



PHILIPS

MASTER
LEDspot LV



Technical Application Guide

Philips Master LED MR16

Philips LED Spot 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 50W Philips Halogen MR16 lamp.

The form-factor of the Philips LED Spot 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 86% 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
- 24 & 36 degrees beam angle for a clearly defined beam spread
- CCT: 2700K,
- 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 MR16 lamp is suitably designed for general lighting applications in the hospitality and retail segment.

Unlike the conventional halogen reflector lamp, Philips LED MR16 lamp has 7/8W 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

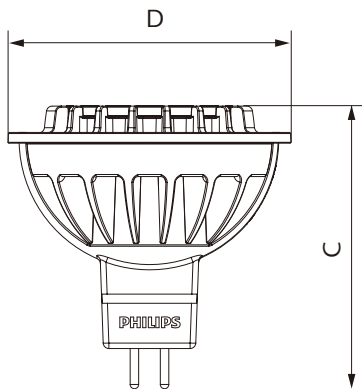
Product features

Technical Specifications

Product type	Voltage (VAC)	Lamp Wattage (W)	Replaced Wattage (W)	Base	Lumen (lm)	Beam Angle (°)	CCT (K)	MBCP (Cd)	Lifetime (Hrs)	CRI	Dimmable
MASTER LED 7-35W 927 MR16 24D Dim	12	7.0	35	Gu5.3	400	24	2700	2100	40,000	90	Yes
MASTER LED 7-35W 927 MR16 36D Dim	12	7.0	35	Gu5.3	400	36	2700	1150	40,000	90	Yes
MASTER LED 8-50W 927 MR16 24D Dim	12	8.0	50	Gu5.3	621	24	2700	1150	40,000	90	Yes
MASTER LED 8-50W 927 MR16 36D Dim	12	8.0	50	Gu5.3	621	36	2700	1150	40,000	90	Yes

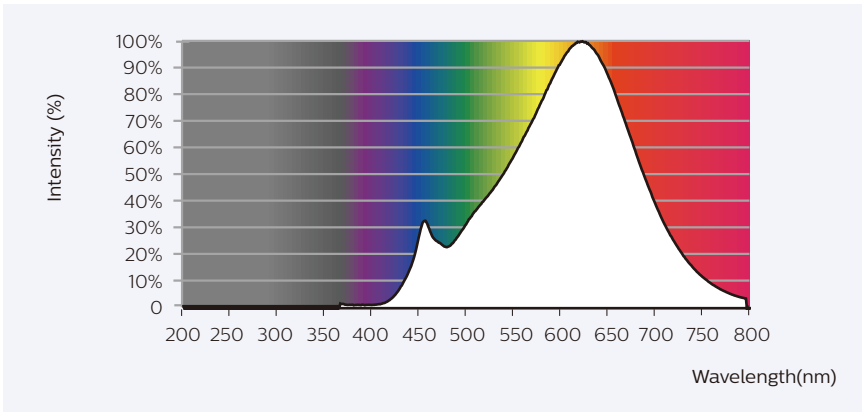
Fixture Compatibility

Type	C max. Overall Length (mm)	D max. Diameter (mm)	max. Weight (gram)
MASTER LED 7-50W MR16 Dim	51	51	50
MASTER LED 8-50W MR16 Dim	55	51	60

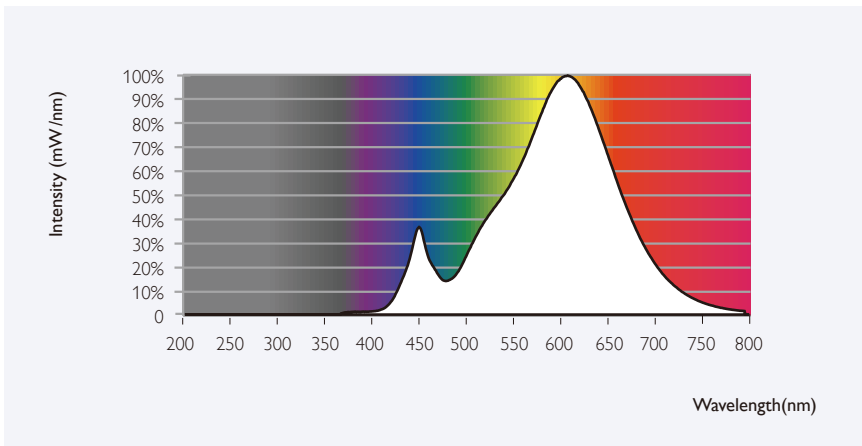


Spectral Power Distribution

2700 K



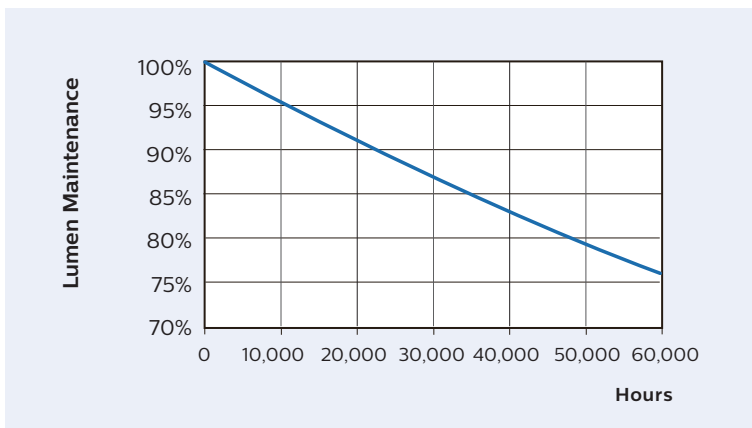
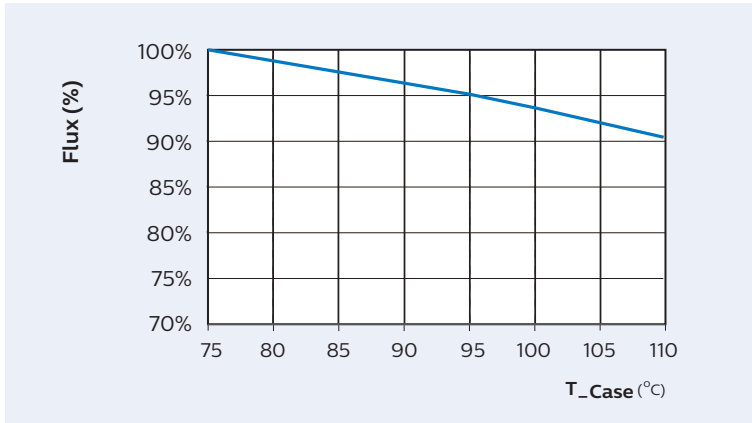
2700 K



Temperature

Philips LED 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 7/8 W



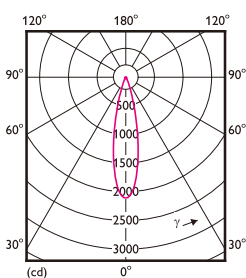
Photometric Diagrams

MASTER LED 7-35W 927 MR16 24D Dim

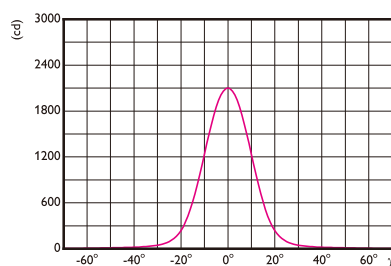
400 lm

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

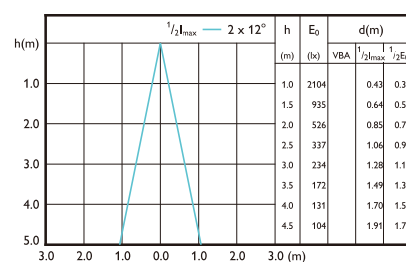
Polar intensity diagram



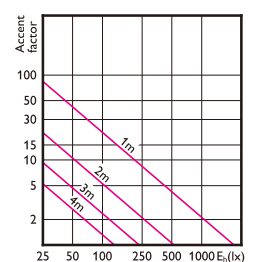
Cartesian intensity diagram



Beam diagram

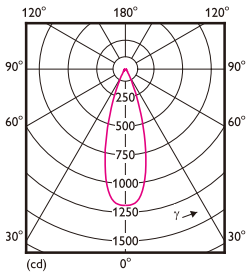


Visual impact diagram

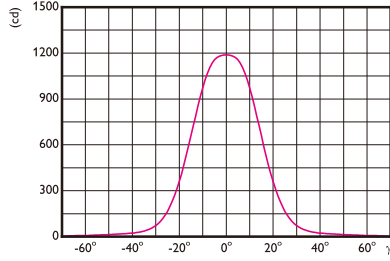


Light output ratio	1.00	I_{max}	1188 cd
Service upward	0.00	$BS (\frac{1}{2} I_{max})$	$2 \times 16^\circ$
Service downward	1.00	$VBA (\frac{1}{2} E_0)$	$2 \times 15^\circ$

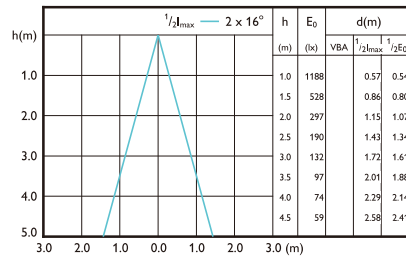
Polar intensity diagram



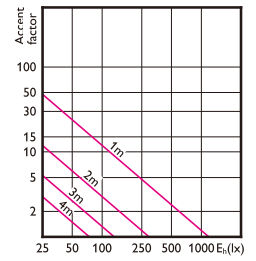
Cartesian intensity diagram



Beam diagram



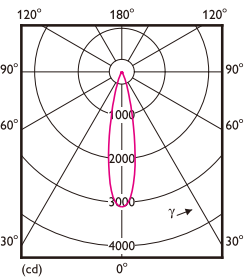
Visual impact diagram



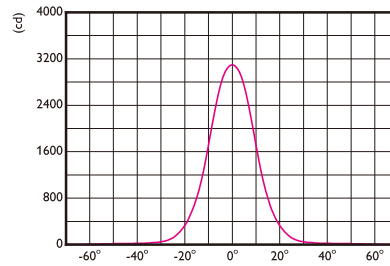
MASTER LED 8-50W+ 827 MR16 24D Dim

Light output ratio	1.00	I_{max}	3100 cd
Service upward	0.00	$BS (\frac{1}{2} I_{max})$	$2 \times 11^\circ$
Service downward	1.00		

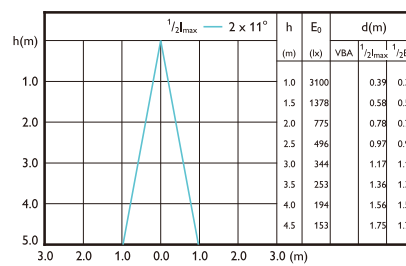
Polar intensity diagram



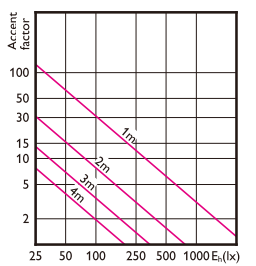
Cartesian intensity diagram



Beam diagram



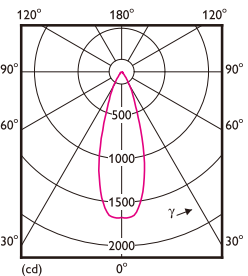
Visual impact diagram



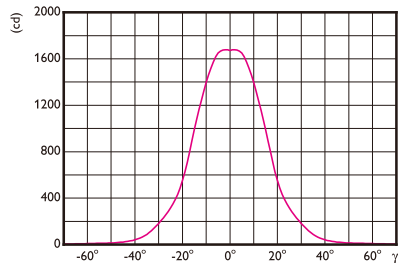
MASTER LED 8-50W 827 MR16 36D Dim

Light output ratio	1.00	VBA	$2 \times 41^\circ$	I_{max}	1650 cd
Service upward	0.00	$BS (\frac{1}{2} I_{max})$	$2 \times 17^\circ$	K5	
Service downward	1.00	$VBA (\frac{1}{2} E_0)$	$2 \times 16^\circ$		

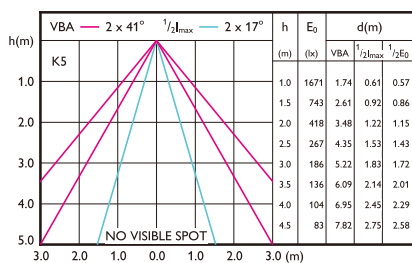
Polar intensity diagram



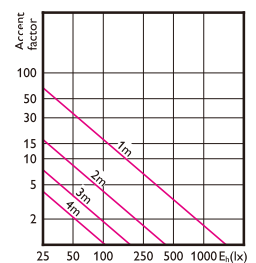
Cartesian intensity diagram



Beam diagram

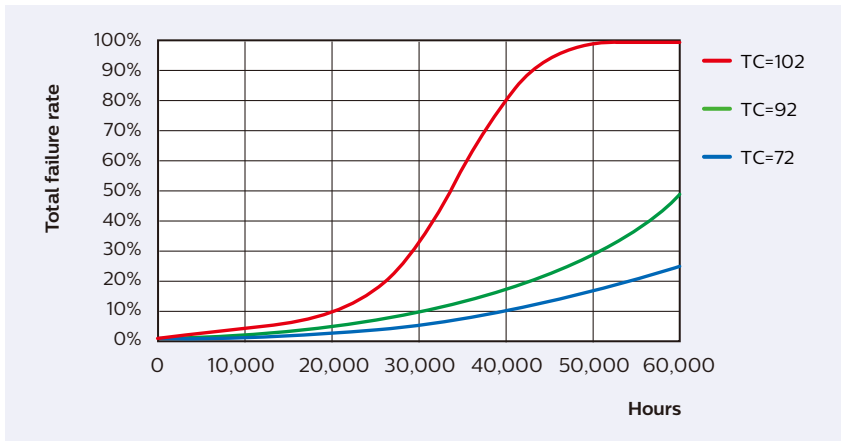


Visual impact diagram



Lifetime + Sustainability

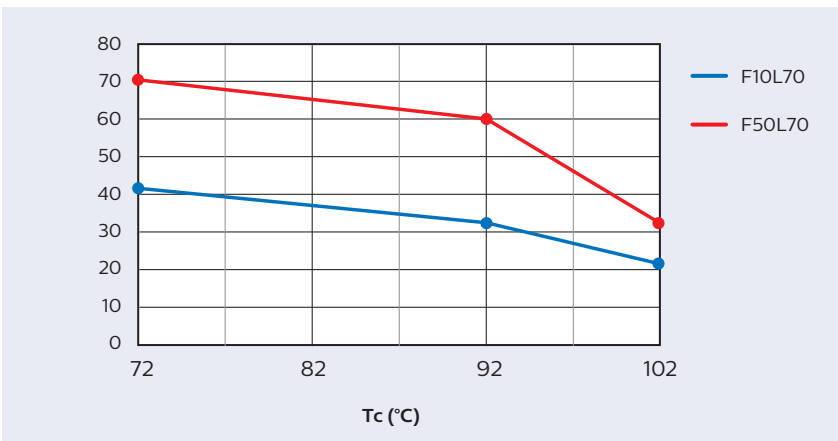
Failure Rate Curve of LED 7W 12V MR16



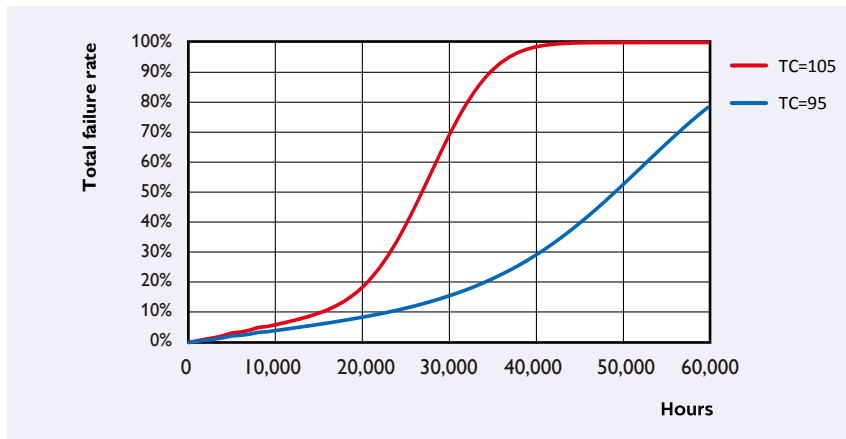
Philips LED MR16 lamp has a lifetime of 40,000 hours, defined as the number of hours when 50% of a large group of identical lamps below 70% of its initial lumens.

Lifetime estimation based on the application environment condition: at room temperature (25°C@ 10mm free air), base down burning position, and at rated voltage.

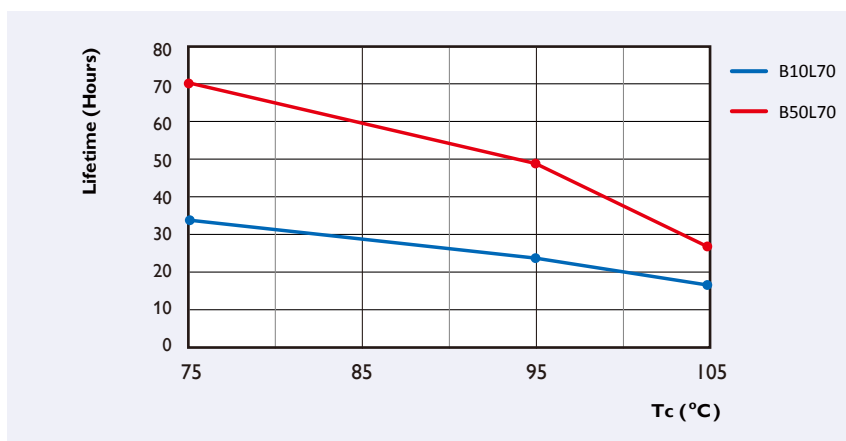
Master LED 7W Lifetime Vs Tc



Failure Rate Curve of LED 8W 12V MR16



Master LED 8W 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:

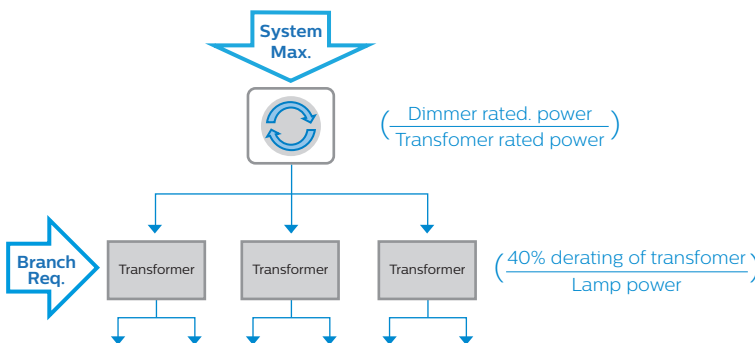
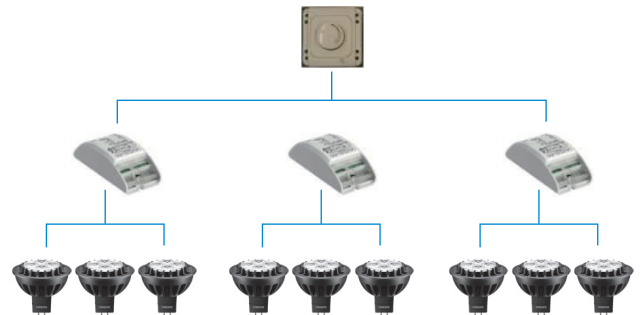
1. W (or VA) *40% of ET to determine max. lamps per transformer



Transformer: ET-S60
 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



Transformer Compatibility

PHILIPS 12V MASTER LED 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 LED MR16 up to $INT(60W * 40\% / LED W) = \#$ of LED lamps.*

Compatibility list

		Transformer																								
Brand		Philips										OSRAM						Tridonic			LONON	NVC	Panasonic	Koizumi	ENDO	Daiko
Model		ET-E10	ET-E15	ET-E30	ET-E60	ET-S30	ET-S60	ET-E105	ET-C60	ET-S15	EHC 150F	HTM 70	HTM 105	HTM 150	ET-P60	Redback 60VA	VIPER	Speedy	POSSUM	LNDET -50	ET60E	HNK 00844	AEE 690157	X224B	DP36283	
ET compatibility without Dimmer		PASS	PASS	PASS	PASS	PASS	PASS	Fail (1 lamp)	PASS (>1 lamp)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	
Brand	Model																									
Dimmer	Clipsal	32E450UDM																								
		32E450TM																								
		32E2CFLDM																								
		250Volt 500VA																								
		KB31RD400																								
	HPM	Cat 400L																								
		Cat 400T																								
	Philips	LRD8020																								
	TCL	V8051																								
		A8051																								
	TNC	Z62-M12																								
	PDL	624TMWH																								
	KIWI	K004U																								
		K005T																								
	ANAM	D700																								
	Schneider	3031H360M																								
		E3031HD																								
		559																								
	WEG	WEG57816																								
		WEG57813																								
WEC57518																										
WMS 549																										
Panasonic		NQ20203T																								
	WNS75211K																									
	NQ20615																									
	NOF 20571																									
	WTAF 57016CH																									
Koizumi	AEE690180																									
ENDO	X-220W																									
ERE 电工	110V																									
中一电工	110V																									
	220V																									

NR



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