HiLetgo 2-Channel Relay Module User Manual

Model: 3-01-0342 | Brand: HiLetgo

1. Introduction

This manual provides detailed instructions for the HiLetgo 2pcs DC 12V 2 Channel Relay Module with Isolated Optocoupler. This module is designed for various control applications, allowing for high or low-level triggering. It features robust construction and clear interface labeling for ease of use in industrial and hobbyist projects.

2. Key Features

- Configurable high or low level trigger via jumper settings, accommodating diverse trigger applications.
- Integrated patch optical isolation for strong drive capability and stable, reliable performance.
- User-friendly interface design with all connections directly accessible via terminal wiring leads for convenient setup.
- Fault-tolerant design ensures the relay remains in its current state even if the control line is interrupted.
- Equipped with power indicator (green) and relay status indicators (red) for visual feedback.

3. Product Overview and Components

The HiLetgo 2-Channel Relay Module is a compact board featuring two independent relays, each capable of handling AC 250V/10A or DC 30V/10A loads. The module's dimensions are approximately 50mm x 26mm x 18.5mm (L x W x H), with four mounting bolt holes (3.1mm diameter, 44.5mm x 20.5mm pitch).

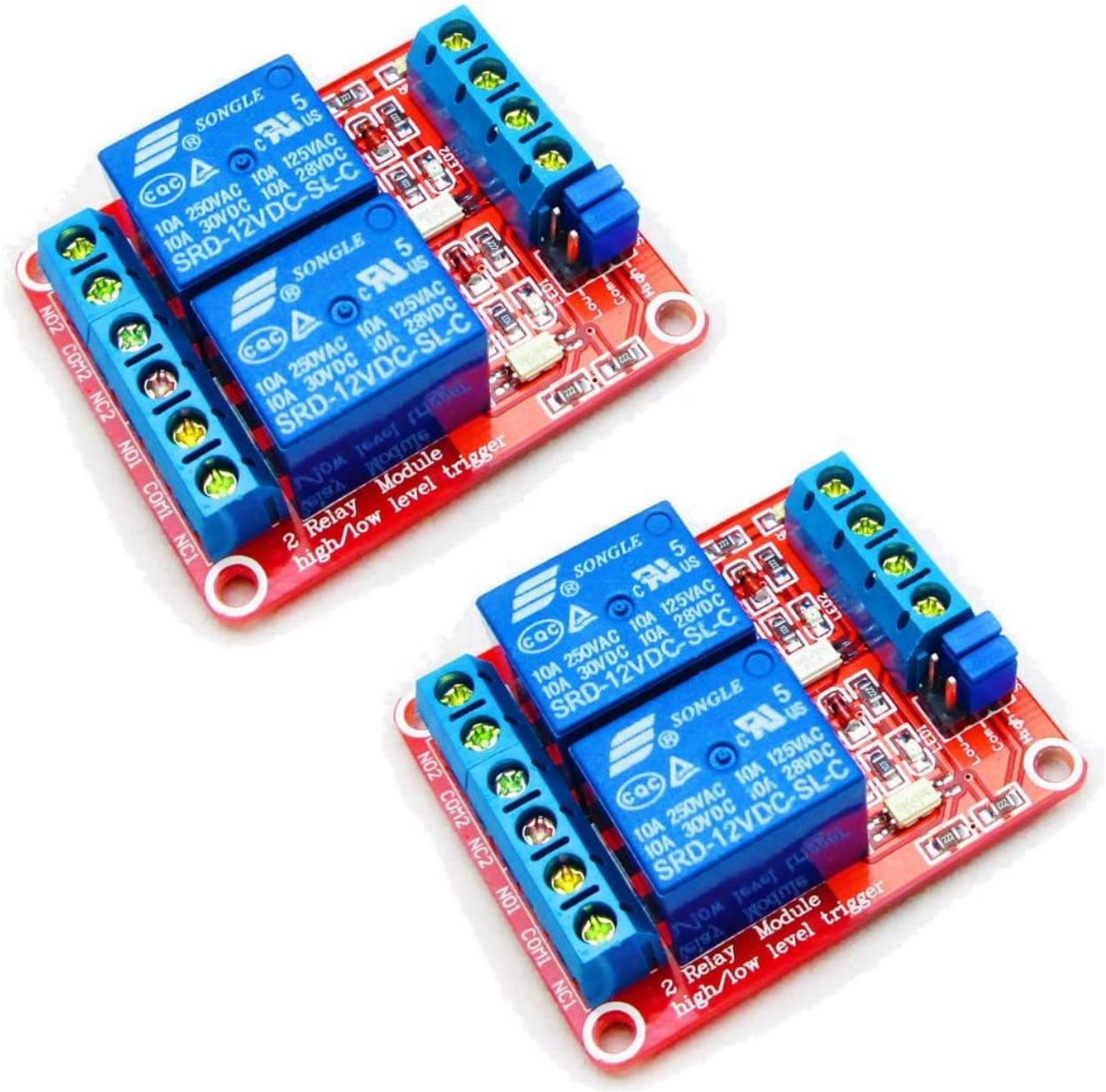

Figure 1: Overview of two HiLetgo 2-Channel Relay Modules. Each module features two blue Songle relays, screw terminals for connections, and indicator LEDs.

Module Interface Connections:

- **DC+:** Positive power supply input (DC 12V).
- **DC-:** Negative power supply connection (Ground).
- **IN1:** Signal input for Channel 1. This input controls the first relay and can be configured for high or low-level triggering.

- **IN2:** Signal input for Channel 2. This input controls the second relay and can be configured for high or low-level triggering.

Relay Outputs:

Each relay provides three terminals for connection:

- **NO1 / NO2:** Normally Open (NO) interface for Relay 1 / Relay 2. This contact is open when the relay is de-energized and closes when the relay is activated (pulled).
- **COM1 / COM2:** Common (COM) interface for Relay 1 / Relay 2. This is the common terminal for the switch.
- **NC1 / NC2:** Normally Closed (NC) interface for Relay 1 / Relay 2. This contact is closed when the relay is de-energized and opens when the relay is activated (pulled).

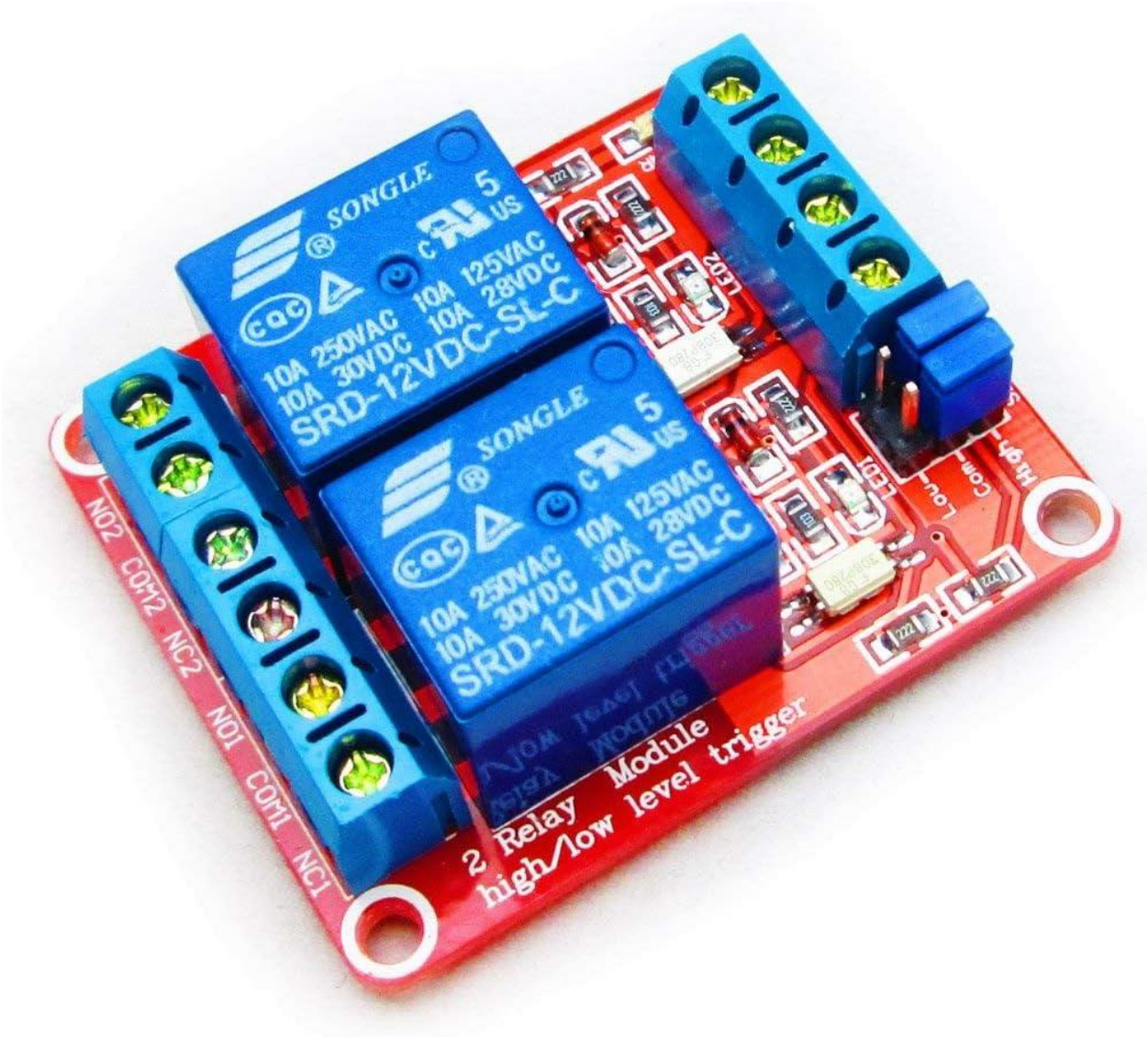

Figure 2: Detailed view of a single module, showing the relay components, screw terminals, and jumper settings for trigger level.

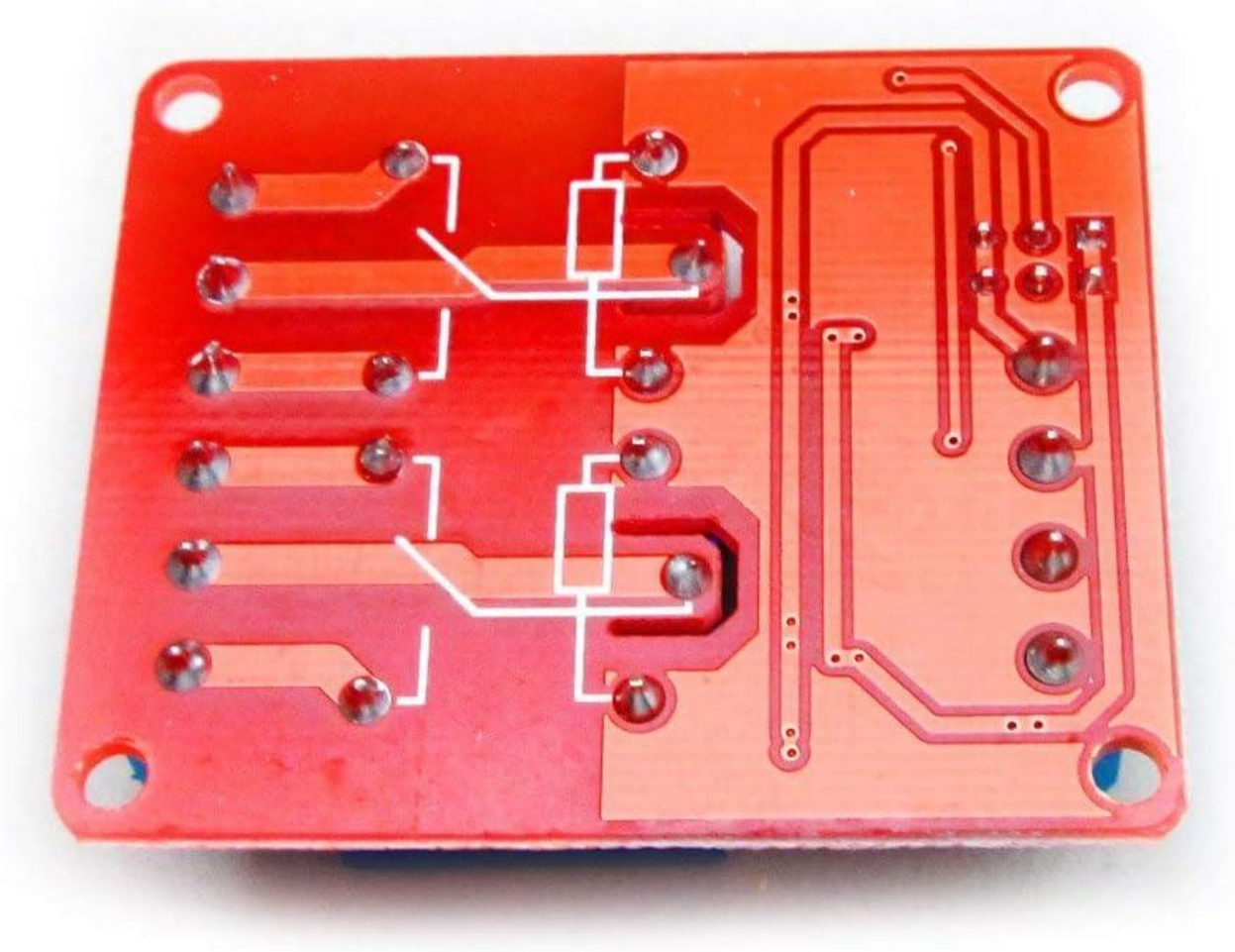

Figure 3: Underside of the relay module, illustrating the PCB traces and solder points for the components.

4. Setup and Connection

Proper connection of the relay module is crucial for its functionality and safety. Follow these steps for setup:

1. **Power Supply Connection:** Connect your DC 12V power supply to the module. The positive terminal of the power supply should connect to the **DC+** terminal on the module, and the negative terminal (ground) should connect to the **DC-** terminal. Ensure the power supply is stable and within the specified voltage range.
2. **Trigger Level Configuration:** The module supports both high and low-level triggering. Use the onboard jumpers to select the desired trigger level for IN1 and IN2.

- For **High-Level Trigger**: Connect the jumper between the "COM" and "HIGH" pins. The relay will activate when a high voltage signal (e.g., 12V) is applied to IN1 or IN2.
- For **Low-Level Trigger**: Connect the jumper between the "COM" and "LOW" pins. The relay will activate when a low voltage signal (e.g., 0V or ground) is applied to IN1 or IN2.

Note: *This relay module is specifically designed to be triggered by a DC 12V signal. It cannot be directly triggered by a 5V Arduino signal without additional circuitry to step up the voltage.*

3. **Signal Input Connection:** Connect your control signal source (e.g., microcontroller output, switch) to the **IN1** and **IN2** terminals according to your chosen trigger level.
4. **Load Connection:** Connect the device or circuit you wish to control to the relay output terminals (NO, COM, NC).
    - For a circuit that should be **ON when the relay is activated**: Connect one side of your load to **COM1/COM2** and the other side to **NO1/NO2**.
    - For a circuit that should be **OFF when the relay is activated**: Connect one side of your load to **COM1/COM2** and the other side to **NC1/NC2**.

5. Operating Instructions

Once the module is correctly wired and powered, its operation is straightforward:

1. **Power Indicator:** Upon applying 12V DC power, the green power indicator LED on the module will illuminate, indicating that the module is receiving power.
2. **Relay Activation:**
    - If configured for **High-Level Trigger**: When a 12V signal is applied to IN1 (for Relay 1) or IN2 (for Relay 2), the corresponding relay will activate. The red relay status indicator LED for that channel will light up. When the signal is removed (or goes low), the relay will de-activate.
    - If configured for **Low-Level Trigger**: When a low signal (0V or ground) is applied to IN1 (for Relay 1) or IN2 (for Relay 2), the corresponding relay will activate. The red relay status indicator LED for that channel will light up. When the signal is removed (or goes high), the relay will de-activate.
3. **Contact Switching:** When a relay activates, its internal switch changes state:
    - The connection between COM and NO will close.

- The connection between COM and NC will open.

When the relay de-activates, the contacts return to their default states.

Always ensure that the current and voltage ratings of your connected load do not exceed the maximum ratings of the relay (AC 250V/10A, DC 30V/10A) to prevent damage to the module or connected devices.

6. Specifications

Specification	Value
Brand	HiLetgo
Model Number	3-01-0342
Coil Voltage	12 Volts DC
Current Rating (Relay Contacts)	10 Amps
Maximum Switching Voltage	AC 250V / DC 30V
Contact Type	Normally Open (NO), Normally Closed (NC)
Connector Type	Screw Terminals
Mounting Type	PCB Mount
Product Dimensions (L x W x H)	2 x 1.6 x 0.72 inches (approx. 50mm x 41mm x 18.5mm)
Item Weight	1.76 ounces
Material Type	FR4
Color	Red (PCB)

7. Troubleshooting

- **Relay not activating:**
    - Verify that the 12V DC power supply is correctly connected to DC+ and DC- terminals and is providing stable 12V. Check if the green power LED is on.
    - Ensure the trigger signal (IN1/IN2) matches the configured trigger level (high or low) set by the jumpers.
    - Confirm that the trigger signal is indeed 12V, not 5V or another voltage, as the module requires 12V for triggering.
    - Check for loose wiring connections at the screw terminals.
- **Relay activating unexpectedly:**
    - Re-check the jumper settings for high/low level triggering. An incorrect setting can cause unintended activation.
    - Ensure there is no stray voltage or noise on the IN1/IN2 lines that could inadvertently trigger the relay.
- **Load not switching:**
    - Confirm the relay is activating (red LED illuminates).
    - Verify that the load is correctly wired to the COM and NO/NC terminals.
    - Check the load's power supply and ensure it is functioning correctly.
    - Ensure the load's current and voltage requirements do not exceed the relay's maximum ratings.

8. Maintenance

The HiLetgo 2-Channel Relay Module is designed for durability and requires minimal maintenance. However, following these guidelines can help ensure its longevity:

- **Keep Clean:** Periodically inspect the module for dust or debris accumulation. Use a soft, dry brush or compressed air to gently clean the board. Avoid using liquids or solvents.
- **Environmental Conditions:** Operate the module within its specified temperature and humidity ranges. Avoid exposure to extreme temperatures, moisture, or corrosive environments.
- **Secure Connections:** Regularly check all screw terminal connections to ensure they are tight and secure. Loose connections can lead to intermittent operation or overheating.

- **Visual Inspection:** Occasionally inspect the module for any signs of physical damage, such as cracked components, burnt traces, or swollen capacitors. If damage is observed, discontinue use.

9. Warranty and Support

For technical support, troubleshooting assistance, or warranty inquiries regarding your HiLetgo 2-Channel Relay Module, please contact the seller or manufacturer directly. Refer to your purchase documentation for specific warranty terms and contact information.

You can typically find support information on the HiLetgo official website or through the platform where the product was purchased. For general inquiries, you may visit the HiLetgo Store on Amazon.