# QM42 Series Sensor

## Features



- Compact, rugged, low-cost self-contained sensors in metal die-cast housings
- Epoxy-encapsulated circuitry; leakproof IP67 construction for harsh environments
- Outstanding electrical noise immunity
- Dual LED system indicates sensor performance
- Choice of integral cable or quick disconnect connector

**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

*QM42 Opposed Mode Emitter (E) and Receiver (R)*

| Models | Cable | Output Type |
|---|---|---|
| **QM426E** Emitter | 2 m (6.5 ft) | - |
| **QM426EQ** Emitter | 4-pin M12 QD | |
| **QM42VN6R** Receiver | 2 m (6.5 ft) | NPN |
| **QM42VN6RQ** Receiver | 4-pin M12 QD | |
| **QM42VP6R** Receiver | 2 m (6.5 ft) | PNP |
| **QM42VP6RQ** Receiver | 4-pin M12 QD | |

*QM42 Plastic Fiber Optic Mode*

| Model | Cable | Outputs Type |
|---|---|---|
| **QM42VP6FPQ** | 4-pin M12 QD | PNP |

*QM42 Diffuse Mode*

| Models | Cable | Output Type |
|---|---|---|
| **QM42VN6D** | 2 m (6.5 ft) | NPN |
| **QM42VN6DQ** | 4-pin M12 QD | |
| **QM42VP6D** | 2 m (6.5 ft) | PNP |
| **QM42VP6DQ** | 4-pin M12 QD | |

*QM42 Polarized Retroreflective Mode*

| Models | Cable | Output Type |
|---|---|---|
| **QM42VP6LPQ** | 4-pin M12 QD | PNP |

Models with a QD connector require a mating cable.

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

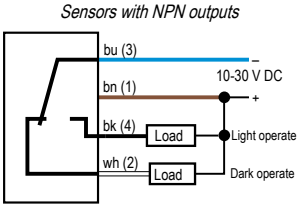
*Inactive models*

| Models | Cable | Output Type |
|---|---|---|
| **QM42VN6R** Receiver | 2 m (6.5 ft) | NPN |
| **QM42VN6FP** Plastic fiber-optic | 2 m (6.5 ft) | NPN |
| **QM42VN6FPQ** Plastic fiber-optic | 4-pin M12 QD | NPN |
| **QM42VP6FP** Plastic fiber-optic | 2 m (6.5 ft) | PNP |
| **QM42VN6LP** Polarized retroreflective | 2 m (6.5 ft) | NPN |
| **QM42VN6LPQ** Polarized retroreflective | 4-pin M12 QD | NPN |
| **QM42VP6LP** Polarized retroreflective | 2 m (6.5 ft) | PNP |

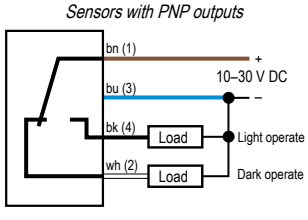
None of the 9 m W/30 models are available, but the models are still covered by the information in this document.

## Wiring

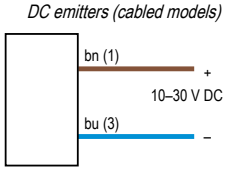
*Sensors with NPN outputs*




*Sensors with PNP outputs*




*DC emitters (cabled models)*




Continued on page 2

Original Instructions
21-Apr-26

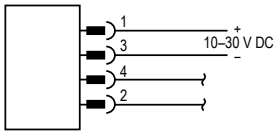
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44487
p/n: 44487 Rev C

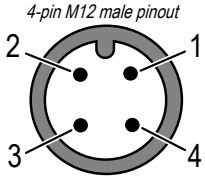
ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

Continued from page 1

*DC emitters (QD models)*




*4-pin M12 male pinout*




1 - brown
2 - white
3 - blue
4 - black

Cabled models are shown. Quick disconnect wiring diagrams are functionally identical.

## Specifications

**Sensing Beam**

Infrared, 880 nm for opposed and diffuse

Visible red, 660 nm for fiber optic and retroreflective modes

**Supply Voltage and Current**

10 to 30 V DC (10% maximum ripple) at less than:

Diffuse and retroreflective models: 20 milliamps

Opposed mode: 30 milliamps (emitter), 10 milliamps (receiver)

Fiber optic models: 30 milliamps

**Supply Protection Circuitry**

Protected against reverse polarity and transient voltages

**Output Configuration**

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

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

Dark operate: N.C. output conducts when the sensor sees dark

**Repeatability**

Diffuse and retroreflective modes: 250 microseconds

Opposed Mode: 120 microseconds

Fiber optic mode: 60 microseconds

**Adjustments**

All models except emitters: 15-turn slotted brass GAIN (sensitivity) adjustment potentiometer (clutched at both ends of travel)

**Indicators**

Two LEDs: green and amber

Green solid = power to sensor is on (Opposed emitters: Green power "on")

Green flashing = output is overloaded

Amber solid = light is sensed; normally open output on

Amber flashing = marginal excess gain (1–1.5x) in light condition

**Construction**

Housings are die-cast zinc alloy with black epoxy powder paint finish; lenses are acrylic

**Connections**

2 m (6.5 ft) or 9 m (30 ft) attached cable, or 4-pin M12 quick-disconnect fitting; Cables for QD models are purchased separately

**Output Rating**

100 mA maximum (each output)

Off-state leakage current: < 5 microamps at 30 V DC

On-state saturation voltage: < 1 V at 10 mA DC; < 1.5 V at 100 mA DC

**Output Protection Circuitry**

Protected against false pulse on power-up and continuous overload or short-circuit of outputs

Overload trip point ≥ 150 mA, typical, at 20 °C

**Output Response Time**

Diffuse and retroreflective modes: 1 millisecond on and off

Opposed mode: 1 millisecond on, 0.5 millisecond off

Fiber optic mode: 0.25 millisecond on and off

**Environmental Rating**

IP67

**Operating Conditions**

Temperature: –20 °C to +70 °C (–4 °F to +158 °F)

Relative Humidity: 90% at +50 °C maximum relative humidity (non-condensing)

**Certifications**

**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.

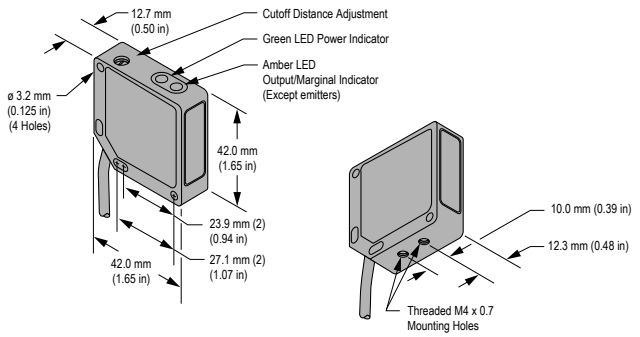
Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

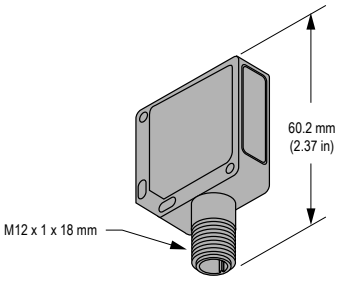
| Supply Wiring (AWG) | Required Overcurrent Protection (A) | Supply Wiring (AWG) | Required Overcurrent Protection (A) |
|---|---|---|---|
| 20 | 5.0 | 26 | 1.0 |
| 22 | 3.0 | 28 | 0.8 |
| 24 | 2.0 | 30 | 0.5 |

## Dimensions

**Cabled Diffuse, Opposed, and Retroreflective Models**

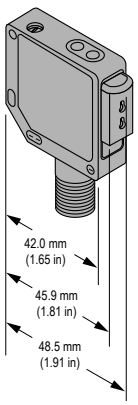



**Quick Disconnect Models**




**Quick Disconnect FP Models**

QM42FP Models



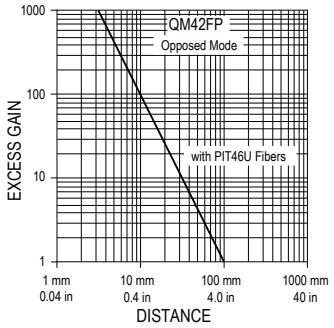



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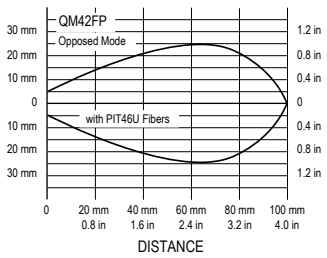
## Performance Curves

### Plastic Fiber Optic Mode - Range: 40 mm (1.5 in)

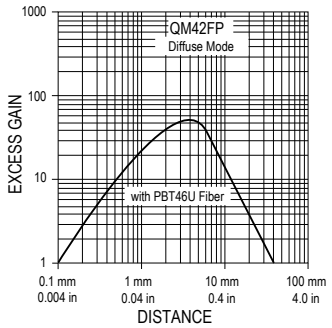
#### Excess Gain



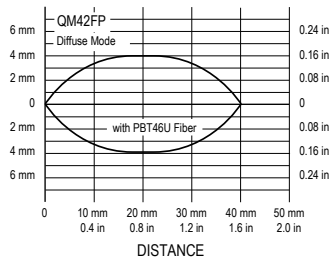

#### Beam Pattern




#### Excess Gain

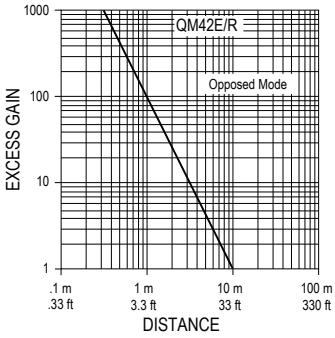



#### Beam Pattern[1]

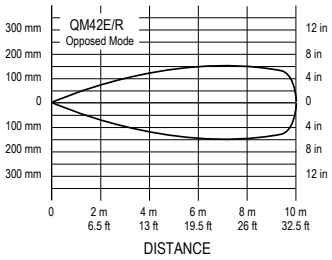



### Opposed Mode - Range: 10 m (33 ft)

#### Excess Gain

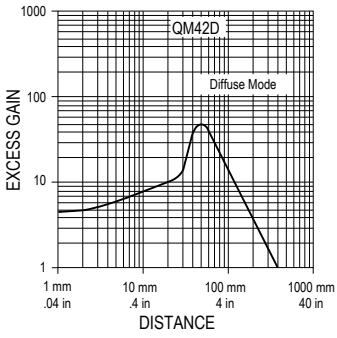



#### Beam Pattern (Effective beam: 8 mm)

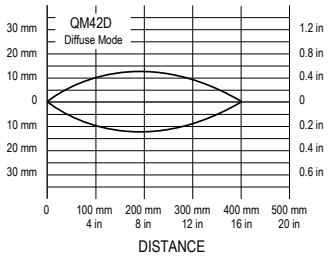



### Diffuse Mode - Range: 400 mm (16 in)

#### Excess Gain

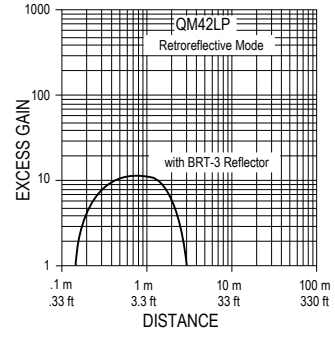



#### Beam Pattern[2]

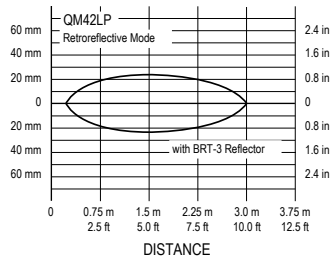



### Polarized Retroreflective Mode - Range: 3 m (10 ft)

#### Excess Gain




#### Beam Pattern

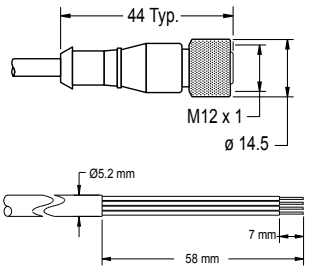
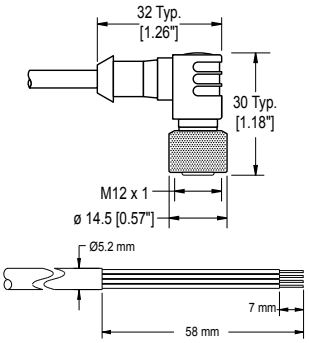
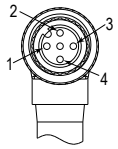



## Accessories

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

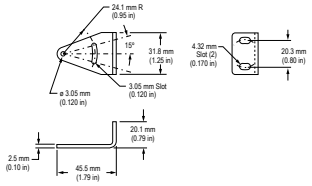
[1] Diffuse mode performance is based on a 90% reflectance white test card.
[2] Performance is based on a 90% reflectance white test card.


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| 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) | | | | |
| **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) | | | | |

**SMB19**

- Right-angle mounting bracket with a curved slot for versatile orientation
- CAD Files: DXF, PDF, IGS, STP




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