

# S18 Series Sensor (AC Voltage)



## Datasheet

For complete technical information about this product, including dimensions, accessories, and specifications, go to [www.bannerengineering.com](http://www.bannerengineering.com) and search for your model number. See also document 121521.



### 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

Sensing Mode	Range	LED	Output	Model
 OPPOSED	20 m (66 ft)	Infrared 950 nm	-	<b>S183E</b>
			LO	<b>S18AW3R</b>
			DO	<b>S18RW3R</b>
 RETRO	2 m (79 in)	Infrared 950 nm	LO	<b>S18AW3L</b>
			DO	<b>S18RW3L</b>
 POLAR RETRO <sup>1</sup>	2 m (79 in)	Visible Red 680 nm	LO	<b>S18AW3LP</b>
			DO	<b>S18RW3LP</b>
 DIFFUSE	100 mm (4 in)	Infrared 880 nm	LO	<b>S18AW3D</b>
			DO	<b>S18RW3D</b>
	300 mm (12 in)		LO	<b>S18AW3DL</b>
			DO	<b>S18RW3DL</b>
 FIXED-FIELD	25 mm (1 in) cutoff	Infrared 880 nm	LO	<b>S18AW3FF25</b>
			DO	<b>S18RW3FF25</b>
	50 mm (2 in) cutoff		LO	<b>S18AW3FF50</b>
			DO	<b>S18RW3FF50</b>
	100 mm (4 in) cutoff		LO	<b>S18AW3FF100</b>
			DO	<b>S18RW3FF100</b>

Standard 2 m (6.5 ft) cable models are listed.

- To order the 9 m (30 ft) cable models, add suffix **W/30** (for example, **S183E W/30**).
- To order the 4-pin 1/2"-20UNF QD models, add suffix **Q1** (for example, **S183EQ1**). A model with a QD connector requires a mating cable.
- To order the 5-pin 1/2"-20UNF QD models, add suffix **Q** (for example, **S183EQ**). A model with a QD connector requires a mating cable.

<sup>1</sup> Use polarized models when shiny objects will be sensed.



## Wiring

Figure 1. Cabled emitters

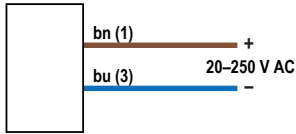


Figure 2. 4-pin 1/2"-20UNF QD emitters

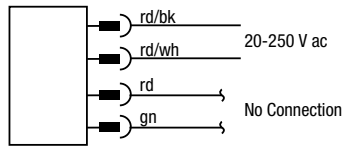


Figure 3. 5-pin 1/2"-20UNF QD emitters

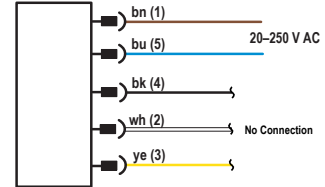


Figure 4. All other cabled models

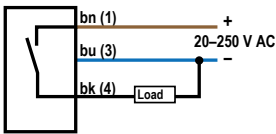


Figure 5. All other 4-pin 1/2"-20UNF QD Models

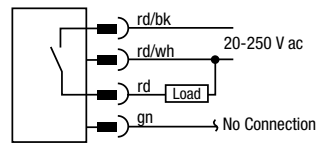
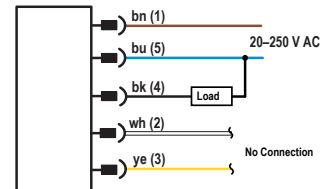
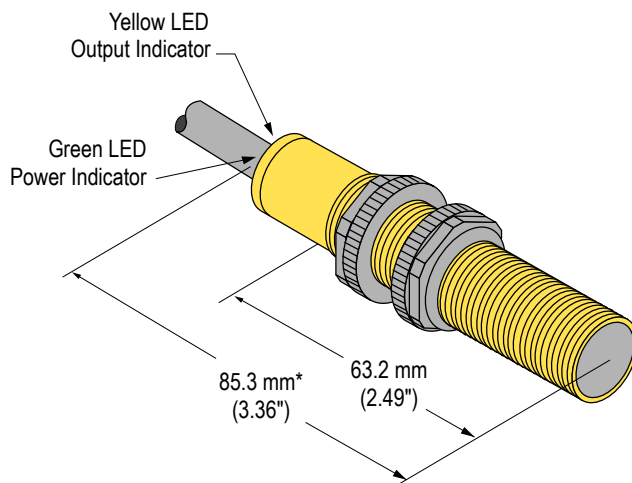


Figure 6. All other 5-pin 1/2"-20UNF QD Models



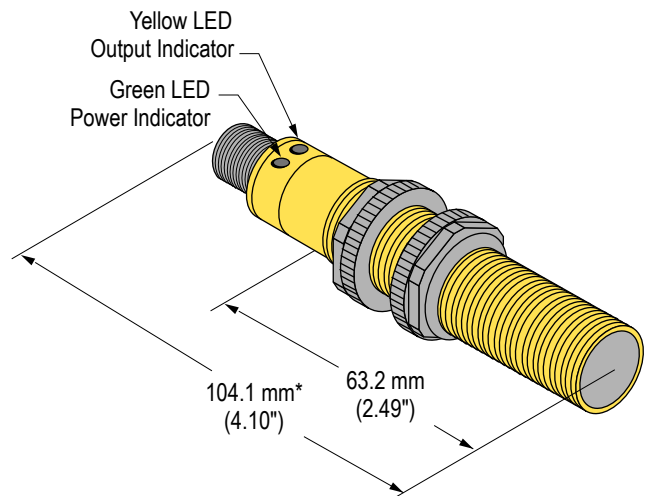
## Dimensions

### Cabled Models



\*Polarized retro and fixed-field models = 86.3 mm (3.40")

### QD Models



\*Polarized retro and fixed-field models = 105.1 mm (4.14")

## Specifications

### Supply Voltage and Current

20 to 250 V AC (50/60 Hz)  
 Average current: 20 mA  
 Peak current: 200 mA at 20 V AC, 500 mA at 120 V AC, 750 mA at 250 V AC

### Supply Protection Circuitry

Protected against transient voltages

### Indicators

Two LEDs (green and amber)  
 Green on: power to sensor is on  
 Amber on: sensor sees light  
 Amber flashing: excess gain marginal (1 to 1.5x) in light condition

### Construction

Housing: PBT polyester housing  
 Lens: polycarbonate (opposed-mode) or acrylic (other models)

### Connections

2 m (6.5 ft) integral cable; 9 m (30 ft) integral cable; 4-pin 1/2"-20UNF quick-disconnect fitting; or 5-pin 1/2"-20UNF quick-disconnect fitting

### Operating Conditions

-40 °C to +70 °C (-40 °F to +158 °F)  
 90% at +50 °C maximum relative humidity (non-condensing)

### Environmental Rating

Leakproof design rated NEMA 6P and IEC IP67 per IEC 60529  
 IP69K per DIN40050 for quick disconnect and cable models when the cables are protected from direct spray

### Vibration and Mechanical Shock

All models meet MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz maximum, 0.06 inch (1.52 mm) double amplitude, 10G acceleration) requirements.  
 Method 213B conditions H&I.  
 Shock: 75G with device operating; 100G for non-operation

### Certifications



### Output Configuration

SPST solid-state AC switch; Three-wire connections; Choose light operate or dark operate models  
 Light Operate: Output conducts when sensor sees its own (or the emitter's) modulated light  
 Dark Operate: Output conducts when the sensor sees dark

### Output Rating

300 mA maximum (continuous)  
 Fixed-field models: derate 5 mA/°C above +50 °C (+122 °F)  
 Inrush Capability 1 amp for 20 milliseconds, non-repetitive  
 OFF-state leakage current: < 100 microamps  
 ON-state saturation voltage: 3 V at 300 mA AC; 2 V at 15 mA AC

### Output Protection Circuitry

Protected against false pulse on power-up

### Output Response Time

Opposed mode models: 16 ms ON, 8 ms OFF  
 Other models: 16 ms ON and OFF  
 NOTE: 100 ms delay on power-up

### Repeatability

Opposed mode models: 2 ms  
 Other models: 4 ms  
 Repeatability and response are independent of signal strength.

### Required Overcurrent Protection



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

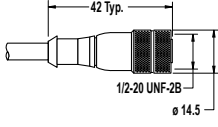
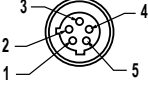
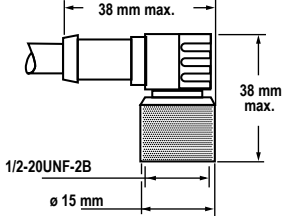
Overcurrent protection is required to be provided by end product application per the supplied table.  
 Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.  
 Supply wiring leads < 24 AWG shall not be spliced.  
 For additional product support, go to [www.bannerengineering.com](http://www.bannerengineering.com).

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

## Accessories

### Cordsets

4-Pin 1/2-in Dual Key Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQAC-406	2 m (6.56 ft)	Straight		<p>1 = Red/Black                  2 = Red/White                  3 = Red                  4 = Green</p>
MQAC-415	5 m (16.4 ft)			
MQAC-430	9.14 m (30 ft)			
MQAC-406RA	1.83 m (6 ft)	Right-Angle		
MQAC-415RA	5 m (16.4 ft)			
MQAC-430RA	9.14 m (30 ft)			

5-Pin 1/2-in Dual Key Cordsets with Shield—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQVR3S-506	2 m (6.56 ft)	Straight		 <p>1 = Brown 2 = White 3 = Yellow 4 = Black 5 = Blue</p>
MQVR3S-515	5 m (16.4 ft)			
MQVR3S-530	10 m (32.8 ft)			
MQVR3S-506RA	2 m (6.56 ft)	Right Angle		
MQVR3S-515RA	5 m (16.4 ft)			
MQVR3S-530RA	10 m (32.8 ft)			

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