

PHILIPS

Fortimo

LED system

DLM Flex 2000 lm Gen2



Datasheet

A new generation solution for downlight applications

Fortimo LED DLM Flex 2000 lm Gen2

The Fortimo LED DLM Flex G2 is a new generation solution for down light applications. It is a product in line with the Fortimo brand promise of light quality and a smart system. We provide you with a system proposition ranging from 1100 lm to 5000 lm, with the flexibility to tune as per your needs.

Benefits

- Increased energy efficiency
- Flexibility to tune the performance as per your need by modifying the operating point
- Improved luminaire manufacturability
- Improved temperature management
- Smart systems with Xitanium drivers, including the new mini drivers
- Part of the Philips warranty scheme
- Best in class lumen maintenance

Features

- Ability to operate your module at a desired current
- Flexibility to choose between the PCB, with or without the housing
- Two choices for the housing, a high housing having the same form factor as the DLM G5 and the shallow housing, having the same foot print as the DLM G5, but slimmer
- One stop shop for your system (detailed list of complementary partners in design-in guide)

Ordering Data

| Commercial product name | Type | EOC | 12NC |
|------------------------------------|-----------------|-------------------|----------------|
| Fortimo LED DLM Flex 2000/830 Gen2 | LED board | 6974939 121206 00 | 92900 1504 180 |
| Fortimo LED DLM Flex 2000/840 Gen2 | LED board | 6974939 121229 00 | 92900 1504 280 |
| Fortimo LED DLM Flex Cover | Shallow housing | 8718291 797456 00 | 92900 0908 506 |
| Fortimo LED DLM Flex High Cover | High housing | 8718696 421178 00 | 92900 0927 806 |
| Fortimo LED DLM Flex cable 600mm | Cable | 8718696 421192 00 | 92900 0910 706 |

Drive Currents and Case Temperature

| Parameter | Nominal* | Life** | Max*** | Unit |
|---------------------------------------|----------|--------|--------|------|
| I (LED board only) - 830 | 416 | 416 | 960 | mA |
| I (LED board + shallow housing) - 830 | 509 | 509 | 960 | mA |
| I (LED board + high housing) - 830 | 624 | 624 | 960 | mA |
| I (LED board only) - 840 | 381 | 381 | 960 | mA |
| I (LED board + shallow housing) - 840 | 463 | 463 | 960 | mA |
| I (LED board + high housing) - 840 | 561 | 561 | 960 | mA |
| Tc (Case temperature at Tc point) | 75 | 75 | 85 | °C |

* Nominal value at which typical performance is specified.

** Value at which lifetime is specified.

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

Electrical Characteristics

| Parameter | Typ | Max | Unit |
|---|------|------|------|
| Forward Voltage (LED board only) - 830 | 34.4 | 37.2 | V |
| Forward Voltage (LED board + shallow housing) - 830 | 34.8 | 37.6 | V |
| Forward Voltage (LED board + high housing) - 830 | 35.2 | 37.6 | V |
| Forward Voltage (LED board only) - 840 | 34.2 | 37 | V |
| Forward Voltage (LED board + shallow housing) - 840 | 34.6 | 37.3 | V |
| Forward Voltage (LED board + high housing) - 840 | 34.9 | 37.3 | V |
| Power Consumption (LED board only) - 830 | 14.3 | 35.7 | W |
| Power Consumption (LED board + shallow housing) - 830 | 17.7 | 36.1 | W |
| Power Consumption (LED board + high housing) - 830 | 22 | 36.1 | W |
| Power Consumption (LED board only) - 840 | 13 | 35.5 | W |
| Power Consumption (LED board + shallow housing) - 840 | 16 | 35.8 | W |
| Power Consumption (LED board + high housing) - 840 | 19.6 | 35.8 | W |

Specifications stated at Tc-nom and I-nom.

Absolute Maximum Ratings

| Parameter | Min | Typ | Max | Unit |
|---|-----|-----|-----|------|
| Current through the LED module (I-max) | | | 960 | mA |
| Case temperature (Tc-max) | | | 85 | °C |
| Human Body Model (HBM) Class 2A JS-001-2012 | | | 4 | kV |
| Storage temperature | -40 | | 100 | °C |

Optical characteristics - table per CCT

Fortimo LED DLM Flex 2000 lm 830 Gen2

| Parameter | Min | Typ | Unit |
|--|-----|------|------|
| Luminous Flux | | 2000 | lm |
| Efficacy: LED board | | 140 | lm/W |
| Efficacy: LED board + shallow housing | | 113 | lm/W |
| Efficacy: LED board + high housing | | 91 | lm/W |
| Correlated color temperature (CCT) range | | 3000 | K |
| CRI | 80 | | - |
| Energy efficiency label Fortimo LED DLM Flex 2000/830 GEN2 | | A++ | |
| Energy efficiency label Fortimo LED DLM Flex 2000/830 GEN2 + Shallow Housing | | A+ | |
| Energy efficiency label Fortimo LED DLM Flex 2000/830 GEN2 + High Housing | | A+ | |

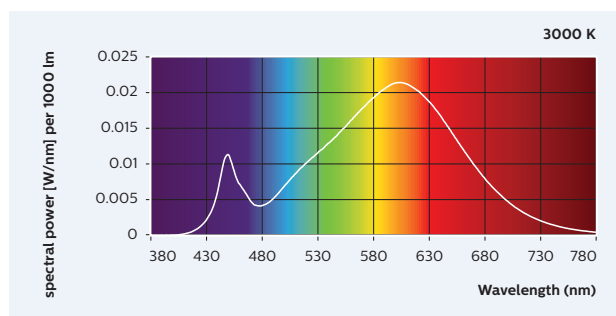
Color consistency of 3 SDCM, averaged over the module.

| Operation Point | 830 | lm | lm/W |
|-----------------|----------------|------|------|
| 80% I-nom | Tc 65 °C | 1680 | 120 |
| | Tc- nom 75 °C | 1650 | 118 |
| | Tc - max 85 °C | 1610 | 116 |
| I-nom | Tc 65 °C | 2050 | 115 |
| | Tc- nom 75 °C | 2000 | 113 |
| | Tc - max 85 °C | 1950 | 111 |
| I-max | Tc 65 °C | 3430 | 94 |
| | Tc- nom 75 °C | 3340 | 93 |
| | Tc - max 85 °C | 3260 | 91 |

Tolerance for flux data is -10% - +20%.

Tolerance for Vf data is ±10%.

Tolerance for efficacy data is dependent on the above mentioned tolerances.

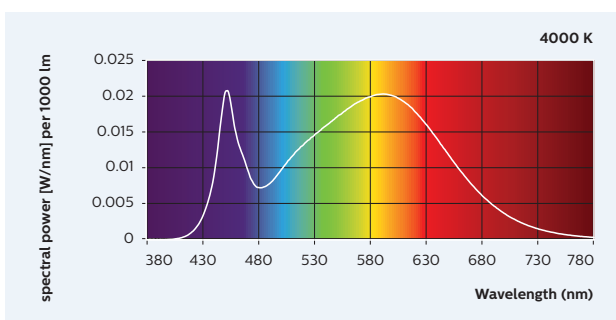


Fortimo LED DLM Flex 2000 lm 840 Gen2

| Parameter | Min | Typ | Unit |
|--|-----|------|------|
| Luminous Flux | | 2000 | lm |
| Efficacy: LED board | | 153 | lm/W |
| Efficacy: LED board + shallow housing | | 125 | lm/W |
| Efficacy: LED board + high housing | | 102 | lm/W |
| Correlated color temperature (CCT) range | | 4000 | K |
| CRI | 80 | | - |
| Energy efficiency label Fortimo LED DLM Flex 2000/840 GEN2 | | A++ | |
| Energy efficiency label Fortimo LED DLM Flex 2000/840 GEN2 + Shallow Housing | | A++ | |
| Energy efficiency label Fortimo LED DLM Flex 2000/840 GEN2 + High Housing | | A+ | |

Color consistency of 3 SDCM, averaged over the module.

| Operation Point | 840 | lm | lm/W |
|-----------------|----------------|------|------|
| 80% I-nom | Tc 65 °C | 1680 | 131 |
| | Tc- nom 75 °C | 1640 | 129 |
| | Tc - max 85 °C | 1600 | 127 |
| I-nom | Tc 65 °C | 2050 | 126 |
| | Tc- nom 75 °C | 2000 | 124 |
| | Tc - max 85 °C | 1950 | 121 |
| I-max | Tc 65 °C | 3720 | 102 |
| | Tc- nom 75 °C | 3630 | 100 |
| | Tc - max 85 °C | 3540 | 98 |



Tolerance for flux data is -10% - +20%.

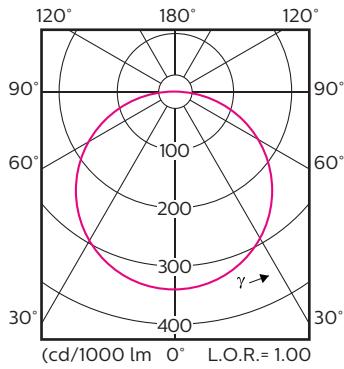
Tolerance for Vf data is ±10%.

Tolerance for efficacy data is dependent on the above mentioned tolerances.

Beam shape

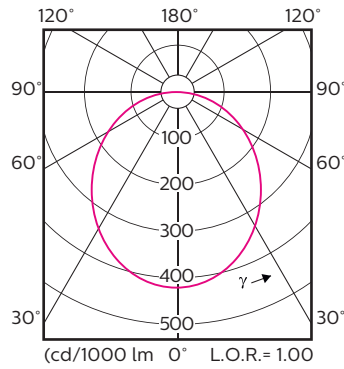
The Philips Fortimo LED DLM Flex generates a Lambertian beam shape, which is a pragmatic starting point for OEMs wishing to design secondary optics.

Polar intensity diagram



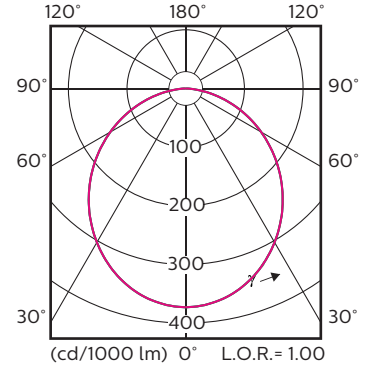
Only LED board (L2)

Polar intensity diagram



With Shallow Housing (L2+)

Polar intensity diagram

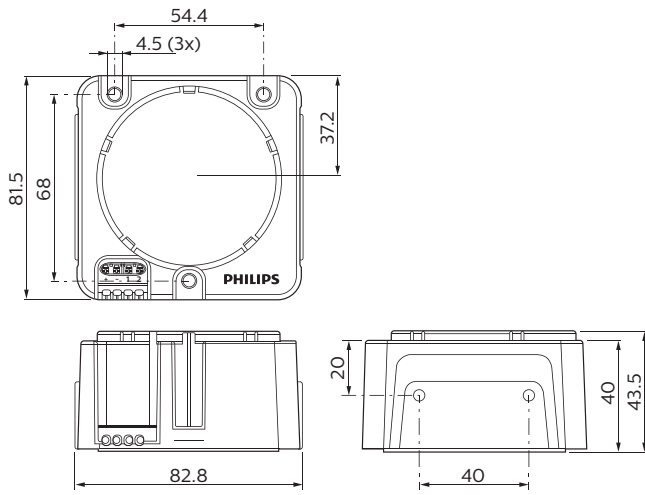


With High Housing (L2+)

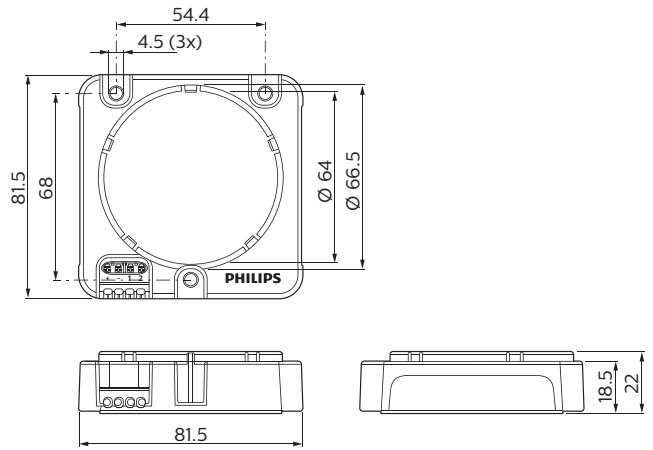
Lifetime

| Operation Point | Lifetime x 1000 hours | L70 | | | L80 | | | L90 | | |
|-----------------|-----------------------|------|------|------|-----|-----|-----|-----|-----|-----|
| | | B50 | B20 | B10 | B50 | B20 | B10 | B50 | B20 | B10 |
| 80% of Inom | Tc 55 °C | > 60 | > 60 | > 60 | 47 | 46 | 45 | 22 | 21 | 21 |
| | Tc 65 °C | > 60 | > 60 | > 60 | 42 | 41 | 40 | 20 | 19 | 19 |
| | Tc 75 °C | > 60 | > 60 | 59 | 38 | 37 | 37 | 18 | 17 | 17 |
| | Tc 85 °C | 56 | 54 | 54 | 35 | 34 | 33 | 16 | 16 | 15 |
| Inom | Tc 55 °C | > 60 | > 60 | > 60 | 45 | 44 | 43 | 21 | 20 | 20 |
| | Tc 65 °C | > 60 | > 60 | > 60 | 41 | 40 | 39 | 19 | 18 | 18 |
| | Tc 75 °C | > 60 | 58 | 57 | 37 | 36 | 35 | 17 | 17 | 16 |
| | Tc 85 °C | 54 | 53 | 52 | 34 | 33 | 32 | 16 | 15 | 15 |
| Imax | Tc 55 °C | > 60 | > 60 | > 60 | 43 | 41 | 41 | 20 | 19 | 19 |
| | Tc 65 °C | > 60 | > 60 | 59 | 38 | 37 | 37 | 18 | 17 | 17 |
| | Tc 75 °C | 56 | 54 | 54 | 35 | 34 | 33 | 16 | 16 | 15 |
| | Tc 85 °C | 51 | 50 | 49 | 32 | 31 | 30 | 15 | 14 | 14 |

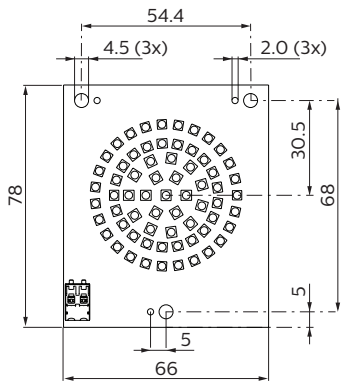
Mechanical characteristics



High housing



Shallow housing



LED board

Dimensions in mm

Application information

Compliance and approval

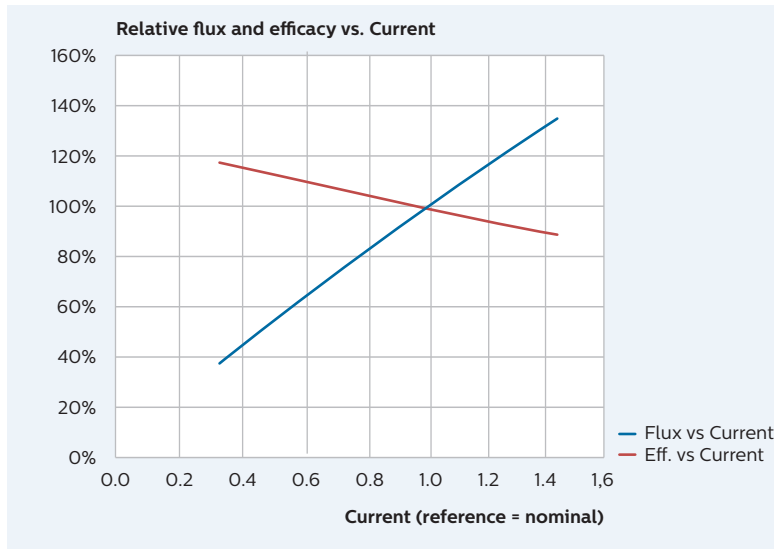
IEC/EN 62031, IEC 62471

Application information

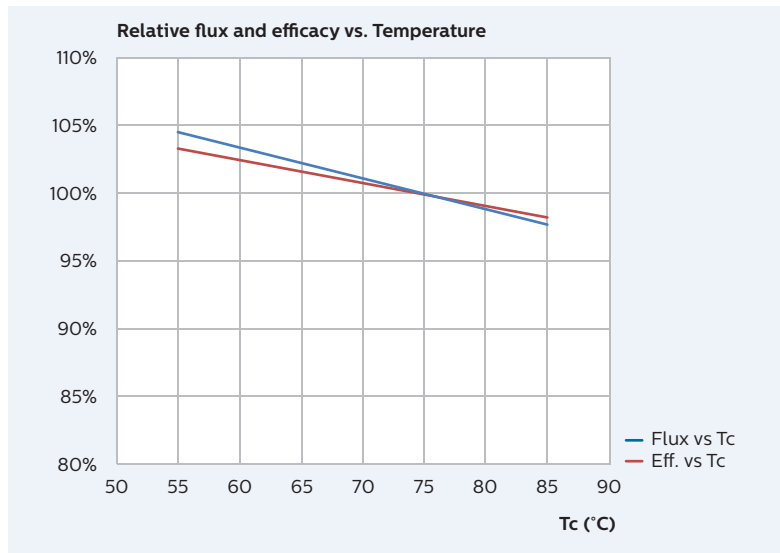
| | |
|------------------------|---------------|
| IP rating | No IP rating |
| Overheating protection | No protection |

Tuning information

Flux and Efficacy vs Current (At $T_c = 75\text{ }^\circ\text{C}$, for LED board + housing)



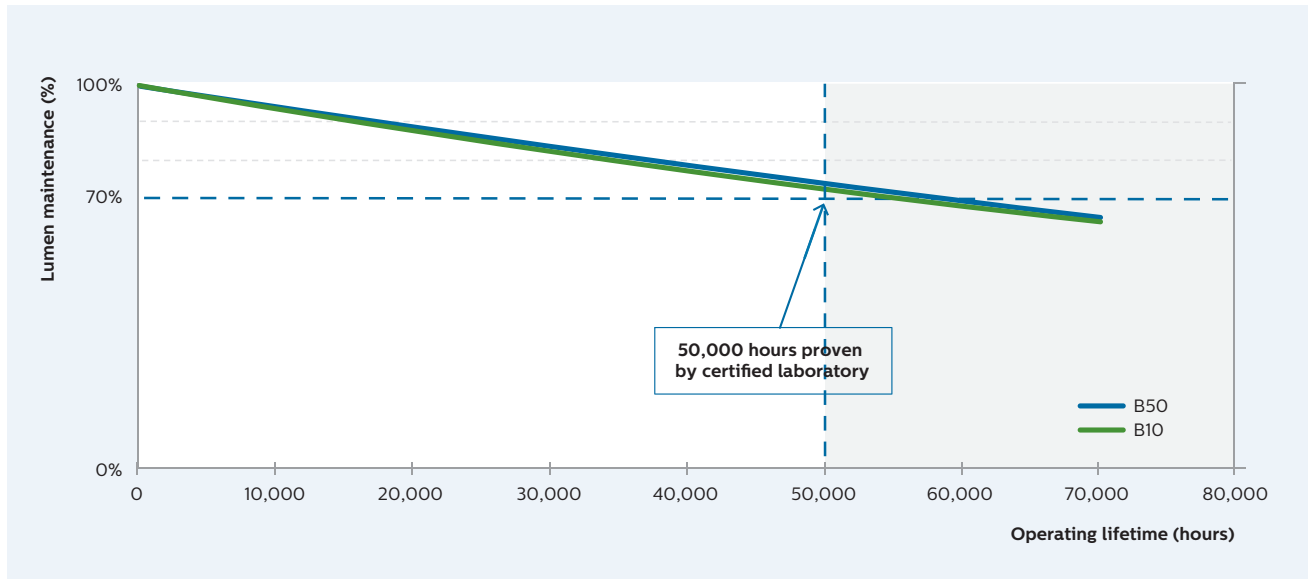
Flux and Efficacy vs Temperature (At $I = I_{nom}$, for LED board + housing)



Lumen maintenance

Lumen maintenance at I-life and Tc-life conditions

Fortimo LED DLM Flex 2000 lm Gen2



Lumen maintenance for B50 at current I-life conditions

Fortimo LED DLM Flex 2000 lm Gen2

