

KEYENCE FS-T2

KEYENCE FS-T2 Simple Fiberoptic Amplifier NPN Cable Type

Instruction Manual

1. INTRODUCTION

This manual provides essential information for the safe and correct use of the KEYENCE FS-T2 Simple Fiberoptic Amplifier NPN Cable Type. The FS-T2 is designed as a child unit, requiring connection to a compatible main amplifier (e.g., FS-T1/M1/V1/PS-T1, LV-21A/11A, CZ-V1) for power supply and operation. Please read this manual thoroughly before installation and operation, and keep it for future reference.

2. SAFETY INFORMATION

To ensure safe operation and prevent damage to the product or injury to personnel, observe the following precautions:

- Do not attempt to disassemble, repair, or modify the unit.
- Ensure the power supply voltage is within the specified range (DC 12-24V $\pm 10\%$).
- Avoid installing the unit in locations subject to excessive dust, corrosive gases, or direct sunlight.
- Always disconnect power before wiring or performing maintenance.
- Mount the unit securely on a DIN rail, especially when connecting multiple units, to ensure proper heat dissipation and stability.

3. PRODUCT OVERVIEW

The KEYENCE FS-T2 is a compact fiberoptic amplifier designed for precise detection. It features a robust polycarbonate body and cover, with clear indicators for operational status.



Figure 3.1: Front view of the KEYENCE FS-T2 Fiberoptic Amplifier, showing the NPN model label, indicator lights (OFF-D, ON-D, I.D.ON, I.L.ON), SET button, and LOCK switch.

The unit includes a connector for power and signal output, designed for easy integration into existing systems.



Figure 3.2: Bottom view of the KEYENCE FS-T2 Fiberoptic Amplifier, highlighting the multi-pin connector for electrical connections.

4. SETUP AND INSTALLATION

4.1 Mounting

The FS-T2 unit is designed for DIN rail mounting. Ensure the DIN rail is securely attached to a metal plate for optimal performance, especially when multiple units are connected.

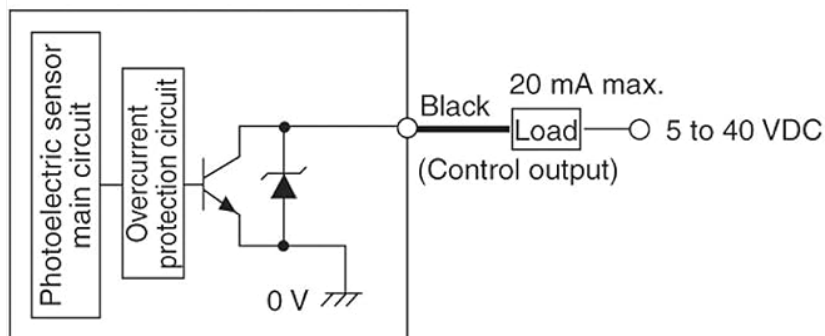
4.2 Wiring

The FS-T2 is an NPN output type. Connect the unit to a compatible main amplifier and ensure correct polarity. Refer to the wiring diagram for detailed connection instructions.

入出力回路図_接続図

※ 文字が読みにくい場合は、CADもしくはマニュアルをご確認ください。

入出力回路図



※ 電源は、親機より供給されます。

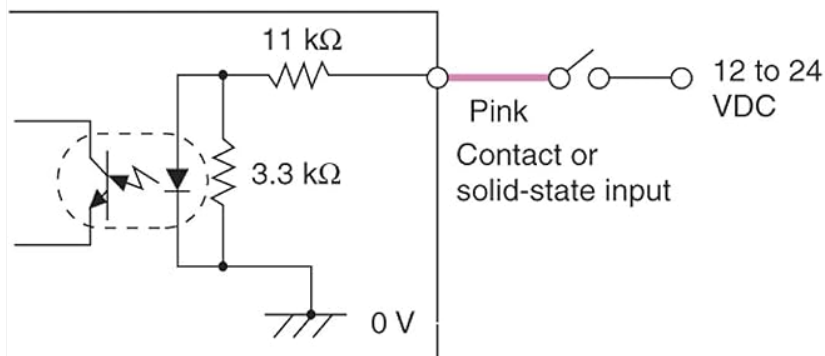
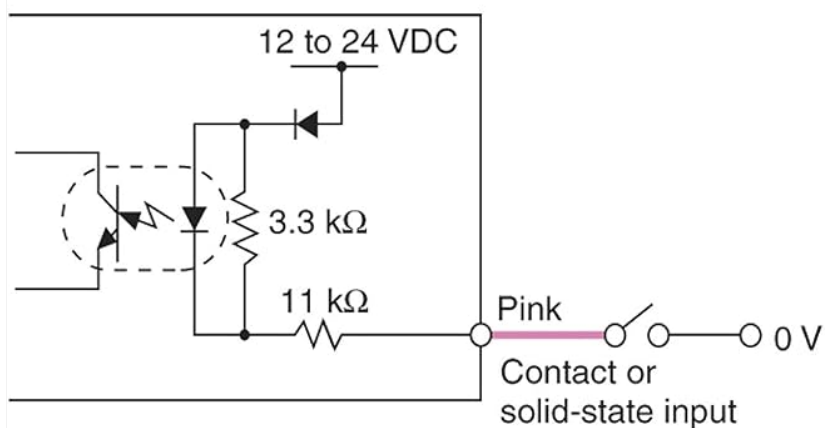


Figure 4.1: Wiring diagram for the KEYENCE FS-T2, showing the NPN output circuit and connections for 12-24 VDC power and solid-state input.

The output circuit includes reverse connection protection, overcurrent protection, and surge absorption. The NPN open collector output has a maximum current of 100mA (40V or less) with a residual voltage of 1V or less.

4.3 Connecting Multiple Units

This unit can be connected with other units of the same model through its connector. Up to 16 units can be connected side-by-side (total 17 units including the main amplifier). When expanding, ensure the units are mounted on a DIN rail (attached to a metal plate) and the output current is kept below 20mA per unit. Note that ambient temperature ratings may change when multiple units are connected:

- For 3-10 connected units: -10 to +50°C
- For 11-16 connected units: -10 to +45°C

5. OPERATING INSTRUCTIONS

5.1 One-Touch Calibration

The FS-T2 supports one-touch calibration. Refer to the main amplifier's manual for specific calibration procedures, as the FS-T2 is a child unit.

5.2 Mode Switching

The operation mode can be switched between Light ON and Dark ON using the designated switch. The unit also features timer functions including ON-delay 40ms, OFF-delay 40ms, and Timer OFF, selectable via a switch.

5.3 Indicators

The unit is equipped with several indicator lights:

- **Output Indicator:** Red LED, illuminates when output is active.
- **Stable Operation Indicator:** Green LED, indicates stable detection.
- **Tuning Indicator:** Green LED, assists during sensitivity adjustment.

6. MAINTENANCE

The KEYENCE FS-T2 is designed for minimal maintenance. Keep the unit clean and free from dust and debris. Use a soft, dry cloth for cleaning. Do not use abrasive cleaners or solvents. Regularly inspect wiring for any signs of damage or loose connections.

6.1 Unit Removal

To remove the unit from the DIN rail, slide the unit to the right and then lift it off the rail. Ensure power is disconnected before removal.



Figure 6.1: Excerpt from the instruction manual showing the cover and diagrams for removing the unit from a DIN rail.

7. TROUBLESHOOTING

If the unit does not operate as expected, consider the following:

- **No Power:** Verify that the main amplifier is powered on and correctly connected to the FS-T2. Check all wiring connections.
- **No Detection/Unstable Detection:** Ensure fiber optic cables are clean and properly inserted. Perform one-touch calibration again. Check ambient light conditions; excessive illumination (over 10,000 lux for incandescent, 20,000 lux for sunlight) can affect performance.
- **Output Not Switching:** Check the operation mode switch (Light ON/Dark ON). Verify the timer function settings.
- **Interference with Other Units:** Ensure proper spacing or use interference prevention settings if available on the main amplifier. The FS-T2 supports up to 16 interference prevention units.

If issues persist, consult the main amplifier's manual or contact KEYENCE support.

8. SPECIFICATIONS

Detailed technical specifications for the KEYENCE FS-T2 are provided below:

FS-T2

ファイバアンブ ケーブルタイプ 子機 NPN FS-T2



仕様

型式	FS-T2	
種類	ワンライン子機	
出力タイプ	NPN出力	
光源	赤色LED	
感度調整/モード切換	ボタン式	
応答時間	250 μs	
動作形態	入光時ON/しゃ光時ON スイッチ切換	
表示灯	出力表示…赤色LED 安定動作表示…緑色LED チューニング表示…橙色LED	
タイマ機能	オンディレイ40ms/オフディレイ40ms/タイマOFF スイッチ切換	
入力	外部チューニング	
制御出力	NPNオープンコレクタ最大100mA (40V以下)残留電圧1V以下	
スタビリティ出力	NPNオープンコレクタ最大50mA (40V以下)残留電圧1V以下*1	
保護回路	逆接続保護、過電流保護、サージ吸収	
子機増設	16台まで可能 (親機合計17台接続)*2	
干渉防止台数	4台	
定格	電源電圧	DC 12 - 24 V ±10 %、リップル (P-P) 10 % 以下*3
	消費電流	35 mA 以下
耐環境性	使用周囲照度	白熱ランプ：10,000 lux 以下、太陽光：20,000 lux 以下
	使用周囲温度	-10 ～ +55 ℃ (氷結しないこと)*4
	使用周囲湿度	35 ～ 85 % RH (結露しないこと)
	耐振動	10 ～ 55 Hz、複振幅 1.5 mm、X,Y,Z 各方向 2 時間
	耐衝撃	500 m/s ² 、X,Y,Z 各方向 3 回
ケース材質	本体、カバー：ポリカーボネート	
付属品	エンドユニット×2 注意書きシール	
質量	約 40 g	
価格(¥)	14,800	

^{*1} FS-T1/M1のみスタビリティ出力装備。FS-T2/M2はFS-T1/M1/PS-T1よりスタビリティ出力されます。

^{*2} 増設される場合は、以下の条件によって使用周囲温度は変わります。増設する場合は、必ずDINレール (金属板に取り付けた状態)に取り付け、出力電流は20mA以下としてください。3 $\sim$ 10台増設時 : -10 $\sim$ +50 $^{\circ}$ C、11 $\sim$ 16台増設時 : -10 $\sim$ +45 $^{\circ}$ C

^{*3} FS-T2/M2 は、FS-T1/M1/ V1/ V11/PS-T1、LV-21A/11A、CZ-V1 より供給されます。

^{*4} 増設される場合は、以下の条件によって使用周囲温度は変わります。増設される場合は、必ず DIN レール (金属板に取り付けた状態) に取り付け、出力電流は 20 mA 以下としてください。3 $\sim$ +10 台増設時 : -10 $\sim$ +50 $^{\circ}$ C、11 $\sim$ +16 台増設時 : -10 $\sim$ +45 $^{\circ}$ C

Figure 8.1: Datasheet page 1, listing comprehensive technical specifications for the FS-T2.

Parameter	Specification
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Parameter	Specification
Model	FS-T2
Type	One-line Child Unit
Output Type	NPN Output
Light Source	Red LED
Response Time	250 μ s
Operation Mode	Light ON / Dark ON (Switchable)
Indicator Lights	Output (Red LED), Stable Operation (Green LED), Tuning (Green LED)
Timer Function	ON-delay 40ms / OFF-delay 40ms / Timer OFF (Switchable)
Input	External Tuning
NPN Open Collector Output	Max 100mA (40V or less), Residual voltage 1V or less
Protection Circuit	Reverse connection protection, Overcurrent protection, Surge absorption
Interference Prevention Units	Up to 16 units possible (total 17 units connected side-by-side)
Power Supply Voltage	DC 12 - 24 V $\pm$ 10 %. Ripple (P-P) 10 % or less
Current Consumption	35 mA or less
Ambient Illumination	Incandescent lamp: 10,000 lux or less, Sunlight: 20,000 lux or less
Ambient Temperature	-10 ~ +55 °C (no freezing) (Note: -10 ~ +50°C for 3-10 units, -10 ~ +45°C for 11-16 units when expanded)
Ambient Humidity	35 ~ 85 % RH (no condensation)
Vibration Resistance	10 ~ 55 Hz, double amplitude 1.5 mm, 2 hours each in X,Y,Z directions
Shock Resistance	500 m/s ² , 3 times each in X,Y,Z directions
Case Material	Body, Cover: Polycarbonate
Accessories	End unit x2, Caution sticker
Weight	Approx. 40 g

8.1 Dimensions

The physical dimensions of the FS-T2 unit are detailed in the diagram below. The cable length is 2 meters with a corex 0.34mm² diameter.

外形寸法図

※ 文字が読みにくい場合は、CADもしくはマニュアルをご確認ください。

FS-T2

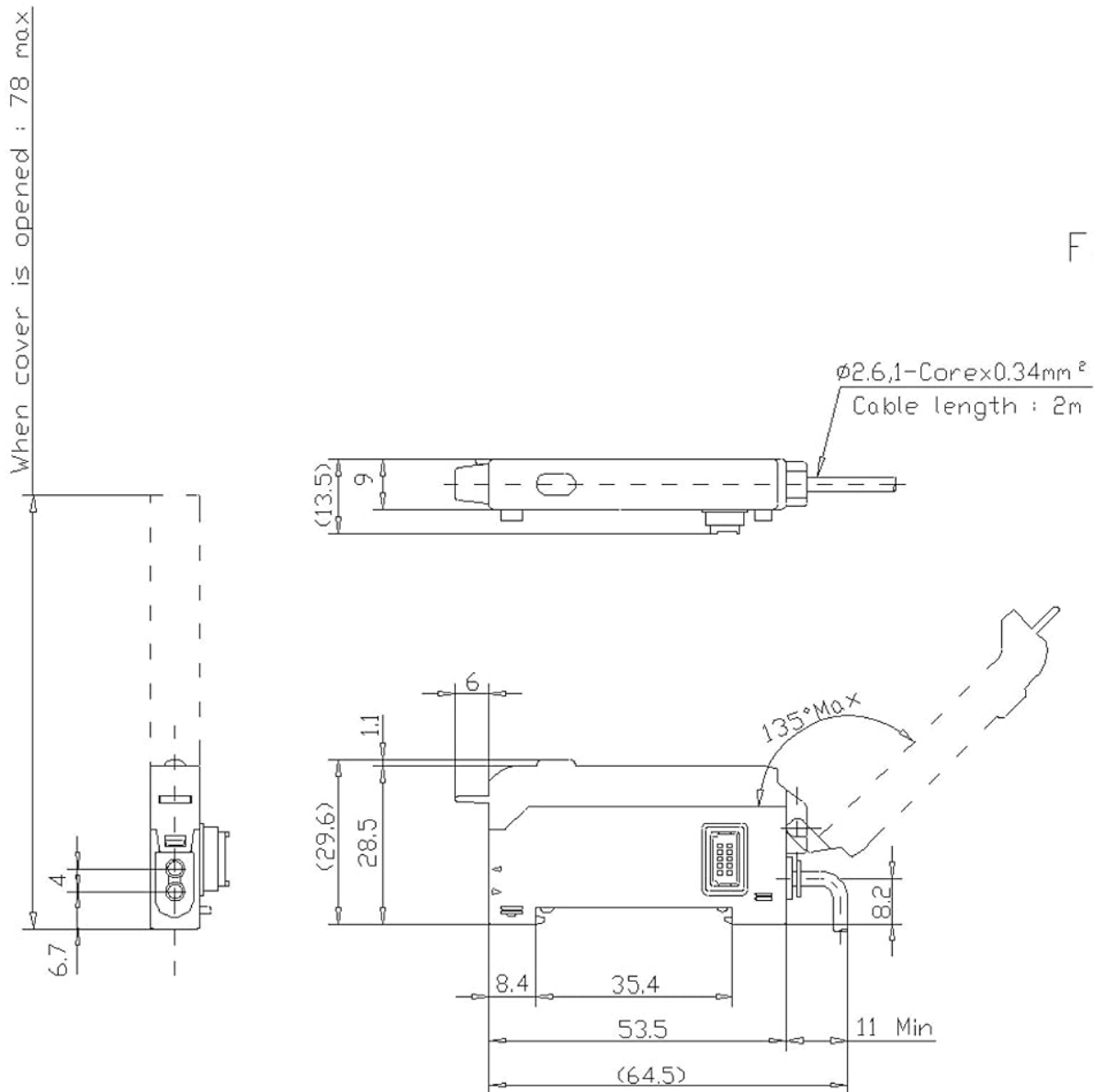


Figure 8.2: Dimensional drawing of the KEYENCE FS-T2, showing measurements in millimeters and cable specifications.

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please contact your local KEYENCE representative or visit the official KEYENCE website. Ensure you have your product model number (FS-T2) available when seeking support.