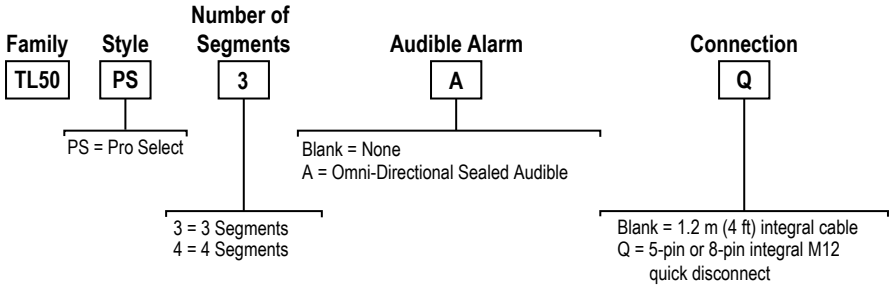
TL50 Pro Select Tower Light

Datasheet

50 mm Programmable Multicolor RGB Tower Light

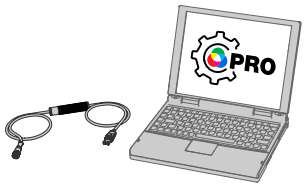
- Rugged, cost-effective, and easy-to-install 3- and 4-segment tower lights
- Programmable using Banner's Pro Editor software and Pro Converter Cable
- Illuminated segments provide easy-to-see operator guidance and indication of equipment status
- Audible models available with omni-directional audible element
- 12 V DC to 30 V DC operation
- No assembly required

Models



Configuration Instructions

Pro Editor

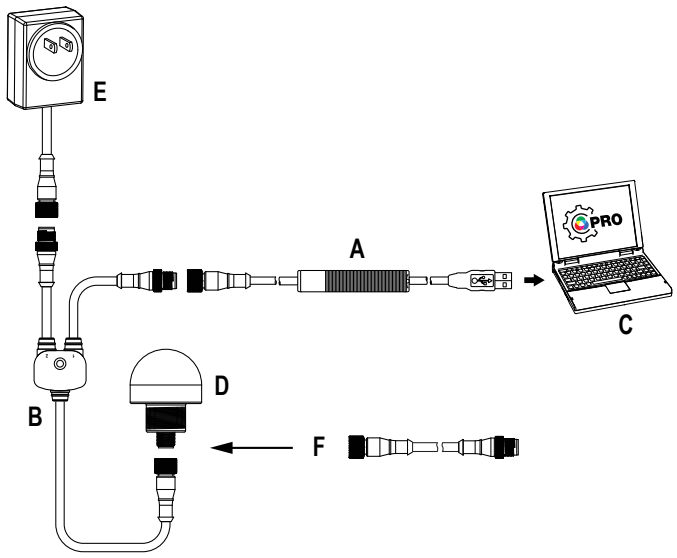


Use Banner's Pro Editor software and Pro Converter Cable to create custom configurations by selecting different colors, flash patterns, and animations.

For more information visit www.bannerengineering.com/proeditor.

Full Preview Connection (Required)

The full preview connection must be used for the TL50 Pro Tower Light, the K90 Pro Indicator, and for Pro-series Strip Lights, and is optional but recommended for other Pro-series enabled devices.



A = Pro Converter Cable (MQDC-506-USB)
B = Splitter (CSB-M1251FM1251M)
C = PC running Pro Editor software
D = Any Banner Pro Series-enabled device (K50 shown)
E = Power Supply (PSW-24-1 or PSD-24-4)
F = 8-Pin to 5-Pin Double-Ended Cordset (MQDC-801-5M-PRO), required for 8-Pin models

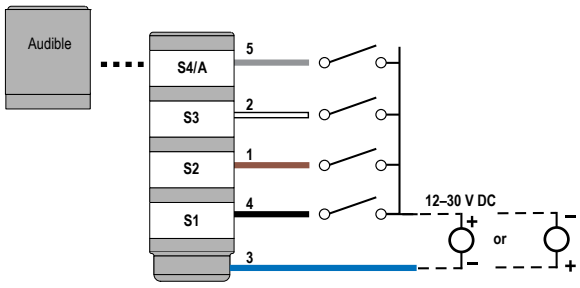
Default Segment Colors

Number of Segments	Colors (Bottom to Top)
3	Green, Yellow, Red
4	Blue, Green, Yellow, Red

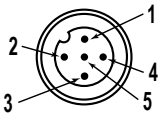
Wiring Diagrams

Note: All models are bimodal and can be wired as PNP or NPN devices.

5-pin/Wire Models

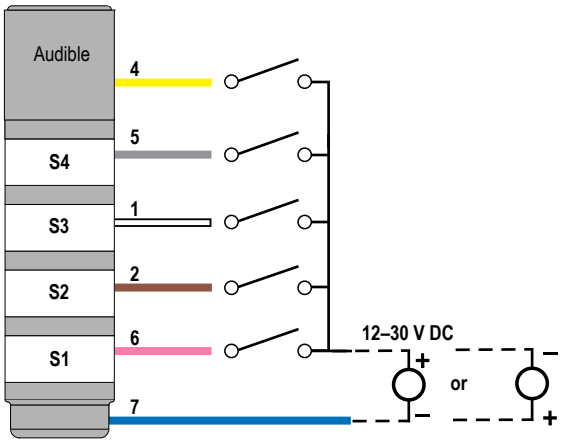


S1 = Segment 1
S2 = Segment 2
S3 = Segment 3
S4 = Segment 4
A = Audible

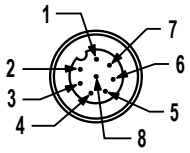


Pin	Color	Segment Mode	Advanced Mode
3	blue	Common	Common (PNP) or 12 V DC to 30 V DC (NPN)
4	black	Segment 1	Reset Input
1	brown	Segment 2	12 V DC to 30 V DC (PNP) or Common (NPN)
2	white	Segment 3	PWM, PFM, Counter, or Timer input
5	gray	Segment 4/Audible	N/A

8-pin/Wire Models



S1 = Segment 1
S2 = Segment 2
S3 = Segment 3
S4 = Segment 4



Pin	Color	Segment Mode	Advanced Mode
7	blue	Common	Common (PNP) or 12 V DC to 30 V DC (NPN)
6	pink	Segment 1	Reset Input
2	brown	Segment 2	12 V DC to 30 V DC (PNP) or Common (NPN)
1	white	Segment 3	PWM, PFM, Counter, or Timer input
5	gray	Segment 4	N/A
4	yellow	Audible	N/A
8	red	N/A	N/A
3	green	N/A	N/A

Pro Editor Configuration for the TL50 Pro Select

Banner's Pro Editor software offers an easy way to configure Pro Series-enabled touch and indicator devices, allowing users full control of device states. The easy-to-use configuration software provides a variety of tools and capabilities to solve a wide range of applications. Pro Editor includes a preview mode that allows users to verify device performance before writing a configuration to a device. Configure any Pro Series-enabled device using the free Pro Editor software, available for download at www.bannerengineering.com/proeditor.

Segment—Use Segment Mode to activate each segment and to control the input wire, color, animation, intensity, and speed.

Segment Mode Animation	Description
Off	Segment is off
Steady	Color 1 is on at defined intensity
Flash	Color 1 flashes at defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random)
Two Color Flash	Color 1 and Color 2 flash alternately at defined speed, color intensities, and pattern (normal, strobe, three pulse, SOS, or random)
Intensity Sweep	Color 1 repeatedly increases and decreases intensity between 0% to 100% at defined speed and color intensity

Run—Use the TL50 Pro Select's Run Mode to control the entire tower light and to control the input wire, color, animation, intensity, and speed. Run Mode with a larger assigned run number overrides the lower assigned run numbers.

Run Mode Animation	Description
Off	All tower light segments are off
Steady	Color 1 is solid on for every tower light segment at defined intensity
Flash	Color 1 flashes on every tower light segment at defined speed, color intensity, and pattern (normal, strobe, three pulse, SOS, or random)
Two Color Flash	Color 1 and Color 2 flash alternately on every segment at defined speed, color intensities, and pattern (normal, strobe, three pulse, SOS, or random)
Intensity Sweep	Color 1 repeatedly increases and decreases intensity between 0% to 100% on every segment at defined speed and color intensity
Scroll	Color 1 fills two segments and those segments move in one direction up or down against the background of Color 2 at the defined speed, color intensities, and rotational direction
Bounce	Color 1 fills two segments and those segments move up and down between the top and bottom of the tower against the background of Color 2 at the defined speed, color intensities, and rotational direction
Color Spectrum	The tower light scrolls through the 14 predefined colors with a different color on each segment at the defined speed, Color 1 intensity, and rotational direction

Level—The light adjusts position and color continuously based on the PFM or PWM input value and defined animation in up to four thresholds while maintaining an optional steady background for segments outside the active threshold range. The PFM signal frequency range can be from 100 to 10,000 Hz. The PWM duty cycle range can be from 0 to 100%.

Timer—The timer option uses the TL50 Pro Select as a timer, counting up or counting down. Set the total time and choose up to four thresholds to change the visual appearance of the device as time advances. The timer starts when 12 V DC to 30 V DC is applied to the timer run input wire, and paused when left floating or tied to ground. The timer resets when 12 V DC to 30 V DC is applied to the reset wire. The timer automatically resets when it reaches the final count. A steady global background can be applied, from which color and intensity can be defined.

Counter—The counter option counts up or down by converting input pulses into movement of segments along the length of the device based on up to four thresholds that define animations. When the rising edge of an 12 V DC to 30 V DC pulse is applied to the counter input wire, the count increases by one. The user can choose whether the counter resets or the count decreases by one when 12 V DC to 30 V DC is applied to the control input wire. The counter automatically resets when it reaches the final count. A steady global background can be applied, from which color and intensity can also be defined.

Specifications

Supply Voltage and Current
12 V DC to 30 V DC
Maximum current per LED segment:
92 mA at 12 V DC
50 mA at 24 V DC
44 mA at 30 V DC
Maximum current for Omni-Directional Sealed Audible: 45 mA

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Input Rating
Leakage Current Immunity: 400 uA
Indicator On/Off Response Time: 250 ms (maximum)
PWM Duty Cycle Range: 0 to 100%
PFM Frequency Range: 100 to 10000 Hz

Connections
5-pin or 8-pin integral M12 quick disconnect; 1 m (6.5 ft) integral PVC cable, depending on model
Models with a quick disconnect require a mating cordset

Construction
Bases, Covers, Light Segment: Polycarbonate

Operating Conditions
Non-Audible: –40 °C to +50 °C (–40 °F to +122 °F)
Audible: –20 °C to +50 °C (–4 °F to +122 °F)
95% at +50 °C maximum relative humidity (non-condensing)

Certifications

Environmental Rating
IP65, UL Type 4X

Vibration and Mechanical Shock
Vibration: 10 Hz to 55 Hz, 1.0 mm peak-to-peak amplitude per IEC 60068-2-6
Shock: 30G 11 ms duration, half sine wave per IEC 60068-2-27

Audible Alarm
3.1 kHz ± 500 Hz oscillation frequency
Intensity: 93 dB at 1 m (typical)

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 (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

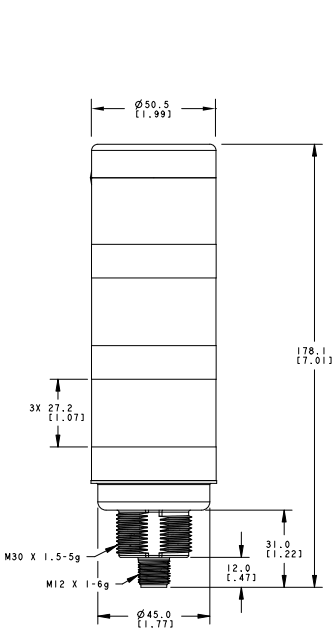
Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates [1]		Lumen Output Per Segment (Typical at 25 °C)
		X	Y	
Red	620	0.668	0.318	8.4
Green	522	0.195	0.710	15.5
Yellow	576	0.455	0.500	22.4
Blue	466	0.139	0.083	3.8
Magenta	–	0.370	0.185	10.0
Cyan	493	0.163	0.352	17.1
White	5700 K	0.326	0.347	24.4
Amber	589	0.539	0.431	15.1
Rose	–	0.494	0.238	8.4
Lime Green	562	0.367	0.567	18.8
Orange	599	0.600	0.382	11.6
Sky Blue	486	0.153	0.262	16.7
Violet	–	0.223	0.119	6.6
Spring Green	508	0.180	0.520	15.8

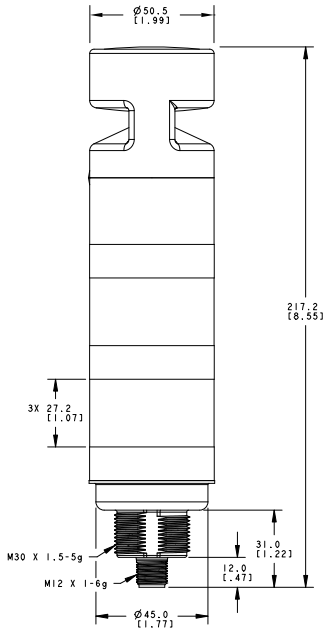
[1] Refer to CIE 1931 chromaticity diagram or color chart to show equivalent color with indicated color coordinates

Dimensions

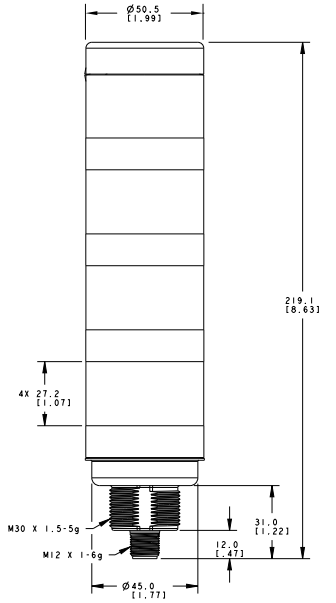
All measurements are listed in millimeters [inches], unless noted otherwise.



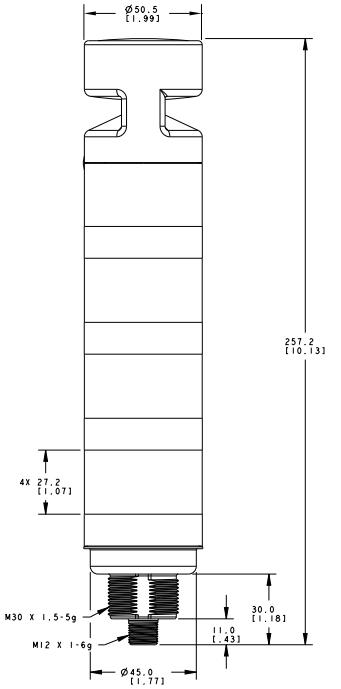
Standard Models



Audible Models



Standard Models



Audible Models

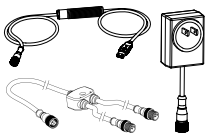
Accessories

Pro Editor Hardware

PRO-KIT

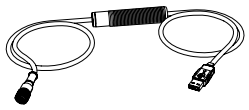
Includes:

- Pro Converter Cable (MQDC-506-USB)
- Splitter (CSB-M1251FM1251M)
- Power Supply (PSW-24-1)



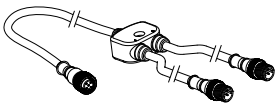
MQDC-506-USB

- Pro Converter Cable
- 1.83 m (6 ft) length 5-pin M12 quick disconnect to Device and USB to PC
- Required for connection to Pro Editor



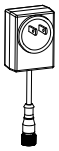
CSB-M1251FM1251M

- 5-pin parallel Y splitter (Male-Male-Female)
- For full Pro Editor preview capability
- Requires external power supply, sold separately



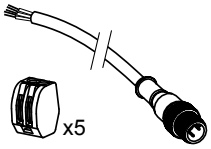
PSW-24-1

- 24 V DC, 1 A power supply
- 2 m (6.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately



ACC-PRO-CABLE5

- Mating accessory for cabled and terminal models
- 150 mm (6 inch) PVC cable with M12 quick disconnect
- Lever wire nuts included (qty 5)
- Required to connect cabled models and screw terminal models to Pro Converter Cable, sold separately

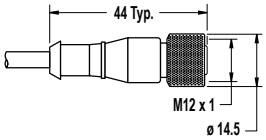
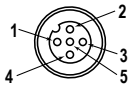
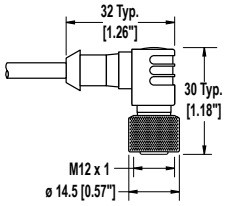


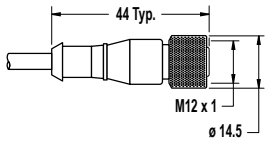
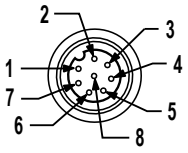
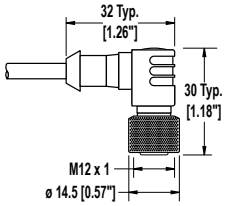
MQDC-801-5M-PRO

- 8-pin to 5-pin double-ended cordset
- 0.31 m (1 ft) PVC cable with M12 quick disconnects
- Required to connect 8-pin Pro Series-enabled devices to Pro Converter Cable (MQDC-506-USB), sold separately

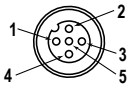
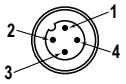
Cordsets

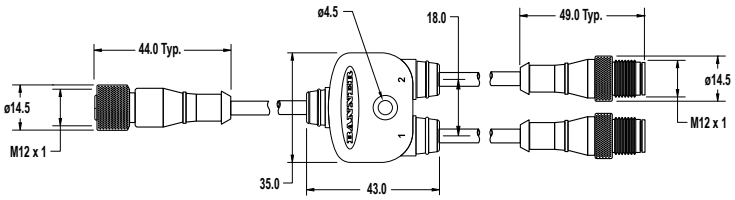
5-Pin Threaded M12 Cordsets—Single Ended

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
MQDC1-506	2 m (6.5 ft)			
MQDC1-515	5 m (16.4 ft)			
MQDC1-530	9 m (29.5 ft)			
MQDC1-506RA	2 m (6.5 ft)	Right-Angle		
MQDC1-515RA	5 m (16.4 ft)			
MQDC1-530RA	9 m (29.5 ft)			

8-Pin Threaded M12 Cordsets with Open-Shield—Single Ended				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
MQDC2S-806	2.04 m (6.7 ft)	Straight		 1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red
MQDC2S-815	5.04 m (16.54 ft)			
MQDC2S-830	10.04 m (32.95 ft)			
MQDC2S-850	16 m (52.49 ft)			
MQDC2S-806RA	2 m (6.56 ft)	Right-Angle		
MQDC2S-815RA	5 m (16.4 ft)			
MQDC2S-830RA	10 m (32.81 ft)			
MQDC2S-850RA	16 m (52.49 ft)			

Splitter Cables for Use with IO-Blocks

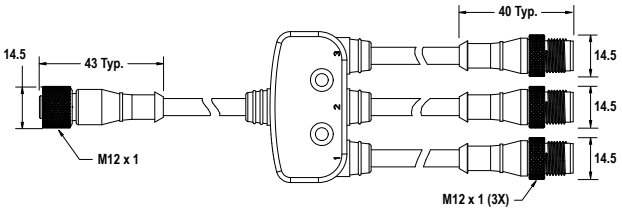
5-Pin Threaded M12 to 4-Pin Threaded M12 Combiner Cordset with Flat Junction			
Model	**Branches (Male)**	**Trunk (Female)**	**Pinout**
CSF-M12F51M12M41	4-pin Quick Disconnect, 2 × 0.31 m (1.02 ft)	5-pin Quick Disconnect, 0.31 m (1.02 ft)	Female  Male 



Trunk	Branch 1	Branch 2
1 = Brown	1 = NC	1 = NC
2 = White	2 = Brown	2 = Gray
3 = Blue	3 = Blue	3 = Blue
4 = Black	4 = Black	4 = White
5 = Gray		

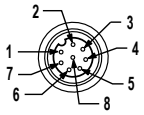
8-Pin Threaded M12 to 4-Pin Threaded M12 Combiner Cordset with Flat Junction

Model	Branches (Male)	Trunk (Female)
CSF3A-M12F81M12M41	4-pin M12 Quick Disconnect, 3 × 0.3 m (0.98 ft)	8-pin M12 Quick Disconnect, 0.3 m (0.98 ft)

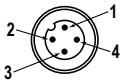


Pinout

Female



Male



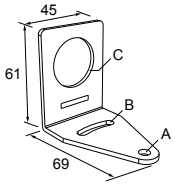
	Trunk	Branch 1	Branch 2	Branch 3
1	White	NC	NC	NC
2	Brown	Brown	Gray	Red
3	Green	Blue	Blue	Blue
4	Yellow	Pink	White	Yellow
5	Gray			
6	Pink			
7	Blue			
8	Red			

Mounting Brackets

All measurements are listed in millimeters [inches], unless noted otherwise.

SMB30A

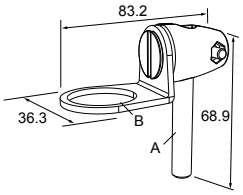
- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel



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

SMB30FA

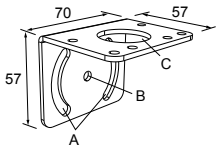
- Swivel bracket with tilt and pan movement for precise adjustment
- Mounting hole for 30 mm sensor
- 12-ga. 304 stainless steel
- Easy sensor mounting to extrude rail T-slot
- Metric and inch size bolt available



Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50
Hole size: B= ø 30.1

SMB30MM

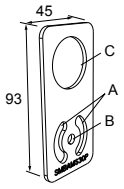
- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor



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

SMBAMS30P

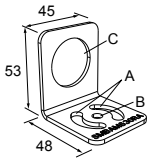
- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel



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

SMBAMS30RA

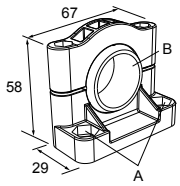
- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel



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

SMB30SC

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included

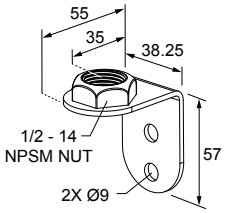


Hole center spacing: A=ø 50.8
Hole size: A=ø 7.0, B=ø 30.0

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

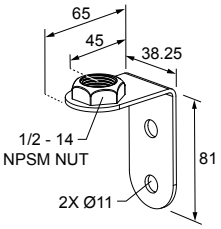
Hole center spacing: 20.0



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

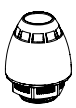
Hole center spacing: 35.0



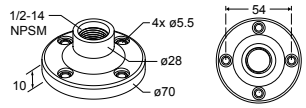
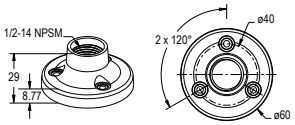
LMB Sealed Right-Angle Bracket

Model	Description	Construction	
LMB30RA	**Direct-Mount Models:** Bracket kit with base, 30 mm adapter, set screw, fasteners, O-rings, and gaskets.	Black polycarbonate	
LMB30RAC		Gray 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	
LMBE12RAC		Gray polycarbonate	

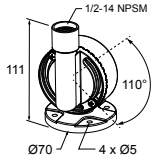
Elevated Mount System

Model			Features	Components
SA-M30TE12 - Black ABS			• Streamlined black ABS or white UHMW stand-off pipe adapter/cover • Connects between 30 mm light base and ½ in. NPSM/ DN15 pipe • Mounting hardware included	
SA-M30TE12C - White UHMW				
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 • 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 ABS			• Streamlined black ABS 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	
SA-E12M30C - White UHMW				

Pipe Mounting Flange

Pipe Mounting Flange			
Model	**Features**	**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

Foldable Mounting Brackets			
Model	**Features**	**Construction**	
SA-FFB12	• For use with 1/2 inch stand-off pipes • Stainless steel hardware	Black polycarbonate	
SA-FFB12C		Gray polycarbonate	

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FCC Part 15 and CAN ICES-3 (B)/NMB-3(B)

This device complies with part 15 of the FCC Rules and 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.

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 and CAN ICES-3 (B)/NMB-3(B). 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 manufacturer.