Sick UM30-213118

SICK UM30-213118 Ultrasonic Sensor User Manual

Model: UM30-213118

1. Introduction

This manual provides essential information for the safe and efficient installation, operation, and maintenance of the SICK UM30-213118 ultrasonic sensor. Please read this manual thoroughly before using the product to ensure proper function and to prevent damage or injury.

2. Safety Instructions

- **Qualified Personnel:** Installation, electrical connection, and commissioning must only be carried out by qualified personnel.
- **Power Disconnection:** Always disconnect power before performing any installation, wiring, or maintenance work on the sensor.
- **Environmental Conditions:** Ensure the sensor is operated within its specified environmental conditions (temperature, humidity, etc.) to prevent malfunction.
- **Proper Wiring:** Follow the wiring diagrams precisely. Incorrect wiring can damage the sensor or connected equipment.
- **Intended Use:** Use the sensor only for its intended purpose as a distance measurement device. Any other use is considered improper.

3. Product Overview

The SICK UM30-213118 is a high-performance ultrasonic sensor designed for non-contact distance measurement and object detection. It features both analog (0-10 VDC and 4-20 mA) and digital (PNP) outputs, making it versatile for various industrial applications. The sensor operates on a 9-30 VDC supply and connects via an M12 5-pin connector.

3.1 Key Features

- Measurement Range: 200 mm to 2000 mm

- Analog Output: 0-10 VDC and 4-20 mA
- Digital Output: 1 PNP switching output
- Supply Voltage: 9-30 VDC
- Connection: M12 5-pin connector
- Part Number: 6036923

3.2 Sensor Components

Figure 1: SICK UM30-213118 Ultrasonic Sensor. This image shows the cylindrical sensor body, the M12 connector at the rear, and the ultrasonic transducer face.

The sensor typically consists of a robust cylindrical housing, an ultrasonic transducer on the front face for emitting and receiving sound waves, and an M12 connector at the rear for power and signal connections. Indicators (e.g., LEDs) may also be present to show operational status or switching states.

4. Setup

4.1 Mounting

- Mount the sensor securely using appropriate mounting brackets.
- Ensure the transducer face is clear of obstructions and points directly at the target object.
- Avoid mounting the sensor in areas with strong air currents, extreme temperature fluctuations, or excessive acoustic noise, as these can affect performance.
- Maintain a minimum distance from other ultrasonic sensors or reflective surfaces to prevent interference.

4.2 Electrical Connection

The UM30-213118 sensor uses an M12 5-pin connector. Refer to the following pin assignment for correct wiring:

Pin	Color (M12)	Description
1	Brown	L+ (9-30 VDC)
2	White	Analog Output (0-10 VDC)
3	Blue	M (0 VDC)
4	Black	PNP Switching Output
5	Grey	Analog Output (4-20 mA)

Connect the sensor to a stable 9-30 VDC power supply. Ensure proper grounding.

4.3 Initial Configuration

The UM30-213118 typically features teach-in buttons or software configuration options for setting the switching points and analog output range. Refer to the detailed SICK product documentation for specific teach-in procedures for your application. The 200-2000 mm range can be adjusted to a smaller window if needed.

5. Operating

Once properly installed and configured, the sensor continuously emits ultrasonic pulses and measures the time it takes for the echo to return. This time-of-flight measurement is converted into a distance value.

5.1 Analog Output (0-10 VDC / 4-20 mA)

The analog output provides a continuous signal proportional to the measured distance. The 0-10 VDC output (Pin 2) will scale 0V to 10V across the configured measurement range. Similarly, the 4-20 mA output (Pin 5) will scale 4mA to 20mA across the configured range. These outputs are suitable for precise distance monitoring in control systems.

5.2 PNP Switching Output

The PNP switching output (Pin 4) activates when the detected object falls within a pre-defined switching window or reaches a specific switching point. This output is commonly used for presence detection or level control.

6. Maintenance

The SICK UM30-213118 sensor is designed for low maintenance. However, regular checks can ensure optimal performance and longevity.

- **Cleaning:** Keep the transducer face clean and free from dust, dirt, or moisture. Use a soft, damp cloth for cleaning. Do not use abrasive cleaners or solvents.
- **Inspection:** Periodically inspect the sensor housing, cable, and connector for any signs of damage, wear, or corrosion.
- **Mounting Check:** Ensure the sensor remains securely mounted and its alignment towards the target has not shifted.
- **Environmental Check:** Verify that the operating environment continues to meet the sensor's specifications.

7. Troubleshooting

If the sensor is not functioning as expected, consider the following troubleshooting steps:

- **No Output/Incorrect Reading:**
  - Check power supply voltage (9-30 VDC).
  - Verify wiring connections according to the M12 5-pin diagram.
  - Ensure the transducer face is clean and unobstructed.
  - Check for strong acoustic interference or air currents in the environment.
  - Confirm the target object is within the 200-2000 mm detection range and has sufficient acoustic reflectivity.
  - Re-perform the teach-in procedure if applicable.
- **Intermittent Readings:**
  - Check for loose connections or damaged cables.
  - Investigate environmental factors such as fluctuating temperatures or air turbulence.
  - Ensure the target surface is stable and not vibrating.
- **Sensor LED Indicators:** Consult the specific product datasheet for the meaning of any LED indicators on your sensor model, as they often provide diagnostic information.

If problems persist after following these steps, contact SICK technical support.

8. Specifications

Parameter	Value
Model Number	UM30-213118
Part Number	6036923
Measurement Range	200 mm - 2000 mm
Analog Output 1	0-10 VDC
Analog Output 2	4-20 mA
Digital Output	1 x PNP
Supply Voltage	9-30 VDC
Connection Type	M12 5-PIN
Item Weight	7 ounces
Manufacturer	SICK

9. Warranty and Support

SICK products are manufactured to high-quality standards and typically come with a manufacturer's warranty against defects in materials and workmanship. For specific warranty terms, duration, and conditions, please refer to the official SICK warranty statement or contact SICK directly.
For technical support, service, or further inquiries, please contact your local SICK representative or visit the official SICK website for contact information.