YEJMKJ ESP-WROOM-32 ESP32 ESP-32S

YEJMKJ ESP-WROOM-32 ESP32 ESP-32S Development Board Instruction Manual

Model: ESP-WROOM-32 ESP32 ESP-32S

INTRODUCTION

The YEJMKJ ESP-WROOM-32 ESP32 ESP-32S Development Board is a versatile microcontroller designed for a wide range of applications, including Internet of Things (IoT) projects and smart device control. It integrates dual-mode WiFi and Bluetooth capabilities, offering robust wireless communication. This board features a powerful dual-core CPU and a Type-C USB interface for easy connectivity and programming.

PRODUCT OVERVIEW

The ESP-WROOM-32 ESP32 ESP-32S Development Board is equipped with essential components for rapid prototyping and development.

WIRELESS CONNECTIVITY

With built-in WiFi and Bluetooth capabilities, the board allows seamless and reliable wireless communication, making it ideal for IoT projects and smart device control.
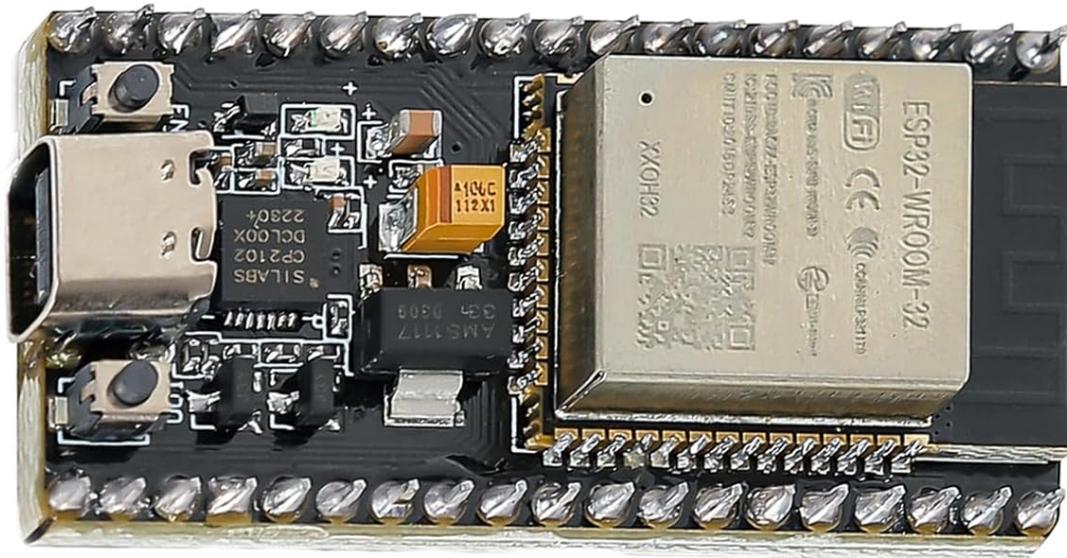

Figure 1: Top-down view of the YEJMKJ ESP-WROOM-32 ESP32 ESP-32S Development Board, highlighting its compact design and pin layout.

CP2102 CHIP

Unlock effortless and dependable connectivity with CP2102 chip, enabling seamless communication and reliable data transfer
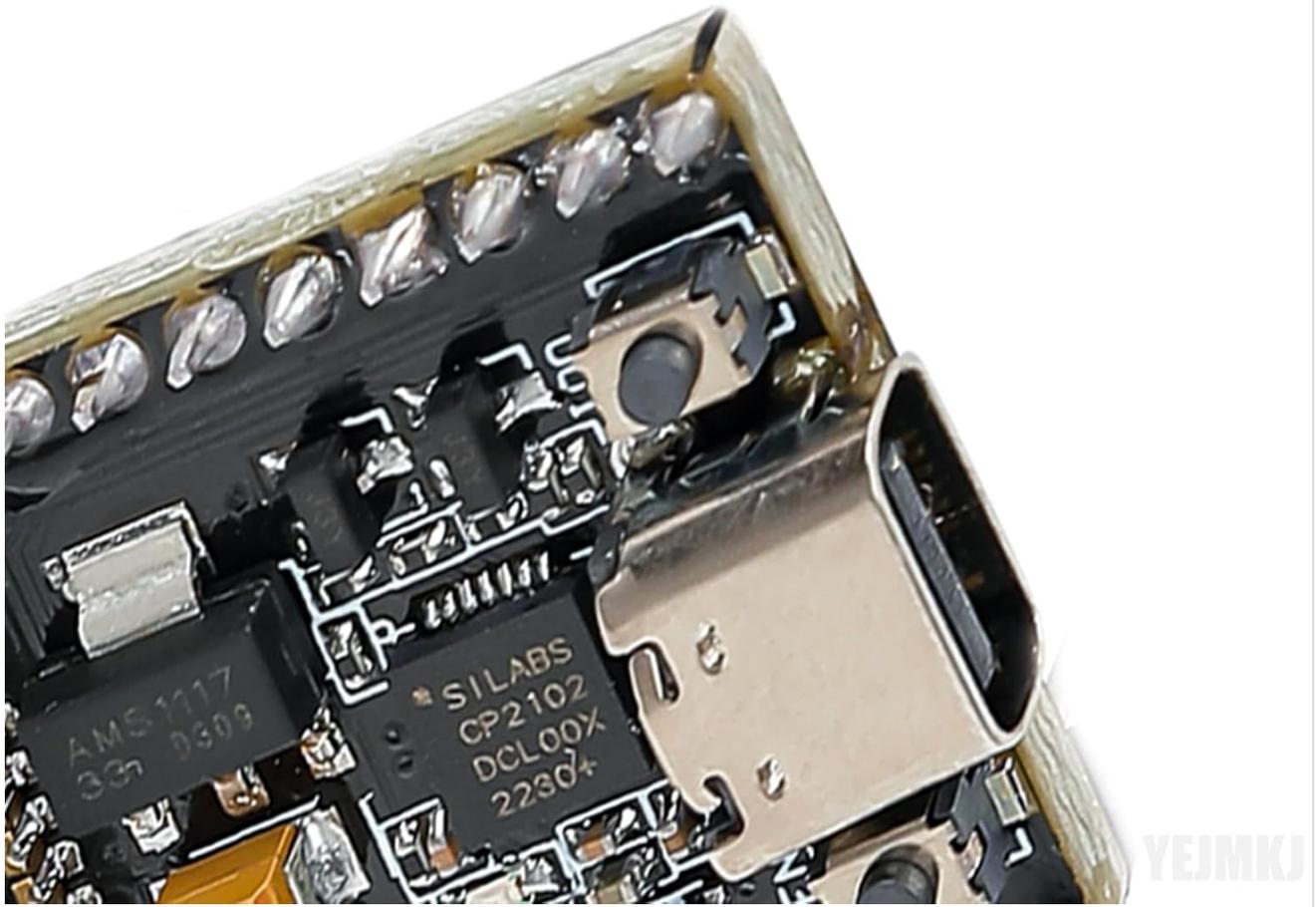

Figure 2: Close-up of the Type-C USB interface, enabling convenient data communication, power supply, and firmware debugging/uploading.

Figure 3: Detail of the CP2102 chip, which facilitates reliable serial communication and data transfer for the development board.
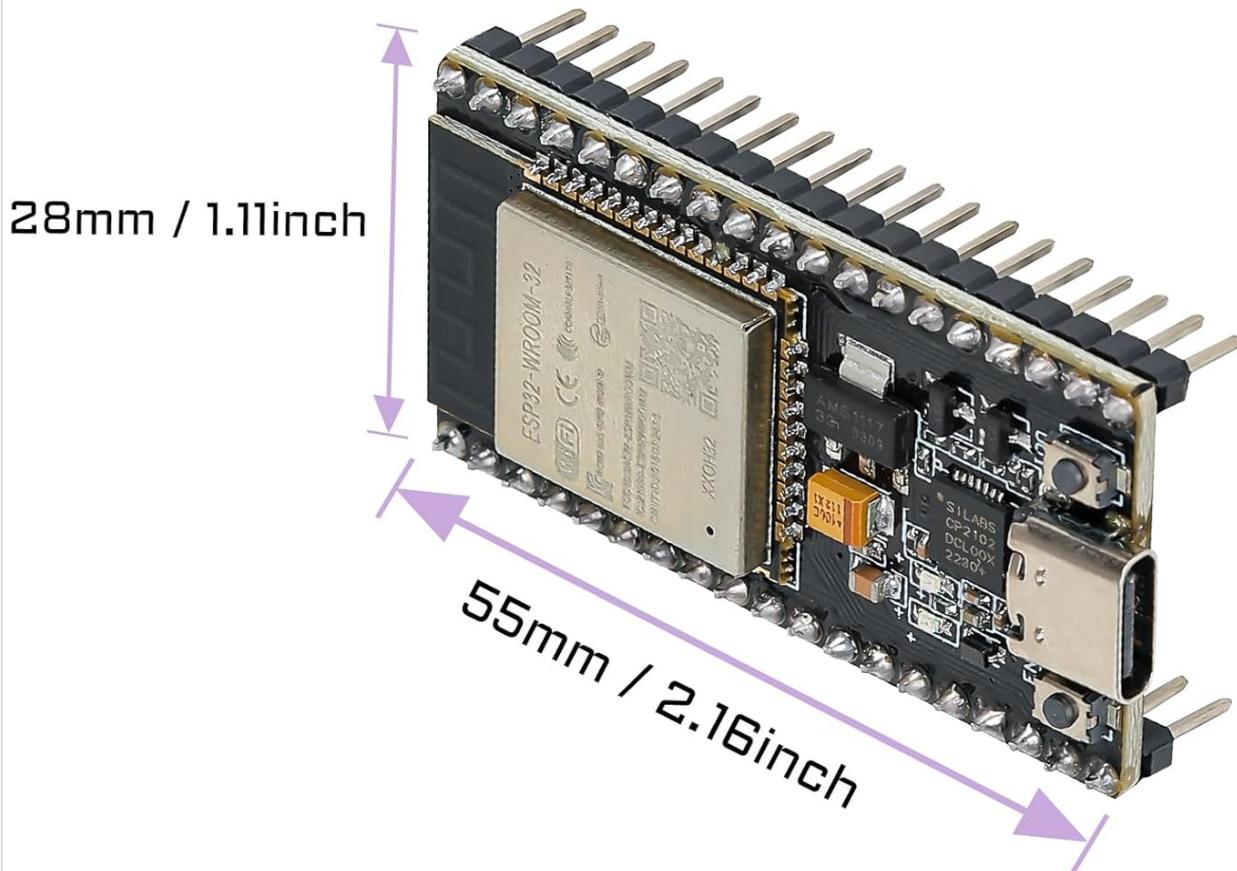
Figure 4: Product dimensions, showing the compact size of the development board (approximately 55mm x 28mm).

KEY FEATURES

- **Multiple Functions:** Integrates various peripherals including capacitive touch sensors, Hall sensors, low noise amplifiers, SD card interface, Ethernet interface, and high-speed SDIO/SPI, UART, I2S, I2C.
- **High Performance:** Features a powerful dual-core CPU for efficient wireless WiFi and Bluetooth connectivity applications.
- **Wireless Connectivity:** Built-in WiFi and Bluetooth capabilities enable seamless and reliable wireless communication, suitable for IoT projects.
- **Energy Efficient:** Designed for low power consumption, ensuring extended battery life for portable and low-power applications.
- **Easy Integration:** Compatible with a wide range of development platforms and programming languages, including Arduino IDE, simplifying project integration and reducing development time.

Setup and Installation

To begin using your YEJMKJ ESP-WROOM-32 ESP32 ESP-32S Development Board, follow these general steps for initial setup and connection.

Connecting to Your Computer

1. Connect the development board to your computer using a Type-C USB cable.
2. Ensure the necessary USB-to-Serial drivers (e.g., CP210x drivers) are installed on your computer. These drivers are typically available from the chip manufacturer's website.
3. The board should be recognized as a serial port by your operating system.

Integrated Development Environment (IDE) Setup

The ESP32-S development board is compatible with the Arduino IDE. To set up your Arduino IDE for ESP32 development:

1. Open the Arduino IDE.
2. Go to **File > Preferences**.
3. In the "Additional Boards Manager URLs" field, add the ESP32 board manager URL.
4. Go to **Tools > Board > Boards Manager...**
5. Search for "ESP32" and install the "esp32 by Espressif Systems" package.
6. Select your specific ESP32 board (e.g., "ESP32 Dev Module") from **Tools > Board**.
7. Select the correct serial port for your connected board from **Tools > Port**.

Video 1: An overview of the ESP32 Development Board, demonstrating its physical aspects and potential applications.

Programming and Operation

This section covers the basics of programming and operating your ESP-WROOM-32 ESP32 ESP-32S Development Board.

Flashing Firmware

To upload your code or firmware to the ESP32 board, you will typically use the Arduino IDE or Espressif's flash tool.

Figure 5: Screenshot illustrating the process of flashing firmware to the ESP32 board using a dedicated flash tool, showing configuration options and progress.

Debugging

Debugging is crucial for identifying and resolving issues in your code. Tools like SecureCRT can be used to monitor output from the UART0 port.


```
Flash address                              Note: If you want to flash the firmware we
                                           provided (Only one bin file), such as
The images flash to the address list below:
                                           _LuaNode_201701180951.bin_, the  only one
For  ESP8266 :                             bin file flash started from 0x1000

    • blank.bin --> 0xfe000                For ESP31B :
    • esp_init_data_default.bin -- > 0x7c000
    • 0x00000.bin --> 0x00000                  • blank.bin --> 0xfe000
    • 0x40000.bin --> 0x40000                  • blank.bin --> 0xfe000
                                               • boot.bin --> 0x00000
For ESP32 :                                    • drom0.bin --> 0x04000
                                               • irom0_flash.bin --> 0x40000
    • bootloader.bin --> 0x1000
    • partitions-LuaNode.bin --> 0x8000    Note: The baudrate to flash for Esp31B must
    • LuaNode.bin --> 0x10000              be 230400, while the default baudrate for
                                           Esp8266 is 115200, this can be changed.
```
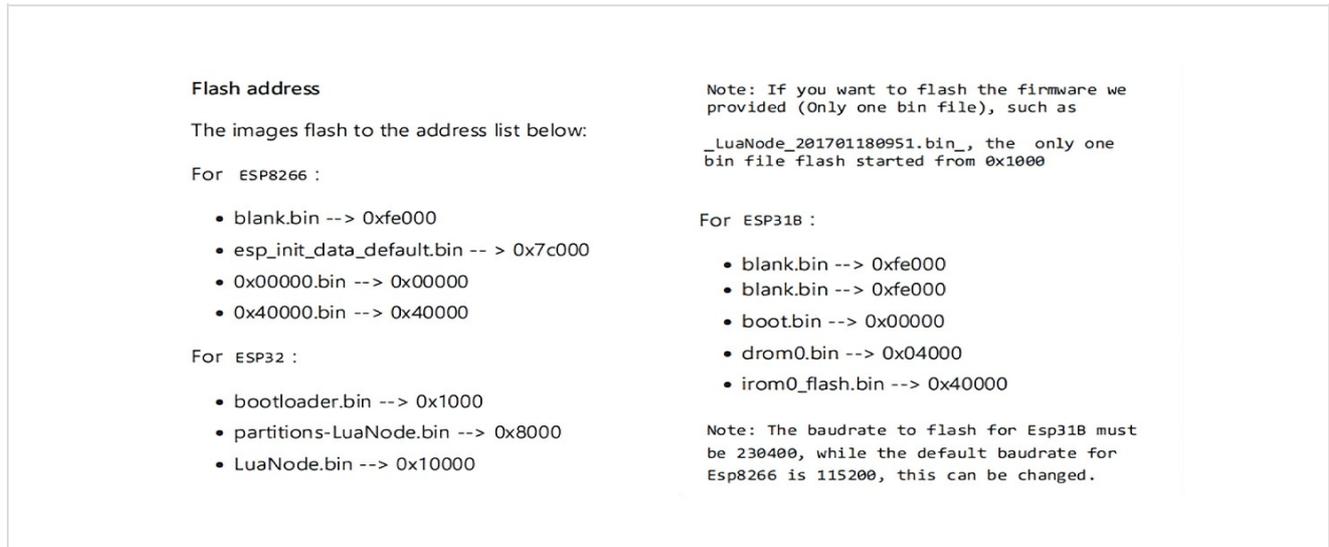
Figure 6: Screenshot demonstrating SecureCRT settings for monitoring UART0 output, including serial port configuration for debugging ESP32 applications.

Example Applications

The ESP32 platform supports various applications, from simple tasks to complex IoT solutions.

- **Basic Task Creation:** Example code for creating an operating system task.
- **WiFi Killer:** A sample application demonstrating WiFi disconnection.
- **Wifilister:** Lists all access points and connected clients, sending data to an Android device via OTG.
- **ESP32-Camera:** An application to control a camera module with ESP32.
- **ESP32 BLE LED Controller:** Sample to create BLE client and server for LED control.
- **ESP32 Communicate with nRF51822 via BLE:** Example for BLE communication between ESP32 and nRF51822.

Video 2: A brief demonstration of the ESP-32S Development Board in action, showcasing its functionality.

SPECIFICATIONS

Feature	Detail
Brand	YEJMKJ
Model Name	ESP32 ESP-32S
Processor Brand	Espressif Systems
Number of Processors	2
Wireless Type	Bluetooth, Wi-Fi
Connectivity Technology	Bluetooth, Ethernet, USB, Wi-Fi
Operating System	Linux (compatible)

RAM	LPDDR4
Item Weight	0.528 ounces
Product Dimensions (LxWxH)	2.05 x 1.18 x 0.59 inches
Included Components	CD (for drivers/software)

TROUBLESHOOTING

- **Board Not Recognized:** Ensure all necessary USB-to-Serial drivers (e.g., CP210x) are correctly installed. Try a different USB port or cable.
- **Flashing Errors:** Verify that the correct board and serial port are selected in your IDE. Check baud rate settings. Ensure the board is in flashing mode (often by holding the BOOT button while connecting or resetting).
- **Pin Spacing/Compatibility:** Note that the pin spacing on some ESP32-S boards may not be standard for all breadboards or breakout boards. Verify compatibility with your specific accessories before use.
- **Intermittent Connectivity:** For wireless applications, ensure the board is within range of your WiFi or Bluetooth network. Check for interference from other electronic devices.
- **Device Not Responding (DOA):** If the board is completely inoperative upon arrival, contact customer support for assistance.

MAINTENANCE

To ensure the longevity and optimal performance of your YEJMKJ ESP-WROOM-32 ESP32 ESP-32S Development Board, consider the following maintenance tips:

- **Handle with Care:** Avoid static discharge by handling the board on an anti-static mat or by grounding yourself.
- **Keep Clean:** Regularly clean the board with a soft, dry brush or compressed air to remove dust and debris. Avoid using liquids.
- **Storage:** Store the board in a dry, cool environment, away from direct sunlight and extreme temperatures. Use anti-static bags if storing for extended periods.
- **Power Supply:** Always use a stable and appropriate power supply (typically 5V via USB or VIN pin) to prevent damage.

WARRANTY AND SUPPORT

For warranty information, technical support, or any inquiries regarding your YEJMKJ ESP-WROOM-32 ESP32 ESP-32S Development Board, please refer to the official YEJMKJ website or contact their customer service directly. Keep your purchase receipt for warranty claims.