



Fortimo LED Line Gen2 Module

Fortimo LED Line 1ft 650lm 3R LV2

Fortimo LED Line systems are designed to replace fluorescent lighting in new luminaires. Fortimo LED Line Gen 2 systems are designed to replace conventional lighting in both fixed and dimmable luminaires. This latest generation is characterized by breakthrough high energy efficiency levels, up to 144 lm/W. Fortimo LED Line systems also offer high quality white light in terms of color rendition and color consistency and are part of the Fortimo future proof promise. The Fortimo LED Line 3R system has been designed for applications where diffused lighting where energy efficiency and glare control are important.

Benefits

- Increased energy efficiency
- Improved luminaire manufacturability
- Improved temperature management
- Applicable for all fluorescent luminaires
- Systems with Xitanium drivers
- 5-year limited system warranty

Features

- Module efficiency up to 144 lm/W
- Introduction of push-in connectors increasing flexibility and enabling usage of bulk wiring and automated wiring
- High quality of white light

Applications

- General lighting applications in office, retail, industry
- Ideal for applications requiring diffuse light



PHILIPS

Commercial product name	12NC
Fortimo LED line 1ft 650lm 830 3R LV2	9290 008 55803
Fortimo LED line 1ft 650lm 835 3R LV2	9290 008 55903
Fortimo LED line 1ft 650lm 840 3R LV2	9290 008 56003
Fortimo LED line 1ft 650lm 850 3R LV2	9290 008 56103

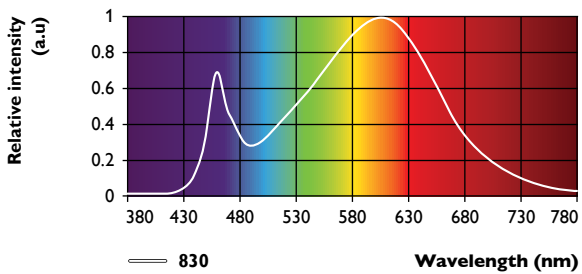
Optical characteristics - table per CCT^{1,2}

Fortimo LED line 1ft 650lm 830 3R LV2

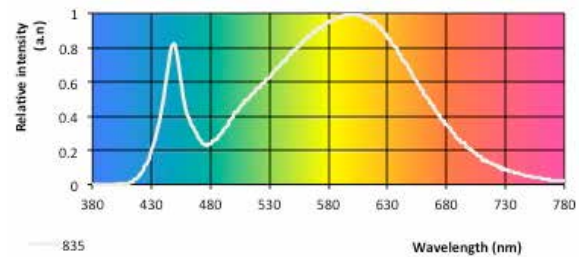
Parameter	Min	Approx.	Max	Unit
Luminous flux ²	560	605	655	lm
Module efficiency	122	134	145	lm/W
Correlated color temperature (CCT) ³		3000		K
Correlated color temperature (CCT) ⁴		3060		K
Color coordinates (CIEx, CIEy)		(0.433, 0.403)		-
Color consistency ⁵			3.5	SDCM
CRI	80			-
Radiation angle		120		deg

Fortimo LED line 1ft 650lm 835 3R LV2

Parameter	Min	Approx.	Max	Unit
Luminous flux ²	590	640	685	lm
Module efficiency	127	139	151	lm/W
Correlated color temperature (CCT) ³		3500		K
Correlated color temperature (CCT) ⁴		3480		K
Color coordinates (CIEx, CIEy)		(0.407, 0.392)		-
Color consistency ⁵			3.5	SDCM
CRI	80			-
Radiation angle		120		deg



3000K



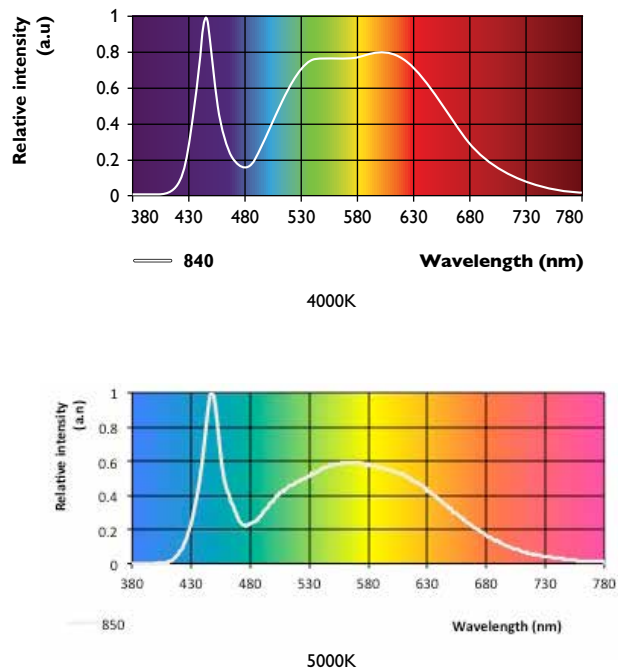
3500K

Fortimo LED line 1ft 650lm 840 3R LV2

Parameter	Min	Approx.	Max	Unit
Luminous flux ²	605	650	700	lm
Module efficiency	130	143	155	lm/W
Correlated color temperature (CCT) ³		4000		K
Correlated color temperature (CCT) ⁴		4010		K
Color coordinates (CIEx, CIEy)		(0.381, 0.380)		-
Color consistency ⁵			3.5	SDCM
CRI	80			-
Radiation angle		120		deg

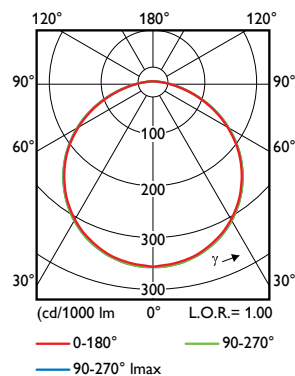
Fortimo LED line 1ft 650lm 850 3R LV2

Parameter	Min	Approx.	Max	Unit
Luminous flux ²	615	665	715	lm
Module efficiency	131	144	156	lm/W
Correlated color temperature (CCT) ³		5000		K
Correlated color temperature (CCT) ⁴		5070		K
Color coordinates (CIEx, CIEy)		(0.343, 0.353)		-
Color consistency ⁵			3.5	SDCM
CRI	80			-
Radiation angle		120		deg



Beam shape

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



1, 2, 3, 4, 5, can be found on page 7

Electrical characteristics¹

Parameter	Min	Typ	Max	Unit
Forward voltage	30.3	31.7	33.2	V
Power consumption	4.4	4.6	4.8	W
Minimum dimming for performance	10			%
Number of parallel modules per chain			6	
Bins		2 (F and G)		

Lifetime^{1,6}

Parameter	Min	Typ	Max	Unit
Lumen maintenance B50L70	50,000			hrs
$\Delta u/v$ at 6,000 hours			0.007	-
Critical failures		no spec known		%

Parameter	Nominal ⁷	Life ⁸	Max ⁹
Tc [°C]	35	56	80
Current [mA]	144	225	285

Performance at 1 life and Tc life	Flux [lm]	Efficiency [lm/W]
3000K	880	121
3500K	925	126
4000K	945	129
5000K	970	130

Abs max ratings

Parameter	Min	Typ	Max	Unit
Current I _{max}			285	mA
Case temperature Tc max			80	°C
ESD (direct contact)			8	kV
ESD (air)			15	kV
Isolation breakdown voltage	500			Vdc
Ambient temperature	-20			°C

Wiring

Specification item	Value	Unit	Condition
Input wire cross-section	0.2...0.75	mm ²	solid and fine stranded
	18...24	AWG	
Input wire strip length	6...7	mm	
Tested cable length*	4000	mm	Total length of wiring including LED modules, one way

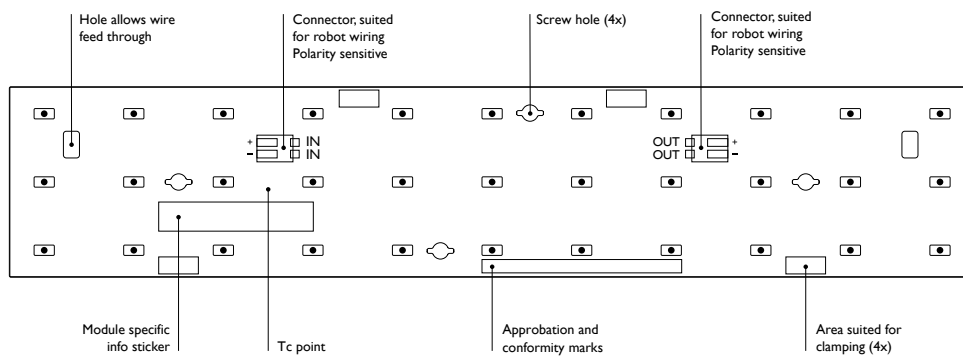
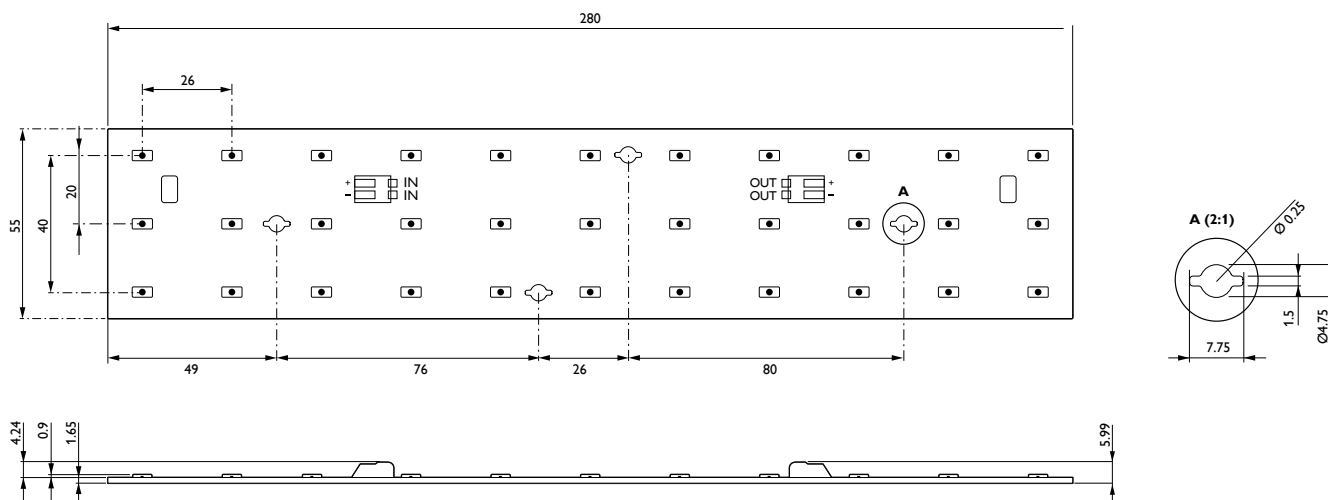
* Note: connector suited for robot wiring* Note: connector

6, 7, 8, 9. can be found on page 7

Mechanical characteristics

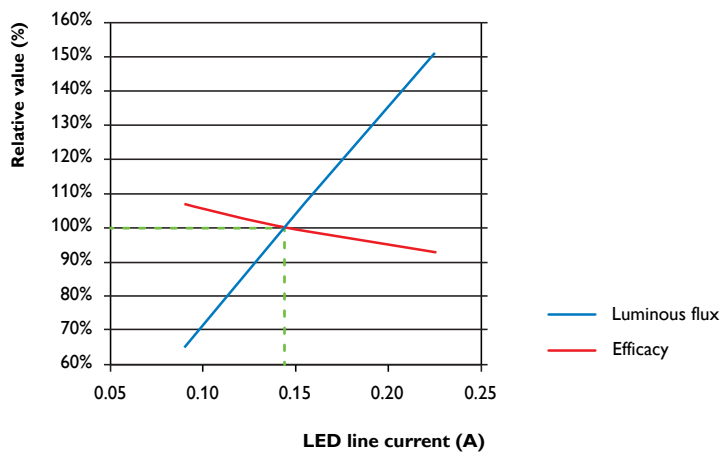
Parameter	Min	Typ	Max	Unit
Length	279.75	280	280.25	mm
Width	54.8	55	55.2	mm
Height excl. connector	1.5	1.65	1.8	mm
Height incl. connector	5.8	6.15	6.5	mm
Warpage (IPC-TM-650)			2.1	mm

Note: Bow & Twist of the PCB after production tested and released according IPC-TM-650 2.4.22

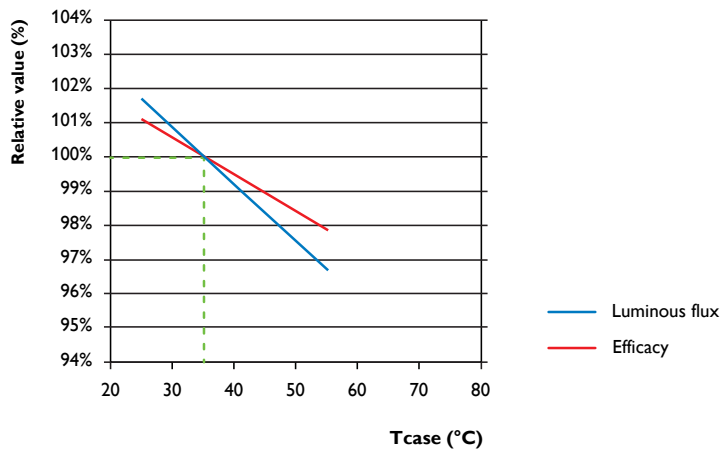


Tuning information

Flux and efficacy versus current



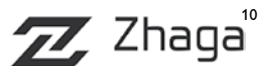
Flux and efficacy versus temperature at Tc



Application information

Compliance and approval

IEC / EN 62031, IEC / EN 62471



Environmental

REACH



Application information

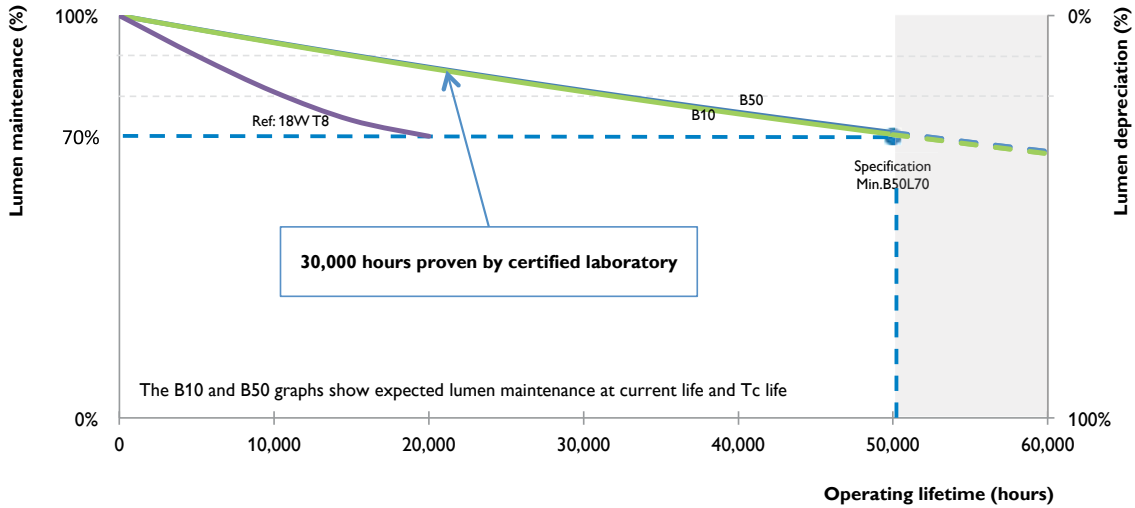
Zhaga	
Designation of the ECG housing (book-1 / annex C)	BL4
Designation of the Book-7 LLE category	L28W6
Luminous Flux category	C006
CCT category	4000 K
CRI	80
The position of the temperature measurement point tp	same as Tc point
The value of tp, max	56
The value of tp, headroom	-
IP rating	No IP rating
Overheating protection	No protection
Luminaire class	UL Class 2/ IEC Class II or Class III

1. Current specifications are subject to change, for the latest specifications, please contact your local Philips sales representative.
2. Photometric testing consistent with CIE 127:2007 2nd Edition
3. CCT for characterisation. Complies with ANSIC78.377A Specifications
4. CCT of Target Color Point
5. Production units will fall between +/- 0.2 of listed value. Note: 3.5 SDCM color consistency specification may not be sufficient for applications that are sensitive to color differences like wall washers, which typically require 2 SDCM.
6. Average rated life is based on engineering data testing and probability analysis. The hours are at the B50, L70 point - 50,000 hours life with 70% lumen maintenance at Tc point of 56° C for 3R and 61° C for 1R
7. Nominal value at which performance is specified
8. Value at which lifetime is specified
9. Maximum value for safety
10. Philips Fortimo _____ Module is a Zhaga certified light engine. For more information visit www.zhagastandard.org
11. Indicates that the LEDs are components recognized with UL and complies with UL8750 Standard for LEDs
12. Restrictions on Hazardous Substances (RoHS) is a European directive (2002/95/EC) designed to limit the content of 6 substances [lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE)] in electrical and electronic products. For products used in North America compliance to RoHS is voluntary and self-certified

Lumen maintenance

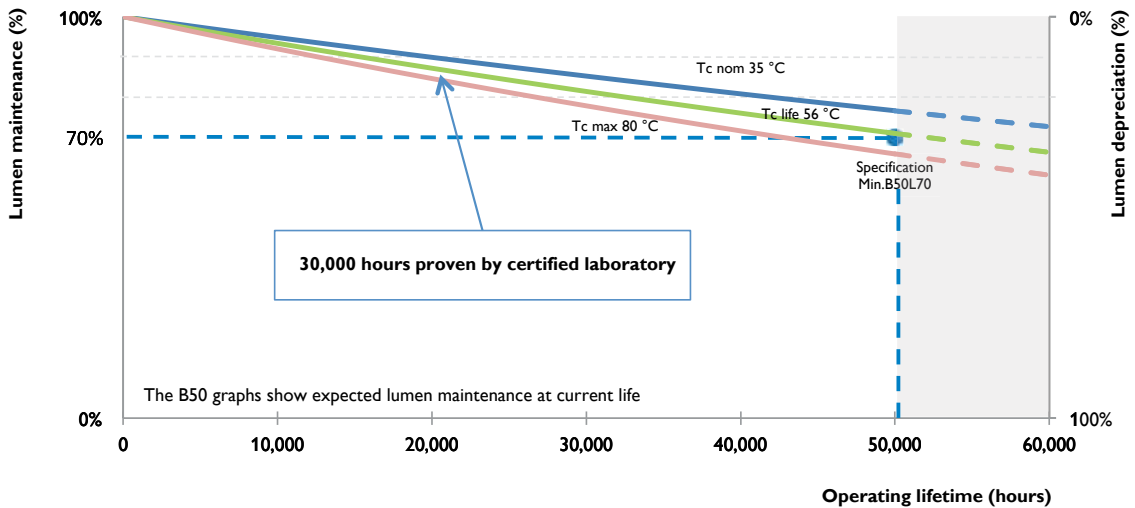
Lumen maintenance B10/B50

Fortimo LED line 1 ft 650 lm 3R LV2



Lumen maintenance T-case

Fortimo LED line 1 ft 650 lm 3R LV2



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