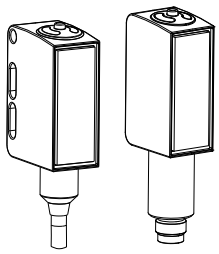
# QM26 and QMH26 Series Sensors

## Instruction Manual

*Stainless Steel and Hygienic Stainless Steel Sensors for Washdown and Chemical Compatibility*



- QM26: Washdown rated with convenient 25.4 mm (1 in) mounting spacing and 3 mm (0.125 in) mounting hardware
- QMH26: Hygienic shape for superior cleaning performance
- Made from FDA compliant materials for worry-free use in food and pharmaceutical applications
- Chemically resistant, non-toxic 316L stainless steel housing
- Acrylic optical window with coating for resistance to hydrogen peroxide and alcohol
- IP69K rated for use in harsh 1500 psi washdown environments at 80° C (176° F)
- Withstands environmental temperature cycling from –30° to +60° C (–22° to +140° F)
- Sealed housing and smooth joints minimize cleaning time and reduce bacterial accumulation
- Sensor marking is chemically etched into the housing for long-lasting identification and to eliminate food contamination
- Push buttons and light pipes are over-molded to reduce crevices and provide excellent cleaning and sealing results
- High performance coaxial polarized retroreflective models for clear or transparent bottle and film detection
- Excellent background suppression performance with advanced ambient light suppression
- Bright, visible red light spot on adjustable background suppression models makes alignment easy
- Models have a hygienic design for easy cleaning and sanitizing

WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

## QM26 Models

Stainless Steel Sensors for Washdown and Chemical Compatibility

| Model | Mode | Range | Output | Connector |
|---|---|---|---|---|
| QM26E-5M | Emitter | 8.5 m (27.8 ft) | NA | 5 m (16.25 ft) cable, 4 wire |
| QM26EQ5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26VNR-5M | Receiver | | Complementary NPN | 5 m (16.25 ft) cable, 4 wire |
| QM26VNRQ5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26VPR-5M | | | Complementary PNP | 5 m (16.25 ft) cable, 4 wire |
| QM26VPRQ5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26VNLP-5M | Polarized Retroreflective | 3 m (9.8 ft) with BRT-60X40C | Complementary NPN | 5 m (16.25 ft) cable, 4 wire |
| QM26VNLPQ5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26VPLP-5M | | | Complementary PNP | 5 m (16.25 ft) cable, 4 wire |
| QM26VPLPQ5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26ENXLPC-5M | *Expert*™ Coaxial Polarized Retroreflective | 2.6 m (8.5 ft) with BRT-60X40C | NPN | 5 m (16.25 ft) cable, 4 wire |
| QM26ENXLPCQ5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26EPXLPC-5M | | | PNP | 5 m (16.25 ft) cable, 4 wire |
| QM26EPXLPCQ5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |

| Model | Mode | Range | Output | Connector |
|---|---|---|---|---|
| QM26VNAF400-5M | Adjustable Field Background Suppression | 5 to 400 mm (0.2 in to 15.7 in) | Complementary NPN | 5 m (16.25 ft) cable, 4 wire |
| QM26VNAF400Q5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26VPAF400-5M | | | Complementary PNP | 5 m (16.25 ft) cable, 4 wire |
| QM26VPAF400Q5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26VNAF200-5M | Adjustable Field Background Suppression (small light spot) And | 5 to 200 mm (0.2 in to 7.85 in) | Complementary NPN | 5 m (16.25 ft) cable, 4 wire |
| QM26VNAF200Q5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |
| QM26VPAF200-5M | | | Complementary PNP | 5 m (16.25 ft) cable, 4 wire |
| QM26VPAF200Q5 | | | | 200 mm (7.5 in) PVC pigtail, M12 Euro QD connector, 4-pin |

To order the 350 mm (13.7 in) PVC pigtail with M12/Euro-style quick disconnect model, add the suffix C1 (for example, QM26VPAF200Q5C1).

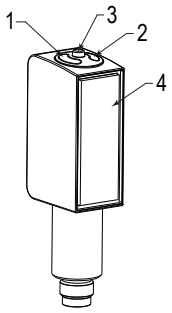
## QMH26 Models

Hygienic Stainless Steel Sensors for Washdown and Chemical Compatibility

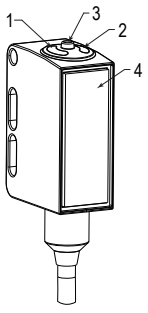
| Model | Mode | Range | Output | Connector |
|---|---|---|---|---|
| QMH26VNLP-5M | Polarized Retroreflective | 3m (9.8 ft) with BRT-60X40C | Complementary NPN | 5 m (16.25 ft) cable, 4 wire |
| QMH26VNLPQ7 | | | | M8 Pico QD connector, 4-pin |
| QMH26VPLP-5M | | | Complementary PNP | 5 m (16.25 ft) cable, 4 wire |
| QMH26VPLPQ7 | | | | M8 Pico QD connector, 4-pin |
| QMH26ENXLPC-5M | *Expert*™ Coaxial Polarized Retroreflective | 2.6 m (8.5 ft) with BRT-60X40C | NPN | 5 m (16.25 ft) cable, 4 wire |
| QMH26ENXLPCQ7 | | | | M8 Pico QD connector, 4-pin |
| QMH26EPXLPC-5M | | | PNP | 5 m (16.25 ft) cable, 4 wire |
| QMH26EPXLPCQ7 | | | | M8 Pico QD connector, 4-pin |
| QMH26VNAF400-5M | Adjustable Field Background Suppression | 5 to 400 mm (0.2 in to 15.7 in) | Complementary NPN | 5 m (16.25 ft) cable, 4 wire |
| QMH26VNAF400Q7 | | | | M8 Pico QD connector, 4-pin |
| QMH26VPAF400-5M | | | Complementary PNP | 5 m (16.25 ft) cable, 4 wire |
| QMH26VPAF400Q7 | | | | M8 Pico QD connector, 4-pin |
| QMH26VNAF200-5M | Adjustable Field Background Suppression (small light spot) | 5 to 200 mm (0.2 in to 7.85 in) | Complementary NPN | 5 m (16.25 ft) cable, 4 wire |
| QMH26VNAF200Q7 | | | | M8 Pico QD connector, 4-pin |
| QMH26VPAF200-5M | | | Complementary PNP | 5 m (16.25 ft) cable, 4 wire |
| QMH26VPAF200Q7 | | | | M8 Pico QD connector, 4-pin |

## Overview

QMH26




QM26



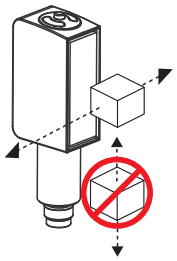

Key

1. Green Indicator
2. Yellow Indicator
3. Push Button

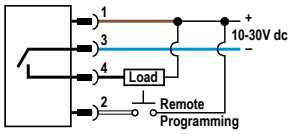
   Adjustment Screw/Potentiometer (not shown)—AFxxx models
4. Optical Window

## Sensor Installation

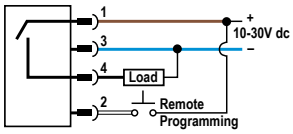
Install the sensor so that the object to be detected moves horizontally to the sensor.



## Wiring Diagrams



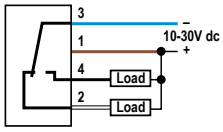

*Expert*™ NPN



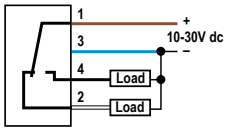

*Expert*™ PNP

Wiring Key

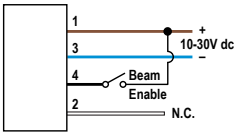
1 = Brown
2 = White
3 = Blue
4 = Black




NPN




PNP




QM26—Emitters

## Sensor Configuration

- Adjustable field background suppression models (AFxxx models) have an 8-turn adjustment screw (potentiometer) to set the background suppression distance.
- *Expert*™ coaxial polarized retroreflective models (XLPC models) are configurable using either the sealed push button or the remote input wire.
- Two-lens polarized retroreflective models (LP models) and opposed mode models require no user adjustments.

### Sensor Setup - Background Suppression—AFxxx Models

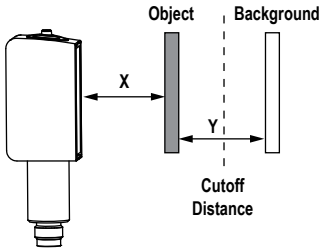
Background Suppression Mode: Objects beyond the set cutoff distance will not be detected.

Background suppression mode can be used in most situations with varying object colors and positions or with varying background conditions.

To ensure reliable background suppression, a minimum separation distance between the object and the background is necessary. See *Figure 5* on page 10 to determine the minimum separation distance.

1. Mount the sensor with the darkest object at the longest application distance. The distance to the object must be less than shown in *Figure 5* on page 10 for your object color.
2. Turn the adjustment potentiometer counter-clockwise until the yellow indicator turns off (8 turns maximum).
3. Turn the adjustment potentiometer clockwise until the yellow indicator turns on.
4. Replace the darkest object with the brightest background at the closest application distance.
5. Turn the adjustment potentiometer clockwise, counting the revolutions, until the yellow indicator turns on.
6. Turn the adjustment potentiometer counter-clockwise half of the number of turns from step 5. This places the cutoff distance midway between the object and the background switchpoints (see *Figure 1* on page 4).

   The sensor is ready for operation.




X: Distance to the Object

Y: Minimum Separation Between the Object and the Background

*Figure 1.*

Set the cutoff distance approximately midway between the farthest object and the closest background

## Setup Example

An object with a reflectivity similar to black paper is set 100 mm (3.9 in) away from the AF200 sensor. A background with a reflectivity similar to white paper is set away from the sensor. According to *Figure 5* on page 10 , the minimum separation distance between the object and the background is 24 mm (0.94 in). In this application, reliable detection is achieved when set up according to the procedure outlined in *Sensor Setup - Background Suppression—AFxxx Models* on page 3.

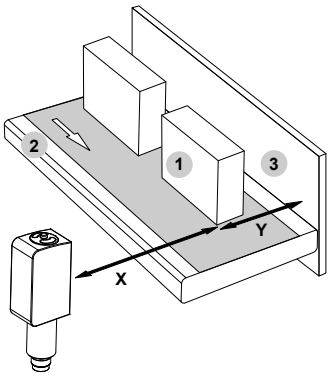



*Figure 2. Background Suppression Mode Application Example*

1. Object
2. Conveyor
3. Background

X: Distance to the Object = 100 mm (3.9 in)

Y: Minimum Separation Between the Object and the Background = 24 mm (0.94 in)

## Remote Configuration—XLPC models

The remote input wire (pin 2/white wire) is used to to lock the push button, select Light or Dark Operate, or perform the desired Light SET or Dark SET for the object. In contrast to other Banner Engineering sensors, the QM26 and QMH26 *Expert*™ coaxial polarized retroreflective sensors (XLPC models) use the duration between pull-high pulses on the remote input wire to both initiate the Light SET or Dark SET and to select the desired sensitivity simultaneously. See *Light SET for High Sensitivity* on page 6, *Light SET for Medium Sensitivity* on page 6, and *Dark SET for Maximum Operating Range* on page 7 for details.

NOTE: After the delay before startup has elapsed ( ≤ 300 ms), the remote input may be used.

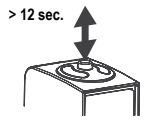
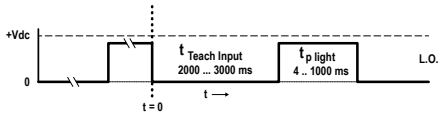
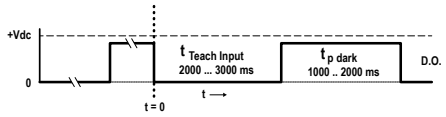
## Push Button Lockout—XLPC Models

The remote input wire (pin 2/white wire) can be used to disable the sensor push button on the XLPC models to prevent unauthorized adjustment to the sensor. Connect the remote input wire (pin 2/white wire) of the sensor to the +V dc terminal to disable configuration adjustments using the push button.

| Push Button | Remote Input Wire | Result |
|---|---|---|
| Not available | Connect the remote input wire to +V dc for 4 ms or longer. | The push button is disabled (locked). |
| Not available | Disconnect the remote input wire from +V dc. | The push button is enabled (unlocked). |

## Select Light Operate / Dark Operate—XLPC models

Change the sensor operation to light operate or dark operate for the desired application. Use either the button or the remote input wire procedure to configure the sensor.

| Push Button | Remote Input Wire | Result |
|---|---|---|
| Press and hold the button for longer than 12 s.<br>Continue pressing the button until the desired operation is selected, then release the button.<br>  | Pulse the remote input wire to +V dc, then pull the remote input wire to ground for 2000 to 3000 ms.<br>Light operate select: Pulse the remote input wire to +V dc for 4 to 1000 ms, then pull the remote input wire to ground.<br>  <br>Dark operate select: Pulse the remote input wire to +V dc for 1000 to 2000 ms, then pull the remote input wire to ground.<br>  | Push button only: The green LED flashes.<br>  <br>Yellow LED ON = Light operate<br>  <br>Yellow LED OFF = Dark operate<br>  <br>The sensor is configured for the desired mode and is ready. |

## Light SET—XLPC Models

A Light SET optimizes the sensor to provide reliable detection of various objects. For most applications, the factory default setting is appropriate. Perform the Light SET only if the desired object is not reliably detected. Stable mounting of both the sensor and the reflector is required for reliable detection.

- High sensitivity (11% offset)—suitable for highly transparent bottles, thin films, and foils. See *Light SET for High Sensitivity* on page 6.
- Medium sensitivity (18% offset)—suitable for standard bottle types and translucent objects. See *Light SET for Medium Sensitivity* on page 6.

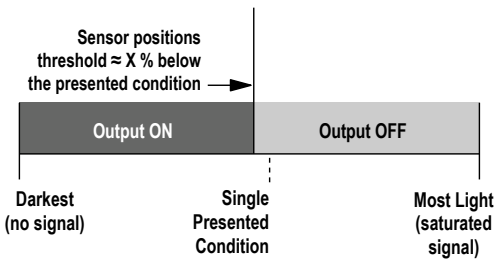
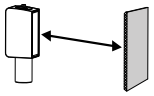
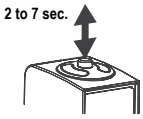
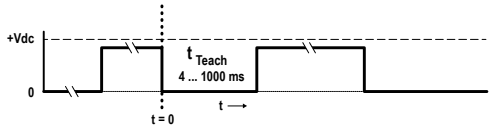
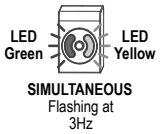



*Figure 3. Light SET (Dark Operate Shown)*

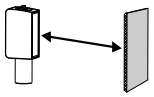
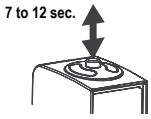
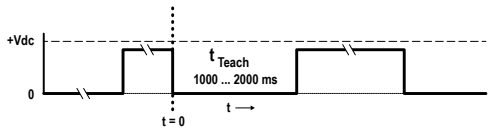
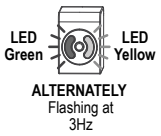
## Light SET for High Sensitivity

Use High Sensitivity (11% sensitivity) for detecting highly transparent bottles, thin films, and foils with a thickness of more than 20 µm. Use either the button or the remote input wire procedure to configure the sensor.

| Push Button | Remote Input Wire | Result |
|---|---|---|
| Clear the light path to the reflector. | Clear the light path to the reflector. |  |
| Press the button for 2 to 7 seconds until the LEDs flash simultaneously, then release the button.<br>  | Pulse the remote input wire to +V dc, then pull the remote input wire to ground for 4 to 1000 ms.<br>Pulse the remote input wire to +V dc to complete the high sensitivity Light SET.<br>  | Push button only: The green and yellow LEDs flash simultaneously.<br>  <br>The sensor is configured for High Sensitivity and is ready for use. |

## Light SET for Medium Sensitivity

Use Medium Sensitivity (18% sensitivity) for detecting standard bottle types and translucent objects. Use either the button or the remote input wire procedure to configure the sensor.

| Push Button | Remote Input Wire | Result |
|---|---|---|
| Clear the light path to the reflector. | Clear the light path to the reflector. |  |
| Press the button for 7 to 12 seconds until the LEDs flash alternately, then release the button.<br>  | Pulse the remote input wire to +V dc, then pull the remote input wire to ground for 1000 to 2000 ms.<br>Pulse the remote input wire to +V dc to complete the medium sensitivity Light SET.<br>  | Push button only: The green and yellow LEDs flash alternately.<br>  <br>The sensor is configured for Medium Sensitivity and is ready for use. |

## Dark SET—XLPC Models

Dark SET (maximum operating range) is the factory default setting and provides maximum sensing range, ease of alignment, and reliable detection of brown or green bottles and opaque objects.

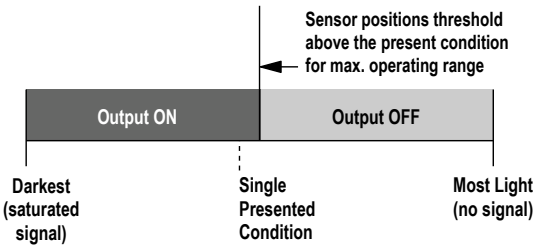
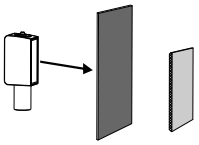
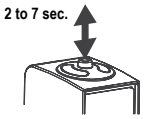
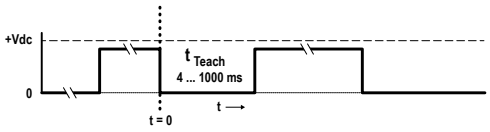
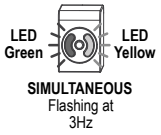
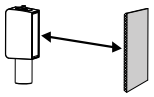



*Figure 4. Dark SET (Dark Operate Shown)*

## Dark SET for Maximum Operating Range

Use either the button or the remote input wire procedure to configure the sensor.

| Push Button | Remote Input Wire | Result |
|---|---|---|
| Block the light path to the reflector. | Block the light path to the reflector. |  |
| Press the button for 2 to 7 seconds until the LEDs flash simultaneously, then release the button.<br>  | Pulse the remote input wire to +V dc, then pull the remote input wire to ground for 4 to 1000 ms.<br>Pulse the remote input wire to +V dc to complete the Dark SET.<br>  | Push button only: The green and yellow LEDs flash simultaneously.<br>  <br>The sensor is configured for Dark SET (maximum operating range). |
| Clear the light path to the reflector. | Clear the light path to the reflector. |  <br>The sensor is ready for use. |

# Specifications

Supply Voltage and Current
10 to 30 V dc (10% maximum ripple within specified limits); supply current (exclusive of load current) < 20 mA

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Output Configuration
XLPC models: Single PNP or NPN on pin 4 (black wire) with remote input on pin 2 (white wire)
All other models: Complementary PNP or NPN by model number

Delay Before Power-Up
< 300 ms

Output Rating
100 mA per output
Off-state leakage current for load = 1500 **Ω**:
NPN: < 200 µA
PNP: < 500 µA
ON-state saturation voltage: < 2 V at 100 mA

Output Protection Circuitry
Protected against false pulse at power up, and overload or short circuit of outputs

Emitter LED Wavelength
AF200 models: 660 nm
All other models: 620 nm

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 *http://www.bannerengineering.com*.

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

Output Response Time
500 µs

Repeatability
QM26—Opposed Models: 110 µs
All other models: 150 µs

Indicators
Green on: Power ON and sensor ready
Yellow on: Light sensed
XLPC models—Yellow flashing: Light sensed but marginal signal

Construction
Housing: 316L stainless steel
Optical Window: Coated acrylic (PMMA)
Indicator and buttons: TPV - PE

Connection
4-wire 5 m (16.25 ft) cable or 4-pin M12 Euro-style quick disconnect connector with 200 mm (7.5 in) PVC pigtail, depending on model
Banner recommends using the 4-Pin Threaded M12/Euro-Style Cordsets—Washdown, Stainless Steel cordsets listed in the *Accessories* section.

Adjustments
QM26 Emitter—Beam Enable: Connect black wire to +V dc to activate emitter LED
AFxxx models—Adjustment Screw: Sets background suppression distance
XLPC models—Push Button: User set up
XLPC models—Remote Input Wire: Remote PLC set up and push button lock out

Environmental Rating
IEC IP67 and IEC IP69K

Chemical Compatibility
ECOLAB® certified

Operating Conditions
Operating Temperature and Storage Temperature: –30 °C to +70 °C (–22 °F to +158 °F)
Humidity: Periodic exposure to 100% humidity and washdown cleaning

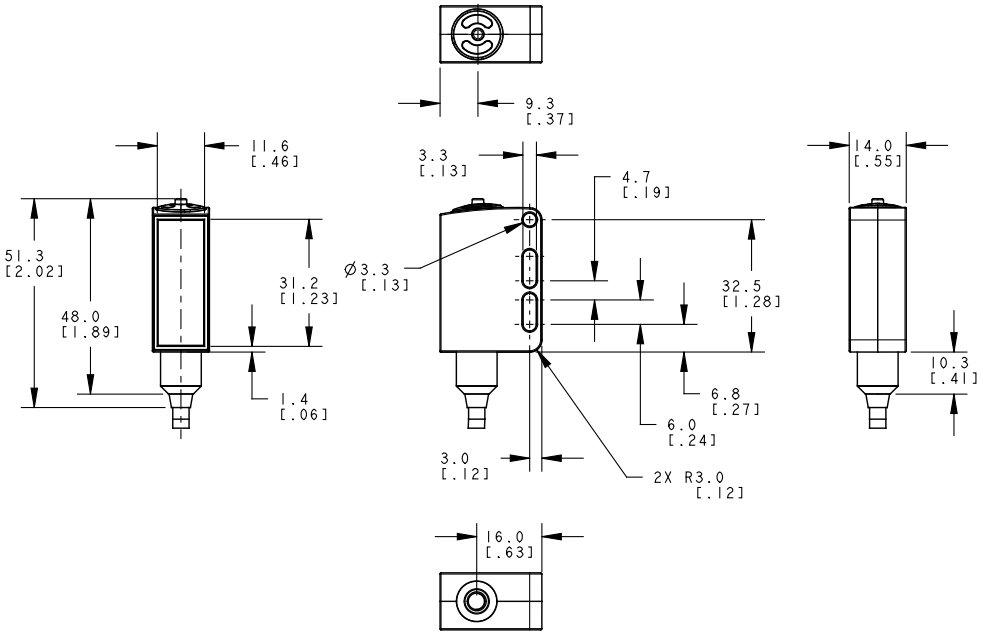
Vibration and Shock
IEC60947-5-2

Certifications

c UL US LISTED
with class 2 power supply

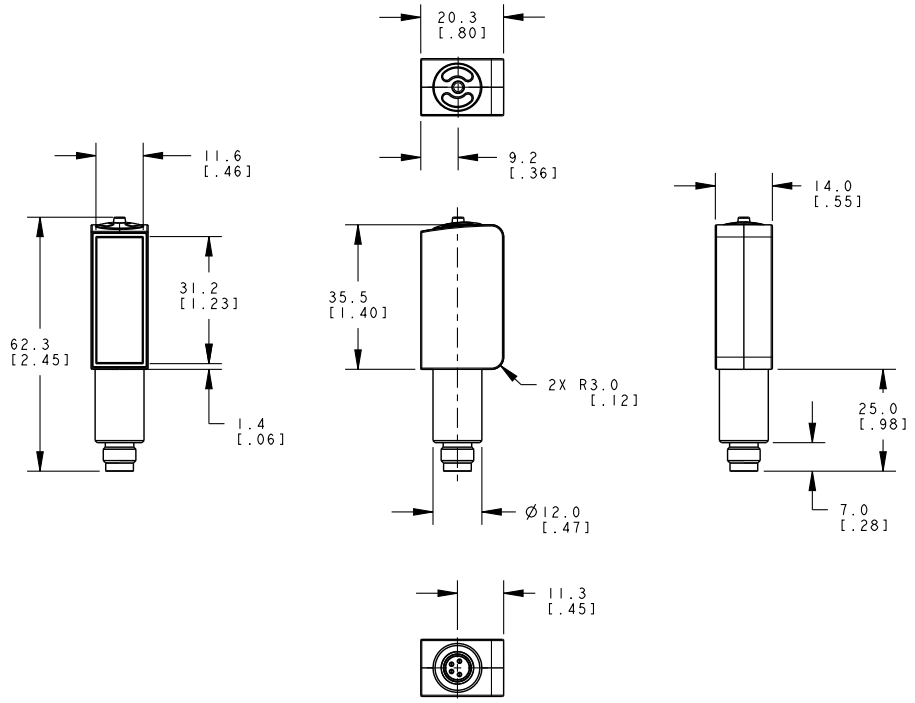
## QM26 Dimensions

All measurements are listed in millimeters (inches), unless noted otherwise.




## QMH26 Dimensions

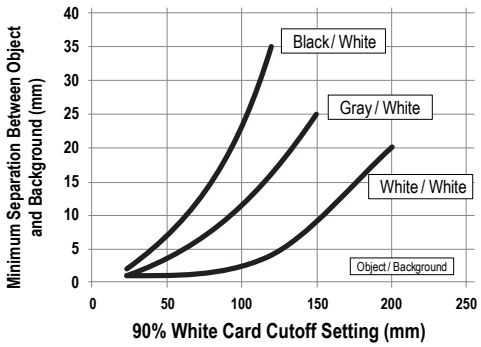
All measurements are listed in millimeters (inches), unless noted otherwise.



# Performance Curves

## Minimum Separation Distance

AF200 Models




AF400 Models

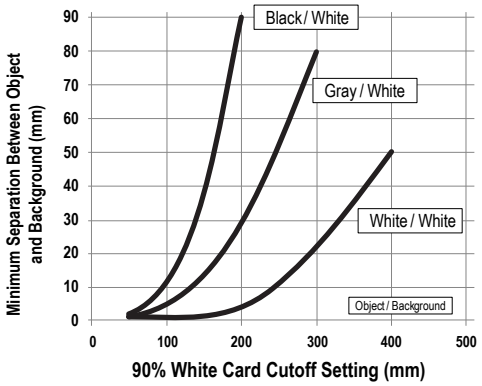
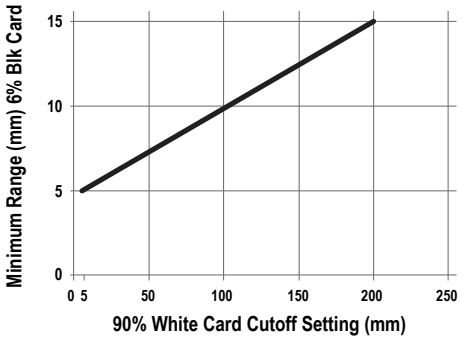



*Figure 5. Minimum Separation Distance*

## Minimum Sensing Range

AF200 Models




AF400 Models

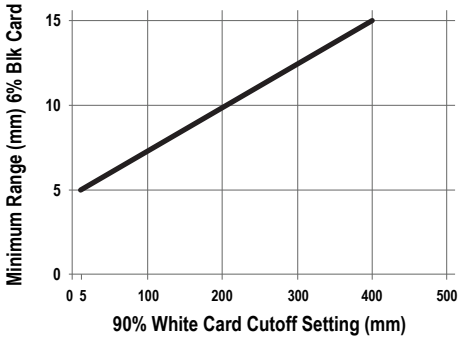



*Figure 6. Minimum Sensing Range (Dead Zone)*

## Excess Gain

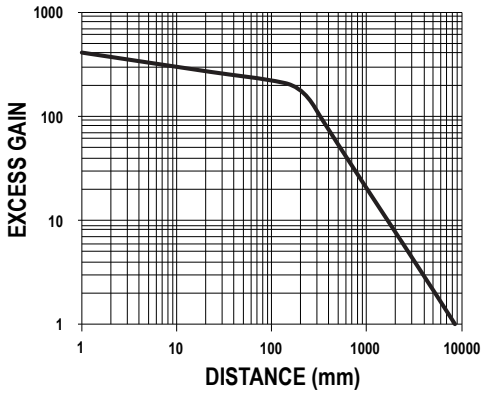



*Figure 7. Opposed Mode Models*

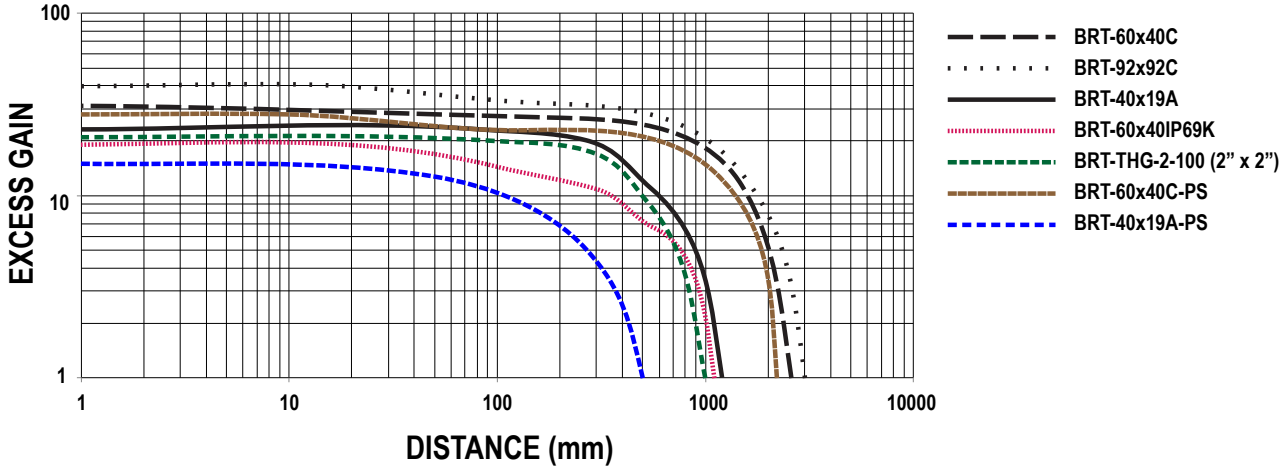



*Figure 8. Expert™ Retroreflective Models (XLPC Models)*

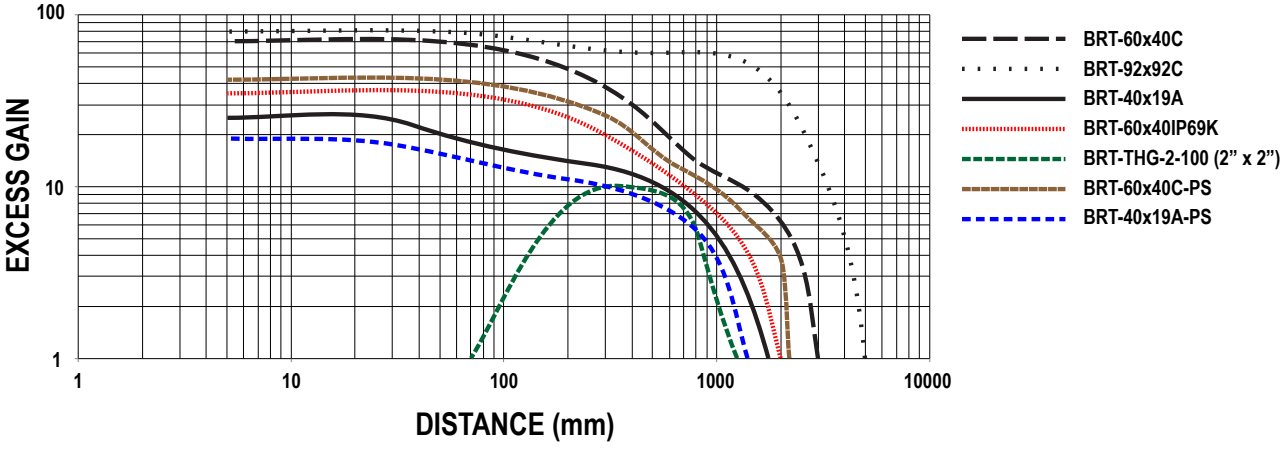



*Figure 9. Fixed Gain Retroreflective Models (LP models)*

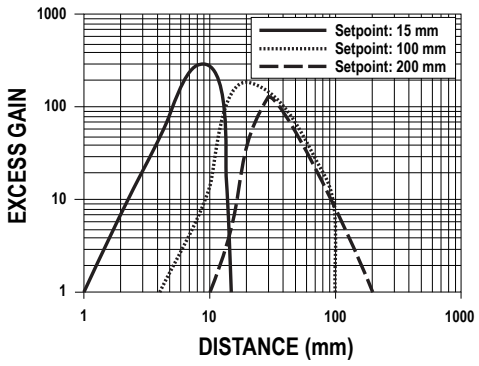
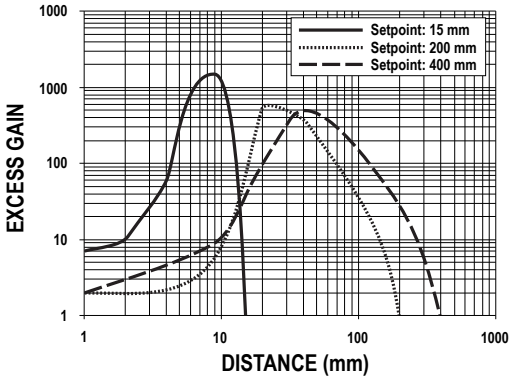
| AF200 Models | AF400 Models |
|---|---|
|  |  |



*Figure 10. Adjustable Field Models (AFxxx Models)*

## Beam Patterns

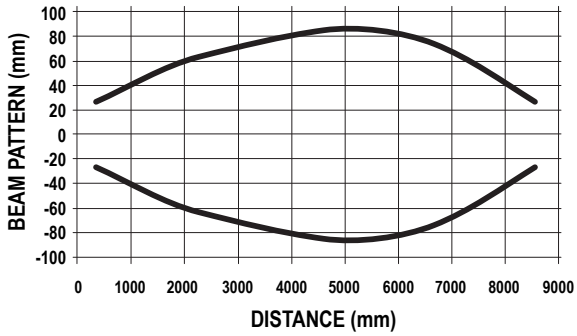




*Figure 11. Opposed Mode Models*

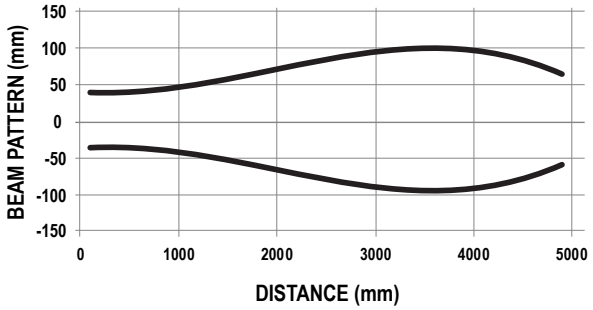




*Figure 12. Fixed Gain Retroreflective (LP) Models*

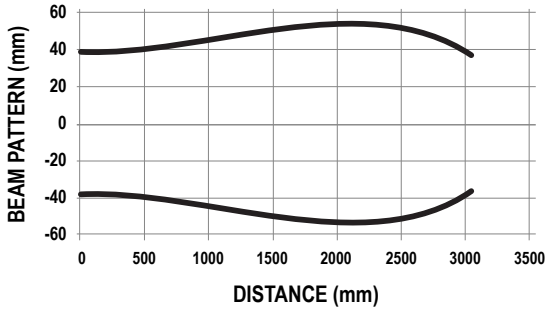




*Figure 13. Expert™ Retroreflective Models (XLPC ) Models*

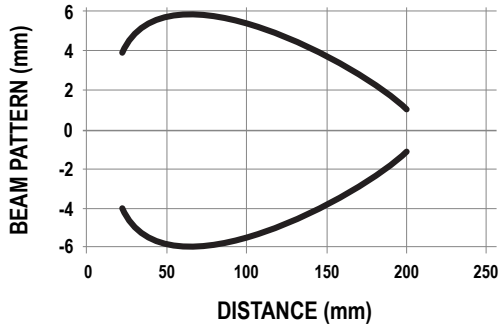
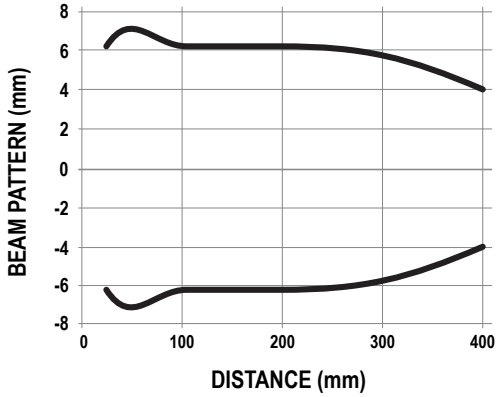
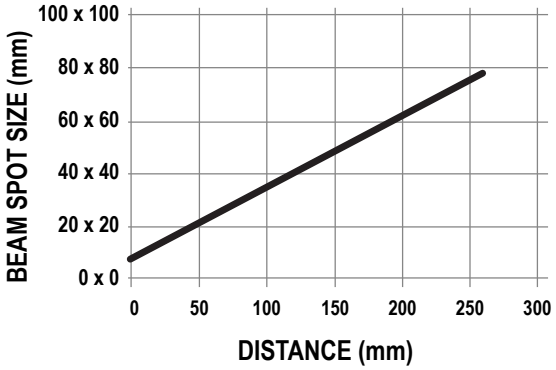
| AF200 Models | AF400 Models |
|---|---|
|  |  |





*Figure 14. Adjustable Field Models (AFxxx Models)*

## Spot Size Versus Distance

| Clear Object Expert Retroreflective (XLPC) Models | |
|---|---|
|  | |



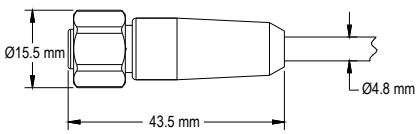
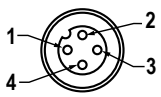
# Accessories

## Cordsets for QM26 Models with Suffix Q5

All measurements are listed in millimeters, unless noted otherwise.

4-Pin Threaded M12/Euro-Style Cordsets (Washdown, Stainless Steel) (Recommended)

Cable: PVC cable, stainless steel coupling nut, EPDM o-ring
Conductors: 22 AWG, gold-plated contacts
Voltage/Current Rating: 300 V dc, 4.0 A
Temperature: –40 °C to +105 °C (–40 °F to +221 °F)
Environmental Rating: IP69K

| 4-Pin Threaded M12/Euro-Style Cordsets—Washdown, Stainless Steel | | | | |
|---|---|---|---|---|
| Model | Length | Style | Dimensions | Pinout |
| MQDC-WDSS-0406 | 1.83 m (6 ft) | Straight |  |  |
| MQDC-WDSS-0415 | 4.57 m (15 ft) | | | |
| MQDC-WDSS-0430 | 9.14 m (30 ft) | | | |

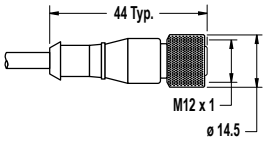
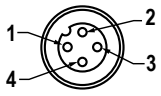




1 = Brown
2 = White
3 = Blue
4 = Black

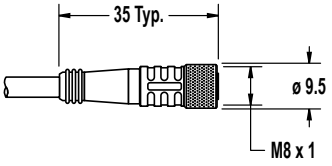
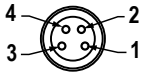
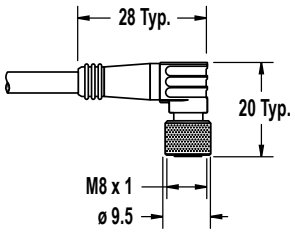
4-Pin Threaded M12/Euro-Style Cordsets

Cable: PVC jacket, PUR (polyurethane) connector body, nickel-plated brass coupling nut
Conductors: 22 AWG, gold-plated contacts
Voltage/Current Rating: 250 V ac/dc, 4.0 A
Temperature: –40 °C to +105 °C (–40 °F to +221 °F)
Environmental Rating: IP67/IP69K

| 4-Pin Threaded M12/Euro-Style Cordsets | | | | |
|---|---|---|---|---|
| Model | Length | Style | Dimensions | Pinout |
| MQDC-406 | 1.83 m (6 ft) | Straight |  |  <br>1 = Brown<br>2 = White<br>3 = Blue<br>4 = Black |
| MQDC-415 | 4.57 m (15 ft) | | | |
| MQDC-430 | 9.14 m (30 ft) | | | |
| MQDC-450 | 15.2 m (50 ft) | | | |

## Cordsets for QMH26 Models with suffix Q7

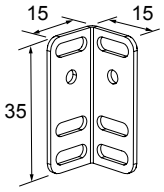
All measurements are listed in millimeters, unless noted otherwise.

| 4-Pin Threaded M8/Pico-Style Cordsets | | | | |
|---|---|---|---|---|
| Model | Length | Style | Dimensions | Pinout |
| PKG4M-2 | 2.00 m (6.56 ft) | Straight |  |  <br>1 = Brown<br>2 = White<br>3 = Blue<br>4 = Black |
| PKG4M-5 | 5.00 m (16.4 ft) | | | |
| PKG4M-9 | 9.00 m (29.5 ft) | | | |
| PKW4M-2 | 2.00 m (6.56 ft) | Right Angle |  | |
| PKW4M-5 | 5.00 m (16.4 ft) | | | |
| PKW4M-9 | 9.00 m (29.5 ft) | | | |

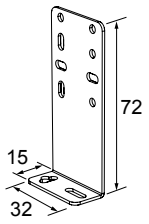
## Brackets for QM26 Models

All measurements are listed in millimeters, unless noted otherwise.

SMBLSTDLQ26
- Adjustable right-angle metal bracket
- 304 stainless steel




SMBLSTQ26
- Right-angle bracket
- 304 stainless steel

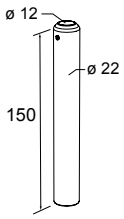


## Brackets for QMH26 Models

All measurements are listed in millimeters, unless noted otherwise.

SMBQMH26-SS-150

- Smooth surfaces for easy cleaning
- Setscrew adjustment of sensor
- 316L stainless steel

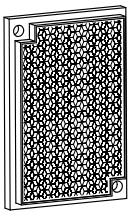



## Retroreflectors

All measurements are listed in millimeters, unless noted otherwise.

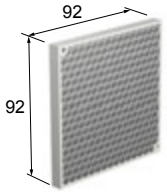
BRT-60X40C

- Rectangular, acrylic target
- Reflectivity Factor: 1.4
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Optional brackets are available
- Approximate size: 40 mm × 60 mm



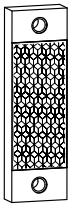
BRT-92X92C

- Square, acrylic target
- Reflectivity Factor: 3.0
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Optional brackets are available
- Approximate size: 92 mm × 92 mm



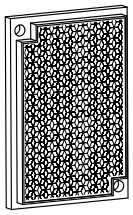

BRT-40X19A

- Rectangular, acrylic target
- Reflectivity Factor: 1.3
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Approximate size: 19 mm × 60 mm overall; 19 mm × 40 mm reflector



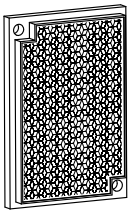
BRT-60X40IP69K

- Rectangular, acrylic target (color is amber)
- Reflectivity Factor: 0.7
- Temperature: –20 °C to +140 °C (–4 °F to +284 °F)
- Chemically resistant
- IP69K washdown rated
- Optional brackets are available
- Approximate size: 40 mm × 60 mm



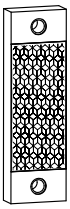
BRT-60X40C-PS

- Rectangular, polystyrene target
- Reflectivity Factor: 1.1
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Optional brackets are available
- Chemically compatible with hydrogen peroxide
- Yellow back
- Approximate size: 40 mm × 60 mm



BRT-40X19A-PS

- Rectangular, polystyrene target
- Reflectivity Factor: 1.0
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Chemically compatible with hydrogen peroxide
- Yellow back
- Approximate size: 19 mm × 60 mm overall; 19 mm × 40 mm reflector



| Model | Reflectivity Factor | Maximum Temperature | Size |
|---|---|---|---|
| BRT-THG-2-100 | 0.7 | +60 °C (+140 °F) | 50 mm (2 in) wide, 2.5 m (100 in) long |

## 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.

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