

LED LINEAR ALLROUND – 5050

BUILT-IN MODULES



LED LINEAR ALLROUND – 5050

WU-M-630/xx

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

The modules are available in four shapes (4, 8, 12 or 16 LEDs) and in up to 3 white colour tones.

Typical Applications (depending on the choice of optics)

- Integration in luminaires
- Street lighting, urban street lighting
- Tunnel lighting
- Flood and area lighting
- Indoor lighting
- Industrial lighting for:
 - Production halls
 - Warehouses
- Lighting for sports facilities

LED Linear Allround – 5050

■ **HIGHLY EFFICIENT: UP TO 184 LM/W**
AT $T_p = 60\text{ }^\circ\text{C}$, $I_f = 350\text{ mA}$

■ **FLEXIBLE LIGHT DISTRIBUTION BY VARIOUS ATTACHMENT OPTICS**

■ **INITIAL COLOUR ACCURACY: 5 SDCM**

■ **ON-BOARD SURGE PROTECTION UP TO 4 KV**
(IN COMBINATION WITH VS STREETLIGHT DRIVERS)


■ **ZHAGA-COMPLIANT MOUNTING DIMENSION**
(ACC. TO BOOK 15)

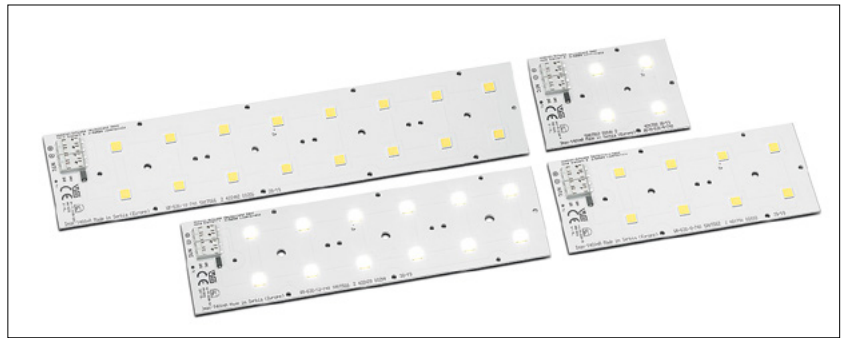
■ **ENEC AND VDE APPROVED**
(ACC. TO EN 62031)



LED Linear Allround 5050

Technical Notes

- LED built-in module for integration into luminaires 
- 4, 8, 12 or 16 high-efficiency High Power LEDs
- Dimensions (excl. optics) LxVxH
 - 4 LEDs: 70.6x49.5x6 mm
 - 8 LEDs: 121.4x49.5x6 mm
 - 12 LEDs: 172.2x49.5x6 mm
 - 16 LEDs: 223x49.5x6 mm
- Push-in terminals for quick and simple wiring
- Suitable for 5050-optimized 2x2 optics made by VS
- Design for optimum thermal management
- Degree of protection: IP00
- ESD protection class 3a (up to 8 kV)
- NTC resistor for external driver feedback of module temperature (type: NCP18xH103J03RB)
- CRI80 variants on request



Electrical Characteristics

at $t_p = 60\text{ °C}$

Type	No. of LEDs	Voltage DC (V)												Temperature coefficient mV/K
		350 mA			700 mA			1050 mA			1400 mA			
		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	
WU-M-630/4	4	10.4	10.9	11.4	10.8	11.4	11.9	11.2	11.8	12.4	11.6	12.2	12.7	-3.4
WU-M-630/8	8	20.7	21.8	22.9	21.6	22.7	23.8	22.4	23.6	24.7	23.1	24.3	25.5	-6.9
WU-M-630/12	12	31.1	32.7	34.3	32.4	34.1	35.7	33.6	35.3	37.1	34.7	36.5	38.2	-10.3
WU-M-630/16	16	41.4	43.6	45.7	43.2	45.4	47.6	44.8	47.1	49.4	46.2	48.6	51.0	-13.7

Type	No. of LEDs	Power consumption (W)											
		350 mA			700 mA			1050 mA			1400 mA		
WU-M		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.
WU-M-630/4	4	3.6	3.8	4.0	7.6	7.9	8.3	11.8	12.4	13.0	16.2	17.0	17.8
WU-M-630/8	8	7.3	7.6	8.0	15.1	15.9	16.7	23.5	24.7	25.9	32.4	34.0	35.7
WU-M-630/12	12	10.9	11.4	12.0	22.7	23.8	25.0	35.3	37.1	38.9	48.6	51.0	53.5
WU-M-630/16	16	14.5	15.3	16.0	30.2	31.8	33.3	47.1	49.5	51.9	64.7	68.1	71.4

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 I_c point °C		Storage temperature range °C		Max. allowed repetitive peak current mA
		min.	max.	min.	max.	
All types	≤ 1050	-30	+85	-40	+85	1800
	≤ 1400	-30	+75	-40	+85	1800

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LED Linear Allround 5050

Optical Characteristics

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

Type	Ref. No.	Colour	Correlated colour temperature K	Luminous flux* (lm) and typ. efficiency (lm/W)												CRI**
				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	
WU-M-630-/4-730	569979	warm white	3000	625	670	176	1200	1285	162	1710	1830	148	2195	2345	138	≥ 70
WU-M-630-/4-740	569980	neutral white	4000	670	705	184	1285	1350	170	1830	1920	155	2345	2460	145	≥ 70
WU-M-630-/4-750	569981	cool white	5000	670	705	184	1285	1350	170	1830	1920	155	2345	2460	145	≥ 70
WU-M-630-/8-730	569982	warm white	3000	1255	1340	176	2405	2570	162	3425	3660	148	4390	4695	138	≥ 70
WU-M-630-/8-740	569983	neutral white	4000	1340	1405	184	2570	2695	170	3660	3840	155	4695	4920	145	≥ 70
WU-M-630-/8-750	569984	cool white	5000	1340	1405	184	2570	2695	170	3660	3840	155	4695	4920	145	≥ 70
WU-M-630-/12-730	569985	warm white	3000	1880	2010	176	3605	3855	162	5135	5490	148	6585	7040	138	≥ 70
WU-M-630-/12-740	569986	neutral white	4000	2010	2110	184	3855	4045	170	5490	5755	155	7040	7380	145	≥ 70
WU-M-630-/12-750	569987	cool white	5000	2010	2110	184	3855	4045	170	5490	5755	155	7040	7380	145	≥ 70
WU-M-630-/16-730	569988	warm white	3000	2505	2680	176	4810	5140	162	6850	7320	148	8780	9385	138	≥ 70
WU-M-630-/16-740	569989	neutral white	4000	2680	2810	184	5140	5390	170	7320	7675	155	9385	9840	145	≥ 70
WU-M-630-/16-750	569990	cool white	5000	2680	2810	184	5140	5390	170	7320	7675	155	9385	9840	145	≥ 70

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

Operating Life

Lumen degradation	Operating life in hours at stated t_c point temperature											
	$I_f \leq 350$ 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	85 °C	40 °C	60 °C	75 °C
L80/B10	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000	> 54,000	> 54,000	> 54,000	> 54,000	> 54,000	> 54,000
L70/B10	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000	> 72,000	> 54,000	> 54,000	> 54,000	> 54,000	> 54,000	> 54,000

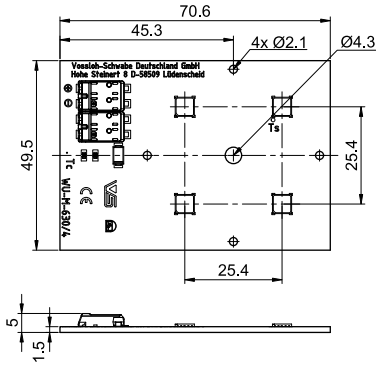
These values do not refer to the colour temperature. | Lxx/Byy (lumen maintenance at xx%, failure rate yy%)

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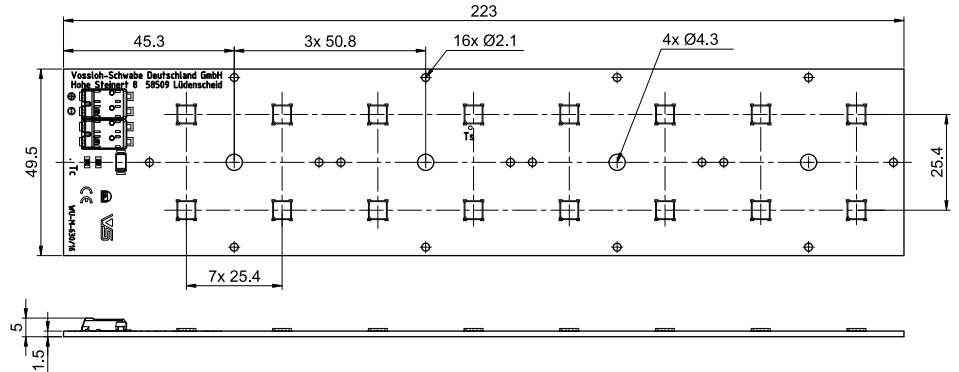
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Mechanical Dimensions

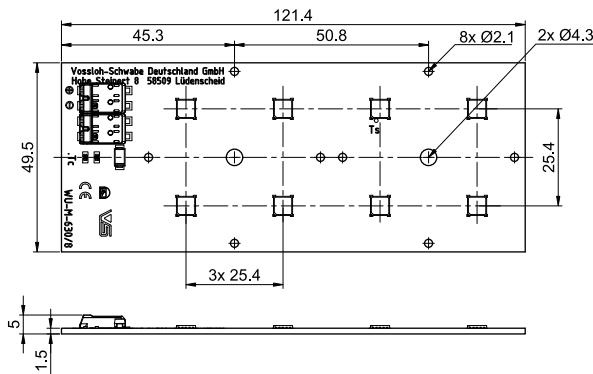
WU-M-630-4



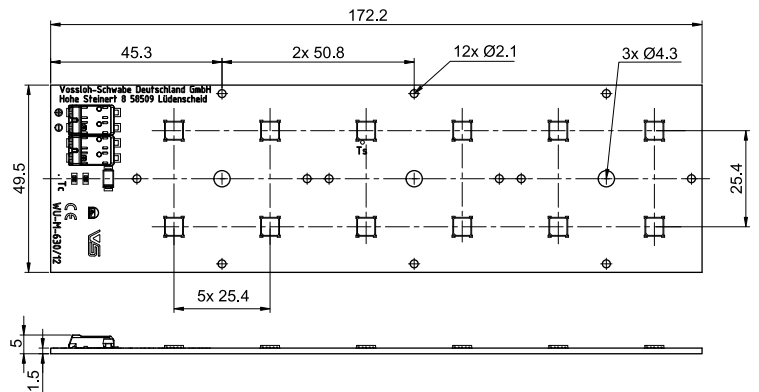
WU-M-630-16



WU-M-630-8



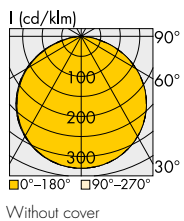
WU-M-630-12



All holes \varnothing 2.1 mm are fixing holes for optics. | All holes \varnothing 4.3 mm are fixing holes for PCB.

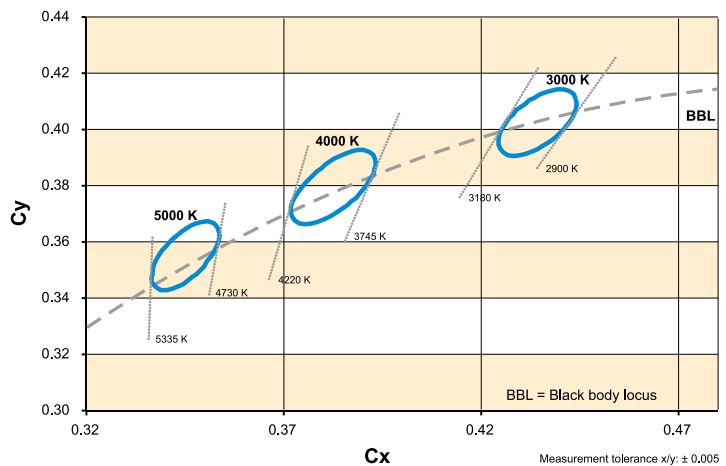
Typical Light Distribution Curve

Data are available in .ldt format for download under www.vossloh-schwabe.com.



Light distribution curve for LED Linear Allround 5050 modules **with optics** see page 5.

Bins

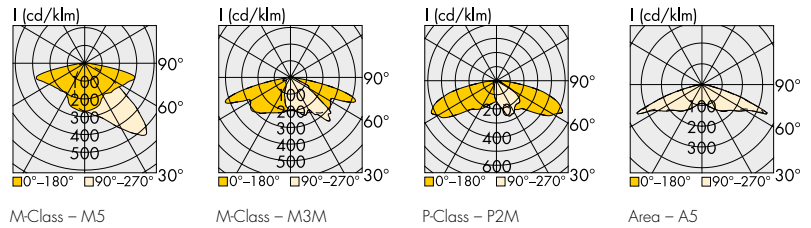


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2x2 Streetlight Optics for LED Linear Allround 5050

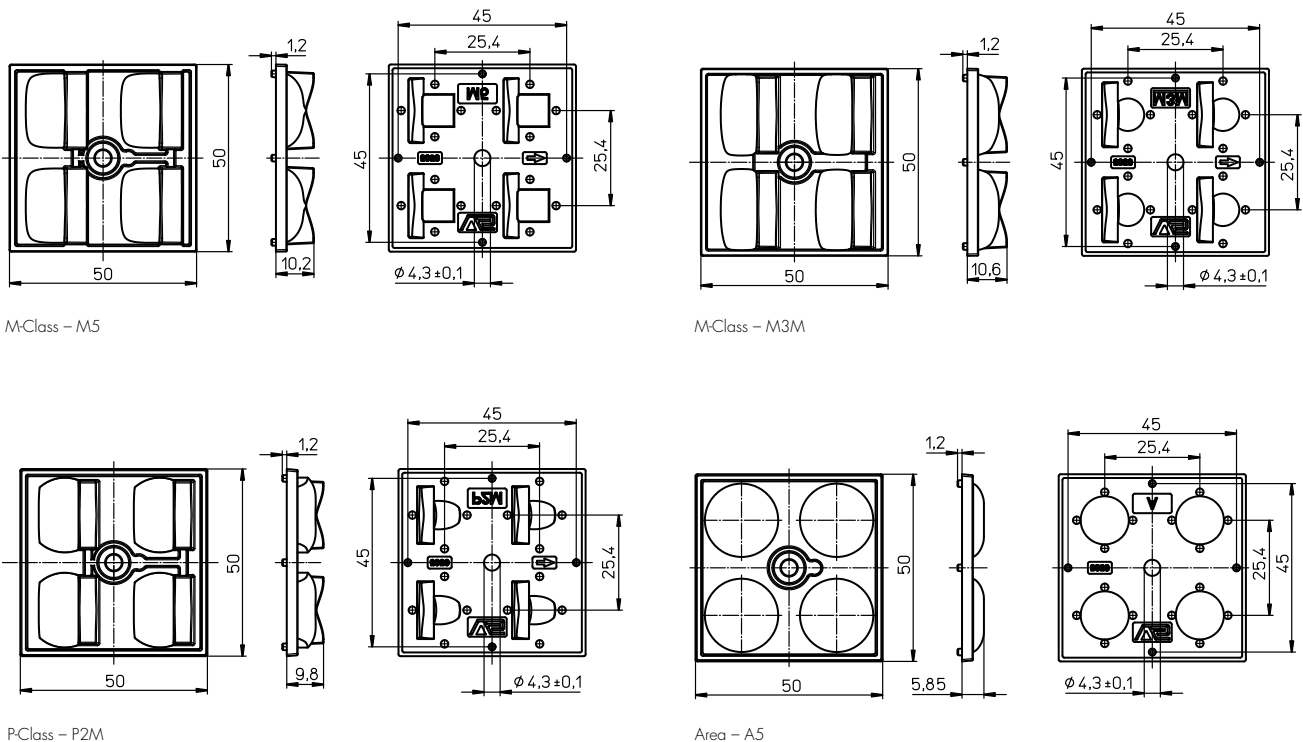
Technical Notes for Optics

- Highly efficient up to 93%
- Material: PMMA
- Dimensions (LxWxH) for
M-Class M5: 50x50x10.2 mm
M-Class M3M: 50x50x10.6 mm
P-Class: 50x50x9.8 mm
Area: 50x50x5.85 mm
- Max. allowed temperature: 80 °C
- Fixing hole for M3/M4 screw
- Max. torque on screws
M3: 0.5 Nm; M4: 1.4 Nm
- Packaging unit: 400 pcs.



Light distribution	Optics type	Ref. No.	Efficiency %
M-Class	M5	570137	93
M-Class	M3M	569966	92
P-Class	P2M	569967	93
Area	A5	569968	94

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
- The module must be fixed onto a thermally conductive surface with 1 to 4 M3 screws (respectively M4). Max. allowed torque for M3: 0.5 Nm and M4: 1.2 Nm
 - In case of using VS 2x2-array lenses the max. allowed torque to be applied to the screws M3 is 0.5 Nm and for M4 it is 1.4 Nm.
 - In this regard please observe also the usage of proper thermal interface material. Make sure not to go below the min. contact pressure needed. The installation instructions of the selected interface materials have to be followed.
- The wiring can be done by solid or stranded wires having a cross section of 0.2–0.75 mm²; stripped length of lead ends of 7–9 mm. For inserting/removing stranded wires press lightly on the push button.
- When installing/screwing the module into a luminaire, please ensure that the cables are not squeezed between luminaire/heat sink and LED module. Also ensure that the mounting surface is clean and flat. For a reliable thermal attachment, we recommend the mounting surface flatness of ≤ 0.2 mm.
- 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-630/xx-X are designed for working voltages up to 500 V DC (basic insulation) acc. to EN 62031/EN 60598.
- If a system consists of multiple LED Linear Allround modules connected to a single driver, only one module will be monitored by the NTC. That means that one module is in "master" mode operated and the rest are operated in "slave" mode.
- 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.
- To ensure good thermal contact, it is recommended to use proper thermal interface material (e.g. thermal paste, phase change or thermal pads).
- When mounting LED Linear Allround modules directly on the luminaire housing, we recommend to use aluminum of at least 3 mm thickness. Thicker material will improve the heatflow through the luminaire, resulting in a lower t_p temperature on the module itself.
- Use anodised or painted surfaces rather than blank surfaces to enhance the heat-transfer via thermal radiation.
- Try to limit as far as possible the number of thermal interfaces in the primary heat path towards ambient air. For the primary heat path use solely materials with high thermal conductivity (e.g. aluminum).
- The LED Linear Allround modules are built-in modules and have no IP-classification (IP00). They are not designed for operation in "open air". 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.
- 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

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Assembly and Safety Information

- 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-630/xx-X
 - other applications
risk group 2: WU-M-630/xx-X



Assessment in acc. with IEC/TR 62778:

Given a clearance of more than d_{min} , within which the lighting intensity limit of $E_{thr} = 900 \text{ lx}$ 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

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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