M-CLASS, S-CLASS, AREA

IP20 BUILT-IN MODULES FOR HIGH LUMEN PACKAGES

LED STREET AND OUTDOOR LIGHTING

WU-M-518/xx-C

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

These modules were designed for built-in into luminaire casings. They enable a modular luminaire design.

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

The modules are available in three shapes (32 or 64 LEDs) and 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

- **HIGHLY EFFICIENT: UP TO 154 LM/W**
- **VERY HOMOGENOUS ILLUMINATION**
- **HUGE RANGE OF CCT & CRI VARIANTS**
- **INITIAL COLOUR ACCURACY: 5 SDCM**
- **SURGE PROTECTION: 4 KV**
- **VDE APPROVED (ACC. TO EN 62031)**

pending

LIGHTING SOLUTIONS

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M-Class, S-Class, Area

Technical Notes

- LED built-in module for integration into luminaires
- 32 or 64 high-efficiency High Power LEDs
- Push-in terminals (WAGO series 2060)
- Design for optimum thermal management
- Degree of protection: IP20
- ESD protection class 2
- Surge protection: 4 kV

Electrical Characteristics at t_p = 60 °C

Type voltage DC (V)													Temp.-	Typ. power consumption (W)											
350 mA			700 mA			1050 mA			1400 mA				coeffi-	350 mA			700 mA			1050 mA			1400 mA		
min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.		cient	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.
V	V	V	V	V	V	V	V	V	V	V	V		mV/K	W	W	W	W	W	W	W	W	W	W	W	W
WU-M-518/32-C – 32 LEDs																									
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
WU-M-518/64-C – 64 LEDs																									
157.5	175.5	183.1	165.9	183.8	191.5	173.1	191	198.7	179.1	197	204.7		-178	55.1	61.4	64.1	116.1	128.7	134.1	181.8	200.6	208.6	250.7	275.8	286.6

Use of external LED constant current driver required.

Maximum Ratings

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

Type	Operation current	Operation temperature range at t_c point		Storage temperature range		Max. allowed repetitive peak current
	mA	°C min.	°C max.	°C min.	°C max.	mA
All types	350	-30	+85	-30	+85	1810
All types	700	-30	+85	-30	+85	1670
All types	1050	-30	+80	-30	+85	1580
All types	1400	-30	+60	-30	+85	1510

Optical Characteristics

at t_p = 60 °C

Type	Colour	Correlated colour temperature K	Luminous flux* (lm) and typ. efficiency (lm/W)												CRI**	Photo-metric code
			350 mA			700 mA			1050 mA			1400 mA				
			min. lm	typ. lm	typ. lm/W	min. lm	typ. lm	typ. lm/W	min. lm	typ. lm	typ. lm/W	min. lm	typ. lm	typ. lm/W	R_a	
32 LEDs																
WU-M-518/32-C-730	warm white	3000 -90/+185	4225	4340	141	7990	8210	128	11275	11585	116	14065	14455	105	≥ 70	730/579
WU-M-518/32-C-740	neutral white	4000 -235/+230	4370	4635	151	8265	8760	136	11665	12365	123	14550	15425	112	≥ 70	740/579
WU-M-518/32-C-650	cool white	5000 -265/+360	4665	4735	154	8820	8955	139	12445	12635	126	15520	15765	114	≥ 65	650/579
64 LEDs																
WU-M-518/64-C-730	warm white	3000 -90/+185	8450	8685	141	15980	16425	128	22550	23175	116	28135	28910	105	≥ 70	730/579
WU-M-518/64-C-740	neutral white	4000 -235/+230	8745	9265	151	16535	17525	136	23330	24730	123	29105	30850	112	≥ 70	740/579
WU-M-518/64-C-650	cool white	5000 -265/+360	9325	9470	154	17635	17910	139	24885	25275	126	31045	31530	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			I_F 700 mA			I_F 1050 mA			I_F 1400 mA		
	40 °C	60 °C	80°C	40 °C	60 °C	80°C	40 °C	60 °C	80°C	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%)

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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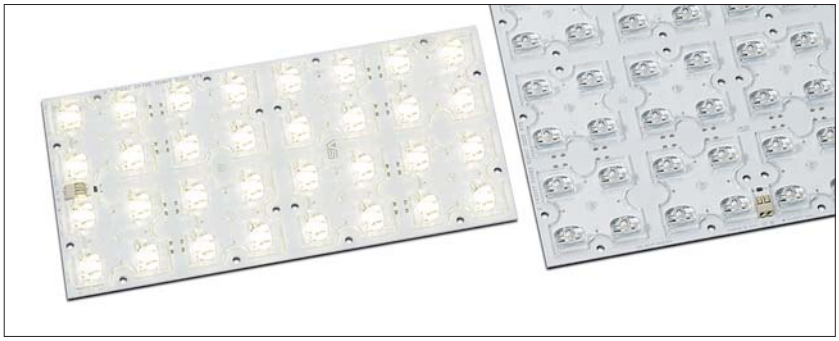
LED Roadway Light M-Class – IP20



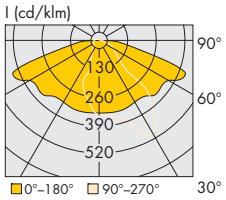
Technical Notes

- Dimensions (incl. optics) LxWxH
  32 LEDs: 120x240x10.3 mm
  64 LEDs: 240x240x10.3 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)

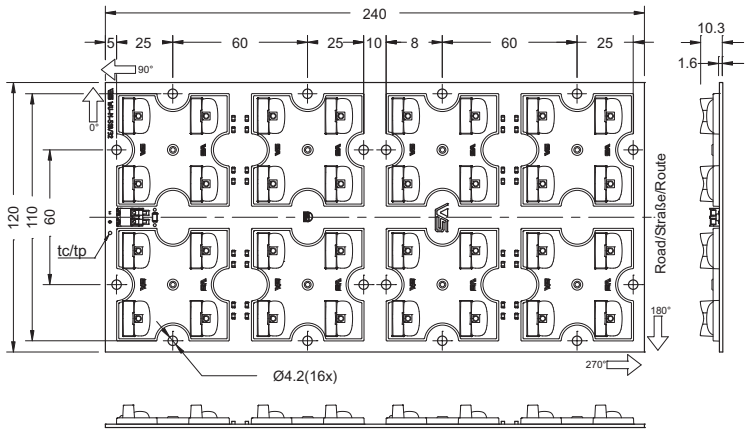
Reference Numbers

Type	**Ref. No.**	Number of LEDs
WU-M-518/32-C-730	**561916**	32
WU-M-518/32-C-740	**561921**	32
WU-M-518/32-C-650	**561926**	32
WU-M-518/64-C-730	**561931**	64
WU-M-518/64-C-740	**561936**	64
WU-M-518/64-C-650	**561941**	64

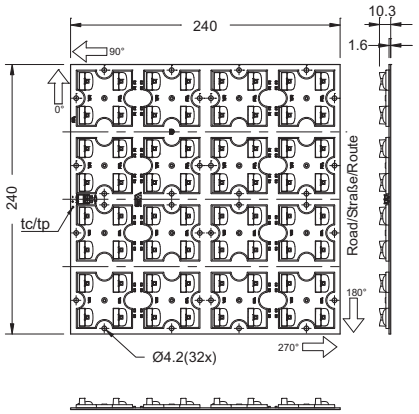
Typical Light Distribution Curve



Mechanical Dimensions



WU-M-518/32



WU-M-518/64

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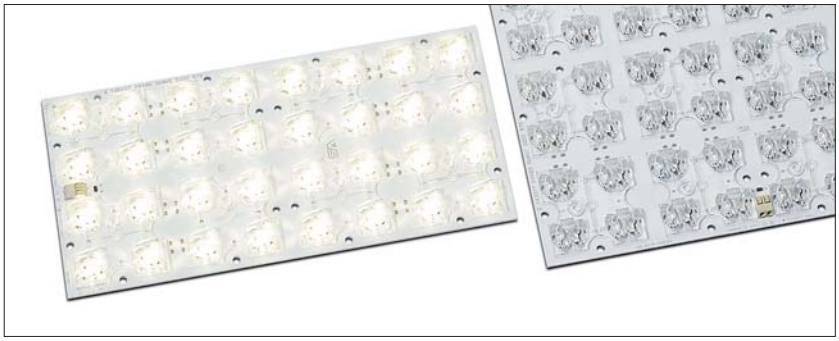
LED Roadway Light S-Class – IP20



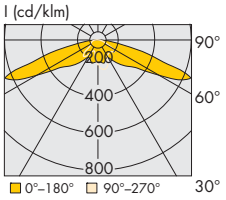
Technical Notes

- Dimensions (incl. optics) LxWxH
  32 LEDs: 120x240x12.4 mm
  64 LEDs: 240x240x12.4 mm
- Lenses for street lighting applications of S class (acc. to EN 13201)
- Optimum illumination – installation ratio: 7.5:1 (distance between luminaire poles to height of the luminaire pole)

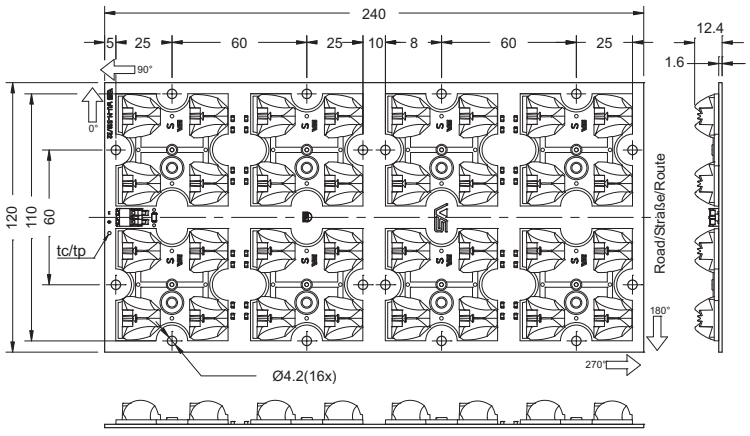
Reference Numbers

Type	**Ref. No.**	Number of LEDs
WU-M-518/32-C-730	**561917**	32
WU-M-518/32-C-740	**561922**	32
WU-M-518/32-C-650	**561927**	32
WU-M-518/64-C-730	**561932**	64
WU-M-518/64-C-740	**561937**	64
WU-M-518/64-C-650	**561942**	64

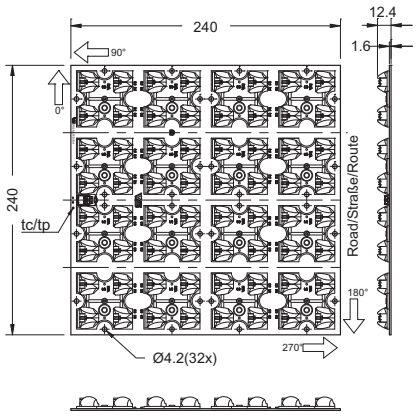
Typical Light Distribution Curve



Mechanical Dimensions



WU-M-518/32



WU-M-518/64

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LED Roadway Light Area – IP20

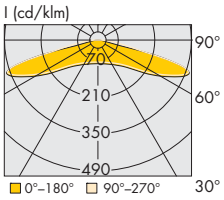
Technical Notes

- Dimensions (incl. optics) LxWxH
  32 LEDs: 120x240x6.7 mm
  64 LEDs: 240x240x6.7 mm
- Lenses for the illumination of public places
- Optimum illumination – installation ratio: 5.5:1 (distance between luminaire poles to height of the luminaire pole)

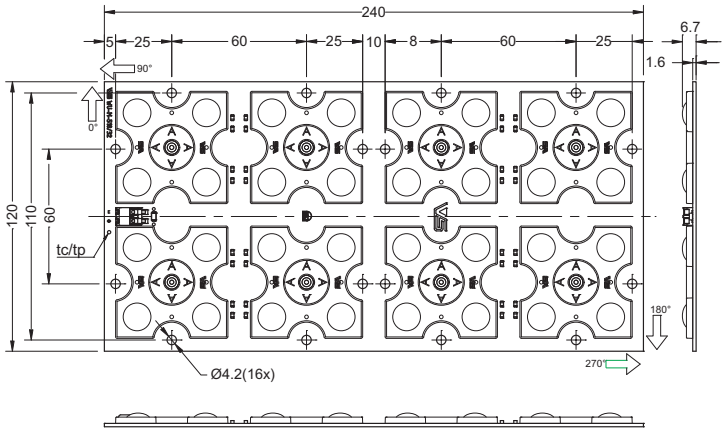
Reference Numbers

Type	**Ref. No.**	Number of LEDs
WU-M-518/32-C-730	**561918**	32
WU-M-518/32-C-740	**561923**	32
WU-M-518/32-C-650	**561928**	32
WU-M-518/64-C-730	**561933**	64
WU-M-518/64-C-740	**561938**	64
WU-M-518/64-C-650	**561943**	64

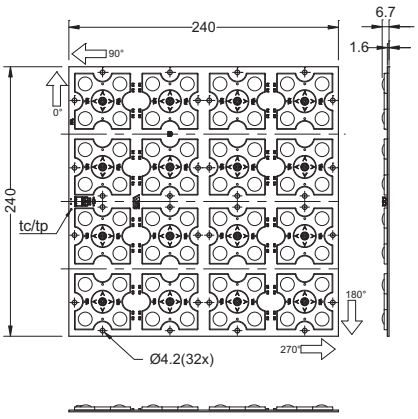
Typical Light Distribution Curve



Mechanical Dimensions



WU-M-518/32



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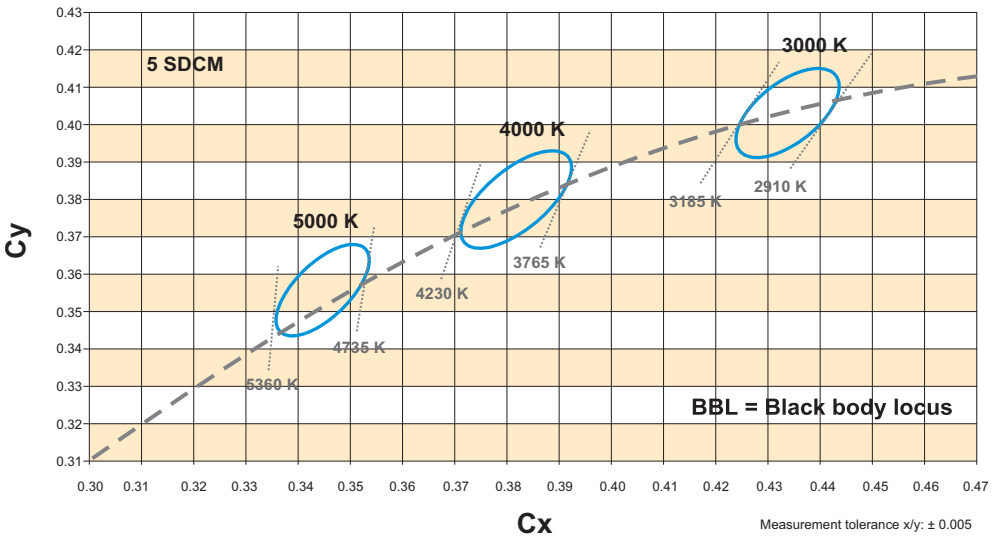
LED Roadway Light
M-Class, S-Class, Area – IP20

Bin



Measurement tolerance x/y: ± 0.005

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LED Roadway Light
M-Class, S-Class, Area – IP20

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
- The module must be fixed onto a thermally conductive surface with up to 16 M4 screws (WU-M-518/32) or with up to 32 M4 screws (WU-M-518/64). Recommended torque: 0.6–0.8 Nm.
- 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 of LED modules WU-M-518/xx-C are designed for working voltages up to 450 V DC (acc. to EN 62031/EN 60598).
- Insulation of LED modules WU-M-518/xx-C designed for basic insulation for working voltages of up to max. 450 V.
- 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.
- In the event of outdoor applications or applications in damp locations, care must be taken to protect LED assembly modules against humidity, splashes and jets of water. Any corrosion damage resulting from humidity or contact with condensation will not be recognised as a defect or manufacturing fault. LED assembly modules are not specially protected against foreign bodies or dust. Depending on the type of application, further protection must be ensured to prevent dust and foreign bodies from entering.
- 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-518/xx-C
  - other applications
    risk group 2: WU-M-518/xx-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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