Features

Opposed-mode infrared photoelectric sensors for especially demanding applications



- Stainless steel or plastic barrel models
- Very high excess gain; 150 m (500 ft) sensing range; 880 nm Infrared LED
- Positive sealing eliminates even capillary leakage; lens is quad-ring sealed; ideal for equipment wash-down environments
- EZ-BEAM® technology provides reliable sensing without the need for adjustment
- Modulation frequency “A” is standard; frequencies “B” and “C” also available for preventing crosstalk in multiple-sensor applications (emitter and opposed receiver frequencies must match)
- AC- and DC-operated receiver models are available; emitters feature Universal voltage
- Range for all models: 150 m (500 ft)

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

Modulation Frequency[1]			Housing	Cable[2]	Power Supply	Output Type
A	B	C				
Emitter Models						
SMA30PEL	SMA30PELB	SMA30PELC	Plastic	2 m (6.5 ft) 2-wire Cable	Universal: 12 to 240 V AC, 10 to 30 V DC	–
SMA30PELQD	SMA30PELQDB	SMA30PELQDC		3-pin Mini QD[3]		
SMA30SEL	SMA30SELB	SMA30SELC	Stainless Steel	2 m (6.5 ft) 3-wire Cable		
SMA30SELQD	SMA30SELQDB	SMA30SELQDC		3-pin Mini QD[3]		
DC Receivers						
SM30PRL	SM30PRLB	SM30PRLC	Plastic	2 m (6.5 ft) 4-wire Cable	10 to 30 V DC	Bi-Modal™ NPN or PNP
SM30PRLQD	SM30PRLQDB	SM30PRLQDC		4-pin Mini QD		
SM30SRL	SM30SRLB	SM30SRLC	Stainless Steel	2 m (6.5 ft) 4-wire Cable		
SM30SRLQD	SM30SRLQDB	SM30SRLQDC		4-pin Mini QD		
AC Receivers						
SM2A30PRL	SM2A30PRLB		Plastic	2 m (6.5 ft) 2-wire Cable	24 to 240 V AC	SPST Solid-state, L.O.
SM2A30PRLQD	SM2A30PRLQDB	SM2A30PRLQDC		3-pin Mini QD[3]		
SM2A30SRL	SM2A30SRLB	SM2A30SRLC	Stainless Steel	2 m (6.5 ft) 3-wire Cable		
SM2A30SRLQD	SM2A30SRLQDB	SM2A30SRLQDC		3-pin Mini QD[3]		
SM2A30PRLNC	SM2A30PRLNCB	SM2A30PRLNCC	Plastic	2 m (6.5 ft) 2-wire Cable		SPST Solid-state, D.O.
SM2A30PRLNCQD	SM2A30PRLNCQDB	SM2A30PRLNCQDC		3-pin Mini QD[3]		
SM2A30SRLNC	SM2A30SRLNCB	SM2A30SRLNCC	Stainless Steel	2 m (6.5 ft) 3-wire Cable		
SM2A30SRLNCQD	SM2A30SRLNCQDB	SM2A30SRLNCQDC		3-pin Mini QD[3]		

The following models are no longer available for order but are still covered by the information in this document.

- SM2A30PRLB W/30

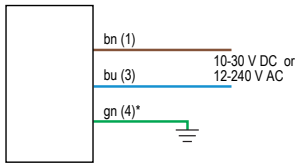
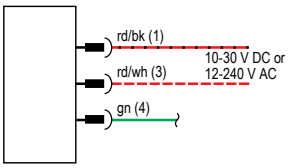
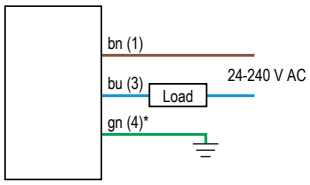
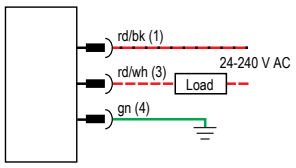
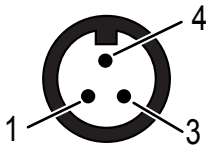
[1] Any emitter and receiver shown here can be used together, if they have the same modulation frequency.
[2] Standard 2 m (6.5 ft) cable and integral QD models are listed. Models with a quick disconnect require a mating cordset. To order the 9 m (30 ft) PVC cable model, add the suffix "W/30" to the cabled model number. For example, SM30PRLBW/30.
[3] AC models with QD require SM30CC model cables.

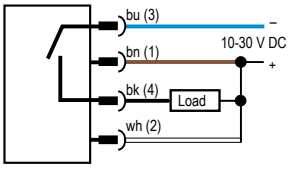
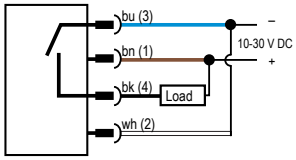
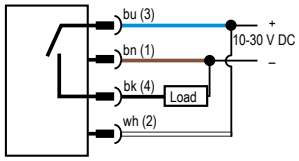
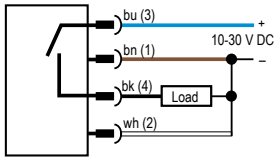
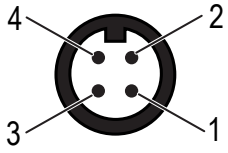
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03541
p/n: 03541 Rev I

- SM2A30PRLC
- SM2A30PRLNCB W/30
- SM2A30SRLNCB W/30
- SM2A30SRLNCC W/30

Wiring Diagrams

Emitters—Cabled	Emitters—QD	AC Receivers—Cabled	AC Receivers—QD
			
3-pin Mini male pinout 	**NOTE:** AC emitters are not polarity-sensitive when powered by DC voltage. For QD emitters, use a SM30CC model cordset to match cable colors. Connect the green wire to earth ground whenever a stainless steel model is powered by AC voltage. (Cabled plastic models have no green wire.)		

DC Receivers—NPN		DC Receivers—PNP	
Light Operate	**Dark Operate**	**Light Operate**	**Dark Operate**
			
4-pin Mini male pinout 			

Specifications

Supply Voltage and Current

Emitters: 12 to 240 V AC (50/60 Hz) or 10-30 V DC at 20 mA, 10% maximum ripple

DC Receivers: 10 to 30 V DC at 10 mA maximum (exclusive of load); 10% maximum ripple

AC Receivers: 24 to 240 V AC (50/60 Hz)

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Output Configuration

DC Receivers: Bi-Modal™ output (PNP sourcing or NPN sinking). Selection of light/dark operate and sourcing or sinking configuration dependent on hookup.

AC Receivers: SPST solid-state switch; light operate (LO) or dark operate (DO) dependent on model.

Output Rating

DC Receivers: 250 mA continuous

Output saturation voltage (PNP & NPN configuration) < 1 volt at 10 mA and < 2 volts at 250 mA

Off-state leakage current < 10 microamps

AC Receivers: Maximum steady-state load capability is 500 mA

Inrush capability: 10 amps for 1 second (non-repeating)
Off-state leakage: current < 1.7 mA rms
On-state voltage drop: < 3.5 volts rms across a 500 mA load; < 5 volts rms across a 15 mA load

Output Protection Circuitry

Outputs of DC receivers are short-circuit protected

Output Response Time

10 milliseconds on/off

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Repeatability

"A" frequency models: 1 ms

"B" frequency models: 1.5 ms

"C" frequency models: 2.3 ms

Construction

Fully epoxy-encapsulated tubular threaded housing, positive sealed at both ends, quad-ring sealed acrylic lens.

Plastic models: 30 mm diameter thermoplastic polyester housing and jam nuts.

Stainless Steel models: 30 mm diameter 303 stainless steel housing and jam nuts.

Indicators

Internal red LED, visible through the lens or from side of the sensor.

Emitters: Red "Power ON" indicator LED

DC Receivers: Lights whenever receiver sees its modulated light source

AC Receivers: Lights whenever receiver's output is conducting

Connections

PVC-jacketed 2 m or 9 m cables or Mini-style quick-disconnect (QD) fitting are available. QD cables are ordered separately.

Environmental Rating

Exceeds IP67

Operating Conditions

Temperature: –40 °C to +70 °C (–40 °F to +158 °F)

90% at +50 °C maximum relative humidity (non-condensing)

Certifications

Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	2.0	30	0.5

FCC Part 15 Class A for Unintentional Radiators

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada ICES-003(A)

This device complies with CAN ICES-3 (A)/NMB-3(A). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

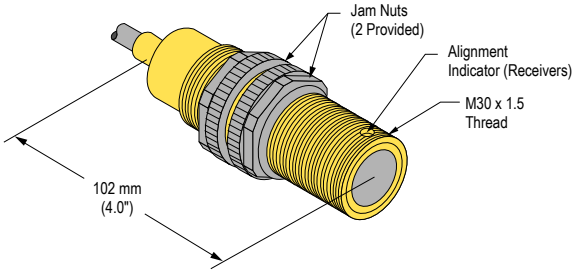
Cet appareil est conforme à la norme NMB-3(A). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

Dimensions

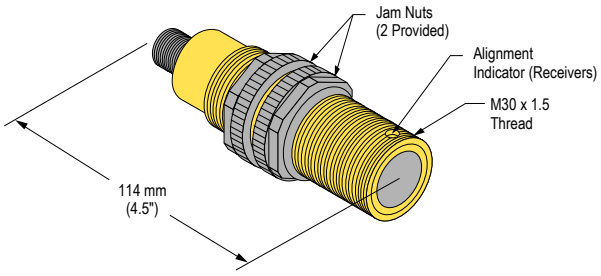
All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.

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Cabled models

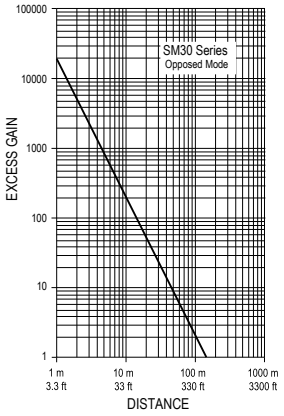


QD models

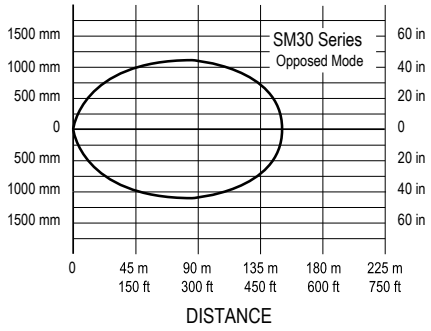


Performance Curves

Excess gain curve

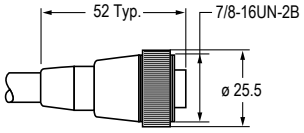
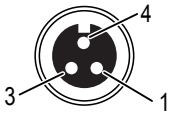


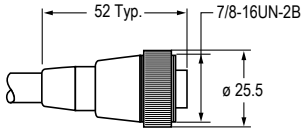
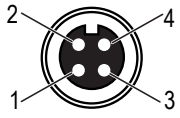
Beam pattern



Accessories

Cordsets

3-pin Single-Ended Mini Female Cordsets				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
SM30CC-306	1.83 m (6 ft)	Straight		 1 = Red/Black 3 = Red/White 4 = Green
SM30CC-312	3.66 m (12 ft)			

4-Pin Single-Ended Mini Female Cordsets				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
MBCC-406	1.83 m (6 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black
MBCC-412	3.66 m (12 ft)			
MBCC-430	9.14 m (30 ft)			

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Apertures

APG30S

Kit includes black acetal round apertures of 0.05 in, 0.12 in, and 0.70 in diameter; slotted widths of 1 mm (0.04 in), 2.5 mm (0.10 in), and 5 mm (0.20 in.)

Used with SM30 and SMI30 models.

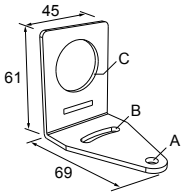


Brackets

SMB30A

- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-gauge stainless steel
- CAD Files: DXF, PDF, IGS, STP

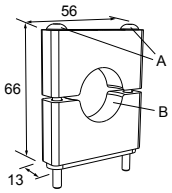
Hole center spacing: A to B=40
Hole size: A=ø 6.3, B= 27.1 × 6.3, C=ø 30.5



SMB30C

- 30 mm split clamp, black PBT bracket
- Stainless steel mounting hardware included
- Mounting hole for 30 mm sensor
- CAD Files: DXF, PDF, IGS, STP

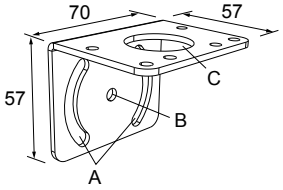
Hole center spacing: A=ø 45
Hole size: B=ø 27.2



SMB30MM

- 12-gauge stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- CAD Files: DXF, PDF, IGS, STP

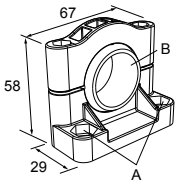
Hole center spacing: A=51, A to B=25.4
Hole size: A=42.6 × 7, B=ø 6.4, C=ø 30.1



SMB30SC

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included
- CAD Files: DXF, PDF, IGS, STP

Hole center spacing: A=ø 50.8
Hole size: A=ø 7.0, B=ø 30.0



Product Support and Maintenance

Clean Sensor with Compressed Air and Water

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 the window clear using filtered, compressed air, then clean as necessary using only water and a lint-free cloth. Do not use any other 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

Banner Engineering Corp. | 9714 Tenth Avenue North | Plymouth, MN 55441, USA | Phone: + 1 888 373 6767

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