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› AYWHP ESP32 Development Board (Model YY1-0112) User Manual

## AYWHP YY1-0112

# AYWHP ESP32 Development Board (Model YY1-0112) User Manual

## INTRODUCTION

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The AYWHP ESP32 Development Board is a versatile microcontroller module designed for Internet of Things (IoT) applications. It integrates Wi-Fi and Bluetooth capabilities, powered by a dual-core LX6 microprocessor. This board features a CP2012 USB-to-serial chip for easy communication and is compatible with various development environments, including Arduino IDE and Lua.

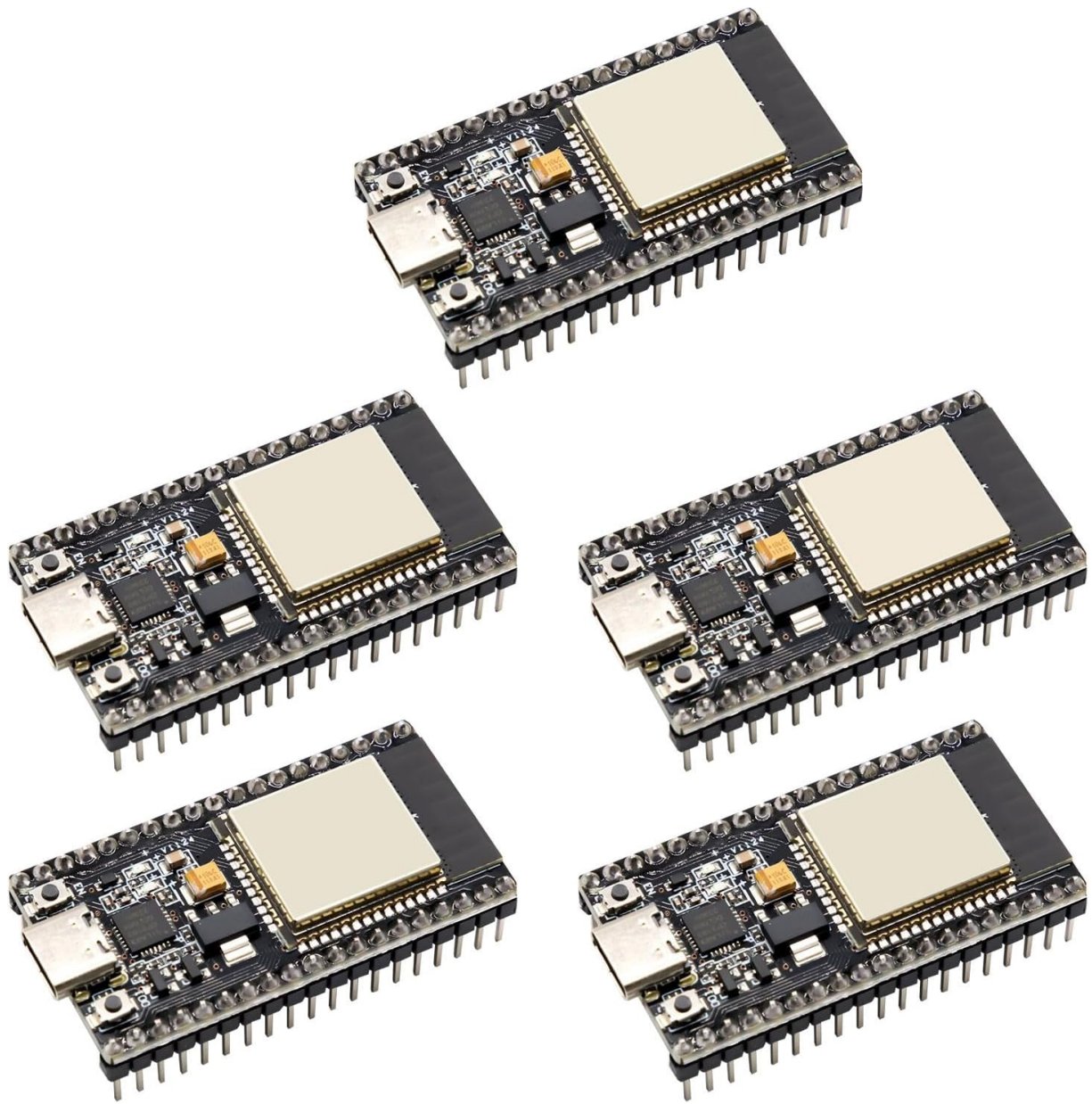


Image: Overview of the AYWHP ESP32 Development Board, highlighting its compact design and key features.

## PRODUCT FEATURES

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- **Integrated Connectivity:** Features ESP32-WROOM-32 chip with dual-mode Bluetooth 4.2 and Wi-Fi (IEEE 802.11 b/g/n) for robust wireless communication.
- **USB-to-Serial Communication:** Equipped with a CP2012 USB-to-serial chip for seamless data exchange with computers and microcontrollers, ensuring compatibility with Arduino.
- **Programming Flexibility:** Supports Lua scripting language, Arduino IDE, and MicroPython, simplifying the development process for various user levels.
- **Compact Design:** Small form factor allows for easy integration into diverse projects.
- **Operating Modes:** Supports AP (Access Point), STA (Station), and AP+STA coexistence modes for flexible network configurations.
- **Reliable Performance:** Built with TSMC 40nm low-power technology, offering high performance with minimal power consumption.
- **Dual-Core Processor:** Utilizes a dual-core LX6 microprocessor for efficient task handling.
- **Memory:** Includes 4MB Flash memory.
- **GPIO Pins:** Provides 32 General Purpose Input/Output (GPIO) pins.

- **Power Options:** Can be powered via Micro USB (5V) or VIN pin (7-12V).

# Module Details

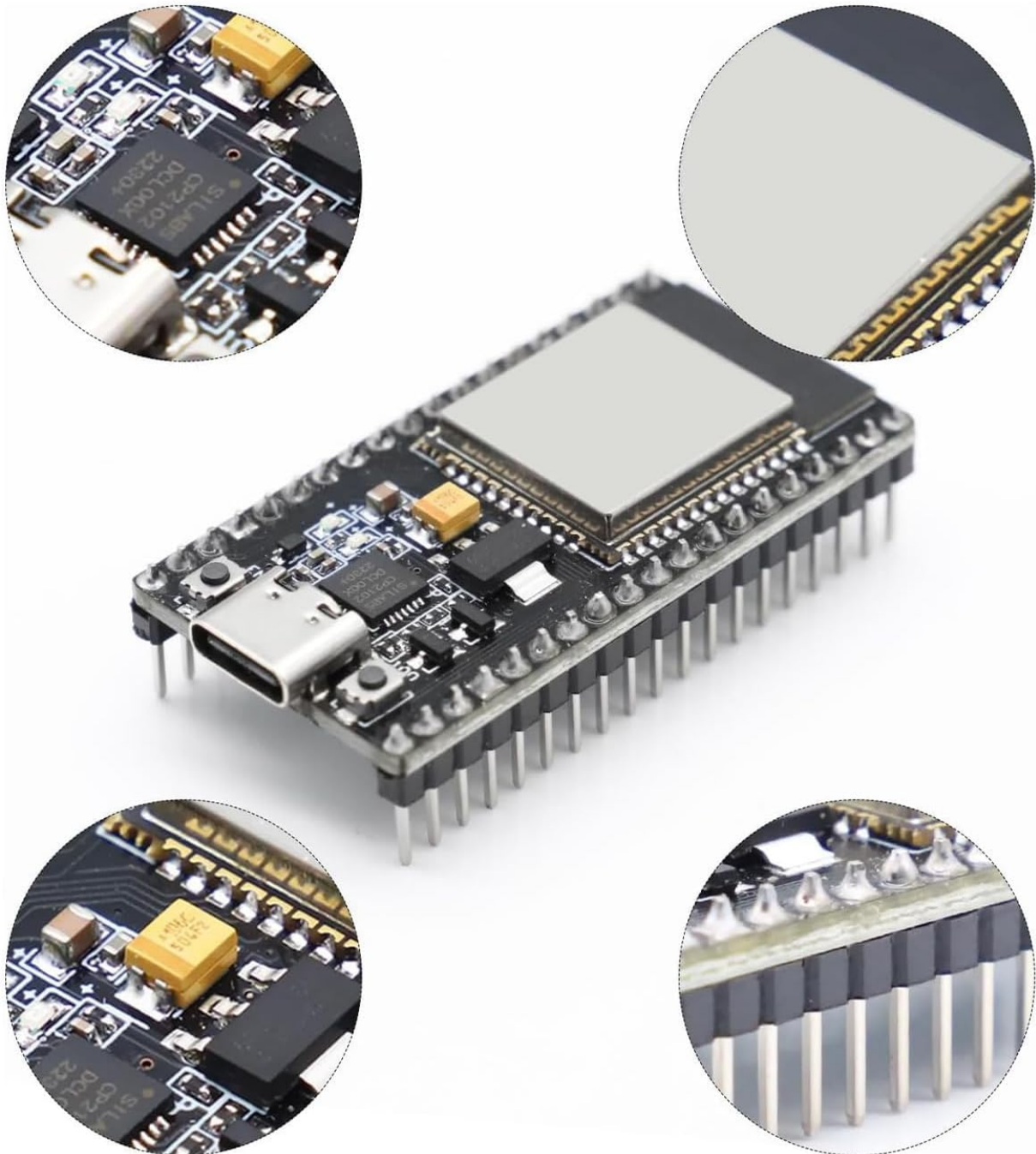


Image: Detailed views of the ESP32 Development Board, showcasing the CP2012 USB-to-serial chip, the main ESP32 module, and other surface-mounted components.

## SETUP GUIDE

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### 1. Initial Inspection

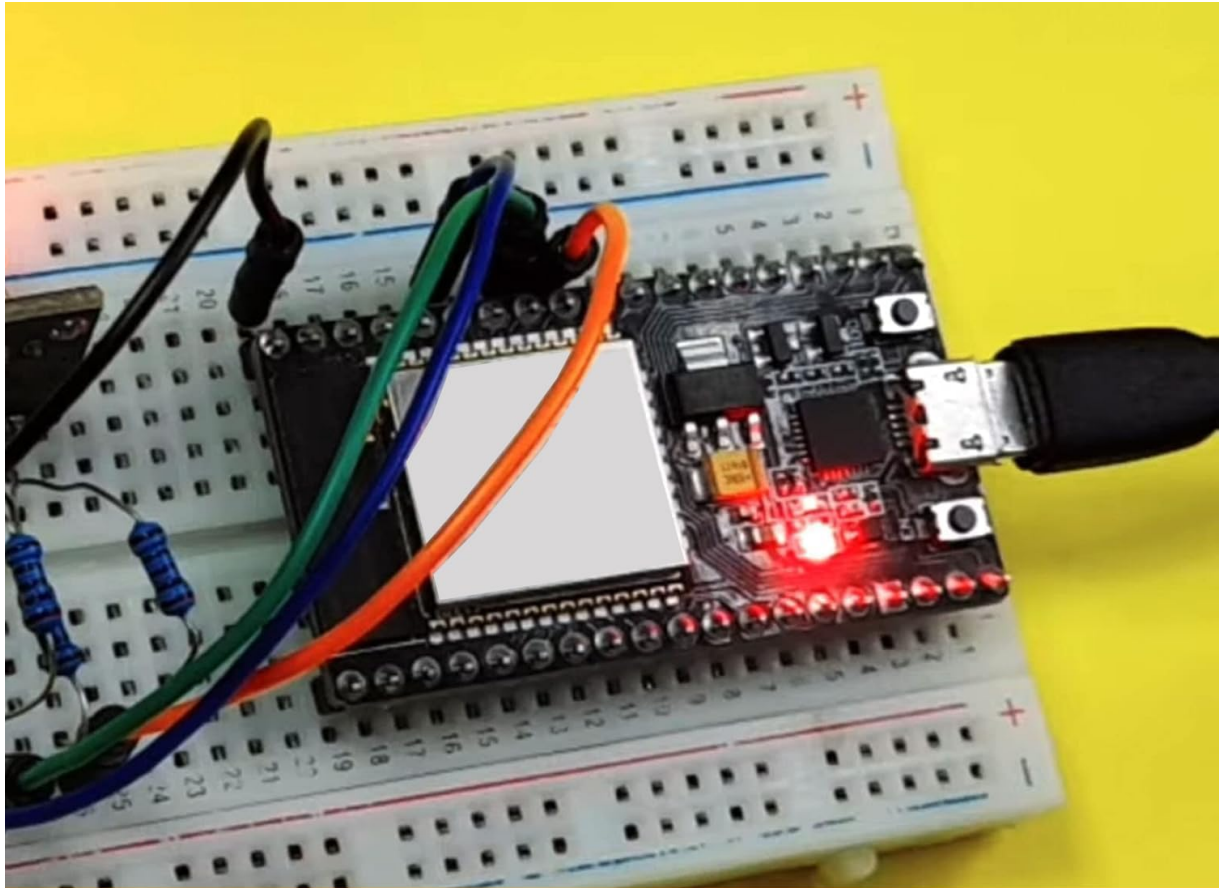
Before connecting the board, visually inspect it for any physical damage or bent pins. Ensure all components appear securely attached.

### 2. Driver Installation (if necessary)

The CP2012 chip typically requires a USB-to-serial driver. For Windows, macOS, or Linux, download and install the appropriate CP2012 driver from the [Silicon Labs website](#). Most modern operating systems may install this automatically upon connection.

### 3. Connecting the Board

Connect the ESP32 Development Board to your computer using a USB-C cable. The board will draw power from the USB connection.



**Programming: Easy to Program with Arduino Ide**  
**Wifi + bluetooth: Great for Home Automation Projects**  
**Sound Quality: Good Solder Connections**

Image: ESP32 Development Board connected to a breadboard, demonstrating a typical setup for programming and prototyping. The USB-C port is visible, providing power and data connection.

### 4. Development Environment Setup

To program the ESP32 board, you will need a suitable Integrated Development Environment (IDE). Popular choices include:

- **Arduino IDE:** Download and install the Arduino IDE. Then, add ESP32 board support by navigating to File > Preferences, adding the ESP32 board manager URL, and installing the ESP32 boards package from Tools > Board > Boards Manager.
- **PlatformIO:** A powerful extension for VS Code that supports ESP32 development.
- **MicroPython:** Install MicroPython firmware onto the ESP32 board and use a serial terminal or IDE like Thonny.

- **Lua:** Utilize the NodeMCU firmware for Lua scripting.

## 5. First Program (Blink LED)

A common first program is to make an LED blink. Refer to the documentation of your chosen development environment for specific instructions on uploading a "Blink" sketch or script to the ESP32 board.

## OPERATING INSTRUCTIONS

### Powering the Board

The ESP32 board can be powered via its USB-C port (5V) or through the VIN pin (7-12V). Ensure the power supply voltage is within the specified range to prevent damage.

### GPIO Pin Usage

The board features 32 GPIO pins. These pins can be configured as digital inputs/outputs, analog inputs, PWM outputs, or for various communication protocols (I2C, SPI, UART).

## Module Pins

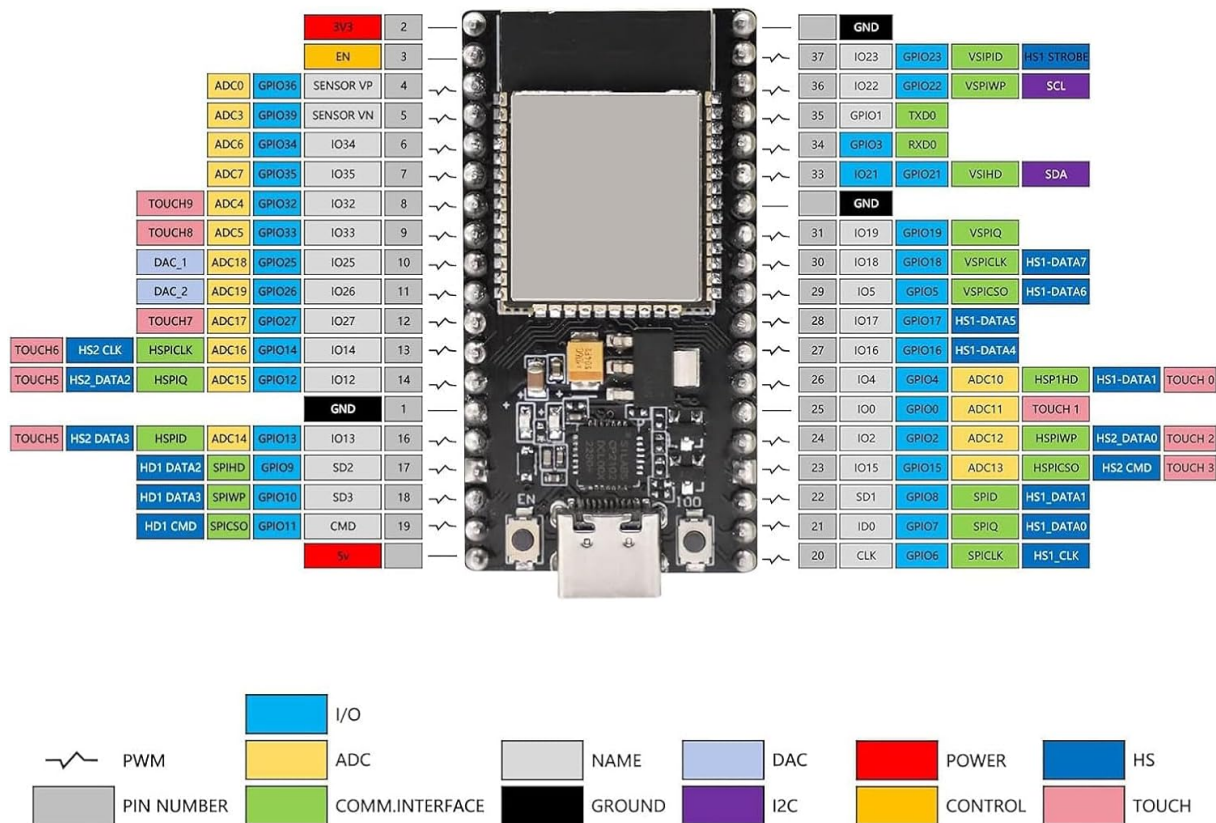


Image: Detailed pinout diagram of the ESP32 Development Board, illustrating the function of each of the 38 pins for various applications.

## Wi-Fi and Bluetooth Operation

The ESP32 supports Wi-Fi (2.4 GHz) and Bluetooth 4.2 (including BLE). These can be used for network connectivity, data transfer, and creating IoT solutions. Programming examples for Wi-Fi and Bluetooth are widely available for Arduino IDE and other environments.

## Programming and Uploading Code

To upload code, connect the board via USB-C. In your IDE, select the correct board type (e.g., "ESP32 Dev Module") and the serial port corresponding to the CP2012 chip. Some boards may require holding down the "BOOT" button while pressing "RESET" to enter programming mode, though many modern ESP32 boards handle this automatically.

## MAINTENANCE

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### Cleaning

Keep the board clean and free from dust and debris. Use a soft, dry brush or compressed air to gently clean the surface. Avoid using liquids or harsh chemicals.

### Storage

Store the ESP32 board in an anti-static bag when not in use to protect it from electrostatic discharge (ESD). Keep it in a dry environment, away from extreme temperatures and humidity.

### Handling

Always handle the board by its edges to avoid touching components or pins, which can cause damage or introduce static electricity.

## TROUBLESHOOTING

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### Board Not Detected by Computer

- **Driver Issue:** Ensure the CP2012 USB-to-serial driver is correctly installed.
- **Cable Issue:** Try a different USB-C cable. Some cables are for charging only and do not support data transfer.
- **Port Issue:** Try a different USB port on your computer.

### Failed to Upload Code

- **Incorrect Port/Board:** Verify that the correct serial port and board type are selected in your IDE.
- **Programming Mode:** If automatic programming fails, try manually putting the board into programming mode (hold BOOT, press and release RESET, then release BOOT).
- **Power Supply:** Ensure the board is receiving sufficient power.

### Wi-Fi/Bluetooth Connectivity Issues

- **Code Errors:** Double-check your Wi-Fi or Bluetooth code for any typos or logical errors.
- **Antenna:** Ensure the onboard antenna is not obstructed.
- **Signal Strength:** Check the distance to your Wi-Fi router or Bluetooth device.

### Unexpected Behavior

- **Power Fluctuations:** Ensure a stable power supply.
- **Pin Conflicts:** Verify that your code does not have conflicting pin assignments.
- **Component Damage:** Inspect the board for any visible damage to components.

## TECHNICAL SPECIFICATIONS

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| Feature                  | Detail                                  |
|--------------------------|-----------------------------------------|
| Chipset                  | ESP32 (Dual-core LX6 microprocessor)    |
| Main Frequency           | 240MHz                                  |
| Flash Memory             | 4MB                                     |
| Wi-Fi Standard           | IEEE 802.11 b/g/n (2.4 GHz)             |
| Bluetooth Version        | Bluetooth 4.2 and BLE                   |
| I/O Ports                | 32 GPIO pins                            |
| Operating Voltage        | 3.3V                                    |
| Input Voltage Range      | 5V (via USB-C) or 7-12V (via VIN pin)   |
| Power Supply Interface   | USB-C or VIN pin                        |
| Dimensions               | Approx. 51mm x 25.5mm (2.00in x 1.00in) |
| Development Environments | Arduino IDE, Lua, MicroPython           |
| USB-to-Serial Chip       | CP2012                                  |

Physical dimensions of the module:

# Module Size

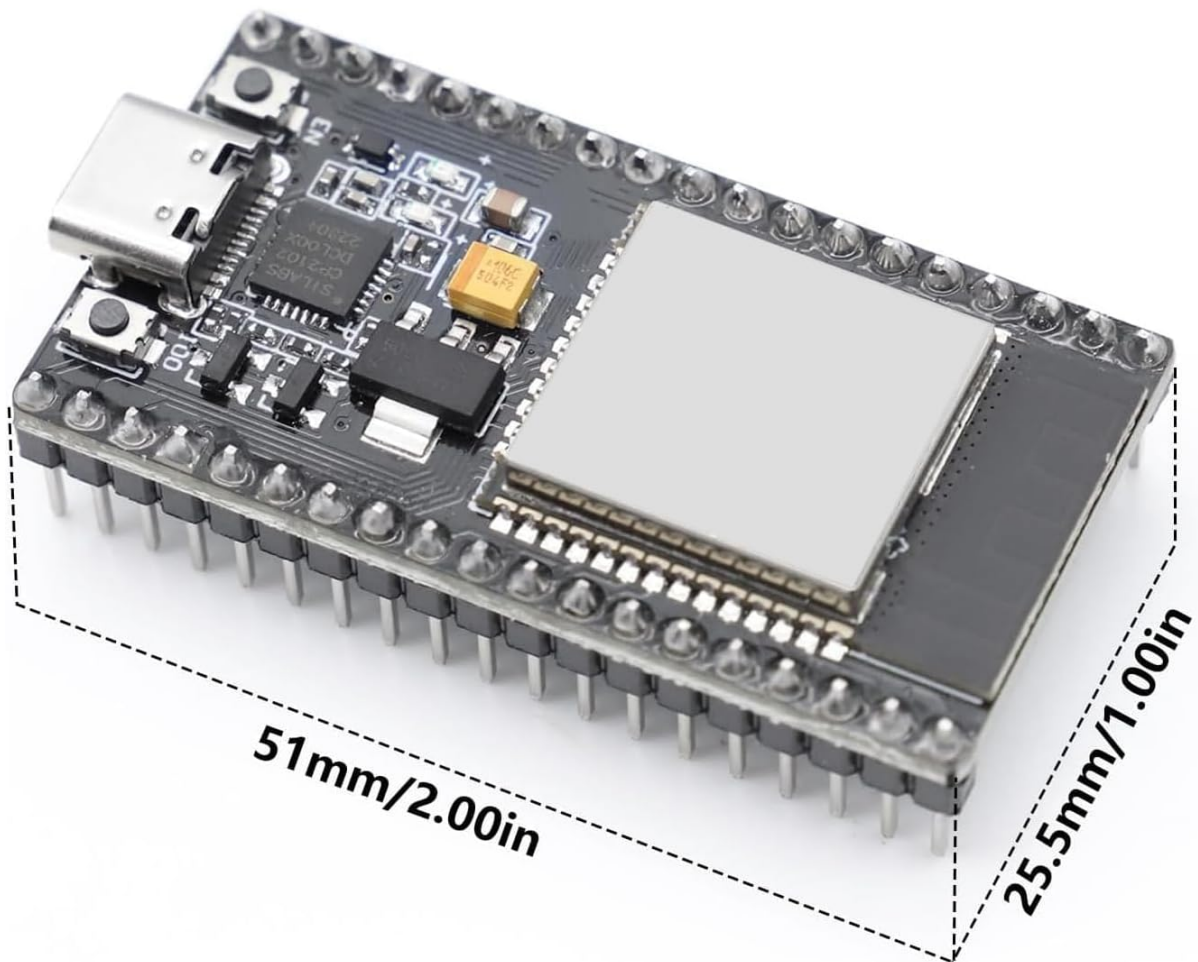


Image: ESP32 Development Board with dimensions indicated as 51mm (2.00in) in length and 25.5mm (1.00in) in width.

## WHAT'S IN THE BOX

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- 5 x ESP32 Development Board with CP2012 Chip

*(Note: USB-C cables are typically not included and must be purchased separately.)*

## WARRANTY AND SUPPORT

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### Warranty Information

This product comes with a standard manufacturer's warranty. Please refer to the seller's return policy or contact the manufacturer directly for specific warranty terms and conditions. Keep your proof of purchase for warranty claims.

### Technical Support

For technical assistance, programming guides, or troubleshooting beyond this manual, please refer to online communities and resources dedicated to ESP32 development. Many forums and documentation sites offer extensive support for ESP32 users.

