Senzooe ZK-KTD2

Senzooe ZK-KTD2 Time Delay Relay Module User Manual

Model: ZK-KTD2

1. Introduction

The Senzooe ZK-KTD2 is a versatile time delay relay module designed for various timing control applications. It supports operating voltages of 5V, 12V, and 24V, making it suitable for a wide range of electronic projects and industrial controls. This module features a digital display for easy parameter setting and monitoring, offering multiple operating modes for precise control over relay activation and deactivation based on time delays or trigger events.

2. Product Overview

The ZK-KTD2 module integrates a digital display, control buttons, and a relay output. Its compact design allows for easy integration into existing systems. The module's interface includes a 3-digit LED display, 'SET' button, 'UP' button, 'DOWN' button, and an 'OUT' indicator for relay status.

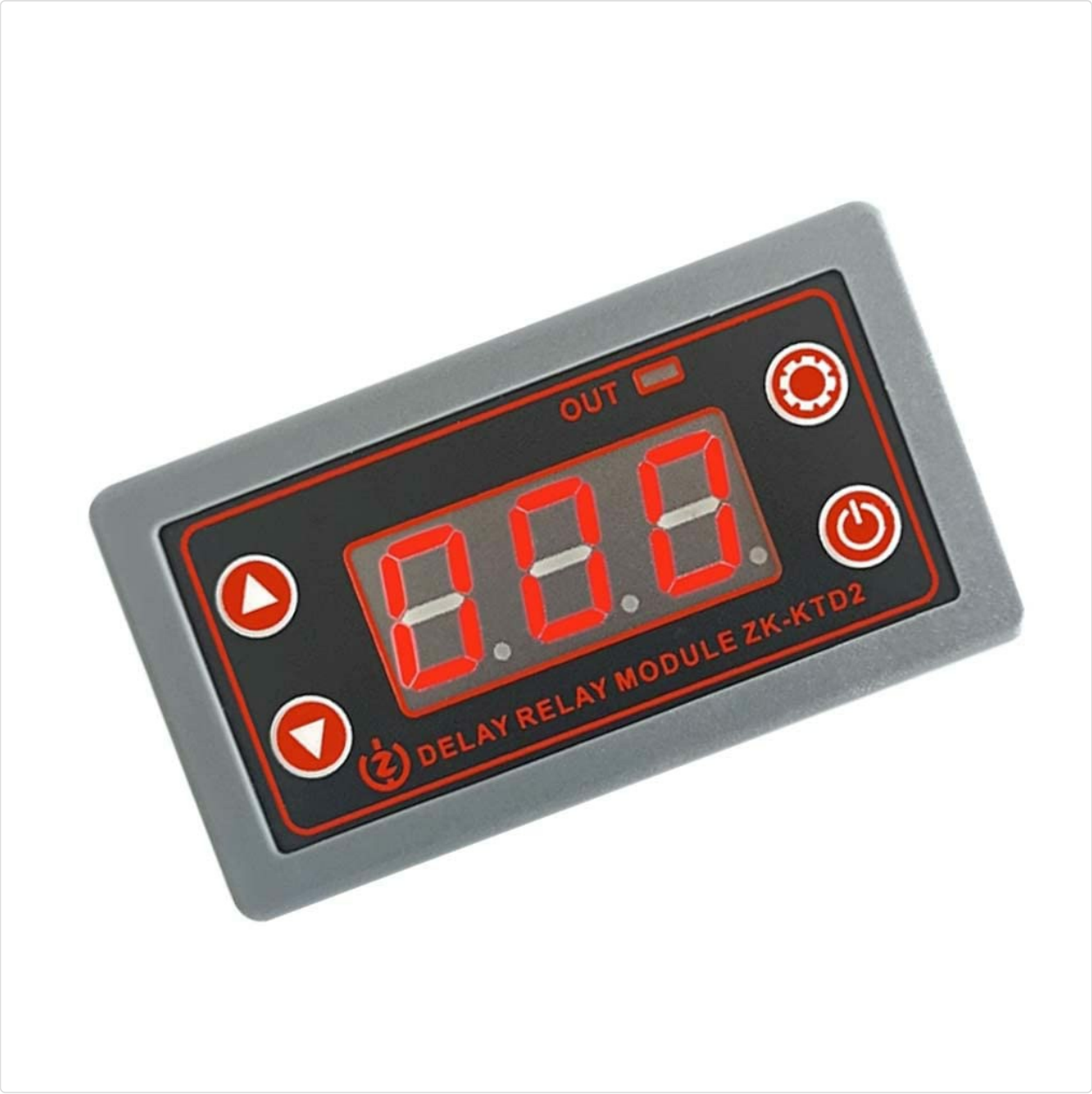

Figure 1: Front view of the ZK-KTD2 Time Delay Relay Module. This image shows the module's front panel, featuring a three-digit red LED display, an 'OUT' indicator light, and four control buttons: 'SET' (gear icon), 'UP' (up arrow), 'DOWN' (down arrow), and 'Power' (circle with line). The module is encased in a gray housing with a black faceplate.

3. Specifications

- **Model:** ZK-KTD2
- **Operating Voltage:** 5V, 12V, 24V (selectable/compatible)
- **Connector Type:** Through Hole
- **Contact Type:** Normally Open (NO)
- **Mounting Type:** PCB Mount, DIN Rail Mount (with appropriate adapter, not included)
- **Operation Mode:** Automatic
- **Dimensions:** Approximately 79mm x 43mm
- **Weight:** Approximately 40g

Figure 2: Dimensions of the ZK-KTD2 module. This image displays the front of the ZK-KTD2 module with arrows indicating its approximate length of 79mm and width of 43mm, providing a clear visual reference for its physical size.

4. Wiring and Connections

Proper wiring is crucial for the safe and correct operation of the ZK-KTD2 module. Ensure all connections are secure and match the specified voltage requirements.

4.1 Power Supply

Connect the appropriate DC voltage (5V, 12V, or 24V) to the module's power input terminals. Observe polarity: positive (+) to VCC and negative (-) to GND.

4.2 Trigger Input

The module typically uses a trigger input to initiate timing sequences. Refer to the specific mode descriptions for how the trigger signal (e.g., a momentary switch closure or a voltage pulse) should be applied.

4.3 Relay Output

The ZK-KTD2 features a single-pole, double-throw (SPDT) relay. The output terminals are typically labeled

COM (Common), NO (Normally Open), and NC (Normally Closed). For most applications, you will connect your load between COM and NO. When the relay is activated, the connection between COM and NO will close, supplying power to your load.

Figure 3: Back view of the ZK-KTD2 module. This image displays the reverse side of the module, revealing the printed circuit board (PCB), the Songle SRD-05VDC-SL-C relay, and various electronic components. Screw terminals for power input (GND, VIN) and relay output (ON, COM, GNDVIN) are visible, indicating connection points for power and controlled devices.

5. Setup and Configuration

The ZK-KTD2 module offers various operating modes, each with configurable time parameters. The 'SET' button is used to enter and navigate through programming modes, while 'UP' and 'DOWN' buttons adjust values.

5.1 Basic Operation

1. **Power On:** Apply the correct DC voltage to the module. The display will show the current operating mode (e.g., P1.1).
2. **Enter Mode Selection:** Press and hold the 'SET' button for approximately 3 seconds. The display will flash the current mode (e.g., 'P1.1').

3. **Select Mode:** Use the 'UP' and 'DOWN' buttons to cycle through available operating modes (P1.1, P1.2, P1.3, etc.).
4. **Confirm Mode:** Briefly press the 'SET' button to select the desired mode. The display will then show the first parameter for that mode.
5. **Adjust Parameters:** Use 'UP' and 'DOWN' buttons to change the time value. A short press changes by 0.1, a long press changes rapidly.
6. **Select Time Unit:** After setting the time value, press 'SET' again. The display may show a decimal point indicating the time unit (e.g., no decimal for seconds, one decimal for 0.1 seconds, two decimals for 0.01 seconds, or a specific indicator for minutes/hours). Use 'UP'/'DOWN' to change the unit if applicable.
7. **Save and Exit:** Continue pressing 'SET' to cycle through all parameters for the selected mode. After setting the last parameter, the module will save the settings and return to the main operating display.

6. Operating Modes (Common Examples)

The ZK-KTD2 typically supports several operating modes. The exact number and functionality may vary, but common modes include:

- **P1.1: Trigger Delay ON (Monostable)**
  When a trigger signal is received, the relay activates for a set time 'T' and then deactivates. The trigger is ignored during the timing period.
- **P1.2: Trigger Delay OFF**
  When a trigger signal is received, the relay deactivates for a set time 'T' and then activates. The trigger is ignored during the timing period.
- **P1.3: Cycle Timer (Infinite Loop)**
  After a trigger, the relay cycles between ON for time 'T1' and OFF for time 'T2' indefinitely. A new trigger can stop or reset the cycle depending on configuration.
- **P1.4: Triggered Cycle Timer**
  Similar to P1.3, but the cycle runs for a specified number of times 'N' after a trigger.

Refer to the module's display and button presses to identify and configure the specific modes available on your ZK-KTD2 unit.

7. Maintenance

The ZK-KTD2 module is designed for reliable operation with minimal maintenance. Follow these guidelines to ensure longevity:

- **Cleaning:** Keep the module free from dust and debris. Use a soft, dry cloth for cleaning. Avoid using liquid cleaners or solvents.
- **Environment:** Operate the module within its specified temperature and humidity ranges. Avoid exposure to extreme temperatures, direct sunlight, moisture, or corrosive environments.
- **Connections:** Periodically check all wiring connections to ensure they remain secure. Loose connections can lead to intermittent operation or damage.

8. Troubleshooting

If you encounter issues with your ZK-KTD2 module, consider the following troubleshooting steps:

- **Module Not Powering On:**

Issue: Display is blank after applying power.
Solution: Verify the power supply voltage matches the module's requirement (5V, 12V, or 24V) and that polarity is correct. Check power supply connections for continuity.

- **Relay Not Activating/Deactivating:**
  Issue: The relay does not switch as expected.
  Solution:
  a. Check the selected operating mode and its parameters. Ensure the time values are set correctly.
  b. Verify the trigger input. Is the trigger signal being applied correctly and at the right time?
  c. Ensure the load connected to the relay is within the relay's current and voltage ratings.
  d. Check the 'OUT' indicator LED. If it lights up but the load doesn't activate, the issue might be with the load or its wiring.
- **Incorrect Timing:**
  Issue: The delay or cycle time is not accurate.
  Solution: Re-enter the programming mode and carefully verify all time parameters (T1, T2, etc.) and their corresponding time units (seconds, minutes).
- **Buttons Unresponsive:**
  Issue: Buttons do not respond to presses.
  Solution: Power cycle the module. If the issue persists, ensure the buttons are not physically stuck.

9. Warranty and Support

For warranty information and technical support regarding your Senzooe ZK-KTD2 Time Delay Relay Module, please refer to the documentation provided at the point of purchase or contact your vendor directly. Keep your purchase receipt as proof of purchase.