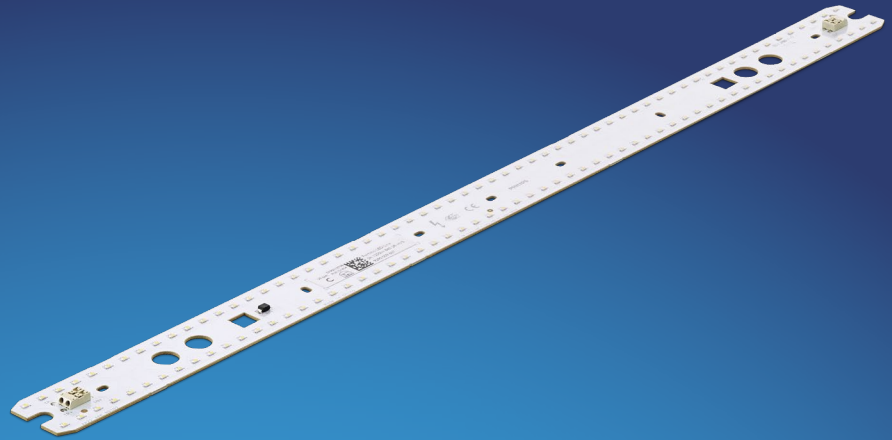


PHILIPS

Fortimo

LED system

LED Line 2 ft
1250 lm 2R HV3



Datasheet

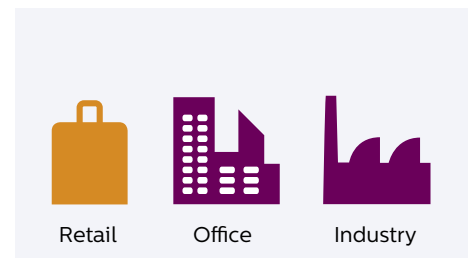
Fortimo LED Line Gen3

Fortimo LED Line systems are designed to produce pure white light for general lighting applications with high efficiency levels. The Fortimo LED Line portfolio consists of 3 main ranges of products, which have been differentiated by the number of rows of LEDs contained on the module. Fortimo LED Linear encompasses a wide range, offering solutions for all the different types of linear luminaires.

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
- Choice of color temperatures (3000 K, 4000 K and 5000 K)
- Two lumen packages: 650 lm and 1100 lm per foot/280 mm
- LED module range with 1, 2 or 3 rows of LEDs
- Tunable lumen output, efficacy and lifetime
- Push-in connectors enabling automated wiring
- Five year system warranty

Suitable for:



June 2015

Ordering data

Commercial product name	EOC	12NC
Fortimo LED Line 2ft 1250lm 830 2R HV3	8718696 480908 00	9290 009 65606
Fortimo LED Line 2ft 1250lm 840 2R HV3	8718696 480922 00	9290 009 65706

Drive currents and case temperatures

Parameter	Nominal*	Life**	Max***	Unit
I (current through the LED module)	237	350	400	mA
Tc (case temperature at Tc point)	40	75	80	°C

* Nominal value at which typical performance is specified.

** Value at which lifetime L70B50 ≥ 50,000 hour is specified.

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

Optical characteristics - table per color (CCT)

Fortimo LED Line 2ft 1250 lm 830 2R HV3

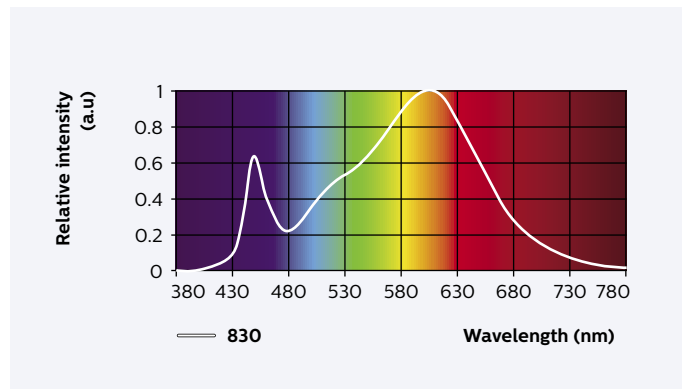
Parameter	Min	Typ	Max	Unit
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.380 , 0.375)		-
CRI ¹	80			-
Radiation angle		120		deg

Color consistency of 3 SDCM, averaged over the module.

Operation point	830	lm	lm/W
80% I-nom 190 mA	Tc 25 °C	975	153
	Tc-nom 40 °C	951	151
	Tc-life 75 °C	889	146
I-nom 237 mA	Tc 25 °C	1229	150
	Tc-nom 40 °C	1184	148
	Tc-life 75 °C	1107	143
I-life 350 mA	Tc 25 °C	1759	143
	Tc-nom 40 °C	1716	141
	Tc-life 75 °C	1604	136

Tolerance for flux data is ±7.5%.

Tolerance for efficacy data is ±10%.



Fortimo LED Line 2ft 1250 lm 840 2R HV3

Parameter	Min	Typ	Max	Unit
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.379 , 0.374)		-
CRI ¹	80			-
Radiation angle		120		deg

Color consistency of 3 SDCM, averaged over the module.

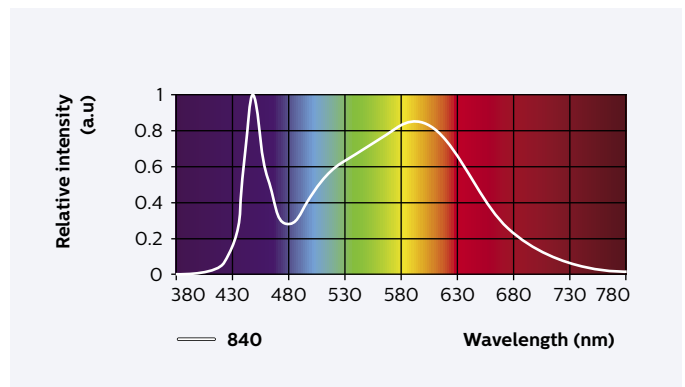
Operation point	840	lm	lm/W
80% I-nom 190 mA	Tc 25 °C	1030	162
	Tc-nom 40 °C	1004	160
	Tc-life 75 °C	938	154
I-nom 237 mA	Tc 25 °C	1298	158
	Tc-nom 40 °C	1250	157
	Tc-life 75 °C	1168	152
I-life 350 mA	Tc 25 °C	1857	151
	Tc-nom 40 °C	1811	149
	Tc-life 75 °C	1693	144

Tolerance for flux data is ±7.5%.

Tolerance for efficacy data is ±10%.

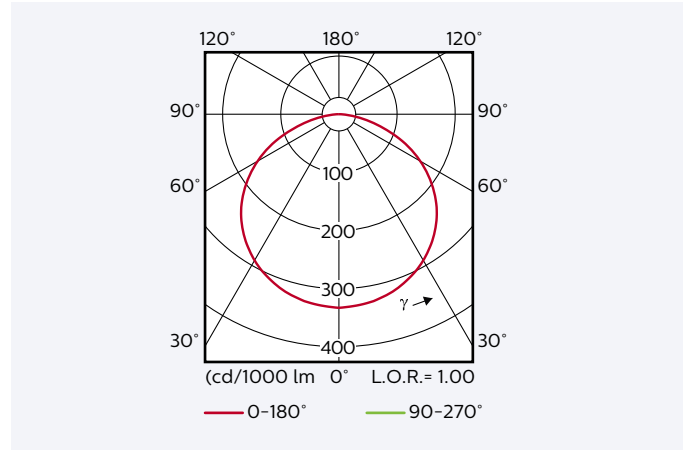
Measurement tolerance is ± 2.5% for the flux data and 5% for the efficacy data.

* Measurement tolerance is ± 1



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
Nominal current		237		mA
Forward voltage	31.3	33.7	36.1	V
Power consumption	7.4	8.0	8.6	W
Energy efficiency label		A++		
Minimum dimming for performance	10			%
Number of modules per chain			7	
Bins		2 (C and D)		

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 190 mA	Tc 25 °C	>50	>50	>50	>50	>50	>50	29	28	28
	Tc-nom 40 °C	>50	>50	>50	>50	>50	>50	25	25	25
	Tc-life 75 °C	>50	>50	>50	36	35	35	17	17	17
I-nom 237 mA	Tc 25 °C	>50	>50	>50	>50	>50	>50	28	27	27
	Tc-nom 40 °C	>50	>50	>50	>50	>50	>50	25	24	24
	Tc-life 75 °C	>50	>50	>50	35	34	34	16	16	16
I-life 350 mA	Tc 25 °C	>50	>50	>50	>50	>50	>50	26	25	25
	Tc-nom 40 °C	>50	>50	>50	48	47	47	23	22	22
	Tc-life 75 °C	>50	>50	50	32	32	31	15	15	15

Values in the table are based on available LM80 LED data (9000h). Lumen maintenance will be updated once additional measurement data becomes available.

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

Specifications stated while $T_c < T_{c-life}$ and $I < I-life$.

Absolute maximum ratings

Parameter	Min	Typ	Max	Unit
Current through the LED module (I-max)			400	mA
Case temperature (Tc-max)			80	°C
Power rated at U-max and I-max			16	W
ESD (direct contact)			4	kV
ESD (air)			8	kV
Working voltage (between input to metal mounting plate)			420	Vdc
Voltage strength (Input to metal mounting plate)			1840	Vac
Ambient temperature	-40			°C

Wiring

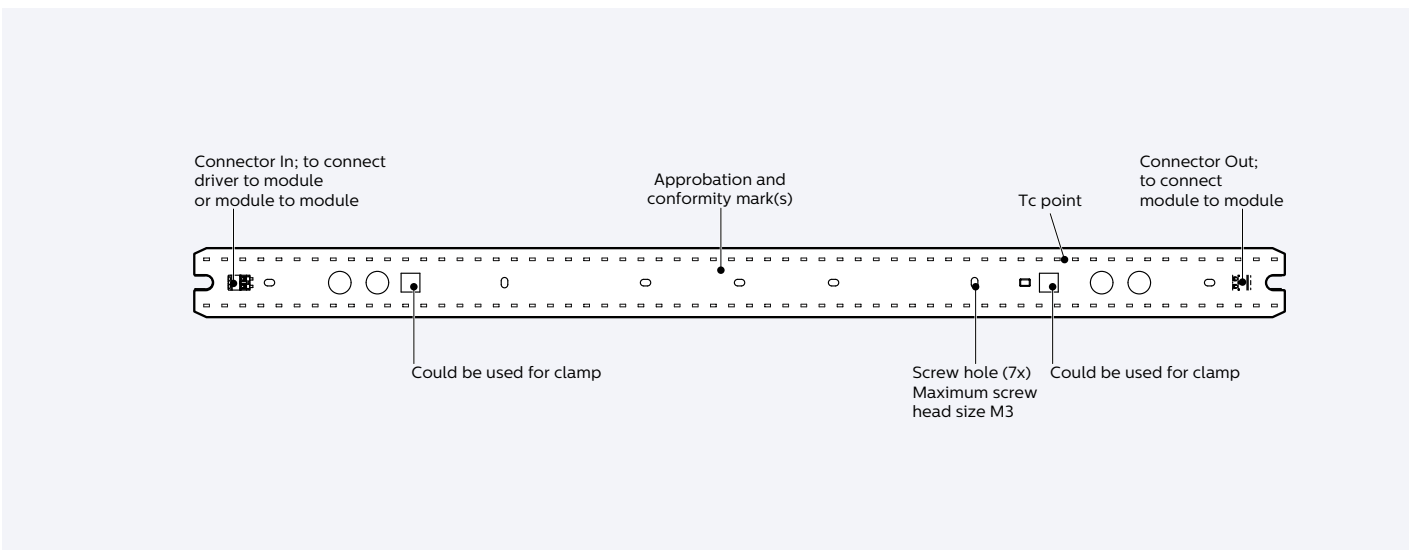
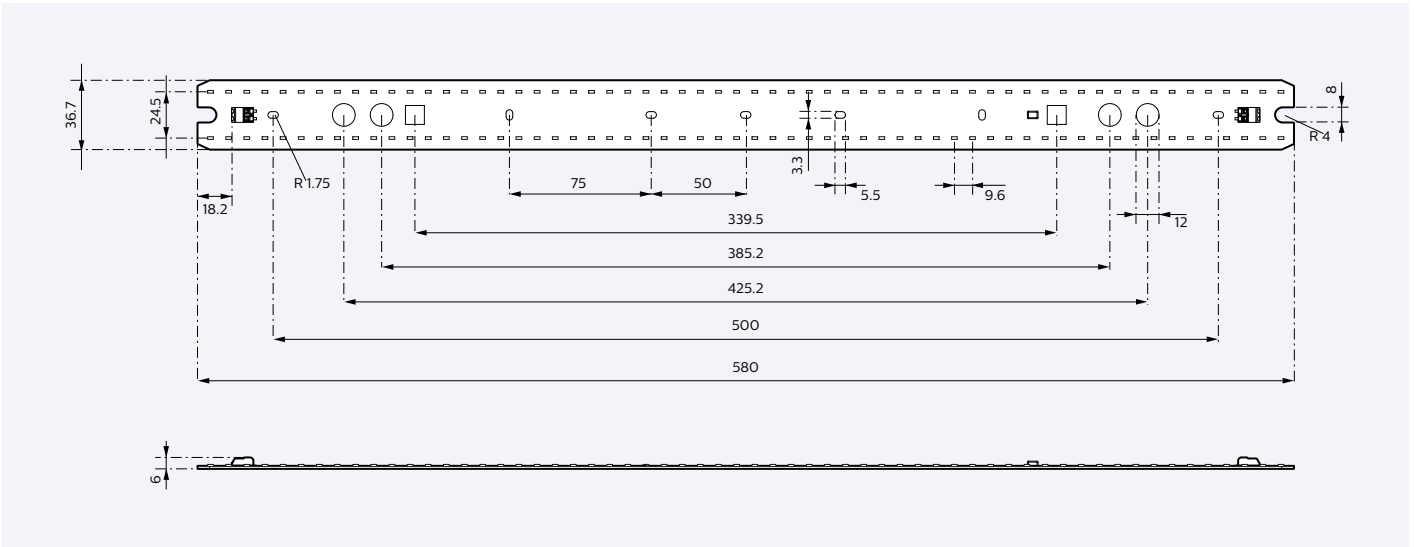
Specification item	Value	Unit	Condition
Input wire cross-section	0.2...0.75	mm ²	Solid
	18...24	AWG	
	0.3...0.5	mm ²	Stranded
	20...22	AWG	
Input wire strip length	7.5..8.5	mm	
Tested cable length	4000	mm	Total length of wiring including LED modules, one way

Connector suited for robot wiring.

Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	579.7	580	580.3	mm
Width	36.5	36.7	36.9	mm
Height excl. connector	1.45	1.6	1.75	mm
Height incl. connector	5.7	6	6.3	mm
Warpage (IPC-TM-650)			4	%

Bow & Twist of the PCB after production tested and released according IPC-TM-650 2.4.22.



Application information

Compliance and approval

IEC / EN 62031, IEC / EN 62471

Photobiological safety

Risk group: Risk group 1

Environmental

RoHS / REACH

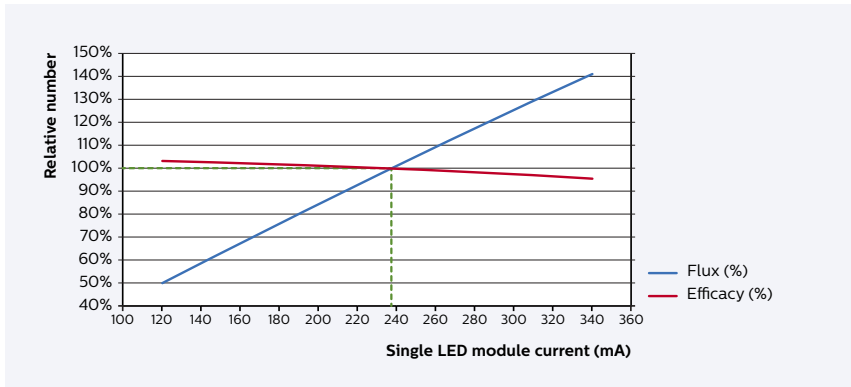
Application information

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

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

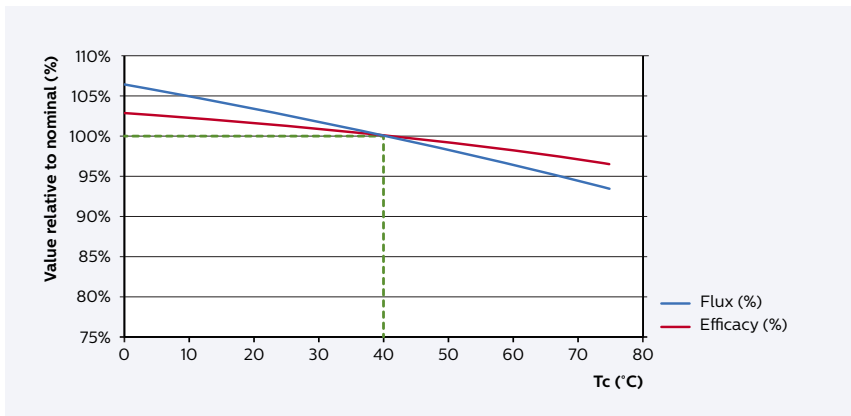
Case temperature Tc [°C]	Amount of cycles
35	14,600
40	14,600
45	14,600
50	14,600
55	14,600
60	14,600
65	14,600
70	14,600
75	14,600
80	
85	
90	
95	

Tuning information



Flux and efficacy versus current

	I [mA]	Flux [%]	Efficacy [%]	
50% Inom	120	50%	103%	
	140	59%	103%	
	160	67%	103%	
	180	76%	102%	
80% Inom	190	80%	102%	
	200	85%	101%	
	210	89%	101%	
I nom	237	100%	100%	
	260	109%	99%	
	280	117%	98%	
	300	125%	97%	
	320	133%	96%	
	340	141%	95%	
	I life	400	139%	92%

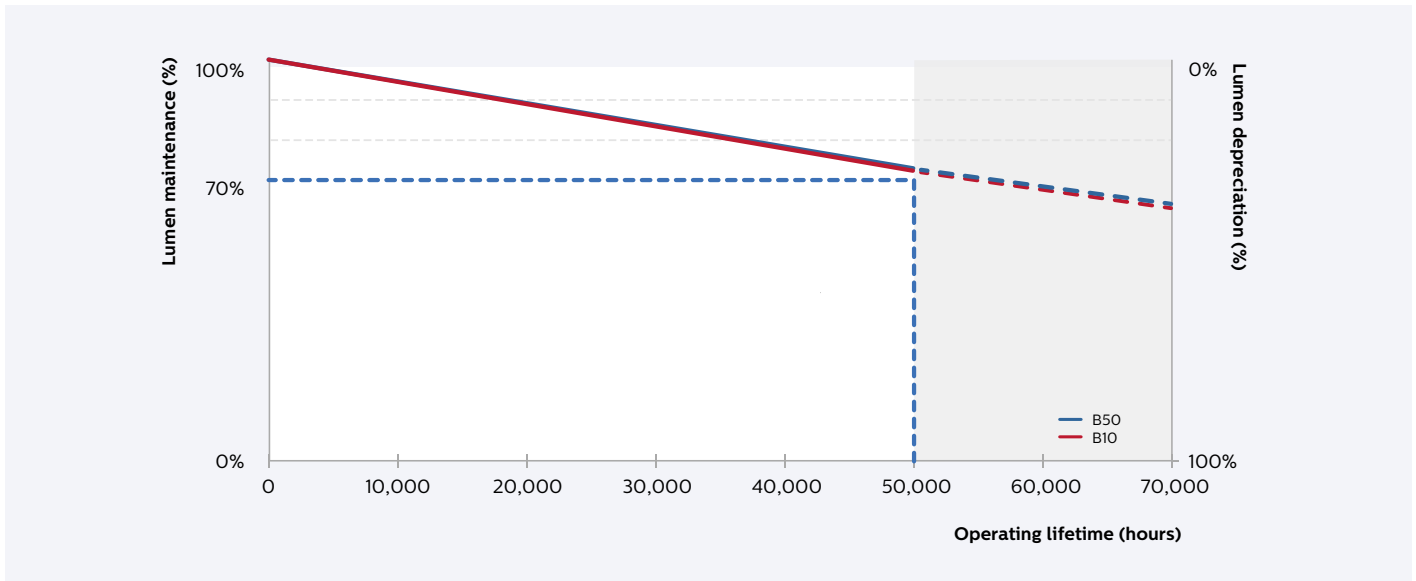


Flux and efficacy versus temperature at Tc

	Tc [°C]	Flux [%]	Efficacy [%]
	0	106%	103%
	20	103%	102%
	25	103%	101%
Tc nom	40	100%	100%
	60	96%	98%
Tc Life	75	94%	97%

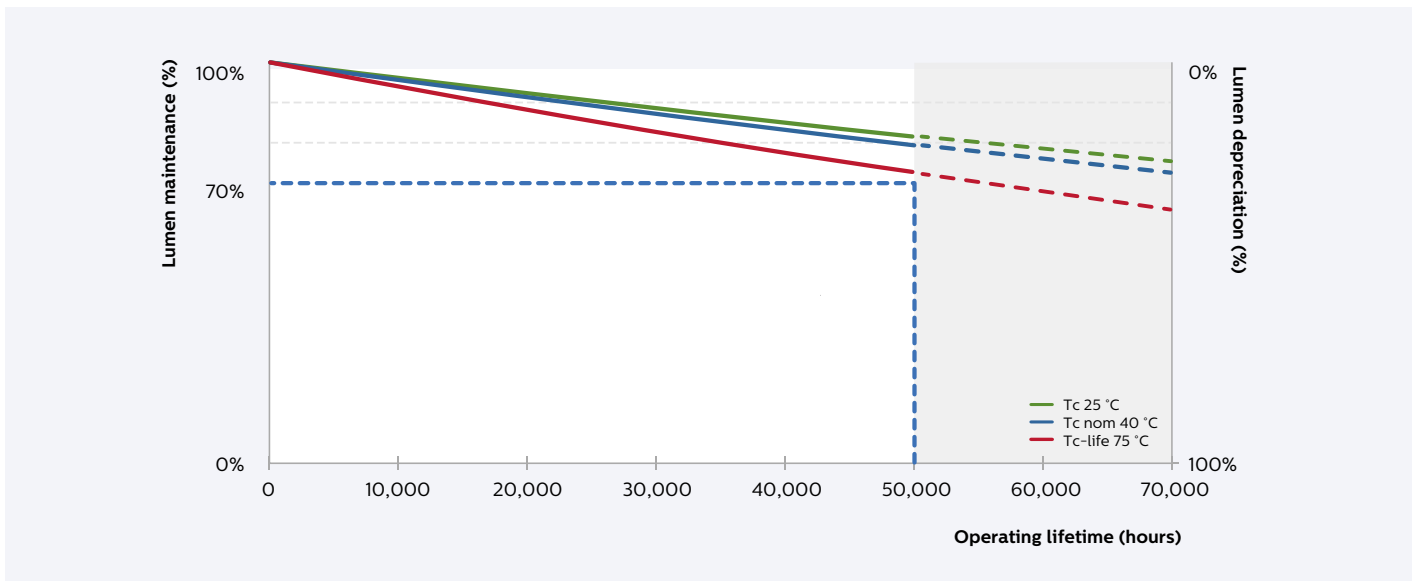
Lumen maintenance

Lumen maintenance at I-life and Tc-life conditions



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

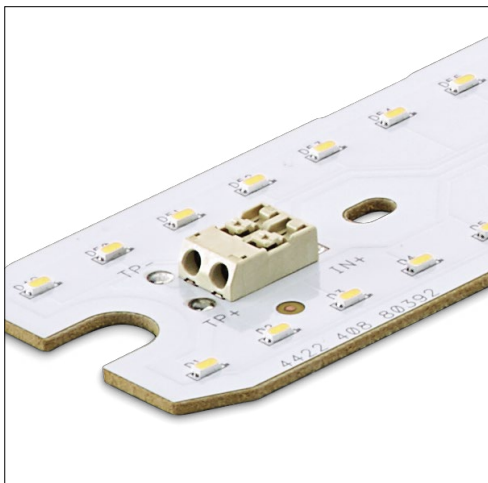
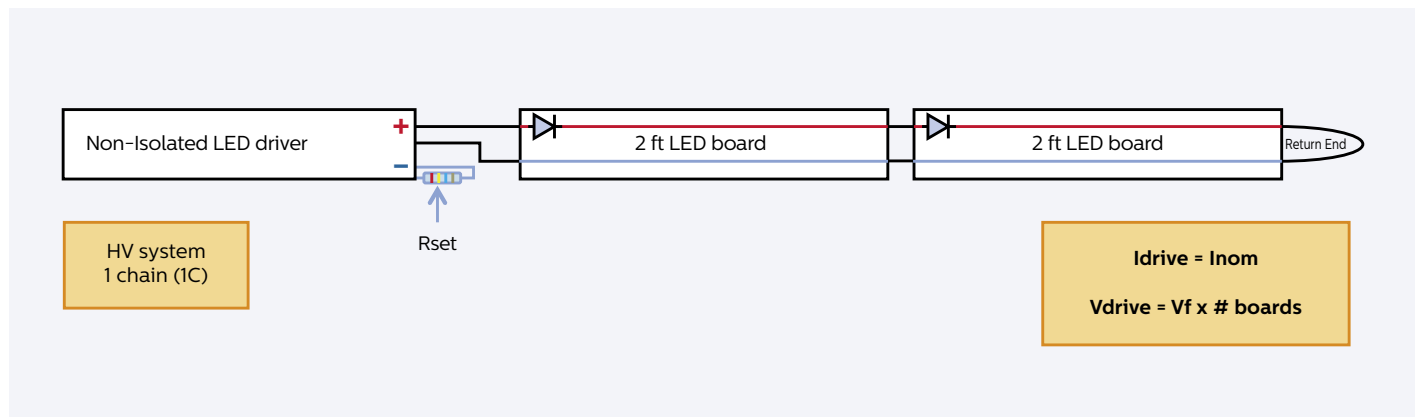
Lumen maintenance for B50 at current I-life conditions



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

Wiring schematic

Examples





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06/2015
Data subject to change