



P18 Photoelectric Sensor Product Manual

Original Instructions

p/n: 253476 Rev. A

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Contents

- Chapter 1 Features 3**
 - Models 3
 - Overview 4
 - Specifications 4
 - FCC Part 15 Class A for Unintentional Radiators 5
 - Industry Canada ICES-003(A) 5
 - Performance Curves 5
 - Dimensions 6
- Chapter 2 Installation Instructions 7**
 - Mount the Device 7
 - Wiring 7
- Chapter 3 Accessories 8**
- Chapter 4 Product Support and Maintenance 11**
 - Repairs and Translations-MASTER 11
 - Banner Engineering Corp Limited Warranty 12

Chapter Contents

Models	3
Overview	4
Specifications	4

Chapter 1 Features

The P18 is a low-profile retroreflective sensor.



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

Models	Range	Output	Connection
P18-RPLP	5 m	Dark operate PNP	2 m cable
P18-RPLPQ			150 mm (6") cable with a 4-pin M8 male quick disconnect connector
P18-APLP		Light operate PNP	2 m cable
P18-APLPQ			150 mm (6") cable with a 4-pin M8 male quick disconnect connector
P18-APLPQ5		Light operate PNP	150 mm (6") cable with a 4-pin M12 male quick disconnect connector
P18-RPLPQ5		Dark operate PNP	150 mm (6") cable with a 4-pin M12 male quick disconnect connector

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 **retroreflective** sensing modes, light operate means the output is on when the beam is unblocked and dark operate means the output is on when the beam is blocked.

Overview



- 1. Green power indicator
- 2. Amber indicator
 - a. On: Indicates the normally open (NO) output is conducting
 - b. Flashing: Indicates a marginal signal condition

Specifications

- Supply Voltage**
 - 10 V DC to 30 V DC (10% maximum ripple) at less than 25 mA exclusive of load
 - Protected against reverse polarity and transient voltages
- Sensing Beam**
 - Visible red LED 630 nm
- Output Configuration**
 - PNP
- Output Response**
 - 500 microseconds
 - 120 millisecond delay on power-up; outputs do not conduct during this time
- Construction**
 - ABS Housing, 18 mm and 3 mm mounting hardware included.
- Connections**
 - 150 mm (6") PVC cable with a 4-pin M8 quick disconnect connector or a 2 m PVC cable with flying leads, depending on the model ordered
- Repeatability**
 - 120 microseconds
- Environmental Rating**
 - IP67
- Operating Conditions**
 - 25 °C to +55 °C (-13 °F to +131 °F)
 - 95% at +55 °C maximum relative humidity (non-condensing)

Certifications



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



UL LISTED

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.

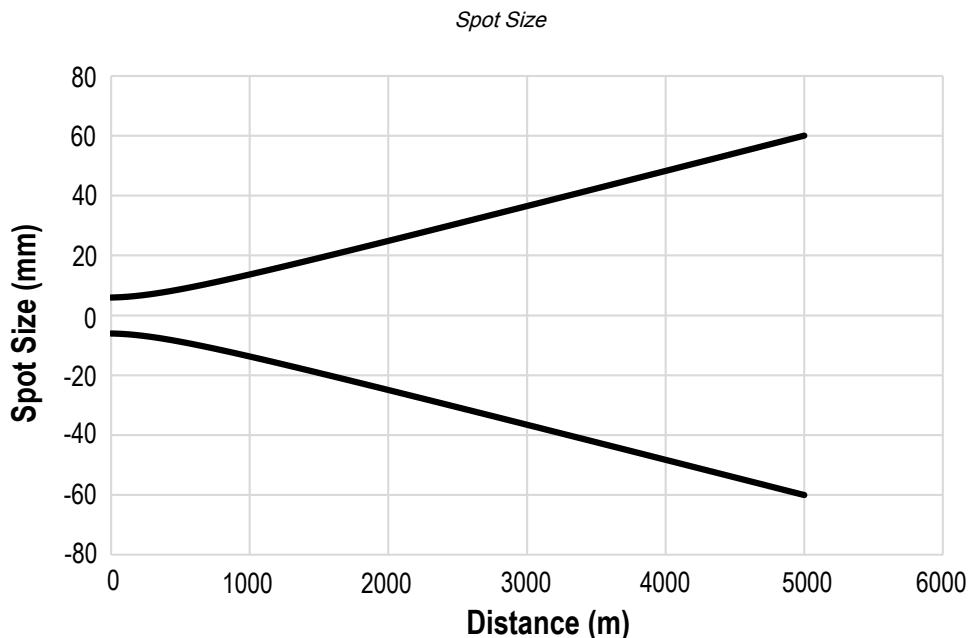
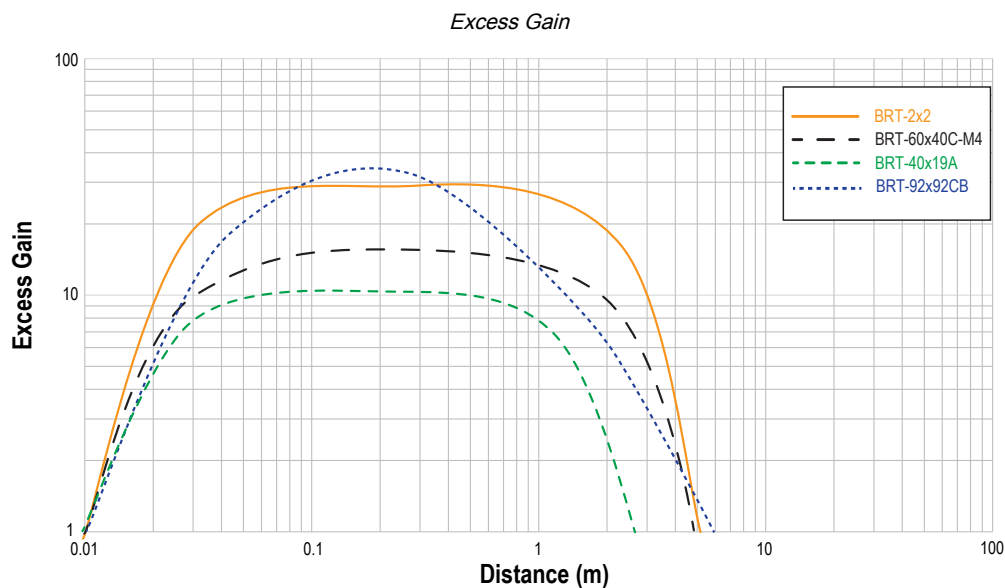
(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

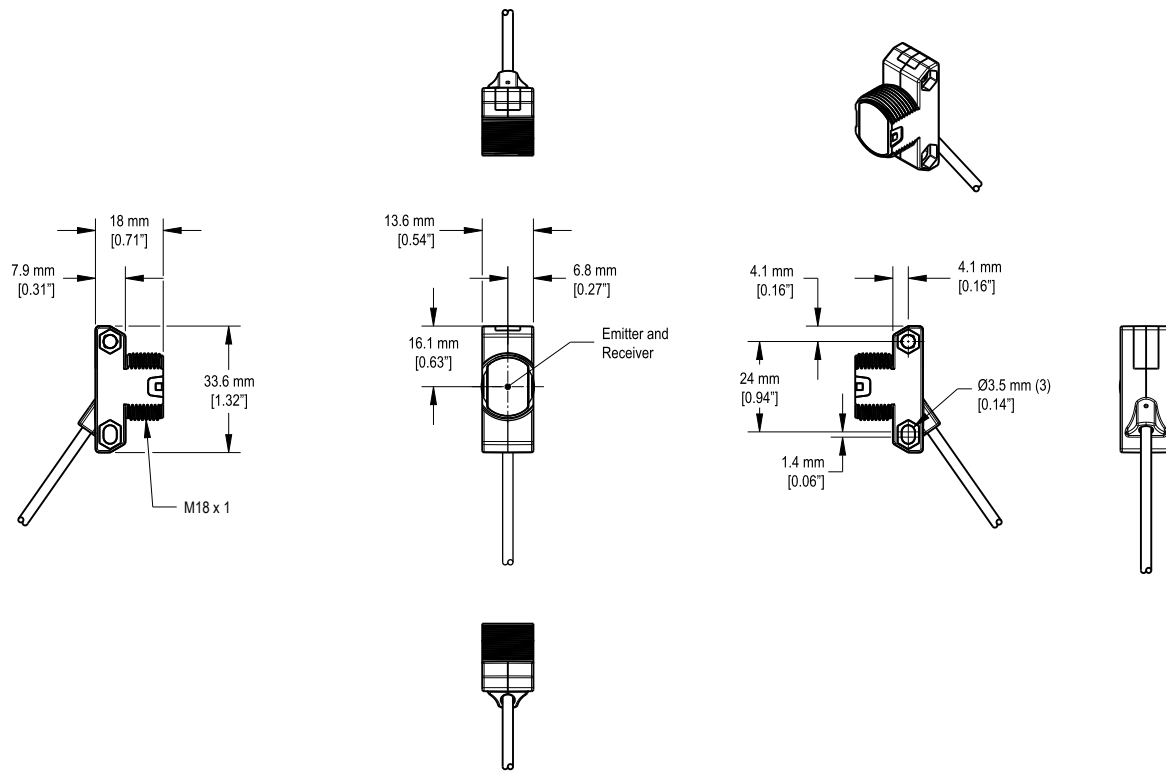
Cet appareil est conforme à la norme NMB-3(A). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

Performance Curves



Dimensions

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



Chapter Contents

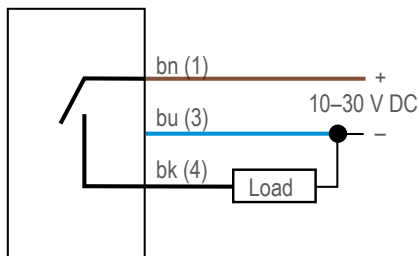
Mount the Device	7
Wiring	7

Chapter 2 Installation Instructions

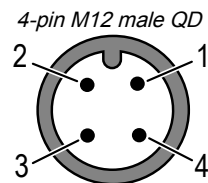
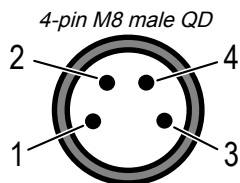
Mount the Device

1. If a bracket is needed, mount the device onto the bracket.
2. Mount the device (or the device and the bracket) to the machine or equipment at the desired location. Do not tighten the mounting screws at this time.
3. Check the device alignment.
4. Tighten the mounting screws to secure the device (or the device and the bracket) in the aligned position.

Wiring



1. Brown
2. Not used
3. Blue
4. Black



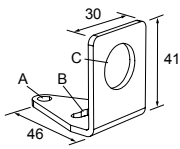
Chapter Contents

Chapter 3 Accessories

SMB18A

- Right-angle mounting bracket with a curved slot for versatile orientation
- 12-ga. stainless steel
- 18 mm sensor mounting hole
- Clearance for M4 (#8) hardware
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

Hole center spacing: A to B = 24.2
Hole size: A = $\varnothing$ 4.6, B = 17.0 $\times$ 4.6, C = $\varnothing$ 18.5

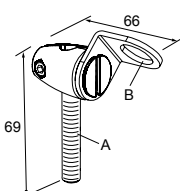


SMB18FA..

- Swivel bracket with tilt and pan movement for precision adjustment
- Easy sensor mounting to extruded rail T-slots
- Metric and inch size bolts available
- 18 mm sensor mounting hole

Hole size: B= $\varnothing$ 18.1

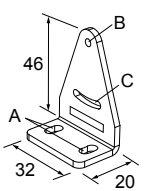
Bolt Thread (A):
SMB18FA = 3/8 - 16 $\times$ 2 in
CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)
SMB18FAM10 = M10 - 1.5 $\times$ 50
CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)
SMB18FAM12 = n/a; no bolt included. Mounts directly to 12 mm (1/2 in) rods
CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

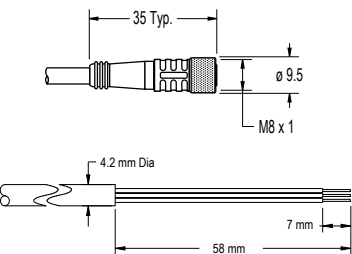
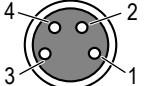


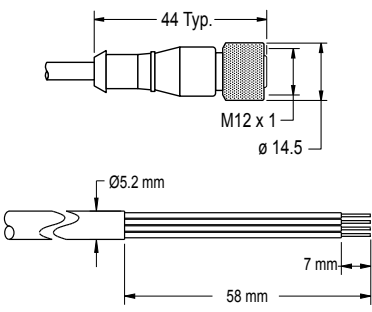
SMB312S

- Stainless steel 2-axis, side-mount bracket
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

A = 4.3 $\times$ 7.5, B = diam. 3, C = 3 $\times$ 15.3



4-pin Single-Ended M8 Female Cordsets (datasheet p/n 236623)				
Model	Length	Dimensions (mm)	Pinout (Female)	
BC-M8F4-24-0.5	0.5 m (1.64 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 
BC-M8F4-24-1	1 m (3.28 ft)			
BC-M8F4-24-2	2 m (6.56 ft)			
BC-M8F4-24-5	5 m (16.4 ft)			
BC-M8F4-24-8	8 m (26.25 ft)			
BC-M8F4-24-10	10 m (30.81 ft)			

4-pin Single-Ended M12 Female Cordsets (datasheet p/n 235937)				
Model	Length	Dimensions (mm)	Pinout (Female)	
BC-M12F4-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused 
BC-M12F4-22-2	2 m (6.56 ft)			
BC-M12F4-22-5	5 m (16.4 ft)			
BC-M12F4-22-8	8 m (26.25 ft)			
BC-M12F4-22-10	10 m (30.81 ft)			
BC-M12F4-22-15	15 m (49.2 ft)			
BC-M12F4-22-20	20 m (65.61 ft)			
BC-M12F4-22-25	25 m (82.02 ft)			
BC-M12F4-22-30	30 m (98.42 ft)			

BRT-2X2

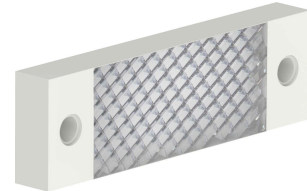
- Square, acrylic target
- Reflectivity factor: 1.0
- Maximum temperature: +50 °C (+122 °F)
- Optional brackets are available
- Reflector size: 51 mm × 51 mm
- Approximate size: 51.3 mm × 61 mm
- Two 4.2 mm diameter slots for mounting
- CAD files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

BRT-2X2-25 Qty 25**BRT-2X2-100** Qty 100

Model	Target Type	Reflectivity Factor	Temperature	Dimensions and Mounting (mm)	
BRT-60X40C-M4	Acrylic target with two 4 mm mounting holes CAD Files: DXF , PDF , IGS , STP	1.4	−20 °C to +60 °C (−4 °F to +140 °F)	40 × 60, optional brackets are available	

BRT-40X19A

- Rectangular, acrylic target
- Reflectivity Factor: 1.3
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Reflector size: 18 mm × 40 mm
- Approximate size: 18 mm × 60 mm × 7.3 mm
- Two 4 mm diameter mounting holes, 50 mm centers
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)



BRT-92X92C

- Square, acrylic target
- Reflectivity Factor: 3.0
- Temperature: -20 °C to +60 °C (-4 °F to +140 °F)
- Optional brackets are available
- Reflector size: 92 mm × 92 mm
- Approximate size: 100 mm × 100 mm × 9 mm
- Two 3.5 mm diameter mounting holes
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)



Chapter Contents

Repairs and Translations-MASTER	11
Banner Engineering Corp Limited Warranty	12

Chapter 4 Product Support and Maintenance

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