

How to adjust data in a fiber optic sensor



Overview

With simple operation, the current value is adjusted to "100.0" at the same time as when adjusting sensitivity.

Key Takeaways

Fiber optic sensor parameters can be adjusted by calibrating the sensor, setting sensitivity, and using preset or reference values to optimize detection accuracy.

Basic Adjustment Steps

Initial Setup and Inspection Begin by cleaning the sensor and fiber optic cables, ensuring there is no dust or damage that could affect light transmission. Mount the sensor securely in its intended position and connect it to the signal source and data acquisition system to verify functionality and stability. **Sensitivity Adjustment** Many sensors allow manual or automatic sensitivity adjustment.

For example, Keyence FS-N series sensors can be adjusted by pressing and holding the and buttons, selecting the "rSt" mode, and initializing the sensor. The sensitivity can then be fine-tuned to account for variations in light intensity due to dust, dirt, or environmental changes. Automatic sensitivity adjustment can also be performed while passing the workpiece through the sensor, which is useful for continuous line operations.

Preset and Reference Values Use the preset function to define reference points for detection. You can set arbitrary two points to "100. 0" and "0.

0" to calibrate the sensor against background or target conditions. This helps reduce variation due to individual sensor differences and improves repeatability. The zero-shift function can also be used to correct the current value to 0.

0, but it cannot be combined with the preset function.

Calibration for Measurement Accuracy

Mechanical or Thermal Loading For strain or temperature sensors, apply known mechanical strains or controlled temperature changes to the sensor. Record the sensor output (wavelength or intensity) corresponding to each applied input. This generates a calibration curve that relates sensor output to the physical parameter being measured.

Optical Loading Some fiber optic sensors can be calibrated using a tunable laser or wavelength meter to simulate changes in light intensity or wavelength without applying physical strain. This method is useful for remote or online calibration but may not fully reflect real-world conditions. **Validation** After calibration, compare the sensor output against known standards or specifications.

Ensure the sensor meets accuracy, precision, and stability requirements. Repeat adjustments if necessary to maintain reliable performance.

Advanced Considerations

Environmental Compensation: Adjust parameters to account for temperature fluctuations, vibration, or electromagnetic interference. **Multiplexing:** If multiple sensors are used on the same fiber, ensure each sensor is individually calibrated and sensitivity is optimized to prevent cross-talk. **Software Tools:** Use manufacturer-provided software to plot calibration curves, fit mathematical models, and store sensor settings for repeatable operation.

By following these steps—inspection, sensitivity adjustment, presetting reference values, calibration, and validation—you can effectively adjust fiber optic sensor parameters for accurate and reliable measurements in industrial or laboratory applications.

Article Content

FS-N Series Setting Guide 468GB

With simple operation, the current value is adjusted to "100.0" at the same time as when adjusting sensitivity. This can remove variation in detected contents or variation due to individual difference,

How to Calibrate Fiber Optic Sensors for Strain

Learn the basics of calibrating fiber optic sensors for strain measurement using different methods and tools in this article.

Fiber Optic Sensors: Fundamentals, Principles & Applications

Radiation absorption creates electronic excited states that are trapped by localized defects for extended periods of time. Heating the material enables the trapped states to interact with phonons and decay

Fiber optic sensor User Guide | Manualzz

This user guide provides instructions on how to zero and calibrate the Fiber optic sensor. It also includes a troubleshooting guide.

Fiber Optic Sensors: Types, Working Principle & Applications

A fiber optic sensor measures a physical quantity by modulating the intensity, spectrum, phase, or polarization of light traveling through the optical fiber system.

Fiber Sensors

When a sensing object passing between the emitter and receiver fibers interrupts the emitted light, it reduces the amount of light that enters the receiver. This reduction in light intensity is used to detect

CHAPTER 09 FIBER OPTIC SENSORS

CHAPTER 09 FIBER OPTIC SENSORS INTRODUCTION: After the invention of LASER in 1960 a new branch in fiber optics developed in parallel with the communication which is also a well known and

Optical Fiber Sensing

Optical fiber sensing refers to the use of optical fibers to measure various parameters such as temperature, strain, and pressure by detecting changes either in the properties of the optical fiber

Fiber Optic Sensor : Types, Working, Interfacing & Its Applications

At the remote place, several sensors can be simply multiplexed along the length of fiber by using light wavelength shift for every sensor, otherwise by sensing the delay of time when light

Fiber-optic sensor

Optical fibers can be used as sensors to measure strain, temperature, pressure and other quantities by modifying a fiber so that the quantity to be measured modulates the intensity, phase, polarization,

Fibre Optic Cable | Fibre Cable | RS

Fibre optic cable, also known as "optical fibre cable" is a technology that uses thin strands of glass or plastic to transmit data, including text, sound, and images, in the form of light pulses.

Optics, Lasers, Imaging | News, Products, Events

Photonics Spectra is a global photonics resource and magazine with news, products, research, and applications covering optics, lasers, imaging, and sensing.

DTSX1 Fiber Optic Heat Detector | Yokogawa Electric Corporation

DTSX1 fiber optic heat detector stores the functions required for heat detection in one box. DTSX1 analyzes the temperature data with high accuracy by measuring with fiber optic sensor cable and

How to Adjust

How to Adjust - Set up Keyence Fibre Optic Teach Sensor on JDA Filling & Capping Machines For sales inquiries or questions about our machinery please contact our office.

OPTICAL FIBER COMMUNICATION

Yasin OUTLINE Introduction about Optical Fibers. Main Characteristics of Fiber Optics Communication System. Light propagation in an Optical Fiber. Mode Analysis for Single Mode Fiber. Mode Analysis

Digital Fiber Optic Sensor/Amplifier Wiring and Setting

Fiber optic sensor has a digital LED display and 3-wires out lines. Digital fiber optic sensor is used for detection, counting and position control in the occasions with high accuracy requirement ...

Optical Fiber Sensors: Working Principle, Applications,

Brief theory of sensing principle, fabrication method, applications, advantages and disadvantages of the different fiber-optic sensors, are

How to Setup Fiber Optic Sensor?

Optical fiber can be easily integrated in space limited places to solve the problem of difficult signal collection; Fiber optic sensor can process signals with high

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