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› HiLetgo 315Mhz RF Transmitter and Receiver Module Kit User Manual

HiLetgo 3-01-0082

HiLetgo 315Mhz RF Transmitter and Receiver Module Kit User Manual

Model: 3-01-0082

PRODUCT OVERVIEW

This HiLetgo 315Mhz RF Transmitter and Receiver Module link kit is designed for various microcontroller applications, including Arduino, ARM, MCU, and Raspberry Pi projects. It provides a simple and effective way to add wireless communication capabilities to your electronic designs.

Package Contents

- 1 x Receiver module
- 1 x Transmitter Module

Module Identification

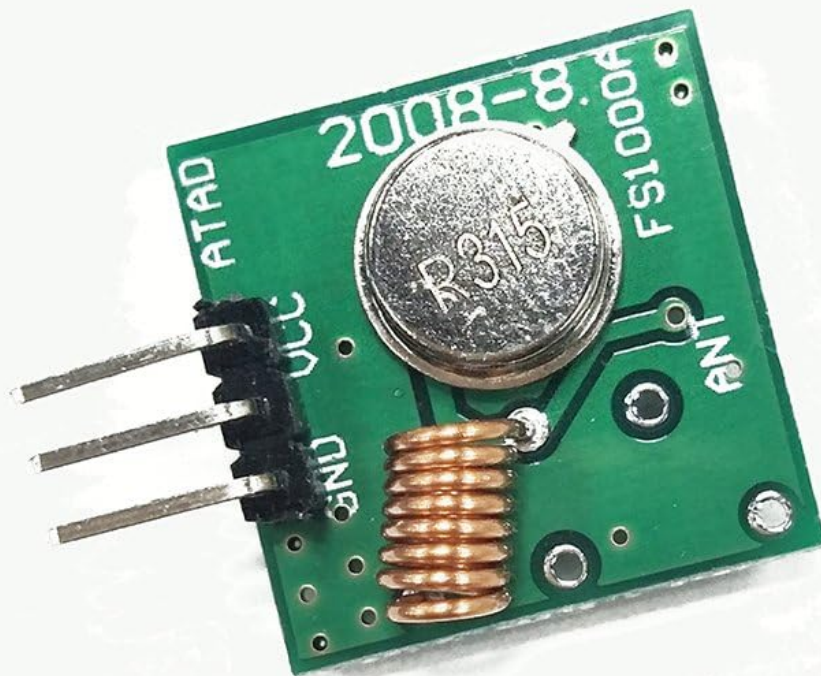


Image of the HiLetgo 315Mhz RF Transmitter Module (MX-FS-03V). This module is green, square-shaped, with three pins on one side labeled DATA, VCC, and GND. It features a small coiled antenna and a metal can resonator labeled R315.

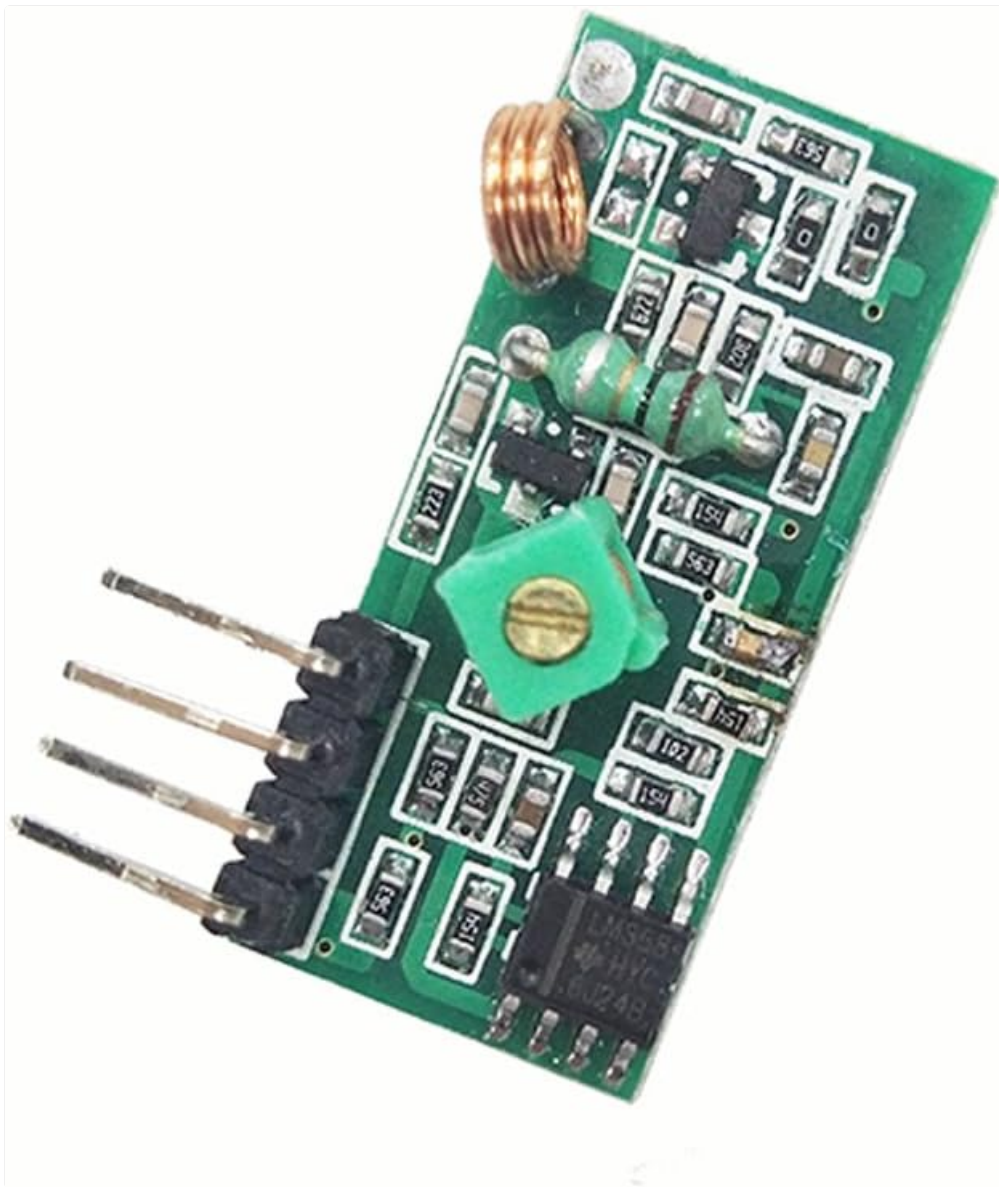


Image of the HiLetgo 315Mhz RF Receiver Module (MX-05V). This module is green, rectangular, with four pins on one side. It includes various surface-mount components and a small adjustable inductor (green square with a screw).

Safety Information

It is important to handle electronic components with care. Observe the following safety guidelines:

- Handle batteries with care and dispose of them properly.
- Avoid using the device near other wireless devices to prevent interference.
- Ensure correct voltage and polarity when connecting power to prevent damage to the modules.
- Do not exceed the maximum operating voltage specified for each module.

Specifications

Receiver Module (MX-05V)

Product Model	MX-05V
Operating Voltage	DC 5V
Quiescent Current	4mA

Receiving Frequency	315Mhz
Receiver Sensitivity	-105dB
Dimensions	30 x 14 x 7mm
External Antenna	32CM single core wire, wound into a spiral

Transmitter Module (MX-FS-03V)

Product Model	MX-FS-03V
Launch Distance	20-200 meters (varies with voltage)
Operating Voltage	3.5-12V
Dimensions	19 x 19mm
Operating Mode	AM (Amplitude Modulation)
Transfer Rate	4KB/S
Transmitting Power	10mW
Transmitting Frequency	315Mhz
External Antenna	25cm ordinary multi-core or single-core line
Pinout (Left to Right)	DATA; VCC; GND

SETUP AND CONNECTION

Proper connection of the transmitter and receiver modules is crucial for their operation. Refer to the pinout diagrams and connection examples below.

Transmitter Module Pinout (MX-FS-03V)

DATA: Data input pin. Connect this to the digital output pin of your microcontroller.

VCC: Power supply input. Connect to a 3.5V to 12V DC power source.

GND: Ground connection. Connect to the ground of your power supply and microcontroller.

Receiver Module Pinout (MX-05V)

The receiver module typically has 4 pins: VCC, DATA, DATA, GND. Some modules may have two data pins that can be used interchangeably or for redundancy.

VCC: Power supply input. Connect to a 5V DC power source.

DATA: Data output pin. Connect this to the digital input pin of your microcontroller.

GND: Ground connection. Connect to the ground of your power supply and microcontroller.

Antenna Connection

For optimal performance, an external antenna is required for both modules. For the receiver, use a 32cm single core wire wound into a spiral. For the transmitter, use a 25cm ordinary multi-core or single-core line. Solder the antenna wire to the designated "ANT" pad on each module.



Diagram illustrating the basic connection of the RF Transmitter and Receiver modules to a power source and microcontroller. The transmitter shows connections for DATA, VCC (3-12V), and GND, with a signal output to the microcontroller for encoding. The receiver shows connections for VCC (5V), GND, and Signal Input, with a signal output to a device after microcontroller decoding.

OPERATING INSTRUCTIONS

These modules operate on Amplitude Modulation (AM) at 315Mhz. They are typically used for simple data transmission, such as on/off signals or short data packets.

Transmitting Data

1. **Connect Power:** Supply 3.5V to 12V DC to the VCC pin and connect GND.
2. **Connect Data:** Connect the DATA pin to a digital output pin of your microcontroller (e.g., Arduino).
3. **Encode Data:** Use a suitable library (e.g., RadioHead, RC-Switch for Arduino) to encode the data you wish to transmit. These libraries handle the timing and modulation required for reliable AM transmission.
4. **Transmit:** Send the encoded data through the DATA pin. The module will convert this digital signal into a 315Mhz RF signal.

Receiving Data

1. **Connect Power:** Supply 5V DC to the VCC pin and connect GND.
2. **Connect Data:** Connect one of the DATA pins to a digital input pin of your microcontroller.
3. **Decode Data:** Use the same library (or a compatible one) on the receiving microcontroller to decode the incoming signal. The receiver module outputs a digital signal that corresponds to the transmitted data.
4. **Process Data:** Once decoded, your microcontroller can process the received data to control other devices or trigger actions.

Note: The effective transmission and reception range can vary significantly based on environmental factors, antenna quality, and power supply stability.

MAINTENANCE

These modules are low-maintenance electronic components. Follow these guidelines to ensure their longevity:

- **Keep Dry:** Avoid exposure to moisture or high humidity, which can damage the electronic components.
- **Clean Gently:** If cleaning is necessary, use a dry, soft cloth. Do not use liquid cleaners or solvents.
- **Protect from Static:** Handle modules by their edges and use anti-static precautions (e.g., anti-static mat, wrist strap) to prevent electrostatic discharge (ESD) damage.
- **Secure Connections:** Ensure all wire connections are secure and properly insulated to prevent short circuits.

TROUBLESHOOTING

If you encounter issues with your RF modules, consider the following troubleshooting steps:

No Signal or Poor Range

- **Antenna Check:** Ensure both transmitter and receiver have properly connected antennas of the correct length (25cm for TX, 32cm for RX). A poorly connected or missing antenna is a common cause of poor performance.
- **Power Supply:** Verify that both modules are receiving the correct voltage (3.5-12V for TX, 5V for RX) and that the power supply is stable and capable of providing sufficient current.
- **Frequency Tuning (Receiver):** The receiver module (MX-05V) may have a small adjustable inductor (often a green square with a screw) that can be used to fine-tune the receiving frequency. Gently adjust this with a non-metallic screwdriver while the transmitter is sending a continuous signal, observing the data output on your microcontroller.
- **Interference:** High levels of RF noise in the environment can degrade performance. Try operating the modules in a different location or away from other wireless devices.
- **Line of Sight:** RF signals are affected by obstacles. Ensure there is a clear line of sight between the transmitter and receiver, especially for longer distances.

Incorrect Data Received

- **Baud Rate/Timing:** Ensure that the data encoding and decoding libraries on both the transmitter and receiver microcontrollers are configured with compatible baud rates and timing parameters.
- **Noise Filtering:** The receiver output can be noisy. Implement software filtering or error checking (e.g., checksums) in your microcontroller code to validate received data.
- **Grounding:** Ensure a common ground connection between the modules and their respective microcontrollers. Poor grounding can introduce noise.

Module Not Powering On

- **Polarity:** Double-check that VCC and GND connections are not reversed.
- **Voltage:** Confirm that the supplied voltage is within the specified operating range for each module.
- **Short Circuits:** Inspect for any accidental short circuits on the module or connecting wires.

WARRANTY AND SUPPORT

For technology support or if any issue you meet on our products, please contact us:

Email: support@hiletgo.com

Website: www.hiletgo.com

Please refer to the original purchase documentation for specific warranty terms and conditions.

