433Mhz RF Transmitter With Receiver Kit For Arduino ARM MCU Wireless

Description:

This is 433Mhz RF transmitter with receiver kit for Arduino ARM MCU wireless
Application environment:

Remote control switch, receiver module, motorcycles, automobile anti-theft products, home security products, electric doors, shutter doors, windows, remote control socket, remote control LED, remote audio remote control electric doors, garage door remote control, remote control retractable doors, remote volume gate, pan doors, remote control door opener, door closing device control system, remote control curtains, alarm host, alarm, remote control motorcycle remote control electric cars, remote control MP3.

Specification:

Receiver module:
Product Model: XD-RF-5V
Operating voltage: DC5V
Quiescent Current: 4MA
Receiving frequency: 433.92MHZ
Receiver sensitivity: -105DB
Size:30x14x7mm

Transmitter:

Product Model: XD-FST
Launch distance :20-200 meters (different voltage, different results)
Operating voltage :3.5-12V
Dimensions: 19 * 19mm
Operating mode: AM
Transfer rate: 4KB / S
Transmitting power: 10mW
Transmitting frequency: 433M
Pinout from left → right: (DATA; VCC; GND)

See for how to: http://electronics-diy.com/arduino-rf-link-using-433mhz-transmitter-receiver-modules.php

XD-RF-5V Transmitter/Receiver

Project name: RF 315/330/433 MHz XD-FST / XD-RF-5V Transmitter / Receiver - way to communicate between Arduinos

Tags: Arduino, RF 315/330/433 MHz XD-FST / XD-RF-5V Transmitter / Receiver, way to communicate between Arduinos

Attachments: library1, transmittersketch1, receiversketch1; library2, transmittersketch2, receiversketch2;

In this project, you needed these parts :

1.Aruduino Uno R3 (you can also use the other version of Arduino) 2 pcs

2.Arduino IDE (you can download it from here)

3.Jumper cables

4. RF 315/330/433 MHz XD-FST / XD-RF-5V Transmitter / Receiver module 1 pc

General

We will learn how to connect RF 315/330/433 MHz XD-FST / XD-RF-5V Transmitter / Receiver modules to Arduino board and use them.

Understanding the RF 315/330/433 MHz XD-FST / XD-RF-5V Transmitter / Receiver

The 433MHz is used on a wide variety of applications that require wireless control. Check that it's legal to operate low powered devices (25mW) in the 433MHz band without a licence in your country. If you're transmitting to (or on the same frequency as) a garage door opener / RC toy etc that you bought in your own country, it should be fine, provided you stick to the power limit.

315/330/433 MHz XD-FST / XD-RF-5V Transmitter / Receiver modules are very popular and, of course, cheap You can use them with any microcontroller (MCU).They work very well when the receiver and transmitter are close to each other. If you separate them too far you'll loose the communication. The communication range will vary. It depends on how much voltage that you're supplying to your transmitter module, RF noise in your environment and if you're using an external antenna.

RF 315/330/433 MHz XD-FST/XD-RF-5V Transmitter/Receiver

Short antenna (optional)

Long antenna (optional)

TX module
(Transmit signal)

RX module
(Receive signal)

FS1000A

ANT

XY-FST

VCC

GND

ATAD

Output signal   (+)   (-) Ground

Microcontroller
coding

Power supply (3V - 12V)

Sensors

(+) VCC
5V

Data

Data

GND (-)
Ground

The devices
that you want
to control

Control signal
output

Input signal

decoding
Microcontroller
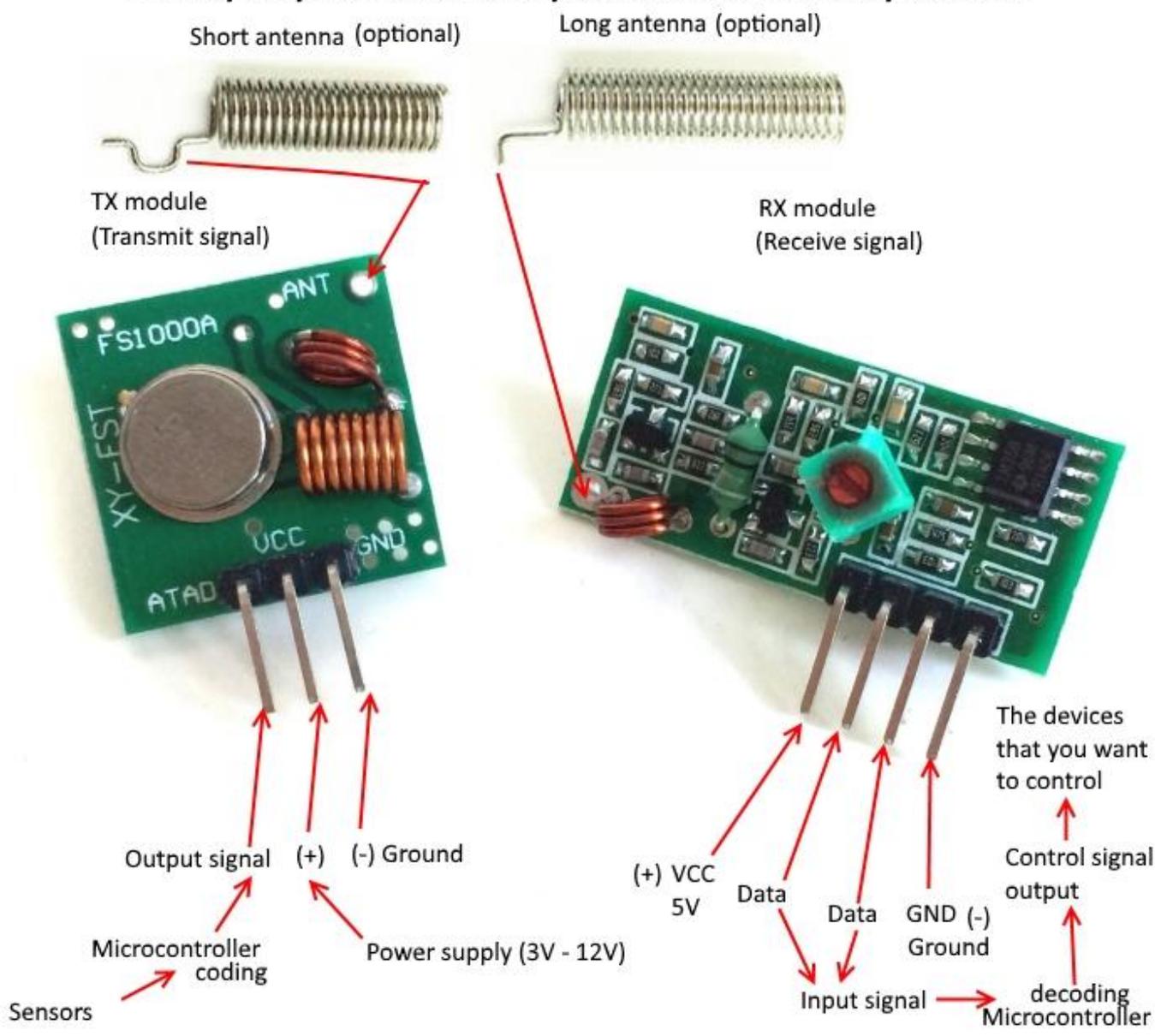
The use of an optional antenna will increase the effectiveness of your wireless communication.
See on picture below.
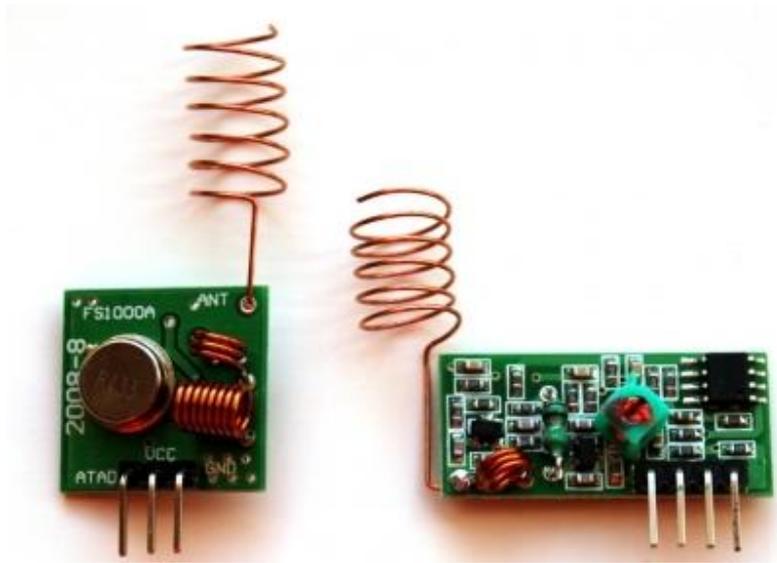
Specification:

TX (Transmitter) Technical Specifications:

- Working voltage: 3V～12V
- Working current: max≤40mA (12V), min≤9mA(3V)
- Resonance mode: sound wave resonance (SAW)
- Modulation mode: ASK /OOK
- Working frequency: 315MHz-433.92MHz, customized frequency is available.
- Transmission power: 25mW (315MHz at 12V)
- Frequency error: +150kHz (max)
- Velocity: ≤10Kbps
- Self-owned codes: negative
- Transmit up to 90m in open area

RX (Receiver) Technical Specifications:

- Working voltage: 5.0VDC +0.5V
- Working current:≤5.5mA (5.0VDC)
- Working principle: single chip super regeneration receiving
- Working method: OOK/ASK
- Working frequency: 315MHz-433.92MHz, customized frequency is available.
- Bandwidth: 2MHz (315MHz, having result from testing at lowing the sensitivity 3dBm)
- Sensitivity: excel –100dBm (50Ω)
- Transmitting velocity: <9.6Kbps (at 315MHz and -95dBm)

Signals and connections of the RF 315/330/433 MHz XD-FST/XD-RF-5V Transmitter/Receiver

<u>Transmitter (TX) pins:</u>

ATAD (DATA) - output signal coded by first Arduino board

GND - should be connected to ground , (-) of power supply

VCC - should be connected to power supply +3V - +12V

Receiver (RX) pins:

DATA - there are two pins, it doesn't matter which one to connect to second Arduino board, as long as you use only one of the DATA pins.

GND - should be connected to second Arduino board ground pin

VCC - should be connected to second Arduino board 5V pin.

Build the circuit

The following picture shows the needed connections with the Arduino Uno
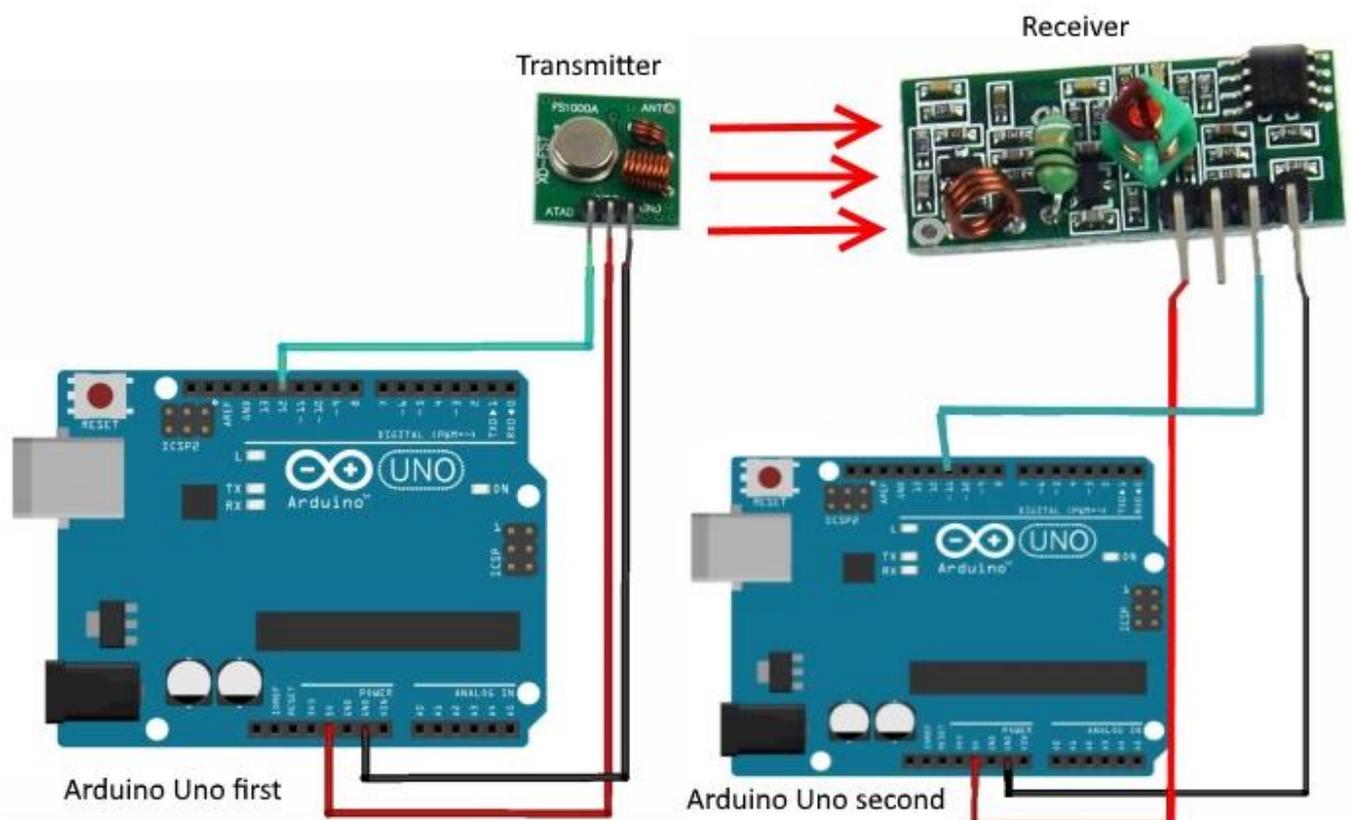
Code

1. Sketches with **RadioHead** library:

<u>Transmitter sketch / you will need to modify this line</u>

const char *msg = "Welcome to Acoptex.com!!!";//you can change this message to yours, do not forget to change number of symbols in receiver sketch

<u>Receiver sketch / you will need to modify this line</u>

uint8_t buf[25];//you can change this number. it is the number of symbols in transmitter message

2. Sketches with **VirtualWire** library:

<u>Transmitter sketch / you will need to modify this line</u>

const char *msg = "Welcome to Acoptex.com!!!";

Step by Step instruction

1. Do wiring.
2. Setup of tranmitter and receiver can be done on different PC (using installed Arduino IDE softwares) or on the same PC (using installed Arduino IDE and portable Arduino PC softwares) Open Arduino IDE.
3. Plug your Adruino Uno board into your PC and select the correct board and com port
4. Open up serial monitor and set your baud to 9600 baud
5. Verify and upload the the sketch to your Arduino Uno board.
6. Open the Arduino IDE serial monitor to see the values. Transmitter serial monitor window (on the left) and receiver serial monitor window (on the right):
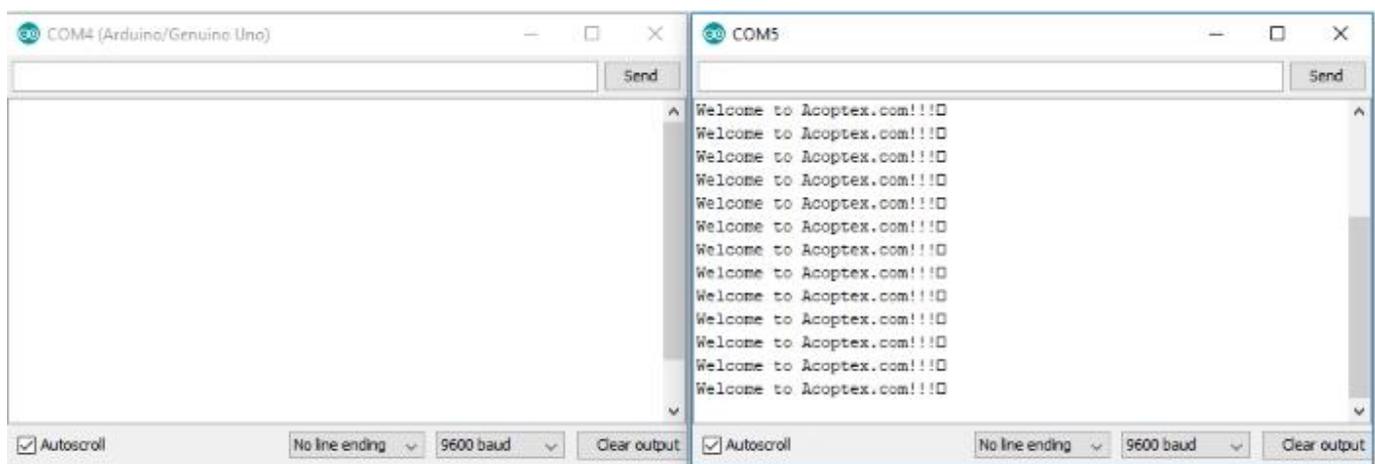
Summary

We have learnt how to connect RF 315/330/433 MHz XD-FST / XD-RF-5V Transmitter / Receiver modules to Arduino board and use them.

Library:

- See attachments on the begining of this project description.

  We have used the library - NewliquidCrystal_1.3.4.zip which we downloaded, unzipped, changed the name of folder to LiquidCristal and added to libraries in our PC, for example C:\Users\toshiba\Documents\Arduino\libraries. This link you can find in Preferences of Adruino IDE program which installed in your PC.

  See attachments on the begining of this project description.

- Sketches (transmitter1 and receiver1). We have used the **RadioHead** library - RadioHead.zip which we downloaded, unzipped and added to libraries in our PC, for example *C:\Users\toshiba\Documents\Arduino\libraries*. This link you can find in Preferences of Adruino IDE program which installed in your PC.
- Sketches (transmitter2 and receiver2). We have used the **VirtualWire** library - VirtualWire.zip which we downloaded, unzipped and added to libraries in our PC, for example *C:\Users\toshiba\Documents\Arduino\libraries*. This link you can find in Preferences of Adruino IDE program which installed in your PC.