Q4X-Q3X Laser Sensor Demo Kit
(DK-Q4X-Q3X)

Q4X Features

- Solves difficult distance based applications regardless of target surface reflectivity

- Reliable sensing range of 25 mm (0.98 in) to 300 mm (11.81 in) with best in class excess gain

- Angled four-digit display with submillimeter resolution is easily viewed from multiple vantage points

- FDA grade stainless steel, chemically-resistant material and laser marked sensor information withstands aggressive cleaning procedures

Q3X Features

- Solves challenging part-detection applications with small contrast differences

- High-speed part detection as fast as 250 µs, capturing up to 2,000 events per second

- Angled three-digit display is easily viewed from multiple vantage points

- Rugged nickel-plated zinc, laser-marked housing suitable for use even in environments where cutting fluids and oils might be present

Demo Kit Components (PN 92503 Model DK-Q4X-Q3X)

Models	Description
Q4XTBLAF300-Q8	Q4X Sensor (p/n 94118)
	Base with 2 Rods
SMBQ4XFAM12	Bracket (p/n 91547) 2 included
	Hex Driver
	Target Piece
	Demo Kit Setup Card (p/n 182849)
	Q4X Sell Sheet (p/n 183055)
	Q4X Quick Start Guide (p/n 181484)
Q3XTBLD-Q8	Q3X Sensor (p/n 91638)
	Q3X Sell Sheet (p/n 183523)
	Q3X Quick Start Guide (p/n 181486)

Q4X: Prepare the Demo

• Remove the demo stand from the case and apply power to the Q4X sensor.

• Position the sensor within 100 mm of the base with the display facing the customer and buttons visible on the upper surface.

Restoring factory defaults assures correct sensor performance and provides an opportunity to highlight the display, configuration options and buttons. Be sure to reinforce the flexibilty and ease of custom configuration, the straightforward display and the tactile response of the buttons. These all provide a great customer interface experience.

Return the sensor to factory defaults

1. Push and hold the Mode button for two seconds until tch appears on the display.

2. Scroll through the display by pushing (+) until rSET appears.

3. Push (SELECT), then push (−) to see 'YES' on the display, then push (SELECT) again

4. The display will flash to acknowledge the the sensor was returned to factory defaults

Prove the Q4X is a Versatile Problem Solver

Teaching a black on black application shows the easy Teach process and high optical performance of the Q4X. Two-Point Teach works well when both ON and OFF conditions can be presented to the sensor. Mention the sub-millimeter resolution of the display within 100 mm and the ability to change performance parameters with only a few clicks.

Demo 1: Two Point TEACH to detect black foam on a black background

1. Put the target piece on the demo base and explain how the display is showing the distance measured from the sensor face to the target.

2. Push and hold the center (TEACH) for two seconds. SEt 1St will appear.

3. Align the beam on the black plastic and push (TEACH). SEt 2nd will appear.

4. Align the beam on the black foam and push (TEACH) again.

5. The new switch point distance flashes, and the Q4X returns to run mode. Move the target piece back and forth to show that either foam piece, but no background is detected.

Now, shift the sensor's zero point to the taught distance

The display will then show the measured distance in front of or behind the taught point. This can be very intuitive for users, and provides measurement feedback for operators.

1. Push and hold (MODE) for two seconds.

2. Push (+) four times until ZEro appears. Push (SELECT) and then (+). FAr will appear. Push (SELECT) to set the zero reference at 300 mm from the face of the sensor.

3. ZEro will be on the display. Push (+) again to see ShFt. Push (SELECT) and then (+). on will appear. Push (SELECT) to shift the zero reference to the last taught distance.

4. Push (+) three more times. End will appear. Push (SELECT) to save these changes and return to run mode. Note that the display now shows 300 minus the previously measured distance.

5. The zero point will be shifted to the taught distance in Demo 2.

Setting the sensor in Background Suppression mode allows us to do the same black on black detection by presenting only a known background condition. This is useful for different sized targets or to configure the sensor with the machine in an idle state. Reinforce that the distance based Q4X is unaffected by different colored objects.

Demo 2: Background Suppression SET to ignore the reflective background and detect the target piece.

1. Push and hold (MODE) for two seconds. The display will show tch.

2. Push (SELECT), then push either (+) or (−) until bGS appears.

3. Push and hold (SELECT) for two seconds to choose background suppression and return the sensor to run mode.

4. Remove the target piece so the beam is aligned on the aluminum base.

5. Push and hold (TEACH) for two seconds. The display will alternate SEt and oFF.

6. Push (TEACH) again. The new switch point distance flashes and the sensor returns to run mode.

7. Place the target piece in front of the sensor and show that the output turns ON for the entire target piece.

see demo video

Q3X: Prepare the Demo

- Remove the demo stand from the case and apply power to the Q3X sensor.

- Position the sensor above the Q4X with the beam pointed at a 5 - 15° angle from the demo base. The display should face the customer and the buttons should be visible on the upper surface.

Restoring factory defaults assures correct sensor performance and provides an opportunity to highlight the display, configuration options and buttons. Be sure to reinforce the flexibility and ease of custom configuration, the straightforward display and the tactile response of the buttons. These all provide a great customer interface experience.

Return the sensor to factory defaults

1. Push and hold (MODE) for two seconds until out appears on the display

2. Scroll through the display by pushing (+) until rSt appears.

3. Push (+) and (−) once simultaneously, then push (−) to see YES on the display, then push (+) and (−) again to confirm.

4. The display will flash to acknowledge the sensor was returned to factory defaults

Prove the Q3X is the Perfect Solution Partner to the Q4X

Teaching low contrast light gray and white targets shows the easy teach process and outstanding optical performance of the Q3X. Two-Point Teach works well when both On and Off conditions can be presented to the sensor. Mention the real time display and the ability to change performance parameters with only a few clicks.

Demo 1: Two Point TEACH to differentiate gray and white

1. Put the target piece on the demo base and explain what the display is showing. (see back page for details).

2. Push and hold (TEACH) for two seconds. SEt 1St will flash.

3. Align the beam on the lightest gray section and push (TEACH). SEt 2nd will appear.

4. Align the beam on the white section and push (TEACH) again. The new switchpoint flashes, and the Q3X returns to run mode.

5. Move the target piece back and forth to show that the sensor sees the white target but does not see any shade of gray or the foam. Also note that the yellow and red targets reflect similar amounts of light as the white target, and will also be ON conditions

Dark Set mode is useful when only a single 'ON' condition is available to present to the sensor. In Dark Set mode, the threshold is set above the taught intensity level. This allows us to see all targets that are brighter than the taught condition.

Demo 2: Dark Set

1. Push and hold (MODE) for two seconds. The display will show out.

2. Push (+) once, tch appears. Push (+) and (−) together to enter the teach submenu.

3. Push (+) or (−) until dr appears, press and hold (+) and (−) to select and return to run mode.

4. Push and hold (TEACH) for two seconds. SEt and dr will flash.

5. Position the target so the laser is on the green segment. Push (TEACH) again. The sensor sets the new threshold and return to run mode.

6. Move the target piece to show that the output will be ON for all targets seen as brighter than green. Only the green, blue, darkest gray and black segments will be OFF conditions.

Window set mode is useful when only a single 'ON' condition is available to present to the sensor. In Window Set mode, 100 represents the taught signal strength, and the displayed value is the ratio of the received light signal and the taught light level. The output switches at values above and below 100 as determined by the user selected window offset percentage. Default is 20% (80 – 120).

Demo 3: Window Set

1. Push and hold (MODE) for two seconds. The display will show out.

2. Push (+) once, tch appears. Push (+) and (−) together to enter the teach submenu.

3. Push (+) or (−) until win appears, press and hold (+) and (−) to select and return to run mode.

4. Push and hold (TEACH) for two seconds. SEt and 1Pt will flash.

5. Align the beam on the middle gray segment and push (TEACH). The sensor sets the new threshold and returns to run mode.

6. Move the gray scale targets in front of the sensor and show that the output turns ON only for the taught segment, and not anything lighter (>120) or darker (<80). Note that the sensor also turns ON for the similarly colored gray foam.

see demo video

250 mm

The Q4X is a distance based sensor designed to solve applications with difficult contrast changes but distinct distance changes. The display is a 4-digit, 7-segment LED readout that shows distance in millimeters. The sensor's zero distance point can be shifted from the nose of the sensor or 300mm from the nose of the sensor. At distances less than 100mm, the distance goes to sub-millimeter resolution as indicated by the decimal point.

200 mm

150 mm

The Q3X is a contrast based sensor that detects differences in the intensity of light received by the sensor; target reflectivity is always a performance factor, and distance can also influence the output. The display is a 3-digit, 7-segment LED readout of the normalized signal strength. The display shows the ratio of received light signal divided by the threshold. The result ranges from 0 to 990%, or 0 to 9.9 times excess gain. In most conditions, the output switches at a displayed value of 100. Note that the third button on the Q4X is replaced by a simultaneous click of both buttons on the Q3X.

100 mm

50 mm
from
bottom of
page