

## AYWHP Nano V3.0 Board

# AYWHP Nano V3.0 Microcontroller Board Instruction Manual

Model: Nano V3.0 Board with ATmega328P and CH340G Chip (USB C Port)

## 1. INTRODUCTION

This manual provides detailed instructions for the AYWHP Nano V3.0 Microcontroller Board. This board is a compact, breadboard-friendly development platform based on the ATmega328P microcontroller, featuring a CH340G USB-to-serial converter and a modern USB Type-C port for connectivity and power. It is designed for hobbyists, students, and engineers for various embedded projects and is fully compatible with the Arduino development environment.

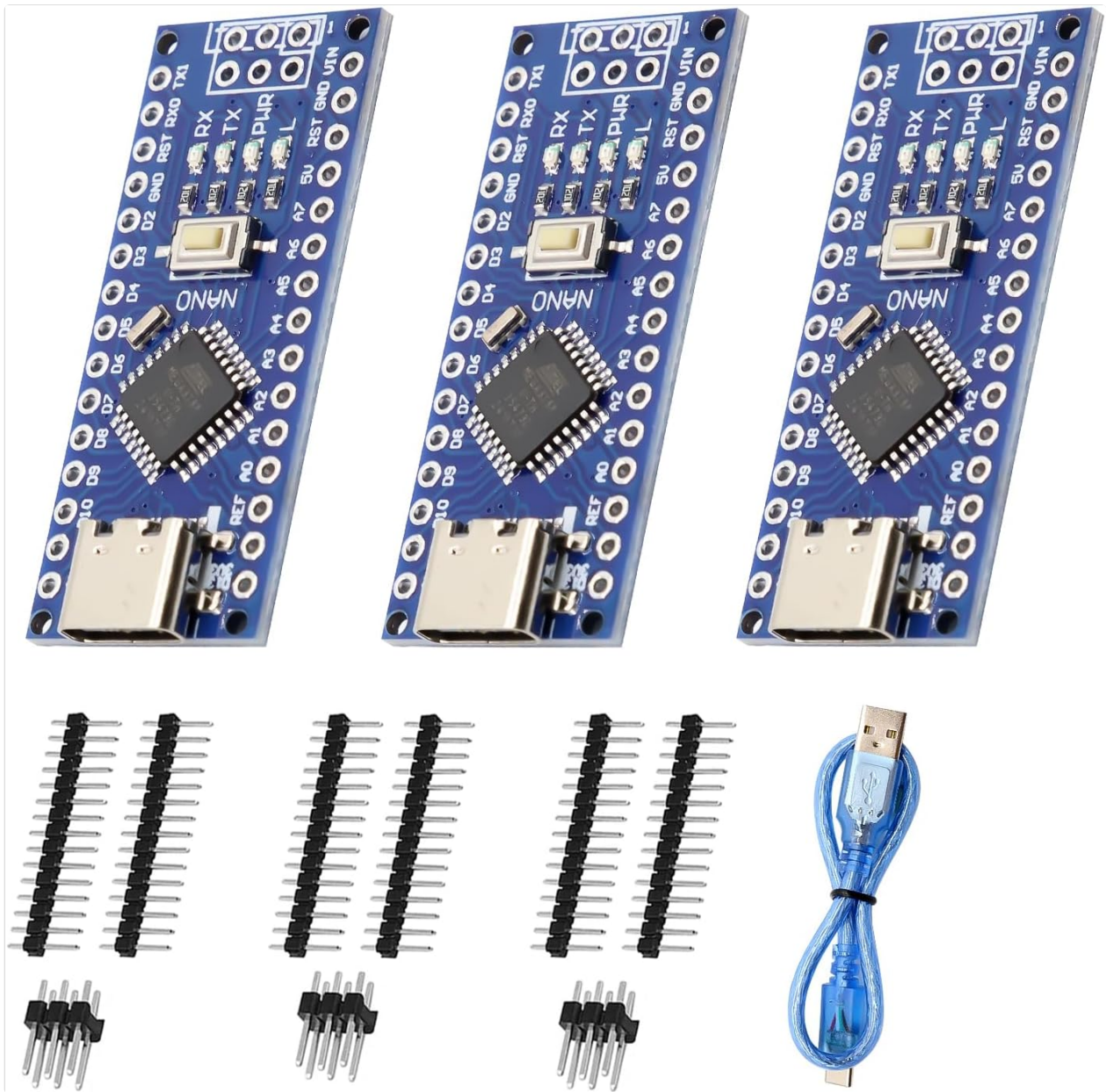


Figure 1: AYWHP Nano V3.0 Microcontroller Boards with included accessories.

## 2. PRODUCT OVERVIEW AND KEY FEATURES

The AYWHP Nano V3.0 board offers robust functionality in a small form factor. Key features include:

- **Microcontroller:** ATmega328P-AU, providing ample processing power for diverse applications.
- **USB-to-Serial Converter:** CH340G chip, ensuring broad compatibility with Windows, Mac, and Linux operating systems.
- **Connectivity:** USB Type-C port for convenient power and data transfer.
- **Digital I/O Pins:** 14 digital input/output pins, 6 of which can be used as PWM outputs.
- **Analog Input Pins:** 6 analog input pins.
- **Clock Speed:** 16MHz quartz oscillator for precise timing.
- **Power Options:** Can be powered via USB C (5V), unregulated external power supply (6-12V), or regulated external power supply (5V). The board automatically selects the higher potential power source.
- **Breadboard Friendly:** Compact design with pin headers (often requiring soldering) for easy integration into breadboard projects.

## Component Details



Figure 2: USB Type-C Port

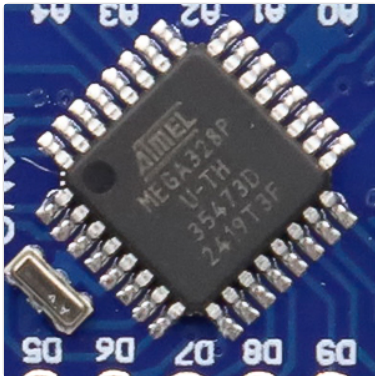


Figure 3: ATmega328P  
Microcontroller

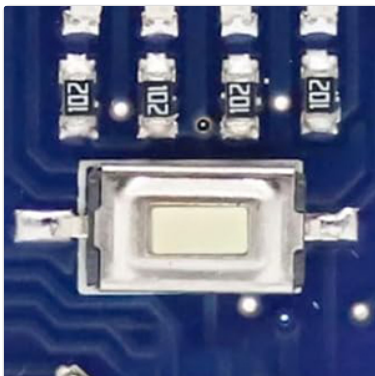


Figure 4: Reset Button

## 3. SETUP GUIDE

### 3.1 Driver Installation (CH340G)

The AYWHP Nano V3.0 board uses the CH340G chip for USB communication. Before connecting the board to your computer, you may need to install the appropriate drivers. Most modern operating systems (Windows 10/11, recent macOS, Linux distributions) often have these drivers pre-installed or can automatically download them. If the board is not recognized:

1. Search online for "CH340G driver" for your specific operating system.
2. Download the driver from a reputable source (e.g., manufacturer's website or a well-known Arduino community site).
3. Follow the installation instructions provided with the driver package.

4. Restart your computer if prompted.

## 3.2 Arduino IDE Setup

To program the Nano V3.0 board, you will use the Arduino Integrated Development Environment (IDE).

1. Download and install the latest version of the Arduino IDE from the official Arduino website ([www.arduino.cc/en/software](http://www.arduino.cc/en/software)).
2. Connect the Nano V3.0 board to your computer using the provided USB Type-C cable.
3. Open the Arduino IDE.
4. Go to **Tools > Board** and select "**Arduino Nano**".
5. Go to **Tools > Processor** and select "**ATmega328P (Old Bootloader)**". Some compatible boards may require the old bootloader option for proper communication. If you experience issues, try this setting.
6. Go to **Tools > Port** and select the COM port associated with your Nano board. This will typically appear after connecting the board and installing drivers.

## 3.3 Soldering Pin Headers

The AYWHP Nano V3.0 boards typically come with unsoldered pin headers. These headers need to be soldered onto the board to allow it to be plugged into a breadboard or connected via jumper wires. If you are new to soldering, seek guidance from experienced individuals or online tutorials to ensure proper connections and avoid damage to the board.

# 4. OPERATING INSTRUCTIONS

---

## 4.1 Powering the Board

The Nano V3.0 board can be powered in several ways:

- **USB Type-C:** Connect the board to your computer or a 5V USB power adapter using the USB-C cable. This is the most common method for programming and basic operation.
- **VIN Pin:** Provide an unregulated external power supply between 6V and 12V to the VIN pin.
- **5V Pin:** Provide a regulated 5V external power supply to the 5V pin.

The board automatically detects and switches to the power source with the highest potential, eliminating the need for manual jumper selection.

## 4.2 Uploading Sketches

Once the Arduino IDE is configured and the board is connected:

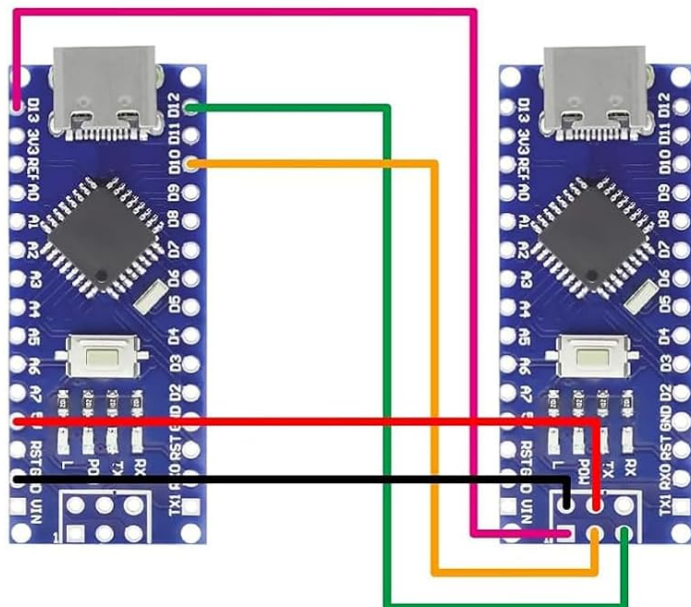
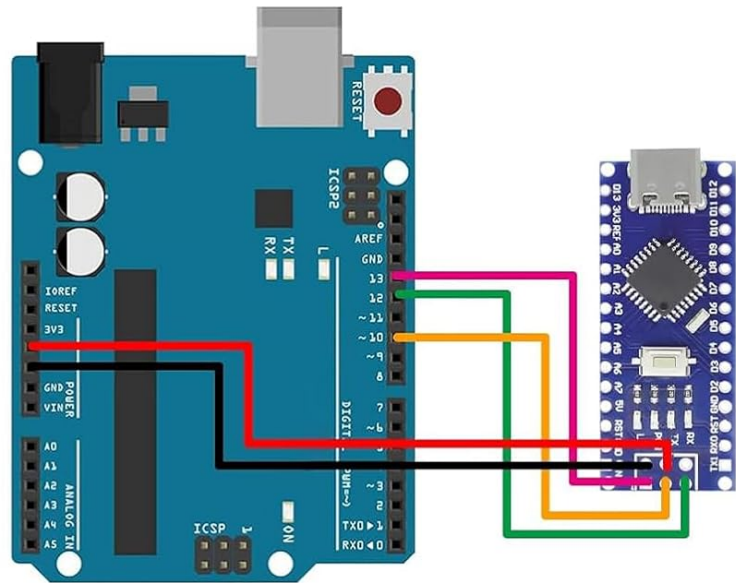
1. Open an example sketch (e.g., **File > Examples > 01.Basics > Blink**).
2. Click the "**Upload**" button (right arrow icon) in the Arduino IDE.
3. The IDE will compile the code and upload it to your Nano board. The RX/TX LEDs on the board will blink during the upload process.

## 4.3 Bootloader Burning

In rare cases, you might need to burn a new bootloader to your Nano V3.0 board, for example, if it becomes corrupted or if you are using a bare ATmega328P chip. This typically requires another Arduino board (e.g., an Uno) acting as an ISP (In-System Programmer).

# Nano V3 Connections

## Burn Bootloader via Arduino



## Burn Bootloader via NANO

Figure 5: Bootloader Connection Diagrams

Refer to official Arduino documentation or community guides for detailed steps on burning bootloaders, as this is an advanced procedure.

## 5. PINOUT DIAGRAM

Understanding the pinout is crucial for connecting sensors, actuators, and other components to your Nano V3.0 board. The board features digital I/O pins, analog input pins, power pins, and communication pins.



# Nano V3 Pins

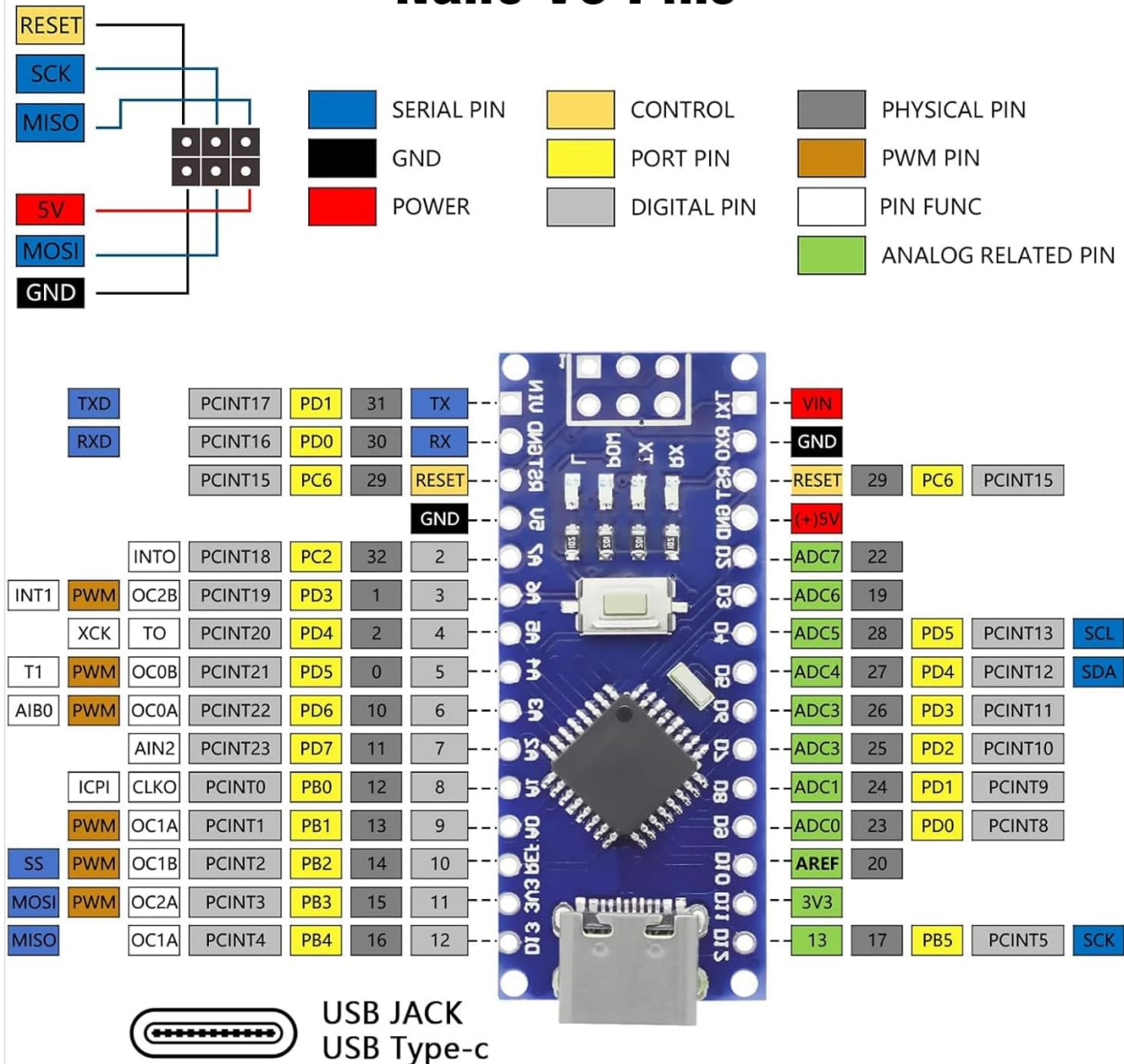


Figure 6: Nano V3.0 Pinout Diagram

## Key Pin Functions:

- **Digital Pins (D0-D13):** General purpose input/output. D0 (RX) and D1 (TX) are also used for serial communication. D3, D5, D6, D9, D10, D11 support PWM.
- **Analog Pins (A0-A7):** Analog input pins, also usable as digital I/O.
- **Power Pins:**
  - **VIN:** Input voltage to the board when using an external power source (6-12V).
  - **5V:** Regulated 5V output or input for regulated 5V power supply.
  - **3V3:** Regulated 3.3V output from the onboard regulator.
  - **GND:** Ground pins.
- **Communication Pins:**
  - **Serial (UART):** RX (D0), TX (D1).
  - **I2C (TWI):** A4 (SDA), A5 (SCL).
  - **SPI:** D10 (SS), D11 (MOSI), D12 (MISO), D13 (SCK).
- **RESET:** Resets the microcontroller.

## 6. TECHNICAL SPECIFICATIONS

The following table details the technical specifications of the AYWHP Nano V3.0 board:

Feature	Specification
Microcontroller	ATmega328P-AU
USB Chip	CH340G
Operating Voltage	5V
Input Voltage (recommended)	7-12V (VIN pin)
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (6 PWM outputs)
Analog Input Pins	8 (A0-A7)
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 mA
Flash Memory	32 KB (ATmega328P) of which 2 KB used by bootloader
SRAM	2 KB (ATmega328P)
EEPROM	1 KB (ATmega328P)
Clock Speed	16 MHz
Dimensions (L x W)	45mm x 18mm (approx. 1.77in x 0.71in)
Weight	Approx. 2g (0.07 oz)

## 7. APPLICATIONS

The AYWHP Nano V3.0 board is versatile and suitable for a wide range of projects, including but not limited to:

- Robotics and automation
- Home automation systems
- Sensor data acquisition
- Wearable electronics
- Educational projects
- Prototyping and rapid development

# Nano V3 Size

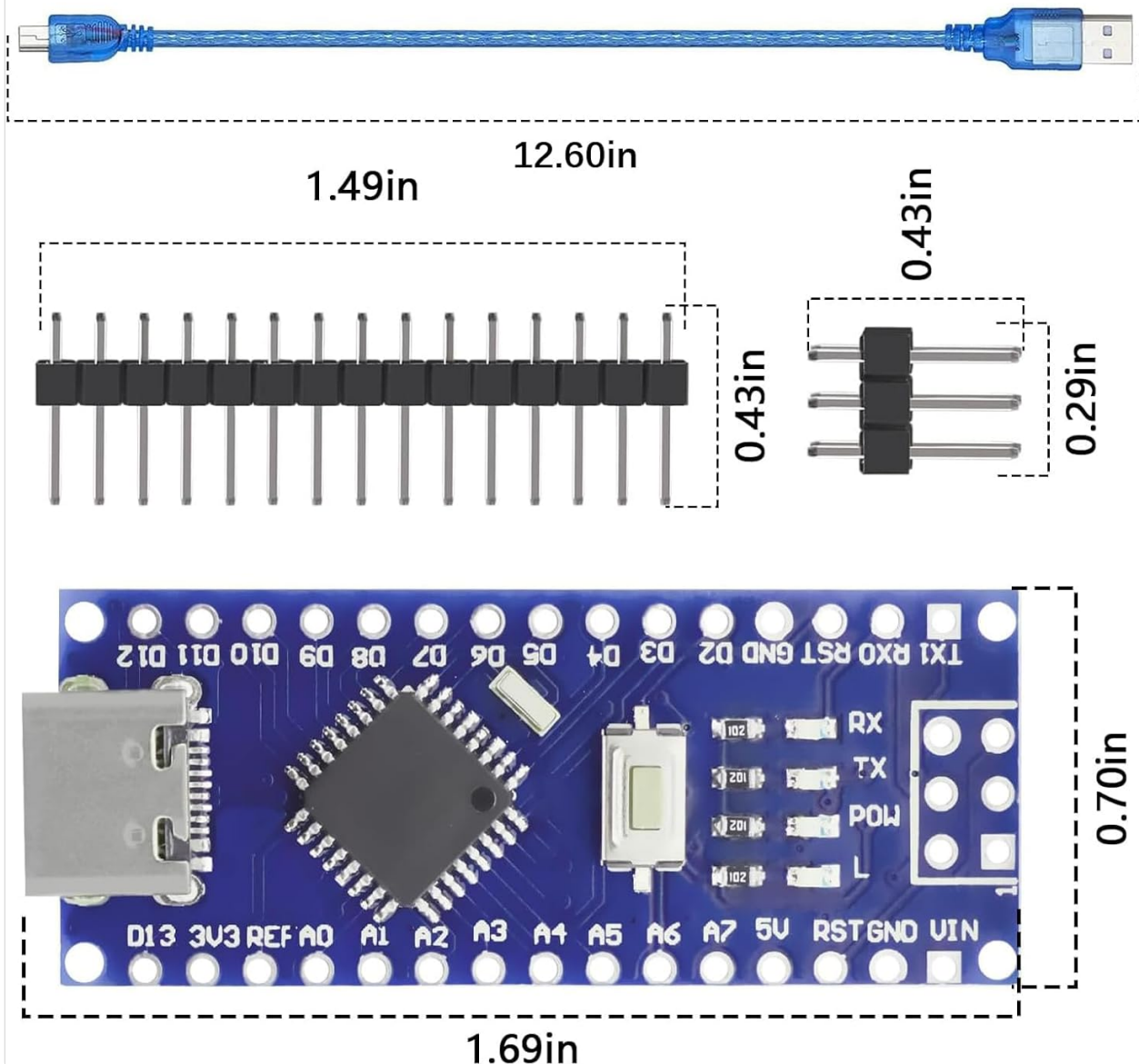
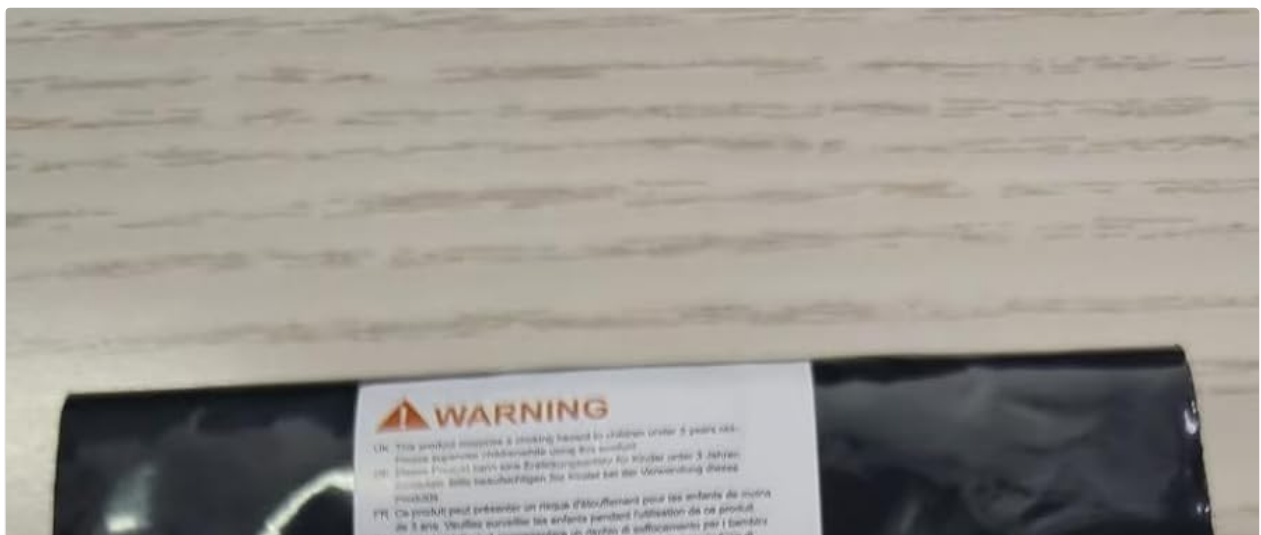


Figure 7: Example Applications of Nano V3.0

## 8. DIMENSIONS

The compact size of the Nano V3.0 board makes it ideal for projects where space is limited.





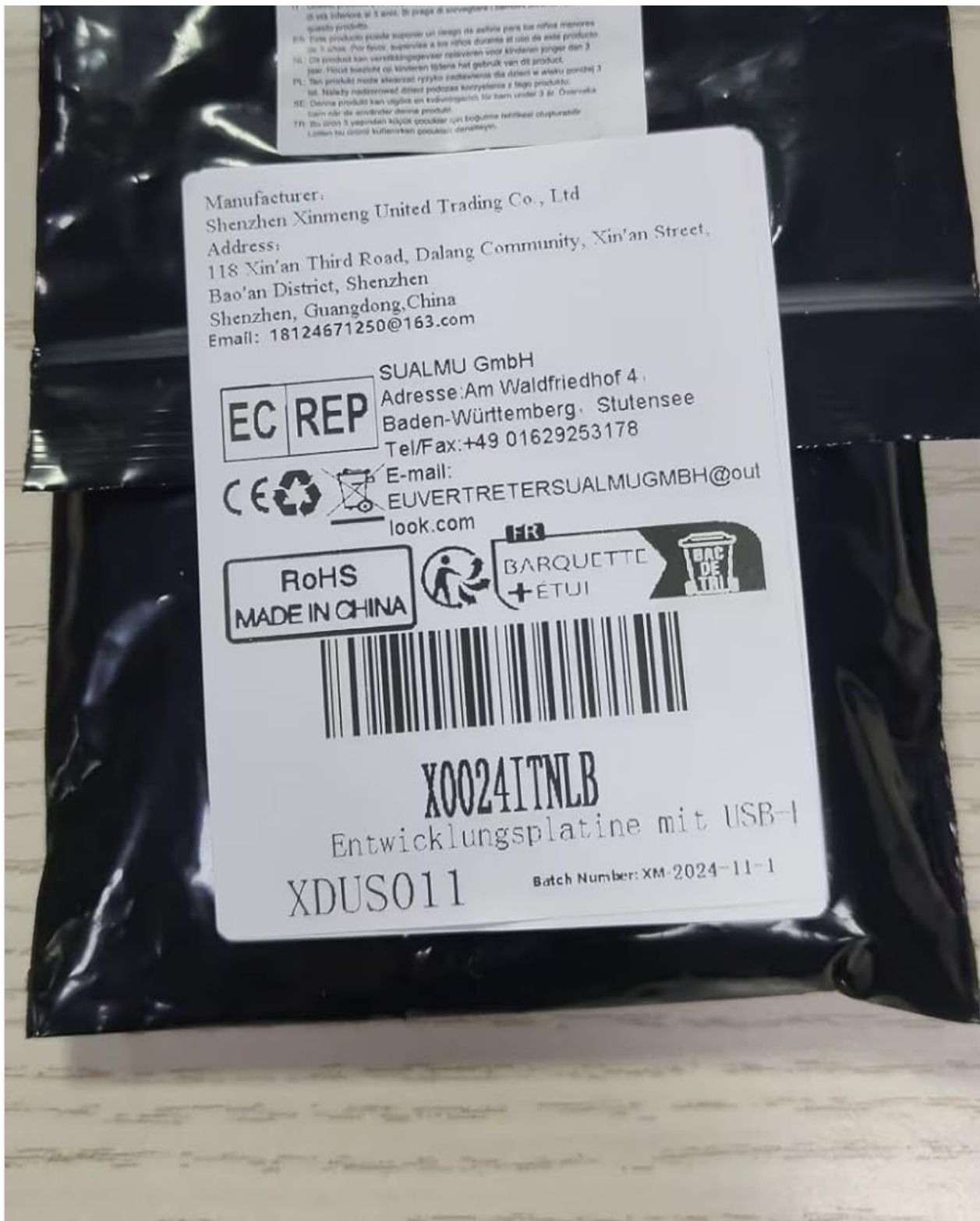


Figure 8: Nano V3.0 Board Dimensions

- **Board Length:** Approximately 1.69 inches (43mm)
- **Board Width:** Approximately 0.70 inches (18mm)
- **USB Cable Length:** Approximately 12.60 inches (32cm)

## 9. TROUBLESHOOTING

If you encounter issues with your AYWHP Nano V3.0 board, consider the following common troubleshooting steps:

- **Board Not Recognized:** Ensure the CH340G driver is correctly installed. Check Device Manager

(Windows) or System Information (macOS/Linux) to see if the USB-Serial device is listed. Try a different USB port or cable.

- **Upload Errors:** Verify that you have selected the correct board (**Arduino Nano**) and processor (**ATmega328P (Old Bootloader)**) in the Arduino IDE. Confirm the correct COM port is selected. Ensure no other software is using the serial port.
- **Power Issues:** Check that the board is receiving adequate power. The PWR LED should be illuminated. If using an external power supply, ensure it is within the specified voltage range (6-12V for VIN, 5V for 5V pin).
- **Sketch Not Running:** After a successful upload, if your sketch doesn't run, try pressing the reset button on the board. Double-check your code for logical errors.
- **Pinout Confusion:** Always refer to the pinout diagram (Figure 6) when making connections to ensure correct wiring. Incorrect wiring can damage components.

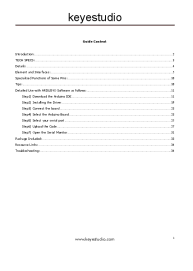
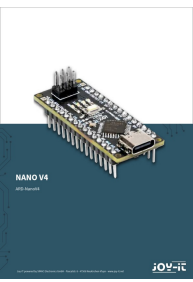
## 10. WARRANTY AND SUPPORT




For technical support or warranty inquiries regarding your AYWHP Nano V3.0 Microcontroller Board, please contact the manufacturer, AYWHP, through your point of purchase or their official support channels. Please retain your purchase receipt for warranty validation.

Product Identifier: X0024ITNLB

© 2025 AYWHP. All rights reserved.

### Related Documents - Nano V3.0 Board

	<p><a href="#">Keyestudio NANO CH340: Development Board Guide and Arduino IDE Setup</a></p> <p>A comprehensive guide to the Keyestudio NANO CH340 development board, covering technical specifications, pinouts, and a step-by-step tutorial for setting up the Arduino IDE and uploading code.</p>
	<p><a href="#">Joy-IT ARD-NanoV4 Microcontroller Board - User Guide</a></p> <p>Comprehensive guide for the Joy-IT ARD-NanoV4 microcontroller board. Learn about its features, device overview, software setup using Arduino IDE, code examples, and support information.</p>

<div><p>Operating Instructions</p><p>Elektor Arduino® NANO Training Board MCCAB Rev. 3.3</p></div>	<p><a href="#">Elektor Arduino NANO Training Board MCCAB Operating Instructions Rev. 3.3</a></p> <p>Operating instructions for the Elektor Arduino® NANO Training Board MCCAB Rev. 3.3, detailing its components, safety guidelines, intended use, power supply, connections, and programming hints for learning microcontroller applications.</p>
<div><p>OPEN-SMART</p><p>NAME: AVR/ISP Shield manual Version: v1.0 Date: Nov 18, 2016</p><p>LORENZ ECKERT</p></div>	<p><a href="#">OPEN-SMART AVR ISP Shield Manual: Guide to Bootloader Burning</a></p> <p>Discover the OPEN-SMART AVR ISP Shield, an Arduino expansion board designed for modifying fuse bits and burning bootloaders onto external chips and Arduino boards. This manual provides detailed instructions and specifications.</p>
<div><p>RADIX <small>NANO</small></p></div>	<p><a href="#">HavenTechnik Radix Nano PIC Development Board Guide</a></p> <p>Comprehensive guide to the HavenTechnik Radix Nano series of PIC development boards, detailing features, variants (Nano 18, 20, 28), power options, programming methods, and general usage.</p>
<div><p>PTSolns</p><p>Nano Flip 3V3</p><p>1. DESCRIPTION</p></div>	<p><a href="#">PTSolns Nano Flip 3V3 Datasheet and Technical Overview</a></p> <p>Comprehensive datasheet for the PTSolns Nano Flip 3V3, a 3.3V microcontroller development board based on the ATmega328P. Covers product features, physical and electrical properties, usage instructions, Arduino IDE programming, and troubleshooting.</p>