

Q2X Series



Q2X Series Miniature Sensor

- Miniature photoelectric sensor for installation in the smallest of spaces
- Exceptional optical performance with long detection range
- Visible red LED or Class 1 laser emitter spot for easy alignment
- Retroreflective, opposed, and adjustable-field models for reliable detection in a wide range of applications
- Many connection types and output configurations available by model number

Q2X Series

Powerful and simple sensing in a miniature package makes the Q2X ideal for installation in very precise machinery and tight industrial spaces.



Polarized Retroreflective

- Bright visible red LED for easy alignment of sensor
- Works with a variety of reflectors
- Ideal for detecting dark and shiny targets



Opposed

- Visible red LED with large spot size for easy alignment
- High switching frequency for reliable detection in high-speed applications



Adjustable-Field

- Small visible red LED or Class 1 laser emitter spot
- Simple multi-turn screw adjustment of cutoff distance
- Reliable detection of objects when the background condition is not controlled or fixed
- Crosstalk immunity algorithm allows two sensors to be used in close proximity



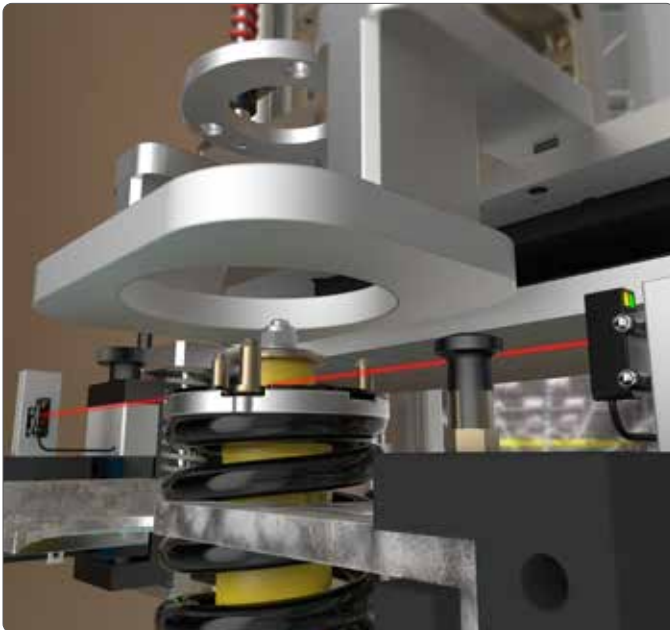
Challenge

Electronics assembly equipment generally has limited space available for detecting the amount and consistency of glue applied to printed circuit boards (PCBs). Proper adhesive application is critical to secure tiny components, and any gaps or missing adhesive must be detected quickly to reduce wasted product and downtime, and to avoid costly product recalls.

Solution

Banner's Q2X sensors are small and light weight enough to be installed on the robotic arm directly above power control boards, and they can be positioned to aim at the precise locations where the robot applies adhesive. As a background-suppression sensor, a Q2X can detect small changes in height, including the presence of glue applied to PCBs to adhere electronic parts. This configuration allows any issues with glue application to be resolved immediately, before the circuit boards move on to a secondary station and the glue completely dries.

Mounting the sensor is easy and versatile, with a bracket that is adjustable to 15 degrees in either direction. The sensor can operate at very close range for precise monitoring of adhesive placement and consistency. It can also detect the leading edges of trays that hold PCBs as they move through automated assembly processes, ensuring that glue is applied to the correct locations on the circuit boards.



Challenge

Systems that help provide confirmation that automotive parts are manufactured correctly are critical to protecting driver safety and vehicle performance. For example, if an assembly machine is supposed to attach a top cap onto a suspension strut using screws, a missed step could cause a faulty or incomplete automobile part to be created. By contrast, installing a detection device would help to verify proper assembly. However, Tier 1 automotive assembly machines may not have enough physical space to house a larger or even average-sized sensor.

Solution

A Q2X sensor is constructed with a miniaturized (31 mm x 14 mm x 8 mm) enclosure that can be fit into most assembly machines, even when there is limited space available for hardware add-ons. With an installed Q2X, if the step of attaching the top cap of the strut is missed, the sensor's receiver will continue to pick up light from its corresponding emitter, and the machine will not be able to advance to the next stage of assembly.

Q2X Miniature Sensor

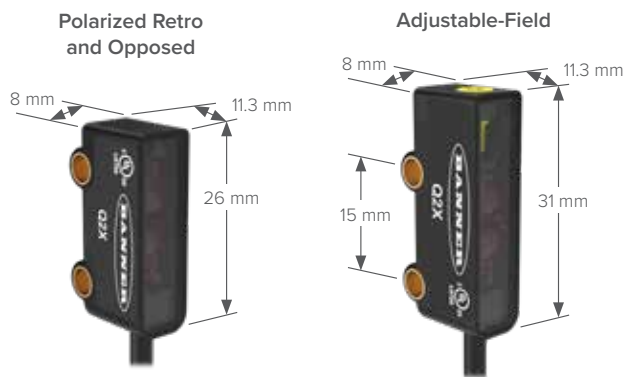
Polarized Retro and Opposed

Family	Output State	Output	Mode	Connector
Q2X	A	P	LPF	2M
	A = Light Operate R = Dark Operate Blank = No Output	P = PNP N = NPN B = Bipolar NA = No Output	E = Emitter R = Receiver LPF = Fixed Gain Polarized Retroreflective	2M = 2 m Cable Q = 6 in. 4-pin M8 Pigtail Q3 = 6 in. 3-pin M8 Pigtail Q5 = 6 in. 4-pin M12 Pigtail

Adjustable-Field

Family	Output State	Output	Mode	Range	Connector
Q2X	A	P	LAF	100	2M
	A = Light Operate R = Dark Operate	P = PNP N = NPN B = Bipolar	LAF = Laser Adjustable-Field AF = LED Adjustable-Field	100 = 18–100 mm 150 = 18–150 mm	2M = 2 m Cable Q = 6 in. 4-pin M8 Pigtail Q3 = 6 in. 3-pin M8 Pigtail Q5 = 6 in. 4-pin M12 Pigtail

Specifications



Response Speed

Adjustable-Field: 850 μ s, ON/OFF
Polarized Retro: 600 μ s, ON/OFF
Opposed: 1 ms ON, 0.6 ms OFF

Operating Conditions

-25 to +50 °C

Environmental Rating

IP67

Construction

Housing: PC/ABS
Lens cover: Acrylic

Certifications



Accessories



3-Pin M8 Connector
Straight connector models listed; for right-angle, replace G with W in the model number (example, PKW3M-2)

PKG3M-2
2 m (6.5')
PKG3M-5
5 m (16')
PKG3M-9
9 m (30')

4-Pin M8 Connector
Straight connector models listed; for right-angle, replace G with W in the model number (example, PKW4M-2)

PKG4M-2
2 m (6.5')
PKG4M-5
5 m (16')
PKG4M-9
9 m (30')

4-Pin M12 Connector
Straight connector models listed; for right-angle, add RA to the end of the model number (example, MQDC1-506RA)

MQDC-406
2 m (6.5')
MQDC-415
5 m (15')
MQDC-430
9 m (30')



Banner Engineering Corp.

9714 10th Avenue North • Minneapolis, MN 55441 • 1-888-373-6767 • www.bannerengineering.com