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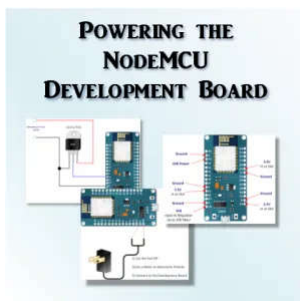
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Powering the ESP-12E NodeMCU Development Board

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NodeMCU Development Board Power Supplies



(<https://i2.wp.com/henrysbench.capnfatz.com/wp-content/uploads/2016/09/Powering-NodeMCU-Board.png>) The low cost NodeMCU can be powered a variety ways. The neat thing about the boards being offered on the internet is that they are largely the same. This article is based on the LoLin V3 module I have on my bench. It's an ESP-12E version. There can be subtle differences in others being

a place for the electronic hobbyist offered, so do pay attention.

This is not intended to be an exhaustive list, but rather one that should give you some ideas.

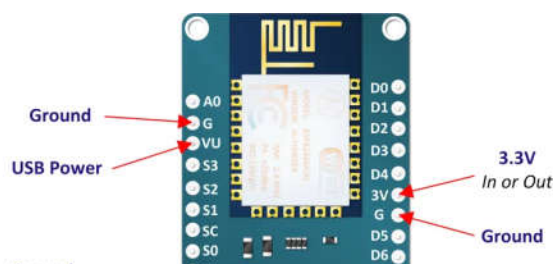
GETTING A NodeMCU ESP-12E Development Board

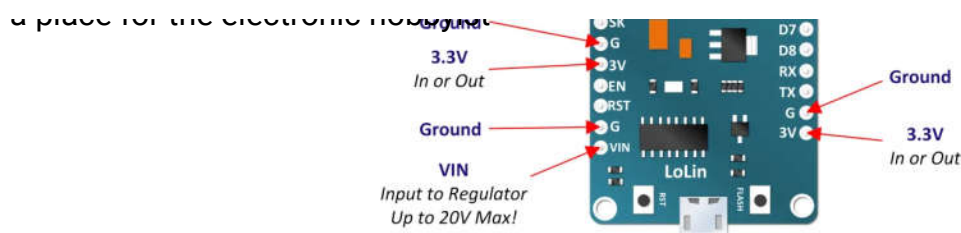
You can pick up one of these modules from anyone of the following vendors:

Amazon (https://www.amazon.com/gp/search/ref=as_li_qf_sp_sr_il_tl?ie=UTF8&tag=leaacicarbatf-20&keywords=LoLin+NodeMCU&index=aps&camp=1789&creative=9325&linkCode=xm2&linkId=d3640387a8d9d0d20af46e0ca05ae472) eBay
(http://rover.ebay.com/rover/1/711-53200-19255-0/1?icep_ff3=9&pub=5575103433&toolid=10001&campid=5337702195&customid=&icep_uq=Lolin+NodeMCU&icep_sellerId=&icep_ex_kw=&icep_sortBy=12&icep_catId=&icep_minPrice=&icep_maxPrice=&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg) Bang good
(<http://www.anrdoezrs.net/links/8535047/type/dlg/https://www.banggood.com/search/lolin-nodemcu.html>) AliExpress (http://www.anrdoezrs.net/links/8535047/type/dlg/https://www.aliexpress.com/wholesale?catId=0&initiative_id=AS_20180210115409&SearchText=lolin+nodemcu)

Power Related ESP-12E Development Board Pins

Since we're focusing on powering the NodeMCU board, the following illustration only shows the power related pins.





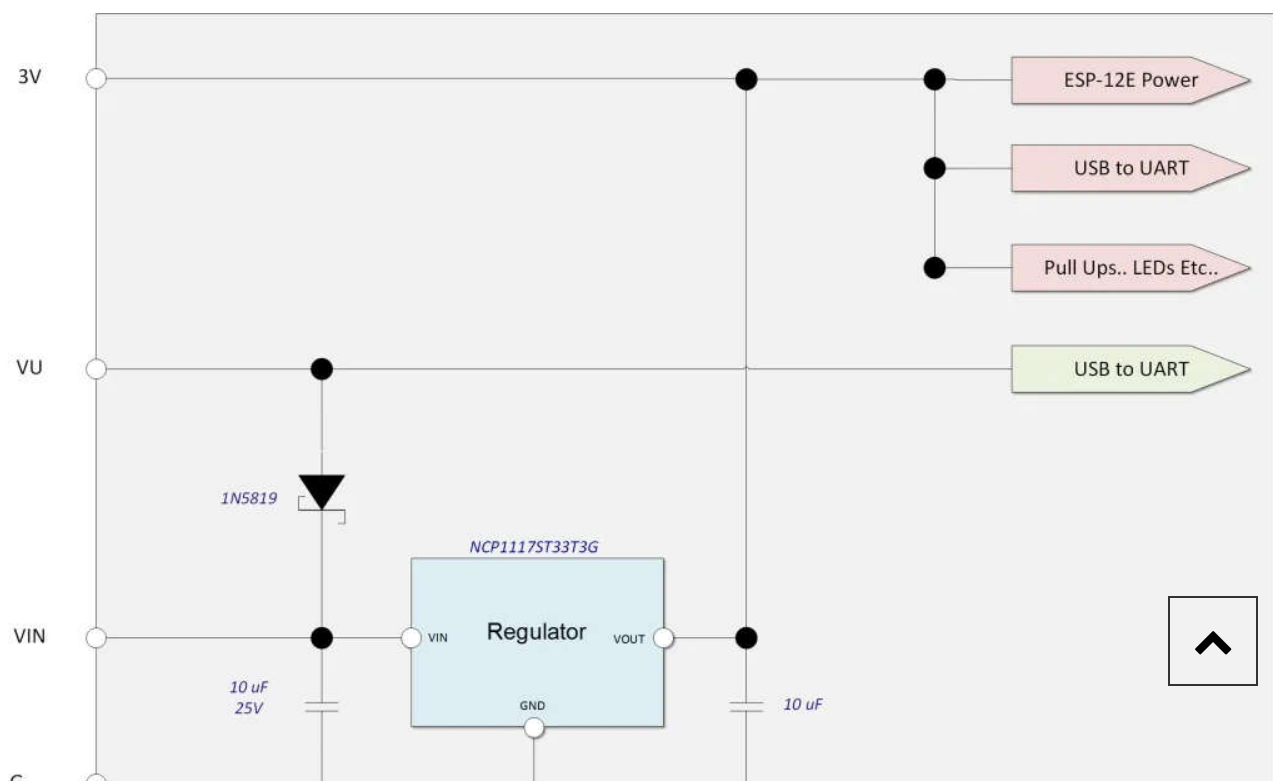
(<https://i0.wp.com/henrysbench.cpnfatz.com/wp-content/uploads/2016/09/ESP12-E-Developer-Board-Power-Pinouts.png>)

NodeMCU ESP-12E Power Supply Simplified Schematic

I found a development board schematic, compared it to the my NodeMCU board and found it to be pretty accurate. The following simplified drawing is based on that schematic.

The Schottky diode means you can provide both VIN and USB power safely. Something that is necessary if you USB port chokes.

Keep in mind, there are five ground pins and three 3.3V pins. They are the same electrical point and thus not included in the schematic below for simplicity sake.



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(<https://i0.wp.com/henrysbench.capnfatz.com/wp-content/uploads/2016/09/Node-MCU-Power-Supply-Schematic.png>)

Overview of Your Supply Options

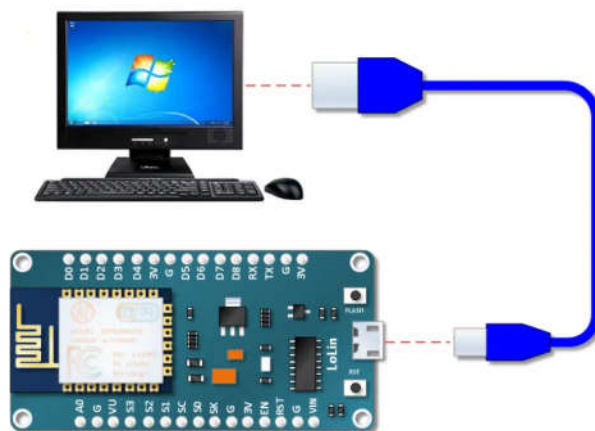
Examining the Schematic, the options boil down to three basic approaches.

1. Use USB Power... Great for loading programs, but not so good if you want to actually have your project disconnected from the computer.
2. Provide 3.3V directly... This is a strong option. With your own off board regulator, you can provide a robust power source for your device.
3. Provide Power to VIN... The regulator is rated up to 800 mA. In many cases, that is more than sufficient. Care should be taken to keep track of your load if your intent is to power other devices from the 3.3V pin.

Specific NodeMCU Power Supply Examples

Power the NodeMCU ESP8266 via the USB Port

Using my computer, this works fine. On yours it might not. Some USB ports can't provide the current necessary to the ESP8266 development board.



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(<https://i1.wp.com/henrysbench.capnfatz.com/wp-content/uploads/2016/09/Connect-to-Computer.png>)

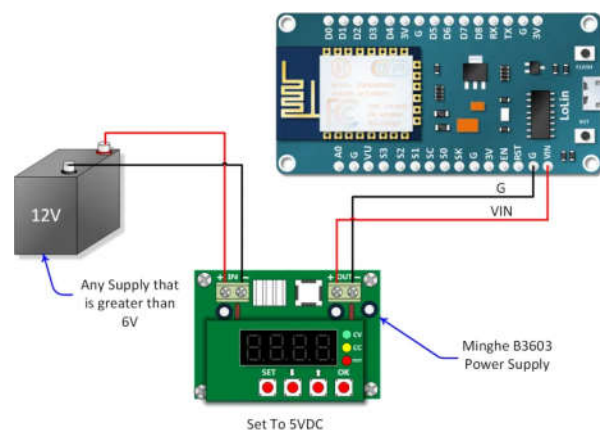
Use a Bench Top Supply Unit (Minghe B3603)

As the schematic shows, there is an on board 3.3V regulator. It is connected to VIN. This allows us to provide something other than 3.3 V to the board.

If you're constantly testing ideas, having a small constant current, constant voltage adjustable supply around is smart. I use the Minghe B3603 and I cover it in more detail [HERE](http://henrysbench.capnfatz.com/henrys-bench/power-supplies-and-converters/minghe-b3603-user-manual-table-of-contents/) (<http://henrysbench.capnfatz.com/henrys-bench/power-supplies-and-converters/minghe-b3603-user-manual-table-of-contents/>).

In this example, the power supply is set to 5V and connected to VIN. It should be capable of providing more than 1.0 Amp of current with no heat issues. As mentioned before, the ESP8266, when doing it's thing, can hog some current.

NOTE – You could use a higher voltage. I selected 5V because I often have other devices that are powered by 5 Volts.



(<https://i0.wp.com/henrysbench.capnfatz.com/wp-content/uploads/2016/09/NodeMCU-Powered-by-B3603.png>)Getting a Minghe B3603.



Try any of the following locations:

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Amazon ([https://www.amazon.com/gp/search/ref=as_li_qf_sp_sr_il_tl?ie=UTF8&](https://www.amazon.com/gp/search/ref=as_li_qf_sp_sr_il_tl?ie=UTF8&tag=leaacicarbatf-20&keywords=b3603&index=aps&camp=1789&creative=9325&linkCode=xm2&linkId=0724f872d14efefbfe696dd101b465f5)


tag=leaacicarbatf-20&keywords=b3603&index=aps&camp=1789&creative=9325&

linkCode=xm2&linkId=0724f872d14efefbfe696dd101b465f5) eBay ([http://rover.ebay.com](http://rover.ebay.com/rover/1/711-53200-19255-0/1?icep_ff3=9&pub=5575103433&toolid=10001&campid=5337702195&customid=&icep_uq=b3603+power+supply&icep_sellerId=&icep_ex_kw=&icep_sortBy=12&icep_catId=&icep_minPrice=&icep_maxPrice=&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg)

/rover/1/711-53200-19255-0/1?icep_ff3=9&pub=5575103433&toolid=10001&

campid=5337702195&customid=&icep_uq=b3603+power+supply&icep_sellerId=&

icep_ex_kw=&icep_sortBy=12&icep_catId=&icep_minPrice=&icep_maxPrice=&ipn=psmain&

icep_vectorid=229466&kwid=902099&mtid=824&kw=lg)  Bang good

([http://www.shareasale.com/r.cfm?u=1129382&b=305177&m=32599&afftrack=&](http://www.shareasale.com/r.cfm?u=1129382&b=305177&m=32599&afftrack=&urlink=www%2Ebanggood%2Ecom%2Fsearch%2Fb3603%2Ehtml)

urlink=www%2Ebanggood%2Ecom%2Fsearch%2Fb3603%2Ehtml) Deal Extreme

([http://www.shareasale.com/r.cfm?u=1129382&b=302497&m=32431&afftrack=&](http://www.shareasale.com/r.cfm?u=1129382&b=302497&m=32431&afftrack=&urlink=www%2Edx%2Ecom%2Fs%2Fb3603)

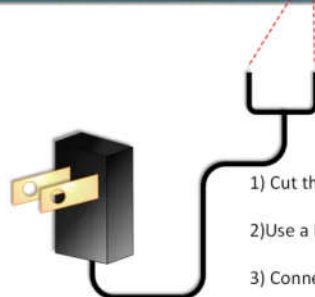
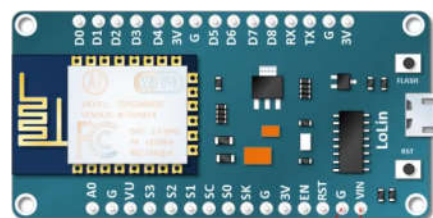
urlink=www%2Edx%2Ecom%2Fs%2Fb3603)

Use the Minghe Supply and Connect to 3.3V Input

A set up similar to what is pictured above is what will be required. Set the voltage to 3.3 Volts and connect to one of the 3V inputs.

Use a Wall Wart

Something like a nine volt supply will work fine. You just need to cut the end off. Use a meter to verify polarity and then connect.



1) Cut the End Off

2) Use a Meter to Determine Polarity

3) Connect to the Development Board

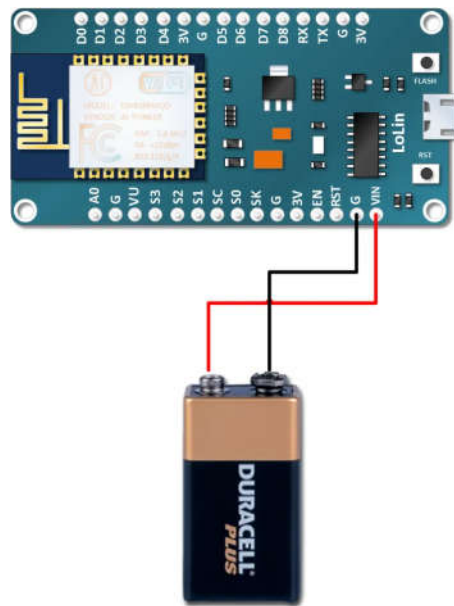
([https://i0.wp.com/henrysbench.capnfatz.com/wp-content/uploads/2016/09/ESP-12E](https://i0.wp.com/henrysbench.capnfatz.com/wp-content/uploads/2016/09/ESP-12E-Powered-by-Wall-Wart.png) 

Powered-by-Wall-Wart.png)

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Power the NodeMCU with a 9V Battery

This is my least favorite option. You may wish to think about re-chargeable batteries if this is the route you choose to go.

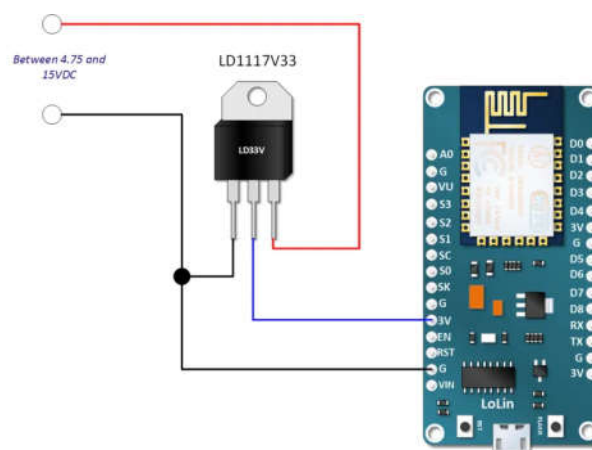


(<https://i0.wp.com/henrysbench.capnfatz.com/wp-content/uploads/2016/09/Power-ESP-12E-with-a-9V-Battery.png>)

Power the ESP-12E Development Board with 3.3V Regulator

This option allows you to power other 3.3 volt devices. I'd normally use some 10 μ F capacitors in a circuit like this. I didn't find them necessary at the output because the NodeMCU board already has one.


As for the input to the regulator, I was just being lazy.



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
(<https://i2.wp.com/henrysbench.capnfatz.com/wp-content/uploads/2016/09/Powering-NodeMCU-with-LD33.png>)

Getting a 3.3V Regulator


Amazon (https://www.amazon.com/gp/search/ref=as_li_qf_sp_sr_il_tl?ie=UTF8&tag=leaacicarbatf-20&keywords=LD33V&index=aps&camp=1789&creative=9325&linkCode=xm2&linkId=9a8efdd8d32d7bd8292f9c95b80b9437) eBay
(http://rover.ebay.com/rover/1/711-53200-19255-0/1?icep_ff3=9&pub=5575103433&toolid=10001&campid=5337702195&customid=&icep_uq=ld33&icep_sellerId=&icep_ex_kw=&icep_sortBy=12&icep_catId=&icep_minPrice=&icep_maxPrice=&ipn=psmain&icep_vectorid=229466&kwid=902099&mtid=824&kw=lg) 

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Small Stuff*

(<http://amzn.to/2kpPRy6>)



*Magnifying
Glasses*

(<http://amzn.to/2loKBJm>)



What I use

(<http://amzn.to/2liSGCV>)



3.3 & 5Vdc Supply

(<http://amzn.to/2kG4LyE>)




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Very Handy

(https://www.amazon.com/gp/product/B00Q2TTQEE/ref=as_li_ss_tl?ie=UTF8&linkCode=ll1&tag=henrysbench-20&linkId=d544649c81bc5c4c563614b1af136157)

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