Product Manual

- Opposed mode slot sensor for simple, reliable detection
- Cost-effective, space-saving design for installation in tight places
- Quick and accurate detection with response time up to 3 kHz
- Bright LED for easy status indication visible from multiple angles
- Robust IP64 housing that is resistant to shock and vibration
- Enhanced circuit protection built into the sensor reduces sensor failures from improper wiring

WARNING:

- **Do not use this device for personnel protection**
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.

Models

	Model	Housing Style	Slot Width	Output	Connection
	**BCS1KVN2M**	K	5 mm	Complementary NPN	2 m cable
	BCS1KVNQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector
	BCS1KVP2M			Complementary PNP	2 m cable
	BCS1KVPQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector
	**BCS1LVN2M**	L	5 mm	Complementary NPN	2 m cable
	BCS1LVNQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector
	BCS1LVP2M			Complementary PNP	2 m cable
	BCS1LVPQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector
	**BCS1TVN2M**	T	5mm	Complementary NPN	2 m cable
	BCS1TVNQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector
	BCS1TVP2M			Complementary PNP	2 m cable
	BCS1TVPQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector
	**BCS1YVN2M**	Y	5mm	Complementary NPN	2 m cable
	BCS1YVNQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector
	BCS1YVP2M			Complementary PNP	2 m cable
	BCS1YVPQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector

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30-May-25

247926
p/n: 247926 Rev. A

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	Model	Housing Style	Slot Width	Output	Connection
	**BCS1RVN2M**	R	5 mm	Complementary NPN	2 m cable
	BCS1RVNQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector
	BCS1RVP2M			Complementary PNP	2 m cable
	BCS1RVPQ				150 mm (6 in) cable with a 4-pin M8 male quick disconnect connector

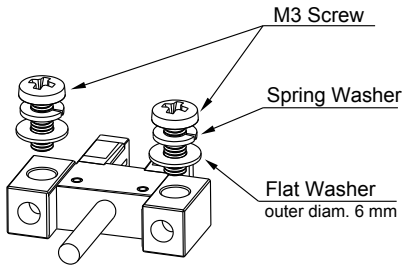
Indicator

When the sensor is powered up and no target is breaking the beam, the indicator is on. When a target breaks the beam, the indicator turns off.

Installation Instructions

When mounting the BCS1 with threads, the following must be true:

Screw	Spring Washer	Flat Washer	Tightening Torque
M3 screw	1	ø6 mm (small round)	0.5 N·m



If the ambient temperature is +50 °C (+122 °F) or higher, mount the BCS1 to a metal body.

Be careful not to direct an external light source to the receiving end.

NOTE: The cable loses its flexibility at ambient temperatures of -10°C (14 °F) when using a bend-resistant wire.

When using a bend-resistant cable in a movable part, secure the root of the cable to prevent pressure from being exerted on the extracted part of the cable.

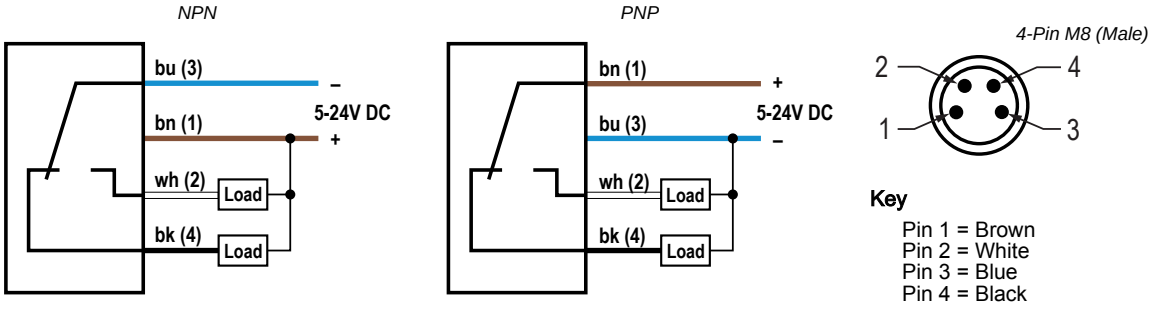
When storing fold-resistant cables, prevent the cables from coming into contact with the inspection area and work indication area.

If a motor, solenoid, solenoid valve, etc. that generates a large surge of electricity is located near the sensor, install a surge absorber on the device. In addition, avoid wiring in parallel with power cables, and connect a capacitor between the +V and 0V of the sensor to make sure that the capacitance has completely disappeared before use.

Mount the Device

1. If a bracket is needed, mount the device onto the bracket.
2. Mount the device (or the device and the bracket) to the machine or equipment at the desired location. Do not tighten the mounting screws at this time.
3. Check the device alignment.
4. Tighten the mounting screws to secure the device (or the device and the bracket) in the aligned position.

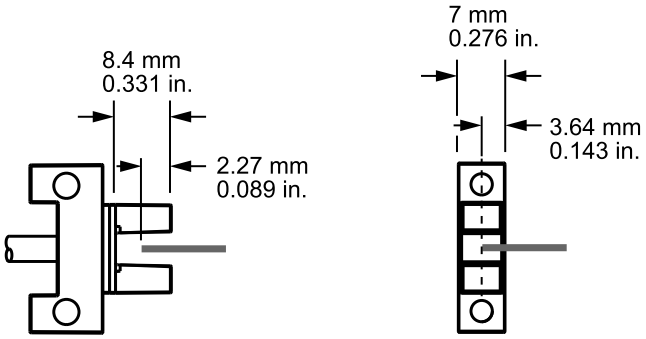
Wiring Diagrams



Detection Position

The following figure shows the minimum distance the target must enter the slot so that it is detected.

Target Position for Detection (Minimum)



Specifications

Slot Opening
5 mm wide × 8.4 mm deep

Minimum Detection Object
0.8 mm × 1.2 mm opaque body

Repeatability
< 0.01 mm

Supply Voltage
5 V DC to 24 V DC (10% maximum ripple within limits)

Current Consumption
< 15 mA

Control Output
Complementary (light operate (LO) and dark operate (DO)), single output (NPN or PNP), depending on model
Rating: 50 mA total output current
On-state saturation voltage: < 2 V at 50 mA

Supply Protection Circuitry
Power reverse connection, output reverse connection, short circuit protection

Response Time
20 µs ON; 80 µs OFF

Delay at Power Up
Do not use the sensor until it has been powered up for 50 ms

Indicator Light
Red LED

Environmental Rating
IP64

Operating Conditions
–20 °C to +55 °C (–4 °F to +131°F)
Operating Humidity: 5 % to 85 % relative humidity
Storage Humidity:5% to 95% relative humidity

Ambient Light Immunity
< 1000 lux

Vibration Resistance
10 Hz to 55 Hz, 1.5 mm double amplitude, 2 hours each along X, Y and Z axis

Shock Resistance
Meets IEC 60068-2-27 requirements (Shock: 30G 11 ms duration, half sine wave)

Sensing Beam
Infrared, 940 nm

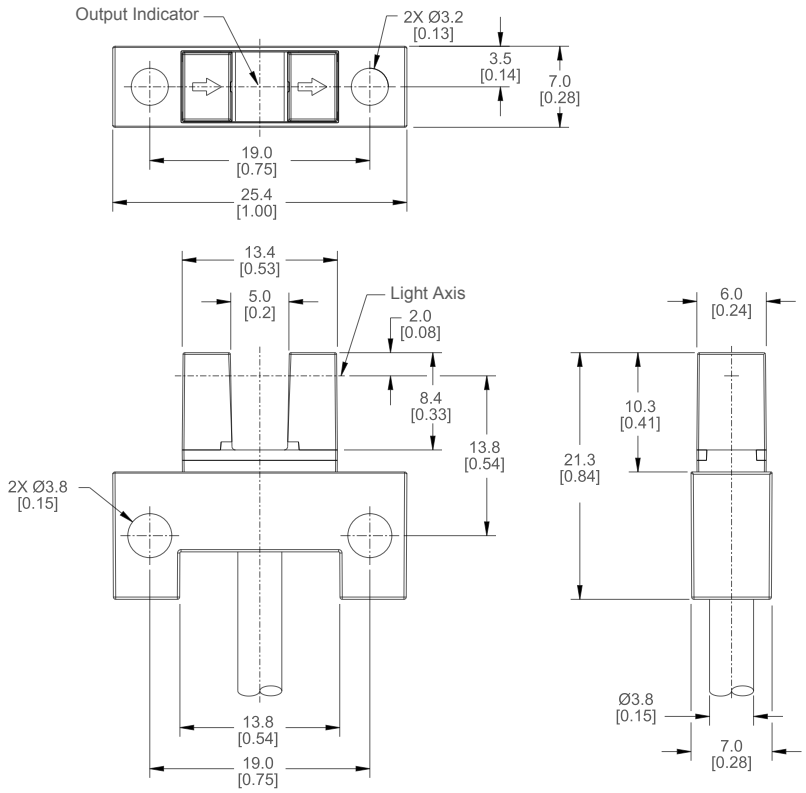
Construction
Housing: ABS
Translucent Cover: PC

Certifications

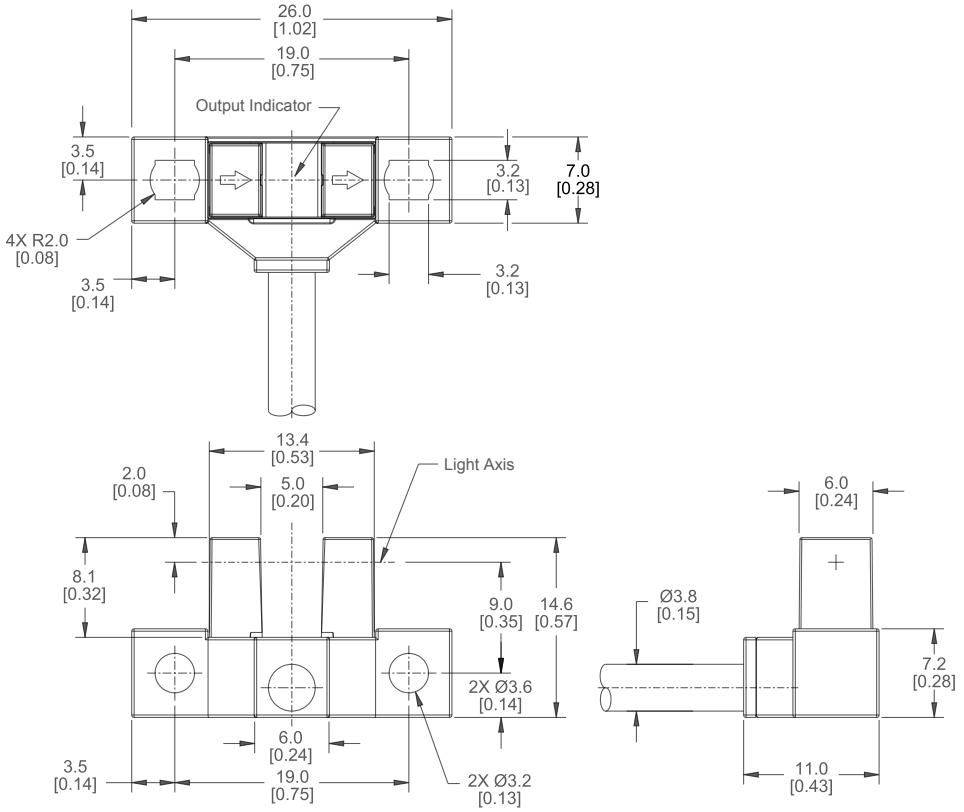
Dimensions

All measurements are listed in millimeters, unless noted otherwise. The measurements provided are subject to change.

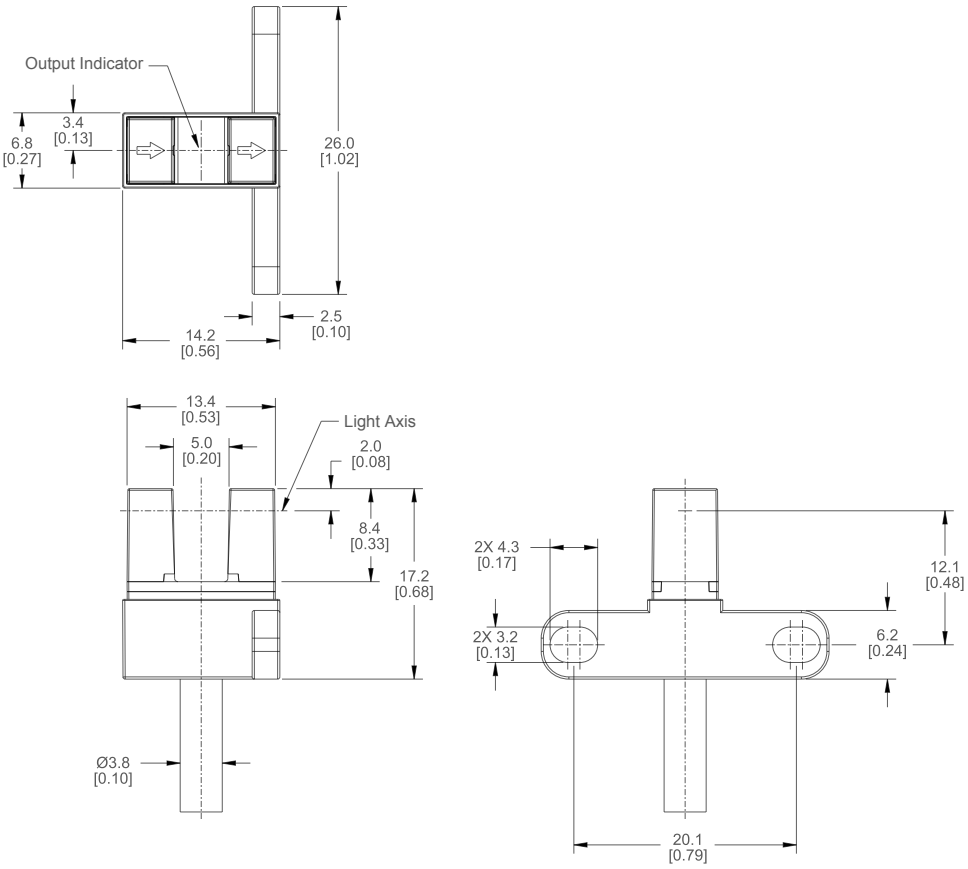
K Housing Style



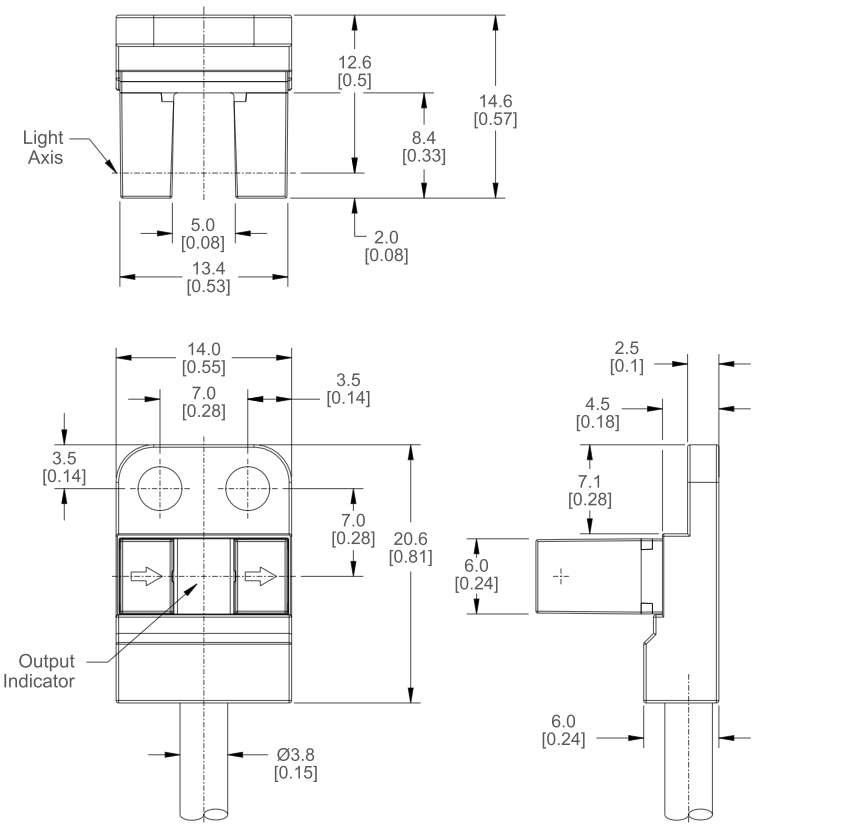
L Housing Style



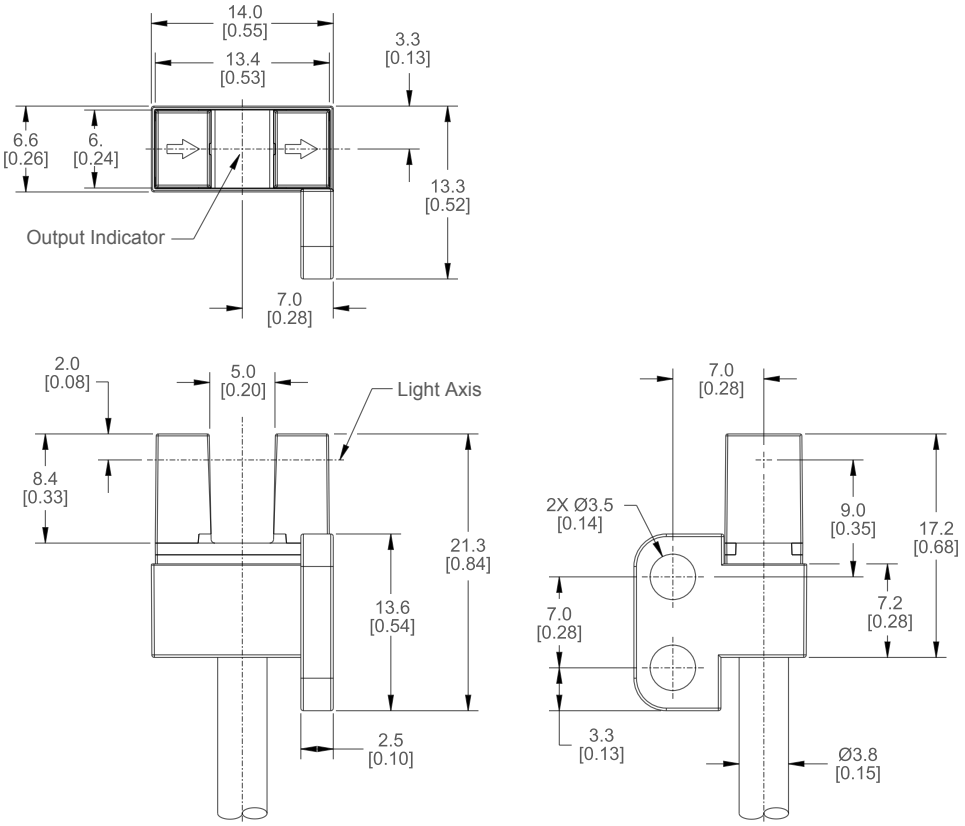
T Housing Style



Y Housing Style



R Housing Style



Product Support

Clean Sensor with Compressed Air and Lint-Free Cloth

Handle the sensor with care during installation and operation. Sensor windows soiled by fingerprints, dust, water, oil, etc. create stray light that may degrade the peak performance of the sensor.

Blow dust from the sensor using filtered, compressed air, then clean as necessary using a lint-free cloth. Do not use any chemicals for cleaning.

Repairs

Contact Banner Engineering for troubleshooting of this device. **Do not attempt any repairs to this Banner device; it contains no field-replaceable parts or components.** If the device, device part, or device component is determined to be defective by a Banner Applications Engineer, they will advise you of Banner's RMA (Return Merchandise Authorization) procedure.

> **IMPORTANT:** If instructed to return the device, pack it with care. Damage that occurs in return shipping is not covered by warranty.

Contact Us

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For worldwide locations and local representatives, visit www.bannerengineering.com.

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