

PHILIPS

LED Modules

Fortimo LED Line

1ft 1100lm 1R



Fortimo LED Line gen 4 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 LV4	9290 015 42906
Fortimo LED Line 1ft 1100lm 835 1R LV4	9290 015 43006
Fortimo LED Line 1ft 1100lm 840 1R LV4	9290 015 43106
Fortimo LED Line 1ft 1100lm 850 1R LV4	9290 015 43206

Fortimo LED Line 1ft 1100lm 1R

Features

- High energy efficiency of up to 186 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

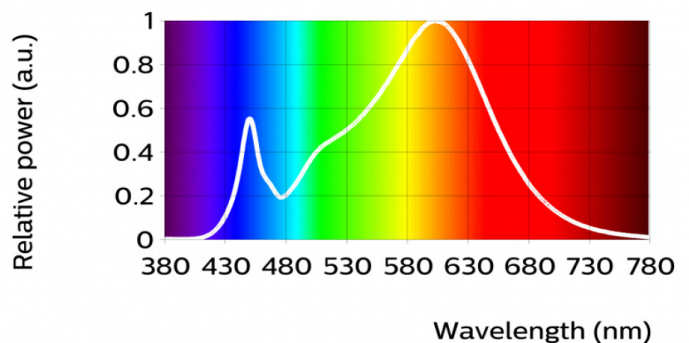
Fortimo LED Line 1ft 1100lm 830 1R LV4

Parameter	Min	Typ	Max	Unit
Luminous Flux	967	1045	1126	Lm
Lumen Efficiency	148	164	180	Lm/W
Correlated Color Temperature (CCT) Target		3000		K
Color Consistency			3	SDCM
CRI	80			-
Radiation Angle		120		deg
Photobiological Safety			RG1 unlimited	
Energy Efficiency Label		A++		
$\Delta u'v'$ at 6000 Hours			0.007	

R9=7

Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 . Measurement precision for CRI ± 1.5 .

Operation Point	830	lm	lm/W
80% I-nom 163mA	Tc 25 °C	867	172
	Tc-nom 45 °C	848	169
	Tc-life 80 °C	810	166
I-nom 204mA	Tc 25 °C	1069	167
	Tc-nom 45 °C	1045	164
	Tc-life 80 °C	998	158
I-life 300mA	Tc 25 °C	1524	157
	Tc-nom 45 °C	1488	154
	Tc-life 80 °C	1420	149



Footnotes on page 11.

Fortimo LED Line 1ft 1100lm 1R

Optical Characteristics – Table per CCT

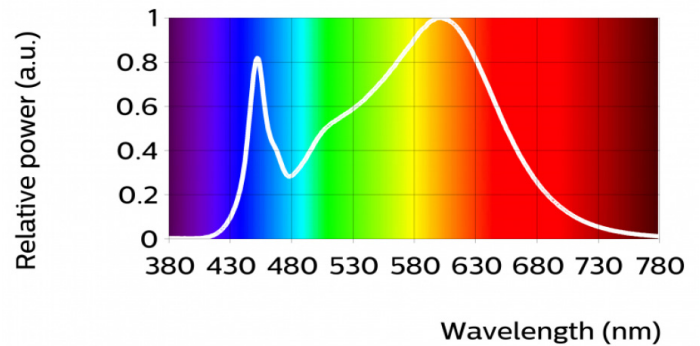
Fortimo LED Line 1ft 1100lm 835 1R LV4

Parameter	Min	Typ	Max	Unit
Luminous Flux	997	1078	1159	Lm
Lumen Efficiency	152	169	185	Lm/W
Correlated Color Temperature (CCT) Target		3500		K
Color Consistency			3	SDCM
CRI	80			-
Radiation Angle		120		deg
Photobiological Safety			RG1 unlimited	
Energy Efficiency Label		A++		
$\Delta u'v'$ at 6000 Hours			0.007	

R9=7

Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 . Measurement precision for CRI ± 1.5 .

Operation Point	830	lm	lm/W
80% I-nom 163mA	Tc 25 °C	896	177
	Tc-nom 45 °C	875	174
	Tc-life 80 °C	832	168
I-nom 204mA	Tc 25 °C	1105	172
	Tc-nom 45 °C	1078	168
	Tc-life 80 °C	1024	163
I-life 300mA	Tc 25 °C	1576	161
	Tc-nom 45 °C	1536	158
	Tc-life 80 °C	1456	151



Fortimo LED Line 1ft 1100lm 1R

Optical Characteristics – Table per CCT

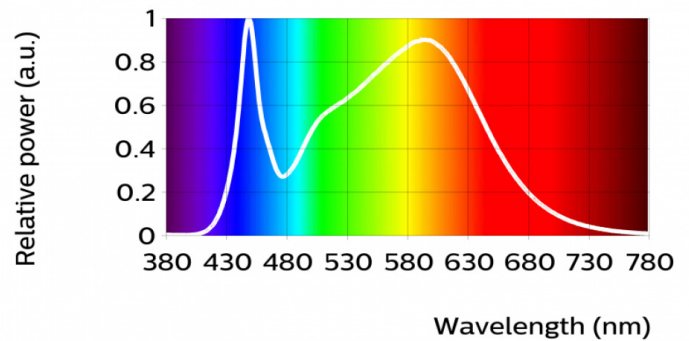
Fortimo LED Line 1ft 1100lm 840 1R LV4

Parameter	Min	Typ	Max	Unit
Luminous Flux	1018	1100	1183	Lm
Lumen Efficiency	155	173	190	Lm/W
Correlated Color Temperature (CCT) Target		4000		K
Color Consistency			3	SDCM
CRI	80			-
Radiation Angle		120		deg
Photobiological Safety			RG1 unlimited	
Energy Efficiency Label		A++		
$\Delta u'v'$ at 6000 Hours			0.007	

R9=7

Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 . Measurement precision for CRI ± 1.5 .

Operation Point	830	lm	lm/W
80% I-nom 163mA	Tc 25 °C	913	181
	Tc-nom 45 °C	892	178
	Tc-life 80 °C	853	172
I-nom 204mA	Tc 25 °C	1126	176
	Tc-nom 45 °C	1100	173
	Tc-life 80 °C	1051	167
I-life 300mA	Tc 25 °C	1604	165
	Tc-nom 45 °C	1567	162
	Tc-life 80 °C	1496	157



Fortimo LED Line 1ft 1100lm 1R

Optical Characteristics – Table per CCT

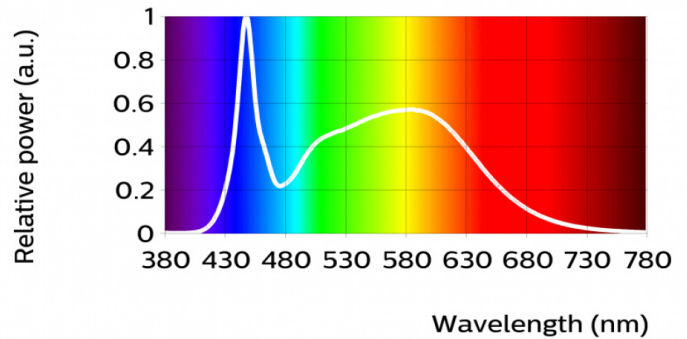
Fortimo LED Line 1ft 1100lm 850 1R LV4

Parameter	Min	Typ	Max	Unit
Luminous Flux	1028	1111	1194	Lm
Lumen Efficiency	157	174	192	Lm/W
Correlated Color Temperature (CCT) Target		5000		K
Color Consistency			3	SDCM
CRI	80			-
Radiation Angle		120		deg
Photobiological Safety			RG1 unlimited	
Energy Efficiency Label		A++		
$\Delta u'v'$ at 6000 Hours			0.007	

R9=7

Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 .
Measurement precision for CRI ± 1.5 .

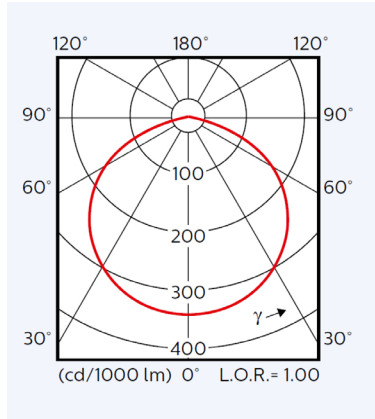
Operation Point	830	lm	lm/W
80% I-nom 163mA	Tc 25 °C	922	182
	Tc-nom 45 °C	901	179
	Tc-life 80 °C	861	173
I-nom 204mA	Tc 25 °C	1137	177
	Tc-nom 45 °C	1111	174
	Tc-life 80 °C	1061	168
I-life 300mA	Tc 25 °C	1620	167
	Tc-nom 45 °C	1583	164
	Tc-life 80 °C	1511	158



Fortimo LED Line 1ft 1100lm 1R

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
Forward Voltage	30.2	31.2	32.2	V
Power Consumption	6.2	6.4	6.6	W
Number of Modules in Parallel per Chain			5	

Measurement precision for Vf +/- 3%. Measurement precision for power +/- 3.3%.
Specifications stated at Tc-nom and I-nom.
Bins D and I.

Drive Currents

Parameter	Nominal *	Life**	Max***	Unit
Fortimo LED Line 1ft 1100lm 8xx 1R LV4	204	300	380	mA

Module Temperatures

Parameter	Nominal *	Life**	Max***	Unit
Tc (case temperature at Tc point)	45	80	80	°C

* 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

Abs Max Ratings

Parameter	Min	Typ	Max	Unit
Current through the LED Module (I-max)			380	mA
Case Temperature (Tc Max)			80	°C
Power at Rated Vf-max and I-max			13.3	W
ESD (Direct Contact)			8	kV
ESD (Air)			15	kV
Working Voltage			120	Vdc
Voltage Strength	1840			Vdc
Ambient Temperature	-40			°C

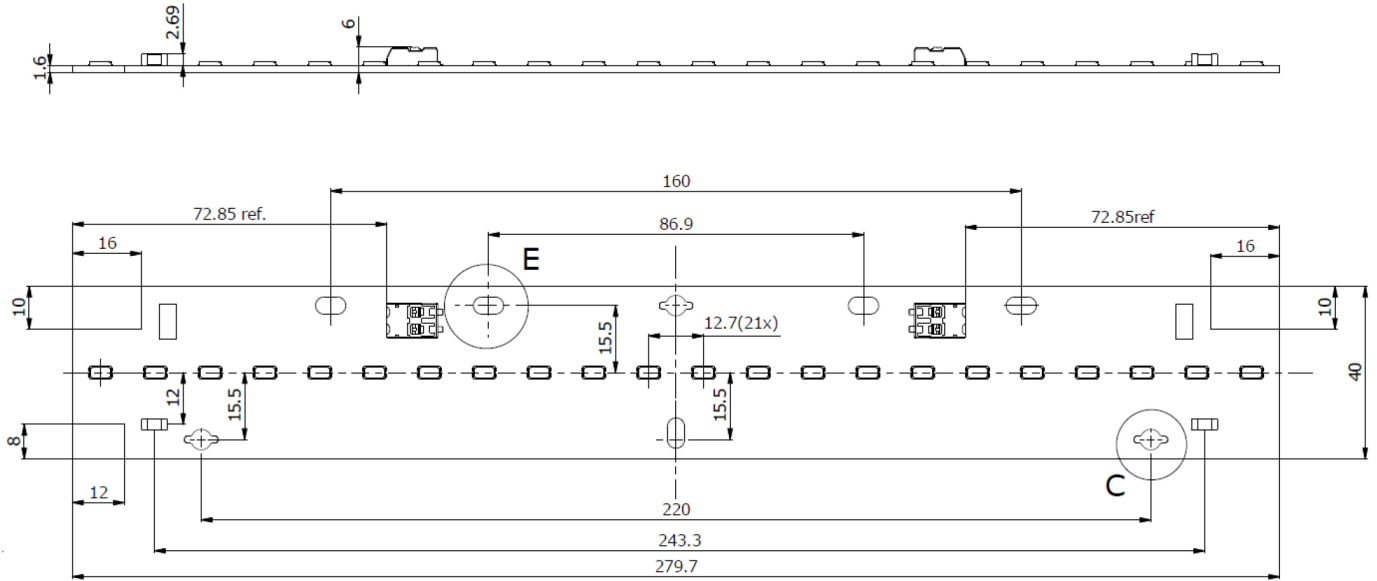
Fortimo LED Line 1ft 1100lm 1R

Wiring

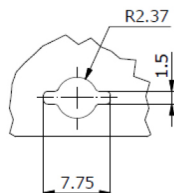
Specification Item	Value	Unit	Condition
Input Wire Cross-Section	0.33...0.5	mm ²	stranded wire
	20...22	AWG	stranded wire
Input Wire Strip Length	7.5..8.5	mm	
Input Wire Cross-Section	0.33...0.75	mm ²	solid, fused, stranded
	18...22	AWG	solid, fused, stranded
Input Wire Strip Length	7.5..8.5	mm	

Mechanical Characteristics

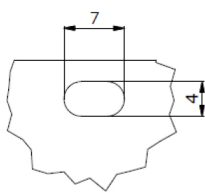
Parameter	Min	Typ	Max	Unit
Length	279.2	279.7	280.2	mm
Width	39.5	40	40.5	mm
Height Excl. Connector	4.19	4.29	4.39	mm
Height Incl. Connector	5.6	5.8	6	mm



C (2 : 1)



E (2 : 1)



Fortimo LED Line 1ft 1100lm 1R

Application Information

Compliance and Approval

IEC/TR 62278:2014
IEC 62384
IEC 62031:2008 (First Edition) + A1:2012 + A2:2014
Relevant clauses of EN 62471:2008 (With IEC/TR 62471-2: 2009 and IEC/TR 62778: 2014)
UL 8750
ENEC+
CE
ENEC

Environmental

RoHS / REACH

Application Information

Zhaga ²	Compliant*
*L28W4	

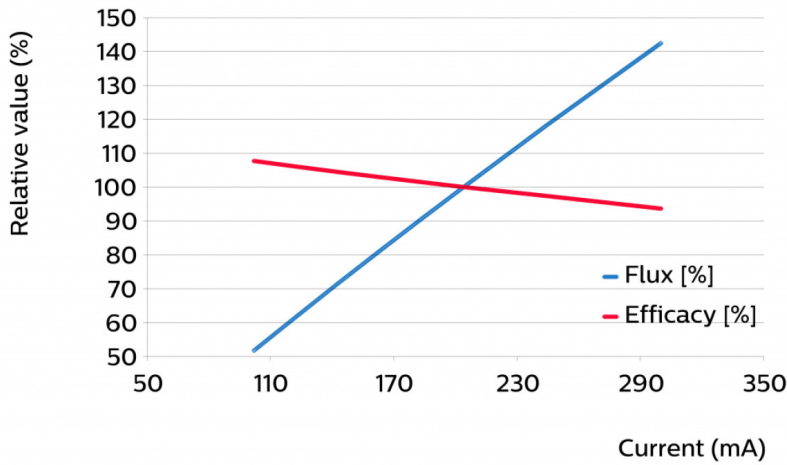
IP Rating	No IP rating
Overheating Protection	No protection
Luminaire Class	IEC Class I and IEC Class II
Dimming	Yes

Footnotes on page 11.

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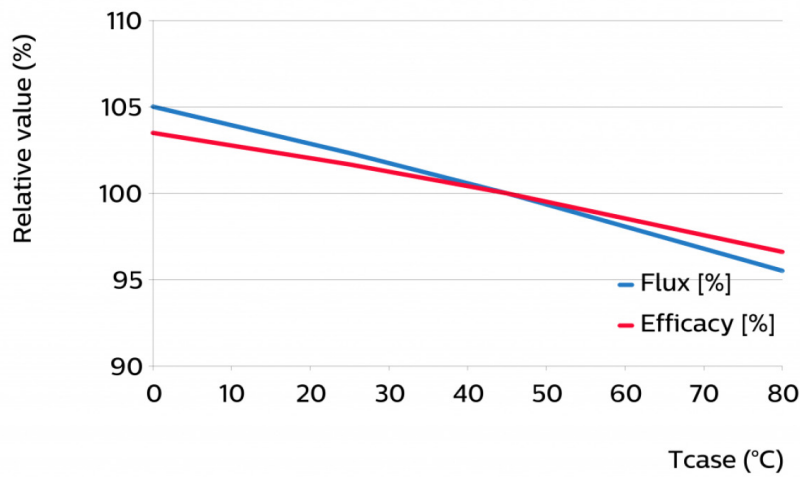
Tuning Information

Flux and Efficacy Vs. Current



I [A]	Flux [%]	Efficacy [%]
300	142	94
245	118	97
204	100	100
184	91	101
163	81	103
143	71	104
122	62	106
102	52	108

Flux and Efficacy Vs. Temperature at Tc



Tc [°C]	Flux [%]	Efficacy [%]
80	96	97
45	100	100
25	102	102
0	105	103

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Lumen Maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I-nom 163mA	Tc 25°C	>70	>70	>70	>70	>70	>70	35	35	35
	Tc-nom 45°C	>70	>70	>70	65	60	60	30	30	30
	Tc-life 80°C	70	70	65	45	40	40	20	20	20
I-nom 204mA	Tc 25°C	>70	>70	>70	>70	70	70	35	30	30
	Tc-nom 45°C	>70	>70	>70	60	55	55	25	25	25
	Tc-life 80°C	65	65	65	40	40	40	20	20	20
I-life 300mA	Tc 25°C	>70	>70	>70	65	65	60	30	30	30
	Tc-nom 45°C	>70	>70	>70	55	50	50	25	25	25
	Tc-life 80°C	60	60	55	35	35	35	15	15	15

Values in the table are based on available LM80 LED data. Lumen maintenance will be updated once additional measurement data becomes available.

Lifetime

Lifetime L70B50 = 60 000 hours at I-life and Tc-life. >70 000 hours claim is based on extrapolating raw LM80-data to lower temperatures and currents by using statistical techniques.

Thermal Switching Table

Calculated number of switches at which the survival rate of the population $\geq 90\%$, at a given ambient temperature and delta T with respect to Tc (where Tc = Tambient + delta T)

		Tambient [°C]											
		-40	-30	-20	-10	0	10	20	30	40	50	60	70
delta T [°C] (delta T = Tc - Tambient)	10	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k
	20	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	X
	30	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	X	X
	40	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	X	X	X
	50	69 k	69 k	69 k	69 k	69 k	69 k	69 k	69 k	X	X	X	X
	60	35 k	35 k	35 k	35 k	35 k	35 k	35 k	X	X	X	X	X
	70	19 k	19 k	19 k	19 k	19 k	19 k	X	X	X	X	X	X
	80	12 k	12 k	12 k	12 k	12 k	X	X	X	X	X	X	X
	90	7 k	7 k	7 k	X	X	X	X	X	X	X	X	X
	100	5 k	5 k	X	X	X	X	X	X	X	X	X	X

- 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.
- Philips Fortimo LED Line 1ft 1100lm 1R LV3 Module is a Zhaga certified light engine. Visit www.zhagastandard.org for more information.
- View limited warranty at www.philips.com/warranties for details and restrictions.



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