PHILIPS

Fortimo

LED

Fortimo LED Strip 2ft 2200lm 9xx HV4

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

August 2018

Zhaga

Ordering data

Commercial product name	EOC	12NC	Box quantity
Fortimo LED Strip 2ft 2200lm 930 FC HV4	8718696 655436 00	9290 015 26806	168
Fortimo LED Strip 2ft 2200lm 940 FC HV4	8718696 655450 00	9290 015 26906	168

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED Strip 2ft 2200lm 9xx HV4	342	390	417	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)

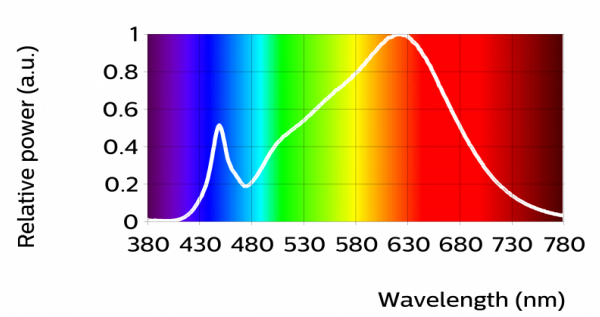
Fortimo LED Strip 2ft 2200lm 930 FC HV4

Parameter	Min	Typ	Max	Unit
Luminous flux	1933	2090	2247	lm
Module efficacy	121	134	147	lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.432, 0.401)		-
Color consistency			3	SDCM
CRI	90			
Radiation angle		120		deg
Photobiological safety			RG1 unlimited	
Energy efficiency label		A++		
Δu'v' at 6000 hours			0.007	

R9=59

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	930	lm	lm/W
80% I-nom 274mA	Tc 25 °C	1739	141
	Tc-nom 45 °C	1704	139
	Tc-life 80 °C	1626	135
I-nom 342mA	Tc 25 °C	2135	136
	Tc-nom 45 °C	2090	134
	Tc-life 80 °C	1990	130
I-life 390mA	Tc 25 °C	2404	133
	Tc-nom 45 °C	2351	131
	Tc-life 80 °C	2236	126



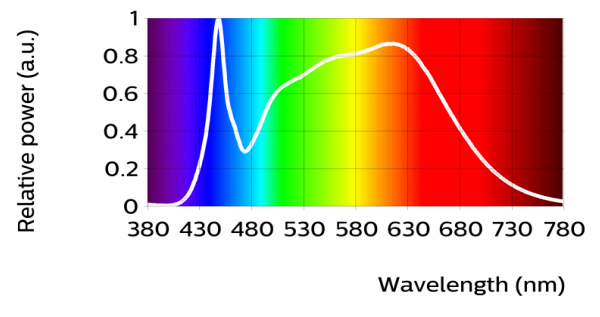
Fortimo LED Strip 2ft 2200lm 940 FC HV4

Parameter	Min	Typ	Max	Unit
Luminous flux	2035	2200	2365	lm
Module efficacy	127	141	155	lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.380, 0.377)		-
Color consistency			3	SDCM
CRI	90			
Radiation angle		120		deg
Photobiological safety			RG1 unlimited	
Energy efficiency label		A++		
Δu'v' at 6000 hours			0.007	

R9=64

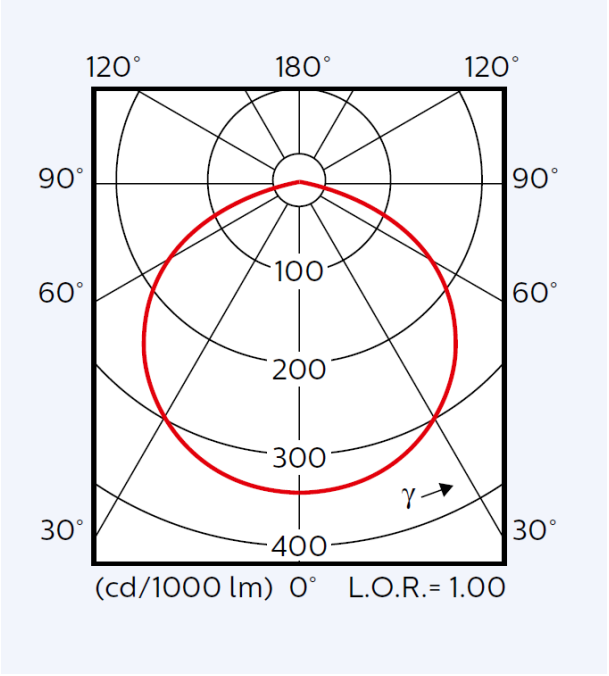
Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5

Operation point	940	lm	lm/W
80% I-nom 274mA	Tc 25 °C	1831	148
	Tc-nom 45 °C	1794	146
	Tc-life 80 °C	1712	142
I-nom 342mA	Tc 25 °C	2247	143
	Tc-nom 45 °C	2200	141
	Tc-life 80 °C	2095	136
I-life 390mA	Tc 25 °C	2531	140
	Tc-nom 45 °C	2476	138
	Tc-life 80 °C	2354	133



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 2ft 2200lm 930 FC HV4
Fortimo LED Strip 2ft 2200lm 940 FC HV4

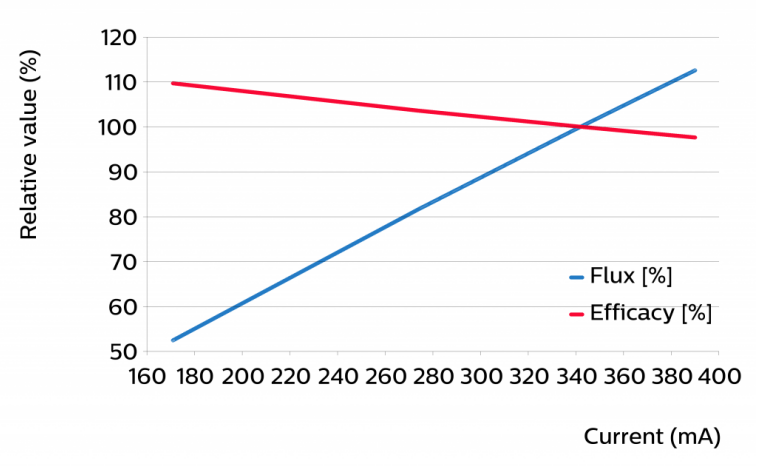
Parameter	Min	Typ	Max	Unit
Forward voltage	43.5	45.5	47.5	V
Power consumption	14.9	15.6	16.2	W
Number of modules in series per chain			6	

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

Tuning information

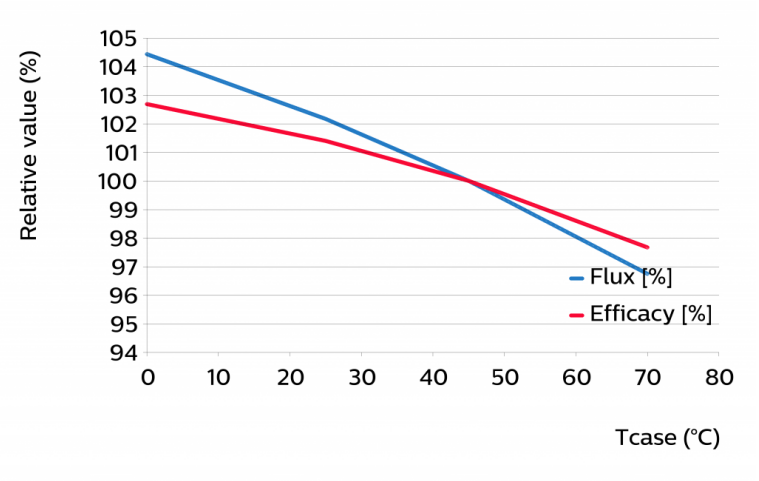
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
390	113	98
366	106	99
342	100	100
274	82	104
171	52	110



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

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



Lumen maintenance

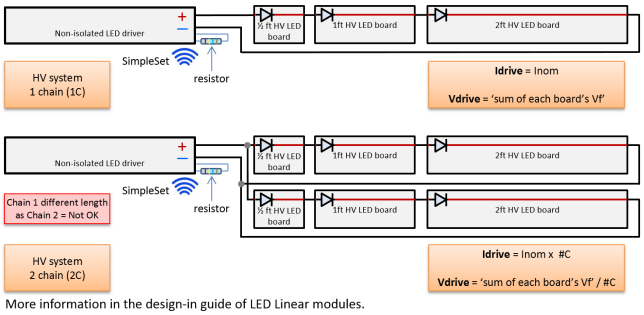
Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I nom 274 mA	Tc 25°C	>70	>70	>70	>70	65	60	35	35	30
	Tc nom 45°C	>70	>70	>70	>70	65	60	35	35	30
	Tc life 70°C	>70	>70	>70	55	50	50	30	25	25
I nom 342 mA	Tc 25°C	>70	>70	>70	>70	65	60	35	35	30
	Tc 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 390 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

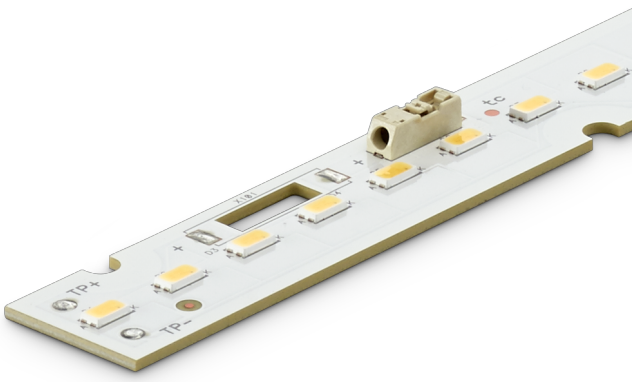
Lifetime L70B50 > 70 0000 hours at I-life and Tc-life. >70 000 hours claim is based on extrapolating raw LM80-data to lower temperatures and currents by using statistical techniques.

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	0.25…0.75	mm²	solid wire
	18…24	AWG	solid wire
Input wire strip length	7.5…8.5	mm	



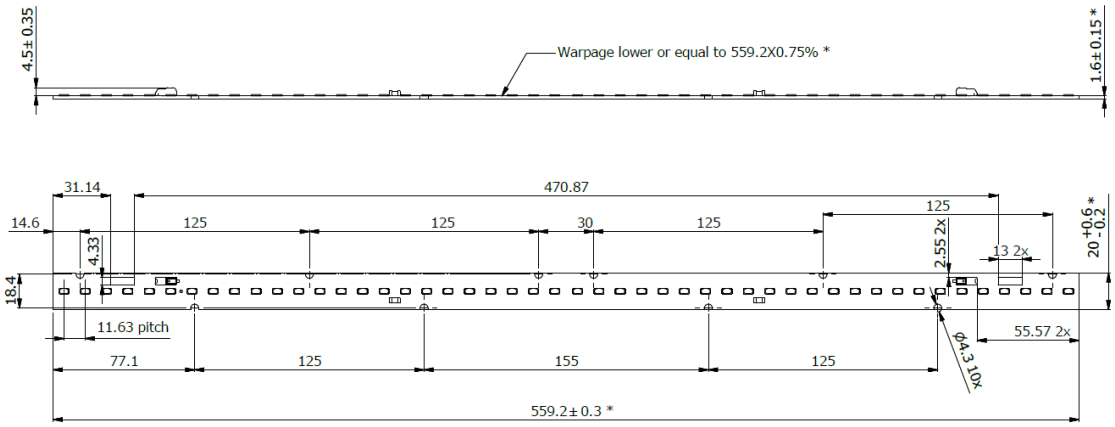
More information in the design-in guide of LED Linear modules.



Mechanical characteristics

Fortimo LED Strip 2ft 2200lm 930 FC HV4
Fortimo LED Strip 2ft 2200lm 940 FC HV4

Parameter	Min	Typ	Max	Unit
Length	558.9	559.2	559.5	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



Absolute ratings

Parameter	Min	Typ	Max	Unit
Current through the LED module (I-max)			417	mA
Case temperature (Tc-max)			80	°C
Power at rated Vf-max and I-max			16.2	W
ESD (direct contact)			8	kV
ESD (air)			15	kV
Working voltage			350	V_{dc}
Voltage strength	1700			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)
ENEC (Products are tested for safety and operation AND IEC approved by an accredited testhouse)
ENEC+
CE

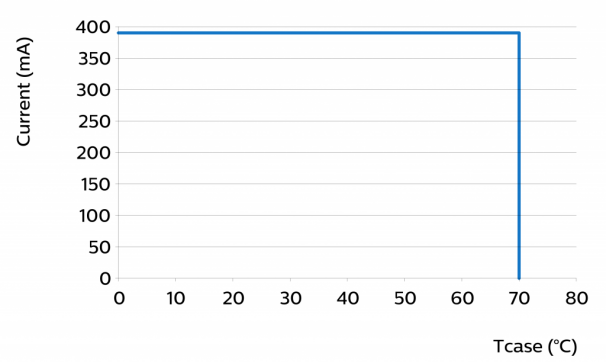
Environmental
RoHS/REACH

Zhaga	Compliant*

*Book 7

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

Performance Window



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