

CEZOS

GrowEmity Herba 4000



LED  **Light for you**
powered by OSRAM

CERTIFIED PARTNER

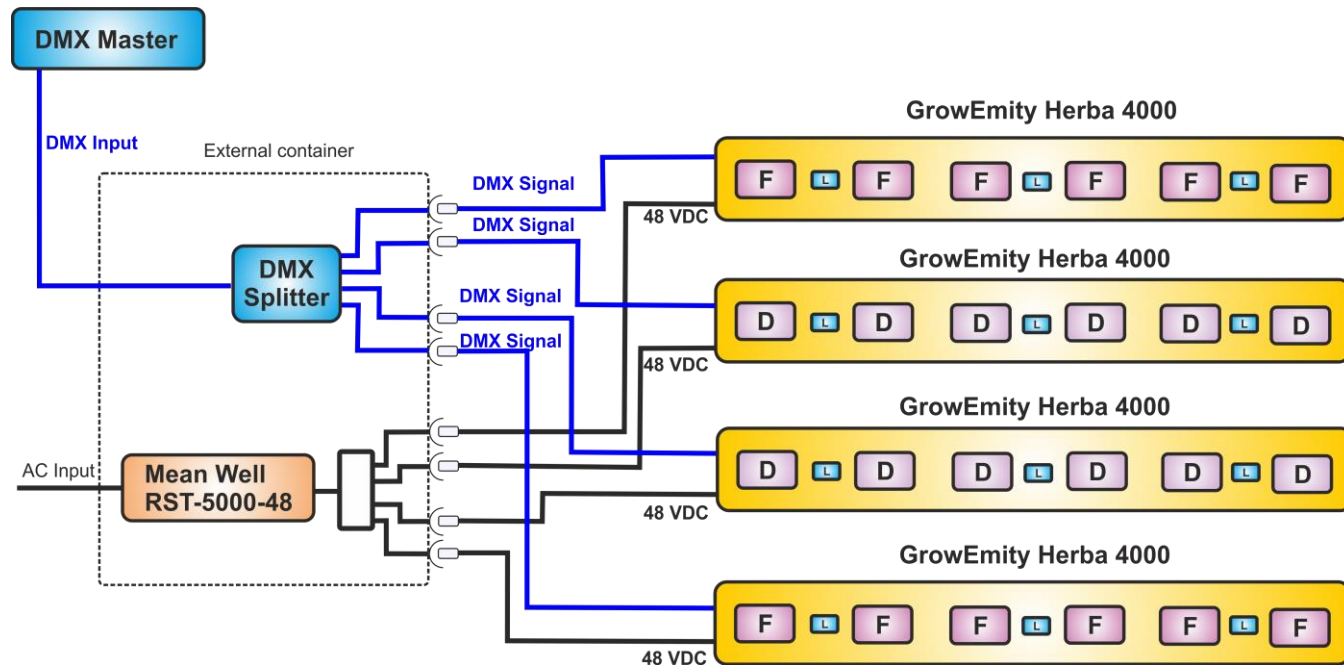
GrowEmity Herba 4000 is special lamp for plants. The LED light source allows to accelerate plant growth. It is even possible to regulate plant growth. GrowEmity have ability to regulate and can matched spectrum for specific plants. Additionally, LEDs generate more light and less heat than sodium lamp. LED light sources are used in artificial plantation without daylight.

GROWEMITY HERBA 4000

Name	GrowEmity Herba 4000
Size	4000x108x80 mm
Weight	22 kg
Input Voltage	48 V DC
Max. Input Current	21 A
Max. Power	1008 W
Control Interface	DMX 512
Driver	L476A
International Protection	IP 65
Ambient Temperature	0 – 40 °C

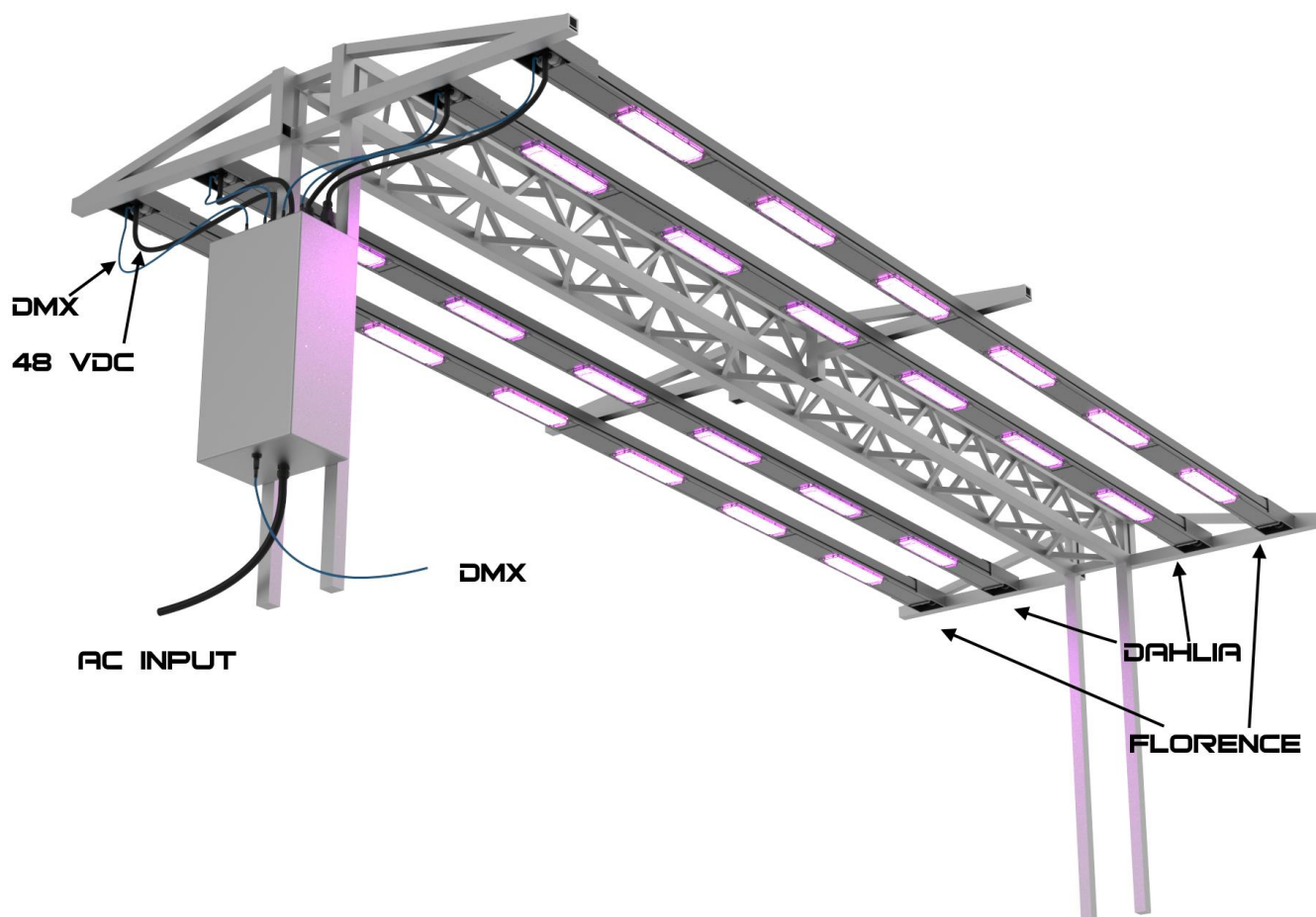
The GrowEmity Herba 4000 is connected to 48 VDC power supply. Every lamp have three drivers that can power six LED modules. LED module has four channel, which can be control separately and they are supply with equal power per channel. One driver can control eight channel. There are two kind of lamp: one with Dahlia optics and another with Florence optics. Each lamp have wire with for power and another for DMX.

BLOCK DIAGRAM OF GROWEMITY HERBA 4000

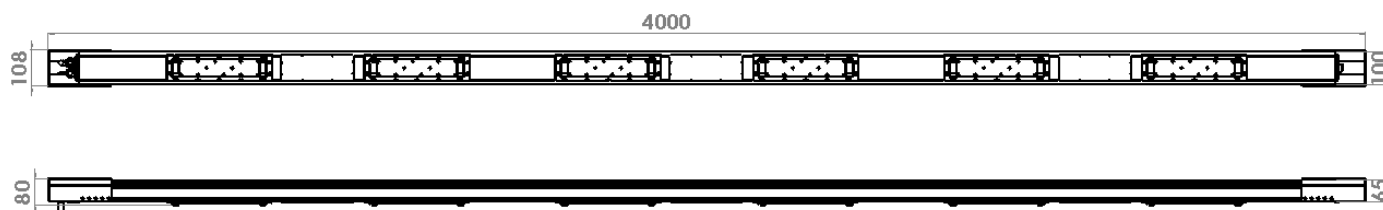


D – Dahlia modules
 F – Florence modules
 L – L476A - Herba driver

GROWEMITY HERBA 4000



SIZE OF GROWEMITY HERBA 4000

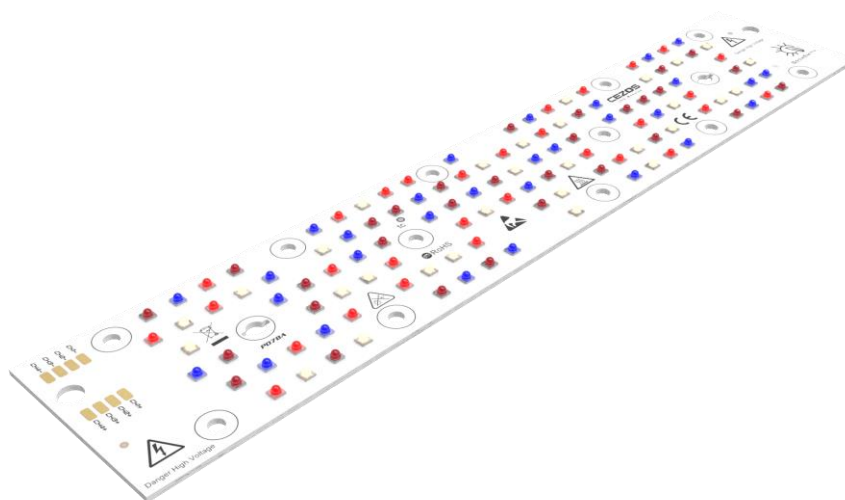


LED LAMPS

LAMP WITH DAHLIA OPTIC



LED LIGHT SOURCES



Name	GrowEmity 120 – R006
Far Red LED – 36 pcs	OSRAM - GF CSSPM1.24
Red LED – 26 pcs	OSRAM - GH CSSPM1.24
Deep Blue LED – 32 pcs	OSRAM - GD CSSPM1.14
White LED – 26 pcs	OSRAM – LUW CQAR
Ambient Temperature	0 – 40 °C

CALCULATED PARAMETERS OF SIX Roo6 LED MODULES

Total Power [W]	Colour	λ [nm] / CCT [K]	Radiant Power [mW] / Luminous Flux [lm]	PPF [$\mu\text{mol/s}$]	PPF/W [$\mu\text{mol/J}$]	Total PPF [$\mu\text{mol/s}$]	Total PPF/W [$\mu\text{mol/J}$]	Article Number
590,1	RED	657	81600	442,56	3,06	1149,48	1,95	6x L0-278053-RFBW-C1000-R006
	FAR RED	727	57240	34,56	0,25			
	DEEP BLUE	455	99060	366,60	2,36			
	WHITE	5000	23072	305,76	2,04			

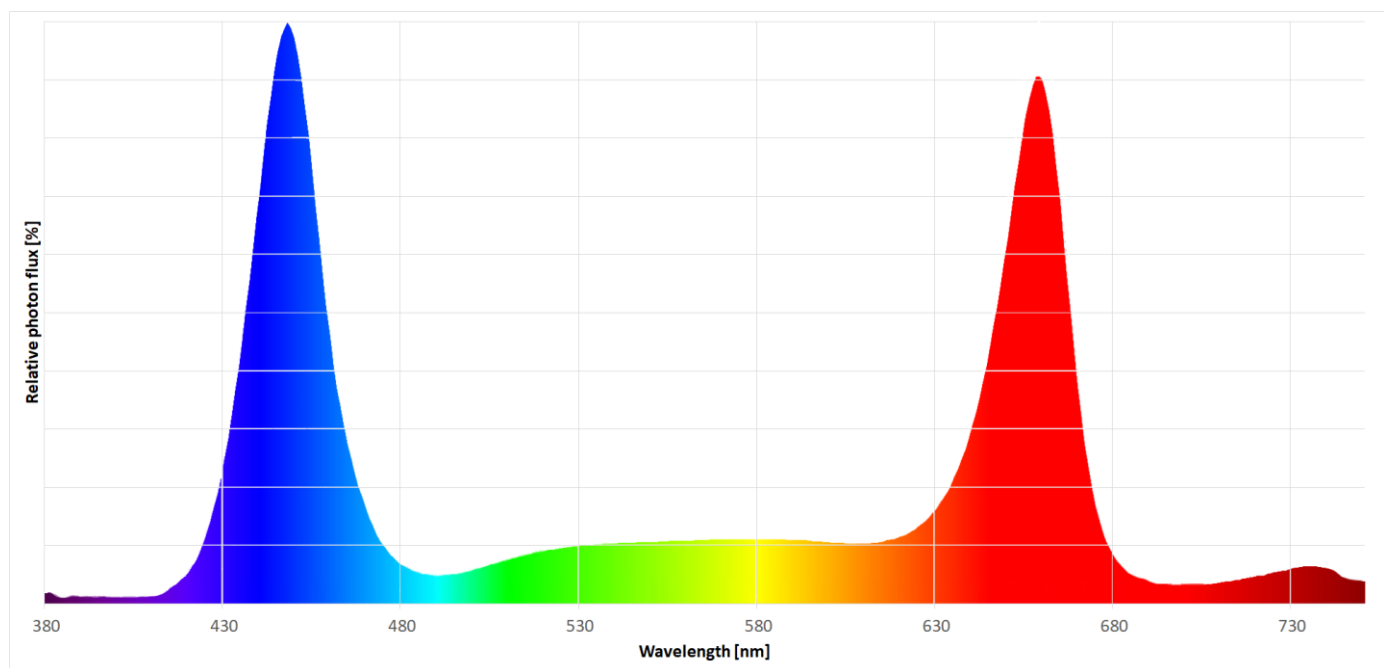
Parameters were calculated for temperatures $T_j = 25^\circ\text{C}$

Radiant power and wavelength for color LEDs; Luminous flux and colour temperature for white LEDs.

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

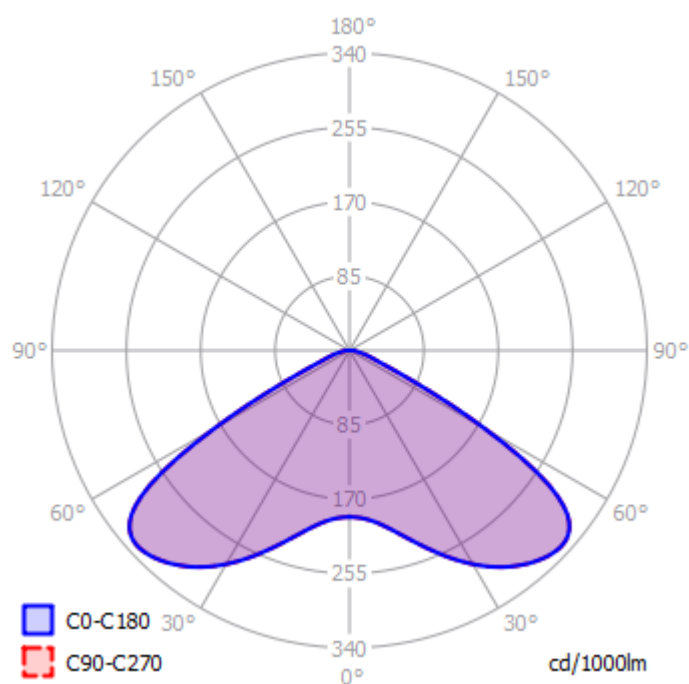
Different type of plants have different requirements for the best growth, so to maximized effect, light sources have many sets of LEDs configuration. Most common LED types are: red, far red, hyper red, blue, deep blue and white with different colour temperature.

SPECTRUM OF LEDs

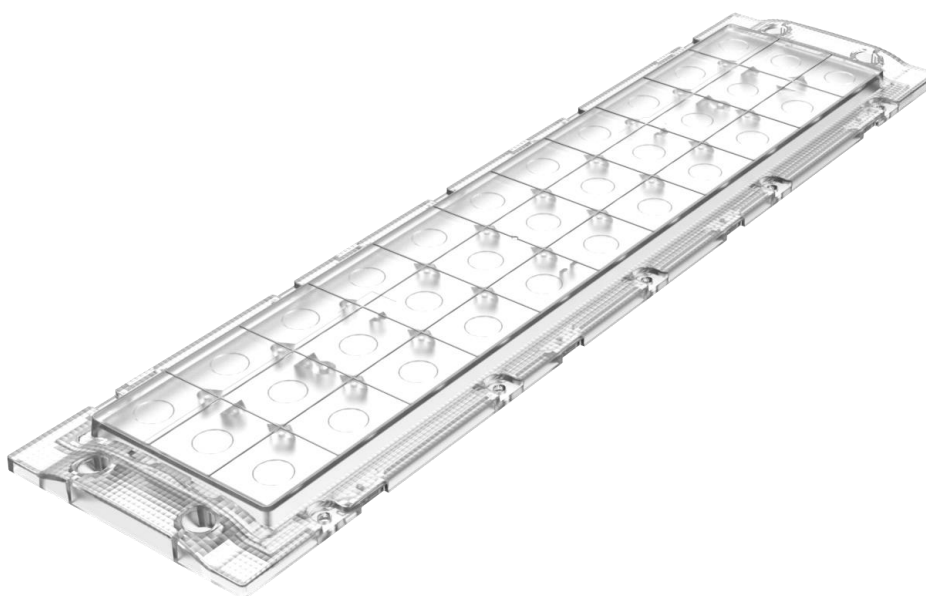


Normalized spectrum graph of the red, far red, blue and white LEDs at 350 mA current. Spectrum can be changed by choosing LEDs and power output.

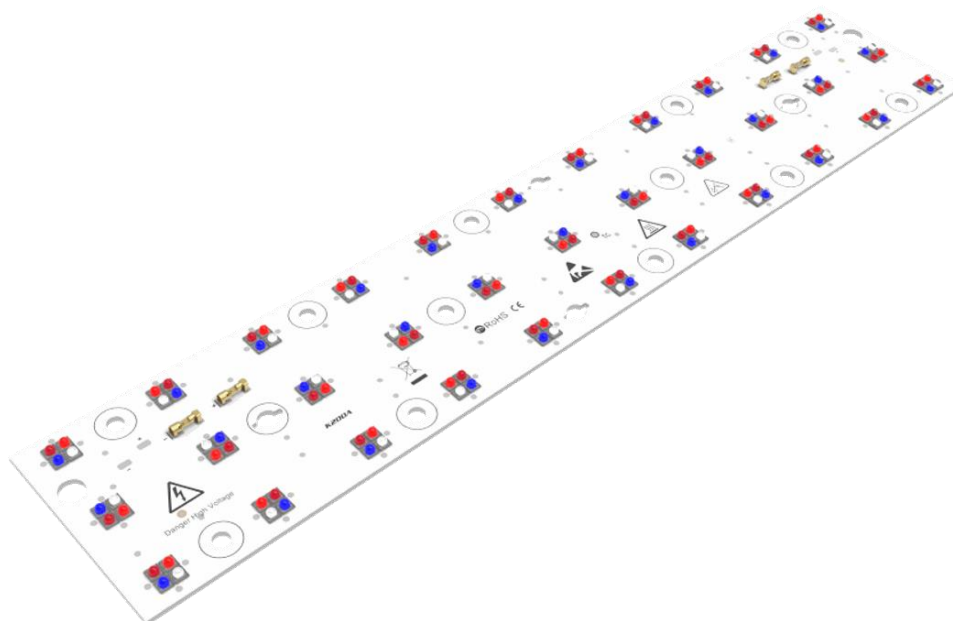
LIGHT DISTRIBUTION OF LIGHT SOURCE



LAMP WITH FLORENCE OPTIC



LED LIGHT SOURCES



Name	GrowEmity 3x11 – R007
Far Red LED – 36 pcs	OSRAM - GF CSSPM1.24
Red LED – 26 pcs	OSRAM - GH CSSPM1.24
Deep Blue LED – 32 pcs	OSRAM - GD CSSPM1.14
White LED – 26 pcs	OSRAM – LUW CQAR
Ambient Temperature	0 – 40 °C

CALCULATED PARAMETERS OF SIX R007 LED MODULES

Total Power	Colour	λ [nm] / CCT [K]	Radiant Power [mW] / Luminous Flux [lm]	PPF [$\mu\text{mol/s}$]	PPF/W [$\mu\text{mol/J}$]	Total PPF [$\mu\text{mol/s}$]	Total PPF/W [$\mu\text{mol/J}$]	Article Number
590,1	RED	657	81600	442,56	3,06	1149,48	1,95	L0-278053-RFBW-C1000-R007
	FAR RED	727	57240	34,56	0,25			
	DEEP BLUE	455	99060	366,60	2,36			
	WHITE	5000	23072	305,76	2,04			

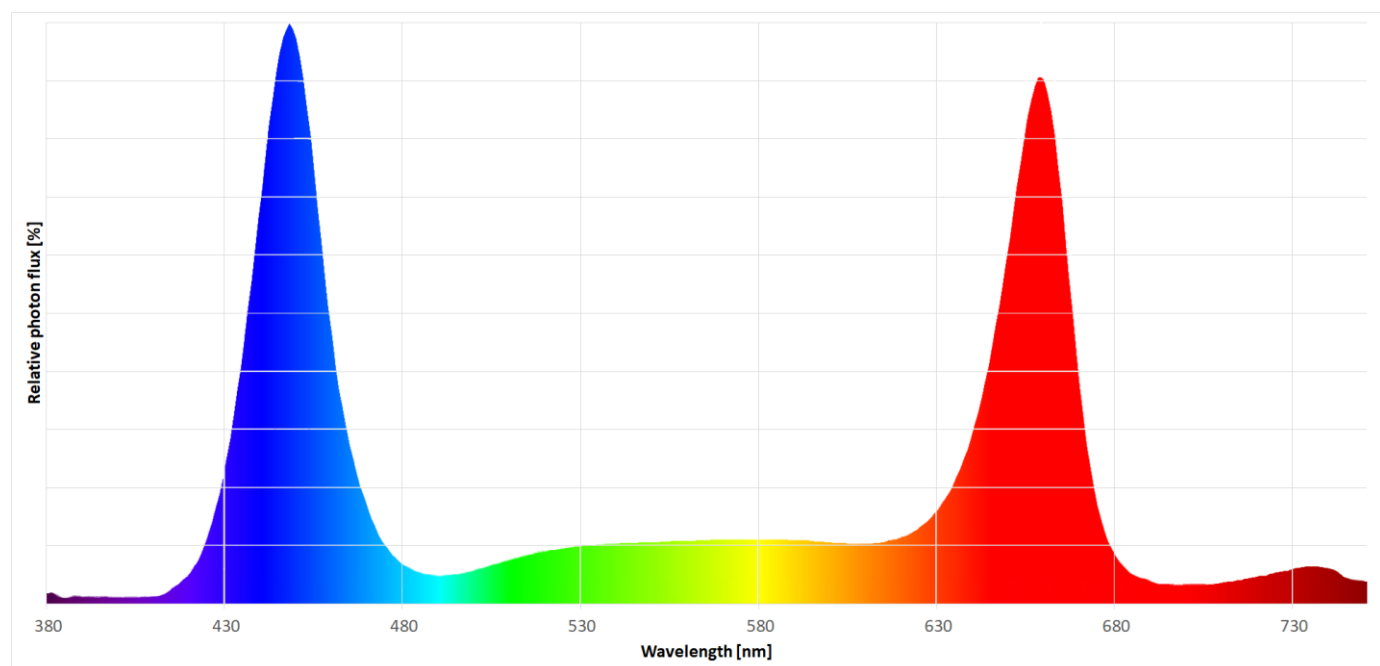
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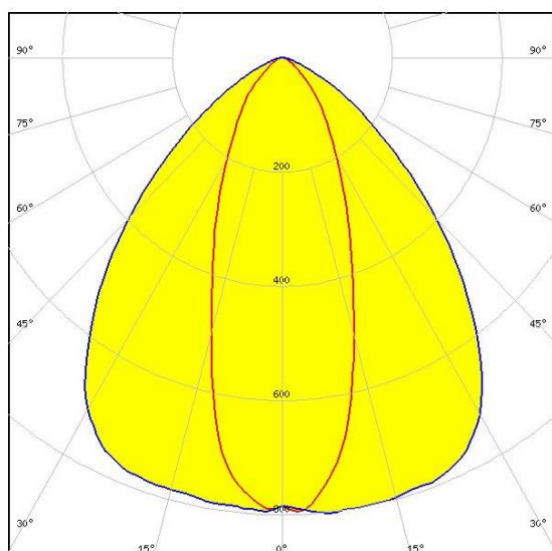
SPECTRUM OF LEDs



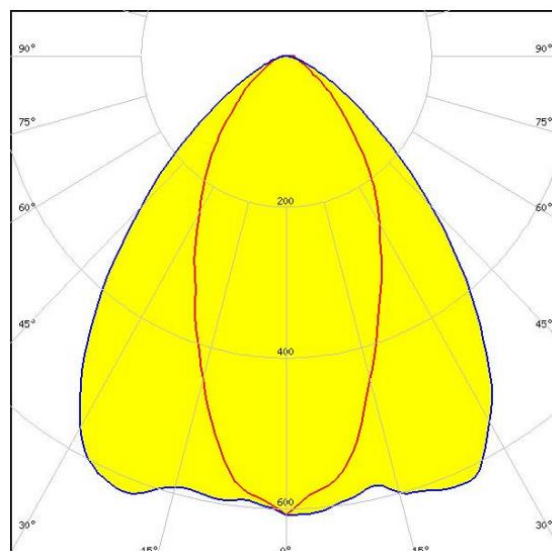
Normalized spectrum graph of the red, far red, blue and white LEDs at 350 mA current. Spectrum can be changed by choosing LEDs and power output.

LIGHT DISTRIBUTION OF LIGHT SOURCE

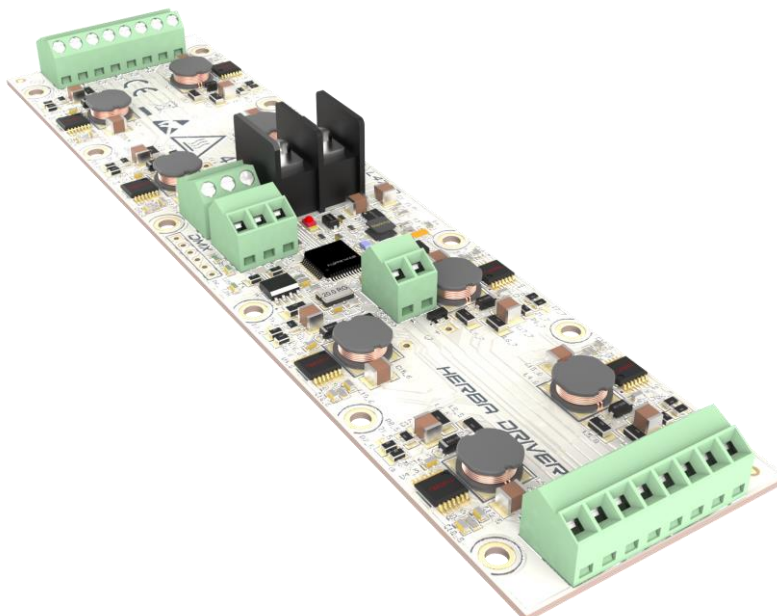
1)



2)



These are just examples of light distribution with Florence optics and may be different for another light source.

DRIVER**HERBA DRIVER – L476**

	Parameters
Type of power supply	Constant Current (CC)
Dimensions	168x42x16.5 mm
Supply voltage	48 V DC
Maximum power output	336 W
Maximum output current	7 A
Connection type	Screw Terminals
Ambient Temperature	0 - 40 °C

POWER SOURCE**MEANWELL RST-5000-48**

	Parameters
Type of power supply	Switched-mode
Dimensions	460x211x83.5 mm
Weight	10 kg
Power output	5040 W
Supply voltage	3x 196...530 V AC
Output voltage	48V DC
Output current	105 A
Operating temperature	-30 to +70 °C

COOLING

The lifetime of the light source depends on the operating temperature and used LEDs. The temperature should be measured in the middle of the board. The temperature can be measured with thermocouple or simple temperature probe. Lifetime of LEDs decreases with the rise of temperature and luminous intensity in higher temperatures may be lower than nominal. Any place of installation should ensure correct heat dissipation from LED light sources. Overheat can damage or destroy some elements or entire LED light source. Never use overheated light source again as it may be damaged and can cause losses or even fire. We are not responsible for any loss, or damage resulting from overheating! Guarantee become void in such cases.

GrowEmity controller produces heat. It must have be provided with good air ventilation. Overheat can damage or destroy some elements or entire controller. We are not responsible for any loss, or damage resulting from improper use of controller! Guarantee become void in such cases.

SAFETY

Controllers can change light intensity, but even dimmed LEDs generate high-intensity light. Looking into LEDs beam is unhealthy and may cause irreversible injury to eye's retina. Never look into the beam without protection glasses with an appropriate filter. Additionally, they may change LEDs light intensity almost immediately. If people are photosensitive, LEDs light may be a trigger to epileptic seizures and alter the perception, especially when light change very fast.

Controllers can work on high power, so never touch components and wires of controller when power supply is on.

PROTECTION MEASURES AGAINST DAMAGE

Controllers and LED light sources are delicate, even small mechanical stress may damage controller. Such stresses should be avoided. If it is impossible, it should be kept to the minimum. Mechanical stresses such as pressure, bending, breaking, drilling, etc. may cause irreversible damage. Damaged controllers aren't suitable for use.

Electrostatic Discharge (ESD) is a serious threat to electronics devices. The human body can accumulate very high electrostatic charge which can decrease the 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 light sources, power supply, wires etc. from any metal parts which can conduct electrostatic charges or cause a short circuit. Controllers aren't equipped with short circuit protection. During a short circuit, very high current is flowing from a 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 a short circuit caused by inappropriate handling or wrong construction of the lamp! Guarantee become void in such cases.

Additionally controllers can be damaged by some chemical substances. Depends on 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 controllers! Guarantee become void in such cases.

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

CONTACT

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Subject to errors and technical changes.