



Fortimo LED Line High Flux Module

Fortimo LED line 2ft 4000lm 1R LV1

The Fortimo LED Line high flux systems consist of linear white light LED modules with high flux, high energy efficiency, and high quality of light. The Fortimo LED Line high flux systems are designed to replace fluorescent lighting in higher application heights, such as trunking, high bay and battens in warehouses, factories, and big retail stores.

Benefits

- Enabling luminaires for high application heights
- High energy efficiency
- Flexible specification due to Xitanium drivers

Features

- Lumen levels up to 2000 lm/ft
- High quality white light
- Long lifetime

Applications

- Fortimo LED Line High Flux System are ideal for application at higher application heights where more light is needed, such as trunking, battens, high-bay applications
- Typical segments are warehouses, factories, big retail stores, cold storage



PHILIPS

Commercial product name	12NC
Fortimo LED line 2ft 4000lm 830 1R LV1	9290 008 60103
Fortimo LED line 2ft 4000lm 835 1R LV1	9290 008 60203
Fortimo LED line 2ft 4000lm 840 1R LV1	9290 008 60303
Fortimo LED line 2ft 4000lm 850 1R LV1	9290 008 60403

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

Fortimo LED line 2ft 4000lm 830 1R LV1

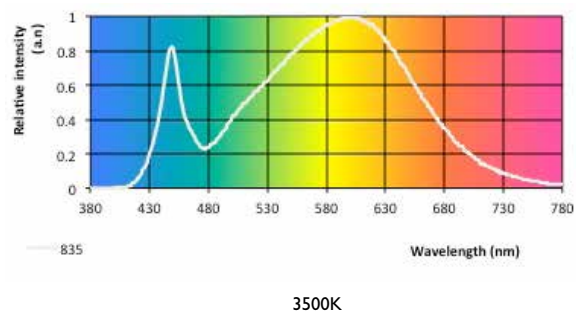
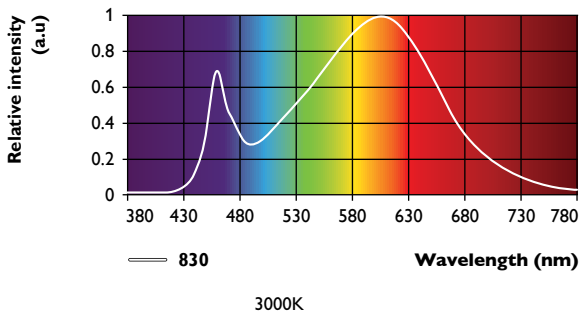
Parameter	Min	Approx	Max	Unit
Luminous flux ²	3520	3805	4090	lm
Module efficiency	114	125	136	lm/W
Correlated color temperature (CCT) ³		3000		K
Correlated color temperature (CCT) ⁴		3070		K
Color coordinates (CIEx, CIEy)		(0.432, 0.402)		-
Color consistency ⁵			3.5	SDCM
CRI	80			-
Radiation angle		120		deg

Note: Tc nom = 55 °C I nom = 930 mA

Fortimo LED line 2ft 4000lm 835 1R LV1

Parameter	Min	Approx	Max	Unit
Luminous flux ²	3630	3925	4220	lm
Module efficiency	117	129	140	lm/W
Correlated color temperature (CCT) ³		3500		K
Correlated color temperature (CCT) ⁴		3490		K
Color coordinates (CIEx, CIEy)		(0.405, 0.390)		-
Color consistency ⁵			3.5	SDCM
CRI	80			-
Radiation angle		120		deg

Note: Tc nom = 55 °C I nom = 930 mA



Fortimo LED line 2ft 4000lm 840 1R LV1

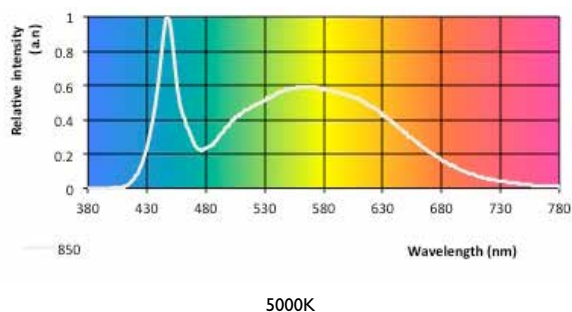
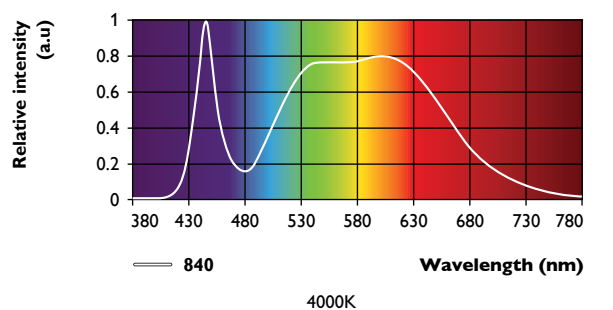
Parameter	Min	Approx	Max	Unit
Luminous flux ²	3705	4005	4305	lm
Module efficiency	120	132	143	lm/W
Correlated color temperature (CCT) ³		4000		K
Correlated color temperature (CCT) ⁴		4030		K
Color coordinates (CIEx, CIEy)		(0.380, 0.377)		-
Color consistency ⁵			3.5	SDCM
CRI	80			-
Radiation angle		120		deg

Note: Tc nom = 55 °C I nom = 930 mA

Fortimo LED line 2ft 4000lm 850 1R LV1

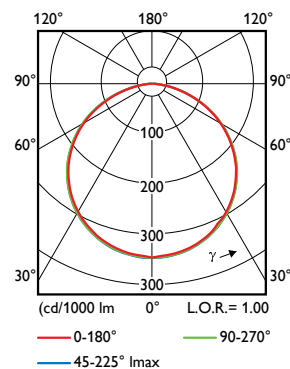
Parameter	Min	Approx	Max	Unit
Luminous flux ²	3780	4085	4395	lm
Module efficiency	122	134	146	lm/W
Correlated color temperature (CCT) ³		5000		K
Correlated color temperature (CCT) ⁴		5110		K
Color coordinates (CIEx, CIEy)		(0.342, 0.352)		-
Color consistency ⁵			3.5	SDCM
CRI	80			-
Radiation angle		120		deg

Note: Tc nom = 55 °C I nom = 930 mA



Beam shape

The Philips Fortimo LED Line 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 6

Electrical characteristics

Parameter	Min	Typ	Max	Unit
Forward voltage	31.1	32.7	34.3	V
Power consumption	28.9	30.4	31.9	W
Minimum dimming for performance	10			%
Number of parallel modules per chain			1	
Bins		2 (D and C)		

Note: T_c nom = 55 °C I nom = 930 mA

Lifetime^{1,6}

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

Note: T_c < 75 °C, I < 1040 mA

Parameter	Nominal ⁷	Life ⁸	Max ⁹
T _c [°C]	55	75	90
Current [mA]	930	1040	1120

Performance at I life and T _c life	Flux [lm]	Efficiency [lm/W]
3000K	4065	119
3500K	4190	123
4000K	4275	126
5000K	4365	128

Abs max ratings

Parameter	Min	Typ	Max	Unit
Current I _{max}			1120	mA
Case temperature T _c max			90	°C
ESD (direct contact)			8	kV
ESD (air)			15	kV
Isolation breakdown voltage	500			V _{dc}
Ambient temperature	-20			°C

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

Wiring

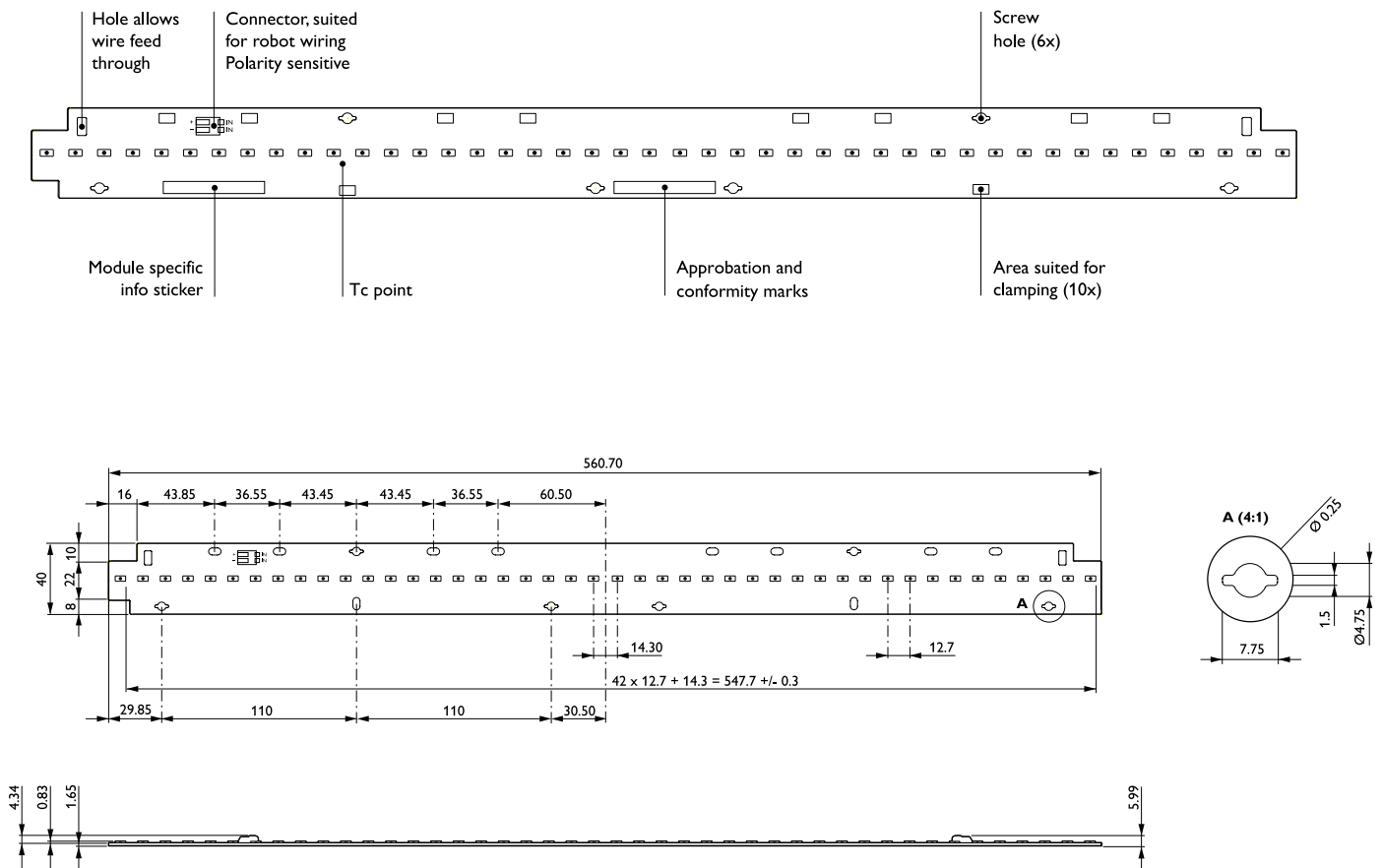
Specification item	Value	Unit	Condition
Input wire cross-section	0.2...0.75	mm ²	Solid and fine stranded
	18...24	AWG	
Input wire strip length	6...7	mm	
Tested cable length*	4000	mm	Total length of wiring including LED modules, one way

* Note: connector suited for robot wiring

Mechanical characteristics

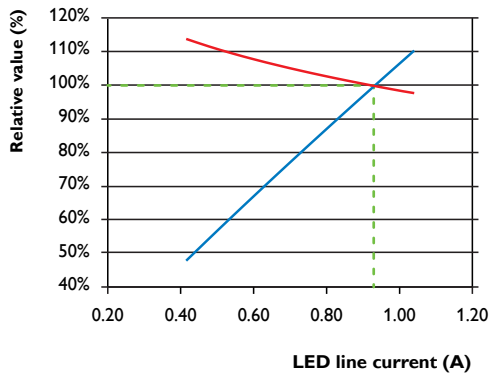
Parameter	Min	Typ	Max	Unit
Length	560.4	560.7	561	mm
Width	39.8	40	40.2	mm
Height excl. connector	1.5	1.65	1.8	mm
Height incl. connector	5.8	6.15	6.5	mm
Warpage (IPC-TM-650)			4.2	mm

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

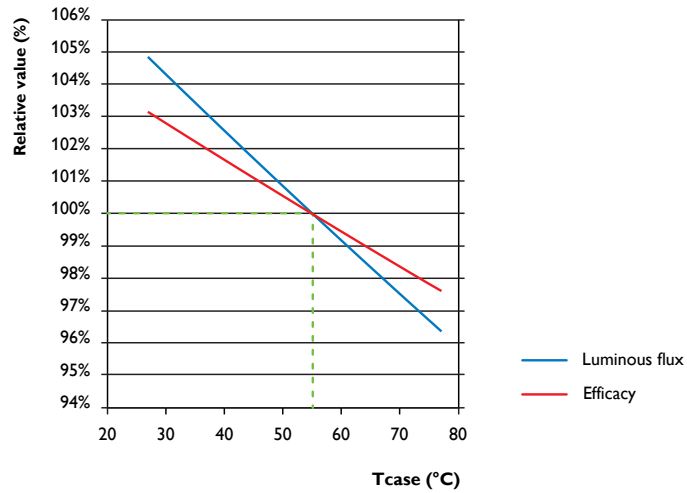


Tuning information

Flux and efficacy versus current



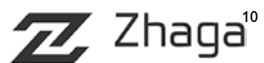
Flux and efficacy versus temperature at Tc



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	L56W4
Luminous Flux category	C040
CCT category	4000 K
CRI	80
The position of the temperature measurement point tp	same as Tc point
The value of tp, max	75
The value of tp, headroom	22

IP rating	No IP rating
Overheating protection	No protection
Luminaire class	UL Class 2/ IEC Class II or Class III

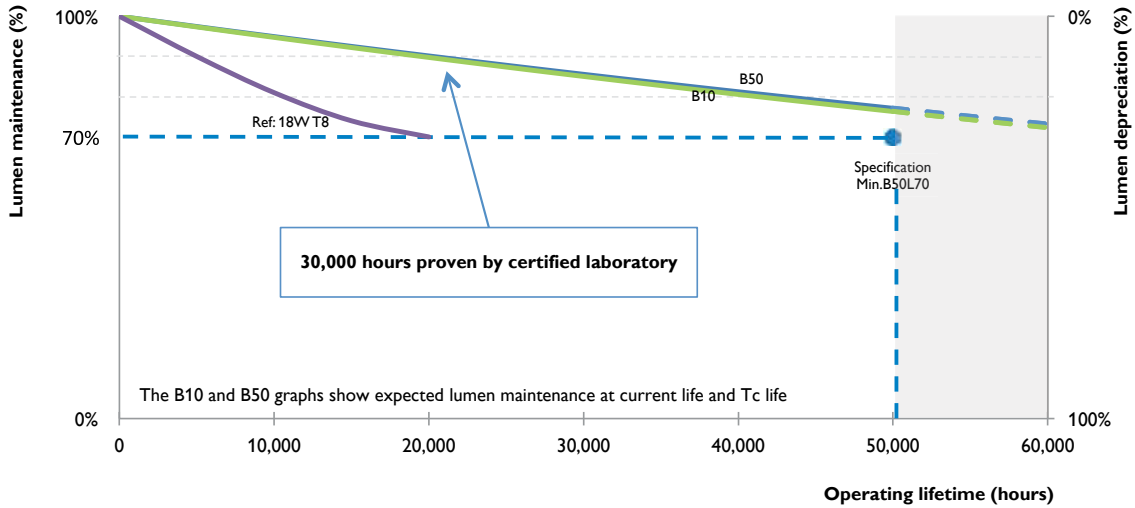
1. Current specifications are subject to change, for the latest specifications, please contact your local Philips sales representative.
2. Photometric testing consistent with CIE 127:2007 2nd Edition
3. CCT for characterisation. Complies with ANSIC78.377A Specifications
4. CCT of Target Color Point
5. 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

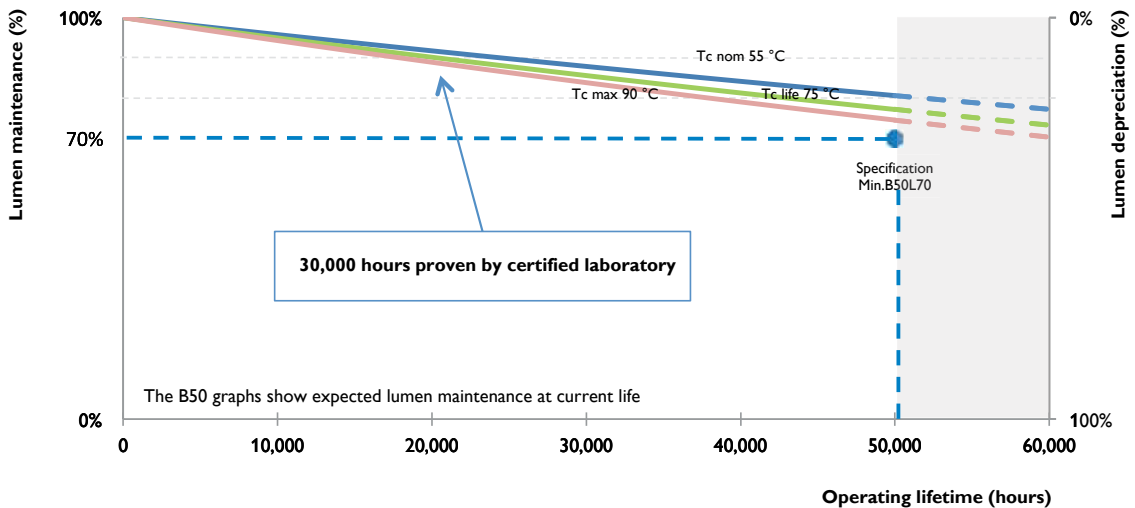
Lumen maintenance B10/B50

Fortimo LED Line 2ft 4000lm 1R LV1



Lumen maintenance T-case

Fortimo LED Line 2ft 4000lm 1R LV1



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