ELEGOO EL-CB-003

ELEGOO MEGA R3 ATmega 2560 Microcontroller Board Instruction Manual

Model: EL-CB-003

1. Product Overview

The ELEGOO MEGA R3 ATmega 2560 is a microcontroller board designed for electronic projects and development. It is fully compatible with the Arduino IDE and most shields designed for the Arduino Mega R3. This board is optimized for functional requirements, product quality, and ease of use, while maintaining compatibility with the original design.

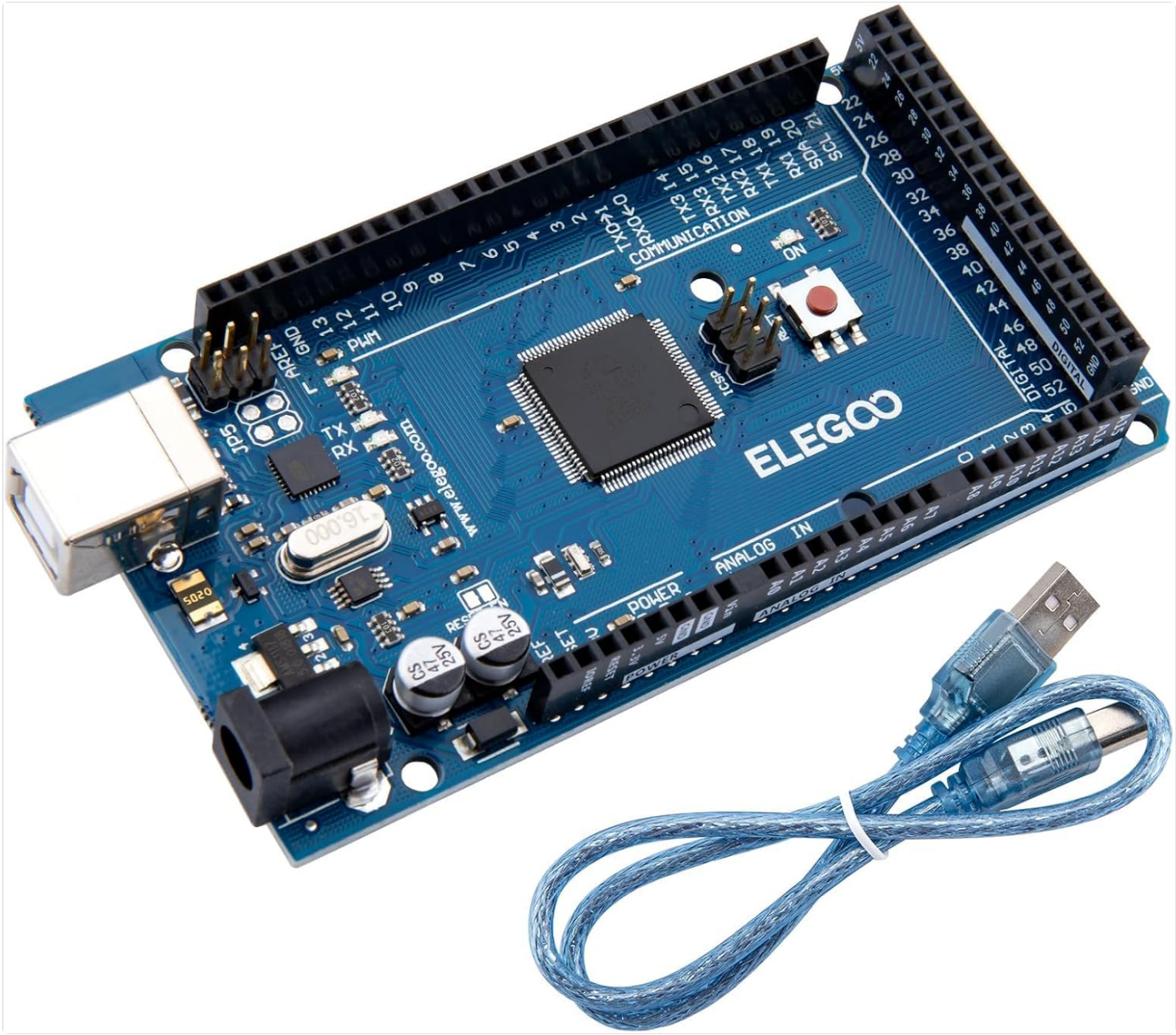


Figure 1: ELEGOO MEGA R3 ATmega 2560 Microcontroller Board and included USB cable.

The board features an ATmega2560-16AU microcontroller and a 16u2 chip for USB communication, ensuring performance consistent with official versions. It offers extensive input/output capabilities and memory for complex projects.

2. Package Contents

- 1 x ELEGOO MEGA R3 ATmega 2560 Microcontroller Board
- 1 x USB Cable



Figure 2: The ELEGOO MEGA R3 board and USB cable as typically packaged.

3. Setup Instructions

3.1 Powering the Board

The ELEGOO MEGA R3 board can be powered in several ways:

- **USB Connection:** Connect the board to your computer using the provided USB cable. This will power the board and enable communication.
- **External Power Supply:** An AC-to-DC adapter or battery can be connected to the 5.5 * 2.1mm DC barrel jack (compatible with 5.5 * 2.5mm DC barrel jacks). The recommended input voltage is 7-12V, with limits between 6-20V.

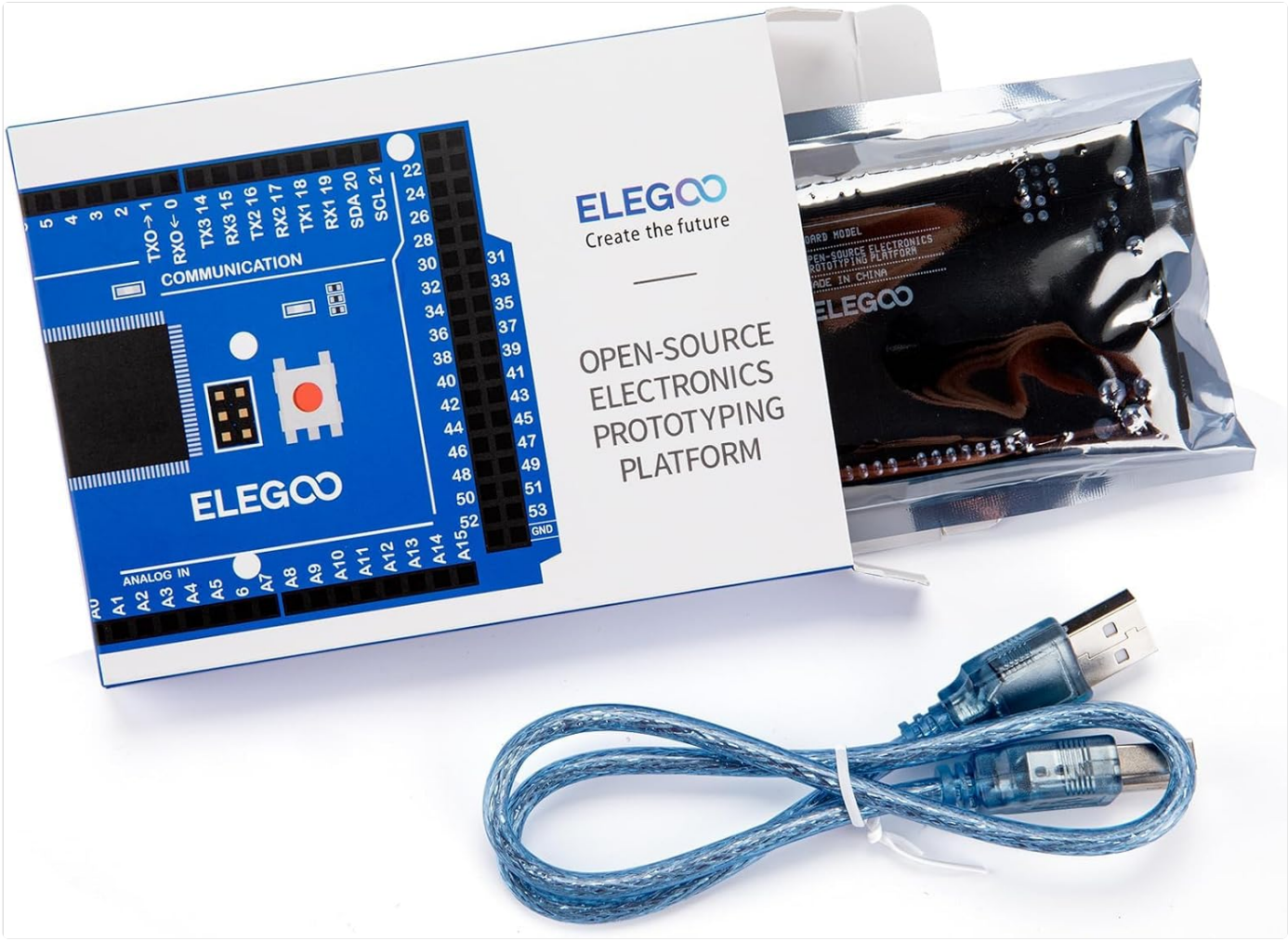


Figure 3: Connecting the ELEGOO MEGA R3 board to a computer using the USB cable for power and data.

3.2 Software Setup (Arduino IDE)

To program the ELEGOO MEGA R3, you will need the Arduino IDE. Follow these steps:

1. Download and install the latest version of the Arduino IDE from the official Arduino website.
2. Connect your ELEGOO MEGA R3 board to your computer using the USB cable.
3. Open the Arduino IDE.
4. Go to **Tools > Board** and select "Arduino/Genuino Mega or Mega 2560".
5. Go to **Tools > Port** and select the serial port corresponding to your connected board.
6. You are now ready to upload sketches to your board.

4. Operating the Board

The ELEGOO MEGA R3 offers a wide range of digital and analog pins for various applications. Its ATmega2560 microcontroller provides ample processing power and memory for complex projects.

4.1 Pinout and Features

The board features 54 digital I/O pins (15 of which provide PWM output) and 16 analog input pins. It also includes dedicated pins for SDA, SCL (near AREF), and IOREF (near RESET) for enhanced shield compatibility.

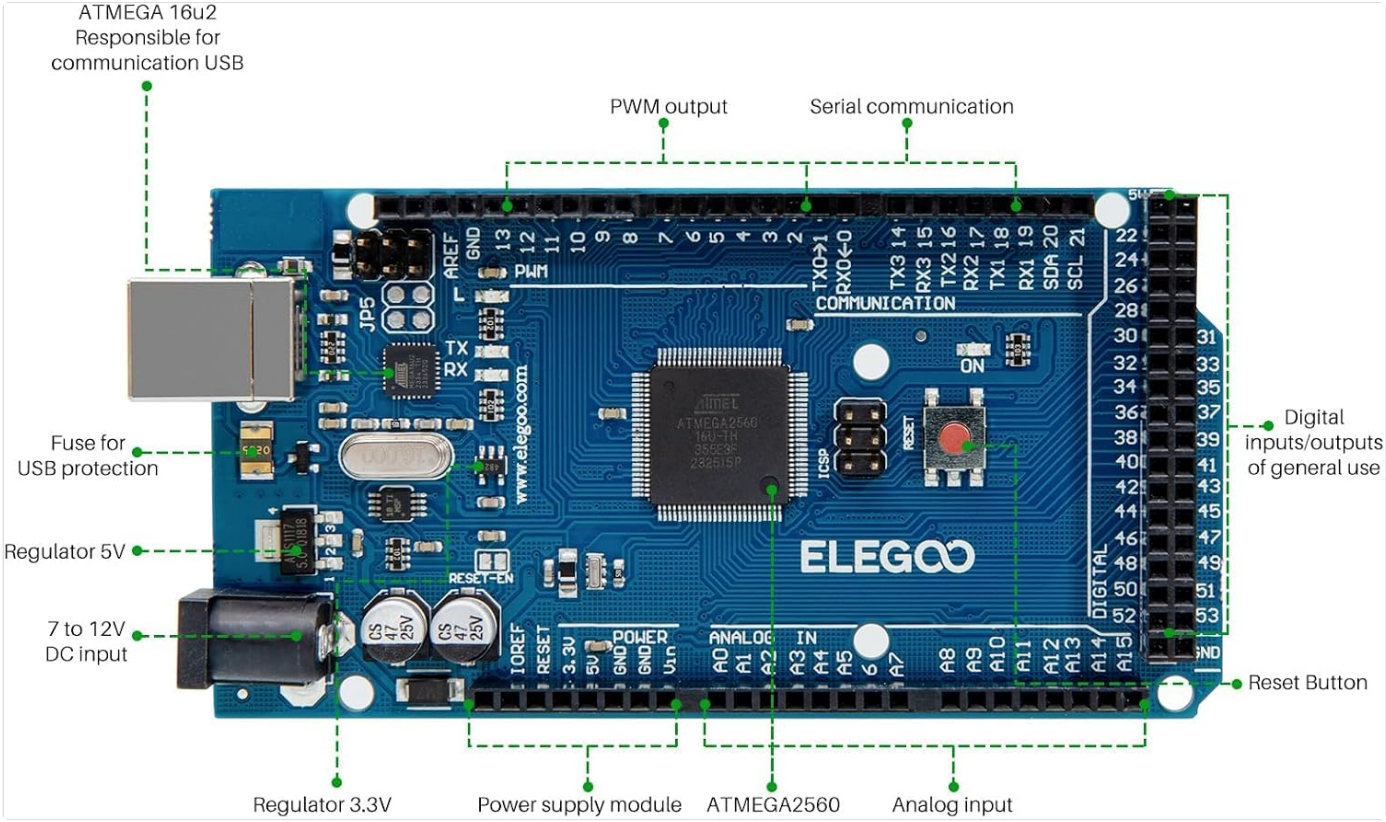


Figure 4: Detailed view of the pin headers, showing clear labeling for easy connection.

- **Digital I/O Pins:** Use these pins for digital input (reading button states) or digital output (controlling LEDs).
- **PWM Output:** 15 digital pins support Pulse Width Modulation for controlling analog-like behavior (e.g., LED brightness, motor speed).
- **Analog Input Pins:** These pins can read analog sensor values.
- **Communication Interfaces:** The board supports Serial, SPI, and I2C communication protocols.
- **Reset Button:** A dedicated reset button allows for easy program restart.

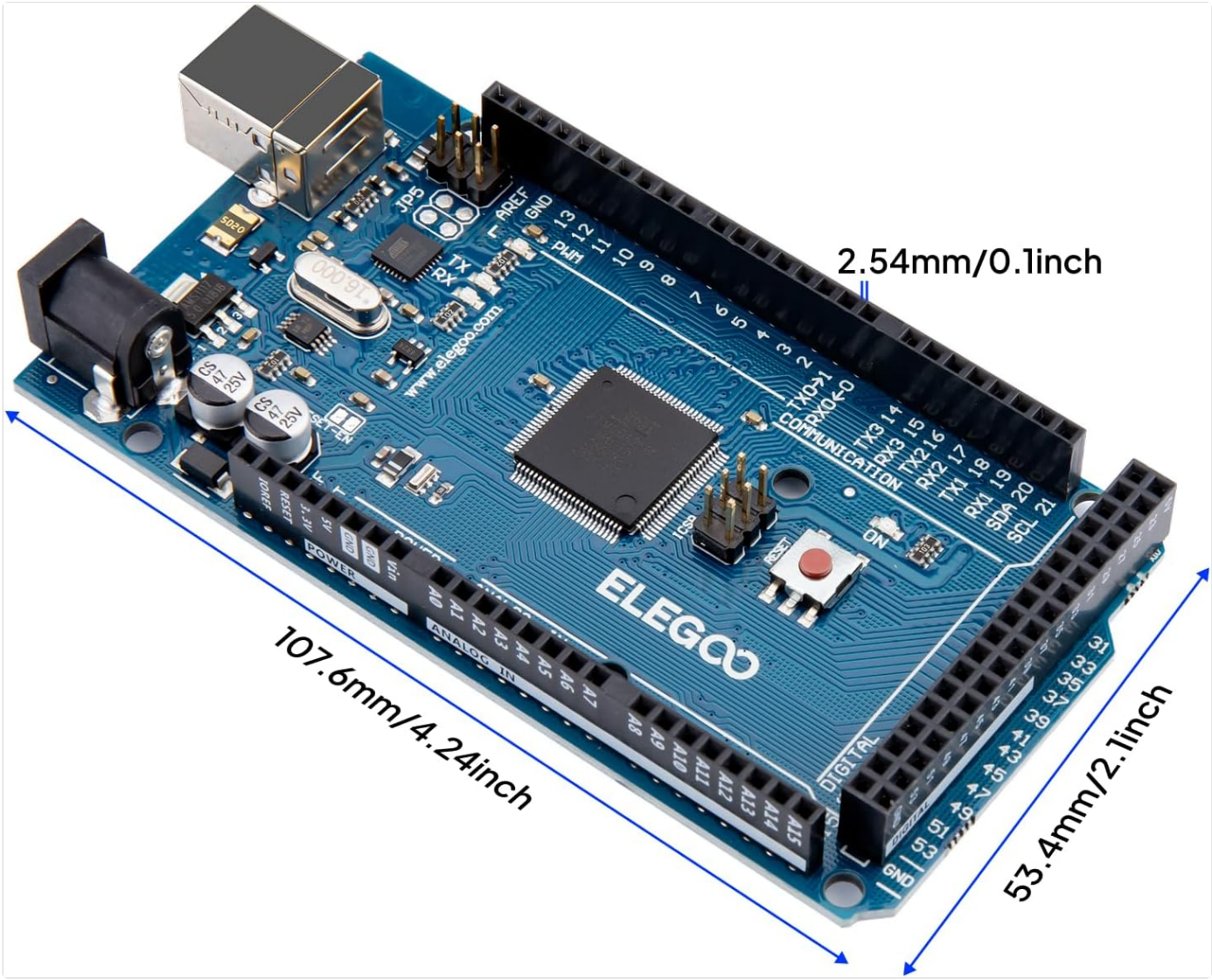


Figure 5: The reset button and surrounding components on the ELEGOO MEGA R3 board.

5. Maintenance

To ensure the longevity and proper functioning of your ELEGOO MEGA R3 board, follow these maintenance guidelines:

- **Handle with Care:** Avoid dropping the board or subjecting it to physical shock.
- **Keep Dry:** Protect the board from moisture and liquids.
- **Cleanliness:** Keep the board free from dust and debris. Use a soft, dry brush or compressed air for cleaning.
- **Power Supply:** Always use a stable power supply within the recommended voltage range (7-12V recommended, 6-20V limits). The board features a stronger RESET circuit and a resettable fuse for USB protection.
- **Storage:** Store the board in an anti-static bag when not in use to prevent electrostatic discharge damage.

6. Troubleshooting

If you encounter issues with your ELEGOO MEGA R3 board, consider the following:

- **Board Not Powering On:**
  - Ensure the USB cable is securely connected to both the board and the computer.
  - If using an external power supply, verify the voltage is within the 6-20V range and the polarity is correct.
  - Check if the power LED on the board is illuminated.

- **Upload Errors in Arduino IDE:**
  - Confirm that the correct board ("Arduino/Genuino Mega or Mega 2560") is selected under **Tools > Board**.
  - Verify that the correct serial port is selected under **Tools > Port**.
  - Ensure no other programs are using the serial port.
  - Try a different USB port or cable.
- **Inconsistent Behavior:**
  - Check all wiring connections for looseness or incorrect placement.
  - Ensure your code is free of errors and logic issues.
  - Press the reset button on the board to restart the program.

7. Specifications

Feature	Specification
Microcontroller	ATmega2560-16AU
Operating Voltage	5V
Input Voltage (Recommended)	7-12V
Input Voltage (Limits)	6-20V
Digital I/O Pins	54 (15 provide PWM output)
Analog Input Pins	16
DC Current per I/O Pin	40 mA
DC Current for 3.3V Pin	50 mA
Flash Memory	256 KB (8 KB used by bootloader)
SRAM	8 KB
EEPROM	4 KB
Clock Speed	16 MHz
USB Connector	USB-B
DC Jack	5.5 * 2.1mm (compatible with 5.5 * 2.5mm)
Dimensions	107.6mm x 53.4mm (approx. 4.24 x 2.1 inches)
Weight	2.24 ounces



Figure 6: Physical dimensions of the ELEGOO MEGA R3 board.

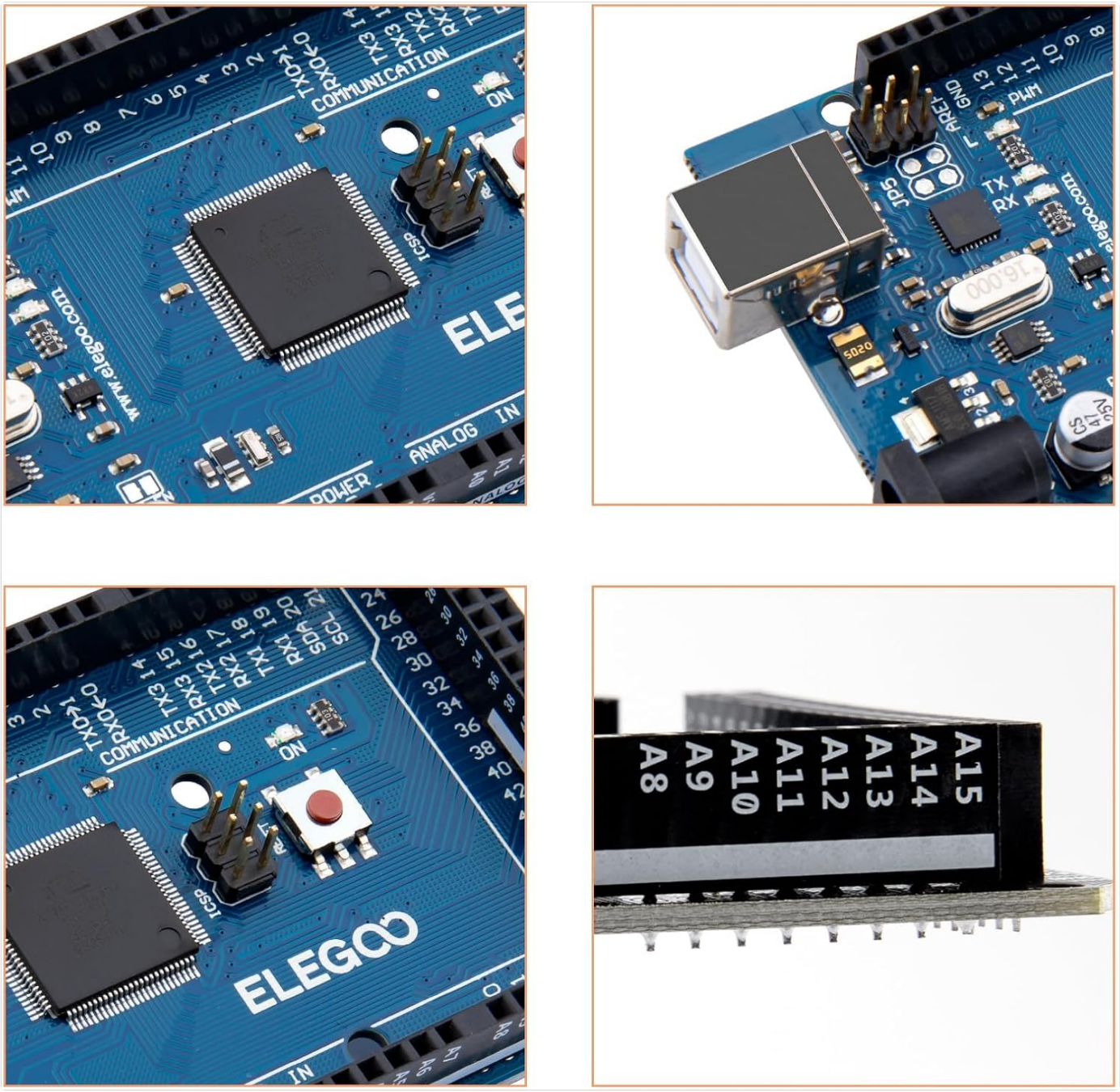


Figure 7: The ATmega2560 microcontroller, the central processing unit of the board.

8. Warranty and Support

ELEGOO is committed to product quality and customer satisfaction. While specific warranty details are not provided in this manual, ELEGOO offers an after-sales service team for quick support. For any inquiries, technical assistance, or to provide valuable suggestions, please refer to the contact information provided with your product or visit the official ELEGOO website.

The product is RoHS Compliant, indicating it meets standards for restricted hazardous substances.

Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question