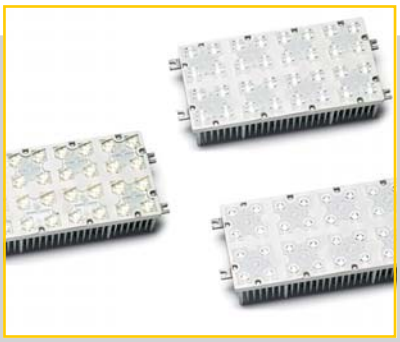
M-CLASS SILICONE

LED LIGHTENGINE IP67/IP69/IK08



LED STREET AND OUTDOOR LIGHTING

WU-M-496-C

This LED LightEngine is suitable for standard-compliant street lighting, paths and squares in accordance with EN 13201.

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

The VS ECXd 700/150 W LED driver enables power reduction via phase inversion.

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

Typical Applications

- Integration in luminaires
- Streetlighting for ME- and S-classes (acc. to EN 13201)
- Illumination of public places

LED Street and Outdoor Lighting

- **DEGREE OF PROTECTION: IP67/IP69/IK08**
- **INTEGRATED HEAT SINK FOR OPTIMUM THERMAL MANAGEMENT**
- **HIGHLY EFFICIENT: UP TO 154 LM/W**
- **VERY HOMOGENOUS ILLUMINATION**
- **INITIAL COLOUR ACCURACY: 5 SDCM**
- **SURGE PROTECTION: 4 KV**
- **VDE APPROVED (ACC. TO EN 62031)** pending

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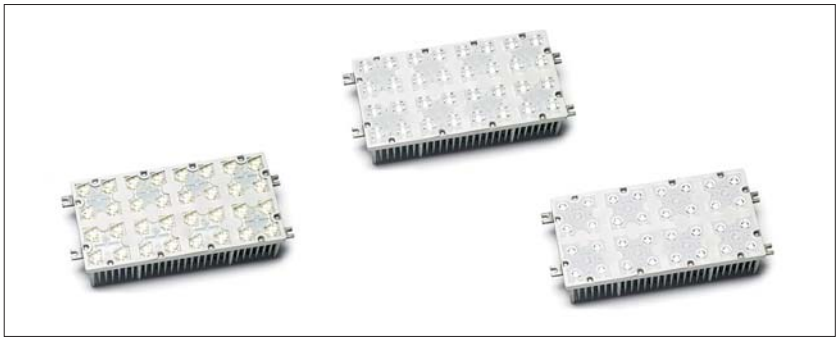
LED LightEngine M-Class Silicone



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: IP67/IP69/IK08
- 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 °C

Type	No. of LEDs	Voltage DC (V) 350 mA min.	typ.	max.	700 mA min.	typ.	max.	1050 mA min.	typ.	max.	1400 mA min.	typ.	max.	Temperature coefficient mV/K	Power consumption (W) 350 mA min.	typ.	max.	700 mA min.	typ.	max.	1050 mA min.	typ.	max.	1400 mA 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 °C min.	°C max.	Storage temperature range °C min.	°C max.	Max. allowed repetitive peak current mA
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	+70	-30	+85	1510

Optical Characteristics at tp = 60 °C

Type	Colour	Correlated colour temperature K	Luminous flux* (lm) and typ. efficiency (lm/W) 350 mA min. lm	typ. lm	typ. lm/W	700 mA min. lm	typ. lm	typ. lm/W	1050 mA min. lm	typ. lm	typ. lm/W	1400 mA min. lm	typ. lm	typ. lm/W	CRI** R_a	Photometric code
32 LEDs																
WU-M-496-C-730	warm white	3000 -90/+185	4225	4340	141	7990	8210	128	11275	11585	116	14065	14455	105	≥ 70	730/579
WU-M-496-C-740	neutral white	4000 -235/+230	4370	4635	151	8265	8760	136	11665	12365	123	14550	15425	112	≥ 70	740/579
WU-M-496-C-650	cool white	5000 -265/+360	4665	4735	154	8820	8955	139	12445	12635	126	15520	15765	114	≥ 65	650/579

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: ±7% | ** Measurement tolerance CRI: ±2 | CRI ≥ 80 on request

Operating Life

Modules	Operating life in hours at measured temperature at t_p point I_F 350 mA 40 °C	60 °C	85°C	I_F 700 mA 40 °C	60 °C	85°C	I_F 1050 mA 40 °C	60 °C	80°C	I_F 1400 mA 40 °C	60 °C	80°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. | * Lxx/Byy (lumen maintenance at xx%, failure rate yy%)

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LED LightEngine M-Class Silicone

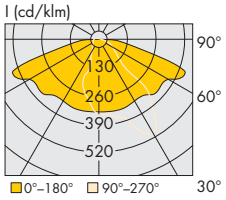
Technical Notes

- Dimensions (incl. optics) LxWxH 240x120x61.7 mm
- Lenses for street lighting applications of M class (acc. to EN 13201)
- Optimum illumination – installation ratio: 4.5:1 (distance between luminaire poles to height of the luminaire pole)

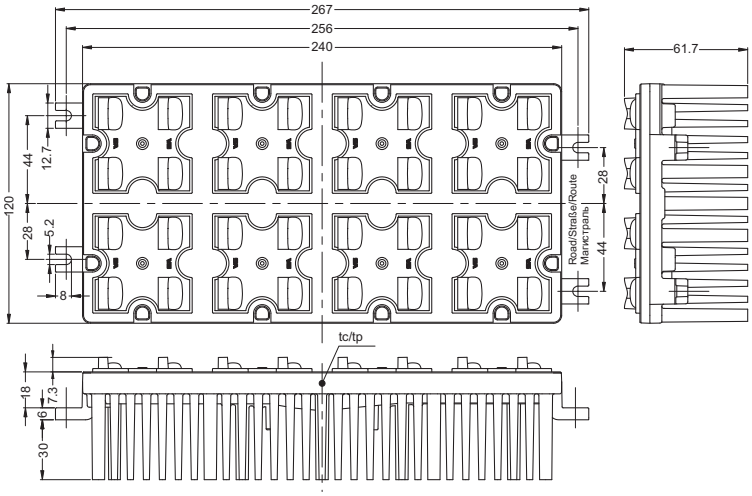
Reference Numbers

Type Lens direction	Ref. No. lengthwise	 crosswise
WU-M-496-C-730	**562083**	**562084**
WU-M-496-C-740	**562093**	**562094**
WU-M-496-C-650	**562103**	**562104**

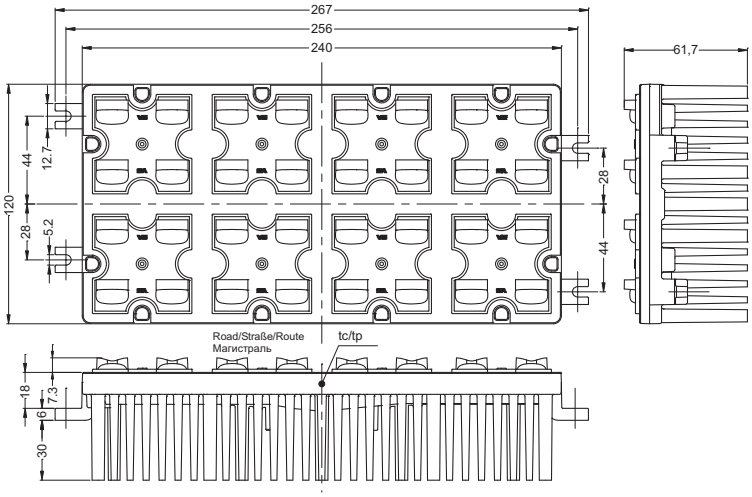
Typical Light Distribution Curve



Mechanical Dimensions



WU-M-496 M-Class – crosswise



WU-M-496 M-Class – lengthwise

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

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LED LightEngine
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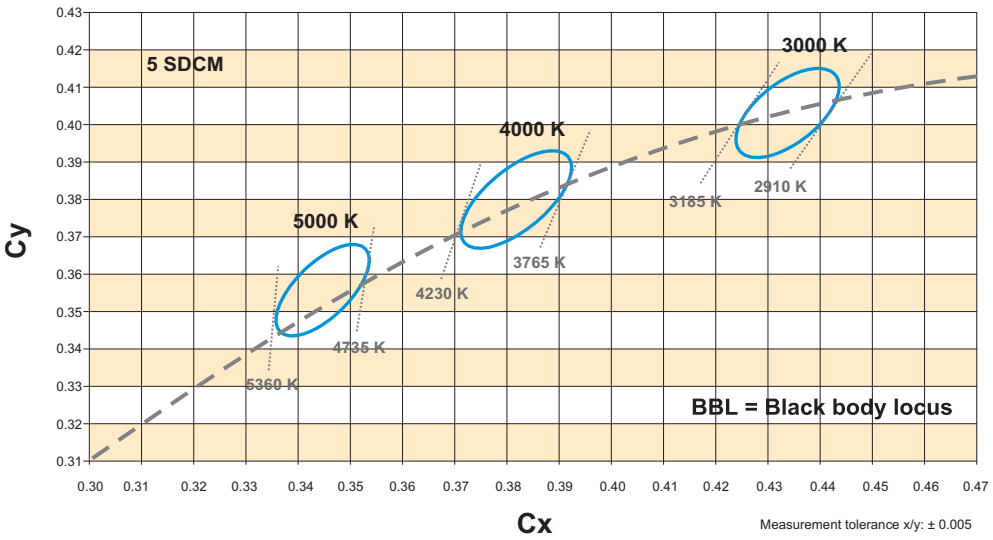
Bin



Measurement tolerance x/y: ± 0.005

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LED LightEngine M-Class Silicone

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 lx is attained, the classification goes down to Risk Group 1.

Applied Standards

EN 62031
LED modules for general lighting – Safety specifications

pending

EN 62471
Photobiological safety of lamps and lamp systems

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