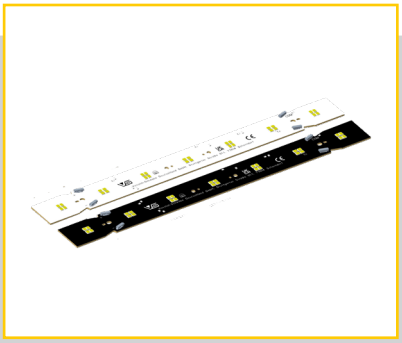
LED LINE SMD W2.5 LIGHT&DARK TW GEN. 2



LED LINE SMD W2.5 LIGHT&DARK TW GEN. 2

MLC SC W2.5 TW G2

Typical Applications

Built-in luminaires/general illumination

- Office lighting
- Retail, corridor and shelf lighting

LED Line SMD W2.5 Light&Dark TW Gen. 2

- **LONG SERVICE LIFE TIME: 93.000 H (L80, B10)**
- **HIGHLY EFFICIENT: UP TO 203 LM/W AT T_P = 50 °C**
- **1 LENGTH AVAILABLE: 280 MM**
- **2 PCBS COLOUR AVAILABLE: WHITE AND BLACK**
- **COLOUR TUNING: 2700-6500 K**
- **ENEC APPROVED**
- **WARRANTY 5 YEARS**

LIGHTING SOLUTIONS

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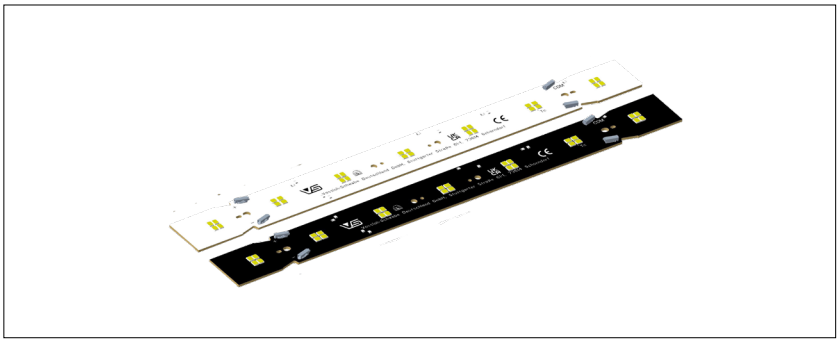
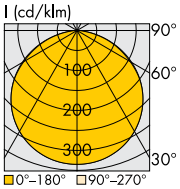


Technical Notes

- LED built-in module for integration into luminaires
- Dimensions
  MLC SC W2.5/280: 280x25 mm
- Driving current: 150 mA / 200 mA / 300 mA / 350 mA / 500 mA
- On-board push-in terminals
- Beam angle: 120°
- Colour rendering index (CRI): Ra80 and Ra90

Typical Light Distribution Curve

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



Covers and optics

Please visit our homepage for details for suitable optics:

- www.vossloh-schwabe.com/en/products/optics-reflectors/linear-optics

Electrical Characteristics

at t_p = 50 °C

Type	Number of LEDs*	Typ. voltage DC** (V)					Typ. power consumption** (W)				
		150 mA V	200 mA V	300 mA V	350 mA V	500 mA V	150 mA W	200 mA W	300 mA W	350 mA W	500 mA W
LED Line SMD W2.5 Light&Dark TW Gen. 2											
MLC SC W2.5/280/x S/28/yzz/yzz G2	14	18.6	18.8	19.3	19.5	20.1	2.8	3.8	5.8	6.8	10.0

* per channel | ** Tolerance of voltage and power: ± 10 % / data per channell | **Use of external LED constant current driver required.**

Maximum Ratings

Exceeding the maximum ratings can lead to reduction of service life or destruction of the module.

Type	Operating current (mA)*	Operation temperature range at t_c point		Storage temperature range		Max. allowed repetitive peak current for frequencies ≥ 100 Hz [mA]
		°C min.	°C max.	°C min.	°C max.	
MLC SC W2.5/280/x S/28/yzz/yzz G2	500	–20	+80	–20	+70	960

* per channel in single channel operating mode | in dual channel operating mode maximum allowed current per channel may differ.

Operating Life

L80/B10 in hours at measured temperature at t_p point

Type	150 mA			200 mA			300 mA			350 mA			500 mA		
	40 °C	50 °C	80 °C	40 °C	50 °C	80 °C	40 °C	50 °C	80 °C	40 °C	50 °C	80 °C	40 °C	50 °C	80 °C
All types	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>91.000

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Optical Characteristics – CRI > 80

at t_p = 50 °C, without secondary optics
CRI: R_a > 80

Type	Ref. No. PCB colour "x" White (W)	Ref. No. PCB colour "x" Black (B)	Colour	Correlated colour temp.* K	Typ. luminous flux** and typ. efficiency** at 150 mA lm	150 mA lm/W	200 mA lm	200 mA lm/W	300 mA lm	300 mA lm/W	350 mA lm	350 mA lm/W	500 mA lm	500 mA lm/W	Photometric code
LED Line SMD W2.5 Light&Dark TW Gen. 2 - L28															
MLC SC W2.5/280/x S/28/827/865 G2	**574333**	**574334**	warm white	2700	530	190	695	184	1010	175	1165	171	1605	160	359
			cool white	6500	565	203	740	197	1080	187	1245	183	1715	171	

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: ±10%

Tuneable Characteristics – CRI > 80

at t_c1 / t_c2 (t_p) = 50 °C; without secondary optics

	CCT (K) for type MLC SC W2.5/280/x S/28						
Channel 1 / 2700 K	500 mA	2765 K	3345 K	3500 K	not allowed	not allowed	not allowed
	350 mA	2755 K	3520 K	3710 K	4030 K	4165 K	not allowed
	300 mA	2750 K	3615 K	3820 K	4160 K	4300 K	4640 K
	200 mA	2750 K	3900 K	4150 K	4530 K	4685 K	5035 K
	150 mA	2745 K	4145 K	4410 K	4810 K	4965 K	5305 K
	0 mA	0 K	6730 K	6745 K	6770 K	6780 K	6825 K
	Operating current	0 mA	150 mA	200 mA	300 mA	350 mA	500 mA
		Channel 2 / 6500 K					

	Typ. luminous flux (lm) for type MLC SC W2.5/280/x S/28						
Channel 1 / 2700 K	500 mA	1605 lm	2170 lm	2345 lm	not allowed	not allowed	not allowed
	350 mA	1165 lm	1730 lm	1905 lm	2250 lm	2415 lm	not allowed
	300 mA	1010 lm	1575 lm	1750 lm	2095 lm	2260 lm	2730 lm
	200 mA	695 lm	1260 lm	1435 lm	1775 lm	1940 lm	2410 lm
	150 mA	530 lm	1095 lm	1270 lm	1610 lm	1775 lm	2245 lm
	0 mA	0 lm	565 lm	740 lm	1080 lm	1245 lm	1715 lm
	Operating current	0 mA	150 mA	200 mA	300 mA	350 mA	500 mA
		Channel 2 / 6500 K					

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Optical Characteristics – CRI > 90

at t_p = 50 °C, without secondary optics
CRI: R_a > 90

Type	Ref. No. PCB colour "x" White (W)	Ref. No. PCB colour "x" Black (B)	Colour	Correlated colour temp.* K	Typ. luminous flux** and typ. efficiency** at 150 mA lm	150 mA lm/W	200 mA lm	200 mA lm/W	300 mA lm	300 mA lm/W	350 mA lm	350 mA lm/W	500 mA lm	500 mA lm/W	Photometric code
LED Line SMD W2.5 Light&Dark TW Gen. 2 - L28															
MLC SC W2.5/280/x S/28/927/965 G2	**574320**	**574332**	warm white	2700	420	150	550	146	800	139	925	136	1275	127	359
			cool white	6500	490	177	645	171	940	163	1085	159	1495	149	

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: ±10%

Tuneable Characteristics – CRI > 90

at t_c1 / t_c2 (t_p) = 50 °C; without secondary optics

	CCT (K) for type MLC SC W2.5/280/x S/28						
Channel 1 / 2700 K	500 mA	2765 K	3395 K	3560 K	not allowed	not allowed	not allowed
	350 mA	2755 K	3580 K	3785 K	4115 K	4255 K	not allowed
	300 mA	2750 K	3680 K	3895 K	4250 K	4395 K	4740 K
	200 mA	2750 K	3985 K	4240 K	4630 K	4780 K	5130 K
	150 mA	2745 K	4230 K	4505 K	4905 K	5060 K	5395 K
	0 mA	0 K	6730 K	6745 K	6770 K	6780 K	6825 K
	Operating current	0 mA	150 mA	200 mA	300 mA	350 mA	500 mA
		Channel 2 / 6500 K					

	Typ. luminous flux (lm) for type MLC SC W2.5/280/x S/28						
Channel 1 / 2700 K	500 mA	1275 lm	1765 lm	1920 lm	not allowed	not allowed	not allowed
	350 mA	925 lm	1415 lm	1570 lm	1865 lm	2010 lm	not allowed
	300 mA	800 lm	1295 lm	1445 lm	1745 lm	1890 lm	2300 lm
	200 mA	550 lm	1040 lm	1195 lm	1490 lm	1635 lm	2045 lm
	150 mA	420 lm	910 lm	1065 lm	1360 lm	1505 lm	1915 lm
	0 mA	0 lm	490 lm	645 lm	940 lm	1085 lm	1495 lm
	Operating current	0 mA	150 mA	200 mA	300 mA	350 mA	500 mA
		Channel 2 / 6500 K					

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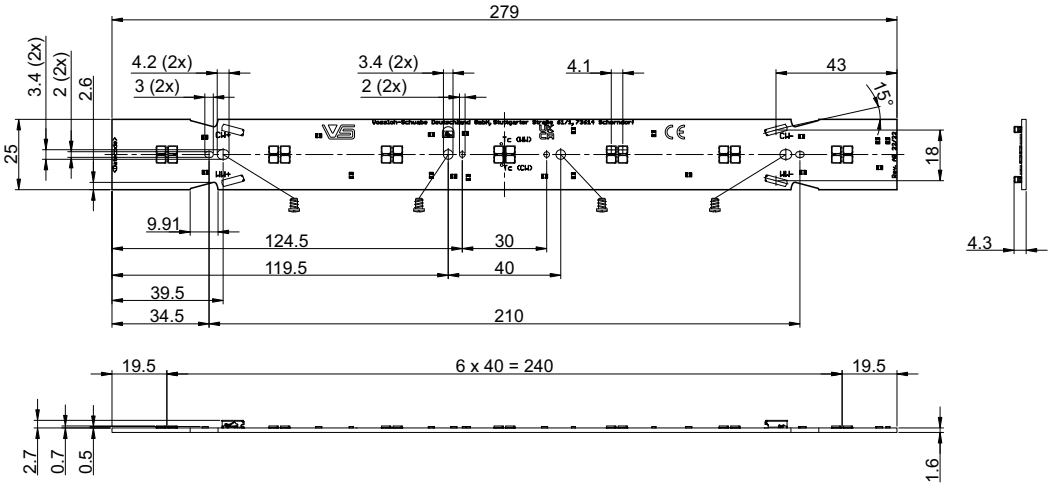
Logistics Data

Product Dimension mm	Product description	Packaging unit	Dimension of box mm	Pieces per box	Gross weight of box g	Weight per piece g	Box pieces per pallet	Pieces per pallet	Gross weight of pallet kg	Dimension of pallet mm
LED Line SMD W2.5 Light&Dark TW Gen. 2										
280x25	MLC SC W2.5/280/x S/28/yzz/yzz G2	Carton box	290x190x97	72	1521.76	19	112	8064	194.5	1200x800x920

Mechanical Dimensions

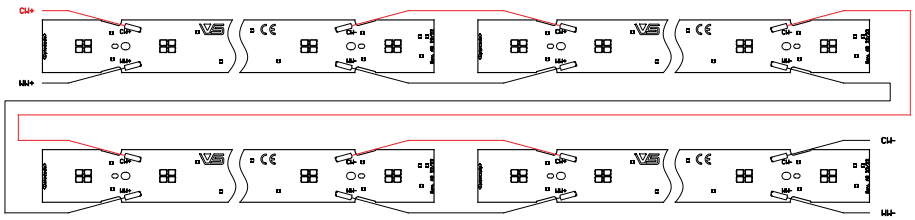
S = Small Top Connection

MLC SC W2.5/280/x S/28/yzz/yzz G2



Connection Example

- The number of modules that can be connected in series depends on the available output voltage of the LED driver.
- The clearance and creepage distances are designed for working voltages up to 500 V DC (basic insulation) and 250 V DC (reinforced insulation).
- In case of assembly of the LED modules in profiles (e.g. aluminium) where the profile touches the top edge of the PCB the clearance and creepage distances are reduced to 250 V DC (basic insulation)
- Only the marked holes are fixing holes for screws M3. Please do not use other holes for fixation!



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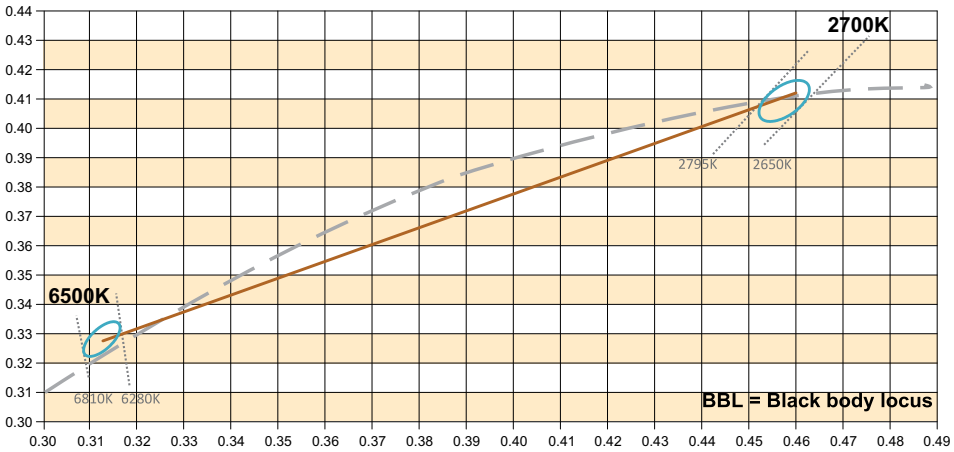
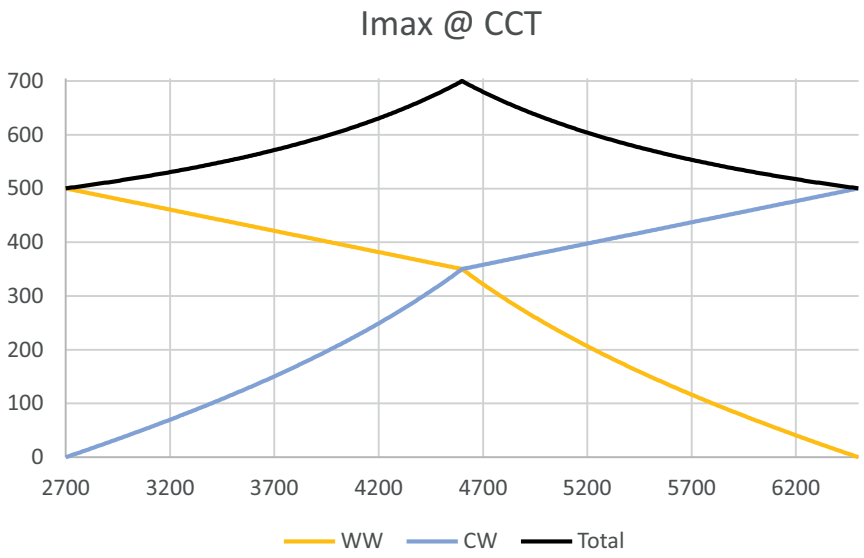
Bins



Max.operating current vs. colour temperature.



Currents mixing: 500mA per channel (Single channel), 350mA per channel (mixing currents).
Imax = Icw + Iww = 700mA

Linear LED Constant Current Drivers

Please visit our homepage for details for suitable LED constant current drivers: www.vossloh-schwabe.com

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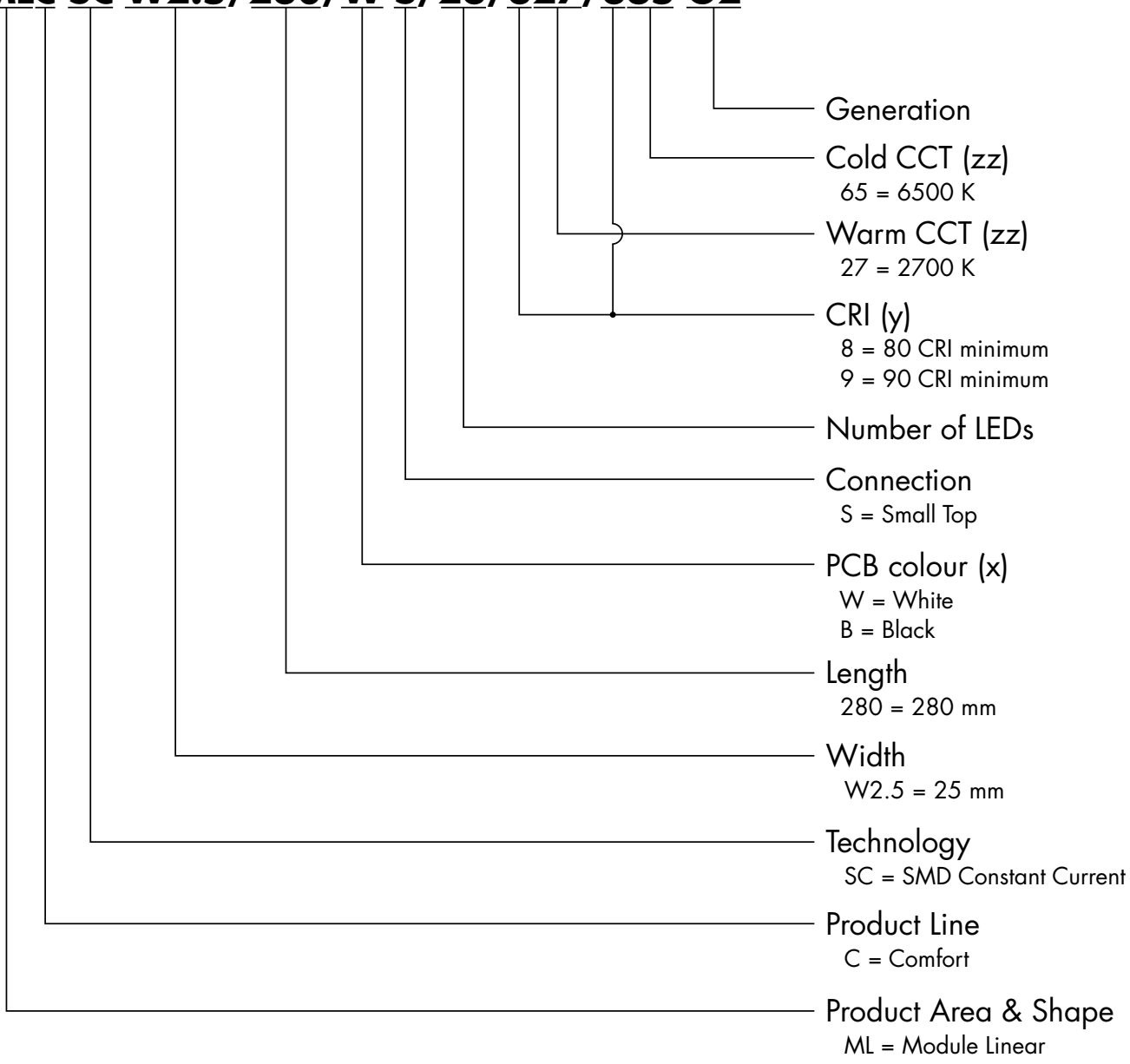
MLC SC W2.5/280/W S/28/827/865 G2



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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. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advice must be observed; non-observance can result in the destruction of the LED assembly modules, fire and/or other hazards.

- Consider safety regulations acc. EN 60598 in the luminair design, especially when the operating LED driver is not galvanic isolated.
  - In mode of operation regard to sufficient isolation.
  - Live parts must not be touched in operation mode. Danger of death!!!

- ESD (electrostatic discharge) protection measures must be observed when handling and installing the LED modules. See VS's application notes on ESD protection.
- Adequate anti-static electricity measures, including the use of conductive shoes, ionizers, work bench grounding, wrist straps, flooring and stools should be used.
- LED assembly modules must not be subjected to any undue mechanical stress, e. g.:
  - do not treat as bulk cargo
  - avoid shear and compressive forces during handling and installation
  - do not damage circuit paths
  - avoid any pressure on the light emitting surface
- Safe operation only possible by the use of external constant current sources ($I_{max.}$ see table "Electrical Characteristics").
- Operation only with power supply units that feature the following protection:
  - Short-circuit protection
  - Overload protection
  - Overheating protection
- The module can be fixed with M3 screws. Fixation only with flat or cylinder head screws (M3) (no countersank screws)
  Max. torque: 1.2 Nm (M3)
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- For interconnection the LED modules is equipped with push-in terminals (WAGO 2065).
- Safety regulations acc. to EN 60598 (or further standards) has to be observed if the maximum output voltage exceed the permitted touchable value.
- Measurement tolerances:
  - luminous flux: ± 7%
  - voltage: ± 3%
  - CRI: ± 1
- The following points must be observed when connecting LED modules in parallel:
  - All LED strings that are wired in parallel must contain the same number of LEDs (symmetrical loading).
  - Owing to differing forward biases, there can be a difference of up to 10% in brightness between modules connected in parallel.
- To ensure problem-free operation, the specified maximum temperature at the 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.
- 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.
- Due to the manufacturing process, the PCBs of the LED assembly modules can have sharp edges and corners. Care must therefore be taken during handling and installation to avoid injury.
- 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.
- 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 2

CCT K	Max. operating current for risk group 2 mA	E threshold for higher operating currents to be risk group 2 lx
≤ 6500	500	682

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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