

## DORHEA ESP32-WROOM-32E

# DORHEA ESP32 WiFi 4-Channel Relay Module

MODEL: ESP32-WROOM-32E

## 1. INTRODUCTION

This manual provides essential information for the proper installation, operation, and maintenance of your DORHEA ESP32 WiFi 4-Channel Relay Module. This module integrates a stable ESP32-WROOM-32E module with a 4MByte Flash, offering versatile control capabilities for various applications, including smart home automation and Arduino-based projects. It features four 5V relays capable of switching AC250V/DC30V loads and supports both AC220V and DC5-30V power inputs.

## 2. SAFETY INFORMATION

Please read and understand all safety instructions before using this product. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- **Electrical Hazard:** This module operates with AC and DC power. Ensure all power connections are made by qualified personnel and adhere to local electrical codes.
- **Power Supply:** Use only the specified power supply voltage (AC220V or DC5-30V). Exceeding these limits can damage the module and connected devices.
- **Isolation:** The relay outputs provide switch signals. Ensure proper isolation between high-voltage and low-voltage circuits.
- **Environment:** Do not expose the module to moisture, extreme temperatures, or corrosive environments.
- **Handling:** Handle the module with care to avoid damaging sensitive electronic components.

## 3. PRODUCT OVERVIEW

### 3.1 Key Features

- Onboard mature and stable ESP32-WROOM-32E module with large-capacity 4MByte Flash.
- Flexible power supply options: AC220V or DC5-30V.
- Supports Arduino IDE development environment with provided reference programs.
- Equipped with four 5V relays, providing switch signals suitable for controlling loads up to



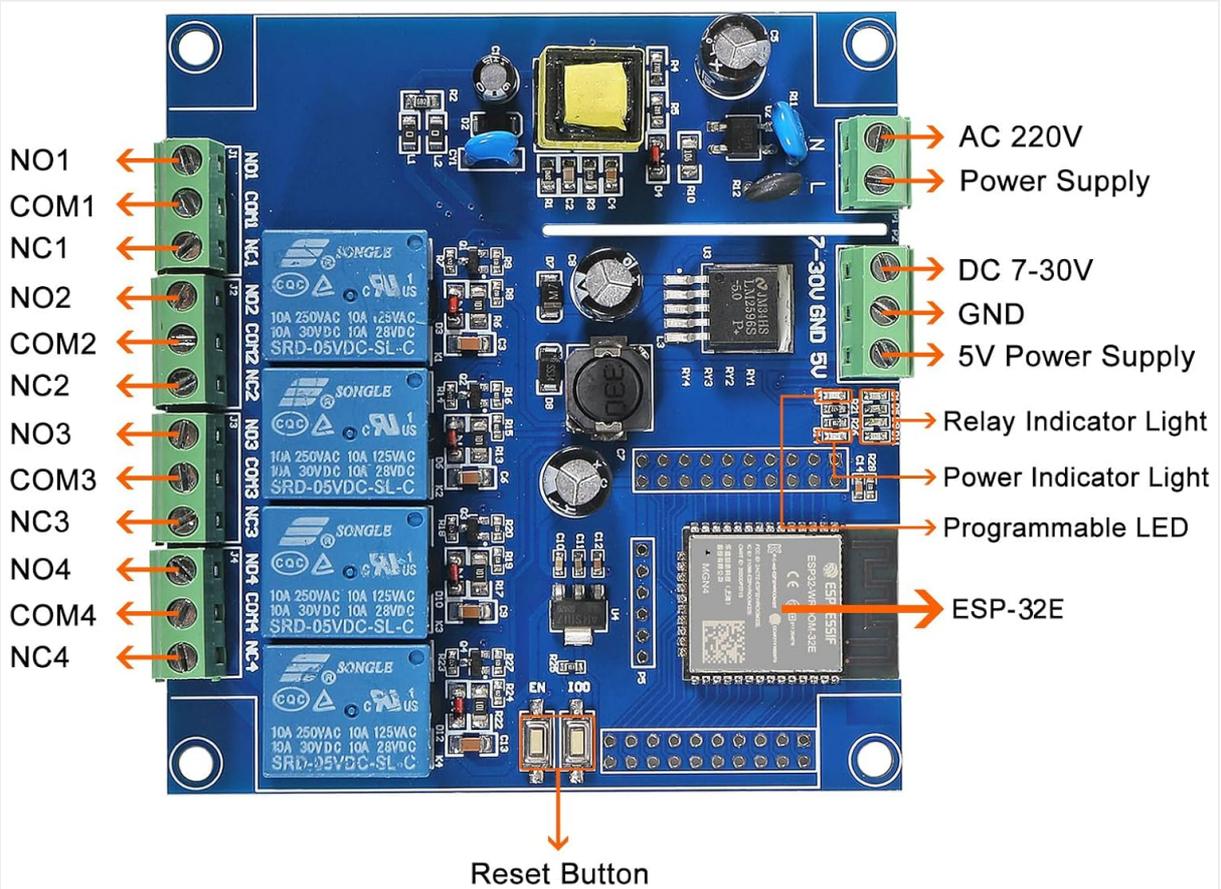


Figure 2: Detailed view of the module with labeled components including AC 220V Power Supply, DC 7-30V, GND, 5V Power Supply, Relay Indicator Light, Power Indicator Light, Programmable LED, ESP-32E module, and Reset Button. The relay outputs are labeled NO1/COM1/NC1 through NO4/COM4/NC4.

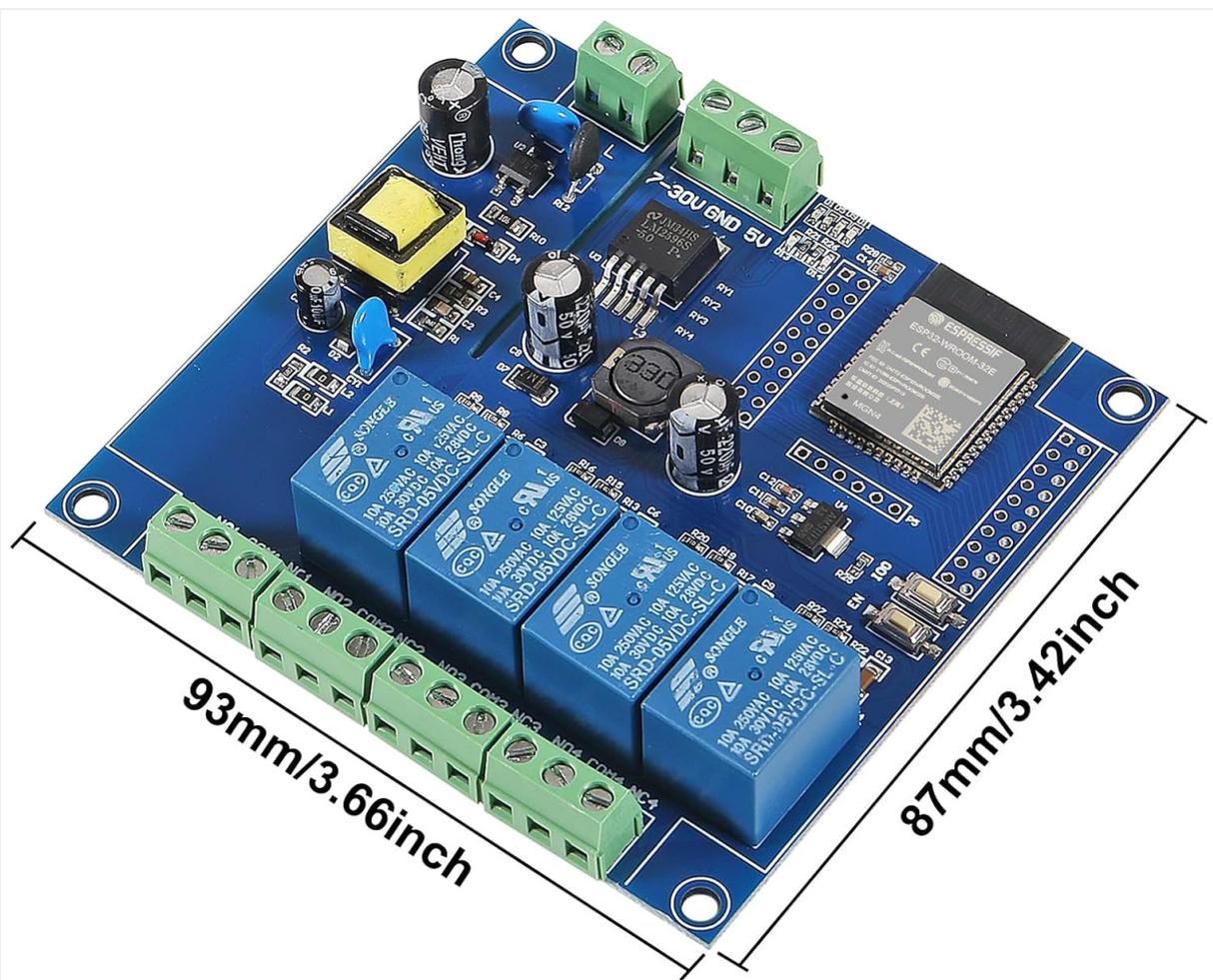


Figure 3: Physical dimensions of the module, measuring 93mm (3.66 inches) in length and 87mm (3.42 inches) in width.

## 4. SETUP

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Before connecting the module, ensure your workspace is clear and you have all necessary tools and components.

### 4.1 Power Supply Connection

1. Identify the power input terminals on the module. The module supports both AC220V and DC5-30V.
2. For AC power, connect the Live (L) and Neutral (N) wires from your AC220V source to the corresponding terminals.
3. For DC power, connect the positive (+) lead of your DC5-30V power supply to the '7-30V' terminal and the negative (-) lead to the 'GND' terminal.
4. Ensure all connections are secure to prevent accidental disconnections or short circuits.

### 4.2 Relay Load Connection

Each of the four relays has three terminals: Normally Open (NO), Common (COM), and Normally Closed (NC).

1. Determine whether your load requires a Normally Open (NO) or Normally Closed (NC) connection.
2. Connect one side of your load to the COM terminal of the desired relay.
3. Connect the other side of your load to either the NO or NC terminal, depending on your application's requirements.
4. Ensure the load's operating voltage and current do not exceed the relay's maximum ratings (AC250V/DC30V, 10A).

### 4.3 Pin Headers and UART Port

The included pin headers can be soldered to the module's I/O ports and UART program download port for secondary development and easier prototyping with breadboards or other modules.

## 5. OPERATING INSTRUCTIONS

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The DORHEA ESP32 WiFi 4-Channel Relay Module is designed for programmable control, primarily using the Arduino IDE.

### 5.1 Programming with Arduino IDE

1. Install the Arduino IDE on your computer.
2. Add ESP32 board support to your Arduino IDE. Instructions can typically be found on the Espressif website or through online tutorials.
3. Connect the module to your computer using a USB-to-UART converter connected to the module's UART program download port (TX, RX, GND).
4. Select the correct ESP32 board (e.g., ESP32 Dev Module) and COM port in the Arduino IDE.
5. Upload your custom code to control the relays and utilize the WiFi capabilities. Reference programs are often available for common functionalities.

### 5.2 Wireless Control via Application

Once programmed, the module can be controlled wirelessly, for example, through a mobile application. The

following video demonstrates controlling a development board via an app.

Video 1: Demonstration of using a mobile application to control a development board, showing how to toggle switches (ON/OFF) wirelessly. This illustrates the potential for remote control with the ESP32 module.

## 5.3 General Operation and Programmability

The ESP32 module's versatility allows for a wide range of applications. The following video provides a general overview of an ESP32 development board's programmability and AC/DC power supply capabilities.

Video 2: Overview of an AC/DC power supply ESP32 development board, showcasing its programmable nature and various applications. This highlights the core functionality and flexibility of the ESP32 platform.

## 6. MAINTENANCE

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The DORHEA ESP32 WiFi 4-Channel Relay Module requires minimal maintenance.

- **Cleaning:** Keep the module clean and free from dust and debris. Use a soft, dry cloth for cleaning. Avoid using liquids or abrasive cleaners.
- **Connections:** Periodically check all electrical connections to ensure they remain tight and secure.
- **Firmware Updates:** Regularly check for firmware updates for the ESP32-WROOM-32E module to ensure optimal performance and security.

## 7. TROUBLESHOOTING

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If you encounter issues with your module, consider the following troubleshooting steps:

- **Module Not Powering On:** Verify the power supply connections and ensure the voltage is within the specified range (AC220V or DC5-30V). Check for any blown fuses or tripped circuit breakers.
- **Relays Not Activating:** Confirm that the control signals to the relays are correct and that the load is properly connected. Check the relay indicator LEDs for status.
- **WiFi Connectivity Issues:** Ensure the ESP32 module is correctly configured for your WiFi network (SSID and password). Check the signal strength and proximity to your router.
- **Programming Errors:** If you are experiencing issues during programming, double-check your code for syntax errors and ensure the correct board and port are selected in the Arduino IDE. Refer to ESP32 documentation and community forums for specific programming guidance.
- **Lack of Documentation:** While this manual provides essential information, detailed pinouts and advanced programming examples can often be found in the ESP32 community, such as forums and GitHub repositories (e.g., ESPHome configurations often provide pin details for similar boards). For this module, GPIO pins 32, 33, 25, and 26 are commonly used for relays.

## 8. SPECIFICATIONS

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Feature	Specification
Module	ESP32-WROOM-32E
Flash Memory	4MByte
Power Supply (AC)	AC220V

Feature	Specification
Power Supply (DC)	DC5-30V
Number of Relays	4
Relay Voltage	5V
Max Load (AC)	AC250V / 10A
Max Load (DC)	DC30V / 10A
Dimensions (L x W)	93mm x 87mm (3.66 inches x 3.42 inches)
Item Weight	0.48 ounces
Manufacturer	DORHEA
Date First Available	August 23, 2024

## 9. WARRANTY AND SUPPORT

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DORHEA products are designed for reliability and performance. For warranty information and technical support, please refer to the product packaging or contact DORHEA customer service through their official channels. Online resources and community forums for ESP32 development are also valuable sources of information and assistance.