

PHILIPS

Fortimo

LED

Fortimo LED Strip
1150mm 4400lm 8xx HV4



Datasheet

Fortimo LED Strip

Fortimo LED Strip systems are ideal for use in designer or miniaturized, slim linear luminaires for direct lighting in offices, banks, schools, public buildings, supermarkets and anywhere where a small, slim form factor is appreciated.

Key features and benefits

- State-of-the-art LED module efficiency of up to 182 lm/W
- Long life-time: >50,000 hours
- High color rendering (CRI >80 and >90)
- Excellent color consistency of 3 SDCM
- Choice of color temperatures (3000 K, 4000 K and 5000 K)
- Five module lengths: 0,5ft/140mm, 1ft/280mm, 2ft/560mm, 1150mm or 1450mm
- Slim module width of only 20mm
- Three lumen packages: 650 lm, 1100 lm and 2000 lm per foot/280 mm
- Choice of front-side or back-side connector
- Tunable lumen output, efficacy and lifetime
- Push-in connectors enabling automated wiring
- Wide temperature (Tc) range from -40 °C up to +90 °C
- Five year system warranty

January 2017

Ordering data

| Commercial product name | EOC | 12NC | Box quantity |
|--|-------------------|----------------|--------------|
| Fortimo LED Strip 1150mm 4400lm 830 HV4F | 6947939 131549 00 | 9290 015 48006 | 96 |
| Fortimo LED Strip 1150mm 4400lm 840 HV4F | 6947939 131563 00 | 9290 015 48106 | 96 |
| Fortimo LED Strip 1150mm 4400lm 850 HV4F | 6947939 131587 00 | 9290 015 48206 | 96 |
| Fortimo LED Strip 1150mm 4400lm 830 HV4B | 6947939 132027 00 | 9290 015 50406 | 96 |
| Fortimo LED Strip 1150mm 4400lm 840 HV4B | 6947939 132041 00 | 9290 015 50506 | 96 |
| Fortimo LED Strip 1150mm 4400lm 850 HV4B | 6947939 132065 00 | 9290 015 50606 | 96 |

Drive currents

| Parameter | Nominal* | Life** | Max*** | Unit |
|---|----------|--------|--------|------|
| Fortimo LED Strip 1150mm 4400lm 8xx HV4 | 276 | 390 | 417 | mA |

Module temperatures

| Parameter | Nominal* | Life** | Max*** | Unit |
|---|----------|--------|--------|------|
| T _c (case temperature at T _c point) | 45 | 70 | 80 | °C |

* Nominal value at which typical performance is specified

** Value at which life time is specified

*** Maximum value for safe operation, do not operate above this value

Optical characteristics - table per color (CCT)

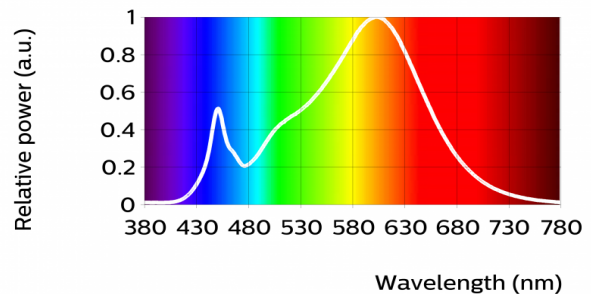
Fortimo LED Strip 1150mm 4400lm 830 HV4F
 Fortimo LED Strip 1150mm 4400lm 830 HV4B

| Parameter | Min | Typ | Max | Unit |
|------------------------------------|------|----------------|-------|------|
| Luminous flux | 3862 | 4175 | 4488 | lm |
| Module efficacy | 152 | 169 | 186 | lm/W |
| Correlated color temperature (CCT) | | 3000 | | K |
| Color coordinates (CIEx, CIEy) | | (0.432, 0.401) | | - |
| Color consistency | | | 3 | SDCM |
| CRI | 80 | | | |
| Radiation angle | | 120 | | deg |
| Photobiological safety | | | RG1 | |
| Energy efficiency label | | A++ | | |
| $\Delta u'v'$ at 6000 hours | | | 0.007 | |

R9=8

Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 . Measurement precision for CRI ± 1.5

| Operation point | 830 | lm | lm/W |
|-----------------|---------------|------|------|
| 80% I nom 221mA | Tc 25 °C | 3469 | 176 |
| | Tc-nom 45 °C | 3401 | 175 |
| | Tc-life 70 °C | 3294 | 171 |
| I nom 276mA | Tc 25 °C | 4260 | 171 |
| | Tc-nom 45 °C | 4175 | 169 |
| | Tc-life 70 °C | 4044 | 166 |
| I life 390mA | Tc 25 °C | 5812 | 161 |
| | Tc-nom 45 °C | 5694 | 159 |
| | Tc-life 70 °C | 5510 | 156 |



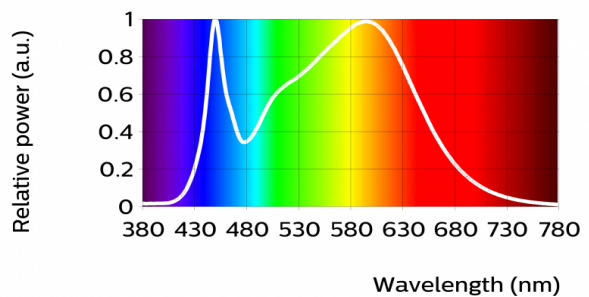
Fortimo LED Strip 1150mm 4400lm 840 HV4F
 Fortimo LED Strip 1150mm 4400lm 840 HV4B

| Parameter | Min | Typ | Max | Unit |
|------------------------------------|------|----------------|-------|------|
| Luminous flux | 4070 | 4400 | 4730 | lm |
| Module efficacy | 160 | 178 | 196 | lm/W |
| Correlated color temperature (CCT) | | 4000 | | K |
| Color coordinates (CIEx, CIEy) | | (0.380, 0.377) | | - |
| Color consistency | | | 3 | SDCM |
| CRI | 80 | | | |
| Radiation angle | | 120 | | deg |
| Photobiological safety | | | RG1 | |
| Energy efficiency label | | A++ | | |
| Δu'v' at 6000 hours | | | 0.007 | |

R9=9

Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5

| Operation point | 840 | lm | lm/W |
|-----------------|---------------|------|------|
| 80% I nom 221mA | Tc 25 °C | 3655 | 186 |
| | Tc-nom 45 °C | 3583 | 184 |
| | Tc-life 70 °C | 3472 | 181 |
| I nom 276mA | Tc 25 °C | 4489 | 180 |
| | Tc-nom 45 °C | 4400 | 178 |
| | Tc-life 70 °C | 4262 | 175 |
| I life 390mA | Tc 25 °C | 6125 | 169 |
| | Tc-nom 45 °C | 6001 | 168 |
| | Tc-life 70 °C | 5809 | 164 |



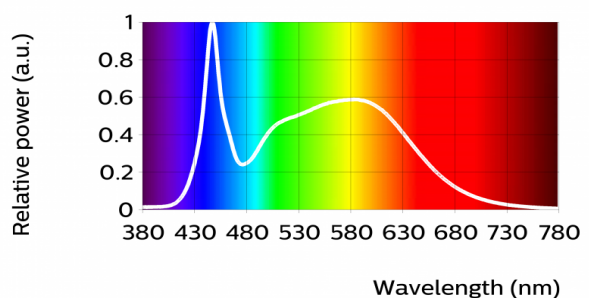
Fortimo LED Strip 1150mm 4400lm 850 HV4F
 Fortimo LED Strip 1150mm 4400lm 850 HV4B

| Parameter | Min | Typ | Max | Unit |
|------------------------------------|------|----------------|-------|------|
| Luminous flux | 4112 | 4445 | 4778 | lm |
| Module efficacy | 162 | 180 | 198 | lm/W |
| Correlated color temperature (CCT) | | 5000 | | K |
| Color coordinates (CIEx, CIEy) | | (0.341, 0.350) | | - |
| Color consistency | | | 3 | SDCM |
| CRI | 80 | | | |
| Radiation angle | | 120 | | deg |
| Photobiological safety | | | RG1 | |
| Energy efficiency label | | A++ | | |
| Δu'v' at 6000 hours | | | 0.007 | |

R9=11

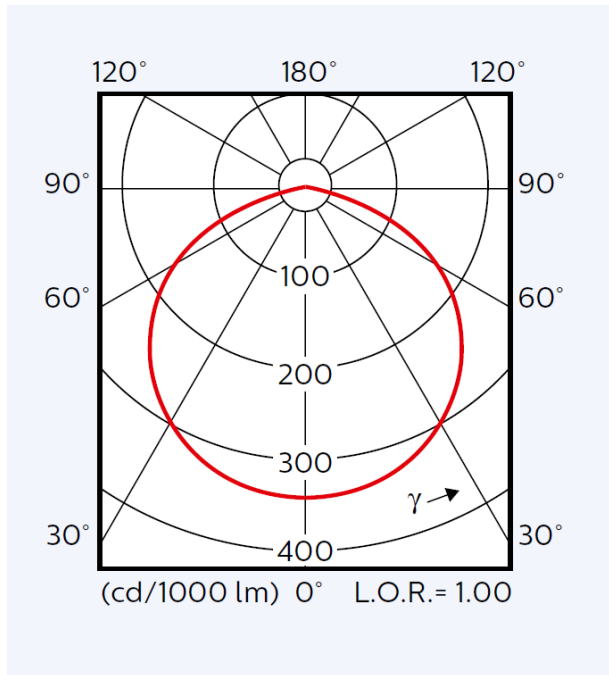
Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5

| Operation point | 850 | lm | lm/W |
|-----------------|---------------|------|------|
| 80% I nom 221mA | Tc 25 °C | 3691 | 188 |
| | Tc-nom 45 °C | 3619 | 186 |
| | Tc-life 70 °C | 3507 | 182 |
| I nom 276mA | Tc 25 °C | 4534 | 182 |
| | Tc-nom 45 °C | 4445 | 180 |
| | Tc-life 70 °C | 4307 | 177 |
| I life 390mA | Tc 25 °C | 6188 | 171 |
| | Tc-nom 45 °C | 6064 | 169 |
| | Tc-life 70 °C | 5872 | 166 |



Beam shape

The Philips LED module generates a Lambertian beam shape, which is a pragmatic starting point for OEMs wishing to design secondary optics.



Electrical characteristics

- Fortimo LED Strip 1150mm 4400lm 830 HV4F
- Fortimo LED Strip 1150mm 4400lm 840 HV4F
- Fortimo LED Strip 1150mm 4400lm 850 HV4F
- Fortimo LED Strip 1150mm 4400lm 830 HV4B
- Fortimo LED Strip 1150mm 4400lm 840 HV4B
- Fortimo LED Strip 1150mm 4400lm 850 HV4B

| Parameter | Min | Typ | Max | Unit |
|---------------------------------------|------|------|------|------|
| Forward voltage | 85.7 | 89.4 | 93.1 | V |
| Power consumption | 23.6 | 24.7 | 25.7 | W |
| Number of modules in series per chain | | | 3 | |

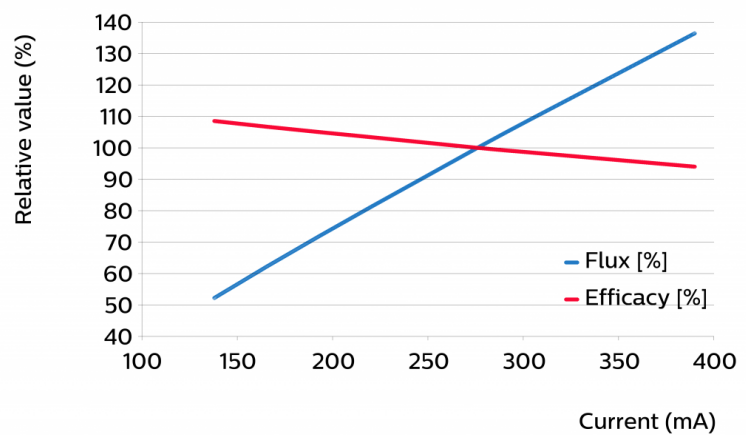
Bins E and F.

Measurement precision for V_f +/- 3%. Measurement precision for power +/- 3.3%. Specifications stated at T_c -nom and I -nom.

Tuning information

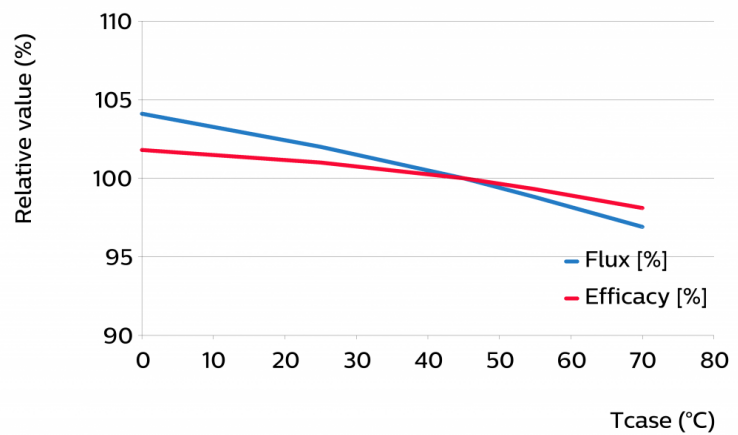
Flux and efficacy versus current (at Tc nominal)

| I [mA] | Flux [%] | Efficacy [%] |
|--------|----------|--------------|
| 390 | 136 | 94 |
| 304 | 109 | 99 |
| 290 | 105 | 99 |
| 276 | 100 | 100 |
| 249 | 91 | 102 |
| 221 | 81 | 103 |
| 193 | 72 | 105 |
| 166 | 62 | 107 |
| 138 | 52 | 109 |



Flux and efficacy versus temperature at Tc (at I nominal)

| Tcase [°C] | Flux [%] | Efficacy [%] |
|------------|----------|--------------|
| 70 | 97 | 98 |
| 55 | 99 | 99 |
| 45 | 100 | 100 |
| 25 | 102 | 101 |
| 0 | 104 | 102 |



Lumen maintenance

| Operation point | Lumen maintenance x 1000 hours | L70 | | | L80 | | | L90 | | |
|-----------------|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | B50 | B20 | B10 | B50 | B20 | B10 | B50 | B20 | B10 |
| 80% I-nom 221mA | Tc 25°C | >72 | >72 | >72 | >72 | 66 | 62 | 38 | 34 | 32 |
| | Tc-nom 45°C | >72 | >72 | >72 | >72 | 66 | 62 | 38 | 34 | 32 |
| | Tc-life 70°C | >72 | >72 | >72 | 58 | 52 | 50 | 31 | 28 | 26 |
| I-nom 276mA | Tc 25°C | >72 | >72 | >72 | >72 | 66 | 62 | 38 | 34 | 32 |
| | Tc-nom 45°C | >72 | >72 | >72 | >72 | 66 | 62 | 38 | 34 | 32 |
| | Tc-life 70°C | >72 | >72 | >72 | 58 | 52 | 50 | 31 | 28 | 26 |
| I-life 390mA | Tc 25°C | >72 | >72 | >72 | >72 | 66 | 62 | 38 | 34 | 32 |
| | Tc-nom 45°C | >72 | >72 | >72 | >72 | 66 | 62 | 38 | 34 | 32 |
| | Tc-life 70°C | >72 | >72 | >72 | 58 | 52 | 50 | 31 | 28 | 26 |

Values in the table are based on available LM80 LED data (12000h). Lumen maintenance will be updated once additional measurement data becomes available.

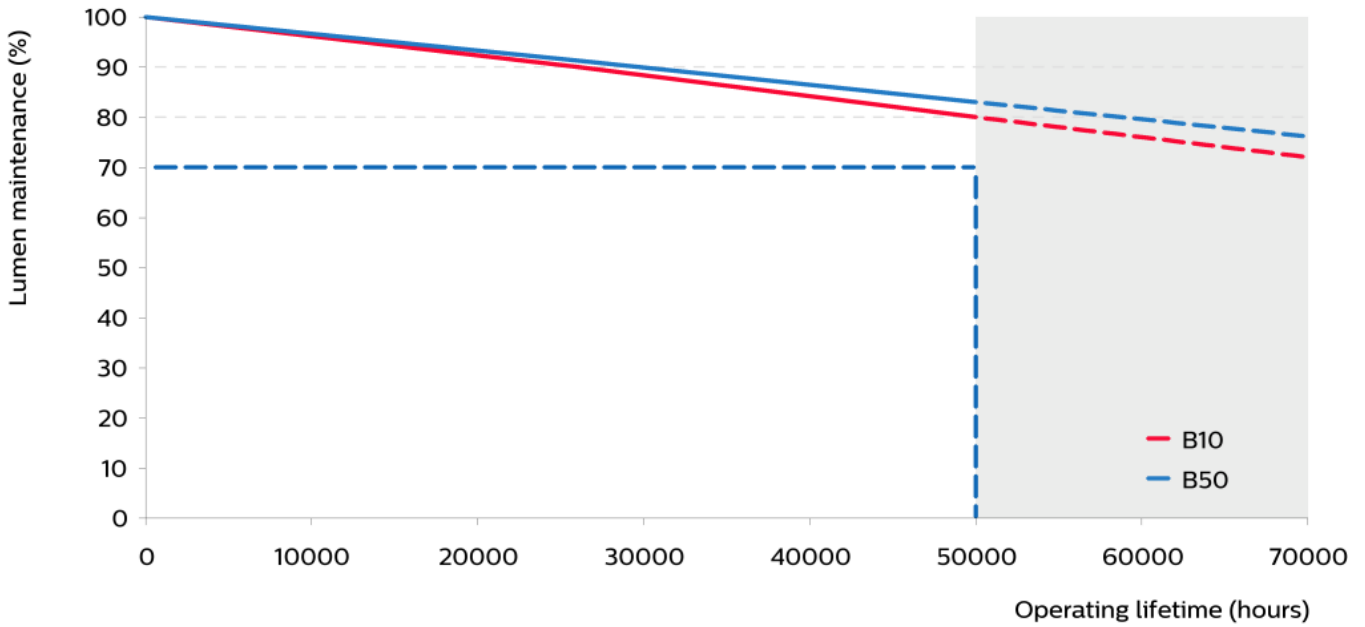
Thermal switching table

Calculated number of switches at which the survival rate of the population >90%, at a given ambient temperature and delta T with respect to Tc (where Tc = Tambient + delta T)

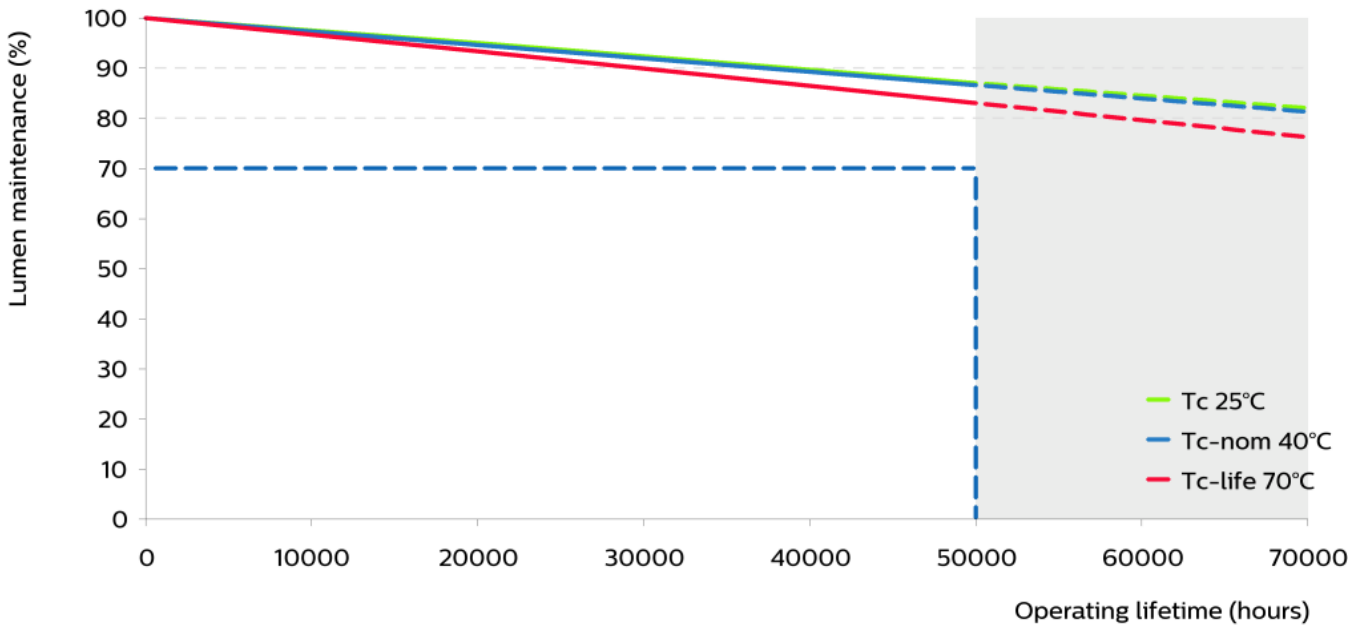
| | | Tambient [°C] | | | | | | | | | | | | |
|---|---|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| | | -40 | -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | |
| delta T [°C] (delta T = Tc - Tambient) | Continuous operation or dimming only | 10 | >100k | >100k | >100k | >100k | >100k | >100k | >100k | >100k | >100k | >100k | >100k | >30k |
| | | 20 | >100k | >100k | >100k | >100k | >100k | >100k | >100k | >100k | >30k | >30k | 27k | X |
| | | 30 | >100k | >100k | >100k | >100k | >100k | >100k | >30k | >30k | 29k | 17k | X | X |
| | | 40 | >30k | >30k | >30k | >30k | >30k | >30k | 21k | 12k | X | X | X | X |
| | | 50 | 21 k | 21 k | 20 k | 20 k | 20 k | 18 k | 10k | X | X | X | X | X |
| | | 60 | 11 k | 11 k | 11 k | 11 k | 10 k | 8k | X | X | X | X | X | X |
| | | 70 | 6 k | 6 k | 6 k | 6 k | 6 k | X | X | X | X | X | X | X |
| | | 80 | 4 k | 4 k | 4 k | 4 k | X | X | X | X | X | X | X | X |
| | | 90 | 2 k | 2 k | 2 k | X | X | X | X | X | X | X | X | X |
| | | 100 | 1 k | 1 k | X | X | X | X | X | X | X | X | X | X |

Lumen maintenance graphs

Lumen maintenance at I-life and Tc-life conditions

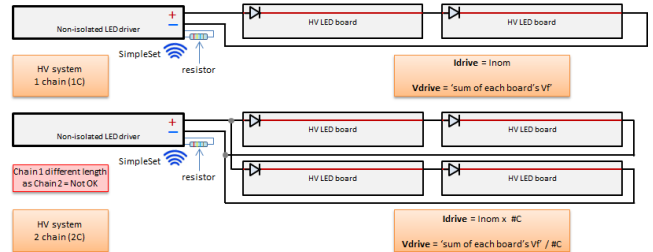
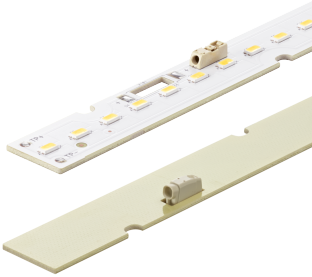


Lumen maintenance for B50 at current I-life conditions



Wiring

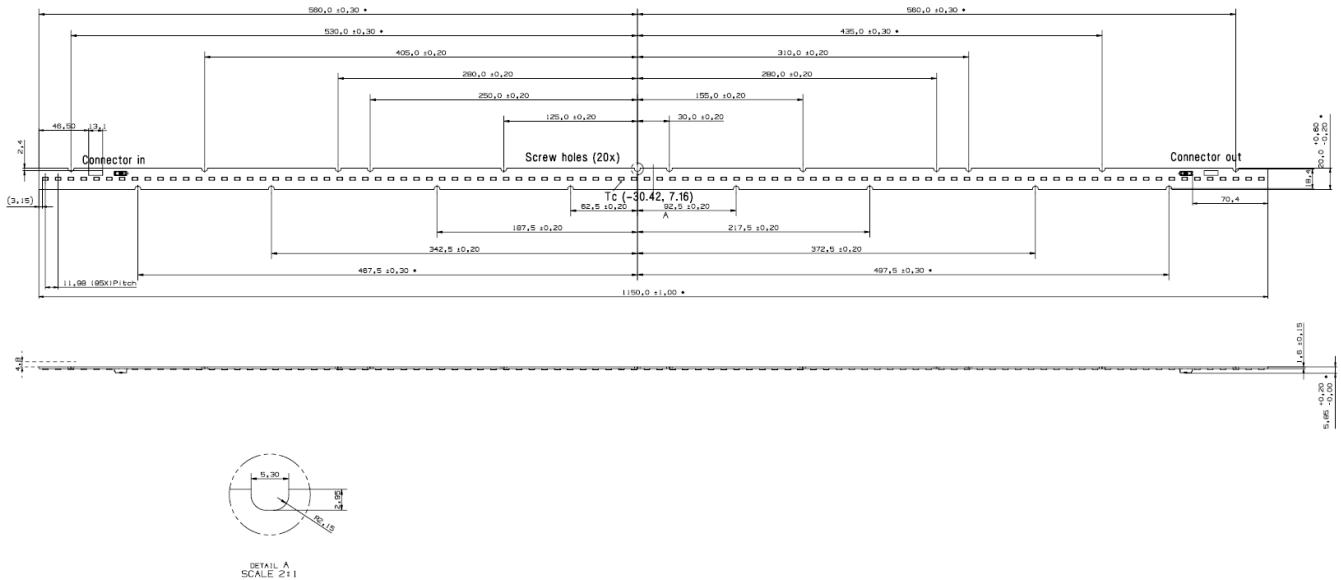
| Specification item | Value | Unit | Condition |
|--------------------------|-------------|-----------------|---------------|
| Input wire cross-section | 0.25...0.75 | mm ² | solid wire |
| | 18...24 | AWG | solid wire |
| Input wire strip length | 7.5...8.5 | mm | |
| Input wire cross-section | 0.33...0.5 | mm ² | stranded wire |
| | 20...22 | AWG | stranded wire |
| Input wire strip length | 7.5...8.5 | mm | |



Mechanical characteristics

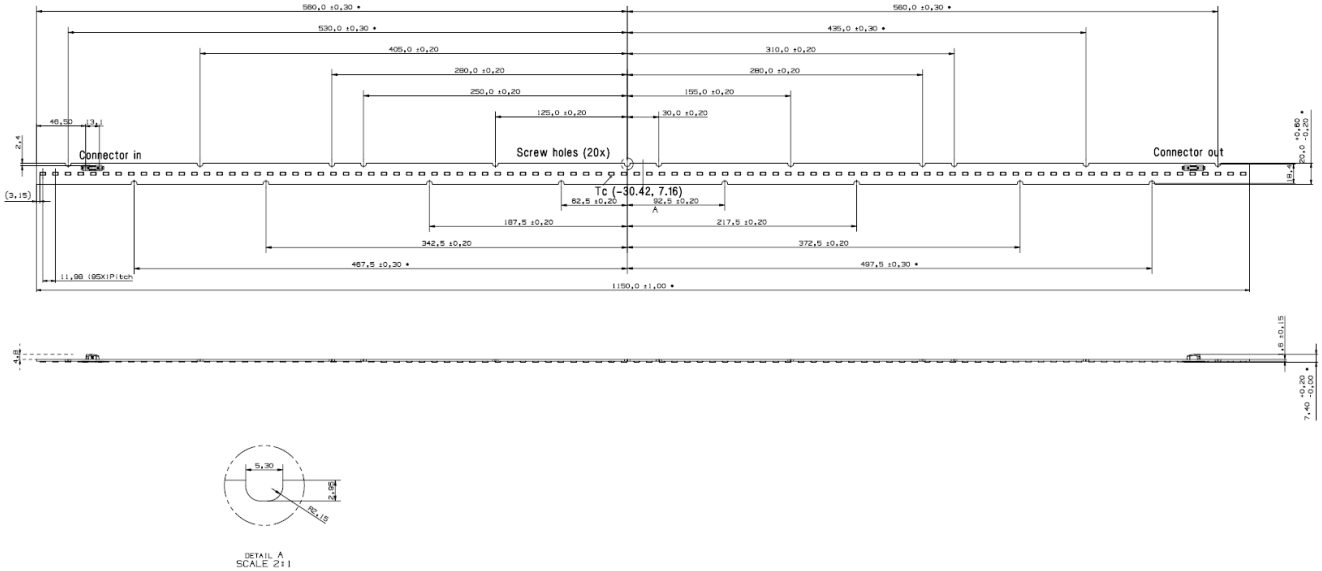
Fortimo LED Strip 1150mm 4400lm 830 HV4F
 Fortimo LED Strip 1150mm 4400lm 840 HV4F
 Fortimo LED Strip 1150mm 4400lm 850 HV4F

| Parameter | Min | Typ | Max | Unit |
|------------------------|------|------|------|------|
| Length | 1149 | 1150 | 1151 | mm |
| Width | 19.8 | 20 | 20.6 | mm |
| Height excl. connector | 2.53 | 5.53 | 2.73 | mm |
| Height incl. connector | 5.5 | 5.85 | 6.2 | mm |
| Warpage (IPC-TM-650) | | | 0.75 | % |



Fortimo LED Strip 1150mm 4400lm 830 HV4B
 Fortimo LED Strip 1150mm 4400lm 840 HV4B
 Fortimo LED Strip 1150mm 4400lm 850 HV4B

| Parameter | Min | Typ | Max | Unit |
|------------------------|------|------|------|------|
| Length | 1149 | 1150 | 1151 | mm |
| Width | 19.8 | 20 | 20.6 | mm |
| Height excl. connector | 2.33 | 5.53 | 2.73 | mm |
| Height incl. connector | 7.05 | 7.4 | 7.75 | mm |
| Warpage (IPC-TM-650) | | | 0.75 | % |



Absolute ratings

| Parameter | Min | Typ | Max | Unit |
|--|------|-----|------|-----------------|
| Current through the LED module (I-max) | | | 417 | mA |
| Case temperature (Tc-max) | | | 80 | °C |
| Power at rated Vf-max and I-max | | | 41.8 | W |
| ESD (direct contact) | | | 8 | kV |
| ESD (air) | | | 15 | kV |
| Working voltage | | | 350 | V _{dc} |
| Voltage strength | 1700 | | | V _{dc} |
| Ambient temperature | -40 | | | °C |

Application information

Certificates and Standards

ENEC+

IEC 62031:2008 (First Edition) + A1:2012 + A2:2014

IEC/TR 62278:2014

CE

Application

| | |
|------------------------|---------------|
| IP rating | No IP-rating |
| Overheating protection | No protection |
| Luminaire class | IEC Class I |
| Dimming | Yes |

