Self-contained CMOS Laser Sensor
LR-ZB□N/P Series

Instruction Manual

Read this manual before using the product in order to achieve maximum performance. Keep this manual in a safe place after reading it so that it can be used at any time.

The following symbols alert you to important messages. Be sure to read these messages carefully.

- This product is only intended to detect object(s). Do not use this product for the purpose to protect a human body or part of a human body.
- Do not wire the cable along with power lines or high-tension lines, as the sensor may malfunction or be damaged due to noise.
- Do not stare into the beam.
- Do not disassemble this product. Laser emission from this product is not automatically stopped when it is disassembled. Use with an over current protection device which is rated 30 V or more and not more than 1 A.
- Do not use with a commercially available switching regulator, ground the frame terminal and ground terminal.
- Do not disassemble this product. Laser emission from this product is not automatically stopped when it is disassembled.
- Do not store the product near water.

Safety Precautions on Laser Product

- The laser classification for FDA (CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice No.50.
- The laser classification for FDA (CDRH) Part 1040.10*2.

Certification and Identification Label

- When using this product in the U.S., affix the Certification and Identification Label included in the package of this product as shown on the right.
- Use of this product is intended only to detect object(s). Do not use this product for the purpose to protect a human body or part of a human body.
- Do not use this product as a hazardous location and/or potentially explosive atmosphere.
- Do not disassemble this product. Laser emission from this product is not automatically stopped when it is disassembled.
- Do not stare into the beam.

Safety Information for LR-ZB Series

- Do not use this product as a hazardous location and/or potentially explosive atmosphere.
- Do not disassemble this product. Laser emission from this product is not automatically stopped when it is disassembled.
- Do not stare into the beam.

Precautions on Regulations and Standards

UL Certification

- This product is an UL/C-UL Listed product.
- Use a power supply with Class 2 output defined in NFPA70 (NEC: National Electrical Code).
- Power supply/Control input/Control output shall be connected to a single Class 2 source only.
- Install the product at the ambient temperature 45°C or below when using with following optional cable. (OP-73864, OP-73885, OP-87396, OP-85499, OP-85500, OP-85497, OP-87399, OP-85684, OP-85585)


- Applies to the following specifications when using this product in a member state of the European Union.
- These specifications do not give any guarantee that the end-product with this product incorporated complies with the essential requirements of EMC Directive. The manufacturer of the end-product is solely responsible for the compliance on the end-product itself according to EMC Directive.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Distance setting</th>
<th>Appearance</th>
<th>Model</th>
<th>Length (m)</th>
<th>Response time (ms)</th>
<th>Power consumption (μW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPN*1</td>
<td>2 m cable</td>
<td>Rectangular</td>
<td>LR-ZB100N/P</td>
<td>50 to 100</td>
<td>1.5 to 1000</td>
<td>2 m cable: Approx. 55 g</td>
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<tr>
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<td>2 m cable</td>
<td>Rectangular</td>
<td>LR-ZB100N/P</td>
<td>50 to 100</td>
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</tr>
<tr>
<td>PNP*2</td>
<td>3 m cable</td>
<td>Rectangular</td>
<td>LR-ZB100N/P</td>
<td>50 to 100</td>
<td>1.5 to 1000</td>
<td>2 m cable: Approx. 55 g</td>
</tr>
</tbody>
</table>

Consignes de sécurité relatives au Laser

L’utilisation des commandes ou réglages ou l’exécution des procédures autres que celles spécifiées dans les présentes exigences peuvent être la cause d’une exposition à un rayonnement dangereux.

I/O Circuit Diagram

- NPN type (LR-ZB*N)
- PNP type (LR-ZB*P)

UL Certification

- UL File No. E301717/Category NRKH. NRKH7/Enclosure Type 1 (UL50)
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**Basic Operation**

### Part names and functions

- **DTM:** This lights up when datum calibration is performed.
- **1 spot:** This turns off when no light enters or multiple reflections occur.

### Package contents

- **Sensor**
- **Certification and Identification Label**
- **Instruction Manual**

A connector cap is supplied with connector type sensors.

### Installation

**Tightening Torque:** 0.6 Nm or less

**Direction of installation:**

- **M3**

### Wiring

- **Brown:** 10 to 30 V
- **White:** IN
- **Blue:** 0 V
- **Black:** OUT

**M8 Connector Tightening Torque:** 0.6 Nm

* Tighten the connector by hand, and then retighten it by using tools and so on. Insufficient tightening will degrade water-resistant performance.

### Output configuration (L.ON ↔ D.ON)

1. **Operation**
   - **Output at the time of D.ON**
   - **Output at the time of L.ON**

### Sensitivity adjustment

#### Basic setting (high accuracy)

- **(2-point calibration, background suppression - BGS)**

1. **When an object other than the background is to be detected (Datum calibration, foreground suppression - FGS)**

2. **When an object located nearer than the background is to be detected (Maximum sensitivity calibration, background suppression - BGS)**

3. **Moving target calibration**

   - **(Full auto calibration, background suppression - BGS)**

**Manual adjustment**

1. **(Run Mode)**

   - Press briefly < 1s

2. **Adjust sensitivity**

   - -99 to 999

   - Press and hold > 3s
Advanced Settings

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