

**PHILIPS**

Fortimo

LED system

Strip 0.5 ft  
550 lm 1R LV3



## Datasheet

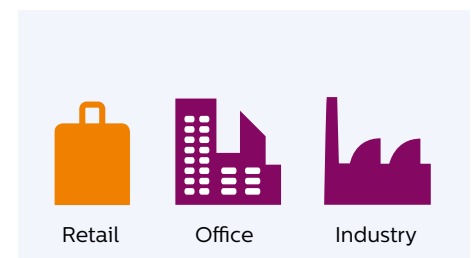
# Fortimo LED Strip Gen3

Fortimo LED Strip systems are ideal for use in designer or miniaturized, slim linear luminaires for architectural applications, which were not previously possible with fluorescent lighting or Fortimo LED Line.

### Key features and benefits

- State-of-the-art LED module efficiency of up to 165 lm/W
- Long life-time: >50,000 hours
- High color rendering (CRI >80 and >90)
- Excellent color consistency of 3 SDCM
- Variety of color temperatures (3000 K, 4000 K and 5000 K)
- Two lumen packages: 650 lm and 1100 lm per foot
- Tunable lumen output, efficacy and lifetime
- Wide case temperature (T<sub>c</sub>) range from -40 °C to +80 °C
- Push-in connectors enabling automated wiring
- Five year system warranty

### Suitable for:



July 2015



## Ordering data

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Commercial product name	EOC	12NC
Fortimo LED Strip 0.5ft 550lm 830 1R LV3	8718696 900239 00	9290 009 96606
Fortimo LED Strip 0.5ft 550lm 840 1R LV3	8718696 900246 00	9290 009 96806
Fortimo LED Strip 0.5ft 550lm 850 1R LV3	8718696 900253 00	9290 009 96906

## Drive currents and case temperatures

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Parameter	Nominal *	Life**	Max***	Unit
I (current through the LED module)	100	130	150	mA
Tc (case temperature at Tc point)	45	70	80	°C

\* Nominal value at which typical performance is specified.

\*\* Value at which lifetime L70B50  $\geq$  50,000 hour is specified.

\*\*\* Maximum value for safe operations; do not operate above this value.

## Optical characteristics - table per color (CCT)

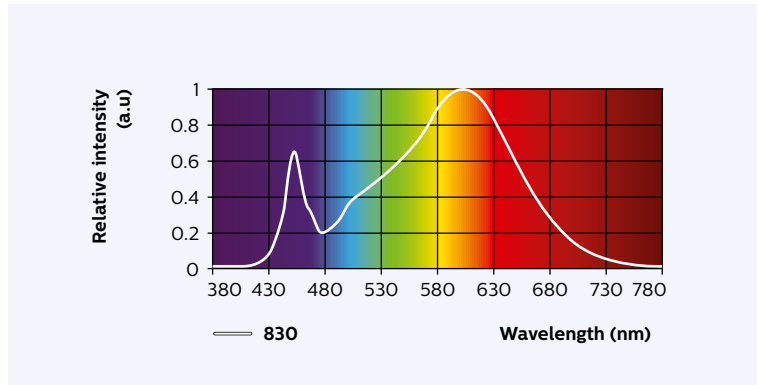
### Fortimo LED Strip 0.5ft 550lm 830 1R LV3

Parameter	Min	Typ	Max	Unit
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)*		(0.4318, 0.4010)		-
CRI**	80			-
Radiation angle		120		deg

Color consistency of 3 SDCM, averaged over the module.

Operation point	830	lm	lm/W
80% I-nom 80 mA	Tc 25 °C	446	164
	Tc-nom 45 °C	435	161
	Tc-life 70 °C	423	158
I-nom 100 mA	Tc 25 °C	543	157
	Tc-nom 45 °C	<b>530</b>	<b>155</b>
	Tc-life 70 °C	516	152
I-life 130 mA	Tc 25 °C	681	149
	Tc-nom 45 °C	665	147
	Tc-life 70 °C	647	144

Tolerance for flux data is ±7.5%.  
Tolerance for efficacy data is ±10%.



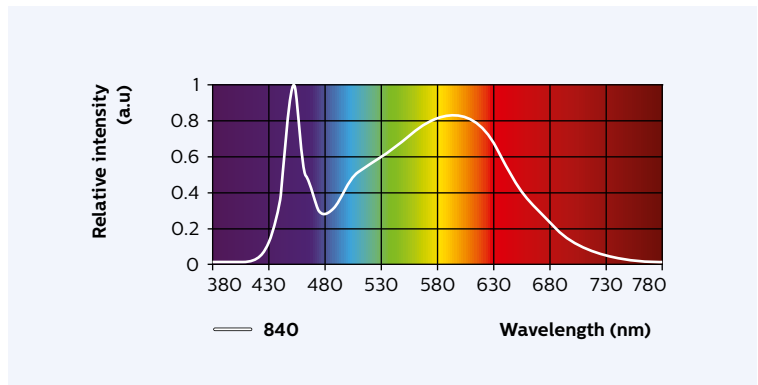
### Fortimo LED Strip 0.5ft 550lm 840 1R LV3

Parameter	Min	Typ	Max	Unit
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)*		(0.3804, 0.3773)		-
CRI**	80			-
Radiation angle		120		deg

Color consistency of 3 SDCM, averaged over the module.

Operation point	840	lm	lm/W
80% I-nom 80 mA	Tc 25 °C	463	169
	Tc-nom 45 °C	451	166
	Tc-life 70 °C	439	164
I-nom 100 mA	Tc 25 °C	564	162
	Tc-nom 45 °C	<b>550</b>	<b>160</b>
	Tc-life 70 °C	535	157
I-life 130 mA	Tc 25 °C	707	153
	Tc-nom 45 °C	690	151
	Tc-life 70 °C	671	149

Tolerance for flux data is ±7.5%.  
Tolerance for efficacy data is ±10%.



## Fortimo LED Strip 0.5ft 550lm 850 1R LV3

Parameter	Min	Typ	Max	Unit
Correlated color temperature (CCT)		5000		K
Color coordinates (CIEx, CIEy)*		(0.3425, 0.3518)		-
CRI**	80			-
Radiation angle		120		deg

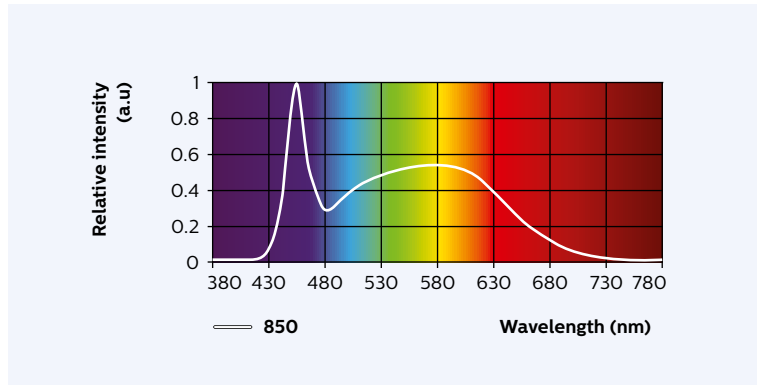
Color consistency of 3 SDCM, averaged over the module.

Operation point	850	lm	lm/W
80% I-nom 80 mA	Tc 25 °C	471	172
	Tc-nom 45 °C	459	170
	Tc-life 70 °C	447	167
I-nom 100 mA	Tc 25 °C	574	165
	Tc-nom 45 °C	<b>560</b>	<b>163</b>
	Tc-life 70 °C	545	160
I-life 130 mA	Tc 25 °C	720	156
	Tc-nom 45 °C	702	154
	Tc-life 70 °C	683	152

Tolerance for flux data is  $\pm 7.5\%$ .  
Tolerance for efficacy data is  $\pm 10\%$ .

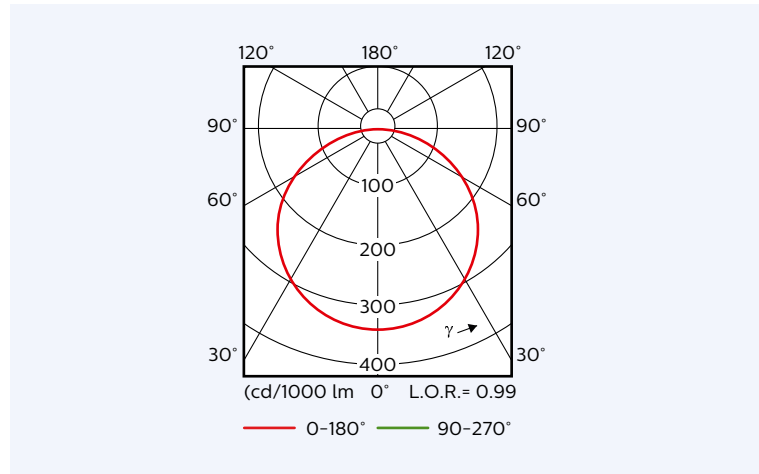
Measurement tolerance is  $\pm 2.5\%$  for the flux data and  
 $5\%$  for the efficacy data.

\* Measurement tolerance is  $\pm 0.004$   
\*\* Measurement tolerance is  $\pm 1$



## Beam shape

The Philips Fortimo 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
Nominal current		100		mA
Forward voltage	32.6	34.2	35.3	V
Power consumption	3.3	3.4	3.5	W
Energy efficiency label		A++		
Minimum dimming for performance	10			%
Number of modules per chain			12	
Bins			N/A	

Specifications stated at Tc-nom and I-nom.

## Performance over life

### Lumen maintenance

Operation point	Time x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I-nom 80 mA	Tc 25 °C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-nom 45 °C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-life 70 °C	>50	>50	>50	>50	>50	>50	39	38	38
I-nom 100 mA	Tc 25 °C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-nom 45 °C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-life 70 °C	>50	>50	>50	>50	>50	>50	39	38	38
I-life 130 mA	Tc 25 °C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-nom 45 °C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc-life 70 °C	>50	>50	>50	>50	>50	>50	36	35	35

Values in the table are based on available LM80 LED data (8000h). Lumen maintenance will be updated once additional measurement data becomes available. >48k hours claim is based on extrapolating raw LM80-data to lower temperatures and currents by using statistical techniques.

Parameter	Min	Typ	Max	Unit
$\Delta u'v'$ at 6000 hours			0.007	-

Specifications stated while Tc < Tc-life and I < I-life.

## Absolute maximum ratings

Parameter	Min	Typ	Max	Unit
Current through the LED module (I-max)			150	mA
Case temperature (Tc-max)			80	°C
Power rated at U-max and I-max			5.6	W
ESD (direct contact)			8	kV
ESD (air)			15	kV
Working voltage (between input to metal mounting plate)			200	Vdc
Voltage strength (Input to metal mounting plate)			500	Vac
Ambient temperature	-40			°C

## Wiring

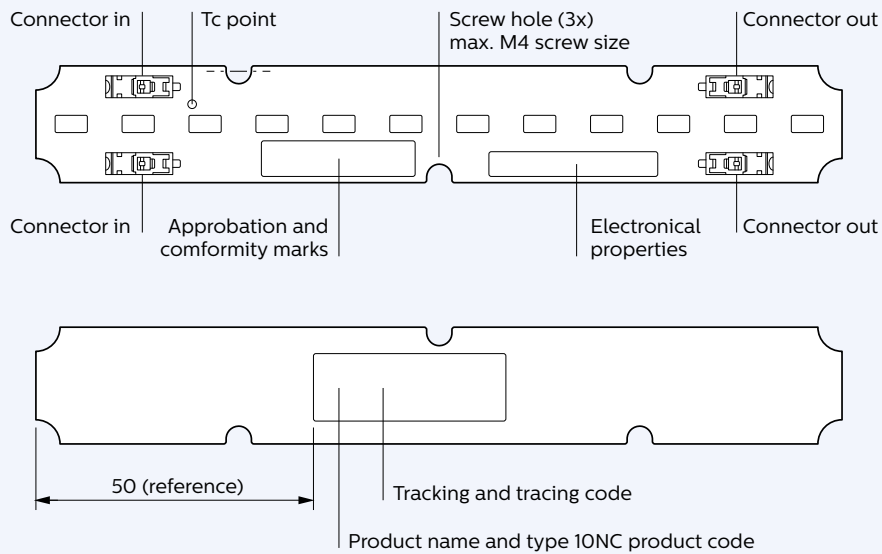
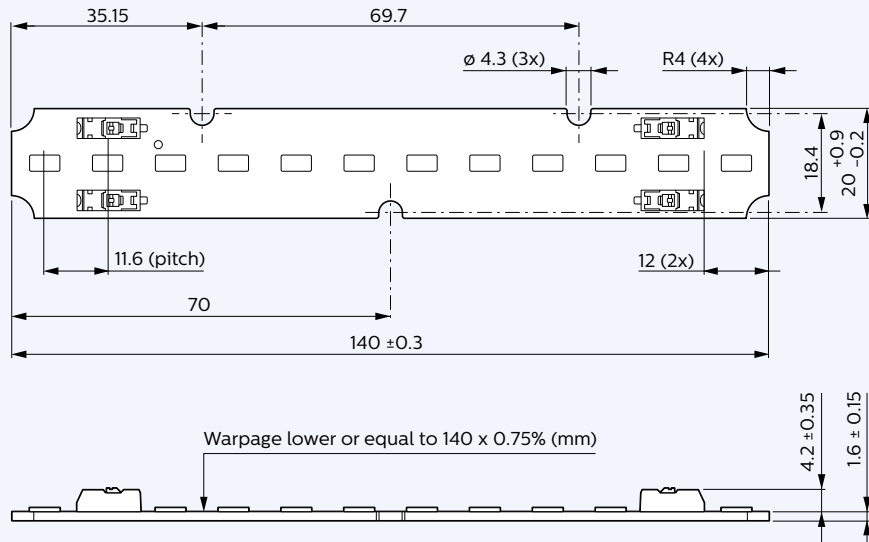
Specification item	Value	Unit	Condition
Input wire cross-section	0.2...0.8	mm <sup>2</sup>	Solid
	18...24	AWG	
	0.45..0.7	mm <sup>2</sup>	Stranded
	20..22	AWG	
Input wire strip length	7.5..8.5	mm	
Tested cable length for EMC	4000	mm	Total length of wiring including LED modules, one way. For longer lengths we advise to repeat EMC test.

Connector suited for robot wiring.

## Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	139.7	140,0	140.3	mm
Width	19.8	20,0	20.6	mm
Height excl. connector	1.5	1.6	1.75	mm
Height incl. connector	3.9	4.2	4.55	mm
Warpage (IPC-TM-650)			1.1	mm

Note: Bow & Twist of the PCB after production tested and released according IPC



## Application information

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### Compliance and approval

IEC / EN 62031, IEC / EN 62471

### Photobiological safety

Risk group: Risk Group 1

### Environmental

RoHS / REACH

### Application information

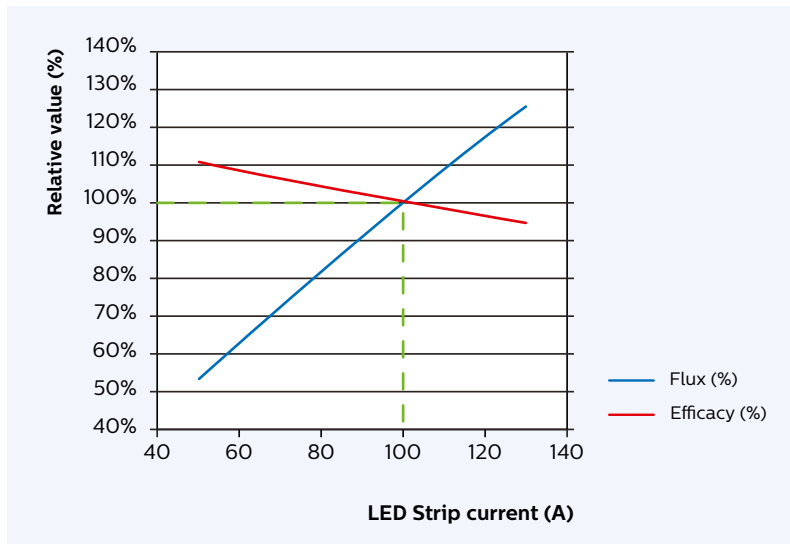
IP rating	No IP rating
Overheating protection	No protection
Luminaire class	IEC Class II

Warranted number of full thermal product cycles at which the survival rate of the population  $\geq 90\%$ , at 25 °C ambient temperature.

Case temperature Tc [°C]	Amount of cycles
35	>30,000
40	>30,000
45	>30,000
50	>30,000
55	>30,000
60	>30,000
65	>30,000
70	27,000
75	20,000
80	15,000
85	
90	
95	

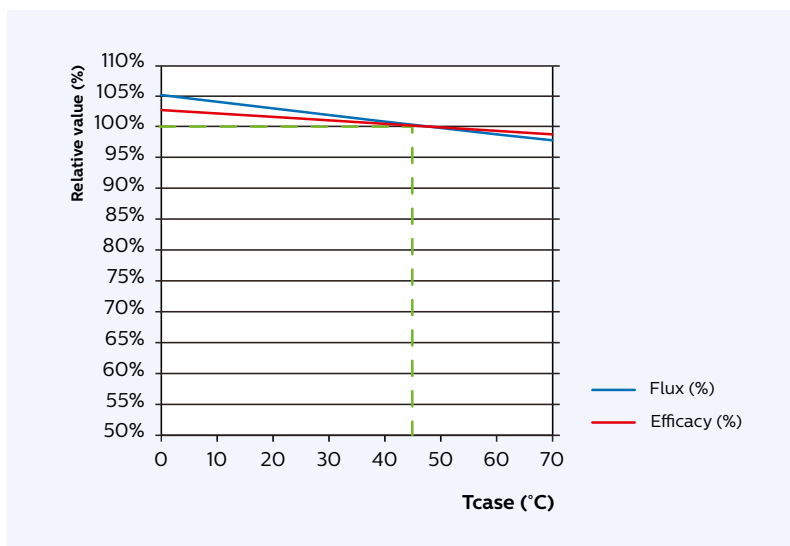


## Tuning information



### Flux and efficacy versus current

	I [A]	Flux [%]	Efficacy [%]
I-life	130	125%	95%
	123	120%	96%
	120	117%	96%
	110	109%	98%
	<b>(I-nom)</b>	<b>100</b>	<b>100%</b>
	90	91%	102%
	80	82%	104%
	70	73%	106%
	60	63%	108%
(I-nom x 50%)	50	53%	111%

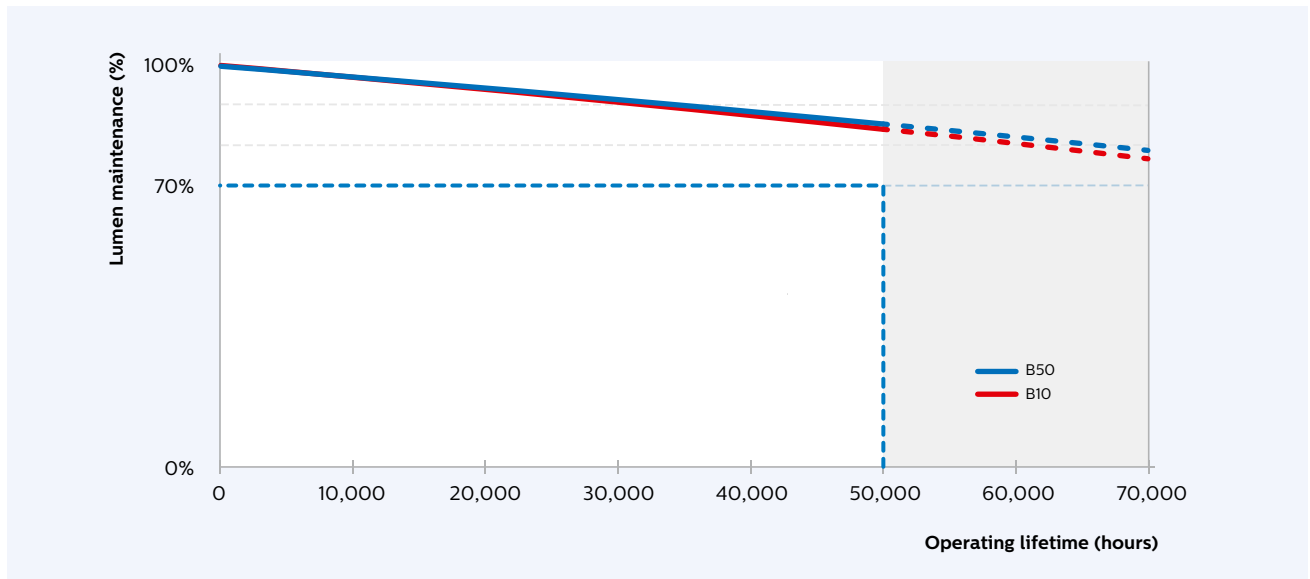


### Flux and efficacy versus temperature at Tc

	Tc [°C]	Flux [%]	Efficacy [%]	
(Tc-life)	70	96%	98%	
	65	97%	98%	
	60	98%	99%	
	55	99%	99%	
	50	99%	100%	
	<b>(Tc-nom)</b>	<b>45</b>	<b>100%</b>	<b>100%</b>
		40	101%	100%
	35	101%	101%	
	30	102%	101%	
	25	103%	101%	
	20	103%	102%	
	15	104%	102%	
	10	104%	102%	
	5	105%	103%	
	0	105%	103%	

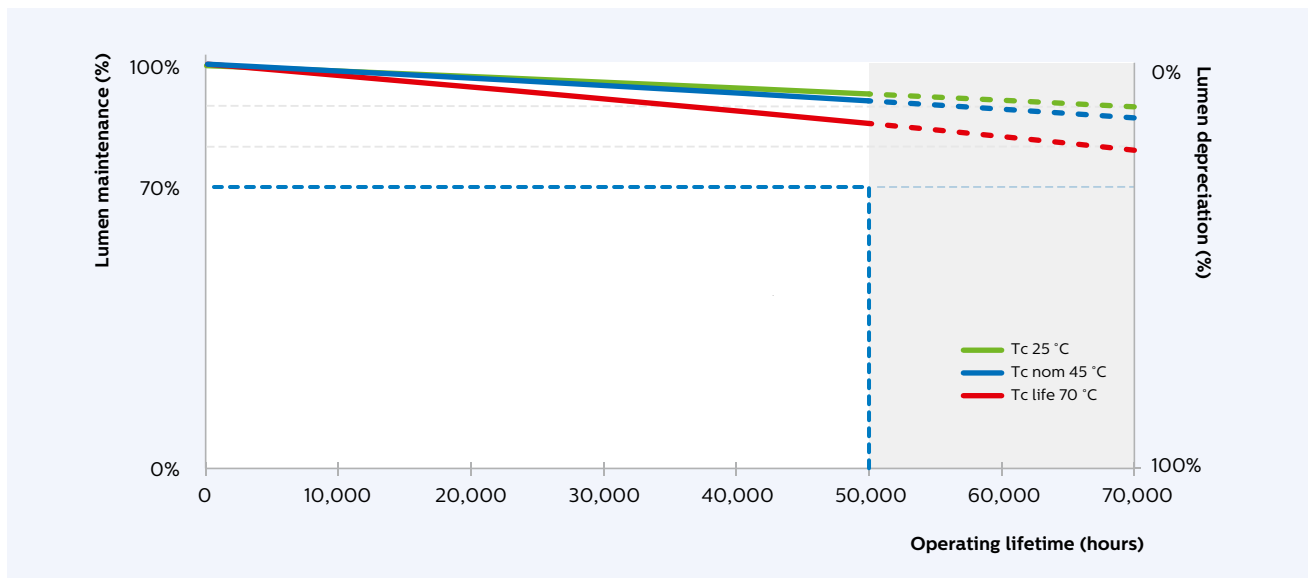
## Lumen maintenance

Lumen maintenance at I life and Tc life conditions



Lumen depreciation as a function of operating hours for I-life and Tc-life.

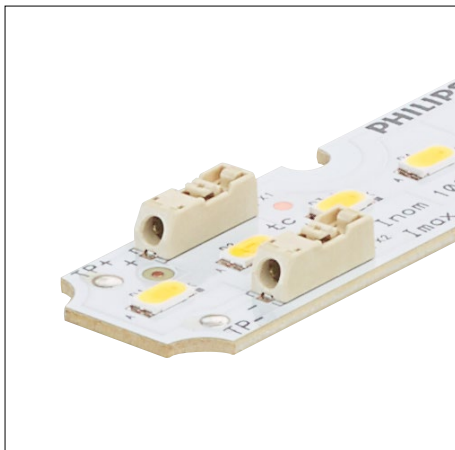
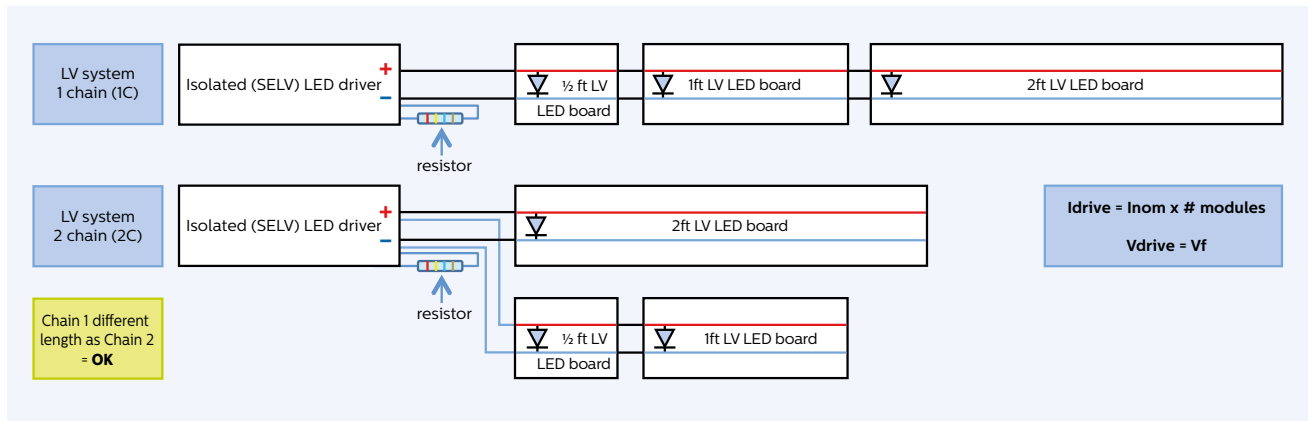
Lumen maintenance (B50) at current I life



Lumen depreciation as a function of operating hours at different Tc values and I-life.

# Wiring schematic

## Examples





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Data subject to change