Keyence FS-V31

Keyence FS-V31 Fiber Optic Sensor Instruction Manual

Model: FS-V31

1. Introduction

This manual provides essential instructions for the safe and effective use of the Keyence FS-V31 Fiber Optic Sensor. The FS-V31 is a digital, single-control fiber optic sensor designed for industrial applications, featuring NPN output and selectable Light-ON/Dark-ON operation. It operates on a 12-24 VDC input and has a low power consumption of 0.71 WATT.
Please read this manual thoroughly before installation, operation, or maintenance to ensure proper functionality and to prevent potential hazards.

2. Safety Information

Observe the following safety precautions to prevent injury to personnel and damage to the equipment.

- **Electrical Safety:** Ensure the power supply is disconnected before wiring or performing any maintenance. Incorrect wiring can lead to electric shock or equipment damage.
- **Power Supply:** Use only a 12-24 VDC power supply as specified. Exceeding this voltage range can damage the sensor.
- **Environment:** Do not install the sensor in locations subject to excessive vibration, shock, high temperatures, corrosive gases, or direct sunlight.
- **Wiring:** All wiring should be performed by qualified personnel in accordance with local electrical codes.
- **Modifications:** Do not attempt to disassemble, repair, or modify the sensor. Unauthorized modifications can lead to malfunction and void the warranty.

3. Product Overview and Components

The Keyence FS-V31 Fiber Optic Sensor consists of the main sensor unit and an integrated cable. Key features include control buttons and indicator lights for easy setup and monitoring.

Figure 3.1: Keyence FS-V31 Sensor Unit. This image displays the main sensor body with its integrated cable, clearly showing the product label with model information and serial number.

Figure 3.2: Keyence FS-V31 Wiring Details. This image provides a closer view of the sensor's wiring, indicating the color codes for power (BROWN, BLUE) and output (BLACK), along with the CE compliance mark.

Figure 3.3: Keyence FS-V31 Control Panel. A detailed view of the sensor's control interface, highlighting the 'SEL' (Select), 'MODE', 'SET', and 'DSC' buttons, which are used for configuration and adjustment.

4. Setup and Installation

4.1 Mounting

Mount the FS-V31 sensor securely in a location free from excessive vibration and heat. Ensure adequate space for wiring and access to control buttons. Use appropriate mounting hardware (not included) for your specific application.

4.2 Wiring

Refer to Figure 3.2 for wiring color codes. Connect the sensor to a stable 12-24 VDC power supply according to the following:

- **BROWN Wire:** Connect to +V (Positive DC Power Supply)
- **BLUE Wire:** Connect to 0V (Negative DC Power Supply / Ground)

- **BLACK Wire:** NPN Output (Connect to load, then to +V)

Ensure all connections are secure and insulated to prevent short circuits.

5. Operation

5.1 Power On

Once wired correctly, apply 12-24 VDC power. The sensor will power on, and indicator lights will illuminate to show its status.

5.2 Light-ON / Dark-ON Selection

The FS-V31 allows selection between Light-ON and Dark-ON modes. In Light-ON mode, the output activates when light is detected. In Dark-ON mode, the output activates when light is interrupted (darkness is detected).
Refer to Figure 3.3 for control button locations. Use the 'MODE' or 'SEL' button to cycle through operating modes. Consult the sensor's display (if present) or indicator lights to confirm the selected mode.

5.3 Sensitivity Adjustment

The 'SET' and 'DSC' buttons (refer to Figure 3.3) are typically used for sensitivity adjustment or teaching functions. Follow these general steps:

1. Place the target object in the desired detection position.
2. Press and hold the 'SET' button (or follow specific sequence) to initiate teaching.
3. Remove the target object (if applicable for 2-point teaching).
4. Press the 'SET' button again to complete the teaching process.

The sensor will automatically adjust its threshold for optimal detection based on the taught conditions.

6. Maintenance

The Keyence FS-V31 is designed for minimal maintenance. However, regular inspection and cleaning can prolong its lifespan and ensure reliable operation.

- **Cleaning:** Periodically clean the sensor's detection surface and housing with a soft, dry cloth. Avoid using abrasive cleaners or solvents.
- **Cable Inspection:** Check the integrated cable for any signs of damage, such as cuts, abrasions, or kinks. Replace the sensor if the cable is damaged.
- **Mounting Security:** Verify that the sensor remains securely mounted and that all connections are tight.

7. Troubleshooting

If the sensor is not operating as expected, refer to the following common issues and solutions:

Problem	Possible Cause	Solution
Sensor does not power on.	No power supply, incorrect wiring, or faulty power supply.	Check power connections (BROWN to +V, BLUE to 0V). Verify power supply voltage (12-24 VDC).

Problem	Possible Cause	Solution
Output does not switch.	Incorrect Light-ON/Dark-ON mode, improper sensitivity adjustment, or target out of range.	Verify selected operating mode. Re-adjust sensitivity using 'SET' button. Ensure target is within detection range.
Erratic detection.	Dust/dirt on sensor lens, external light interference, or unstable mounting.	Clean sensor lens. Shield sensor from strong ambient light. Securely mount the sensor.

8. Specifications

Parameter	Value
Model	FS-V31
Brand	Keyence
Input Voltage	12-24 VDC
Power Consumption	0.71 WATT
Output Type	NPN
Operation Mode	Light-ON / Dark-ON Selectable
Control Type	Single Control, Digital
Product Dimensions	5 x 5 x 1 inches
Product Weight	2 Pounds
Manufacturer	KEYENCE CORP
Date First Available	January 1, 2016

9. Warranty and Support

Specific warranty terms for the Keyence FS-V31 Fiber Optic Sensor are provided by the manufacturer or authorized seller at the time of purchase. Please retain your proof of purchase for warranty claims.
For technical support, service, or detailed warranty information, please contact Keyence Corporation directly or your local Keyence distributor. You can find more information on their official website: www.keyence.com.

Related Documents - FS-V31

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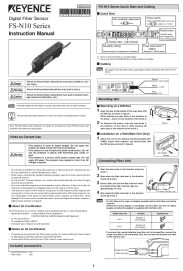
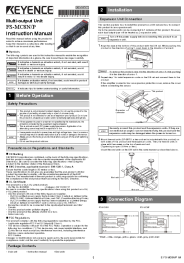
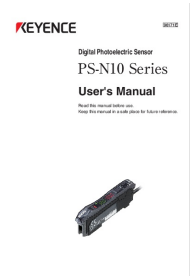
	KEYENCE FS-N10 Series Digital Fiber Sensor Instruction Manual Instruction manual for the KEYENCE FS-N10 Series Digital Fiber Sensor, covering quick start, cabling, mounting, calibration methods, user-friendly functions, configuration, error displays, and specifications.
	KEYENCE FS-MC8N/P Multi-output Unit Instruction Manual for Industrial Automation This instruction manual from KEYENCE provides comprehensive guidance on the FS-MC8N/P Multi-output Unit, covering installation, expansion unit connection, operation, specifications, and troubleshooting for industrial automation systems.
	KEYENCE PS-N10 Series Digital Photoelectric Sensor User's Manual This user's manual provides comprehensive guidance on the operation, installation, and features of the KEYENCE PS-N10 Series Digital Photoelectric Sensor, ensuring safe and efficient use.
	Keyence PZ-V/M Series: Intelligent Reflective Photoelectric Sensors for Enhanced Stability Discover the Keyence PZ-V/M Series of self-contained photoelectric sensors, offering superior stability and reliability in detecting various targets, including those with challenging colors, shapes, or backgrounds. Learn about their advanced technologies like P.S.D. and A.P.R. circuits, one-touch calibration, and robust design for harsh environments.
	KEYENCE FS-neo Digital Fiberoptic Sensor Training Guide: Basics, Calibration, Tips, and Troubleshooting This training guide provides essential information for KEYENCE FS-neo digital fiberoptic sensors. It covers fundamental calibration techniques, practical tips for using thrubeam and reflective models, and common troubleshooting solutions for industrial automation applications.