

## LED LINE SMD KIT GEN. 2

WU-M-480/-481- G

WU-M-501/-502- G



## LED LINE SMD KIT GEN. 2

**WU-M-480/-481- G and WU-M-501/-502- G**

### Typical Applications

Built-in luminaires/general illumination

- Office lighting
- Retail, corridor and shelf lighting
- T5/T8 replacement as built-in module
- Furniture lighting
- Backlighting for advertising

### LED SMD Kit Gen. 2

- **LONG SERVICE LIFE TIME: 50,000 H (L80, B10)**
- **HIGHLY EFFICIENT:  
UP TO 185 LM/W AT  $T_p = 50\text{ °C}$**
- **TWO POWER CLASSES**
- **2 LENGTHS AVAILABLE: 280 / 560 MM**
- **FLEXIBLE LIGHT DISTRIBUTION BY  
DIFFERENT OPTICS**
- **ZHAGA-COMPLIANT HOLE DISTANCE**

## LED Line SMD Kit Gen. 2

### Technical Notes

- LED built-in module for integration into luminaires
- Dimensions  
WU-M-480/501: 280x39.6 mm  
WU-M-481/502: 560x39.6 mm
- Driving current: 350 mA / 500 mA / 700 mA
- On-board push terminal system
- Colour tolerance: 3-step MacAdam



### Electrical Characteristics

at  $t_p = 50\text{ °C}$

Type	No. of LEDs	Voltage DC (V)									Temperature coefficient mV/K	Power consumption (W)								
		350 mA			500 mA			700 mA				350 mA			500 mA			700 mA		
		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.
WU-M-480-G	30	13.0	13.9	15.5	13.5	14.4	16.0	14.2	15.1	16.7	-16.63	4.5	4.9	5.4	6.8	7.2	8.0	9.9	10.6	11.7
WU-M-480-G-HB	30	25.7	27.3	28.7	26.5	28.1	29.5	27.5	29.2	30.5	-33.26	9.0	9.6	10.0	13.3	14.1	14.8	19.3	20.4	21.4
WU-M-481-G	60	26.0	27.8	31.0	27.1	28.9	32.1	28.3	30.1	33.3	-33.26	9.1	9.7	10.8	13.6	14.5	16.1	19.8	21.1	23.3
WU-M-481-G-HB	60	51.3	54.6	57.3	53.0	56.3	59.0	55.1	58.4	61.1	-66.51	18.0	19.1	20.1	26.5	28.2	29.5	38.6	40.9	42.8
WU-M-501-G	15	8.0	8.5	9.5	8.3	8.9	9.8	8.7	9.3	10.2	-9.98	2.8	3.0	3.3	4.2	4.5	4.9	6.1	6.5	7.1
WU-M-501-G-HB	15	15.6	16.6	17.4	16.2	17.2	18.0	17.0	17.9	18.8	-19.95	5.5	5.8	6.1	8.1	8.6	9.0	11.9	12.5	13.2
WU-M-502-G	30	15.9	17.0	18.9	16.6	17.7	19.6	17.5	18.5	20.5	-19.95	5.6	6.0	6.6	8.3	8.8	9.8	12.3	12.9	14.4
WU-M-502-G-HB	30	31.3	33.2	34.9	32.4	34.4	36.0	33.9	35.9	37.5	-39.91	11.0	11.6	12.2	16.2	17.2	18.0	23.7	25.1	26.3

**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 mA
		°C min.	°C max.	°C min.	°C max.	
WU-M-480-G/ WU-M-481-G	350	-20	+75	-20	+85	1270
	500	-20	+75	-20	+85	1200
	700	-20	+75	-20	+85	1110
WU-M-501-G/ WU-M-502-G	350	-20	+75	-20	+85	1030
	500	-20	+75	-20	+85	980
	700	-20	+75	-20	+85	935

### Operating Life

L80/B10

in hours at measured temperature at  $t_p$  point

	350 mA			500 mA			700 mA		
	40 °C	50 °C	75 °C	40 °C	50 °C	75 °C	40 °C	50 °C	75 °C
WU-M-480-G/481-G	> 60,000	> 60,000	> 60,000	> 60,000	> 60,000	58,000	> 60,000	> 60,000	48,000
WU-M-480-G/481-G-HB	> 60,000	> 60,000	38,000	> 60,000	> 60,000	33,000	> 60,000	> 60,000	25,000
WU-M-501-G/502-G	> 60,000	> 60,000	> 60,000	> 60,000	> 60,000	55,000	> 60,000	> 60,000	45,000
WU-M-501-G/502-G-HB	> 60,000	> 60,000	36,000	> 60,000	> 60,000	30,000	> 60,000	59,000	22,000

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

## LED Line SMD Kit Gen. 2

### Optical Characteristics

at  $t_p = 50\text{ °C}$ ; without secondary optics

Type	Ref. No.	Colour	Correlated colour temperature K	Luminous flux* (lm) and efficiency (lm/W) at									CRI		Beam angle* °	Photo-metric code
				350 mA			500 mA			700 mA			R <sub>a</sub> min.	R <sub>a</sub> typ.		
				min. lm	typ. lm	typ. lm/W	min. lm	typ. lm	typ. lm/W	min. lm	typ. lm	typ. lm/W				
<b>LED Line SMD Kit Gen. 2 – 280 mm – 30 LEDs</b>																
WU-M-480-G-830	<b>560115</b>	warm white	3000	755	835	171	1055	1170	162	1445	1600	152	80	85	120	830/349
WU-M-480-G-840	<b>560116</b>	neutral white	4000	785	875	180	1100	1230	170	1505	1680	159	80	85	120	840/349
WU-M-480-G-850	<b>560117</b>	neutral white	5000	855	900	185	1200	1260	175	1640	1725	164	80	85	120	850/349
WU-M-480-G-865	<b>560118</b>	cool white	6500	785	885	182	1100	1245	172	1505	1700	161	80	85	120	865/349
WU-M-480-G-HB-830	<b>560119</b>	warm white	3000	1435	1590	166	2015	2230	159	2760	3055	149	80	85	120	830/349
WU-M-480-G-HB-840	<b>560120</b>	neutral white	4000	1565	1670	175	2200	2345	167	3005	3210	157	80	85	120	840/349
WU-M-480-G-HB-850	<b>560121</b>	neutral white	5000	1565	1700	178	2200	2390	170	3005	3265	160	80	85	120	850/349
WU-M-480-G-HB-865	<b>560122</b>	cool white	6500	1565	1665	174	2200	2340	166	3005	3205	157	80	85	120	865/349
<b>LED Line SMD Kit Gen. 2 – 560 mm – 60 LEDs</b>																
WU-M-481-G-830	<b>560123</b>	warm white	3000	1505	1665	171	2115	2340	162	2890	3200	152	80	85	120	830/349
WU-M-481-G-840	<b>560124</b>	neutral white	4000	1570	1750	180	2200	2455	170	3010	3360	159	80	85	120	840/349
WU-M-481-G-850	<b>560125</b>	neutral white	5000	1710	1795	185	2400	2520	175	3280	3450	164	80	85	120	850/349
WU-M-481-G-865	<b>560126</b>	cool white	6500	1570	1770	182	2200	2485	172	3010	3400	161	80	85	120	865/349
WU-M-481-G-HB-830	<b>560127</b>	warm white	3000	2870	3175	166	4035	4465	159	5520	6105	149	80	85	120	830/349
WU-M-481-G-HB-840	<b>560128</b>	neutral white	4000	3130	3340	175	4395	4695	167	6015	6420	157	80	85	120	840/349
WU-M-481-G-HB-850	<b>560129</b>	neutral white	5000	3130	3400	178	4395	4775	170	6015	6535	160	80	85	120	850/349
WU-M-481-G-HB-865	<b>560130</b>	cool white	6500	3130	3335	174	4395	4685	166	6015	6405	157	80	85	120	865/349
<b>LED Line SMD Kit Gen. 2 – 280 mm – 15 LEDs</b>																
WU-M-501-G-830	<b>560131</b>	warm white	3000	450	495	167	625	695	157	855	945	145	80	85	120	830/349
WU-M-501-G-840	<b>560132</b>	neutral white	4000	465	520	175	655	730	165	890	990	153	80	85	120	840/349
WU-M-501-G-850	<b>560133</b>	neutral white	5000	510	535	180	710	750	169	970	1015	157	80	85	120	850/349
WU-M-501-G-865	<b>560134</b>	cool white	6500	465	525	177	655	735	167	890	1005	154	80	85	120	865/349
WU-M-501-G-HB-830	<b>560139</b>	warm white	3000	855	945	163	1195	1325	154	1630	1800	143	80	85	120	830/349
WU-M-501-G-HB-840	<b>560140</b>	neutral white	4000	930	995	171	1305	1390	162	1775	1895	151	80	85	120	840/349
WU-M-501-G-HB-850	<b>560141</b>	neutral white	5000	930	1010	174	1305	1415	165	1775	1930	153	80	85	120	850/349
WU-M-501-G-HB-865	<b>560142</b>	cool white	6500	930	990	171	1305	1390	161	1775	1890	150	80	85	120	865/349
<b>LED Line SMD Kit Gen. 2 – 560 mm – 30 LEDs</b>																
WU-M-502-G-830	<b>560135</b>	warm white	3000	895	990	167	1255	1390	157	1705	1890	145	80	85	120	830/349
WU-M-502-G-840	<b>560136</b>	neutral white	4000	935	1040	175	1305	1455	165	1775	1980	153	80	85	120	840/349
WU-M-502-G-850	<b>560137</b>	neutral white	5000	1015	1070	180	1420	1495	169	1935	2035	157	80	85	120	850/349
WU-M-502-G-865	<b>560138</b>	cool white	6500	935	1055	177	1305	1475	167	1775	2005	154	80	85	120	865/349
WU-M-502-G-HB-830	<b>560143</b>	warm white	3000	1710	1890	163	2395	2650	154	3255	3605	143	80	85	120	830/349
WU-M-502-G-HB-840	<b>560144</b>	neutral white	4000	1865	1990	171	2610	2785	162	3550	3790	151	80	85	120	840/349
WU-M-502-G-HB-850	<b>560145</b>	neutral white	5000	1865	2025	174	2610	2835	165	3550	3855	153	80	85	120	850/349
WU-M-502-G-HB-865	<b>560146</b>	cool white	6500	1865	1985	171	2610	2780	161	3550	3780	150	80	85	120	865/349

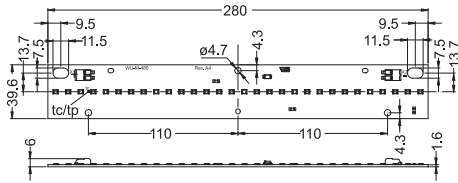
\* Measurement tolerance:  $\pm 7\%$  | CRI > 90 on request

**Minimum order quantity (packaging unit): 50 pcs.**

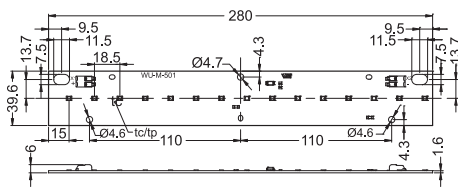
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## LED Line SMD Kit Gen. 2

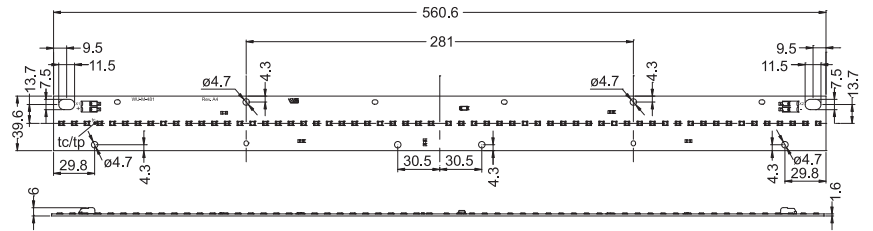
### Mechanical Dimensions SMD Board



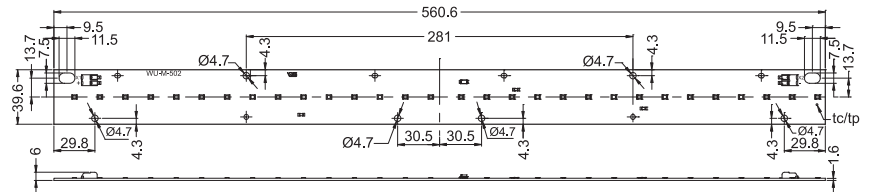
WU-M-480-G



WU-M-501-G



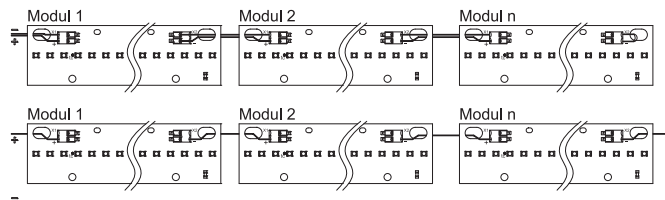
WU-M-481-G



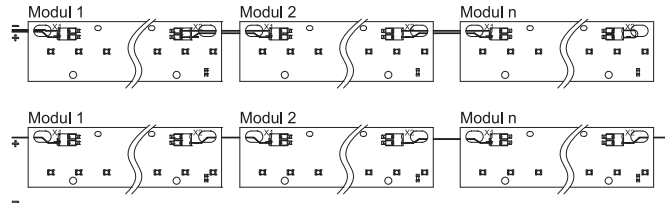
WU-M-502-G

### Connection Examples

- 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 450 V DC.
- Max. diameter of screw head (M4): 8 mm
- The modules are connected in series in both wiring examples.
- Due to different forward voltages and power classes it is not recommended to use WU-M-480/481-G and WU-M-501/502-G in one application.



WU-M-480-G / WU-M-481-G



WU-M-501-G / WU-M-502-G

### Fixing Clip

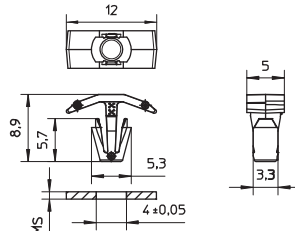
For fastening LED PCBs to luminaire sheets without needing screws

PCB hole dia.: 4.3–4.5 mm

Vibration resistant version

Material: PC, white (UL-94 V2)

Weight: 0.2 g, Packaging unit: 1000 pcs.



Type	Ref. No.	For luminaire sheet thickness (MS) mm
98050	<b>562870</b>	0.5–1.0*

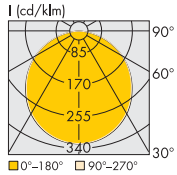
\* PCB thickness: 1.6 mm

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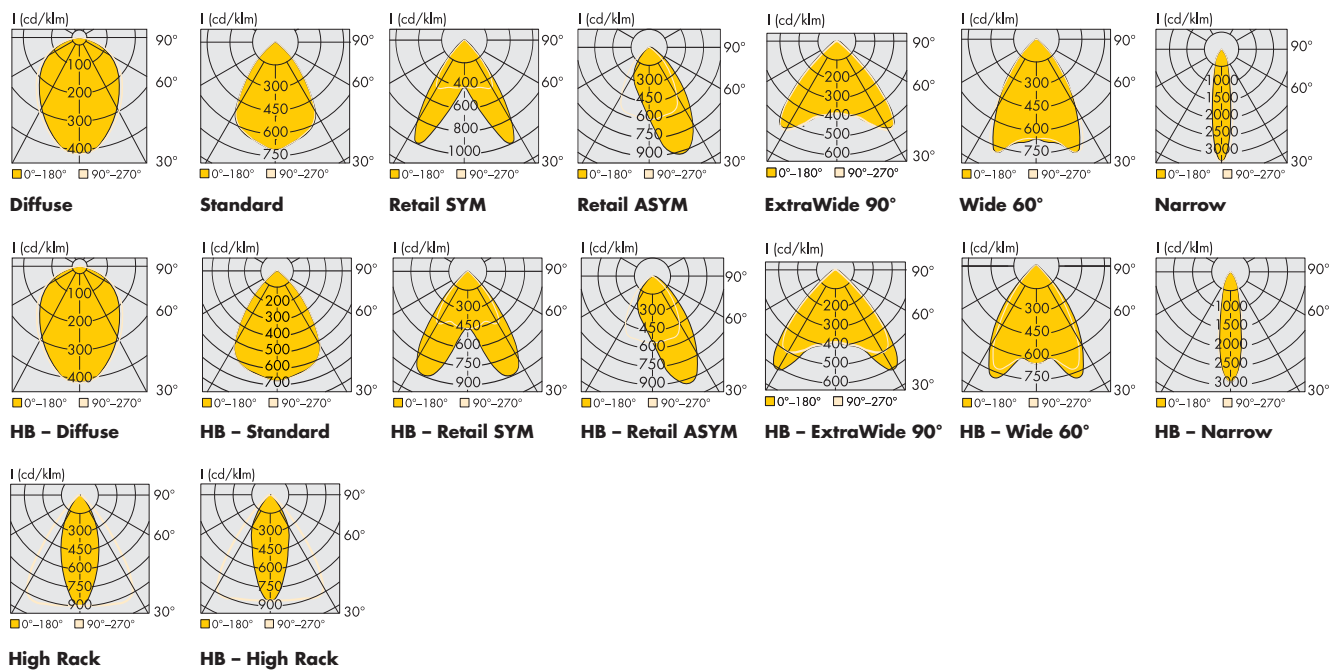
## LED Line SMD Kit Gen. 2

### Typical Light Distribution Curves

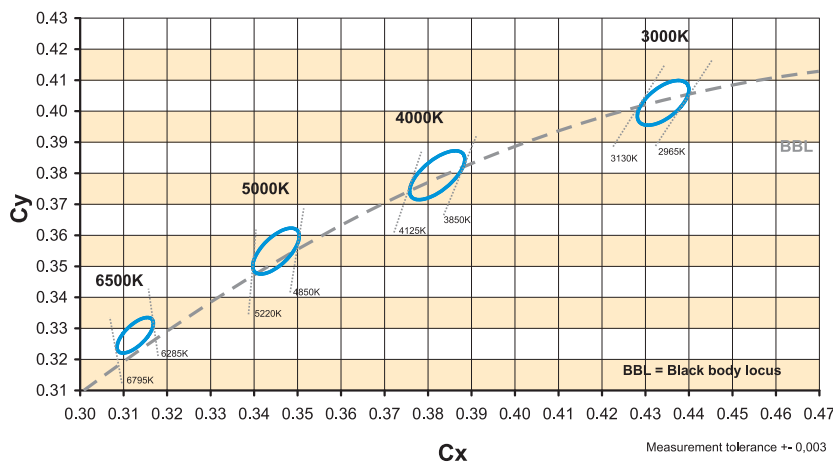
Data are available in .ldt format for download under [www.vossloh-schwabe.com](http://www.vossloh-schwabe.com).



Without optics



### Bins



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## LED Line SMD Kit Gen. 2

### Technical Notes for Optics

Highly efficient of up to 95%

Material: PMMA

Dimensions (LxWxH): 280 or 560x43x9.5 mm

optics can be stringed together,

for modules 280 mm, 560 mm and module chains

Max. allowed temperature: 80 °C

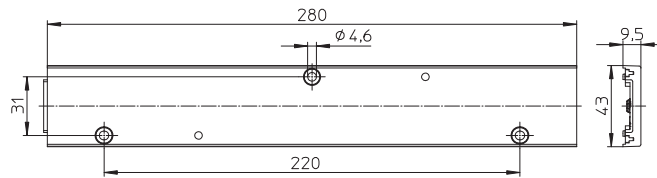
Fixation with flat or cylinder head screws (M4)

or with fixing clip (see below)

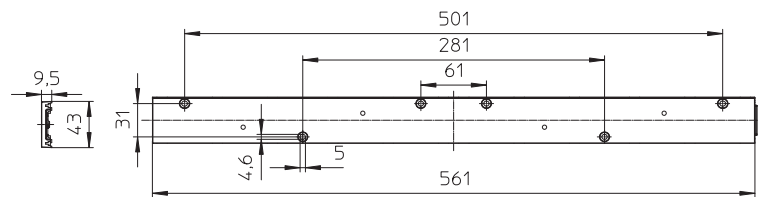
Max. torque: 1.2 Nm (M4)

Packaging unit 280 mm/560 mm: 192/96 pcs.

### Optics length: 280 mm



### Optics length: 560 mm



Light distribution	Optics type	Ref. No.	Efficiency %	Weight g
<b>Optics length: 280 mm</b>				
Standard	98810	<b>555437</b>	95	50
Diffuse	98810	<b>559972</b>	88	50
Extra Wide 90°	98813	<b>560570</b>	95	50
Wide 60°	98816	<b>560573</b>	95	50
Narrow 30°	98814	<b>560571</b>	95	50
Retail SYM	98811	<b>555438</b>	95	50
Retail ASYM	98812	<b>555439</b>	95	50
High Rack	98817	<b>563598</b>	95	50
<b>Optics length: 560 mm</b>				
Standard	98850	<b>562984</b>	95	107
Retail SYM	98851	<b>563524</b>	95	107

### End Cap

Lateral fixation at the optics

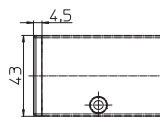
with tongue and groove

Weight: 0.9 g, Packaging unit: 500 pcs.

Type: 98810

**Ref. No.: 555482**

### End Cap



### Fixing Clip

For fastening LED optics of type 988 and LED PCBs

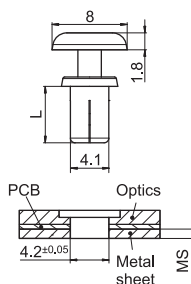
to luminaire sheets without needing screws

Vibration resistant version

Material: PA, natural (UL-94 V-2)

Weight: 0.2 g, Packaging unit: 1000 pcs.

### Fixing Clip



Type	Ref. No.	For luminaire sheet thickness* (MS) mm	Length L mm
98002	<b>562558</b>	0.5–1.3	9
98003	<b>562559</b>	1.4–2.2	10

\* For PCB thickness: 1.5 mm

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## Linear LED Constant Current Drivers

Please visit our homepage for details for suitable  
LED constant current drivers: [www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)

## LED Line SMD Kit Gen. 2

### 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 luminaire 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 in life!!!
- 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 M4 screws. Fixation only with flat or cylinder head screws (M4) /countersank screws  
Max. torque: 1.2 Nm (M4)
- 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 2060).
- Safety regulations acc. to EN 60598 (or further standards) has to be observed if the maximum output voltage exceed the permitted touchable value.
- 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.

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## LED Line SMD Kit Gen. 2

### Assembly and Safety Information

- 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](http://www.vossloh-schwabe.com)
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471  
Rating in accordance with IEC / TR 62778: risk group 1 (except HB, 6500 K, > 500 mA: risk group 2)

### Applied Standards

EN 62031  
LED modules for general lighting – Safety specifications



pending

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](http://www.vossloh-schwabe.com)). We will be happy to send you these conditions upon request.

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