

XINGYHENG XH-M131 Light Automatic Control Module 12V Instruction Manual

Model: XH-M131 (Part No. XLX-1514) | Brand: XINGYHENG

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the XINGYHENG XH-M131 Light Automatic Control Module. This 12V photosensitive relay module is designed for automatic light control applications, enabling devices to switch on or off based on ambient light conditions. Please read this manual thoroughly before use to ensure proper functionality and safety.

2. Product Overview

The XH-M131 module integrates a photosensitive resistor (CdS cell) with a 12V relay, allowing for light-activated switching. It features adjustable sensitivity and clear indicator LEDs for power and relay status.

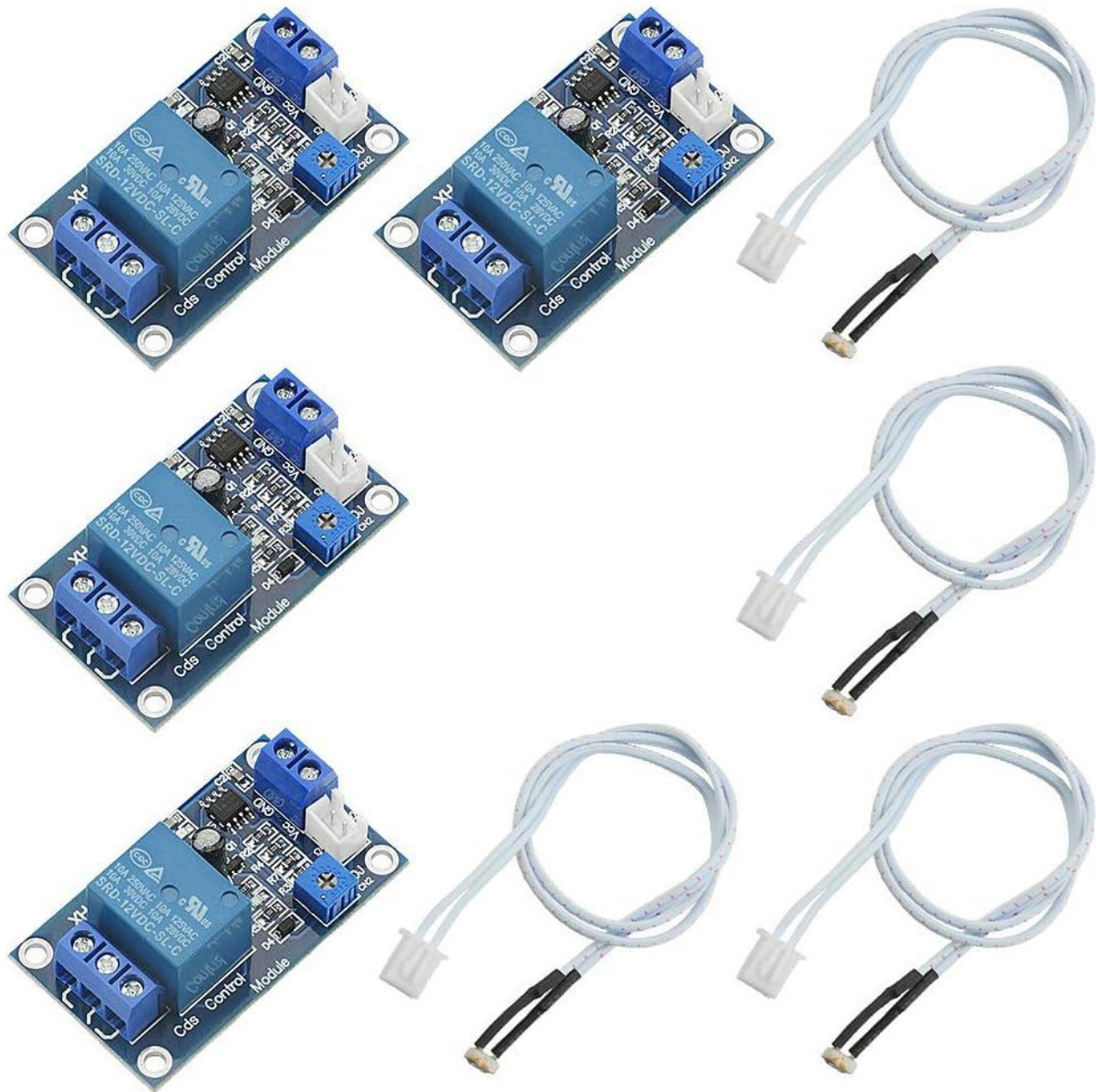


Figure 2.1: Overview of four XH-M131 modules, each with a connected photosensitive sensor. These modules are designed for automatic light-dependent switching.

Key Components:

- **Photosensitive Resistor (CdS Cell):** Detects ambient light levels. Connected via a 2-pin connector.
- **Potentiometer (ADJ):** Used to adjust the light sensitivity threshold for relay activation.
- **12V Relay:** An SRD-12VDC-SL-C relay capable of switching up to 10A at 250V AC or 30V DC.

- **Power Input Terminals (VCC, GND):** For connecting the 12V DC power supply.
- **Relay Output Terminals (NO, COM, NC):** Normally Open, Common, and Normally Closed contacts for connecting the load.
- **LED Indicators:** Red LED for power status, Blue LED for relay activation status.

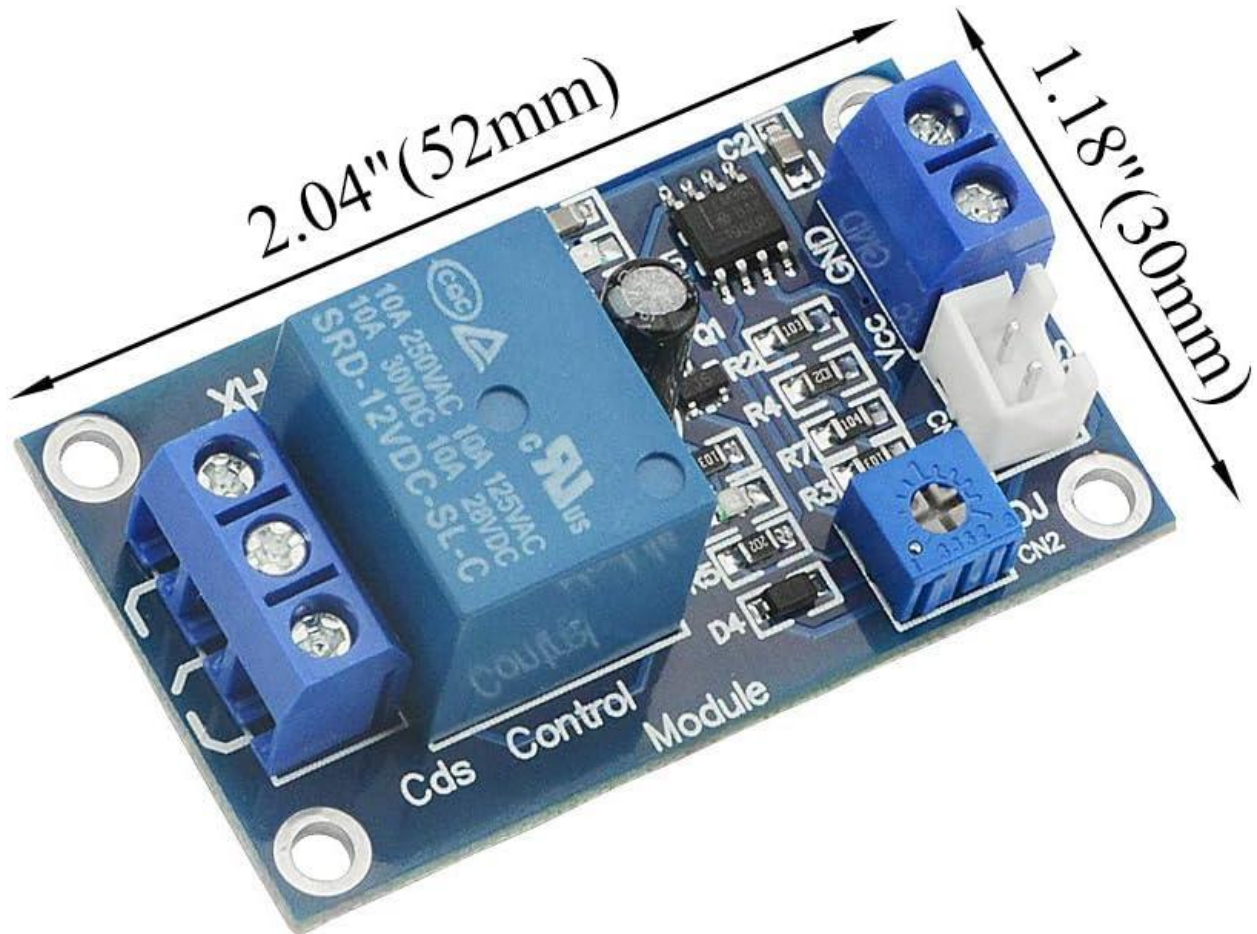


Figure 2.2: Dimensions of the XH-M131 module, measuring approximately 52mm by 30mm.

Figure 2.3: Top-down view highlighting the power input (VCC, GND), photosensitive sensor input (CDS), sensitivity adjustment potentiometer (ADJ), and relay output terminals.

3. Specifications

Parameter	Value
Operating Voltage	12V DC
Output Type	Relay Switch Output
Control Capacity (Relay)	Max 10A
Load Capacity	10A / AC 250V or DC up to 30V
Contact Type	Normally Open (NO), Common (COM), Normally Closed (NC)
Connector Type	Screw Terminals
Mounting Type	Screw Mount
Material	Acrylonitrile Butadiene Styrene, Plastic
Operating Temperature	-20°C to +85°C
Dimensions (Approx.)	52mm x 30mm (2.04" x 1.18")
Weight	Approx. 0.1KG (per module)

4. Setup

4.1 Wiring Diagram

Refer to the module layout for terminal identification. Ensure all connections are secure before applying power.

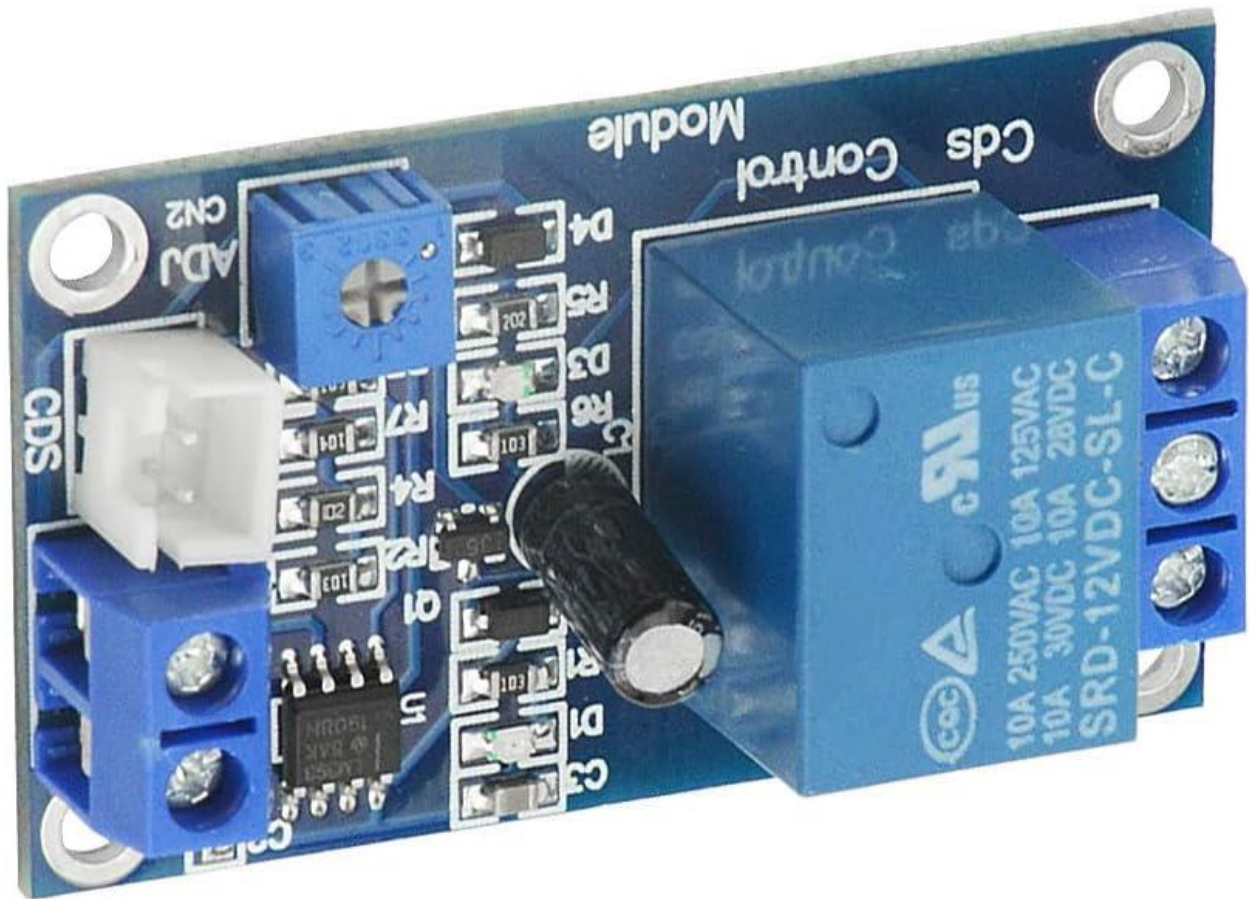


Figure 4.1: Angled view of the module, illustrating the various connection points and components.

1. **Power Supply Connection:**

- Connect the **positive (+)** terminal of a 12V DC power supply to the **VCC** terminal on the module.
- Connect the **negative (-)** terminal of the 12V DC power supply to the **GND** terminal on the module.

2. **Photosensitive Sensor Connection:**

- Plug the provided photosensitive resistor (CdS cell) into the **CDS** 2-pin connector on the module. The sensor can be remotely mounted using its attached lead wire.

3. **Load Connection (Relay Output):**

- The relay has three terminals: **NO** (Normally Open), **COM** (Common), and **NC** (Normally Closed).

- To switch a device **ON when light is detected** (or OFF when dark), connect your device's power line through **COM** and **NO**.
- To switch a device **OFF when light is detected** (or ON when dark), connect your device's power line through **COM** and **NC**.
- Ensure the load's voltage and current ratings do not exceed the relay's maximum capacity (10A / AC 250V or DC 30V).

4.2 Initial Power-Up and Indicator LEDs

Once power is applied to VCC and GND:

- The **Red LED** will illuminate, indicating that the module is powered on.
- The **Blue LED** indicates the relay's status. Its behavior depends on the ambient light and the potentiometer setting.

5. Operating Instructions

5.1 Adjusting Sensitivity

The module's light detection threshold is adjusted using the blue potentiometer labeled **ADJ**. This allows you to set the specific light level at which the relay will activate or deactivate.

1. Place the photosensitive sensor in the desired location where light detection is needed.
2. Apply power to the module. The Red LED should be on.
3. Use a small screwdriver to slowly turn the **ADJ** potentiometer.
4. Observe the Blue LED and listen for the relay click. Turning the potentiometer clockwise or counter-clockwise will increase or decrease the sensitivity, respectively.
5. Adjust until the relay activates (Blue LED changes state) at your desired ambient light level. For example, if you want the relay to activate when it gets dark, adjust the potentiometer until the Blue LED changes state at that specific darkness level.

Note: The potentiometer can be very sensitive around the crossover point. Make small adjustments for precise control.

5.2 Relay Operation

The relay acts as an electrical switch. When the light level crosses the set threshold, the relay coil is energized or de-energized, causing the internal contacts to switch. This changes the connection between the COM terminal and either the NO or NC terminal.

- **Normally Open (NO):** The circuit between COM and NO is open (disconnected) when the relay is inactive, and closed (connected) when the relay is active.
- **Normally Closed (NC):** The circuit between COM and NC is closed (connected) when the relay is inactive, and open (disconnected) when the relay is active.

6. Troubleshooting

- **Module Not Powering On (Red LED Off):**
 - Check the 12V DC power supply connection to VCC and GND. Ensure correct polarity.
 - Verify the power supply is providing 12V DC.
- **Relay Not Activating/Deactivating:**
 - Ensure the photosensitive sensor is correctly plugged into the CDS connector.
 - Adjust the **ADJ** potentiometer slowly. The sensitivity might be set too high or too low for the current ambient light conditions.
 - Check the photosensitive sensor for damage or obstruction.
 - Verify the load connected to the relay is functioning correctly and within the relay's specifications.
- **Incorrect Relay Terminal Orientation:**
 - In rare cases, the relay screw terminal block might be mounted incorrectly. If you are unable to make a connection, inspect the terminal block. This may require advanced electronic repair (de-soldering and re-soldering) and should only be attempted by qualified individuals.
- **Oscillation During Light Transition:**
 - If the relay rapidly switches on and off during twilight or dawn, the sensitivity setting is likely too precise for the fluctuating light. Adjust the **ADJ** potentiometer slightly to create a wider hysteresis, preventing rapid switching.

7. Maintenance

The XH-M131 module is designed for reliable operation with minimal maintenance.

- **Cleaning:** Keep the module and photosensitive sensor free from dust and debris. Use a soft, dry cloth for cleaning. Avoid liquid cleaners.

- **Environment:** Operate the module within its specified temperature range (-20°C to +85°C). Protect it from moisture, direct water exposure, and corrosive environments.
- **Connections:** Periodically check all wiring connections to ensure they remain secure.

8. Warranty and Support

XINGYHENG products are manufactured to high standards. For specific warranty information or technical support, please refer to the product packaging or contact your retailer. General support inquiries can be directed to XINGYHENG customer service through their official channels.

For additional resources and community support, searching for "XH-M131" online may provide further documentation and project examples from other users.