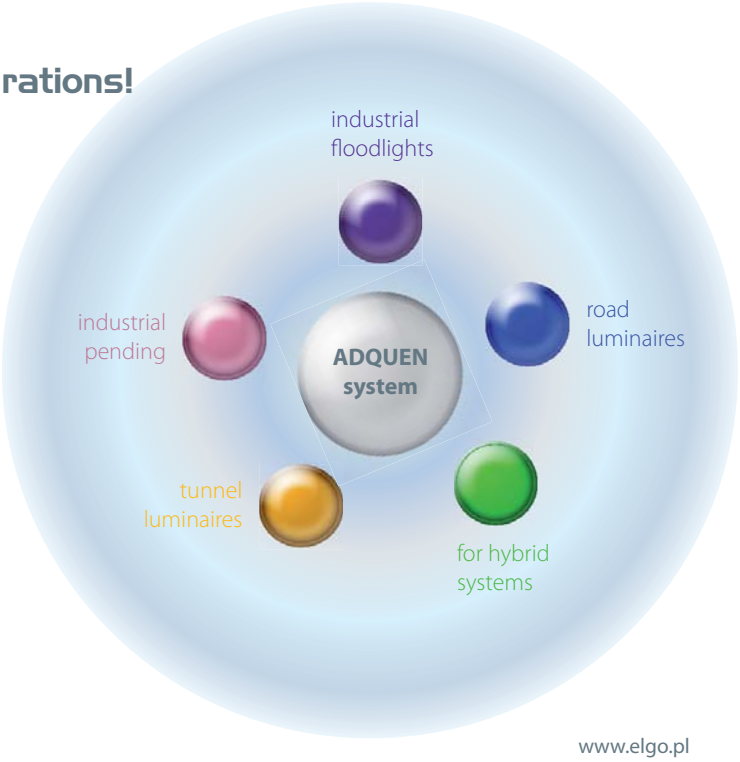
Unique LED lighting system

Advanced LED technology in professional lighting

The unique system of ADQUEN luminaires is equipped with revolutionary light sources – LEDs (light emitting diodes) with the highest degree of technological advancement.

More than 2,000,000 possible configurations!

System of the ADQUEN LED luminaires under ELGO brand is an innovative and unique in the world concept assuming that the offer is not rigidly limited to a specific number of models characterised by specific parameters imposed, by the manufacturer.
The basic idea is to release user's creativity from the "catalogue" limits and to offer the possibility of setting up individual combination of parameters which would meet customer's requirements.
The wide range of scalable parameters results in a choice of more than 2,000,000 available options of ADQUEN luminaires.



Free choice of parameters

Flexible configuaration, instead of rigid "catalogue" limits

Instead of a typical catalogue with a limited number of offered models the investor gets a computer application. It allows him to configure a type and parameters of the luminaire freely. At the same time, when the selection of specific luminaire parameters take place its unique identification code is generated.

Exactly what you need

Individual configuration fulfils luminaire's specific lighting tasks and meets detailed requirements. As a result the whole process clearly presents all parameters of the lighting fixture with selected features (properties). A generated identification code allows the customer to prepare a precise inquiry concerning the chosen set of features of the luminaire. Luminaire can be manufactured within 48 hours after placing an order.

Eleven calibrated parameters

ADQUEN system allows the selection of the eleven major features of the luminaire.
One can cofigure:

- **luminaire type depending on its task,**
- **power consumption,**
- **LED type,**
- **nominal luminous flux of a single diode,**
- **number of LEDs in luminaire,**
- **range of correlated colour temperature of diodes,**
- **type of optical system,**
- **angle distribution of the optical system,**
- **type of power supply and control,**
- **luminaire colour,**
- **total luminous flux of LEDs in the luminaire.**

Step I Selection of ADQUEN characteristics

• Luminaire category

Choosing the type of the luminaire is closely connected with a lighting task for which it is intended. There are five options:

- road luminaire – OU type,
- industrial luminaire - floodlight – ON type,
- industrial luminaire - pending – OP type,
- tunnel luminaire – OT type,
- luminaire for hybrid power systems – OH type.

• Power

The power consumption of the luminaire can be selected from a wide range from 15 up to 300 watts, by every 1W.

• LED diode type

ADQUEN system uses only the most technologically advanced diodes of Power LED type. Currently, there is the possibility of choice of three kinds of diodes provided by Cree- the manufacturer of ultra-modern light sources. These are XP-G, XP-E and XR-E.

• Luminous flux of a single diode

After selecting the LEDs type also the value of luminous flux can be chosen from a range of available on the market diodes. Different ranges of diodes have a specific luminous flux. Owing to their possible types and selections, one can choose luminous flux value ranging from 67,2 lm to 139 lm.

• Number of LEDs in the luminaire

A single LED is a light source characterized by very high luminous efficacy, but low power, and hence relatively low luminous flux. The value of the luminous flux must be therefore achieved by the use of multiple LEDs in a single luminaire.
In the system of ADQUEN luminaires, it is possible to select the number of diodes in a single luminaire from 14 up to 140.

• LEDs correlated colour temperature

Various lighting tasks may require different "shade" of white colour defined by a correlated colour temperature parameter. Therefore, during configuration of ADQUEN luminaire, one can choose from the following ranges of correlated colour temperature:

- daylight, 5 000 ÷ 8 300K,
- neutral white, 3 700 ÷ 5 000K,
- warm white, 2 600 ÷ 3 700K.

Modern construction

LED panel

The main part of each luminaire from ADQUEN system is a flat panel with LEDs. It is made of a special aluminium profile, richly finned on the upper surface of it. It is an effective heat sink for conducting heat generated by the LEDs. Thanks to it, LED temperature is maintained at a sufficient low level. Consequently, maximum durability and efficiency of LEDs is ensured. From the inner side of luminaire on the profile there is a plate with LEDs equipped with the individual optical lens system. The area between the diodes is also covered with flat, metal mask. The panel is hermetically closed with flat tempered glass. Depending on selected number of LEDs, the length of the profile is properly chosen. Consequently, the length of the entire panel changes. The other parts of the luminaire are mounted at both ends of the LED panel.
All connections of the parts of the luminaire are sealed with gaskets.

Lens optical system

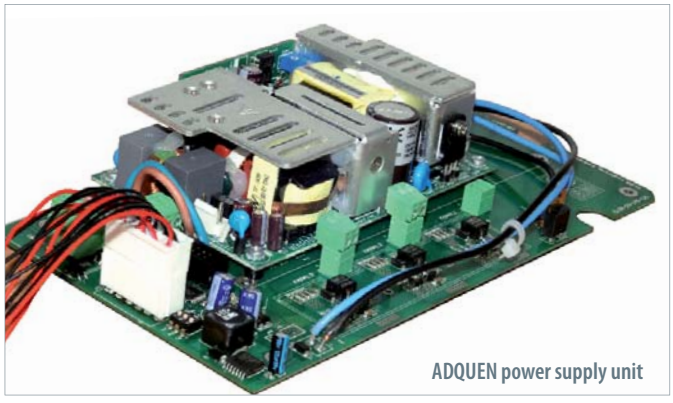
Light distribution of ADQUEN luminaires system can be modulated by selection of one of five types of lenses:
A The three types of lenses provide a symmetrical distribution of light in three different ranges of angles,
B The two types of lenses with the asymmetrical light distribution in two different ranges of angles.

A

B

Power supply unit

In a chamber with a high degree of tightness of IP 66, there is microprocessor power supplier of high efficiency. The power supplier is equipped with the following protection against short circuit, overload, overvoltage, over temperature protection and also active PFC function, i.e. power factor correction system.



ADQUEN power supply unit

In addition, the power supply unit provides protection:

- against short-circuit or spread of the diode, which enables further work of the luminaire even in the case of failure or short-circuit of one of the diodes,
- thermal one with temperature sensor of every diode line. It reduces power of the luminaire in the case of exceeding temperature of 70°C, because of unforeseen external reasons. Also, it cuts off totally power from the luminaire in the case of exceeding the temperature of 85°C – critical for operating of the diodes.

The power supply can perform automatic adjustment during night time and cooperation with twilight sensor as well as motion sensor. Thanks to the use of microprocessor power supply system, any cycle of luminaire operation can be configured.
ADQUEN luminaire of OH type intended for cooperation with hybrid power supply systems is equipped with DC / DC converter to ensure the stable operation of the LED light sources and their protection against damage.

Exemplary parameters of ADQUEN system road luminaires

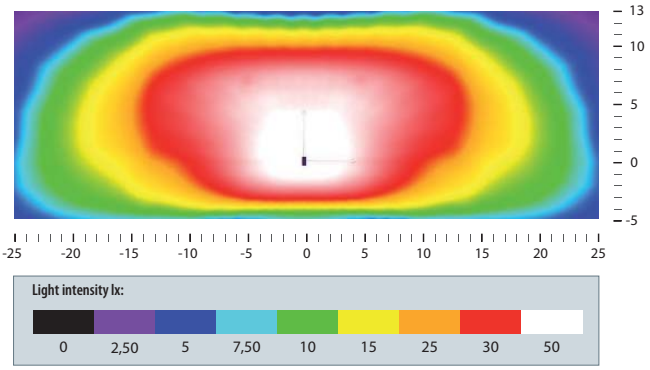
Hanging height of luminaire – 10m. Lightened area dimensions – 50 x 18m.

*Examples refer to road luminaire ADQUEN of the following index:

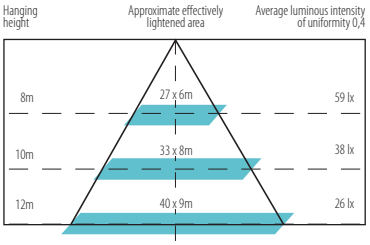
OU–237GR5–140CA–NUW–P00–285

OU – road luminaire
237 – power consumption: 237W
G – Cree diodes XP-G type
R5 – nominal luminous flux of a single diode: 139 lm
140 – 140 diodes
CA – correlated colour temperature: daylight, range 5000 ÷ 8300K
N – asymmetric optical system
UW – asymmetric, distribution angle 129° x 52°
P – power supply and control: basic
00 – body colour: window grey RAL 7040
285 – initial rated light output of used LEDs: 28,500 lm

Light intensity distribution example*

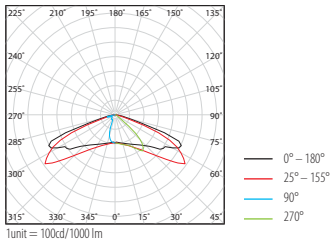


The example of a diagram presenting an effectively lightened area*



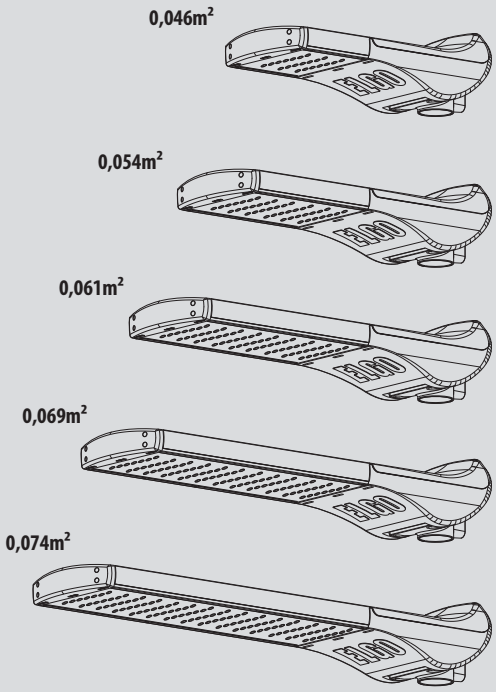
Luminous intensity at uniformity of brightness on the level 0,4		
Hanging height	Average luminous intensity	Maximum luminous intensity
8m	59 lx	86 lx
10m	38 lx	55 lx
12m	26 lx	38 lx

Exemplary light distribution diagram*

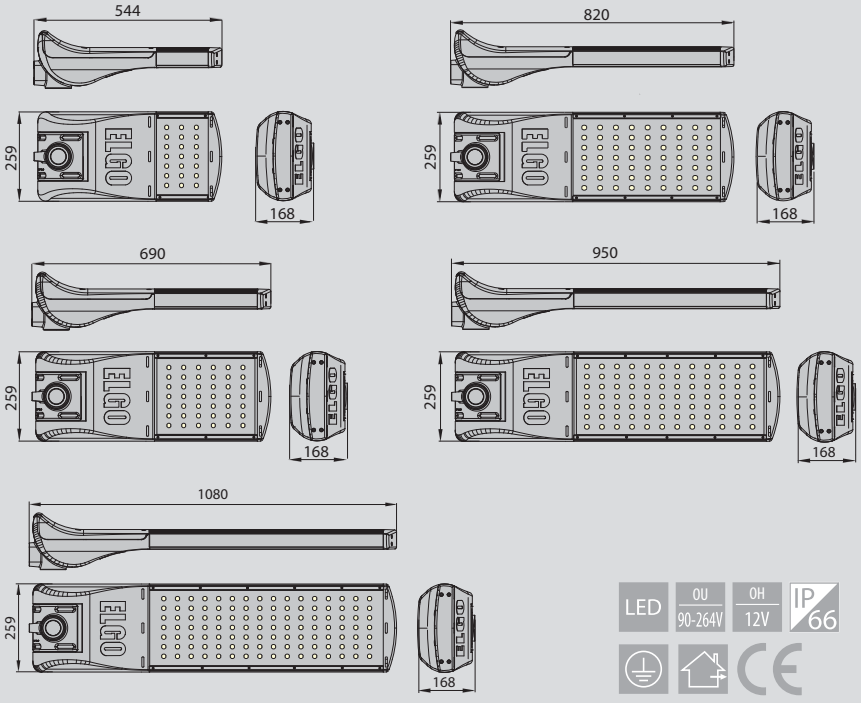


1unit = 100cd/1000 lm

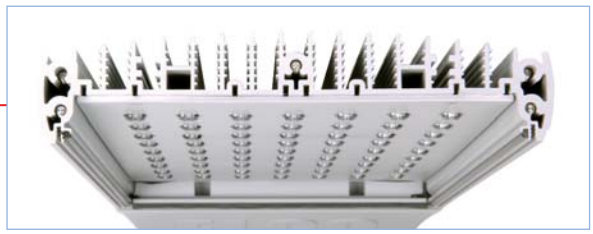
Side surface exposed to wind



Dimensions

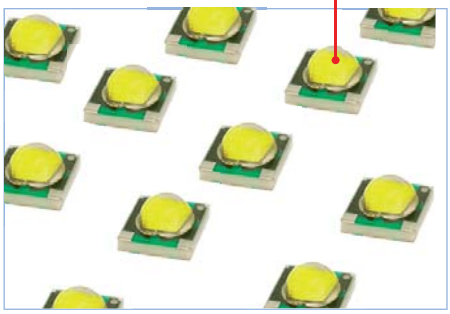


ADQUEN OU Road luminaires



LED panel and heat transferring radiator

LED panel is made of aluminium profile. Its length depends on a selected number of LEDs. Fining of the upper surface of the aluminium profile constitutes the effective radiator that transfers heat generated by LEDs. Thanks to it, diode temperature is maintained at a sufficient low level. Consequently, owing to optimal conditions, maximum durability and efficiency of LEDs are ensured.

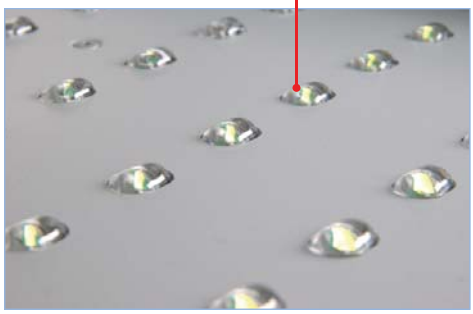


LEDs

Cree diodes are used as light sources. Their types include: XP-G, XP-E and XR-E.

Body

The body is made of weather-protected die-cast aluminium covered with powder paint.



Lenticular optical system

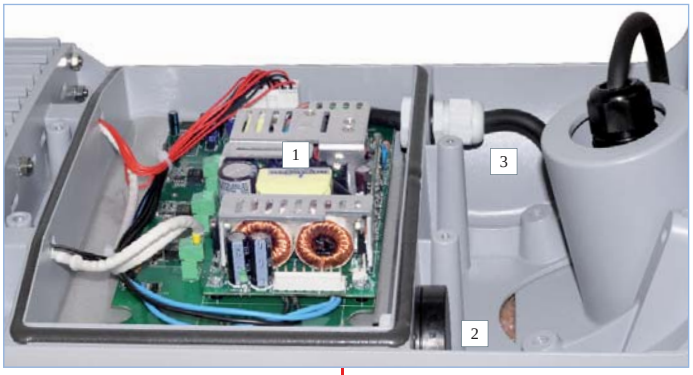
Each LED is equipped with the individual optical system in the form of lenses made of polymethylmethacrylate (PMMA). Lenses are characterized by the precise angle of light distribution and very high coefficient light transmission.

Resistant and sealed cover of tempered glass

From the bottom LED panel is tightly closed with flat tempered glass cover which protects LEDs and lenses from mechanical damages and dirt.

Supply and control chamber

In the gear compartment, closed from the top with a lid, there is chamber containing power supply and control system.



1 Power supply unit with power reduction

Inside ADQUEN luminaires there are microprocessor power supply units of high efficiency designed and manufactured in ELGO. They ensure the adjustment of the supplying voltage range from 10 to 100%. The power supply unit is equipped with the protection against: short circuit, overload, overvoltage, overheating and also with the active PFC function, i.e. power factor correction system.
Special protection allows further work of the luminaire in the case of failure or short circuit of a single diode and protects LEDs against overheating.

2 Filter

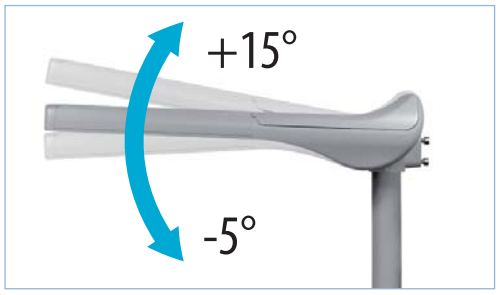
Filter is located in the wall of the supply and control chamber. It protects its inside against pollution suction during equalization of the pressure between the inside and outside of the chamber. It takes place in the course of cooling of, after the luminaire is switched off.

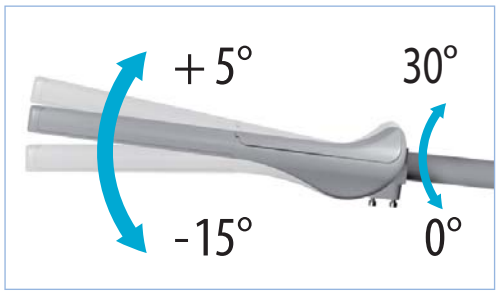
3 Easy and reliable connection

The special connector situated on supplying plug leaded from the gear chamber ensures easy and reliable connection of mains.

Mounting grip

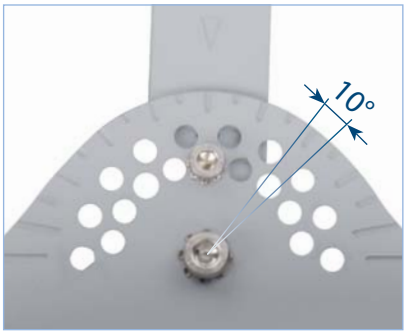
The adjustable die-cast grip made of aluminium is situated at the back of the gear chamber. It enables installation of the luminaire at the vertical pole or at the horizontal extensions arm at the angle of 0° and 30° with the road surface with the diameter's endings of 42 ÷ 60mm. The construction of the bracket enables the smooth change of the inclination angle -5°/+15° at the vertical pole and -15°/+5° at the horizontal extension arm. The change of mounting method from the pole to the extension arm requires only a simple adjustment in the position of the grip.





ADQUEN OT Tunnel luminaires

By selecting the appropriate luminaire features, including optical system and the method of mounting, ADQUEN, luminaires may be adapted to the specific task - lighting road tunnels.



Floodlights ON and tunnel OT luminaires of ADQUEN system are equipped with a universal arched bracket used to mount the luminaire to the surface. Bracket enables users to adjust the inclination angle of every 10° in the range from -90° to +90°.

The ADQUEN system luminaires have a special connector situated on supplying plug leaded from the gear chamber. It ensures the easy and reliable connection of mains.

ADQUEN ON Industrial-floodlight luminaires

The selection of the appropriate configuration of the luminaire's features allows creation of flood industrial luminaire intended for lighting industrial interiors or outside illumination of building's facade.

ADQUEN OP

Industrial-pending luminaires

The option of suspension mounting, in connection with other features, allows ADQUEN to be used in high industrial interiors.

The system of pendant ADQUEN OP industrial luminaires is equipped with hooks for simple installation on four suspension cords or chains.

ADQUEN OH

Luminaire for hybrid power supply systems

ADQUEN luminaires of OH type are adapted to cooperation with the hybrid power supply systems. They are equipped with DC power supply unit which feeds LEDs with direct current from batteries charged by energy from a photovoltaic panel and wind turbine. The Power supply unit consists of modules connected in parallel. Each module supplies one strip which contains 9 LEDs. The failure of one module turns off only one strip, while the other LEDs still work properly.