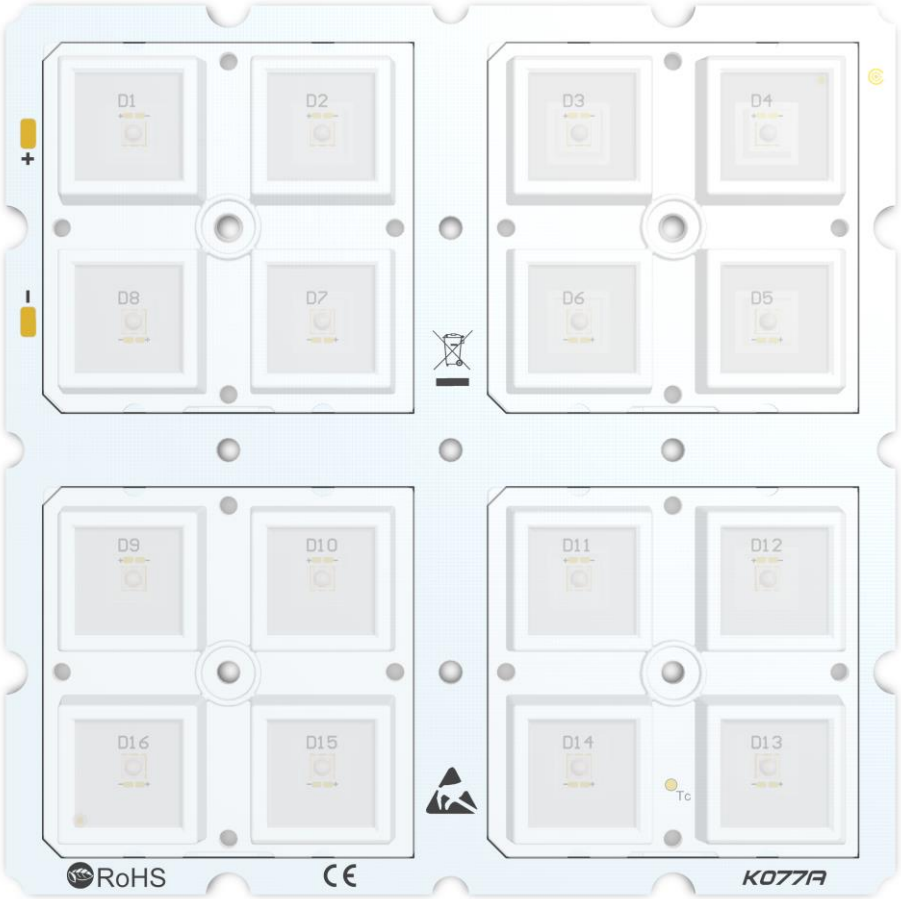
Q0-120120-xxx-C1800-K077

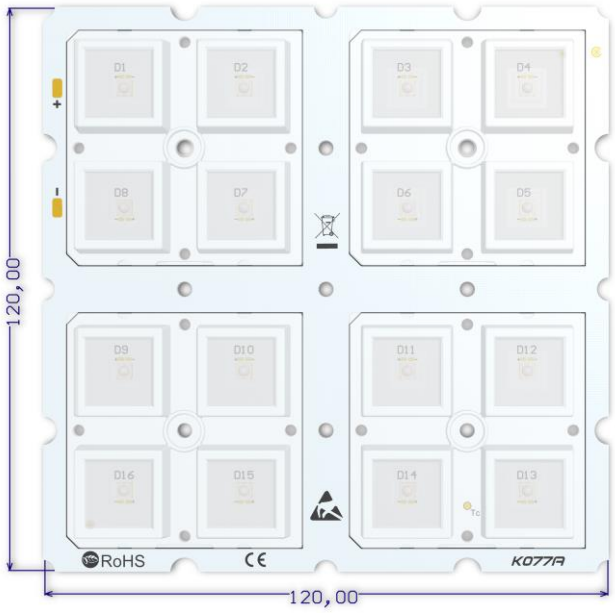


Q0-120120-xxx-C1800-K077

INTRODUCTION

Street LED module is an advanced light source designed for the best energy efficient and eco-friendly outdoor lighting, with additional weather protection. It is based on medium power LEDs produced by the leader of the LED technology OSRAM. Using newest technology we provide the best solution for lighting. With a very high value of CRI and simple installation. Solder pads provide quick installation of the entire lighting system. This solution is the best for street lamps, parking lamps etc.

LED Type	OSRAM OSLON – CSSRM1
LED Quantity	16 pcs
Dimension	120x120 mm
Power Supply Type	Constant Current (CC)
Input Current	max. 1800 mA
Material Thickness	1,5 mm
Cable Connection	Solder Pads
Max Ambient Temperature	45°C
CRI	>70



FEATURES

LEDs have significant advantages compared to other types of lighting and are easy to use. LEDs are versatile and virtually maintenance free.

- Efficiency of the module up to 165 lm/W
- Rigid board LED module
- Compatible with Ledil Optics Type STRADA / HIGH BAY 2x2
- High colour rendering index CRI >70
- Small colour tolerance
- Small luminous flux tolerances
- Colour temperatures 2700K, 3000K,4000K, 5000K
- Solder pads for quick and simple wiring
- Simple installation
- Long lifetime

APPLICATIONS

- Street lamps
- Parking lamps

VARIANTS

- MCPCB board with LEDs
- MCPCB board with LEDs and optic

STREET LED MODULES

Street LED modules are specially designed LED light source for street lamp, parking lamps etc. They consist of a suitable optic and LED module, generally in the shape of rectangle or square. Shape of LED light source allow to place them close to each other's, so LED modules may be better adapted to the existing or projected lamp. Street LED allow to use different types of optics with same LED light source. This enable selecting proper angle of illumination. Additionally, in case of some Street LED modules and optics it is possible to change polarization of illumination.

CALCULATED PARAMETERS AT T_J = 25°C AND T_J = 65°C

Input Current [mA]	Forward Voltage [V]	Power [W]	CCT [K]	Typ. CRI	Luminous Flux* [lm]	Module Efficacy* [lm/W]	Luminous Flux** [lm]	Module Efficacy** [lm/W]	Article Number
500	48,1	24	2700	82	2741	114	2649	110	Q0-120120-827-C1800-K077
			3000	72	3368	140	3255	135	Q0-120120-730-C1800-K077
				82	2741	114	2649	110	Q0-120120-830-C1800-K077
			4000	72	3650	152	3526	147	Q0-120120-740-C1800-K077
				82	2931	122	2832	118	Q0-120120-840-C1800-K077
			5000	72	3962	165	3828	159	Q0-120120-750-C1800-K077
				82	3152	131	3045	127	Q0-120120-850-C1800-K077
1050	50	52,5	2700	82	5044	96	4873	93	Q0-120120-827-C1800-K077
			3000	72	6358	121	6143	117	Q0-120120-730-C1800-K077
				82	5044	96	4873	93	Q0-120120-830-C1800-K077
			4000	72	6889	131	6656	126	Q0-120120-740-C1800-K077
				82	5392	103	5210	99	Q0-120120-840-C1800-K077
			5000	72	7478	142	7226	137	Q0-120120-750-C1800-K077
				82	5799	111	5603	107	Q0-120120-850-C1800-K077
1400	50,9	71,3	2700	82	6234	87	6023	84	Q0-120120-827-C1800-K077
			3000	72	7986	111	7716	107	Q0-120120-730-C1800-K077
				82	6234	87	6023	84	Q0-120120-830-C1800-K077
			4000	72	8653	121	8360	116	Q0-120120-740-C1800-K077
				82	6665	93	6440	90	Q0-120120-840-C1800-K077
			5000	72	9394	131	9076	126	Q0-120120-750-C1800-K077
				82	7168	101	6925	97	Q0-120120-850-C1800-K077

* - Parameters were calculated for temperatures T_J= 25°C

** - Parameters were calculated for temperatures T_J= 65°C

Value of these parameters were calculated for default bin and with tolerances of 15%.

Parameters shown in table above are default and for temperatures T_J=25°C and T_J=65°C. Some of these parameters are temperature dependent and can be different during long time of operation. So it is impossible to order modules with the same parameters after some time. LED technology is developed fast and producers are creating new LEDs with better features very quick. If you need LED modules with different value of some parameters, we provide other LEDs with different colour temperature and features. It is possible to make modification of LED modules or create a new one. In such cases and for more information, please contact us before ordering. Please have all of this in mind when ordering LED modules.

SAFETY

Most of LEDs generate high intensity light even when dimmed. If LED light has high intensity, it is classified as laser. These LEDs must have appropriate marking. Combination of LEDs or even weak LEDs with optics can be very dangerous, because optics can focus beam and looking into LEDs beam is unhealthy and may cause irreversible injury to eye's retina. Never look into the beam without protection glasses with appropriate filter.

Additionally LED light can change intensity almost immediately. If people are photosensitive, LED light may be a trigger to epileptic seizures and alter the perception, especially when light changes very fast.

PROTECTION MEASURES AGAINST DAMAGE

LED modules are delicate, even small mechanical stress may damage modules. Especially sensitive are LEDs. Such stresses should be avoided. If it is impossible, it should be reduced to minimum. Mechanical stresses such as pressure, bending, breaking, drilling, etc. may cause irreversible damage. Damaged LED modules aren't suitable for use.

Serious threat to LEDs is ESD. People generate very high electrostatic voltage. Such voltage decreases lifetime of LEDs and in worst case may destroy electronic components. Best way to avoid damage is use of electrostatic protection. Do not touch electronic components.

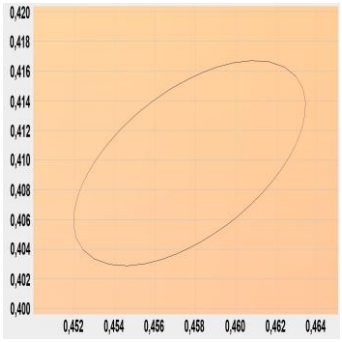
Additionally LED modules can be damaged by some chemical substances. Depends of elements the damage may be different. It is important not to use chemical substances like acids, organic acids, sulphur, alkalis, organic solvents, mineral oils, vegetable oils and synthetic oils, etc. We are not responsible for any loss, or damage resulting from improper use of modules! Guarantee become void in such cases.

Do not operate LED modules, when they aren't working properly. If modules are working incorrectly, turn off power supply. Damaged LED modules may cause electric shock or short circuit.

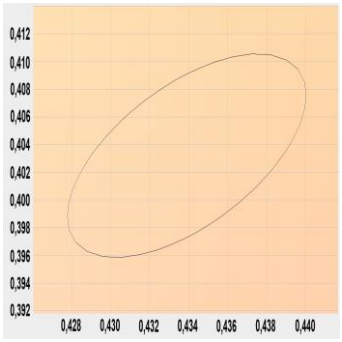
MacAdam Ellipse

Producing LEDs with the same colour temperature is almost impossible. LEDs with similar colours are divided into bins. MacAdam Ellipses are used to describe differences in colour of LEDs with the same bin. When most people can't see very small differences in colours, these colours are in first step level of MacAdam Ellipse (1SDCM). If the differences are getting bigger, then number of step is increasing. Second zone of MacAdam ellipse (2SDCM) is twice bigger than first one and so on. Differences in colour for 3000K LEDs can be up to ±30K in 1SDCM. If bin is in 4SDCM, then colour differences should be less than ±100K. LEDs with smaller number of SDCM are better. Most common LEDs are in 4th to 7th step level, in other words human eyes certainly can see colour differences in LEDs that are ostensibly the same colour. In most of our projects have been used LEDs in 3rd step level, so differences in colour aren't as big as fourth step level of MacAdam Ellipse.

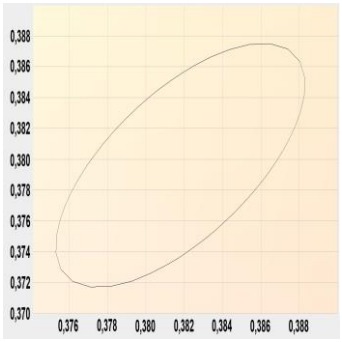
2700K 3SDCM



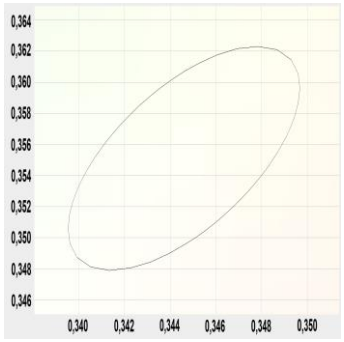
3000K 3SCDM



4000K 3SCDM



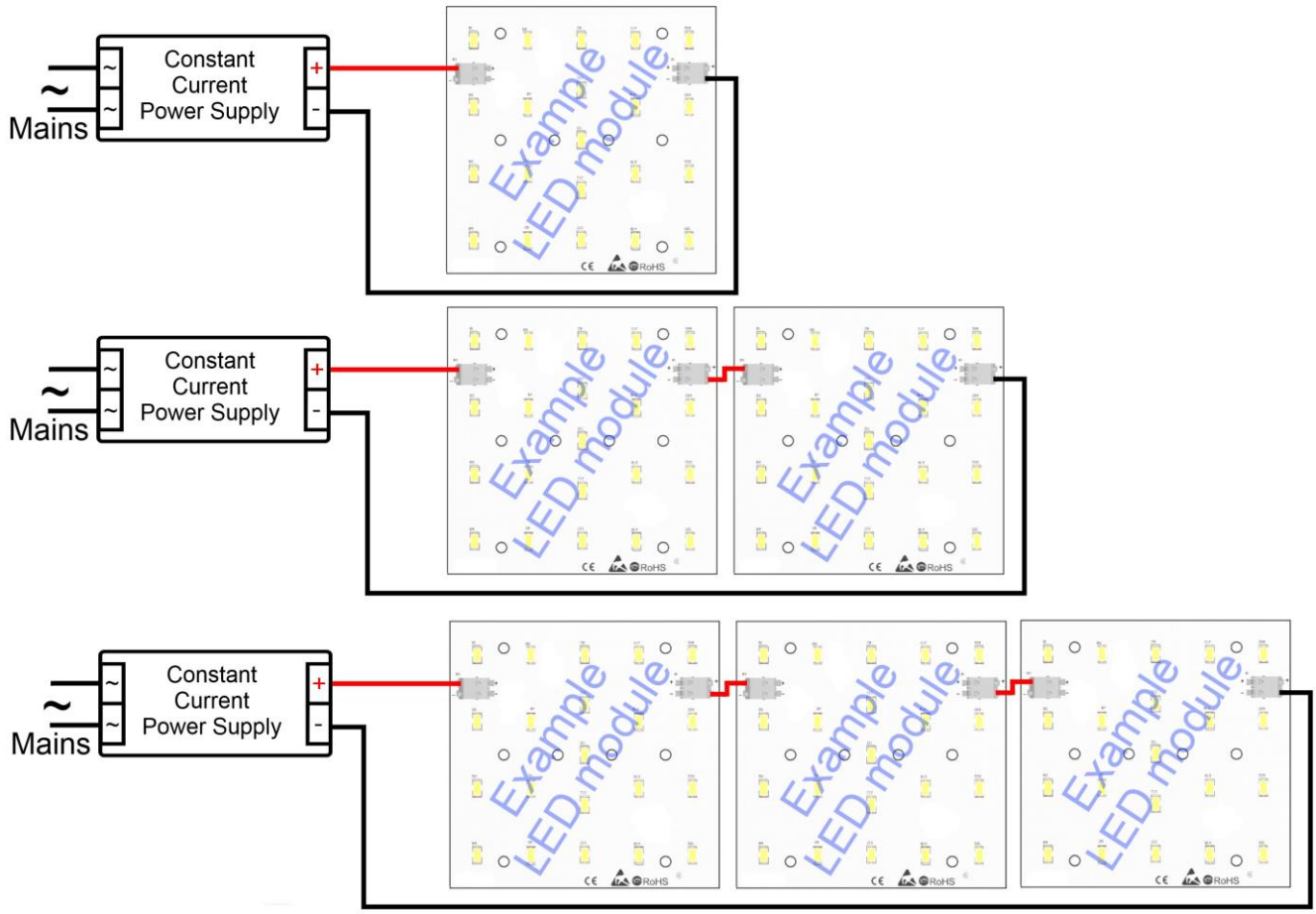
5000K 3SCDM



Connections

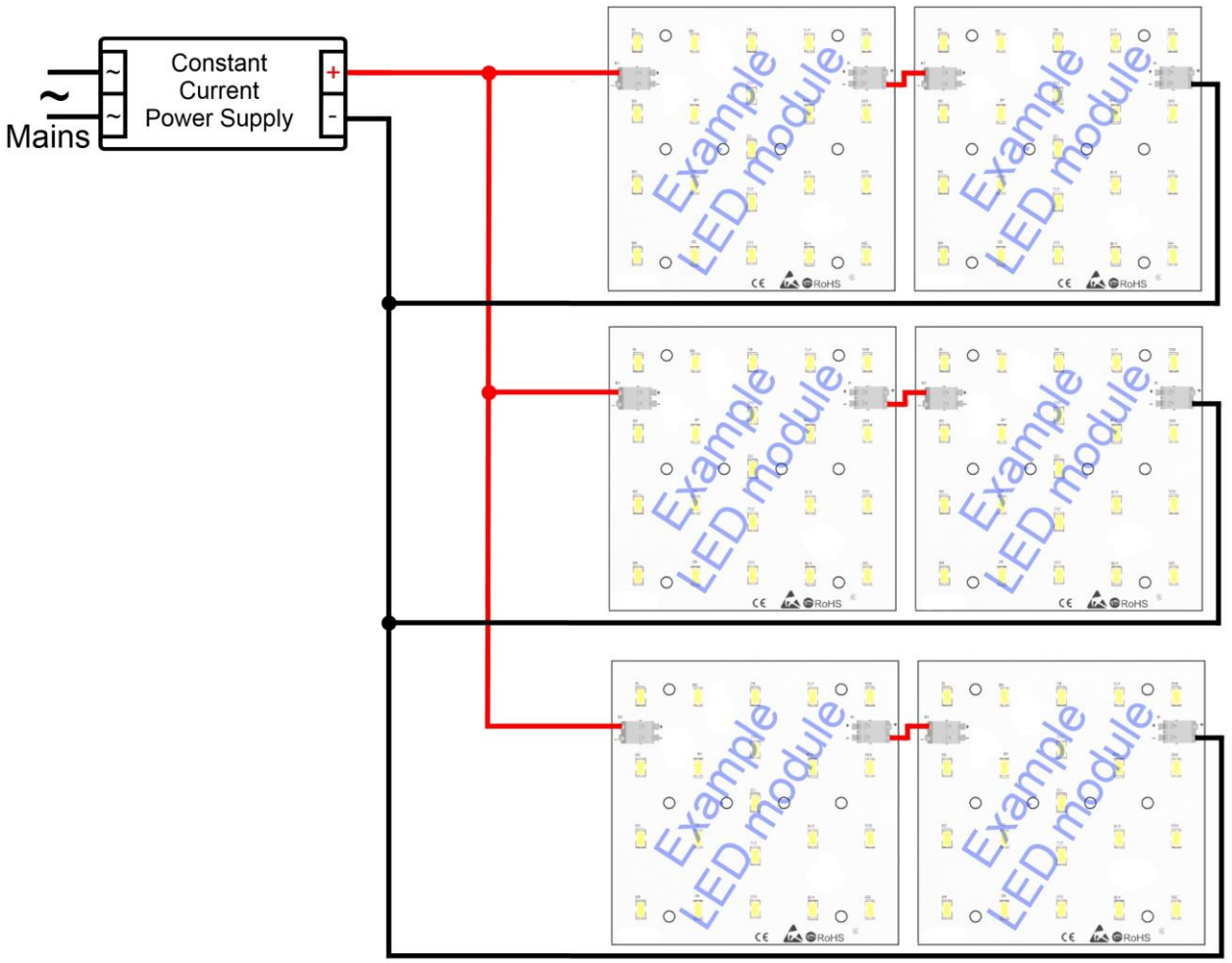
Connecting few Steer LED modules allows to adapt lamp in most effective way. Solder pads provide quick installation of the entire lamp. The LED modules must be operated with power supply that is suitable for LEDs. When connecting a few LED modules use of appropriate power supply is important. Power supply should have sufficient maximum power to maintain all LED modules. Power supply must be connected properly. Wrong polarization can destroy modules in very short time. We are not responsible for any loss, or damage resulting from improper use of modules! Guarantee become void in such cases.

WIRING DIAGRAM FOR LED CC MODULES WITH SERIAL WIRING



Advantages of this solution are very effective operation and uniform distribution of light. Higher voltage supply is require, when large number of LED modules are connected. If too many LED modules are connected, the voltage value may not meet requirements of SELV. Non-SELV voltage need additional protection. All above connections are examples and may be different from the actual.

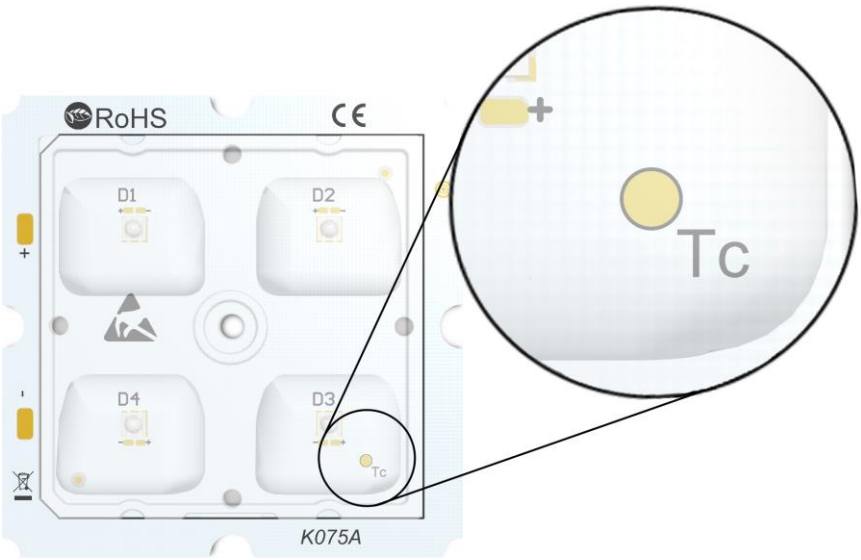
WIRING DIAGRAM FOR LED CC MODULES WITH SERIAL - PARALLEL WIRING



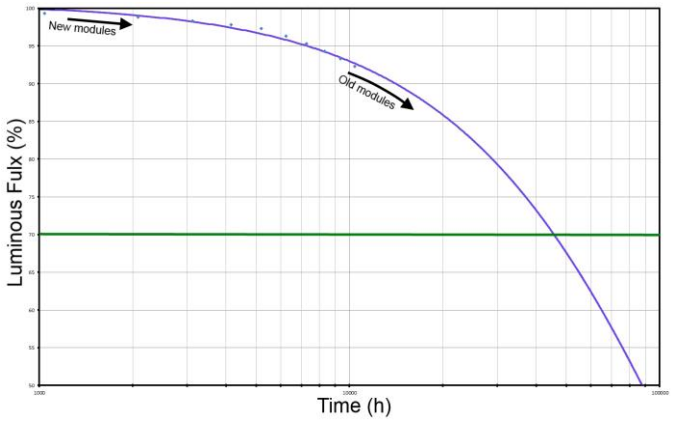
Serial connections must have same number of LED modules in every series. This solution need less voltage supply than serial wiring with same number of LED modules. Higher current supply is require to proper operation. Disadvantage of this solution are patchy distribution of light and different lifetime of LEDs. Especial when one or more LED modules are damage, because distribution of current in the system is patchy. Higher current increases temperature and decreases lifetime. If too many LED modules are connected in serial, the voltage value may not meet requirements of SELV. Non-SELV voltage need additional protection. We are not responsible for any loss, or damage resulting from improper use of modules! Guarantee become void in such cases. Above connection is examples and may be different from the actual.

COOLING

The modules are usually self-cooling but if temperature on T_c point exceeds 70°C, then a heat-sink is required. Temperature test point (T_c) for measurement should be localized in the middle of the board near LED's thermal pad. The temperature at the T_c point can be measured with thermocouple or simple temperature probe. Example of T_c point is shown on the photo below.



The lifetime of the module depends to operating temperature and used LEDs. If temperature at T_c will be lower than 65°C, the value of luminous flux shouldn't be less than 80% of its nominal value after 50.000h. If temperature is too high then lifetime can be significantly decreased or damage LEDs. Another disadvantage of high temperature is reduction of relative luminous intensity. LED modules produces heat. They must be provided with good air ventilation. Modules without air ventilation can overheat. Overheat can damage or destroy some elements or entire LED modules. We are not responsible for any loss, or damage resulting from improper use of modules! Guarantee become void in such cases.



Most common problem using new modules in old installation is differences in brightness of modules. This is result of luminous flux degradation over time of use. Degradation is normal effect and applies to all LEDs. This effect is different for each LEDs and can be only predicted by testing and estimation. It is complicate issue that mostly depends on temperature and current. Good solution to this problem is reduce of current in new modules, but degradation will be different for each modules. Above characteristic is examples for LEDs in temperature above 100°C and different from the actual.

STANDARDS AND DIRECTIVES

In the process of designing and manufacturing the following standards and directives were taken into account:

• 2014/35/EU– Low-voltage Directive: on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

• 2014/30/EU– EMC Directive: on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

• 2011/65/EC – RoHS Directive: restriction of hazardous substances in electrical and electronic equipment

• EN 62031:2010/A1:2013-06 – Safety requirements for LED modules

• EN 60598-1:2015-04 – General requirements and tests for luminaires

• EN 60598-2-2:2012 – Luminaires - Part 2. Special requirements; Main section 2: Recessed luminaires

• EN 62471:2010 – Photo-biological safety of lamps and lamps systems

• EN 61347-1:2015-09 – General and safety requirements

• EN 61347-2-13:2015-04 – Special requirements for DC and AC powered electronic operating equipment for LED modules

• EU Regulation No: 874/2012 – Energy labelling of electrical lamps and luminaries

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Subject to technical changes and errors.