

S18 Series Sensors (DC Voltage)



Installation Guide

For complete technical information about this product, including dimensions, accessories, and specifications, see www.bannerengineering.com and search for your model number. See also document 121522.



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	Model ¹		Range	LED	Output
 OPPOSED	S186E	Emitter	20 m (66 ft)	Infrared 950 nm	-
	S18SN6R	Receiver			NPN
	S18SP6R				PNP
 RETRO	S18SN6L		2 m (79 in)	Infrared 950 nm	NPN
	S18SP6L				PNP
 POLAR RETRO ²	S18SN6LP		2 m (79 in)	Visible Red 680 nm	NPN
	S18SP6LP				PNP
 DIFFUSE	S18SN6D		100 mm (4 in)	Infrared 880 nm	NPN
	S18SP6D				PNP
	S18SN6DL		300 mm (12 in)		NPN
	S18SP6DL				PNP
 FIXED-FIELD	S18SN6FF25		25 mm (1 in) cutoff	Infrared 880 nm	NPN
	S18SP6FF25				PNP
	S18SN6FF50		50 mm (2 in) cutoff		NPN
	S18SP6FF50				PNP
	S18SN6FF100		100 mm (4 in) cutoff		NPN
	S18SP6FF100				PNP



Note: Users must purchase one emitter and one receiver for opposed mode sensors.

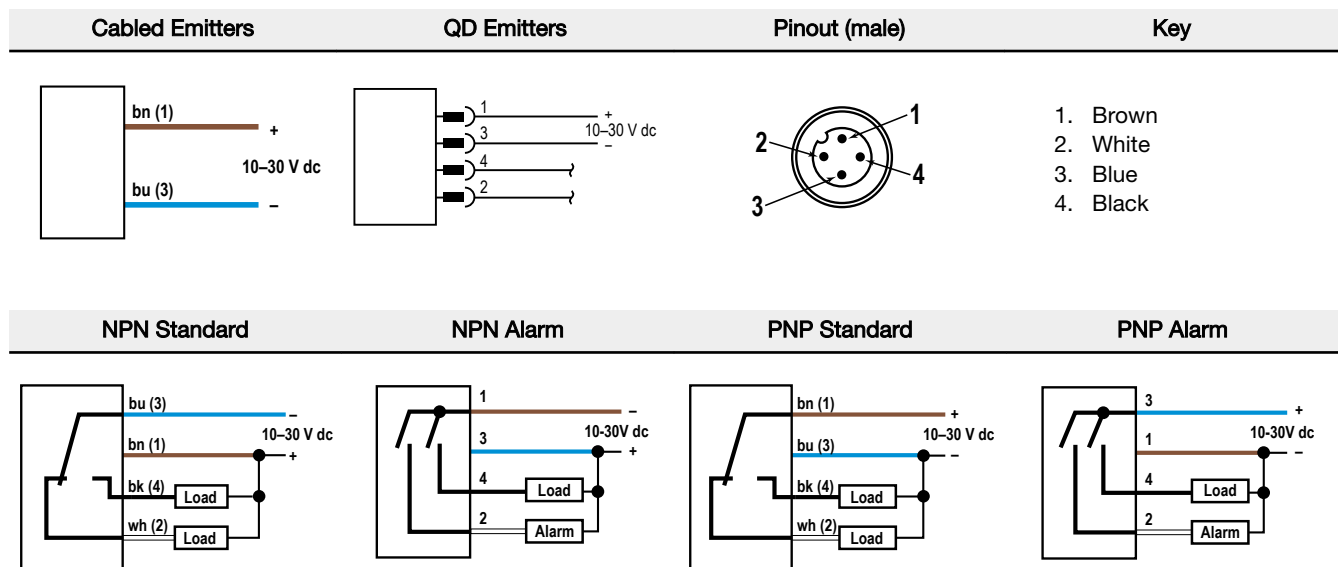
¹ Standard 2 m (6.5 ft) cable models are listed.

- To order the 9 m (30 ft) cable models, add suffix **W/30** (for example, **S186E W/30**).
- To order the 4-pin M12/Euro-style QD models, add suffix **Q** (for example, **S186EQ**). A model with a QD connector requires a mating cable.

² Use polarized models when shiny objects will be sensed.



Wiring Diagrams



Wiring for the quick disconnect (QD) models is functionally identical.

Specifications

Supply Voltage and Current

10 to 30 V dc (10% maximum ripple)

Supply current (exclusive of load current):

- Emitters, non-polarized retroreflective, retroreflective, diffuse models: 25 mA
- Receivers: 20 mA
- Polarized retroreflective models: 30 mA
- Fixed-field models: 35 mA

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Indicators

Two LEDs (green and amber):

- Green on: power to sensor is on
- Green flashing: output is overloaded
- Amber on: N.O. output is conducting
- 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; or 4-pin M12/Euro-style quick-disconnect fitting

Output Configuration

SPDT solid-state dc switch; Choose NPN (current sinking) or PNP (current sourcing) models

Light Operate: N.O. output conducts when sensor sees its own (or the emitter's) modulated light

Dark Operate: N.C. output conducts when the sensor sees dark; the N.C. (normally closed) output may be wired as a normally open marginal signal alarm output, depending upon wiring to power supply (U.S. patent 5087838)

Output Rating

150 mA maximum (each) in standard wiring. When wired for alarm output, the total load may not exceed 150 mA.

OFF-state leakage current: < 1 microamp at 30 V dc

ON-state saturation voltage: < 1 V at 10 mA dc; < 1.5 V 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 mode models: 3 ms ON, 1.5 ms OFF

Retroreflective, fixed-field, and diffuse mode models: 3 ms ON and OFF

NOTE: 100 ms delay on power-up; outputs do not conduct during this time.

Repeatability

Opposed mode models: 375 μ s

Retroreflective, fixed-field, and diffuse mode models: 750 μ s

Repeatability and response are independent of signal strength.

4-Pin Threaded M12/Euro-Style Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC-406RA	1.83 m (6 ft)	Right-Angle		
MQDC-415RA	4.57 m (15 ft)			
MQDC-430RA	9.14 m (30 ft)			
MQDC-450RA	15.2 m (50 ft)			

Sensor Status Indicators

S15L Series In-Line Sensor Status Indicator						
Model	Input Type	LED Color	Dimensions	Female	Male	Wiring
S15LGYPQ	PNP	Power ON = Green				1 = Brown, 10 to 30 V DC 2 = White 3 = Blue, dc common 4 = Black, Sensor Input
S15LGYNQ	NPN	Input Active = Yellow				

Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

For patent information, see www.bannerengineering.com/patents.

FCC Part 15 and CAN ICES-3 (B)/NMB-3(B)

This device complies with part 15 of the FCC Rules and CAN ICES-3 (B)/NMB-3(B). 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules and CAN ICES-3 (B)/NMB-3(B). These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the manufacturer.