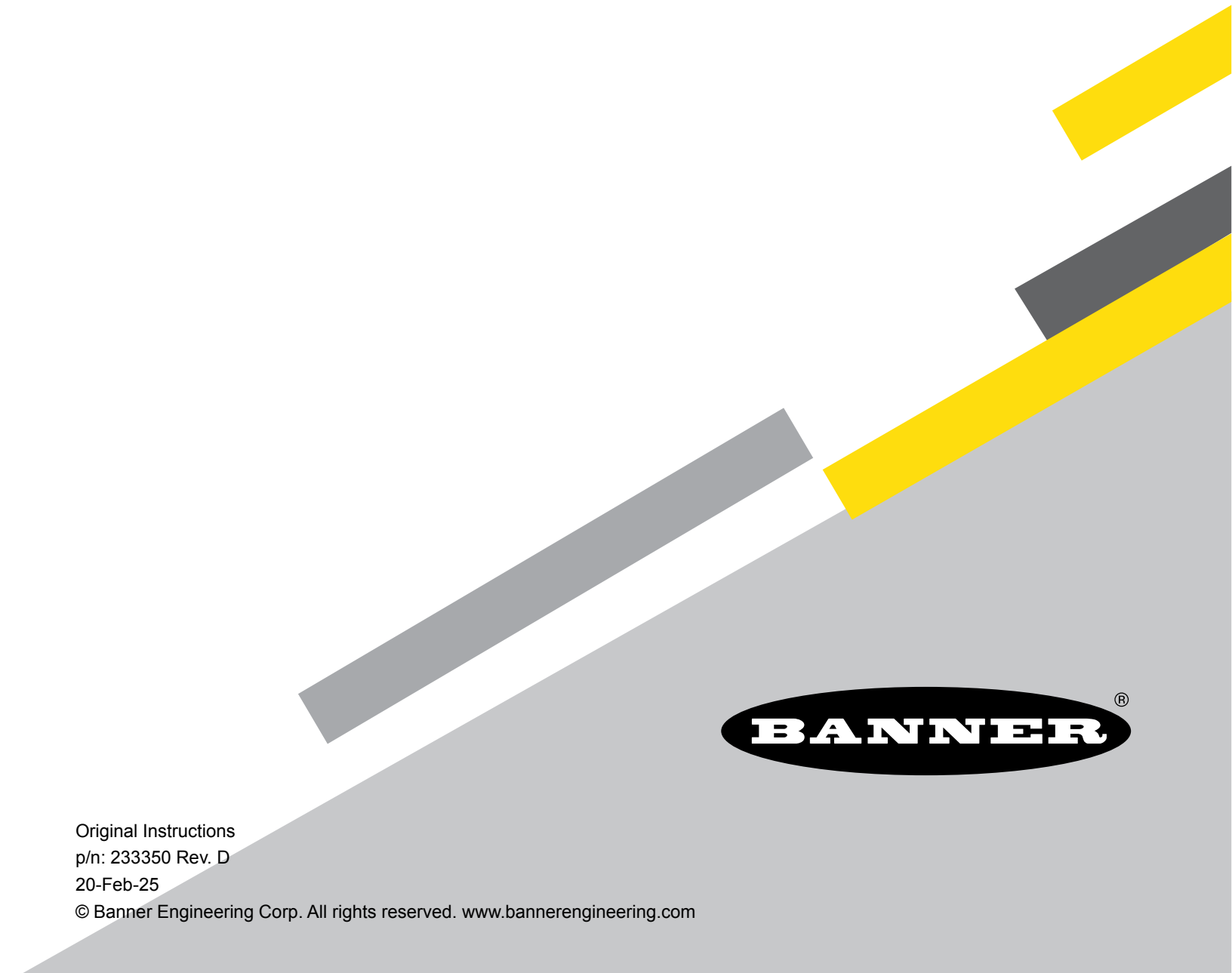
TL70 Basic Modular Tower Light Product Manual



Original Instructions
p/n: 233350 Rev. D
20-Feb-25
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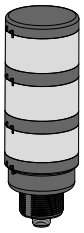
Chapter 1 Features



Banner's TL70 Basic Tower Light is a 70 mm, modular LED indicator with bright and uniform light. The modularity gives the user flexibility to customize tower lights as needed and change positions in the field. The TL70 is also available preassembled for easy installation.

- Light segments have user-selectable solid ON or flashing
- Up to five indicator segments, or four indicator segments plus audible, in one device
- Rugged, water-resistant IP65 housing with UV-stabilized material
- Bright, uniform indicator segments appear gray when off to eliminate false indications from ambient light
- Simple and fast connection with M12 quick-disconnect connector

Models

TL70 Basic Base Model Key

Housing	—	Connection
B-TL70B	—	**Q8**
TL70 Basic Base		Q5 = Integral 5-pin M12 male quick-disconnect connector Q8 = Integral 8-pin M12 male quick-disconnect connector

TL70 Basic Segments Model Key

Housing	—	Color/Alarm
SG-TL70B	—	**G**
TL70 Basic Segment		G = Green Y = Yellow R = Red B = Blue W = White O = Orange V = Violet A = Standard Audible

Select the 5-pin base for tower light configurations of up to 4 modules. Select the 8-pin base for tower light configurations of up to 5 modules.

- Example base model number: B-TL70B-Q5
- Example light segment model number: SG-TL70B-G
- Example audible segment model number: SG-TL70B-A

TL70 Basic Pre-Assembled Models

Part Number	Model
814501	TL70B-GYRQ

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Part Number	Model
814502	TL70B-GYRAQ
814503	TL70B-BGYRQ
814504	TL70B-BGYRAQ
814505	TL70B-WBGYRQ

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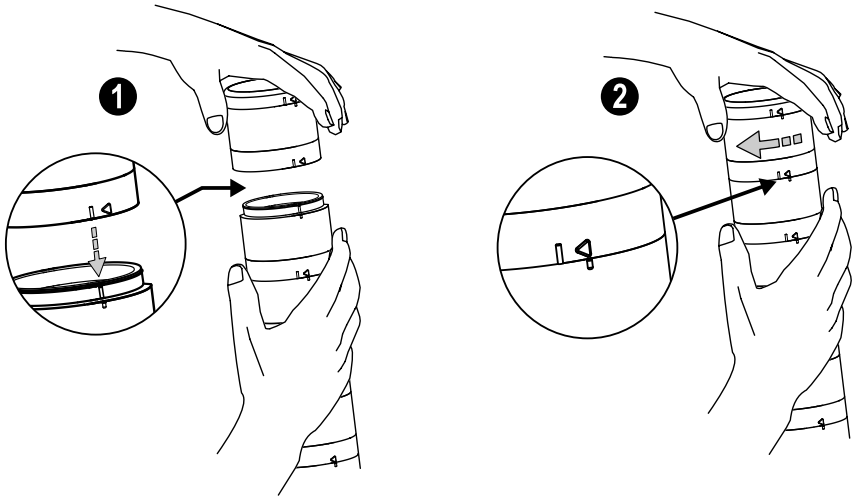
Chapter 2 Assembling the Modules



To assemble the modules:

1. Align the notches on each module and press together.
2. Rotate the top module clockwise to lock into place (notches shown in the locked position).

NOTE: DIP switches should remain in the default off position.

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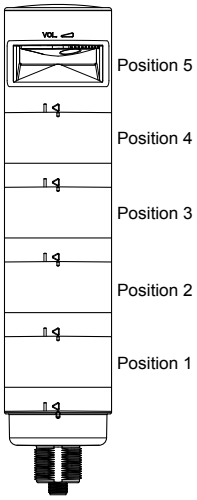
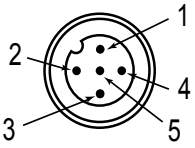
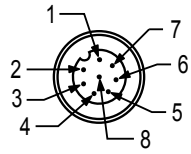
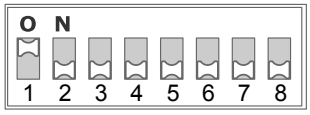
Chapter 3 Wiring

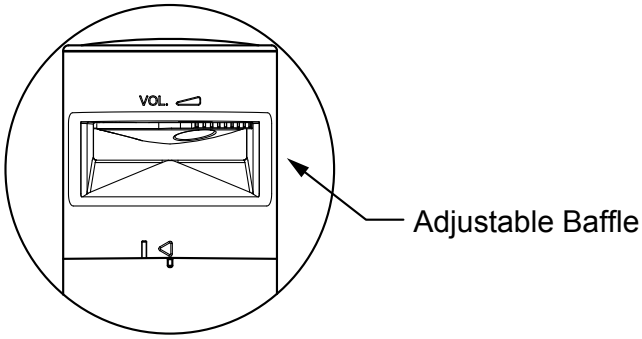
Diagram	5-Pin Pinout	8-Pin Pinout
	 1 = Brown (Position 2) 2 = White (Position 3) 3 = Blue (Ground) 4 = Black (Position 1) 5 = Gray (Position 4)	 1 = White (Position 3) 2 = Brown (Position 2) 3 = Green (Not used) 4 = Yellow (Position 5) 5 = Gray (Position 4) 6 = Pink (Position 1) 7 = Blue (Ground) 8 = Red (Not used)

Flash/Pulse Control

The DIP switch is located in the TL70B base segment. DIP switch numbers 1-5 correlate to Positions 1-5 (see diagram above). DIP switch number 7 sets a global speed for the flashing function. DIP switch numbers 6 and 8 are not used.

Diagram	DIP Switch Number	Function	Light Segment		Audible Segment	
			On	Off	On	Off
	1-5	Toggle Flash ON/ OFF	Flash	Steady	Pulse	Continuous
	7	Toggle Flash Speed	1.5 Hz	3 Hz	1.5 Hz	3 Hz

Adjustable audible baffle - for audible models only



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Chapter 4 Specifications

Supply Voltage and Current

12 V DC to 30 V DC

Indicator Color or Audible Model	Maximum Current (mA)		
	at 12 V DC	at 24 V DC	at 30 V DC
Blue, White	204	102	82
Red, Orange, Yellow, Green, Violet	141	71	57
Standard Audible	33	17	14

Supply Protection Circuitry

Protected against transient voltages

Indicators

1 to 5 colors depending on model (Green, Red, Yellow, Blue, White, Orange, and Violet)

Flash Rates: 1.5 Hz ±10% and 3 Hz ±10%

Indicator Response Time

Off Response: 25 µs (maximum) at 12 V DC to 30 V DC

On Response: 2 ms (maximum) at 12 V DC to 30 V DC

Connections

Integral 5-pin M12 male quick-disconnect connector, integral 8-pin M12 male quick-disconnect connector

Operating Conditions

–40 °C to +50 °C (–40 °F to +122 °F)

95% at +50 °C maximum relative humidity (non-condensing)

Environmental Rating

IP65

Audible Alarm

2.7 kHz ± 250 Hz oscillation frequency; maximum intensity (typical) 104 dB at 1 m (3.3 ft)

Audible Adjustment

Rotate the audible baffle until the desired volume is reached

Typical Reduction in Sound Intensity with Audible Adjustment (maximum to minimum): 13 dB

Construction

Bases, Segments, Covers: polycarbonate

Vibration and Mechanical Shock

Vibration: 10 Hz to 55 Hz, 0.5 mm peak-to-peak amplitude per IEC 60068-2-6

Shock: 15G 11 ms duration, half sine wave per IEC 60068-2-27

Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates[1]		Lumen Output (Typical at 25 °C)
		x	y	
Green	525 nm	–	–	67
Red	625 nm	–	–	24
Yellow	590 nm	–	–	55
Blue	475 nm	–	–	25
White	5000 K	–	–	107
Orange	605 nm	–	–	29
Violet	–	0.214	0.133	28

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

Certifications

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

[1] Refer to CIE 1931 chromaticity diagram or color chart, to show equivalent color with indicated color coordinates.

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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.

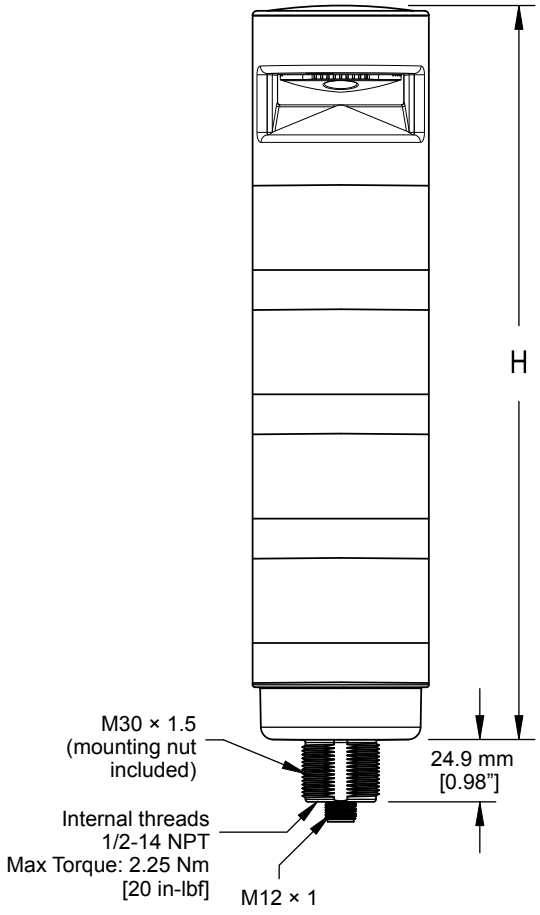
Industry Canada ICES-003(B)

This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.



Model	Height (H)
1 light module	87.6 mm (3.45 in)

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Model	Height (H)
1 light module, 1 audible module	144.3 mm (5.68 in)
2 light modules	137.3 mm (5.41 in)
2 light modules, 1 audible module	194 mm (7.64 in)
3 light modules	187 mm (7.36 in)
3 light modules, 1 audible module	243.7 mm (9.59 in)
4 light modules	236.7 mm (9.32 in)
4 light modules, 1 audible module	293.4 mm (11.55 in)
5 light modules	286.4 mm (11.28 in)

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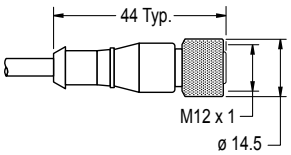
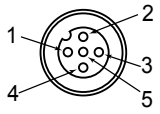
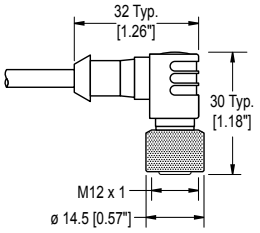
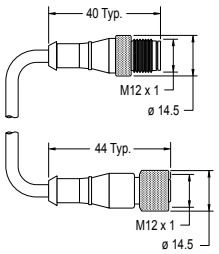
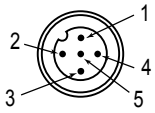
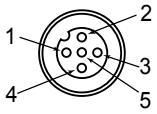
Cordsets

5-Pin Single-Ended M12 Female Cordsets				
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 Double-Ended M12 Female to M12 Male Cordsets					
Model	**Length**	**Style**	**Dimensions**	**Pinout (Male)**	**Pinout (Female)**
MQDEC-501SS	0.31 m (1.02 ft)	Male Straight/Female Straight			
MQDEC-503SS	0.91 m (2.99 ft)			1 = Brown 2 = White 3 = Blue	4 = Black 5 = Gray
MQDEC-506SS	1.83 m (6 ft)				
MQDEC-512SS	3.66 m (12 ft)				
MQDEC-515SS	5 m (16.4 ft)				
MQDEC-530SS	9 m (29.5 ft)				
MQDEC-550SS	15 m (49.2 ft)				

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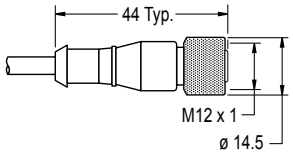
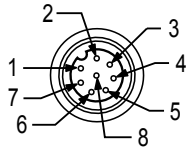
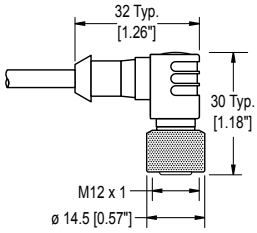
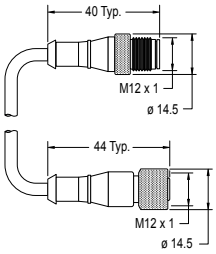
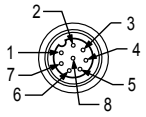
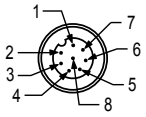
8-Pin Single-Ended M12 Female Cordsets					
Model	**Length**	**Style**	**Dimension**	**Pinout (Female)**	
MQDC1-803	1 m (3.2 ft)	Straight			
MQDC1-806	2 m (6.5 ft)				
MQDC1-815	5 m (16.4 ft)				
MQDC1-830	9 m (29.5 ft)				
MQDC1-850	15 m (49.2 ft)				
MQDC1-806RA	2 m (6.5 ft)	Right-Angle		1 = White 2 = Brown 3 = Green 4 = Yellow	5 = Gray 6 = Pink 7 = Blue 8 = Red
MQDC1-815RA	5 m (16.4 ft)				
MQDC1-830RA	9 m (29.5 ft)				
MQDC1-850RA	15 m (49.2 ft)				

8-Pin Double-Ended M12 Female to M12 Male Cordsets					
Model	**Length**	**Style**	**Dimensions**		**Pinout**
MQDEC1-803SS	1 m (3.28 ft)	Male Straight / Female Straight			1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red
MQDEC1-806SS	2 m (6.56 ft)				
MQDEC1-810SS	3 m (9.84 ft)				
MQDEC1-815SS	5 m (16.4 ft)				
MQDEC1-830SS	9 m (29.5 ft)		Female 	Male 	
MQDEC1-850SS	15 m (49.2 ft)				
MQDEC1-8100SS	30.5 m (100 ft)				
MQDEC1-8200SS	61 m (200 ft)				

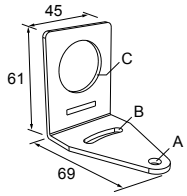
Mounting Brackets

All measurements are listed in millimeters, unless noted otherwise. The measurements provided are subject to change.

SMB30A

- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-gauge stainless steel

Hole center spacing: A to B=40
Hole size: A=ø 6.3, B= 27.1 × 6.3, C=ø 30.5



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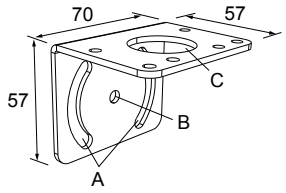
SMB30MM

- 12-gauge stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor

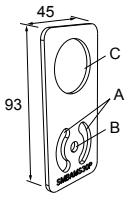
Hole center spacing: A = 51, A to B = 25.4
Hole size: A = 42.6 × 7, B = ø 6.4, C = ø 30.1



SMBAMS30P

- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-gauge 300 series stainless steel

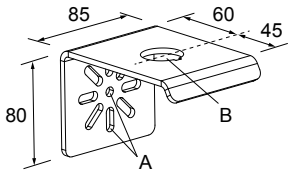
Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 × 7.0, B=ø 6.5, C=ø 31.0



SSA-MBK-EEC1

- Single 30 mm hole
- 8 gauge steel, black finish (powder coat)
- Front surface for customer-applied labels

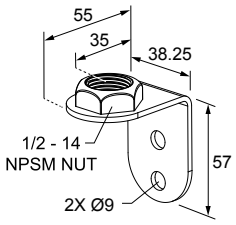
Hole size: A = ø 7 , B = ø 30



LMBE12RA35

- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 35 mm

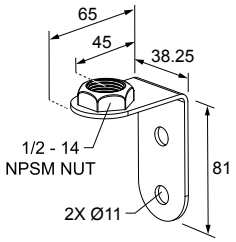
Hole center spacing: 20.0



LMBE12RA45

- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 45 mm

Hole center spacing: 35.0



Elevated Mount System

Model	Features	Components
SA-M30 - Black Polycarbonate	• Streamlined black PC or Gray PC thread cover • Covers the outer M30 threads on the light's base • Mounting hardware included	

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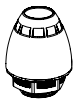
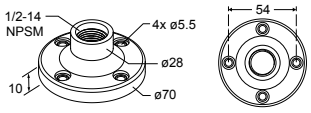
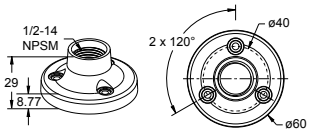
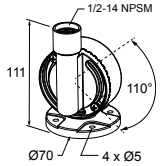
Model			Features	Components
Polished 304 Stainless Steel	**Black Anodized Aluminum**	**Clear Anodized Aluminum**	• Elevated-use stand-off pipe (½ in. NPSM/DN15) • Polished 304 stainless steel, black anodized aluminum, or clear anodized aluminum surface • ½ in. NPT thread at both ends: one end screws into the internal threads of the light's base, and one end screws into the mounting base adapter/ cover • Compatible with most industrial environments	
SOP-E12-150SS 150 mm (6 in) long	**SOP-E12-150A** 150 mm (6 in) long	**SOP-E12-150AC** 150 mm (6 in) long		
SOP-E12-300SS 300 mm (12 in) long	**SOP-E12-300A** 300 mm (12 in) long	**SOP-E12-300AC** 300 mm (12 in) long		
SOP-E12-900SS 900 mm (36 in) long	**SOP-E12-900A** 900 mm (36 in) long	**SOP-E12-900AC** 900 mm (36 in) long		
SA-E12M30 - Black Acetal			• Streamlined black acetal or white UHMW mounting base adapter/cover • Connects between ½ in. NPSM/DN15 pipe and 30 mm (1-3/16 in) drilled hole • Mounting hardware included	

Pipe Mounting Flange			
Model	**Description**	**Construction**	
SA-F12	• Elevated-use stand-off pipes (½ in, NPSM/DN15) • M5 mounting hardware and nitrile gasket included	Die-cast zinc base with black paint	
SA-F12-3	• Elevated-use stand-off pipes (½ in, NPSM/DN15) • M4 mounting hardware and nitrile blend gasket included	Black Polycarbonate	

Foldable Mounting Brackets			
Model	**Features**	**Construction**	
SA-FFB12	• For use with 1/2 inch stand-off pipes • Stainless steel hardware	Black polycarbonate	

LMB Sealed Right Angle Bracket

Model	Description	Construction	
LMB30RA	**Direct-Mount Models:** Bracket kit with base, 30 mm adapter, set screw, fasteners, O-rings, and gaskets.	Black polycarbonate	
LMBE12RA	**Pipe-Mount Models:** Bracket kit with base, ½-14 pipe adapter, set screw, fasteners, O-rings, and gaskets. For use with stand-off pipe (listed and sold separately).	Black polycarbonate	

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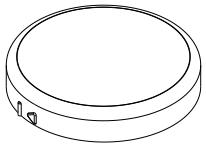
Top Replacement Cover

C-TL70 Replacement Top Cover • Black polycarbonate housing • Fits TL70 tower lights • IP65 rated	

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Chapter 6 Product Support and Maintenance

Clean with Mild Detergent and Water

Wipe down the enclosure and the display with a soft cloth that has been dampened with a mild detergent and warm water solution.

Repairs

Contact Banner Engineering for troubleshooting of this device. **Do not attempt any repairs to this Banner device; it contains no field-replaceable parts or components.** If the device, device part, or device component is determined to be defective by a Banner Applications Engineer, they will advise you of Banner's RMA (Return Merchandise Authorization) procedure.

> **IMPORTANT:** If instructed to return the device, pack it with care. Damage that occurs in return shipping is not covered by warranty.

Contact Us

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For worldwide locations and local representatives, visit www.bannerengineering.com.

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