

HiLetgo 3-01-0490-A

HiLetgo Mifare RC522 RFID Kit User Manual

Model: 3-01-0490-A

INTRODUCTION

The HiLetgo Mifare RC522 RFID Kit is a highly integrated read and write module designed for 13.56MHz contactless communication. It utilizes the MFRC522 chip, offering a low-cost, small-sized solution ideal for smart meters, portable handheld devices, and various development projects, particularly with platforms like Arduino and Raspberry Pi.

This kit supports 14443A compatible transponder signals and includes features for ISO14443A framing and error detection. It also supports fast CRYPTO1 encryption algorithms and MIFARE product validation. The MFRC522 facilitates high-speed non-contact communication with MIFARE series cards, achieving two-way data transmission rates up to 424kbit/s.

Communication with a host CPU is simplified via an SPI interface, which helps reduce connection complexity, PCB board size, and overall cost.

SETUP INSTRUCTIONS

This section outlines the basic steps to set up your HiLetgo Mifare RC522 RFID Kit.

Kit Contents:

- 1x MFRC522 RFID Module
- 1x S50 Blank Card
- 1x Key Ring (Key Fob)
- Pin Headers (for soldering)

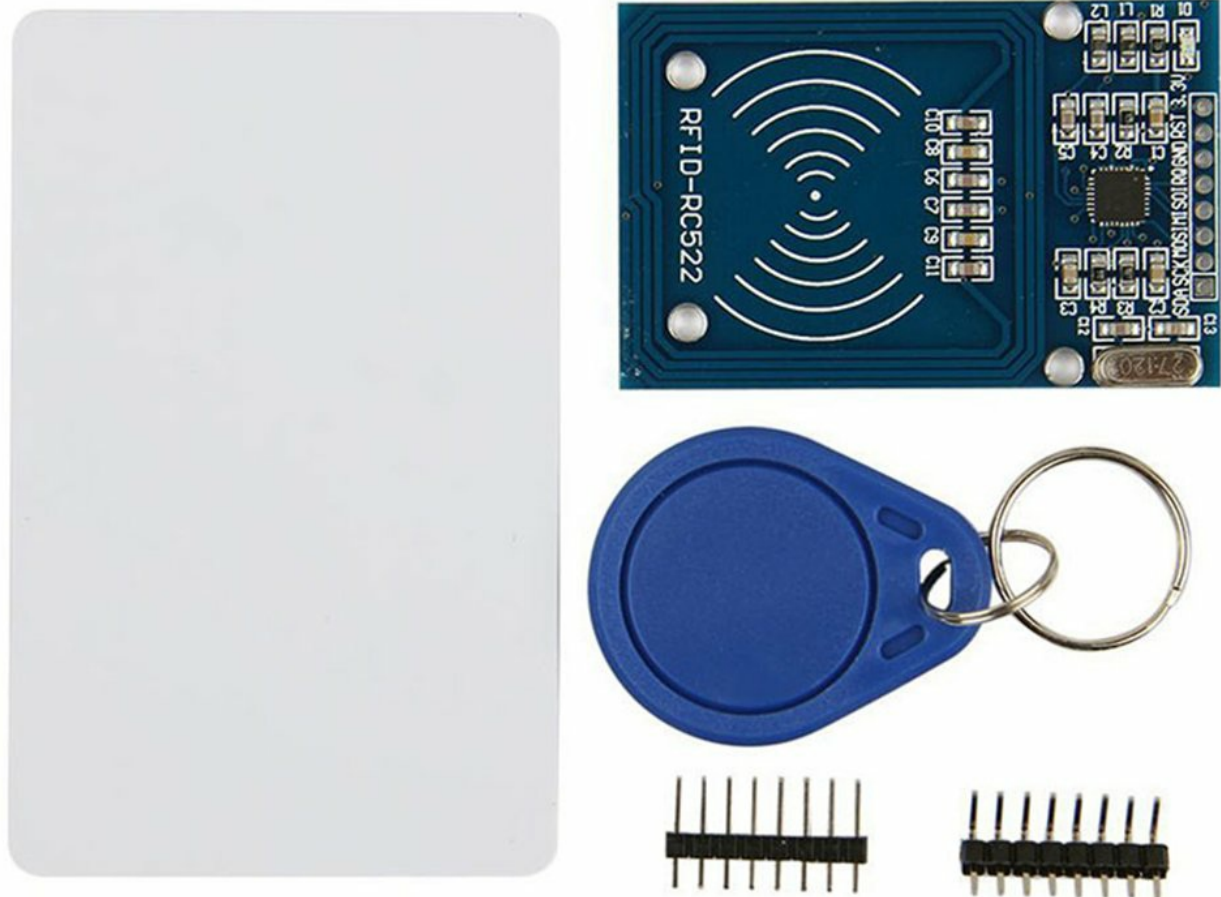


Image: The HiLetgo Mifare RC522 RFID Kit, showing the RC522 module, an S50 blank card, a blue key fob, and pin headers for connection.

Physical Connection:

1. **Solder Pin Headers:** Attach the included pin headers to the MFRC522 module. It is recommended to use the supplied right-angle pins for easier access after mounting.
2. **Power Supply:** The module operates at 3.3V DC. Ensure your power source provides this voltage.
3. **SPI Interface:** Connect the module to your microcontroller (e.g., Arduino, Raspberry Pi) using the Serial Peripheral Interface (SPI). The SPI pins typically include SCK, MOSI, MISO, and SS (Slave Select). Refer to your microcontroller's documentation for specific SPI pin assignments.
4. **RST Pin:** Connect the RST (Reset) pin of the module to a digital pin on your microcontroller.

For detailed wiring diagrams and code examples specific to Arduino or Raspberry Pi, consult online tutorials and community resources. Popular libraries like the MFRC522 Arduino Library are widely available and well-documented.

OPERATING INSTRUCTIONS

Once the module is physically connected and powered, you can begin interacting with RFID tags.

Software Setup:

1. **Install Library:** Download and install a compatible MFRC522 library for your development environment (e.g., Arduino IDE, Python for Raspberry Pi).
2. **Load Example Code:** Most libraries come with example sketches or scripts for reading and writing RFID tags. Load a basic example to test the connection.
3. **Configure Pins:** Modify the example code to match the specific digital pins you used for SS and RST connections.

Reading RFID Tags:

1. **Power On:** Ensure your microcontroller and the RFID module are powered on.
2. **Place Tag:** Position an RFID tag (like the included S50 card or key fob) close to the MFRC522 module's antenna. The optimal reading distance is typically very short, often requiring the tag to be directly on the module's surface.
3. **Observe Output:** The example code will usually print the UID (Unique Identifier) of the detected tag to the serial monitor or console.

Supported Card Types:

The MFRC522 module supports various MIFARE card types, including:

- MIFARE Classic 1K (mifare1 S50)
- MIFARE Classic 4K (mifare1 S70)
- MIFARE Ultralight
- MIFARE Pro
- MIFARE DESFire

MAINTENANCE

To ensure the longevity and reliable operation of your HiLetgo Mifare RC522 RFID Kit, follow these general maintenance guidelines:

- **Keep Dry:** Protect the module from moisture and liquids, as these can cause short circuits and damage electronic components.
- **Avoid Static Discharge:** Handle the module with care, especially in dry environments, to prevent electrostatic discharge (ESD) which can harm sensitive electronics.
- **Clean Gently:** If cleaning is necessary, use a soft, dry cloth. Avoid harsh chemicals or abrasive materials.
- **Proper Storage:** When not in use, store the module in an anti-static bag or a protective container to prevent physical damage and exposure to dust.
- **Inspect Connections:** Periodically check soldered joints and wire connections for any signs of looseness or corrosion.

TROUBLESHOOTING

If you encounter issues with your HiLetgo Mifare RC522 RFID Kit, consider the following troubleshooting steps:

Module Not Responding / No Tag Detection:

- **Check Power:** Verify that the module is receiving a stable 3.3V power supply.
- **Inspect SPI Connections:** Ensure all SPI pins (SCK, MOSI, MISO, SS) and the RST pin are correctly wired to your microcontroller. Double-check for loose connections or incorrect pin assignments.
- **MISO/MOSI Swap:** Some MFRC522 library versions or specific microcontroller setups may require swapping the MISO and MOSI pins. If you're experiencing communication issues, try reversing these two connections.
- **Tag Placement:** Ensure the RFID tag is placed directly on or very close to the module's antenna. The reading range is typically short.
- **Software Library:** Confirm that you are using the correct and up-to-date MFRC522 library for your specific microcontroller and development environment.
- **Example Code:** Test with a known working example code from the library to rule out issues with custom programming.

Inconsistent Readings / SPI Connection Faults:

- **Wiring Quality:** Use high-quality jumper wires and ensure secure connections. Poor wiring can lead to intermittent communication.
- **Grounding:** Ensure a common ground connection between the RFID module and your microcontroller.
- **Interference:** Keep the module away from strong electromagnetic fields or other electronic devices that might cause interference.

SPECIFICATIONS

Electrical Parameters:

Parameter	Value
Operating Current	13-26mA / DC 3.3V
Idle Current	10-13mA / DC 3.3V
Sleep Current	<80uA
Peak Current	<30mA
Operating Frequency	13.56MHz
Connectivity Technology	SPI
Compatible Devices	Arduino, Raspberry Pi

Product Physical Characteristics:

Parameter	Value
Module Size	40mm × 60mm
Operating Temperature	-20°C to 80°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5% - 95%

Parameter	Value
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WARRANTY INFORMATION

HiLetgo products are manufactured to high-quality standards. For specific warranty terms and conditions, please refer to the product packaging or contact HiLetgo customer support directly. General return policies may apply as per the retailer's terms of sale.

SUPPORT

For technical support, inquiries, or any issues you may encounter with your HiLetgo Mifare RC522 RFID Kit, please contact our support team:

- **Email:** support@hiletgo.com
- **Website:** www.hiletgo.com

When contacting support, please provide your product model number (3-01-0490-A) and a detailed description of the issue to help us assist you more efficiently.



Image: HiLetgo product packaging, displaying the brand logo and support contact details.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question