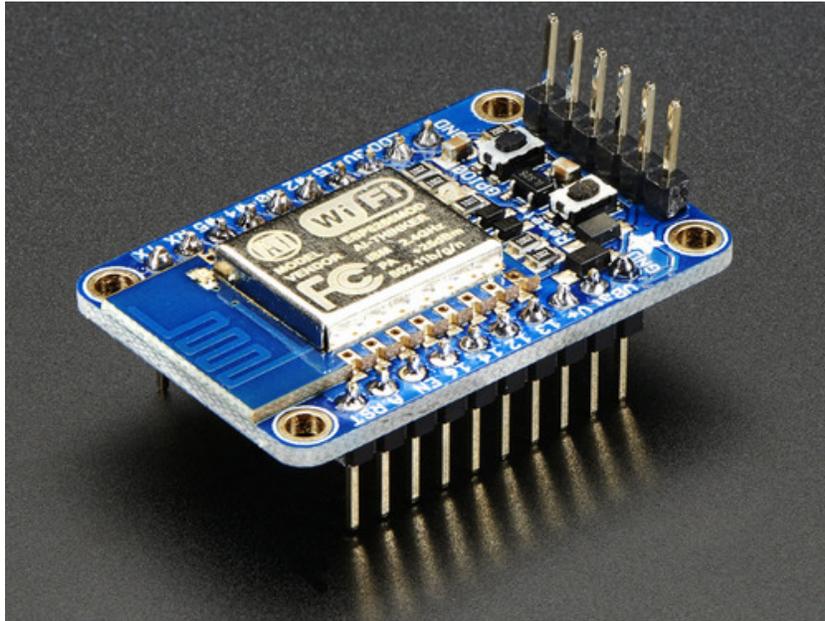




Adafruit HUZZAH ESP8266 breakout

Created by lady ada

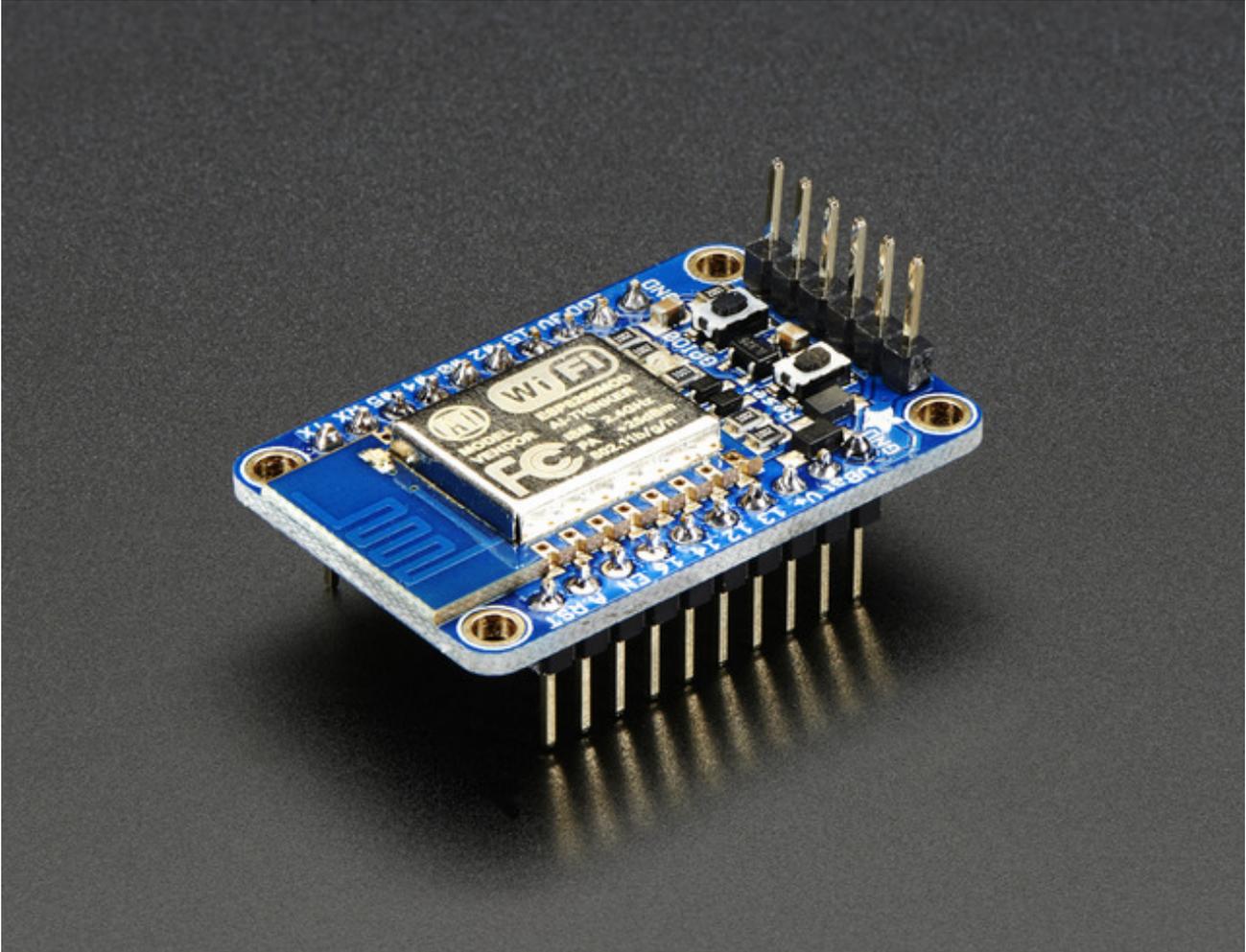


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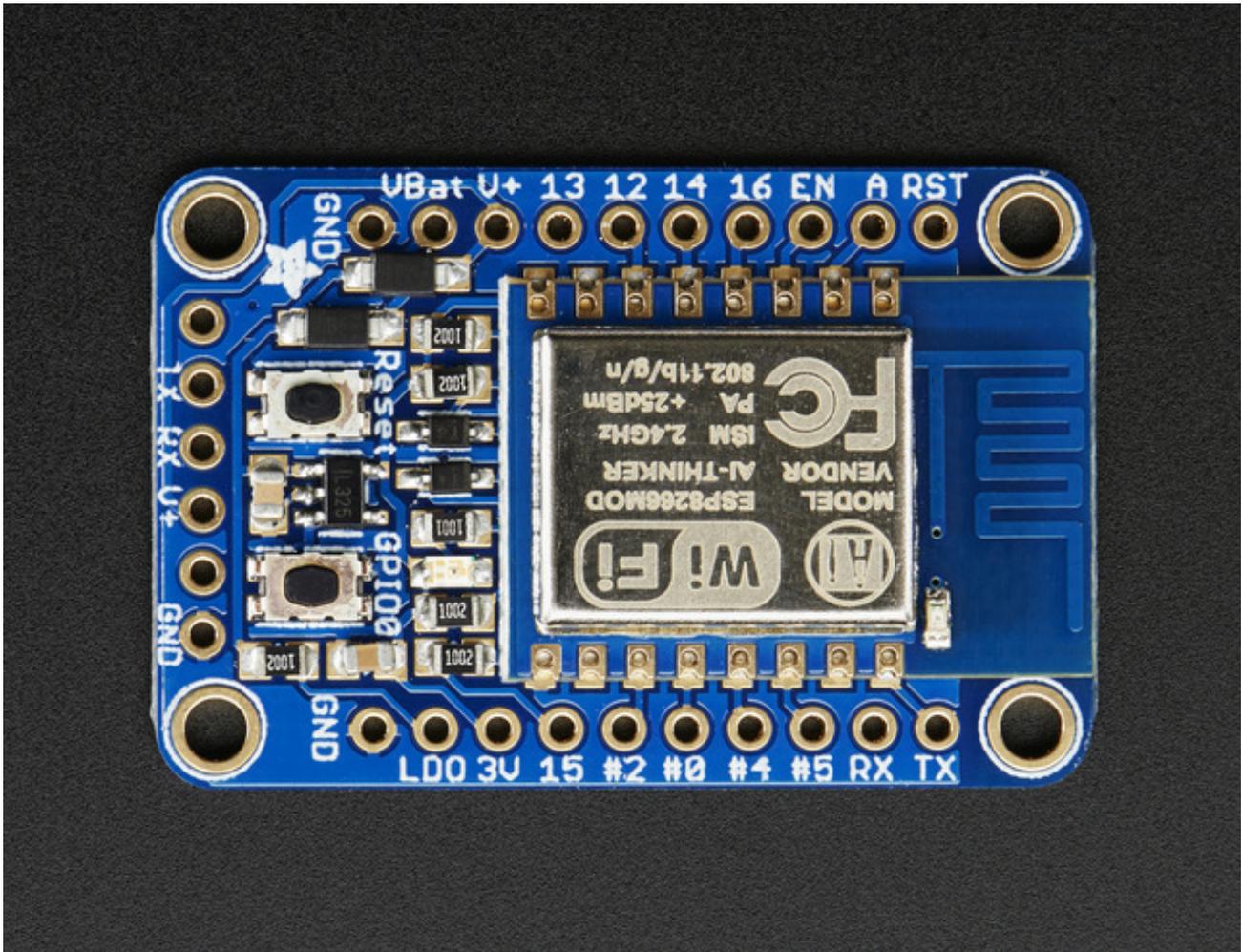
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Overview

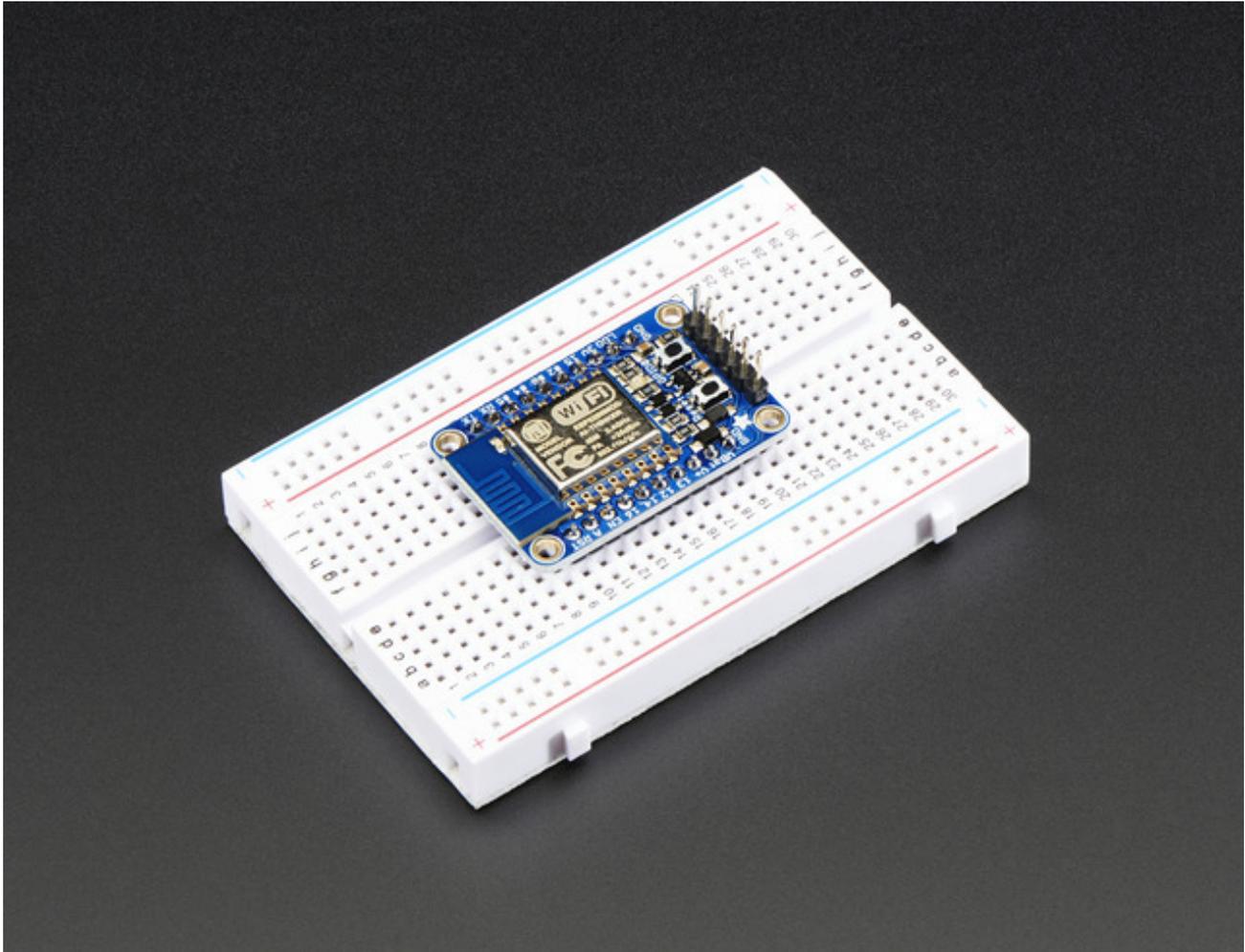


Add Internet to your next project with an adorable, bite-sized WiFi microcontroller, at a price you like! The ESP8266 processor from Espressif is an 80 MHz microcontroller with a full WiFi front-end (both as client and access point) and TCP/IP stack with DNS support as well. While this chip has been very popular, its also been very difficult to use. Most of the low cost modules are not breadboard friendly, don't have an onboard 500mA 3.3V regulator or level shifting, and aren't CE or FCC emitter certified....**UNTIL NOW!**



The HUZZAH ESP8266 breakout is what we designed to make working with this chip super easy and a lot of fun. We took a certified module with an onboard antenna, and plenty of pins, and soldered it onto our designed breakout PCBs. We added in:

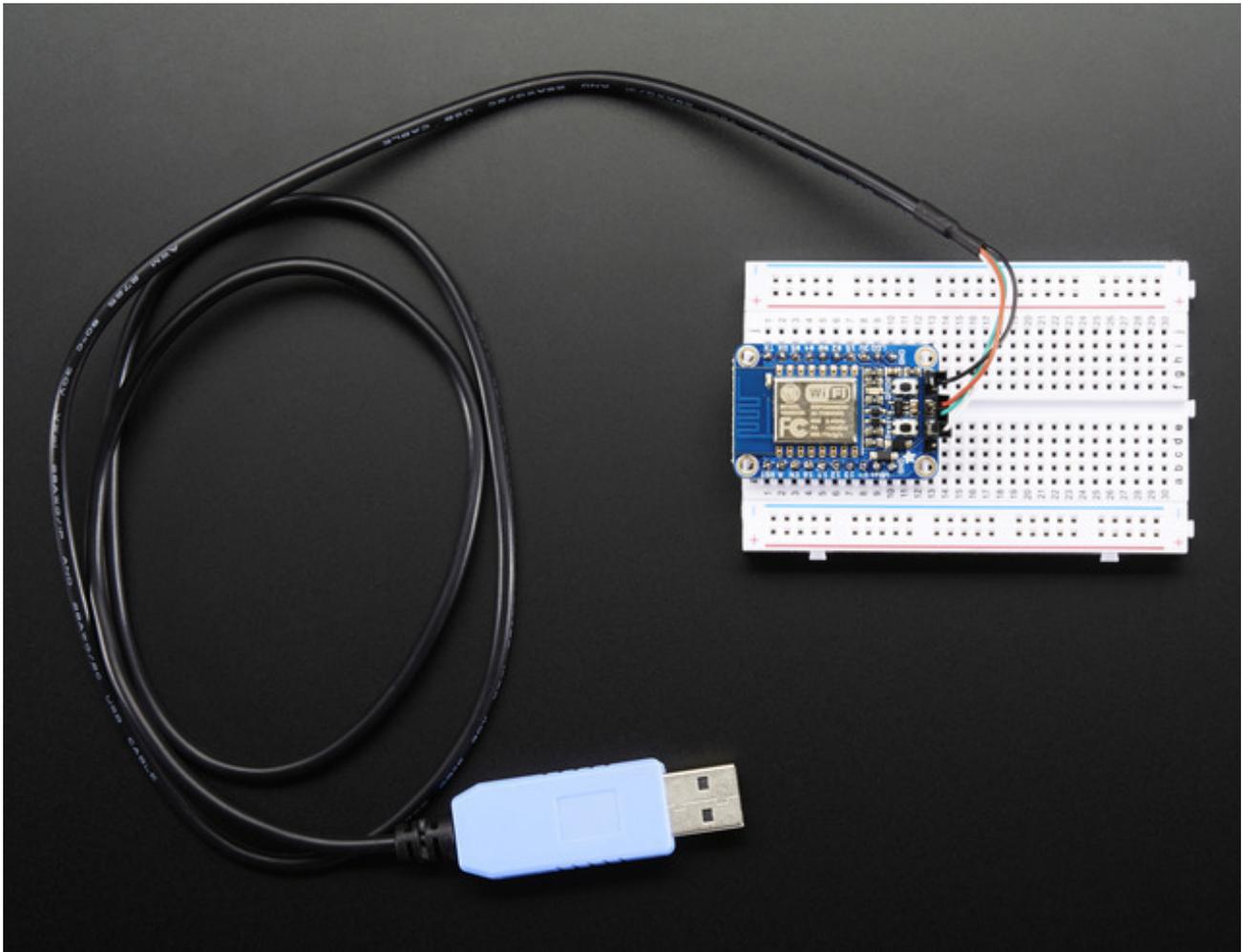
- Reset button,
- User button that can also put the chip into bootloading mode,
- Red LED you can blink
- Level shifting on the UART and reset pin
- 3.3V out, 500mA regulator (you'll want to assume the ESP8266 can draw up to 250mA so budget accordingly)
- Two diode-protected power inputs (one for a USB cable, another for a battery)



Two parallel, breadboard-friendly breakouts on either side give you access to:

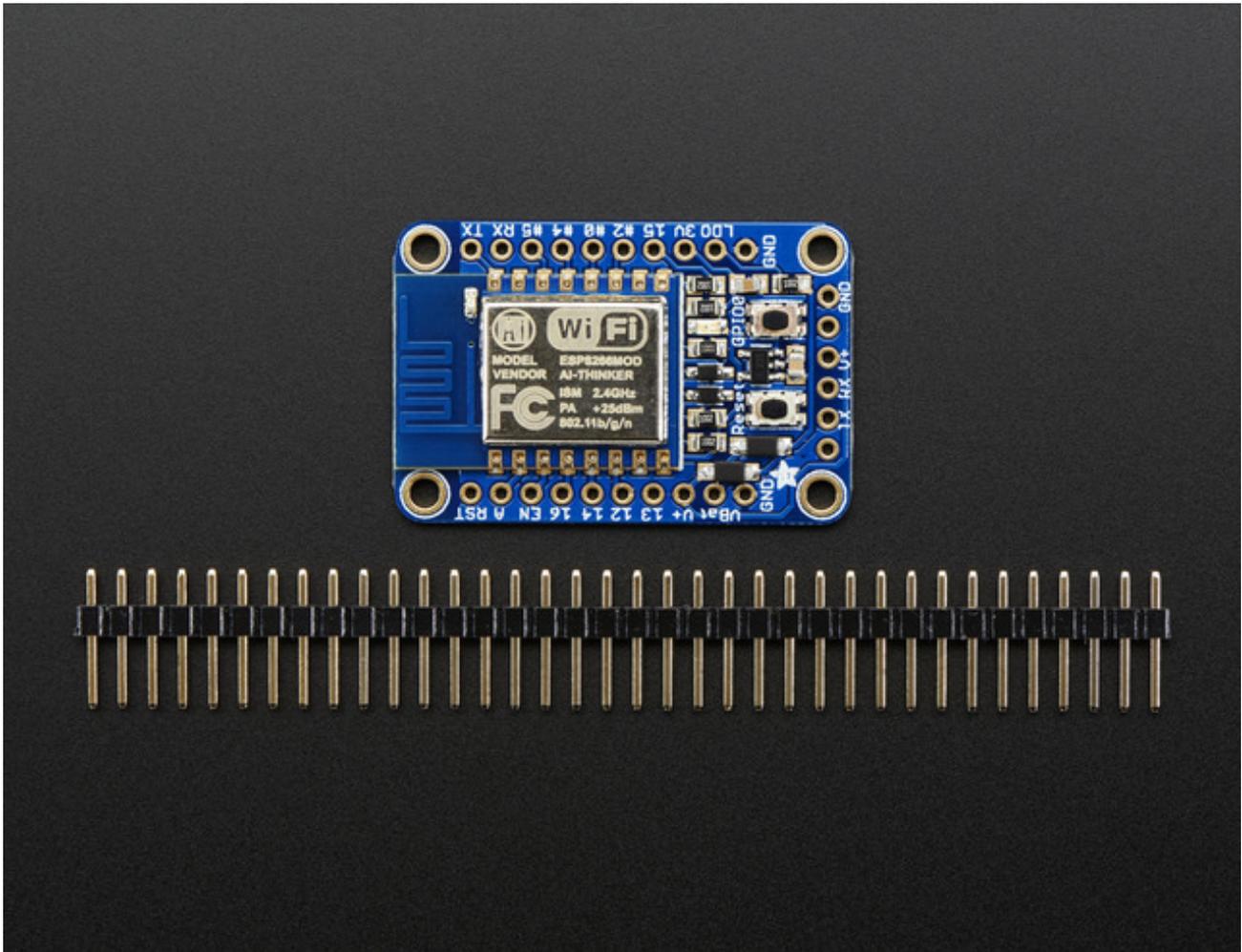
- 1 x Analog input (1.8V max)
- 9 x GPIO (3.3V logic), which can also be used for I2C or SPI
- 2 x UART pins
- 2 x 3-12V power inputs, reset, enable, LDO-disable, 3.3V output

One breakout at the end has an "FTDI" pinout so you can plug in an FTDI or console cable to upload software and read/write debugging information via the UART. When you're done with your coding, remove the cable, and this little module can be embedded into your project box.



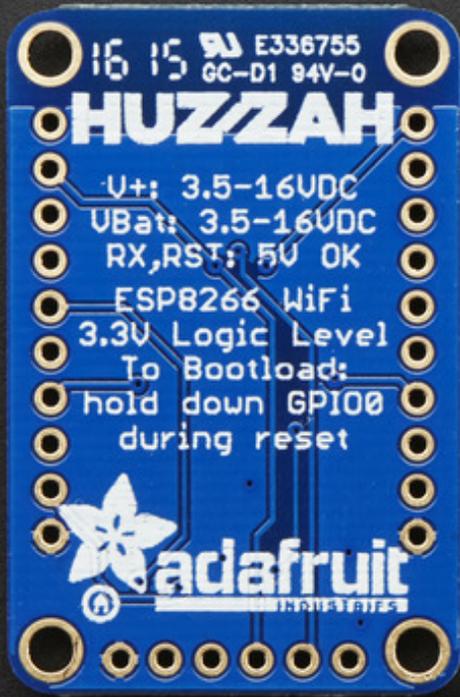
Each module comes pre-loaded with NodeMCU's Lua interpreter (NodeMCU 0.9.5 build 20150318 / Lua 5.1.4 to be specific) (<http://adafru.it/f1V>), you can run commands, and 'save' Lua programs directly to the module's Flash using a USB-Serial converter cable.

But, if you'd like, you can skip Lua and [go direct to using the Arduino IDE](#). Once you download the [ESP8266 core](#), you can treat it just like a microcontroller+WiFi board, no other processors needed (<http://adafru.it/f1W>)!



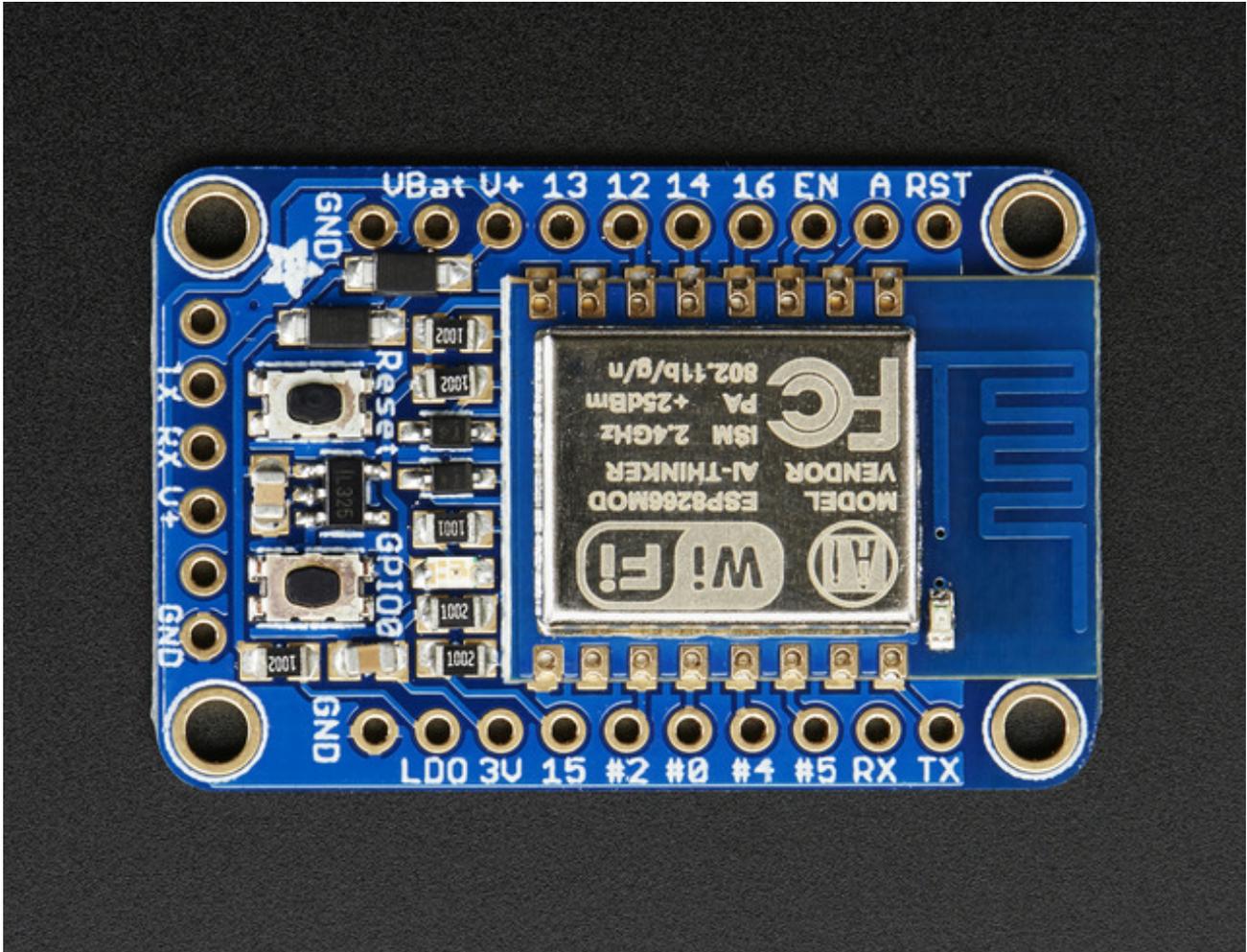
Each order comes with one assembled and tested HUZAZH ESP8266 breakout board, and a stick of 0.1" header that you can solder on and plug the breakout into a breadboard. A soldering iron and solder is required for that, and aren't included. **You'll also need a USB-serial cable** such as a [USB console cable \(http://adafru.it/dDd\)](http://adafru.it/dDd), [FTDI Friend \(http://adafru.it/284\)](http://adafru.it/284), or [FTDI cable \(http://adafru.it/70\)](http://adafru.it/70) (3 or 5V power/logic is fine) to upload software to the HUZAZH ESP8266!

Don't forget to visit [esp8266.com](http://adafru.it/f1F) for the latest and greatest in ESP8266 news, software and gossip! (http://adafru.it/f1F)

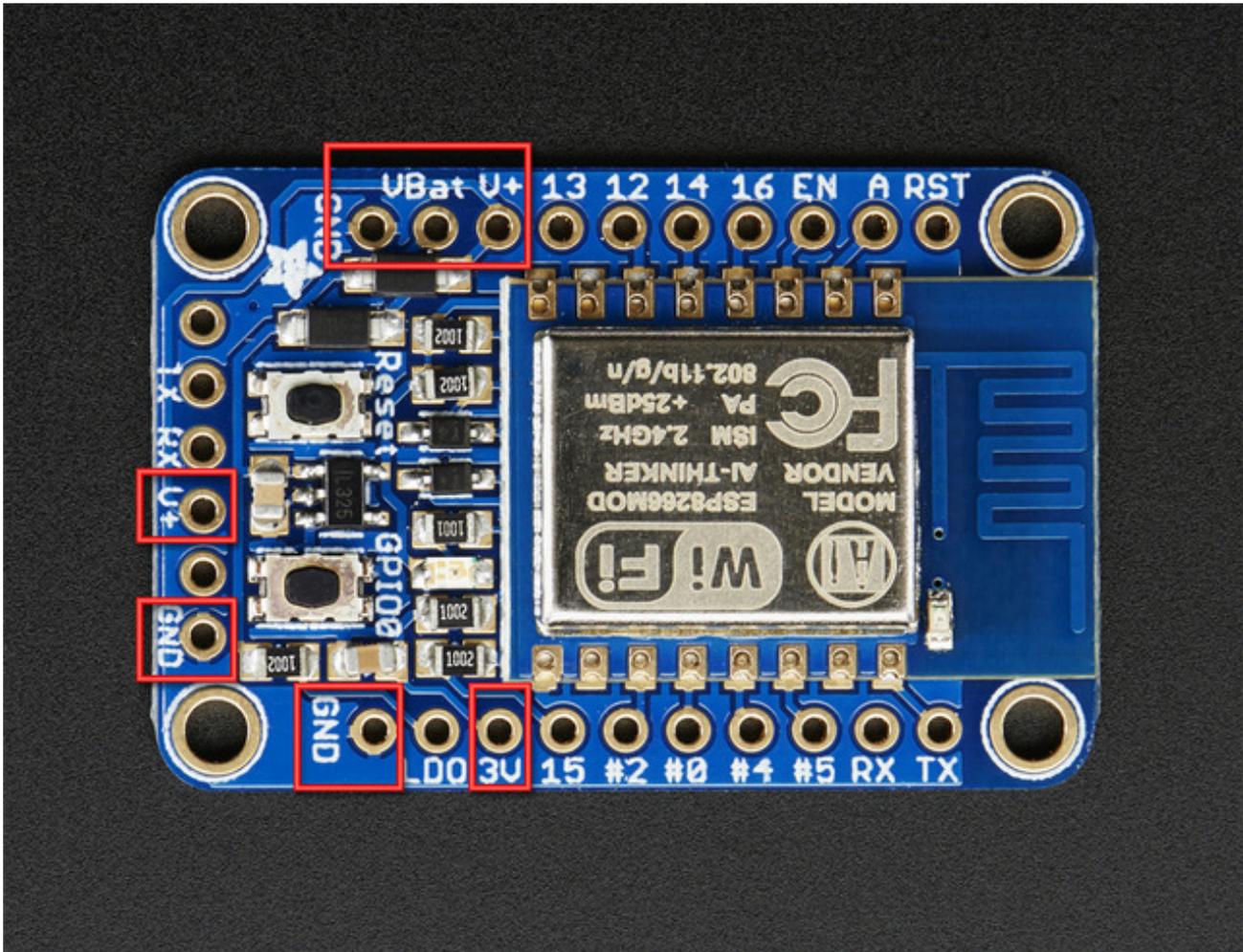


Pinouts

The ESP8266 runs on 3.3V power and logic, and unless otherwise specified, GPIO pins are not 5V safe! The analog pin is also 1.8V max!



This ESP8266 breakout has a ton of pins available, compared to the mini ESP-01 module. When programming the breakout in Lua or via the Arduino IDE, you can control these I/O pins to light up LEDs, read buttons, talk to sensors etc. There's also a bunch of pins for power and control.



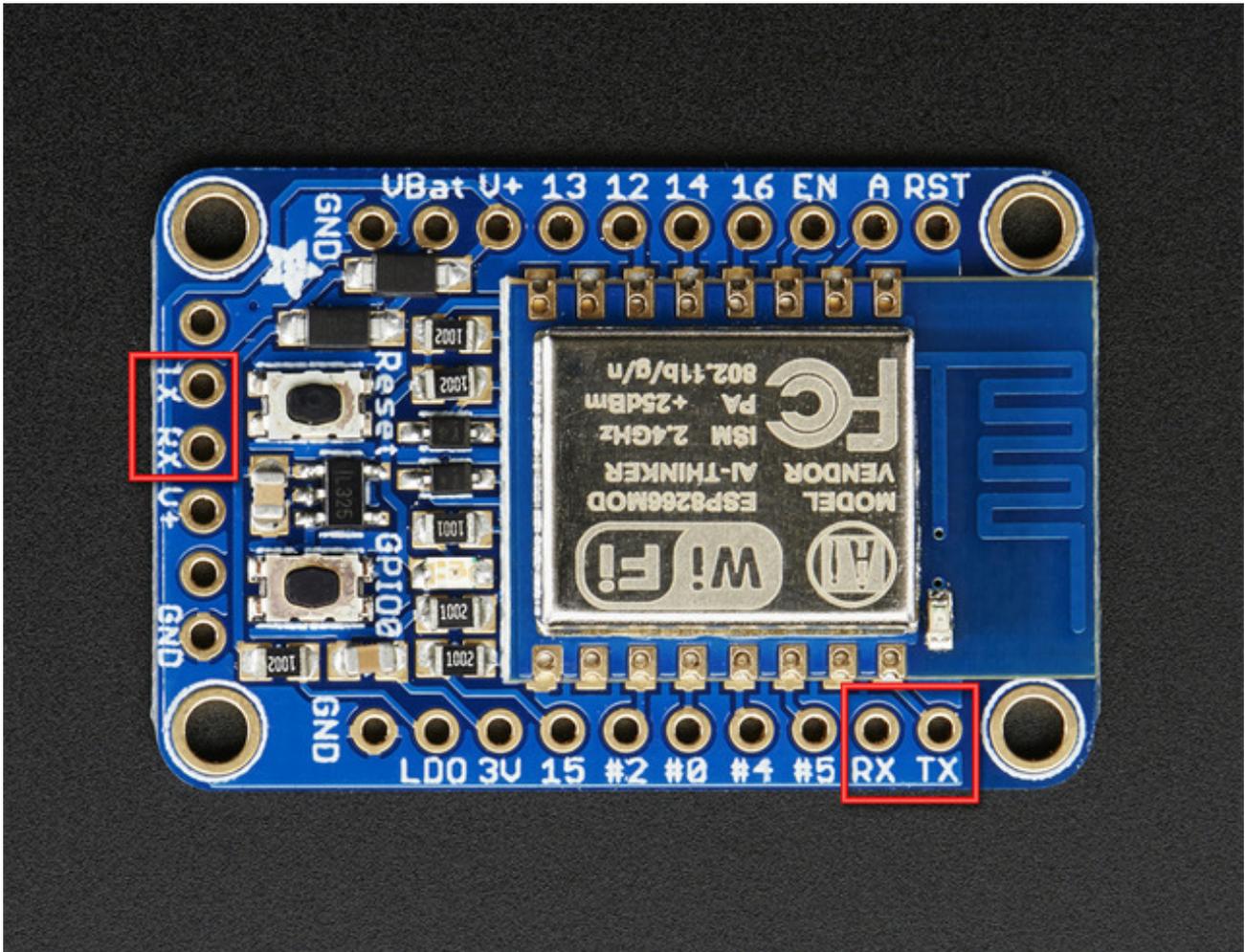
Power Pins

The ESP8266 requires 3.3V power voltage and peaks at 500mA or so of current for small periods of time. You'll want to assume the ESP8266 can draw up to 250mA so budget accordingly. To make it easier to power, we put a high-current-capable 3.3V voltage regulator on the board. It can take 3.4-16V and supply the current for the ESP8266.

There are two inputs for the regulator, **V+** and **VBat**. Both have schottky diodes so you can connect both at different voltages and the regulator will simply power from the higher voltage. The **V+** pin is also on the FTDI/serial header at the bottom edge.

We recommend connecting your LiPoly or AA battery pack directly to **VBat** and then keeping **V+** unused for when an FTDI cable is attached

There's also a 3.3V output from the regulator available on the **3V** pin



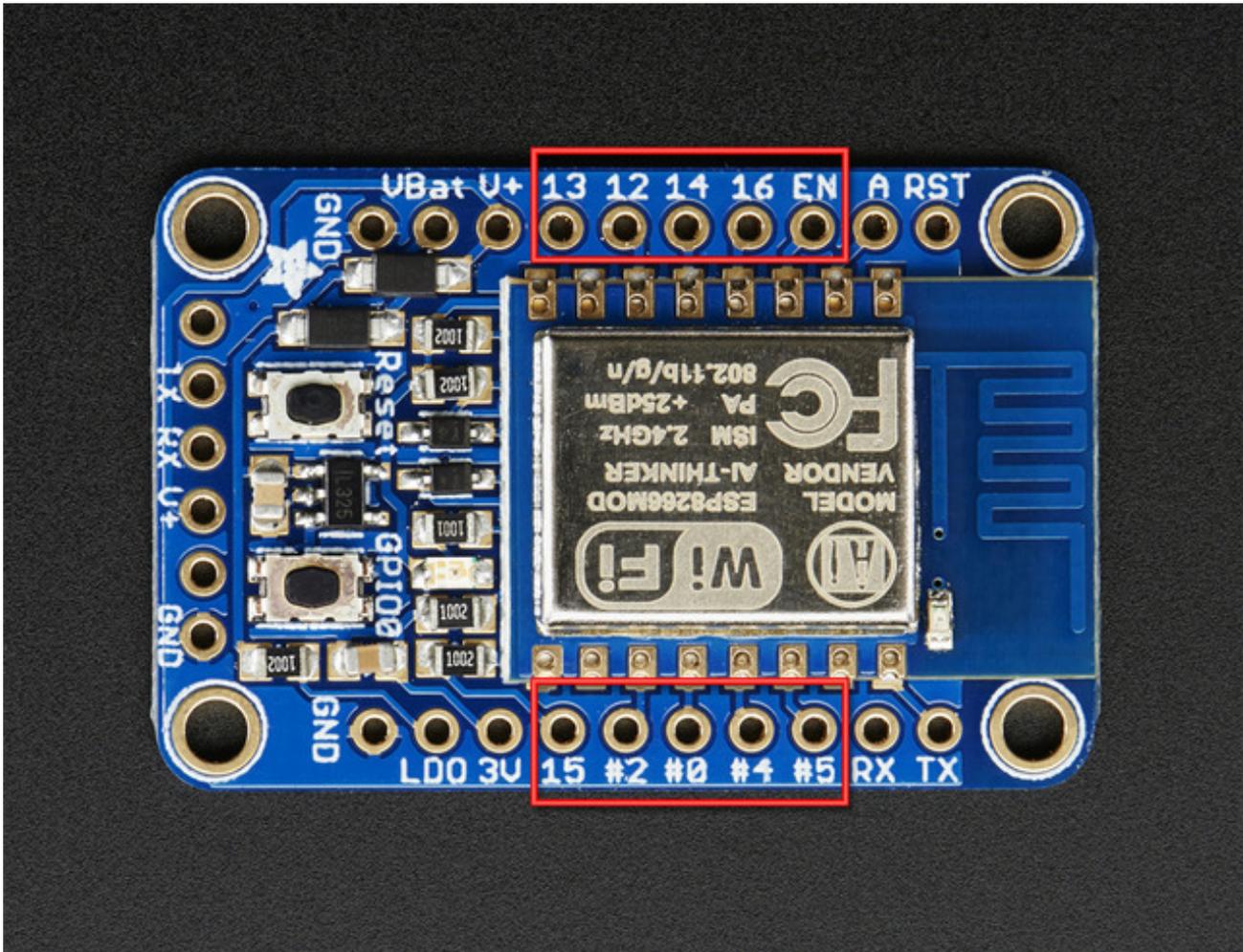
Serial pins

RX and **TX** are the serial control and bootloading pins, and are how you will spend most of your time communicating with the ESP module.

The **TX** pin is the output *from* the module and is 3.3V logic.

The **RX** pin is the input *into* the module and is 5V compliant (there is a level shifter on this pin)

The pins are available in two places, one set is on the right side breakout. The same pins are also at the bottom on the "FTDI/Serial" breakout



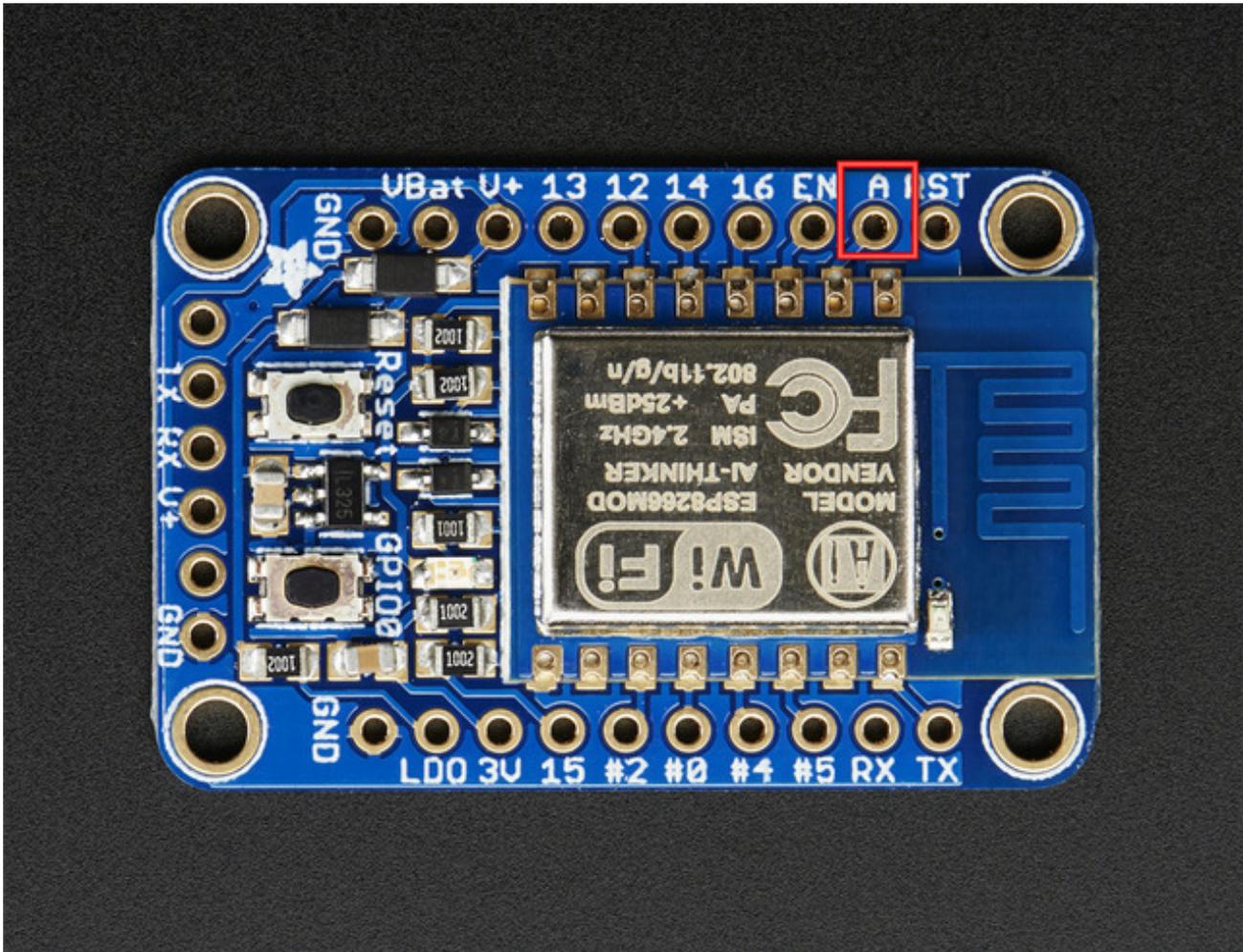
GPIO pins

This breakout has 9 GPIO: #0, #2, #4, #5, #12, #13, #14, #15, #16 all GPIO are 3.3V logic level in and out, and are **not 5V compatible**. Read the [full spec sheet \(http://adafruit.it/f1E\)](http://adafruit.it/f1E) to learn more about the GPIO pin limits, but be aware the maximum current drawn per pin is **12mA**.

These pins are general purpose and can be used for any sort of input or output. Most also have the ability to turn on an internal pullup. The only 'strange' pin is GPIO #0, which does not have an internal pullup, and is also connected to both a mini tactile switch and red LED. This pin is used by the ESP8266 to determine when to boot into the bootloader.

For this reason, we dont recommend connecting anything to GPIO #0, because if the pin is held low during power-up it will start bootloading! That said, you can use it as an output, and blink the red LED.

Rev A of this board has GPIO #4 and #5 swapped (the modules changed pinouts on us) so if #4/#5 aren't working for you, try swapping! We'll fix in the next PCB run



Analog Pins

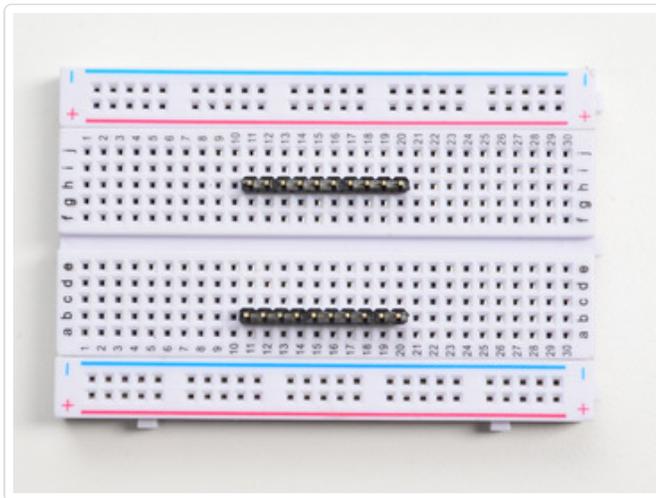
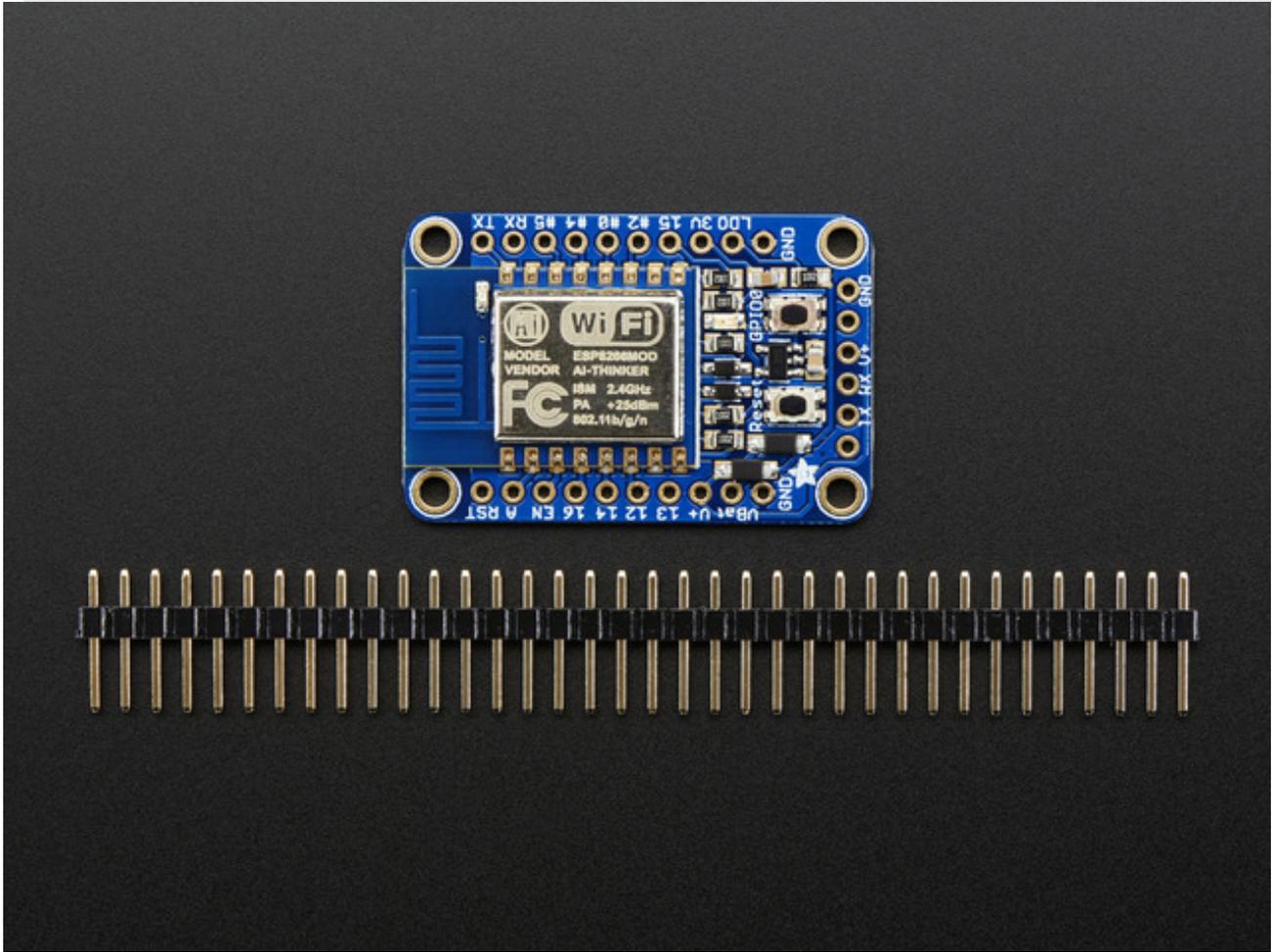
There is also a single analog input pin called **A**. This pin has a 1.8V maximum voltage, so if you have an analog voltage you want to read that is higher, it will have to be divided down to 1.8V

Other control pins

We have a few other pins for controlling the ESP8266

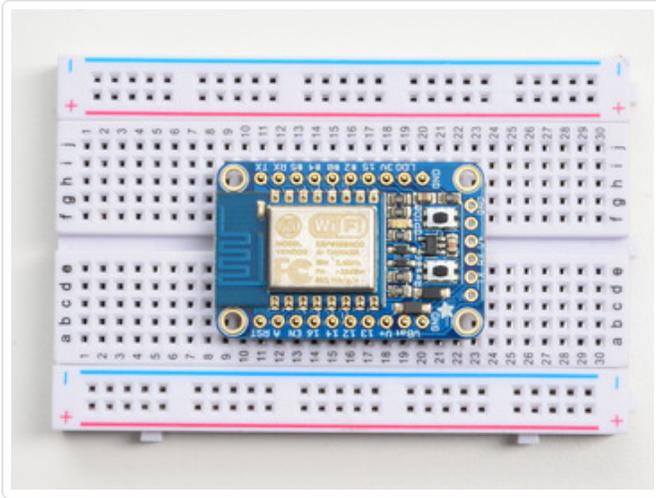
- **LDO** - this is the enable pin for the regulator. By default its pulled high, when connected to ground it will turn off the 3.3V regulator and is an easy way to cut power off to the whole setup. There is a 10K pullup is to whatever is greater, **V+** or **VBat**.
- **RST** - this is the reset pin for the ESP8266, pulled high by default. When pulled down to ground momentarily it will reset the ESP8266 system. This pin is 5V compliant.
- **EN (CH_PD)** - This is the enable pin for the ESP8266, pulled high by default. When pulled down to ground momentarily it will reset the ESP8266 system. This pin is 3.3V logic only

Assembly

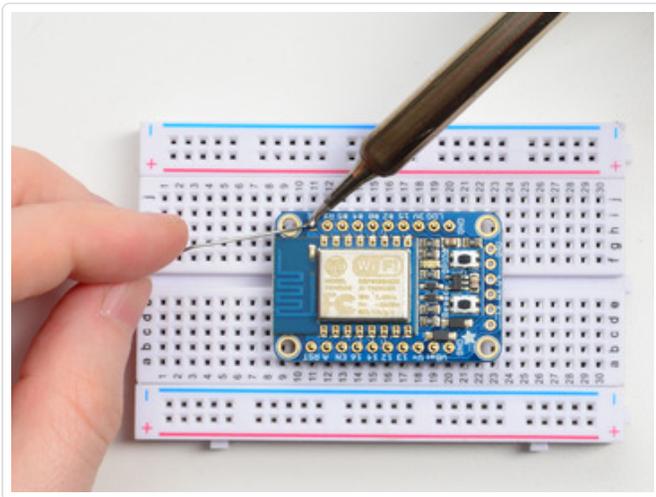


Prepare the header strip:
Cut two strips to length if necessary. It will be easier to solder if you insert it into a breadboard - **long pins down**

Add the breakout board:
Place the breakout board over the pins so that the



short pins poke through the breakout pads

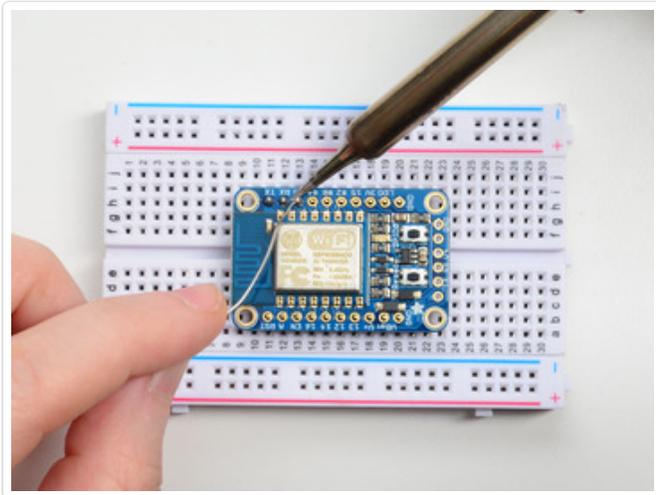


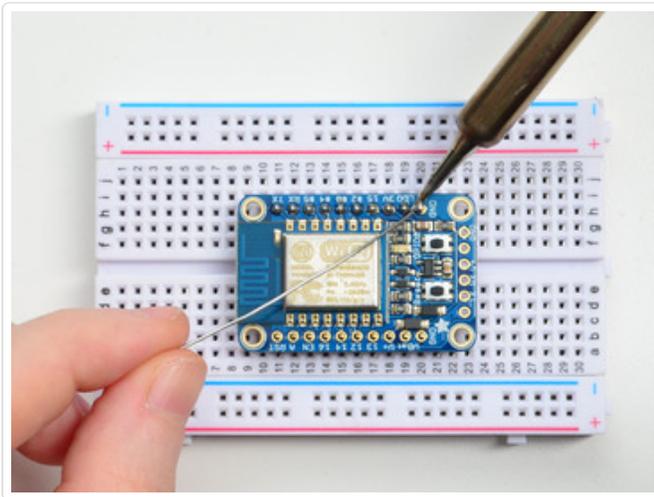
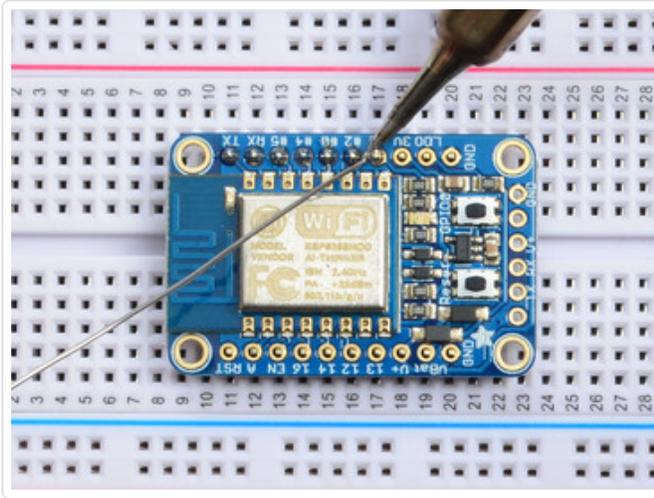
And Solder!

Be sure to solder all pins for reliable electrical contact.

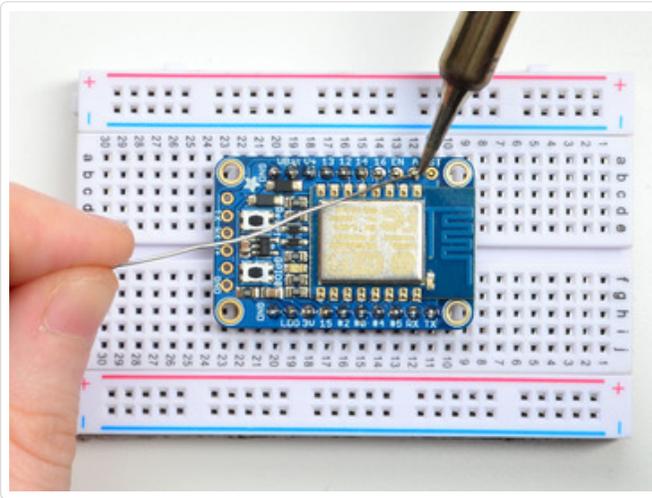
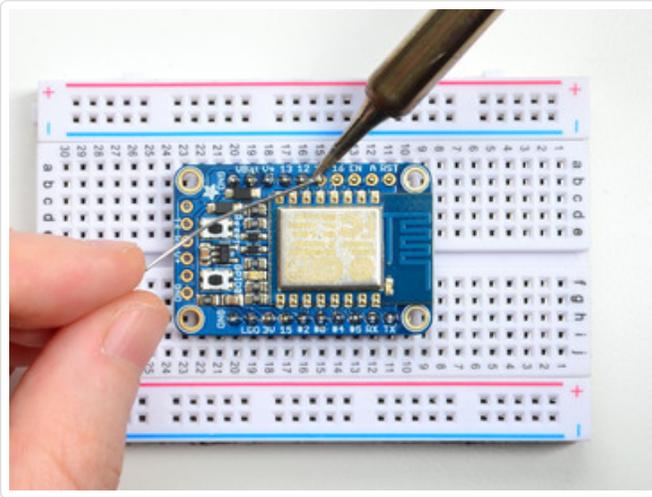
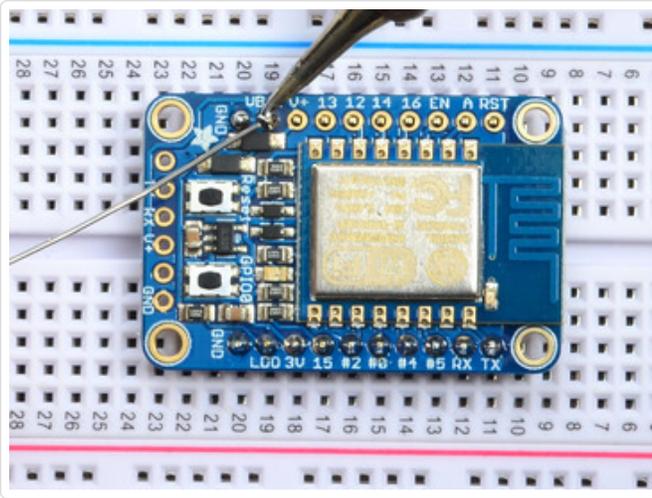
Solder one side of the board at first

(For tips on soldering, be sure to check out our [Guide to Excellent Soldering](http://adafru.it/aTk) (<http://adafru.it/aTk>)).

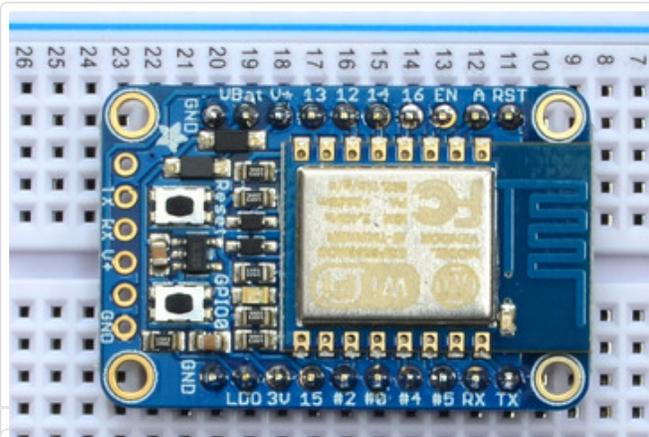




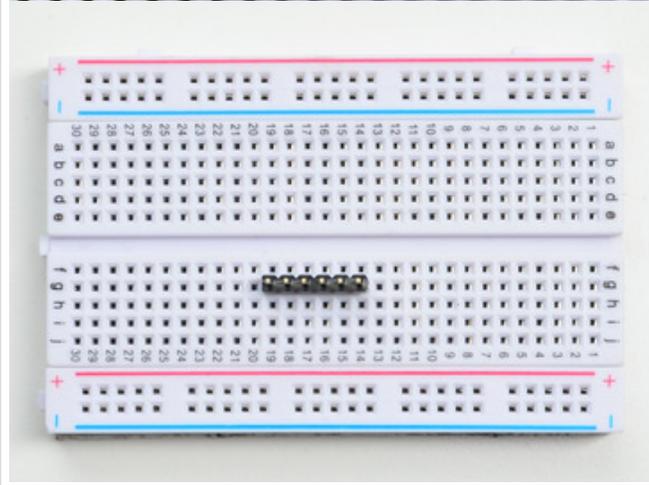
Flip the breadboard around to solder the other strip



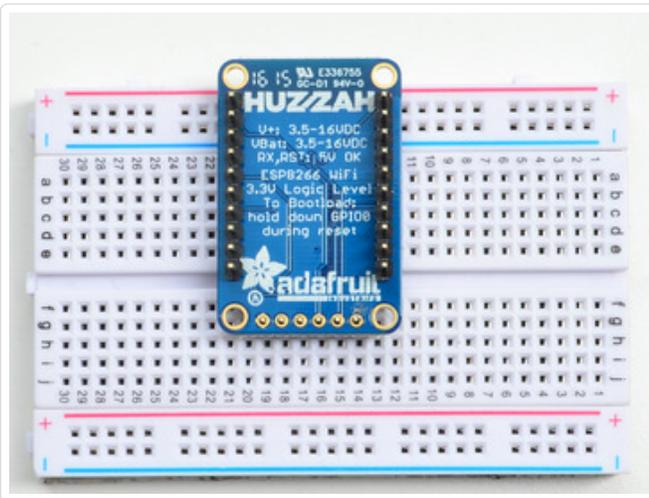
You're done! Check your solder joints visually and continue onto the next steps



If you're planning on programming with an FTDI or console cable, it's handy to have 6 pins soldered on the end for plugging in.

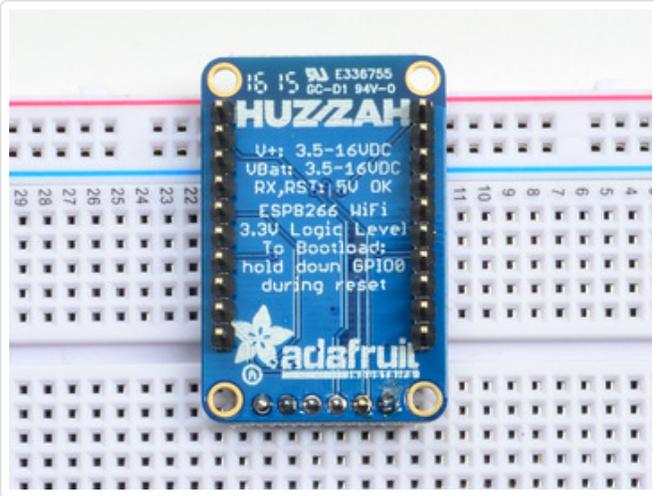
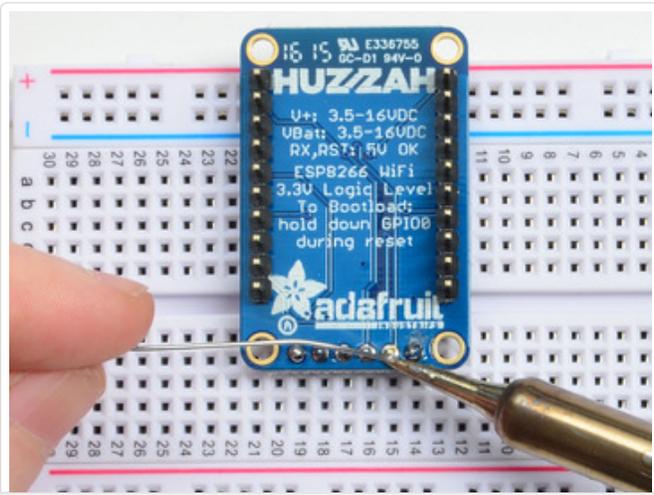
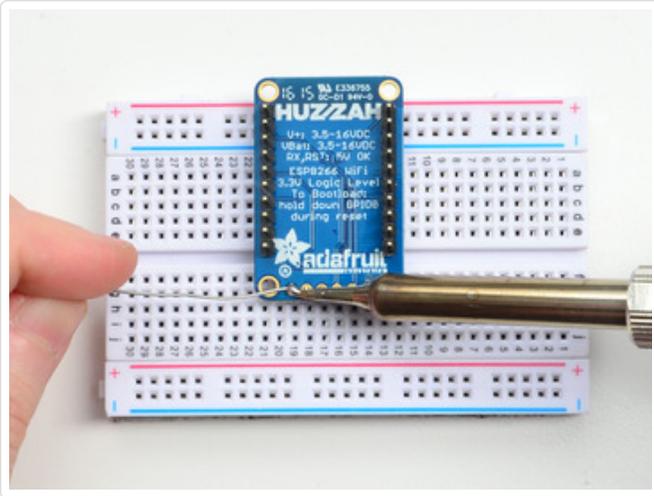


Cut another 6-pin strip to length if necessary. Insert it into a breadboard - **long pins down**



Place the breakout on the breadboard facing down

Solder all 6 pins!



You're done! Check your solder joints visually and continue onto the next steps

Using NodeMCU Lua

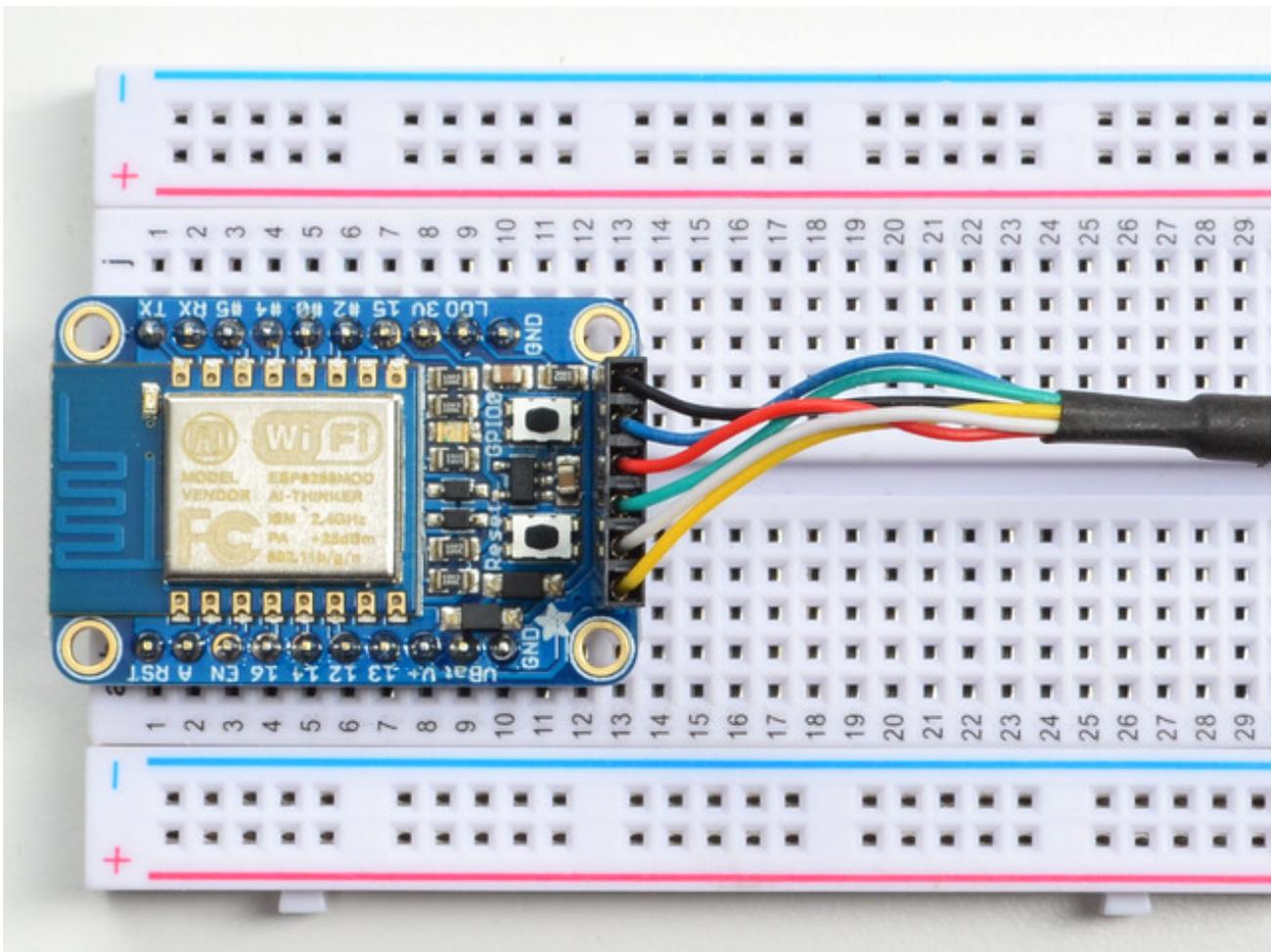
Each HUZAZH ESP8266 breakout comes pre-programmed with NodeMCU's Lua interpreter. As of this writing, we ship with **NodeMCU 0.9.5 build 20150318 powered by Lua 5.1.4** but it may be more recent

The Lua interpreter runs on the ESP8266 and you can type in commands and read out the results over serial. A serial console cable is perfect for this! Use either an [FTDI cable \(http://adafru.it/dNN\)](http://adafru.it/dNN) or [any console cable \(http://adafru.it/954\)](http://adafru.it/954), you can use either 3V or 5V logic and power as there is level shifting on the RX pin.

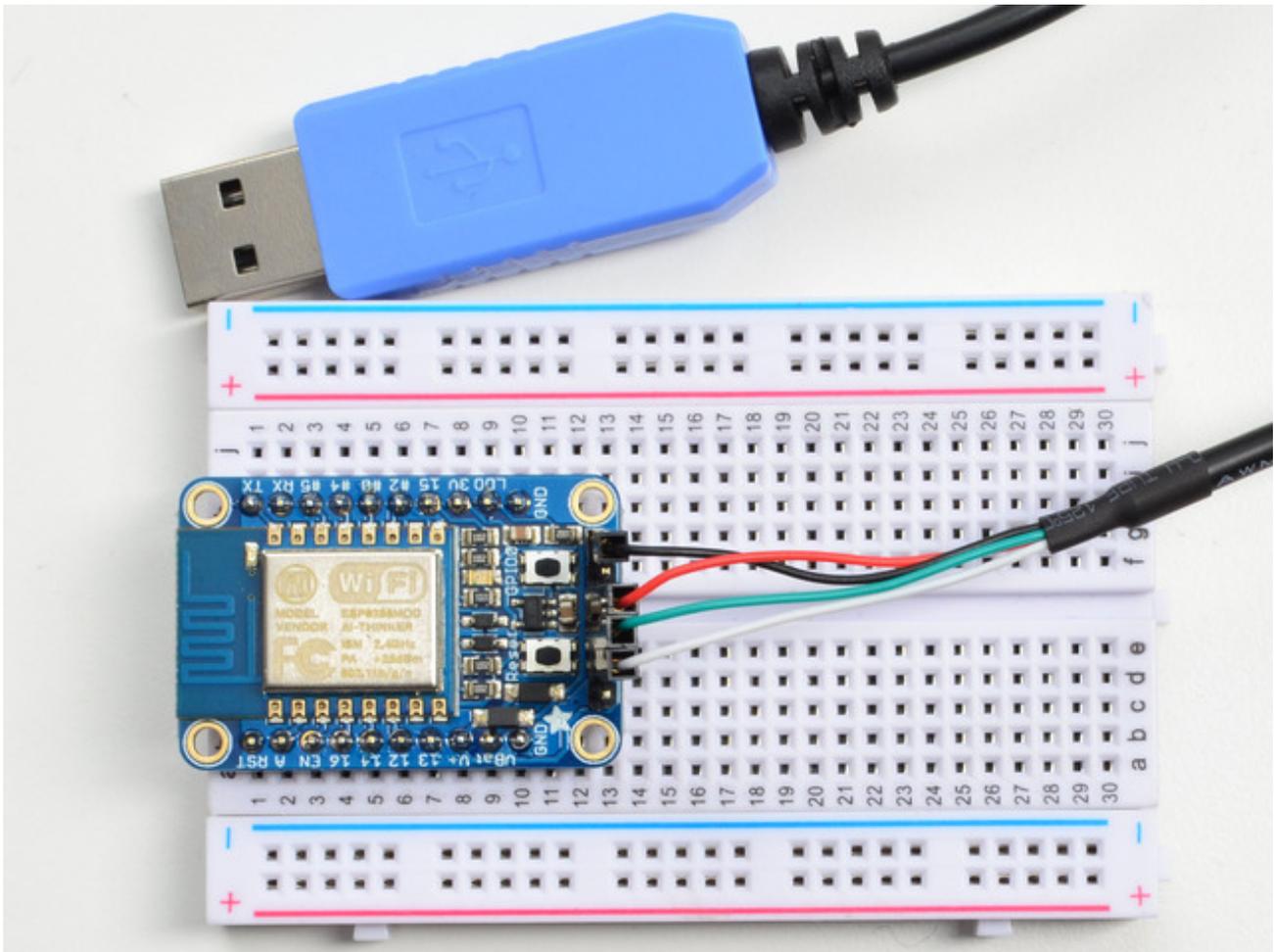
Don't forget to visit esp8266.com for the latest and greatest in ESP8266 news, software and gossip! (<http://adafru.it/f1F>)

Connect USB-Serial cable

Connect either your console cable or FTDI cable. If using FTDI, make sure the black wire goes to the GND (ground) pin



If using a console cable, connect the black wire to ground, red wire to **V+**, white wire to **TX** and green wire to **RX**

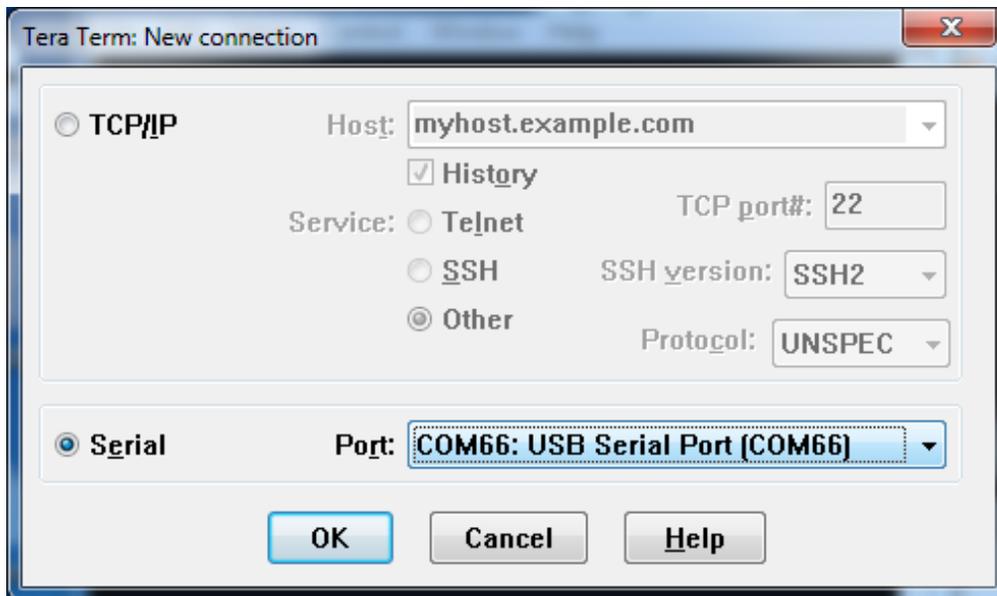
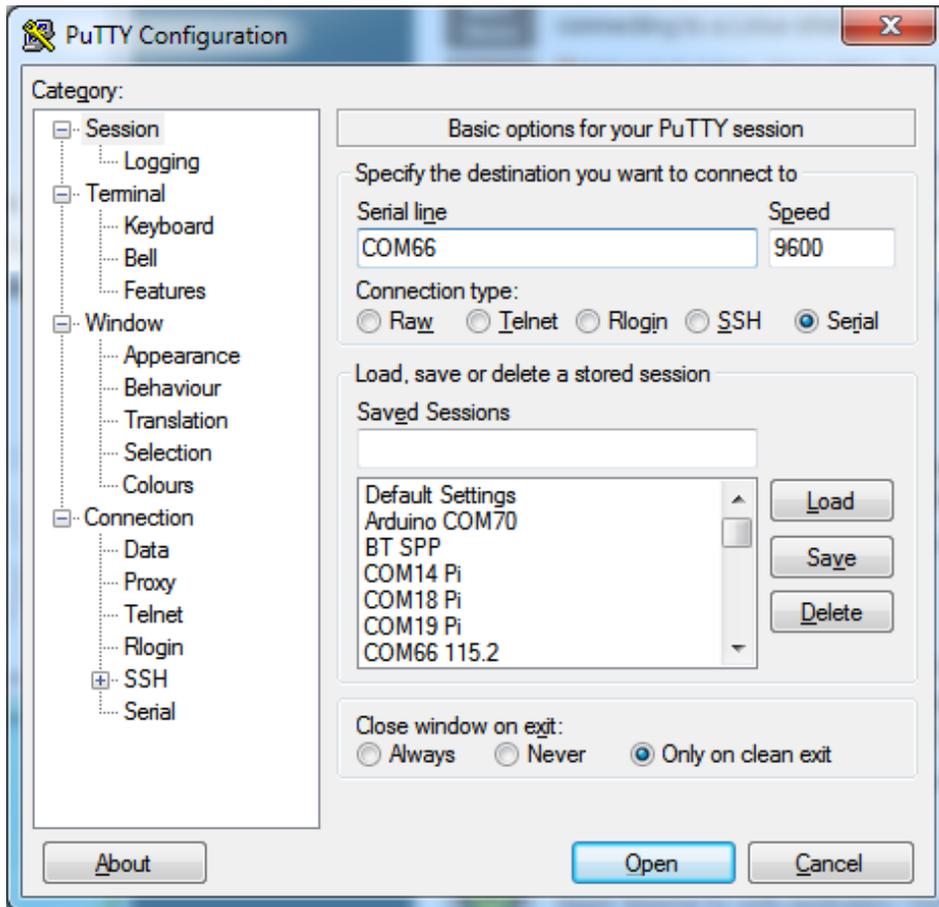


You will see the red and blue onboard LED flicker when powered up, but they will not stay lit.

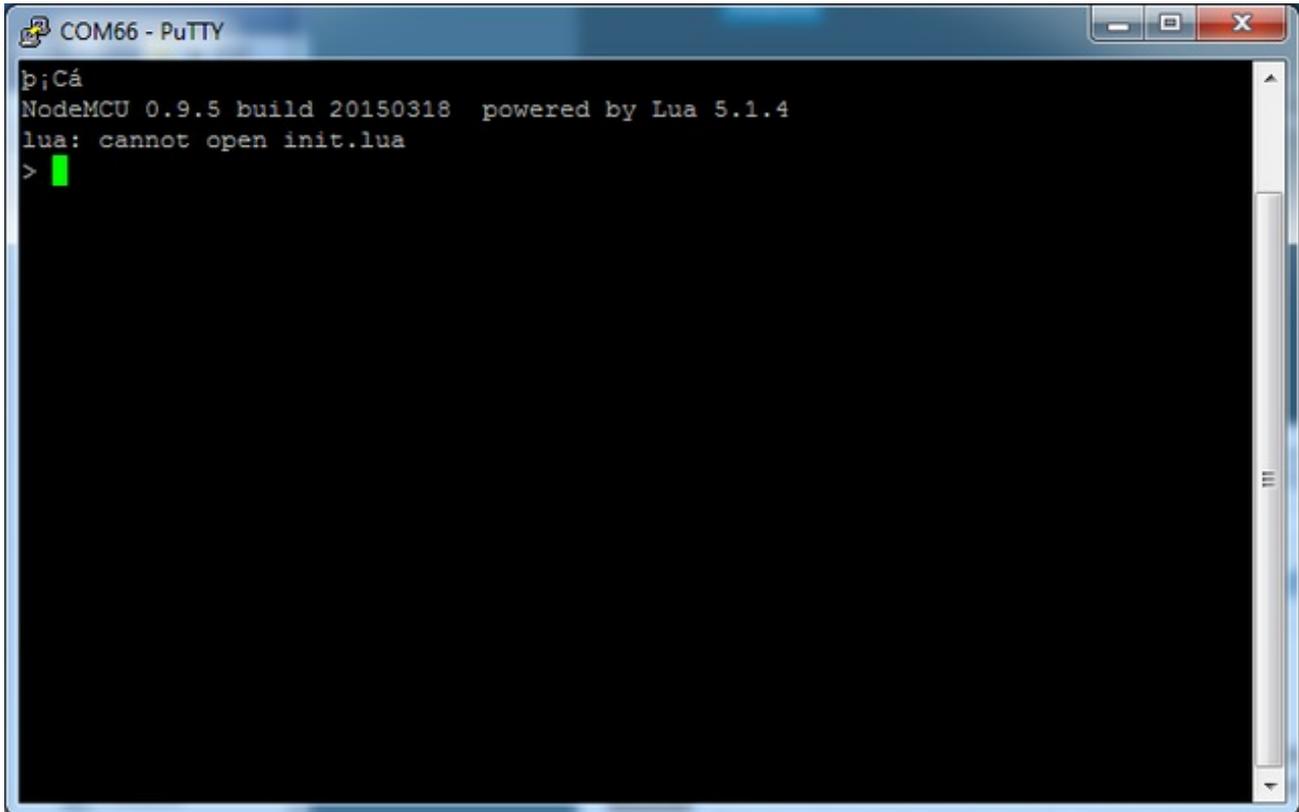
Open up serial console

Next up, on your computer, use a serial console program such as **CoolTerm** (Mac) or **Putty** (Windows) or **screen** (linux). Teraterm seems to dislike the initial 115.2kbps data stream from the ESP8266 so you can try it but you'll possibly need to reset the terminal software.

Connect up to the COM or Serial port used by your cable, at 9600 Baud



Once the terminal software is connected, click the **Reset** button on the HUZDAH ESP board to reset it and have it print out the welcome message:



```
p;Cá
NodeMCU 0.9.5 build 20150318 powered by Lua 5.1.4
lua: cannot open init.lua
>
```

If you don't get this message, first check that the red/blue leds flickered when you press the reset button. If they didnt, make sure the board is powered via **V+** or **Vbat**. If they do flicker, make sure you've got the right baud rate selected in the software (9600) and the RX/TX/GND pins connected right

Hello world!

Ok we can now turn on an LED. There is a red LED on each board, connected to **GPIO #0**

NodeMCU's pinouts are not the same as the Arduino/gcc pinouts. We print the Arduino pinouts on the board so watch out!

Rev A of this board has GPIO #4 and #5 swapped (the modules changed pinouts on us) so if #4/#5 aren't working for you, try swapping! We'll fix in the next PCB run

Pin Notes	PCB/Arduino	NodeMCU/Lua
No pullups!	0	3
	2	4
	3	9
	4	1
	5	2
	9	11
	10	12
	12	6
	13	7
	14	5
	15	8
	16	0

So to set the pin #0 LED on and off first make it an output:

```
gpio.mode(3, gpio.OUTPUT)
```

Turn the LED on with:

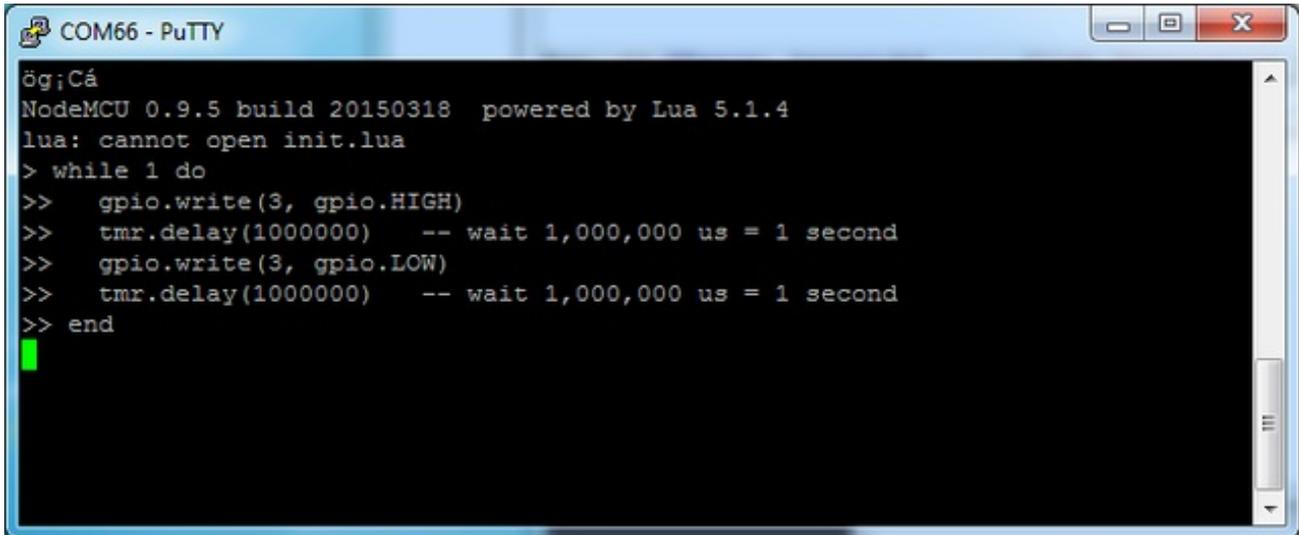
```
gpio.write(3, gpio.LOW)
```

And off with:

```
gpio.write(3, gpio.HIGH)
```

You can make this a little more automated by running:

```
while 1 do
  gpio.write(3, gpio.HIGH)
  tmr.delay(1000000) -- wait 1,000,000 us = 1 second
  gpio.write(3, gpio.LOW)
  tmr.delay(1000000) -- wait 1,000,000 us = 1 second
end
```



The LED will now be blinking on and off.

Note that since its in a loop, its not possible to get it to stop via the interpreter. To stop it, click the **Reset** button again!

Scanning & Connecting to WiFi

We'll continue with a quick demo of scanning for WiFi and connecting.

Once you're back at the Lua prompt, set the ESP8266 into WiFi Client mode with

```
wifi.setmode(wifi.STATION)
```

Then you can run the scanner and have it print out the available AP's

```

-- print ap list
function listap(t)
  for k,v in pairs(t) do
    print(k.." : "..v)
  end
end
wifi.sta.getap(listap)

```

or for more detail...

```

-- print ap list
function listap(t)
  for ssid,v in pairs(t) do
    authmode, rssi, bssid, channel = string.match(v, "(%d),(-?%d+),(%x%x:%x%x:%x%x:%x%x:%x%x:%x%x:%x%x)", "%x%x:%x%x:%x%x:%x%x:%x%x:%x%x:%x%x")
    print(ssid,authmode,rssi,bssid,channel)
  end
end
wifi.sta.getap(listap)

```

```

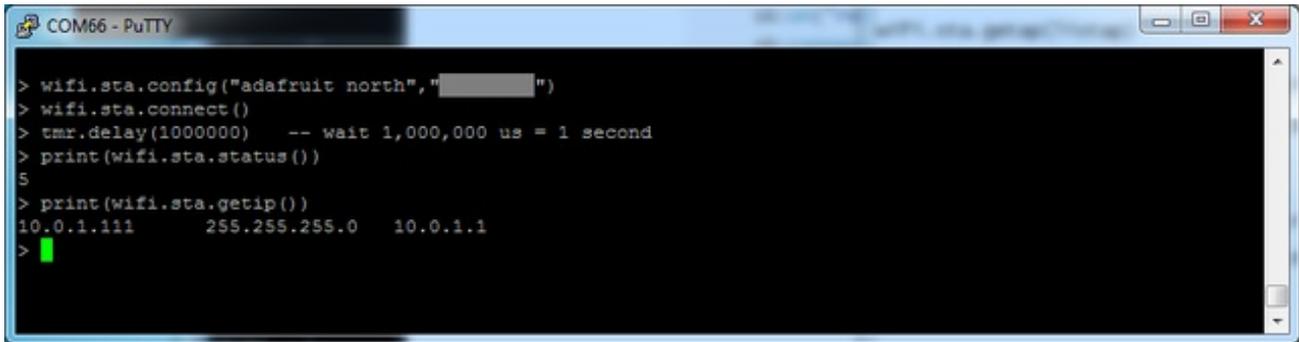
COM66 - PuTTY
öq;Cá
NodeMCU 0.9.5 build 20150318 powered by Lua 5.1.4
lua: cannot open init.lua
> -- print ap list
> function listap(t)
>>   for ssid,v in pairs(t) do
>>     authmode, rssi, bssid, channel = string.match(v, "(%d),(-?%d+),(%x%x:%x%x:%x%x:%x%x:%x%x:%x%x:%x%x)", "%x%x:%x%x:%x%x:%x%x:%x%x:%x%x:%x%x")
>>     print(ssid,authmode,rssi,bssid,channel)
>>   end
>> end
> wifi.sta.getap(listap)
> adafruit west 3 -77 88:1f:a1:34:db:4a 11
adafruit4thfloor 3 -83 80:ea:96:ef:5c:8e 11
W-K 3 -91 d8:c7:c8:a4:47:40 6
adafruit 3 -69 88:1f:a1:2f:36:68 11
adafruit receiving 3 -68 88:1f:a1:35:2a:e2 11
adafruit SE 3 -93 80:ea:96:ed:14:20 1
IYUN9 1 -93 00:7f:28:f7:a5:76 6
LHF 2 -79 c0:ea:e4:2a:c1:11 1
mcgraw 3 -63 80:ea:96:ed:14:2a 11
PV-Employee 3 -89 24:de:c6:85:e6:62 5
Macon 3 -91 ac:b3:13:81:ef:e0 6
adafruit north 3 -68 88:1f:a1:2f:61:38 11
salthru-guest 4 -78 00:18:0a:31:d9:e0 6
PV-Guest 3 -91 24:de:c6:85:e6:63 5
DG1670AA2 3 -86 40:70:09:87:5b:a0 6
SECAL 1 -82 00:15:c7:2a:6b:e0 8
VAIO-I2MO 3 -89 60:a4:4c:f2:58:98 11

```

We can connect to the access point with **wifi.sta.config** and **wifi.sta.connect** - it will take a second or two to complete the connection, you can query the module to ask the status with

wifi.sta.status() - when you get a 5 it means the connection is completed and DHCP successful

```
wifi.sta.config("accesspointname","yourpassword")
wifi.sta.connect()
tmr.delay(1000000) -- wait 1,000,000 us = 1 second
print(wifi.sta.status())
print(wifi.sta.getip())
```



```
COM66 - PuTTY
> wifi.sta.config("adafruit north"," ")
> wifi.sta.connect()
> tmr.delay(1000000) -- wait 1,000,000 us = 1 second
> print(wifi.sta.status())
5
> print(wifi.sta.getip())
10.0.1.111      255.255.255.0   10.0.1.1
>
```

WebClient example

Once you're got the IP address you can connect to adafruit, for example, and read a webpage and print it out:

```
sk=net.createConnection(net.TCP, 0)
sk:on("receive", function(sck, c) print(c) end )
sk:connect(80,"207.58.139.247")
sk:send("GET /testwifi/index.html HTTP/1.1\r\nHost: www.adafruit.com\r\nConnection: keep-alive\r\nAccept: */*
```

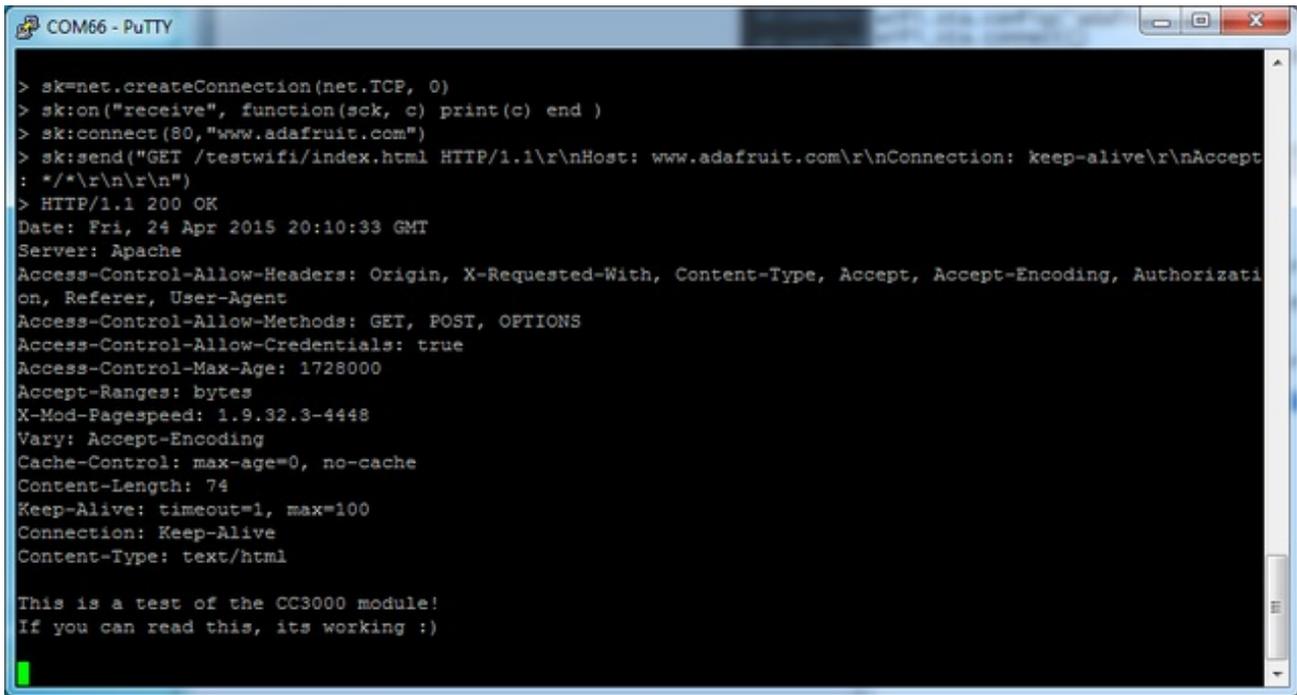
```
COM66 - PuTTY
> print(wifi.sta.getip())
10.0.1.111      255.255.255.0  10.0.1.1
> sk=net.createConnection(net.TCP, 0)
> sk:on("receive", function(sck, c) print(c) end )
> sk:connect(80,"207.58.139.247")
> sk:send("GET /testwifi/index.html HTTP/1.1\r\nHost: www.adafruit.com\r\nConnection: keep-alive\r\nAccept: */*\r\n\r\n")
> HTTP/1.1 200 OK
Date: Fri, 24 Apr 2015 20:08:49 GMT
Server: Apache
Access-Control-Allow-Headers: Origin, X-Requested-With, Content-Type, Accept, Accept-Encoding, Authorization, Referer, User-Agent
Access-Control-Allow-Methods: GET, POST, OPTIONS
Access-Control-Allow-Credentials: true
Access-Control-Max-Age: 1728000
Accept-Ranges: bytes
X-Mod-Pagespeed: 1.9.32.3-4448
Vary: Accept-Encoding
Cache-Control: max-age=0, no-cache
Content-Length: 74
Keep-Alive: timeout=1, max=100
Connection: Keep-Alive
Content-Type: text/html

This is a test of the CC3000 module!
If you can read this, its working :)

>
```

You can also have the module do DNS for you, just give it the hostname instead of IP address:

```
sk=net.createConnection(net.TCP, 0)
sk:on("receive", function(sck, c) print(c) end )
sk:connect(80,"www.adafruit.com")
sk:send("GET /testwifi/index.html HTTP/1.1\r\nHost: www.adafruit.com\r\nConnection: keep-alive\r\nAccept: */*
```



```
COM66 - PuTTY
> sk=net.createConnection(net.TCP, 0)
> sk:on("receive", function(sock, c) print(c) end )
> sk:connect(80,"www.adafruit.com")
> sk:send("GET /testwifi/index.html HTTP/1.1\r\nHost: www.adafruit.com\r\nConnection: keep-alive\r\nAccept: */*\r\n\r\n")
> HTTP/1.1 200 OK
Date: Fri, 24 Apr 2015 20:10:33 GMT
Server: Apache
Access-Control-Allow-Headers: Origin, X-Requested-With, Content-Type, Accept, Accept-Encoding, Authorization, Referer, User-Agent
Access-Control-Allow-Methods: GET, POST, OPTIONS
Access-Control-Allow-Credentials: true
Access-Control-Max-Age: 1728000
Accept-Ranges: bytes
X-Mod-Pagespeed: 1.9.32.3-4448
Vary: Accept-Encoding
Cache-Control: max-age=0, no-cache
Content-Length: 74
Keep-Alive: timeout=1, max=100
Connection: Keep-Alive
Content-Type: text/html

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```

This is just a light overview of testing out your HUZZAH ESP breakout! For much more, check out NodeMCU's tutorial page https://github.com/nodemcu/nodemcu-firmware/wiki/nodemcu_api_en (<http://adafru.it/f1M>) for the details on what functions are available to you, as well as <http://www.lua.org> (<http://adafru.it/f1N>) to learn more about the Lua scripting language

Using Arduino IDE

For reasons we're not sure of, our ESP8266 add-on package does not work well with many Macs. If you have Mac OS X try out the all-in-one ESP8266 package at <https://github.com/esp8266>

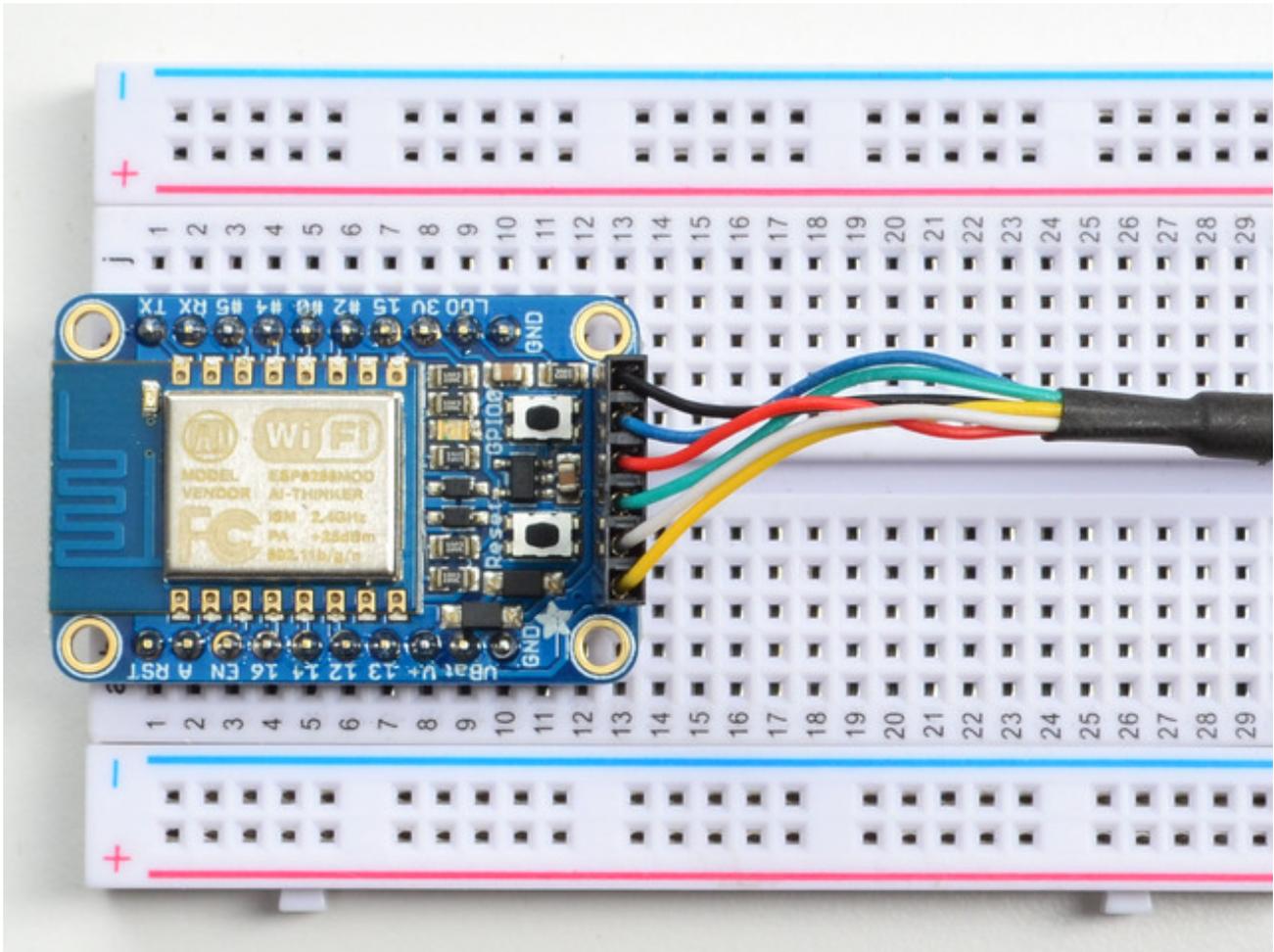
While the HUZAZH ESP8266 breakout comes pre-programmed with NodeMCU's Lua interpreter, you don't have to use it! Instead, you can use the Arduino IDE which may be more familiar. **This will write directly to the firmware, erasing the NodeMCU firmware**, [so if you want to go back to Lua, use the flasher to re-install it \(http://adafru.it/f1O\)](#)

In order to upload code to the ESP8266 and use the serial console, you will need a USB to serial converter! [Use either an FTDI cable \(http://adafru.it/dNN\)](#) or [any console cable \(http://adafru.it/954\)](#), you can use either 3V or 5V logic and power as there is level shifting on the RX pin.

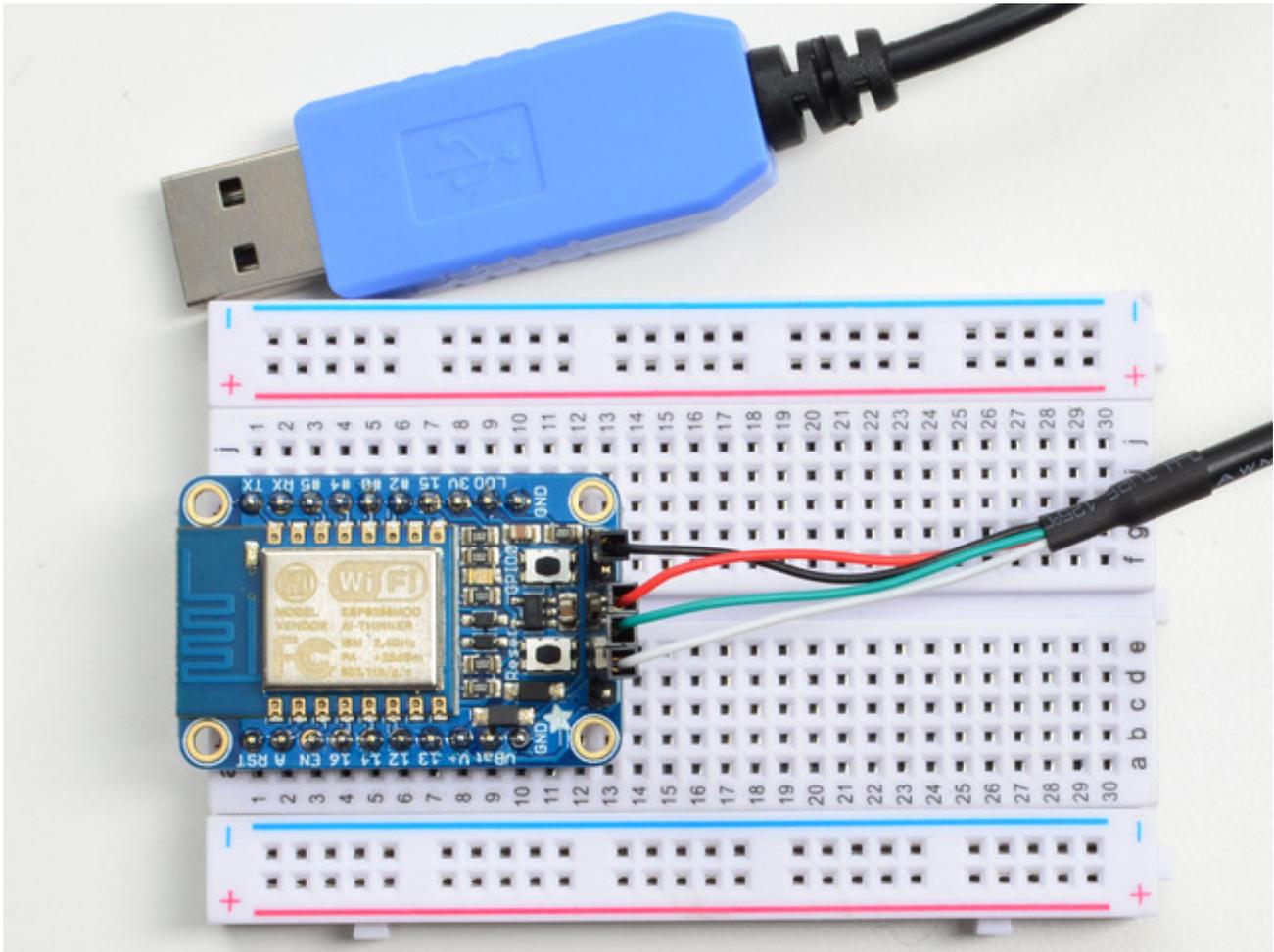
Don't forget to visit esp8266.com for the latest and greatest in ESP8266 news, software and gossip! (http://adafru.it/f1F)

Connect USB-Serial cable

Connect either your console cable or FTDI cable. If using FTDI, make sure the black wire goes to the GND (ground) pin



If using a console cable, connect the black wire to ground, red wire to **V+**, white wire to **TX** and green wire to **RX**



You will see the red and blue onboard LED flicker when powered up, but they will not stay lit.

Install the Arduino IDE 1.6.4 or greater

Download Arduino IDE from [Arduino.cc](http://arduino.cc) (1.6.4 or greater) - don't use 1.6.2! You can use your existing IDE if you have already installed it (<http://adafruit.it/f1P>)

You can also try downloading the ready-to-go package from the [ESP8266-Arduino project](http://adafruit.it/eSH) (<http://adafruit.it/eSH>), if the proxy is giving you problems

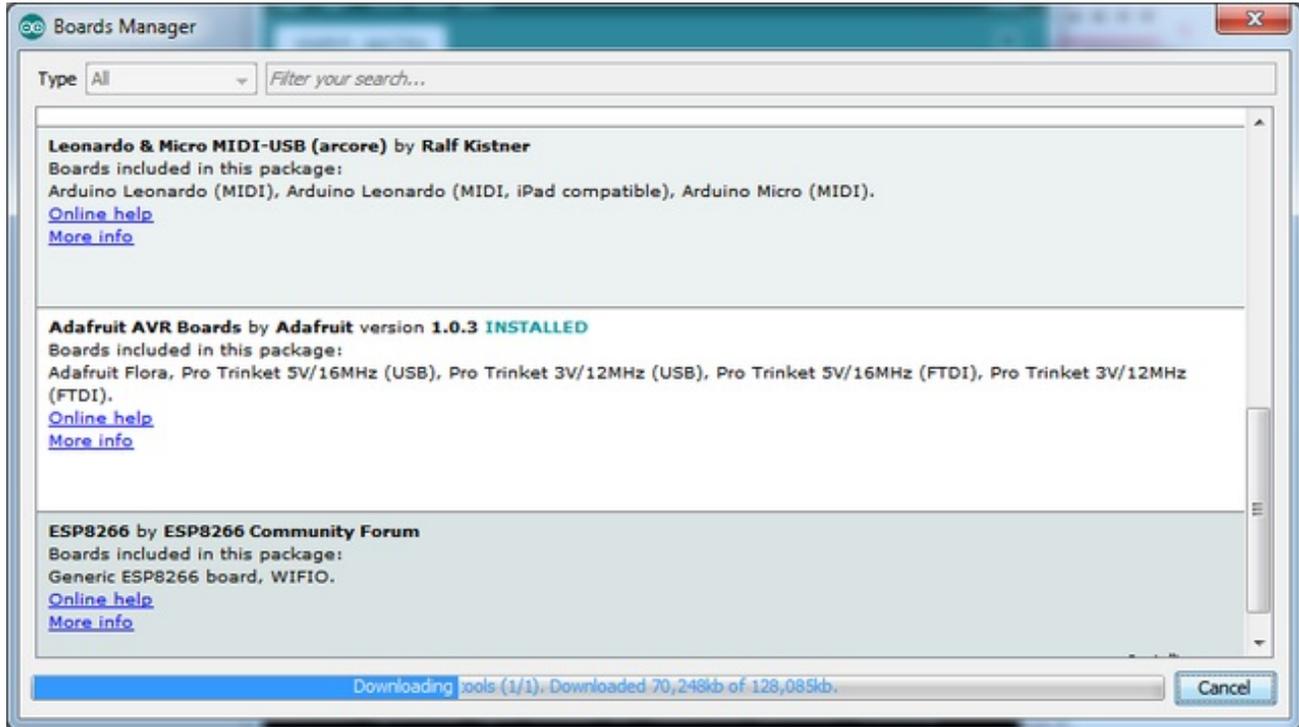
Install the Adafruit Board Manager extras

Visit our guide for how to add the [Adafruit Boards Extras](http://adafruit.it/f7Y) that will make it really easy to install the ESP8266 support core (<http://adafruit.it/f7Y>)

Then use the **Board manager** to install "ESP8266 support 1.6.2" or greater (its a big file)

For reasons we're not sure of, our ESP8266 add-on package does not work well with many

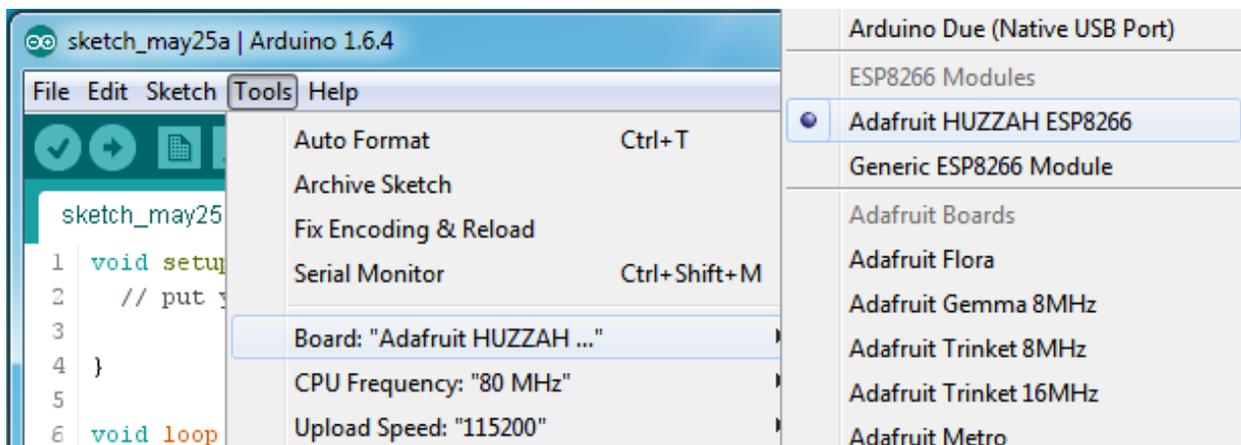
Macs. If you have Mac OS X try out the all-in-one ESP8266 package at <https://github.com/esp8266>



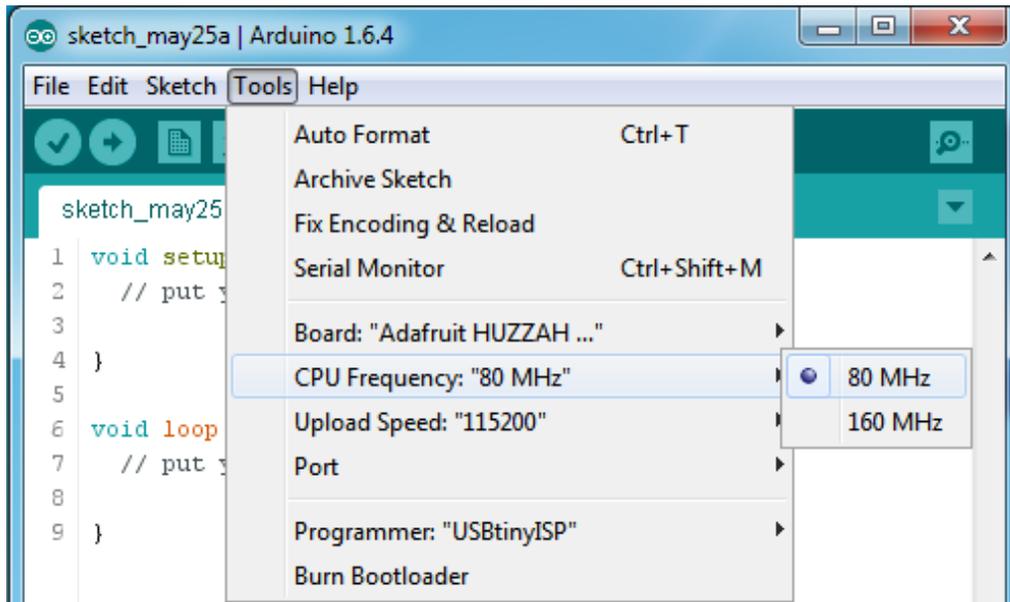
Once done quit and restart the IDE

Setup ESP8266 Support

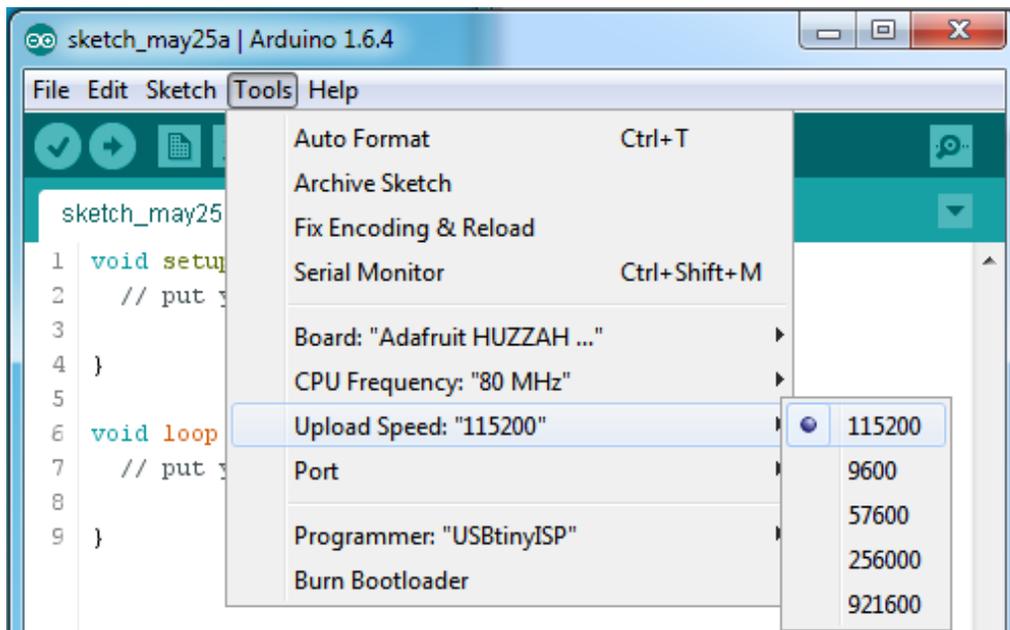
When you've restarted, select **Adafruit HUZZAH ESP8266** from the Tools->Board dropdown



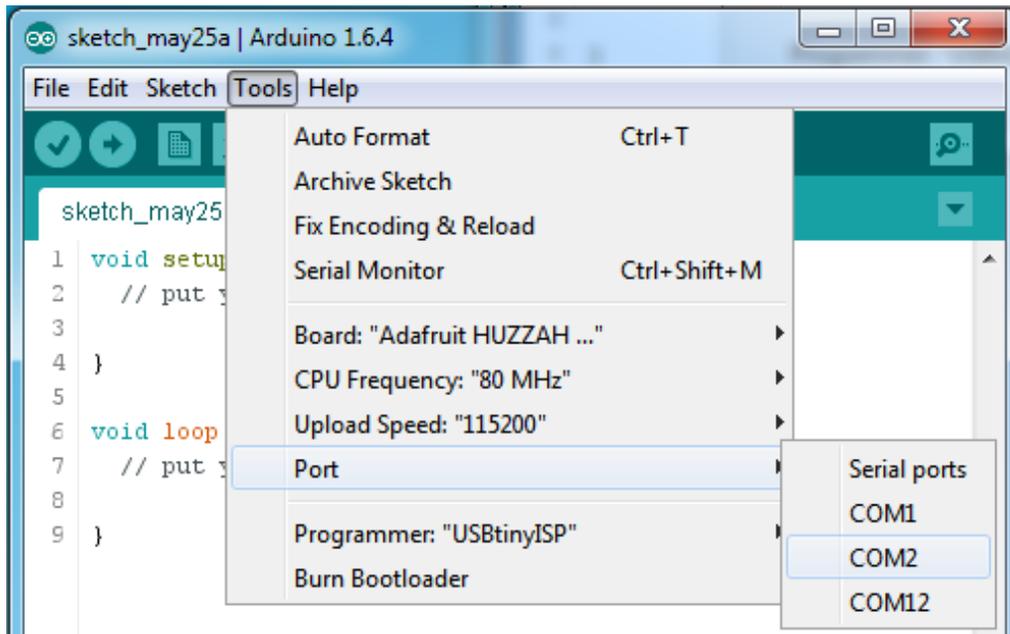
80 MHz as the CPU frequency



115200 baud upload speed



The matching COM port for your FTDI or USB-Serial cable



Blink Test

We'll begin with the simple blink test

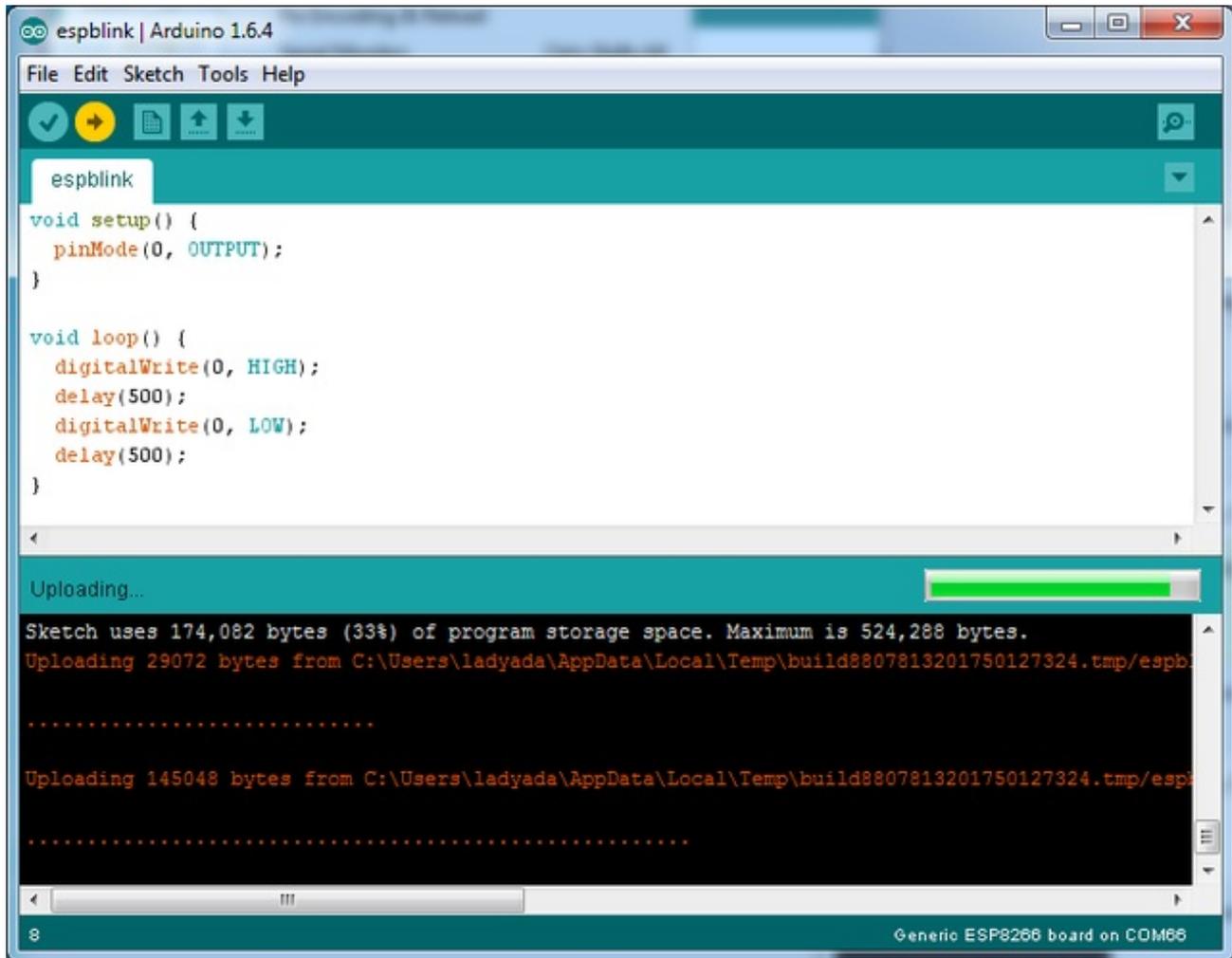
Enter this into the sketch window (and save since you'll have to)

```
void setup() {  
  pinMode(0, OUTPUT);  
}  
  
void loop() {  
  digitalWrite(0, HIGH);  
  delay(500);  
  digitalWrite(0, LOW);  
  delay(500);  
}
```

Now you'll need to put the board into bootload mode. You'll have to do this before each upload. There is no timeout for bootload mode, so you don't have to rush!

1. Hold down the **GPIO0** button, the red LED will be lit
2. While holding down **GPIO0**, click the **RESET** button
3. When you release the RESET button, the red LED will be lit dimly, this means its ready to bootload

Once the ESP board is in bootload mode, upload the sketch via the IDE



The sketch will start immediately - you'll see the LED blinking. Hooray!

Connecting via WiFi

OK once you've got the LED blinking, lets go straight to the fun part, connecting to a webserver. Create a new sketch with this code:

```
/*
 * Simple HTTP get webclient test
 */

#include <ESP8266WiFi.h>

const char* ssid = "yourssid";
const char* password = "yourpassword";

const char* host = "www.adafruit.com";

void setup() {
```

```

void setup() {
  Serial.begin(115200);
  delay(10);

  // We start by connecting to a WiFi network

  Serial.println();
  Serial.println();
  Serial.print("Connecting to ");
  Serial.println(ssid);

  WiFi.begin(ssid, password);

  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }

  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}

int value = 0;

void loop() {
  delay(5000);
  ++value;

  Serial.print("connecting to ");
  Serial.println(host);

  // Use WiFiClient class to create TCP connections
  WiFiClient client;
  const int httpPort = 80;
  if (!client.connect(host, httpPort)) {
    Serial.println("connection failed");
    return;
  }

  // We now create a URI for the request
  String url = "/testwifi/index.html";
  Serial.print("Requesting URL: ");
  Serial.println(url);

  // This will send the request to the server

```

```
client.print(String("GET ") + url + " HTTP/1.1\r\n" +
  "Host: " + host + "\r\n" +
  "Connection: close\r\n\r\n");
delay(10);

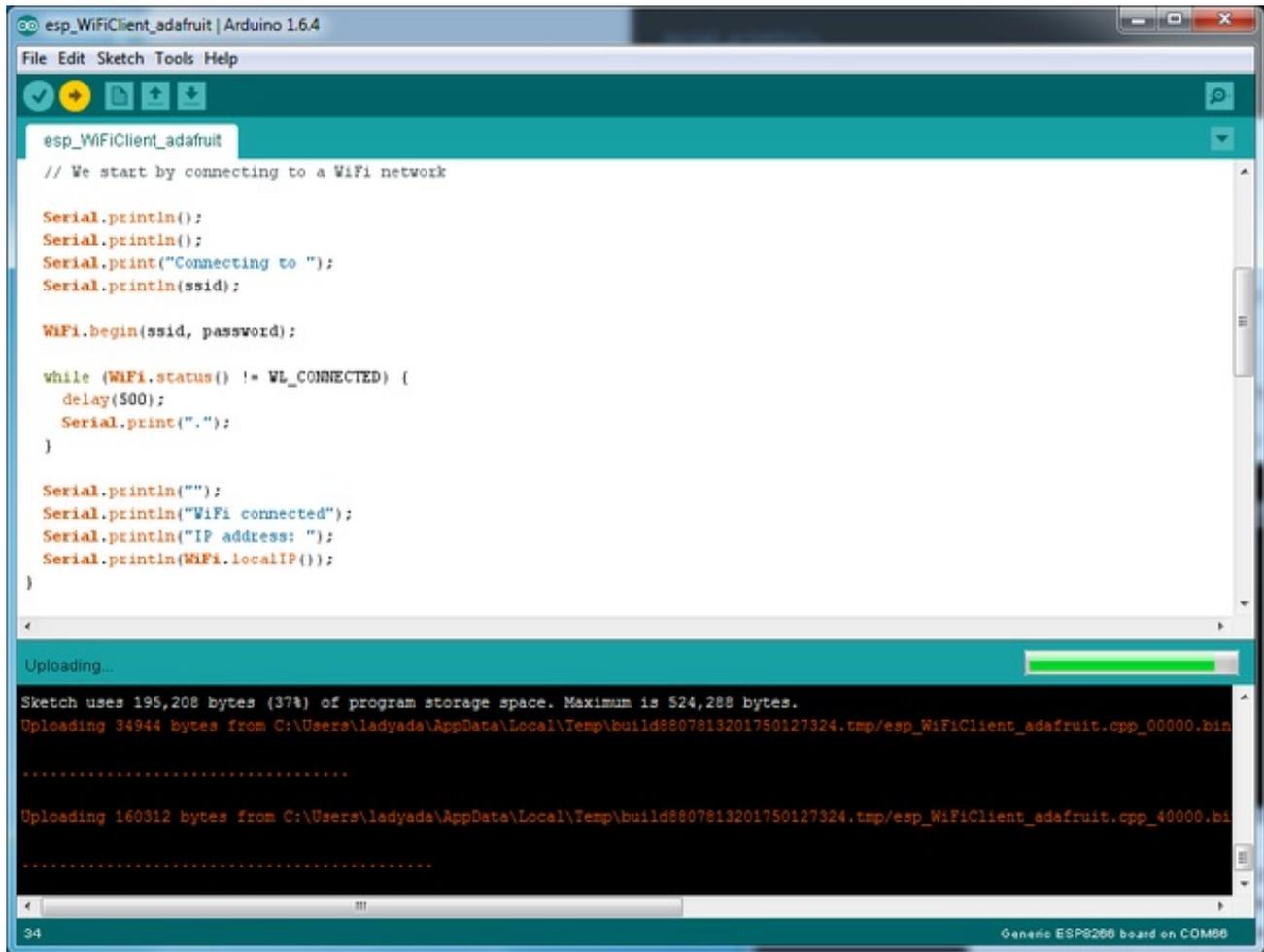
// Read all the lines of the reply from server and print them to Serial
while(client.available()){
  String line = client.readStringUntil('\r');
  Serial.print(line);
}

Serial.println();
Serial.println("closing connection");
}
```

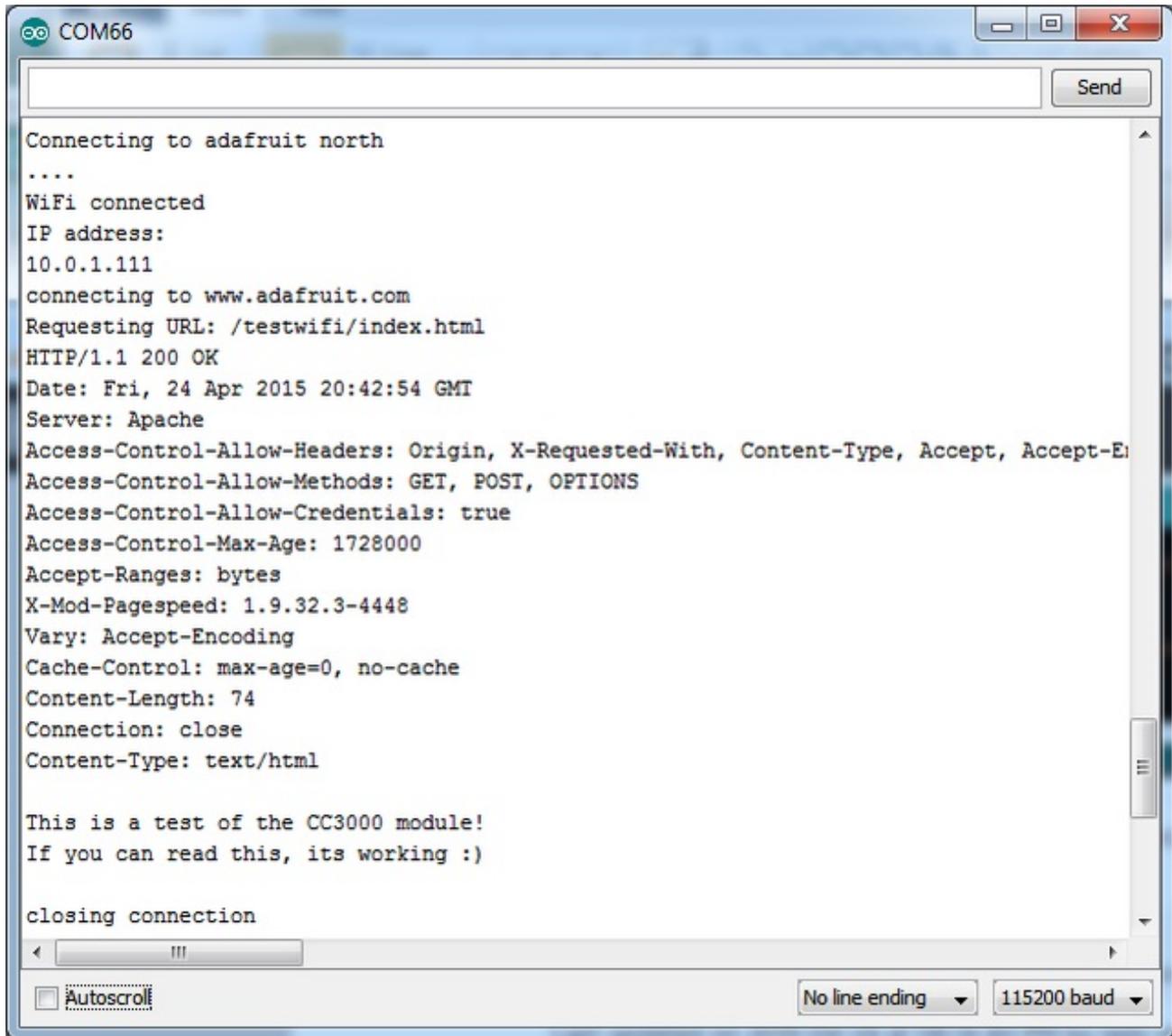
Dont forget to update

```
const char* ssid = "yourssid";
const char* password = "yourpassword";
```

to your access point and password, then upload the same way: get into bootload mode, then upload code via IDE



Open up the IDE serial console at 115200 baud to see the connection and webpage printout!



That's it, pretty easy!

This page was just to get you started and test out your module. For more information, check out the [ESP8266 port github repository \(http://adafru.it/eSH\)](http://adafru.it/eSH) for much more up-to-date documentation!

Other Options

- You can also try using [embedXcode \(http://adafru.it/f5J\)](http://adafru.it/f5J) which has a template for the ESP8266 with Xcode
- [esp-open-sdk \(http://adafru.it/f5K\)](http://adafru.it/f5K) is a toolchain that will let you program the ESP8266 processor directly ([more info at the esp8266.com wiki \(http://adafru.it/f5L\)](http://adafru.it/f5L))

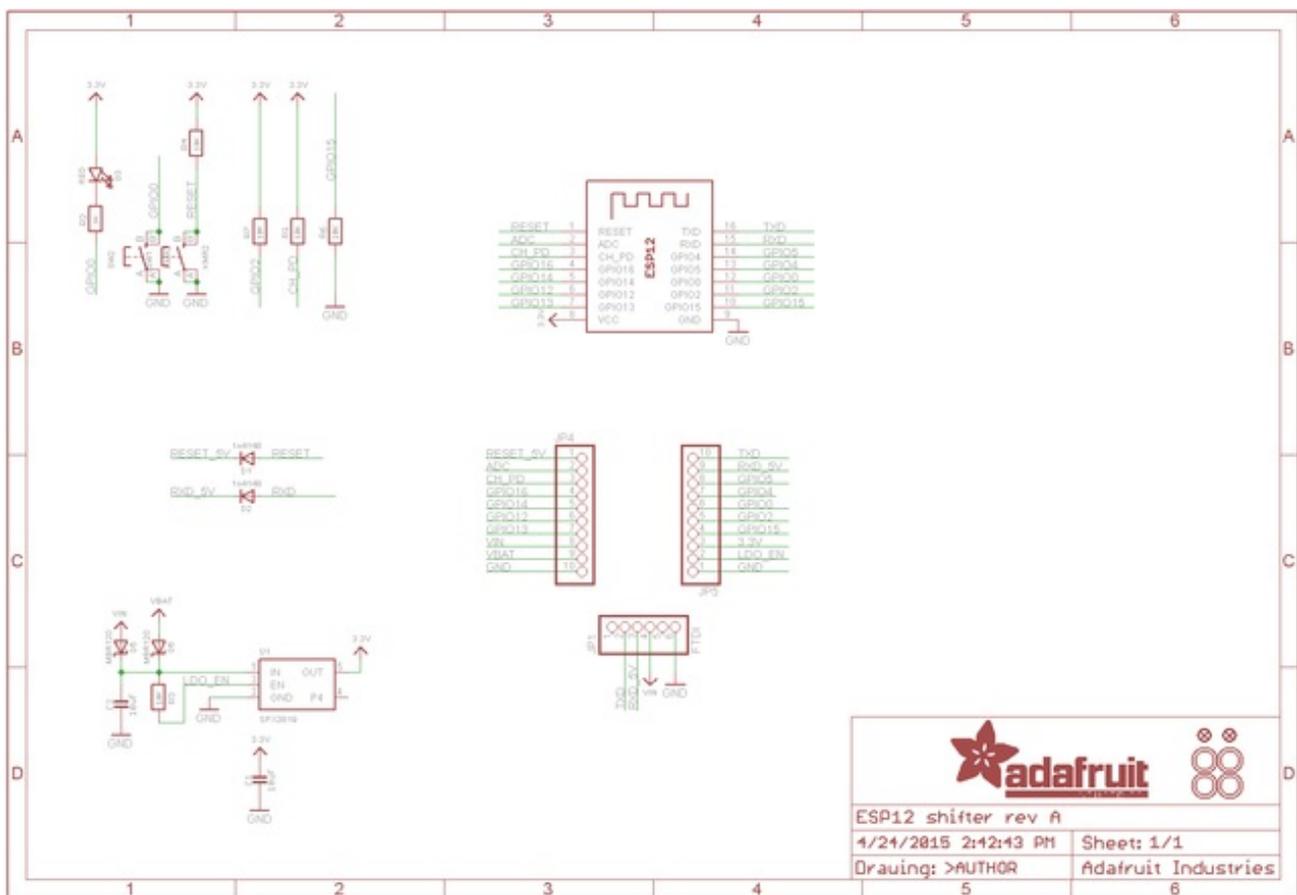
Downloads

More info about the ESP8266

- [ESP8266 specification sheet \(http://adafru.it/f1E\)](http://adafru.it/f1E)
- [SPX3819 3.3V linear regulator on board \(http://adafru.it/f4z\)](http://adafru.it/f4z)
- [FCC test report \(http://adafru.it/f1S\)](http://adafru.it/f1S) for the module used on this breakout
- [CE test report for the module used on this breakout \(http://adafru.it/f1U\)](http://adafru.it/f1U)
- Huuuuge amount of information on <http://www.esp8266.com/> (<http://adafru.it/f1F>) community forum!
- [NodeMCU \(Lua for ESP8266\) webpage \(http://adafru.it/f1G\)](http://adafru.it/f1G) with examples and documentation on the Lua framework
- [Arduino IDE support for ESP8266 \(http://adafru.it/eSH\)](http://adafru.it/eSH)

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Schematic



Fabrication print

Dimensions in mm & inches

