BANNER®
the photoelectric specialist

EZ-BEAM® "S2" Series Sensors

Designed for use on Sensor BUS Networks

Features

- Low cost and easy to use; no adjustments are necessary
- Sensor selection is simply a matter of choosing a housing style and sensing mode
- Models available for opposed (through-beam), polarized retroreflective, and fixed-field diffuse modes
- Advanced self-diagnostics with separate alarm output; dual LED system indicates sensor performance
- Solid-state outputs for direct connection to a BUS system network junction such as a Banner BUS DEPOT®
- 4-pin quick disconnect connector for standard euro-style extension cables
- Epoxy-encapsulated circuitry; leakproof IP67 (NEMA 6P) rating for harsh sensing environments
- Brackets available for several mounting options

Description

"S2" Series EZ-BEAM sensors are designed to connect directly to a "smart" BUS system network junction, such as the Banner BUS-DEPOT®. S2 Series sensors are internally wired to take advantage of the EZ-BEAM's marginal signal ALARM output. The ALARM output is normally open (N.O.) and conducts whenever the sensor's excess gain drops to between 1X and 1.5X in the light condition. The sensing signal output is also normally open, which means that the output conducts when light is sensed (i.e. - light operate).

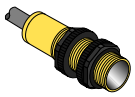
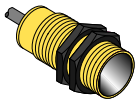
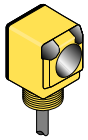
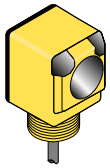
In order to take advantage of the second ALARM output, S2 sensors require the use of BUS DEPOT junctions which offer two channels per input. Both sensor outputs are PNP (current sourcing) for direct connection to a BUS network junction using standard 4-pin euro-style extension cables.

S2 Series sensors offer all of the features and powerful sensing performance that EZ-BEAMs offer. The innovative dual-indicator system takes the guesswork out of sensor performance monitoring. Housings are tightly sealed and the sensor circuitry is epoxy-encapsulated for reliable duty in wet or oily sensing environments. Models are available for opposed (through-beam), polarized retroreflective and fixed-field diffuse sensing (see chart on page 2, for available ranges).

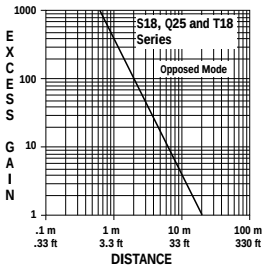
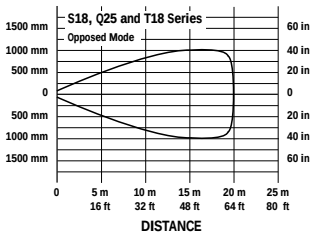
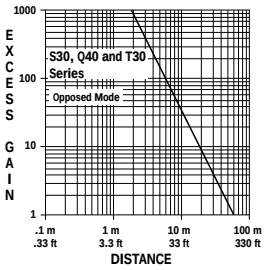
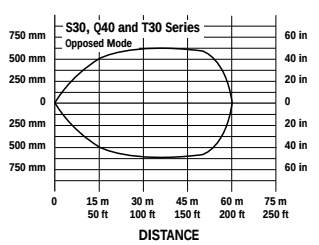
As the chart on page 2 shows, there are three basic housing styles. The "S" style is a threaded barrel which is available in 18 mm or 30 mm diameters. The "Q" style offers either 25 mm or 40 mm right-angle rectangular housings. Finally, the "T" style is a patented† right-angle design available with either an 18 mm or 30 mm threaded lens. The "T" style combines the mounting ease of a barrel sensor with the low-profile advantage of a right-angle design.

Several mounting options are offered, including angled brackets and split-clamp brackets. S2 series sensors may also be simply mounted through suitable clearance holes. See page 7 for more information.

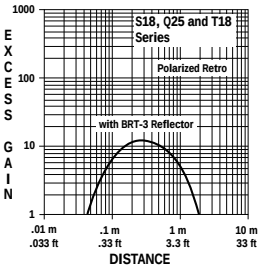
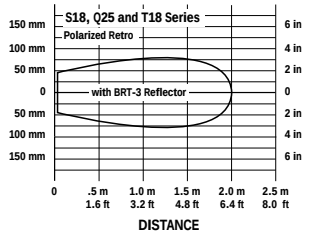
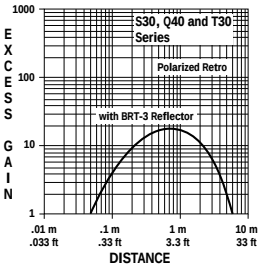
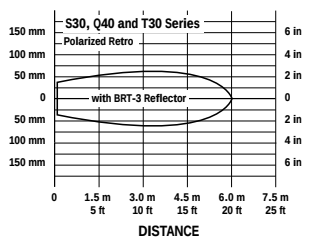
† U.S. Patent #5087838

Family	Sensor Package	Available Sensing Modes and Ranges		
		Opposed	Retro	Fixed-field
S18 	18 mm barrel	20 m (60 ft)	2 m (79 in)	50 mm (2 in) 100 mm (4 in)
S30 	30 mm barrel	60 m (200 ft)	6 m (20 ft)	200 mm (8 in) 400 mm (16 in)
Q25 	25 mm rectangular	20 m (60 ft)	2 m (79 in)	50 mm (2 in) 100 mm (4 in)
Q40 	40 mm rectangular	60 m (200 ft)	6 m (20 ft)	200 mm (8 in) 400 mm (16 in)
T18 	18 mm right-angle	20 m (60 ft)	2 m (79 in)	50 mm (2 in) 100 mm (4 in)
T30 	30 mm right-angle	60 m (200 ft)	6 m (20 ft)	200 mm (8 in) 400 mm (16 in)

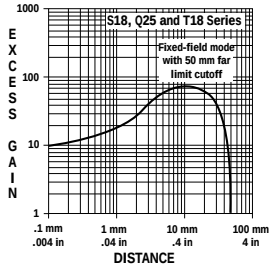
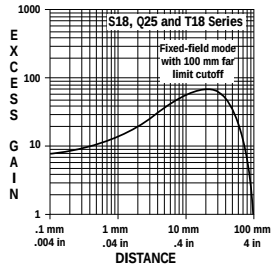
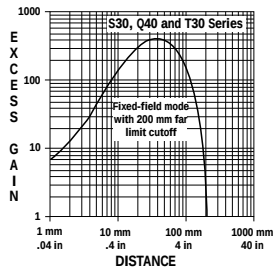
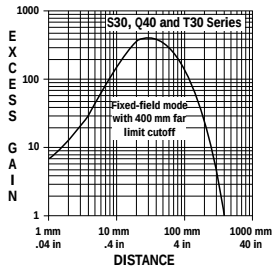
Opposed Mode Emitter (E) and Receiver (R)

Models	Range	Cable	Supply Voltage	Output Type	Excess Gain	Beam Pattern
S186EQ S18S2P6RQ	20 m (66 ft)	4-pin Euro QD	10-30V dc	PNP		Effective Beam: 13 mm (0.5") 
Q256EQ Q25S2P6RQ						
T186EQ T18S2P6RQ						
S306EQ S30S2P6RQ	60 m (200 ft)	4-pin Euro QD	10-30V dc	PNP		Effective Beam: 23 mm (0.9") 
Q406EQ Q40S2P6RQ						
T306EQ T30S2P6RQ						

Retroreflective Mode

Models	Range	Cable	Supply Voltage	Output Type	Excess Gain	Beam Pattern
S18S2P6LPQ	2 m (79 in)	4-pin Euro QD	10-30V dc	PNP		
Q25S2P6LPQ						
T18S2P6LPQ						
S30S2P6LPQ	6 m (20 ft)	4-pin Euro QD	10-30V dc	PNP		
Q40S2P6LPQ						
T30S2P6LPQ						

Fixed-field Mode

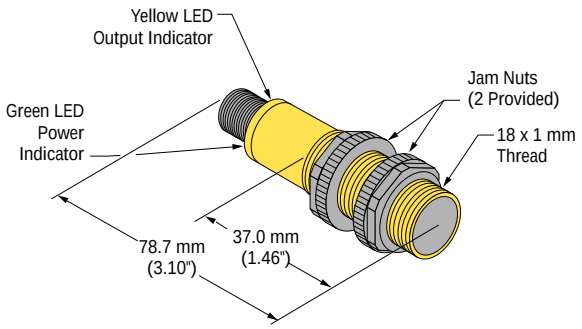
Models	Range	Cable	Supply Voltage	Output Type	Excess Gain Performance based on 90% reflectance white test card
50 mm far limit cutoff					
S18S2P6FF50Q	50 mm (2 in)	4-Pin Euro QD	10-30V dc	PNP	
Q25S2P6FF50Q					
T18S2P6FF50Q					
100 mm far limit cutoff					
S18S2P6FF100Q	100 mm (4 in)	4-Pin Euro QD	10-30V dc	PNP	
Q25S2P6FF100Q					
T18S2P6FF100Q					
200 mm far limit cutoff					
S30S2P6FF200Q	200 mm (8 in)	4-Pin Euro QD	10-30V dc	PNP	
Q40S2P6FF200Q					
T30S2P6FF200Q					
400 mm far limit cutoff					
S30S2P6FF400Q	400 mm (16 in)	4-Pin Euro QD	10-30V dc	PNP	
Q40S2P6FF400Q					
T30S2P6FF400Q					

Product Specifications

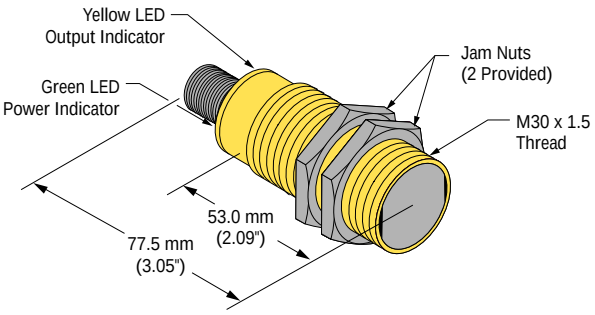
Supply Voltage and Current Opposed Mode Emitter Opposed Mode Receiver Polarized Retro Fixed-field	10 to 30V dc (10% maximum ripple); Supply current (exclusive of load current): 25 mA 20 mA 30 mA 35 mA	
Supply Protection Circuitry	Protected against reverse polarity and transient voltages	
Output Configuration	Sensing Output: PNP (current sourcing), light operated	Alarm Output: PNP (current sourcing), normally open and conducts whenever the sensor's excess gain drops to between 1X and 1.5X in the light condition
Output Rating	150 mA maximum (each); the total load may not exceed 150 mA; **Off-state leakage current** <1 microamp at 30V dc; **On-state saturation voltage** <1V at 10 mA dc; <1.5V at 150 mA dc	
Output Protection Circuitry	Protected against false pulse on power-up and continuous overload or short-circuit of outputs	
Output Response Time	**Opposed:** 3 milliseconds "on" and 1.5 milliseconds "off" **Polarized Retro and Fixed-field:** 3 milliseconds "on" and "off" *NOTE: 100 millisecond delay on power-up; outputs are non-conducting during this time*	
Repeatability	**Opposed:** 375 microseconds **Polarized Retro and Fixed-field:** 750 microseconds Repeatability and response are independent of signal strength	
Indicators	Two LEDs: Green and Yellow GREEN **glowing steadily** = power to sensor is "on" GREEN **flashing** = output is overloaded YELLOW **glowing steadily** = normally open output is conducting YELLOW **flashing** = excess gain marginal (1-1.5x) in light condition	
Construction	Housings are VALOX® thermoplastic polyester; Lenses are Lexan® (opposed models) or acrylic (retro and fixed-field models) S18 and S30 come with two jam nuts; T18, T30, Q25 and Q40 come with one jam nut	
Environmental Rating	Leakproof design rated NEMA 6P; IEC IP67	
Connections	4-pin euro-style quick-disconnect fitting; cables are ordered separately	
Operating Temperature	-40° to +70°C (-40° to 158°F); Maximum relative humidity 90% at 50°C (non-condensing)	
Vibration and Mechanical Shock	All models meet Mil. Std. 202F requirements. Method 201A (Vibration; frequency 10 to 60 Hz, max., double amplitude 0.06-inch acceleration 10G). Method 213B conditions H&I (Shock: 75G with unit operating; 100G for non-operation)	

Dimension Information

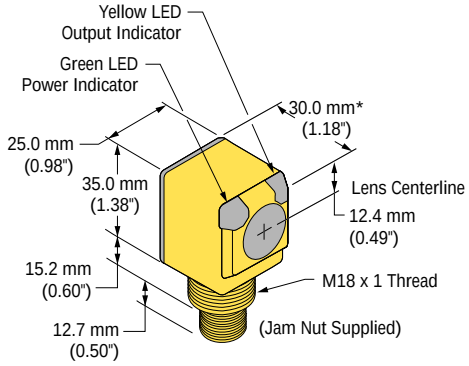
S18



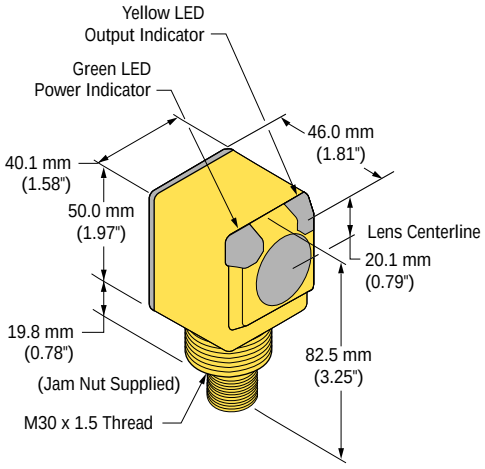
S30



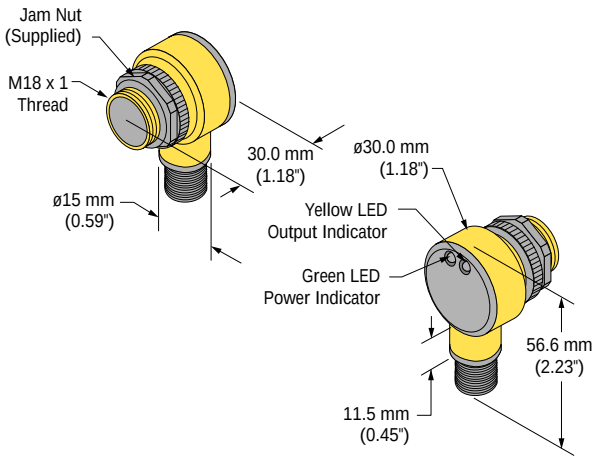
Q25



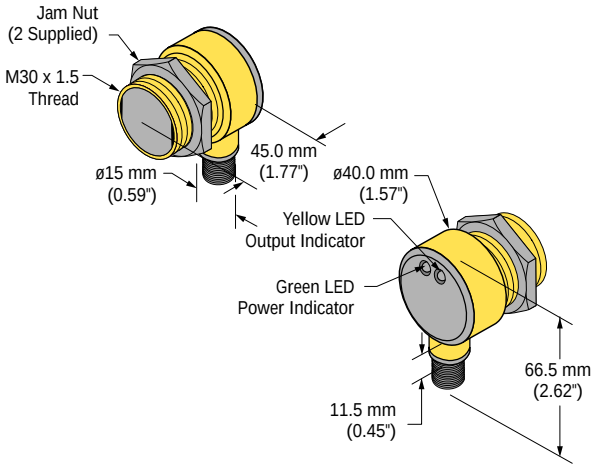
Q40



T18

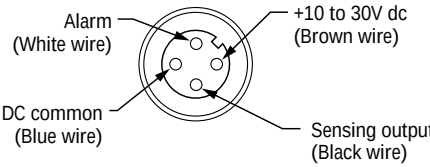


T30

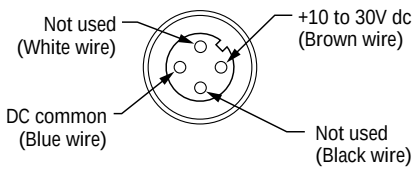


Hookup Information

Quick Disconnect Pin Detail
connector on sensor shown (male pins)



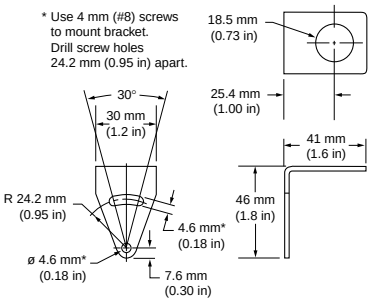
Emitter Quick Disconnect Pin Detail
connector on sensor shown (male pins)



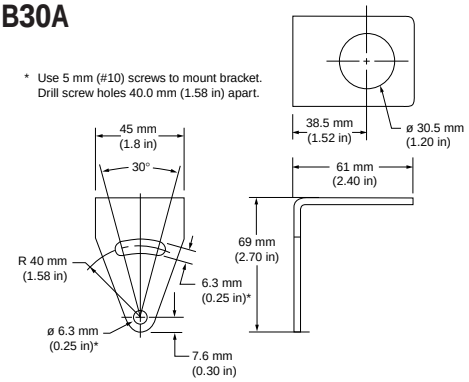
Note: Wire colors are for Banner MQDC-4 Series quick disconnect cables

Mounting Brackets

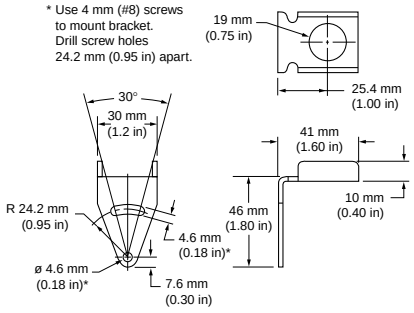
SMB18A



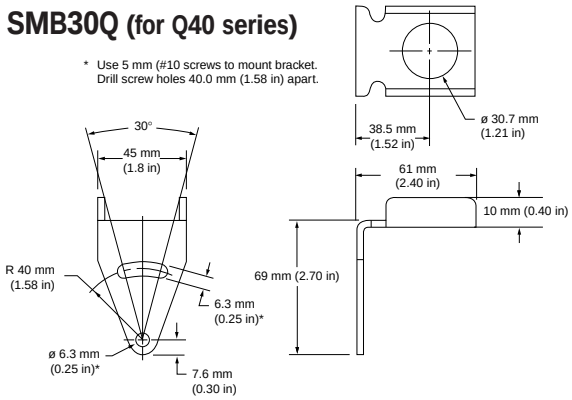
SMB30A



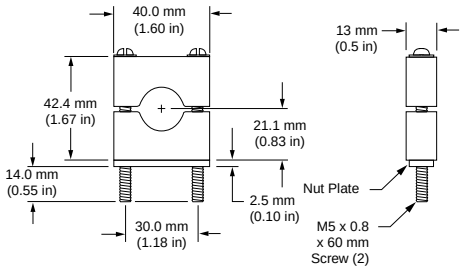
SMB18Q (for Q25 series)



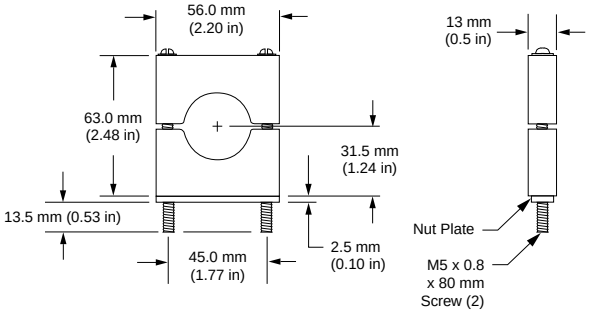
SMB30Q (for Q40 series)



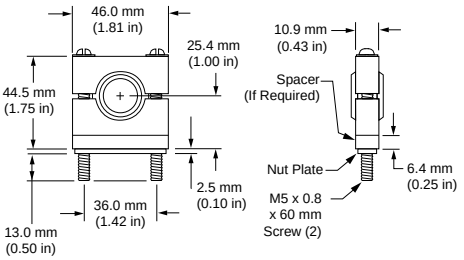
SMB18C



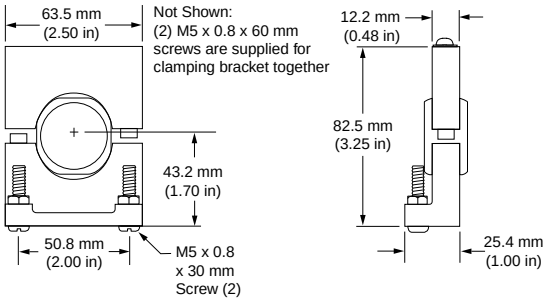
SMB30C



SMB18S



SMB30S



EZ BEAM S2 Series

the photoelectric specialist

WARRANTY: Banner Engineering Corporation warrants its products to be free from defects for one year. Banner Engineering Corporation will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.

WARNING These photoelectric presence sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can result in either an energized or a de-energized sensor output condition.

Never use these products as sensing devices for personnel protection. Their use as a safety device may create an unsafe condition which could lead to serious injury or death.

Only MINI-SCREEN™, MULTI-SCREEN™, MACHINE-GUARD and PERIMETER-GUARD Systems, and other systems so designated, are designed to meet OSHA and ANSI machine safety standards for point-of-operation guarding devices. No other Banner sensors or controls are designed to meet these standards, and they must NOT be used as sensing devices for personnel protection.

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