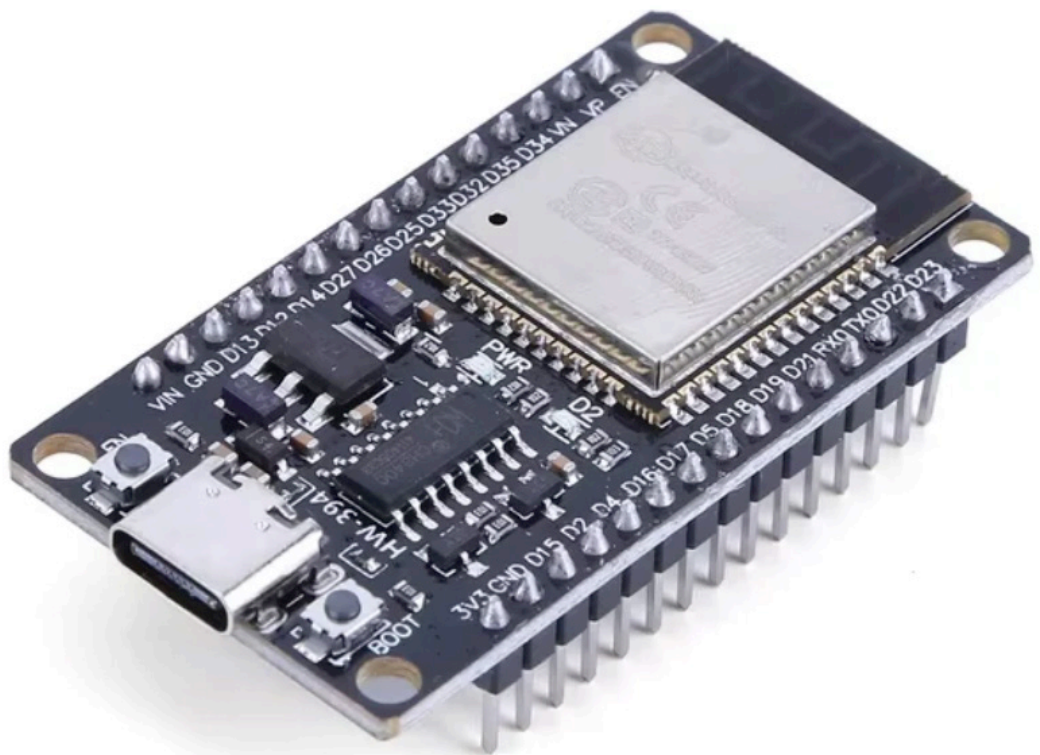


Get Started with ESP32



Hardware Versions

First things first, the expression ESP32 refers to the chip and what we are going to talk about here, is development boards that have an ESP32 chip mounted on them.

The **ESP32 development boards** come in many versions but for getting started, none of it is too critical.

- 1) The full size versions (there are some mini versions) come in 30 pin and 38 pin versions. Unless you are working on a project that needs a load of pins for inputs and outputs, just get a 30 pin version.
- 2) They come with either a USB-C or Micro-USB socket
Get the USB-C version because they are more robust, the plug goes in either way round and is easier to insert.
- 3) Get one with the text displaying the pin functions (GPIO - General Purpose input output pins) printed on the top where you can see them. It just makes life easier.

Those are the main choices. There are other things, such as the memory onboard and the processor used, but again, we don't need to worry about that at this stage.

Ali Express is an OK place to buy from and they typically cost \$5 or less. Why not buy five, to get started. Delivery takes about ten days

You can also get them from Amazon for \$8 - \$12 each - Delivery is 2 days

Communicating with the ESP32

This is important.

Most ESP32 development boards have a USB socket that is used to power the board and also to communicate with it.

The ESP32 does not understand USB-Speak directly and so, each board has a USB to Serial converter chip onboard. There are three different makers of these chips and each one uses it's own driver software. These drivers must be loaded onto your computer before you can talk to the board. Load all three and it covers all the boards that you might buy. The makers of these chips are ...

FTDI

WCH

Silicon Labs

Google is your friend, so just Google

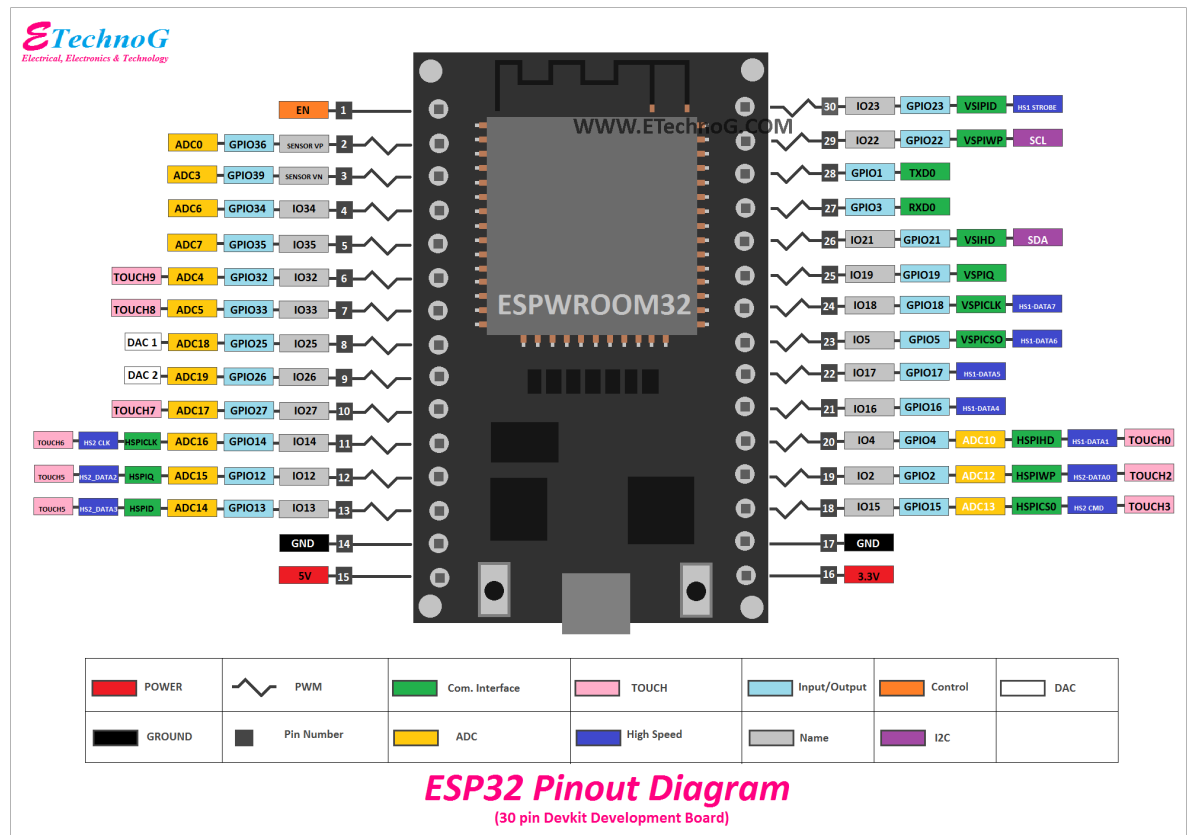
Driver software for FTDI USB to Serial Converter
and

Driver software for WCH USB to Serial Converter
and

Driver software for Silicon Labs USB to Serial Converter

That will take you to the download link and installation instructions for whatever computer you are using. Choose the one appropriate to your machine.

Pinout



You will notice that each pin has several functions. Which function is active is selected within the software. Some pins may not be free to use for general purpose as they are dedicated for specific purposes, such as the I2C bus etc.

The ones that are free to use are GPIO numbers

GPIO 4, 16, 17, 18, 19, 21, 22, 23, 25, 26, 27, 32, and 33

Generally speaking, stick to those pins unless you want to do something special such as Analogue to Digital Conversion, access to data busses or UART. In other words, to switch on LEDs and the like, use pins from the above list.

Writing the Software

The ESP32 can be typically run using C++ and Micro-Python

To get started, download the following two pieces of software

Arduino IDE (used for C++)

Thonny IDE (used for micropython)

The arduino IDE comes with loads of examples that you can use to get started.

Before you can use it with the ESP32, you need to tell it where it can find the board descriptions for the different ESP32 boards which are available. Just google how to do that. It involves copying a link and pasting it into the settings page on the Arduino IDE.

Essentially, the different development boards could have different pin connections on the board and the IDE just needs to know what is connected to the pins.

When using the Arduino IDE you must first go to the **tools menu** and choose your board from the BOARD menu. If you don't see your specific board listed, just choose something generic like 'ESP32 Development Board' near the top of the list. It is not a perfect science.

Then you go to the PORT menu in the Tools menu and select the port from the list provided. If you don't see the ports listed, it is most likely one of the following issues

- 1) The ESP32 is not plugged in
- 2) The cable is for charging only. Cables sold as charging cable, generally are not able to transfer data, You need to make sure that the cable is suitable for exchanging data as well as charging.
- 3) You don't have the correct driver installed.

Your First Program (sketch)

It is traditional that the first program you try is one called the Blink sketch. Sketch is what the scripts are called in Arduino-Speak

First, select you Board and Port from the Tools Menu

Then, you will find the Blink Sketch in

File Menu

Examples

01 Basics

Blink

When you have the Blink sketch open in the IDE, click on the right pointing arrow located at the top left of you window. The sketch will compile first and then upload to your ESP32. At this point, the onboard LED will start to flash.

Congratulations! You are running your first sketch - You Got Started

