Fiber Optic Through-Beam Matrix Sensor

Article Overview

A fiber optic through-beam matrix sensor is a photoelectric sensor system that uses optical fibers to transmit a light beam from an emitter to a receiver, detecting objects or changes in position with high precision.

Overview

A fiber optic through-beam matrix sensor combines the principles of fiber optic sensing with the through-beam (opposed mode) configuration. In this setup, a light source emits a beam through optical fibers across a detection area to a receiver. When an object interrupts or modifies the light beam, the sensor detects the change and converts it into an electronic signal for processing .

Structure and Operation

o Emitter and Receiver: The system has separate transmitter and receiver units connected via optical fibers. The fibers guide light efficiently, even in tight or complex spaces .
o Matrix Configuration: Multiple fibers can be arranged in a grid or matrix, allowing the sensor to detect the presence, position, or size of objects across a larger area. This is particularly useful for detecting small parts or verifying alignment on production lines .
o Light Modulation: The sensor measures changes in light intensity, phase, or polarization caused by objects interrupting the beam. High-precision versions can detect variations as small as 0.03 mm .
o Fiber Types: Plastic fibers are flexible and cost-effective, while glass fibers allow high-temperature operation and higher precision .

Advantages

o High Accuracy: The small effective beam diameter allows detection of very small targets or subtle variations .
o Robustness: Fiber optics are resistant to electromagnetic interference and can operate in harsh industrial environments .
o Flexibility: The matrix arrangement enables coverage of wide areas or complex geometries without bulky sensor heads .
o Reliability: Excess gain in the design ensures tolerance to dirt, moisture, and debris, maintaining consistent performance .

Applications

o Parts Sensing: Detecting small components on conveyor belts or assembly lines .
o Quality Verification: Measuring dimensions, verifying positions, or monitoring tool breakage .

o Counting and Sorting: Automated counting of items or verification of feed in assembly equipment .
o Harsh Environments: Ideal for areas with vibration, dust, or moisture where conventional sensors may fail .
In summary, a fiber optic through-beam matrix sensor is a versatile, high-precision optical sensor system that leverages fiber optics and through-beam technology to detect objects, measure dimensions, and monitor production processes efficiently, even in challenging industrial environments .

Fiber optic through beam sensor E20493 FE-00-M-V-R3 For applications in high-temperature areas Metal silicone sheathing for use

Fiber optic through beam sensor E21317 FE-11-EPV-O6/F1x1/2m For installation with limited mounting space Operation as through

Discover how thru beam fibre optic sensors detect objects by blocking a light beam between emitter and receiver. Ideal for precise,

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

The optics made of temperature-resistant glass are resistant to radiant heat. For higher ambient

The ipf plastic fiber optic systems consist of a flexible pla-stic fiber with a sensing head and an optoelectronic fiber optic amplifier.

Panasonic Industrial Automation FT Thru-Beam Type Fiber Optic Sensors feature tough, high-quality fiber and a

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

Hier sollte eine Beschreibung angezeigt werden, diese Seite lässt dies jedoch nicht zu.

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

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

Engineered for seamless integration, this sensor is fully compatible with all standard fiber optic amplifiers, including both conventional

Fiber Optic Through-Beam Matrix Sensor

Through-beam sensors from Balluff serve to detect objects reliably, regardless of surface, color, material -

This through beam fiber optic sensor has high performance and professional design, thread size M3, M4,

Through-beam Fiber Optic Sensor With high precision, superior sensitivity, and excellent environmental adaptability, this sensor

Through-Beam Type Sensors from KEYENCE, SICK & OMRON. High-precision detection.

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