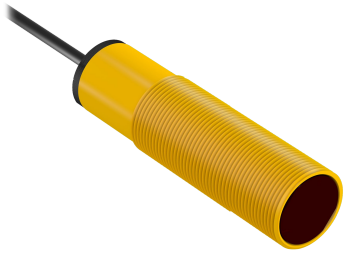
# S18 Series Sensor (AC Voltage) Datasheet

## Features

For complete technical information about this product, including installation instructions, application requirements and guidelines, technical specifications, and accessories, go to www.bannerengineering.com and search for instruction manual part number 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

*Opposed mode models*

| Models | Range | LED | Output | Connection |
|---|---|---|---|---|
| S183E Emitter | 20 m (66 ft) | Infrared 950 nm | - | 2 m cable |
| S18AW3R Receiver | | | LO | 2 m cable |
| S18RW3R Receiver | | | DE | 2 m cable |

*Retroreflective mode models*

| Models | Range | LED | Output | Connection |
|---|---|---|---|---|
| S18AW3L | 2 m (79 in) | Infrared 950 nm | LO | 2 m cable |
| S18RW3L | | | DO | 2 m cable |

*Polarized retroreflective mode models*

| Models[1] | Range | LED | Output | Connection |
|---|---|---|---|---|
| S18AW3LP | 2 m (79 in) | Visible Red 680 nm | LO | 2 m cable |
| S18RW3LP | | | DO | 2 m cable |

*Diffuse mode models*

| Models | Range | LED | Output | Connection |
|---|---|---|---|---|
| S18AW3D | 100 mm (4 in) | Infrared 880 nm | LO | 2 m cable |
| S18RW3D | | | DO | 2 m cable |
| S18AW3DL | 300 mm (12 in) | | LO | 2 m cable |
| S18RW3DL | | | DO | 2 m cable |

*Fixed-field mode models*

| Models | Range | LED | Output | Connection |
|---|---|---|---|---|
| S18AW3FF25 | 25 mm (1 in) cutoff | Infrared 880 nm | LO | 2 m cable |
| S18RW3FF25 | | | DO | 2 m cable |
| S18AW3FF50 | 50 mm (2 in) cutoff | | LO | 2 m cable |
| S18RW3FF50 | | | DO | 2 m cable |
| S18AW3FF100 | 100 mm (4 in) cutoff | | LO | 2 m cable |
| S18RW3FF100 | | | DO | 2 m cable |

- 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.

[1] Use polarized models when shiny objects will be sensed.



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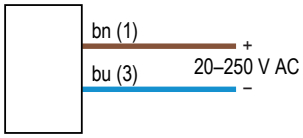
- To order the 5-pin 1/2"-20UNF QD models, add suffix **Q** (for example, **S183EQ**). A model with a QD connector requires a mating cable.

In light operate (LO) mode, the output is ON when the target returns the same or more light to the sensor and OFF when the sensor detects less light than the configured/taught target. In **opposed and retroreflective sensing modes**, light operate is active when the beam is unblocked. In **diffuse, fixed field, and adjustable field sensor modes**, light operate is active when the target is present.

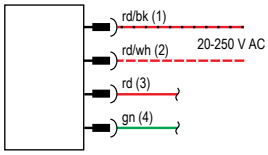
In dark operate (DO) mode, the output is ON when the target returns less light to the sensor than the configured target and OFF when the sensor detects more light than the configured/taught target. In **opposed and retroreflective sensing modes**, dark operate is active when the beam is blocked. In **diffuse, fixed field, and adjustable field sensor modes**, dark operate is active when the target is absent.

# Wiring

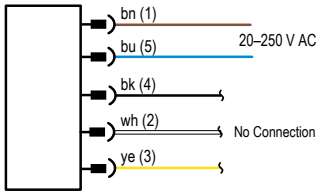
*Cabled emitters*



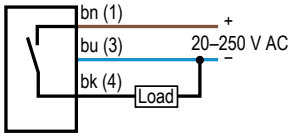

*4-pin 1/2"-20UNF QD emitters*



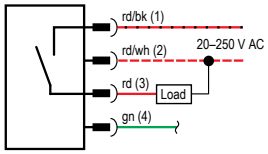

*5-pin 1/2"-20UNF QD emitters*



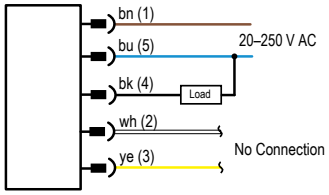

*All other cabled models*



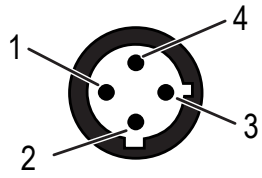

*All other 4-pin 1/2"-20UNF QD Models*



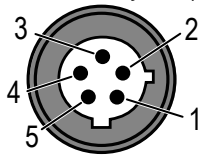

*All other 5-pin 1/2"-20UNF QD Models*




*4-pin 1/2-in dual key male pinout*




*5-pin 1/2-in dual key male pinout*




# 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 1.5×) 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

**Output Protection Circuitry**

Protected against false pulse on power-up

**Output Configuration**

SPST solid-state AC switch; Three-wire connections; Choose light operate or dark operate models
Light Operate: Output conducts when the 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 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.

**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


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**Certifications**

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1831 Diegem, BELGIUM

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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.

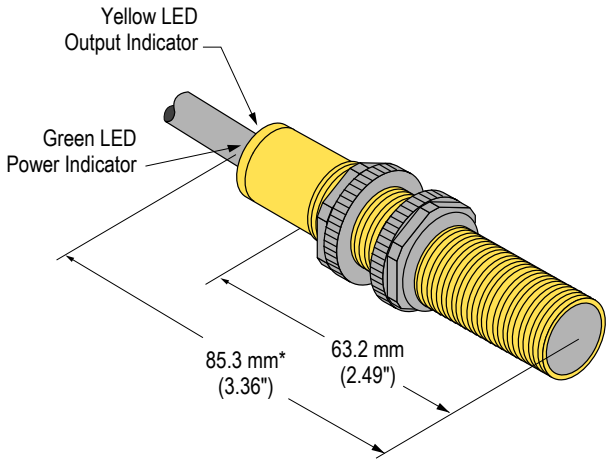
Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
Supply wiring leads < 24 AWG shall not be spliced.

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 |

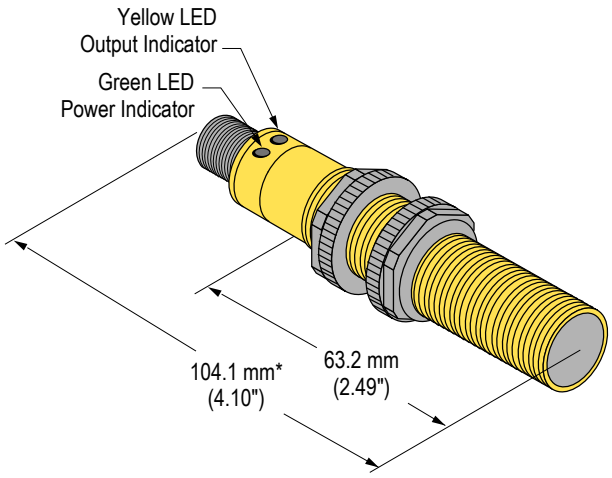
## Dimensions

*Cabled models*




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

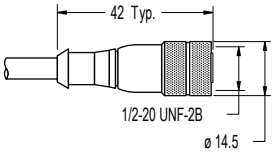
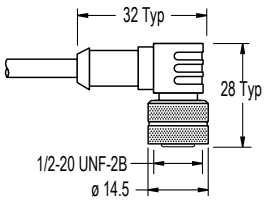
*Quick disconnect models*



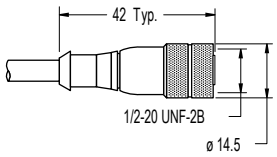
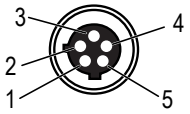
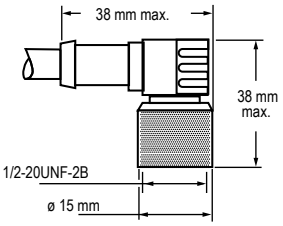

*Polarized retro and fixed-field models = 105.1 mm (4.14")

# Accessories

## Cordsets

| 4-Pin Single-Ended 1/2-in Dual Key Female Cordsets | | | | |
|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout (Female)** |
| **MQAC-406** | 2 m (6.56 ft) | Straight |   |   1 = Red/Black<br>2 = Red/White<br>3 = Red<br>4 = Green |
| **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) | | | |


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| 5-Pin Single-Ended 1/2-in Dual Key Female Shielded Cordsets | | | | |
|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout (Female)** |
| **MQVR3S-506** | 2 m (6.56 ft) | Straight |  | <br>1 = Brown<br>2 = White<br>3 = Yellow<br>4 = Black<br>5 = Blue |
| **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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