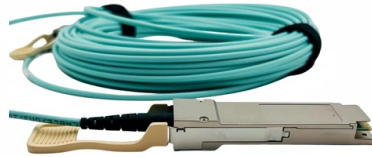


How to adjust a simple fiber optic sensor



AI Overview

Proper adjustment of fiber optic sensors involves calibration, sensitivity tuning, fiber alignment, and environmental optimization to ensure accurate and reliable detection.

Key Steps for Adjustment

1. Preliminary Setup Before installation, perform a bench calibration. Connect the sensor to a stable power supply (typically 10-30V DC) and verify the output type (NPN or PNP). Use a test target that closely matches the actual production material in size, color, and reflectivity to establish baseline settings .
2. Fiber Preparation and Alignment Ensure fiber ends are clean and properly aligned. Avoid over-tightening connectors, which can cause signal loss. For through-beam sensors, precisely align the emitter and receiver fibers, using a laser alignment tool if necessary .
3. Sensitivity Adjustment Start with the sensitivity set to its minimum threshold. Gradually increase it until the sensor reliably detects the target. For diffuse reflective sensors, place the target at the farthest expected distance and adjust until the output switches cleanly. Use an oscilloscope or multimeter to monitor the output signal during adjustment .
4. Calibration for Measurement Applications For sensors measuring strain, temperature, or pressure, calibration involves applying known inputs and recording the corresponding optical output (wavelength or intensity). Plot the output versus input to create a calibration curve or fit a mathematical model. Mechanical loading devices like load cells or hydraulic jacks can be used for controlled strain application .
5. Environmental Considerations Account for ambient light interference, background objects, and reflective surfaces. Fine-tune the sensor in its actual operating environment to prevent false triggering and ensure stable performance .
6. Dynamic and Continuous Adjustment For moving targets or variabl...

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2 Wh optical fiber to the launch end, and multi core optical fiber to the receiving end.

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Website: <https://ntmmgroup.co.za>

Email: sales@ntmmgroup.co.za

Phone: +27 82 471 2596

Address: Unit 7, Optic Park, 24 High-Tech Lane, Century City, Cape Town,
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