TL70 Wireless Modular Tower Light Product Manual



Features

The Sure Cross® TL70 Wireless Modular Tower Light combines the best of Banner's popular Tower Light family with its reliable, field-proven, Sure Cross wireless architecture.

- · Available in 900 MHz and 2.4 GHz ISM radio frequencies
- Up to six colors, or five colors 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
- Two-way communication light segments can be controlled with the input wires or the client radio
- Input wires can be configured as auxiliary sourcing inputs from external devices or as a 20 Hz, 32-bit event counter

IMPORTANT: Please download the complete TL70 Wireless Modular Tower Light technical documentation, available in multiple languages, from www.bannerengineering.com for details on the proper use, applications, Warnings, and installation instructions of this device.

IMPORTANT: Por favor descargue desde www.bannerengineering.com toda la documentación técnica de los TL70 Wireless Modular Tower Light, disponibles en múltiples idiomas, para detalles del uso adecuado, aplicaciones, advertencias, y las instrucciones de instalación de estos dispositivos.

IMPORTANT: Veuillez télécharger la documentation technique complète des TL70 Wireless Modular Tower Light sur notre site www.bannerengineering.com pour les détails sur leur utilisation correcte, les applications, les notes de sécurité et les instructions de montage.

Models



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

- Example base model number: B-TL70DXN2-Q5
- Example light segment model number: SG-TL70-G
- · Example audible segment model number: SG-TL70-A



Example pre-assembled model number: TL70DXN2GYRAQ

Configuration Instructions

Configuring the Modules



Turn on the appropriate DIP switch to set the order of the components, counting up from the tower light's base.





Assembly Options		DIP Switches									
		1	2	3	4	5	6	7	8	9	10
	Pulse 1.5 Hz							ON	OFF		
	Chirp Alarm							ON	ON		
	Siren Alarm							OFF	ON		
Loud Audible Module	Continuous Alarm*							OFF	OFF		
Settings	Low Intensity*									OFF	OFF
	Med. Intensity									ON	OFF
	Med./Loud Intensity									OFF	ON
	Loud Intensity									ON	ON

* Factory default setting

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).

Configuring the Radio Module

Set the Radio Module DIP Switches



The 900 MHz radios have a high output option that will transmit at 500 mW (27 dBm). The low output option transmits at 250 mW (24 dBm). The 250 mW mode reduces the radio's range but improves the battery life in short-range applications. For 2.4 GHz models, this DIP switch is disabled. The transmit power for 2.4 GHz is fixed at about 65 mW EIRP (18 dBm).

DIP Switch 2: Input Wires	900 MHz Models and 2.4 GHz Models
OFF *	Input wires control lights
ON	Disables wired input control of lights and converts wires to auxiliary Inputs

If there are no lights at the end of the input wires to turn on, the inputs still function as a sourcing input.

DIP Switch 3: Event Counter	900 MHz Models and 2.4 GHz Models
OFF *	Default I/O operation
ON	 8-pin Models: Configure input 5 as a 32-bit synchronous counter at a maximum frequency of 20 Hz; disable input 6 (the counter requires two registers) 5-Pin Models: Configure input 3 as a 32-bit synchronous counter at a maximum frequency of 20 Hz

The event counter is active for RF firmware revision 5.3 or higher.

For the 8-pin models: In the default position (OFF), inputs 1 through 6 control the tower lights. When DIP switch 3 is ON, input 5 wire is the counter input and input 6 wire is disabled. Registers 5 and 6 store the 32-bit synchronous counter count. Inputs 5 and 6 are independent from the lights and will not drive any lights they are wired to. Inputs 1 through 4 function normally.

For the 5-pin models: In the default position (OFF), inputs 1 through 3 control the tower lights. When DIP switch 3 is ON, input 3 wire is the counter input. Registers 3 and 4 store the 32-bit synchronous counter count. Input 3 is independent from the lights and will not drive any lights they are wired to. Inputs 1 and 2 function normally.

DIP Switch 4: Bit Packing I/O	900 MHz Models and 2.4 GHz Models
OFF *	Default I/O operation
ON	Bit-packed I/O with all inputs in Modbus register 1 and all outputs in Modbus register 9. All other Modbus registers are disabled.

Bit packing is active for RF firmware revision 5.8 or higher. Bit packing uses a single register, or range of contiguous registers, to represent I/ O values. This allows you to read or write multiple I/O values with a single Modbus message. Input 1 is stored in the least significant bit of register 1. Output 1 is stored in the least significant bit of register 9.

Event Counter

To use the event counter, the measured (logic high) signal must be greater than or equal to 25 ms. The 32-bit count is stored in I/O registers 3 and 4 for 5-pin models and 5 and 6 for 8-pin models.

To zero out (clear) the event counter,

 Map an input/button on a Gateway to Node register 14 to clear the counter when the input/button is activated; or



From a host system, write a 1 (the output must transition from a zero to a one to reset the counter) to Node register 14 or write a 5424 (0x1530) to Node control register 15.

RF firmware revision 5.3 or higher (on all products released after 3/20/2015) is required to use this feature.

Bind the TL70 to the Gateway and Assign the Node Address

Before beginning the binding procedure, apply power to all the devices.

- 1. Enter binding mode.
 - For housed Gateways, triple-click button 2.
 - For board-level Gateway modules, triple-click the button.
 - · For DXMs, under the ISM Radio menu, use the down arrow button to highlight the Binding menu. Click ENTER.
 - On the board modules, the green/red LED flashes. On the housed models, both LEDs flash red.
- 2. Assign the TL70 a Node address using the Gateway's rotary dials or the DXM's arrow keys.
 - On a Gateway: Use the left rotary dial for the left digit and the right rotary dial for the right digit. For example, to assign your TL70 to Node 01, set the left dial to 0 and the right dial to 1.
 - · On the DXM: Use the arrow keys to select the Node ID, then press ENTER. The display shows Binding.

Valid Node addresses are 01 through 47.

- 3. Access the circuit board in the radio module of the TL70.
- 4. Enter binding mode on the TL70 by triple-clicking the binding button. The bicolor LED flashes alternately while it searches for a Gateway in binding mode. After the TL70 is bound, the LED is red and green for four seconds (looks amber), then it flashes four times (looks amber). The TL70 automatically exits binding mode, cycles power, and enters Run mode.
- 5. For DXMs, click BACK to exit binding for that specific Node address.
- 6. Label the Node with the assigned address for future references. This makes it easier to identify the physical Node location within a multi-Node network.
- 7. Reassemble the components back onto the base.
- 8. Repeat steps 2 through 5 for as many TL70 Wireless Modular Tower Lights as are needed for your network.
- 9. After binding all TL70s, exit binding mode on the Gateway.
 - For housed Gateways, double-click button 2.
 - · For board-level Gateway modules, double-click the button.
 - For DXM models, click BACK until you return to the main menu.

LED Behavior for the One LED Nodes

Nodes do not sample inputs until they are communicating with the Gateway. The radios and antennas must be a minimum distance apart to function properly.

Recommended minimum distances are:

- 900 MHz radio transmitting at \leq 250 mW: 6 feet 900 MHz radios transmitting at \geq 500 mW: 15 feet
- 2.4 GHz radios transmitting at 65 mW: 1 foot

LED (Bi-color)	Node Status
Flashing green	Radio link okay
Green and red flashing alternately	In Binding mode
Both colors are solid for 4 seconds, then flash 4 times; looks amber	Binding mode is complete
Flashing red, once every 3 seconds	Radio link error
Flashing red, once every second	Device error

Modes of Operation

Node Controlled. The wireless TL70 Node can be operated similar to a wired model where the individual segments are activated by a PLC or manual switch. In this scenario, the Gateway only monitors the status of the light segments. An example application would be remotely monitoring the status of one or multiple machines from a single Gateway.

Gateway Controlled. In the Gateway-controlled mode, the TL70 Node only requires 10 V DC to 30 V DC power. Input signals sent from the Gateway have full control over the status of all the segments. An example application would be a call-for-parts application with a TL70 Node mounted to a fork truck and the Gateway mounted in a work cell or stock room. When part pick-up or delivery is needed, the operator sends a signal to the fork truck driver. A multicolor TL70 could be used when there are multiple pick-up or delivery locations.



DX80 Performance Configuration Software

The configuration software offers an easy way to link I/O points in your wireless network, view I/O register values, and set system communication parameters when a host system is not part of the wireless network. The software runs on any computer with the Windows Vista, Windows 7, Windows 8, or Windows 10 operating system.

			Device C	Configu	ration sc	reen			
Configuration	Linking	Network & Device	Re	gister Vi	ew	Device Restore			
Device Configuration Show (All Nodes Gateway DX80 G/).*)	_					GET Gatew	vay SE	ND Gateway
Parameters System Devices in system TDMA behavior	 Default TDMA)▼	Health Polling Interval (Max bad count Re-link count Auto recover Timeout 0 Relink	6 v s 16 0 s 1 0 0:04:16.000 00:15:00	Health H Interval Number Heartbe	eartbeat —— of misses at timeout	00:15:00.000 🕏 100 🕏 00:30:27.000	GET Parameters Default Output Triggers Device power up Out of sync Host link failure Node link failure Gateway link failure	SEND Par	rameters
I/O Points							GET I/O Points	SEND I/	O Points
🕨 Input 1 🔳 Ena	abled		GET	SEND	Output 9	Enabled		GET	SEND
🕨 Input 2 🔳 Ena	abled		GET	SEND	Output 1) 🔲 Enabled		GET	SEND
🕨 Input 3 🔳 Ena	abled		GET	SEND	 Output 11 	Enabled		GET	SEND
+ Input 4 🔳 Ena	abled		GET	SEND	Output 12	2 🔲 Enabled		GET	SEND
🕨 Input 5 🔳 Ena	abled		GET	SEND	Output 1	3 🔲 Enabled		GET	SEND
Input 6 Ena	abled		GET	SEND	Output 14	Enabled		GET	SEND

Use a USB to RS-485 adapter cable to connect a standalone DX80 Gateway to the computer. For DXM Controllers with an internal DX80 radio, connect a computer to the DXM Controller using the supplied USB or Ethernet connection. Download the most recent revisions of the configuration software from Banner Engineering's website: https://www.bannerengineering.com/us/en/products/wireless-sensor-networks/ reference-library/software.html.

The USB to RS-485 adapter cable is not required for the DXM Controller. For standalone DX80 Gateway devices use:

- USB to RS-485 adapter cable model BWA-UCT-900 for 1 Watt radios
 USB to RS-485 adapter cable model BWA-HW-006 for all other radios

Modbus Registers

Modbus holding registers for the 5-pin models.

I/O	Modbus Holding Register		І/О Туре	I/O Range		Holding Register Representation (Dec.)		Module #
	Gateway	Any Node	10 type		Max.	Min.	Max.	
1	1	1 + (Node# × 16)	Discrete IN 1 / Bit-packed inputs	0	1	0	1	M1
2	2	2 + (Node# × 16)	Discrete IN 2	0	1	0	1	M2
3	3	3 + (Node# × 16)	Discrete IN 3 / 32-bit event counter high word	0	1 / 65535	0	1 / 65535	M3
4	4	4 + (Node# × 16)	Reserved / 32-bit event counter low word	0	65535	0	65535	M4
8	8	8 + (Node# × 16)	Device Message					
9	9	9 + (Node# × 16)	Discrete OUT 9 / Bit-picked outputs	0	1	0	1	M1
10	10	10 + (Node# × 16)	Discrete OUT 10	0	1	0	1	M2
11	11	11 + (Node# × 16)	Discrete OUT 11	0	1	0	1	M3
12	12	12 + (Node# × 16)	Discrete OUT 12	0	1	0	1	M4
13	13	13 + (Node# × 16)	Discrete OUT 13	0	1	0	1	M5
14	14	14 + (Node# × 16)	Discrete OUT 14 / Zero out (clear) the counter	0	1	0	1	M6
15	15	15 + (Node# × 16)	Control Message					
16	16	16 + (Node# × 16)	Reserved					

Modbus holding registers for the 8-pin models.

I/O	Modbus	Holding Register	I/O Type	I/O Range		Holding Register Representation (Dec.)		Module #
	Gateway	Any Node			Max.	Min.	Max.	
1	1	1 + (Node# × 16)	Discrete IN 1 / Bit-packed inputs	0	1	0	1	M1
2	2	2 + (Node# × 16)	Discrete IN 2	0	1	0	1	M2
3	3	3 + (Node# × 16)	Discrete IN 3	0	1	0	1	М3
4	4	4 + (Node# × 16)	Discrete IN 4	0	1	0	1	M4
5	5	5 + (Node# × 16)	Discrete IN 5 / 32-bit event counter high word	0	1 / 65535	0	1 / 65535	M5
6	6	6 + (Node# × 16)	Discrete IN 6 / 32-bit event counter low word	0	1 / 65535	0	1 / 65535	M6
7	7	7 + (Node# × 16)	Reserved					
8	8	8 + (Node# × 16)	Device Message					
9	9	9 + (Node# × 16)	Discrete OUT 9 / Bit-picked outputs	0	1	0	1	M1
10	10	10 + (Node# × 16)	Discrete OUT 10	0	1	0	1	M2
11	11	11 + (Node# × 16)	Discrete OUT 11	0	1	0	1	М3
12	12	12 + (Node# × 16)	Discrete OUT 12	0	1	0	1	M4
13	13	13 + (Node# × 16)	Discrete OUT 13	0	1	0	1	M5
14	14	14 + (Node# × 16)	Discrete OUT 14 / Zero out (clear) the counter	0	1	0	1	M6
15	15	15 + (Node# × 16)	Control Message					
16	16	16 + (Node# × 16)	Reserved					

Use the DX80 Performance Configuration Software to define unique synchronous flash patterns for the lights.

Creating Flash Patterns

Use the DX80 Performance Configuration Software to create the flash pattern.

To create a flash pattern:

- 1. Enable the appropriate output if it is not yet enabled.
- 2. Click **GET** to download the input/output current configuration from the device to the configuration software. This automatically populates the Output configuration settings specific to the Node type.
- 3. For this example, configure output 9 is enabled and configured as discrete output 1 (color 1 for this K70 light). Different models may use distinct output types and I/O configuration values.
- 4. Define the flash pattern by selecting the appropriate checkboxes in the **Flash Pattern** section. In this example, the light will flash twice a second.
- 5. Click **SEND** to upload the configuration to the device.

Defining a flash pattern for discrete output 1					
Output 9 🛛 Enabled Discrete Output 1	GET SENE				
I/O configuration	Analog output mapping				
Units Discrete	Threshold 0 🚭				
Invert I/O	Hysteresis 0 🌩				
Hold last state Default output 0.00 🔷 on/off	Extended parameters				
Switched power options	Miscellaneous 0 🍣				
Power supply External	Serial address 0				
Output voltage (Battery) -					
Warmup 00:00:00.000	Pulse width 00:00:00.000				
Flash Pattern 0ms 250ms 500 XXXX)ms 750ms				

Wiring Diagrams



Input wires M1 through M6 can be used to either control the light segments or can be configured as external PNP Inputs. Refer to "Set the Radio Module DIP Switches" on page 4 for configuration instructions.

Specifications

Radio Specifications for Performance Internal Antenna

Radio Transmit Power (900 MHz, 500 mW radios)

Conducted: 27 dBm (500 mW) EIRP with the supplied antenna: < 36 dBm

Radio Transmit Power (2.4 GHz radios)

Conducted: < 18 dBm (65 mW) EIRP with the supplied antenna: < 20 dBm (100 mW)

Antenna Minimum Separation Distance

900 MHz radios transmitting at \geq 500 mW: 4.57 m (15 ft) with the supplied antenna

2.4 GHz radios transmitting at 65 mW: 0.3 m (1 ft) with the supplied antenna

Radio Range

A 2 dB antenna ships with this device.

Transmit power and range are subject to many factors, including antenna gain, installation methods, characteristics of the application, and environmental conditions.

Please refer to the following documents for installation instructions and high-gain antenna options.

Installing Your Sure Cross® Radios (151514) Conducting a Site Survey (133602) Sure Cross® Antenna Basics (132113)

Link Timeout (Performance)

Gateway: Configurable via User Configuration Software Node: Defined by Gateway

Spread Spectrum Technology

FHSS (Frequency Hopping Spread Spectrum)

900 MHz Compliance (SX7023EXT Radio Module) Radio module is indicated by the product label marking Contains FCC ID: UE3SX7023EXT Contains IC: 7044A-SX7023EXT

2.4 GHz Compliance (SX243 Radio Module)

Radio module is indicated by the product label marking Contains FCC ID: UE3SX243 Radio Equipment Directive (RED) 2014/53/EU Contains IC: 7044A-SX243

FCC Part 15 Class A for Intentional 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 Statement for Intentional Radiators

This device contains licence-exempt transmitters(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- 1. This device may not cause interference.
- 2. This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil contient des émetteurs/récepteurs exemptés de licence conformes à la norme Innovation, Sciences, et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes:

- 1. L'appareil ne doit pas produire de brouillage.
- 2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

TL70 Wireless Modular Tower Light Specifications

Supply Voltage and Current

12 V DC to 30 V DC (Outside the USA: 12 V DC to 24 V DC, \pm 10%) $^{(1)}$

900 MHz Consumption: Maximum current draw is < 40 mA and typical current draw is < 30 mA at 24 V DC. (2.4 GHz consumption is less.)

Indicator Color or Audible Medel	Maximum	Current (mA)
	at 12 V DC	at 30 V DC
Blue, Green, White	420	150
Red, Yellow, Orange	285	120
Standard Audible	30	30
Loud Audible (Intensity 1)	18	14
Loud Audible (Intensity 2)	40	28
Loud Audible (Intensity 3)	160	70
Loud Audible (Intensity 4)	350	110

Supply Protection Circuitry

Protected against transient voltages

Audible Alarm

Standard Audible: 2.6 KHz \pm 250 Hz oscillation frequency; maximum intensity (typical) 92 dB at 1 m (3.3 ft) **Loud Audible:** 2.6 KHz \pm 250 Hz oscillation frequency; maximum intensity (typical) at 1 m (3.3 ft)

DIP Switches		Maximum Intensity (typical) at 1 mater dB		
9	10			
ON	ON	Intensity 4: 109 dB		
OFF	ON	Intensity 3: 106 dB		
ON	OFF	Intensity 2: 101 dB		
OFF	OFF	Intensity 1: 94 dB		

Audible Adjustment

Standard Audible: Rotate the cover until the desired volume is reached

Loud Audible Adjustment: Select the desired volume using DIP switches 9 and 10

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

- · Standard Audible: 8 dB
- · Loud Audible: 16 dB

⁽¹⁾ For European applications, power this device from a Limited Power Source as defined in EN 60950-1.

Indicators

1 to 6 colors depending on model (Green, Red, Yellow, Blue, White, and Orange) LEDs are independently selected

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

Indicator Response Time

Off Response: 150 µs (maximum) at 12 V DC to 30 V DC **On Response:** 180 ms (maximum) at 12 V DC; 50 ms (maximum) at 30 V DC

Connections

5-pin M12 quick disconnect, 8-pin M12 quick disconnect, 150 mm (5.9 in) PVC cable with an M12 quick disconnect, or 2 m (6.5 ft) unterminated cable, depending on model

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	Co Coordir	olor nates ⁽²⁾	Lumen Output (Typical at	
	Temperature (CCT)	x	У	(Typical at 25 °C)	
Green	525 nm	-	-	92	
Red	625 nm	-	-	40	
Yellow	590 nm	-	-	22	
Blue	470 nm	-	-	32	
White	5000 K	-	-	125	
Orange	-	0.66	0.33	33	

Operating Conditions

-40 °C to +50 °C (-40 °F to +122 °F)

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

IP65

Radiated Immunity HF

10 V/m (EN 61000-4-3)

 $^{(2)}$ Refer to CIE 1931 chromaticity diagram or color chart, to show equivalent color with indicated color coordinates.

Certifications

CE/UKCA approval only applies to 2.4 GHz models



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

NATFI Agência Nacional de Telecomunicações



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

ANATEL

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Para maiores informações, consulte o site da ANATEL www.gov.br/anatel/pt-br/



Dimensions



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)	
E Balation alute a disculture alute	0.40.4	
5 light modules, 1 audible module	343.1 mm (13.5 ln)	
5 light modules, 1 audible module Model	Height (H)	
Model 1 light module	Height (H) 87.6 mm (3.45 in)	
Model 1 light module, 1 audible module 1 light module, 1 audible module	Height (H) 87.6 mm (3.45 in) 144.3 mm (5.68 in)	
Model Model 1 light module 1 light module 2 light modules	Height (H) 87.6 mm (3.45 in) 144.3 mm (5.68 in) 137.3 mm (5.41 in)	
Model Model 1 light module 2 light modules 2 light modules 2 light modules	Height (H) 87.6 mm (3.45 in) 144.3 mm (5.68 in) 137.3 mm (5.41 in) 194 mm (7.64 in)	
Model 1 light module 1 light module 2 light modules 2 light modules, 1 audible module 3 light modules	Height (H) 87.6 mm (3.45 in) 144.3 mm (5.68 in) 137.3 mm (5.41 in) 194 mm (7.64 in) 187 mm (7.36 in)	
Model Model 1 light module 2 light modules 2 light modules 2 light modules 3 light modules 3 light modules	Height (H) 87.6 mm (3.45 in) 144.3 mm (5.68 in) 137.3 mm (5.41 in) 194 mm (7.64 in) 187 mm (7.36 in) 243.7 mm (9.59 in)	
Model 1 light module 1 light module 2 light modules, 1 audible module 2 light modules, 1 audible module 3 light modules, 1 audible module 4 light modules	Height (H) 87.6 mm (3.45 in) 144.3 mm (5.68 in) 137.3 mm (5.41 in) 194 mm (7.64 in) 187 mm (7.36 in) 243.7 mm (9.59 in) 236.7 mm (9.32 in)	
Model 1 light module 1 light module 2 light modules 2 light modules 3 light modules 3 light modules, 1 audible module 4 light modules 4 light modules, 1 audible module	Height (H) 87.6 mm (3.45 in) 144.3 mm (5.68 in) 137.3 mm (5.41 in) 194 mm (7.64 in) 187 mm (7.36 in) 243.7 mm (9.59 in) 236.7 mm (9.32 in) 293.4 mm (11.55 in)	

Continued from page 10			
Model	Height (H)		
5 light modules	286.4 mm (11.28 in)		
5 light modules, 1 audible module	343.1 mm (13.5 in)		
Continued on page 12			

Continued from page 10			
Model	Height (H)		
6 light modules	336.1 mm (13.23 in)		

Accessories

Cordsets

5-Pin Single-Ended M12 Female Cordsets					
Model	Length	Style	Dimensions	Pinout (Female)	
MQDC1-501.5	0.5 m (1.5 ft)				
MQDC1-503	0.9 m (2.9 ft)		 44 Typ.─── -		
MQDC1-506	2 m (6.5 ft)			1 = Brown $2 = White$ $3 = Blue$ $4 = Black$ $5 = Gray$	
MQDC1-515	5 m (16.4 ft)	Straight			
MQDC1-530	9 m (29.5 ft)		M12 x 1		
MQDC1-560	18 m (59 ft)		Ø 14.5 →		
MQDC1-5100	31 m (101.7 ft)				
MQDC1-506RA	2 m (6.5 ft)		20 Tun		
MQDC1-515RA	5 m (16.4 ft)		[1.26"]		
MQDC1-530RA	9 m (29.5 ft)				
MQDC1-560RA	19 m (62.3 ft)	Right-Angle	M12 x 1 Ø 14.5 [0.57"] → 30 Typ. [1.18"] ↓ 30 Typ. [1.18"] ↓	c UL us	

8-Pin Single-Ended M12 Female Open-Shielded Cordsets					
Model Length Style Dimensions		Pinout (Female)			
MQDC2S-806	2.04 m (6.7 ft)		44 Turp		
MQDC2S-815	5.04 m (16.54 ft)			2 - 3 - 3 - 4 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	
MQDC2S-830	10.04 m (32.95 ft)	Straight			
MQDC2S-850	16 m (52.49 ft)		M12 x 1 ø 14.5		
MQDC2S-806RA	2 m (6.56 ft)		32 Typ.		
MQDC2S-815RA	5 m (16.4 ft)				
MQDC2S-830RA	10 m (32.81 ft)				
MQDC2S-850RA	16 m (52.49 ft)	Right-Angle	M12 x 1 + - + ø 14.5 [0.57"] + - +	5 = Gray 6 = Pink 7 = Blue 8 = Red	

Mounting Brackets

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



Elevated Mount System

Model			Description	Components	
SA-M30 - Black Polycarbonate			Streamlined black PC or Gray PC thread cover		
SA-M30C - Gray Polycarbonate			Covers M30 thread on the light baseMounting hardware included		
Polished 304 Stainless Steel	Black Anodized Aluminum	Clear Anodized Aluminum			
SOP-E12-150SS	SOP-E12-150A	SOP-E12-150AC	 Elevated use stand off size (1/ in NESM/DN15) 		
150 mm (6 in) long	150 mm (6 in) long	150 mm (6 in) long	 Polished 304 stainless steel, black anodized aluminum, 		
SOP-E12-300SS	SOP-E12-300A	SOP-E12-300AC	 ½ in. NPT thread at both ends 		
300 mm (12 in) long	300 mm (12 in) long	300 mm (12 in) long	Compatible with most industrial environments		
SOP-E12-900SS	SOP-E12-900A	SOP-E12-900AC			
900 mm (36 in) long	900 mm (36 in) long	900 mm (36 in) long			
SA-E12M30 - Black Acetal			Streamlined black acetal or white UHMW mounting base		
SA-E12M30C - White UHMW			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	1/2-14 NPSM 10 10 4x ø5.5 ø28 ø70	
SA-F12-3	 Elevated-use stand-off pipes (½ in, NPSM/ DN15) M4 mounting hardware and nitrile blend gasket included 	Black Polycarbonate	1/2-14 NPSM 29 18777 1 1 1 2 1 1 2 1 2 2 1 2 2 1 2 0 0 0 0 0	

Foldable Mounting Brackets					
Model	Description	Construction			
SA-FFB12		Black polycarbonate	1/2-14 NPSM		
SA-FFB12C	 For use with 1/2 inch stand-off pipes Stainless steel hardware 	Gray polycarbonate			

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. 	

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Continued from page 13				
Model				
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) 			

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Approved Antennas

BWA-902-C.-Antena, Omni 902-928 MHz, 2 dBd, junta de caucho, RP-SMA Macho BWA-905-C.-Antena, Omni 902-928 MHz, 5 dBd, junta de caucho, RP-SMA Macho BWA-906-A.-Antena, Omni 902-928 MHz, 6 dBd, fibra de vidrio, 1800mm, N Hembra BWA-910-A.-Antena, Yagi, 900 MHz, 10 dBd, N Hembra

Mexican Importer

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