

# GETTING STARTED

## WITH RASPBERRY PI

Creating amazing projects is easy with a Raspberry Pi, but first you need to plug it in and set up Raspbian, the default operating system. This guide will get you up and running in no time

**T**he Raspberry Pi is a wonderful microcomputer that brims with potential.

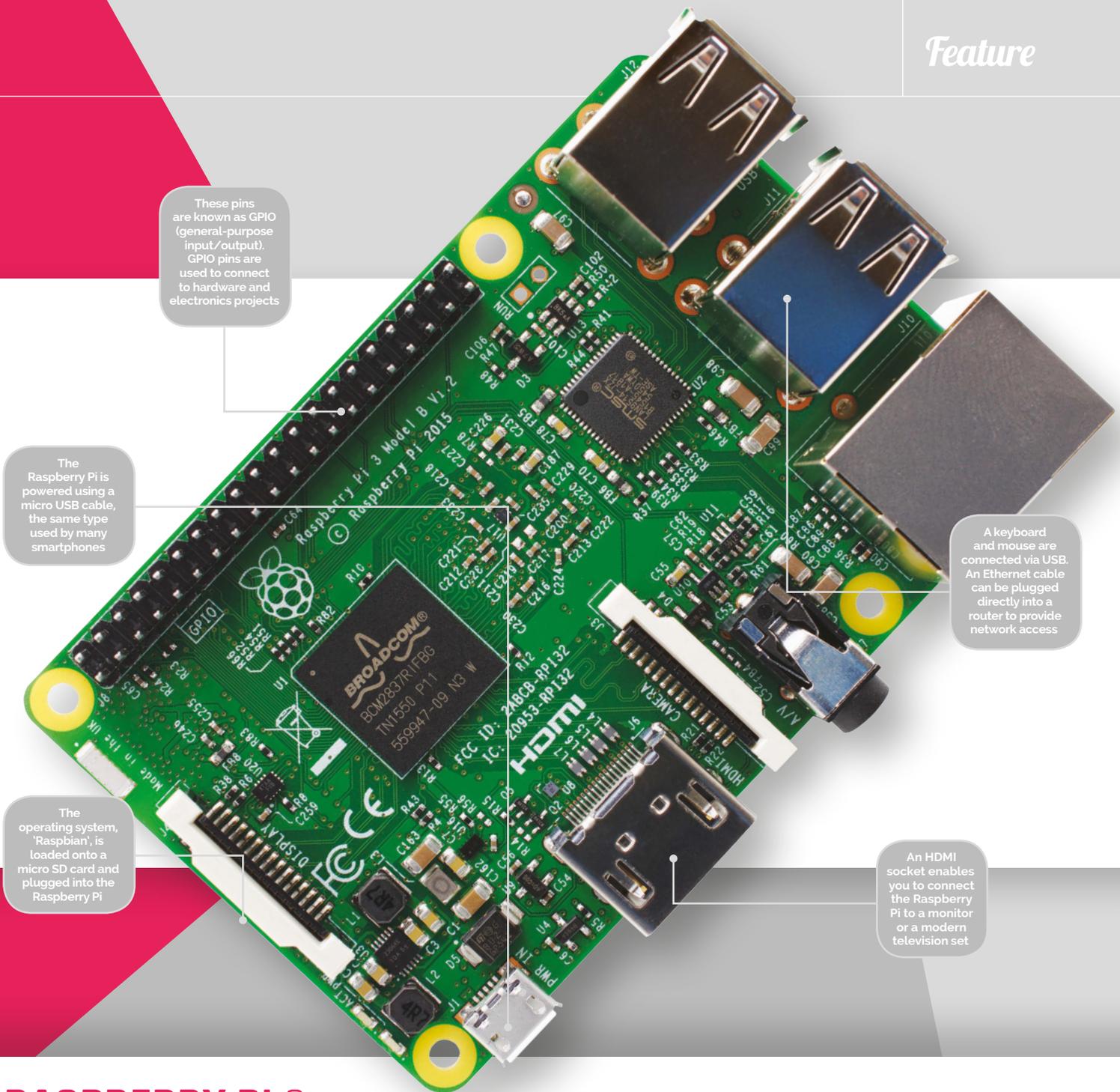
With a Raspberry Pi you can build robots, learn to code, and create all kinds of weird and wonderful projects.

Hackers and enthusiasts have turned Raspberry Pi boards into fully automated weather stations, internet-connected beehives, motorised skateboards, and much more. The only limit is your imagination.

But first, you need to start at the beginning. Upon picking up your Raspberry Pi for the first time, you're faced with a small green board of chips and sockets and may have no idea what to do with

it. Before you can start building the project of your dreams, you'll need to get the basics sorted: keyboard, mouse, display, and operating system.

Creating projects with a Raspberry Pi is fun once you've mastered the basics. So in this guide, we're going to take you from newbie zero to Raspberry Pi hero. Grab your Raspberry Pi and let's get going.



# RASPBERRY PI 3

The Raspberry Pi 3 is the latest model, and the version recommended for most newcomers

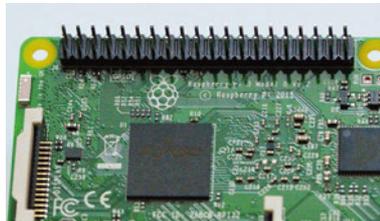
## SD card

On the underside of the Raspberry Pi 3 board is the SD card slot. You preload the operating system onto a micro SD card and use it to boot up the Raspberry Pi.



## Wireless network

The Pi 3 is the first Raspberry Pi to feature built-in wireless LAN and Bluetooth. This enables you to connect to a wireless router and get online without using a WiFi dongle.



## 1.2GHz ARM CPU

Featuring the latest 1.2GHz quad-core ARM CPU (central processing unit), the Raspberry Pi 3 is faster than many smartphones, and powerful enough to be used as a desktop computer.



# RASPBERRY PI

# ZERO

Ultra-low-cost, super-tiny, and incredibly powerful, the Pi Zero is the tiniest Raspberry Pi computer

**T**he Pi Zero is an ultra-low-cost and incredibly small microcomputer packed onto a single board. It's roughly a third the size of the Raspberry Pi 3, and has a teenie price tag (\$5, or around £4).

For all that, the Pi Zero is packed with enough power to handle demanding computer projects.

Despite its diminutive stature, the Pi Zero is no toy. The Pi Zero is a fully fledged microcomputer with

a 1GHz ARM CPU and 512MB RAM. It packs enough technology to run the full version of Raspbian, just the same as the Raspberry Pi 3.

The smaller board is more minimalist than other Raspberry Pi units, which makes it more challenging to set up. But it's a rewarding device that's ideal for creating Internet of Things, wearable, and embedded projects.

To keep the size down, the Pi Zero features a smaller-than-

normal mini HDMI socket. You'll almost certainly need a mini HDMI-to-HDMI adapter or cable to connect the Raspberry Pi to a television or monitor.

Alternatively, hackers can hook up an RCA cable directly to the video headers on the board. RCA cables are the red, white, and yellow plugs that you find on older televisions. This feature makes the Pi Zero a great choice for retro gaming enthusiasts.

## PI ZERO

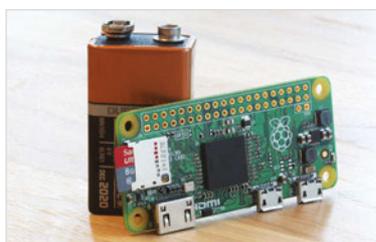
### Powerful processor

The Pi Zero packs a sizzling 1GHz single-core ARM 11 CPU with 512MB RAM. Despite its diminutive size, it's 40 percent faster than the original Raspberry Pi model.



### Tiny form factor

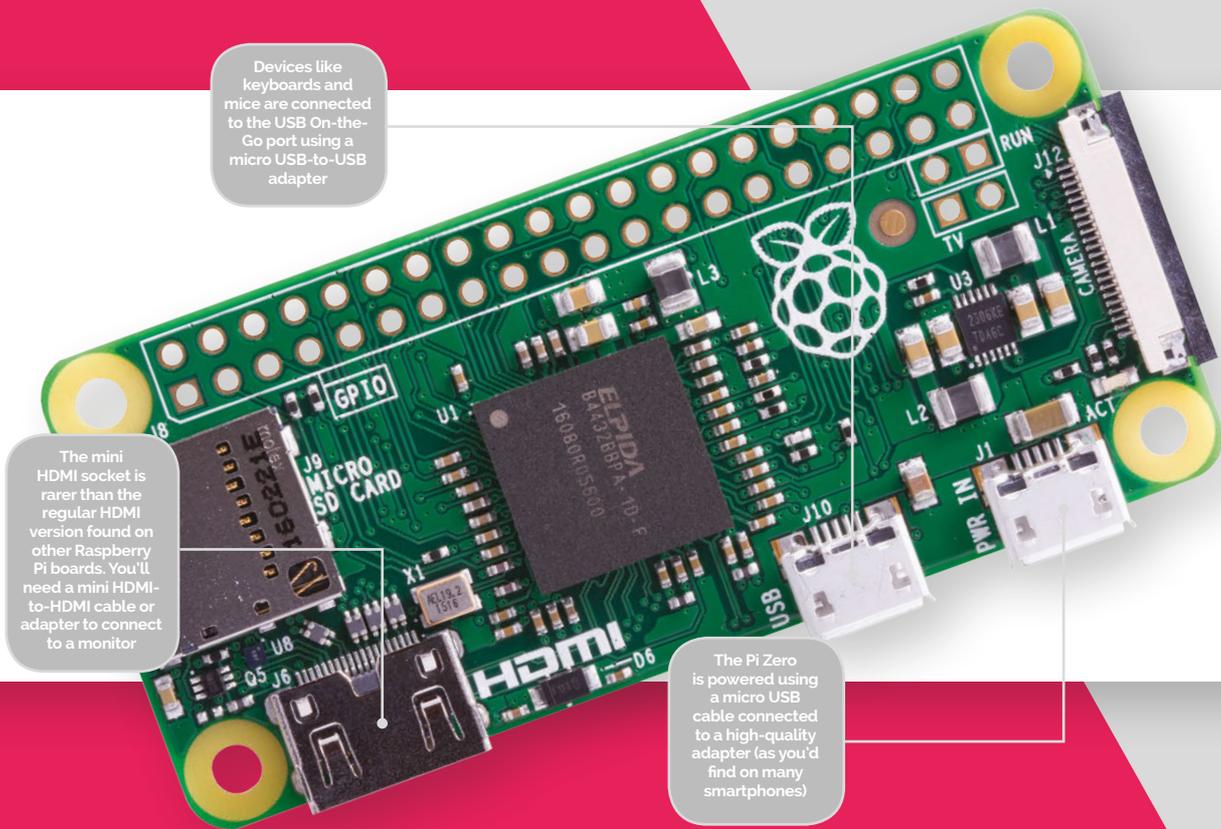
The Pi Zero offers a full computer experience, complete with the Raspbian operating system, and is only a third the size of the original Raspberry Pi.



### GPIO to go

The full GPIO header sits along the side of the Pi Zero board. These holes enable makers to attach hardware to the Pi Zero, and you can experiment with electronics projects.





Devices like keyboards and mice are connected to the USB On-the-Go port using a micro USB-to-USB adapter

The mini HDMI socket is rarer than the regular HDMI version found on other Raspberry Pi boards. You'll need a mini HDMI-to-HDMI cable or adapter to connect to a monitor

The Pi Zero is powered using a micro USB cable connected to a high-quality adapter (as you'd find on many smartphones)

The Pi Zero board uses the same micro USB power input as other Raspberry Pi devices, and you can

use it to turn the Pi Zero into a super low-cost camera for taking photos and recording videos.

Hooking a Pi Zero up to the internet requires either a USB-to-Ethernet adapter or, more commonly, a WiFi dongle.

Amazingly, the Pi Zero even has the full 40-pin GPIO header of the other Raspberry Pi models, but you don't get the pins pre-built onto the board. Instead, you need to solder two 20-pin male headers to the GPIO holes.

Setting up a Pi Zero is slightly more tricky than a Raspberry Pi 3, but it's also a lot of fun. The end result is a super-cheap, super-powerful computer that runs a full operating system.

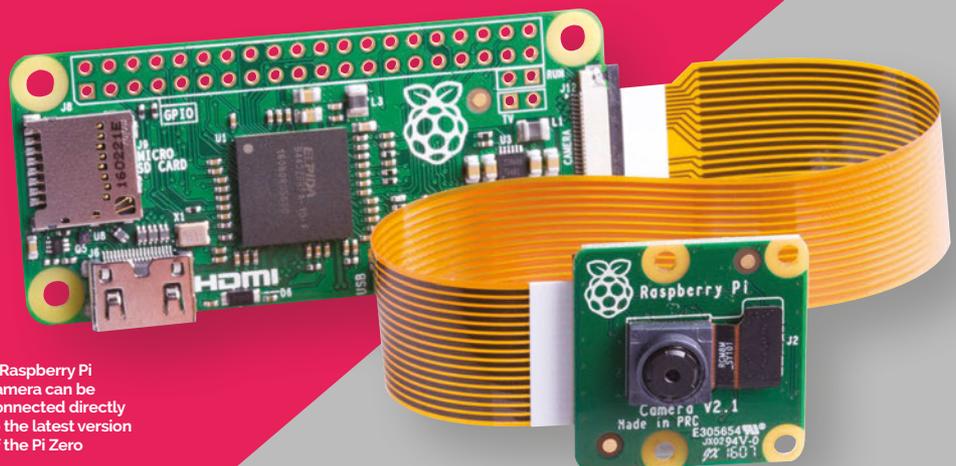
## Ports are minimal on the Pi Zero, and it sports a single USB port that's smaller than a regular one

use an official adapter or salvage a high-quality power supply from a mobile phone (2A output is recommended).

Ports are minimal on the Pi Zero, and it sports a single USB port that's smaller than a regular one. You'll need a micro USB-to-USB adapter to connect your keyboard. You may also want a USB hub to connect a mouse and other devices like a USB camera.

A recent version update, Pi Zero v1.3, has a built-in camera connector. Like the other Raspberry Pi devices, you can connect a Raspberry Pi Camera Module or NoIR Camera Module directly to the Pi Zero. This enables

Thanks to the low power draw of the Pi Zero, this is ideal for time-lapse photography. You just set it up and let it get on with it.



A Raspberry Pi camera can be connected directly to the latest version of the Pi Zero