LED LINEAR ALLROUND – 5050 GEN. 3

BUILT-IN MODULES

LED LINEAR ALLROUND – 5050 GEN. 3

WU-M-630-SA/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 4 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 Gen. 3

- **HIGHLY EFFICIENT: UP TO 217 LM/W AT T_P = 60 °C, I_F = 350 mA**
- **FLEXIBLE LIGHT DISTRIBUTION BY VARIOUS ATTACHMENT OPTICS**
- **INITIAL COLOUR ACCURACY: 5 SDCM**
- **ON-BOARD SURGE PROTECTION UP TO 10 KV (IN COMBINATION WITH VS STREETLIGHT DRIVERS)**
- **ENEC AND VDE (ACC. TO EN 62031)**

VS LIGHTING SOLUTIONS

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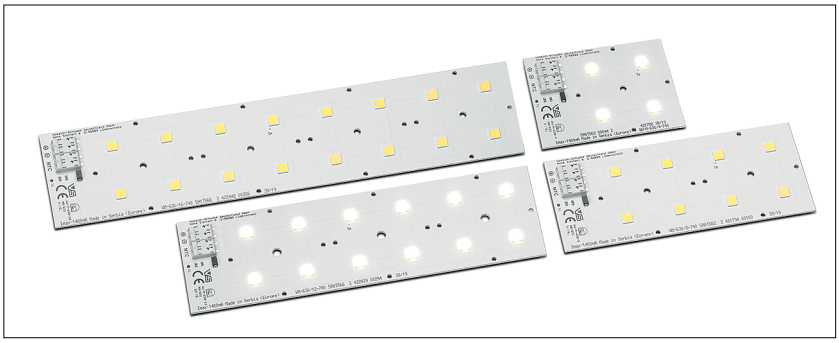
LED Linear Allround 5050 Gen. 3



Technical Notes

- LED built-in module for integration into luminaires
- 4, 8, 12 or 16 high-efficiency High Power LEDs
- Dimensions (excl. optics) LxWxH
  - 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 3 (up to 8 kV)
- NTC resistor for external driver feedback of module temperature (type: NCP18xH103J03RB)

Electrical Characteristics

at t_p = 60 °C

Type	No. of LEDs	Typ. voltage DC 350 mA V	500 mA V	700 mA V	1050 mA V	1400 mA V	Temperature coefficient mV/K	Typ. power consumption 350 mA W	500 mA W	700 mA W	1050 mA W	1400 mA W
WU-M-630-SA/4	4	10.9	11.1	11.3	11.8	12.2	–3.17	3.8	5.5	7.9	12.4	17.0
WU-M-630-SA/8	8	21.8	22.2	22.7	23.5	24.3	–6.33	7.6	11.1	15.9	24.7	34.0
WU-M-630SA/12	12	32.7	33.3	34.0	35.3	36.5	–9.50	11.4	16.6	23.8	37.1	51.0
WU-M-630-SA/16	16	43.6	44.4	45.4	47.1	48.6	–12.66	15.3	22.2	31.8	49.4	68.1

Voltage and power consumption tolerance: ± 10%.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
All types	≤ 1050	–30	+85	–40	+85	2000
	≤ 1400	–30	+75	–40	+85	2000

Operating Life

Lumen degradation	Operating life in hours at stated t_c point temperature I_f ≤ 350 mA to I_f 700 mA 60 °C	70 °C	85 °C	I_f 1050 mA 60 °C	70 °C	85 °C	I_f 1400 mA 60 °C	70 °C	85 °C
L90/B10	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 95,000	> 102,000	> 102,000	> 90,000
L80/B10	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000
L70/B10	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000	> 102,000

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

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Optical Characteristics

at t_p = 60 °C, CRI** ≥ 70

Type	Ref. No.	Colour	Correl. colour temp. K	Luminous flux* (lm) and typ. efficiency (lm/W) 350 mA typ. lm	typ. lm/W	500 mA typ. lm	typ. lm/W	700 mA typ. lm	typ. lm/W	1050 mA typ. lm	typ. lm/W	1400 mA typ. lm	typ. lm/W
WU-M-630-SA/4-722	**573280**	warm white	2200	700	184	980	176	1330	168	1915	155	2455	144
WU-M-630-SA/4-730	**573125**	warm white	3000	795	208	1105	199	1505	189	2160	175	2770	163
WU-M-630-SA/4-740	**573126**	neutral white	4000	825	217	1150	208	1565	197	2255	182	2890	170
WU-M-630-SA/4-750	**573219**	cool white	5000	815	214	1135	205	1545	195	2225	180	2850	168
WU-M-630-SA/8-722	**573215**	warm white	2200	1405	184	1955	176	2660	168	3830	155	4910	144
WU-M-630-SA/8-727	**573128**	warm white	2700	1540	202	2145	193	2920	184	4200	170	5385	158
WU-M-630-SA/8-730	**573129**	warm white	3000	1585	208	2210	199	3005	189	4320	175	5545	163
WU-M-630-SA/8-740	**573130**	neutral white	4000	1655	217	2305	208	3135	197	4510	182	5785	170
WU-M-630-SA/8-750	**573220**	cool white	5000	1630	214	2270	205	3090	195	4445	180	5705	168
WU-M-630-SA/12-722	**573216**	warm white	2200	2105	184	2935	176	3995	168	5745	155	7365	144
WU-M-630-SA/12-727	**573132**	warm white	2700	2310	202	3215	193	4380	184	6300	170	8080	158
WU-M-630-SA/12-730	**573133**	warm white	3000	2380	208	3310	199	4510	189	6485	175	8315	163
WU-M-630-SA/12-740	**573134**	neutral white	4000	2480	217	3455	208	4700	197	6760	182	8675	170
WU-M-630-SA/12-750	**573221**	cool white	5000	2445	214	3405	205	4635	195	6670	180	8555	168
WU-M-630-SA/16-722	**573217**	warm white	2200	2810	184	3910	176	5325	168	7655	155	9820	144
WU-M-630-SA/16-727	**573136**	warm white	2700	3080	202	4290	193	5840	184	8400	170	10775	158
WU-M-630-SA/16-730	**573137**	warm white	3000	3170	208	4415	199	6010	189	8645	175	11090	163
WU-M-630-SA/16-740	**573138**	neutral white	4000	3310	217	4605	208	6270	197	9015	182	11565	170
WU-M-630-SA/16-750	**573222**	cool white	5000	3265	214	4540	205	6185	195	8890	180	11405	168

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

Optical Characteristics

at t_p = 60 °C, CRI** ≥ 80

Type	Ref. No.	Colour	Correl. colour temp. K	Luminous flux* (lm) and typ. efficiency (lm/W) 350 mA typ. lm	typ. lm/W	500 mA typ. lm	typ. lm/W	700 mA typ. lm	typ. lm/W	1050 mA typ. lm	typ. lm/W	1400 mA typ. lm	typ. lm/W
WU-M-630-SA/4-830	**on request**	warm white	3000	700	184	980	176	1330	168	1915	155	2455	144
WU-M-630-SA/4-840	**573127**	neutral white	4000	750	196	1040	188	1415	178	2040	165	2615	154
WU-M-630-SA/8-830	**on request**	warm white	3000	1405	184	1955	176	2660	168	3830	155	4910	144
WU-M-630-SA/8-840	**573131**	neutral white	4000	1495	196	2080	188	2835	178	4075	165	5230	154
WU-M-630-SA/12-830	**on request**	warm white	3000	2105	184	2935	176	3995	168	5745	155	7365	144
WU-M-630-SA/12-840	**573135**	neutral white	4000	2245	196	3125	188	4250	178	6115	165	7840	154
WU-M-630-SA/16-830	**on request**	warm white	3000	2810	184	3910	176	5325	168	7655	155	9820	144
WU-M-630-SA/16-840	**573139**	neutral white	4000	2990	196	4165	188	5670	178	8150	165	10455	154

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* Measurement tolerance of luminous flux: ±7% | ** Measurement tolerance CRI: ±2

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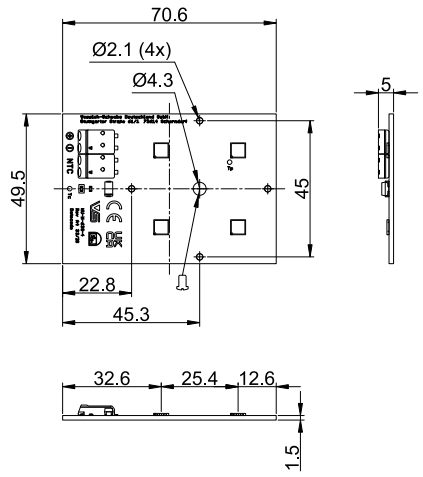
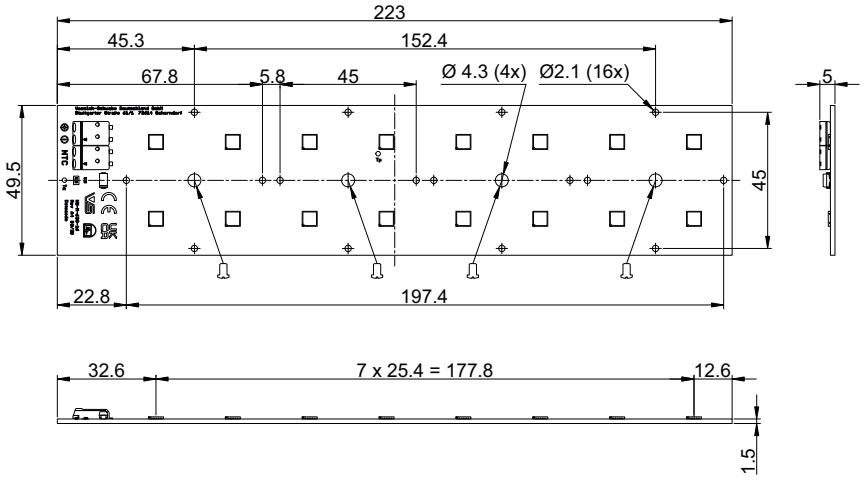
Mechanical Dimensions

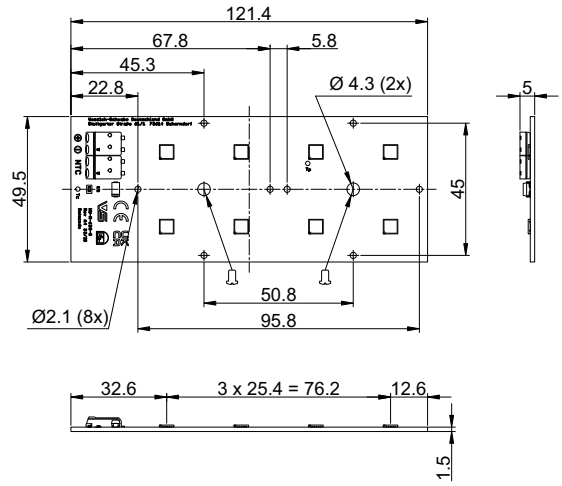
WU-M-630-SA/4



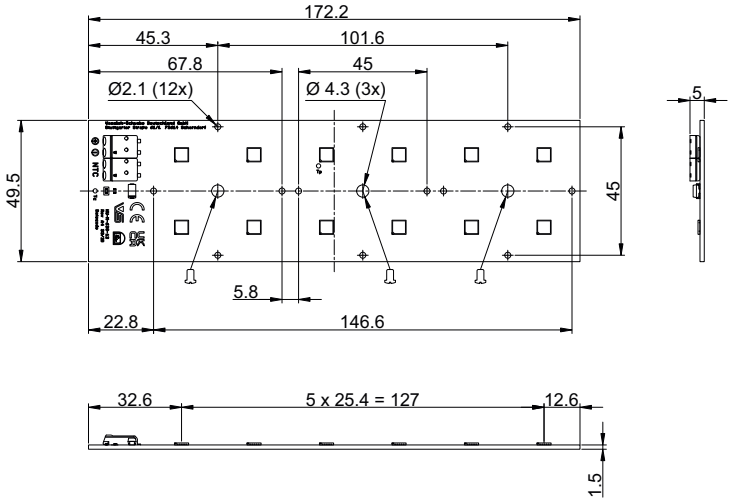
WU-M-630-SA/16



WU-M-630-SA/8



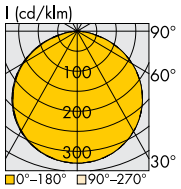
WU-M-630-SA/12



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

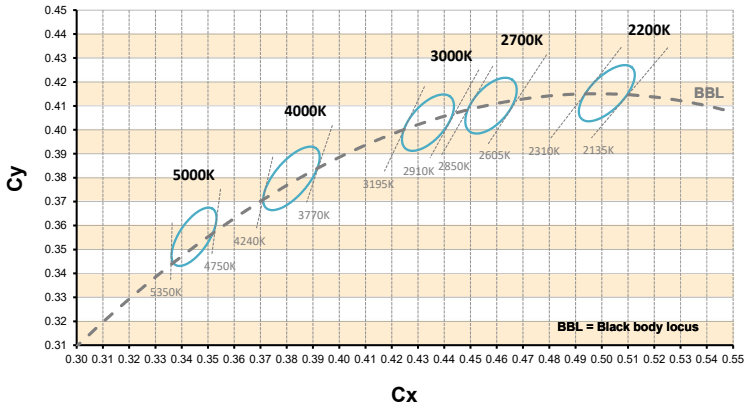
Typical Light Distribution Curve

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



Without cover

Bins



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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. allowd 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-SA/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 reccommend 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).
- To ensure problem-free operation, the specified maximum temperature at the t_c and t_p point (see "Operating Life") must be observed (and measured in accordance with EN 60598-1). To satisfy this point, it may be necessary to put measures in place to ensure any heat is dissipated from the PCB to the environment.
- 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
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471: 2008.
  Rating in accordance with IEC / TR 62778: risk group 1
  As long as subsequent table is fulfilled:

CCT K	Max. operating current for risk group 1 mA	Limit illuminance (E_{thr}) for higher operating currents to be risk group 1 lx
3000	1448	2500.17
4000	1002.6	1710.01
5000	772	1250.78
6500	569.61	852.64

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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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