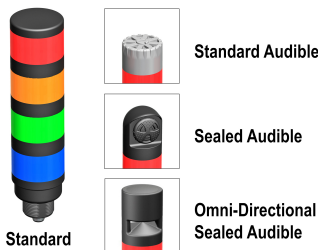


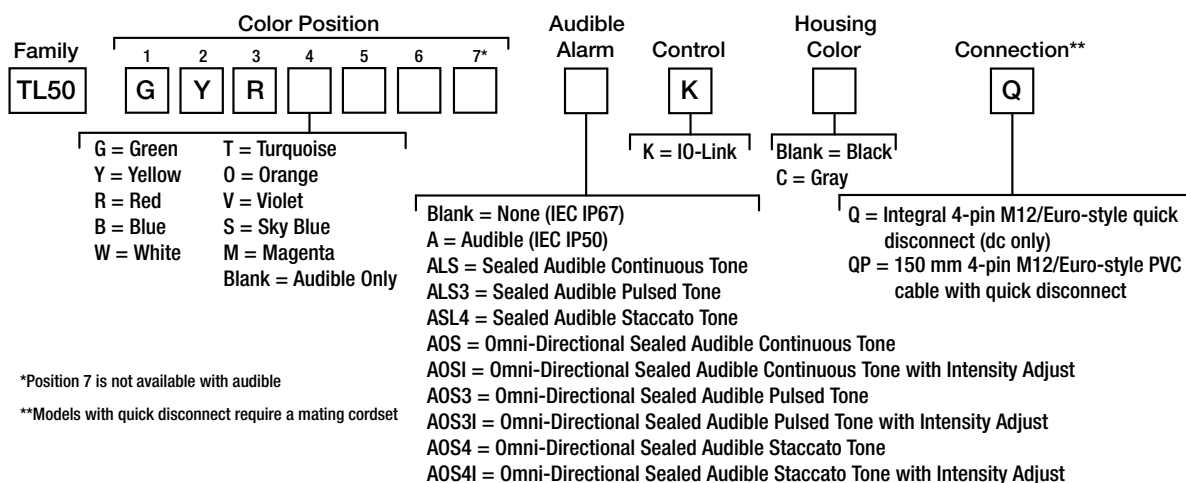
Datasheet

Multi-Color General-Purpose or Audible Indicators



- Rugged, cost-effective, and easy-to-install multi-segment indicators
- Illuminated segments provide easy-to-see operator guidance and indication of equipment status
- Up to seven stacked colors available
- Available in black or light gray housing
- Audible models available with standards, sealed, or omni-directional audible element
- Compact devices are completely self-contained, no controller needed
- 12 V dc to 30 V dc operation with IO-Link control
- No assembly required

Models



Example models include: TL50WBGYRKQ or TL50GYRAOSIKQ. The first color listed is the bottom color, going up in successive order.

IO-Link Process Data Out (Master to Device)

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

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

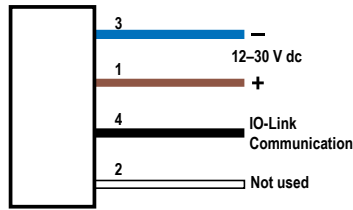
Process Data Out is transmitted cyclically to the IO-Link device from the IO-Link master. These values written to the TL50 are used to perform one of the following functions:

- Tower light and audible segments turn off = 00
- Tower light and audible segments turn on = 01
- Tower light segment flashes; audible segment turns on = 10

| Process Data Out | | | | | | | | | | | | | | | | |
|------------------|----|-----------|----|----|-----------|---|---|-----------|---|-----------|---|-----------|---|-----------|---|-----------|
| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | |
| | | Segment 7 | | | Segment 6 | | | Segment 5 | | Segment 4 | | Segment 3 | | Segment 2 | | Segment 1 |
| Example: | | On | | | Flashing | | | Flashing | | Off | | Flashing | | On | | On |



Wiring Diagram



Key

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

Specifications

Supply Voltage and Current

12 V dc to 30 V dc

Indicators—maximum current per LED color:

- 160 mA at 12 V dc
- 70 mA at 24 V dc
- 55 mA at 30 V dc

Standard Audible Alarm: 50 mA maximum current

Sealed Audible Alarm: 60 mA maximum current

Omni-Directional Sealed Audible: 70 mA maximum current

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Input Response Time

Indicator On/Off: 10 milliseconds maximum

Audible Alarm

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

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

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

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

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

- **Standard Audible:** 30 dB
- **Sealed Audible:** 20 dB
- **Omni-Directional Sealed Audible:** 12 dB

Audible Adjustment

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

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

Connections

Integral 4-pin M12/Euro-style quick disconnect (dc only), or 150 mm (6 in) PVC cable with a 4-pin M12/Euro-style quick disconnect, depending on model

Models with a quick disconnect require a mating cordset

Construction

Bases and Covers: ABS

Light Segment: Polycarbonate

Vibration and Mechanical Shock

Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 1.0 mm amplitude, 5 minutes sweep, 30 minutes dwell)

Meets IEC 60068-2-27 requirements (Shock: 30G 11 ms duration, half sine wave)

Operating Conditions

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

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

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

Environmental Rating

UL Type 4X Indoor and UL Type 13

Non-Audible and Sealed Audible: IEC IP67

Standard Audible: IEC IP50

Indicators

LEDs are independently selected; 1 to 7 segments depending on model (lights and audible alarms are counted as segments)

Indicator Characteristics

| Color | Dominant Wavelength or Color Temperature (CCT) | Color Coordinates ¹ | | Typical Lumen Output (lm) |
|-----------|--|--------------------------------|------|---------------------------|
| | | x | y | |
| Green | 528 nm | - | - | 31 |
| Red | 625 nm | - | - | 13 |
| Yellow | 590 nm | - | - | 32 |
| Blue | 470 nm | - | - | 8 |
| Orange | 608 nm | - | - | 9.5 |
| White | 6000 K | - | - | 36 |
| Turquoise | - | 0.19 | 0.37 | 22 |
| Violet | - | 0.20 | 0.08 | 4 |
| Magenta | - | 0.35 | 0.15 | 4.5 |
| Sky Blue | - | 0.19 | 0.26 | 16 |

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.

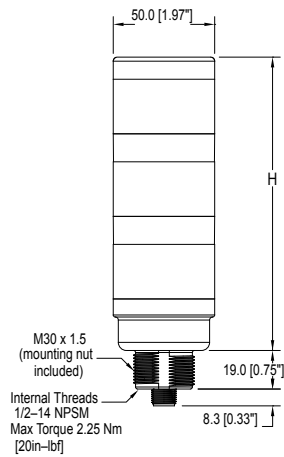
| Supply Wiring (AWG) | Required Overcurrent Protection (Amps) |
|---------------------|--|
| 20 | 5.0 |
| 22 | 3.0 |
| 24 | 2.0 |
| 26 | 1.0 |
| 28 | 0.8 |
| 30 | 0.5 |

Certifications



¹ Refer to the CIE 1930 (x,y) Chromaticity Diagram, to show equivalent color with indicated color coordinates.

Dimensions



| # of Colors | Tower Height (H) | | | |
|-------------|--------------------|--------------------|--------------------|---------------------------------|
| | Non-Audible | Standard Audible* | Sealed Audible | Omni-Directional Sealed Audible |
| 1 | 61.2 mm (2.4 in) | 92.0 mm (3.6 in) | 115.1 mm (4.5 in) | 129.1 mm (5.1 in) |
| 2 | 101.9 mm (4.0 in) | 132.7 mm (5.2 in) | 155.8 mm (6.1 in) | 169.8 mm (6.7 in) |
| 3 | 142.6 mm (5.6 in) | 173.4 mm (6.8 in) | 196.5 mm (7.7 in) | 210.5 mm (8.3 in) |
| 4 | 183.3 mm (7.2 in) | 214.1 mm (8.4 in) | 237.2 mm (9.3 in) | 251.2 mm (9.9 in) |
| 5 | 224.0 mm (8.8 in) | 254.8 mm (10.0 in) | 277.9 mm (10.9 in) | 291.1 mm (11.5 in) |
| 6 | 264.7 mm (10.4 in) | 298.5 mm (11.8 in) | 318.6 mm (12.5 in) | 332.6 mm (13.1 in) |
| 7 | 305.4 mm (12.0 in) | - | - | - |

* Tower height (H) with top unscrewed approximately 3.5 mm (0.18 in) to allow sound to escape

All measurements are listed in millimeters [inches], unless noted otherwise.

Accessories

Cordsets

| 4-Pin Threaded M12/Euro-Style Cordsets—Double Ended | | | | |
|---|----------------|-----------------------------------|------------|--------|
| Model | Length | Style | Dimensions | Pinout |
| MQDEC-401SS | 0.31 m (1 ft) | Male Straight/ Female Straight | | Female |
| MQDEC-403SS | 0.91 m (3 ft) | | | 1 |
| MQDEC-406SS | 1.83 m (6 ft) | | | 2 |
| MQDEC-412SS | 3.66 m (12 ft) | | | 3 |
| MQDEC-420SS | 6.10 m (20 ft) | | | 4 |
| MQDEC-430SS | 9.14 m (30 ft) | | | Male |
| MQDEC-450SS | 15.2 m (50 ft) | | | Female |
| | | | | |

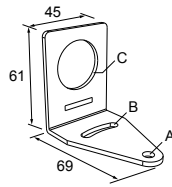
1 = Brown
2 = White
3 = Blue
4 = Black

Mounting Brackets

All measurements are listed in millimeters [inches], 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

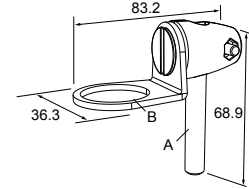


Hole center spacing: A to B=40

Hole size: A=ø 6.3, B= 27.1 x 6.3, C=ø 30.5

SMB30FA

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

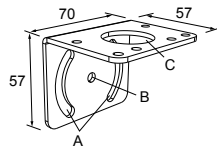


Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50

Hole size: B= ø 30.1

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

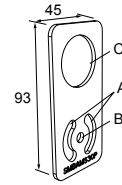


Hole center spacing: A = 51, A to B = 25.4

Hole size: A = 42.6 x 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-ga. 300 series stainless steel

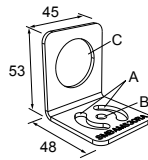


Hole center spacing: A=26.0, A to B=13.0

Hole size: A=26.8 x 7.0, B=ø 6.5, C=ø 31.0

SMBAMS30RA

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

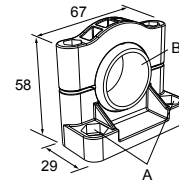


Hole center spacing: A=26.0, A to B=13.0

Hole size: A=26.8 x 7.0, B=ø 6.5, C=ø 31.0

SMB30SC

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

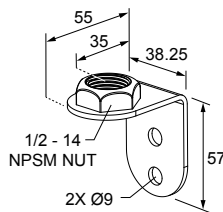


Hole center spacing: A=ø 50.8

Hole size: A=ø 7.0, B=ø 30.0

LMBE12RA35

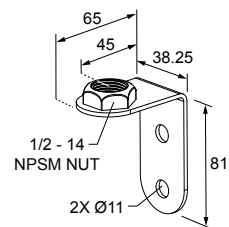
- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 35 mm



Hole center spacing: 20.0

LMBE12RA45

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



Hole center spacing: 35.0

LMB Sealed Right-Angle Bracket

| Model | Description | 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 | 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 | |
| LMBE12RAC | | Gray polycarbonate | |

Pipe Mounting Flange

| Pipe Mounting Flange | | | |
|----------------------|--|-------------------------------------|--|
| Model | Features | Construction | |
| SA-F12 | <ul style="list-style-type: none"> Elevated-use stand-off pipes (½ in, NPSM/DN15) M5 mounting hardware and nitrile gasket included | Die-cast zinc base with black paint | |
| SA-F12-3 | <ul style="list-style-type: none"> Elevated-use stand-off pipes (½ in, NPSM/DN15) M4 mounting hardware and nitrile blend gasket included | Black Polycarbonate | |

Elevated Mount System

| Model | Features | Components | | | | | | | | | | | | |
|--|--|--------------------------------------|-------------------------|-------------------------------------|------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|---|--|
| SA-M30TE12 - Black Acetal | <ul style="list-style-type: none"> Streamlined black acetal or white UHMW stand-off pipe adapter/cover Connects between 30 mm light base and ½ in. NPSM/DN15 pipe Mounting hardware included | | | | | | | | | | | | | |
| SA-M30TE12C - White UHMW | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Polished 304 Stainless Steel</td> <td>Black Anodized Aluminum</td> <td>Clear Anodized Aluminum</td> </tr> <tr> <td>SOP-E12-150SS 150 mm (6 in) long</td> <td>SOP-E12-150A 150 mm (6 in) long</td> <td>SOP-E12-150AC 150 mm (6 in) long</td> </tr> <tr> <td>SOP-E12-300SS 300 mm (12 in) long</td> <td>SOP-E12-300A 300 mm (12 in) long</td> <td>SOP-E12-300AC 300 mm (12 in) long</td> </tr> <tr> <td>SOP-E12-900SS 900 mm (36 in) long</td> <td>SOP-E12-900A 900 mm (36 in) long</td> <td>SOP-E12-900AC 900 mm (36 in) long</td> </tr> </table> | Polished 304 Stainless Steel | Black Anodized Aluminum | Clear Anodized Aluminum | SOP-E12-150SS 150 mm (6 in) long | SOP-E12-150A 150 mm (6 in) long | SOP-E12-150AC 150 mm (6 in) long | SOP-E12-300SS 300 mm (12 in) long | SOP-E12-300A 300 mm (12 in) long | SOP-E12-300AC 300 mm (12 in) long | SOP-E12-900SS 900 mm (36 in) long | SOP-E12-900A 900 mm (36 in) long | SOP-E12-900AC 900 mm (36 in) long | <ul style="list-style-type: none"> Elevated-use stand-off pipe (½ in. NPSM/DN15) Polished 304 stainless steel, black anodized aluminum, or clear anodized aluminum surface ½ in. NPT thread at both ends Compatible with most industrial environments | |
| Polished 304 Stainless Steel | Black Anodized Aluminum | Clear Anodized Aluminum | | | | | | | | | | | | |
| SOP-E12-150SS 150 mm (6 in) long | SOP-E12-150A 150 mm (6 in) long | SOP-E12-150AC 150 mm (6 in) long | | | | | | | | | | | | |
| SOP-E12-300SS 300 mm (12 in) long | SOP-E12-300A 300 mm (12 in) long | SOP-E12-300AC 300 mm (12 in) long | | | | | | | | | | | | |
| SOP-E12-900SS 900 mm (36 in) long | SOP-E12-900A 900 mm (36 in) long | SOP-E12-900AC 900 mm (36 in) long | | | | | | | | | | | | |
| SA-E12M30 - Black Acetal | <ul style="list-style-type: none"> Streamlined black acetal or white UHMW mounting base adapter/cover Connects between ½ in. NPSM/DN15 pipe and 30 mm (1-3/16 in) drilled hole Mounting hardware included | | | | | | | | | | | | | |
| SA-E12M30C - White UHMW | | | | | | | | | | | | | | |

Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

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