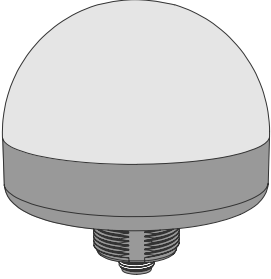


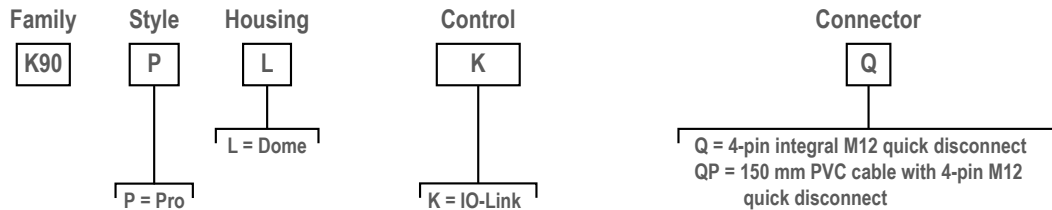
## Datasheet

90 mm IO-Link Controlled Multicolor RGB Indicator



- Bright, uniform indicator light
- IO-Link control allows access to full color, flashing and dimming controls as well as advanced animations
- Millions of color possibilities
- 30 mm threaded polycarbonate base
- Translucent polycarbonate dome
- Rugged IP67 and UL Type 4X and UL Type 13 design
- Variety of connector options

## Models



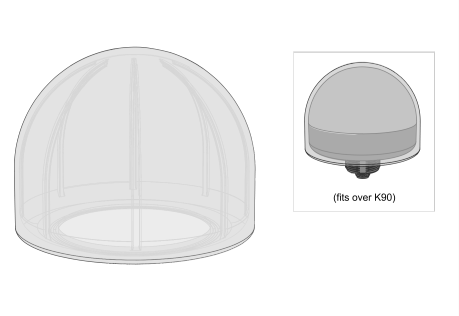
## Washdown Silicone Cover WC-K90

Washdown Cover Model	Description
WC-K90	FDA-grade silicone cover

## Installing the Silicone Cover

To properly install the FDA-grade silicone cover and achieve an IP69 rating, follow these instructions.

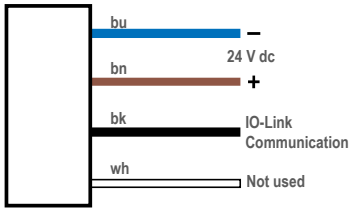
1. Turn the cover inside-out.
2. Place the cover on top of the indicator.
3. Roll the cover onto the indicator.
4. Continue rolling the cover down, around the base of the indicator, until the entire light is covered.
5. Mount the indicator and cover assembly to a bracket wide enough to cover the base of the assembly. The cover should be clamped firmly between the indicator and the bracket.



**NOTE:** The FDA-grade silicone cover withstands high pressure, high temperature washdown, and increases the product rating to IEC IP69. The cover is ECOLAB® certified to withstand aggressive cleaning procedures with chemicals used in the food processing industry.

## Wiring Diagram





## IO-Link® Process Out Data

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 and/or receive process data. For the latest IO-Link protocol and specifications, please visit [www.io-link.com](http://www.io-link.com). For the latest IODD files, please refer to the Banner Engineering Corp website at: [www.bannerengineering.com](http://www.bannerengineering.com).

Process Data is transmitted cyclically to the IO-Link device from the IO-Link master. These parameters are written to the K90 acyclically and are used to perform the following functions:

**NOTE:** Additional color shades can be made by adjusting intensity

IO-Link Process Data Out for the K90	
Name	Values
Color 1	Green, Red, Orange, Yellow, Lime Green, Spring Green, Cyan, Sky Blue, Blue, Violet, Magenta, Rose, White, 5 Custom Colors to define
Color 2	
Color Flash Rate (Hz)	0.5, 1.5, 3, 6, 9, 12, Custom Rate to define
Color 1 Intensity	High, Medium, Low, Custom Intensity to define
Color 2 Intensity	
Animation Mode	Steady, Flash, Two-Color Flash, Strobe, Half/Half, Half/Half Rotate, Chase, Demo Mode
Rotation Direction	Counter Clockwise, Clockwise

Animation Control	
Name	Description
Flashing	Flash light at defined flash rate (50/50 duty cycle)
Two-Color Flashing	Flash two colors at defined flash rate, alternating (50/50 duty cycle)
Strobe	Strobe light at defined flash rate (80/20 duty cycle)
Half/Half	Show half one color and half another color
Half/Half Rotate	Animation that shows half one color and half another color while rotating clockwise or counter-clockwise
Chase	Animation that shows a single spot in one color against a background of another color while rotating clockwise or counter-clockwise
Demo Mode	Cycles through defined colors and then through color spectrum

For more information see IO-Link Data Reference Guide (p/n 200721).

## Specifications

### Supply Voltage and Current

18 V DC to 30 V DC  
300 mA maximum at 18 V DC

### Supply Protection Circuitry

Protected against reverse polarity and transient voltages

### Input Response Time

30 milliseconds maximum while active

### Connections

Integral 4-pin M12 male quick-disconnect connector, or 150 mm (6 in) PVC-jacketed cable with an M12 quick disconnect, depending on model  
Models with a quick disconnect require a mating cordset

### Construction

**Base, Dome, and Nut:** 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**

−40 °C to +50 °C (−40 °F to +122 °F)

90% at +50 °C maximum relative humidity (non-condensing)

Storage Temperature: −40 °C to +70 °C (−40 °F to +158 °F)

**Indicator Characteristics**

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates <sup>(1)</sup>		Lumen Output (Typical at 25 °C)
		x	y	
Green	530 nm	0.161	0.705	81.2
Red	625 nm	0.686	0.312	39.2
Yellow	–	0.477	0.466	98.7
Blue	470 nm	0.137	0.057	14.0
White	5950 K	0.342	0.339	107.9
Cyan	–	0.164	0.343	93.0
Magenta	–	0.404	0.186	49.9
Orange	–	0.599	0.377	56.5
Lime Green	–	0.359	0.557	104.5
Spring Green	–	0.156	0.527	85.4
Sky Blue	–	0.145	0.248	85.4
Violet	–	0.216	0.095	27.7
Rose	–	0.512	0.234	44.8

<sup>(1)</sup> Refer to CIE 1931 chromaticity diagram or color chart, to show equivalent color with indicated color coordinates.

**FCC Part 15 Class B**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Industry Canada**

This device complies with CAN ICES-3 (B)/NMB-3(B). 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(B). 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.

**Mounting**

M30 by 1.5 threaded base, maximum torque 4.5 N·m (40 inch·lbf)

Mounting nut included

**Environmental Rating**

IP67

Enclosure: UL Type 4X, UL Type 13

**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](http://www.bannerengineering.com).

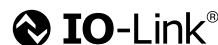
Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

**Certifications**

Banner Engineering BV  
Park Lane, Culliganlaan 2F bus 3  
1831 Diegem, BELGIUM

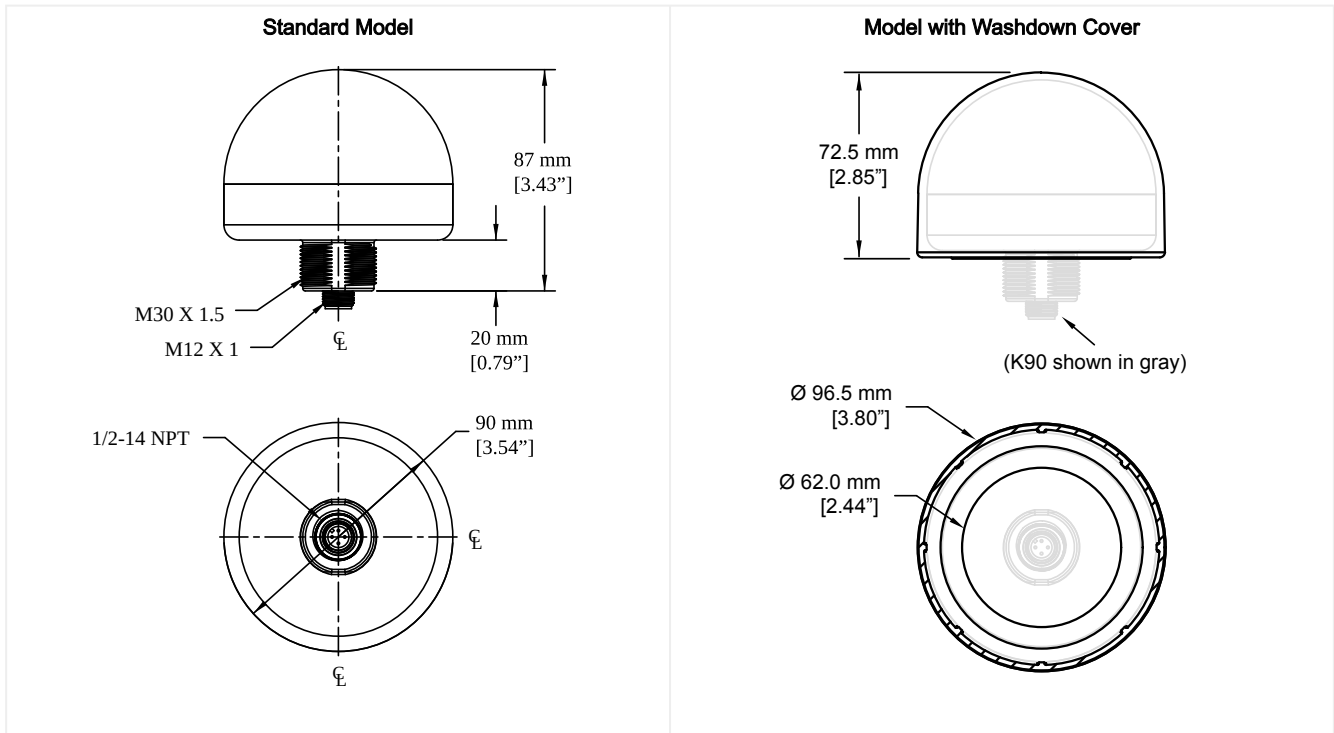


Turck Banner LTD Blenheim House  
Blenheim Court  
Wickford, Essex SS11 8YT  
GREAT BRITAIN



## Dimensions

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



## Accessories

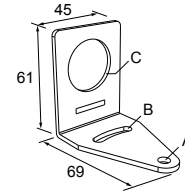
### Cordsets

4-Pin Threaded M12 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 (2.99 ft)			Female
MQDEC-406SS	1.83 m (6 ft)			Female
MQDEC-412SS	3.66 m (12 ft)			Female
MQDEC-420SS	6.10 m (20 ft)			Female
MQDEC-430SS	9.14 m (30.2 ft)			Female
MQDEC-450SS	15.2 m (49.9 ft)			Female
				Male
				<p>1 = Brown 2 = White 3 = Blue 4 = Black</p>

## Brackets

### 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

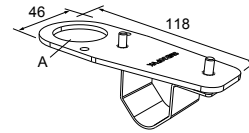


**Hole center spacing:** A to B=40

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

### SMB30FVK

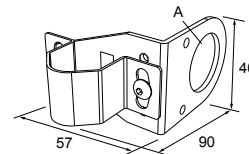
- V-clamp, flat bracket and fasteners for mounting to pipe or extensions
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



**Hole size:** A= ø 31

### SMB30RAVK

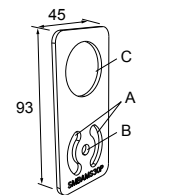
- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusion
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



**Hole size:** A = ø 30.5

### SMBAMS30P

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

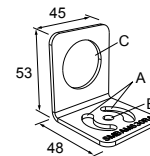


**Hole center spacing:** A=26.0, A to B=13.0

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

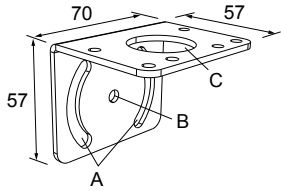
### SMBAMS30RA

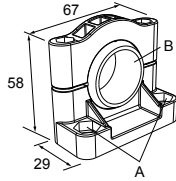
- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel



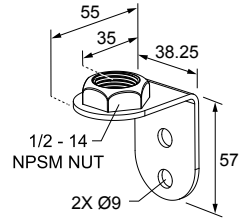
**Hole center spacing:** A=26.0, A to B=13.0

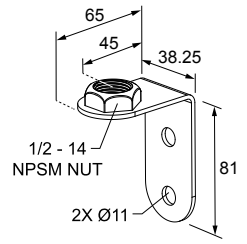
**Hole size:** A=26.8 x 7.0, B=ø 6.5, C=ø 31.0

<p><b>SMB30MM</b></p> <ul style="list-style-type: none"> <li>• 12-ga. stainless steel bracket with curved mounting slots for versatile orientation</li> <li>• Clearance for M6 (¼ in) hardware</li> <li>• Mounting hole for 30 mm sensor</li> </ul>	
<p><b>Hole center spacing:</b> A = 51, A to B = 25.4  <b>Hole size:</b> A = 42.6 x 7, B = ø 6.4, C = ø 30.1</p>	

<p><b>SMB30SC</b></p> <ul style="list-style-type: none"> <li>• Swivel bracket with 30 mm mounting hole for sensor</li> <li>• Black reinforced thermoplastic polyester</li> <li>• Stainless steel mounting and swivel locking hardware included</li> </ul>	
<p><b>Hole center spacing:</b> A=ø 50.8  <b>Hole size:</b> A=ø 7.0, B=ø 30.0</p>	




<p><b>SMB30FA</b></p> <ul style="list-style-type: none"> <li>• Swivel bracket with tilt and pan movement for precise adjustment</li> <li>• Mounting hole for 30 mm sensor</li> <li>• 12-ga. 304 stainless steel</li> <li>• Easy sensor mounting to extrude rail T-slot</li> <li>• Metric and inch size bolt available</li> </ul>	
<p><b>Bolt thread:</b> SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50      <b>Hole size:</b> B= ø 30.1</p>	

<p><b>LMBE12RA35</b></p> <ul style="list-style-type: none"> <li>• Direct mounting of stand-off pipe, with common bracket type</li> <li>• Zinc-plated steel</li> <li>• 1/2-14 NPSM nut</li> <li>• Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 35 mm</li> </ul> <p>Hole center spacing: 20.0</p>	
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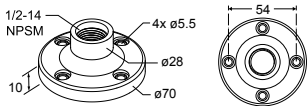
<p><b>LMBE12RA45</b></p> <ul style="list-style-type: none"> <li>• Direct mounting of stand-off pipe, with common bracket type</li> <li>• Zinc-plated steel</li> <li>• 1/2-14 NPSM nut</li> <li>• Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 45 mm</li> </ul> <p>Hole center spacing: 35.0</p>	
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All measurements are listed in millimeters [inches], unless noted otherwise.

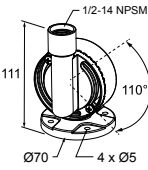
## Elevated Mount System

Model			Features	Components
SA-M30 - Black Polycarbonate			<ul style="list-style-type: none"> <li>Streamlined black PC or Gray PC thread cover</li> <li>Covers M30 thread on the light base</li> <li>Mounting hardware included</li> </ul>	
SA-M30C - Gray Polycarbonate				
Polished 304 Stainless Steel	Black Anodized Aluminum	Clear Anodized Aluminum	<ul style="list-style-type: none"> <li>Elevated-use stand-off pipe (1/2 in. NPSM/DN15)</li> <li>Polished 304 stainless steel, black anodized aluminum, or clear anodized aluminum surface</li> <li>1/2 in. NPT thread at both ends</li> <li>Compatible with most industrial environments</li> </ul>	
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"> <li>Streamlined black acetal or white UHMW mounting base adapter/cover</li> <li>Connects between 1/2 in. NPSM/DN15 pipe and 30 mm (1-3/16 in) drilled hole</li> <li>Mounting hardware included</li> </ul>	
SA-E12M30C - White UHMW				



### Pipe Mounting Flange

Model	Features	Construction	
SA-F12	<ul style="list-style-type: none"> <li>Elevated-use stand-off pipes (1/2 in. NPSM/DN15)</li> <li>M5 mounting hardware and nitrile gasket included</li> </ul>	Die-cast zinc base with black paint	

### Foldable Mounting Brackets

Model	Features	Construction	
SA-FFB12	<ul style="list-style-type: none"> <li>For use with 1/2 inch stand-off pipes</li> <li>Stainless steel hardware</li> </ul>	Black polycarbonate	
SA-FFB12C		Gray polycarbonate	

## LMB Sealed Right-Angle Bracket

Model	Description	Construction	
LMB30RA	<b>Direct-Mount Models:</b> 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, 1/2-14 pipe adapter, set screw, fasteners, O-rings, and gaskets. For use with stand-off pipe (listed and sold separately).	Black polycarbonate	
LMBE12RAC		Gray polycarbonate	

## Sun Shield

**K90DS**

- Use for enhanced visibility in direct sunlight conditions
- Polycarbonate



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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.

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For patent information, see [www.bannerengineering.com/patents](http://www.bannerengineering.com/patents).

Document title: K90 Pro Indicator with IO-Link - Datasheet

Part number: 220947

Revision: C

Original Instructions

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