

# LED HORTICULTURE LIGHT SYM II SILICONE

WU-M-515



## LED HORTICULTURE LIGHTING

### WU-M-515

Derived from our successful product line for street and industrial lighting, the WU-M-515 Horticulture is characterized by the same high level quality and excellent lighting properties. The protection class IP69/IK08, including the secondary VS silicone optics, make the LED module the ideal component for horticulture luminaires.

- The self-cooling capability at maximum operation current and ambient temperatures of up to 40 °C enables passive cooling concepts without additional heatsinks.
- Pre-assembled, reinforced, insulated cables with cord grips on the LED module are suitable for luminaires of protection class II and thus enable easy installation in the luminaires.
- Huge flexibility in spectral design while maintaining high efficiency values (customized spectral designs on request).

### Typical Applications

- Greenhouse
- Top Lighting
- Vertical Farm
- Research facilities

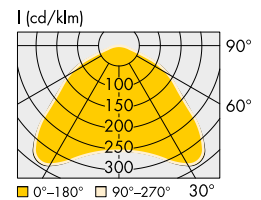
### LED Industrial Lighting

- **DEGREE OF PROTECTION: IP67 / IP69 / IK08**
- **HIGHLY EFFICIENT: UP TO 3.6  $\mu\text{mol}/\text{J}$**
- **VERY HOMOGENOUS ILLUMINATION**
- **5 DIFFERENT SPECTRA**
- **PHOTON FLUX: UP TO 80  $\mu\text{mol}/\text{s}$**
- **SECONDARY OPTICS MADE OF SILICONE**

## LED Horticulture Light SYM II Silicone

### Technical Notes

- LED built-in module for integration into luminaires
- 16 high-efficiency High Power LEDs, serial connected
- Encapsulated for outdoor applications with degree of protection: IP67 / IP69 / IK08
- Dimensions incl. optics (LxVxH): 120x120x16 mm
- Weight: 0.32 kg
- Pre-assembled leads with cord grips: 2 leads: + (white); – (black) for luminaires of protection class II, length: 500 mm, with tinned lead ends
- Self cooling ability up to  $I_{max}$ . at  $t_a = 40\text{ °C}$
- Symmetrical lenses for homogenous light distribution
- Robust and compact aluminium carrier, salt-resistant



### Electrical Characteristics

at stated  $t_c$  temperature

Type	No. of LEDs	$t_c$ °C	Typ. voltage DC			Temperature coefficient mV/K	Typ. power consumption			Typ. application field / description
			350 mA V	500 mA V	700 mA V		350 mA W	500 mA W	700 mA W	
WU-M-515-1B15R	16	50	34.4	36.5	39.1	-22.2	12.1	18.3	27.3	Monochromatic spectrum with high amounts of deep red light, makes this an ideal candidate for supplemental lighting.
WU-M-515-1B15R UHP	16	45	32.4	33.9	35.7	-21.2	11.3	16.9	25.0	2 different versions available, high power and ultra high power, which reach up to 3.6 $\mu\text{mol}/\text{J}$ or 80 $\mu\text{mol}/\text{s}$ .
WU-M-515-2B10R4FR	16	50	33.9	35.7	38.0	-21.1	11.9	17.9	26.6	This variant supports the 1B15R options with higher blue and far red proportion for optimized growth.
WU-M-515-2B2R12W830C	16	60	42.4	43.3	44.4	-35.2	14.8	21.7	31.1	Full spectrum option with high amount of blue and green. Suitable for indoor plants and seedlings.
WU-M-515-2R2FR12W850C	16	60	40.4	41.3	42.4	-34.9	14.1	20.7	29.7	Full spectrum option with higher portion of deep red and far red. Same indoor application scenarios as 2B2R12W830C type, where more deep and far red is required.
WU-M-515-10R2FR4W750D	16	50	34.3	35.6	37.1	-24.9	12.0	17.8	26.0	Full spectrum variant with high amount of deep red light, while covering all other relevant wavelength bands like blue, green and far red.

Voltage and power tolerance:  $\pm 10\%$  | Use of external LED constant current driver required.

### Maximum Ratings

Exceeding the maximum ratings can lead to destruction of the module.

Type	Operation current mA	Operation temperature range at $t_c$ point		Storage temperature range		Max. allowed repetitive peak current mA
		°C min.	°C max.	°C min.	°C max.	
All types	$\leq 700$	-30	+85	-30	+85	1000

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

## Optical Characteristics

at stated  $t_c$  temperature

Type	Ref. No.	light colour	Correlated colour temperature K	$t_c$ °C	Operation current mA	Photon flux and typ. efficiency				Typ. luminous flux* (lm) and typ. efficiency (lm/W)		Typ. CRI $R_a$
						PAR* typ. $\mu\text{mol/s}$	$\mu\text{mol/J}$	PBAR* typ. $\mu\text{mol/s}$	$\mu\text{mol/J}$	lm	lm/W	
WU-M-515-1B15R	569619	pink	N/A	50	350	37.9	3.1	38.0	3.2	475	39	N/A
					500	53.5	2.9	53.7	2.9	660	36	
					700	73.5	2.7	73.7	2.7	890	33	
WU-M-515-1B15R UHP	569620	pink	N/A	45	350	40.6	3.6	40.7	3.6	525	46	N/A
					500	57.6	3.4	57.8	3.4	730	43	
					700	79.8	3.2	80.0	3.2	990	40	
WU-M-515-2B10R4FR	569621	pink	N/A	50	350	28.4	2.4	35.5	3.0	350	29	N/A
					500	40.1	2.2	50.1	2.8	485	27	
					700	55.0	2.1	68.6	2.6	645	24	
WU-M-515-2B2R12W830C	569622	pinkish white	3750	60	350	32.2	2.2	33.1	2.2	1705	115	88
					500	44.6	2.1	45.9	2.1	2360	109	
					700	60.1	1.9	61.8	2.0	3170	102	
WU-M-515-2R2FR12W850C	569623	white	4500	60	350	27.5	1.9	31.9	2.3	1590	113	94
					500	38.3	1.9	44.1	2.1	2200	107	
					700	51.5	1.7	59.4	2.0	2950	99	
WU-M-515-10R2FR4W750D	569624	pinkish white	1950	50	350	34.2	2.9	38.0	3.2	975	81	50
					500	48.3	2.7	53.6	3.0	1350	76	
					700	66.5	2.6	73.7	2.8	1815	70	

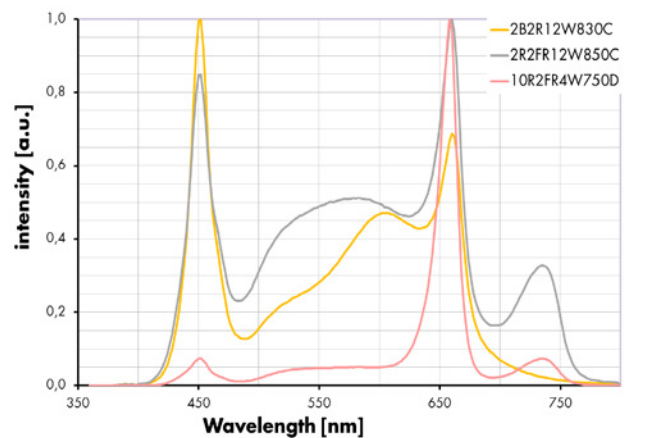
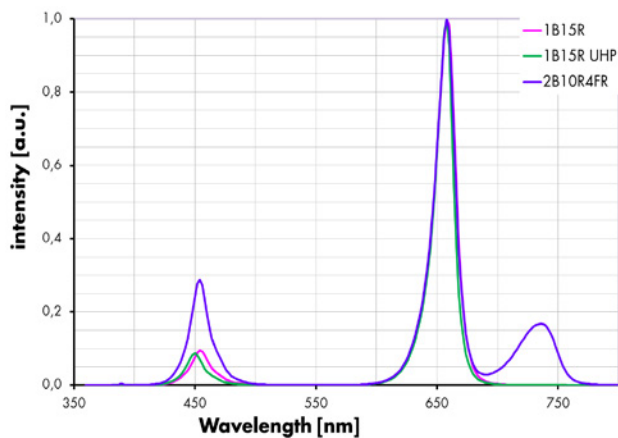
\* Production tolerance of photon flux, luminous flux and efficiency:  $\pm 10\%$  | PAR range: 400–700 nm, PBAR range: 280–800 nm

## Spectral Characteristics

at stated  $t_c$  temperature

Type	Spectral distribution related to $\mu\text{mol/s}$				Ratios		
	Blue 400–500 nm	Green 500–600 nm	Red 600–700 nm	Far red > 700 nm	Blue – Red	Blue – Green	Red – Far red
WU-M-515-1B15R	6.1%	0.2%	93.5%	0.2%	1 : 15	N/A	N/A
WU-M-515-1B15R UHP	5.8%	0.2%	93.8%	0.2%	1 : 16	N/A	N/A
WU-M-515-2B10R4FR	12.8%	0.2%	67.0%	20.0%	1 : 5.2	N/A	1 : 0.3
WU-M-515-2B2R12W830C	22.4%	30.5%	44.4%	2.6%	1 : 2.1	1 : 1.5	1 : 0.1
WU-M-515-2R2FR12W850C	17.2%	31.6%	38.2%	13.0%	1 : 2.1	1 : 1.8	1 : 0.3
WU-M-515-10R2FR4W750D	4.9%	11.6%	73.7%	9.8%	1 : 14	1 : 2.3	1 : 0.1

\* All characteristics shown are for reference only and will not be guaranteed.



The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

# LED Horticulture Lighting – IP67 / IP69 / IK08

## Operating Life

at stated  $t_c$  temperature

Lumen maintenance	Operating life in hours at measured temperature at $t_c$ point								
	$I_f$ 350 mA			$I_f$ 500 mA			$I_f$ 700 mA		
	40 °C	60 °C	85 °C	40 °C	60 °C	85 °C	40 °C	60 °C	70 °C
L90/B10*	> 30,000	> 30,000	> 29,000	> 30,000	> 30,000	> 29,000	> 30,000	> 30,000	> 29,000
L80/B10*	> 36,000	> 36,000	> 32,000	> 36,000	> 36,000	> 32,000	> 36,000	> 36,000	> 32,000
L70/B10*	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000

These values do not refer to the colour temperature. | \* Lxx/Byy (photon flux / lumen maintenance at xx%, failure rate yy%)

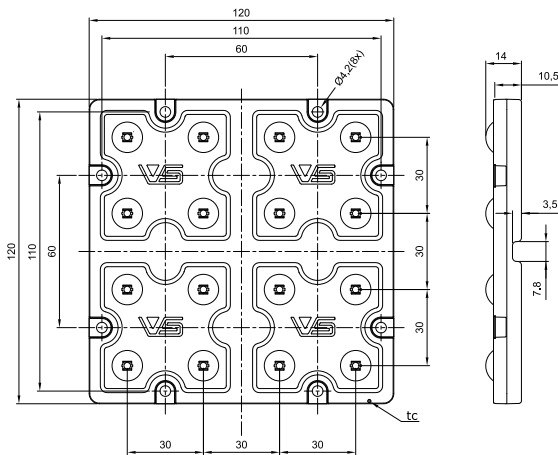
## Self cooling ability at $t_a = 25$ °C, test current = $I_{max.} = 700$ mA

Type	$t_c$ (typ.) °C
WU-M-515-1B15R	60
WU-M-515-1B15R UHP	50
WU-M-515-2B10R4FR	58
WU-M-515-2B2R12W830C	69
WU-M-515-2R2FR12W850C	68
WU-M-515-10R2FR4W750D	55

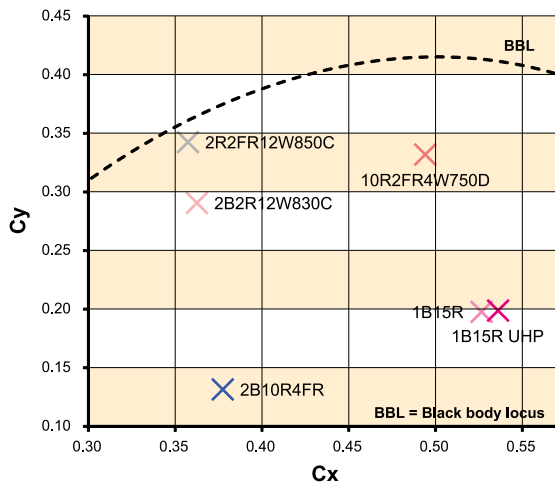
All values shown are for reference only and will not be guaranteed

The integrated heatsink enables passive cooling concepts without further heatsinks up to a maximum  $t_a$  of 40 °C. Care must always be taken to not exceed the maximum allowed temperature at the  $t_c$ -point.

## Mechanical Dimensions



## Bins



Colour coordinates are only for indication of colour impression and are no part of the guaranteed product specification.

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.



## LED Horticulture Lighting

### Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. The LED modules are designed for operation within a casing or luminaire. Safety regulations acc. to EN 60598 has to be observed. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains).

- LED built-in modules must not be subjected to any undue mechanical stress, e. g.:
  - handle LED modules carefully
  - avoid shear and compressive forces onto
  - the optics during handling and installation
  - avoid vibrations of more than 2 kHz, 40 G
  - Do not carry or move LED modules by using the wires.
- The modules must not be used in hermetically sealed casings.
- The module must be fixed onto a thermally conductive surface with four M4 screws.
- When installing/screwing the module into a luminaire, please ensure that the cables are not squeezed between luminaire/heat-sink and LED module.
- Safe operation only possible by the use of external constant current sources ( $I_{max}$ , see table "Electrical Characteristics").
- Operation is dependent on constant current drivers that should provide the following protective measures:
  - short-circuit protection
  - overload protection
  - overheating protection
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- The maximum output of the power supply must be observed.
- For optimal load of used constant current driver the modules can only be connected in series. The quantity of LED modules is limited by the sum of forward voltage and the capacity of used constant current driver. Safety regulations acc. to EN 60598 has to be observed if the sum of forward voltage exceed the permitted touchable value.
- The clearance and creepage distances are designed for working voltages up to 450 V DC acc. to EN 62031/EN 60598.
- Please ensure standard ESD (electrostatic discharge) protection measures are employed when handling and installing LED modules. Electrostatic discharge can damage LEDs.
- To ensure problem-free operation, the specified maximum temperature at the  $t_c$  and  $t_p$  point (see "Operating Life") must be observed (measured in accordance with EN 60598-1). To satisfy this point, it is necessary to put measures in place to ensure any heat is dissipated from the LED module to the environment.
- A parallel connection of the modules is not allowed.

- Operating LED modules in the presence of certain chemical substances or in chemically enriched (aggressive) environments can impair module functionality or even cause total module failure. Detailed information can be found in our "Chemical Incompatibility" PDF on our website [www.vossloh-schwabe.com](http://www.vossloh-schwabe.com).
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471: 2008. Assessment in acc. with IEC/TR 62778: risk group 2. Given a clearance of more than 80 cm the classification goes down to Risk Group 1.



### Applied Standards

EN 62031  
LED modules for general lighting – Safety specifications

EN 62471  
Photobiological safety of lamps and lamp systems

### Product Guarantee

- 5 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage ([www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)). We will be happy to send you these conditions upon request.

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.