TUNNELS I INFRASTRUCTURES

T-MAX

GEN3

2 Modules (L)

1 Module (S / M)

KEY ADVANTAGES

- Modular design and flexible assembly in all kinds of tunnels and underpasses.
- Independent driver compartment.
- Floodlight to last decades in tunnel environments.
- Up to 15 different installation methods depending on the version.
- Sturdiness: IP66 + IP69K + IK09.
- Extruded aluminium with ventilation channels in casing.
- Energy Efficient: 159 lm/W
- Up to 10 optical distributions.
- Smart Ready: Designed to house both indoor and outdoor communications nodes.
- Future Proof: Zhaga-compliant
- Life span L90B10 100,000h (Ta) 25ºC
- Night Friendly: ULR Arrêté du 27 décembre 2018

IP66
IP69K

IK09

CI

CII

RAL 9006
Smooth Gloss

Marine finish
available upon

DESCRIPTION

The T-MAX Series is a luminaire designed and manufactured by Carandini that offers full flexibility to adapt to all kinds of tunnels or underpasses. T-MAX has been developed using the latest LED technology. All components have been studied to meet the highest quality standards that guarantee a long luminaire lifetime, making them the most reliable and efficient on the market.

The LED solution uses latest generation, high-performance and efficient LEDs developed as a universal modular solution that can be integrated into our luminaires.

3,000 K CRI>70
4,000 K CRI>70

3,800 lm - 52,800 lm.

S: 0.104 m³
M: 0.171 m³
L: 0.352 m³

159 lm/W
Luminaire

-40°C - 50°C

S: 12 Kg
M: 16 Kg
L: 30 Kg

0.00% - 0.06%
FHS/ULR

220 - 240 V / 100 V - 277 V
50-60 Hz

STANDARDS / CERTIFICATES

- CE
- RoHS
- UNE-EN 60598-1:2009
- UNE-EN 60598-2-5:2003
- UNE-EN 62471:2009
- UNE-EN 61000-3-2:2006
- UNE-EN 61000-3-3:2013
- UNE-EN 55015:2013
- UNE-EN 61547:2009
- UNE-EN 62031:2009
- UNE-EN 61347-2-13:2009
- UNE-EN 62384:2007
- UNE-EN 13032-4
- UNE EN ISO 9227

*Test reports from independent ENAC accredited laboratories or equivalent
Measurements taken at an ISO 17025 approved laboratory.
Meets the minimum CEI - IDAE requirements

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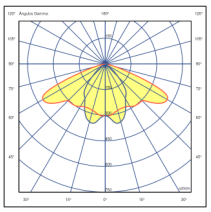
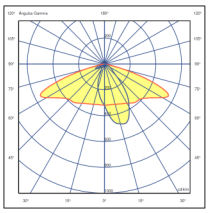
TUNNELS I INFRASTRUCTURES
PHOTOMETRIC CONFIGURA-

10 photometric configurations are available for use in the various environments where this type of luminaire might be installed, meaning it can be adapted to suit all situations:



TMX.L1L1



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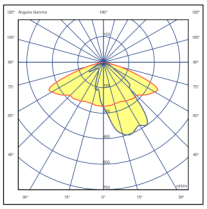
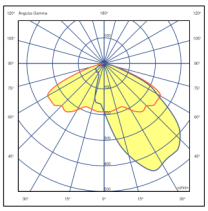
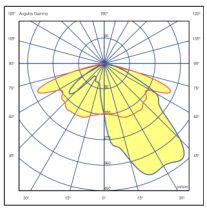


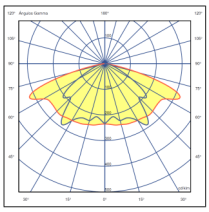
TMX.L1L6



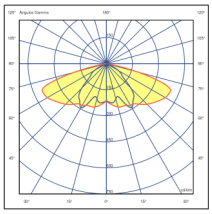
TMX.L1L7



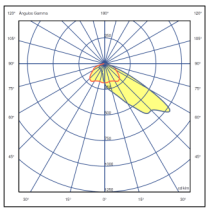
TMX.L5L6



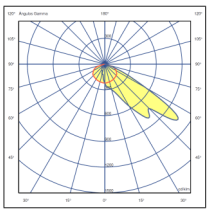
TMX.L6L6



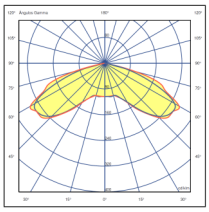
TMX.L7L7



TMX.L8L7



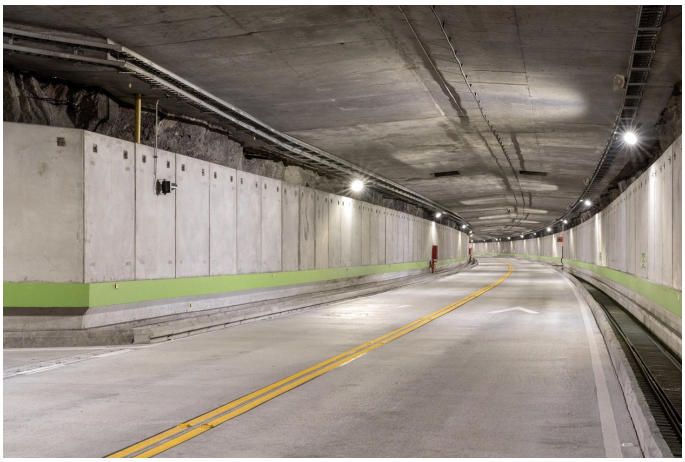
TMX.L8X2



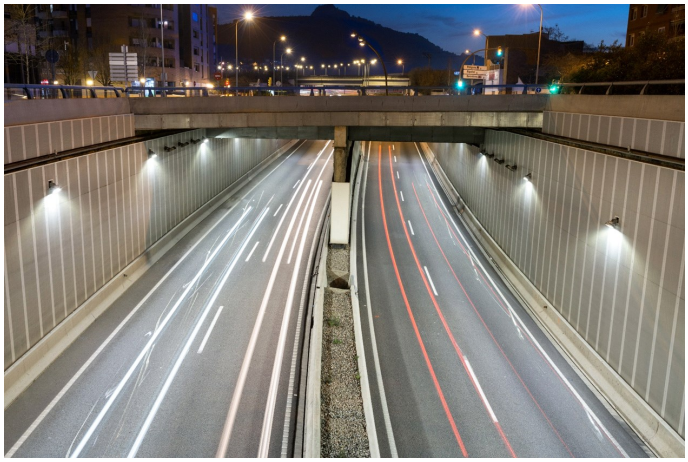
TMX.L1X2

APPLICATIONS

Tunnels, Underpasses, Roundabouts, Car parks, Sports facilities, Sports centres, Industrial warehouses, Loading docks



Oriente Tunnel
Medellín - Colombia



C-17 Tunnel
Montcada y Reixac, Barcelona - Spain

LOGISTICAL INFORMATION

T-MAX S/M

Box size: 711 x 516 x 118 mm

Box weight: S:11.8-11.9 kg and M:15.1-15.3kg.

Number of boxes: 24 units

American base: 1200 x 800 x 1950 mm

Stack height: 12 levels

Area occupied: 76.4%

Volume used: 72.2%

T-MAX L

Box size: 665 x 525 x 243 mm

Box weight: L: 28.6-29.8 kg.

Number of boxes: 12 units

American base: 1200 x 800 x 1950 mm

Stack height: 6 levels

Area occupied: 72.7%

Volume used: 70.7%

Total gross weight (approx.): 432 kg.

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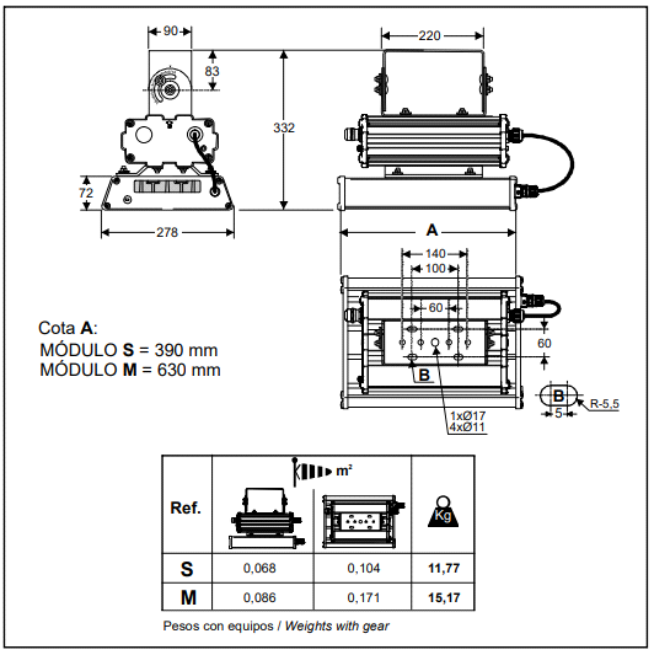
TUNNELS I INFRASTRUCTURES

DIMENSIONS (Depending on type of ins-

SIZE S / M

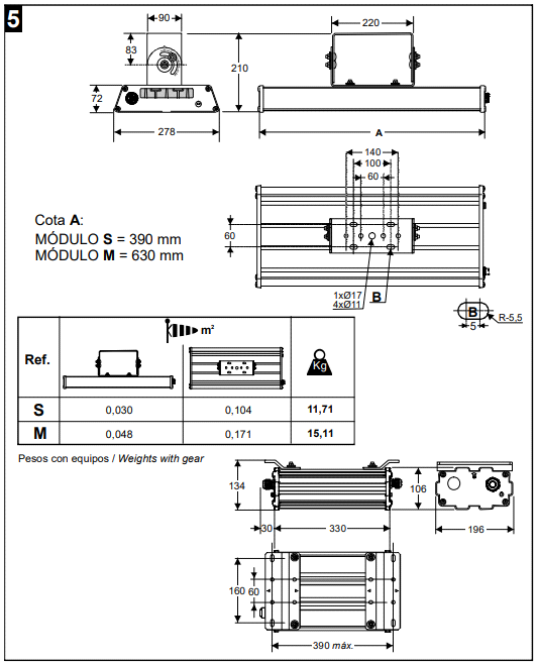
1L4 - SHORT ADJUSTABLE FORK WITH BUILT-IN GBOX-310



Ref.	m²		Kg
S	0,068	0,104	11,77
M	0,086	0,171	15,17

Pesos con equipos / *Weights with gear*

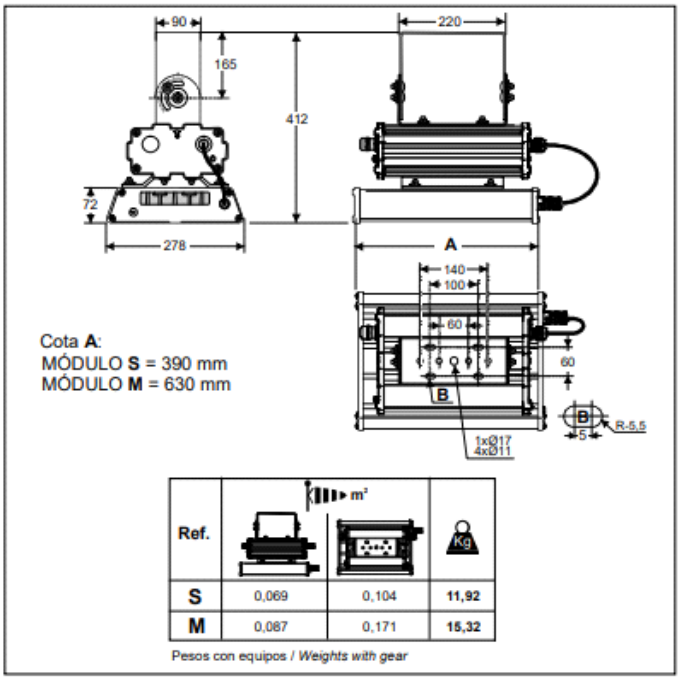
1L9 - SHORT ADJUSTABLE FORK WITH SEPARATE GBOX-310



Ref.	m²		Kg
S	0,030	0,104	11,71
M	0,048	0,171	15,11

Pesos con equipos / *Weights with gear*

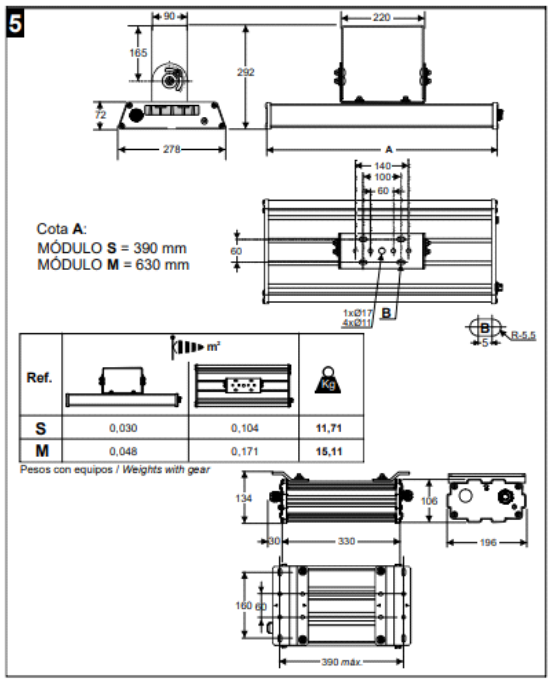
1S4 (1N9) - LONG ADJUSTABLE FORK WITH BUILT-IN GBOX-310



Ref.	m²		Kg
S	0,069	0,104	11,92
M	0,087	0,171	15,32

Pesos con equipos / *Weights with gear*

1S9 (1T9) - LONG ADJUSTABLE FORK WITH SEPARATE GBOX-310



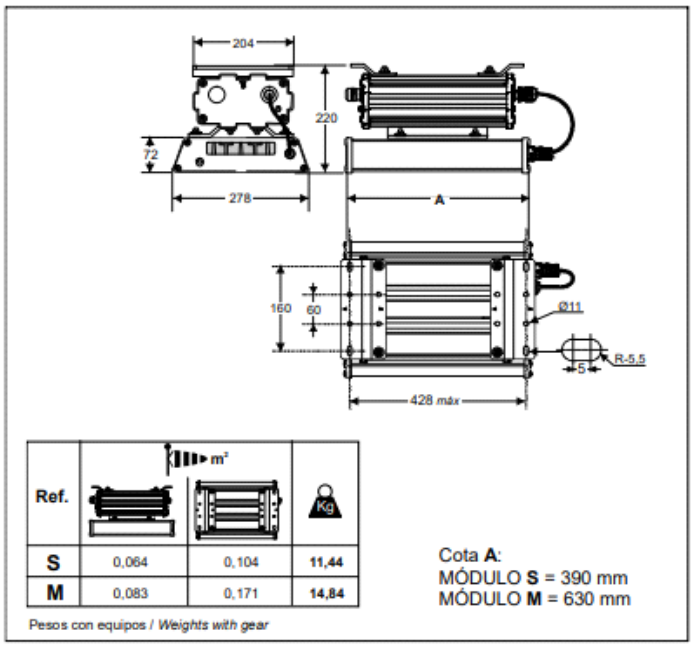
Ref.	m²		Kg
S	0,030	0,104	11,71
M	0,048	0,171	15,11

Pesos con equipos / *Weights with gear*

DIMENSIONS (Depending on type of installation)

SIZE L

1Z4 - CENTRAL FIXED FORK WITH BUILT-IN GBOX-310

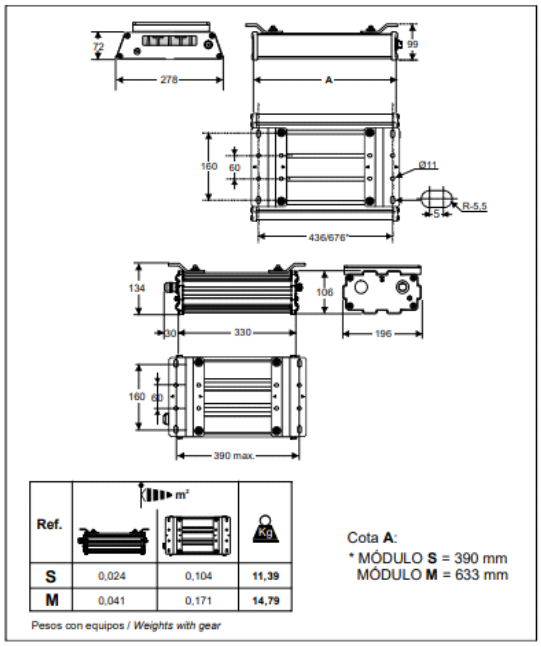


Ref.	m²		Kg
S	0,064	0,104	11,44
M	0,083	0,171	14,84

Pesos con equipos / *Weights with gear*

Cota **A**:
MÓDULO **S** = 390 mm
MÓDULO **M** = 630 mm

1Z9 - CENTRAL FIXED FORK WITH SEPARATE GBOX-310

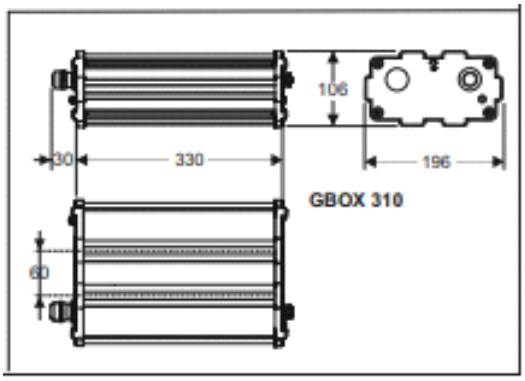


Ref.	m²		Kg
S	0,024	0,104	11,39
M	0,041	0,171	14,79

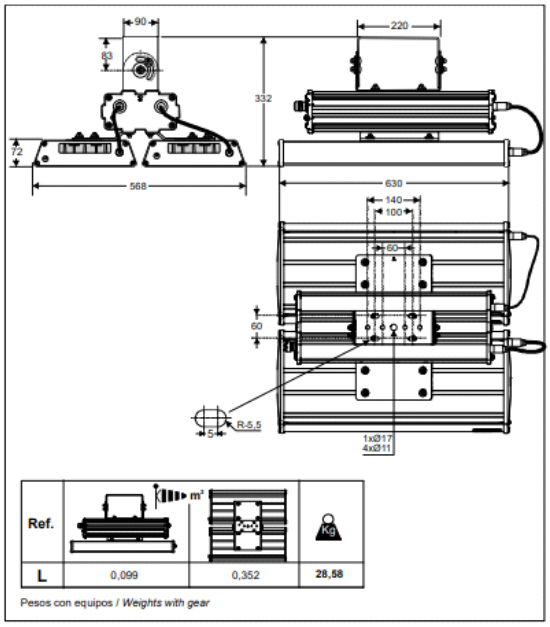
Pesos con equipos / *Weights with gear*

Cota **A**:
* MÓDULO **S** = 390 mm
MÓDULO **M** = 633 mm

GBOX-310 FOR SIZE S / M



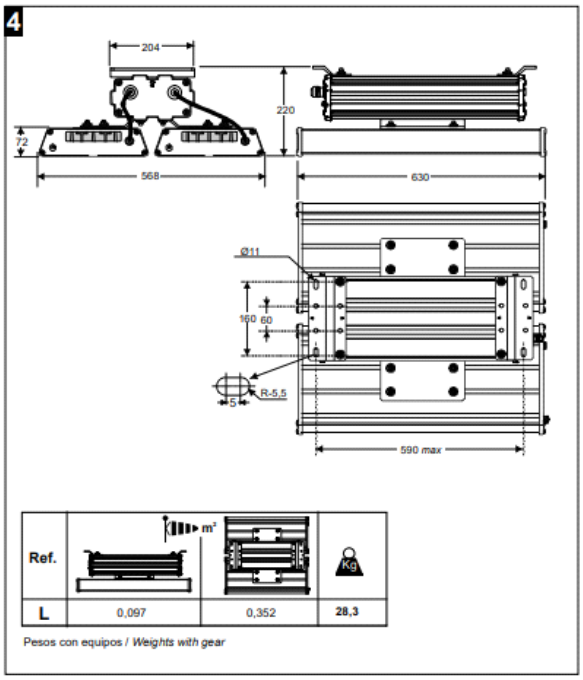
2L4 - SHORT ADJUSTABLE FORK WITH BUILT-IN GBOX-510



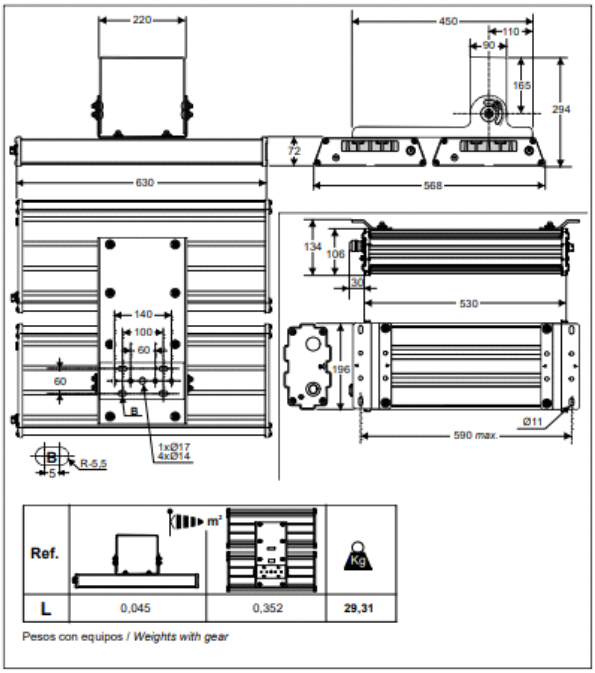
Ref.	m²		Kg
L	0,099	0,352	28,58

Pesos con equipos / *Weights with gear*

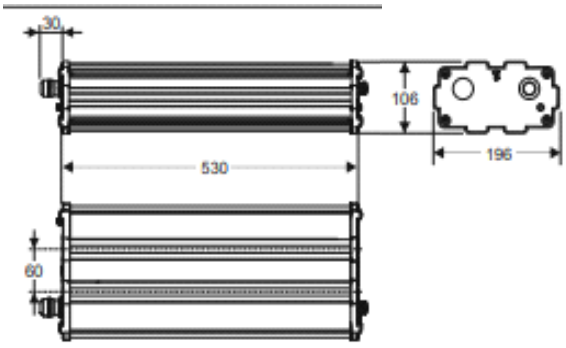
2Z4 - TOP FIXED FORK WITH BUILT-IN GBOX-510



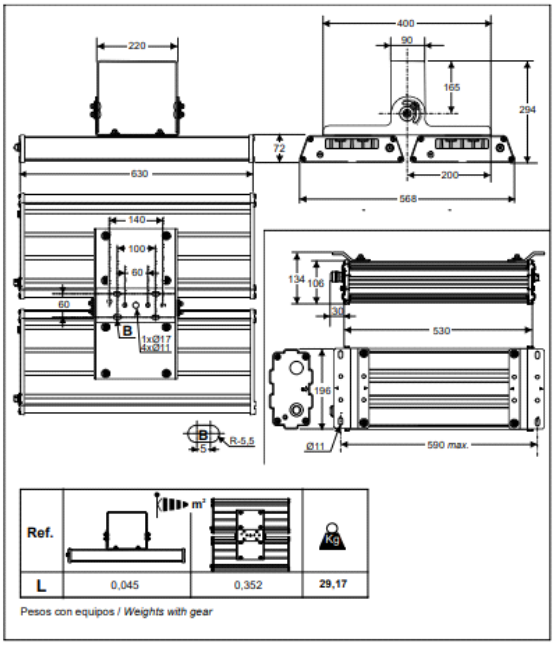
2S9 - LONG SIDE ADJUSTABLE FORK WITH SEPARATE GBOX-510



GBOX-510 FOR SIZE L



2L9 - LONG TOP ADJUSTABLE FORK WITH SEPARATE GBOX-510



TUNNELS I INFRASTRUCTURES

T-MAX GEN3 CHARACTERISTICS

GENERAL INFORMATION	
Sustainability	Recyclability: 97.37%. Maximum carbon footprint per use: 0.0189 kg kW/h de CO2
CE mark	Yes
RoHS-compliant	Yes
Testing standards	LM 79-80 (all measurements at ISO17025 certified laboratory)

GENERAL CHARACTERISTICS	
Side covers	Pressure die-cast aluminium 44100 AISI12 with low copper content <0.1%.
Body and box	Extruded aluminium 6060 T6, anodised.
Light enclosure	4mm toughened glass.
Finish	Anodised aluminium body. Side covers painted in Smooth Gloss RAL-9006 (Metallic Silver). Polyester powder coating.
Type of finishes	Standard polyester powder coating (C2-C3 according to ISO 9223-2012 standard). Optional: Optional anodised polyester powder coating (C5 -CX according to ISO 9223-2012 standard).
Exterior nuts and bolts	A4 stainless steel (AISI 316)
General ingress protection	According to EN 60598-1 and EN 60529:Level of luminaire ingress protection IP66. Level of GBOX ingress protection IP66. Level of protection against high-pressure water jet IP69K (Luminaire and GBOX). Connector and cable gland IP68/IP69K.
Level of protection against impacts	IK09 (EN 62262).
Operating temperature	Ta -40°C to +50°C According to luminaire configuration.
Life	L90B10 100,000 h at Ta 25°C. Light maintenance values at 25°C. Calculated by TM-21 based on LM-80 data.

ELECTRICAL CHARACTERISTICS	
Electrical class	Class I (For AC220-240V and AC120-277V driver) Class II (For AC220-240V driver)
Input voltage	220 V - 240 V / 50 Hz - 60 Hz Optional 100 V- 277 V
Power factor (at full load)	> 0.9
Harmonic	< 10%
Overvoltage protection	Overvoltage protection (1.2 / 50) 10 kV. Maximum current (8/20) 10 kA. Maximum service voltage (L-N) 320 V. Maximum service voltage (L/N-GND) 400 V. Optional overvoltage protection: 20 kA, 20 kV

LIGHTING CHARACTERISTICS	
Real light package	3,800 lm - 57,000 lm. (26 W - 432 W)
LED colour temperature	4,000 K (Neutral White, nw). 3,000 K (Warm White, ww). Other colour temperatures, upon request.
LEDs	Includes 6 to 72 high-performance and efficiency LEDs. The LEDs have been welded to the PCB in a zero oxygen atmosphere to considerably increase the sturdiness.
ULR / ULR	Between 0.00% and 0.06%
Optics	Acrylic PMMA lenses especially designed for LEDs.
Photometric configurations	L1L1=> Throw 60º and narrow symmetric spread 15º. L1L5=> Throw 60º and narrow spread 15º. L1L6=> Throw 60º and narrow spread 15/35º. L1L7=> Throw 60º and wide spread 45º/15º. L1X2=> Throw 60º and wide spread 60º. L5L6=> Throw 70º and narrow spread 20º. L6L6=> Throw 70º and wide symmetric spread 35/50º. L7L7=> Throw 70º and narrow symmetric spread 30º. L8L7=> Throw 45º and narrow symmetric spread 55º. L8X2=> Throw 65º and narrow symmetric spread 40/55º.
LED thermal management	Temperature dissipation by the 3 principles of heat transfer (conduction, convection and radiation), through design modularity, body ventilation channels and leveraging the Venturi effect of the tunnel.

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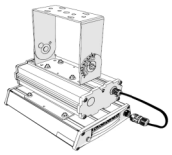
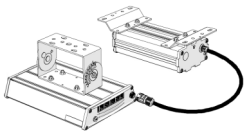
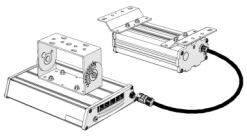
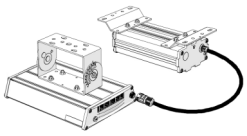
V1: 05/01/2022

T-MAX GEN3 CHARACTERISTICS

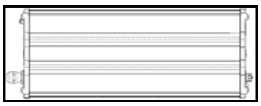
MAINTENANCE AND ASSEMBLY	
Maintenance	Four screws to access the control gear from the side.
Installation / Depending on type of Cable	We have various types of anchoring systems:1L4: 1 S-M_Short Adjustable Fork - with attached GBOX - 40cm. 1L9: 1 S-M_Short Adjustable Fork - with separate GBOX - 90cm. 1S4: 1 S-M_Long Adjustable Fork - with attached GBOX - 40cm. 1S9: 1 S-M_Long Adjustable Fork - with separate GBOX - 90cm. 1Z4: 1 S-M_Fixed Top Fork - with attached GBOX - 40cm. 1Z9: 1 S-M_Fixed Top Fork - with separate GBOX - 90cm.1N4: 1 S-M_Short Adjustable Fork - with attached GBOX + Nema Socket Fork - 40cm.1N9: 1 S-M_Short Adjustable Fork - with separate GBOX + Nema Socket Fork - 90cm.1T9: 1 S-M_Fixed Top Fork - with separate GBOX + Nema Socket Fork - 90cm.2L4: 2 L_Short Adjustable Fork - with attached GBOX - 40cm. 2L9: 2 L_Long Adjustable Fork - with separate GBOX - 90cm. 2Z4: 2 L_Fixed Top Fork - with attached GBOX - 40cm. 2S9: 2 L_Long Adjustable Side Fork - with separate GBOX - 90cm. 2N4: 2 L_Short Adjustable Fork - with attached GBOX + Nema Socket Fork - 40cm. 2N9: 2 L_Long Adjustable Side Fork - with separate GBOX + Nema Socket Fork - 90cm.
Weight	S: 12.3 Kg M: 15.7 Kg L: 29.8 Kg
GBOX control gear box	The driver comes in a box that is especially designed to house the control gear. The luminaire and control gear are connected with an insulated, flexible EPR air cable made of halide-free polyurethane, equipped with an IP68 connector for fast connection. Cable length depends on the luminaire version type. They can be:PL304 => 40-cm cable PL309 => 90-cm cableOptional: PL318 => 180-cm cable PL390 => 900-cm cable

MANAGEMENT AND CONTROL	
Control gear / Adjustment	1N: LED 1 level RC: Adjustable LED in head AF: Adjustable LED Protocol 1-10 V RD: Adjustable LED Protocol DALI 2 RL: Pulse adjustable LED SC: Adjustable as requested by client (LRTSC) SE: Tray without gear. SR: Smart Ready D4i
Autonomous regulation	Factory-programmable regulation: SC: As requested by the client.
CLO regulation	Percentage flow during product lifetime: 7: 70% luminous flux during luminaire lifetime. 8: 80% luminous flux during luminaire lifetime. 9: 90% luminous flux during luminaire lifetime.
Sockets	U: Nema 3 pin socket with IP66 cover. V: Nema 5 pin socket with IP66 cover. W: Nema 7 pin socket with IP66 cover. (With accessory)
Node	ON: Controlux ONE BS: Controlux Basic Imcu NH: Controlux Tunnel LPC NL: Controlux Tunnel LPC Lite

T-MAX GEN3 CONNECTORS

CONNECTORS	STANDARD		OPTIONAL	
Length	PL304 - 40-cm cableUsed when the GBOX is built into the luminaire	PL309 - 90-cm cableUsed when the GBOX is separate in the luminaire	PL318 - 180-cm cableUsed when the GBOX is separate in the luminaire	PL390 - 900-cm cableUsed when the GBOX is separate in the luminaire
S, M and L Connector Image				

T-MAX GEN3 CONFIGURATION ELEMENTS

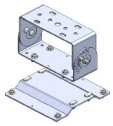
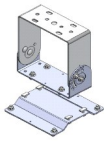
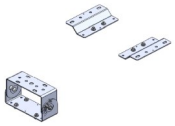
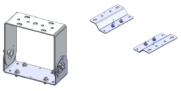
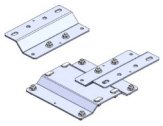
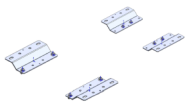
SIZE	LUMINAIRE IMAGE	COMPLETE GBOX IMAGE	GBOX WITH DRIVER
S			.310 GBOX
M			
L			.510 GBOX

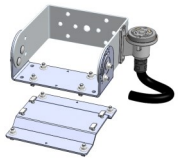
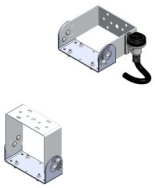
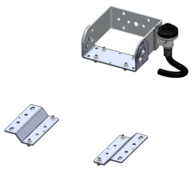
Note: The company reserves the right to change products without advanced notice.

V1: 05/01/2022

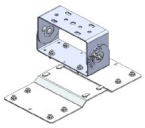
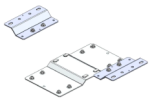
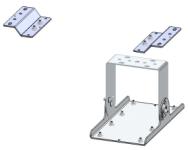
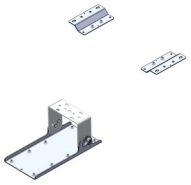
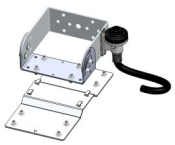
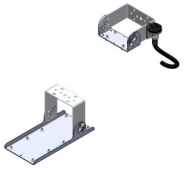
T-MAX GEN3 FORKS

S/M FORKS

Name	1L4	1S4	1L9	1S9	1Z4	1Z9
Image Fork**Size S / M**						

1N4	1N9	1T9
		

L FORKS

Name	2L4	2Z4	2L9	2S9	2N4	2N9
Image Fork**Size L**						

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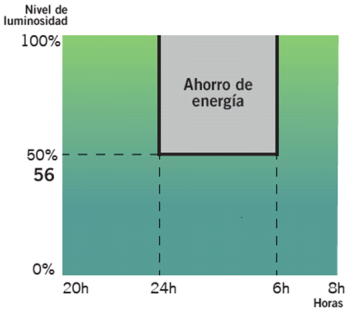
V1: 05/01/2022

By programming the driver

Programming profile
The driver can be programmed so that luminous flux is reduced from the luminaire during the least busy hours at night while always meeting the required lighting and uniformity levels.

Programming profile 56
From 00:00 to 06:00 the luminaire reduces its initial intensity by 50%.

Hasta un 26% de ahorro



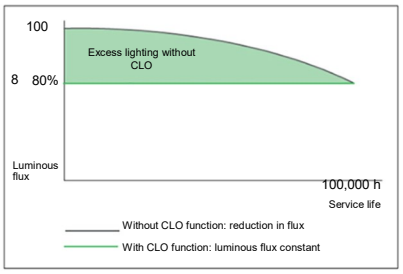
Using the CLO function

While taking lumen depreciation over the years into account, the driver is programmed so that it starts at a reduced level and gradually increases power over the lifetime of the luminaire. This saves energy and increases the lifetime of the system. Furthermore, the light level in the area where the luminaire is installed remains constant over time.

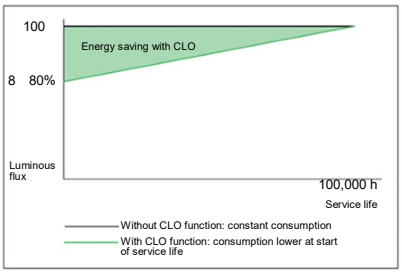
Constant luminous flux 8
Luminous flux from the luminaire at 80% to maintain light levels throughout its lifetime.

Hasta un 10% de ahorro
y se incrementa la vida de la luminaria

Graph: Luminous flux



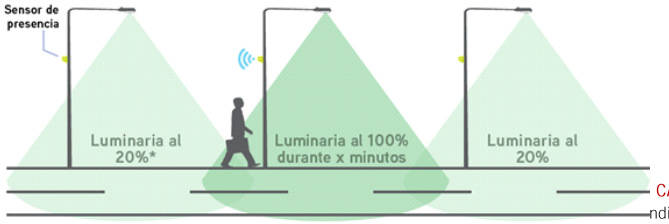
Graph: Consumption



By incorporating an additional device

Presence sensor
By using a presence sensor, lighting can be adjusted according to the level of activity in the area where the luminaire is installed.

The light level is raised when a pedestrian or vehicle is detected in the area.

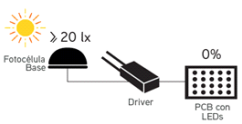


Photocell
A photocell enables the luminaire to be switched on or off based on the solar light intensity detected.

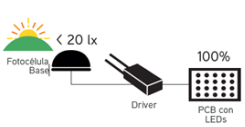
This is extremely useful so the luminaires are not switched on during the day when there is still sufficient natural light.

Ejemplo con fotocélula de 20 lx:

Si la fotocélula detecta más de 20 lx no activará el encendido de la luminaria.



Es cuando los niveles lumínicos empiezan a bajar que la fotocélula detecta 20 lx y activa el encendido de la luminaria.



Note: The company reserves the right to change products without advanced notice.

V1: 05/01/2022