

LED ROADWAY LIGHT – M-CLASS SILICONE GEN. 3

IP67 / IP69 / IK08



LED STREET AND OUTDOOR LIGHTING

WU-M-515-D

These LED modules are suitable for standard-compliant street lighting, paths and squares in accordance with EN 13201.

The combination of a robust aluminium base 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 modules are available in three white colour tones.

Typical Applications

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

LED Street and Outdoor Lighting

- **DEGREE OF PROTECTION: IP67 / IP69 / IK08**
- **HIGHLY EFFICIENT: UP TO 163 LM/W**
- **VERY HOMOGENOUS ILLUMINATION**
- **INITIAL COLOUR ACCURACY: 5 SDCM**
- **SURGE PROTECTION: 4 KV**
- **VDE APPROVED (ACC. TO EN 62031)**



LED Roadway Light M-Class Silicone Gen. 3

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
- Weight: 0.32 kg
- Pre-assembled leads: 2 leads: + (white); – (black) 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 $t_p = 60\text{ °C}$

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-515-D	16	40.2	44.1	49.1	41.8	45.8	51	42.8	46.9	52.1	43.7	47.8	53.1	-34.5	14.1	15.4	17.2	29.3	32.1	35.7	45	49.2	54.7	61.2	66.9	74.3

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		Storage temperature range °C		Max. allowed repetitive peak current mA
		min.	max.	min.	max.	
All types	350	-30	+85	-30	+85	2270
All types	700	-30	+85	-30	+85	2060
All types	1050	-30	+80	-30	+85	1940
All types	1400	-30	+70	-30	+85	1860
All types	1500	-30	+65	-30	+85	1840

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

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.	R_a	

Square – 16 LEDs

WU-M-515-D-730	warm white	3000 ^{-90/+185}	2245	2385	155	4230	4480	140	5825	6175	125	7270	7705	115	≥ 70	730/579
WU-M-515-D-740	neutral white	4000 ^{-235/+230}	2400	2505	162	4510	4705	147	6215	6485	132	7750	8095	121	≥ 70	740/579
WU-M-515-D-750	cool white	5000 ^{-265/+360}	2400	2520	163	4510	4735	148	6215	6525	133	7750	8140	122	≥ 70	750/579

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			I _F 700 mA			I _F 1050 mA			I _F 1400 mA		
	40 °C	60 °C	85 °C	40 °C	60 °C	85 °C	40 °C	60 °C	80 °C	40 °C	60 °C	70 °C
L80/B10*	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000
L70/B10*	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000	> 108,000

These values do not refer to the colour temperature. | * Lxx/Byy (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.

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Technical Notes

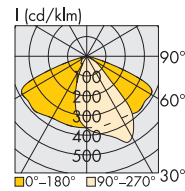
- Dimensions (incl. optics) LxWxH: 120x120x16 mm
- Lenses for street lighting applications of M class (acc. to EN 13201)
- Optimum illumination – installation ratio: 4.5:1 (distance between luminaire poles to height of the luminaire pole)



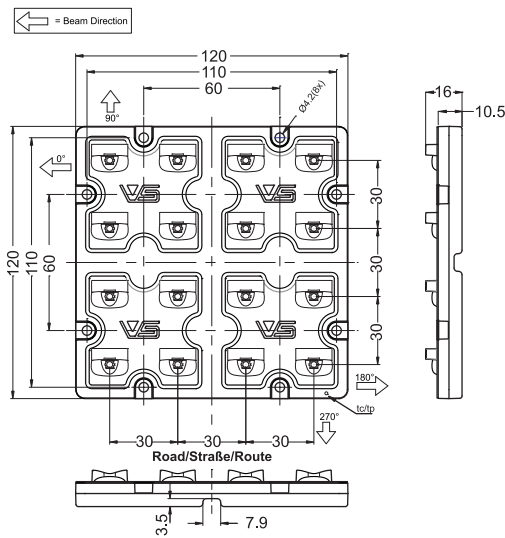
Reference Numbers

Type	Ref. No.
WU-M-515-D-730	567747
WU-M-515-D-740	567748
WU-M-515-D-750	567746

Typical Light Distribution Curve



Mechanical Dimensions



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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 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-515-D
 - other applications
risk group 2: WU-M-515-D

Assessment in acc. with IEC/TR 62778:



Given a clearance of more than d_{min} , within which the lighting intensity limit of $E_{thr} = 943 \text{ lx}$ for 5000 K ($E_{thr} = 1497 \text{ lx}$ for $\leq 4000 \text{ K}$) 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

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).
- We will be happy to send you these conditions upon request.

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