

Omron E3Z-D82-2M

OMRON E3Z-D82-2M Photoelectric Sensor User Manual

Model: E3Z-D82-2M

Brand: Omron

1. INTRODUCTION

This manual provides essential information for the safe and effective use of the OMRON E3Z-D82-2M Photoelectric Sensor. It covers product overview, installation, operation, maintenance, and troubleshooting. Please read this manual thoroughly before using the product and keep it for future reference.

2. SAFETY INFORMATION

Always observe the following safety precautions to prevent injury to personnel or damage to the product.

- Ensure power is disconnected before performing any wiring or maintenance.
- Do not disassemble, repair, or modify the sensor.
- Use the product within its specified voltage and current ratings.
- Avoid installing the sensor in locations subject to excessive vibration, shock, dust, or corrosive gases.
- This product is designed for industrial applications. Do not use it for applications requiring strict safety standards without additional safety measures.

3. PRODUCT OVERVIEW

The OMRON E3Z-D82-2M is a compact diffuse reflective photoelectric sensor from the E3Z series, designed for reliable object detection in various industrial environments.



Figure 3.1: OMRON E3Z-D82-2M Photoelectric Sensor. This image shows the compact sensor head with its two lenses (emitter and receiver) and the attached 2-meter black cable, neatly coiled and secured with a blue tie. The cable ends are pre-wired with exposed copper strands for connection.

Key Features:

- **Sensing Distance:** 1 Meter
- **Power Supply:** 12-24 VDC
- **Cable Length:** 2 Meter (Pre-wired)
- **Amplifier:** Built-in
- **Sensing Method:** Diffuse Reflective
- **Light Source:** Infrared LED
- **Output Type:** PNP Output
- **Operation Mode:** Light-ON/Dark-ON selectable

4. SETUP AND INSTALLATION

4.1 Mounting

Mount the sensor securely using appropriate brackets and fasteners. Ensure the sensing surface is clean and unobstructed. For diffuse reflective sensors, consider the background material and color, as they can affect sensing stability. Position the sensor so that the target object passes within the 1-meter sensing range.

4.2 Wiring

The E3Z-D82-2M features a 2-meter pre-wired cable. Connect the wires according to the following standard PNP output configuration:

- **Brown Wire:** +V (12-24 VDC)
- **Blue Wire:** 0V (GND)
- **Black Wire:** Output (PNP)

Ensure all connections are secure and insulated to prevent short circuits. Verify the power supply voltage is within the specified 12-24 VDC range.

5. OPERATING INSTRUCTIONS

The E3Z-D82-2M sensor operates by emitting infrared light and detecting the reflection from a target object. Its built-in amplifier processes the signal to provide a stable output.

5.1 Light-ON / Dark-ON Operation

This sensor supports both Light-ON and Dark-ON operation modes. The specific mode is typically selected via a switch or wiring configuration on the sensor itself, or it may be a fixed setting for this model. Refer to the sensor's label or detailed datasheet for confirmation.

- **Light-ON (L.ON):** The output turns ON when light is received (i.e., when an object is detected within the sensing range).
- **Dark-ON (D.ON):** The output turns ON when light is NOT received (i.e., when an object is NOT detected, or when an object blocks the light path in through-beam or retro-reflective types, though this is a diffuse reflective sensor). For diffuse reflective, Dark-ON means the output is ON when no object is present to reflect light back.

Observe the indicator LED on the sensor (if present) to confirm detection status during operation.

6. MAINTENANCE

Regular maintenance ensures optimal performance and extends the lifespan of your sensor.

- **Cleaning:** Periodically clean the sensing surface with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Inspection:** Regularly check the cable for any signs of damage, fraying, or loose connections. Ensure the sensor is securely mounted and not subject to excessive vibration.
- **Environmental Check:** Verify that the operating environment remains within the specified temperature and humidity ranges.

7. TROUBLESHOOTING

If the sensor is not functioning as expected, refer to the following common issues and solutions:

Problem	Possible Cause	Solution
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Problem	Possible Cause	Solution
Sensor does not detect objects.	No power or incorrect wiring. Sensing surface is dirty or obstructed. Object is outside sensing range. Incorrect Light-ON/Dark-ON setting.	Check power supply and wiring connections. Clean the sensing surface. Adjust sensor position or object path. Verify or change the operation mode.
Unstable detection or false triggers.	Excessive ambient light interference. Vibration or mechanical instability. Reflective background or nearby objects. Dust or condensation on sensor lens.	Shield sensor from strong light sources. Securely mount the sensor to minimize vibration. Adjust sensor angle or use a non-reflective background. Clean the sensor lens.
Output always ON or always OFF.	Wiring error (e.g., short circuit). Sensor failure.	Recheck all wiring connections. If wiring is correct, the sensor may be faulty and require replacement.

If the problem persists after attempting these solutions, please contact Omron technical support.

8. SPECIFICATIONS

Parameter	Value
Model Number	E3Z-D82-2M
Sensing Distance	1 Meter
Power Supply Voltage	12-24 VDC
Cable Length	2 Meter
Amplifier	Built-in
Sensing Method	Diffuse Reflective
Light Source	Infrared LED
Output Type	PNP Output
Operation Mode	Light-ON/Dark-ON
Wiring	Pre-wired
Manufacturer	OMRON
Date First Available	July 17, 2019

9. WARRANTY AND SUPPORT

For information regarding product warranty, technical support, or service, please contact your local Omron representative or visit the official Omron website. Keep your purchase receipt for warranty claims.

Omron Official Website: www.omron.com

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