

Overview

RP2040-Tiny micro development board, using the RP2040 developed by Raspberry Pi as the core.

With a separate adapter board design, USB and keypad circuits can be separated, reducing the overall thickness and size of the PCB and making it easier for users to integrate into their projects.

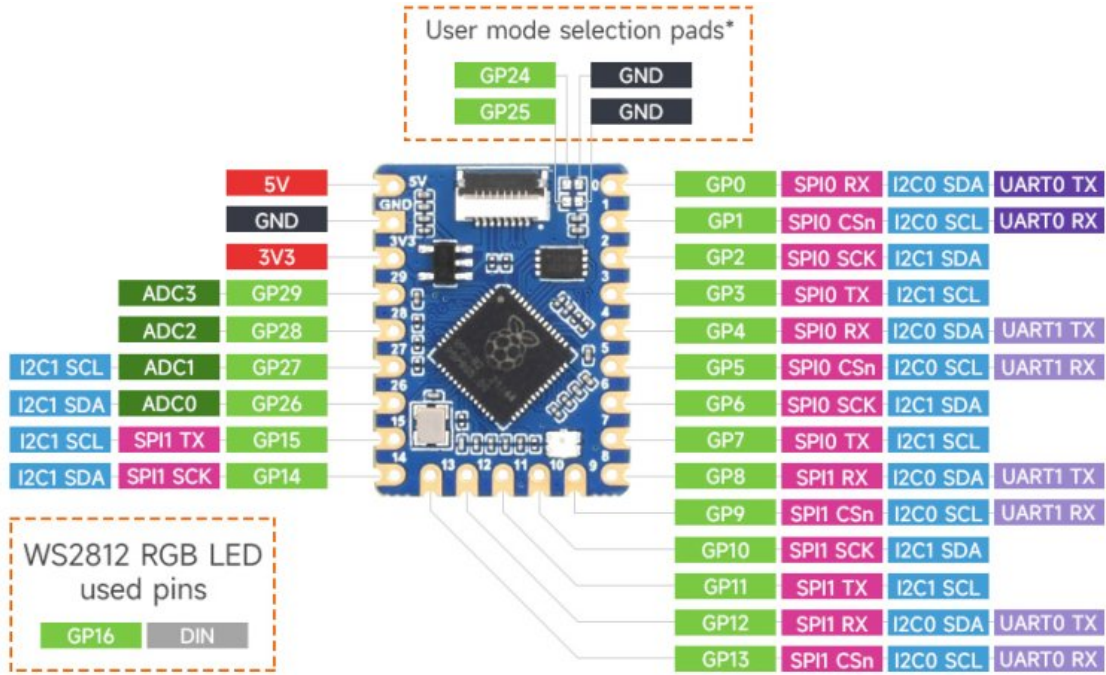
The separate adapter board design, compact size, and very thin thickness make this board ideal for projects requiring a small size. Whether you are a beginner or an experienced developer, it is a great choice for your next project.



Features

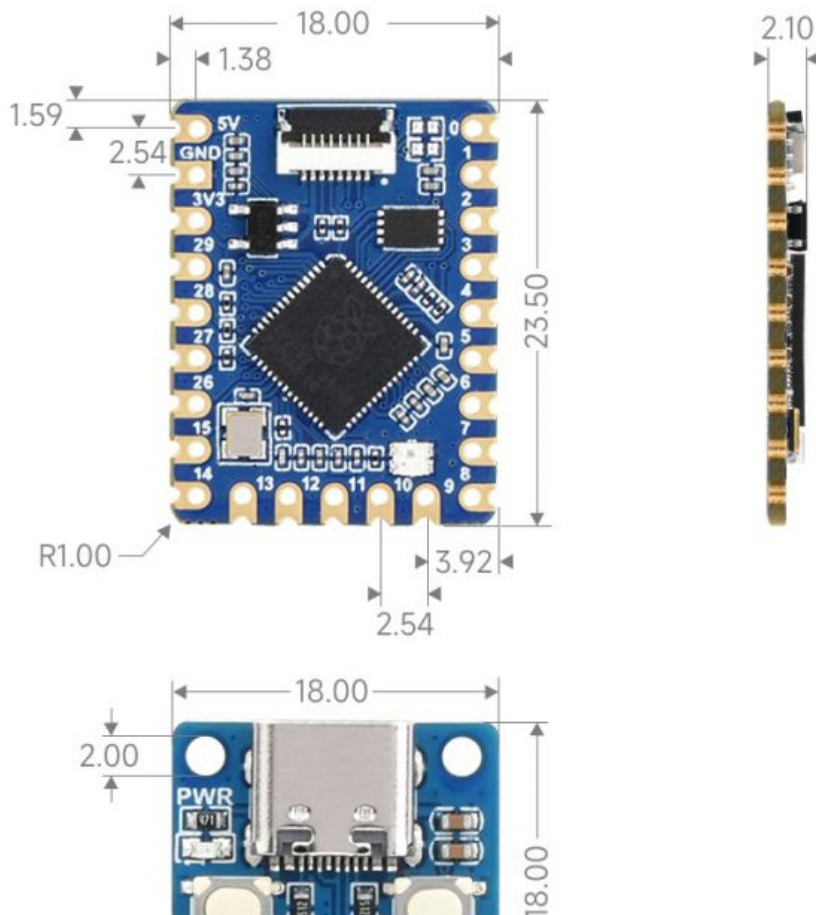
- RP2040 microcontroller chip designed by Raspberry Pi in the United Kingdom.
- Dual-core Arm Cortex M0+ processor, flexible clock running up to 133 MHz.
- 264KB of SRAM, and 2MB of onboard Flash memory.
- Onboard FPC 8PIN connector, adapting USB Type-C port via an adapter board.
- Castellated module allows soldering directly to carrier boards.
- USB 1.1 with device and host support.
- Low-power sleep and dormant modes.
- Drag-and-drop programming using mass storage over USB
- 20 × multi-function GPIO pins.
- 2 × SPI, 2 × I2C, 2 × UART, 4 × 12-bit ADC, 16 × controllable PWM channels.
- Accurate clock and timer on-chip.
- Temperature sensor.
- Accelerated floating-point libraries on-chip.
- 8 × Programmable I/O (PIO) state machines for custom peripheral support.

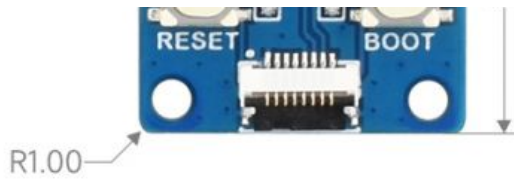
Pinout



- Power
- Ground
- UART / UART (default)
- GPIO, PIO, and PWM
- ADC
- SPI
- I2C

Dimensions





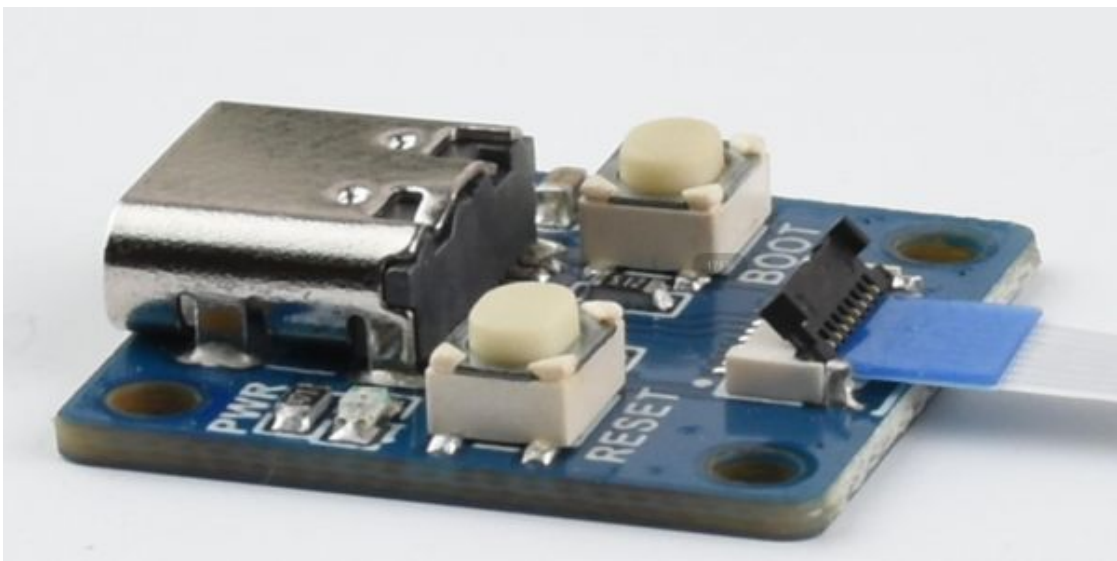
Unit:mm

Cable Connection

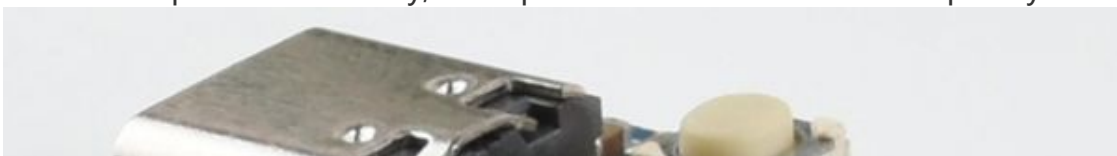
- **Please read this section and the precautions before connection, otherwise the device may be damaged or short-circuited!**
 - FPC connector update in V1.1 version and above can bring you a better experience, which can be identified by the back of the Rev*. * for version differentiation.
1. Open the flip cover of the cable connector.

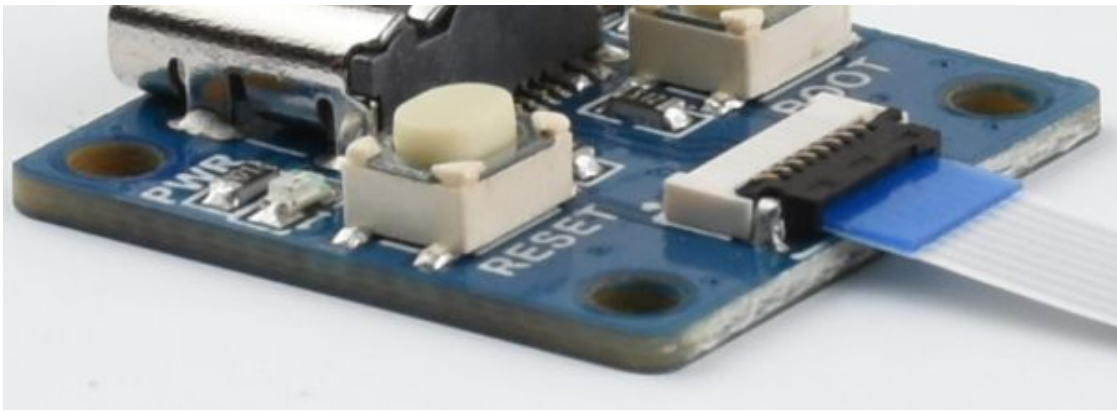


2. Please make sure to install the cable in the center.

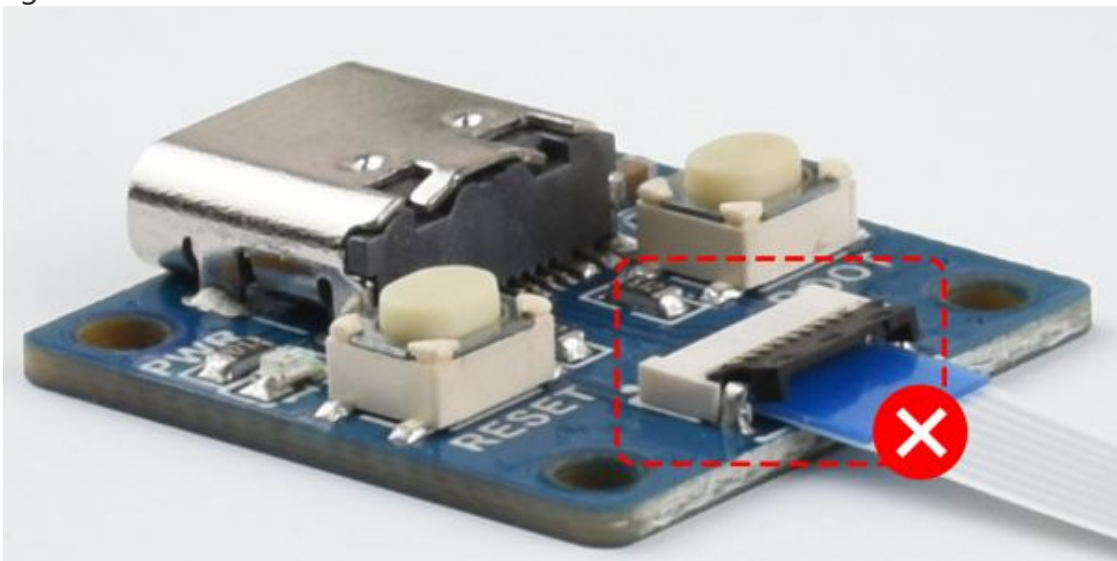


3. Close the flip cover. Normally, the flip cover should be closed completely.





4. If the cable is not properly installed, it may prevent the flip cover from closing correctly. Please adjust the position of the cable and try to close the flip cover again.



Note

- **Please do not unplug the cable with electricity, otherwise it may lead to a short circuit.**
- **When installing the cable, it is important to pay attention to its proper connection in the center and ensure that it is inserted fully into the socket. Incorrect installation may result in connection issues or even short circuits.**

Pico Quick Start

Download Firmware

- [MicroPython Firmware Download](#)
- [C_Blink Firmware Download](#) [\[Expand\]](#)

Video Tutorial

- [Pico Tutorial I - Basic Introduction](#)
- [Pico Tutorial II - GPIO](#) [\[Expand\]](#)

- [Pico Tutorial III - PWM](#) [\[Expand\]](#)
- [Pico Tutorial IV - ADC](#) [\[Expand\]](#)
- [Pico Tutorial V - UART](#) [\[Expand\]](#)
- [Pico Tutorial VI - To be continued...](#) [\[Expand\]](#)

MicroPython Series

- [\[MicroPython\] machine.Pin Function](#)
- [\[MicroPython\] machine.PWM Function](#)
- [\[MicroPython\] machine.ADC Function](#)
- [\[MicroPython\] machine.UART Function](#)
- [\[MicroPython\] machine.I2C Function](#)
- [\[MicroPython\] machine.SPI Function](#)
- [\[MicroPython\] rp2.StateMachine](#)

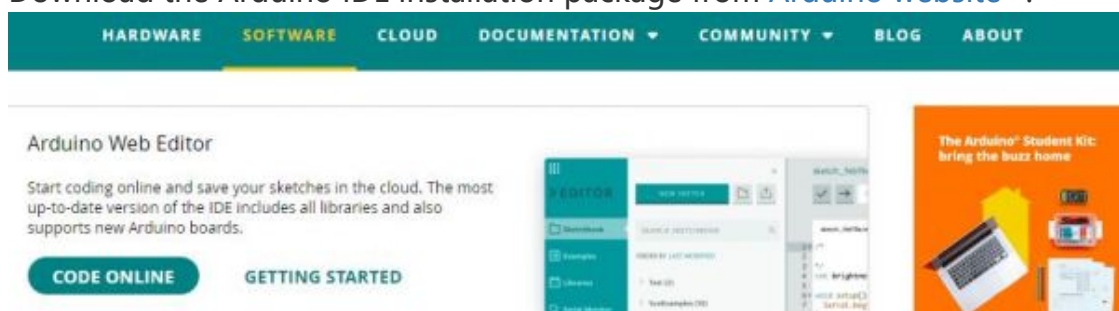
C/C++ Series

- [\[C/C++\] Windows Tutorial 1 - Environment Setting](#)
- [\[C/C++\] Windows Tutorial 1 - Create New Project](#)

Arduino IDE Series

Install Arduino IDE

1. Download the Arduino IDE installation package from [Arduino website](#).



Downloads



Arduino IDE 2.0.0

The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger.

DOWNLOAD OPTIONS

Windows Win 10 and newer, 64 bits

Windows MSI installer

Windows ZIP file

Linux AppImage 64 bits (X86-64)

Linux ZIP file 64 bits (X86-64)

macOS 10.14: "Mojave" or newer, 64 bits

For more details, please refer to the [Arduino IDE 2.0 documentation](#).

Nightly builds with the latest bugfixes are available through the section below.

SOURCE CODE

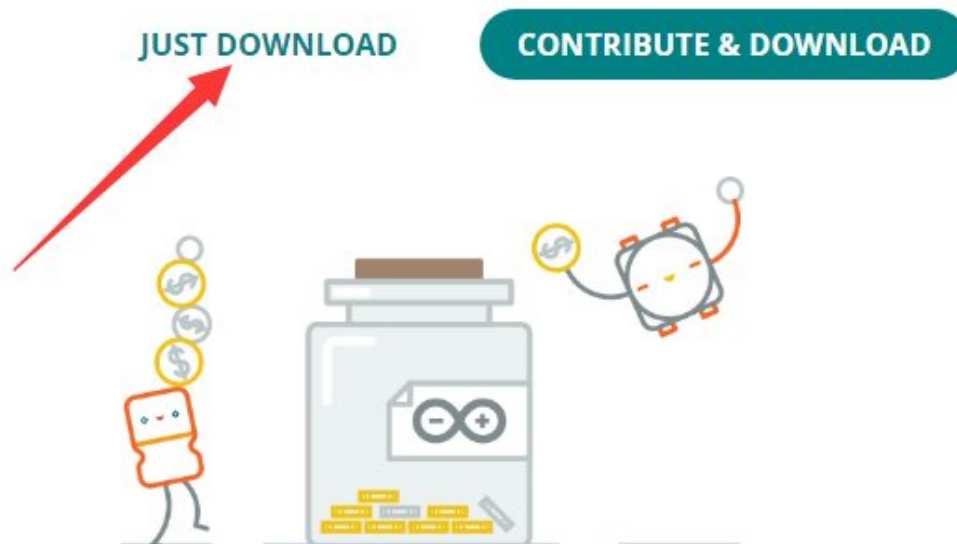
The Arduino IDE 2.0 is open source and its source code is hosted on [GitHub](#).

2. Just click on "JUST DOWNLOAD".

Support the Arduino IDE

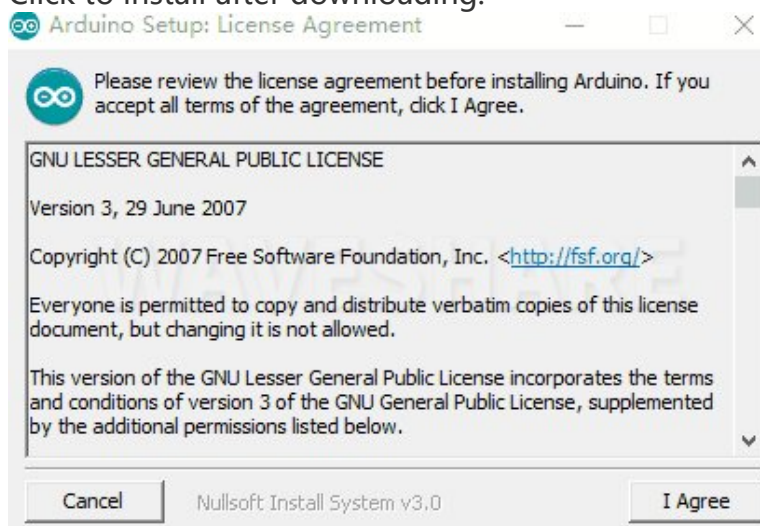
Since the release 1.x release in March 2015, the Arduino IDE has been downloaded **69,954,557** times — impressive! Help its development with a donation.

\$3	\$5	\$10	\$25	\$50	Other
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Learn more about [donating to Arduino](#).

3. Click to install after downloading.



4. **Note: You will be prompted to install the driver during the installation process, we can click Install.**

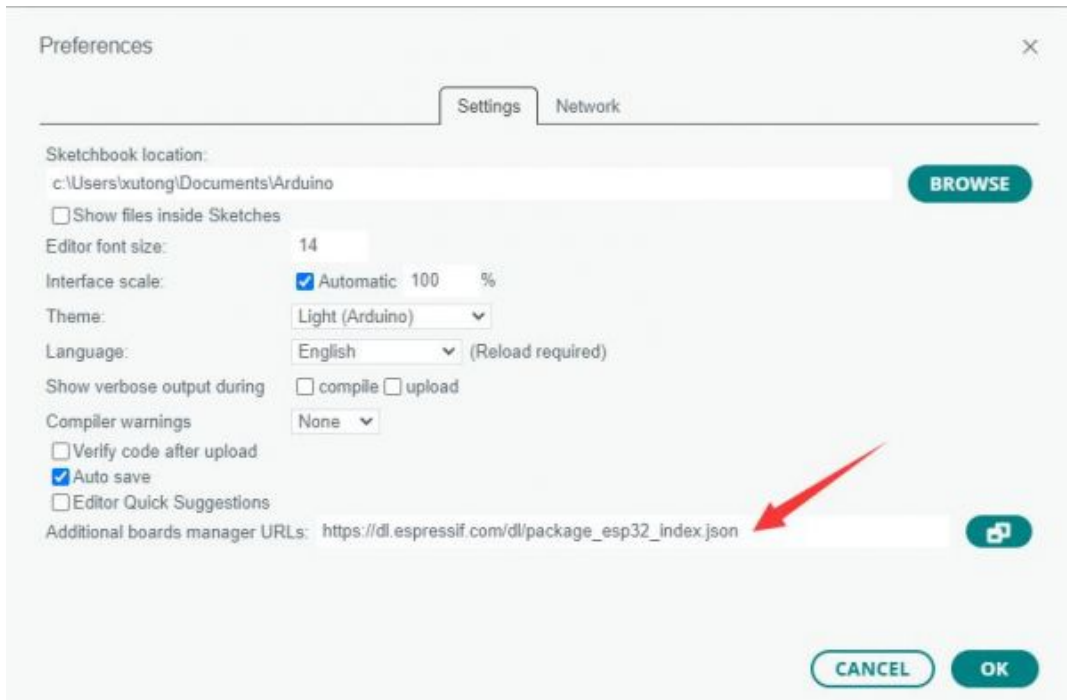
Install Arduino-Pico Core on Arduino IDE

1. Open Arduino IDE, click the File on the left corner and choose "Preferences".



2. Add the following link in the additional development board manager URL, then click OK.

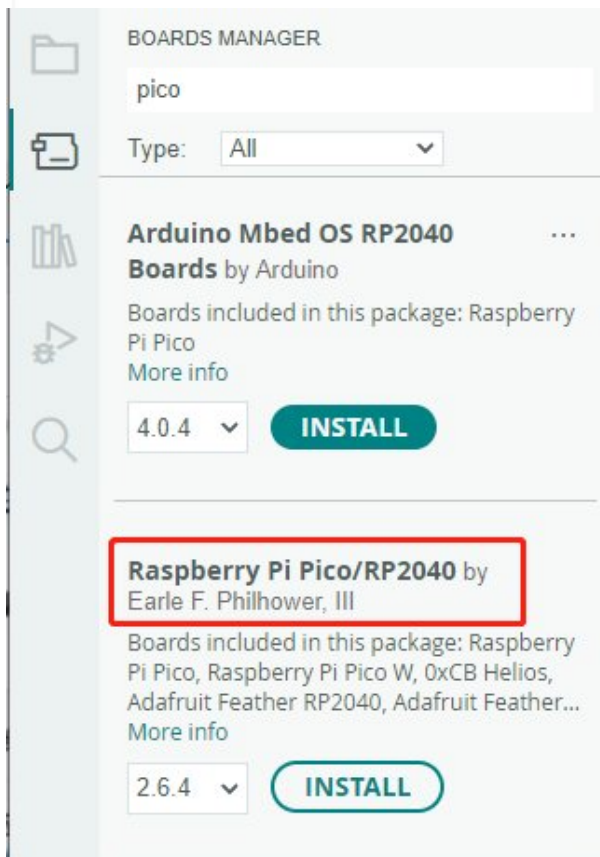
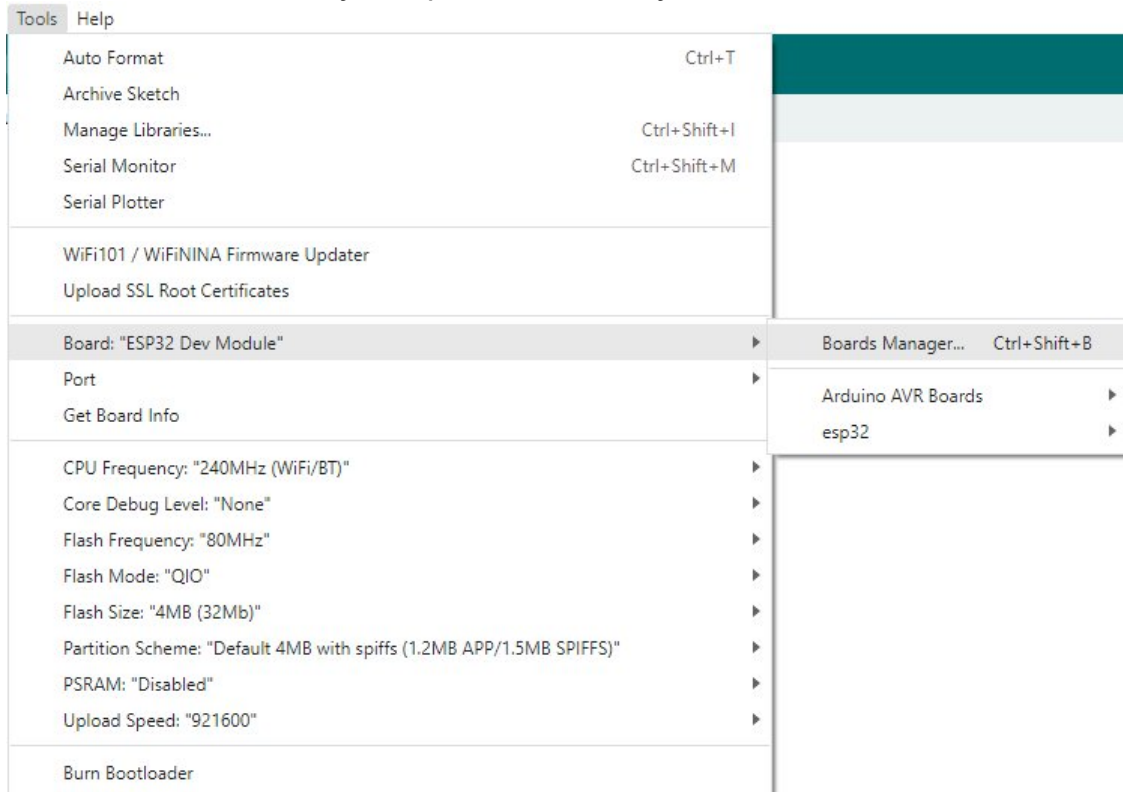
```
https://github.com/earlephilhower/arduino-pico/releases/download/global/package_rp2040_index.json
```



Note: If you already have the ESP8266 board URL, you can separate the URLs with commas like this:

```
https://dl.espressif.com/dl/package_esp32_index.json,https://github.com/earlephilhower/arduino-pico/releases/download/global/package_rp2040_index.json
```

3. Click on Tools -> Dev Board -> Dev Board Manager -> Search for pico, it shows installed since my computer has already installed it.

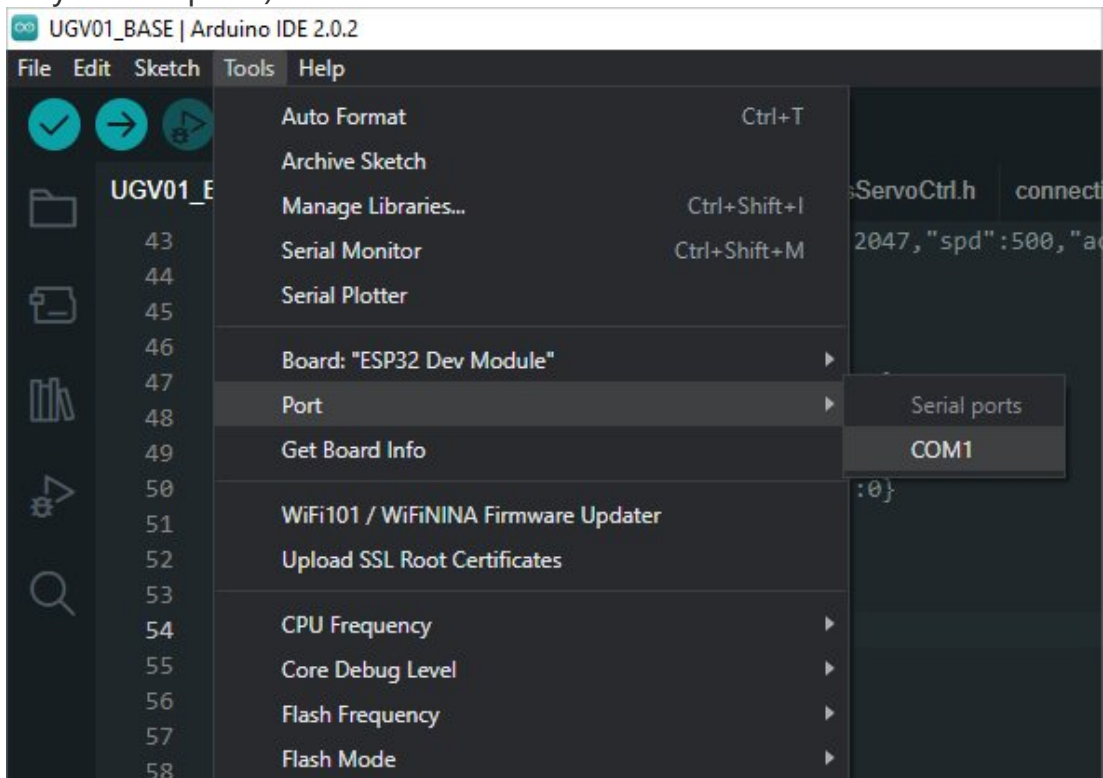


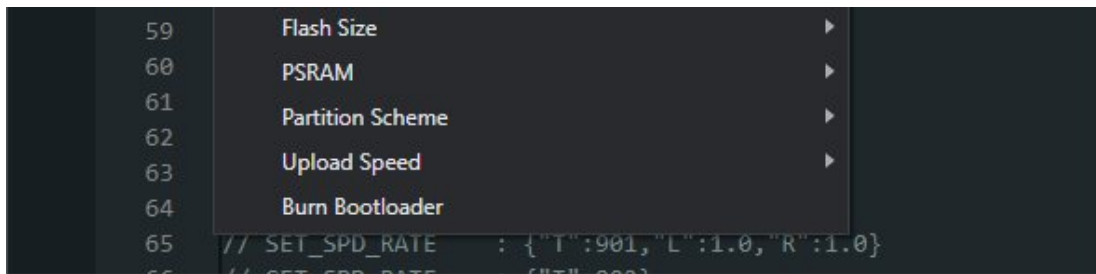
Upload Demo At the First Time

1. Press and hold the BOOTSET button on the Pico board, connect the Pico to the USB port of the computer via the Micro USB cable, and release the button when the computer recognizes a removable hard drive (RPI-RP2).

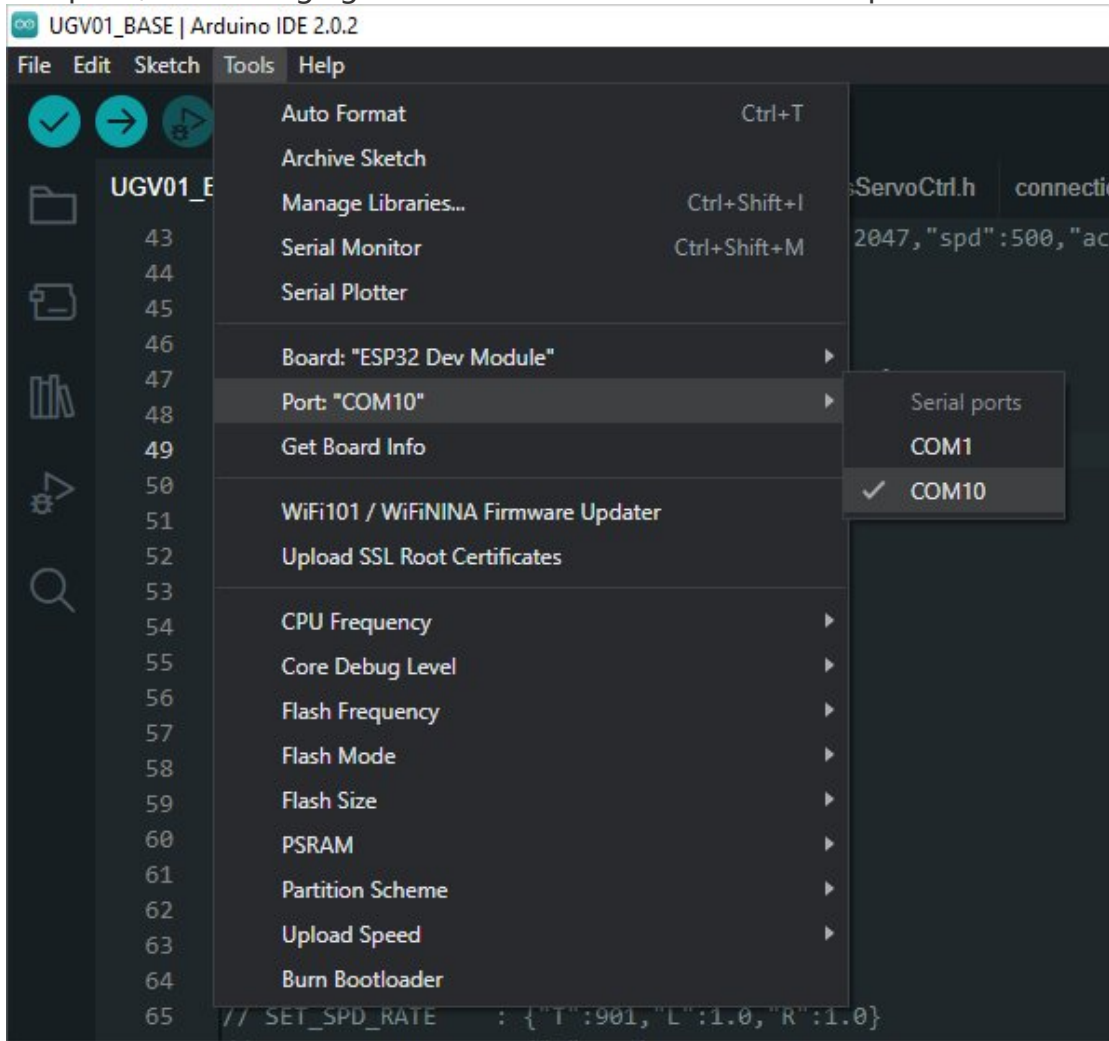


2. Download the demo, open arduino\PWM\D1-LED path under the D1-LED.ino.
3. Click Tools -> Port, remember the existing COM, do not need to click this COM (different computers show different COM, remember the existing COM on your computer).

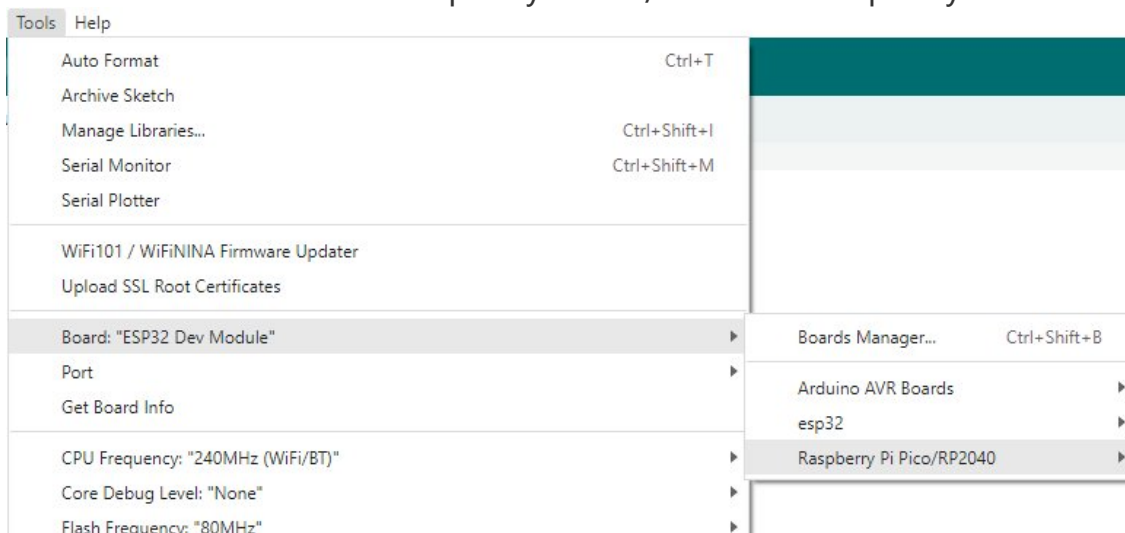


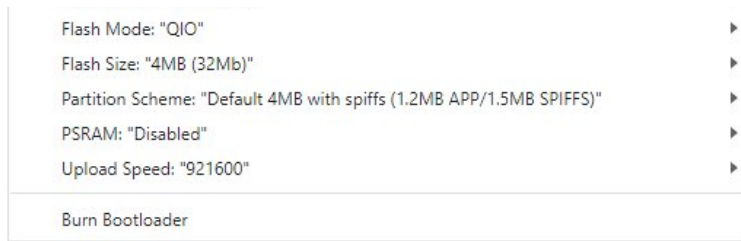


4. Connect the driver board to the computer with a USB cable, then click Tools -> Ports, select uf2 Board for the first connection, and after the upload is complete, connecting again will result in an additional COM port.



5. Click Tool -> Dev Board -> Raspberry Pi Pico/RP2040 -> Raspberry Pi Pico.





6. After setting, click the right arrow to upload.



- If you encounter problems during the period, you need to reinstall or replace the Arduino IDE version, uninstall the Arduino IDE needs to be uninstalled cleanly, after uninstalling the software you need to manually delete all the contents of the folder C:\Users\[name]\AppData\Local\Arduino15 (you need to show the hidden files in order to see it) and then reinstall.

Pico-W Series Tutorial (To be continued...)

Open Source Demo

- [MicroPython Demo \(GitHub\)](#)
- [MicroPython Firmware/Blink Demo \(C\)](#)
- [Official Raspberry Pi C/C++ Demo](#)
- [Official Raspberry Pi MicroPython Demo](#)
- [Arduino Official C/C++ Demo](#)

Resource

Document

- [RP2040-Tiny Schematic](#)
- [V1.1 Schematic](#)
- [RP2040-Tiny Adapter V1.1 Schematic](#)
- Note that there is a logo "Rev*. *" on the back of the V1.1 and above. Please select the corresponding schematic according to your version.

3D Model

- [RP2040-Tiny 3D Model](#)
- [RP2040-Tiny Adapter 3D Model](#)

Demo

- [WS2812B Test Demo](#)

Application Demo

- [JustUSB \(shared by Waveshare users\)](#)

Official Resource

Raspberry Pi

- [Raspberry Pi Pico Get Started with MicroPython on Raspberry Pi Pico](#)
- [Official website of Pico](#)
- [Getting started with Pico](#)
- [Pico C SDK](#)
- [Pico Python SDK](#)
- [Pico Pinout](#)
- [Pico Datasheet](#)
- [RP2040 Datasheet](#)
- [RP2040 Hardware design](#)

Examples

- [Raspberry Pi C/C++ demo \(github\)](#)
- [Raspberry Pi micropython demo \(github\)](#)

Development Software

- [Thonny Python IDE \(Windows V3.3.3\)](#)
- [Zimo221.7z](#)
- [Image2Lcd.7z](#)

Support

Technical Support

If you need technical support or have any feedback/review, please click the **Submit Now** button to submit a ticket, Our support team will check and reply to you within 1 to 2 working days. Please be patient as we make every effort to help you to resolve the issue.

Working Time: 9 AM - 6 AM GMT+8 (Monday to Friday)

[Submit Now](#)