# TL70 Pro Ethernet Modular Tower Light Product Manual

Original Instructions
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ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

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# Chapter 1 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 and IP66 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:<br>• One 475 mm (18.7 in) cable with a 4-pin D-Code M12 female quick-disconnect connector<br>• 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 |
| TL70PE3Q2PE | Ethernet with three RGB segments |
| TL70PE3AQ2PE | Ethernet with three RGB segments and an audible segment |

# 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 |

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| 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 | |
| Light and Audible segment | 110 | 85 | 75 | 45 | 40 | 35 | 125 |

### Environmental Rating
IP65, IP66

### Supply Protection Circuitry
Protected against reverse polarity and transient voltages

### Initial Startup Time
30 seconds

### Construction
Bases, segments, and covers: polycarbonate

### Connections
See "Wiring" on page 8

### 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
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

### 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 | 2.0 | 30 | 0.5 |


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### 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 |

## 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; 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(A). 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.

[1] Refer to CIE 1931 chromaticity diagram or color chart to show equivalent color with indicated color coordinates. Actual coordinates may differ by 10%.


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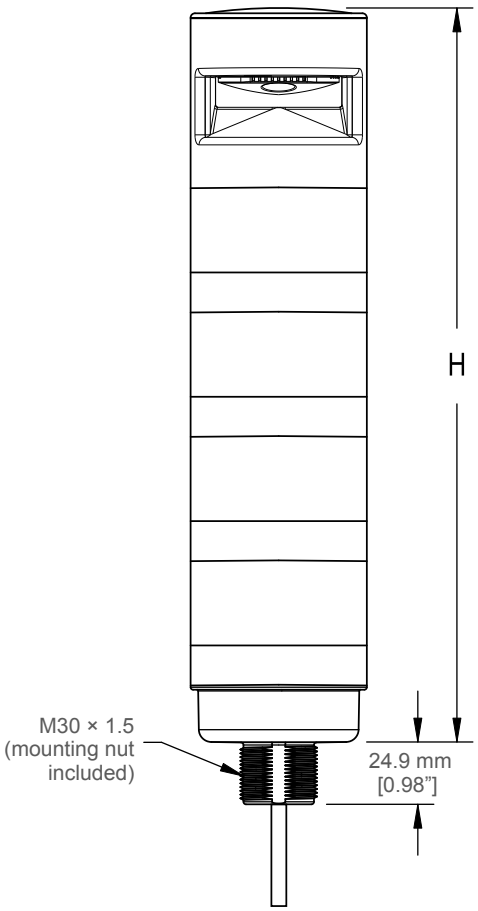
## Dimensions




| 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 (13.51 in) |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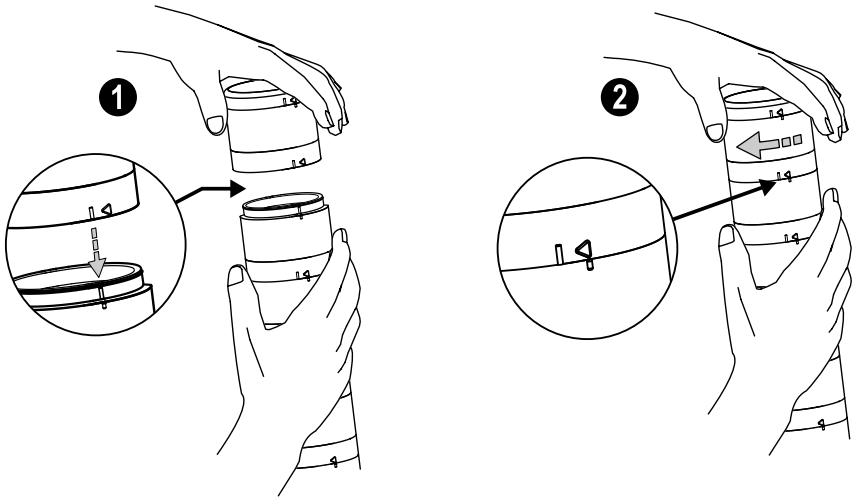
# Chapter 2 Installation Instructions

## Assembling the Modules




**IMPORTANT:**

- Do not assemble or swap segments while the unit is powered on.
- Ensure power is off when assembling or swapping segments.

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).

**NOTE:** DIP switches should remain in the default off position.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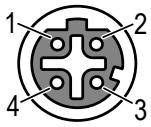
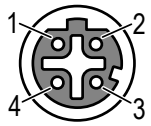
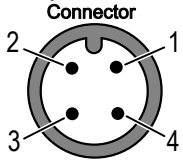
Chapter Contents

# Chapter 3 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 |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# Chapter 4 Configuration Instructions

## 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.

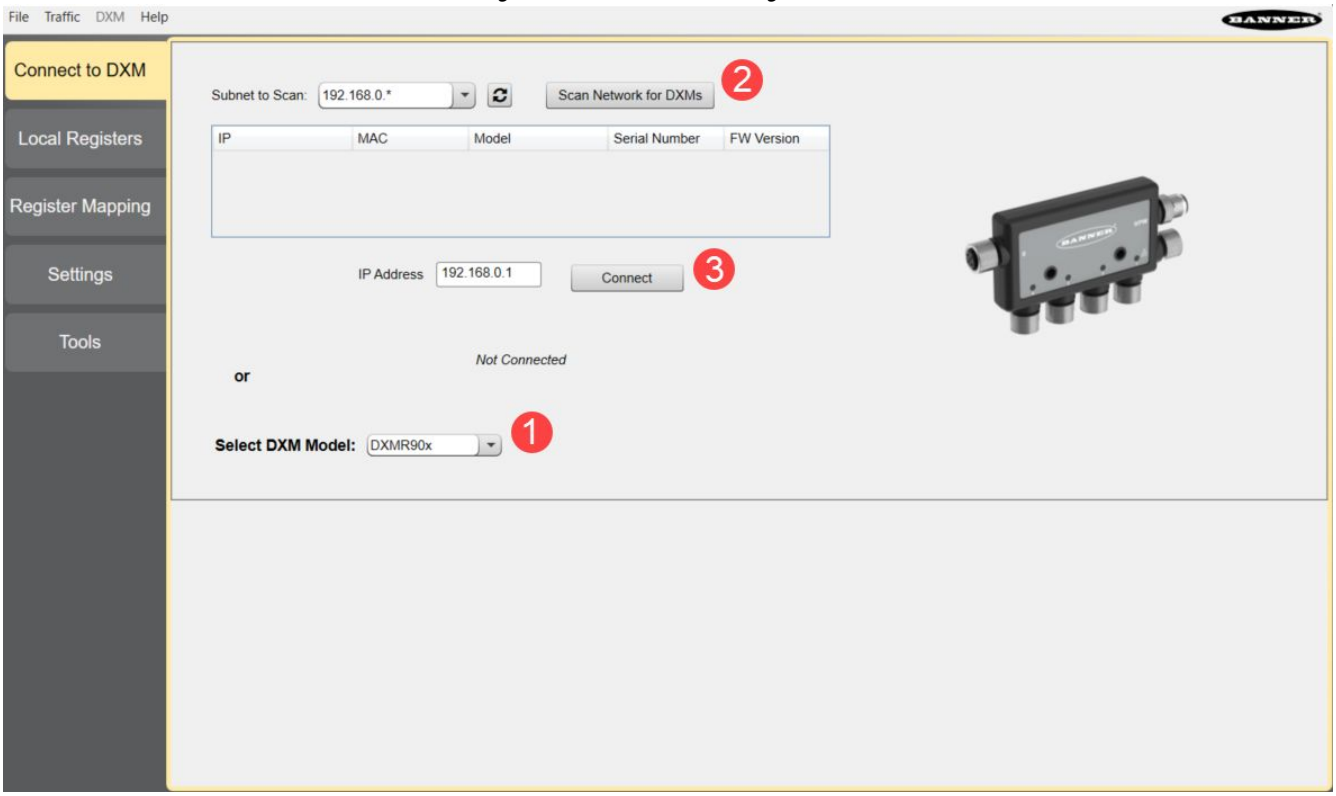
Plug the tower light into a switch, and use the default IP address of 192.168.0.1 and subnet mask of 255.255.255.0 to connect via Modbus TCP or EtherNet/IP.

### Connecting to the Device with DXM Configuration Software

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**.

*Connecting a Device to the DXM Configuration Software*




For connection troubleshooting and additional instruction, refer to the DXM Configuration Software Manual, PN 209933.

### Retrieving the Configuration from the Device

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.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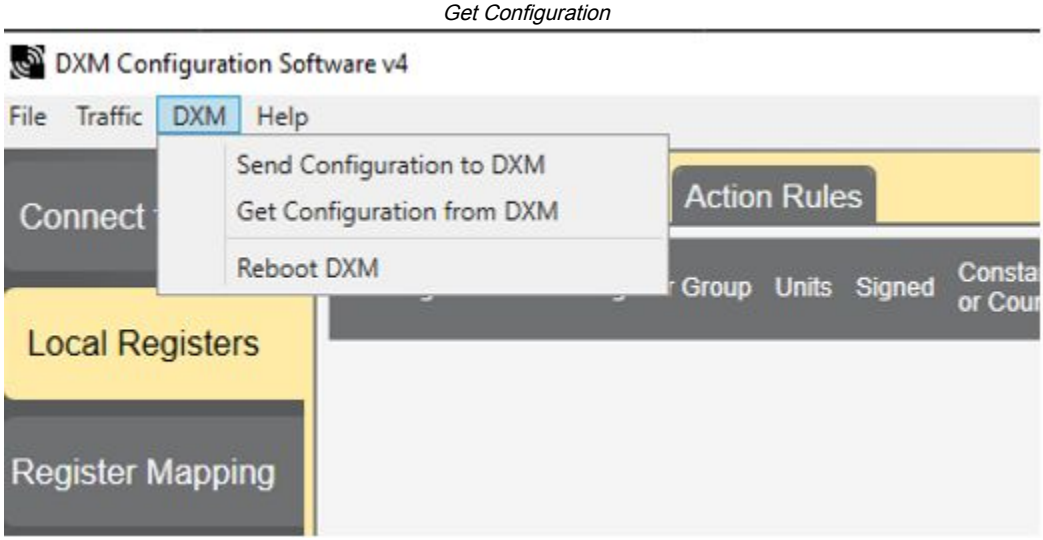
*Get Configuration*

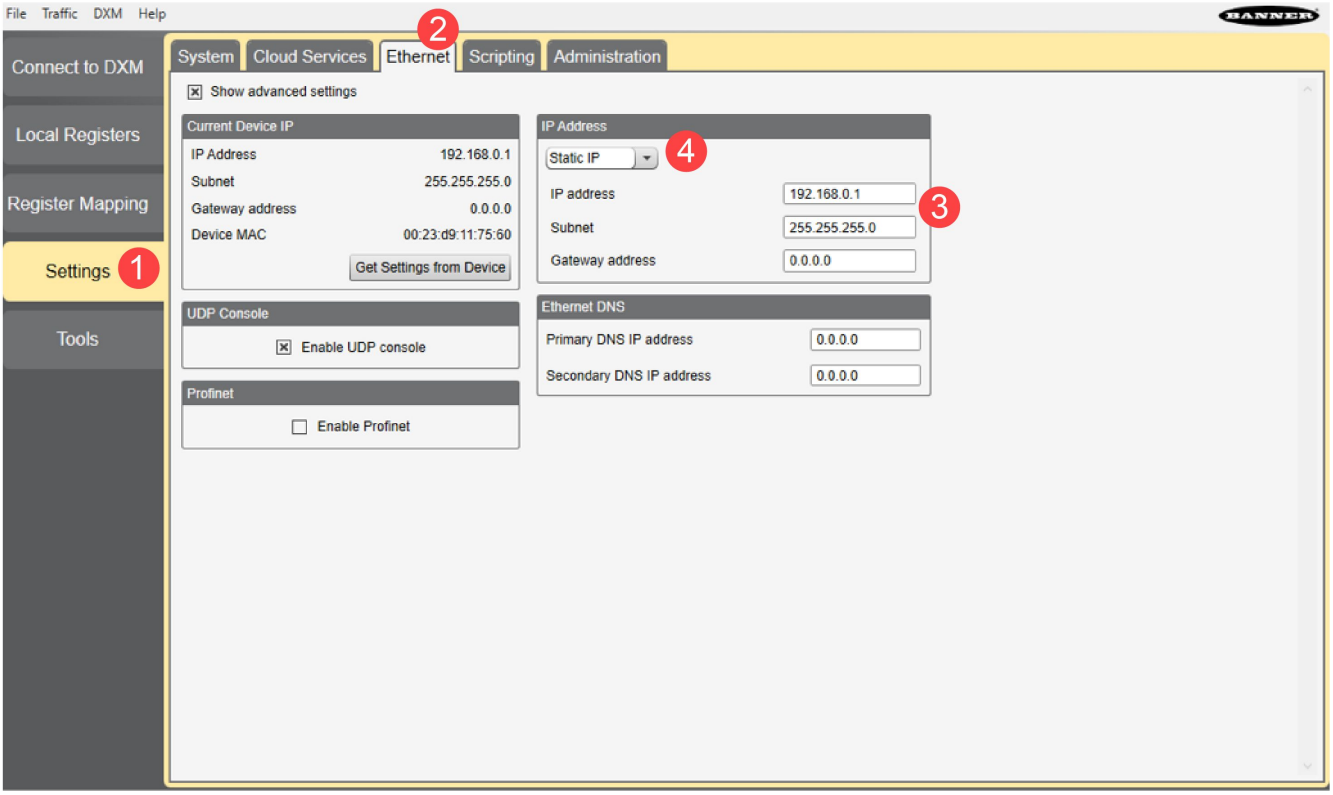



## Changing the IP Address

To change the IP address:

1. Select **Settings**.
2. Select **Ethernet**.
3. Enter the desired IP address and subnet.
4. Choose either Static or DHCP from the drop-down menu.

*Changing the IP Address*





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## Save and Upload the Configuration File

After making any changes to the configuration, you must save the configuration files to your computer, then upload it to the device.

Changes to the XML file are not automatically saved. Save your configuration file before exiting the software and before sending the XML file to the device to avoid losing data. If you select **DXM › Send XML Configuration to DXM** before saving the configuration file, the software will prompt you to choose between saving the file or continuing without saving the file.

1. Save the XML configuration file to your hard drive by going to the **File › Save As** menu.
2. Go to the **DXM › Send XML Configuration to DXM** menu.

   After the file transfer is complete, the device reboots and begins running the new configuration.

## Ethernet Map

| PLC Address | EIP Outputs | EIP Output Options | Alternate - Basic Mode | Alternate - Basic Mode Options |
|---|---|---|---|---|
| 0 | Restore Factory Configuration | 1 = Soft Reset, 2 = Hard Reset (with comms) | - | - |
| 1 | Segment 1 Animation | 0 = Off<br>1 = Steady<br>2 = Flash<br>3 = Two Color Flash<br>4 = 50/50<br>5 = 50/50 Rotate<br>6 = Chase<br>7 = Intensity Sweep<br>8 = Demo | Basic Mode Segment 1 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| 2 | Segment 1 Color 1 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | Basic Mode Segment 2 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |

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| PLC Address | EIP Outputs | EIP Output Options | Alternate - Basic Mode | Alternate - Basic Mode Options |
|---|---|---|---|---|
| 3 | Segment 1 Color 2 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | Basic Mode Segment 3 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| 4 | Segment 1 Color 1 Intensity | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom | Basic Mode Segment 4 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| 5 | Segment 1 Color 2 Intensity | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom | Basic Mode Segment 5 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| 6 | Segment 1 Speed | 0 = Slow<br>1 = Medium<br>2 = Fast<br>3 = Custom | Basic Mode Basic Audible | 0 = Off, 1 = Basic On |
| 7 | Segment 1 Pattern | 0 = Normal<br>1 = Strobe<br>2 = 3-Pulse<br>3 = SOS<br>4 = Random | - | - |
| 8 | Segment 2 Animation | Same as Segment 1 | - | - |
| 9 | Segment 2 Color 1 | | - | - |
| 10 | Segment 2 Color 2 | | - | - |
| 11 | Segment 2 Color 1 Intensity | | - | - |
| 12 | Segment 2 Color 2 Intensity | | - | - |
| 13 | Segment 2 Speed | | - | - |
| 14 | Segment 2 Pattern | | - | - |
| 15 | Segment 3 Animation | Same as Segment 1 | - | - |

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| PLC Address | EIP Outputs | EIP Output Options | Alternate - Basic Mode | Alternate - Basic Mode Options |
|---|---|---|---|---|
| 16 | Segment 3 Color 1 | | - | - |
| 17 | Segment 3 Color 2 | | - | - |
| 18 | Segment 3 Color 1 Intensity | | - | - |
| 19 | Segment 3 Color 2 Intensity | | - | - |
| 20 | Segment 3 Speed | | - | - |
| 21 | Segment 3 Pattern | | - | - |
| 22 | Segment 4 Animation | Same as Segment 1 | - | - |
| 23 | Segment 4 Color 1 | | - | - |
| 24 | Segment 4 Color 2 | | - | - |
| 25 | Segment 4 Color 1 Intensity | | - | - |
| 26 | Segment 4 Color 2 Intensity | | - | - |
| 27 | Segment 4 Speed | | - | - |
| 28 | Segment 4 Pattern | | - | - |
| 29 | Segment 5 Animation | Same as Segment 1 | - | - |
| 30 | Segment 5 Color 1 | | - | - |
| 31 | Segment 5 Color 2 | | - | - |
| 32 | Segment 5 Color 1 Intensity | | - | - |
| 33 | Segment 5 Color 2 Intensity | | - | - |
| 34 | Segment 5 Speed | | - | - |
| 35 | Segment 5 Pattern | | - | - |
| 36 | Audible Type | 0 = Off<br>1 = Tone<br>2 = Sync | - | - |
| 37 | Audible Volume | 0 = Off<br>1 = Low<br>2 = Medium<br>3 = High | - | - |
| 38 | Audible Tone | 0 = Freq 1<br>1 = Freq 2<br>2 = Freq 3 | - | - |
| 39 | Custom Speed | dHz | - | - |
| 40 | Custom Intensity | 0-100% | - | - |
| 41 | Operation Mode Write | 1 = Basic Mode, 2 = Advanced Mode | - | - |
| 42 | Address Command | 1 =Write IP<br>2 = Write Subnet<br>3 = Write IP & Subnet | - | - |
| 43 | IP_1 | IP Byte 1 | - | - |
| 44 | IP_2 | IP Byte 2 | - | - |
| 45 | IP_3 | IP Byte 3 | - | - |
| 46 | IP_4 | IP Byte 4 | - | - |
| 47 | Subnet_1 | Subnet Byte 1 | - | - |

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| PLC Address | EIP Outputs | EIP Output Options | Alternate - Basic Mode | Alternate - Basic Mode Options |
|---|---|---|---|---|
| 48 | Subnet_2 | Subnet Byte 2 | - | - |
| 49 | Subnet_3 | Subnet Byte 3 | - | - |
| 50 | Subnet_4 | Subnet Byte 4 | - | - |
| 51 | Segment 1 Basic Color | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | - | - |
| 52 | Segment 1 Basic Flash Speed | 0 = Standard<br>1 = Fast<br>2 = Slow<br>3 = Custom | - | - |
| 53 | Segment 1 Basic Animation | 0 = Off<br>1 = Steady<br>2 = Flash<br>3 = Two Color Flash<br>4 = 50/50<br>5 = 50/50 Rotate<br>6 = Chase<br>7 = Intensity Sweep<br>8 = Demo | - | - |

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| PLC Address | EIP Outputs | EIP Output Options | Alternate - Basic Mode | Alternate - Basic Mode Options |
|---|---|---|---|---|
| 54 | Segment 1 Basic Color 1 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | - | - |
| 55 | Segment 1 Basic Color 2 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | - | - |
| 56 | Segment 1 Basic Intensity 1 | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom | - | - |
| 57 | Segment 1 Basic Intensity 2 | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom | - | - |

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| PLC Address | EIP Outputs | EIP Output Options | Alternate - Basic Mode | Alternate - Basic Mode Options |
|---|---|---|---|---|
| 58 | Segment 1 Basic Speed | 0 = Slow<br>1 = Medium<br>2 = Fast<br>3 = Custom | - | - |
| 59 | Segment 1 Basic Pattern | 0 = Normal<br>1 = Strobe<br>2 = 3-Pulse<br>3 = SOS<br>4 = Random | - | - |
| 60 | Segment 2 Basic Color | Same as Segment 1 | - | - |
| 61 | Segment 2 Basic Flash Speed | | - | - |
| 62 | Segment 2 Basic Animation | | - | - |
| 63 | Segment 2 Basic Color 1 | | - | - |
| 64 | Segment 2 Basic Color 2 | | - | - |
| 65 | Segment 2 Basic Intensity 1 | | - | - |
| 66 | Segment 2 Basic Intensity 2 | | - | - |
| 67 | Segment 2 Basic Speed | | - | - |
| 68 | Segment 2 Basic Pattern | | - | - |
| 69 | Segment 3 Basic Color | Same as Segment 1 | - | - |
| 70 | Segment 3 Basic Flash Speed | | - | - |
| 71 | Segment 3 Basic Animation | | - | - |
| 72 | Segment 3 Basic Color 1 | | - | - |
| 73 | Segment 3 Basic Color 2 | | - | - |
| 74 | Segment 3 Basic Intensity 1 | | - | - |
| 75 | Segment 3 Basic Intensity 2 | | - | - |
| 76 | Segment 3 Basic Speed | | - | - |
| 77 | Segment 3 Basic Pattern | | - | - |
| 78 | Segment 4 Basic Color | Same as Segment 1 | - | - |
| 79 | Segment 4 Basic Flash Speed | | - | - |
| 80 | Segment 4 Basic Animation | | - | - |
| 81 | Segment 4 Basic Color 1 | | - | - |
| 82 | Segment 4 Basic Color 2 | | - | - |
| 83 | Segment 4 Basic Intensity 1 | | - | - |
| 84 | Segment 4 Basic Intensity 2 | | - | - |
| 85 | Segment 4 Basic Speed | | - | - |
| 86 | Segment 4 Basic Pattern | | - | - |
| 87 | Segment 5 Basic Color | Same as Segment 1 | - | - |
| 88 | Segment 5 Basic Flash Speed | | - | - |
| 89 | Segment 5 Basic Animation | | - | - |
| 90 | Segment 5 Basic Color 1 | | - | - |
| 91 | Segment 5 Basic Color 2 | | - | - |
| 92 | Segment 5 Basic Intensity 1 | | - | - |

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| PLC Address | EIP Outputs | EIP Output Options | Alternate - Basic Mode | Alternate - Basic Mode Options |
|---|---|---|---|---|
| 93 | Segment 5 Basic Intensity 2 | | - | - |
| 94 | Segment 5 Basic Speed | | - | - |
| 95 | Segment 5 Basic Pattern | | - | - |
| 96 | Basic Audible Type | 0 = Off<br>1 = Tone<br>2 = Sync | - | - |
| 97 | Basic Audible Volume | 0 = Off<br>1 = Low<br>2 = Medium<br>3 = High | - | - |
| 98 | Basic Audible Tone | 0 = Freq 1<br>1 = Freq 2<br>2 = Freq 3 | - | - |

## EIP Inputs

| PLC Address | Description | Data Range | Notes |
|---|---|---|---|
| 0 | Number of Segments | 0…5 | - |
| 1 | Operation Mode | 1 or 2 | 1 = Basic, 2 = Advanced |
| 2 | Banner Name_01 | 0…65535 | ASCII |
| 3 | Banner Name_02 | 0…65535 | |
| 4 | Banner Name_03 | 0…65535 | |
| 5 | Banner Name_04 | 0…65535 | |
| 6 | Banner Name_05 | 0…65535 | |
| 7 | Banner Name_06 | 0…65535 | |
| 8 | Banner Name_07 | 0…65535 | |
| 9 | Banner Name_08 | 0…65535 | |
| 10 | Banner Name_09 | 0…65535 | |
| 11 | Banner Name_10 | 0…65535 | |
| 12 | Product Name_01 | 0…65535 | ASCII |
| 13 | Product Name_02 | 0…65535 | |
| 14 | Product Name_03 | 0…65535 | |
| 15 | Product Name_04 | 0…65535 | |
| 16 | Product Name_05 | 0…65535 | |
| 17 | Product Name_06 | 0…65535 | |
| 18 | Product Name_07 | 0…65535 | |
| 19 | Product Name_08 | 0…65535 | |
| 20 | Product Name_09 | 0…65535 | |
| 21 | Product Name_10 | 0…65535 | |
| 22 | Product Name_11 | 0…65535 | |
| 23 | Product Name_12 | 0…65535 | |
| 24 | Product Name_13 | 0…65535 | |

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| PLC Address | Description | Data Range | Notes |
|---|---|---|---|
| 25 | Product Name_14 | 0…65535 | |
| 26 | Product Name_15 | 0…65535 | |
| 27 | Product Name_16 | 0…65535 | |
| 28 | Item H | 0…65535 | - |
| 29 | Item L | 0…65535 | - |
| 30 | Serial Number 1 (H) | 0…65535 | - |
| 31 | Serial Number 2 | 0…65535 | - |
| 32 | Serial Number 3 | 0…65535 | - |
| 33 | Serial Number 4 (L) | 0…65535 | - |
| 34 | Firmware PN H | 0…65535 | - |
| 35 | Firmware PN L | 0…65535 | - |
| 36 | Firmware Version H | 0…65535 | - |
| 37 | Firmware Version L | 0…65535 | - |
| 38 | Firmware Build Number H | 0…65535 | - |
| 39 | Firmware Build Number L | 0…65535 | - |
| 40 | User Defined Tag_01 | 0…65535 | User-defined data space |
| 41 | User Defined Tag_02 | 0…65535 | |
| 42 | User Defined Tag_03 | 0…65535 | |
| 43 | User Defined Tag_04 | 0…65535 | |
| 44 | User Defined Tag_05 | 0…65535 | |
| 45 | User Defined Tag_06 | 0…65535 | |
| 46 | User Defined Tag_07 | 0…65535 | |
| 47 | User Defined Tag_08 | 0…65535 | |
| 48 | User Defined Tag_09 | 0…65535 | |
| 49 | User Defined Tag_10 | 0…65535 | |
| 50 | User Defined Tag_11 | 0…65535 | |
| 51 | User Defined Tag_12 | 0…65535 | |
| 52 | User Defined Tag_13 | 0…65535 | |
| 53 | User Defined Tag_14 | 0…65535 | |
| 54 | User Defined Tag_15 | 0…65535 | |
| 55 | User Defined Tag_16 | 0…65535 | |

## Modbus TCP Register Map

| Name | Register | With Offset | Description | Holding Register Representation | Access |
|---|---|---|---|---|---|
| Read only | 0 | 1 | Number of segments Read | #1 - 5 | - |
| | 1 | 2 | Mode Read | 1 = Basic Mode, 2 = Advanced Mode | RO |
| Modbus Addressing | 600 | 601 | Baud Rate | 0 = 9600<br>1 = 19200<br>2 = 38400 | WO |
| | 601 | 602 | Parity | 1 = None<br>2 = Odd<br>3 = Even | WO |

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| Name | Register | With Offset | Description | Holding Register Representation | Access |
|---|---|---|---|---|---|
| | 602 | 603 | Address | 1 - 254 | WO |
| | 603 | 604 | Reserved | NA | WO |
| | 604 | 605 | Factory Reset | 1 = Soft Reset, 2 = Hard Reset (with comms) | WO |
| Device Information | 605-614 | 606-615 | Banner Name | 0..65535 | RO |
| | 615-630 | 616-631 | Product Name | 0..65535 | RO |
| | 631 | 632 | Item H | 0..65535 | RO |
| | 632 | 633 | Item L | 0..65535 | RO |
| | 633 | 634 | Serial Number 1 (H) | 0..65535 | RO |
| | 634 | 635 | Serial Number 2 | 0..65535 | RO |
| | 635 | 636 | Serial Number 3 | 0..65535 | RO |
| | 636 | 637 | Serial Number 4 (L) | 0..65535 | RO |
| | 637 | 638 | Firmware PN H | 0..65535 | RO |
| | 638 | 639 | Firmware PN L | 0..65535 | RO |
| | 639 | 640 | Firmware Version H | 0..65535 | RO |
| | 640 | 641 | Firmware Version L | 0..65535 | RO |
| | 641 | 642 | Firmware Build Number H | 0..65535 | RO |
| | 642 | 643 | Firmware Build Number L | 0..65535 | RO |
| | 643-658 | 644-659 | User Define Tag | 0..65535 | RO |
| Basic Mode Control | 5000 | 5001 | Segment 1 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation | RW |
| | 5001 | 5002 | Segment 2 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation | RW |
| | 5002 | 5003 | Segment 3 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation | RW |
| | 5003 | 5004 | Segment 4 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation | RW |
| | 5004 | 5005 | Segment 5 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation | RW |
| | 5005 | 5006 | Basic Audible | 0 = Off, 1 = Basic On | RW |

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| Name | Register | With Offset | Description | Holding Register Representation | Access |
|---|---|---|---|---|---|
| Advanced Mode Control | 5000 | 5001 | Segment 1 Animation | 0 = Off<br>1 = Steady<br>2 = Flash<br>3 = Two Color Flash<br>4 = 50/50<br>5 = 50/50 Rotate<br>6 = Chase<br>7 = Intensity Sweep<br>8 = Demo | RW |
| | 5001 | 5002 | Segment 1 Color 1 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | RW |
| | 5002 | 5003 | Segment 1 Color 2 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | RW |

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| Name | Register | With Offset | Description | Holding Register Representation | Access |
|---|---|---|---|---|---|
| | 5003 | 5004 | Segment 1 Color 1 Intensity | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom | RW |
| | 5004 | 5005 | Segment 1 Color 2 Intensity | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom | RW |
| | 5005 | 5006 | Segment 1 Speed | 0 = Slow<br>1 = Medium<br>2 = Fast<br>3 = Custom | RW |
| | 5006 | 5007 | Segment 1 Pattern | 0 = Normal<br>1 = Strobe<br>2 = 3-Pulse<br>3 = SOS<br>4 = Random | RW |
| | 5007 | 5008 | Segment 2 Animation | - | RW |
| | 5008 | 5009 | Segment 2 Color 1 | - | RW |
| | 5009 | 5010 | Segment 2 Color 2 | - | RW |
| | 5010 | 5011 | Segment 2 Color 1 Intensity | - | RW |
| | 5011 | 5012 | Segment 2 Color 2 Intensity | - | RW |
| | 5012 | 5013 | Segment 2 Speed | - | RW |
| | 5013 | 5014 | Segment 2 Pattern | - | RW |
| | 5014 | 5015 | Segment 3 Animation | - | RW |
| | 5015 | 5016 | Segment 3 Color 1 | - | RW |
| | 5016 | 5017 | Segment 3 Color 2 | - | RW |
| | 5017 | 5018 | Segment 3 Color 1 Intensity | - | RW |
| | 5018 | 5019 | Segment 3 Color 2 Intensity | - | RW |
| | 5019 | 5020 | Segment 3 Speed | - | RW |
| | 5020 | 5021 | Segment 3 Pattern | - | RW |
| | 5021 | 5022 | Segment 4 Animation | - | RW |
| | 5022 | 5023 | Segment 4 Color 1 | - | RW |
| | 5023 | 5024 | Segment 4 Color 2 | - | RW |
| | 5024 | 5025 | Segment 4 Color 1 Intensity | - | RW |
| | 5025 | 5026 | Segment 4 Color 2 Intensity | - | RW |
| | 5026 | 5027 | Segment 4 Speed | - | RW |
| | 5027 | 5028 | Segment 4 Pattern | - | RW |
| | 5028 | 5029 | Segment 5 Animation | - | RW |
| | 5029 | 5030 | Segment 5 Color 1 | - | RW |

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| Name | Register | With Offset | Description | Holding Register Representation | Access |
|---|---|---|---|---|---|
| | 5030 | 5031 | Segment 5 Color 2 | - | RW |
| | 5031 | 5032 | Segment 5 Color 1 Intensity | - | RW |
| | 5032 | 5033 | Segment 5 Color 2 Intensity | - | RW |
| | 5033 | 5034 | Segment 5 Speed | - | RW |
| | 5034 | 5035 | Segment 5 Pattern | - | RW |
| | 5035 | 5036 | Audible State | 0 = Off<br>1 = Tone<br>2 = Sync | RW |
| | 5036 | 5037 | Audible Volume | 0 = Off<br>1 = Low<br>2 = Medium<br>3 = High | RW |
| | 5037 | 5038 | Audible Tone | 0 = Freq 1<br>1 = Freq 2<br>2 = Freq 3 | RW |
| | 5038 | 5039 | Custom Speed | dHz | RW |
| | 5039 | 5040 | Custom Intensity | 0-100% | RW |
| Operating Mode | 5040 | 5041 | Operation Mode Write | 1 = Basic Mode, 2 = Advanced Mode | WO |
| Basic Mode Segment 1 Configuration | 5110 | 5111 | Basic Color | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | RW |
| | 5111 | 5112 | Basic Flash Speed | 0 = Standard<br>1 = Fast<br>2 = Slow<br>3 = Custom | RW |

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| Name | Register | With Offset | Description | Holding Register Representation | Access |
|---|---|---|---|---|---|
| | 5112 | 5113 | Basic Animation | 0 = Off<br>1 = Steady<br>2 = Flash<br>3 = Two Color Flash<br>4 = 50/50<br>5 = 50/50 Rotate<br>6 = Chase<br>7 = Intensity Sweep<br>8 = Demo | RW |
| | 5113 | 5114 | Basic Color 1 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | RW |
| | 5114 | 5115 | Basic Color 2 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White | RW |

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| Name | Register | With Offset | Description | Holding Register Representation | Access |
|---|---|---|---|---|---|
| | 5115 | 5116 | Basic Intensity 1 | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom | RW |
| | 5116 | 5117 | Basic Intensity 2 | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom | RW |
| | 5117 | 5118 | Basic Speed | 0 = Slow<br>1 = Medium<br>2 = Fast<br>3 = Custom | RW |
| | 5118 | 5119 | Basic Pattern | 0 = Normal<br>1 = Strobe<br>2 = 3-Pulse<br>3 = SOS<br>4 = Random | RW |
| Segment Mode Segment 2 Configuration | 5120 | 5121 | Basic Color | - | RW |
| | 5121 | 5122 | Basic Flash Speed | - | RW |
| | 5122 | 5123 | Basic Animation | - | RW |
| | 5123 | 5124 | Basic Color 1 | - | RW |
| | 5124 | 5125 | Basic Color 2 | - | RW |
| | 5125 | 5126 | Basic Intensity 1 | - | RW |
| | 5126 | 5127 | Basic Intensity 2 | - | RW |
| | 5127 | 5128 | Basic Speed | - | RW |
| | 5128 | 5129 | Basic Pattern | - | RW |
| Segment Mode Segment 3 Configuration | 5130 | 5131 | Basic Color | - | RW |
| | 5131 | 5132 | Basic Flash Speed | - | RW |
| | 5132 | 5133 | Basic Animation | - | RW |
| | 5133 | 5134 | Basic Color 1 | - | RW |
| | 5134 | 5135 | Basic Color 2 | - | RW |
| | 5135 | 5136 | Basic Intensity 1 | - | RW |
| | 5136 | 5137 | Basic Intensity 2 | - | RW |
| | 5137 | 5138 | Basic Speed | - | RW |
| | 5138 | 5139 | Basic Pattern | - | RW |
| Segment Mode Segment 4 Configuration | 5140 | 5141 | Basic Color | - | RW |
| | 5141 | 5142 | Basic Flash Speed | - | RW |
| | 5142 | 5143 | Basic Animation | - | RW |
| | 5143 | 5144 | Basic Color 1 | - | RW |
| | 5144 | 5145 | Basic Color 2 | - | RW |

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| Name | Register | With Offset | Description | Holding Register Representation | Access |
|---|---|---|---|---|---|
| | 5145 | 5146 | Basic Intensity 1 | - | RW |
| | 5146 | 5147 | Basic Intensity 2 | - | RW |
| | 5147 | 5148 | Basic Speed | - | RW |
| | 5148 | 5149 | Basic Pattern | - | RW |
| Segment Mode Segment 5 Configuration | 5150 | 5151 | Basic Color | - | RW |
| | 5151 | 5152 | Basic Flash Speed | - | RW |
| | 5152 | 5153 | Basic Animation | - | RW |
| | 5153 | 5154 | Basic Color 1 | - | RW |
| | 5154 | 5155 | Basic Color 2 | - | RW |
| | 5155 | 5156 | Basic Intensity 1 | - | RW |
| | 5156 | 5157 | Basic Intensity 2 | - | RW |
| | 5157 | 5158 | Basic Speed | - | RW |
| | 5158 | 5159 | Basic Pattern | - | RW |
| Basic Segment Audio Configuration | 5160 | 5161 | Audible State | 0 = Off<br>1 = Tone<br>2 = Sync | RW |
| | 5161 | 5162 | Audible Volume | 0 = Off<br>1 = Low<br>2 = Medium<br>3 = High | RW |
| | 5162 | 5163 | Audible Tone | 0 = Freq 1<br>1 = Freq 2<br>2 = Freq 3 | RW |

# PROFINET Configuration

After connecting to the TL70 and uploading the configuration via the DXM configuration software:

1. Select **Settings**.
2. Select **Ethernet**.
3. Check `Enable Profinet`.


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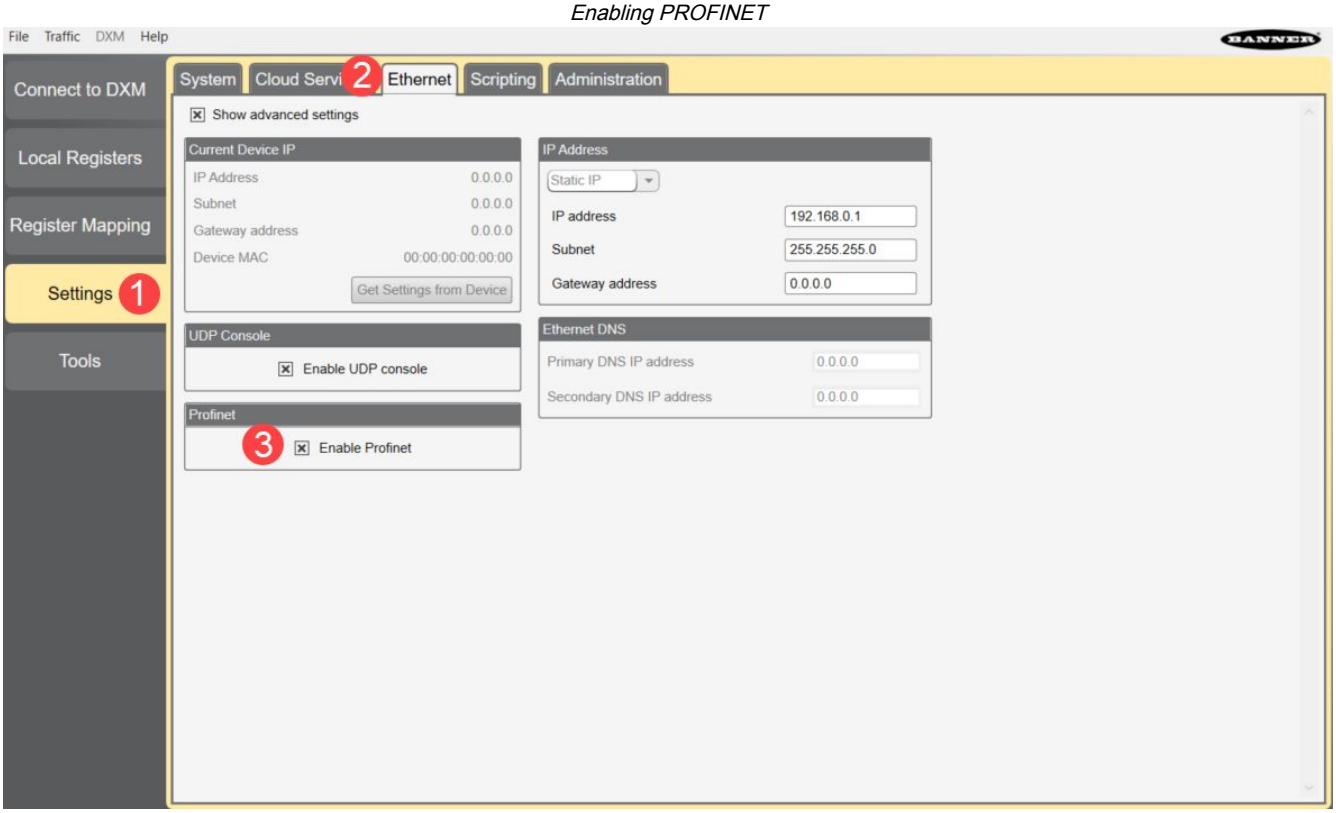
*Enabling PROFINET*




When complete, select **File › Save**, and then select `DXM` and `Send Configuration to DXM` to send the PROFINET-enabled configuration to the tower light. The tower light can now be connected over PROFINET.

## PROFINET Map

| Slot | Name | Profinet Byte # | Local Registers | Description | Holding Register Representation |
|---|---|---|---|---|---|
| 1 | Read only | 0-1 | 1 | Number of segments Read | #1 - 5 |
| | | 2-3 | 2 | Mode Read | 1 = Basic Mode, 2 = Advanced Mode |
| 3 | Device Information | 186-205 | 606-615 | Banner Name | 0..65535 |
| | | 206-237 | 616-631 | Product Name | 0..65535 |
| | | 238-239 | 632 | Item H | 0..65535 |
| | | 240-241 | 633 | Item L | 0..65535 |
| | | 242-243 | 634 | Serial Number 1 (H) | 0..65535 |
| | | 244-245 | 635 | Serial Number 2 | 0..65535 |
| | | 246-247 | 636 | Serial Number 3 | 0..65535 |
| | | 248-249 | 637 | Serial Number 4 (L) | 0..65535 |
| | | 250-251 | 638 | Firmware PN H | 0..65535 |
| | | 252-253 | 639 | Firmware PN L | 0..65535 |
| | | 254-255 | 640 | Firmware Version H | 0..65535 |
| | | 256-257 | 641 | Firmware Version L | 0..65535 |
| | | 258-259 | 642 | Firmware Build Number H | 0..65535 |
| | | 260-261 | 643 | Firmware Build Number L | 0..65535 |
| | | 262-293 | 644-659 | User Define Tag | 0..65535 |

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| Slot | Name | Profinet Byte # | Local Registers | Description | Holding Register Representation |
|---|---|---|---|---|---|
| 7 | Basic Mode Control | 0-1 | 5001 | Segment 1 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| | | 2-3 | 5002 | Segment 2 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| | | 4-5 | 5003 | Segment 3 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| | | 6-7 | 5004 | Segment 4 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| | | 8-9 | 5005 | Segment 5 State | 0 = Off<br>1 = Basic On<br>2 = Basic Flash<br>3 = Animation |
| | | 10-11 | 5006 | Basic Audible | 0 = Off, 1 = Basic On |
| 7 | Advanced Mode Control | 0-1 | 5001 | Segment 1 Animation | 0 = Off<br>1 = Steady<br>2 = Flash<br>3 = Two Color Flash<br>4 = 50/50<br>5 = 50/50 Rotate<br>6 = Chase<br>7 = Intensity Sweep<br>8 = Demo |

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| Slot | Name | Profinet Byte # | Local Registers | Description | Holding Register Representation |
|---|---|---|---|---|---|
| | | 2-3 | 5002 | Segment 1 Color 1 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White |
| | | 4-5 | 5003 | Segment 1 Color 2 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White |
| | | 6-7 | 5004 | Segment 1 Color 1 Intensity | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom |
| | | 8-9 | 5005 | Segment 1 Color 2 Intensity | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom |

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| Slot | Name | Profinet Byte # | Local Registers | Description | Holding Register Representation |
|---|---|---|---|---|---|
| | | 10-11 | 5006 | Segment 1 Speed | 0 = Slow<br>1 = Medium<br>2 = Fast<br>3 = Custom |
| | | 12-13 | 5007 | Segment 1 Pattern | 0 = Normal<br>1 = Strobe<br>2 = 3-Pulse<br>3 = SOS<br>4 = Random |
| | | 14-15 | 5008 | Segment 2 Animation | - |
| | | 16-17 | 5009 | Segment 2 Color 1 | - |
| | | 18-19 | 5010 | Segment 2 Color 2 | - |
| | | 20-21 | 5011 | Segment 2 Color 1 Intensity | - |
| | | 22-23 | 5012 | Segment 2 Color 2 Intensity | - |
| | | 24-25 | 5013 | Segment 2 Speed | - |
| | | 26-27 | 5014 | Segment 2 Pattern | - |
| | | 28-29 | 5015 | Segment 3 Animation | - |
| | | 30-31 | 5016 | Segment 3 Color 1 | - |
| | | 32-33 | 5017 | Segment 3 Color 2 | - |
| | | 34-35 | 5018 | Segment 3 Color 1 Intensity | - |
| | | 36-37 | 5019 | Segment 3 Color 2 Intensity | - |
| | | 38-39 | 5020 | Segment 3 Speed | - |
| | | 40-41 | 5021 | Segment 3 Pattern | - |
| | | 42-43 | 5022 | Segment 4 Animation | - |
| | | 44-45 | 5023 | Segment 4 Color 1 | - |
| | | 46-47 | 5024 | Segment 4 Color 2 | - |
| | | 48-49 | 5025 | Segment 4 Color 1 Intensity | - |
| | | 50-51 | 5026 | Segment 4 Color 2 Intensity | - |
| | | 52-53 | 5027 | Segment 4 Speed | - |
| | | 54-55 | 5028 | Segment 4 Pattern | - |
| | | 56-57 | 5029 | Segment 5 Animation | - |
| | | 58-59 | 5030 | Segment 5 Color 1 | - |
| | | 60-61 | 5031 | Segment 5 Color 2 | - |
| | | 62-63 | 5032 | Segment 5 Color 1 Intensity | - |
| | | 64-65 | 5033 | Segment 5 Color 2 Intensity | - |
| | | 66-67 | 5034 | Segment 5 Speed | - |
| | | 68-69 | 5035 | Segment 5 Pattern | - |
| | | 70-71 | 5036 | Audible Type | 0 = Off<br>1 = Tone<br>2 = Sync |

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| Slot | Name | Profinet Byte # | Local Registers | Description | Holding Register Representation |
|---|---|---|---|---|---|
| | | 72-73 | 5037 | Audible Volume | 0 = Off<br>1 = Low<br>2 = Medium<br>3 = High |
| | | 74-75 | 5038 | Audible Tone | 0 = Freq 1<br>1 = Freq 2<br>2 = Freq 3 |
| | | 76-77 | 5039 | Custom Speed | dHz |
| | | 78-79 | 5040 | Custom Intensity | 0-100% |
| 7 | Operating Mode | 80-81 | 5041 | Operation Mode Write | 1 = Basic Mode, 2 = Advanced Mode |
| 7 | Basic Mode Segment 1 Configuration | 220-221 | 5111 | Basic Color | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White |
| | | 222-223 | 5112 | Basic Flash Speed | 0 = Standard<br>1 = Fast<br>2 = Slow<br>3 = Custom |
| | | 224-225 | 5113 | Basic Animation | 0 = Off<br>1 = Steady<br>2 = Flash<br>3 = Two Color Flash<br>4 = 50/50<br>5 = 50/50 Rotate<br>6 = Chase<br>7 = Intensity Sweep<br>8 = Demo |

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| Slot | Name | Profinet Byte # | Local Registers | Description | Holding Register Representation |
|---|---|---|---|---|---|
| | | 226-227 | 5114 | Basic Color 1 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White |
| | | 228-229 | 5115 | Basic Color 2 | 0 = Green<br>1 = Red<br>2 = Orange<br>3 = Amber<br>4 = Yellow<br>5 = Lime Green<br>6 = Spring Green<br>7 = Cyan<br>8 = Sky Blue<br>9 = Blue<br>10 = Violet<br>11 = Magenta<br>12 = Rose<br>13 = White |
| | | 230-231 | 5116 | Basic Intensity 1 | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom |
| | | 232-233 | 5117 | Basic Intensity 2 | 0 = High<br>1 = Medium<br>2 = Low<br>3 = Off<br>4 = Custom |

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| Slot | Name | Profinet Byte # | Local Registers | Description | Holding Register Representation |
|---|---|---|---|---|---|
| | | 234-235 | 5118 | Basic Speed | 0 = Slow<br>1 = Medium<br>2 = Fast<br>3 = Custom |
| | | 236-237 | 5119 | Basic Pattern | 0 = Normal<br>1 = Strobe<br>2 = 3-Pulse<br>3 = SOS<br>4 = Random |
| 7 | Segment Mode Segment 2 Configuration | 240-241 | 5121 | Basic Color | - |
| | | 242-243 | 5122 | Basic Flash Speed | - |
| | | 244-245 | 5123 | Basic Animation | - |
| | | 246-247 | 5124 | Basic Color 1 | - |
| | | 248-249 | 5125 | Basic Color 2 | - |
| | | 250-251 | 5126 | Basic Intensity 1 | - |
| | | 252-253 | 5127 | Basic Intensity 2 | - |
| | | 254-255 | 5128 | Basic Speed | - |
| | | 256-257 | 5129 | Basic Pattern | - |
| 7 | Segment Mode Segment 3 Configuration | 260-261 | 5131 | Basic Color | - |
| | | 262-263 | 5132 | Basic Flash Speed | - |
| | | 264-265 | 5133 | Basic Animation | - |
| | | 266-267 | 5134 | Basic Color 1 | - |
| | | 268-269 | 5135 | Basic Color 2 | - |
| | | 270-271 | 5136 | Basic Intensity 1 | - |
| | | 272-273 | 5137 | Basic Intensity 2 | - |
| | | 274-275 | 5138 | Basic Speed | - |
| | | 276-277 | 5139 | Basic Pattern | - |
| 7 | Segment Mode Segment 4 Configuration | 280-281 | 5141 | Basic Color | - |
| | | 282-283 | 5142 | Basic Flash Speed | - |
| | | 284-285 | 5143 | Basic Animation | - |
| | | 286-287 | 5144 | Basic Color 1 | - |
| | | 288-289 | 5145 | Basic Color 2 | - |
| | | 290-291 | 5146 | Basic Intensity 1 | - |
| | | 292-293 | 5147 | Basic Intensity 2 | - |
| | | 294-295 | 5148 | Basic Speed | - |
| | | 296-297 | 5149 | Basic Pattern | - |
| 7 | Segment Mode Segment 5 Configuration | 300-301 | 5151 | Basic Color | - |
| | | 302-303 | 5152 | Basic Flash Speed | - |
| | | 304-305 | 5153 | Basic Animation | - |
| | | 306-307 | 5154 | Basic Color 1 | - |
| | | 308-309 | 5155 | Basic Color 2 | - |
| | | 310-311 | 5156 | Basic Intensity 1 | - |

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| Slot | Name | Profinet Byte # | Local Registers | Description | Holding Register Representation |
|---|---|---|---|---|---|
| | | 312-313 | 5157 | Basic Intensity 2 | - |
| | | 314-315 | 5158 | Basic Speed | - |
| | | 316-317 | 5159 | Basic Pattern | - |
| 7 | Basic Segment Audio Configuration | 320-321 | 5161 | Audible Type | 0 = Off<br>1 = Tone<br>2 = Sync |
| | | 322-323 | 5162 | Audible Volume | 0 = Off<br>1 = Low<br>2 = Medium<br>3 = High |
| | | 324-325 | 5163 | Audible Tone | 0 = Freq 1<br>1 = Freq 2<br>2 = Freq 3 |

# 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 |
| 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 |

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| Setting | Description |
| --- | --- |
| Audible Tone | Defines the audible tone frequency |


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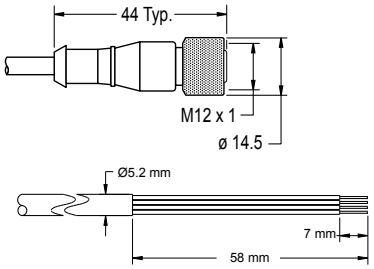
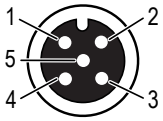
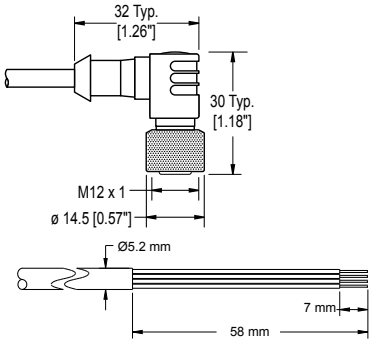
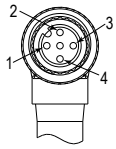
# Chapter 5 Accessories

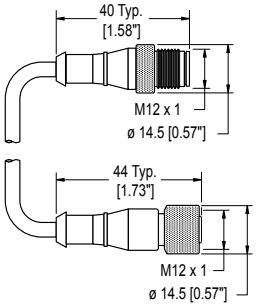
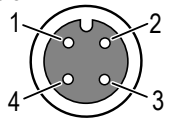
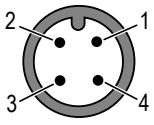
## Cordsets

**4-Pin Single-Ended, M12 Female Cordsets**

| Model | Length | Style | Dimensions | Pinout (Female) |
|---|---|---|---|---|
| MQDC-406 | 2 m (6.56 ft) | Straight |  |  |
| 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 |  |  |
| MQDC-415RA | 5 m (16.4 ft) | | | |
| MQDC-430RA | 9 m (29.5 ft) | | | |
| MQDC-450RA | 15 m (49.2 ft) | | | |

1 = Brown
2 = White
3 = Blue
4 = Black
5 = Unused

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

| Model | Length | Style | Dimensions | Pinout |
|---|---|---|---|---|
| MQDEC-401SS | 0.31 m (1 ft) | Male Straight/ Female Straight |  | Female  Male  1 = Brown<br>2 = White<br>3 = Blue<br>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) | | | |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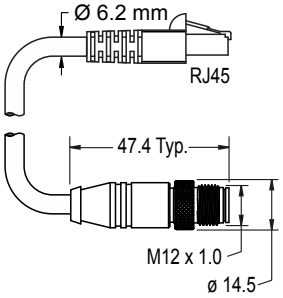
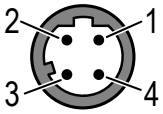
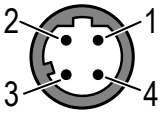
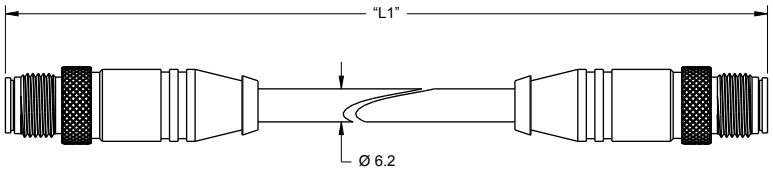
| 4-Pin D-Code Double-Ended, M12 Male-RJ45 Male, Shielded Cordsets | | | | |
|---|---|---|---|---|
| **Model** | **Length** | **Dimensions** | **RJ45 Pinout (Male)** | **M12 Pinout (Male)** |
| **STP-M12D-403** | 0.9 m (2.95 ft) |  | <br>1 = White/Orange<br>2 = Orange<br>3 = White/Blue<br>6 = Blue | <br>1 = White/Orange<br>2 = White/Blue<br>3 = Orange<br>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 to M12 Male Shielded Cordset | | | | |
|---|---|---|---|---|
| **Model** | **Length "L1"** | **Style** | **Pinout** | |
| **M12D-M12D-4M** | 4 m (13.1 ft) | Male Straight / Male Straight |  | 1 = White / Orange<br>2 = White / Blue<br>3 = Orange<br>4 = Blue |
|  | | | | |

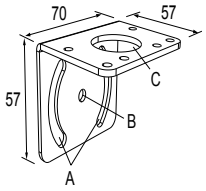
# Mounting Brackets

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

**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
- CAD Files: DXF, PDF, IGS, STP

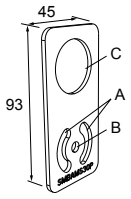
**Hole center spacing:** A=51, A to B=25.4
**Hole size:** A=42.6 × 7, B=ø 6.4, C=ø 30.1




**SMBAMS30P**

- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-gauge 300 series stainless steel
- CAD Files: DXF, PDF, IGS, STP

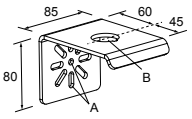
**Hole center spacing:** A=26.0, A to B=13.0
**Hole size:** A=26.8 × 7.0, B=ø 6.5, C=ø 31.0




**SSA-MBK-EEC1**

- Single 30 mm hole
- 8 gauge steel, black finish (powder coat)
- Front surface for customer-applied labels
- CAD Files: DXF, PDF, IGS, STP

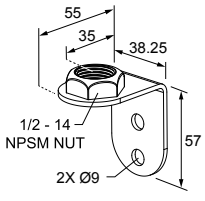
**Hole size:** A = ø 7 , B = ø 30




**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
- CAD Files: DXF, PDF, IGS, STP

**Hole center spacing:** 20.0

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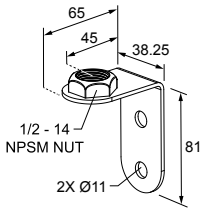
**LMBE12RA45**

- 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
- CAD Files: DXF, PDF, IGS, STP

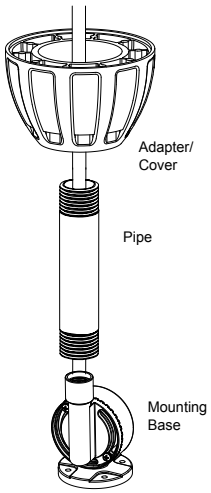
**Hole center spacing:** 35.0




# Elevated Mount System

Single-cable models (suffix QPD) are compatible with the Elevated Mount System. Dual-cable models (suffix Q2PE) are incompatible with the Elevated Mount System. This applies to both base models and pre-assembled models. See Models for more detailed model numbers.

*Example Assembly for a TL70 Tower Light*

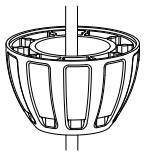



This example uses:

1. Adapter/Cover (SA-M30 shown)
2. Pipe
3. Mounting Base (SA-FFB12 shown)

Other compatible parts are listed in the following tables.

## Adapters/Covers

| Adapter/Cover Model | Description | |
|---|---|---|
| **SA-M30** - Black polycarbonate | • Streamlined black PC or Gray PC thread cover<br>• Covers the outer M30 threads on the light's base<br>• Typically used for the TL70 Tower Light and K90 series<br>• Mounting hardware included<br>• CAD files: DXF, PDF, IGS, STP |  |
| **SA-M30C** - Gray polycarbonate | | |

## Pipes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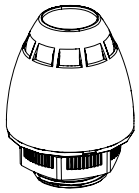
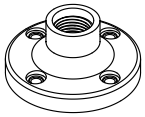
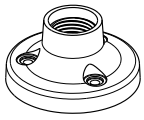
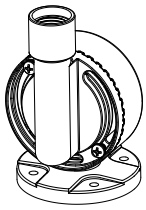
| Black Anodized Aluminum, ½ in. NPT Pipe Models | Clear Anodized Aluminum, ½ in. NPT Pipe Models | Description |
|---|---|---|
| **SOP-E12-150A**, 150 mm (6 in) long | **SOP-E12-150AC**, 150 mm (6 in) long | • Elevated-use stand-off pipe<br>• Threaded at both ends<br>• Compatible with most industrial environments<br>• CAD Files:<br>◦ **SOP-E12-150A**: DXF, PDF, IGS, STP<br>◦ **SOP-E12-300A**: DXF, PDF, IGS, STP<br>◦ **SOP-E12-600A**: DXF, PDF, IGS, STP<br>◦ **SOP-E12-900A**: DXF, PDF, IGS, STP |
| **SOP-E12-300A**, 300 mm (12 in) long | **SOP-E12-300AC**, 300 mm (12 in) long | |
| **SOP-E12-600A**, 600 mm (24 in) long | - | |
| **SOP-E12-900A**, 900 mm (36 in) long | **SOP-E12-900AC**, 900 mm (36 in) long | |

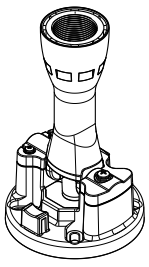
## Bottom Covers and Mounting Bases

| Mounting Base Model | Description | |
|---|---|---|
| **SA-E12M30** - Black acetal<br>**SA-E12M30C** - White UHMW | • Streamlined black acetal or white UHMW mounting base adapter/cover<br>• Adapter from ½ in. NPSM/DN15 pipe to 30 mm (1-3/16 in) drilled hole<br>• Mounting hardware included<br>• CAD files: DXF, PDF, IGS, STP |  |

| Mounting Base Model | Description | |
|---|---|---|
| **SA-F12** | • Die-cast zinc base with black paint<br>• Elevated-use stand-off pipes (½ in, NPSM/DN15)<br>• M5 mounting hardware and nitrile gasket included<br>• CAD files: DXF, PDF, IGS, STP |  |

| Mounting Base Model | Description | |
|---|---|---|
| **SA-F12-3** | • Black polycarbonate<br>• Elevated-use stand-off pipes (½ in, NPSM/DN15)<br>• M4 mounting hardware and nitrile blend gasket included<br>• CAD files: DXF, PDF, IGS, STP |  |

| Mounting Base Model | Description | |
|---|---|---|
| **SA-FFB12** - Black polycarbonate<br>**SA-FFB12C** - Gray polycarbonate | • For use with ½ in. stand-off pipes<br>• 110° rotation<br>• Stainless steel hardware<br>• CAD files: DXF, PDF, IGS, STP |  |

| Mounting Base Model | Description | |
|---|---|---|
| **SOKTL150R4** | • Black polycarbonate<br>• Foldable stand model with upright and 90° folding states<br>• Elevated-use stand-off pipes (½ in, NPSM/DN15)<br>• Mounting hardware included<br>• CAD files: DXF, PDF, IGS, STP |  |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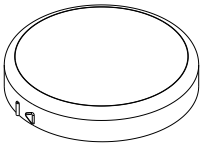
# LMB Sealed Right Angle Bracket

| Model | Description | Construction | |
|---|---|---|---|
| **LMB30RA**<br>CAD Files: DXF, PDF, IGS, STP | **Direct-Mount Models:** Bracket kit with base, 30 mm adapter, set screw, fasteners, O-rings, and gaskets. | Black polycarbonate |  |
| **LMBE12RA**<br>CAD Files: DXF, PDF, IGS, STP | **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 |  |

# Top Replacement Cover

| | |
|---|---|
| **C-TL70** Replacement Top Cover<br>• Black polycarbonate housing<br>• Fits TL70 tower lights<br>• IP65 rated<br>• CAD Files: DXF, PDF, IGS, STP |  |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# Chapter 6 Product Support and Maintenance

## Clean with Mild Detergent and Warm Water

Wipe down the device with a soft cloth dampened with a mild detergent and warm water solution. Do not use any other chemicals for cleaning.

## Repairs

Contact Banner Engineering for troubleshooting of this device. **Do not attempt any repairs to this Banner device; it contains no field-replaceable parts or components.** If the device, device part, or device component is determined to be defective by a Banner Applications Engineer, they will advise you of Banner's RMA (Return Merchandise Authorization) procedure.

> **IMPORTANT:** If instructed to return the device, pack it with care. Damage that occurs in return shipping is not covered by warranty.

## Contact Us

Banner Engineering Corp. | 9714 Tenth Avenue North | Plymouth, MN 55441, USA | Phone: + 1 888 373 6767

For worldwide locations and local representatives, visit www.bannerengineering.com.

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