

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)

October 2015

Ordering Data

Commercial product name	Type	EOC	12NC
Fortimo LED DLM Flex 2000/830 Gen2	LED board	6974939 121206 00	9290 015 04180
Fortimo LED DLM Flex 2000/840 Gen2	LED board	6974939 121229 00	9290 015 04280
Fortimo LED DLM Flex 2000/850 Gen 2*	LED board	6947939 171026 00	9290 015 08480
Fortimo LED DLM Flex Cover	Shallow housing	8718291 797456 00	9290 009 08506
Fortimo LED DLM Flex High Cover	High housing	8718696 421178 00	9290 009 27806
Fortimo LED DLM Flex cable 600mm	Cable	8718696 421192 00	9290 009 10706

* Available in APR, please contact your local sales representative if availability in EU is needed.

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, 850	381	381	960	mA
I (LED board + shallow housing) - 840, 850	463	463	960	mA
I (LED board + high housing) - 840, 850	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, 850	34.2	37	V
Forward Voltage (LED board + shallow housing) - 840, 850	34.6	37.3	V
Forward Voltage (LED board + high housing) - 840, 850	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, 850	13	35.5	W
Power Consumption (LED board + shallow housing) - 840, 850	16	35.8	W
Power Consumption (LED board + high housing) - 840, 850	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

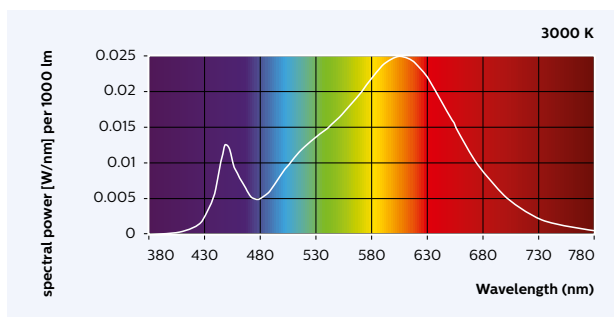
Fortimo LED DLM Flex 2000 lm 830 Gen2

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.



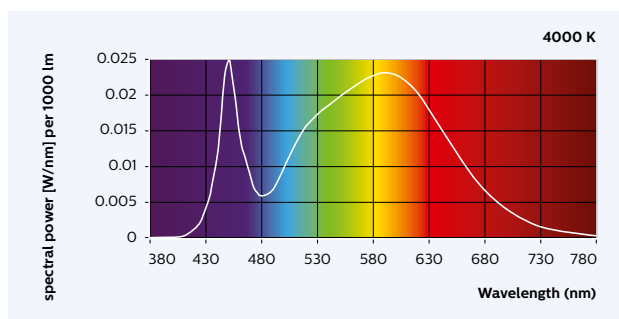
Fortimo LED DLM Flex 2000 lm 840 Gen2

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.



Fortimo LED DLM Flex 2000 lm 850 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		5000	K
CRI	80		-
Energy efficiency label Fortimo LED DLM Flex 2000/850 GEN2		A++	
Energy efficiency label Fortimo LED DLM Flex 2000/850 GEN2 + Shallow Housing		A++	
Energy efficiency label Fortimo LED DLM Flex 2000/850 GEN2 + High Housing		A+	

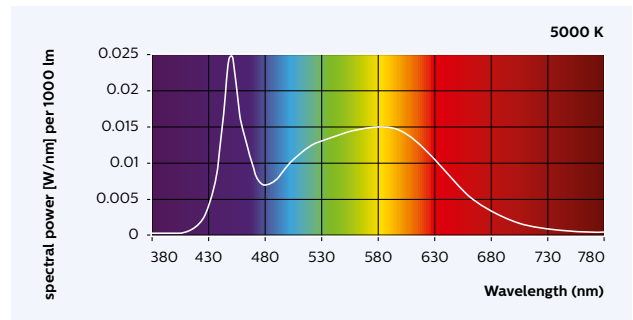
Color consistency of 3 SDCM, averaged over the module.

Operation Point	850	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%.

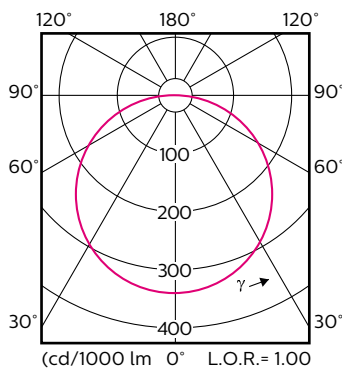
Tolerance for efficacy data is dependent on the above mentioned tolerances.



Beam shape

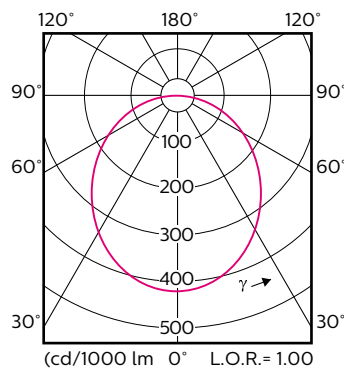
The Philips Fortimo LED DLM Flex generates a Lambertian beam shape, which is a pragmatic starting point for OEMs wishing to design secondary optics.

Polar intensity diagram



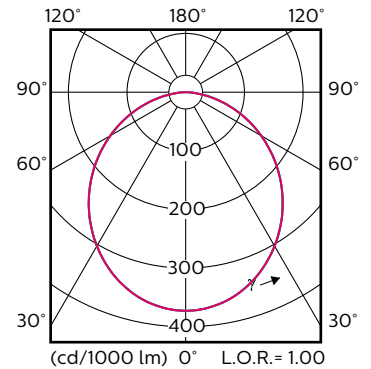
Only LED board (L2)

Polar intensity diagram



With Shallow Housing (L2+)

Polar intensity diagram

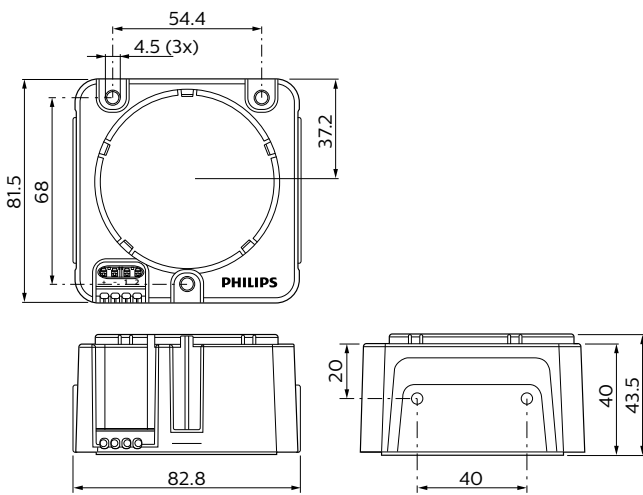


With High Housing (L2+)

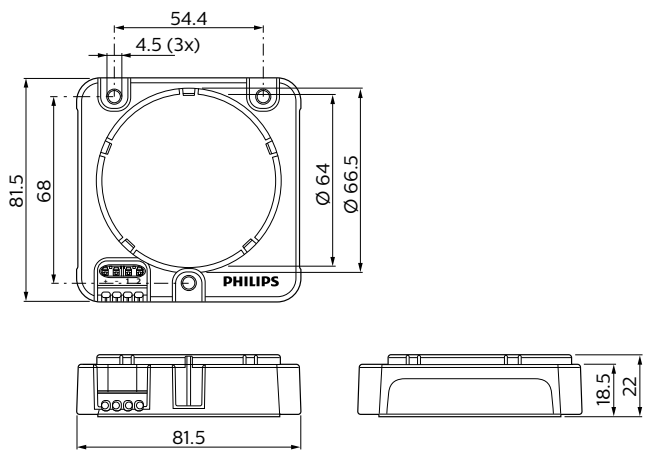
Lifetime

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

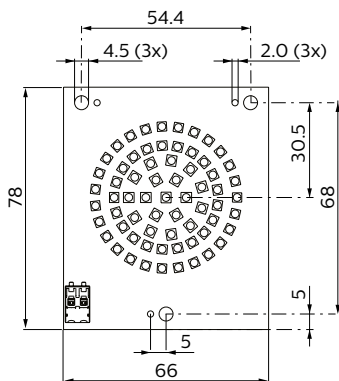
Mechanical characteristics



High housing



Shallow housing



LED board

Dimensions in mm

Application information

Compliance and approval

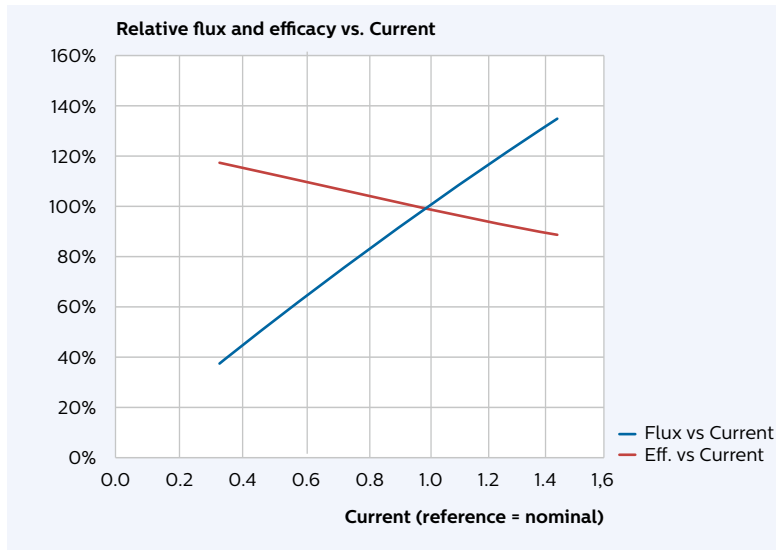
IEC/EN 62031, IEC 62471

Application information

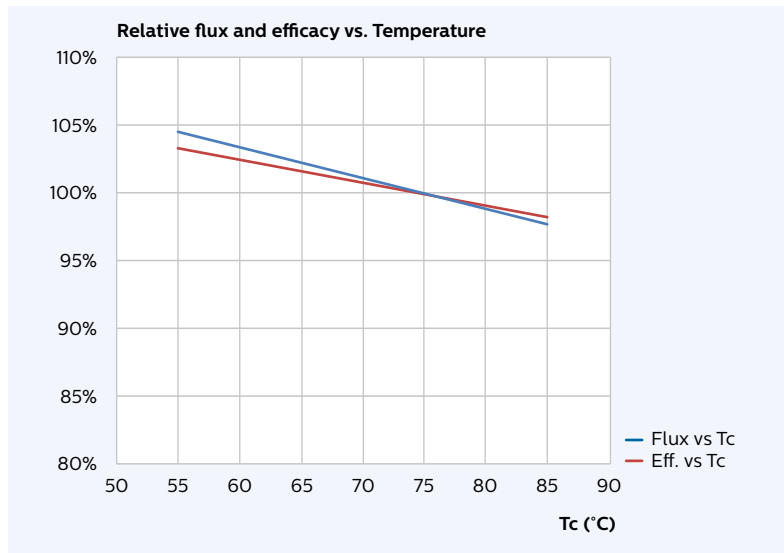
IP rating	No IP rating
Overheating protection	No protection

Tuning information

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



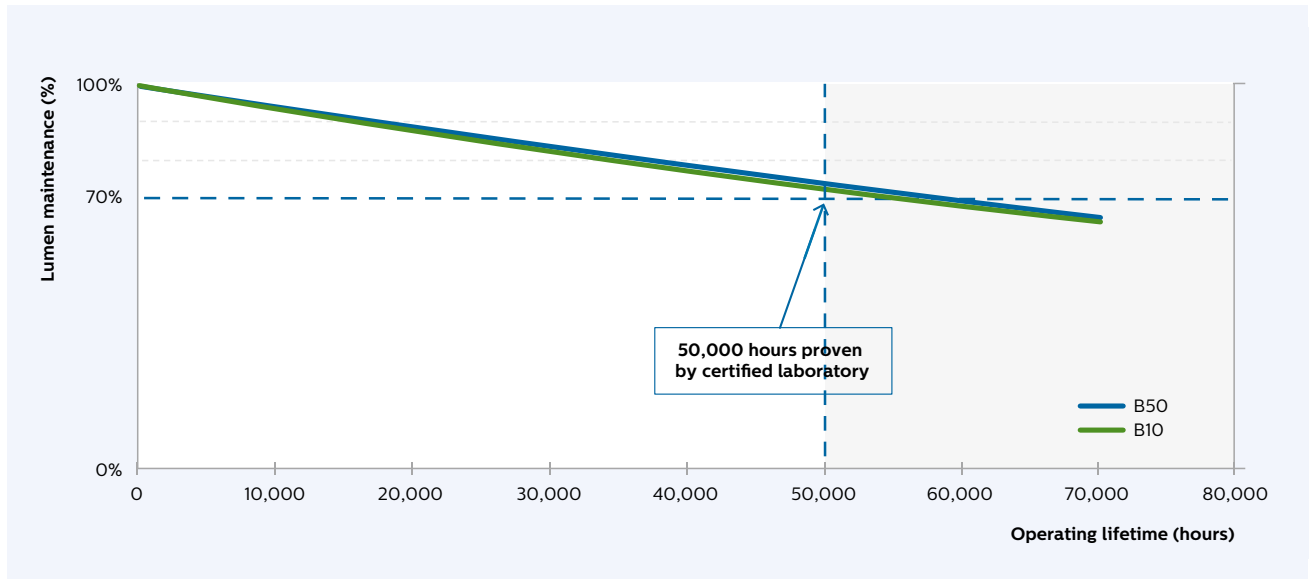
Flux and Efficacy vs Temperature (At $I = I_{\text{nom}}$, for LED board + housing)



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

