



# Raspberry Pi

A credit-card sized, \$35 single-board computer. It runs linux from an SD card and has support for popular options for connection and peripherals (USB, Ethernet) as well as hardware in- and outputs (GPIO). It's built for hacking.

Raspberry Pi GPIO connector (P1) pinout



• = changed since board revision 2

Broadcom ARM CPU (700MHz) & Memory (512MB)

DSI Screen Connector

SD Memory Card  
Contains Operating System

Micro USB Power Connection  
Requires 5VDC / 800mA

HDMI Video Output  
Outputs screen to newer HD-TV's

RCA Composite Video Output  
Outputs to older TV's

3.5mm Analog Audio Output  
For headphones or amplifier

- ACT SD Card activity indicator
- PWR Device is powered okay.
- FDX Full duplex connection
- LNK Network link established
- 100 100MBit Ethernet connection

Broadcom Ethernet controller

2x Full Speed USB  
480Mbit

Ethernet Network  
100Mbit

CSI Camera Connector

## Popular operating systems / distributions:

### Raspbian "wheezy"

This is the recommended distribution for beginners, based on the Raspbian optimised version of Debian (a Linux distribution), containing development tools and example source code for multimedia functions. user: pi password: raspberry <http://www.raspbian.org/>

### Adafruit Occidentals

This distribution is based on "Raspbian Wheezy" and meant to be more hardware-hacker friendly. It is made and maintained by Adafruit Industries and has support for I2C, hardware SPI, 1Wire, Bonjour, WiFi networking and includes kernel modules for using a hardware RTC and other popular sensors. <http://bit.ly/adapi>

### Arch Linux ARM

Arch Linux ARM is based on Arch Linux, which aims for simplicity and full control to the end user. Note that this distribution may not be suitable for beginners. The latest version of this image boots to a command prompt in around ten seconds. user: root password: <http://bit.ly/arch-pi>

### XBMC Media Center

XBMC Media Center is an award-winning free and open source cross-platform software media player and entertainment hub for digital media for home theater PC's. XBMC for Raspberry Pi is based on the same code as XBMC for all the other supported platforms, but is still in early beta stage. <http://bit.ly/xbcmcp>

### RISC OS

RISC OS is a computer operating system designed in Cambridge, England by Acorn. First released in 1987, its origins can be traced back to the original team that developed the ARM microprocessor. This version is made available free of charge to Raspberry Pi users. <http://bit.ly/riscpi>

### Raspberry Pi Chameleon

Chameleon is a disk image with a nice launcher menu to choose from a wide range

of emulators, or as their tag-line says: old computers, classic games, consoles and arcade on your Pi... Worth giving a try if you love vintage computers! <http://bit.ly/cham-pi>

### Other operating systems

There are currently over 24 (and counting) other operating systems to choose from, check out the Raspberry Pi Wikipedia article to see the complete list. <http://bit.ly/os-pi>

### Installing an OS on your SD card

To use an image file, you will need to unzip it and write it to a suitable SD card using the UNIX tool "dd" on Mac or Linux. Windows users should use "Win32DiskImager". Do not try to drag and drop or otherwise copy over the image without using "dd" or "Win32DiskImager", it won't work! Instructions and downloads can be found here: <http://bit.ly/sd-pi>

Additionally, there are a lot of helpful and interesting forum threads at the official Raspberry Pi website. Make sure to check out the sticky topics first, so you can quickly find the answers to common questions. <http://bit.ly/sd-pi2>

### Raspberry Pi FAQ

#### What's the difference between Model A and Model B?

Model A has 256MB RAM, one USB port and no ethernet port (network connection). Model B has 512MB RAM, 2 USB ports and an ethernet port.

#### What's the visual difference between Raspberry Pi Model B, revision 1 and 2? A revision 2 board can be identified by:

- Status led labels: top led has label "ACT" and bottom led has label "100"
- Header P2 is not populated
- The text underneath the Raspberry Pi logo reads: "(C) 2011,12"
- The area next to the micro usb port has CE and FCC logos and the text "Made in China or UK" along the board edge.
- There are two 2,9mm holes in the PCB, which can be used as mounting holes.
- P5 is a new GPIO header with 4 additional GPIO pins and 4 power pins. Also

note that some pin and I2C port numbers of connector P1 have been modified between revisions!

- Header P6 (left from the HDMI port) was added, short these two pins to reset the computer or wake it up when powered down with the "sudo halt" command.

#### What are the dimensions of the Raspberry Pi?

The Raspberry Pi measures 85.60mm x 56mm x 21mm, with a little overlap for the SD card and connectors which project over the edges. It weighs 45g.

#### What System-on-Chip are you using?

The SoC is a Broadcom BCM2835. This contains an ARM1176JZFS, with floating point, running at 700Mhz, and a Videocore 4 GPU. The GPU is capable of BluRay quality playback, using H.264 at 40Mbits/s. It has a fast 3D core which can be accessed using the supplied OpenGL ES2.0 and OpenVG libraries.

#### Can it play MPEG-2 videos?

The Raspberry Pi is capable of using hardware acceleration for MPEG-2 and VC-1 playback, but you'll need to buy licence keys at the Raspberry Pi Store to unlock this functionality.

#### Which programming languages can I use?

Python, C/C++, Perl, Java, PHP/MySQL, Scratch and many more that can run under Linux.

#### Troubleshooting:

If you're getting a flashing red PWR LED or random restarts during the booting process it's likely that your PSU or USB cable has problems. The Raspberry Pi is pretty picky and requires a solid 5V / 1000mA power supply. For other issues and more troubleshooting tips check out the extensive overview at the eLinux website: <http://bit.ly/fix-pi>

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