

PHILIPS

LED Modules

Fortimo LED Line

1ft 1100lm 1R LV3



Fortimo LED Line Gen 3 will enable you to upgrade your linear LED luminaires to latest high-performance technology while offering the freedom to tune and differentiate on lumen output, efficacy and lifetime while delivering into a common footprint and enabling easy generation change.

The Fortimo LED Line 1R system, with 1 row of LEDs on the module, is ideal for applications requiring beam shaping. The Fortimo LED Line 3R systems have been designed for applications where diffuse lighting is key.

The Fortimo LED Line family was upgraded with better color consistency of 3 SDCM. Light sources with good color consistency are recommended in color-critical applications, such as in hospitals or art galleries.

Commercial Product Name	12NC
Fortimo LED Line 1ft 1100lm 830 1R LV3	929000918806
Fortimo LED Line 1ft 1100lm 835 1R LV3	929000918906
Fortimo LED Line 1ft 1100lm 840 1R LV3	929000919006
Fortimo LED Line 1ft 1100lm 850 1R LV3	929000919106

Fortimo LED Line 1ft 1100lm 1R LV3

Features

- High energy efficiency of up to 152 lm/W
- CRI > 80 and 3 SDCM Color Consistency
- Variation of Color Temperatures (3000K, 3500K, 4000K, 5000K)
- Long product lifetime of > 50,000 hrs¹
- Push-in connectors
- Zhaga compliant²
- 5-year limited system warranty³

Benefits

- Low total cost of ownership through reduced energy consumption
- High quality of light
- Easy wiring
- Backward compatible to previous generations

Applications

- Office
- Industry
- Retail

Optical Characteristics – Table per CCT

Fortimo LED Line 1ft 1100lm 830 1R LV3

Parameter	Min	Typ	Max	Unit
Luminous Flux		1046		Lm
Lumen Efficiency		145		Lm/W
Forward Current		234		mA
Forward Voltage	29.4	30.9	32.4	V
Correlated Color Temperature (CCT) Target		3000		K
CRI	80			-
Radiation Angle		120		deg

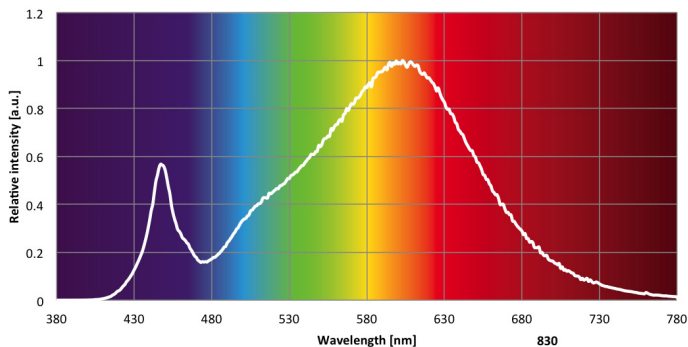
Nominal temperature for performance specification: T_c = 45°C

Color consistency of 3 SDCM, averaged over the module.

Tolerance for flux data is ±7.5%.

Tolerance for efficacy data is ±10%.

Measurement tolerance is ± 2.5% for the flux data and 5% for the efficacy data.



Footnotes on page 10.

Fortimo LED Line 1ft 1100lm 1R LV3

Optical Characteristics – Table per CCT

Fortimo LED Line 1ft 1100lm 835 1R LV3

Parameter	Min	Typ	Max	Unit
Luminous Flux		1079		Lm
Lumen Efficiency		149		Lm/W
Forward Current		234		mA
Forward Voltage	29.4	30.9	32.4	V
Correlated Color Temperature (CCT) Target		3500		K
CRI	80			-
Radiation Angle		120		deg

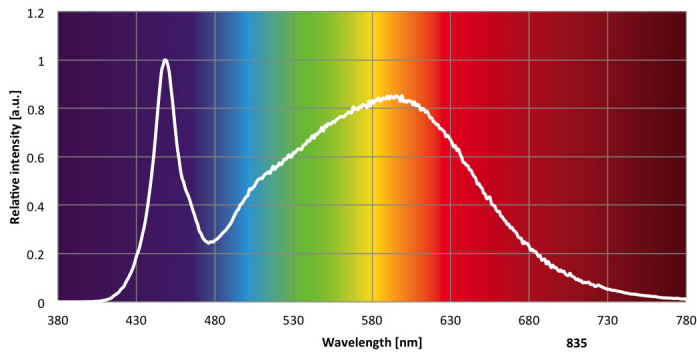
Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$

Color consistency of 3 SDCM, averaged over the module.

Tolerance for flux data is $\pm 7.5\%$.

Tolerance for efficacy data is $\pm 10\%$.

Measurement tolerance is $\pm 2.5\%$ for the flux data and 5% for the efficacy data.

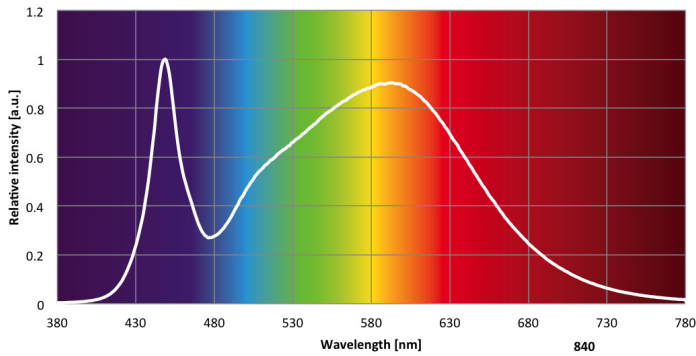


Fortimo LED Line 1ft 1100lm 1R LV3

Optical Characteristics – Table per CCT

Fortimo LED Line 1ft 1100lm 840 1R LV3				
Parameter	Min	Typ	Max	Unit
Luminous Flux		1100		Lm
Lumen Efficiency		152		Lm/W
Forward Current		234		mA
Forward Voltage	29.4	30.9	32.4	V
Correlated Color Temperature (CCT) Target		4000		K
CRI	80			-
Radiation Angle		120		deg

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$
Color consistency of 3 SDCM, averaged over the module.
Tolerance for flux data is $\pm 7.5\%$.
Tolerance for efficacy data is $\pm 10\%$.
Measurement tolerance is $\pm 2.5\%$ for the flux data and 5% for the efficacy data.



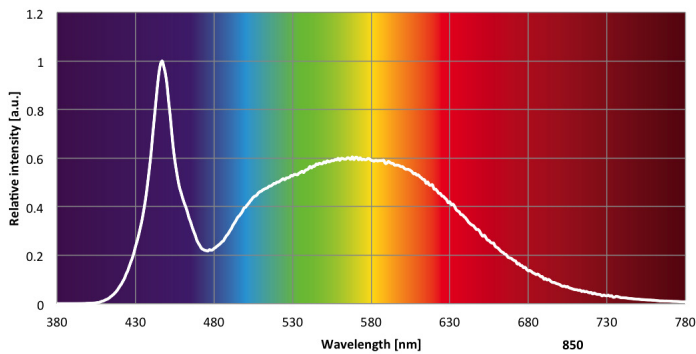
Fortimo LED Line 1ft 1100lm 1R LV3

Optical Characteristics – Table per CCT

Fortimo LED Line 1ft 1100lm 850 1R LV3

Parameter	Min	Typ	Max	Unit
Luminous Flux		1100		Lm
Lumen Efficiency		152		Lm/W
Forward Current		234		mA
Forward Voltage	29.4	30.9	32.4	V
Correlated Color Temperature (CCT) Target		5000		K
CRI	80			-
Radiation Angle		120		deg

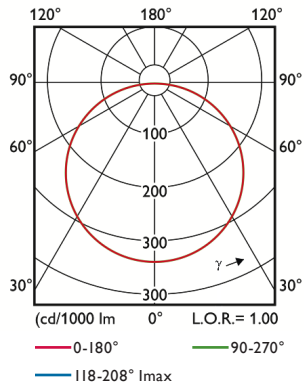
Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$
 Color consistency of 3 SDCM, averaged over the module.
 Tolerance for flux data is $\pm 7.5\%$.
 Tolerance for efficacy data is $\pm 10\%$.
 Measurement tolerance is $\pm 2.5\%$ for the flux data and 5% for the efficacy data.



Fortimo LED Line 1ft 1100lm 1R LV3

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.



Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Nominal Current		234	400	mA
Forward Voltage	29.4	30.9	32.4	V
Power Consumption	6.9	7.2	7.5	W
Forward Voltage Bins		2 (C and D)		

Note: Specifications stated at T_c nom = 45°C and I_{nom} = 234 mA

Lifetime

Parameter	Nominal *	Life**	Max***
T _c [°C]	45	70	80
Current [mA]	234	300	400

* Nominal value at which typical performance is specified

** Value at which lifetime L70B50 ≥ 50,000h is specified (max current for warranty)

*** Maximum value for safe operation; do not operate above this value

Parameter	Min	Typ	Max	Units
Δu'v' at 6000 Hours			0.007	—

Note: Specifications stated while T_c < 70°C and I < 300 mA

Abs Max Ratings

Parameter	Min	Typ	Max	Unit
Current I _{max}			400	mA
Case Temperature T _c Max			80	°C
ESD (Direct Contact)			8	kV
ESD (Air)			15	kV
Working Voltage (Between input to metal mounting plate)			120	V _{dc}
Voltage Strength (Input to metal mounting plate)			1240	V _{dc}
Ambient Temperature	-40			°C
Number of Modules per Chain			4	

Fortimo LED Line 1ft 1100lm 1R LV3

Wiring

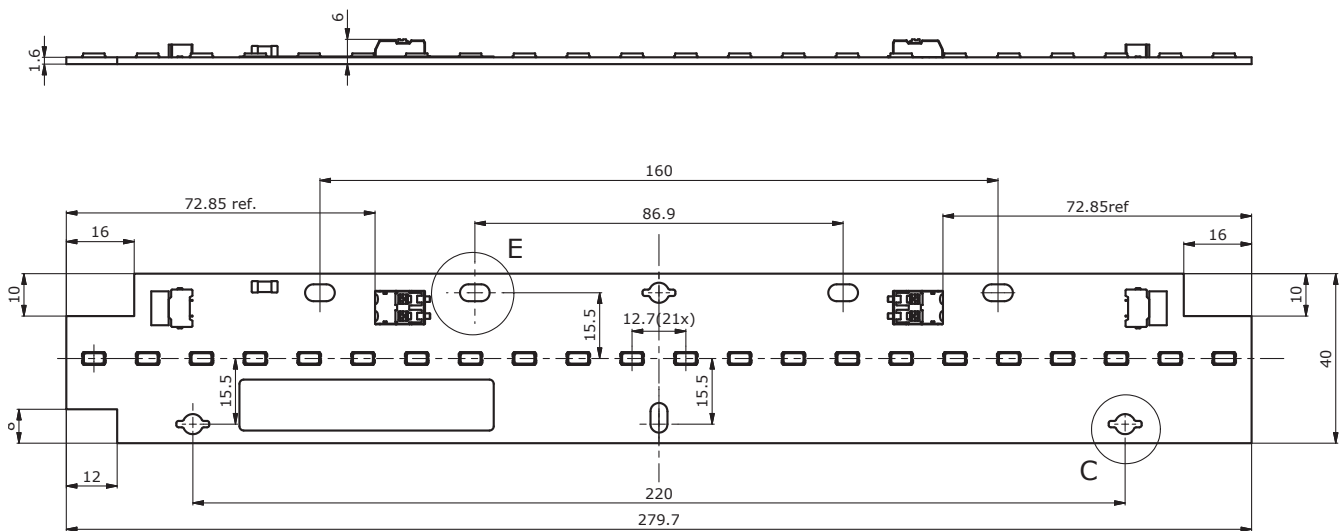
Specification Item	Value	Unit	Condition
Input Wire Cross-Section	0.2...0.75	mm ²	solid
	18...24	AWG	
	0.3...0.5	mm ²	stranded
	20...22	AWG	
Input Wire Strip Length	7.5...8.5	mm	
Tested Cable Length	4000	mm	Total length of wiring including LED modules, one way

Note: Connector suited for robot wiring

Mechanical Characteristics

Parameter	Min	Typ	Max	Unit
Length	279.2	279.7	280.2	mm
Width	39.5	40	40.5	mm
Height Excl. Connector	2	2.1	2.2	mm
Height Incl. Connector	5.6	5.8	6	mm
Warpage (IPC-TM-650)			4	%

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



Fortimo LED Line 1ft 1100lm 1R LV3

Application Information

Compliance and Approval

IEC / EN 62031, IEC / EN 62471, UL8750 (UL recognized)

Environmental

RoHS / REACH

Application Information

Zhaga ²	
Designation of the Book-7 LLE Category	L28W4
Luminous Flux Category	C011
CCT Category	3000K, 3500K, 4000K, 5000K
CRI	80
The Position of the Temperature Measurement Point T _p	same as T _c point
The Value of T _p , Max [°C]	45

IP Rating	No IP rating
Overheating Protection	No protection
Luminaire Class	UL Class 2

Warranted Number of Full Thermal Product Cycles @ 25°C Ambient Temperature

Warranted number of full thermal product cycles at which the survival rate of the population $\geq 90\%$, at 25°C ambient temperature.

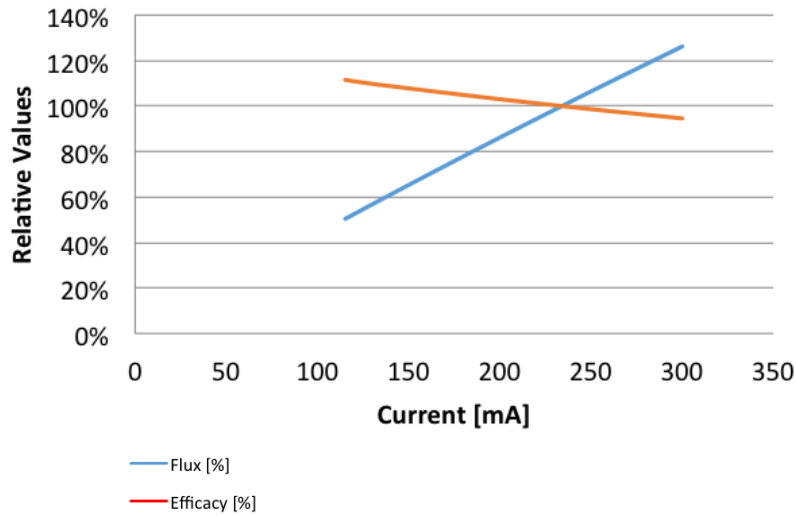
Case Temperature T _c [°C]	Amount of Cycles
70	14600

Footnotes on page 10.

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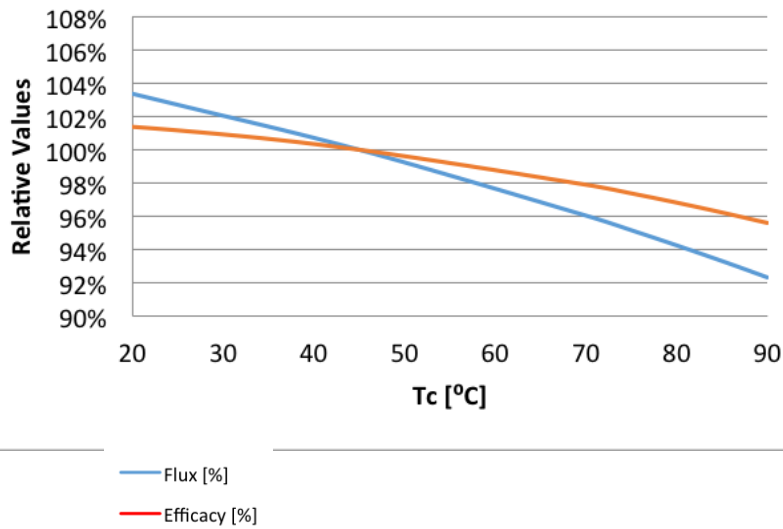
Tuning Information

Flux and Efficacy Vs. Current



I [A]	Flux [%]	Efficacy [%]
115	50%	111%
140	61%	109%
170	74%	106%
200	86%	103%
234	100%	100%
260	110%	98%
300	126%	95%

Flux and Efficacy Vs. Temperature at Tc



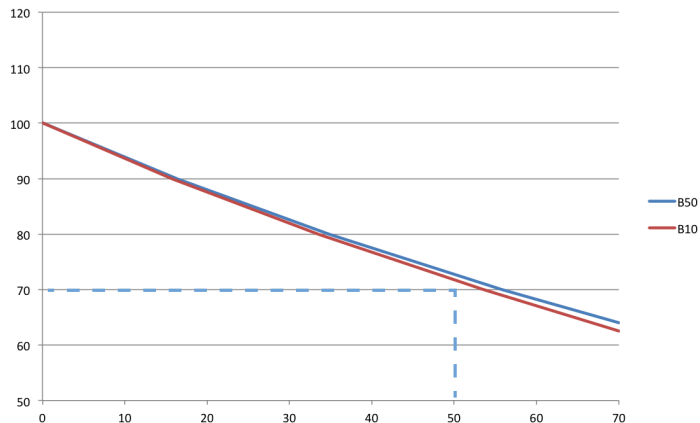
Tc [°C]	Flux [%]	Efficacy [%]
70	96%	98%
45	100%	100%
25	103%	101%
0	106%	102%

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Lumen Maintenance

Lumen Maintenance: at I Life and Tc Life Conditions

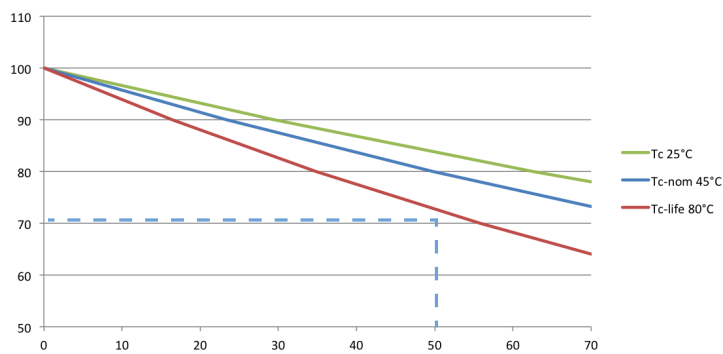
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Lumen depreciation as a function of operating hours for I-life and Tc-life.

Lumen Maintenance (B50): at Current I Life

Fortimo LED Line 1ft 1100lm 1R LV3



Lumen depreciation as a function of operating hours at different Tc values and I-life.

1. 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.
2. Philips Fortimo LED Line 1ft 1100lm 1R LV3 Module is a Zhaga certified light engine. Visit www.zhagastandard.org for more information.
3. View limited warranty at http://www.usa.lighting.philips.com/connect/tools_literature/warranties.wpd for details and restrictions.



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