

PHILIPS

Fortimo

LED

Fortimo LED Strip 1ft
650lm 8xx FC LV4



Datasheet

Fortimo LED Strip Gen4

Fortimo LED Strip systems are ideal for use in designer or miniaturized, slim linear luminaires for direct lighting in offices, banks, schools, public buildings, supermarkets and anywhere where a small, flexible form factor is appreciated.

Key features and benefits

- State-of-the-art LED module efficiency of up to 182 lm/W
- Long life-time: >50,000 hours
- High color rendering (CRI >80 and >90)
- Excellent color consistency of 3 SDCM
- Choice of color temperatures (3000 K, 4000 K and 5000 K)
- Two lumen packages: 650 lm and 1100 lm per foot
- Small LED module width of only 20mm
- Tunable lumen output, efficacy and lifetime
- Wide temperature (Tc) range from -40 °C to +80 °C
- Push-in connectors enabling automated wiring
- Five year system warranty

November 2017

 Zhaga

Ordering data

Commercial product name	EOC	12NC	Box quantity
Fortimo LED Strip 1ft 650lm 830 FC LV4	8718696 655078 00	9290 015 24606	168
Fortimo LED Strip 1ft 650lm 840 FC LV4	8718696 655092 00	9290 015 24706	168

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED Strip 1ft 650lm 8xx FC LV4	110	130	139	mA

Module temperatures

Parameter	Nominal*	Life**	Max***	Unit
T _c (case temperature at T _c point)	45	70	80	°C

* Nominal value at which typical performance is specified

** Value at which life time is specified

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

Optical characteristics - table per color (CCT)

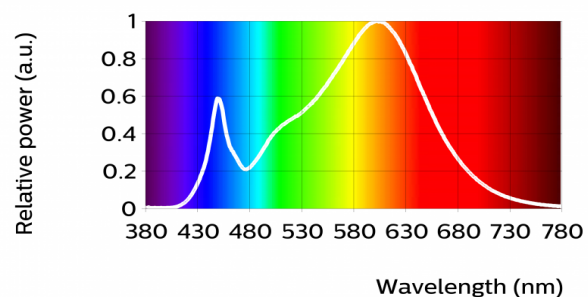
Fortimo LED Strip 1ft 650lm 830 FC LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	571	617	663	lm
Module efficacy	148	164	180	lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.432, 0.401)		-
Color consistency			3	SDCM
CRI	80			
Radiation angle		120		deg
Photobiological safety			RG1	
Energy efficiency label		A++		
$\Delta u'v'$ at 6000 hours			0.007	

R9=10

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 88mA	Tc 25 °C	515	173
	Tc-nom 45 °C	504	171
	Tc-life 70 °C	488	167
I nom 110mA	Tc 25 °C	630	167
	Tc-nom 45 °C	617	164
	Tc-life 70 °C	597	161
I life 130mA	Tc 25 °C	730	161
	Tc-nom 45 °C	715	159
	Tc-life 70 °C	691	156



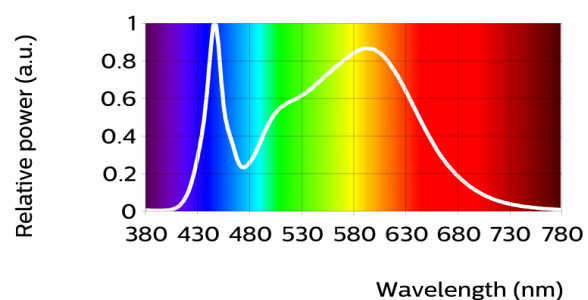
Fortimo LED Strip 1ft 650lm 840 FC LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	600	650	700	lm
Module efficacy	156	173	190	lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.380, 0.377)		-
Color consistency			3	SDCM
CRI	80			
Radiation angle		120		deg
Photobiological safety			RG1	
Energy efficiency label		A++		
$\Delta u'v'$ at 6000 hours			0.007	

R9=5

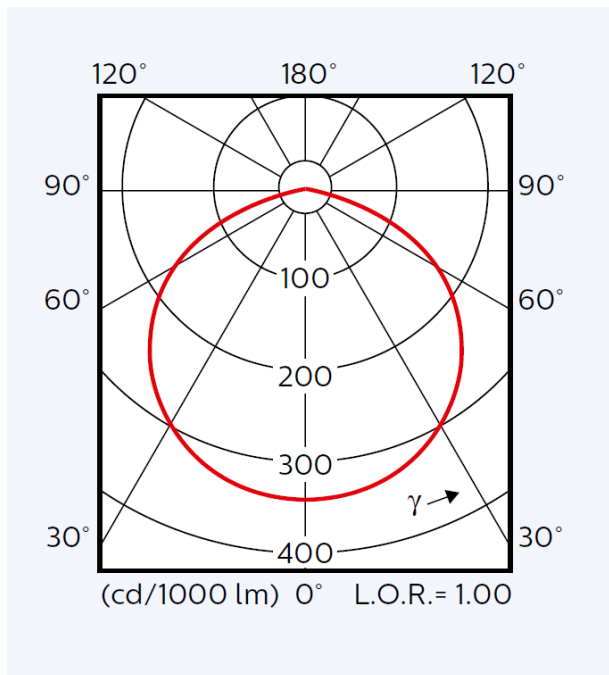
Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 . Measurement precision for CRI ± 1.5

Operation point	840	lm	lm/W
80% I nom 88mA	Tc 25 °C	542	182
	Tc-nom 45 °C	532	180
	Tc-life 70 °C	515	177
I nom 110mA	Tc 25 °C	664	175
	Tc-nom 45 °C	650	173
	Tc-life 70 °C	629	170
I life 130mA	Tc 25 °C	770	170
	Tc-nom 45 °C	754	168
	Tc-life 70 °C	729	164



Beam shape

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



Electrical characteristics

Fortimo LED Strip 1ft 650lm 830 FC LV4

Fortimo LED Strip 1ft 650lm 840 FC LV4

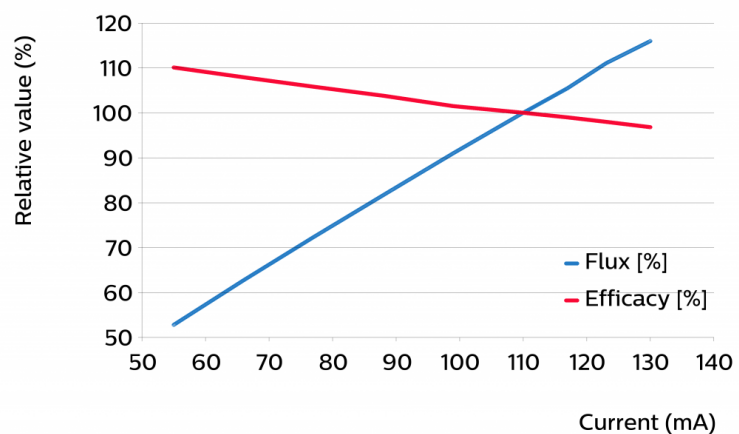
Parameter	Min	Typ	Max	Unit
Forward voltage	32.6	34.1	35.6	V
Power consumption	3.6	3.8	3.9	W
Number of modules in parallel per chain			10	

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

Tuning information

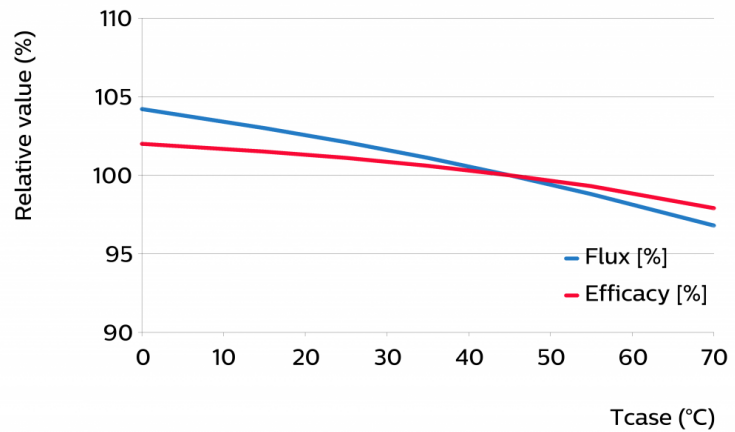
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
130	116	97
123	111	98
117	106	99
110	100	100
99	91	102
88	82	104
77	72	106
66	63	108
55	53	110



Flux and efficacy versus temperature at Tc (at I nominal)

Tcase [°C]	Flux [%]	Efficacy [%]
70	97	98
55	99	99
45	100	100
35	101	101
25	102	101
15	103	102
0	104	102



Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I nom 88 mA	Tc 25°C	>70	>70	>70	>70	65	60	35	35	30
	Tc nom 45°C	>70	>70	>70	>70	65	60	35	35	30
	Tc life 70°C	>70	>70	>70	55	50	50	30	25	25
I nom 110 mA	Tc 25°C	>70	>70	>70	>70	65	60	35	35	30
	Tc nom 45°C	>70	>70	>70	>70	65	60	35	35	30
	Tc life 70°C	>70	>70	>70	55	50	50	30	25	25
I life 130 mA	Tc 25°C	>70	>70	>70	>70	65	60	35	35	30
	Tc nom 45°C	>70	>70	>70	>70	65	60	35	35	30
	Tc life 70°C	>70	>70	>70	55	50	50	30	25	25

Lifetime L70B50 > 70 0000 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.

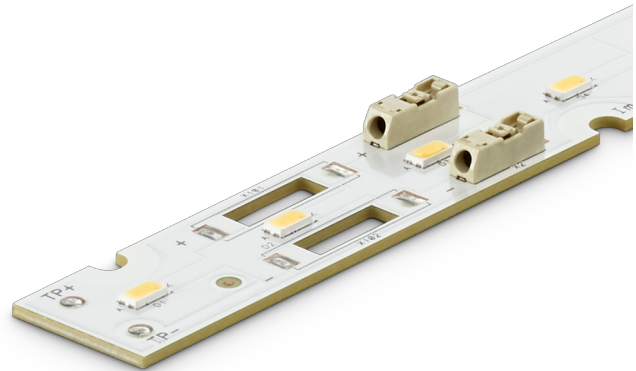
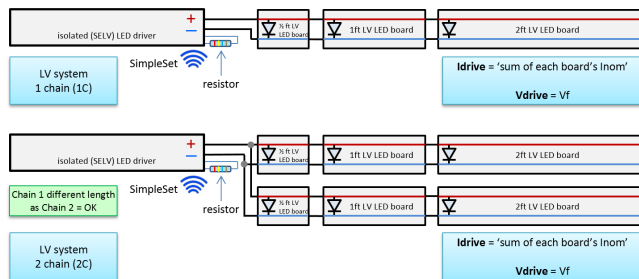
Thermal switching table

Calculated number of switches at which the survival rate of the population >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	Continuous operation or dimming only	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>30 k	
	20		>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>30 k	>30 k	X
	30		>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>100 k	>30 k	>30 k	26 k	X	X
	40		>30 k	>30 k	>30 k	>30 k	>30 k	>30 k	>30 k	>30 k	18 k	X	X	X
	50		21 k	21 k	20 k	20 k	20 k	18 k	13 k	X	X	X	X	X
	60		11 k	11 k	11 k	11 k	10 k	9 k	X	X	X	X	X	X
	70		6 k	6 k	6 k	6 k	6 k	X	X	X	X	X	X	X
	80		4 k	4 k	4 k	4 k	X	X	X	X	X	X	X	X
	90		2 k	2 k	2 k	X	X	X	X	X	X	X	X	X

Wiring

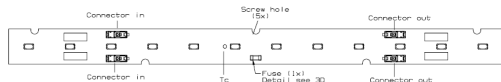
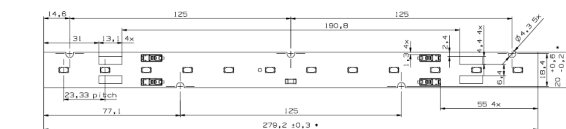
Specification item	Value	Unit	Condition
Input wire cross-section	0.25...0.75	mm ²	solid wire
	18...24	AWG	solid wire
Input wire strip length	7.5...8.5	mm	
Input wire cross-section	0.33...0.5	mm ²	stranded wire
	20...22	AWG	stranded wire
Input wire strip length	7.5...8.5	mm	



Mechanical characteristics

Fortimo LED Strip 1ft 650lm 830 FC LV4
Fortimo LED Strip 1ft 650lm 840 FC LV4

Parameter	Min	Typ	Max	Unit
Length	278.9	279.2	279.5	mm
Width	19.8	20	20.6	mm
Height excl. connector	1.45	1.6	1.75	mm
Height incl. connector	3.85	4.2	4.55	mm



Connector out to connect module to driver or module to module
Connector in to connect module to driver or module to module

Absolute ratings

Parameter	Min	Typ	Max	Unit
Current through the LED module (I-max)			139	mA
Case temperature (Tc-max)			80	°C
Power at rated Vf-max and I-max			7.4	W
ESD (direct contact)			8	kV
ESD (air)			15	kV
Working voltage			120	V _{dc}
Voltage strength	1240			V _{ac}
Ambient temperature	-40			°C

Application information

Certificates and Standards

IEC 62031:2008 (First Edition) + A1:2012 + A2:2014

EN 62031:2008 (First Edition) + A1:2013 + A2:2015

Relevant clauses of IEC 62471:2006 (Incl. IEC/TR 62471-2: 2009 and IEC/TR 62778: 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

Zhaga

Compliant*

*Book 7

Application

IP rating	None
Overheating protection	No
Luminaire class	Class I and Class II
Dimming	Yes



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