from tracks, large number of passengers	200	—	0,50	60
5.53.3	Lower passages for passengers (underground), low number of passengers	50	28	0,50	40
5.53.4	Lower passages for passengers (underground), significant number of passengers	100	28	0,50	40
5.53.5	Halls and counters	200	28	0,50	40
5.53.6	Offices and ticket offices for tickets and luggage	300	19	0,50	80
5.53.7	Waiting rooms	200	22	0,40	80
5.53.8	Entrance halls, train station halls	200	—	0,40	80
5.53.9	Control rooms and engine rooms	200	28	0,40	60
5.53.10	Access tunnels	50	—	0,40	20
5.53.11	Maintenance hangars and maintenance	300	22	0,50	60

$E_m$  : average illumination /  $UGR_L$  : glare /  $U_o$  : uniformity of lighting /  $R_A$  : color rendering







SE 3581 LED



PROFILES ■ LED

- Lighting system for linear LED module, maximum 3 984 lumens / meter
- Can be mounted continuous row
- Custom made corner
- CRI of 80
- MacAdam Ellipse: 3 SDCM
- Available in 3 000 K et 4 000 K
- 50 000 hours lamp life (L80B20)
- Luminous efficiency of system up to 156 lm/W
- Rectangular section, size 80x105 mm
- Opal diffuser made of polycarbonate (DO) or microprism (MIC)
- Housing made of extruded aluminium profile
- Endcap made of die cast aluminium
- Static heat sink
- **Weight:** approx. 5 kg / m
- **Number of module(s):** depends on the length of the luminaire
- **Driver(s):** Fixed, 1-10 V Driver (1-10V), Dimmable driver DALI (CDIMMDALI)
- **Option(s):** R-G-B-Y colour or trichotomy LED

Driver(s)



Efficiency energy class



Dimensions



Standards

Class I | IK07 | 850°

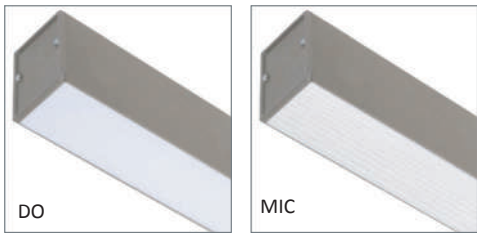
Beam(s)



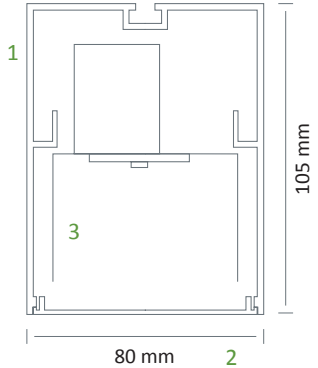
ITEM	LENGTH (MM)	POWER	CONSUMPTION	LUMINOUS FLUX	SYSTEM EFFICIENCY	COLOUR TEMPERATURE	CRI
SE 3581 LED 1200-4400-830	1129	25W	28,5W	4245 lumens	148,5 lm/W	3000	80
SE 3581 LED 1200-4400-840	1129	25W	28,5W	4460 lumens	156 lm/W	4000	80
SE 3581 LED 1800-6600-830	1690	37,1W	42,6W	6239 lumens	146,5 lm/W	3000	80
SE 3581 LED 1800-6600-840	1690	37,1W	42,6W	6599 lumens	154,5 lm/W	4000	80
SE 3581 LED 2400-7800-830	1972	43,3W	52,2W	7454 lumens	143 lm/W	3000	80
SE 3581 LED 2400-7800-840	1972	43,3W	52,2W	7857 lumens	150,5 lm/W	4000	80
SE 3581 LED 2400-8800-830	2400	50,4W	58W	8490 lumens	146,5 lm/W	3000	80
SE 3581 LED 2400-8800-840	2400	50,4W	58W	8950 lumens	154,5 lm/W	4000	80
SE 3581 LED 3000-11000-830	2800	62,1W	71,1W	10 484 lumens	147,5 lm/W	3000	80
SE 3581 LED 3000-11000-840	2800	62,1W	71,1W	11 059 lumens	155,5 lm/W	4000	80

SE 3581 LED

OPTICALS

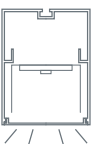


CROSS SECTION

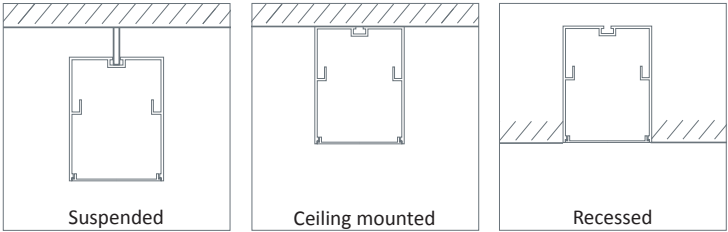


- 1 Body made of extruded aluminium profile
- 2 Diffuser
- 3 Lighting tray and aluminium reflector

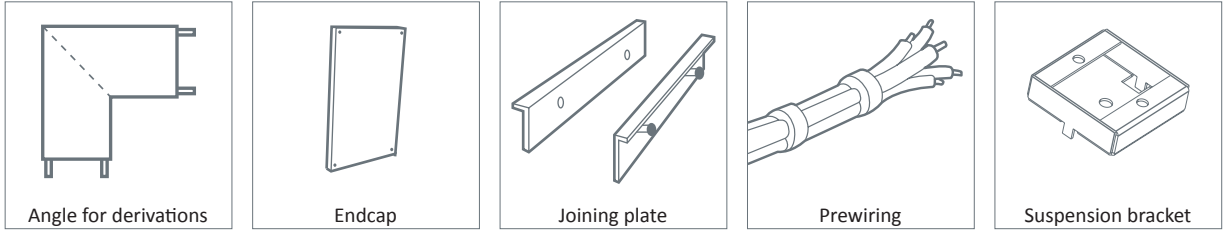
LIGHTING CONFIGURATION



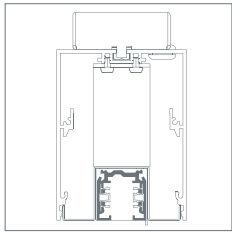
FIXING



ACCESSORIES



3-CIRCUIT TRACK INTEGRATED





ET 2196 LED



Colour(s)

OP

EXTRA PROTECTED LUMINAIRES ■ LED

- Waterproof IP 68 ceiling mounted luminaire for LINEAR LED MODULE, maximum 5 400 lumens
- CRI of 80
- MacAdam Ellipse: 3 SDCM
- Available in 4 000 K
- 50 000 hours lamp life (L80B10)
- Luminous efficiency of system up to 100 lm/W
- Interior and exterior lighting
- Housing made of opal co-extruded polycarbonate In the upper part to hide the technical elements, and clear in the lower part
- Endcap made of stainless steel
- Static heat sink
- **Weight:** approx. 3,6 kg
- **Driver(s)** : Fixed, Dimmable driver DALI (CDIMMDALI)
- **Option(s)** : Stainless steel suspension brackets

Driver(s)

FIXED

C DIMM DALI

Standards

Class I | IP 68 | 850° | IK 10

Efficiency energy class

A<sup>+</sup>

Beam(s)

Dimensions

1550 mm

100 mm

118 mm

ITEM	CONSUMPTION	LUMINOUS FLUX	SYSTEM EFFICIENCY	COLOUR TEMPERATURE	CRI	LENGTH
ET 2196 LED 5400-840	54W	5400 lumens	100 lm/W	4000 K	80	1550 mm

Stainless steel suspension brackets



ET 2658 LED



Colour(s)

EXTRA PROTECTED LUMINAIRES ■ LED

- Waterproof IP 65 ceiling mounted luminaire for LINEAR LED module, maximum 7 760 lumens
- CRI of 80
- Ellipse de MacAdam : 3 SDCM
- Available in 4 000 K
- 50 000 hours lamp life (L80B10)
- Luminous efficiency of system up to 140,5 lm/W
- Housing made of injected polycarbonate
- Opal optical
- Clip made of stainless steel
- Static heat sink
- Fixed terminal with an installation and electrical connection (2 compression-gland)
- **Weight:** approx. 2,5 kg
- **Driver(s)**: Fixed, 1-10 V Driver (1-10V), Dimmable driver DALI (CDIMMDALI)
- **Option(s)**: Electrical connection (through wiring, Lighting sensor)

Driver(s)

FIXED

1-10V

C DIMM DALI

Standards

Class I | IP 65 | 850° | IK 08

Efficiency energy class

A<sup>++</sup>

Light distribution

Dimensions

1275 mm / 1575 mm

98,5 mm

84 mm / 134 mm

ITEM	CONSUMPTION	LUMINOUS FLUX	SYSTEM EFFICIENCY	COLOUR TEMPERATURE	CRI	LENGTH
ET 2658 LED-4500-840	32W	4490 lumens	140,5 lm/W	4000 K	80	84x1275 mm
ET 2658 LED-6200-840	45W	6210 lumens	138 lm/W	4000 K	80	134x1275 mm
ET 2658 LED-7700-840	56W	7760 lumens	138,5 lm/W	4000 K	80	134x1575 mm

Accessories



Stainless steel clip







AR 2268 LED



Colour(s)

■

HIGH BAY LED

- High bay for LED SPOT module, maximum 27 000 lumens
- CRI of 80
- MacAdam Ellipse: 4 SDCM
- Available in 4 000 K
- 50 000 hours lamp life (L80B50)
- Luminous efficiency of system up to 135 lm/W
- Static heat sink
- **Weight:** approx. 80W (3,7 kg), 100W (3,7 kg), 120W (4,6 kg), 150W (5,3 kg), 200W (7,2 kg)
- **Driver(s):** Fixed, Dimmable driver DALI (CDIMMDALI)
- **Minimum allowable temperature:** -20°C
- **Option(s):** Box for through wiring

Deported Driver(s)



Standards

Class I | IP 65 | 650°

Efficiency  
energy class

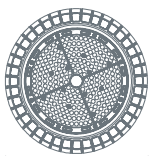
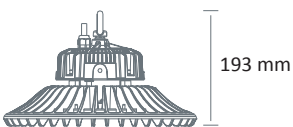


Beam(s)

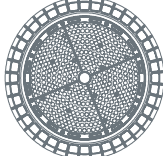
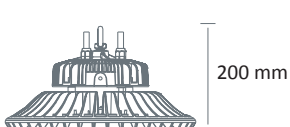


Dimensions

80W / 100W / 120W / 150W



200W

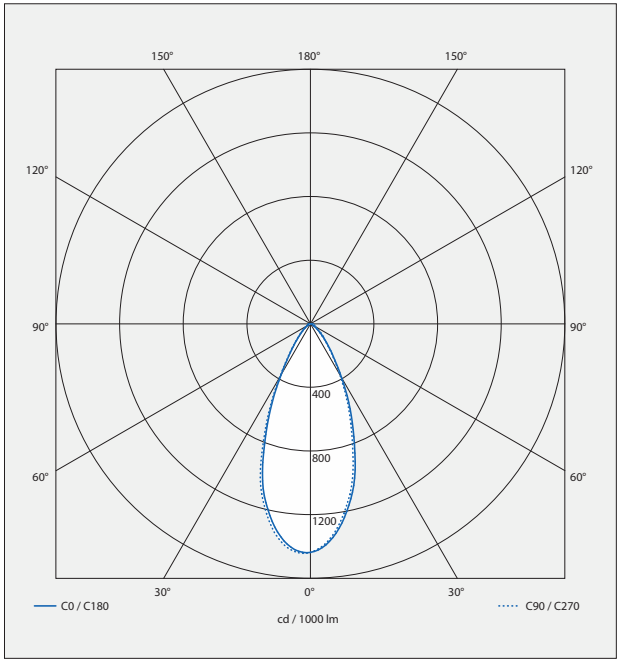


ITEM	CONSUMPTION	LUMINOUS FLUX	SYSTEM EFFICIENCY	COLOUR TEMPERATURE	CRI
AR 2268 LED-11000-840	80W	10800 lumens	135 lm/W	4000 K	80
AR 2268 LED-13500-840	100W	13500 lumens	135 lm/W	4000 K	80
AR 2268 LED-16000-840	120W	16200 lumens	135 lm/W	4000 K	80
AR 2268 LED-20000-840	150W	20250 lumens	135 lm/W	4000 K	80
AR 2268 LED-27000-840	200W	27000 lumens	135 lm/W	4000 K	80

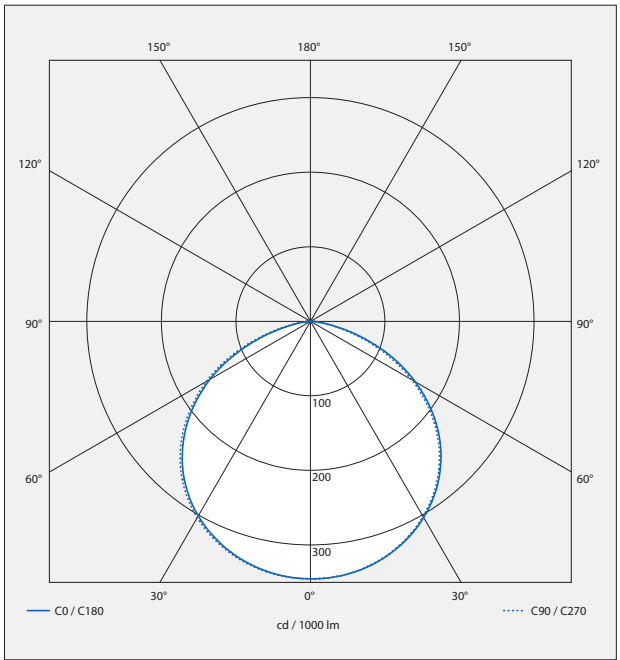
AR 2268 LED

LIGHT DISTRIBUTION

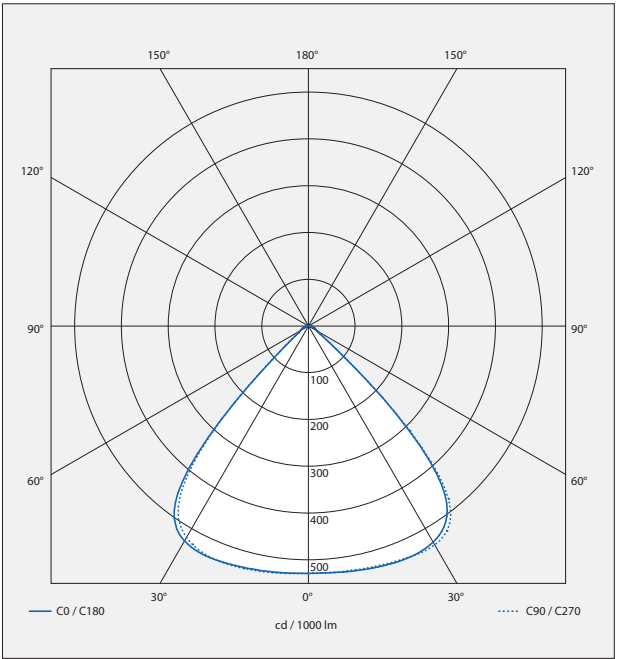
Symmetrical:  
LOR: 100 %  
Beam: 50°



Symmetrical:  
LOR: 100 %  
Beam: 120°



Symmetrical:  
LOR: 100 %  
Beam: 90°



■ AR 2269 LED



Colour(s)  
■

HIGH BAY ■ LED

- High bay for LED SPOT module, maximum 26 000 lumens
- CRI of 80
- MacAdam Ellipse: 4 SDCM
- Available in 4 000 K
- 50 000 hours lamp life (L80B50)
- Luminous efficiency of system up to 130 lm/W
- Static heat sink
- **Weight:** approx. 50W (1,8 kg), 100W (3,5 kg), 150W (4,6 kg), 200W (5,9 kg)
- **Minimum allowable temperature:** -20°C
- **Driver(s) :** Fixed, Dimmable driver DALI (CDIMMDALI)

Deported Driver(s)



Standards

Class I | IP 65 | 650°

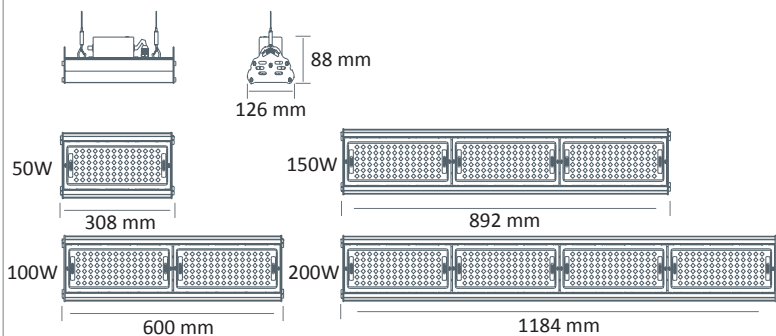
Efficiency  
energy class



Beam(s)



Dimensions

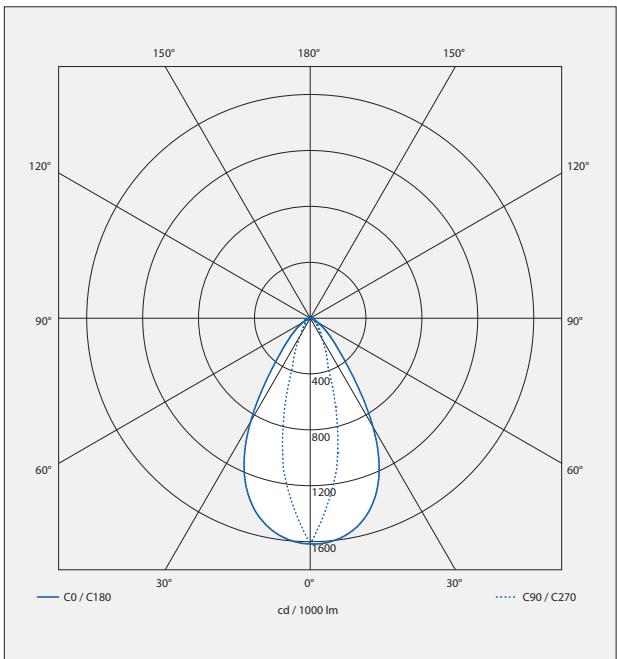


ITEM	CONSUMPTION	LUMINOUS FLUX	SYSTEM EFFICIENCY	COLOUR TEMPERATURE	CRI
AR 2269 LED-6000-840	50W	6200 lumens	124 lm/W	4000 K	80
AR 2269 LED-13000-840	100W	13000 lumens	130 lm/W	4000 K	80
AR 2269 LED-19500-840	150W	19500 lumens	130 lm/W	4000 K	80
AR 2269 LED-26000-840	200W	26000 lumens	130 lm/W	4000 K	80

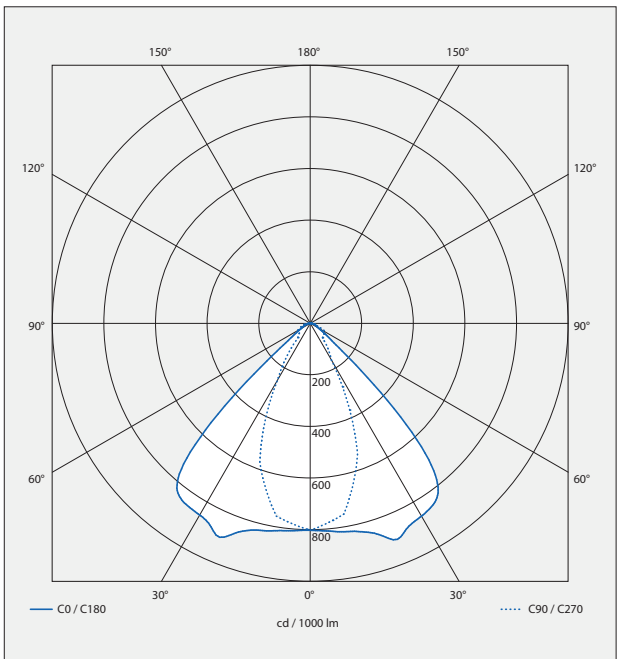
■ AR 2269 LED

■ LIGHT DISTRIBUTION

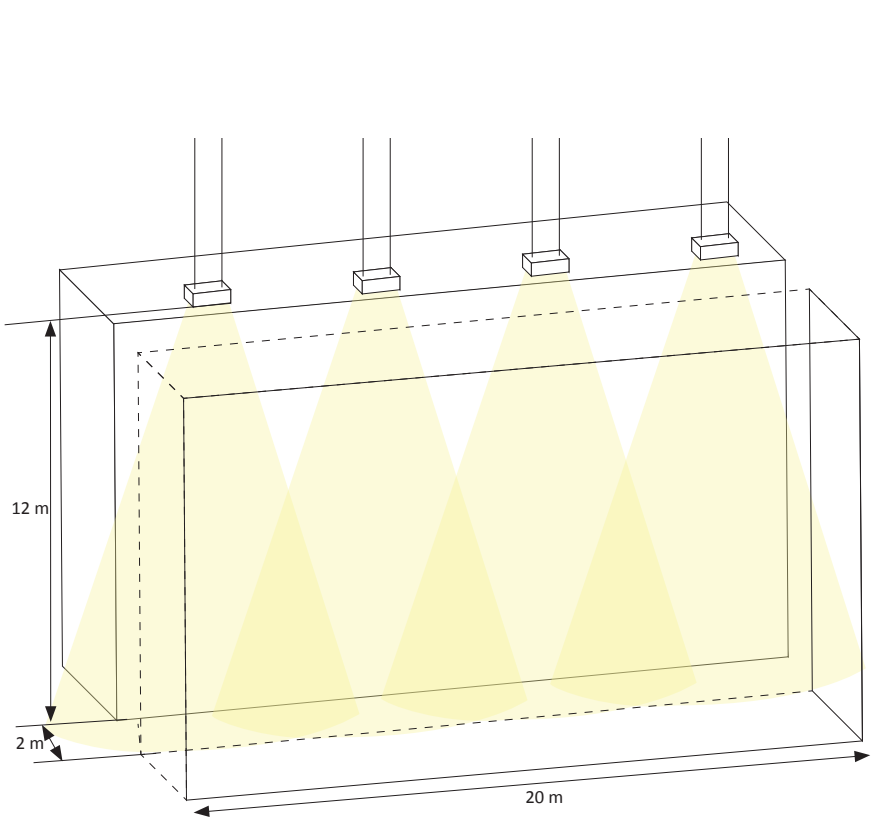
Symmetrical:  
LOR: 100 %  
Beam: 30° x 70°



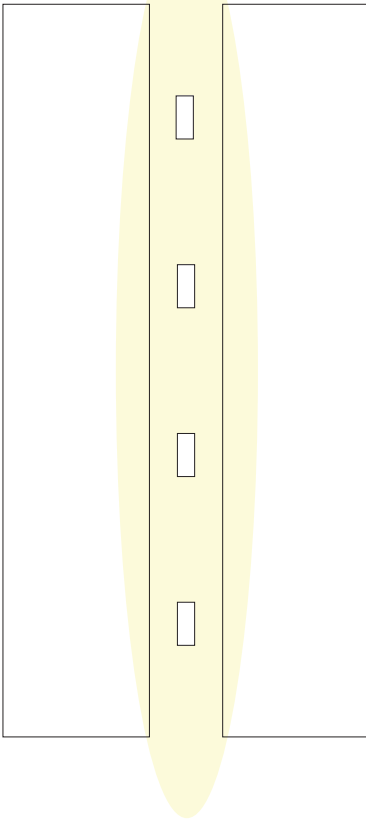
Symmetrical:  
LOR: 100 %  
Beam: 60° x 100°



■ DISTRIBUTION OF LIGHT - PHOTOMETRY 60x100° for 100W



110 lux on the floor









## TRATO-TLV, the LED lighting specialist

There is no doubt that LED technology has become an ideal solution for lighting, and has many advantages.

TRATO-TLV targets the development of its LED luminaires on dependable quality, providing its customers with efficient and high quality lighting.

An in-house R&D department, made up of 12 engineers works on the

interaction of carefully selected components. TRATO-TLV selects suppliers who are leaders in their field.

Special attention is paid to thermal management and safety, the lenses, the choice of drivers and LED modules, the efficiency of the modules and their light quality (CRI) in order to put convincing products onto the market.

### The many advantages of LED technology

- Production of light free from ultraviolet and infrared rays, hence no thermal radiation in the direction of the objects being illuminated.
- Maximisation of the direction of the lighting.
- Improved optical performance of the luminaires (high efficiency).
- Excellent sustainability of the luminous flux over time (80% at 50,000 hours).
- Long service life that can be as long as 50,000 hours, providing a significant reduction in maintenance costs.
- Reduction in energy consumption.
- Ease of control for creating dynamic lighting.
- Instantaneous illumination.
- Comfortable lighting.
- Ease of recycling (absence of mercury).
- The recent improvement in CRI (Colour Rendering Index).
- Also enables new forms of luminaires to be created

### Temperature behaviour and service life

- To obtain a long service life and efficient operation from LED, good thermal management is essential. When the chip is subject to relatively high temperatures they not only reduce its service life but also the efficiency of the LED chip; this happens proportionally in relation to the temperature increase.
- The luminous flux of the LED is considerably reduced when it overheats, unlike conventional bulbs. The same applies to the service life.
- The average service life of the LED chip is often quoted as 100,000 hours, but this does not take into account the reduction in luminous flux over time. Good thermal management is absolutely necessary to be able to achieve an actual service life to 50,000 hours for a LED luminaire.

### Luminous flux and efficiency

- The luminous flux is the quantity of light emanating from the LED chip or LED module. In the lighting trade the actual luminous flux of the luminaire is more important as it demonstrates the efficiency of the whole of an appliance. Efficiency is measured in lumens per watt (lm/W).
- The luminous flow is the amount of light from a source (LED chip, LED module or luminaire)





**Beyond manufacturing lighting fixtures, TRATO-TLV proposes a multitude of services in order to supply high performance luminaires suitable to their environment.**

### ■ Lighting calculation Software

- TRATO uses the software Dialux and Relux to its lighting researches.
- This software allows the project lighting level simulation.

Lighting calculation :

- Building checking (dimensions, reflection ratio...)
- Advice about the required lighting
- Advice about the choice of the luminaires to be installed
- Building reproduction in the software RELUX and results calculation

### ■ Lighting Design

According to the lighting survey, TRATO will propose you to do the luminaires set up on your plans with AutoCAD (formats: DXF or DWG).

### ■ Measures on site

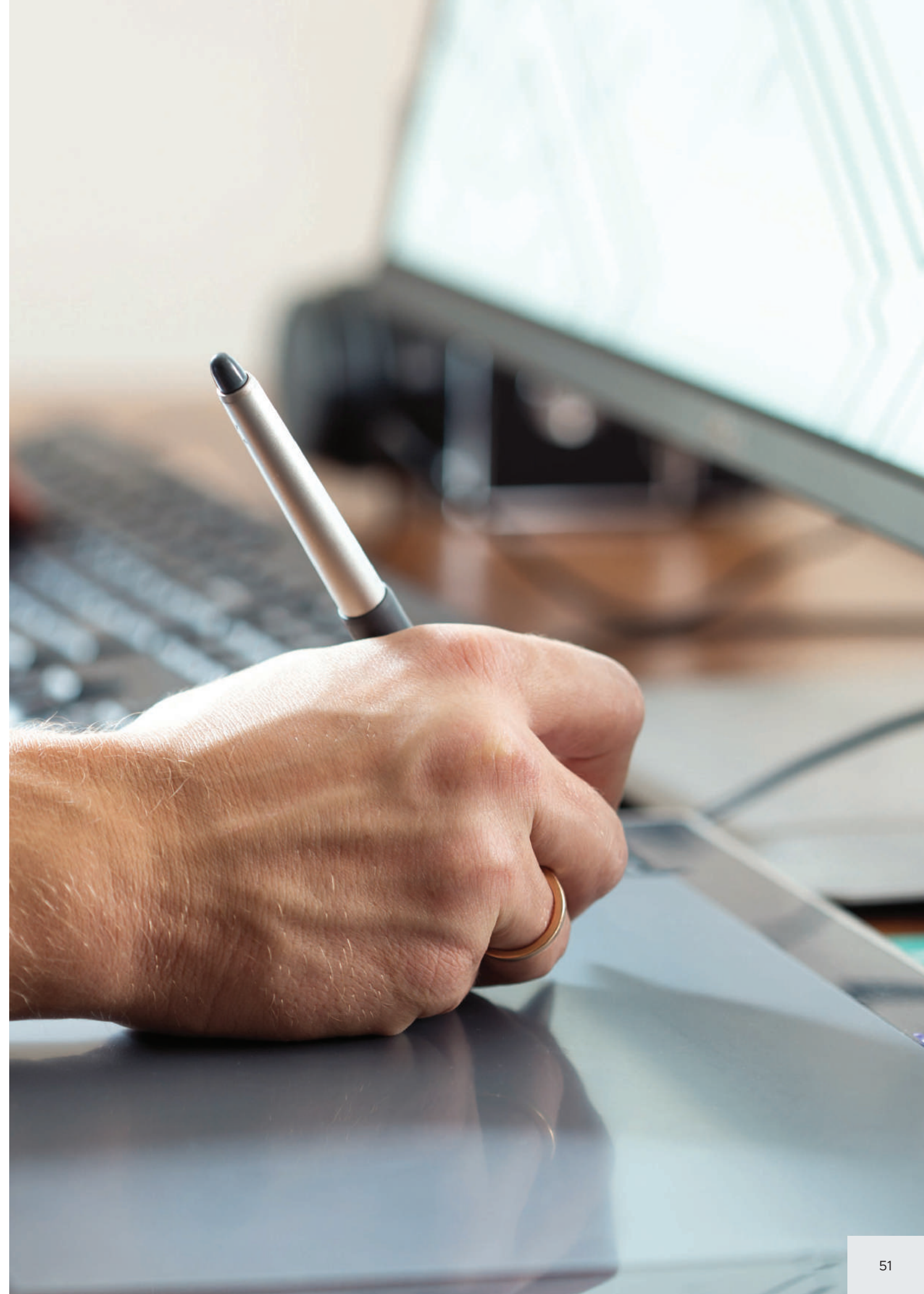
TRATO offers engineering services on the building site, thanks to their highly qualified personnel.

Our means:

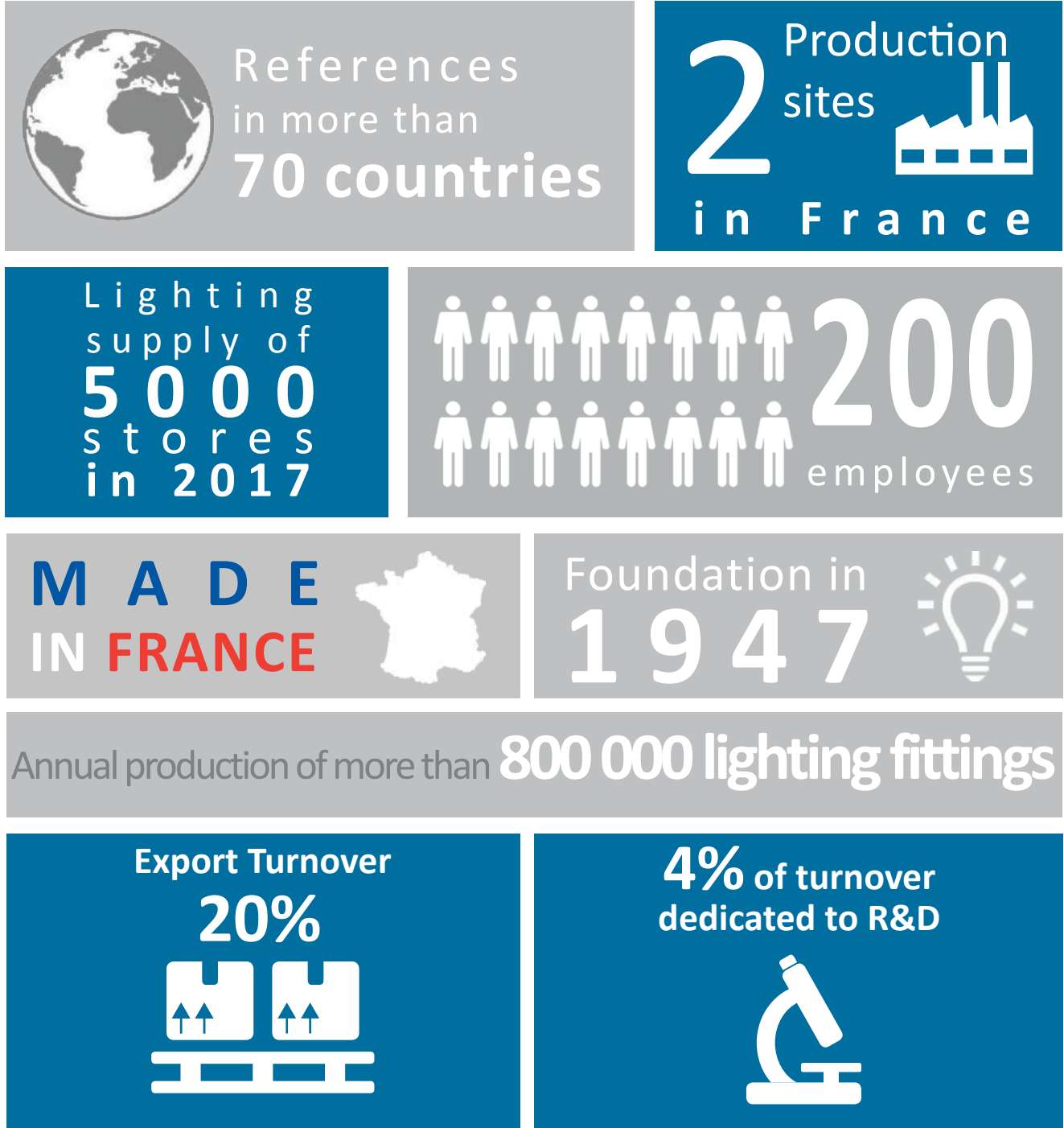
- Rotary laser level : Luminaire lengths measuring to a height of a given installation
- Distometer building length and height measuring at approx. 5mm
- Digital protractor: angle degrees measuring at approx. 0.25°.

### ■ Light distribution

The light distributions are available as EULUMDAT (ldt)







**LED LUMINAIRES GUARANTEE CONDITIONS**

A professional lighting specialist, **TRATO offers a guarantee of up to 5 years on its own-brand LED luminaires from 1st January 2012.**

With the LED luminaires guarantee, TRATO emphasises its role as a pioneer in the field of innovation, design and quality.

**1. PURPOSE**

This guarantee applies only to TRATO brand LED luminaires sold by TRATO Industries.

**2. CONDITIONS**

In accordance with the provisions set out in the table below, TRATO guarantees its LED luminaires for a period of up to 5 years from the date of the invoice.

The guarantee applies only on the condition that the LED luminaires are used in accordance with the given product and usage specifications and that they are professionally installed and brought into service (in compliance with the assembly instructions attached to the luminaire).

Therefore, subject to compliance with the provisions set out below, any operating fault resulting from a design, material or manufacturing defect, gives the buyer the right to a refund, exchange or free repair of the defective luminaires within a reasonable time frame and at TRATO's discretion.

However, the buyer must cover the cost and risk of transporting, dismantling and re-assembling the LED luminaires concerned. The buyer must also cover the cost of repairs on site (employees, lift, equipment).

If TRATO has to replace a defective LED luminaire but is not in a position to do so because the particular fitting is no longer manufactured or available, TRATO reserves the right to replace the fitting with a similar model that may vary slightly in terms of design and specifications.

LED luminaires that are replaced under this guarantee are themselves guaranteed for the remaining initial guarantee period.

The customer is responsible for programming a lighting management system, which is not covered by this guarantee.

**3. SPECIAL CONDITIONS**

The guarantee period is based on a maximum operation of 4000 hours per year.

It may be possible to agree an "extended guarantee" on request, following an evaluation of the specific conditions of application.

**4. PROCEDURE**

- To take advantage of the guarantee, the buyer must:
- Inform TRATO in writing of any faults ascribed to the luminaire as soon as these faults appear and, at the latest, within 30 days of discovering the fault.
  - Inform TRATO in writing of the installation date, the invoice date and the invoice number
  - Specify the nature of the fault and the number of defective products
  - Specify the conditions in which the product is used, the operating hours and the lighting cycles
  - Not try to repair the fitting himself or have it repaired unless TRATO has given its written agreement
  - Return the defective fitting for examination. If a non-compliance is discovered during the guarantee period, TRATO will exchange, repair or refund the cost of the fitting, having first assessed the validity of the request and if the fault or error may be ascribed to the fitting

**5. LIMITATION OF LIABILITY**

In no circumstances may TRATO be held liable for any indirect prejudice, foreseeable or not, such as loss of profit, production or earnings or commercial losses.

Contractual liability in respect of any other form of prejudice arising as a result of an order may in no circumstances exceed fifty (50) % of the total ex-VAT payments received by TRATO for the luminaires in question.

The guarantee does not cover damage caused by modifications to appliances.

**6. RESTRICTIONS**

The guarantee does not cover defects caused by a failure to follow the storage or installation instructions or by a cause unrelated to the luminaire (poor electrical installation, overload, lightning)

The luminaires sold by TRATO must be installed in a dry environment at an ambient temperature not exceeding 25°C. Any other form of use will not be covered by the guarantee.

The luminaires must be installed and brought into service by professionals, whose work must comply with the best professional practices and standards in force. TRATO may ask to see all documents showing evidence that the installation has been properly carried out (electricity plan, list of equipment used, periodic electrical installation verification report, etc.).

TRATO may not be held liable for the conditions relating to the electricity supply, including voltage peaks / underloads and fluctuating current linked to a management system that is not within the limits specified for the luminaire and those defined by the applicable standards (e.g. EN 50160 standards).

The guarantee conditions concern only the levels of loss exceeding the nominal failure rate mentioned in the table below.

No claims may be made under the guarantee for a drop in flux not exceeding the values set out in the table.

	LED luminaire powered by a converter.	LED luminaire powered by a 230V supply.	Luminaires based on a substitute LED bulb with a standard base.
Guarantee period	5 years*	2 years*	2 years*
Nominal failure rate	0.2% per 1000 hours of operation	0.4% per 1000 hours of operation	0.4% per 1000 hours of operation
Nominal drop in flux	0.6% per 1000 hours of operation	1.2% per 1000 hours of operation	Depends on the bulb manufacturer's guarantee

\*See paragraph 3

The informations given in TRATO data sheets are indicative and can be modified when necessary. We reserve the right to alter specifications and designs without prior notice. In accordance with the selected fitting, we can supply all types, powers and temperatures of lamp.







GROUPE  
**TRATOTLV**

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