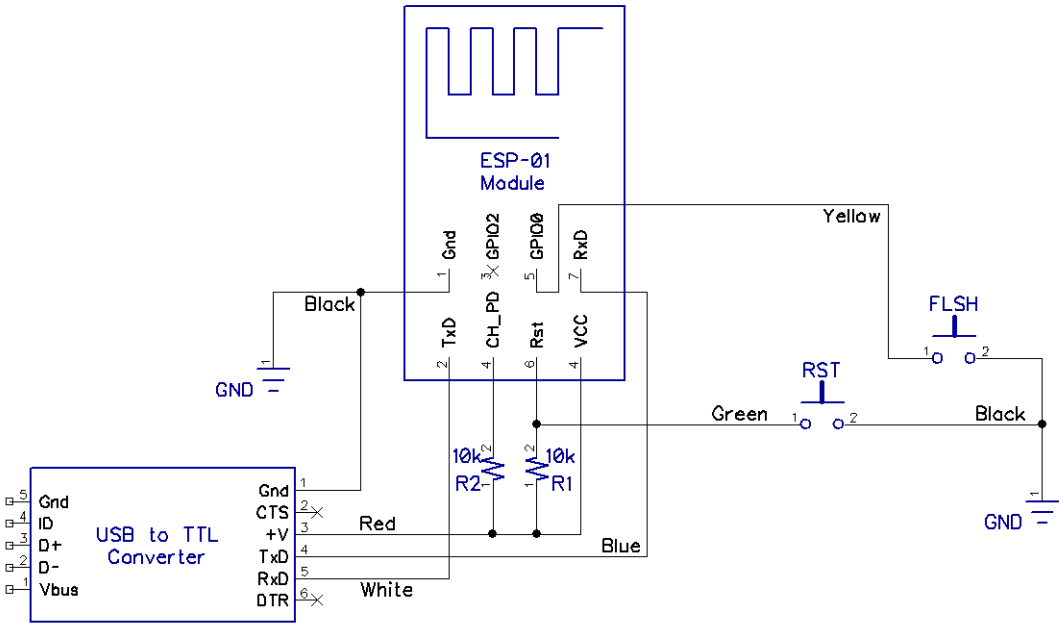
ESP8266 Setup and Basics Tutorial

Flashing Circuit



ESP-01 Connection Diagram

From all about circuits

- https://www.allaboutcircuits.com/projects/update-the-firmware-in-your-esp8266-wi-fi-module/

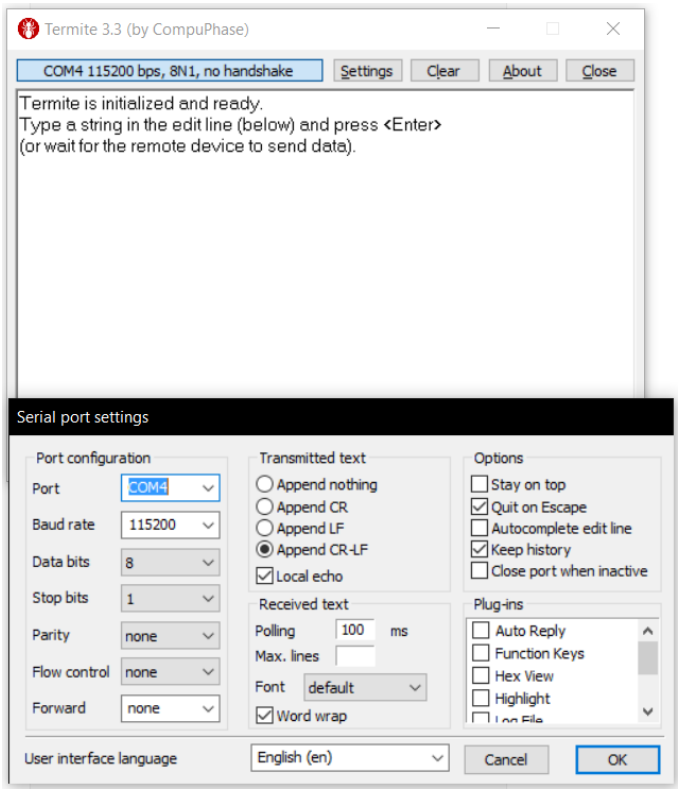
Make sure to use a 3.3 FTDI chip. PS. 5v can be changed to 3.3v with some soldering.

Update the Firmware

Termite

Termite is a program that can be used to establish a connection and transmit data over to the ESP. Use the following link to download it: https://www.compuphase.com/software_termite.htm

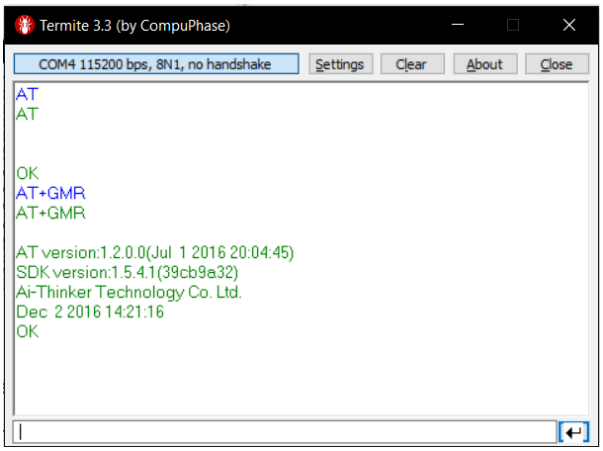
Once install, click on settings and input the following:



Hit “OK”

Check Firmware

Type “AT” and hit enter
after you see an “OK”
Type “AT+GMR” and hit enter
you should see the following:
(this is displaying the firmware information about the ESP)



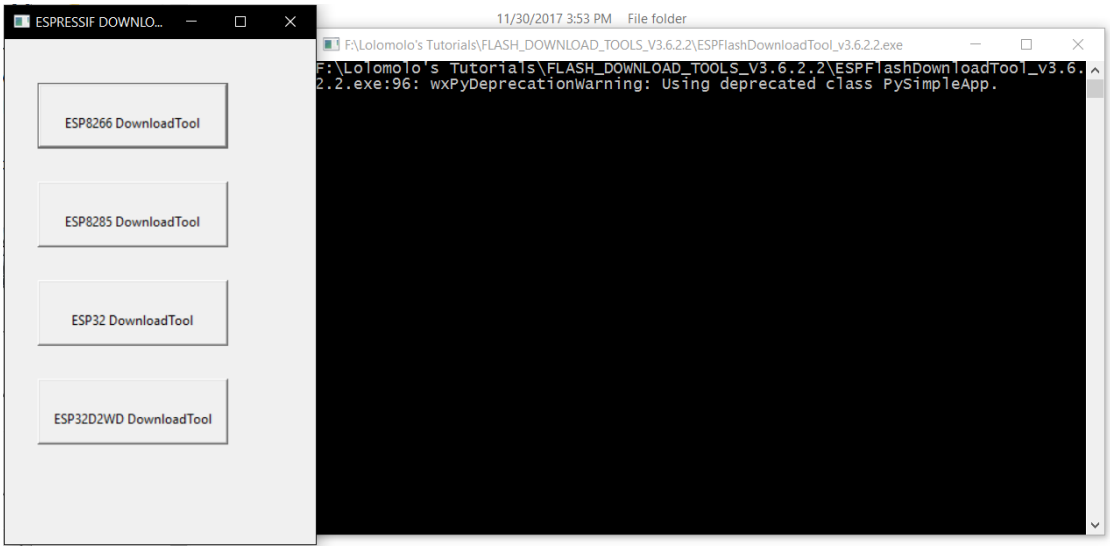
Flash Download Tools

Flash Download Tools is a program offered by Espressif (the company that made the ESP) which

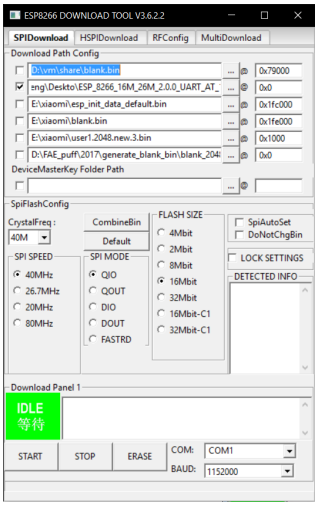
allows you to flash a new version of the firmware onto the chip. Download it from their website off of the following link: http://espressif.com/en/support/download/overview?keys=&field_type _tid %5 B %5 D=14

P.S. the software development kit can be downloaded off of their github here: https://github.com/espressif/ESP8266_NONOS_SDK/releases/tag/v2.1.0

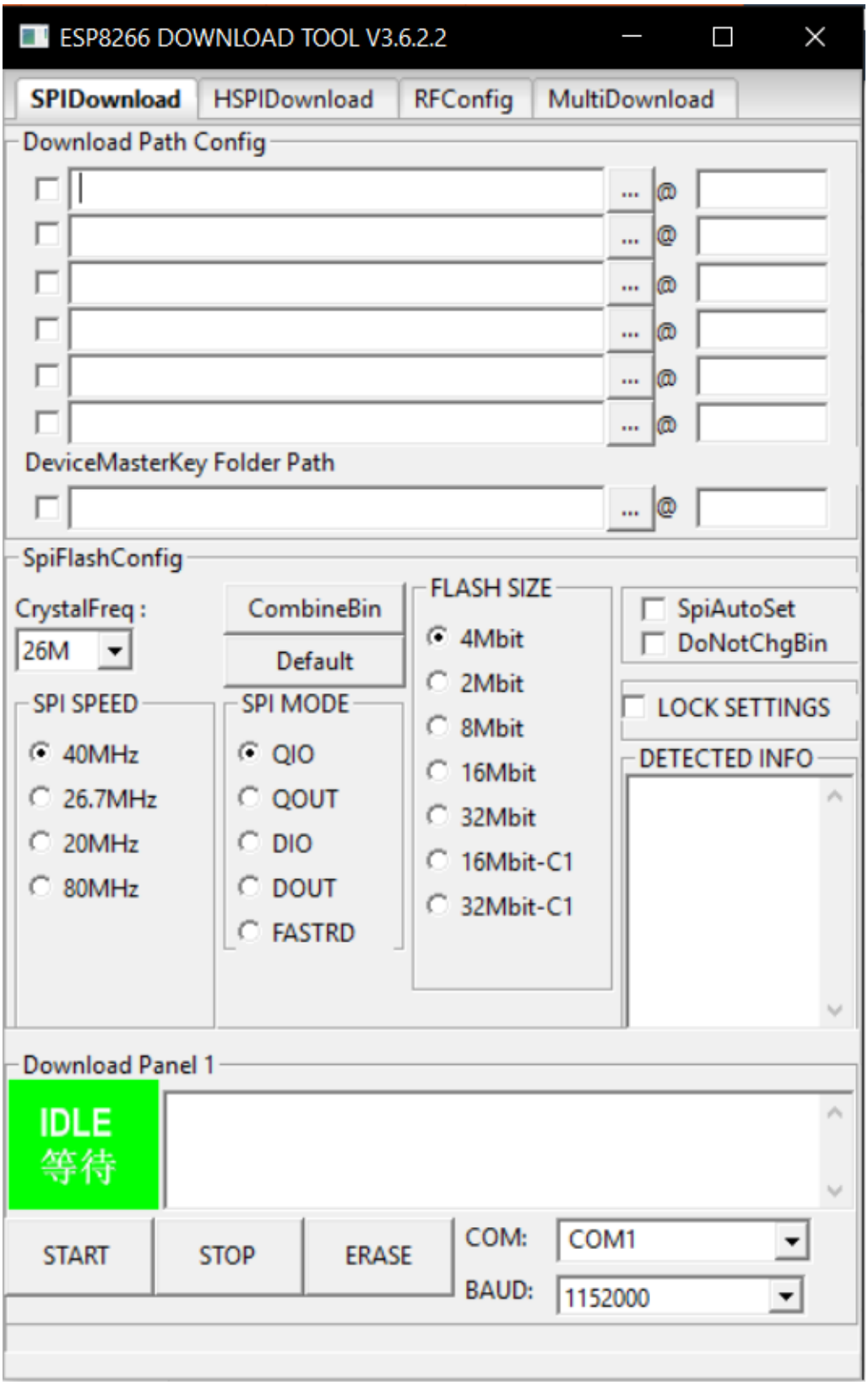
Open the Flash Download tool and select “ESP8266 DownloadTool”



You should see something like this:



Make it look like this:



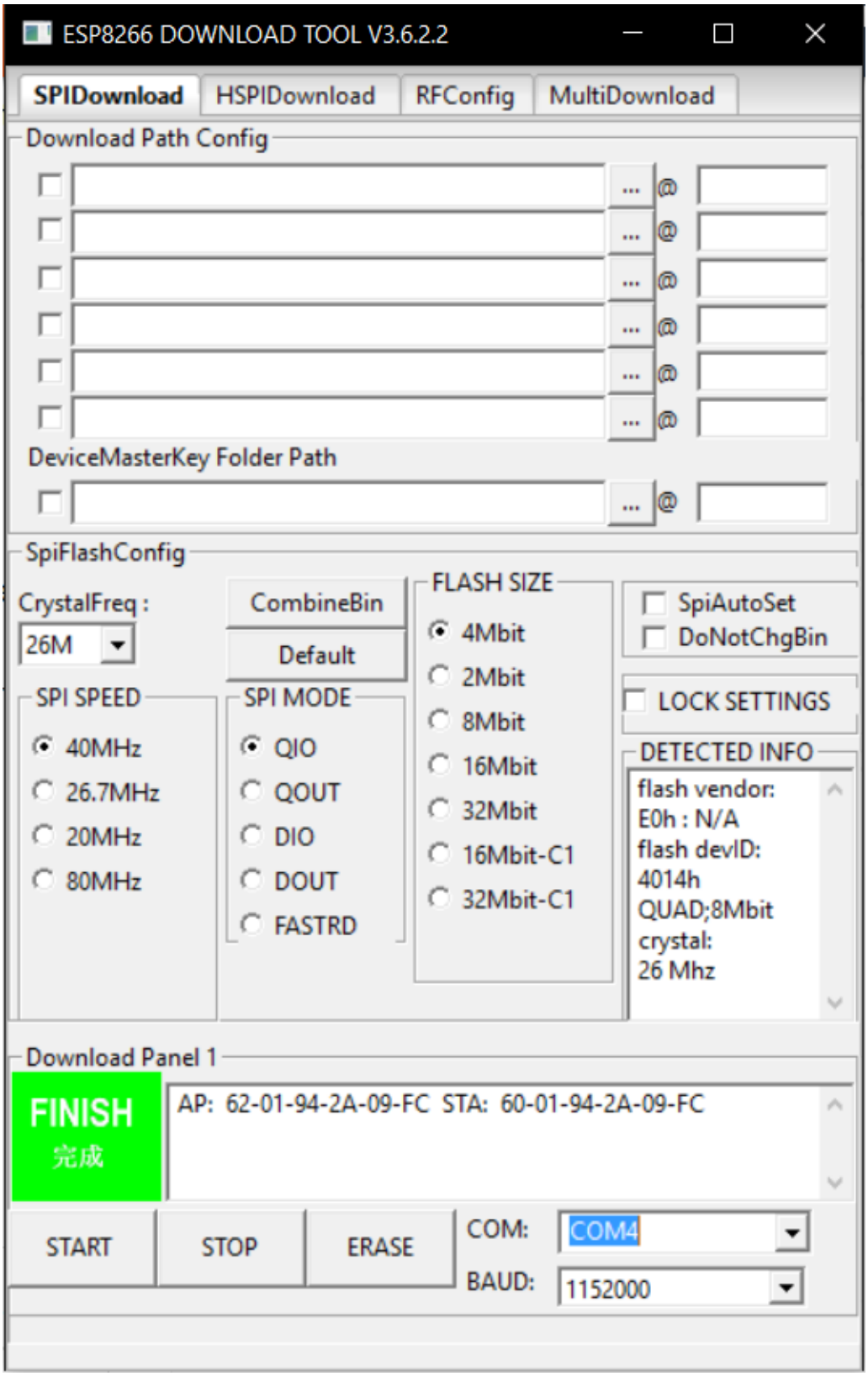
Perform the following instructions:

Flash Procedure

1 Press and hold the Reset button (SW1) on your flashing circuit.
2 Press and hold the Flash button (SW2) on your flashing circuit.
3 Release the Reset button.
4 Release the Flash button.
5 Click the Start button at the lower left portion of the download tool window.

***make sure that the COM# is the correct USB connection

It should display something comparable to the following:



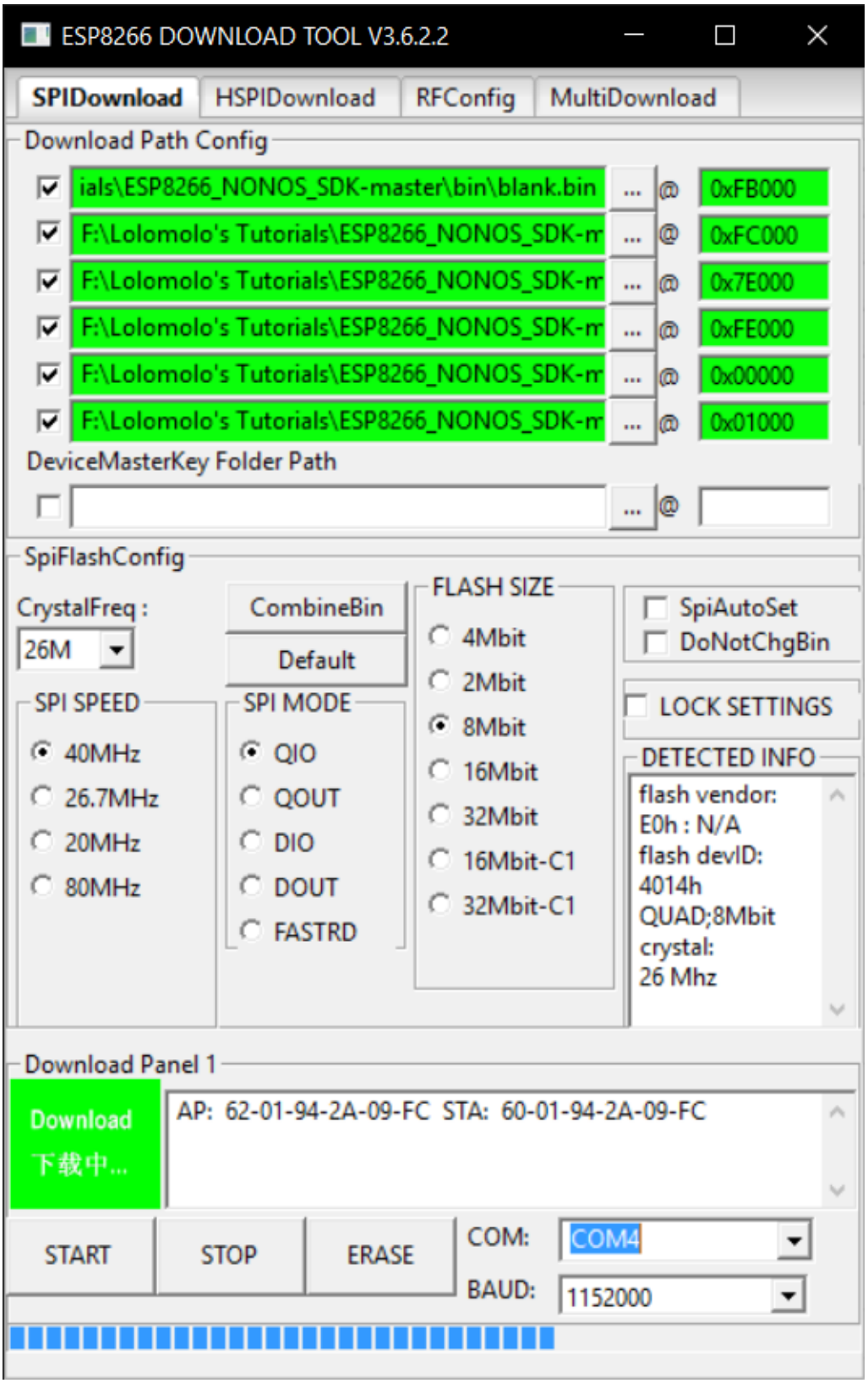
Here’s what has happened during the download tool process time:

The download tool determined the size of the EEPROM on the module as “QUAD;8Mbit,” which translates to 1Megabyte.
The download tool determined the crystal speed to be 26MHz.
The download tool read the MAC addresses for your ESP-01 module in both the AP (Access Point) mode and in the STA (Station) mode, and entered them in Download Panel 1. (Note that the MAC addresses for your ESP-01 module will be different from the addresses shown above; record the MAC addresses of your module for future reference.)

Upload Firmware

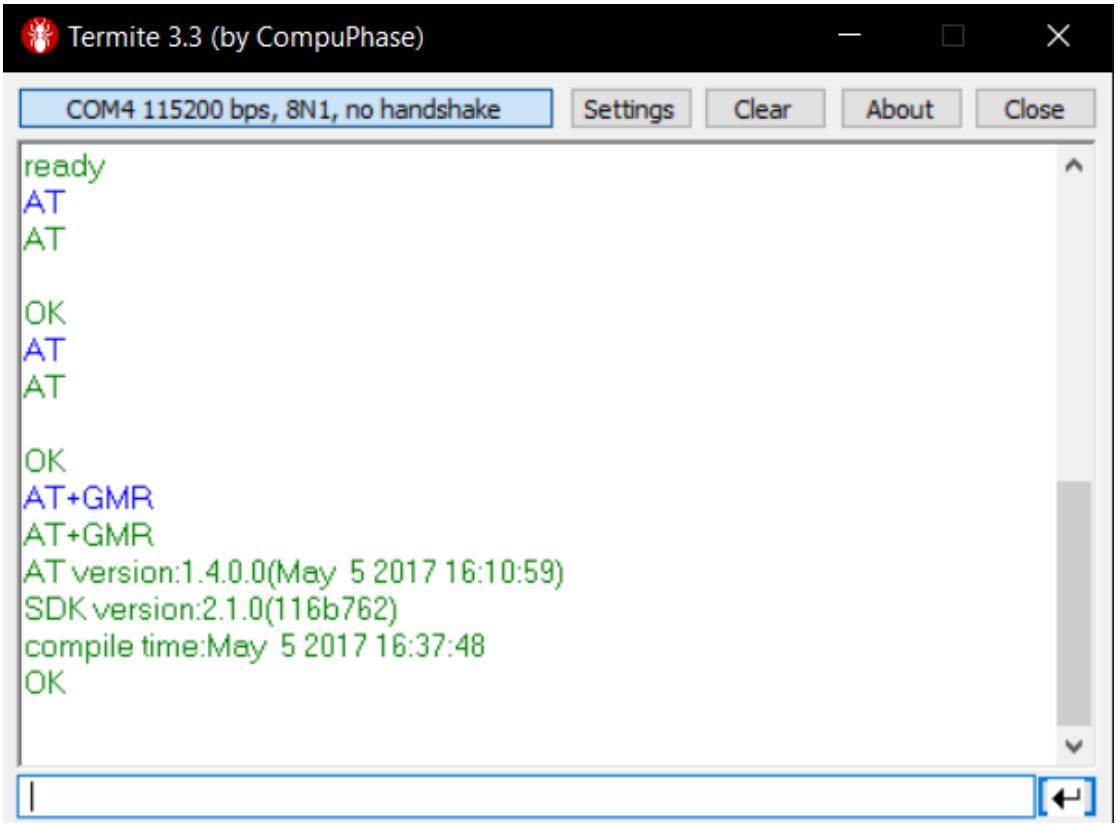
Binary File Name	Binary File Location	ESP-01 Flash Address
blank.bin	...\esp8266_nonos_sdk_v2.0.0_16_08_10\ESP8266_NONOS_SDK\bin	0xFB000
esp_init_data_default.bin	...\esp8266_nonos_sdk_v2.0.0_16_08_10\ESP8266_NONOS_SDK\bin	0xFC000
blank.bin	...\esp8266_nonos_sdk_v2.0.0_16_08_10\ESP8266_NONOS_SDK\bin	0x7E000
blank.bin	...\esp8266_nonos_sdk_v2.0.0_16_08_10\ESP8266_NONOS_SDK\bin	0xFE000
boot_v1.6.bin	...\esp8266_nonos_sdk_v2.0.0_16_08_10\ESP8266_NONOS_SDK\bin	0x00000
user1.1024.new.2.bin	...\esp8266_nonos_sdk_v2.0.0_16_08_10\ESP8266_NONOS_SDK\bin\at\512+512	0x01000

Input the following and hit Start after following the Flash procedure (switch 1 and switch 2 reset)



Once it finishes, power down the circuit by hitting the reset key

To check that the firmware was successfully updated send AT+GMR over termite.



Upload Test Program

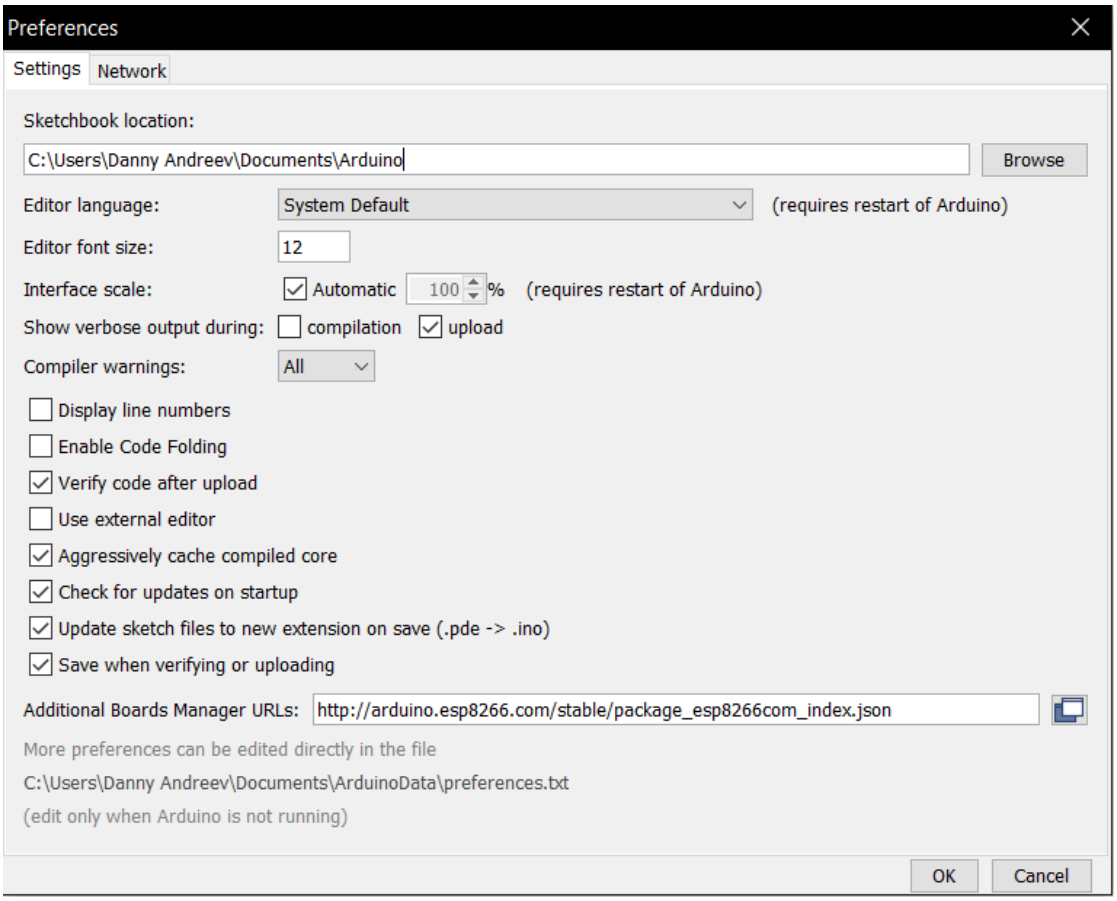
Arduino

Download the arduino IDE

Libraries

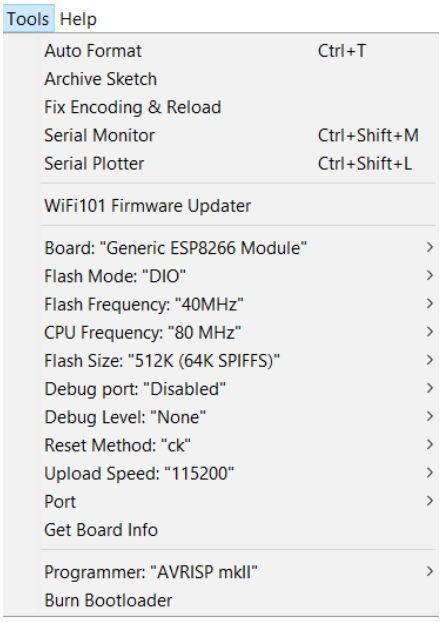
Now, navigate to “Library Manager” under Tools>Add Library>Manage Libraries
and search for the EPS8266 library, install it
****

Under File>Prefrences include http://arduino.esp8266.com/stable/package_esp8266com_index.json



Under tools, make set the settings:

*make sure that the correct COM port is selected.



Then, click on the “Blink” Example sketch under File>Examples>ESP8266>Blink

```
void setup() {
  pinMode(LED_BUILTIN, OUTPUT);     // Initialize the LED_BUILTIN pin as an output
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(LED_BUILTIN, LOW);   // Turn the LED on (Note that LOW is the voltage level
                                    // but actually the LED is on; this is because
                                    // it is acive low on the ESP-01)
  delay(1000);                      // Wait for a second
  digitalWrite(LED_BUILTIN, HIGH);  // Turn the LED off by making the voltage HIGH
  delay(2000);                      // Wait for two seconds (to demonstrate the active low LED)
}
```

P.S. If you are using the ESP 12 module the built-in LED is on Pin 2 instead of pin one. So replace each instance of “LED_BUILTIN” with “2”.

Upload the sketch.
While it is compiling quickly:
Press S1
Press S2
Release S1
Once you can see that it is uploading
Release S2

The sketch should successfully upload and the led on the board should blink