

Arduino Uno Wi-Fi ATmega328P + ESP8266

Introduction:

The Arduino Uno Wi-Fi ATmega328P + ESP8266 is an innovative development board that combines the capabilities of the classic Arduino Uno with integrated Wi-Fi functionality provided by the ESP8266 module.

At its core, the board features the ATmega328P microcontroller, which is the same microcontroller found on the traditional Arduino Uno, offering compatibility with a vast array of Arduino sketches and libraries. What sets this board apart is the integration of the ESP8266 Wi-Fi module, enabling seamless wireless communication and connectivity.

The ESP8266 module serves as a powerful adjunct, allowing the Arduino Uno Wi-Fi to access the internet, interact with online services, and communicate wirelessly with other devices. This combination makes the board an excellent choice for Internet of Things (IoT) projects, home automation, and applications requiring both the versatility of Arduino and the connectivity features of Wi-Fi.

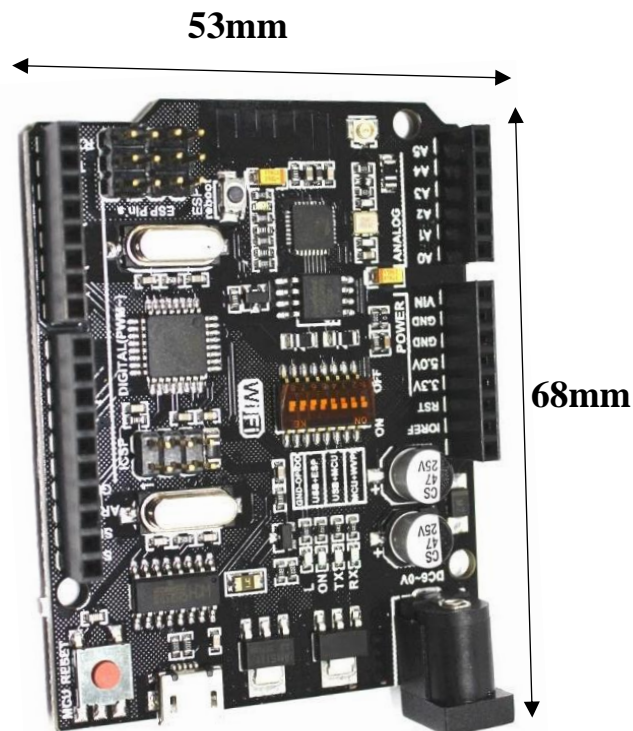
Specifications:

- Microcontrollers : 1x ATMEGA328P and 1x ESP-8266EX
- Analog input pins : 6 for ATMEGA328P (5V compliant) + 1 for ESP8266 (3.3V compliant)
- Clock speed : 16MHz for ATMEGA328P and 80MHz/160MHz for ESP8266
- ESP8266 Flash : 8M bytes

Features:

- **Microcontroller:** ATmega328P as the primary microcontroller for general-purpose tasks.
- **Memory:** 32MB (32 megabits) flash memory for the ESP8266 module.
- **Clock speed:** ATmega328P running at 16 MHz (standard Arduino Uno clock speed).
- **Wi-Fi connectivity:** Integrated ESP8266 module for Wi-Fi connectivity (802.11 b/g/n).

Product dimension:



Requirements:

- The board typically requires a stable power supply. This can be provided through the USB connection (5V) or an external power source.
- A USB cable is needed to connect the Arduino Uno Wi-Fi ATmega328P + ESP8266 to a computer for programming and communication.
- You need the Arduino IDE installed on your computer. This software is used for writing, compiling, and uploading code to the Arduino board.

DIP Switch and Port Configuration

| Operation Mode | | | | | | | | | |
|-------------------------------------|------------|----|----|----|----|----|----|----|-------|
| GRAY = OFF | GREEN = ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| CH340 to ESP8266 (Upload Sketch) | | | | | | ON | ON | ON | NoUSE |
| CH340 to ESP8266 (Connect) | | | | | | ON | ON | | NoUSE |
| CH340 to ATmega328p (Upload Sketch) | | | | ON | ON | | | | NoUSE |
| CH340 to ATmega328p to ESP8266 | ON | ON | ON | ON | | | | | NoUSE |
| ATmega328p + ESP8266 | ON | ON | | | | | | | NoUSE |
| All modules work independent | | | | | | | | | NoUSE |

Application:

- Remote monitoring and control
- Smart home automation
- Weather station with online reporting
- IoT data logger
- Wi-Fi controlled robotics

Conclusion:

- The combination of Arduino Uno and ESP8266 provides Wi-Fi capabilities to the Arduino platform, enabling wireless communication and connectivity.
- The ATmega328P serves as the main microcontroller, handling general-purpose tasks and interfacing with various sensors and actuators.
- The ESP8266 module is responsible for managing Wi-Fi communication, allowing the Arduino Uno to connect to the internet or local networks.