

BF4R Fiber Optic Sensor Principle

Article Overview

The BF4R fiber optic sensor operates by detecting changes in light transmitted through an optical fiber, converting these changes into electrical signals via a compact amplifier for precise and fast object detection.

Operating Principle

The BF4R series from Autonics is a fiber optic amplifier that works in conjunction with optical fibers to detect the presence, absence, or position of objects. The sensor system consists of a light-emitting source, an optical fiber, and a photodetector. Light is transmitted through the fiber, and when an object interrupts or reflects the light, the photodetector senses the change in light intensity. This change is then processed by the BF4R amplifier, which converts it into a digital output signal for further control or monitoring .

Key Features

- **Fast Response:** The BF4R amplifier has a response speed of under 0.5 milliseconds, allowing for high-speed detection in automated processes .
- **Compact Design:** Its small form factor enables installation in narrow or confined spaces, making it suitable for complex machinery layouts .
- **External Synchronization Input:** This function allows multiple sensors to operate without interference, improving reliability in environments with multiple fiber optic sensors .
- **Mutual Interference Protection:** Prevents false triggering when multiple sensors are used in close proximity .
- **Self-Diagnosis Function:** The amplifier can detect fiber disconnection or misalignment, ensuring consistent performance and reducing maintenance downtime .

Applications

The BF4R fiber optic sensor is widely used in industrial automation, including:

- Detecting small or transparent objects
- Positioning and alignment tasks
- Monitoring high-speed production lines
- Environments where conventional sensors cannot fit or are affected by electromagnetic interference...

Article Content

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BF4R-R Autonics | Sensor, Transducer Amplifiers | DigiKey Marketplace

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View and Download Autonics BF4R Series manual online. High reliability of fiber optic amplifier for

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02. Fiber Optic Amplifiers

The fiber output optic units, of self-diagnosis lowered light turns level ON the these emitter, conditions: missing the of the

Sep 10, 2025

Autonics BF4 series Instructions Manual | Manualzz

Autonics BF4 series is a high reliability fiber optic amplifier designed for convenient mounting. It features a high-speed response of

May 02, 2026

BF4R Series

This fiber optic amplifier has fast response speed of under 0.5ms, and can be compactly mounted. Also, external synchronization

Feb 07, 2026

Fiber Optic Sensor Cable Type

The Autonics fiber optic sensor BF4R is used as digital display fiber optic amplifier with NPN output. This

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BF4R-R Autonics Photoelectric Sensors

BF4R-R quick delivery, authorized Autonics distributor. Offers complete line of Photoelectric Sensors . Easy online ordering, rewards

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BF4 Series High reliability of fiber optic amplifier for convenience

When fiber hood is contaminated by dust, transmitted light is lowered by element ability loss or received light is lowered by missing of

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BF4R | Fiber Optic Amplifier | Autonics

Autonics BF4R - FIBER OPTIC AMPLIFIER The Autonics BF4R is a standard-type photoelectric sensor with a red LED emitter at

Mar 14, 2026

Autonics BF4G, BF4G-E, BF4G-R, BF4GP, BF4R, BF4R-E, BF4R-R

If fiber optic sensor is used in place where there are targets with high reflectivity and low reflectivity, it is able to get stable detection

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BF4 Series Fiber Optic Amplifier

To extend sensing distance (diffuse reflective type): If fiber optic sensor is used in place where there are targets with high reflectivity

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Press the ② rear part of the amplifier on DIN rail. Push the back of amplifier toward ① and lift the hole for

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BF4R 12-24VDC AUTONICS

AUTONICS BF4R 12-24VDC | Sensor: optical fiber amplifier; NPN; Connection: cables; 2m; 50mA - This product is available in

Nov 08, 2025

Autonics BF4R-R Fiber Optic Sensor

The Autonics BF4R-R Fiber Optic Sensor offers Red LED(660nm) light source, 12-24VDC power supply,

Jul 22, 2026

BF4R-Digital Display Fiber Optic Amplifiers-Fiber Optic Sensors ...

BF4R-Digital Display Fiber Optic Amplifiers-Fiber Optic Sensors – Autonics Sensors
USD 70.46 SKU N/A Category Autonics Fiber

Mar 16, 2026

6_BF4_EN_ACA-EP-KE-08-0240M_20151218 dd

Used at bad environment (through-beam type): If fiber optic sensor is used in place where there is lots of dust or moisture, it might

Dec 23, 2025

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Page 7 Fiber Optic Amplifier Timer (OFF Delay) Function Stop Transmission Function Photoelectric -Operation Test

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BF4R-R AUTONICS

AUTONICS BF4R-R | Sensor: optical fiber amplifier; NPN; Connection: cables; 2m; 50mA - This product is available in Transfer

Dec 19, 2025

Autonics BF4R Fiber Optic Sensor

Autonics BF4R Digital Display Fiber Optic Amplifier features 12-24VDC supply, Red LED(660nm), NPN output, and 0.5-0.7ms

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Autonics BF4R-R Fiber optic Amplifier Sensor

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BF4R – C.B.Electronics

FIBER OPTIC SENSOR Type Standard type Light source Red LED (660nm) Response time Frequency 1: Max. 0.5ms Frequency 2:

Contact Us

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