

Function of Through-beam Fiber Optic Sensors



Article Overview

Through-beam fiber optic sensors detect objects by transmitting a light beam from an emitter to a separate receiver, triggering detection when the beam is interrupted, and are widely used in high-precision industrial applications.

Working Principle

Through-beam fiber optic sensors consist of two main components: an emitter and a receiver, housed separately. The emitter sends a continuous light beam to the receiver. When an object passes between the emitter and receiver, it interrupts the light beam, signaling the presence of the object. This configuration allows for long sensing distances and high detection reliability, although precise alignment of the emitter and receiver is required for optimal performance. In fiber optic implementations, the light is transmitted through optical fibers, which can be configured in arrays for multi-point detection. The fibers guide the light to and from the sensing area, allowing detection of very small objects, sometimes as small as 0.04 mm, over a measurement range of 6 mm to 120 mm. The use of fiber optics also enables operation in harsh environments, including areas with high vibration, moisture, or chemical exposure, because the sensing heads contain no electronic components.

Advantages

- High precision and sensitivity for detecting small or fast-moving objects....

Article Content

Feb 16, 2026

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

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Through-Beam Sensor Overview | PDF | Optics | Sensor

The document discusses through-beam photoelectric sensors, including their principle of operation using a light transmitter and

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Omron E32-T16WR Fiber Optic Sensor | Features & Guide

When an object interrupts the beam between them, the sensor triggers detection. This method is known for its

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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

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Thru-Beam/Opposed Mode Sensors | TRI-TRONICS

Self-contained, easy-to-use sensors available in a wide variety of sensing models (thru-beam, retroreflective, proximity and fiber

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Through-beam sensors | Balluff

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

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10.083-97_Photo1

Fiber-optic waveguides These extend the range of possible applications of photoelectric fiber sensors with important additional fi

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fiber optic through-beam and dif. reflection sensors

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

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Threaded Through-Beam Fiber Units | M3, M4, M6 Fiber Sensors

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

Nov 17, 2025

Overview of Photoelectric Sensors | OMRON Industrial Automation

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

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What Are Through-Beam Photoelectric Sensors? | Working Principle

Learn what through-beam photoelectric sensors are and how they work. Discover their key advantages, common uses, and benefits

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What Is a Photoelectric Sensor? | Types & Working Principle

Explore how photoelectric sensors detect objects using light. Learn about the different types—through-beam, retroreflective, and

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How Through-Beam Photoelectric Sensors Work: A Technical

Learn how through-beam photoelectric sensors operate with a separate emitter and receiver. This article covers

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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

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Overview of Photoelectric Sensors | OMRON Industrial Automation

The incredibly high resolution achieved with these Sensors derives from advanced design technologies that yielded a very small spot

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Through beam fiber-F& C sensors

Through beam fiber 1. The amplifier is equipped with optical fiber, which can detect the presence or absence of opaque or

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FIBER OPTIC SENSOR GUIDE

Sensing type Select a fiber optic unit in consideration of the installation environment. Through-beam type,

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Array Through-beam Fiber Optic Sensor

Array Through-beam Fiber Optic Sensor This Array Fiber optical sensor is ideal for a wide range of industries, including electronics

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Thru-Beam/Opposed Mode Sensors | TRI-TRONICS

Solves thru-beam sensing tasks where the material is dense for container contents sensing, where the lens is subject to

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Understanding Fiber Optic's Role in Photoelectric Sensing

Photoelectric sensors and fiber optic sensors are very similar in a lot of ways, but which one is superior in function

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Through-beam Fiber Optic Sensor

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

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Through Beam Fiber Optic Proximity Sensors | GlobalSpec

Fiber optic through beam sensor -- E20059 from ifm efector inc. For installation with limited mounting space. Operation as through

May 29, 2026

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 multi-piece

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Through Beam Fiber Optic Sensor, M3/M4/M6

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

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Function of Through-beam Fiber Optic Sensors

Solves thru-beam sensing tasks where the material is dense for container contents sensing, where the lens is subject to

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Through Beam Fiber Optic Sensors - Mouser

Through Beam Fiber Optic Sensors are available at Mouser Electronics. Mouser offers inventory, pricing, & datasheets for Through

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Through-Beam Fiber Optic Sensors

Fiber optic sensors detect the presence of objects using highly focused light transmitted through a fiber optic cable and detected with

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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

Sep 30, 2025

Fiber optic through beam sensor

All information about the E20827 at a glance. We assist you with your requirements. Technical data Mounting and Installation

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Fiber Sensors

These Sensors operate on the principle that an object interrupts or reflects light, so they are not limited like Proximity Sensors to

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Functionality and technology of photoelectric sensors

A through-beam sensor consists of two separate components: an emitter, which produces a continuous light beam, and a receiver,

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FT Thru-Beam Type Fiber Optic Sensors

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

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What Are Through-Beam Photoelectric Sensors? | Working Principle

Through-beam photoelectric sensors work by having a separate emitter and receiver. The emitter sends a light beam, and the

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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

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Fiber Sensors

Detection Principles Optical fiber is comprised of a central core with a high refractive index surrounded by cladding with a low

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How to Specify Fiber Optic Sensors |Library tomationDirect

Fiber optic sensors, sometimes called fiber photoelectric sensors, include two devices which are typically specified

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