UNO+WiFi-R3-AT328-ESP8266-32MB-CH340G

Generic WiFi R3 ATmega328P+ESP8266 Development Board User Manual

Model: UNO+WiFi-R3-AT328-ESP8266-32MB-CH340G

1. Introduction

This manual provides instructions for the Generic WiFi R3 ATmega328P+ESP8266 Development Board. This board integrates an Uno R3 ATmega328 microcontroller and an ESP8266 WiFi module with 32Mb memory onto a single platform. It is designed for projects requiring both microcontroller and WiFi capabilities, offering flexibility for various applications. The board features a USB-serial converter (CH340G) for updating sketches and firmware for both the ATmega328 and ESP8266.
The integrated DIP switch allows for flexible configuration, enabling the modules to work together or independently, and facilitating communication between the USB interface and each module.

Figure 1: Top-down view of the Generic WiFi R3 ATmega328P+ESP8266 Development Board, showing various components and pin headers.

2. What's in the Box

- 1 x Generic WiFi R3 ATmega328P+ESP8266 Development Board
- (Note: Additional components like USB cables or external power supplies may be required and are sold separately.)

3. Setup and Configuration

The board's functionality is controlled by a 7-position DIP switch. Correct configuration of this switch is crucial for selecting the desired communication path between the ATmega328, ESP8266, and the USB-serial converter.

Figure 2: Close-up view of the DIP switch, showing its position on the board.

3.1 DIP Switch Settings

Refer to the table below for the correct DIP switch settings for various operational modes. "ON" indicates the switch is in the ON position, and "OFF" indicates the switch is in the OFF position.

Connection	DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	DIP 6	DIP 7
ATmega328 <-> ESP8266	ON	ON	OFF	OFF	OFF	OFF	OFF
USB <-> ATmega328	OFF	OFF	ON	ON	OFF	OFF	OFF
USB <-> ESP8266 (Update firmware/sketch)	OFF	OFF	OFF	OFF	ON	ON	ON
USB <-> ESP8266 (Communication)	OFF	OFF	OFF	OFF	ON	ON	OFF
All Independent	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Important: Always ensure the correct DIP switch settings are applied before powering on the board or attempting to upload sketches/firmware. Incorrect settings can lead to communication errors or unexpected behavior.

4. Operating Instructions

4.1 Powering the Board

The board can be powered via the USB port or an external DC power supply (7-12V). Ensure the power source meets the board's requirements.

4.2 Programming the ATmega328 (Arduino Uno R3)

1. Set the DIP switches for **USB <-> ATmega328** communication (OFF, OFF, ON, ON, OFF, OFF, OFF).
2. Connect the board to your computer using a USB cable.
3. Open the Arduino IDE.
4. Select the correct board (Arduino Uno) and COM port from the Tools menu.
5. Upload your sketch to the ATmega328.

4.3 Programming the ESP8266 (NodeMCU/WeMos)

1. Set the DIP switches for **USB <-> ESP8266 (Update firmware/sketch)** (OFF, OFF, OFF, OFF, ON, ON, ON).
2. Connect the board to your computer via USB.
3. Use the appropriate IDE (e.g., Arduino IDE with ESP8266 board manager, or NodeMCU firmware flashing tools) to upload your code or firmware.
4. After uploading, you may switch to **USB <-> ESP8266 (Communication)** (OFF, OFF, OFF, OFF, ON, ON, OFF) for serial communication with the ESP8266.

4.4 ATmega328 and ESP8266 Intercommunication

To enable communication between the ATmega328 and ESP8266 modules on the board:

1. Set the DIP switches for **ATmega328 <-> ESP8266** (ON, ON, OFF, OFF, OFF, OFF, OFF).
2. Ensure both modules are correctly programmed to communicate with each other via their respective serial pins.

Figure 3: Side view of the board, highlighting the USB port and various pin headers for connectivity.

5. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the board. Avoid using liquids or abrasive cleaners.
- **Storage:** Store the board in a dry, anti-static environment when not in use.
- **Handling:** Handle the board by its edges to avoid touching components, especially when powered. Static electricity can damage sensitive components.
- **Firmware Updates:** Regularly check for updated firmware for the ESP8266 module and drivers for the CH340G USB-serial converter to ensure optimal performance and compatibility.

6. Troubleshooting

- **Board Not Detected by Computer:**
  - Ensure the USB cable is securely connected.
  - Verify that the CH340G USB-serial driver is installed on your computer. Drivers are typically available

from the manufacturer's website or common online resources.
    - Check DIP switch settings for USB communication (e.g., USB <-> ATmega328 or USB <-> ESP8266).
- **Sketch/Firmware Upload Failure:**
    - Confirm the correct DIP switch settings for programming the target module (ATmega328 or ESP8266).
    - Ensure the correct board type and COM port are selected in your IDE.
    - Check for any error messages in the IDE output for specific guidance.
- **WiFi Connectivity Issues:**
    - Verify the ESP8266 firmware is correctly installed and configured for WiFi.
    - Ensure the ESP8266 has sufficient power.
    - Check the WiFi network credentials in your code.
- **Inter-module Communication Problems (ATmega328 <-> ESP8266):**
    - Confirm DIP switches are set for ATmega328 <-> ESP8266 communication.
    - Verify that both modules are programmed to communicate using the correct serial protocols and baud rates.

7. Specifications

Model Name	UNO+WiFi-R3-AT328-ESP8266-32MB-CH340G
Microcontroller	ATmega328P
WiFi Module	ESP8266
Memory (ESP8266)	32 MB
USB-Serial Converter	CH340G
Input Voltage (DC Jack)	7-12V
Connectivity	USB, Wi-Fi

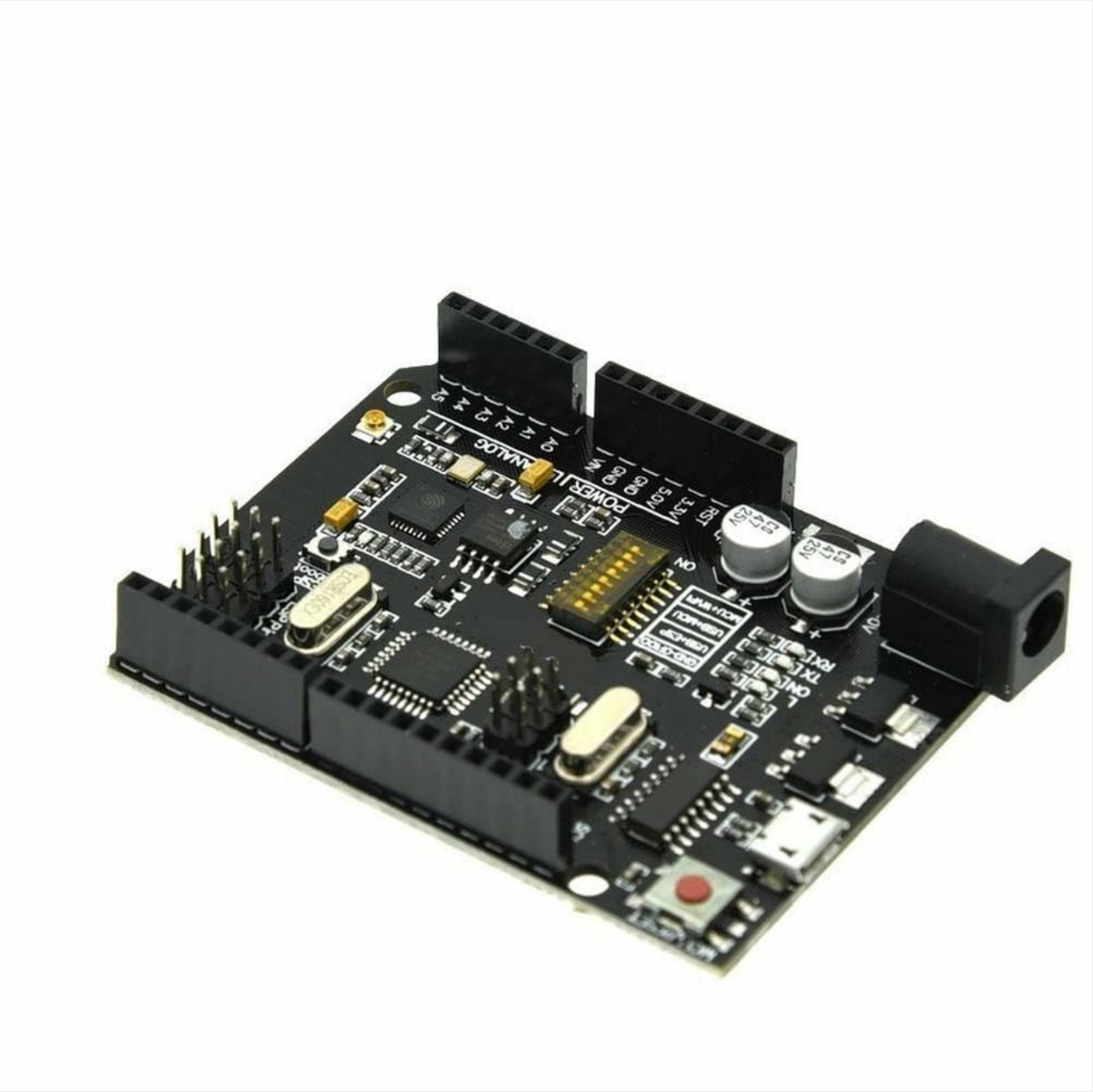

Figure 4: Angled view of the board, illustrating the DC power input jack and other components.

8. Warranty and Support

Information regarding product warranty and customer support was not provided in the available product data. Please refer to the retailer or manufacturer's website for details on warranty coverage and support options.