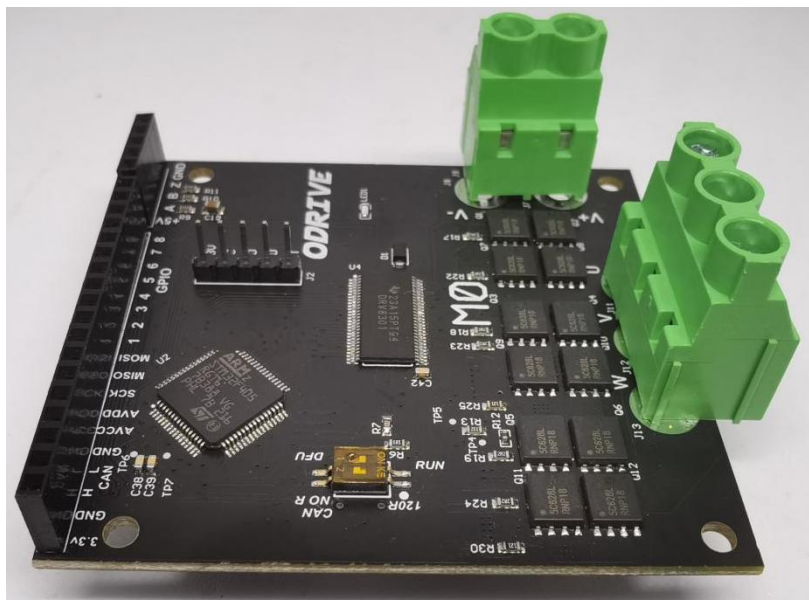
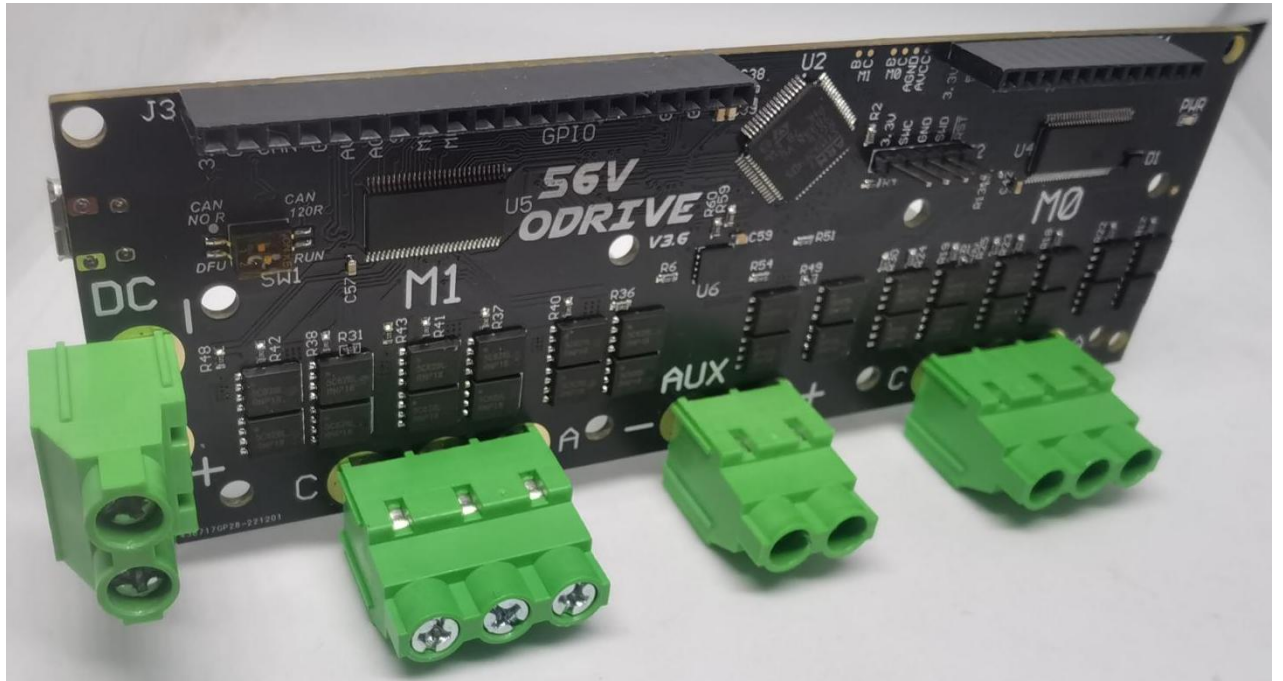




ODRIVE 开发





目录

- 一：硬件3
 - 1. 电源 24V 3A3
 - 2. 接线说明(A2212 电机+TLE5012 编码器)3
 - 3. 接线说明(A2212 电机+AS5047P 编码器)4
- 二：工具软件安装 5
 - 1. 系统要求 5
 - 2. 安装软件 5
 - 2.1 安装 python-3.9.1-amd645
 - 2.2 安装 odrivetool 7
 - 2.3 安装 zadig-2.58
 - 2.4 odrivetool 连接11
 - 2.5 A2212 电机测试12

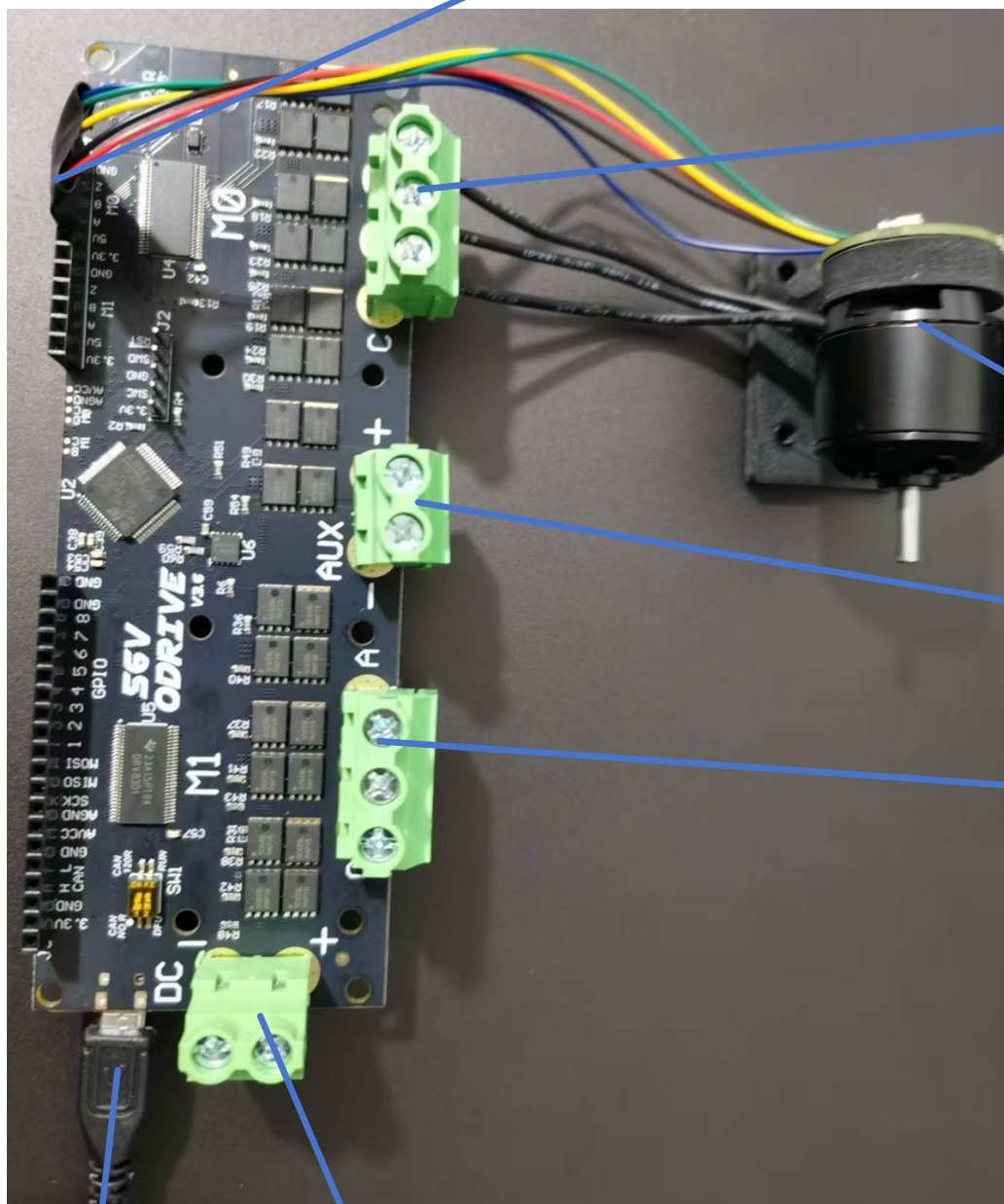


ODRIVE 开发

一：硬件

1. 电源 24V 3A
2. 接线说明(A2212 电机+TLE5012 编码器)

红色对应+5V
朝下排是+5V A B Z GND
对应 M0 M1



M0 电机线不区分

A2212 电机
+TLE5012 增量编码器

0.47R 刹车电阻

M1 电机线不区分

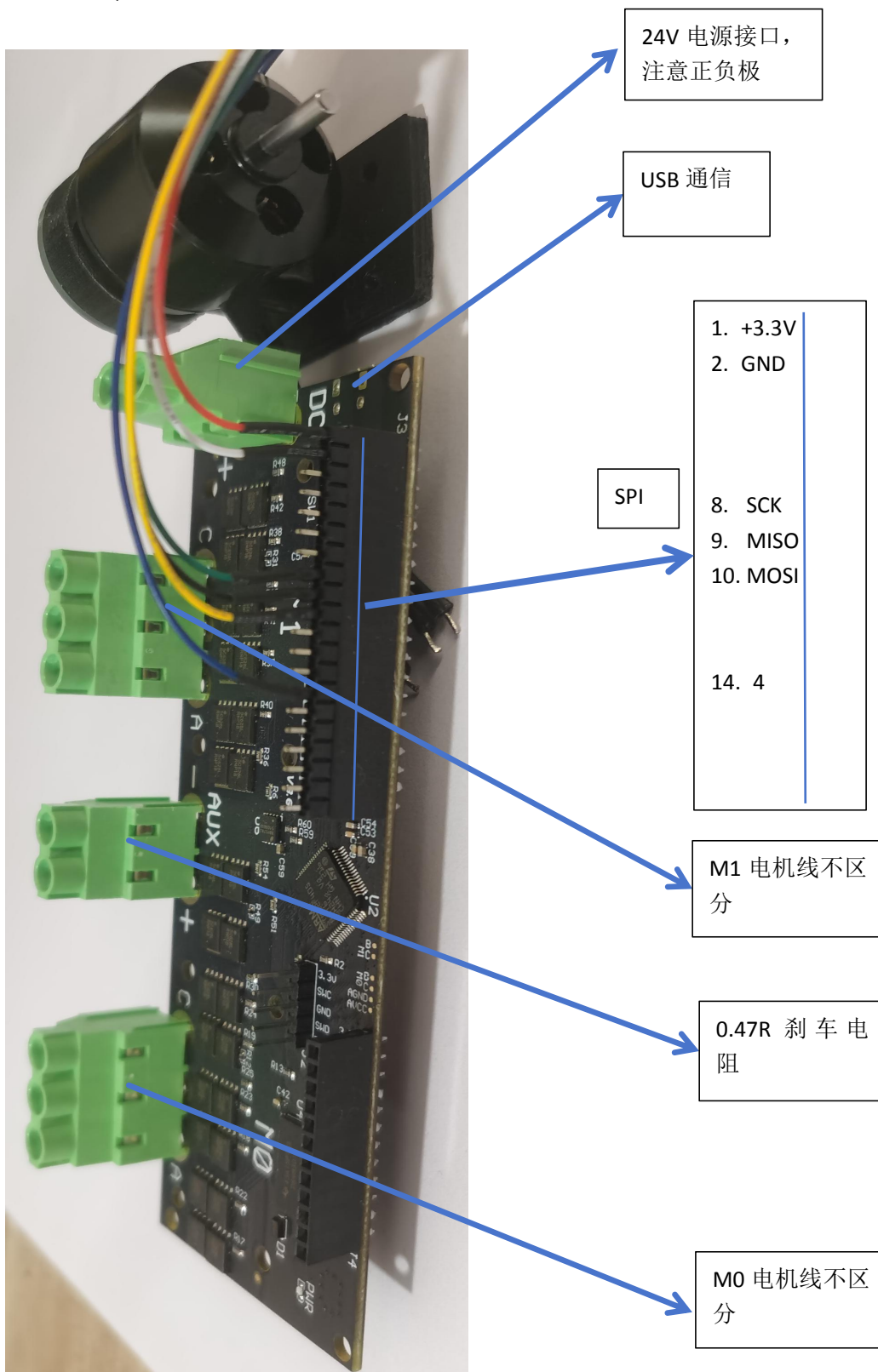
USB 通信

24V 电源接口，
注意正负极



ODRIVE 开发

3. 接线说明(A2212 电机+AS5047P 编码器)





二：工具软件安装

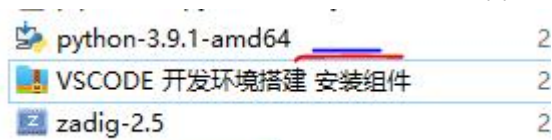
1. 系统要求

Win10 64 位

2. 安装软件

路径在 2-- Odrive 开发相关组件文件夹里面

2.1 安装 python-3.9.1-amd64



双击 python-3.9.1-amd64.exe 应用程序

弹出的 Setup 窗口中，勾选 Add Python 3.9 to PATH



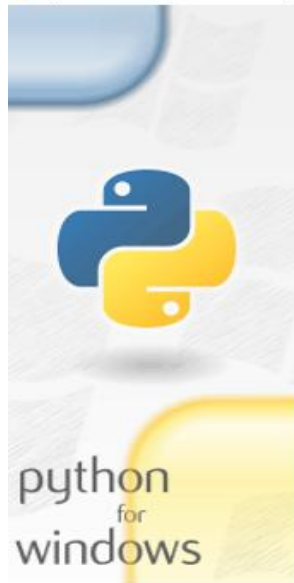
点击 Install Now 进入安装



ODRIVE 开发

Python 3.9.1 (64-bit) Setup

— □ ×



Setup Progress

Installing:

Python 3.9.1 Development Libraries (64-bit)

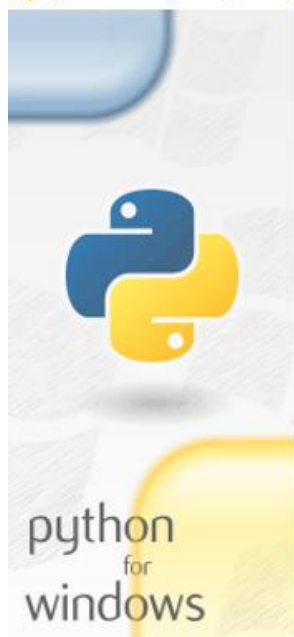


Cancel

等待安装完成，点击 close 结束安装

Python 3.9.1 (64-bit) Setup

— □ ×



Setup was successful

New to Python? Start with the [online tutorial](#) and [documentation](#). At your terminal, type "py" to launch Python, or search for Python in your Start menu.

See [what's new](#) in this release, or find more info about [using Python on Windows](#).

Disable path length limit

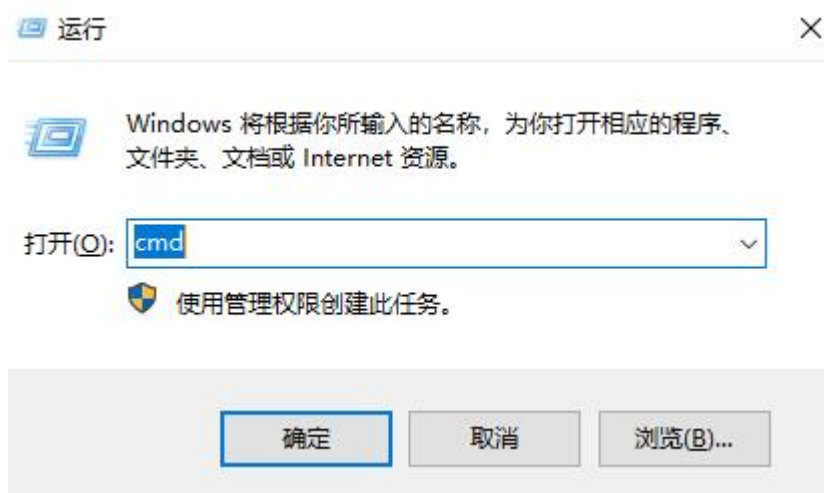
Changes your machine configuration to allow programs, including Python, to bypass the 260 character "MAX_PATH" limitation.

Close

打开 cmd,快捷键 WIN+R 运行框输入 cmd 进入



ODRIVE 开发



输入 `python --version`，返回 `Python 3.9.1`，说明安装成功

```
管理员: C:\windows\system32\cmd.exe
Microsoft Windows [版本 10.0.19045.2311]
(c) Microsoft Corporation。保留所有权利。

C:\Users\Administrator> python --version
Python 3.9.1

C:\Users\Administrator>
```

2.2 安装 odrivetool

打开命令终端，输入（电脑需要连网）

`pip install odrive==0.5.1.post0`

按下回车键后，开始安装，如下图所示



ODRIVE 开发

```
管理员: C:\windows\system32\cmd.exe - pip install odrive==0.5.1.post0

Microsoft Windows [版本 10.0.19045.2311]
(c) Microsoft Corporation。保留所有权利。

C:\Users\Administrator> python --version
Python 3.9.1

C:\Users\Administrator> pip install odrive==0.5.1.post0
Collecting odrive==0.5.1.post0
  Downloading odrive-0.5.1.post0.tar.gz (41 kB)
    | 41 kB 11 kB/s
Collecting ipython
  Downloading ipython-8.18.1-py3-none-any.whl (808 kB)
    | 276 kB 7.2 kB/s eta 0:01:14

C:\Users\Administrator>

管理员: C:\windows\system32\cmd.exe

Collecting executing>=1.2.0
  Downloading executing-2.1.0-py2.py3-none-any.whl (25 kB)
Collecting pure-eval
  Downloading pure_eval-0.2.3-py3-none-any.whl (11 kB)
Collecting parso<0.9.0,>=0.8.4
  Downloading parso-0.8.4-py2.py3-none-any.whl (103 kB)
    | 103 kB 6.4 MB/s
Collecting wcwidth
  Downloading wcwidth-0.2.13-py2.py3-none-any.whl (34 kB)
Collecting six>=1.5
  Downloading six-1.17.0-py2.py3-none-any.whl (11 kB)
Collecting zipp>=3.1.0; python_version < "3.10"
  Downloading zipp-3.21.0-py3-none-any.whl (9.6 kB)
Using legacy 'setup.py install' for odrive, since package 'wheel' is not installed.
Installing collected packages: traitlets, exceptiongroup, matplotlib-inline, asttokens, executing, pure-eval, colorama, parso, jedi, wcwidth, prompt-toolkit, pygments, typing-extensions, decorator, ipython, Pygments, set-normalizer, idna, certifi, urllib3, requests, IntelHex, packaging, pyparsing, six, python-dateutil, numpy, contourpy, pillow, kiwisolver, zipp, importlib-resources, matplotlib, monotonic, appdirs, py
Running setup.py install for odrive ... done
Successfully installed IntelHex-2.3.0 PySerial-3.5 PyUSB-1.2.1 appdirs-1.4.4 asttokens-3.0.0 certifi-2.0.0 contourpy-1.1.0 colorama-0.4.6 contourpy-1.3.0 cyclor-0.12.1 decorator-5.1.1 exceptiongroup-1.2.2 executing-2.1.0 idna-3.10 importlib-resources-6.4.5 ipython-8.18.1 jedi-0.19.2 kiwisolver-1.4.7 matplotlib-3.7.1 matplotlib-inline-0.1.7 monotonic-1.6 numpy-2.0.2 odrive-0.5.1.post0 packaging-24.2 parso-0.8.4 pillow-11.0.0 pyparsing-3.2.0 python-dateutil-2.9.0.post0 pywin32-308 requests-2.32.0 set-normalizer-0.6.3 traitlets-5.14.3 typing-extensions-4.12.2 urllib3-2.3.0 wcwidth-0.2.13 zipp-3.21.0
WARNING: You are using pip version 20.2.3; however, version 24.3.1 is available.
You should consider upgrading via the 'c:\users\administrator\appdata\local\programs\python\python39\python.exe -m pip install --upgrade pip' command.
```

出现上面，说明安装完成

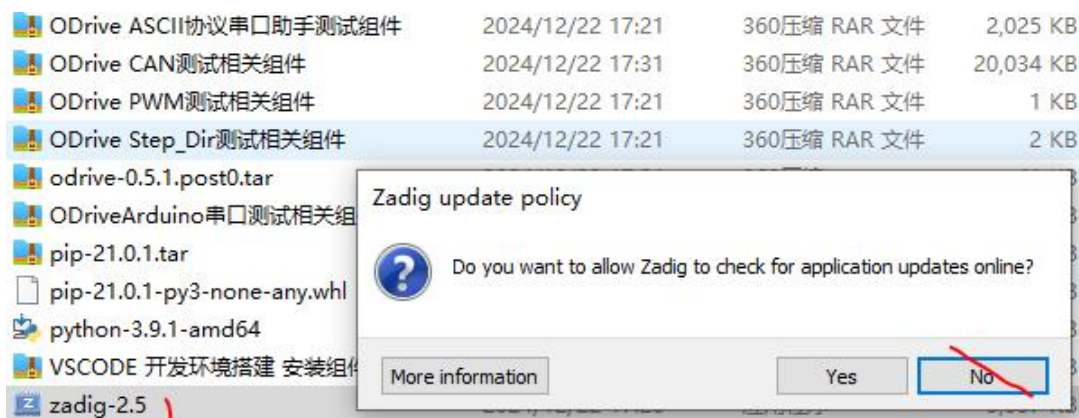
2.3 安装 zadig-2.5

注意：Odrive 控制板需要上电，Usb 通信线也要和电脑相连

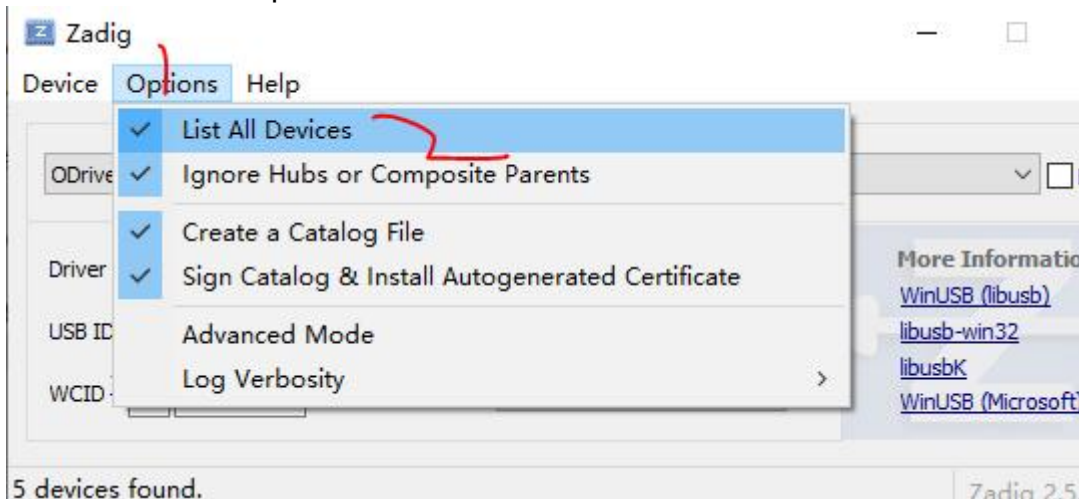
双击 zadig-2.5，弹出的更新检查窗口，点击 No



ODRIVE 开发

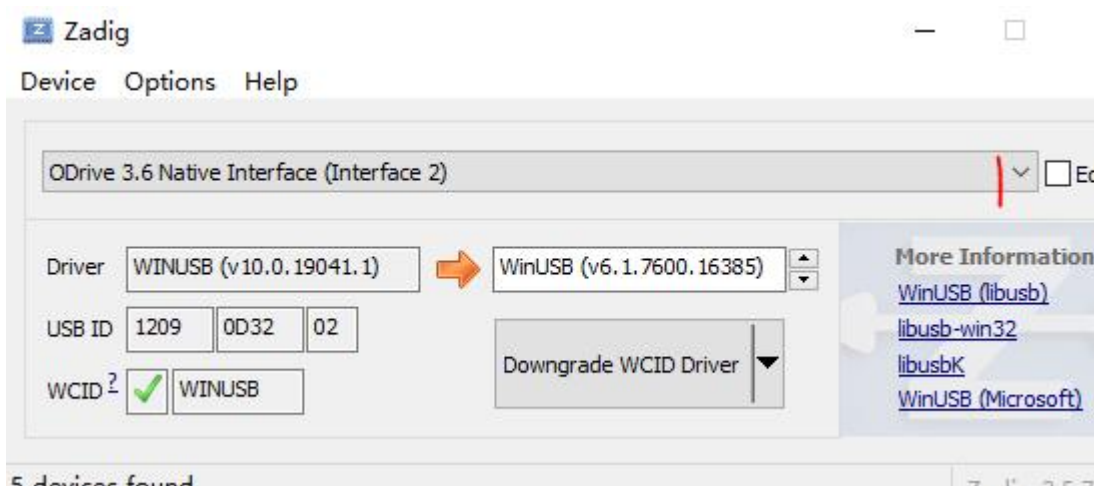


选择菜单栏中的 Options，点击 List All Devices



5 devices found.

点击下拉箭头，并选择 ODrive 3.6 Native Interface (Interface 2)

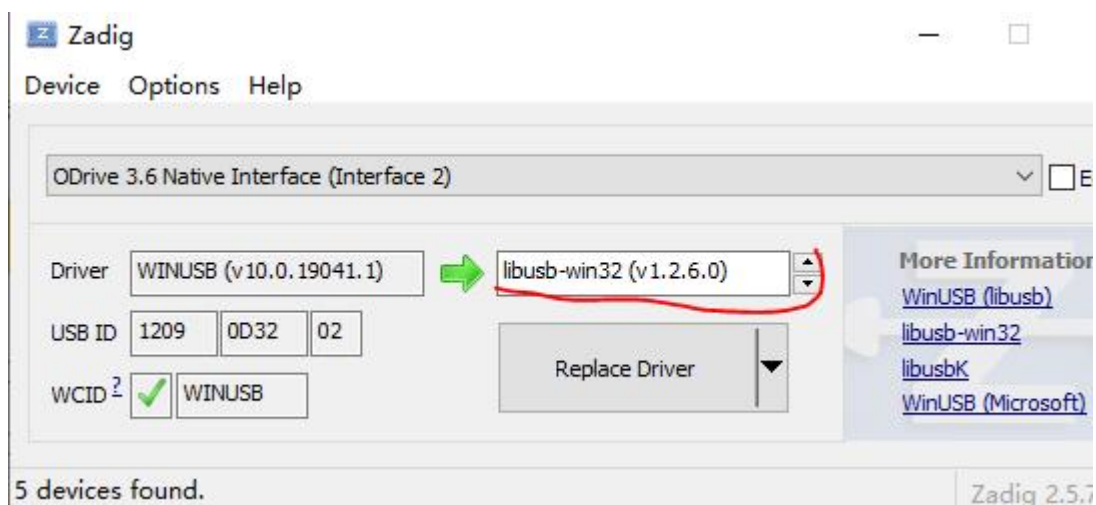


5 devices found.

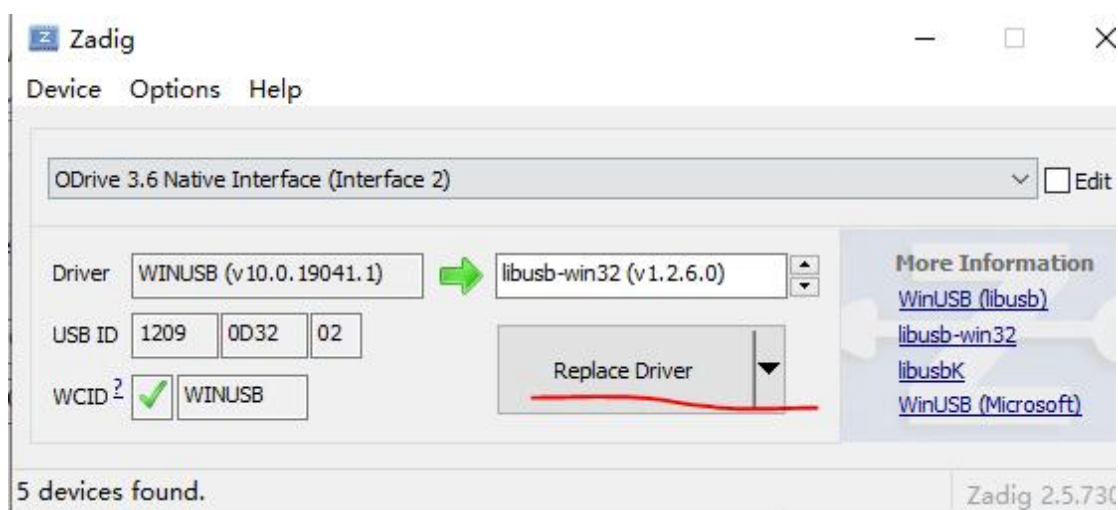
点击上/下箭头，选择 libusb-win32(v 1.2.6.0)



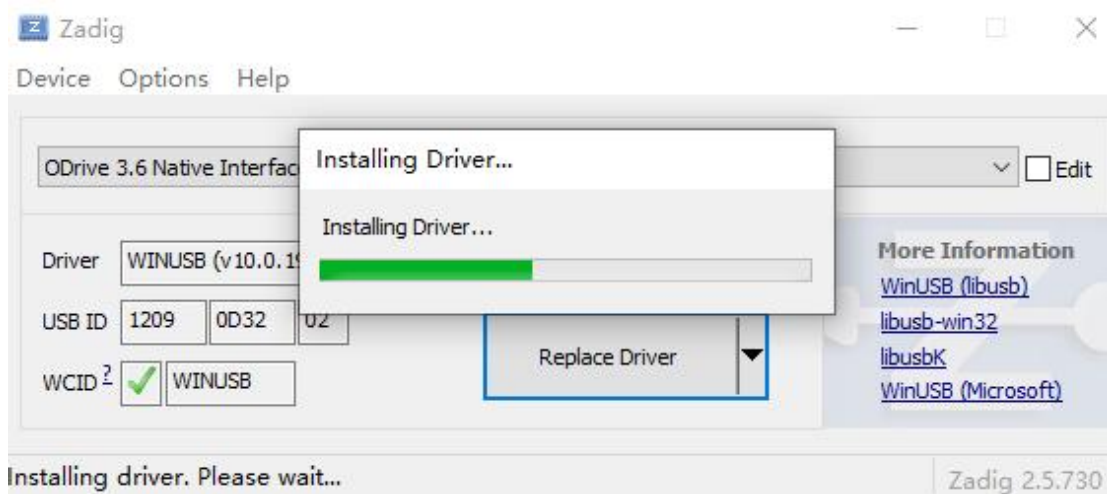
ODRIVE 开发



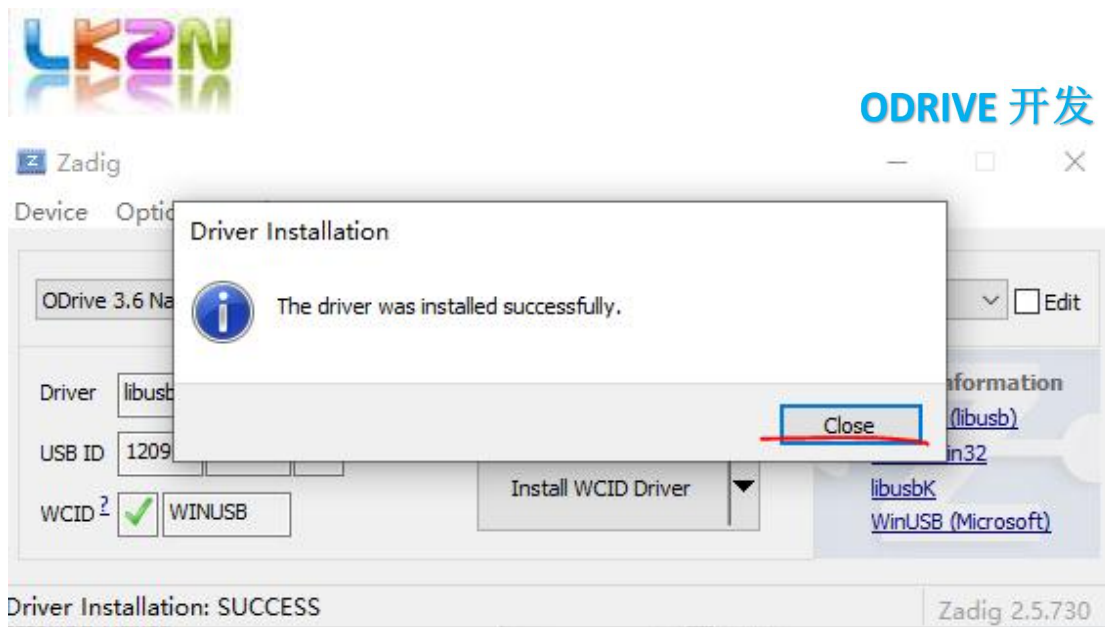
点击 Replace Driver



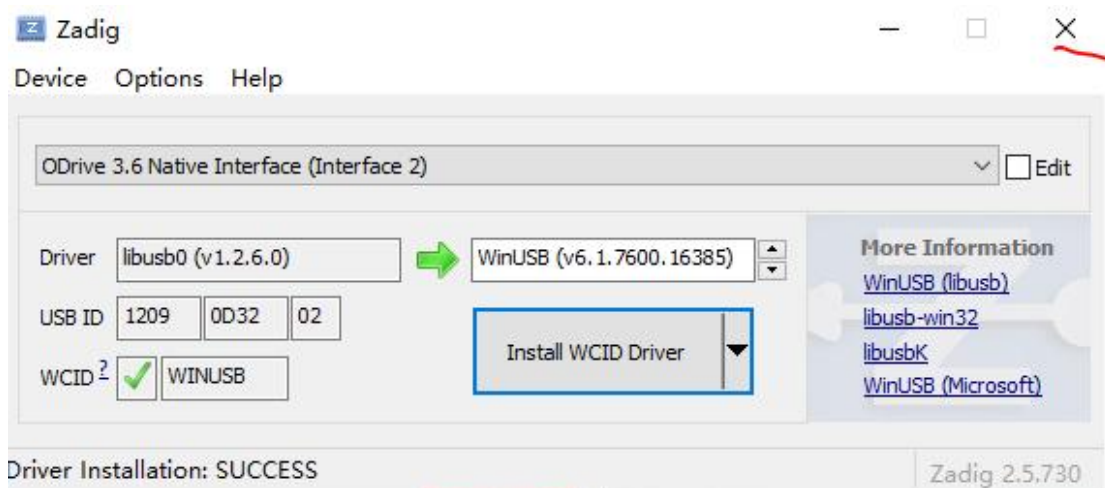
等待驱动替换完成



驱动安装成功后，点击 Close



点击 X，关闭 Zadig 窗口



Zadig 安装完成

2.4 odrivetool 连接

打开命令终端，输入

odrivetool

出现如下界面，连接成功

出现 **Connected to ODrive 337334583333 as odrv0** 表示 oDrive 连接成功。

其中 337334583333 为当前 oDrive 主板序列号



```
C:\Users\Administrator>odrivetool
ODrive control utility v0.5.1.post0
Downloading json data from ODrive... (this might take a while)
Website: https://odriverobotics.com/
Docs: https://docs.odriverobotics.com/
Forums: https://discourse.odriverobotics.com/
Discord: https://discord.gg/k3ZZ3mS
Github: https://github.com/madcowswe/ODrive/

Please connect your ODrive.
You can also type help() or quit().

Connected to ODrive 337334583333 as odrv0
In [1]:
```

输入 `odrv0.vbus_voltage`, 查看供电电压

```
You can also type help() or quit().

Connected to ODrive 337334583333 as odrv0
In [1]: odrv0.vbus_voltage
Out[1]: 24.17072868347168
In [2]:
```

输入 `odrv0.axis0.error`, 检查 M0 :

输入 `odrv0.axis1.error`, 检查 M1 :

```
In [2]: odrv0.axis0.error
Out[2]: 0

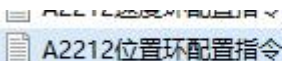
In [3]: odrv0.axis1.error
Out[3]: 0

In [4]:
```

2.5 A2212 电机测试

2.5.1 A2212+TLE5012 位置模式

按照 1-- Odrive 电机测试参数配置 文件夹里面的 A2212 位置环配置指令.txt



测试电机, 运行到

1.6 测试参数配置

```
odrv0.axis0.requested_state = AXIS_STATE_MOTOR_CALIBRATION
```

电机 会响一声

```
odrv0.axis0.requested_state = AXIS_STATE_ENCODER_OFFSET_CALIBRATION
```

电机 会正反转几圈

输入指令到下面

电机控制测试



```
odrv0.axis0.controller.input_pos = 50
```

电机一直转到指定位置

1.6 测试参数配置

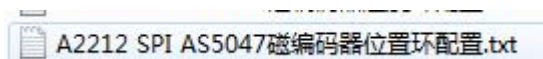
```
odrv0.axis0.requested_state = AXIS_STATE_MOTOR_CALIBRATION  
odrv0.axis0.motor.config.pre_calibrated = True  
odrv0.axis0.requested_state = AXIS_STATE_ENCODER_OFFSET_CALIBRATION  
odrv0.axis0.requested_state = AXIS_STATE_CLOSED_LOOP_CONTROL  
odrv0.axis0.config.startup_encoder_offset_calibration = True  
odrv0.axis0.config.startup_closed_loop_control = True  
odrv0.save_configuration()  
odrv0.reboot()
```

电机控制测试

```
odrv0.axis0.controller.input_pos = 50
```

2.5.2 A2212+AS5047P 位置模式

按照 1-- Odrive 电机测试参数配置 文件夹里面的 A2212 SPI AS5047 磁编码器位置环配置.txt



测试电机，运行到

1.6 测试参数配置

```
odrv0.axis0.requested_state = AXIS_STATE_MOTOR_CALIBRATION
```

电机响一声

```
odrv0.axis0.requested_state = AXIS_STATE_ENCODER_OFFSET_CALIBRATION
```

电机正反转几圈

输入指令到下面

电机控制测试

```
odrv0.axis0.controller.input_pos = 50
```

电机一直转到指定位置

1.6 测试参数配置

```
odrv0.axis0.requested_state = AXIS_STATE_MOTOR_CALIBRATION  
odrv0.axis0.motor.config.pre_calibrated = True  
odrv0.axis0.requested_state = AXIS_STATE_ENCODER_OFFSET_CALIBRATION  
odrv0.axis0.requested_state = AXIS_STATE_CLOSED_LOOP_CONTROL  
odrv0.axis0.config.startup_encoder_offset_calibration = True  
odrv0.axis0.config.startup_closed_loop_control = True  
odrv0.save_configuration()  
odrv0.reboot()
```

电机控制测试

```
odrv0.axis0.controller.input_pos = 50
```