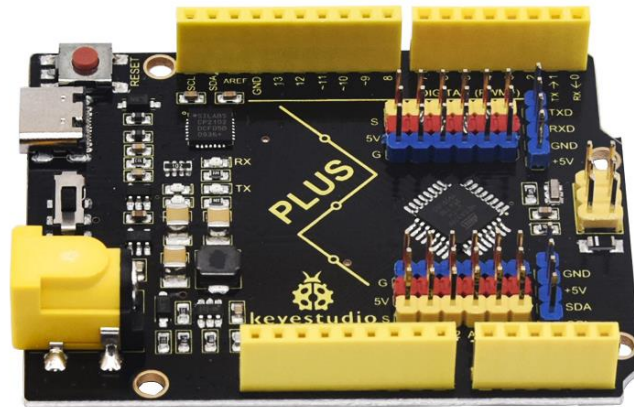


**Keystudio PLUS Control Board
(Black and Eco-friendly)**



Content

1. Description 2

2. Specification 3

3. Interfaces Description 4

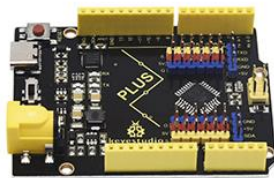
4. Specialized Functions of Some Pins: 5

5. Install Arduino IDE and Driver	5
5.1 Download the Arduino IDE.....	5
5.2 Installing driver	8
5.3 Arduino IDE Setting	14
5.4 Start first program	17
6. MAC System	21
6.1 Install Arduino IDE on MAC System	21
6.2 Download the Driver of CP2102	21
6.3 How to Install the Driver of CP2102.....	22
6.4 Arduino IDE Setting.....	22

1. Description

Doing experiment with electronic products, we often program on the Arduino IDE development environment with Arduino series microcontrollers.

Keyestudio PLUS control board is fully compatible with Arduino IDE development environment. It is as same as the Arduino UNO R3 board. Moreover, some improvements we made highly strengthen its function(as shown below). In order to wire efficiently, we equip with a 1m USB cable with type-c interface for you.



Keyestudio PLUS

VS



Arduino UNO R3

1. USB CP2102, stability and compatibility are better for turn-chip
2. Working voltage can be selected 3.3 V or 5 V, can connect 3.3 V sensor
3. Two more IO mouth, A6,A7, the best
4. Extended serial communication and I2C interface, can be easily connected to similar devices
5. Unique DC-DC power supply design, working voltage 5 V, the current of 2 A, can directly drive some high current load, such as steering gear and motor
6. Extension of 6 PWM ports and 6 analog port interfaces to connect sensors directly
7. Extended serial communication and I2C interface, can be easily connected to similar devices
8. Input voltage 6-15 V, wider voltage range, choose more
9. Choose the current more popular type-c interface, beautiful and generous, faster transmission speed



1. USB turnstile chip is 16 U2, Some systems are not compatible



2. Only 5 V working voltage, no way to connect 3.3 V sensor



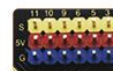
3. Design did not leave these 2 IO ports, defective



4. No expansion port, more complex connection required



5. Working voltage 5 V, the current only 1 A, can not drive the equipment with high current.



6. No expansion port, more complex connection required



7. No expansion port, more complex connection required



8. Input voltage 7-12 V, optional power supply mode is not



9. Adopt traditional square USB interface, more common

2. Specification

Microcontroller: ATMEGA328P-AU

USB to serial chip: CP2102

Working voltage: 5V or 3.3V (DIP switch control)

External power: DC 6-15V (recommend 9V)

Digital I / O pins: 14 (D0-D13)

PWM channel: 6 (D3 D5 D6 D9 D10 D11)

Analog input channel (ADC): 8 (A0-A7)

Each I / O Port of DC output capability : 20 mA

Output capability of 3.3V port: 50 mA

Flash Memory: 32 KB (of which 0.5 KB is used by the bootloader)

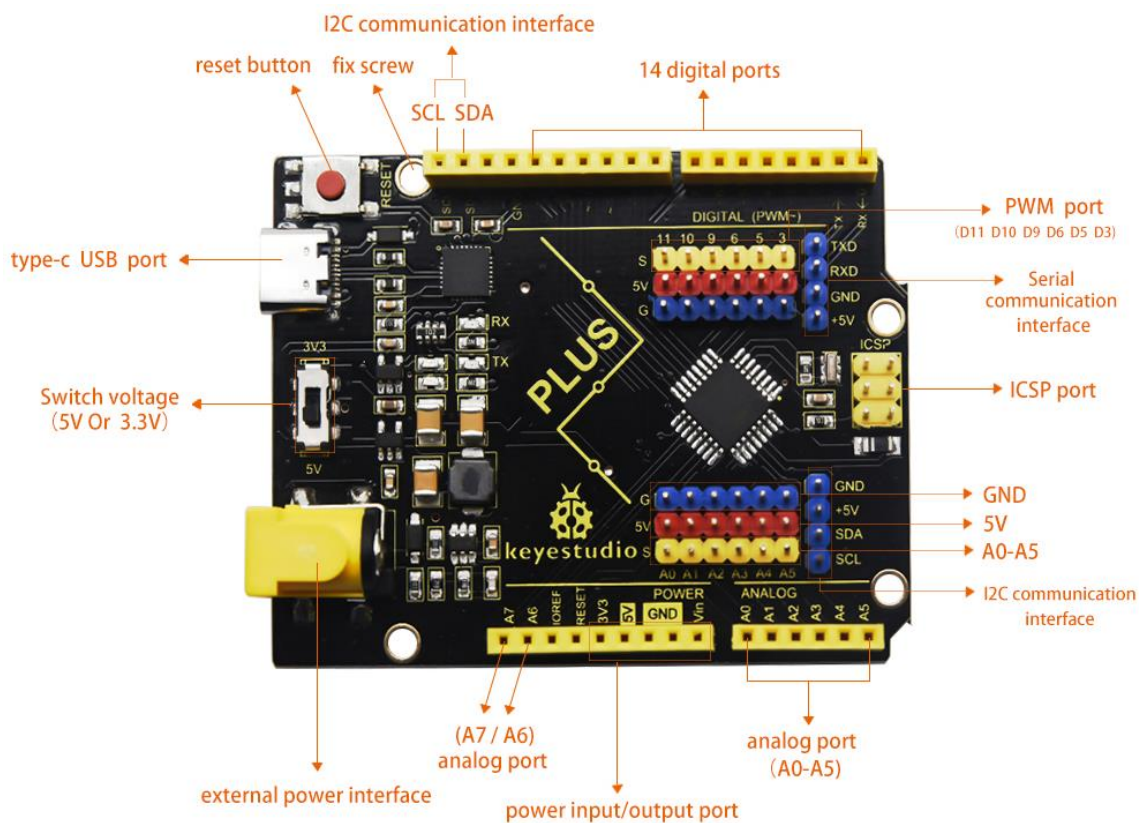
SRAM: 2 KB (ATMEGA328P-AU)

EEPROM: 1 KB (ATMEGA328P-AU)

Clock speed: 16MHz

On-board LED pin: D13

3. Interfaces Description



4. Specialized Functions of Some Pins:

Serial communication interface: D0 is RX, D1 is TX

PWM interface (pulse width modulation): D3 D5 D6 D9 D10 D11

External interrupt interface: D2 (interrupt 0) and D3 (interrupt 1)

SPI communication interface: D10 is SS, D11 is MOSI, D12 is MISO, D13 is SCK

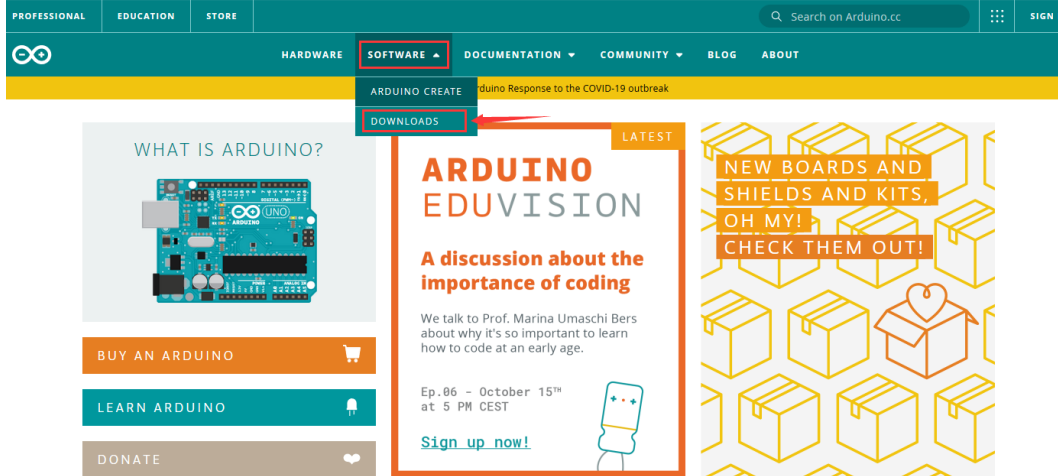
IIC communication port: A4 is SDA, A5 is SCL

5. Install Arduino IDE and Driver

5.1 Download the Arduino IDE

When getting this control board, we need to install Arduino IDE

Enter the website <https://www.arduino.cc/>, click **SOFTWARE** and **DOWNLOADS**



Select the version you want to download, the latest version could be downloaded.

Download the Arduino IDE



Alternatively, you could select previous release.

In this project, we use 1.8.12 version

Previous Releases

Download the [previous version of the current release](#) the classic [Arduino 1.0.x](#), or the [Arduino 1.5.x Beta version](#).

All the [Arduino 00xx versions](#) are also available for download. The Arduino IDE can be used on Windows, Linux (both 32 and 64 bits), and Mac OS X.

Click [previous version of the current release](#) to view the below page

ARDUINO 1.8.12

Arduino IDE that can be used with any Arduino board, including the Arduino Yún and Arduino DUE. Refer to the [Getting Started](#) page for Installation instructions.
[See the release notes.](#)

[Windows Installer](#)
[Windows ZIP file for non admin install](#)

Mac OS X 10.8 Mountain Lion or newer

Linux 32 bits
Linux 64 bits
Linux ARM 32
Linux ARM 64

[Source](#)

Click [Windows Installer](#) to download an installer of Arduino 1.8.12 version, which needs to be installed manually. When you tap [Windows ZIP file for non admin install](#), a zip file of Arduino 1.8.12 version will be directly downloaded, and you only need to unzip it to finish installation.

Contribute to the Arduino Software

Consider supporting the Arduino Software by contributing to its development. (US tax payers, please note this contribution is not tax deductible). [Learn more on how your contribution will be used.](#)



SINCE MARCH 2015, THE ARDUINO IDE HAS BEEN DOWNLOADED **45,290,706** TIMES. (IMPRESSIVE!) NO LONGER JUST FOR ARDUINO AND GENUINO BOARDS, HUNDREDS OF COMPANIES AROUND THE WORLD ARE USING THE IDE TO PROGRAM THEIR DEVICES, INCLUDING COMPATIBLES, CLONES, AND EVEN COUNTERFEITS. HELP ACCELERATE ITS DEVELOPMENT WITH A SMALL CONTRIBUTION! REMEMBER: OPEN SOURCE IS LOVE!

\$3 \$5 \$10 \$25 \$50 OTHER

[JUST DOWNLOAD](#) [CONTRIBUTE & DOWNLOAD](#)

Click icon  [CONTRIBUTE & DOWNLOAD](#) to download Arduino IDE.

5.2 Installing Driver

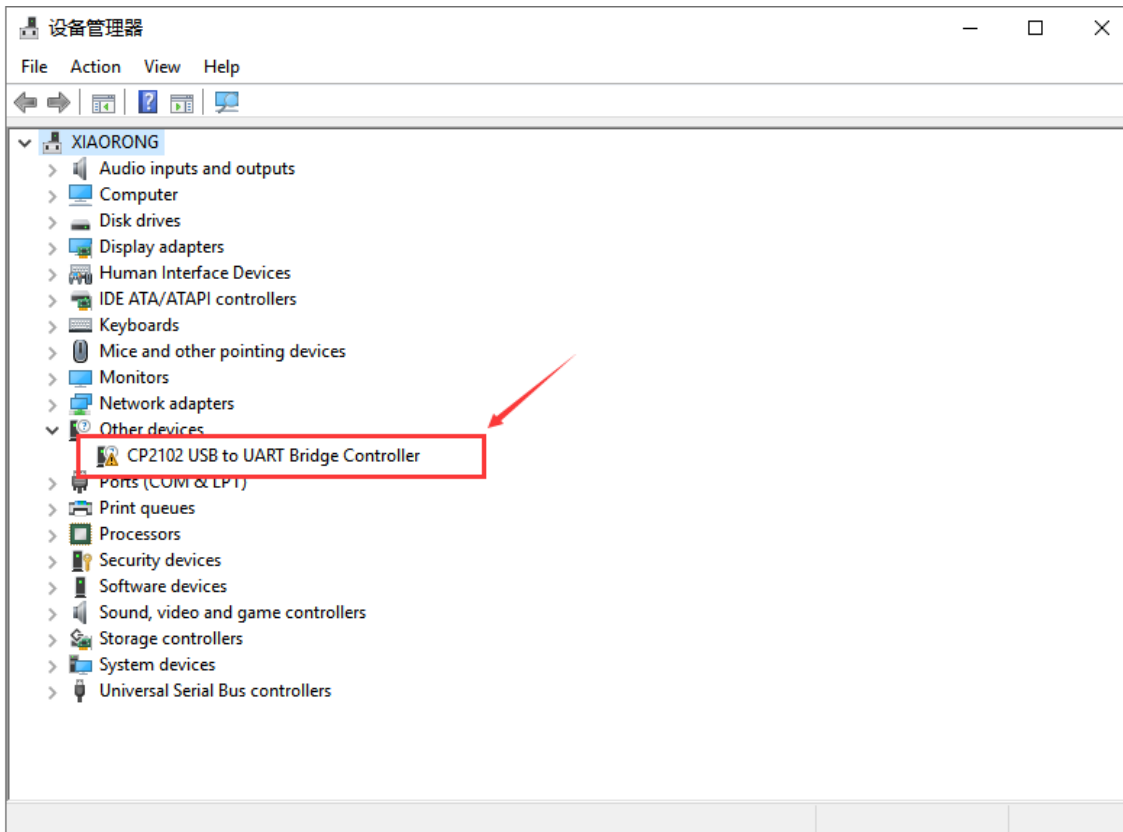
Let' s install the driver of keyestudio PLUS control board . The USB-TTL chip on PLUS board adopts CP2102 serial chip. The driver program of CP2102 is included in Arduino 1.8 version and above, which is convenient to operate. Plug in USB, the computer can recognize the hardware and automatically install the driver of CP2102.

Note: If the version of Arduino IDE you download is below 1.8, you need to download the driver of CP2102.

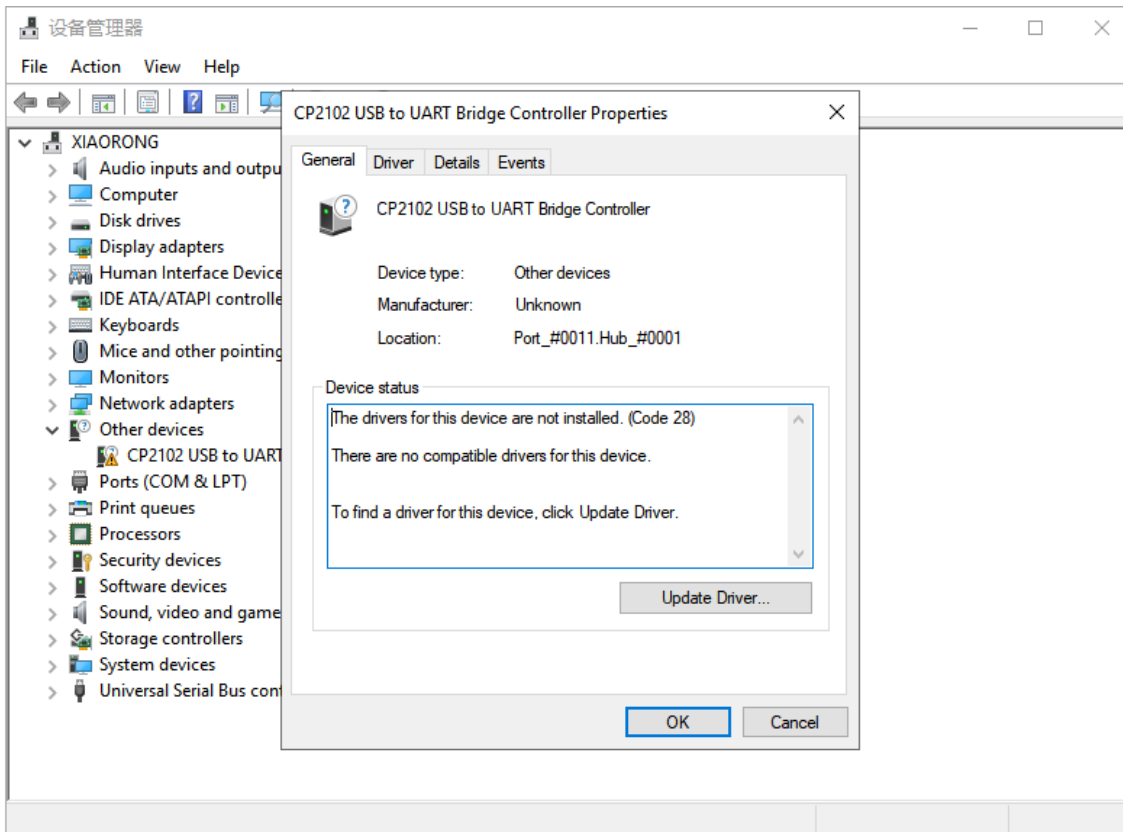
Download the driver of CP2102:

<https://fs.keyestudio.com/CP2102-WIN>

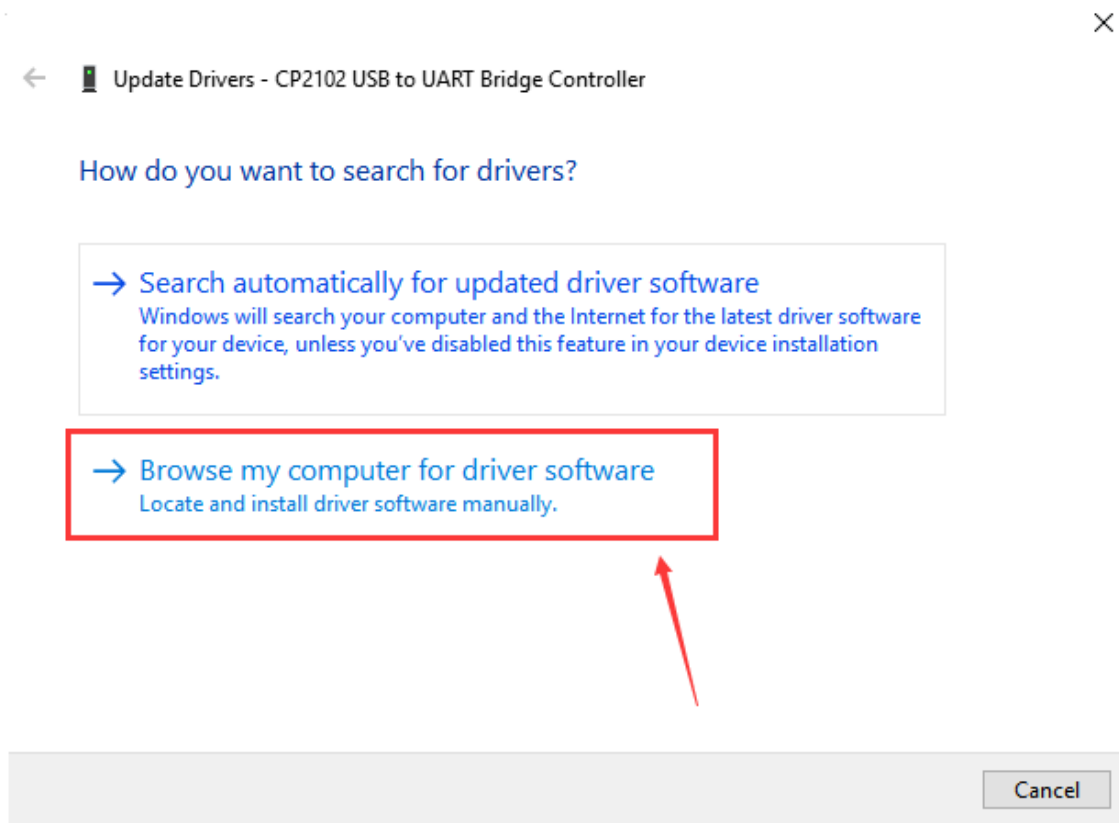
If install unsuccessfully, or you intend to install manually, open the device manager of computer. Right click Computer----- Properties----- Device Manager.




There is a yellow exclamation mark on the page, which implies installing the driver of CP2102 unsuccessfully. Then we double click the hardware and update the driver.

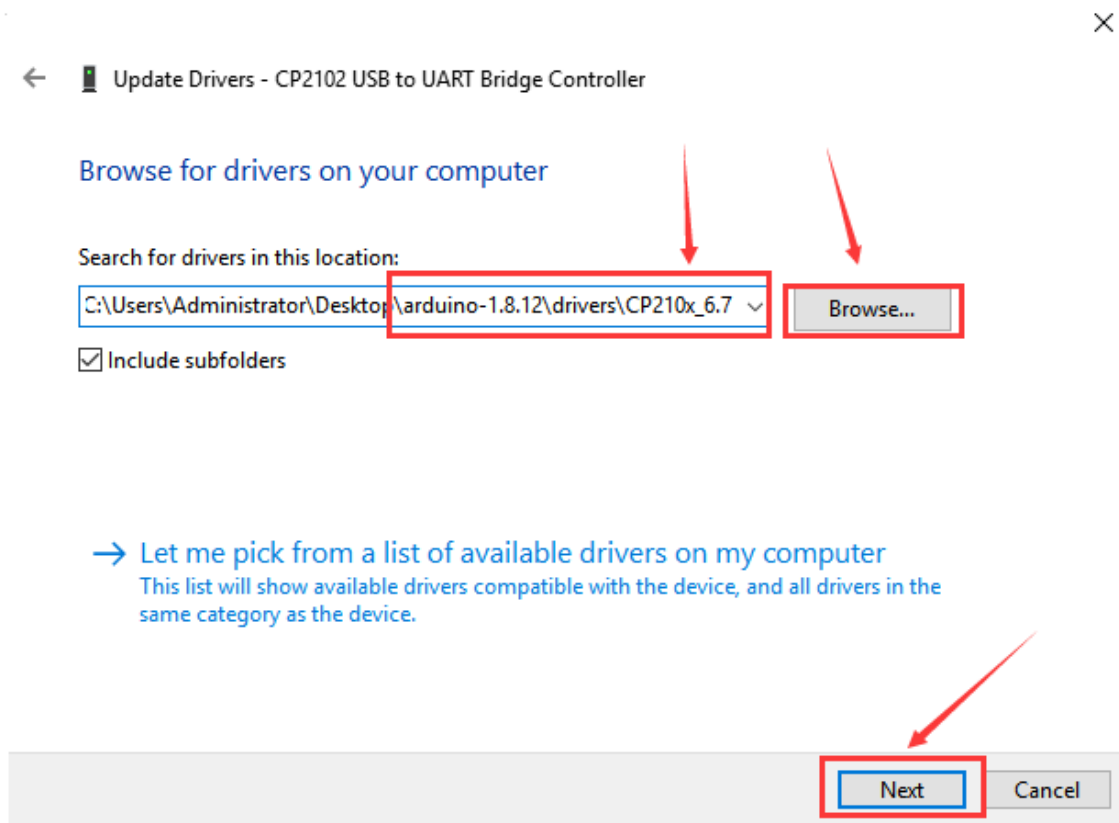


Click "OK" to enter the following page, click "browse my computer for updated driver software", find out the installed or downloaded ARDUINO software. As shown below:

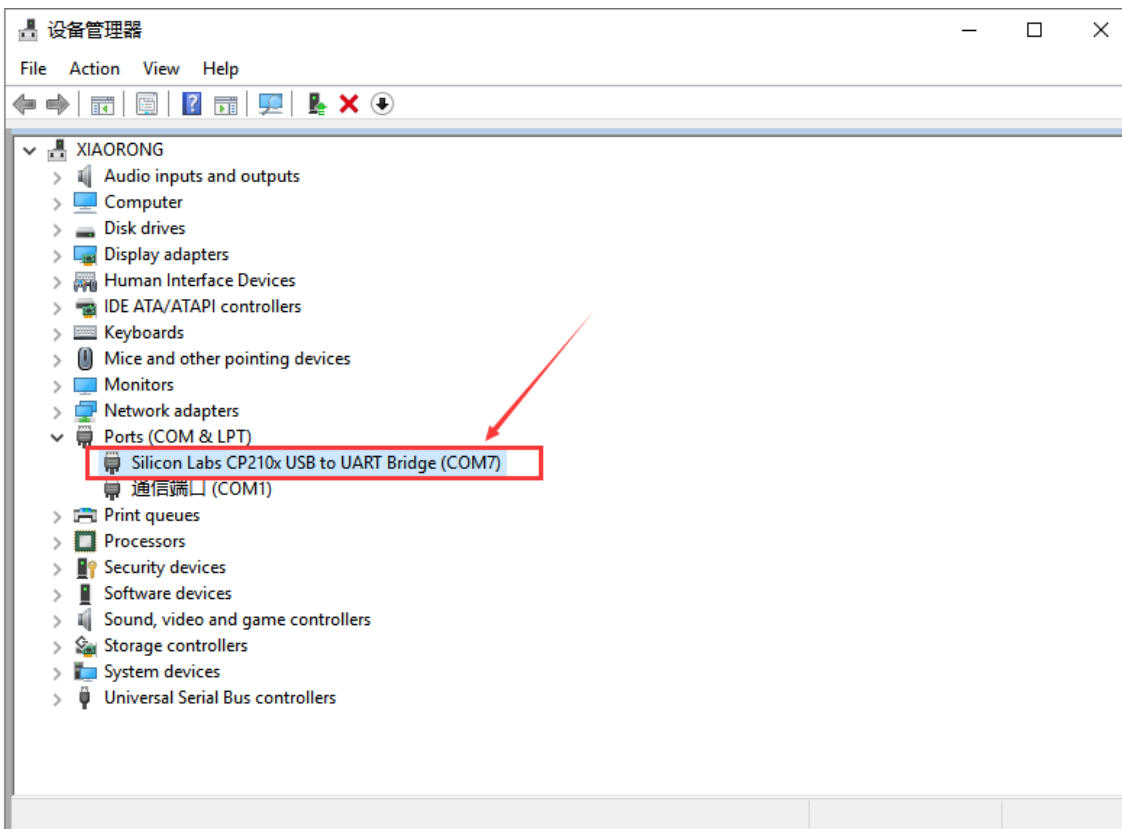
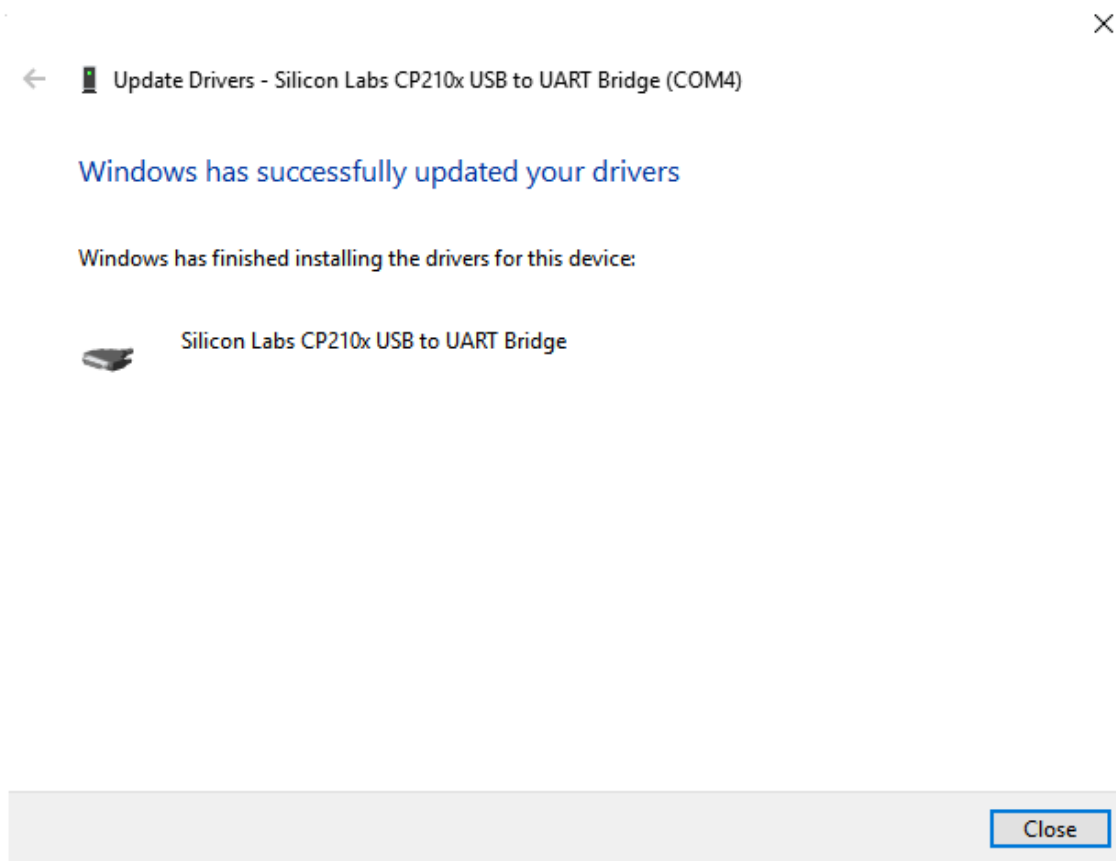


There is a **DRIVERS** folder in **Arduino software installed package**

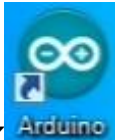
( **arduino-1.8.12**) , open driver folder and you can see the driver of **CP210X series chips**.

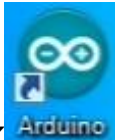


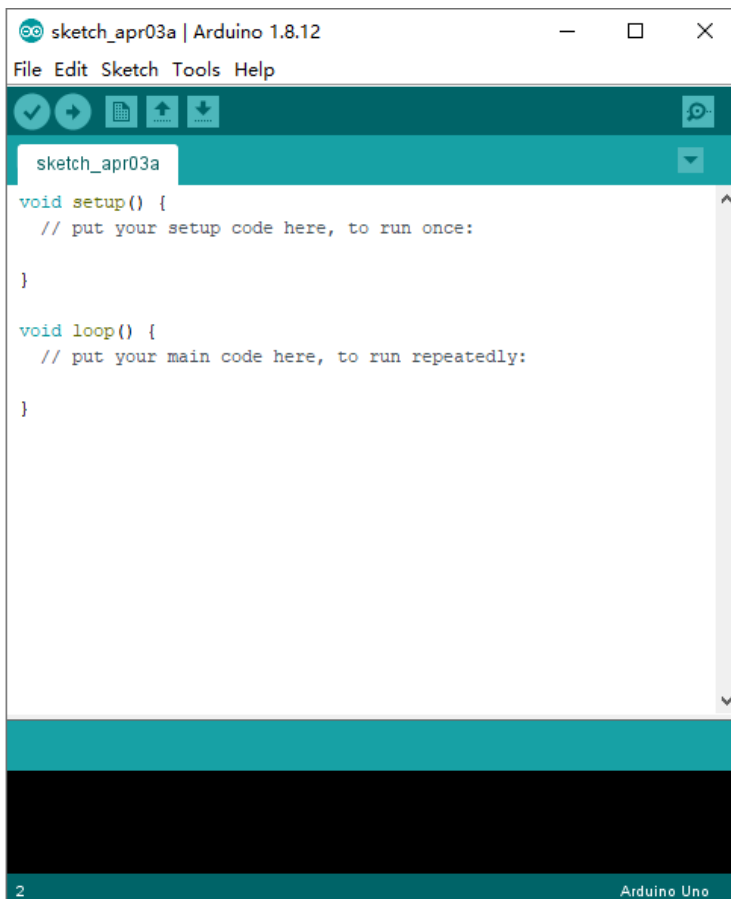
Open device manager, we will find the yellow exclamation mark disappear.
The driver of CP2102 is installed successfully.



5.3 Arduino IDE Setting

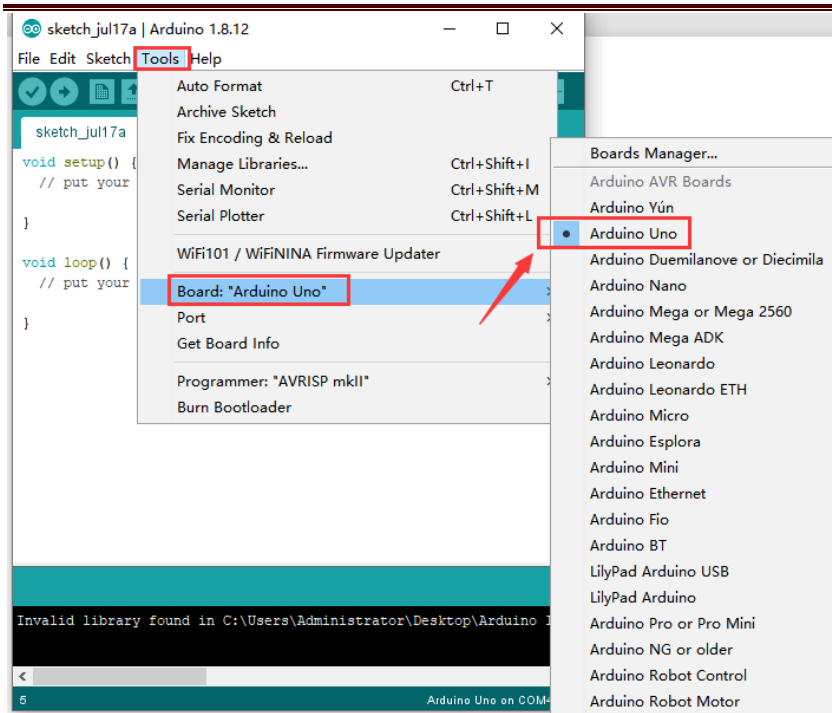


Click  icon, open Arduino IDE.

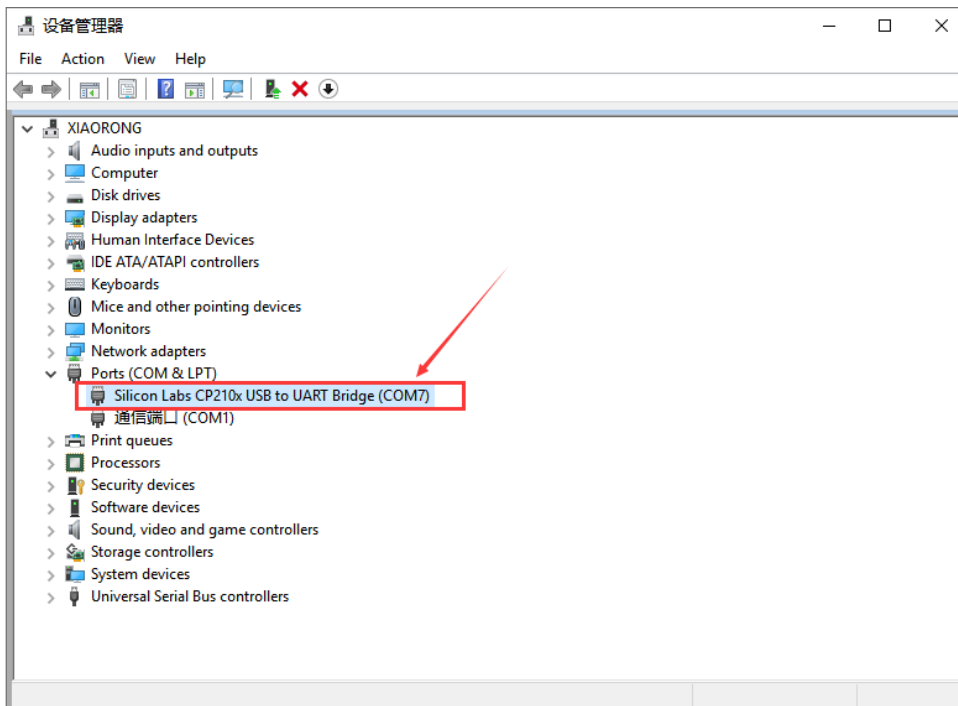


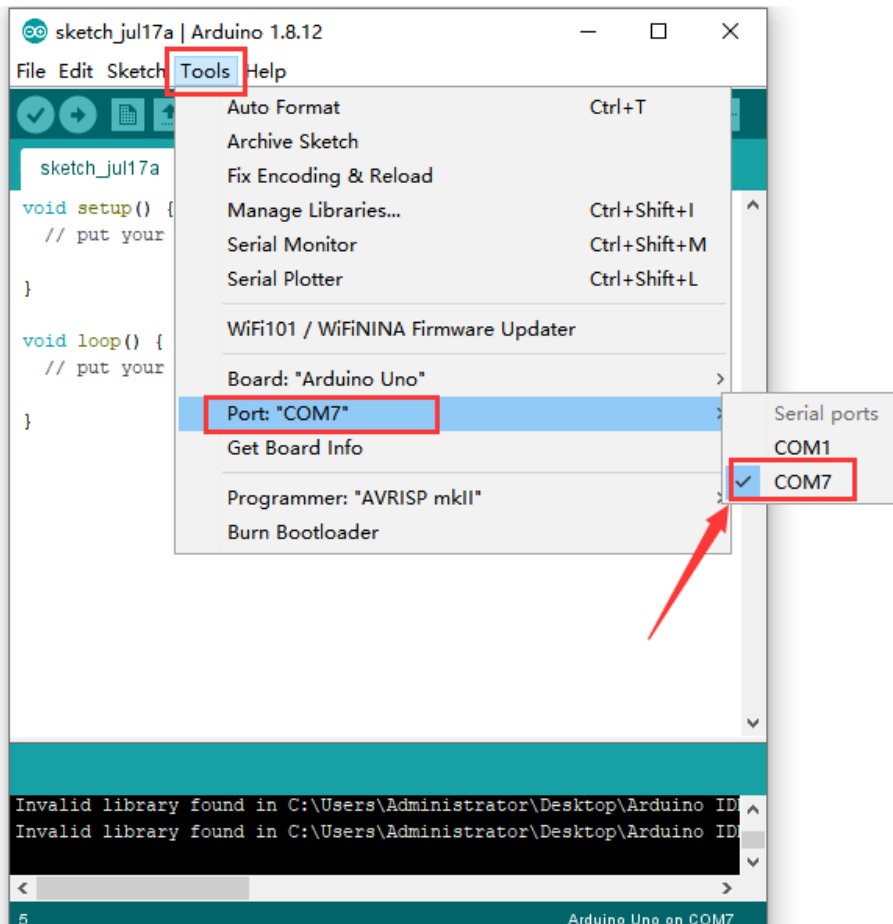
To avoid the errors when uploading the program to the board, you need to select the correct Arduino board that matches the board connected to your computer.

Then come back to the Arduino software, you should click Tools→Board, select the board. (as shown below)

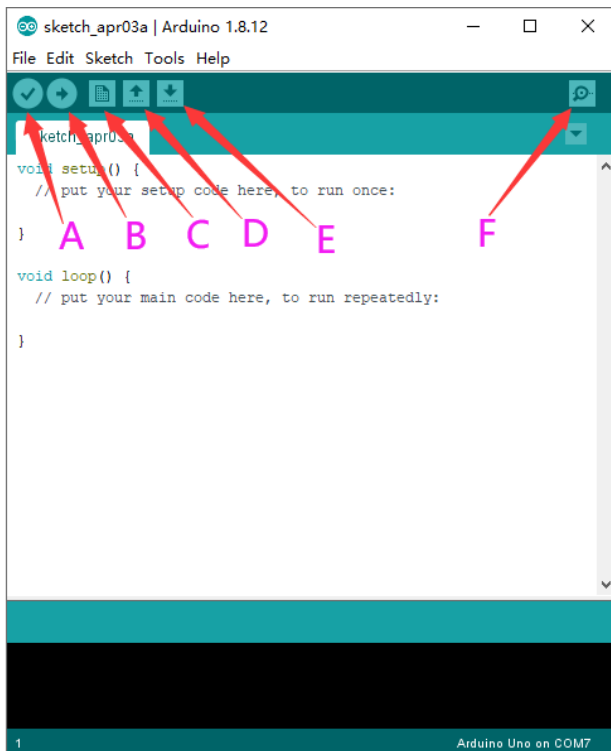


Then select the correct COM port (you can see the corresponding COM port after the driver is successfully installed)





Before uploading the program to the board, let's demonstrate the function of each symbol in the Arduino IDE toolbar.



A- Used to verify whether there is any compiling mistakes or not.

B- Used to upload the sketch to your Arduino board.

C- Used to create shortcut window of a new sketch.

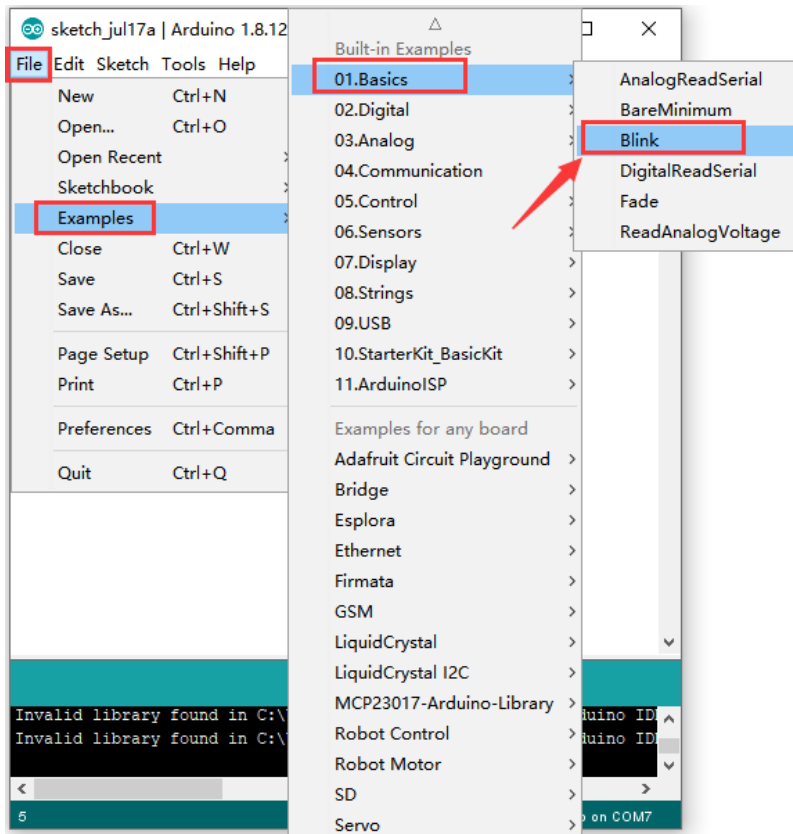
D- Used to directly open an example sketch.

E- Used to save the sketch.

F- Used to send the serial data received from board to the serial monitor.

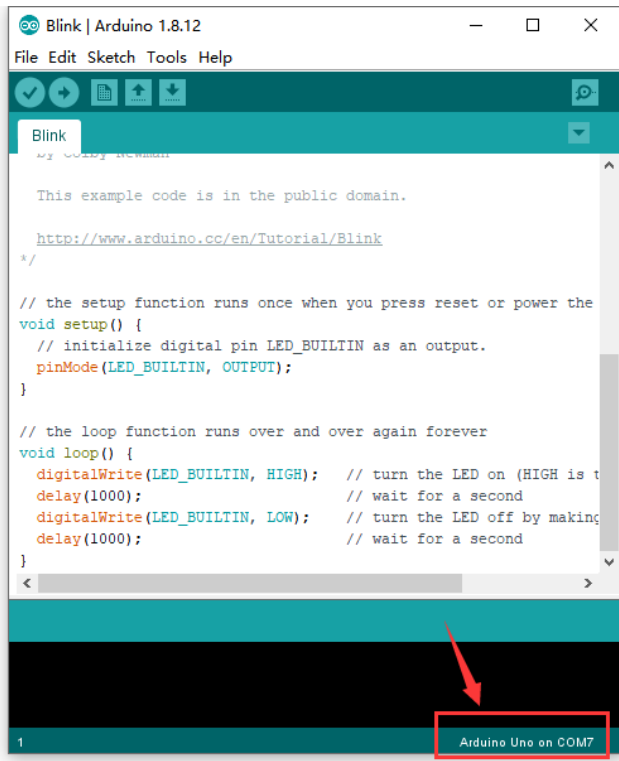
5.4 Start First Program


Open the file to select Example, choose **BLINK** from **BASIC**, as shown below:

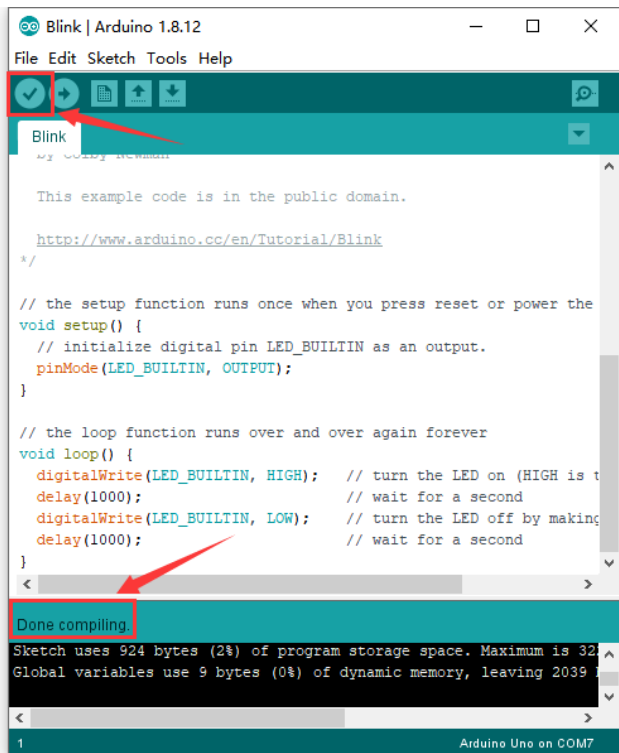


Set board and COM port, the corresponding board and COM port are

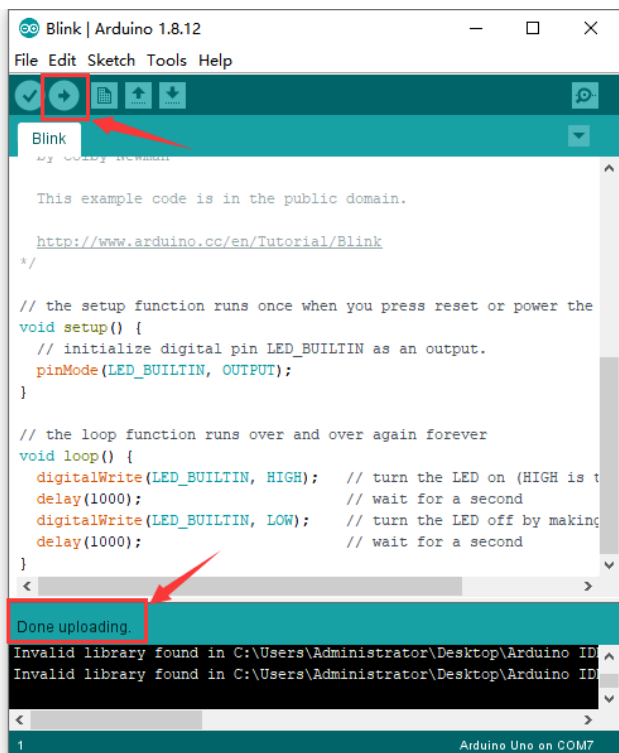
shown on the lower right of IDE.



Click  to start compiling the program, check errors.



Click  to upload the program, upload successfully.



Upload the program successfully, the onboard LED lights on for 1s, lights

off for 1s. Congratulation, you finish the first program.

6. MAC System

6.1 Install Arduino IDE on MAC System

The installation instruction is as same as the chapter 5.1, as shown below:



ARDUINO 1.8.12

Arduino IDE that can be used with any Arduino board, including the Arduino Yún and Arduino DUE. Refer to the [Getting Started](#) page for Installation instructions.
[See the release notes.](#)

Windows Installer
Windows ZIP file for non admin install

Mac OS X 10.8 Mountain Lion or newer

Linux 32 bits
Linux 64 bits
Linux ARM 32
Linux ARM 64

[Source](#)

6.2 Download the Driver of CP2102

<https://fs.keyestudio.com/CP2102-MAC>

6.3 How to Install the Driver of CP2102

The following link is for your reference:

<https://wiki.keystudio.com/How to Install the Driver of CP2102 on MAC System>

6.4 Arduino IDE Setting

The setting method is as same as the chapter 5.3 except from COM port, as shown below.

