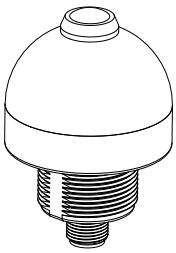
K50 Series Pick-to-Light

Datasheet

Self-Contained Indicator for Bin-Picking Operations

To view or download the latest technical information about this product, including specifications, dimensions, accessories, and wiring, see *www.bannerengineering.com*.



- Rugged, cost-effective and easy-to-install solutions for error-proofing and parts verification applications
- Compact devices are completely self-contained — no controller needed
- Illuminated dome provides a big, easy-to-see green job light, some models also light red for alternate operation
- Push-button and passive-actuation models available
- Fully encapsulated IP67 construction — ideal for use in abusive environments rated to IP69K, depending on installation
- Immune to ambient light, EMI and RFI interference
- AS-i module compatible
- 12 V dc to 30 V dc operation

WARNING: Not To Be Used for Personnel **Protection**

Never use this device as a sensing device for personnel **protection.** Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Standard Models - Single Color

- Job light is ON at all times while job input is active
- Presence of hand (or pressing push button) activates output

Model	Sensing Mode / LED	Housing	Range	**Connection**[1]	Output [2]	Job Light
K50APLPGXDQ	Polarized retroreflective, visible red, 680 nm	50 mm dome 30 mm mount polycarbonate	2 m (6 ft)	Integral 4-pin M12/Euro-style QD	PNP, N.O.	Green
K50RPLPGXDQ					PNP, N.C.	
K50ANLPGXDQ					NPN, N.O.	
K50RNLPGXDQ					NPN, N.C.	
K50APFF50GXDQ	Fixed field, infrared, 880 nm		50 mm cutoff		PNP, N.O.	
K50RPFF50GXDQ					PNP, N.C.	
K50ANFF50GXDQ					NPN, N.O.	
K50RNFF50GXDQ					NPN, N.C.	
K50APFF100GXDQ			100 mm cutoff		PNP, N.O.	
K50RPFF100GXDQ					PNP, N.C.	
K50ANFF100GXDQ					NPN, N.O.	
K50RNFF100GXDQ					NPN, N.C.	
K50APPBGXDQ	Push button		—		PNP, N.O.	

1 Integral 4-pin M12/Euro-style quick disconnect models are listed.
- To order the 2 m (6.5 ft) PVC cable model, omit the suffix "Q" in the model number. For example, K50APLPGXD.
- To order the 9 m (30 ft) PVC cable model, add the suffix "W/30" to the cabled model number. For example, K50APLPGXD W/30.
- To order the 150 mm (6 in) PVC cable model with a 4-pin M12/Euro-style quick disconnect, replace the suffix "Q" with "QP" in the model number. For example, K50APLPGXDQP.
- Models with a quick disconnect require a mating cordset.

2 N.O. = Normally Open; N.C. = Normally Closed

Model	Sensing Mode / LED	Housing	Range	**Connection**[1]	Output [2]	Job Light
K50RPPBGXDQ					PNP, N.C.	
K50ANPBGXDQ					NPN, N.O.	
K50RNPBGXDQ					NPN, N.C.	

Specialty C-Series — Two-Color Models, 12 V dc to 30 V dc

- Job light is green while the job input is active (unless a hand is present)
- Presence of hand (or pressing push button) activates output and overrides job light (turns red) for visual verification that action was sensed
- Retroreflective models: To simplify alignment, the sensor provides a red signal when the retroreflective target is incorrectly aligned

Model	Sensing Mode / LED	Range	Cable [1]	Output [2]	Job Light
K50RPLPGRCQ	Polarized retroreflective, Visible red, 680 nm	2 m (6 ft)	Integral 4-pin M12/ Euro-style QD	PNP, N.C.	Green (Red)
K50RNLPGRCQ				NPN, N.C.	
K50APFF50GRCQ	Fixed-field, Infrared, 880 nm	50 mm cutoff		PNP, N.O.	
K50ANFF50GRCQ				NPN, N.O.	
K50APFF100GRCQ		100 mm cutoff		PNP, N.O.	
K50ANFF100GRCQ				NPN, N.O.	
K50APPBGRCQ	Push button	—		PNP, N.O.	
K50ANPBGRCQ				NPN, N.O.	

Specialty E-Series — Two-Color Models

- Job light is green at all times while job input is active
- Presence of hand (or pressing push button) activates output
- Presence of hand (or pressing push button) while job input is inactive causes unit to light red, for visual verification that sensor is functioning properly

Model	Sensing Mode / LED	Range	Cable [1]	Output [2]	Job Light
K50RPLPGREQ	Polarized retroreflective, visible red, 680 nm	2 m (6 ft)	Integral 4-pin M12/Euro-style QD	PNP, N.C.	Green (Red)
K50RNLPGREQ				NPN, N.C.	
K50APFF50GREQ	Fixed field infrared, 880 nm	50 mm cutoff		PNP, N.O.	
K50ANFF50GREQ				NPN, N.O.	
K50APFF100GREQ		100 mm cutoff		PNP, N.O.	
K50ANFF100GREQ				NPN, N.O.	
K50APPBGREQ	Push button	—		PNP, N.O.	
K50ANPBGREQ				NPN, N.O.	

[1] Integral 4-pin M12/Euro-style quick disconnect models are listed.
- To order the 2 m (6.5 ft) PVC cable model, omit the suffix "Q" in the model number. For example, K50APLPGXD.
- To order the 9 m (30 ft) PVC cable model, add the suffix "W/30" to the cabled model number. For example, K50APLPGXD W/30.
- To order the 150 mm (6 in) PVC cable model with a 4-pin M12/Euro-style quick disconnect, replace the suffix "Q" with "QP" in the model number. For example, K50APLPGXDQP.
- Models with a quick disconnect require a mating cordset.

[2] N.O. = Normally Open; N.C. = Normally Closed

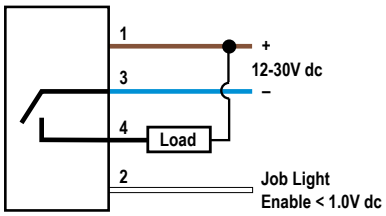
Installation

For push-button models, install the sensor at such a height and in a location that will be easy for the user and/or supervisor to see the indicator and will be comfortable for the user to press the push-button.

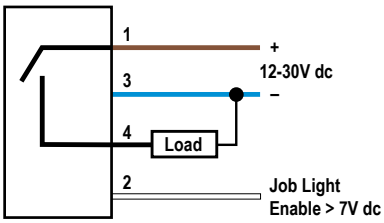
For other models, install the sensor in a location that will be comfortable for the user to break the beam when reaching for the required part. When multiple sensors will be located in close proximity, to monitor multiple bins for example, mount all the sensors in a similar sensing position (all mounted at the tops of the bins and pointing down, for example). This may reduce potential optical crosstalk, where one sensor detects another sensor's beam.

Wiring Diagrams

NPN Models



PNP Models



Wiring Key

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

Note: Cabled wiring diagrams are shown. Quick disconnect (QD) wiring diagrams are functionally identical.

Specifications

Supply Voltage and Current
12 V dc to 30 V dc
< 75 mA max current at 12 V dc (exclusive of load)
< 40 mA max current at 30 V dc (exclusive of load)
AS-i compatible

Supply **Protection** Circuitry
Protected against reverse polarity and transient voltages (fast-transient and overvoltage)

Output **Configuration**
PNP or NPN, depending on model

Output **Rating**
Maximum load: 150 mA
OFF-state leakage current: <10 µA at 30 V dc
ON-state saturation voltage: < 2 V dc at 10 mA; < 2.5 V dc at 150 mA

Output **Protection** Circuitry
Protected against output short-circuit, continuous overload, and false pulse on power-up

Output Response Time
3 milliseconds On and Off

Power-Up Output Delay Time
300 milliseconds

Job Light Enable Input
Input impedance: 8000 ohms
PNP Input low < 1.5 V
NPN Input high > 7 V

Construction
Base: polycarbonate
Translucent dome: polycarbonate
Push button: thermoplastic
Lense: polycarbonate or acrylic

Connections
Depending on model: 4-wire, 2 m (6.5 ft) integral cable; 4-pin M12/Euro-style quick disconnect fitting; 150 mm PVC cable with quick disconnect; accessory cordset required for QD models

Ambient Light Immunity
Up to 5,000 lux

EMI-RFI Immunity
Immune to EMI and RFI noise sources, per IEC 947-5-2

Indicators

Entire translucent dome provides indicator light; either job or pick sensed indicator inhibits the other light, depend on model
Job (pick) indicator: Green
Pick sensed indicator: Red or unilluminated, depending on model

Environmental **Rating**

Fully encapsulated; IEC IP67
Integral QD models: DIN 40050 (IP69K) when using IP69K-rated cables
Cable models: IP69K when mounted with conduit
NEMA/UL Type 4X, 13

Operating Conditions

–40 °C to +50 °C (–40 °F to +122 °F)
90% at +50 °C maximum relative humidity (non-condensing)

Certifications

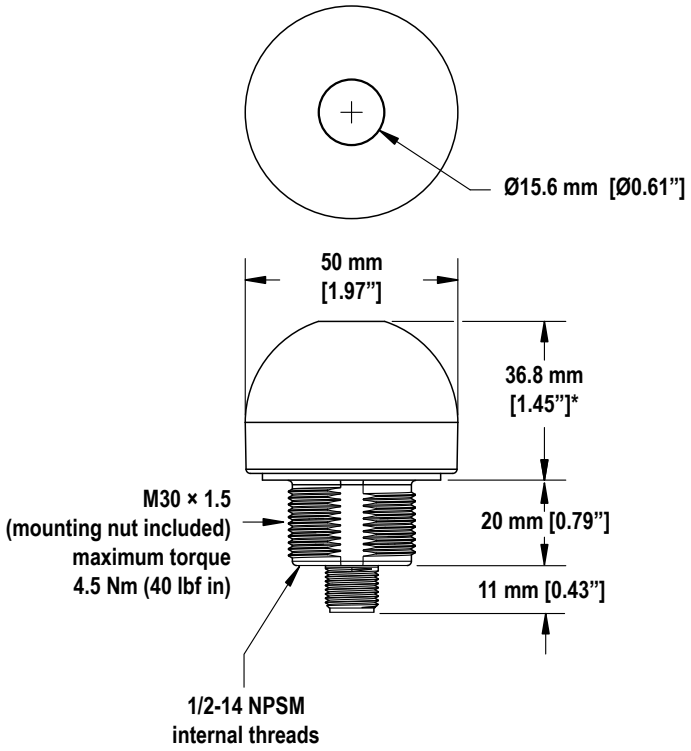
Required Overcurrent **Protection**

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

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

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

Dimensions

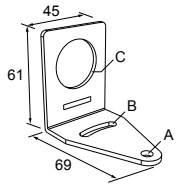


*For push-button models, this dimension is 44.2 mm (1.74 in)

Accessories

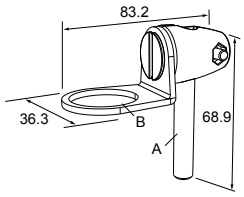
Brackets

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



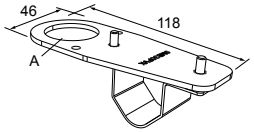
Hole center spacing: A to B=40
Hole size: A=ø 6.3, B= 27.1 x 6.3, C=ø 30.5

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



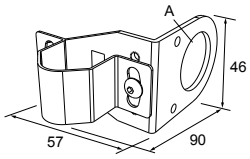
Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50
Hole size: B= ø 30.1

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

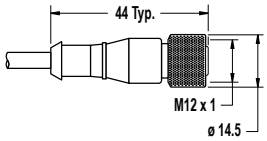
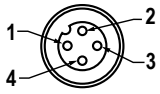
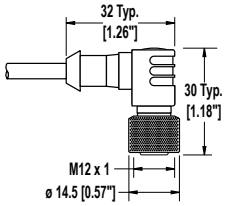
SMB30RAVK
- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusion
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A = ø 30.5

Cordsets

4-Pin Threaded M12/Euro-Style Cordsets

Model	Length	Style	Dimensions	Pinout (Female)
MQDC-406	1.83 m (6 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black
MQDC-415	4.57 m (15 ft)			
MQDC-430	9.14 m (30 ft)			
MQDC-450	15.2 m (50 ft)			
MQDC-406RA	1.83 m (6 ft)	Right-Angle		
MQDC-415RA	4.57 m (15 ft)			
MQDC-430RA	9.14 m (30 ft)			
MQDC-450RA	15.2 m (50 ft)			

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