

Article Overview

Fiber optic through-beam sensors use separate emitter and receiver fiber heads connected to an amplifier, allowing detection in tight or harsh environments while keeping the electronics remote.

Basic Components and Wiring

A fiber optic through-beam sensor consists of three main components:

- o Fiber Amplifier Unit - Contains the light source, signal processing electronics, and output circuitry.
- o Emitter Fiber Head - Transmits light from the amplifier to the target area.
- o Receiver Fiber Head - Collects the transmitted light and sends the signal back to the amplifier for detection.

Wiring Steps:

- o Connect the amplifier unit to the power supply according to the manufacturer's specifications (typically 12-24 VDC).
- o Attach the emitter fiber to the amplifier's output port and the receiver fiber to the input port.
- o Route the fiber cables to the sensing location, ensuring they are not bent beyond the minimum bend radius to avoid signal loss.
- o Align the emitter and receiver fibers so that the light beam passes directly from the emitter to the receiver.
- o Connect the amplifier's output terminals to the control system (PLC, relay, or other devices) to receive the detection signal.

Installation Considerations

- o Tight Spaces: Fiber heads can be installed in confined areas where the amplifier cannot fit, making them ideal for compact machinery or narrow detection points ().
- o Harsh Environments: Since the fiber heads contain no electronics, they are resistant to heat, water, vibration, and electrical noise ().
- o Alignment: Use visible light fiber heads if possible to simplify alignment. The beam should be unobstructed for accurate detection.
- o Aperture Selection: For small parts, select fiber heads with smaller apertures to improve detection precision. If the target is very small and the span distance is large, you may combine a standard aperture fiber on one side with a smaller aperture fiber on the other to maintain range and accuracy ().

Operational Tips

- o Ensure the amplifier is mounted in a location with easy access for adjustments and maintenance.
- o Avoid sharp bends or kinks in the fiber cables to prevent signal attenuation.

Wiring Method for Fiber Optic Through-beam Sensor

- o Test the sensor with the actual target to verify detection reliability and adjust the amplifier sensitivity as needed.
- o For long-range detection, consider high-output fiber amplifiers or fibers with larger apertures to maximize received light intensity (). By following these wiring and installation guidelines, fiber optic through-beam sensors can provide fast, non-contact detection in challenging industrial environments while keeping the sensitive electronics safely away from the sensing point.

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

? The installation method for the fiber optic units may vary depending on the fiber optic amplifiers. Be sure to refer to the

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

Learn the wiring diagram and circuit principles of through-beam photoelectric sensors. This technical guide covers

Our thru-beam fiber optic sensor cable can detect an object with a minimum size of 30 mm. This 2M array

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

In conclusion, gaining a clear understanding of Through Beam Photoelectric Sensor wiring diagrams is important for

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

When a small part needs to be sensed, and the application requires a large span, the combination of one Tri-Tronics fiber-optic with

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

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

Wiring Method for Fiber Optic Through-beam Sensor

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

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

The sensing section of a Fiber Unit has no electric circuits. This makes it highly reliable even under severe environmental conditions,

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

This article explains in detail the working principle of through-beam photoelectric sensors, their comparison with other

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