Versatile, Rugged Laser Distance Sensor

- Housing rated to IP69K with FDA-grade stainless steel
- Discrete, Analog, IO-Link outputs available
- Precise measurement up to 610 mm
- Reliably detects opaque and transparent objects
Dynamically adjusted laser power increases output for dark targets or objects at steep or uneven angles, while reducing power for shiny targets, providing accurate measurements across a wide range of challenging targets.

Robust FDA grade stainless steel housing for even the most demanding environments; IP67, IP68, IP69K

Compact housing to fit in tight spaces with flat face option for food and beverage

Class 1 laser with small, highly visible laser spot for easy alignment and small object detection

Lens cover made from PMMA acrylic

Industry standard 18 mm threaded barrel housing option for quick installation

Remote input allows for remote teaching, laser enable and advanced measurement modes to expand the range of applications solved with a single sensor

Bright LED output indicator and real-time distance feedback of distance (mm) or analog output (0-10 V, 4-20 mA) provides easy setup and troubleshooting, leading to reduced installation costs

Easy-to-Use. Problem Solver.

Reliable, durable sensor that solves even the most challenging applications.

Challenging Targets

- Round
- Uneven
- Shiny or metal
- Dark surface
- Clear

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Distance: Precision Measurement and Detection Regardless of Target

Dual mode: Distance with Intensity to Detect Any Change

Clear Object Detection
Reliably detects transparent objects without the need of a retro reflector.

Contrast
Detects intensity changes due to variation in surface finish, tone, or lightness.

Extended Range Presence/Absence
Teach reference to detect changes in contrast, even past the maximum measuring range.
Distance-based presence/absence detection or part positioning regardless of color or reflectivity of object and background.

Application Challenge
The presence of candy bars on a conveyor must be verified to trigger down the line processes. The candy bars can vary in size, shape, texture, and color consistency, complicating detection. At times there is little contrast between the candy bars and the conveyor, further complicating detection.

Application Solution
A Q4X measures the distance from the face of the sensor to the conveyor. Capable of detecting sub-millimeter changes in distance, the Q4X easily detects the slight variations in height that indicate the presence of a candy bar on the conveyor. The sensor has an FDA grade stainless steel flush mount housing and can withstand aggressive washdown procedures.
Application Challenge

Measuring the fill level of pills in a bottle helps ensure that the quantities inside the bottle are correct. However, the shape, edges, and gaps between pills create an inconsistent surface which is difficult to measure.

Application Solution

A Q4X analog sensor set up in trigger mode uses the averaging feature to provide a more consistent fill level measurement. A connected Q3X contrast sensor detects the leading edge of each bottle and uses a one-shot output timer to determine when and how long the Q4X will measure. The Q4X then measures across the varying surface inside the bottle and outputs a single analog value based on the average measurement.

Analog output for continuous measurement of part size, position, or fill level.
Error Proofing

Application Challenge
In a car speaker assembly the presence and placement of all components must be verified to ensure that defective or incomplete product is not shipped to the customer. The small sizes, slim profiles and similar colors of many components can make identifying errors difficult.

Application Solution
By measuring the distance from the face of the sensor to the mounting bracket, a Q4X verifies that a single spacer is present and properly seated. Using dual mode detection, the Q4X can also measure the amount of light received to determine if the spacer has been placed with the adhesive side up or down. The compact size of the Q4X allows for an unobtrusive installation into congested assembly stations.

Inspections use distance to verify parts presence and position, and intensity to verify correct color or part orientation.
Clear Object Detection

Application Challenge
Regulating the flow of bottles on a conveyor can prevent damage to the bottles, product loss, machine downtime, and helps to ensure that downstream processes progress smoothly. Variations in bottle shape, size, material, color, and transparency can make detecting bottles and accumulations difficult.

Application Solution
Taught to recognize a stable background condition, a Q4X operating in dual mode will detect any alteration in the distance to and light intensity from the background condition, making the sensor immune to variations in bottle shape, size, color, clarity, and reflectivity. The Q4X has integral on/off delays that can send a signal if an accumulation occurs.

Reliably detects transparent objects without the need of a retro reflector.
Q4X Laser Distance Sensor

**Family**
- Q4X

**Housing Style**
- T
  - Threaded Barrel
- F
  - Flush Mount

**Output**
- B = Bipolar Discrete NPN & PNP
- U = 0 to 10 V Analog
- I = 4 to 20 mA Analog

**Mode**
- LAF = Laser Adjustable-Field

**Range**
- 100 = 25-100 mm
- 300 = 25-300 mm
- 500 = 25-500 mm*
- 600 = 25-600 mm**

*Not available with Dual Discrete / IO-Link Output (K models)

**Connector**
- Q8 = Integral QD

**Environmental Rating**
- IP67, IP68, IP69K

**Certifications**
- Housing: 316L stainless steel
- Lens cover: PMMA acrylic
- Indicator & Display Window: Polysulfone

**Response Speed**
- User selectable as fast as:
  - Discrete and Dual Discrete: 1.5 ms
  - Analog: 0.5 ms

**Operating Conditions**
- -10 to +50 °C

**Construction**
- User selectable as fast as:
  - Discrete and Dual Discrete: 1.5 ms
  - Analog: 0.5 ms

**Accessories**
- SMBQ4XFA includes 3/8" bolt for mounting
- SMBQ4XFAM10 includes 10 mm bolt for mounting
- SMBQ4XFAM12 clamps directly onto industry standard bracket systems of 1/2" or 12 mm rods

**Reference Targets for Clear Object Detection**
- BRT-Q4X-60X50
- 50 x 60 x 6 mm
- BRT-Q4X-60X18
- 18 x 60 x 6 mm

**Cordsets for Analog Models**
- 0 to 10 V, 4 to 20 mA

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<tr>
<th>Model</th>
<th>Length</th>
<th>Notes</th>
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<tr>
<td>MQDEC2-506</td>
<td>2 m (6.5')</td>
<td>Straight connector models listed, for right-angle, add RA to the end of the model number (example, MQDEC2-506RA)</td>
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<tr>
<td>MQDEC2-515</td>
<td>5 m (15')</td>
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<tr>
<td>MQDEC2-530</td>
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<td>MQCWD-506</td>
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<tr>
<td>MQCWD-530</td>
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**Cordsets for Other Models**
- Bipolar (5-pin) and PNP, NPN and Dual Discrete (4-pin)

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