"Innovative on the inside"

EVO FP
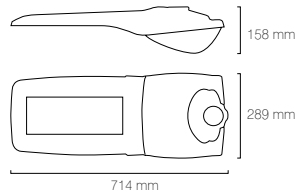
STREET

GRAH®
LED LIGHTING

EVO FP

TECHNICAL
SPECIFICATIONS

158 mm

289 mm

714 mm

Supply voltage range:	202-254 V, 50 / 60 Hz
Surge protection:	6 kV / 10 kV
Consumption:	15W / 159 W
Power Factor:	>0,95
Temperature range:	-30 °C / +60 °C
Working temperature at Ta25:	+55 °C
LEDs overheating protection:	NTC thermistor
Light guiding system:	PMMA lenses
Optics:	Asymmetric
Power reduction:	DALI 0-100% DIM, 50% one step DIM positive or programmable
Driver default settings:	Fade up and down time 5 s, Switch off delay time 0 s End Of Life 100.000 h, startup time 1000 ms
Light source:	High power LED
Colour temperature:	4000 K (3000 K, 5000 K on request)
Colour Rendering Index:	>70
LED Lifetime:	Up to 100.000 hours, L90 @ Ta = 25 °C
System efficacy:	up to 129 lm/W
Luminous flux:	1.600 lm / 18.200 lm
Appliance class:	I or II
Housing material:	Aluminium alloy
Sealing material:	Silicone, heat resistant
Cover material:	TG – Tempered glass
Housing colour:	Grey Anthracite fine texture (other colours on request)
Wind resistance:	0,13 m²
Ingress protection class:	IP66
Impact resistance:	IK09
Design:	Shape for best heat conductivity and water flow
Mounting angle adjustment:	+/- 15°
Mounting diameter option:	Ø60 and Ø76 (with adapter)
Suggested mounting height:	3-15 m
Dimension (L x W x H):	714 x 289 x 158 mm
Net weight:	max 8,7 kg

100% EU

CE

EK 22

RoHSII

LED

IP66

ASTRO DIM

IK09

50% DIM

DALI

ida

COMMERCIAL SPECIFICATIONS

ID: 1241 - 0016 - 1233 - 6452 - 0000

Code	Name	Code	Regulation	Code	Optics / Lum. flux [lm] 23 FN / 25 SCL / 26 ME / 28 T2 / 29 PX	Optics / Lum. flux [lm] 20 DWC / 21 A-T / 24 DNW	Optics / Lum. flux [lm] 27 ME-Wide 1	Power [W]	Code	App. class	Code	Colour Temp.[K]	Code	Housing Colour
1241	EVO FP	2	50% step DIM	016	1600	1600	1600	15	1	SCI	3	3000*	5	Grey Anthracite
				023	2300	2300	2300	21	2	SCII	4	4000	6	Special
		3	DALI	026	2600	2600	2600	25			5	5000*		
				030	3000	3000	3000	29						
				035	3500	3500	3500	28						
				048			4800	40						
				049	4900	4900		40						
				056			5600	47						
				057	5700	5700		47						
				063			6300	55						
				064	6400	6400		55						
				070			7000	57						
				072	7200	7200		57						
				082			8200	68						
				084	8400	8400		68						
				092			9200	75						
				094	9400	9400		75						
				093			9300	81						
				095	9500	9500		81						
				107			10700	91						
				109		10900		91						
				110	11000			91						
				117			11700	93						
				119		11900		93						
				120	12000			93						
				121			12100	110						
				123		12300		110						
				124	12400			110						
				137			13700	116						
				139		13900		116						
				140	14000			116						
				154			15400	135						
				157		15700		135						
				158	15800			135						
				157			15700	137						
				160		16000		137						
				161	16100			137						
				177			17700	159						
				181		18100		159						
				182	18200			159						

*Luminous flux for 3000 K and 5000 K may vary, please contact our Sales department for detailed information.

Code	Custom programmable options*
0029	Programmable setup options

*For programmable options DALI is required.

| Code	Accessories
3999-0004-0000-0000	10 kA Surge Protection Module Class I self turn off
3999-0005-0000-0000	10 kA Surge Protection Module Class II self turn off

FEATURES

Aerodynamic, extremely durable and smart ready

A truly great product, defined by integration of shape and functionality.
EVO is built from ECO friendly materials. With specially designed housing we have achieved both great look and optimal heat dissipation. This lamp self-cleans due to special ribs, inspired by the laws of aerodynamics. This feature gives the product a constant cooling performance, too.
With integration of Smart City System (SCS) referred to as "smartification," lights can be managed individually or in groups with software, thus enabling needs-oriented lighting for a variety of urban areas: downtown, busy streets, residential roads, tunnels, and parks. The system is based on a network of LED lights.

TIP: for Smart City solutions see next page
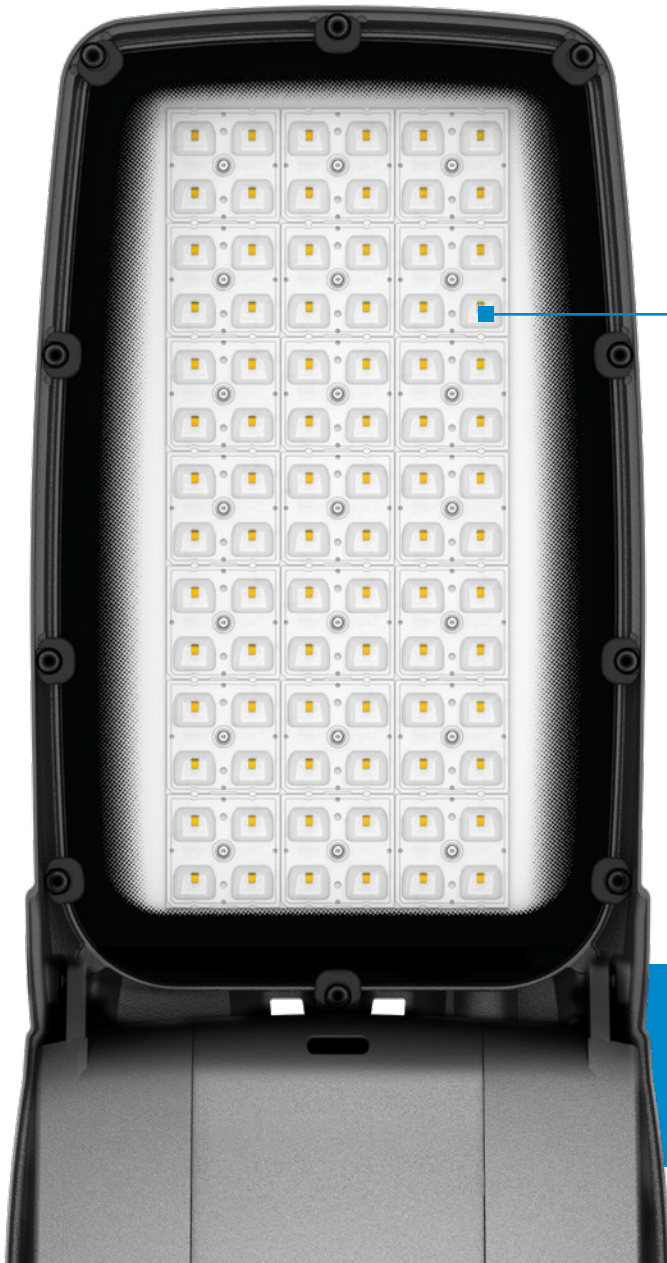
One size
9 light distributions

New optics systems for 9 different applications. EVO FP comes with 6 kV or 10 kV built-in surge protection against internal components damage. With the latest LED chip, efficacy is increased up to 129 lm/W. NTC thermistor is used to protect the LEDs from overheating.

DWC	DNW	ME-Wide 1
A-T	SCL	T2
FN	ME	PX
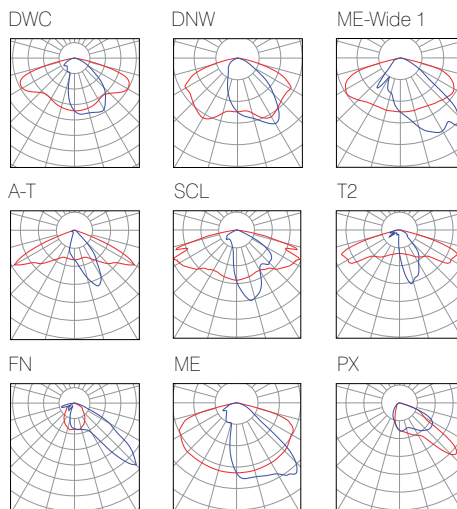
TIP: for detailed information on light distributions and the connection with pole height, distance between poles and road width see brochure:
**Street LED Lighting Guidelines**

Side or top entry mounting +/-15° Angle

ONE bracket for all versions. +/-15º angle mounted on the side or on top entry with a Ø60 mm diameter or Ø76 mm (with adapter).

Simple maintenance

EVO family was started with the desire for modularity and simple maintenance. All components can be easily removed. The top housing can be separated from the bottom without tools.

3 – 15 m
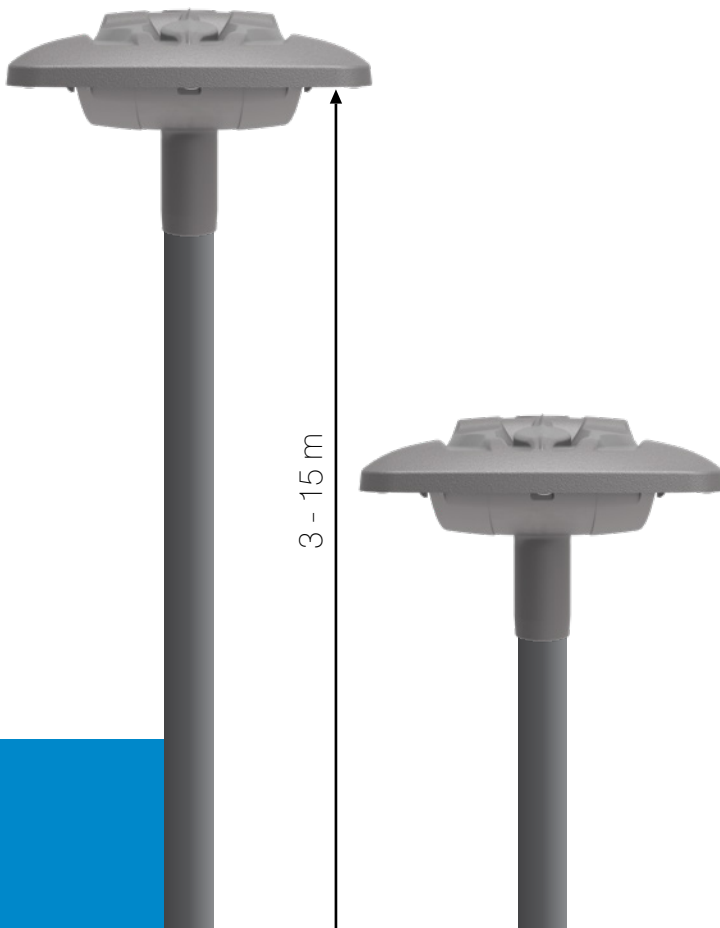
With luminous flux from 1.600 lm to 18.200 lm and different optics systems, EVO FP cover all your needs

- smaller roads
- residential streets
- private driveways
- walking paths
- bicycle lanes
- side ways
- pedestrian crossings
- parking lots

- industrial areas
- interurban roads
- urban roads
- high speed traffic roads
- junctions
- resting places
- collector roads

ACCESSORIES FOR STREET LIGHTS

COLOURS

You can choose one of the three colour options for your accessory.

Accessories Colours					
0	Not Painted	1	Grey Colour	6	Special Colour

Replace (z) in Accessories Code with selected colour from the table above.

For more options and data or requirements please contact our Support team.

REDUCTION AND EXTENSION OPTIONS

Accessories	Reduction adapter	D1 [mm]	D2 [mm]	
Code	3999-0015-0000-0000	60	40	

Accessories	Pole reduction	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0027-0000-00z0	76	60	520

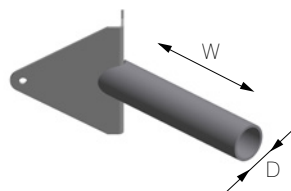| Accessories	Pole extension	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0028-0000-00z0	60	60	1000
	3999-0029-0000-00z0	76	60	1000

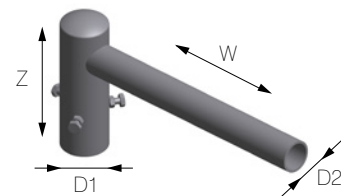## MOUNTING OPTIONS

Different situations require different mounting options.
Bellow information explains and represents different basic mounting option solutions.
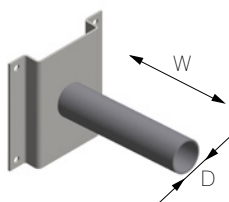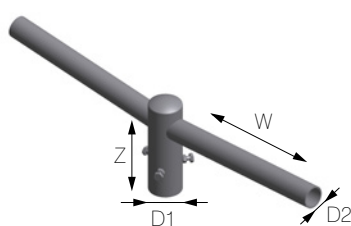
Accessories	Wall boom	W [mm]	D [mm]
Code	3999-0046-0000-00z0	300	60

Accessories	Wall corner boom	W [mm]	D [mm]
Code	3999-0045-0000-00z0	300	60

Accessories	Pole single boom extension	W [mm]	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0019-0000-00z0	500	60	60	150
	3999-0020-0000-00z0	500	76	60	200

Accessories	Pole double boom extension	W [mm]	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0021-0000-00z0	500	60	60	150
	3999-0022-0000-00z0	500	76	60	200
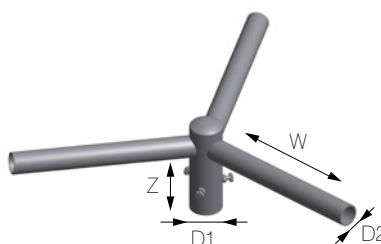
Accessories	Pole triple boom extension	W [mm]	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0023-0000-00z0	500	76	60	150
	3999-0024-0000-00z0	1000	76	60	200
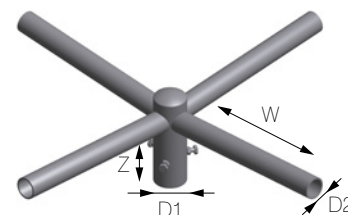
Accessories	Pole quad boom extension	W [mm]	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0025-0000-00z0	500	76	60	150
	3999-0026-0000-00z0	1000	76	60	200

One step DIM

One step DIM is LineSwitch in a 3-phase 230/400VAC grid which allow supplying power from another phase than the one controlling the LineSwitch interface. It can be selectable dimming level from 0-100% positive (default) or negative Line switching future more also switch off delay time from 0-1800s in case on Switch line is used any kind of sensor with relay to avoid instant interferences.

Constant Light Output (CLO)

Traditional light sources suffer from depreciation in light output over time. This applies to LED light sources as well. The CLO feature enables LED solutions to deliver a constant lumen output throughout the life of the LED module. Based on the type of LEDs used, heat sinking and driver output current, a correction of the lumen depreciation can be entered. The luminaire then counts the number of operating hours and will correct the output current based on this input. GRAH lighting CLO is set on 0h=90%, 100.000h= 100%

DC Emergency (DCemDim)

Luminaire may operate on a DC input voltage. As a result, enables application in emergency luminaires in compliance with IEC 60598-2-22 excluding high-risk task areas. The luminaire support operation both a flat DC input voltage as well as operation rectified sinewave "joker" input voltage. The DC Emergency Dim feature named DCemDim is available. This feature allows selectable DIM level from 10 to 60% of the luminaire output to which the luminaire will switch over automatically once connected to a DC input voltage. The mains input of DC-rated luminaire is not polarity-sensitive for DC input voltage and the luminaire is fully CISPR15 EMC-compliant when operated on a DC grid.

5 step Astro DIM

Integrated Astro DIM allows dimming to predefined light levels based on the nightly operating time. With flexibility in setting time from 15:00h to10:00h and light levels from 0 to 100%, it can be configured for specific locations and application needs. Using Integrated Astro DIM, it is possible to set up to 5 DIM levels and time intervals. The luminaire does not have a real time clock. Instead it runs a virtual clock, determined by the length of nightly operating hours. After 3 ON-OFF cycles, the driver will calculate the virtual clock time. A valid ON-time is defined as a period during which the driver operates continuously for ≥4 hours to ≤24 hours. After repeating the luminaire ON-time for 3 consecutive days, the DIM profile takes effect from the 4th day onwards.

TIP: for detailed informations on Astro DIM see brochure: **Street LED Lighting Guidelines**

SMART CITY SOLUTION

We offer Tvilight Smart City solution with all main requirements for a sustainable system that ensures future viability & flexibility

CITY SENSE
Sensor-based Wireless Lighting Controller Outdoor occupancy sensor
Mounted on the pole

- Wireless node
- Lighting controller
- Enables "Light on Demand"

SKYLITE
Wireless Lighting Controller
Built in the luminaire or. on pole

- Wireless node
- Lighting controller

SkyLite PRIME
Wireless Lighting Controller
Mounted on the top of the luminaire - ZHAGA standard

- Wireless node
- Lighting controller

GATEWAY
Plug-and-Play Gateway Link between local device network and internet
Mounted on the pole

- Wi-Fi, 3G/4G or Ethernet
- 200:1 node-gateway ratio

CityManager
Web based Asset Management Software

- Allows remote monitoring, management and control of lighting infrastructure
- Report on energy savings, maintenance statues and system health

TVILIGHT SMART CITY COMPONENTS

SkyLite PRIME

- universal fixture compatibility via standard ZHAGA socket
- SR allows access to almost 60 driver data points Driver & LED health data points predict asset health & lifetime
- safe circle of light by using the external sensor input, trigger surrounding lights creating a safe circle of light around the road user
- compatibility with SR drivers or similar products
- control via 0-10V / DALI / DALI 2.0 / SR (up to 4 drivers)
- lux sensor measures ambient light

SkyLite V3

- plug-and-play wireless lighting controller for the monitoring and control of the outdoor lighting fixtures
- it creates a smart, energy-efficient and safe environment and serves as an ideal foundation for a Smart City
- supports seamless communication with other Tvilight products, such as CitySense Plus and Tvilight Gateway, and can be managed remotely via CityManager

CitySense Plus

- revolutionary integrated wireless motion sensor for the presence based monitoring and control of outdoor lighting
- compatible with conventional and LED luminaires
- delivers on-demand dynamic lighting, making the lights adjust their brightness based on the presence of pedestrians, bicycles, and cars
- dynamic lighting reduces energy consumption by up to 80% without compromising public safety and citizen comfort
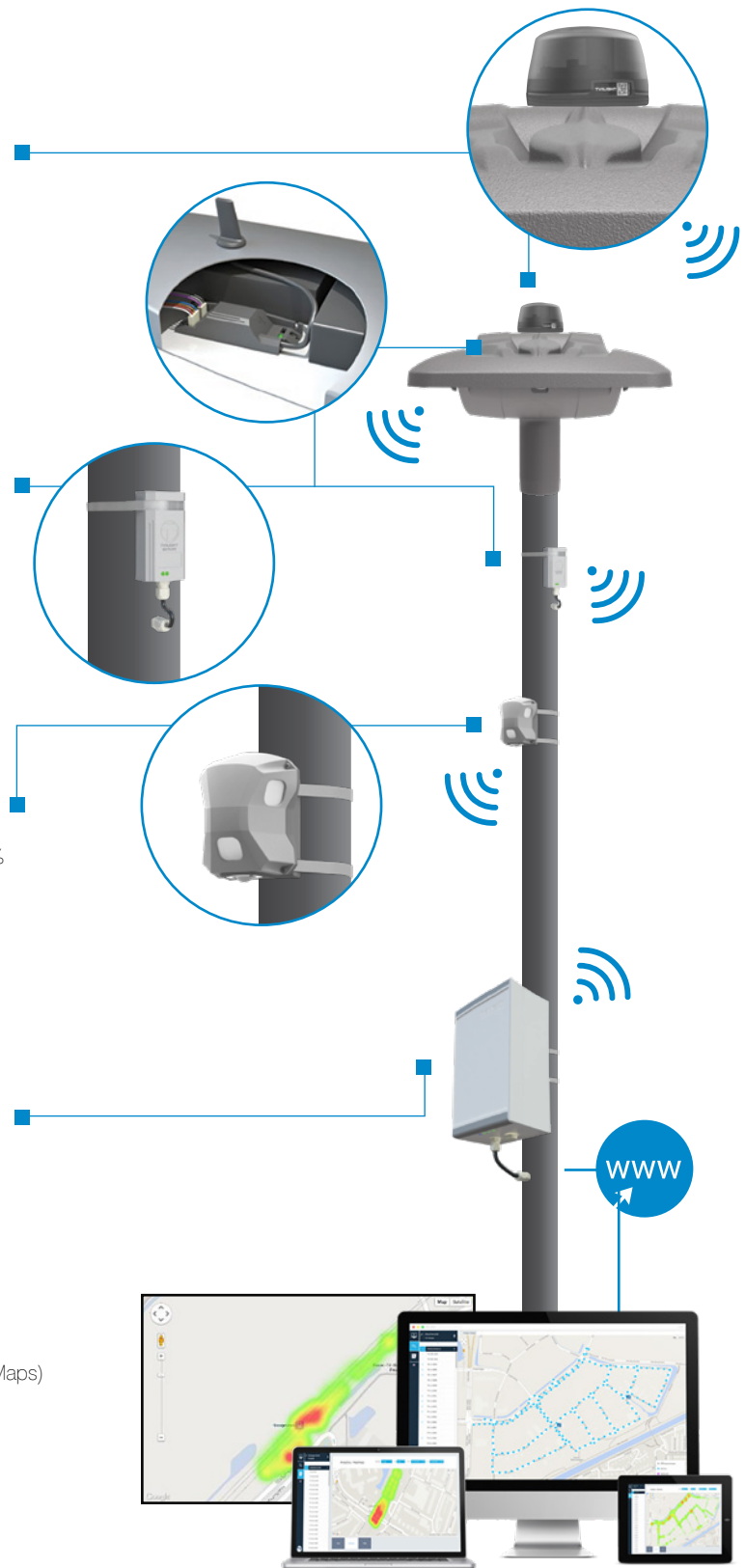
Gateway

- state-of-the-art network interface device which synchronizes Tvilight outdoor lighting controllers and the street lighting management software
- built-in radio module for wireless network configuration, commissioning, and maintenance
- it can reliably communicate with many devices spread across large distances
- in-built smart monitoring tools notify users about the status of the lamps and the network via CityManager
- supports industry standard protocols allowing for an easy integration with other systems and networks

CityManager

- web-based Software and User-friendly and intuitive (Google Maps)
- automatic failure reports & notifications Individual generation and management of dimming profiles (incl. astro-clock)
- statistics & analysis of the entire lighting infrastructure (e.g. energy savings, triggers)
- different user profiles and logging on system changes / accesses
- "heat map" to monitor traffic density (and other data)

For more info see: www.tvilight.com

WWW

All specifications are preliminary and are subject to change without prior notice.