



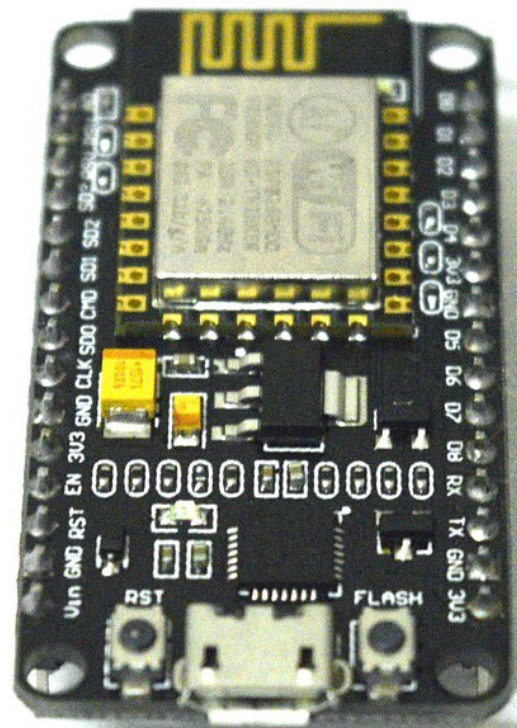
**EINSTRONIC**  
TURN ON THE FUTURE

# INTRODUCTION TO

## NodeMCU ESP8266

DEVKIT v1.0

JULY 2017

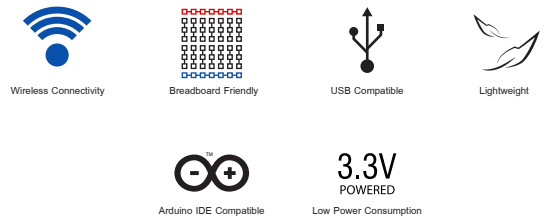
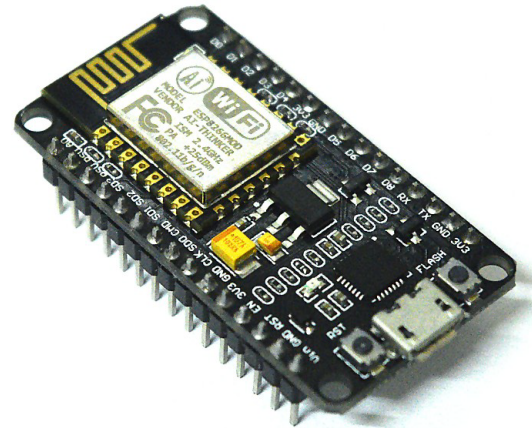


## NodeMCU ESP8266 ESP-12E WiFi Development Board

NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. The term “NodeMCU” by default refers to the firmware rather than the DevKit. The firmware uses the Lua scripting language. It is based on the eLua project, and built on the Espressif Non-OS SDK for ESP8266. It uses many open source projects, such as lua-cjson, and spiffs.

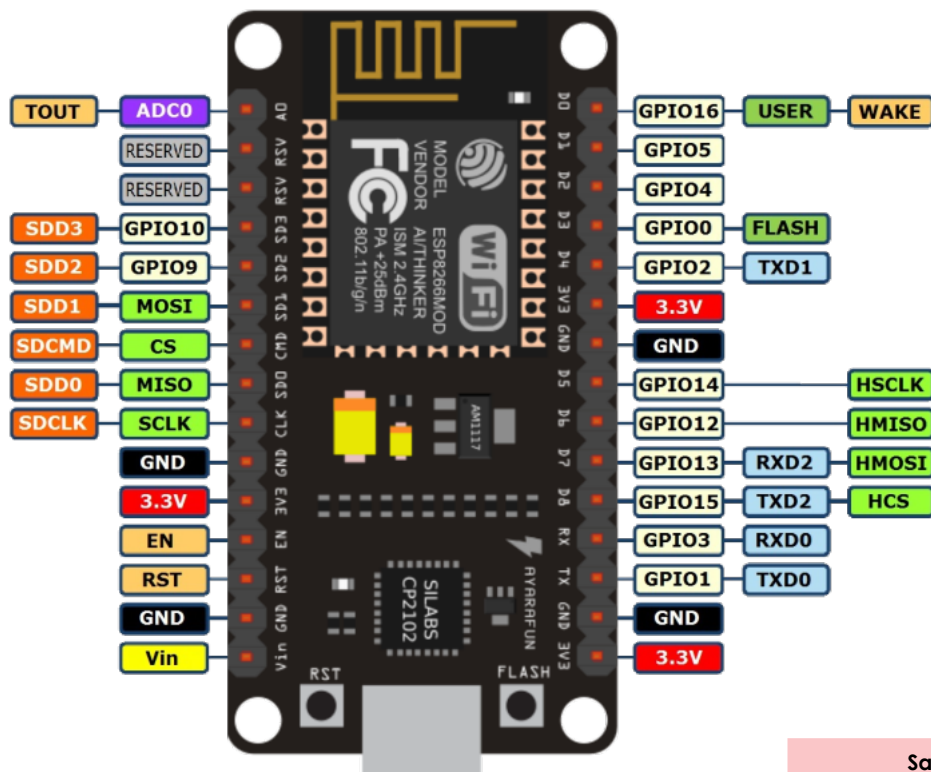
### Features

- ▶ Version : DevKit v1.0
- ▶ Breadboard Friendly
- ▶ Light Weight and small size.
- ▶ 3.3V operated, can be USB powered.
- ▶ Uses wireless protocol 802.11b/g/n.
- ▶ Built-in wireless connectivity capabilities.
- ▶ Built-in PCB antenna on the ESP-12E chip.
- ▶ Capable of PWM, I2C, SPI, UART, 1-wire, 1 analog pin.
- ▶ Uses CP2102 USB Serial Communication interface module.
- ▶ Arduino IDE compatible (extension board manager required).
- ▶ Supports Lua (alike node.js) and Arduino C programming language.



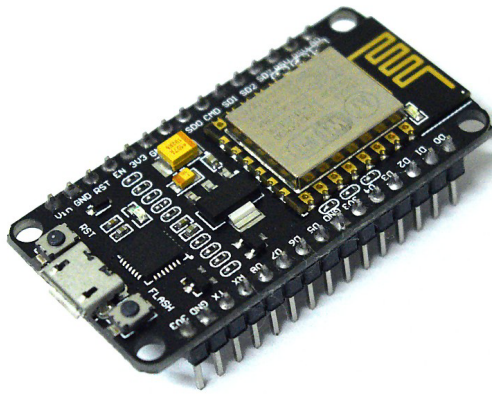
### PINOUT DIAGRAM

#### NodeMCU ESP8266 v1.0

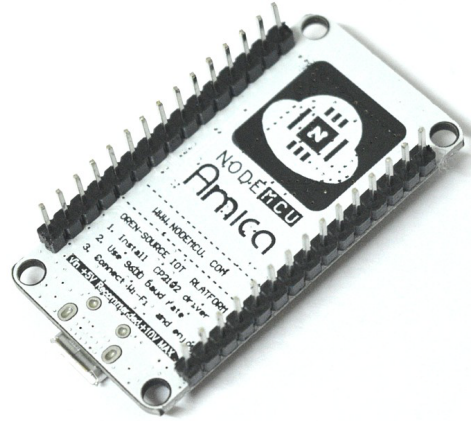


Source  
<https://iotbytes.wordpress.com/nodemcu-pinout/>

**Safety Precaution**  
 All GPIO runs at 3.3V !!



Front View



Front View

## Specifications of ESP-12E WiFi Module

<b>Wireless Standard</b>	IEEE 802.11 b/g/n
<b>Frequency Range</b>	2.412 - 2.484 GHz
<b>Power Transmission</b>	802.11b : +16 ± 2 dBm (at 11 Mbps) 802.11g : +14 ± 2 dBm (at 54 Mbps) 802.11n : +13 ± 2 dBM (at HT20, MCS7)
<b>Receiving Sensitivity</b>	802.11b : -93 dBm (at 11 Mbps, CCK) 802.11g : -85 dBm (at 54 Mbps, OFDM) 802.11n : -82 dBm (at HT20, MCS7)
<b>Wireless Form</b>	On-board PCB Antenna
<b>IO Capability</b>	UART, I2C, PWM, GPIO, 1 ADC
<b>Electrical Characteristic</b>	3.3 V Operated 15 mA output current per GPIO pin 12 - 200 mA working current Less than 200 uA standby current
<b>Operating Temperature</b>	-40 to +125 °C
<b>Serial Transmission</b>	110 - 921600 bps, TCP Client 5
<b>Wireless Network Type</b>	STA / AP / STA + AP
<b>Security Type</b>	WEP / WPA-PSK / WPA2-PSK
<b>Encryption Type</b>	WEP64 / WEP128 / TKIP / AES
<b>Firmware Upgrade</b>	Local Serial Port, OTA Remote Upgrade
<b>Network Protocol</b>	IPv4, TCP / UDP / FTP / HTTP
<b>User Configuration</b>	AT + Order Set, Web Android / iOS, Smart Link APP

### Disclaimer

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## Related Sites

NodeMCU official site

[http://nodemcu.com/index\\_en.html](http://nodemcu.com/index_en.html)

NodeMCU Documentation

<https://nodemcu.readthedocs.io/en/master/>

NodeMCU Firmware (GitHub)

<https://github.com/nodemcu/nodemcu-firmware>

Project tagged with NodeMCU, HACKADAY.IO

<https://hackaday.io/projects?tag=NodeMCU>

ESP8266 Getting started, by ACROBOTIC industries

<http://learn.acrobotic.com/tutorials/post/esp8266-getting-started>

Quick Start to Nodemcu (ESP8266) on Arduino IDE

by Magesh Jayakumar

<http://www.instructables.com/id/Quick-Start-to-Nodemcu-ESP8266-on-Arduino-IDE/>

GETTING STARTED WITH PLATFORMIO AND ESP8266 NODEMCU

by Brandon Cannaday

<https://www.losant.com/blog/getting-started-with-platformio-esp8266-nodemcu>

Programming ESP8266 ESP-12E NodeMCU V1.0 With Arduino IDE

Into Wireless Temperature Logger

by Shin Teo

<http://www.instructables.com/id/ESP8266-NodeMCU-v10-ESP12-E-with-Arduino-IDE/>

For more details, we can be reached at the addresses below.

Terms & Condition apply.

## CONTACT INFORMATION



[www.einstronic.com](http://www.einstronic.com)



010 - 2181014 ( Henry - Owner )



[einstronics@gmail.com](mailto:einstronics@gmail.com)



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