WeMOS® ESP32 UNO D1 R32 Board – WiFi and Bluetooth 4MB Flash

The **WeMOS® ESP32 UNO D1 R32 Board** is a powerful and versatile development board designed for hobbyists, students, and professional IoT developers. It combines the advanced capabilities of the **ESP32 microcontroller** with the familiar **Arduino UNO R3 form factor**, making it easy to use with Arduino shields and accessories. Featuring **dual-core processing, built-in Wi-Fi, Bluetooth 4.2, and 4MB of Flash memory**, this board is perfect for creating next-generation Internet of Things (IoT) projects, smart home automation systems, and wireless communication devices.

ESP32 Performance in an Arduino Form Factor

The **ESP32 microcontroller** is one of the most powerful and popular chips for IoT and embedded systems. With a **dual-core Tensilica LX6 processor** running at up to 240 MHz,

integrated Wi-Fi, and Bluetooth connectivity, it provides excellent performance for both simple and complex applications. The WeMOS® ESP32 UNO D1 R32 makes this power accessible in the classic **Arduino UNO R3 layout**, ensuring compatibility with most Arduino shields, expansion boards, and sensors.

🔹 Built-in Wi-Fi and Bluetooth

One of the standout features of the **WeMOS® ESP32 UNO D1 R32** is its **integrated wireless connectivity**. The board supports:

- **Wi-Fi 802.11 b/g/n** for connecting devices to local networks, cloud platforms, or hosting a lightweight web server.
- **Bluetooth v4.2 (Classic + BLE)** for wireless communication with smartphones, tablets, and other Bluetooth-enabled devices.

This combination of Wi-Fi and Bluetooth makes it an ideal solution for IoT projects that require seamless data transfer and device-to-device communication.

🔹 4MB Flash Memory for Complex Projects

With **4MB of Flash memory**, the WeMOS® ESP32 UNO D1 R32 provides ample space for storing firmware, libraries, and application data. This makes it suitable for large projects that require multiple libraries or advanced features, such as secure cloud communication, OTA (Over-The-Air) updates, and real-time data processing.

🔹 Easy to Program – Arduino IDE Compatible

The WeMOS® ESP32 UNO D1 R32 can be programmed directly using the **Arduino IDE**, which makes it beginner-friendly while still powerful enough for advanced developers. Additionally, it supports **PlatformIO, MicroPython, and ESP-IDF (Espressif IoT Development Framework)**, giving developers the flexibility to choose their preferred environment.

🔹 Wide Range of Applications

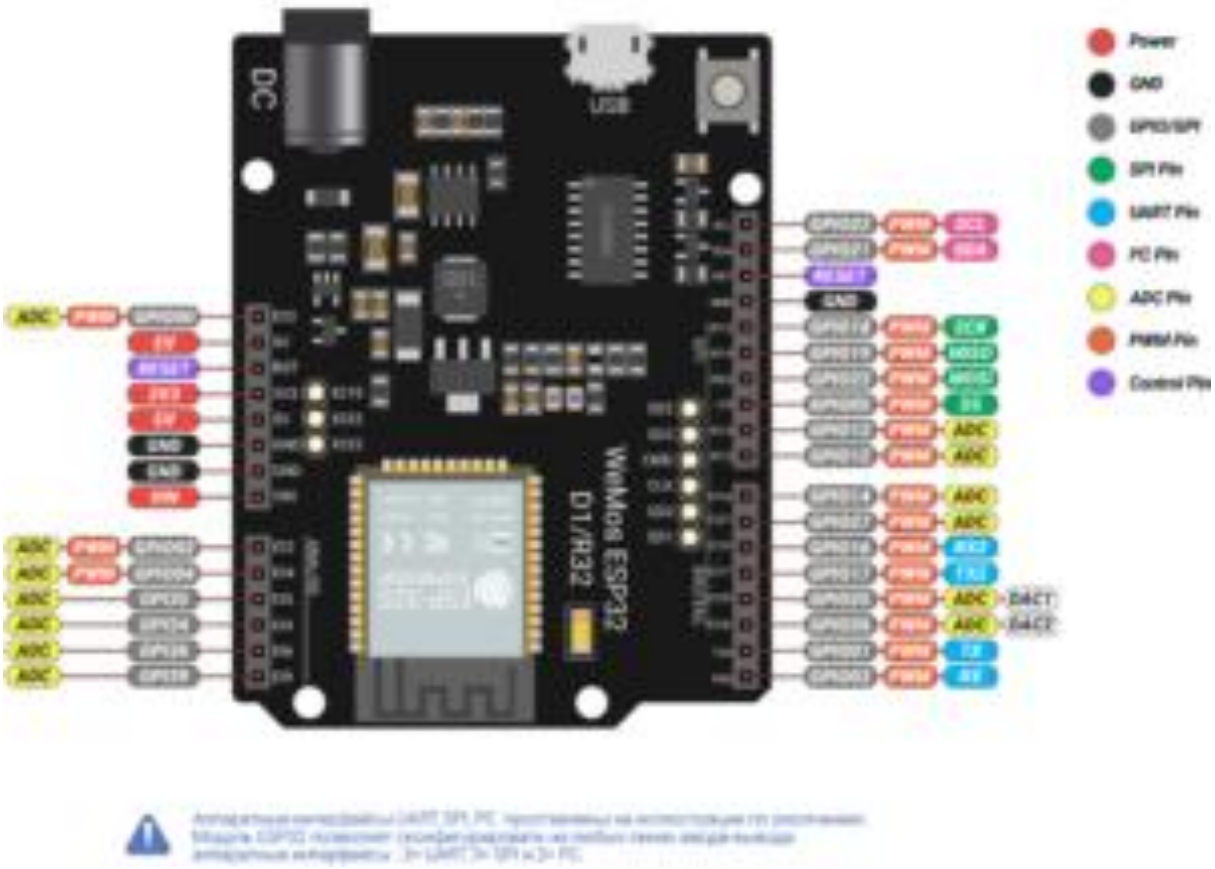
Thanks to its robust features, the **WeMOS® ESP32 UNO D1 R32** is widely used in:

- **Smart Home Automation** – Control lights, appliances, and security devices with Wi-Fi or Bluetooth.
- **IoT Prototyping** – Quickly develop and test new connected devices.

- **Wireless Sensor Networks** – Collect and transmit data from temperature, humidity, or motion sensors.
- **Robotics** – Add Wi-Fi/Bluetooth control to robots and autonomous vehicles.
- **Wearable and Portable Devices** – Low-power operation makes it suitable for battery-driven projects.

🔹 Technical Specifications

- **Microcontroller**: ESP32 Dual-Core Tensilica LX6, up to 240 MHz
- **Flash Memory**: 4 MB
- **SRAM**: 520 KB
- **Operating Voltage**: 3.3V (regulated from USB 5V)
- **USB Interface**: Micro-USB
- **Connectivity**:
  - Wi-Fi 802.11 b/g/n (2.4 GHz)
  - Bluetooth v4.2 (Classic + BLE)
- **I/O Pins**:
  - 30+ GPIOs with support for UART, SPI, I²C, ADC, DAC, PWM
- **Analog Inputs**: Multiple 12-bit ADC channels
- **Digital Outputs**: PWM on most pins
- **Compatibility**: Arduino UNO R3 form factor, supports most Arduino shields
- **Dimensions**: Approx. 68.6mm x 53.4mm



🔹 Benefits of Using the WeMOS® ESP32 UNO D1 R32

- **Familiar Design**: Arduino UNO-style layout for easy integration.
- **Powerful Performance**: Dual-core ESP32 with Wi-Fi + Bluetooth.
- **Large Memory**: 4MB Flash for complex applications.
- **Flexible Programming**: Supports Arduino IDE, MicroPython, and ESP-IDF.
- **Wide Community Support**: Thousands of tutorials, libraries, and online resources.

✅ Conclusion

The **WeMOS® ESP32 UNO D1 R32 Board – WiFi and Bluetooth 4MB Flash** is the perfect bridge between the Arduino ecosystem and the power of the ESP32. Its UNO R3 form factor allows you to use existing Arduino shields and accessories, while the ESP32 provides cutting-edge wireless connectivity and processing capabilities.

Whether you are building a smart home system, a wireless monitoring solution, or experimenting with IoT concepts, this board provides the flexibility, performance, and ease of use you need. With the **WeMOS® ESP32 UNO D1 R32**, bringing your IoT ideas to life has never been easier.