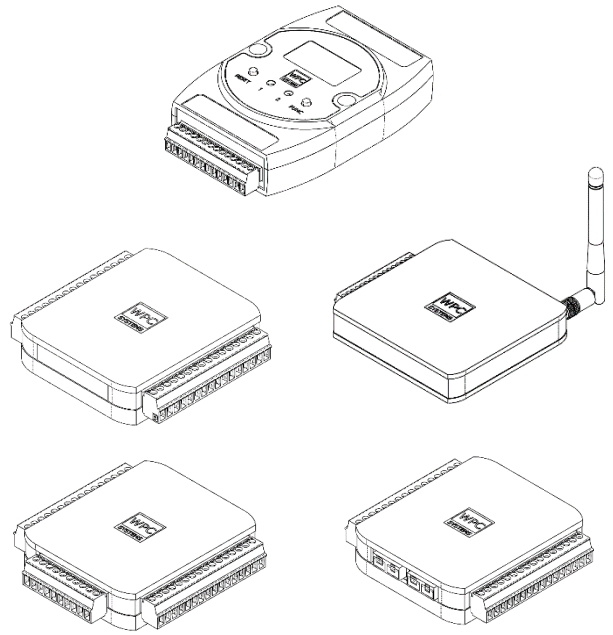
WPC DAQ Devices user manual

WPC Systems Ltd.

Justin Wu

2022-07-19

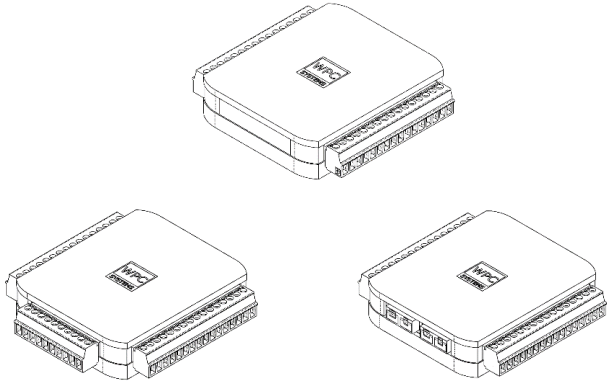


USB DAQs

Digital I/O

Analog I/O

Communication

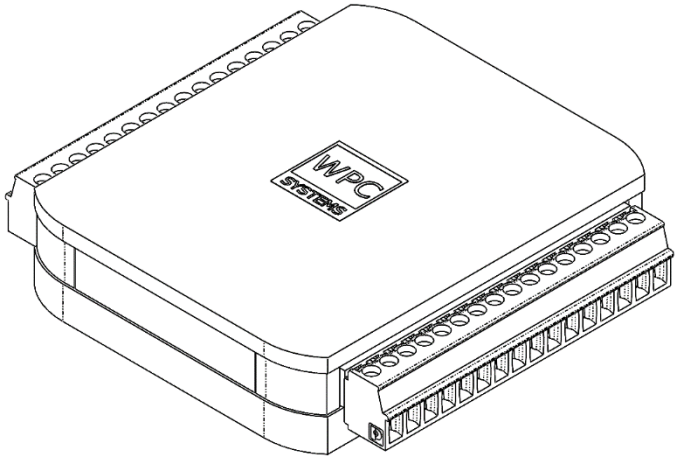


Model selection table

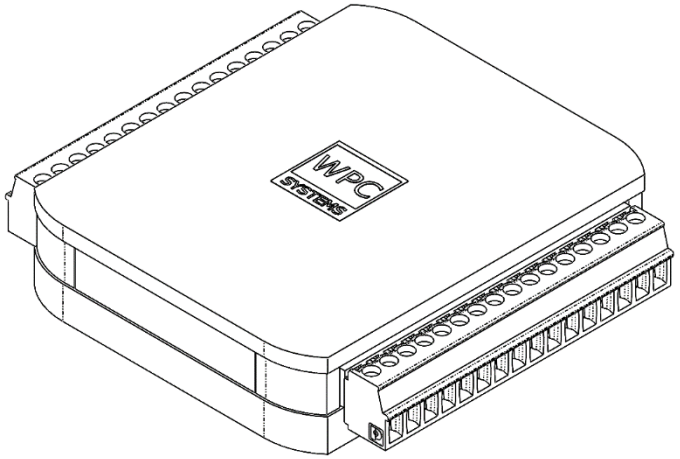
	Feature
WPC-USB-DAQ-D-SNK	24V-DIO
WPC-USB-DAQ-D	DIO
WPC-USB-DAQ-AD	DIO+AI
WPC-USB-DAQ-TD	DIO+TC
NEW WPC-USB-DAQ-RD	DIO+RTD
WPC-USB-DAQ-CD	DIO+CAN
WPC-USB-DAQ-AOD	DIO+AI+AO

	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

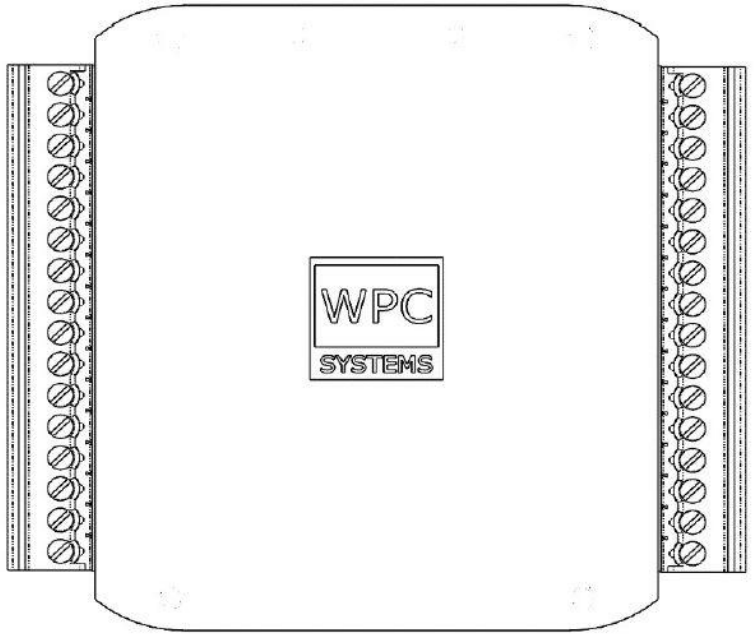


Model: WPC-USB-DAQ-D-SNK
24V industrial DIO
24V external power required *

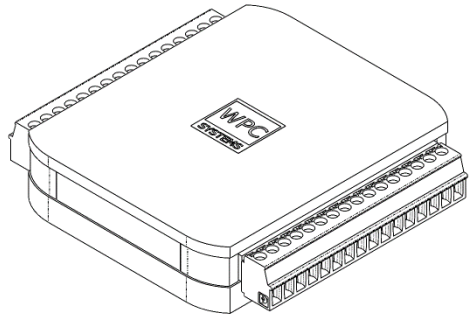
WPC-USB-DAQ-D

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

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



3.3V Digital

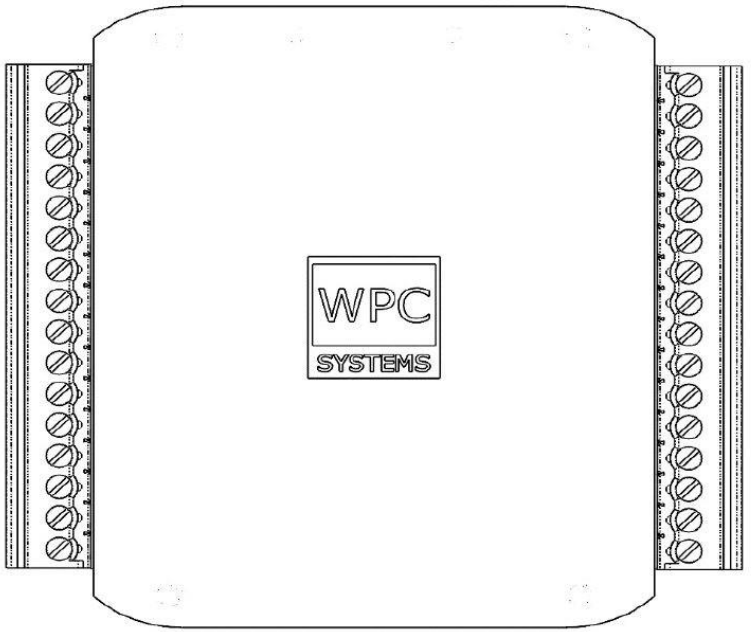


WPC-USB-DAQ-D-SNK

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

DO

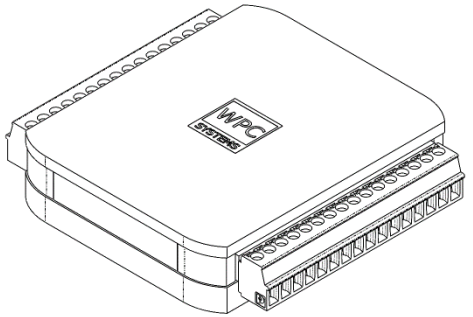
P3.3	1
P3.2	2
P3.1	3
P3.0	4
P2.7	5
P2.6	6
P2.5	7
P2.4	8
P2.3	9
P2.2	10
P2.1	11
P2.0	12
0V	13
0V	14
24V	15
24V	16



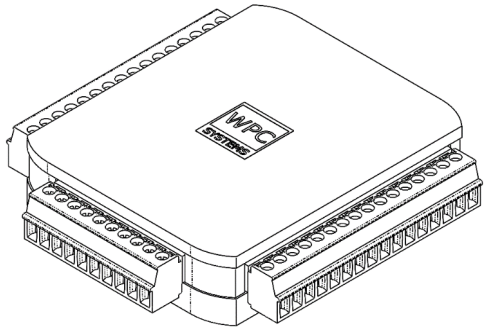
32	X
31	X
30	P0.0
29	P0.1
28	P0.2
27	P0.3
26	P0.4
25	P0.5
24	P0.6
23	P0.7
22	P1.0
21	P1.1
20	P1.2
19	P1.3
18	P1.4
17	P1.5

DI

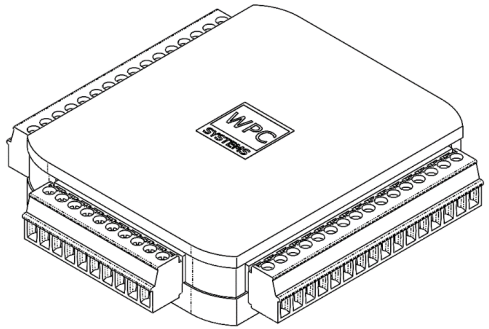
24V Digital



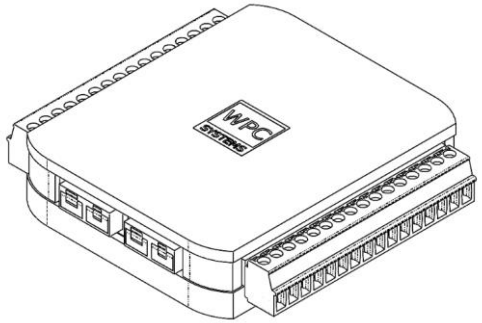
Model feature (analog)



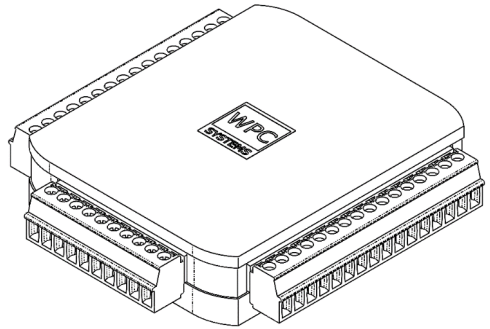
WPC-USB-DAQ-AD
3.3V DIO (5V tolerant)
8ch +/-10V analog input



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



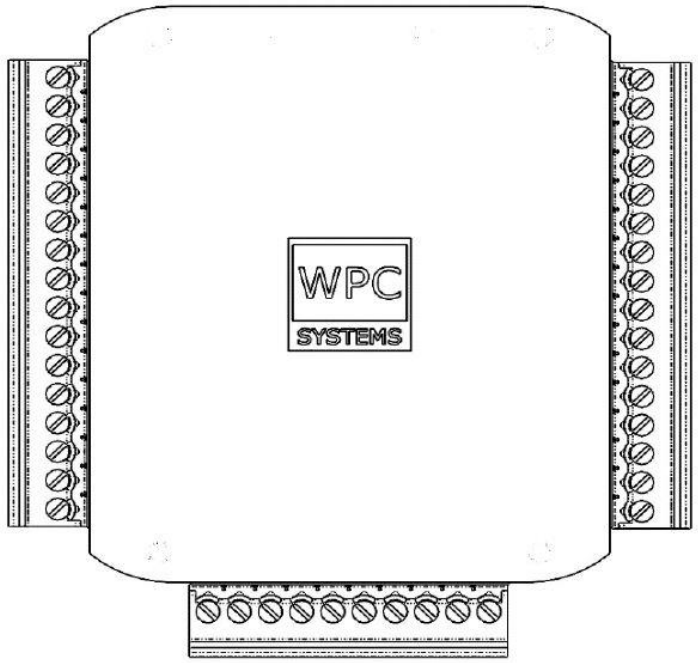
WPC-USB-DAQ-RD
3.3V DIO (5V tolerant)
2ch RTD input (different model)

NEW

WPC-USB-DAQ-AD

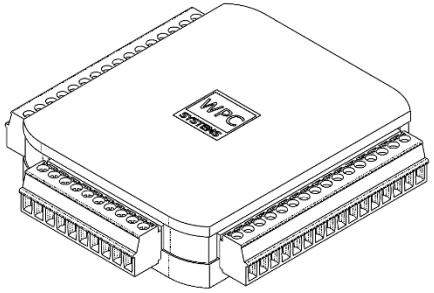
- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- +/-10V Analog input (single-ended)

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



33	34	35	36	37	38	39	40	41	42
GND	AI0	AI1	AI2	AI3	AI4	AI5	AI6	AI7	GND

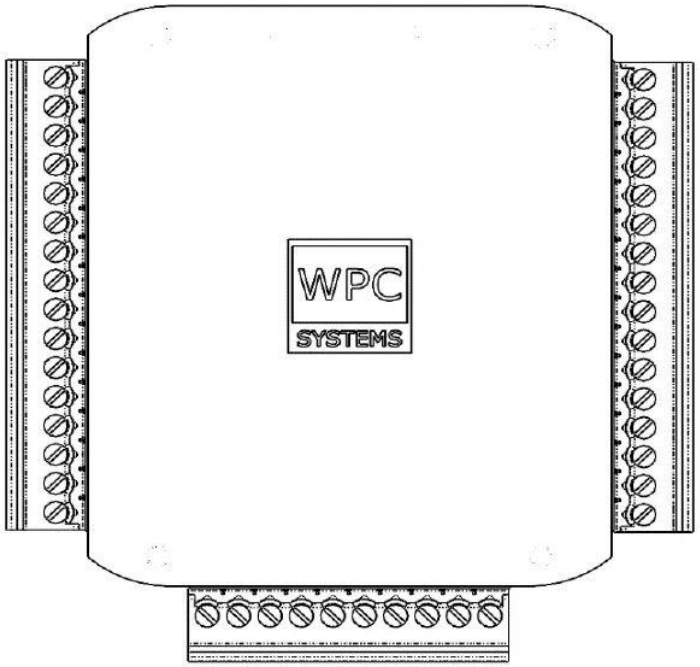
Digital + AI



WPC-USB-DAQ-AOD

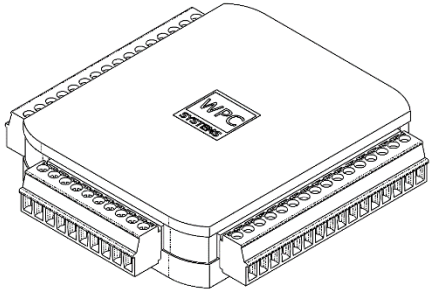
- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- AI / AO

	GND	1	32	P0.0		
	5V	2	31	P0.1		
	AO0	3	30	P0.2		
	AO1	4	29	P0.3	RX1	
	AO2	5	28	P0.4	TX1	
	AO3	6	27	P0.5		
SDA2	P3.1	7	26	P0.6		
SCL2	P3.0	8	25	P0.7		
SDA1	P2.7	9	24	P1.0		
SCL1	P2.6	10	23	P1.1		
	X	11	22	P1.2	RX2	
	X	12	21	P1.3	TX2	
	AO4	13	20	X		
	AO5	14	19	X		
	AO6	15	18	5V		
	AO7	16	17	GND		



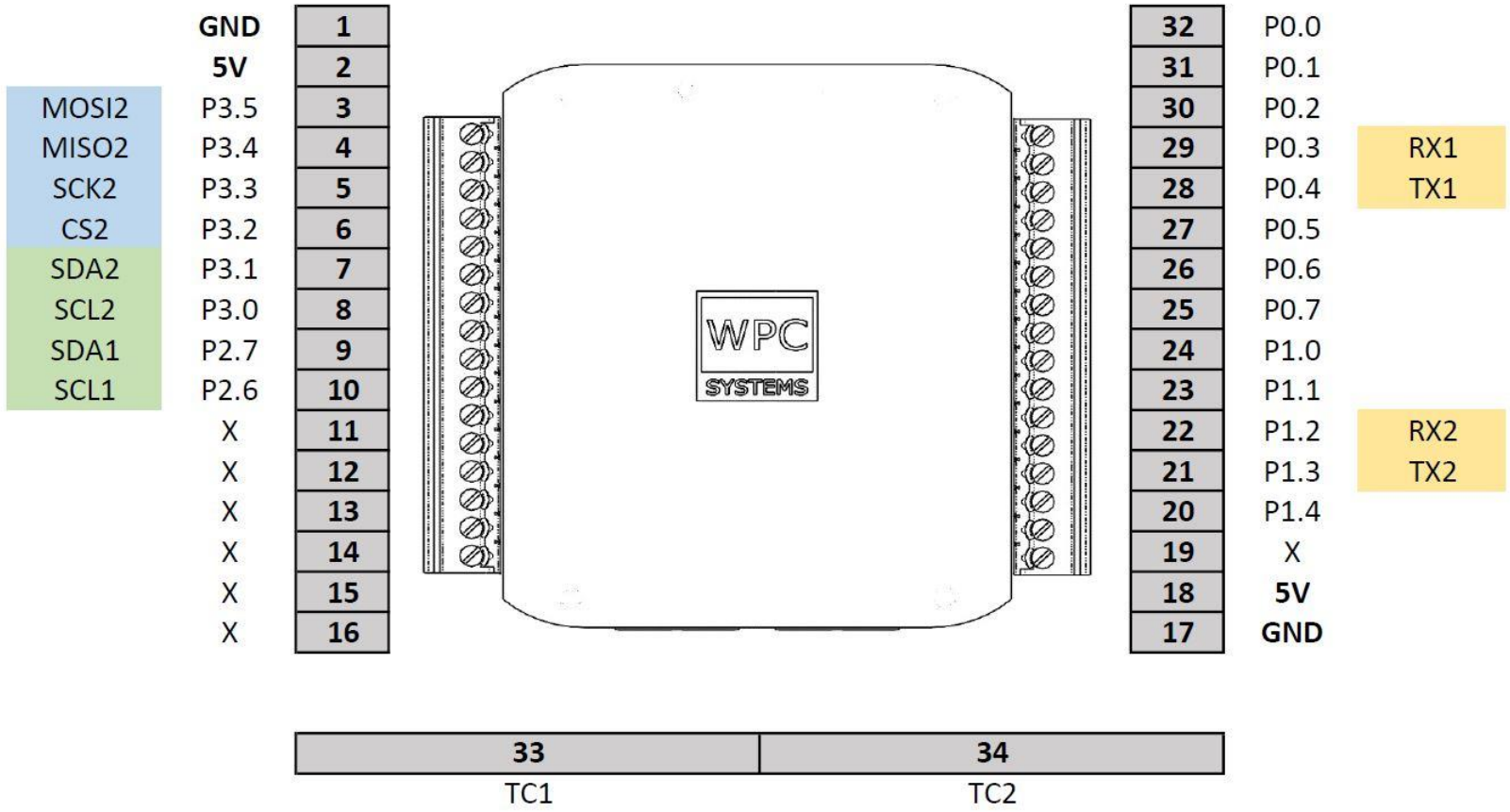
33	34	35	36	37	38	39	40	41	42
AI0	AI1	AI2	AI3	AI4	AI5	AI6	AI7	GND	5V

Digital + AI + AO

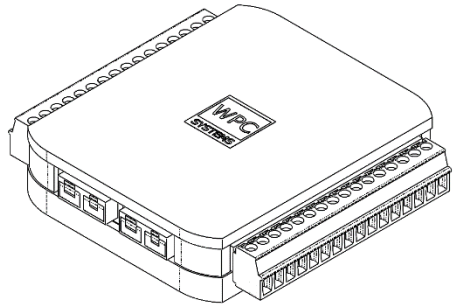


WPC-USB-DAQ-TD

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



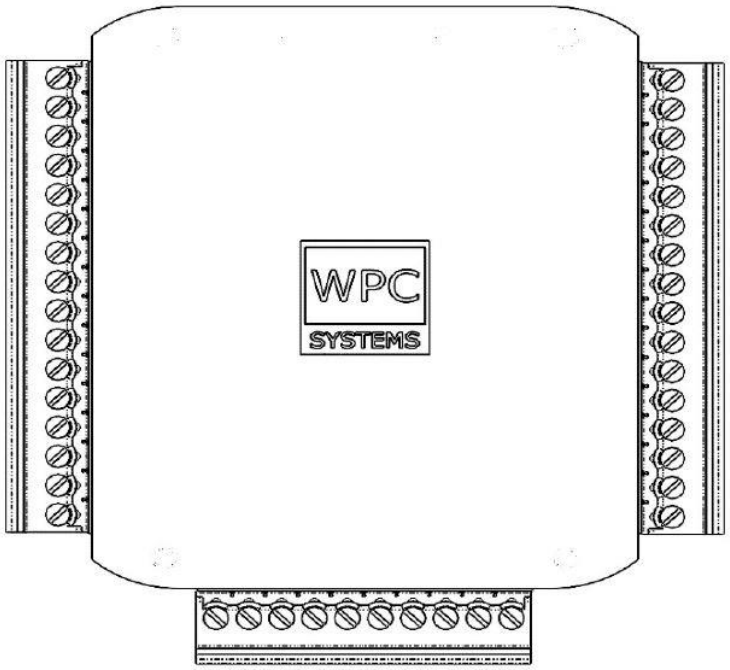
Digital + Thermocouple



WPC-USB-DAQ-RD

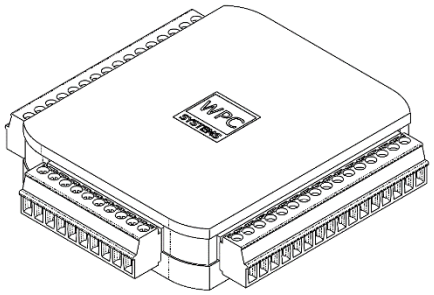
- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- PT-100 or PT-1000 (different model)

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

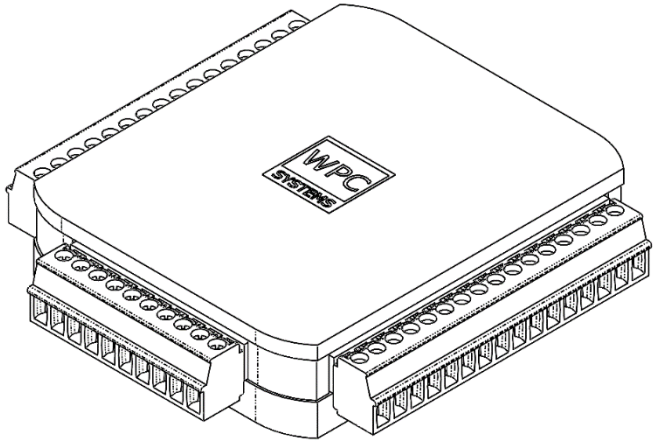


33	34	35	36	37	38	39	40	41	42
EX1+	RTD1+	RTD1-	EX1-	X	X	EX2+	RTD2+	RTD2-	EX2-

Digital + RTD



Model feature (Communication)

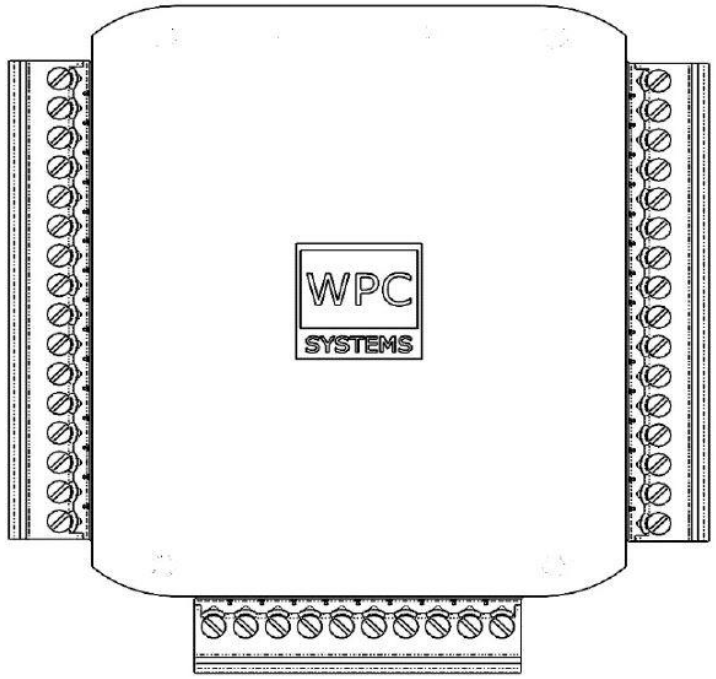


Model: WPC-USB-DAQ-CD
3.3V DIO (5V tolerant)
SPI / I2C / UART
1Mbps CAN bus

WPC-USB-DAQ-CD

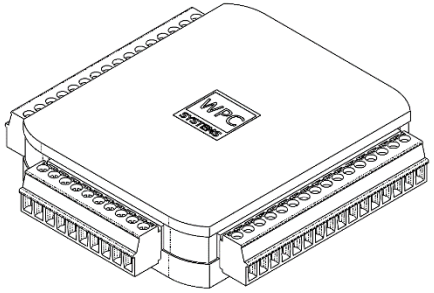
- Level: 3.3V (5V-tolerant)
- DIO / SPI / I2C / UART
- CAN V2.0B @ 1Mb/S

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



33	34	35	36	37	38	39	40	41	42
CAN_H	CAN_L	TE+	TE-	X	X	X	X	X	X

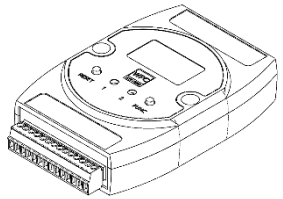
Digital + CAN



Ethernet DAQs

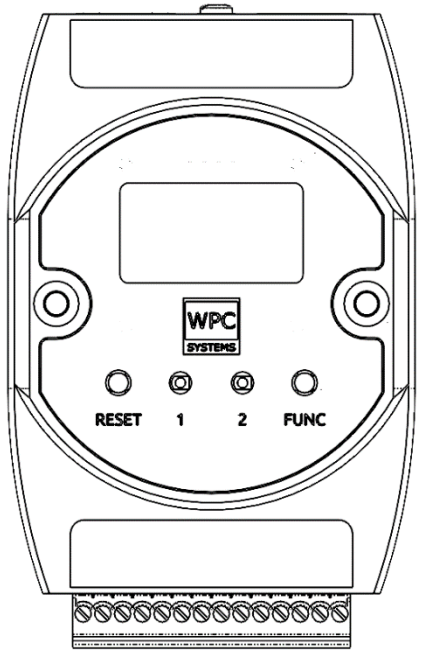
Industrial digital I/O

Analog I/O

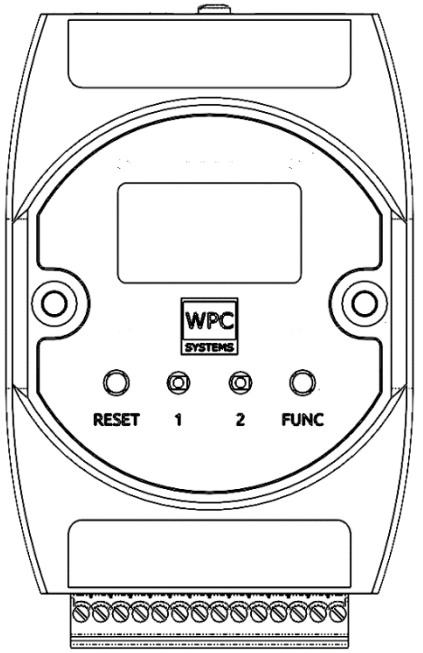


Model selection

Model: WPC-Ethan-D
10/100 cable Ethernet
8ch 24V digital input (sourcing/sinking)
6ch 24V digital output (sinking/sourcing)



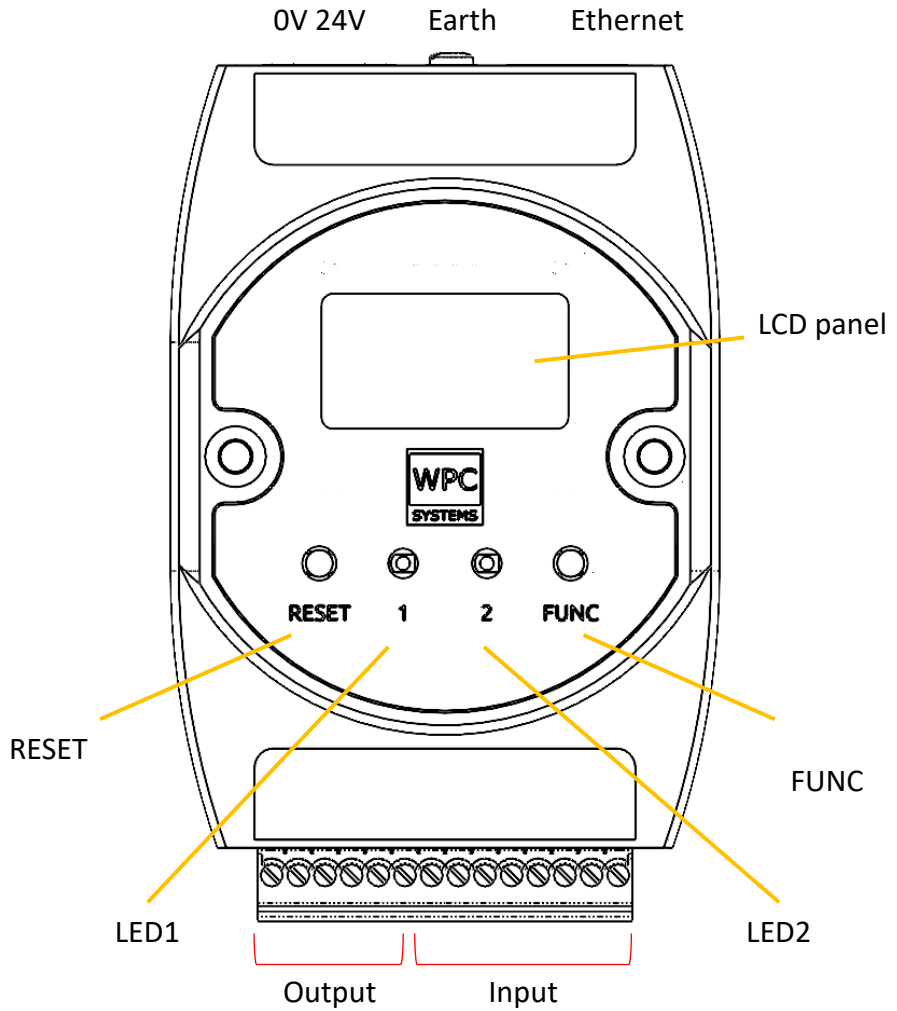
Model: WPC-Ethan-A
10/100 cable Ethernet
8ch simultaneous voltage input
Max sampling rate: 20KHz
+/-10V voltage input range



Model: WPC-Ethan-D

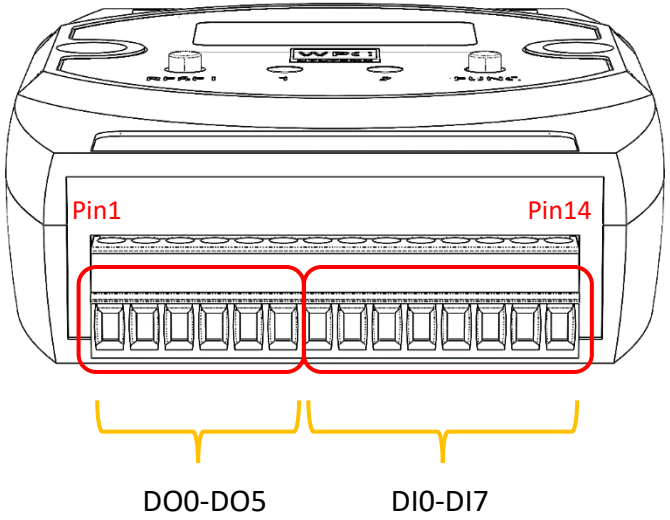
- 10/100 T-based Ethernet interface
- 6ch opto-isolated digital output (DO)
- 8ch opto-isolated digital input (DI)
- Power input: 24VDC

- 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)

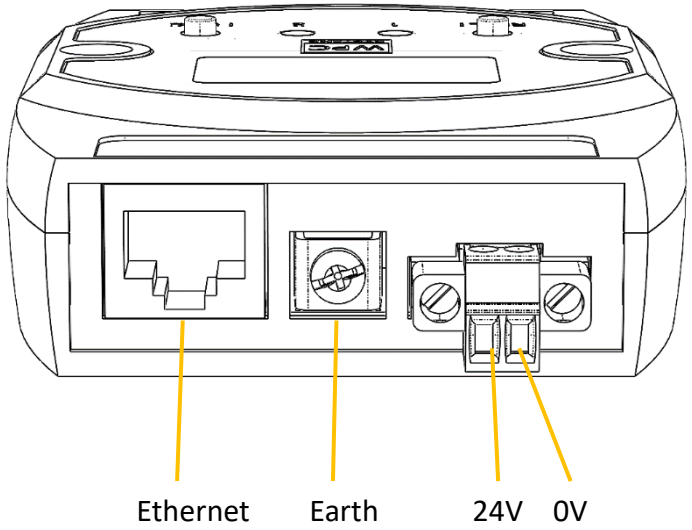


Appearance

front view

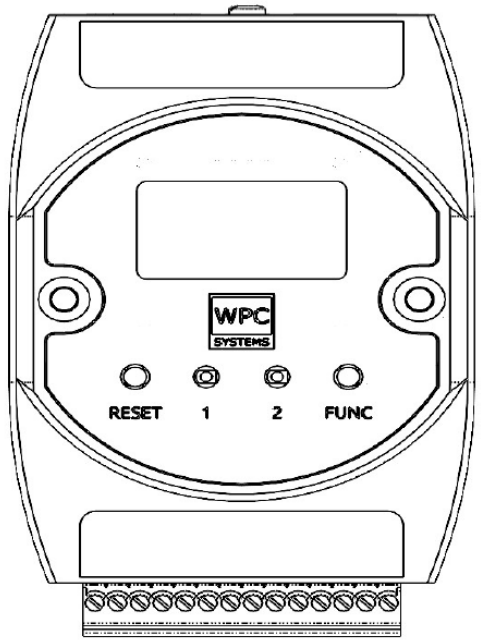


back view



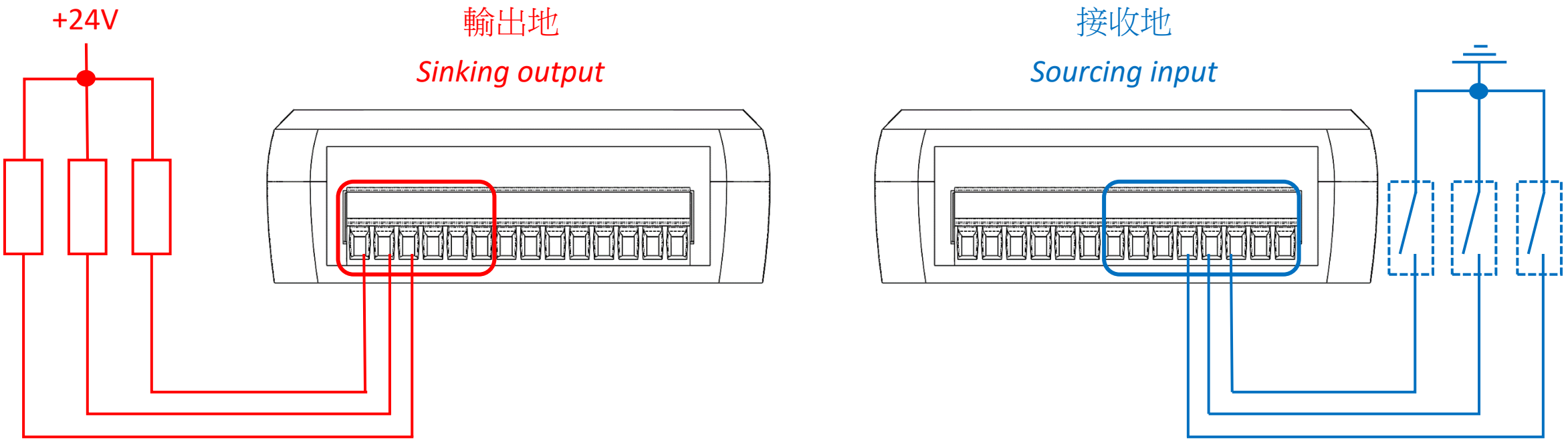
Connector pinout

1	2
0V	24V



1	2	3	4	5	6	7	8	9	10	11	12	13	14
P0.0	P0.1	P0.2	P0.3	P0.4	P0.5	P1.0	P1.1	P1.2	P1.3	P1.4	P1.5	P1.6	P1.7
DO						DI							

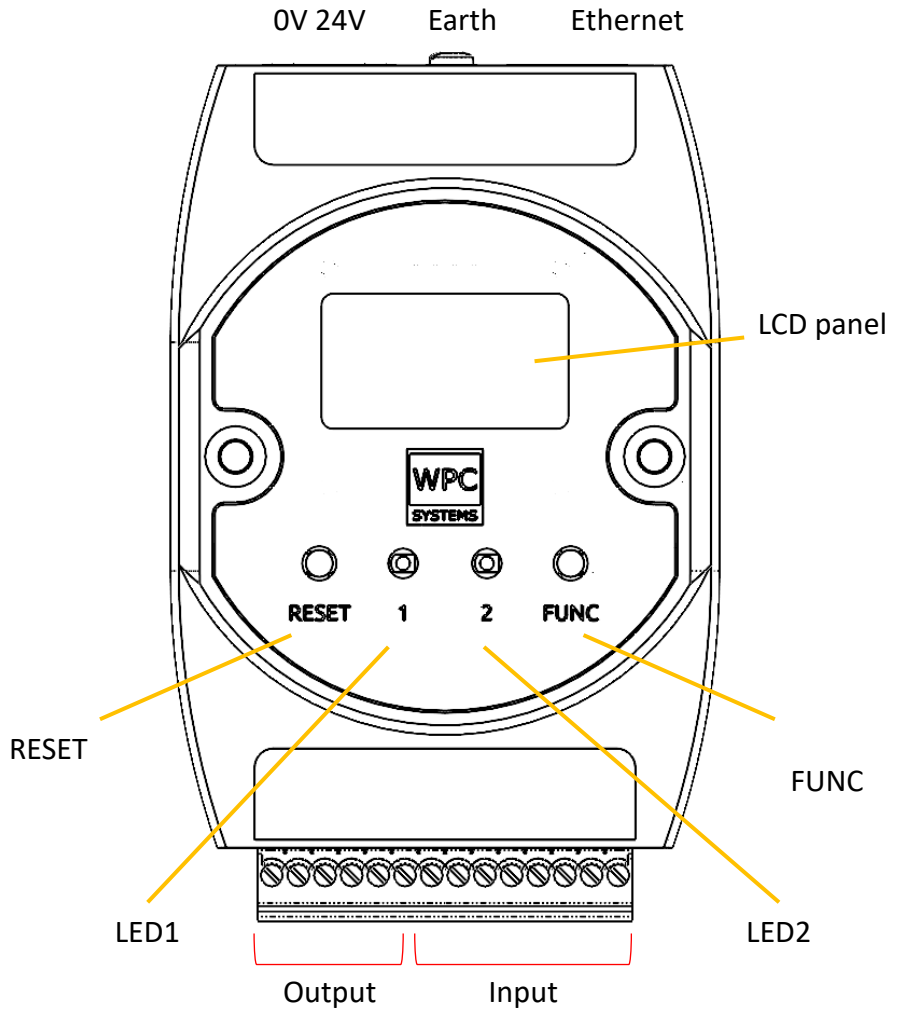
Signal connection



Model: WPC-Ethan-A

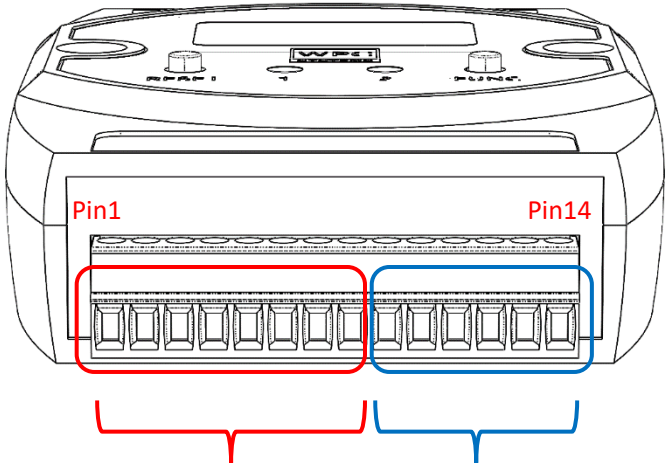
- 10/100 T-based Ethernet interface
- 8ch simultaneous voltage input
- Max sampling rate: 20KHz
- +/-10V voltage input range
- Power input: 24VDC

- 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)

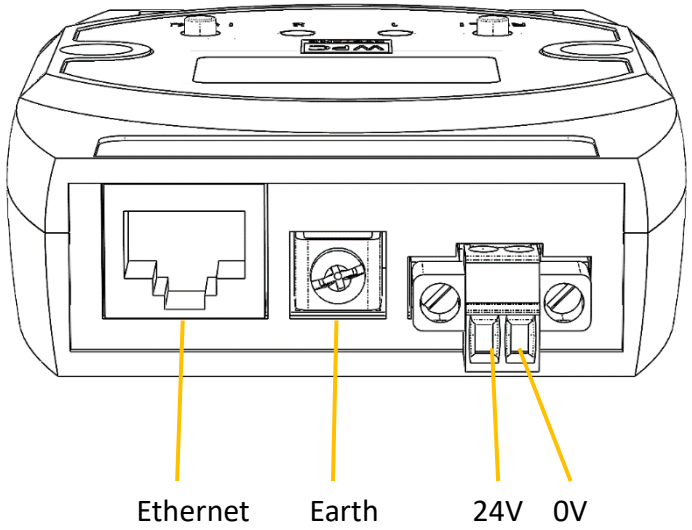


Appearance (front and rear)

front view

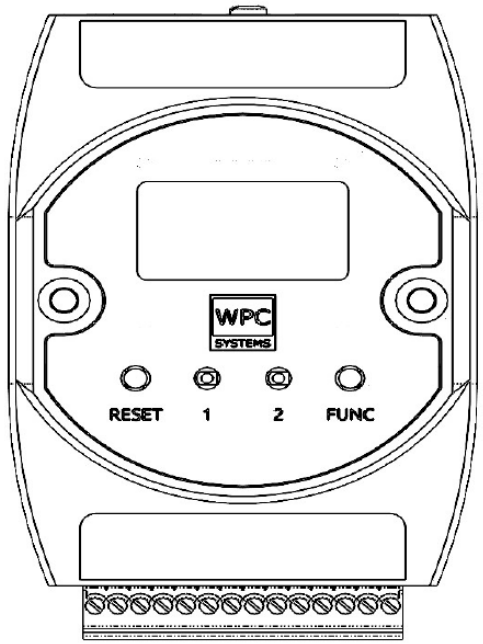


back view



Connector pinout

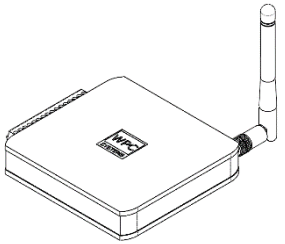
1	2
0V	24V



1	2	3	4	5	6	7	8	9	10	11	12	13	14
AI0	AI1	AI2	AI3	AI4	AI5	AI6	AI7	AGND	AGND	AGND	AGND	AGND	AGND
Voltage													

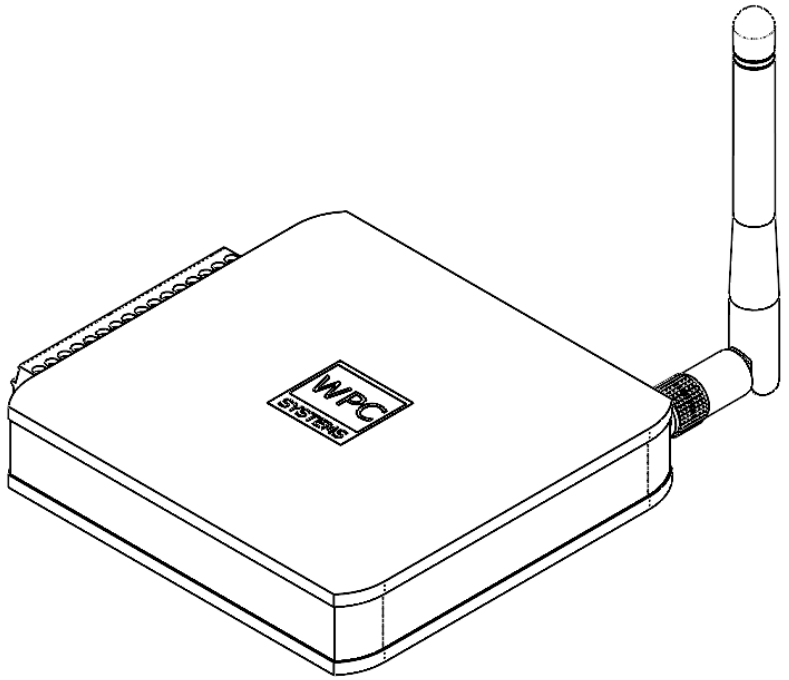
WIFI DAQs

Analog I/O

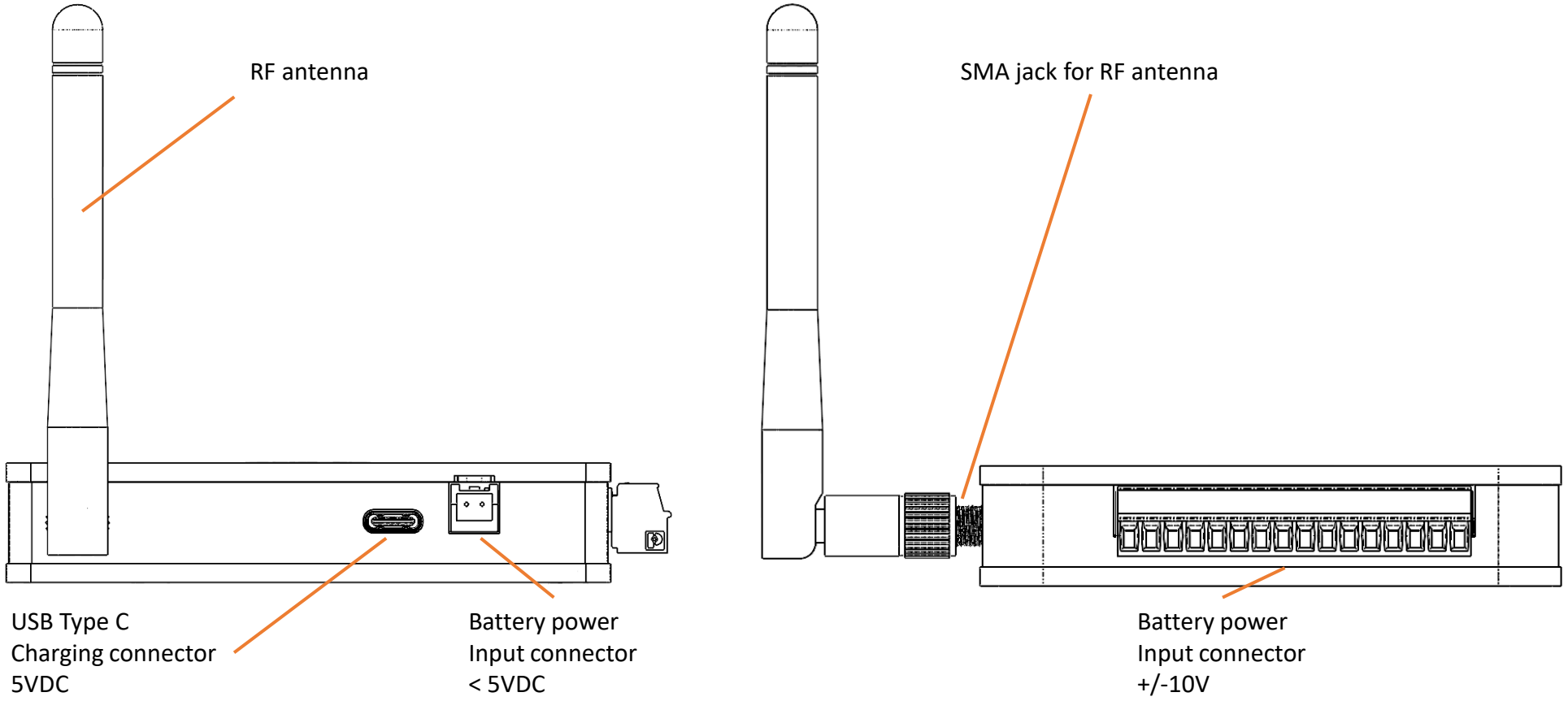


Model Feature

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)

wpc_device_manager_v1.0.8.0.zip
Download File

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

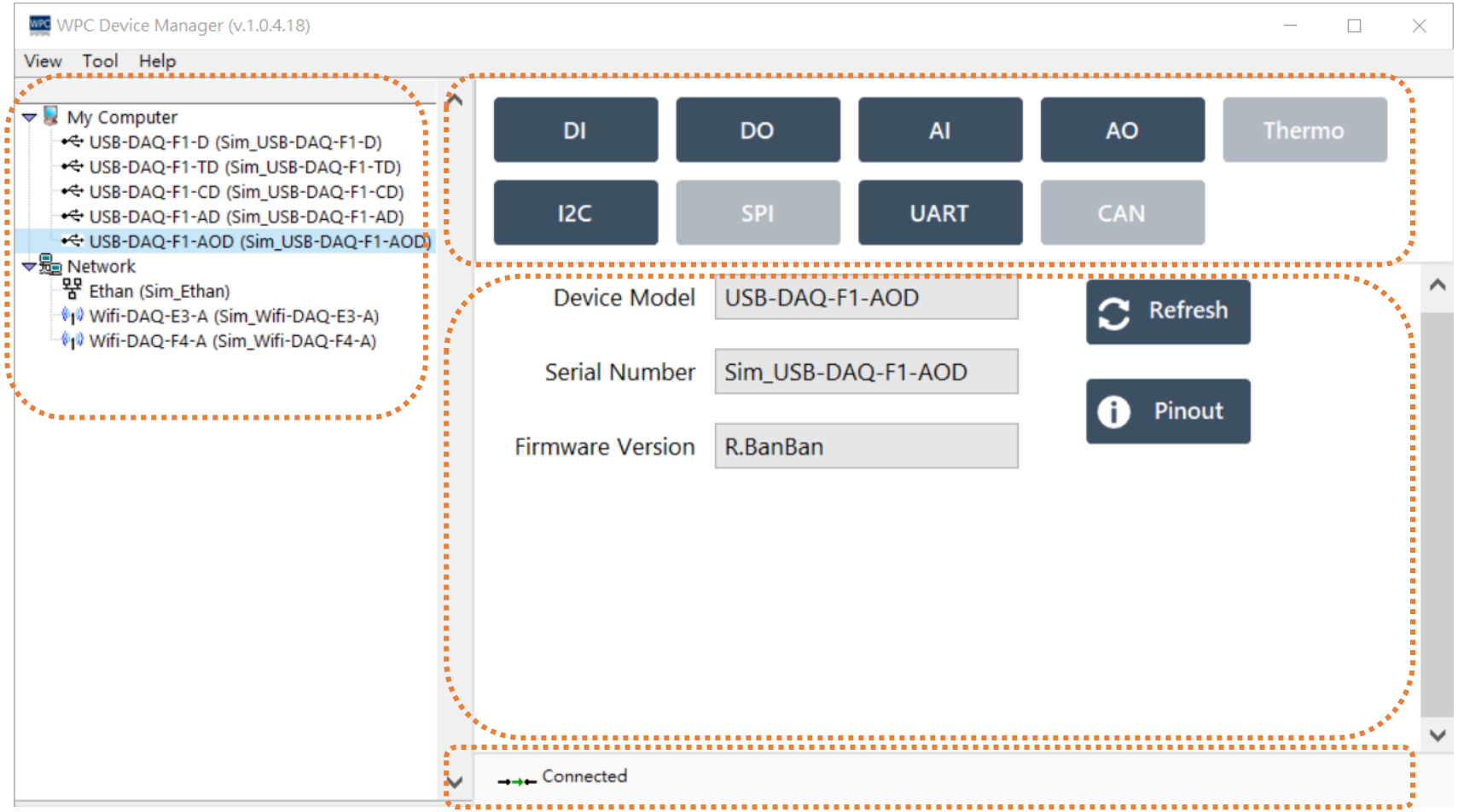
LabVIEW 2015 SP1 Run-time engine

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

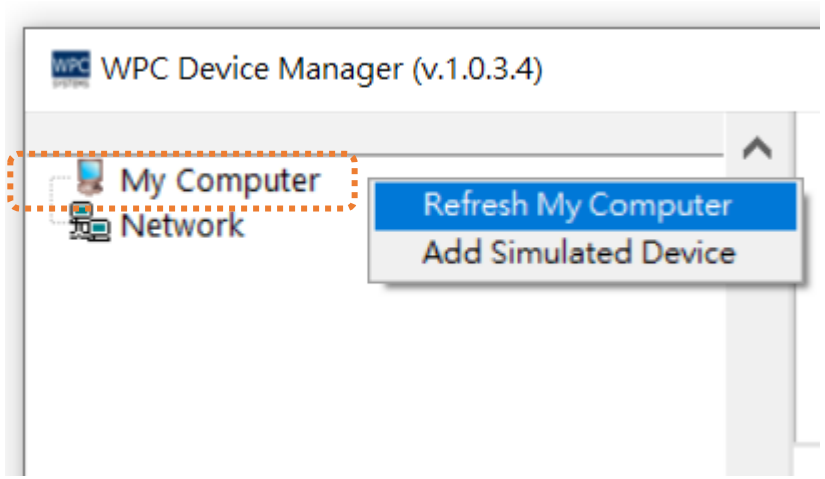


Software front panel (SFP)

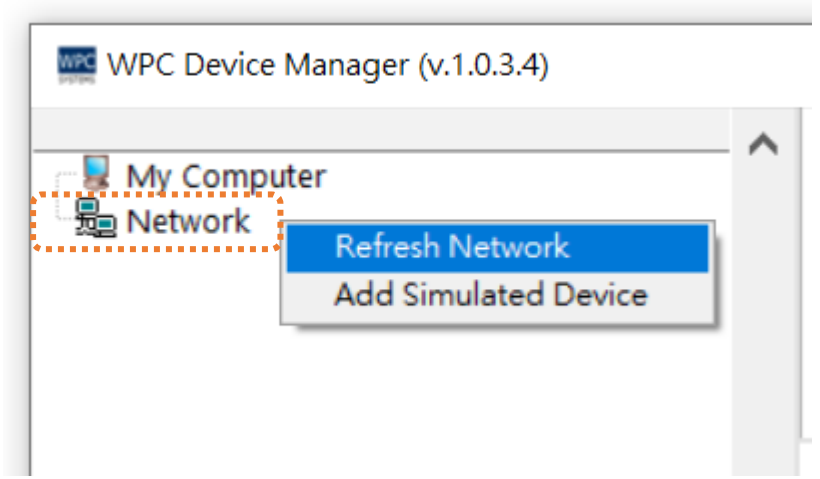
Device info / setting
Firmware update

Status / Message

Search/refresh WPC devices

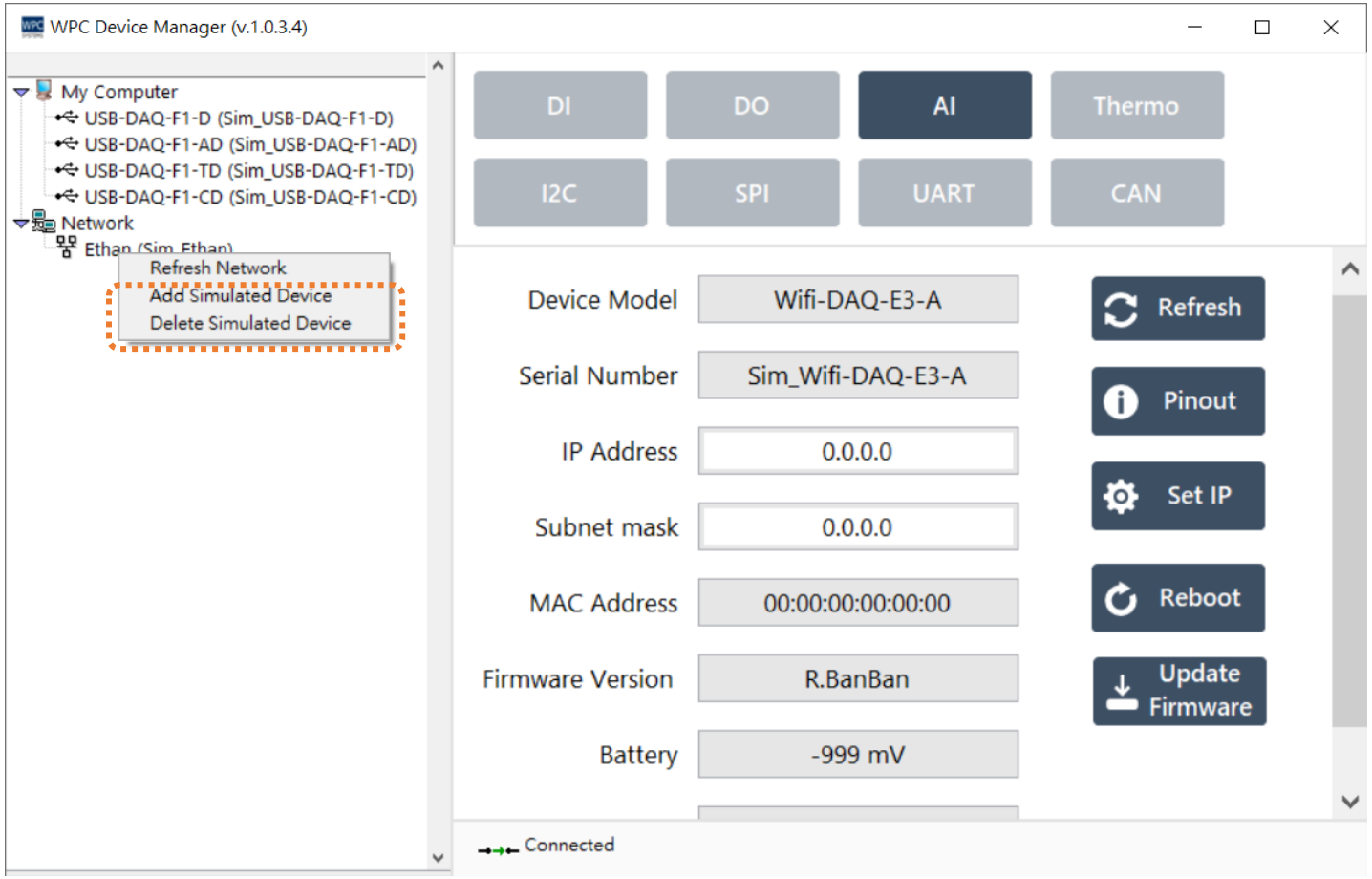


Refresh device list on host PC

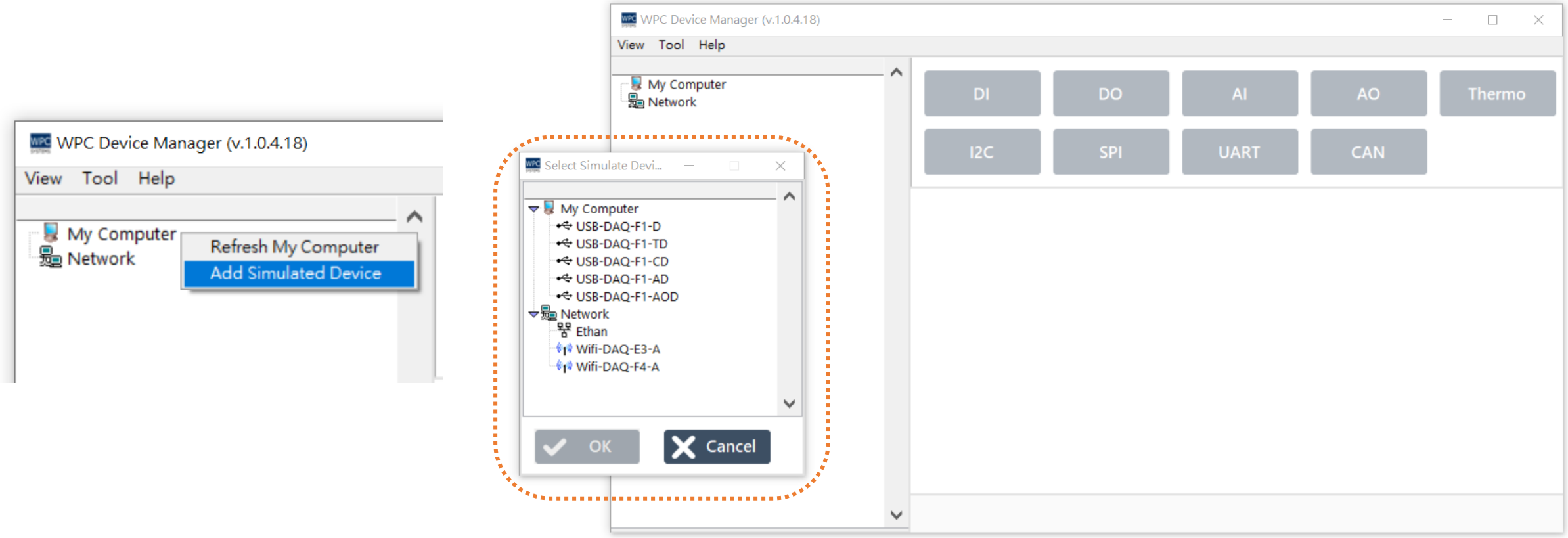


Discover devices on local area network (LAN)

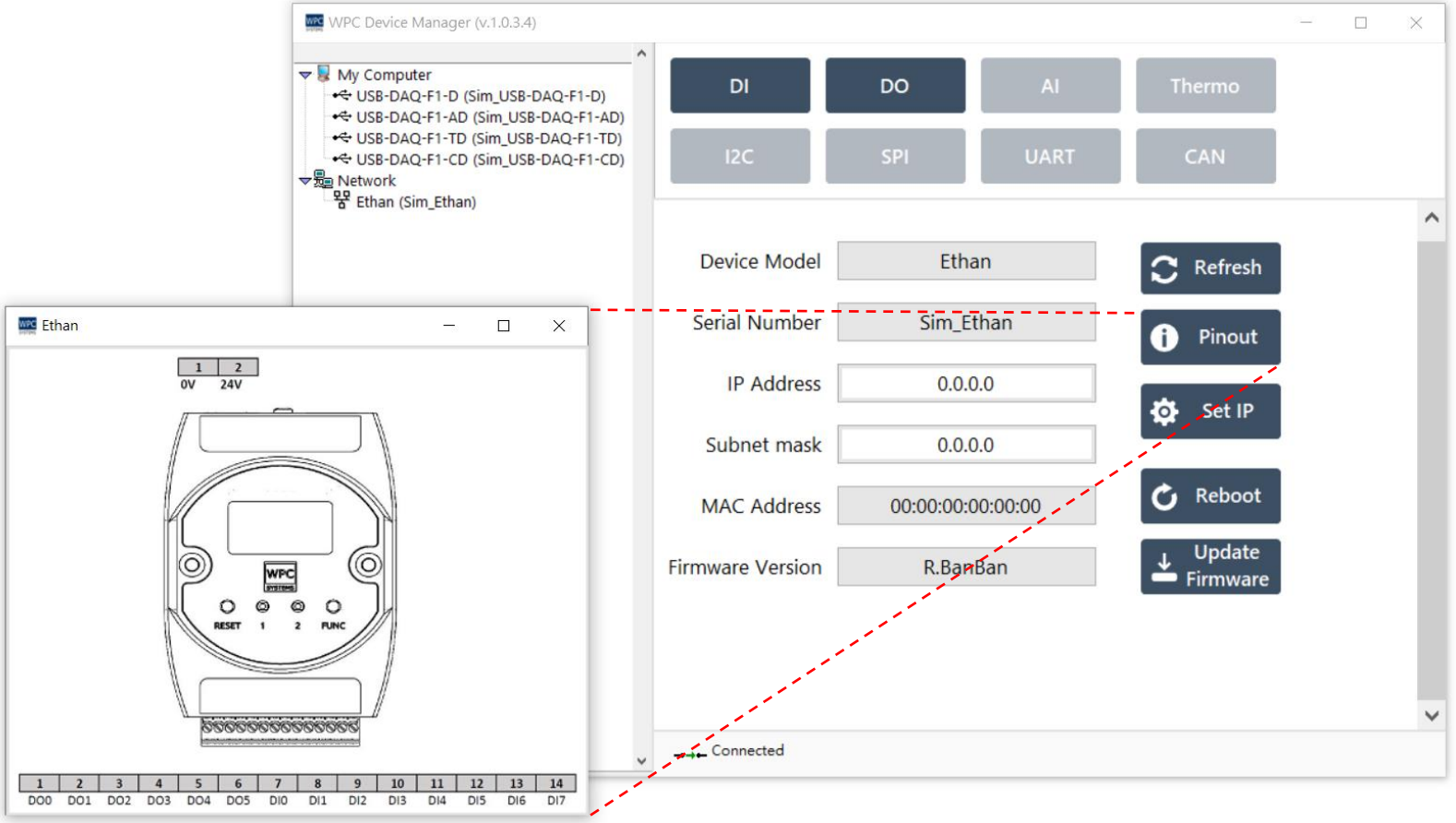
Right-click to add/remove simulated devices



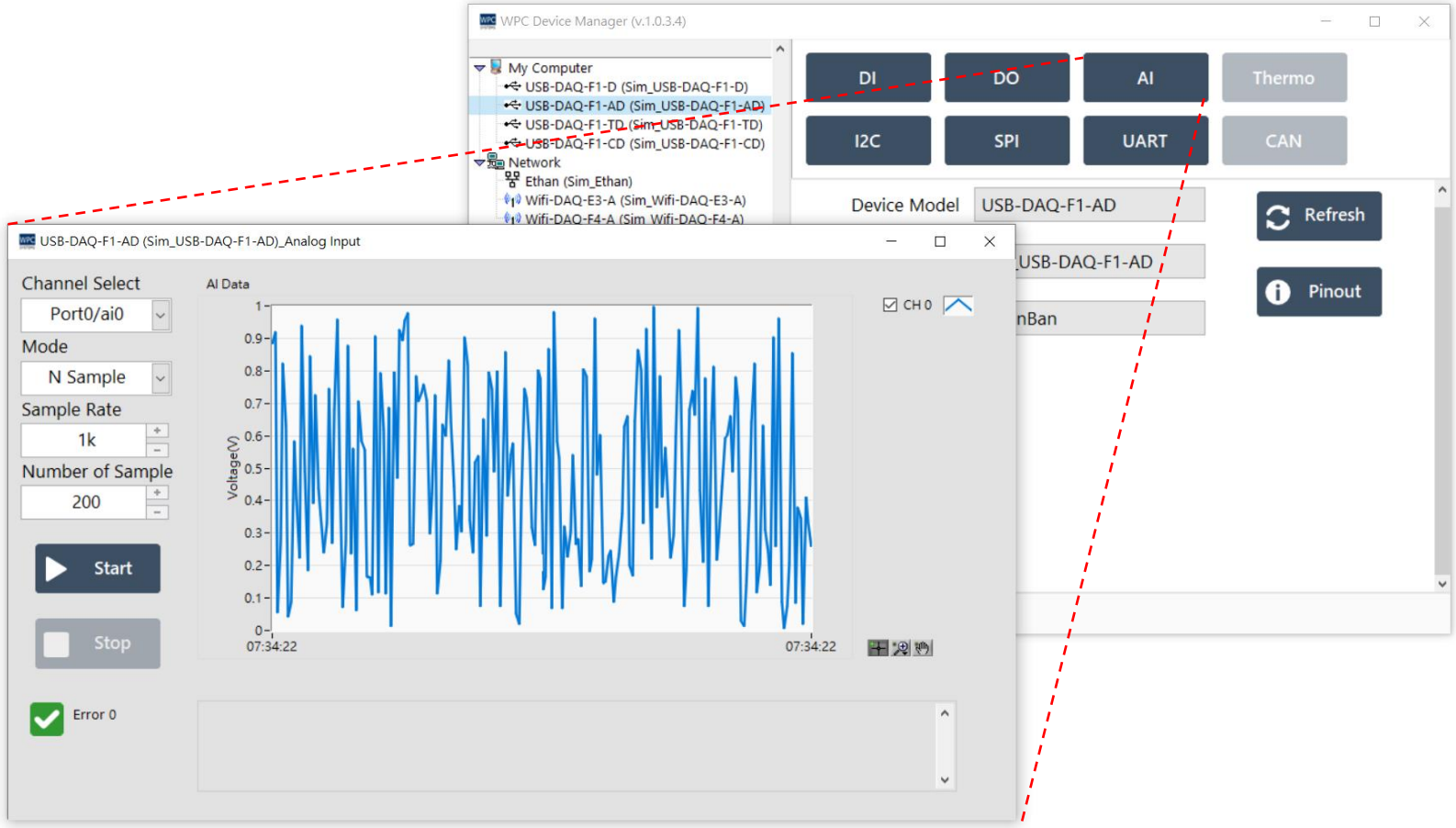
Add simulated devices



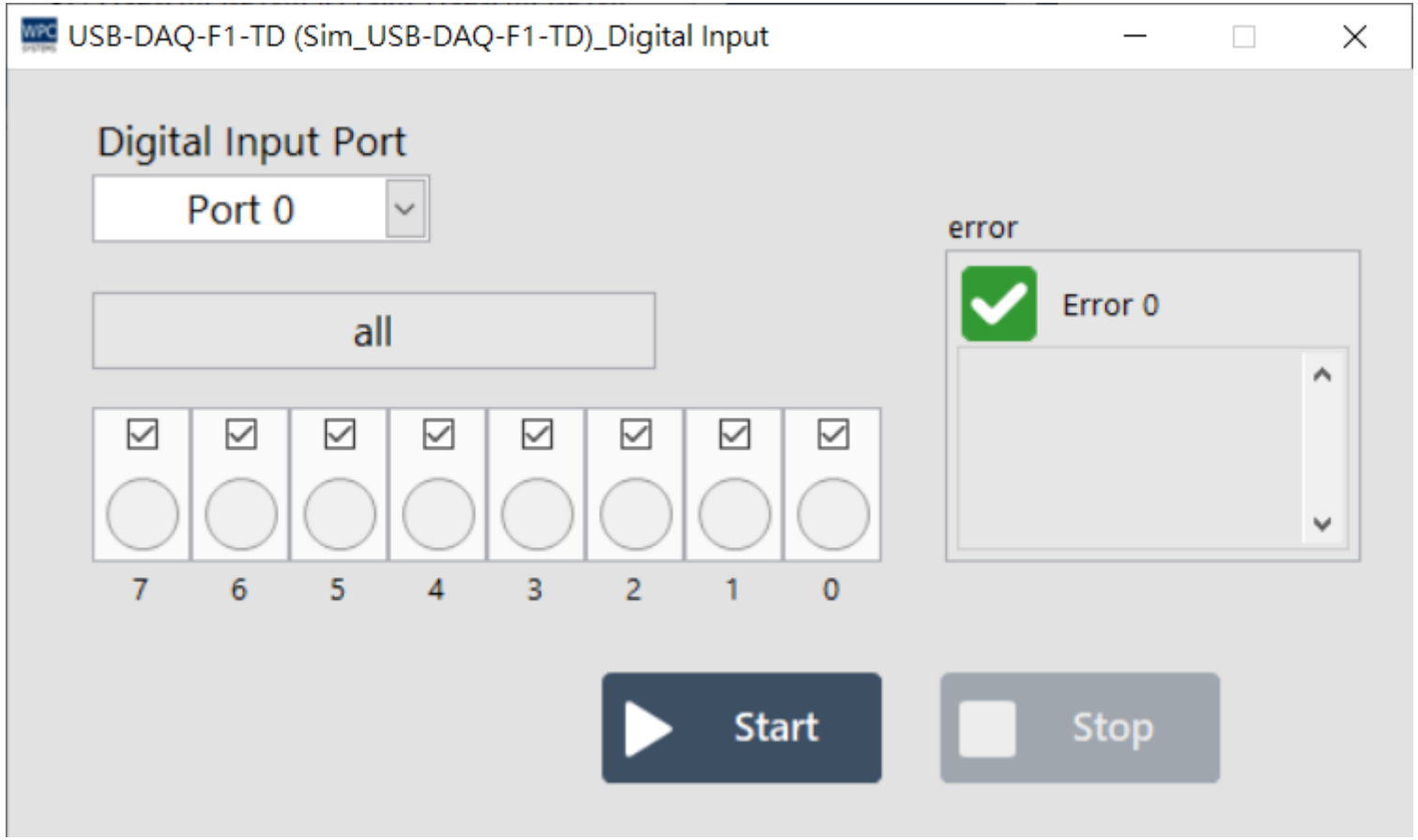
Find device pinout



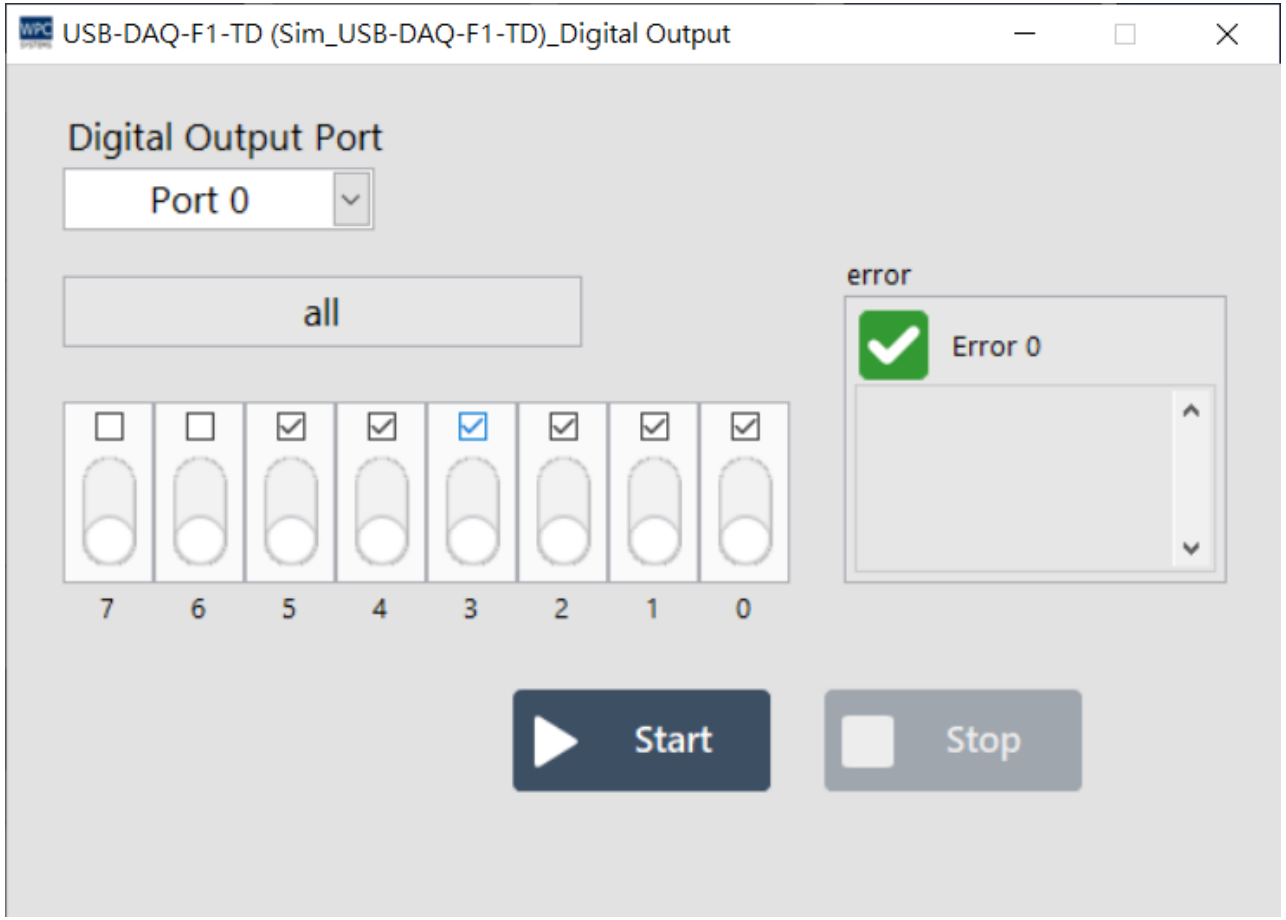
Open test panel - Interact with devices



Test panel DI

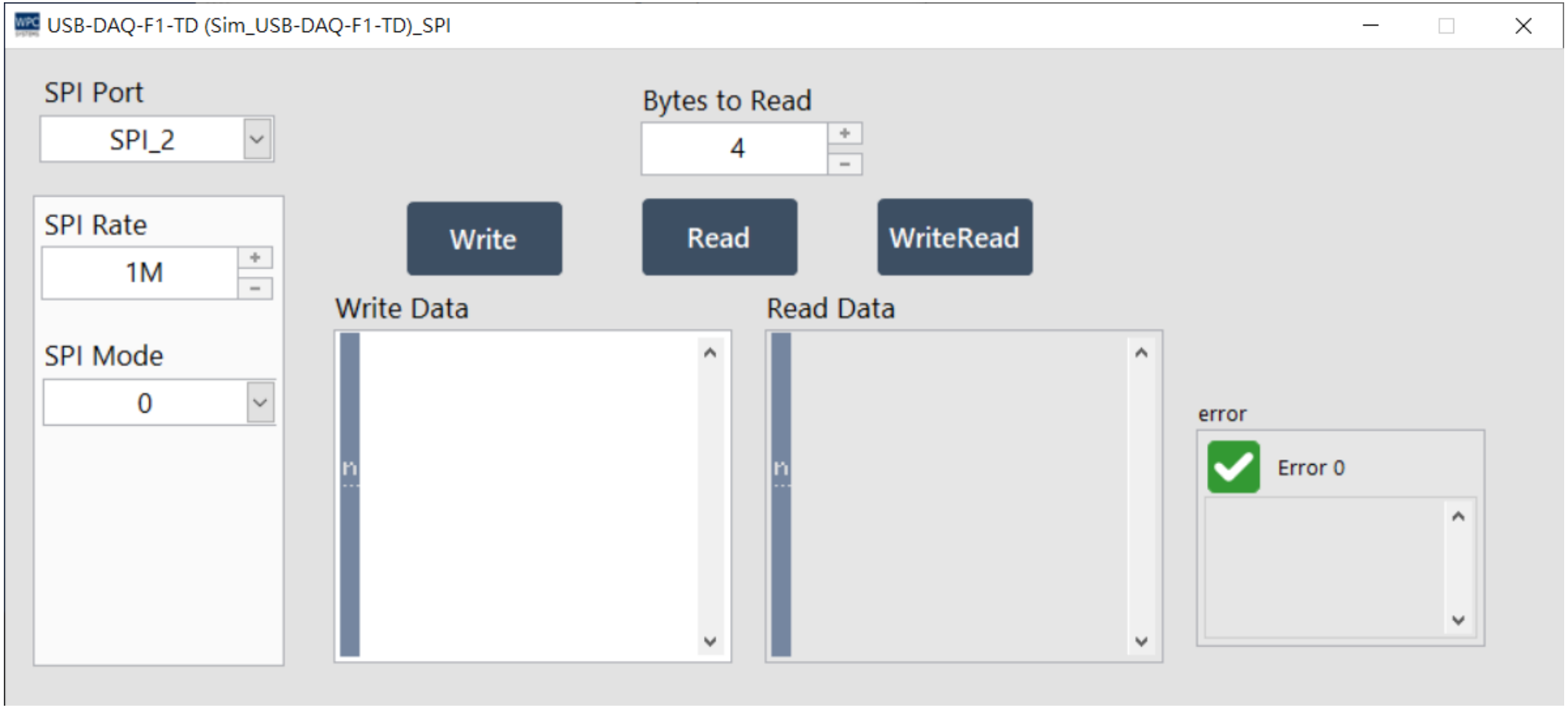


Test panel DO

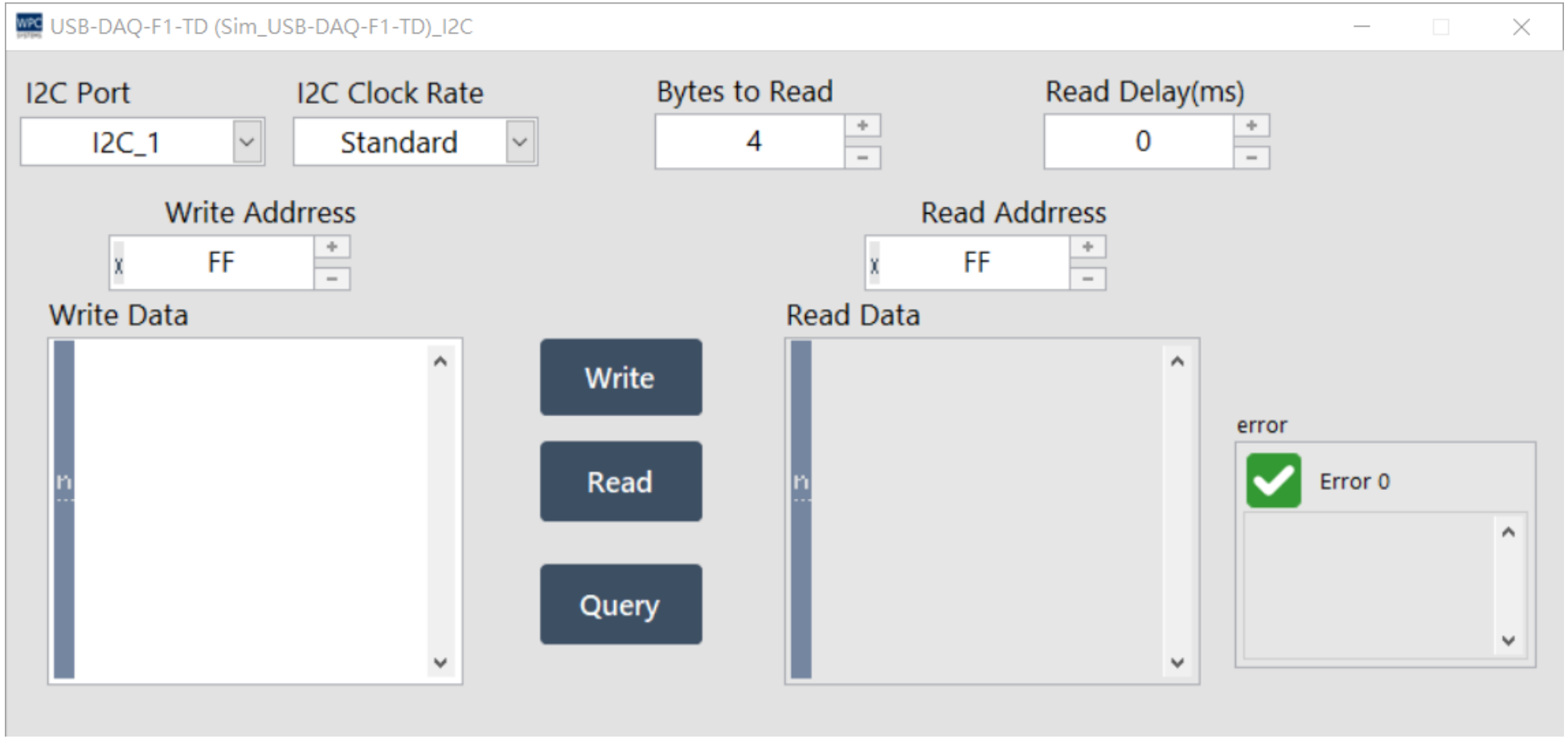


Test panel UART

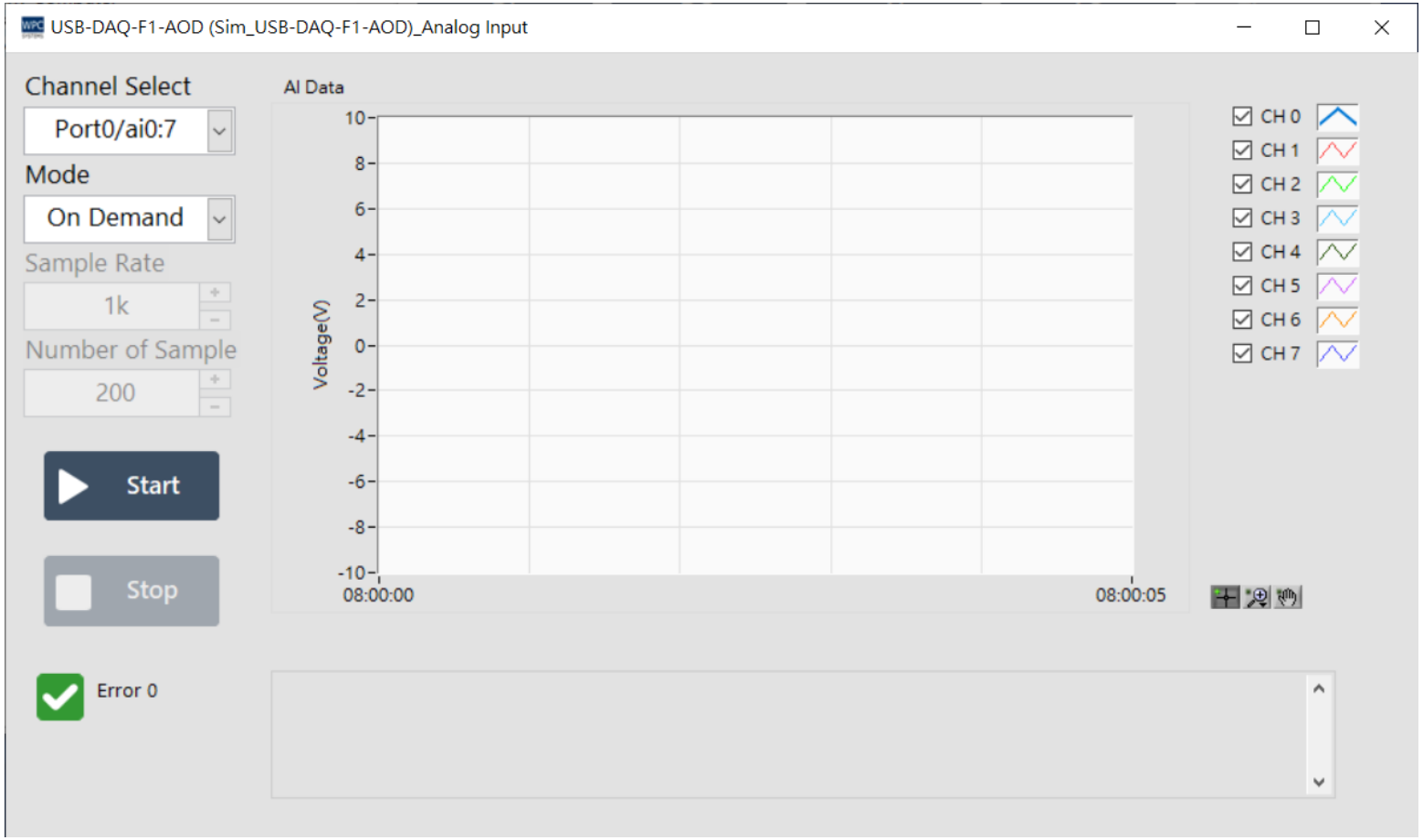
Test panel SPI



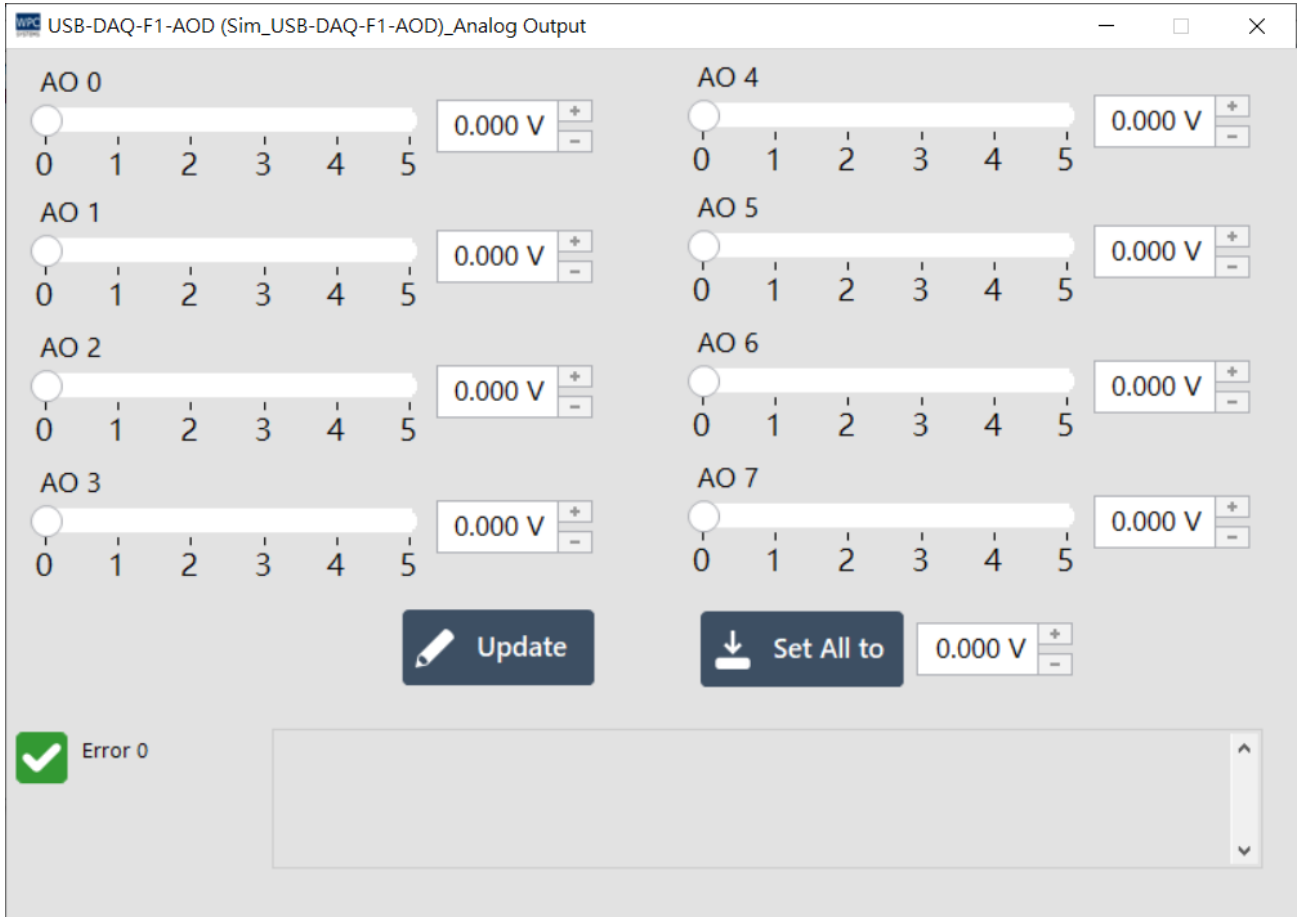
Test panel I2C



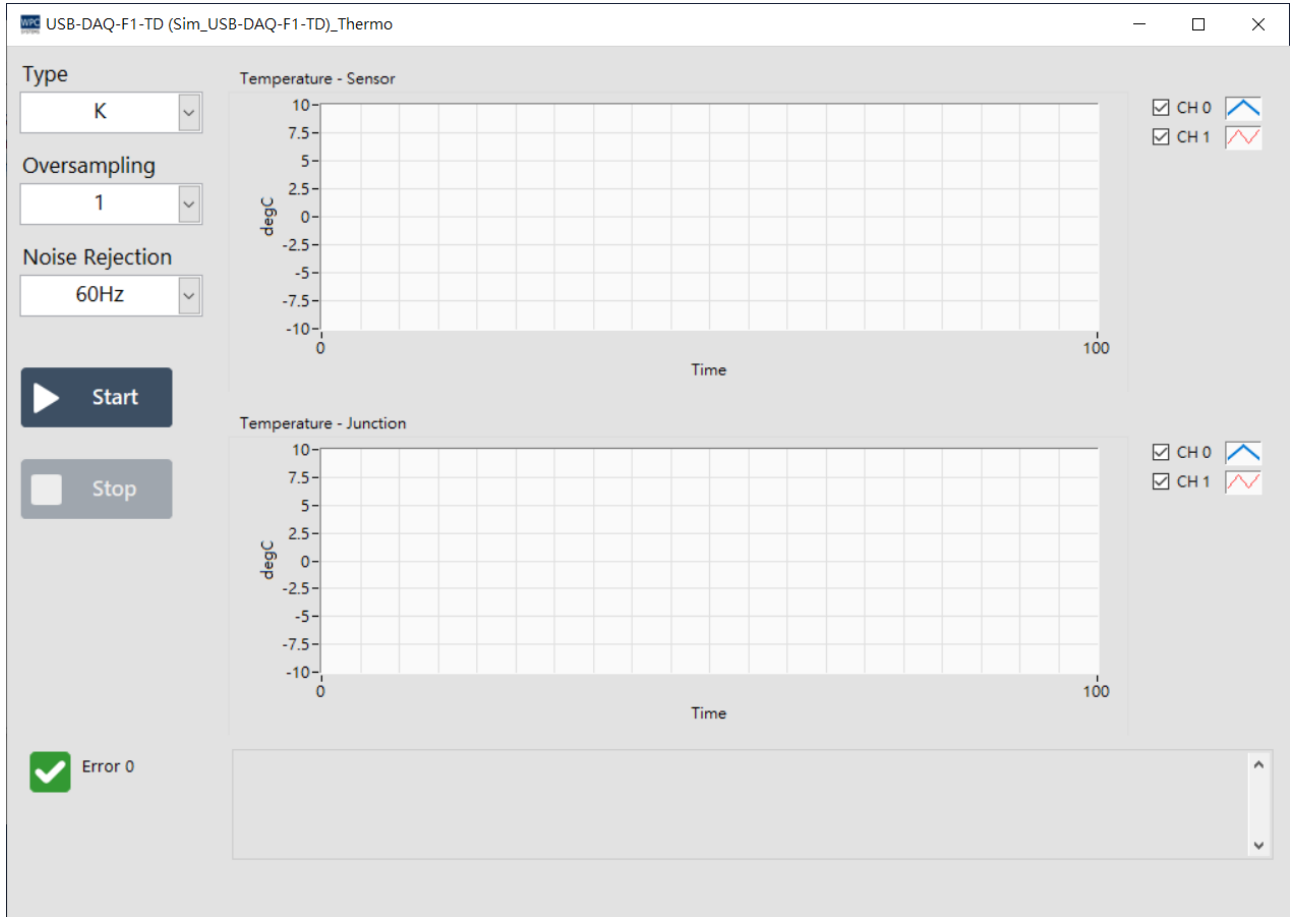
Test panel AI



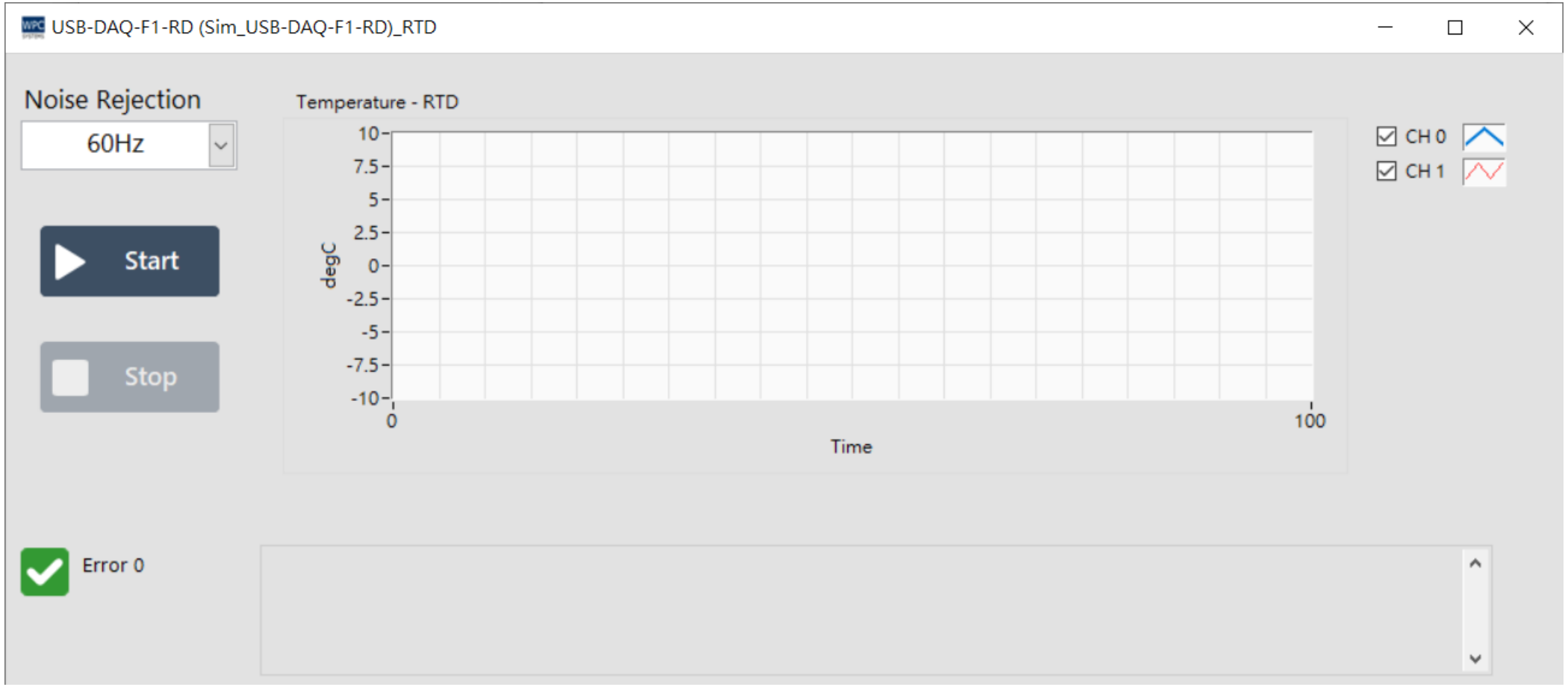
Test panel AO



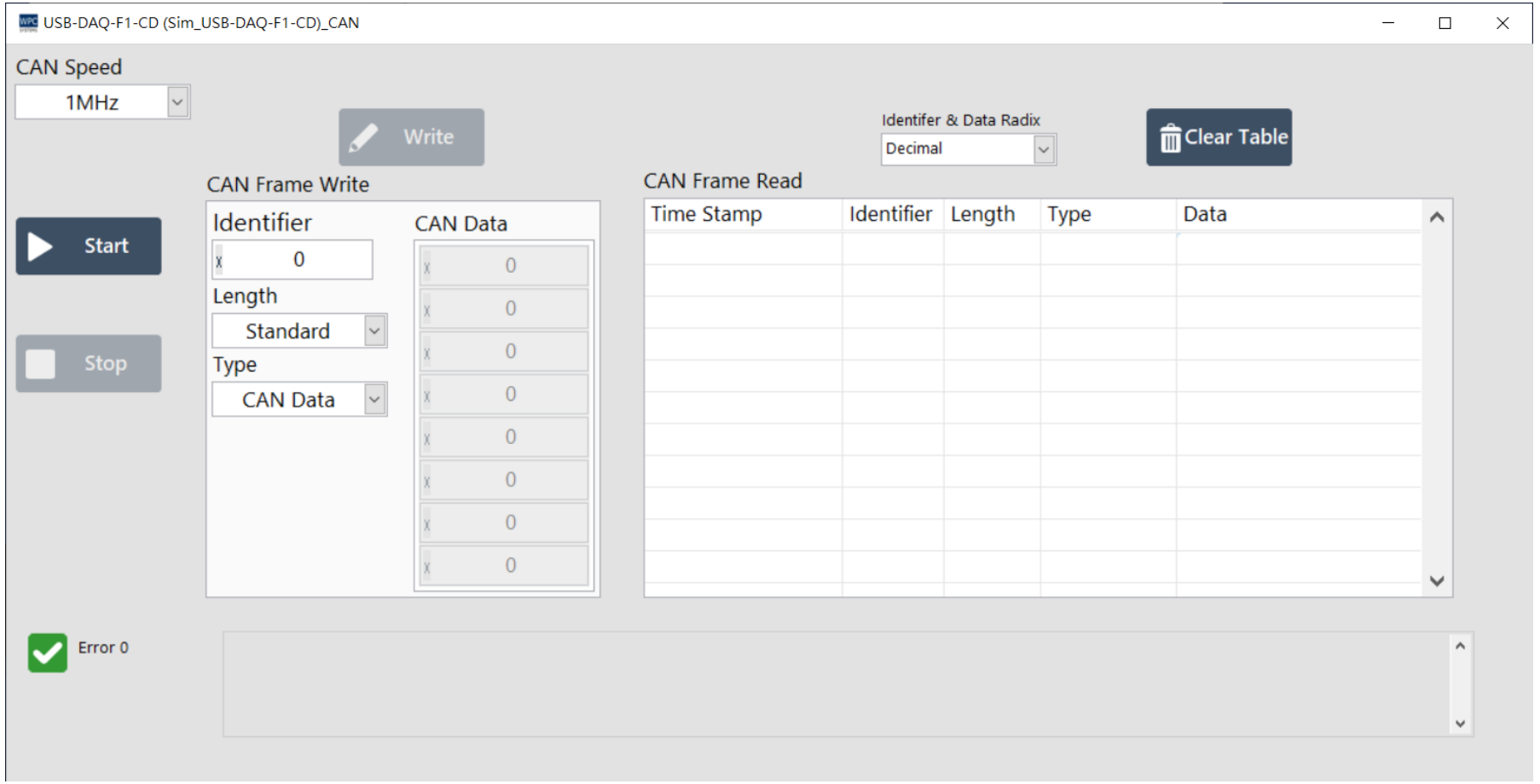
Test panel Thermocouple



Test panel RTD



Test panel CAN bus



WPC DAQ Driver Library

Easy-to-use LabVIEW API

WPC product vs. driver 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	●

舊版本 新版本

●	direct support
▲	workaround
X	not supported

How to get WPC DAQ driver?

Download the latest version of WPC DAQ driver

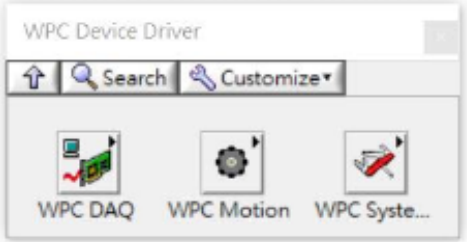
WPC Device Driver 驅動程式下載 (2022-07-08更新)

wpc_device_driver-1.0.13.4.zip
Download File

Download

wpc_device_driver-1.0.10.6.vip

- LabVIEW 驅動程式、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

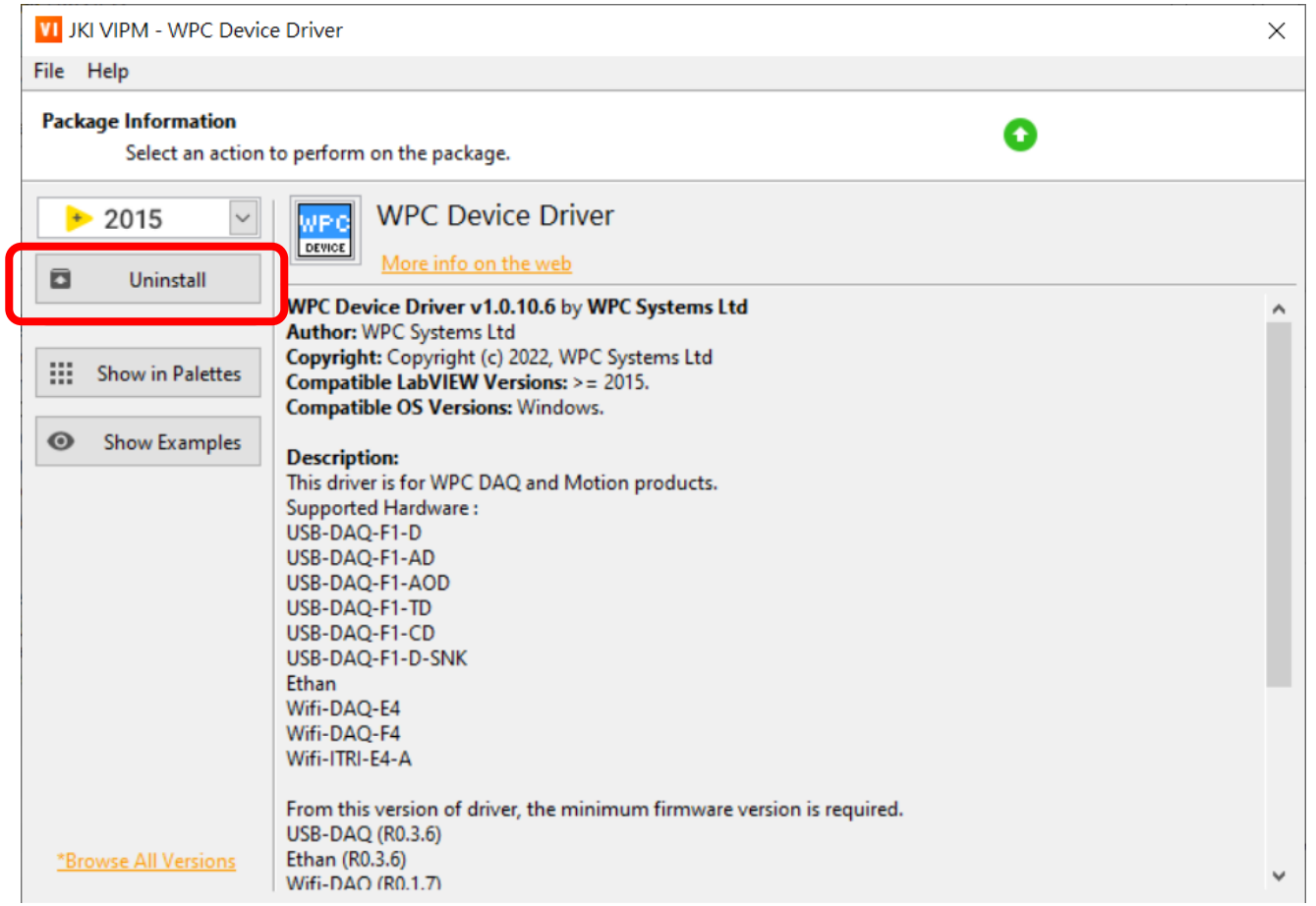


Install the WPC DAQ driver

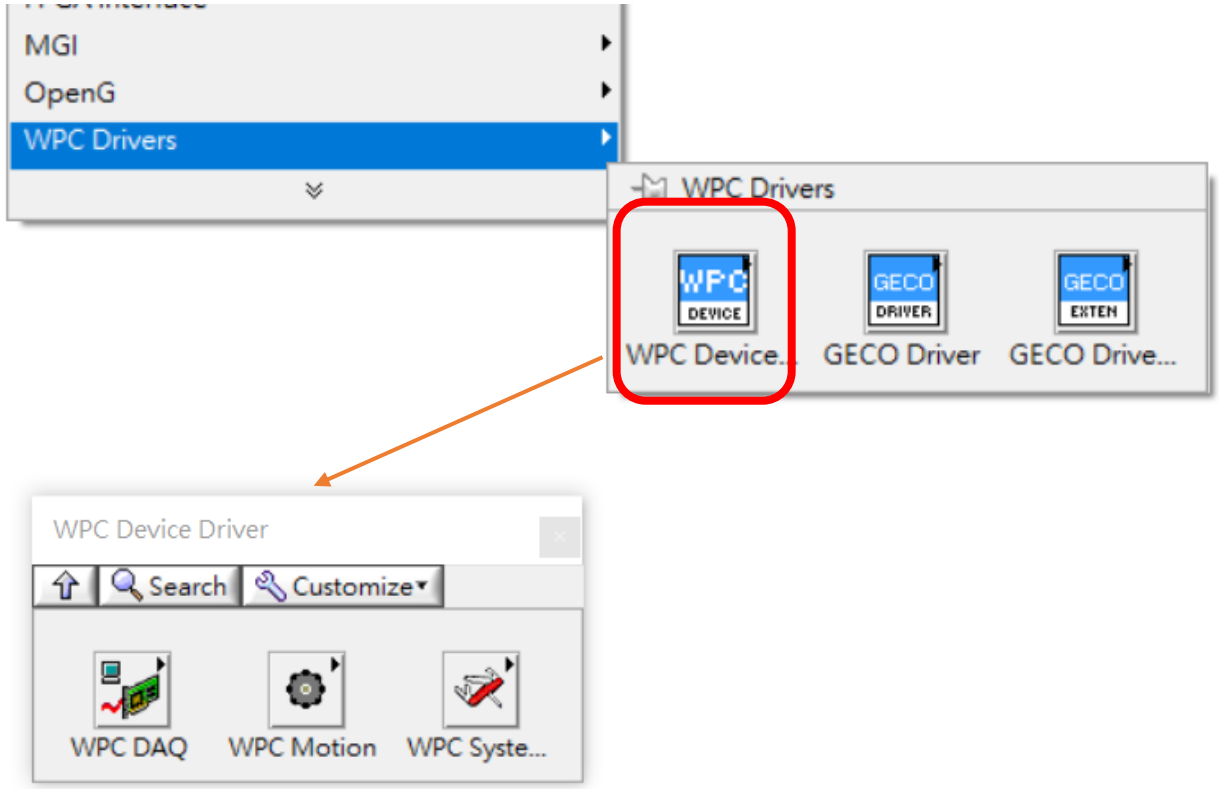
wpc_device_driver-1.0.10.6.vip

Double-click

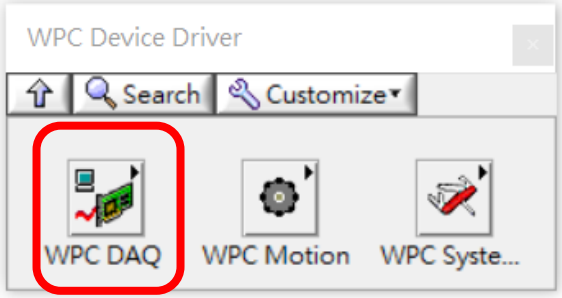
Install /uninstall

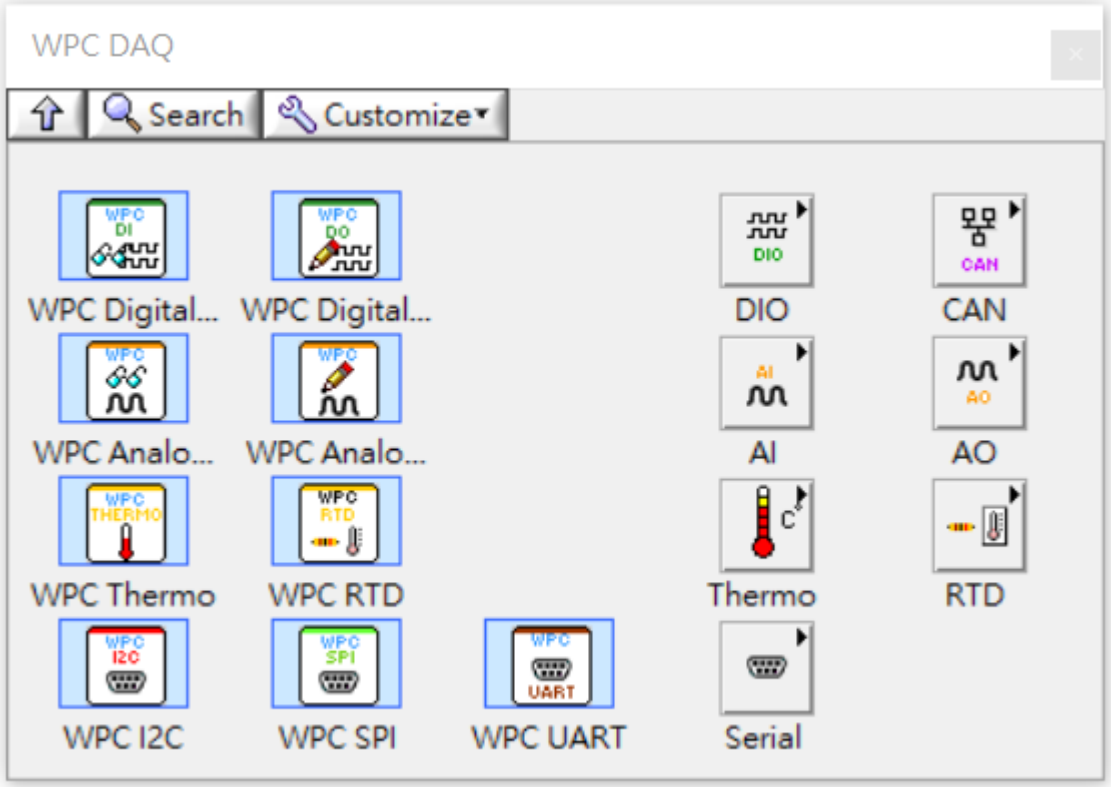


Right-click on LabVIEW block diagram

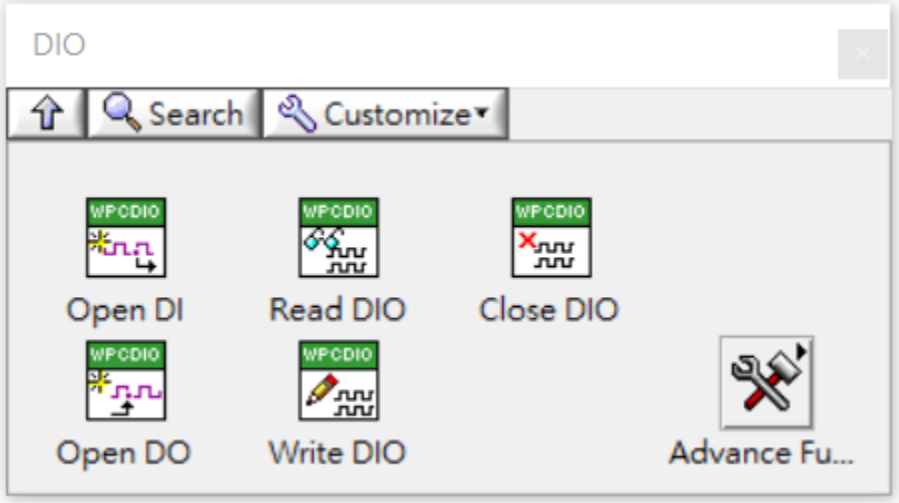


WPC DAQ driver API

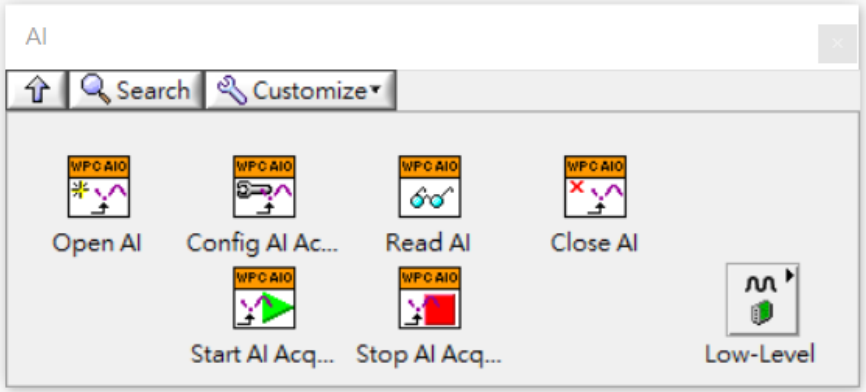


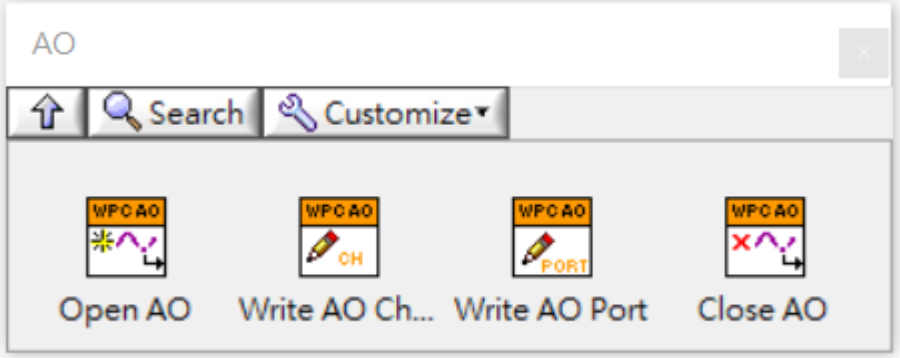


Digital I/O API

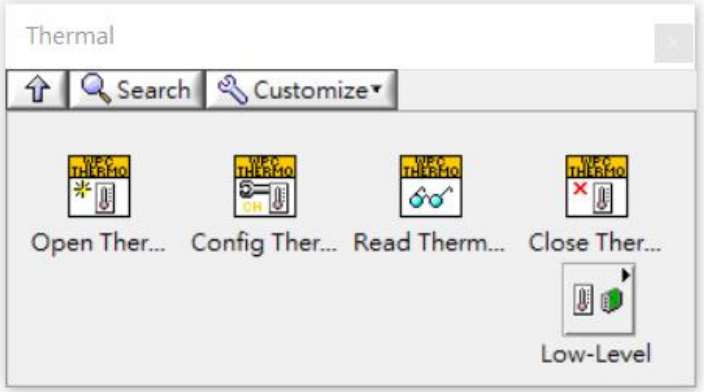


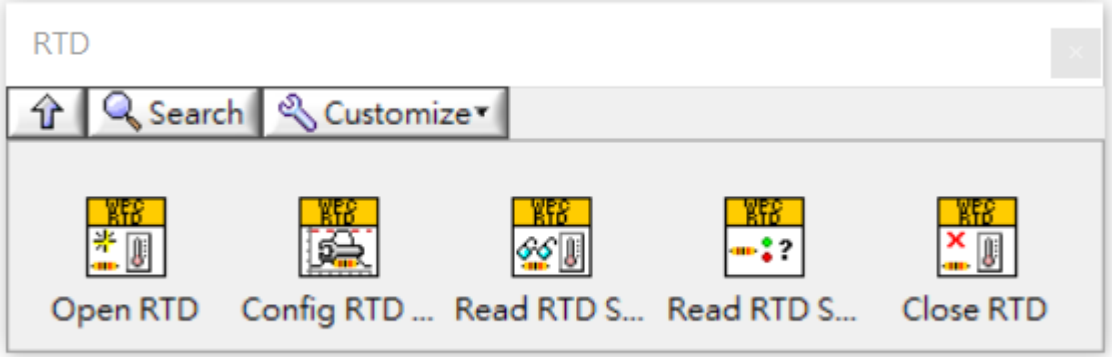
Analog I/O API



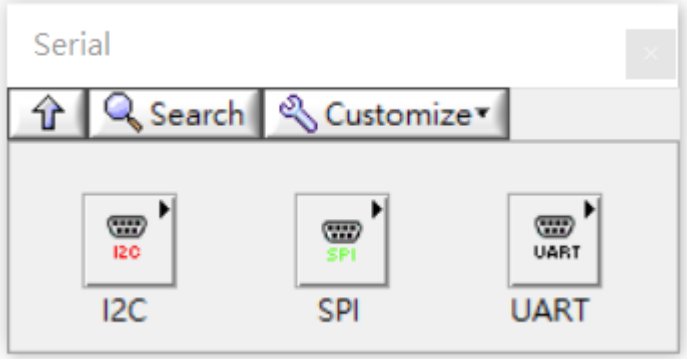


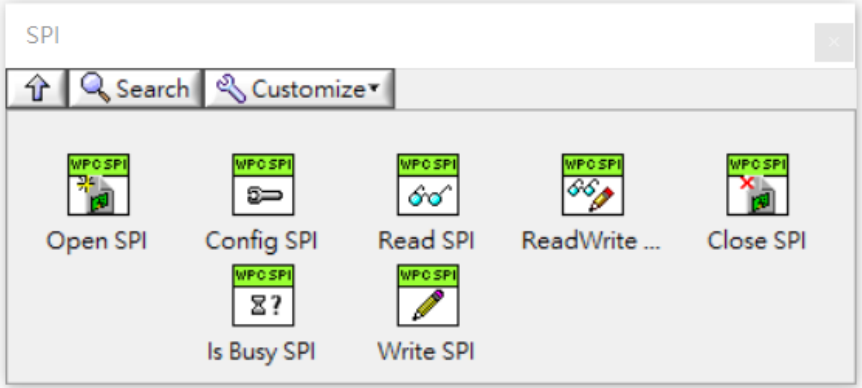
Temperature sensing API

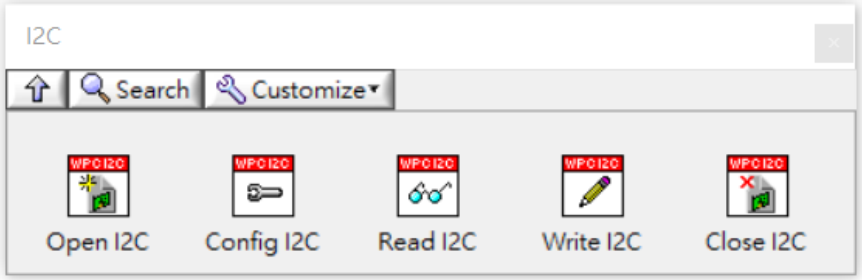


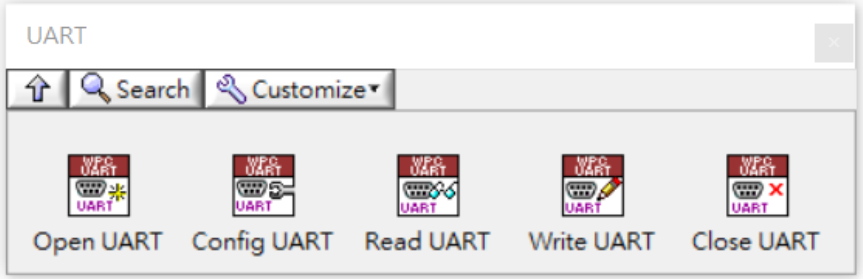


Digital interfacing API

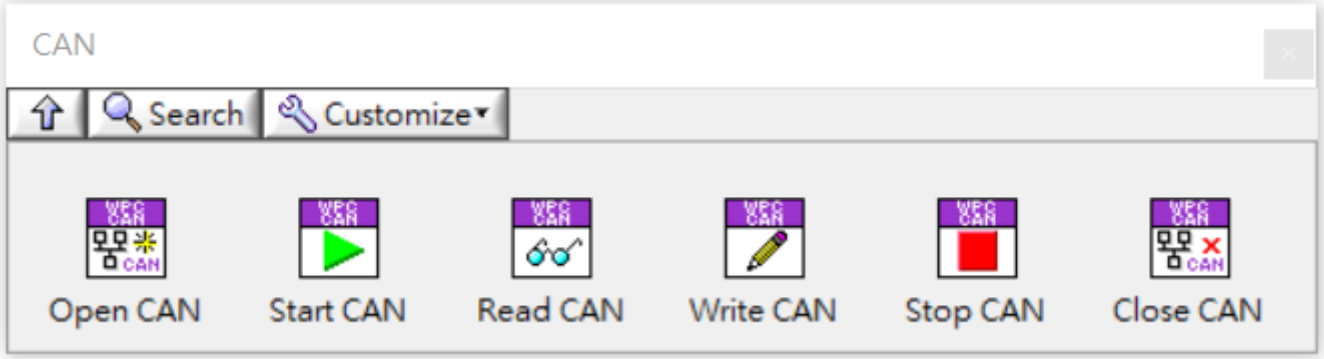




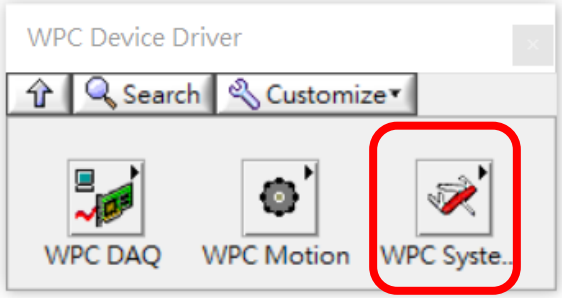


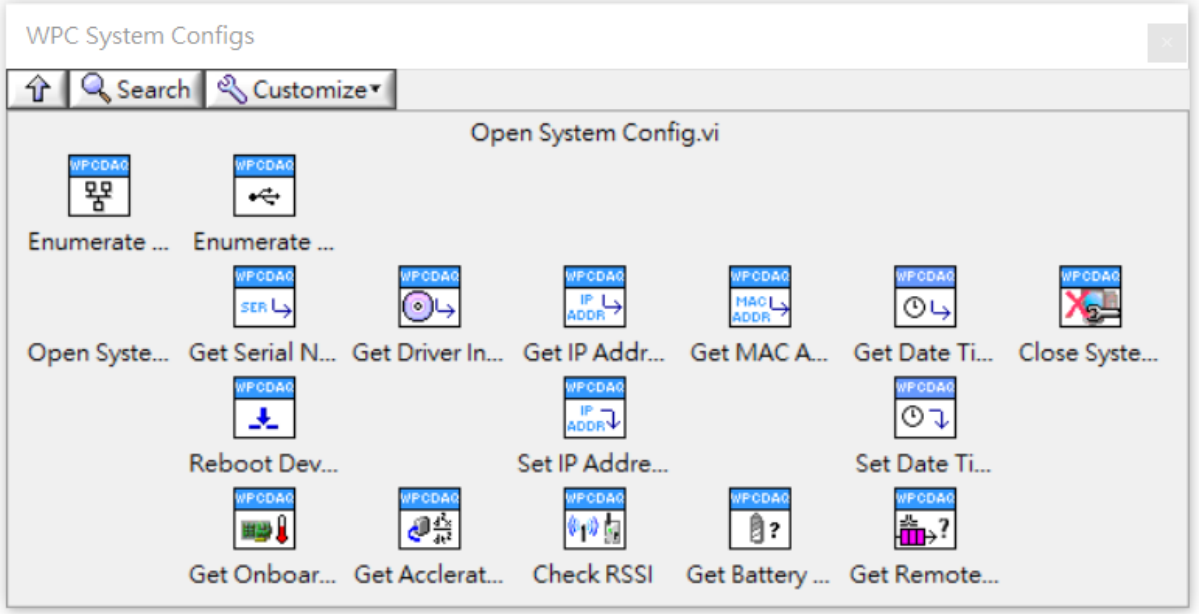


Communication API



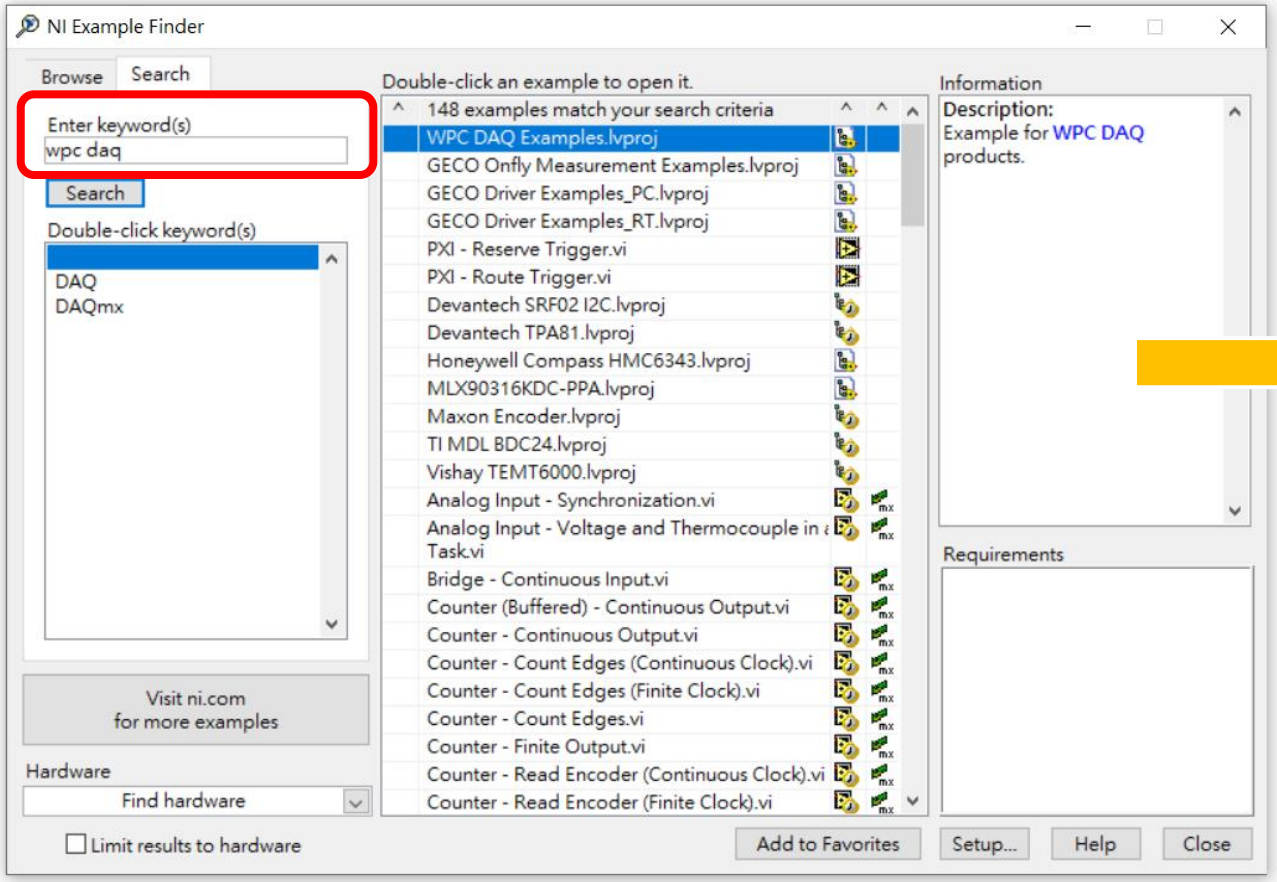
Device management API

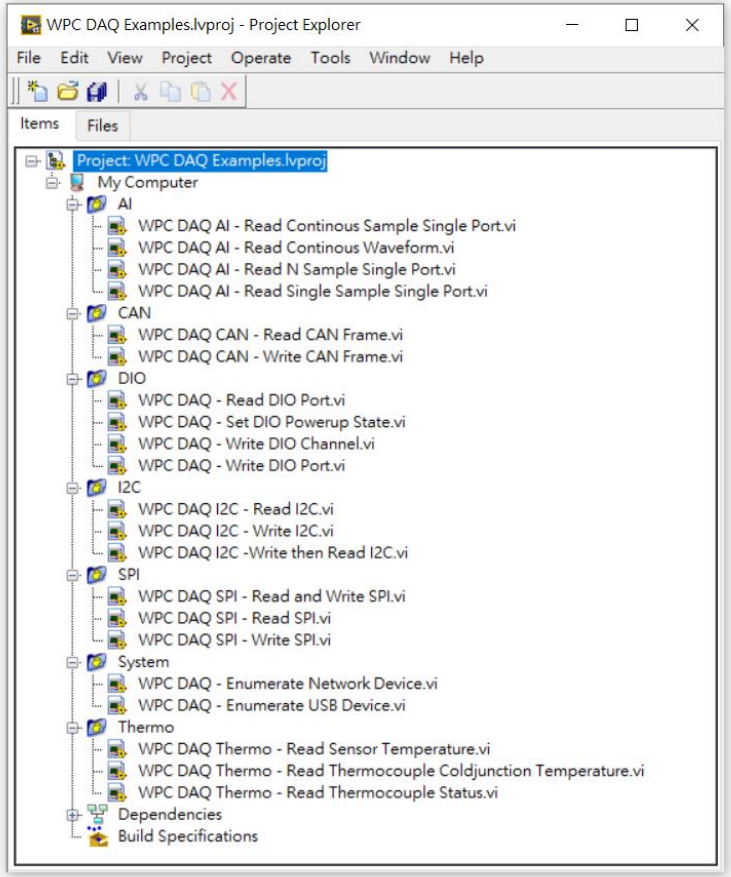




WPC DAQ example codes

Find example codes through NI Example Finder





Open example folder through VI package