Laser Measurement Sensor

- Powerful sensor with advanced functions including:
  - Remote teach
  - Laser inhibit
  - Delay timers
  - Advanced measuring modes
- 50 to 24,000 mm sensing range
- Durable, IP67 metal housing with 100G shock rating
Durability and Precision Measurement

Distance measured

Time-of-Flight Measurement

Class 2 laser emitter with small, highly visible spot for easy sensor alignment and high excess gain

Durable acrylic lens

Large high-performance optical receiver lens

Easy to Set Up

Rotatable M12 QD for versatile mounting options

Durability and precision measurement, emitting a pulsed light, measuring the amount of time for the light to reflect off the object and return to the sensor to calculate the distance. This enables sensing in long-range applications across a wide variety of targets.

Distance measured

Distance (m)

Repeatability (mm)

50 mm 12 m

The LTF detects dark targets at 7 meters and white targets at 12 meters with repeatability <5 millimeters and accuracy from ±10 millimeters

Best-in-Class Combination of Accuracy, Repeatability, and Range

The LTF sensor uses time-of-flight measurement, emitting a pulsed light, measuring the amount of time for the light to reflect off the object and return to the sensor to calculate the distance. This enables sensing in long-range applications across a wide variety of targets.
Best-in-Class Performance
High excess gain. High reliability. Rugged and durable.

Flexible Mounting

Consistent detection of a target at an angle

Temperature Stability

Stable performance across temperature keeps inspections running all day and night

Challenging Targets

- Shiny or metal
- Dark surface
- Round
- Uneven

Dynamically adjusted laser power increases output for dark targets or objects at steep angles, while reducing power for shiny targets, providing accurate measurements across a wide range of challenging targets

Ambient Light Resistance

Designed to prevent errant readings due to ambient light up to and beyond 40,000 lux

Fast Response Speed

1.5ms

Measure fast moving targets with ease

Applications

- Robot End Effector
- Log Dimensioning
- Palletizer
- Roll Diameter
- Transfer Press
- Automated Storage
Starts Measuring Right out of the Box
Choose from several TEACH modes and advanced settings to customize your application.

Fast and Easy Installation in Only 3 Steps

1. Mount the sensor
   - Rotatable QD for flexible mounting

2. Align the sensor
   - Visible spot for easy alignment

3. Start Measuring
   - Right out of the box the LTF provides a real-time distance measurement and the analog output measurement on an easy-to-read eight-character display

TEACH Modes for Any Application

2-Point Teach
- Teach two targets as the end points of the analog span or discrete output window

Switch Point Teach
- Teach target to automatically set a switching threshold in front of or behind target for background suppression or foreground suppression applications

Mid-Point Teach
- Teach a window of user-defined size around a target

Push Button Adjust
- Manually set analog and discrete output end points without presenting a target

Advanced Settings

Advanced Measurement Modes
- Driven by an external trigger, the LTF can continuously measure and output values such as:
  - minimum value
  - maximum value
  - average value or more

Delay Timers
- The Timer option sets:
  - ON/OFF Delays
  - One-Shot timers between 1 to 9999 ms

Invert the display
- Use the View option to invert the display for readability

Cross-talk Avoidance
- Use Master/slave mode to eliminate any chance of cross-talk between sensor pairs. Use Laser Enable to avoid cross-talk when using more than two sensors.
Loop Control

Loop Control on a Calendering Machine

Application Challenge
Measurement of loops of material are used to adjust machine speed and avoid excessive or insufficient tension that can damage the material. The dark color and sheen of the rubber makes consistent and accurate detection at a long range difficult for most sensors.

Solution
The LTF takes advantage of high excess gain, superior signal processing and automatic adaptive laser power control to enable the sensor to reliably detect challenging dark and reflective targets from a distance and at an angle.

Advanced Settings
Set the reference point to zero at the midpoint to show the loop position measurement on the LTF display.

Teaching the ideal loop position at the mid point quickly sets the analog window to cover the full range of loop motion.

Shift the zero reference from the face of the sensor to the midpoint allows the operator to determine if the loop is above or below the ideal position.
Part Presence or Absence

Weld Cell Error Proofing

Application Challenge
The presence and position of the component must be verified before the weld can be made. If the component is missing or incorrectly placed, the panel will be unusable.

Solution
The exceptional linearity, repeatability and resolution offered by the LTF ensure that the part will be detected in the correct position and any variations will result in an output sent to stop the robot before welding begins.

TEACH Mode
Set a single switchpoint for background suppression.

In single switchpoint mode, the background is taught and the placed object is detected.

Advanced Settings
Laser enable

The remote input is used to turn OFF the emitter when workers are in the cell.
Fill Level

Monitoring Levels Inside a High-Volume Hopper

Application Challenge
Dust and other debris generated during the processing of peanuts can accumulate on the face of a sensor. Gradually this can negatively affect a sensor's performance and may result in unscheduled downtime for maintenance.

Solution
An LTF Series sensor with IO-Link communicates configuration and application trending data via an IO-Link master device to a controller on an industrial network. Monitoring data such as excess gain can help identify debris build-up and aids in preventative maintenance and maximizing machine uptime. If the sensor is ever damaged and requires replacement, configuration data saved on the IO-Link master will automatically update the new sensor.

Discovery Mode
Easily identify which sensor on the factory floor requires maintenance by sending a signal via IO-Link to have all three lights flash.
LTF Series Sensor

Specifications

<table>
<thead>
<tr>
<th>Family</th>
<th>Range (m)</th>
<th>Output</th>
<th>Laser Class</th>
<th>Sensing Mode</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTF</td>
<td>12</td>
<td>I</td>
<td>C2</td>
<td>LD</td>
<td>Q</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>4 to 20 mA analog and (I) NPN/PNP discrete</td>
<td>C2 = Class 2</td>
<td>LD = Laser diffuse</td>
<td>Q = Rotatable M12 QD</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>0 to 10 V analog and (I) NPN/PNP discrete</td>
<td>K = Dual discrete (NPN/PNP configurable) with IO-Link</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Power**: 12 to 30 V dc
- **Range**: 50 mm to 24000 mm (1.97 in to 472.44 in)
- **Response Time**: Fast: 1.5 ms
- **Operating Conditions**: −4 °F to +131°F (−20 °C to +55 °C)
- **Construction**: Housing: Die-cast zinc
- **Environmental Rating**: IEC IP67
- **Repeatability (1σ)**: ± 0.15 to 2 mm
- **Beam Spot Size**: 6.5 mm at 50 mm
- **Certifications**: 3TJJ IND. CONT. EQ.

**Accessories**

- **SMBLTFFA**: includes 3/8" bolt for mounting
- **SMBLTFFAM10**: includes 10 mm bolt for mounting
- **SMBLTFFAM12**: Clamps directly onto industry standard bracket systems of 1/2" or 12 mm rods

**Separate Mounting Kits**

- **RWAMSLTF**: Kit includes 1 mounting plate and 2 replacement windows

**Coupler and Cordset Options**

- **MQDEC2-506**: 2 m (6 ft)
- **MQDEC2-515**: 5 m (15 ft)
- **MQDEC2-530**: 9 m (30 ft)
- **MQDEC2-550**: 15 m (50 ft)

For right-angle models add **RA** to the model number. Example: **MQDEC2-506RA**

**Double-ended 4-pin M12 QD for use with IO-Link models**

- **MQDEC406SS**: 2 m (6 ft)
- **MQDEC412SS**: 4 m (12 ft)
- **MQDEC420SS**: 6 m (20 ft)
- **MQDEC430SS**: 9 m (30 ft)

The RSD1QP remote display is designed to provide easy sensor configuration and monitoring. It can be used for initial setup by equipment manufacturers with the ability to copy settings across many sensors.

Visit our website for more information.

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