# TL70 Modular Tower Light



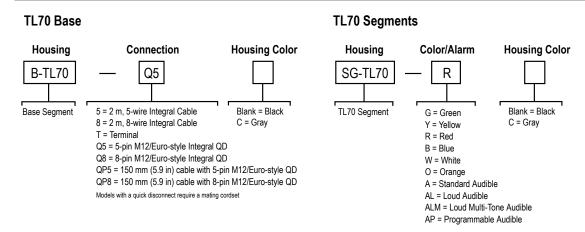
### Instruction Manual



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

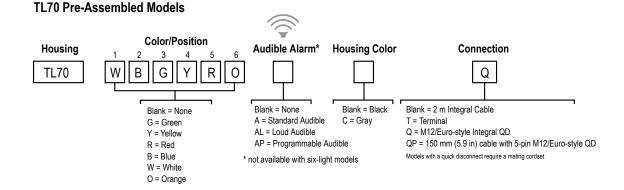
- Light segments have user-selectable solid ON or flashing
- · Up to six colors, or five colors plus audible, in one device
- Rugged, water-resistant IP65 housing with UV-stabilized material
- Bright, uniform indicator segments appear gray when off to eliminate false indication from ambient light
- Several connection options to choose from including M12/Euro-style quick disconnect, cabled, and terminal-wired

## Models



Select the 5-pin base for tower light configurations of up to 4 modules. Select the 8-pin base for tower light configurations of up to 6 modules.

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



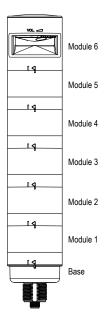
• Example pre-assembled model number: TL70GYRAQ.



# Configuring the Modules



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

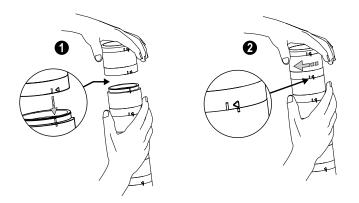


| A                                   | 0                    | DIP Switches |    |    |    |    |    |     |     |
|-------------------------------------|----------------------|--------------|----|----|----|----|----|-----|-----|
| Assembly                            | Options              | 1            | 2  | 3  | 4  | 5  | 6  | 7   | 8   |
|                                     | Module 1             | ON           |    |    |    |    |    |     |     |
|                                     | Module 2             |              | ON |    |    |    |    |     |     |
| Light and                           | Module 3             |              |    | ON |    |    |    |     |     |
| Standard Audible<br>Components      | Module 4             |              |    |    | ON |    |    |     |     |
| N                                   | Module 5             |              |    |    |    | ON |    |     |     |
|                                     | Module 6             |              |    |    |    |    | ON |     |     |
|                                     | 0.11-                |              | ·  |    |    |    |    | ON  | OFF |
| Light Module                        | 3 Hz                 |              |    |    |    |    |    | ON  | OFF |
| Flash Rate                          | 1.5 Hz               |              |    |    |    |    |    | ON  | ON  |
|                                     | Solid On*            |              |    |    |    |    |    | OFF | OFF |
|                                     | Pulse 1.5 Hz         |              |    |    |    |    |    | ON  | OFF |
|                                     | Chirp Alarm          |              |    |    |    |    |    | ON  | ON  |
| Standard Audible<br>Module Settings | Siren Alarm          |              |    |    |    |    |    | OFF | ON  |
| Wodule Settings                     | Continuous<br>Alarm* |              |    |    |    |    |    | OFF | OFF |

| Assamble               | Accomply Options       |   | DIP Switches |   |   |   |   |     |     |     |     |
|------------------------|------------------------|---|--------------|---|---|---|---|-----|-----|-----|-----|
| Assembly Options       |                        | 1 | 2            | 3 | 4 | 5 | 6 | 7   | 8   | 9   | 10  |
|                        | Pulse 1.5 Hz           |   |              |   |   |   |   | ON  | OFF |     |     |
|                        | Chirp Alarm            |   |              |   |   |   |   | ON  | ON  |     |     |
|                        | Siren Alarm            |   |              |   |   |   |   | OFF | ON  |     |     |
| Laural Auraliala       | Continuous<br>Alarm*   |   |              |   |   |   |   | OFF | OFF |     |     |
| Loud Audible<br>Module | Low Intensity          |   |              |   |   |   |   |     |     | OFF | OFF |
| Settings               | Med.<br>Intensity      |   |              |   |   |   |   |     |     | ON  | OFF |
|                        | Med./Loud<br>Intensity |   |              |   |   |   |   |     |     | OFF | ON  |
|                        | Loud<br>Intensity      |   |              |   |   |   |   |     |     | ON  | ON  |

<sup>\*</sup> Factory default setting

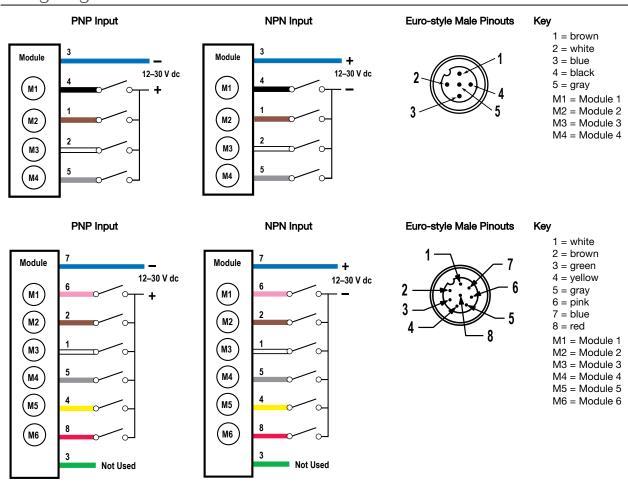
# Assembling the Modules



#### To assemble the modules:

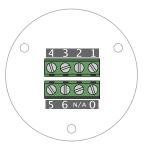
- 1. Align the notches on each module and press together.
- 2. Rotate the top module clockwise to lock into place (notches shown in the locked position).

# Wiring Diagrams



Note: Models SG-TL70-ALM and SG-TL70-ALMC are not compatible with NPN input wiring.

#### Wiring Terminal Block



#### Terminal Block Key

0 = dc common

1 = Module 1

2 = Module 2

3 = Module 34 = Module 4

5 = Module 5

6 = Module 6

## Specifications

# Supply Voltage and Current 12 V dc to 30 V dc

| Indicator Color or Audible Model | Maximum    | Current (mA) |
|----------------------------------|------------|--------------|
| indicator color of Addible Model | 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)       | 30         | 25           |
| Loud Audible (Intensity 2)       | 50         | 40           |
| Loud Audible (Intensity 3)       | 165        | 75           |
| Loud Audible (Intensity 4)       | 350        | 120          |

#### Supply Protection Circuitry

Protected against transient voltages

#### 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 to 30 V dc
On Response: 180 ms (maximum) at 12 V dc; 50 ms (maximum) at 30 V dc

#### Audible Alarm

Standard Audible: 2.6 kHz ± 250 Hz oscillation frequency; maximum intensity (typical) 92 dB at 1 m (3.3 ft)

Loud Audible: 2.6 kHz ± 250 Hz oscillation frequency; maximum intensity (typical) at 1 m (3.3 ft) (see table)

| DIP S | witches | Max Intensity (Loud Audible) |
|-------|---------|------------------------------|
| 9     | 10      |                              |
| ON    | ON      | Intensity 4: 101 dB          |
| OFF   | ON      | Intensity 3: 99 dB           |
| ON    | OFF     | Intensity 2: 92 dB           |
| OFF   | OFF     | Intensity 1: 85 dB           |

#### Audible Adjustment

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

#### Construction

Bases, Segments, Covers: polycarbonate

#### Indicator Characteristics

| Color  | Dominant Wavelength (nm)<br>or Color Temperature (CCT) | Color Coor | dinates <sup>1</sup> | Lumen<br>Output       |
|--------|--|------------|----------------------|-----------------------|
|        | or color remperature (ccr)                             | x          | у                    | (Typical at<br>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                    |

#### Connections

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

#### Terminal Block Models

14 to 28 AWG wire

#### **Operating Conditions**

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

#### **Environmental Rating**

IEC IP65

#### Certifications





#### Vibration and Mechanical Shock

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

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

#### 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.

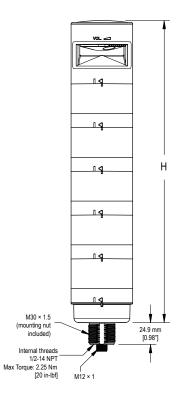
overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

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                                    |

## **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) |
| 5 light modules, 1 audible module | 343.1 mm (13.5 in)  |

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

# Accessories

# Cordsets

| Model       | Length          | Style       | Dimensions                                      | Pinout (Female)   |
|-------------|-----------------|-------------|---|---|
| MQDC1-501.5 | 0.50 m (1.5 ft) |             | <del> </del>                                    |   |
| MQDC1-506   | 1.83 m (6 ft)   |             |   |   |
| MQDC1-515   | 4.57 m (15 ft)  | Straight    |   |   |
| MQDC1-530   | 9.14 m (30 ft)  |             | M12 x 1 —                                       | 1 2   |
| MQDC1-506RA | 1.83 m (6 ft)   |             |   | 3   |
| MQDC1-515RA | 4.57 m (15 ft)  | 32 Typ      |   | 4 5   |
| MQDC1-530RA | 9.14 m (30 ft)  | Right-Angle | (1.26")<br>30 Typ.<br>[1.18"]<br>0 14.5 [0.57"] | 1 = Brown<br>2 = White<br>3 = Blue<br>4 = Black<br>5 = Gray |

| 8-Pin Threaded M12/Euro- | -Style Cordsets with Open- | Shield      |                                 |  |
|--------------------------|----------------------------|-------------|---------------------------------|--|
| Model                    | Length                     | Style       | Dimensions                      | Pinout (Female)  |
| MQDC2S-806               | 1.83 m (6 ft)              |             |                                 |  |
| MQDC2S-815               | 4.57 m (15 ft)             |             | 44 Typ. ———                     |  |
| MQDC2S-830               | 9.14 m (30 ft)             | _           |                                 |  |
| MQDC2S-850               | 15.2 m (50 ft)             | Straight    | M12 x 1                         | 2 - 3<br>1 - 4<br>7 - 5 - 4  |
| MQDC2S-806RA             | 1.83 m (6 ft)              |             |                                 | 6 - 8 - 3  |
| MQDC2S-815RA             | 4.57 m (15 ft)             |             | 32 Typ                          |  |
| MQDC2S-830RA             | 9.14 m (30 ft)             | [1.26"]     | [1.26"]                         | 1 = White<br>2 = Brown   |
| MQDC2S-850RA             | 15.2 m (50 ft)             | Right-Angle | 30 Typ. [1.18"]  φ 14.5 [0.57"] | 3 = Green<br>4 = Yellow<br>5 = Gray<br>6 = Pink<br>7 = Blue<br>8 = Red |

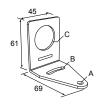
## Mounting Brackets

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-ga. stainless steel

Hole center spacing: A to B=40 Hole size:  $A=\emptyset$  6.3,  $B=27.1 \times 6.3$ ,  $C=\emptyset$  30.5

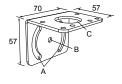


#### **SMB30MM**

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

Mounting hole for 30 mm sensor

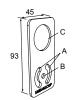
**Hole center spacing:** A = 51, A to B = 25.4**Hole size:**  $A = 42.6 \times 7$ ,  $B = \emptyset 6.4$ ,  $C = \emptyset 30.1$ 



#### SMBAMS30P

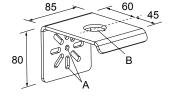
- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel

**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



#### SSA-MBK-EEC1

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

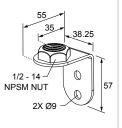


Hole size:  $A = \emptyset 7$ ,  $B = \emptyset 30$ 

#### 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

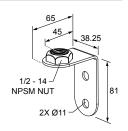
Hole center spacing: 20.0



#### 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 SA-M30C - Gray Polycarbonate |  |   | Streamlined black PC or Gray PC thread cover     Covers M30 thread on the light base     Mounting hardware included  |            |
| Polished 304 Stainless<br>Steel                           | Black Anodized<br>Aluminum                 | Clear Anodized<br>Aluminum                  |  |            |
| <b>SOP-E12-150SS</b><br>150 mm (6 in) long                | <b>SOP-E12-150A</b><br>150 mm (6 in) long  | <b>SOP-E12-150AC</b><br>150 mm (6 in) long  | <ul> <li>Elevated-use stand-off pipe (½ in. NPSM/DN15)</li> <li>Polished 304 stainless steel, black anodized</li> </ul>  |            |
| <b>SOP-E12-300SS</b><br>300 mm (12 in) long               | <b>SOP-E12-300A</b><br>300 mm (12 in) long | <b>SOP-E12-300AC</b><br>300 mm (12 in) long | <ul> <li>aluminum, or clear anodized aluminum surface</li> <li>½ in. NPT thread at both ends</li> <li>Compatible with most industrial environments</li> </ul>            |            |
| <b>SOP-E12-900SS</b><br>900 mm (36 in) long               | <b>SOP-E12-900A</b><br>900 mm (36 in) long | <b>SOP-E12-900AC</b><br>900 mm (36 in) long |  | <b>T</b>   |
| SA-E12M30 - Black Acetal SA-E12M30C - White UHMW          |  |   | 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 | db         |

| 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 | 1/2-14<br>NPSM 4x Ø5.5<br>028<br>070 |  |  |
| 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 2x 120 e40               |  |  |

| Foldable Mounting Brackets |   |                     |                        |  |  |
|----------------------------|---|---------------------|------------------------|--|--|
| Model                      | Features  | Construction        |                        |  |  |
| SA-FFB12                   |   | Black polycarbonate | 1/2-14 NPSM            |  |  |
| SA-FFB12C                  | <ul> <li>For use with 1/2 inch stand-off pipes</li> <li>Stainless steel hardware</li> </ul> | Gray polycarbonate  | 111 110°<br>Ø70 4 x Ø5 |  |  |

## 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  | <b>Pipe-Mount Models:</b> Bracket kit with base, ½-14 pipe adapter, set screw, fasteners, O-rings, and gaskets. | Black polycarbonate |  |
| LMBE12RAC |   | Gray polycarbonate  |  |

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