

Preliminary datasheet

# CEZOS

## *GrowEmity 300W*



The GrowEmity LED light source allows to accelerate plant growth and increase harvest. It is even possible to regulate plant growth and blooming time. Unlike an artificial light sources, LED light sources have specially matched spectrum for specific plants. LEDs are fully controllable, so it is possible to change the spectrum using different LEDs. This increases efficiency of horticulture and yields. Additionally, LEDs generate more light and less heat than sodium lamp, allow for lighting from side of plants. LED light sources are used in artificial plantation without daylight, so plants can be grow everywhere.

## PACKET OF GROWEMITY KIT

Name	GrowEmity 300W Kit
Packet Size	46x46x14 cm
Packet Weight	8 kg

## GROWEMITY LED LIGHT SOURCES

Name	GrowEmity 120
Size	340x98x72,4 mm
Weight	1,8 kg
Power Supply Type	Constant Current (CC)
Number Of Channels	4
Power Supply Current	Max. 1000 mA / channel
Far Red LED – 30 pcs	OSRAM - GF CSSPM1.24
Red LED – 30 pcs	OSRAM - GH CSSPM1.24
Deep Blue LED – 30 pcs	OSRAM - GD CSSPM1.14
White LED – 30 pcs	OSRAM - GW CSHPM1.PM
International Protection	IP 67
Ambient Temperature	0 - 40°C

## CALCULATED PARAMETERS OF K237 LED MODULES

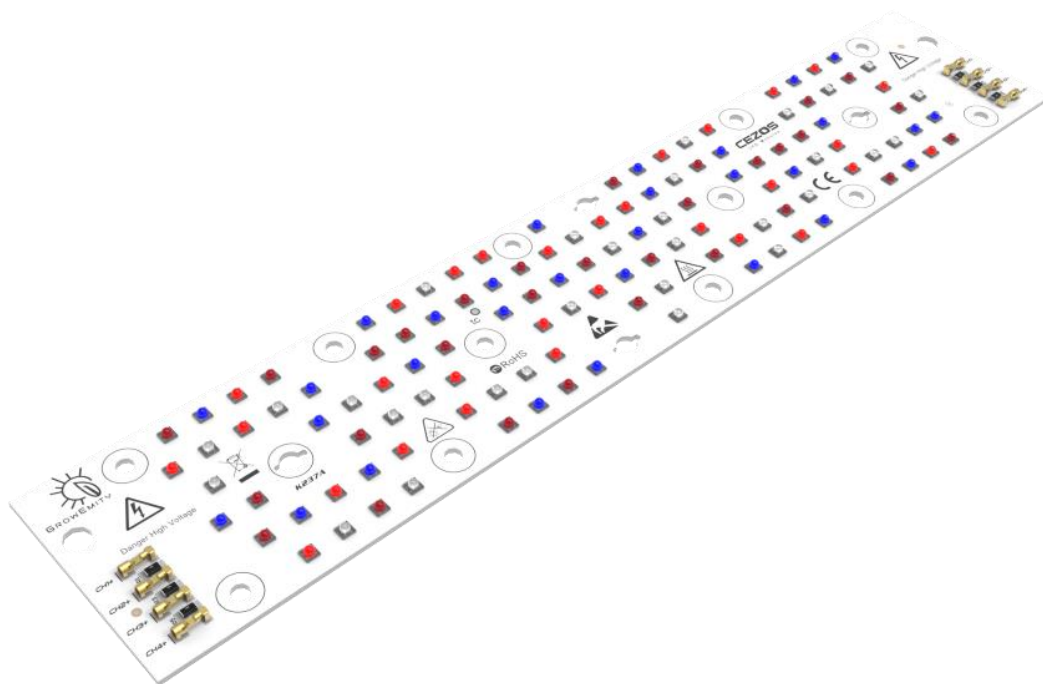
Input Current [mA]	Forward Voltage [V]	Power [W]	Total Power [W]	Colour	$\lambda$ [nm] / CCT [K]	Radiant Power [mW] / Luminous Flux [lm]	PPF [ $\mu\text{mol/s}$ ]	PPF/W [ $\mu\text{mol/J}$ ]	Total PPF [ $\mu\text{mol/s}$ ]	Total PPF/W [ $\mu\text{mol/J}$ ]	Article Number
700	72,0	50,4	218,2	RED	657	24353	132,08	2,62	364,50	1,61	Adjustable Spectrum: Q0-278053-RFBW-C1000-K237
	62,1	43,5		FAR RED	727	15185	9,17	0,21			
	89,1	62,4		DEEP BLUE	455	32766	121,26	1,94			
	88,5	62,0		WHITE	5000	7987	102,00	1,65			

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

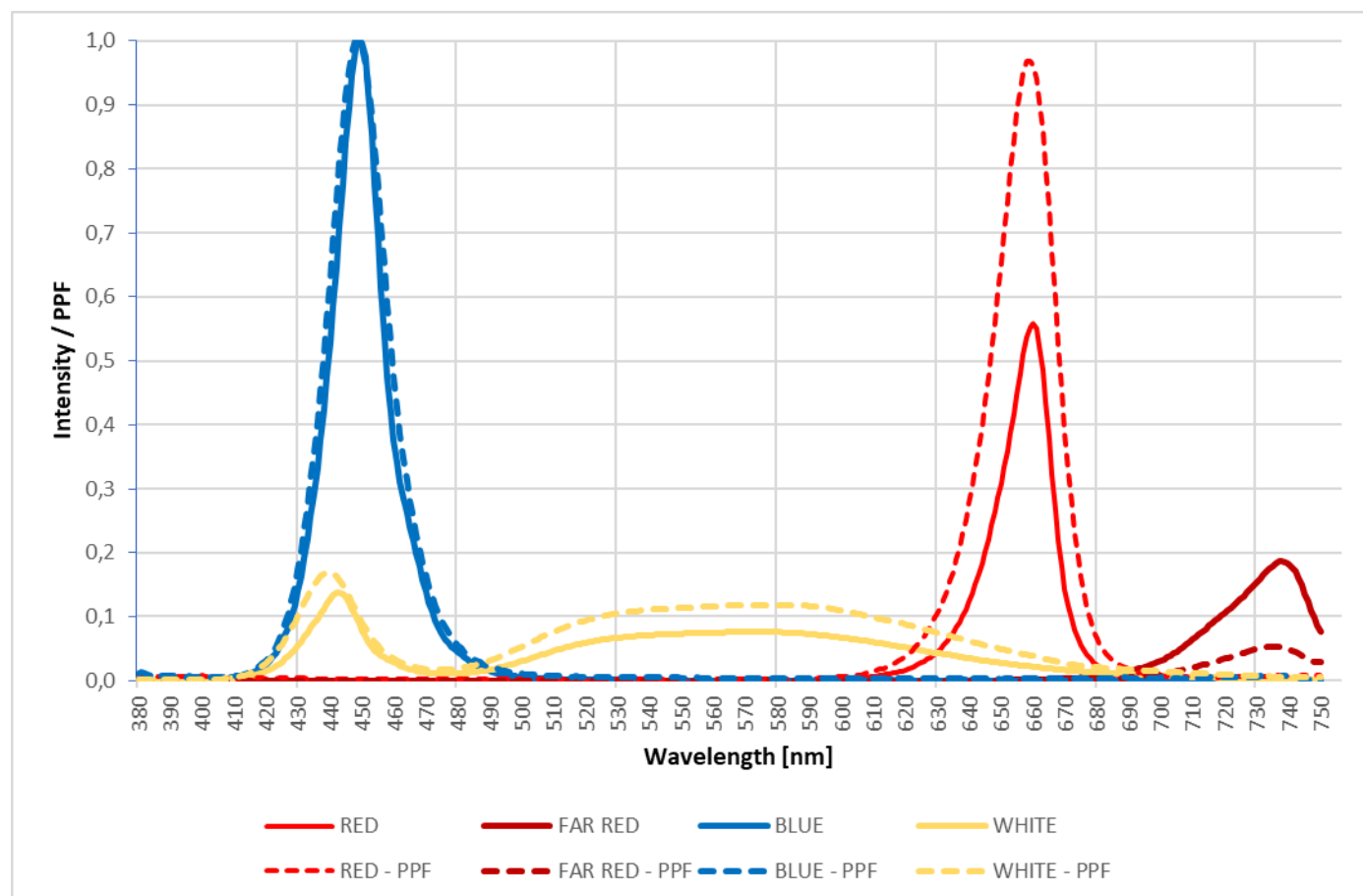
Radiant power and wavelength for color LEDs; Luminous flux and colour temperature for white LEDs.

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, GrowEmity light sources have many sets of LEDs configuration. Most commands LED types are: red, far red, hyper red, blue, deep blue and white with different colour temperature.



### SPECTRUM OF LEDs

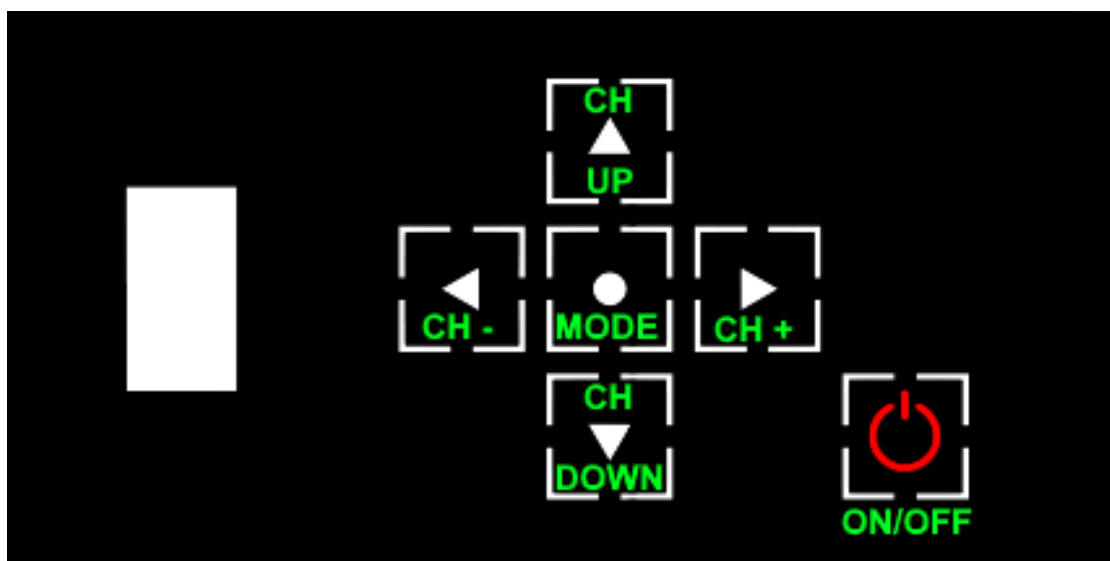


Normalized spectrum graph of the red, far red, blue and white LEDs at 700 mA current. Spectrum can be changed by choosing LEDs and power output.

**GROWEMITY DRIVER**

Name	GrowEmity 300
Size	352x252x142 mm
Weight	6,2 kg
Input Voltage	~230 V AC
Number Of Channels	4
Output Type	Constant Current (CC)
Output Current	700 mA
Output Voltage	53 - 107 V
Control Interface	Touch panel
International Protection	IP 65
Ambient Temperature	0 - 40°C



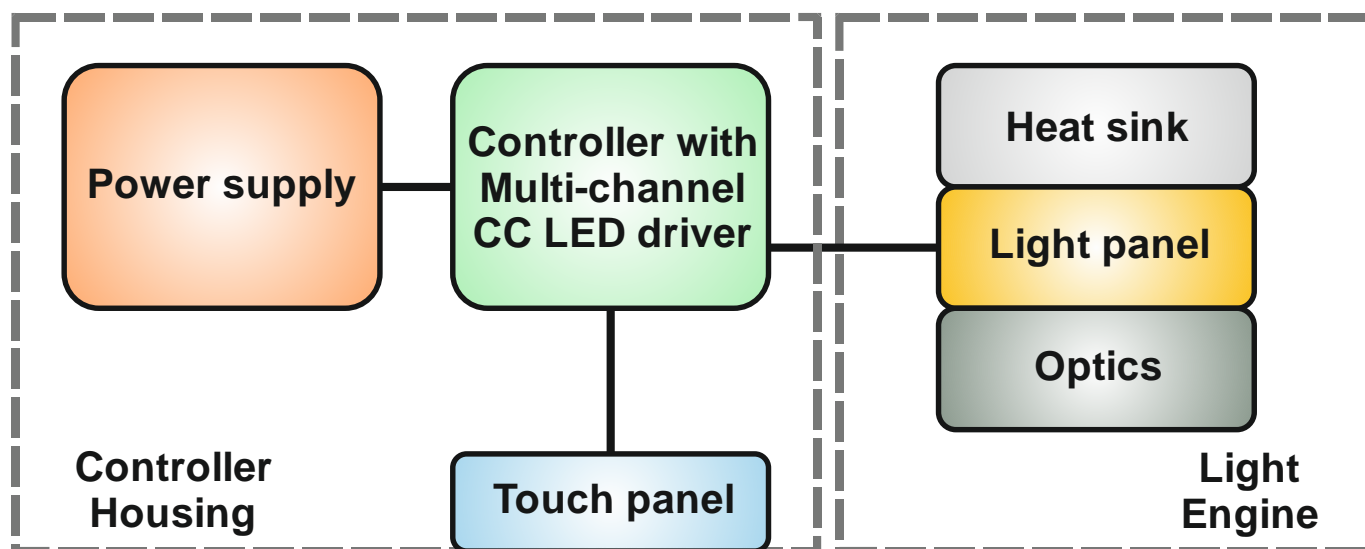


ON/OFF – LED light sources turn on or turn off

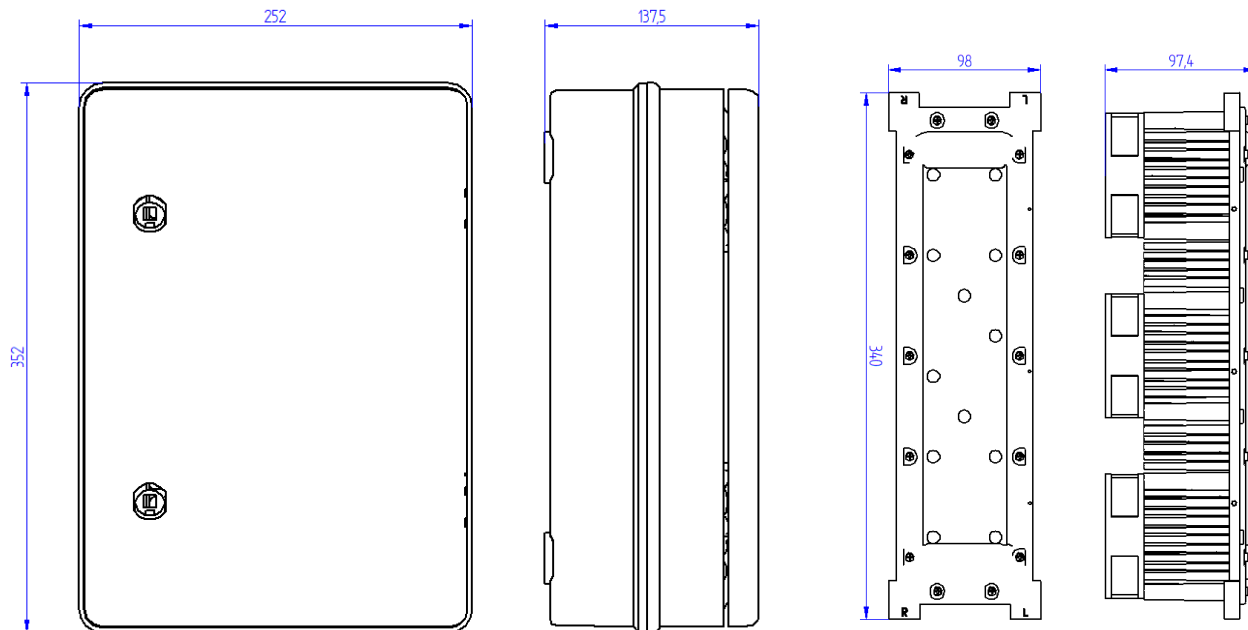
CH UP/DOWN – change selected channel

CH +/- – change intensity of selected channel

### BLOCK DIAGRAM OF GROWEMITY 120 DEMO



## SIZE



## 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.



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## **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**

CEZOS

81-534 Gdynia POLAND,

Olgerda 88/b

tel. +48 58 664 88 61

cezos@cezos.com

www.cezos.com

Subject to errors and technical changes.