TL50 Pro Tower Light with IO-Link

Features

50 mm IO-Link Controlled Multicolor RGB Tower Light

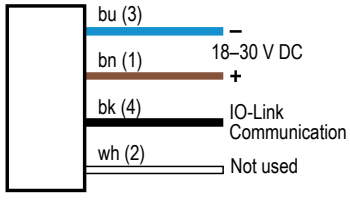


- Rugged, cost-effective, and easy-to-install multi-segment tower lights
- Illuminated segments provide easy-to-see operator guidance and indication of equipment status
- IO-Link gives full access to color, flashing, rotating, and dimming settings, as well as advanced animations like run and level modes which provides dynamic response to changing machine conditions
- Up to 10 segments available
- Available in black or light gray housing to match different machine styles
- Audible models available with standard, sealed, or omni-directional audible element
- Compact and beacon models are more intense in a smaller form factor compared to standard models

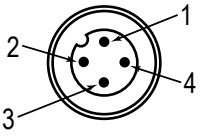
Models

Family	Style	Number of Segments	Audible Alarm	Control	Housing Color	Connector[1]
TL50		**3**	**A**	**K**		**Q**
	Blank = Standard C = Compact BL = Beacon	1 = 1 segment 2 = 2 segments 3 = 3 segments 4 = 4 segments 5 = 5 segments 6 = 6 segments 7 = 7 segments 8 = 8 segments 9 = 9 segments 10 = 10 segments	Blank = None (IP67) A = Audible (IP50) ALS = Sealed audible continuous tone AOS = Omni-directional sealed audible continuous tone AOSI = Omni-directional sealed audible continuous tone with intensity adjustment	K = IO-Link	Blank = Black C = Cool gray	Q = Integral 4-pin M12 male quick-disconnect connector QP = 150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector

Wiring



4-pin M12 Male



Key
1 = Brown
2 = White
3 = Blue
4 = Black

IO-Link Process Data Out (Master to Device)

IO-Link® is a point-to-point communication link between a master device and a sensor and/or light. It can be used to automatically parameterize sensors or lights and to transmit process data. For the latest IO-LINK protocol and specifications, please visit www.io-link.com.

For the latest IODD files, please refer to the Banner Engineering Corp website at: www.bannerengineering.com.

Basic Segment Mode

Use process data to set each segment to off, solid on, flash, or animation mode. Use parameter data to change color, intensity, flash speed, and select animation type.

[1] Models with a quick-disconnect connector require a mating cordset.

Original Instructions
08-Jul-25

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205167
p/n: 205167 Rev. C

ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

Animation	Description
Off	Segment is off
Steady	Color 1 is solid 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)
50/50	Color 1 is displayed on 50% of the segment and Color 2 is displayed on the other 50% of the segment at the defined color intensities
50/50 Rotate	Color 1 is displayed on 50% of the segment and Color 2 is displayed on the other 50% of the segment while rotating at the defined speed, color intensities, and rotational direction
Chase	Color 1 is displayed as a single spot against the background of Color 2 while rotating at the defined speed, color intensities, and rotational direction
Intensity Sweep	Color 1 repeatedly increases and decreases intensity between 0% to 100% at defined speed and color intensity

Advanced Segment Mode

Use process data to activate each segment and control color, intensity, flash, and other animation types. Use parameter data to create custom colors, intensity, and flash speeds.

Animation	Description
Off	Segment is off
Steady	Color 1 is solid 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)
50/50	Color 1 is displayed on 50% of the segment and Color 2 is displayed on the other 50% of the segment at the defined color intensities
50/50 Rotate	Color 1 is displayed on 50% of the segment and Color 2 is displayed on the other 50% of the segment while rotating at the defined speed, color intensities, and rotational direction
Chase	Color 1 is displayed as a single spot against the background of Color 2 while rotating at the defined speed, color intensities, and rotational direction
Intensity Sweep	Color 1 repeatedly increases and decreases intensity between 0% to 100% at defined speed and color intensity

Run Mode

Use process data to control entire tower light and select color, intensity, flash and run mode animations. Use parameter data to create custom colors, intensity, and flash speeds.

Animation	Description
Off	Tower is off
Steady	Color 1 is solid on for every segment at defined intensity
Flash	Color 1 flashes on every 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)
50/50	Color 1 is displayed on 50% of every segment and Color 2 is displayed on the other 50% of every segment at the defined color intensities
50/50 Rotate	Color 1 is displayed on 50% of every segment and Color 2 is displayed on the other 50% of every segment while rotating at the defined speed, color intensities, rotational direction, and segment shift
Chase	Color 1 is displayed as a single spot against the background of Color 2 while rotating at the defined speed, color intensities, rotational direction, and segment shift
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 a defined number of 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 a defined number of 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 scrolls through the 14 predefined colors with a different color on each segment at the defined speed, Color 1 intensity, and rotational direction
Demo	Cycles through color spectrum, 50/50 rotate, bounce, and level mode animations

Level Mode

Use process data to set the level value. Use parameter data to set range, thresholds, colors, intensities, flash speeds, and animation types.

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Animation	Description
Level Mode Value	Value of the level of the tower (between 0 to 65,535)
Full Scale Value	Set the upper limit of the Level Mode Value (between 0 to 65535)
Threshold Type: None	Level Mode Values are displayed on tower as defined by Base color, intensity, and state (steady or flashing).
Threshold Type: Low	Level Mode Values below Low Threshold Value are displayed on segments defined by Low Threshold color, intensity, and state (steady or flashing). Level Mode Values above Low Threshold Value are displayed on segments defined by Base color, intensity, and state (steady or flashing).
Threshold Type: High	Level Mode Values below High Threshold Value are displayed on segments defined by Base color, intensity, and state (steady or flashing). Level Mode Values above High Threshold Value are displayed on segments defined by High Threshold color, intensity, and state (steady or flashing).
Threshold Type: High and Low	Level Mode Values below Low Threshold Value are displayed on segments defined by Low Threshold color, intensity, and state (steady or flashing). Level Mode Values between Low and High Threshold Values are displayed on segments defined by Base color, intensity, and state (steady or flashing). Level Mode Values above High Threshold Value are displayed on segments defined by High Threshold color, intensity, and state (steady or flashing).
Base, Low Threshold, High Threshold, and Background	Colors, Intensities, and States - Set the colors, intensities, and states (steady or flash) the tower will display if the Level Mode Value conforms to the defined threshold type
Dominance	If Non-Dominant is defined, segments display their defined threshold color; if Dominant is defined, all segments display the active threshold color
Segment Style	If Level Mode Value is a partial percentage of a segment, select if segment will be on steady, flashing, or analog dimmed to the partial percentage

Specifications

Supply Voltage and Current

18 V DC to 30 V DC

Maximum current per LED segment:
- 100 mA at 18 V DC
- 75 mA at 24 V DC
- 60 mA at 30 V DC

Maximum current for Standard Audible Alarm: 25 mA

Maximum current for Omni-Directional Sealed Audible: 45 mA

Maximum current for Sealed Audible Alarm: 35 mA

NOTE: Different IO-Link masters have different maximum current limits. Use the current draw data per segment to calculate the maximum current draw of each configuration. For example, a 5 segment tower light with standard audible has a maximum current draw of 0.4 A at 24 V DC.

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Input Response Time

Indicator On/Off: 20 ms (maximum)

Audible Adjustment

Standard Audible Alarm: Unscrew the cover (up to 1.5 turns maximum) to adjust the audible intensity. (Do not exceed 1.5 turns or the cover may detach during operation.) For maximum intensity, rotate the center plug 180° counterclockwise to remove it.

Sealed Audible Alarm and Omni-Directional Sealed Audible Alarm with Intensity Adjustment: Rotate the front cover until the desired intensity is reached.

Omni-Directional Sealed Audible Alarm: No adjustment.

Audible Alarm

Standard Audible Alarm: 2.7 kHz ± 500 Hz oscillation frequency; maximum intensity 92 dB at 1 m (3.3 ft) (typical)

Sealed Audible Alarm: 2.9 kHz ± 250 Hz oscillation frequency; maximum intensity 94 dB at 1 m (3.3 ft) (typical)

Omni-Directional Sealed Audible Alarm: 2.1 kHz ± 250 Hz oscillation frequency; maximum intensity 99 dB at 1 m (3.3 ft) (typical)

Omni-Directional Sealed Audible Alarm with Intensity Adjustment: 2.1 kHz ± 250 Hz oscillation frequency; maximum intensity 95 dB at 1 m (3.3 ft) (typical)

Connections

Integral 4-pin M12 male quick-disconnect connector, or 150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector, depending on model

Models with a quick-disconnect connector require a mating cordset

Construction

Bases and Covers: ABS

Light Segment: Polycarbonate

Operating Conditions

Non-Audible: –40 °C to +50 °C (–40 °F to +122 °F)

Standard and Audible Sealed: –20 °C to +50 °C (–4 °F to +122 °F)

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

Environmental Rating

NEMA/UL Type 13

Non-Audible and Sealed Audible: IP67

Standard Audible: IP50

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

Certifications

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

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

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Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates[2]		Lumen Output Per Segment (Typical at 25 °C)		
		X	Y	Standard	Compact	Beacon
Red	625	0.688	0.301	7.2	6.3	9.8
Green	535	0.22	0.694	17.5	14.1	21.8
Yellow	575	0.46	0.496	23.8	18.9	29.2
Blue	465	0.145	0.052	3.4	2.5	4.1
Magenta	–	0.372	0.171	10.4	8.3	12.6
Cyan	492	0.176	0.339	19.2	14.9	22.9
White	6150 K	0.319	0.337	24.8	19.5	29.9
Amber	588	0.543	0.424	15.3	12.3	19.2
Rose	–	0.507	0.22	8.2	6.7	10.1
Lime Green	561	0.372	0.562	21.2	16.8	25.9
Orange	599	0.606	0.375	11.3	9.3	14.5
Sky Blue	485	0.167	0.253	20.1	15.6	24
Violet	–	0.216	0.089	6.6	5.1	8
Spring Green	509	0.194	0.502	18.2	14.2	21.9

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.

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

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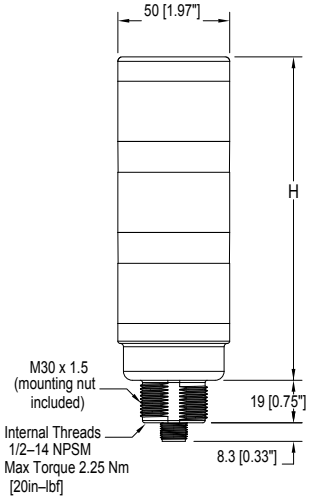
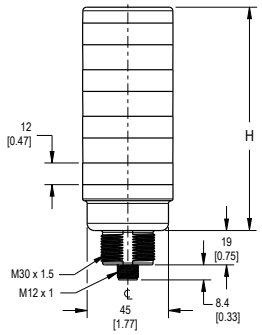
Dimensions

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

Standard Models

Dimensions	# of Segments	Tower Height (H)			
		Non-Audible	Standard Audible	Sealed Audible	Omni-Directional Sealed Audible
	1	61.2 mm (2.4 in)	92 mm (3.6 in)	115.1 mm (4.5 in)	129.1 mm (5.1 in)
	2	101.9 mm (4 in)	132.7 mm (5.2 in)	155.8 mm (6.1 in)	169 mm (6.7 in)
	3	142.6 mm (5.6 in)	173.4 mm (6.8 in)	196.5 mm (7.7 in)	210.5 mm (8.3 in)
	4	183.3 mm (7.2 in)	214.1 mm (8.4 in)	237.2 mm (9.3 in)	251.2 mm (9.9 in)
	5	224 mm (8.8 in)	254.8 mm (10 in)	277.9 mm (10.9 in)	291.1 mm (11.5 in)
	6	264.7 mm (10.4 in)	295.5 mm (11.6 in)	318.6 mm (12.5 in)	332.6 mm (13.1 in)
	7	305.4 mm (12 in)	336.2 mm (13.2 in)	359.3 mm (14.1 in)	373.3 mm (14.7 in)
	8	346.1 mm (13.6 in)	376.9 mm (14.8 in)	400 mm (15.7 in)	414 mm (16.3 in)
	9	386.8 mm (15.2 in)	417.6 mm (16.4 in)	440.7 mm (15.7 in)	454.7 mm (17.9 in)
	10	427.5 mm (16.8 in)	458.3 mm (18 in)	481.4 mm (18.9 in)	495.4 mm (19.5 in)

Compact and Beacon Models

Dimensions	# of Segments	Tower Height (H)			
		Non-Audible	Standard Audible	Sealed Audible	Omni-Directional Sealed Audible
	1	46.2 mm (1.9 in)	77.1 mm (3.1 in)	110.2 mm (4 in)	114.2 (4.5 in)
	2	72 mm (2.9 in)	102.9 mm (4.1 in)	126 mm (5 in)	140 mm (5.5 in)
	3	97.8 mm (3.9 in)	128.7 mm (5.1 in)	151.8 mm (6 in)	165.8 mm (6.5 in)
	4	123.6 mm (4.9 in)	154.5 mm (6.1 mm)	177.6 mm (7 in)	191.6 mm (7.5 in)
	5	149.4 mm (5.9 in)	180.3 mm (7.1 in)	203.4 mm (8 in)	217.4 mm (8.5 in)
	6	175.2 mm (6.9 in)	206.1 mm (8.1 in)	229.2 (9 in)	243.2 (9.5 in)
	7	201 mm (7.9 in)	231.9 mm (9.1 in)	255 mm (10 in)	269 mm (10.5 in)
	8	226.8 mm (8.9 in)	257.7 mm (10.1 in)	280.8 mm (11 in)	294.8 mm (11.5 in)
	9	252.6 mm (9.9 in)	283.5 mm (11.1 in)	306.6 mm (12 in)	320.6 (12.5 in)
	10	278.4 mm (10.9 in)	309.3 mm (12.1 in)	332.4 mm (13 in)	346.4 mm (13.5 in)

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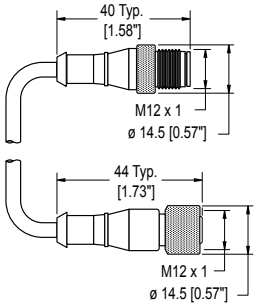
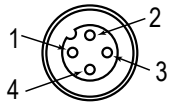
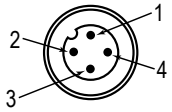
Accessories

Cordsets

4-Pin Double-Ended M12 Female to M12 Male Cordsets				
Model	**Length**	**Style**	**Dimensions**	**Pinout**
MQDEC-401SS	0.31 m (1 ft)	Male Straight/Female Straight		Female  Male  1 = Brown 2 = White 3 = Blue 4 = Black
MQDEC-403SS	0.91 m (2.99 ft)			
MQDEC-406SS	1.83 m (6 ft)			
MQDEC-412SS	3.66 m (12 ft)			
MQDEC-415SS	4.58 m (15 ft)			
MQDEC-420SS	6.10 m (20 ft)			
MQDEC-430SS	9.14 m (30.2 ft)			
MQDEC-450SS	15.2 m (49.9 ft)			

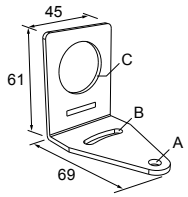
Mounting Brackets

All measurements are listed in millimeters [inches], 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

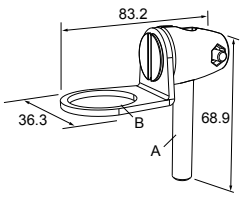
Hole center spacing: A to B=40
Hole size: A=ø 6.3, B= 27.1 × 6.3, C=ø 30.5



SMB30FA

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

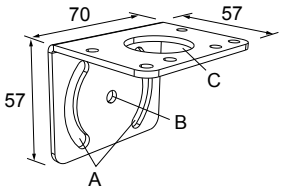
Bolt thread: SMB30FA, A= 3/8 - 16 × 2 in; SMB30FAM10, A= M10 - 1.5 × 50
Hole size: B= ø 30.1



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

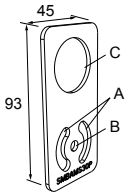
Hole center spacing: A = 51, A to B = 25.4
Hole size: A = 42.6 × 7, B = ø 6.4, C = ø 30.1



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



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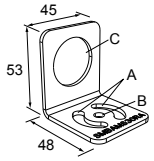
SMBAMS30RA

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

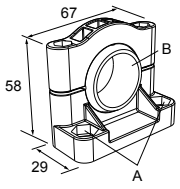
Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 × 7.0, B=ø 6.5, C=ø 31.0



SMB30SC

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

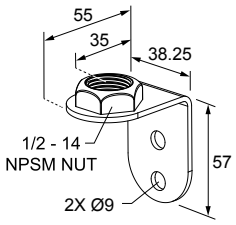
Hole center spacing: A=ø 50.8
Hole size: A=ø 7.0, B=ø 30.0



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

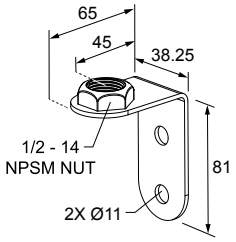
Hole center spacing: 20.0



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	
LMB30RA - Black polycarbonate **LMB30RAC** - Gray polycarbonate	• **Direct-Mount Models** • Bracket kit with base, 30 mm adapter, set screw, fasteners, O-rings, and gaskets.	
LMBE12RA - Black polycarbonate **LMBE12RAC** - Gray polycarbonate	• **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)	

Elevated Mount System

Model	Description	Components
SA-M30TE12 - Black Acetal	• Streamlined black acetal 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		

Continued on page 8

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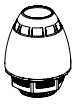
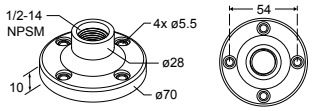
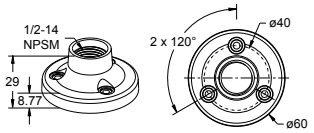
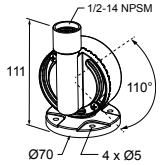
Model			Description	Components
Polished 304 Stainless Steel	**Black Anodized Aluminum**	**Clear Anodized Aluminum**	• Elevated-use stand-off pipe (½ in. NPSM/DN15) • Polished 304 stainless steel, black anodized aluminum, or clear anodized aluminum surface • ½ in. NPT thread at both ends: one end screws 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	
SA-E12M30C - White UHMW				

Pipe Mounting Flange

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

Foldable Mounting Brackets			
Model	**Description**	**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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