



## **LED Office Solutions**

LED Modules and Drivers for Office Applications

# LED MODULES AND DRIVERS

FOR OFFICE APPLICATIONS



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The values detailed in this brochure can change due to technical innovations; such changes will be made without separate notification.  
Further detailed information can be found at [www.vossloh-schwabe.com](http://www.vossloh-schwabe.com).

## LED LINE SMD L14/28/56 W2

STANDARD AND  
HIGH BRIGHTNESS



## LED LINE SMD L14/28/56 W2 – STANDARD AND HIGH BRIGHTNESS

**WU-M-507/508, WU-M-509/510, WU-M-511/512**

### 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 Line SMD – L14/28/56 W2

- **LONG SERVICE LIFETIME: 50,000 H (L80, B10)**
- **HIGHLY EFFICIENT: UP TO 165 LM/W AT  $T_p = 50^\circ\text{C}$**
- **3 LENGTHS AVAILABLE: 140 / 280 / 560 MM**
- **2 DIFFERENT POWER CLASSES**
- **ZHAGA-COMPLIANT HOLE DISTANCES**

## LED Line SMD L14/28/56 W2

### Technical Notes

- LED built-in module for integration into luminaires
- Dimensions  
WU-M-507/508: 140x20 mm  
WU-M-509/510: 280x20 mm  
WU-M-511/512: 560x20 mm
- Driving current: 350 mA / 500 mA / 700 mA
- On-board push-in connector (WAGO 2060)



### Electrical Characteristics

at  $t_p = 50^\circ\text{C}$

| Type                | No. of SMDs | Voltage DC (V) |      |      |        |      |      |        |      |      | Temperature coefficient<br>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. |
| LED Line SMD L14 W2 |             |                |      |      |        |      |      |        |      |      |                                 |                       |      |      |        |      |      |        |      |      |
| WU-M-507            | 5           | 2.4            | 2.9  | 3.3  | 2.5    | 3.0  | 3.4  | 2.6    | 3.1  | 3.5  | -2,5                            | 0.8                   | 1.0  | 1.1  | 1.2    | 1.5  | 1.7  | 1.8    | 2.2  | 2.4  |
| WU-M-507-HB*        | 5           | 5.0            | 5.7  | 6.4  | 5.2    | 5.9  | 6.6  | 5.4    | 6.1  | 6.8  | -5                              | 1.7                   | 2.0  | 2.2  | 2.6    | 2.9  | 3.3  | 3.8    | 4.3  | 4.8  |
| WU-M-508            | 10          | 4.7            | 5.7  | 6.5  | 4.9    | 5.9  | 6.7  | 5.2    | 6.2  | 7.0  | -5                              | 1.7                   | 2.0  | 2.3  | 2.5    | 3.0  | 3.4  | 3.6    | 4.3  | 4.9  |
| WU-M-508-HB*        | 10          | 10.0           | 11.4 | 12.8 | 10.4   | 11.8 | 13.2 | 10.8   | 12.2 | 13.6 | -10                             | 3.5                   | 4.0  | 4.5  | 5.2    | 5.9  | 6.6  | 7.6    | 8.5  | 9.5  |
| LED Line SMD L28 W2 |             |                |      |      |        |      |      |        |      |      |                                 |                       |      |      |        |      |      |        |      |      |
| WU-M-509            | 10          | 4.7            | 5.7  | 6.5  | 4.9    | 5.9  | 6.7  | 5.2    | 6.2  | 7.0  | -5                              | 1.7                   | 2.0  | 2.3  | 2.5    | 3.0  | 3.4  | 3.6    | 4.3  | 4.9  |
| WU-M-509-HB*        | 10          | 10.0           | 11.4 | 12.8 | 10.4   | 11.8 | 13.2 | 10.8   | 12.2 | 13.6 | -10                             | 3.5                   | 4.0  | 4.5  | 5.2    | 5.9  | 6.6  | 7.6    | 8.5  | 9.5  |
| WU-M-510            | 20          | 9.4            | 11.4 | 13.0 | 9.9    | 11.9 | 13.5 | 10.4   | 12.4 | 14.0 | -10                             | 3.3                   | 4.0  | 4.6  | 4.9    | 5.9  | 6.7  | 7.3    | 8.7  | 9.8  |
| WU-M-510-HB*        | 20          | 20.0           | 22.8 | 25.6 | 20.8   | 23.6 | 26.4 | 21.6   | 24.4 | 27.2 | -20                             | 7.0                   | 8.0  | 8.9  | 10.4   | 11.8 | 13.2 | 15.1   | 17.1 | 19.0 |
| LED Line SMD L56 W2 |             |                |      |      |        |      |      |        |      |      |                                 |                       |      |      |        |      |      |        |      |      |
| WU-M-511            | 20          | 9.4            | 11.4 | 13.0 | 9.9    | 11.9 | 13.5 | 10.4   | 12.4 | 14.0 | -10                             | 3.3                   | 4.0  | 4.6  | 4.9    | 5.9  | 6.7  | 7.3    | 8.7  | 9.8  |
| WU-M-511-HB*        | 20          | 20.0           | 22.8 | 25.6 | 20.8   | 23.6 | 26.4 | 21.6   | 24.4 | 27.2 | -20                             | 7.0                   | 8.0  | 8.9  | 10.4   | 11.8 | 13.2 | 15.1   | 17.1 | 19.0 |
| WU-M-512            | 40          | 18.9           | 22.9 | 26.1 | 19.8   | 23.8 | 27.0 | 20.8   | 24.8 | 28.0 | -20                             | 6.6                   | 8.0  | 9.1  | 9.9    | 11.9 | 13.5 | 14.5   | 17.3 | 19.6 |
| WU-M-512-HB*        | 40          | 39.9           | 45.5 | 51.1 | 41.5   | 47.1 | 52.7 | 43.2   | 48.8 | 54.4 | -40                             | 14.0                  | 15.9 | 17.9 | 20.8   | 23.6 | 26.4 | 30.2   | 34.2 | 38.1 |

### Use of external LED constant current driver with required.

\* Products under development; preliminary technical datas

### 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 |
|-----------|------------------------|--------------------------------------------|-----------------------|---------------------------|-----------------------|-----------------------------------------|
|           |                        | $^\circ\text{C min.}$                      | $^\circ\text{C max.}$ | $^\circ\text{C min.}$     | $^\circ\text{C max.}$ |                                         |
| All types | 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

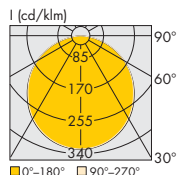
|                       | 350 mA              |                     |                     | 500 mA              |                     |                     | 700 mA              |                     |                     |
|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                       | 40 $^\circ\text{C}$ | 50 $^\circ\text{C}$ | 75 $^\circ\text{C}$ | 40 $^\circ\text{C}$ | 50 $^\circ\text{C}$ | 75 $^\circ\text{C}$ | 40 $^\circ\text{C}$ | 50 $^\circ\text{C}$ | 75 $^\circ\text{C}$ |
| WU-M-507 to 512       | > 60,000            | > 60,000            | 53,000              | > 60,000            | > 60,000            | 45,000              | > 60,000            | > 60,000            | 37,000              |
| WU-M-507 to 512 - HB* | > 60,000            | > 60,000            | 29,000              | > 60,000            | > 60,000            | 22,000              | 58,000              | 37,000              | 17,000              |

\* Products under development; preliminary technical datas

## LED Line SMD – L14/28/56 W2

### Typical Light Distribution Curves

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



### Optical Characteristics

at  $t_p = 50^\circ\text{C}$

| 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.                                         | typ. | typ. lm/W | min.   | typ. | typ. lm/W | min.   | typ. | typ. lm/W | min.           | typ. |              |                   |
| LED Line SMD L14 W2 |          |               |                                 |                                              |      |           |        |      |           |        |      |           |                |      |              |                   |
| WU-M-507-830        | 557992   | warm white    | 3000                            | 130                                          | 145  | 145       | 180    | 200  | 133       | 245    | 270  | 123       | 80             | 85   | 120          | 830/349           |
| WU-M-507-840        | 557993   | neutral white | 4000                            | 130                                          | 155  | 155       | 180    | 215  | 143       | 245    | 295  | 134       | 80             | 85   | 120          | 840/349           |
| WU-M-507-850        | 559199   | neutral white | 5000                            | 130                                          | 165  | 165       | 180    | 230  | 153       | 245    | 310  | 141       | 80             | 85   | 120          | 850/349           |
| WU-M-507-865        | 559200   | cool white    | 6500                            | 130                                          | 165  | 165       | 180    | 230  | 153       | 245    | 310  | 141       | 80             | 85   | 120          | 865/349           |
| WU-M-507-HB-830**   | 559201   | warm white    | 3000                            | 250                                          | 275  | 138       | 345    | 385  | 133       | 465    | 515  | 120       | 80             | 85   | 120          | 830/349           |
| WU-M-507-HB-840**   | 559202   | neutral white | 4000                            | 250                                          | 295  | 148       | 345    | 415  | 143       | 465    | 555  | 129       | 80             | 85   | 120          | 840/349           |
| WU-M-507-HB-850**   | 559203   | neutral white | 5000                            | 250                                          | 310  | 155       | 345    | 435  | 150       | 465    | 585  | 136       | 80             | 85   | 120          | 850/349           |
| WU-M-507-HB-865**   | 566051   | cool white    | 6500                            | 250                                          | 310  | 155       | 345    | 435  | 150       | 465    | 585  | 136       | 80             | 85   | 120          | 865/349           |
| WU-M-508-830        | 557994   | warm white    | 3000                            | 265                                          | 290  | 145       | 365    | 400  | 133       | 495    | 540  | 126       | 80             | 85   | 120          | 830/349           |
| WU-M-508-840        | 557995   | neutral white | 4000                            | 265                                          | 315  | 158       | 365    | 435  | 145       | 495    | 590  | 137       | 80             | 85   | 120          | 840/349           |
| WU-M-508-850        | 566052   | neutral white | 5000                            | 265                                          | 330  | 165       | 365    | 455  | 152       | 495    | 620  | 144       | 80             | 85   | 120          | 850/349           |
| WU-M-508-865        | 566053   | cool white    | 6500                            | 265                                          | 330  | 165       | 365    | 455  | 152       | 495    | 620  | 144       | 80             | 85   | 120          | 865/349           |
| WU-M-508-HB-830**   | 558825   | warm white    | 3000                            | 495                                          | 550  | 138       | 695    | 770  | 131       | 930    | 1030 | 121       | 80             | 85   | 120          | 830/349           |
| WU-M-508-HB-840**   | 566054   | neutral white | 4000                            | 495                                          | 590  | 148       | 695    | 830  | 141       | 930    | 1110 | 131       | 80             | 85   | 120          | 840/349           |
| WU-M-508-HB-850**   | 566055   | neutral white | 5000                            | 495                                          | 620  | 155       | 695    | 870  | 147       | 930    | 1165 | 137       | 80             | 85   | 120          | 850/349           |
| WU-M-508-HB-865**   | 566056   | cool white    | 6500                            | 495                                          | 620  | 155       | 695    | 870  | 147       | 930    | 1165 | 137       | 80             | 85   | 120          | 865/349           |
| LEDLine SMD L28 W2  |          |               |                                 |                                              |      |           |        |      |           |        |      |           |                |      |              |                   |
| WU-M-509-830        | 557996   | warm white    | 3000                            | 265                                          | 290  | 145       | 365    | 400  | 133       | 495    | 540  | 126       | 80             | 85   | 120          | 830/349           |
| WU-M-509-840        | 557997   | neutral white | 4000                            | 265                                          | 315  | 158       | 365    | 435  | 145       | 495    | 590  | 137       | 80             | 85   | 120          | 840/349           |
| WU-M-509-850        | 566057   | neutral white | 5000                            | 265                                          | 330  | 165       | 365    | 455  | 152       | 495    | 620  | 144       | 80             | 85   | 120          | 850/349           |
| WU-M-509-865        | 566058   | cool white    | 6500                            | 265                                          | 330  | 165       | 365    | 455  | 152       | 495    | 620  | 144       | 80             | 85   | 120          | 865/349           |
| WU-M-509-HB-830**   | 566059   | warm white    | 3000                            | 495                                          | 550  | 138       | 695    | 770  | 131       | 930    | 1030 | 121       | 80             | 85   | 120          | 830/349           |
| WU-M-509-HB-840**   | 566060   | neutral white | 4000                            | 495                                          | 590  | 148       | 695    | 830  | 141       | 930    | 1110 | 131       | 80             | 85   | 120          | 840/349           |
| WU-M-509-HB-850**   | 566061   | neutral white | 5000                            | 495                                          | 620  | 155       | 695    | 870  | 147       | 930    | 1165 | 137       | 80             | 85   | 120          | 850/349           |
| WU-M-509-HB-865**   | 566062   | cool white    | 6500                            | 495                                          | 620  | 155       | 695    | 870  | 147       | 930    | 1165 | 137       | 80             | 85   | 120          | 865/349           |
| WU-M-510-830        | 557998   | warm white    | 3000                            | 525                                          | 580  | 145       | 725    | 800  | 136       | 985    | 1080 | 124       | 80             | 85   | 120          | 830/349           |
| WU-M-510-840        | 557999   | neutral white | 4000                            | 525                                          | 630  | 158       | 725    | 870  | 147       | 985    | 1180 | 136       | 80             | 85   | 120          | 840/349           |
| WU-M-510-850        | 566063   | neutral white | 5000                            | 525                                          | 660  | 165       | 725    | 910  | 154       | 985    | 1235 | 142       | 80             | 85   | 120          | 850/349           |
| WU-M-510-865        | 566064   | cool white    | 6500                            | 525                                          | 660  | 165       | 725    | 910  | 154       | 985    | 1235 | 142       | 80             | 85   | 120          | 865/349           |
| WU-M-510-HB-830**   | 558826   | warm white    | 3000                            | 990                                          | 1095 | 137       | 1385   | 1535 | 130       | 1860   | 2060 | 120       | 80             | 85   | 120          | 830/349           |
| WU-M-510-HB-840**   | 566065   | neutral white | 4000                            | 990                                          | 1185 | 148       | 1385   | 1660 | 141       | 1860   | 2225 | 130       | 80             | 85   | 120          | 840/349           |
| WU-M-510-HB-850**   | 566066   | neutral white | 5000                            | 990                                          | 1245 | 156       | 1385   | 1740 | 147       | 1860   | 2335 | 137       | 80             | 85   | 120          | 850/349           |
| WU-M-510-HB-865**   | 566067   | cool white    | 6500                            | 990                                          | 1245 | 156       | 1385   | 1740 | 147       | 1860   | 2335 | 137       | 80             | 85   | 120          | 865/349           |

\* Measurement tolerance of luminous flux:  $\pm 7\%$  | \*\* Products under development; preliminary technical datas

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

## LED Line SMD – L14/28/56 W2

### Optical Characteristics

at  $T_p = 50^\circ\text{C}$

| Type | Ref. No. | Colour | Correlated colour temperature*<br>K | Luminous flux* (lm) and efficiency (lm/W) at |      |              |        |      |              |        |      |              | CRI            |      | Beam angle*<br>° | Photo-metric code |
|------|----------|--------|-------------------------------------|----------------------------------------------|------|--------------|--------|------|--------------|--------|------|--------------|----------------|------|------------------|-------------------|
|      |          |        |                                     | 350 mA                                       |      |              | 500 mA |      |              | 700 mA |      |              | R <sub>a</sub> |      |                  |                   |
|      |          |        |                                     | min.                                         | typ. | typ.<br>lm/W | min.   | typ. | typ.<br>lm/W | min.   | typ. | typ.<br>lm/W | min.           | typ. |                  |                   |

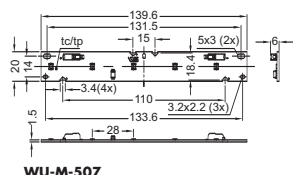
### LEDLine SMD L56 W2

|                   |               |               |      |      |      |     |      |      |     |      |      |     |    |    |     |         |
|-------------------|---------------|---------------|------|------|------|-----|------|------|-----|------|------|-----|----|----|-----|---------|
| WU-M-511-830      | <b>558000</b> | warm white    | 3000 | 525  | 580  | 145 | 725  | 800  | 136 | 985  | 1080 | 124 | 80 | 85 | 120 | 830/349 |
| WU-M-511-840      | <b>558001</b> | neutral white | 4000 | 525  | 630  | 158 | 725  | 870  | 147 | 985  | 1180 | 136 | 80 | 85 | 120 | 840/349 |
| WU-M-511-850      | <b>559220</b> | neutral white | 5000 | 525  | 660  | 165 | 725  | 910  | 154 | 985  | 1235 | 142 | 80 | 85 | 120 | 850/349 |
| WU-M-511-865      | <b>559221</b> | cool white    | 6500 | 525  | 660  | 165 | 725  | 910  | 154 | 985  | 1235 | 142 | 80 | 85 | 120 | 865/349 |
| WU-M-511-HB-830** | <b>559222</b> | warm white    | 3000 | 990  | 1095 | 137 | 1385 | 1535 | 130 | 1860 | 2060 | 120 | 80 | 85 | 120 | 830/349 |
| WU-M-511-HB-840** | <b>559223</b> | neutral white | 4000 | 990  | 1185 | 148 | 1385 | 1660 | 141 | 1860 | 2225 | 130 | 80 | 85 | 120 | 840/349 |
| WU-M-511-HB-850** | <b>559224</b> | neutral white | 5000 | 990  | 1245 | 156 | 1385 | 1740 | 147 | 1860 | 2335 | 137 | 80 | 85 | 120 | 850/349 |
| WU-M-511-HB-865** | <b>559225</b> | cool white    | 6500 | 990  | 1245 | 156 | 1385 | 1740 | 147 | 1860 | 2335 | 137 | 80 | 85 | 120 | 865/349 |
| WU-M-512-830      | <b>558002</b> | warm white    | 3000 | 1050 | 1155 | 144 | 1455 | 1595 | 134 | 1970 | 2165 | 125 | 80 | 85 | 120 | 830/349 |
| WU-M-512-840      | <b>558003</b> | neutral white | 4000 | 1050 | 1260 | 158 | 1455 | 1740 | 146 | 1970 | 2355 | 136 | 80 | 85 | 120 | 840/349 |
| WU-M-512-850      | <b>559226</b> | neutral white | 5000 | 1050 | 1320 | 165 | 1455 | 1825 | 153 | 1970 | 2475 | 143 | 80 | 85 | 120 | 850/349 |
| WU-M-512-865      | <b>559227</b> | cool white    | 6500 | 1050 | 1320 | 165 | 1455 | 1825 | 153 | 1970 | 2475 | 143 | 80 | 85 | 120 | 865/349 |
| WU-M-512-HB-830** | <b>558827</b> | warm white    | 3000 | 1980 | 2195 | 138 | 2775 | 3070 | 130 | 3720 | 4120 | 120 | 80 | 85 | 120 | 830/349 |
| WU-M-512-HB-840** | <b>559229</b> | neutral white | 4000 | 1980 | 2370 | 149 | 2775 | 3315 | 140 | 3720 | 4450 | 130 | 80 | 85 | 120 | 840/349 |
| WU-M-512-HB-850** | <b>559232</b> | neutral white | 5000 | 1980 | 2485 | 156 | 2775 | 3480 | 147 | 3720 | 4670 | 137 | 80 | 85 | 120 | 850/349 |
| WU-M-512-HB-865** | <b>559234</b> | cool white    | 6500 | 1980 | 2485 | 156 | 2775 | 3480 | 147 | 3720 | 4670 | 137 | 80 | 85 | 120 | 865/349 |

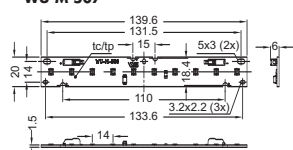
\* Measurement tolerance of luminous flux:  $\pm 7\%$  | \*\* Products under development; preliminary technical datas

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

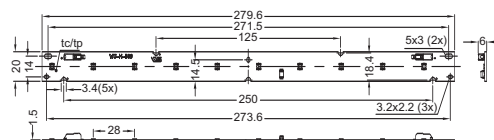
### Mechanical Dimensions



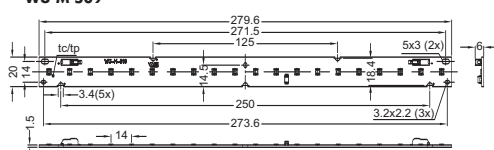
WU-M-507



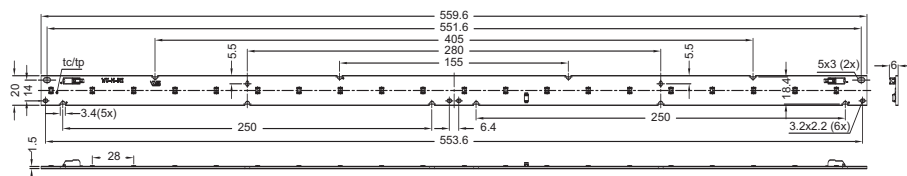
WU-M-508



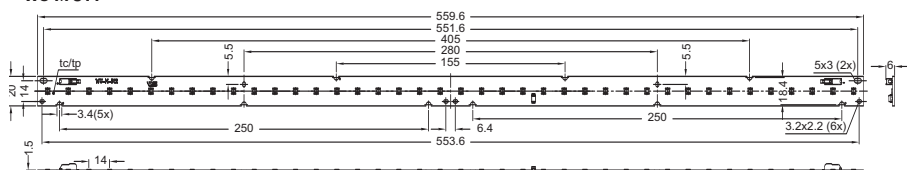
WU-M-509



WU-M-510



WU-M-511

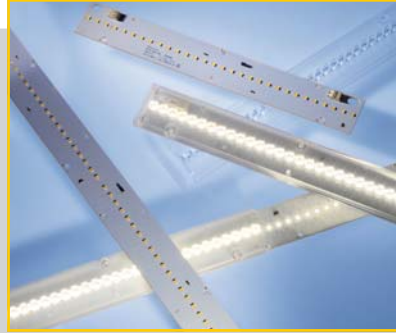


WU-M-512

## LED LINE SMD KIT

WU-M-480/-481

WU-M-501/-502



## LED LINE SMD KIT

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

### 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

- **LONG SERVICE LIFETIME: 50,000 H (L80, B10)**
- **HIGHLY EFFICIENT: UP TO 174 LM/W AT  $T_P = 50^\circ\text{C}$**
- **TWO POWER CLASSES**
- **2 LENGTHS AVAILABLE: 280 / 560 MM**
- **FLEXIBLE LIGHT DISTRIBUTION BY DIFFERENT OPTICS**
- **ZHAGA-COMPLIANT HOLE DISTANCE**

## LED Line SMD Kit

### Technical Notes

- LED built-in module for integration into luminaires
- Dimensions  
WU-M-480/501: 279.6x39.6 mm  
WU-M-481/502: 560.6x39.6 mm
- Driving current: 350 mA / 500 mA / 700 mA
- On-board push-in connector
- Colour tolerance: 2-step MacAdam  
(in one production batch, see "Bins")



### Electrical Characteristics

at  $t_p = 50^\circ\text{C}$

| Type        | No. of LEDs | Voltage DC (V) |      |      |        |      |      |        |      |      | Temperature coefficient<br>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    | 30          | 11.6           | 14.1 | 16.1 | 12     | 14.5 | 16.5 | 12.8   | 15.3 | 17.3 | -12.5                           | 4.1                   | 4.9  | 5.6  | 6      | 7.3  | 8.3  | 8.9    | 10.7 | 12.1 |
| WU-M-481    | 60          | 23.2           | 28.2 | 32.2 | 24     | 29   | 33   | 25.5   | 30.5 | 34.5 | -25                             | 8.1                   | 9.9  | 11.3 | 12     | 14.5 | 16.5 | 17.9   | 21.4 | 24.2 |
| WU-M-480-HB | 30          | 24.9           | 28.4 | 31.9 | 25.9   | 29.4 | 32.9 | 26.9   | 30.4 | 33.9 | -25                             | 8.7                   | 9.9  | 11.1 | 12.9   | 14.7 | 16.4 | 18.8   | 21.2 | 23.7 |
| WU-M-481-HB | 60          | 49.7           | 56.7 | 63.7 | 51.7   | 58.7 | 65.7 | 53.7   | 60.7 | 67.7 | -50                             | 17.4                  | 19.8 | 22.3 | 25.9   | 29.4 | 32.9 | 37.6   | 42.5 | 47.4 |
| WU-M-501    | 15          | 7.1            | 8.6  | 9.8  | 7.5    | 9    | 10.2 | 7.8    | 9.3  | 10.5 | -7.5                            | 2.5                   | 3    | 3.4  | 3.7    | 4.5  | 5.1  | 5.5    | 6.5  | 7.3  |
| WU-M-502    | 30          | 14.2           | 17.2 | 19.6 | 15     | 18   | 20.4 | 15.6   | 18.6 | 21   | -15                             | 5                     | 6    | 6.8  | 7.5    | 9    | 10.2 | 10.9   | 13   | 14.7 |
| WU-M-501-HB | 15          | 15.2           | 17.3 | 19.4 | 15.8   | 17.9 | 20   | 16.6   | 18.7 | 20.8 | -15                             | 5.3                   | 6    | 6.8  | 7.9    | 9    | 10   | 11.6   | 13.1 | 14.5 |
| WU-M-502-HB | 30          | 30.3           | 34.5 | 38.7 | 31.7   | 35.9 | 40.1 | 33.1   | 37.3 | 41.5 | -30                             | 10.6                  | 12.1 | 13.5 | 15.8   | 17.9 | 20   | 23.2   | 26.1 | 29.1 |

Use of external LED constant current driver with 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 |
|-----------------------|------------------------|--------------------------------------------|-----------------------|---------------------------|-----------------------|-----------------------------------------|
|                       |                        | $^\circ\text{C min.}$                      | $^\circ\text{C max.}$ | $^\circ\text{C min.}$     | $^\circ\text{C max.}$ |                                         |
| WU-M-480/<br>WU-M-481 | 350                    | -20                                        | +75                   | -20                       | +85                   | 1270                                    |
|                       | 500                    | -20                                        | +75                   | -20                       | +85                   | 1200                                    |
|                       | 700                    | -20                                        | +75                   | -20                       | +85                   | 1110                                    |
| WU-M-501/<br>WU-M-502 | 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 $^\circ\text{C}$ | 50 $^\circ\text{C}$ | 75 $^\circ\text{C}$ | 40 $^\circ\text{C}$ | 50 $^\circ\text{C}$ | 75 $^\circ\text{C}$ | 40 $^\circ\text{C}$ | 50 $^\circ\text{C}$ | 75 $^\circ\text{C}$ |
| WU-M-480/481      | > 60,000            | > 60,000            | > 60,000            | > 60,000            | > 60,000            | 58,000              | > 60,000            | > 60,000            | 48,000              |
| WU-M-480/481-HB   | > 60,000            | > 60,000            | 38,000              | > 60,000            | > 60,000            | 33,000              | > 60,000            | > 60,000            | 25,000              |
| WU-M-501/502      | > 60,000            | > 60,000            | > 60,000            | > 60,000            | > 60,000            | 55,000              | > 60,000            | > 60,000            | 45,000              |
| WU-M-501/502 - HB | > 60,000            | > 60,000            | 36,000              | > 60,000            | > 60,000            | 30,000              | > 60,000            | 59,000              | 22,000              |

## LED Line SMD Kit

### Optical Characteristics

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

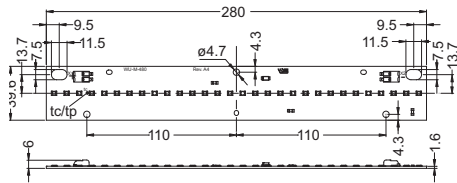
| Type                                | Ref. No. | Colour        | Correlated colour temperature K | Luminous flux* (lm) and efficiency (lm/W) at 350 mA |      |           |      |      |           |      |      |           | 500 mA |      |           | 700 mA  |      |  | CRI |  | Beam angle* ° | Photo-metric code |
|-------------------------------------|----------|---------------|---------------------------------|-----------------------------------------------------|------|-----------|------|------|-----------|------|------|-----------|--------|------|-----------|---------|------|--|-----|--|---------------|-------------------|
|                                     |          |               |                                 | min.                                                | typ. | typ. lm/W | min. | typ. | typ. lm/W | min. | typ. | typ. lm/W | min.   | typ. | typ. lm/W | min.    | typ. |  |     |  |               |                   |
| LED Line SMD Kit – 280 mm – 30 LEDs |          |               |                                 |                                                     |      |           |      |      |           |      |      |           |        |      |           |         |      |  |     |  |               |                   |
| WU-M-480-830                        | 555314   | warm white    | 3000                            | 680                                                 | 745  | 152       | 925  | 1015 | 139       | 1250 | 1375 | 129       | 80     | 85   | 120       | 830/349 |      |  |     |  |               |                   |
| WU-M-480-840                        | 555315   | neutral white | 4000                            | 680                                                 | 815  | 166       | 925  | 1105 | 151       | 1250 | 1495 | 140       | 80     | 85   | 120       | 840/349 |      |  |     |  |               |                   |
| WU-M-480-850                        | 555316   | neutral white | 5000                            | 680                                                 | 855  | 174       | 925  | 1160 | 159       | 1250 | 1570 | 147       | 80     | 85   | 120       | 850/349 |      |  |     |  |               |                   |
| WU-M-480-865                        | 555317   | cool white    | 6500                            | 680                                                 | 855  | 174       | 925  | 1160 | 159       | 1250 | 1570 | 147       | 80     | 85   | 120       | 865/349 |      |  |     |  |               |                   |
| WU-M-480-HB-830                     | 557723   | warm white    | 3000                            | 1220                                                | 1350 | 136       | 1755 | 1940 | 132       | 2320 | 2570 | 121       | 80     | 85   | 120       | 830/349 |      |  |     |  |               |                   |
| WU-M-480-HB-840                     | 557724   | neutral white | 4000                            | 1220                                                | 1455 | 147       | 1755 | 2095 | 143       | 2320 | 2770 | 131       | 80     | 85   | 120       | 840/349 |      |  |     |  |               |                   |
| WU-M-480-HB-850                     | 559069   | neutral white | 5000                            | 1220                                                | 1530 | 155       | 1755 | 2200 | 150       | 2320 | 2910 | 137       | 80     | 85   | 120       | 850/349 |      |  |     |  |               |                   |
| WU-M-480-HB-865                     | 559070   | cool white    | 6500                            | 1220                                                | 1530 | 155       | 1755 | 2200 | 150       | 2320 | 2910 | 137       | 80     | 85   | 120       | 865/349 |      |  |     |  |               |                   |
| LED Line SMD Kit – 560 mm – 60 LEDs |          |               |                                 |                                                     |      |           |      |      |           |      |      |           |        |      |           |         |      |  |     |  |               |                   |
| WU-M-481-830                        | 555318   | warm white    | 3000                            | 1360                                                | 1495 | 151       | 1850 | 2030 | 140       | 2500 | 2745 | 128       | 80     | 85   | 120       | 830/349 |      |  |     |  |               |                   |
| WU-M-481-840                        | 555319   | neutral white | 4000                            | 1360                                                | 1630 | 165       | 1850 | 2210 | 152       | 2500 | 2990 | 140       | 80     | 85   | 120       | 840/349 |      |  |     |  |               |                   |
| WU-M-481-850                        | 555320   | neutral white | 5000                            | 1360                                                | 1710 | 173       | 1850 | 2320 | 160       | 2500 | 3140 | 147       | 80     | 85   | 120       | 850/349 |      |  |     |  |               |                   |
| WU-M-481-865                        | 555321   | cool white    | 6500                            | 1360                                                | 1710 | 173       | 1850 | 2320 | 160       | 2500 | 3140 | 147       | 80     | 85   | 120       | 865/349 |      |  |     |  |               |                   |
| WU-M-481-HB-830                     | 557725   | warm white    | 3000                            | 2435                                                | 2700 | 136       | 3505 | 3885 | 132       | 4635 | 5135 | 121       | 80     | 85   | 120       | 830/349 |      |  |     |  |               |                   |
| WU-M-481-HB-840                     | 557726   | neutral white | 4000                            | 2435                                                | 2915 | 147       | 3505 | 4195 | 143       | 4635 | 5545 | 130       | 80     | 85   | 120       | 840/349 |      |  |     |  |               |                   |
| WU-M-481-HB-850                     | 559071   | neutral white | 5000                            | 2435                                                | 3055 | 154       | 3505 | 4400 | 150       | 4635 | 5815 | 137       | 80     | 85   | 120       | 850/349 |      |  |     |  |               |                   |
| WU-M-481-HB-865                     | 559072   | cool white    | 6500                            | 2435                                                | 3055 | 154       | 3505 | 4400 | 150       | 4635 | 5815 | 137       | 80     | 85   | 120       | 865/349 |      |  |     |  |               |                   |
| LED Line SMD Kit – 280 mm – 15 LEDs |          |               |                                 |                                                     |      |           |      |      |           |      |      |           |        |      |           |         |      |  |     |  |               |                   |
| WU-M-501-830                        | 557727   | warm white    | 3000                            | 395                                                 | 435  | 145       | 545  | 600  | 135       | 740  | 810  | 125       | 80     | 85   | 120       | 830/349 |      |  |     |  |               |                   |
| WU-M-501-840                        | 557728   | neutral white | 4000                            | 395                                                 | 470  | 157       | 545  | 650  | 145       | 740  | 885  | 136       | 80     | 85   | 120       | 840/349 |      |  |     |  |               |                   |
| WU-M-501-850                        | 557729   | neutral white | 5000                            | 395                                                 | 495  | 165       | 545  | 685  | 150       | 740  | 930  | 143       | 80     | 85   | 120       | 850/349 |      |  |     |  |               |                   |
| WU-M-501-865                        | 557730   | cool white    | 6500                            | 395                                                 | 495  | 165       | 545  | 685  | 150       | 740  | 930  | 143       | 80     | 85   | 120       | 865/349 |      |  |     |  |               |                   |
| WU-M-501-HB-830                     | 557731   | warm white    | 3000                            | 745                                                 | 825  | 138       | 1040 | 1150 | 128       | 1395 | 1545 | 118       | 80     | 85   | 120       | 830/349 |      |  |     |  |               |                   |
| WU-M-501-HB-840                     | 557732   | neutral white | 4000                            | 745                                                 | 890  | 148       | 1040 | 1245 | 138       | 1395 | 1670 | 127       | 80     | 85   | 120       | 840/349 |      |  |     |  |               |                   |
| WU-M-501-HB-850                     | 559261   | neutral white | 5000                            | 745                                                 | 930  | 155       | 1040 | 1305 | 145       | 1395 | 1750 | 134       | 80     | 85   | 120       | 850/349 |      |  |     |  |               |                   |
| WU-M-501-HB-865                     | 559262   | cool white    | 6500                            | 745                                                 | 930  | 155       | 1040 | 1305 | 145       | 1395 | 1750 | 134       | 80     | 85   | 120       | 865/349 |      |  |     |  |               |                   |
| LED Line SMD Kit – 560 mm – 30 LEDs |          |               |                                 |                                                     |      |           |      |      |           |      |      |           |        |      |           |         |      |  |     |  |               |                   |
| WU-M-502-830                        | 557733   | warm white    | 3000                            | 790                                                 | 865  | 144       | 1090 | 1195 | 135       | 1480 | 1625 | 125       | 80     | 85   | 120       | 830/349 |      |  |     |  |               |                   |
| WU-M-502-840                        | 557734   | neutral white | 4000                            | 790                                                 | 945  | 158       | 1090 | 1305 | 145       | 1480 | 1770 | 136       | 80     | 85   | 120       | 840/349 |      |  |     |  |               |                   |
| WU-M-502-850                        | 557735   | neutral white | 5000                            | 790                                                 | 990  | 165       | 1090 | 1365 | 150       | 1480 | 1855 | 143       | 80     | 85   | 120       | 850/349 |      |  |     |  |               |                   |
| WU-M-502-865                        | 557736   | cool white    | 6500                            | 790                                                 | 990  | 165       | 1090 | 1365 | 150       | 1480 | 1855 | 143       | 80     | 85   | 120       | 865/349 |      |  |     |  |               |                   |
| WU-M-502-HB-830                     | 557737   | warm white    | 3000                            | 1485                                                | 1645 | 136       | 2080 | 2305 | 129       | 2795 | 3095 | 119       | 80     | 85   | 120       | 830/349 |      |  |     |  |               |                   |
| WU-M-502-HB-840                     | 557738   | neutral white | 4000                            | 1485                                                | 1775 | 147       | 2080 | 2490 | 139       | 2795 | 3340 | 128       | 80     | 85   | 120       | 840/349 |      |  |     |  |               |                   |
| WU-M-502-HB-850                     | 559263   | neutral white | 5000                            | 1485                                                | 1865 | 154       | 2080 | 2610 | 146       | 2795 | 3505 | 134       | 80     | 85   | 120       | 850/349 |      |  |     |  |               |                   |
| WU-M-502-HB-865                     | 559264   | cool white    | 6500                            | 1485                                                | 1865 | 154       | 2080 | 2610 | 146       | 2795 | 3505 | 134       | 80     | 85   | 120       | 865/349 |      |  |     |  |               |                   |

\* Measurement tolerance:  $\pm 7\%$  | 2000 K and 2400 K on request

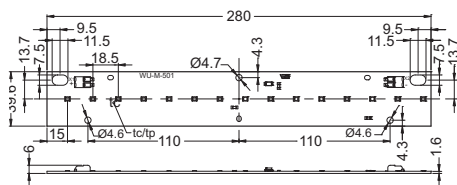
**Minimum order quantity (packing unit): 50 pcs.**

## LED Line SMD Kit

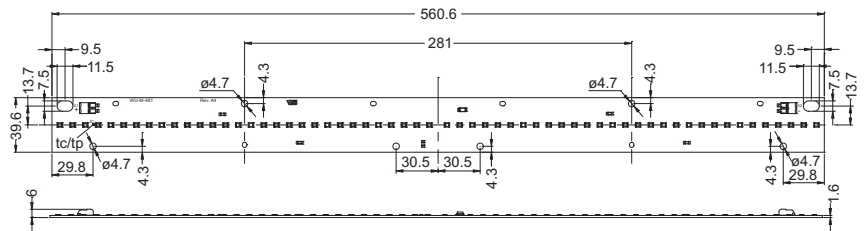
### Mechanical Dimensions SMD Board



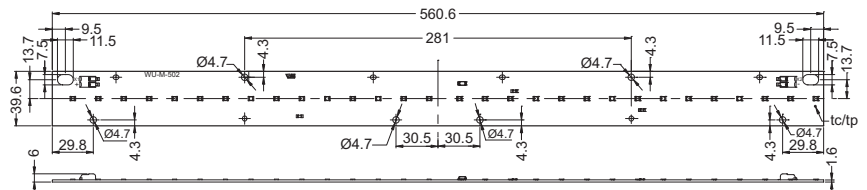
WU-M-480



WU-M-501



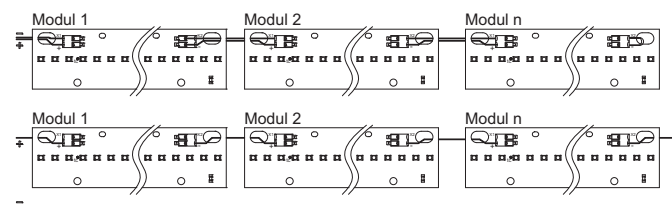
WU-M-481



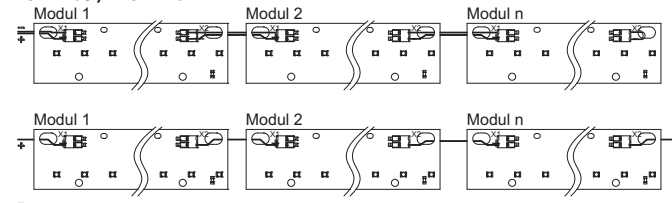
WU-M-502

### 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 and WU-M-501/502 in one application.



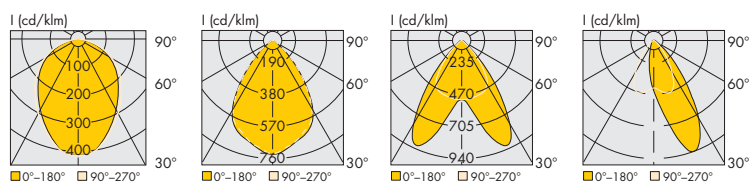
WU-M-480 / WU-M-481



WU-M-501 / WU-M-502

### Typical Light Distribution Curves

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

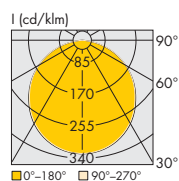


Diffuse

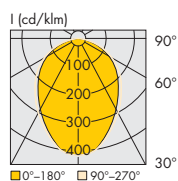
Standard

Retail SYM

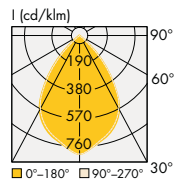
Retail ASYM



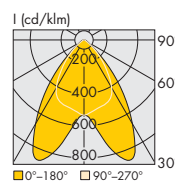
Without optics



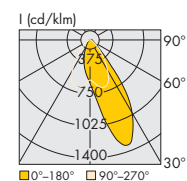
HB - Diffuse



HB - Standard



HB - Retail SYM



HB - Retail ASYM

## LED Line SMD Kit

### Technical Notes for Lense

Dimensions: 280x43 mm. SMD Kits can be stringed together, for modules 280 mm, 560 mm and module chains.

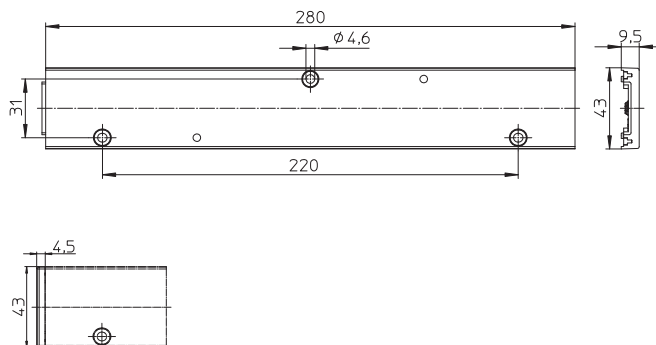
Material: PMMA

Max. allowed ambient temperature  $t_{a \max.} = 55^{\circ}\text{C}$

Fixation with flat or cylinder head screws (M4)

Max. torque: 1.2 Nm (M4)

| Optics type | Ref. No.      | Efficiency % | Weight g | Packaging unit (pcs.) |
|-------------|---------------|--------------|----------|-----------------------|
| Standard    | <b>555437</b> | 95           | 50       | 192                   |
| Retail SYM  | <b>555438</b> | 95           | 50       | 192                   |
| Retail ASYM | <b>555439</b> | 95           | 50       | 192                   |
| Diffuse     | <b>559972</b> | 88           | 50       | 192                   |



### End Cap

Lateral fixation at the lense

with tongue and groove

Weight: 0.9 g, Packaging unit: 500 pcs.

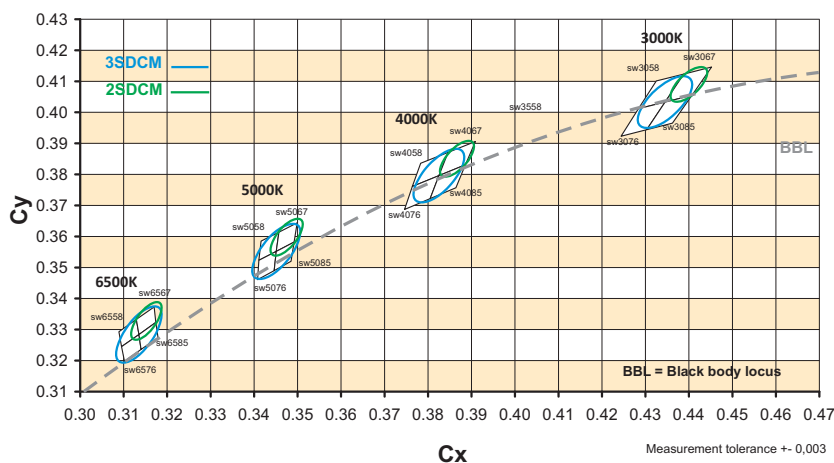
Type: 98810

Ref. No.: 555482

## LED Line SMD / SMD Kit

### Bins

The standard shipping format regarding the reference numbers includes all chromaticity coordinate groups. The chromaticity coordinate groups of 2-step MacAdam distribution (SW3058, SW3067,...) can be identified on the product and packaging label.



# LED LIGHT PANEL SMD

WU-M-520



## LED LIGHT PANEL SMD – LED MODULES FOR OFFICE LIGHTING

**WU-M-520**

### Typical Applications

Built-in luminaires/general illumination

- Office lighting, especially grid luminaires 600x600 mm
- Retail lighting
- T5/T8 replacement as built-in module
- Furniture lighting
- Backlighting for advertising



### LED Light Panel SMD

■ **LONG SERVICE LIFETIME: 60,000 H (L80, B10)**

■ **HIGHLY EFFICIENT: UP TO 190 LM/W AT  $T_p = 50\text{ }^{\circ}\text{C}$**

■ **VERY NARROW COLOUR TOLERANCES:  
3 STEP MACADAM**

## LED Light Panel SMD

### Technical Notes

- LED built-in module for integration into luminaires
- Dimensions: 249x249 mm
- Driving current: 350 mA / 500 mA / 700 mA
- On-board push-in connector
- Colour tolerance: 3-step MacAdam



### Electrical Characteristics

at  $T_p = 50^\circ\text{C}$

| Type      | No. of LEDs | Voltage DC* (V) |      |      |        |      |      |        |      |      | Temperature coefficient<br>mV/K | Power consumption* (W) |      |      |       |      |      |       |      |      |
|-----------|-------------|-----------------|------|------|--------|------|------|--------|------|------|---------------------------------|------------------------|------|------|-------|------|------|-------|------|------|
|           |             | 350 mA          |      |      | 500 mA |      |      | 700 mA |      |      |                                 | 350mA                  |      |      | 500mA |      |      | 700mA |      |      |
|           |             | min.            | typ. | max. | min.   | typ. | max. | min.   | typ. | max. |                                 | min.                   | typ. | max. | min.  | typ. | max. | min.  | typ. | max. |
| All types | 64          | 20.4            | 21.9 | 24.4 | 21     | 22.4 | 25   | 21.7   | 23.2 | 25.7 | -34                             | 7.1                    | 7.7  | 8.5  | 10.5  | 11.2 | 12.5 | 15.2  | 16.2 | 18   |

**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      | Operation temperature range at $T_c$ point |                       | Storage temperature range |                       | Max. allowed repetitive peak current<br>mA |
|-----------|--------------------------------------------|-----------------------|---------------------------|-----------------------|--------------------------------------------|
|           | $^\circ\text{C min.}$                      | $^\circ\text{C max.}$ | $^\circ\text{C min.}$     | $^\circ\text{C max.}$ |                                            |
| All types | -20                                        | +70                   | -20                       | +85                   | 1480                                       |

### Optical Characteristics

at  $T_p = 50^\circ\text{C}$

| 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.                                         | typ. | typ. lm/W | min.   | typ. | typ. lm/W | min.   | typ. | typ. lm/W |                |    |               |                   |
| WU-M-520-830 | <b>559648</b> | warm white    | 3000 -80/+130                     | 1160                                         | 1260 | 167       | 1630   | 1770 | 158       | 2235   | 2425 | 148       | 80             | 85 | 120           | 830/349           |
| WU-M-520-840 | <b>558905</b> | neutral white | 4000 -160/+115                    | 1210                                         | 1320 | 174       | 1700   | 1855 | 165       | 2330   | 2535 | 155       | 80             | 85 | 120           | 840/349           |
| WU-M-520-850 | <b>559649</b> | neutral white | 5000 -125/+155                    | 1260                                         | 1440 | 190       | 1770   | 2020 | 181       | 2425   | 2770 | 169       | 80             | 85 | 120           | 850/349           |
| WU-M-520-865 | <b>559650</b> | cool white    | 6500 -165/+220                    | 1260                                         | 1385 | 183       | 1770   | 1945 | 174       | 2425   | 2665 | 163       | 80             | 85 | 120           | 860/349           |

\* Measurement tolerance:  $\pm 7\%$

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

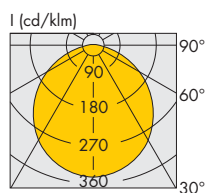
### Operating Life

L80/B10

| Temperature                 | $I_F$ 350 mA  | $I_F$ 500 mA  | $I_F$ 700 mA  |
|-----------------------------|---------------|---------------|---------------|
| at $T_p = 50^\circ\text{C}$ | > 60,000 hrs. | > 60,000 hrs. | > 60,000 hrs. |
| at $T_p = 70^\circ\text{C}$ | > 60,000 hrs. | > 60,000 hrs. | > 60,000 hrs. |

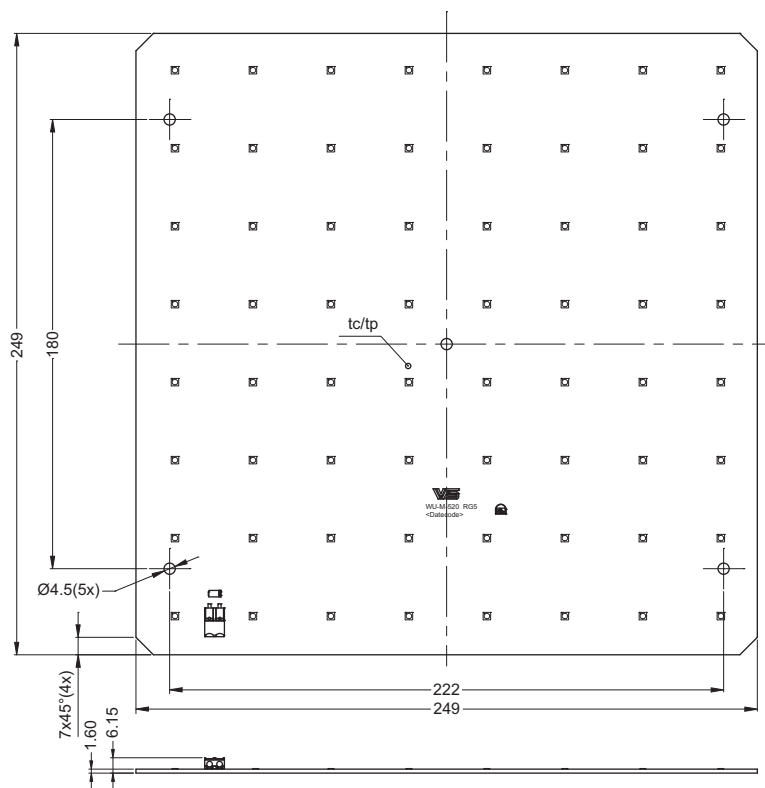
### Typical Light Distribution Curve

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



## LED Light Panel SMD

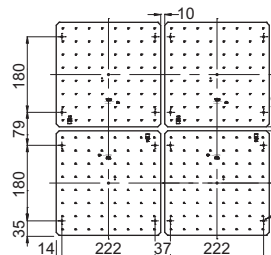
### Mechanical Dimensions



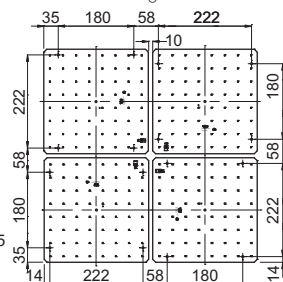
### Connection Examples

#### With 10 mm distance between LED modules

Feed-in lateral  
with wiring on top

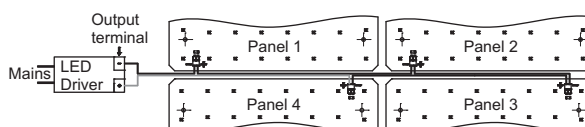


Feed-in central  
with rear wiring



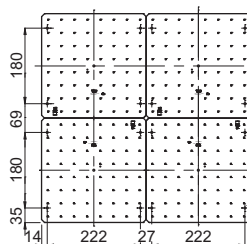
#### Connection Diagram 1 – Decentralised Feed-in

4 LED Panels WU-M-520 (all in series)

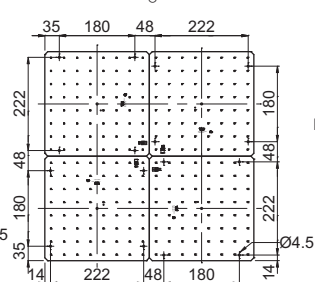


#### Without distance between LED modules

Feed-in lateral  
with wiring on top

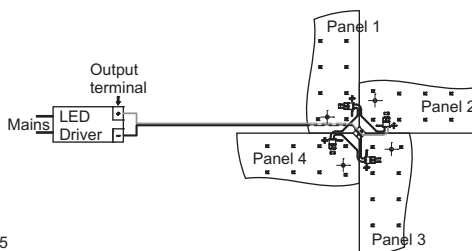


Feed-in central  
with rear wiring



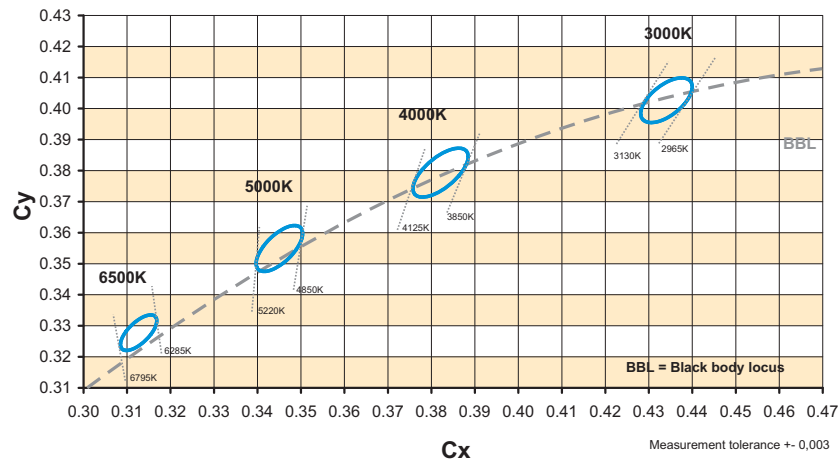
#### Connection Diagram 2 – Centralised Feed-in

4 LED Panels WU-M-520 (all in series)



## LED Light Panel SMD

### Bins



## LED LINE SMD LIGHTBAR

T5/T8 REPLACEMENT



## LED LINE SMD LIGHTBAR – LED MODULES FOR LINEAR LIGHTING

### Typical Applications

Built-in luminaires/general illumination

- Office lighting
- Retail lighting
- T5/T8 replacement as built-in module
- Furniture lighting

### LED Line SMD Lightbar

- **HIGH BRIGHTNESS**
- **GLARELESS AND EXCELLENT LENS DESIGN**
- **80% LED USAGE REDUCTION**
- **90% ULTRA HIGH UNIFORMITY**
- **WIDE BEAM ANGLE: > 145°**



# LED Line SMD Lightbar – LED Modules for Linear Lighting

## LED Line SMD Lightbar

### Technical Notes

- LED built-in module for integration into luminaires
- Dimensions: 520x17 mm
- Driving current: up to 300 mA



### Electrical Characteristics

at  $t_a = 25\text{ }^{\circ}\text{C}$

| Type  | Typ. voltage DC* (V)<br>300 mA |      |      | Typ. power consumption* (W)<br>300 mA |  |
|-------|--------------------------------|------|------|---------------------------------------|--|
|       | min.                           | typ. | max. | typ.                                  |  |
| 89520 | 19.6                           | 23.1 | 24.5 | 6.9                                   |  |

\*Voltage and power tolerance:  $\pm 10\%$

### Maximum Ratings

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

| Type       | Operation temperature range<br>range at $t_c$ -point |                         | Storage temperature range |                         | Max. allowed repetitive<br>peak current<br>mA | Max. permitted output voltage of operating device<br>V |
|------------|------------------------------------------------------|-------------------------|---------------------------|-------------------------|-----------------------------------------------|--------------------------------------------------------|
|            | $^{\circ}\text{C}$ min.                              | $^{\circ}\text{C}$ max. | $^{\circ}\text{C}$ min.   | $^{\circ}\text{C}$ max. |                                               |                                                        |
| 559509     | -20                                                  | +45                     | -20                       | +50                     | 300                                           | < 250                                                  |
| all others | -20                                                  | +40                     | -20                       | +50                     | 300                                           | < 250                                                  |

### Optical Characteristics

at  $t_a = 25\text{ }^{\circ}\text{C}$

| Type  | Ref. No.      | No. of<br>LEDs | Colour        | Correlated colour<br>temperature*<br>K | Typ. luminous flux* and efficiency at<br>300 mA |      | Beam<br>angle<br>$^{\circ}$ | CRI<br>$R_a$ |      |
|-------|---------------|----------------|---------------|----------------------------------------|-------------------------------------------------|------|-----------------------------|--------------|------|
|       |               |                |               |                                        | lm                                              | lm/W |                             | min.         | typ. |
| 89520 | <b>559932</b> | 7              | warm white    | 3000                                   | 595                                             | 86   | 145                         | 80           | 85   |
| 89520 | <b>559933</b> | 7              | neutral white | 4000                                   | 630                                             | 91   | 145                         | 80           | 85   |
| 89520 | <b>557990</b> | 7              | cool white    | 5700                                   | 665                                             | 96   | 145                         | 80           | 85   |
| 89520 | <b>559509</b> | 7              | cool white    | 5700                                   | 700                                             | 102  | 145                         | 80           | 85   |
| 89520 | <b>559934</b> | 7              | cool white    | 11000                                  | 665                                             | 96   | 145                         | 70           | 75   |

\* Measurement tolerance of luminous flux:  $\pm 10\%$  | Min. CRI  $R_a$ : > 70 / 80

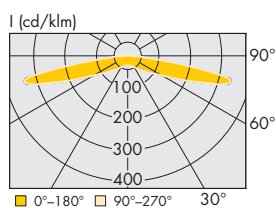
**Minimum order quantity (packing unit): 240 pcs.**

### Operating Life

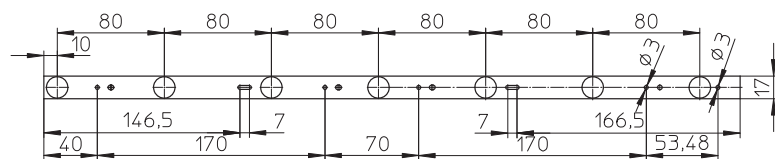
at  $t_a = 25\text{ }^{\circ}\text{C}$

|                      |                              |
|----------------------|------------------------------|
| Lumen<br>maintenance | <b>89520</b><br>$I_f$ 300 mA |
| L70/B50              |                              |

### Typical Light Distribution Curve



### Mechanical Dimensions



## LED Line SMD Lightbar

## Connection leads

Leads: UL 1007 22AWG 1C Red / White

JST-PH-3Pn-Serial MINI JST PH 3pin Male

Plug lead, serial

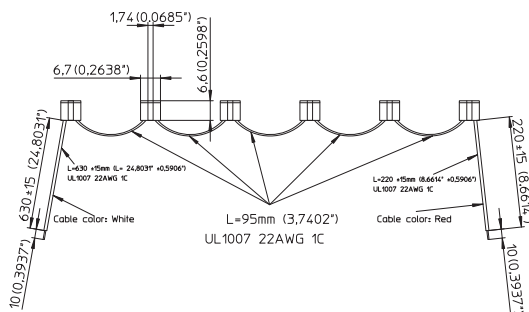
Lead length (L): 1325 mm

Lead end: tin 10 mm

Type: 89520

**Ref. No.: 559935**

## Connetion Assembly



## ComfortLine LED Drivers – with Selectable Current

**125 to 650 mA / 27.5 W to 85 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load:  $> 0.9$



### Selectable current output

The required current output can be chosen by selecting the respective pin at the output terminal.

### Connection details

Mains voltage: 220-240 V  $\pm$  10%

Mains frequency: 50-60 Hz

Push-in terminals: 0.2–1.5 mm<sup>2</sup>

**Expected service life time**

at operation temperatures at  $t_c$  point

| Operation<br>current | Ref. No.<br>all types |         |
|----------------------|-----------------------|---------|
| all                  | 70 °C                 | 60 °C   |
| hrs.                 | 50,000                | 100,000 |

## Safety features

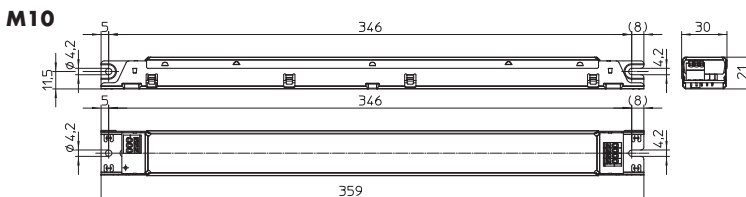
### Electronic short-circuit protection

### Overtemperature protection

### Protection against "no load" operation

Degree of protection: IP20

Protection class I



### Products under development; preliminary technical datas

| Max. output                           | Type         | Ref. No.      | Mains voltage<br>50-60 Hz | Mains current | Current output<br>DC | Voltage output<br>DC | Max. voltage<br>without load<br>DC | Efficiency<br>at<br>full load<br>% (230 V) | Ambient temperature<br>$t_a$<br>°C | Casing temperature<br>$t_c$<br>°C | Weight |
|---------------------------------------|--------------|---------------|---------------------------|---------------|----------------------|----------------------|------------------------------------|--------------------------------------------|------------------------------------|-----------------------------------|--------|
| W                                     |              |               | V                         | mA            | mA                   | V                    | V                                  |                                            |                                    |                                   | g      |
| <b>M10 – Dimensions: 359x30x21 mm</b> |              |               |                           |               |                      |                      |                                    |                                            |                                    |                                   |        |
| 47                                    | ECXe 325.175 | <b>186488</b> | 220-240                   | 245-220       | 275                  | 85-170               | < 250                              | > 88                                       | - 25 to 50                         | > 70                              | 230    |
|                                       |              |               |                           | 245-220       | 300                  | 78-156               |                                    | > 88                                       |                                    | > 70                              |        |
|                                       |              |               |                           | 245-220       | 325                  | 72-144               |                                    | > 88                                       |                                    | > 70                              |        |

## LED Line SMD Lightbar

### 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 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 could 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
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- 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.



- 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/en/home/products/led-lighting-technology/notes-on-led-technology.html](http://www.vossloh-schwabe.com/en/home/products/led-lighting-technology/notes-on-led-technology.html)

## LINEAR LED BUILT-IN MODULES

T5/T8 REPLACEMENT



### LUGA LINE RX 2015 LED MODULES COB FOR LINEAR LIGHTING

**DML068 \*\*\*FR (280 mm)**

**DML028 \*\*\*FR (93 mm)**

#### Typical Applications

Built-in luminaires/general illumination

- Office lighting
- Retail lighting
- T5/T8 replacement as built-in module
- Furniture lighting



#### LUGA Line RX 2015

■ **LONG SERVICE LIFETIME: 50,000 H (L80, B10)**

■ **NARROW COLOUR TOLERANCE: 3 MACADAM**

■ **HIGHLY EFFICIENT: UP TO 148 LM/W AT  $T_p = 65^\circ\text{C}$**

■ **SPECIAL COLOURS (3000 K / 4000 K)  
WITH BRILLIANT WHITE EFFECT (PEARL WHITE)**

■ **COB TECHNOLOGY (CHIP-ON-BOARD)**  
homogeneous light field (no individual light points visible),  
perfect for use with reflectors

■ **VDE APPROVED (ACC. TO EN 62031)**



## LUGA Line RX 2015

### Technical Notes

- LED built-in module for integration into luminaires
- Dimensions:  
280x18.4 mm and 93x18.4 mm
- Driving current: up to 1050 mA
- On-board push-in terminals (WAGO 2059)
- Colour accuracy initially: 3 SDCM per BIN;  
4 SDCM colour shift after 50,000 hrs.



### Electrical Characteristics

at  $t_p = 65^\circ\text{C}$

| Type        | Typ. voltage DC* [V] |        |        |         | Temperature coefficient<br>mV/K | Typ. power consumption* (W) |        |        |         |
|-------------|----------------------|--------|--------|---------|---------------------------------|-----------------------------|--------|--------|---------|
|             | 350 mA               | 500 mA | 700 mA | 1050 mA |                                 | 350 mA                      | 500 mA | 700 mA | 1050 mA |
| DML068***FR | 16,9                 | 17,2   | 17,6   | 18,1    | -8                              | 5.9                         | 8.6    | 12.3   | 19      |
| DML028***FR | 5.6                  | 5.7    | 5.9    | 6.1     | -3                              | 2.0                         | 2.9    | 4.1    | 6.4     |

\*Voltage and power tolerance:  $\pm 10\%$

### Maximum Ratings

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

| Type      | Operation temperature range<br>range at $t_{c\text{-point}}$ |                       | Ambient temperature<br>range |                       | Storage temperature<br>range |                       | Max. allowed<br>repetitive<br>peak current (mA) | Max. permitted output voltage<br>of operating device<br>V |
|-----------|--------------------------------------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|-----------------------|-------------------------------------------------|-----------------------------------------------------------|
|           | $^\circ\text{C min.}$                                        | $^\circ\text{C max.}$ | $^\circ\text{C min.}$        | $^\circ\text{C max.}$ | $^\circ\text{C min.}$        | $^\circ\text{C max.}$ |                                                 |                                                           |
| All types | -40                                                          | +85                   | -40                          | +40                   | -40                          | +100                  | 1200                                            | 420                                                       |

### Optical Characteristics

at  $t_p = 65^\circ\text{C}$

| Type         | Ref. No.   | Colour        | Correlated colour temperature*<br>K | Typ. luminous flux** and efficiency at |      |        |      |        |      |         |      | Beam angle ° | CRI<br>R <sub>a</sub><br>typ. | Photo-metric code |
|--------------|------------|---------------|-------------------------------------|----------------------------------------|------|--------|------|--------|------|---------|------|--------------|-------------------------------|-------------------|
|              |            |               |                                     | 350 mA                                 |      | 500 mA |      | 700 mA |      | 1050 mA |      |              |                               |                   |
|              |            |               |                                     | lm                                     | lm/W | lm     | lm/W | lm     | lm/W | lm      | lm/W |              |                               |                   |
| DML068       |            |               |                                     |                                        |      |        |      |        |      |         |      |              |                               |                   |
| DML068C27FR  | 557979     | warm white    | 2700                                | 780                                    | 132  | 1075   | 125  | 1435   | 117  | 1980    | 104  | 120          | 82                            | 827/349           |
| DML068C30FR  | 557980     | warm white    | 3000                                | 810                                    | 137  | 1115   | 130  | 1490   | 121  | 2055    | 108  | 120          | 82                            | 830/349           |
| DML068C30FBR | 557981     | warm white    | 3000 (below BBL)                    | 775                                    | 131  | 1070   | 124  | 1425   | 116  | 1965    | 103  | 120          | 82                            | 830/349           |
| DML068C35FR  | 557982     | neutral white | 3500                                | 835                                    | 142  | 1150   | 134  | 1540   | 125  | 2125    | 112  | 120          | 82                            | 835/349           |
| DML068C40FR  | 557983     | neutral white | 4000                                | 860                                    | 146  | 1185   | 138  | 1585   | 129  | 2185    | 115  | 120          | 84                            | 840/349           |
| DML068C40FBR | 557984     | neutral white | 4000 (below BBL)                    | 825                                    | 140  | 1140   | 133  | 1520   | 124  | 2095    | 110  | 120          | 84                            | 840/349           |
| DML068C50FR  | 557985     | cool white    | 5000                                | 875                                    | 148  | 1205   | 140  | 1615   | 131  | 2225    | 117  | 120          | 84                            | 850/349           |
| DML068C65FR  | 557986     | cool white    | 6500                                | 870                                    | 147  | 1200   | 140  | 1605   | 130  | 2215    | 117  | 120          | 84                            | 865/349           |
| DML068S31FR  | 557987     | pearl white   | 3100                                | 680                                    | 115  | 935    | 109  | 1260   | 102  | 1730    | 91   | 120          | 95                            | 931/349           |
| DML028       |            |               |                                     |                                        |      |        |      |        |      |         |      |              |                               |                   |
| DML028C27FR  | 558100     | warm white    | 2700                                |                                        |      |        |      |        |      |         |      | 120          | 82                            | 827/349           |
| DML028C30FR  | 558101     | warm white    | 3000                                |                                        |      |        |      |        |      |         |      | 120          | 82                            | 830/349           |
| DML028C30FBR | 558102     | warm white    | 3000 (below BBL)                    |                                        |      |        |      |        |      |         |      | 120          | 82                            | 830/349           |
| DML028C35FR  | on request | neutral white | 3500                                |                                        |      |        |      |        |      |         |      | 120          | 82                            | 835/349           |
| DML028C40FR  | 558103     | neutral white | 4000                                |                                        |      |        |      |        |      |         |      | 120          | 84                            | 840/349           |
| DML028C40FBR | 558104     | neutral white | 4000 (below BBL)                    |                                        |      |        |      |        |      |         |      | 120          | 84                            | 840/349           |
| DML028C50FR  | 558105     | cool white    | 5000                                |                                        |      |        |      |        |      |         |      | 120          | 84                            | 850/349           |
| DML028C65FR  | on request | cool white    | 6500                                |                                        |      |        |      |        |      |         |      | 120          | 84                            | 865/349           |
| DML028S31FR  | 558106     | pearl white   | 3100                                |                                        |      |        |      |        |      |         |      | 120          | 95                            | 931/349           |

\* Colour tolerance: 3 MacAdam | \*\* Production tolerance of luminous flux and efficiency:  $\pm 15\%$  | Min. CRI  $R_a$ :  $> 80$  /  $> 90$

**Minimum order quantity (packing unit): 30 pcs. (DML068); 60 pcs. (DML028)**

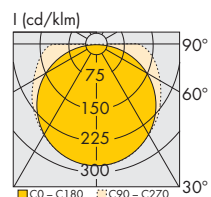
## LUGA Line RX 2015

### Operating Life

at  $t_p = 65^\circ\text{C}$

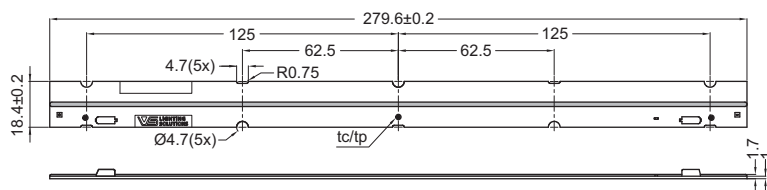
| Lumen maintenance | DML068/028***FR |              |              |               |
|-------------------|-----------------|--------------|--------------|---------------|
|                   | $I_F$ 350 mA    | $I_F$ 500 mA | $I_F$ 700 mA | $I_F$ 1050 mA |
| L90/B10           | 62.000 hrs.     | 57.000 hrs.  | 50.000 hrs.  | 33.000 hrs.   |
| L80/B10           | 75.000 hrs.     | 71.000 hrs.  | 65.000 hrs.  | 50.000 hrs.   |
| L70/B10           | 83.000 hrs.     | 79.000 hrs.  | 73.000 hrs.  | 58.000 hrs.   |

### Typical Light Distribution Curve

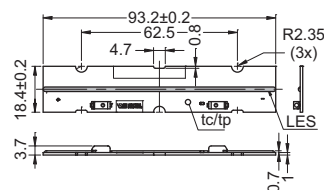


### Mechanical Dimensions

#### DML068



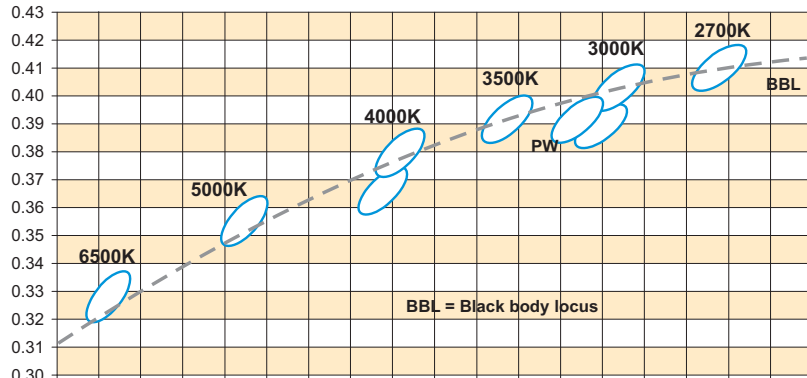
#### DML028



### Produkt Code

| Code 1 | Code 2 | Product Name | Internal Code |
|--------|--------|--------------|---------------|
| 27CR   | 68C27  | DML068C27FR  | Data Matrix   |
| 30CR   | 68C30  | DML068C30FR  |               |
| 30BR   | 68B30  | DML068C30FBR |               |
| 35CR   | 68C35  | DML068C35FR  |               |
| 40CR   | 68C40  | DML068C40FR  |               |
| 40BR   | 68B40  | DML068C40FBR |               |
| 50CR   | 68C50  | DML068C50FR  |               |
| 65CR   | 68C65  | DML068C65FR  |               |
| 31SR   | 68S31  | DML068S31FR  |               |

### Bins



## LEDLINE ECX

### ELECTRONIC CONSTANT CURRENT DRIVERS



## LED CONSTANT CURRENT DRIVERS

### Electronic converters for LED modules operated with constant current LED drivers

To ensure the safe operation of LEDs that are wired in series, the operating current must be limited to a constant value by the LED driver.

Light-emitting diodes are semiconductor devices with a light-emitting p-n junction. Due to the specific diode characteristics, the current can only flow through an LED in one direction. Coupled with the special properties of a semiconductor, this non-linear behaviour can increase the current and power uptake of an LED as it heats up.

If this effect is not limited, uncontrolled heating can finally destroy the semiconductor junction. For this reason, VS recommends using an external constant current driver to operate all constant current driven LED modules. To ensure that the same current flows through every LED, constant current driven LED modules can only be wired in series.

The constant current source has to be selected to suit the respective application, i.e. it must supply the required current and also provide sufficient voltage for the LED string.

The number of VS LED modules that can be connected to a single operating device is dependent on the forward voltage of the respective modules.

#### LEDLine ECX

- OVERLOAD PROTECTION
- SHORT CIRCUITING PROTECTION
- SELV OR SELV EQUIVALENT



## PrimeLine LED Drivers – with Selectable Current

**350–700 mA,  
max. 42 W and max. 84 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.

## Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: 0.97

Stand-by losses:  $< 0.5 \text{ W}$

## Dimming

The dimming function is achieved by applying a PWM signal to the nominal current.

Dimming range: 3 to 100%.

If no dimming interface is connected, brightness will stay at 100%.

## Programmability

The output current can be freely adjusted in 1 mA steps between 350 mA and 700 mA (factory setting: 350 mA).

An iProgrammer (Ref. No. 186428) and a PC running the respective VS software are required for programming purposes.



### Connection details

Mains voltage: 220-240 V  $\pm$  10%

Mains frequency: 50-60 Hz

Push-in terminals: 0.2–1.5 mm<sup>2</sup>

## Safety features

### Electronic short-circuit protection

### Overtemperature protection

### Protection against "no load" operation

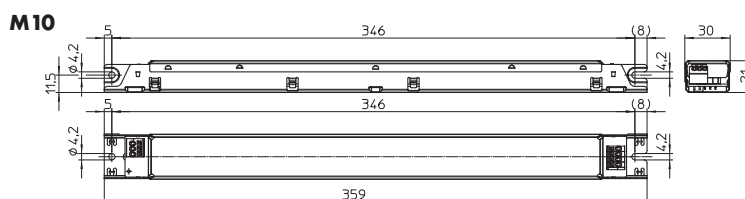
Degree of protection: IP20

Protection class I

### Products under development; preliminary technical datas

| Max.<br>output<br><br>W               | Type         | Ref. No.      | Mains voltage<br>50-60 Hz<br><br>V | Mains<br>current<br><br>mA | Current output DC<br>programmable<br><br>mA | Voltage<br>output *<br>DC<br>V | Max. voltage<br>without load<br>DC<br>V | Efficiency<br>at<br>full load<br>% [230 V] | Ambient<br>temperature<br>t <sub>a</sub><br>°C | Casing<br>temperature<br>t <sub>c</sub><br>°C | Weight<br><br>g |
|---------------------------------------|--------------|---------------|------------------------------------|----------------------------|---------------------------------------------|--------------------------------|-----------------------------------------|--------------------------------------------|------------------------------------------------|-----------------------------------------------|-----------------|
| <b>M10 – Dimensions: 359x30x21 mm</b> |              |               |                                    |                            |                                             |                                |                                         |                                            |                                                |                                               |                 |
| 42                                    | ECXe 700.150 | <b>186446</b> | 220-240                            | 420-390                    | 350-700 ± 5%                                | 28-114                         | < 250                                   | > 88                                       | -25 to 50                                      | 60                                            | 227             |
| 77<br>84                              | ECXe 700.149 | <b>186445</b> | 220-240                            | 200-110                    | 350-700 ± 5%                                | 60-220                         | < 250                                   | > 88                                       | -25 to 50                                      | 70                                            | 250             |

\* Depends on the adjusted current output



## ComfortLine LED Drivers – Dimmable

### 2x700 mA / max. 2x70 W

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: 0.95

Stand-by losses: < 0.5 W

### Dimming

The dimming function is achieved by applying a PWM signal to the nominal current.

Dimming range: 3 to 100%.

If no dimming interface is connected, brightness will stay at 100%.

### Connection details

Mains voltage: 220–240 V ± 10%

Mains frequency: 50–60 Hz

DC operation: 198–264 V DC, 0 Hz

(can be reduced to 176 V with reduced service life time)

Push-in terminals: 0.2–1.5 mm<sup>2</sup>

### Safety features

Electronic short-circuit protection

Overload and overtemperature protection

Protection against "no load" operation

Degree of protection: IP20

Protection class I

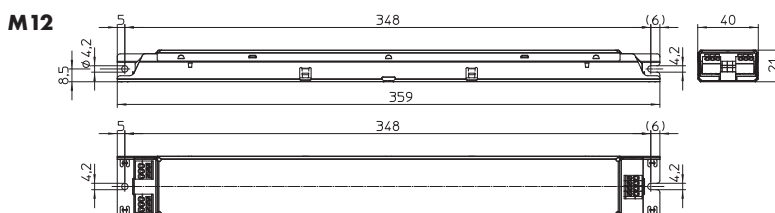
**SELV**



### Expected service life time

at operation temperatures at  $t_c$  point

| Operation current | Ref. No. |         |
|-------------------|----------|---------|
|                   | 186356   |         |
| 2x700 mA          | 80 °C    | 70 °C   |
| hrs.              | 50,000   | 100,000 |



| Max. output<br>W                      | Type          | Ref. No.      | Mains voltage<br>0 Hz,<br>50–60 Hz<br>V | Mains current<br>mA | Current output DC<br>mA | Voltage output DC<br>V | Max. voltage without load<br>DC<br>V | Efficiency at full load<br>% (230 V) | Ambient temperature<br>$t_a$<br>°C | Casing temperature<br>$t_c$<br>°C | Weight<br>g |
|---------------------------------------|---------------|---------------|-----------------------------------------|---------------------|-------------------------|------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|
| <b>M12 – Dimensions: 359x40x21 mm</b> |               |               |                                         |                     |                         |                        |                                      |                                      |                                    |                                   |             |
| 2x70                                  | ECXd 2700.089 | <b>186356</b> | 198–264<br>220–240                      | 834–625<br>750–688  | 2x700 ± 5%              | 42–100                 | < 120                                | > 90                                 | –20 to 50                          | 80                                | 400         |

## ComfortLine LED Drivers – Dimmable

**2x350 mA / max. 2x20 W**  
**2x500 mA / max. 2x28.5 W**  
**2x700 mA / max. 2x40 W**  
**and max. 2x70 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: 0.95

## Dimming

The dimming function is achieved by applying a PWM signal to the nominal current (M12) or with an analogue dimming signal (M10/M11). Dimming range: 3 to 100%.

If no dimming interface is connected, brightness will stay at 100%.

### Connection details

Mains voltage: 220-240 V  $\pm$  10%

Mains frequency: 50-60 Hz

DC operation: 198–264 V DC, 0 Hz

(can be reduced to 176 V with reduced service life time)

Push-in terminals: 0.2–1.5 mm<sup>2</sup>

## Safety features

## Electronic short-circuit protection

### Overload and overtemperature protection

Protection against "no load" operation

Degree of protection: IP20

Protection class I

**SELV**

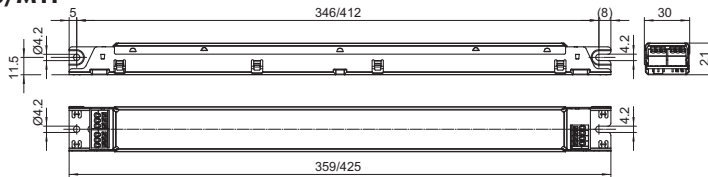
### Expected service life time

at operation temperatures at  $t_c$  point

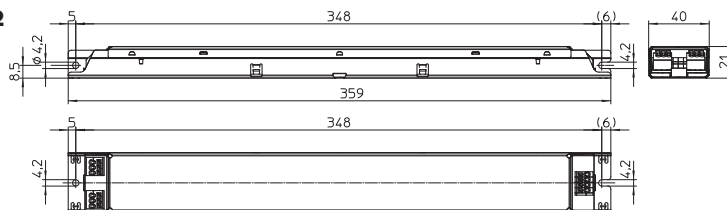
| Operation<br>current | Ref. No. |         |        |         |        |         |
|----------------------|----------|---------|--------|---------|--------|---------|
|                      | 186407   |         | 186410 |         | 186355 |         |
| 2x350 mA             | 75 °C    | 65 °C   | —      | —       | —      | —       |
| 2x500 mA             | —        | —       | 75 °C  | 65 °C   | —      | —       |
| 2x700 mA             | —        | —       | 75 °C  | 65 °C   | 80 °C  | 70 °C   |
| hrs.                 | 50,000   | 100,000 | 50,000 | 100,000 | 50,000 | 100,000 |

|  |              |  |
|--|--------------|--|
|  |              |  |
|  | <b>1-10V</b> |  |
|  |              |  |

## M10/M11



## M12



|                                           |               |               |                                         |                     |                            |                           |                                      |                                      |                                             |                                            |             |
|-------------------------------------------|---------------|---------------|-----------------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|---------------------------------------------|--------------------------------------------|-------------|
| Max. output                               | Type          | Ref. No.      | Mains voltage<br>0 Hz,<br>50-60 Hz<br>V | Mains current<br>mA | Current output<br>DC<br>mA | Voltage output<br>DC<br>V | Max. voltage without load<br>DC<br>V | Efficiency at full load<br>% (230 V) | Ambient temperature<br>t <sub>a</sub><br>°C | Casing temperature<br>t <sub>c</sub><br>°C | Weight<br>g |
| <b>M10 – Dimensions: 359 x 30 x 21 mm</b> |               |               |                                         |                     |                            |                           |                                      |                                      |                                             |                                            |             |
| 2x20                                      | ECXd 2350.124 | <b>186407</b> | 198-264                                 | 500-340             | 2x350 ± 5%                 | 17-57                     | 42                                   | > 85                                 | -20 to 50                                   | 75                                         | 270         |
|                                           |               |               | 220-240                                 | 400-370             |                            |                           |                                      |                                      |                                             |                                            |             |
| <b>M11 – Dimensions: 425 x 30 x 21 mm</b> |               |               |                                         |                     |                            |                           |                                      |                                      |                                             |                                            |             |
| 2x28,5/<br>2x40                           | ECXd 2700.127 | <b>186410</b> | 198-264                                 | 260-175             | 2x500 ± 5%/                | 17-57                     | 60                                   | > 88                                 | -20 to 50                                   | 75                                         | 310         |
|                                           |               |               | 220-240                                 | 200-190             | 2x700 ± 5%                 |                           |                                      |                                      |                                             |                                            |             |
| <b>M12 – Dimensions: 359 x 40 x 21 mm</b> |               |               |                                         |                     |                            |                           |                                      |                                      |                                             |                                            |             |
| 2x70                                      | ECXd 2700.088 | <b>186355</b> | 198-264                                 | 834-625             | 2x700 ± 5%                 | 42-100                    | 120                                  | > 90                                 | -20 to 50                                   | 80                                         | 400         |
|                                           |               |               | 220-240                                 | 750-688             |                            |                           |                                      |                                      |                                             |                                            |             |

## ComfortLine LED Drivers – with Selectable Current

**125 to 650 mA / 27.5 W to 85.1 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: 0.97

### Selectable current output

The required current output can be chosen by selecting the respective pin at the output terminal.

### Connection details

Mains voltage: 220-240 V  $\pm$  10%

Mains frequency: 50-60 Hz

Push-in terminals: 0.2-1.5 mm<sup>2</sup>

### Safety features

Electronic short-circuit protection

Overtemperature protection

Protection against "no load" operation

Degree of protection: IP20

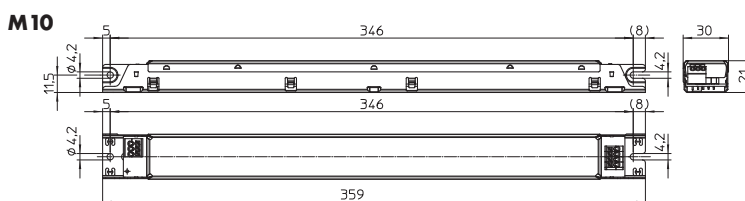
Protection class I



### Expected service life time

at operation temperatures at  $t_c$  point

| Operation current | Ref. No. 186486 |         | 186487 |         | 186488 |         | 186491 |         | 186492 |         |
|-------------------|-----------------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
| 350 mA            | 55 °C           | 45 °C   | 60 °C  | 50 °C   | 60 °C  | 50 °C   | 65 °C  | 55 °C   | 65 °C  | 55 °C   |
| 500 mA            | 55 °C           | 45 °C   | 60 °C  | 50 °C   | 60 °C  | 50 °C   | 65 °C  | 55 °C   | 70 °C  | 60 °C   |
| 700 mA            | 55 °C           | 45 °C   | 60 °C  | 50 °C   | 60 °C  | 50 °C   | 65 °C  | 55 °C   | 70 °C  | 60 °C   |
| hrs.              | 50,000          | 100,000 | 50,000 | 100,000 | 50,000 | 100,000 | 50,000 | 100,000 | 50,000 | 100,000 |



| Max. output<br>W | Type | Ref. No. | Mains voltage<br>50-60 Hz<br>V | Mains current<br>mA | Current output<br>DC<br>mA | Voltage output<br>DC<br>V | Max. voltage without load<br>DC<br>V | Efficiency at full load<br>% (230 V) | Ambient temperature<br>$t_a$<br>°C | Casing temperature<br>$t_c$<br>°C | Weight<br>g |
|------------------|------|----------|--------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|
|------------------|------|----------|--------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|

#### M10 – Dimensions: 359x30x21 mm

|      |              |               |         |         |     |         |       |      |           |    |     |
|------|--------------|---------------|---------|---------|-----|---------|-------|------|-----------|----|-----|
| 27.5 | ECXe 175.173 | <b>186486</b> | 220-240 | 150-140 | 125 | 155-220 | < 250 | > 90 | -25 to 50 | 55 | 220 |
| 33   |              |               |         | 175-165 | 150 | 130-220 |       | > 91 |           |    |     |
| 38.5 |              |               |         | 200-190 | 175 | 110-220 |       | > 92 |           |    |     |
| 44   | ECXe 250.174 | <b>186487</b> | 220-240 | 220-205 | 200 | 112-220 | < 250 | > 93 | -25 to 50 | 60 | 220 |
| 47   |              |               |         | 230-220 | 225 | 104-208 |       | > 92 |           |    |     |
| 47   |              |               |         | 235-220 | 250 | 94-188  |       | > 92 |           |    |     |
| 46.8 | ECXe 325.175 | <b>186488</b> | 220-240 | 235-220 | 275 | 85-170  | < 250 | > 91 | -25 to 50 | 60 | 220 |
|      |              |               |         | 235-220 | 300 | 78-156  |       | > 91 |           |    |     |
|      |              |               |         | 235-220 | 325 | 72-144  |       | > 91 |           |    |     |
| 82.5 | ECXe 425.178 | <b>186491</b> | 220-240 | 410-375 | 375 | 113-220 | < 250 | > 93 | -25 to 50 | 60 | 243 |
| 84.8 |              |               |         | 420-385 | 400 | 105-212 |       | > 94 |           |    |     |
| 85   |              |               |         | 420-390 | 425 | 100-200 |       | > 94 |           |    |     |
| 84.7 | ECXe 650.179 | <b>186492</b> | 220-240 | 420-390 | 550 | 77-154  | < 250 | > 93 | -25 to 50 | 65 | 244 |
| 84.6 |              |               |         | 420-390 | 600 | 71-141  |       | > 93 |           | 70 |     |
| 85.1 |              |               |         | 420-390 | 650 | 65-131  |       | > 93 |           | 70 |     |

## ComfortLine LED Drivers – with Selectable Current

**125 to 650 mA / 27.5 W to 85.1 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: 0.97

### Selectable current output

The required current output can be chosen by selecting the respective pin at the output terminal.

### Connection details

Mains voltage: 220-240 V  $\pm$  10%

Mains frequency: 50-60 Hz

Push-in terminals: 0.2-1.5 mm<sup>2</sup>

### Safety features

Electronic short-circuit protection

Overtemperature protection

Protection against "no load" operation

Degree of protection: IP20

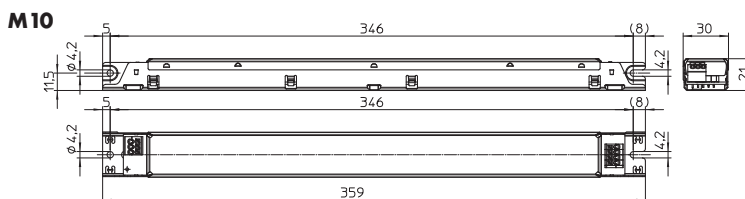
Protection class I



### Expected service life time

at operation temperatures at  $t_c$  point

| Operation current | Ref. No. 186486 |         | 186487 |         | 186488 |         | 186491 |         | 186492 |         |
|-------------------|-----------------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
| 350 mA            | 55 °C           | 45 °C   | 60 °C  | 50 °C   | 60 °C  | 50 °C   | 65 °C  | 55 °C   | 65 °C  | 55 °C   |
| 500 mA            | 55 °C           | 45 °C   | 60 °C  | 50 °C   | 60 °C  | 50 °C   | 65 °C  | 55 °C   | 70 °C  | 60 °C   |
| 700 mA            | 55 °C           | 45 °C   | 60 °C  | 50 °C   | 60 °C  | 50 °C   | 65 °C  | 55 °C   | 70 °C  | 60 °C   |
| hrs.              | 50,000          | 100,000 | 50,000 | 100,000 | 50,000 | 100,000 | 50,000 | 100,000 | 50,000 | 100,000 |



| Max. output<br>W | Type | Ref. No. | Mains voltage<br>50-60 Hz<br>V | Mains current<br>mA | Current output<br>DC<br>mA | Voltage output<br>DC<br>V | Max. voltage without load<br>DC<br>V | Efficiency at full load<br>% (230 V) | Ambient temperature<br>$t_a$<br>°C | Casing temperature<br>$t_c$<br>°C | Weight<br>g |
|------------------|------|----------|--------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|
|------------------|------|----------|--------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|

#### M10 – Dimensions: 359x30x21 mm

|      |              |               |         |         |     |         |       |      |           |    |     |
|------|--------------|---------------|---------|---------|-----|---------|-------|------|-----------|----|-----|
| 27.5 | ECXe 175.173 | <b>186486</b> | 220-240 | 150-140 | 125 | 155-220 | < 250 | > 90 | -25 to 50 | 55 | 220 |
| 33   |              |               |         | 175-165 | 150 | 130-220 |       | > 91 |           |    |     |
| 38.5 |              |               |         | 200-190 | 175 | 110-220 |       | > 92 |           |    |     |
| 44   | ECXe 250.174 | <b>186487</b> | 220-240 | 220-205 | 200 | 112-220 | < 250 | > 93 | -25 to 50 | 60 | 220 |
| 47   |              |               |         | 230-220 | 225 | 104-208 |       | > 92 |           |    |     |
| 47   |              |               |         | 235-220 | 250 | 94-188  |       | > 92 |           |    |     |
| 46.8 | ECXe 325.175 | <b>186488</b> | 220-240 | 235-220 | 275 | 85-170  | < 250 | > 91 | -25 to 50 | 60 | 220 |
|      |              |               |         | 235-220 | 300 | 78-156  |       | > 91 |           |    |     |
|      |              |               |         | 235-220 | 325 | 72-144  |       | > 91 |           |    |     |
| 82.5 | ECXe 425.178 | <b>186491</b> | 220-240 | 410-375 | 375 | 113-220 | < 250 | > 93 | -25 to 50 | 60 | 243 |
| 84.8 |              |               |         | 420-385 | 400 | 105-212 |       | > 94 |           |    |     |
| 85   |              |               |         | 420-390 | 425 | 100-200 |       | > 94 |           |    |     |
| 84.7 | ECXe 650.179 | <b>186492</b> | 220-240 | 420-390 | 550 | 77-154  | < 250 | > 93 | -25 to 50 | 65 | 244 |
| 84.6 |              |               |         | 420-390 | 600 | 71-141  |       | > 93 |           | 70 |     |
| 85.1 |              |               |         | 420-390 | 650 | 65-131  |       | > 93 |           | 70 |     |

## ComfortLine LED Drivers – with Selectable Current

**350/500/700 mA,  
max. 40 W and max. 85 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: 0.97

### Selectable current output

The required current output can be chosen by selecting the respective pin at the output terminal.

### Connection details

Mains voltage: 220–240 V ± 10%

Mains frequency: 50–60 Hz

Push-in terminals: 0.2–1.5 mm<sup>2</sup>

### Safety features

Electronic short-circuit protection

Overtemperature protection

Protection against "no load" operation

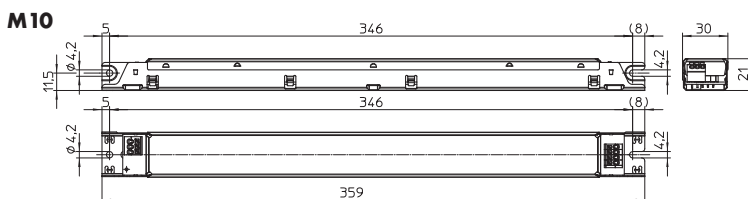
Degree of protection: IP20

Protection class I

### Expected service life time

at operation temperatures at  $t_c$  point

| Operation current | Ref. No. 186444 |         | 186443 |         |
|-------------------|-----------------|---------|--------|---------|
|                   | 350 mA          | 500 mA  | 700 mA | 700 mA  |
| 60 °C             | 50 °C           | 70 °C   | 60 °C  |         |
| 65 °C             | 55 °C           | 75 °C   | 65 °C  |         |
| 70 °C             | 60 °C           | 80 °C   | 70 °C  |         |
| hrs.              | 50,000          | 100,000 | 50,000 | 100,000 |



| Max. output<br>W                      | Type         | Ref. No.      | Mains voltage<br>50–60 Hz<br>V | Mains current<br>mA | Current output<br>DC<br>mA | Voltage output<br>DC<br>V | Max. voltage without load<br>DC<br>V | Efficiency at full load<br>% (230 V) | Ambient temperature<br>$t_a$<br>°C | Casing temperature<br>$t_c$<br>°C | Weight<br>g |
|---------------------------------------|--------------|---------------|--------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|
| <b>M10 – Dimensions: 359x30x21 mm</b> |              |               |                                |                     |                            |                           |                                      |                                      |                                    |                                   |             |
| 40                                    | ECXe 700.148 | <b>186444</b> | 220–240                        | 400–370             | 350 ± 5%                   | 57–114                    | < 250                                | > 90                                 | –25 to 50                          | 60                                | 227         |
|                                       |              |               |                                | 420–390             | 500 ± 5%                   | 40–80                     |                                      | > 89                                 |                                    | 65                                |             |
|                                       |              |               |                                | 420–390             | 700 ± 5%                   | 28–57                     |                                      | > 88                                 |                                    | 70                                |             |
| 79                                    | ECXe 700.147 | <b>186443</b> | 220–240                        | 200–190             | 350 ± 5%                   | 120–225                   | < 250                                | > 94                                 | –25 to 50                          | 70                                | 250         |
| 85                                    |              |               |                                | 205–190             | 500 ± 5%                   | 80–170                    |                                      | > 93                                 |                                    | 75                                |             |
|                                       |              |               |                                | 210–195             | 700 ± 5%                   | 60–120                    |                                      | > 92                                 |                                    | 80                                |             |

## ComfortLine LED Drivers

**2x350 mA / max. 2x20 W**  
**2x500 mA / max. 2x28.5 W**  
**2x700 mA / max. 2x40 W**  
**and max. 2x70 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.



### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: 0.95

### Connection details

Mains voltage: 220-240 V  $\pm$  10%

Mains frequency: 50-60 Hz

DC operation: 198-264 V DC, 0 Hz

(can be reduced to 176 V with reduced service life time)

Push-in terminals: 0.2-1.5 mm<sup>2</sup>

### Safety features

Electronic short-circuit protection

Overload and overtemperature protection

Protection against "no load" operation

Degree of protection: IP20

Protection class I

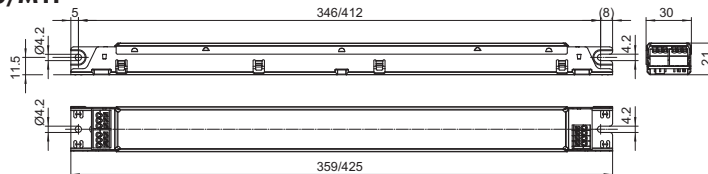
**SELV**

### Expected service life time

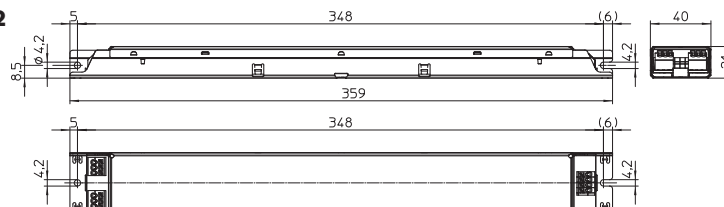
at operation temperatures at  $t_c$  point

| Operation current | Ref. No. |         | 186406 |         | 186409 |         | 186354 |   |
|-------------------|----------|---------|--------|---------|--------|---------|--------|---|
| 2x350 mA          | 75 °C    | 65 °C   | —      | —       | —      | —       | —      | — |
| 2x500 mA          | —        | —       | 75 °C  | 65 °C   | —      | —       | —      | — |
| 2x700 mA          | —        | —       | 75 °C  | 65 °C   | 80 °C  | 70 °C   | —      | — |
| hrs.              | 50,000   | 100,000 | 50,000 | 100,000 | 50,000 | 100,000 | —      | — |

### M10/M11



### M12



| Max. output<br>W                      | Type          | Ref. No.      | Mains voltage<br>0 Hz,<br>50-60 Hz<br>V | Mains current<br>mA | Current output DC<br>mA   | Voltage output<br>DC<br>V | Max. voltage<br>without load<br>DC<br>V | Efficiency<br>at<br>full load<br>% (230 V) | Ambient<br>temperature<br>$t_a$<br>°C | Casing<br>temperature<br>$t_c$<br>°C | Weight<br>g |
|---------------------------------------|---------------|---------------|-----------------------------------------|---------------------|---------------------------|---------------------------|-----------------------------------------|--------------------------------------------|---------------------------------------|--------------------------------------|-------------|
| <b>M10 – Dimensions: 359x30x21 mm</b> |               |               |                                         |                     |                           |                           |                                         |                                            |                                       |                                      |             |
| 2x20                                  | ECXe 2350.123 | <b>186406</b> | 198-264                                 | 500-340             | 2x350 ± 5%                | 17-57                     | < 60                                    | > 85                                       | -20 to 50                             | 75                                   | 270         |
|                                       |               |               | 220-240                                 | 400-370             |                           |                           |                                         |                                            |                                       |                                      |             |
| <b>M11 – Dimensions: 425x30x21 mm</b> |               |               |                                         |                     |                           |                           |                                         |                                            |                                       |                                      |             |
| 2x28.5/<br>2x40                       | ECXe 2700.126 | <b>186409</b> | 198-264                                 | 260-175             | 2x500 ± 5%/<br>2x700 ± 5% | 17-57                     | < 60                                    | > 88                                       | -20 to 50                             | 75                                   | 310         |
|                                       |               |               | 220-240                                 | 200-190             |                           |                           |                                         |                                            |                                       |                                      |             |
| <b>M12 – Dimensions: 359x40x21 mm</b> |               |               |                                         |                     |                           |                           |                                         |                                            |                                       |                                      |             |
| 2x70                                  | ECXe 2700.087 | <b>186354</b> | 198-264                                 | 834-625             | 2x700 ± 5%                | 42-100                    | < 120                                   | > 90                                       | -20 to 50                             | 80                                   | 400         |
|                                       |               |               | 220-240                                 | 750-688             |                           |                           |                                         |                                            |                                       |                                      |             |

## ComfortLine LED Drivers

**4 x 60 mA / max. 4 x 9 W**

**350 mA / max. 75 W**

**500 mA / max. 107 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: > 0.95

### Connection details

Mains voltage: 220–240 V ± 10%

Mains frequency: 50–60 Hz

DC operation: 176/198–264 V DC, 0 Hz  
(except 186305)

Push-in terminals: 0.2–1.5 mm<sup>2</sup>

### Safety features

Electronic short-circuit protection

Overload protection

Protection against "no load" operation

Degree of protection: IP20

Protection class I

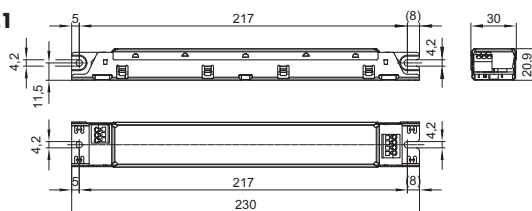


### Expected service life time

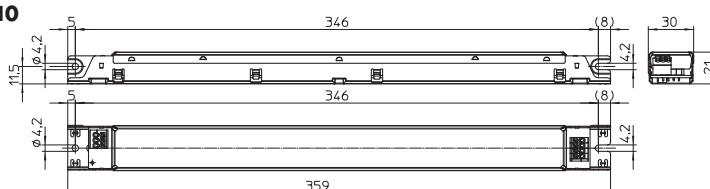
at operation temperatures at  $t_c$  point

| Operation current | Ref. No. all types |         |
|-------------------|--------------------|---------|
| all               | 70 °C              | 60 °C   |
| hrs.              | 50,000             | 100,000 |

#### M6.1



#### M10



| Max. output<br>W                             | Type         | Ref. No.      | Mains voltage<br>0 Hz,<br>50–60 Hz<br>V | Mains current<br>mA | Current output<br>DC<br>mA | Voltage output<br>DC<br>V | Max. voltage<br>without load<br>DC<br>V | Efficiency<br>at<br>full load<br>% (230 V) | Ambient temperature<br>$t_a$<br>°C | Casing temperature<br>$t_c$<br>°C | Weight<br>g |
|----------------------------------------------|--------------|---------------|-----------------------------------------|---------------------|----------------------------|---------------------------|-----------------------------------------|--------------------------------------------|------------------------------------|-----------------------------------|-------------|
| <b>M6.1 – Dimensions: 230 x 30 x 20.9 mm</b> |              |               |                                         |                     |                            |                           |                                         |                                            |                                    |                                   |             |
| 4x9                                          | ECXe 460.061 | <b>186305</b> | –<br>220–240                            | –<br>180–165        | 4x60 ± 5%                  | 110–150                   | 450                                     | > 88                                       | –20 to 60                          | 70                                | 156         |
| <b>M10 – Dimensions: 359 x 30 x 21 mm</b>    |              |               |                                         |                     |                            |                           |                                         |                                            |                                    |                                   |             |
| 75                                           | ECXe 350.028 | <b>186226</b> | 176–264<br>220–240                      | 250–160<br>370–320  | 350 + 5/-10%               | 90–215                    | 450                                     | > 93                                       | –20 to 50                          | 70                                | 228         |
| 107                                          | ECXe 500.068 | <b>186315</b> | 198–264<br>220–240                      | 650–410<br>520–440  | 500 ± 5%                   | 90–215                    | 450                                     | > 94                                       | –25 to 50                          | 70                                | 273         |

## ComfortLine LED Drivers

### 350 mA / max. 15 W

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: 0.6

### Connection details

Mains voltage: 220–240 V ± 10%

Mains frequency: 50–60 Hz

DC operation: 176–264 V DC, 0 Hz

Push-in terminals: 0.2–1.5 mm<sup>2</sup>

### Safety features

Electronic short-circuit protection

Overload protection

Protection against "no load" operation

Degree of protection: IP20

### Protection class II

### SELV

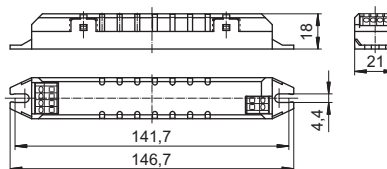


### Expected service life time

at operation temperatures at  $t_c$  point

| Operation current | Ref. No. |         |
|-------------------|----------|---------|
|                   | 186229   |         |
| 350 mA            | 80 °C    | 70 °C   |
| hrs.              | 50,000   | 100,000 |

### K21



| Max. output<br>W | Type | Ref. No. | Mains voltage<br>0 Hz,<br>50–60 Hz<br>V | Mains current<br>mA | Current output<br>DC<br>mA | Voltage output<br>DC<br>V | Max. voltage without load<br>DC<br>V | Efficiency at full load<br>% (230 V) | Ambient temperature<br>$t_a$<br>°C | Casing temperature<br>$t_c$<br>°C | Weight<br>g |
|------------------|------|----------|-----------------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|
|------------------|------|----------|-----------------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|

### K21 – Dimensions: 146.7 x 21 x 18 mm

|    |              |        |                    |                 |              |      |    |      |           |    |    |
|----|--------------|--------|--------------------|-----------------|--------------|------|----|------|-----------|----|----|
| 15 | ECXe 350.031 | 186229 | 176–264<br>220–240 | 140–90<br>81–75 | 350 + 5/-10% | 2–40 | 42 | > 81 | -20 to 50 | 80 | 49 |
|----|--------------|--------|--------------------|-----------------|--------------|------|----|------|-----------|----|----|

## EasyLine LED Drivers

**350 mA / max. 42 W**

**700 mA / max. 60 W**

The linear LED constant-current drivers are designed for use in office and retail lighting.

### Electrical characteristics

Secondary side switching of LED modules is not allowed.

Power factor at full load: > 0.9

### Connection details

Mains voltage: 220-240 V  $\pm$  10%

Mains frequency: 50-60 Hz

Push-in terminals: 0.2-1.5 mm<sup>2</sup>

### Safety features

Electronic short-circuit protection

Overload protection

Protection against "no load" operation

Degree of protection: IP20

Protection class I

**SELV** (186429)

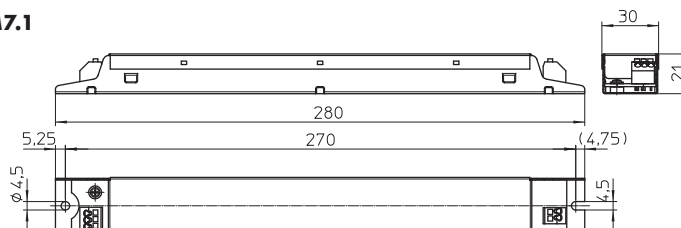


### Expected service life time

at operation temperatures at  $t_c$  point

| Operation current | Ref. No. 186414 |        | 186429 |        |
|-------------------|-----------------|--------|--------|--------|
|                   | 70 °C           | 60 °C  | —      | —      |
| 350 mA            | —               | —      | 75 °C  | 65 °C  |
| 700 mA            | —               | —      | —      | —      |
| hrs.              | 30,000          | 50,000 | 30,000 | 50,000 |

### M7.1



| Max. output<br>W | Type | Ref. No. | Mains voltage<br>50-60 Hz<br>V | Mains current<br>mA | Current output<br>DC<br>mA | Voltage output<br>DC<br>V | Max. voltage without load<br>DC<br>V | Efficiency at full load<br>% (230 V) | Ambient temperature<br>$t_a$<br>°C | Casing temperature<br>$t_c$<br>°C | Weight<br>g |
|------------------|------|----------|--------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|
|------------------|------|----------|--------------------------------|---------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|-------------|

### M7.1 – Dimensions: 280x30x21 mm

|    |              |               |         |         |              |        |       |      |           |    |     |
|----|--------------|---------------|---------|---------|--------------|--------|-------|------|-----------|----|-----|
| 42 | ECXe 350.129 | <b>186414</b> | 220-240 | 220-200 | 350 $\pm$ 5% | 80-120 | < 130 | > 88 | -15 to 45 | 70 | 200 |
| 60 | ECXe 700.140 | <b>186429</b> | 220-240 | 305-275 | 700 $\pm$ 5% | 46-86  | < 95  | > 89 | -15 to 45 | 75 | 200 |

# LED OPTICS

## UP TO 2 M IN LENGTH



### ONLY AT VS!

Production capacity for 3D optics of up to **2 metres in length** thanks to a new manufacturing process.

**UNIQUE**

#### ■ LED OPTICS

##### **Bundling, Shaping and Directing Light**

Optics design is one of the core competencies within the field of LED light development. Precise optics enable efficient implementation of application-specific light distributions.

We develop and produce a variety of LED optics for shops, offices, industrial plants and street lighting. As a result, you can choose among different optics shapes (circular, square, linear), all of which are made using high-quality materials (e.g. PMMA, silicone) and are available with any number of different radiation angles (narrow/broad beam, asymmetrical or combinations).

Thanks to a brand-new injection moulding process, we are now capable of manufacturing three-dimensional optics of up to 2 metres in length.

Our bespoke optics design service lets you bring your own personal light characteristics to life.

## Optics create lighting perfection.

#### LED Optics

- **UP TO 2 M IN LENGTH**
- **PRECISE LIGHT DISTRIBUTION**
- **INDIVIDUAL FREEDOM OF DESIGN**
- **FLEXIBLE THREE-DIMENSIONAL OPTICAL STRUCTURES**

Whenever an electric light goes on around the world, Vossloh-Schwabe is likely to have made a key contribution to ensuring that everything works at the flick of a switch.

Headquartered in Germany, Vossloh-Schwabe has been a member of the global Panasonic group since 2002 and counts as a technology leader within the lighting sector. Top-quality, high-performance products form the basis of the company's success.

Whether cost-effective standard components or tailor-made product developments are needed, Vossloh-Schwabe can satisfy even the most diverse market and customer requirements. Vossloh-Schwabe's extensive product portfolio covers all lighting components: LED systems with matching control gear units, state-of-the-art control systems (LiCS) as well as electronic and magnetic ballasts and lampholders.



A member of the Panasonic group **Panasonic**

### **Vossloh-Schwabe Deutschland GmbH**

Hohe Steinert 8 · D-58509 Lüdenscheld · Germany  
Phone +49 (0) 23 51/10 10 · Fax +49 (0) 23 51/10 12 17

**[www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)**

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