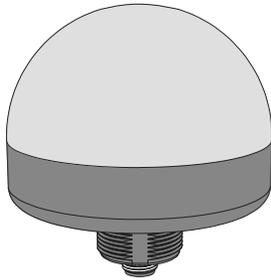


K90 Pro Indicator with IO-Link

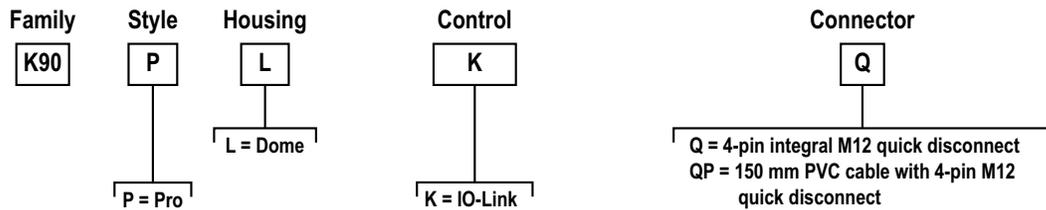
Datasheet

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



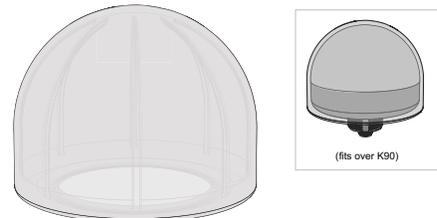
Washdown Silicone Cover WC-K90

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

Installing the Silicone Cover

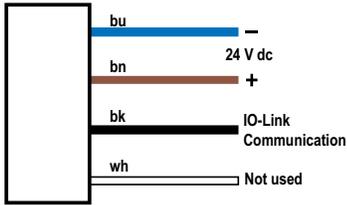
To properly install the FDA-grade silicone cover and achieve an IP69 rating, follow these instructions.

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

Mounting

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

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)

Environmental Rating

IP67
Enclosure: UL Type 4X, UL Type 13

Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates ^a		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

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

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.
 Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
 Supply wiring leads < 24 AWG shall not be spliced.
 For additional product support, go to www.bannerengineering.com.

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

Certifications



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.

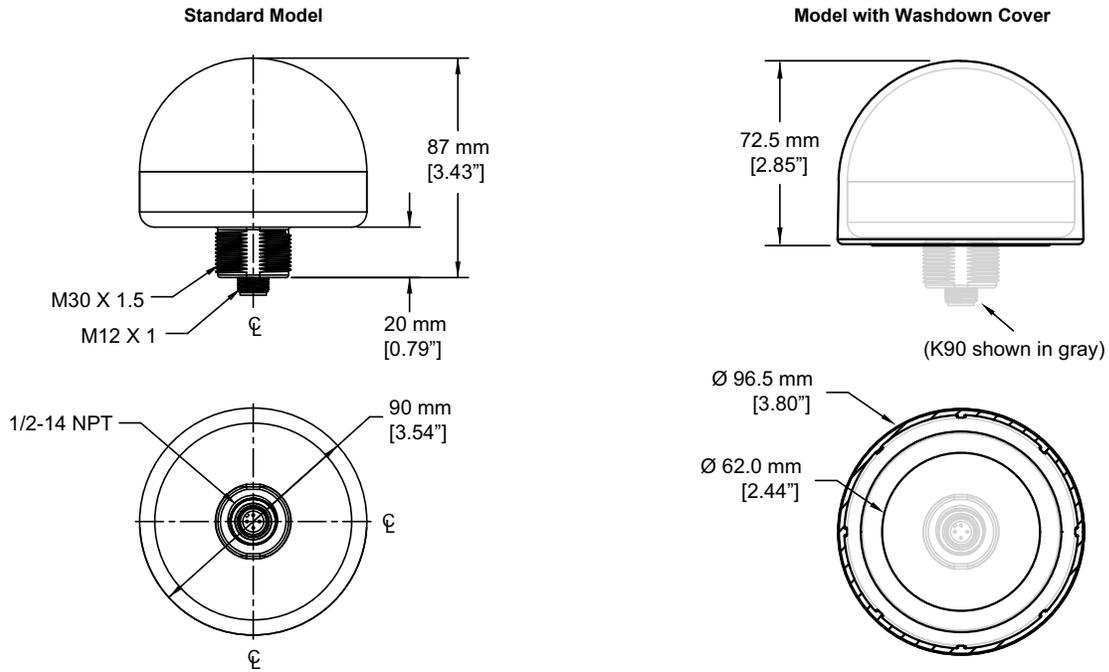
Industry Canada

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.

Dimensions

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



Accessories

Cordsets

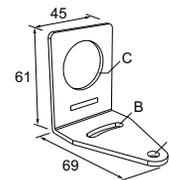
4-Pin Threaded M12 Cordsets—Double Ended

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

Brackets

SMB30A

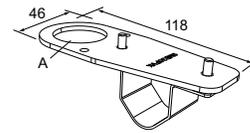
- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel



Hole center spacing: A to B=40Hole size: A=ø 6.3, B= 27.1 x 6.3, C=ø 30.5

SMB30FVK

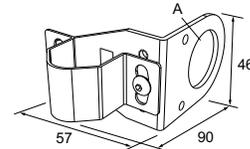
- V-clamp, flat bracket and fasteners for mounting to pipe or extensions
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A= \varnothing 31

SMB30RAVK

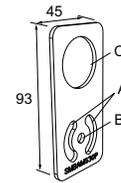
- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusion
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A = \varnothing 30.5

SMBAMS30P

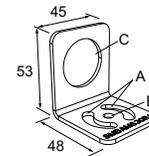
- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel



Hole center spacing: A=26.0, A to B=13.0Hole size: A=26.8 x 7.0, B= \varnothing 6.5, C= \varnothing 31.0

SMBAMS30RA

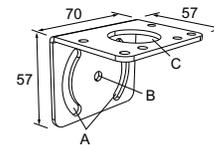
- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel



Hole center spacing: A=26.0, A to B=13.0Hole size: A=26.8 x 7.0, B= \varnothing 6.5, C= \varnothing 31.0

SMB30MM

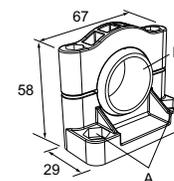
- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (1/4 in) hardware
- Mounting hole for 30 mm sensor



Hole center spacing: A = 51, A to B = 25.4Hole size: A = 42.6 x 7, B = \varnothing 6.4, C = \varnothing 30.1

SMB30SC

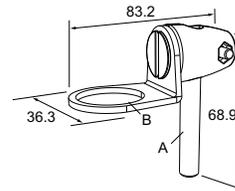
- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included



Hole center spacing: A= \varnothing 50.8Hole size: A= \varnothing 7.0, B= \varnothing 30.0

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

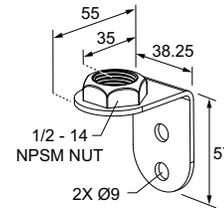


Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50 **Hole size:** B= ø 30.1

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

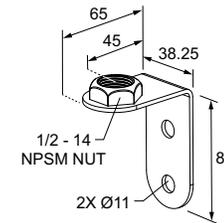
Hole center spacing: 20.0



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



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

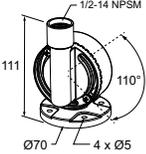
Elevated Mount System

Model			Features	Components
SA-M30 - Black Polycarbonate			<ul style="list-style-type: none"> • Streamlined black PC or Gray PC thread cover • Covers M30 thread on the light base • Mounting hardware included 	
SA-M30C - Gray Polycarbonate				
Polished 304 Stainless Steel SOP-E12-150SS 150 mm (6 in) long	Black Anodized Aluminum SOP-E12-150A 150 mm (6 in) long	Clear Anodized Aluminum SOP-E12-150AC 150 mm (6 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 	
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				
SA-E12M30C - White UHMW			<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 	

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	

Foldable Mounting Brackets

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

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, 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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 Part number: 220947
 Revision: C
 Original Instructions
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