3/15/2014 NRF24L01-2-4GHz-Antenna-Wireless-Transceiver-Module

Tutorial
Home Networking Article

1. Project Reference Number / Title:

20140315 NRF24L01-2-4GHz-Antenna-Wireless-Transceiver-Module

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nRF24L01 Demo!
Arduino library: http://playground.arduino.cc/InterfacingWithHardware/Nrf24L01#.UyUSI9vOdDQ

Actually there are several different libraries for this device, the one above is what the Arduino.cc website uses in it's examples.

This one seems to support more of the features of the nRF24L01
https://github.com/stanleyseow/RF24
this one also supports the Raspberry PI, and a few of his examples have the rPI and Arduinos "talking" to each other

One other library I found is: http://www.airspayce.com/mikem/arduino/NRF24/
Airspayce also has the library for the "cheap" RF transmitters and receivers, good side, lots of information about wireless protocols and types.

Cheapest I've found these amazing tranceivers:
http://www.ebay.com/itm/1pc-New-NRF24L01-2-4GHz-Antenna-Wireless-Transceiver-Module-/221326963838?pt=LH_DefaultDomain_0&hash=item33881d747e

There are a number of forums and people talking about how they feel these will replace Zigbees which were the leader in Arduino and wireless technology. Mostly because of the cost of a Zigbee and the costs of these. There are at least 2 different models, the ones I have don't have a + at the end, I'm not sure what the difference between them is. There are also a couple of different configurations for the boards themself, https://www.sparkfun.com/products/691 (19.95 + shipping) even at that price they are cheaper then Zigbee.

I've read some mixed reviews on power - opted to go with 3.3v in mine, but 5v seems ok
General Specs on these:

3.3v (I would stick with 3.3v just to be save) It's also possable my boards have a regulator on them
100m range at 250kbps
250kbps to 2Mbit data rate (This puts the safely in the DSL range, although low end DSL http://testmy.net/tools/connection_chart.php) making it "high speed"
Auto Acknowledge (The RF24 library says this can be turned off if needed)
Auto Re-Transmit (believe this can be turned off as well)
Multiceiver capable (Arduino's library doesn't support this from a few of the forums I've read, I think the other 2 libraries do) (Up to 6 Data Pipes)
32 Byte separate TX and RX FIFOs
5v tolerant input pins
Software selectable channels from 2.4Ghz to 2.525Ghz (125 Selectable channels)
SPI interface
11.3mA TX at 0 dBm output power
13.5mA RX at 2Mbps air data rate
900nA in power down

more information about the chip itself can be found here:
https://www.sparkfun.com/datasheets/Components/SMD/nRF24L01Pluss_Preliminary_Product_Specification_v1_0.pdf
Lot of support on Nordic Semiconductor website (the makers of this fine chip)

I was trying to get full duplexing to work, but it was difficult to type on two keyboards at once From looking at the code, it appears that (not in multiceiver mode) you setup a TX channel, and a RX channel, so I think they should be full duplex.

I am going to be demoing the NRF24 library, and running the "Chat" program, which was a little tricky to setup at first, it seems it needs a Line Feed or CR in order to send data.

Should be interesting, I'll also have the other libraries loaded on the laptop, and we can look at some of the example code.