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.

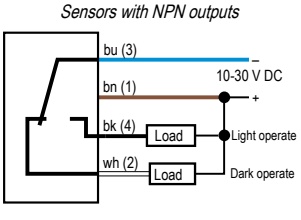
Inactive models

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

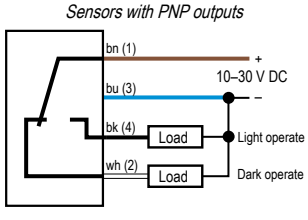
None of the 9 m W/30 models are available, but the models are still covered by the information in this document.

Wiring

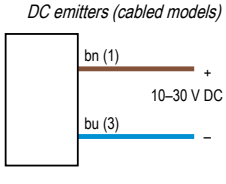
Sensors with NPN outputs



Sensors with PNP outputs



DC emitters (cabled models)



Continued on page 2

Original Instructions
21-Apr-26

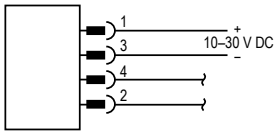
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44487
p/n: 44487 Rev C

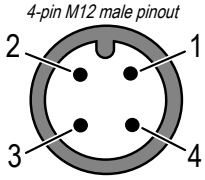
ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

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.

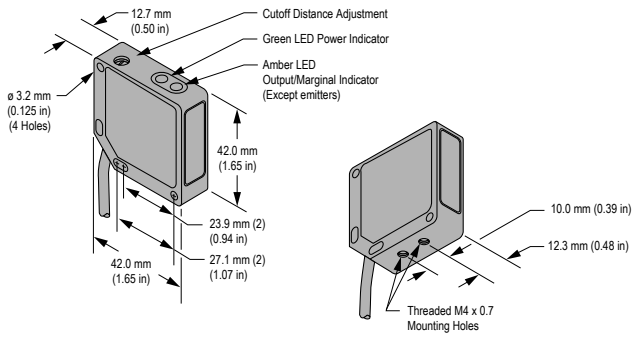
Supply wiring leads < 24 AWG shall not be spliced.

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

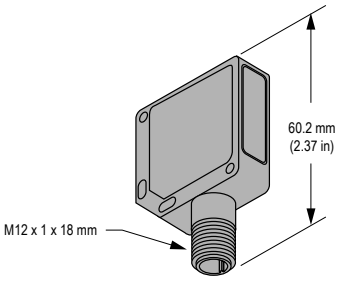
Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	2.0	30	0.5

Dimensions

Cabled Diffuse, Opposed, and Retroreflective Models

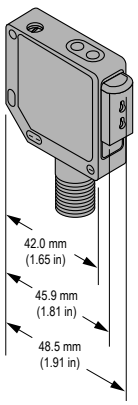


Quick Disconnect Models



Quick Disconnect FP Models

QM42FP Models

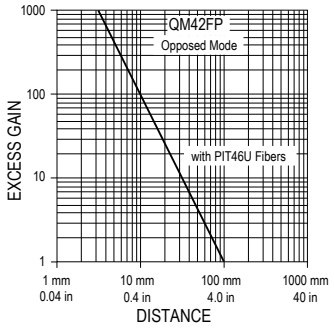


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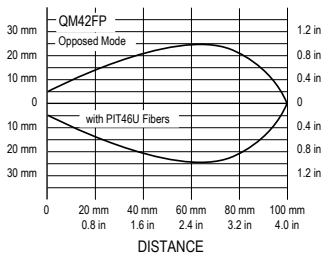
Performance Curves

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

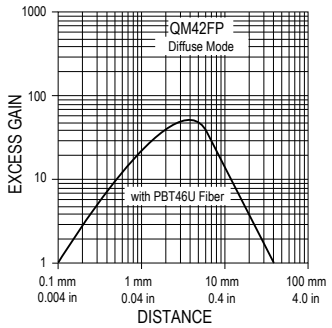
Excess Gain



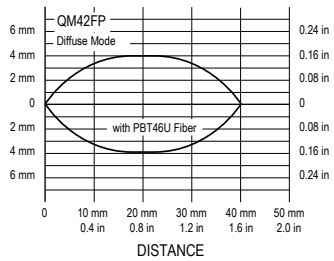
Beam Pattern



Excess Gain

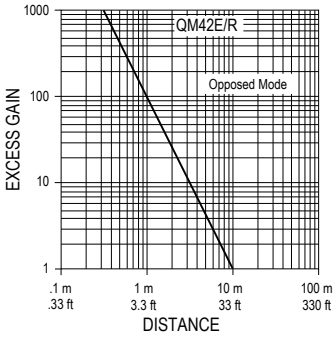


Beam Pattern[1]

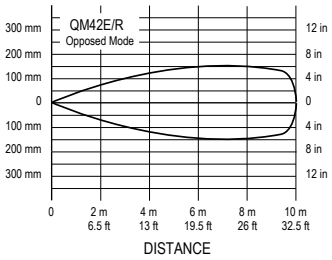


Opposed Mode - Range: 10 m (33 ft)

Excess Gain

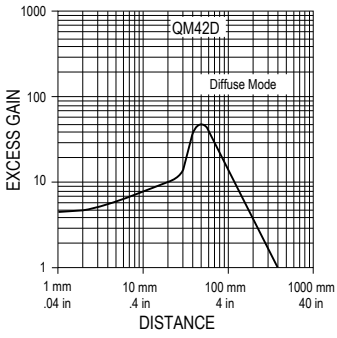


Beam Pattern (Effective beam: 8 mm)

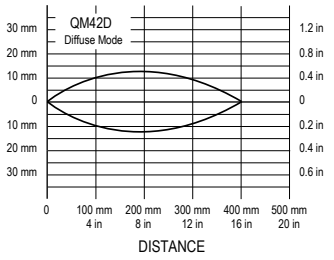


Diffuse Mode - Range: 400 mm (16 in)

Excess Gain

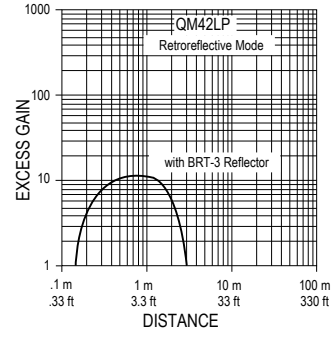


Beam Pattern[2]

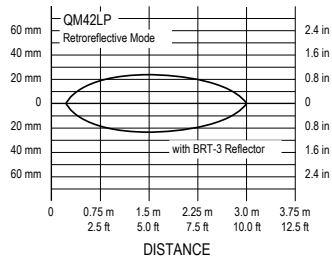


Polarized Retroreflective Mode - Range: 3 m (10 ft)

Excess Gain



Beam Pattern

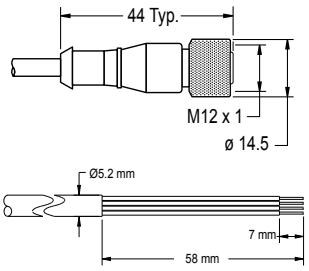
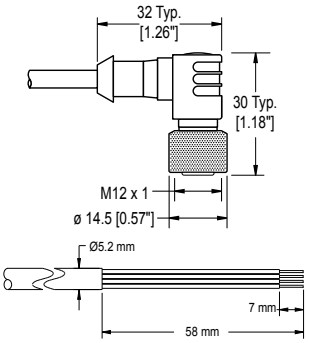
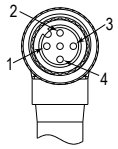


Accessories

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

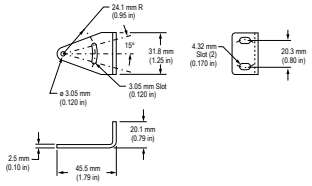
[1] Diffuse mode performance is based on a 90% reflectance white test card.
[2] Performance is based on a 90% reflectance white test card.

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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 2 = White 3 = Blue 4 = Black 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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