

SA1Q Stainless Laser Sensor with Dual Discrete Outputs and IO-Link

Quick Start Guide

Class 1 laser CMOS sensor with dual outputs and IO-Link.

This guide is designed to help you set up and install the SA1Q sensor with dual discrete outputs and IO-Link. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual. Use of this document assumes familiarity with pertinent industry standards and practices.

For illustration purposes, the threaded barrel model SA1Q images are used throughout this document.

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| | <p>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.</p> <p>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.</p> |
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Features

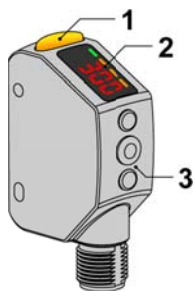


Figure1. Sensor Features

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

Display and Indicators

The display is a 4-digit, 7-segment LED. The main screen is the Run mode screen. For 2-pt, BGS, FGS, and DYN TEACH modes, the display shows the current distance to the target in millimeters*¹. For dual TEACH mode, the display shows the percentage matched to the taught reference surface. A display value of 0000 indicates the sensor has not been taught. (*1. The display may differ from the actual distance due to operating environment, target and aging. The distance data is a reference value.)



Figure2. Display in Run Mode

1. Stability indicator (STB; Green)
2. Active TEACH indicators
 - DYN : Dynamic (Amber)
 - FGS : Foreground Suppression (Amber)
 - BGS : Background Suppression (Amber)

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| | <p>Note: The indicators represent the currently selected channel. However, if Output 2 is set to something other than LO, DO, or Complementary, then the indicators represent the Channel 1 status.</p> |
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Output Indicator

- On : Output is on
- Off : Output is off

Active TEACH Indicators (DYN, FGS and BGS)

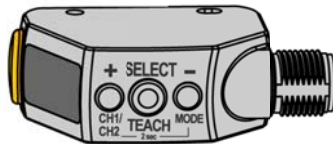
- DYN, FGS, and BGS all off : Two-point TEACH mode selected (default)
- DYN on : Dynamic TEACH mode selected
- FGS on : Foreground suppression TEACH mode selected
- BGS on : Background suppression TEACH mode selected
- DYN, FGS, and BGS all on : Dual TEACH mode selected

Stability Indicator (STB)

- On : Stable signal within the specified sensing range
- Flashing : Marginal signal, the target is outside the limits of the specified sensing range, or a multiple peak condition exists
- Off : No target detected within the specified sensing range

Buttons

Use the sensor buttons **[SELECT/TEACH]**, **[+/CH1/CH2]**, and **[-/MODE]** to program the sensor.

**[SELECT/TEACH]**

- Press to select menu items in Setup mode
- Press and hold for longer than 2 seconds to start the currently selected TEACH mode (the default is two-point TEACH)

[-/MODE]

- Press to navigate the sensor menu in Setup mode
- Press to change the distance setting for the 0 V (4 mA) point; press and hold to decrease numeric values
- Press and hold for longer than 2 seconds to enter Setup mode

[+/CH1/CH2]

- Press to navigate the sensor menu in Setup mode
- Press to change the setting values ; press and hold to increase numeric value
- Press and hold for longer than 2 seconds to switch between Channel 1 and Channel 2



Note: When navigating the menu, the menu items loop.

Laser Description and Safety Information

CAUTION: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Do not attempt to disassemble this sensor for repair. A defective unit must be returned to the manufacturer.

Class 1 Lasers

Class 1 lasers are lasers that are safe under reasonably foreseeable conditions of operation, including the use of optical instruments for intrabeam viewing.

COMPLIES WITH 21 CFR 1040.10 AND 1040.11
EXCEPT FOR DEVIATIONS PURSUANT TO
LASERNOTICE No. 50, DATED JUNE 24, 2007.
IDEC CORPORATION
2-6-64, Nishimiyahara, Yodogawa-ku,
Osaka 532-0004, Japan

CLASS 1
LASER PRODUCT

COMPLIES WITH IEC 60825-1:2007

Laser wavelength: 655 nm


Output: < 0.20 mW

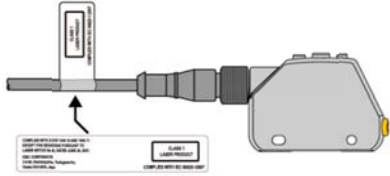
Pulse Duration: 7 μ s to 2 ms

Installation

Install the Safety Label

The safety label must be installed on SA1Q sensors that are used in the United States.

 **Note:** Position the label on the cable in a location that has minimal chemical exposure.



1. Remove the protective cover from the adhesive on the label.
2. Wrap the label around the SA1Q cable, as shown.
3. Press the two halves of the label together.

Figure 3. Safety Label Installation

Sensor Orientation

Optimize detection reliability and minimum object separation performance with correct sensor-to-target orientation. To ensure reliable detection, orient the sensor as shown in relation to the target to be detected.

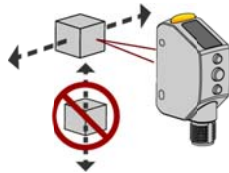


Figure 4. Optimal Orientation of Target to Sensor

See the following figures for examples of correct and incorrect sensor-to-target orientation as certain placements may pose problems for sensing some targets. The SA1Q can be used in the less preferred orientation and provide reliable detection performance; refer to the Performance Curves for the minimum object separation distance required for each case.

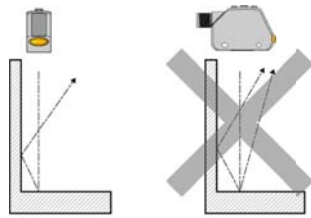


Figure 5. Orientation by a wall

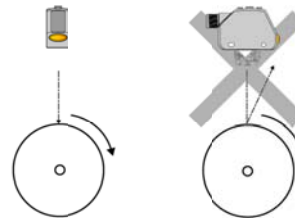


Figure 6. Orientation for a turning object

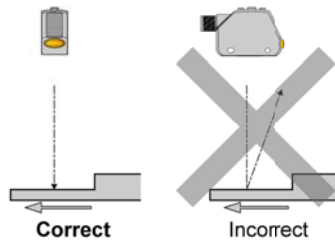


Figure 7. Orientation for a height difference

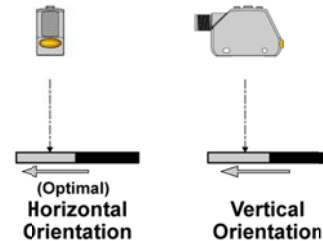


Figure 8. Orientation for a color or luster