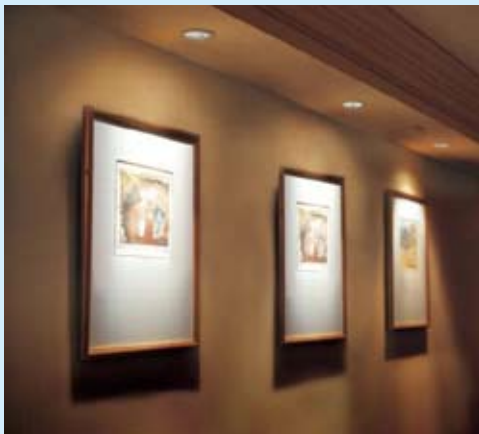




# Technical Application Guide for PHILIPS LED Lamps

12V PHILIPS EnduraLED 10W MR16 Dimmable

# Introduction



PHILIPS 12V EnduraLED 10W MR16 dimmable integrates a leading high power LED light source and a compact high efficiency driver into a traditional halogen form-factor. Not only does it employ a hi-tech IC solution to ensure dimming system control, it also delivers a light intensity and quality which meet the Energy Star standard for MR16 lamps. The form-factor of the PHILIPS 12V EnduraLED 10W MR16 Dimmable guarantees a 100% form-fit on the back-side of the lamp.

12V EnduraLED 10W MR16 dimmable is ideal for a myriad of applications including track lighting, general architectural and landscape lighting, plus industrial OEM equipment lighting.

## Design Highlights

- Up to 80% energy saving compared to standard halogen and incandescent spot lamps
- Long lifetime of 25,000 hours (B50, L70) at  $T_c=77^{\circ}\text{C}$
- Retrofits into vast majority of MR16 fixtures
- Dimmable when using leading edge dimmers
- 15 & 24 & 36 degrees beam angle for a clearly defined beam spread
- Emits virtually no heat and will not fade colors
- CCT: 2700K, 3000K, 4000K
- Discharges virtually no UV/IR light in the beam
- Environmental friendly, without Mercury or any other hazardous substances
- RoHS compliant

## Application Areas

PHILIPS 12V EnduraLED 10W MR16 dimmable lamp is suitably designed for spot and general lighting applications in hospitality and retail industries.

Unlike the conventional halogen reflector lamp, PHILIPS 12V EnduraLED 10W MR16 dimmable lamp, 10W power consumption per lamp, has a long lifetime of 25,000 hours (or equivalent to 3 years if lit continuously for 24hrs a day) ensuring minimum maintenance cost in hotels, restaurants, cafes and shops, especially suitable for various applications in the public areas such as:

- Corridors / Stairway / Washroom
- Lobby / Reception areas

## Application Notes

- Fulfill Energy Star noise requirement of 25dB Max
- Operating open air ambient temperature range for rated life is  $-20^{\circ}\text{C}$  to  $41^{\circ}\text{C}$   
 $T_c \text{ max} = 77^{\circ}\text{C}$  for rated life. (See Lifetime + Sustainability Curves)  
Storage temperature range is between  $-40^{\circ}\text{C}$  and  $65^{\circ}\text{C}$ , humidity range is between 10% and 90%
- Dimmable with most of leading edge dimmers in the market (refer to the recommended dimmer list on the last page)
- Not intended for use with emergency light fixtures or exit lights
- For use in fixtures that can structurally support a lamp weighing 0.099 pound

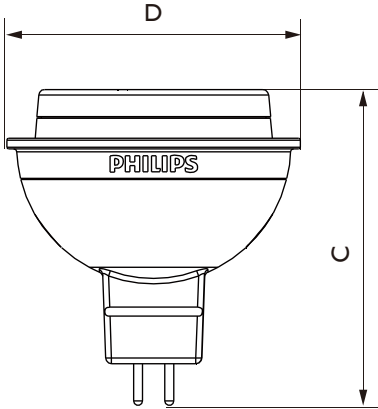
# Product Design

## Technical Specifications

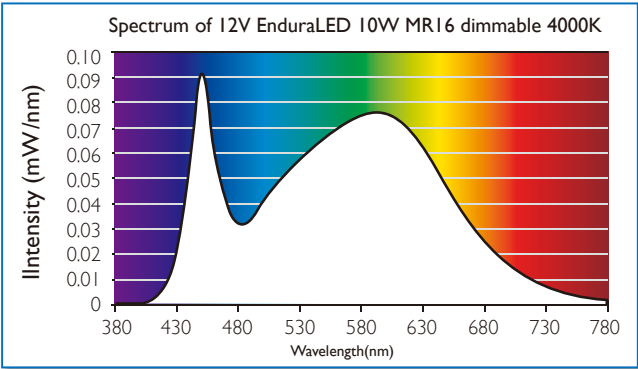
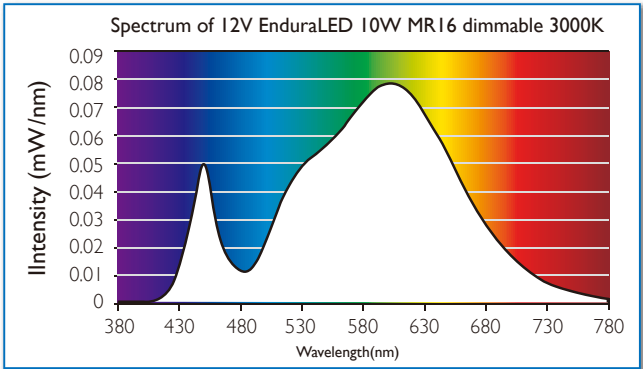
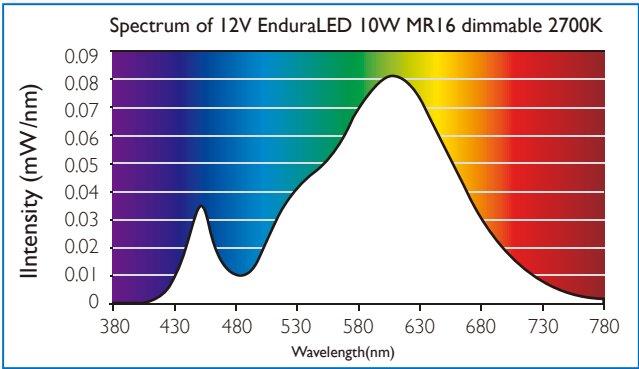
Product type	Volts	Nom. Watts	Equ. Watts	Base	Power Factor	Approx. Lumens	Beam Angle	Color Temp. (Kelvin)	Approx. MBCP	Rated Avg. Life (hrs)	CRI	Dimmable
12V EnduraLED 10W MR16 15D 2700K dimmable	12	10	50	GU5.3	0.8	405	15D	2700K	3320	25,000	80	Yes
12V EnduraLED 10W MR16 15D 3000K dimmable	12	10	50	GU5.3	0.8	435	15D	3000K	3560	25,000	80	Yes
12V EnduraLED 10W MR16 24D 2700K dimmable	12	10	50	GU5.3	0.8	445	24D	2700K	1860	25,000	80	Yes
12V EnduraLED 10W MR16 24D 3000K dimmable	12	10	50	GU5.3	0.8	475	24D	3000K	1990	25,000	80	Yes
12V EnduraLED 10W MR16 24D 4000K dimmable	12	10	50	GU5.3	0.8	440	24D	4000K	2060	25,000	80	Yes
12V EnduraLED 10W MR16 36D 2700K dimmable	12	10	50	GU5.3	0.8	420	36D	2700K	1020	25,000	80	Yes
12V EnduraLED 10W MR16 36D 3000K dimmable	12	10	50	GU5.3	0.8	445	36D	3000K	1090	25,000	80	Yes
12V EnduraLED 10W MR16 36D 4000K dimmable	12	10	50	GU5.3	0.8	410	36D	4000K	1020	25,000	80	Yes

## Fixture Compatibility

Type	C max. Overall length (In.)	D max. Diameter (In.)	max. Weight (Pound)	max. Weight (Gram)
12V EnduraLED 10W dimmable	2.13	1.99	0.099	45



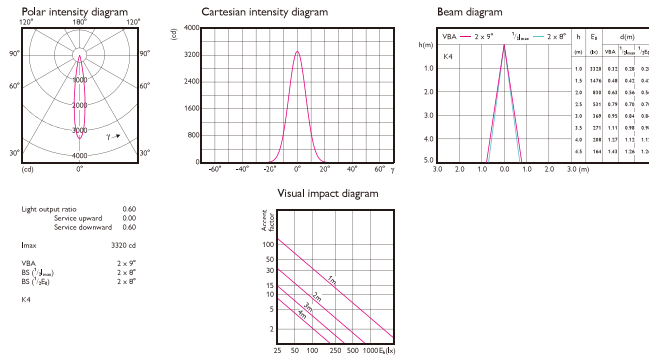
## Spectral Power Distribution



# Photometric Diagrams

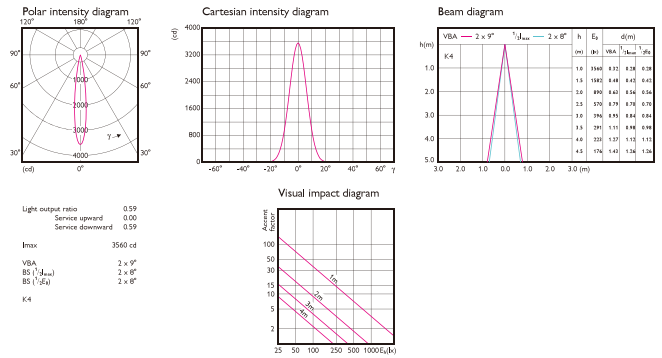
## Dimmable 10W MRI16 1x4 X LEDs /2700K 15D Collimator

I x 405 lm



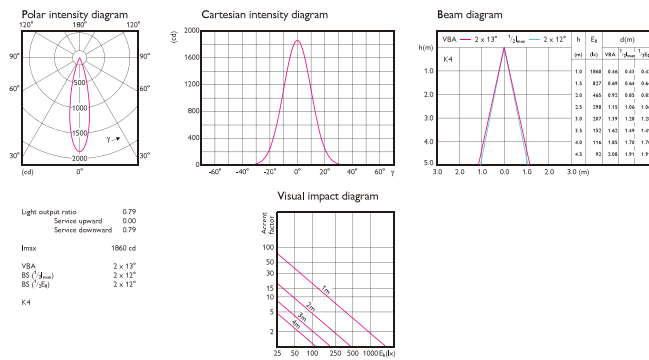
## Dimmable 10W MRI16 1x4 X LEDs /3000K 15D Collimator

I x 435 lm



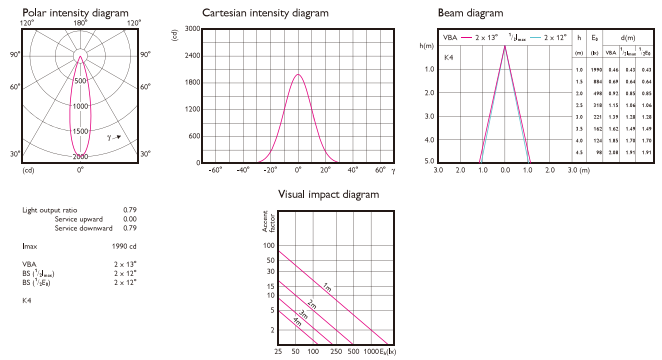
## Dimmable 10W MRI16 1x4 X LEDs /2700K 24D Collimator

I x 445 lm



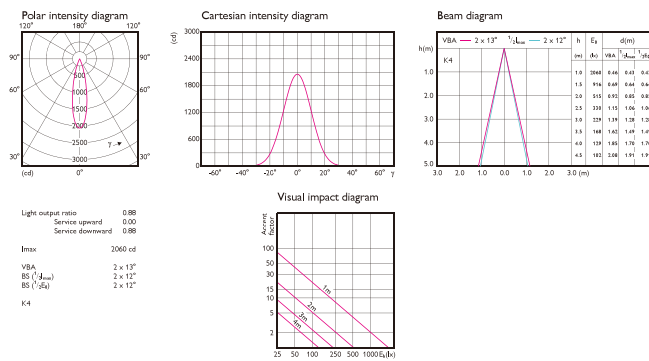
## Dimmable 10W MRI16 1x4 X LEDs /3000K 24D Collimator

I x 475 lm



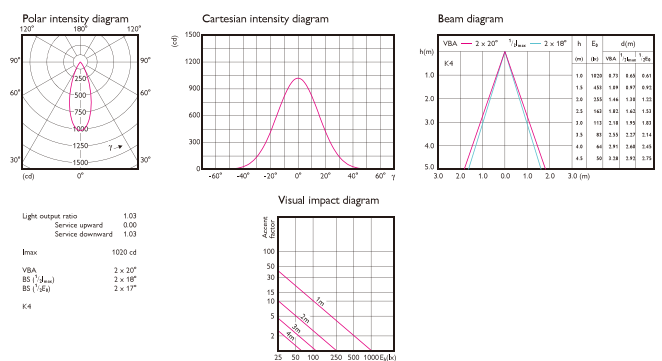
## Dimmable 10W MRI16 1x4 X LEDs /4000K 24D Collimator

I x 440 lm



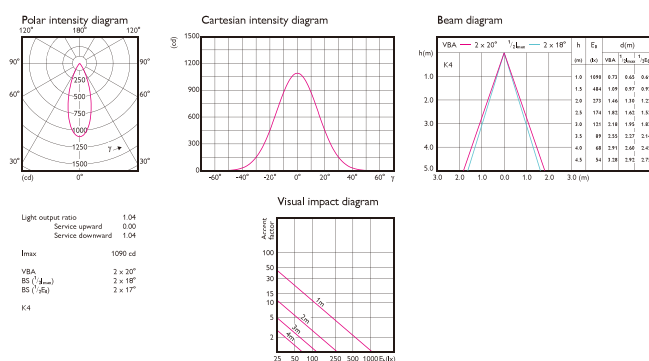
## Dimmable 10W MRI16 1x4 X LEDs /2700K 36D Collimator

I x 420 lm



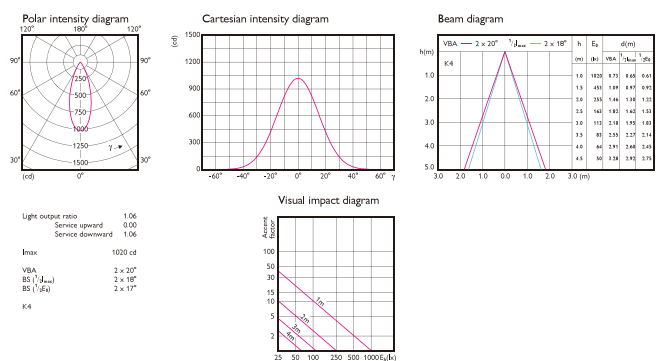
## Dimmable 10W MRI16 1x4 X LEDs /3000K 36D Collimator

I x 445 lm

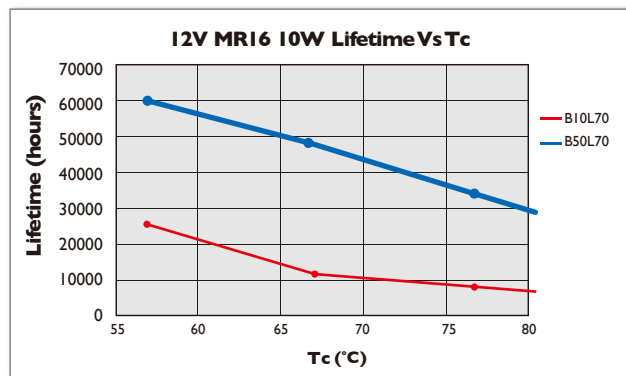
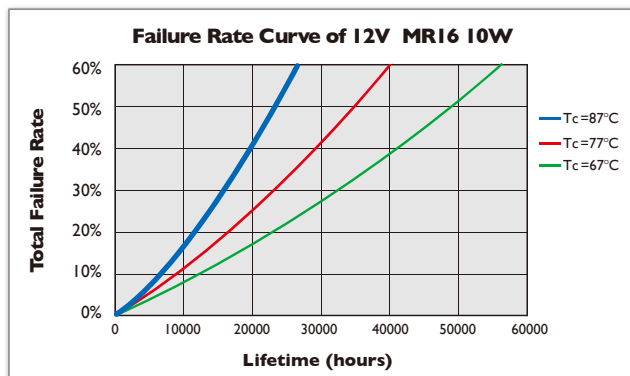


## Dimmable 10W MRI16 1x4 X LEDs /4000K 36D Collimator

I x 410 lm



## Lifetime + Sustainability



- PHILIPS 12V EnduraLED 10W MRI16 dimmable lamp has a lifetime of 25,000 hours, defined as the number of hours when 50% of a large group of identical lamps below 70% of its initial lumens.

- Lifetime estimation based on the application environment condition: please refer to the T<sub>c</sub> for lifetime forecast.

## Temperature

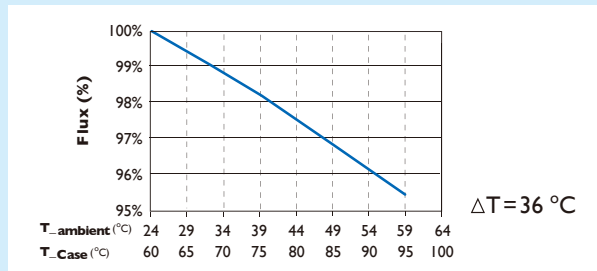
PHILIPS 12V EnduraLED 10W MRI16 dimmable is designed for operation in all MRI16 lighting installations in open fixtures.

Maximum case temperature for normal light output behavior (reduced lifetime): T<sub>c</sub> max = 81°C;

Maximum case temperature for rated 25,000 hr lifetime: 77°C.

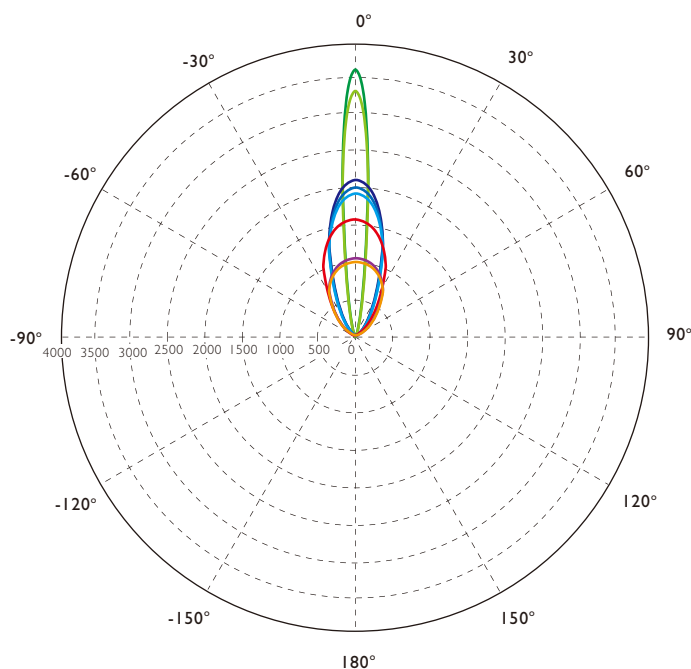
T<sub>ambient</sub> here represents the temperature operating in free air.

ΔT is the difference between the temperature of the aluminum heatsink (T<sub>c</sub>) and the temperature of the air in the test room (T<sub>ambient</sub>) when the lamp is operated in free air condition.

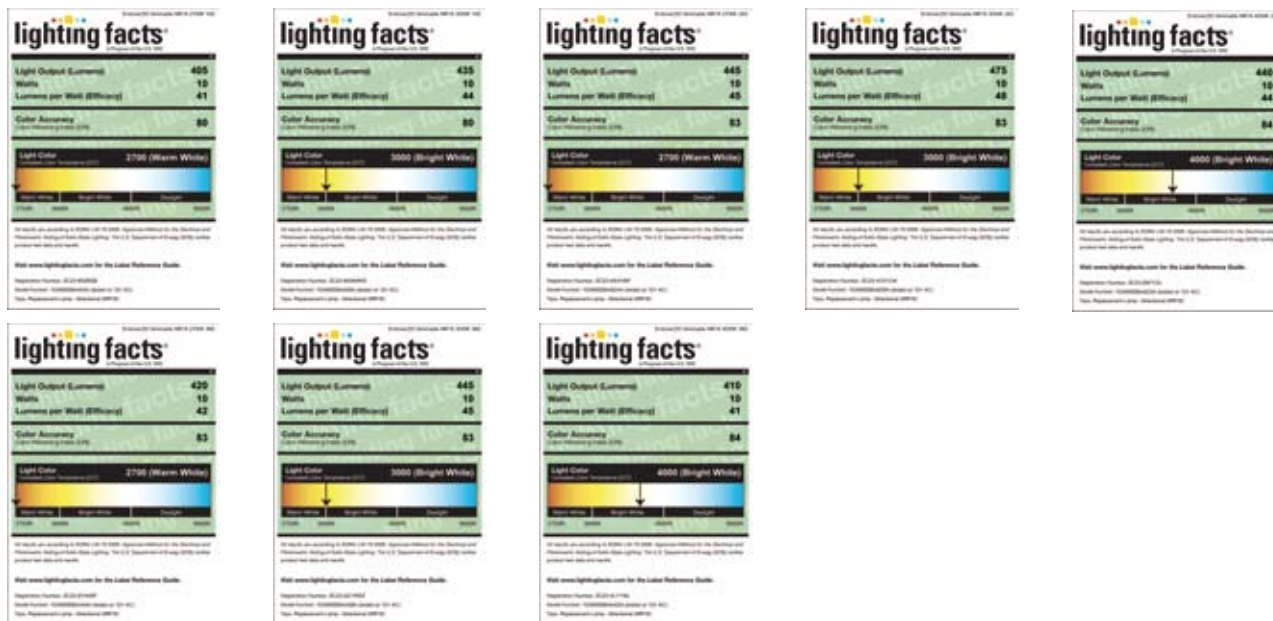


## Polar Diagram Comparison

—	Halogen 50W MRI16 36D
—	12V EnduraLED 10W MRI16 15D 2700K dimm
—	12V EnduraLED 10W MRI16 15D 3000K dimm
—	12V EnduraLED 10W MRI16 24D 2700K dimm
—	12V EnduraLED 10W MRI16 24D 3000K dimm
—	12V EnduraLED 10W MRI16 24D 4000K dimm
—	12V EnduraLED 10W MRI16 36D 2700K dimm
—	12V EnduraLED 10W MRI16 36D 3000K dimm
—	12V EnduraLED 10W MRI16 36D 4000K dimm



## Lighting Facts Label



## Packaging Warnings and Cautions

Suitable for use in open luminaires (fixtures).

Caution - Risk of Electric Shock - Do Not Use Where Directly Exposed To Water.

This device is not intended for use with emergency exit fixtures or emergency lights.

NOT FOR USE WHERE EXPOSED TO THE WEATHER.

Turn off power before changing lamp.

Notes: This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus complies with Canadian ICES-003.

## Recommended Dimmer & Transformer List

<div><div></div> No flicker or flicker below 10% dim-level</div> <div><div></div> Flixker between 10%-50% dim level</div> <div><div></div> Can't start up or flicker at high position</div>				Region		NAM			
				Manufacturer		Hatch		Lightech	Philips
				Country		US		US	US
				Type		RS-12-60M		LET 60	71A9743
				Trailing/Leading		Leading and Trailing		Dimmable	Leading
Region	Manufacturer	Country	Type	Load	Trailing/Leading	I lamp	I lamp	I lamp	
NAM	Lutron	USA	SLV-600P-WH	RL	Leading	N/A	N/A	3%-100%	
	Lutron	USA	NTLV-600P-WH	RL	Leading	N/A	N/A	2%-100%	
	Lutron	USA	TGLV-600PR-WH	RL	Leading	N/A	N/A	101%-100%	
	Leviton	USA	VPM 06	RL	Leading	N/A	N/A	1%-100%	
	Leviton	USA	6613	RL	Leading	N/A	N/A	3%-100%	
	Leviton	USA	6615	RC	Trailing	45%-100%	36%-100%	N/A	