DWEII ESP32-DevKitC-32

DWEII ESP32 Development Board User Manual

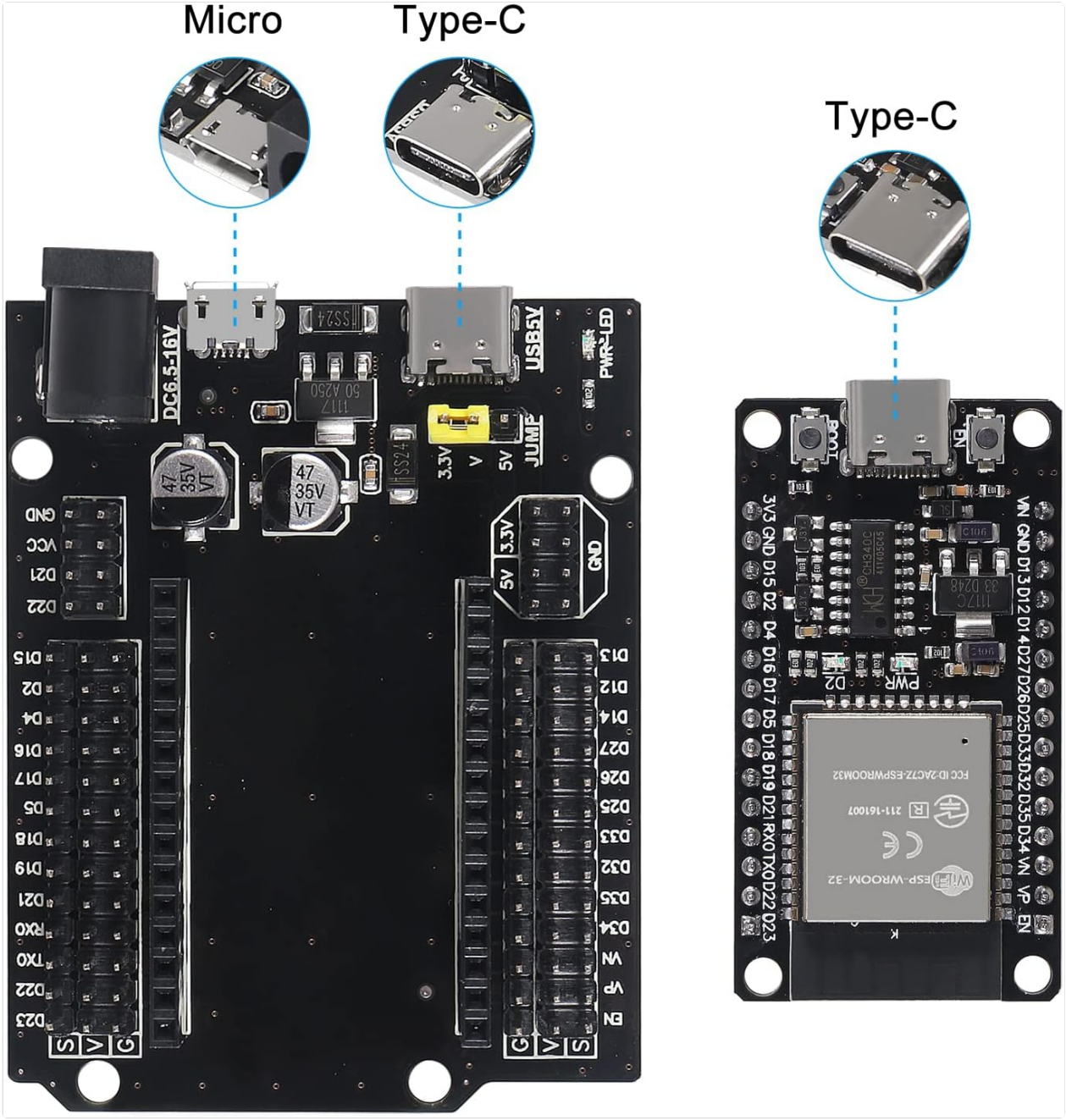
Model: ESP32-DevKitC-32

1. Product Overview

The DWEII ESP32 Development Board (ESP32-DevKitC-32) is a versatile microcontroller board designed for various IoT and embedded applications. It integrates Wi-Fi and Bluetooth capabilities, making it suitable for projects requiring wireless communication. This manual provides essential information for setting up, operating, and maintaining your development board.

Key Features:

- **Development Board Model:** ESP32-DevKitC-32
- **Module Model:** ESP32-WROOM-32
- **Main Control Chip:** ESP32-DOWDQ6-V3 dual-core 32-bit MCU with integrated Wi-Fi and Bluetooth
- **Memory:** Integrated 520KB SRAM, 448KB ROM, 16KB SRAM in RTC; 4MB external storage
- **USB Driver Chip:** CH340C for reliable system compatibility and download speed
- **Power Supply Options:** VIN external wide voltage input (5-12V), USB power supply, external 3.3V power supply
- **Compatibility:** Supports programming with Arduino IDE, Mixly, Mind+, and Python



This image displays the DWEII ESP32 Development Board (right) and its accompanying expansion board (left). It highlights the Micro USB port on the expansion board and the Type-C USB ports on both the development board and the expansion board, indicating various connectivity options.

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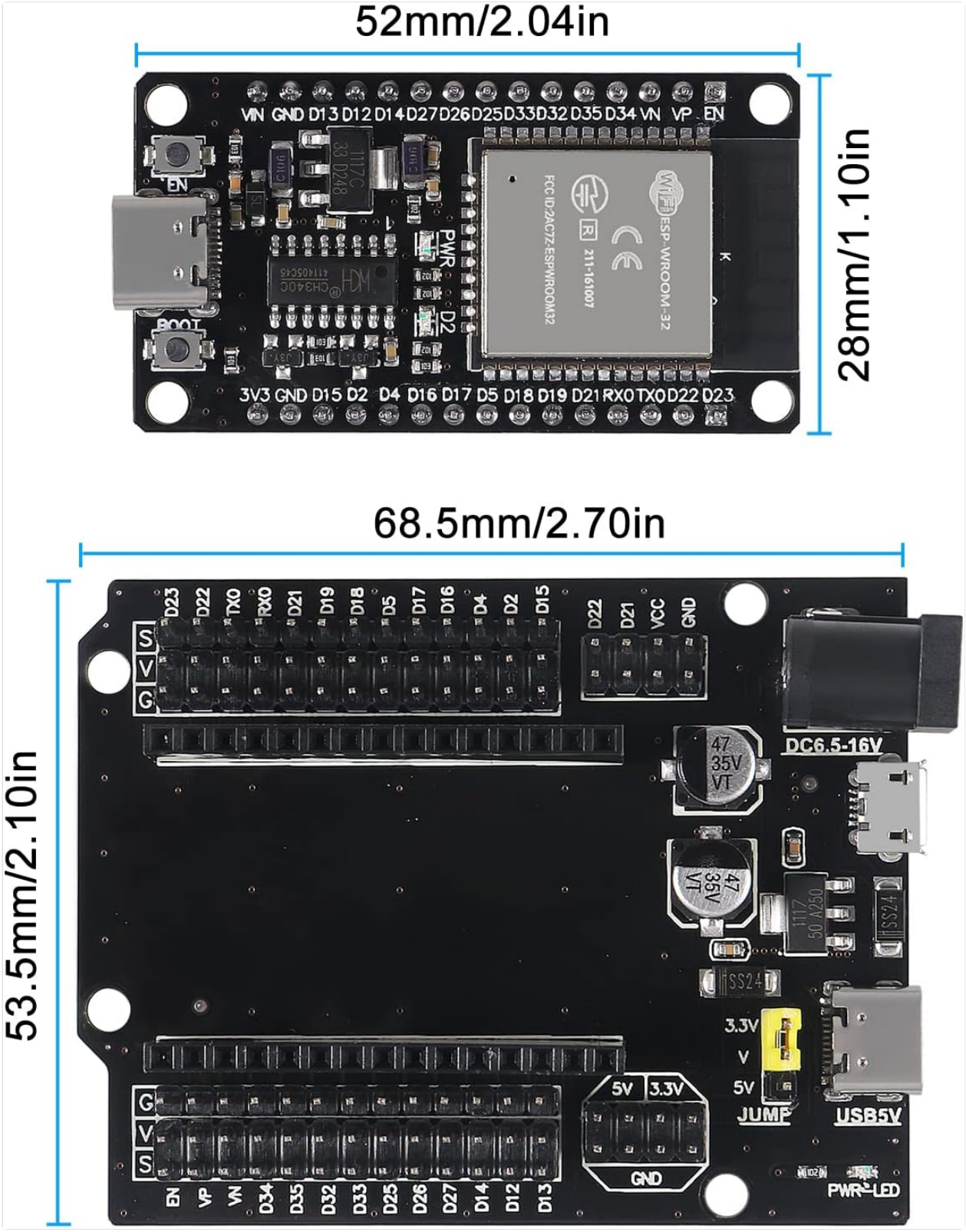
2. Components and Dimensions

The DWEII ESP32 Development Board package includes the ESP32-DevKitC-32 module and a compatible expansion board. Understanding the physical layout and dimensions is crucial for integration into your projects.



This image provides the physical dimensions of both the DWEII ESP32 Development Board (top) and the expansion board (bottom). The ESP32 board measures 52mm (2.04in) by 28mm (1.10in), while the expansion board measures 68.5mm (2.70in) by 53.5mm (2.10in).

Board Components:

- **ESP32-DevKitC-32:** The main development board featuring the ESP-WROOM-32 module, Type-C USB port, and pin headers.
- **Expansion Board:** Provides additional breakout pins, a Micro USB port, a DC barrel jack for external power, and a jumper for power selection.

3. Setup Instructions

3.1 Driver Installation (CH340C)

The DWEII ESP32 Development Board uses the CH340C USB-to-serial converter chip. Before connecting the board, ensure the appropriate drivers are installed on your computer. Drivers are typically available for Windows, macOS, and Linux operating systems. Search online for "CH340C driver" and download from a reputable source.

1. Download the CH340C driver package compatible with your operating system.
2. Follow the installation instructions provided with the driver package.
3. Restart your computer if prompted.

3.2 Connecting the Development Board

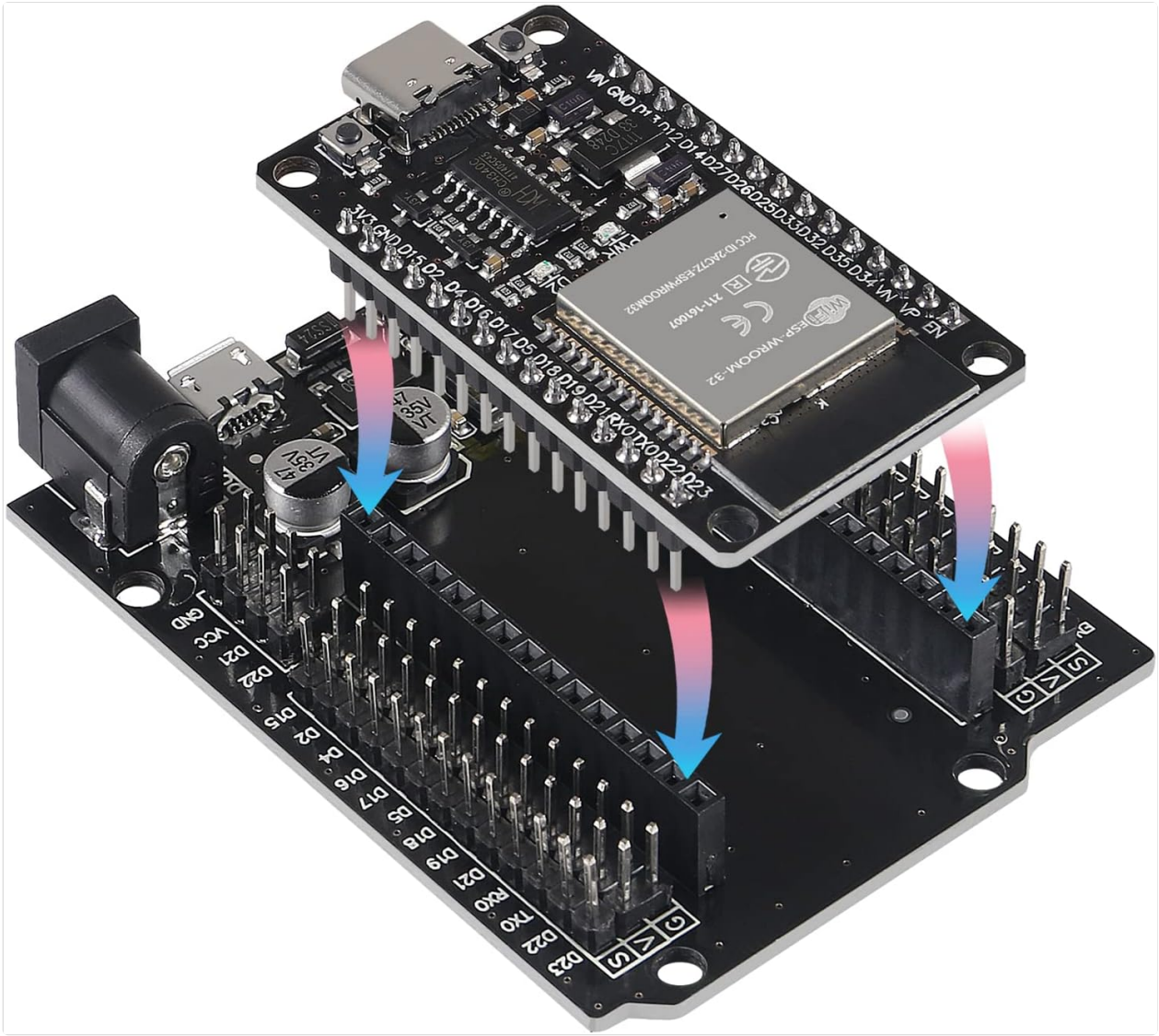
The ESP32-DevKitC-32 can be used standalone or mounted onto the provided expansion board.

Standalone Connection:

- Connect a Type-C USB cable to the ESP32-DevKitC-32 board and then to your computer.
- The board will draw power from the USB connection.

Using with Expansion Board:

1. Carefully align the pin headers of the ESP32-DevKitC-32 with the corresponding sockets on the expansion board.
2. Gently press the ESP32 board into the expansion board until it is securely seated.
3. Connect a Type-C USB cable to the ESP32 board or a Micro USB cable to the expansion board, or use the DC barrel jack for external power.



This image demonstrates the process of connecting the DWEII ESP32 Development Board to its expansion board. The ESP32 board is shown aligning with the pin headers on the larger expansion board, indicating how the two components fit together.

3.3 Power Supply Options

The board supports multiple power input methods:

- **USB Power:** Connect via the Type-C USB port on the ESP32 board or the Micro USB port on the expansion board.
- **VIN External Power:** The expansion board supports a wide voltage input of 5-12V via the DC barrel jack. Ensure the power supply polarity is correct.
- **External 3.3V:** Provide a regulated 3.3V power supply directly to the 3.3V pin on the board.

3.4 Programming Environment Setup

The DWEII ESP32 Development Board is compatible with popular programming environments.

Arduino IDE:

1. Install the Arduino IDE from the official website.
2. Add ESP32 board support through the Board Manager (refer to Espressif's official documentation for detailed steps).
3. Select the correct board model (ESP32 Dev Module) and COM port in the IDE.

Python (e.g., MicroPython):

1. Install Python on your computer.
2. Install esptool.py for flashing firmware: pip install esptool
3. Download MicroPython firmware for ESP32.
4. Erase flash and flash the firmware using esptool.py (refer to MicroPython documentation).

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4. Operating Instructions

4.1 Basic Programming

Once your development environment is set up, you can begin programming the ESP32. The ESP32-DOWDQ6-V3 is a dual-core MCU, allowing for complex tasks and efficient resource management.

- **Uploading Code:** In Arduino IDE, write your code, compile it, and click the "Upload" button. Ensure the correct board and port are selected.
- **Serial Monitor:** Use the Serial Monitor in your IDE to view output from your ESP32 and debug your code. Set the baud rate to match your code (e.g., 115200).

4.2 Using Wi-Fi and Bluetooth

The integrated Wi-Fi and Bluetooth capabilities enable a wide range of wireless applications.

- **Wi-Fi:** The ESP32 can act as a Wi-Fi station (connecting to an access point), a soft access point (creating its own network), or both. Libraries like WiFi.h in Arduino provide functions for network management.
- **Bluetooth:** Supports both Classic Bluetooth and Bluetooth Low Energy (BLE). Use appropriate libraries (e.g., BluetoothSerial.h for Classic BT, BLE.h for BLE) to implement communication protocols.

4.3 Utilizing the Expansion Board

The expansion board provides convenient access to the ESP32's GPIO pins and additional power options.

- **Pin Breakouts:** All ESP32 GPIO pins are broken out to standard 2.54mm headers, allowing easy connection to breadboards and other modules.
- **Power Jumper:** The expansion board includes a jumper to select between 3.3V and 5V power output for connected peripherals. Ensure the correct voltage is selected for your components.

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5. Maintenance

5.1 General Handling and Care

- **Static Electricity:** Handle the board with care, especially in dry environments, to avoid damage from electrostatic discharge (ESD). Consider using an anti-static wrist strap.
- **Physical Damage:** Avoid bending or dropping the board. Do not apply excessive force when connecting cables or components.
- **Moisture:** Keep the board away from liquids and high humidity.
- **Cleaning:** If necessary, gently clean the board with a soft, dry brush or compressed air. Avoid using liquid cleaners.

5.2 Storage

When not in use, store the development board in an anti-static bag or a protective container in a cool, dry place, away from direct sunlight and extreme temperatures.

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6. Troubleshooting

6.1 Common Issues

- **Board Not Recognized:**
  - Ensure CH340C drivers are correctly installed.
  - Try a different USB cable or USB port on your computer.
  - Verify the board is properly connected.
- **Upload Errors:**
  - Check that the correct board model and COM port are selected in your IDE.
  - Ensure no other applications are using the serial port.
  - Press the BOOT button on the ESP32 board while uploading if issues persist.
- **Power Issues:**
  - If using external power via the DC barrel jack on the expansion board, ensure the power supply is within the 5-12V range and provides sufficient current.
  - Verify the power jumper on the expansion board is set correctly if powering peripherals.
- **Intermittent Barrel Jack Connection:** Some users have reported intermittent connections with the barrel jack on the expansion board. If experiencing power interruptions when using the barrel jack, try wiggling the connector or using an alternative power method (USB).

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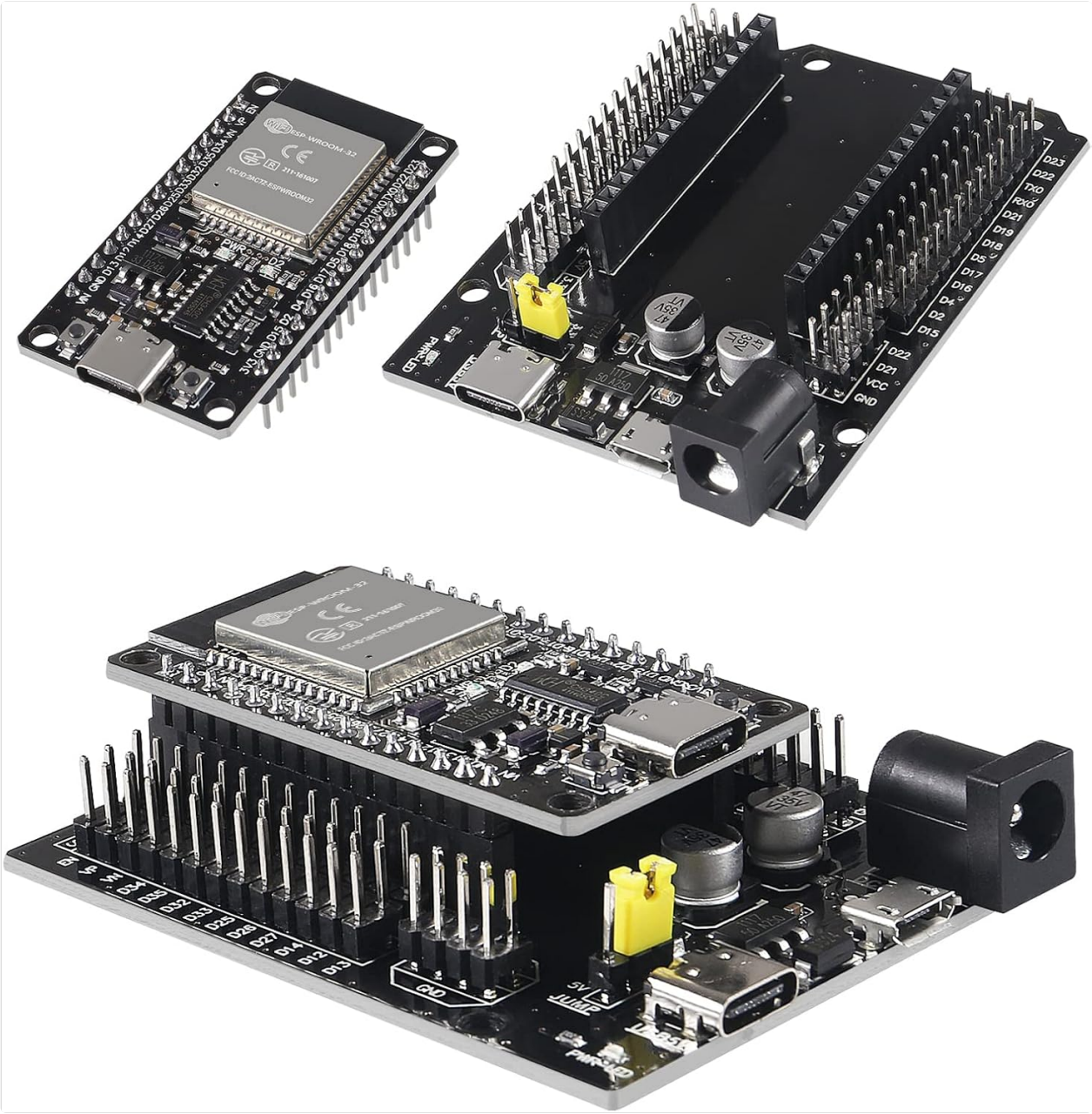
7. Specifications

Feature	Specification
Development Board Model	ESP32-DevKitC-32
Module Model	ESP32-WROOM-32
Main Control Chip	ESP32-DOWDQ6-V3 dual-core 32-bit MCU
Integrated Features	Wi-Fi, Bluetooth
Internal RAM	520KB SRAM, 16KB SRAM in RTC
Internal ROM	448KB ROM
External Storage	4MB
USB Driver Chip	CH340C

Power Supply (VIN)	5-12V DC (external via barrel jack)
Power Supply (USB)	5V DC via Type-C or Micro USB
Power Supply (External)	3.3V DC
Board Dimensions (ESP32)	52mm x 28mm (2.04in x 1.10in)
Board Dimensions (Expansion)	68.5mm x 53.5mm (2.70in x 2.10in)
Item Weight	Approximately 9.5g (ESP32 board)
Operating System	FreeRTOS



This image presents the DWEII ESP32 Development Board and its expansion board in various configurations. It shows the ESP32 board separately, the expansion board separately, and both boards assembled together, providing a complete view of the product components.

8. Warranty and Support

For warranty information, technical support, or further assistance, please contact the seller or manufacturer directly through the platform where the product was purchased. Keep your purchase receipt or order details handy for faster service.