

"Innovative on the inside"

EVO FP



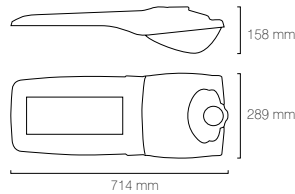
GRAH[®]
LED LIGHTING

STREET

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, L90B10 @ 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 m ²
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



RoHSII



IP66

ASTRO
DIM

IK09

50%
DIM

DALI



COMMERCIAL SPECIFICATIONS

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

Code	Name	Code	Regulation	Optics / Lum. flux [lm]			Power [W]	Code	App. class	Code		Colour Temp.[K]	Code		Housing Colour
				23 FN	25 SCL	26 ME				20 DWC	21 A-T		24 DNW	27 ME-Wide 1	
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											

*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

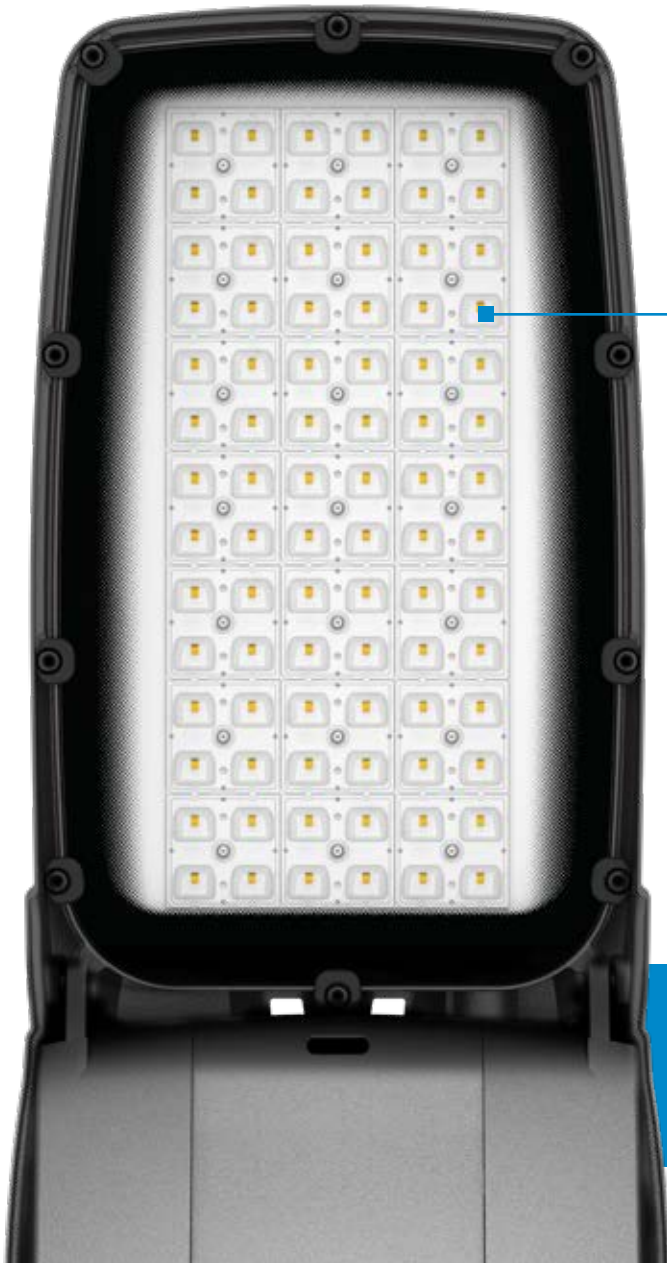
FEATURES

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.

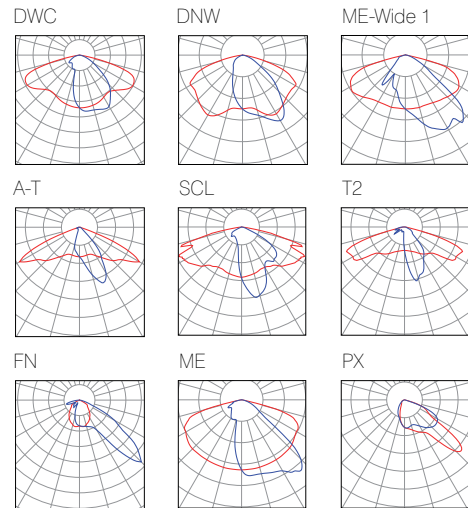


TIP: for Smart City solutions see next page



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.



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



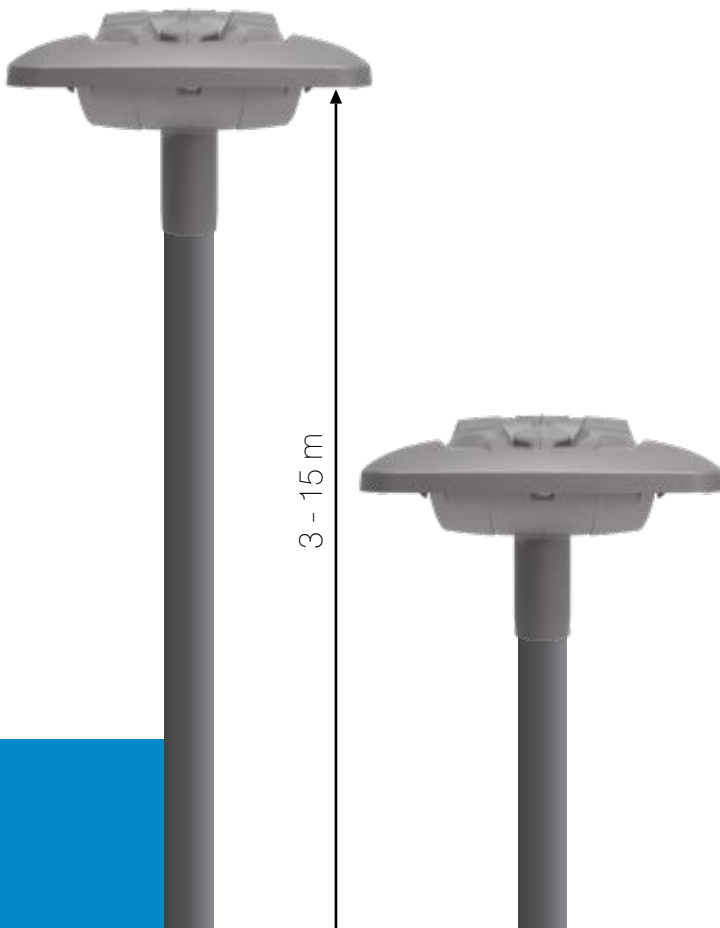
Side or top entry mounting +/-15° Angle

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

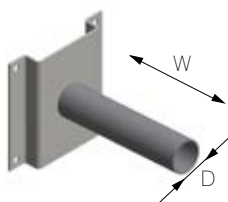


Accessories	Pole extension	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0028-0000-00z0	60	60	1000
Code	3999-0029-0000-00z0	76	60	1000

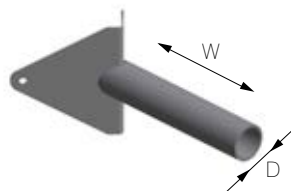
MOUNTING OPTIONS

Different situations require different mounting options.

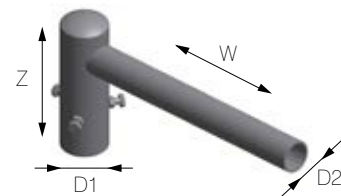
Bellow information explains and represents different basic mounting option solutions.



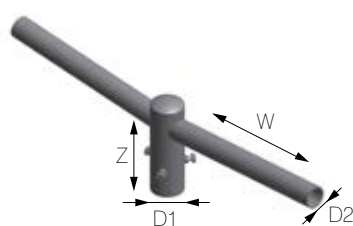
Accessories	Wall boom	W [mm]	D [mm]
Code	3999-0046-0000-00z0	300	60



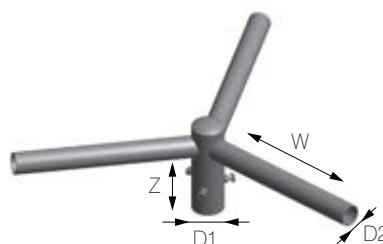
Accessories	Wall corner boom	W [mm]	D [mm]
Code	3999-0045-0000-00z0	300	60



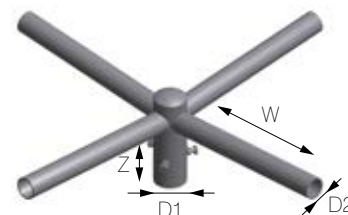
Accessories	Pole single boom extension	W [mm]	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0019-0000-00z0	500	60	60	150
Code	3999-0020-0000-00z0	500	76	60	200



Accessories	Pole double boom extension	W [mm]	D1 [mm]	D2 [mm]	Z [mm]
Code	3999-0021-0000-00z0	500	60	60	150
Code	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
Code	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
Code	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 ≥ 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 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



GRAH LIGHTING d.o.o.
Zadružna ulica 6,
SI-2310 Slovenska Bistrica,
Slovenia, EU

+386 82 801 424
info@grahlighting.com
www.grahlighting.com