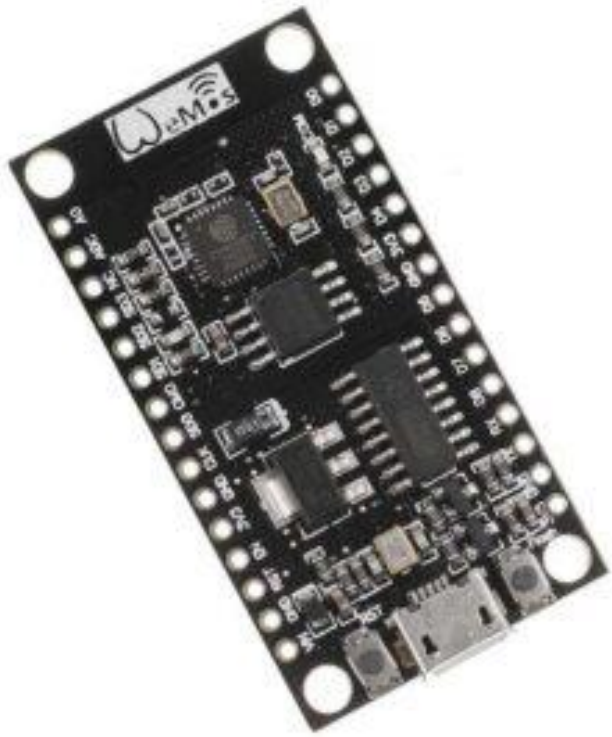
Wemos NodeMCU V3 ESP8266 340G WiFi Module

The **Wemos NodeMCU V3 ESP8266 340G WiFi Module** is one of the most widely used development boards in the world of IoT and embedded electronics. Based on the **ESP8266 Wi-Fi SoC (System on Chip)**, this module provides a cost-effective yet powerful platform for building smart devices, automation systems, and wireless communication projects. Designed with an onboard USB-to-serial interface and a user-friendly pinout, the NodeMCU V3 is ideal for beginners, hobbyists, and professional developers alike.



🔹 ESP8266 Core – Reliable Performance for IoT

At the heart of the **NodeMCU V3** is the **ESP8266EX microcontroller**, a 32-bit Tensilica L106 processor capable of running at **80/160 MHz**. It integrates a full TCP/IP networking stack and microcontroller functionality, making it a self-contained system for wireless connectivity. With its strong performance and built-in Wi-Fi, the ESP8266 has become the standard for affordable IoT development.

CH340G USB-to-Serial Chip

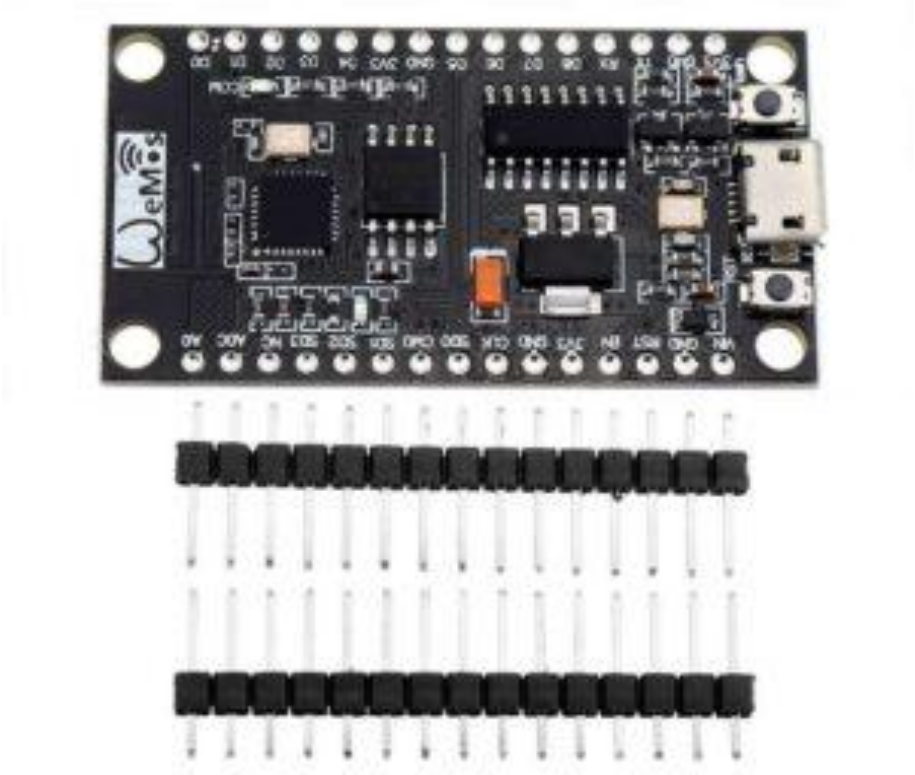
The **NodeMCU V3 ESP8266 340G WiFi Module** features the **CH340G USB-to-serial converter**, which provides reliable connectivity between your computer and the board. This makes programming straightforward and eliminates the need for an external USB-to-TTL adapter. Drivers for CH340G are widely available, ensuring compatibility with **Windows, macOS, and Linux** systems.

Onboard Wi-Fi Connectivity

One of the key features of the NodeMCU ESP8266 is its **integrated Wi-Fi 802.11 b/g/n module**, which allows it to connect seamlessly to existing Wi-Fi networks or create its own. It supports multiple modes:

- **Station Mode** – Connect to your home or office Wi-Fi.
- **Access Point Mode** – Create a Wi-Fi hotspot for direct device communication.
- **Mixed Mode** – Operate as both a station and access point simultaneously.

This flexibility makes the NodeMCU V3 perfect for projects ranging from smart home automation to IoT cloud communication.



Easy Programming & Compatibility

The **Wemos NodeMCU V3 ESP8266 340G WiFi Module** is designed for ease of use, supporting multiple programming environments:

- **Arduino IDE** – Beginner-friendly with extensive libraries and examples.
- **Lua scripting** – NodeMCU firmware allows lightweight scripting with Lua.
- **MicroPython** – Ideal for developers who prefer Python-based coding.
- **PlatformIO & ESP8266 SDK** – Advanced tools for professional developers.

This flexibility makes the board highly adaptable for projects of all sizes.

Applications of NodeMCU V3 ESP8266

Thanks to its robust hardware and built-in Wi-Fi, the NodeMCU V3 can be used in a wide variety of applications, such as:

- **Smart Home Automation** – Control appliances, lights, and sensors remotely.
- **IoT Devices** – Build prototypes that connect to cloud services like AWS IoT, Google Firebase, or Blynk.

- **Wireless Sensor Networks** – Collect and transmit real-time sensor data.
- **DIY Electronics Projects** – Prototyping and testing new electronic devices.
- **Education** – Perfect for teaching IoT, networking, and embedded programming concepts.

🔹 Technical Specifications

- **Board Model**: Wemos NodeMCU V3 ESP8266 340G
- **Microcontroller**: ESP8266EX (32-bit Tensilica L106)
- **Clock Speed**: 80/160 MHz
- **Operating Voltage**: 3.3V (with onboard regulator for USB 5V input)
- **Flash Memory**: 4 MB (standard)
- **SRAM**: 128 KB
- **Storage**: 16 KB instruction cache, 64 KB IRAM, 96 KB data RAM
- **USB Interface**: CH340G USB-to-Serial
- **Connectivity**: Wi-Fi 802.11 b/g/n (2.4 GHz)
- **I/O Pins**:
  - 17 GPIOs with support for UART, SPI, I²C, ADC, PWM
- **Analog Input**: 1 channel, 10-bit resolution
- **Dimensions**: Approx. 58 mm × 31 mm
- **Programming Compatibility**: Arduino IDE, Lua, MicroPython, PlatformIO

🔹 Benefits of Using Wemos NodeMCU V3 ESP8266

- **All-in-One IoT Solution** – Microcontroller + Wi-Fi in a single board.
- **Easy to Program** – Multiple IDE and firmware options available.
- **Wide Community Support** – Extensive tutorials, forums, and libraries.
- **Low-Cost & Reliable** – Affordable option for students and professionals.
- **Flexible Applications** – Suitable for everything from smart homes to robotics.

✅ Conclusion

The **Wemos NodeMCU V3 ESP8266 340G WiFi Module** is an excellent choice for anyone looking to dive into the world of IoT and wireless communication. With its powerful ESP8266 core, integrated Wi-Fi, CH340G USB interface, and wide programming compatibility, it offers both simplicity for beginners and flexibility for advanced developers.

Whether you are creating smart home devices, building IoT prototypes, or experimenting with wireless data transmission, the NodeMCU V3 delivers reliability and performance in an affordable package.