

RIVO MULTITRADE OPTICAL SYSTEMS

How to disassemble a fiber optic sensor



Overview

This Quick Start Guide accompanies a Fiber Optic Sensor Installation Kit that can be purchased from Luna (P/N: FOSAPPKIT).

Key Takeaways

Fiber optic sensors can be disassembled by carefully removing external housings, standoffs, and screws to access the internal fiber and electronic components, while taking precautions to avoid damaging delicate optical fibers. General Disassembly Steps

- **Power Down and Disconnect** Ensure the sensor is completely powered off and disconnected from any power supply or data lines to prevent electrical hazards and avoid damaging sensitive electronics.
- **Remove External Housing** Most fiber optic sensors, such as the Keyence FS-V1 series, have upper and lower shells secured with screws or snap-on connectors. Carefully remove these shells to expose the internal circuitry and fiber interfaces .
- **Identify and Remove Connectors** Fiber optic modules often use connectors to link multiple sub-modules. Disconnect these connectors gently to avoid bending or breaking the fiber cables .
- **Access the Circuit Board** After removing the housing, you may encounter shielding, such as copper foil, around the main control board. Remove this shielding carefully to reveal the main control chip, ADCs, and other electronic components .

- Remove Standoffs and Screws For devices like fiber optic gyroscopes (FOGs), remove standoffs and screws on the interface port and bottom of the sensor to lift the main board and access the fiber spool .

- Expose the Fiber Element Once the main board is removed, the fiber optic cable spool becomes visible. Handle the fiber with care, as it is extremely delicate and often coated with a protective gel or resin . Note the orientation and routing of the fiber, especially in gyroscopes where the fiber loops through phase modulators.

- Document and Inspect Components Take photos or notes during disassembly to ensure proper reassembly. Identify key components such as transmitting and receiving ports, photodiodes, LEDs, and couplers .

Safety and Handling Tips

- Avoid bending the fiber sharply, as this can break or degrade signal quality.

- Use anti-static precautions when handling circuit boards.

- Do not force connectors or screws, as fiber optic sensors are precision devices.

- Wear gloves to prevent contamination of optical surfaces.

Notes on Specific Sensors

- Keyence FS Series: Modular design allows multiple sensor modules to be combined. The main board contains ADCs and microcontrollers, often shielded with copper foil .

- Fiber Optic Gyroscopes (FOG): The fiber spool is integrated with couplers and phase modulators. Disassembly requires careful removal of the main board and protective covers to access the fiber loops .

- Optel-Texys Probes: Disassembly follows the reverse of mounting steps, as detailed in their instructional guides . By following these steps and precautions, fiber optic sensors can be safely disassembled for inspection, maintenance, or educational purposes without damaging the delicate optical and electronic components.

Article Content

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KEYENCE Fiber Optic Sensor Disassembly

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Presentation Focus The major focus of this presentation will be on distributive fiber optic sensors which has seen the greatest usage

Fiber-optic sensor

Fiber-optic sensor A fiber-optic sensor is a sensor that uses optical fiber either as the sensing element ("intrinsic sensors"), or as a

What is a fibre optic sensor? | Sensor Basics: Principle ...

Outline The fibre optic sensor has an optical fibre connected to a light source to allow for detection in tight spaces or where a small

How does a Fiber optic sensor work?

The fiber optic sensor works on the principle of total internal reflection. When light enters the core, it is guided along

Optical Fiber Sensors: An Overview

1. Introduction Fiber optic sensor technology has been under development for the past 40 years and has resulted in the production of

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