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USING nRF24L01+ & nRF24L01+ PA LNA WIRELESS MODULE WITH BREAKOUT BOARD

Introduction

The nRF24L01+ module designed to operate in the 2.4 GHz worldwide ISM frequency band and uses GFSK modulation for data transmission. The data transfer rate is configurable and can be set to 250kbps, 1Mbps, or 2Mbps.

Specification

Frequency Range	2.4 GHz ISM Band
Maximum Air Data Rate	2 Mb/s
Modulation Format	GFSK
Max. Output Power	0 dBm
Operating Supply Voltage	1.9 V to 3.6 V
Max. Operating Current	13.5mA
Min. Current(Standby Mode)	26µA
Logic Inputs	5V Tolerant
Communication Range	800+ m (line of sight)

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Objective:

To establish connection and transmit data transfer between two nRF24L01 module.

Note:

Setting up nRF24L01 without breakout can be hit or miss due lack of power consistencies from Arduino. Breakout board will eliminate the voltage inconsistencies to nRF module. Adding external DC 5v power source to breakout board recommended.

Connection Diagram:

Attach Module on Breakout board as picture below.

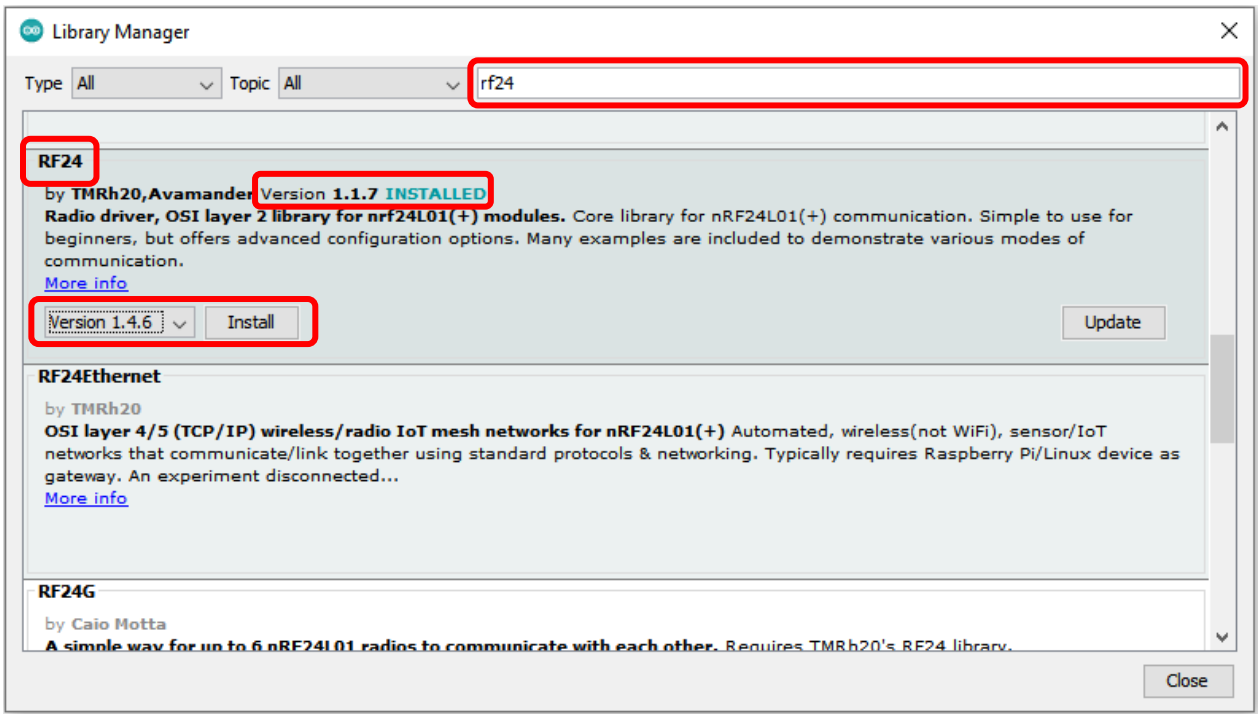
Connection Table:

5V external DC power sources are optional, if used with external supply positive terminal goes to VIN.

Arduino UNO	nRF24L01 Breakout board	OPTIONAL: 5V DC Adapter
5V / VIN	VCC	Positive Terminal
GND	GND	Negative Terminal
D9	CE	-
D10	CSN	-
D13	SCK	-
D11	MOSI	-
D12	MISO	-
No Connection	IRQ	-

Installing Arduino Library:

In this guide, we will use ***RF24-1.1.7.zip***. User can download it thru Arduino IDE Library Manager or from our share drive. ***Latest version are not tested.*** Restart Arduino IDE after perform Library installation.

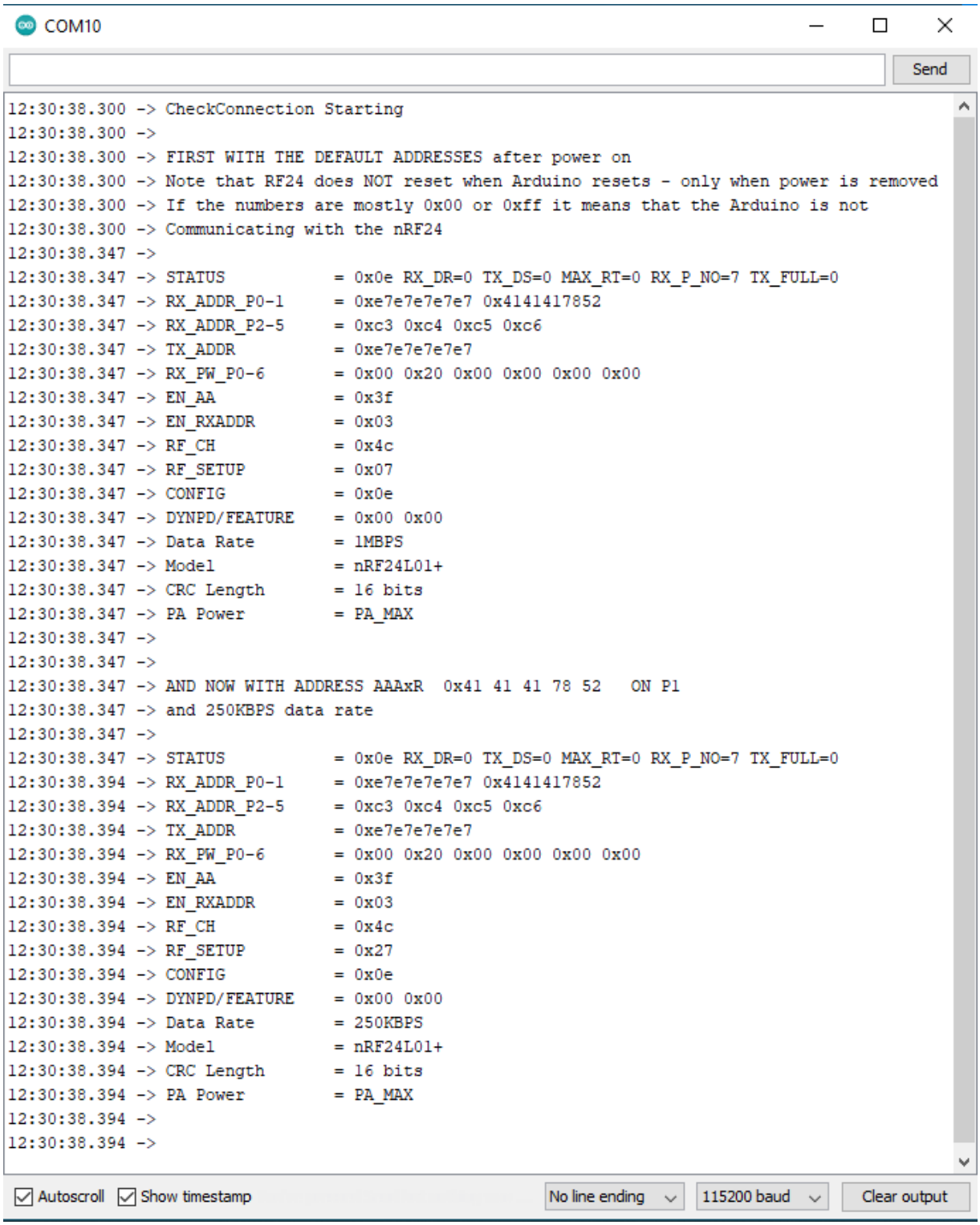


A. Checking Connection/Setup.

1. **Upload** the provided **Check Connection** code to check whether the module hooked properly. Make sure **Board type** and **COM port** are correct before upload. Upload it on both Arduino.

2. Open **serial monitor** and check the data. Make sure your **baud rate** are set to **115200 bps**.

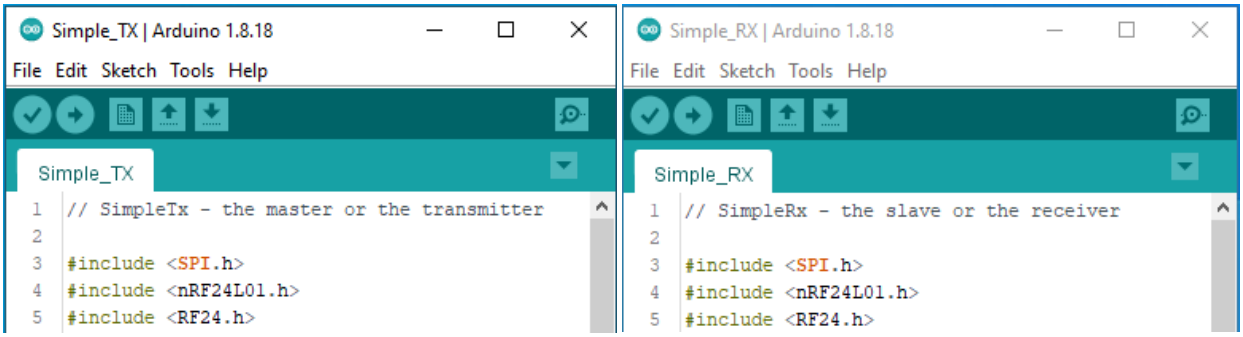
3. If you got mostly **0x00** or **0xff**, means there might be a **communication problem** between Arduino and nRF module. Check your connection and try again.



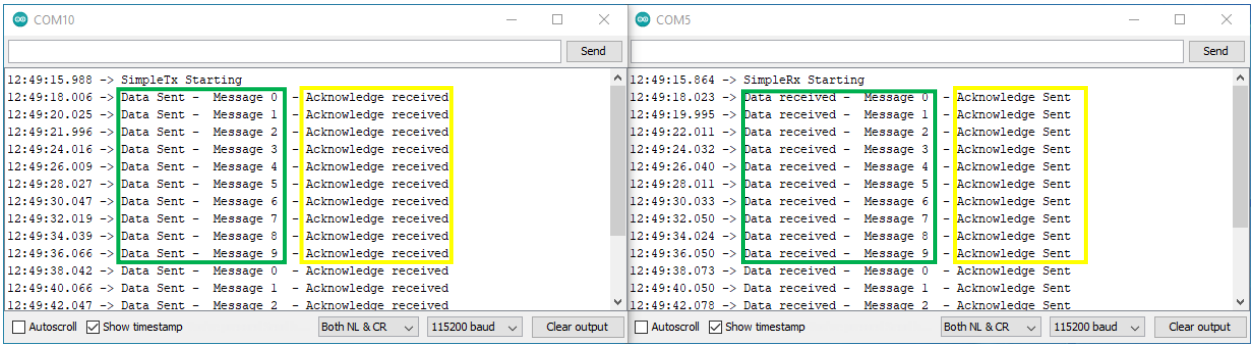
B. Transmitting and Receiving Data.

1. Upload **Simple_TX** and **Simple_RX** code to each respective Arduino. Make sure **Board type** and **COM port** are correct before upload.

UNO A & nRF Module for Transmit data - UNO B & nRF Module for Receive data



2. Open both **serial monitor**, our Transmitter nRF will send text 'Message (X)', where 'X' are number counting from 0 to 9. On Receiver nRF side, it will display text that received.



nRF24L01+ Automatic Packet Handling Explanation.

1. Transmitter send data to Receiver.
2. Once data received thru Receiver it will wait for 130 µs.
3. Receiver will sent Acknowledgement to Transmitter.
4. Transmitter Receive Acknowledgement.
5. Data transmission successful.