



Adaptive architectural lighting systems



## Spec Guide

# BoxRail® | Stack | 117

Direct lighting for library stack and display applications.



BoxRail, direct or indirect, 370° rotation.

## Benefits & Features

### Minimal, Robust Design

Square profile, 1.14" (29mm) x 1.14" (29mm).

### Superior Light Quality & Performance

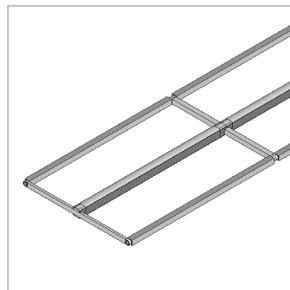
Output up to 1484 lm/ft (4869 lm/m) (HO), 131 lm/W (SO). 80 or 90 CRI & tunable white (2200K-5000K) available.

### Adaptive Power

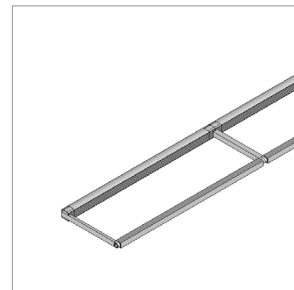
Full range dimming power for all protocols. Integral or remote power available.

### Better Optics & Beam Control Options

Batwing, FlyWing™, MicroBaffle™, diffuse lens and narrow optics available. Directional control with 370° rotation, angle gauge and lock.



Double-sided



Single-sided

## Build Your Specification

| 117-BX                                                 |                                    |                                                 |                                                                                                                                                           | ST              | 18                                              |
|--------------------------------------------------------|------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------|
| <b>System &amp; Rail Type</b>                          | <b>Single/Double Rail</b>          | <b>System Length</b>                            | <b>Rail Length</b>                                                                                                                                        | <b>Mounting</b> | <b>Arm Length</b>                               |
| 117-BX BoxRail                                         | K1 Single-sided<br>K2 Double-sided | Specify overall system length in ft/in or M/mm. | 24 24" (610mm) <sup>1</sup><br>36 36" (914mm)<br>48 48" (1219mm)<br>60 60" (1524mm)<br>72 72" (1829mm)<br>ZZ Other rail length or layout (please specify) | ST Stack        | 18 18" arm (457mm)<br>ZZ Other (please specify) |
| See <a href="#">Rail Length Chart</a> for more details |                                    |                                                 |                                                                                                                                                           |                 |                                                 |

| IP                                                                  |                                                                                                                                                                                                                                                                                                 |                                              | 0                                                                 | Z               |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------|-----------------|
| <b>Power Location</b>                                               | <b>Power Type*</b>                                                                                                                                                                                                                                                                              | <b>Voltage</b>                               | <b>Emergency Power</b>                                            | <b>LED Type</b> |
| Integral Power<br>IP Integral Power                                 | AE eldoLED 0-10v, 1.0% Dimming<br>AT eldoLED 0-10v, 0.1% Dimming<br>AD eldoLED DALI, 0.1% Dimming<br>AX eldoLED DMX, 100-0% Dimming<br>AH Hi-lume 1% EcoSystem, Soft On / Fade to Black Technology, LDE1<br>AH2 Hi-lume 1% 2-wire LTEA2W (120V forward phase only)<br>ZZ Other (please specify) | 1 120v<br>2 120v-277v<br>X Not Yet Specified | 0 No Emergency Power<br>ZZ Emergency Power (specify requirements) | Z Zipper Board™ |
| *See <a href="#">Power Guide</a> for driver features & limitations. |                                                                                                                                                                                                                                                                                                 |                                              |                                                                   |                 |

| <b>Lumen Output*</b>                                                                                                   | <b>Color Temperature</b>                                                                                                                                                                              | <b>Optics</b>                                                                                                                                                          | <b>Finish</b>                                                                           | <b>Options</b>                      |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------|
| LO Low Output<br>SO Standard Output<br>HO High Output<br>ZZ Other (please specify)                                     | 80+ CRI<br>27 2700K<br>30 3000K<br>35 3500K<br>40 4000K<br><br>90+ CRI<br>279 2700K<br>309 3000K<br>359 3500K<br>409 4000K<br><br>ZZ Tunable White Available<br>See <a href="#">Guide</a> for details | Zipper Board (Z)<br>1 Diffuse<br>WB White Baffle<br>BB Black Baffle<br>G1 120° Batwing<br>G2 120° FlyWing<br>S1 40° Symmetric<br>S2 60° Symmetric<br>A1 85° Asymmetric | AL Clear Anodized<br>WH White Painted<br>BL Black Anodized<br>ZZ Other (please specify) | 0 None<br>ZZ Other (please specify) |
| See <a href="#">IES Files</a> page for details.<br>*See <a href="#">Power Guide</a> for driver features & limitations. |                                                                                                                                                                                                       |                                                                                                                                                                        |                                                                                         |                                     |

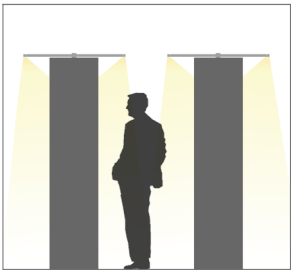
5 Year Limited Warranty. See full Vode warranty description [here](#) or at [vode.com](#).

Listed to UL standards for damp location by a Nationally Recognized Testing Laboratory (NRTL) recognized by OSHA.



# Applications

## Library Stack and Display



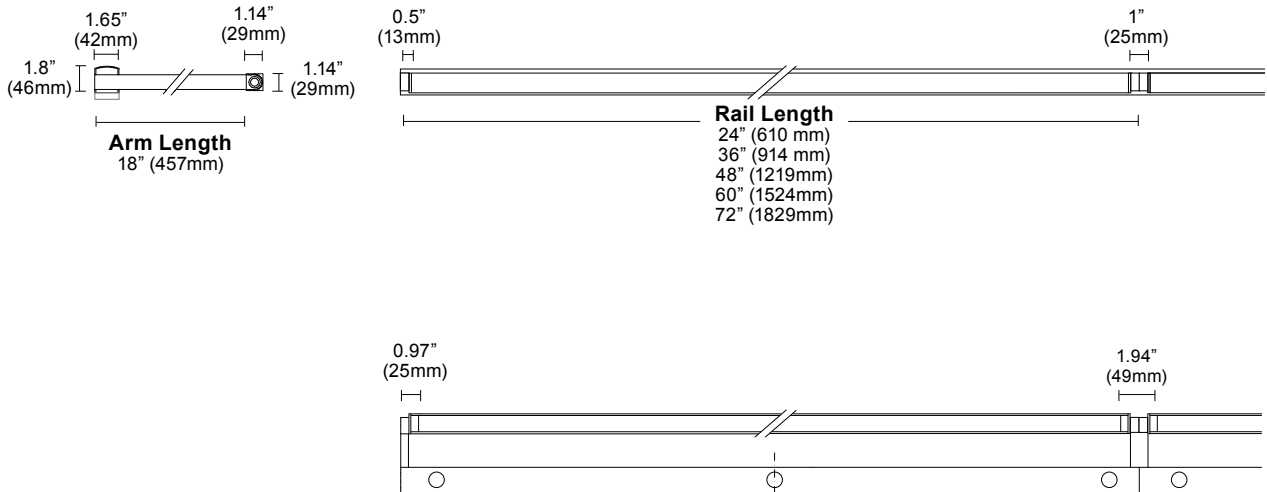
## Structure

|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| Rail Lengths          | 24" (610mm), 36" (914mm), 48" (1219mm), 60" (1524mm), 72" (1829mm).                                  |
| Rail Dimensions       | 1.14" (29mm) x 1.14" (29mm).                                                                         |
| Construction          | Extruded and machined 6063 aluminum.                                                                 |
| Mounting              | Single or double-sided stack mount to integral power housing.                                        |
| Arm Length            | 18" (457mm). Standard and non-standard lengths available. Single-sided requires lengths 24" or less. |
| System Run Length     | 24" (610mm) minimum. Unlimited maximum.                                                              |
| Operating Temperature | 32°F to 104°F (0°C to 40°C).                                                                         |
| Humidity              | 0-85%, non-condensing.                                                                               |

## Materials

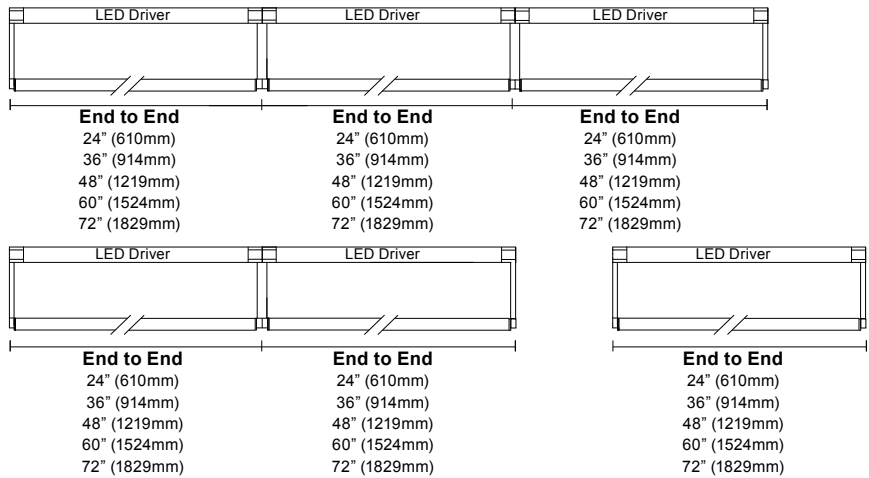
|                        |                                                                                                                      |
|------------------------|----------------------------------------------------------------------------------------------------------------------|
| LED Board Construction | Aluminum core PCB, black LCP connectors, RoHS compliant.                                                             |
| Lens                   | High-impact extruded acrylic glass (PMMA).                                                                           |
| Baffle                 | 6063 Aluminum, RoHS compliant painted finish.                                                                        |
| Power Cable            | Ø4mm, 18/2 AWG, Plenum (CMP) rated semi-rigid PVC or FEP, flame tested UL-910 ( <i>PVC free in 2020</i> )            |
| Cable Connectors       | Unfilled black nylon, rated UL 94 V-0, halogen free, PVC or FEP overmold, RoHS compliant ( <i>PVC free in 2020</i> ) |
| Integral Power Housing | Extruded and machined 6063 aluminum.                                                                                 |

Dimensions

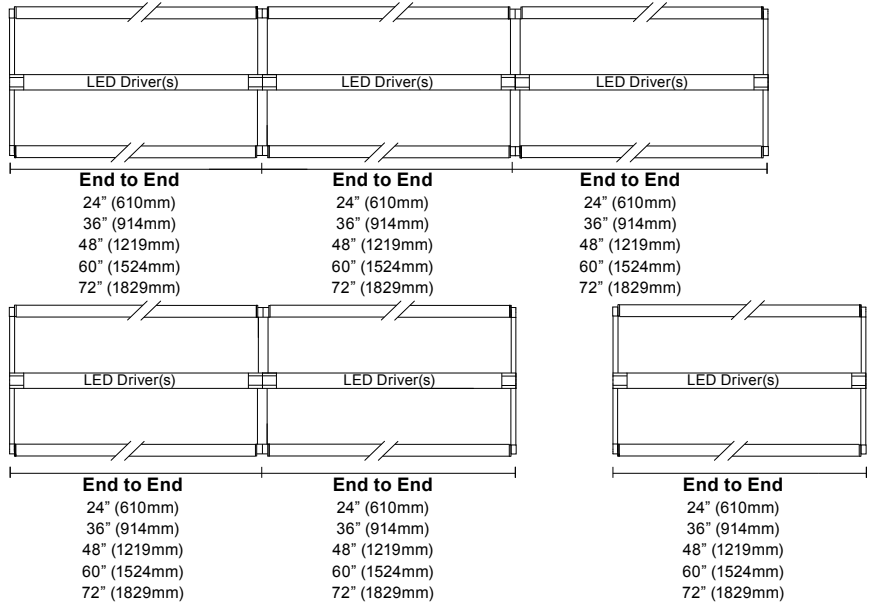


Layout

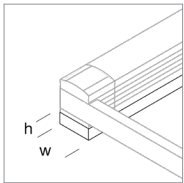
Single Sided (K1)



Double Sided (K2)



# Mounting Options



Vode Strut  
(provided with systems  
with multiple rail sections)  
h 0.8" (20mm)  
w 1.61" (41mm)

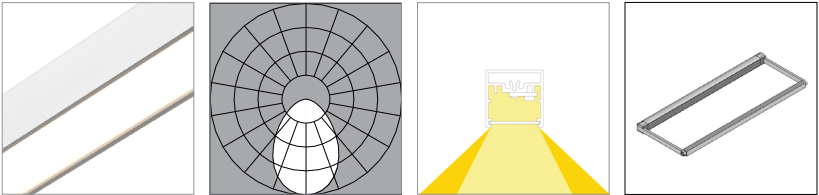
# Power and Controls

|                  |                                                                                                                     |
|------------------|---------------------------------------------------------------------------------------------------------------------|
| Power Type       | Class 2 (<60v output) constant current driver.                                                                      |
| Dimming Controls | Dimming (0.1%, 1%), 0-10v, DALI, DMX, Lutron Hi-lume 1% are available. See <a href="#">Power Guide</a> for details. |
| Input Voltage    | 120v - 277v, 50/60hz.                                                                                               |
| Power Location   | Integral power. See <a href="#">Power Guide</a> for details.                                                        |

# Performance | Zipper LED

Zipper Board has 72 diodes per foot (305mm). Testing based on a 4' rail section. Lumen measurement complies with IES-LM-79-08 testing procedures.

Diffuse (1)



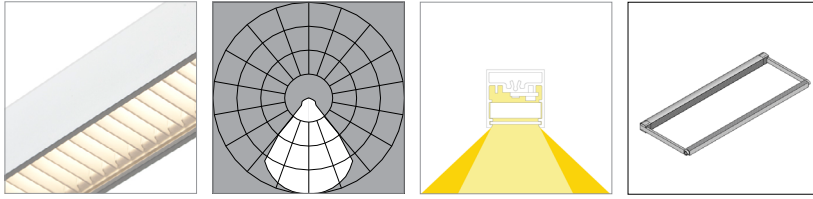
L80 >60,000 hours

|                            | 80 CRI (80min., 84 avg.) |       |       |       | 90 CRI (90min., 96 avg.) |       |       |       |
|----------------------------|--------------------------|-------|-------|-------|--------------------------|-------|-------|-------|
| Low Output (LO)            | 2700K                    | 3000K | 3500K | 4000K | 2700K                    | 3000K | 3500K | 4000K |
| Efficacy - Lumens per Watt | 76                       | 79    | 79    | 79    | 66                       | 68    | 69    | 71    |
| Lumens per foot (305mm)    | 283                      | 292   | 295   | 305   | 244                      | 252   | 257   | 262   |
| Watts per foot (305mm)     | 3.8                      | 3.8   | 3.8   | 3.8   | 3.8                      | 3.8   | 3.8   | 3.8   |
| Standard Output (SO)       | 2700K                    | 3000K | 3500K | 4000K | 2700K                    | 3000K | 3500K | 4000K |
| Efficacy - Lumens per Watt | 94                       | 97    | 98    | 98    | 82                       | 84    | 86    | 88    |
| Lumens per foot (305mm)    | 566                      | 584   | 589   | 589   | 489                      | 504   | 515   | 525   |
| Watts per foot (305mm)     | 6.1                      | 6.1   | 6.1   | 6.1   | 6.1                      | 6.1   | 6.1   | 6.1   |
| CRI                        | -                        | -     | 84    | -     | -                        | -     | 96    | -     |
| High Output (HO)           | 2700K                    | 3000K | 3500K | 4000K | 2700K                    | 3000K | 3500K | 4000K |
| Efficacy - Lumens per Watt | 88                       | 91    | 92    | 92    | 76                       | 78    | 80    | 82    |
| Lumens per foot (305mm)    | 1075                     | 1109  | 1120  | 1120  | 929                      | 958   | 978   | 997   |
| Watts per foot (305mm)     | 12.4                     | 12.4  | 12.4  | 12.4  | 12.4                     | 12.4  | 12.4  | 12.4  |

## Performance | Zipper LED Continued

Zipper Board has 72 diodes per foot (305mm). Testing based on a 4' rail section. Lumen measurement complies with IES-LM-79-08 testing procedures.

### White Baffle (WB)



L80 >60,000 hours

#### 80 CRI (80min., 84 avg.)

#### 90 CRI (90min., 96 avg.)

#### Low Output (LO)

|                            | 2700K | 3000K | 3500K | 4000K | 2700K | 3000K | 3500K | 4000K |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Efficacy - Lumens per Watt | 52    | 54    | 54    | 55    | 44    | 47    | 47    | 48    |
| Lumens per foot (305mm)    | 191   | 201   | 201   | 205   | 164   | 173   | 173   | 177   |
| Watts per foot (305mm)     | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   |

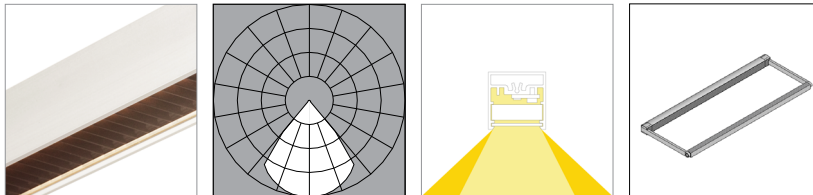
#### Standard Output (SO)

|                            |     |     |     |     |     |     |     |     |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Efficacy - Lumens per Watt | 64  | 66  | 67  | 67  | 55  | 57  | 58  | 59  |
| Lumens per foot (305mm)    | 381 | 393 | 401 | 401 | 329 | 339 | 346 | 353 |
| Watts per foot (305mm)     | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |

#### High Output (HO)

|                            |      |      |      |      |      |      |      |      |
|----------------------------|------|------|------|------|------|------|------|------|
| Efficacy - Lumens per Watt | 59   | 61   | 62   | 64   | 51   | 53   | 54   | 55   |
| Lumens per foot (305mm)    | 725  | 748  | 763  | 778  | 625  | 644  | 658  | 671  |
| Watts per foot (305mm)     | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 |

### Black Baffle (BB)



L80 >60,000 hours

#### 80 CRI (80min., 84 avg.)

#### 90 CRI (90min., 96 avg.)

#### Low Output (LO)

|                            | 2700K | 3000K | 3500K | 4000K | 2700K | 3000K | 3500K | 4000K |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Efficacy - Lumens per Watt | 28    | 30    | 30    | 31    | 25    | 26    | 26    | 26    |
| Lumens per foot (305mm)    | 105   | 110   | 110   | 112   | 90    | 95    | 95    | 97    |
| Watts per foot (305mm)     | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   |

#### Standard Output (SO)

|                            |     |     |     |     |     |     |     |     |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Efficacy - Lumens per Watt | 35  | 36  | 37  | 38  | 30  | 31  | 32  | 33  |
| Lumens per foot (305mm)    | 209 | 216 | 220 | 225 | 180 | 186 | 190 | 194 |
| Watts per foot (305mm)     | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |

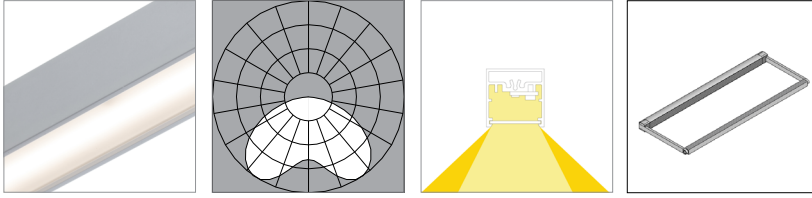
#### High Output (HO)

|                            |      |      |      |      |      |      |      |      |
|----------------------------|------|------|------|------|------|------|------|------|
| Efficacy - Lumens per Watt | 33   | 34   | 35   | 35   | 28   | 29   | 30   | 30   |
| Lumens per foot (305mm)    | 397  | 410  | 418  | 427  | 343  | 353  | 361  | 368  |
| Watts per foot (305mm)     | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 |

## Performance | Zipper LED Continued

Zipper Board has 72 diodes per foot (305mm). Testing based on a 4' rail section. Lumen measurement complies with IES-LM-79-08 testing procedures.

### 120° Batwing (G1)



L80 >60,000 hours

#### 80 CRI (80min., 84 avg.)

#### 90 CRI (90min., 96 avg.)

#### Low Output (LO)

|                            | 2700K | 3000K | 3500K | 4000K | 2700K | 3000K | 3500K | 4000K |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Efficacy - Lumens per Watt | 98    | 101   | 103   | 105   | 84    | 87    | 89    | 91    |
| Lumens per foot (305mm)    | 364   | 375   | 383   | 391   | 314   | 323   | 330   | 337   |
| Watts per foot (305mm)     | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   |

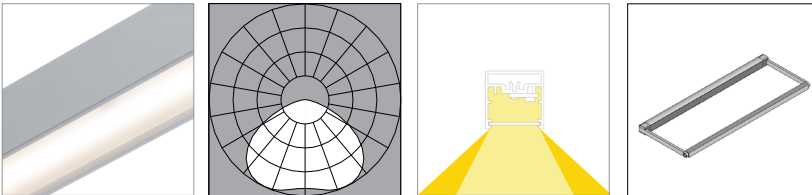
#### Standard Output (SO)

|                            |     |     |     |     |     |     |     |     |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Efficacy - Lumens per Watt | 122 | 126 | 128 | 131 | 105 | 109 | 111 | 113 |
| Lumens per foot (305mm)    | 727 | 750 | 766 | 781 | 627 | 647 | 660 | 673 |
| Watts per foot (305mm)     | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |

#### High Output (HO)

|                            |      |      |      |      |      |      |      |      |
|----------------------------|------|------|------|------|------|------|------|------|
| Efficacy - Lumens per Watt | 113  | 116  | 119  | 121  | 97   | 100  | 102  | 104  |
| Lumens per foot (305mm)    | 1382 | 1426 | 1455 | 1484 | 1192 | 1229 | 1254 | 1279 |
| Watts per foot (305mm)     | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 |

### 120° FlyWing (G2)



L80 >60,000 hours

#### 80 CRI (80min., 84 avg.)

#### 90 CRI (90min., 96 avg.)

#### Low Output (LO)

|                            | 2700K | 3000K | 3500K | 4000K | 2700K | 3000K | 3500K | 4000K |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Efficacy - Lumens per Watt | 90    | 93    | 95    | 97    | 78    | 80    | 82    | 83    |
| Lumens per foot (305mm)    | 335   | 346   | 353   | 360   | 289   | 298   | 304   | 310   |
| Watts per foot (305mm)     | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   | 3.8   |

#### Standard Output (SO)

|                            |     |     |     |     |     |     |     |     |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Efficacy - Lumens per Watt | 112 | 115 | 118 | 120 | 96  | 99  | 101 | 103 |
| Lumens per foot (305mm)    | 670 | 691 | 705 | 719 | 578 | 596 | 608 | 620 |
| Watts per foot (305mm)     | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |

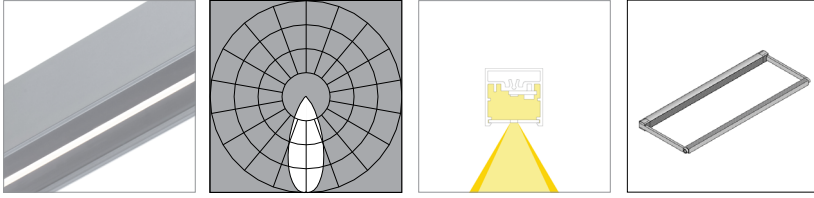
#### High Output (HO)

|                            |      |      |      |      |      |      |      |      |
|----------------------------|------|------|------|------|------|------|------|------|
| Efficacy - Lumens per Watt | 104  | 107  | 109  | 112  | 90   | 93   | 94   | 96   |
| Lumens per foot (305mm)    | 1273 | 1313 | 1340 | 1367 | 1098 | 1132 | 1155 | 1178 |
| Watts per foot (305mm)     | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 |

## Performance | Zipper LED Continued

Zipper Board has 72 diodes per foot (305mm). Testing based on a 4' rail section. Lumen measurement complies with IES-LM-79-08 testing procedures.

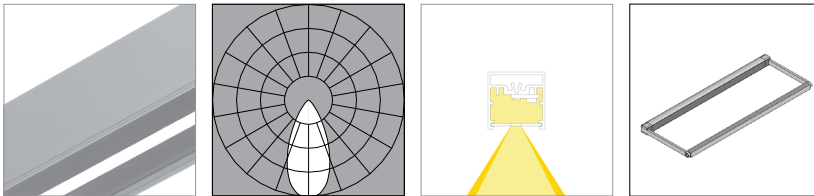
### 40° Symmetric (S1)



L80 >60,000 hours

|                            | 80 CRI (80min., 84 avg.) |       |       |       | 90 CRI (90min., 96 avg.) |       |       |       |
|----------------------------|--------------------------|-------|-------|-------|--------------------------|-------|-------|-------|
| Low Output (LO)            | 2700K                    | 3000K | 3500K | 4000K | 2700K                    | 3000K | 3500K | 4000K |
| Efficacy - Lumens per Watt | 42                       | 43    | 44    | 45    | 36                       | 37    | 38    | 39    |
| Lumens per foot (305mm)    | 154                      | 159   | 162   | 165   | 133                      | 137   | 140   | 142   |
| Watts per foot (305mm)     | 3.8                      | 3.8   | 3.8   | 3.8   | 3.8                      | 3.8   | 3.8   | 3.8   |
|                            |                          |       |       |       |                          |       |       |       |
| Standard Output (SO)       |                          |       |       |       |                          |       |       |       |
| Efficacy - Lumens per Watt | 52                       | 53    | 54    | 55    | 45                       | 46    | 47    | 48    |
| Lumens per foot (305mm)    | 308                      | 317   | 324   | 330   | 265                      | 273   | 279   | 285   |
| Watts per foot (305mm)     | 6.1                      | 6.1   | 6.1   | 6.1   | 6.1                      | 6.1   | 6.1   | 6.1   |
|                            |                          |       |       |       |                          |       |       |       |
| High Output (HO)           |                          |       |       |       |                          |       |       |       |
| Efficacy - Lumens per Watt | 48                       | 49    | 50    | 51    | 41                       | 43    | 44    | 44    |
| Lumens per foot (305mm)    | 584                      | 603   | 615   | 627   | 504                      | 520   | 530   | 541   |
| Watts per foot (305mm)     | 12.4                     | 12.4  | 12.4  | 12.4  | 12.4                     | 12.4  | 12.4  | 12.4  |

### 60° Symmetric (S2)



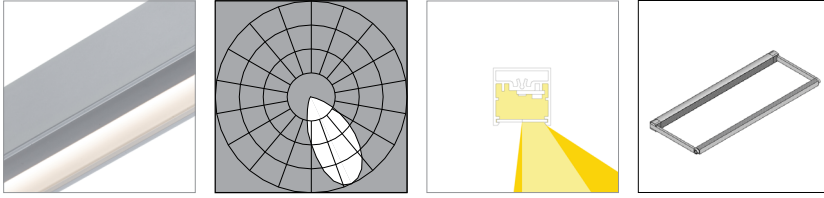
L80 >60,000 hours

|                            | 80 CRI (80min., 84 avg.) |       |       |       | 90 CRI (90min., 96 avg.) |       |       |       |
|----------------------------|--------------------------|-------|-------|-------|--------------------------|-------|-------|-------|
| Low Output (LO)            | 2700K                    | 3000K | 3500K | 4000K | 2700K                    | 3000K | 3500K | 4000K |
| Efficacy - Lumens per Watt | 52                       | 53    | 54    | 55    | 45                       | 46    | 47    | 48    |
| Lumens per foot (305mm)    | 191                      | 197   | 201   | 205   | 165                      | 170   | 173   | 177   |
| Watts per foot (305mm)     | 3.8                      | 3.8   | 3.8   | 3.8   | 3.8                      | 3.8   | 3.8   | 3.8   |
|                            |                          |       |       |       |                          |       |       |       |
| Standard Output (SO)       |                          |       |       |       |                          |       |       |       |
| Efficacy - Lumens per Watt | 64                       | 66    | 67    | 69    | 55                       | 57    | 58    | 59    |
| Lumens per foot (305mm)    | 382                      | 394   | 402   | 410   | 329                      | 340   | 347   | 354   |
| Watts per foot (305mm)     | 6.1                      | 6.1   | 6.1   | 6.1   | 6.1                      | 6.1   | 6.1   | 6.1   |
|                            |                          |       |       |       |                          |       |       |       |
| High Output (HO)           |                          |       |       |       |                          |       |       |       |
| Efficacy - Lumens per Watt | 59                       | 61    | 63    | 64    | 51                       | 53    | 54    | 55    |
| Lumens per foot (305mm)    | 726                      | 749   | 764   | 779   | 626                      | 646   | 659   | 672   |
| Watts per foot (305mm)     | 12.4                     | 12.4  | 12.4  | 12.4  | 12.4                     | 12.4  | 12.4  | 12.4  |

## Performance | Zipper LED Continued

Zipper Board has 72 diodes per foot (305mm). Testing based on a 4' rail section. Lumen measurement complies with IES-LM-79-08 testing procedures.

### 85° Asymmetric (A1)



L80 >60,000 hours

|                            | 80 CRI (80min., 84 avg.) |       |       |       | 90 CRI (90min., 96 avg.) |       |       |       |
|----------------------------|--------------------------|-------|-------|-------|--------------------------|-------|-------|-------|
|                            | 2700K                    | 3000K | 3500K | 4000K | 2700K                    | 3000K | 3500K | 4000K |
| <b>Low Output (LO)</b>     |                          |       |       |       |                          |       |       |       |
| Efficacy - Lumens per Watt | 66                       | 68    | 69    | 71    | 57                       | 59    | 60    | 61    |
| Lumens per foot (305mm)    | 244                      | 252   | 257   | 262   | 210                      | 217   | 221   | 226   |
| Watts per foot (305mm)     | 3.8                      | 3.8   | 3.8   | 3.8   | 3.8                      | 3.8   | 3.8   | 3.8   |

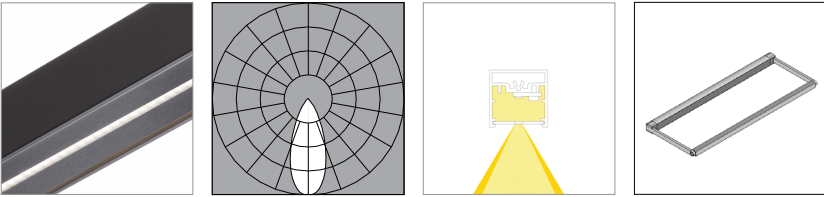
### Standard Output (SO)

|                            |     |     |     |     |     |     |     |     |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Efficacy - Lumens per Watt | 75  | 77  | 79  | 80  | 65  | 67  | 68  | 69  |
| Lumens per foot (305mm)    | 488 | 503 | 513 | 524 | 420 | 434 | 443 | 451 |
| Watts per foot (305mm)     | 6.6 | 6.6 | 6.6 | 6.6 | -   | -   | -   | -   |

### High Output (HO)

|                            |      |      |      |      |      |      |      |      |
|----------------------------|------|------|------|------|------|------|------|------|
| Efficacy - Lumens per Watt | 76   | 78   | 80   | 81   | 65   | 67   | 69   | 70   |
| Lumens per foot (305mm)    | 927  | 956  | 975  | 995  | 799  | 824  | 841  | 858  |
| Watts per foot (305mm)     | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 |

### 40° Symmetric, black finish (S1-BL)



L80 >60,000 hours

|                            | 80 CRI (80min., 84 avg.) |       |       |       | 90 CRI (90min., 96 avg.) |       |       |       |
|----------------------------|--------------------------|-------|-------|-------|--------------------------|-------|-------|-------|
|                            | 2700K                    | 3000K | 3500K | 4000K | 2700K                    | 3000K | 3500K | 4000K |
| <b>Low Output (LO)</b>     |                          |       |       |       |                          |       |       |       |
| Efficacy - Lumens per Watt | 32                       | 33    | 33    | 34    | 28                       | 29    | 29    | 30    |
| Lumens per foot (305mm)    | 117                      | 121   | 123   | 126   | 101                      | 104   | 106   | 108   |
| Watts per foot (305mm)     | 3.8                      | 3.8   | 3.8   | 3.8   | 3.8                      | 3.8   | 3.8   | 3.8   |

### Standard Output (SO)

|                            |     |     |     |     |     |     |     |     |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Efficacy - Lumens per Watt | 39  | 41  | 41  | 42  | 34  | 35  | 36  | 37  |
| Lumens per foot (305mm)    | 234 | 242 | 247 | 252 | 202 | 208 | 213 | 217 |
| Watts per foot (305mm)     | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |

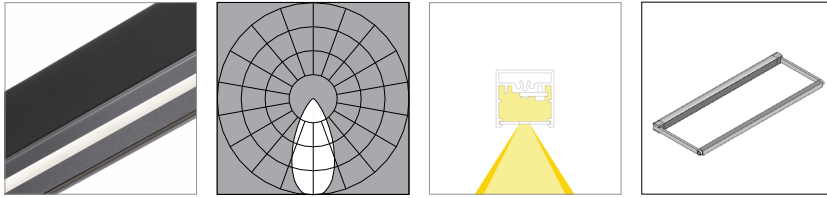
### High Output (HO)

|                            |      |      |      |      |      |      |      |      |
|----------------------------|------|------|------|------|------|------|------|------|
| Efficacy - Lumens per Watt | 37   | 38   | 39   | 39   | 32   | 33   | 33   | 34   |
| Lumens per foot (305mm)    | 445  | 459  | 469  | 478  | 384  | 396  | 404  | 412  |
| Watts per foot (305mm)     | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 |

## Performance | Zipper LED Continued

Zipper Board has 72 diodes per foot (305mm). Testing based on a 4' rail section. Lumen measurement complies with IES-LM-79-08 testing procedures.

### 60° Symmetric, black finish (S2-BL)



L80 >60,000 hours

|                            | 2700K | 80 CRI (80min., 84 avg.) |       |       |  | 2700K | 90 CRI (90min., 96 avg.) |       |       |  |
|----------------------------|-------|--------------------------|-------|-------|--|-------|--------------------------|-------|-------|--|
|                            |       | 3000K                    | 3500K | 4000K |  |       | 3000K                    | 3500K | 4000K |  |
| <b>Low Output (LO)</b>     |       |                          |       |       |  |       |                          |       |       |  |
| Efficacy - Lumens per Watt | 39    | 40                       | 41    | 41    |  | 33    | 34                       | 35    | 36    |  |
| Lumens per foot (305mm)    | 142   | 147                      | 150   | 153   |  | 123   | 127                      | 129   | 132   |  |
| Watts per foot (305mm)     | 3.8   | 3.8                      | 3.8   | 3.8   |  | 3.8   | 3.8                      | 3.8   | 3.8   |  |

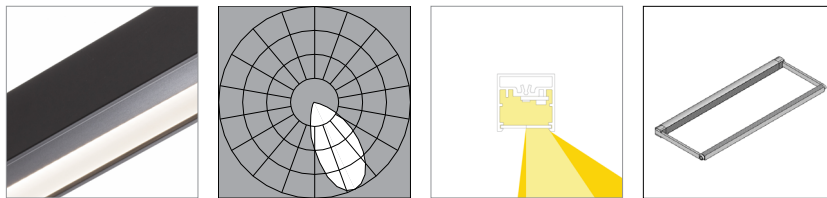
### Standard Output (SO)

|                            |     |     |     |     |  |     |     |     |     |  |
|----------------------------|-----|-----|-----|-----|--|-----|-----|-----|-----|--|
| Efficacy - Lumens per Watt | 48  | 49  | 50  | 51  |  | 41  | 43  | 43  | 44  |  |
| Lumens per foot (305mm)    | 285 | 294 | 300 | 306 |  | 245 | 253 | 258 | 263 |  |
| Watts per foot (305mm)     | 6.1 | 6.1 | 6.1 | 6.1 |  | 6.1 | 6.1 | 6.1 | 6.1 |  |

### High Output (HO)

|                            |      |      |      |      |  |      |      |      |      |  |
|----------------------------|------|------|------|------|--|------|------|------|------|--|
| Efficacy - Lumens per Watt | 44   | 46   | 47   | 48   |  | 38   | 40   | 40   | 41   |  |
| Lumens per foot (305mm)    | 541  | 558  | 569  | 581  |  | 446  | 481  | 491  | 501  |  |
| Watts per foot (305mm)     | 12.4 | 12.4 | 12.4 | 12.4 |  | 12.4 | 12.4 | 12.4 | 12.4 |  |

### 85° Asymmetric, black finish (A1-BL)



L80 >60,000 hours

|                            | 2700K | 80 CRI (80min., 84 avg.) |       |       |  | 2700K | 90 CRI (90min., 96 avg.) |       |       |  |
|----------------------------|-------|--------------------------|-------|-------|--|-------|--------------------------|-------|-------|--|
|                            |       | 3000K                    | 3500K | 4000K |  |       | 3000K                    | 3500K | 4000K |  |
| <b>Low Output (LO)</b>     |       |                          |       |       |  |       |                          |       |       |  |
| Efficacy - Lumens per Watt | 35    | 36                       | 36    | 37    |  | 30    | 31                       | 32    | 32    |  |
| Lumens per foot (305mm)    | 128   | 132                      | 134   | 137   |  | 110   | 114                      | 116   | 118   |  |
| Watts per foot (305mm)     | 3.8   | 3.8                      | 3.8   | 3.8   |  | 3.8   | 3.8                      | 3.8   | 3.8   |  |

### Standard Output (SO)

|                            |     |     |     |     |  |     |     |     |     |  |
|----------------------------|-----|-----|-----|-----|--|-----|-----|-----|-----|--|
| Efficacy - Lumens per Watt | 43  | 44  | 45  | 46  |  | 37  | 38  | 39  | 40  |  |
| Lumens per foot (305mm)    | 255 | 263 | 269 | 274 |  | 220 | 227 | 232 | 236 |  |
| Watts per foot (305mm)     | 6.1 | 6.1 | 6.1 | 6.1 |  | 6.1 | 6.1 | 6.1 | 6.1 |  |

### High Output (HO)

|                            |      |      |      |      |  |      |      |      |      |  |
|----------------------------|------|------|------|------|--|------|------|------|------|--|
| Efficacy - Lumens per Watt | 40   | 41   | 42   | 43   |  | 34   | 36   | 36   | 37   |  |
| Lumens per foot (305mm)    | 485  | 501  | 511  | 521  |  | 418  | 431  | 440  | 449  |  |
| Watts per foot (305mm)     | 12.4 | 12.4 | 12.4 | 12.4 |  | 12.4 | 12.4 | 12.4 | 12.4 |  |

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