LED LINEAR ALLROUND – 5050 GEN. 2

BUILT-IN MODULES

LED LINEAR ALLROUND – 5050 GEN. 2

WU-M-630-S/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. 2

- **HIGHLY EFFICIENT: UP TO 201 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 4 KV (IN COMBINATION WITH VS STREETLIGHT DRIVERS)**
- **ENEC AND VDE (ACC. TO EN 62031)**

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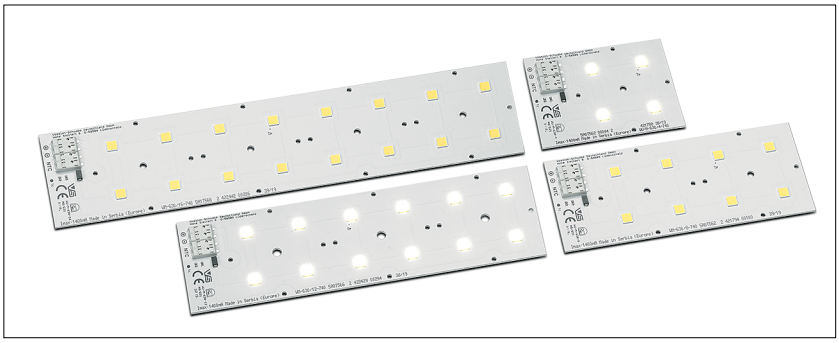
LED Linear Allround 5050 Gen. 2



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	Voltage DC (V) 350 mA min.	350 mA typ.	350 mA max.	500 mA min.	500 mA typ.	500 mA max.	700 mA min.	700 mA typ.	700 mA max.	1050 mA min.	1050 mA typ.	1050 mA max.	1400 mA min.	1400 mA typ.	1400 mA max.	Temperature coefficient mV/K
WU-M- 630-S/4	4	10.2	10.7	11.2	10.4	10.9	11.4	10.6	11.2	11.7	11.1	11.6	12.2	11.5	12.1	12.7	–4.17
WU-M- 630-S/8	8	20.3	21.4	22.4	20.8	21.8	22.9	21.3	22.4	23.5	22.1	23.3	24.4	23	24.1	25.3	–8.34
WU-M- 630-S/12	12	30.5	32	33.6	31.1	32.7	34.3	31.9	33.6	35.2	33.2	34.9	36.6	34.4	36.2	38	–12.51
WU-M- 630-S/16	16	40.6	42.7	44.8	41.5	43.6	45.8	42.6	44.8	47	44.3	46.6	48.8	45.9	48.3	50.6	–16.67

Type WU-M	No. of LEDs	Power consumption (W) 350 mA min.	350 mA typ.	350 mA max.	500 mA min.	500 mA typ.	500 mA max.	700 mA min.	700 mA typ.	700 mA max.	1050 mA min.	1050 mA typ.	1050 mA max.	1400 mA min.	1400 mA typ.	1400 mA max.
WU-M- 630-S/4	4	3.6	3.7	3.9	5.2	5.5	5.7	7.5	7.8	8.2	11.6	12.2	12.8	16.1	16.9	17.7
WU-M- 630-S/8	8	7.1	7.5	7.8	10.4	10.9	11.4	14.9	15.7	16.4	23.2	24.4	25.6	32.1	33.8	35.5
WU-M- 630-S/12	12	10.7	11.2	11.8	15.6	16.4	17.2	22.4	23.5	24.7	34.9	36.7	38.5	48.2	50.7	53.2
WU-M- 630-S/16	16	14.2	15	15.7	20.8	21.8	22.9	29.8	31.3	32.9	46.5	48.9	51.3	64.3	67.6	70.9

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	1600
	≤ 1400	–30	+75	–40	+85	1600

Operating Life

Lumen degradation	Operating life in hours at stated t_c point temperature I_f ≤ 350 mA to I_f 700 mA 40 °C	60° C	85 °C	I_f 1050 mA 40 °C	60° C	85 °C	I_f 1400 mA 40 °C	60° C	85 °C
L80/B10	> 120,000	> 120,000	> 120,000	> 120,000	> 120,000	> 108,000	> 54,000	> 54,000	> 54,000
L70/B10	> 120,000	> 120,000	> 120,000	> 120,000	> 120,000	> 120,000	> 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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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			500 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	min. lm	typ. lm	typ. lm/W	
WU-M-630-S/4-730	**570496**	warm white	3000	645	700	187	900	975	179	1220	1325	169	1750	1895	155	2240	2425	144	
WU-M-630-S/4-740	**570497**	neutral white	4000	700	750	201	975	1050	193	1325	1425	182	1895	2040	167	2425	2615	155	
WU-M-630-S/4-750	**570498**	cool white	5000	700	740	198	975	1035	190	1325	1405	179	1895	2010	164	2425	2575	152	
WU-M-630-S/4-765	**570512**	cool white	6500	645	715	192	900	1000	184	1220	1360	173	1750	1945	159	2240	2490	147	
WU-M-630-S/8-730	**570499**	warm white	3000	1290	1395	187	1800	1955	179	2445	2645	169	3495	3785	155	4480	4855	144	
WU-M-630-S/8-740	**570500**	neutral white	4000	1395	1505	201	1955	2105	193	2645	2850	182	3785	4080	167	4855	5225	155	
WU-M-630-S/8-750	**570501**	cool white	5000	1395	1480	198	1955	2075	190	2645	2810	179	3785	4020	164	4855	5110	152	
WU-M-630-S/8-765	**570513**	cool white	6500	1290	1435	192	1800	2005	184	2445	2715	173	3495	3885	159	4480	4980	147	
WU-M-630-S/12-730	**570502**	warm white	3000	1935	2095	187	2705	2930	179	3665	3970	169	5245	5680	155	6720	7280	144	
WU-M-630-S/12-740	**570503**	neutral white	4000	2095	2255	201	2930	3155	193	3970	4275	182	5680	6120	167	7280	7840	155	
WU-M-630-S/12-750	**570504**	cool white	5000	2095	2225	198	2830	3110	190	3970	4215	179	5680	6030	164	7280	7725	152	
WU-M-630-S/12-765	**570514**	cool white	6500	1935	2150	192	2705	3005	184	3665	4075	173	5245	5830	159	6720	7470	147	
WU-M-630-S/16-722	**573091**	warm white	2200	2150	2320	155	3005	3245	149	4070	4400	140	5825	6290	129	7465	8065	119	
WU-M-630-S/16-730	**570505**	warm white	3000	2580	2795	187	3605	3905	179	4885	5295	169	6990	7575	155	8960	9705	144	
WU-M-630-S/16-740	**570506**	neutral white	4000	2795	3005	201	3905	4205	193	5295	5700	182	7575	8155	167	9705	10450	155	
WU-M-630-S/16-750	**570507**	cool white	5000	2795	2965	198	3905	4145	190	5295	5620	179	7575	8040	164	9705	10305	152	
WU-M-630-S/16-765	**570515**	cool white	6500	2580	2865	192	3605	4016	184	4885	5430	173	6990	7770	159	8960	9960	147	

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 | 6500 K: Production after receipt of order

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			500 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	min. lm	typ. lm	typ. lm/W	
WU-M-630-S/4-830	**570709**	warm white	3000	590	655	175	825	915	168	1120	1240	158	1600	1775	145	2055	2275	135	
WU-M-630-S/4-840	**570710**	neutral white	4000	645	680	182	900	955	175	1220	1295	165	1750	1850	151	2240	2370	140	
WU-M-630-S/4-850	**570711**	cool white	5000	645	680	182	900	955	175	1220	1295	165	1750	1850	151	2240	2370	140	
WU-M-630-S/8-830	**570712**	warm white	3000	1180	1310	175	1650	1835	168	2240	2485	159	3205	3555	145	4105	4555	135	
WU-M-630-S/8-840	**570713**	neutral white	4000	1290	1365	183	1800	1910	175	2445	2585	165	3495	3700	151	4480	4740	140	
WU-M-630-S/8-850	**570714**	cool white	5000	1290	1365	183	1800	1910	175	2445	2585	165	3495	3700	151	4480	4740	140	
WU-M-630-S/12-830	**570715**	warm white	3000	1770	1965	175	2480	2750	168	3360	3725	158	4805	5330	145	6160	6830	135	
WU-M-630-S/12-840	**570716**	neutral white	4000	1935	2045	182	2705	2860	175	3665	3880	165	5245	5550	151	6720	7110	140	
WU-M-630-S/12-850	**570717**	cool white	5000	1935	2045	182	2705	2860	175	3665	3880	165	5245	5550	151	6720	7110	140	
WU-M-630-S/16-830	**570718**	warm white	3000	2365	2620	175	3305	3665	168	4480	4970	159	6410	7110	145	8215	9110	135	
WU-M-630-S/16-840	**570719**	neutral white	4000	2580	2730	183	3605	3815	175	4885	5170	165	6990	7400	151	8960	9480	140	
WU-M-630-S/16-850	**570720**	cool white	5000	2580	2730	183	3605	3815	175	4885	5170	165	6990	7400	151	8960	9480	140	

On account of the complex manufacturing process of the modules, the above values only represent statistical variables.
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* Measurement tolerance of luminous flux: ±7% | ** Measurement tolerance CRI: ±2

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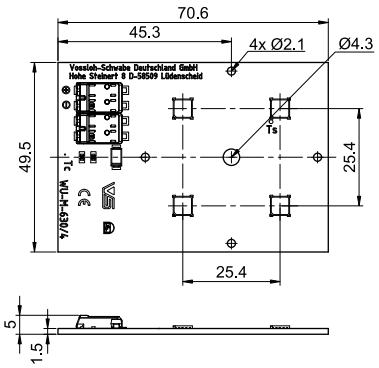
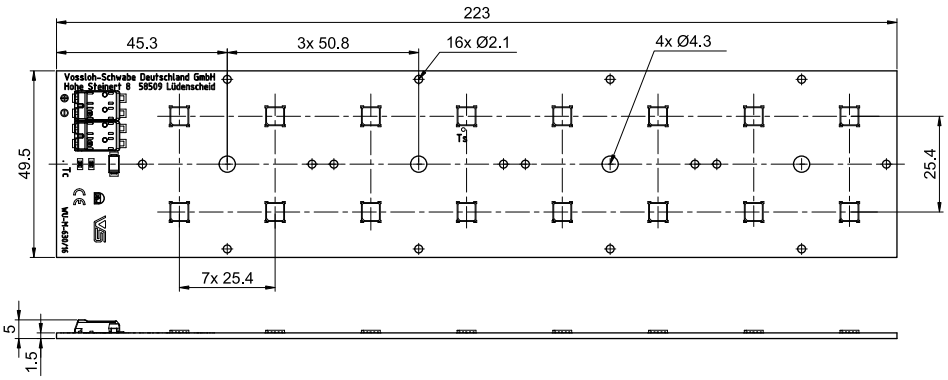
Mechanical Dimensions

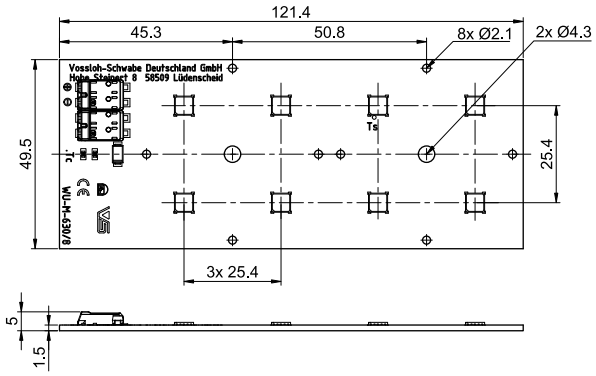
WU-M-630-S-4



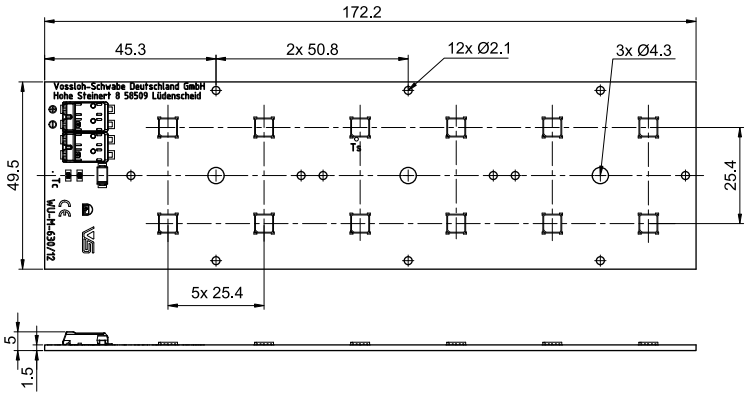
WU-M-630-S-16



WU-M-630-S-8



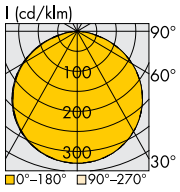
WU-M-630-S-12



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

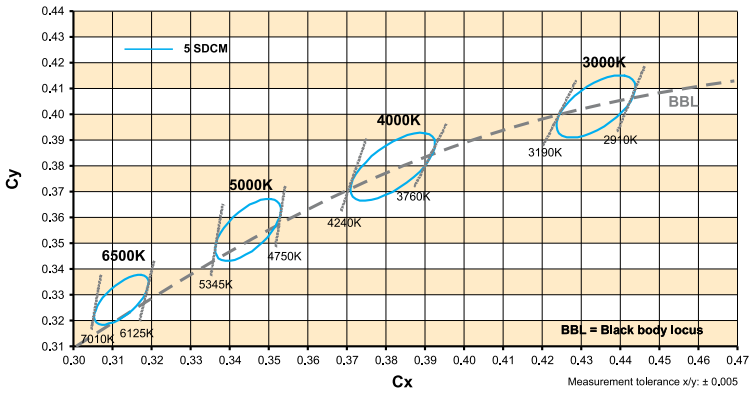
Data are available in .ldt format for download under www.vossloh-schwabe.com.



Without cover

Light distribution curve for LED Linear Allround 5050 Gen. 2 modules **with optics** see page 5.

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-S/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.
  - general lighting
    exempt group: WU-M-630-S/xx-X
  - other applications
    risk group 2: WU-M-630-S/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 lx is attained, the classification goes down to Risk Group 1.

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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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