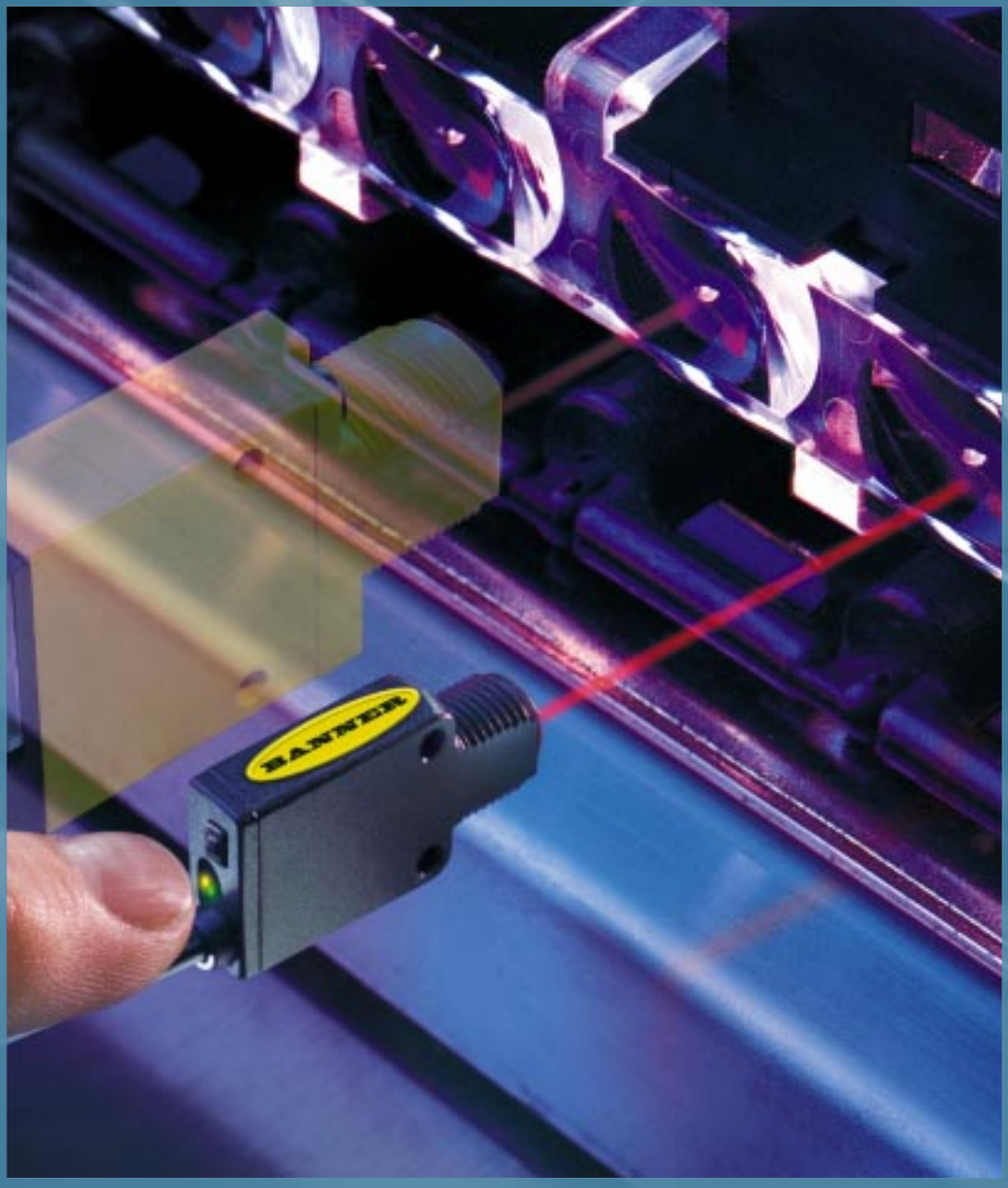


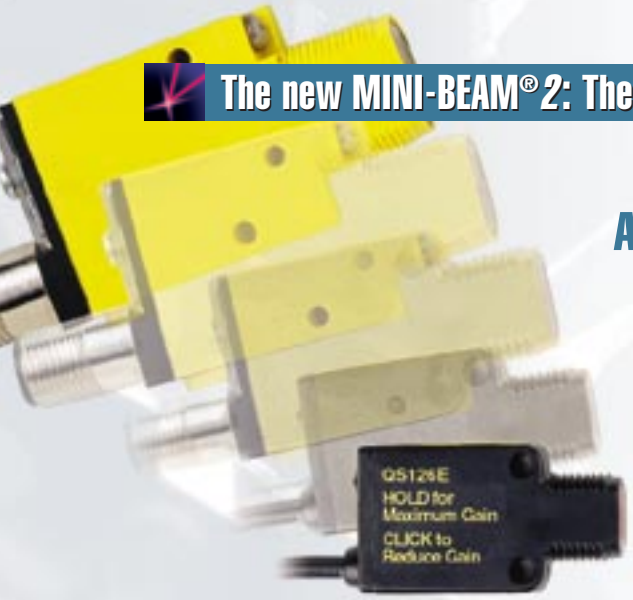
BANNER®

the photoelectric specialist

MINI-BEAM® 2

Photoelectric Sensors

The new MINI-BEAM® *2*: The natural evolution of the world's most popular sensor.



Less than 1/3 the size of the original MINI-BEAM (shown actual size)

A new level of miniaturization.*

Introduced in 1985, the original MINI-BEAM® has become the world's most popular miniature photoelectric sensor. With millions of units in use, it is the benchmark for small photoelectrics. Now this popular technology has been leapfrogged with the new, patent-pending MINI-BEAM® *2* sensor. It features a housing just one-third the size of the original MINI-BEAM. It measures a mere 20 mm (0.8") high, by 36 mm (1.4") long, with a thickness of only 8 mm (0.32"), or about the size of a postage stamp. You benefit because now you can mount a self-contained photoelectric sensor inside your machinery where other photoelectrics will not fit or function.

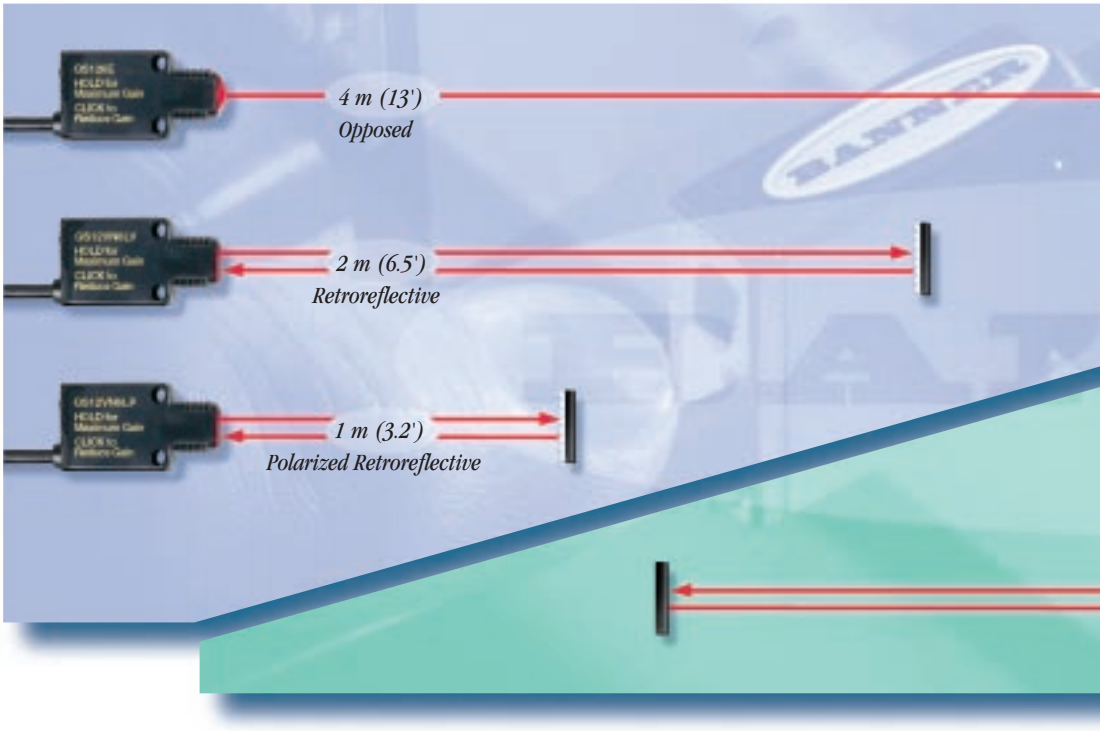
**Patent pending*

Advanced new circuitry and digital adjustment makes operation easier.

The MINI-BEAM*2* features all-new miniaturized circuitry. And its advanced new algorithm allows you to adjust the sensitivity incrementally with a single pushbutton. Setup is easier and you eliminate cumbersome screw potentiometers, switches and knobs.

Sensing modes & ranges that solve your application needs.

MINI-BEAM*2* sensors are available in six sensing modes to help solve applications in all industries. Choose from regular or wide-angle diffuse (proximity mode), retroreflective and polarized retroreflective, convergent beam, or opposed (through beam) modes, to provide accurate and reliable sensing at ranges up to 4 m (13').



Push-button sensitivity adjustments make setup faster & easier.

Digital gain adjustment.

Advanced MINI-BEAM*2* sensors offer a digital gain adjustment that uses a single push button to streamline installation and setup. Programming of sensitivity (excess gain) is achieved easily with a single, sealed button that eliminates easily-changed and leak-prone potentiometers and switches, keeping your settings safe and secure. The user simply holds the button in to achieve maximum sensitivity, and then can click the button for seven additional incremental settings to fine tune for your specific applications.

More visible, smart LED's that tell you more.

MINI-BEAM*2* sensors feature smart new status indicators. Green and amber LEDs display operating status from three directions, indicate "power on" and "light sensed," and flash to signal "maximum gain," "gain reduced one increment" and "minimum gain" conditions. You can tell the operating status of your sensors at a glance.

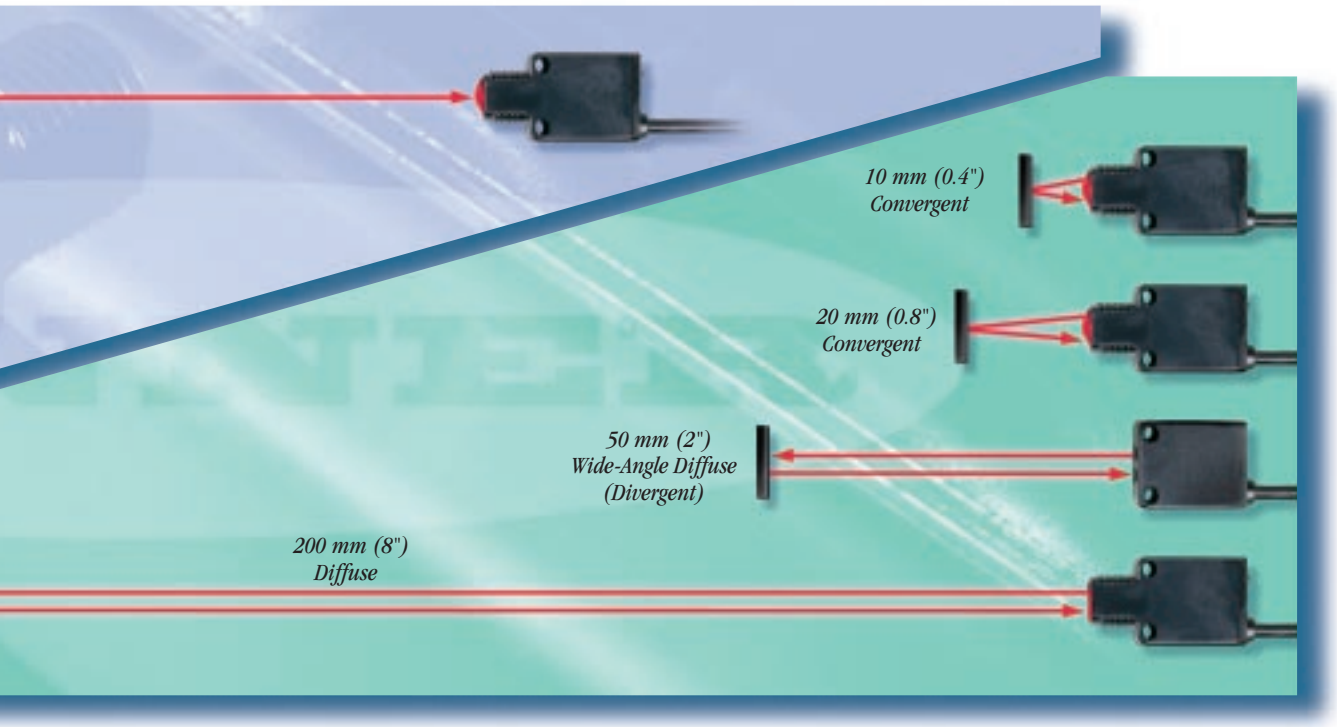
Green Steady: Power on

Amber Steady: Light sensed

Green Flashes five times to indicate maximum gain

Single Green Flash: Click registered; gain reduced one increment

Green/Amber Alternating: Minimum gain achieved



The new MINI-BEAM®*2*: All the features you need for maximum performance.

Switch 150 mA loads, NPN or PNP outputs.

Now you can switch larger loads with smaller sensors. Despite their tiny size, 10 to 30V dc MINI-BEAM*2* sensors have the power to switch a 150 mA load, and are available with NPN or PNP (current sinking or sourcing) outputs.

Rugged sealed housing.

New MINI-BEAM*2* sensors are just as rugged as their predecessors and will stand up to your tough applications. They are housed in durable black polycarbonate/ABS alloy, and meet IEC IP67 and NEMA 1, 2, 3, 4, 4X, 6, 12, and 13 environmental standards. They will operate in a wide range of temperatures from -20° to +55° C (-4° to +131° F).

Protected circuitry.

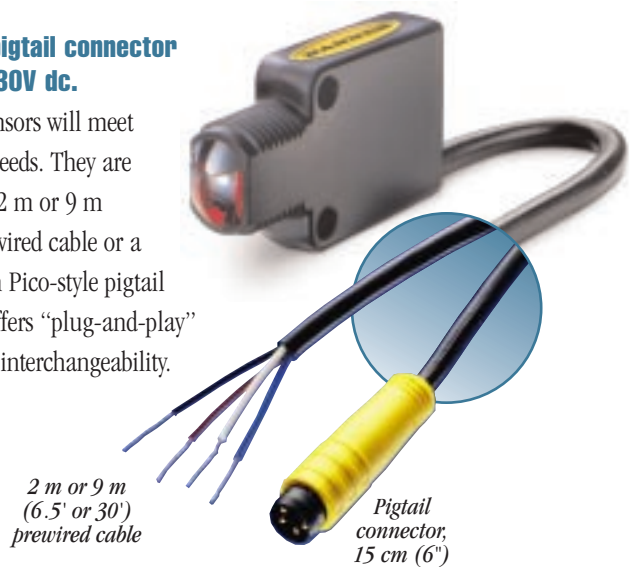
When you purchase the MINI-BEAM*2*, you won't lose your sensor investment due to electrical problems or installation error. Integral protective circuitry guards MINI-BEAM*2* sensors against reverse-polarity and transient voltages, short circuits, and false pulse on power up.

Optional timing functions.

Optional timing and logic functions are quickly available for MINI-BEAM*2* sensors, including on-delay, off-delay, on-and-off delay, one shot, delayed one-shot and more. For your special timing and logic needs, simply contact Banner Applications Engineering at 1-888-373-6767 or via email at sensors@baneng.com

Prewired or pigtail connector wiring, 10 to 30V dc.

MINI-BEAM*2* sensors will meet all your wiring needs. They are available with a 2 m or 9 m (6.5' or 30') prewired cable or a 15 cm (6") 4-pin Pico-style pigtail connector that offers "plug-and-play" convenience and interchangeability.



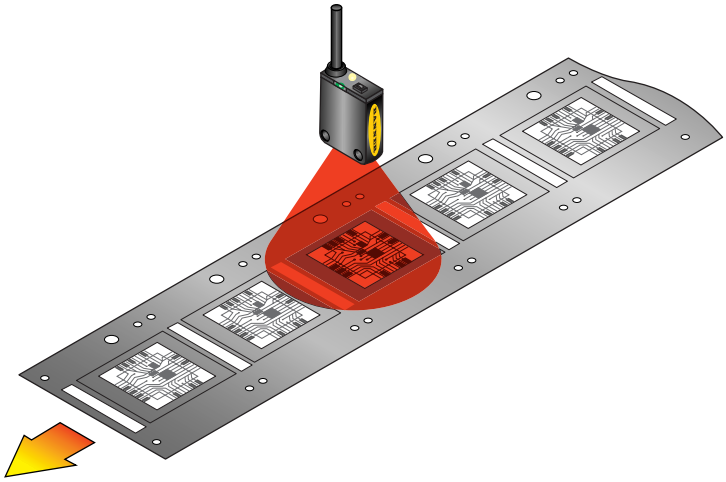
MINI-BEAM®2 Sensor Applications

LEAD FRAME DETECTION

Objective: To detect the presence of an integrated circuit lead frame.

Sensor: **QS12VN6W**

Operation: The wide beam angle of the divergent optics senses the lead frame, even in the areas where most of the metal is removed.

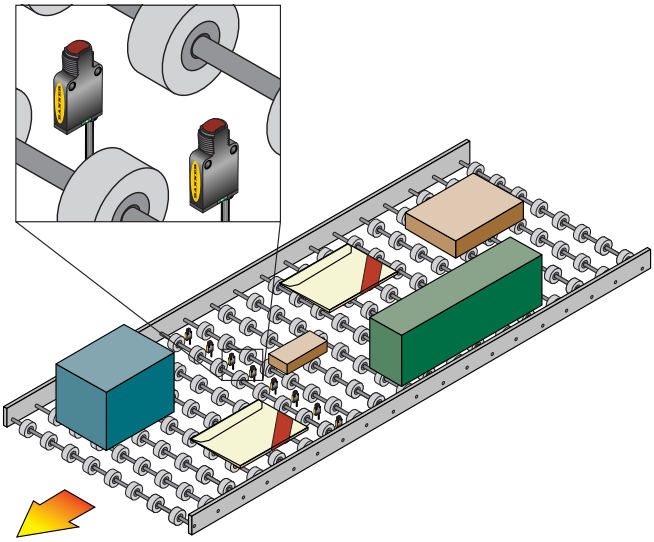


PARCEL SENSING

Objective: To sense random-sized parcels on a roller conveyor.

Sensor: **QS12VN6CV20**

Operation: MINI-BEAM2 sensors fit easily between conveyor rollers. The convergent optics are more forgiving than diffuse optics to the build-up of dust and dirt on the lenses.

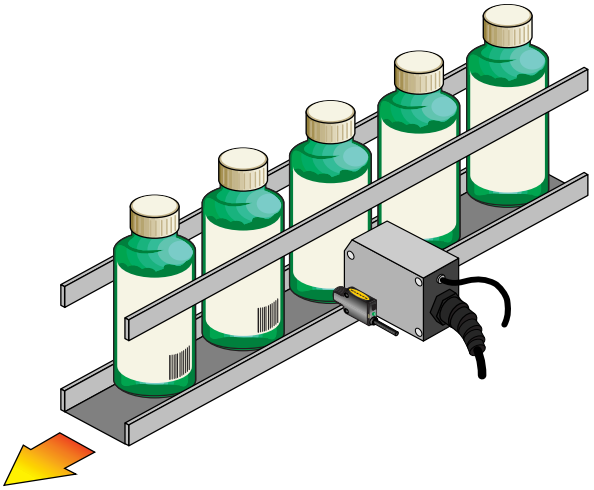


INK JET PRINTING REGISTRATION

Objective: To sense the leading edge of bottles and provide the trigger signal to an ink jet printer.

Sensor: **QS12VN6CV10**

Operation: Bottles are channeled through guide rails to control the distance to both the sensor and the ink jet printer. The convergent beam sensor consistently triggers the printer at the same point on the circumference of each bottle to provide accurate printing registration.



The MINI-BEAM®2 Sensor Model Selection & Accessories

Models with pre-wired cable Models with Pico-style pigtail quick-disconnect

Model Number	Part Number	Sensing Mode	Range	Cable	Supply Voltage	Output Type	Output Rating	Response	Repeatability
QS126E	58623	Opposed Emitter	—	2 m (6.5')	10 to 30V dc	—	150 mA maximum	—	—
QS126EQ	58624			4-pin Pico QD					
QS12VN6R	58626	Opposed Receiver	4 m (13')	2 m (6.5')		NPN		8 milliseconds ON 4 milliseconds OFF	1 millisecond
QS12VN6RQ	58627			4-pin Pico QD					
QS12VP6R	58629			2 m (6.5')		PNP			
QS12VP6RQ	58630			4-pin Pico QD					
QS12VN6LP	58632	Polarized Retroreflective	1 m (3.2')	2 m (6.5')		NPN		1.5 milliseconds	175 microseconds
QS12VN6LPQ	58633			4-pin Pico QD					
QS12VP6LP	58635			2 m (6.5')		PNP			
QS12VP6LPQ	58636			4-pin Pico QD					
QS12VN6LV	58638	Retroreflective	2 m (6.5')	2 m (6.5')		NPN			
QS12VN6LVQ	58639			4-pin Pico QD					
QS12VP6LV	58641			2 m (6.5')		PNP			
QS12VP6LVQ	58642			4-pin Pico QD					
QS12VN6CV10	58644	Convergent 10 mm	10 mm (0.4")	2 m (6.5')		NPN			
QS12VN6CV10Q	58645			4-pin Pico QD					
QS12VP6CV10	58647			2 m (6.5')		PNP			
QS12VP6CV10Q	58648			4-pin Pico QD					
QS12VN6CV20	58650	Convergent 20 mm	20 mm (0.8")	2 m (6.5')		NPN			
QS12VN6CV20Q	58651			4-pin Pico QD					
QS12VP6CV20	58653			2 m (6.5')		PNP			
QS12VP6CV20Q	58654			4-pin Pico QD					
QS12VN6D	58656	Diffuse	200 mm (8")	2 m (6.5')		NPN			
QS12VN6DQ	58657			4-pin Pico QD					
QS12VP6D	58659			2 m (6.5')		PNP			
QS12VP6DQ	58660			4-pin Pico QD					
QS12VN6DBZ	58668	Diffuse (flush front)	200 mm (8")	2 m (6.5')		NPN			
QS12VN6DBZQ	58669			4-pin Pico QD					
QS12VP6DBZ	58671			2 m (6.5')		PNP			
QS12VP6DBZQ	58672			4-pin Pico QD					
QS12VN6W	58662	Wide-Angle Diffuse (flush front)	50 mm (2")	2 m (6.5')		NPN			
QS12VN6WQ	58663			4-pin Pico QD					
QS12VP6W	58665			2 m (6.5')		PNP			
QS12VP6WQ	58666			4-pin Pico QD					

All cabled models also available with attached 9 m (30') cable (add W/30 to model number).

MINI-BEAM®2 Accessories

Right-Angle Bracket

Side-mount, 16 gauge stainless steel.
Model SMBQS12S (Part Number 59607)

Right-Angle Bracket

12 mm nose-mount, 16 gauge stainless steel.
Model SMBQS12PD (Part Number 59606)

Pico-Style Quick-Disconnect Cable

Straight 4-pin cable, 2 m (6.5') length.
PUR jacket, polyurethane connector body.
Model PKG4-2 (Part Number 32438)

MINI-BEAM®2 Specifications, Dimensions & Accessories

Specifications: MINI-BEAM® 2 Sensors

Supply Voltage: 10 to 30V dc (10% maximum ripple) at less than 25 mA, exclusive of load.

Supply Protection Circuitry: Protected against reverse polarity and transient voltages.

Output Configuration: Solid state complementary (SPDT): NPN or PNP (current sinking or sourcing) output models available.

Output Rating: 150 mA maximum, each output at 25° C. OFF-stage leakage current: less than 10 µA @ 30V dc. ON-stage saturation voltage: less than 1 V @ 10 mA; less than 1.5 V @ 150 mA.

Output Protection Circuitry: Protected against false pulse on power-up and continuous overload or short circuit of outputs.

Output Response: Opposed Mode: 8 milliseconds ON, 4 milliseconds OFF. All others, 1.5 milliseconds. NOTE: 500 millisecond delay on power-up, outputs do not conduct during this time.

Repeatability: Opposed Mode: 1 millisecond. All others 175 microseconds.

Adjustments: One rubber-sealed push button. HOLD for maximum gain. CLICK to reduce gain one increment.

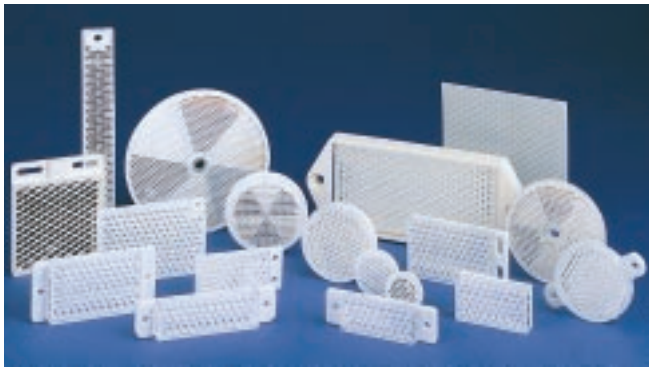
Indicators: 2 LEDs, visible from back and sides of sensor: 1 green, 1 amber.

Construction: Black polycarbonate/ABS alloy housing; totally encapsulated circuitry.

Environmental Rating: IEC IP67; NEMA 6.

Connections: 2 m (6.5') 4-wire PVC cable, 9 m (30') PVC cable, or 4-pin Pico-style 150 mm (6") pigtail QD.

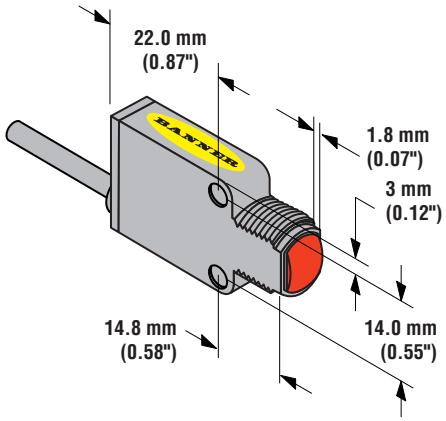
Operating Conditions: Temperature: -20° to +55° C (-4° to +131° F). Relative Humidity: 90% @ 50° C (non-condensing).



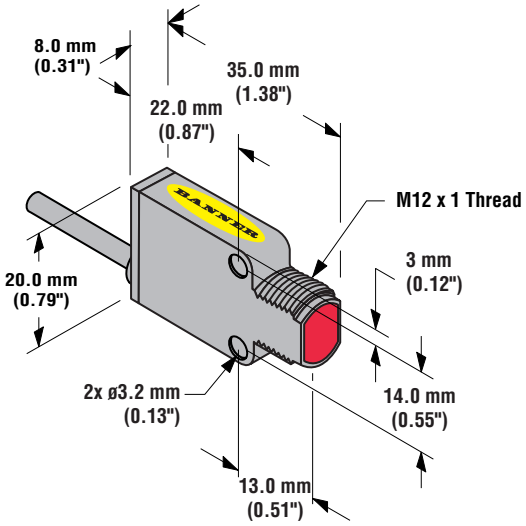
Optical-quality retroreflectors.

Choose from a complete line of high-quality acrylic targets, high-temperature targets and adhesive-backed retro tapes (not shown). Numerous sizes, shapes and mounting options meet your application requirements. Standard reflectivity model BRT-3 is used to conservatively rate the range of Banner retroreflective sensors, however new high-reflectivity models dramatically increase the sensing ranges with reflectivity factors up to 3. Maximum temperature ratings range from 50°C (120°F) up to 480°C (900°). Various mounting options are available. Request the Banner Sensor Catalog (P/N 99000) or CD ROM (P/N 99100) for available models.

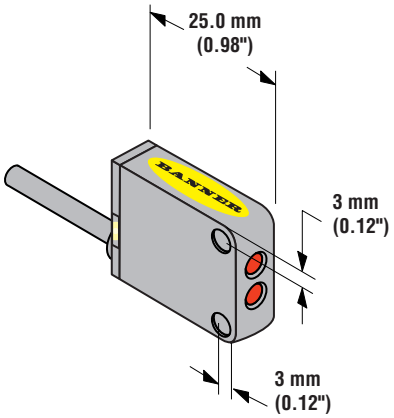
Opposed Emitter & Receiver & Convergent Mode Models



Diffuse, Retroreflective & Polarized Retroreflective Mode Models



Flush Front Diffuse & Wide-Angle Diffuse Mode Models



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The industry's most complete catalog; more than 700 pages of detailed product and technical information on more than 12,000 photoelectric sensors. Simple selection charts make specifying the correct sensor easier than ever. Call, write, or email for your copy today, P/N 99000; CD ROM, P/N 99100.

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