

How to Select a Fiber Optic Through-Beam Sensor



AI Overview

Fiber optic through-beam sensors are ideal for detecting objects in narrow, harsh, or space-constrained environments, offering high-speed, non-contact detection with flexible installation options.

Working Principle Fiber optic through-beam sensors consist of two main components: a fiber amplifier unit and fiber optic cables or sensor heads. The amplifier contains the electronics and light source, while the fiber cables transmit and receive light. Detection occurs when an object interrupts the light beam between the transmitter and receiver, triggering an output signal. Because the sensing heads contain no electronics, they are suitable for tight spaces, high vibration, and harsh environmental conditions ().

Key Selection Criteria

Detection Method Through-beam: Emitter and receiver face each other; ideal for long-range, high-speed detection, and transparent or bright objects (). Reflective/Retro-reflective: Light reflects off a target or reflector; suitable for simpler setups but may be affected by surface properties.

Light Source Commonly LED (red or infrared) or laser. LED models balance cost and performance, while lasers provide precise alignment and long-range detection ().

Response Time Standard models: 1–5 ms; high-speed models: 0.5 ms or faster, suitable for production lines exceeding 1,200 parts per minute ().

Environmental Protection IP65: Dustproof, low-pressure water resistance. IP67: Short-term immersion. IP68/IP69K: High-pressure washdown, essential for food, beverage, and pharmaceutical industries ().

Output Type Many sensors offer selectable NPN/PNP outputs, providing flexibility without multiple variants ().

Installation Flexibility Fiber optic cables can be bent and routed, allowing detection in space-constrained or hard-to-reach areas. The amplifier can be installed remotely from the sensing head ().

Practical Applications Manufacturing & Assembly Lines: Detect presence/absence o...

Article Content

Fiber Optic Sensors | KEYENCE America

Learn all about various sensors—including fiber optic sensors, photoelectric sensors, laser sensors, and contact sensors—with detailed information on measurement principles and applications.

Through Beam Fiber Optic Sensor, M3/M4/M6

This through beam fiber optic sensor has high performance and professional design, thread size M3, M4, M6 optional, fiber length 1M and 2M to adapt to a variety of

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 manufacturing, packaging inspection, automotive production,

What is a Fiber Optic Sensor?

A fiber optic sensor operates with an optical fiber cable connected to a dedicated light source. These sensors offer great mounting flexibility and can be used in

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 a light sensor. Due to the light's tight focus, they can detect subtle or

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 numerous advantages/trade-offs associated with the through-beam mode, the

FIBER OPTIC SENSOR GUIDE

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

Thru-Beam/Opposed Mode Sensors | TRI-TRONICS

AC/DC Sensor with Timer, Relay, or Triac Output Self-contained, easy-to-use sensors available in a wide variety of sensing models (thru-beam, retroreflective,

Fiber optic through beam sensor

All information about the E20752 at a glance. We assist you with your requirements. Technical data Mounting and Installation Instructions CAD drawings Compatible Accessories.

Through-Beam

Through-beam photoelectric sensors consist of an emitter and a receiver in separate housings. The emitter sends a beam of light to the receiver, which determines a

Through-Beam Type Sensors

Conclusion Trough-beam type sensors are an essential component in modern industrial automation, offering precise and reliable object detection

Fiber Optic Proximity Sensors Selection Guide: Types, Features ...

When searching for fiber optic proximity sensors, sensing performance and optical configuration are the most important parameters to consider. Other considerations include cable material, emitted beam,

Fiber optic sensors and fiber optics | Baumer India

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 source (transmitter), typically an

Thru-Beam Sensors

Through-beam sensing is the most efficient sensing mode which results in the longest sensing ranges and highest excess gain. This high gain enables through-beam sensors to be reliably used in foggy,

From Diffuse to Through-Beam: Understanding Photoelectric Sensor

From Diffuse to Through-Beam: Understanding Photoelectric Sensor Types Explore the strengths of each photoelectric sensor type to choose the right one for your automation needs.

How to Specify Fiber Optic Sensors |Library tomatonDirect

Sensing range for fiber optics is impacted by the amplifier, fiber cable length and type of optical head. Due to these many factors, it is usually difficult to determine an exact working range,

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 and durability, and under what

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

Omron E32-T16WR Fiber Optic Sensor | Features & Guide

Examine the Omron E32-T16WR fiber optic through-beam sensor. Learn its specs, features, amplifier options, and applications in this detailed

Fiber optic through beam sensor

Fiber optic through beam sensor E20703 FE-11-EPV-M4/F1X1/2M For installation with limited mounting space Operation as through-beam sensor Long range For

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. The principle of operation is similar to a through-beam sensor or

Specifying Fiber Optic Sensors

The fiber optic cable can include the emitter and receiver in one optical sensor head, a configuration often used with diffuse and reflective

Fiber Optic Through Beam Sensor: Real-World Performance

Fiber optic through beam sensors offer reliable detection of small transparent objects in industrial settings, outperforming traditional sensors. This blog explains their operation, setup, thread size

5 Expert Tips for Through-beam Photoelectric Sensors: Selection,

This article explains in detail the working principle of through-beam photoelectric sensors, their comparison with other types, key selection parameters, wiring methods, and practical

FIBER OPTIC SENSOR GUIDE

The cables near the insertion part of the fiber optic amplifier and the hood of the unit have a high possibility will be broken. Do not bend the cable within the length of 20 mm or more like

Through-Beam Photoelectric Sensors: Principles, Applications, and ...

This guide covers their advantages for long-range, reliable object detection, key use cases, installation tips, and how to select the right sensor for demanding environments like

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