

# PHILIPS

## LED Modules

Fortimo DLM ES  
0-10V G1 NA 1500lm



The new Philips Fortimo downlight module (DLM) EaseSelect (ES) is an integrated module with a 0-10V 1% dimmable driver inside, enabling speed on design, assembly and installation. It also offers a self-cooling feature up to 1,500lm\*, eliminating the need for an external heat sink.

| Commercial Product Name                 | 12NC         | Box Quantity |
|-----------------------------------------|--------------|--------------|
| Fortimo LED DLM ES 1500 830 0-10V G1 NA | 929000791813 | 32           |
| Fortimo LED DLM ES 1500 835 0-10V G1 NA | 929000791913 | 32           |
| Fortimo LED DLM ES 1500 840 0-10V G1 NA | 929000792013 | 32           |

\*Please refer to product's design-in guide for further details and conditions.

# Fortimo LED DLM ES 0-10V G1 NA 1500lm

## Features

- High system efficiency (>95lm/W – including driver)
- Self-cooling up to 1,500 lm\*
- Class 2 LED driver\*\*
  - 120V–277V, 0–10V dimming, 1% dimmable
  - Comparable flicker performance as Philips Advance Xitanium SmartMate drivers. Contact your Philips Lighting account manager for more details.
- L2 LED module
  - 3 SDCM, CRI 80
  - 3 CCTs (3000K, 3500K, 4000K)
  - 3 lumen packages (1,100lm, 1,500lm, 2,000lm)

## Benefits

- Fewer components as compared to current offering = less BOM and manufacturing costs
- Fast assembly and installation time
- Specifications compatible with market standards (no compromise due to integration)
- Improved serviceability as compared to current offering

## Application

- Offices
- Retail
- Hospitality

## Electrical Input Data

| Specification Item                | Value                  | Unit | Condition                               |
|-----------------------------------|------------------------|------|-----------------------------------------|
| Rated Input Voltage               | 120~277                | V    | AC                                      |
| Rated Input Frequency             | 50~60                  | Hz   |                                         |
| Rated Input Current               | 0.09/0.042             | A    | Typical current @120V AC 60Hz/277V 60Hz |
| Power @277V AC 60HZ               | 15                     | W    | Typical                                 |
| Power Factor                      | >0.9                   |      |                                         |
| Total Harmonic Distortion         | <15                    | %    | Typical current @120V AC 60Hz/277V 60Hz |
| Dimming                           | 0-10V dimmable         |      | 100-1%                                  |
| Surge Protection (Combi-Wave, KV) | 2.5                    | Kv   | 100kHz Ring Wave (w/t 30Ω)              |
| Envir. Protection Rating          | UL damp & dry          |      |                                         |
| Approval Marks                    | UL, UL SREC, CSA, RoHS |      |                                         |

Typical specifications stated at Tc-nom.  
Power range -4% to + 4%.

\* Please refer to product's design-in guide for further details and conditions.

\*\* This integrated module is a non-class 2 system with an integrated class 2 driver.

# Fortimo LED DLM ES 0-10V G1 NA 1500lm

## Optical Characteristics – Table per CCT

**Fortimo LED DLM ES 1500 830 0-10V G1 NA**

| Parameter                                    | Min. | Typ. | Max. | Unit |
|----------------------------------------------|------|------|------|------|
| Flux (at Tc-nom)                             |      | 1460 |      | lm   |
| Efficacy (at Tc-nom)                         |      | 97   |      | lm/W |
| Reference Correlated Color Temperature (CCT) |      | 3000 |      | K    |
| CRI                                          | 80   |      |      | -    |
| Radiation Angle                              |      | 108  |      | deg  |

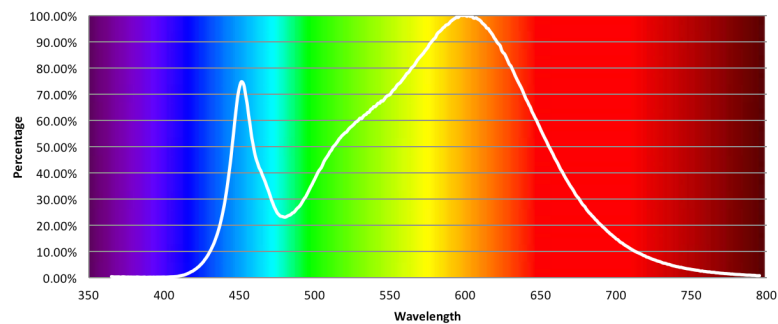
Specifications stated at Tc-nom (70°C).

Color consistency of 3 SDCM, averaged over the module.

Measurement tolerance is: ± 5% for the flux data, ± 5% for the efficacy data, and ± 1.5 for the CRI data.

Flux range -10% to +20%. Power range -4% to + 4%. Efficiency range respective to flux and power ranges.

**Spectrum of DLM ES**



## Optical Characteristics – Table per CCT

**Fortimo LED DLM ES 1500 835 0-10V G1 NA**

| Parameter                                    | Min. | Typ. | Max. | Unit |
|----------------------------------------------|------|------|------|------|
| Flux (at Tc-nom)                             |      | 1490 |      | lm   |
| Efficacy (at Tc-nom)                         |      | 99   |      | lm/W |
| Reference Correlated Color Temperature (CCT) |      | 3500 |      | K    |
| CRI                                          | 80   |      |      | -    |
| Radiation Angle                              |      | 108  |      | deg  |

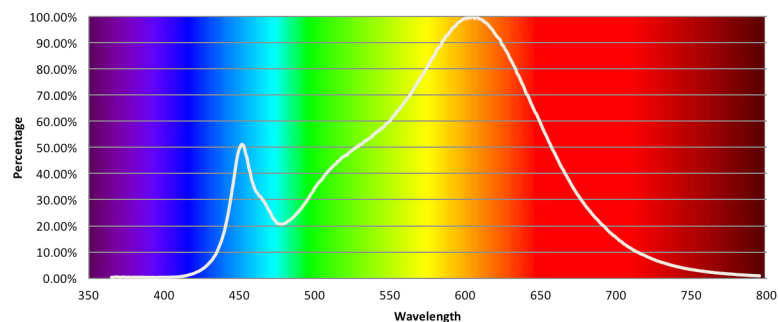
Specifications stated at Tc-nom (70°C).

Color consistency of 3 SDCM, averaged over the module.

Measurement tolerance is: ± 5% for the flux data, ± 5% for the efficacy data, and ± 1.5 for the CRI data.

Flux range -10% to +20%. Power range -4% to + 4%. Efficiency range respective to flux and power ranges.

**Spectrum of DLM ES**



# Fortimo LED DLM ES 0-10V G1 NA 1500lm

## Optical Characteristics – Table per CCT

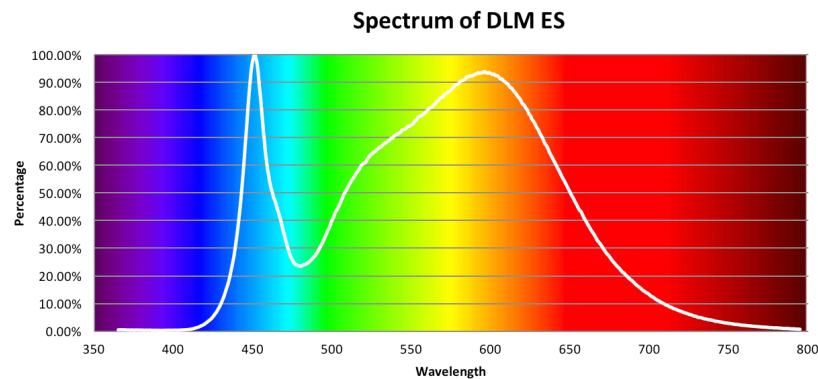
| Fortimo LED DLM ES 1500 840 0-10V G1 NA      |      |      |      |      |
|----------------------------------------------|------|------|------|------|
| Parameter                                    | Min. | Typ. | Max. | Unit |
| Flux (at Tc-nom)                             |      | 1540 |      | lm   |
| Efficacy (at Tc-nom)                         |      | 103  |      | lm/W |
| Reference Correlated Color Temperature (CCT) |      | 4000 |      | K    |
| CRI                                          | 80   |      |      | -    |
| Radiation Angle                              |      | 108  |      | deg  |

Specifications stated at Tc-nom (70°C).

Color consistency of 3 SDCM, averaged over the module.

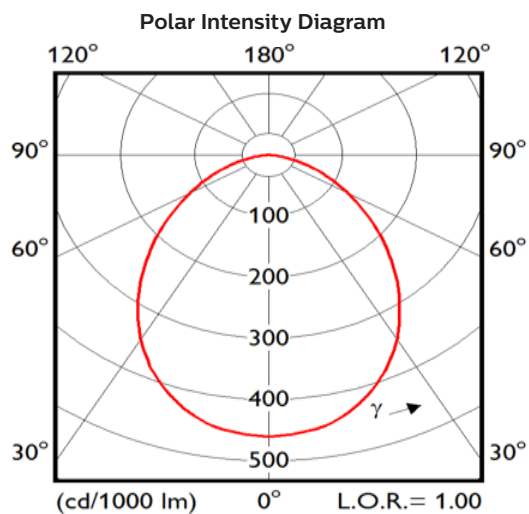
Measurement tolerance is:  $\pm 5\%$  for the flux data,  $\pm 5\%$  for the efficacy data, and  $\pm 1.5$  for the CRI data.

Flux range -10% to +20%. Power range -4% to +4%. Efficiency range respective to flux and power ranges.



## Beam Shape

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



# Fortimo LED DLM ES 0-10V G1 NA 1500lm

## Module Temperatures

| Parameter                         | Nominal* | Life** | Max.*** | Unit |
|-----------------------------------|----------|--------|---------|------|
| Tc (case temperature at Tc point) | 70       | 75     | 85      | °C   |

\* Nominal value at which typical performance is specified.

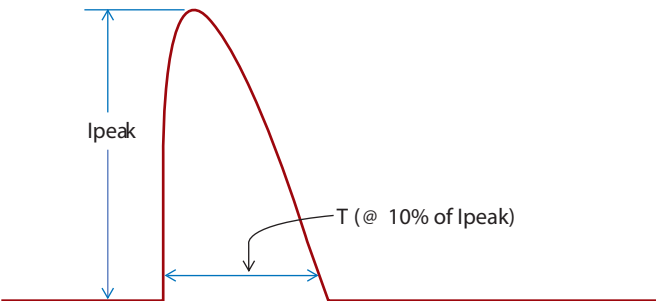
\*\* Value at which lifetime is specified.

\*\* Note: Modules Tc Life of 75°C has a comparable thermal power of a L2 board at Tc=85°C.

\*\*\* Maximum value for safe operation (UL); do not operate above this value.

## Inrush Current Info

| Vin      | Ipeak | T (@ 10% of Ipeak) |
|----------|-------|--------------------|
| 120 Vrms | 1.9   | 50                 |
| 277 Vrms | 4     | 130                |



## Abs Max. Ratings

| Parameter                                  | Min. | Typ. | Max. | Unit |
|--------------------------------------------|------|------|------|------|
| Ambient Temperature                        | -20  |      | 65   | °C   |
| Ambient Relative Humidity (non-condensing) | 10   |      | 90   | %    |
| Operating Pressure                         |      |      | 290  | hPa  |
| Input Voltage                              | 120  |      | 277  | Vac  |
| Storage Temperature                        | -25  |      | 85   | °C   |
| Storage Relative Humidity (non-condensing) | 5    |      | 95   | %    |

## Thermal Switching Cycles

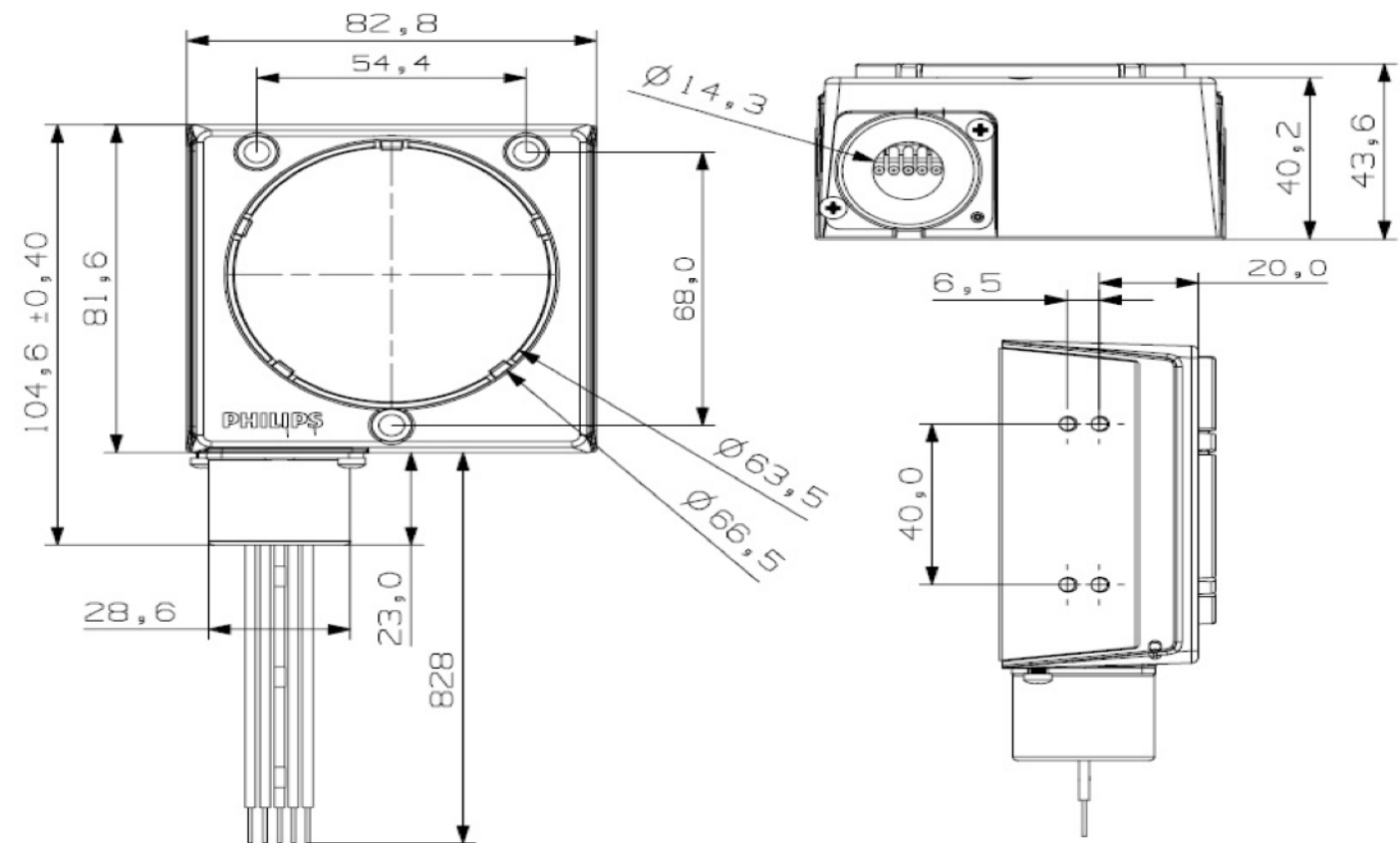
| Tc | Cycles |
|----|--------|
| 75 | 28K    |
| 70 | 42K    |
| 65 | >50K   |
| 60 | >50K   |
| 55 | >50K   |

Maximum number of cycles allowed over lifetime (varying according to different Tc values @Ta=25°C).

# Fortimo LED DLM ES 0-10V G1 NA 1500lm

## Mechanical Characteristics

| Parameter                         | Min.  | Typ.  | Max.  | Unit |
|-----------------------------------|-------|-------|-------|------|
| Height                            | 43.4  | 43.6  | 43.8  | mm   |
| Width                             | 82.6  | 82.8  | 83    | mm   |
| Length Excl. Conduit Fitting Base | 81.4  | 81.6  | 81.8  | mm   |
| Length Incl. Conduit Fitting Base | 104.4 | 104.6 | 104.8 | mm   |



Unmarked tolerances +/-0.2mm

## Application Information

### Compliance and Approval

UL (E336402), UL SREC (UL991), CSA

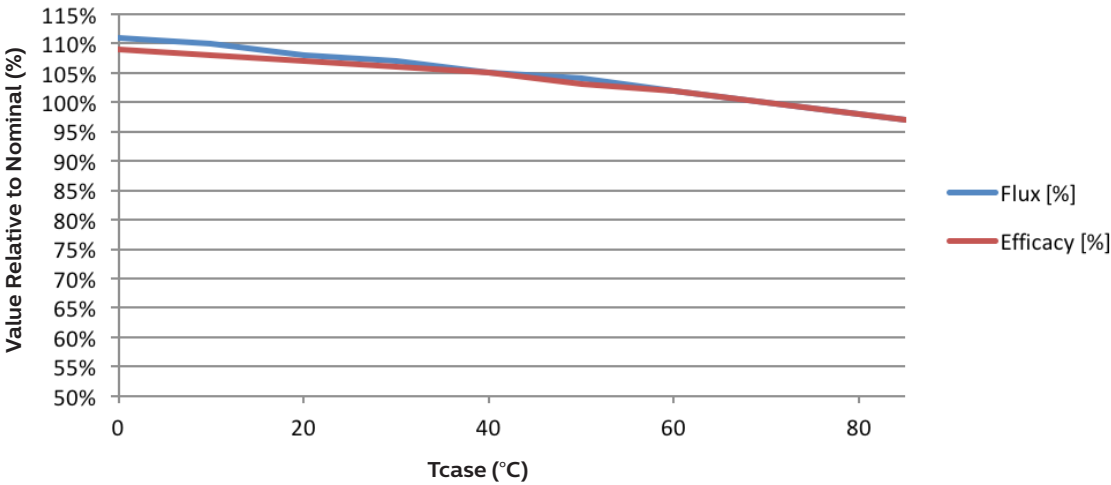
### Application Information

|                        |              |
|------------------------|--------------|
| IP Rating              | No IP Rating |
| Overheating Protection | UL SREC      |
| Luminaire Class        | Non-Class 2  |

# Fortimo LED DLM ES 0-10V G1 NA 1500lm

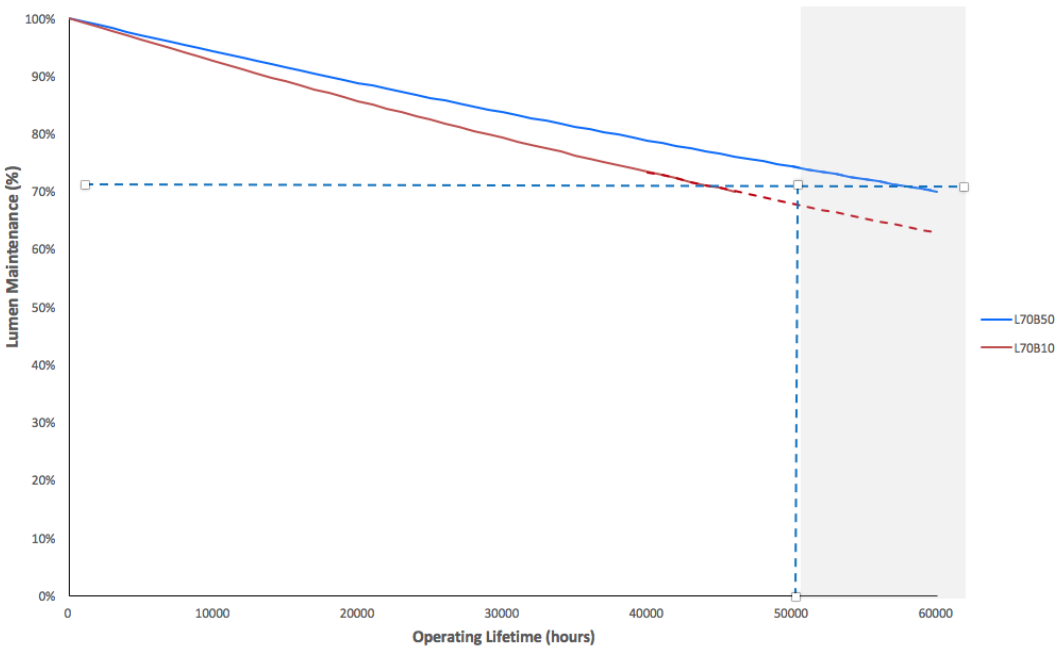
Flux and Efficacy Versus Temperature at Tc

|           | Tc [°C]   | Flux [%]    | Efficacy [%] |
|-----------|-----------|-------------|--------------|
| (Tc-Max.) | 85        | 97%         | 97%          |
| Tc-Life   | 75        | 99%         | 99%          |
| Tc-Nom    | 70        | 100%        | 100%         |
|           | 60        | 102%        | 102%         |
|           | <b>50</b> | <b>104%</b> | <b>103%</b>  |
|           | 40        | 105%        | 105%         |
|           | 30        | 107%        | 106%         |
|           | 20        | 108%        | 107%         |
|           | 10        | 110%        | 108%         |
| (0 degC)  | 0         | 111%        | 109%         |



# Fortimo LED DLM ES 0-10V G1 NA 1500lm

## Lumen Maintenance at Tc-life Conditions



## Parameter

| Parameter                   | Min. | Typ. | Max.  | Unit |
|-----------------------------|------|------|-------|------|
| $\Delta u'v'$ at 6000 hours |      |      | 0.007 | -    |

## Wiring Schematic

|                                                                                     |                                  |
|-------------------------------------------------------------------------------------|----------------------------------|
|  | Neutral (White)                  |
|  | Line (Black)                     |
|  | Dim + (Purple)                   |
|  | Dim - (Gray)                     |
|  | Function GND only (Yellow-Green) |

**Warning:** Install in accordance with national and local electrical codes.

Wires are 18AWG solid copper wires.

Rated  $\geq 300V/105^{\circ}C$

### Grounding:

Metal case must be grounded.

### Note:

Removable conduit interface is suitable for 5/16" conduit cable.

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