Keyes RF Transceiver

nRF905

General Description

The Nordic nRF905 is a highly integrated, low power, multiband RF transceiver IC for the 433/868/915MHz ISM (Industrial, Scientific and Medical) band. With an integrated +10dBm PA and sensitivity of -100dBm, the nRF905 is an ideal solution for applications requiring longer-range. The ShockBurst™ hardware protocol accelerator offloads time critical protocol functions from the application microcontroller enabling the implementation of advanced and robust wireless connectivity with low cost 3rd-party microcontrollers.

In summary, the nRF905 integrates a complete 433/868/915MHz ISM RF transceiver, RF synthesizer, and baseband logic, including the ShockBurst™ hardware protocol accelerator supporting a

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high-speed SPI interface for the application controller. No external loop filter, resonators, or VCO varactor diodes are required, only a low cost crystal, matching circuitry, and antenna.

Specifications

- 2.5µA power down mode

- 9mA Radio TX at -10dBm; 30mA Radio TX at +10dBm; 12.5mA Radio RX

- License-free 433/868/915MHz ISM band operation, GFSK modulation

- +10, 6, -2, and -10dBm programmable TX output power

- 50kbps on-air data rate

- -100dBm RX sensitivity

- 1.9 to 3.6V supply range

- Temperature range of -40 to +80 ºC

- 16 MHz Crystal Oscillator

- Outdoor Range: up to 1000m

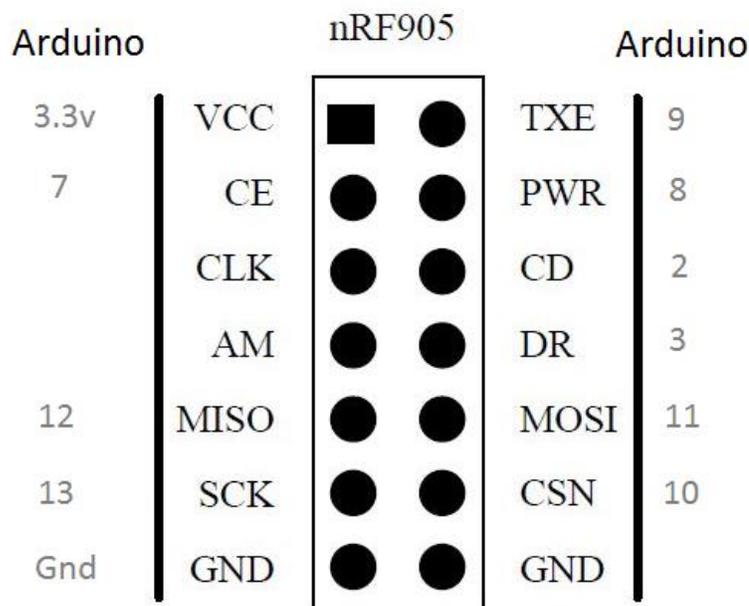- Indoor Range: up to 200m

Schematic
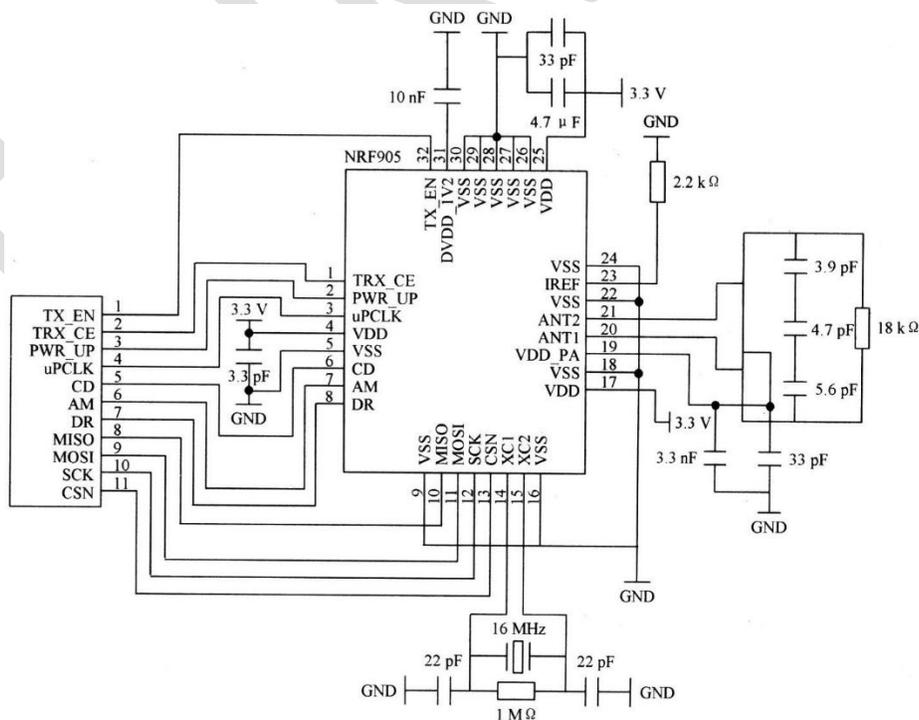
How to test

You need:

2 Arduino

2 nRF905 Transceiver

Connecting Wires

Breadboard

1. First of all, download nRF905 library and extract it to your Arduino libraries folder.
2. Connect the nRF905 Transceiver to your Arduino using the connections shown below. You have to do this twice using 2 Arduinos and 2 nRF905 Transceivers.

Arduino		nRF905		Arduino
3.3v	VCC		TXE	9
7	CE		PWR	8
	CLK		CD	2
	AM		DR	3
12	MISO		MOSI	11
13	SCK		CSN	10
Gnd	GND		GND	

3. Choose a COM port, open lowpwr_client then click upload. You can find this sketch at Arduino IDE File> Examples > nRF905 > lowpwr_client.
4. Open lowpwr_server then click upload. You can find this sketch at Arduino IDE File> Examples > nRF905 > lowpwr_server. Be noted that you have to open a new instance of Arduino IDE to use two serial monitors at the same time.
5. Open both serial monitors and see the results. You should be able to get ping test between the two transceivers.

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Actual Setup

Result

COM1

| | Send |
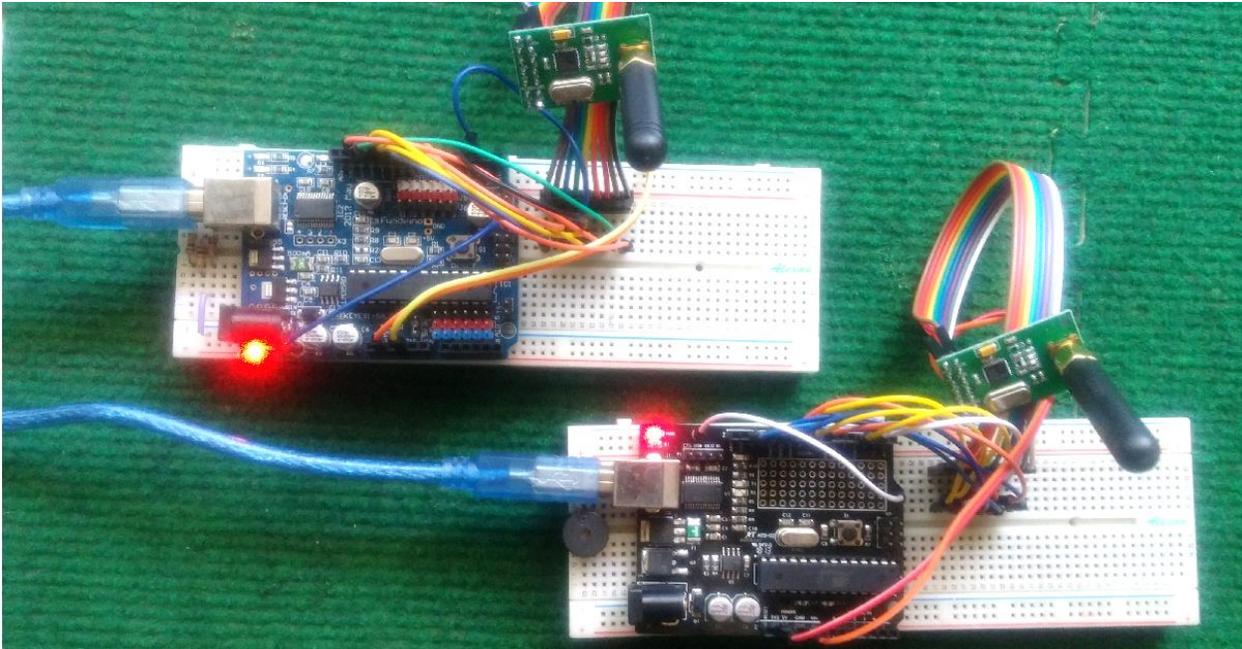
```
Data from server: test 101
Ping time: 16ms
Data from server: test 102
Ping time: 16ms
Data from server: test 103
Ping time: 15ms
Data from server: test 104
Ping time: 14ms
Data from server: test 105
Ping time: 14ms
Data from server: test 106
Ping time: 14ms
Data from server: test 107
Ping time: 14ms
Data from server: test 108
```

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COM15

| | Send |

```
Got ping
Sending reply...
Reply sent
Data: test 106
Waiting for ping...
Got ping
Sending reply...
Reply sent
Data: test 107
Waiting for ping...
Got ping
Sending reply...
Reply sent
Data: test 108
Waiting for ping...
```

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