This Instructable will teach you how to use those $5.00 ESP8266 modules, as well as provide you some basic knowledge about networking. I'll be using the Micromite Companion Kit (http://propellerpowered.com/shop/?page_id=1946) in my examples which is programmed in BASIC, however all of these instructions should be adaptable easily to your favorite micro.

In short, the ESP8266 module is a TTL "Serial to Wireless Internet" device. Providing your microcontroller has the ability to talk to a TTL serial device *(most do)* you'll be in business! The original instructions have been translated from Chinese into cryptic data sheets. We'll try to change that with this Instructable.

The ESP8266 module is a 3v device, but it's no wimp. It draws quite a bit of power. In fact, you'll probably need to make sure that your circuit's power supply can handle at least 1 amp of power. (In my case, I was using a simple 7.5v 500ma power supply. When I started working with this module, I switched it for a 7.5v 1amp power supply and had plenty of power.) As it turns out there is good reason for this; some Youtube videos have surfaced recently with folks seeing anything from 500 meters to a couple miles of transmission capability from this module. That's a lot of horsepower for $5.00!

About This Instructable

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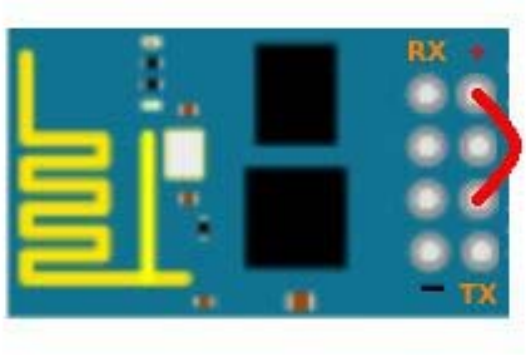
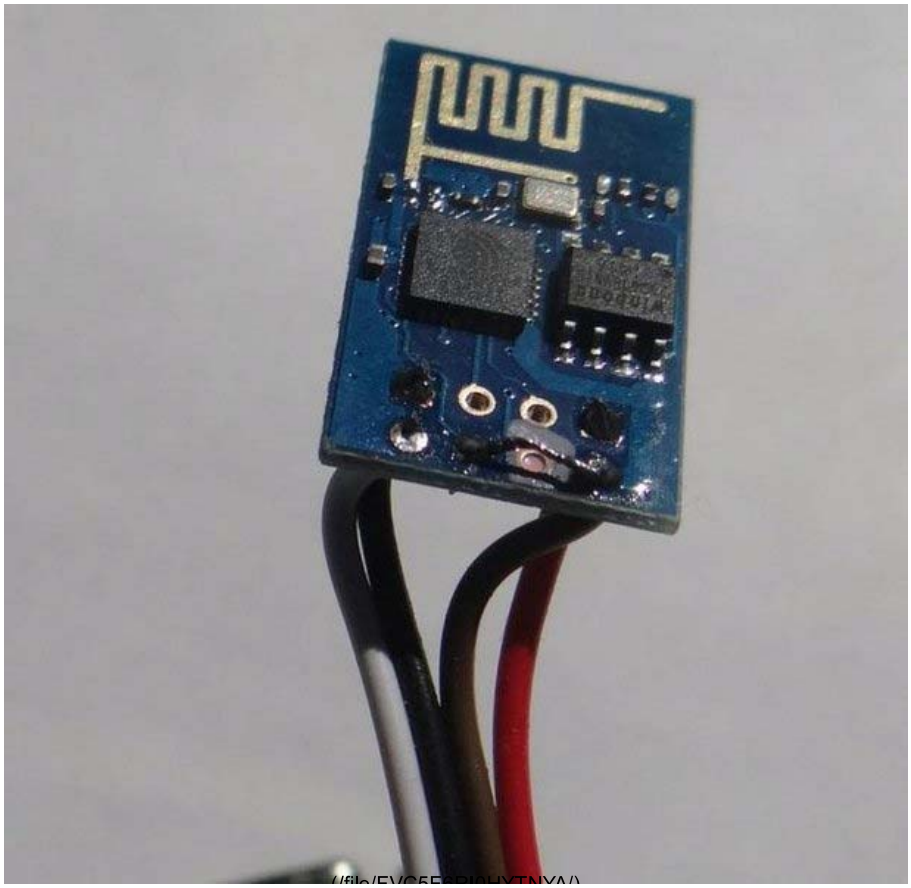
Step 1: Obtaining and preparing your 8266 module





I obtained my module from an Ebay vendor (http://www.ebay.com/itm/281430286471?_trksid=p2059210.m2749.l2649&ssPageName=STRK%3AMEBIDX%3AIT) in the United States. The shipping was faster than China, but more importantly, the vendor provides the module without the pins soldered in.

The 8266 module isn't really breadboard friendly, but it's easy to convert it to a four pin module if you purchase the pin-less version. (or take a few minutes to remove the pins if you have obtained the other version)

You'll need 5 pin connections to make the module work. *(See image 1)*

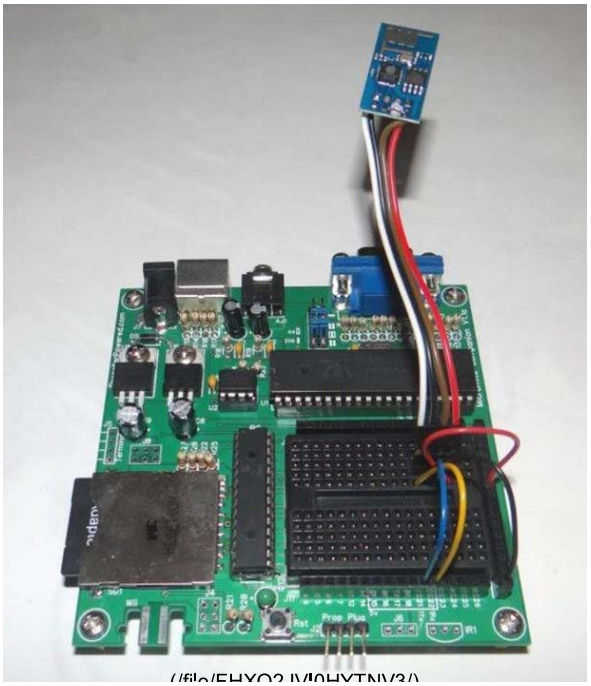
RX, TX, ground, and 3v connected to two positions on the module.

I sourced a 4pin female cable from my parts box and cut off one end.

I used a small amount of nail polish to carefully paint over the unused pin, then looped the 3v connection from the power pin over the unused pin into the center. *(See image 2)*

The end result is a 4pin module that is now breadboard friendly to plug into your project.

Step 2: Hooking it up



Once you have the module adapted, now make the four connections, (RX,TX,3v,Gnd) to your microcontroller. I've breadboarded mine to my Micromite Companion (http://propellerpowered.com/shop/?page_id=1946) which is using the Micromite chip *(created by Geoff Graham)* running BASIC. The Micromite has multiple serial connections, and a console which I'm using as my interface to the 8266 module. You could even connect the module directly to your PC if you have a TTL-Serial-to-USB adapter. *(Don't try to connect the module to a PC serial port directly, you could cause damage to the module or the your computer!)*

The correct connections to the Micromite Companion (*Micromite)* are RX to 21, TX to 22.

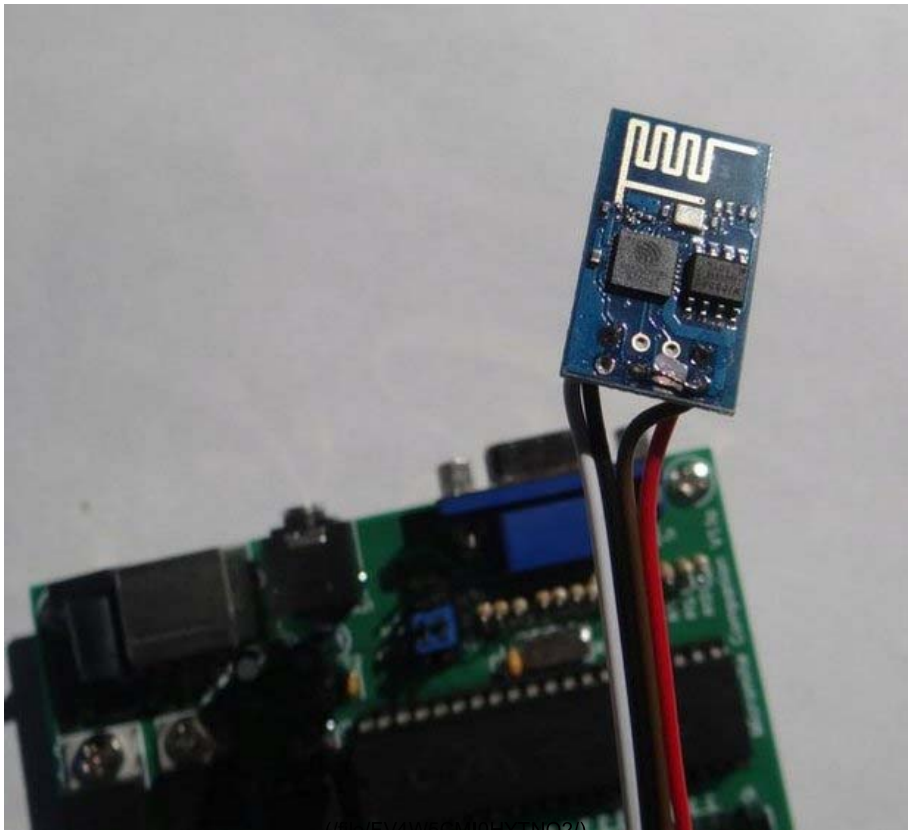
The default baud rate settings are 115200,N,8,1

Next, you'll need to use a terminal program to program the unit.

I've written the following BASIC terminal program for the Micromite:

- **Open "Com1:115200" As #1**
- **terminal:**
- **a$="" : b$=""**
- **a$=Inkey$**
- **If a$ <> "" Then Print #1,a$;**
- **If Loc(#1) >=1 Then b$=Input$(1,#1)**
- **char = Asc(b$)**
- **If char >31 Then Print b$;**
- **If char =13 Then Print " "**
- **GoTo terminal**

Step 3: Configuring the 8266 Module



You'll need to configure the module for your wireless network.

You should already know your wireless SSID and password, as we'll need those next!

From your terminal, type **AT** and press enter. If you get a cheery **OK** from the module, you have have accomplished a big step in this Instructable!

Next, type **AT+RST** and give the module a moment to reset. You'll see a paragraph of data returned.

Type **AT+CWMODE=3** to set the module as both a client and an access point.

Don't worry if you make a typo in the process of doing these commands. (There's no backspace) Just hit the enter button and enjoy the broken English error message and retype the command.

Next, let's see if we can see your wireless router. Type **AT+CWLAP** and enter. You'll see something like this.

+CWLAP:(4,"Guest",-75)

+CWLAP:(4,"linksys",-80)

+CWLAP:(4,"family",-90)

+CWLAP:(4,"NETGEAR",-91)

See your access point? Type the following command, replacing SSID and password with your information.

AT+CWJAP="SSID","password"

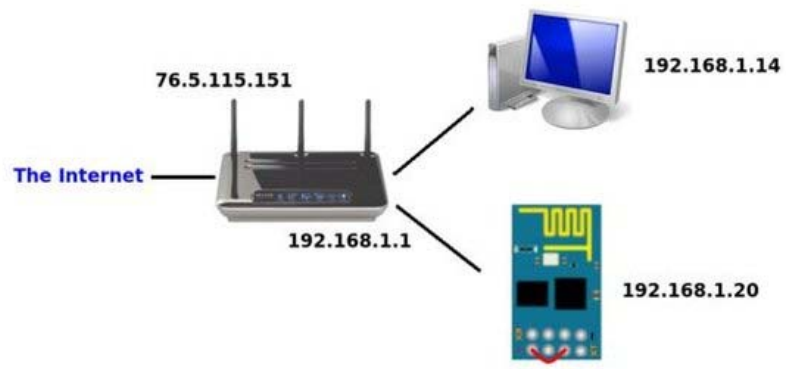
Congratulations! Your module is configured for your network.

Now we need to see what IP address has been assigned to it.

Type **AT+CIFSR** and press enter. Your module's IP address should be displayed.

192.168.1.20

Step 4: BASIC networking



Ok, we've lost about half our audience at the end of the last step. If you are still reading, it means that you have a working module, but need some guidance in the world of networking. Don't worry, you are in good hands. I'm going to condense a semester of networking classes *(I used to teach CCNA)* into just enough networking knowledge to be really dangerous. Sound like fun? Read on!

So you have the IP address that was displayed in the last step of the last page. *(Did you write it down?)*

Now what?

I'll assume you are at home with a wireless router somewhere in your home. It's probably connected to either a cable modem or DSL adapter. It's even possible that you have a single device which is doing both jobs. This device is the gateway to all of your internet travels, even the Instructable you are reading!

Your home network has a private side, and a public side. The private side of your network is all of the computers and devices which are connected to your wireless router. *They can be wired to it's ports, or connected wirelessly.*

You actually got a BIG CLUE to how the private side of your network is configured by the IP Address you were given to your module. Mine was 192.168.1.20.

Take a look at those first three numbers.. **192.168.1**

Those are the private side of your network. You might have 192.168.0 or even 10.0.0.

All of your computers and wireless devices on your network have an IP address that starts with those three digits.

It's that last digit (20 in my case) that determines the full address of each connection.

Each of your devices will have a different last number. Your wireless router probably uses 1. 192.168.1.1

The neat part about the private numbers is that typically there is room for up to 254 different devices and computers on your network right now! Talk about a LAN party!

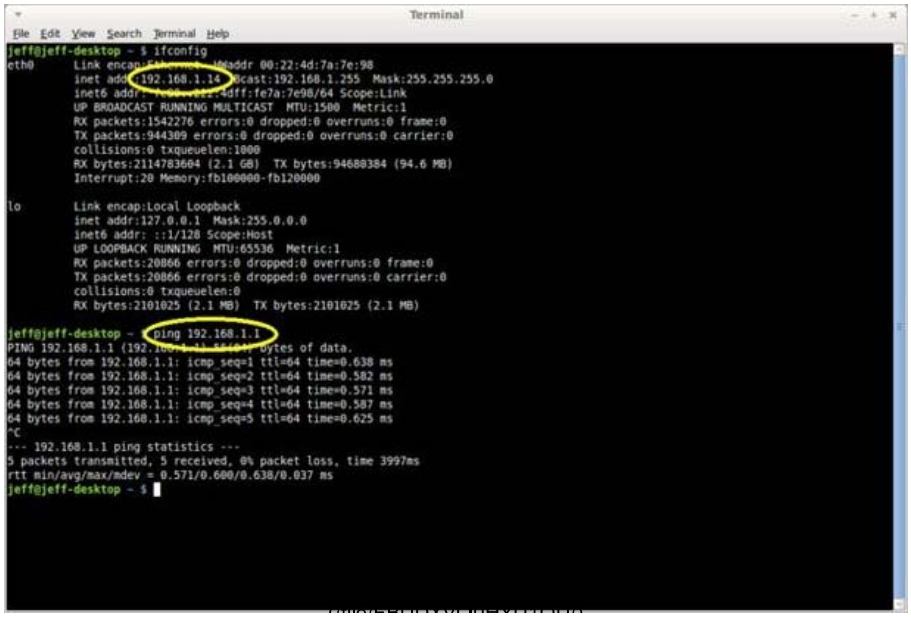
Take a look at the image above.

Remember when I said that your wireless router has both a private side and a public side?

Your router receives a live IP address from your Internet provider. This address is unique to the entire world, and it's very important that it is! The wireless router actually contains two addresses. One is the private side, the other is the live IP

address which is visible to the world. *Don't worry, your router is designed to be the gatekeeper, controlling your web requests from your devices and keeping the bad guys out of your computers.* The truth is, those private IP addresses are not visible from the outside world. *(Unless we want them to be, keep reading!)*

Step 5: Communicating with the module



Let's take a break from networking class to see if your little 8266 module is able to communicate with your network. An easy way to do this is using the PING command.

If you are using Windows:

Click on Start, Run, and type **CMD** and press enter.

Type **IPCONFIG** and press enter.

Type PING and the IP address of your module. (I typed PING 192.168.1.20)

If you are using Linux:

Open a terminal window

Type **IFCONFIG** and press enter

Type PING and the IP address of your module (I typed PING 192.168.1.20)

I've circle two pieces of information in my image. The first is the IP address of the computer I'm working at. (This is always good information) and the second is the IP address of what I actually PINGed. Did you catch me PINGing my wireless router? Good eyes! Ping your router as well as see if it answers. It's usually .1

A successful PING request will always return a set of numbers like mine did. If you get "Request Time Out" messages it means that something isn't communicating.

Step 6: Running a simple webserver in BASIC

If you've gotten good PING results from your module, you are ready to start experimenting!

Let's start with a really simple web server written in MMBASIC. *If you are using another micro, the BASIC program should be very easy to read and convert to your language.*

Type in the little program and RUN it on your Micromite Companion.

If you are using a terminal program connected to your 8266 module, take note of the following commands..

AT+CIPMUX=1
AT+CIPSERVER=1,80

These two commands set up the magic to make the module automatically answer a request from another computer or device. In my case, I've configured the module to answer web requests on port 80.

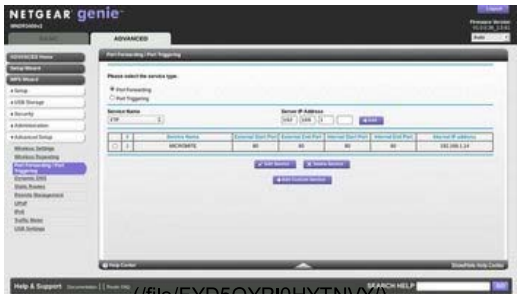
Typical ports are as follows:

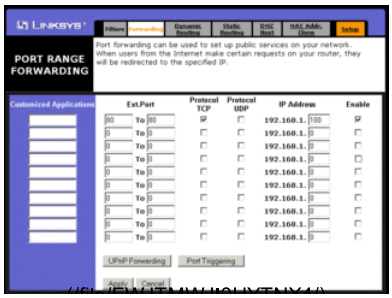
- 80 = Http web requests
- 8080 = Http web requests on networks on which 80 is blocked
- 23 = Telnet (text terminal) requests

Once you've run the program, open a web browser and type the address of your device (mine was 192.168.1.20) into the web address bar. That place where you've typed www.instructables.com. (http://www.instructables.com.)

The module seems to handle all of the formatting of the required HTML headers your web browser is looking for, so you can blast data directly. (At a reasonable speed of course!)

Step 7: Inviting the Internet





So you can communicate from your web browser, your phone, laptop, or other Internet capable device to control your projects. I'll bet the ideas are already churning!

What if you want your friend in Ireland to control your project as well?

What if you want to control your project from somewhere other than your home network?

Those private IP addresses are only good while you are inside your own network.

It's time to talk about public address and something called router "Port Forwarding".

First, you need to know your router's public Internet address. It's easy to find. Simply point your web browser at www.whatismyip.com (http://www.whatismyip.com) are you be given your live IP address. (See first image)

Next you'll need to configure your router to allow requests from the outside world into your network and provide it a "rule" to allow certain traffic to your wireless module. This is called "Port Forwarding".

Remember when i said that I PING'd my wireless router at .1 to find it's address?

Open your web browser and type the address of your wireless router into the address bar.

(Usually, it's 192.168.1.1 or 192.168.0.1 depending on your network, but you should know it now.)

The router will respond with a login/password response. Unless you have re-programmed it, (Most people haven't) it will accept **admin** and **password**. *(Don't worry, your router doesn't allow folks from the Internet to program it by default!)*

Here's the tricky part. You'll need to dig, *(usually in the "advanced" menus)* for something called "Port Forwarding" or "Forwarding". *All routers are a little different, but don't be afraid to poke around. You aren't going to hurt anything.*

Take a look at the 2nd and 3rd images. They are great samples of some common routers.

Once you found it, you'll need to add a rule with the following information:

The External Port# you want to use with your device. Most of the time, you'll use either 80 (if you want to provide web access) or 23 (if you want to provide telnet "text" access). Just use the same number twice as you see in my examples. Some routers will also ask for an Internal Port# as well. Again you can use the same numbers twice again. Finally, give the IP address of your device. (Mine was 192.168.1.20)

Once you've established this rule in your router, your device is now accessible from the world! From outside of your network, you can use your "live" IP address to access your 8266 module.

Step 8: Closing Notes

Remember when I said you'd get enough networking information to be dangerous? Welcome to the fun.

A few notes:

First, some Internet providers, in paticular cable providers don't like to give you the ability to use the common lower port numbers (like port 80, or 23). They will claim that doing this is a violation of their service *(nonsense!)* or that they are protecting you by blocking these ports. *(hog wash!)*

If this is the case, just us higher port numbers, like 8080 or 2323 *(or just make up a higher number you can remember easily.*) Just add it at the end of the web or telnet request to make it work.

Also, from time to time your "live" IP address can change making it impossible for you to reach your project until you go back home and look up the new address with www.whatismyip.com. (http://www.whatismyip.com.) There is a great, free service which you can subscribe to called DuckDNS (www.duckdns.org (http://www.duckdns.org)) which will give you a name on their server and a little tool to run on your PC which will keep track of the changes. Instead of using the IP address, you'll be able to use {yourname}.duckdns.org. It really works well!

Need more help?

Drop over to our friendly forums at Propellerpowered and post up!

http://forums.propellerpowered.com (http://forums.propellerpowered.com)

We have a be nice comment policy.
Please be positive and constructive.

I Made it! Add Images Post Comment

OmarS127 (/member/OmarS127) 8 days ago Reply

any thread discussing ESP8266 and arduino ?

TamásS13 (/member/TamásS13) 12 days ago Reply

I don't want to make that much electro smog in my environmet. I need a range of say 10m only, no more.

Can you please suggest an IC with that range?

KhaledE39 (/member/KhaledE39) ▸ TamásS13 (/member/TamásS13) Reply

11 days ago

using Bluetooth module would be about 20 m in range .., but if you would like to use networking without any signals on the air you can use Ethernet the module to use is "enc28j60"

GabrielC115 (/member/GabrielC115) made it! 2 months ago Reply

i also got another query, i am connected to my singtel 5g but there is no ap on m y com port, can i ask why? thanks:)

(https://cdn.instructables.com/FO7/9365/IT67RVJA/FO79365IT67RVJA.LARGE.jpg)

GabrielC115 (/member/GabrielC115) made it! 2 months ago Reply

HI, PLEASE HELP!:)

Type AT+CIFSR and press enter. Your module's IP address should be displayed.

192.168.1.20

i got AT+CIFSR

+CIFSR:APIP,"192.168.4.1"

+CIFSR:APMAC,"62:01:94:0f:7f:32"

+CIFSR:STAIP,"192.168.137.1"

+CIFSR:STAMAC,"60:01:94:0f:7f:32"

OK

If you are using Windows:

Click on Start, Run, and type CMD and press enter.

Type IPCONFIG and press enter.

Type PING and the IP address of your module

i typed and got a different screen from yours,

Windows IP Configuration

Wireless LAN adapter Local Area Connection* 2:

Media State . . . . . : Media disconnected

Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . :

Link-local IPv6 Address . . . . . : fe80::5462:3d11:7fa0:5a5a%7

IPv4 Address. . . . . : 192.168.1.9

Subnet Mask . . . . . : 255.255.255.0

Default Gateway . . . . . : 192.168.1.254

Wireless LAN adapter Local Area Connection* 12:

Connection-specific DNS Suffix . :

Link-local IPv6 Address . . . . . : fe80::e102:d273:cfe6:48d3%18

IPv4 Address. . . . . : 192.168.137.1

Subnet Mask . . . . . : 255.255.255.0

Default Gateway . . . . . :

Tunnel adapter isatap.{B47839E6-0F16-42F5-B42B-E4F611F3071B}:

Media State . . . . . : Media disconnected

Connection-specific DNS Suffix . :

Tunnel adapter Teredo Tunneling Pseudo-Interface:

Connection-specific DNS Suffix . :

IPv6 Address. . . . . : 2001:0:9d38:90d7:4d9:3d0a:3f57:fef6

Link-local IPv6 Address . . . . . : fe80::4d9:3d0a:3f57:fef6%13

Default Gateway . . . . . : ::

Tunnel adapter isatap.{62B05E0C-5222-40F9-9240-6BA9E8322691}:

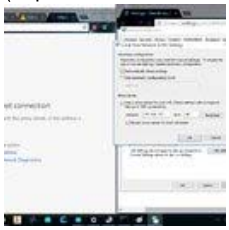
Media State . . . . . : Media disconnected

Connection-specific DNS Suffix . :

so i do not know which one is my module.

i tried to ping 192.168.137.1 and i got a signal but no internet access, please help? i feel i am close but i am also very very far away, please help thanks:)

(https://cdn.instructables.com/F6H/LVX3/IT67RVIE/F6HLVX3IT67RVIE.LARGE.jpg)



(https://cdn.instructables.com/FXL/QI4X/IT67RVIG/FXLQI4XIT67RVIG.LARGE.jpg)

dev1234bajaj (/member/dev1234bajaj)

this is use to host a wifi network or to connect a wifi network

2 months ago Reply

Xiu Wen Song (/member/Xiu Wen Song) 4 months ago Reply

Hi, I am gonna use ESP8266 to build wireless tire pressure monitoring system and display on android? Any information to give me in order to facilitate my project? Thanks so much guys!

abhay yelads (/member/abhay yelads) 11 months ago Reply

Hi! I want to use esp8266 module as an normal wi-fi adpter to make my computer wi-fi enabled. Can i use this module.. Thanks in advance..

M.S4 (/member/M.S4) ▸ abhay yelads (/member/abhay yelads) Reply

6 months ago

Simple answer is no. But it is possible by a very complicated way. But why? U can purchase usb wifi adaptor for same price.

SamuelR66 (/member/SamuelR66) 6 months ago Reply

i want to send and receive data between my esp 8266 and a web server,how can i do it?

thanks

AminA33 (/member/AminA33) 7 months ago Reply

how to store an array with the set of values of rssi and can i send them back to pc p.s. u would save my semister :D?

sandeep.laik (/member/sandeep.laik) 9 months ago Reply

Very well written. Thank you. :)

gmeadows3 (/member/gmeadows3) 9 months ago Reply

Brilliant - took a little of the mystery out of ip addresses for me. I've ordered a 8266 to try out now. Thanks for a very clear instructable

souhadl (/member/souhadl) 10 months ago Reply

Hi. After connecting my esp-01's vcc and ch_p0 to 3.3V to the arduino and started the serial monitor at 115200 baud, i got the cheerful OK after entering AT and even the version info after AT+GMR but that's about it.
All other commands end up with ERROR. Tried toggling the baud rate but with same results.
Any thoughts?

boomer48 (/member/boomer48) a year ago Reply

Ok, so I get the following on my terminal when I put the STA IP address into a browser window after manually sending the CIPMUX and CIPSERVER commands. After that I try to manually send the "<TITLE>" string from your BASIC program. I get the response back on my terminal program that the correct number of bytes were sent along with a "SEND OK" message. But I see nothing in the browser window to indicate that it received anything. Where are these bytes going if not to the browser?

+IPD,0,255:GET / HTTP/1.1
Accept: text/html, application/xhtml+xml, */*
Accept-Language: en-US
User-Agent: Mozilla/5.0 (Windows NT 6.1; WOW64; Trident/7.0; rv:11.0) like Gecko
Accept-Encoding: gzip, deflate
Host: 192.168.1.88
DNT: 1
Connection: Keep-Alive

priyam170 (/member/priyam170) 2 years ago Reply

how can i make the esp's IP static(assigned by router,something like 192.168.1.17).

leaosir (/member/leaosir) ▸ priyam170 (/member/priyam170) a year ago Reply

If you want to change static address; this is the command at

AT+CIPAP=ip

example:

AT+CIPAP="192.168.1.100"

drmpf (/member/drmpf) ▸ priyam170 (/member/priyam170) a year ago Reply

check out this instructable for code to assign static, configurable IP for ESP8266

A Cheaper ESP8266 WiFi Shield for Arduino and other micros (http://www.instructables.com/id/ESP8266-WiFi-Shield-for-Arduino-and-other-micros/)

sagaraute (/member/sagaraute) a year ago Reply

My esp8266 is disconnect to client app after some time when i use esp8266 as webserver.

sagaraute (/member/sagaraute) a year ago Reply

how to change IP address of esp8266???

AlessandroP (/member/AlessandroP) 2 years ago Reply

Hello,

I am working on a project with the ESP8266 and need to define requirements so I have different options. I want to use the ESP8266 Version 12 connected to Arduino to collect sensors data and communicate with a mobile app that sends these data to the cloud. So I am trying to figure out how to set the ESP8266 to talk to the mobile app. The mobile app would be like a bridge between the ESP/Arduino system and the cloud. The mobile phone can be set as tethering or portable hotspot via Wifi and connect to the cloud via 4G. Would like to have some suggestions for the best setup for the ESP8266/Arduino in this configuration?

drmpf (/member/drmpf) ▸ AlessandroP (/member/AlessandroP) a year ago Reply

I suggest setting the mobile as an Access Point and then connecting directly from ESP8266 to cloud. I will soon put up an Instructable showing how to use ESP8266-01 as a passthrough Wifi connection for Arduino

connected via Serial (or Serial1)

P.S. Using the AT command set is asking for trouble (although I have a library that works, see www.pfod.com.au)

drmpf (/member/drmpf) ▸ drmpf (/member/drmpf) a year ago Reply

A Cheaper ESP8266 WiFi Shield for Arduino and other micros (http://www.instructables.com/id/ESP8266-WiFi-Shield-for-Arduino-and-other-micros/) posted now

poltu12345667 (/member/poltu12345667) ▸ AlessandroP (/member/AlessandroP) 2 years ago Reply

Hey,

I am too working on this type project. Instead of arduino I am using Atmel8051. It will be very help full if you give me some information on the same. Thanks in advance

jmpm4619 (/member/jmpm4619) 2 years ago Reply

Hi would you be able to assist in making a schematic with the esp8266?

drmpf (/member/drmpf) ▸ jmpm4619 (/member/jmpm4619) a year ago Reply

Try this instructable, A Cheaper ESP8266 WiFi Shield for Arduino and other micros (http://www.instructables.com/id/ESP8266-WiFi-Shield-for-Arduino-and-other-micros/)

bobbytaylor7 (/member/bobbytaylor7) a year ago Reply

Thanks for sharing..

hjsalom (/member/hjsalom) a year ago Reply

Very nice. This article has made a lot of things clear to me. Thanks for sharing.

radames ajna (/member/radames ajna) 2 years ago Reply

hey, is it possible to set the it up as an access point? i.e make it discoverable by an SSID?

KevinC10 (/member/KevinC10) ▸ radames ajna (/member/radames ajna) Reply

2 years ago

Yes it is. I have 6 named GEOCACHE1, 2 , 3 and so on for various geocaches hidden in the area, I am working on some type of solar for the supply, was triggering by infrared to start the device, then moved on to solar. In ap mode , you can look at the wifi settings on your phone or download an app for range of wifi's and as you get closer to the geocache the signal gets better etc. This is the primary use at this time for me. I have 2 other controlling relays and am using another for rgb led mixing. The rgb color mixing I am going to expand to use on a mini remote control car , color mixing will be the control voltage for right, left and foward [no reverse yet] buffered off a 3 transisters. This is just for fun and where I am now. I had it connected to the web with no other interest. I am applying them to surge strips and out lets naming them outlet one, or TV or kitchen light etc using a different code to control the on off of each device, yes I know smartswitchs and plugs are out their but when you make it yourseld it is fun.

AnthonyP15 (/member/AnthonyP15) ▸ KevinC10 (/member/KevinC10) Reply

a year ago

Kevin, what firmware did you use for configuring your ESP's as configurable access points? I want to create unique SSID for the device, that I can connect to on any device, preferably housing a cut-down webserver. Is there any particular flavor you found easier than others?

KevinC10 (/member/KevinC10) ▸ AnthonyP15 (/member/AnthonyP15) Reply

a year ago

I forgot to tell you that every time they came out with a newer firmware i had to have it and began to have problems if is not broke why fix it? I went back to 9.2 wep you can program 4 manuel the esplorer has 3 built in but their is 4 anyway i went to as far as 1..1 or something and went back to 95 9.2 for the switch. The newer firmware I am still playing with and is not working up to my expectations yet...it suppose is set up to control the output power so you can lower it. Several at commands have been dropped and/ore changed and the way you enter the at commands are different. Still playing I have about 35 esp devices whats cool if you have an annoying neighbor try running about 15 at a time....on the wall tends to block out any wifi connection even to his router....too much interference. This may not work for you but it does a great job here placing them on different channels...name the router their name on all devices and vary the channel big confusion on their part if they dont know the mac address..

KevinC10 (/member/KevinC10) ▸ AnthonyP15 (/member/AnthonyP15) Reply

a year ago

0.9.2 use this app

https://play.google.com/store/apps/details?id=kr.c...
(https://play.google.com/store/apps/details?id=kr.co.tskit.ESP8266Manager)

use the info from his web site here

http://tskit.co.kr/zbxe/download/2587
(http://tskit.co.kr/zbxe/download/2587)

download the cool esplorer programer

http://esp8266.ru/esplorer-latest/?f=ESPlorer.zip
(http://esp8266.ru/esplorer-latest/?f=ESPlorer.zip)

download the flasher

https://github.com/nodemcu/nodemcu-flasher/blob/ma...
(https://github.com/nodemcu/nodemcu-flasher/blob/master/Win32/Release/ESP8266Flasher.exe)

note ypu will have to make changes in this flasher to his page inf examp, load his 0000 and 4000 to the appropriate location on node mcu program page. you will have to select the comm port for it also. If you played with the esp befort this should be easy for you. If not use his loader at :

http://tskit.co.kr/zbxe/?module=file&act=procFileD...
(http://tskit.co.kr/zbxe/?module=file&act=procFileDownload&file_srl=2598&sid=de0b39f9eed0df28363437f0e363fea2)
this is his xcomm loader after the 9.2 is loaded load his 0000 then load his 4000 as described on his page at:

http://tskit.co.kr/zbxe/download/2587
(http://tskit.co.kr/zbxe/download/2587)

If you want me to preload one for you I will do it for free ...either send me a esp8266-01 or a the cost of the chip (about 2,75) . The 201 and the 12 will take the same program....note that the 12 and 201 have several outputs but you have to run lots of wire to control various items this could be ok in like a car short runs to a multi relay box but in a house several long runs....i use only 1 esp8266-01 per relay to control ...the only

downside is that you have to connect to that wifi esp directly for each switch. Hope this helped a little. Google hangouts for me is scramplepad@gmail.com

radames ajna (/member/radames ajna) ▸ KevinC10 (/member/KevinC10) Reply

2 years ago

Hey great! thanks for the information

BugBlaster (/member/BugBlaster) ▸ KevinC10 (/member/KevinC10) Reply

2 years ago

I was thinking of doing the same with te geocaches but then perhaps also letting people get cords from the web pages or even have a pizzel builr into the page that then could open the locked cache

KevinC10 (/member/KevinC10) ▸ KevinC10 (/member/KevinC10) Reply

2 years ago

Also here is a link to some KUHN smart sockets for about $21.00 fre shipping. http://www.ebay.com/itm/Smart-Wifi-Plug-Socket-Remote-Control-Power-Socket-for-Andoid-iPhone-App-US-Plug-/181588872808?pt=LH_DefaultDomain_0&hash=item2a478a4e68

Ambrogio (/member/Ambrogio) 2 years ago Reply

priyam170 (/member/priyam170) 2 years ago Reply

How can i access my esp8266 from any where in the world..??

SeanM9 (/member/SeanM9) 2 years ago Reply

Great job! For those wanting to talk from their PC, you can use this breakout board to convert from USB to TTL: https://www.sparkfun.com/products/9873. (https://www.sparkfun.com/products/9873.)

There is a program called CoolTermWin that's free that lets you communicate to the board: http://freeware.the-meiers.org/. Be sure to set your baud to 115K in the options.

IoTeacher (/member/IoTeacher) 2 years ago Reply

Can you use the module in a framework like Temboo & grovestreams

fhovin (/member/fhovin) 2 years ago Reply

Hi. My module seems to be acting strange and differently from both this example and all others I've found.

I can connect to my access point. But for some reason, AT+CIFSR shows my device having TWO ip-addresses when I use AT+CWMODE=3; One actualy IP address in my LAN (10.0.0.52), and another (192.168.4.1) which id doesn't get from my router.

If I use CWMODE=1, I only get the actual IP address in my LAN.

But, in either case, I'm unable to ping the device. I just get "Destination host unreachable", also after setting AT+CIPMUX=1 and AT+CIPSERVER=1,80. And I cannot connect to port 80 with a terminal program either.>

Any ideas?

A.Paul.Frost (/member/A.Paul.Frost) ▸ fhovin (/member/fhovin) Reply

2 years ago

The ping command is sent over your Ethernet network to the device, a couple things could be going on.

1. You are seeing a response from your device over serial, but it's not actually connected to the network.

2. The device is on the network, but your IP address and/or subnet mask are causing communication issues. Try to make sure the first three octets of your IP address and subnet mask match on both devices (pinger and pingee).

3. A firewall or other piece of software is blocking communications.

I didn't write this instructable but I hope that helps if you haven't gotten it working already.

radames ajna (/member/radames ajna) 2 years ago Reply

Hey guys, check this out!

A lua based firmware for wifi-soc esp8266

https://github.com/nodemcu/nodemcu-firmware (https://github.com/nodemcu/nodemcu-firmware)

aav1 (/member/aav1) ▸ radames ajna (/member/radames ajna) 2 years ago Reply

yeah it is a cool firmware - Here's an example for a project with this firmware if you are interested http://www.whatimade.today/esp8266-and-the-water-heater/

GNoorP (/member/GNoorP) 2 years ago Reply

WoW ! Excellent Tutorial. I liked it very much. Easy to follow, and I just connected my ESP module in 15 minutes. Great Work.

wholliday1 (/member/wholliday1) 2 years ago Reply

how do we enabled DHCP? im trying to connect my mobile phone to it..... or does this only allow infrastructure to other esp8266's?

i have made a successfull TCP Messengers!

KDMcMullan (/member/KDMcMullan) ▸ wholliday1 (/member/wholliday1) Reply

2 years ago

DHCP serving is a feature of your router / modem. Are you trying to get your 8266 to acquire an IP address by DHCP? If you were to allow this, then the other devices on your network (eg your phone) wouldn't "know" the address of the 8266 and couldn't communicate with it. It's best for "servers" (like the 8266) to have fixed IP numbers.

wholliday1 (/member/wholliday1) ▸ KDMcMullan (/member/KDMcMullan) Reply

2 years ago

well the code inside the 8622 has DHCP, and why be an access point it cant assigned IPs to other connections?

you saying that you can only connect to these 8622 softAP if other connections TO the device is using preset IPs?

(im not using a router; i want to connect my mobile to communicate to my robot)

my phone is meant to ask for an IP from the 8622 DHCP, says that it has one

KDMcMullan (/member/KDMcMullan) ▸ wholliday1 (/member/wholliday1) Reply

2 years ago

I'm completely unaware of the functionality of the code in the chip. I find it hard to believe it can be a DHCP server.

I absolutely did not say that one can only connect these 8266 if other devices have fixed IPs. I'm saying that if you want the 8266 to be a "server" I cannot see sense in it having an address allocated by DHCP as other devices would be unable to talk to it as they would have no means of knowing its address.

If the 8266 is, indeed a DHCP server, then your phone should be able to obtain an IP address from it and communicate with it. I doubt it has, though.

Irritatingly, the more I read about the device, the more convinced I am that there is now way to give it a fixed IP address! Can anyone confirm? How can we port forward if the address is allocated by DHCP?

wholliday1 (/member/wholliday1) ▸ KDMcMullan (/member/KDMcMullan) Reply

2 years ago

Okey, i think i found something, oddly - the soft AP works when another device is already connected to it such as another 8266 after that the phone connected and got an ip from the softAP DHCP service...

Am i correct that the DHCP for these devices start at 100 - 254?

Pretty cool little devices!! DEFINATELY a game changer

KevinC10 (/member/KevinC10) ▸ wholliday1 (/member/wholliday1) Reply

2 years ago

Try this out as I have been exp. with the devices for about 3 months. Place the 8266 in mode 3, download the esp8266 smartswitch from the play stroe, just run the app, it will give you the following just running the app with the esp off:

android ip:0.0.0.0

esp8266ip:0.0.0.0.

after powering up the esp and if you have it programed as an ap, search for it in the wifi menu and connect to it, , then hit status again on the smartswitch app, it will give you somthing different now, mine is the following:

android ip:192.168.4.100 and the esp8266 ip:192.168.4.1 hope this some help. You can download the code for each app from the developer yonts as you will see from the app. More inf keeps comming every day. Their was almost nothing about this chip and now it is alot more info out their. Have fun.

JamesCaska (/member/JamesCaska) 2 years ago Reply

This article inspired me to include a breakout for the ESP8266 module as standard part of the VZ-BUS making it snap to create your own PCB's that use these modules.

https://www.kickstarter.com/projects/683231209/virtual-breadboard-pcb-direct (https://www.kickstarter.com/projects/683231209/virtual-breadboard-pcb-direct)

thenecroscope (/member/thenecroscope) 2 years ago Reply

Nice simple write up! Thanks

dhanishvijayan (/member/dhanishvijayan)

Hello, t 2 years ago Reply

Thanks for a nice tutorial.

Is there a way to Ping other devices connected to the same network of ESP8266.?

zx lee (/member/zx lee) 2 years ago Reply

Great instructables. It just give me most of the info I need for ESP8266, networking and port forwarding. Thanks

KDMcMullan (/member/KDMcMullan) ▸ zx lee (/member/zx lee) Reply

2 years ago

www.portforward.com has instructions on how to set up port forwarding from many different types of router.

Vincent19 (/member/Vincent19) ▸ zx lee (/member/zx lee) 2 years ago Reply

working on it ?

WillarF (/member/WillarF) 2 years ago Reply

Excelente explicacion los felicito

rk_garg (/member/rk_garg) 2 years ago Reply

Here is a code to control the IO Pins of arduino UNO over the web.

#include <SoftwareSerial.h>

#define DEBUG true

#define SSID "uour SSID"

#define PASSWORD "password"

SoftwareSerial esp8266(2,3); // make RX Arduino line is pin 2, make TX Arduino line is pin 3.

// This means that you need to connect the TX line from the esp to the Arduino's pin 2

// and the RX line from the esp to the Arduino's pin 3

void setup()

{

Serial.begin(9600);

esp8266.begin(9600); // your esp's baud rate might be different

pinMode(11,OUTPUT);

digitalWrite(11,LOW);

pinMode(12,OUTPUT);

digitalWrite(12,LOW);

pinMode(13,OUTPUT);

digitalWrite(13,LOW);

sendData("AT+RST\r\n",2000,DEBUG); // reset module

sendData("AT+CWMODE=3\r\n",1000,DEBUG); // configure as access point

boolean wifi_connected=false; //not connected yet...

for(int i=0;i<5;i++) //attempt 5 times to connect to wifi - this is a good idea

{

```
if(connectWiFi()) //are we connected?
{
wifi_connected = true; //yes
break; //get outta here!
}
}
sendData("AT+CIFSR\r\n",1000,DEBUG); // get ip address
sendData("AT+CIPMUX=1\r\n",1000,DEBUG); // configure for multiple connections
sendData("AT+CIPSERVER=1,80\r\n",1000,DEBUG); // turn on server on port 80
}
void loop()
{
if(esp8266.available()) // check if the esp is sending a message
{
Serial.print("available");
if(esp8266.find("+IPD,"))
{
delay(1000); // wait for the serial buffer to fill up (read all the serial data)
// get the connection id so that we can then disconnect
int connectionId = esp8266.read()-48; // subtract 48 because the read() function returns
// the ASCII decimal value and 0 (the first decimal number) starts at 48
esp8266.find("pin="); // advance cursor to "pin="
int pinNumber = (esp8266.read()-48)*10; // get first number i.e. if the pin 13 then the 1st number is 1, then multiply to get 10
pinNumber += (esp8266.read()-48); // get second number, i.e. if the pin number is 13 then the 2nd number is 3, then add to the first number
digitalWrite(pinNumber, !digitalRead(pinNumber)); // toggle pin
// make close command
String closeCommand = "AT+CIPCLOSE=";
closeCommand+=connectionId; // append connection id
closeCommand+="\r\n";
sendData(closeCommand,1000,DEBUG); // close connection
}
}
}
/*
* Name: sendData
* Description: Function used to send data to ESP8266.
* Params: command - the data/command to send; timeout - the time to wait for a response; debug - print to Serial window?(true = yes, false = no)
* Returns: The response from the esp8266 (if there is a reponse)
*/
String sendData(String command, const int timeout, boolean debug)
{
String response = "";
```

```
esp8266.print(command); // send the read character to the esp8266
long int time = millis();
while( (time+timeout) > millis())
{
while(esp8266.available())
{
// The esp has data so display its output to the serial window
char c = esp8266.read(); // read the next character.
response+=c;
}
}
if(debug)
{
Serial.print(response);
}
return response;
}
boolean connectWiFi()
{
String cmd="AT+CWJAP=\""; //form eg:
AT+CWJAP="dynamode","5555555555555555555555555"
cmd+=SSID;
cmd+="\",\"";
cmd+=PASSWORD;
cmd+="\"";
esp8266.println(cmd);
delay(5000); //give it time - my access point can be very slow sometimes
if(esp8266.find("OK")) //healthy response
{
Serial.println("Connected to WiFi...");
return true;
}
else
{
Serial.println("Not connected to WiFi.");
return false;
}
}
```

Use the wifi ip address (NOT the 192.168.4.1) in html page.

Follow this URL for details http://allaboutee.com/2015/01/02/esp8266-arduino-led-control-from-webpage/

atiq136 (/member/atiq136) 2 years ago Reply

Nice Work!!!

Does any body worked on STM32F4 Discovery board with this ESP8266 Wi-Fi module...?????

aakash1995bansal (/member/aakash1995bansal) 2 years ago Reply

Scargill (/member/Scargill) 2 years ago Reply

Lack of fixed IP and that pesky "busy" message are the two things currently seriously impeding the use of the ESP8266 which is otherwise something of a game-changer.

Bullfrogerwytsch. (/member/Bullfrogerwytsch.) ▸ Scargill (/member/Scargill) 2 years ago Reply

It has to have a Mac address right? Cant you set your router to give that mac address a certain IP everytime?

tomas.rudolf1 (/member/tomas.rudolf1) ▸ Bullfrogerwytsch. (/member/Bullfrogerwytsch.) 2 years ago Reply

Yes you can, but you would must program the smart thing behind this to ask a DHCP server for address and then set the IP to address from its response (permanent or even dynamic IP, but always from DHCP response). This will work only if this can communicate on MAC level of communication (after joining the wifi network) which I don't know(yet).

rkhope (/member/rkhope) 2 years ago Reply

Nice work.

Take a look at my work!

OpenSource, Standalone ESP8266 Webserver with great responsive, mobile friendly GUI

Turn GPIO0 on off remotely

Do more... explore..!

Also includes compiled firmware for test.

https://github.com/IOCare/esp8266GUI (https://github.com/IOCare/esp8266GUI)

Based on original work by sprite_tm (thanks)

arpruss (/member/arpruss) 2 years ago Reply

If I configure the 8266 module to connect to my home WiFi, will it afterwards automatically connect each time it's powered up, or does some serial command need to be sent for it each time to connect?

If it connects automatically on powerup, then one can use it as a super-simple wireless sensor (with significant latency, but that's irrelevant for my application). I'm thinking of using it in conjunction with a Leakfrog water leak detector. The idea is that I would wire 8266 modules to Leakfrog units, so that when a water leak is detected the 8266 is powered up, and connects to WiFi. Some other device running on my network (e.g., an old Android phone or tablet, or maybe a router with custom firmware) will be polling the network and will email and text me to tell me which 8266 module has powered up, and will again email and text when the module has powered down.

But if the 8266 requires a serial command to connect, then a microcontroller is needed to generate that serial command, and that complicates the hardware.

Akin Yildiz (/member/Akin Yildiz) 2 years ago Reply

hello everyone, can anybody do a simpler project with this? I just want to collect data using arduino Analog0 input with an LDR photoresistor. collect the data and simply post it on Thingspeak ?!?!

.
all the examples I find are very complicated and include libraries. I need my project to be much simpler. just read some data from the analog sensor and display the value on the cloud.
.
can anybody please help me with this? I have updated the firmware on my ESP8266 and I can connect to my house network using the CoolTerm software.
.
any help is highly appreciated !!!
thank you,
akin

MaxS2 (/member/MaxS2) ▸ Akin Yildiz (/member/Akin Yildiz) 2 years ago Reply

Akin, The ESP8266 is a great product with lots of applications. In your case, you may be better off using something like the Electric Imp. (www.electricimp.com). This device, which will end-up costing about $60 for the imp and the breakout board (via Sparkfun), uses a cloud to do all of the communication and programming between you and the imp.

See this instructable:

http://www.instructables.com/id/TempBug-internet-c... (http://www.instructables.com/id/TempBug-internet-connected-thermometer/)

Realize that you can use any website, even your own ... not just Xlively.

View other Instructables using the search word: imp

MaxS2 (/member/MaxS2) ▸ MaxS2 (/member/MaxS2) 2 years ago Reply

I also forgot to mention ... if you use the imp, you won't need your Arduino. Save it for a different project.

Akin Yildiz (/member/Akin Yildiz) ▸ MaxS2 (/member/MaxS2) Reply 2 years ago

Max, thank you for your reply. I am aware of electric imp applications (especially the tempbug :) however for $60 I can purchase 13 ESP modules and they are each about 4 times smaller than the imp module in size.. If these two weren't issues, I was actually going to choose the electric imp. but i need to do it with the ESP right now. if there is any way you can help me with this, it would be much appreciated;
http://www.instructables.com/answers/ESP8266-wifi-... (http://www.instructables.com/answers/ESP8266-wifi-module-data-logger/)

electronichamsters (/member/electronichamsters) 2 years ago Reply

Someone should write an Arduino library for it.

Akin Yildiz (/member/Akin Yildiz) ▸ electronichamsters (/member/electronichamsters) 2 years ago Reply

I think there are some people working on this..
https://hackaday.io/project/2879-ESP8266-WiFi-Module-Library (https://hackaday.io/project/2879-ESP8266-WiFi-Module-Library)

TechPaul (/member/TechPaul)

I was just considering adding a bluetooth module to an old multimeter that has a nonstandard serial port. That would have only required the module , this will probably also need a tiny micro but would be very handy.

2 years ago Reply

alaskansnowboarder (/member/alaskansnowboarder) 2 years ago Reply

Do you know if it is possible to set a static ip for the module? Or will we need to wait for a library to come out for it?

JeroenH (/member/JeroenH) ▸ alaskansnowboarder (/member/alaskansnowboarder) 2 years ago Reply

I just use my router to always assign the same IP to the MAC address of the module. Works fine.

Propellerpowered (/member/Propellerpowered) (author) ▸ alaskansnowboarder (/member/alaskansnowboarder) 2 years ago Reply

I've not tried to set a static ip.. I'll see if this can be acomplished and report back.

alaskansnowboarder (/member/alaskansnowboarder) ▸ Propellerpowered (/member/Propellerpowered) 2 years ago Reply

Okay cool.. I have order a bunch of them from a few different suppliers.. I will be messing with it, when I get some in... Do they work reliably? I haven't heard much on them yet as they are still very new... I think if you wrote a blog about it you'd corner the market right now.. cause these things are going to be flying off the shelves...

Propellerpowered (/member/Propellerpowered) (author) ▸ alaskansnowboarder (/member/alaskansnowboarder) 2 years ago Reply

The unit I ordered has been very reliable. Just spent another few hours yesterday writing a little IRC client in MMBASIC for it. I've had zero issues with stability. (Of course it's possible that I got a "lucky" pull from a good batch. For $5.00 retail, I can't imagine any real quality control.)

Using the ESP8266 module

by Propellerpowered (/member/Propellerpowered/) in microcontrollers (/tag/type-id/category-technology/channel-microcontrollers/)

viscomjim (/member/viscomjim) 2 years ago Reply

Very cool instructable. In the code "Running a simple webserver in BASIC" you check the rx buffer of the com port and check if asc(b$) > 31, which checks for standard characters, cool, then you check asc(b$) = 13 which is a carriage return, cool, and then you check asc(b$) = 71, which is a capital G. Why if this comes in do you then run the "webserver" subroutine. What is the significance of the "G"?

Propellerpowered (/member/Propellerpowered) (author) ▸ viscomjim (/member/viscomjim) 2 years ago Reply

Someone who read the code! Cool! It's a "cheat". The web browser initiates a "GET /" (among other things) when it requests a page. We just looked for the capital G in GET to know if someone actually requested a page. I actually wrote a much smarter version of the webserver in MMBASIC on Propellllerpowered's forums.

alaskansnowboarder (/member/alaskansnowboarder) 2 years ago Reply

Well it looks to me like a pretty basic PCB.. so aside from possible soldering issues or chip issues... I think they should be pretty good modules... They already have pretty wide market saturation, but they just were bought out from some of the US vendors...

Robson Couto (/member/Robson Couto) 2 years ago Reply

Nice job! Is good to see that someone is using these new modules.

Well detailed, I will come back here when mine arrive.

Seeing your instructables,mainly the video games related, makes me want to play with Propeller microcontrollers. Maybe in some time, because is hard to buy this kind of product where I live.

Keep up your great work!

rpotts2 (/member/rpotts2) 2 years ago Reply

very nicely done! so this is straight tcpip?

Propellerpowered (/member/Propellerpowered) (author) ▸ rpotts2 (/member/rpotts2) 2 years ago Reply

Yes, it's TCP. I believe the unit can also be set for UDP packets, but I really don't have a need for that in my projects.

Using the ESP8266 module by

Propellerpowered (/member/Propellerpowered/) in microcontrollers (/tag/type-id/category-technology/channel-microcontrollers/)