Manuals+ — User Manuals Simplified.

**TL70 Pro
Ethernet Modular
Tower Light**

BANNER TL70 Pro Ethernet Modular Tower Light Instruction Manual

Contents

BANNER TL70 Pro Ethernet Modular Tower Light

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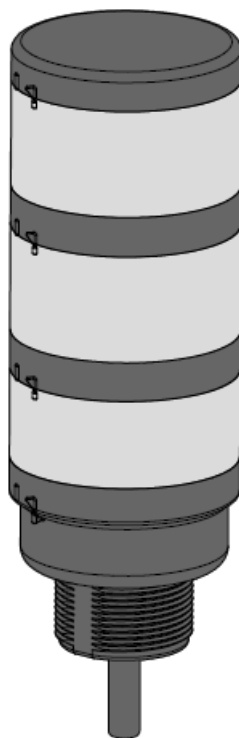
Banner's TL70 Pro Ethernet Modular Tower Light is a 70 mm, modular LED indicator with bright and uniform light. The modularity gives the user flexibility to customize tower lights as needed and change positions in the field. The TL70 is also available preassembled for easy installation.

- Modbus TCP/IP, EtherNetIP, and PROFINET control allows access to full color, flashing, and dimming settings, as well as advanced animations and audible tones
- Up to five indicator segments and one audible segment 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

Segment Models

Model	Description
SG-TL70P-L	RGB light segment
SG-TL70P-A	Audible segment

Base Models

| Model	Description
B-TL70POE-QPD	Power over Ethernet (PoE) base module with 475 mm (18.7 in) cable with a 4-pin D-Code M12 female quick-disconnect connector
B-TL70PE-Q2PE	Ethernet base module with dual cables: • One 475 mm (18.7 in) cable with a 4-pin D-Code M12 female quick-disconnect connector • One 475 mm (18.7 in) cable with a 4-pin A-Code M12 male quick-disconnect connector

Pre-Assembled Models

Model	Description
TL70POE3QPD	Power over Ethernet (PoE) with three RGB segments
TL70POE3AQPD	Power over Ethernet (PoE) with three RGB segments and an audible segment
L70PE3Q2PE	Ethernet with three RGB segments
TL70PE3AQ2PE	Ethernet with three RGB segments and an audible segment

Installation Instructions

Assembling the Modules
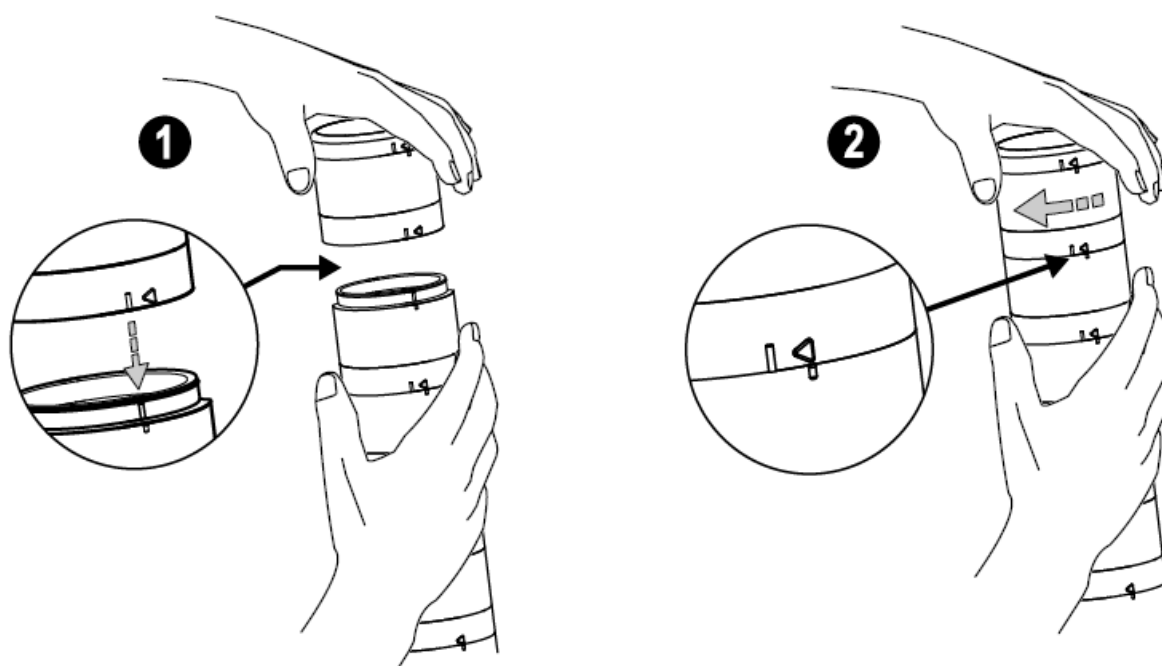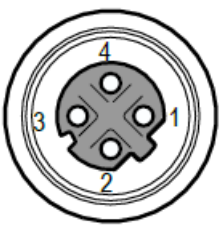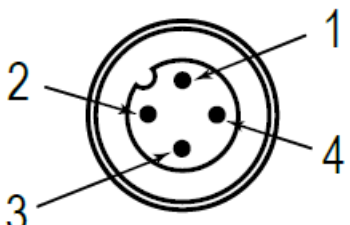

To assemble the modules:

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).

Wiring

Wiring for Power over Ethernet (PoE) Models

Pinout	Pin	Connection (802.3af mode A, mixed DC and data)
475 mm (18.7 in) cable with 4-pin D-Code M12 Female Quick-Disconnect Connector	1	TX+ / DC-
	2	RX+ / DC+
	3	TX- / DC-
	4	RX- / DC+

Wiring for Ethernet Models

Pinout	Pin	Connection
475 mm (18.7 in) cable with 4-pin D-Code M12 Female Quick-Disconnect Connector	1	TX+
	2	RX+
	3	TX-
	4	RX-
475 mm (18.7 in) cable with 4-pin A-Code M12 Male Quick-Disconnect Connector	1	Brown wire: 18 V DC to 30 V DC
	2	White wire: Unused
	3	Blue wire: DC common
	4	Black wire: Unused

Configuration Instructions

For more information about the TL70 Pro Ethernet Modular Tower Light device registers, refer to document PN **243473**.

**Modbus TCP and EtherNet/IP Configuration**

- By default, the TL70 Pro Ethernet Tower Light is configured to communicate via Modbus TCP or EtherNet/IP without the need to connect the device to a computer for setup.
- Plug the tower light into a switch, and use the default IP address of 192.168.0.1 and subnet mask of 255.255.255.0 to connect via Modbus TCP or EtherNet/IP.

PROFINET Configuration

Connect the TL70 Ethernet Tower Light to the computer directly or through a switch.

1. Open the DXM Configuration Software and select DXMR90x from the Select DXM Model drop-down menu.

2. Click Scan Network for DXMs to find the correct IP Address, or enter the IP Address directly if it is known.

3. Click Connect.
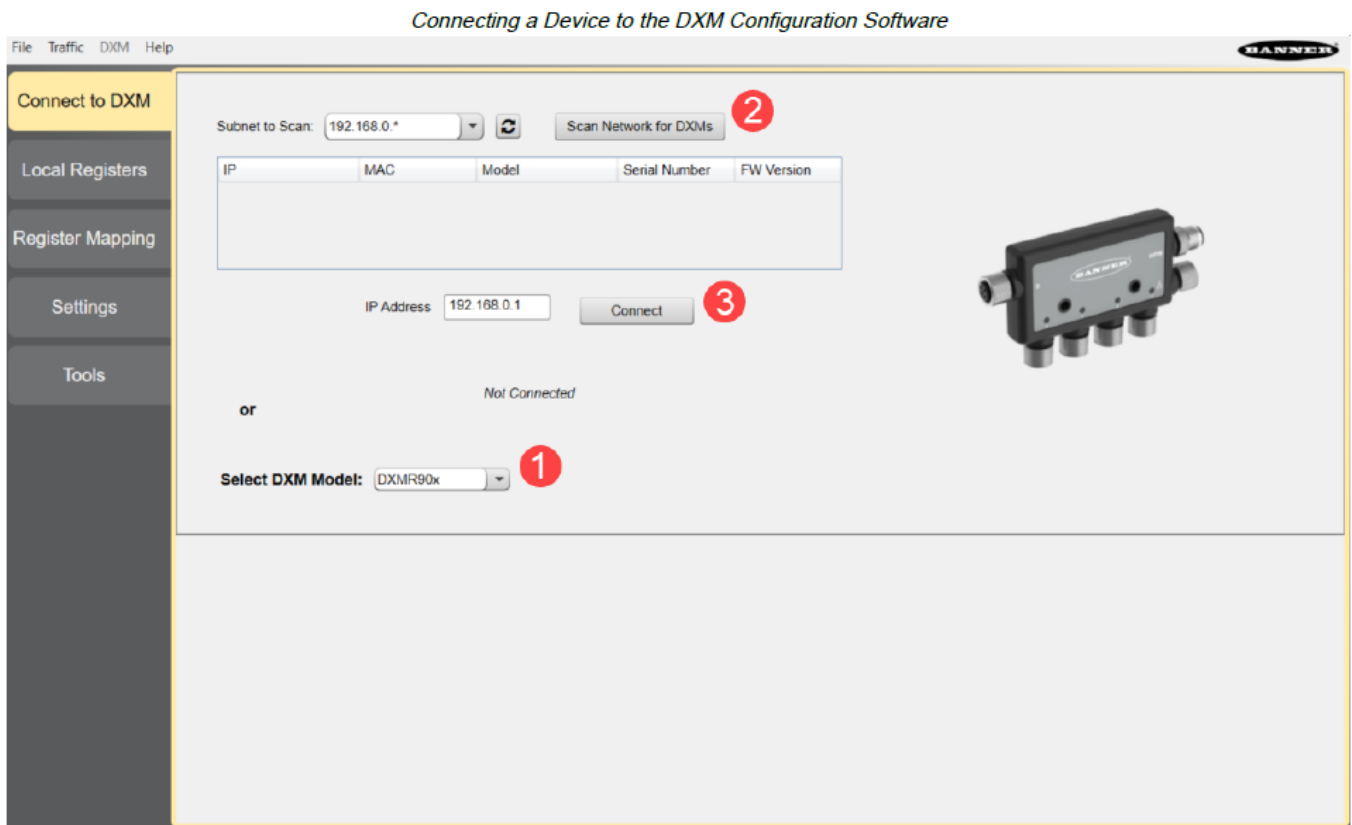
IMPORTANT: Import the tower light configuration before making any changes to the program. Select DXM › Get Configuration from DXM in the toolbar menu to save the configuration to the computer and import it into the software.

After the configuration is imported:

1. Select Settings.

2. Select Ethernet.

3. Check Enable Profinet.
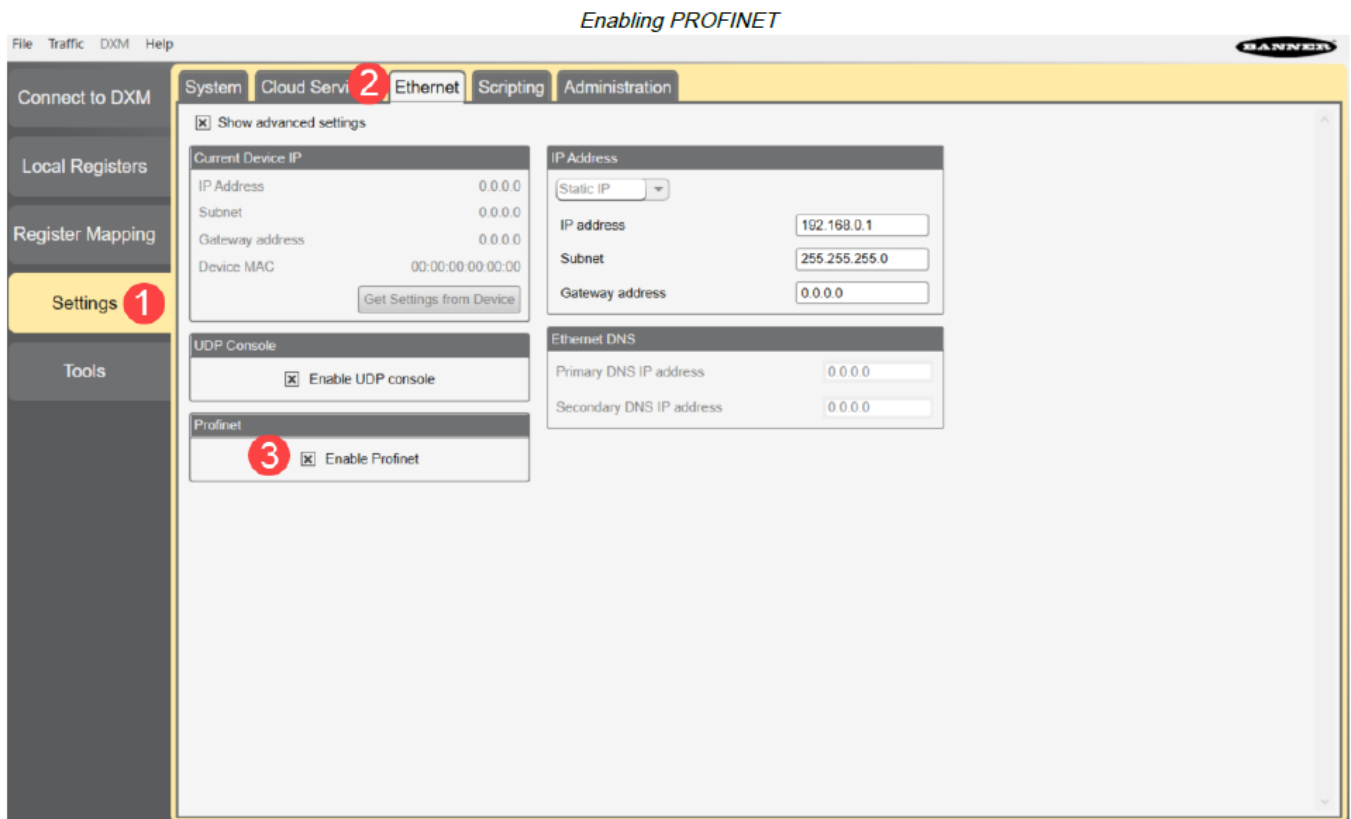
When complete, select File › Save, and then select DXM and Send Configuration to DXM to send the PROFINETenabled configuration to the tower light.
The tower light can now be connected over PROFINET.

Tower Light Segment Modes

Basic Segment Mode

- Use a single run time register per LED segment to set it to Off, On, Flash, or Animation mode.
- Use a single run time register for an audible segment to set it to Off or On.
- Use additional configuration registers to change color, intensity, flash speed, and select animation type on LED segments and change volume and tone on audible segment.

Advanced Segment Mode

- Use multiple run time registers per LED segment to control color, intensity, flash, and other animation types.
- Use multiple run time registers for an audible segment to control sync, volume, and tone settings.
- Use additional configuration registers to create custom intensity and flash speeds.

LED Segment Control

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
Two Color Flash	Color 1 and Color 2 flash alternately at defined speed, color intensities, and pattern

Animation	Description
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 and color intensities
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
Demo	Demo sequence cycles through several sets of colors and configurations to highlight example applications

Audible Segment Control

Setting	Description
Audible State	Sets the segment to off, on, or synced to flash pattern of last LED segment
Audible Volume	Defines the volume of the audible tone
Audible Tone	Defines the audible tone frequency

Specifications

Supply Voltage

- **Power over Ethernet models:** 42.5 V DC to 57 V DC
  - PoE (Class 0 – 802.3af, 802.3at Type 1)
- **Ethernet models:** 18 V DC to 30 V DC

Supply Current

Device	Typical Current (mA) per Device						Max Current (mA)
	18 V DC	24 V DC	30 V DC	42.5 V DC	50 V DC	57 V DC	
PoE base	–	–	–	40	35	30	50
Ethernet base	60	45	40	–	–	–	75
Light and Audible segment	110	85	75	45	40	35	125

Environmental Rating

- IP65

Supply Protection Circuitry

- Protected against reverse polarity and transient voltages

Initial Startup Time

- 30 seconds

Construction

- Bases, segments, and covers: polycarbonate

Connections

- See

Operating Temperature

- –40 °C to +50 °C (–40 °F to +122 °F)
- 95% at +50 °C maximum relative humidity (non-condensing)

Audible Alarm

- Tone 0: 1.7 kHz ± 250 Hz oscillation frequency; maximum intensity (typical) 81 dB at 1 m (3.3 ft)
- Tone 1: 2.2 kHz ± 250 Hz oscillation frequency; maximum intensity (typical) 100 dB at 1 m (3.3 ft)
- Tone 2: 2.7 kHz ± 250 Hz oscillation frequency; maximum intensity (typical) 104 dB at 1 m (3.3 ft)

Vibration and Mechanical Shock

- Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 0.5 mm amplitude, 5 minutes sweep, 30 minutes dwell)
- Meets IEC 60068-2-27 requirements (Shock: 15G 11 ms duration, half sine wave)

Certifications

C E **Banner Engineering BV**

- Park Lane, Culliganlaan 2F bus 3 1831 Diegem, BELGIUM

UK CA **Turck Banner LTD Blenheim House**

- Blenheim Court
- Wickford, Essex SS11 8YT GREAT BRITAIN

Default Light Segment Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates(1)		Lumen Output Per Segment (Typical at 25 °C)
		X	Y	
Green	532	0.181	0.735	34.8
Red	621	0.691	0.308	15.4
Yellow	578	0.473	0.474	21
Blue	467	0.137	0.056	27.6
White	5700K	0.328	0.337	29.7
Cyan	492	0.150	0.334	20.9
Magenta	–	0.379	0.177	18.7
Amber	590	0.552	0.414	6.6
Rose	–	0.508	0.230	9.3
Lime Green	565	0.393	0.535	23.8
Sky Blue	485	0.146	0.241	14.1
Orange	600	0.611	0.370	24.1
Violet	–	0.212	0.091	19.6
Spring Green	509	0.157	0.553	12.7

Dimensions

M30 × 1.5
(mounting nut
included)

H

24.9 mm
[0.98"]
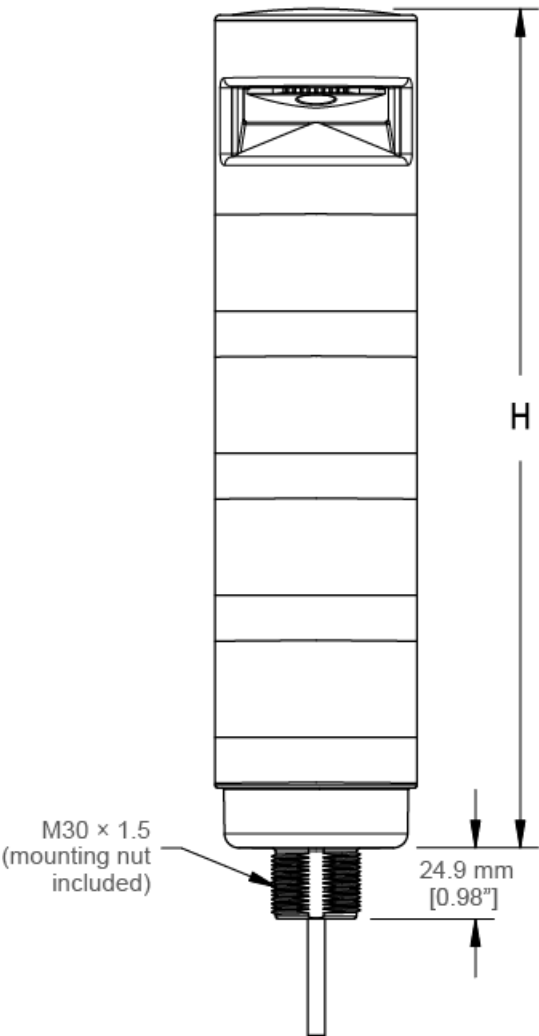
Model	Height (H)
1 light module	87.6 mm (3.45 in)
1 light module, 1 audible module	144.3 mm (5.68 in)
2 light modules	137.3 mm (5.41 in)
2 light modules, 1 audible module	194 mm (7.64 in)
3 light modules	187 mm (7.36 in)
3 light modules, 1 audible module	243.7 mm (9.59 in)
4 light modules	236.7 mm (9.32 in)
4 light modules, 1 audible module	293.4 mm (11.55 in)
5 light modules	286.4 mm (11.28 in)
5 light modules, 1 audible module	343.1 mm (13.51 in)

FCC STATEMENT

FCC Part 15 Class A for Unintentional Radiators

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(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.
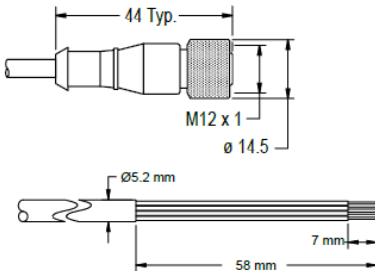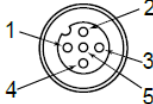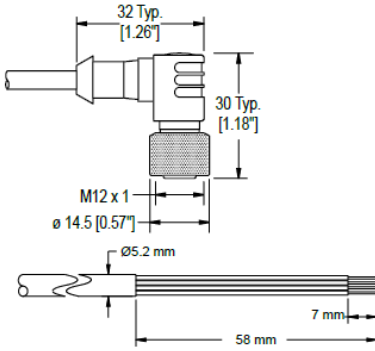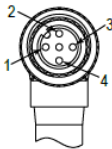
Industry Canada ICES-003(A)

This device complies with CAN ICES-3 (A)/NMB-3(A). Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.
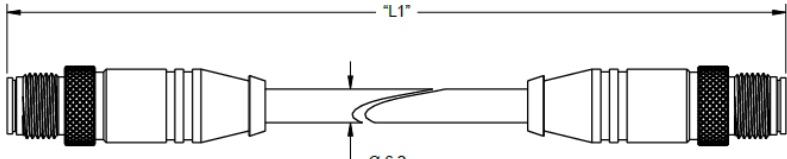
Accessories

Cordsets

			4-Pin Single-Ended, M12 Female Cordsets		c(UL)us
Model	Length	Style	Dimensions	Pinout (Female)	
MQDC-406	2 m (6.56 ft)	Straight	44 Typ. / M12 x 1 / ø 14.5 / Ø5.2 mm / 7 mm / 58 mm	1, 2, 3, 4, 5	
MQDC-415	5 m (16.4 ft)				
MQDC-430	9 m (29.5 ft)				
MQDC-450	15 m (49.2 ft)				
MQDC-406RA	2 m (6.56 ft)	Right-Angle	32 Typ. [1.26"] / 30 Typ. [1.18"] / M12 x 1 / ø 14.5 [0.57"] / Ø5.2 mm / 7 mm / 58 mm	1, 2, 3, 4	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
MQDC-415RA	5 m (16.4 ft)				
MQDC-430RA	9 m (29.5 ft)				
MQDC-450RA	15 m (49.2 ft)				

4-Pin Double-Ended, M12 Female-M12 Male Cordsets

cULus

Model	Length	Style	Dimensions	Pinout
MQDEC-401SS	0.31 m (1 ft)	Male Straight/ Female Straight	40 Typ. [1.58"] M12 x 1 ø 14.5 [0.57"] — 44 Typ. [1.73"] M12 x 1 ø 14.5 [0.57"]	Female: 1, 2, 3, 4 Male: 1, 2, 3, 4 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)			

4-Pin D-Code Double-Ended, M12 Male-RJ45 Male, Shielded Cordsets

Model	Length	Dimensions	RJ45 Pinout (Male)	M12 Pinout (Male)
STP-M12D-403	0.9 m (2.95 ft)	Ø 6.2 mm RJ45 — 47.4 Typ. M12 x 1.0 ø 14.5	1 = White/Orange 2 = Orange 3 = White/Blue 6 = Blue	1 = White/Orange 2 = White/Blue 3 = Orange 4 = Blue
STP-M12D-406	1.83 m (6 ft)			
STP-M12D-415	4.57 m (15 ft)			
STP-M12D-430	9.14 m (30 ft)			

4-Pin D-Code Double-Ended, M12 Male-M12 Male, Shielded Cordset

Model	Length "L1"	Style	Pinout	
M12D-M12D-4M	4 m (13.1 ft)	Male Straight / Male Straight	1, 4, 2, 3	1 = White / Orange 2 = White / Blue 3 = Orange 4 = Blue

"L1" — Ø 6.2

Mounting Brackets

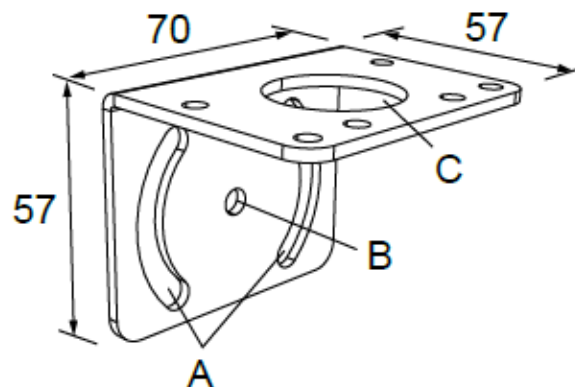All measurements are listed in millimeters, unless noted otherwise.

SMB30A
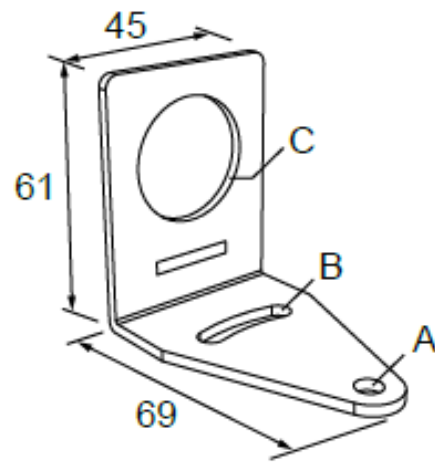
- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-gauge stainless steel

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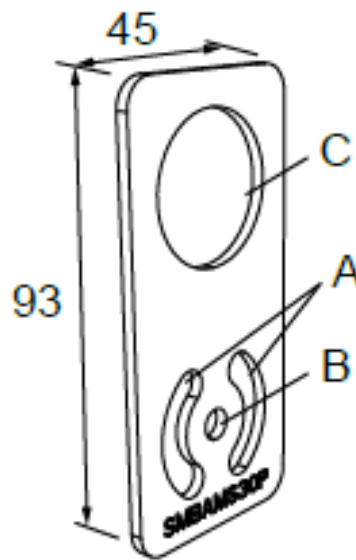**Hole size:** A=ø 6.3, B= 27.1 × 6.3, C=ø 30.5

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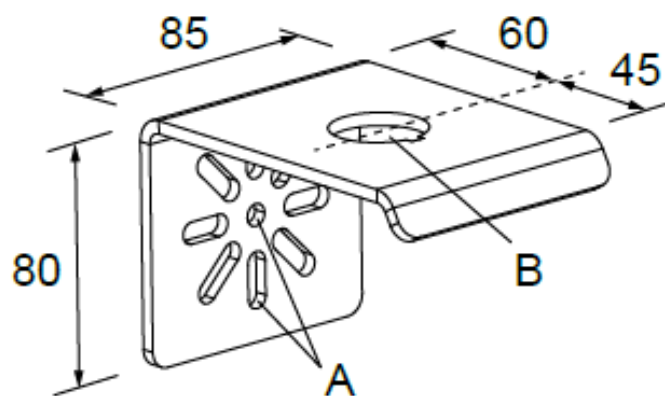
- Single 30 mm hole
- 8 gauge steel, black finish (powder coat)
- Front surface for customer-applied labels

Hole size: A = ø 7 , B = ø 30
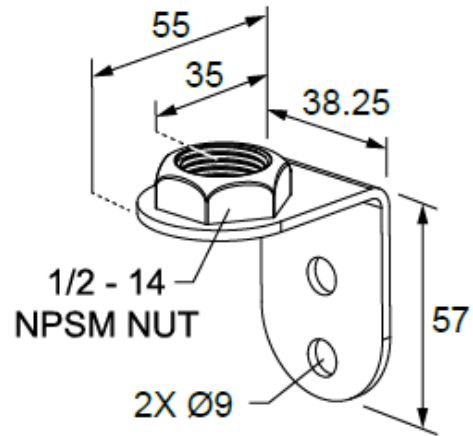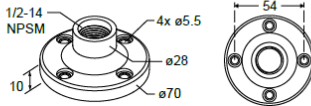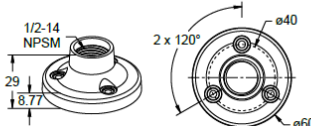
LMBE12RA35

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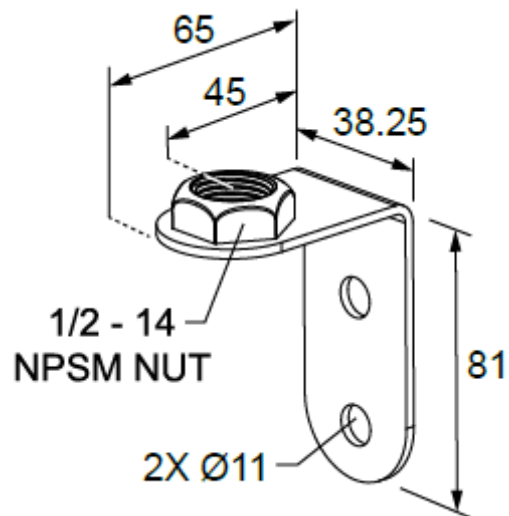
- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
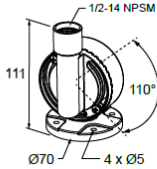- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 45 mm

Hole center spacing: 35.0

Elevated Mount System

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

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	

Limited Warranty

Banner Engineering Corp Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its

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For patent information, see **www.bannerengineering.com/patents**.

FAQ

Frequently Asked Questions

- **Q:** Can I customize the TL70 Pro Ethernet Modular Tower Light?
    - A: Yes, the modularity of the TL70 Pro Ethernet Modular Tower Light allows for customization of tower lights as needed.

Information

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Documents / Resources

BANNER TL70 Pro Ethernet Modular Tower Light [pdf] Instruction Manual
TL70 Pro, TL70 Pro Ethernet Modular Tower Light, Ethernet Modular Tower Light, Modular Tower Light, Tower Light, Light

References

- **Banner Engineering**
- **Patents**
- **Banner Engineering**
- **User Manual**