Acxico LB135

Acxico KY-008 Laser Transmitter and Receiver Sensor Module Kit User Manual

Model: LB135

1. Introduction

This manual provides detailed instructions for the setup, operation, and maintenance of the Acxico KY-008 Laser Transmitter and Receiver Sensor Module Kit. This kit is designed for use with microcontrollers like Arduino and AVR, enabling various laser detection and control applications.
The kit includes two sets, each comprising a KY-008 Laser Transmitter Module and a Laser Receiver Sensor Module. These modules are suitable for educational projects, prototyping, and integration into custom electronic systems.

2. Product Overview

The Acxico KY-008 Laser Sensor Module Kit consists of two primary components:

2.1 KY-008 Laser Transmitter Module

This module generates a 650 nm red laser beam. It operates at 5V and features a 3-pin interface for power and control. The laser diode is mounted on a small PCB, making it compact for integration.

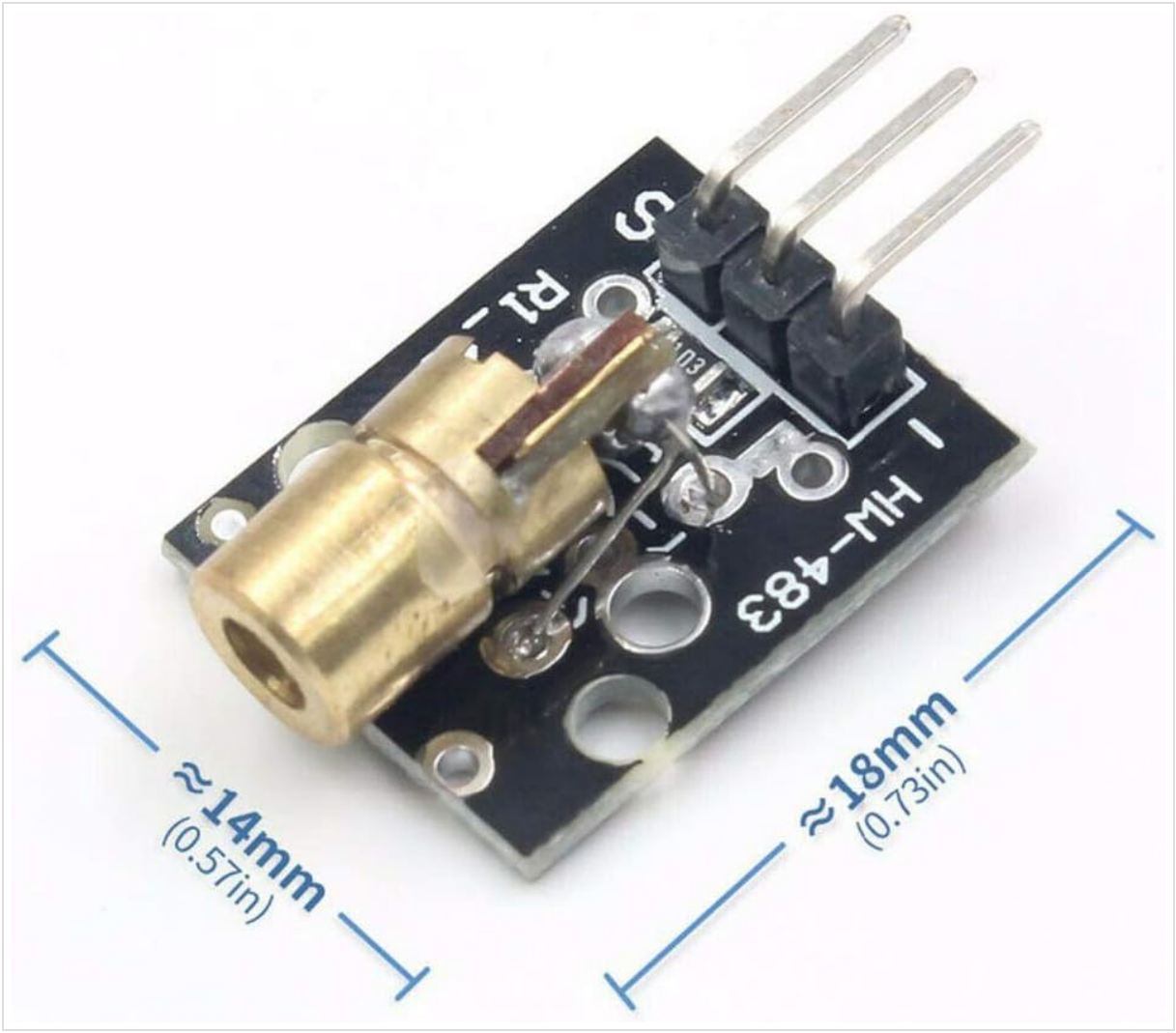

Image 2.1: KY-008 Laser Transmitter Module. This image shows the compact laser transmitter module with approximate dimensions of 14mm by 18mm. It features a brass laser diode housing and a 3-pin header.

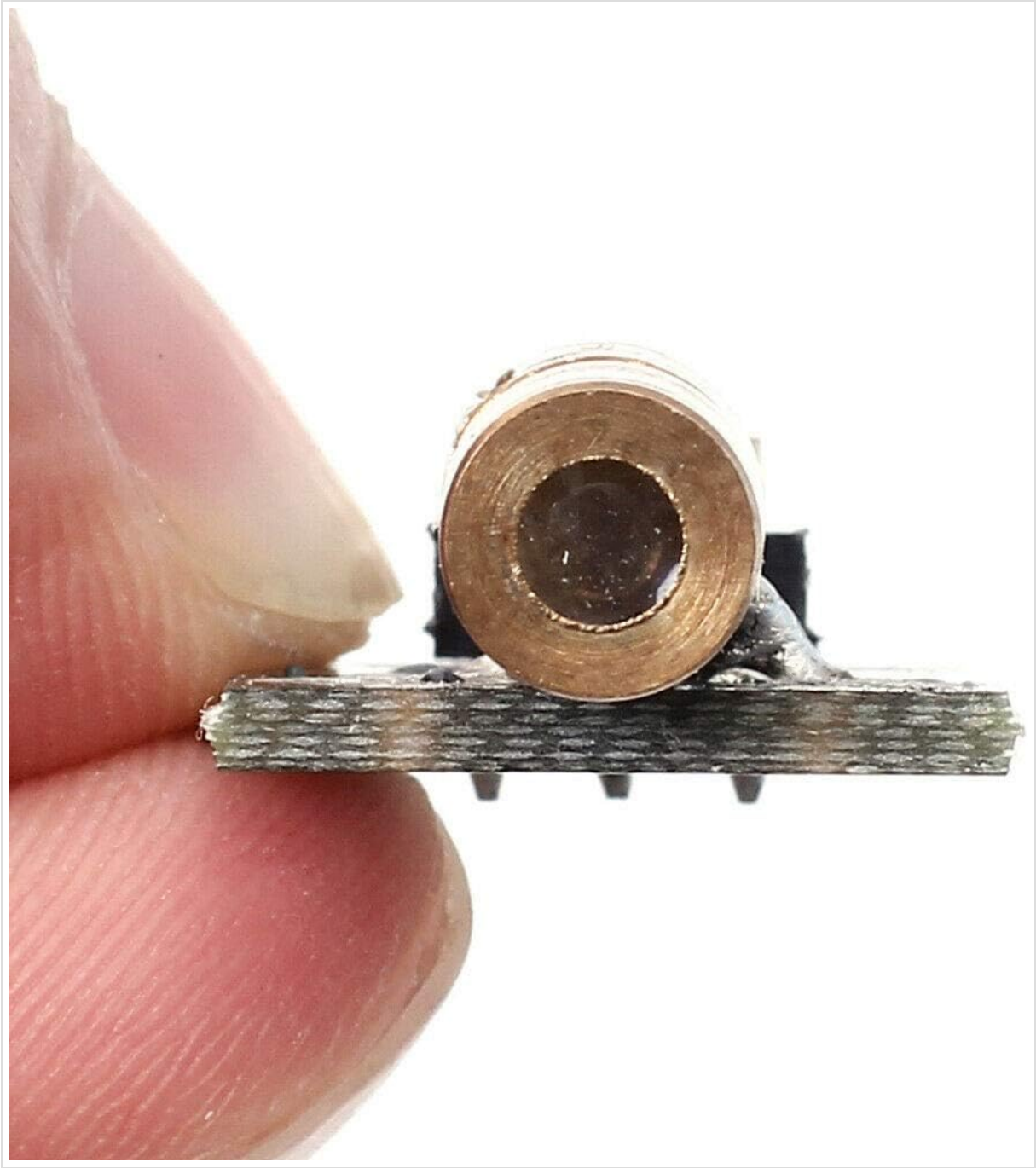

Image 2.2: Close-up of the Laser Transmitter Module. A detailed view of the laser module, highlighting the brass casing of the laser diode and its mounting on the PCB.

2.2 Laser Receiver Sensor Module

This module detects the laser beam emitted by the transmitter. It operates at 5V and provides a digital output: a high-level signal when irradiated by a laser and a low-level signal when no laser is detected. This module is designed for use in environments without significant ambient light interference.

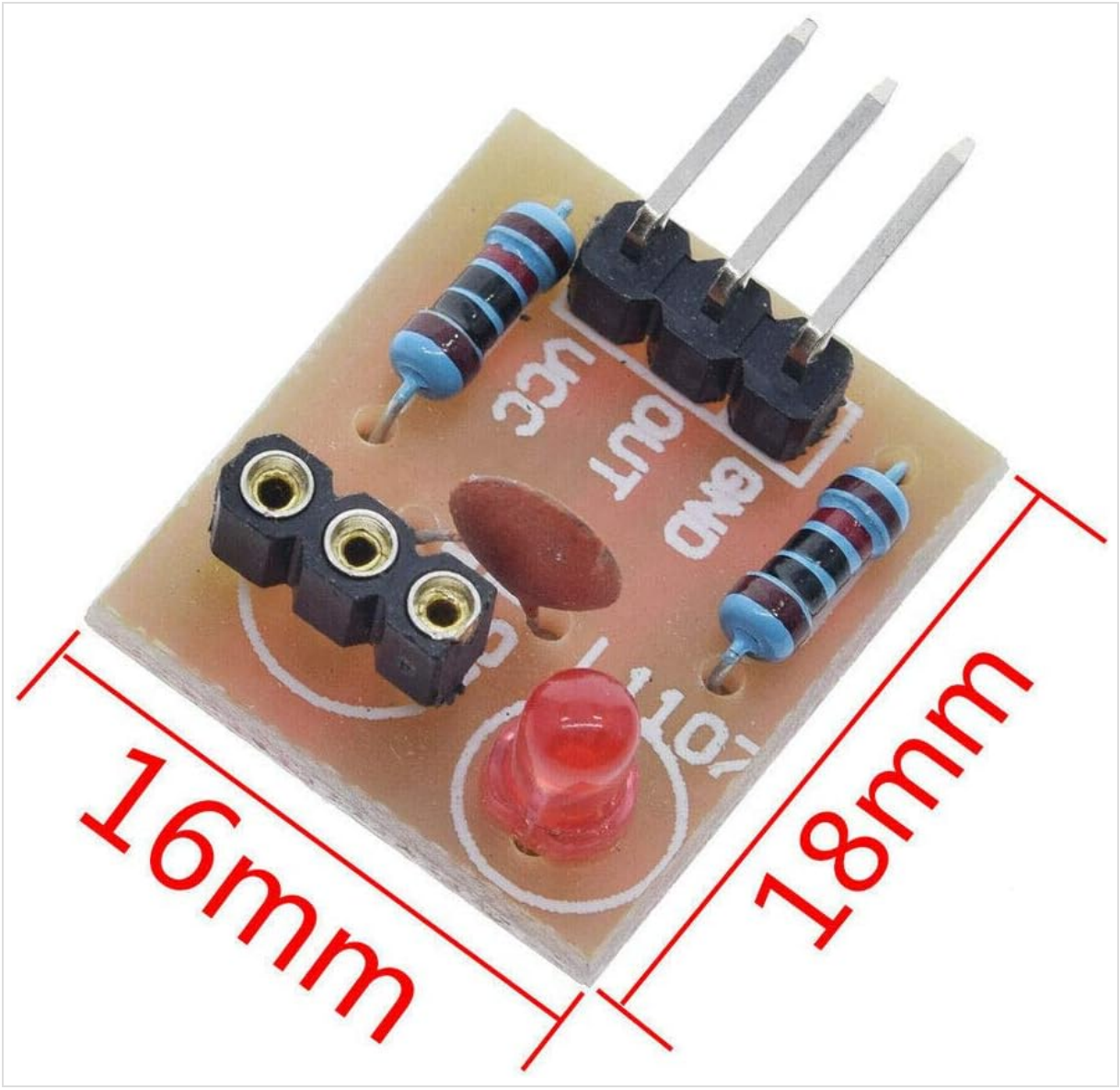

Image 2.3: Laser Receiver Sensor Module. This image displays the laser receiver module with approximate dimensions of 16mm by 18mm. It includes a photodiode, resistors, and a 3-pin header for connections.

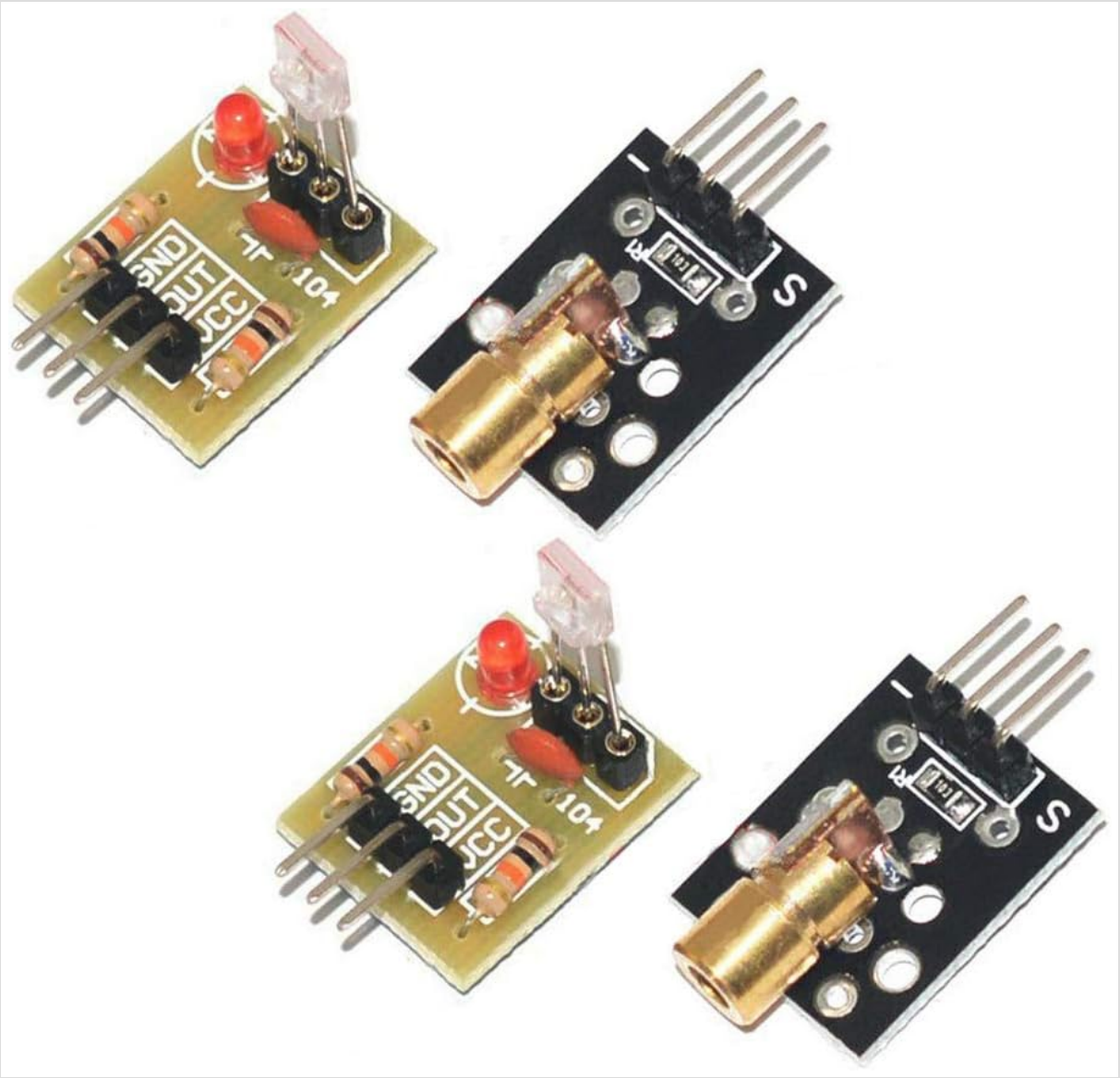

Image 2.4: Complete Kit Contents. An overhead view showing two complete sets of the Acxico laser sensor modules, each consisting of one transmitter and one receiver.

3. Specifications

Feature	Specification
Operating Voltage	5V
Laser Wavelength	650 nm (Red Laser)
Transmitter Module Size	Approximately 15 x 24 mm (0.59 x 0.94 inches)
Receiver Module Size	Approximately 15.2 x 22.2 mm (0.60 x 0.87 inches)
Receiver Output	High level with laser irradiation, Low level without laser irradiation
Material	ABS
Compatibility	Arduino, AVR, and similar microcontrollers

4. Setup Instructions

Follow these steps to connect and set up your Acxico laser sensor modules:

1. **Power Supply:** Connect the VCC pin of both the Laser Transmitter Module and the Laser Receiver Sensor Module to a 5V power source. Connect the GND pin of both modules to the ground (GND) of your power source and microcontroller.
2. **Transmitter Connection:** The KY-008 Laser Transmitter Module typically has three pins: VCC, GND, and S (Signal). For basic operation, connect VCC to 5V and GND to ground. The S pin is often unused for simple laser emission, as the laser activates when power is supplied.
3. **Receiver Connection:** The Laser Receiver Sensor Module also has VCC, GND, and OUT (Output) pins. Connect VCC to 5V and GND to ground. Connect the OUT pin to a digital input pin on your microcontroller (e.g., Arduino).
4. **Alignment:** Position the Laser Transmitter Module and Laser Receiver Sensor Module so that the laser beam from the transmitter directly irradiates the sensor on the receiver module. Precise alignment is crucial for reliable detection.
5. **Environment:** The Laser Receiver Sensor Module uses a non-modulated laser receiver. For optimal performance, operate the modules in a room with minimal ambient light. Direct sunlight or strong artificial lighting can interfere with detection.

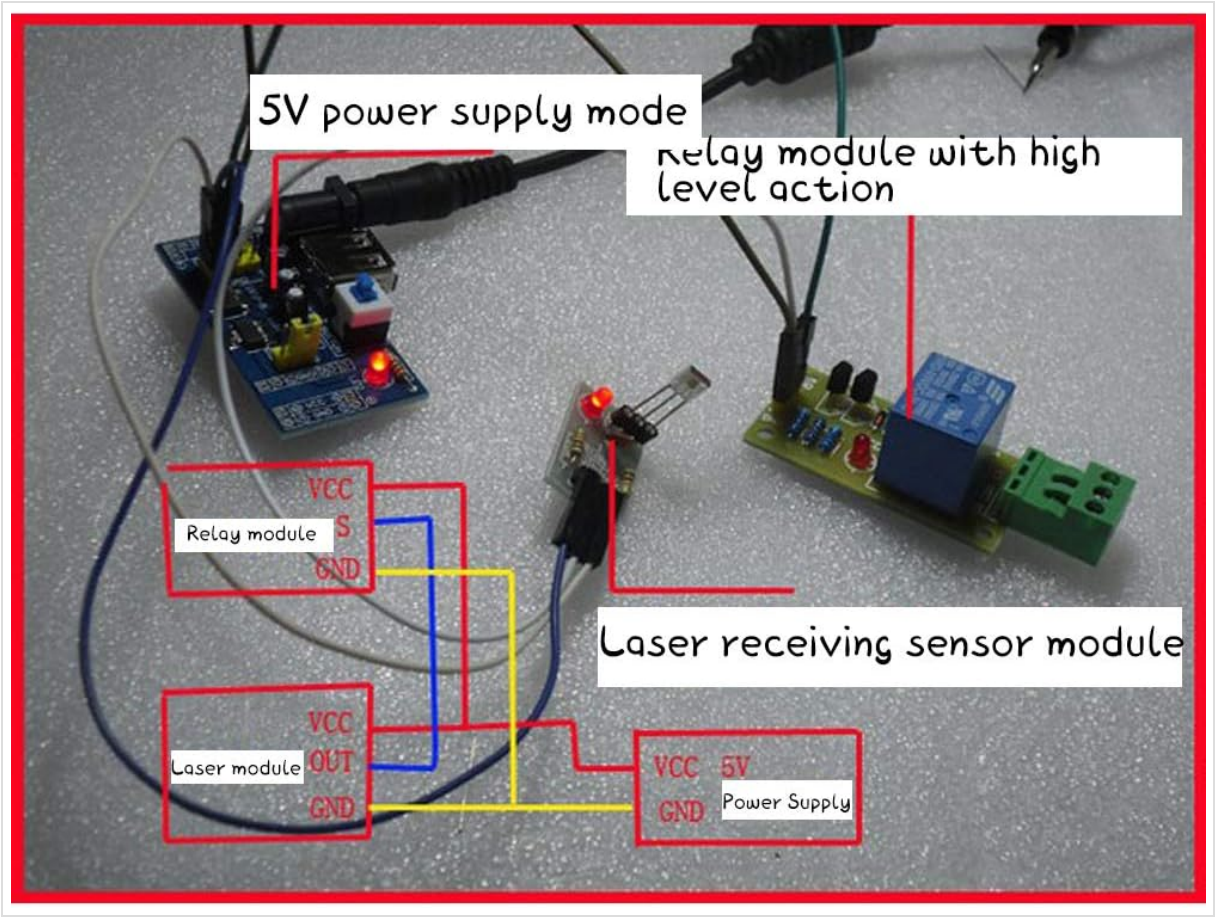

Image 4.1: Example Wiring Diagram. This diagram illustrates how to connect the laser module, laser receiving sensor module, and a relay module to a 5V power supply. The laser module's VCC and GND are connected to the power supply, and the receiver module's VCC, GND, and OUT are connected to the power supply and a relay module's signal input.

5. Operating Instructions

Once the modules are correctly wired and powered, their operation is straightforward:

- **Laser Emission:** The KY-008 Laser Transmitter Module will emit a continuous red laser beam when powered.

- **Laser Detection:** When the laser beam from the transmitter irradiates the sensor on the Laser Receiver Sensor Module, its OUT pin will output a high-level signal (approximately 5V).
- **No Detection:** If the laser beam is interrupted or not irradiating the sensor, the OUT pin of the Laser Receiver Sensor Module will output a low-level signal (approximately 0V).
- **Microcontroller Integration:** Your microcontroller can read the state of the OUT pin to determine if the laser beam is detected or not, allowing you to trigger actions based on this input.

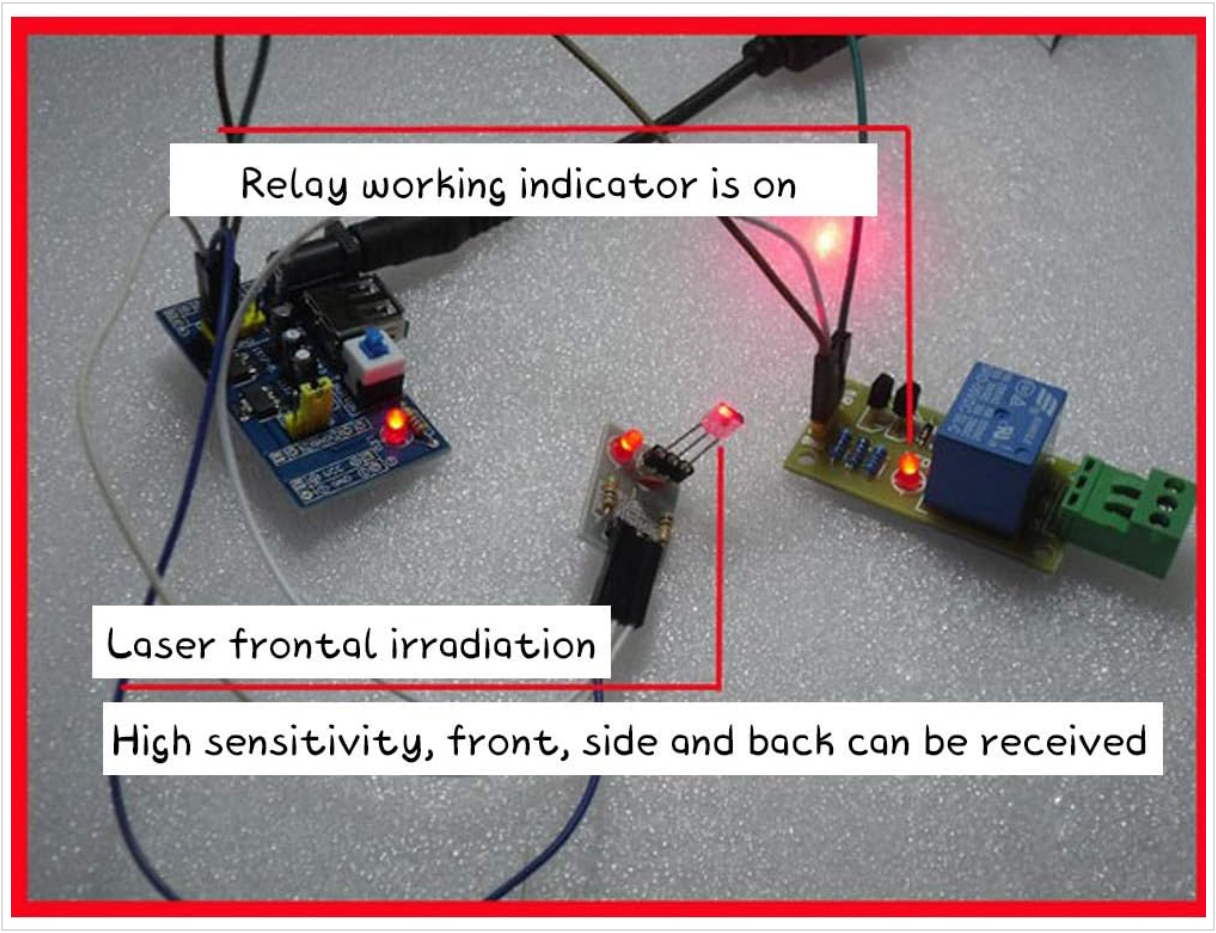

Image 5.1: Laser Detection Example. This image shows the laser transmitter irradiating the receiver module, causing a connected relay module's indicator to light up, signifying a high-level output from the receiver. The setup demonstrates high sensitivity, capable of receiving the laser from front, side, and back angles.

6. Maintenance

These modules are generally low-maintenance. Observe the following guidelines to ensure longevity and optimal performance:

- **Cleanliness:** Keep the laser emitter and receiver sensor free from dust and debris. Use a soft, dry cloth for cleaning. Avoid abrasive materials or harsh chemicals.
- **Handling:** Handle the modules with care. The laser mounting can be delicate; avoid excessive force when adjusting or handling to prevent damage.
- **Storage:** Store the modules in a dry, cool environment, away from direct sunlight and extreme temperatures.
- **Power Supply:** Always ensure the correct operating voltage (5V) is supplied. Incorrect voltage can damage the modules.

7. Troubleshooting

If you encounter issues with your laser sensor module kit, consider the following troubleshooting steps:

- **No Laser Emission:**
  - Verify that the Laser Transmitter Module is receiving 5V power and is correctly grounded.
  - Check for any visible damage to the module or its connections.
- **Receiver Not Detecting Laser:**
  - Ensure the Laser Receiver Sensor Module is receiving 5V power and is correctly grounded.
  - Confirm that the laser beam is accurately aligned and directly hitting the sensor on the receiver module.
  - Minimize ambient light in the operating environment. Strong light sources (sunlight, bright lamps) can interfere with the non-modulated receiver.
  - Check the polarity of your connections. Incorrect polarity can prevent operation or damage the module.
  - Inspect the receiver module for any physical damage.
- **Intermittent Detection:**
  - Improve laser alignment.
  - Reduce ambient light interference.
  - Ensure stable power supply to both modules.
- **Physical Damage:**
  - If the laser mounting appears fragile or damaged, handle with extreme care or consider replacement if functionality is compromised.

8. Warranty and Support

For any issues not resolved by the troubleshooting guide, or for further assistance, please contact Acxico customer support. While specific warranty details are not provided in this manual, general product support can be obtained through the vendor or manufacturer.
Please refer to your purchase documentation for specific warranty terms and contact information.