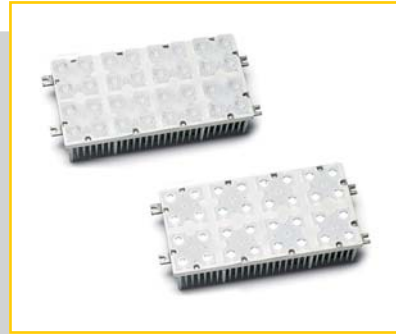


SYM I AND SYM II

LED LIGHTENGINE IP66



LED INDUSTRY AND HALL LIGHTING

WU-M-496-C

These LED LightEngines are suitable for illuminating industrial, production, sports and warehouse facilities as well as for petrol station lighting.

The combination of a robust aluminium heat sinks and the enhanced degree of protection enables a simpler, modular luminaire design.

The LED LightEngines are available in two different light distributions and each in three white colour tones.

Typical Applications

- Integration in luminaires
- Indoor lighting
- Industrial lighting for:
 - Production halls
 - Warehouses
- Petrol station lighting
- Lighting for Sports Facilities

LED Industry and Hall Lighting

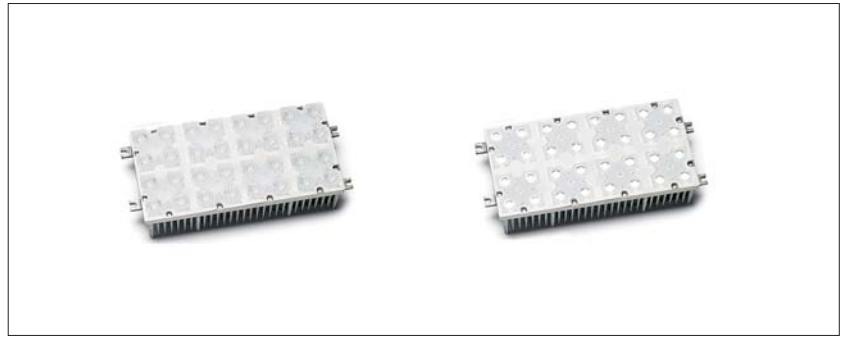
- **DEGREE OF PROTECTION: IP66**
- **INTEGRATED HEAT SINK FOR OPTIMUM THERMAL MANAGEMENT**
- **HIGHLY EFFICIENT: UP TO 135 LM/W**
- **VERY HOMOGENOUS ILLUMINATION**
- **INITIAL COLOUR ACCURACY: 5 SDCM**
- **SURGE PROTECTION: 4 KV**
- **VDE APPROVED (ACC. TO EN 62031)**



SYM I, SYM II

Technical Notes

- LED built-in module for integration into luminaires
- 32 high-efficiency High Power LEDs, serial connected
- Encapsulated for outdoor applications with degree of protection: IP66/IK05
- Weight: 1.33 kg
- Pre-assembled leads: 2 leads: + (red); - (blue) for luminaires of protection class II, length: 500 mm
- Design for optimum thermal management
- ESD protection class 2
- Surge protection: 4 kV



Electrical Characteristics at $t_p = 60^\circ\text{C}$

Type	No. of LEDs	Voltage DC (V)												Temperature coefficient mV/K	Power consumption (W)											
		350 mA			700 mA			1050 mA			1400 mA				350 mA			700 mA			1050 mA			1400 mA		
		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.
WU-M-496-C	32	78.8	87.7	91.6	82.9	91.9	95.7	86.5	95.5	99.3	89.5	98.5	102.3	-88.7	27.6	30.7	32.1	58	64.3	67	90.8	100.3	104.3	125.3	137.9	143.2

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 $^\circ\text{C}$		Storage temperature range $^\circ\text{C}$		Max. allowed repetitive peak current mA
		min.	max.	min.	max.	
WU-M-496-C	350	-30	+85	-30	+85	1810
WU-M-496-C	700	-30	+85	-30	+85	1670
WU-M-496-C	1050	-30	+80	-30	+85	1580
WU-M-496-C	1400	-30	+60	-30	+85	1510

Optical Characteristics at $t_p = 60^\circ\text{C}$

Type	Colour	Correlated colour temperature K	Luminous flux* (lm) and typ. efficiency (lm/W)												CRI**	Photometric code
			350 mA			700 mA			1050 mA			1400 mA				
			min.	typ.	typ.	min.	typ.	typ.	min.	typ.	typ.	min.	typ.	typ.		

32 LEDs

WU-M-496-C-830	warm white	3000 ^{-90/+185}	3790	3905	127	7165	7385	115	10110	10420	104	12610	13000	94	≥ 80	830/579
WU-M-496-C-840	neutral white	4000 ^{-235/+230}	4080	4155	135	7715	7855	122	10885	11080	111	13580	13825	100	≥ 80	840/579
WU-M-496-C-850	cool white	5000 ^{-265/+360}	3645	4005	130	6890	7580	118	9720	10695	107	12125	13340	97	≥ 80	850/579

On account of the complex manufacturing process of the modules, the above values only represent statistical variables.

The values do not necessarily correspond exactly to the actual parameters of every single product, which can vary from the typical specification.

* Measurement tolerance of luminous flux: $\pm 7\%$ | ** Measurement tolerance CRI: ± 2 | CRI ≥ 70 on request

Operating Life

Modules	Operating life in hours at measured temperature at t_p point											
	I_f 350 mA			I_f 700 mA			I_f 1050 mA			I_f 1400 mA		
	40 $^\circ\text{C}$	60 $^\circ\text{C}$	85 $^\circ\text{C}$	40 $^\circ\text{C}$	60 $^\circ\text{C}$	85 $^\circ\text{C}$	40 $^\circ\text{C}$	60 $^\circ\text{C}$	80 $^\circ\text{C}$	40 $^\circ\text{C}$	60 $^\circ\text{C}$	80 $^\circ\text{C}$
L80/B10*	> 60,000	> 60,000	46,000	> 60,000	> 60,000	30,000	> 60,000	50,000	25,000	47,000	27,000	–
L70/B10*	> 60,000	> 60,000	> 60,000	> 60,000	> 60,000	58,000	> 60,000	> 60,000	48,000	> 60,000	51,000	–

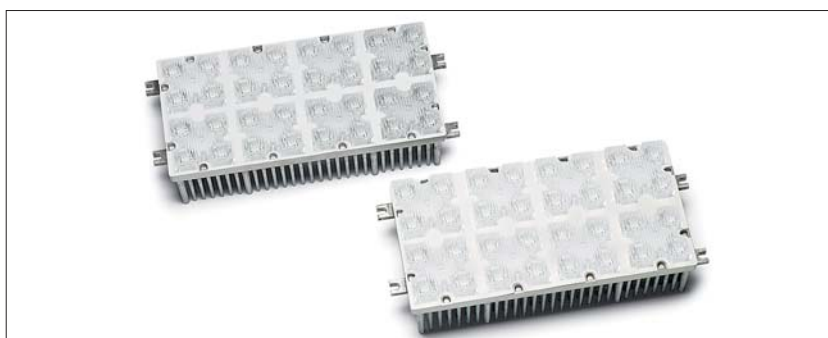
These values do not refer to the colour temperature. | * L_{xx}/B_{yy} (lumen maintenance at xx%, failure rate yy%)

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

LED Industrial Light SYM I

Technical Notes

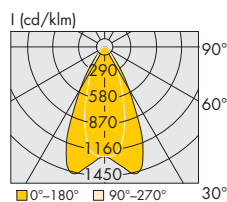
- Dimensions (incl. optics) LxWxH
240x120x62 mm
- Lenses for high-bay symmetrical lighting
- Optimum illumination - installation ratio: 1:1
in the 0-180° lengthwise layer and 8:5 in the
90-270° crosswise layer (ratio of height to the
distance between luminaires).



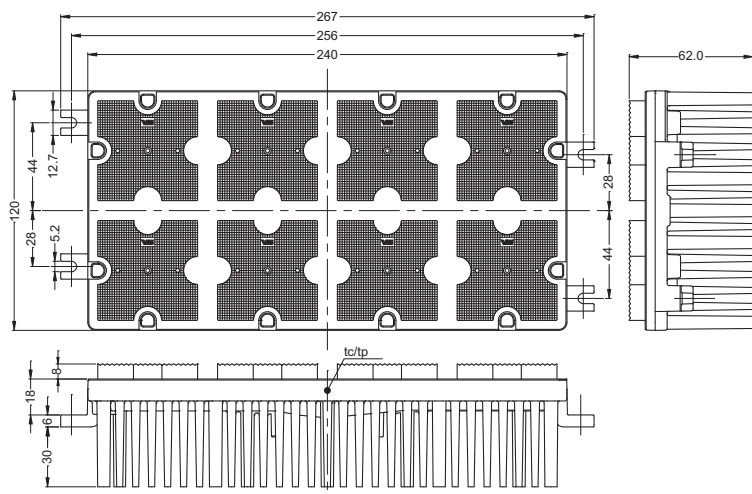
Reference Numbers

Type	Ref. No.
WU-M-496-C-830	562088
WU-M-496-C-840	562098
WU-M-496-C-850	562108

Typical Light Distribution Curve



Mechanical Dimensions



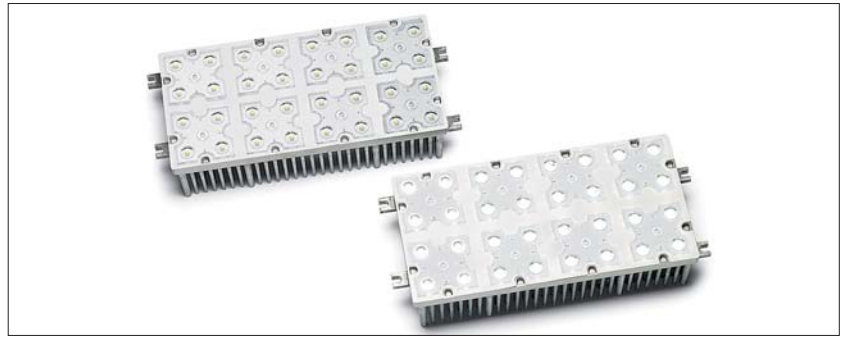
WU-M-496 SYM I

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LED Industrial Light SYM II

Technical Notes

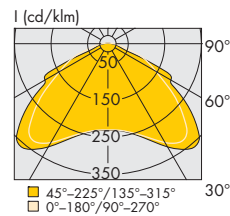
- Dimensions (incl. optics) LxWxH
240x120x54.6 mm
- Lenses for high-bay symmetrical lighting
- Optimum illumination - installation ratio: 1:2
(ratio of height to the distance between luminaires)



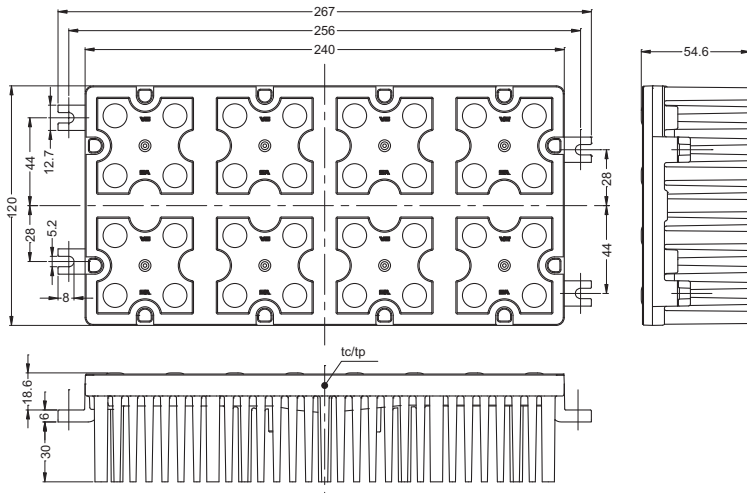
Reference Numbers

Type	Ref. No.
WU-M-496-C-830	562089
WU-M-496-C-840	562099
WU-M-496-C-850	562109

Typical Light Distribution Curve



Mechanical Dimensions

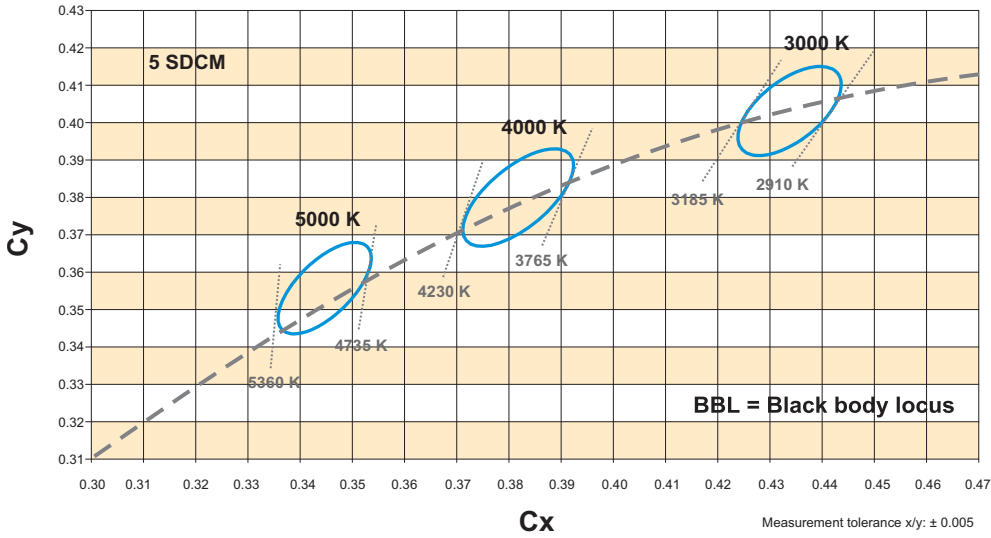


WU-M-496 SYM II

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LED Industrial Light SYM I, SYM II

Bin



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LED Industrial Light SYM I, SYM II

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.
- 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 250 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/en/home/products/led-lighting-technology/notes-on-led-technology.html
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471: 2008.

- general lighting
exempt group:
WU-M-496-C
- other applications
risk group 2:
WU-M-496-C



Assessment in acc. with IEC/TR 62778:

Given a clearance of more than d_{min} , within which the lighting intensity limit of $E_{thr} = 1200 \text{ lx}$ is attained, 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

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