

SM30 Series 30 mm Barrel Sensor

Opposed-Mode Infrared Photoelectric Sensors for Especially Demanding Applications



Features

- Stainless steel or plastic barrel models
- Very high excess gain; 200 m (700') sensing range; 880 nm Infrared LED
- Positive sealing eliminates even capillary leakage; lens is quad-ring sealed; exceeds NEMA 6P (IP67) ratings – 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 available; emitters feature Universal voltage
- Range for all models: 200 m (700'). See page 3 for performance curves.

Models

Modulation Frequency*			Housing	Cable**	Supply Power	Output Type
A	B	C				
Emitter Models						
SMA30PEL	SMA30PELB	SMA30PELC	Plastic	2 m (6.5') 2-wire Cable	Universal: 12 to 240V ac, 10 to 30V dc	-
SMA30PELQD	SMA30PELQDB	SMA30PELQDC		3-pin Mini-style QD†		
SMA30SEL	SMA30SELB	SMA30SELC	Stainless Steel	2 m (6.5') 3-wire Cable		
SMA30SELQD	SMA30SELQDB	SMA30SELQDC		3-pin Mini-style QD†		
DC Receivers						
SM30PRL	SM30PRLB	SM30PRLC	Plastic	2 m (6.5') 4-wire Cable	10 to 30V dc	Bi-Modal™ NPN or PNP
SM30PRLQD	SM30PRLQDB	SM30PRLQDC		4-pin Mini-style QD		
SM30SRL	SM30SRLB	SM30SRLC	Stainless Steel	2 m (6.5') 4-wire Cable		
SM30SRLQD	SM30SRLQDB	SM30SRLQDC		4-pin Mini-style QD		
AC Receivers						
SM2A30PRL	SM2A30PRLB	SM2A30PRLC	Plastic	2 m (6.5') 2-wire Cable	24 to 240V ac	SPST Solid-state, L.O.
SM2A30PRLQD	SM2A30PRLQDB	SM2A30PRLQDC		3-pin Mini-style QD†		
SM2A30SRL	SM2A30SRLB	SM2A30SRLC	Stainless Steel	2 m (6.5') 3-wire Cable		
SM2A30SRLQD	SM2A30SRLQDB	SM2A30SRLQDC		3-pin Mini-style QD†		
SM2A30PRLNC	SM2A30PRLNCB	SM2A30PRLNCC	Plastic	2 m (6.5') 2-wire Cable		SPST Solid-state, D.O.
SM2A30PRLNCQD	SM2A30PRLNCQDB	SM2A30PRLNCQDC		3-pin Mini-style QD†		
SM2A30SRLNC	SM2A30SRLNCB	SM2A30SRLNCC	Stainless Steel	2 m (6.5') 3-wire Cable		
SM2A30SRLNCQD	SM2A30SRLNCQDB	SM2A30SRLNCQDC		3-pin Mini-style QD†		

* Any emitter and receiver shown here can be used together, if they have the same modulation frequency.

** Standard 2 m (6.5') cable and integral QD models are listed. A model with a QD connector requires a mating cable; see page 4.

9 m (30') cable: add suffix “W/30” following the Frequency suffix of any cable model (e.g., **SM30PRLBW/30**).

† AC models with QD require SM30CC model cables; see page 4.

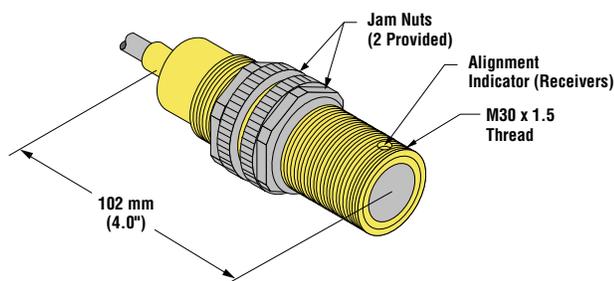
Important: See Safety Warning on Back Page

Specifications

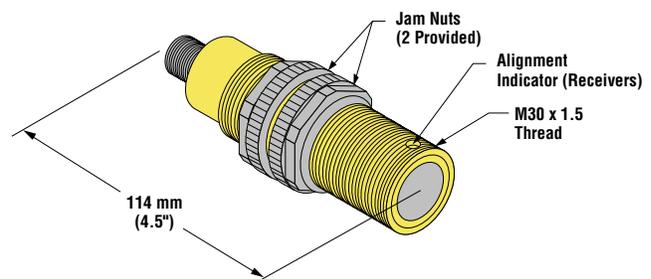
Supply Voltage and Current	Emitters: 12 to 240V ac (50/60 Hz) or 10-30V dc at 20 mA, 10% maximum ripple DC Receivers: 10 to 30V dc at 10 mA maximum (exclusive of load); 10% maximum ripple AC Receivers: 24 to 240V ac (50/60 Hz)
Supply Protection Circuitry	Protected against reverse polarity and transient 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
Repeatability	“A” frequency models: 1 ms “B” frequency models: 1.5 ms “C” frequency models: 2.3 ms
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
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.
Environmental Rating	Exceeds NEMA 6P and IEC IP67 standards
Connections	PVC-jacketed 2 m or 9 m cables or Mini-style quick-disconnect (QD) fitting are available. QD cables are ordered separately. See page 4.
Operating Conditions	Temperature: -40° to +70° C (-40° to +158° F) Relative humidity: 90% at 50° C (non-condensing)
Certifications	

Dimensions

Cabled Models

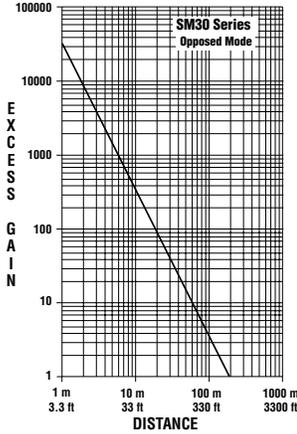


QD Models

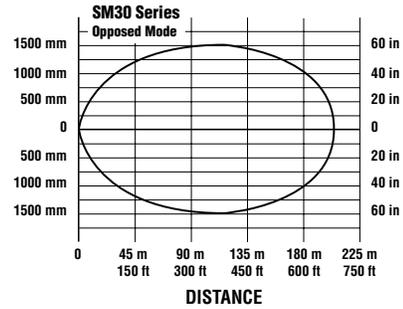


Performance Curves

Excess Gain Curve

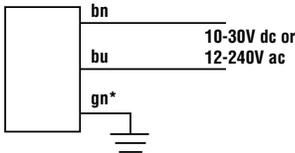


Beam Pattern

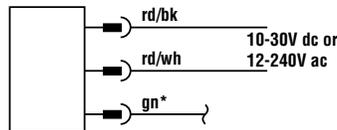


Hookups

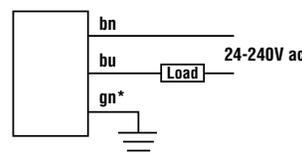
Emitters – Cabled



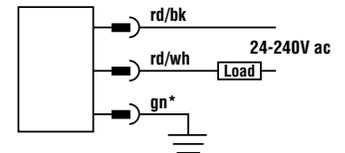
Emitters – QD



AC Receivers – Cabled



AC Receivers – QD

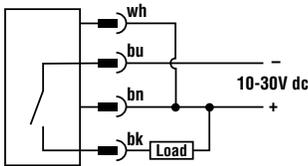


NOTE: AC emitters are not polarity-sensitive when powered by dc voltage.
For QD emitters, use SM30CC model cables listed on page 4 in order to match cable colors.

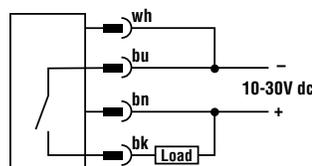
*Connect green wire to earth ground whenever a stainless steel model is powered by ac voltage. (Cabled plastic models have no green wire.)

DC Receivers – NPN

Light Operate

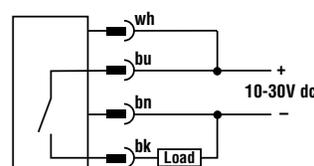


Dark Operate

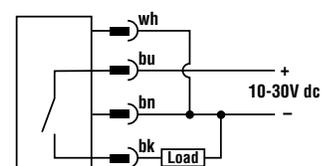


DC Receivers – PNP

Light Operate



Dark Operate



NOTE: Where QD hookups only are shown, cabled model hookups are functionally identical.



SM30 Series 30 mm Sensors – for Especially Demanding Applications

Quick-Disconnect (QD) Cables

Style	Model	Length	Connector	Use with	Pinout
3-pin Mini-Style	SM30CC-306 SM30CC-312	2 m (6.5') 4 m (12')	Straight	Emitters and AC receivers	
4-pin Mini-Style	MBCC-406 MBCC-412 MBCC-430	2 m (6.5') 4 m (12') 9 m (30')		DC receivers	

Apertures

Model	Description		
APG30S	Kit includes: a thread-on stainless steel housing, a flat glass lens, two quad-ring seals, plus 3 round and 3 slotted aperture disks		

Mounting Brackets

	SMB30A	<ul style="list-style-type: none"> • 30 mm, 12-gauge, stainless steel, right-angle bracket with a curved mounting slot for versatile orientation • Clearance for M6 (1/4") hardware
	SMB30C	<ul style="list-style-type: none"> • 30 mm split clamp bracket • Black reinforced thermoplastic polyester • Includes stainless steel mounting hardware
	SMB30MM	<ul style="list-style-type: none"> • 30 mm, 12-gauge, stainless steel, right-angle bracket with curved mounting slots for versatile orientation • Clearance for M6 (1/4") hardware
	SMB30SC	<ul style="list-style-type: none"> • 30 mm swivel bracket • Black reinforced thermoplastic polyester • Includes stainless steel mounting and swivel locking hardware



WARNING . . . Not To Be Used for Personnel Protection

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.



WARRANTY: Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. 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.