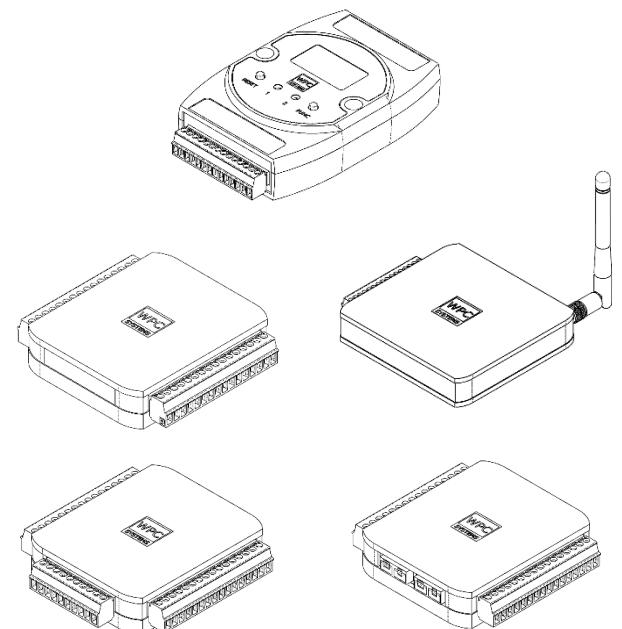


WPC DAQ Devices user manual

WPC Systems Ltd.

Justin Wu

2022-11-25

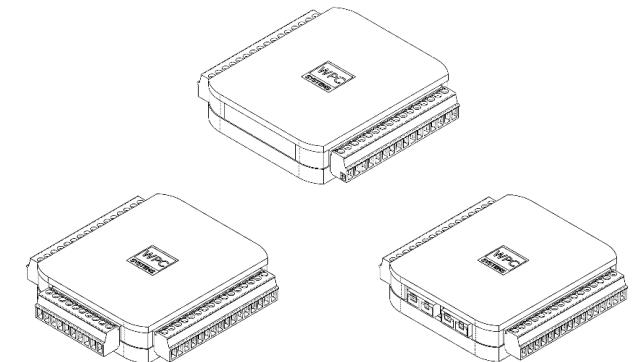


USB DAQs

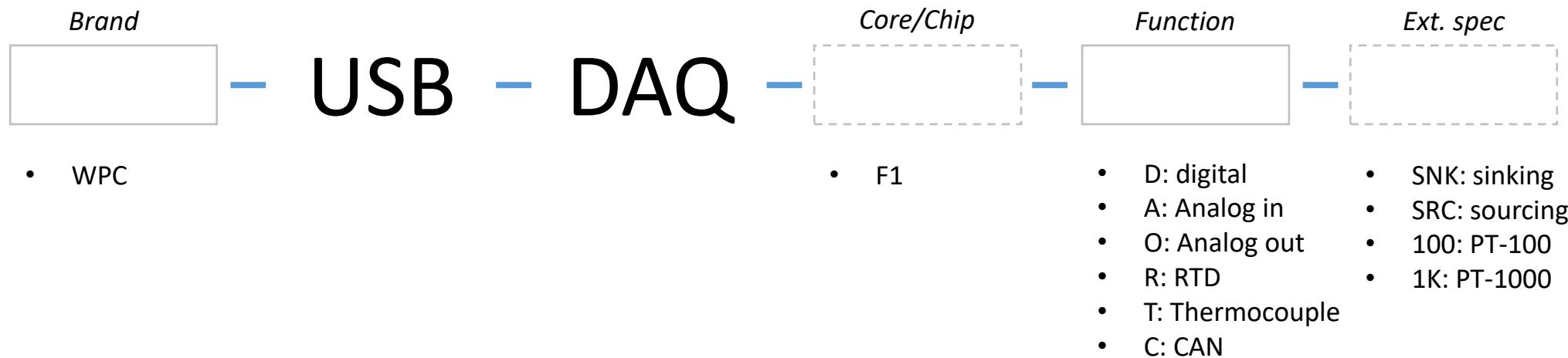
Digital I/O

Analog I/O

Communication



Model naming rule for USB DAQ

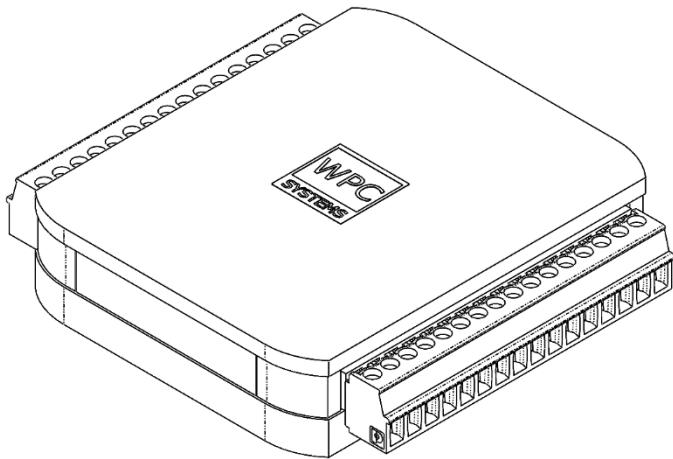


Model selection table

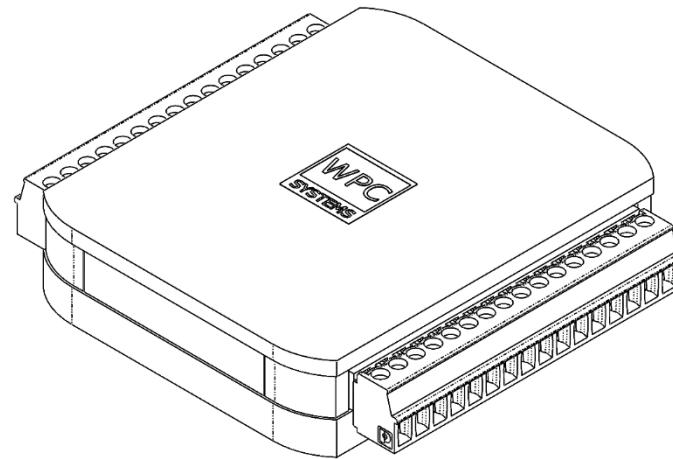
	Feature
WPC-USB-DAQ-D-SNK	24V-DIO
WPC-USB-DAQ-D	DIO
WPC-USB-DAQ-AD	DIO+AI
WPC-USB-DAQ-TD	DIO+TC
NEW WPC-USB-DAQ-RD	DIO+RTD
WPC-USB-DAQ-CD	DIO+CAN
WPC-USB-DAQ-AOD	DIO+AI+AO

	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



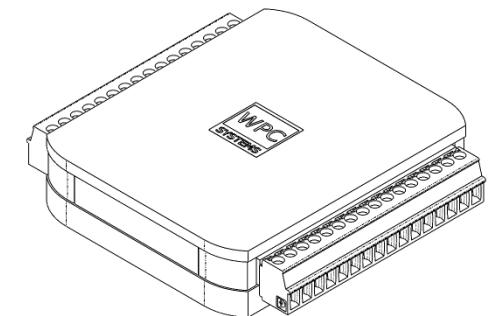
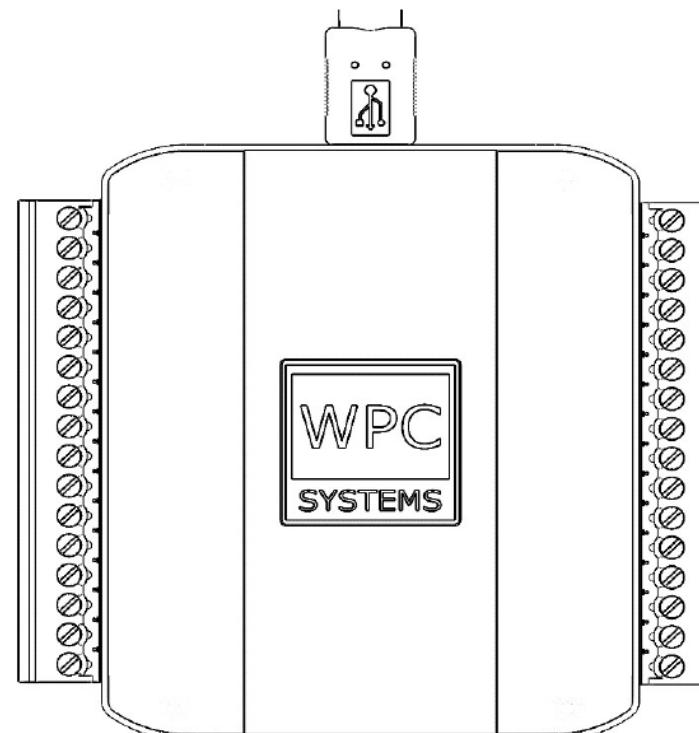
Model: WPC-USB-DAQ-D-SNK
24V industrial DIO
24V external power required *

WPC-USB-DAQ-D

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

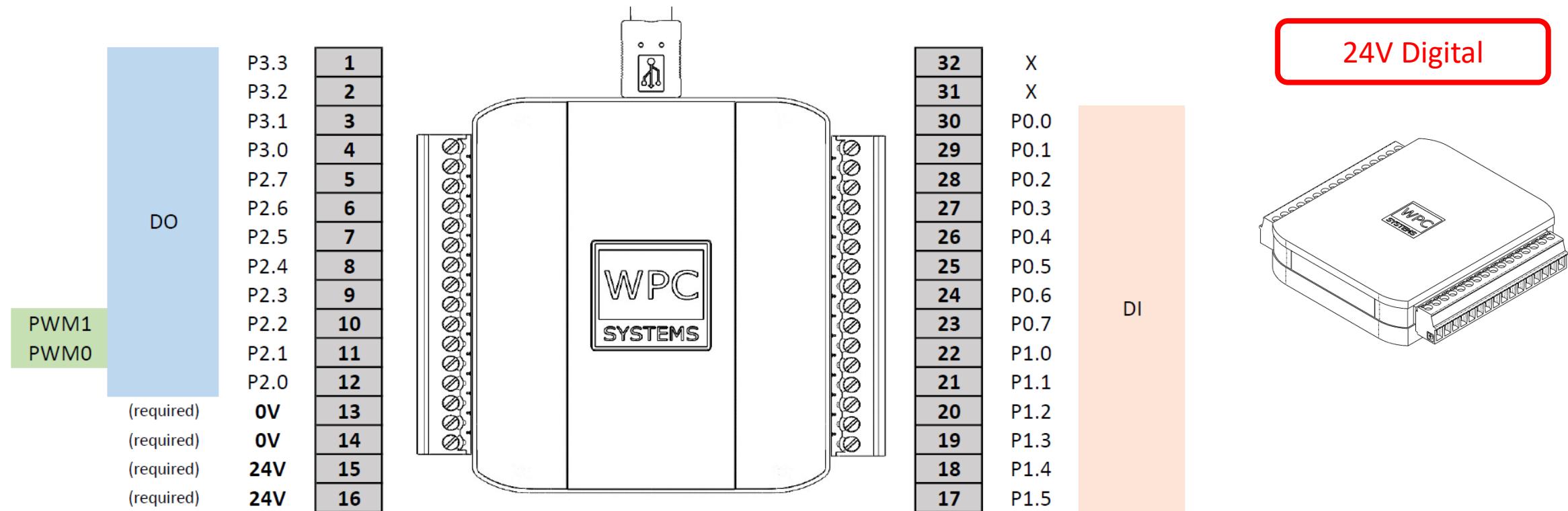
	GND	1	P0.0
	5V	2	P0.1
MOSI2	P3.5	3	P0.2
MISO2	P3.4	4	P0.3
SCK2	P3.3	5	P0.4
CS2	P3.2	6	P0.5
SDA2	P3.1	7	P0.6
SCL2	P3.0	8	P0.7
SDA1	P2.7	9	P1.0
SCL1	P2.6	10	P1.1
	X	11	P1.2
	X	12	P1.3
MOSI1	P2.3	13	RX2
MISO1	P2.2	14	TX2
SCK1	P2.1	15	
CS1	P2.0	16	
		32	
		31	PWM0
		30	PWM1
		29	RX1
		28	TX1
		27	
		26	
		25	
		24	
		23	
		22	
		21	
		20	
		19	
		18	5V
		17	GND

3.3V Digital

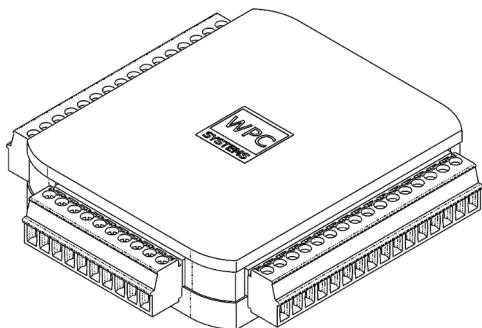


WPC-USB-DAQ-D-SNK

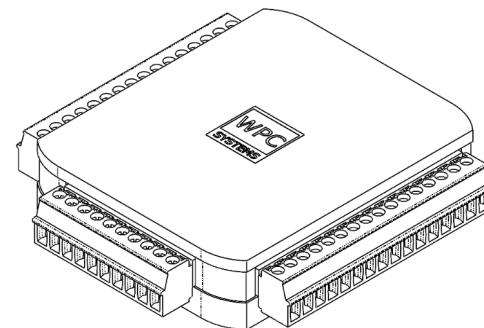
- Level: 24V DIO
- 24V External power required *



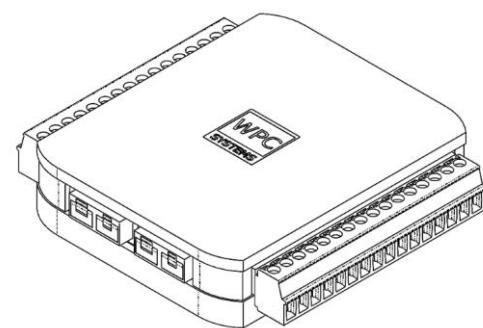
Model feature (analog)



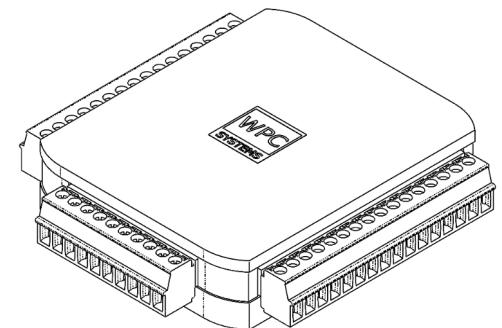
WPC-USB-DAQ-AD
3.3V DIO (5V tolerant)
8ch +/-10V analog input



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**)

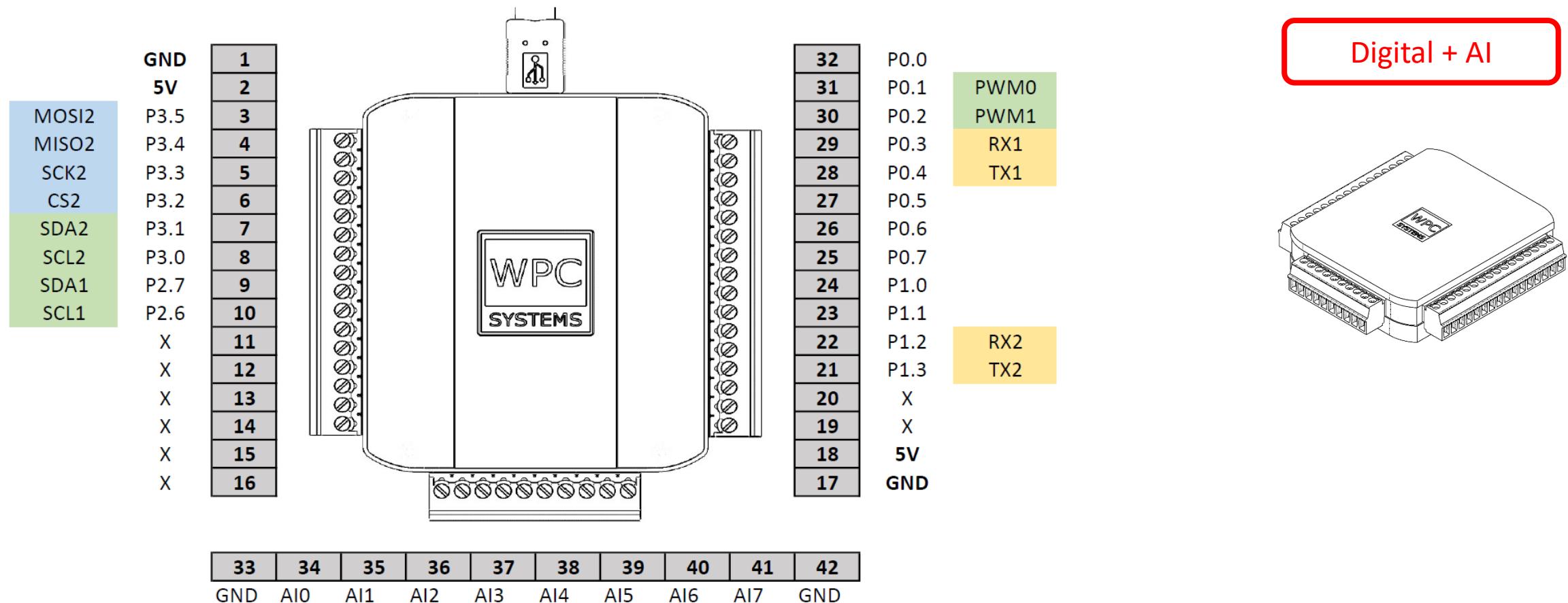
NEW

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							

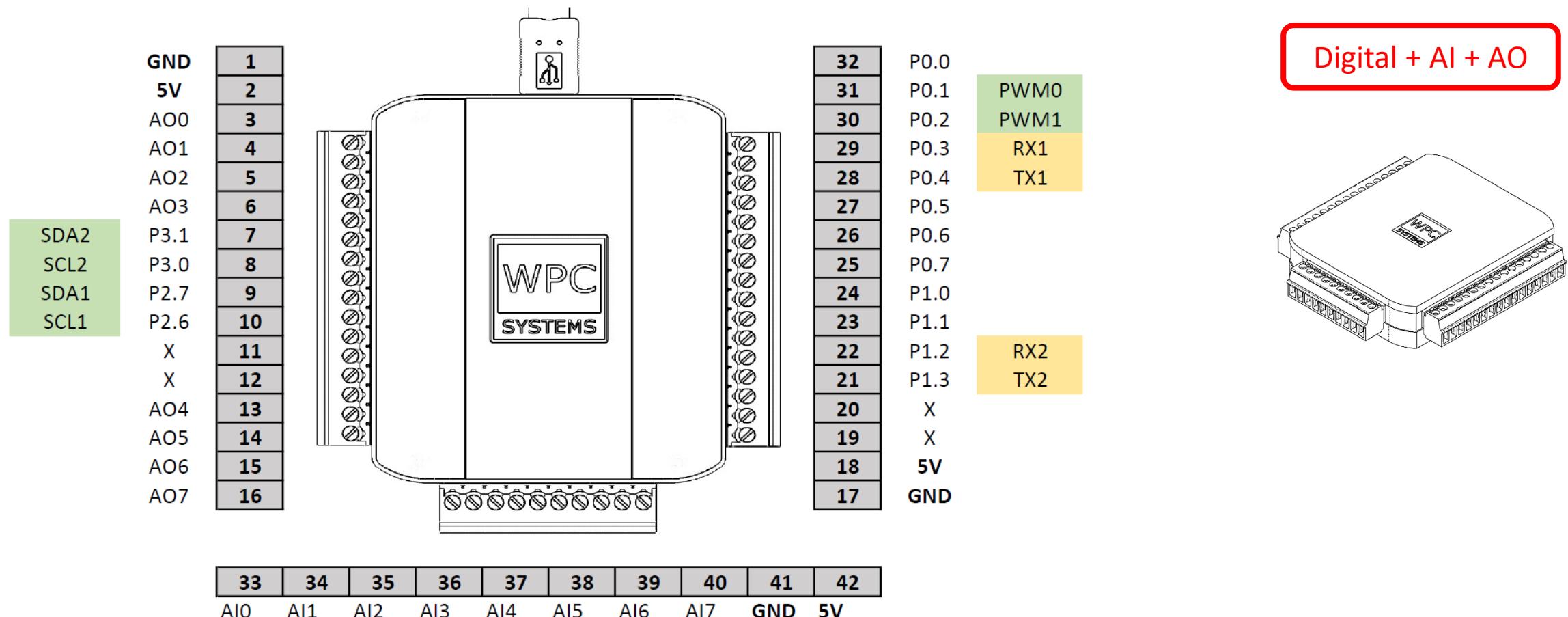
WPC-USB-DAQ-AD

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



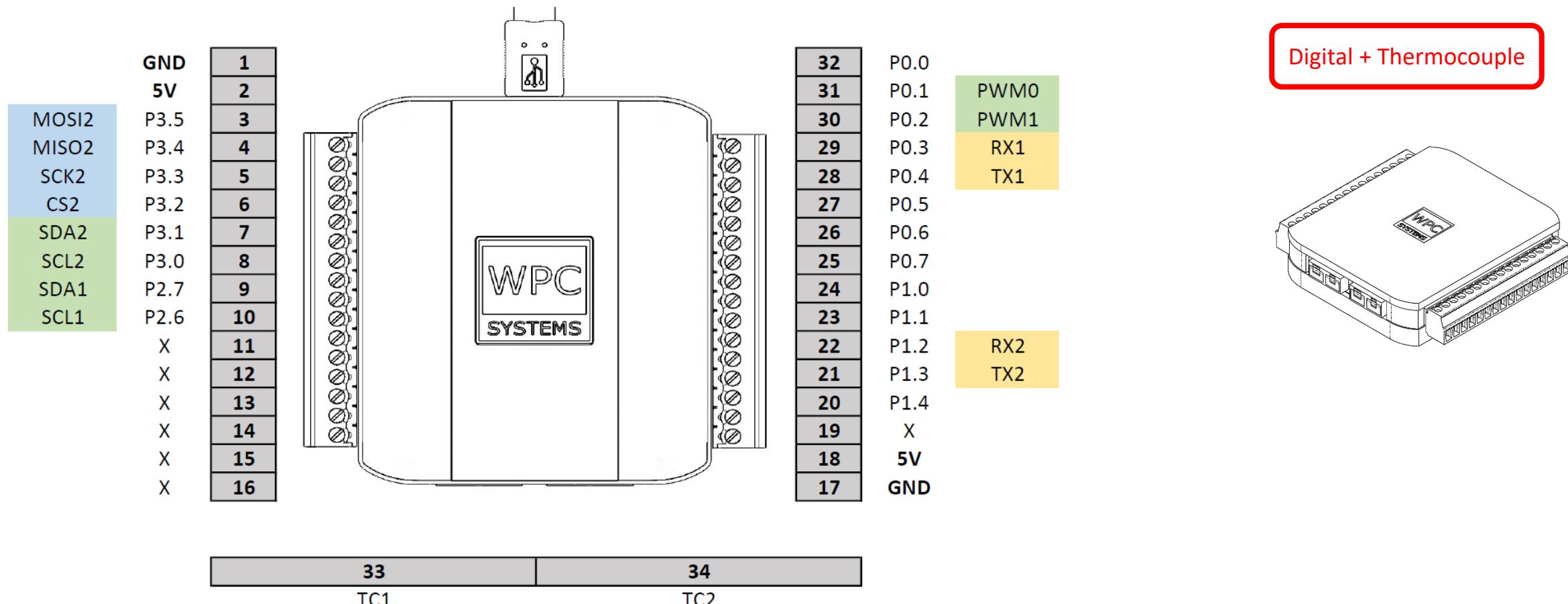
WPC-USB-DAQ-AOD

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



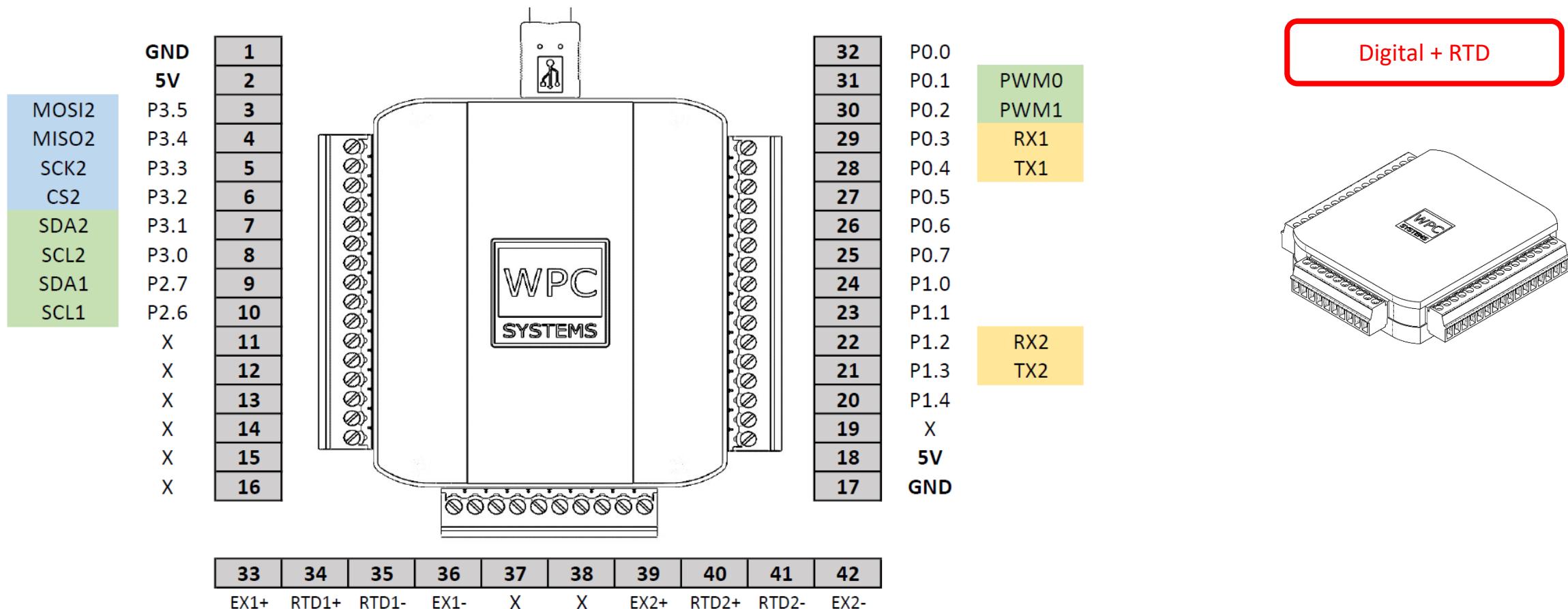
WPC-USB-DAQ-TD

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

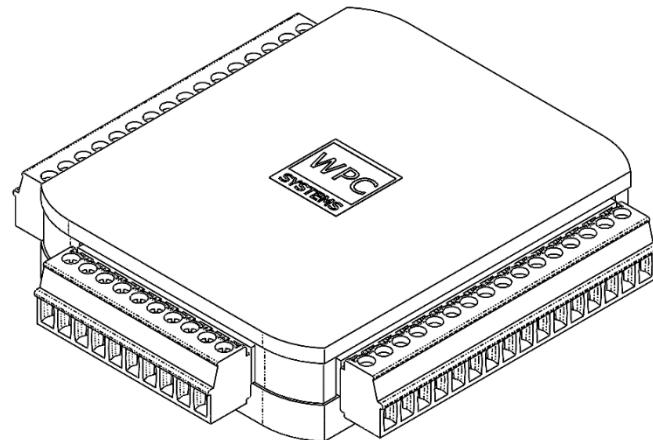


WPC-USB-DAQ-RD

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



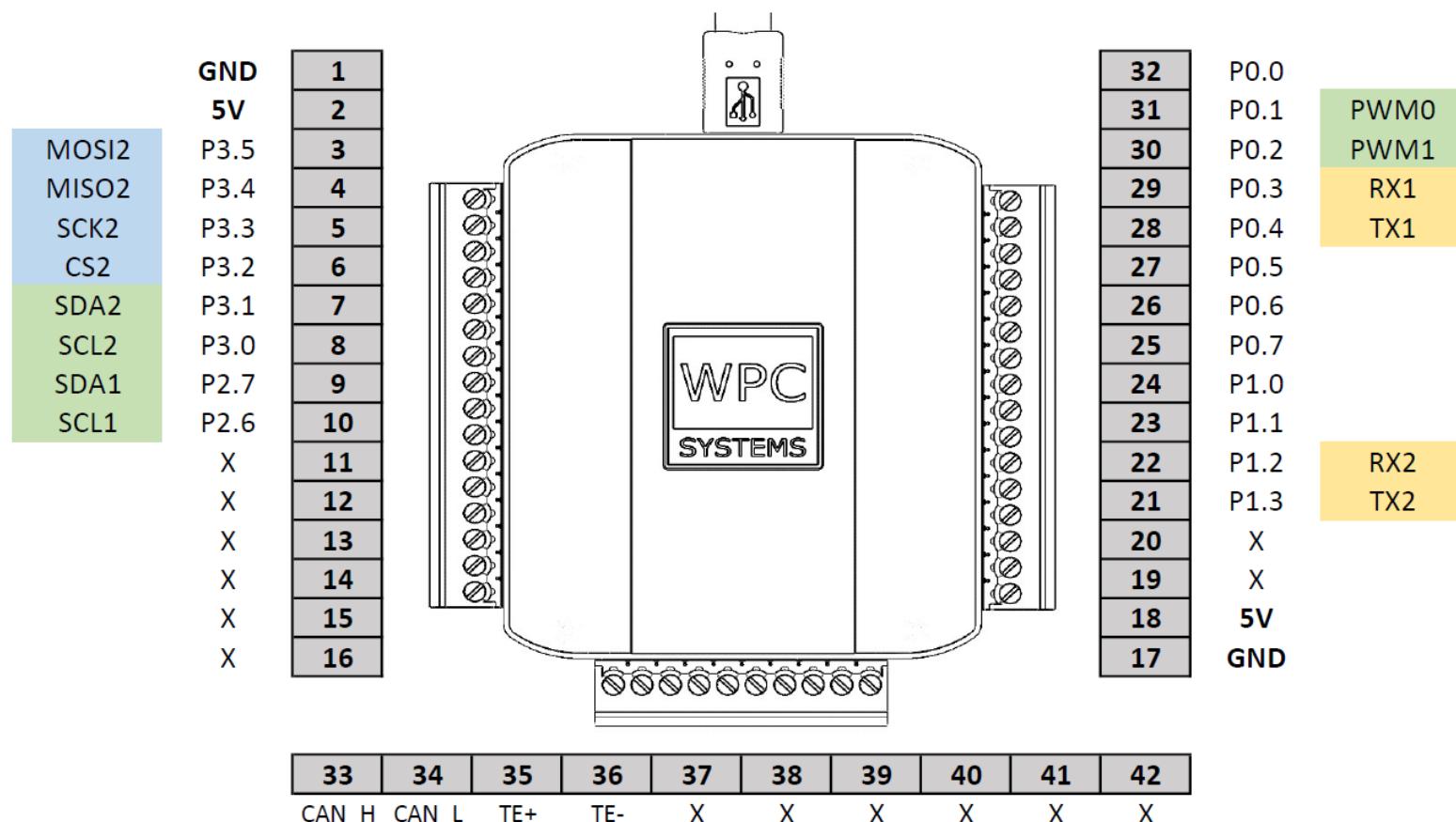
Model feature (Communication)



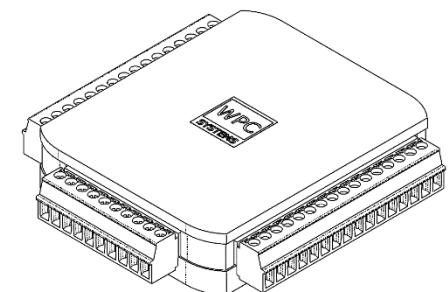
Model: WPC-USB-DAQ-CD
3.3V DIO (5V tolerant)
SPI / I2C / UART
1Mbps CAN bus

WPC-USB-DAQ-CD

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



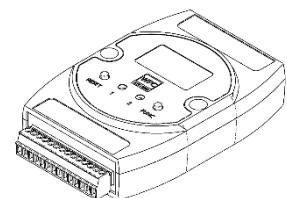
Digital + CAN



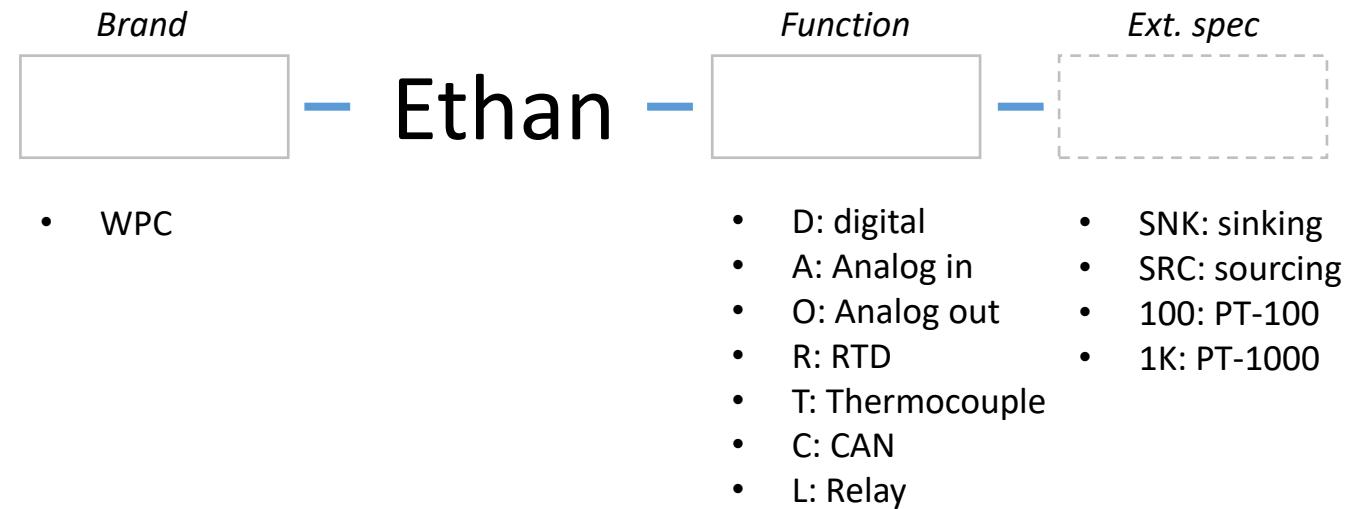
Ethernet DAQs (Ethan)

Industrial digital I/O

Analog I/O



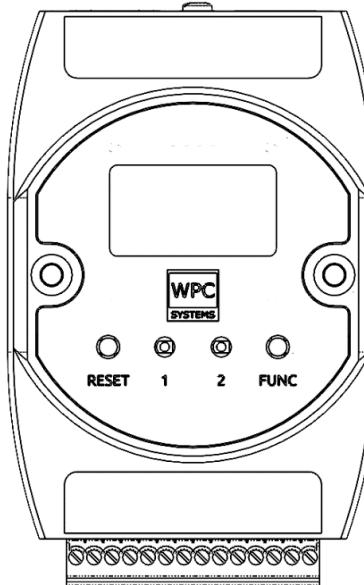
Model naming rule for Ethan



Model selection guide

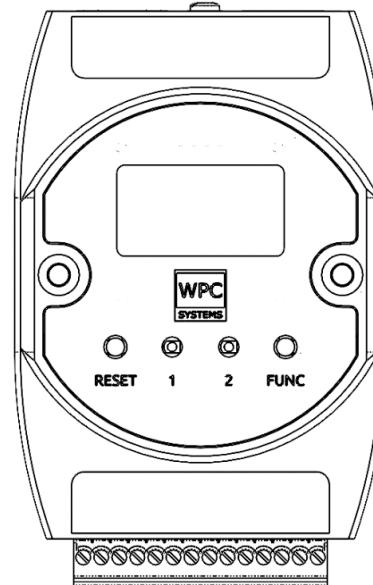
Model: WPC-Ethan-D

10/100 cable Ethernet
8ch 24V digital input (NPN/PNP)
6ch 24V digital output (NPN/PNP)



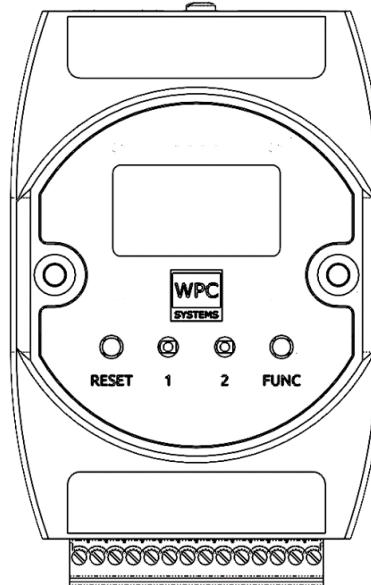
Model: WPC-Ethan-A

10/100 cable Ethernet
8ch simultaneous voltage input
Max sampling rate: 20KHz
+/-10V voltage input range



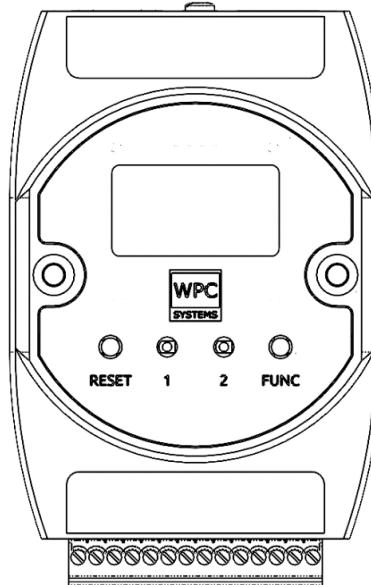
Model: WPC-Ethan-L

10/100 cable Ethernet
6ch high quality mechanical relay
4ch Form-A (NO), 2ch Form-C (NO+NC)
Max voltage: 220Vdc / 250 Vac
Max current: 1A



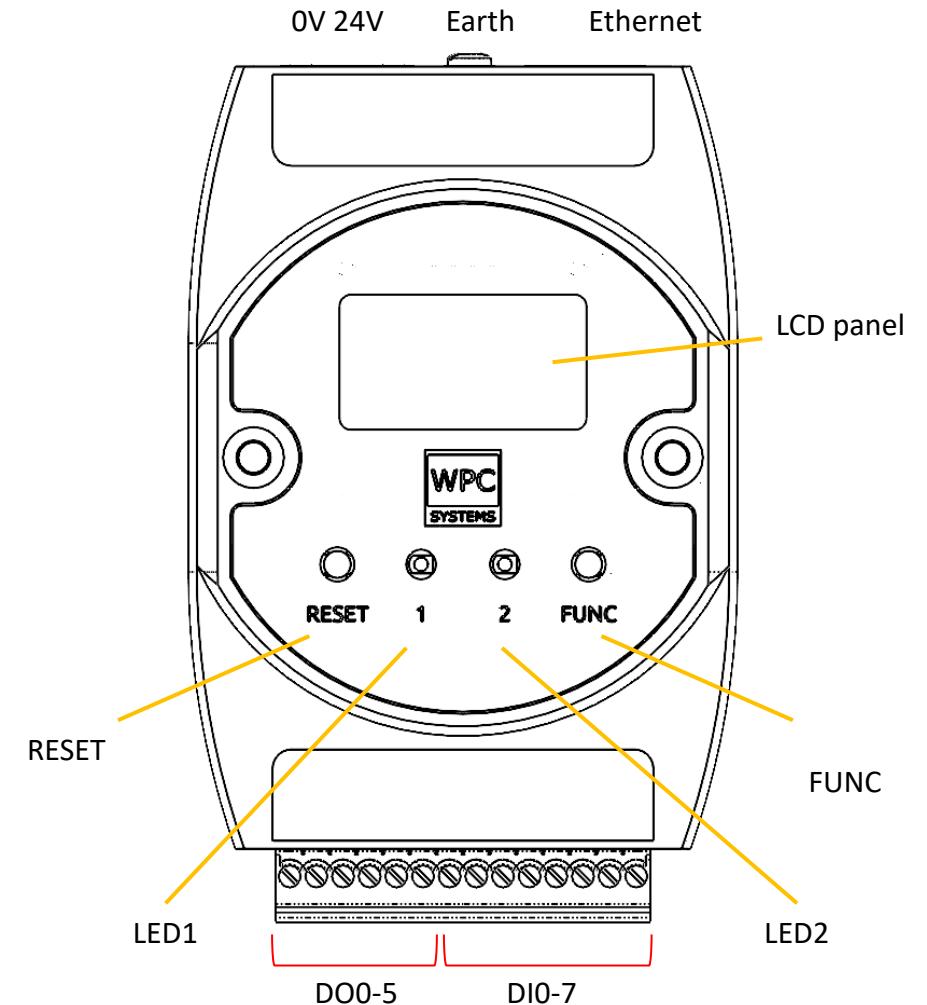
Model: WPC-Ethan-O

10/100 cable Ethernet
8ch voltage output
Max update rate: 1KHz
+/-10V voltage input range



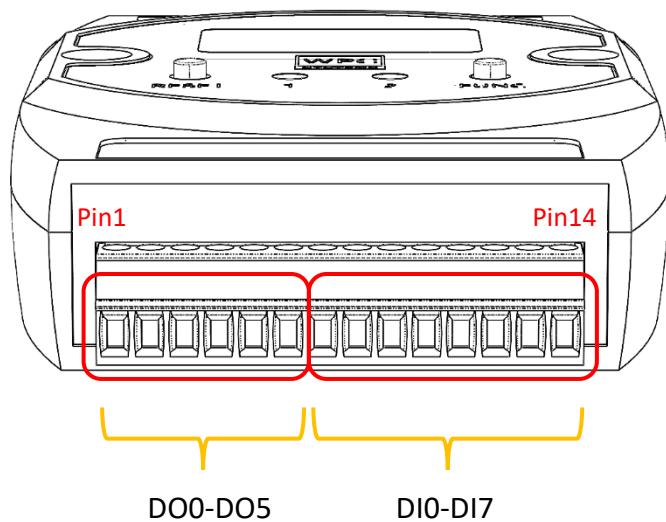
Model: WPC-Ethan-D

- 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)

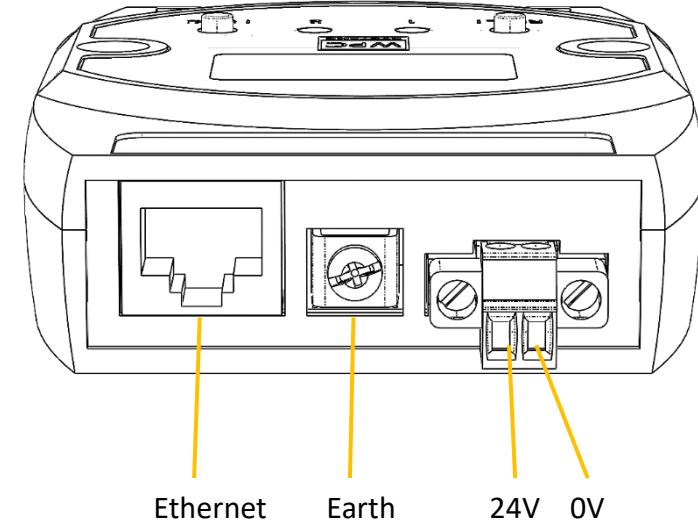


Appearance

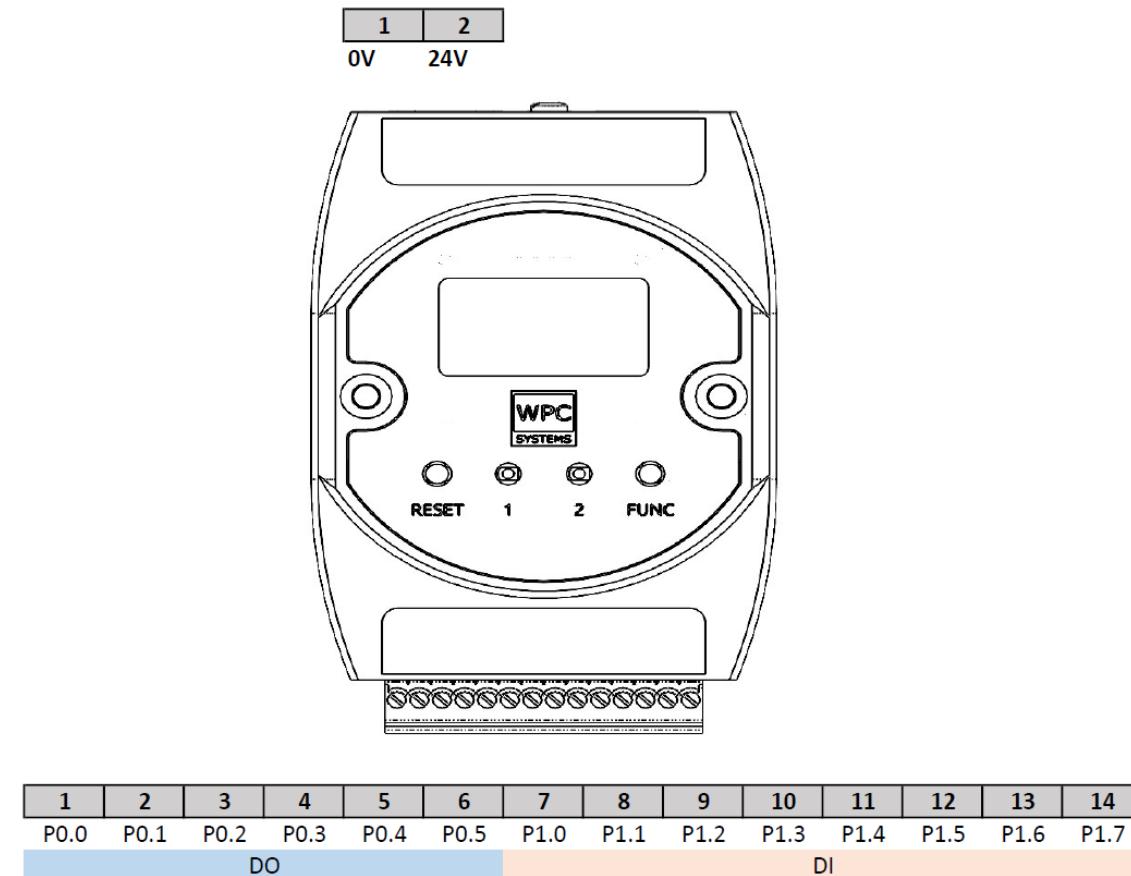
front view



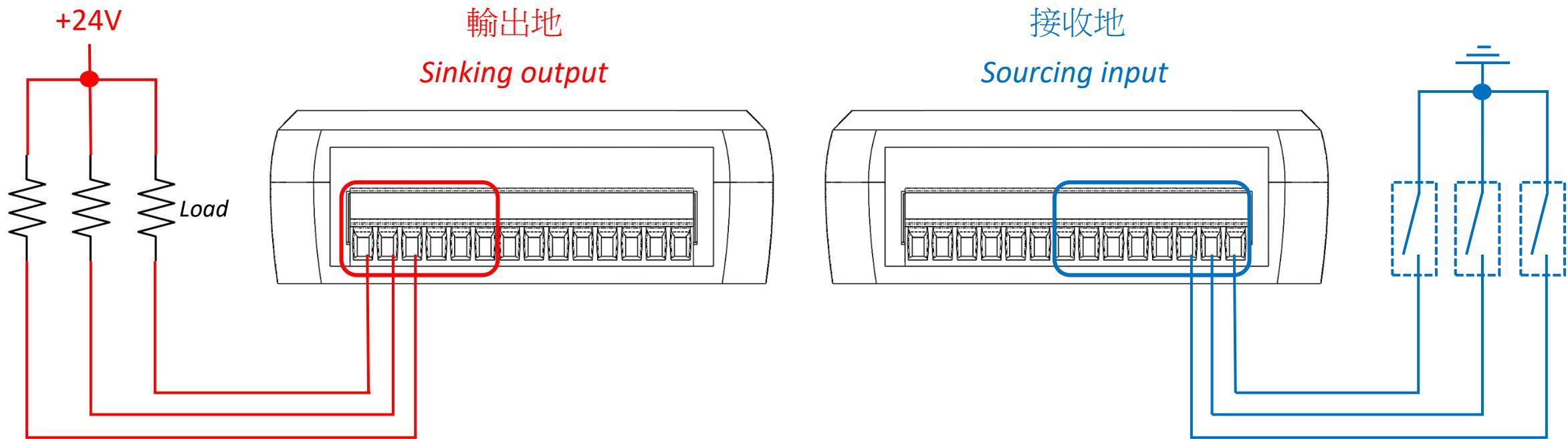
back view



Connector pinout (WPC-Ethan-D)



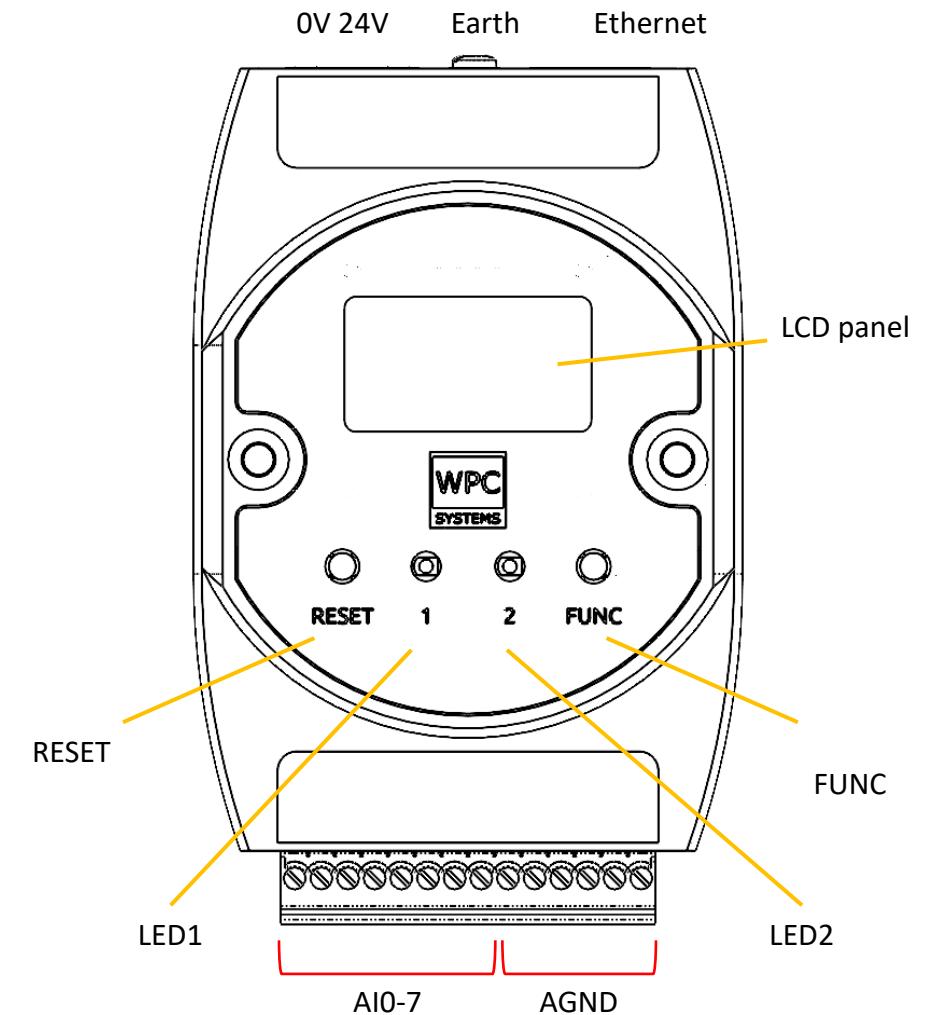
Signal connection



Model: WPC-Ethan-A

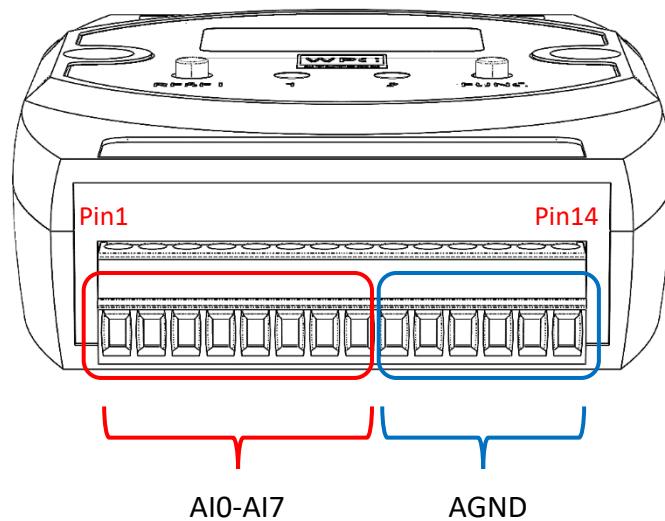
- 10/100 T-based Ethernet interface
- 8ch simultaneous voltage input
- Max sampling rate: 20KHz
- +/-10V voltage input range
- Power input: 24VDC

- 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)

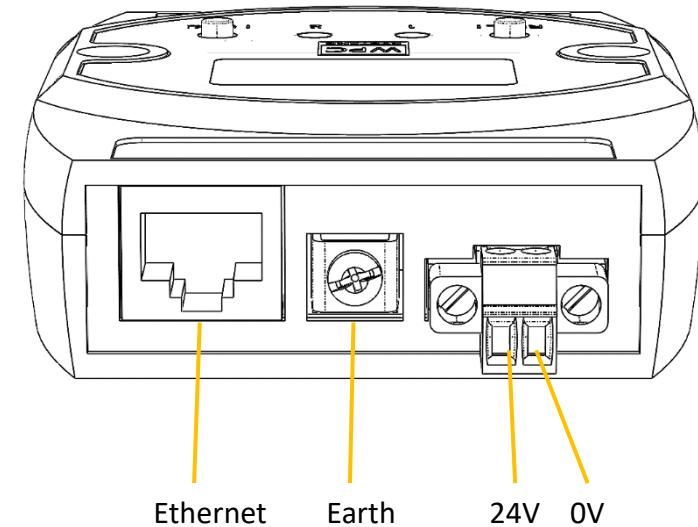


Appearance (front and rear)

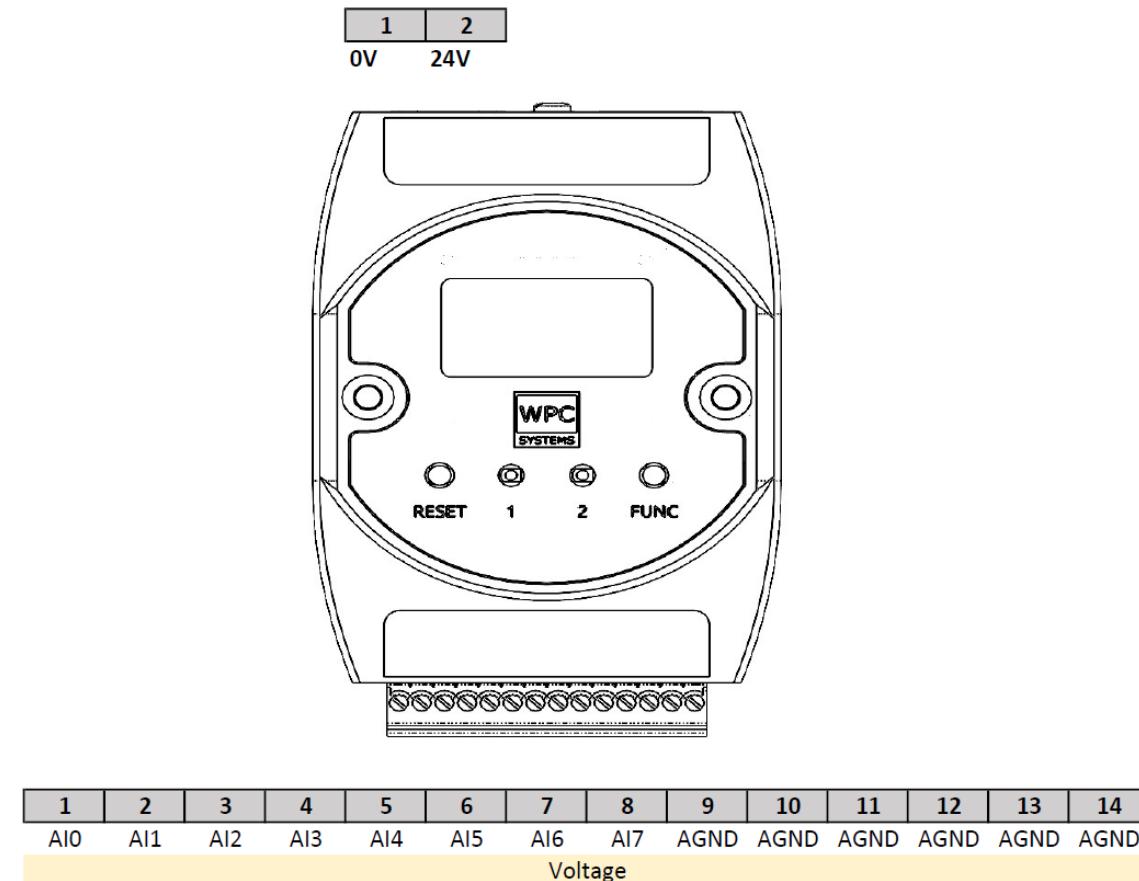
front view



back view



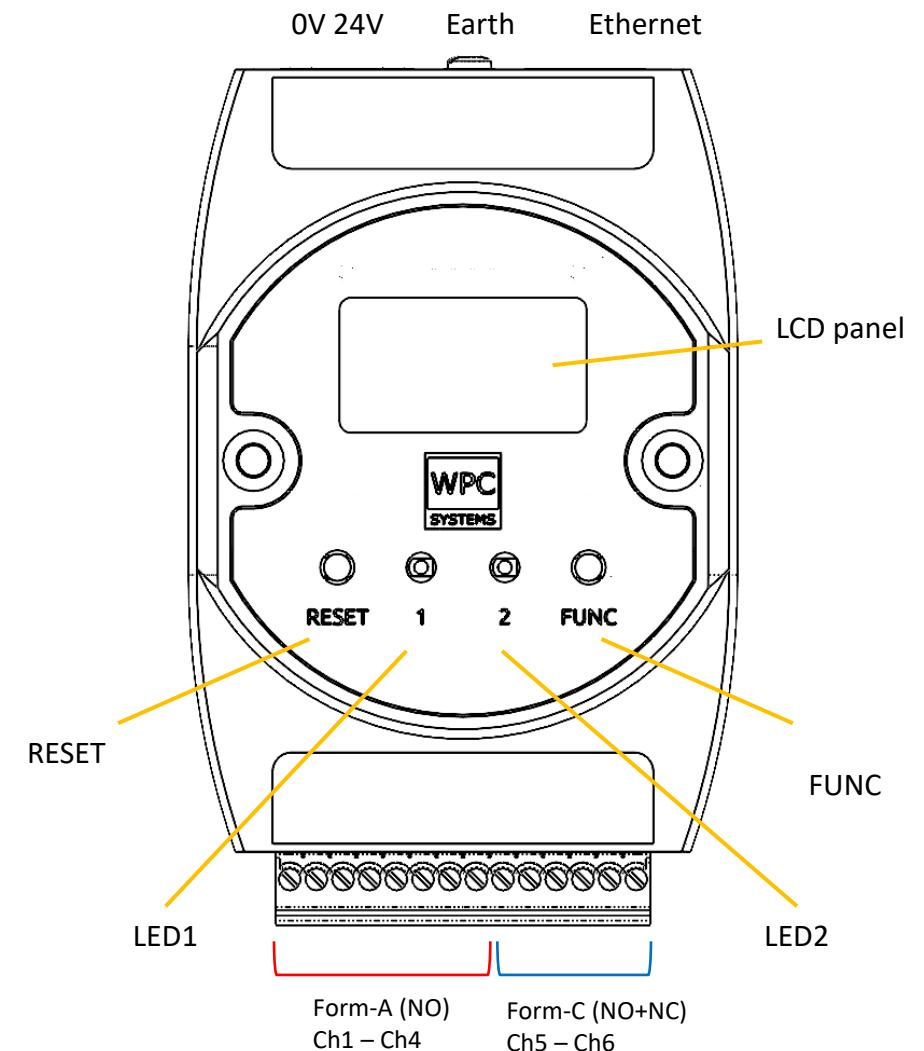
Connector pinout (WPC-Ethan-A)



Model: WPC-Ethan-L

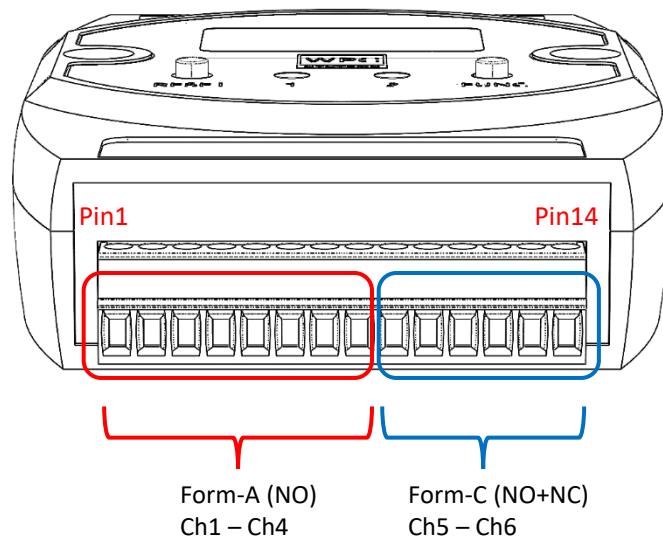
- 10/100 T-based Ethernet interface
- 6ch high quality mechanical relay
- 4ch Form-A (NO), 2ch Form-C (NO+NC)
- Max voltage: 220Vdc / 250 Vac
- Max current: 1A
- Operating time: 2ms (excluding bounce)
- Release time: 1ms (excluding bounce)
- Power input: 24VDC

- 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)

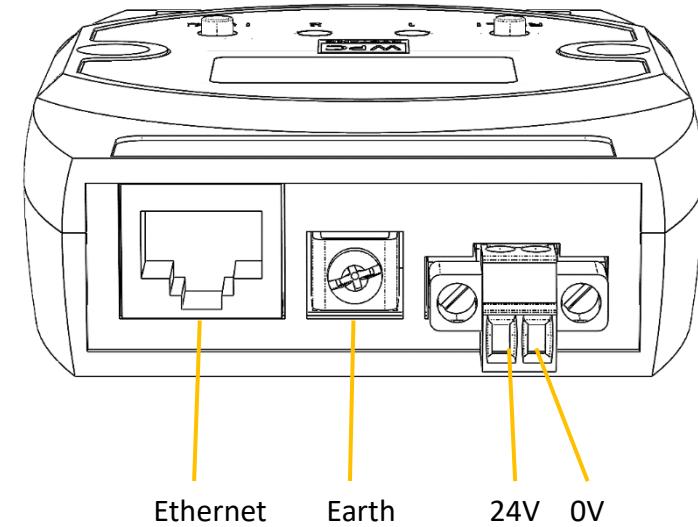


Appearance (front and rear)

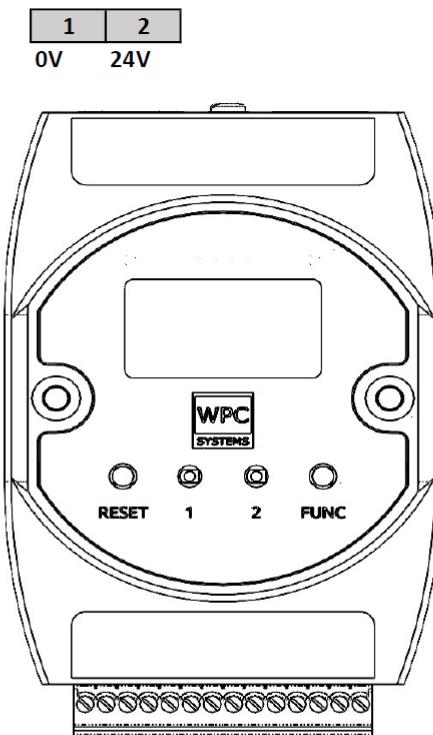
front view



back view

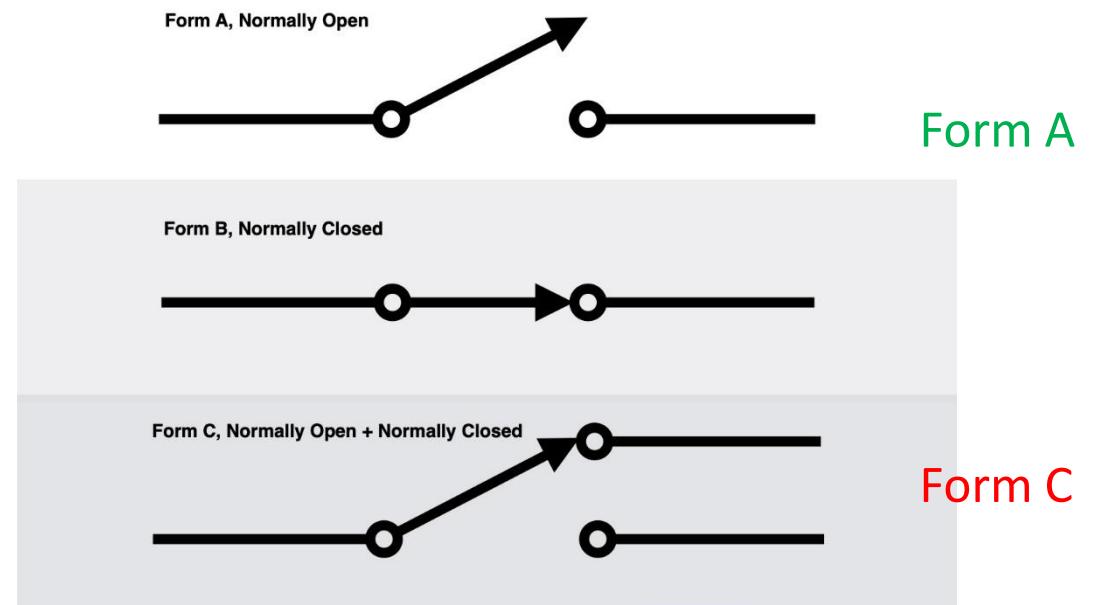


Connector pinout (WPC-Ethan-L)



1	2	3	4	5	6	7	8	9	10	11	12	13	14
COM1	NO1	COM2	NO2	COM3	NO3	COM4	NO4	NC5	COM5	NO5	NC6	COM6	NO6
Ch1		Ch2		Ch3		Ch4			Ch5			Ch6	

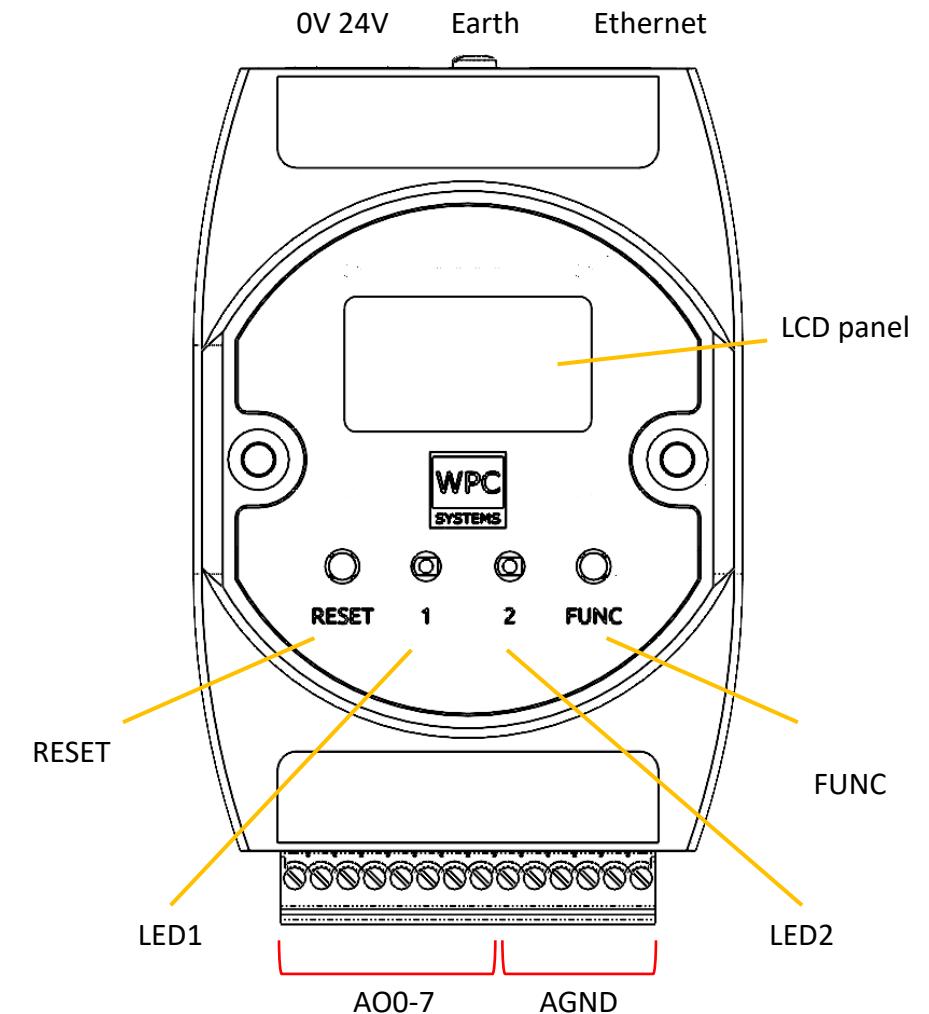
Below the table, the pins are labeled as follows:
 Pin 1: Form A
 Pin 2: Form A
 Pin 3: Form A
 Pin 4: Form A
 Pin 5: Form C
 Pin 6: Form C



Model: WPC-Ethan-O

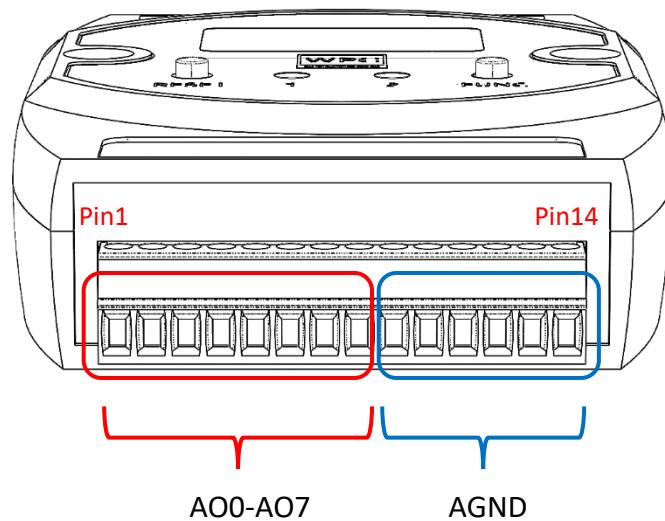
- 10/100 T-based Ethernet interface
- 8ch voltage output
- +/-10V voltage output range
- Max update rate: 1KHz
- Power input: 24VDC

- 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)

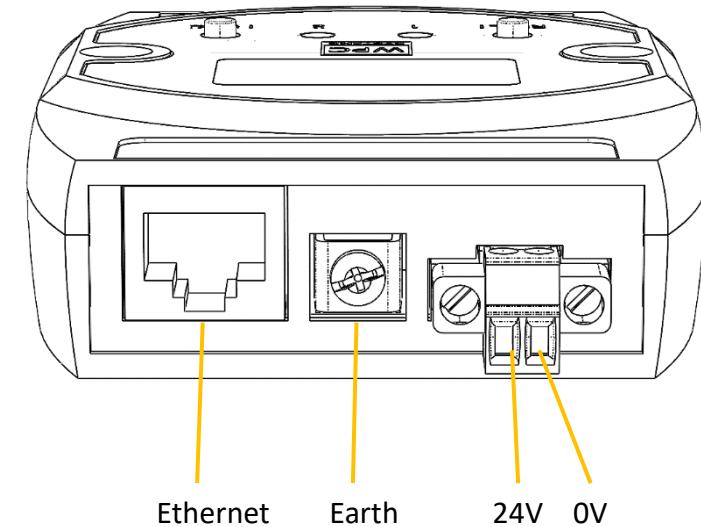


Appearance (front and rear)

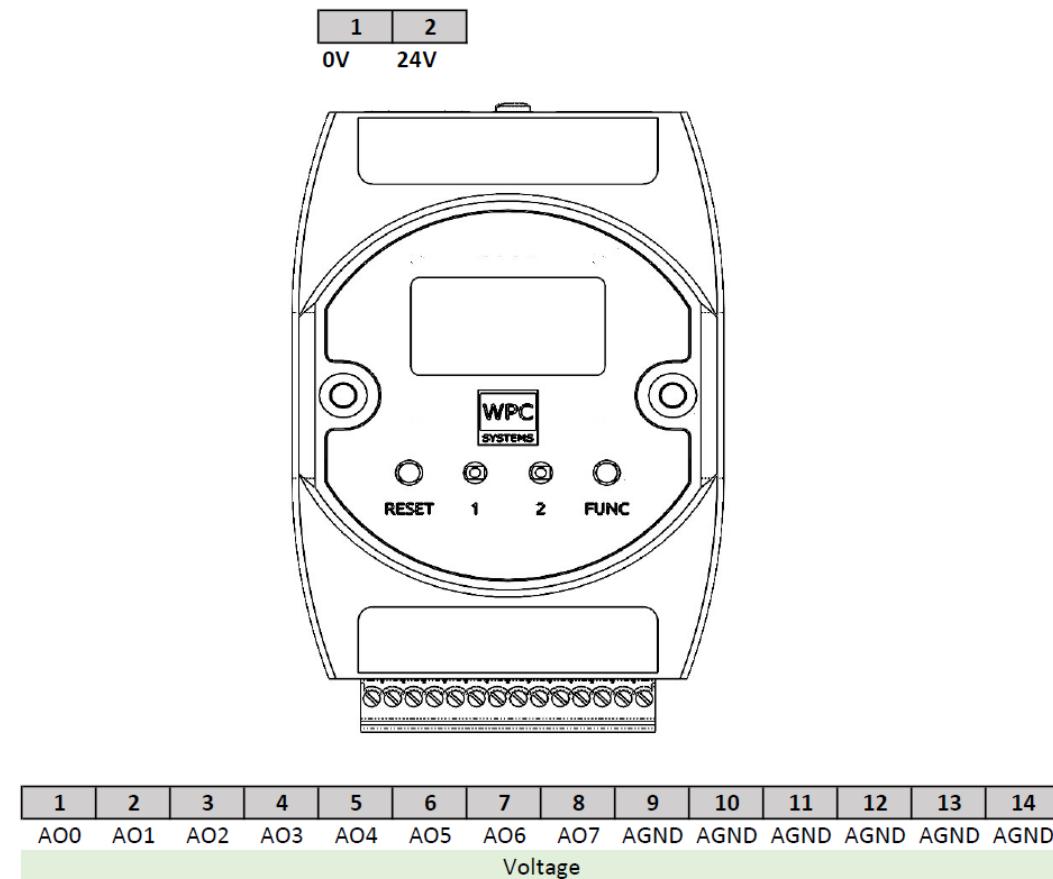
front view



back view

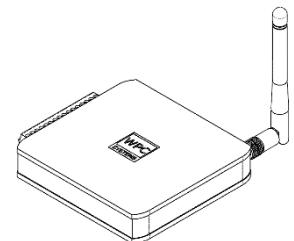


Connector pinout (WPC-Ethan-O)

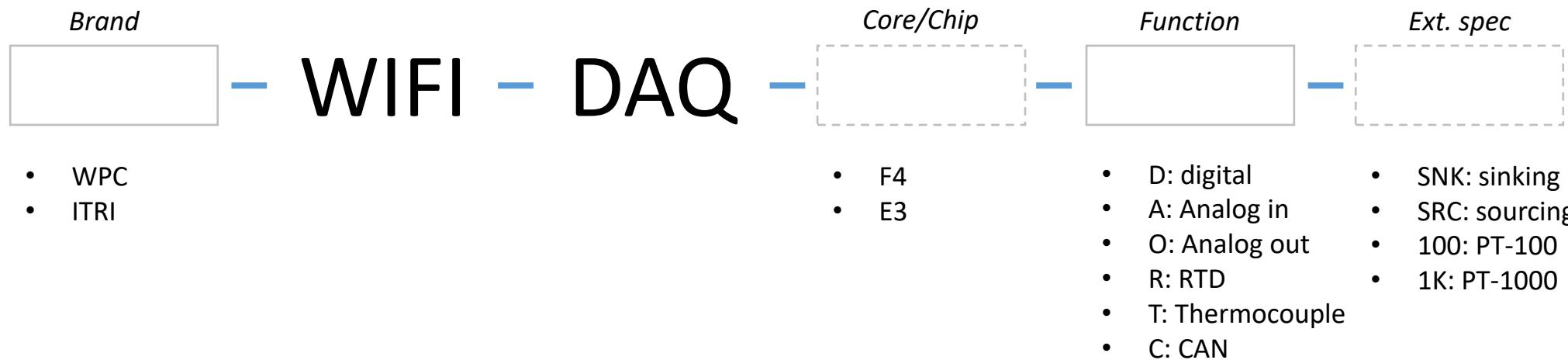


WIFI DAQs

Analog I/O



Model naming rule for WIFI DAQ



Model Feature

Model: WPC-WIFI-DAQ-A

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

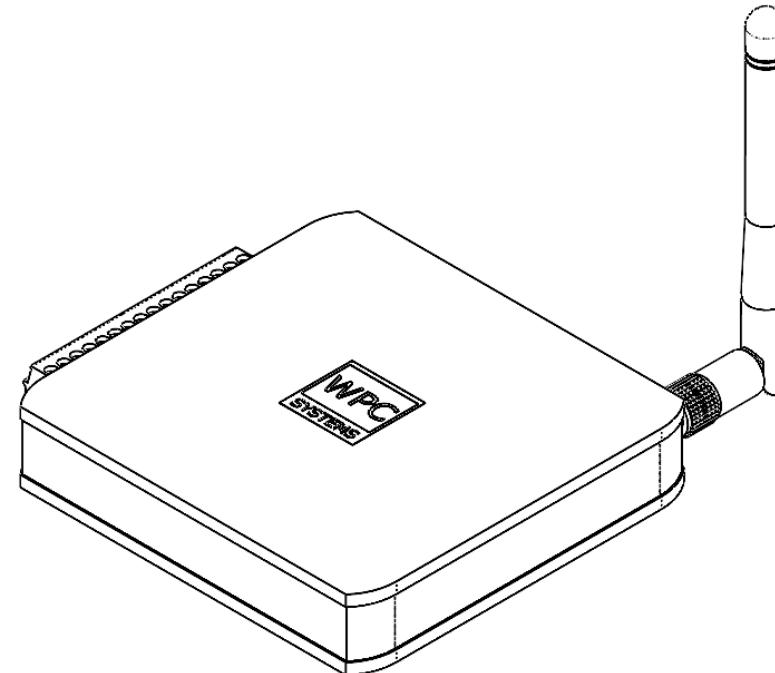
Max sampling rate: 20kSps

Web-based configurator

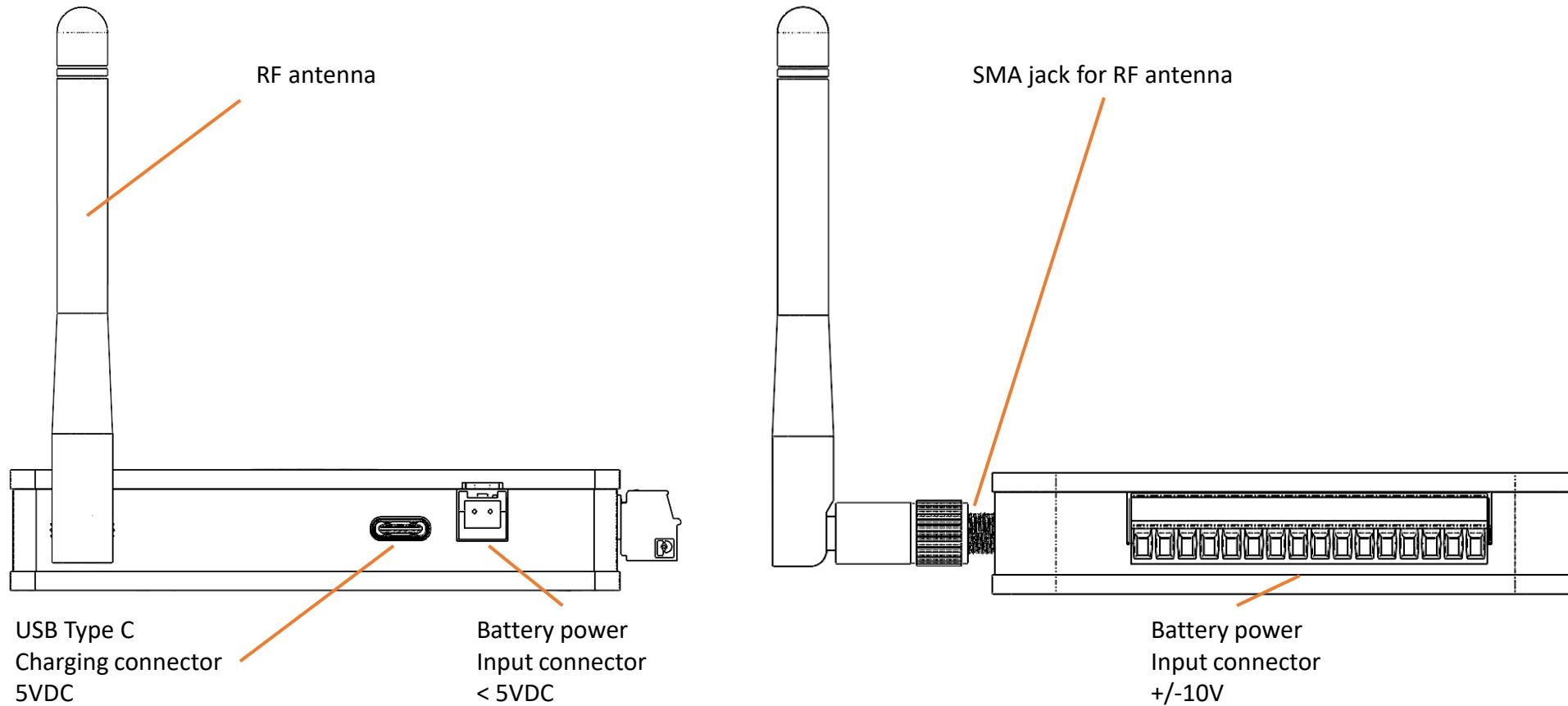
802.11 b/g/n WiFi

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



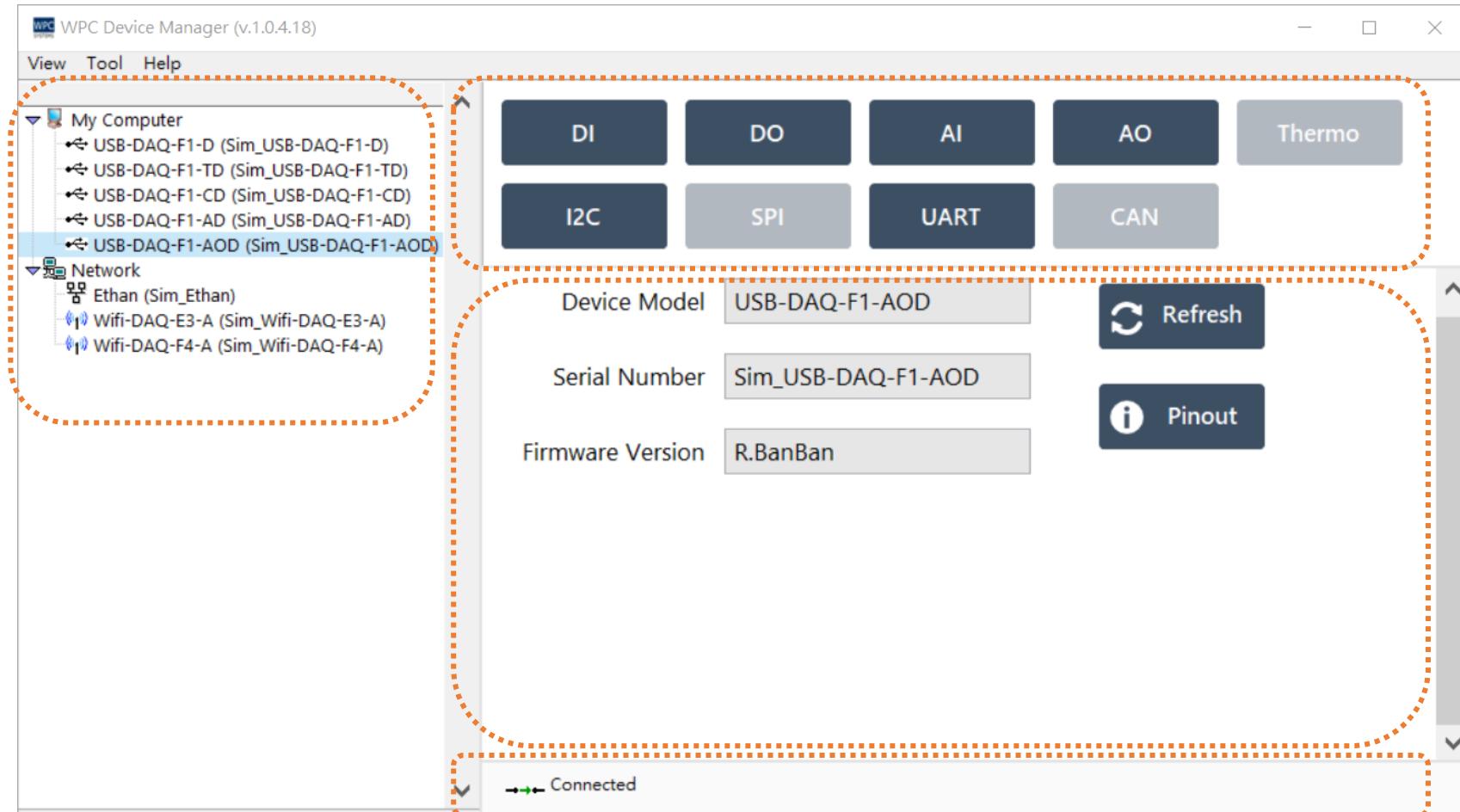
LabVIEW 2015 SP1 Run-time engine

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

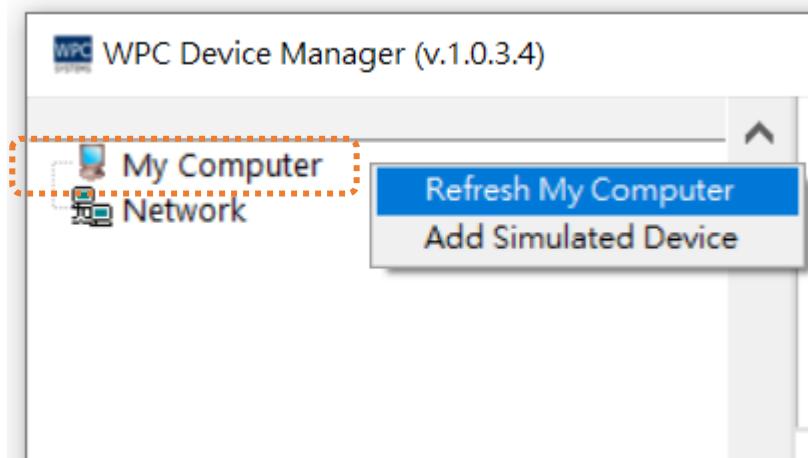


Software front panel (SFP)

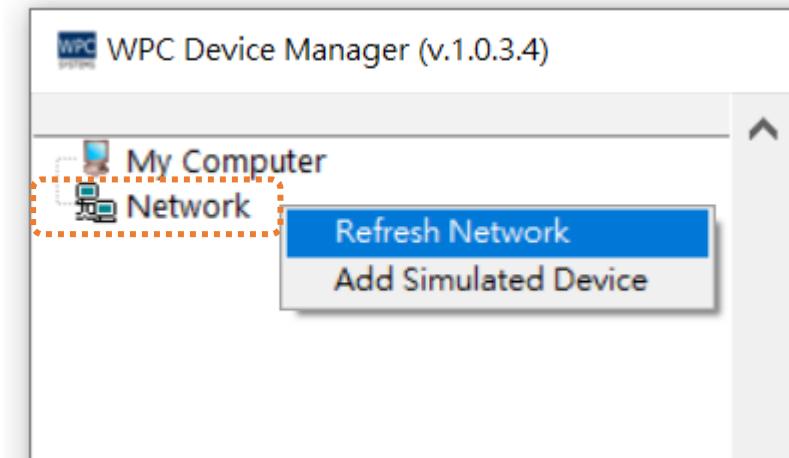
Device info / setting
Firmware update

Status / Message

Search/refresh WPC devices

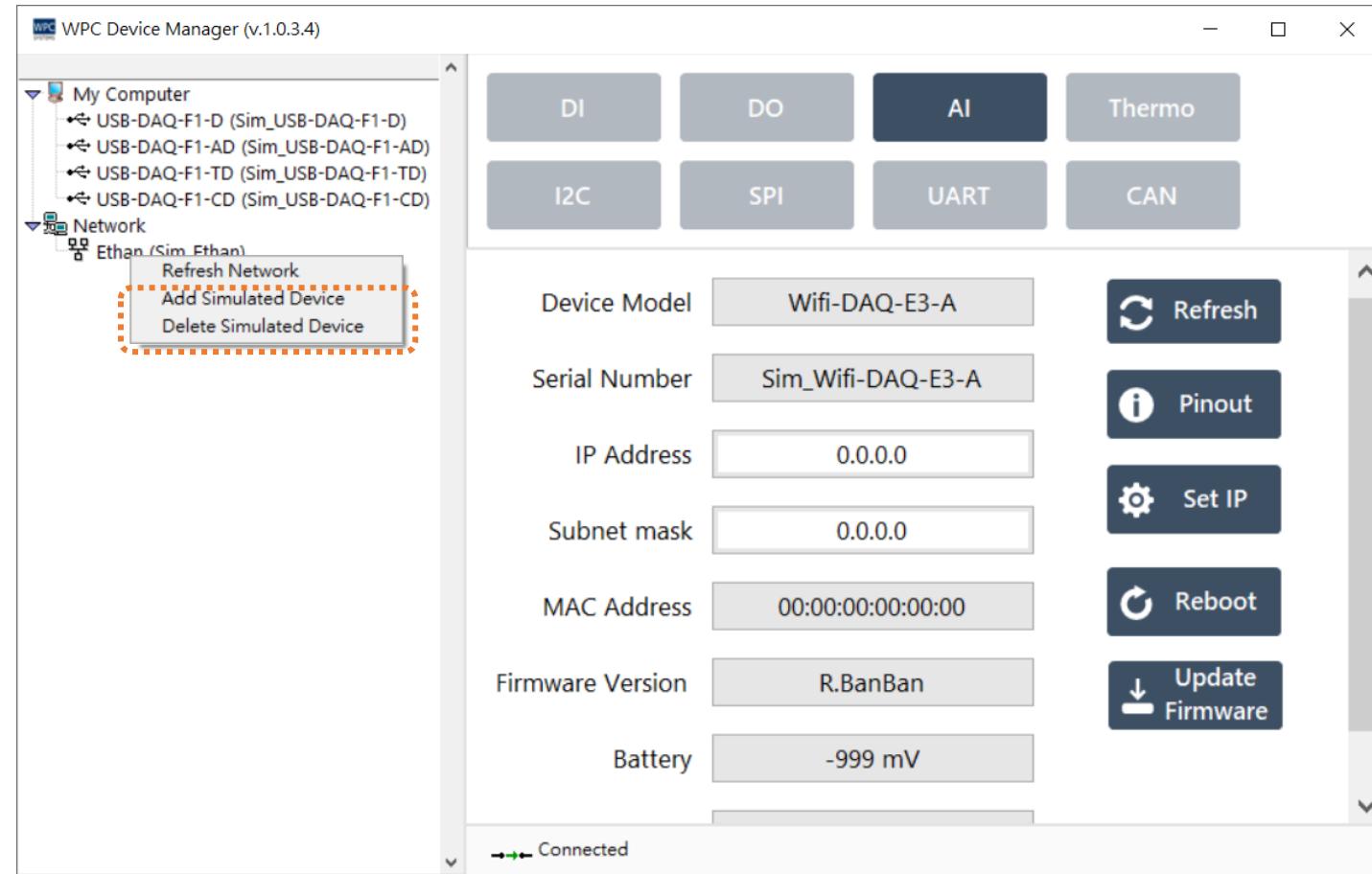


Refresh device list on host PC

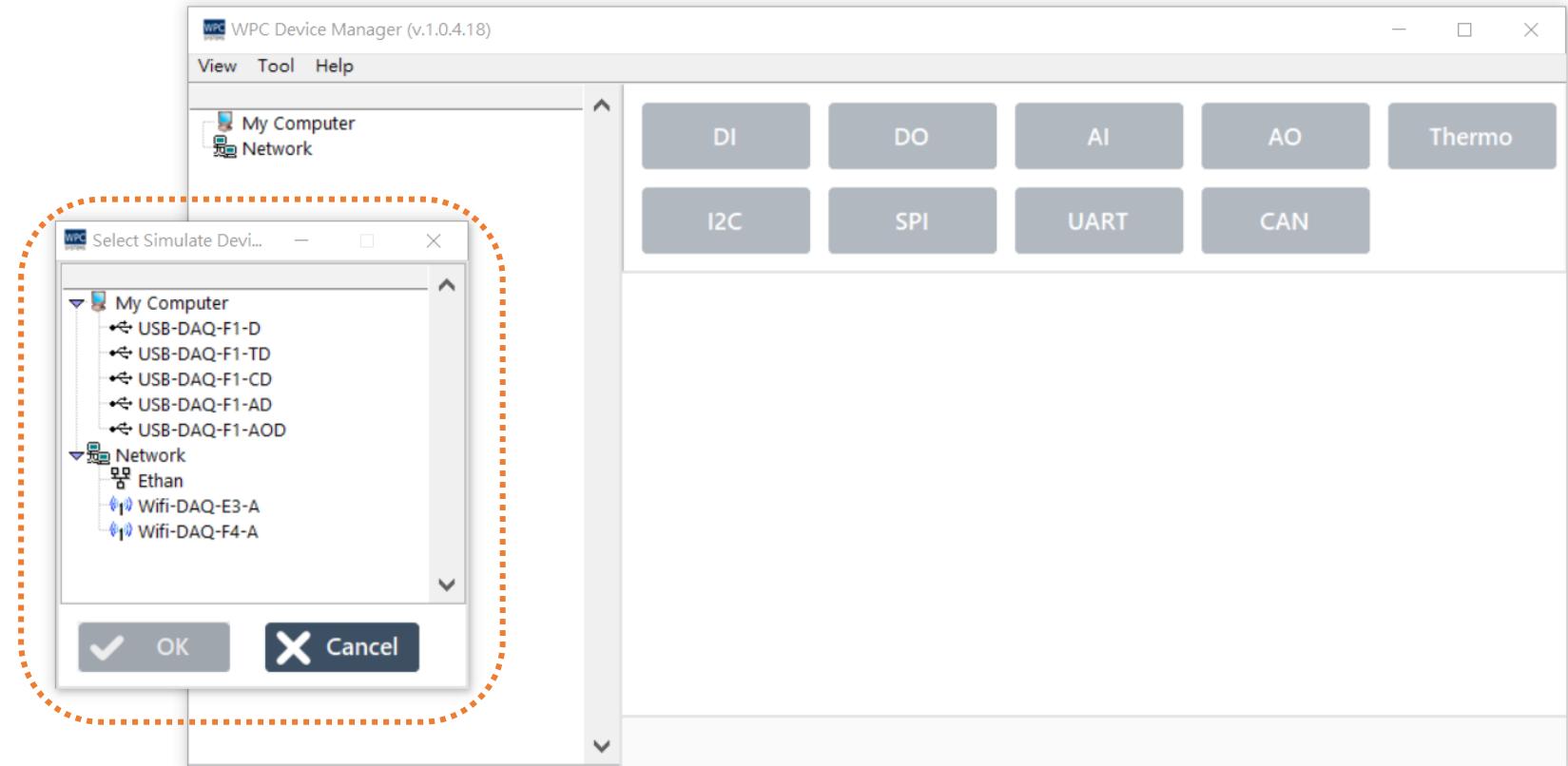
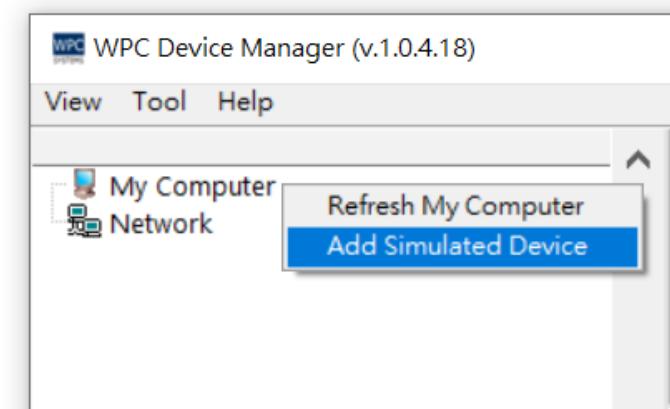


Discover devices on local area network (LAN)

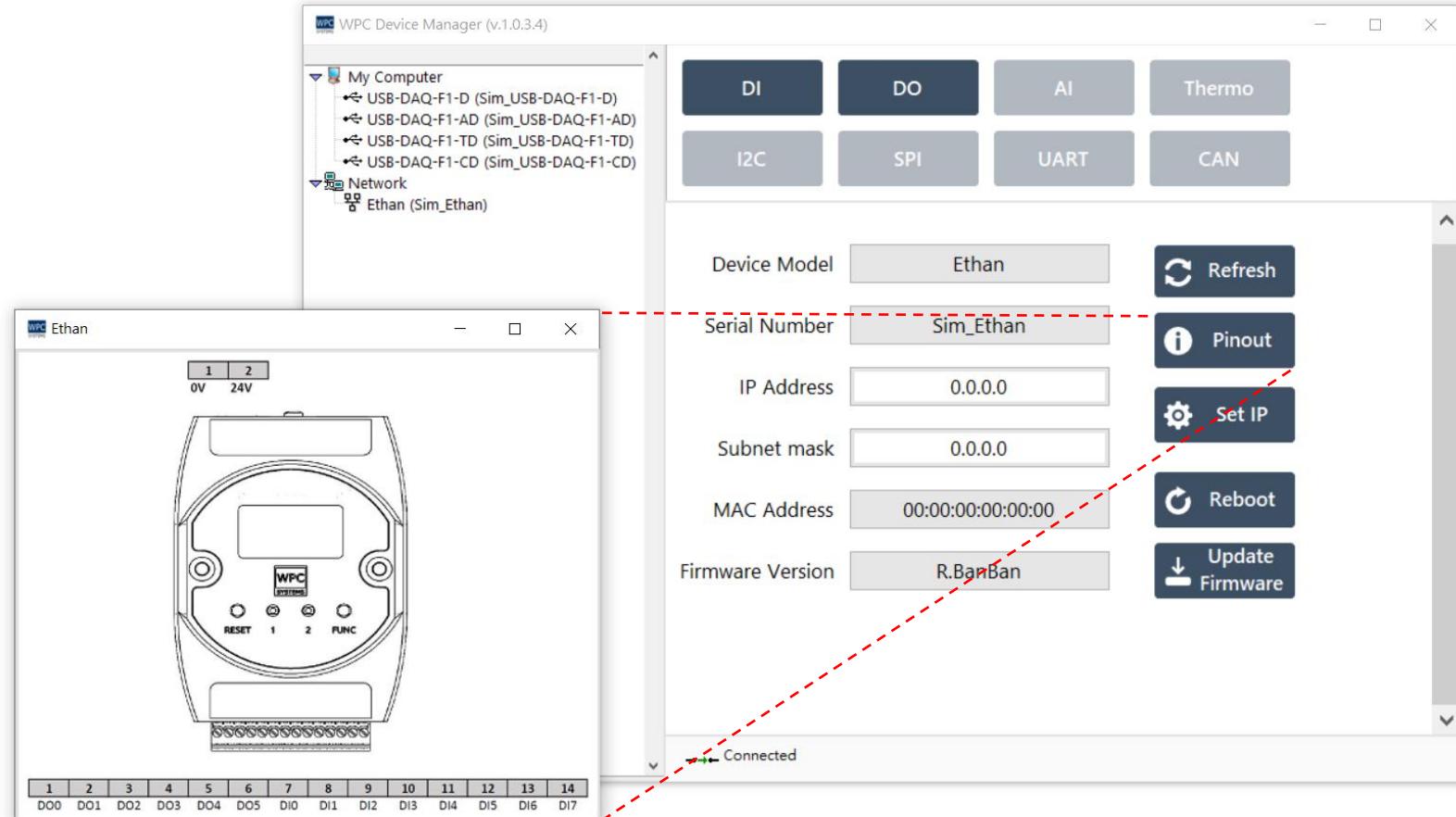
Right-click to add/remove simulated devices



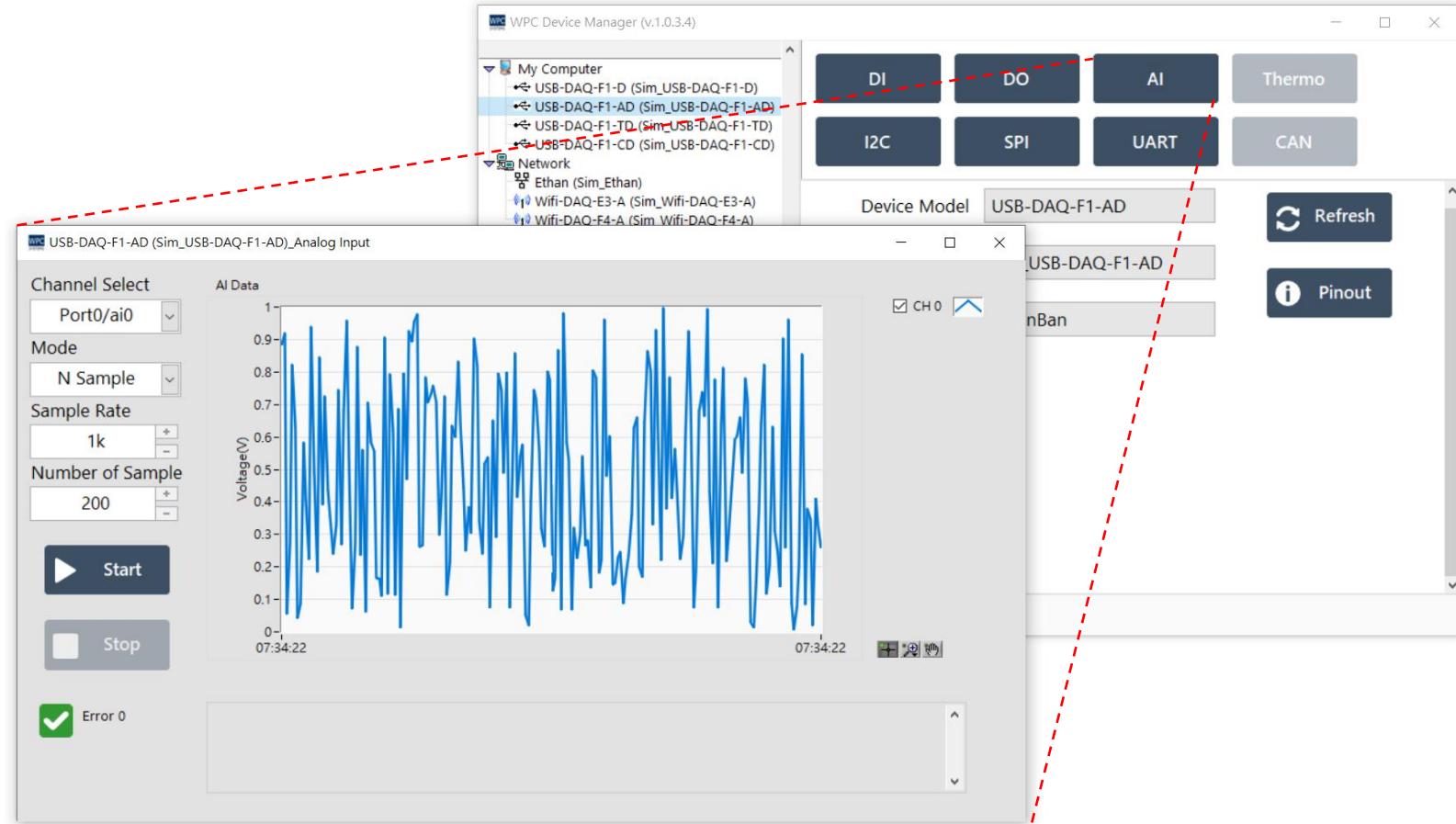
Add simulated devices



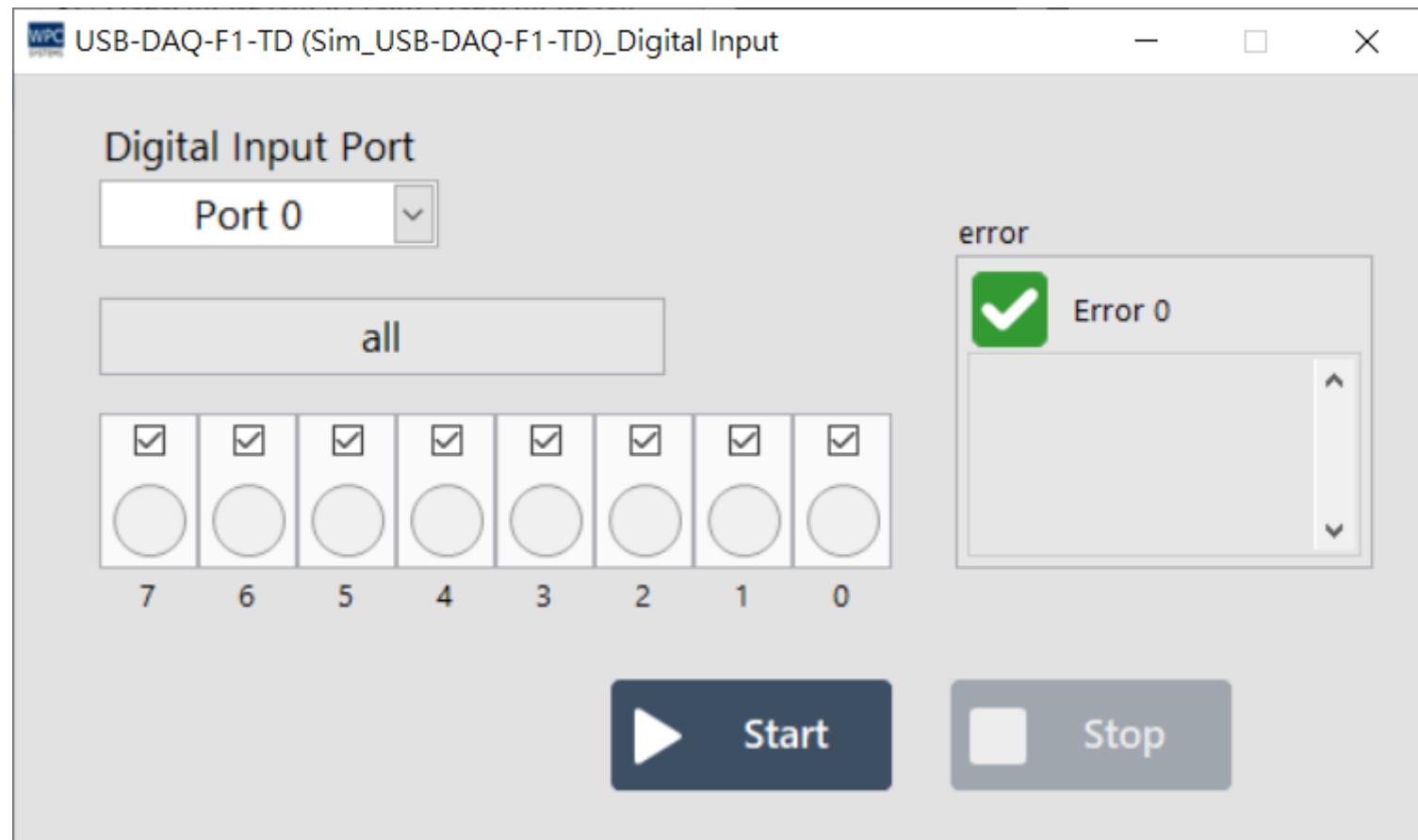
Find device pinout



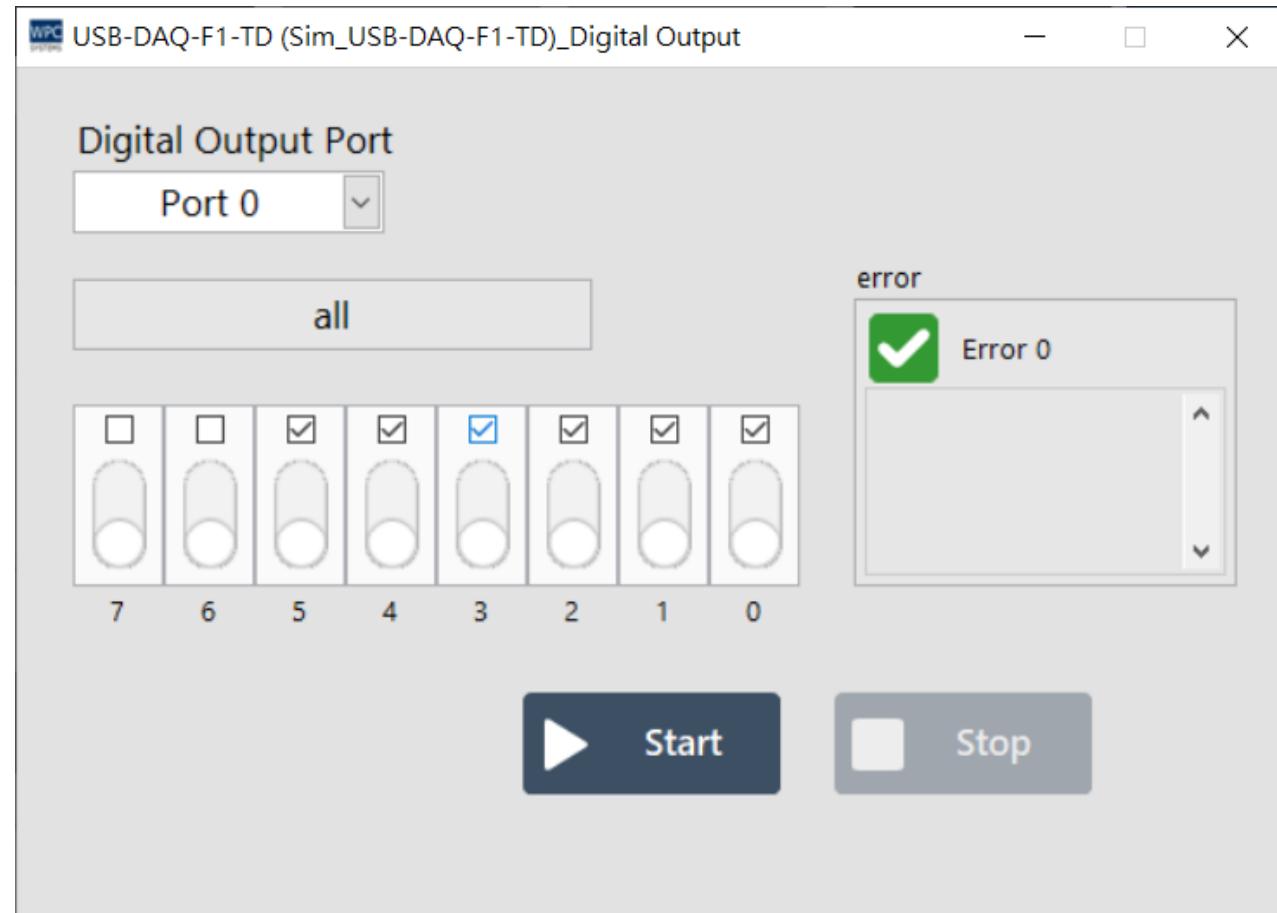
Open test panel - Interact with devices



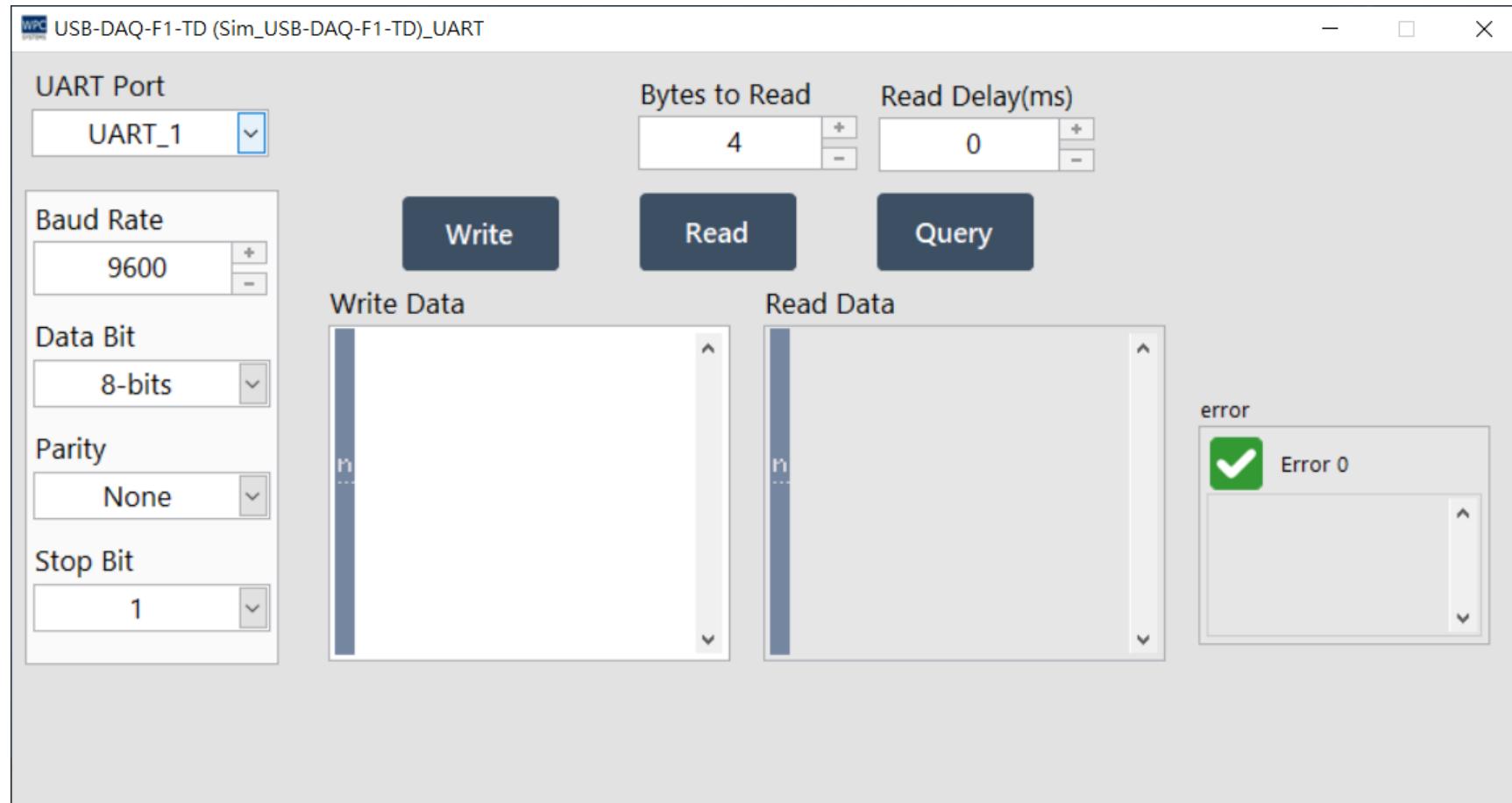
Test panel DI



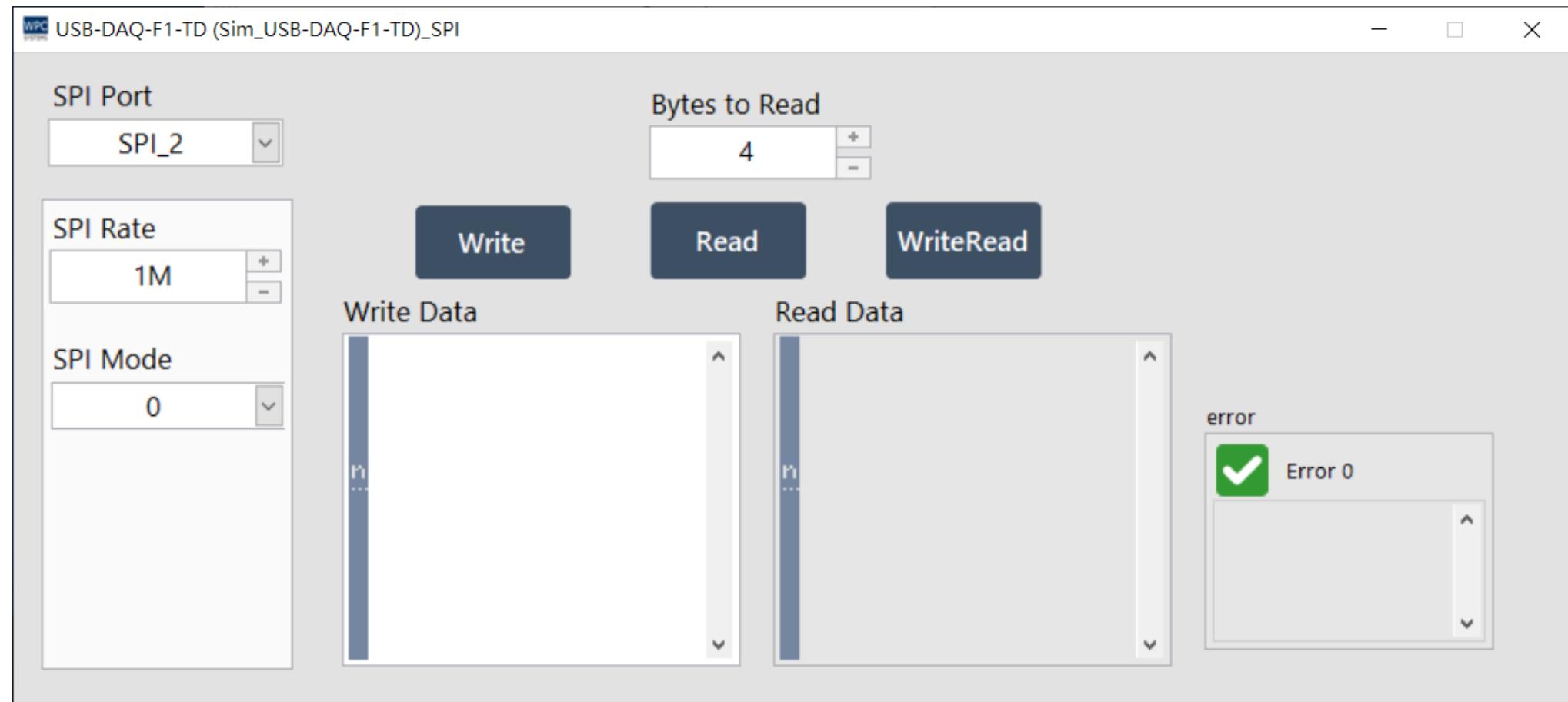
Test panel DO



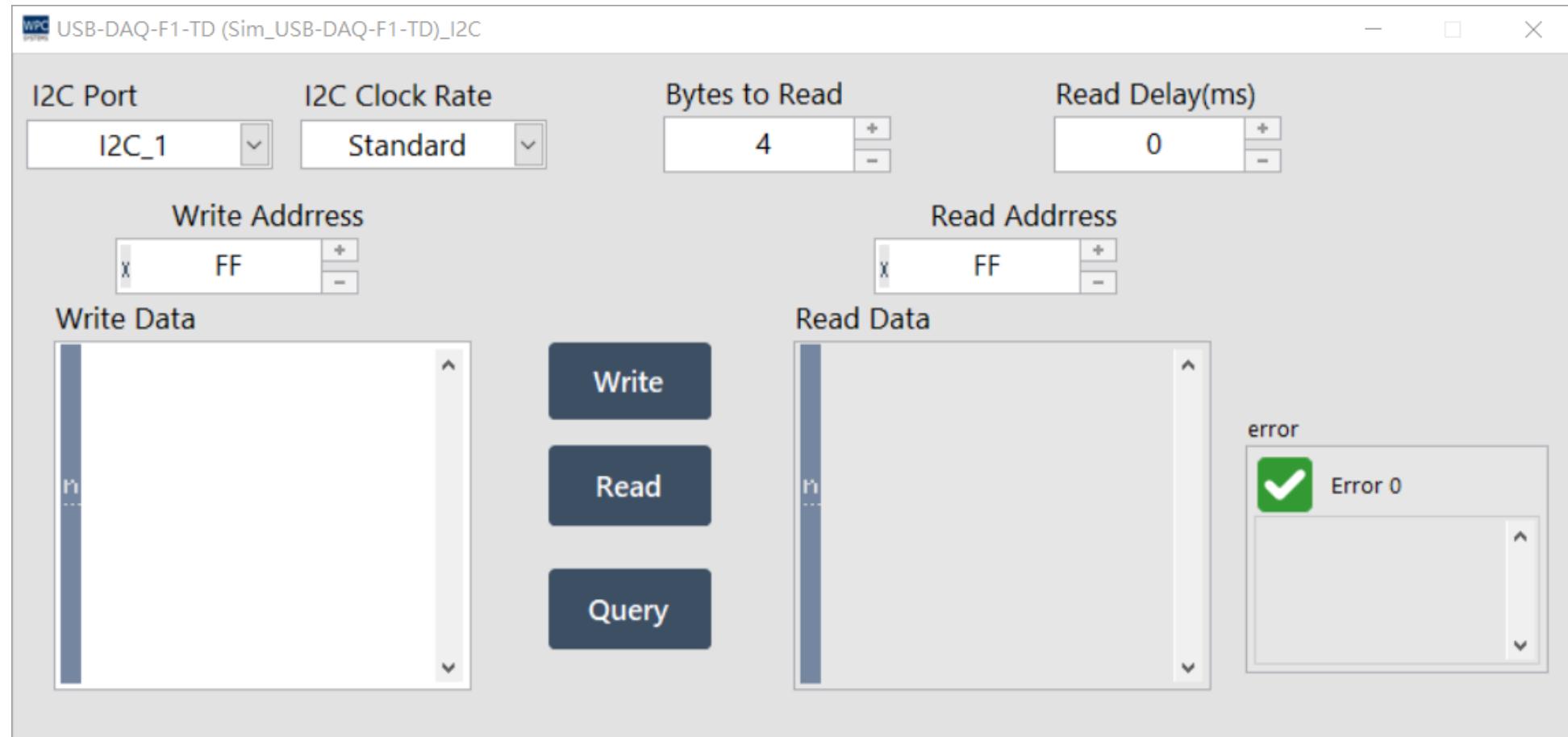
Test panel UART



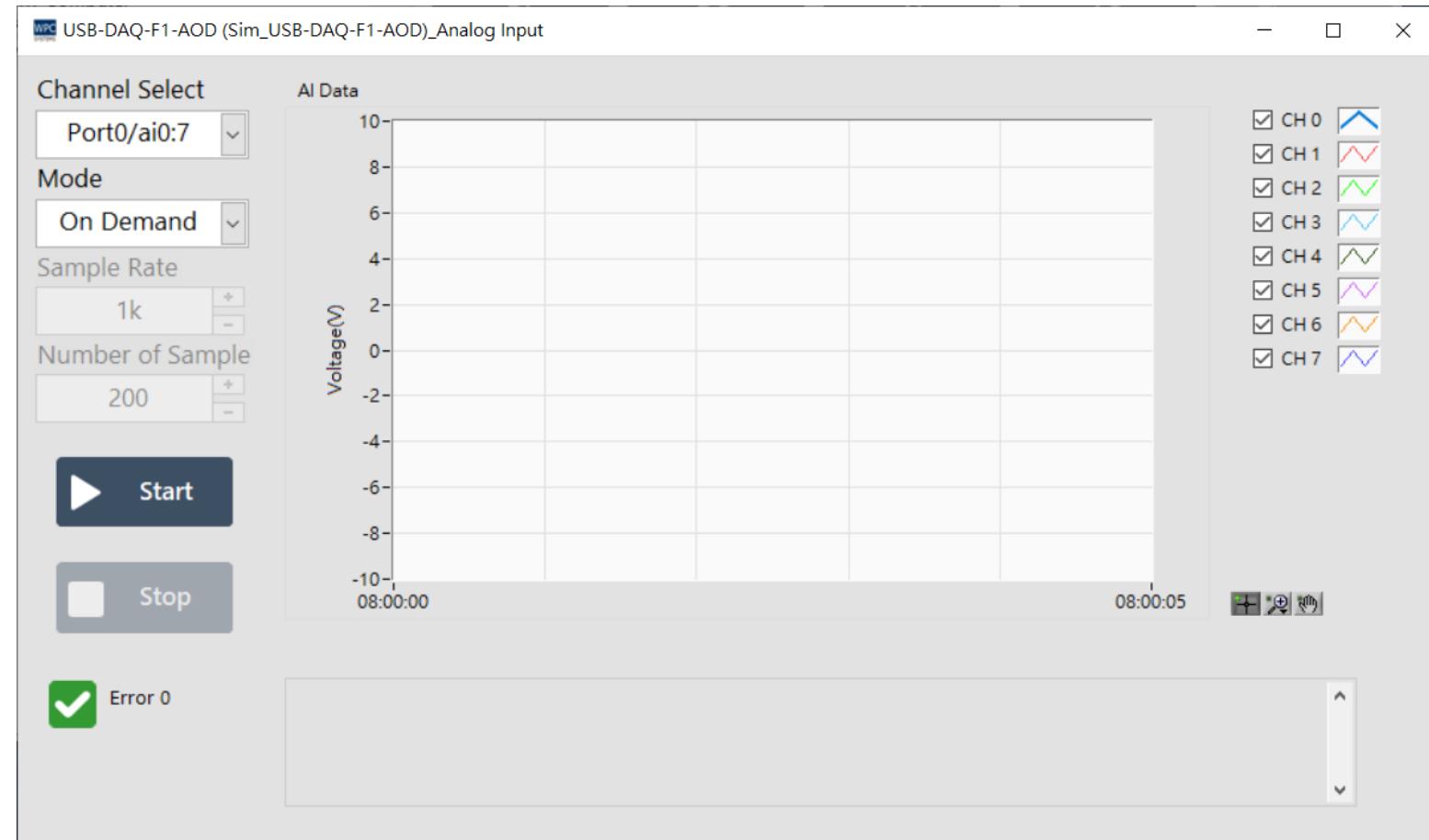
Test panel SPI



Test panel I2C



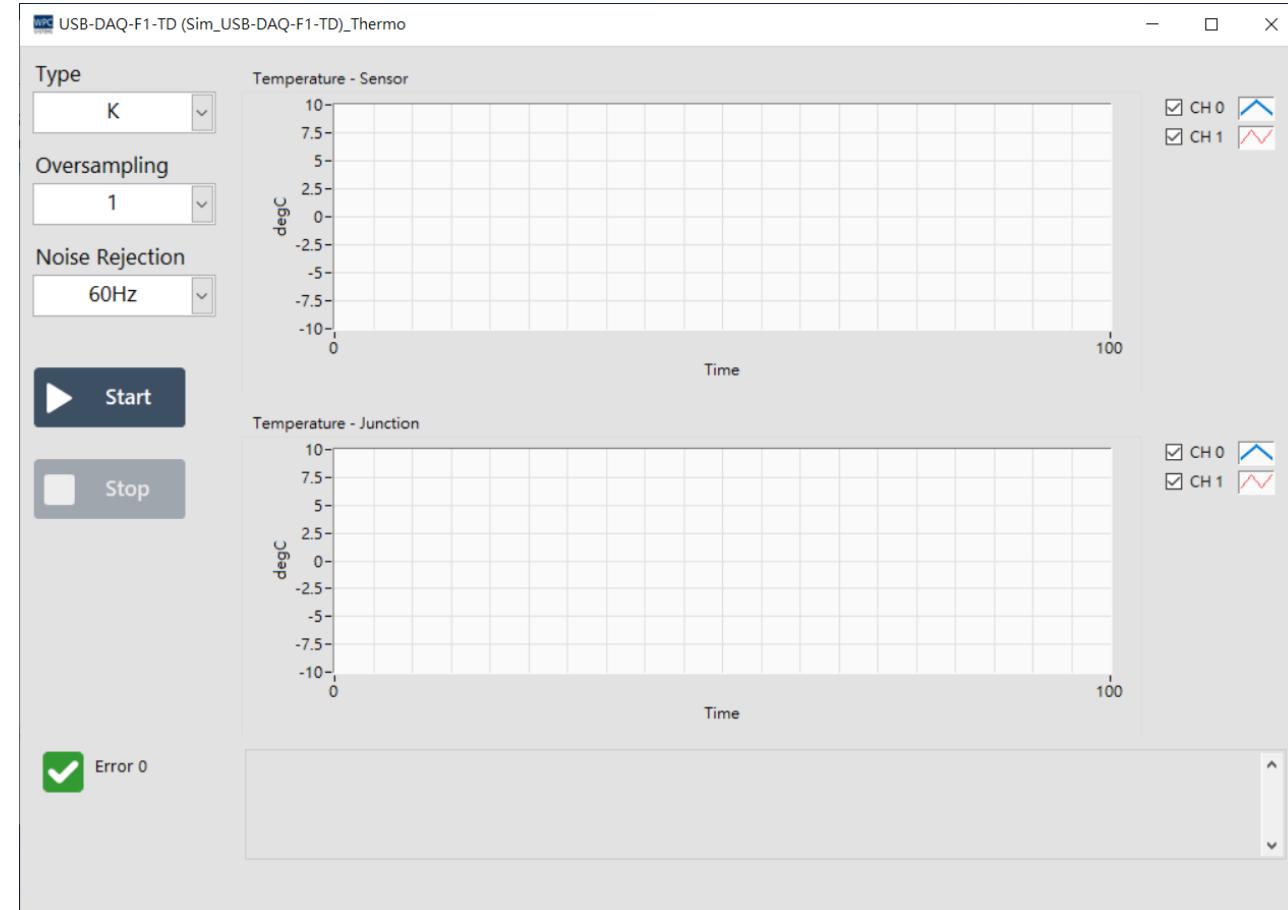
Test panel AI



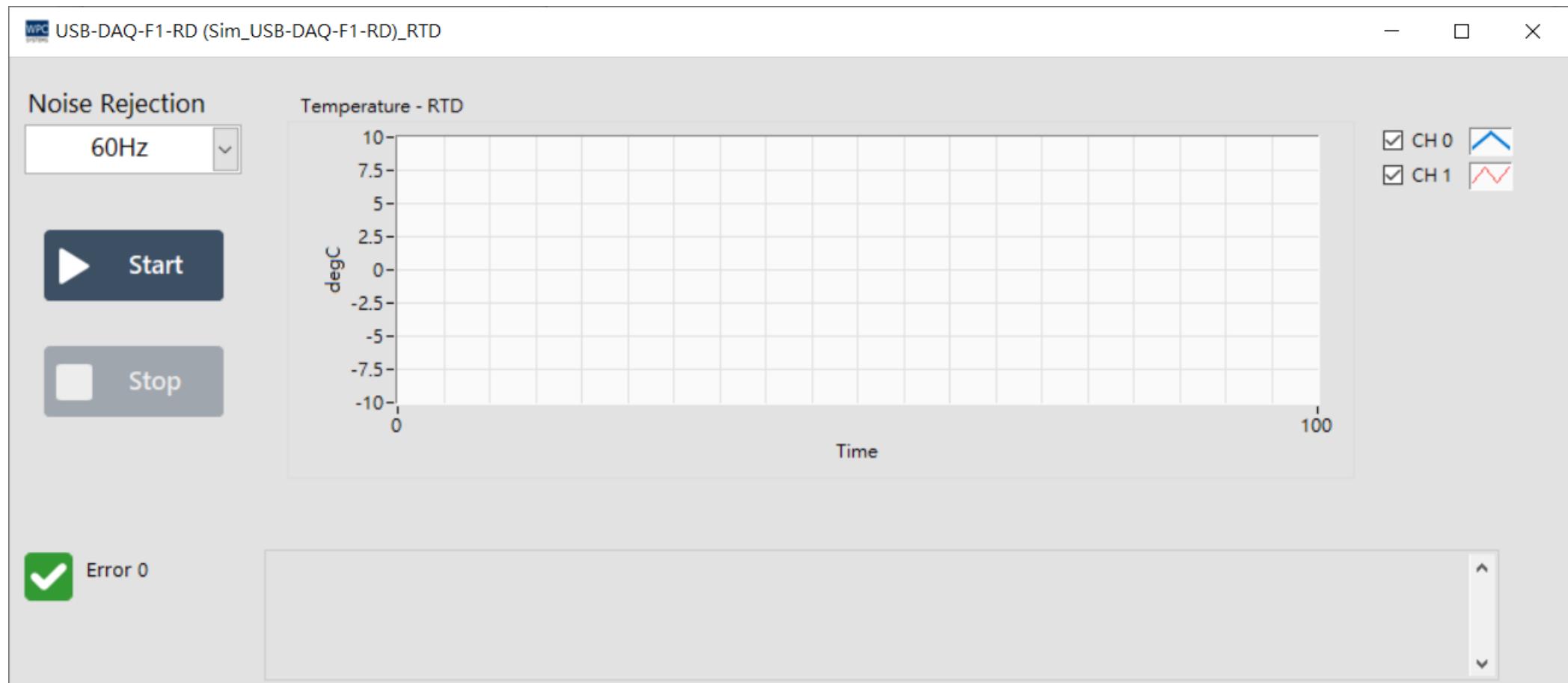
Test panel AO



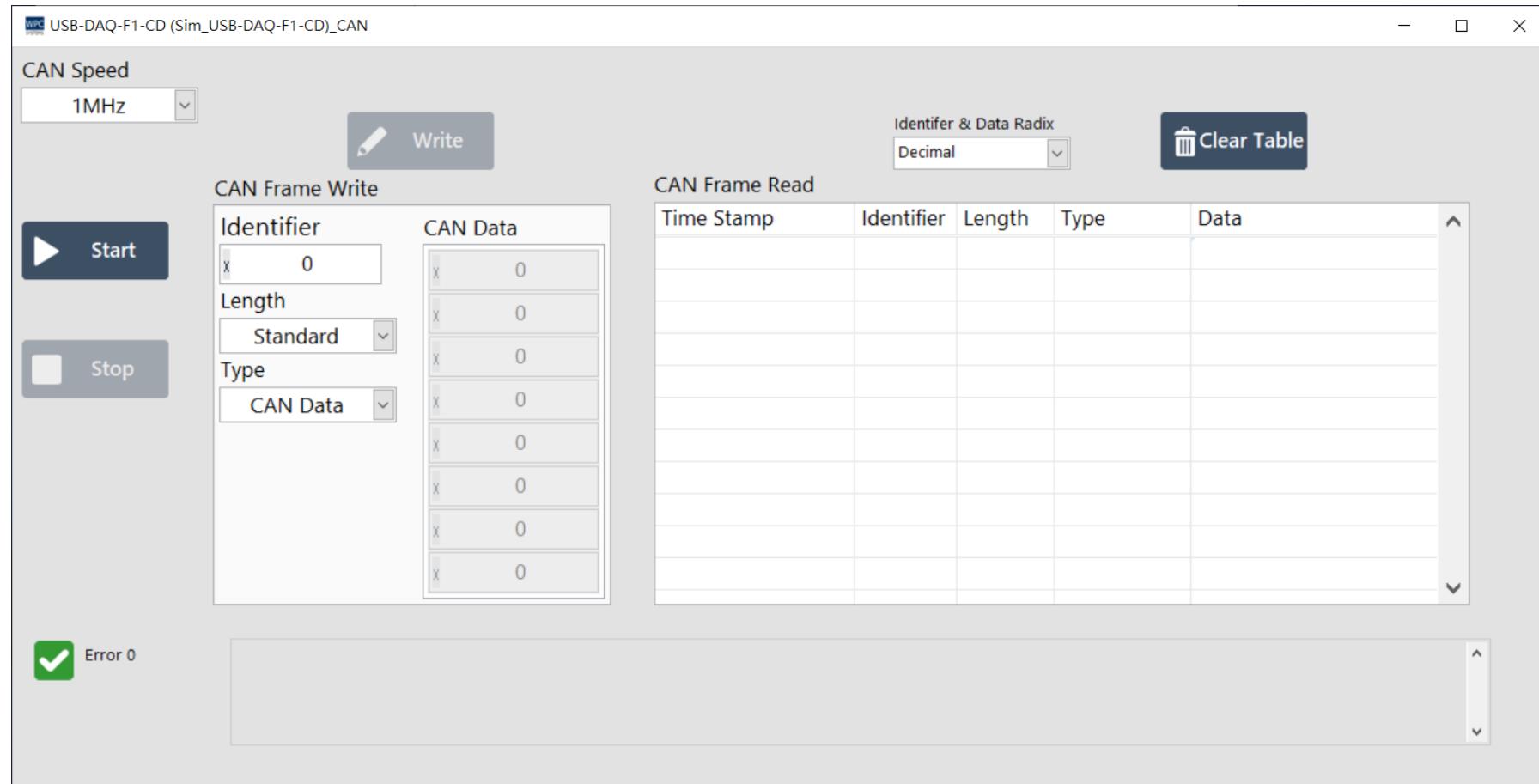
Test panel Thermo - Thermocouple



Test panel Thermo - RTD



Test panel CAN bus

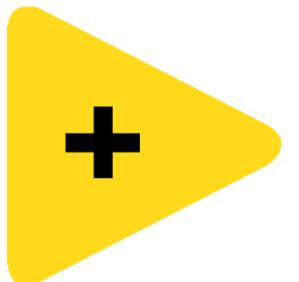


Test panel PWM



WPC DAQ Driver Library

Easy-to-use LabVIEW API



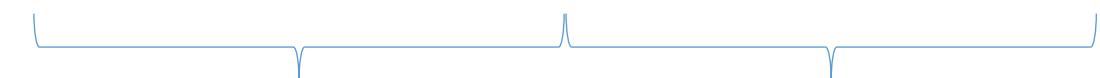
Model vs. driver compatibility

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

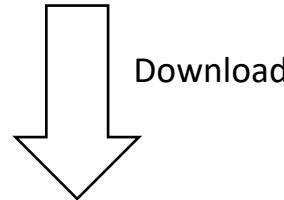


USB 類比 I/O

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)

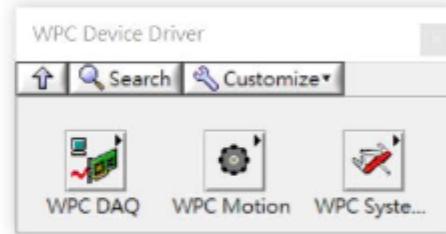


Download

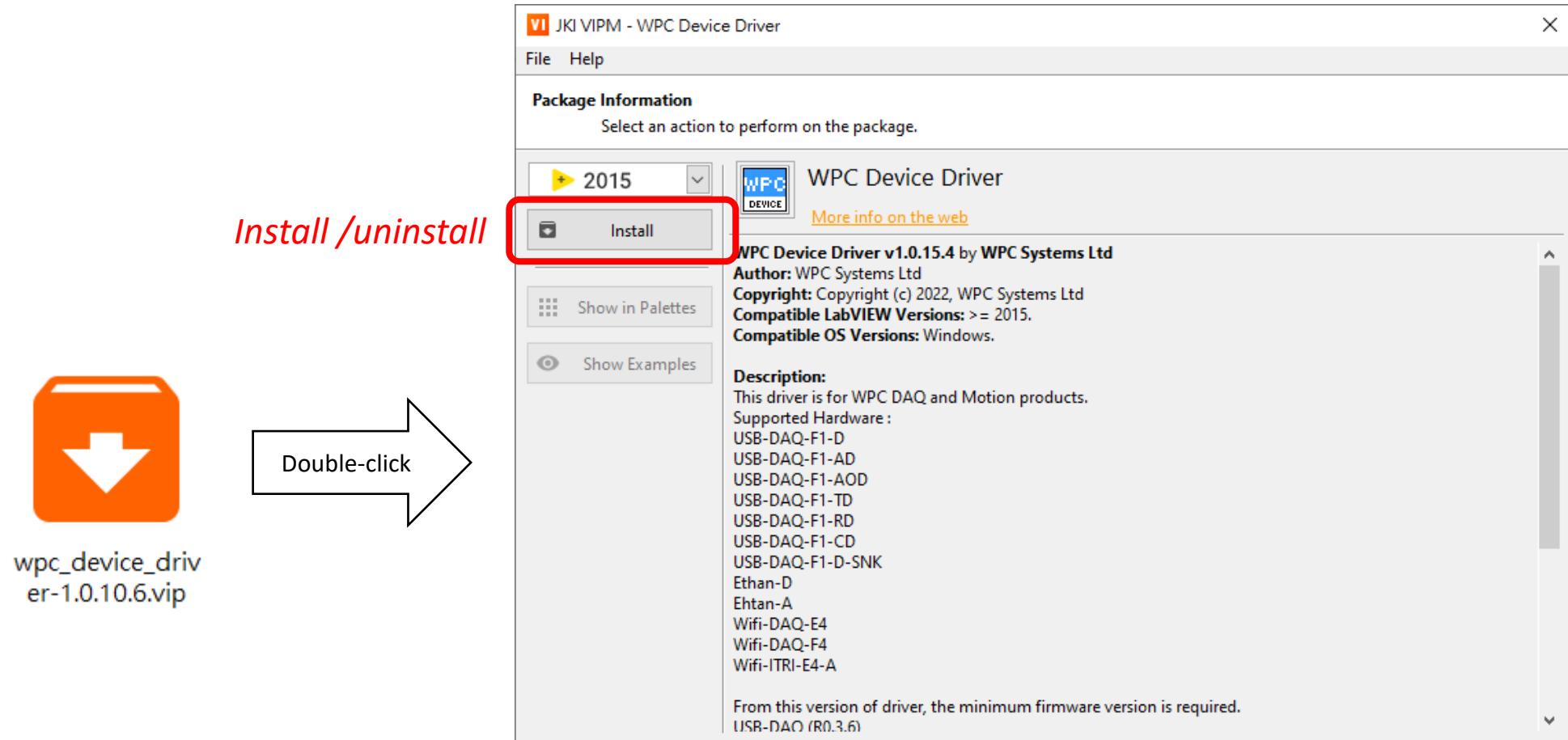


wpc_device_driver-1.0.10.6.vip

- 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

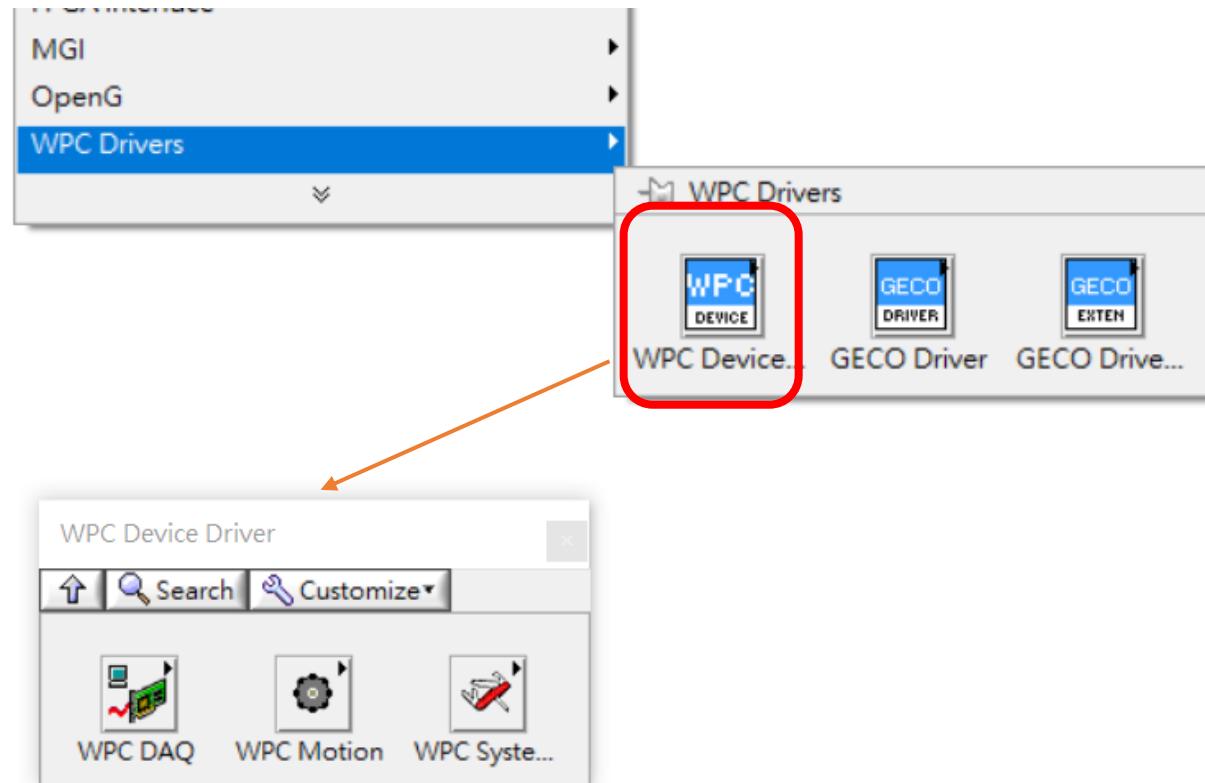


Install the WPC DAQ driver

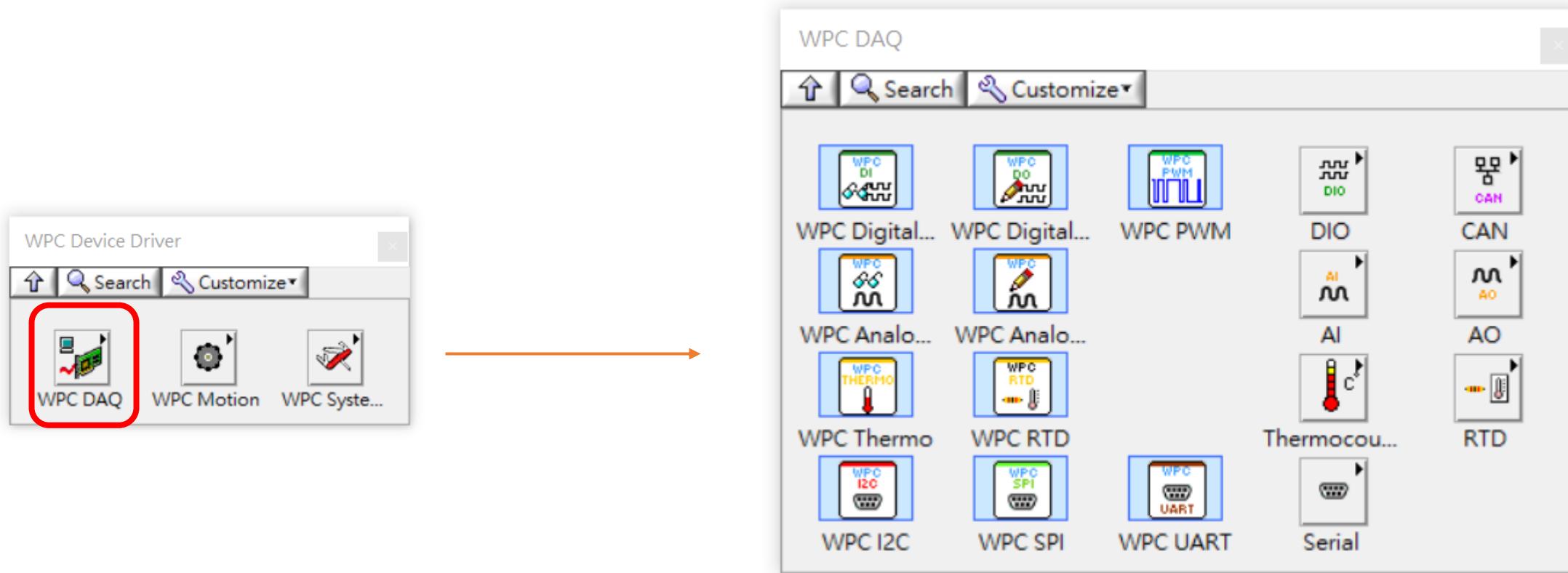


Double-click

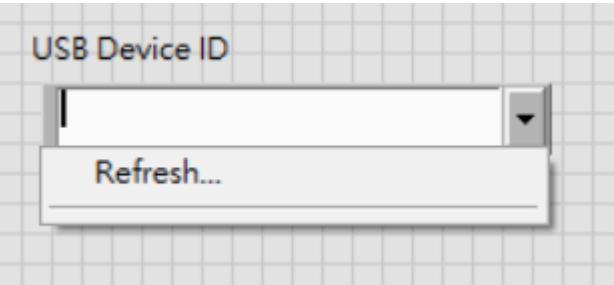
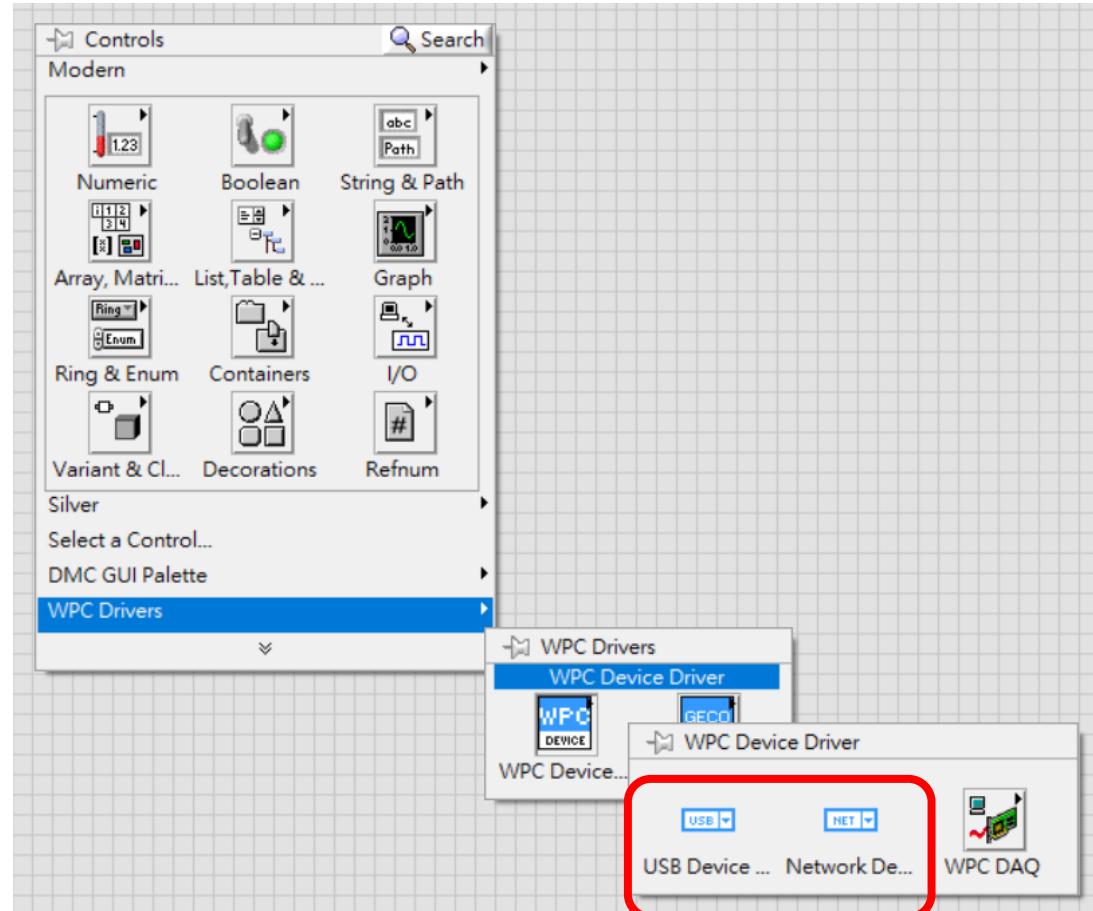
Right-click on LabVIEW block diagram



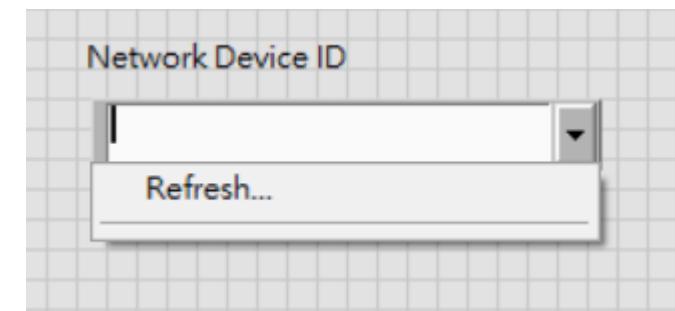
WPC DAQ driver API



WPC device resource control (custom)

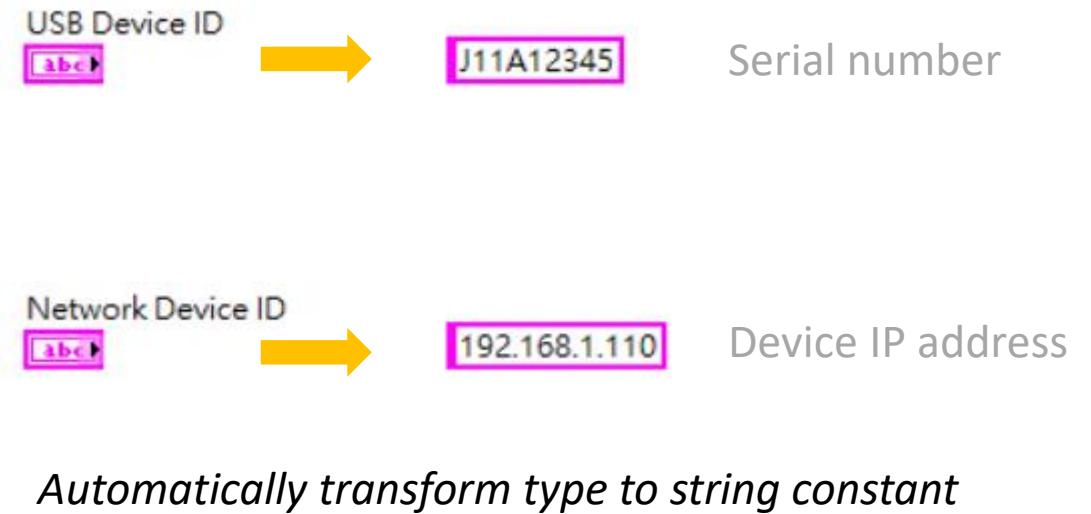
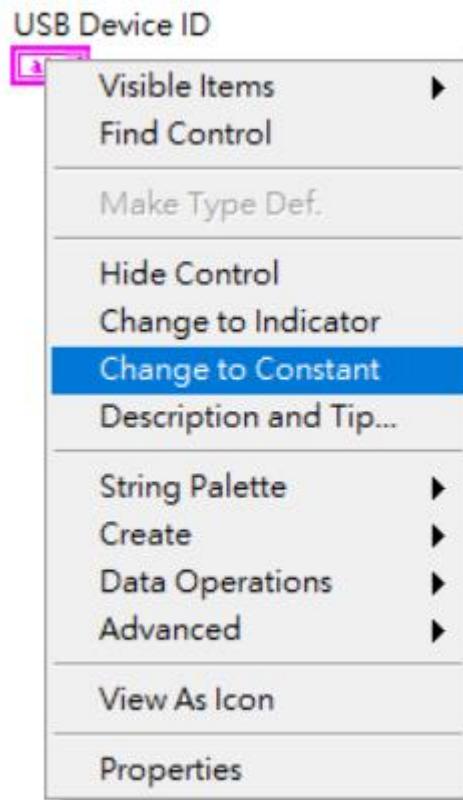


USB auto-enumeration

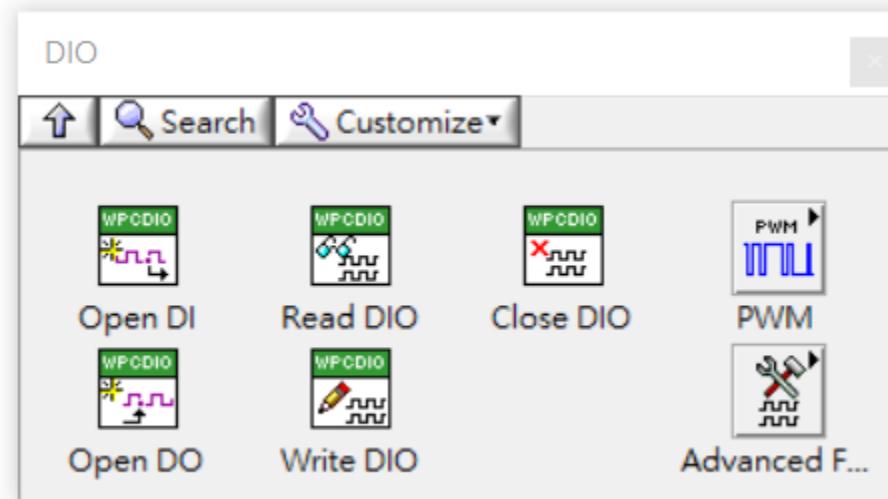


Network device finding

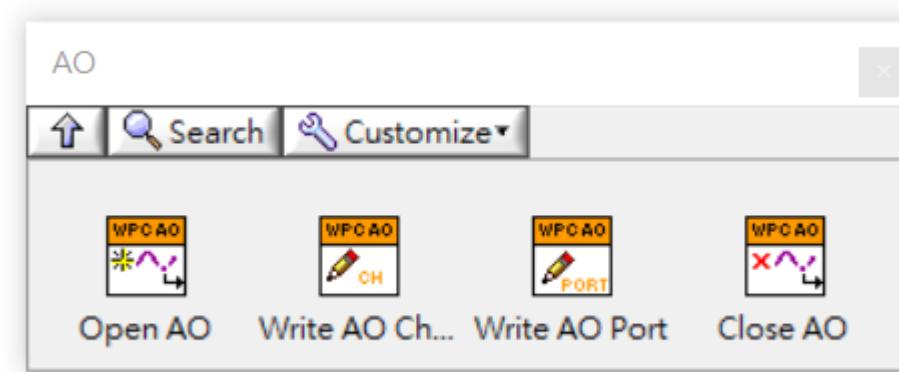
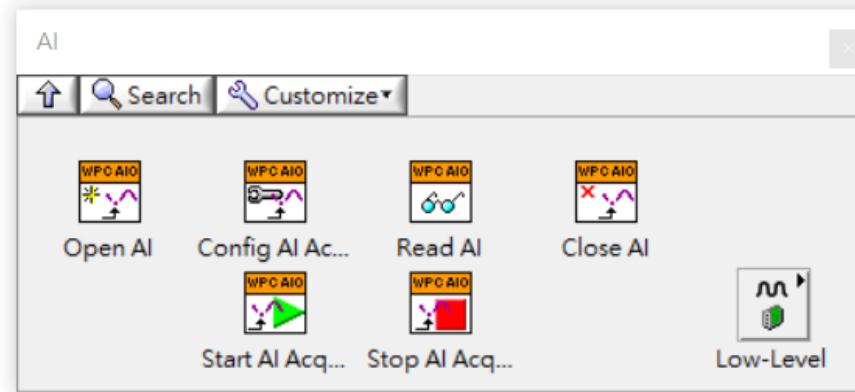
Change WPC control to constant



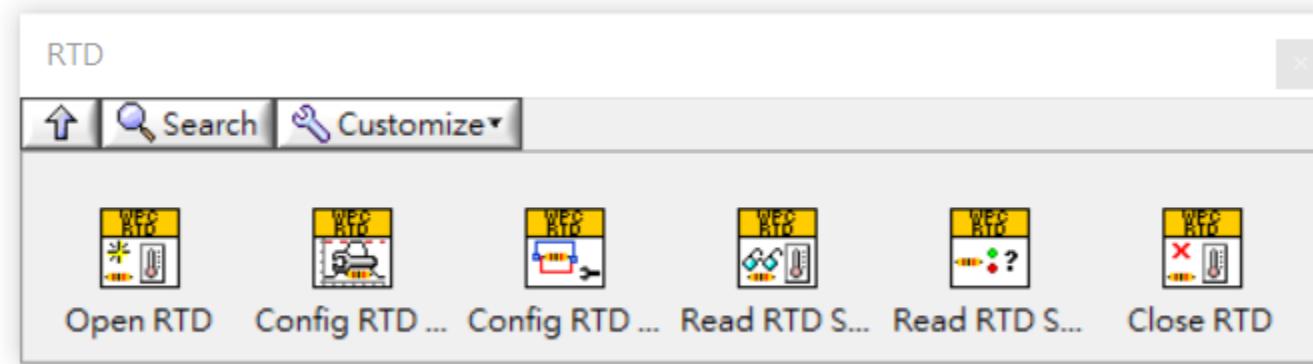
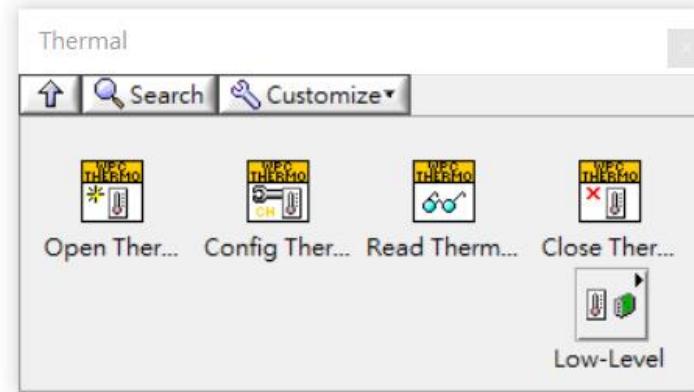
Digital I/O API



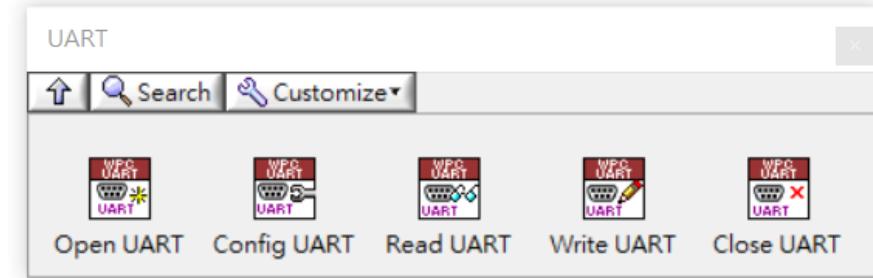
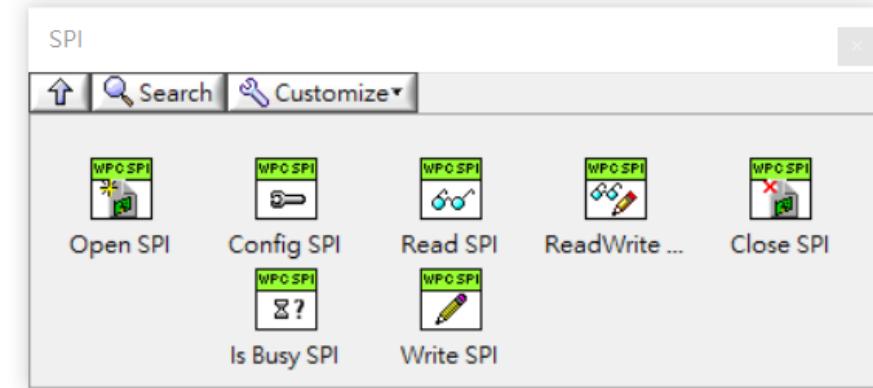
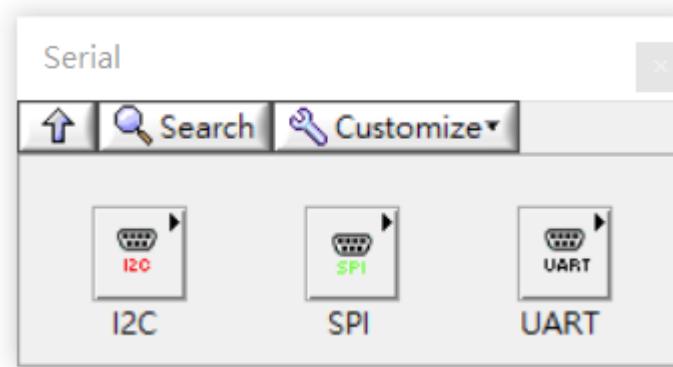
Analog I/O API



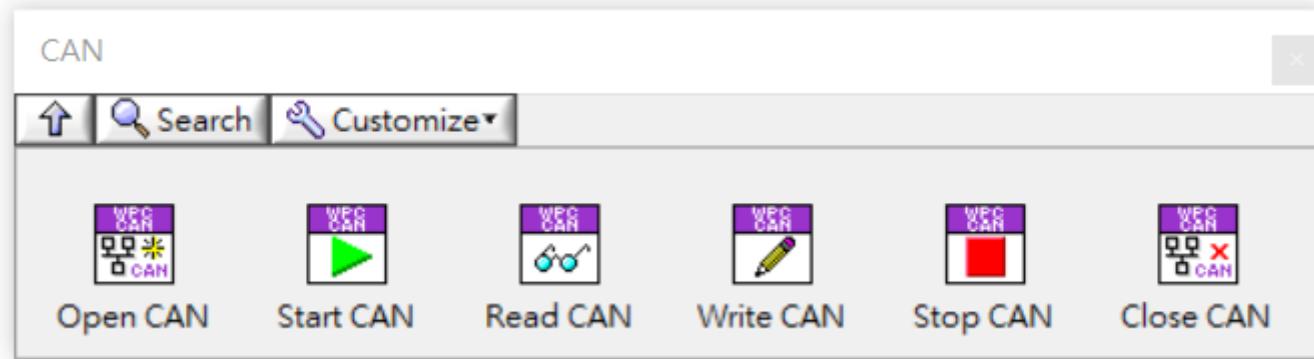
Temperature sensing API



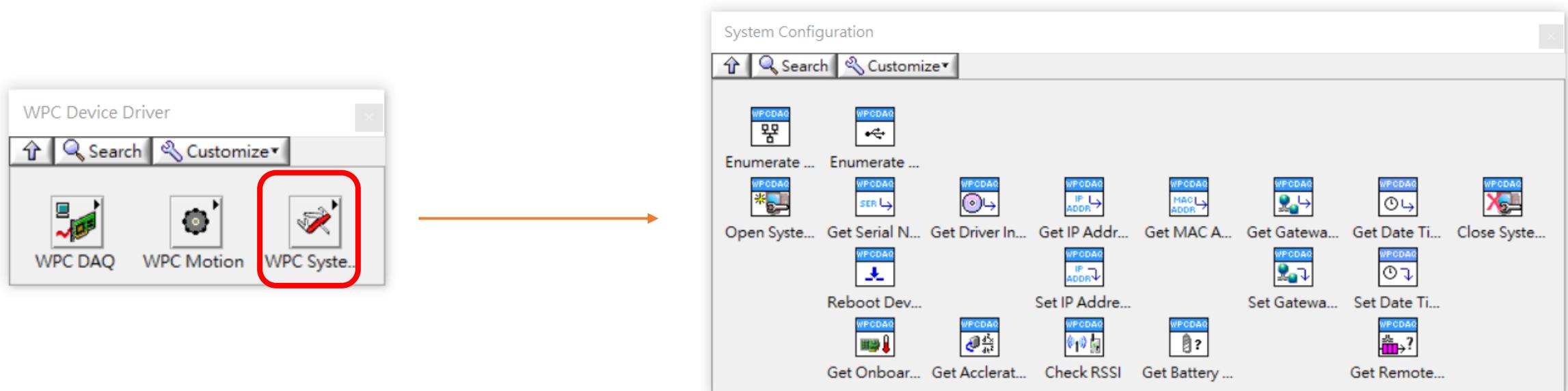
Digital interfacing API



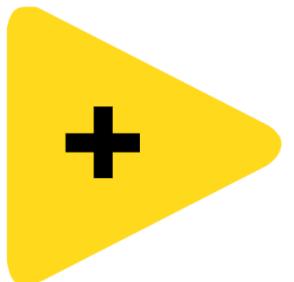
Communication API



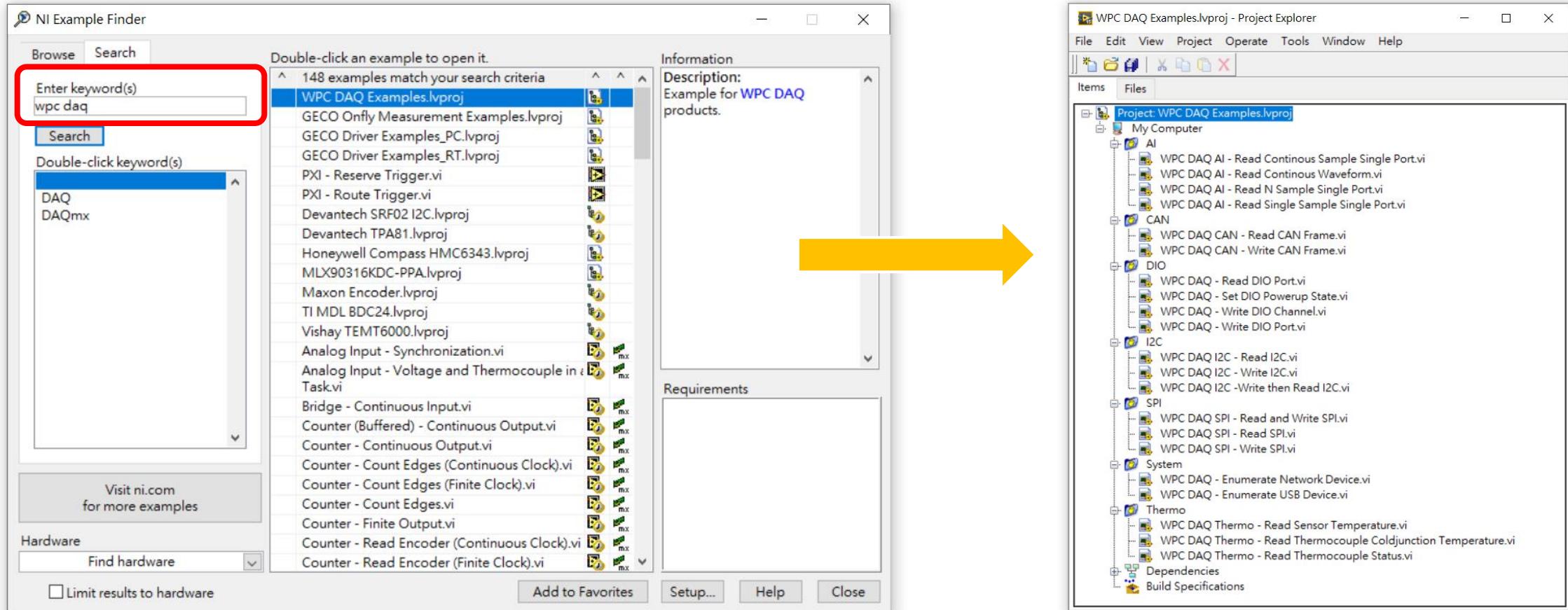
Device management API



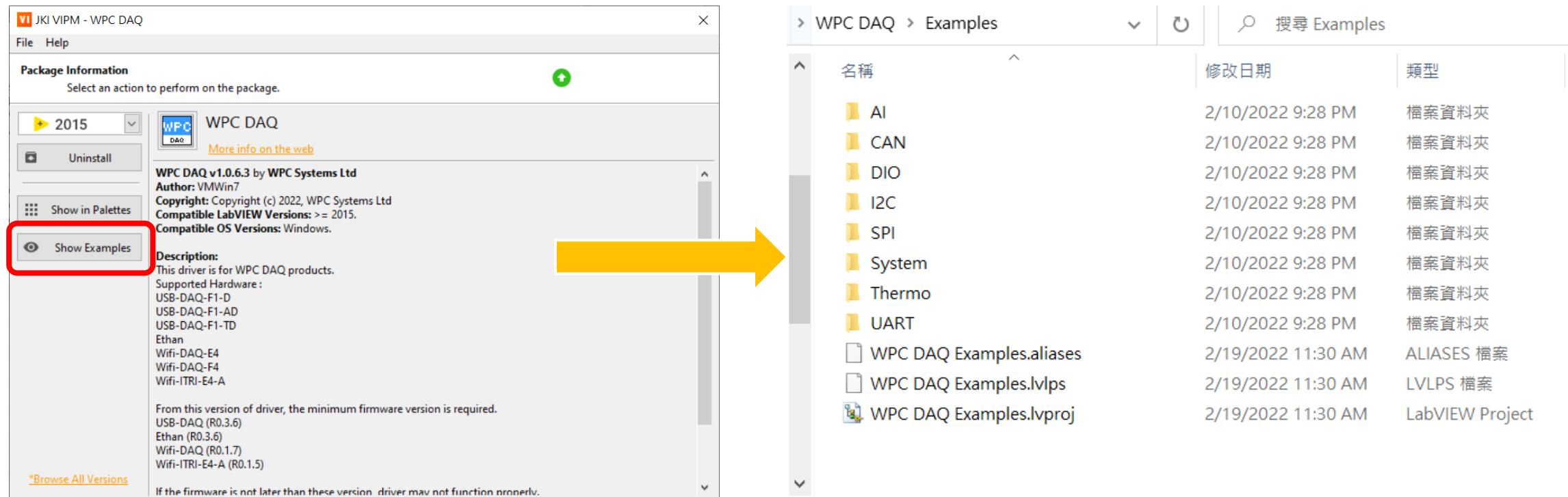
WPC DAQ example codes



Find example codes through NI Example Finder



Open example folder through VI package

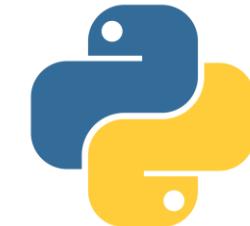


Other language support

Python

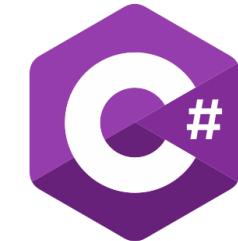
C#





WPC Python driver support

- Python driver release on Github
- https://github.com/WPC-Systems-Ltd/WPC_Python_driver_release
- Python driver user guide
- https://wpc-systems-ltd.github.io/WPC_Python_driver_release/
- Python driver Wiki
- https://github.com/WPC-Systems-Ltd/WPC_Python_driver_release/wiki



WPC C# driver support

- C# driver release on Github
- https://github.com/WPC-Systems-Ltd/WPC_CSharp_driver_release
- C# driver user manual
- https://wpc-systems-ltd.github.io/WPC_CSharp_driver_release/articles/README.html
- C# driver Wiki
- https://github.com/WPC-Systems-Ltd/WPC_CSharp_driver_release/wiki