

WPC-EDrive-SRV user guide

WPC Systems Ltd.

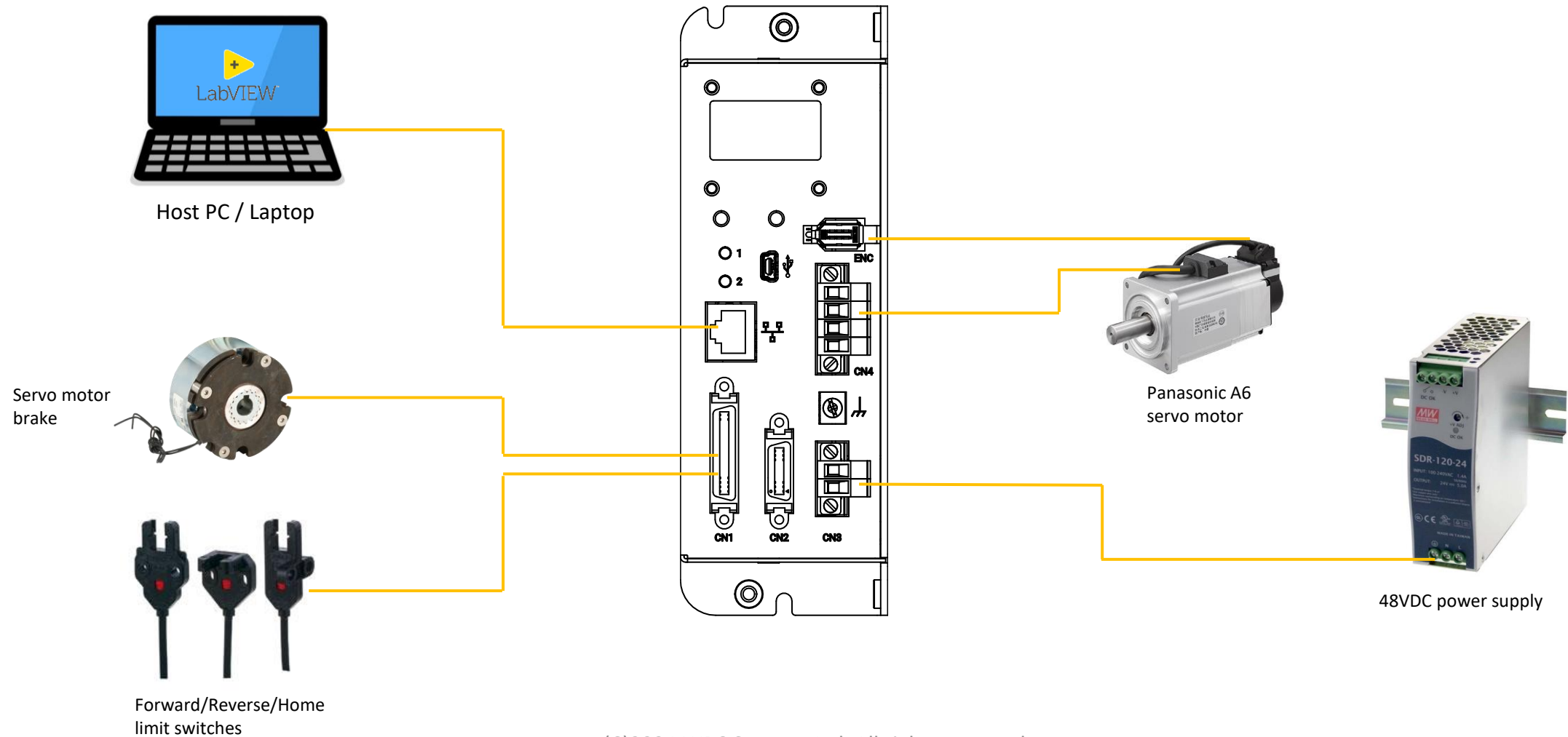
Justin Wu

2024-01-23

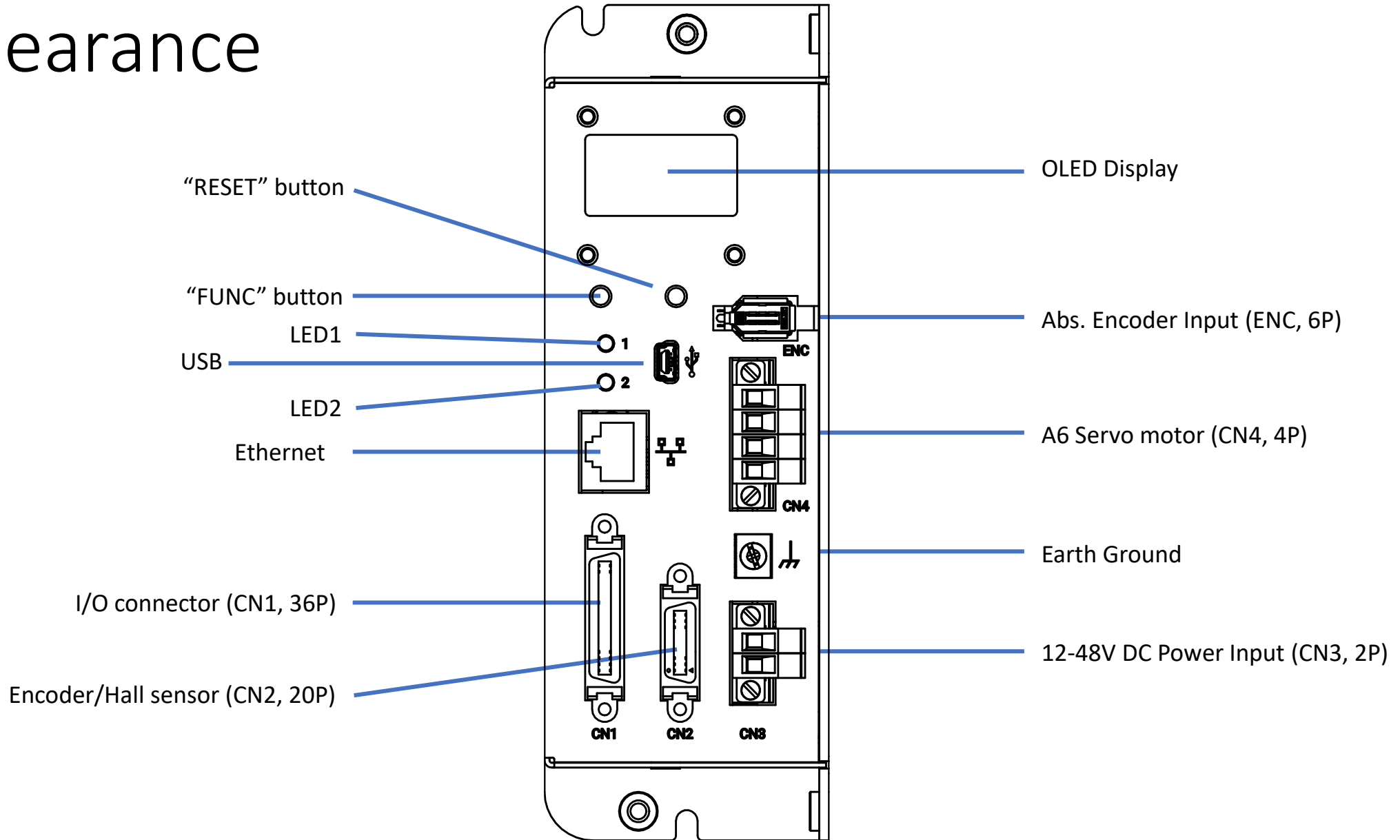
Features

- Model: WPC-EDrive-SRV
 - 馬達種類：Panasonic A6 (AC伺服馬達)
 - 極限開關：FWD, REV (w/o Home)
 - Brake release, Break-point
 - Encoder 23-bit 絕對型編碼器
 - 12-48V 直流電源輸入（最大輸出功率400W）
- 軟體支援：
 - WPC Device Manager (WDM), WPC Device Driver (WDD)

System diagram

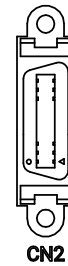
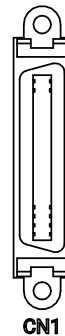


Appearance



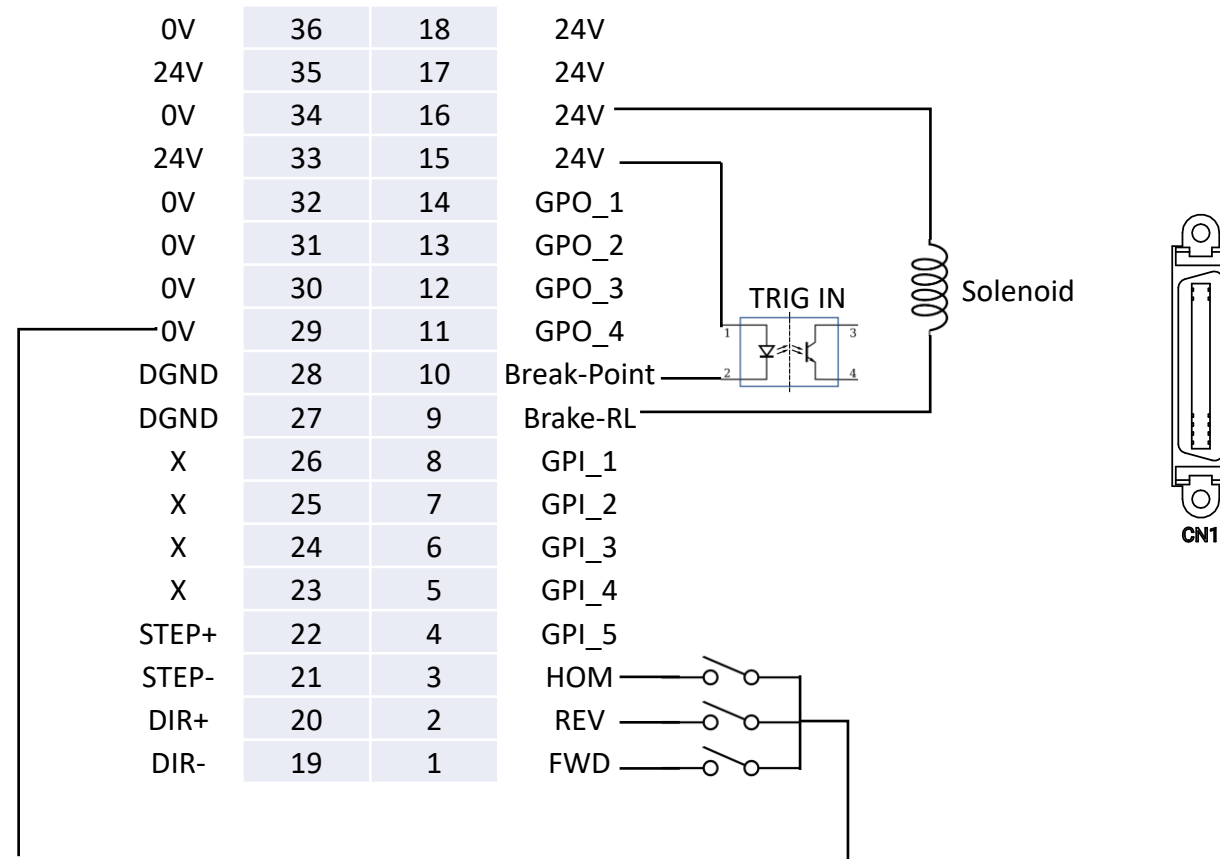
CN1, CN2 connector pinout

0V	36	18	24V
24V	35	17	24V
0V	34	16	24V
24V	33	15	24V
0V	32	14	GPO_1
0V	31	13	GPO_2
0V	30	12	GPO_3
0V	29	11	GPO_4
DGND	28	10	Break-Point
DGND	27	9	Brake-RL
X	26	8	GPI_1
X	25	7	GPI_2
X	24	6	GPI_3
X	23	5	GPI_4
STEP+	22	4	GPI_5
STEP-	21	3	HOM
DIR+	20	2	REV
DIR-	19	1	FWD

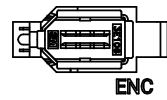
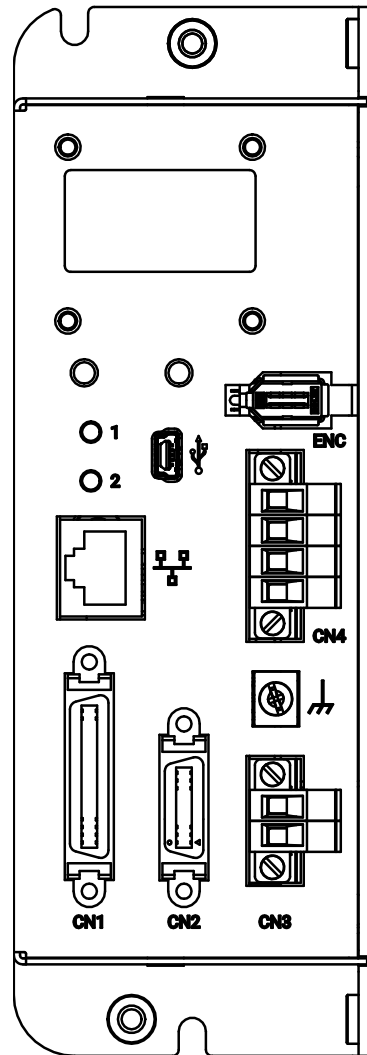


Enc_A+	20	10	Hall_Sensor_U+
Enc_A-	19	9	Hall_Sensor_U-
Enc_B+	18	8	Hall_Sensor_V+
Enc_B-	17	7	Hall_Sensor_V-
Enc_Z+	16	6	Hall_Sensor_W+
Enc_Z-	15	5	Hall_Sensor_W-
Enc_A	14	4	Hall_Sensor_U
Enc_B	13	3	Hall_Sensor_V
Enc_Z	12	2	Hall_Sensor_W
DGND	11	1	5V

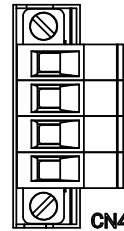
CN1 connection example



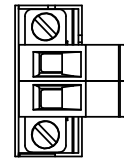
CN3, CN4, ENC connector pinout



D-	6	5	D+
	4	3	
0V	2	1	5V



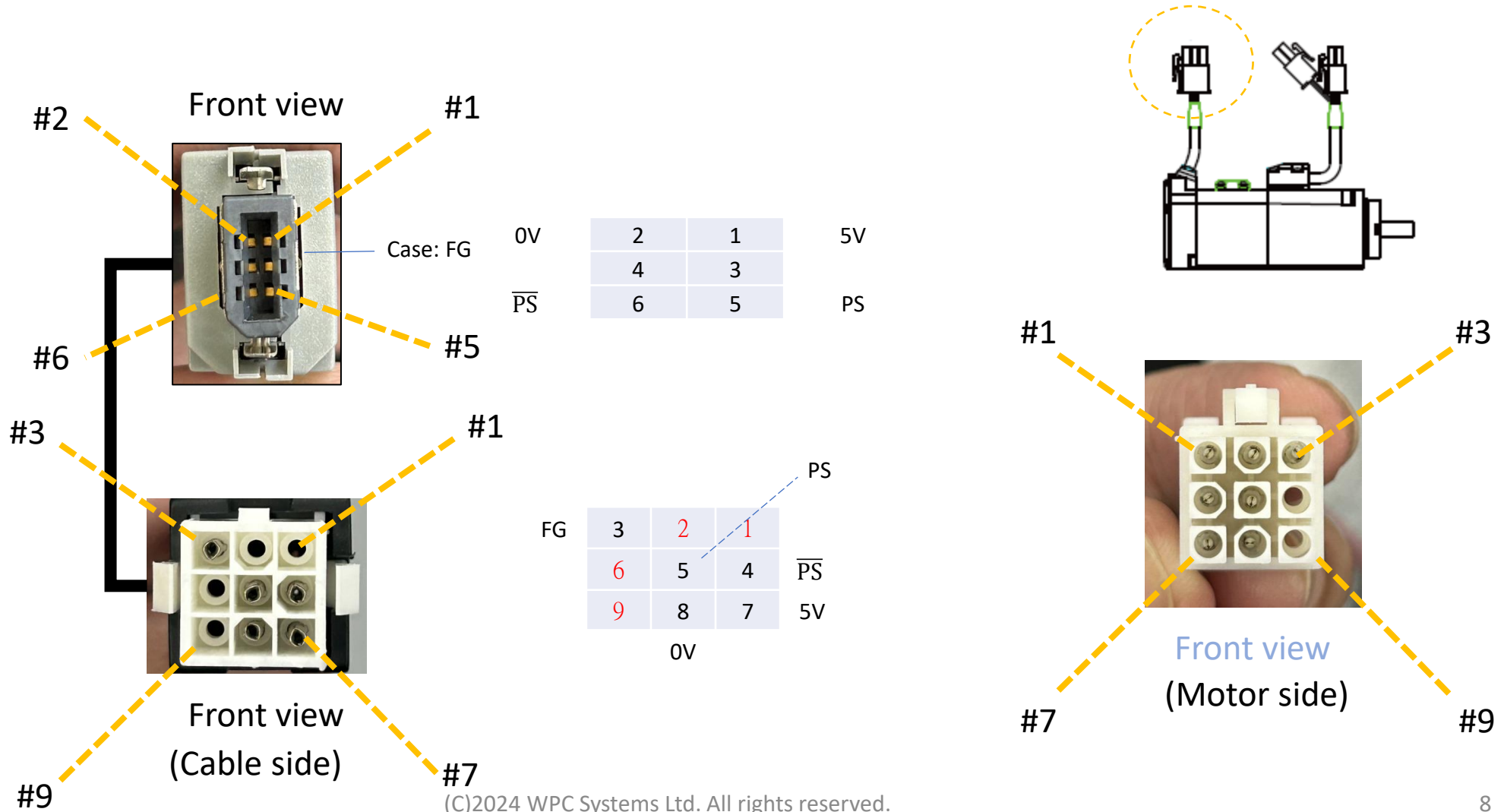
4	W
3	V
2	U
1	Shield



2	12-48V
1	0V

CN3

Encoder cable pinout




Software operating guide

WPC device manager (WDM) download

⚠ 不安全 | wpc.com.tw/36939212052551121046-motion.html


WPC device driver (LabVIEW) 驅動程式下載 (2023-10-26更新)

 **wpc_device_driver-1.1.5.1.zip**
Download File

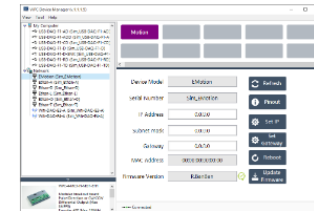
- LabVIEW 驅動程式、範例程式
- 支援 WPC USB, Ethernet, WiFi DAQ, Ethernet motion 全系列產品



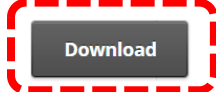
WPC Device Manager 裝置管理員 (2023-10-30更新)

 **wpc_device_manager_v1.1.5.2.7z**
Download File

- 管理 USB, Ethernet, WiFi DAQ, Ethernet motion 裝置
- Software front panel (SFP)
- 裝置韌體更新
- 須安裝 LabVIEW 2015 SP1 Run-time Engine

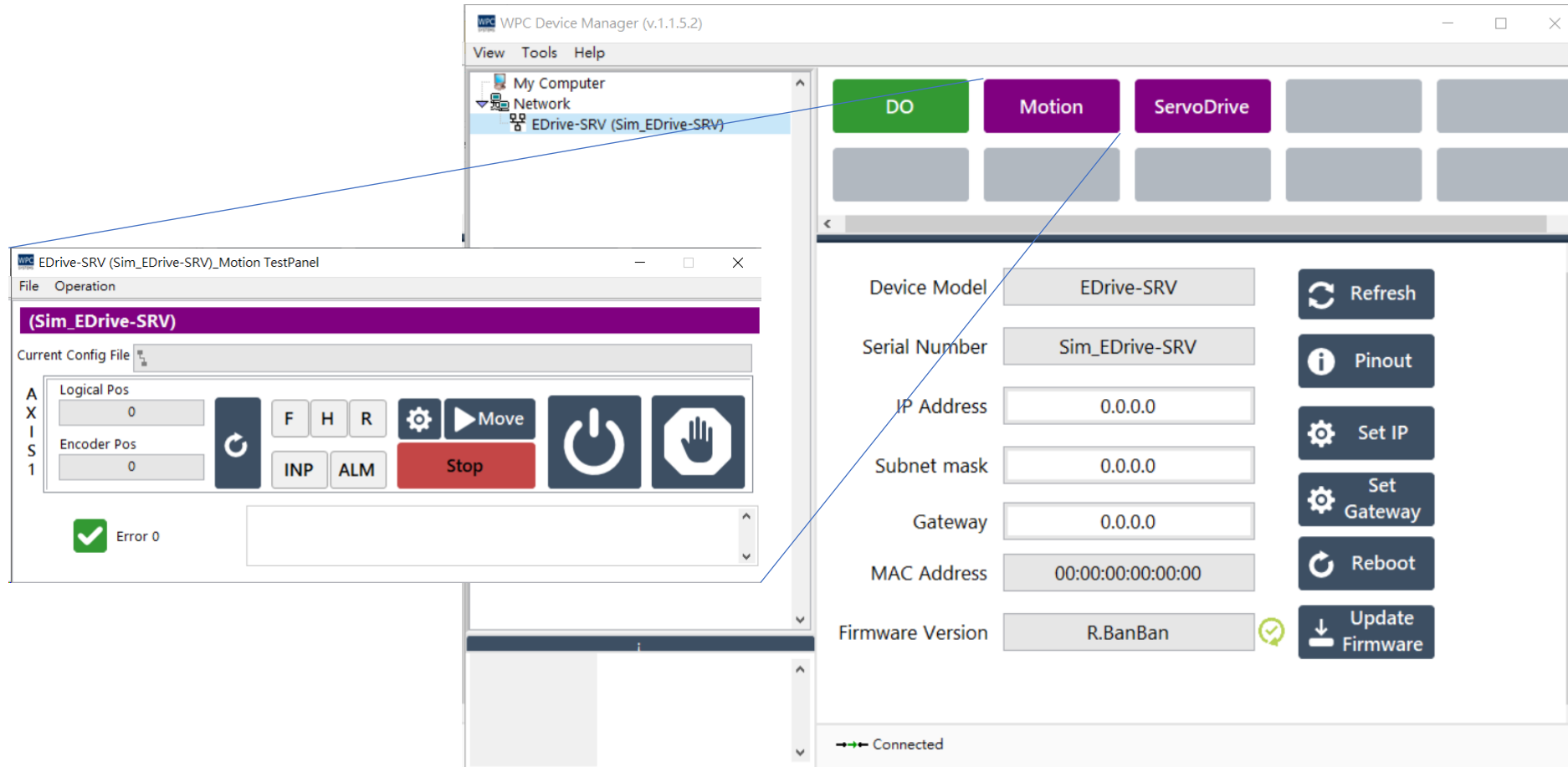


LabVIEW 2015 SP1 Run-time engine (需安裝)

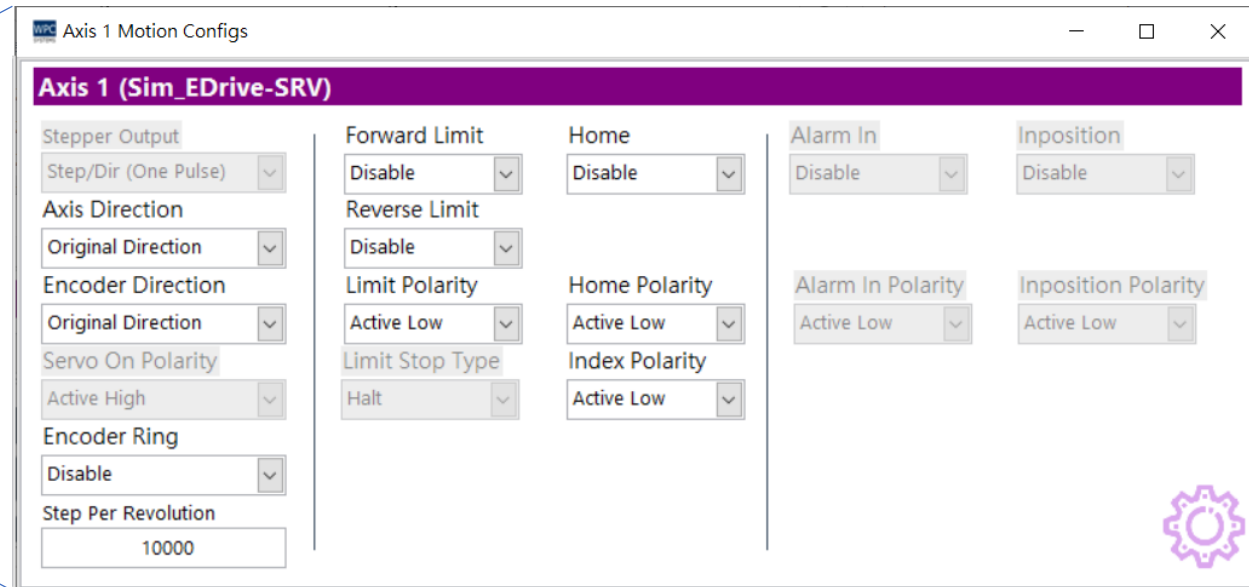
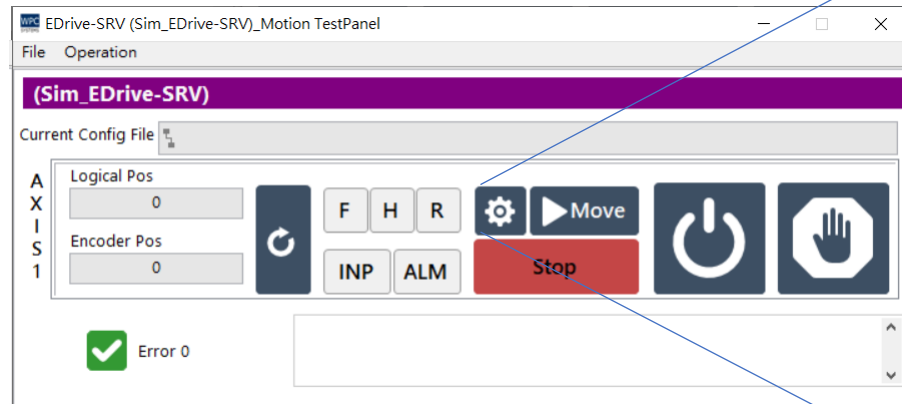
 Download

If you don't have pre-installed LabVIEW environment, you need to install run-time engine (RTE) at least.

WDM --> Motion Test Panel



Motion configurations



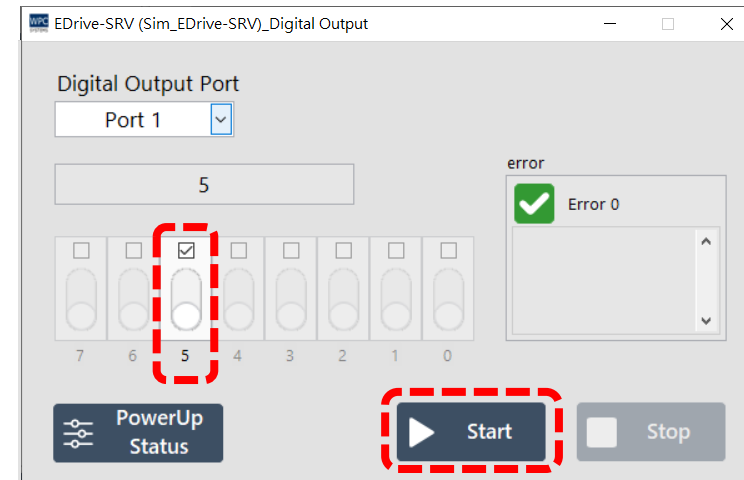
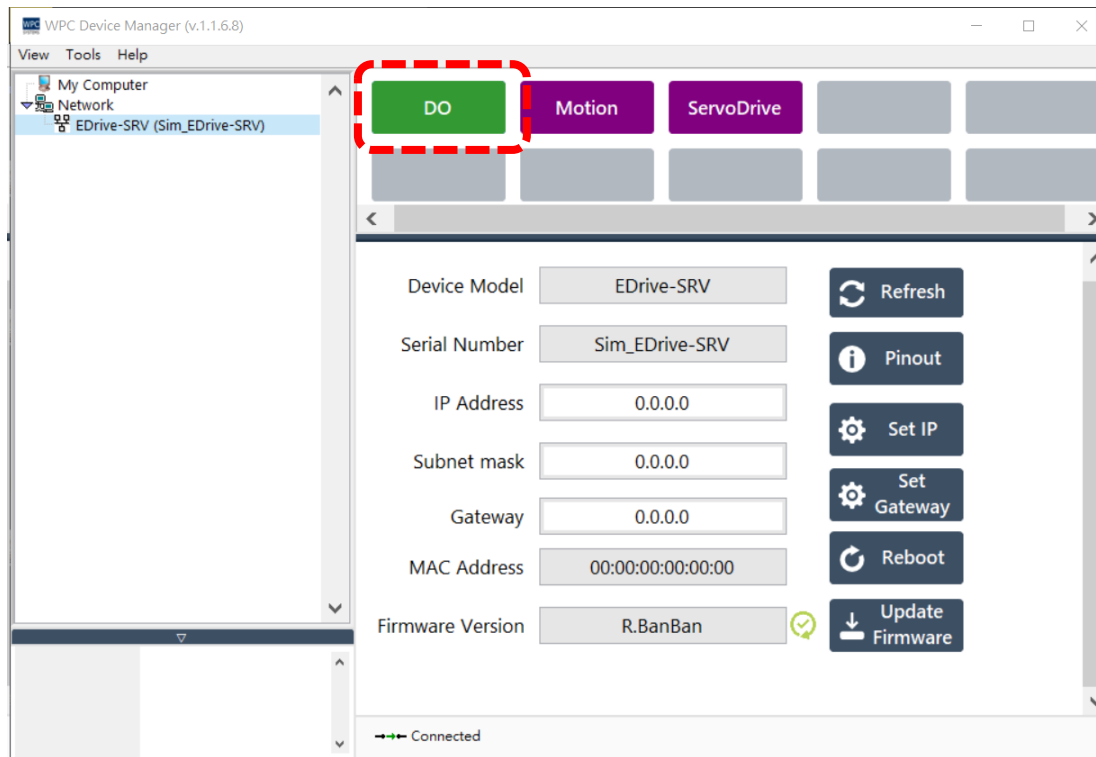
1-axis Interactive

The image displays a software interface for controlling a 1-axis motor. It consists of three main windows:

- EDrive-SRV (Sim_EDrive-SRV)_Motion TestPanel:** The main control window. It features a menu bar (File, Operation), a title bar (Sim_EDrive-SRV), and a "Current Config File" field. Below this are input fields for "Logical Pos" and "Encoder Pos", both set to 0. A row of control buttons includes a refresh icon, "F", "H", "R", a gear icon, a "Move" button, a power icon, and a hand icon. Below these are "INP", "ALM", and a red "Stop" button. At the bottom, there is a green checkmark and "Error 0" status.
- Axis 1 Motor Move (SimpleMove):** A detailed control window for simple movement. It has a title bar "Axis 1 (Sim_EDrive-SRV)" and two tabs: "SimpleMove" (active) and "FindRef". It includes an "Operation Mode" dropdown set to "Absolute Position", a "Run" button, and a "Stop" button. Parameters are shown in input fields: "Target Position(step)" at 0, "Velocity(step/sec)" at 1000, "Acceleration(step/sec^2)" at 5000, and "Deceleration(step/sec^2)" at 5000. A "Blend" button is located at the bottom.
- Axis 1 Motor Move (FindRef):** A detailed control window for finding the reference position. It has a title bar "Axis 1 (Sim_EDrive-SRV)" and two tabs: "SimpleMove" and "FindRef" (active). It includes a "Find Reference Select" dropdown set to "Find Home", a "Search Velocity (step/sec)" field at 0, a "Search Direction" dropdown set to "Forward", an "Approach Velocity Percent (%)" field at 0, a "Reset Position after Ref found" toggle set to "Disable", and an "Offset Position (step)" field at 0. It features "Find" and "Stop" buttons. A home icon is visible in the bottom right corner.

Brake release control

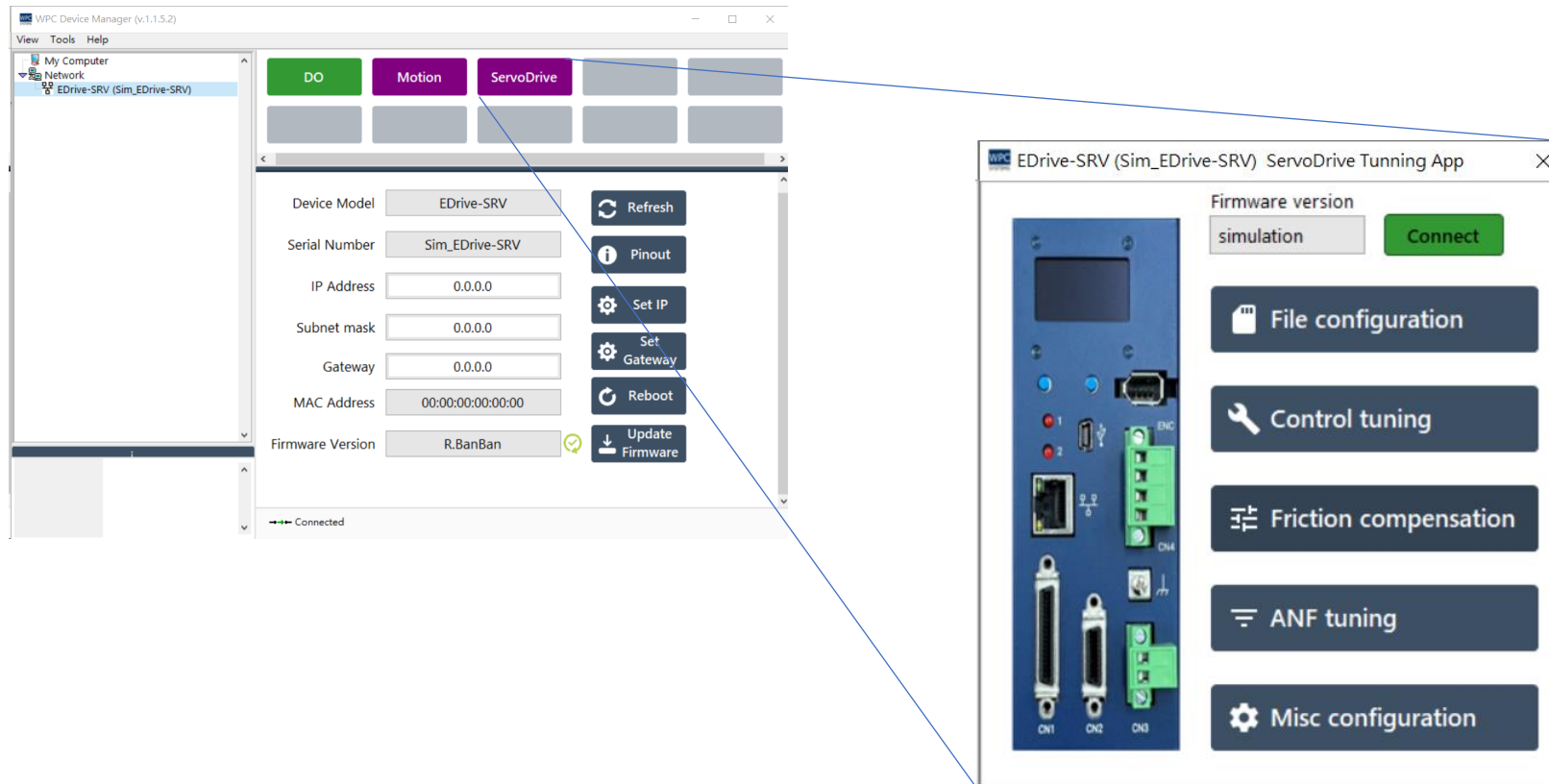
Brake release through DO test panel



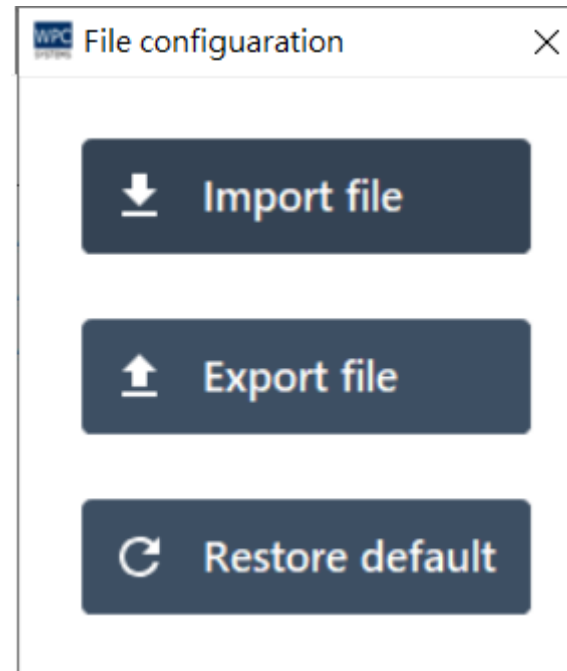
ServoDrive tuning software

Interactive motor tuning software

ServoDrive tuning software



Configuration file operation





Motor close-loop PID tuning

Control tuning application
✕

Procedure

- **Step1, Fill motor specification**
- Step2, Configure electric parameter
- Step3, Release brake
- Step4, Perform system identification (electrical)
- Step5, System identification (mechanical) guideline
- Step6, Perform system identification (mechanical)
- Step7, Configure controller bandwidth

Please fill motor specification

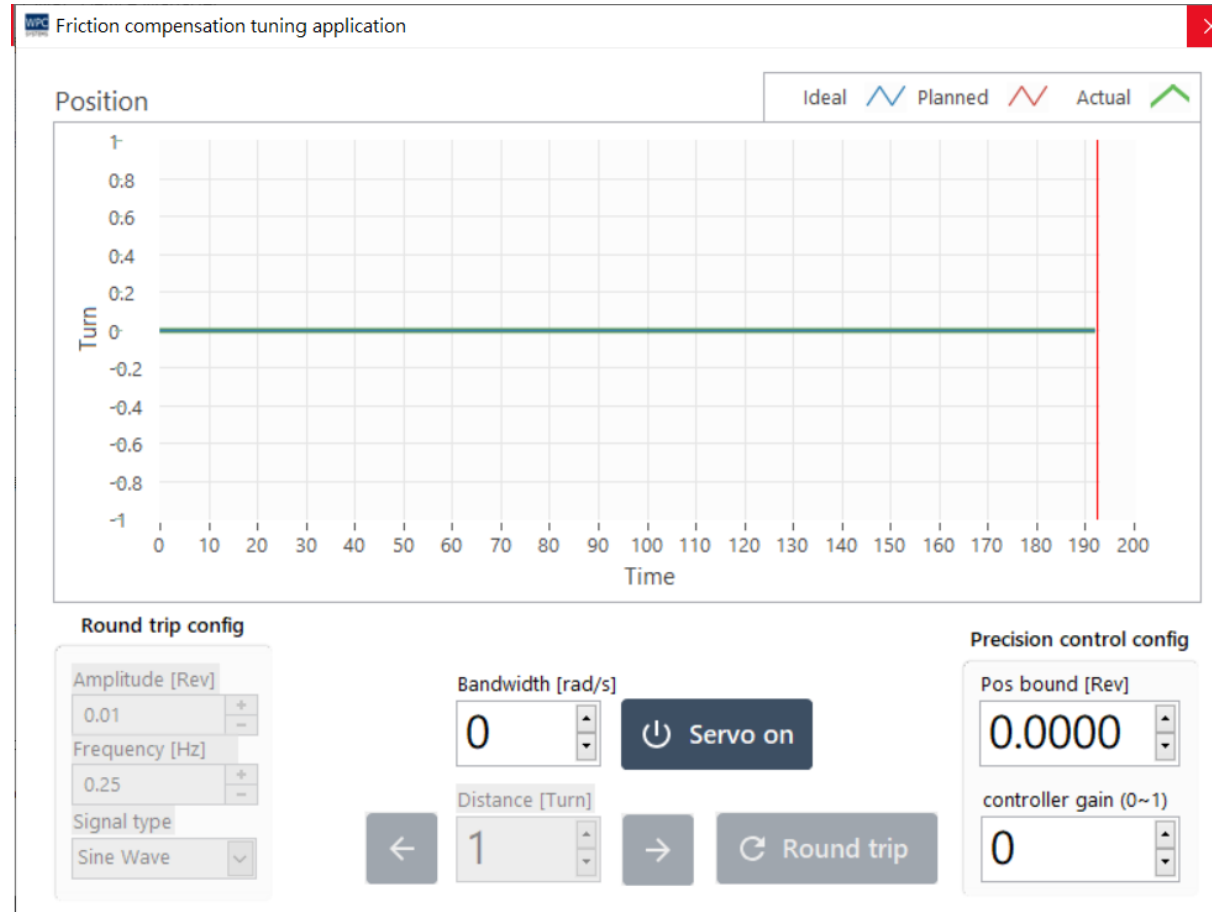
<p>Panasonic AC SERVO MOTOR Model No. MSMF042L1U2M INPUT 3ϕ AC 121 V <input type="text" value="0"/> A RATED OUTPUT 0.4 kW RATED FREQ. <input type="text" value="0"/> Hz RATED REV. <input type="text" value="0"/> r/min</p> <p style="text-align: center;">   </p>	<p>CONT. TORQUE <input type="text" value="0"/> N-m RATING S1 THERMAL CLASS 155(F) IP65 CONNECTION Δ, TE, 40°C SER.No. 23072040Z 20230701</p> <p style="text-align: center;">   Panasonic Industry Co., Ltd. </p>
--	--



← Previous

→ Next

Fiction compensation tuning



Adaptive notch filter (ANF) tuning



The screenshot shows the 'Adaptive Notch Filter tuning software' interface. It features a main plot titled 'Position' showing 'Turn' vs 'Time' with 'Ideal', 'Planned', and 'Actual' trajectories. The 'Actual' trajectory is a flat green line at 0 turns. Below this is a 'Trajectory config' section with input fields for Velocity [RPS], Acceleration [RPS/sec], and Deceleration [RPS/sec], all set to 0. A 'Bandwidth [rad/s]' field is set to 0, and a 'Distance [Turn]' field is set to 1. A 'Servo on' button is present. On the right, there are three tabs for 'First ANF', 'Second ANF', and 'Third ANF'. The 'First ANF' tab is active, showing 'Enable ANF', 'Frequency estimator', and 'Suppress vibration' buttons. It also has input fields for 'Min freq [Hz]' (0), 'Damping ratio [0~1]' (0), and 'Adaptive step size' (0). Below these is an 'Estimated frequency [Hz]' plot showing a flat blue line at 0 Hz. At the bottom right, there is a 'Set frequency' button and a 'Notch filter freq [Hz]' field set to 0.

Misc. configuration

Misc configuration
×

Procedure

- **Step1, Configure current protection**
- Step2, Configure inposition

Enable current protection

Off

Peak current limit [A]

0

Saturation current [A]

0

Average current limit [A]

0

← Previous

Next →

For LabVIEW users

Download WPC device driver (WDD) from WPC official site

▲ 不安全 | wpc.com.tw/36939212052551121046-motion.html

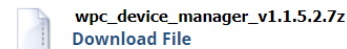
WPC device driver (LabVIEW) 驅動程式下載 (2023-10-26更新)



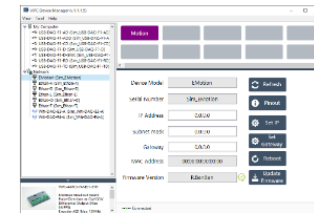
- LabVIEW 驅動程式、範例程式
- 支援 WPC USB, Ethernet, WiFi DAQ, Ethernet motion 全系列產品



WPC Device Manager 裝置管理員 (2023-10-30更新)



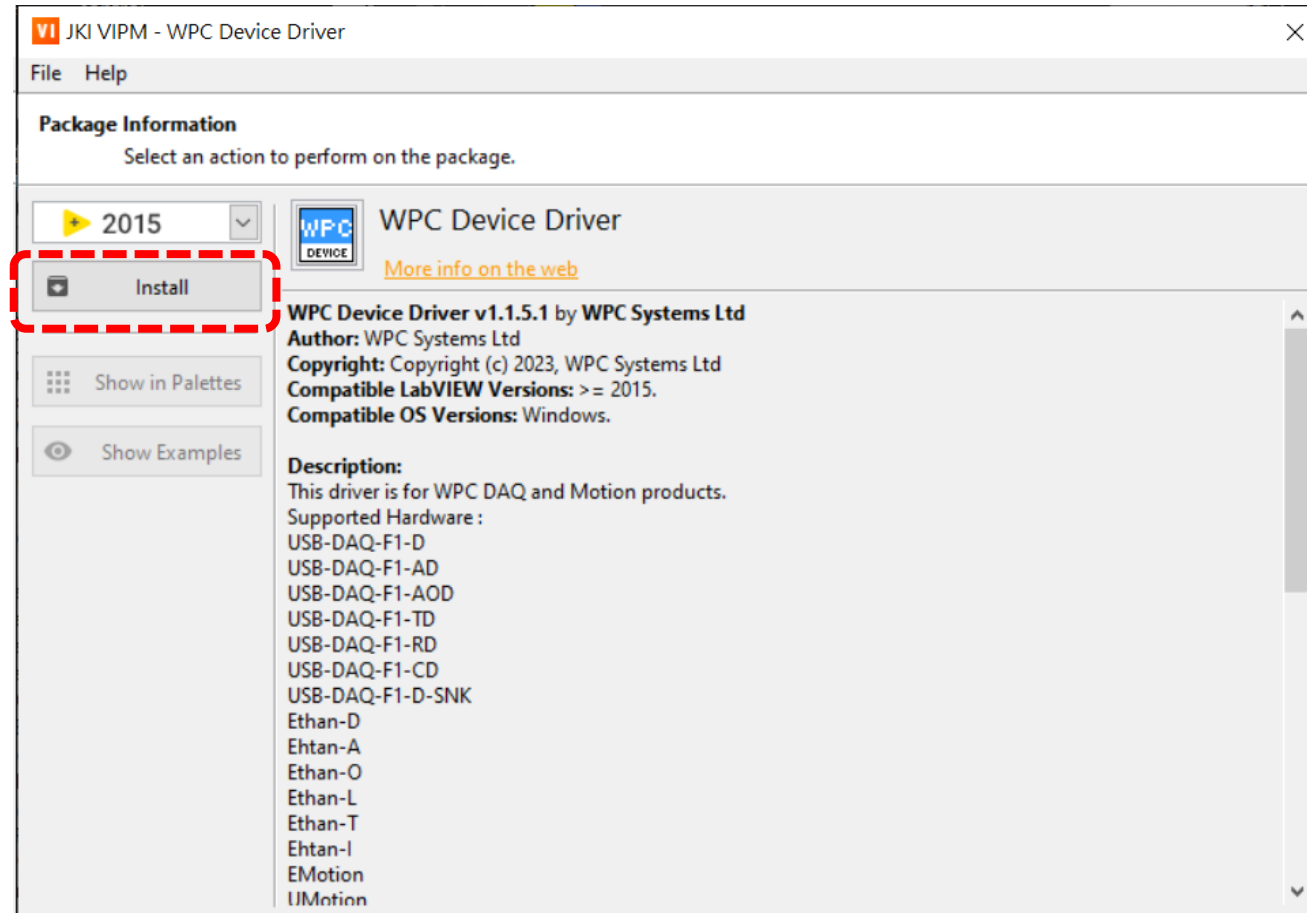
- 管理 USB, Ethernet, WiFi DAQ, Ethernet motion 裝置
- Software front panel (SFP)
- 裝置韌體更新
- 須安裝 LabVIEW 2015 SP1 Run-time Engine



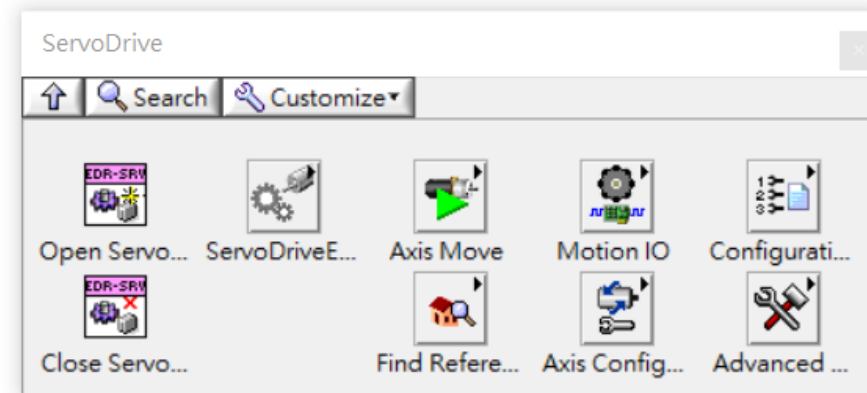
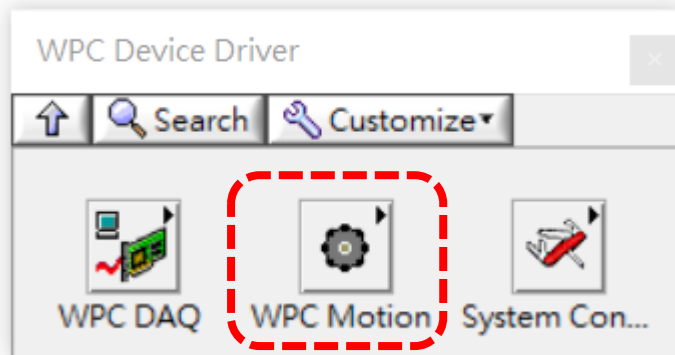
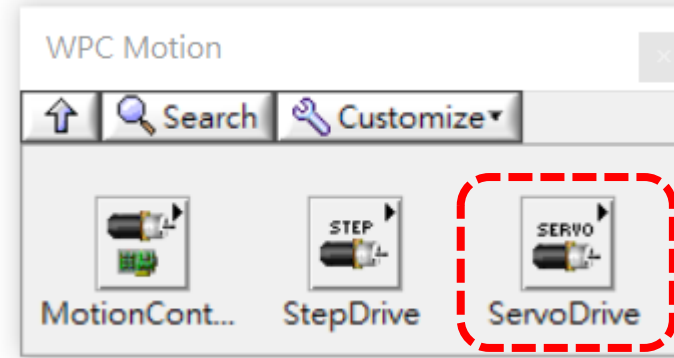
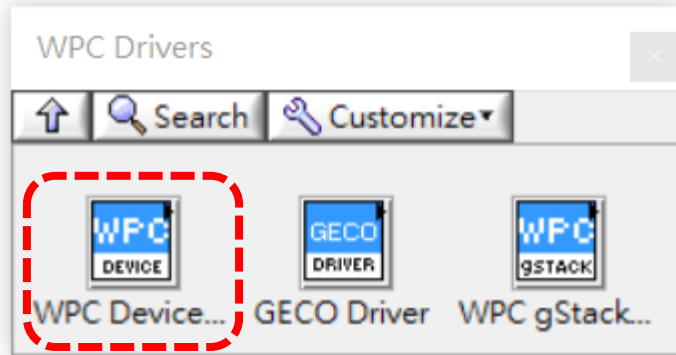
LabVIEW 2015 SP1 Run-time engine (需安裝)

Download

Double click for installation and follow instructions

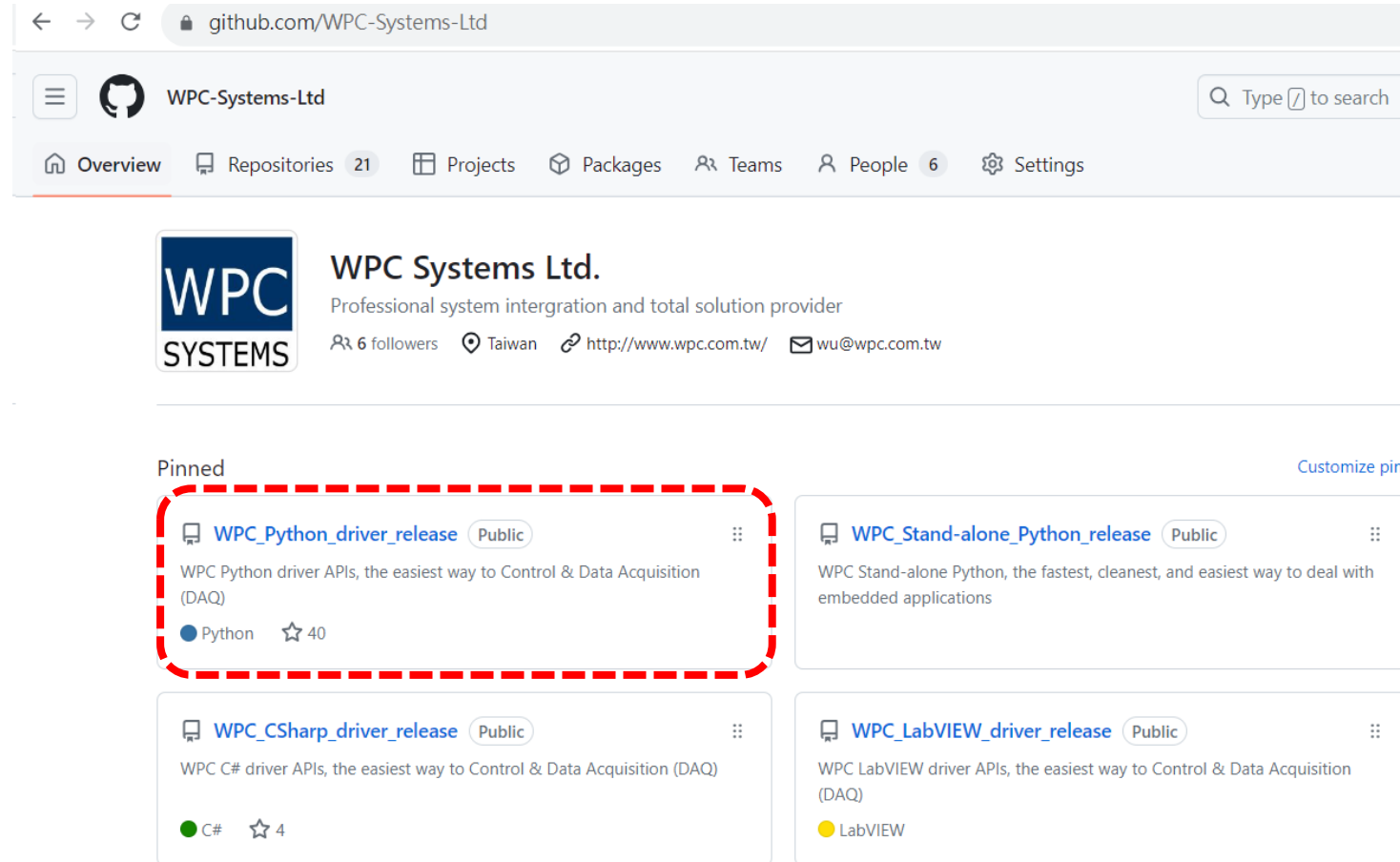


Right click on VI's block diagram



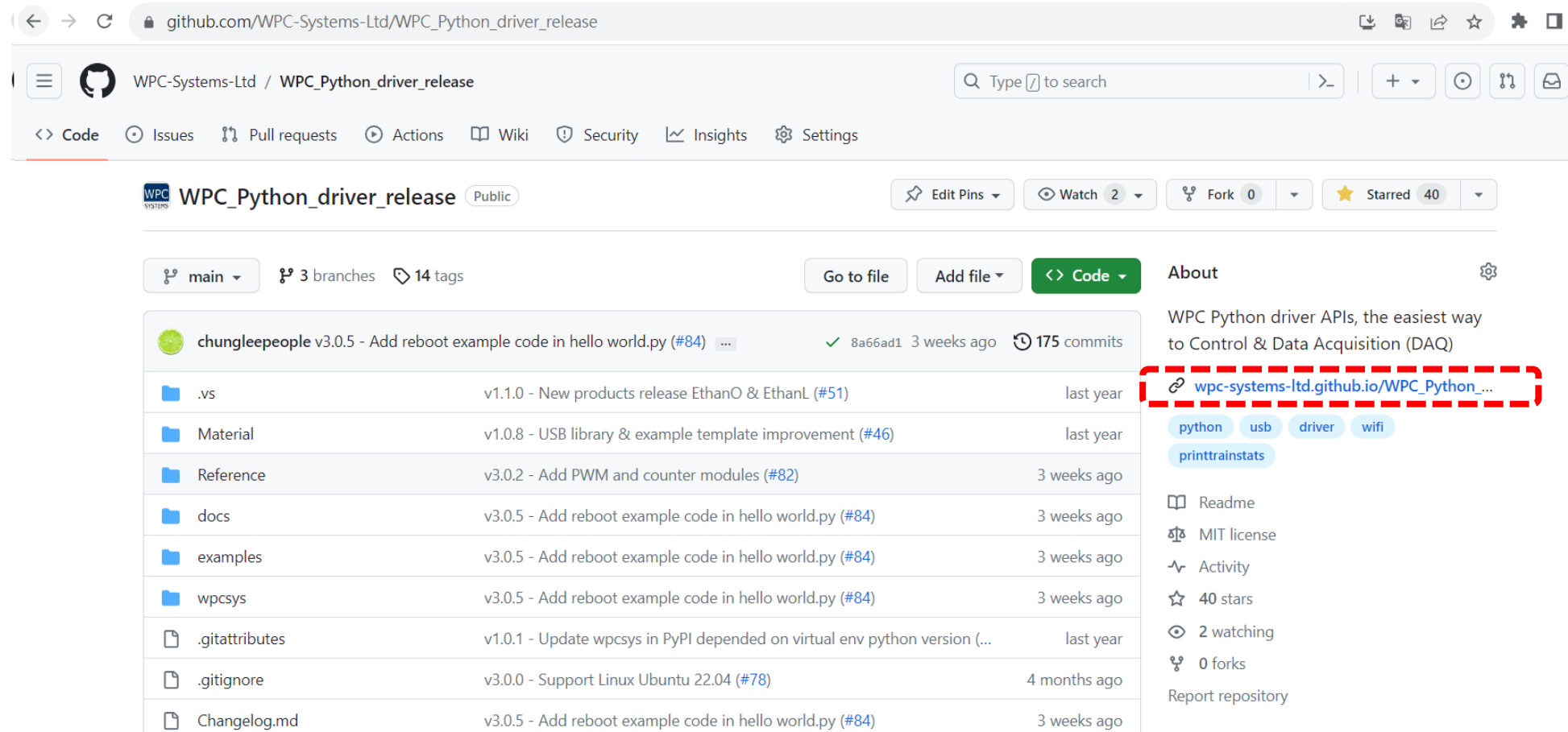
For Python users

Goto GitHub WPC official site



The screenshot shows the GitHub profile page for WPC-Systems-Ltd. The browser address bar displays 'github.com/WPC-Systems-Ltd'. The profile header includes the WPC SYSTEMS logo, the name 'WPC Systems Ltd.', and the tagline 'Professional system intergration and total solution provider'. It also shows 6 followers, location in Taiwan, and contact information for the website and email. Below the header, a 'Pinned' section contains four repository cards. The first card, 'WPC_Python_driver_release', is highlighted with a red dashed border. It is a public repository with 40 stars and is categorized as Python. The other three cards are 'WPC_Stand-alone_Python_release' (Public, 0 stars), 'WPC_CSharp_driver_release' (Public, 4 stars, C#), and 'WPC_LabVIEW_driver_release' (Public, 0 stars, LabVIEW).

For Python users



github.com/WPC-Systems-Ltd/WPC_Python_driver_release

WPC-Systems-Ltd / WPC_Python_driver_release

Code Issues Pull requests Actions Wiki Security Insights Settings

WPC SYSTEMS WPC_Python_driver_release Public Edit Pins Watch 2 Fork 0 Starred 40

main 3 branches 14 tags Go to file Add file Code

chunglepeople v3.0.5 - Add reboot example code in hello world.py (#84) ...	8a66ad1 3 weeks ago	175 commits
.vs	v1.1.0 - New products release EthanO & EthanL (#51)	last year
Material	v1.0.8 - USB library & example template improvement (#46)	last year
Reference	v3.0.2 - Add PWM and counter modules (#82)	3 weeks ago
docs	v3.0.5 - Add reboot example code in hello world.py (#84)	3 weeks ago
examples	v3.0.5 - Add reboot example code in hello world.py (#84)	3 weeks ago
wpcsys	v3.0.5 - Add reboot example code in hello world.py (#84)	3 weeks ago
.gitattributes	v1.0.1 - Update wpcsys in PyPI depended on virtual env python version (...)	last year
.gitignore	v3.0.0 - Support Linux Ubuntu 22.04 (#78)	4 months ago
Changelog.md	v3.0.5 - Add reboot example code in hello world.py (#84)	3 weeks ago

About

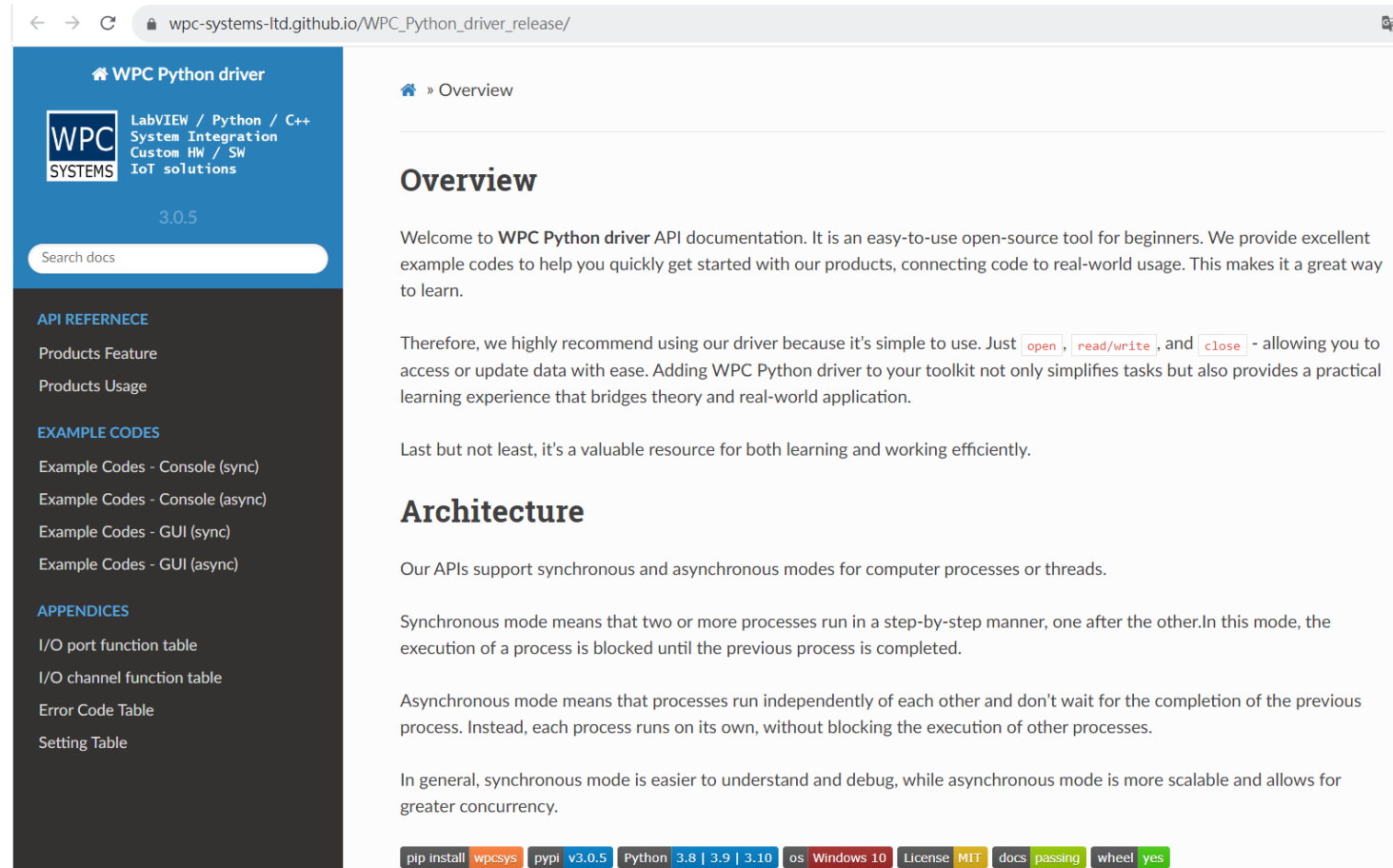
WPC Python driver APIs, the easiest way to Control & Data Acquisition (DAQ)

[wpc-systems-ltd.github.io/WPC_Python_...](#)

python usb driver wifi printtrainstats

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Python programming guide



The screenshot shows the WPC Python driver API documentation website. The browser address bar displays `wpc-systems-ltd.github.io/WPC_Python_driver_release/`. The page features a blue header with the WPC SYSTEMS logo and navigation links for LabVIEW, Python, C++, System Integration, Custom HW/SW, and IoT solutions. The version number 3.0.5 is displayed below the header. A search bar is present in the top left of the main content area. The left sidebar contains a table of contents with sections for API REFERNECE, EXAMPLE CODES, and APPENDICES. The main content area is titled "Overview" and contains the following text:

» Overview

Overview

Welcome to **WPC Python driver** API documentation. It is an easy-to-use open-source tool for beginners. We provide excellent example codes to help you quickly get started with our products, connecting code to real-world usage. This makes it a great way to learn.

Therefore, we highly recommend using our driver because it's simple to use. Just `open`, `read/write`, and `close` - allowing you to access or update data with ease. Adding WPC Python driver to your toolkit not only simplifies tasks but also provides a practical learning experience that bridges theory and real-world application.

Last but not least, it's a valuable resource for both learning and working efficiently.

Architecture

Our APIs support synchronous and asynchronous modes for computer processes or threads.

Synchronous mode means that two or more processes run in a step-by-step manner, one after the other. In this mode, the execution of a process is blocked until the previous process is completed.

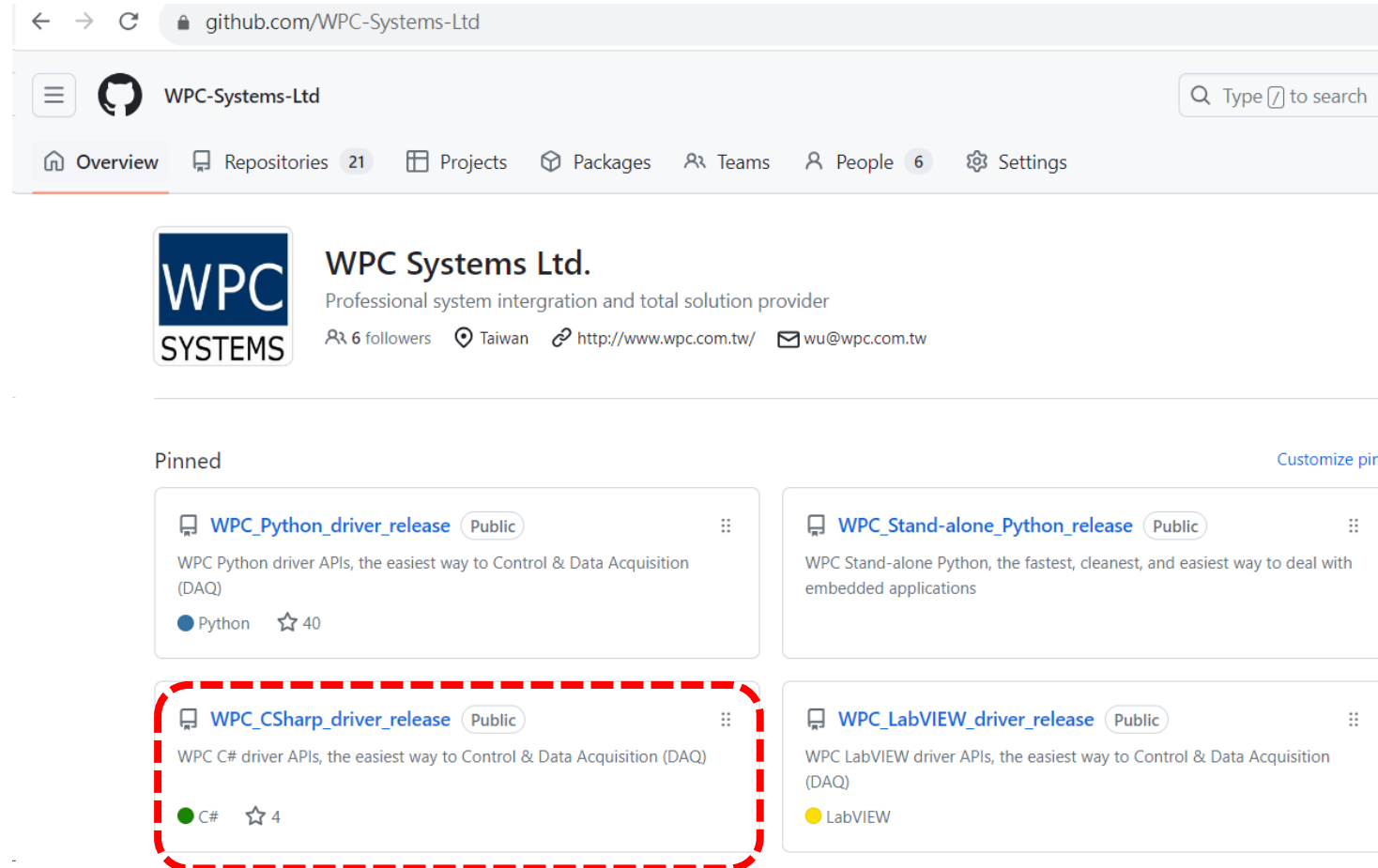
Asynchronous mode means that processes run independently of each other and don't wait for the completion of the previous process. Instead, each process runs on its own, without blocking the execution of other processes.

In general, synchronous mode is easier to understand and debug, while asynchronous mode is more scalable and allows for greater concurrency.

At the bottom of the page, there is a status bar with the following information: `pip install wpcsys`, `pypi v3.0.5`, `Python 3.8 | 3.9 | 3.10`, `os Windows 10`, `License MIT`, `docs passing`, and `wheel yes`.

For C# users

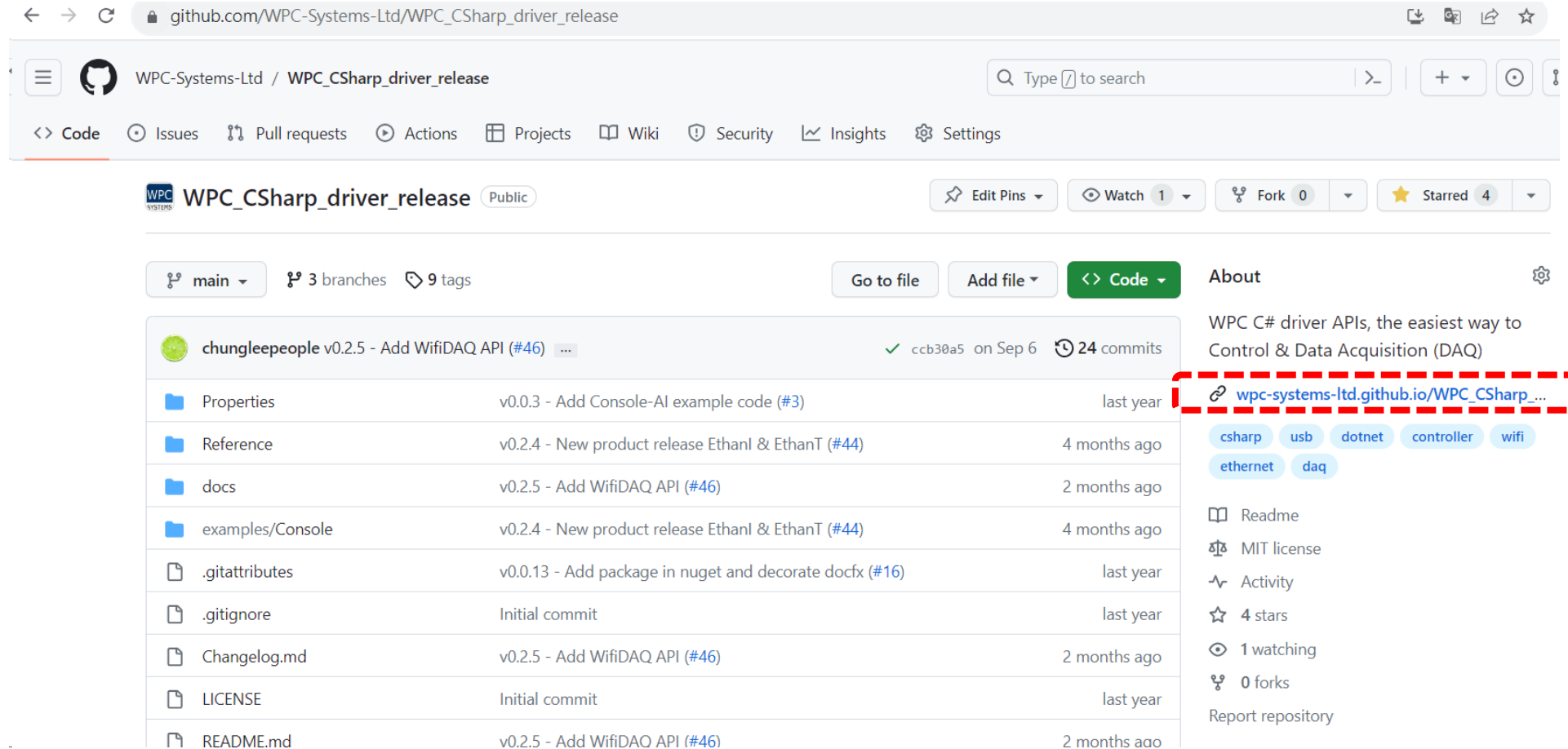
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- WPC_Python_driver_release** (Public): WPC Python driver APIs, the easiest way to Control & Data Acquisition (DAQ). Python, 40 stars.
- WPC_Stand-alone_Python_release** (Public): WPC Stand-alone Python, the fastest, cleanest, and easiest way to deal with embedded applications.
- WPC_CSharp_driver_release** (Public): WPC C# driver APIs, the easiest way to Control & Data Acquisition (DAQ). C#, 4 stars. This card is highlighted with a red dashed border.
- WPC_LabVIEW_driver_release** (Public): WPC LabVIEW driver APIs, the easiest way to Control & Data Acquisition (DAQ). LabVIEW.

For C# users



github.com/WPC-Systems-Ltd/WPC_CSharp_driver_release

WPC-Systems-Ltd / WPC_CSharp_driver_release

Type to search

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WPC SYSTEMS WPC_CSharp_driver_release Public Edit Pins Watch 1 Fork 0 Starred 4

main 3 branches 9 tags Go to file Add file Code

chungleepeople v0.2.5 - Add WifiDAQ API (#46) ✓ ccb30a5 on Sep 6 24 commits

Properties	v0.0.3 - Add Console-AI example code (#3)	last year
Reference	v0.2.4 - New product release EthanI & EthanT (#44)	4 months ago
docs	v0.2.5 - Add WifiDAQ API (#46)	2 months ago
examples/Console	v0.2.4 - New product release EthanI & EthanT (#44)	4 months ago
.gitattributes	v0.0.13 - Add package in nuget and decorate docfx (#16)	last year
.gitignore	Initial commit	last year
Changelog.md	v0.2.5 - Add WifiDAQ API (#46)	2 months ago
LICENSE	Initial commit	last year
README.md	v0.2.5 - Add WifiDAO API (#46)	2 months ago

About

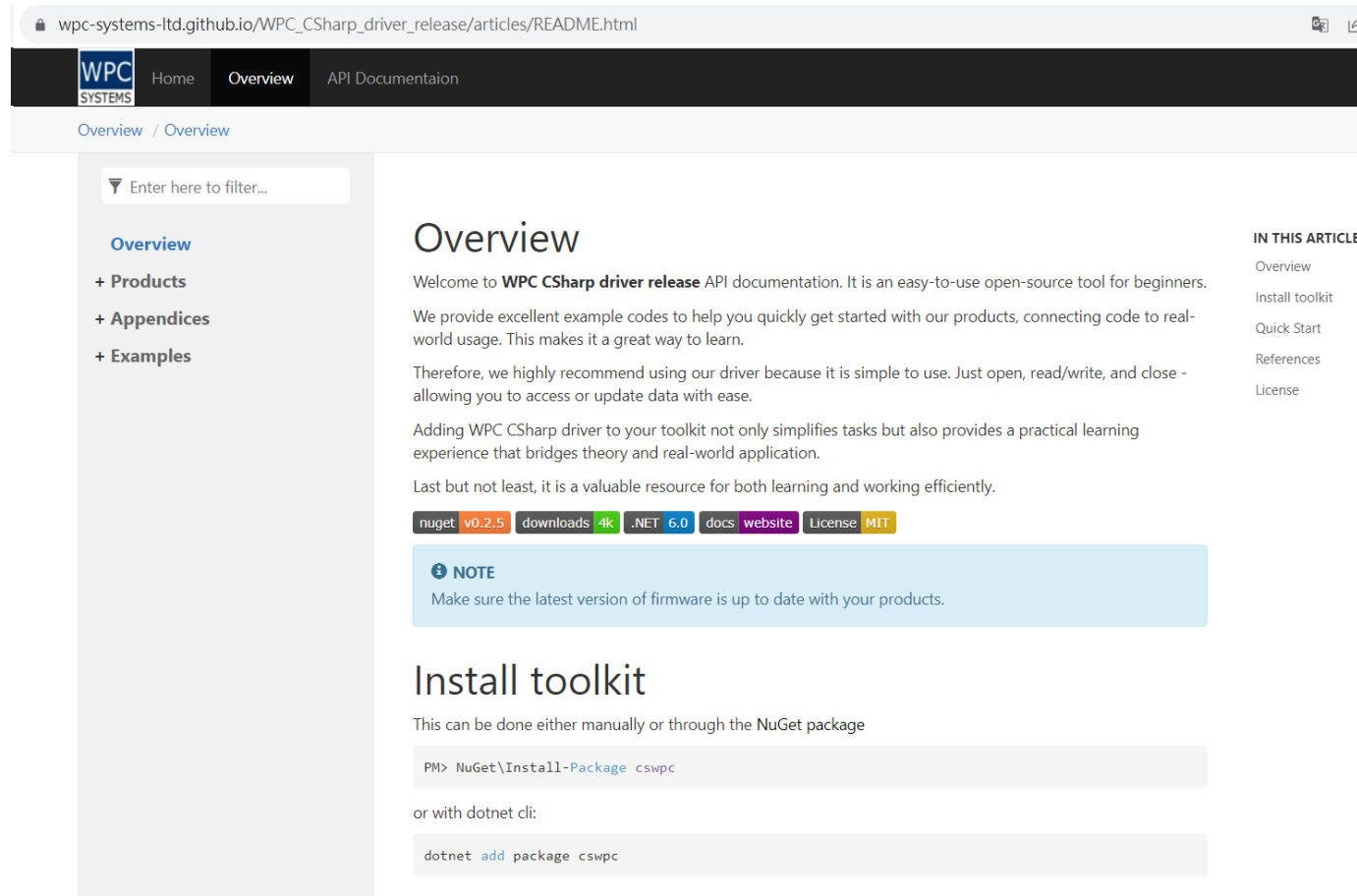
WPC C# driver APIs, the easiest way to Control & Data Acquisition (DAQ)

[wpc-systems-ltd.github.io/WPC_CSharp_...](#)

csharp usb dotnet controller wifi ethernet daq

Readme MIT license Activity 4 stars 1 watching 0 forks Report repository

C# Programming guide



The screenshot shows a web browser displaying the API documentation for the WPC CSharp driver release. The page title is "Overview" and the URL is "wpc-systems-ltd.github.io/WPC_CSharp_driver_release/articles/README.html". The navigation menu includes "Home", "Overview", and "API Documentaion". The left sidebar contains a search bar and a list of sections: "Overview", "+ Products", "+ Appendices", and "+ Examples". The main content area is titled "Overview" and contains the following text:

Welcome to **WPC CSharp driver release** API documentation. It is an easy-to-use open-source tool for beginners. We provide excellent example codes to help you quickly get started with our products, connecting code to real-world usage. This makes it a great way to learn.

Therefore, we highly recommend using our driver because it is simple to use. Just open, read/write, and close - allowing you to access or update data with ease.

Adding WPC CSharp driver to your toolkit not only simplifies tasks but also provides a practical learning experience that bridges theory and real-world application.

Last but not least, it is a valuable resource for both learning and working efficiently.

Tags: [nuget v0.2.5](#) [downloads 4k](#) [.NET 6.0](#) [docs](#) [website](#) [License MIT](#)

NOTE
Make sure the latest version of firmware is up to date with your products.

Install toolkit

This can be done either manually or through the NuGet package

```
PM> NuGet\Install-Package cswpc
```

or with dotnet cli:

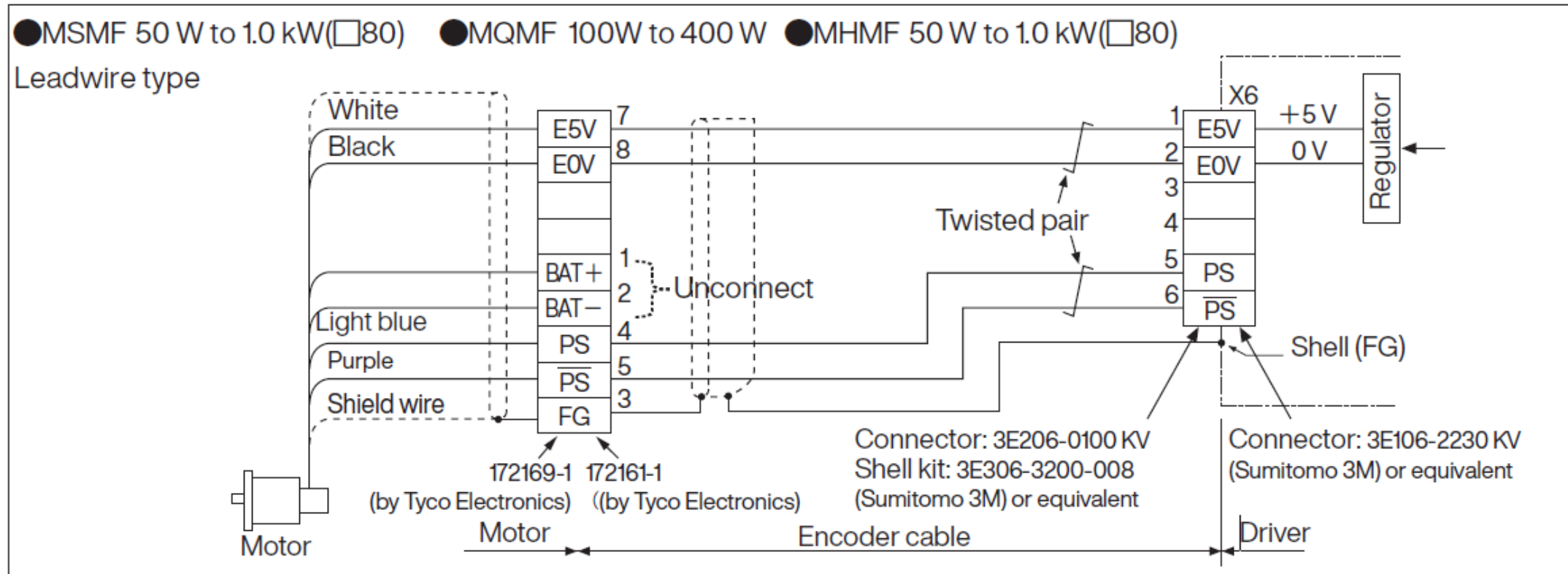
```
dotnet add package cswpc
```

IN THIS ARTICLE

- Overview
- Install toolkit
- Quick Start
- References
- License

Appendix

Panasonic A6 servo motor 23-bit encoder wiring diagram

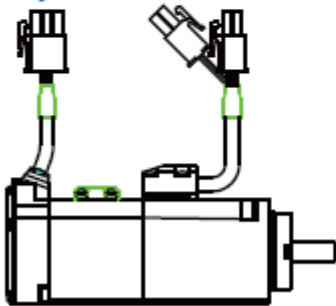


Encoder connector(motor side)

When leadwire type was be used

- When the motors of <MSMF, MQMF, MHMF> are used, they are con
- Connector: Made by Tyco Electronics k.k, (The figures below show connectors for th

Connector for encoder

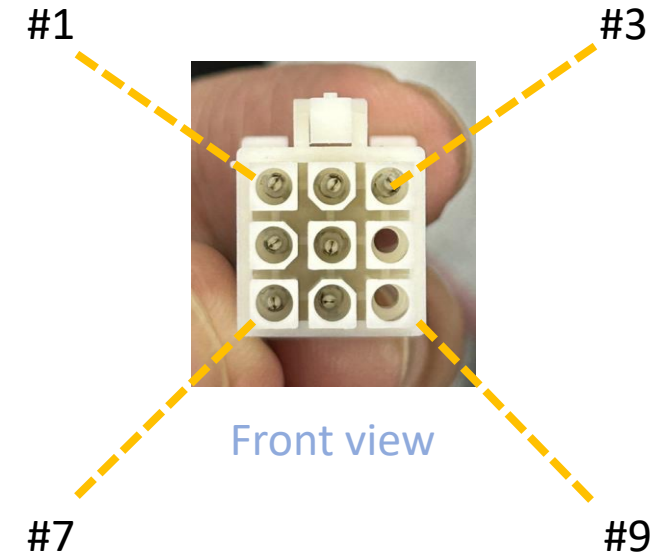


3	2	1
6	5	4
9	8	7

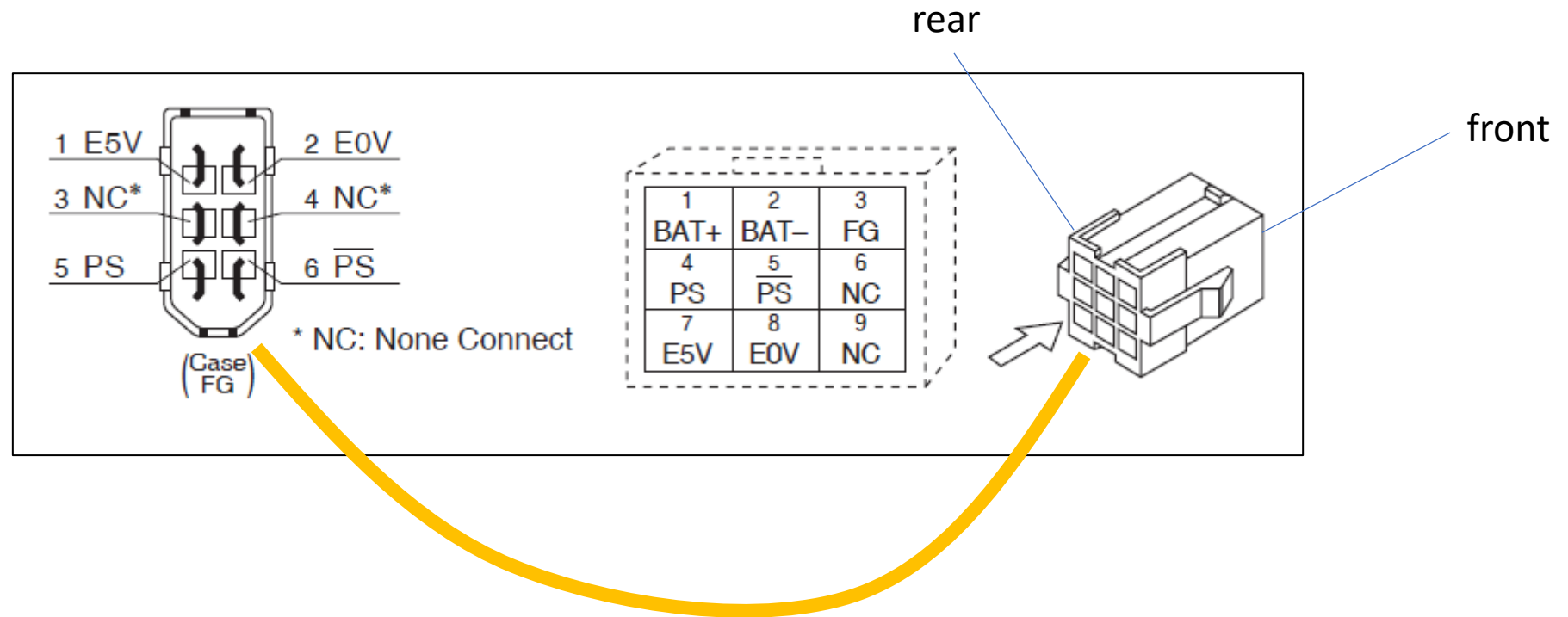
172169-1

Back view

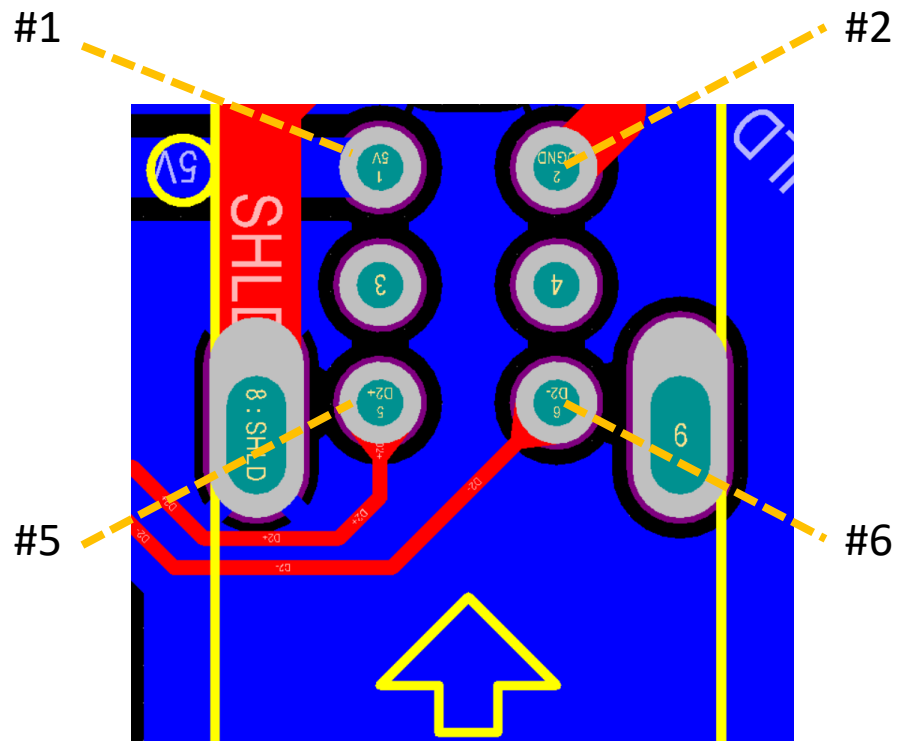
PIN No.	Application
1*	BAT+
2*	BAT-
3	FG(SHIELD)
4	PS
5	PS
6	NC
7	E5V
8	EDV
9	NC



Encoder cable pinout (cable side)



1394 connector (PCB side)



Front

