# Features



- An easy-to-use, self-contained, opposed-mode sensor pair in a U-shaped housing
- Rugged, sealed, die-cast metal housing is rated IEC IP67
- Easy and economical to mount; molded-in beam guides simplify beam placement
- Eight slot widths from 10 mm to 220 mm for a wide variety of sensing applications
- Current sourcing (PNP), current sinking (NPN), or bipolar (one NPN and one PNP) output, depending on model
- Fast 500-microsecond response time
- 10 V DC to 30 V DC supply voltage
- Single-turn potentiometer sensitivity adjustment
- Visible red beam
- Selectable Light Operate (LO) or Dark Operate (DO) with sealed switch

**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

*3-pin M8 male quick disconnect models*

| Models | Slot Width | Output Type |
|---|---|---|
| SLM10P6Q | 10 mm (0.39 in) | PNP |
| SLM10N6Q | | NPN |
| SLM20P6Q | 20 mm (0.79 in) | PNP |
| SLM20N6Q | | NPN |
| SLM30P6Q | 30 mm (1.18 in) | PNP |
| SLM30N6Q | | NPN |
| SLM50P6Q | 50 mm (1.97 in) | PNP |
| SLM50N6Q | | NPN |
| SLM80P6Q | 80 mm (3.15 in) | PNP |
| SLM80N6Q | | NPN |
| SLM120P6Q | 120 mm (4.72 in) | PNP |
| SLM120N6Q | | NPN |
| SLM180P6Q | 180 mm (7.09 in) | PNP |
| SLM180N6Q | | NPN |
| SLM220P6Q | 220 mm (8.66 in) | PNP |
| SLM220N6Q | | NPN |

*2 m (6.5 ft) cabled models*

| Cabled Models | Slot Width | Output Type |
|---|---|---|
| SLM10B6 | 10 mm (0.39 in) | Bipolar (one NPN and one PNP) |
| SLM20B6 | 20 mm (0.79 in) | |
| SLM30B6 | 30 mm (1.18 in) | |
| SLM50B6 | 50 mm (1.97 in) | |
| SLM80B6 | 80 mm (3.15 in) | |
| SLM120B6 | 120 mm (4.72 in) | |
| SLM180B6 | 180 mm (7.09 in) | |
| SLM220B6 | 220 mm (8.66 in) | |

- To order the 9 m (30 ft) PVC cable model, add the suffix "W/30" to the cabled model number. For example, SLM10B6 W/30.
- To order the 150 mm (6 in) PUR cable model with a 4-pin M12 quick disconnect, add the suffix "QPMA" to the model number. For example, SLM10B6QPMA.

Models with a quick disconnect require a mating cordset.

The following models are no longer available for order but are still covered by the information in this document.

- SLM10B6 W/30
- SLM20B6 W/30
- SLM50B6 W/30
- SLM120B6 W/30
- SLM180B6 W/30
- SLM220B6 W/30

Original Instructions
12-Jun-26

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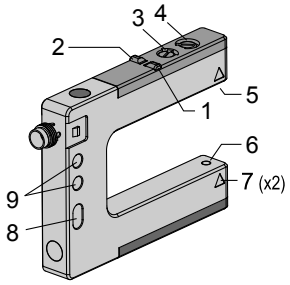
122703
p/n: 122703 Rev H

ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

# Overview

The SLM Series Slot Sensor (sometimes called a “fork sensor”) comprises an opposed-mode emitter and its receiver inside a single convenient housing.

Opposed-mode sensing is very reliable, and the single, self-contained housing provides easy installation, with no sensor alignment required. In addition, molded-in arrows on the housing show the position of the beam, simplifying installation placement. Applications include counting, gear-tooth detection, edge detection, part sensing on conveyor rails and belts, position and orientation verification, dimension verification, tool-break monitoring, and level monitoring.




1. Output LED (amber)
2. Power on LED (green)
3. Dark/Light Operate select switch
4. Sensitivity potentiometer
5. Receiver aperture
6. Emitter aperture
7. Beam position arrows
8. Mounting hole (all models except SLM10 and SLM20)
9. Mounting holes (all models)

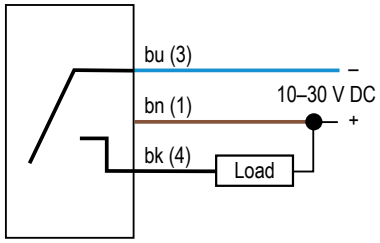
In light operate (LO) mode, the output is ON when the target returns the same or more light to the sensor and OFF when the sensor detects less light than the configured/taught target.

In 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.

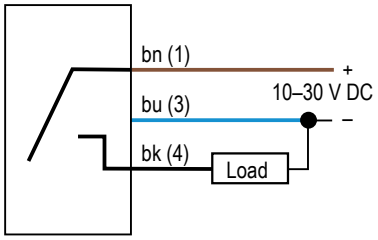
In **opposed** sensing modes, light operate means the output is on when the beam is unblocked and dark operate means the output is on when the beam is blocked.

# Wiring Diagrams

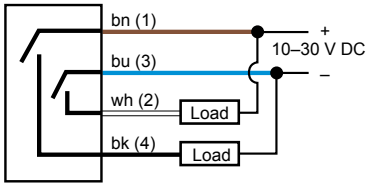
*NPN*



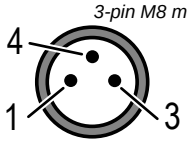

*PNP*




*Bipolar*



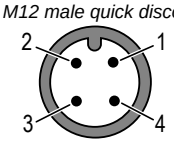

*3-pin M8 male pinout*




**Key**

1. Brown
2. White
3. Blue
4. Black

*4-pin M12 male quick disconnect*




# Configuring the SLM Slot Sensor

For the best results, place the objects to be detected midway between the emitter and receiver.

## Adjusting the Sensitivity

Adjust the sensor’s sensitivity by turning the 270-degree-turn Sensitivity potentiometer with a small flat-blade screwdriver.

Apply power to the sensor and turn the potentiometer all the way clockwise (maximum gain). If the object to be sensed does not block the beam at the maximum gain, turn the gain down a little at a time, testing with the object, until the object can be sensed reliably.

If adjusting the sensitivity with the potentiometer does not provide reliable object detection, investigate alternative sensing methods.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### Selecting Light or Dark Operate

Select dark operate (DO) or light operate (LO) by turning the DO/LO selector switch to the desired setting using a small flat-blade screwdriver.

If dark operate is selected, the output conducts when the receiver element does not see the emitted light (object is present). If light operate is selected, the output conducts when the receiver element sees the emitted light (object is absent).

# Specifications

**Supply Voltage and Current**

10 V DC to 30 V DC (10% max. ripple) at less than 25 mA, exclusive of load

**Supply Protection Circuitry**

Protected against reverse polarity and transient voltages

**Output Configuration**

Cabled and M12 QD models: Bipolar: One current sourcing (PNP) and one current sinking (NPN)

M8 QD models: Current sourcing (PNP) or current sinking (NPN), depending on model

**Output Rating**

100 mA with short circuit protection

OFF-state leakage current:

NPN: < 200 µA
PNP: < 10 µA

ON-state saturation voltage:

NPN: 1.6 V at 100 mA
PNP: 2.0 V at 100 mA

**Output Protection Circuitry**

Protected against output short-circuit and false pulse on power-up

100 ms max. delay at power up; outputs do not conduct during this time

**Output Response Time**

500 microseconds

**Repeatability**

95 microseconds

**Operating Conditions**

–20 °C to +60 °C (–4 °F to +140 °F)

95% at +55 °C maximum relative humidity (non-condensing)

**Slot Opening**

10 mm, 20 mm, 30 mm, 50 mm, 80 mm, 120 mm, 180 mm, or 220 mm (depending on model); beam is 5 mm (0.2 in) from outer edge

**Adjustments**

1-turn potentiometer sensitivity adjustment

Light/dark operate selection switch

**Indicators**

Two LED Indicators: Power (green) and Output (amber)

Green on: Power on

Green flashing: Sensor short circuit

Amber on: Output is activated

**Construction**

Housing: die-cast zinc with nickel plating

Endcaps: ABS

Optic windows: acrylic

**Connections**

Cabled models: 2 m (6.5 ft) or 9 m (30 ft) 4-conductor, PVC-jacketed cable

M8 QD models: 3-pin, threaded integral QD connector

M12 QD models: 150 mm (6 in) PUR cable with 4-pin, threaded connector

**Environmental Rating**

IP67

**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 |

**Certifications**

IND. CONT. EQ.
E224071
LISTED

| | SLM10 | SLM20 | SLM30 | SLM50 | SLM80 | SLM120 | SLM180 | SLM220 |
|---|---|---|---|---|---|---|---|---|
| **Minimum object detection at maximum gain** [1][1] | 1.00 mm (0.040 in) | 1.25 mm (0.050 in) | 1.50 mm (0.060 in) | 1.65 mm (0.065 in) | 1.80 mm (0.070 in) | 1.80 mm (0.070 in) | 1.80 mm (0.070 in) | 2.40 mm (0.095 in) |
| **Minimum object detection at 2 times excess gain**[1] | 0.30 mm (0.012 in) | 0.30 mm (0.012 in) | 0.40 mm (0.016 in) | 0.60 mm (0.024 in) | 0.75 mm (0.030 in) | 0.90 mm (0.035 in) | 0.90 mm (0.035 in) | 1.00 mm (0.039 in) |
| **Hysteresis**[2] | 0.10 mm (0.004 in) | 0.10 mm (0.004 in) | 0.10 mm (0.004 in) | 0.10 mm (0.004 in) | 0.20 mm (0.008 in) | 0.20 mm (0.008 in) | 0.20 mm (0.008 in) | 0.20 mm (0.008 in) |

Continued on page 4

[1] The smallest diameter rod that can be detected when passed slowly through sensing beam. Minimum object detection is measured midway between the emitter and receiver. For best results, place the object to be detected in the midway position when possible. The minimum object detection size may increase if the object is very close to the receiver side.
[2] The distance an object must move to toggle between output OFF and output ON state.


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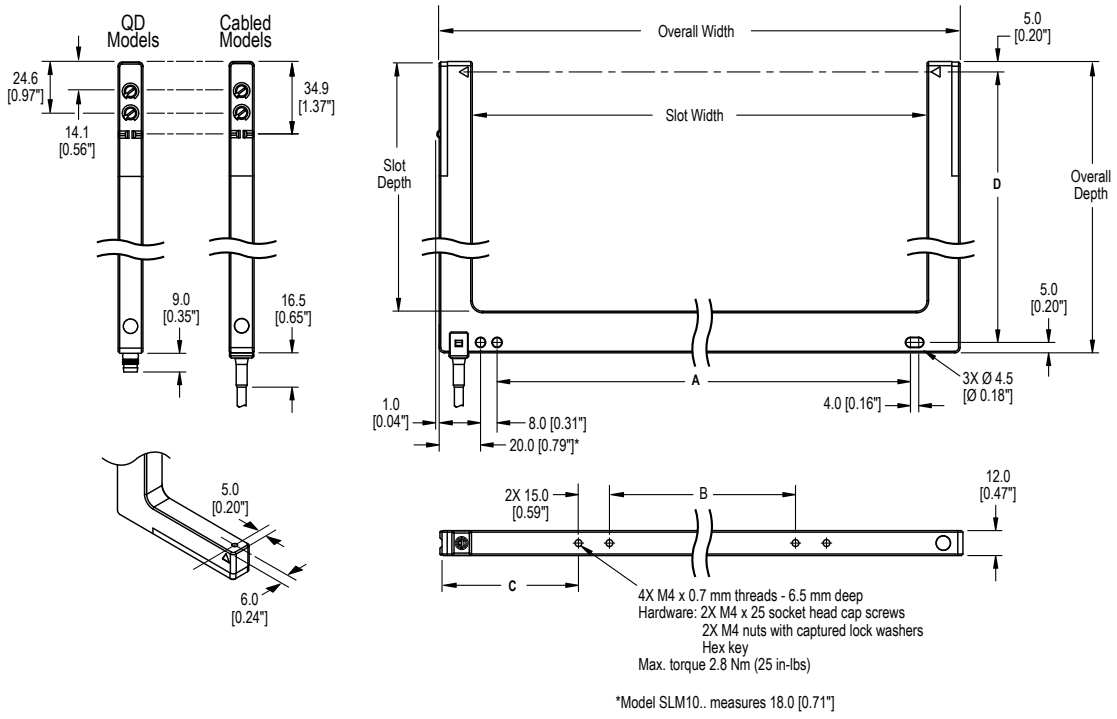
Continued from page 3

| | SLM10 | SLM20 | SLM30 | SLM50 | SLM80 | SLM120 | SLM180 | SLM220 |
|---|---|---|---|---|---|---|---|---|
| **Repeatability** [3] | 0.02 mm (0.001 in) | 0.02 mm (0.001 in) | 0.02 mm (0.001 in) | 0.04 mm (0.002 in) | 0.06 mm (0.002 in) | 0.08 mm (0.003 in) | 0.08 mm (0.003 in) | 0.08 mm (0.003 in) |

# Dimensions

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




| Models | Slot Width | Slot Depth | Overall Width | Overall Depth | A Side Mount | B Back Mount | C | D |
|---|---|---|---|---|---|---|---|---|
| SLM10 | 10 mm (0.39") | 60.8 mm (2.39") | 42 mm (1.65") | 80 mm (3.15") | n/a | n/a | n/a | 70 mm (2.76") |
| SLM20 | 20 mm (0.79") | | 52 mm (2.05") | | | | | |
| SLM30 | 30 mm (1.18") | | 62 mm (2.44") | | 10 mm (0.39") | | | |
| SLM50 | 50 mm (1.97") | | 82 mm (3.23") | | 30 mm (1.18") | 15 mm (0.59") | 33.5 mm (1.32") | |
| SLM80 | 80 mm (3.15") | | 112 mm (4.41") | | 60 mm (2.36") | | 48.5 mm (1.91") | |
| SLM120 | 120 mm (4.72") | 120.7 mm (4.75") | 152 mm (5.98") | 140 mm (5.51") | 100 mm (3.94") | 30 mm (1.18") | 46 mm (1.81") | 130 mm (5.12") |
| SLM180 | 180 mm (7.09") | | 212 mm (8.35") | | 160 mm (6.30") | 70 mm (2.76") | 56 mm (2.20") | |
| SLM220 | 220 mm (8.66") | | 252 mm (9.92") | | 200 mm (7.87") | 90 mm (3.54") | 66 mm (2.60") | |

[3] The variation in switching distance for a standard target at controlled sensing conditions.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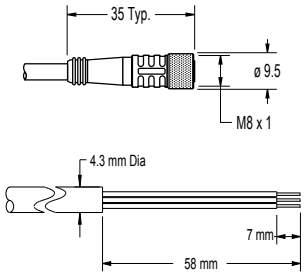
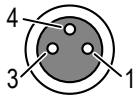
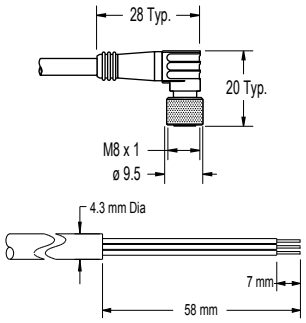
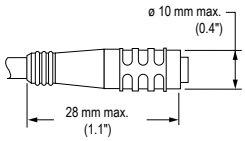
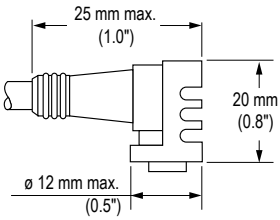
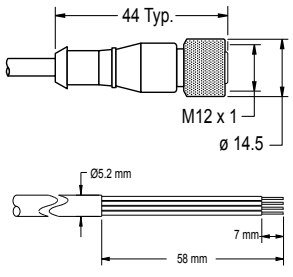
# Accessories

| 3-pin Single-Ended Threaded M8 Female Cordsets | | | | |
|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout (Female)** |
| **PKG3M-2** | 2 m (6.56 ft) | Straight |  | <br>1 = Brown<br>3 = Blue<br>4 = Black |
| **PKG3M-5** | 5 m (16.4 ft) | | | |
| **PKG3M-7** | 7 m (22.96 ft) | | | |
| **PKG3M-9** | 9 m (29.52 ft) | | | |
| **PKG3M-10** | 10 m (32.81 ft) | | | |
| **PKW3M-2** | 2 m (6.56 ft) | Right-Angle |  | |
| **PKW3M-5** | 5 m (16.40 ft) | | | |
| **PKW3M-9** | 9 m (29.53 ft) | | | |

| 3-pin Single-Ended Snap/M8 Female Cordsets | | | | |
|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout (Female)** |
| **PKG3Z-2** | 2 m (6.56 ft) | Straight |  | <br>1 = Brown<br>3 = Blue<br>4 = Black |
| **PKW3-2** | 2 m (6.56 ft) | Right-Angle |  | |

| 4-Pin Single-Ended M12 Female Cordsets | | | | | |
|---|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout (Female)** | |
| **MQDC-406** | 2 m (6.56 ft) | Straight |  |  | 1 = Brown<br>2 = White<br>3 = Blue<br>4 = Black<br>5 = Not used |
| **MQDC-415** | 5 m (16.4 ft) | | | | |
| **MQDC-430** | 9 m (29.5 ft) | | | | |
| **MQDC-450** | 15 m (49.2 ft) | | | | |

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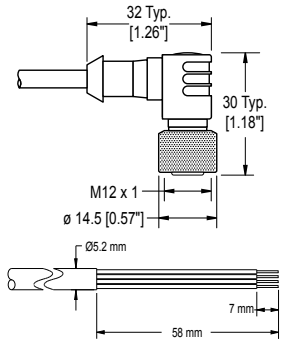
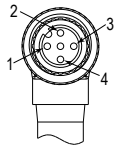
Continued from page 5

| 4-Pin Single-Ended M12 Female Cordsets | | | | | |
|---|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout (Female)** | |
| **MQDC-406RA** | 2 m (6.56 ft) | Right-Angle |  |  | |
| **MQDC-415RA** | 5 m (16.4 ft) | | | | |
| **MQDC-430RA** | 9 m (29.5 ft) | | | | |
| **MQDC-450RA** | 15 m (49.2 ft) | | | | |

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