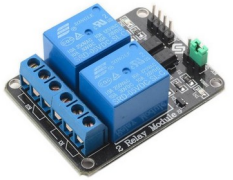
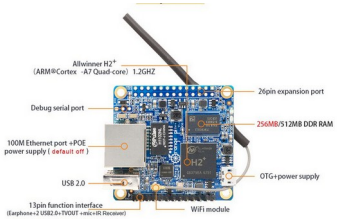
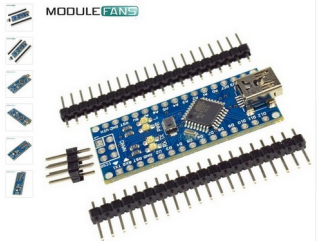
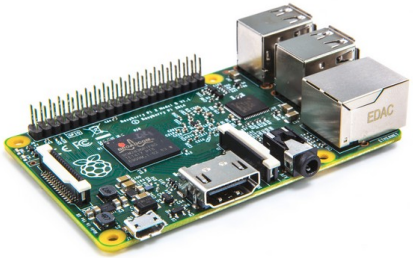
IOT con Arduino









IOT Internet delle cose

Applicare l’elettronica, l’informatica, le tecnologie di comunicazione e quindi internet agli oggetti di tutti i giorni e tutto per migliorare la qualità della vita nella casa e più in generale negli ambienti antropizzati

Migliorare la qualità della vita

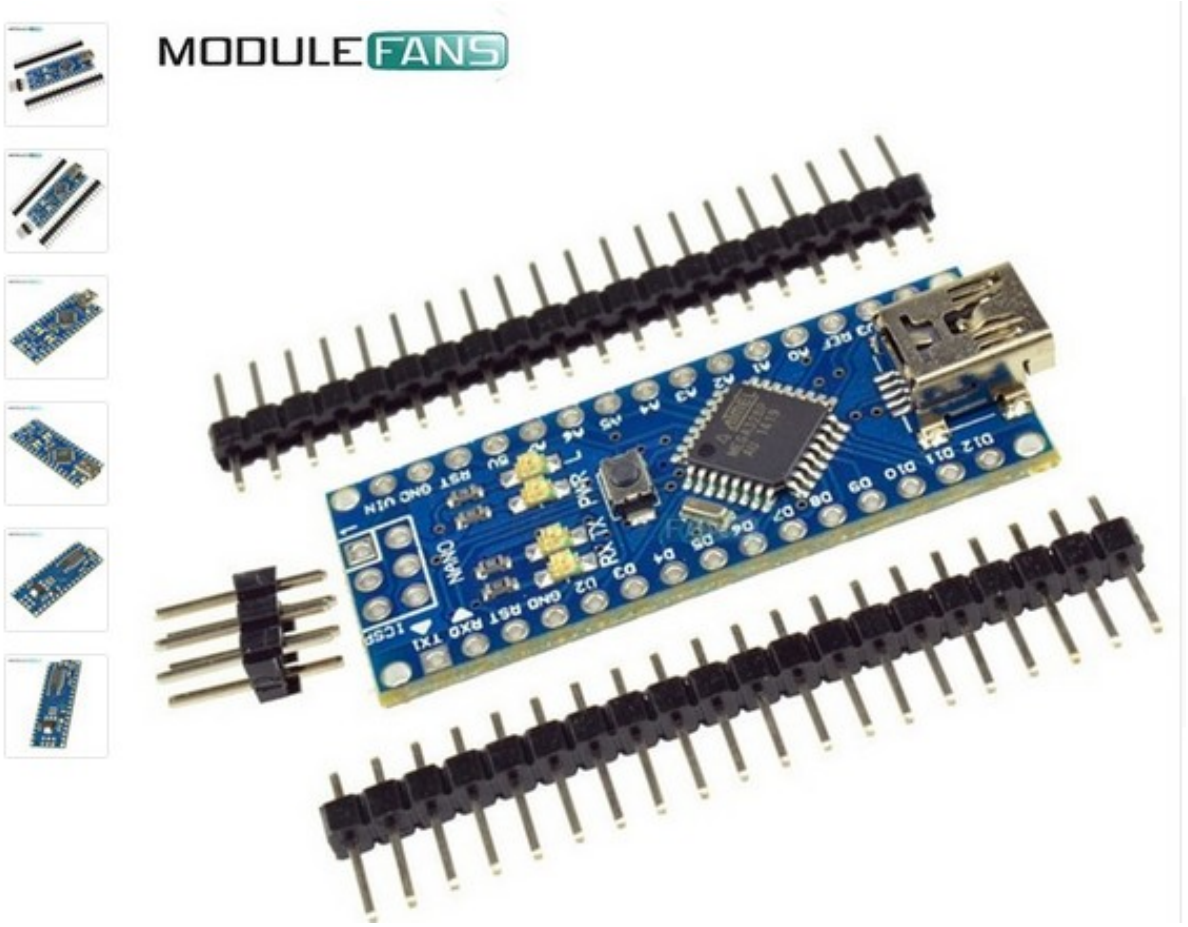
- Faccio accendere la luce automaticamente quando serve
- Rilevo la temperatura e l’umidità nei miei locali per decidere se e come cambiare qualcosa
- Tengo sotto controllo la caldaia
- Lascio che l’automobile mi porti dove ho richiesto
- Altro ...

Strumenti per il fai da te

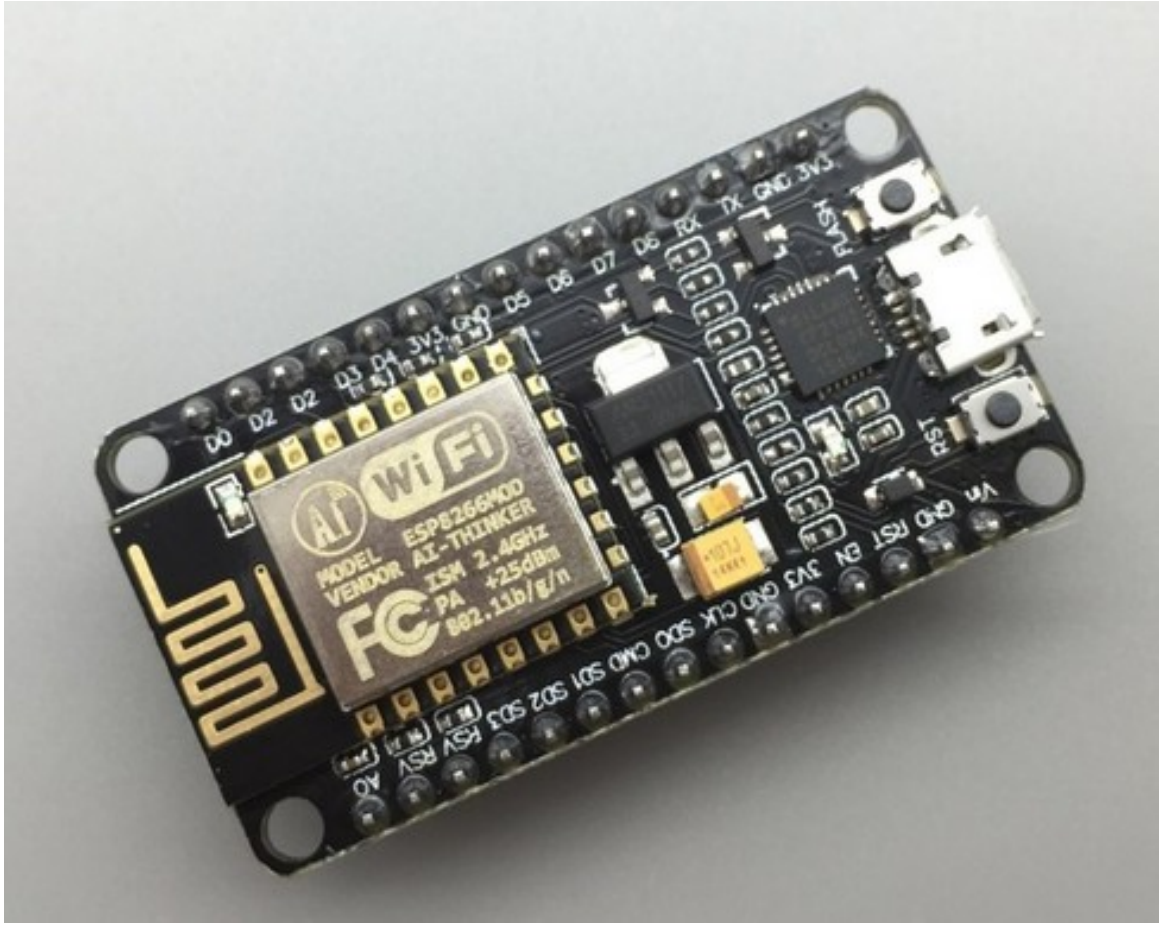
- Hardware
- Software
  - IDE (ambiente di sviluppo)
  - Librerie
  - Programmi

Hardware

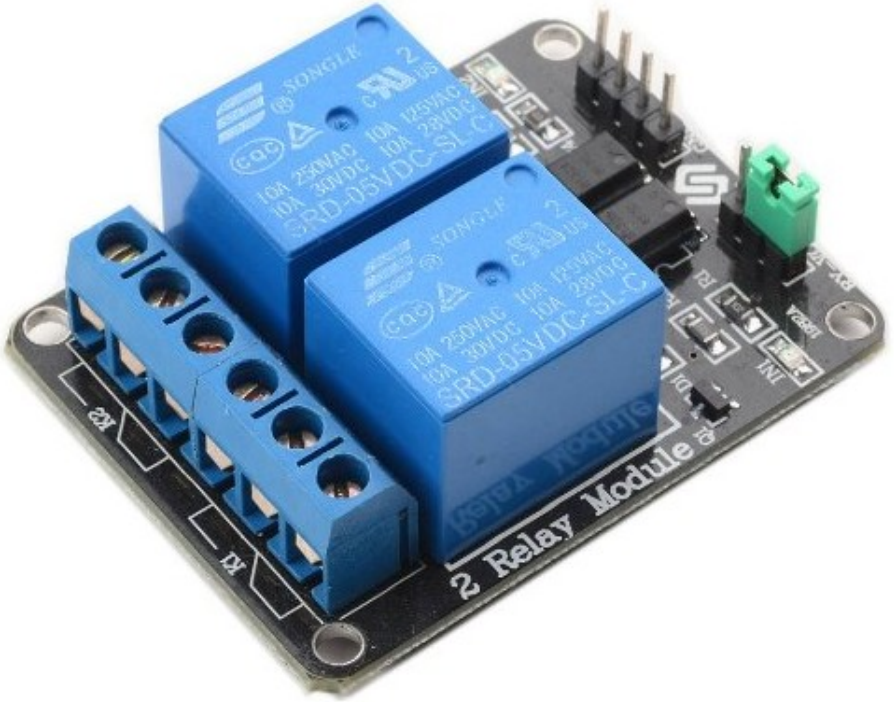
Hardware



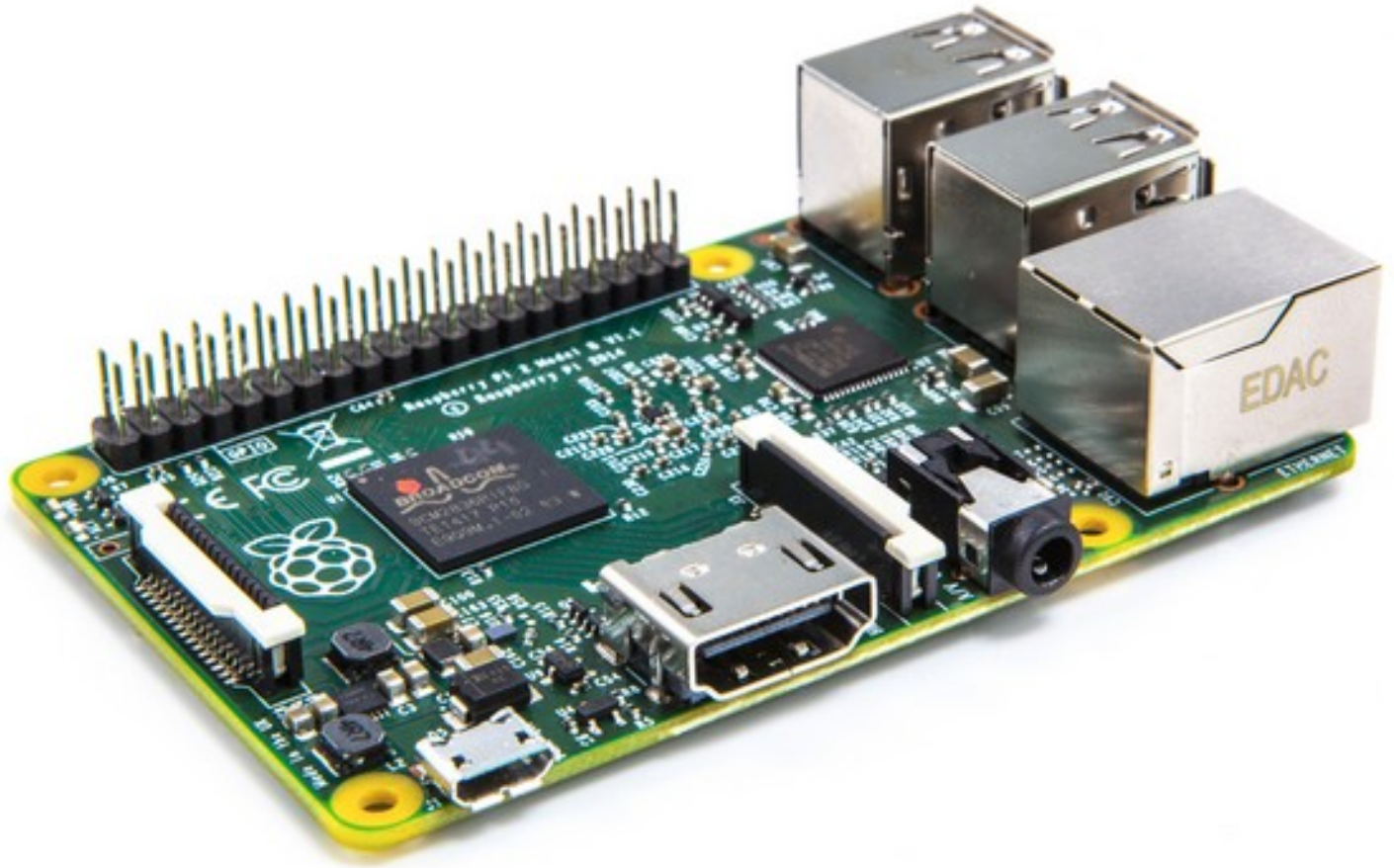
Hardware


Wi Fi
MODEL ESP8266MOD
VENDOR AI-THINKER
ISM 2.4GHz
PA +25dBm
802.11b/g/n
D0 D2 D2 D3 D4 3V3 GND D5 D6 D7 D6 RX TX GND 3V3
RST
GND RST EN 3V3 GND CLK SDO CMD SD1 SD2 SD3 RSV RSV A0

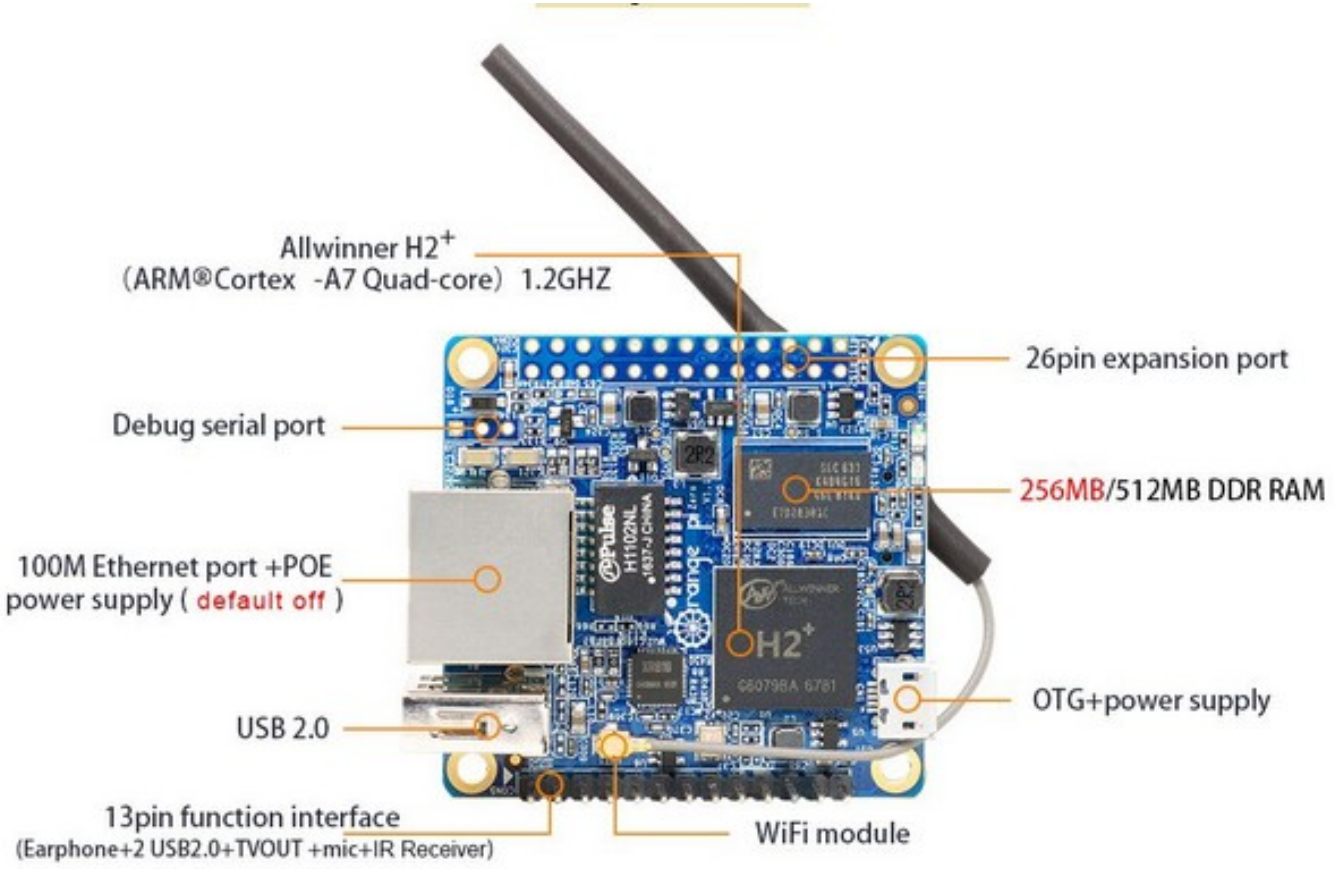
Hardware


SONGLE
10A 250VAC 10A 125VAC
10A 30VDC 10A 28VDC
SRD-05VDC-SL-C
2 Relay Module

Hardware



Hardware


Allwinner H2+
(ARM®Cortex -A7 Quad-core) 1.2GHZ
26pin expansion port
Debug serial port
256MB/512MB DDR RAM
100M Ethernet port +POE
power supply (default off)
OTG+power supply
USB 2.0
13pin function interface
(Earphone+2 USB2.0+TVOUT +mic+IR Receiver)
WiFi module

Software IDE Arduino

Download the Arduino IDE

ARDUINO 1.8.1

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.
This software can be used with any Arduino board.
Refer to the Getting Started page for Installation instructions.

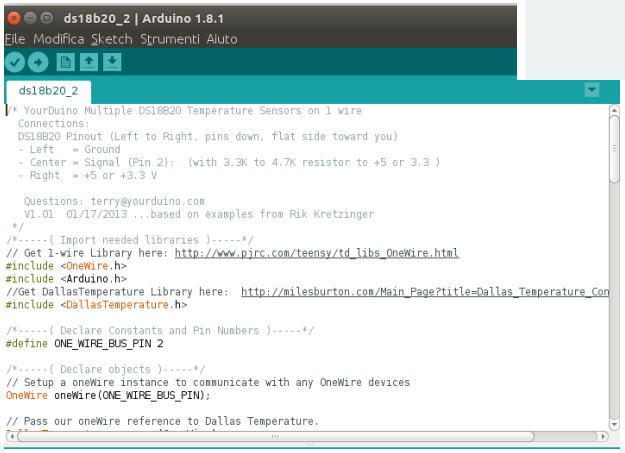
Windows Installer
Windows ZIP file for non admin install

Windows app Get

Mac OS X 10.7 Lion or newer

Linux 32 bits
Linux 64 bits
Linux ARM

Release Notes
Source Code
Checksums (sha512)



Librerie

Standard Libraries

- EEPROM - reading and writing to "permanent" storage
- Ethernet / Ethernet 2 - for connecting to the internet using the Arduino Ethernet Shield, Arduino Ethernet Shield 2 and Arduino Leonardo ETH
- Firmata - for communicating with applications on the computer using a standard serial protocol.
- GSM - for connecting to a GSM/GRPS network with the GSM shield.
- LiquidCrystal - for controlling liquid crystal displays (LCDs)
- SD - for reading and writing SD cards
- Servo - for controlling servo motors
- SPI - for communicating with devices using the Serial Peripheral Interface (SPI) Bus
- SoftwareSerial - for serial communication on any digital pins. Version 1.0 and later of Arduino incorporate Mikal Hart's NewSoftSerial library as SoftwareSerial.
- Stepper - for controlling stepper motors
- TFT - for drawing text , images, and shapes on the Arduino TFT screen
- WiFi - for connecting to the internet using the Arduino WiFi shield
- Wire - Two Wire Interface (TWI/I2C) for sending and receiving data over a net of devices or sensors.

The Matrix and Sprite libraries are no longer part of the core distribution.

101 Only Libraries

- CurieBLE - Interact with smartphones and tablets with Bluetooth Low Energy (BLE).
- CurieIMU - Manage the on-board accelerometer and gyro.
- CurieTimerOne - Allows to use Timer functions.
- CurieTime - Allows to control and use the internal RTC (Real Time Clock)

Software - Programmi

Applicazioni di Raspberry PI

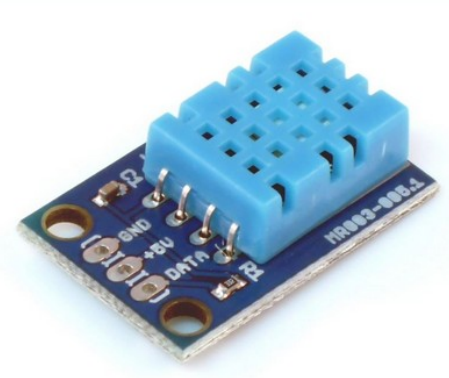
Indice [nascondi]

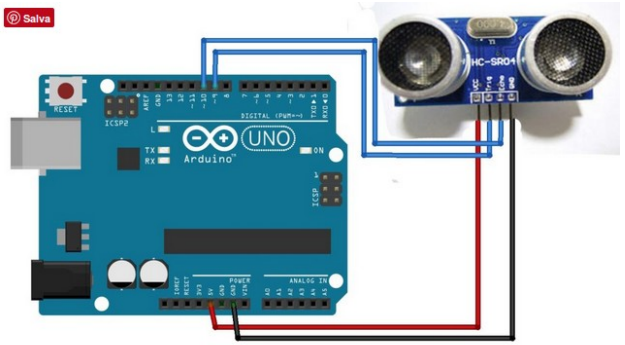
1 Web Server
2 Firewall
3 Access Point
4 Piratebox
5 Freedombox
6 Applicazioni telefoniche
7 Domotica
  7.1 Segnali e Comandi
  7.2 Controllo consumi elettrici
  7.3 Temperature
8 Lavagna multimediale
9 Laboratorio scolastico (linux terminal server)
10 Remote console per server
11 PVR, DVB, TV
12 Videosorveglianza
13 Radiocomandi
14 Raspberry e Arduino insieme: interfacciamento
15 Uno smart player audio da abbinare allo stereo casalingo
16 Cambiamonete / servizi a pagamento / Totem informativo
17 Mini centrale di Controllo Accessi
18 Display LCD
19 Chiavette 3G USB
20 Server Stampante Scanner
21 Server
22 Accesso remoto via Internet
23 qui la lista continua con la vostra fantasia

What can I do with Orange Pi Zero?

Build…
A computer
A wireless server
Games
Music and sounds
HD video
A speaker
Android
Scratch
Pretty much anything else, because Orange Pi Zero is open source

Sensori





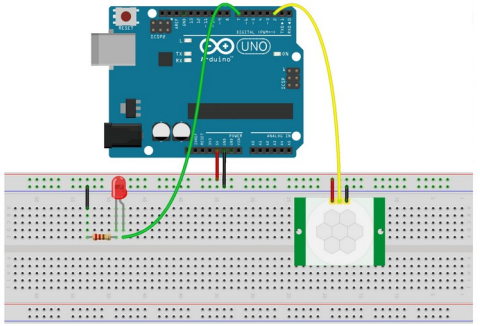
Tutorials ARDUINO

Video tutorial in italiano

https://playground.arduino.cc/Italiano/Tutorials/

Esempio con sensore movimento

https://www.italiantechproject.it/sensori-con-arduino/movimento-pir-hc-sr501



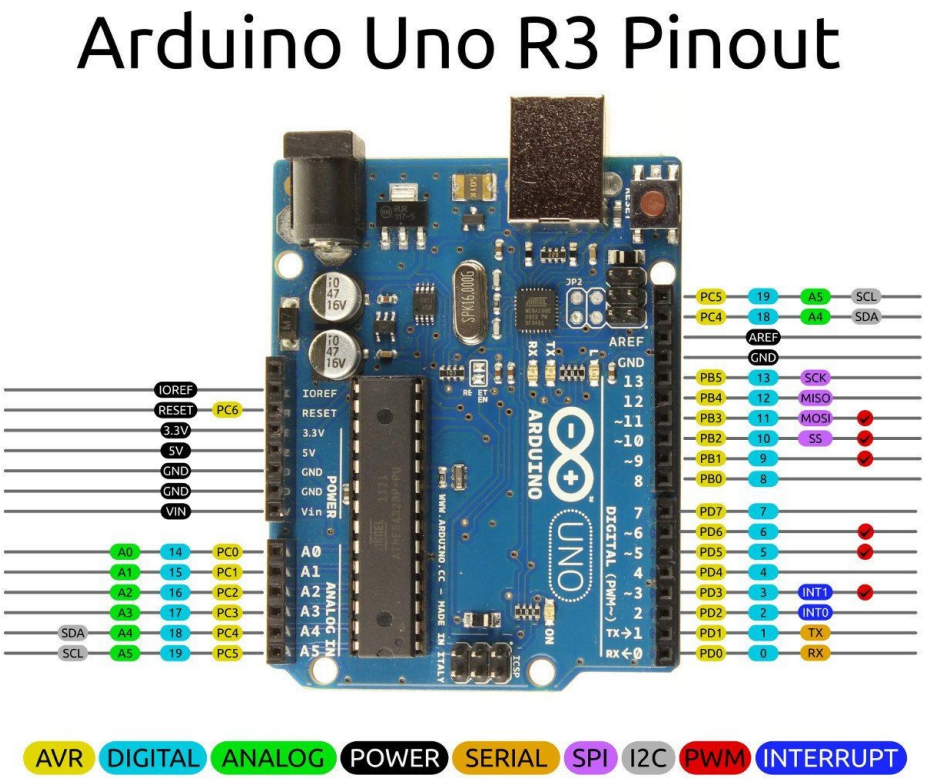
Hardware Arduino

Ci sono molte tipologie di schede

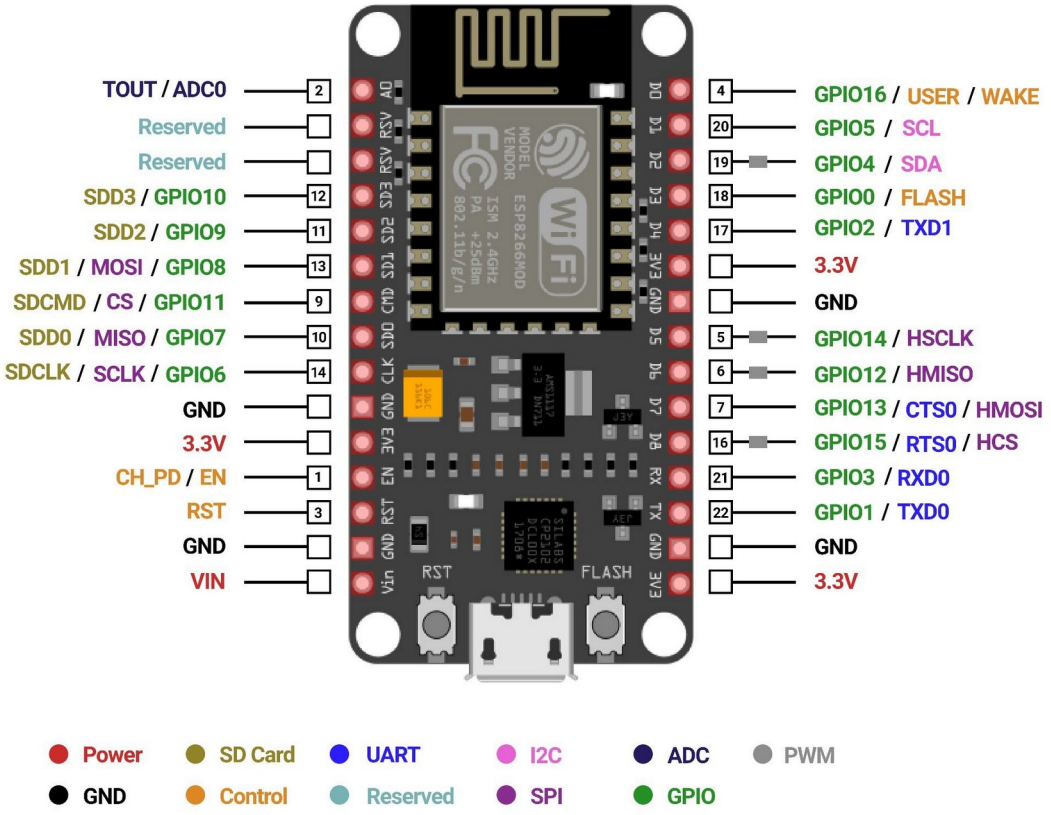
Tutte comprendono le sezioni di:

- Alimentazione
- Input analogici
- Input/Output digitali e PWM
- Ingresso USB/Seriale
- Alimentazione indipendente

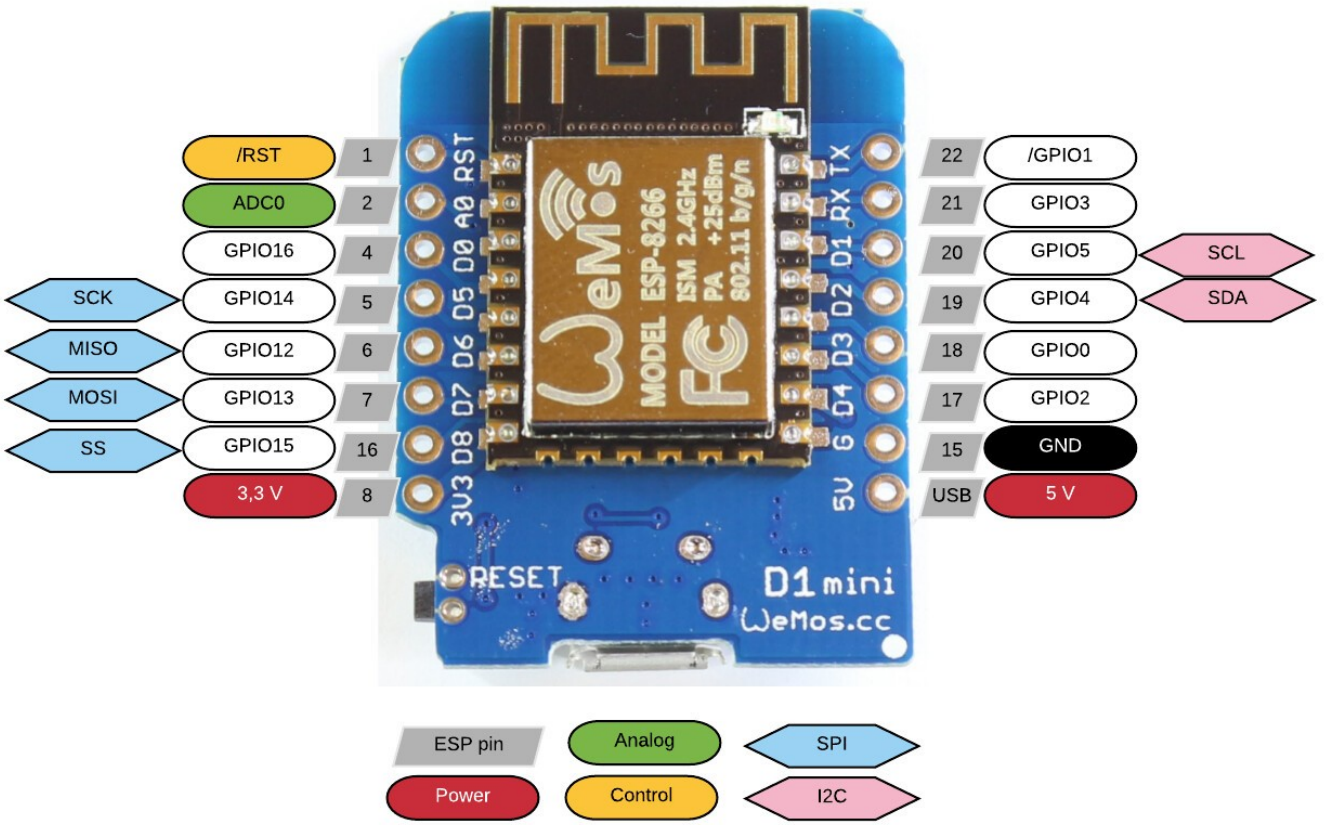
Arduino UNO



Arduino esp8266



Esp8266 D1-R1



IDE ARDUINO

Arduino IDE 2.3.4

The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger.

For more details, please refer to the **Arduino IDE 2.0 documentation**.

Nightly builds with the latest bugfixes are available through the section below.

SOURCE CODE

The Arduino IDE 2.0 is open source and its source code is hosted on **GitHub**.

DOWNLOAD OPTIONS

Windows Win 10 and newer, 64 bits
Windows MSI installer
Windows ZIP file

Linux AppImage 64 bits (X86-64)
Linux ZIP file 64 bits (X86-64)

macOS Intel, 10.15: "Catalina" or newer, 64 bits
macOS Apple Silicon, 11: "Big Sur" or newer, 64 bits

Release Notes

RIFERIMENTI

Il sito di: **mischianti.org/it/**

fornisce informazioni sul layout di schede e tutorial

Il sito del Politecnico di Milano: **blog.osservatori.net/it_it**

fornisce informazioni varie sul mondo digitale e smart

CoderDoJoTrento:

https://www.coderdojotrento.it/elettronica/

Installare Arduino

- Installare da Gestore Applicazioni
- Scaricare il file *.zip, scompattare, attivare esecuzione, assegnare utente al gruppo DIALOUT
- Scaricare la AppImage, renderla eseguibile e assegnare l’utente al gruppo DIALOUT
- Eseguire on-line

Si parte

Dopo aver installato ide-arduino

aggiungere le urls dell’hardware compatibile

https://arduino.esp8266.com/stable/package_esp8266com_index.json

- Aggiungere l’utente al gruppo dialout

  sudo usermod $USER dialout

  sudo usermod $USER root

- Impostare il tipo di scheda utilizzata (Arduino uno)

Esempi

- Esempio1
-
- Esempio3
-
-

Esempi di webserver

- https://www.ingeimaks.it/come-realizzare-un-web-server-con-esp8266-modalita-sta/