



Analog Input Module

AI300



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Analog Input Module

AI300



- 9 Programmable Analog Input Type (Isolated)
- 8 Digital Input/Output Channels
- Digital Input can be Programmable (Status, Counter, Frequency, Quadrature Counter, etc.)
- Support Protocol MODBUS RTU / ASCII Command (RS485)

Analog Input Module AI300 is a device that can receive 9 Analog Input signals, 8 Digital Input channels and control 8 Digital Output channels. Can be connected via port. USB or RS485 port, users can develop programs on PC, PLC or Touch Screen to read. Input values and control Digital Output using the MODBUS ASCII/RTU or Wisco protocol. ASCII by AI300 can also be powered from a USB port.

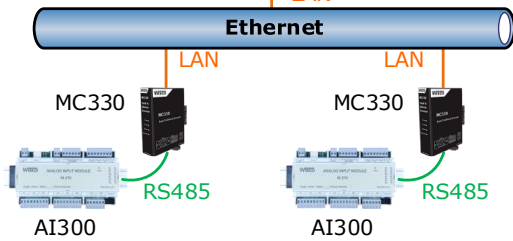
Analog Input can be programmed to be used with sensors such as Thermocouple, RTD, and Programmed to receive signals Voltage (0-125, 0-500 mVDC, 0-5, 0-10 VDC), Current (4-20 mA) etc.

Digital Input can receive both Logic and Counter signals. Logic will show the "ON" or "OFF" for Counter can be programmed to be different types of Counters, such as showing total values. (Totalized) of the number of Input Pulse, record the Totalized value of Flow, rotational speed (RPM), Frequency (Hz), measure the distance of movement of the workpiece (Rotary Encoder), record the Kwh. value of electricity usage or timekeeping (Timer), etc.

Connection Example



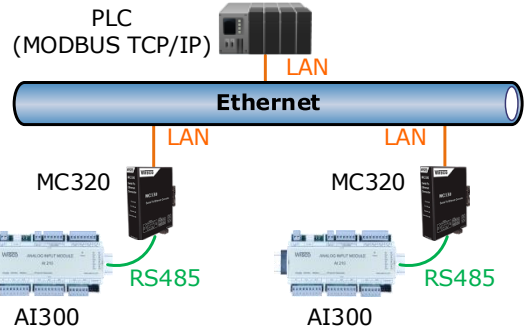
Connection via USB



Connection via Ethernet (LAN)



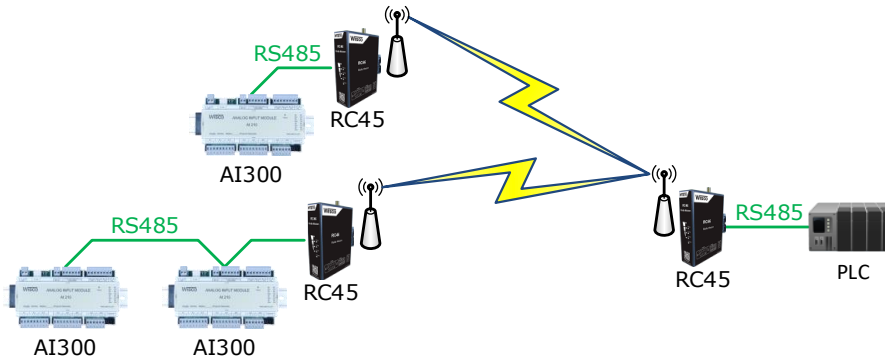
Connection via RS485



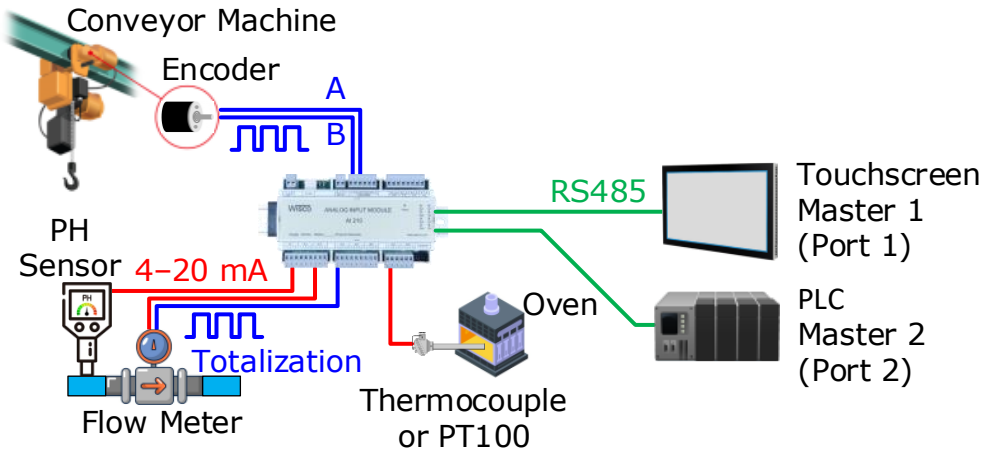
Connection via MODBUS TCP/IP



Connection via Wireless System (Wireless Point to Point: RC35)

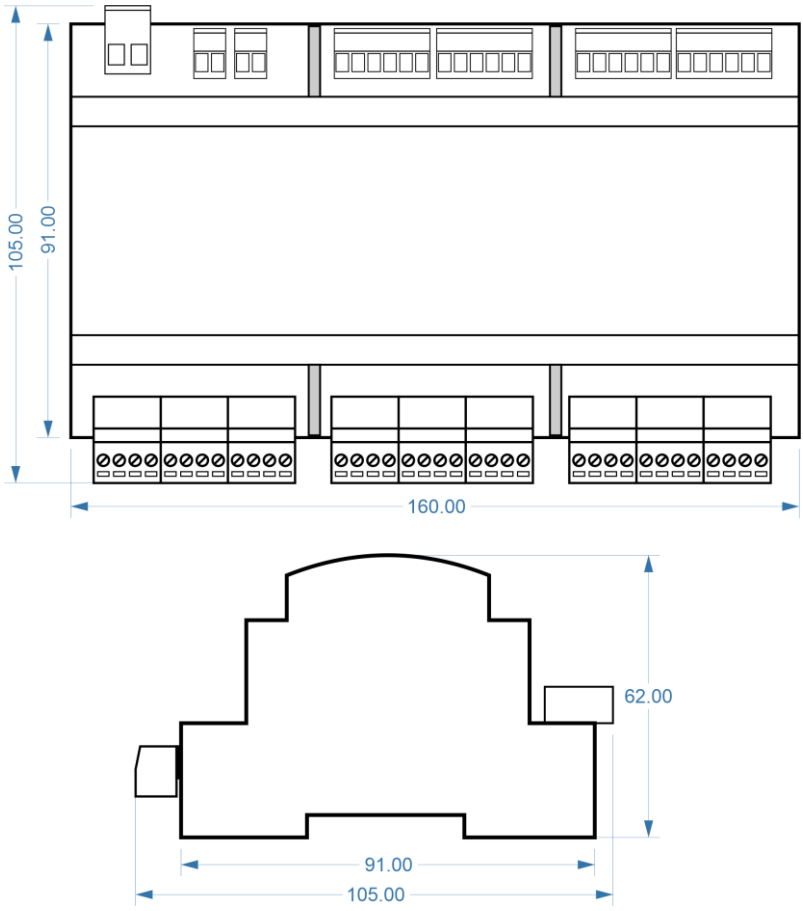


Connection via Wireless System (Wireless Point to Multipoint: RC45)



Example of connection

Dimensions (Unit: mm.)

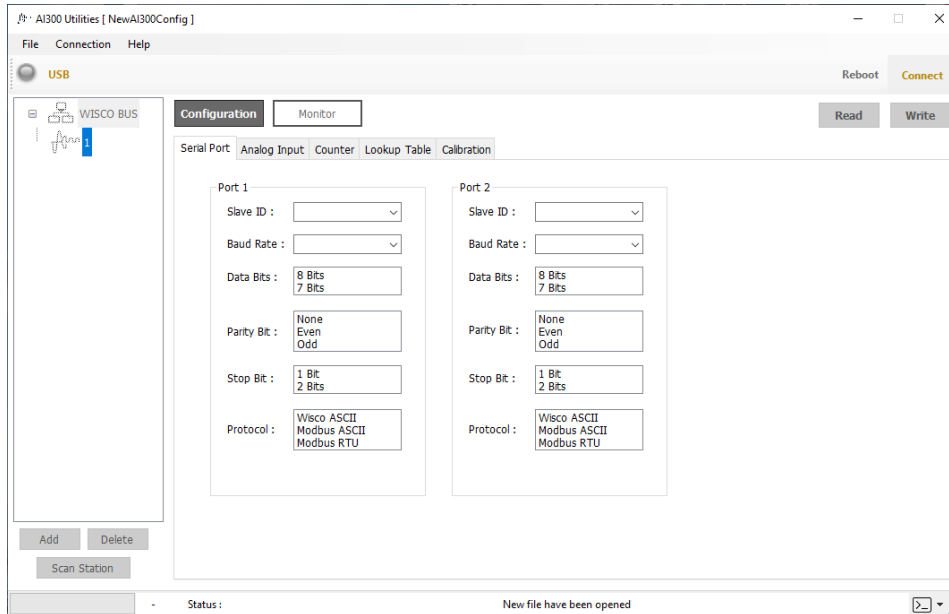


Wiring

<p>Supply</p> <p>110 to 230 VAC 12 to 35 VDC Optional</p>	<p>RS485</p> <p>PC, PLC, Etc.</p>
<p>Analog Input</p> <p><i>Thermocouple</i></p> <p><i>RTD (2-Wire)</i></p> <p><i>RTD (3-Wire)</i></p> <p><i>RTD (4-Wire)</i></p> <p><i>Resister, POT</i></p> <p><i>Voltage (mVDC)</i></p> <p><i>High Voltage (VDC)</i></p> <p><i>Current (mA)</i></p>	<p>Digital Input</p> <p><i>Dry Contact (DI to GND)</i></p> <p><i>Dry Contact (NPN Open Collector)</i></p> <p><i>Wet Contact (DI to COM)</i></p> <p><i>Wet Contact (PNP Output)</i></p> <p><i>Wet Contact or D.C. Pulse</i></p>
<p>Digital Output</p>	

Note: G = GND, C = COM

Wisco AI300 Utilities



Wisco AI300 Utilities program is used for reading values and setting values for AI300, such as setting Serial. Parameter, select the type of Analog Input and Digital Input etc. by connecting via port. USB or RS485 port.

1. Things You Should Know Before Using The Wisco AI300 Utilities Program.

The Wisco AI300 Utilities program can be connected to the AI300 via USB Port or RS485. Using Wisco ASCII Protocol only.

Using the USB Port

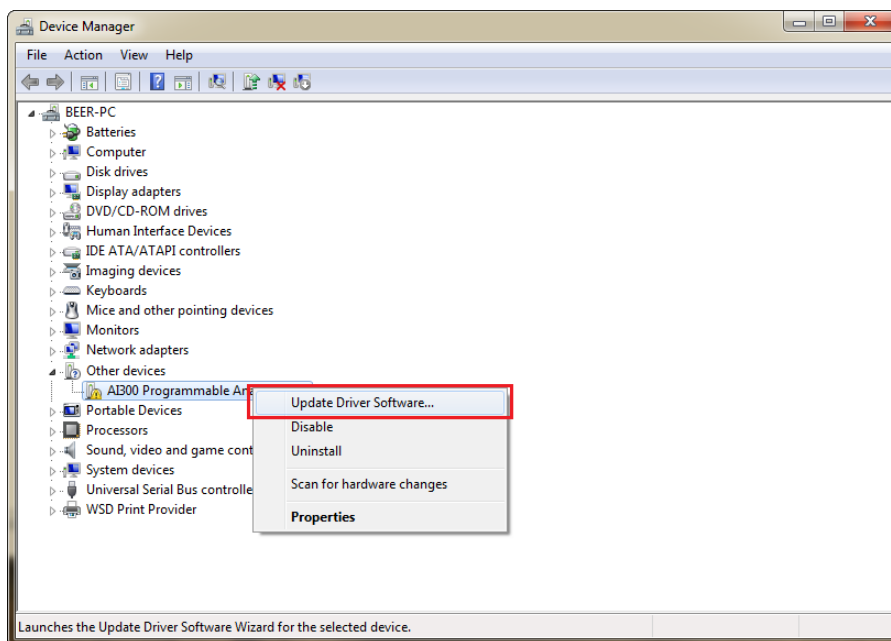
When using the USB Port for the first time, you must install the USB Driver first. See details in Section 1.1.


1.1 How To Install USB Driver.

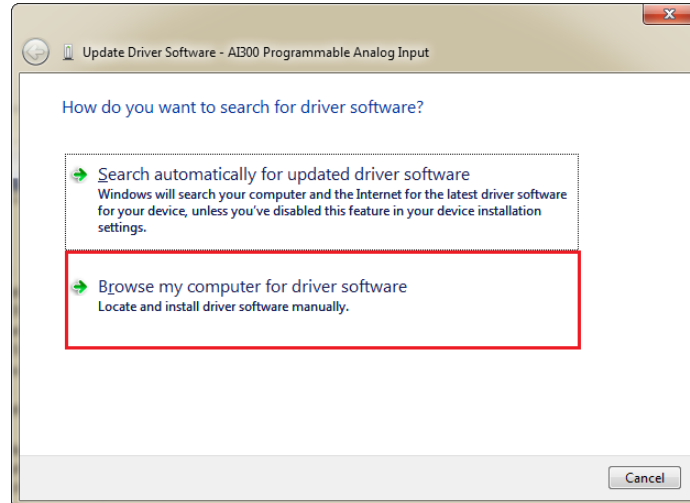
The USB Driver for the module can be obtained from the company website. <https://www.wisco.co.th/main/model/ai300> Driver installation steps are as follows.

For computers with Windows 7/8 system

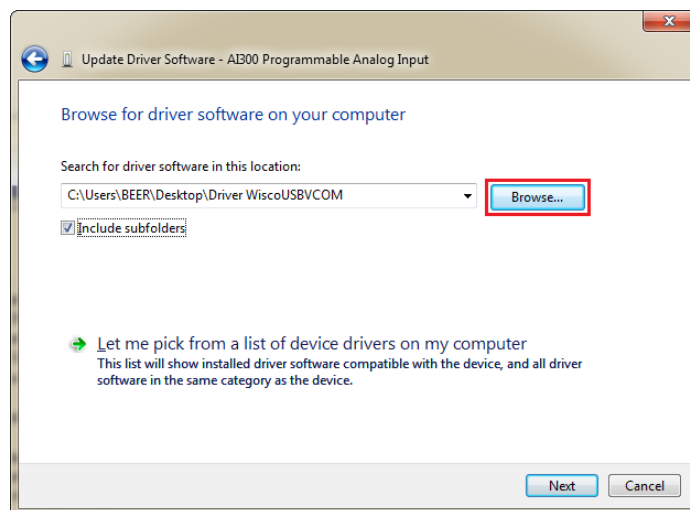
- ❖ Supply power to the module.
- ❖ Connect the USB cable between the module and the computer.
- ❖ Click Start -> Control Panel -> System -> Device Manager or right-click My Computer and select the Manage topic. After that, select the Device Manager topic. (For Windows 8, select Start -> Setting -> Control Panel -> System -> Device Manager)


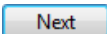


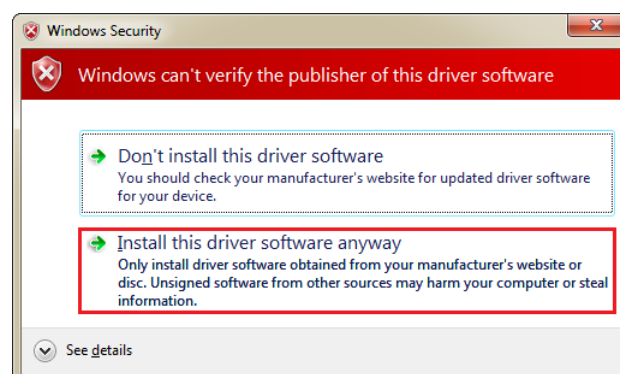
- ❖ Right click on  AI300 Programmable Analog Input and select Update Driver Software...



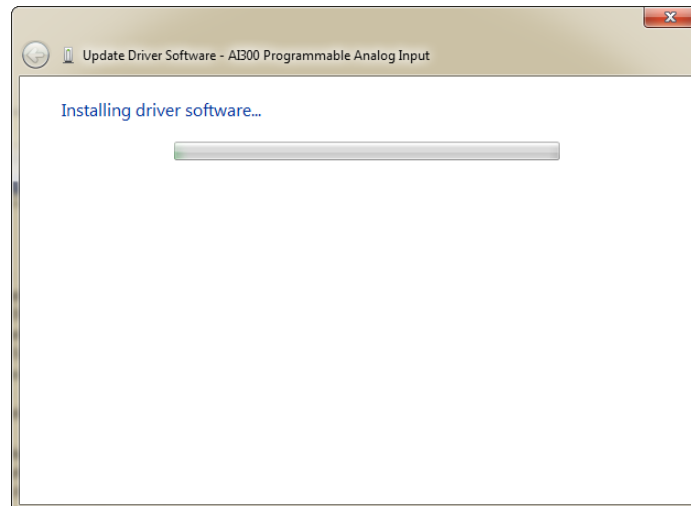
❖ Select the topic “Browse my computer for driver software”



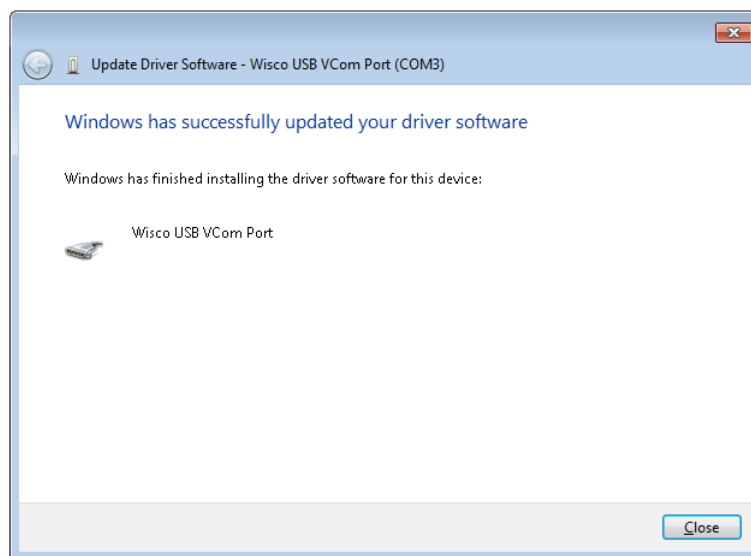
❖ Then press the click button  and select “Driver WiscoUSBVCOM” after that press the button 



❖ In the case where the “Windows Security” window is displayed, click to select Install this driver software anyway.

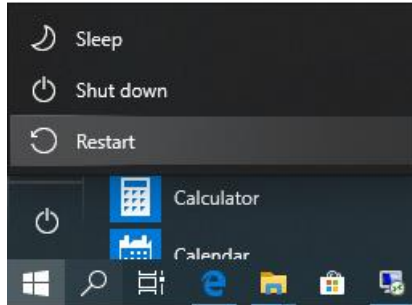


- ❖ Windows will load USB Driver onto the computer.
- ❖ Wait a moment, a "Completing the Found New Hardware Wizard" window will appear, press it click button Complete installation of Driver Wisco USB VCom Port

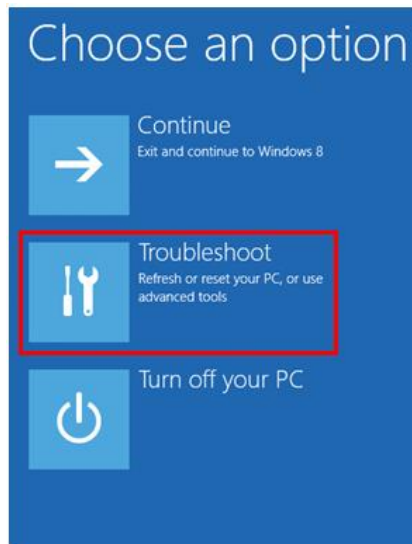


For Computers With Windows 10/11 System

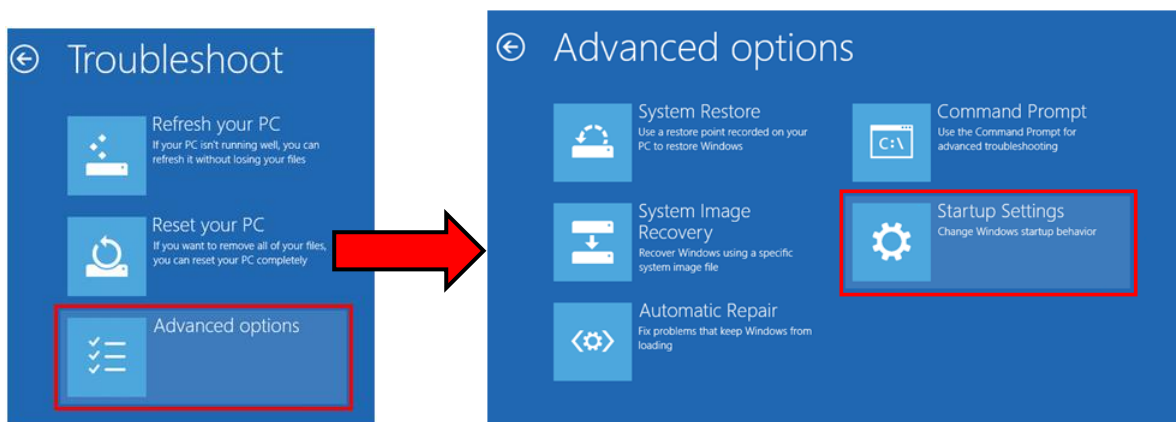
before updating the USB Driver. "Driver Signature" must be turned off first. The details are as follows.



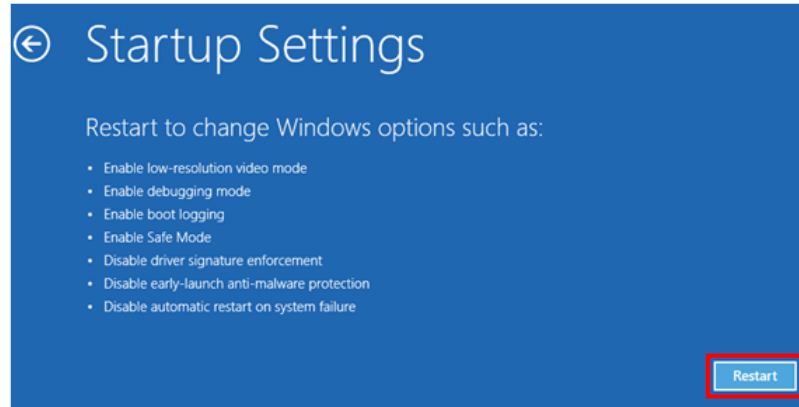
- ❖ Press and hold the Shift key on the Keyboard, then click Start -> Power -> Restart. When the "Choose an Option" window is displayed, release the Shift key.




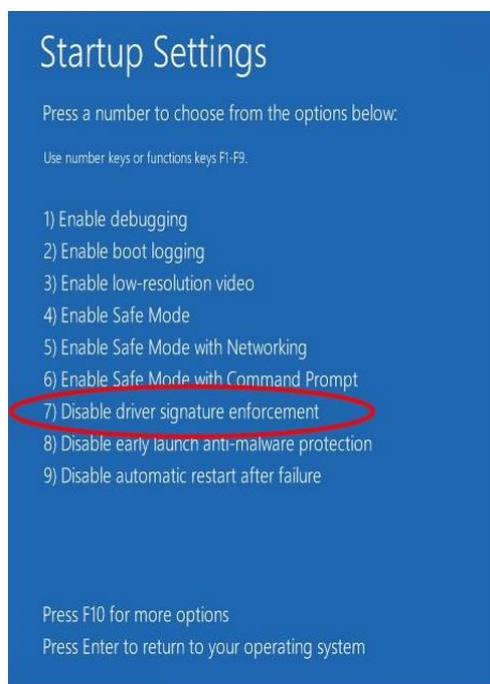
- ❖ At the "Choose an Option" window, click to select "Troubleshoot"



- ❖ Click to select "Advance Option" and in the "Advance Option" window, click to select. "Startup Settings"



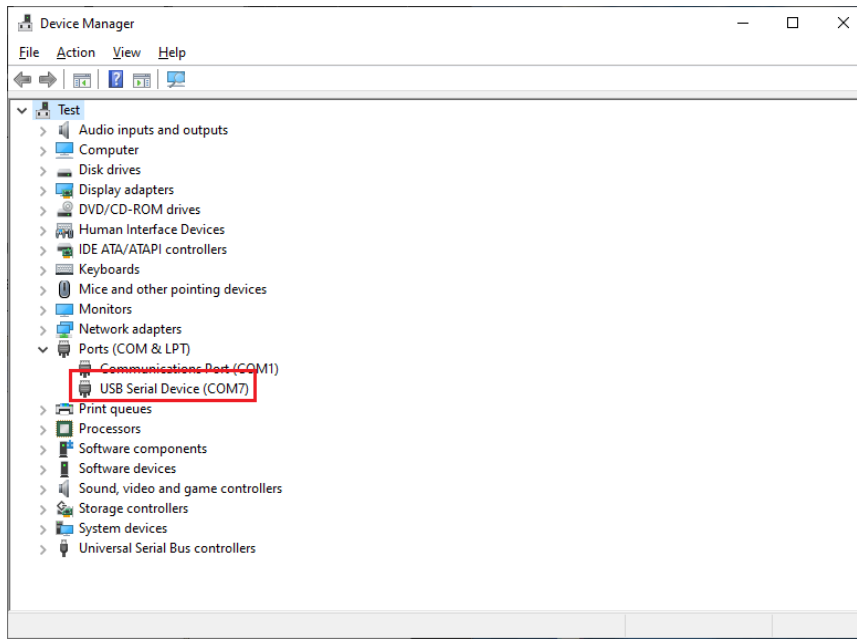
❖ Then press the click button 



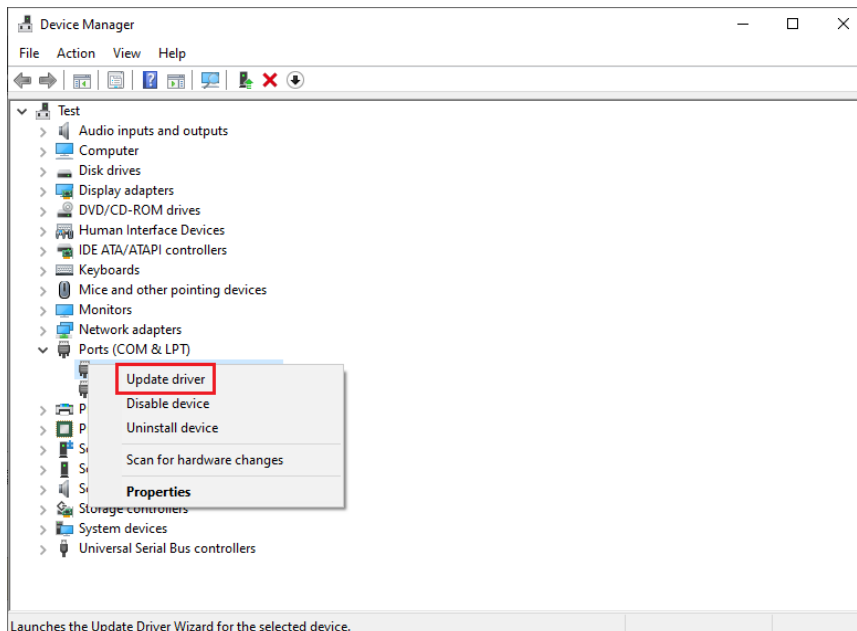
- ❖ After restarting, in the “Startup Settings” window, press the F7 key or press the number 7 key on the Keyboard to complete. Selecting topic number 7 “Disable driver signature enforcement”
- ❖ The computer will restart again after that. Please install the USB Driver again.


The steps to update USB Driver are as follows.

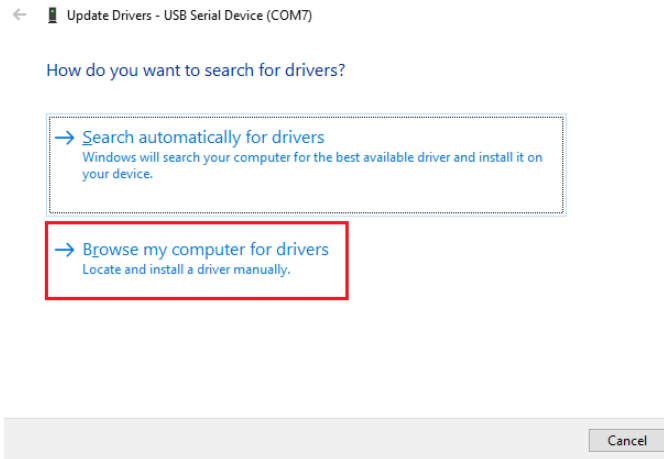
- ❖ Supply power to the module.
- ❖ Connect the USB cable between the module and the computer.
- ❖ Click on Search [🔍] and type Device Manager or right click on This PC and Select the Manage topic, then select the Device Manager topic.



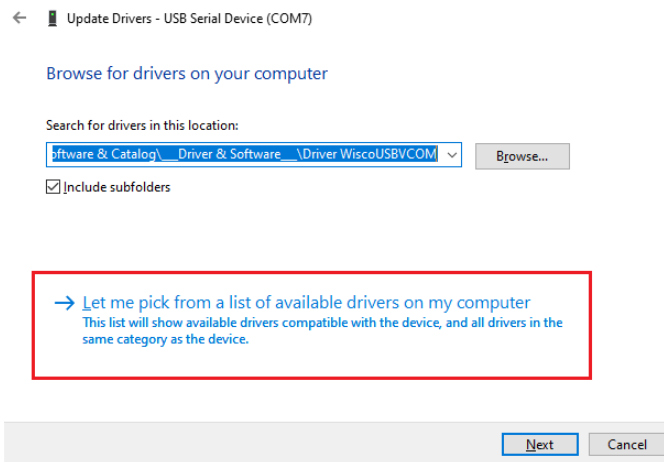
- ❖ Which Windows 10/11 will install the Driver automatically.



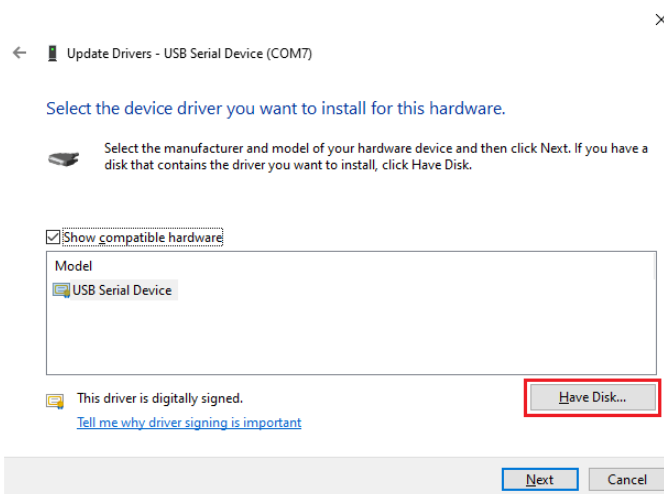
- ❖ in the case shown  AI300 Programmable Analog Input Right click and select Update Driver Software...



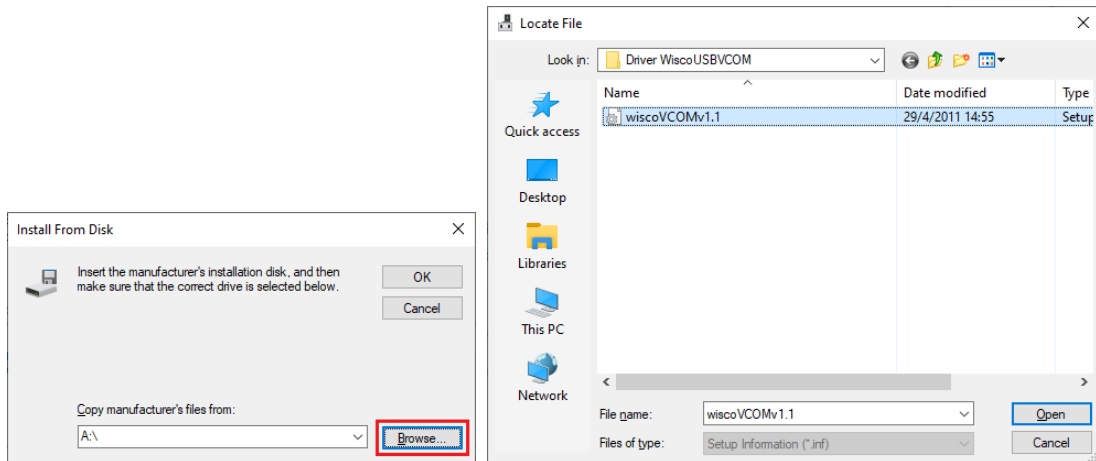
❖ Select the topic "Browse my computer for drivers"



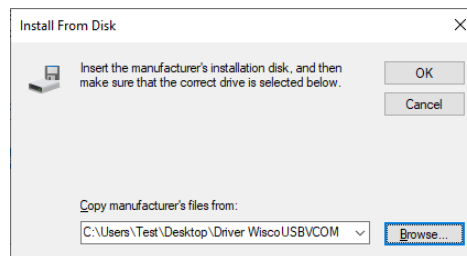
❖ Then select the topic "Let me pick from a list of available drivers on my computer" and then press the button **Next**



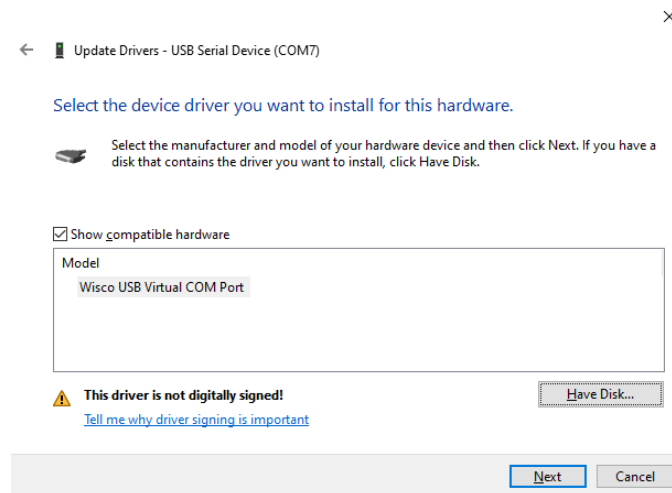
❖ Press the click button **Have Disk...**



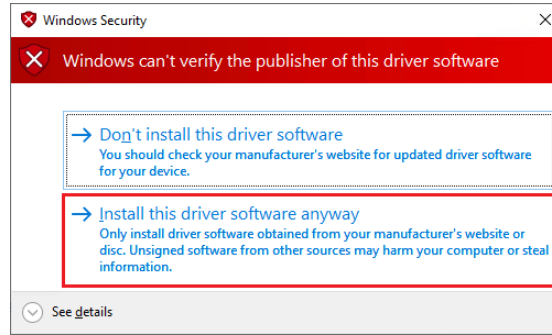
- ❖ Press the click button **Browse...** and choose to go to location of file "wiscoVCOMv1.1" in the machine computer and press the button **Open**



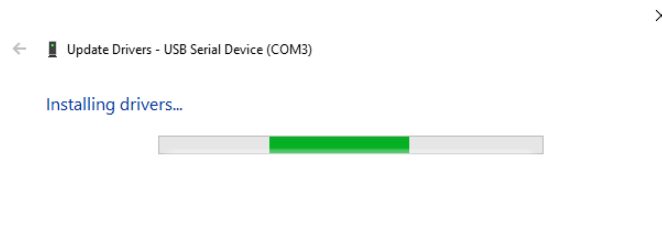
- ❖ When the Driver is selected, press the button **OK** To install a new USB Driver



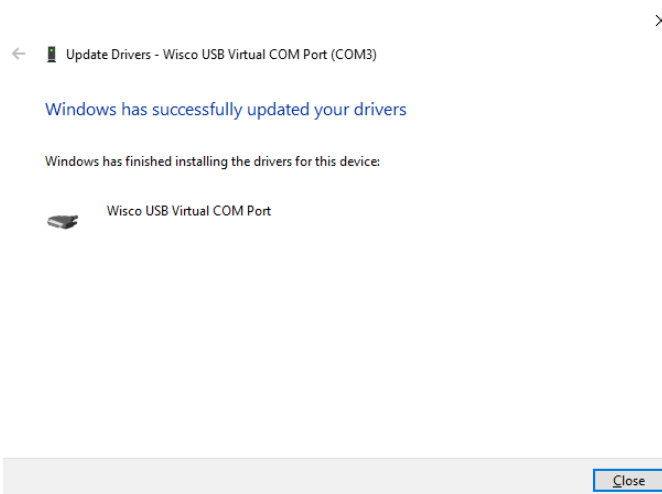
- ❖ Notice that the name in the Model section will be changed to "Wisco USB Virtual COM Port" instead. Then press the click button **Next**



- ❖ In the case where the “Windows Security” window is displayed, click to select “Install this driver software anyway”.



- ❖ Windows will load USB Driver onto the computer.
- ❖ Wait a moment and a “Windows has successfully updated your drivers” window will appear. Press the click button Complete installation of “Driver Wisco USB VCom Port”.

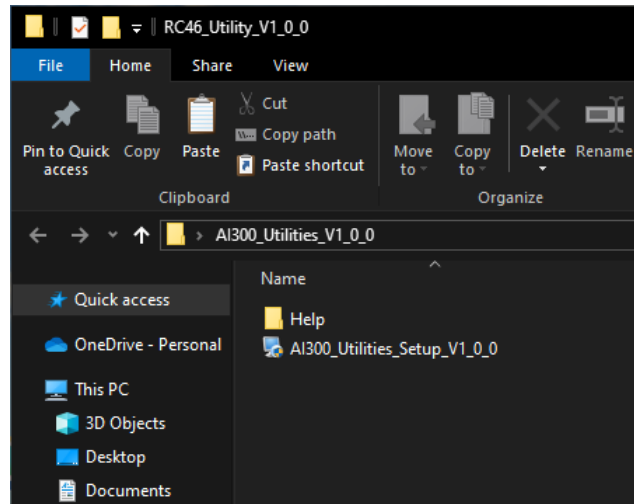


1.2 How To Install The Wisco AI300 Utilities Program.

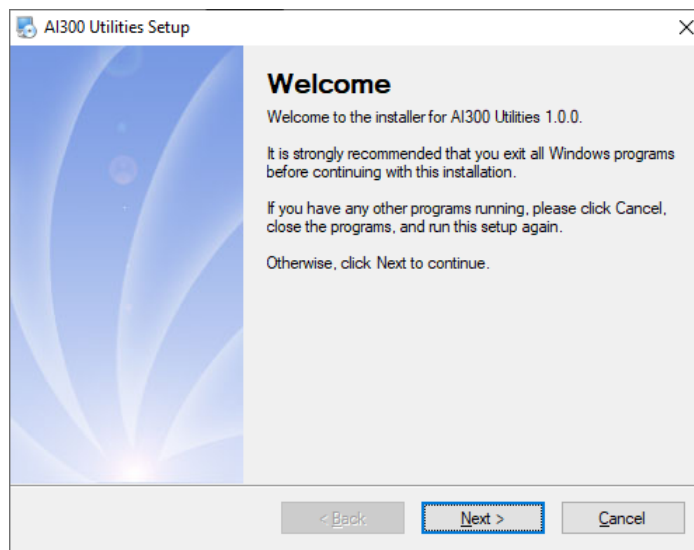
The Wisco AI300 Utilities program can be found on the company's website <https://www.wisco.co.th/main/model/ai300> Installing.

❖ the program has the following steps.

➤ Open the file named AI300_Utilities_Setup_v1_0_0.exe



➤ The Wisco AI300 Utilities 1.0.0 installation window will appear. Click the button until **Next >** the installation ends.




Installed programs are usually located in the Program Files group as follows.

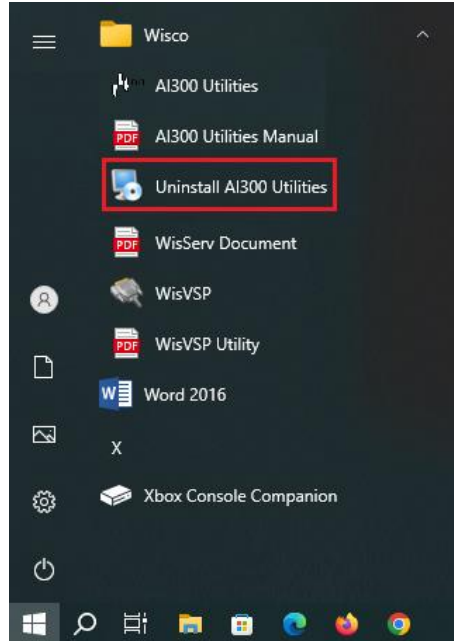
[Windows Drive] > Program Files (x86) > Wisco > Wisco Utility > AI300 Utilities 1.0.0

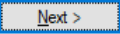
And the shortcut used to open the AI300 Utilities program is in the Programs Group as follows.

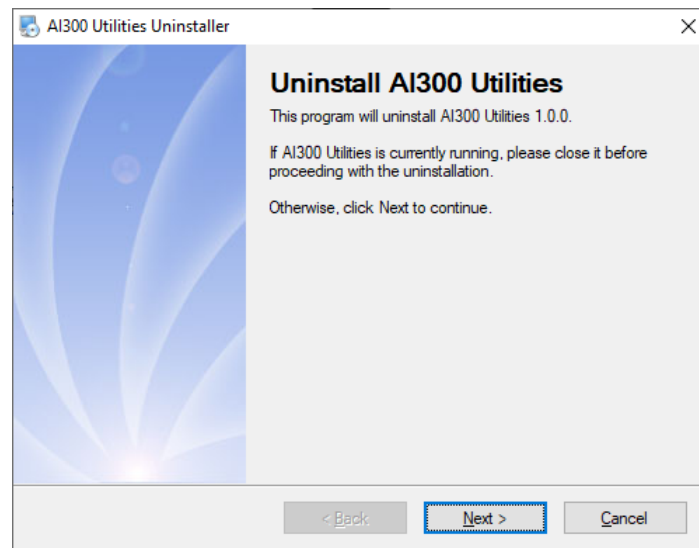
Start [] > Wisco > AI300 Utilities

1.3 How To Delete The Wisco AI300 Utilities Program.

Delete the program by selecting start [] -> Wisco -> Uninstall AI300 Utilities




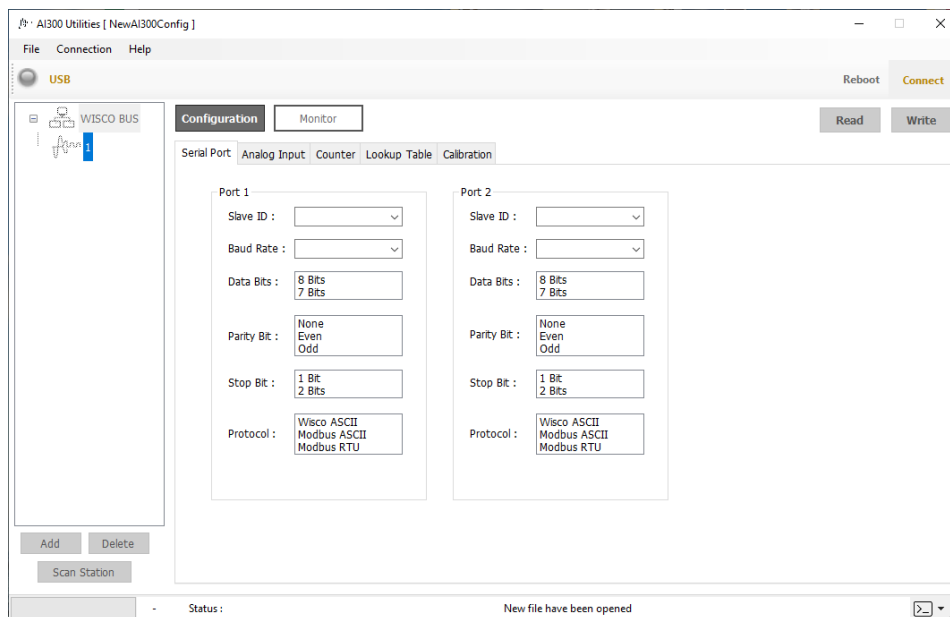
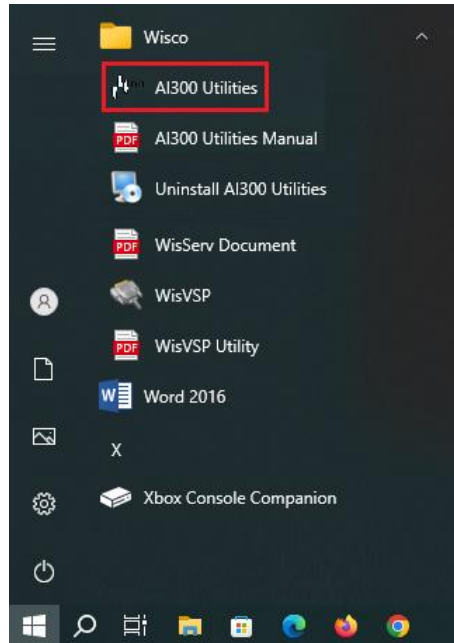
- ❖ A window will appear to confirm the deletion of the program from the system. Click the button 



- ❖ Wait a moment, Windows will delete the program from the system.

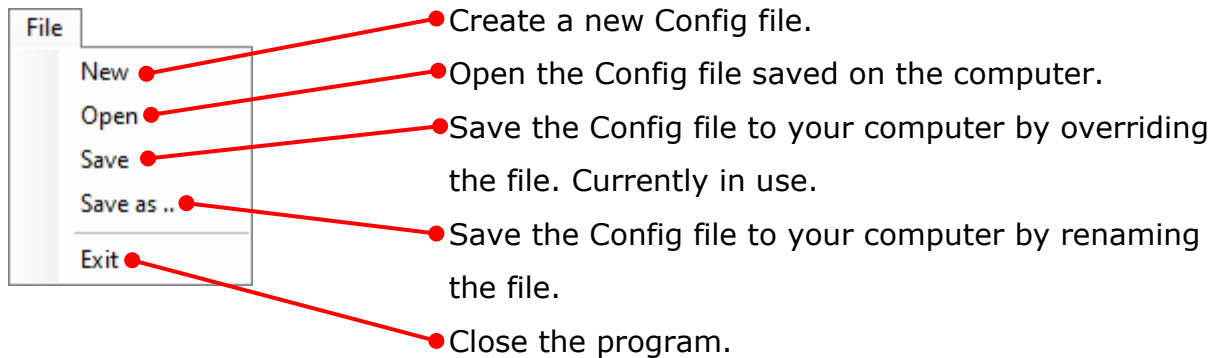
1.4 How To Activate The Wisco AI300 Utilities Program.

Open the program by selecting start [] -> Wisco -> AI300 Utilities will appear AI300 Utilities program

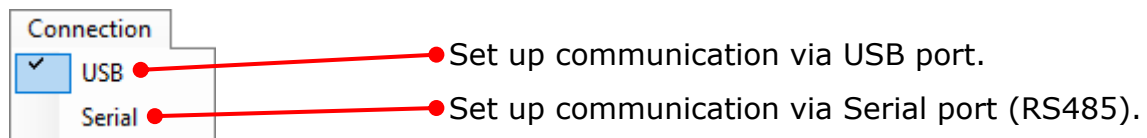


2. Using The Menu And Toolbar.

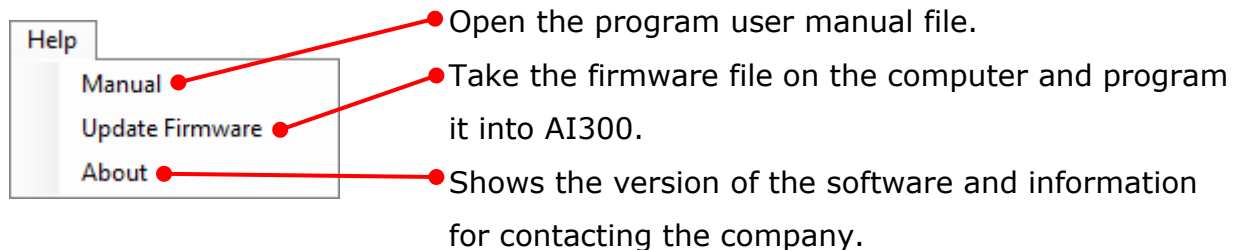
2.1 File Menu.



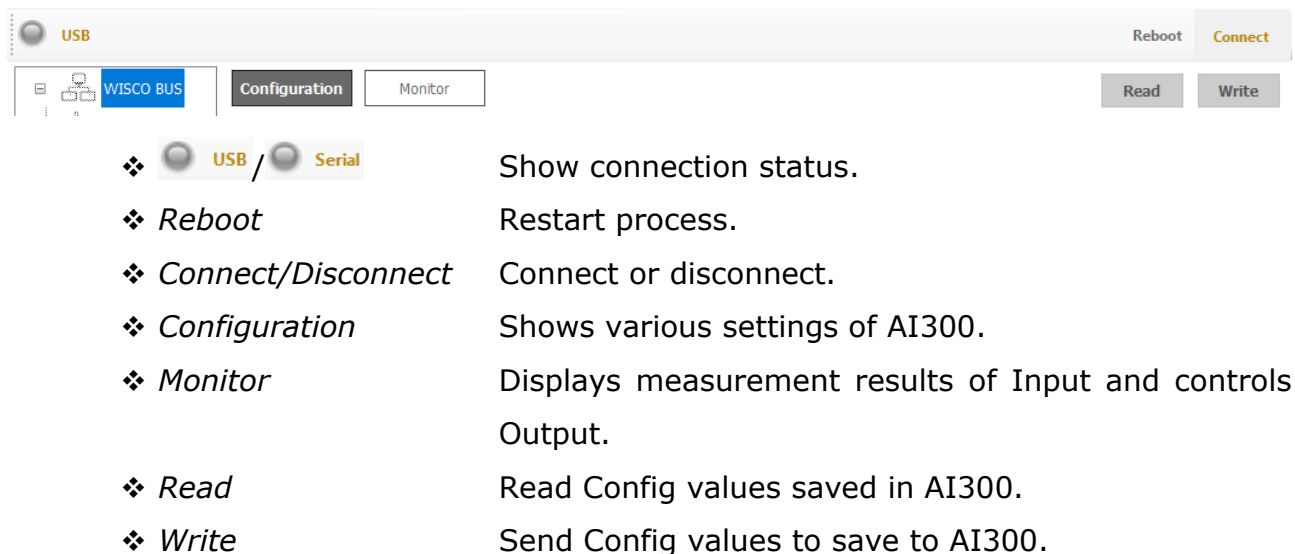
2.2 Module Menu.



2.3 Help Menu.



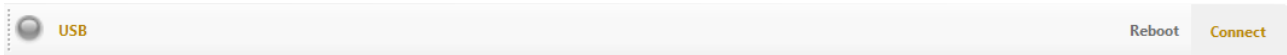
2.4 Toolbar.




3. Communication Between The Wisco AI300 Utilities Program And AI300.

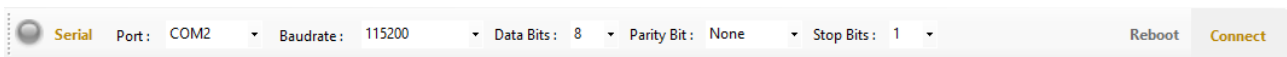
Communication settings can be set by selecting the Connection menu and selecting the connection method via the USB port or Serial port has the following details.

3.1. Connection Via USB Port.




Click on the button **Connect** The status will change **Disconnect** and the USB status will be displayed as green  **USB** to Then click the button **Read** to read Config values saved in AI300. if connected to AI300 will now display the "Read Completed" Window.

3.2. Connection Via Serial Port.



Set communication data via Serial The value must be set to match Serial Parameter of AI300 are as follows.

- ❖ **Port** Set the port used for connection.
- ❖ **Baud Rate** sets the communication speed. (1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200)
- ❖ **Data Bits** sets the length of the data. (8, 7)
- ❖ **Parity** set Parity. (None, Odd, Even)
- ❖ **Stop Bit** sets the number of Stop bits. (1, 2)
- ❖ **Button** **Add** Used for adding modules that the program will do and connect it into Wisco Bus.
- ❖ **Button** **Delete** Used for deleting modules in Wisco Bus.
- ❖ **Button** **Scan Station** Used for searching for modules connected to the Comm Port defined and added to Wisco Bus.

Click on the button **Connect** the status will change to **Disconnect** and the status of Serial is displayed in color green  **Serial** then connect to AI300. There are 2 methods as follows.

Method 1: Add a module by pressing the button **Add** and then specifying the Slave ID of AI300 and clicking the button **Read** to read the Config values saved in the AI300. if already connected to the AI300 will display the "Read Completed" window.

Method 2: Search for modules by clicking the button **Scan Station** The button status will change to **Abort** (If you find the module, you can click the button **Abort** to cancel the search.) If the module has been searched, it will Modules in Wisco Bus icon.

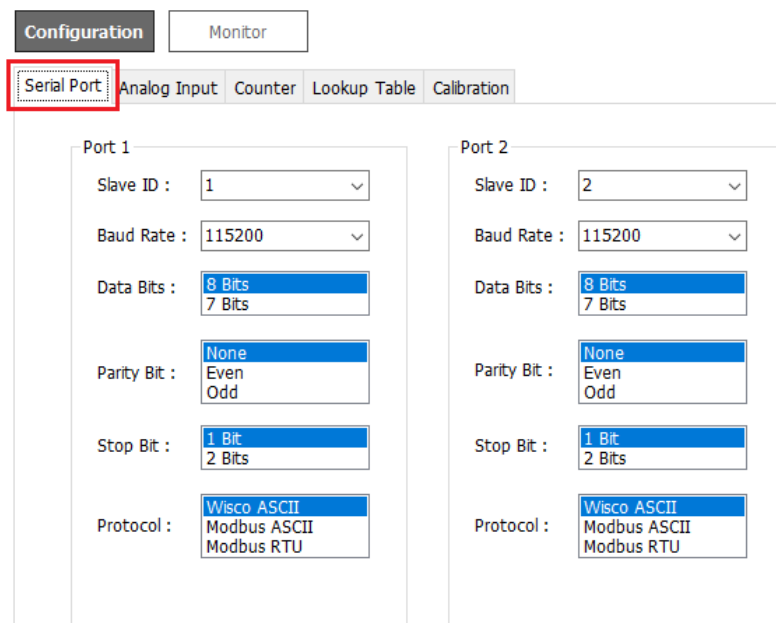
Then click the module in Wisco Bus and click the button **Read** to read the Config values saved in AI300. If connected to the AI300, the "Read Completed" window will appear.

4. Reading Values And Settings For The AI300.

Tab Configuration It is a setting for various applications. The details are as follows.

- ❖ **Serial Port:** Set Serial Parameter.
- ❖ **Analog Input:** Set the type of Analog Input, set the display.
- ❖ **Counter:** Set the type of Digital Input, set the display.
- ❖ **Lookup Table:** Set display in case of non-linearity.
- ❖ **Calibration:** Set values for calibration of Analog Input.

4.1. Tab Serial Port.

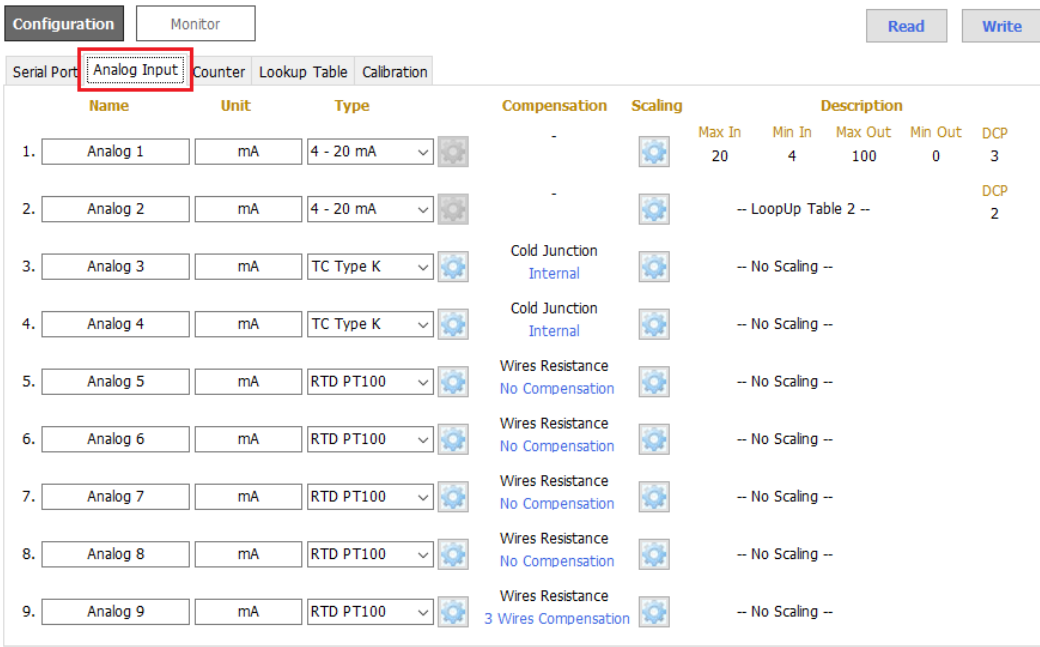


Set Serial Parameter for AI300 with details as follows.

- ❖ **Slave ID** set the device identification number. (1 - 246)
- ❖ **Baud Rate** sets the communication speed. (1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200)
- ❖ **Data Bits** sets the length of the data. (8, 7)
- ❖ **Parity** Set Parity. (None, Odd, Even)
- ❖ **Stop Bit** sets the number of Stop bits. (1, 2)
- ❖ **Protocol** defines the desired communication format. (Wisco ASCII, Modbus ASCII, Modbus RTU)

*** If the program connects via Serial Port and sets a Protocol that is not Wisco ASCII will not connect. It must be connected via a USB port instead.

4.2. Tab Analog Input.

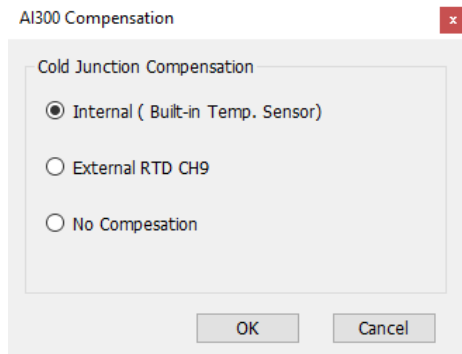


Name	Unit	Type	Compensation	Scaling	Description
1. Analog 1	mA	4 - 20 mA	-		Max In: 20, Min In: 4, Max Out: 100, Min Out: 0, DCP: 3
2. Analog 2	mA	4 - 20 mA	-		-- LoopUp Table 2 --, DCP: 2
3. Analog 3	mA	TC Type K	Cold Junction Internal		-- No Scaling --
4. Analog 4	mA	TC Type K	Cold Junction Internal		-- No Scaling --
5. Analog 5	mA	RTD PT100	Wires Resistance No Compensation		-- No Scaling --
6. Analog 6	mA	RTD PT100	Wires Resistance No Compensation		-- No Scaling --
7. Analog 7	mA	RTD PT100	Wires Resistance No Compensation		-- No Scaling --
8. Analog 8	mA	RTD PT100	Wires Resistance No Compensation		-- No Scaling --
9. Analog 9	mA	RTD PT100	Wires Resistance 3 Wires Compensation		-- No Scaling --

Set the type of Analog Input you want to use and set the display settings.

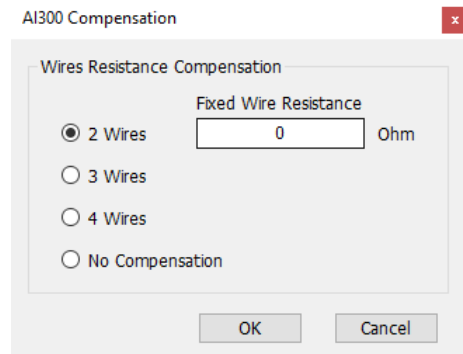
The details are as follows

- ❖ **Name** Set the name of the Analog Input channel. (16 characters)
- ❖ **Unit** sets the unit of signal used. (12 characters)
- ❖ **Type** Select the type of Analog Input you want to use.
- ❖ **Compensation** Set the method of temperature compensation for the Thermocouple (Cold Junction Compensation) including compensating the resistance value to RTD or Resister (Wires Resistance Compensation) as follows.



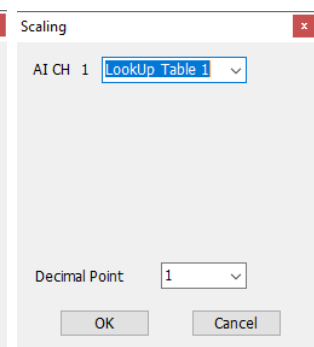
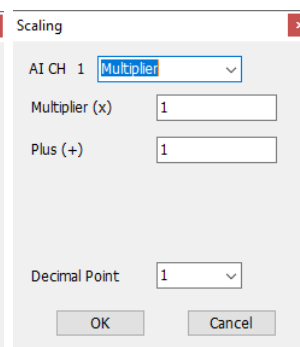
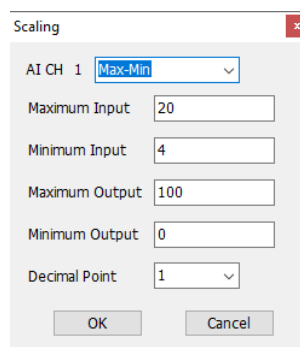
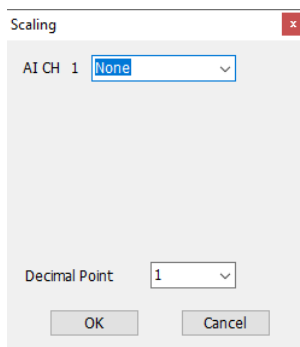
Temperature compensation for thermocouples.

- **Internal (Built-in Temp. Sensor)** set to compensate for temperature by using Sensor Inside the AI300 is for connecting Signal wire from Thermocouple to terminal of Analog Input.
- **External RTD CH9** set to pay Temperature using RTD type Sensor to Analog Input terminal, channel 9 and lead. Sensor installed to the Thermocouple signal cable connection point. (installed near most signal cable connection point)
- **No Compensation** There must be no compensation.



Resistance compensation for RTD or Resister.

- **2 Wire** is set to compensate for the resistance value 2 wires. (compatible with 2 wire sensors) and can specify the desired resistance value. Make adjustments in the "Fixed Wire Resistance" field.
- **3 Wire** is set to compensate for the resistance value 3 wires. (compatible with 3 wire sensors)
- **4 Wire** is set to compensate for the resistance value 4 wires. (compatible with 4 wire sensors)
- **No Compensation** is set to have no Resistance compensation.



❖ **Scaling** is used to set the display value for that channel as follows.

- **None** sets there to be no scaling.
- **Max-Min** Set the maximum and minimum values to be displayed as follows.
 - *Maximum Input* sets the maximum value of the input that is received.
 - *Minimum Input* sets the minimum value of the input that is received.
 - *Maximum Output* sets the maximum value that is desired Display.
 - *Minimum Output* sets the minimum value that is desired Display.


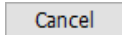
Example: AI300 will use the received input values to will be calibrated to match the display values. that has been specified, such as setting Type 4 - 20 mA, Maximum Output = 100 and Minimum Output = 0

When Input = 20 mA the result will be displayed as 100.
And Input = 4 mA the result will be displayed as 0.
- **Multiplier** sets the multiplication value (Multiplier (x)) and sets the addition value (Plus (+)) as follows.
 - *Multiplier (x)* sets the value used for for multiplying the counted values.

Example AI300 will take the received input value and multiply it with the value set in Multiplier (x) For example, set Type 4 - 20 mA, Multiplier (x) = 2

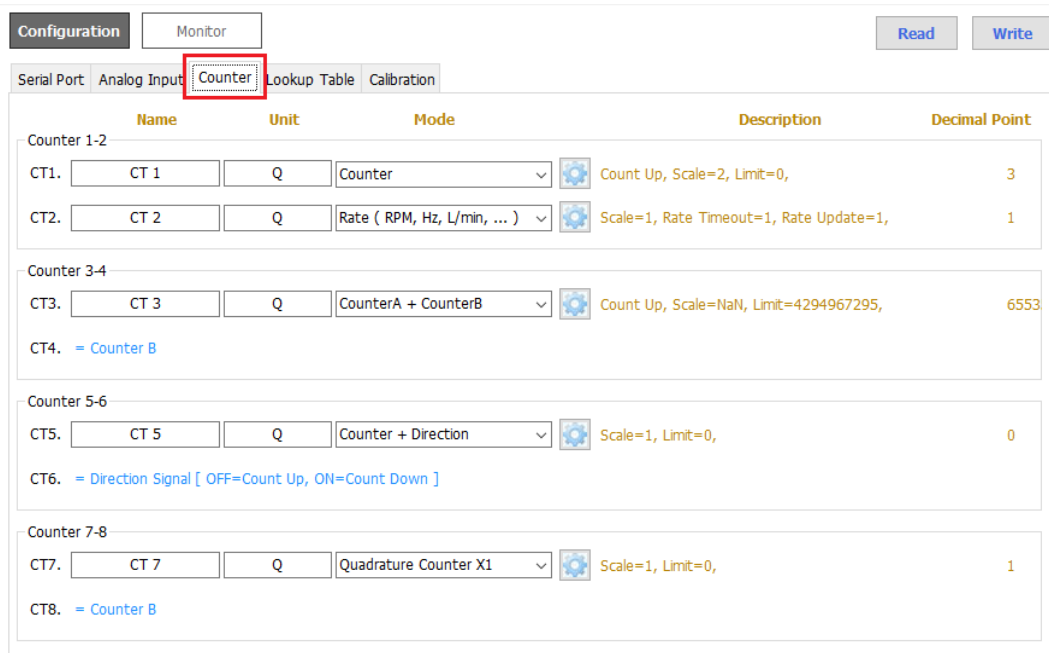
When Input = 20, the result will be displayed as 40.
and Input = 12, the result will be displayed as 24.
 - *Plus (+)* sets the value used for adding values.

Example AI300 will take the received input value plus the value set in Plus (+) such as set Type 4 - 20 mA, Plus (+) = 5

When Input = 20, the result will be displayed as 25
And Input = 12, the result will be displayed as 17
- **LookUp Table 1 - 4** sets the settings in that LookUp Table to be used. (See details in section 4.4)
- **Decimal Point** Set the number of decimal points to be displayed. (0 - 4)
- **Button**  is used to confirm the setting.
- **Button**  is used to For canceling settings.


❖ **Description** Shows details of display settings.

4.3. Tab Counter.



	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	CT 1	Q	Counter	Count Up, Scale=2, Limit=0,	3
CT2.	CT 2	Q	Rate (RPM, Hz, L/min, ...)	Scale=1, Rate Timeout=1, Rate Update=1,	1
Counter 3-4					
CT3.	CT 3	Q	CounterA + CounterB	Count Up, Scale=NaN, Limit=4294967295,	6553
CT4.	= Counter B				
Counter 5-6					
CT5.	CT 5	Q	Counter + Direction	Scale=1, Limit=0,	0
CT6.	= Direction Signal [OFF=Count Up, ON=Count Down]				
Counter 7-8					
CT7.	CT 7	Q	Quadrature Counter X1	Scale=1, Limit=0,	1
CT8.	= Counter B				

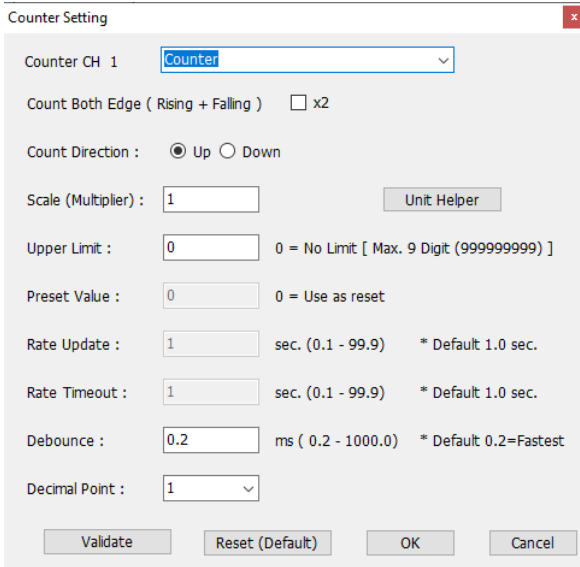
The settings window will change according to the mode in use. The details are as follows.

- ❖ **Name** Set the name of the Digital Input channel. (16 characters)
- ❖ **Unit** sets the unit of signal used. (12 characters)
- ❖ **Mode** is used to select the operating mode for Digital Input.
- ❖ **Button**  used to open the settings window.
- ❖ **Description** Shows details of display settings.
- ❖ **Decimal Point** Shows the number of decimal points set.

Set the working mode of Digital Input that you want to use and set the display settings. There will be a mode Separate Counter consists of Counter, Rate, RPM, Hz, Timer all 8 channels and There is a Combine Counter mode in which each Counter channel is controlled by 2 DI in the following order.

Counter 1 is controlled by DI 1 and DI 2, Counter 2 is controlled by DI 3 and DI 4. The sequence up to Counter 4 is controlled by DI 7 and DI 8.

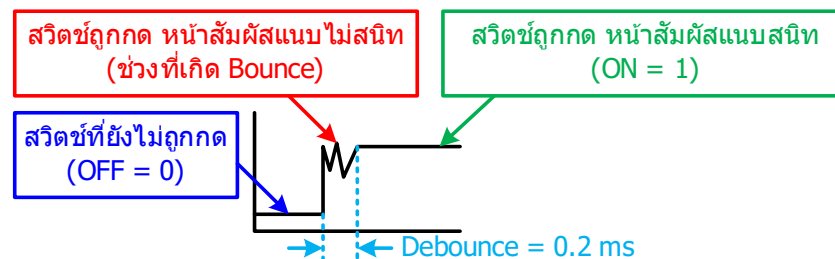
manual describes the functionality of Counter 1 only. All other Counter fields behave similarly to Counter 1 and can be opened in the settings window by clicking the button.



- ❖ **Counter CH 1 (CH 1 - CH 8)** determines the working mode of Digital Input of that channel.
- ❖ **Counter Both Edge (Rising + Falling) x2** specifies to count both the rising edge and the falling edge of Pulse
- ❖ **Scale (Multiplier)** signal sets the value used for multiplying the counted values.

Example AI300 will multiply the received input value with the value set in Multiplier (x) such as Set Type 4 - 20 mA, Multiplier (x) = 2
 When Input = 20, the result will be displayed as 40
 And Input = 12, the result will be displayed as 24

- ❖ **Upper Limit** sets the maximum value of the Counter.
- ❖ **Preset Value** sets the starting value of the Counter.
- ❖ **Rate Update** sets the time to change the display value of Rate. (RPM, Hz)
- ❖ **Rate Timeout** set the Timeout time of Rate. (RPM, Hz)
- ❖ **Debounce** sets the Sampling period of the Pulse signal Pulse.
 Bounce is a pulse signal that comes from a dry contact such as a switch, reed switch, or relay, etc.

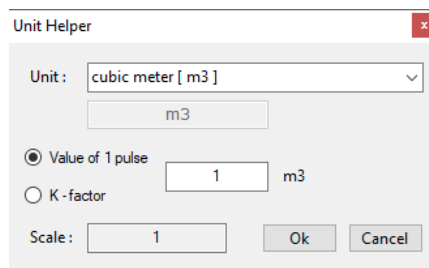


Pressing the switch button that is the touch screen, the touch screen may not be completely attached, causing a signal that is not steady, causing counting errors, such as from 1 Pulse becoming 2 - 3 Pulses (may be more or less) from just pressing the button once.



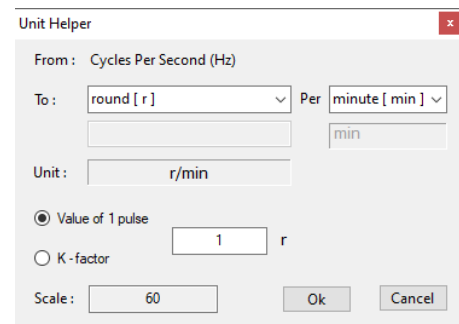
Setting Debounce is setting Sampling To be appropriate for the time period when the Pulse signal is still before it arrives will be counted as ON = 1

- ❖ **Decimal Point** Set the number of decimal points to be displayed. (0 - 4)
- ❖ **Button** Used to open the measurement unit conversion window as follows.



Converting Counter Units of Measurement

- **Unit** Select the desired unit.
- **Value of 1 Pulse** set the value that Want to display results per 1 Pulse such as 0.5 m3/1 Pulse etc.
- **K-Factor** determines the number of Pulse per Value to be displayed For example, 10 Pulse / m3 will be Scale = 0.1 etc.



Rate unit conversion (RPM, Hz)

- **to** select the desired unit.
- **Per** Select the time you want to compare.
- **Value of 1 Pulse** set the value that Want to display results per 1 Pulse For example 0.5 r / 1 Pulse / min etc.
- **K-Factor** determines the number of Pulse per The value to be displayed relative to time. For example, 10 Pulse / r / min will be Scale = 6 etc.

- **Scale** shows the setting results.
- **Button** Used to confirm settings.
- **Button** Used to cancel settings.
- ❖ **Button** Set to apply factory settings.
- ❖ **Button** Used to confirm settings.
- ❖ **Button** Used to cancel settings.

4.3.1 Note Use Mode.

	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	Counter 1	Status	Not Use		0
CT2.	Counter 2	Status	Not Use		0

This operating mode DI 1 - DI 8 is used to display ON (1) or OFF (0) status. Not working as a Counter.

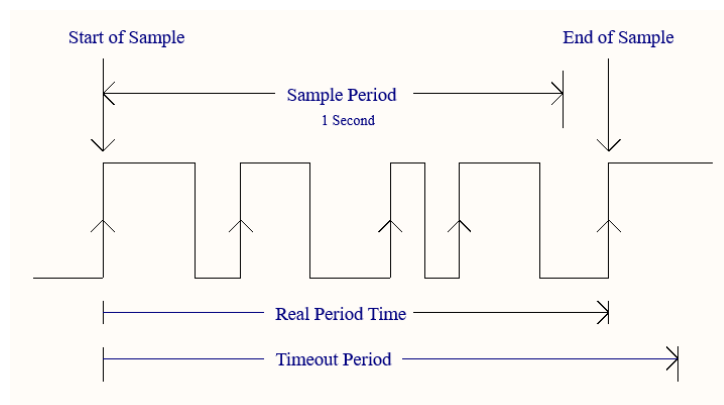
4.3.2 Counter Mode.

	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	Counter 1	Status	Counter	Count Up, Scale=0, Limit=0,	0
CT2.	Counter 2	Status	Not Use		0

DI 1 - DI 8 When there is Input, it will display the accumulated counting value.

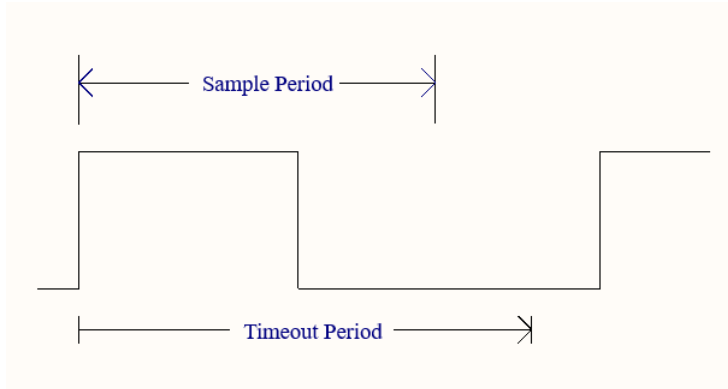
4.3.3 Rate (RPM, Hz, L/min) Mode.

	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	Counter 1	Status	Rate (RPM, Hz, L/min, ...)	Scale=0, Timeout=0, Update=0,	0
CT2.	Counter 2	Status	Not Use		0



DI 1 - DI 8 will act as Rate, will not work as Counter. Rate (rate measurement) is the counting of the total number of waves coming in to compare per unit of time. Measurement starts when The rising edge of the wave is an incoming signal. It will start counting and start the timer. Then it will count the number of waves that come until the specified period (Sample Period or Rate Update) and will wait for the uptrend. The last time to complete the integer number of waves.

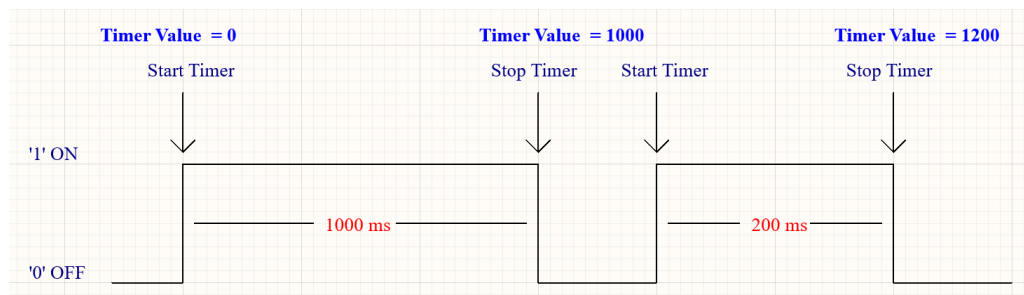
When the last edge is received, the timer will be stopped and the time spent at this point (Real Period Time) will be used. It is the time base for calculating the value.



In the case that the incoming undulating signal has a very low frequency (the signal amplitude is very wide) exceeding the set Timeout value, it will be considered that the rate value is "0".

4.3.4 Timer Mode.

	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	Counter 1	Status	Timer	Scale=0,	0
CT2.	Counter 2	Status	Not Use		0



DI 1 - DI 8 When there is an Input, ON (1) makes the Timer start timing with a resolution of 0.2 ms. and when the Input is OFF (0), the Timer will stop timing. where the time value will be accumulated Continue until there is an order to clear the fee.

4.3.5 Counter A + Counter B Mode.

	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	Counter 1	Status	CounterA + CounterB	Count Up, Scale=0, Limit=0,	0
CT2.	= Counter B				

DI 1 and DI 2 when there is Input coming in, they act as Counter Up. For example, there is Input Pulse comes in at DI 1 = 20 and there is Input coming in at DI 2 = 2, the count value will be displayed as 22 etc.

4.3.6 Counter A - Counter B Mode.

	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	Counter 1	Status	CounterA - CounterB	Scale=0, Limit=0,	0
CT2.	= Counter B				

DI 1 when there is Input comes in, it acts as Count Up. For DI 2, it acts as Count. Down For example, there is an Input Pulse coming at DI 1 = 20 and there is an Input coming at DI 2 = 2. Display count value as 18 etc.

4.3.7 Counter + Direction Mode.

	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	Counter 1	Status	Counter + Direction	Scale=0, Limit=0,	0
CT2.	= Direction Signal [OFF=Count Up, ON=Count Down]				


When DI 2 has a status of Lo and DI 1 has Input coming in, it will work as Count Up if DI 2 Having a status of HI will cause DI 1 to work as Count Down, for example DI 2 = Lo (0 = Lo, 1 = Hi) and there is an Input Pulse coming in at DI 1 = 20, the count value will be displayed as 20 when DI 2 = Hi and There is Input to DI 1 = 2, the count value will be displayed as 18, etc.

4.3.8 Counter + Preset (Reset) Mode.

	Name	Unit	Mode	Description	Decimal Point
Counter 1-2					
CT1.	Counter 1	Status	Counter + Preset (Reset)	Count Up, Scale=0, Limit=0, Preset=0,	0
CT2.	= Preset(Reset) Signal [Active Rising Edge]				


DI 1 when there is an Input comes in, it acts as Count Up and when DI 2 changes its status from Lo, the It's Hi value set in the Preset field will be displayed as the default value of counting, such as setting the value Preset Value = 10 has Input Pulse coming in at DI 1 = 100 and will show the result as 100 and when DI 2 changes the status to Hi, will display 10, etc.

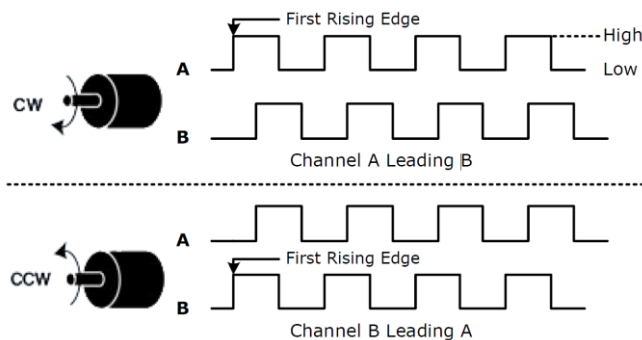
4.3.9 Counter + Run/Hold Mode.

Name	Unit	Mode	Description	Decimal Point
Counter 1-2				
CT1.	Counter 1	Status	Counter + Run/Hold 	Count Up, Scale=0, Limit=0,
CT2.	= Run/Hold Signal [OFF=Hold, ON=Run]			

DI 2 will control the operation of Counter (DI 1) if DI 2 has a status of Lo when DI 1 has Input coming in Counter (DI 1) will not work, but if DI 2 has a status of Hi when DI 1 has Input coming in and will act as Count Up, for example when DI 2 has a status of Hi and has Input Pulse coming into DI 1 = 20 will display as 20 If DI 2 has a status of Lo and there is an Input Pulse coming into DI 1, the display will not change. It will still display a value of 20, etc.

4.3.10 Quadrature Counter Mode.

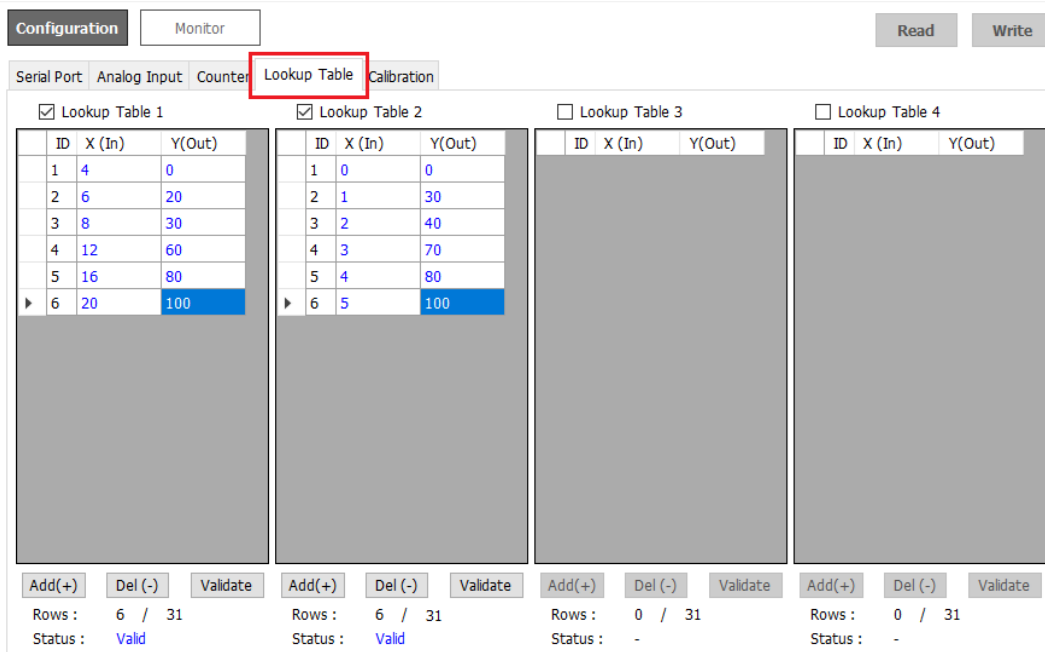
Name	Unit	Mode	Description	Decimal Point
Counter 1-2				
CT1.	Counter 1	Status	Quadrature Counter X1 	Scale=0, Limit=0,
CT2.	= Counter B			



It is a mode used with the Input which is a Quadrature Encoder. There will be 2 channels of Pulse A and Pulse B signals coming from the Encoder to be connected to DI 1 (Pulse A) and DI 2 (Pulse B)

When the Encoder rotates to one side, the Counter acts as Count Up, but when the Encoder rotates in the opposite direction, the Counter acts as Count Down.

4.4. Tab Lookup Table.

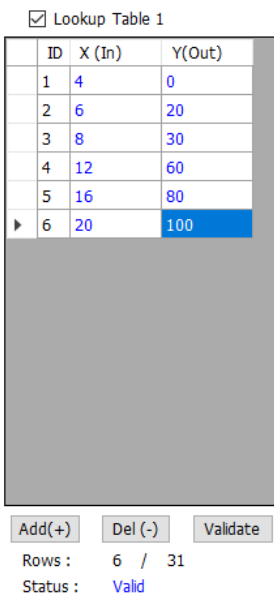


The screenshot shows the 'Lookup Table' configuration window. It has tabs for 'Serial Port', 'Analog Input', 'Counter', 'Lookup Table', and 'Calibration'. The 'Lookup Table' tab is active and contains four sub-panels for 'Lookup Table 1' through 'Lookup Table 4'. Each panel has a table with columns 'ID', 'X (In)', and 'Y(Out)'. Below each table are buttons for 'Add(+)', 'Del(-)', and 'Validate', and a status line showing 'Rows' and 'Status'.

ID	X (In)	Y(Out)
1	4	0
2	6	20
3	8	30
4	12	60
5	16	80
6	20	100

Set the display to be non-linear (Nonlinear) for Analog Input. The details are as follows.

- ❖ **Lookup Table 1** Enable/disable the use of Lookup Table for that channel.
- ❖ **Button** Used for adding display settings.
- ❖ **Button** Used for delete display settings.
- ❖ **Button** Used for checking accuracy.
- ❖ **Rows** Shows the number of settings. (31 settings)
- ❖ **Status** Shows the status of the settings.



This is a detailed view of the 'Lookup Table 1' configuration window. It shows the table with 6 rows and 3 columns. The last row is highlighted in blue. Below the table are the 'Add(+)', 'Del(-)', and 'Validate' buttons, and a status line indicating 'Rows: 6 / 31' and 'Status: Valid'.

ID	X (In)	Y(Out)
1	4	0
2	6	20
3	8	30
4	12	60
5	16	80
6	20	100

4.4.1. How to add display settings There are steps as follows.

- 1) Activate the Lookup Table for the desired field, for example, **Lookup Table 1**
- 2) Click the button then set the minimum value of the input received in the field X (In) and set the maximum value to be displayed in the field. Channel Y (out) (Settings must be started from input and output with low values always first)
- 3) Check accuracy by pressing the button If the settings are correct it will be displayed in color Blue If the setting is abnormal, it will be displayed in red. which may be caused by the sequence of Value cannot be set starting from the lowest value.

Lookup Table 1

ID	X (In)	Y(Out)
1	4	0
2	6	20
3	8	30
4	12	60
5	16	80
6	20	100

Rows : 6 / 31
 Status : Valid

4.4.2. How to delete display settings There are steps as follows.

Click in front of the ID field of the value you want to delete (from the picture, click to select ID4) program The value will be highlighted as a blue bar, then click the button .

4.5. Tab Calibration.

Configuration

Serial Port Analog Input Counter Lookup Table Calibration

Zero-Span Fine Tune Start Calibration Mode :

	Adjust Span (+/-)		Adjust Zero (+/-)			ADC Value (mV)	Final Value
AI 1.	<input type="text" value="0"/>	<input type="button" value="Set"/>	<input type="text" value="0"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	0	<input type="text" value="3.6"/>
AI 2.	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	0	<input type="text" value="3.6"/>
AI 3.	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	-64	<input type="text" value="-270"/>
AI 4.	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	-64	<input type="text" value="-270"/>
AI 5.	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	128	<input type="text" value="850"/>
AI 6.	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	128	<input type="text" value="850"/>
AI 7.	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	128	<input type="text" value="850"/>
AI 8.	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	128	<input type="text" value="850"/>
AI 9.	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="text" value="0.0000"/>	<input type="button" value="Set"/>	<input type="button" value="Reset"/>	128	<input type="text" value="818.8051"/>

When reading the measurement value If there is a discrepancy, adjustments can be made to correct the discrepancy. Analog Input has the following details.



From the picture is an example of adjusting the discrepancy of Input Type 4 - 20 mA by using Calibration equipment that can supply standard signals.

Zero-Span Fine Tune Start Calibration Mode :

	Adjust Span (+/-)	Adjust Zero (+/-)		ADC Value (mV)	Final Value
AI 1.	<input type="text" value="0"/> <input type="button" value="Set"/>	<input type="text" value="0"/> <input type="button" value="Set"/>	<input type="button" value="Reset"/>	<input type="text" value="632"/>	<input type="text" value="10.00387"/>

- ❖ **Button** Used to command "start" correction of discrepancies.
- ❖ **Button** Used to order "stop" to correct discrepancies.
- ❖ **Adjust Span (+/-)** Is to adjust the value of Max Input.
- ❖ **Adjust Zero (+/-)** Is an adjustment to the value of Min Input.
- ❖ **Button** Used to confirm settings.
- ❖ **Button** Used to delete all settings.
- ❖ **ADC Value (mV)** Shows the measurement value, which is the value obtained from the ADC, with units of mVDC.
- ❖ **Final Value** Shows the measurement value, which will be the value according to the Analog Input Type selected.

5. Display Of Measurement Values.

Auto Refresh Sec.

I/O Value

Analog Input

Analog 1 100.049 mA	Analog 2 11.60 mA	Analog 3 -270.0000 mA
Analog 4 -270.0000 mA	Analog 5 850.0000 mA	Analog 6 850.000 mA
Analog 7 850.000 mA	Analog 8 850.000 mA	Analog 9 818.805 mA

Digital Input

1. <input type="button" value="0"/>	2. <input type="button" value="0"/>	3. <input type="button" value="0"/>	4. <input type="button" value="0"/>	5. <input type="button" value="0"/>	6. <input type="button" value="0"/>	7. <input type="button" value="0"/>	8. <input type="button" value="0"/>
-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------

Digital Output

1. <input type="button" value="0"/>	2. <input checked="" type="button" value="1"/>	3. <input type="button" value="0"/>	4. <input type="button" value="0"/>	5. <input checked="" type="button" value="1"/>	6. <input type="button" value="0"/>	7. <input checked="" type="button" value="1"/>	8. <input type="button" value="0"/>
<input type="button" value="All On"/>				<input type="button" value="All Off"/>			

Scaled Counter

CT 1 0.0 Q	CT 2 0 Q
CT 3 F-1 Q	-
CT 5 0 Q	-
CT 7 0 Q	-

Raw Counter

CT1.	<input type="text" value="-"/>	<input type="button" value="W"/>
CT2.	<input type="text" value="0"/>	<input type="button" value="W"/>
CT3.	<input type="text" value="0"/>	<input type="button" value="W"/>
CT4.	-	
CT5.	<input type="text" value="0"/>	<input type="button" value="W"/>
CT6.	-	
CT7.	<input type="text" value="0"/>	<input type="button" value="W"/>
CT8.	-	

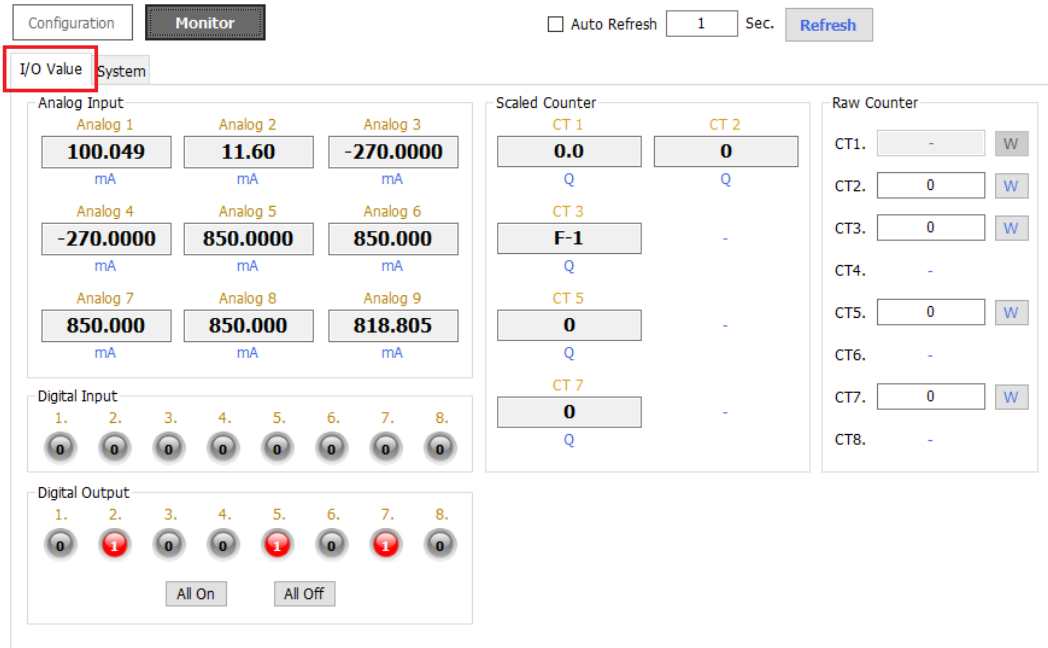
Monitor is used for displaying measurement values of Analog Input, Counter, and showing the status of Digital Input, control the work of Digital Output and display information of AI300.

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Wisnu and Supak Co., Ltd 102/111-112 Tessabansongkroh Rd., Ladyao, Jatujak, Bangkok 10900
 Tel (662)591-1916, (662)954-3280-1, Fax (662)580-4427, www.wisco.co.th, E-mail info@wisco.co.th

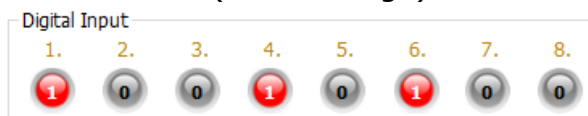
5.1. Tab I/O Value



- ❖ **Button** Used for ordering to read measurement values only once.
- ❖ **Auto Refresh** Sec. Used to order the measurement value to be read every specified period of time. (unit "seconds")



- ❖ **Analog Input** Shows the measurement result if it is not a number. will have the following meanings.
 - **OVR** Means that the measured value is greater than the specified measurement area. (Over Range)
 - **UDR** Means that the measured value is less than the specified measurement area. (Under Range)

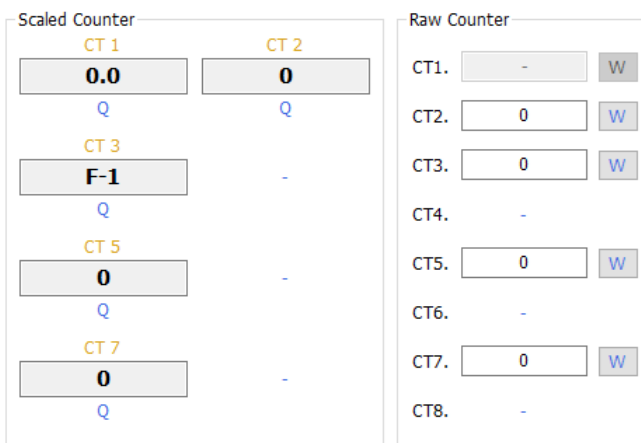


- ❖ **Digital Input** Showing ON status (1) will show red. , OFF (0) will display gray.



❖ **Digital Output** Is used for controlling work. There are 2 states ON state (1) will show red 1 and the OFF (0) status will be displayed in gray 0 as follows.

- Can control the Digital Output of each channel. By clicking on 0 or 1 at that channel to change the status from "OFF (0) 0 is ON (1) 1" or from "ON (1) 1 is OFF (0) 0".
- **Button** All On Used to order Digital Output to be ON (1) 1 all.
- **Button** All Off Used to order Digital Output to be OFF (0) 0 all.



❖ **Scaled Counter** shows the count of Pulse signal is a display that "passes" the Scale has been done.

❖ **Raw Counter** shows the amount of the raw The Pulse signal is a "failed" display Scale.

5.2. Tab System

Configuration
Monitor
Refresh

I/O Value
System

Information

Model Name :

Firmware Version :

Hardware Version :

Serial Number :

Port 1

Baudrate : Mode :

Data Bits : Protocol :

Parity Bits : Slave ID :

Stop Bits :

Ambient Temperature (C) [Terminal Junction]

1. <input type="text" value="27.0"/>	2. <input type="text" value="27.2"/>	3. <input type="text" value="27.5"/>
4. <input type="text" value="27.6"/>	5. <input type="text" value="27.8"/>	6. <input type="text" value="27.8"/>
7. <input type="text" value="27.8"/>	8. <input type="text" value="27.8"/>	9. <input type="text" value="27.8"/>

Port 2

Baudrate : Mode :

Data Bits : Protocol :

Parity Bits : Slave ID :

Stop Bits :

Show various information of the device The details are as follows.

- ❖ **Information** shows various information about the device.
- ❖ **Ambient Temperature (C) [Terminal Junction]** shows the temperature value of each Analog Input channel used for temperature compensation for the Thermocouple.
- ❖ **Port 1 / Port 2** shows information about the Serial Parameter that has been set.

Appendix

Table 1. Shown Accuracy and Resolution Each Input Type

Input Type		Measuring Range	Decimal Point	Resolution	Accuracy (%FS) @ 25 C	Remark
Thermocouple (°C)	R	0 - 1700	0	1 °C	± 0.1% + 2 °C	
	S	0 - 1700	0	1 °C	± 0.1% + 2 °C	
	K	(-)200 - 1300	1	0.1 °C	± 0.1% + 1.5 °C	
	E	(-)200 - 1000	1	0.1 °C	± 0.1% + 1.5 °C	
	J	(-)200 - 1200	1	0.1 °C	± 0.1% + 1.5 °C	
	T	(-)200 - 400	1	0.1 °C	± 0.1% + 1.5 °C	
	B	600 - 1800	0	1 °C	± 0.1% + 2 °C	
	N	(-)200 - 1300	1	1 °C	± 0.1% + 3 °C	
R.T.D. (°C)	PT100	(-)200 - 800	1	0.1 °C	± 0.1% + 1.5 °C	Excitation Current: 0.25 mA
	PT1000	(-)200 - 800	1	0.1 °C	± 0.1% + 1.5 °C	Excitation Current: 0.25 mA
	CU10	(-)200 - 260	1	0.1 °C	± 0.1% + 1.5 °C	Excitation Current: 0.5 mA
Resistance (Ohm)	R100	0 - 100	2	0.01 Ω	± 0.05 + 0.1 Ω	Excitation Current: 1 mA
	1 K	0 - 1	4	0.0001 kΩ	± 0.05 + 0.001 kΩ	Excitation Current: 0.5 mA
	10 K	0 - 10	3	0.001 kΩ	± 0.05 + 0.01 kΩ	Excitation Current: 0.1 mA
	100 K	0 - 100	2	0.01 KΩ	± 0.05 + 0.1 kΩ	Excitation Current: 0.01 mA
Voltage (mVDC)	± 100	(-)110 - 110	3	0.005 mV	± 0.02% + 0.015 mV	Input Impedance: More than 10 MΩ
	± 250	(-)250 - 250	3	0.010 mV	± 0.02% + 0.025 mV	
	± 500	(-)500 - 500	3	0.015 mV	± 0.02% + 0.05 mV	
	± 1000	(-)1000 - 1000	2	0.030 mV	± 0.02% + 0.1 mV	
	± 2000	(-)2000 - 2000	1	0.060 mV	± 0.02% + 0.2 mV	
High Voltage (VDC)	5	0 - 5	4	0.0005 V	± 0.04% + 0.002 V	Input Impedance: Approx. 200 KΩ
	7.5	0 - 7.5	4	0.0005 V	± 0.04% + 0.002 V	
	10	0 - 10	3	0.001 V	± 0.04% + 0.005 V	
	15	0 - 15	3	0.001 V	± 0.04% + 0.005 V	
	30	0 - 30	2	0.01 V	± 0.04% + 0.01 V	
Current (mA)	4 - 20	4 - 20	3	0.001 mA	± 0.03% + 0.004 mA	Input Resistance: Approx. 47 Ω
	± 20	(-)20 - 20	3	0.001 mA	± 0.03% + 0.004 mA	
	± 40	(-)40 - 40	3	0.001 mA	± 0.03% + 0.004 mA	

Note: Accuracy = +/- (% of Reading + Error)

Edit: 15/08/2024