

PHILIPS

LED Modules

Fortimo LED Line

1ft 1100lm 3R 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 3R LV3	929000921706
Fortimo LED Line 1ft 1100lm 835 3R LV3	929000921806
Fortimo LED Line 1ft 1100lm 840 3R LV3	929000921906
Fortimo LED Line 1ft 1100lm 850 3R LV3	929000922006

Fortimo LED Line 1ft 1100lm 3R 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 3R LV3

Parameter	Min	Typ	Max	Unit
Luminous Flux		1046		Lm
Lumen Efficiency		156		Lm/W
Forward Current		228		mA
Forward Voltage	28.0	29.4	30.8	V
Correlated Color Temperature (CCT) Target		3000		K
CRI	80			-
Radiation Angle		120		deg

Fortimo LED Line 1ft 1100lm 830 3R LV3 for 650lm (matching Fortimo LED Line 1ft 650lm 830 3R LV2)

Parameter	Min	Typ	Max	Unit
Luminous Flux		618		Lm
Lumen Efficiency		165		Lm/W
Forward Current		130		mA
Forward Voltage		30.7		V

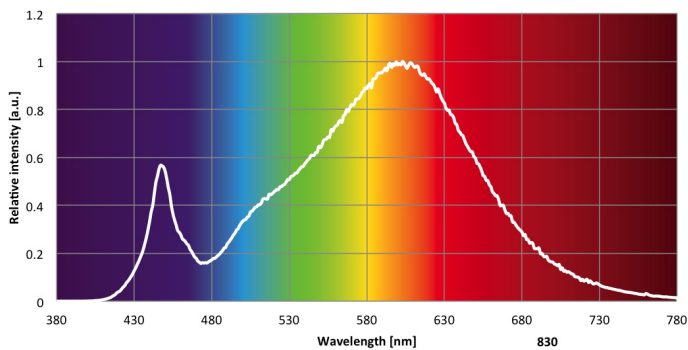
Nominal temperature for performance specification: T_c = 40°C

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 3R LV3

Optical Characteristics – Table per CCT

Fortimo LED Line 1ft 1100lm 835 3R LV3

Parameter	Min	Typ	Max	Unit
Luminous Flux		1079		Lm
Lumen Efficiency		161		Lm/W
Forward Current		228		mA
Forward Voltage	28.0	29.4	30.8	V
Correlated Color Temperature (CCT) Target		3500		K
CRI	80			-
Radiation Angle		120		deg

Fortimo LED Line 1ft 1100lm 835 3R LV3 for 650lm (matching Fortimo LED Line 1ft 650lm 835 3R LV2)

Parameter	Min	Typ	Max	Unit
Luminous Flux		637		Lm
Lumen Efficiency		170		Lm/W
Forward Current		130		mA
Forward Voltage		30.7		V

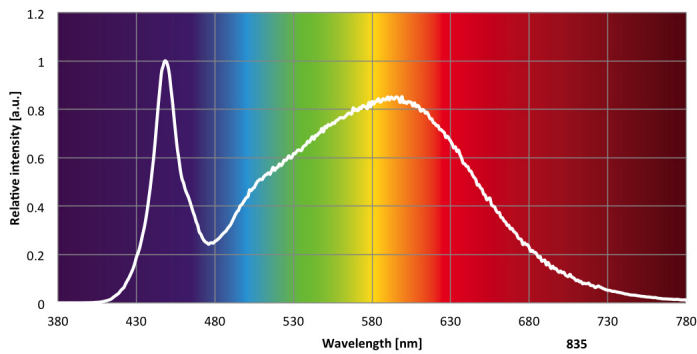
Nominal temperature for performance specification: T_c = 40°C

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.



Fortimo LED Line 1ft 1100lm 3R LV3

Optical Characteristics – Table per CCT

Fortimo LED Line 1ft 1100lm 840 3R LV3

Parameter	Min	Typ	Max	Unit
Luminous Flux		1100		Lm
Lumen Efficiency		164		Lm/W
Forward Current		228		mA
Forward Voltage	28.0	29.4	30.8	V
Correlated Color Temperature (CCT) Target		4000		K
CRI	80			-
Radiation Angle		120		deg

Fortimo LED Line 1ft 1100lm 840 3R LV3 for 650lm (matching Fortimo LED Line 1ft 650lm 840 3R LV2)

Parameter	Min	Typ	Max	Unit
Luminous Flux		650		Lm
Lumen Efficiency		173		Lm/W
Forward Current		130		mA
Forward Voltage		30.7		V

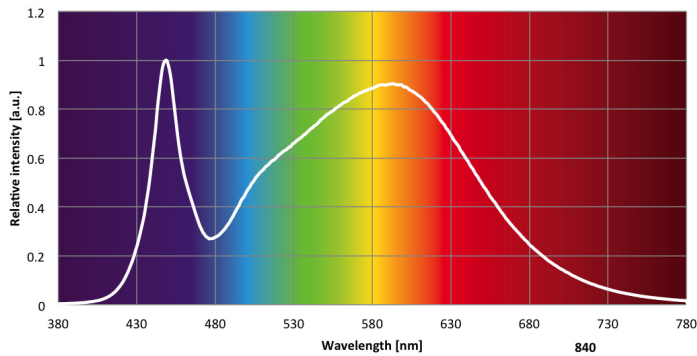
Nominal temperature for performance specification: $T_c = 40^\circ\text{C}$

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 3R LV3

Optical Characteristics – Table per CCT

Fortimo LED Line 1ft 1100lm 850 3R LV3

Parameter	Min	Typ	Max	Unit
Luminous Flux		1100		Lm
Lumen Efficiency		164		Lm/W
Forward Current		228		mA
Forward Voltage	28.0	29.4	30.8	V
Correlated Color Temperature (CCT) Target		5000		K
CRI	80			-
Radiation Angle		120		deg

Fortimo LED Line 1ft 1100lm 850 3R LV3 for 650lm (matching Fortimo LED Line 1ft 650lm 850 3R LV2)

Parameter	Min	Typ	Max	Unit
Luminous Flux		650		Lm
Lumen Efficiency		173		Lm/W
Forward Current		130		mA
Forward Voltage		30.7		V

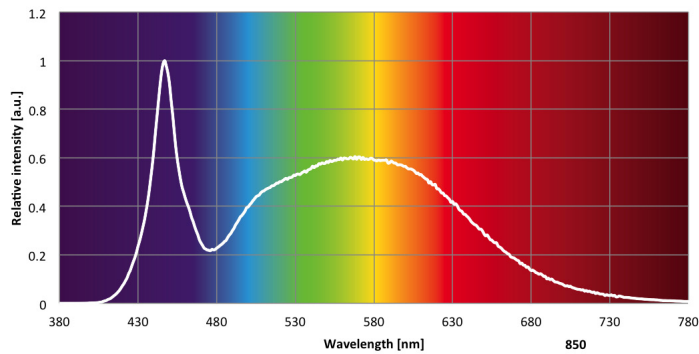
Nominal temperature for performance specification: $T_c = 40^\circ\text{C}$

Color consistency of 3 SDCM, averaged over the module.

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

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

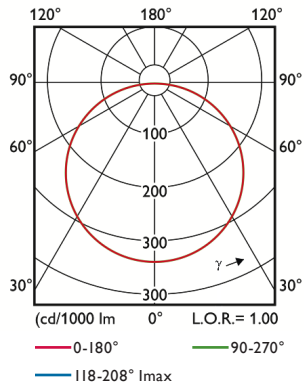
Measurement tolerance is $\pm 2.5\%$ for the flux data and 5% for the efficacy data.



Fortimo LED Line 1ft 1100lm 3R 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		228		mA
Forward Voltage	28.0	29.4	30.8	V
Power Consumption	6.4	6.7	7.0	W
Forward Voltage Bins		2 (C and D)		

Note: Specifications stated at Tc nom = 40°C and I nom = 228mA

Lifetime

Parameter	Nominal *	Life**	Max***
Tc [°C]	40	80	80
Current [mA]	228	450	450

* 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 Tc < 80°C and I < 450 mA

Abs Max Ratings

Parameter	Min	Typ	Max	Unit
Current Imax			450	mA
Case Temperature Tc Max			80	°C
ESD (Direct Contact)			8	kV
ESD (Air)			15	kV
Working Voltage (Between input to metal mounting plate)			120	Vdc
Voltage Strength (Input to metal mounting plate)			1240	Vdc
Ambient Temperature	-40			°C
Number of Modules per Chain			4	

Fortimo LED Line 1ft 1100lm 3R LV3

Wiring

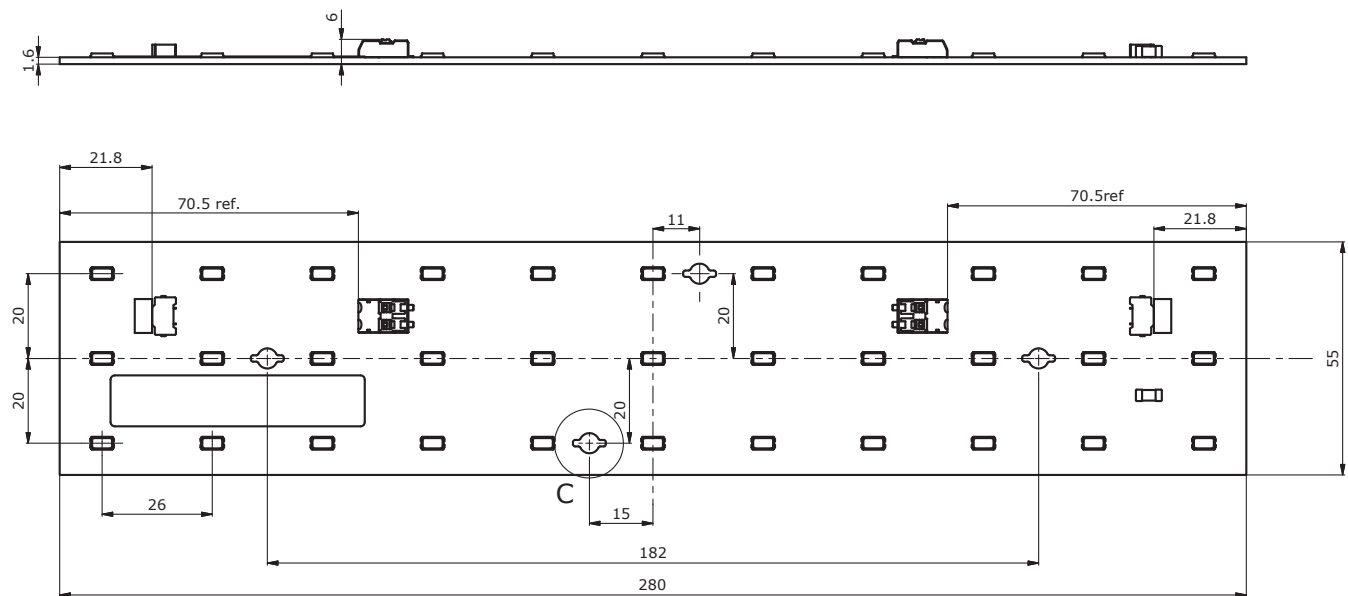
Specification Item	Value	Unit	Condition
Input Wire Cross-Section	0.2...0.75	mm ²	solid
	18...24	AWG	
	0.3...0.5	mm ²	stranded
	20...22	AWG	
Input Wire Strip Length	7.5...8.5	mm	
Tested Cable Length	4000	mm	Total length of wiring including LED modules, one way

Note: Connector suited for robot wiring

Mechanical Characteristics

Parameter	Min	Typ	Max	Unit
Length	279.5	280.0	280.5	mm
Width	54.5	55.0	55.5	mm
Height Excl. Connector	2.0	2.1	2.2	mm
Height Incl. Connector	5.6	5.8	6.0	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 3R 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	L28W6
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]	40

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.

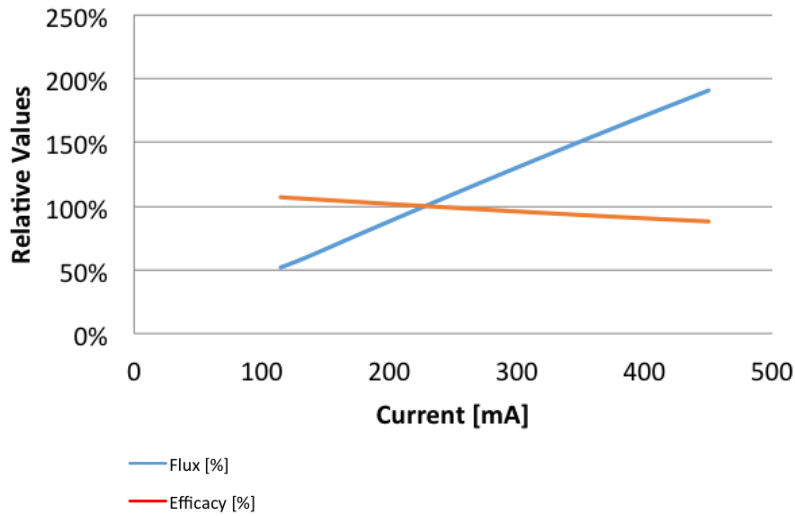
Case Temperature T _c [°C]	Amount of Cycles
80	14600

Footnotes on page 10.

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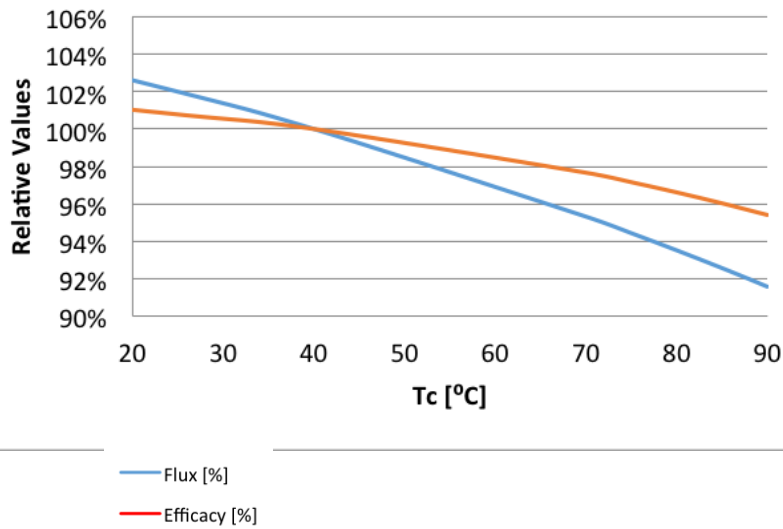
Tuning Information

Flux and Efficacy Vs. Current



I [A]	Flux [%]	Efficacy [%]
115	51%	107%
140	62%	105%
170	75%	104%
200	88%	102%
228	100%	100%
260	114%	98%
290	126%	96%
320	139%	95%
350	151%	93%
380	163%	91%
410	175%	90%
450	191%	88%

Flux and Efficacy Vs. Temperature at Tc



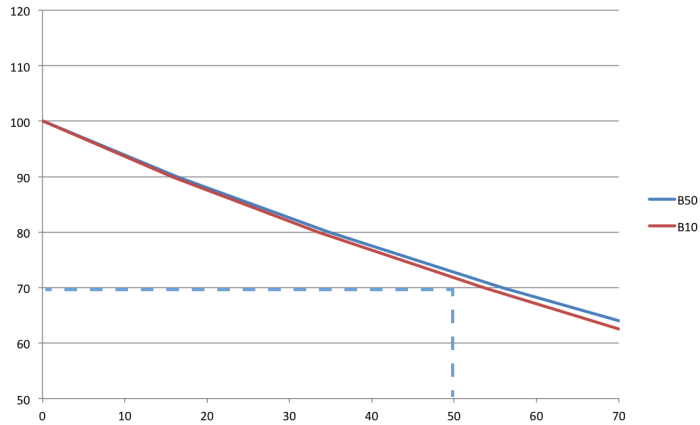
Tc [°C]	Flux [%]	Efficacy [%]
80	94%	97%
75	94%	97%
70	95%	98%
40	100%	100%
25	102%	101%
0	105%	102%

Fortimo LED Line 1ft 1100lm 3R LV3

Lumen Maintenance

Lumen Maintenance: at I Life and Tc Life Conditions

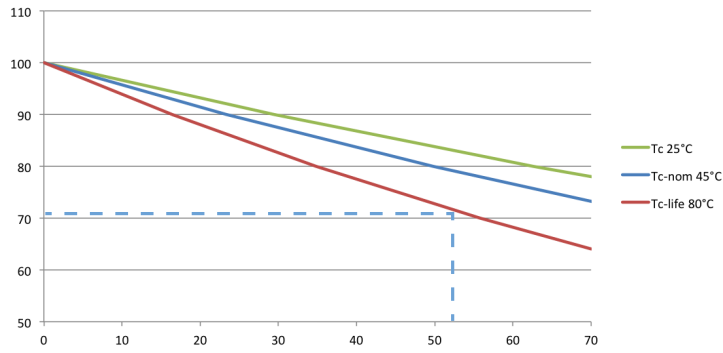
Fortimo LED Line 1ft 1100lm 3R LV3



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 3R 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 3R 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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philips.com/leddrivers



Philips Lighting North America Corporation
10275 W. Higgins Road, Rosemont IL 60018
Tel: 800-322-2086 Fax: 888-423-1882
Customer/Technical Service: 800-372-3331
OEM Support: 866-915-5886

Imported by: Philips Lighting
A division of Philips Electronics Ltd.
281 Hillmount Rd, Markham, ON, Canada L6C 2S3
Tel. 800-668-9008