ZITHA TECH SPECIALTY CABLES (Pty) Ltd

Fiber optic sensor with thin fiber optic head



Overview

A wide variety of head types and cable types allow flexible adaptation to diverse detection environments and installation conditions.

Key Takeaways

Thin fiber optic sensor heads enable precise detection in tight spaces and harsh environments, offering flexibility in installation and high sensitivity for small or minute objects.Overview

Fiber optic sensors consist of two main components: the amplifier, which contains the light source and processing electronics, and the fiber optic head, which transmits and receives light for detection purposes. Thin or compact fiber optic heads are designed to fit into narrow spaces, detect small or minute objects, and operate in environments where conventional sensors may not be suitable .

Key Features of Thin Fiber Optic Heads
• Compact Size: Ultra-small diameters and thin rectangular shapes allow installation in confined areas and precise centering for accurate detection .

• Versatile Sensing Methods: Available in thru-beam, reflective, retro-reflective, and definite reflective types to suit different target shapes and materials .

• High Environmental Resistance: Many heads are resistant to high temperatures (-60 to +350°C / -76 to +662°F), chemicals, and mechanical stress, making them suitable for harsh industrial conditions .

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• Flexible Materials: Fiber sheaths and cases can be made from PFA, stainless steel, or flexible polymers, providing chemical resistance and durability .

• Precision Detection: Combining the fiber with a spot lens enhances the ability to detect very small or transparent objects .

• Customizable Options: Fiber lengths, sleeve lengths, and head shapes (threaded, cylindrical, flat, L-shaped, U-shaped, area detection) can be tailored to specific applications .

Applications

Thin fiber optic heads are ideal for:

• Detecting minute parts in assembly lines or electronics manufacturing .

• Installation in tight or narrow spaces where conventional sensors cannot fit .

• Environments with extreme temperatures, chemical exposure, or high vibration .

• Sensing transparent or irregularly shaped objects using specialized reflective heads .

Integration and Use

These fiber heads are typically connected to a fiber optic sensor amplifier, which handles signal processing and output. Many modern systems feature OLED displays, integrated status indicators, and reduced wiring options, simplifying setup and monitoring . Some models also allow remote teaching and PLC integration for automated adjustments .

Examples of Products

• Panasonic FT-KV40H1: Thru-beam type for indefinite shapes or positions.

• Panasonic FD-L13H1: Reflective type optimized for transparent objects.

• Autonics Fiber Units: Multiple head types including flat, L-shaped, U-shaped, and area detection with flexible or heat-resistant cables .

• Keyence FU Series: Offers high environmental resistance and various head options for difficult targets . Thin fiber optic heads provide a highly adaptable, precise, and durable solution for industrial sensing applications where space, object size, or environmental conditions are challenging.

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Article Content

Fiber Unit

This is a series of fiber optic sensor heads designed to be connected to a fiber optic sensor amplifier. The

Fiber Optic Units

A wide variety of head types and cable types allow flexible adaptation to diverse detection environments and installation conditions.

Fiber Optic Sensors

The BF3 series fiber optic amplifiers come equipped with dual adjusters (COARSE, FINE) for precise

Detection sensors

When installation space is extremely limited or the objects to be detected are tiny, fiber-optic sensors are the ideal solution.

Fiber-optic sensors

Fiber-optic sensors can be implemented in an extremely space-saving manner due to the separation of the sensor head and

E32 Miniature | OMRON, Europe

E32 Miniature Miniature fiber sensor heads The miniature fiber heads provide high accuracy in smallest spaces and reliable

E32 Longer distance | OMRON, Europe

E32 Longer distance Longer distance fiber sensor heads With built-in focal lenses the longer distance fiber heads provide enhanced

Fiber optic sensor head

Find your fiber optic sensor head easily amongst the 11 products from the leading brands (OMRON,

Fiber Optic Sensors: Types, Working Principle

Explore fiber optic sensors: their working principles, types (intrinsic, extrinsic, hybrid), and diverse

Fiber sensor heads | OMRON, Europe

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Fiber sensor heads Filter by Application Enhanced environmental resistance 3 General application 4 Special objects or Installations

Fiber head FN series | volsentec

Fiber sensor head with complete specifications, 9 categories and hundreds of sizes and shapes to choose from, suitable for various

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

Fiber Optic Sensors and Amplifiers

Omron''s high-performance fiber optic sensors and amplifiers come in a wide variety of configurations to meet your specialized

Type of Fiber Optic Sensors/Fiber Unit

The thin sleeve design eliminates problems caused by limited mounting space and allows the sensor to be

Fiber optic sensors and fiber optics | Baumer international

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

Fibre Optic Sensors

Fibre Optic Sensors Omron''s fibre optic portfolio contains hundreds of sensor heads designed to cover virtually any fibre application

Type of fibre optic sensors | Sensor Basics: Principle

The thin sleeve design eliminates problems caused by limited mounting space and allows the sensor to be

Fiber Optic Sensors | KEYENCE America

Commonsense user-interface and unmatched sensing capabilities simplify integration. Sensor head options include high-flexibility,

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Thin-Film-Based Optical Fiber Interferometric Sensor on the Fiber Tip ...

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Thin-Film-Based Optical Fiber Interferometric Sensor on the Fiber Tip for Endovascular Surgical Procedures Abstract:

Specifying Fiber Optic Sensors

The fiber optic cable is actually two devices specified as a single device. It includes the

E32 Precision detection | OMRON, UK

E32 Precision detection Precision detection fiber sensor heads Highest precision in design and manufacturing of the fibers and focal

Fiber optic sensors | Leuze

This is where fiber optic sensors provide an elegant solution. They consist of a two-part structure: flexible fiber optics made of plastic

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Fiber-optic cables

Together with the right fiber optic amplifier, optical fiber cables are crucial for mastering complex detection tasks in automation

E32 Miniature | OMRON, Europe

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Fiber optic sensors

Compact fiber optic sensors with one-way or detecting principle. Various model series for plastic or glass optical fiber.

Fiber optic sensor head

Find out all of the information about the Autonics product: fiber optic sensor head FD/FT/FL/GD/GT series. Contact a supplier or the

Fibre Optic Sensors | KEYENCE India

KEYENCE India provides Fibre Optic Sensors; Perform high-performance, high-speed detection with optical fibres designed to be

Optical Fibre-Based Sensors—An Assessment of Current Innovations

Since the 1980s, the use of fibre-optic sensors has steadily expanded across a range of applications. The underlying sectors have

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Fiber optic sensors

Balluff''s fiber optic sensors are used when a conventional optical sensor is too large or too inflexible for the application: For example,

Fiber sensor heads | OMRON, Europe

Download datasheets, manuals and brochures. See our systems in use and consult our experts.

Fiber Optic Sensors

User-friendly and cost-efficient fiber optic sensor featuring long distance and high-speed modes with low

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Robot application fiber sensor heads with enhanced bend resistance. Omron''s high-performance fiber optic sensors and amplifiers

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