RM-LORA

User Manual

Rev. 1.00

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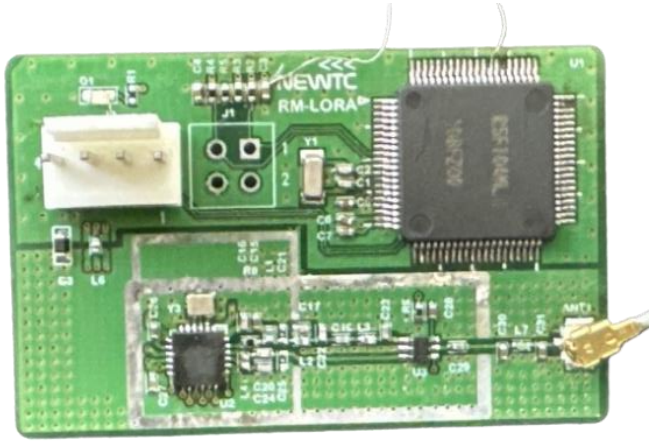
1. RM-LORA LoRa Communication Module

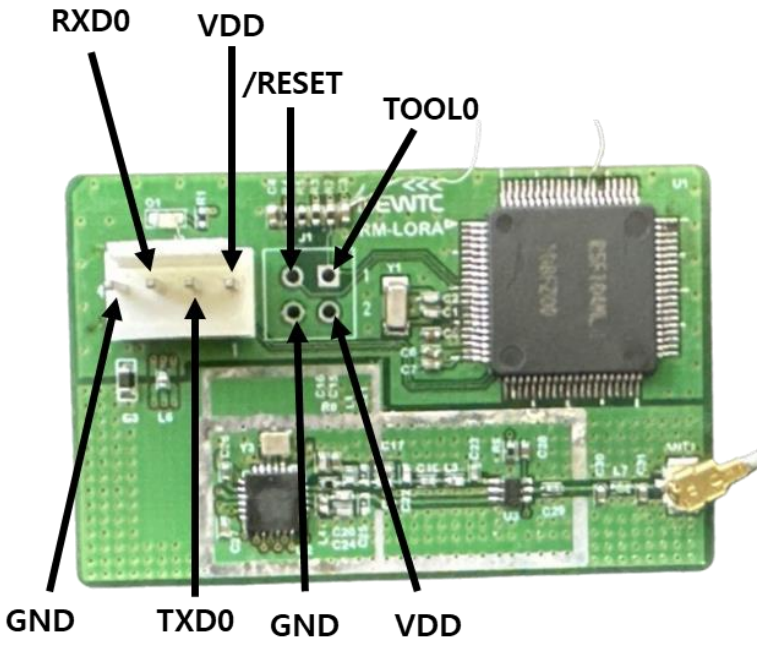


RM-LORA LoRa communication module is a communication module developed using SEMTECH's LoRa chip. You can change the frequency and output using AT commands, and you can also adjust various options or send messages through communication.

According to the specifications of the LoRa communication chip, the communication distance can be set to range from 0 to 15 km.

The LoRa chip is designed to transmit and receive with excellent stability against electromagnetic interference by shielding the RF part using a can lid made of iron.

2. Pin Map

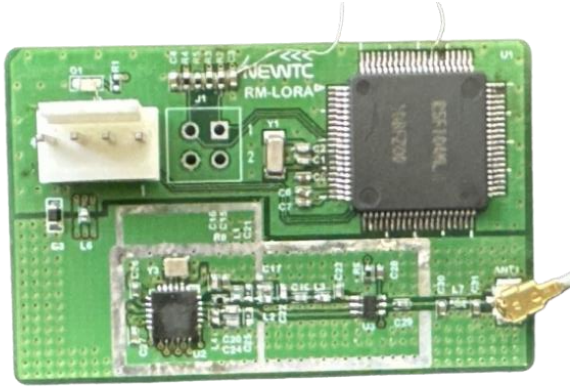


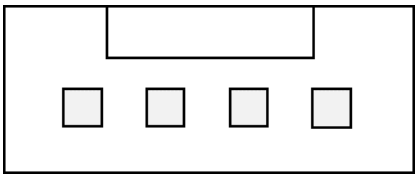
2.1. Detailed explanation of the function of each pin

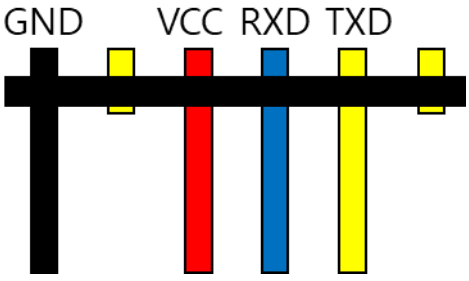
Pin name	Function	explanation
VDD	VDD	Power
TXD0	UART TxD	Pin where RM-LORA module transmits data through UART communication
RXD0	UART RxD	Pin where RM-LORA module receives data through UART communication
GND	GND	Ground
TOOL0	Programming pin	Programming pin used when changing internal firmware
/RESET	Programming pin	Programming pin used when changing internal firmware

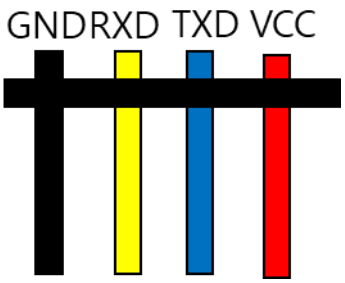
3. Test

Connect RM-LORA module and DM-USB2SERIAL to monitor data transmission and reception of LoRa module using serial communication with PC.









3.1. AT command

Send the AT$0d$0a command to check if an OK signal is output.

Command	Response
AT	OK

Send the AT+FREQ?$0d$0a command to check the currently set frequency.

Command	Response
AT+FREQ	+FREQ:<Current frequency>

You can set the frequency by sending the AT+FREQ=<frequency>$0d$0a command.

Command	Response
AT+FREQ=<frequency>$0d$0a	+FREQ:<set frequency>

You can view the set transmit power by sending the AT+TXPWR?$0d$0a command.

Command	Response
AT+TXPWR?$0d$0a	+TXPWR:<Current Transmission Power>

You can set the transmission power by sending AT+TXPWR=<Transmission Power>$0d$0a command.

The unit is dB.

Command	Response
AT+TXPWR=<Transmission Power>$0d$0a	+TXPWR:<set Transmission Power>

You can enter reception mode by sending the AT+RECV$0d$0a command.

Command	Response
AT+RECV$0d$0a	OK

You can send a preset number of packets by sending the AT+SEND=<number of times to send> command.

If there is a module that has entered reception mode at the same frequency, the received data is displayed.

Command	Response
AT+SEND=<number of times to send>$0d$0a	+TX:1~+TX:<number of times to send

Transmission and reception can be stopped by sending the AT+STOP$0d$0a command.

Command	Response
AT+STOP$0d$0a	OK

The RM-LORA module is capable of both transmitting and receiving.

You can specify the packet to be transmitted by sending the AT+PKT=03,<hexadecimal data>$0d$0a command

Two digits from 0 to 9 and A to F are sent as one byte.

Command	Response
AT+PKT=03,<hexadecimal data>$0d$0a	OK

4. Epilog

4.1. Product Inquiries and Acknowledgments

Thank you for purchasing this NEWTC product. Our company is always working and developing to improve the convenience of AVR users. When using this module, you will need to handle a microcontroller such as AVR. To study the content, please use the examples and lectures provided in the kit or refer to materials such as lectures or data room on the website.

4.2. Technical support homepage

Technical website support: http://www.newtc.co.kr

Various courses, including AVR courses, electronic engineering courses, and robot production courses, are being updated on the technical support homepage, and various necessary files and application programs are being updated in the data room, so please refer to them.

If you have any A/S or inquiries regarding the product, please do not hesitate to leave a comment in the Q&A section of the website. For development-related inquiries, please use email(newtc@newtc.co.kr). Thank you

Rev.	Date	Description
1.00	Mar. 25, 2024	Release version completed

FCC Information to User

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

Caution

Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Compliance Information : This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. This transmitter must not be colocated or operating in conjunction with any other antenna or transmitter.