

Raspberry Pi SBC Presentation

(single board computer)

*not the only SBC around

Raspberry Pi Basic History through now

Developed in the UK by the Raspberry Pi Foundation in 2012.

First generation unit was the **Raspberry Pi Model B.**

Intended for the promotion of teaching basic computer science in schools and in developing countries.

Most current model for the “conventional” design is the The Raspberry Pi 4 B

It is the size of a credit card

Raspberry Pi Types

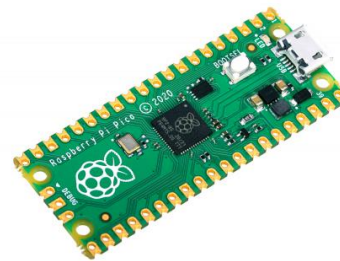
- There are currently 4 main model types for the Raspberry Pi
- (images not to scale)



Pi 4



Pi Zero



Pi Pico



Pi Compute Module

Raspberry Pi Processor Architecture

Utilizes a Broadcom SOC – System on Chip

ARM architecture processor just like your cell phone

Does not run software compiled for intel architecture (ie you can not run conventional Microsoft Windows on it)

Raspberry Pi 4 B general Specifications

Broadcom A72 Processor 1.5 GHz quad core processor

2, 4, or 8 GB RAM

Gigabit Ethernet with POE (power over ethernet)- Wifi and Bluetooth

2 USB 2 and 2 USB 3 Ports –no integrated sound card.

Dual 4K Video output micro HDMI (you can run 2 screens at once)

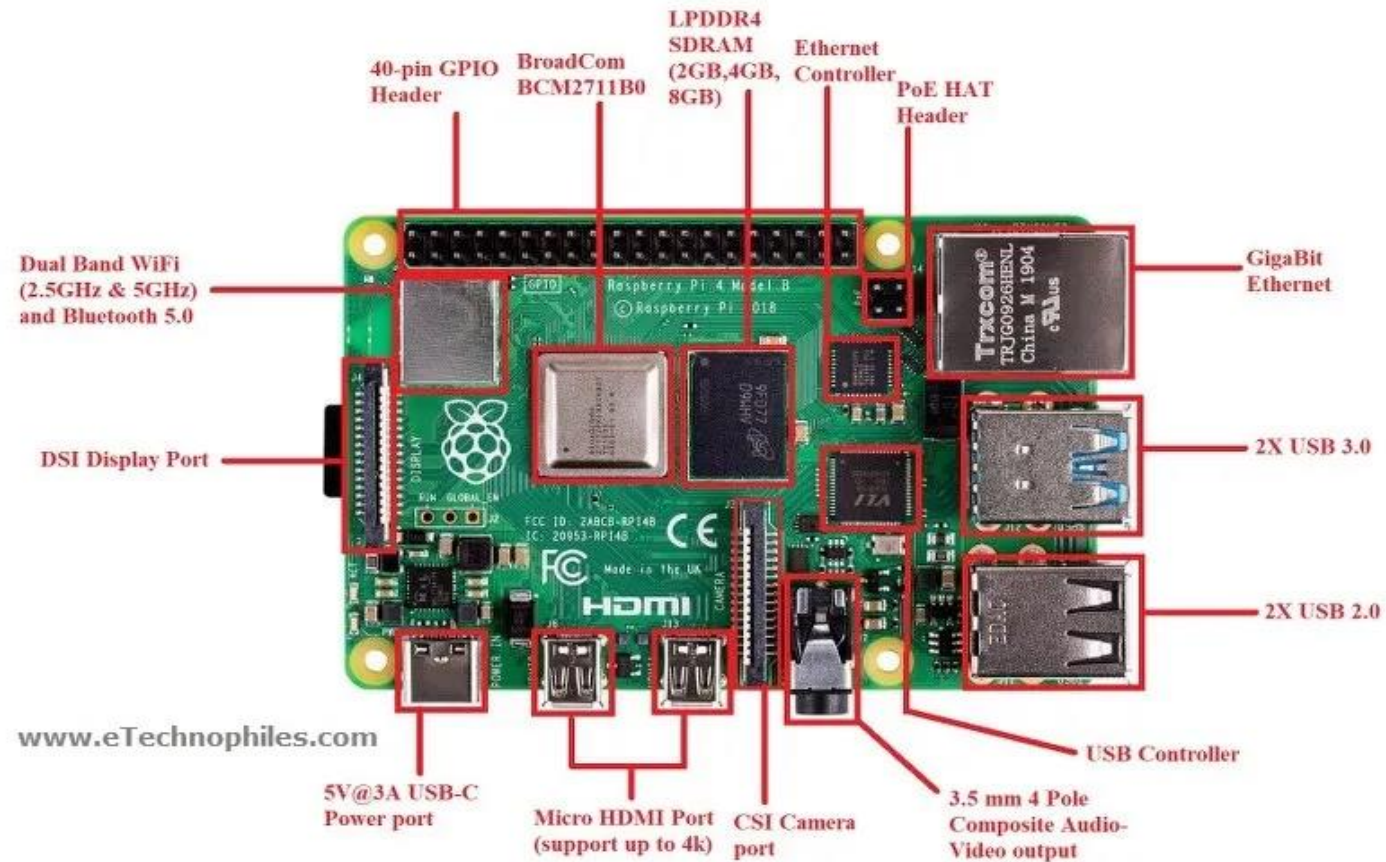
MMC Card Slot (micro SD) for a “Hard drive”

Camera interface ribbon connectors

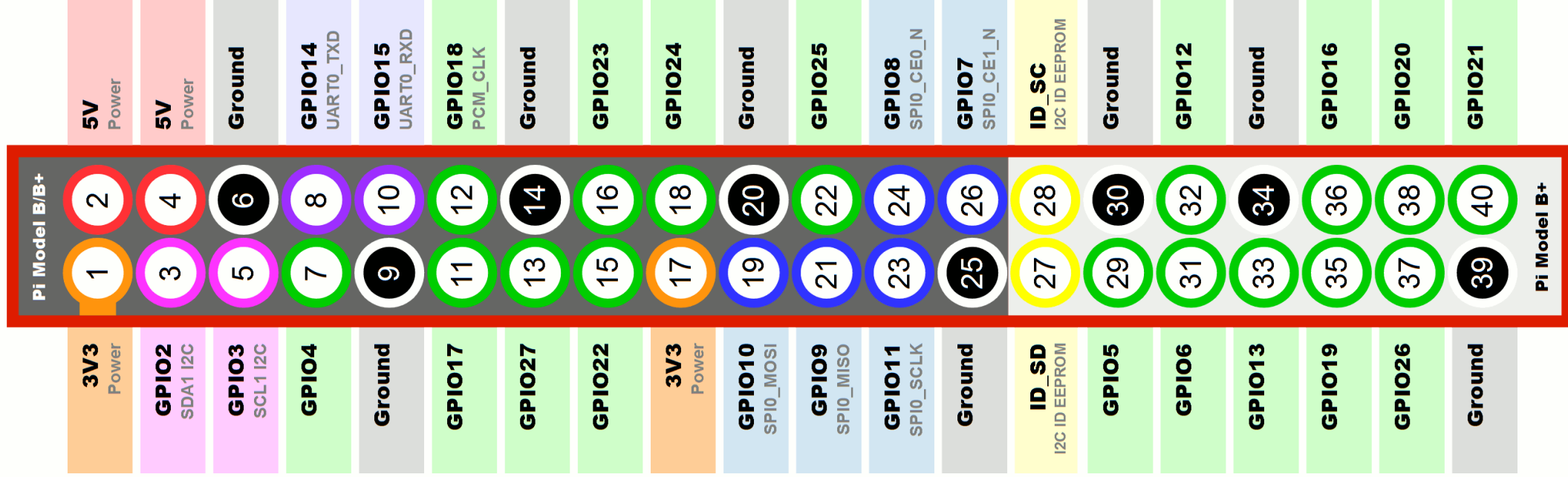
Display ribbon connector

Runs on on 5v 3A

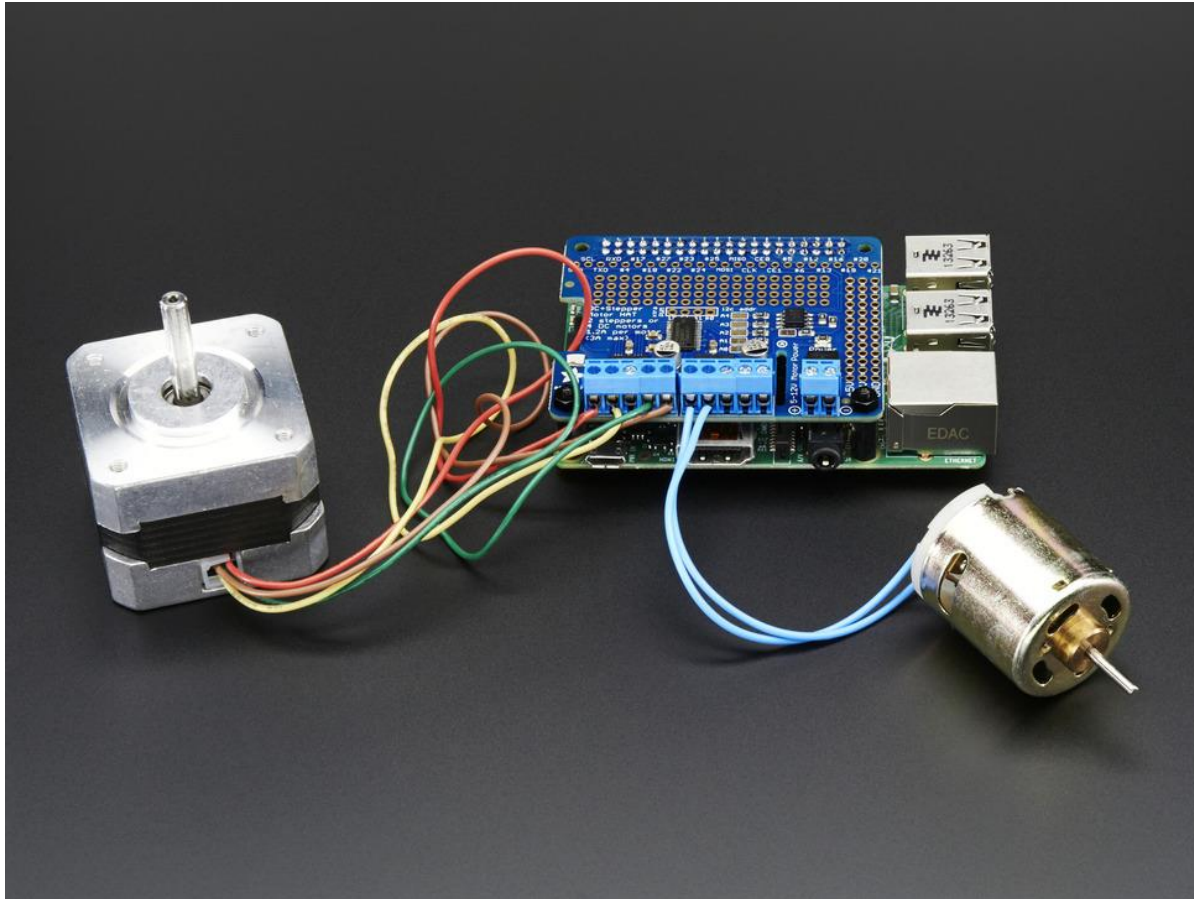
Raspberry Pi 4 Board Components



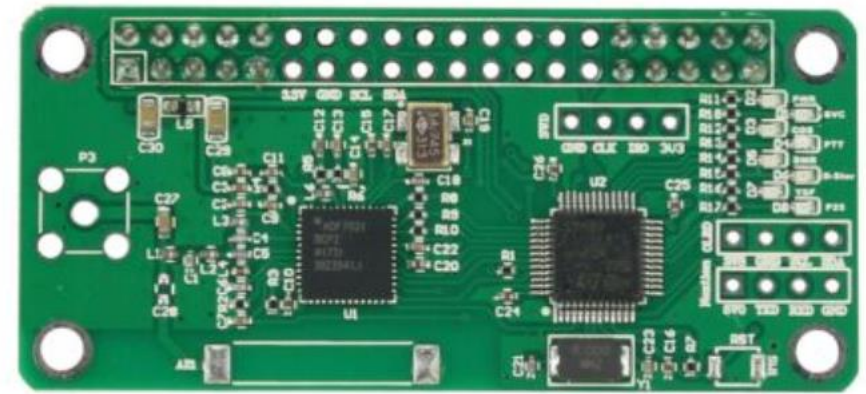
Raspberry Pi GPIO header General Purpose Input Output



Raspberry Pi "Hats"



Motor Controller board



DMR Hotspot kit

Raspberry Pi – what else do I need?

A Case – heat sink types are available as well as actively cooled (a fan and heat sink attached to the processors and some chips)

A Power supply micro USB, or a battery

A micro SD MMC card 8 GB or larger is best

Keyboard, mouse and a display depending on use.

Networking – Wi-Fi or an Ethernet cable.

Another PC to create your Raspberry Pi's disk drive image.
Knowledge of Linux and Python programming language is a plus!

Raspberry Pi Loading an Operating system

You do not (typically) install the OS via a USB drive like MS Windows

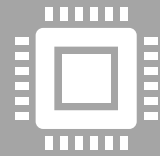
You will need to download and flash an image to an MMC micro SD card. (you'll need a MMC SD card adapter)

Raspberry PI Imager, Balena Etcher, Rufus or DD will do.

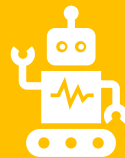
Raspberry Pi – what can we do with it?



Install and run a Linux Based Desktop computer or server on it and run Linux Apps. Applications must be compiled for ARM64 or ARM depending on use.



Turn it into a dedicated appliance type device such as a DMR Hotspot, a weather station or hundreds of other uses you could imagine or find on the internet.



Robotics is a possible common use. Your Terminator can be built.

Raspberry Pi – Which OS?

Premade images for Appliance type devices like a DMR Hotspot.

Raspbian (Raspberry Pi OS) – education programming environment.

Ubuntu or whatever Linux variant your heart desires for a real desktop environment.