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MODEL: MEGA2560 + WiFi R3

1. Product Overview

The Teyleten Robot Mega2560 + WiFi R3 board offers a full integration of the ATmega2560 microcontroller and a WiFi module with 32MB of memory on a single board. This design provides a convenient solution for developing new projects that require both Arduino Mega and WiFi capabilities. The board includes a USB-serial converter (CH340G) for easy sketch and firmware updates for both the ATmega2560 and the WiFi module. Its flexible architecture allows all modules to operate together or independently, each with dedicated pinout headers. A DIP-switch system simplifies the connection configuration between the USB, ATmega2560, and WiFi components.

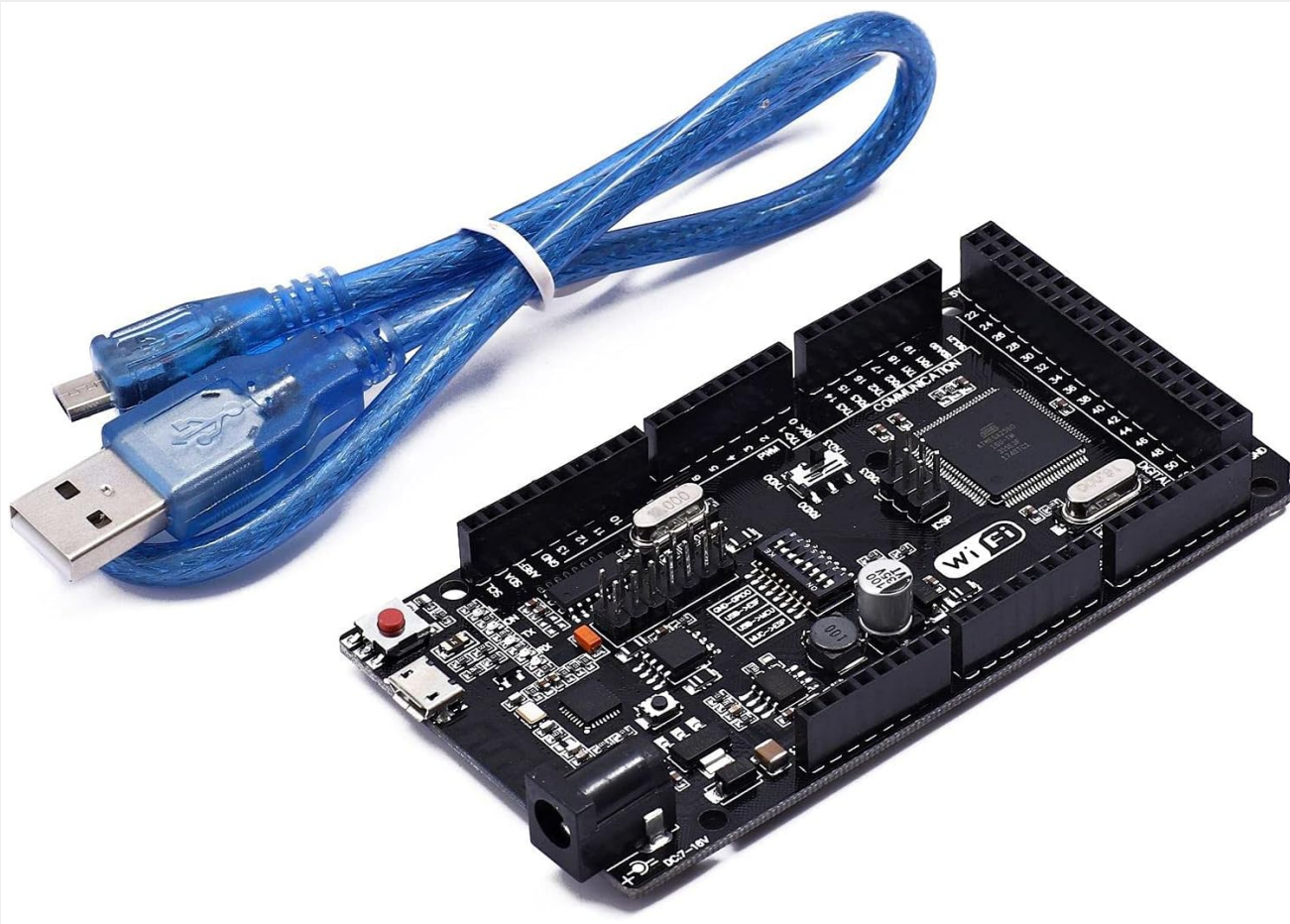


Figure 1: Teyleten Robot Mega2560 + WiFi R3 board with included USB cable. This image displays the main board alongside a blue USB cable, highlighting the compact design and connectivity options.

2. What's in the Box

Upon unboxing, verify that all components are present:

- One (1) Teyleten Robot Mega2560 + WiFi R3 Board (integrating ATmega2560, WiFi ESP8266, and USB-serial converter CH340G)
- One (1) USB Cable (typically Micro-USB to USB-A)

3. Key Features

- **Integrated Design:** Combines ATmega2560 microcontroller and ESP8266 WiFi module on a single board.
- **Memory:** Features 32MB of memory for enhanced project capabilities.
- **Flexible Operation:** Modules can function cooperatively or independently, each with dedicated pin headers.
- **USB-Serial Converter:** Equipped with a CH340G chip for reliable USB communication, enabling easy sketch and firmware uploads.
- **DIP-Switch Configuration:** On-board DIP switches allow for simple configuration of module connections (e.g., USB to ATmega2560, USB to WiFi, ATmega2560 to WiFi).

Before connecting the board to your computer, ensure the CH340G USB-serial converter drivers are installed. These drivers are typically available from the manufacturer's support page or common online repositories for CH340G chips. Without the correct drivers, your computer may not recognize the board.

5.2. DIP Switch Settings

The DIP switches control the communication paths between the ATmega2560, ESP8266, and the USB-serial converter. Refer to the table below for common configurations. "ON" typically means the switch is in the up position, and "OFF" means down.

Features:
 Full integration on one board: Mega R3 ATmega2560 and WIFI ESP8266 with memory 32Mb (megabyte)
 All of the modules can work together or each separately. And everyone has their own pinout headers
 The convenient solution for the development of new projects requiring Uno and WIFI
 Via USB you can update sketches and firmware for ATmega2560 and for ESP8266. For this on board have the USB-serial converter CH340G
 Use this board is very simple
 The board has DIP-switch, to connect the modules
 For example, to: USB and ATmega2560, USB and ESP8266, ATmega2560 and ESP8266

Table DIP- Switch:

Connection	1	2	3	DIP			6	7
ATmega2560 <-> ESP8266	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
USB <-> ATmega2560	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
USB <-> ESP8266 (Update firmware or sketch)	OFF	OFF	OFF	OFF	ON	ON	ON	ON
USB <-> ESP8266 (communication)	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
All independent	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Special solution:
 USB <-> ATmega328 <-> ESP8266

Connection	1	2	3	DIP			6	7	SWITH 2
USB <-> ATmega2560 <-> ESP8266	ON	ON	ON	ON	OFF	OFF	OFF	OFF	To RXD3/TXD3

USB converter CH340G connect to RXD/TXD0 of ATmega2560
 ESP8266 connect to RX3/TX3 of ATmega2560

Size: 10.5x5.3cm/4.13x2.09inch

Figure 3: DIP Switch Configuration Table. This image provides a visual guide to setting the DIP switches for various operational modes, including communication and programming.

Connection	DIP Switch (1-7)						
	1	2	3	4	5	6	7
ATmega2560 <-> ESP8266	ON	ON	OFF	OFF	OFF	OFF	OFF
USB <-> ATmega2560	OFF	OFF	ON	OFF	OFF	OFF	OFF
USB <-> ESP8266 (Update firmware or sketch)	OFF	OFF	OFF	ON	ON	ON	ON
USB <-> ESP8266 (communication)	OFF	OFF	OFF	ON	OFF	OFF	OFF
All independent	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Special solution for USB <-> ATmega328 <-> ESP8266 (SWITH 2):

Connection	DIP Switch (1-7)						
	1	2	3	4	5	6	7
USB <-> ATmega2560 <-> ESP8266	ON	ON	ON	OFF	OFF	OFF	To RXD3/TXD3

Note: The USB converter CH340G connects to RXD0/TXD0 of ATmega2560. ESP8266 connects to RXD3/TXD3 of ATmega2560.

6. Operating Instructions

Once the board is properly set up with the correct DIP switch configuration and drivers, you can begin programming and utilizing its features.

6.1. Programming the ATmega2560

1. Set the DIP switches for "USB <-> ATmega2560" communication (OFF, OFF, ON, OFF, OFF, OFF, OFF).
2. Connect the board to your computer via the USB cable.
3. Open your preferred IDE (e.g., Arduino IDE).
4. Select the correct board (Arduino Mega 2560) and COM port in the IDE.
5. Upload your sketch to the ATmega2560.

6.2. Programming/Communicating with ESP8266 (WiFi Module)

The ESP8266 can be programmed or communicated with directly via USB, or it can communicate with the ATmega2560.

6.2.1. USB to ESP8266 (Firmware Update/Sketch Upload)

1. Set the DIP switches for "USB <-> ESP8266 (Update firmware or sketch)" (OFF, OFF, OFF, ON, ON, ON, ON).
2. Connect the board to your computer via the USB cable.
3. Use an appropriate tool or IDE (e.g., ESPtool, Arduino IDE with ESP8266 board manager) to upload firmware or sketches to the ESP8266.

6.2.2. USB to ESP8266 (Communication)

1. Set the DIP switches for "USB <-> ESP8266 (communication)" (OFF, OFF, OFF, ON, OFF, OFF, OFF).
2. Connect the board to your computer via the USB cable.
3. Open a serial monitor or terminal program to communicate with the ESP8266.

6.2.3. ATmega2560 to ESP8266 Communication

1. Set the DIP switches for "ATmega2560 <-> ESP8266" (ON, ON, OFF, OFF, OFF, OFF, OFF).
2. Program the ATmega2560 to communicate with the ESP8266 via its serial pins (RXD3/TXD3).
3. Ensure both modules are powered correctly.

6.3. Independent Operation

For scenarios where the modules need to operate without direct interaction or USB connection, set the DIP switches to "All independent" (OFF, OFF, OFF, OFF, OFF, OFF, OFF). In this mode, each module can be powered and controlled separately through its respective pin headers.

7. Maintenance

To ensure the longevity and reliable operation of your Teyleten Robot Mega2560 + WiFi R3 board, follow these maintenance guidelines:

- **Handle with Care:** Avoid dropping the board or subjecting it to physical shock.
- **Static Electricity:** Always handle the board by its edges and use anti-static precautions (e.g., anti-static wrist strap) to prevent damage from electrostatic discharge.
- **Keep Clean:** Regularly inspect the board for dust or debris. Use a soft, dry brush or compressed air to gently clean the surface. Avoid using liquids or harsh chemicals.
- **Storage:** When not in use, store the board in an anti-static bag or a protective enclosure in a cool, dry environment, away from direct sunlight and extreme temperatures.
- **Power Supply:** Ensure you use a stable and appropriate power supply within the specified voltage range (DC In 7-18V). Incorrect voltage can damage the board.

8. Troubleshooting

If you encounter issues with your Teyleten Robot Mega2560 + WiFi R3 board, consider the following troubleshooting steps:

- **Board Not Recognized by Computer:**

- Verify that the CH340G drivers are correctly installed on your operating system (Windows, macOS, Linux).
- Try a different USB cable. Ensure it is a data cable, not just a charging cable.
- Test with a different USB port on your computer.
- Restart your computer.

- **Sketch Upload Errors (e.g., "timeout"):**

- Confirm the correct board type (Arduino Mega 2560) and COM port are selected in your IDE.
- Check the DIP switch settings. For ATmega2560 programming, ensure switches are set to "USB <-> ATmega2560".
- Ensure no other applications are using the serial port.
- Try pressing the reset button on the board just before or during the upload process.

- **WiFi Connectivity Issues:**

- Verify the ESP8266 firmware is up-to-date and correctly flashed.
- Check the DIP switch settings for WiFi communication (e.g., "USB <-> ESP8266" or "ATmega2560 <-> ESP8266").
- Ensure adequate power supply. Insufficient power can lead to unstable WiFi performance.
- Confirm your WiFi network is 2.4GHz, as ESP8266 typically operates on this frequency.
- Test the WiFi module independently if possible, to isolate the issue.

- **Power Issues:**

- Ensure the power adapter provides the correct voltage (7-18V DC).
- Check for loose connections or damaged power jacks.

9. Warranty Information

Specific warranty details for the Tyleten Robot Mega2560 + WiFi R3 board are subject to the terms and conditions provided by the retailer or manufacturer at the time of purchase. Please retain your proof of purchase for any warranty claims. For the most accurate and up-to-date warranty information, it is recommended to contact Tyleten Robot directly or refer to the product listing on the platform where it was purchased.

10. Support and Contact

For further assistance, technical support, or inquiries regarding the Tyleten Robot Mega2560 + WiFi R3 board, please refer to the following resources:

- **Manufacturer's Website:** Visit the official Tyleten Robot website for product documentation, FAQs, and support forums.
- **Amazon Store:** For purchase-related support or to view additional product details, visit the Tyleten Robot Store on Amazon.
- **Community Forums:** Many open-source hardware communities offer valuable insights and troubleshooting tips for similar boards.