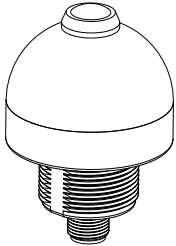


## Datasheet

### 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](http://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 <sup>1</sup>          | Output <sup>2</sup> | Job Light |
|-----------------|--|---|---------------|----------------------------------|---------------------|-----------|
| K50APLPGXDQ     | Polarized retroreflective, visible red, 680 nm | 50 mm dome<br>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.           |           |
| K50RNLPGX DQ    |  |   |               |                                  | NPN, N.C.           |           |
| K50APFF50GX DQ  | Fixed field, infrared, 880 nm                  |   | 50 mm cutoff  |                                  | PNP, N.O.           |           |
| K50RPFF50GX DQ  |  |   |               |                                  | PNP, N.C.           |           |
| K50ANFF50GX DQ  |  |   |               |                                  | NPN, N.O.           |           |
| K50RNFF50GX DQ  |  |   |               |                                  | NPN, N.C.           |           |
| K50APFF100GX DQ |  |   | 100 mm cutoff |                                  | PNP, N.O.           |           |
| K50RPFF100GX DQ |  |   |               |                                  | PNP, N.C.           |           |
| K50ANFF100GX DQ |  |   |               |                                  | NPN, N.O.           |           |
| K50RNFF100GX DQ |  |   |               |                                  | NPN, N.C.           |           |
| K50APPBGXDQ     | Push button                                    |   | —             |                                  | PNP, N.O.           |           |

<sup>1</sup> 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.

<sup>2</sup> N.O. = Normally Open; N.C. = Normally Closed



| Model       | Sensing Mode / LED | Housing | Range | Connection <sup>1</sup> | Output <sup>2</sup> | 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 <sup>1</sup>                   | Output <sup>2</sup> | Job Light   |
|----------------|---|---------------|--------------------------------------|---------------------|-------------|
| K50RPLPGRCQ    | Polarized retroreflective,<br>Visible red, 680 nm | 2 m (6 ft)    | Integral 4-pin M12/<br>Euro-style QD | PNP, N.C.           | Green (Red) |
| K50RNLPGRQC    |   |               |                                      | 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.           |             |
| K50APPBGRQC    | Push button                                       | —             |                                      | PNP, N.O.           |             |
| K50ANPBGRQC    |   |               |                                      | 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 <sup>1</sup>               | Output <sup>2</sup> | 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.           |             |
| K50APBGBREQ    | Push button                                    | —             |                                  | PNP, N.O.           |             |
| K50ANPGBREQ    |  |               |                                  | NPN, N.O.           |             |

<sup>1</sup> 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.

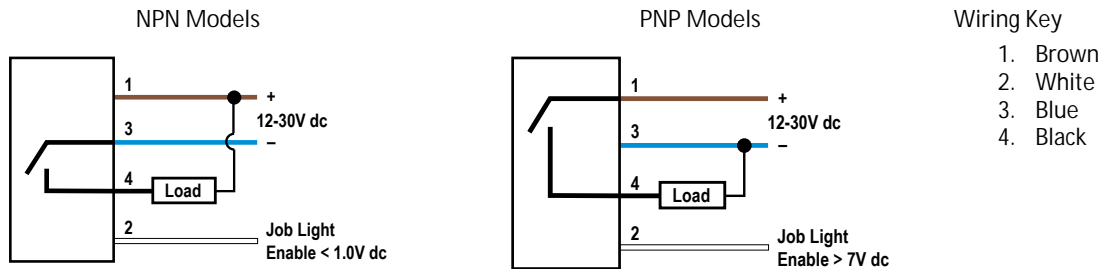
<sup>2</sup> N.O. = Normally Open; N.C. = Normally Closed

## 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



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  $\mu$ A 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.

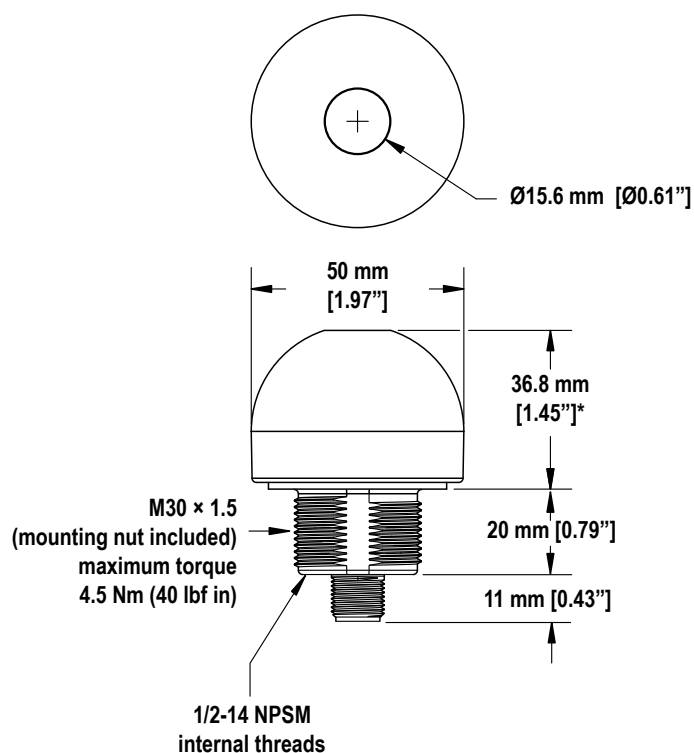
Overcurrent protection is required to be provided by end product application per the supplied table.

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](http://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**

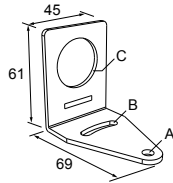
\*For push-button models, this dimension is 44.2 mm (1.74 in)

## 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

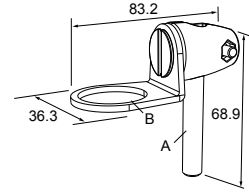


Hole center spacing: A to B=40

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

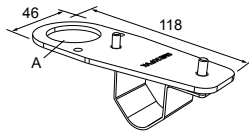


Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50

Hole size: B= ø 30.1

#### SMB30FVK

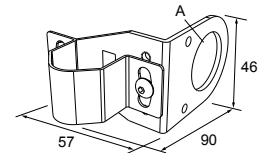
- V-clamp, flat bracket and fasteners for mounting to pipe or extensions
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



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    |            |                 |
| 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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