

Teyleten Robot MEGA2560 PRO

Teyleten Robot MEGA2560 PRO Embed Module User Manual

INTRODUCTION

This manual provides essential information for the Teyleten Robot MEGA2560 PRO Embed Module. This module is built on the ATmega2560 microcontroller and features a CH340G USB-UART interface chip. Its compact size of 38x55mm makes it suitable for integration into various projects, particularly on solder proto-boards. The board utilizes the original ATmega2560 chip operating at 16 MHz, ensuring stable performance. The CH340G chip facilitates reliable data exchange at 12MHz, requiring specific drivers for computer connectivity. Power can be supplied via the MicroUSB connector or dedicated power pinheaders. The onboard voltage regulator (LDO) accepts input voltages from 6V to 9V (peak 18V) DC, providing approximately 800mA for both 5V and 3.3V outputs. Higher input voltages may result in lower outgoing current. This module is designed to reliably power most initial projects.

KEY FEATURES

- Embed version of Mega 2560 CH340G/ATmega2560.
- Built on the Atmel ATmega2560 microcontroller and USB-UART interface chip CH340G.
- Compact board size of 38x55mm, ideal for solder proto-board projects.
- Utilizes the CH340G chip as a UART-USB converter.
- Flash Memory: 256 KB (8 KB used by bootloader); EEPROM: 4 KB; Clock Speed: 16 MHz.

SETUP GUIDE

1. Driver Installation

The Teyleten Robot MEGA2560 PRO uses the CH340G chip for USB-UART communication. Before

connecting the module to your computer, you may need to install the appropriate CH340G drivers. These drivers are typically available from the manufacturer's website or common microcontroller driver repositories. Install the driver according to your operating system's instructions.

2. Connecting the Module

Connect the module to your computer using a Type-C USB cable. The MicroUSB connector on the board serves as both a power supply and a data communication interface. Ensure the cable is securely connected to both the module and your computer's USB port.

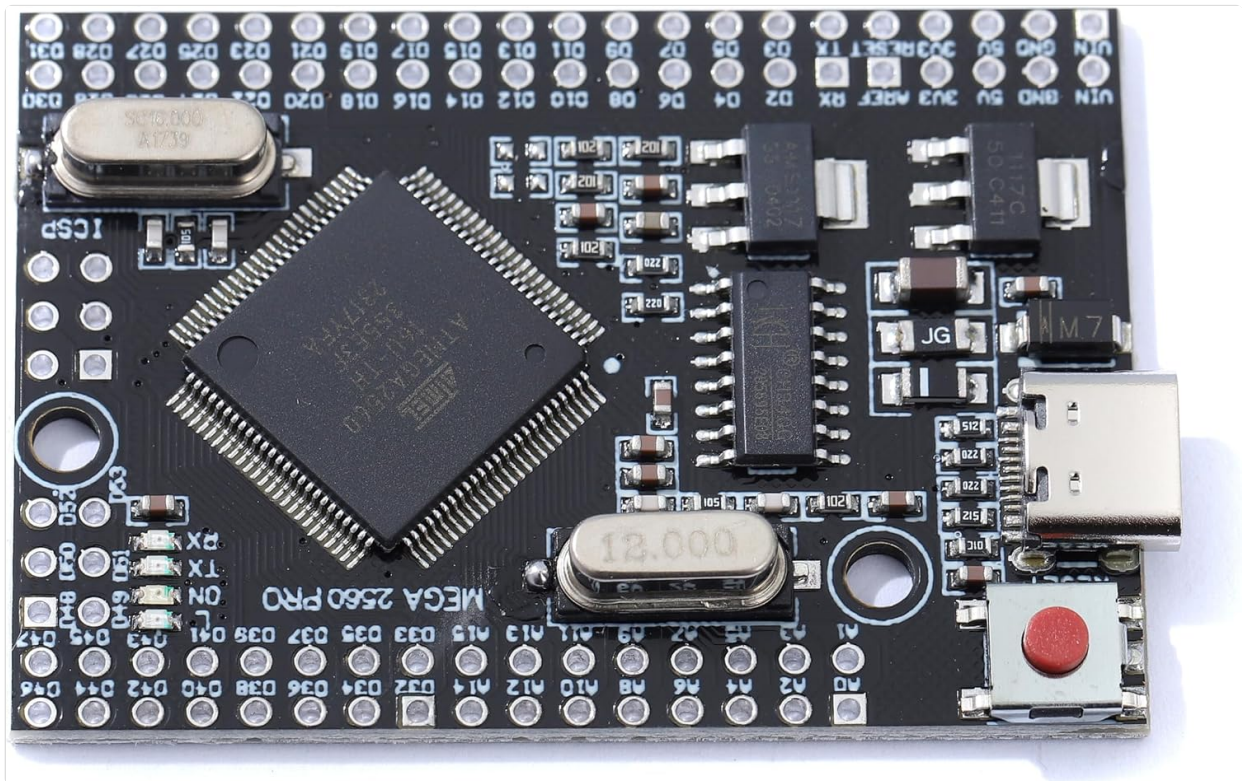


Image: Top view of the Teyliten Robot MEGA2560 PRO Embed Module, highlighting the main components and pin layout.

3. Powering the Board

The module can be powered via the MicroUSB connector from your computer. Alternatively, you can supply power through the dedicated power pinheaders. The onboard voltage regulator supports an input voltage range of 6V to 9V DC (with a peak tolerance of 18V). Ensure the power supply is within this range to prevent damage to the module.

4. Integrated Development Environment (IDE) Setup

For programming, it is recommended to use the Arduino IDE. Download and install the latest version of the Arduino IDE from the official Arduino website. Once installed, open the IDE and navigate to **Tools > Board > Arduino AVR Boards** and select **Arduino Mega or Mega 2560**. Then, go to **Tools > Port** and select the serial port corresponding to your connected module (it will typically appear as a COM port on Windows or /dev/ttyUSBx on Linux/macOS after CH340G driver installation).

OPERATING INSTRUCTIONS

1. Uploading a Sketch

After setting up the Arduino IDE and selecting the correct board and port, you can write or open an Arduino sketch. To upload the sketch to the MEGA2560 PRO module, click the 'Upload' button (right arrow icon) in

the Arduino IDE. The IDE will compile the code and then transfer it to the module. Observe the RX/TX LEDs on the board, which will blink during data transfer.

2. Basic Input/Output

The MEGA2560 PRO offers numerous digital and analog I/O pins. Refer to the pinout diagram on the board or in the specifications section for pin assignments. You can control digital pins using `digitalWrite()` and read their states using `digitalRead()`. Analog pins can be read using `analogRead()`. Ensure proper current limiting resistors are used when connecting LEDs or other components to prevent damage.

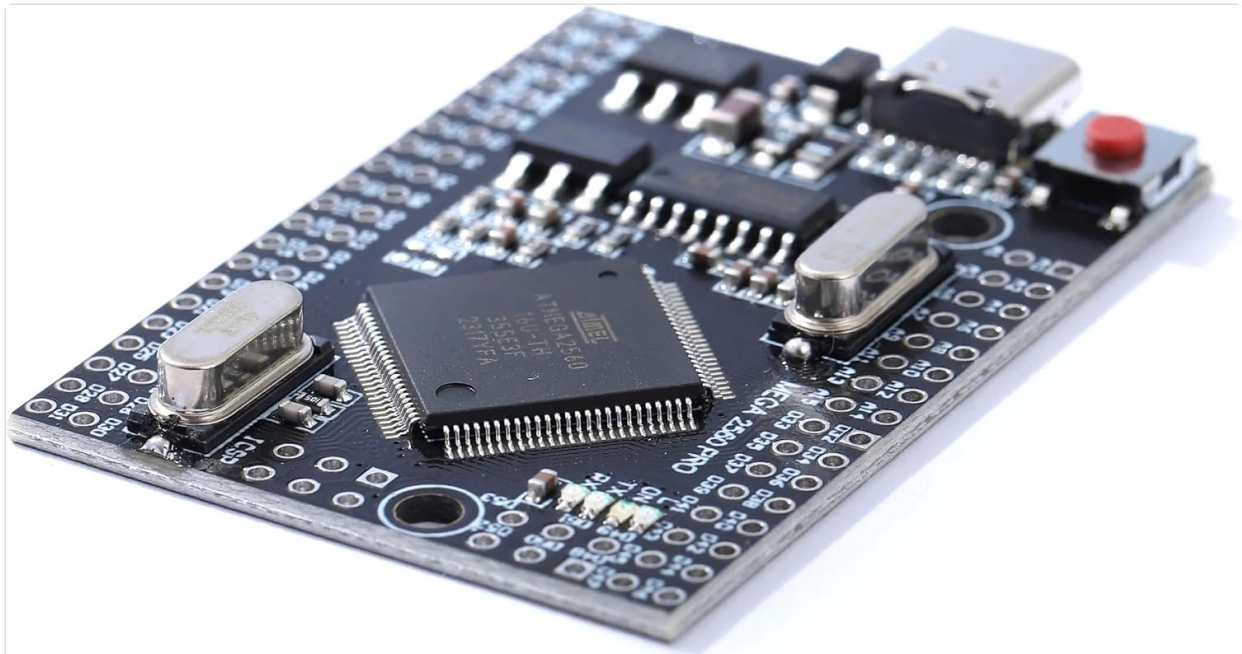


Image: Angled view of the Teyliten Robot MEGA2560 PRO Embed Module, illustrating its compact design.

3. Power Considerations

The module provides regulated 5V and 3.3V outputs, each capable of supplying approximately 800mA. When designing your project, calculate the total current draw of all connected components to ensure it does not exceed these limits. Overloading the power outputs can lead to instability or damage. If your project requires more current, consider an external regulated power supply for your peripherals.

SPECIFICATIONS

Microcontroller:

ATmega2560

USB-UART Converter:

CH340G

Operating Voltage:

5V

Input Voltage (recommended):

6-9V DC (peak 18V)

Digital I/O Pins:

54 (of which 15 provide PWM output)

Analog Input Pins:

16

DC Current per I/O Pin:

20 mA

DC Current for 3.3V Pin:

800 mA

Flash Memory:

256 KB (8 KB used by bootloader)

SRAM:

8 KB

EEPROM:

4 KB

Clock Speed:

16 MHz

Board Dimensions:

38mm x 55mm



Image: Bottom view of the Teyleten Robot MEGA2560 PRO Embed Module, displaying key specifications and pin labels.

MAINTENANCE

To ensure the longevity and reliable operation of your Teyleten Robot MEGA2560 PRO module, follow these maintenance guidelines:

- **Handle with Care:** Avoid dropping the module or subjecting it to physical shock.
- **Keep Dry:** Protect the module from moisture and liquids, as these can cause short circuits and corrosion.
- **Cleanliness:** Keep the board free from dust and debris. Use a soft, dry brush or compressed air for cleaning. Avoid using liquid cleaners.

- **Static Discharge:** Always handle the module in an environment free from static electricity. Use anti-static mats or wrist straps when working with electronic components.
- **Proper Storage:** When not in use, store the module in an anti-static bag or a protective enclosure to prevent damage.

TROUBLESHOOTING

If you encounter issues with your Teyleten Robot MEGA2560 PRO module, consider the following troubleshooting steps:

- **Module Not Recognized by Computer:**
 - Ensure the CH340G driver is correctly installed for your operating system.
 - Try a different USB cable or USB port on your computer.
 - Restart your computer.
- **Upload Errors in Arduino IDE:**
 - Verify that the correct board (Arduino Mega or Mega 2560) is selected under **Tools > Board**.
 - Confirm that the correct serial port is selected under **Tools > Port**.
 - Check for syntax errors in your sketch.
 - Ensure no other software is using the serial port.
- **Module Not Powering On:**
 - Check the USB cable connection.
 - If using external power, ensure the voltage is within the 6-9V DC range and the polarity is correct.
 - Verify the power source is functional.
- **Unexpected Behavior of Connected Components:**
 - Review your circuit connections for any wiring errors.
 - Check if the current draw of your components exceeds the module's output capabilities (800mA for 5V/3.3V).
 - Ensure your code logic is correct.

WHAT'S IN THE BOX

The package for the Teyleten Robot MEGA2560 PRO Embed Module typically includes:

- 1x Teyleten Robot MEGA2560 PRO Embed Module
- 1x USB cable

WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided with your purchase or contact Teyleten Robot customer service directly. Keep your proof of purchase for any warranty claims.

