

ROSA[®]



OUTDOOR LIGHTING
LED COLLECTION

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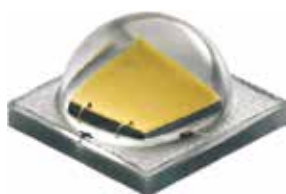


ROSA LED collection includes models of street and park luminaires, decorative columns and lighting sets as well as industrial lighting luminaires. Combining technology of anodized aluminium with an innovative LED light source makes these products not only economic, ecological and durable, but also very aesthetic. The collection is a combination of LED technology and modern design.

CHARACTERISTICS

LIGHT SOURCE

ROSA LED products are equipped with light sources from CREE:



LED CREE XM-L2



LED CREE XT-E



XM-L2 – one of the most efficient single-die diode on the market which assures unprecedented savings in energy consumption:

- high efficiency – allows to achieve up to 120lm/W luminous efficacy for an entire luminaire
- low thermal resistance 2,5°C/W – it translates into lower working temperatures of LEDs and consequently longer lifespan of luminaire

XT-E – a diode with a good ratio of price to performance:

- high uniformity of light colour in the whole angle of the lighting beam (KARIN LED, CORONA LED)

LMH2 – replaceable LED module used in traditional luminaires retrofitted with LED source (ATLANTIS LED, ELBA LED):

- pleasant warm colour temperature of light (3500K) and very high CRI >90

COLOUR TEMPERATURE OF LIGHT, COLOUR RENDERING INDEX

The light sources in ROSA luminaires and lighting sets are available in the various light colour temperatures.

Our luminaires can use LEDs with a colour temperature of light 3500 K or 5000 K with high colour rendering index.

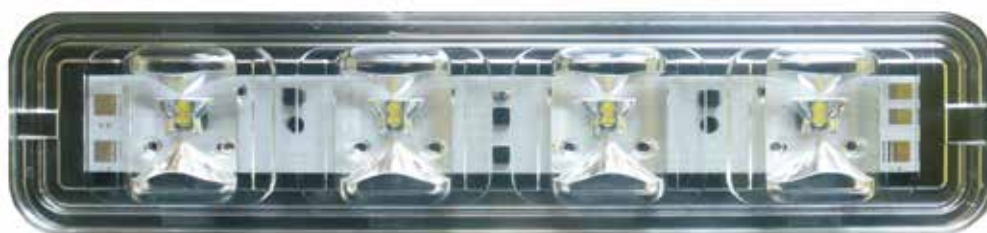
Light colour	Colour temperature of light (CCT)	Colour rendering index (CRI)
Warm white	3500 K	80
		>90*
Neutral white	5000 K	75

* ATLANTIS LED, ELBA LED

These variants are marked in the product code by number „3” for the temperature of 3500 K and by number „6” for the 5000 K. The choice of one of these options makes no difference to the luminaire cost but depends on customer preferences. Warm white colour of lighting is preferred in urban spaces, parks. Whereas, neutral white colour (5000 K) works in street lighting due to higher luminous efficacy.

OPTICS

ROSA LED luminaires use only optics made from PMMA with increased resistance to temperature, both at the collective lens and lamp diffusers/ light diffusing plates (ELBA LED, ATLANTIS LED, CORONA LED, KARIN LED). Standard module LED has a temperature sensor and protections for circuit interruption due to damage of a single diode.



Standard module LED – used in most of the park luminaires, also in lighting sets DROP LED and FLEXI LED

REPLACEABLE LED MODULE

Replaceable LED module contains 12 diodes XM-L2 or XT-E and can be used with 5 unique optics. The lens and connectors are waterproof – IP67. The module has a temperature sensor and protection against circuit interruption. At the bottom of the module a graphite thermal pad is mounted which provides heat transfer to the heat sink of the luminaire or column. The module can be replaced using simple tools.



Replaceable LED module is used in the lighting sets STICK LED, CORE LED, CUT LED.

LUMINAIRE CONSTRUCTION

Luminaires body and lighting sets are made entirely from profiles and aluminium sheets (*). Aluminium alloys used in ROSA luminaires are characterized by excellent thermal properties and high thermal conductivity (> 200W/mK). Maintaining low temperature of LEDs is critical in order to ensure their durability over the years. Luminaire housing is anodized, which further increases dissipation of heat by radiation. Luminaires made of aluminium undergo colouring process using anodizing technology, as standard LED luminaires are offered in inox/black configuration of colours.

**except LED luminaires OS-1 LED, ELBA LED, ATLANTIS LED and MAGNOLIA LED being the products retrofitted with LEDs*

DRIVER – PHILIPS

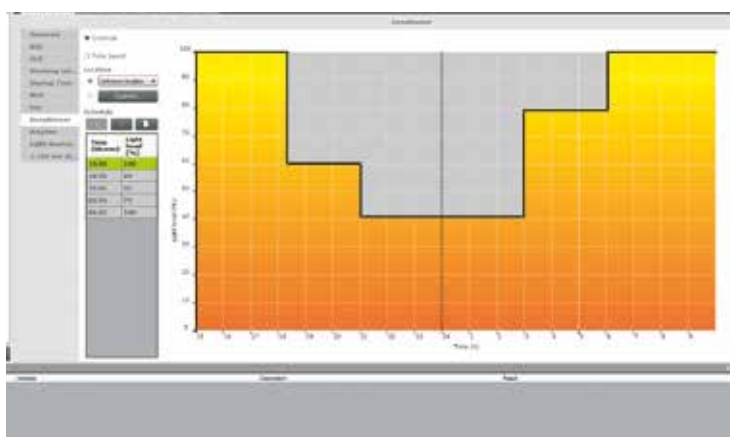
The LED luminaires use highly efficient constant current programmable drivers: Philips Xitanium. Drivers series Xitanium are designed to power outdoor lighting with LED light source. Philips Xitanium drivers offer considerable flexibility through a large number of programmable options that can be set according to different requirements of customers. At the user's disposal are a number of parameters available such as: adjustable output current, interfaces Dali and 1-10V, built-in programmer time profiles. In addition, driver has an option to control the temperature of LED modules, which reduces power if it detects a temperature higher than programmed, allowing to protect LEDs from overheating, and hence faster wear. The driver is housed in an enclosure with routed connectors, making its replacement without or with simple tools.



Parameters used in Philips Xitanium drivers

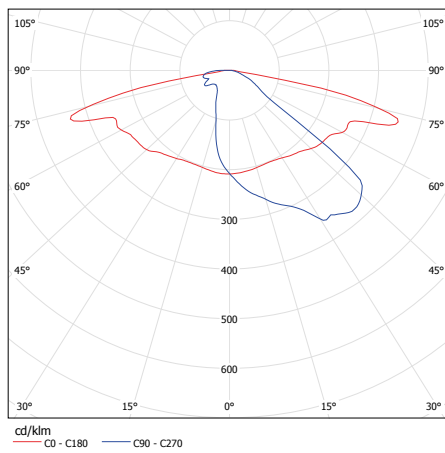
Model	Output power range	Output voltage range	Current output range	Voltage	Insulation class	Ingress protection (IP)
Xitanium 75 W 0.1-1.05A Prog+sXt	25-75 W	36-75 V	100-1050 mA	120-277 V	II	IP66
Xitanium 150 W 0.1-1.05A Prog+sXt	75-150 W	70-148 V				

Programmable time profiles allow to boost savings resulting from the use of lighting based on LED technology. Additional economic benefits result from possibility of reducing power luminaire during the cycle, which does not require a maximum luminous flux. For customer's choice there is a possibility of setting 5 power threshold in the range from 10 to 100% of rated power at any interval cycle of luminaire. Power level which is expected at specific hours is indicated by the user in daily part and next the driver performs a given profile, regardless of the time on/off lighting. The use of such a solution can reduce the power consumption of luminaires, which translates into economic savings.



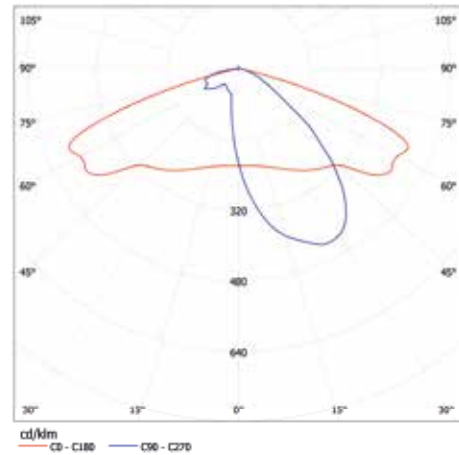
Available optics for replaceable LED module

ME



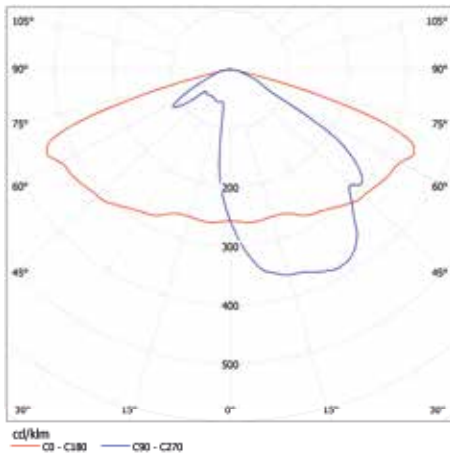
- ME lighting classes
- high rate of surrounding lighting SR > 0.6

T2



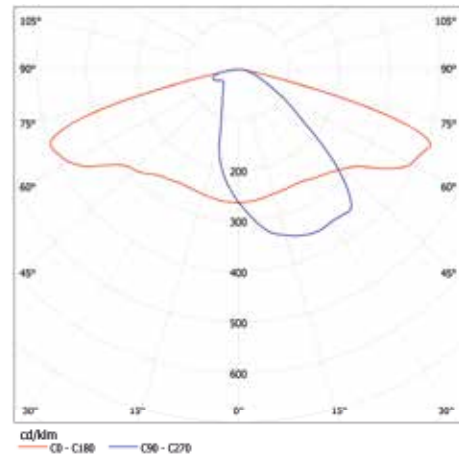
- ME2 lighting classes
- particularly effective in double row configurations (opposing arrangement or on median)

T3



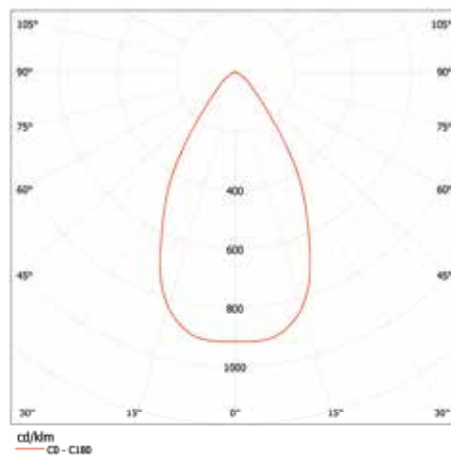
- ME3 lighting classes
- installation of up to 10m
- high longitudinal uniformity of the luminance UI

DW



- ME road classes, pedestrian ways
- installation height up to 8m
- very high longitudinal uniformity of the luminance UI

HB



- illumination of warehouses
- illumination of buildings

EXTERNAL CONTROL SYSTEM

ROSA LED luminaires are compatible with DALI or 1-10V, which allows to control the light intensity of the luminaire. The best way of control is the connection of luminaires to a lighting control system. Such system provides steering and control of LED luminaires.

ROSA recommends a lighting control system from Polish company APANET Green System that gives a possibility of dimming and the exclusion of individual luminaire or groups of the luminaires and control their parameters (active and reactive power, cosφ, THD, etc.).



This system operates in a global standard LonWorks, a protocol LonTalk (ISO/IEC14908) is used to communication so that it is possible to use the devices from different manufacturers in a single installation. Additionally, there is a possibility of installing sensors in the system, mostly twilight and traffic, weather station through which is possible a control the weather conditions in the place of luminaires installation. In case of failure of the luminaire, system sends a text message or an e-mail with information about the damage of the luminaire. Control over such luminaires takes place via the devices with internet connection (desktop computers, laptops, tablets). This allows to control luminaires from almost every place on Earth.

The use of an external control system can significantly affect the reduction of energy costs (e.g. installing a motion sensor on the rarely frequented stretch of road) and maintenance (reporting failure).

ANODIZING COLOURS

Luminaires made of aluminium alloy are subjected to colouring process by using anodizing technology. We offer a wide range of colours, currently consisting of 12 colours, including: natural C-0, champagne C-32, olive C-33, brown C-34, black C-35, black brightened C-35W, inox C-45, inox brightened C-45W, grey CI-63, graphite CI-65, green CI-75 and anthracite CI-78.

DURABILITY

The durability of LED luminaires results from the lifespan of LEDs, which is a minimum of 70 000 hours and by the highest quality materials from which they are made. Anodized aluminium provides proper heat dissipation, making long luminous efficacy of the luminaire at the highest level.

RESEARCH LABORATORY

ROSA company has its own laboratory, which plays a key role in the research and development activities of the company. It allows to carry out, inter alia, precise tests of corrosion, ageing, ingress protection, photometric and climatic. Tests allow to analyze the functioning of luminaires due to weather conditions, environmental and work in the future. The current process control implemented at every stage of production ensures high quality of delivered products and guarantee their durability.

Each product of LED collection has been thoroughly tested in the laboratory at all stages of its formation.



The most modern device to perform photometric tests in ROSA laboratory.



ECOLOGY

ROSA company has developed its own program of environmental protection, which includes the environmental education, creation of ecological attitudes and behaviors among employees and partners but also it is the process of adapting production technology and products manufacture to the strict standards and regulations relating to environmental protection. ROSA program is a specific project undertaken each day – it is a common investment for the future.

Specific actions taken by ROSA on the environment are:

- Selectively carried out waste collection, which after milling is sent to reprocessing or delivered to specialist companies which recover raw materials and use them for alternative fuels.
- In order to reduce emissions of greenhouse gases and carbon emissions the process heat is recovered from operating equipments. Special pumps are used for the heating of production halls.
- Specific cross exchangers are used in the ventilation systems with the result that the air discharged outside heats the air which is sucked into the hall what reduces the consumption of natural gas for heating production halls and offices.
- Production line in anodizing plant is equipped with modern equipment, which significantly limit the impact on the environment.
- Investing in modern equipment that protects the environment, inter alia, in cogeneration units that produce electricity and heat required in the production process.

ROSA products including, inter alia, aluminium columns, through the use of material which is fully recycled and secured by anodizing, extends its lifespan up to 3 times! Anodized coating is permanently integrated with aluminium so that the soil does not get into any impurities.

Luminaires are produced in ROSA LED technology and provide savings class A++ while the LEDs are environment-friendly due to:

- No UV rays emitting.
- No infrared radiation emitting.

Moreover, ROSA LED products use less energy resulting in a reduction in carbon dioxide emissions from electricity producers. All ROSA LED luminaires comply with the Standard of PN-EN 62471 "Photo biological safety of lamps and lamp systems", therefore, do not cause damage to the eyesight under standard conditions of use and are compatible with the international RoHS directive, which restricts the use of hazardous materials in electronics. In accordance with the "Dark Sky" anti light pollution policy, light from ROSA LED luminaires is directed only downward. The whole process of production is controlled by a modern research laboratory owned by ROSA Group.

ROSA LED PRODUCTS ARE COMPATIBLE WITH THE FOLLOWING DIRECTIVES:

- Directive LVD 2006/95/WE on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits
- Directive EMC 2004/108/WE the laws of the Member States relating to electromagnetic compatibility
- Directive RoHS 2002/95/WE on reducing the use of certain dangerous substances in electrical and electronic equipment.

ROSA LED PRODUCTS CARRY A 5 YEAR GUARANTEE WHICH CAN BE EXTENDED UP TO 10 YEARS.

HIGH INVESTMENT COSTS?

ROSA LED LUMINAIRES WILL CHANGE IT!

We give the example that the lighting of a square with dimensions 20 m x 132 m using LED luminaires is **23,2%** cheaper compared to the traditional sodium luminaires.

Our main assumption was to compare the luminous efficiency of two luminaires – LED and sodium one, in the situation when they need to achieve the parameters required by S3 class for the Norm EN 13201 and the total lighting time of luminaire at 4126,3 h in a year.

OPA-1 S-70W Son luminaire



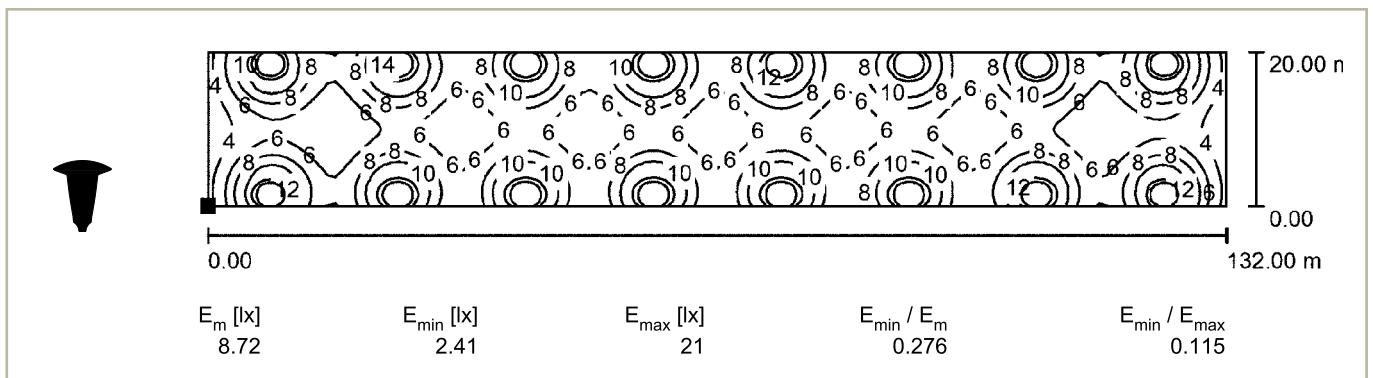
OPA-1 S-70W Son is a sodium luminaire with a power of 70W. To the analysis we chose the luminaire with Atlantis Frozen lamp-diffuser.

MIRA LED 36 luminaire

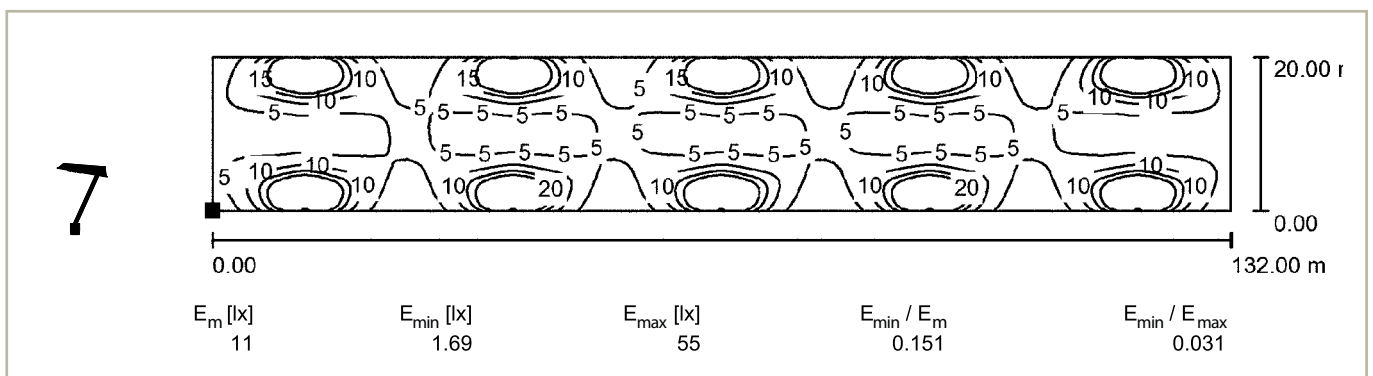


MIRA LED 36 is a LED luminaire with a power of 36W in anodized aluminium body with CREE XM-L2 LEDs. In standard version the luminaire is equipped with a programmable driver that enables power reduction in scheduled night hours.

The chosen luminaires were mounted on the 4,5 m high columns.





In order to achieve the parameters mentioned above, we need to install 16 lighting sets with OPA-1 S-70W luminaires.



We need only 10 lighting sets to illuminate the same area using MIRA LED 36 luminaires.

I. LED luminaires = savings in electrical energy consumptions



Here are the results of our analysis:

	OPA-1 S-70W 	MIRA LED 36 
Total power consumption of luminaire	79 W	42 W
Annual total power consumption of luminaire	326 kWh	173 kWh

CONCLUSION: The annual savings of electricity consumption using MIRA LED 36 is **47%**.

II. LED luminaires = savings through the reduction of lighting sets number

Here are the results of our analysis:

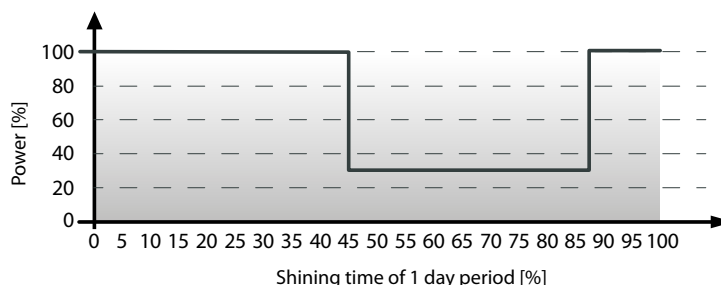
	OPA-1 S-70W 	MIRA LED 36 
Number of lighting sets	16	10
Annual total power consumption of lighting sets	5216 kWh (16 lighting sets x 326 kWh)	1739 kWh (10 lighting sets x 173 kWh)

CONCLUSION: Using MIRA LED 36 luminaires the total annual savings of electricity consumption of whole investment is **66,8%**.



III. Additional savings through the power reduction in LED luminaires

ROSA LED luminaires are equipped with programmable driver that enables reducing the luminous flux at certain hours of the night. Therefore we can assume that in a daily cycle MIRA LED luminaire for the first 45% and last 13% of illumination time will be using 100% of its power and between those periods of time it will be using only 30% of its power. That will cause 30% reduction of overall power.

The below diagram shows the savings which are the result of application of the power reduction in ROSA LED luminaires:



Electricity consumption savings are the best seen in comparison:

	Annual total power consumption of 16 lighting sets with OPA-1 S-70W luminaire without possibility of power reduction	5216 kWh
	Annual total power consumption of 10 lighting sets with MIRA LED 36 luminaire using power reduction in specified hours (-30% power use)	1211 kWh

CONCLUSION: The total annual power savings of the whole investment using MIRA LED 36 and power reduction is **76,8%**.

According to prices on the Polish market total cost of purchase and installation of 10 lighting sets with MIRA LED 36 luminaires is **23,2%** lower than total cost of purchase and installation of 16 lighting sets with OPA-1 S-70W Son luminaires.

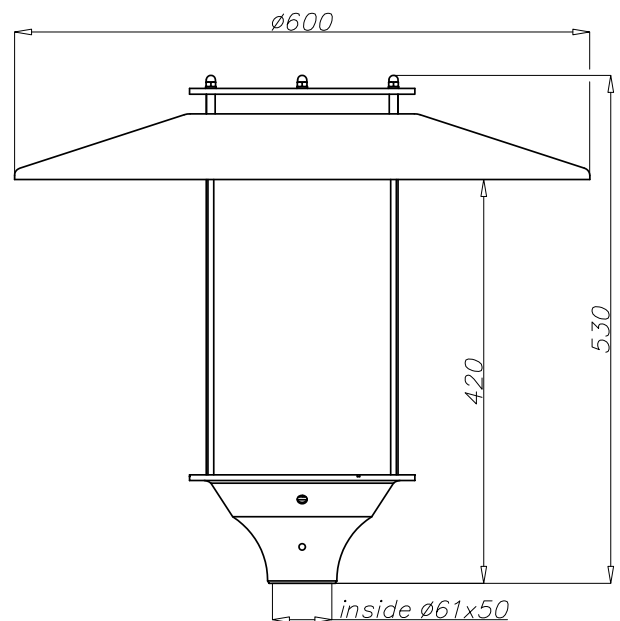
GENERAL CONCLUSION: USING ROSA LED LUMINAIRES MEANS TRIPPLE SAVINGS THAT CAUSE THE INVESTMENT NOT ONLY MORE EFFICIENT AND ENERGY-SAVING BUT CHEAPER AT THE START AS WELL.

CHARACTERISTICS

ELBA LED is designed to illuminate pedestrian ways, parks and squares. The light source is LED CREE LMH2. The luminaire is adapted to work in temperatures between -40°C and +55°C. It is designed for mounting on columns 4 m to 6 m high.

The advantages of using ELBA LED compared to luminaire ELBA S-70W:

- 45,57% reduction of luminaire energy consumption,
- up to 61,90% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





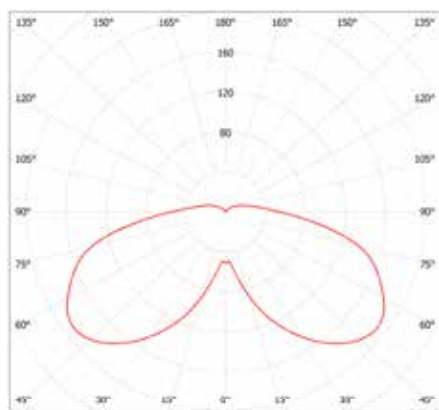
TECHNICAL DATA

Type	ELBA LED
Code	213050/3** 213150/3***
Colour temperature [K]	3500
LEDs power [W]	38
Total power [W]	43
Luminous efficiency [lm/W]	74
Luminous flux [lm]	3 200
Net weight [kg]	5,0
Unit volume [m ³]	0,060
Windage [m ²]	0,115
Voltage [V]	120 -277 AC 50/60 Hz

* due to the precision class of diodes tolerance is +/- 3%

** luminaire's cap painted in black

*** luminaire's cap painted in other colour



cd/klm
C0 - C180

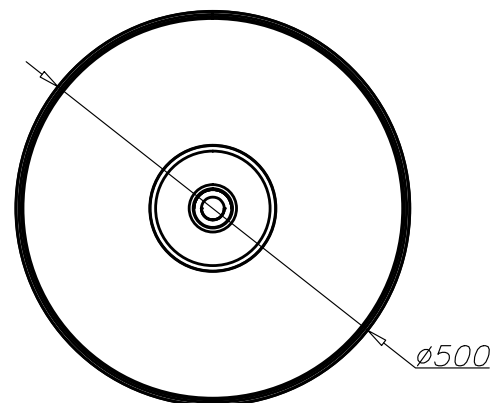
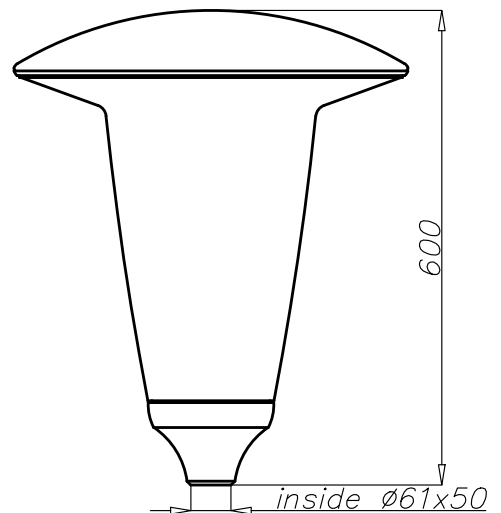
Distribution curve for ELBA LED

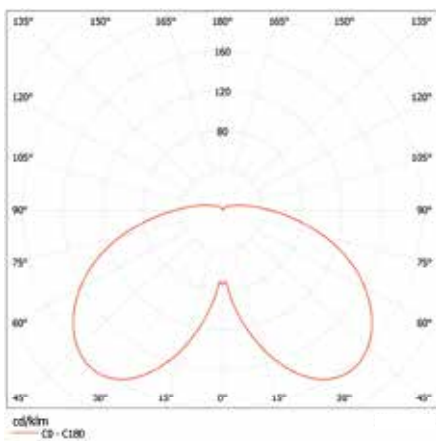
CHARACTERISTICS

ATLANTIS LED is designed to illuminate parks, squares and pedestrian ways. Luminaire's cap is made of aluminium with a high-performance thermal conductivity, frozen lamp diffuser – PMMA and luminaire's base – aluminium cast. The light source is LED CREE LMH2. The luminaire is adapted to work in temperatures between -40°C and +55°C. It is designed for mounting on columns 4 m to 6 m high.

The advantages of using ATLANTIS LED 35 compared to OPA-1 S-70W luminaire with lamp diffuser Atlantis white:

- 49,4% reduction of luminaire energy consumption,
- up to 64,4% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





Distribution curve for ATLANTIS LED

TECHNICAL DATA

Type	ATLANTIS LED
Code	214650/3
Colour temperature [K]	3 500
LEDs power [W]	38
Total luminaire power [W]	43
Luminous efficiency [lm/W]	81
Luminous flux* [lm]	3 500
LEDs amount	16
Net weight [kg]	4,6
Unit volume [m ³]	0,220
Windage [m ²]	0,135
Voltage [V]	120-277 AC 50/60 Hz

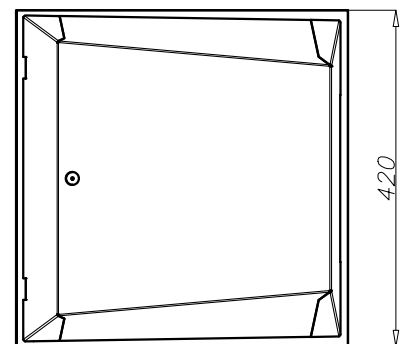
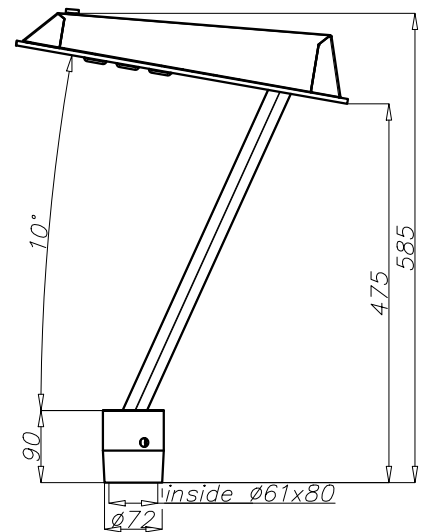
* Due to the precision class of diodes tolerance is +/- 3%

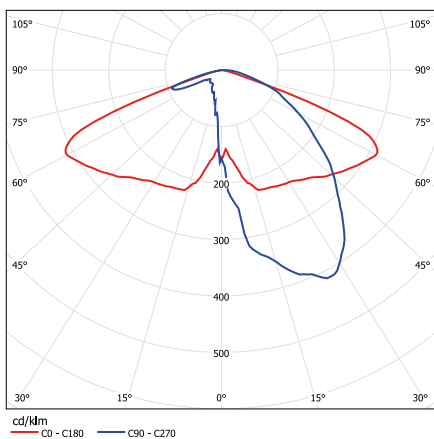
CHARACTERISTICS

MIRA LED is designed to illuminate parks, squares and pedestrian ways. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and +40°C. It is designed for mounting on columns 4 m to 5 m high.

The advantages of using MIRA LED 36 compared to OPA-1 S-70W Son luminaire with lamp diffuser Atlantis frozen:

- 46,84% reduction of luminaire energy consumption,
- up to 62,9% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





Distribution curve for MIRA LED

TECHNICAL DATA

Type	MIRA LED 36	
Code	214532/6	214532/3
Colour temperature [K]	5 000	3 500
LEDs power [W]	36	
Total luminaire power [W]	42	
Luminous efficiency [lm/W]	111	86
Luminous flux* [lm]	4 650	3 600
LEDs amount	12	
Net weight [kg]	6,1	
Unit volume [m ³]	0,115	
Windage [m ²]	0,029	
Voltage [V]	120 -277 AC 50/60 Hz	

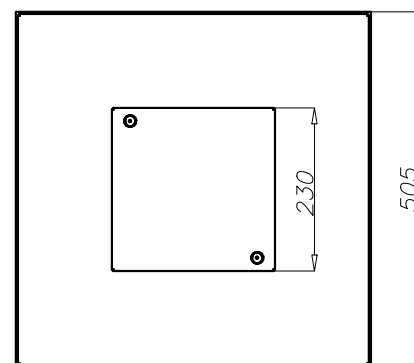
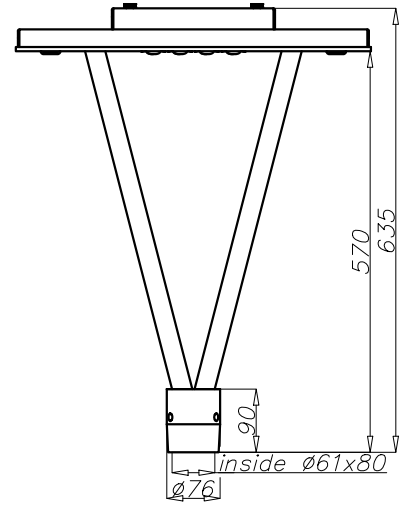
* Due to the precision class of diodes tolerance is +/- 3%

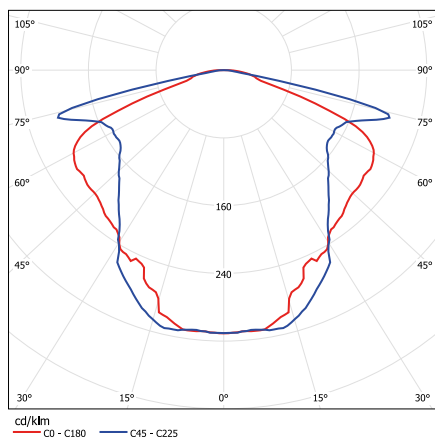
CHARACTERISTICS

MIZAR LED is designed to illuminate parks, squares and pedestrian ways. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and +55°C. It is designed for mounting on columns 5 m to 6 m high.

The advantages of using MIZAR LED 48 compared to OPA-1 S-100W Son luminaire with lamp diffuser Auris Maxi I:

- 50,89% reduction of luminaire energy consumption,
- up to 65,6% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





Distribution curve for MIZAR LED

TECHNICAL DATA

Type	MIZAR LED 48	
Code	214433/6	214433/3
Colour temperature [K]	5 000	3 500
LEDs power [W]	48	
Total luminaire power [W]	55	
Luminous efficiency [lm/W]	113	88
Luminous flux* [lm]	6 200	4 850
LEDs amount	16	
Net weight [kg]	9,2	
Unit volume [m ³]	0,172	
Windage [m ²]	0,057	
Voltage [V]	120 -277 AC 50/60 Hz	

* Due to the precision class of diodes tolerance is +/- 3%

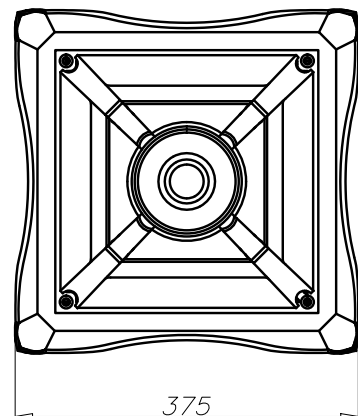
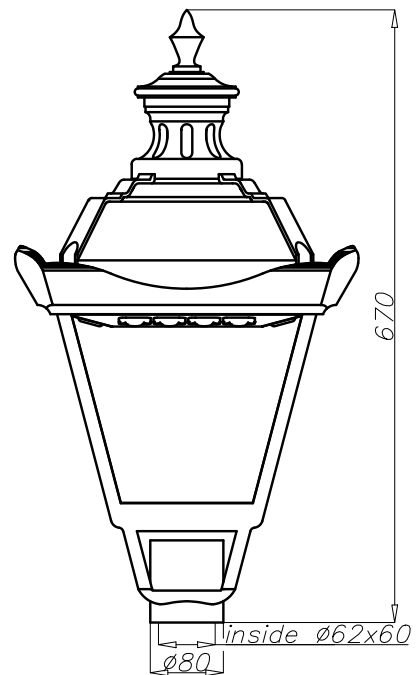
CHARACTERISTICS

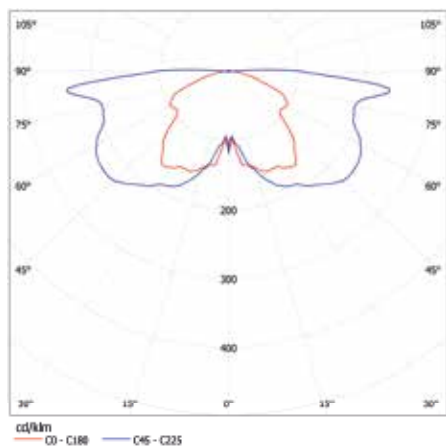
OS-1 LED is designed to illuminate parks, squares and pedestrian ways. It is made of mixture of black polypropylene with glass fibre resistant for UV radiation. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and $+40^{\circ}\text{C}$. It is designed for mounting on columns 5 m to 6 m high.

There was made a reduction in the supply current to 700 mA in OS-1 LED luminaire in order to achieve maximum energy-savings, heat reducing and extending the life of diodes.

The advantages of using OS-1 LED 32 compared to OS-1 S-70W Son luminaire:

- 50,63% reduction of luminaire energy consumption,
- up to 65,3% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





Distribution curve for OS-1 LED

TECHNICAL DATA

Type	OS-1 LED 32	
Code	211331/6	211331/3
Colour temperature [K]	5 000	3 500
LEDs power [W]	32	
Total luminaire power [W]	39	
Luminous efficiency [lm/W]	97	72
Luminous flux* [lm]	3 800	2 800
LEDs amount	16	
Net weight [kg]	5,2	
Unit volume [m ³]	0,1	
Windage [m ²]	0,1	
Voltage [V]	120 -277 AC 50/60 Hz	

* Due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

VEGA LED is designed to illuminate pedestrian ways, parks and squares. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and +55°C. It is designed for mounting on columns 4,5 m to 8 m high. The luminaire is available in two options:

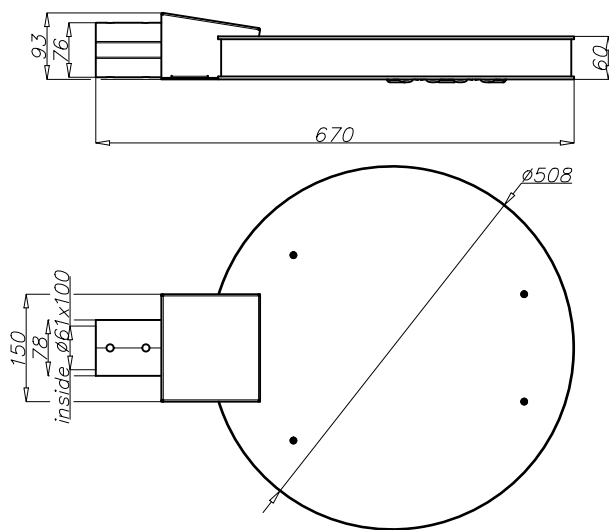
- VEGA LED – designed for mounting on extension arm,
- VEGA LED ALFA – pole top mounted.

The advantages of using VEGA LED 60 compared to luminaire OPA-1 S-100W:

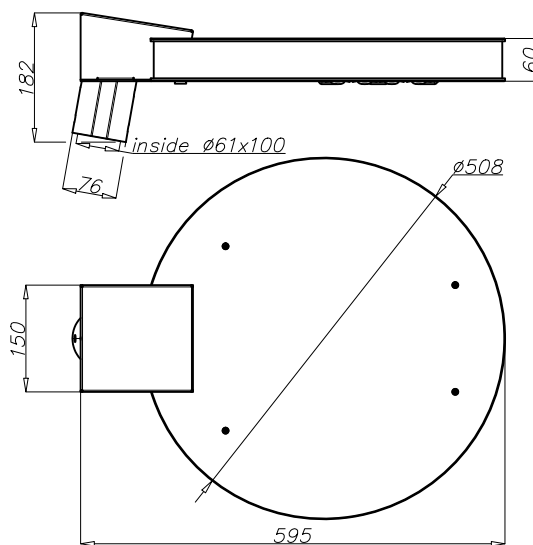
- 39,2% reduction of luminaire energy consumption,
- up to 57,4% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.



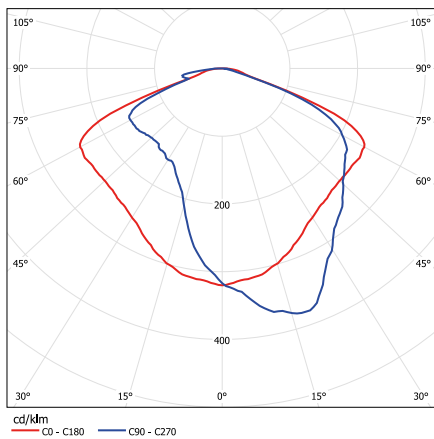
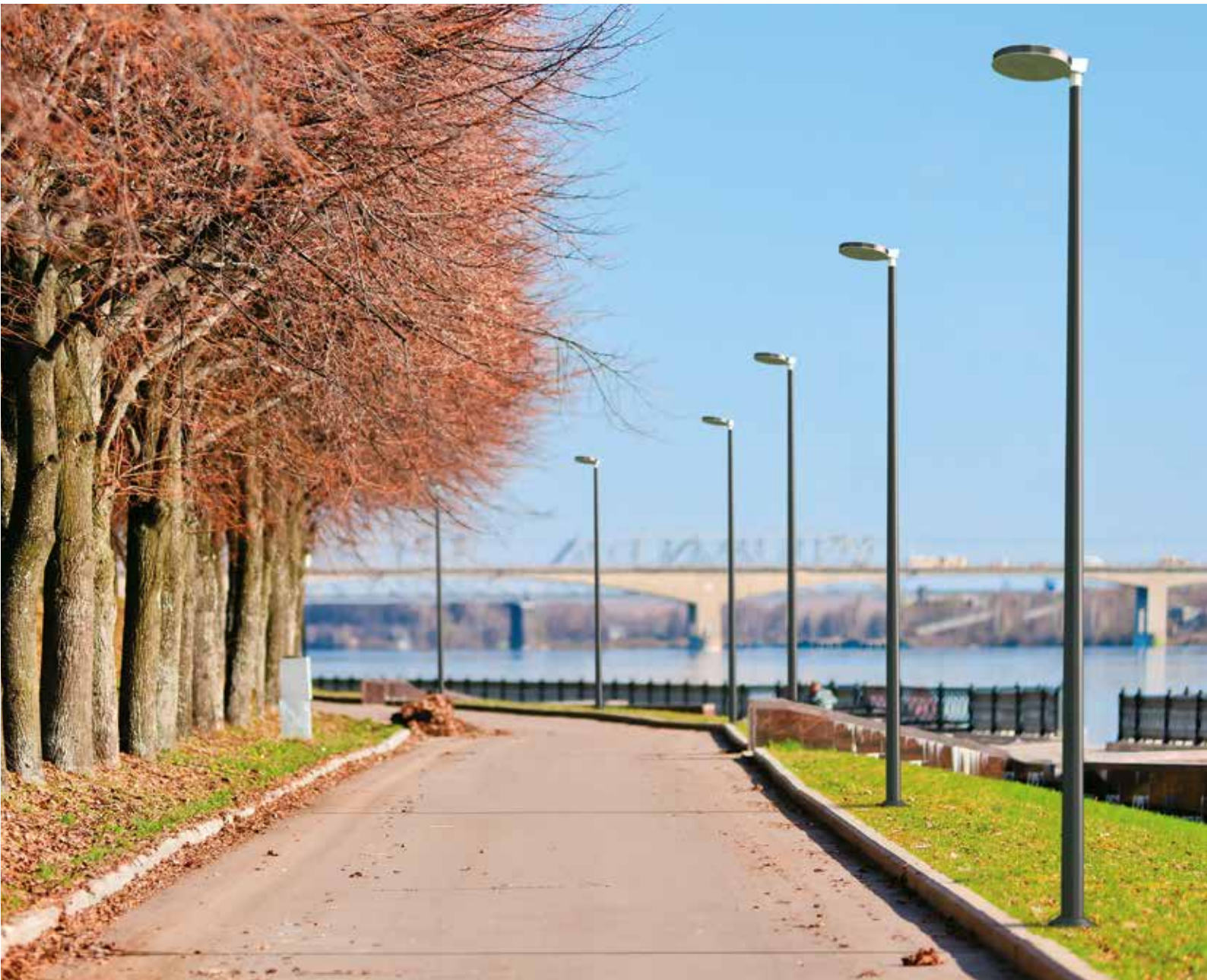
VEGA LED



VEGA LED



VEGA LED ALFA



Distribution curve for VEGA LED ALFA

TECHNICAL DATA

Type	VEGA LED 60 VEGA LED ALFA 60	
	Code	214134/6 214234/6
Colour temperature [K]	5 000	
LEDs power [W]	60	
Total luminaire power [W]	68	
Luminous efficiency [lm/W]	114	89
Luminous flux* [lm]	7 750	6 050
LEDs amount	20	
Net weight [kg]	10,5	
Unit volume [m ³]	0,068	0,099
Windage [m ²]	0,042	
Voltage [V]	120 -277 AC 50/60 Hz	

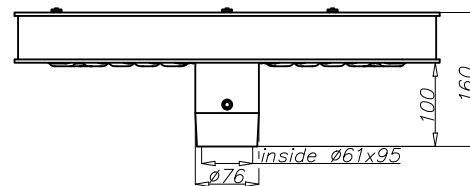
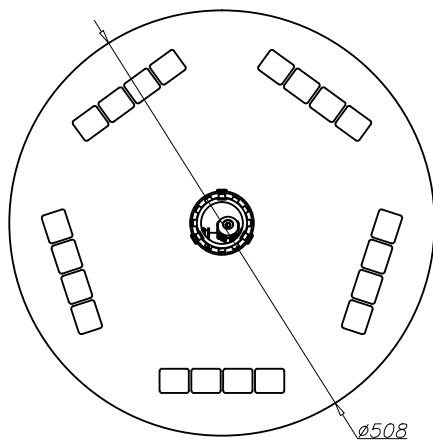
* Due to the precision class of diodes tolerance is +/- 3%

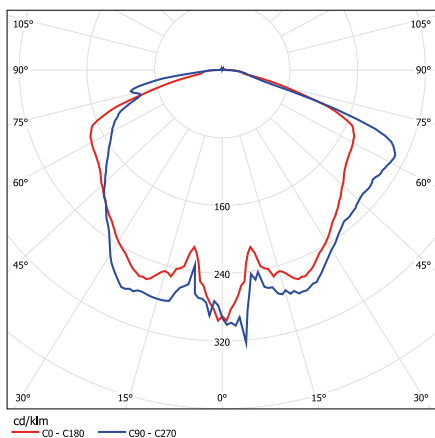
CHARACTERISTICS

VEGA LED BETA is designed to illuminate pedestrian ways, parks and squares. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and +55°C. It is designed for mounting on columns 4 m to 6 m high in a centric way.

The advantages of using VEGA LED BETA:

- reduction of energy consumption,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





Distribution curve for VEGA LED BETA

TECHNICAL DATA

Type	VEGA LED BETA 60	
Code	214034/6	214034/3
Colour temperature [K]	5 000	3 500
LEDs power [W]	60	
Total luminaire power [W]	68	
Luminous efficiency [lm/W]	114	89
Luminous flux* [lm]	7 750	6 050
LEDs amount	20	
Net weight [kg]	9,5	
Unit volume [m ³]	0,068	
Windage [m ²]	0,04	
Voltage [V]	120 -277 AC 50/60 Hz	

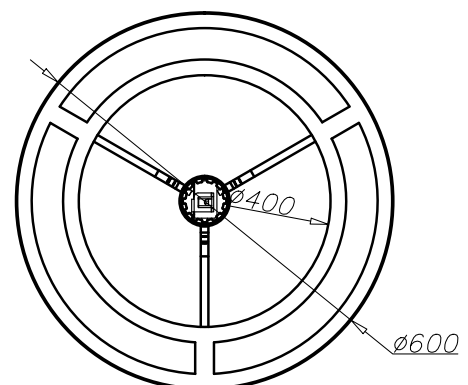
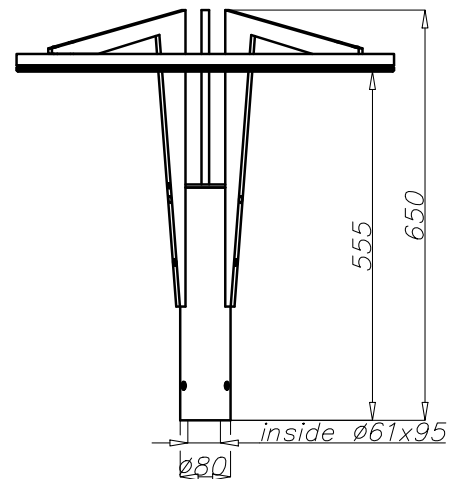
* Due to the precision class of diodes tolerance is +/- 3%

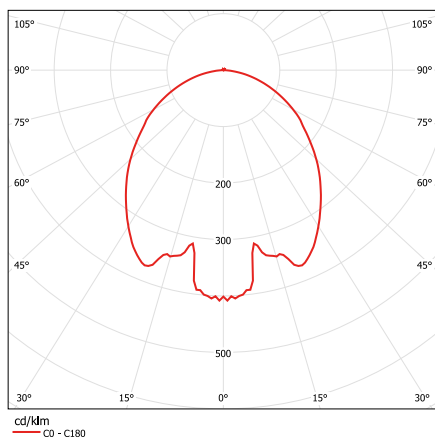
CHARACTERISTICS

CORONA LED is designed to illuminate parks, squares and pedestrian ways. The light source is CREE XT-E LED. The luminaire is adapted to work in temperatures between -40°C and $+55^{\circ}\text{C}$. It is designed for mounting on columns 5 m to 7 m high. For CORONA LED luminaire we recommend using aluminium column SAL DL-3.

The advantages of using CORONA LED:

- reduction of energy consumption,
- maintenance costs savings,
- decorative character.





Distribution curve for CORONA LED

TECHNICAL DATA

Type	CORONA LED 75
Code	214735/6
Colour temperature [K]	5 000
LEDs power [W]	75
Total luminaire power [W]	88
Luminous efficiency [lm/W]	55
Luminous flux* [lm]	4 900
LEDs amount	36
Net weight [kg]	13
Unit volume [m ³]	0,25
Windage [m ²]	0,095
Voltage [V]	120-277 AC 50/60 Hz

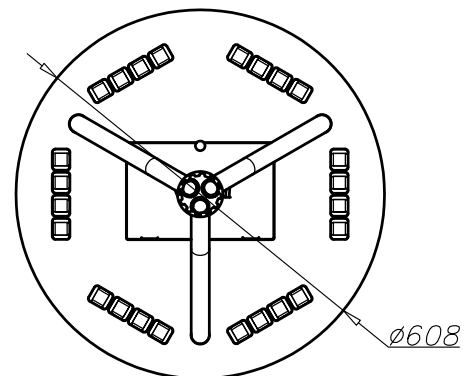
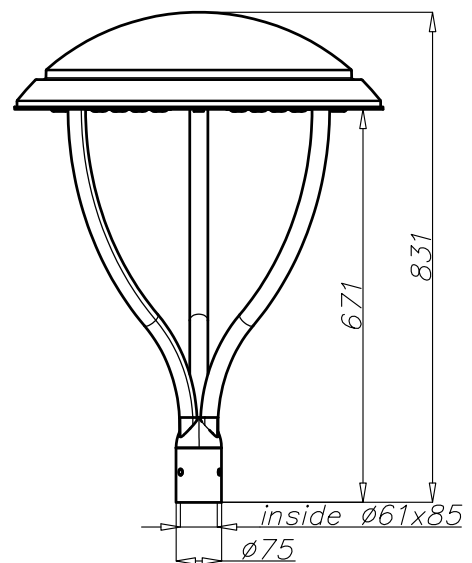
* Due to the precision class of diodes tolerance is +/- 3%.

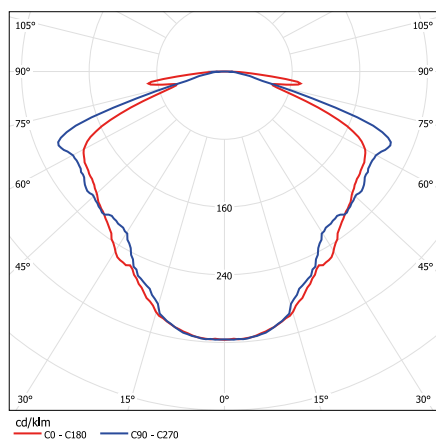
CHARACTERISTICS

COSMO DELTA LED is designed to illuminate parks, squares and pedestrian ways. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and $+55^{\circ}\text{C}$. It is designed for mounting on columns 6 m to 8 m high. For COSMO DELTA LED luminaire we recommend using aluminium column SAL DL-4.

The advantages of using COSMO DELTA LED compared to OPA-1 S-100W Son luminaire with lamp diffuser Auris Maxi with a cap:

- 28,57% reduction of luminaire energy consumption,
- up to 50% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





Distribution curve for COSMO DELTA LED

TECHNICAL DATA

Type	COSMO DELTA LED 72	
	214835/6	214835/3
Code	214835/6	214835/3
Colour temperature [K]	5 000	3 500
LEDs power [W]	72	
Total luminaire power [W]	80	
Luminous efficiency [lm/W]	117	91
Luminous flux* [lm]	9 350	7 250
LEDs amount	24	
Net weight [kg]	11	
Unit volume [m ³]	0,32	
Windage [m ²]	0,13	
Voltage [V]	120 -277 AC 50/60 Hz	

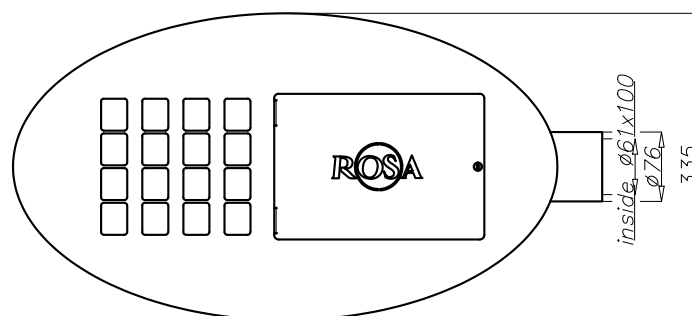
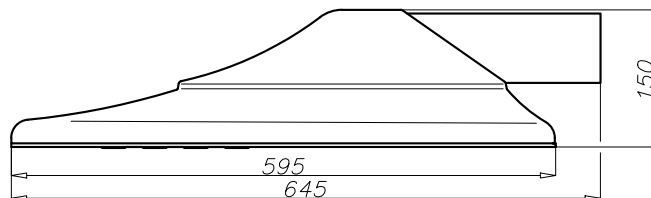
* Due to the precision class of diodes tolerance is +/- 3%

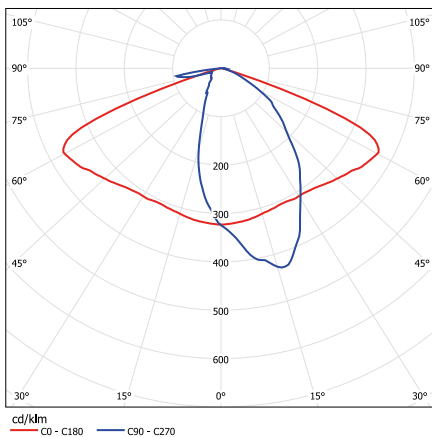
CHARACTERISTICS

GEMINI LED is designed to illuminate streets and pedestrian ways. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and +40°C. It is designed for mounting on columns 5 m to 6 m high.

The advantages of using GEMINI LED 48 compared to MAGNOLIA S-70W Son:

- 30,38 % reduction of luminaire energy consumption,
- up to 51,2 % reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





Distribution curve for GEMINI LED

TECHNICAL DATA

Type	GEMINI LED 36		GEMINI LED 48	
	214332/6	214332/3	214333/6	214333/3
Code	214332/6	214332/3	214333/6	214333/3
Colour temperature [K]	5 000	3 500	5 000	3 500
LEDs power [W]	36		48	
Total luminaire power [W]	42		55	
Luminous efficiency [lm/W]	111	86	113	88
Luminous flux* [lm]	4 650	3 600	6 200	4 850
LEDs amount	12		16	
Net weight [kg]	8		8	
Unit volume [m ³]	0,035		0,035	
Windage [m ²]	0,065		0,065	
Voltage [V]	120 -277 AC 50/60 Hz			

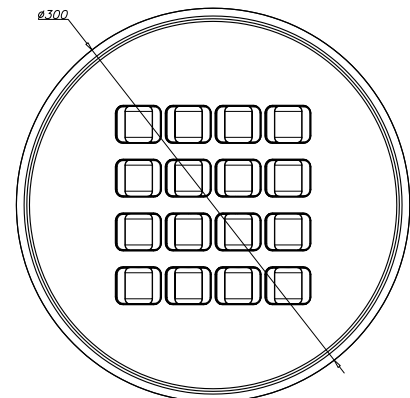
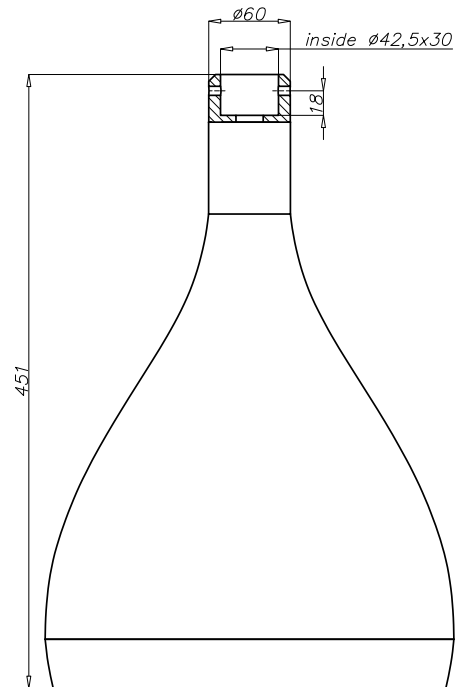
* Due to the precision class of diodes tolerance is +/- 3%

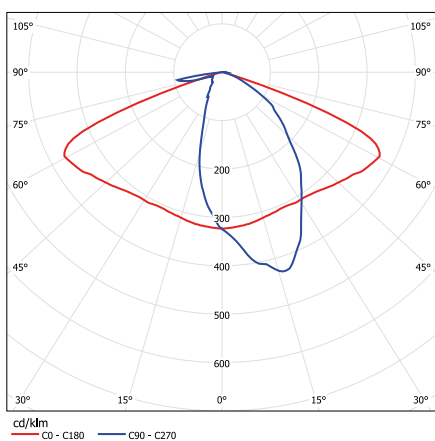
CHARACTERISTICS

DROP LED park luminaire is designed to illuminate parks, squares and pedestrian ways. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and $+40^{\circ}\text{C}$. It is designed to be mounted on columns 5 m to 6 m high. It is adapted to mount on the extension arms with spigot ending $\varnothing 42$ mm. Available with symmetric and asymmetric optics configuration.

The advantages of using DROP LED 48 compared to OW S-70W Son luminaire with lamp diffuser Cone white:

- 30.38% reduction of luminaire energy consumption,
- up to 51.2% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





Distribution curve for DROP LED, asymmetric optics

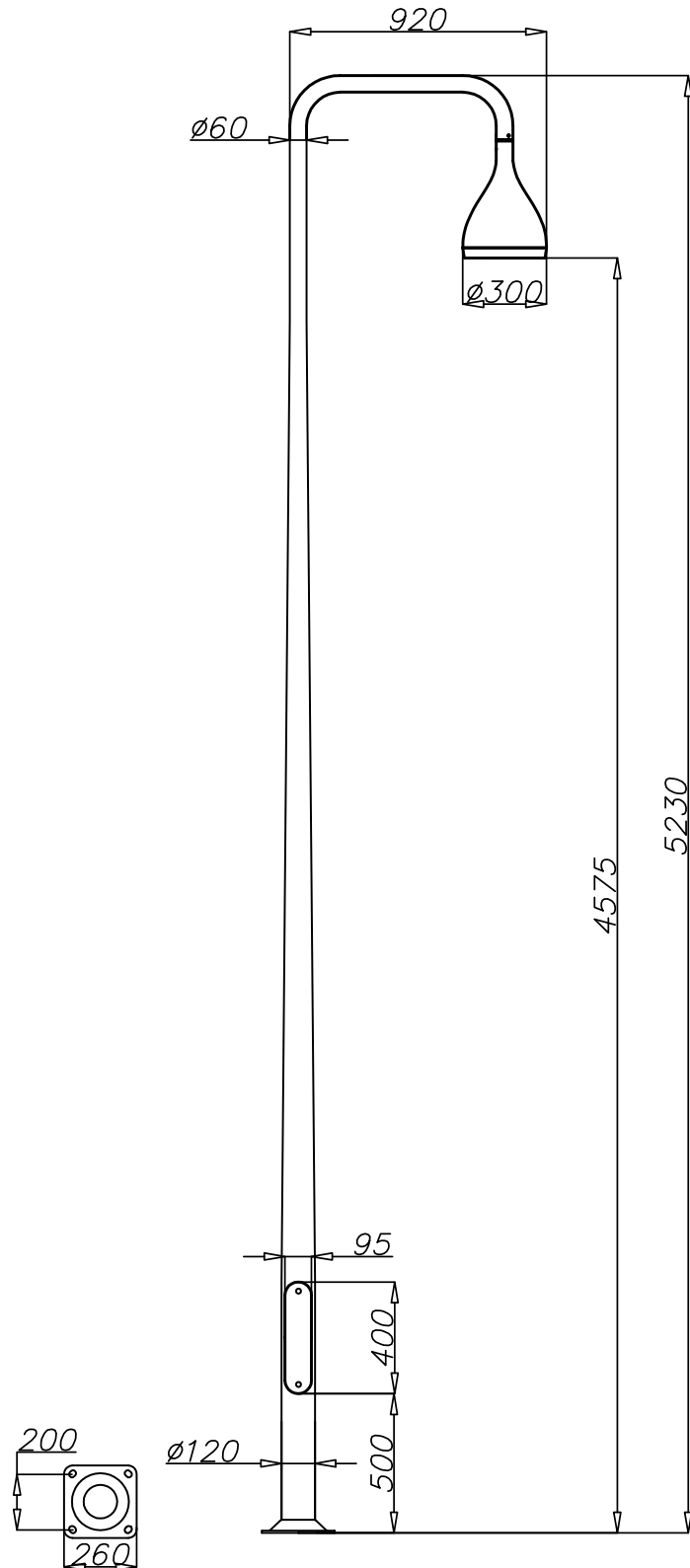
TECHNICAL DATA

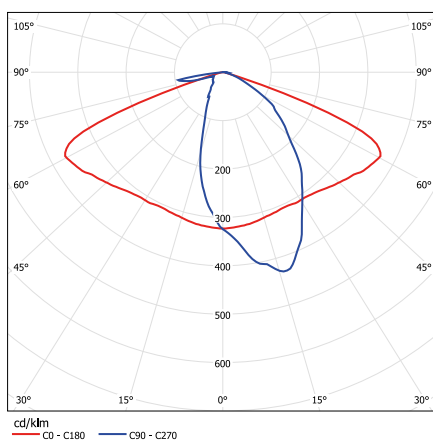
Type	DROP LED 48	
Code	214933/6/A** 214933/6/S***	214933/3/A** 214933/3/S***
Colour temperature [K]	5 000	
LEDs power [W]	48	
Total luminaire power [W]	55	
Luminous efficiency [lm/W]	113	88
Luminous flux* [lm]	6 200	4 850
LEDs amount	16	
Net weight [kg]	6,5	
Unit volume [m ³]	0,041	
Windage [m ²]	0,075	
Voltage [V]	120 -277 AC 50/60 Hz	

* Due to the precision class of diodes tolerance is +/- 3% ** A - asymmetric optics *** S - symmetric optics

CHARACTERISTICS

DROP LED is available in a lighting set DROP I LED consisting of DROP LED luminaire, single aluminium extension arm and aluminium column. The lighting set is designed to illuminate pedestrian ways, streets, parks and squares. The light source is CREE XM-L2 LED. It is adapted to work in temperatures between -40°C and $+40^{\circ}\text{C}$. It is available with symmetric and asymmetric optics configuration.





Distribution curve for DROP I LED, asymmetric optics

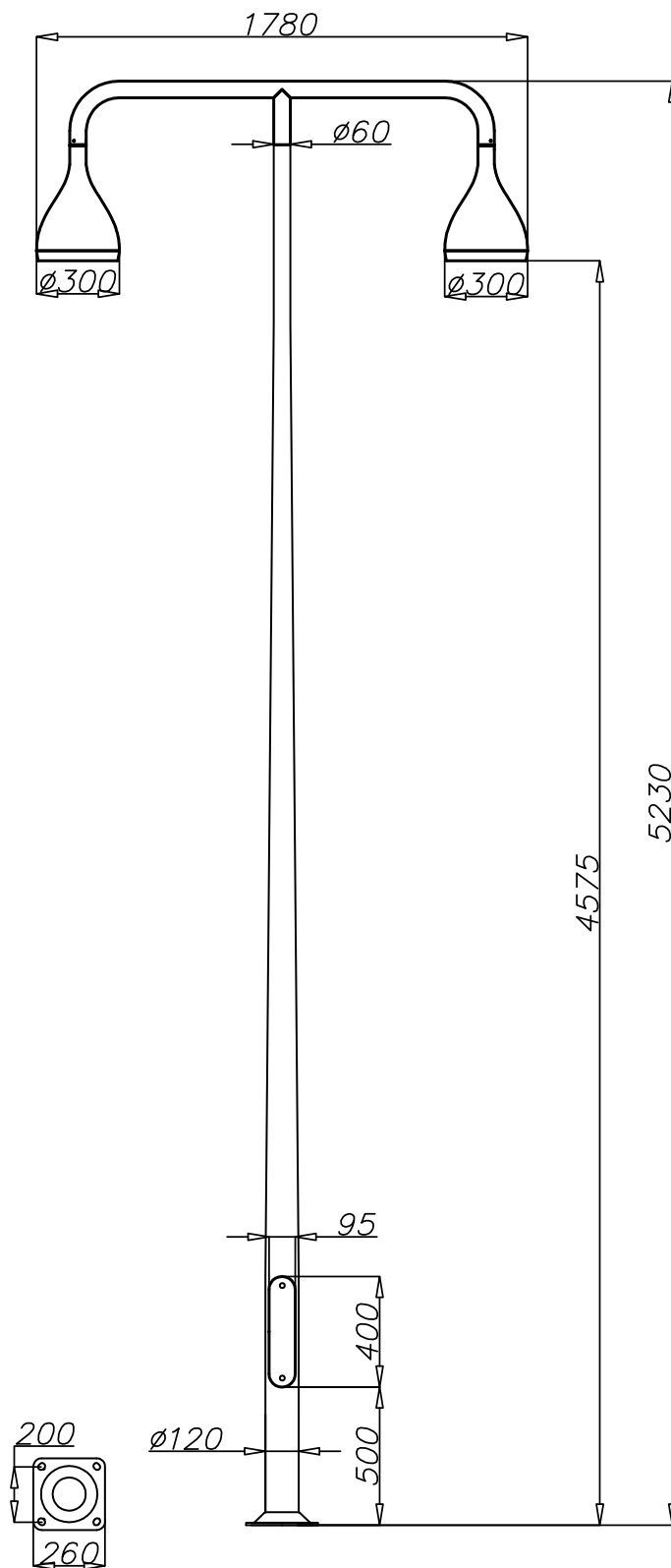
TECHNICAL DATA

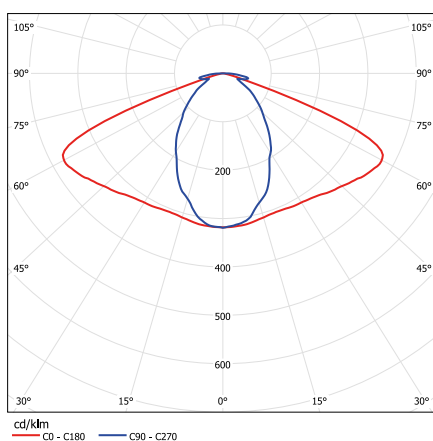
Type	DROP I LED 48	
Code	215033/6/A** 215033/6/S***	215033/3/A** 215033/3/S***
Colour temperature [K]	5 000	
LEDs power [W]	48	
Total luminaire power [W]	55	
Luminous efficiency [lm/W]	113	88
Luminous flux* [lm]	6 200	4 850
LEDs amount	16	
Net weight [kg]	25,9	
Unit volume [m ³]	1,78	
Voltage [V]	120 -277 AC 50/60 Hz	

* Due to the precision class of diodes tolerance is +/- 3% ** A - asymmetric optics *** S - symmetric optics

CHARACTERISTICS

DROP LED is available in a lighting set DROP II LED, consisting of two DROP LED luminaires, double aluminium extension arm and aluminium column. The lighting set is designed to illuminate pedestrian ways, streets, parks and squares. The light source is CREE XM-L2 LED. It is adapted to work in temperatures between -40°C and $+40^{\circ}\text{C}$. It is available with symmetric and asymmetric optics configuration.





Distribution curve for DROP II LED, symmetric optics

TECHNICAL DATA

Type	DROP II LED 2 x 48	
	Code	215133/6/A** 215133/6/S***
Colour temperature [K]	5 000	
LEDs power [W]	2 x 48	
Total luminaire power [W]	2 x 55	
Luminous efficiency [lm/W]	113	88
Luminous flux* [lm]	2 x 6 200	2 x 4 850
LEDs amount	2 x 16	
Net weight [kg]	34,9	
Unit volume [m ³]	3,01	
Voltage [V]	120-277 AC 50/60 Hz	

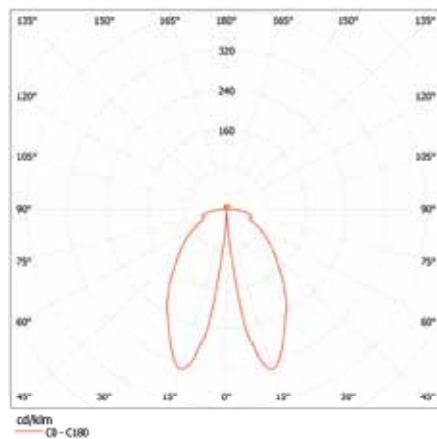
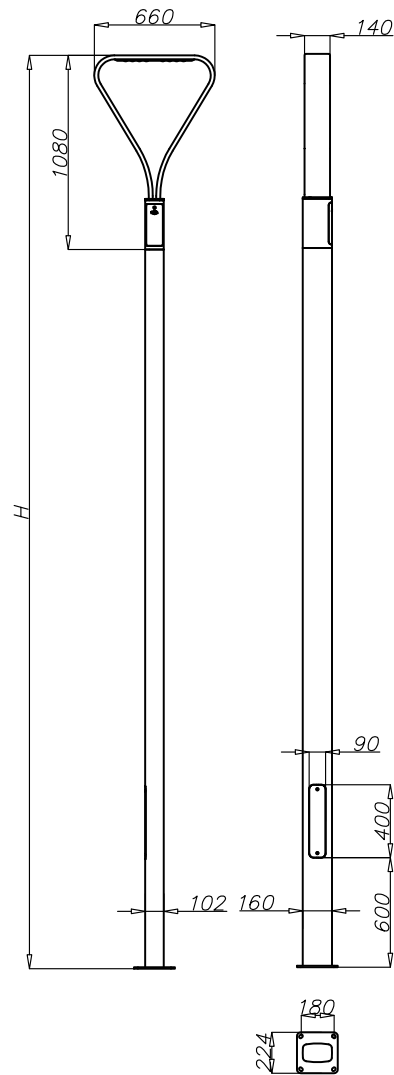
* Due to the precision class of diodes tolerance is +/- 3% ** A - asymmetric optics *** S - symmetric optics

CHARACTERISTICS

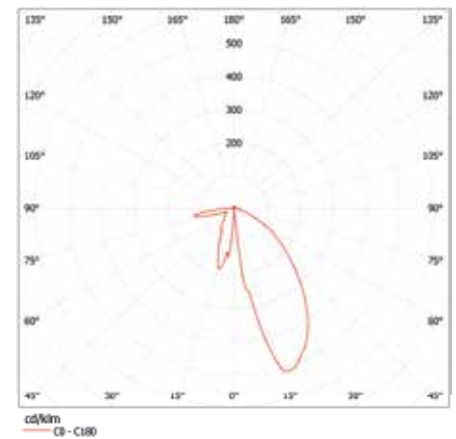
FLEXI LED lighting set is designed to illuminate parks, squares and pedestrian ways. The light source is CREE XM-L2 LED. It is adapted to work in temperatures between -40°C and $+55^{\circ}\text{C}$. It is available in two options of power and height. Available with symmetric and asymmetric optics configuration.

The advantages of using FLEXI LED:

- reduction of annual energy consumption,
- maintenance costs savings,
- decorative character.



Distribution curve for FLEXI, symmetric optics



Distribution curve for FLEXI, asymmetric optics



TECHNICAL DATA

Type	FLEXI LED 24				FLEXI LED 48			
	215530/6/S***	215530/6/A**	215530/3/S***	215530/3/A**	215533/6/S***	215533/6/A**	215533/3/S***	215533/3/A**
Code	215530/6/S***	215530/6/A**	215530/3/S***	215530/3/A**	215533/6/S***	215533/6/A**	215533/3/S***	215533/3/A**
Optics type	Symetric	Asymetric	Symetric	Asymetric	Symetric	Asymetric	Symetric	Asymetric
Colour temperature [K]	5 000	5 000	3 500	3 500	5 000	5 000	3 500	3 500
LEDs power [W]	24				48			
Total luminaire power [W]	28				55			
Luminous efficiency [lm/W]	86	80	67	63	86	80	67	63
Luminous flux* [lm]	2 375	2 200	1 850	1 725	4 750	4 400	3 700	3 450
LEDs amount	8				16			
Height [m]	4				5			
Net weight [kg]	29				32,5			
Unit volume [m ³]	0,6				0,75			
Windage [m ²]	0,38				0,49			
Voltage [V]	120 -277 AC 50/60 Hz							

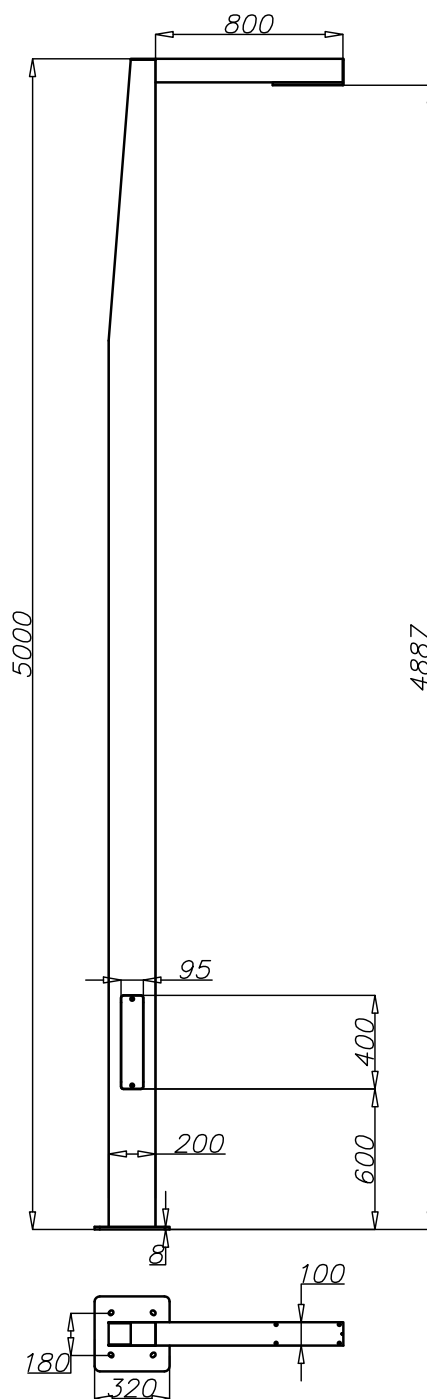
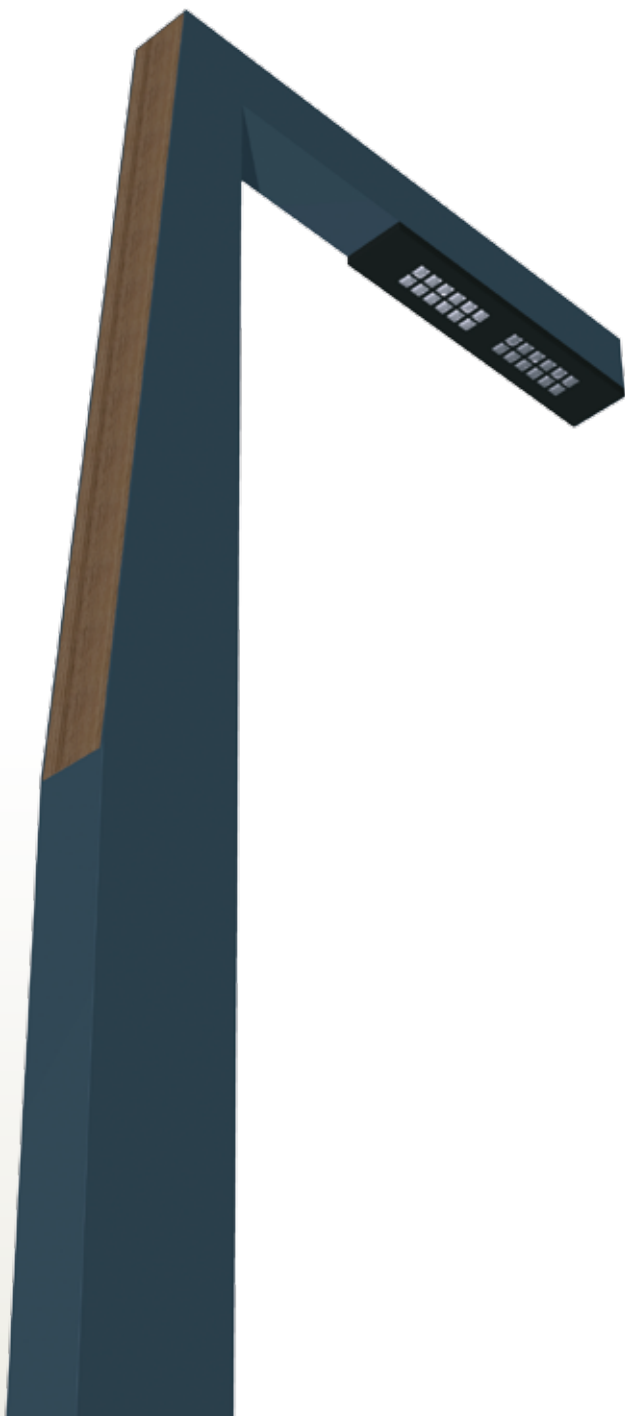
* Due to the diodes tolerance is +/- 3% ** A - asymmetric optics *** S - symmetric optics

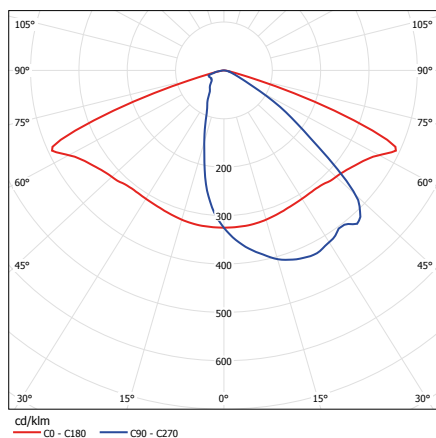
CHARACTERISTICS

CORE LED lighting set is designed to illuminate parks, squares and pedestrian ways. It is made of aluminium profiles anodized grey in standard with wooden decorative element in alder colour. The light source is CREE XT-E LED. The lighting set is adapted to work in temperatures between -40°C and +55°C.

The advantages of using CORE LED:

- reduction of annual energy consumption,
- maintenance costs savings,
- decorative character.





Distribution curve for CORE LED

TECHNICAL DATA

Type	CORE LED 24	CORE LED 48
Code	216530/6	216533/6
Colour temperature [K]	5 000	
LEDs power [W]	24	48
Total power [W]	31	55
Luminous efficiency [lm/W]	71	80
Luminous flux [lm]*	2 200	4 400
LEDs amount	12	24
Net weight [kg]	42	
Height [m]	5	
Unit volume [m ³]	1,75	
Voltage [V]	120-277 AC 50/60 Hz	

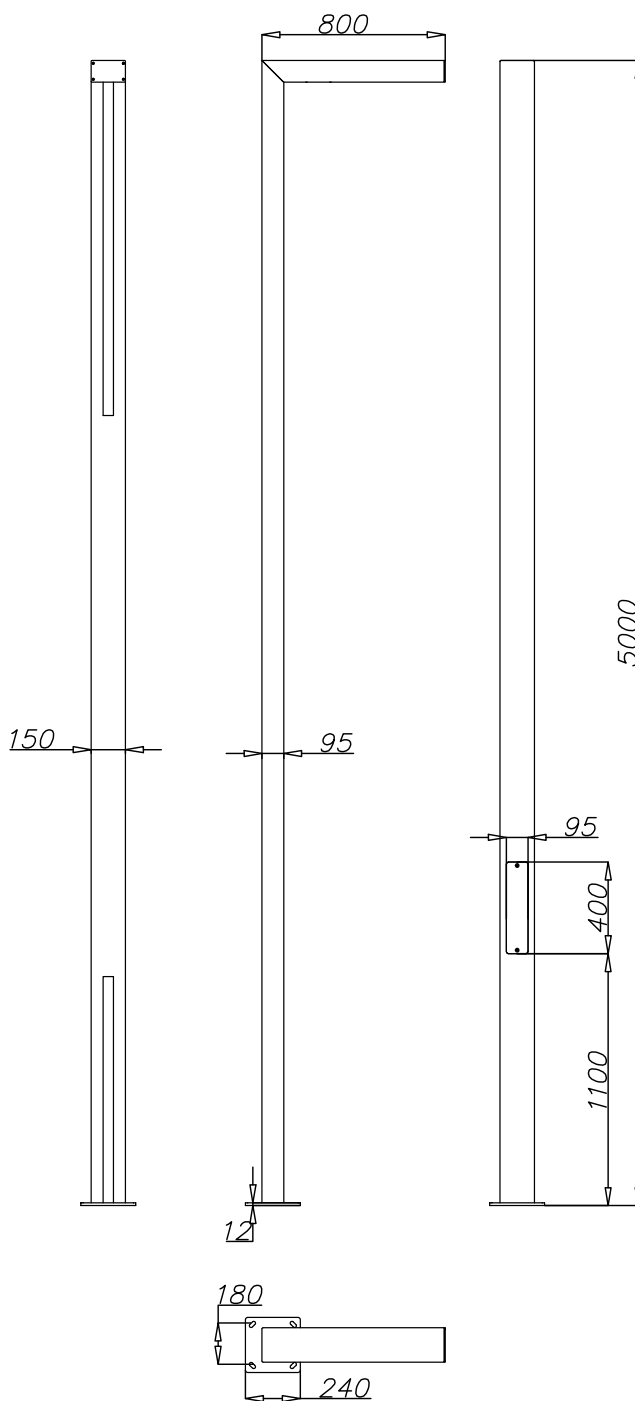
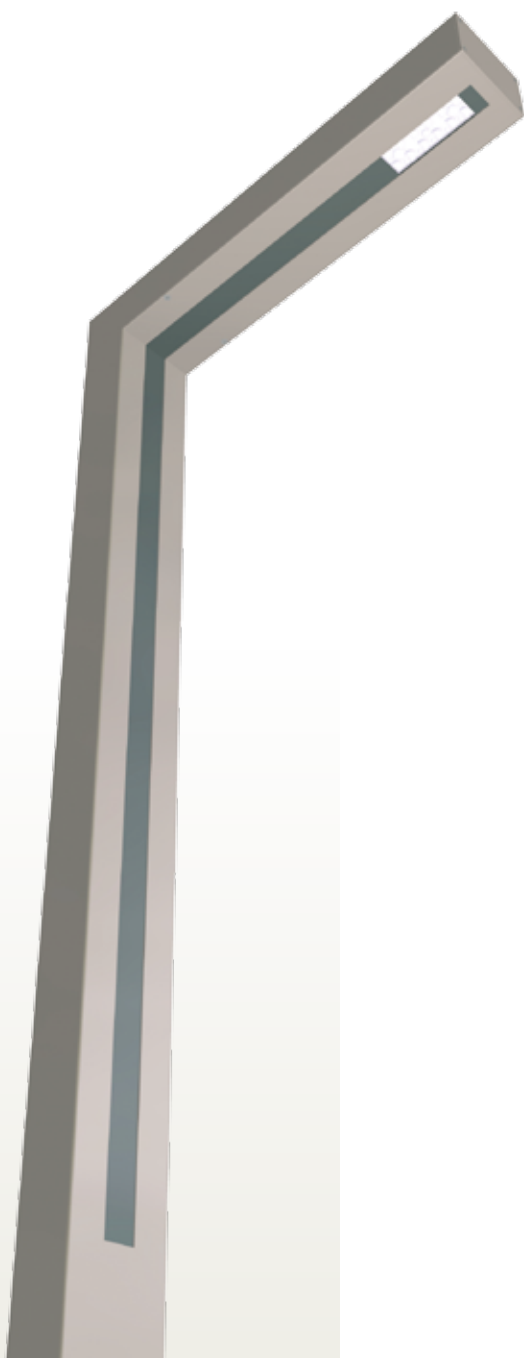
* Due to the precision class of diodes tolerance is +/- 3%

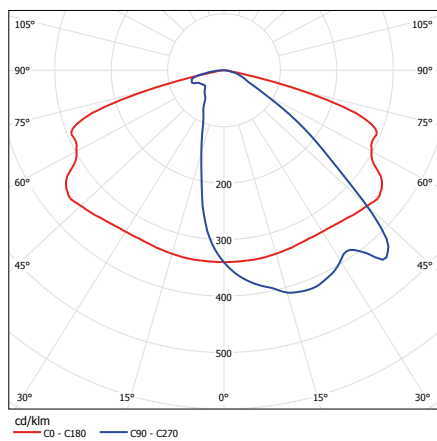
CHARACTERISTICS

CUT LED lighting set is designed to illuminate parks, squares and pedestrian ways. It is made of aluminium profiles anodized inox in standard with decorative elements made of aluminium anodized grey or PMMA (there is a possibility to use decorative lighting in these places). The light source is CREE XT-E LED. The lighting set is adapted to work in temperatures between -40°C and +55°C.

The advantages of using CORE LED:

- reduction of annual energy consumption,
- maintenance costs savings,
- decorative character.





Distribution curve for CUT LED

TECHNICAL DATA

Type	CUT LED 24	CUT LED 48
Code	216030/6	216033/6
Colour temperature [K]	5 000	
LEDs power [W]	24	48
Total power [W]	31	55
Luminous efficiency [lm/W]	71	80
Luminous flux [lm]*	2 200	4 400
LEDs amount	12	24
Net weight [kg]	42	
Height [m]	5	
Unit volume [m ³]	1,00	
Voltage [V]	120-277 AC 50/60 Hz	

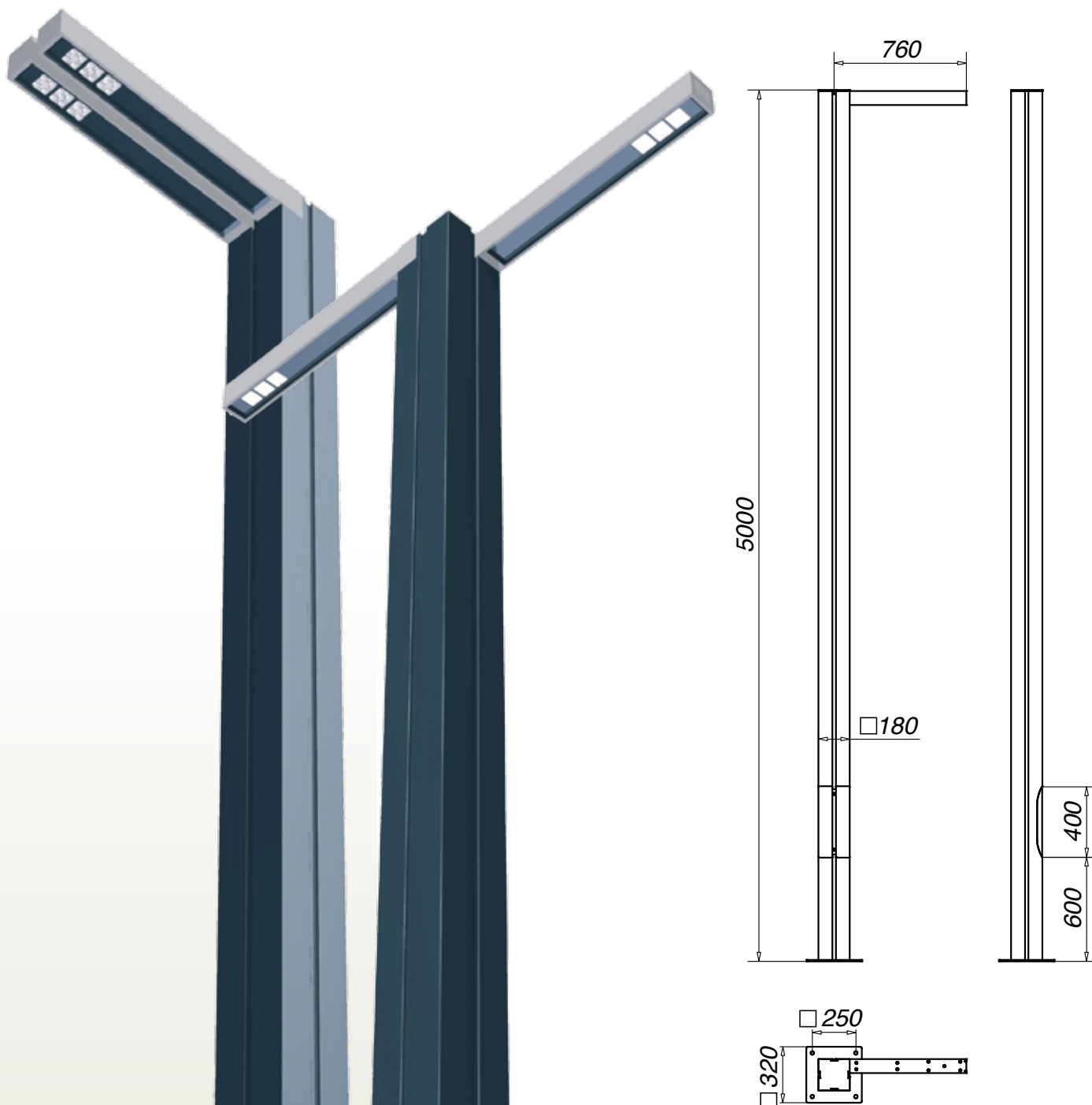
* Due to the precision class of diodes tolerance is +/- 3%

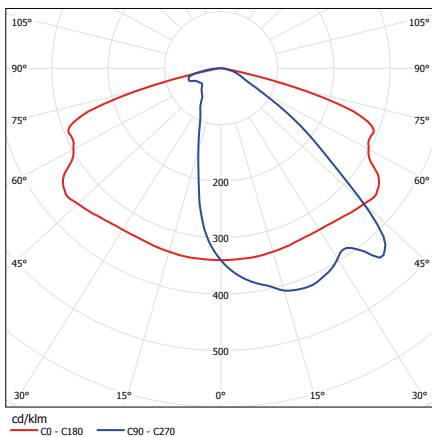
CHARACTERISTICS

STICK LED lighting set is designed to illuminate parks, squares and pedestrian ways. It is made of aluminium profiles anodized grey and inox in standard with the possibility to configure from 1 to 4 arms, 24 W or 48 W each one. The light source is CREE XT-E LED. The lighting set is adapted to work in temperatures between -40°C and +55°C.

The advantages of using STICK LED:

- reduction of annual energy consumption,
- maintenance costs savings,
- decorative character.





Distribution curve for STICK LED

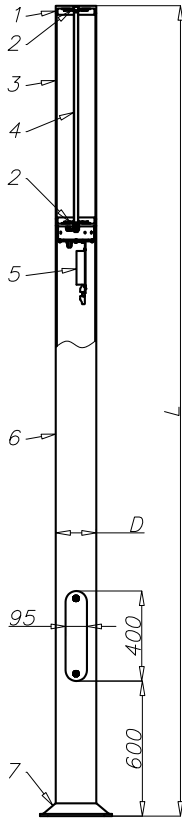
■ TECHNICAL DATA

Type	STICK LED 24	STICK LED 48
Code	217030/6	217033/6
Colour temperature [K]	5 000	
LEDs power [W]	24	48
Total power [W]	31	55
Luminous efficiency [lm/W]	71	80
Luminous flux [lm]*	2 200	4 400
LEDs amount	12	24
Net weight [kg]	56,5	
Height [m]	5	
Unit volume [m ³]	1,75	
Voltage [V]	120-277 AC 50/60 Hz	

* Due to the precision class of diodes tolerance is +/- 3%

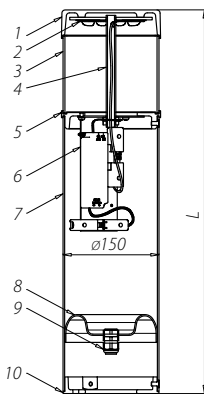
CHARACTERISTICS

Columns and bollards KARIN LED are designed to illuminate pedestrian ways, squares and parks. They are made of anodized aluminium cylindrical pipe with high thermal conductivity. The lamp diffuser is made of polymethacrylate (PMMA) and it is frozen. The light source is CREE XT-E LED. They are available in eight options of height and power.



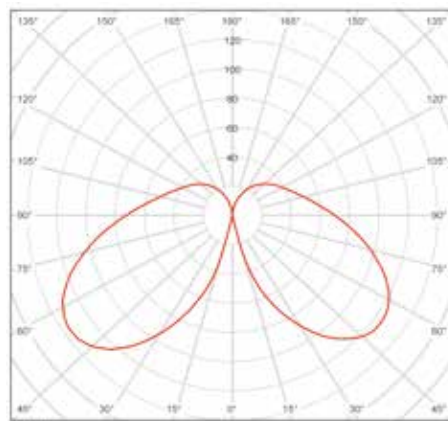
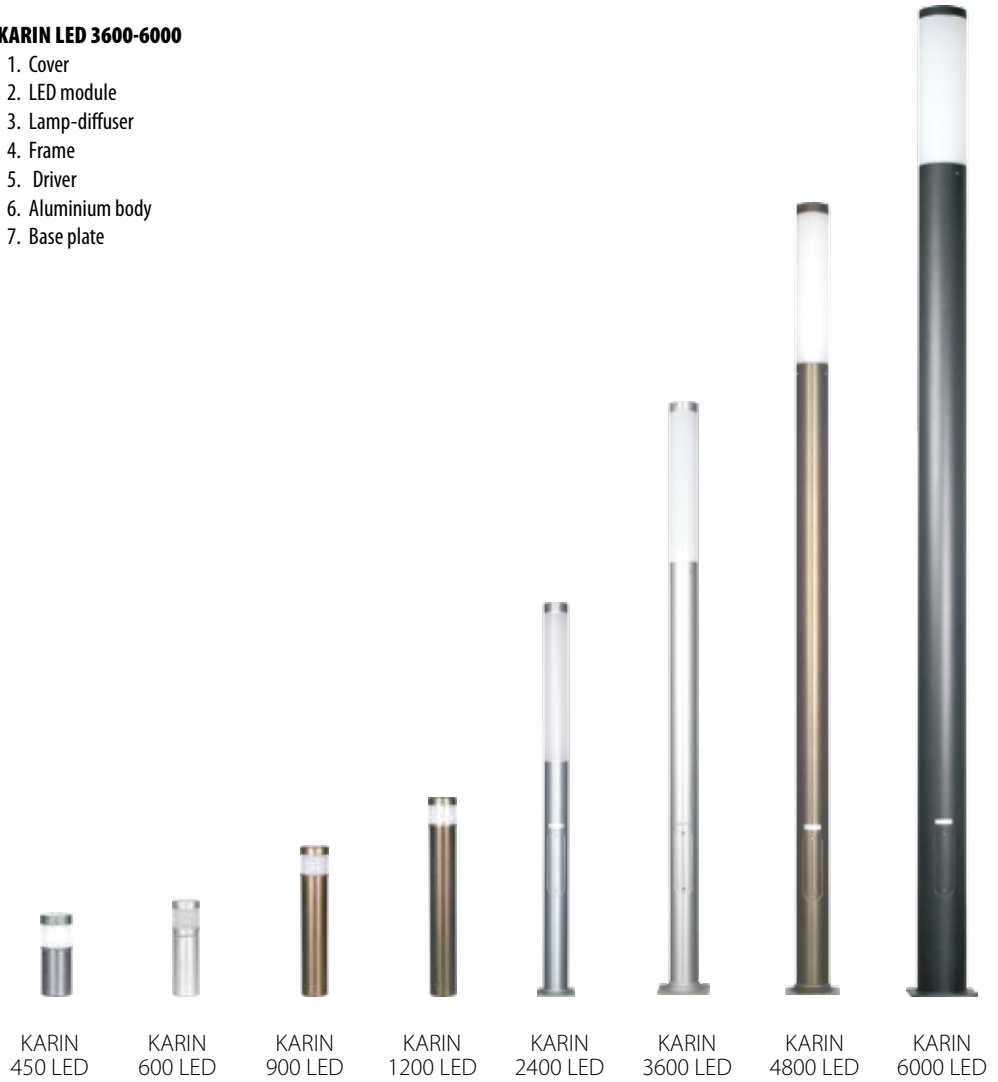
KARIN LED 3600-6000

1. Cover
2. LED module
3. Lamp-diffuser
4. Frame
5. Driver
6. Aluminium body
7. Base plate

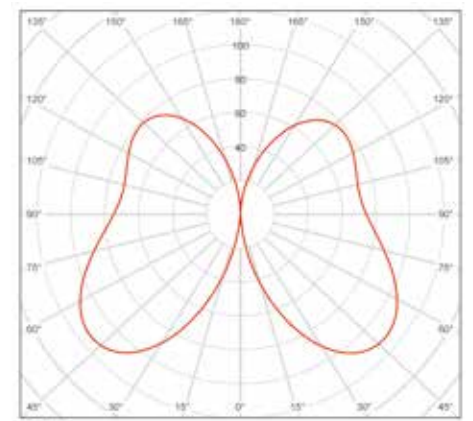


KARIN LED 450-1200

1. Cover
2. LED module
3. Lamp-diffuser
4. Frame
5. Intermediate ring
6. Driver
7. Aluminium body
8. Insulation insert
9. Cable gland
10. Base plate



Distribution curve for KARIN 450-1200 LED



Distribution curve for KARIN 4800 LED



TECHNICAL DATA

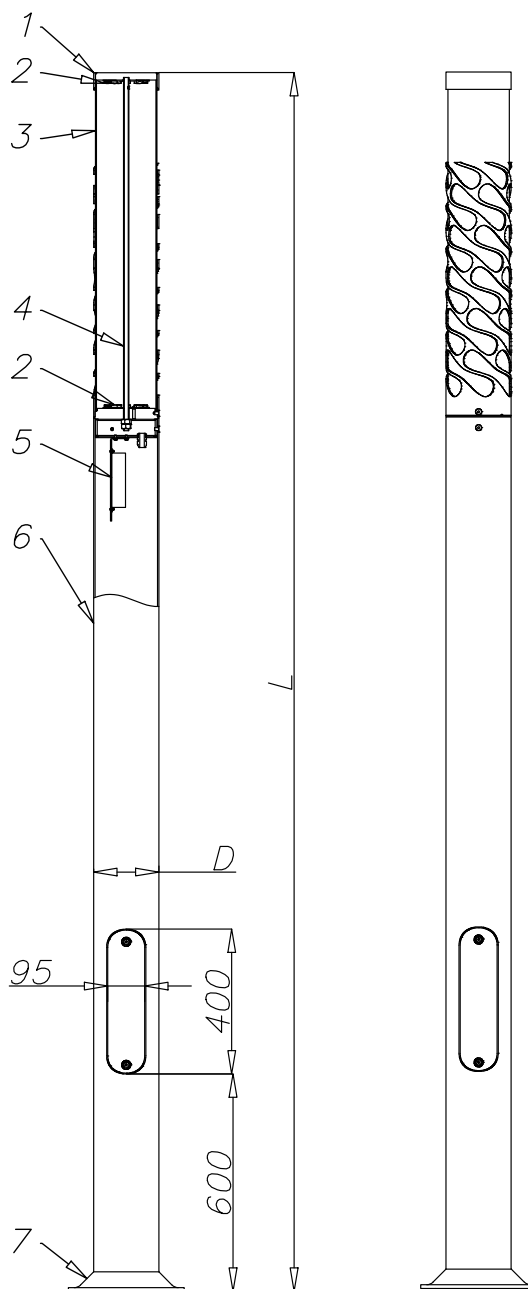
Type	KARIN 450 LED		KARIN 600 LED		KARIN 900 LED		KARIN 1200 LED		KARIN 2400 LED	KARIN 3600 LED	KARIN 4800 LED	KARIN 6000 LED			
Code	45200/6/C...	45200/3/C...	45210/6/C...	45210/3/C...	45220/6/C...	45220/3/C...	45230/6/C...	45230/3/C...	45240/6/C...	45250/6/C...	45260/6/C...	45260/6/C...			
Colour temperature [K]	5 000	3 500	5 000	3 500	5 000	3 500	5 000	3 500	5 000	5 000	5 000	5 000			
Insulation class	II	II	II	II	II	II	II	II	II	II	II	II			
LEDs power [W]	16		16		16		16		32	48	88	116			
LEDs amount	8		8		8		8		16	24	44	58			
Voltage [V]	100 - 240 AC 50/60 Hz		100 - 240 AC 50/60 Hz		100 - 240 AC 50/60 Hz		100 - 240 AC 50/60 Hz		120 - 277 AC 50/60 Hz	120 - 277 AC 50/60 Hz	120 - 277 AC 50/60 Hz	120 - 277 AC 50/60 Hz			
Luminous efficiency [lm/W]	50	48	50	48	50	48	50	48	55	78	71	68			
Total power [W]	21											39	58	100	134
Luminous flux [lm]	1 050	1 000	1 050	1 000	1 050	1 000	1 050	1 000	2 150	4 550	7 100	9 150			
Supply current [mA]	700		700		700		700		700	700	700	700			
Height [mm]	450		600		900		1 200		2 400	3 600	4 800	6 000			
Diameter D [mm]	150											150	180	200	300
Foundation type	B-0/Z-0		B-0/Z-0		B-0/Z-0		B-0/Z-0		B-50/Z-50	B-60/Z-60	B-60/Z-60	B-71/Z-71			
Colour	anodized in 12 colours											powder painted in RAL colours			

* due to the precision class of diodes tolerance is +/- 3%

"C..." - choice of anodizing colour: natural C-0, champagne C-32, olive C-33, brown C-34, black C-35, black brightened C-35W, inox C-45, inox brightened C-45W, grey C-63, graphite C-65, green C-75 and anthracite C-78.

CHARACTERISTICS

Decorative columns KARIN DECOR LED are designed to illuminate pedestrian ways, squares and parks. They are made of anodized aluminium cylindrical pipe with high thermal conductivity. The lamp diffuser is made of polymethacrylate (PMMA) and it is frosted. The light source is CREE XT-E LED. They are available in three options of height and power.

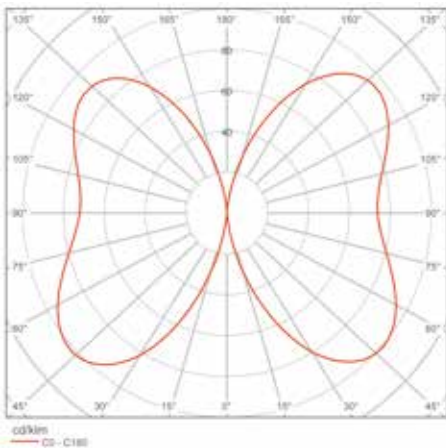


KARIN DECOR LED

1. Cover
2. LED module
3. Lamp-diffuser
4. Frame
5. Driver
6. Aluminium body
7. Base plate



TECHNICAL DATA



Distribution curve for KARIN DECOR 3600 LED

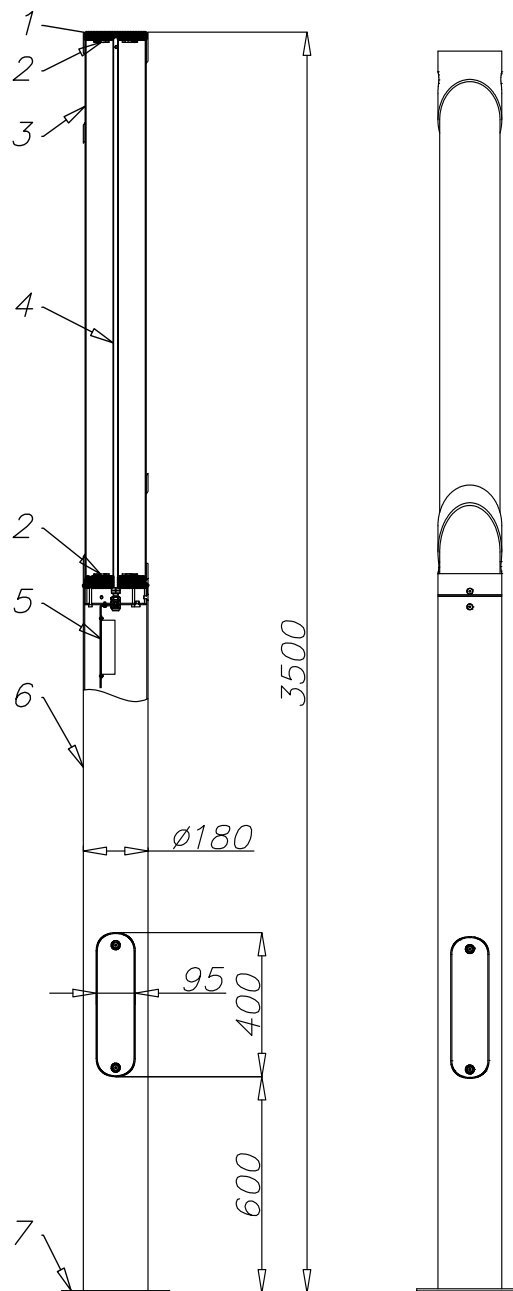
Type	KARIN DECOR 2400 LED	KARIN DECOR 3600 LED	KARIN DECOR 4800 LED
Code	45241/6C...	45251/6/C...	45261/6/C...
Colour temperature [K]	5 000	5 000	5 000
Insulation class	II	II	II
LEDs power [W]	32	48	88
LEDs amount	16	24	44
Voltage [V]	120 - 277 AC 50/60 Hz	120 -277 AC 50/60 Hz	120 -277 AC 50/60 Hz
Luminous efficiency [lm/W]	41	59	54
Total power [W]	39	58	100
Luminous flux* [lm]	1 600	3 400	5 350
Supply current [mA]	700	700	700
Height [mm]	2 400	3 600	4 800
Diameter D [mm]	150	180	200
Base plate dimensions [mm]	224 x 224	320 x 320	320 x 320
Foundation type	B-50 / Z-50	B-60 / Z-60	B-60 / Z-60
Colour	anodized in 12 colours		

* due to the precision class of diodes tolerance is +/- 3%

"C..." - choice of anodizing colour: natural C-0, champagne C-32, olive C-33, brown C-34, black C-35, black brightened C-35W, inox C-45, inox brightened C-45W, grey CI-63, graphite CI-65, green CI-75 and anthracite CI-78.

CHARACTERISTICS

Decorative column SAL DECO 3 LED is designed to illuminate pedestrian ways, squares and parks. It is made of anodized aluminium cylindrical pipe with high thermal conductivity. The lamp diffuser is made of UV resistant polycarbonate with aluminium decorative elements. The light source is CREE XT-E LED.

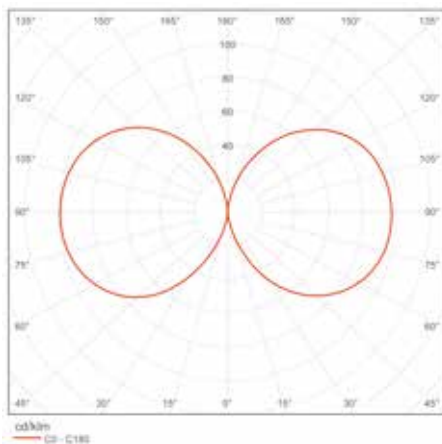


SAL DECO 3 LED

1. Cover
2. LED module
3. Lamp-diffuser
4. Frame
5. Driver
6. Aluminium body
7. Base plate



TECHNICAL DATA



Distribution curve for SAL DECO 3 LED

Type	SAL DECO 3 LED
Code	42923/6/C...
Colour temperature [K]	5000
Insulation class	II
LEDs power [W]	48
LEDs amount	24
Voltage [V]	120-277 AC 50/60 Hz
Luminous efficiency [lm/W]	44
Total power [W]	56
Luminous flux* [lm]	2500
Supply current [mA]	700
Height [mm]	3500
Diameter D [mm]	180
Base dimensions [mm]	Ø 300
Foundation type	B-31 / Z-31
Colour	anodized in 12 colours

* due to the precision class of diodes tolerance is +/- 3%

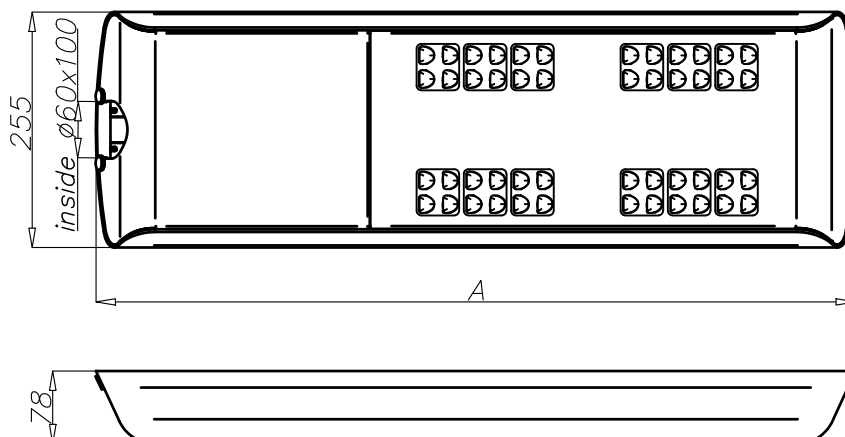
"C..." - choice of anodizing colour: natural C-0, champagne C-32, olive C-33, brown C-34, black C-35, black brightened C-35W, inox C-45, inox brightened C-45W, grey C-63, graphite C-65, green C-75 and anthracite C-78.

CHARACTERISTICS

CUDDLE LED is designed to illuminate streets category ME2a and lower. The light source is CREE XM-L2 LED or X-TE LED depending on the luminaire's power. The luminaire is available in four power options and is adapted to work in temperatures between -40°C and +55°C. It is designed for mounting on columns 6 m to 12 m high.

The advantages of using CUDDLE LED 72 compared to luminaire MAGNOLIA S-150W:

- 47,62% reduction of luminaire energy consumption,
- up to 66,67% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





TECHNICAL DATA

Type	CUDDLE LED 48 (XT-E)		CUDDLE LED 72 (XM-L2)		CUDDLE LED 96 (XT-E)		CUDDLE LED 144 (XM-L2)	
	222333/6	222333/3	222335/6	222335/3	222337/6	222337/3	222341/6	222341/3
Colour temperature [K]	5000	3500	5000	3500	5000	3500	5000	3500
LEDs power [W]	48		72		96		144	
Total power [W]	55		80		105		155	
Luminous efficiency [lm/W]	91	71	117	91	95	74	120	93
Luminous flux [lm]	5000	3900	9350	7250	10000	7800	18650	14500
LEDs amount	24		24		48		48	
Net weight [kg]	8		8		9		9	
Unit volume [m ³]	0,022		0,022		0,045		0,045	
Windage [m ²]	0,028		0,028		0,06		0,06	
Voltage [V]	120 -277 AC 50/60 Hz							

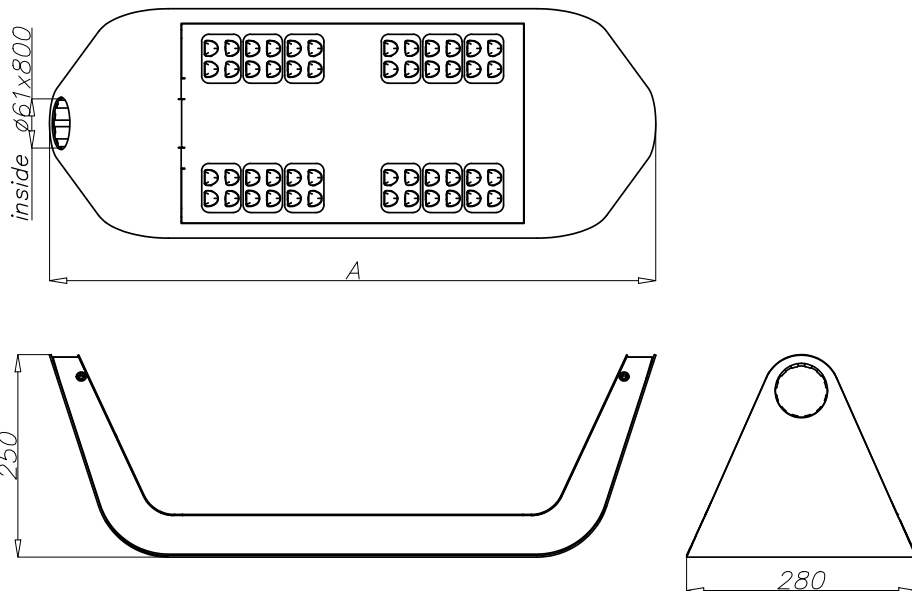
* due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

FLOAT LED is designed to illuminate streets category ME2 and lower. The light source is CREE XM-L2 LED or X-TE LED depending on the luminaire's power. The luminaire is available in four power options and is adapted to work in temperatures between -40°C and +55°C. It is designed for mounting on columns 6 m to 12 m high.

The advantages of using FLOAT LED 72 compared to luminaire MAGNOLIA S-150W:

- 47,62% reduction of luminaire energy consumption,
- up to 66,67% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





TECHNICAL DATA

Type	FLOAT LED 48 (XT-E)		FLOAT LED 72 (XM-L2)		FLOAT LED 96 (XT-E)		FLOAT LED 144 (XM-L2)	
	Code	Code	Code	Code	Code	Code	Code	Code
Code	222433/6	222433/3	222435/6	222435/3	222437/6	222437/3	222441/6	222441/3
Colour temperature [K]	5000	3500	5000	3500	5000	3500	5000	3500
LEDs power [W]	48		72		96		144	
Total power [W]	55		80		105		155	
Luminous efficiency [lm/W]	91	71	117	91	95	74	120	93
Luminous flux [lm]	5000	3900	9350	7250	10000	7800	18650	14500
LEDs amount	24		24		48		48	
Net weight [kg]	8,1		8,1		9,6		9,6	
Unit volume [m ³]	0,047		0,047		0,058		0,058	
Windage [m ²]	0,042		0,042		0,049		0,049	
Voltage [V]	120 -277 AC 50/60 Hz							

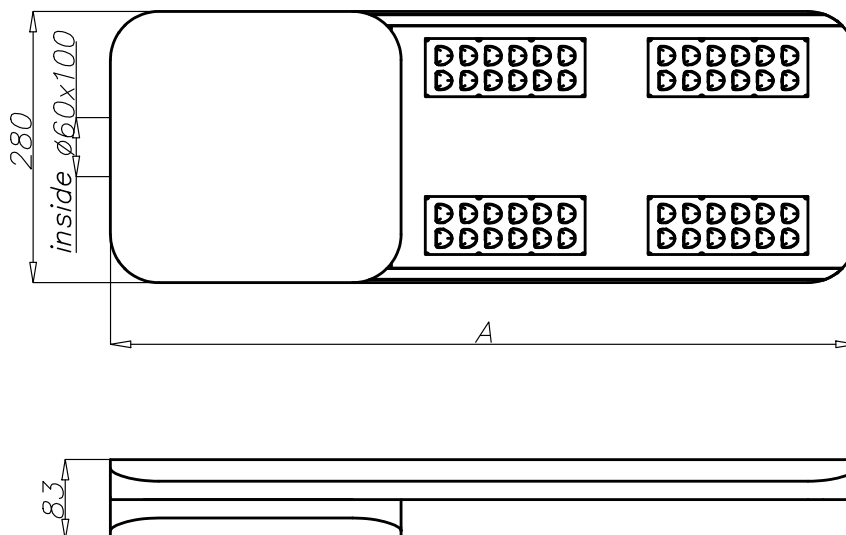
* due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

PHASE LED is designed to illuminate streets category ME2 and lower. The light source is CREE XM-L2 LED or X-TE LED depending on the luminaire's power. The luminaire is available in four power options and is adapted to work in temperatures between -40°C and $+55^{\circ}\text{C}$. It is designed for mounting on columns 6 m to 12 m high.

The advantages of using PHASE LED 72 compared to luminaire MAGNOLIA S-150W:

- 47,62% reduction of luminaire energy consumption,
- up to 66,67% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.





TECHNICAL DATA

Type	PHASE LED 48 (XT-E)		PHASE LED 72 (XM-L2)		PHASE LED 96 (XT-E)		PHASE LED 144 (XM-L2)	
	222533/6	222533/3	222535/6	222535/3	222537/6	222537/3	222541/6	222541/3
Colour temperature [K]	5000	3500	5000	3500	5000	3500	5000	3500
LEDs power [W]	48		72		96		144	
Total power [W]	55		80		105		155	
Luminous efficiency [lm/W]	91	71	117	91	95	74	120	93
Luminous flux [lm]	5000	3900	9350	7250	10000	7800	18650	14500
LEDs amount	24		24		48		48	
Net weight [kg]	9,5		9,5		12		12	
Unit volume [m ³]	0,017		0,017		0,024		0,024	
Windage [m ²]	0,035		0,035		0,045		0,045	
Voltage [V]	120 - 277 AC 50/60 Hz							

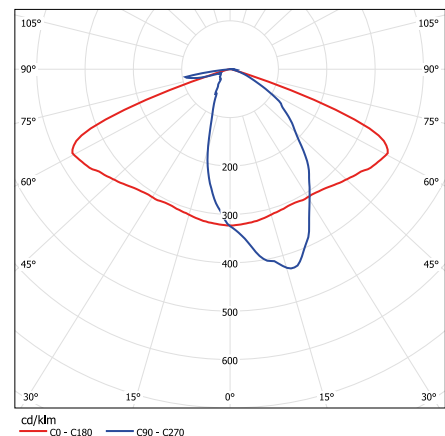
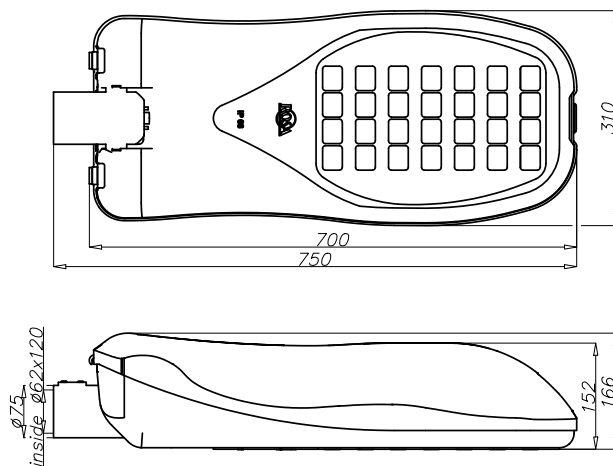
* due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

MAGNOLIA LED is designed to illuminate streets category ME3a and lower. It is made of aluminium cast. The luminaire is painted by polyester powder paints: body – RAL 9006 grey, cover – Silver Renoir. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and +40°C. It is designed to be mounted on columns 8 m to 10 m high. The luminaire is available in four power options.

The advantages of using MAGNOLIA LED 84 compared to luminaire MAGNOLIA S-150W Son:

- 45,24% reduction of luminaire energy consumption,
- up to 61,8% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.



Distribution curve for MAGNOLIA LED



TECHNICAL DATA

Type	MAGNOLIA LED 60		MAGNOLIA LED 72		MAGNOLIA LED 84		MAGNOLIA LED 96	
	220534/6	220534/3	220535/6	220535/3	220536/6	220536/3	220537/6	220537/3
Colour temperature [K]	5 000	3 500	5 000	3 500	5 000	3 500	5 000	3 500
LEDs power [W]	60		72		84		96	
Total luminaire power [W]	68		80		93		105	
Luminous efficiency [lm/W]	114	89	117	91	117	91	119	92
Luminous flux* [lm]	7 750	6 050	9 350	7 250	10 850	8 450	12 450	9 700
LEDs amount	20		24		28		32	
Net weight [kg]	11		11		11		11	
Unit volume [m ³]	0,050		0,050		0,050		0,050	
Windage [m ²]	0,1		0,1		0,1		0,1	
Voltage [V]	120 - 277 AC 50/60 Hz							

* Due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

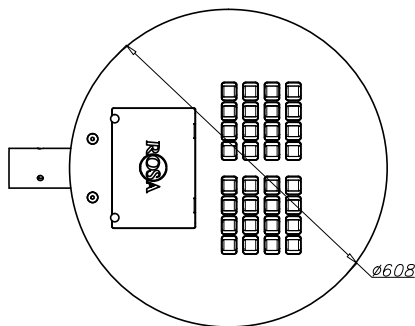
COSMO LED is designed to illuminate streets category ME3a and lower. The light source is CREE XM-L2 LED. It is designed to be mounted on columns 8 m to 10 m high. The luminaire is available in two power options and two mounting options:

- COSMO LED – designed for mounting on extension arm,
- COSMO LED ALFA – pole top mounted.

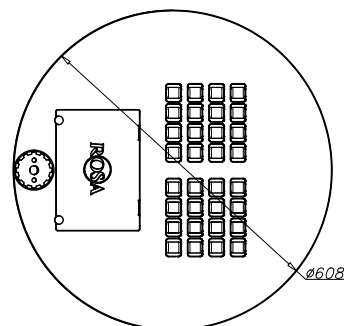
The luminaire is adapted to work in temperatures between -40°C and +55°C.

The advantages of using COSMO LED 96 compared to luminaire MAGNOLIA S-150 W Son:

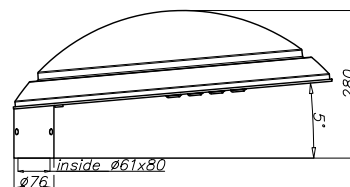
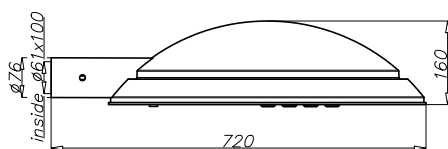
- 37,5% reduction of luminaire energy consumption,
- up to 56,3% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.

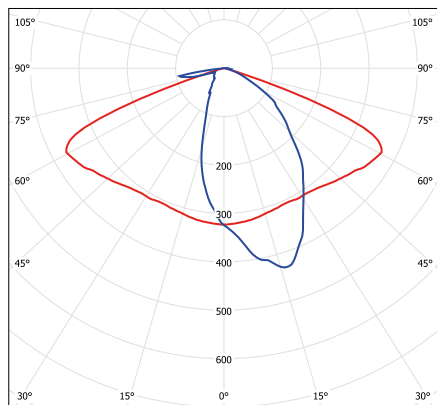


COSMO LED



COSMO LED ALFA





cd/klm
 — C0 - C180 — C90 - C270
 Distribution curve for COSMO LED

TECHNICAL DATA

Type	COSMO LED 72 COSMO LED ALFA 72		COSMO LED 96 COSMO LED ALFA 96	
	221035/6 221235/6	221035/3 221235/3	221037/6 221237/6	221037/3 221237/3
Code				
Colour temperature [K]	5 000		3 500	
LEDs power [W]	72		96	
Total luminaire power [W]	80		105	
Luminous efficiency [lm/W]	117	91	119	92
Luminous flux* [lm]	9 350	7 250	12 450	9 700
LEDs amount	24		32	
Net weight [kg]	11,5		11,5	
Unit volume [m ³]	0,073		0,073	
Windage [m ²]	0,085		0,085	
Voltage [V]	120 - 277 AC 50/60 Hz			

* due to the precision class of diodes tolerance is +/- 3%

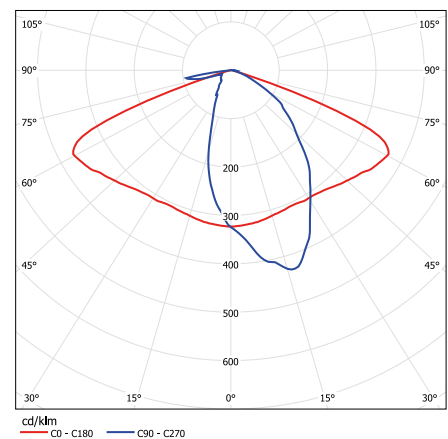
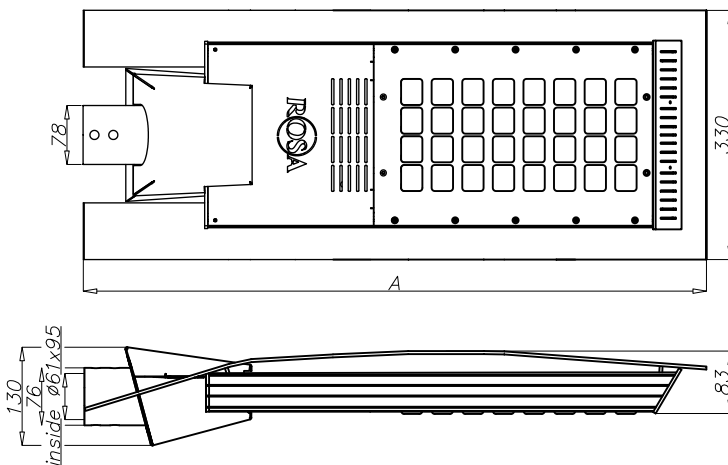
CHARACTERISTICS

ANDROMEDA LED is designed to illuminate streets category ME3a and lower. The light source is CREE XM-L2 LED. It is designed to be mounted on columns 8 m to 11 m high. The luminaire is available in four power options. ANDROMEDA LED 72 and 96 are adapted to work in temperatures between -40°C and +55°C, ANDROMEDA LED 120 and 144 between -40°C and +40°C.

The advantages of using ANDROMEDA LED 144 compared to luminaire MAGNOLIA S-250W Son:

- 43,64% reduction of luminaire energy consumption,
- up to 60,5% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.

Depending on the distribution of columns ANDROMEDA LED 144 achieves the lighting parameters specified by the standard for Class ME2. It can also be used for installations where increasing of spacing between columns is required to meet the requirements of Class ME3a by using 11 columns on a 7 m wide road at 40 m spacings.



Distribution curve for ANDROMEDA LED



TECHNICAL DATA

Type	ANDROMEDA LED 72		ANDROMEDA LED 96		ANDROMEDA LED 120		ANDROMEDA LED 144	
	222235/6	222235/3	222237/6	222237/3	222239/6	222239/3	222241/6	222241/3
Colour temperature [K]	5 000	3 500	5 000	3 500	5 000	3 500	5 000	3 500
LEDs power [W]	72		96		120		144	
Total luminaire power [W]	80		105		130		155	
Luminous efficiency [lm/W]	117	91	119	92	120	93	120	94
Luminous flux* [lm]	9 350	7 250	12 450	9 700	15 550	12 100	18 650	14 500
LEDs amount	24		32		40		48	
Net weight [kg]	9		10		11		12	
A – lenght [mm]	770		901		982		1063	
Unit volume [m ³]	0,034		0,034		0,052		0,052	
Windage [m ²]	0,05		0,056		0,062		0,068	
Voltage [V]	120 - 277 AC 50/60 Hz							

* Due to the precision class of diodes tolerance is +/- 3%

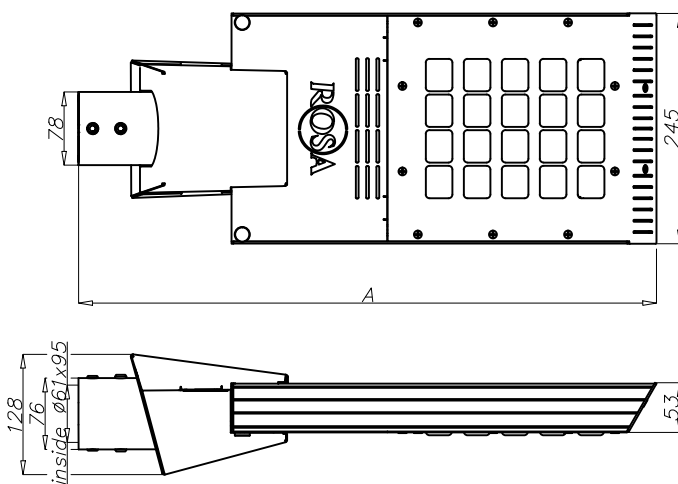
CHARACTERISTICS

URSA I LED is designed to illuminate streets category ME3a and lower. The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and +55°C. It is designed to be mounted on columns 6 m to 8 m high. The luminaire is available in three power options and two mounting options:

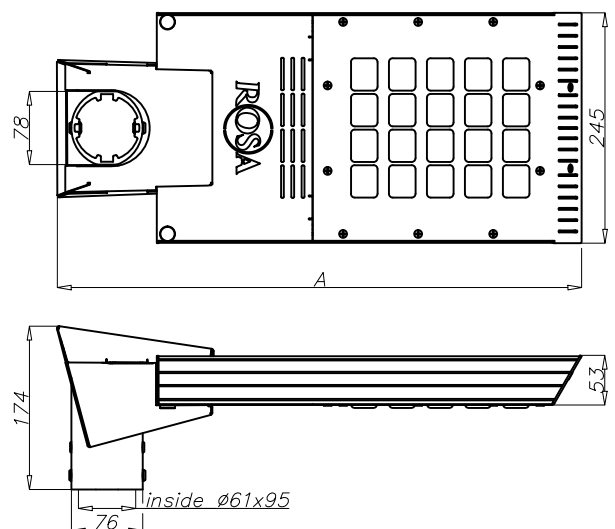
- URSA I LED – designed for mounting on extension arm,
- URSA I LED ALFA – pole top mounted.

The advantages of using URSA I LED 48 compared to luminaire MAGNOLIA S-100W Son:

- 39,29% reduction of luminaire energy consumption,
- up to 57,4% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.



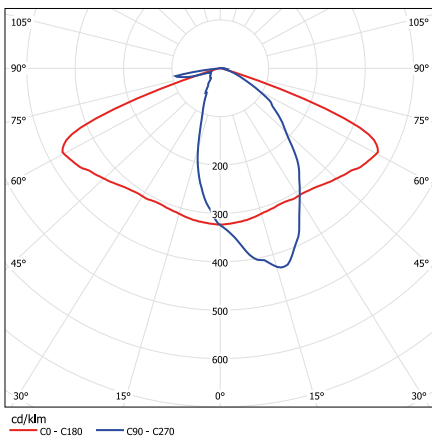
URSA I LED



URSA I LED ALFA



TECHNICAL DATA



Distribution curve for URSA I LED

Type	URSA I LED 48		URSA I LED 60		URSA I LED 72	
	URSA I LED ALFA 48	URSA I LED ALFA 48	URSA I LED ALFA 60	URSA I LED ALFA 60	URSA I LED ALFA 72	URSA I LED ALFA 72
Code	221833/6 221933/6	221833/3 221933/3	221834/6 221934/6	221834/3 221934/3	221835/6 221935/6	221835/3 221935/3
Colour temperature [K]	5 000 3 500		5 000 3 500		5 000 3 500	
LEDs power [W]	48		60		72	
Total luminaire power [W]	55		68		80	
Luminous efficiency [lm/W]	113	88	114	89	117	91
Luminous flux* [lm]	6 200	4 850	7 750	6 050	9 350	7 250
LEDs amount	16		20		24	
Net weight [kg]	6		7		8	
A – length [mm]	558		639		720	
Unit volume [m ³]	0,035		0,035		0,035	
Windage [m ²]	0,04		0,043		0,045	
Voltage [V]	120 - 277 AC 50/60 Hz					

* Due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

URSA II LED is designed to illuminate streets category ME3a and lower. The light source is CREE XM-L2 LED. It is designed to be mounted on columns 8 m to 11 m high. The luminaire is available in four power options and two mounting options:

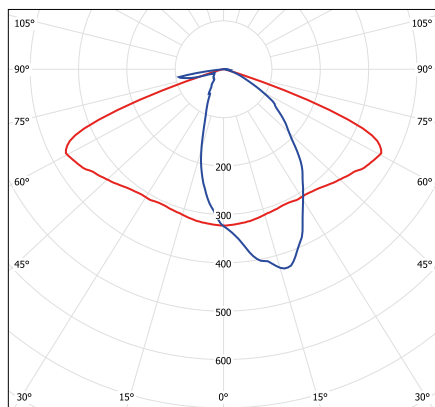
- URSA II LED – designed for mounting on extension arm,
- URSA II LED ALFA – pole top mounted.

URSA II LED 84 and 96 are adapted to work in temperatures between -40°C and +55°C, URSA II LED 120 and 144 between -40°C and +40°C.

The advantages of using URSA II LED 120 compared to MAGNOLIA S-250W Son:

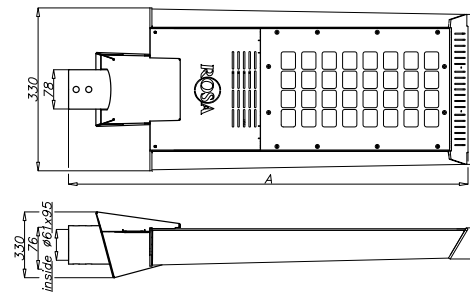
- 52,73% reduction of luminaire energy consumption,
- up to 67% reduction of luminaire energy consumption in case of using power reduction,
- the possibility of reducing the quantity of lighting sets and therefore – reduction of energy consumption and costs of the investment,
- maintenance costs savings.

Depending on the distribution of columns URSA II LED 144 achieves the lighting parameters specified by the standard for Class ME2 It can also be used for installations where increasing of spacing between columns is required to meet the requirements of Class ME3a by using 11 columns on a 7 m wide road at 40 m spacings.

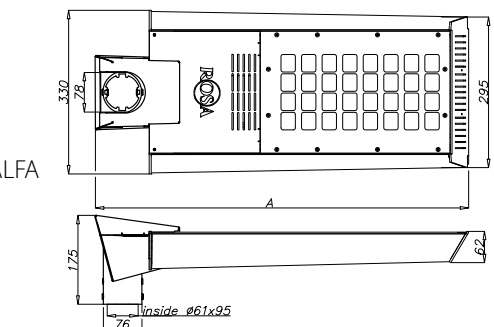


cd/klm
 — C0 - C180 — C90 - C270
 Distribution curve for URSA II LED

URSA II LED



URSA II LED ALFA





TECHNICAL DATA

Type	URSA II LED 84 URSA II LED ALFA 84		URSA II LED 96 URSA II LED ALFA 96		URSA II LED 120 URSA II LED ALFA 120		URSA II LED 144 URSA II LED ALFA 144	
	222036/6 222136/6	222036/3 222136/3	222037/6 222137/6	222037/3 222137/3	222039/6 222139/6	222039/3 222139/3	222041/6 222141/6	222041/3 222141/3
Colour temperature [K]	5 000	3 500	5 000	3 500	5 000	3 500	5 000	3 500
LEDs power [W]	84		96		120		144	
Total luminaire power [W]	92		105		130		155	
Luminous efficiency [lm/W]	117	91	119	92	120	93	120	94
Luminous flux* [lm]	10 850	8 450	12 450	9 700	15 550	12 100	18 650	14 500
LEDs amount	28		32		40		48	
Net weight [kg]	8,5		9,0		10,0		11,0	
A – lenght [mm]	760		801		882		967	
Unit volume [m³]	0,048		0,048		0,058		0,058	
Windage [m²]	0,047		0,05		0,055		0,06	
Voltage [V]	120 - 277 AC 50/60 Hz							

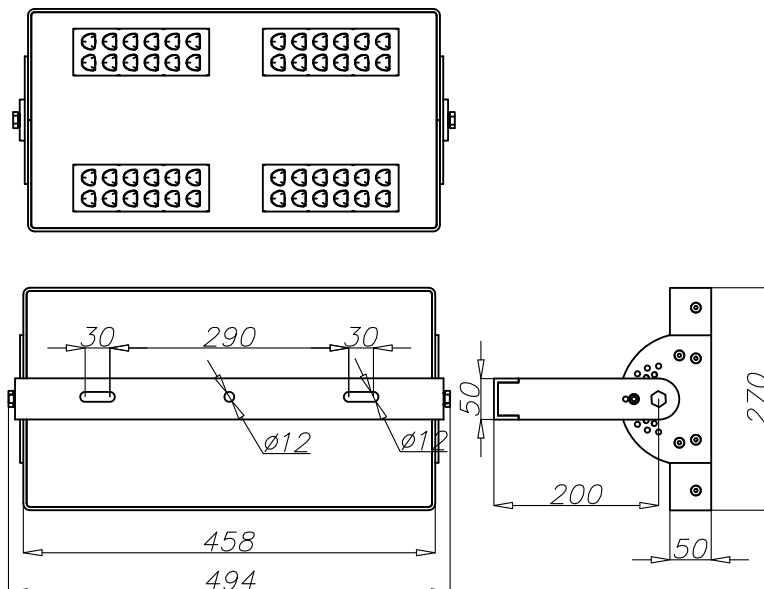
* Due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

ARTEMIS LED is designed to illuminate architectural elements, sport facilities and big spaces. The light source is CREE XM-L2 LED. It is adapted to work in temperatures between -40°C and $+40^{\circ}\text{C}$. The floodlight has also the possibility to adjust the inclination angle in the range from 0° to 180° .

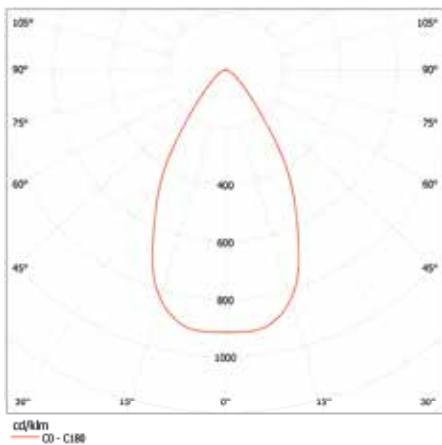
Savings from use of ARTEMIS LED floodlight:

- reduction of energy consumption,
- low maintenance costs – long LED lifetime and floodlight durability,
- the possibility of night time dimming process – energy savings of approximately 30%.





TECHNICAL DATA



Distribution curve for ARTEMIS LED

Type	ARTEMIS LED 144	
Code	229041/6	229041/3
Colour temperature [K]	5 000	3 500
LEDs power [W]	144	
Total luminaire power [W]	155	
Luminous efficiency [lm/W]	120	94
Luminous flux* [lm]	18 650	14 500
LEDs amount	48	
Net weight [kg]	11	
Unit volume [m ³]	0,022	
Windage [m ²]	depends on angular setting (0°-0,08 m ² ; 30°-0,12 m ²)	
Voltage [V]	120 - 277 AC 50/60 Hz	

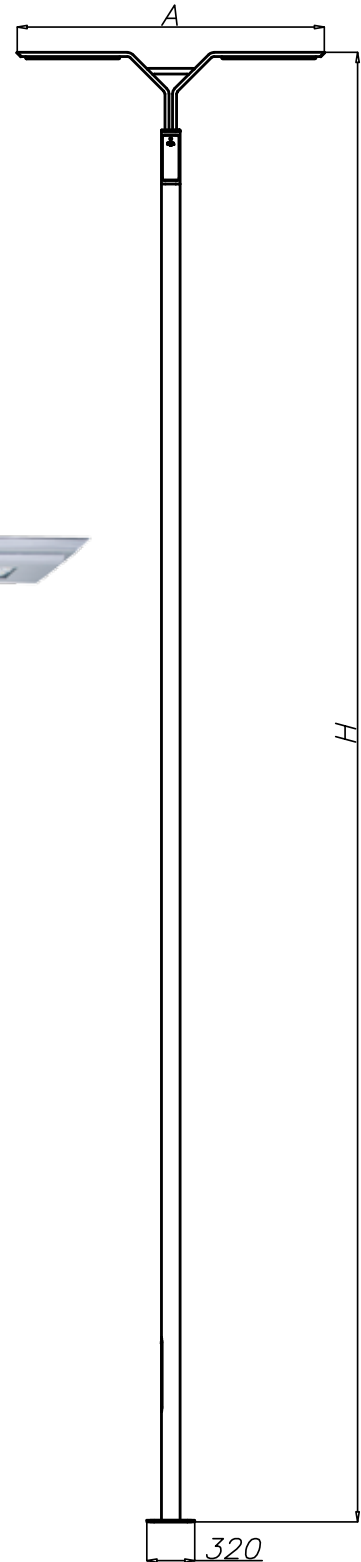
* Due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

GULLWING LED is designed to illuminate streets category ME3a and lower. The light source is CREE XM-L2 LED. The lighting set is available in three power options and is adapted to work in temperatures between -40°C and +55°C. It is adapted for mounting on the height of 8-10 m in double row configuration on median (dividing roadway).

The advantages of using GULLWING LED:

- reduction of energy consumption,
- maintenance costs savings,
- decorative character.





TECHNICAL DATA

Type	GULLWING LED 2 x 72		GULLWING LED 2 x 108		GULLWING LED 2 x 144	
	218035/6	218035/3	218038/6	218038/3	218041/6	218041/3
Colour temperature [K]	5 000	3 500	5 000	3 500	5 000	3 500
LEDs power [W]	72		108		144	
Total power [W]	80		118		155	
Luminous efficiency [lm/W]	117	91	119	91	120	93
Luminous flux [lm]	9 350	7 250	14 000	10 900	18 650	14 500
LEDs amount	24		36		48	
Net weight [kg]	53		68		77	
Height [H]	8		9		10	
Unit volume [m3]	3,52		5,57		7,54	
Voltage [V]	120 - 277 AC 50/60 Hz					

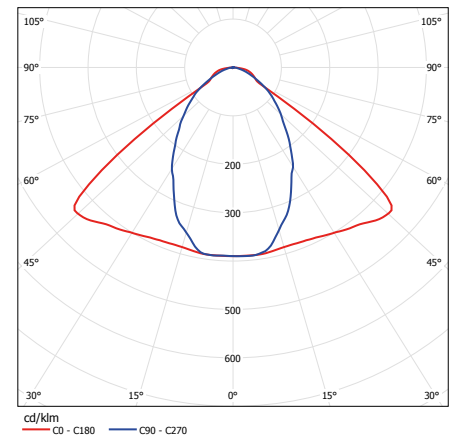
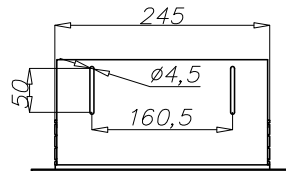
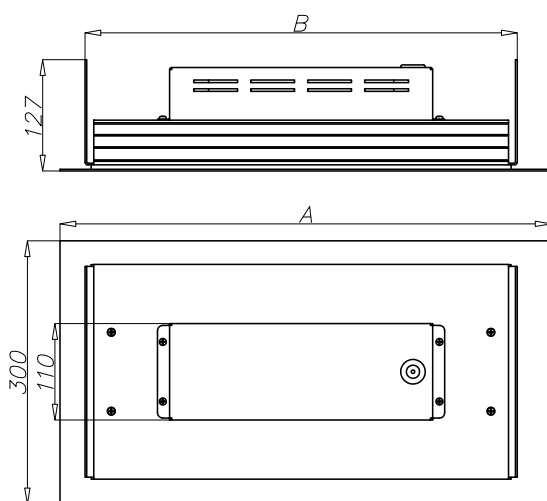
* due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

LIBRA LED industrial luminaire is designed to illuminate production halls, warehouses and utility rooms. In standard the luminaire is anodized natural (other colours available on request). The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and $+40^{\circ}\text{C}$.

The advantages of LIBRA LED:

- reduction of annual energy consumption,
- reduction of quantity of lighting sets,
- maintenance costs savings.



Distribution curve for LIBRA LED



TECHNICAL DATA

Type	LIBRA LED 72		LIBRA LED 96		LIBRA LED 120		LIBRA LED 144	
	Code	Code	Code	Code	Code	Code	Code	Code
Code	230535/6	230535/3	230537/6	230537/3	230539/6	230539/3	230541/6	230541/3
Colour temperature [K]	5 000	3 500	5 000	3 500	5 000	3 500	5 000	3 500
LEDs power [W]	72		96		120		144	
Total luminaire power [W]	80		105		130		155	
Luminous efficiency [lm/W]	95	74	97	75	98	76	98	76
Luminous flux* [lm]	7 650	5 950	10 200	7 950	12 750	9 900	15 300	11 900
LEDs amount	24		32		40		48	
Net weight [kg]	7,7		9,3		10		11,2	
A – length [mm]	427		519		560		642	
B – length of whole in the ceiling [mm]	360		452		493		572	
Unit volume [m ³]	0,016		0,02		0,021		0,025	
Voltage [V]	120 - 277 AC 50/60 Hz							

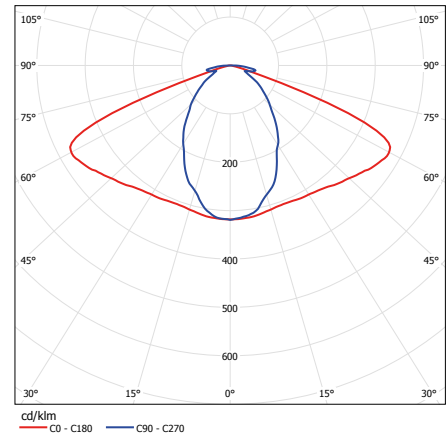
* Due to the precision class of diodes tolerance is +/- 3%

CHARACTERISTICS

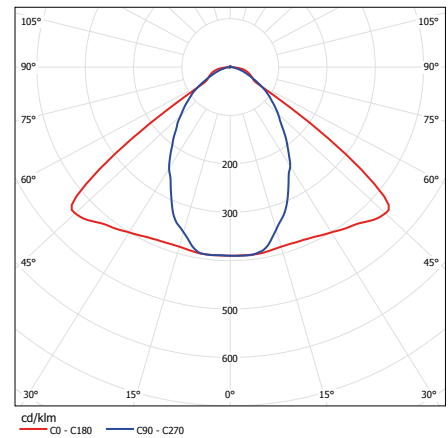
TAURUS LED industrial luminaire is designed to illuminate production halls, warehouses and utility rooms. In standard the luminaire is anodized natural (other colours available on request). The light source is CREE XM-L2 LED. The luminaire is adapted to work in temperatures between -40°C and $+40^{\circ}\text{C}$.

The advantages of TAURUS LED:

- reduction of annual energy consumption,
- reduction of quantity of lighting sets,
- maintenance costs savings.

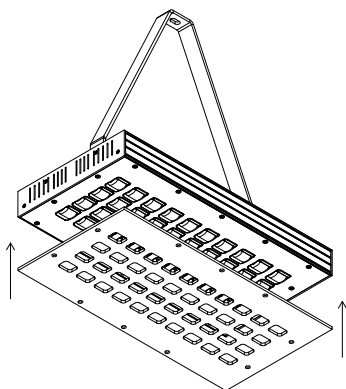


Distribution curve for TAURUS LED

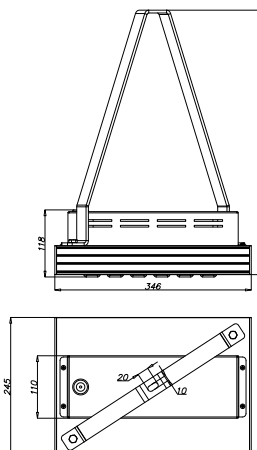


Distribution curve for TAURUS LED with diaphragm

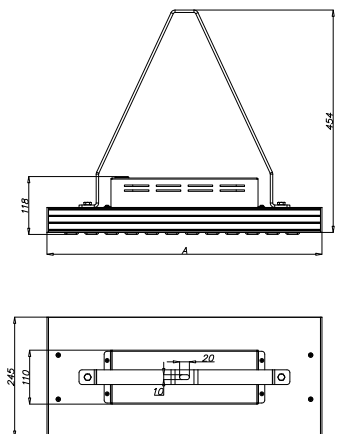
The additional element for TAURUS LED is diaphragm made of anodized aluminium sheet which reduces glare and directs light.



Way of diaphragm assembly



TAURUS LED 72



TAURUS LED 96-144



TECHNICAL DATA

Type	TAURUS LED 72		TAURUS LED 96		TAURUS LED 120		TAURUS LED 144	
	230135/6	230135/3	230137/6	230137/3	230139/6	230139/3	230141/6	230141/3
Colour temperature [K]	5 000	3 500	5 000	3 500	5 000	3 500	5 000	3 500
LEDs power [W]	72		96		120		144	
Total luminaire power [W]	80		105		130		155	
Luminous efficiency [lm/W]	117	91	119	92	120	93	120	94
Luminous flux* [lm]	9 350	7 250	12 450	9 700	15 550	12 100	18 650	14 500
LEDs amount	24		32		40		48	
Net weight [kg]	6,3		7,5		8,3		9,2	
A – lenght [mm]	346		438		479		561	
Unit volume [m ³]	0,040		0,040		0,040		0,040	
Windage [m ²]	0,05		0,056		0,062		0,068	
Additional element – diaphragm	230235		230237		230239		230241	
Voltage [V]	120 - 277 AC 50/60 Hz							

* Due to the precision class of diodes tolerance is +/- 3%



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