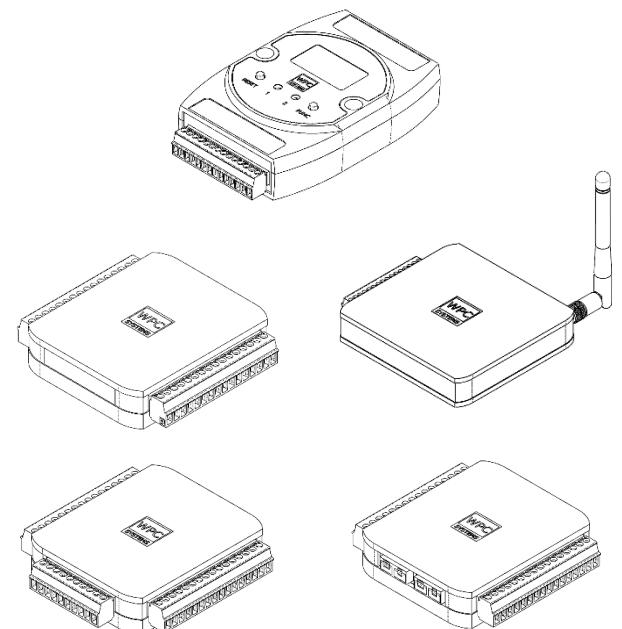


# WPC DAQ Devices user manual

WPC Systems Ltd.

Justin Wu

2022-09-27

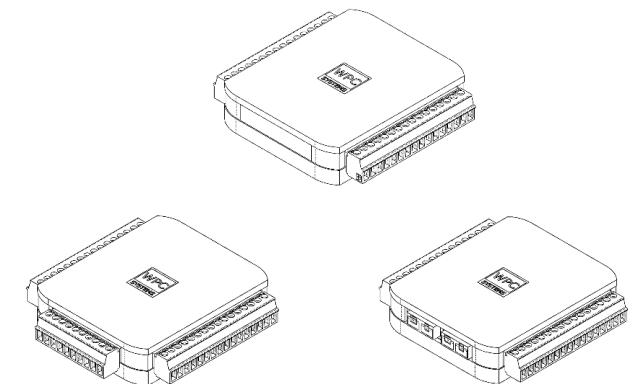


# USB DAQs

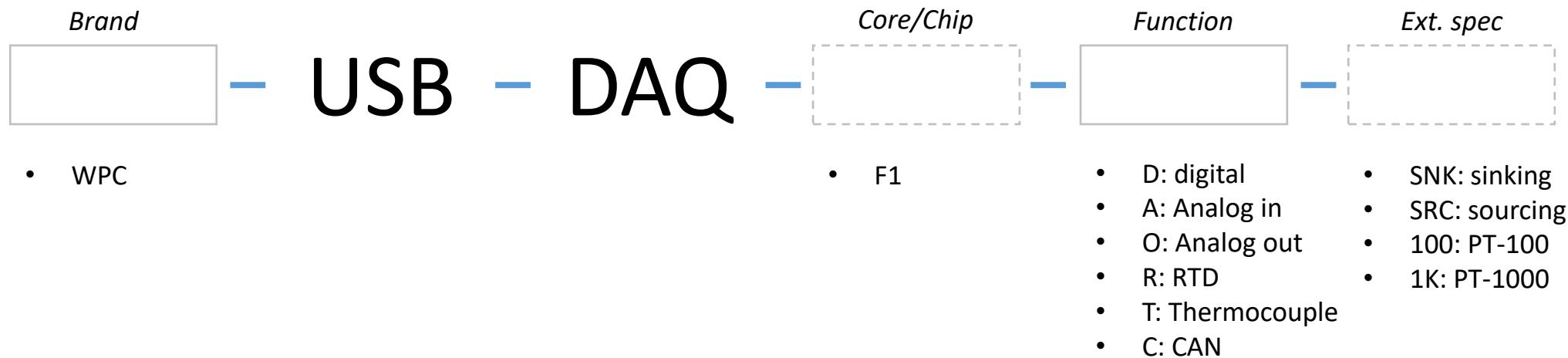
*Digital I/O*

*Analog I/O*

*Communication*



# Model naming rule for USB DAQ

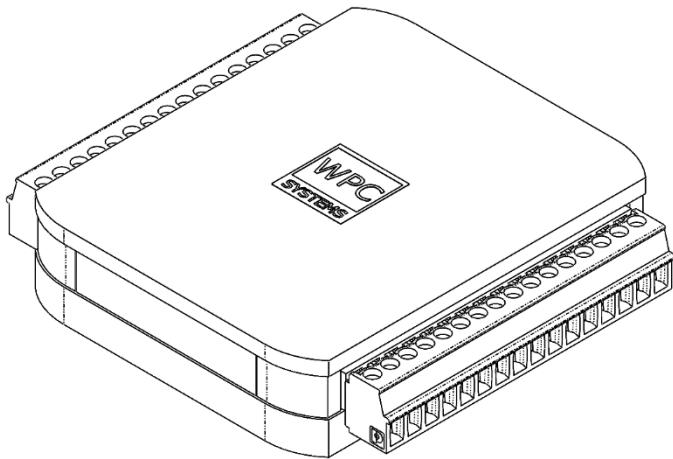


# Model selection table

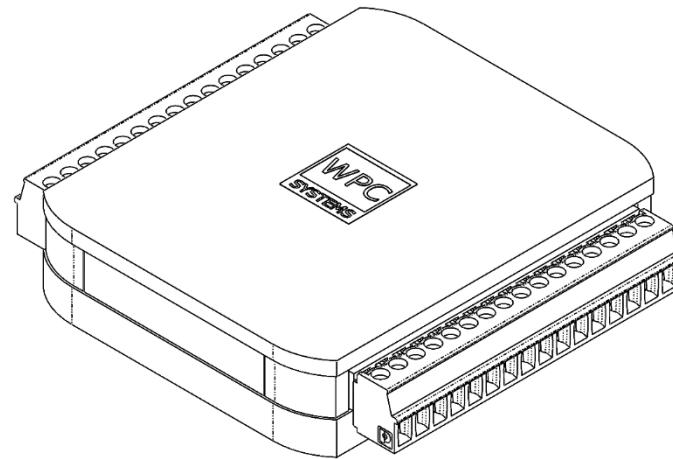
	Feature
WPC-USB-DAQ-D-SNK	24V-DIO
WPC-USB-DAQ-D	DIO
WPC-USB-DAQ-AD	DIO+AI
WPC-USB-DAQ-TD	DIO+TC
NEW WPC-USB-DAQ-RD	DIO+RTD
WPC-USB-DAQ-CD	DIO+CAN
WPC-USB-DAQ-AOD	DIO+AI+AO

	3.3V-DIO	AI	AO	TC	RTD	CAN	24V-DO	24V-DI
WPC-USB-DAQ-D-SNK							12	14
WPC-USB-DAQ-D	26							
WPC-USB-DAQ-AD	20	8						
WPC-USB-DAQ-TD	21			2				
NEW WPC-USB-DAQ-RD	21				2			
WPC-USB-DAQ-CD	20					1		
WPC-USB-DAQ-AOD	16	8	8					

# Model feature (digital)



Model: WPC-USB-DAQ-D  
3.3V DIO (5V tolerant)  
SPI / I2C / UART

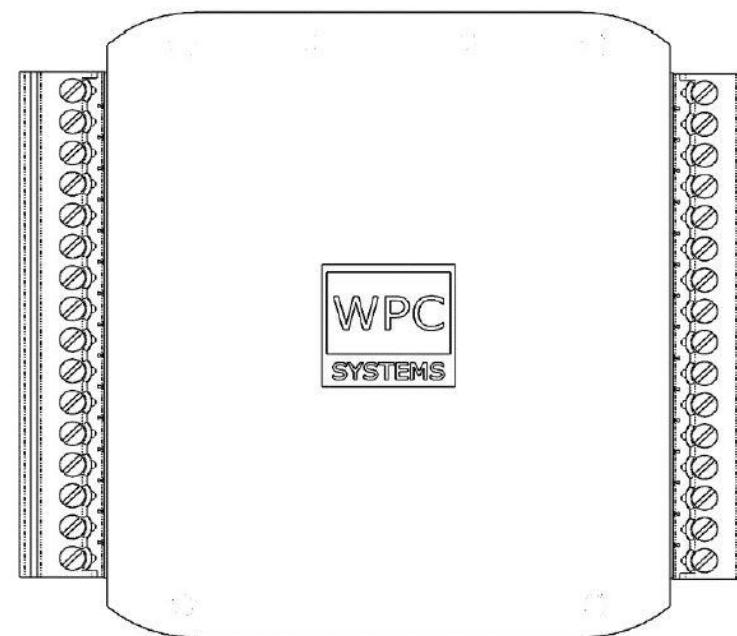


Model: WPC-USB-DAQ-D-SNK  
24V industrial DIO  
**24V external power required \***

# WPC-USB-DAQ-D

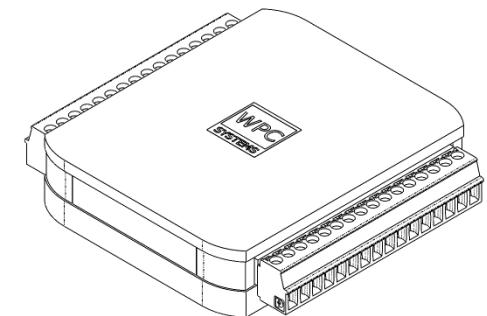
- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART

	GND	1
	5V	2
MOSI2	P3.5	3
MISO2	P3.4	4
SCK2	P3.3	5
CS2	P3.2	6
SDA2	P3.1	7
SCL2	P3.0	8
SDA1	P2.7	9
SCL1	P2.6	10
	X	11
	X	12
MOSI1	P2.3	13
MISO1	P2.2	14
SCK1	P2.1	15
CS1	P2.0	16



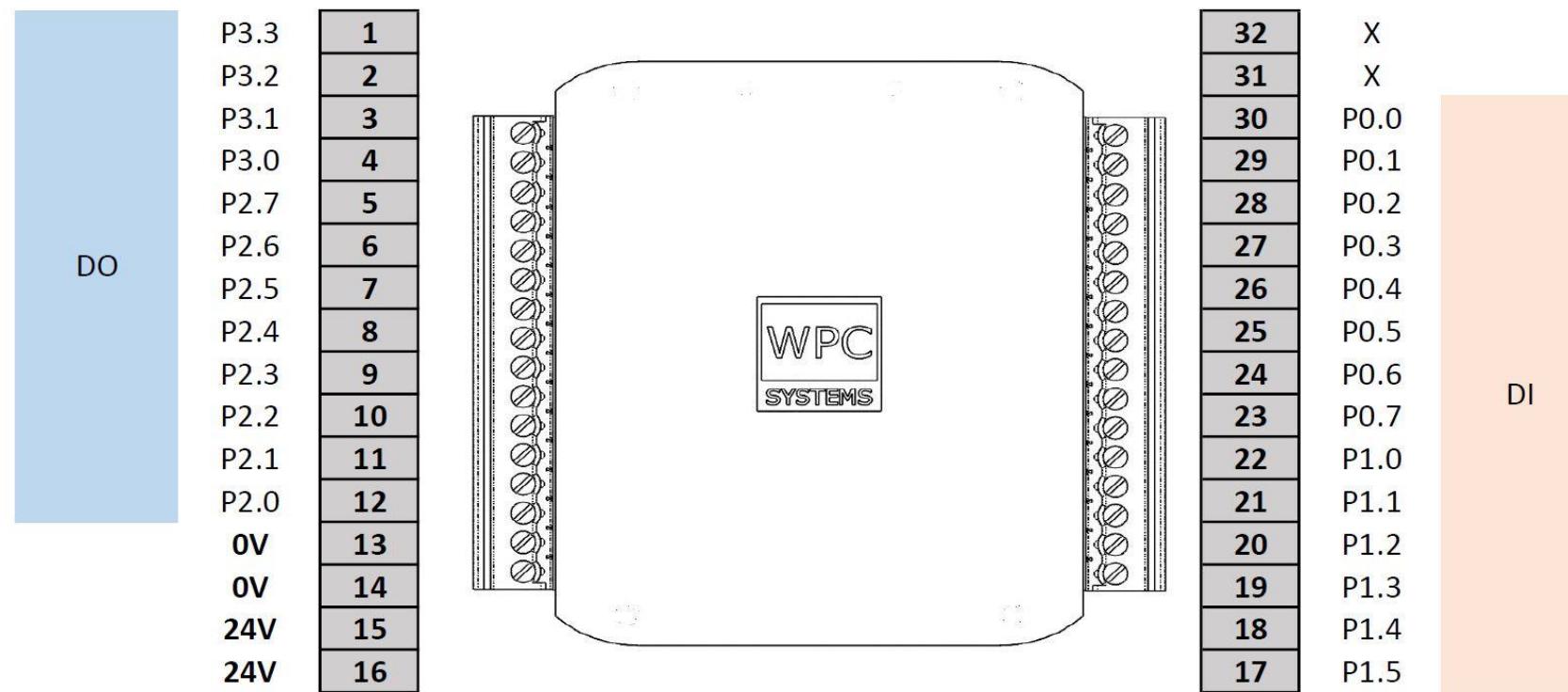
32	P0.0
31	P0.1
30	P0.2
29	P0.3
28	P0.4
27	P0.5
26	P0.6
25	P0.7
24	P1.0
23	P1.1
22	P1.2
21	P1.3
20	P1.4
19	P1.5
18	5V
17	GND

3.3V Digital

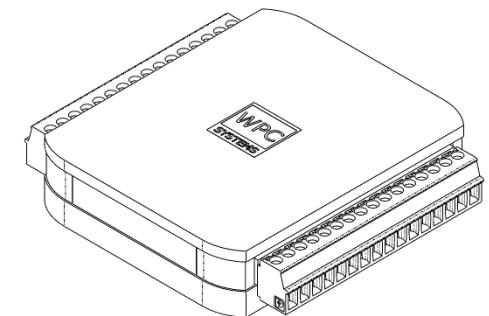


# WPC-USB-DAQ-D-SNK

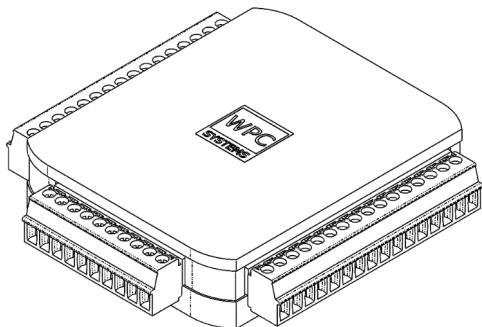
- Level: 24V DIO
- 24V External power required \*



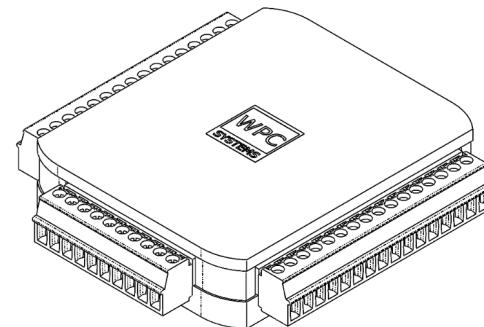
24V Digital



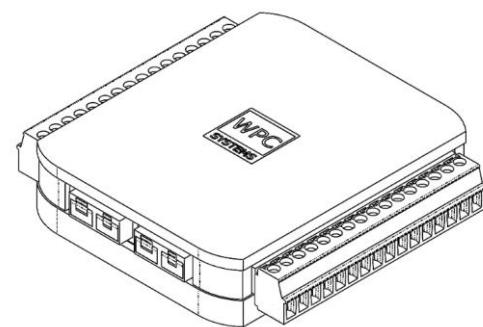
# Model feature (analog)



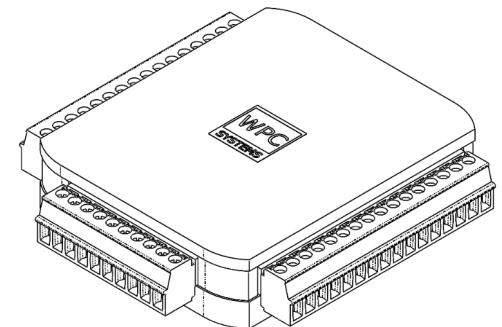
WPC-USB-DAQ-AD  
3.3V DIO (5V tolerant)  
8ch +/-10V analog input



WPC-USB-DAQ-AOD  
3.3V DIO (5V tolerant)  
8ch +/-10V analog input  
8ch 0-5V analog output



WPC-USB-DAQ-TD  
3.3V DIO (5V tolerant)  
2ch universal thermocouple input



WPC-USB-DAQ-RD  
3.3V DIO (5V tolerant)  
2ch RTD input (**different model**)

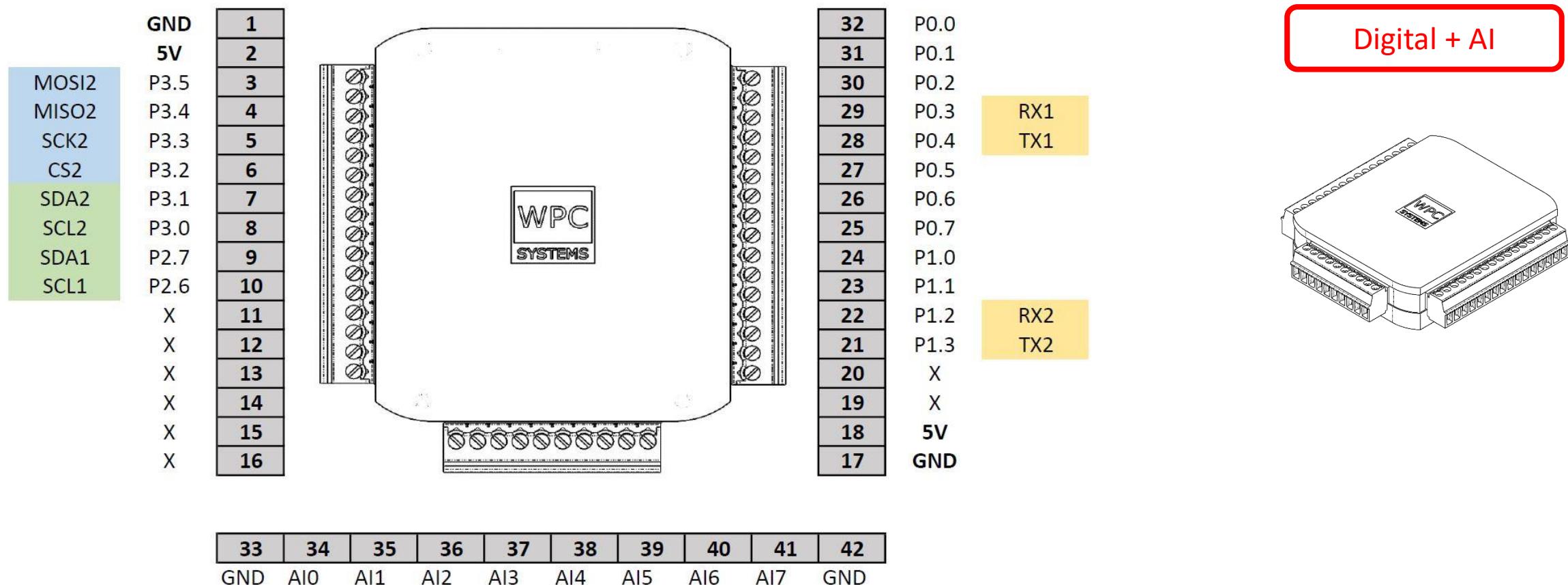
**NEW**

# Channel count vs. sampling rate

	chan 0:0	chan 0:1	chan 0:2	chan 0:3	chan 0:4	chan 0:5	chan 0:6	chan 0:7
WPC-USB-DAQ-AD	20k	12.5k	8.1k	6.3k	4k	3.2k	3.2k	2.5k
WPC-USB-DAQ-AOD	20k	12.5k	8.1k	6.3k	4k	3.2k	3.2k	2.5k
WPC-WIFI-DAQ	10k							
WPC-Ethan-A	20k							

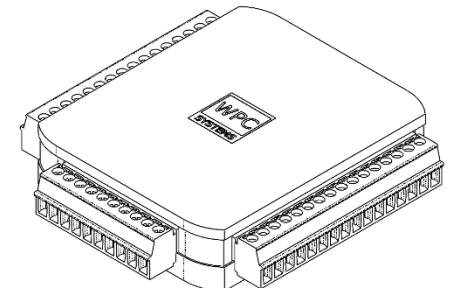
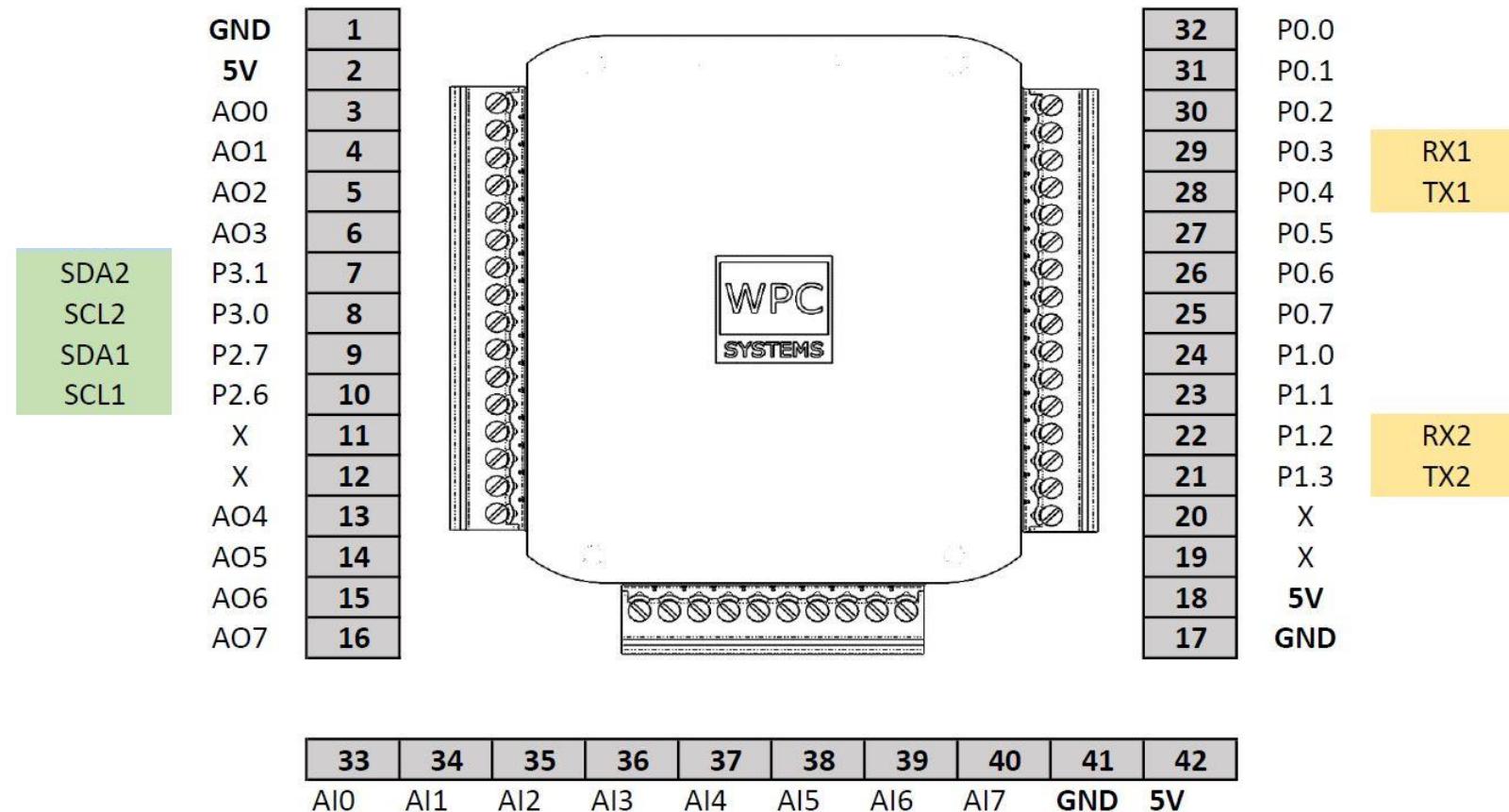
# WPC-USB-DAQ-AD

- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- +/-10V Analog input (single-ended)



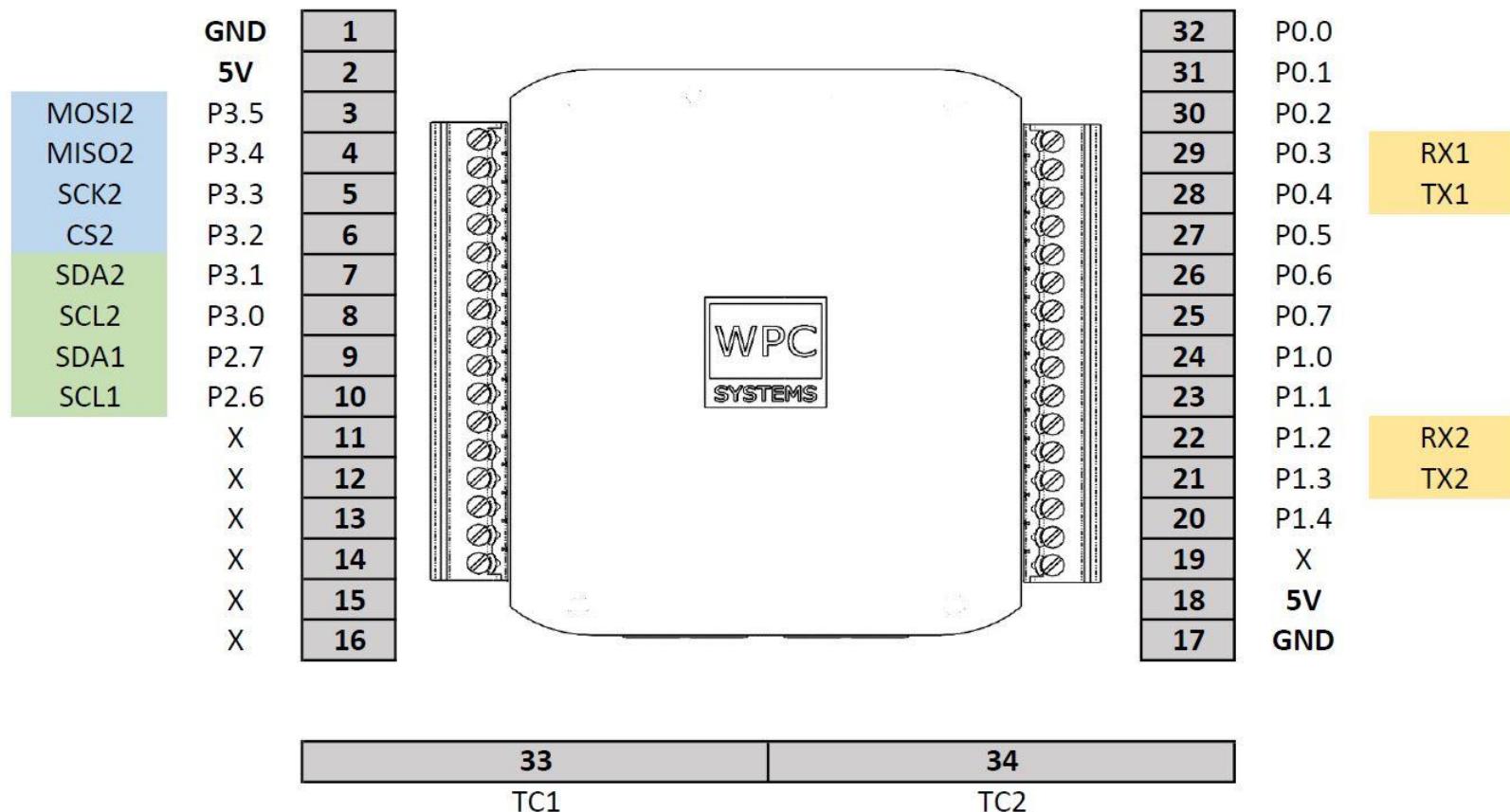
# WPC-USB-DAQ-AOD

- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- AI / AO

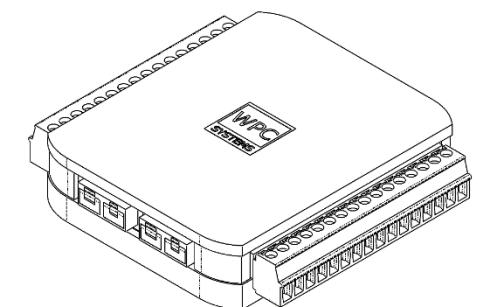


# WPC-USB-DAQ-TD

- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- Thermocouple (K, J, N, R, S, T, E, B)

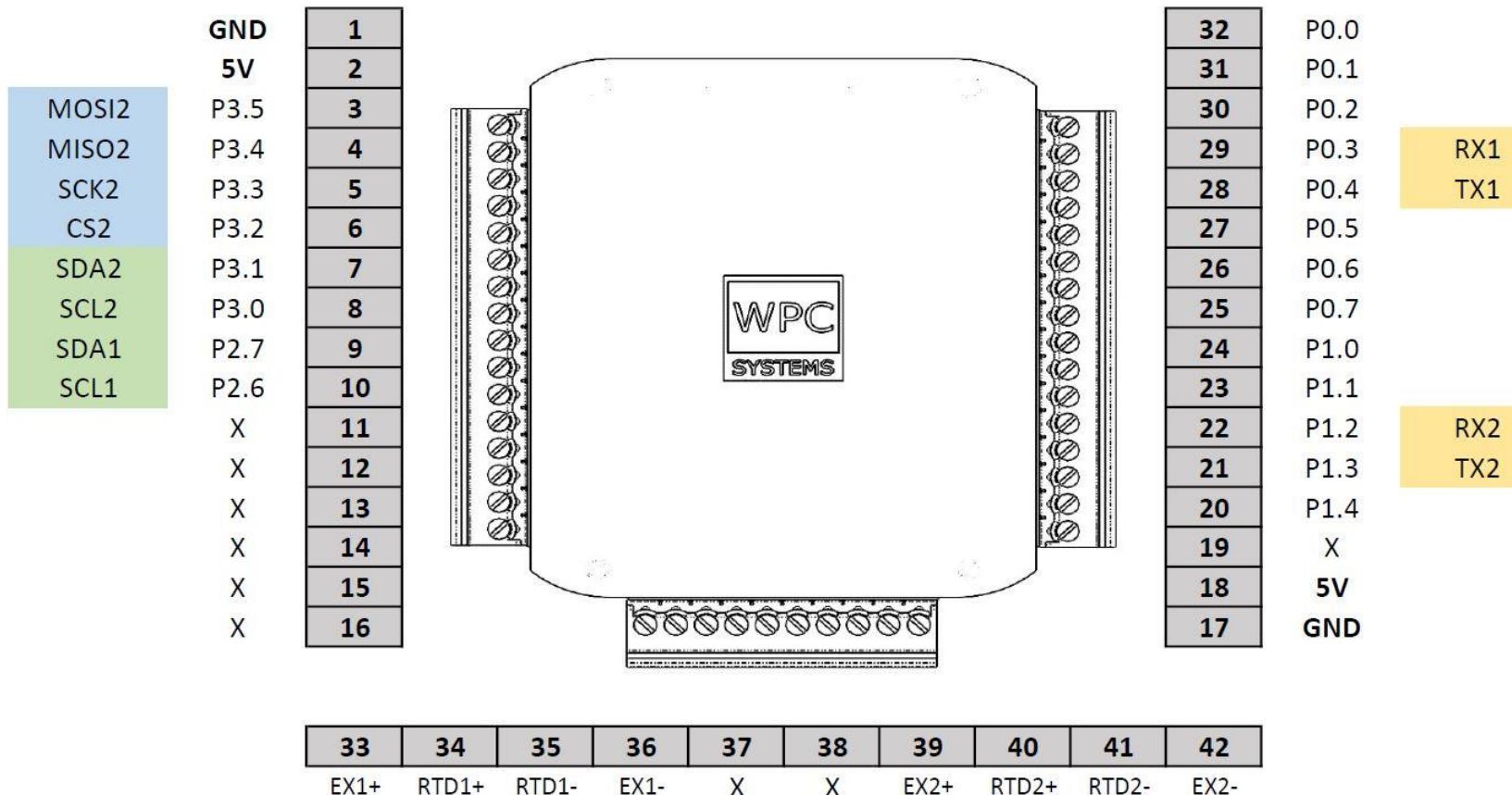


Digital + Thermocouple

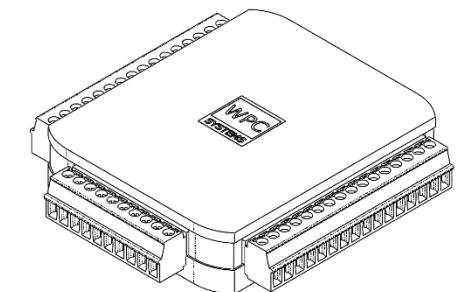


# WPC-USB-DAQ-RD

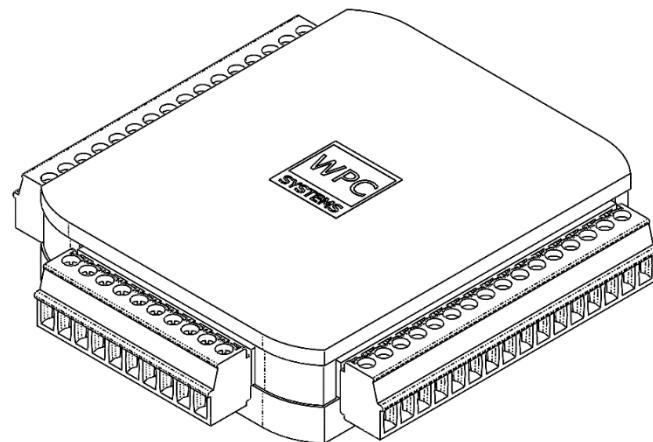
- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- PT-100 or PT-1000 (**different model**)



Digital + RTD



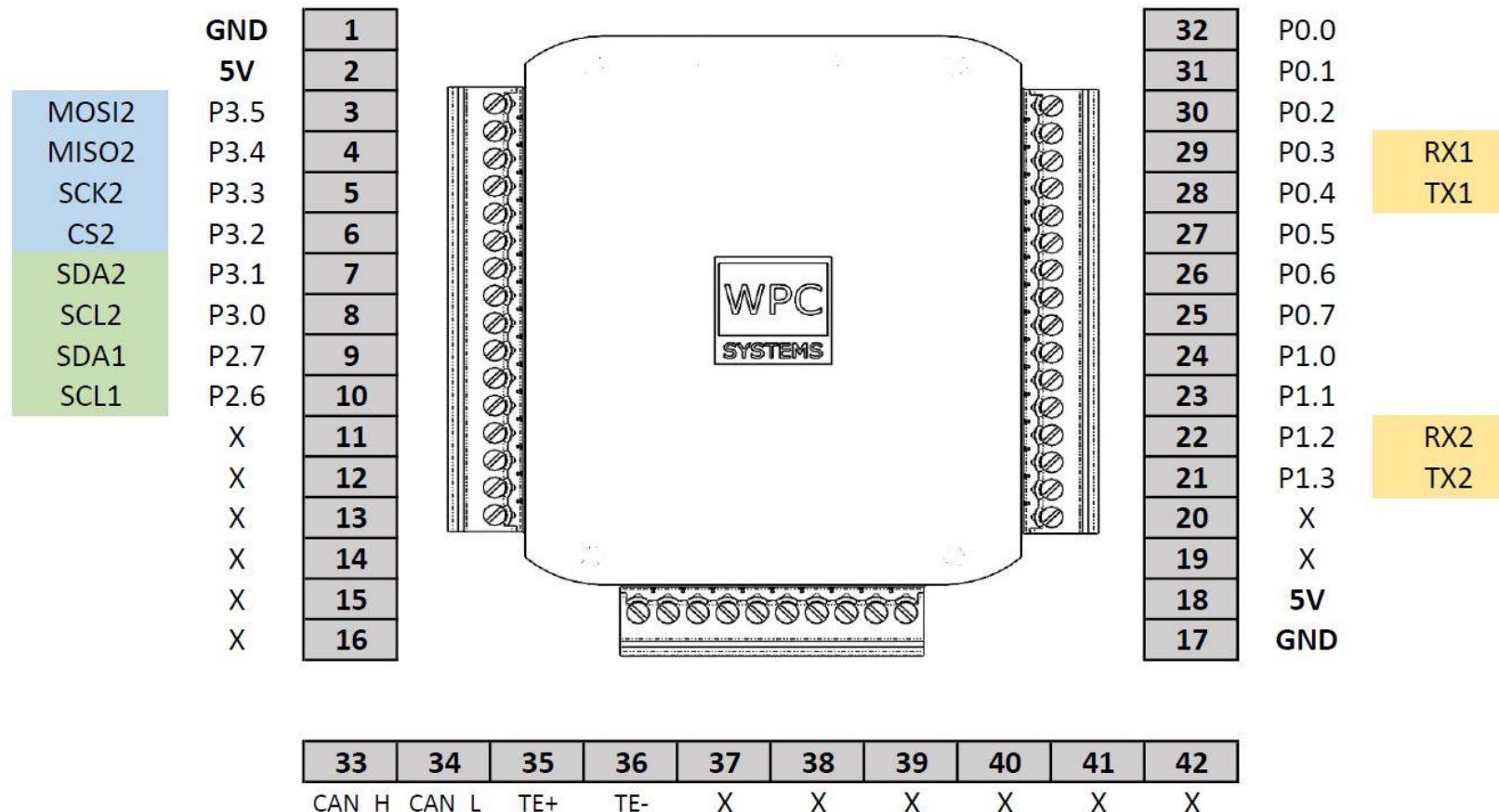
# Model feature (Communication)



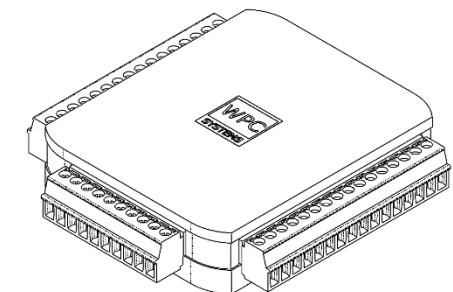
Model: WPC-USB-DAQ-CD  
3.3V DIO (5V tolerant)  
SPI / I2C / UART  
1Mbps CAN bus

# WPC-USB-DAQ-CD

- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- CAN V2.0B @ 1Mb/S



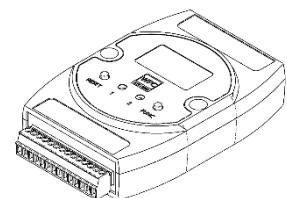
Digital + CAN



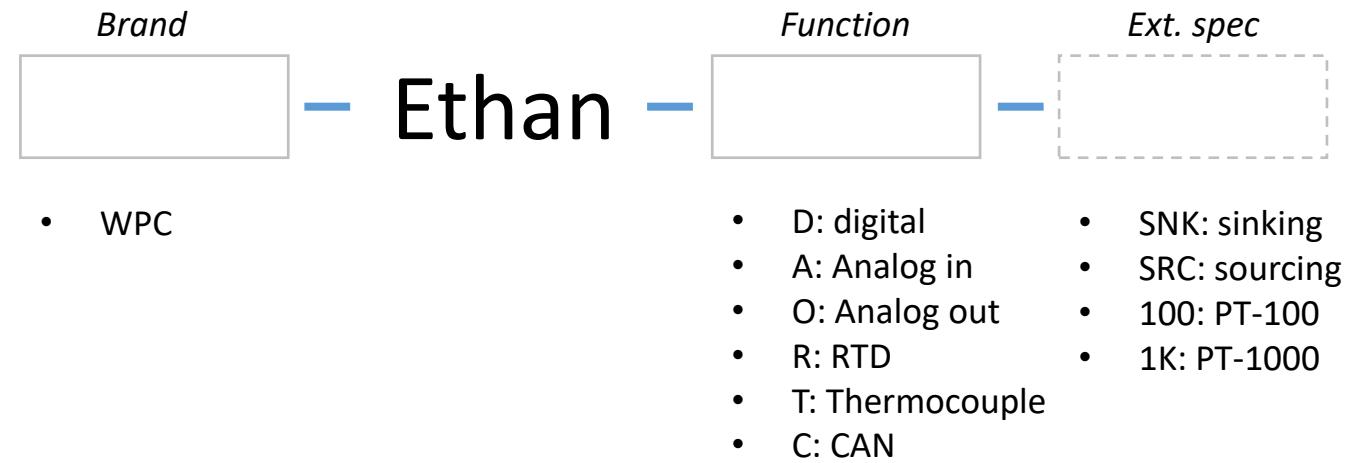
# Ethernet DAQs (Ethan)

Industrial digital I/O

Analog I/O



# Model naming rule for Ethan



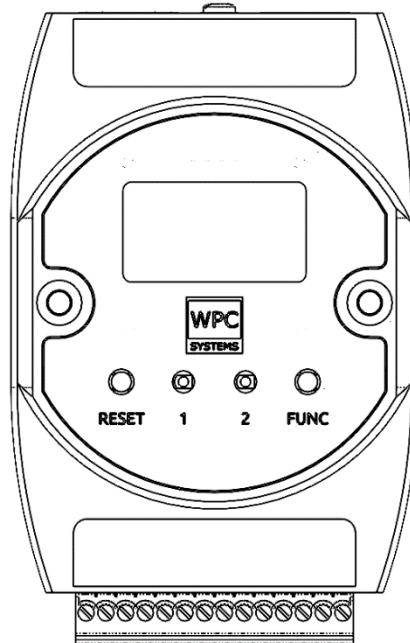
# Model selection

## **Model: WPC-Ethan-D**

10/100 cable Ethernet

8ch 24V digital input (sourcing/sinking)

6ch 24V digital output (sinking/sourcing)



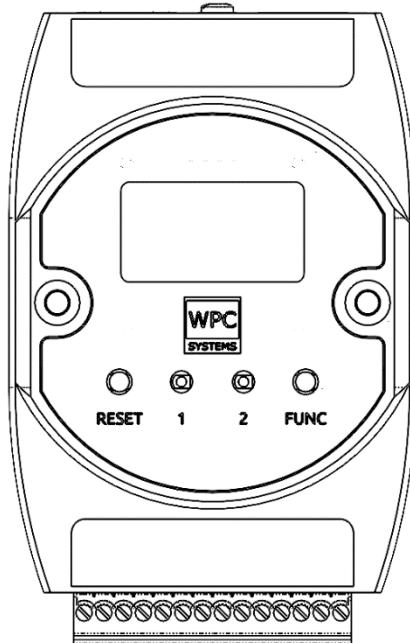
## **Model: WPC-Ethan-A**

10/100 cable Ethernet

8ch simultaneous voltage input

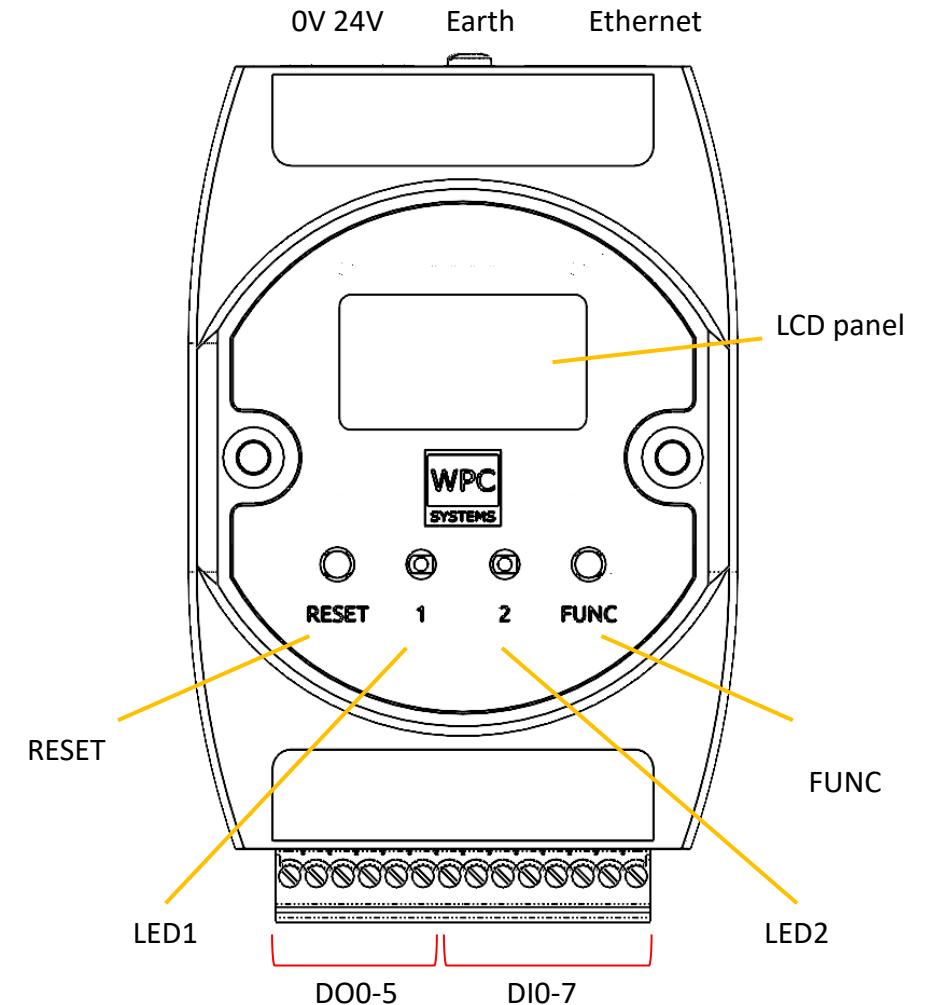
Max sampling rate: 20KHz

+/-10V voltage input range



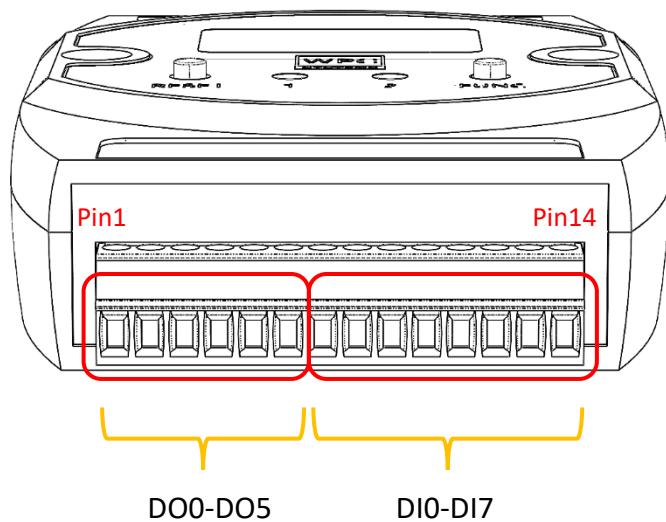
# Model: WPC-Ethan-D

- 10/100 T-based Ethernet interface
- 6ch opto-isolated digital output (DO)
- 8ch opto-isolated digital input (DI)
- Power input: 24VDC
- Display for network info, I/O status and error messages.
- Configurable I/O power-up-state.
- Press and hold FUNC button for at least 5 seconds for factory default IP setting.
- Device search function while In-consistant IP setting condition
- Fully compatible with LabVIEW environment (Driver API, software front panel, example codes)

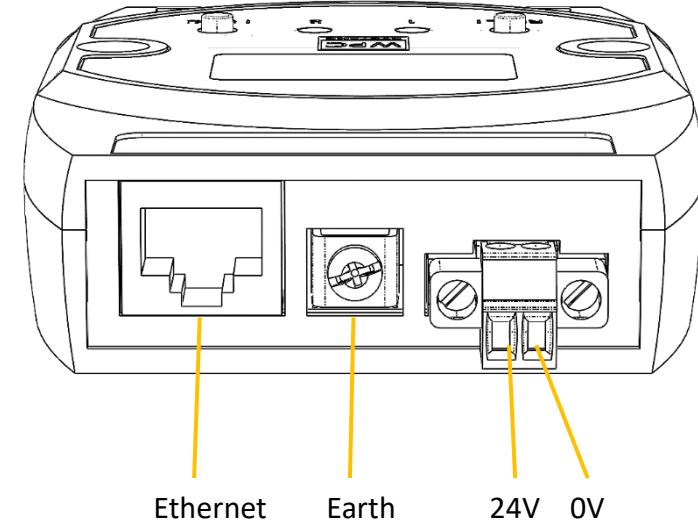


# Appearance

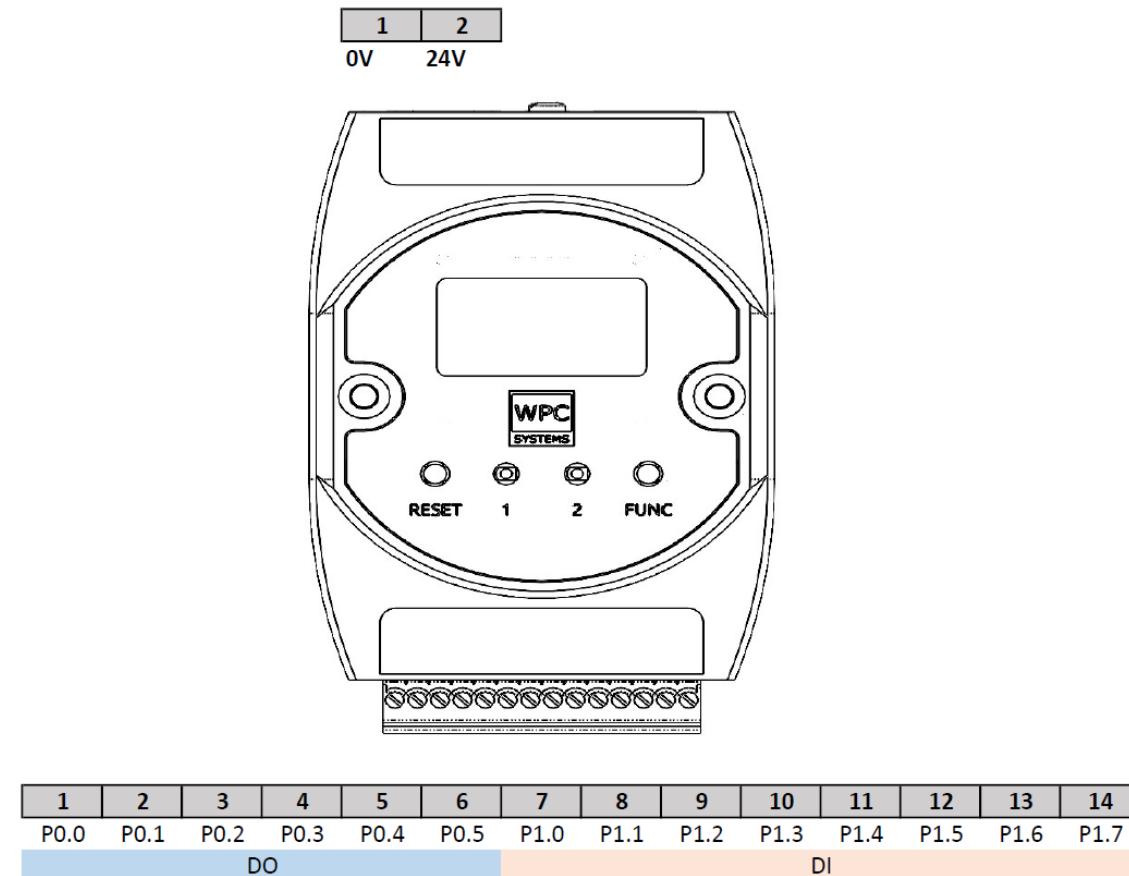
*front view*



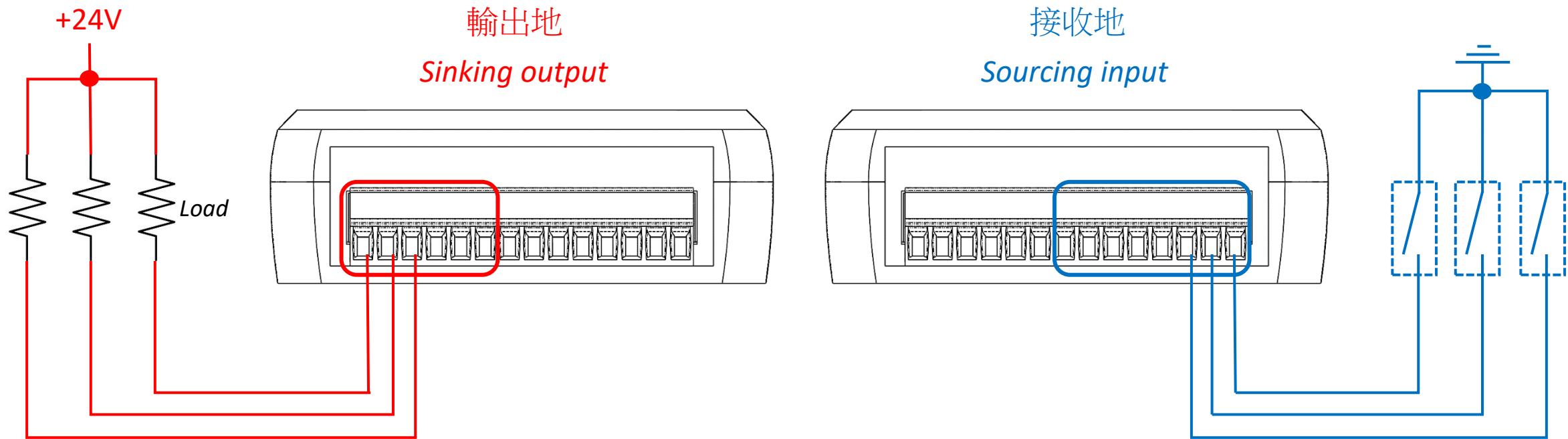
*back view*



# Connector pinout

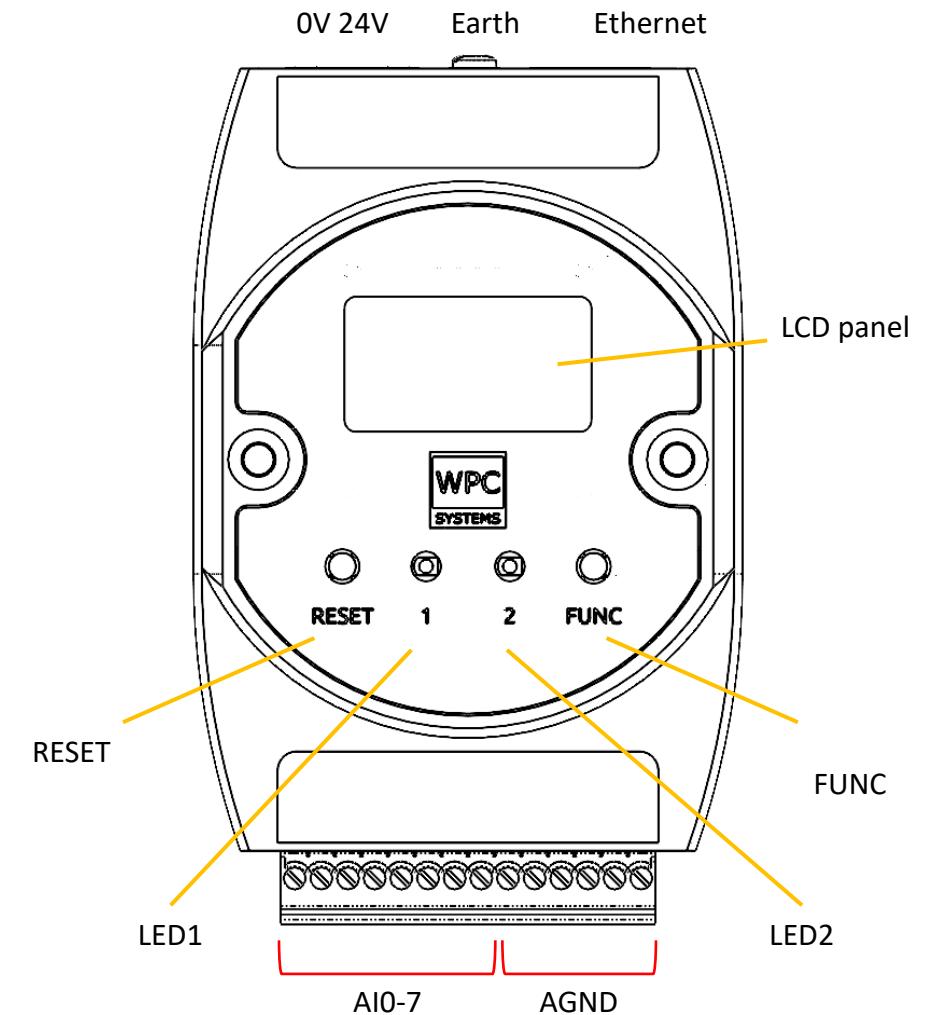


# Signal connection



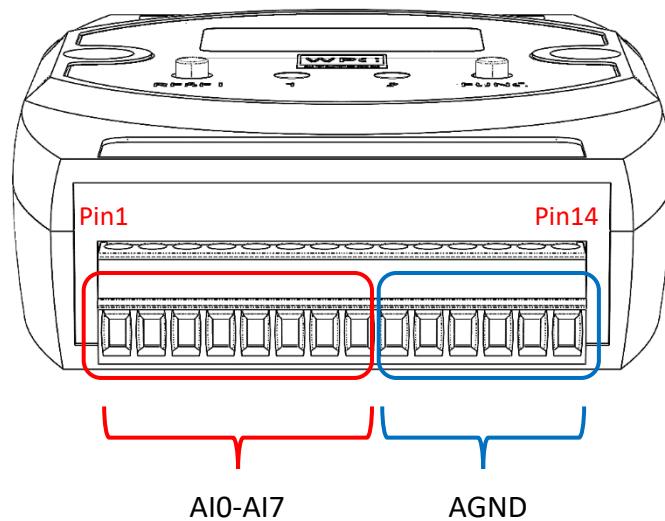
# Model: WPC-Ethan-A

- 10/100 T-based Ethernet interface
- 8ch simultaneous voltage input
- Max sampling rate: 20KHz
- +/-10V voltage input range
- Power input: 24VDC
  
- Display for network info, I/O status and error messages.
- Configurable I/O power-up-state.
- Press and hold FUNC button for at least 5 seconds for factory default IP setting.
- Device search function while In-consistant IP setting condition
- Fully compatible with LabVIEW environment (Driver API, software front panel, example codes)

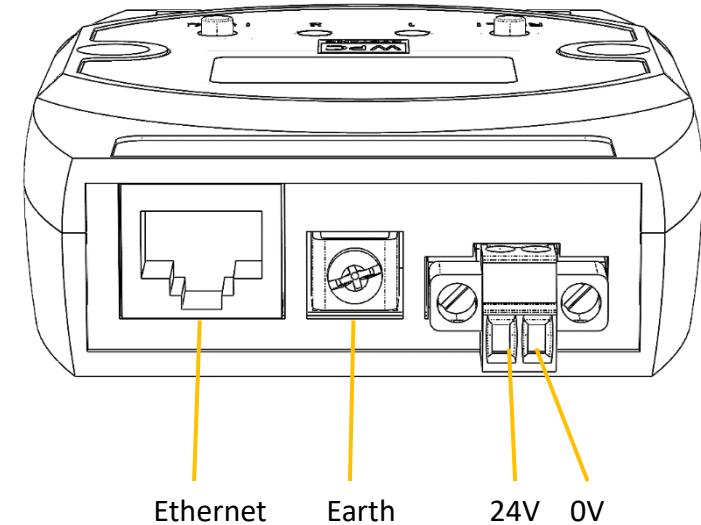


# Appearance (front and rear)

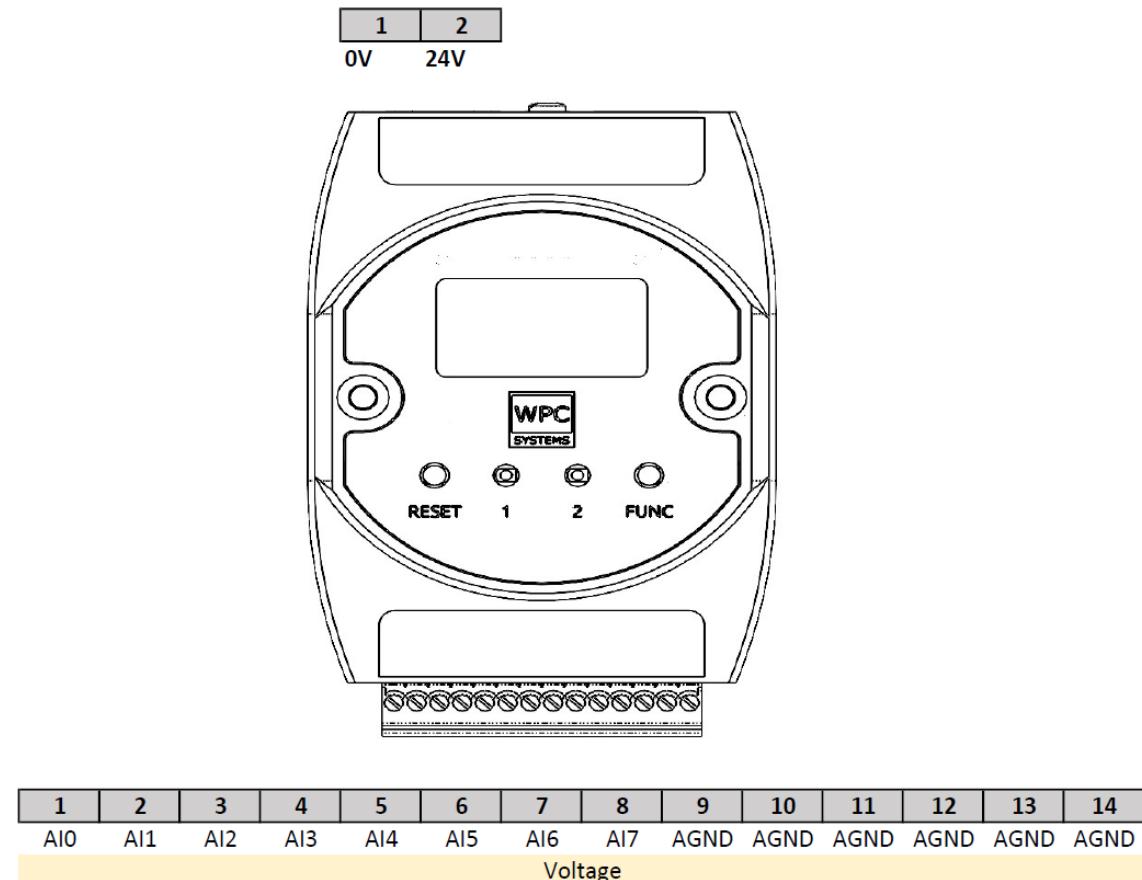
*front view*



*back view*

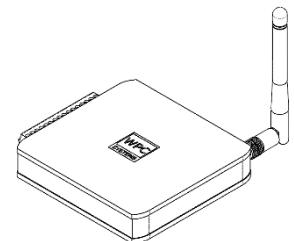


# Connector pinout

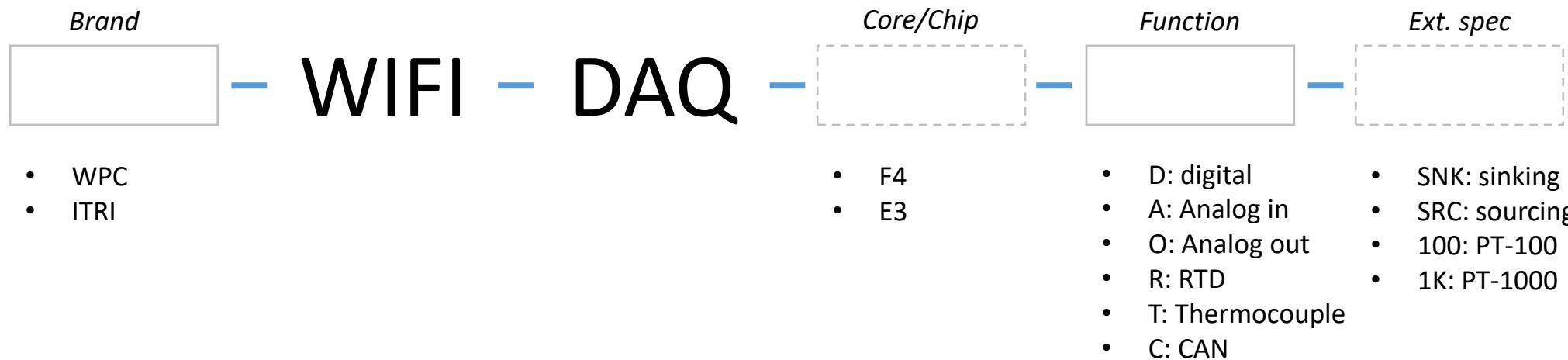


# WIFI DAQs

Analog I/O



# Model naming rule for WIFI DAQ



# Model Feature

## **Model: WPC-WIFI-DAQ-A**

8ch 16-bit +/-10V analog input

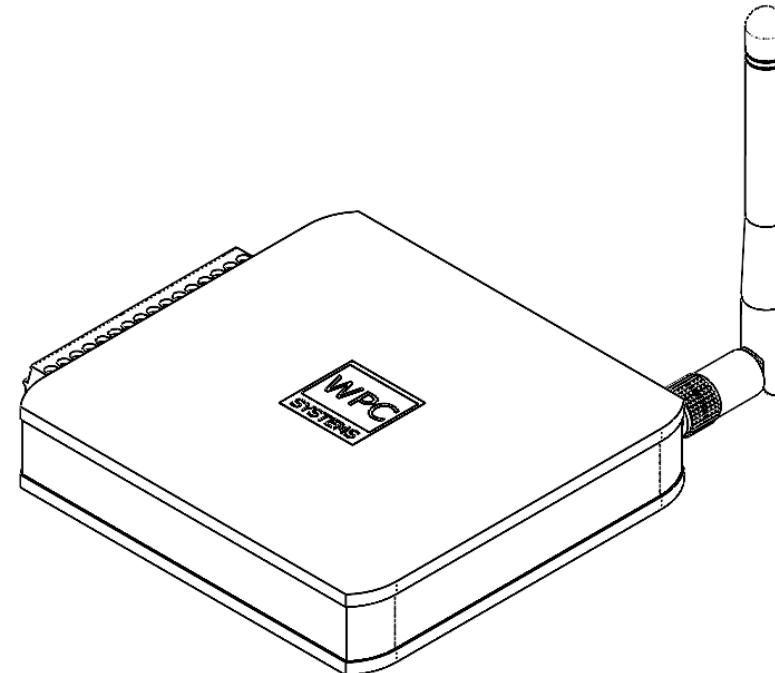
Max sampling rate: 20kSps

Web-based configurator

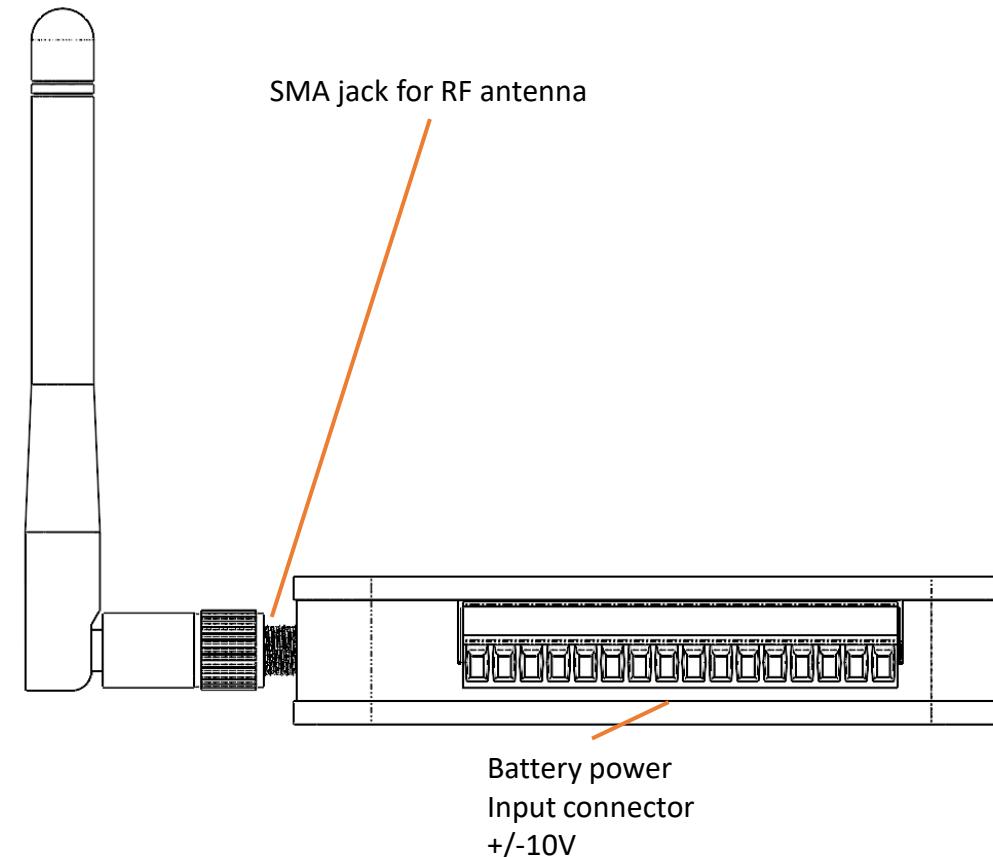
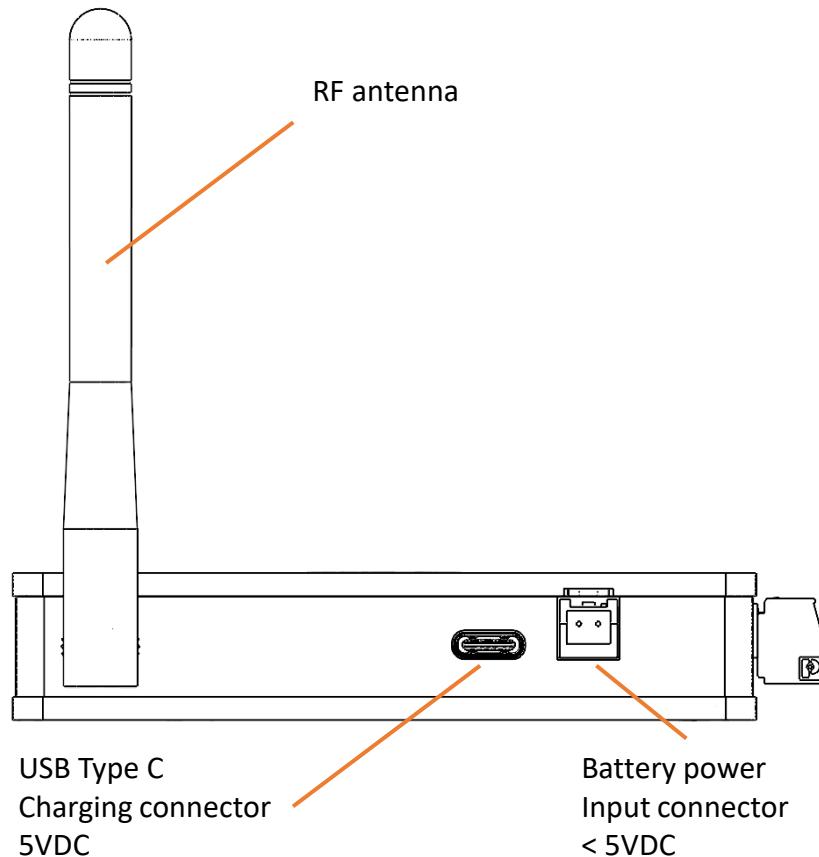
802.11 b/g/n WiFi

2.4 GHz to 2.5 GHz

LabVIEW driver & example codes



# Connector pinout



# WPC Device Manager (WDM)

1. Device Information
2. Device setting
3. Device pinout
4. Software front panel (test panel)
5. Update firmware

# Get the WPC Device Manager

Required: LabVIEW Run-time engine 15.0 or above

WPC Device Manager 裝置管理員 (2022-07-08更新)



- 管理 USB, Ethernet, WiFi DAQ 裝置
- Software front panel (SFP)
- 裝置韌體更新



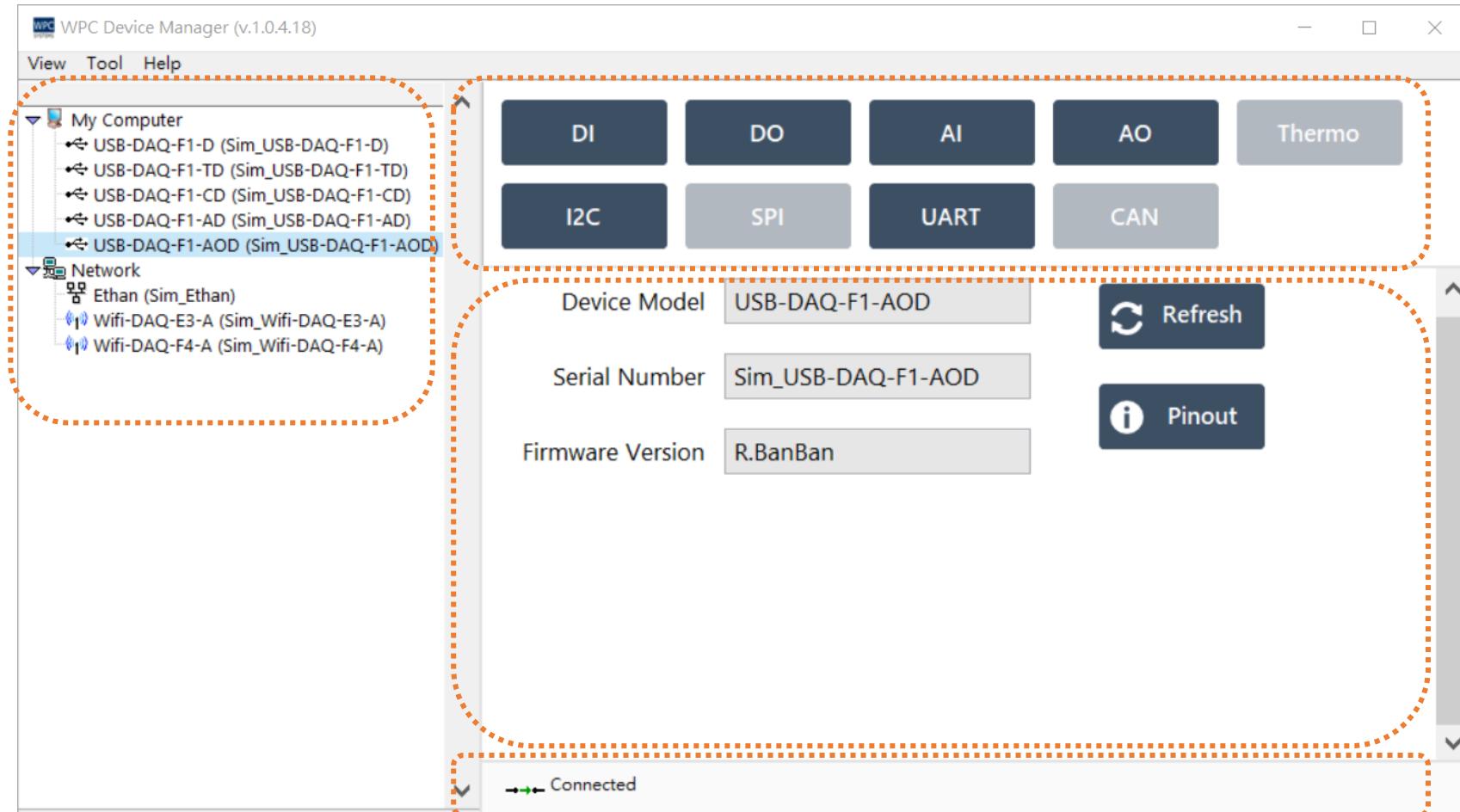
LabVIEW 2015 SP1 Run-time engine

Download

名稱	修改日期	類型	大小
data	2/11/2022 4:06 PM	檔案資料夾	
project	1/6/2022 5:48 PM	檔案資料夾	
niwebserver.conf	8/20/2019 3:27 PM	CONF 檔案	1 KB
WPC Device Manager.aliases	2/11/2022 4:06 PM	ALIASES 檔案	1 KB
WPC Device Manager.exe	2/11/2022 4:06 PM	應用程式	23,138 KB
WPC Device Manager.ini	2/11/2022 4:06 PM	組態設定	1 KB

# WPC Device Manager front panel

Device list

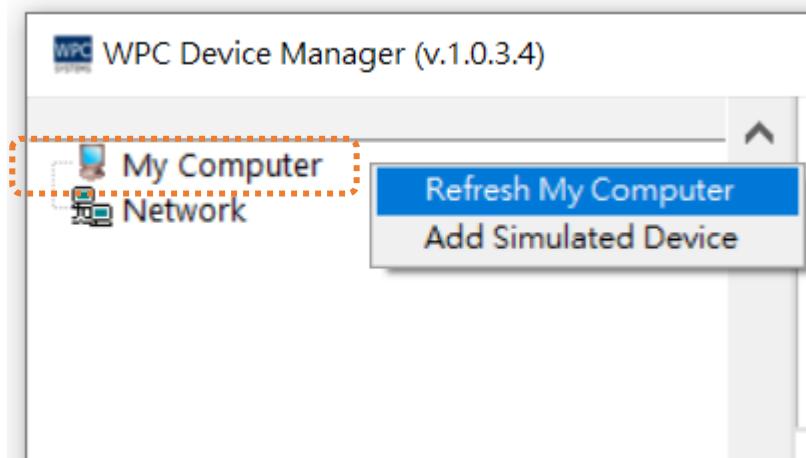


Software front panel (SFP)

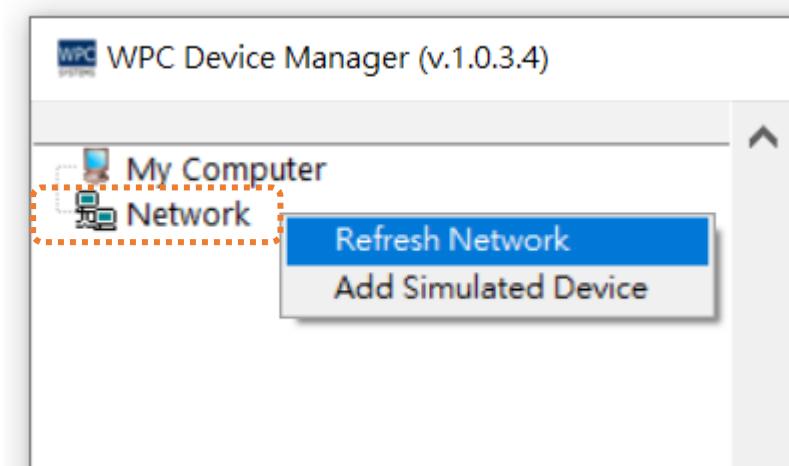
Device info / setting  
Firmware update

Status / Message

# Search/refresh WPC devices

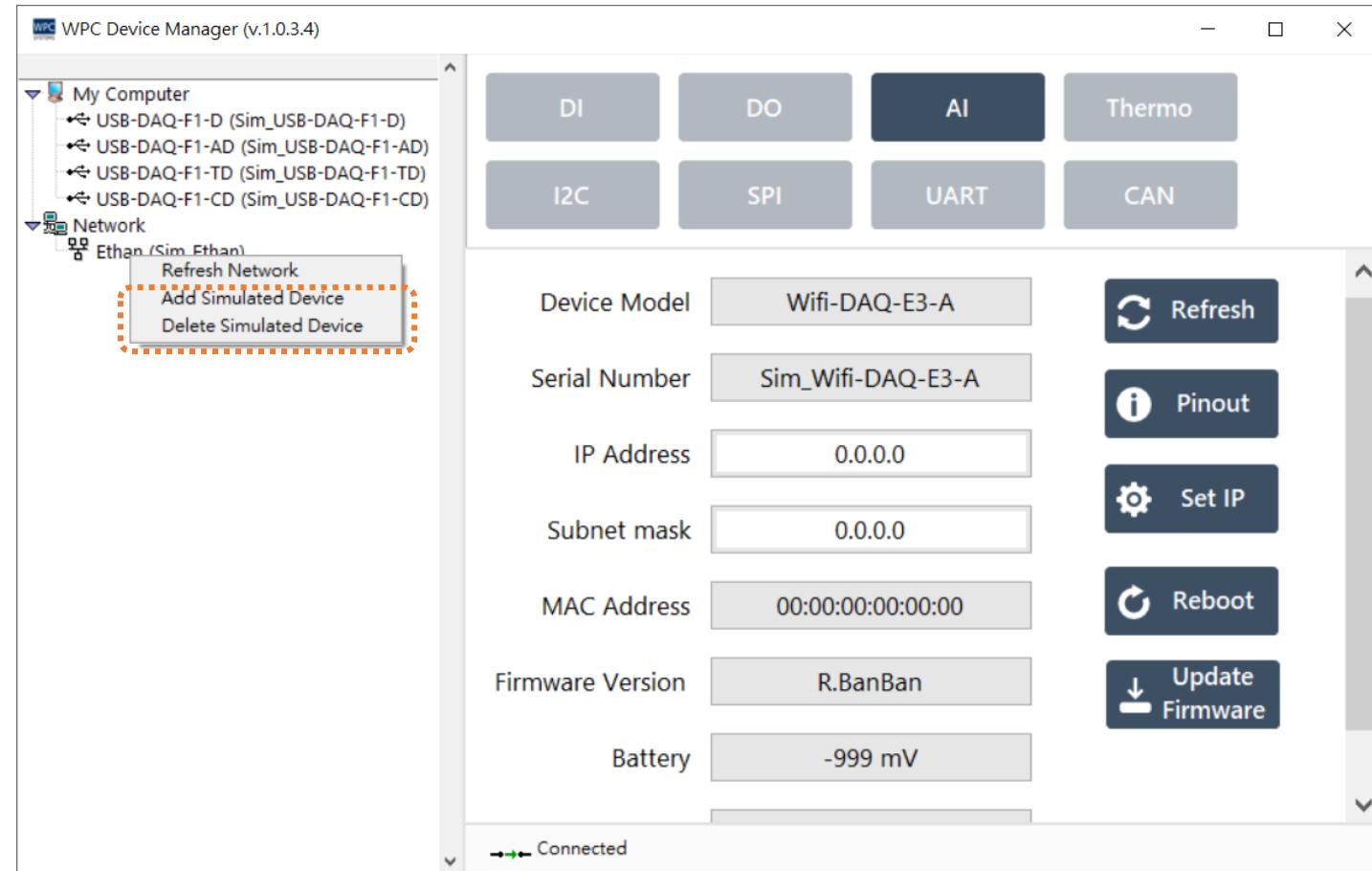


Refresh device list on host PC

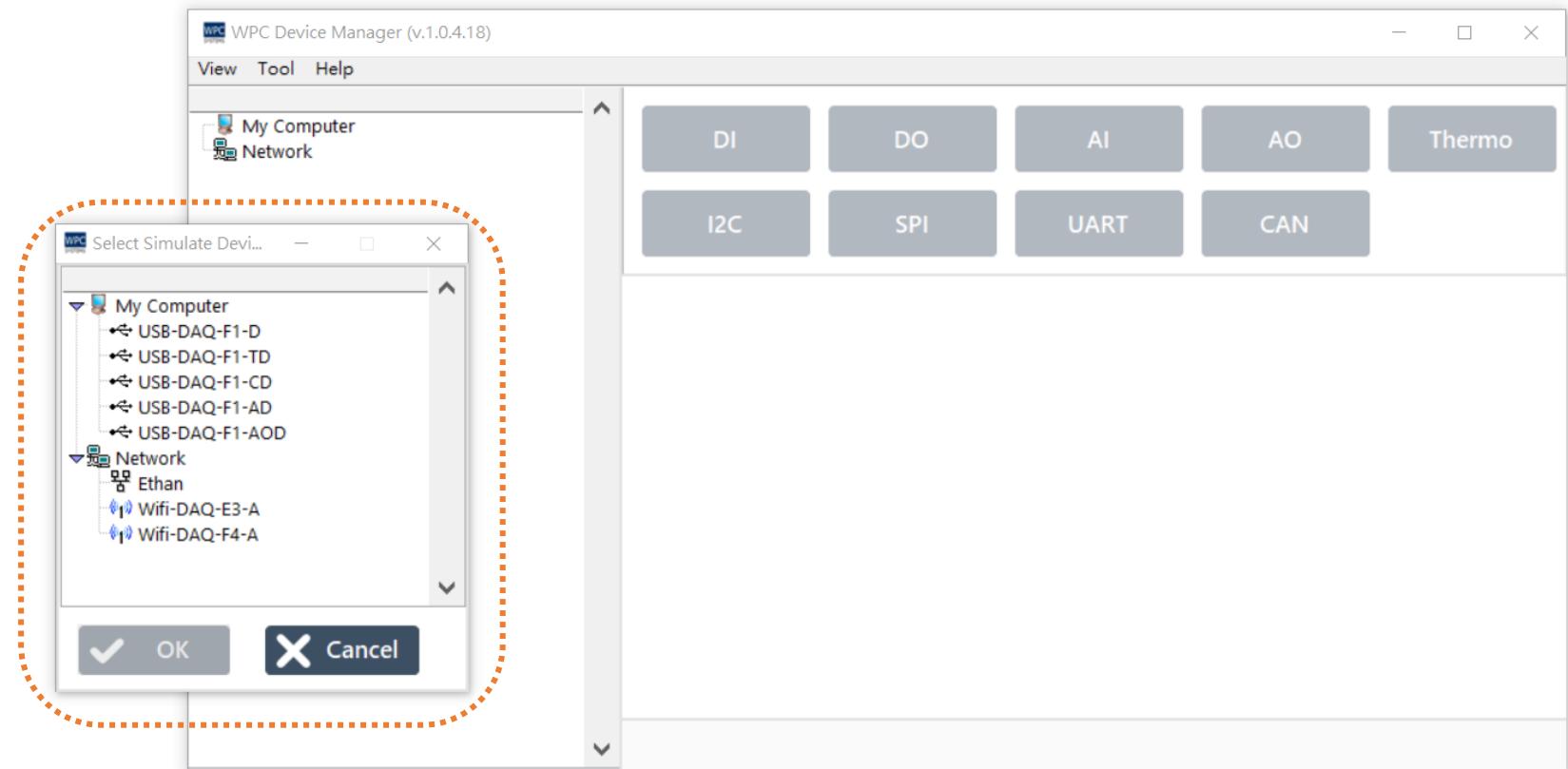
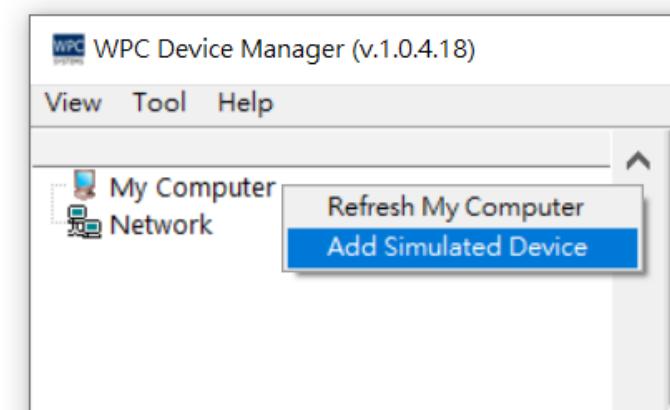


Discover devices on local area network (LAN)

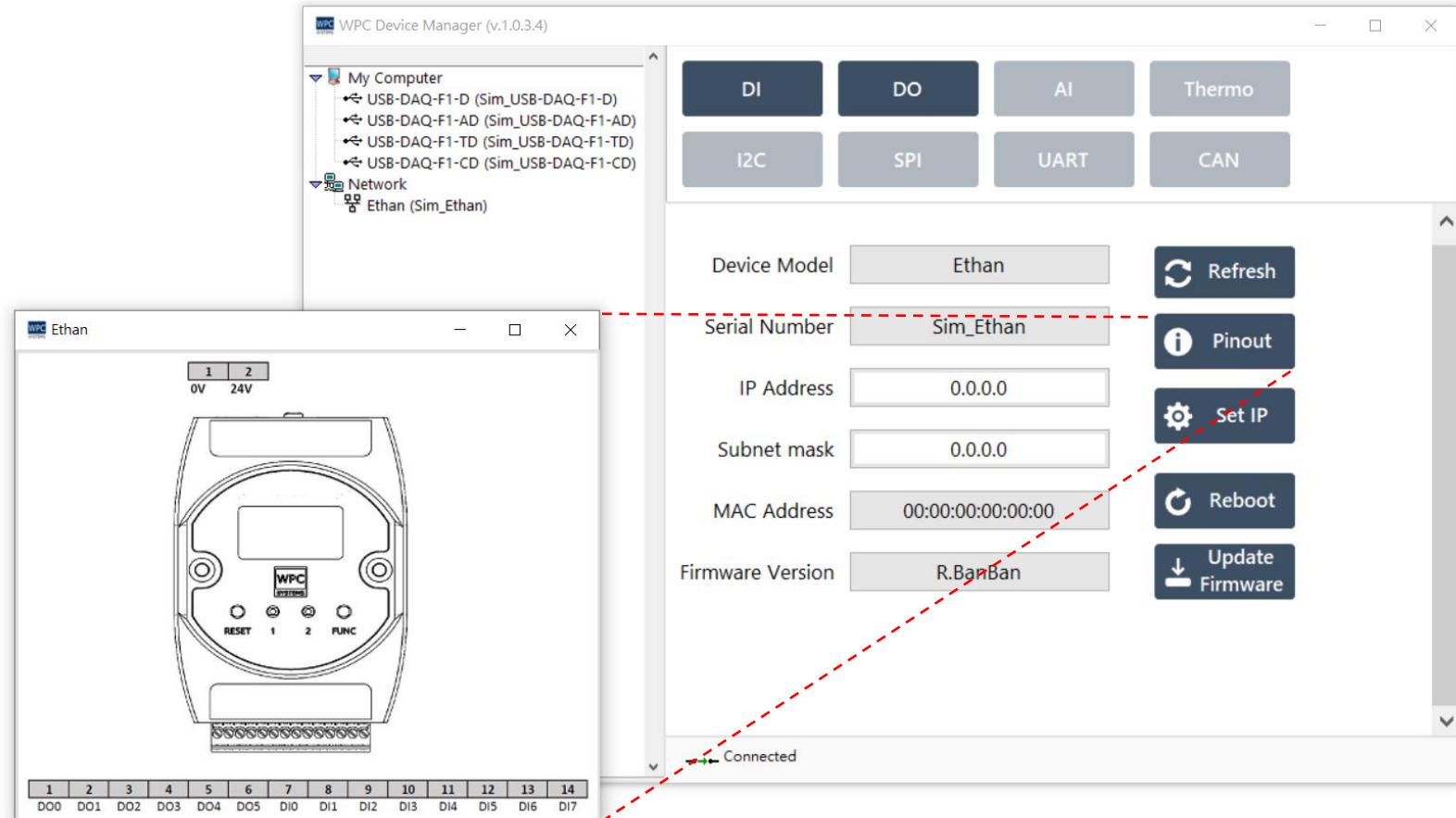
# Right-click to add/remove simulated devices



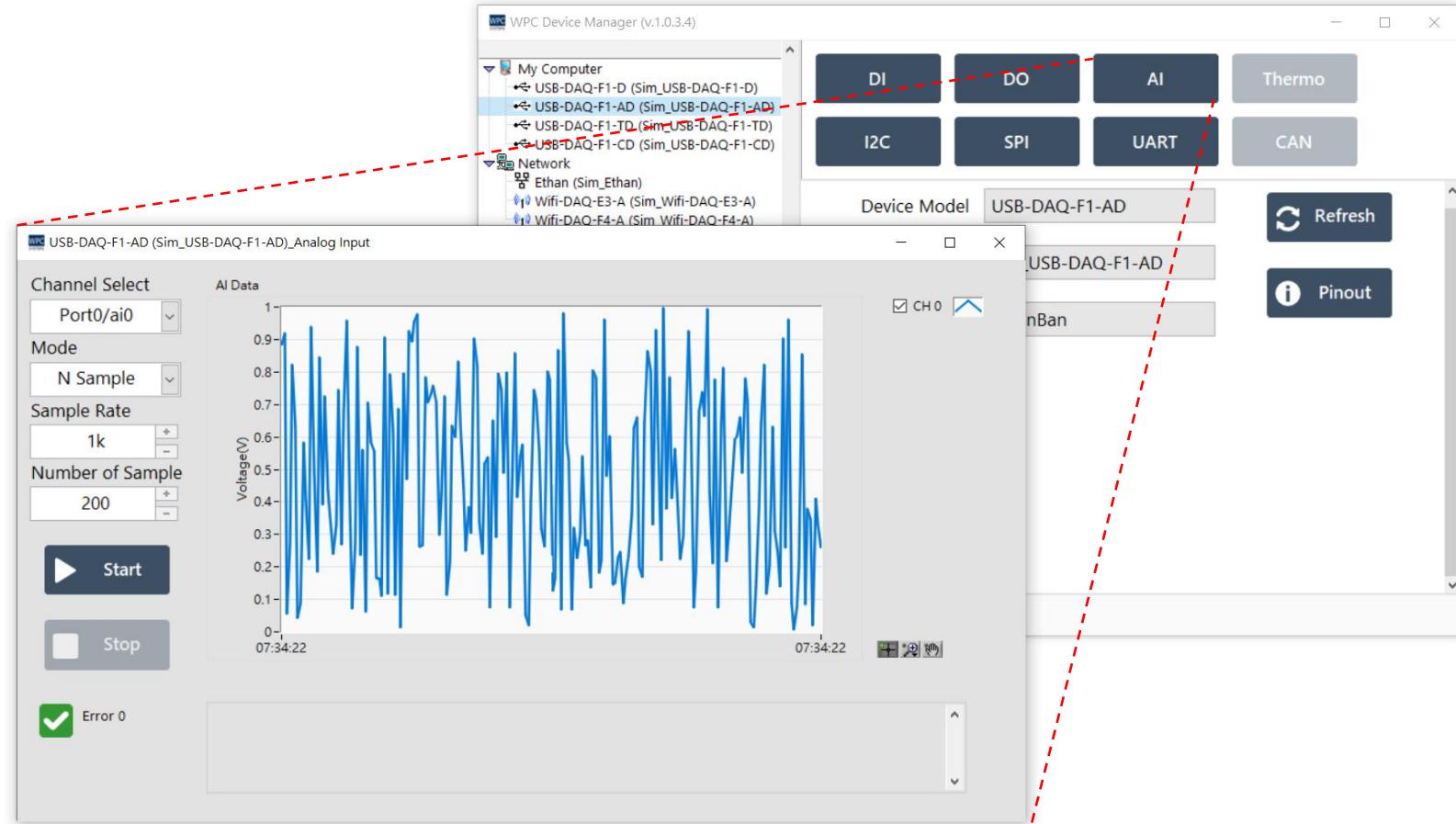
# Add simulated devices



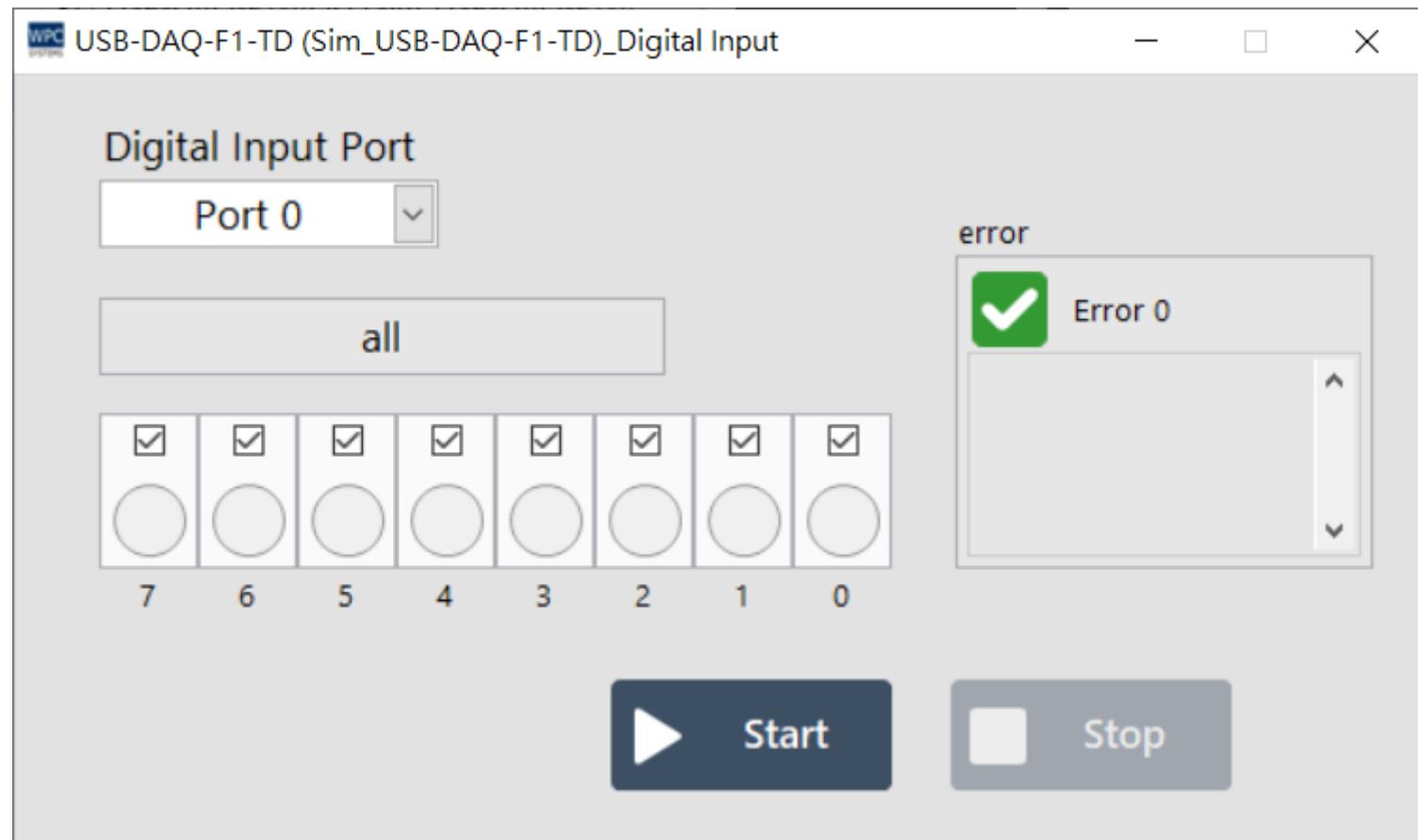
# Find device pinout



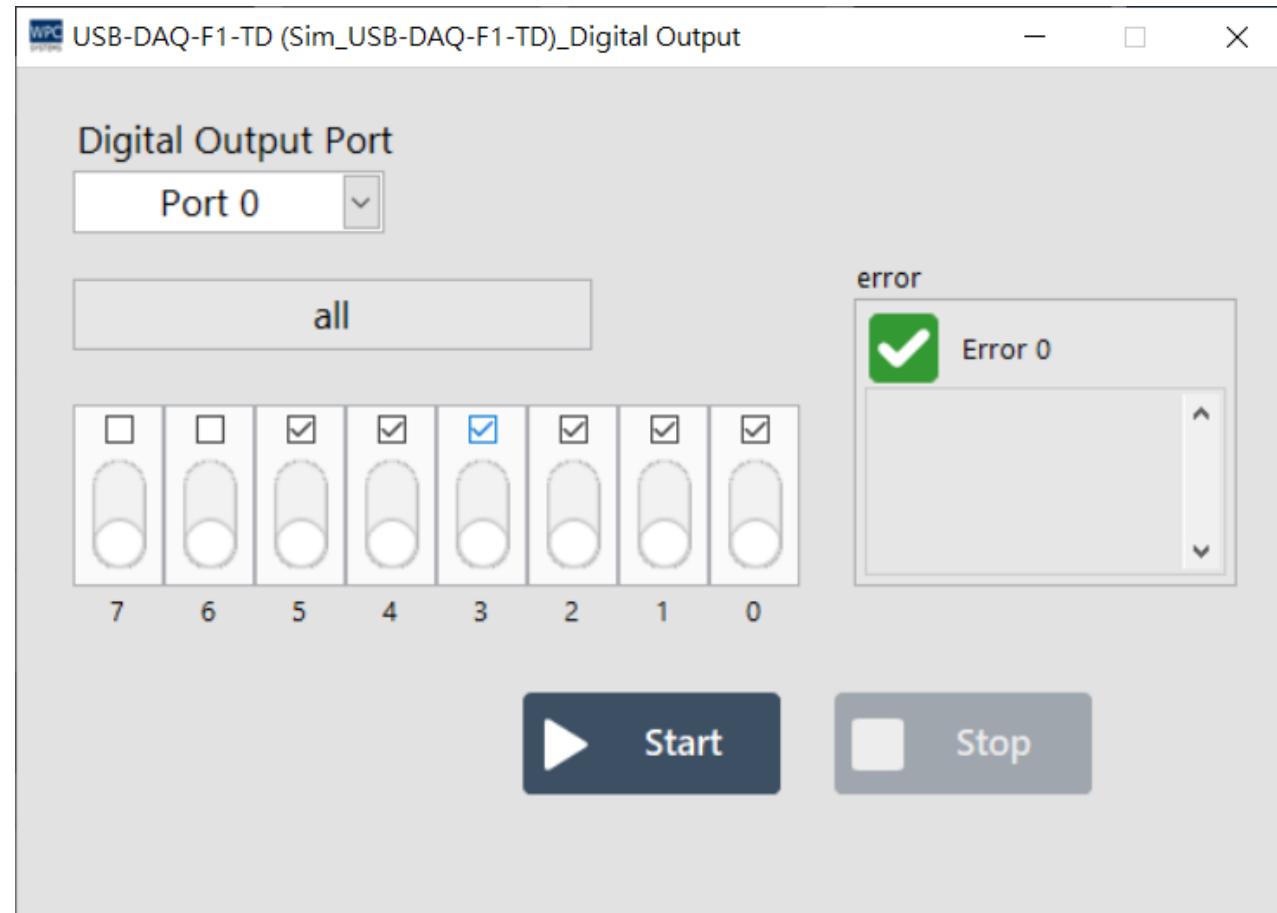
# Open test panel - Interact with devices



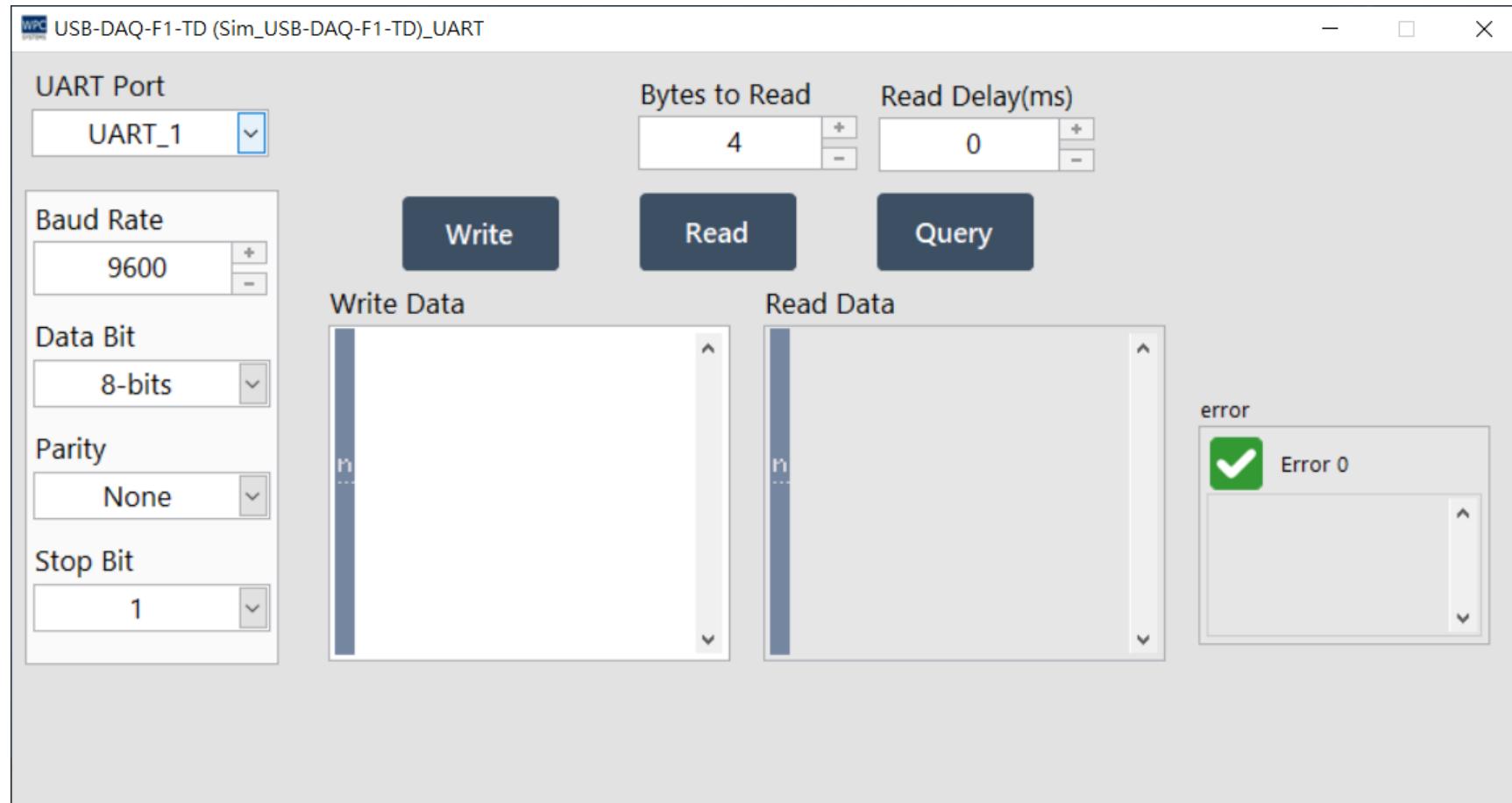
# Test panel DI



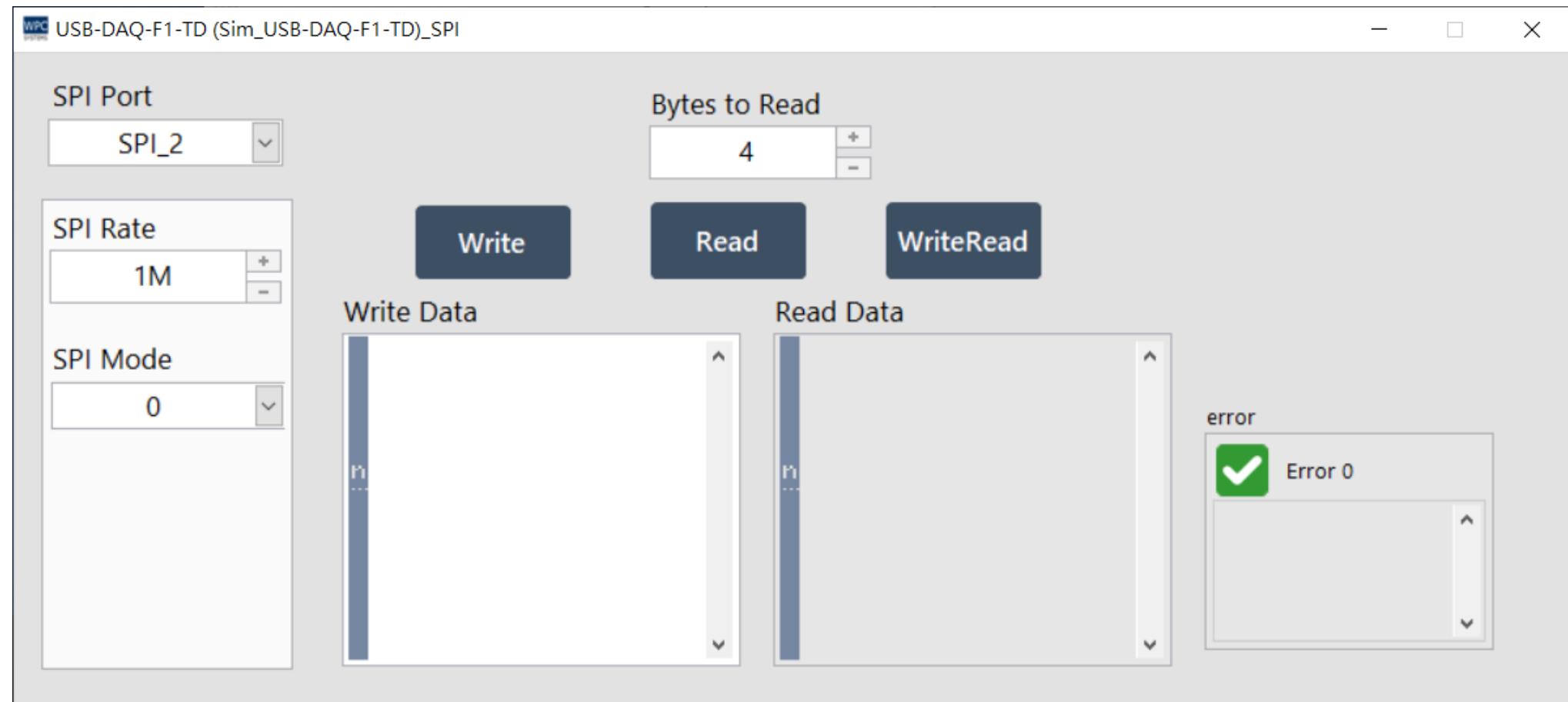
# Test panel DO



# Test panel UART



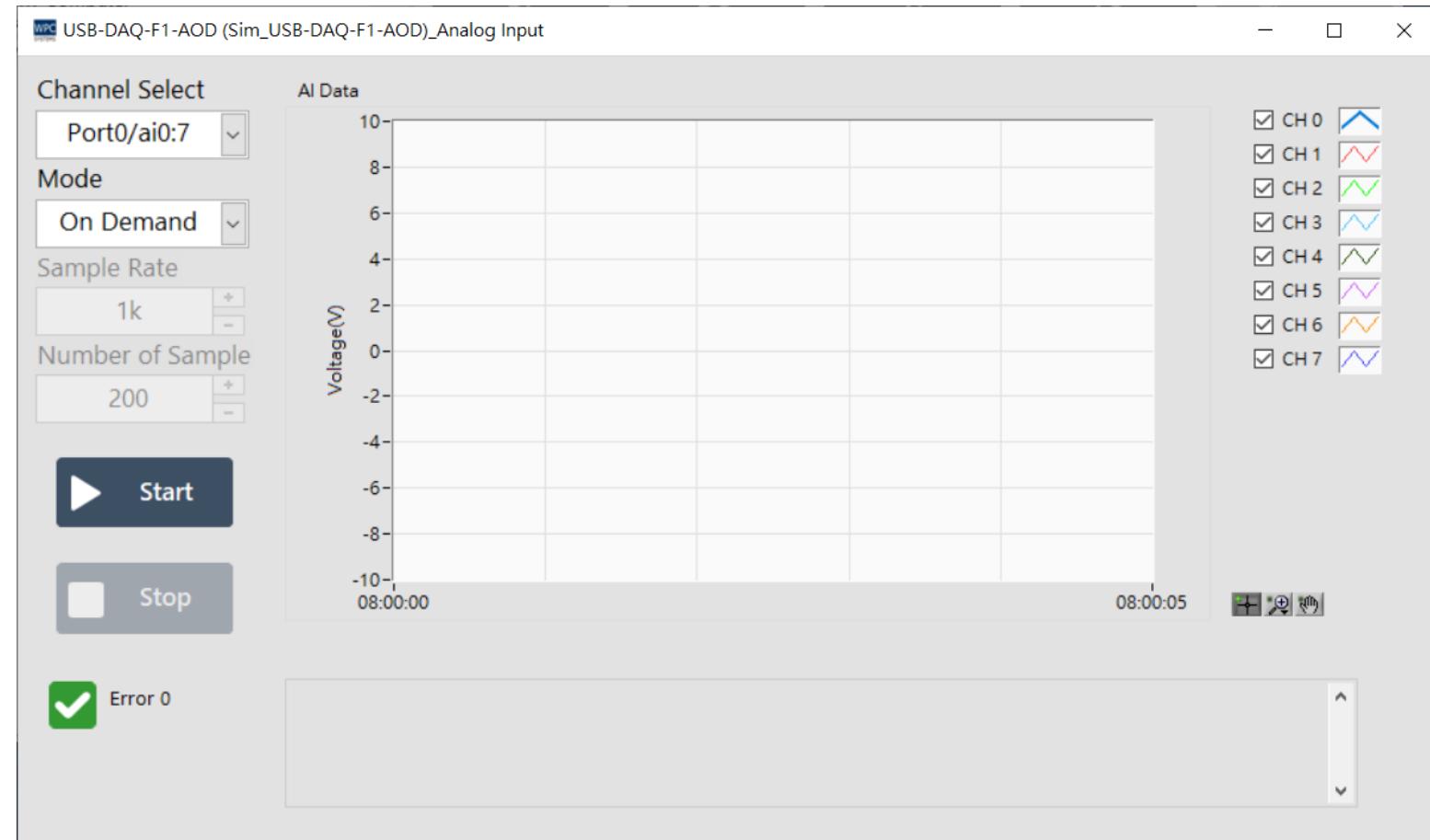
# Test panel SPI



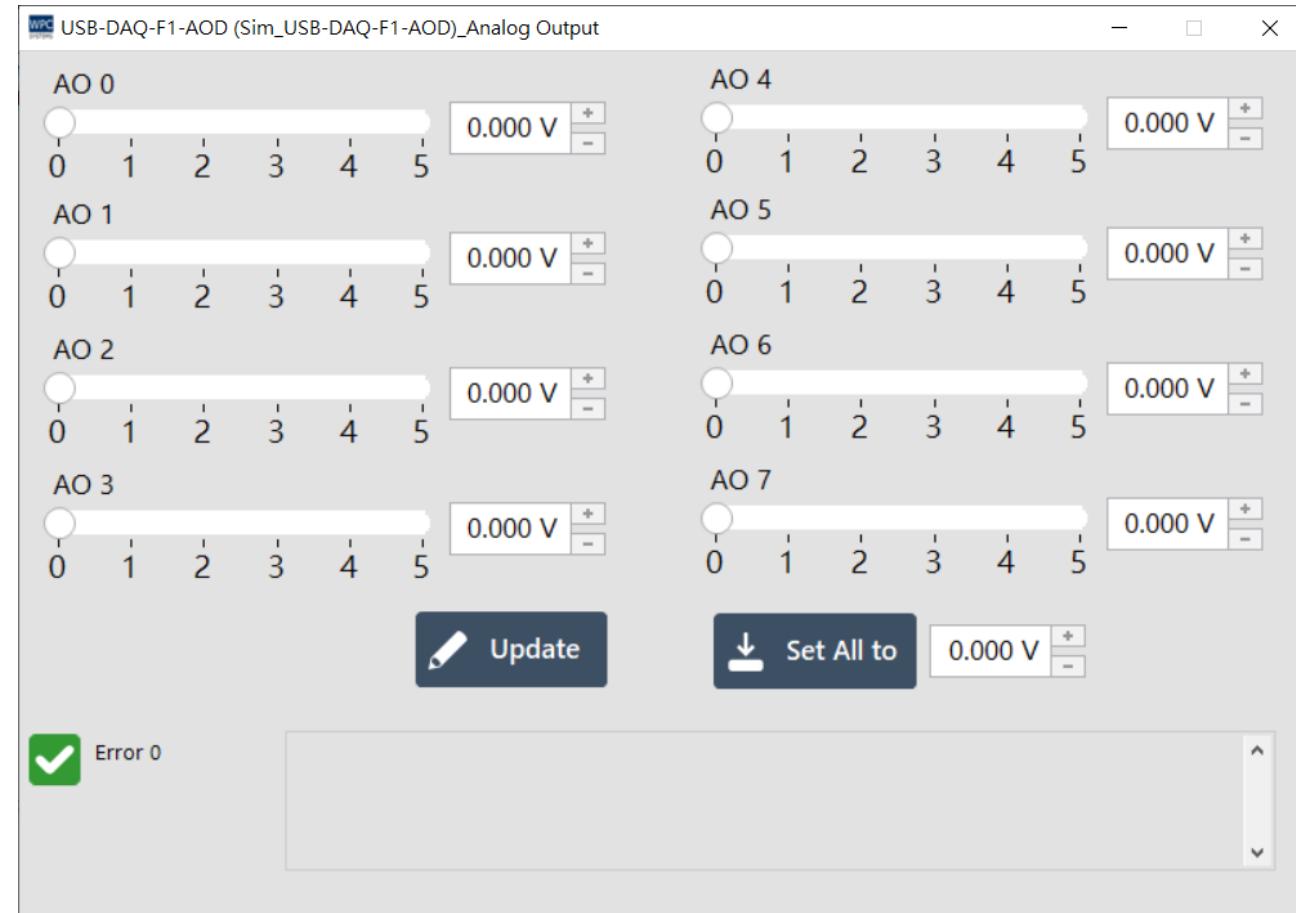
# Test panel I2C



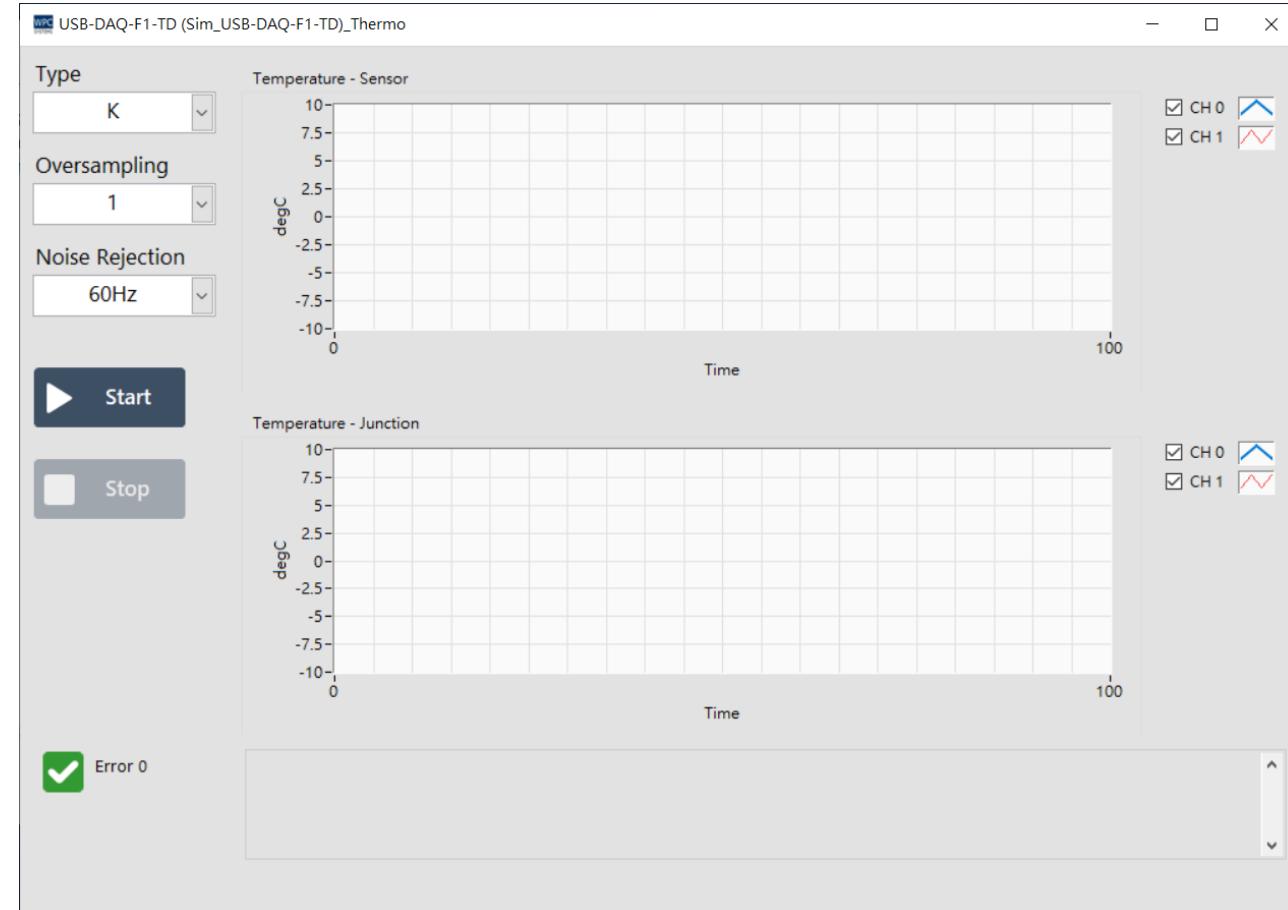
# Test panel AI



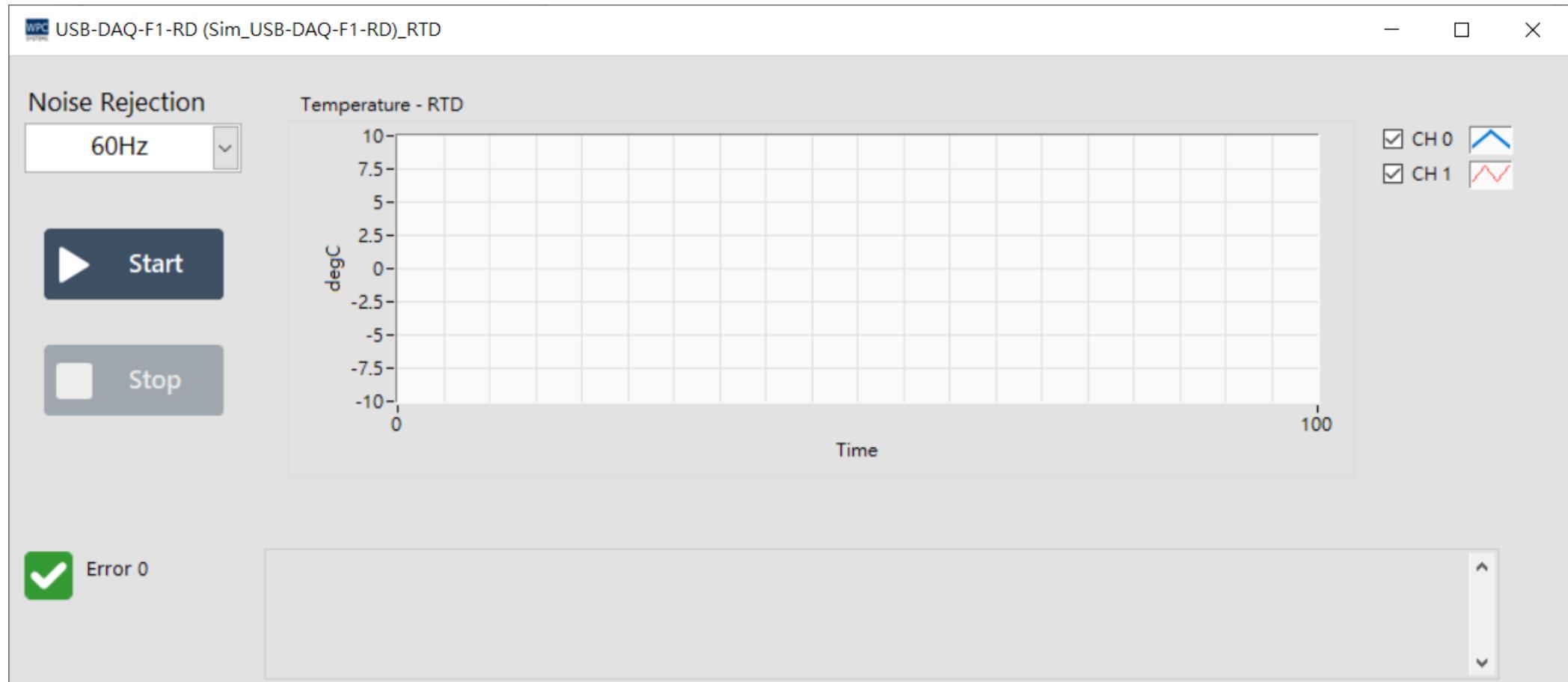
# Test panel AO



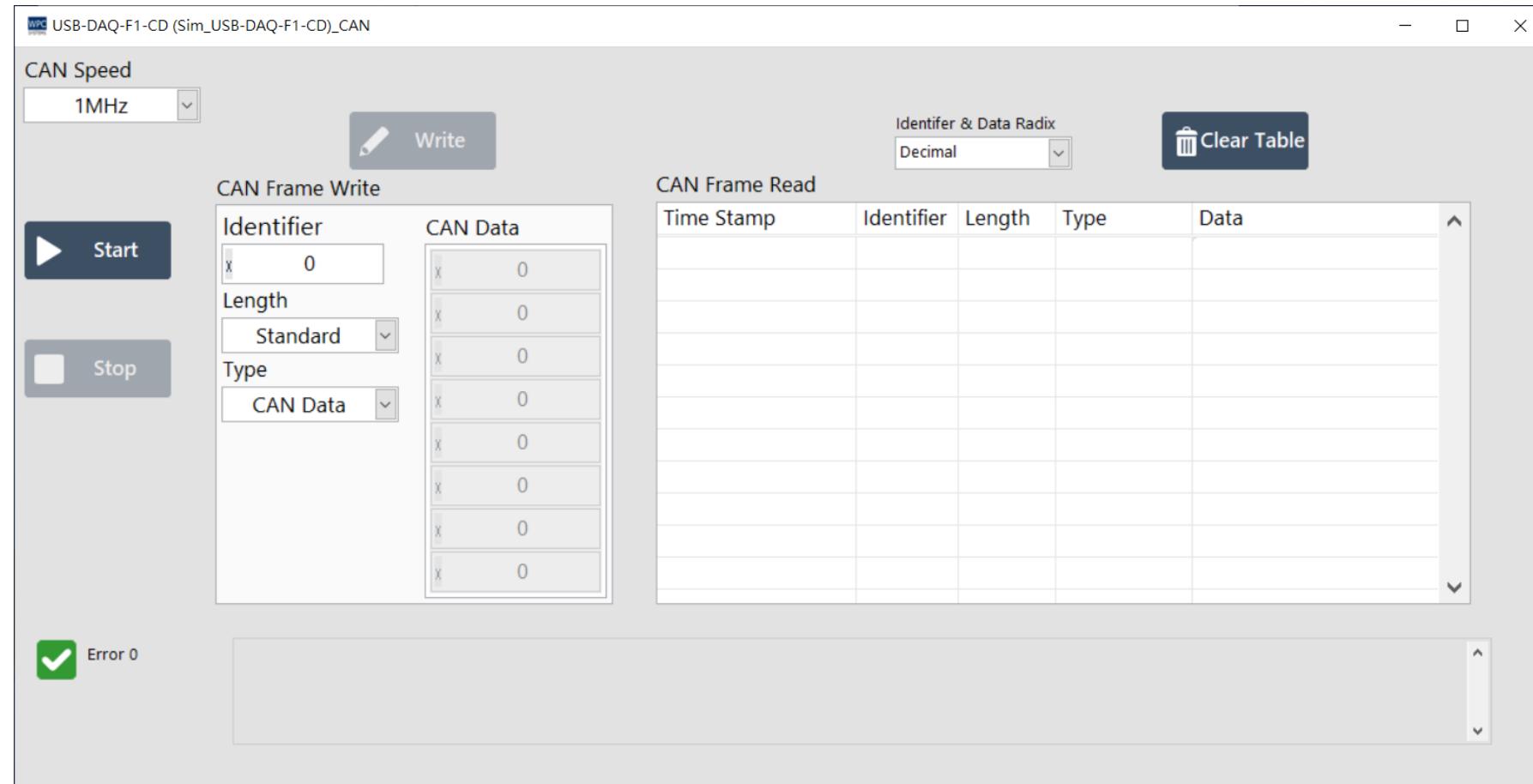
# Test panel Thermo - Thermocouple



# Test panel Thermo - RTD



# Test panel CAN bus



# Test panel PWM



# WPC DAQ Driver Library

Easy-to-use LabVIEW API

# Model vs. driver compatibility

SN	Model Name	GECO Driver	GECO Testpanel Portal	WPC Device Manager(WDM)	WPC Device Driver
1	WPC-USB-DAQ-D-SNK	X	X	○	○
2	WPC-USB-DAQ-D	X	X	○	○
3	WPC-USB-DAQ-AD	X	X	○	○
4	WPC-USB-DAQ-TD	X	X	○	○
5	WPC USB-DAQ-CD	X	X	○	○
6	WPC USB-DAQ-AOD	X	X	○	○
7	WPC-USB-DAQ-RD(PT-100)	X	X	○	○
8	WPC-USB-DAQ-RD(PT-1000)	X	X	○	○
9	WPC-ESP-F407-WIFI-DAQ	X	X	○	○
10	WPC-ESP-WIFI-DAQ	X	X	○	○
11	WPC-Ethan-D	X	X	○	○
12	WPC-Ethan-A	X	X	○	○

# WPC driver version compatibility

WPC Product line	GECO driver	WPC DAQ driver	WPC device driver
GECO	●	X	X
STEM	●	X	X
USB-motion	●	X	X
USB-DAQ	X	●	●
ETH-DAQ	X	●	●
WIFI-DAQ	X	●	●
ETH-Motion	▲	X	●
Future WPC product	X	X	●

●	direct support
▲	workaround
X	not supported



舊版本

新版本

# How to get WPC DAQ driver?

The screenshot shows the WPC Systems website's header and a dropdown menu. The header includes links for 首頁 (Home), 關於 (About), 應用實例 (Case Studies), 產品與服務 (Products & Services), 資源下載 (Resource Download), and 連絡我們 (Contact Us). A dropdown menu is open under '資源下載' with the following options: 控制器 (Controller), 資料擷取 (DAQ) (highlighted with a red box), 運動控制 (Motion), and 型錄. The WPC Systems logo is visible on the left, and social media icons for Facebook, Email, and YouTube are on the right. The footer contains the text '(C)2022 WPC Systems Ltd. All rights reserved.' and icons for Facebook, Email, and YouTube.

使用手冊、驅動程式、範例程式、裝置管理程式下載 (2022-04-20更新)

控制器(controller)

資料採集(DAQ)

運動控制器(Motion)

## WPC 資料擷取卡 (DAQ)



### USB 數位 I/O

3.3V DIO (5V-tolerant)  
24V industrial isolated DIO

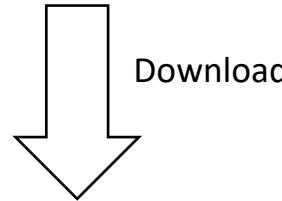


### USB 類比 I/O

16-bit +/-10V analog input (AI)  
16-bit 0-5V analog output (AO)

# Download the latest version of WPC DAQ driver

## *WPC Device Driver 驅動程式下載 (2022-08-25更新)*



Download

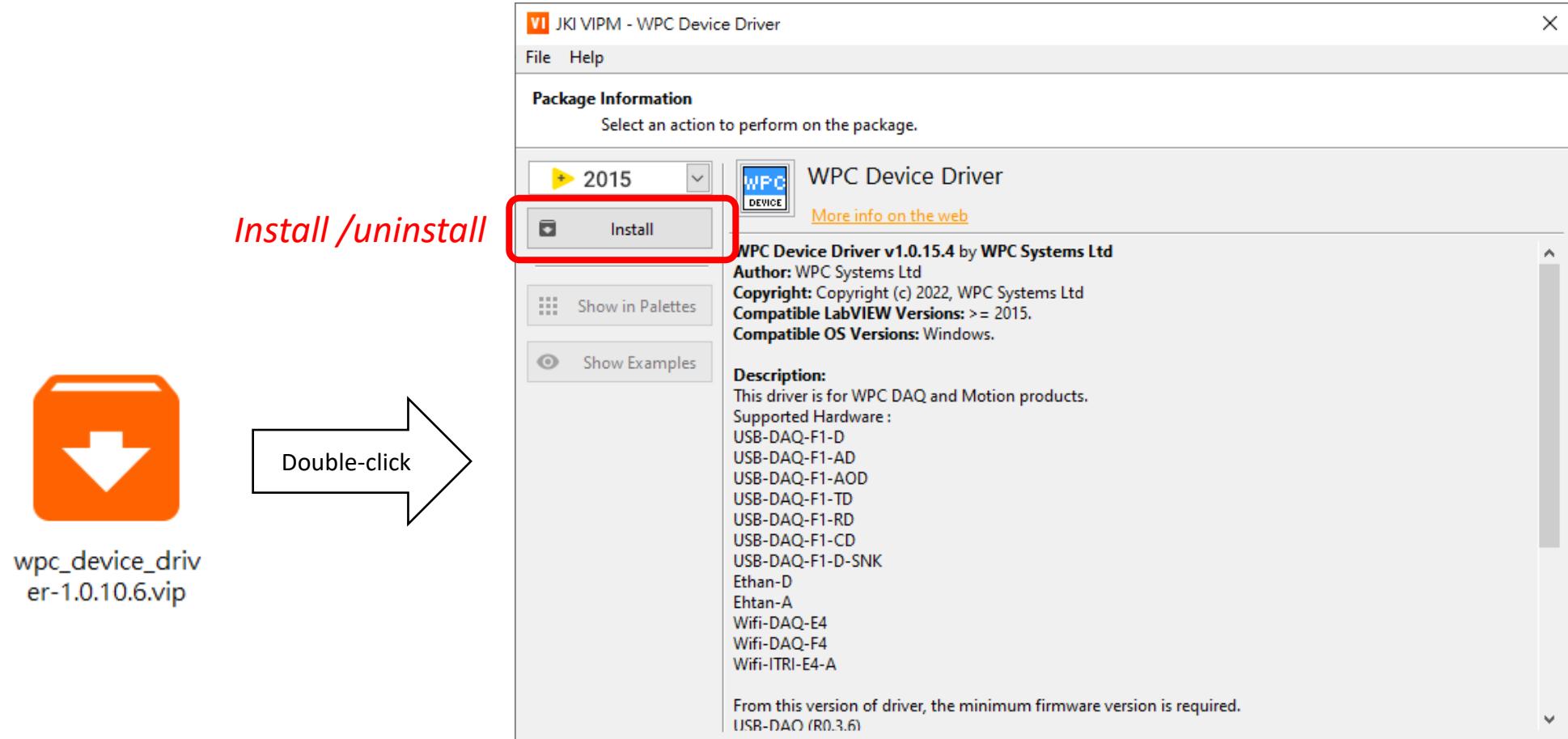


wpc\_device\_driver-1.0.10.6.vip

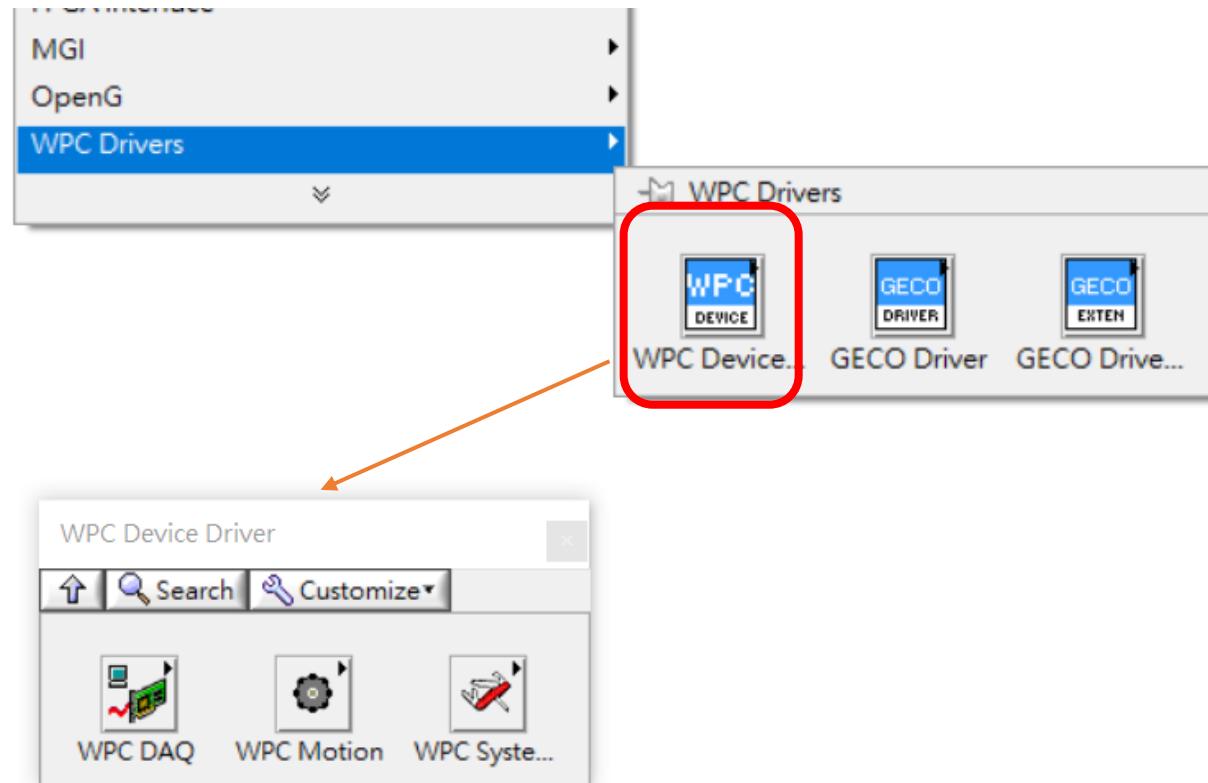
- LabVIEW 駕動程式、範例程式
- 數位及通訊界面DIO / I2C / SPI / UART (3.3V)
- 類比及熱電偶 AI /AO /TC
- 通訊界面 CAN bus
- Ethernet 軸卡
- 安裝前須先手動移除 WPC DAQ Driver 1.0.x.x



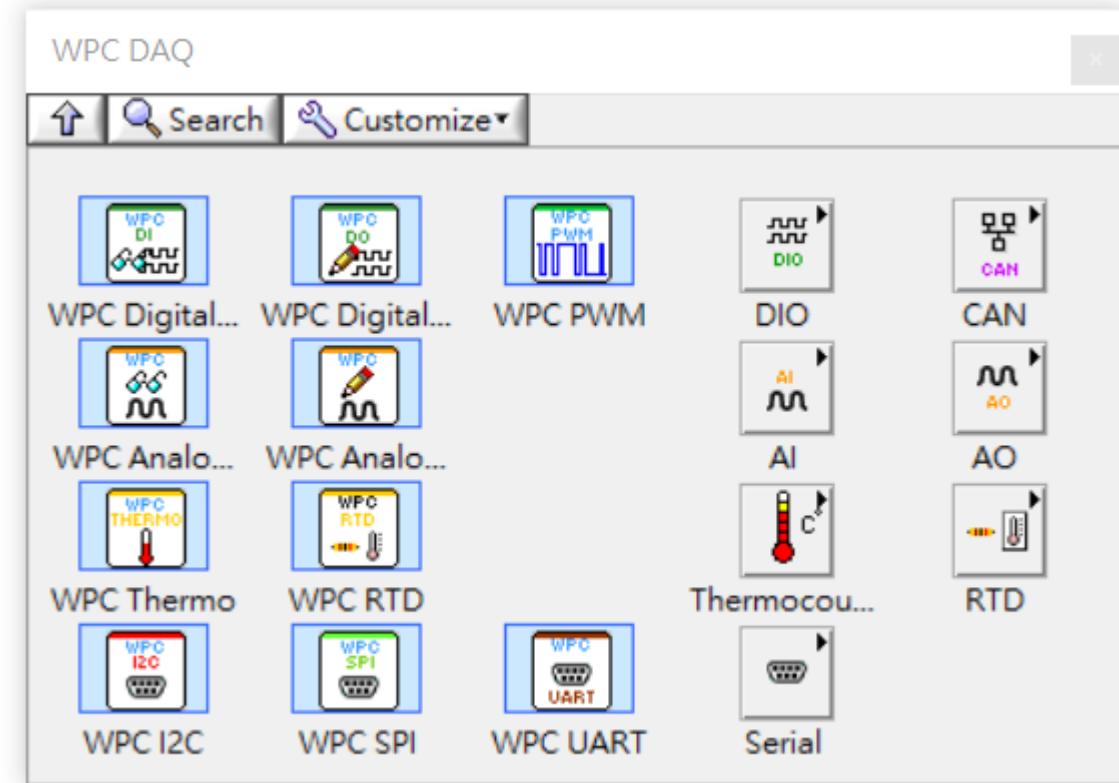
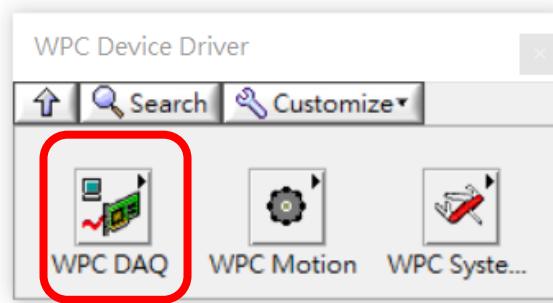
# Install the WPC DAQ driver



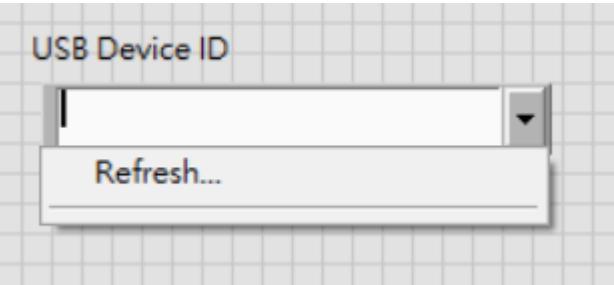
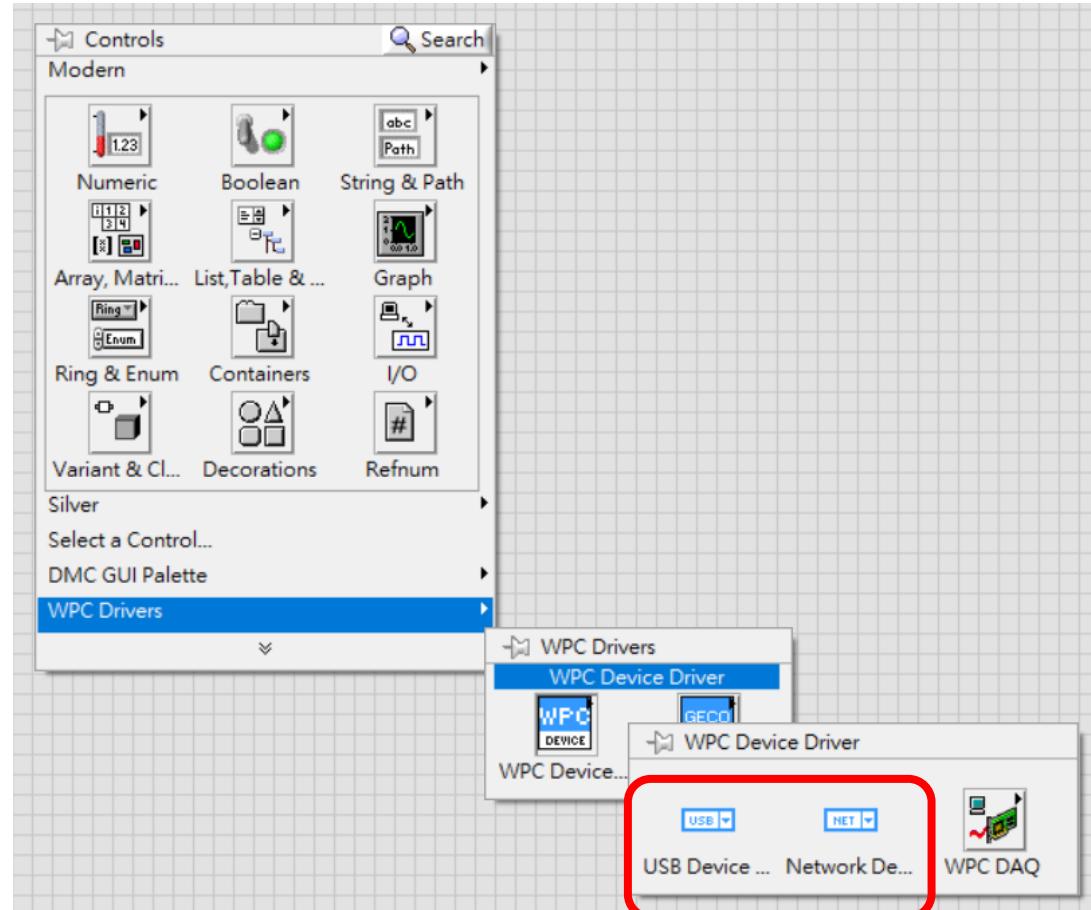
# Right-click on LabVIEW block diagram



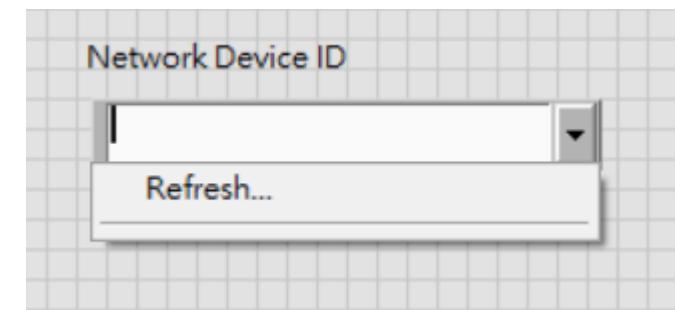
# WPC DAQ driver API



# WPC device resource control (custom)

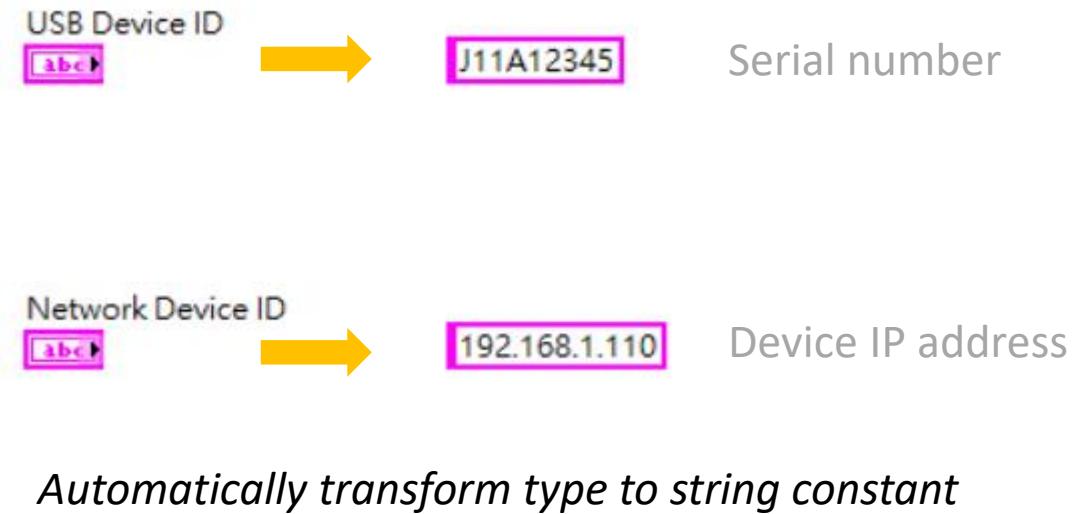
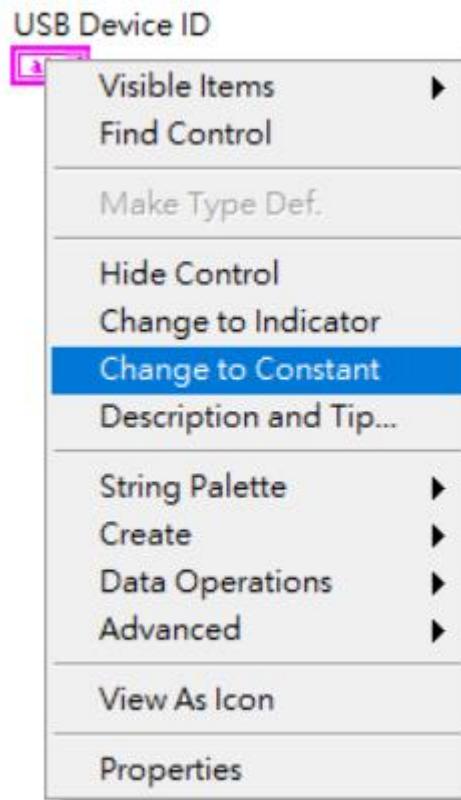


*USB auto-enumeration*

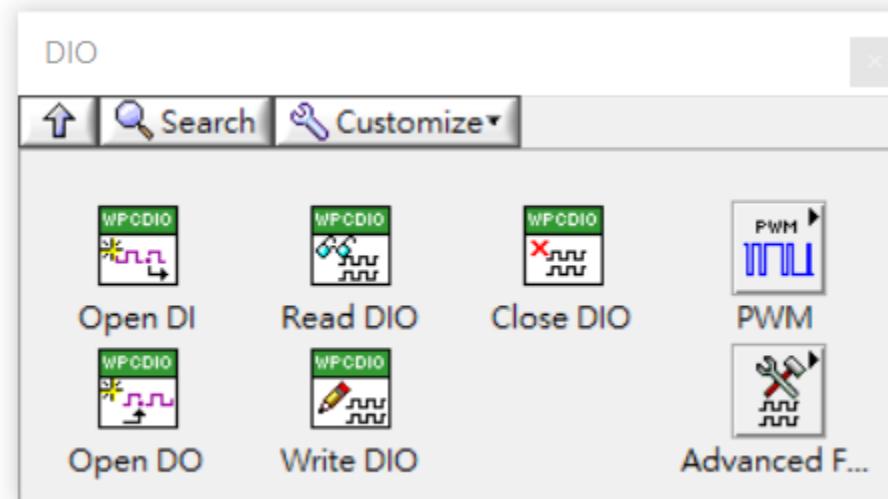


*Network device finding*

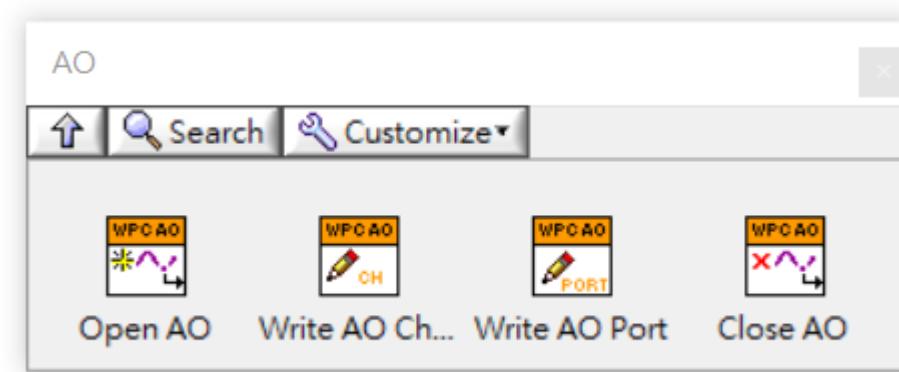
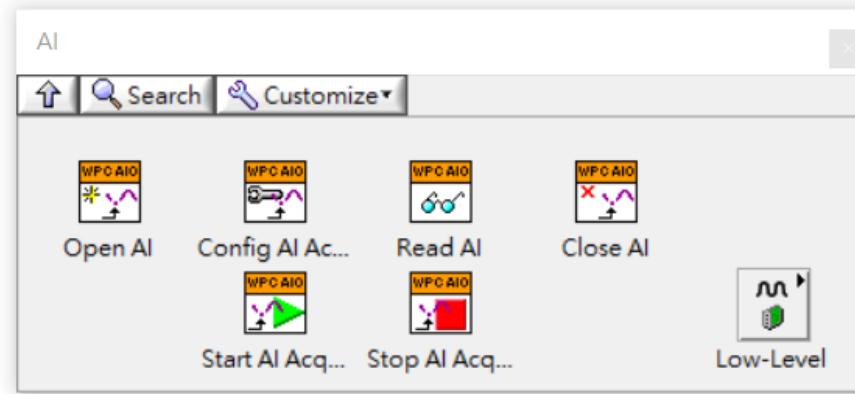
# Change WPC control to constant



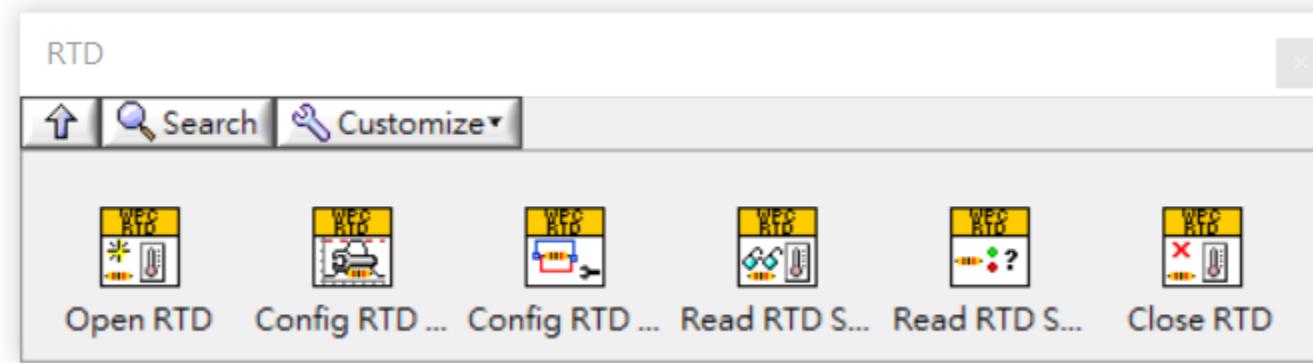
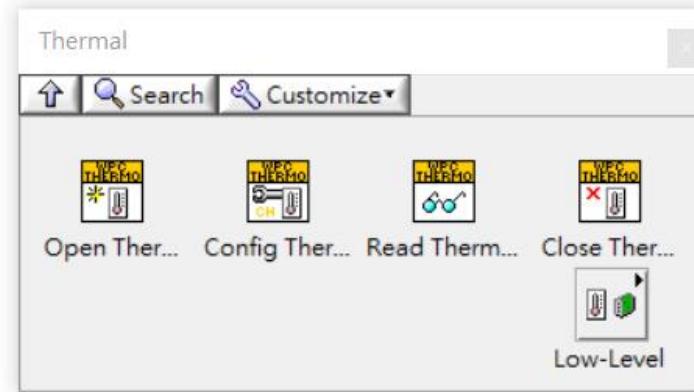
# Digital I/O API



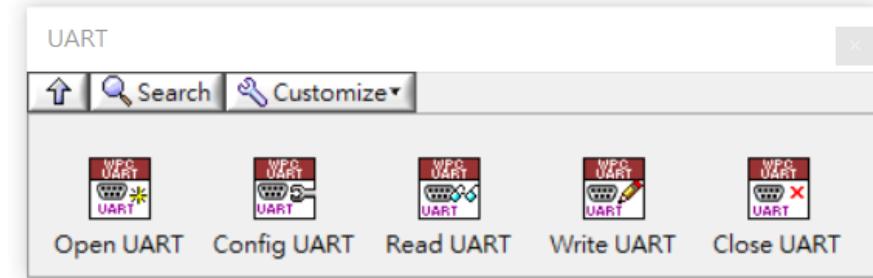
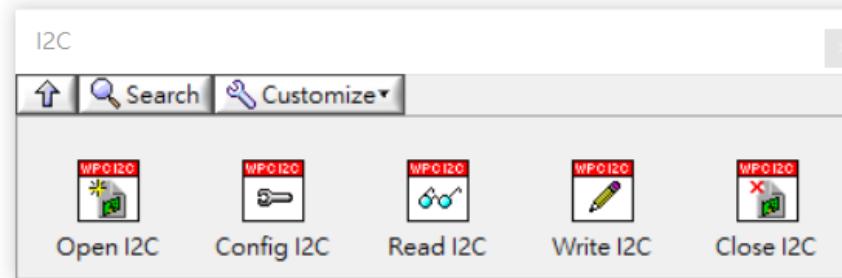
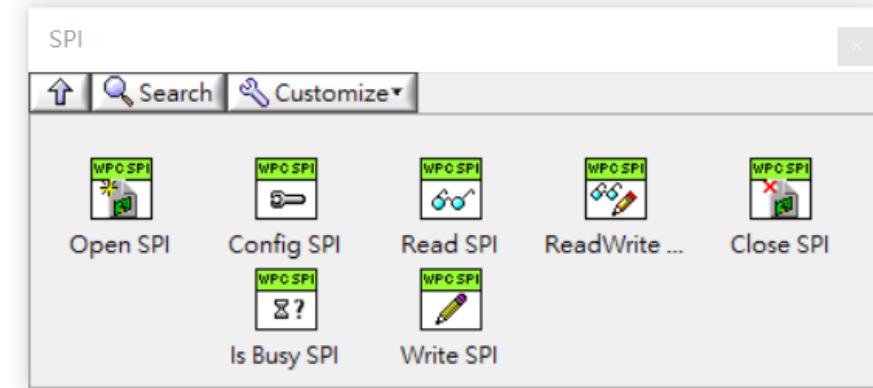
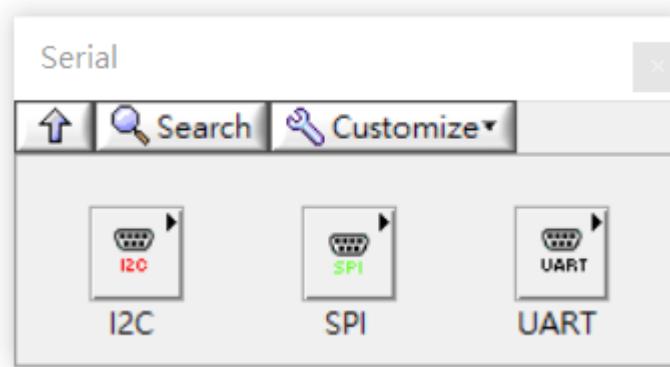
# Analog I/O API



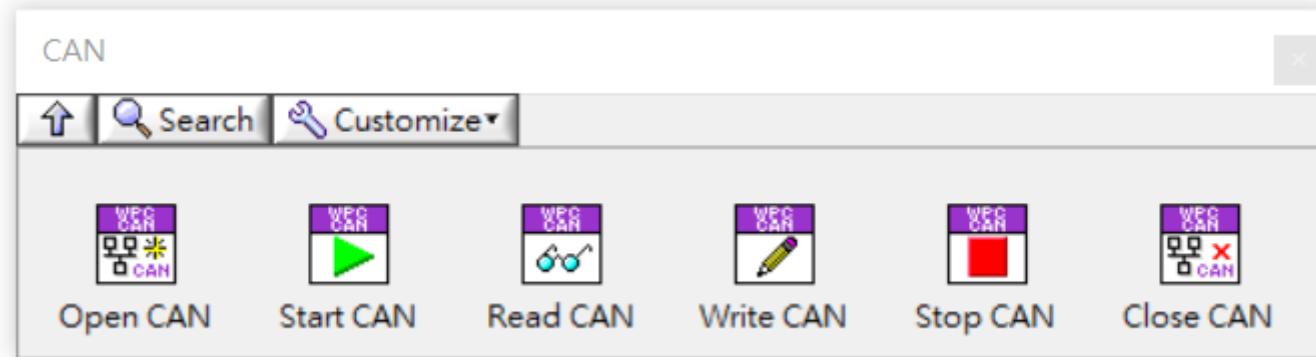
# Temperature sensing API



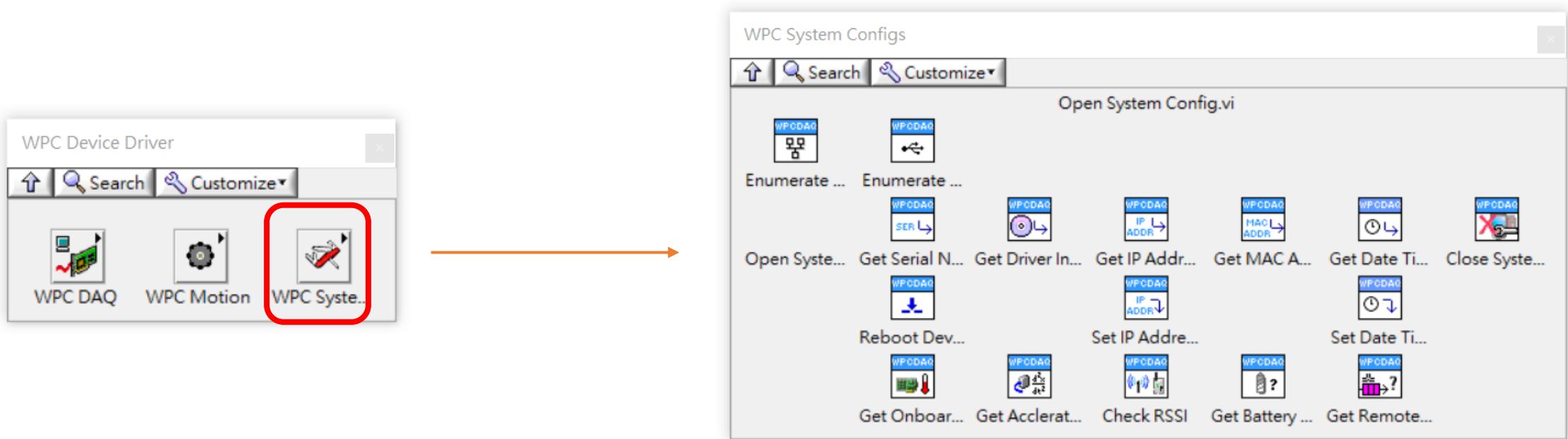
# Digital interfacing API



# Communication API

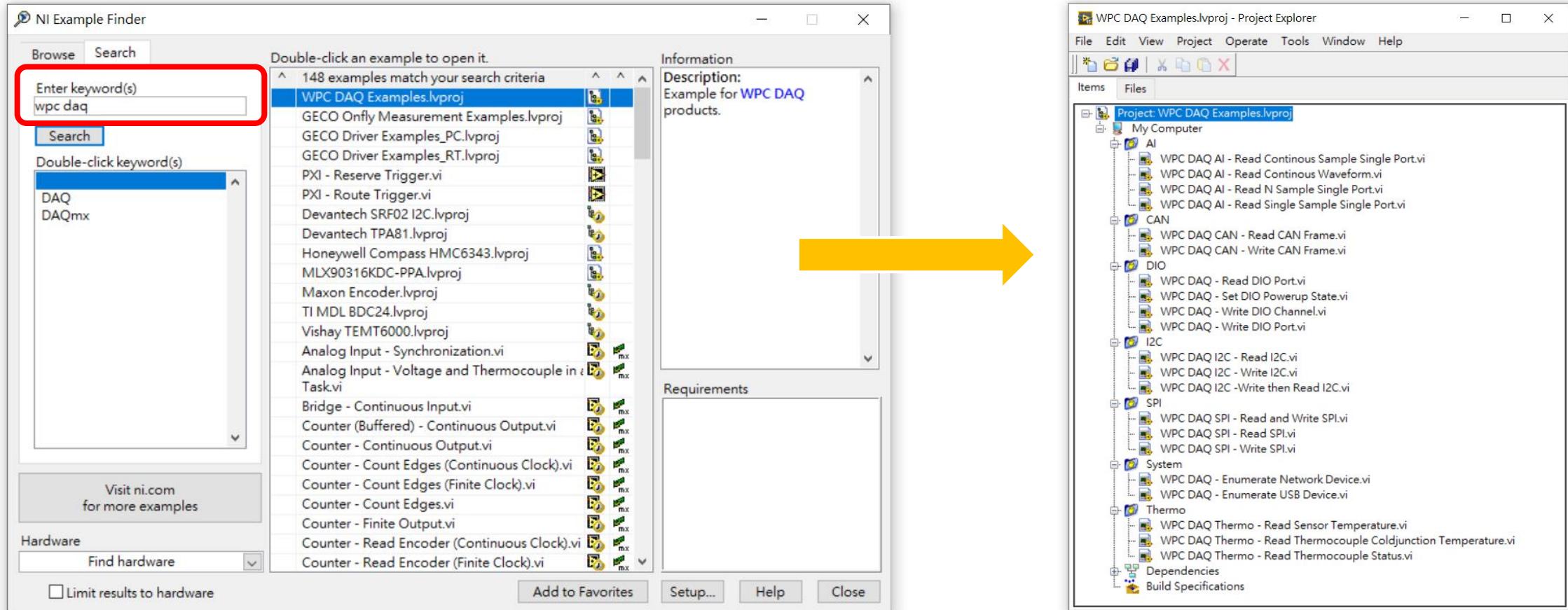


# Device management API



# WPC DAQ example codes

# Find example codes through NI Example Finder



# Open example folder through VI package

