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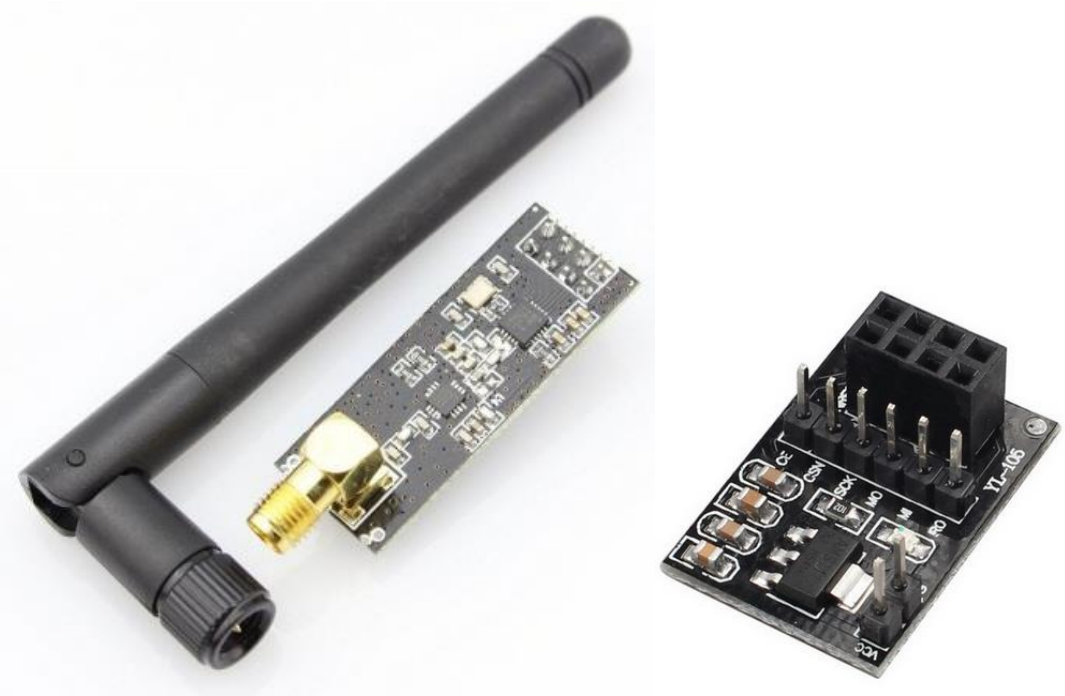
Arduino NRF24L01+PA+LNA 2.4G 1.1KM Module + (Breakout Board)

Introduction:



The NRF24L01P + PA + LNA is an ultra-long-distance data transmission specially developed as a high-power and high sensitivity wireless module. The module operates in the license-free 2.4G ISM band for point-to-point applications and can also be composed of a star network. Meanwhile, the adapter module breakout board is designed for NRF24L01+ user, comes with 2x4 socket that enable direct plug and use of NRF24L01+ module and break the IO out to 6-way straight header pin with proper label, easier for hookup with jumper wires. Not to forget, there is a AMS1117 3.3V voltage regulator to allow Vin of 4.8V to 12V, and is capable of delivering maximum 1A of current. Quite handy for NRF24L01+ as it will need that extra current during wireless communication. There is a power indicator LED too. Now you can power the NRF24L01+ from 5V of Arduino, and since the data communication pins are 5V tolerance, it is easier to use it with Arduino

Features:

- Frequency: 2.4GHz~2.5GHz
- Operating voltage: 3 ~ 3.6V Max
- Current: 115mA
- Multi-frequency: 125 frequency
- Support up to six channels of data reception

Applications:

- Wireless data communication systems.
- Keyless entry.
- Home automation systems.
- Wireless Control System Applications.
- RF remote control units.
- Connected devices

Objectives:

This tutorial will shows you a few simple steps about how to test Arduino NRF24L01+PA+LNA 2.4G 1.1KM Module + (Breakout Board). At the end of this tutorial, you will get a result of comparison when two NRF24L01 can transmit and receive data from each other.

Components needed:

- Jumper wires.
- 2x Arduino UNO.
- 2x USB cable type B
- 2x Arduino NRF24L01+PA+LNA 2.4G 1.1KM Long-Distance Wireless Module (c/w Antenna)
- 2x NRF24L01 Wireless Module Adapter Breakout Board 3.3V.

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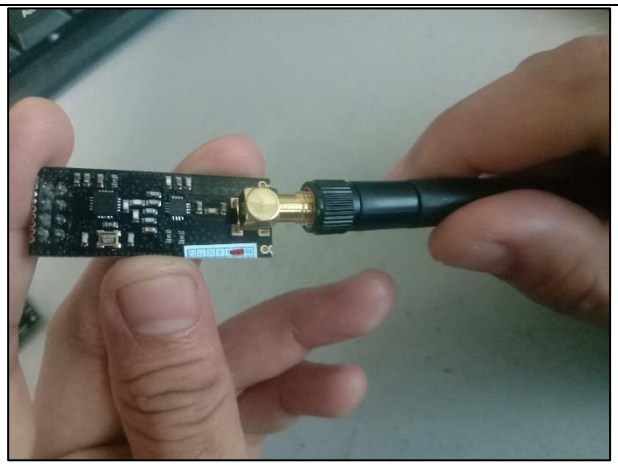
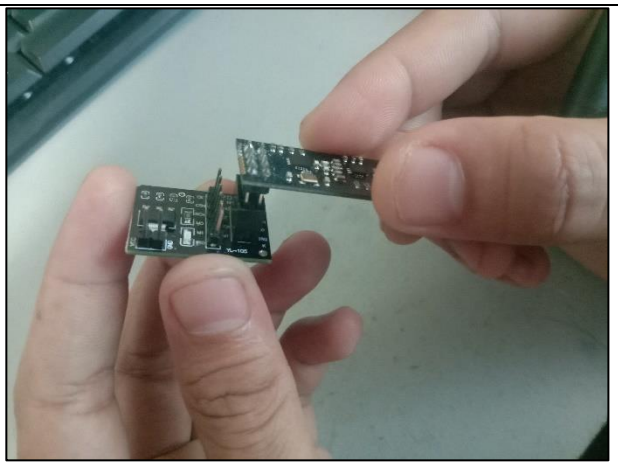
Procedures:

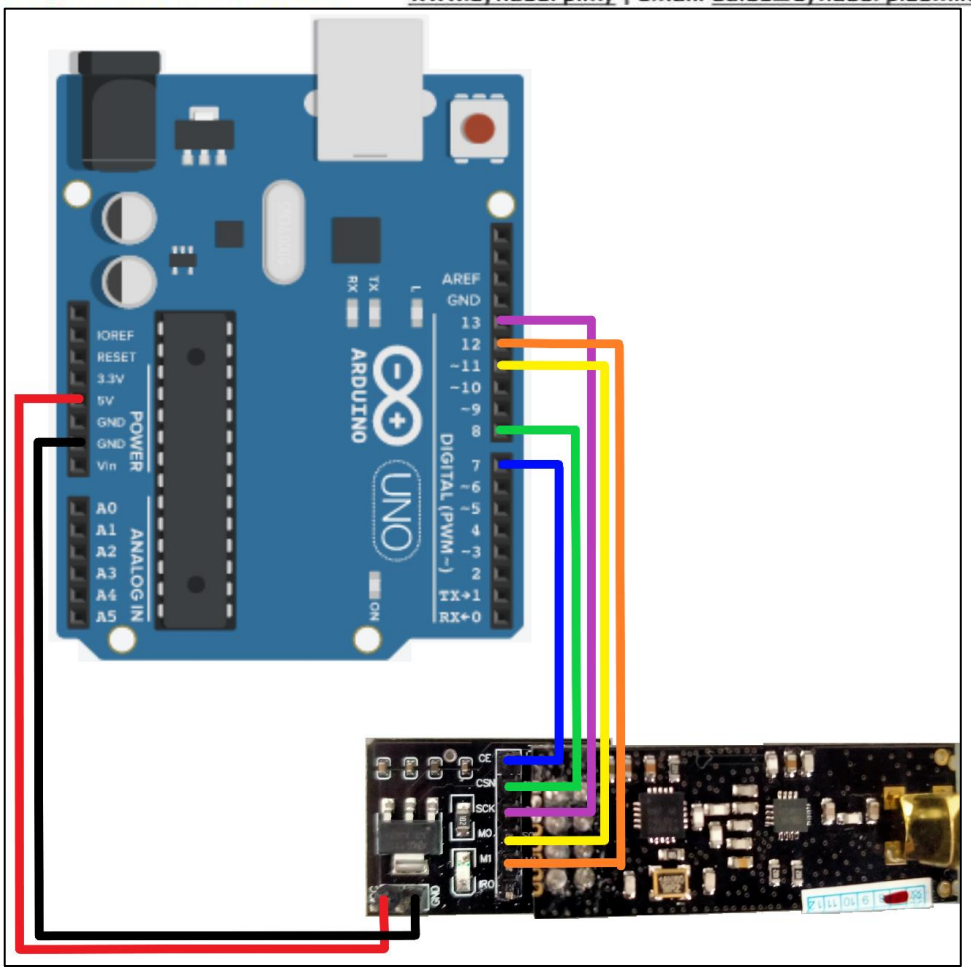
Step 1: Assembling and wiring NRF24L01+PA+LNA 2.4G 1.1KM Module + (Breakout Board).

1. Assemble the Arduino NRF24L01+PA+LNA 2.4G 1.1KM Long-Distance Wireless Module (c/w Antenna) to the NRF24L01 Wireless Module Adapter Breakout Board 3.3V

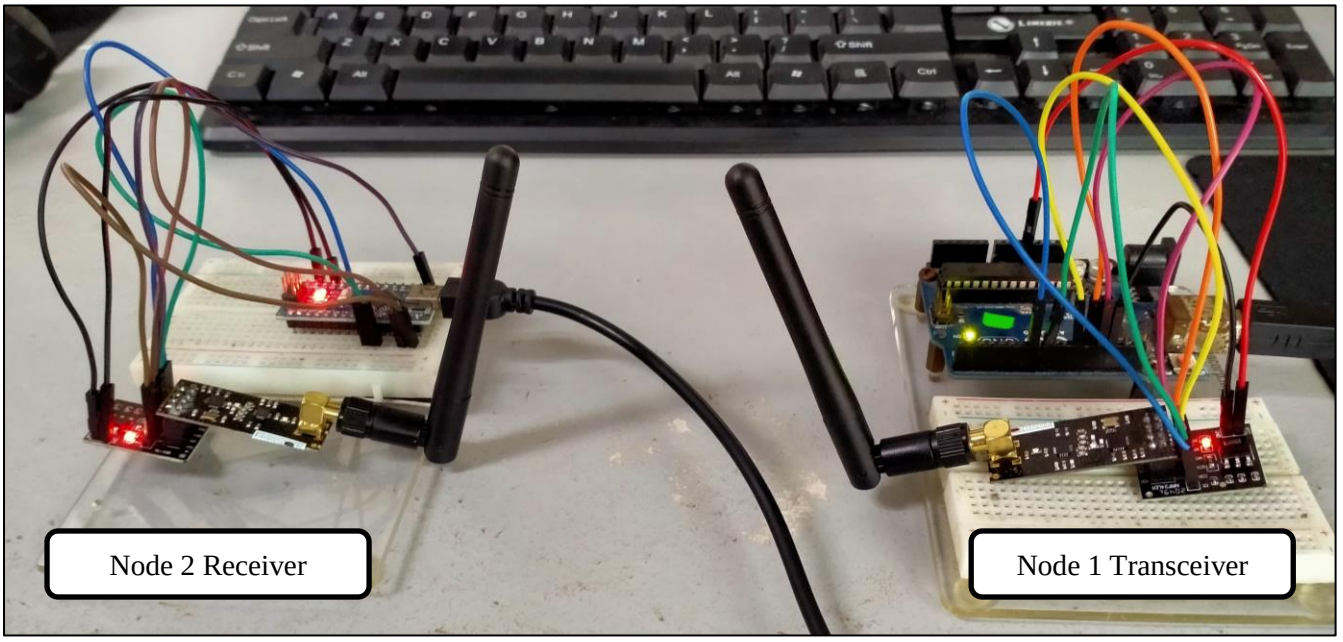
	
I. Screw in the antenna to the wireless module.	II. Attach the wireless module to the breakout board via the 8 pins male to the 8 pins female.

2. Wiring NRF24L01+PA+LNA 2.4G 1.1KM Module + (Breakout Board) for two nodes. Both transceiver and receiver nodes use the same wiring configuration.

Arduino Uno / Arduino Nano	NRF24L01+PA+LNA 2.4G 1.1KM Module + (Breakout Board)
VCC	5V
GND	GND
7	CE
8	CSN
13	SCK
11	MO
12	MI
-	IRO



Both **Transceiver** node and **Receiver** node use the same wiring.

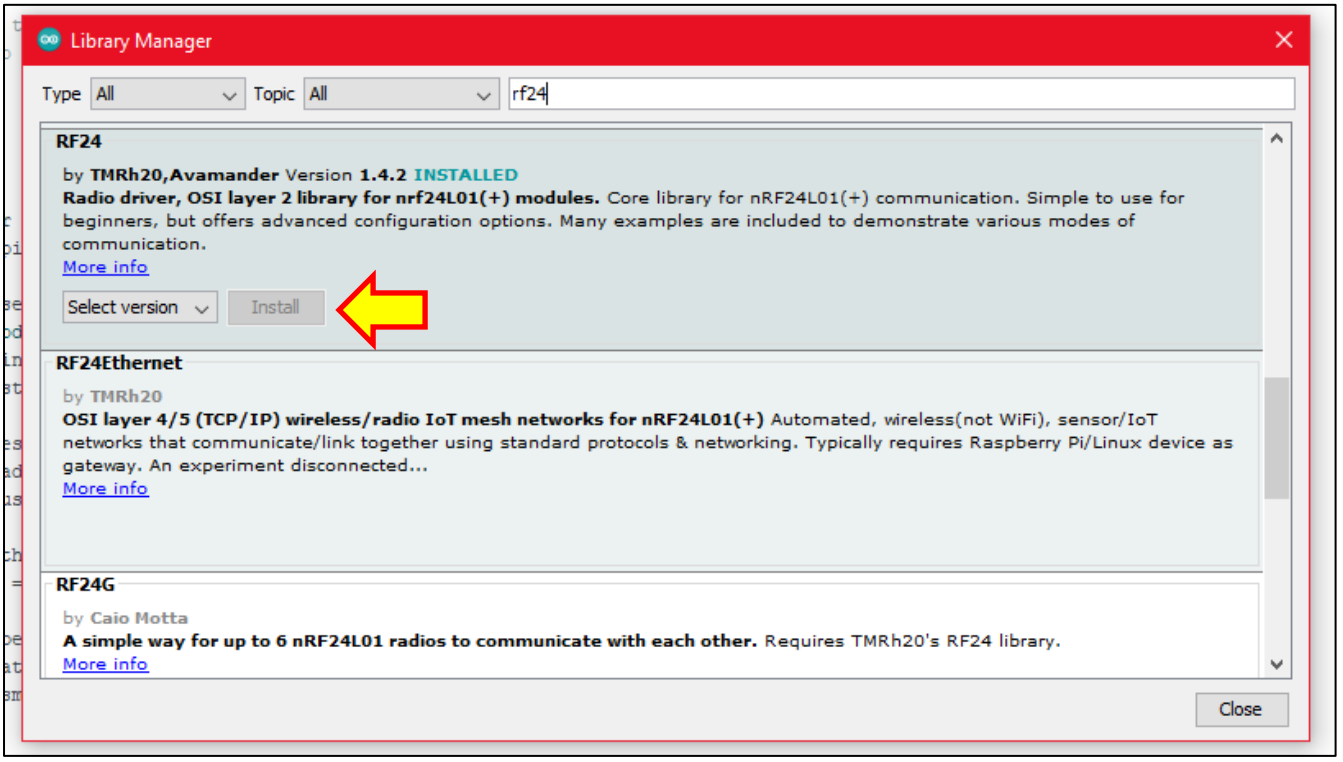


For node 1 (Transceiver) is using Arduino Uno while node 2 (Receiver) is using Arduino Nano. Use what Arduino type available, it does not matter.

Step 2: Installing NRF24L01 library into Arduino IDE and uploading the test coding.

1. Open Arduino IDE Library Manager by clicking on **Sketch > Include Library > Manage Libraries.**

2. Type **RF24** in the search box, and install RF24 by **TMRh20, Avamander**.



3. Open the example coding for NRF24L01 by clicking on **File > Examples > RF24 > GettingStarted.**

4. Choose which board will be using whether Arduino Uno or Nano by clicking **Tools > Board > Arduino AVR Boards > Arduino Uno or Arduino Nano**.

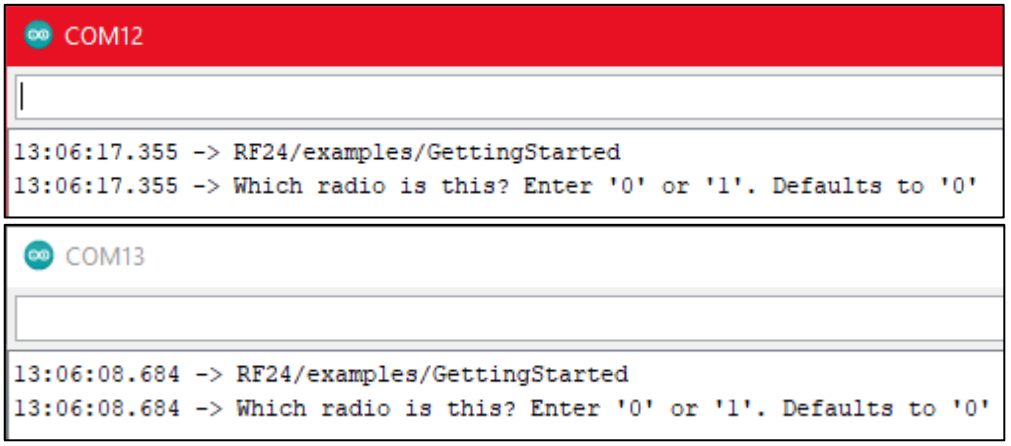
5. Upload the '**GettingStarted'** coding into both of your Arduino.

Step 3: Testing the NRF24L01+PA+LNA 2.4G 1.1KM Module + (Breakout Board).

1. Connect both Arduino Uno to a PC with Arduino IDE.

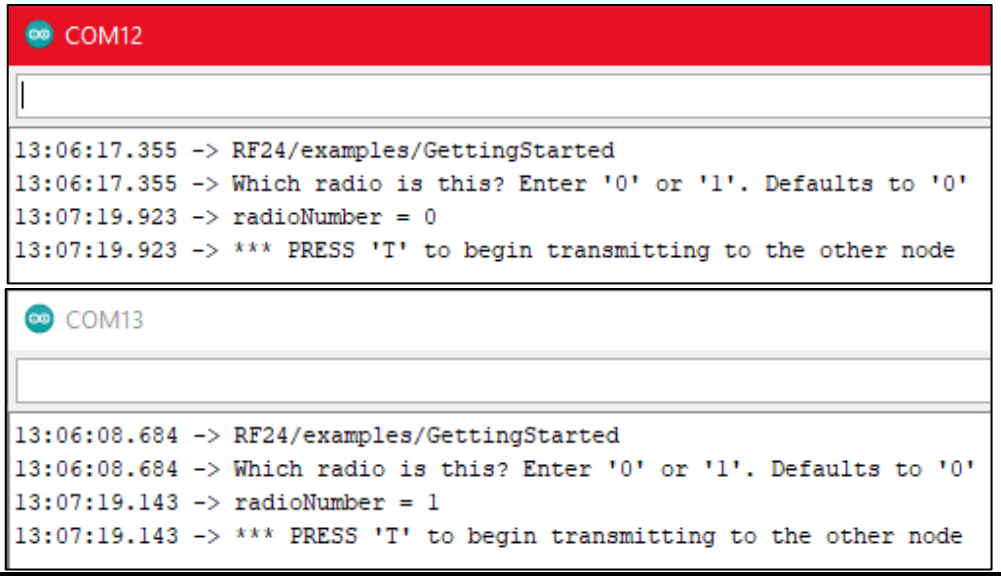
2. Open serial monitor for both Arduino Uno by opening the first sketch and save it using port for Arduino Uno 1 and then close it. Next, open the second sketch, save it while using port for Arduino Uno 2, and then open serial monitor. Afterward, reopen the first sketch and then just click on serial monitor. Now if you follow correctly both serial monitor for each Arduino Uno will be open.

3. Now that the serial monitor for both Arduino is open, it should output like the pictures below for both of them.



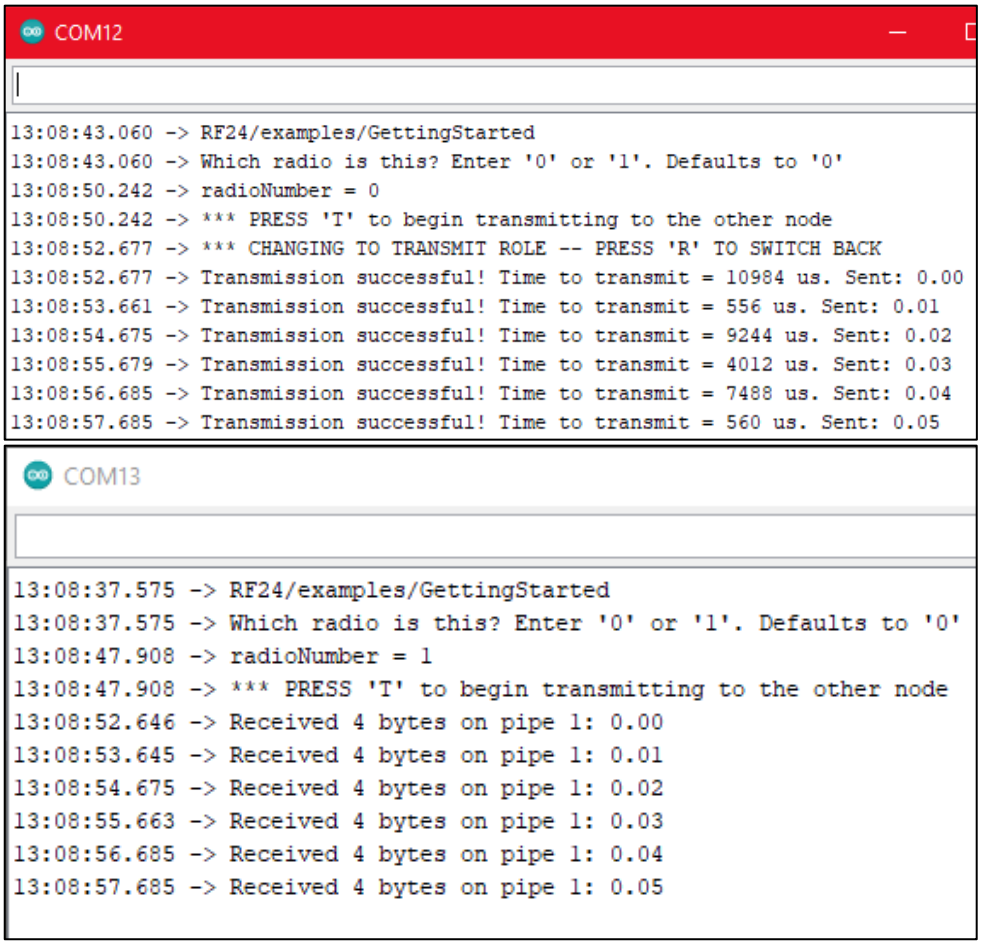
4. For this example, **COM12** is used as **Transceiver** and **COM13** as **Receiver**.

5. Choose which node will be radio 0 or 1.



6. Now, type in "T" to your desired node serial monitor, which is for this example is node 1 COM12 to start transmitting.

7. It should output like the pictures below while transmitting and receiving successfully.



Conclusion:

Arduino NRF24L01+PA+LNA 2.4G 1.1KM Module + (Breakout Board) is a simple transceiver and receiver that is quite easy to set up and use. Two NRF24L01 is required to test, one to act as a transceiver and the other as the receiver. When the "GettingStarted" coding example is upload to both nodes, open up the serial monitors for both Arduino and then choose which radio number you want to assign for the nodes, 0 or 1. Afterward, type in the letter "T" in serial monitor that you want to transmit from to start transmitting. If successful it should start transmitting and receiving data in form of numbers from 0 and up for each successful transmit.