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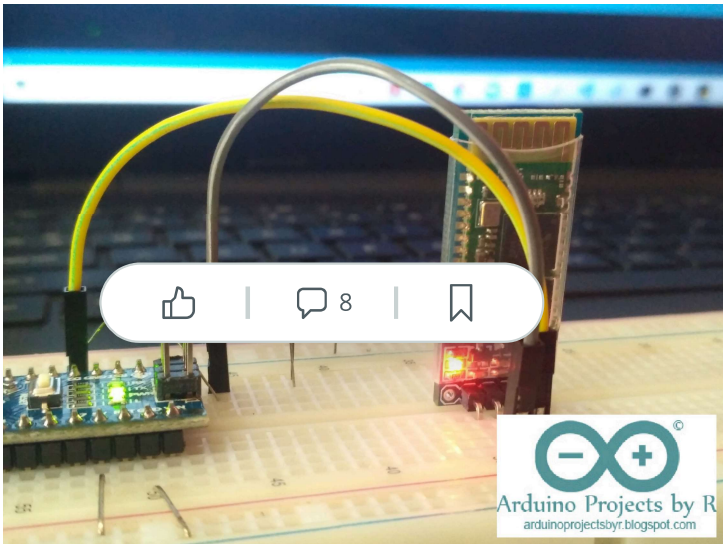
# Interfacing the HC-06 Bluetooth module with Arduino

A simple and informative tutorial about interfacing the HC-06 Bluetooth module with Arduino

Mar 3, 2021 • 117573 views • 8 respects

bluetooth interfacing serial communication communication wireless communication



| | | |
|---|---|---|
| 2 | Resistor 1k ohm | |
| 1 | HC-06 Bluetooth Module | |
| 1 | Arduino Nano R3 | |
| 6 | Male/Male Jumper Wires | |
| 1 | Solderless Breadboard Half Size | |

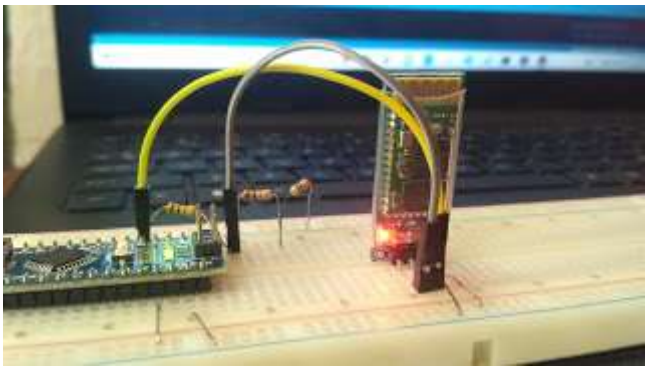
## Apps and platforms

| | | |
|---|---|---|
| 1 | Bluetooth Terminal App - Qwerty | |
| 1 | Arduino IDE | |



## Project description

I am going to give you a tutorial about interfacing the HC-06 Bluetooth module with



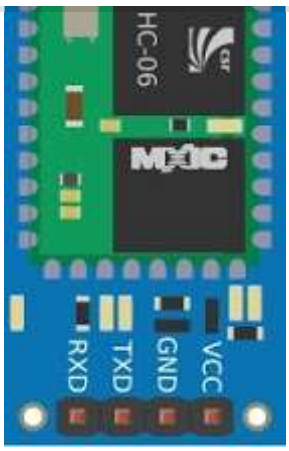
## HC-06 Bluetooth module

HC-06 is a Bluetooth module designed for establishing short range wireless data communication (<100 meters). It is very easy to interface and communicate. It can be interfaced with almost all microcontrollers or processors as it uses UART interface.

This module has the ability to transmit files at speed up to 2.1Mbps and works on Bluetooth 2.0 communication protocol. Unlike the HC-05 Bluetooth module, this module can only act as a slave device.

- Operating Voltage: 3.3V - 6V
- Operating Frequency range: 2.402 GHz - 2.480 GHz

Pinou




You will only be needing the four pins in the HC-06 Bluetooth module.

- RXD: Serial Data Receive Pin. Used for serial input. 3.3V logic
- TXD: Serial Data Transmit Pin. Used for serial output. 3.3V logic
- GND: Ground
- VCC: +5V

## Setting up the HC-06 Bluetooth module

To set up your HC-06 Bluetooth module, you will be needing the USB-TTL Serial Converter module. Connect your USB-TTL Serial converter module with your Bluetooth module. The connections are as follows:

- RX
- TXD --->RX
- GND --->GND
- VCC --->5V

permanently configured to be slave and is always in AT mode when not paired to any other device.

Open Arduino IDE and go to Tools, then Serial Monitor.

Set the Baud rate to 9600 and the 'line ending' to 'Both NL and CR'.

Type in 'AT' without the quotes and click send. If the Serial Monitor displays "OK", the module is in AT mode and you are good to go.

Use these AT commands for the corresponding functions:

- AT : Check the connection
- AT+NAME: To check the default name of the module
- AT+VERSION: To obtain the version
- AT+BAUD: To check the default baud rate of the Bluetooth module
- AT+PIN: To obtain the password of the module
- AT+NAME'DESIRED NAME': Changes the default name of the module to the DESIRED NAME

To char 06 Bluetoo Dx, where x has range from 1 - 9, inclusive.

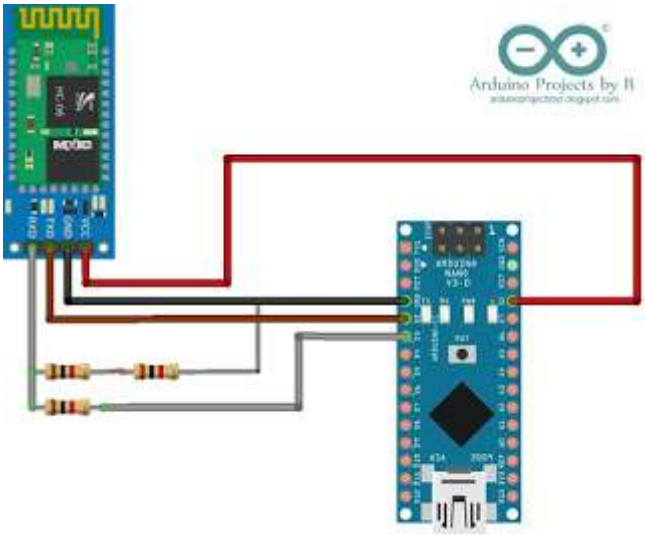


- 1: 1200 baud
- 2: 2400 baud
- 3: 4800 baud

- 7: 57600 baud
- 8: 115200 baud

Sending AT+BAUD3 will change the baud rate from 9600 baud to 4800 baud.

## Connecting the HC-06 Bluetooth module with Arduino development board




## Hardware components

- Arduino Nano - You could use any other development board if you wish
- HC-06 Bluetooth module
- Re n't have a 2kΩ resistor with me so I used 2 1kΩ resistors instead)
- Male-to-Male Jumper wires
- Male-to-Female Jumper wires

Refer to the schematic to see how the Bluetooth module should be connected with the Arduino development Board.Connecting the HC-06 Bluetooth module with Arduino development boardHardware componentsArduino Nano - You could use any other development board if you wishHC-06 Bluetooth moduleResistors - 1kΩ and 2kΩ ( I didn't have a 2kΩ resistor with me so I used 2 1kΩ resistors instead)Male-to-Male Jumper wiresMale-to-Female Jumper wiresSoftwareArduino IDE

The Arduino boards have a serial port at D0 and D1 and it communicates with these pins as well as the computer via USB. We are using the Serial functions so we cannot use these pins. Therefore, we will be using the D2 and D3 pins for communication with the HC-06 Bluetooth module. D2 pin will be connected to TXD pin of the HC-06 module whereas the D3 pin will be connected to the RXD pin.

The module is connected to +5V standard regulated power supply and the voltage divider is used for converting the 5V logic signal sent by Arduino D3 pin to 3.3V logic signals which is suitable for the module. If you do not understand the principle, please refer to the YouTube video in the last section of this post.



If separate power sources are used for the Bluetooth module and Arduino development

## Code

For this project, you will be needing the Software Serial library. This is an in-built library and does not need to be installed. The library has been developed to allow serial communication on other digital pins of the Arduino and this is why we require the library to be used for this project as we want to enable D2 and D3 pins for Serial communication.

I obtained the codes from this website: http://www.martyncurrey.com/arduino-and-hc-06-zs-040/

Compile and upload the sketch to your Arduino development board.

## Testing the Bluetooth Comm



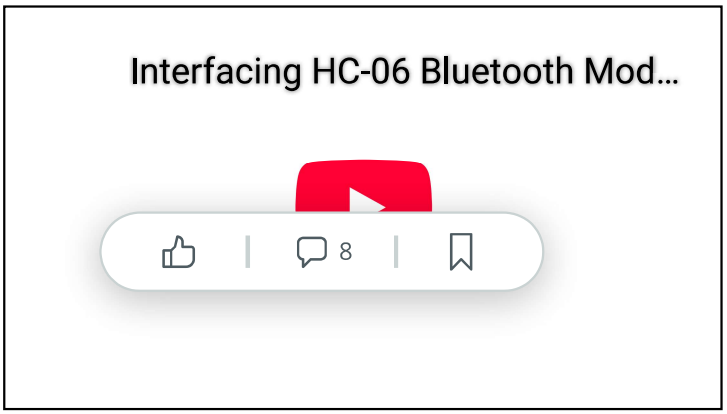
Now that you have successfully set up the Bluetooth module, let's test the communication between this module and another device. If you have an Android device,

your device.

Open the menu icon on the top right corner of the screen and tap on 'Connect a device - secure'. As we have not paired the Bluetooth module with the device, tap on 'Scan for devices'. You will see the Name of your Bluetooth module. To pair with your module, the device will ask for the password. After you provide the correct password, you will see that the device and the module are connected. The LED on the Bluetooth module will flash every 2 seconds.

Open the Serial monitor in the Arduino IDE and set the correct baud rate. Send a message from the Bluetooth terminal app and you will see the message displayed on the Serial monitor. Try sending a message from the Serial monitor. If the connection is successful, the message will be received by your Android device.

## Summary video



# Code

**Code** arduino

Credits to :
http://www.martyncurre[illegible]duino-and-hc-06-zs-040/

```arduino
#include <SoftwareSerial.h>
SoftwareSerial BTSerial (2,3);
void  setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
  Serial.println("Enter AT Commands");
  BTSerial.begin(9600);
}

void  loop() {
  // put your main code here, to run repeatedly:
  if(BTSerial.available()){
```

**Code** arduino

Credits to :
http://www.martyncurre[illegible]duino-and-hc-06-zs-040/

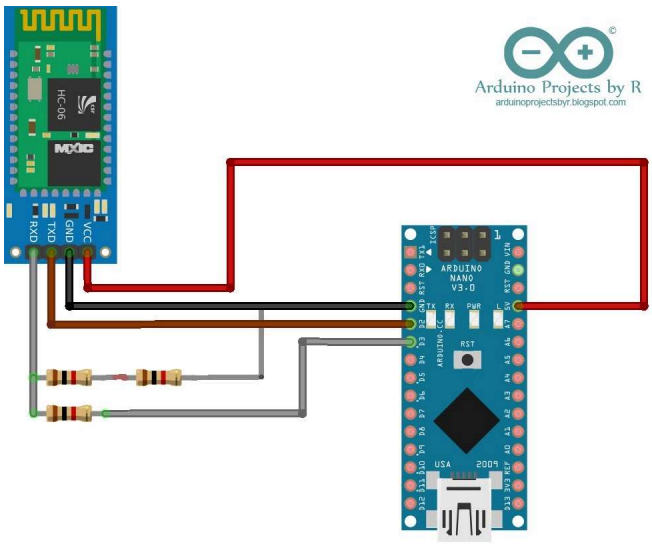
```arduino
#include <SoftwareSerial.h>
[illegible]);

  setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);

  Serial.println("Enter AT
```

12 void

# Downloadable files

### Schematic

Schematic

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# Comments

**cabdiraxman**
17 days ago

I want to use a car, can you help me bro?

**robin_bijo**
2 years ago

Hi! May I know what is the app you use for the schematics?

**sloopjohnt**
2 years ago

This may be a a Uno Rev 3 versus Nano difference, but the code is designed to reassign digital pins 2 and 3 whereas the description is talks about using RX and TX which are Digital Pins 0 and 1 on the Uno.

If you use 0 and 1 for the Bluetooth module connection is won't work ....

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gs worked

useful in proving my second hand HC-06 was working ....

Anyway I learned a lot, which is important as a beginner.

Forgive the stupid comment.
Rereading, this issue is noted in the description: but I still think this bit under connections is unnecessarily confusing.
RXD ---> TX
TXD ---> RX

Better would be be something like

RXD ---> TX (reassigned to Pin D2)
TXD ---> RX (reassigned to Pin D3)

and may be use constants and therefore useful names in this statement in the software.

SoftwareSerial BTSerial (2,3);

**sloopjohnt**
2 years ago

Component list for purchase is wrong: Should be either 3 off 1K resistors or 1 off 1K and 1 off 2K ....

**Anonymous**

8

What Software Do You Use For Controlling The HC-06?
Thank You.

2 years ago

Hello Makerpro,

Not sure if you mean the IDE to write code in, if that is what you mean he is using
Arduino IDE
which you can get at
https://www.arduino.cc/en/software

**robin_bijo**

3 years ago

Hi! May I know what is the app you use for the schematics?

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