

M4 fiber optic sensor sensing distance



AI Overview

The M4 fiber optic sensor system supports sensing distances that depend on the type of fiber optic head used, typically ranging from a few millimeters to several meters in through-beam configurations.

Overview of the M4 Interrogator

The M4 optical interrogator is a commercial-grade device designed to monitor up to 30 Fiber Bragg Grating (FBG) sensors per channel across four channels, suitable for both static and dynamic measurements. It operates in full spectrum or sensor peak detection modes and is compatible with a wide range of FBG-based sensors, including narrow bandwidth (100 pm) and wide bandwidth (3.0 nm) sensors. The system is optimized for high repeatability (± 2 pm), accuracy (± 10 pm), and a dynamic range of 25 dB, ensuring reliable detection even with optical power losses up to 20 dB per channel.

Sensing Distance Factors

The sensing distance of an M4 fiber optic sensor depends primarily on the type of fiber head and configuration:

- Through-beam fiber units:** These sensors detect objects by blocking a light beam between an emitter and a receiver. They are ideal for precise, noise-immune sensing and can achieve distances from a few millimeters up to several meters, depending on the fiber type and optical power.
- Reflective fiber heads:** Sensing distance is influenced by the reflectivity of the target surface. For example, Omron E32 series reflective heads can detect glossy white paper at distances up to 2 meters in standard configurations.

Fiber flexibility and installation: Highly flexible fibers with a minimum bending radius of 1 mm allow installation in tight or contoured spaces without significantly affecting sensing performance.

Practical Considerations

- Target characteristics:** The size, color, and reflectivity of the object affect the maximum sensing distance. Highly reflective or glossy surfaces allow longer detection ranges, while transparent or dark objects may reduce effective distance.
- Environmental conditions:** Dust, vibration, and ambient light can influence the effective sensing range. Using through-beam configurations...

Article Content

Optical sensors

Optical sensors - special tools for industry Optical sensors are devices that use light to detect the presence of an object, in addition to detecting its shape, color,

Sensores de Fibra Óptica Omron

Sensores de Fibra Óptica Omron — Fibras ópticas Omron E32 e amplificadores E3X para detecção de precisão em espaços reduzidos. São 119 part numbers com descrição técnica; solicite cotação de

Optical Fiber: plastic, M4 head, 70mm range (PN

OPT2061 Wenglor optical fiber, plastic, cuttable, diffuse, parallel fibers, M4 head, stainless steel, 90-degree, polyethylene jacket, 70mm sensing distance, 2m length.

Panasonic Industrial Automation FD-G500 Sensor,Fiber

Sensors Sensor Accessories Panasonic Industrial Automation FD-G500 Sensor,Fiber,Reflective,High Precision,M4 Coaxial,500 mm Cable Length,Lens Mount

E32 T14I Omron Standard Head Fiber Sensor, E32-DC200,E32

Ishu Enterprises - Offering E32 T14I Omron Standard Head Fiber Sensor, E32-DC200,E32-T11N,E32-T14LR,E32-T16, Omron Photoelectric Switch at ₹ 1100/piece in New Delhi, Delhi.

E32-D21L 2M | OMRON, Europe

E32-D21L 2M Fiber optic sensor head, diffuse, long distance detection, M4

E32 Longer distance | OMRON, Europe

Features Enhanced sensing distance Light emission of conventional fibers. With built-in focal lenses, longer sensing distances can be achieved up to 5 times

DTSX3000 Distributed Temperature Sensor

What Is Distributed Temperature Sensing? Distributed temperature sensing (DTS) measures temperature distribution over the length of an optical fiber cable using

Understanding M4 Fiber Optic Proximity Sensors: Principles ...

In the realm of industrial automation and precision sensing, fiber optic proximity sensors, particularly the M4 threaded variant, have emerged as indispensable tools for detecting objects in challenging

E32 Longer distance | OMRON, Europe

With built-in focal lenses, longer sensing distances can be achieved up to 5 times longer compared to conventional sensors.

Omron Automation E32-T11R Fiber Optic Sensing

Highly flexible fibers with minimum 1 mm bending radius allows cables to conform to machine contours. Extensive selection of fiber-optic sensing heads offer many

Fiber Optic Sensor 0.8mm Fine Needle Convex Tube Probe M3/M4

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M4 Proximity Sensor Sensing Distance Explained

Explore the sensing distance of M4 proximity sensors, covering rated distance (S_n), factors like target material and temperature, and the critical assured operating distance (S_a) for

E32 Standard cylindrical | OMRON, Europe

E32 Standard cylindrical Standard cylindrical fiber sensor heads The standard cylindrical fiber optic sensing heads provide reliable object detection, easy

Understanding M4 Fiber Optic Proximity Sensors: Principles ...

Explore the functionality and benefits of M4 threaded fiber optic proximity sensors. Learn about their operating principles, advantages over traditional sensors, diverse industrial applications, and key

FR4Y10 Fiber Optic Sensor, Diffuse Reflective Digital Fiber ...

FR4Y10 Fiber Optic Sensor, Diffuse Reflective Digital Fiber Optic, 1000mm Line Length, M4 Probe Sensor, Detection Distance 0-60MM Visit the BOJKEON Store FREE Returns

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E3X-NA11 Optical Fiber Amplifier, Optical Fiber

It belongs to sensor type components, high sensitivity, low delay. Specially suitable for relay amplification for long-distance optical communications. Specification:

Through Hole Fibre Optic Sensors – Mouser Singapore

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

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Optical Fiber Sensors and Sensing Networks: Overview

Optical fiber sensors present several advantages in relation to other types of sensors. These advantages are essentially related to the optical fiber

FU-55 Long Distance Detection Through-beam Fiber Optic Sensor

FU-55 Long Distance Detection Through-beam Fiber Optic Sensor 1500mm Range M4 Threaded 2m Free-cut Industrial Automation

Diffuse Reflective Fiber Optical Sensor, M3/M4/M6

Upgrade your automated inspection system with a high-precision diffuse reflective fiber optic sensor! This fiber optic transducer supports a wide range of thread

FUE 200C1004 | Fiber optic | Baumer India

Fiber optic FUE 200C1004 Article no.: 10123457 Plastic fiber optic cable Diffuse type Sensing distance up to 178 mm Threaded sensing head M4 Plastic fiber 200 cm

Fiber Optic Sensor Probe Reflection 1-2M Cable coaxial Non-coaxial

Minimum sensing distance: 0-0.1mm Standard target: white card reflectivity 90% Residual voltage: DC1V Supply voltage: 10-30 VDC 3-wire Response frequency: 600Hz Protection

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

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Fiber Optic Sensor with M4 Thread, 0 to 3600mm Distance ...

Precise Long-Range Detection: This fiber optic sensor delivers accurate distance measurement from 0 to 3600mm, making it ideal for applications requiring high detection precision in tight or complex

Contact Us

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