



PHILIPS

MASTER
LEDspot LV



Technical Application Guide

Philips Master LED MR16 7W

Philips LED Spot 7W MR16 is the latest in Philips' series of low voltage (12VAC) Halogen MR16 replacements. Not only does it employ Philips' patented solution to guarantee the broadest possible compatibility with standard 12V Halogen electronic transformers, it also delivers beam intensity which equivalent to the 35W Philips Halogen MR16 lamp.

The form-factor of the Philips LED Spot 7W MR16 guarantees a 100% form-fit on the back-side of the Lamp (exact form-fit with Halogen lamps).



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Design highlights

- Up to 80% energy saving compared to standard halogen MR16 lamps
- Long lifetime of 40,000 hours (F50, L70)
- Retrofits into a vast majority of GU5.3 based fixtures
- Compatible with a broad selection of transformers
- 15, 24 & 36 degrees beam angle for a clearly defined beam spread
- CCT: 2700K, 3000K, 4000K
- No UV and Cool Beam (no IR), making it suitable for illuminating heat-sensitive objects (food, organic materials, paintings, etc.)
- Environmental friendly (free of mercury and other hazardous materials)
- RoHS compliant



Application areas

Philips LED 7W MR16 lamp is suitably designed for general lighting applications in the hospitality and retail segment.

Unlike the conventional halogen reflector lamp, Philips LED 7W MR16 lamp has 7W power consumption per lamp, so it has a long lifetime of 40,000 hours ensuring minimum maintenance cost in hospitality and retail shop. It is suitable for various applications such as:

- Lobby / Reception areas
- Hotel room / Ball room / Business center
- Corridors / Stairway / Washroom
- Display area / Dress room / Check out

Application notes

- Operating temperature range is between -20°C and 40°C ambient
- Compatible with broad transformers (refer to the recommended with a broad selection of transformers list), also suitable for 12V DC input
- Suitable for total enclosure fixture application (refer to failure rate curve, make sure Tc is not over max)
- For use in fixtures that can structurally support a lamp weighing 50 grams
- Do not use or install the lamp in wet environment
- Not intended for use with emergency light fixtures or exit lights

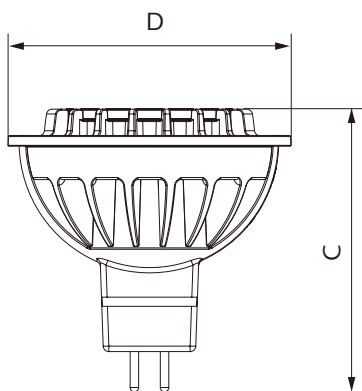
Product features

Technical Specifications

Product type	Voltage (VAC)	Lamp Wattage (W)	Replaced Wattage (W)	Base	90D cone Lumen (lm)	Beam Angle (°)	CCT (K)	MBCP (Cd)	Lifetime (Hrs)	CRI	Dimmable	EEL Label
MAS LEDspotLV D 7-35W 927 MR16 15D	12	7.0	35	Gu5.3	400	15	2700	2800	40,000	90	Yes	A
MAS LEDspotLV D 7-35W 930 MR16 15D	12	7.0	35	Gu5.3	410	15	3000	2950	40,000	90	Yes	A
MAS LEDspotLV D 7-35W 940 MR16 15D	12	7.0	35	Gu5.3	430	15	4000	3050	40,000	90	Yes	A
MAS LEDspotLV D 7-35W 927 MR16 24D	12	7.0	35	Gu5.3	400	24	2700	2100	40,000	90	Yes	A
MAS LEDspotLV D 7-35W 930 MR16 24D	12	7.0	35	Gu5.3	410	24	3000	2200	40,000	90	Yes	A
MAS LEDspotLV D 7-35W 940 MR16 24D	12	7.0	35	Gu5.3	430	24	4000	2300	40,000	90	Yes	A
MAS LEDspotLV D 7-35W 927 MR16 36D	12	7.0	35	Gu5.3	400	36	2700	1150	40,000	90	Yes	A
MAS LEDspotLV D 7-35W 930 MR16 36D	12	7.0	35	Gu5.3	405	36	3000	1200	40,000	90	Yes	A
MAS LEDspotLV D 7-35W 940 MR16 36D	12	7.0	35	Gu5.3	425	36	4000	1250	40,000	90	Yes	A

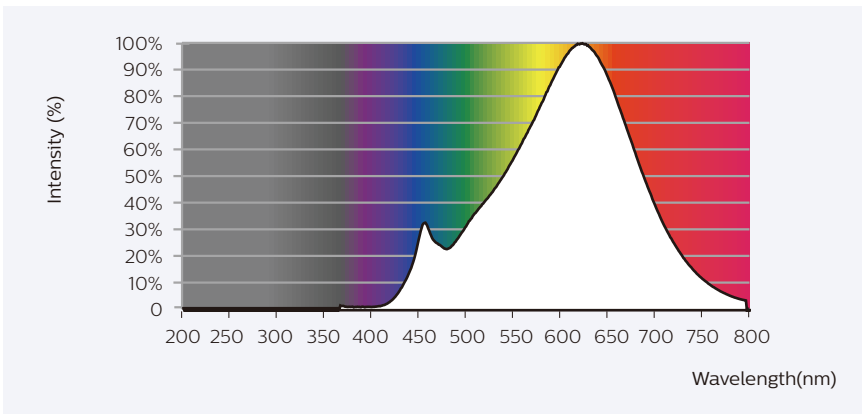
Fixture Compatibility

Type	C max. Overall Length (mm)	D max. Diameter (mm)	max. Weight (gram)
MAS LEDspotLV D 7-35W 927 MR16	51	51	50
MAS LEDspotLV D 7-35W 930 MR16	51	51	50
MAS LEDspotLV D 7-35W 940 MR16	51	51	50

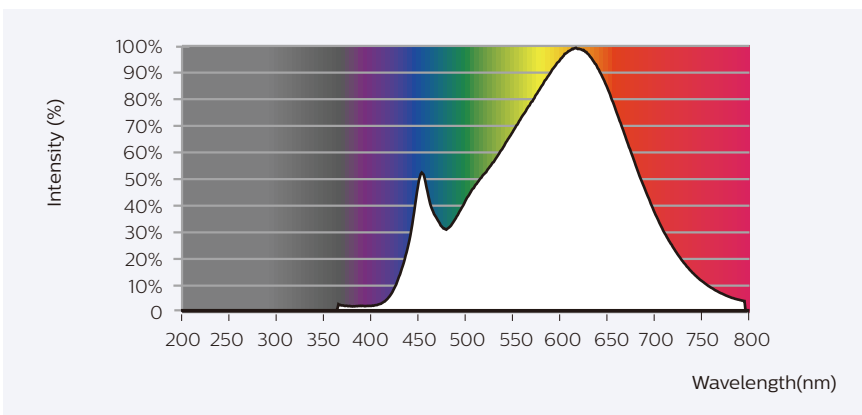


Spectral Power Distribution

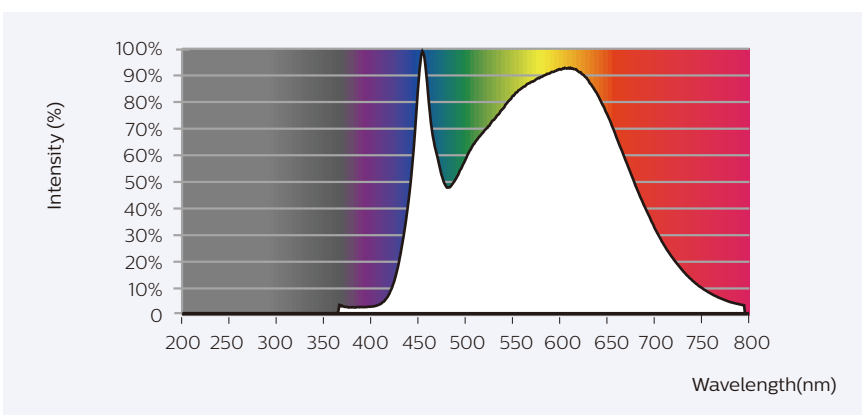
2700 K



3000 K



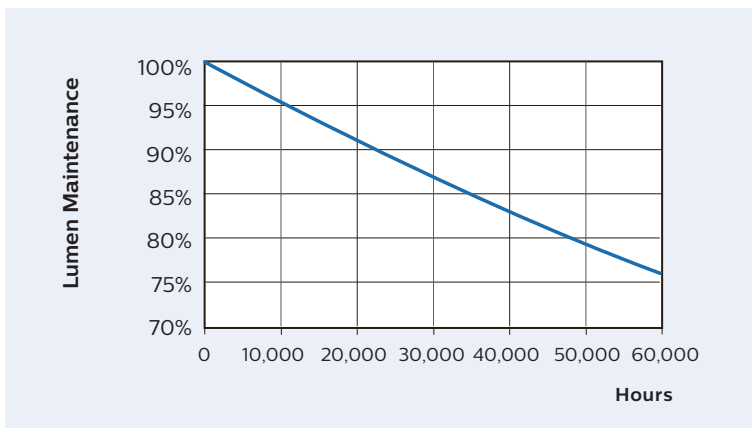
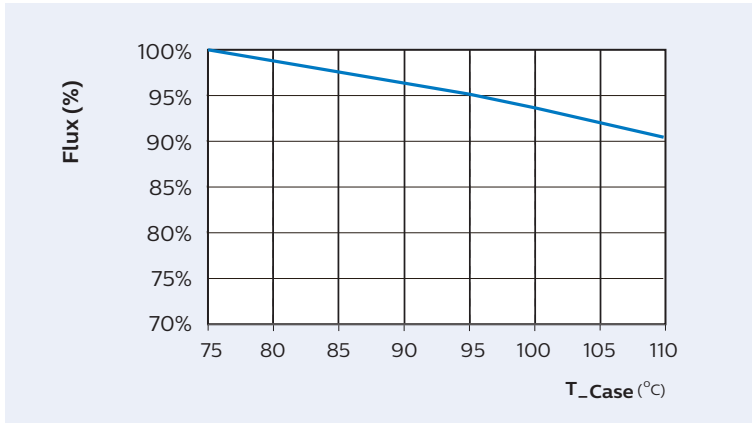
4000 K



Temperature

Philips LED 7W MR16 is designed for operation in all GU5.3 lighting installations in open and closed fixtures, refer to the failure rate curve, make sure Tc is not over the max temperature.

LEDspotLV MR16 7W

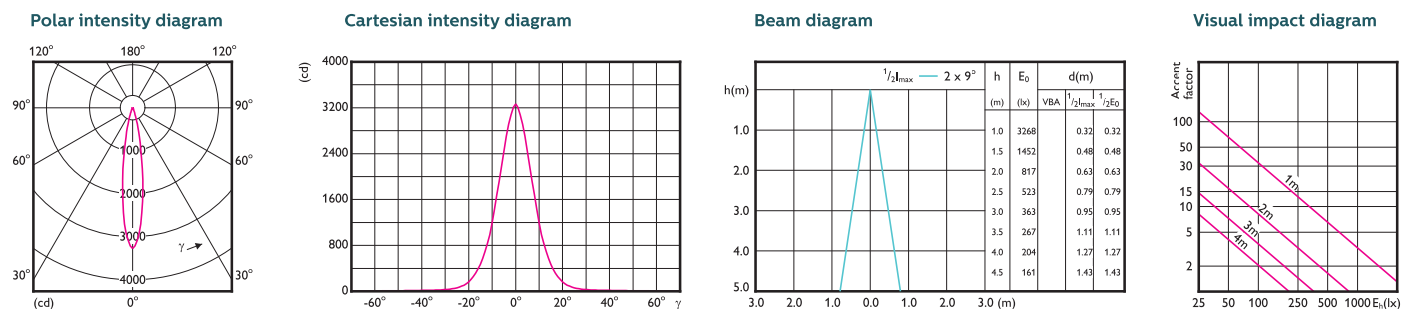


Photometric Diagrams

MAS LEDspotLV D 7-35W 927 MR16 15D

400 lm

Light output ratio	1.00	I_{max}	3268 cd
Service upward	0.00	$BS (1/2 I_{max})$	$2 \times 9^\circ$
Service downward	1.00	$VBA (1/2 E_0)$	$2 \times 9^\circ$

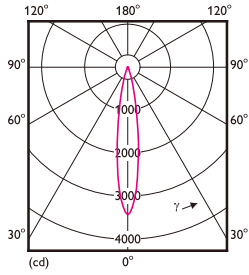


MAS LEDspotLV D 7-35W 930 MR16 15D

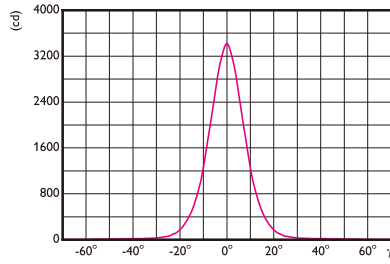
410lm

Light output ratio	1.00	I_{max}	3431 cd
Service upward	0.00	$BS (1/2 I_{max})$	$2 \times 9^\circ$
Service downward	1.00	$VBA (1/2 E_0)$	$2 \times 9^\circ$

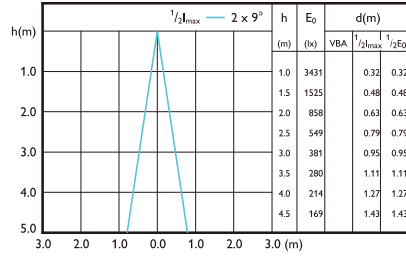
Polar intensity diagram



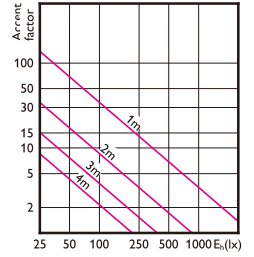
Cartesian intensity diagram



Beam diagram



Visual impact diagram

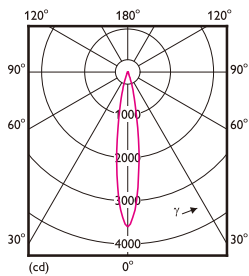


MAS LEDspotLV D 7-35W 940 MR16 15D

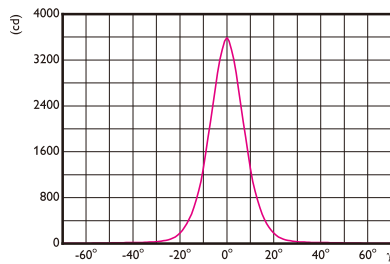
430 lm

Light output ratio	1.00	I_{max}	3594 cd
Service upward	0.00	$BS (1/2 I_{max})$	$2 \times 9^\circ$
Service downward	1.00	$VBA (1/2 E_0)$	$2 \times 9^\circ$

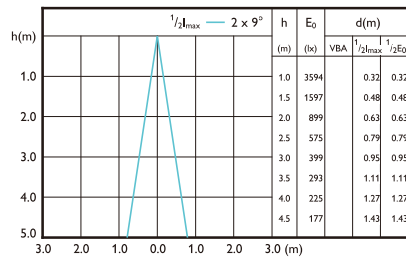
Polar intensity diagram



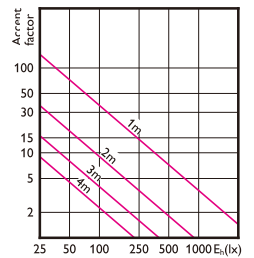
Cartesian intensity diagram



Beam diagram



Visual impact diagram

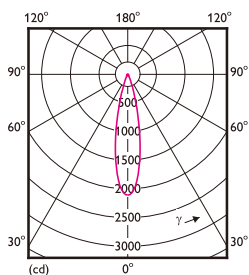


MAS LEDspotLV D 7-35W 927 MR16 24D

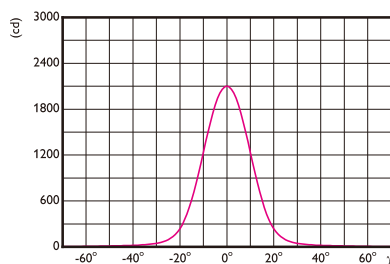
400 lm

Light output ratio	1.00	I_{max}	2104 cd
Service upward	0.00	$BS (1/2 I_{max})$	$2 \times 12^\circ$
Service downward	1.00	$VBA (1/2 E_0)$	$2 \times 11^\circ$

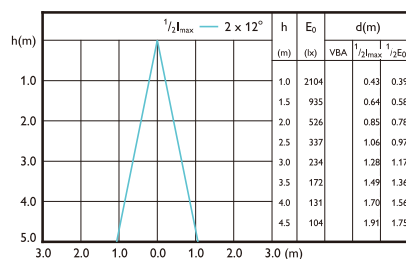
Polar intensity diagram



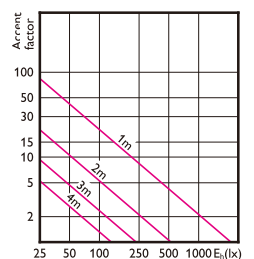
Cartesian intensity diagram



Beam diagram



Visual impact diagram

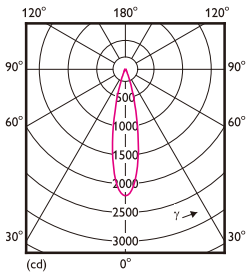


MAS LEDspotLV D 7-35W 930 MR16 24D

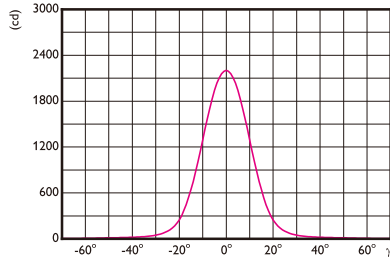
410 lm

Light output ratio	1.00	I_{max}	2204 cd
Service upward	0.00	$BS (1/2 I_{max})$	$2 \times 12^\circ$
Service downward	1.00	$VBA (1/2 E_0)$	$2 \times 11^\circ$

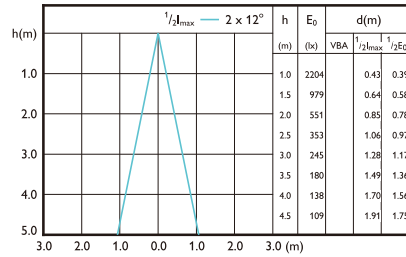
Polar intensity diagram



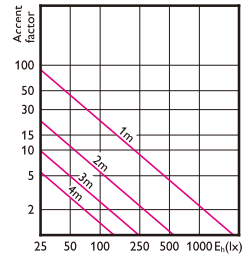
Cartesian intensity diagram



Beam diagram



Visual impact diagram

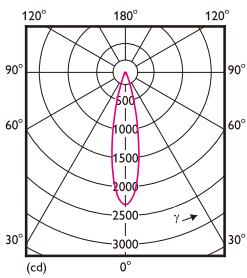


MAS LEDspotLV D 7-35W 940 MR16 24D

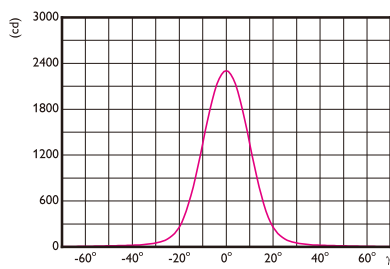
430 lm

Light output ratio	1.00	I_{max}	2304 cd
Service upward	0.00	$BS (1/2 I_{max})$	$2 \times 12^\circ$
Service downward	1.00	$VBA (1/2 E_0)$	$2 \times 11^\circ$

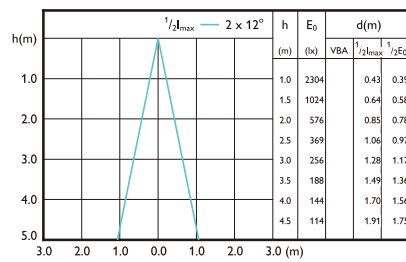
Polar intensity diagram



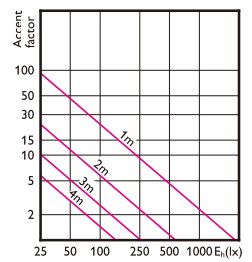
Cartesian intensity diagram



Beam diagram



Visual impact diagram

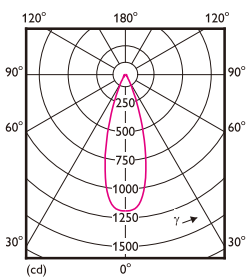


MAS LEDspotLV D 7-35W 927 MR16 36D

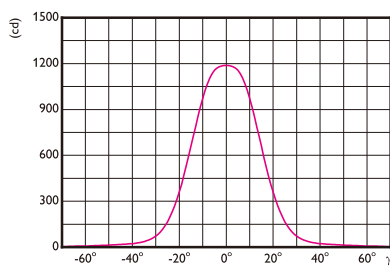
400 lm

Light output ratio	1.00	I_{max}	1188 cd
Service upward	0.00	$BS (1/2 I_{max})$	$2 \times 16^\circ$
Service downward	1.00	$VBA (1/2 E_0)$	$2 \times 15^\circ$

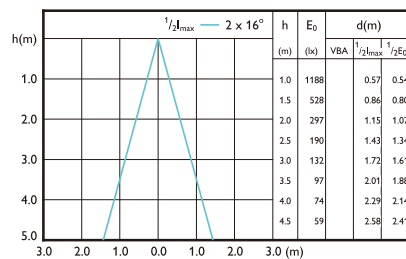
Polar intensity diagram



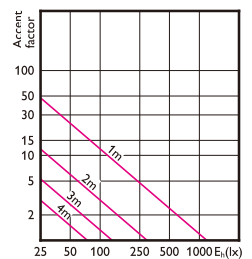
Cartesian intensity diagram



Beam diagram

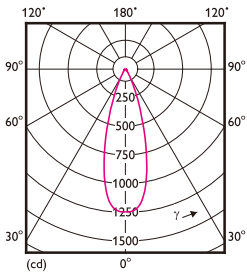


Visual impact diagram

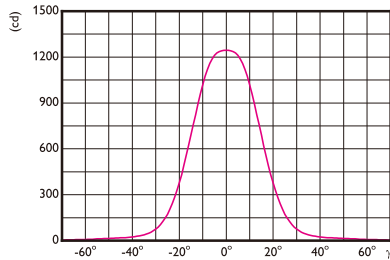


Light output ratio	1.00	I_{max}	1244 cd
Service upward	0.00	$BS (\frac{1}{2} I_{max})$	$2 \times 16^\circ$
Service downward	1.00	$VBA (\frac{1}{2} E_0)$	$2 \times 15^\circ$

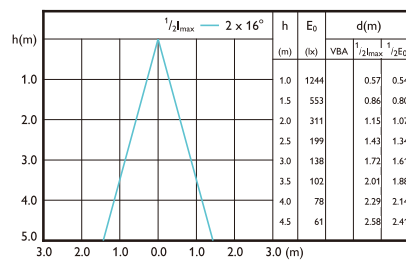
Polar intensity diagram



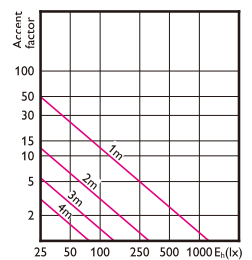
Cartesian intensity diagram



Beam diagram

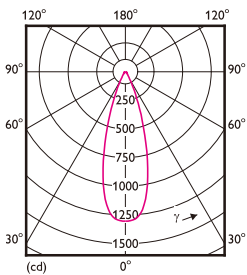


Visual impact diagram

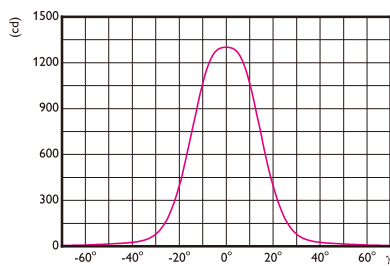


Light output ratio	1.00	I_{max}	1301 cd
Service upward	0.00	$BS (\frac{1}{2} I_{max})$	$2 \times 16^\circ$
Service downward	1.00	$VBA (\frac{1}{2} E_0)$	$2 \times 15^\circ$

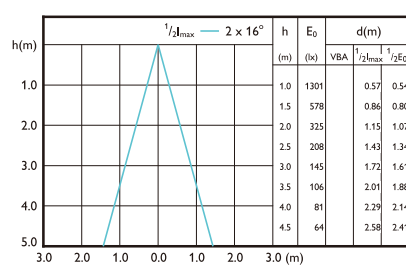
Polar intensity diagram



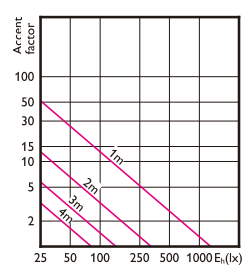
Cartesian intensity diagram



Beam diagram

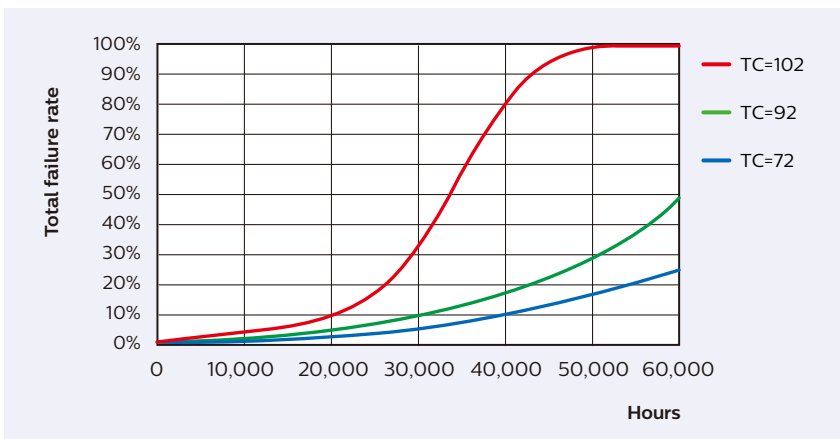


Visual impact diagram



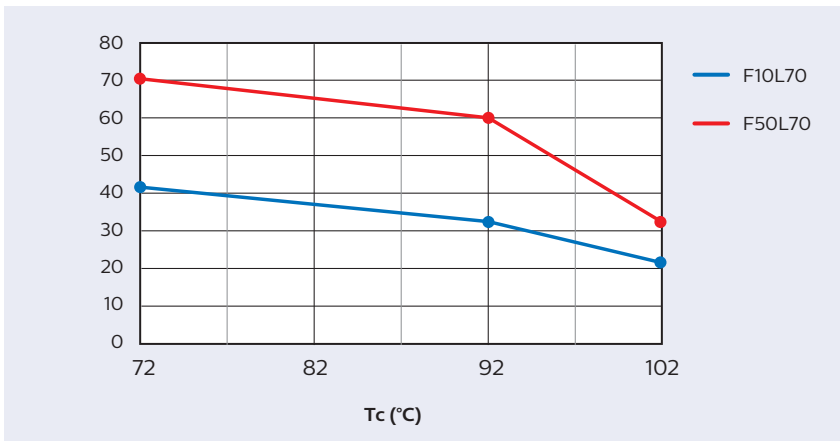
Lifetime + Sustainability

Failure Rate Curve of LED 7W 12V MR16



- Philips LED 7W MR16 lamp has a lifetime of 40,000 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: at room temperature (25°C@ 10mm free air), base down burning position, and at rated voltage.

MASTER LED 7W Lifetime Vs Tc



Installation Guide

Philips LED 7W MR16 lamp has a unique, patented, electronic solution that makes this LED Replacement lamp compatible with the broadest possible range of standard 12VAC Halogen electronic transformers in the global market place except for some IC-base transformers WHEN the whole system is without dimmers. Compatibility with electromagnetic transformers is guaranteed as well. To determine the maximum number of these LED MR16 lamps to be connected to a standard halogen transformer, is by simply dividing 40% of the rated power of the transformer by LED lamp wattage.

Thus, a 60W Halogen transformer will hold Master Premium LED Spot 7W up to INT $(60 \times 40\%/7) = 3$ lamps.

1. Determine the max. number of lamps can be connected to a ET, 40% power derating of ET should be considered
2. For dimming system, you can install for each dimmer

Example:

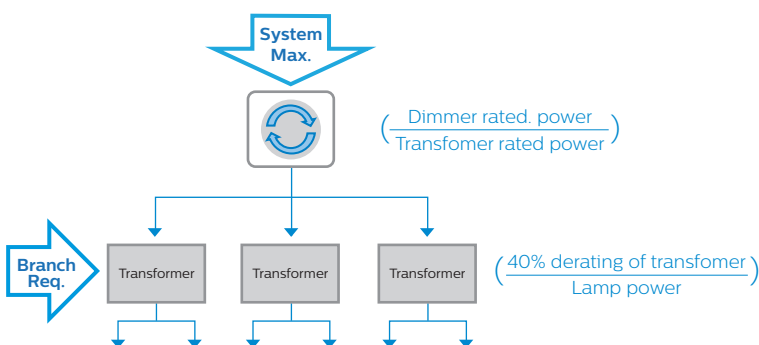
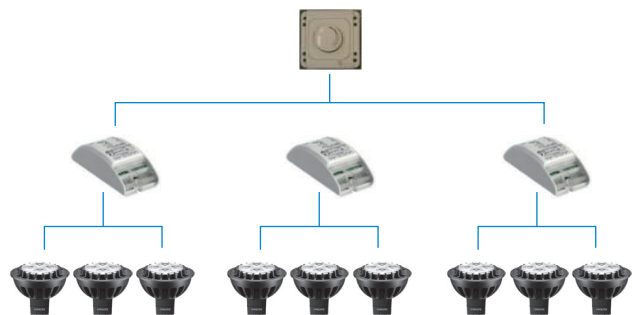
1. W (or VA) * 40% of ET to determine max. lamps per transformer



Transformer: Certaline 60
 Pout: 60W max
 $60W \times 40\%/7W \sim 3$
 3 x 7W lamps max. per transformer

2. The rated power of the dimmer and the transformer is to determine the max. numbers of the transformers per dimmer

Max. number of transformers:
 $200W/60W = 3.33 \rightarrow 3$ transformer per dimmer





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