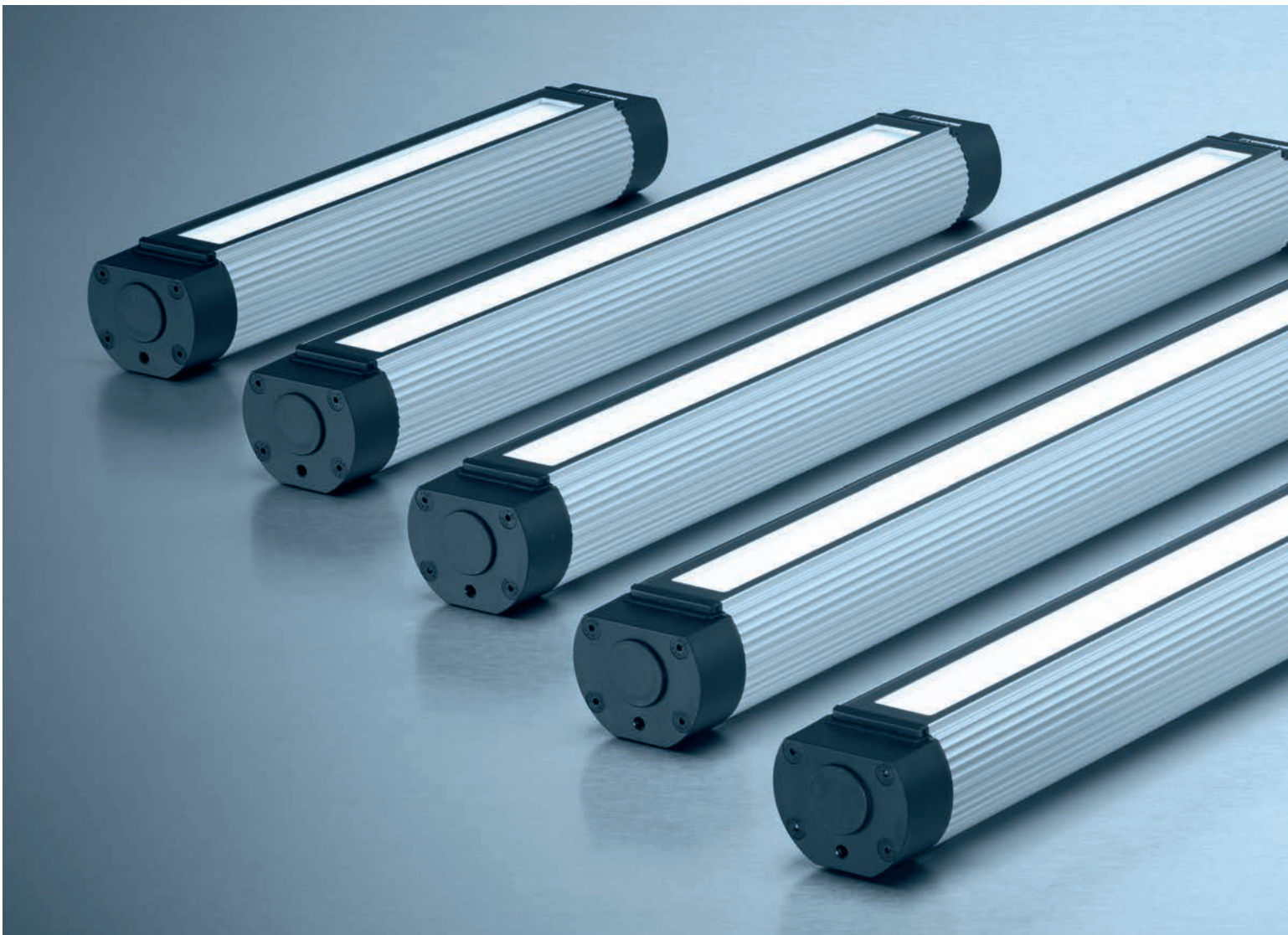


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**MACH LED PLUS**  
SURFACE-MOUNTED LUMINAIRE



LED

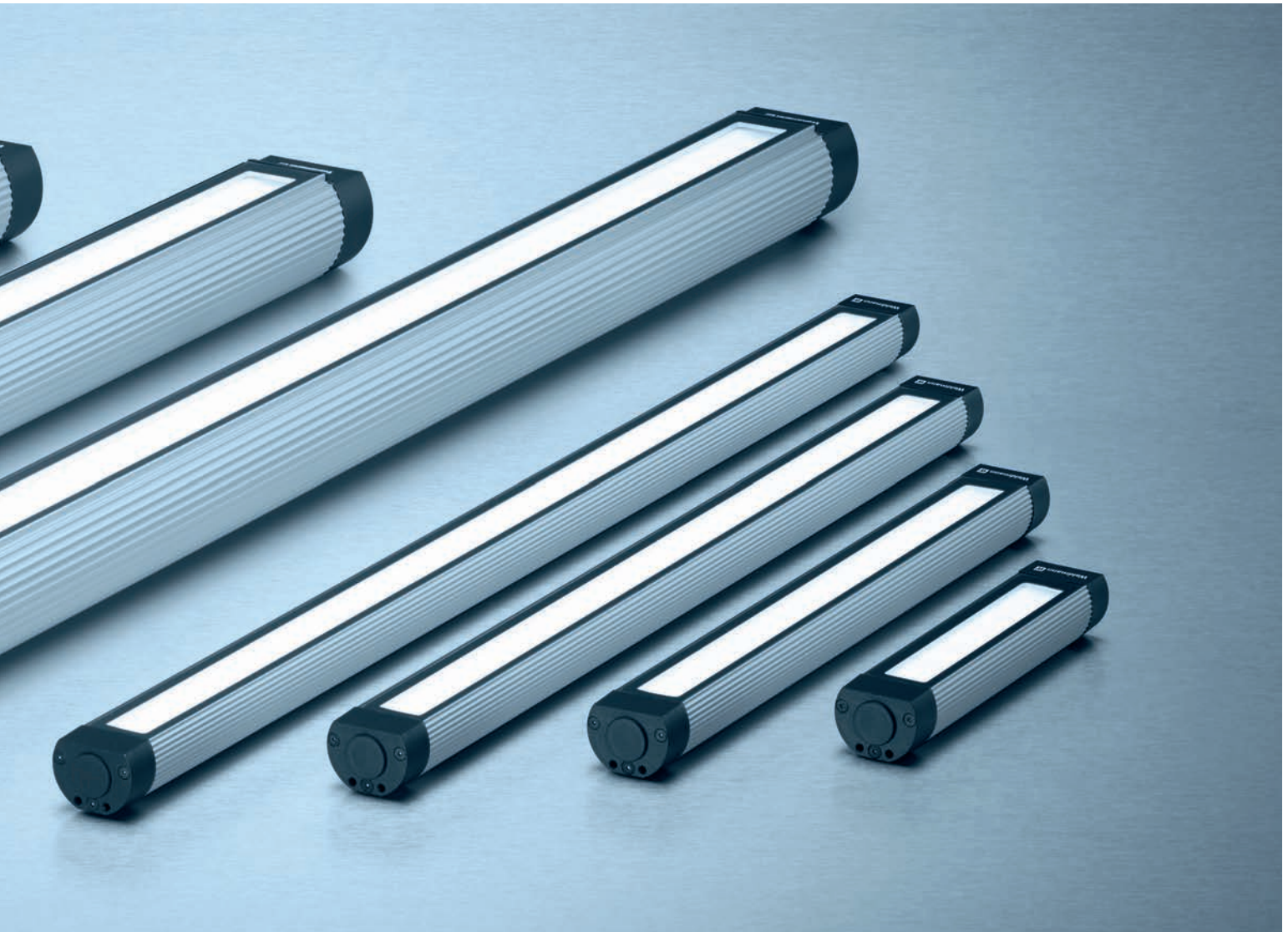


## MODERN LIGHT FOR MODERN MACHINES.

Every day, hundreds of thousands of Waldmann luminaires are used for tough industrial applications all over the world. They have provided the driving force for the technically sophisticated and robust MACH LED PLUS.

The highly efficient and maintenance-free LED technology, extremely durable housing and attractive design make MACH LED PLUS the first choice for lighting of machines, automation systems and industrial enclosures.

With MACH LED PLUS, Waldmann Lighting continues the long-standing tradition of delivering premium light quality and developing safe, sustainable, energy-efficient and cost-effective products for the industrial marketplace.



## MACH LED PLUS FOR THE ADDED PLUS OF POSSIBILITIES.

Designed with energy- and cost-savings of up to 70% and 60,000 hours of maintenance-free operation, the MACH LED PLUS line is a welcome upgrade to the traditional fluorescent tube lights used so often in machines today.

MACH LED PLUS is built to withstand volatile environments that may be present inside of a machine including exposure to harsh coolants, lubricants, flying debris, shock, or vibration. Its rugged anodized aluminum housing is extruded with ridges accommodating easy mounting as well as supporting premium heat-sinking properties.

The MACH LED PLUS line is available in two basic versions – MACH LED PLUS.seventy and MACH LED PLUS.forty.

Both are available in a variety of lengths and light distributions making them ideal for custom machining applications.

The following are key characteristics they share:

- Robust aluminum housing and 4mm safety glass
- Resistant to coolants and lubricants
- IP67 rated
- Glare-free with smooth light transitions
- 60,000+ hours maintenance-free light source
- Easy connection via M12 cable assembly (included)
- Thru-wire versions available
- ETL/cETL approved

# MACH LED PLUS.seventy

MACH LED PLUS.seventy LED linear machine light was designed as a direct replacement for the standard 70mm diameter fluorescent tube lights often used in today's machines.

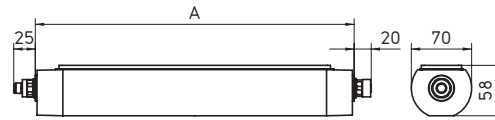
Drastically reducing power consumption while adding bright, glare-free light to the machining area makes MACH LED PLUS.seventy the smart choice. To save even more power, Eco models are available, using less power while still lighting up the space with bright illumination.

An easy upgrade, they can be installed quickly using existing brackets so drilling new holes is not necessary, reducing installation and machine down-time.

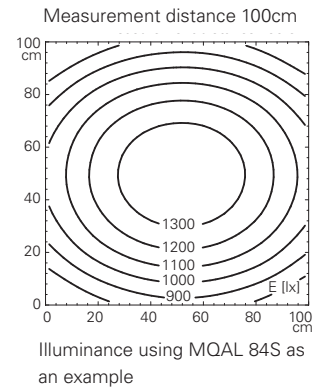
Available in 100-240V AC or low-voltage 24V DC versions. Six lengths meet any space configuration and M12 connectors enable a simple setup without any special tools. It's never been easier to upgrade to LED.



MACH LED PLUS.seventy with thru-wiring



Dimensions in millimeters



## TECHNICAL DATA

### FEATURES:

- Heavy-duty industrial machine light
- Up to 70% energy savings in comparison to fluorescent tube luminaires
- Designed for easy replacement by reusing brackets from existing fluorescent tube lights
- Compatible with standard 70mm tube lights in diameter for easy upgrade
- Impermeable to coolants and lubricants
- Able to withstand extreme ambient heat up to 122°F
- Six lengths: 14.5", 20.1", 22.2", 25.6", 31.1" and 42.1"
- Thru-wire models available for connecting multiple fixtures
- Easy connection via M12 cable assembly (included)
- Flicker-free without dangerous stroboscopic effect
- IP67 rated
- Rugged anodized aluminum housing, 4mm safety glass
- Impervious to mechanical vibration
- 60,000 hours maintenance-free operation
- ETL/cETL approved

### SPECIFICATIONS:

Voltage	24V DC or 100-240V; 50/60Hz
Lamping	LED
Color Temperature	5000K
Color Rendering Index (CRI)	85
Diameter	2.75" (70mm)
Protection Rating	IP67
Cord/Plug	16' cord with molded M12 cable assembly (included)
Certification/safety	CE, ETL/cETL



## ORDERING INFORMATION

Version	Wattage	Length (A)	Lumens	Model	Part #
<b>24V Versions</b> (For AC voltage operation, see external operating devices below)					
Eco	7W	14.6" (370mm)	500	MQAL 12 S	113 045 000 - 005 807 02
Eco, thru-wire	7W	14.6" (370mm)	500	MQAL 12 SD	113 046 000 - 005 806 96
High-output	12W	14.6" (370mm)	900	MQAL 24 S	113 047 000 - 005 806 93
High-output, thru-wire	12W	14.6" (370mm)	900	MQAL 24 SD	113 048 000 - 005 805 73
Eco	10W	20.1" (510mm)	750	MQAL 18 S	113 053 000 - 005 805 88
Eco, thru-wire	10W	20.1" (510mm)	750	MQAL 18 SD	113 054 000 - 005 805 91
High-output	18W	20.1" (510mm)	1350	MQAL 36 S	113 055 000 - 005 805 94
High-output, thru-wire	18W	20.1" (510mm)	1350	MQAL 36 SD	113 056 000 - 005 805 97
Eco	10W	22.2" (565mm)	750	MQAL 18 S	113 061 000 - 005 806 12
Eco, thru-wire	10W	22.2" (565mm)	750	MQAL 18 SD	113 062 000 - 005 806 15
High-output	18W	22.2" (565mm)	1350	MQAL 36 S	113 063 000 - 005 806 18
High-output, thru-wire	18W	22.2" (565mm)	1350	MQAL 36 SD	113 064 000 - 005 806 21
Eco	13W	25.6" (650mm)	1000	MQAL 24 S	113 069 000 - 005 806 39
Eco, thru-wire	13W	25.6" (650mm)	1000	MQAL 24 SD	113 070 000 - 005 806 42
High-output	24W	25.6" (650mm)	1800	MQAL 48 S	113 071 000 - 005 806 45
High-output, thru-wire	24W	25.6" (650mm)	1800	MQAL 48 SD	113 072 000 - 005 806 48
Eco	16W	31.1" (790mm)	1250	MQAL 30 S	113 077 000 - 005 806 63
Eco, thru-wire	16W	31.1" (790mm)	1250	MQAL 30 SD	113 078 000 - 005 806 66
High-output	30W	31.1" (790mm)	2300	MQAL 60 S	113 124 000 - 006 118 55
High-output, thru-wire	30W	31.1" (790mm)	2300	MQAL 60 SD	113 125 000 - 006 128 44
Eco	22W	42.1" (1070mm)	1750	MQAL 42 S	113 081 000 - 005 806 75
Eco, thru-wire	22W	42.1" (1070mm)	1750	MQAL 42 SD	113 082 000 - 005 806 81
High-output	42W	42.1" (1070mm)	3200	MQAL 84 S	113 126 000 - 006 129 73
High-output, thru-wire	42W	42.1" (1070mm)	3200	MQAL 84 SD	113 122 000 - 006 098 07

**100-240V Versions**

Eco	9W	14.6" (370mm)	500	MQAL 12 N	113 049 000 - 005 805 76
Eco, thru-wire	9W	14.6" (370mm)	500	MQAL 12 ND	113 050 000 - 005 805 79
High-output	15W	14.6" (370mm)	900	MQAL 24 N	113 051 000 - 005 805 82
High-output, thru-wire	15W	14.6" (370mm)	900	MQAL 24 ND	113 052 000 - 005 805 85
Eco	12W	20.1" (510mm)	750	MQAL 18 N	113 057 000 - 005 806 00
Eco, thru-wire	12W	20.1" (510mm)	750	MQAL 18 ND	113 058 000 - 005 806 03
High-output	21W	20.1" (510mm)	1350	MQAL 36 N	113 059 000 - 005 806 06
High-output, thru-wire	21W	20.1" (510mm)	1350	MQAL 36 ND	113 060 000 - 005 806 09
Eco	12W	22.2" (565mm)	750	MQAL 18 N	113 065 000 - 005 806 24
Eco, thru-wire	12W	22.2" (565mm)	750	MQAL 18 ND	113 066 000 - 005 806 30
High-output	21W	22.2" (565mm)	1350	MQAL 36 N	113 067 000 - 005 806 33
High-output, thru-wire	21W	22.2" (565mm)	1350	MQAL 36 ND	113 068 000 - 005 806 36
Eco	15W	25.6" (650mm)	1000	MQAL 24 N	113 073 000 - 005 806 51
Eco, thru-wire	15W	25.6" (650mm)	1000	MQAL 24 ND	113 074 000 - 005 806 54
High-output	27W	25.6" (650mm)	1800	MQAL 48 N	113 075 000 - 005 806 57
High-output, thru-wire	27W	25.6" (650mm)	1800	MQAL 48 ND	113 076 000 - 005 806 60
Eco	20W	31.1" (790mm)	1250	MQAL 30 N	113 079 000 - 005 806 69
Eco, thru-wire	20W	31.1" (790mm)	1250	MQAL 30 ND	113 080 000 - 005 806 72
Eco	26W	42.1" (1070mm)	1750	MQAL 42 N	113 083 000 - 005 806 84
Eco, thru-wire	26W	42.1" (1070mm)	1750	MQAL 42 ND	113 084 000 - 005 806 90

**External Operating Devices**

	Max. Wattage	Input	Output	Part #
Required for 120-277V operation with 24V versions	17W	120-277V, 50/60Hz	24V DC	209 585 028
	20W	120-277V, 50/60Hz	24V DC	309 537 010 - 006 704 53
	50W	120V, 50/60Hz	24V DC	209 585 030
	75W	120-277V, 50/60Hz	24V DC	209 585 031

**Mounting Options**

Item	Unit	Part #
End bracket set, adjustable, +/- 65°	Sold as pair	408 001 876 - 005 820 65
Clip bracket, adjustable, +/- 30°	Sold individually	408 001 878 - 005 855 35
Protective cap set (not for use with end brackets)	Sold as pair	408 001 875 - 005 820 72

**Accessories**

Item	Type	Voltage	Part #
M12 connector with 16' cord (included), straight	A-coded	24V DC	US0 009 001
M12 connector with 16' cord (included), straight	S-coded	100-240V AC	US0 009 201
M12 connector with 16' cord, angled	A-coded	24V DC	US0 009 011
M12 connector with 16' cord, angled	S-coded	100-240V AC	US0 009 211
M12 connector for thru-wire (SD) models	A-coded	24V	336 884 M10
M12 connector for thru-wire (ND) models	S-coded	120V	336 886 020 - 006 345 96

# MACH LED PLUS.forty



## MAXIMUM LIGHT - MINIMUM SPACE

MACH LED PLUS.forty combines the positive attributes of MACH LED PLUS.seventy with an even smaller form factor (1.6" diameter). Availability in four lengths – 7.5", 14.4", 21.3", and 28.2" – allows it to accommodate just about any area no matter how small.

MACH LED PLUS.forty's light output extends the full length of the fixture offering more lumens per watt while using less power consumption than comparable lighting used in machining today. With a choice of beam angle, 40° or 90°, MACH LED PLUS.forty makes it

possible to customize the area of illumination even further. Thru-wire versions, available in every length, allow multiple fixtures to be wired together.



MACH LED PLUS.forty for thru-wiring



## Multiple mounting options

### M12 connection



### End bracket set



### Clip bracket



# TECHNICAL DATA

## FEATURES:

- Rugged anodized aluminum housing, 4mm thick safety glass
- Various bracket options for simple installation
- Impermeable to coolants and lubricants
- Able to withstand extreme ambient heat up to 122°F
- Four lengths: 7.5", 14.4", 21.3", 28.2"
- Beam angle option: 40° (optics) or 90° (reflector)
- IP67 rated
- Easy connection via M12 cable assembly (included)
- Impervious to mechanical vibration
- Thru-wire models available for connecting multiple fixtures
- 60,000 hours maintenance-free operation
- ETL/cETL approved

## SPECIFICATIONS:

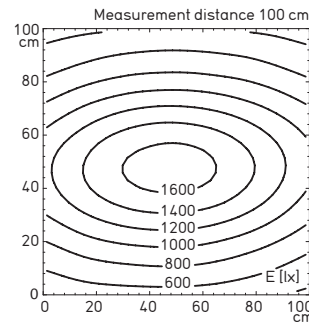
Voltage	24V DC
Lamping	LED
Color Temperature	5000K
Color Rendering Index (CRI)	85
Diameter	1.6" (40mm)
Protection Rating	IP67
Cord/Plug	16' cord with molded M12 connector (included)
Certification	CE, ETL/cETL approved



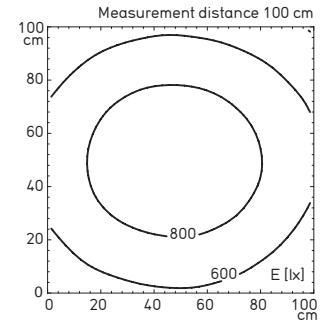
MACH LED PLUS.forty  
with angle of illumination 40°



MACH LED PLUS.forty  
with angle of illumination 90°



Illuminance taking MLAL 57 S with 40° optics as an example



Illuminance taking MLAL 57 S with 90° reflector as an example

## ORDERING INFORMATION (No operating device included, which is only required for 120-277V operation)

Version	Wattage	Length (A)	Lumens	Model	Part #
<b>24V Versions</b>					
90° beam angle	5W	7.5" (190mm)	480	MLAL 12 S	113 161 000 - 006 625 75
40° beam angle	5W	7.5" (190mm)	490	MLAL 12 S	113 161 000 - 006 600 33
90° beam, thru-wire	5W	7.5" (190mm)	480	MLAL 12 SD	113 161 000 - 006 626 00
90° beam angle	10.5W	14.4" (365mm)	1080	MLAL 27 S	113 162 000 - 006 626 85
40° beam angle	10.5W	14.4" (365mm)	1120	MLAL 27 S	113 162 000 - 006 606 81
90° beam, thru-wire	10.5W	14.4" (365mm)	1080	MLAL 27 SD	113 162 000 - 006 627 06
90° beam angle	16W	21.3" (540mm)	1680	MLAL 42 S	113 163 000 - 006 627 17
40° beam angle	16W	21.3" (540mm)	1720	MLAL 42 S	113 163 000 - 006 606 84
90° beam, thru-wire	16W	21.3" (540mm)	1680	MLAL 42 SD	113 163 000 - 006 627 35
90° beam angle	21.5W	28.2" (715mm)	2280	MLAL 57 S	113 164 000 - 006 628 06
40° beam angle	21.5W	28.2" (715mm)	2330	MLAL 57 S	113 164 000 - 006 606 87
90° beam, thru-wire	21.5W	28.2" (715mm)	2280	MLAL 57 SD	113 164 000 - 006 628 33
<b>External Operating Devices</b>					
	<b>Max. Wattage</b>		<b>Input</b>	<b>Output</b>	<b>Part #</b>
	17W		120-277V, 50/60Hz	24V DC	209 585 028
	20W		120-277V, 50/60Hz	24V DC	209 585 029
Required for 120-277V operation	50W		120V, 50/60Hz	24V DC	209 585 030
	96W		120-277V, 50/60Hz	24V DC	209 585 032
<b>Mounting Options</b>					
	<b>Item</b>		<b>Unit</b>		<b>Part #</b>
	End bracket set, +/- 90°		Sold as pair		408 001 403 - 006 716 26
	Clip bracket, adjustable, +/- 20°		Sold separately		408 001 402 - 006 716 23
<b>Accessories</b>					
	<b>Item</b>		<b>Type</b>	<b>Voltage</b>	<b>Part #</b>
	M12 connector with 16' cord (included), straight		A-coded	24V DC	US0 009 001
	M12 connector with 16' cord, angled		A-coded	24V DC	US0 009 011
	M12 connector for thru-wire (SD) models		A-coded	24V DC	336 884 M10

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