

Q3X Laser Contrast Sensor



Quick Start Guide

Laser Expert™ diffuse sensor with bipolar (1 PNP & 1 NPN) output. Patent pending.

This guide is designed to help you set up and install the Q3X Sensor. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual at <http://www.bannerengineering.com>. Search for p/n 181485 to view the manual. Use of this document assumes familiarity with pertinent industry standards and practices.



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.

Features

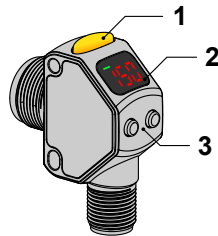


Figure 1. Sensor Features

1. Output Indicator (Amber)
2. Display
3. Buttons

Display and Indicators



Figure 2. Display in Run Mode

1. Stability Indicator (STB = Green)
2. Active TEACH Indicators
 - DYN = Dynamic TEACH selected (Amber)
 - WND = Symmetric window thresholds are active (Amber)

In Run mode, the 3-digit, 7-segment display provides real time information about signal strength for all models and target position for models with a fixed background suppression distance. The numeric value of 0 to 990 represent the amount of the received light divided by the threshold, and represents the excess gain of the sensing event expressed as a percentage of the switch point. This value is called normalized signal strength (NSS). A NSS display range of 999 indicates a saturated received light signal, meaning that low contrast detection is not possible.

In single threshold teach modes (Two-Point Static, Dynamic, Light Set, or Dark Set), the output switches at a displayed value of 100 (excess gain of 1.0).

For models with a specified background suppression distance, **cut** indicates that a target is present at a distance beyond the background suppression distance and is being suppressed. In Light Operate mode, the output switches off when **cut** displays. For the LD50 models, the sensor's output state when displaying **cut** can be controlled using the **ctd** menu. By default, the sensor treats a target in the background as a dark signal and honors the LO/DO selection.



A displayed value of - - - indicates no light received or a loss of signal.

In Window Set teach mode, the value 100 represents the taught signal strength. The displayed value is the percentage of the received light divided by the taught signal strength. The output switches at displayed values above and below 100 as determined by the user-selected window offset percentage.

Output Indicator

- On—Outputs conducting (closed)
- Off—Outputs not conducting (open)

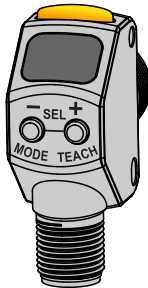
Stability Indicator (STB)

- On—Stable light signal received
- Flashing—Light intensity is within the switching threshold hysteresis band
- Off—No light signal received

Active TEACH Indicators (DYN and WND)

- DYN and WND off—Two-Point Static , Light Set, or Dark Set TEACH mode selected (Two-Point Static TEACH is the default).
- DYN and/or WND flashing—The sensor is in TEACH mode.
- DYN on—Dynamic TEACH mode selected
- WND on—Symmetric Window thresholds are active. The switch points are above and below 100 by the offset percentage

Buttons



Use the sensor buttons (-)(MODE) and (+)(TEACH) to program the sensor. See [Sensor Programming](#) on page 4 for programming instructions.

(-)(MODE)

- Decrease gain: press and release (-)(MODE), then press and hold (-)(MODE) to rapidly decrease gain
- Enter Setup mode: press and hold (-)(MODE) for longer than 2 seconds
- Navigate the sensor menu: press (-)(MODE)
- Change setting values: press and hold (-)(MODE) to decrease numeric values

(+)(TEACH)

- Increase gain: press and release (+)(TEACH), then press and hold (+)(TEACH) to rapidly increase gain
- Start the currently selected TEACH mode: press and hold (+)(TEACH) for longer than 2 seconds (Two-Point Static TEACH is the default)
- Navigate the sensor menu: press (+)(TEACH)
- Change setting values: press and hold (+)(TEACH) to increase numeric values

(-)(MODE) and (+)(TEACH)

- Select menu items in Setup mode: press (-)(MODE) and (+)(TEACH) simultaneously
- Select and save a parameter and return to Run mode: press (-)(MODE) and (+)(TEACH) simultaneously for longer than 2 seconds

When navigating the menu systems, the menu items loop.