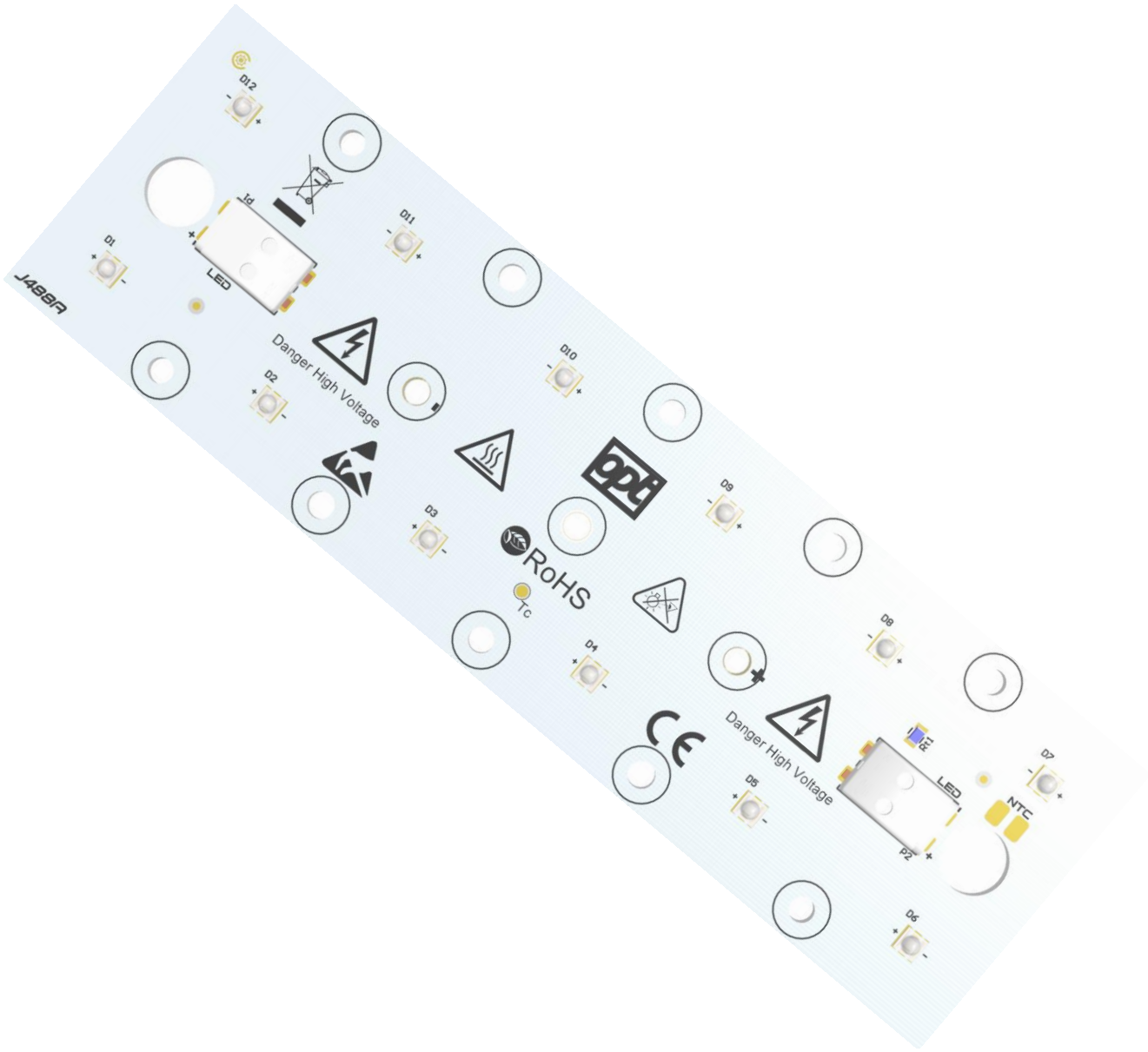
L0-145044-xxx-C3600-J488

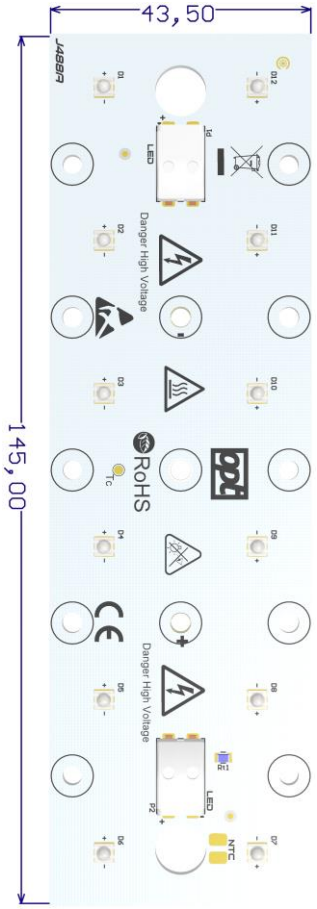


L0-145044-xxx-C3600-J488

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. This solution is the best for street lamps, parking lamps etc.

LED Type	OSRAM OSLON – GW CSSRM2
LED Quantity	12 pcs
Dimension	145x43,5 mm
Power Supply Type	Constant Current (CC)
Input Current	max. 3600 mA
Material Thickness	1,5 mm
Cable Connection	BJB Terminal blocks
Max Ambient Temperature	45°C
CRI	>70
Manufacturing Site	Cezos, Poland, Europe



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 168 lm/W @ 700 mA
- High colour rendering index CRI >70
- Colour temperatures 2700K, 3000K, 4000K, 5000K
- Optional NTC Protection (Thermistor)
- Simple installation

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

PARAMETERS FOR ONE LED MODULE

Input Current [mA]	Forward Voltage [V]	Power [W]	CCT [K]	Min. CRI	Luminous Flux* [lm]	Module Efficacy* [lm/W]	Luminous Flux** [lm]	Module Efficacy** [lm/W]	Article Number
700	17,6	12,3	2700	80	1622	134	1546	130	L0-145044-827-C3600-J488
			3000	70	1934	157	1868	151	L0-145044-730-C3600-J488
				80	1691	139	1612	136	L0-145044-830-C3600-J488
			4000	70	2001	162	1934	157	L0-145044-740-C3600-J488
				80	1760	145	1678	141	L0-145044-840-C3600-J488
			5000	70	2069	168	1999	162	L0-145044-750-C3600-J488
				80	1829	151	1744	147	L0-145044-850-C3600-J488
1400	18,1	25,4	2700	80	3005	118	2861	115	L0-145044-827-C3600-J488
			3000	70	3601	142	3480	137	L0-145044-730-C3600-J488
				80	3133	123	2983	120	L0-145044-830-C3600-J488
			4000	70	3728	147	3602	142	L0-145044-740-C3600-J488
				80	3261	128	3104	125	L0-145044-840-C3600-J488
			5000	70	3854	152	3724	147	L0-145044-750-C3600-J488
				80	3389	133	3226	129	L0-145044-850-C3600-J488
2000	18,7	37,5	2700	80	4086	109	3884	106	L0-145044-827-C3600-J488
			3000	70	5123	131	4950	127	L0-145044-730-C3600-J488
				80	4260	114	4049	110	L0-145044-830-C3600-J488
			4000	70	5303	136	5124	131	L0-145044-740-C3600-J488
				80	4434	118	4214	115	L0-145044-840-C3600-J488
			5000	70	5483	140	5298	136	L0-145044-750-C3600-J488
				80	4608	123	4380	119	L0-145044-850-C3600-J488
2800	19,4	54,3	2700	80	5377	99	5099	96	L0-145044-827-C3600-J488
			3000	70	6500	122	6280	118	L0-145044-730-C3600-J488
				80	5606	103	5316	100	L0-145044-830-C3600-J488
			4000	70	6728	127	6500	122	L0-145044-740-C3600-J488
				80	5835	107	5533	104	L0-145044-840-C3600-J488
			5000	70	6956	131	6721	126	L0-145044-750-C3600-J488
				80	6063	112	5750	108	L0-145044-850-C3600-J488

* - 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 WHEN POWERING BY POWER SUPPLY

Power Supply Type	Number of Modules	Power Supply Current [A]	LED Module Current [mA]	Forward Voltage [V]	Power [W]	CCT [K]	Min. CRI	Luminous Flux* [lm]	Module Efficacy* [lm/W]	Luminous Flux** [lm]	Module Efficacy** [lm/W]	Article Number
HLG-100H-30	1	1,6	1,6	18,3	29,3	2700	80	3376	115	3213	112	L0-145044-827-C3600-J488
						3000	70	4193	143	4062	141	L0-145044-730-C3600-J488
							80	3520	120	3349	116	L0-145044-830-C3600-J488
						4000	70	4335	148	4200	146	L0-145044-740-C3600-J488
							80	3664	125	3486	121	L0-145044-840-C3600-J488
						5000	70	4478	153	4338	151	L0-145044-750-C3600-J488
							80	3807	130	3623	126	L0-145044-850-C3600-J488
	2	1,4	0,7	17,6	24,6	2700	80	3243	134	3093	130	L0-145044-827-C3600-J488
						3000	70	4003	162	3886	161	L0-145044-730-C3600-J488
							80	3381	139	3225	136	L0-145044-830-C3600-J488
						4000	70	4139	168	4018	166	L0-145044-740-C3600-J488
							80	3519	145	3356	141	L0-145044-840-C3600-J488
						5000	70	4274	173	4150	171	L0-145044-750-C3600-J488
							80	3657	151	3488	147	L0-145044-850-C3600-J488
		3,2	1,6	18,3	58,6	2700	80	6753	115	6425	112	L0-145044-827-C3600-J488
						3000	70	8387	143	8125	141	L0-145044-730-C3600-J488
							80	7040	120	6698	116	L0-145044-830-C3600-J488
						4000	70	8671	148	8400	146	L0-145044-740-C3600-J488
							80	7328	125	6972	121	L0-145044-840-C3600-J488
						5000	70	8955	153	8676	151	L0-145044-750-C3600-J488
							80	7615	130	7245	126	L0-145044-850-C3600-J488
HLG-185H-30	3	4,65	1,55	18,3	84,9	2700	80	9854	116	9377	112	L0-145044-827-C3600-J488
						3000	70	12234	144	11854	142	L0-145044-730-C3600-J488
							80	10273	121	9776	117	L0-145044-830-C3600-J488
						4000	70	12649	149	12256	147	L0-145044-740-C3600-J488
							80	10693	126	10175	122	L0-145044-840-C3600-J488
						5000	70	13063	154	12657	152	L0-145044-750-C3600-J488
							80	11112	130	10574	127	L0-145044-850-C3600-J488
	4	2,8	0,7	17,6	49,2	2700	80	6487	134	6186	130	L0-145044-827-C3600-J488
						3000	70	8006	162	7772	161	L0-145044-730-C3600-J488
							80	6763	139	6449	136	L0-145044-830-C3600-J488
						4000	70	8277	168	8036	166	L0-145044-740-C3600-J488
							80	7039	145	6712	141	L0-145044-840-C3600-J488
						5000	70	8549	173	8299	171	L0-145044-750-C3600-J488
							80	7315	151	6975	147	L0-145044-850-C3600-J488
		6,2	1,55	18,3	113,2	2700	80	13139	116	12502	112	L0-145044-827-C3600-J488
						3000	70	16312	144	15805	142	L0-145044-730-C3600-J488
							80	13698	121	13034	117	L0-145044-830-C3600-J488
						4000	70	16865	149	16341	147	L0-145044-740-C3600-J488
							80	14257	126	13566	122	L0-145044-840-C3600-J488
						5000	70	17418	154	16877	152	L0-145044-750-C3600-J488
							80	14816	130	14098	127	L0-145044-850-C3600-J488

* - 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.

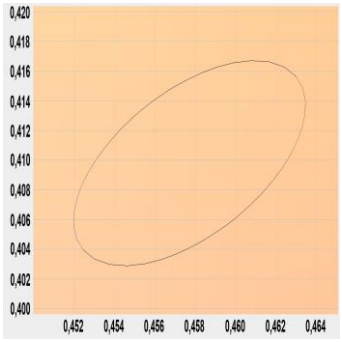
Additionally LED modules can be damaged by some chemical substances. Depends of elements the damage may be different. It is important not to use chemical substances like acids, organic acids, sulphur, alkalis, organic solvents, mineral oils, vegetable oils and synthetic oils, etc. We are not responsible 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.

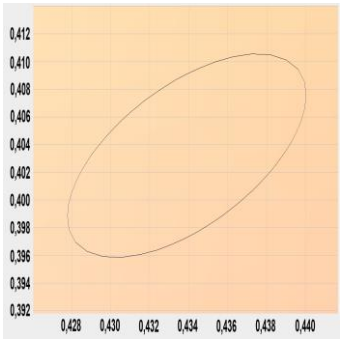
MACADAM ELLIPSE

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.

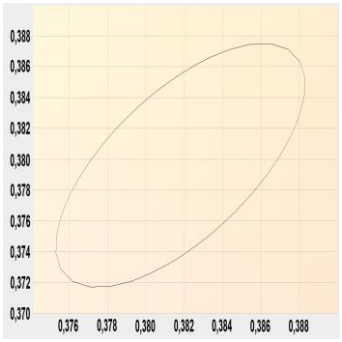
2700K 3SDCM



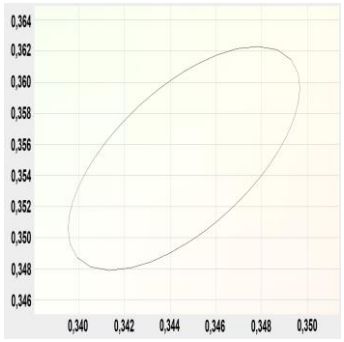
3000K 3SCDM



4000K 3SCDM



5000K 3SCDM

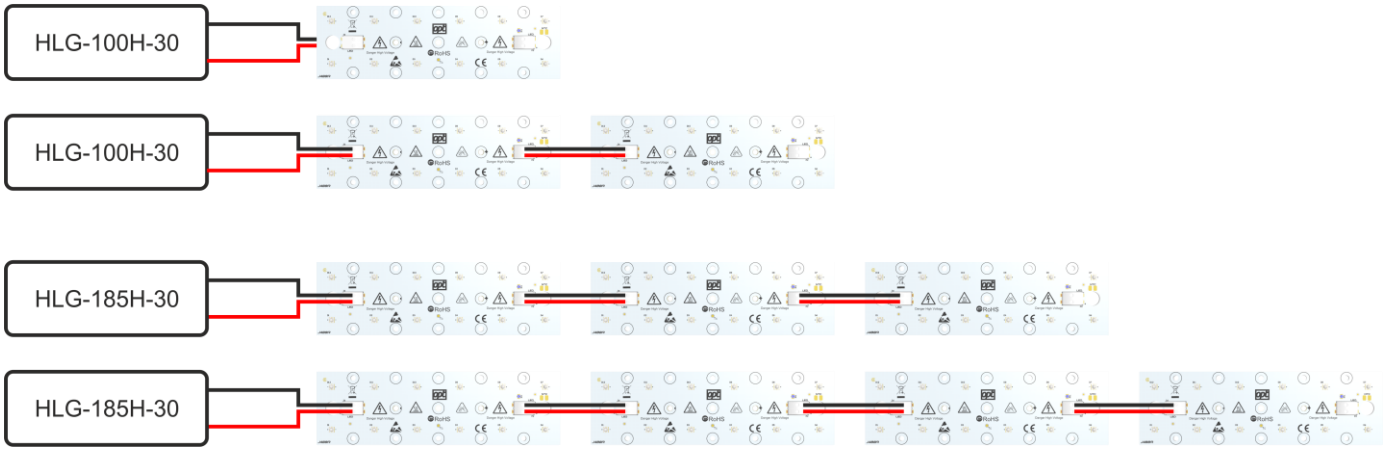


CONNECTIONS

Connecting few Steer LED modules allows to adapt lamp in most effective way. Push terminals 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 STREET LED CC MODULES WITH PARALLEL WIRING

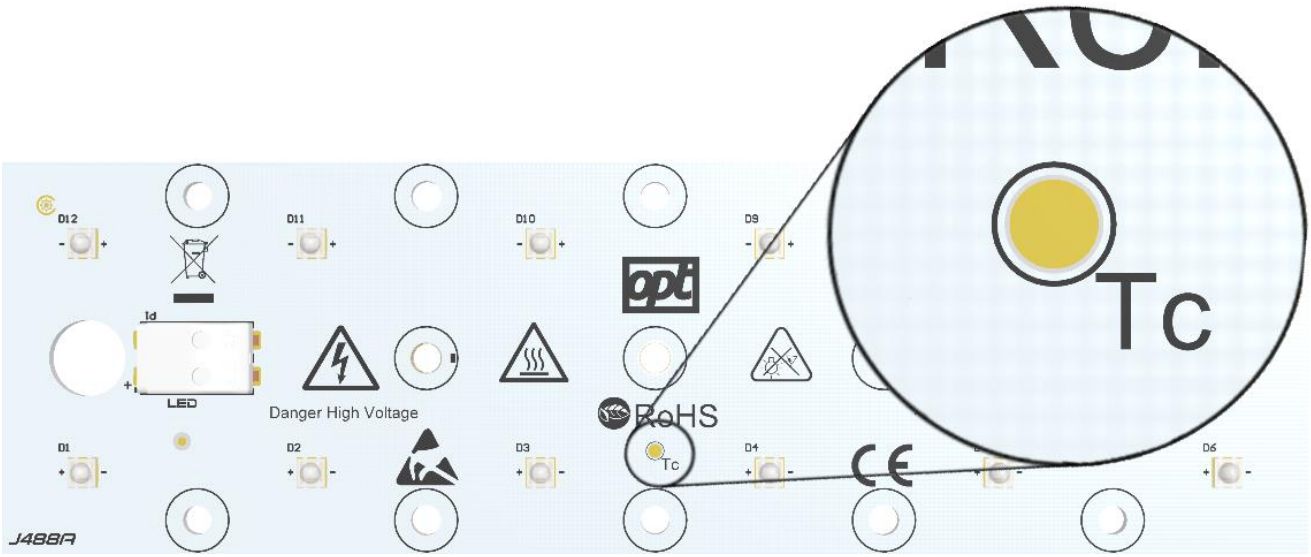
Power Supply	Number of LED modules	Output Current
HLG-100H-30	1 x 12 LED	1,6 A
HLG-100H-30	2 x 12 LED	3,2 A
HLG-185H-30	3 x 12 LED	4,65 A
HLG-185H-30	4 x12 LED	6,2 A



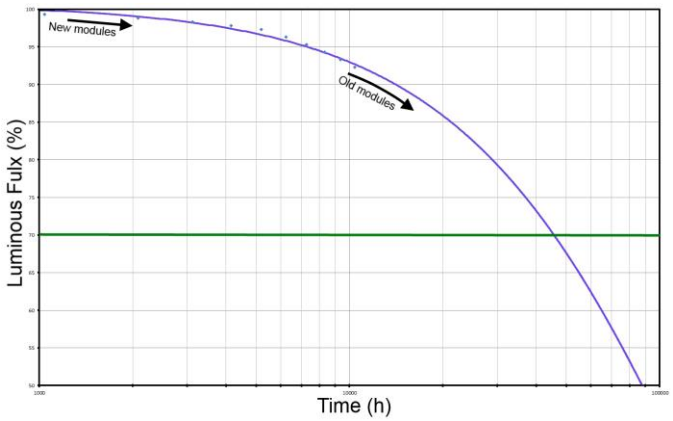
Street LED modules may be connected with serial or serial - parallel wiring. NTC should be connected only to one module. Solder pads of NTC are located close to push terminal on the right side of modules. Above connections are example and may be different from the actual.

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.