

PHILIPS

Fortimo

LED

Fortimo LED Line 1ft
1100lm 8xx 1R HV4



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
- 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

May 2017

 Zhaga

Ordering data

Commercial product name	EOC	12NC	Box quantity
Fortimo LED Line 1ft 1100lm 830 1R HV4	8718696 686348 00	9290 015 42306	180
Fortimo LED Line 1ft 1100lm 840 1R HV4	8718696 686362 00	9290 015 42406	180
Fortimo LED Line 1ft 1100lm 850 1R HV4	8718696 686386 00	9290 015 42506	180

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED Line 1ft 1100lm 8xx 1R HV4	204	300	380	mA

Module temperatures

Parameter	Nominal*	Life**	Max***	Unit
T _c (case temperature at T _c point)	45	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)

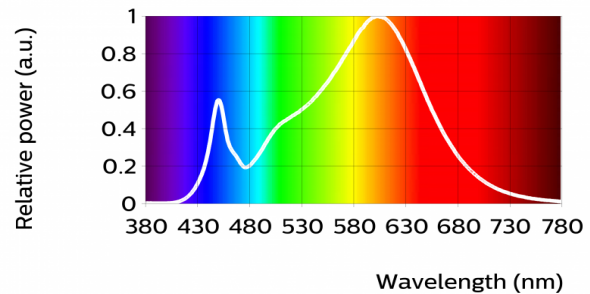
Fortimo LED Line 1ft 1100lm 830 1R HV4

Parameter	Min	Typ	Max	Unit
Luminous flux	967	1045	1123	lm
Module efficacy	148	164	180	lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.433, 0.400)		-
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=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	163
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



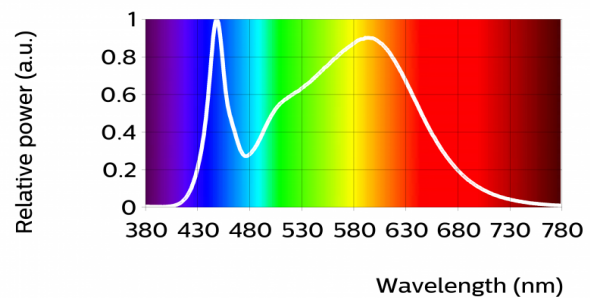
Fortimo LED Line 1ft 1100lm 840 1R HV4

Parameter	Min	Typ	Max	Unit
Luminous flux	1018	1100	1183	lm
Module efficacy	155	173	190	lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.383, 0.375)		-
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=6

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 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



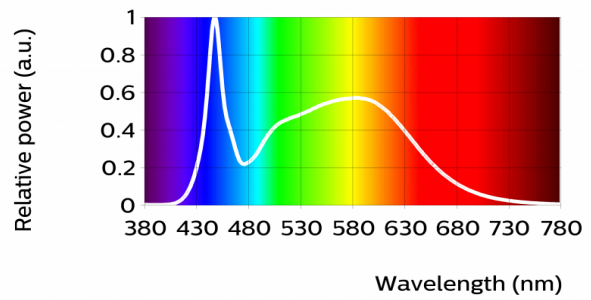
Fortimo LED Line 1ft 1100lm 850 1R HV4

Parameter	Min	Typ	Max	Unit
Luminous flux	1028	1111	1194	lm
Module efficacy	157	174	192	lm/W
Correlated color temperature (CCT)		5000		K
Color coordinates (CIEx, CIEy)		(0.345, 0.352)		-
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=8

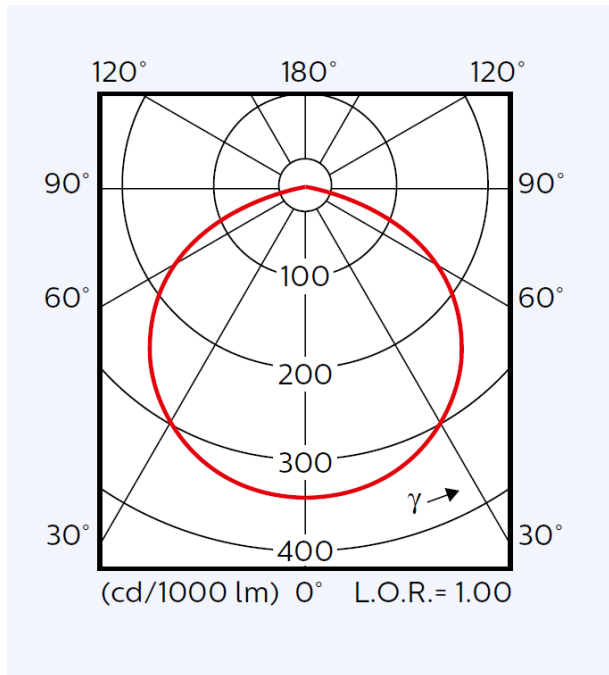
Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 . Measurement precision for CRI ± 1.5

Operation point	850	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



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 Line 1ft 1100lm 830 1R HV4](#)
[Fortimo LED Line 1ft 1100lm 840 1R HV4](#)
[Fortimo LED Line 1ft 1100lm 850 1R HV4](#)

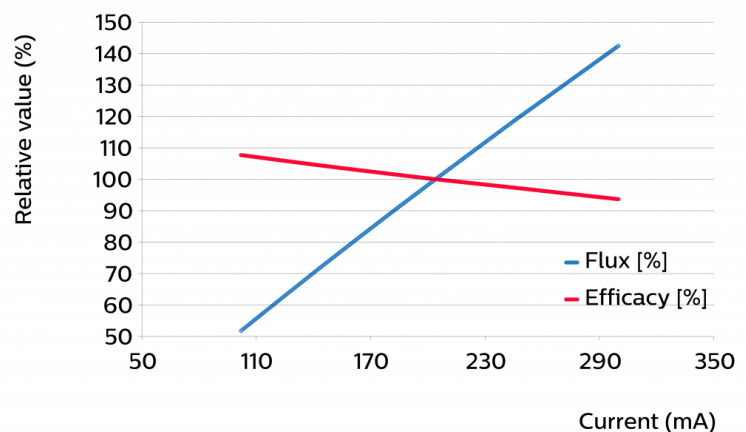
Parameter	Min	Typ	Max	Unit
Forward voltage	30.2	31.2	32.2	V
Power consumption	6.2	6.4	6.6	W
Number of modules in series per chain			8	

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

Tuning information

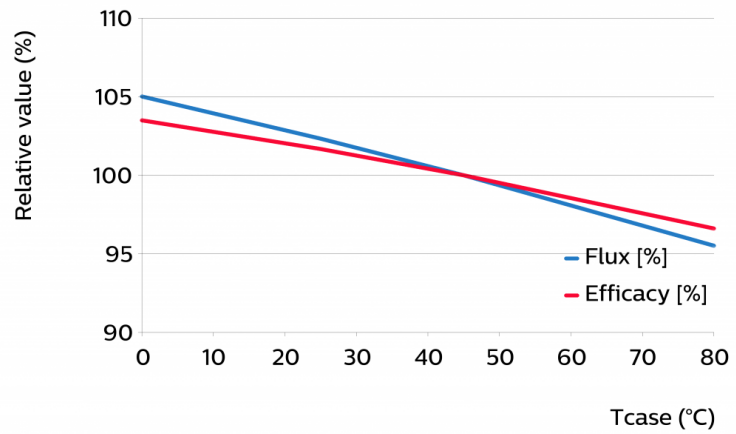
Flux and efficacy versus current (at Tc nominal)

I [mA]	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 versus temperature at Tc (at I nominal)

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



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	36	35	34
	Tc-nom 45°C	>70	>70	>70	64	63	61	30	29	29
	Tc-life 80°C	70	70	68	45	43	42	21	21	20
I-nom 204mA	Tc 25°C	>70	>70	>70	>70	70	69	34	33	32
	Tc-nom 45°C	>70	>70	>70	61	58	57	28	28	27
	Tc-life 80°C	68	65	64	42	41	40	20	19	19
I-life 300mA	Tc 25°C	>70	>70	>70	66	64	62	31	30	29
	Tc-nom 45°C	>70	>70	>70	55	53	52	26	25	25
	Tc-life 80°C	61	59	58	35	37	36	18	17	17

Values in the table are based on available LM80 LED data (12000 hours). Lumen maintenance will be updated once additional measurement data becomes available.

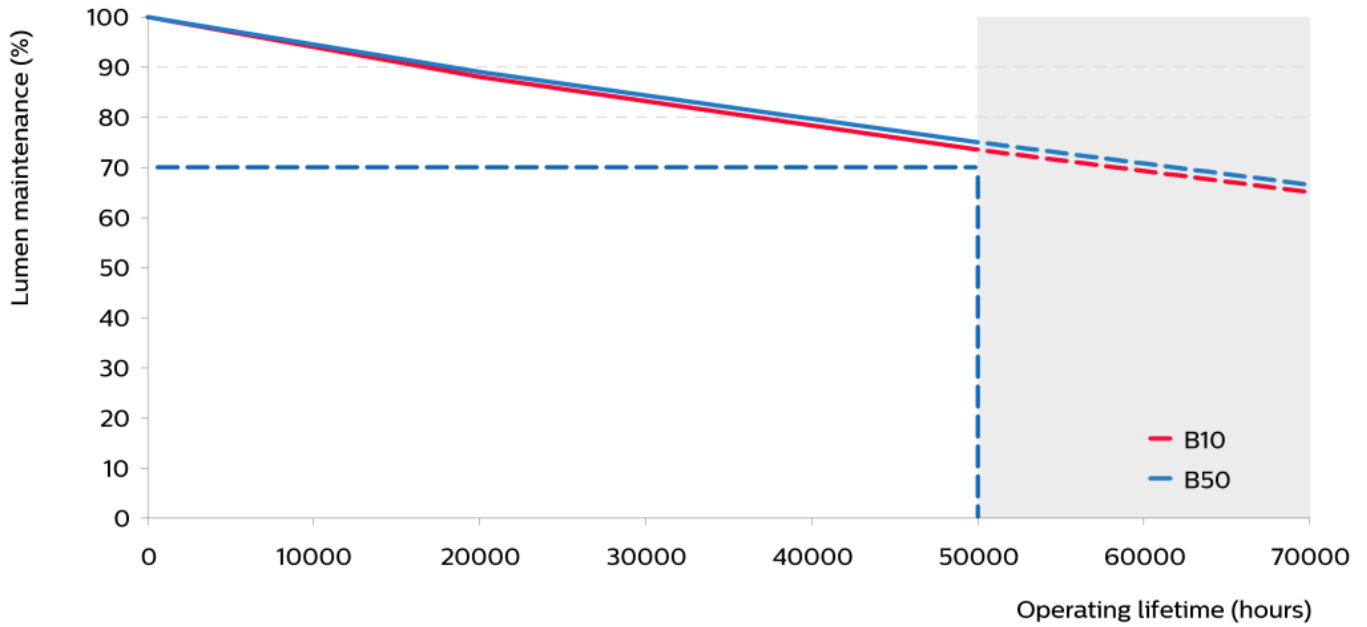
Thermal switching table

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 $T_c = T_{\text{ambient}} + \Delta T$)

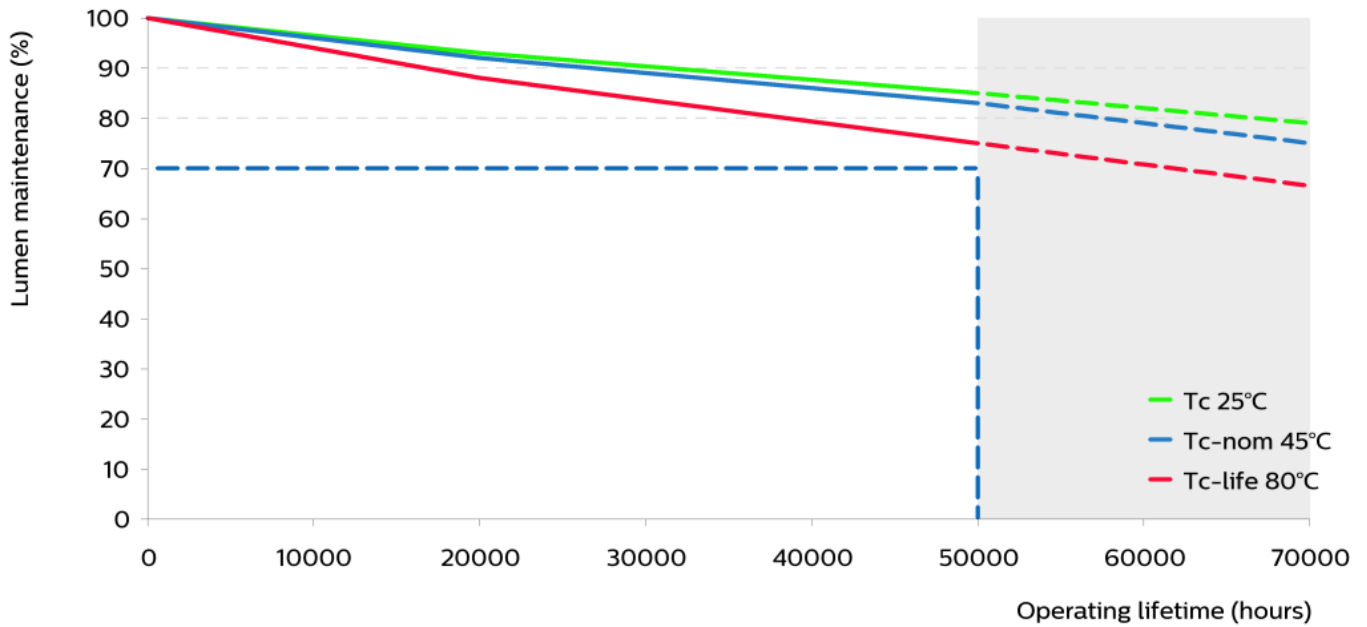
		Tambient [°C]											
		-40	-30	-20	-10	0	10	20	30	40	50	60	70
delta T [°C] (delta T = Tc - Tambient)	10	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k
	20	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	> 100 k	X
	30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

Lumen maintenance graphs

Lumen maintenance at I-life and Tc-life conditions

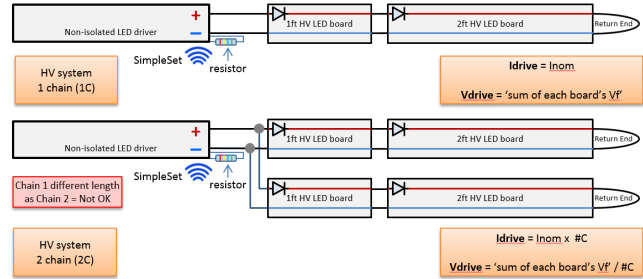


Lumen maintenance for B50 at current I-life conditions



Wiring

Specification item	Value	Unit	Condition
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	
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	

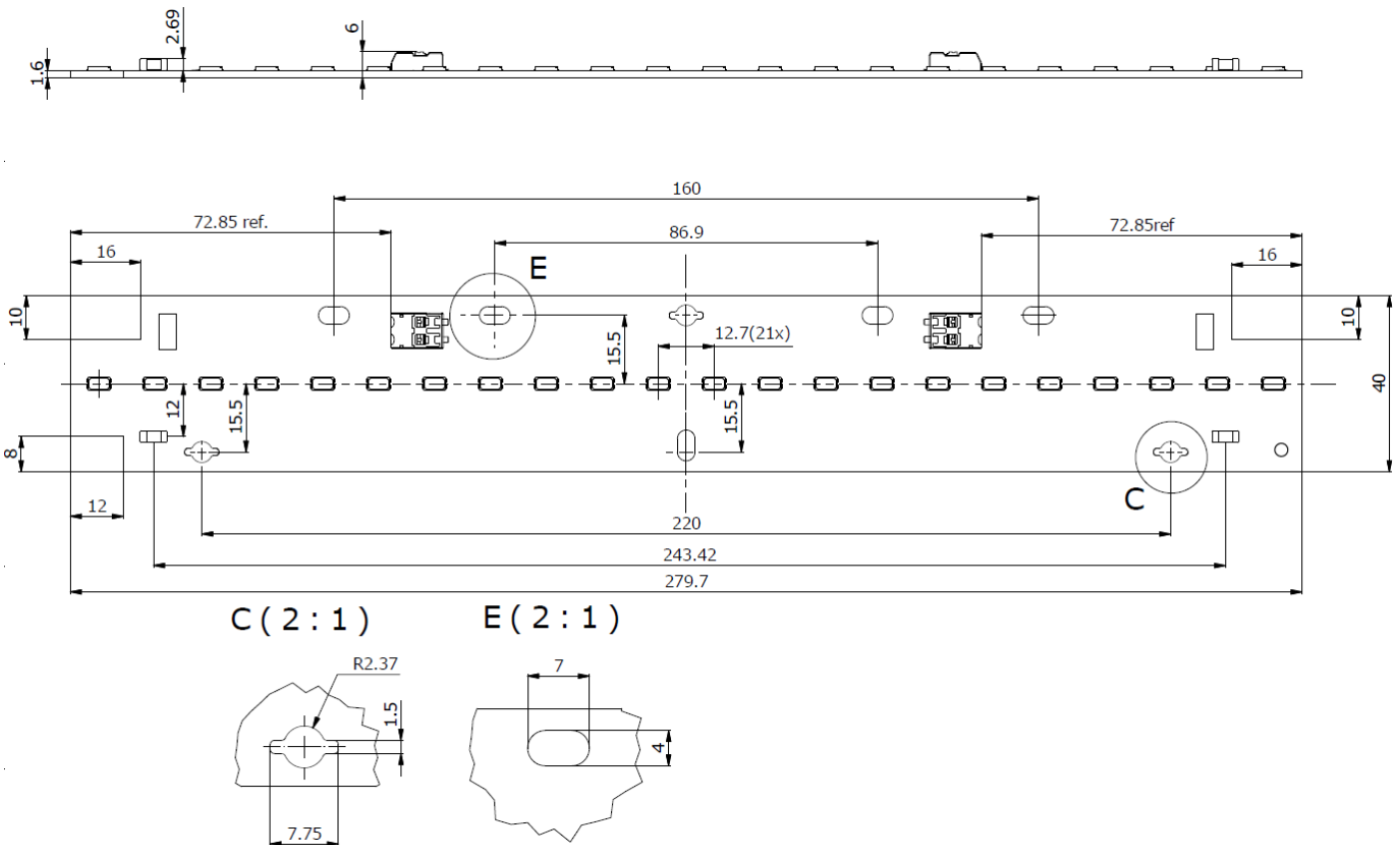


More information in the design-in guide of LED Linear modules.

Mechanical characteristics

Fortimo LED Line 1ft 1100lm 830 1R HV4
 Fortimo LED Line 1ft 1100lm 840 1R HV4
 Fortimo LED Line 1ft 1100lm 850 1R HV4

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
Warpage (IPC-TM-650)			0.75	%



Absolute 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			420	V _{dc}
Voltage strength	1840			V _{ac}
Ambient temperature	-40			°C

Application information

Certificates and Standards

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

Zhaga

Compliant*

*L28W4

Application

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



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