PHILIPS

Fortimo

LED

Fortimo LED Line 1ft
1100lm 8xx 3R HV4B

Datasheet

Fortimo LED Line Gen4

Fortimo LED Line is designed to produce pure white light for general lighting applications with high efficiency levels. The Fortimo LED Line portfolio consists of 2 main ranges of products, which have been differentiated by the number of rows of LEDs on the module. Both ranges feature a variety of different length modules, lumen packages and color temperatures for all the different types of linear luminaires.

Key features and benefits

- State-of-the-art LED module efficiency of up to 186 lm/W
- Instant full light
- Long life-time: >50,000 hours
- High color rendering (CRI >80 and >90)
- Excellent color consistency of 3 SDCM
- Choice of color temperatures (3000, 4000 and 5000 K)
- Two module lengths: 1 ft/280 mm or 2 ft/560 mm
- Three lumen packages: 650, 1100, and 2000 lm per foot/280 mm
- LED module range with 1 or 3 rows of LEDs
- Tunable lumen output, efficacy and lifetime
- Push-in connectors enabling automated wiring
- Wide temperature (Tc) range from -40 °C up to +90 °C
- Five year system warranty

April 2019

indirect

100%
instant

Zhaga

Ordering data

Commercial product name	EOC	12NC	Box quantity
Fortimo LED Line 1ft 1100lm 830 3R HV4B	8718696 901809 00	9290 015 45506	180
Fortimo LED Line 1ft 1100lm 840 3R HV4B	8718696 901816 00	9290 015 45606	180
Fortimo LED Line 1ft 1100lm 850 3R HV4B	8718696 901823 00	9290 015 45706	180

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED Line 1ft 1100lm 8xx 3R HV4B	198	450	450	mA

Module temperatures

Parameter	Nominal*	Life**	Max***	Unit
T_c (case temperature at T_c point)	40	80	80	°C

* Nominal value at which typical performance is specified

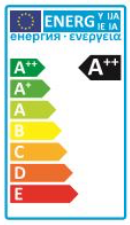
** Value at which life time is specified

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

Optical characteristics - table per color (CCT)

Fortimo LED Line 1ft 1100lm 830 3R HV4B

Parameter	Min	Typ	Max	Unit
Luminous flux	967	1045	1123	lm
Module efficacy	156	174	191	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 unlimited	
Δu'v' at 6000 hours			0.007	



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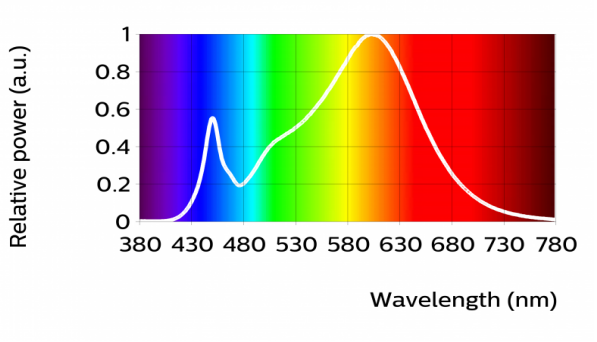
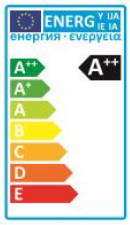
Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5

Operation point	830	lm	lm/W
80% I-nom 158mA	Tc 25 °C	855	179
	Tc-nom 40 °C	841	177
	Tc-life 80 °C	800	170
I-nom 198mA	Tc 25 °C	1060	175
	Tc-nom 40 °C	1045	174
	Tc-life 80 °C	991	167
I-life 450mA	Tc 25 °C	2283	157
	Tc-nom 40 °C	2244	155
	Tc-life 80 °C	2128	149



Fortimo LED Line 1ft 1100lm 840 3R HV4B

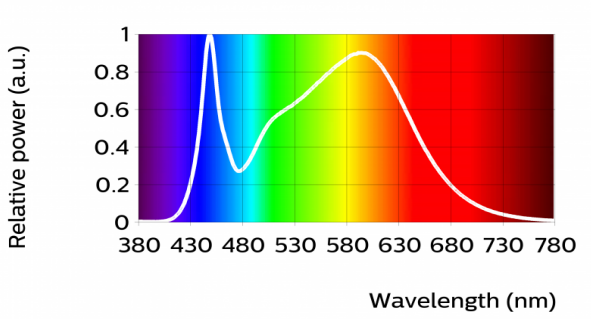
Parameter	Min	Typ	Max	Unit
Luminous flux	1018	1100	1183	lm
Module efficacy	164	183	201	lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.383, 0.379)		-
Color consistency			3	SDCM
CRI	80			
Radiation angle		120		deg
Photobiological safety			RG1 unlimited	
Δu'v' at 6000 hours			0.007	



R9=6

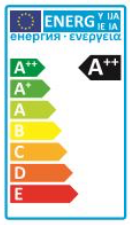
Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5

Operation point	840	lm	lm/W
80% I-nom 158mA	Tc 25 °C	900	188
	Tc-nom 40 °C	885	186
	Tc-life 80 °C	843	179
I-nom 198mA	Tc 25 °C	1116	185
	Tc-nom 40 °C	1100	183
	Tc-life 80 °C	1043	176
I-life 450mA	Tc 25 °C	2405	165
	Tc-nom 40 °C	2363	163
	Tc-life 80 °C	2242	156



Fortimo LED Line 1ft 1100lm 850 3R HV4B

Parameter	Min	Typ	Max	Unit
Luminous flux	1028	1111	1194	lm
Module efficacy	166	185	203	lm/W
Correlated color temperature (CCT)		5000		K
Color coordinates (CIEx, CIEy)		(0.343, 0.352)		-
Color consistency			3	SDCM
CRI	80			
Radiation angle		120		deg
Photobiological safety			RG1 unlimited	
Δu'v' at 6000 hours			0.007	



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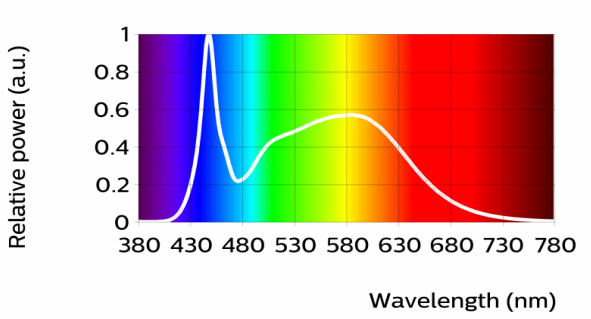
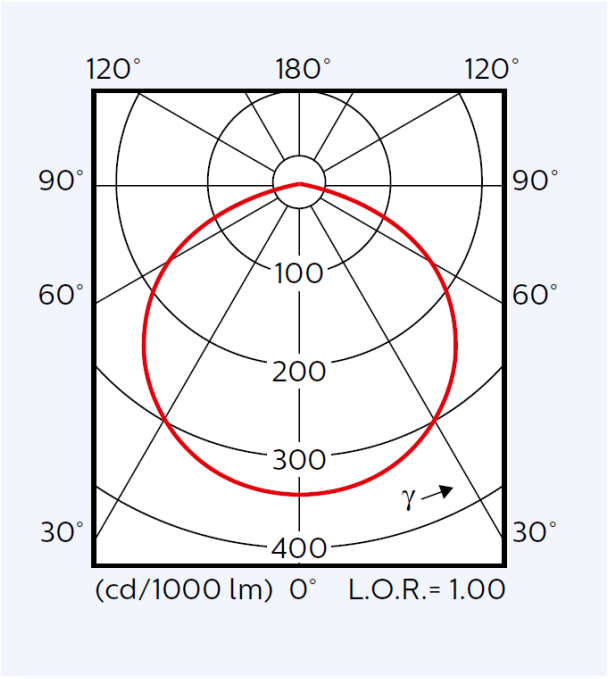
Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5

Operation point	850	lm	lm/W
80% I-nom 158mA	Tc 25 °C	909	190
	Tc-nom 40 °C	894	188
	Tc-life 80 °C	850	181
I-nom 198mA	Tc 25 °C	1127	186
	Tc-nom 40 °C	1111	185
	Tc-life 80 °C	1054	177
I-life 450mA	Tc 25 °C	2429	167
	Tc-nom 40 °C	2388	164
	Tc-life 80 °C	2265	158



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

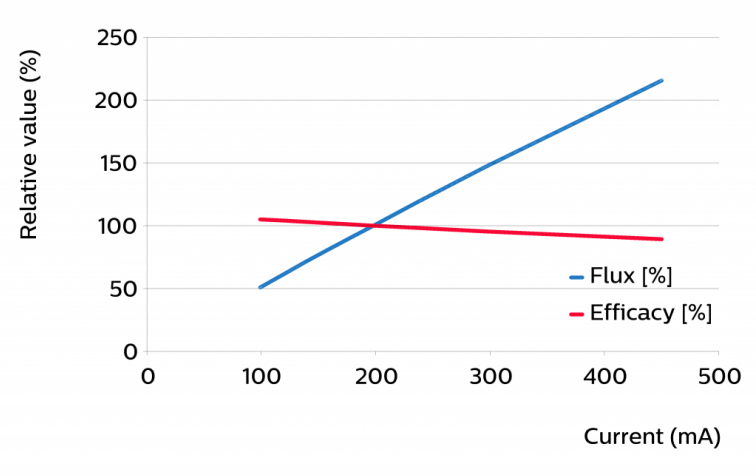
Parameter	Min	Typ	Max	Unit
Forward voltage	29.5	30.5	31.5	V
Power consumption	5.8	6.0	6.2	W = kWh/1000h
Number of modules in series per chain			8	
Number of modules in parallel per chain			8	

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

Tuning information

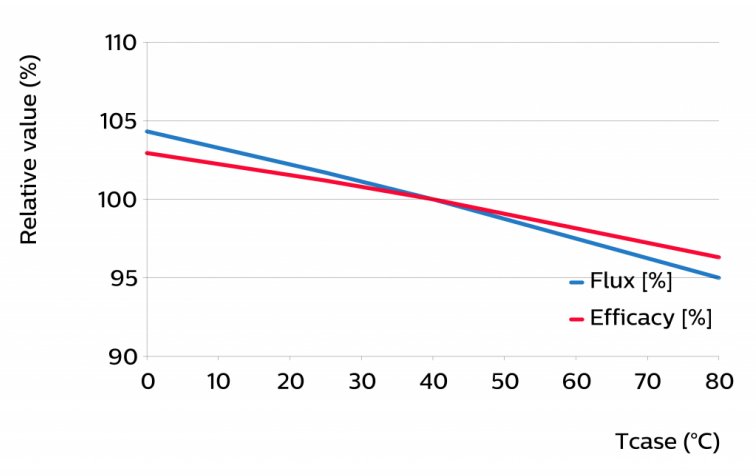
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
450	215	89
296	147	95
237	119	98
198	100	100
178	90	101
158	81	102
138	71	103
119	61	104
99	51	105



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

Tc [°C]	Flux [%]	Efficacy [%]
80	95	96
40	100	100
25	102	101
0	104	103



Lumen maintenance

Operation point	Lumen maintenance	L70			L80			L90		
	x 1000 hours	B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I-nom 158 mA	Tc 25°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-nom 40°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-life 80°C	>50	>50	>50	>50	>50	>50	35	35	35
I-nom 198 mA	Tc 25°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-nom 40°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-life 80°C	>50	>50	>50	>50	>50	>50	35	35	35
I-life 450 mA	Tc 25°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-nom 40°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-life 80°C	>50	>50	>50	>50	>50	>50	35	35	35

Lifetime

Parameter	Value	Unit
M70F50 nominal	>70000	hours
M70F50 life	61000	hours

Lifetime L70B50 = 60 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.

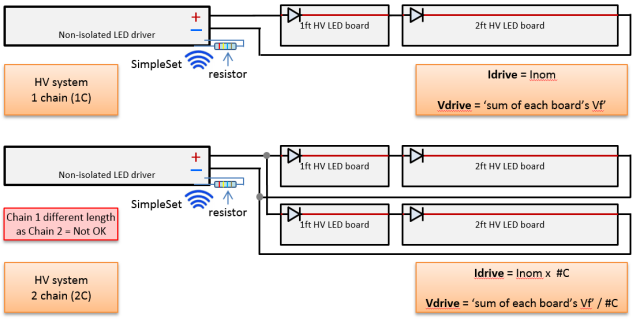
Thermal switching table

Calculated number of switches at which the survival rate of the population >=90%, at a given ambient temperature and delta T with repect 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	>100 k
	20		> 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	X	X
	40		> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	>100 k	>100 k	X	X	X
	50		62 k	62 k	62 k	62 k	62 k	62 k	62 k	X	X	X	X
	60		31 k	31 k	31 k	31 k	31 k	31 k	X	X	X	X	X
	70		17 k	17 k	17 k	17 k	17 k	X	X	X	X	X	X
	80		10 k	10 k	10 k	10 k	X	X	X	X	X	X	X
	90		7 k	7 k	7 k	X	X	X	X	X	X	X	X
	100		4 k	4 k	X	X	X	X	X	X	X	X	X

Wiring

Specification item	Value	Unit	Condition
Input wire cross-section	0.33…0.5	mm²	stranded wire
	20…22	AWG	stranded wire
Input wire strip length	7.5…8.5	mm	
Input wire cross-section	0.33…0.75	mm²	solid, fused, stranded
	18…22	AWG	solid, fused, stranded
Input wire strip length	7.5…8.5	mm	



More information in the design-in guide of LED Linear modules.

Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	279.5	280	280.5	mm
Width	54.5	55	55.5	mm
Height	4.19	4.29	4.39	mm
Product mass		50		gram

Absolute ratings

Parameter	Min	Max	Unit
Current through the LED module (I-max)		450	mA
Case temperature (Tc-max)		80	°C
Power at rated Vf-max and I-max		15.4	W
ESD (direct contact)		8	kV
ESD (air)		15	kV
Working voltage		420	V_{dc}
Voltage strength	1840		V_{ac}
Ambient temperature	-40		°C

Application information

Certificates and Standards
IEC TR 62778
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

Zhaga	Compliant*

*L28W6

Application	
IP rating	No IP-rating
Overheating protection	No protection
Luminaire class	IEC Class I and IEC Class II
Dimming	Yes

Switching cycles in accordance with EU 1194/2012: >15000

03/04/2019

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