PHILIPS

MASTER LED

LED

Technical Application Guide

Philips MASTER

LED MR16 6.5W non-dimmable

PHILIPS 12V MASTER LED 6.5W MR16 is the lastest in Philips' series of LowVoltage (12VAC) Halogen MR16 replacements. Not only does it employs PHILIPS' patented solution to guarantee the broadest possible compatibility with standard 12V Halogen electronic transformers, It also delivers beam intensity which reaches that of a 50W PHILIPS Halogen MR16 lamp. The form-factor of the PHILIPS 12V MASTER LED 6.5W MR16 guarantees a 100% form-fit on the back-side of the Lamp (exact form fit with Halogen lamps).

80% Energy cost saving

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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 vast majority of GU5.3 based fixtures
- Compatible with broad transformers
- 24 & 36 degrees beam angle for a clearly defined beam spread
- CCT: 2700K, 3000K, 4000K
- No UV and Cool Beam (no IR)
- Environmental friendly, without Mercury or any other
- RoHS compliant

Application areas

PHILIPS 12V MASTER LED 6.5W MR16 lamp is suitably designed for general lighting applications in hospitality and retail industries.
Unlike the conventional halogen reflector lamp, PHILIPS 12V MASTER LED 6.5W MR16 lamp, 6.5W power consumption per lamp,has a long lifetime of 40,000 hours (or equivalent to 15 years if lit continuously for 4hrs 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

- Operating temperature range is between -20°C and 40°C ambient
- Compatible with broad transformers (refer to the recommended transformer list), also suitable for 12V DC input
- Not intended for use with emergency light fixtures or exit lights
- For use in fixtures that can structurally support a lamp weighing 51 gram
- Do not use or install the lamp in wet environment
- Suitable for total enclosure fixture application (refer to failure rate curve, make sure Tc is not over max)

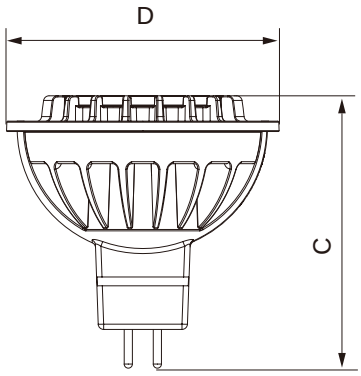
Product features

Technical Specifications

Product type	Voltage (VAC)	Power Wattage (W)	Replaced Wattage (W)	Base	Lumen (lm)	Beam Angle (º)	CCT (K)	Intensity (Cd)	Lifetime (Hrs)	CRI	Dimmable
MASTER LED 6.5-50W 827 MR16 24D	12	6.5	50	GU5.3	450	24	2700	2250	40,000	80	No
MASTER LED 6.5-50W 830 MR16 24D	12	6.5	50	GU5.3	470	24	3000	2350	40,000	80	No
MASTER LED 6.5-50W 840 MR16 24D	12	6.5	50	GU5.3	490	24	4000	2450	40,000	80	No
MASTER LED 6.5-50W 827 MR16 36D	12	6.5	50	GU5.3	450	36	2700	1250	40,000	80	No
MASTER LED 6.5-50W 830 MR16 36D	12	6.5	50	GU5.3	470	36	3000	1300	40,000	80	No
MASTER LED 6.5-50W 840 MR16 36D	12	6.5	50	GU5.3	490	36	4000	1350	40,000	80	No

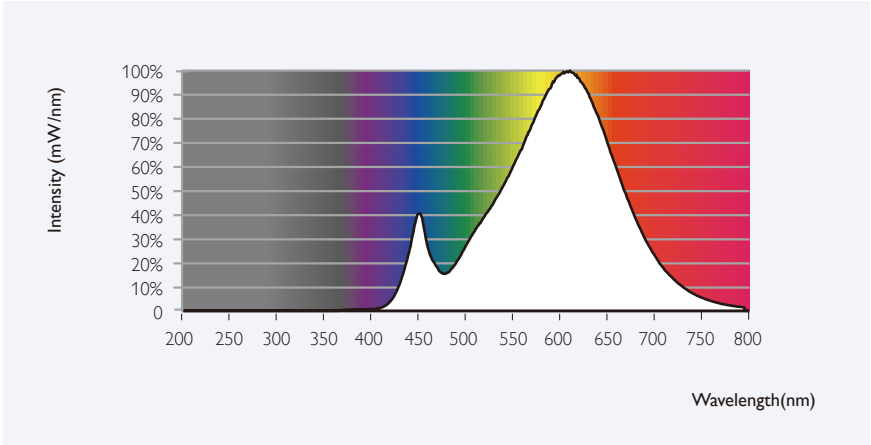
Fixture Compatibility

Type	C max. Overall Length (mm)	D max. Diameter (mm)	max. Weight (gram)
MASTER LED 6.5W MR16	50	50	51

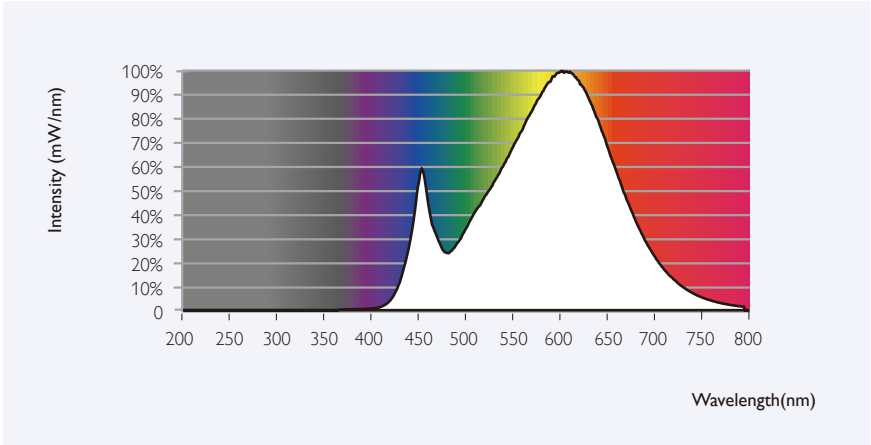


Spectral Power Distribution

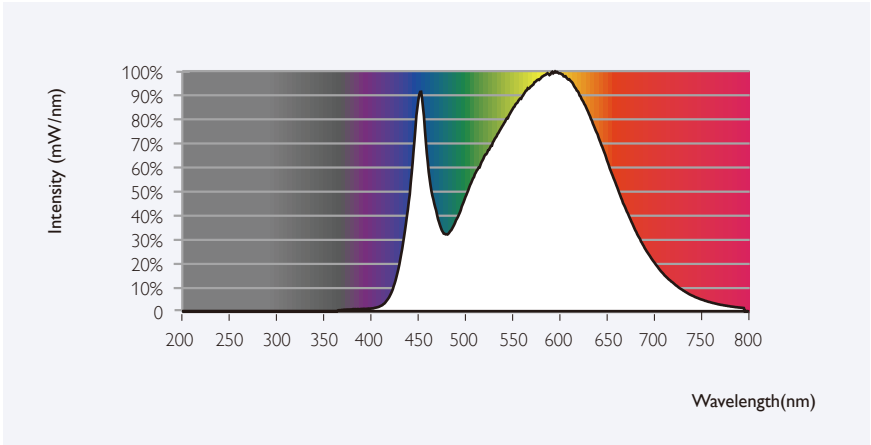
Spectrum MASTER LED MR16 6.5W 2700K



Spectrum MASTER LED MR16 6.5W 3000K



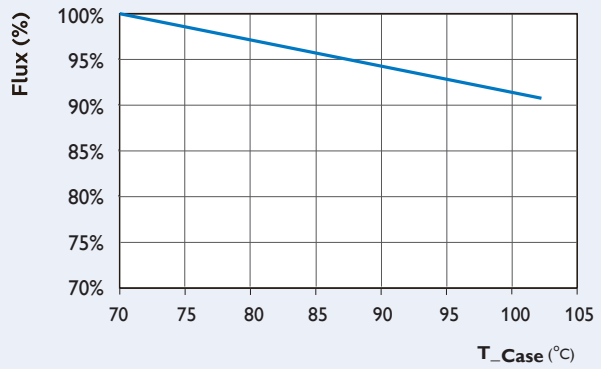
Spectrum MASTER LED MR16 6.5W 4000K

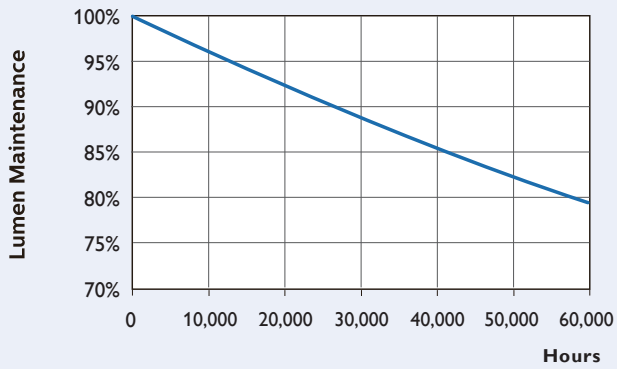


Temperature

PHILIPS 12V MASTER LED 6.5W MR16 is designed for operation in all GU5.3 lighting installations in open fixtures, 10mm free air space is needed around the lamp housing to ensure long-life.

MASTER LED 6.5W MR16



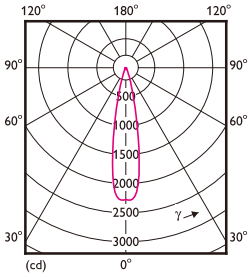


Photometric Diagrams

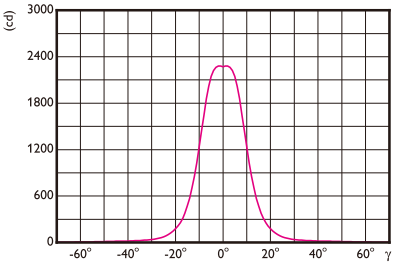
MASTER LED 6.5-50W 827 MR16 24D — 450 lm

Light output ratio	1.00	VBA	2 x 41°	lmax	2250 cd
Service upward	0.00	BS (½ I_{max})	2 x 11°	K5	
Service downward	1.00	VBA (½ E)	2 x 11°		

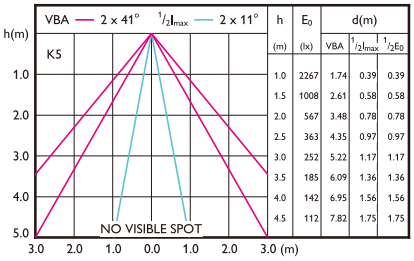
Polar intensity diagram



Cartesian intensity diagram

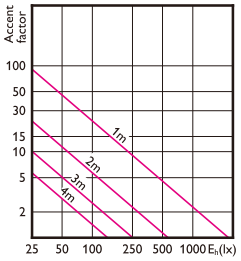


Beam diagram



h (m)	E_0 (lx)	d(m) VBA	d(m) ½I_{max}	d(m) ½E_0
1.0	2267	1.74	0.39	0.39
1.5	1008	2.61	0.58	0.58
2.0	567	3.48	0.78	0.78
2.5	363	4.35	0.97	0.97
3.0	252	5.22	1.17	1.17
3.5	185	6.09	1.36	1.36
4.0	142	6.95	1.56	1.56
4.5	112	7.82	1.75	1.75

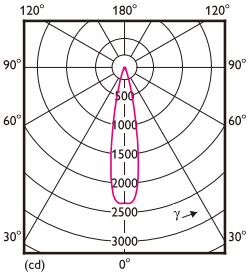
Visual impact diagram



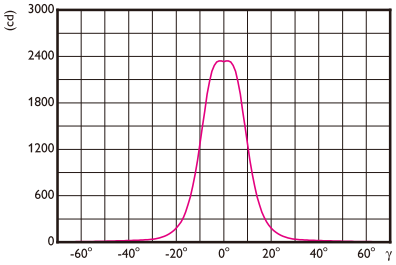
MASTER LED 6.5-50W 830 MR16 24D — 470 lm

Light output ratio	1.00	VBA	2 x 41°	lmax	2350 cd
Service upward	0.00	BS (½ I_{max})	2 x 11°	K5	
Service downward	1.00	VBA (½ E_o)	2 x 11°		

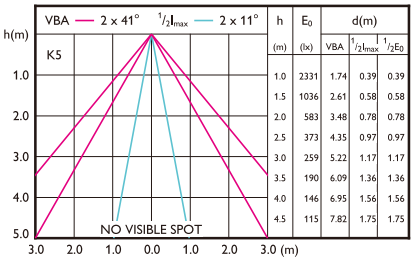
Polar intensity diagram



Cartesian intensity diagram

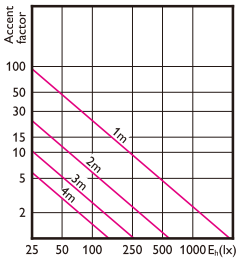


Beam diagram



h (m)	E_0 (lx)	d(m) VBA	d(m) ½I_{max}	d(m) ½E_0
1.0	2331	1.74	0.39	0.39
1.5	1036	2.61	0.58	0.58
2.0	583	3.48	0.78	0.78
2.5	373	4.35	0.97	0.97
3.0	259	5.22	1.17	1.17
3.5	190	6.09	1.36	1.36
4.0	146	6.95	1.56	1.56
4.5	115	7.82	1.75	1.75

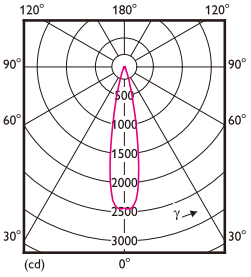
Visual impact diagram



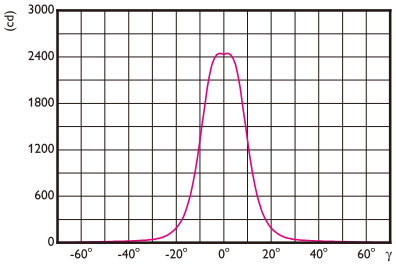
MASTER LED 6.5-50W 840 MR16 24D — 490 lm

Light output ratio	0.86	VBA	2 x 41°	lmax	2450 cd
Service upward	0.00	BS (½ I_{max})	2 x 11°	K5	
Service downward	0.86	VBA (½ E_o)	2 x 11°		

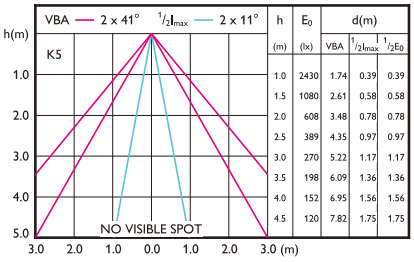
Polar intensity diagram



Cartesian intensity diagram

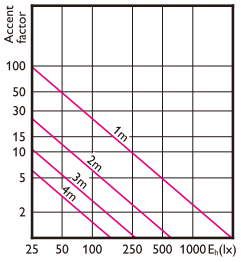


Beam diagram



h (m)	E_0 (lx)	d(m) VBA	d(m) ½I_{max}	d(m) ½E_0
1.0	2430	1.74	0.39	0.39
1.5	1080	2.61	0.58	0.58
2.0	608	3.48	0.78	0.78
2.5	389	4.35	0.97	0.97
3.0	270	5.22	1.17	1.17
3.5	198	6.09	1.36	1.36
4.0	152	6.95	1.56	1.56
4.5	120	7.82	1.75	1.75

Visual impact diagram

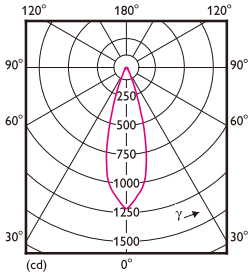


MASTER LED 6.5-50W 827 MR16 36D

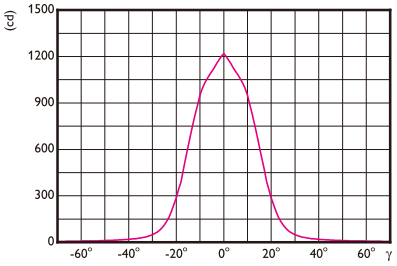
450 lm

Light output ratio	1.00	VBA	2 x 41°	lmax	1250 cd
Service upward	0.00	BS (½ I_{max})	2 x 16°	K5	
Service downward	1.00	VBA (½ E)	2 x 15°		

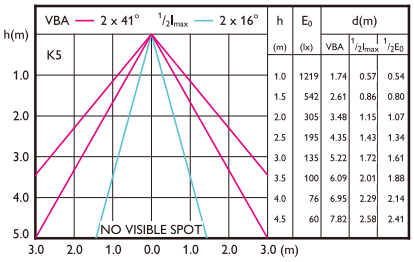
Polar intensity diagram



Cartesian intensity diagram

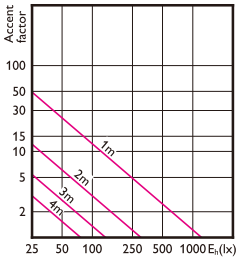


Beam diagram



h (m)	E_0 (lx)	d(m) VBA	d(m) ½I_{max}	d(m) ½E_0
1.0	1219	1.74	0.57	0.54
1.5	542	2.61	0.86	0.80
2.0	305	3.48	1.15	1.07
2.5	195	4.35	1.43	1.34
3.0	135	5.22	1.72	1.61
3.5	100	6.09	2.01	1.88
4.0	76	6.95	2.29	2.14
4.5	60	7.82	2.58	2.41

Visual impact diagram

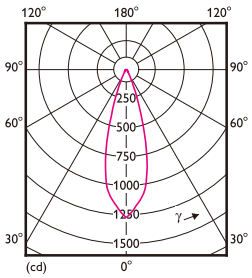


MASTER LED 6.5-50W 830 MR16 36D

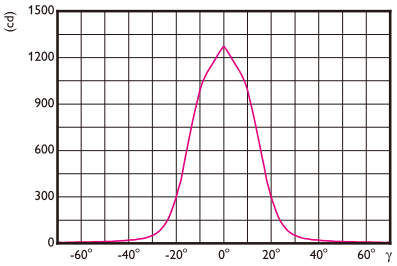
470 lm

Light output ratio	1.00	VBA	2 x 41°	lmax	1300 cd
Service upward	0.00	BS (½ I_{max})	2 x 16°	K5	
Service downward	1.00	VBA (½ E_o)	2 x 15°		

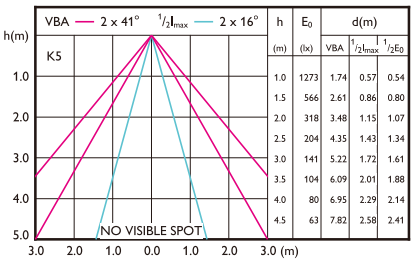
Polar intensity diagram



Cartesian intensity diagram

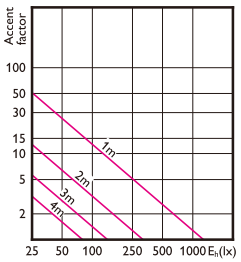


Beam diagram



h (m)	E_0 (lx)	d(m) VBA	d(m) ½I_{max}	d(m) ½E_0
1.0	1273	1.74	0.57	0.54
1.5	566	2.61	0.86	0.80
2.0	318	3.48	1.15	1.07
2.5	204	4.35	1.43	1.34
3.0	141	5.22	1.72	1.61
3.5	104	6.09	2.01	1.88
4.0	80	6.95	2.29	2.14
4.5	63	7.82	2.58	2.41

Visual impact diagram

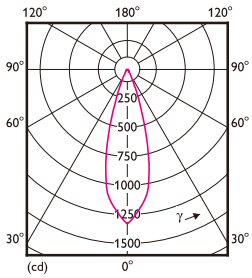


MASTER LED 6.5-50W 840 MR16 36D

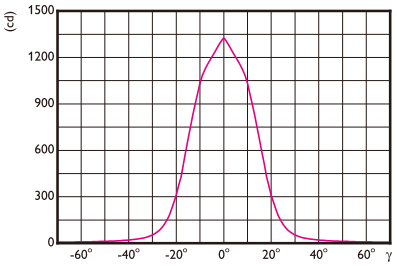
490 lm

Light output ratio	1.00	VBA	2 x 41°	lmax	1350 cd
Service upward	0.00	BS (½ I_{max})	2 x 16°	K5	
Service downward	1.00	VBA (½ E_o)	2 x 15°		

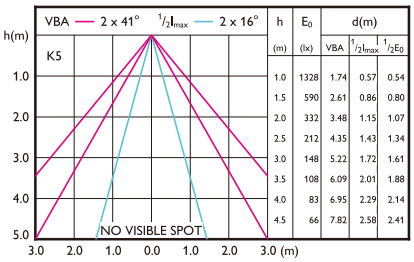
Polar intensity diagram



Cartesian intensity diagram

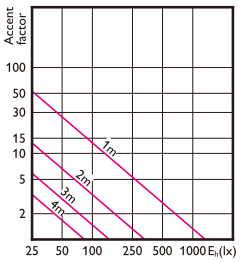


Beam diagram



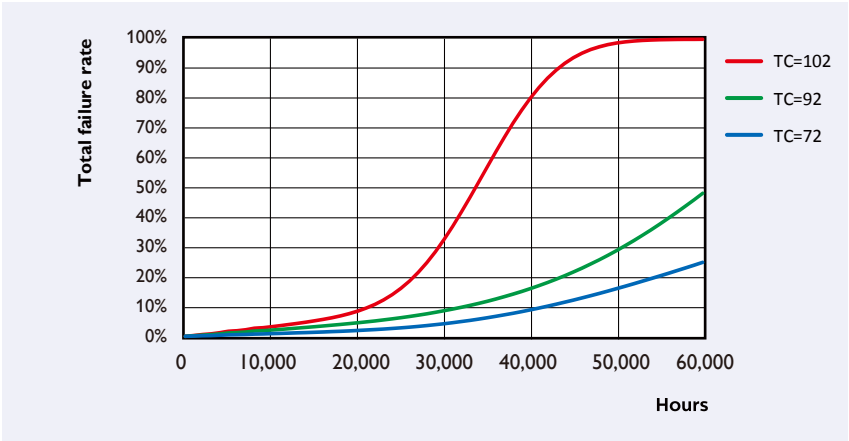
h (m)	E_0 (lx)	d(m) VBA	d(m) ½I_{max}	d(m) ½E_0
1.0	1328	1.74	0.57	0.54
1.5	590	2.61	0.86	0.80
2.0	332	3.48	1.15	1.07
2.5	212	4.35	1.43	1.34
3.0	148	5.22	1.72	1.61
3.5	108	6.09	2.01	1.88
4.0	83	6.95	2.29	2.14
4.5	66	7.82	2.58	2.41

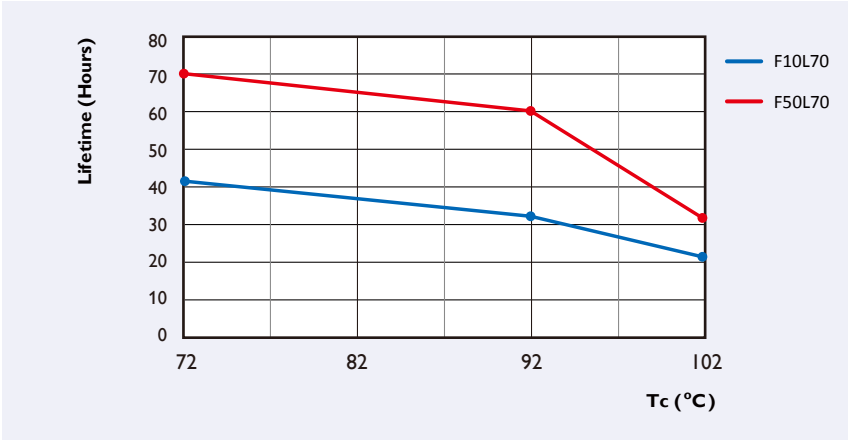
Visual impact diagram



Lifetime + Sustainability

Failure Rate Curve of MASTER LED 6.5W 1MR16





- PHILIPS 12V MASTER LED 6.5W 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.

Transformer Compatibility

PHILIPS 12V MASTER LED 6.5W MR16 lamp has a unique, patented, electronic solution embedded 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 6.5W LED MR16 up to INT(60W*40% /6.5W) = 3 lamp.

Compatibility list

No	Brand	Model	Load min.	Load max.	1 lamp	2 lamp	3 lamp
1	Philips	ET-E10LED	4W(LED)	10W(LED)	PASS	NA	NA
2	Philips	ET-E15LED	4W(LED)	15W(LED)	PASS	PASS	NA
3	Philips	ET-S15LED	4W(LED)	15W(LED)	PASS	PASS	NA
4	Philips	ET-E60	20W	60W	PASS	NA	NA
5	Philips	ET-S60	20W	60W	PASS	NA	NA
6	Philips	ET-C60	NA	60W	PASS	NA	NA
7	Philips	ET-E105	50W	105W	NA	PASS	PASS
8	Tridonic	VIPER	0W	60W	PASS	NA	NA
9	Tridonic	Speedy	20W	50W	PAS	NA	NA
10	Tridonic	POSSUM	0W	60W	PASS	NA	NA
11	Philips	Certaline 60	20W	60W	PASS	NA	NA
12	Philips	Certaline 105	35W	105W	NA	PASS	PASS
13	Philips	Certaline 150	50W	150W	NA	PASS	PASS
14	Philips	Primaline 70	20W	70W	PASS	PASS	NA
15	Philips	Primaline 105	35W	105W	NA	PASS	PASS
16	Philips	Primaline 150	50W	150W	NA	PASS	PASS
17	OSRAM	Redback 60VA	20W	60W	PASS	NA	NA
18	OSRAM	HTM 150	50W	150W	NA	PASS	PASS
19	LONON	LNDET-50	20W	50W	PASS	NA	NA
20	NVC	ET60E	20W	60W	PASS	NA	NA
21	Varilight	YT50	0W	50W	PASS	NA	NA
22	Varilight	YT70	0W	70W	PASS	PASS	NA

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