

RIVO MULTITRADE OPTICAL SYSTEMS

Settings for a Through-beam Matrix Fiber Optic Sensor



Overview

Unlike fiber optics with a single, point-shaped light beam, array fiber optics generate a broad, linear light band.

Key Takeaways

Proper setup of a through-beam fiber optic sensor involves precise alignment of the emitter and receiver, adjustment of sensitivity or excess gain, and consideration of environmental factors to ensure reliable detection. Sensor Alignment and Installation

Through-beam fiber optic sensors consist of a light-emitting fiber and a receiving fiber, often connected to a fiber amplifier unit (). The emitter sends a light beam to the receiver, and detection occurs when an object interrupts the beam (). For optimal performance:

- Align the emitter and receiver carefully to ensure the beam is centered on the receiver lens. Misalignment can reduce detection reliability.
- Mount the fibers securely using brackets or holders to prevent vibration or movement from affecting the beam path ().



- Select the appropriate fiber type (plastic or glass) and length based on the detection distance and environmental conditions ().

Sensitivity and Excess Gain

- Adjust the amplifier unit to set the sensor's sensitivity. Many fiber optic sensors allow fine-tuning of excess gain, which is the margin of light intensity above the minimum required for detection ().
- Higher excess gain improves tolerance to dust, moisture, or debris but may increase false triggers if the beam is too sensitive.
- Lower excess gain reduces false positives but may require cleaner environments or more precise alignment.

Environmental Considerations

- Fiber optic sensors are highly resistant to temperature, vibration, and electrical noise, but the sensing section should be protected from direct impact or contamination ().
- For narrow or confined spaces, use small-diameter fiber units to fit the sensing area without obstructing the beam ().
- Avoid placing reflective surfaces directly in the beam path unless using reflective mode sensors.

Calibration and Testing

- Perform a one-time calibration or “teach” procedure if supported by the amplifier unit to set the detection threshold automatically ().
- Test the sensor with the actual target objects to ensure reliable detection under real operating conditions.
- For matrix or multi-beam configurations, verify that all beams are properly aligned and that the sensor can detect objects of varying sizes across the entire detection area ().

Practical Tips

- Use fork or L-shaped self-contained thru-beam sensors for applications with high vibration or impact, as they reduce setup complexity and improve robustness ().
- Regularly inspect the fiber ends for dirt or damage, as even minor contamination can affect detection accuracy.
- Consider interchangeable lenses or fiber tips to adjust the beam diameter for small or irregularly shaped targets (). By following these alignment, sensitivity, and environmental guidelines, a through-beam matrix fiber optic sensor can achieve high accuracy, fast response, and reliable operation in industrial applications.

Article Content

FUWEI FWT32-130ML-120 Through Beam Area Matrix Fiber Optic

Comprehensive instruction manual for the FUWEI FWT32-130ML-120 Through Beam Area Matrix Fiber Optic Sensor, including

Thru-Beam/Opposed Mode Sensors | TRI-TRONICS

Set-up and configuration at the push of a single button. Configurable lens or fiber-optic modes. Ultra-low-power design features a

P137D599R5 i-Drive Tray Array (Fiber Optic)

The installation instructions will guide you through this product's options and possibilities. Instructions are written with the expressed

Fiber optic sensors and fiber optics | Baumer USA

Unlike fiber optics with a single, point-shaped light beam, array fiber optics generate a broad, linear light band. Depending on the

Fiber optic through beam sensor

For installation with limited mounting space Operation as through-beam sensor Very long range For cutting to size Small bending radius

Photoelectric Through Beam with Fiber-Optics

Challenge: Photoelectric sensors are often used with fiber-optic cables in the through-beam/opposed mode. While there are

THE SELF-CONTAINED THRU-BEAM SENSOR

As a result, self-contained thru-beam sensor designs are superior to traditional thru-beam and more complex fiber optic multipiece

Through Beam Fiber Optic Proximity Sensors | GlobalSpec

Beam Type: Infrared Fibre Optic Sensors -- 1780218 [E32-TC200E 2M from OMRON Automation and Safety] from RS Components,

Through-Beam Matrix Fiber Optic Sensor | Bags Etc, Inc.

Through-Beam Matrix Fiber Optic Sensor Sensing Type: Through Beam Width: 1.73" Thickness: 0.23" Height: 0.74"

Fiber optic through beam sensor

For installation with limited mounting space Operation as through-beam sensor With 90° deflection of the light beam for use where

Omron E32-T16WR Fiber Optic Sensor | Features & Guide

The Omron E32-T16WR is a fiber optic through-beam sensor unit designed to deliver highly accurate object detection

How to Specify Fiber-Optic Sensors | FleetOwner

Through-beam fiber-optic cables are two separate, identical cables that are connected to the amplifier, each with their own optical

Through Beam Rectangular Fiber Optic Sensor

High-quality through beam rectangular fiber optic sensors offer a wide range of detection ranges of 10mm, 15mm, and 20mm for

Fiber optic sensors and fiber optics | Baumer USA

A fiber optic sensor and two fiber optics made of plastic or glass fibers make up a fiber optic system. The sensor contains a light

KEYENCE FIBER OPTIC SENSORS | KEYENCE America

Industry Leader KEYENCE fiber optic sensors became the industry standard because of their high performance and how easy they

Overview of Photoelectric Sensors | OMRON Industrial Automation

Photoelectric Sensors detect photo-optical workpieces. OMRON provides many varieties of Sensor, including diffuse-reflective,

Fiber Optic Sensor & Amplifier | ATO

This through beam fiber optic sensor has high performance and professional design, thread size M3, M4, M6 optional, fiber length 1M

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

