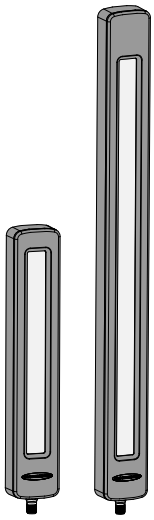
BL60 Sealed LED Bar Light Instruction Manual

Features

Sealed IP67, IP68, and IP69K lighting for use with Vision Systems in washdown environments

To view or download the latest technical information about this product, including specifications, dimensions, accessories, and wiring, go to www.bannerengineering.com.



- Four high-intensity, visible wavelengths, plus IR and UV
- Oil, chemical, and water resistant with IP67, JIS C IP68G, and IP69K per DIN 40050-9
- Available in 340 mm and 640 mm lengths
- Highly resistant to vibration and shock
- High-power, solid-state LED array; continuous or strobed operation
- PNP and NPN strobe operation
- Black e-coated aluminum housing

Model Key

Family	Color	Length (mm)	Window	Lensing	Control	Sealed	Connection
BL60	**W**	**340**		**L14**	**A**	**S**	**Q**
	W = Daylight white (5000K) R = Red G = Green B = Blue I = Infrared UV365 = 365 nm Ultraviolet UV395 = 395 nm Ultraviolet	340 640	Blank = Clear polycarbonate D = Diffused polycarbonate G = Borosilicate glass	Visible and IR Models: L14 = 14-degree FWHM narrow lenses UV Models: L30 = 30-degree FWHM wide lenses	A = Adjustable PWM/Strobe and 1 V to 10 V dimming	S = Sealed	Q = Integral 5-pin M12 male quick-disconnect connector

The following caution applies to white LED models and blue LED models:

CAUTION:
Risk Group 2: Possibly hazardous optical radiation emitted from this product.

Do not stare at the operating lamp. May be harmful to the eyes. Risk Group 2 (RG 2) products generally do not pose a realistic optical hazard if aversion responses limit the exposure duration or where lengthy exposures are unrealistic.

- IEC 62471

The following caution applies to ultraviolet models:

CAUTION:
Risk Group 2: UV Emitted from this product.

Eye or skin irritation may result from exposure. Use appropriate shielding and eye protection. Risk Group 2 (RG 2) products generally do not pose a realistic optical hazard if aversion responses limit the exposure duration or where lengthy exposures are unrealistic.

- IEC 62471

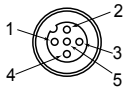
The following caution applies to infrared models:

CAUTION:
Risk Group 1: IR Emitted from this product.

Use appropriate shielding or eye protection. Risk Group 1 (RG 1) products are safe for most use applications, except for very prolonged exposures where direct ocular exposures may be expected.

- IEC 62471

Wiring

Pinout	Pin Number	Wire Color	1 V to 10 V Analog Dimming and Strobing/PWM Dimming Models
	Pin 1	Brown	12 V DC to 30 V DC
	Pin 2	White	NPN PWM/Strobe Input: For maximum intensity, leave the white wire floating, or connect to 12 V DC to 30 V DC. Connecting to DC common causes the LEDs to shut off.
	Pin 3	Blue	DC common
	Pin 4	Black	PNP PWM/Strobe Input: For maximum intensity, leave the black wire floating, or connect to DC common. Connecting to 12 V DC to 30 V DC causes the LEDs to shut off.
	Pin 5	Gray	1 V DC to 10 V DC Analog Dimming

Specifications

Supply Voltage

12 V DC to 30 V DC

Use only with a suitable Class 2 power supply (UL) or SELV power supply (CE)

See the electrical characteristics on the product label.

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Pulse Width Modulation (PWM)/Strobe Control

Maximum Frequency: 30 kHz

Minimum On Time: 20 µs

Input Delay Time: 5 µs

Input Voltage Threshold:

PNP: > 7 V DC
NPN: < 2 V DC

Input Current Maximum: 5 mA

Analog Control

Intensity Adjustment Range: 10% to 100%

Input Voltage Range: 1 V DC to 10 V DC

Input Current Maximum: 5 mA

Construction

Housing: Black e-coated aluminum housing

Window: Clear or diffuse polycarbonate window, or clear borosilicate glass window

Mounting

(6) M6×1 threaded holes in back; multiple bracket options available

Connections

Integral 5-pin M12 male quick-disconnect connector, accessory cordset required

LED Lifetime

Lumen Maintenance: L70

When operating within specifications, the output decreases less than 30% after the following time periods:

Daylight White: 90,000 hours
Red: 70,000 hours
Green: 70,000 hours
Blue: 50,000 hours
Yellow: 60,000 hours
UV: 35,000 hours

Vibration and Mechanical Shock

Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 1.0 mm amplitude, 5 minutes sweep, 30 minutes dwell)

Meets IEC 60068-2-27 requirements (Shock: 15G 11 ms duration, half sine wave)

Operating Conditions

–40 °C to +50 °C (–40 °F to +122 °F)

Storage Temperature

–40 °C to +70 °C (–40 °F to +158 °F)

Environmental Rating

IP67, JIS C IP68G, IP69K per DIN 40050-9

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

Certification

Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

Supply Current

Light Length (mm)	Color	Max. Current Draw (A) at 12 V DC	Typical Current Draw (A)		
			12 V DC	24 V DC	30 V DC
340	White	1.6	1.290	0.600	0.485
	Red	1.6	0.965	0.460	0.375
	Green	1.6	1.100	0.525	0.425
	Blue	1.6	1.175	0.550	0.445
	Infrared	1.6	0.680	0.340	0.280
	365 nm UV	1.6	1.525	0.695	0.560
	395 nm UV	1.6	1.355	0.625	0.500
640	White	3.0	2.475	1.130	0.910
	Red	3.0	1.845	0.880	0.720
	Green	3.0	2.005	0.955	0.780
	Blue	3.0	2.135	1.005	0.820
	Infrared	3.0	1.270	0.635	0.525
	365 nm UV	3.0	2.815	1.280	1.040
	395 nm UV	3.0	2.555	1.180	0.955

FCC Part 15 Class B for Unintentional Radiators

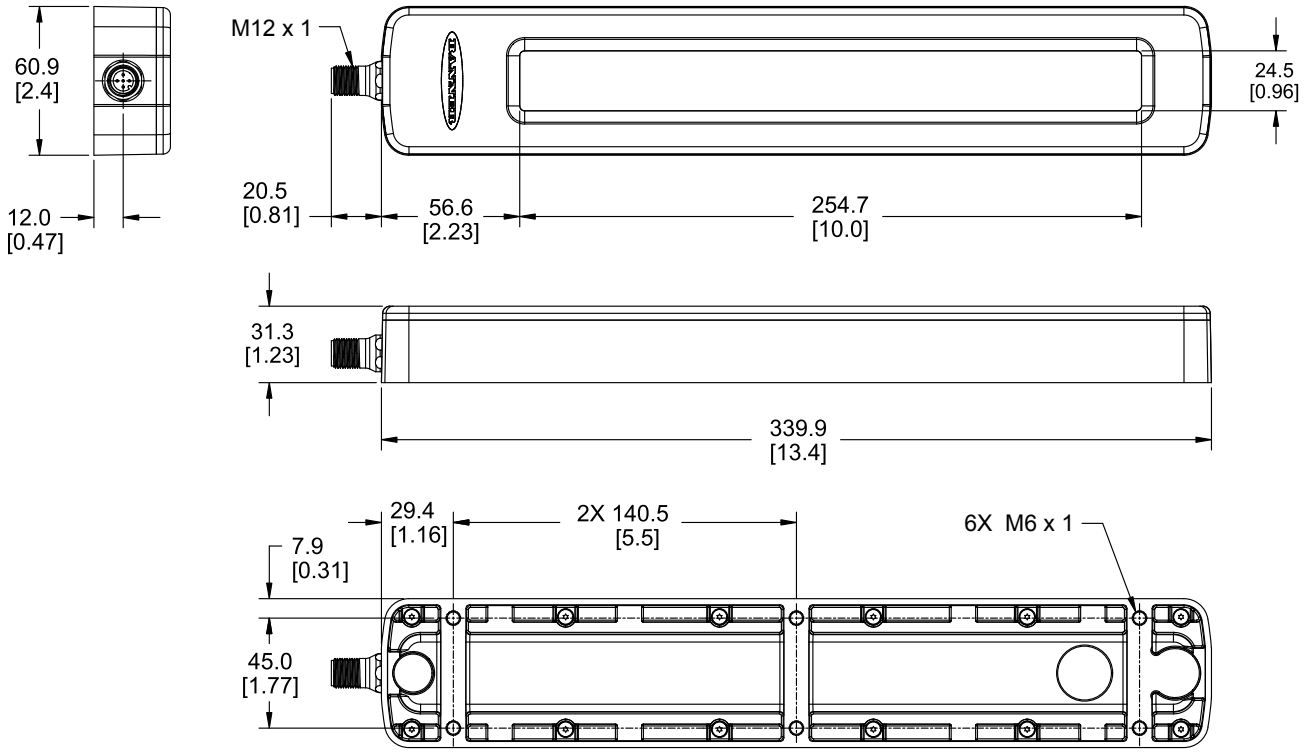
(Part 15.105(b)) This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

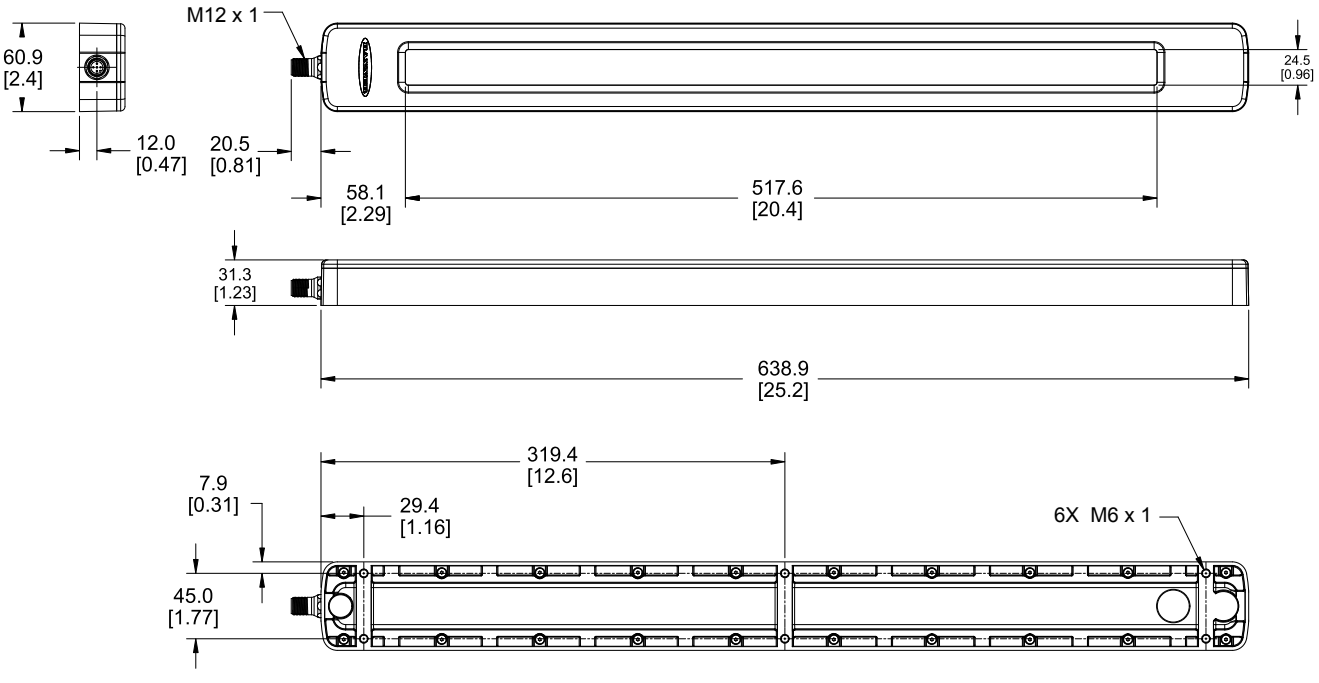
(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Dimensions

340 mm Models



640 mm Models



Optical Data

Light Characteristic: Clear and Diffuse Window

Values shown are typical at 25 °C.

Lighted Length (mm)	Lumens				mWatts		
	Daylight White (5000K)	Green (525nm)	Red (625nm)	Blue (475nm)	UV365 (365nm)	UV395 (395nm)	IR (850nm)
340	1375	1025	650	300	2500	2750	2450
640	2600	1950	1275	575	4600	5000	4550

Photometric Data

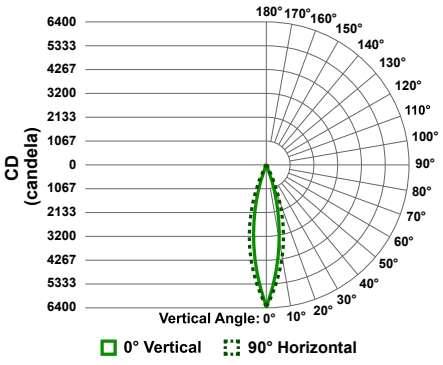
Optical data shown below is for daylight white and UV 365nm models only. To get lux/irradiance and candela/radiant intensity values for models with other colors, multiply the values shown on the charts by the following factors:

Color	Multiplier
Green	0.750
Red	0.473
Blue	0.218
UV395	1.100
IR	1.782

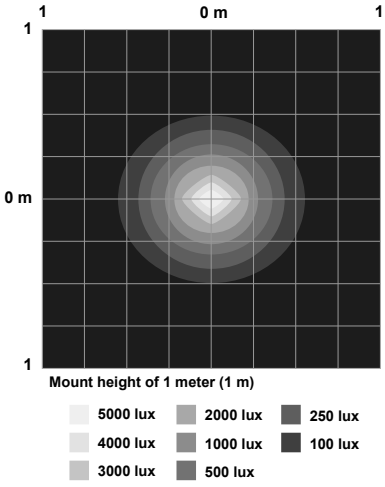
340 mm White Clear Window

BL60 White Clear (340)

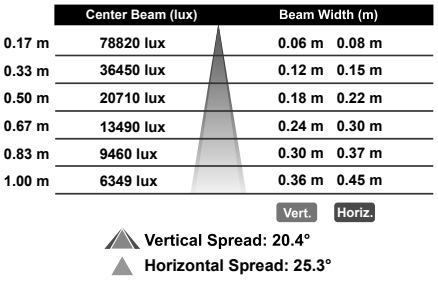
Polar Candela Distribution



Isolux Pattern



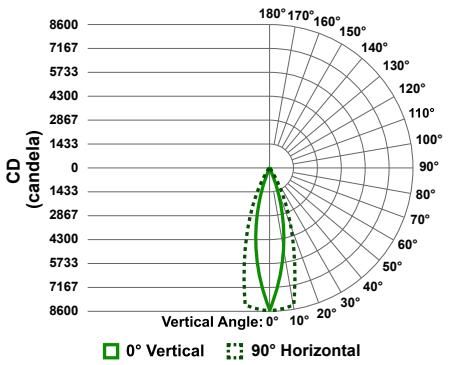
Illuminance at a Distance



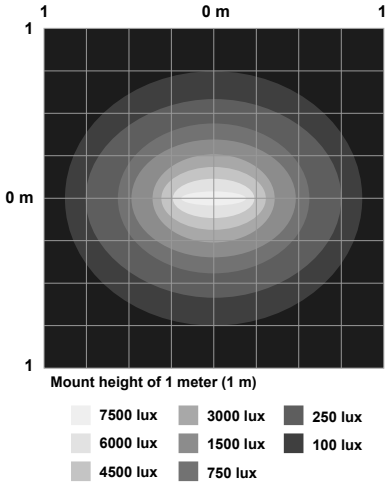
640 mm White Clear Window

BL60 White Clear (640)

Polar Candela Distribution



Isolux Pattern



Illuminance at a Distance

	Center Beam (lux)	Beam Width (m)	
0.17 m	72850 lux	0.07 m	0.11 m
0.33 m	34100 lux	0.13 m	0.22 m
0.50 m	21760 lux	0.20 m	0.33 m
0.67 m	15470 lux	0.27 m	0.44 m
0.83 m	11720 lux	0.33 m	0.55 m
1.00 m	8519 lux	0.40 m	0.66 m

Vert. Horiz.

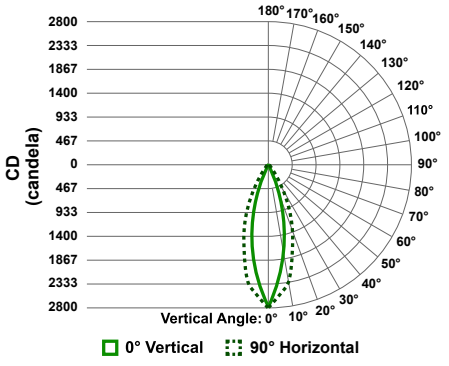
Vertical Spread: 22.8°

Horizontal Spread: 36.5°

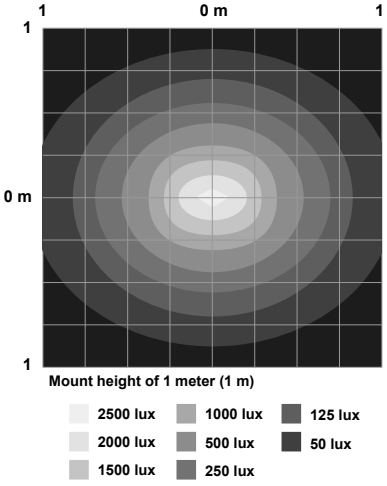
340 mm White Diffuse Window

BL60 White Diffuse (340)

Polar Candela Distribution



Isolux Pattern



Illuminance at a Distance

	Center Beam (lux)	Beam Width (m)	
0.17 m	42960 lux	0.09 m	0.12 m
0.33 m	18650 lux	0.17 m	0.24 m
0.50 m	9732 lux	0.26 m	0.35 m
0.67 m	6023 lux	0.35 m	0.47 m
0.83 m	4015 lux	0.44 m	0.59 m
1.00 m	2890 lux	0.52 m	0.71 m

Vert. Horiz.

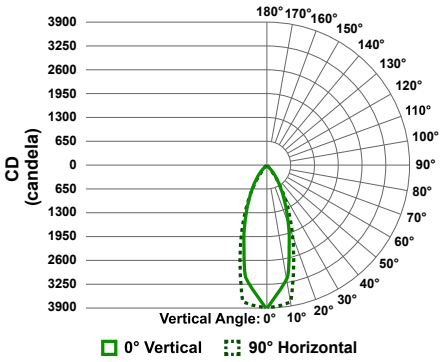
Vertical Spread: 29.4°

Horizontal Spread: 39.0°

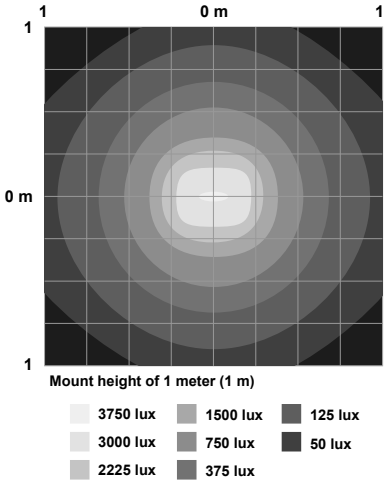
640 mm White Diffuse Window

BL60 White Diffuse (640)

Polar Candela Distribution



Isolux Pattern



Illuminance at a Distance

	Center Beam (lux)	Beam Width (m)	
0.17 m	38200 lux	0.11 m	0.12 m
0.33 m	18040 lux	0.23 m	0.25 m
0.50 m	11090 lux	0.34 m	0.37 m
0.67 m	8305 lux	0.46 m	0.50 m
0.83 m	5519 lux	0.57 m	0.62 m
1.00 m	3950 lux	0.69 m	0.74 m

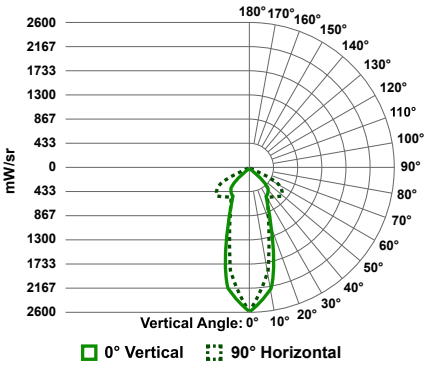
Vert. Horiz.

Vertical Spread: 37.8°
Horizontal Spread: 40.8°

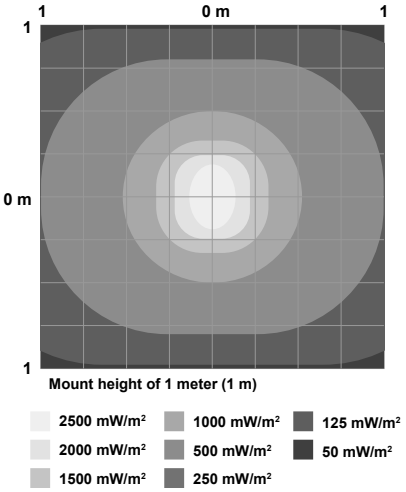
340 mm UV365

BL60 UV365 Clear (340)

Polar Radient Intensity Distribution



Iso-irradiance Pattern



Irradiance at a Distance

	Center Beam (lux)	Beam Width (m)	
0.17 m	25900 mW/m²	0.10 m	0.10 m
0.33 m	12540 mW/m²	0.21 m	0.20 m
0.50 m	7430 mW/m²	0.31 m	0.31 m
0.67 m	4700 mW/m²	0.42 m	0.41 m
0.83 m	3500 mW/m²	0.52 m	0.51 m
1.00 m	2500 mW/m²	0.63 m	0.62 m

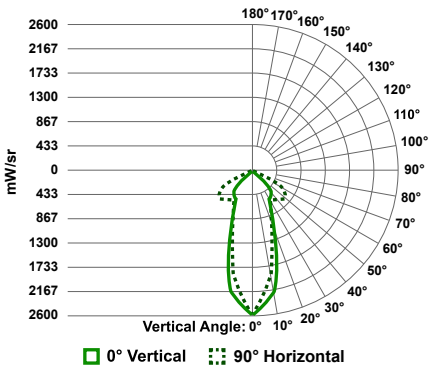
Vert. Horiz.

Horizontal Spread: 34.2°
Vertical Spread: 34.8°

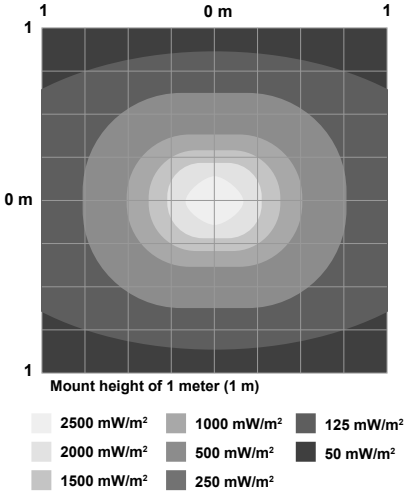
640 mm UV365

BL60 UV365 Clear (640)

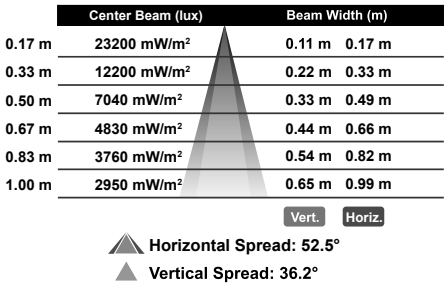
Polar Radient Intensity Distribution



Iso-irradiance Pattern

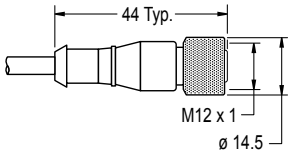
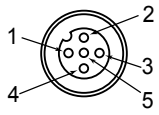
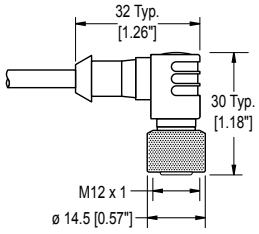


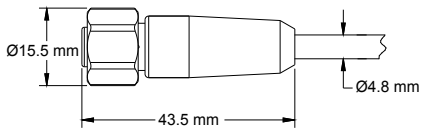
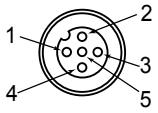
Irradiance at a Distance



Accessories

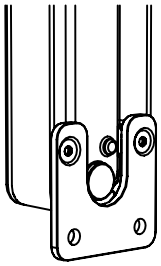
Cordsets

5-Pin Threaded M12 Cordsets—Single Ended				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
MQDC1-501.5	0.5 m (1.5 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
MQDC1-503	0.9 m (2.9 ft)			
MQDC1-506	2 m (6.5 ft)			
MQDC1-515	5 m (16.4 ft)			
MQDC1-530	9 m (29.5 ft)			
MQDC1-560	18 m (59 ft)			
MQDC1-5100	31 m (101.7 ft)			
MQDC1-506RA	2 m (6.5 ft)	Right-Angle		
MQDC1-515RA	5 m (16.4 ft)			
MQDC1-530RA	9 m (29.5 ft)			
MQDC1-560RA	19 m (62.3 ft)			

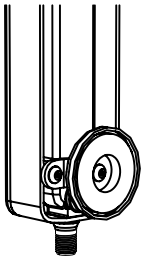
5-Pin Threaded M12 Stainless Steel Washdown Cordsets—Single Ended				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
MQDC-WDSS-0506	2 m (6.56 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
MQDC-WDSS-0515	5 m (16.4 ft)			
MQDC-WDSS-0530	9 m (29.5 ft)			

Brackets

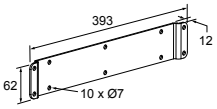
LMBWLC60F
- Set of two flat brackets
- 300 series stainless steel
- Includes M6 flathead screws for mounting to light
- Clearance for M6 or 1/4-20 mounting hardware



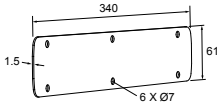
LMBWLC60MAG
- Magnetic mounting kit (set of two)
- Two-inch magnets
- Mounting hardware included



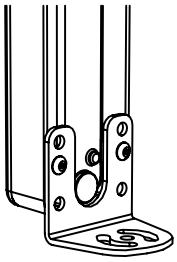
LMBWLC60B340
- Plate for sealing the cavity on the back of the 340 mm models
- 300 series stainless steel
- Includes hardware for mounting to the light



ACC-WLC60-340-GSK-N-1
- Black nitrile gasket
- Thickness: 1.5 mm



LMBWLC60RA
- Set of two right-angle brackets
- 300 series stainless steel
- Includes M6 button head screws for mounting to light
- Clearance for M6 or 1/4-20 mounting hardware



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LF1B-NA3P-2THWW2-3M 2702475 2702481 2702935 2702483 2702936 2702485 LF1B-NA4P-2THWW2-3M LF1D-C2F-2W-330 LF1B-ND4P-2THWW2-3M 1118021 BL60B640L14ASQ BL60G340L14ASQ BL60R340L14ASQ BL60R640L14ASQ BL60W340L14ASQ BL60W340L30ASQ BL60W640L14ASQ LEDILA145XD6-XQ LEDWLA145XD6-XQ LEDWLA290XD6-XQ WLF12XW2000S24QP WLF12XW4000S24QP WLF12XW1200S24QP WLF12XW3000S24QP WLF12XW600S24QP LF1A-A1-2THWW6 LF1A-D1-2THWW6 LF2B-B3P-BTHWW2-1M LF2B-C3P-ATHWW2-1M LF2B-C4P-ATHWW2-1M LF2B-D3P-ATHWW2-1M LF1B-NE3P-2THWW2-3M LF1B-NE4P-2THWW2-3M 2535890000 2576960000 2635090000