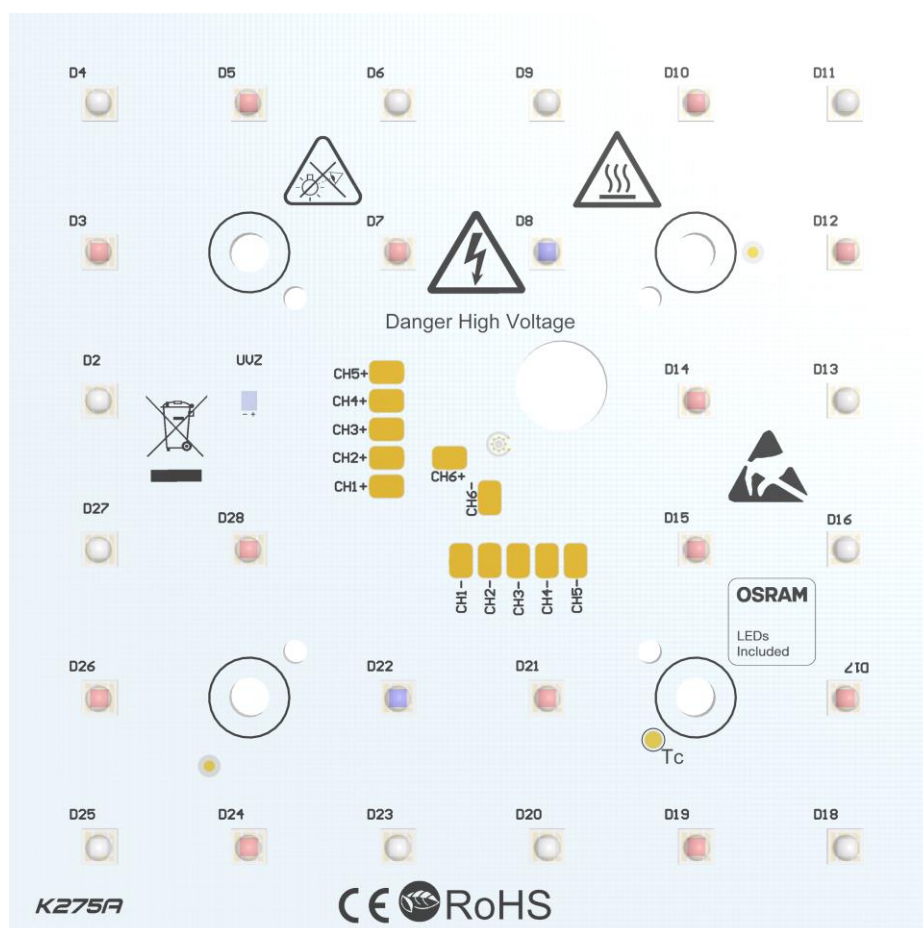




Q0-081081-RFBUWW-C1000-K275



LED light sources for artificial plantation. It is adapted to specific plants breeding, by changing type of LEDs.

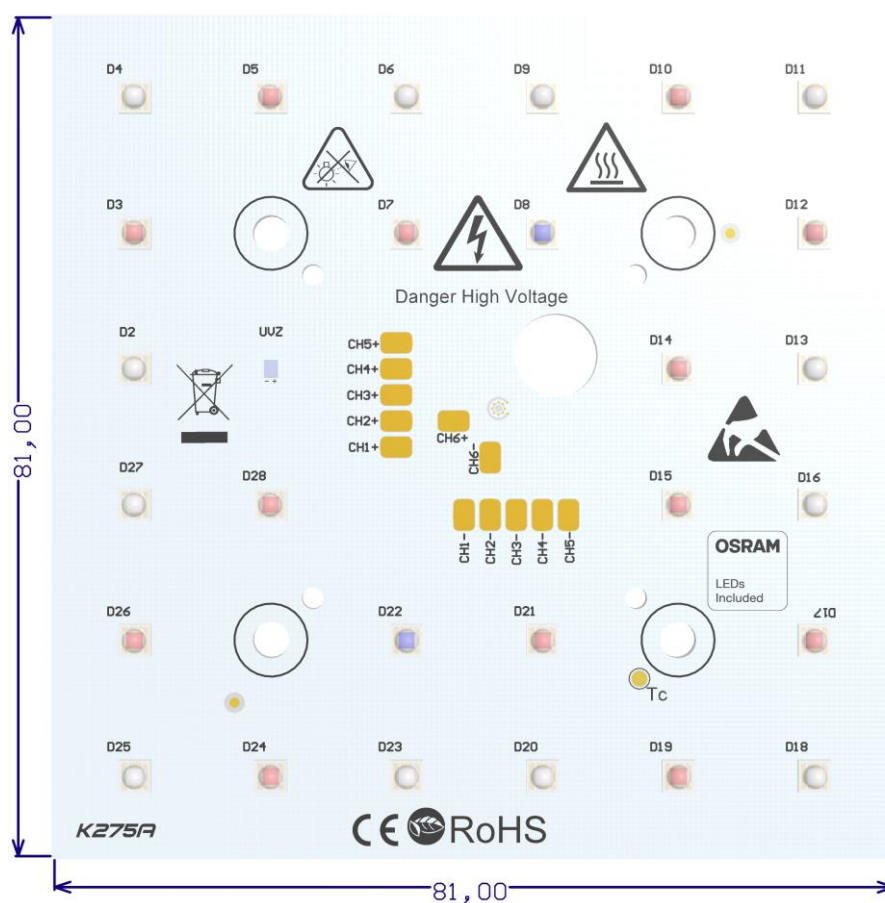
LED Type	OSRAM OSLOM - GH CSXPM1 OSRAM OSLOM - GF CSXPM1 OSRAM OSLOM - GD CSXPM1 OSRAM OSLOM - GW CSSRM1 OSRAM OSLOM - GW CSSRM1 Luxeon Z LHUV-0405
LED Quantity	RED - 11 pcs FAR RED - 2 pcs BLUE - 2 pcs WARM WHITE - 6 pcs COLD WHITE - 6 pcs UV - 1 pcs
Size	81x81 mm
Power Supply Type	Constant Current (CC)
Input Current	max. 1000 mA
Material Thickness	1,5 mm
Cable Connection	Solder Pads
Max Ambient Temperature	45°C

### FEATURES

- Accelerates plant growth
- Increases harvest
- Controlling of plant grow
- Different type of LEDs available
- Solder pads for quick and simple wiring
- Simple installation

### APPLICATIONS

- Horticulture
- Dedicated application



**CALCULATED PARAMETERS AT T<sub>J</sub> = 25°C**

Input Current [mA]	Forward Voltage [V]	Power [W]	Colour	λ [nm] / CCT [K]	Radiant Power [mW] / Luminous Flux [lm]	PPF [μmol/s]	PPF/W [μmol/J]	Article Number
350	23,7	8,3	RED	657	4675	25,36	3,06	Q0-081081-RFBUWW-C1000-K275
	3,7	1,3	FAR RED	727	530	0,32	0,25	
	5,7	2,0	DEEP BLUE	455	1270	4,70	2,36	
	3,0	1,0	UV	400	438	-	-	
	17,8	6,2	WHITE	2700	598	7,97	1,28	
	17,8	6,2	WHITE	6500	807	10,74	1,72	
500	24,8	12,4	RED	657	6592	35,75	2,89	Q0-081081-RFBUWW-C1000-K275
	3,9	2,0	FAR RED	727	747	0,45	0,23	
	5,8	2,9	DEEP BLUE	455	1765	6,53	2,25	
	3,0	1,5	UV	400	625	-	-	
	18,0	9,0	WHITE	2700	811	10,44	1,16	
	18,0	9,0	WHITE	6500	1094	14,09	1,56	
700	26,4	18,5	RED	657	8929	48,43	2,62	Q0-081081-RFBUWW-C1000-K275
	4,1	2,9	FAR RED	727	1012	0,61	0,21	
	5,9	4,2	DEEP BLUE	455	2184	8,08	1,94	
	3,1	2,2	UV	400	875	-	-	
	18,3	12,8	WHITE	2700	1081	13,77	1,07	
	18,3	12,8	WHITE	6500	1457	18,59	1,45	

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

Parameters shown in table above are default and for temperatures =25°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.

Electrostatic Discharge (ESD) is a serious threat to electronics devices. Human body can generate very high electrostatic voltage which can decrease lifetime of electronics significantly and in worst cases may destroy electronic components. To avoid damages use of electrostatic protection is required. It is needed to follow ESD precautions during manipulation of these devices. Do not touch electronic components directly to avoid damages. Observe the official regulations for electrical devices (like DIN, VDE, EN). It is necessary to isolate components like controllers, LED modules, power supply, wires etc. from any metal parts which can conduct electrostatic charges or cause short circuit. Controllers aren't equipped with short circuit protection. During short circuit, very high current is flowing from power supply and can destroy it, causing risk of fire. Electronics must not be modified. Any modification causes loss of guarantee. The electric wiring/connection must comply with all current and valid national requirements, be constructed by a certified electrical tradesman, and comply with all the requirements set forth in this manual. We are not responsible for any loss, or damage resulting from electrostatic voltage discharge and short circuit cause by inappropriate handling or wrong construction of the lamp! Guarantee become void in such cases.

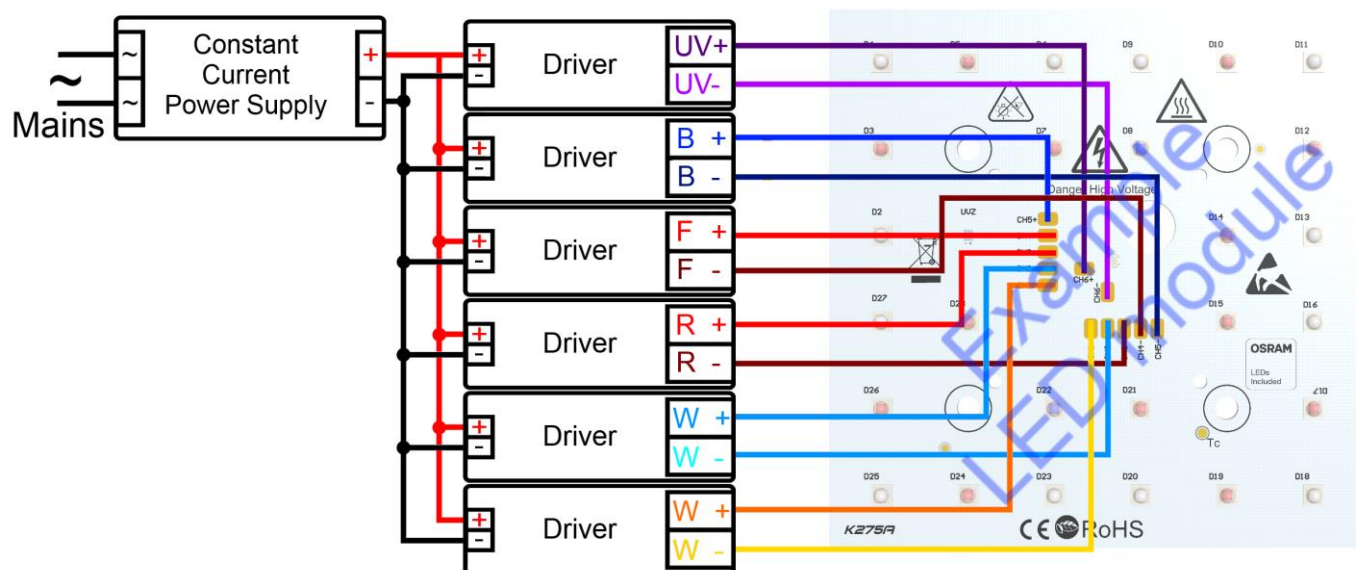
Additionally LED modules can be damaged by some chemical substances. Depends of elements the damage may be different. It is important not to use chemical substances like acids, organic acids, sulphur, alkalis, organic solvents, mineral oils, vegetable oils and synthetic oils, etc. We are not responsible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

## **CONNECTIONS**

Connecting few 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.

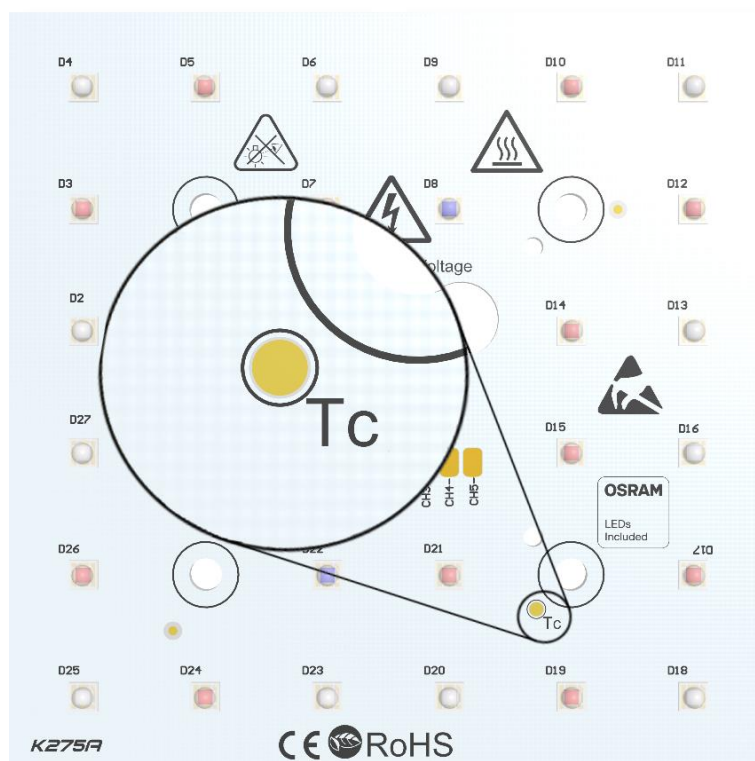
### WIRING DIAGRAM FOR MODULES



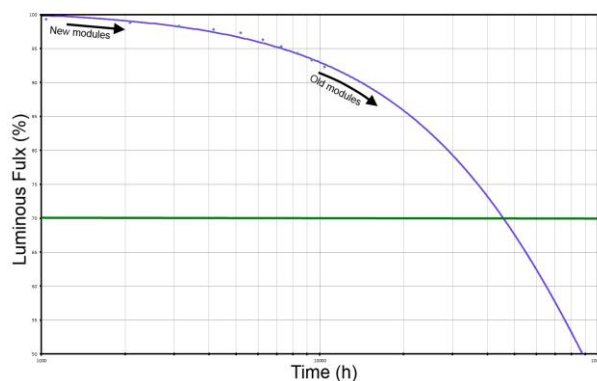
Above connections are example and may be different from the actual.

### COOLING

The modules are usually self-cooling but if temperature on  $T_c$  point exceeds  $70^{\circ}\text{C}$ , 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  $65^{\circ}\text{C}$ , 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  $100^{\circ}\text{C}$  and different from the actual.

## CONTACT

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Subject to technical changes and errors.