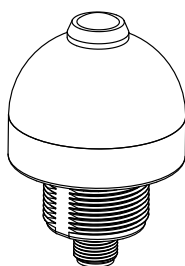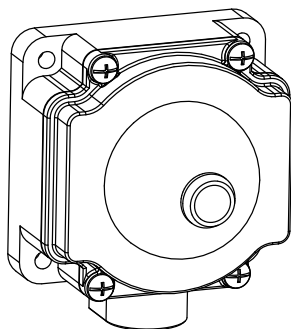# EZ-LIGHT K50 and K80 Specialty — 3-Color

Compact, single-point devices for error-proofing of bin-picking operations

For the latest technical information about this product, including specifications, dimensions, and wiring, see *www.BannerEngineering.com*

BANNER ®
more sensors, more solutions

- 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, red or yellow job light
- Push-button and passive-actuation models available
- Choose NPN or PNP output, depending on model
- Fully encapsulated IP67 construction — ideal for use in abusive environments; rated to IP69K, depending on installation; see specifications
- Immune to ambient light, EMI and RFI interference
- 12 to 30V dc operation

CE   UL LISTED

Models

Model	Sensing Mode / LED	Housing	Range	Cable*	Output***	Job Light
K50RPLPGRYC3QPMA	Polarized retroreflective, visible red, 680 nm	50 mm dome 30 mm mount polycarbonate	2 m	5-pin Euro PUR pigtail QD	PNP, normally closed	Green/ yellow/ red
K50RPLPGRYC4QPMA						
K50APFF50GRYC3QPMA	Fixed field, infra-red, 880 nm		50 mm cutoff		PNP, normally open	
K50APFF50GRYC4QPMA						
K50APFF100GRYC3QPMA			100 mm cut-off			
K50APFF100GRYC4QPMA						
K50APPBGRYC3QPMA	Push button		—			
K50APPBGRYC4QPMA						
K80APPBGRYC3QPMA		50 mm dome Flat or DIN- mount polycarbonate				
K80APPBGRYC4QPMA						

* 5-pin 150 mm Euro-style PUR pigtail QD models are listed. For 2 m (6') PVC cable model, omit suffix "**QPMA**" from model number (e.g., "**K50RPLPGRYC3**"). For 9 m (30') PVC cable model, replace suffix "**QPMA**" with "**W/30**" (e.g., "**K50RPLPGRYC3 W/30**"). For 150 mm (6") PVC pigtail with 5-pin Euro-style fitting, replace suffix "**QPMA**" with "**QP**" (e.g., "**K50RPLPGRYC3QP**").

A model with a QD requires a mating cable (see *5-Pin Euro-Style Cordsets* on page 4).

** PNP models only are listed. For other output types, contact the Factory.

⚠ **WARNING: Not To Be Used for Personnel Protection**
Never use this product as a sensing device for personnel protection. Doing so could lead to serious injury or death. This product 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.

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Overview

The solid-state output interfaces to a system controller, which is pre-programmed for a specific sequence of tasks. Mounted in or near each bin in an assembler's work station, the sensor job light signals the assembler:

- Which bins contain items to be picked in a given operation; and
- In what order they should be picked.

As the assembler takes a part in sequence, the sensor senses that the part was removed and it sends an output signal to the controller. The controller then verifies if the correct part was taken and may respond by turning that job light OFF, activating the job light of the next bin in the sequence.

If multiple parts are to be removed from one bin, the job light may remain ON until the appropriate number of signals is returned to the controller. If an incorrect part is selected, the control system may be wired to signal an alarm for the assembler and/or a supervisor, or it may be programmed to interpret the action as a call for parts.

Fixed-field and retroreflective-mode models require no interaction to operate, and so eliminate the hand, wrist, and arm stresses associated with mechanical push buttons. All models are immune to EMI, RFI, and ambient light interference. The polycarbonate and nylon housing is capable of absorbing high impact (even at low temperatures) and is resistant to abrasion and to damage by most chemicals. Its domed construction allows moisture and debris to slide easily off the sensor housing, simplifying maintenance. The 30 mm threaded base provides easy mounting.

Indicator and Output Behavior

📝 **NOTE:** "C3" and "C4" models as referenced in the table pertain to a part of the product model number, immediately preceding the QPMA designation.

Sensor Conditions		Job Light		Output Signal Status
		C3 Models	C4 Models	
Job input active	Hand/pick absent	ON Green	ON Green	OFF
	Hand/pick present	ON Yellow	ON Yellow until job input is removed	ON
No job input	Hand/pick absent	OFF	OFF	OFF
	Hand/pick present	ON Red	ON Red for 5 seconds after hand/pick is removed	ON

Specifications

Supply Voltage and Current
12 to 30V dc (10% max. ripple)

Less than 90 mA max. current @ 12V dc (exclusive of load)

Less than 60 mA max. current @ 30V dc (exclusive of load)

Supply Protection and Circuitry
Protected against transient voltages (fast-transient and over-voltage) and reverse polarity

Output Configuration
1 current sinking (NPN) transistor or 1 current sourcing (PNP) transistor, depending on model. Retroreflective models have normally closed (N.C.) output; all other models have normally open (N.O.) output.

Output Rating
Max. load: 150 mA

ON-state saturation voltage:

PNP models: < 2V @ 10 mA dc; < 2.5V @ 150 mA dc

NPN models: < 1.5V @ 10 mA dc; < 2V @ 150 mA dc

OFF-state leakage current: < 10 µA @ 30V dc

Output Protection
Protected against false pulse on power-up and continuous overload or short circuit of output

Output Response Time
5 milliseconds ON, 500 ms leading edge OFF

Power-Up Output Delay Time
300 ms

Indicators
Entire translucent dome provides indicator light:

Job (Pick) – Green

Pick Sensed – Yellow

Mispick – Red

Job Light Enable
Input impedance: 8K Ohms

Sinking – Input low < 1.0V

Sourcing – Input high > 7V

Construction
Base: polycarbonate

Translucent dome: polycarbonate

Push button: thermoplastic

Lens: polycarbonate or acrylic

Connections
150 mm pigtail with 5-pin Euro-style QD fitting (QPMA); 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.

Environmental Rating
Fully encapsulated; IEC IP67

Integral QD models meet DIN 40050 (IP69K) when using IP69K-rated cables; pigtail and cable models meet IP69K when mounted with conduit

Operating Conditions
−40° to +50° C (−40° to +122° F)

90% @ +50° C max. rel. humidity (non-condensing)
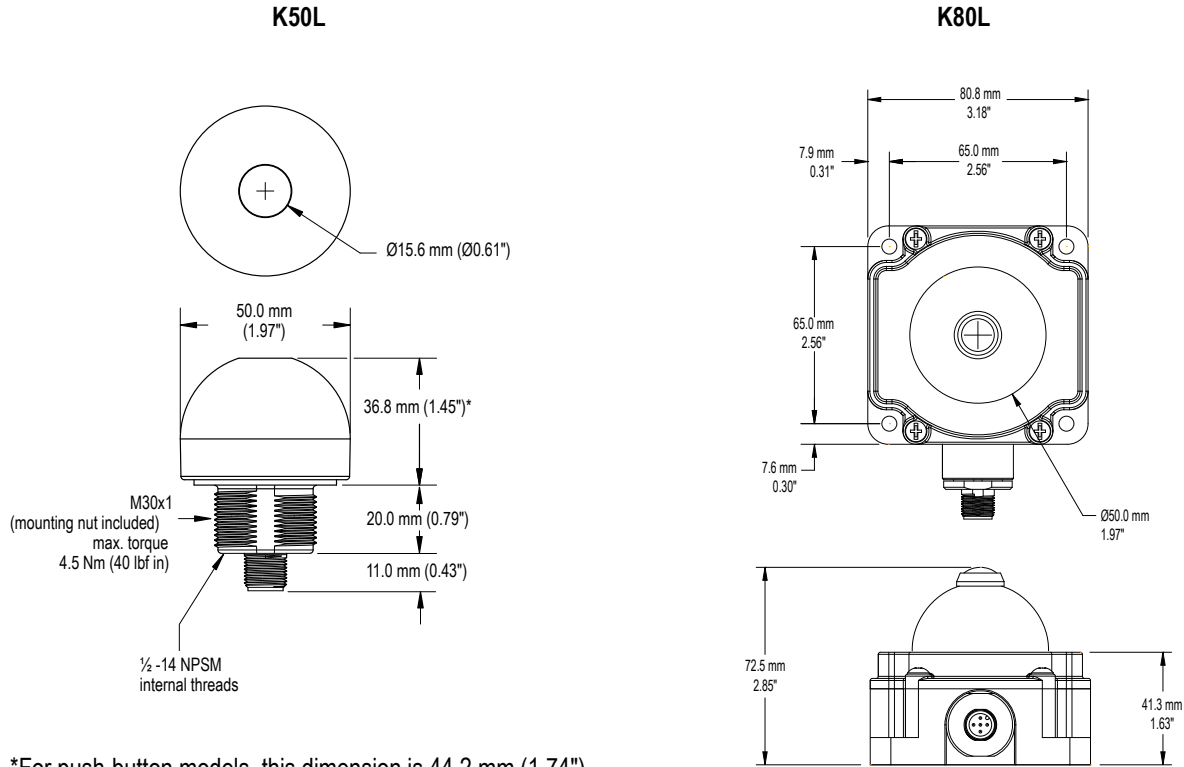
Certifications

K50 models: CE UL LISTED

K80 models: CE

Dimensions

K50L

Ø15.6 mm (Ø0.61")

50.0 mm
(1.97")

36.8 mm (1.45")*

M30x1
(mounting nut included)
max. torque
4.5 Nm (40 lbf in)

20.0 mm (0.79")

11.0 mm (0.43")

½ -14 NPSM
internal threads

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

K80L

80.8 mm
3.18"

7.9 mm
0.31"

65.0 mm
2.56"

65.0 mm
2.56"

7.6 mm
0.30"

Ø50.0 mm
1.97"

72.5 mm
2.85"

41.3 mm
1.63"

Wiring

> **NOTE:** Cabled hookups only are shown. Wiring is functionally identical for cabled and quick-disconnect models.

NPN (Sinking) Output Models	PNP (Sourcing) Output Models	Wiring Key	Pinout
		1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray	

NPN:
1 + 12-30V dc
3 −
4 Load
2 Job Light Enable, Input Low <1.0V
5 Not Used

PNP:
1 + 12-30V dc
3 −
4 Load
2 Job Light Enable, Input High >7V
5 Not Used

5-Pin Euro-Style Cordsets

| 5-Pin M12/Euro-Style Cordsets (straight connector)	5-Pin M12/Euro-Style Cordsets (right-angle connector)
MQDC1-506, 2 m (6')	**MQDC1-506RA,** 2 m (6')
MQDC1-515, 5 m (15')	**MQDC1-515RA,** 5 m (15')
MQDC1-530, 9 m (30')	**MQDC1-530RA,** 9 m (30')

Mounting Brackets

All measurements in mm

SMB30A

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

SMB30SC

- Swivel bracket with 30 mm mounting hole
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included
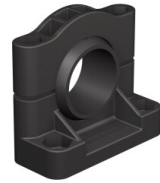
SMB30FA

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

SMBAMS30RA

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

SMB30MM

- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼") hardware
- 30 mm mounting hole

SMBAMS30P

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

For K80L

SMBDX80D

- DIN-mount bracket for K80L models, mounts on 35 mm DIN rail
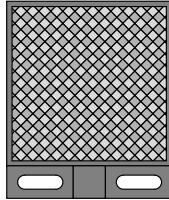- Hardware included to mount to K80L housing
- Black reinforced thermoplastic
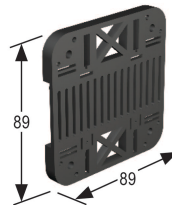
Retroreflective Targets

NOTE: For a complete selection of retroreflective targets, see *www.BannerEngineering.com*.
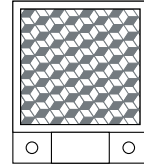

BRT-2X2

- Square, acrylic target
- Reflectivity factor: 1.0
- Max. temperature: 50° C
- Optional brackets are available
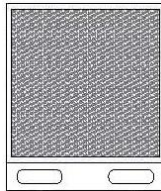- Approximate size: 51 mm x 51 mm

BRT-35X35B

- Square, acrylic target
- Reflectivity Factor: 1.3
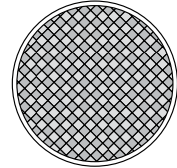- Max. Temperature: 65° C
- Approximate size: 35 mm x 35 mm

BRT-51X51BM

- Square, acrylic target
- Reflectivity Factor: 1.5
- Max. Temperature: +50°C (+120°F)
- This target has micro-prism geometry. Optional brackets are available Replaces reflector BRT-36X40BM.

BRT-50D

- Round, acrylic target with mounting stud
- Reflectivity factor: 1.0
- Max. temperature: 65° C
- Optional brackets are available
- Approximate size: 50 mm diameter

BRT- 100X18A

- Rectangular, acrylic target
- Reflectivity factor: 1.4
- Max. temperature: 50° C
- Approximate size: 18.5 mm x 110 mm

Retroreflective Tape

> **NOTE:** For maximum adhesion of all tape products, surfaces must be clean.

Model	Reflectivity Factor	Maximum Temperature	Size	Unit
BRT-THG-1-100	0.7	60°C (140°F)	25 mm (1") wide	2.5 m (100") long
BRT-THG-2-100	0.7	60°C (140°F)	50 mm (2") wide	2.5 m (100") long
BRT-THG-3-100	0.7	60°C (140°F)	75 mm (3") wide	2.5 m (100") long

Model	Reflectivity Factor	Maximum Temperature	Size	Unit
BRT-TVHG-2X2	0.8	60°C (140°F)	50 x 50 mm	4 per pack

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