

*"Innovative on the inside"*

# EVO FP

STREET

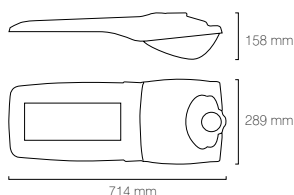


**GRAH<sup>®</sup>**  
LED LIGHTING

## EVO FP



## TECHNICAL SPECIFICATIONS



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



COMMERCIAL SPECIFICATIONS

ID : 1 2 4 1 - 0 0 1 6 - 1 2 3 3 - 6 4 5 2 - 0 0 0 0

						Optics / Lum. flux [lm]		Optics / Lum. flux [lm]		Optics / Lum. flux [lm]										
						23 25	FN SCL	20 21	DWC A-T	27	ME- Wide 1									
						26 28 29	ME T2 PX	24	DNW					Power [W]						
Code	Name	Code	Regulation	Code										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								
				026		2600		2600		2600		25								
				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											

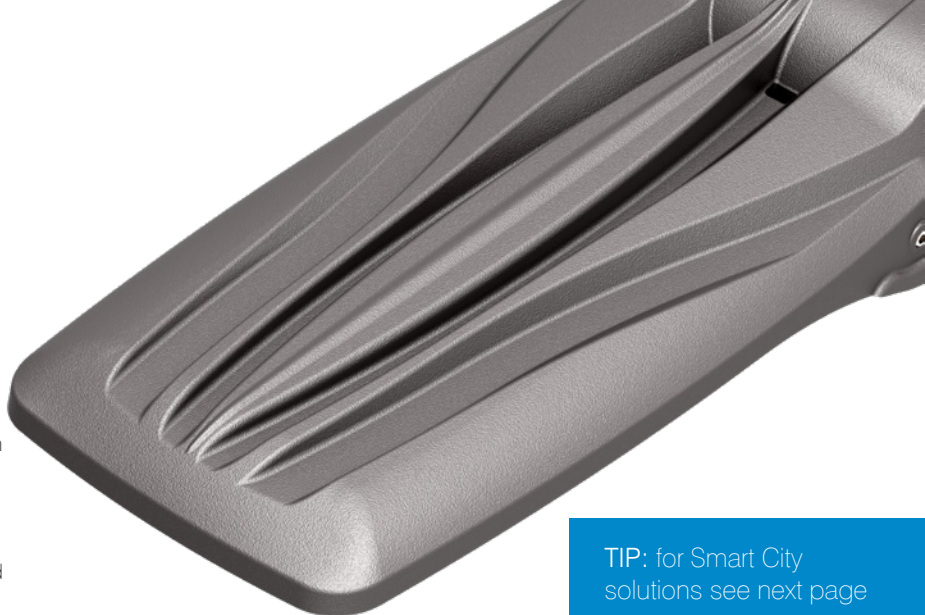
## FEATURES

### Aerodynamic, extremely durable and smart ready

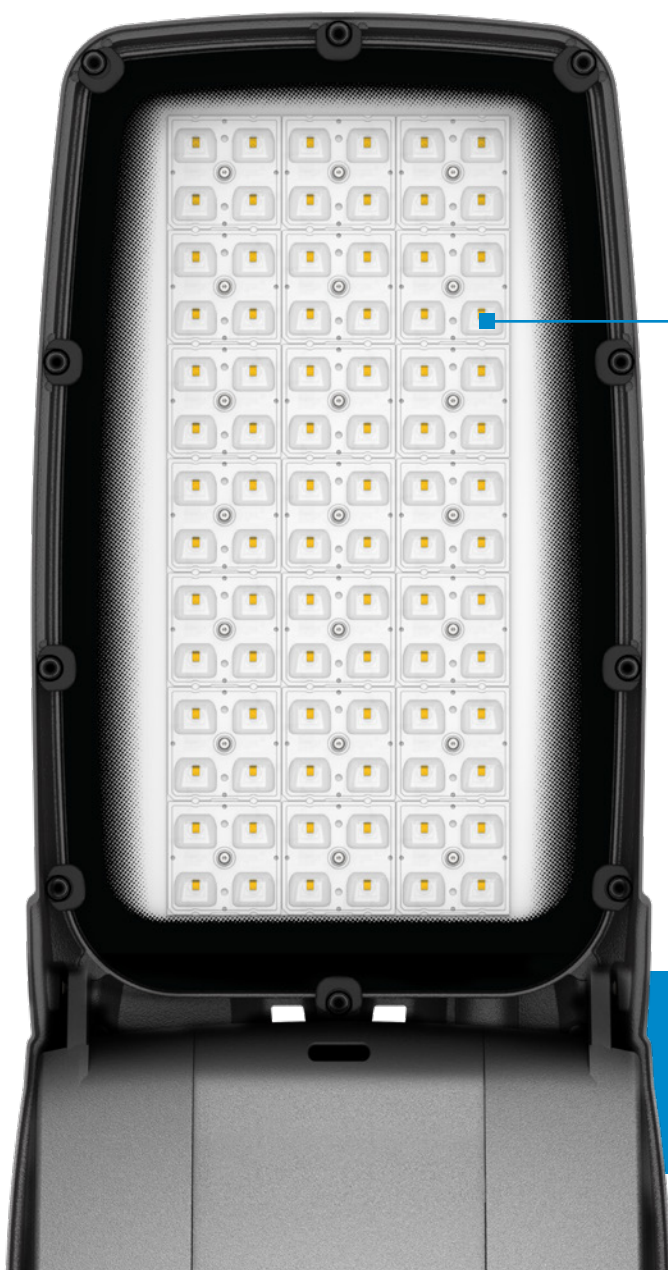
A truly great product, defined by integration of shape and functionality.

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.

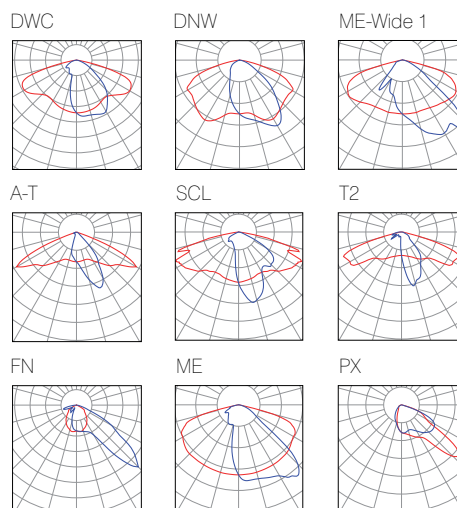


TIP: for Smart City solutions see next page



### 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.



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**



TIP: for other mountings options and extensions see next page



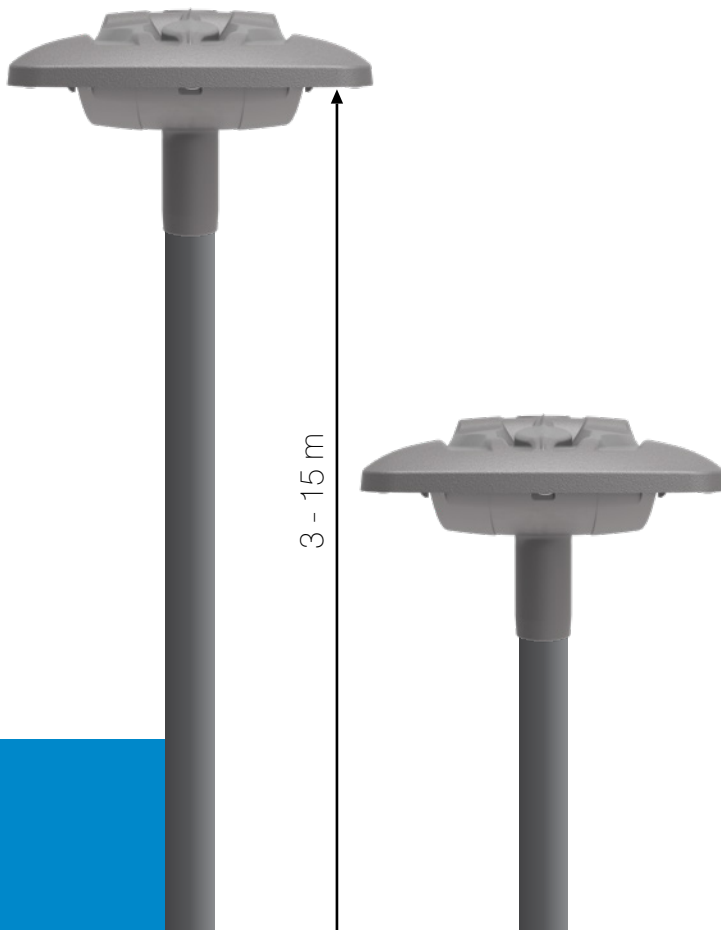
## Side or top entry mounting +/-15° Angle

ONE bracket for all versions. +/-15° 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.



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

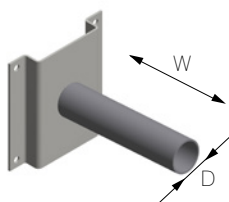


Accessories	Pole extension	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0028-0000-00z0	60	60	1000
	3999-0029-0000-00z0	76	60	1000

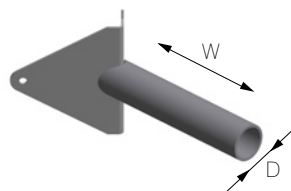
## MOUNTING OPTIONS

Different situations require different mounting options.

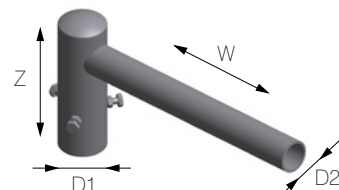
Bellow information explains and represents different basic mounting option solutions.



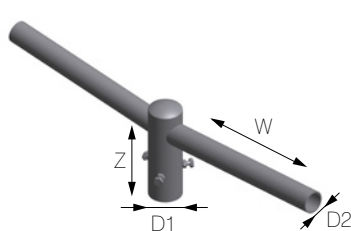
Accessories	Wall boom	W [mm]	D [mm]
Code	3999-0046-0000-00z0	300	60



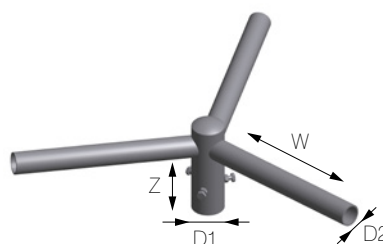
Accessories	Wall corner boom	W [mm]	D [mm]
Code	3999-0045-0000-00z0	300	60



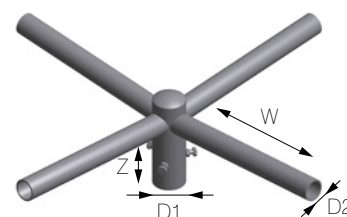
Accessories	Pole single boom extension	W [mm]	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0019-0000-00z0	500	60	60	150
	3999-0020-0000-00z0	500	76	60	200



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

# EVO FP PROGRAMMABLE OPTIONS EXPLANATION

## 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 to 10:00h 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  $\geq 4$  hours to  $\leq 24$  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 Twilight 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 statuses 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](http://www.tvilight.com)



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



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