



Data Logger

DL2200



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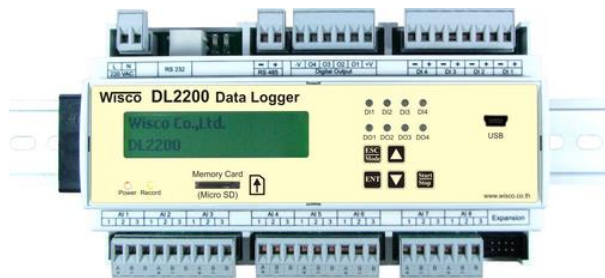
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Data Logger

DL2200



- **8 Channels** Analog Input
(Programmable input)
- **4 Digital** Input / Output
- Isolation Analog Input with Relay,
Digital Input with Optoelectronic
- Easily configure at Panel LCD and Keyboard
- Use **SD card** memory for Data Storage
(4GB)
- Stand Alone Data Logger and Real Time
Data Acquisition

Data logger DL2200 is recording device for analog and digital signal. Data is storing in removable memory card for downloading to computer PC.

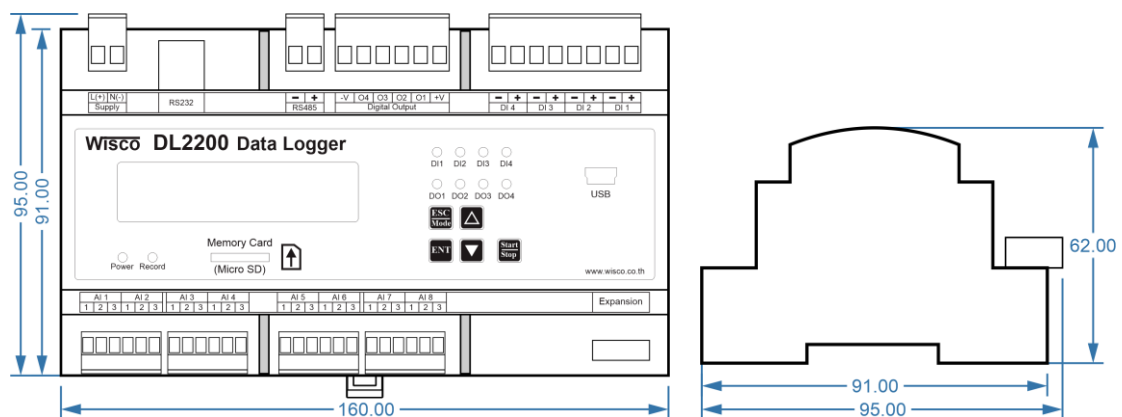
Analog Input is programmable compatible to any kind of Sensor such as Thermocouple, RTD, Ohm, Voltage and Current. Data, date and time will continuously record to memory card

Digital Input, there are 4 optoelectronic digital input which be able to show machine status or show alarm signal

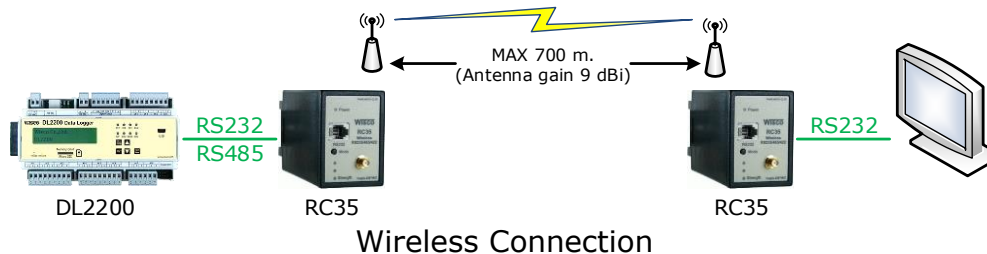
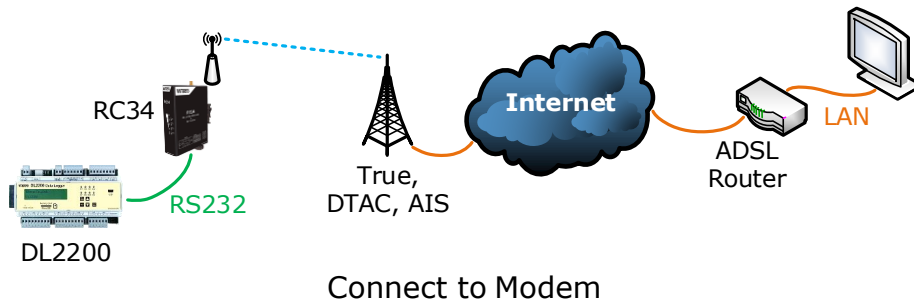
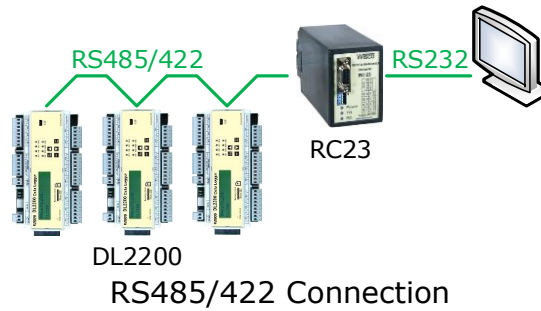
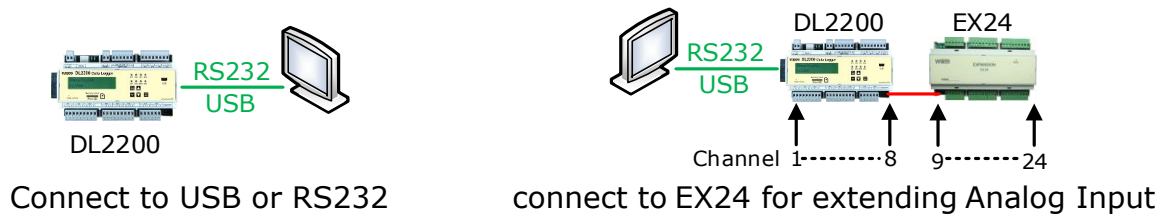
Digital Output is Relay Contact, there are for channel for digital output which be able to send ON-OFF signal to control the system

Data that store in the computer can be show as table or trend graph. Moreover, data can be export for running on other windows program such as excel.

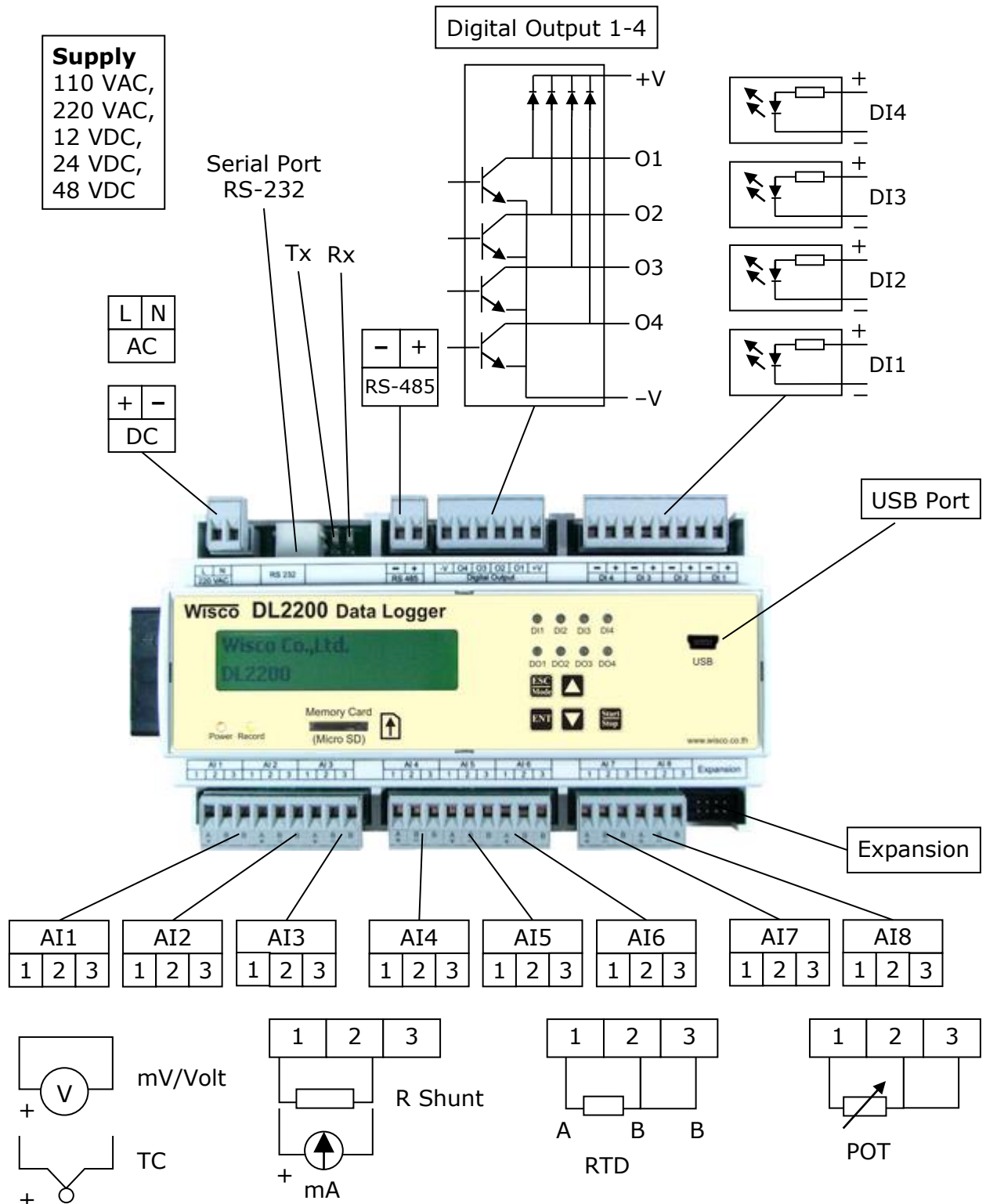
Dimension (Unit: mm.)



I. Wiring Diagram



II. How to connect for each channel



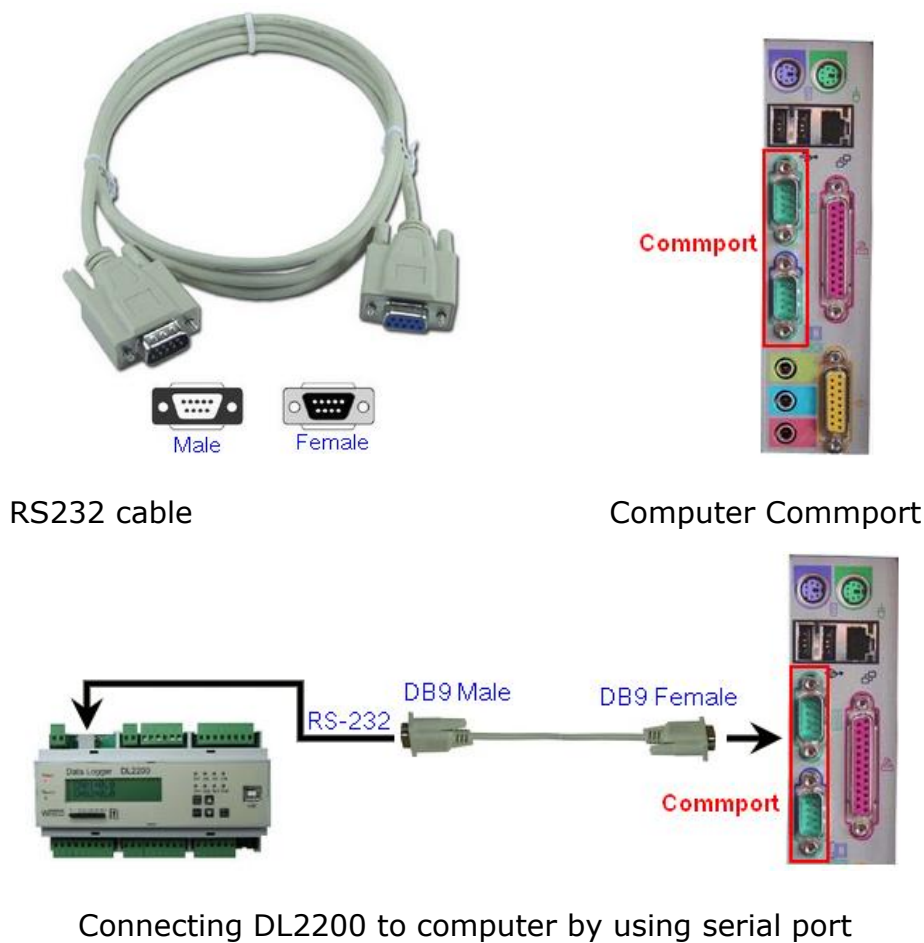
III. How to connect to computer PC

Before start recording data, user has set up the device's parameter such as I/O configuration, System Configuration, Record setting and advance setting by using the Utility program

There are 2 ways to connect DL2200 to Computer PC, connect using Serial port and USB port

Serial Port connection

RJ12 should connect to RS-232 of DL2200. DB9 Female should connect to computer comport



USB Port connection

There are 2 types of USB connector which are Standard A and Standard B. Standard B should connect to USB port of DL2200, and Standard A should connect to USB port of computer

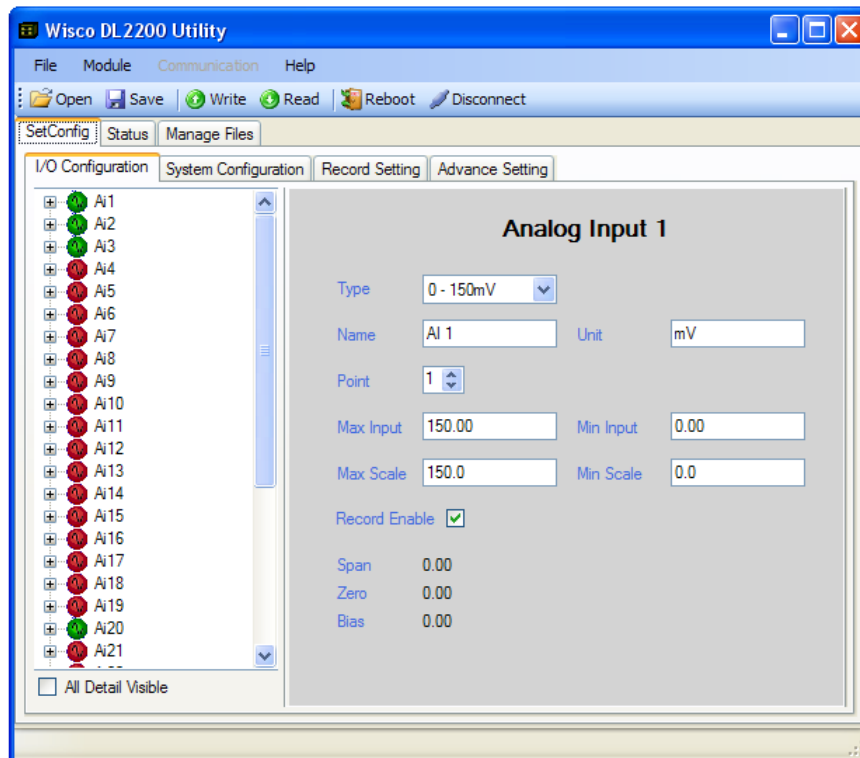


USB cable and USB port of computer



Connecting DL2200 to computer by using USB port

Wisco DL2200 Utility



Wisco DL2200 Utility is program for reading value/Set up parameter such as I/O Configuration, System Configuration, Record setting and monitoring status (not fully real time function). linkage can be should as Serial port, USB port, or Modem(option)

1. What user should know before start using Wisco DL2200 Utility

The communication between Wisco DL2200 Utility program and Datalogger can connect by Wisco ASCII Protocol only. If the communication protocol are Modbus ASCII or Modbus RTU which is not Wisco ASCII, RS-485 is only port that can be connect for program and Datalogger

USB Port

- Before connect USB port and Datalogger, Power has to be ON
- For the first time used of USB port, USB Driver should be installed as detail show on topic **1.1**

Serial Port

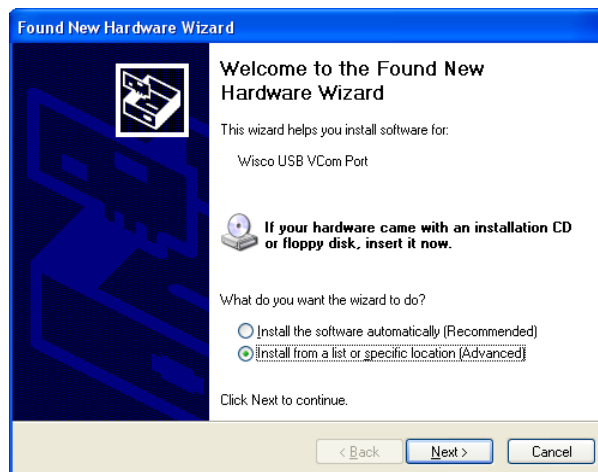
All Serial port parameter such as station, Port, Baud Rate, Data Bits, Parity and Stop bit should be same values on both program and datalogger otherwise the connection will be error.

1.1 Set up USB Driver

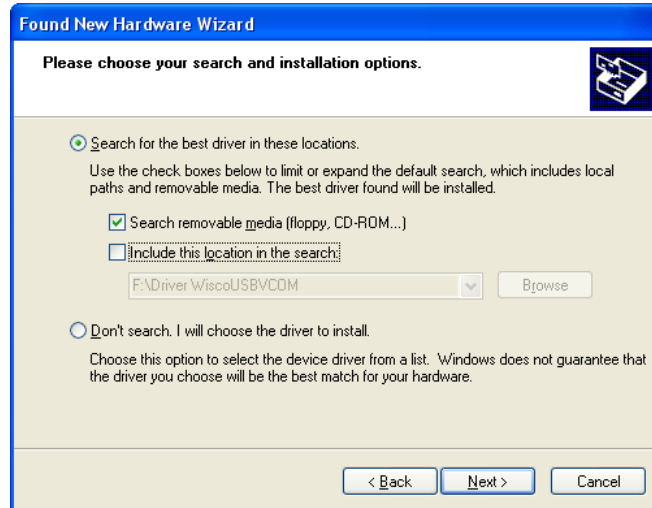
USB Driver is located on startup CD or on website

www.wisco.co.th/download.html . Start set up by

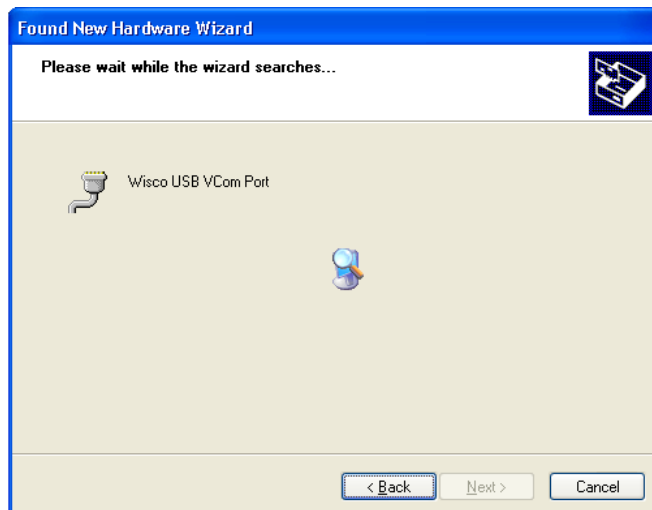
- ❖ Insert CD/DVD-ROM drive
- ❖ Turn on DL2200 power
- ❖ Connect USB cable to DL2200 and computer
- ❖ Wait for a second then message "Found New Hardware Wizard" will appear



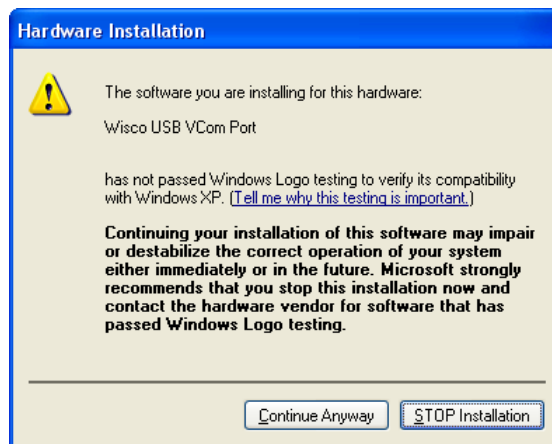
- ❖ select ☒ Install from a list or specific location (Advanced) and click on



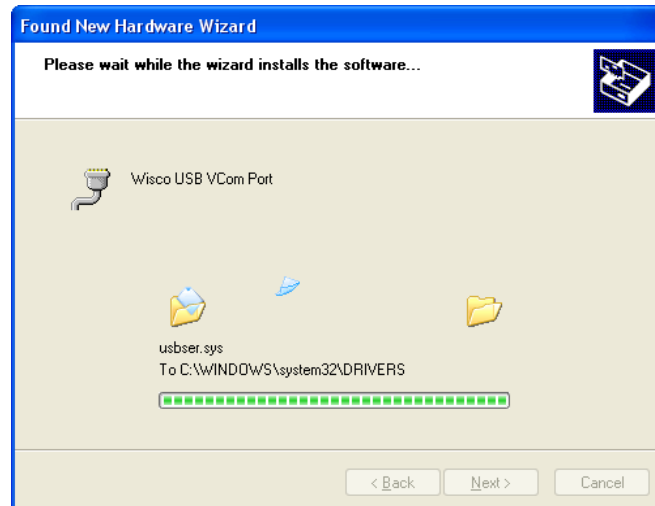
- ❖ Select ☒ Search removable media (floppy, CD-ROM...) and click on
- ❖ Wait for windows program search for Driver file on CD

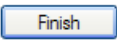


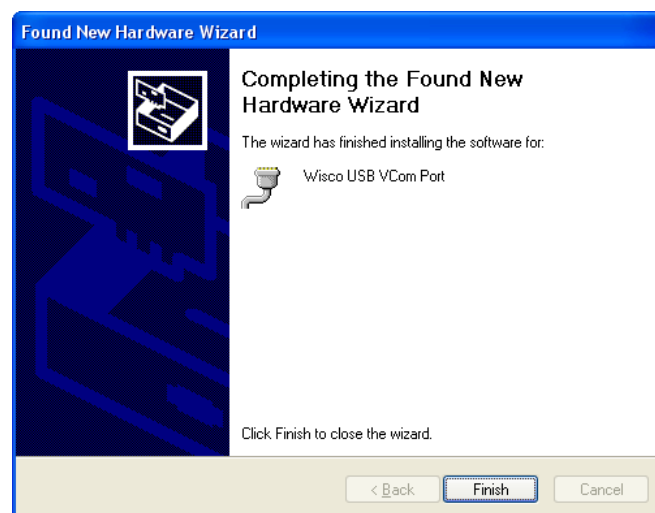
- ❖ "Hardware Installation" show then click on



- ❖ USB Driver file copy to computer



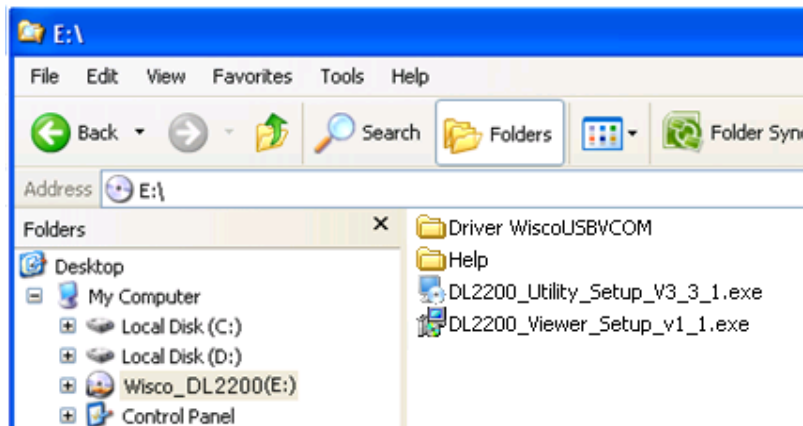
- ❖ "Completing the Found New Hardware Wizard" message show then click on  . then Driver Wisco USB VCom Port installation has been complete



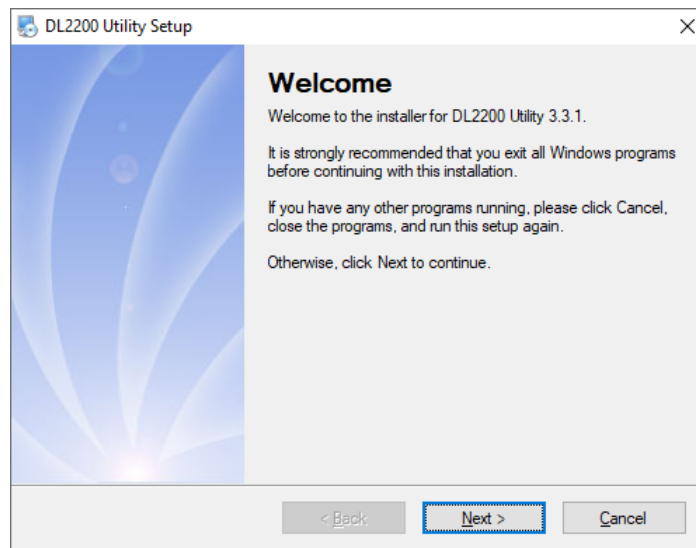
1.2 How to install Wisco DL2200 Utility Program

Wisco DL2200 Utility can be download from:

- ❖ Company website www.wisco.co.th/download.html
(DL2200_Utility_Setup_v3_3_1.exe)
- ❖ Startup CD which come with DL2200
 - ❖ Insert CD to CD/DVD-ROM
 - ❖ open DL2200_Utility_Setup_v3_3_1_Full.exe file



- ❖ Then keep click on **Next >** until installation has been complete



Program Files location

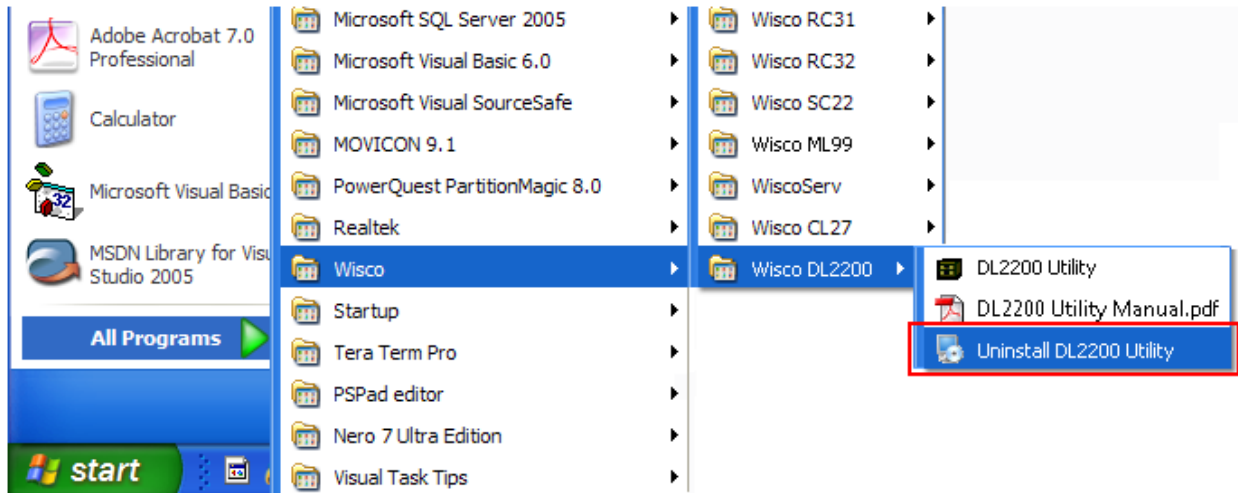
[Windows Drive] > Program Files > Wisco > Wisco Utility > DL2200 Utility 3.3.1

Location of shortcut for run DL2200 Utility program

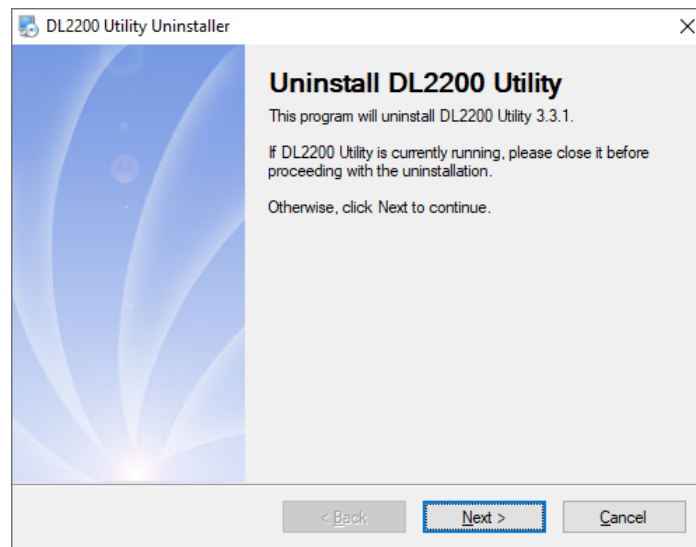
Start > All Programs > Wisco > Wisco DL2200 > DL2200 Utility

1.3 How to uninstall Wisco DL2200 Utility program

Click start -> All Programs -> Wisco -> Wisco DL2200 -> Uninstall DL2200 Utility



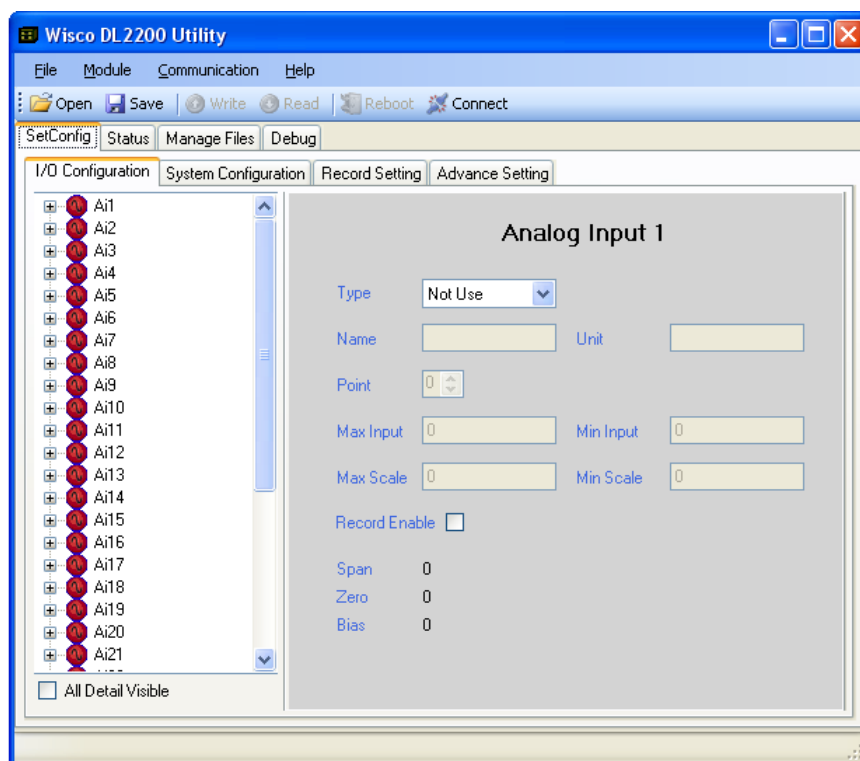
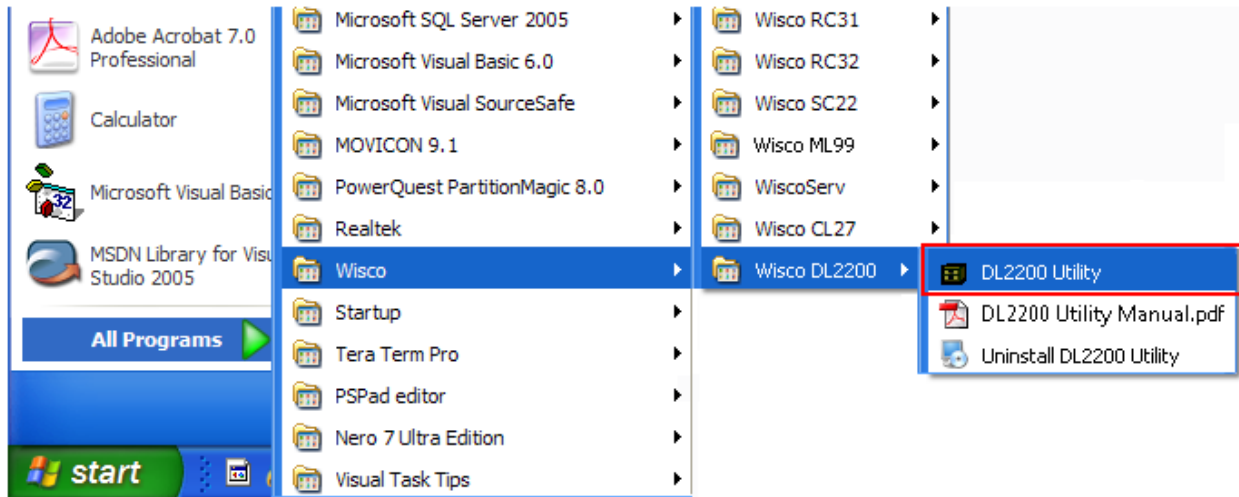
❖ Then click on to confirm uninstall process



❖ Wait for a second, Window will remove program and all component of program

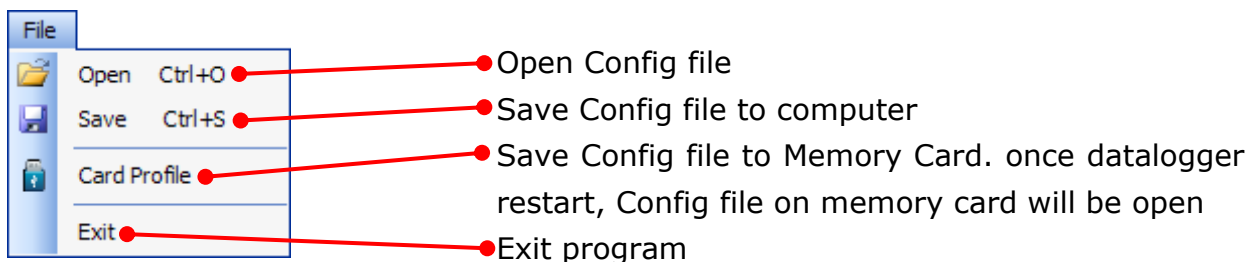
1.4 How to run Wisco DL2200 Utility program

Click start -> All Programs -> Wisco -> Wisco DL2200 -> Uninstall DL2200 Utility

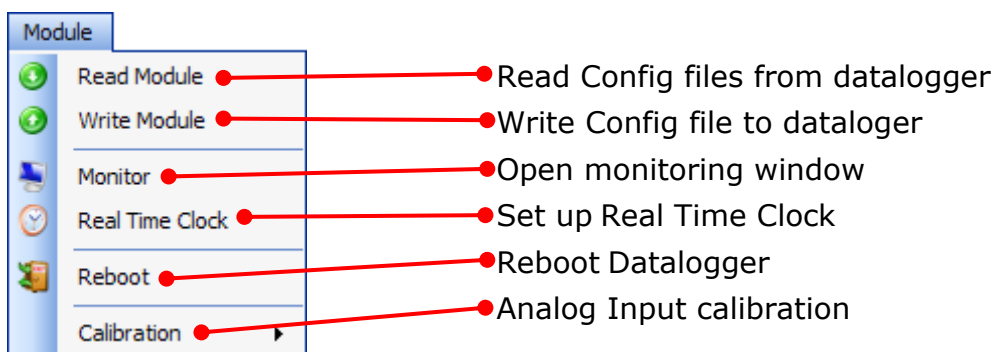


2. How to use Menu and Toolbar

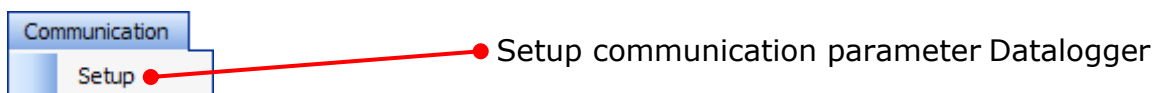
2.1 File



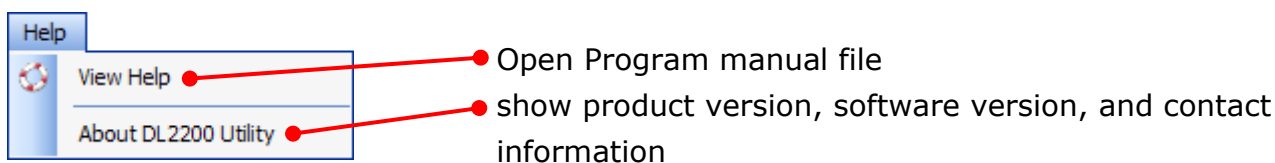
2.2 Module



2.3 Communication



2.4 Help



2.5 Toolbar

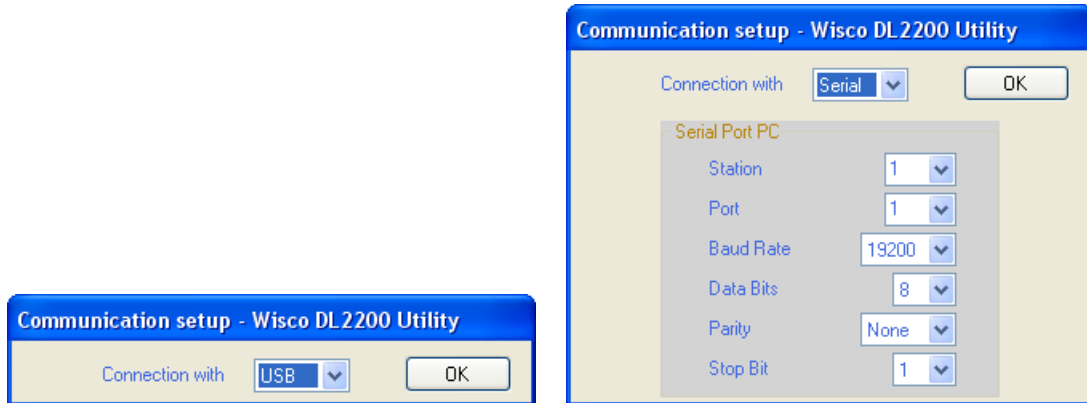


❖ <i>Open</i>	Open Config File
❖ <i>Save</i>	Save Config file to computer
❖ <i>Write</i>	Write Config file to datalogger
❖ <i>Read</i>	Read Config file from datalogger
❖ <i>Reboot</i>	Reboot Datalogger
❖ <i>Connect/Disconnect</i>	Connect/Disconnect Datalogger and computer

3. How to link between Wisco DL2200 Utility with Datalogger

3.1 How to Set up communication parameter

The choice of connection can be choose by click on Communication -> Setup then "Communication setup" window will appear as below figure



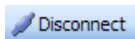
Communication setup

- ❖ **Connection with** is selected communication channel such as USB, Serial, Modem (Option). For connection with serial additional configuration will be require as follow:
- ❖ **Station** choose station number (1 - 254)
- ❖ **Port** select communication port
- ❖ **Baud Rate** select communication speed (4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200)
- ❖ **Data Bits** length of data (8, 7)
- ❖ **Parity** select Parity types (None, Odd, Even)
- ❖ **Stop Bit** configure stop bits (1, 2)

3.2 How to connect program to Datalogger



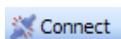
Click  if connection is success, button status will change to



3.3 How to disconnect program from Datalogger



Click  if disconnection is success, button status will change to

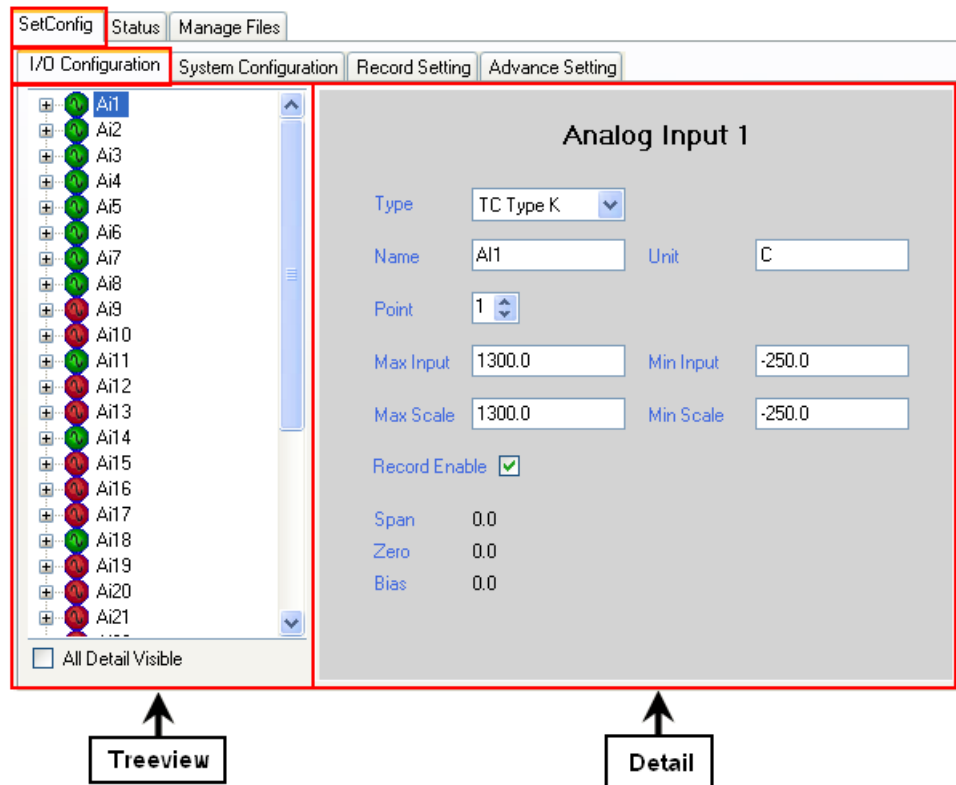


4. How to read and set up configuration to Datalogger

There are 4 sub window on SetConfig tab as follow.

- ❖ I/O Configuration
- ❖ System Configuration
- ❖ Record Setting
- ❖ Advance Setting

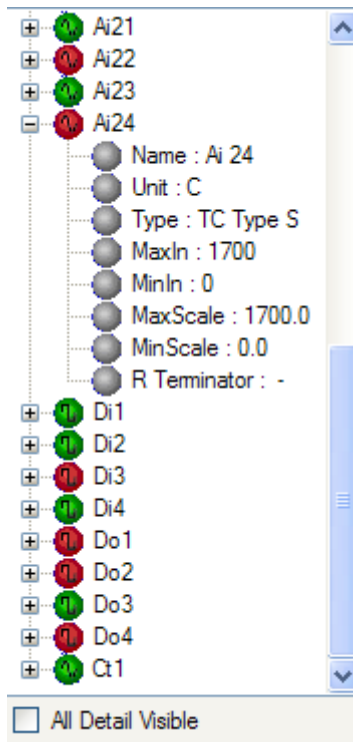
4.1 I/O Configuration



There are 4 types of I/O Configuration which are Analog Input, Digital Input, Digital Output, and Counter (DI4)

4.1.1 I/O Configuration

❖ Treeview



❖ Color of icon is show their status



Enable recording function



Disable recording function



Configuration information of each channel

❖ Click to show more detail

❖ ☐ All Detail Visible click in order to show all detail

❖ Detail

Analog Input 1

Type	TC Type K		
Name	AI1	Unit	C
Point	1		
Max Input	1300.0	Min Input	-250.0
Max Scale	1300.0	Min Scale	-250.0
Record Enable	<input checked="" type="checkbox"/>		
Span	0.0		
Zero	0.0		
Bias	0.0		

Show I/O configuration parameter which choose from Treeview

4.1.2 Analog Input

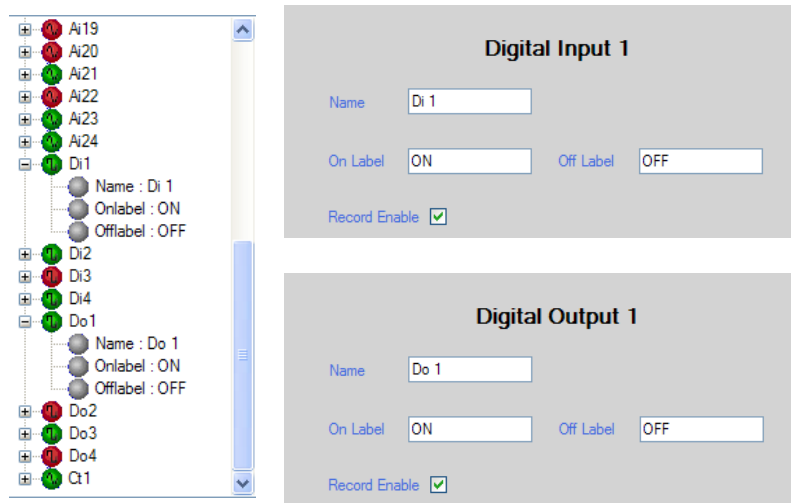
The screenshot shows the 'Analog Input 24' configuration window. The left sidebar lists various inputs: Ai13, Ai14, Ai15, Ai16, Ai17, Ai18, Ai19, Ai20, Ai21, Ai22, Ai23, Ai24, Di1, Di2, Di3, Di4, Do1, Do2, Do3, Do4, and Ct1. The main configuration area for 'Analog Input 24' includes the following fields:

- Type: 0 - 20mA
- Name: Ai 24
- Unit: mA
- Point: 1
- R Terminator: 250.00
- Max Input: 20.000
- Min Input: 0.000
- Max Scale: 20.0
- Min Scale: 0.0
- Record Enable: ☒
- Calibration parameters (highlighted with a red box and an arrow):
 - Span: -0.036
 - Zero: 0.014
 - Bias: 0.047

แสดงค่าที่อยู่ในส่วนของการ Calibration

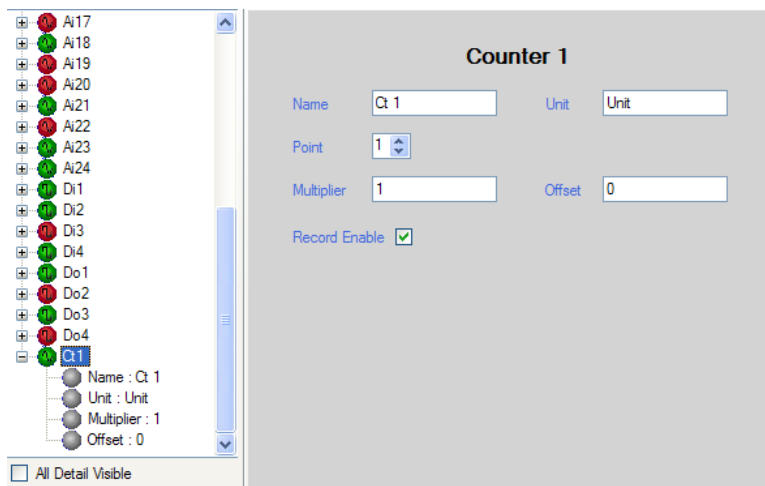
- ❖ **Type** choose analog input types
 - ❖ **Name** Name Analog Input (12 alphabets)
 - ❖ **Unit** signal unit (10 alphabets)
 - ❖ **Point** Decimal point (0 - 4)
 - ❖ **R Terminator** Resistance value for current analog input (250Ω)
(more detail at appendix table T.1)
 - ❖ **Max Input** Maximum input
 - ❖ **Min Input** Minimum input
 - ❖ **Max Scale** Maximum value on display scale (-9999.9~9999.9)
 - ❖ **Min Scale** Minimum value on display scale (-9999.9~9999.9)
- For Example** Datalogger has input types as current 4-20 mA
 Max Input = 20 and Min Input = 4
 Max Scale = 100 and Min Scale = 0
 Then if Input = 20 mA, display data will show= 100
 If Input = 4 mA, display data will show= 0
- ❖ **Record Enable** Enable recording fuction for Analog input
 - ❖ **Span, Zero, Bias** show Calibration parameter

4.1.3 Digital Input and Digital Output



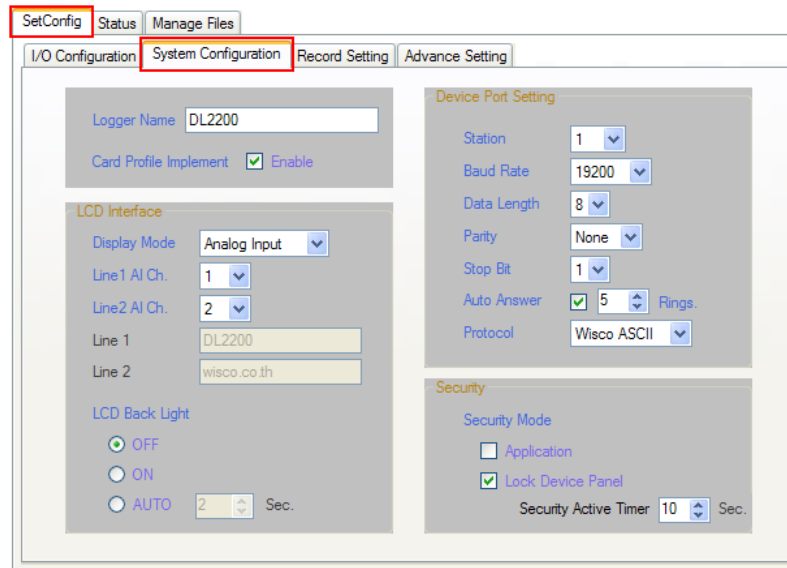
- ❖ **Name** Name Digital input and Digital Output (10 alphabets)
- ❖ **On Label** Display when status is "ON" (10 alphabets)
- ❖ **Off Label** display when status is "OFF" (10 alphabets)
- ❖ **Record Enable** Enable record function for Digital Input and Digital Output

4.1.4 Counter

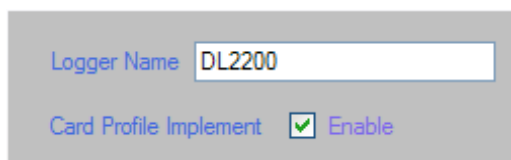


- ❖ **Name** Name Counter channel (10 alphabets)
- ❖ **Unit** Signal units (10 alphabets)
- ❖ **Point** decimal point (0 - 4)
- ❖ **Multiplier** value that multiple with counter value (0.1~9999.9)
- ❖ **Offset** offset value, this value will be add to counter value
- ❖ **Record Enable** enable record status for Counter (DI4)

4.2 System Configuration



Detail of System Configuration



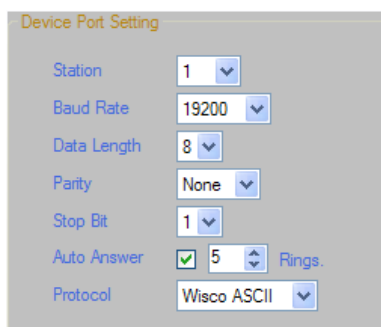
4.2.1 Logger Name

Insert desired name for Datalogger (20 alphabets)

4.2.2 Card Profile Implement

Set Cogfig file which saved on memory card as default (for more detail see topic 7)

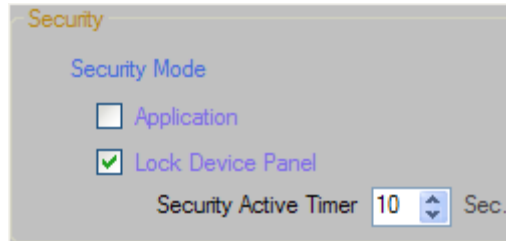
4.2.3 Device Port Setting



Define parameter for serial port connection

- ❖ **Station** station number of datalogger (1-254)
- ❖ **Baud rate** communication speed (4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200)
- ❖ **Data Length** length of data bits (8,7)
- ❖ **Parity** define Parity Bit (None, Odd, Even)
- ❖ **Stop Bit** set up stop bit (1,2)
- ❖ **Auto Answer** set up amount of phone ring before automatically pick up (1-20)
- ❖ **Protocol** choose desired protocol
 - Wisco ASCII • Modbus ASCII • Modbus RTU

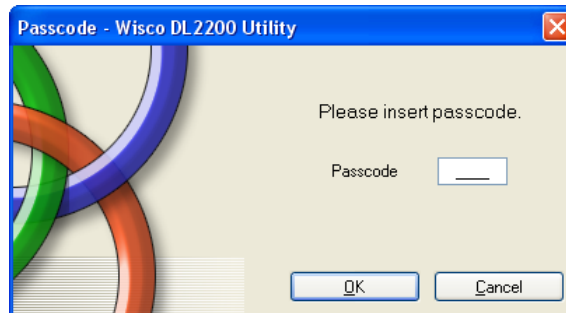
*** For serial port connection, the Wisco ASCII is the only protocol that can be use otherwise user has to use USB port



4.2.4 Security

Mark for enable function

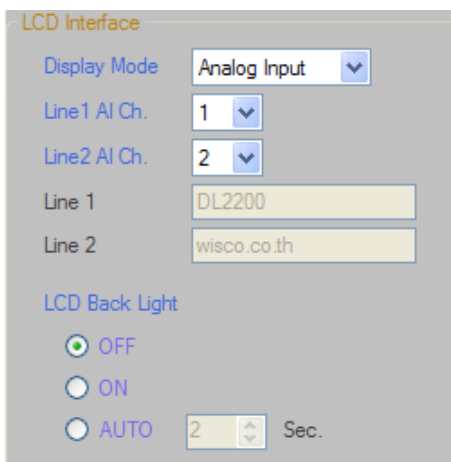
- ❖ **Application** password will be required before program can connect to Datalogger (Default Passcode 0000)



- ❖ **Lock Device Panel** set up password for datalogger panel. (Default Passcode 0000)

- ❖ **Security Active Timer** set up waiting time before datalogger panel will be lock (10-255 Sec.)

4.2.5 LCD Interface



- ❖ Display Mode

- **Date & Time** display Date and Time
- **Analog Input** display analog input value. There are only 2 analogs can be display. One is on line 1 and another is on line 2
- **Logger Status** display memory status
- **MMC Status** display MMC information
- **Ambient Temp** show environment temperature
- **User Define** display desired message on line 1 and line 2 (16 alphabets)
- **LCD Back Light** control ON/OFF for backlight
- **OFF** always turn off
- **ON** always turn on
- **AUTO** automatically turn off when there is no activity. Waiting can be set. (2-255 วินาที)

4.3 Record Setting

Machine Profile is set up Config in case of there is no other config file or Card profile Implement function is disable (for more detail see topic 7)

Record Setting set up Machine Profile

- ❖ **Store Time** set time interval for collecting data. At least 1 second needed for 8 analogs input, 4 digital input, and 4 digital output. For extended module 24 analogs input, 4 digital input, and 4 digital output, at least 3 second will be needed.
- ❖ **Average Measure Value** collect average value. For example, store time is 10 second and average measure value is 5. Datalogger will read value every 2 second then save average value at second 10 to memory card.
- ❖ **Maximum Record/File** amount of data that can be contain on 1 file (0-60000)
- ❖ **Analog Record Enable** enable analog input for recording
- ❖ **Digital Input Record Enable** enable digital input for recording
- ❖ **Digital Output Record Enable** enable digital output for recording
- ❖ **Counter Record Enable** enable counter for recording (DI4)
- ❖ **Record Mode** select recording mode which are Manual, Schedule and Digital Trig (DI1) detail as follow
 - **Manual** manually control datalogger by click on Start/Stop button on panel or Start/Stop in program
 - **Schedule** set up date and time for device to start and stop recording. Detail as follow:

- *Schedule Start* start date
- *Schedule Finish* stop date
- *Start Work* start time
- *Stop Work* stop time
- *Work Day* days for recording

➤ **Working Mode**

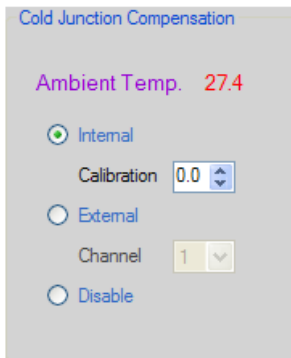
- *Life Time* no start/stop date
- *All Day* no start/stop time
- *All Week* record everyday according to start/stop date and time

- **Digital Trig** start record data when digital input 1 is "high" and stop record when digital input 1 is "low"

4.4 Advance Setting

Advance Setting is Error Correction) and set Cold Junction Compensate. This setting is for thermocouple input. Ambient temperature is from sensor which locate inside datalogger.

4.4.1 Cold Junction Compensation



- ❖ **Internal** Cold junction compensation by using sensor inside datalogger. Calibration is set up Error correction (-5.0 ~ 5.0)
- ❖ **External** Cold junction compensation by using external sensor. The RTD Sensor has to be set (1 ~ 24)
- ❖ **Disable** No cold junction compensation
- ❖ **Cold Junction Compensation Expansion Module** is cold junction compensation for expansion modules

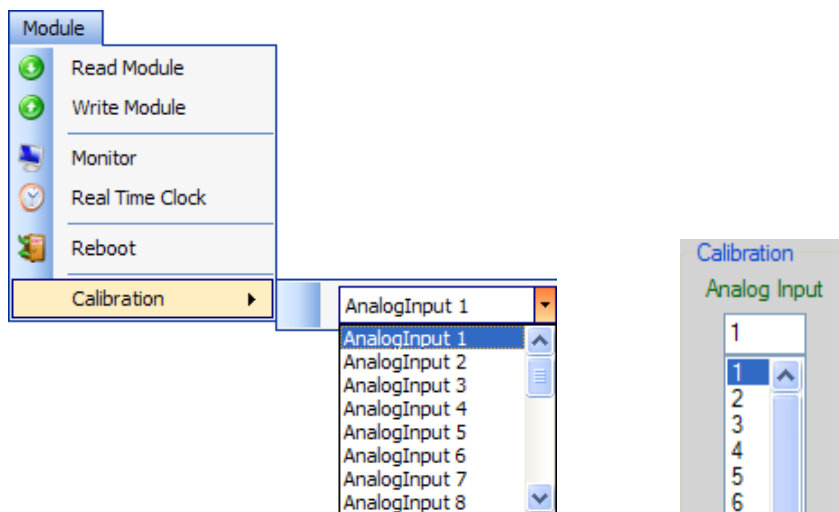
4.4.2 Ambient Temperature

- ❖ Click Read Ambient Temp. to read ambient temperature

4.4.3 Calibration

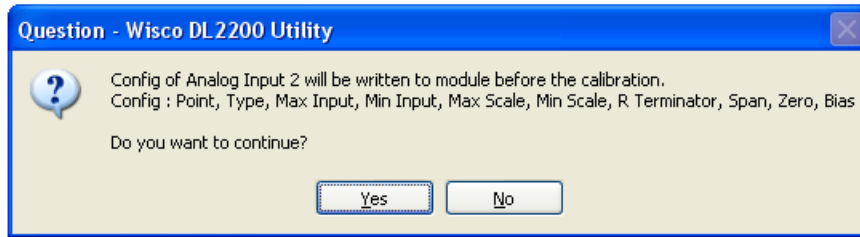
There are 2 way of calibration:

- 1) Click on Module -> Calibration then click Analog Input analog input channel box will appear



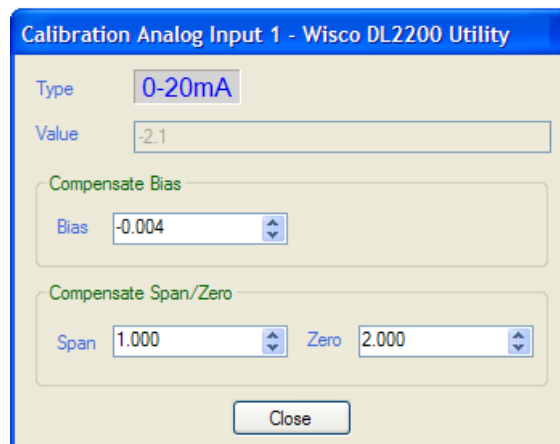
- 2) click on 'SetConfig' tab then click 'Advance Setting' tab. 'choose Analog Input from calibration box

If there is conflict between program and datalogger, window as below figure will show.



Before calibration, program will read value from analog input. If value that read from program is not the same value as datalogger, program will save the particular value to datalogger. Then click then "Calibration Analog Input" window will show.

- ❖ **Bias** set offset on axis Y
- ❖ **Span** revise scale of maximum input
- ❖ **Zero** revise scale of minimum input



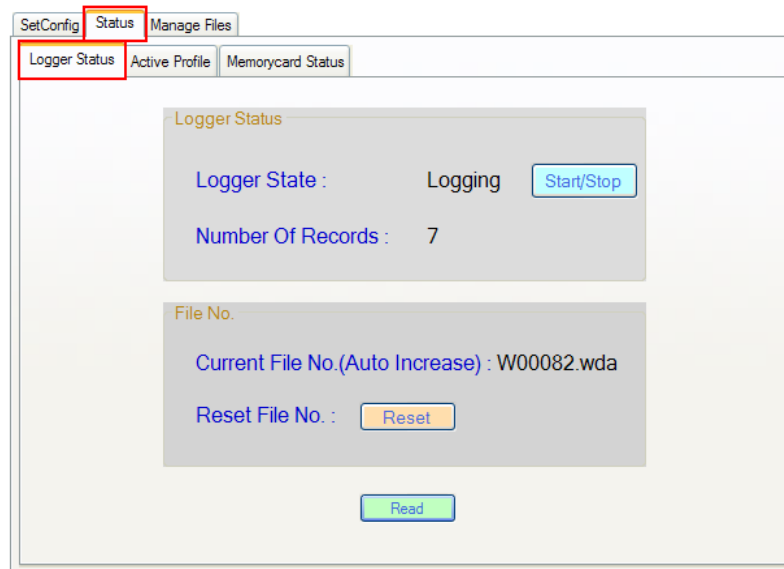
- ❖ **Type** Analog Input type
- ❖ **Value** value that read from analog input which can be change if Bias, Span, and Zero is changed.
- ❖ **Compensate Bias** ใช้สำหรับปรับแต่งค่าของ Bias มีวิธีการดังนี้
 - **Bias** increase value by click and decrease by click or key in the number by click on to
- ❖ **Compensate Span/Zero**
 - **Span** for revise maximum scale of input, increase value by click and decrease by click or key in the number by click on to
 - **Zero** for revise scale of minimum input, increase value by click and decrease by click or key in the number by click on to

5. Tab Status

Tab Status

- Logger Status
- Active Profile
- Memory Card Status

5.1 Logger Status



Logger Status show status and control Datalogger

❖ **Logger State** show recording status of datalogger

- *Logging* is on record mode
- *Fail* recording is fail
- *Idle* empty and waiting for record

❖ **Number Of Records** amount of data that has been saved

❖ **Start/Stop** button control start/stop recording of datalogger

- *Start* start record
- *Stop* stop record

File No. show name of file that data has saved on. File name automatically generate by program.

❖ **Reset** button is reset file once click this button file name will start from "0". in order to reset file name user has to stop record data.

❖ **Read** button is read all data of all parameter on Logger status window

5.2 Active Profile

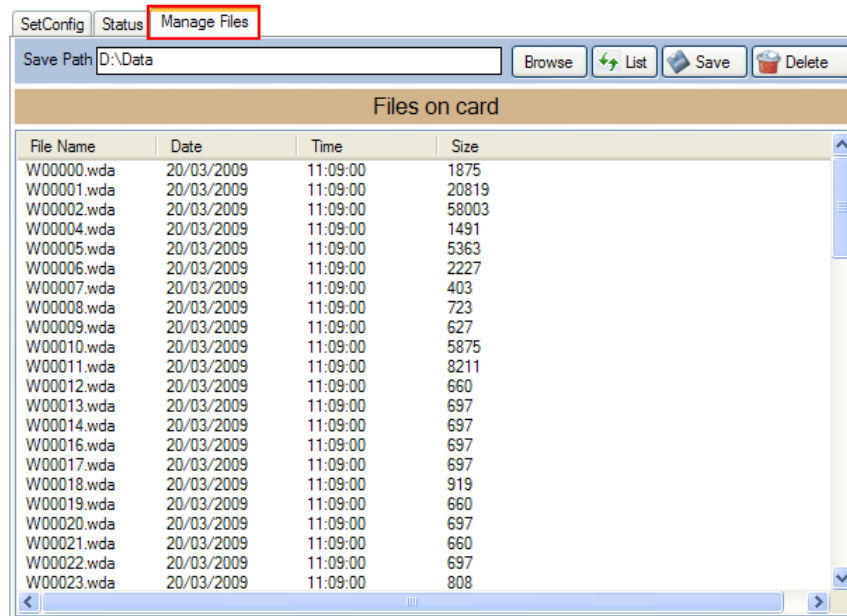
Active Profile Show all config parameter that have been set (for more detail see topic 7)

5.3 Memory card Status

Memory card Status

- ❖ **Exist** show working status of memory card
 - **Cars isn't exist** there is no memory card
 - **Card ready** memory card is ready
 - **Card isn't ready** memory card is not ready
- ❖ **Memory card Type**
 - **Unrecognized** unidentify memory card
 - **MMC** MMC memory card
 - **SD** SD memory card
 - **microSD** micro SD memory card
 - **SDHC** SDHC memory card
- ❖ **Capacities** is memory card capacity
- ❖ **Free Space** space that has left
- ❖ **File System Type** show memory format
 - **Unrecognized** unidentified Format memory card
 - **FAT12** FAT12 format
 - **FAT16** FAT16 format
 - **FAT32** FAT32 format

6. How to manage data on memory card through Datalogger



Program can download and delete data files in memory card by using datalogger

6.1 Toolbar



- ❖ **Save Path** show saved location in computer
- ❖ **Browse** choose saved location
- ❖ **List** update file name in memory card
- ❖ **Save** save file to computer
- ❖ **Delete** delete file on memory card

6.2 POPUP Menu



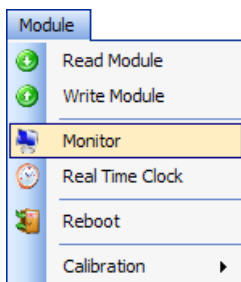
Calling Popup Menu by right click on the files name

7. Profile

There are 3 type of profile

- **Machine Profile** is profile that has been saved on Datalogger. If there is no card profile, machine profile will be use.
- **Card Profile** is profile that has been saved on memory card. If card profile implement is enable, It will be load after device power has been turn on.
- **Active Profile** is profile that is working at that moment.

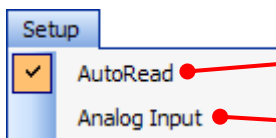
8. Data monitor display



After program connect to Datalogger, monitor window can be display by click Module -> Monitor

8.1 How to use Menu and Toolbar on monitor window

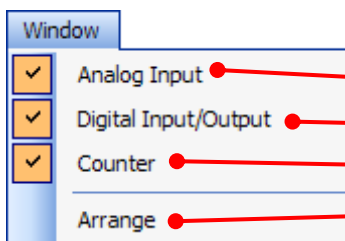
8.1.1 Setup



• automatically read value according to refresh interval time

• set analog input to show on monitor window

8.1.2 Window



• Read Analog Input

• Read Digital Input/Output

• Read Counter

• Arrange sub window

8.1.3 Toolbar



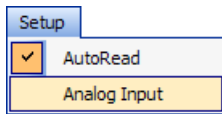
❖ *Refresh Interval*

Interval time for automatically read value

❖ *Read/Stop*

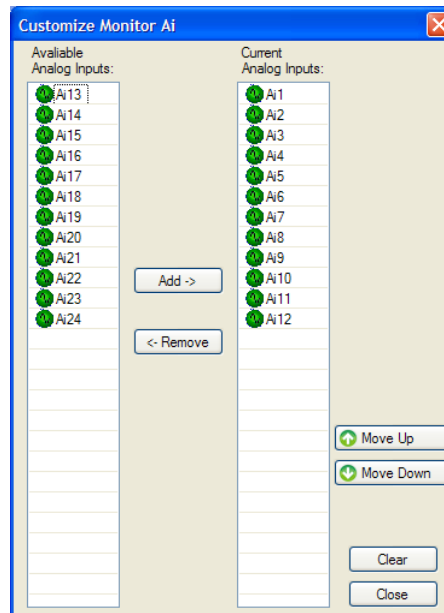
Click  to start read value, and button will change to . Click  to stop reading value

8.2 How to display Analog Input



Select Analog Input for reading value by click Setup -> Analog Input

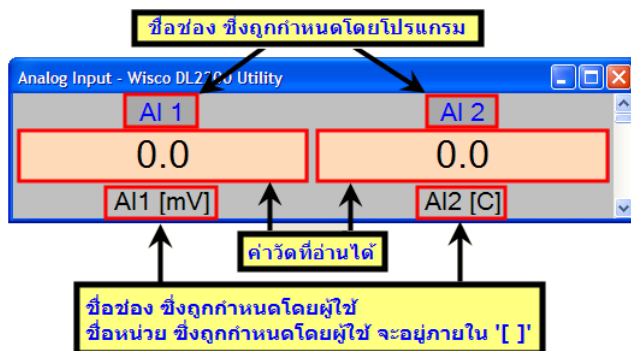
Customize Monitor Ai will appear



Customize Monitor Ai

- ❖ **Available Analog Inputs** analog input which is not set to display
- ❖ **Current Analog Inputs** display analog input
- ❖ **Add ->** click to add analog input
- ❖ **<- Remove** remove analog input from display list
- ❖ **Move Up** move selected analog input to higher level
- ❖ **Move Down** move selected analog input to lower level
- ❖ **Clear** remove all analog input from display list
- ❖ **Close** close Customize Monitor Ai window

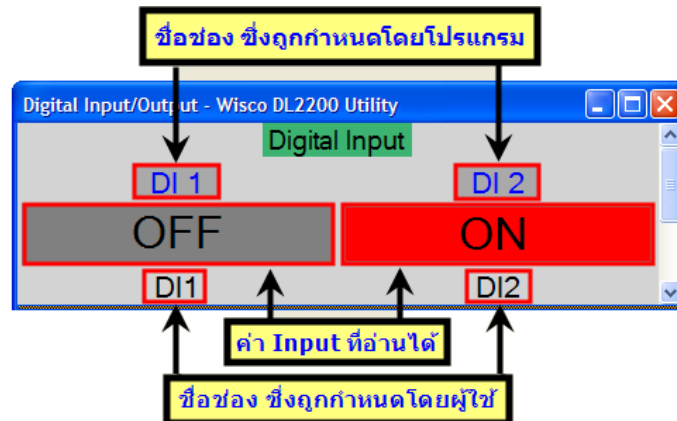
8.3 Analog Input window



- OVR = reading value is over range
- UDR = reading value is under range

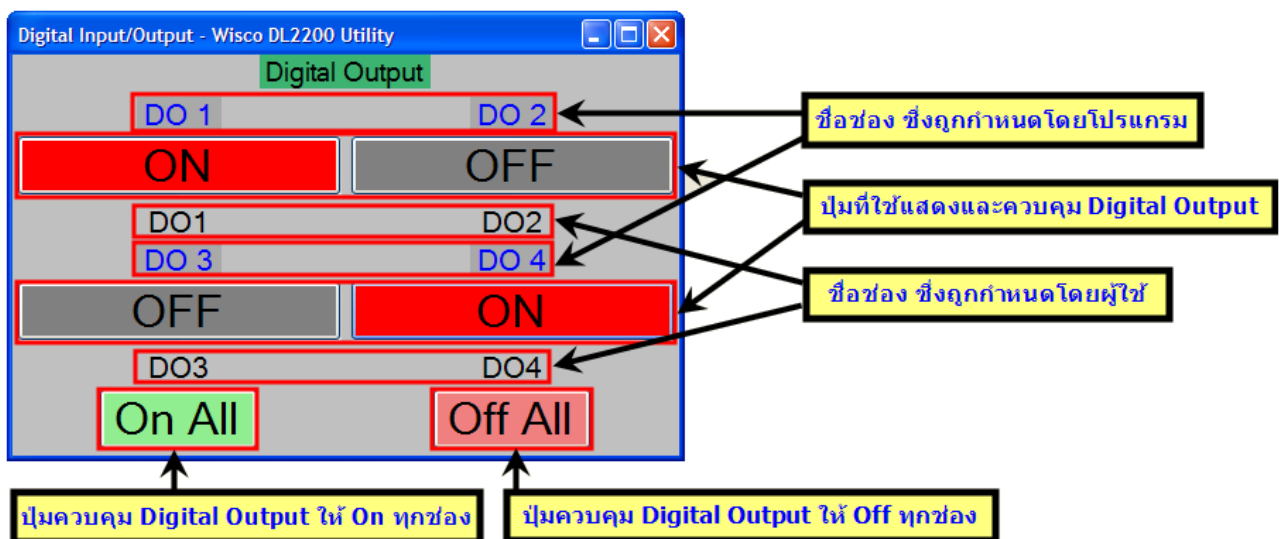
8.4 Digital Input/Output window

8.4.1 Digital Input



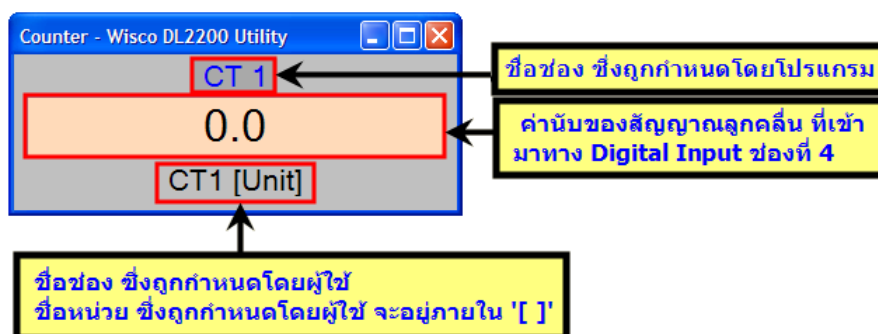
- Gray color = digital status is OFF
- Red color = digital status is ON

8.4.2 Digital Output



- Gray color = digital status is OFF
- Red color = digital status is ON

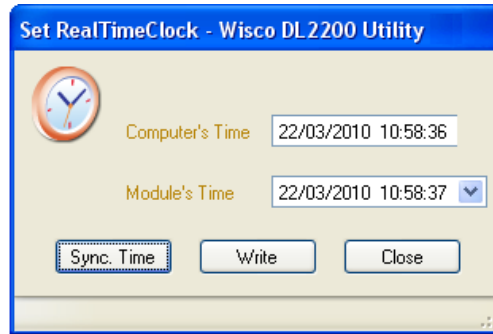
8.4.3 Counter





9. Time set up of Datalogger (Real Time Clock)

Time format for utility program are "date/month/year" and "hour/minute/second"

Time set up of Datalogger can be done by click on Module -> Real Time Clock then "Set Real Time Clock" window will appear






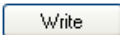


Set Real Time Clock

- **Computer's Time** is computer time
- **Module's Time** is datalogger time
-  set datalogger time to be the same as computer time
-  set datalogger time to be the same as set time on "Module's Time" box

set up time on "Module's Time" box can be done by click on desire time then blue strip will appear

22/05/2008 15:24:31 ▼

- ❖ Click  to increase 1 at a time
- ❖ Click  to decrease 1 at a time
- ❖ Click  to  for manually insert desired number
- ❖ Click  or click  to complete set up

Appendix

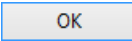
Table. 1 Input type information

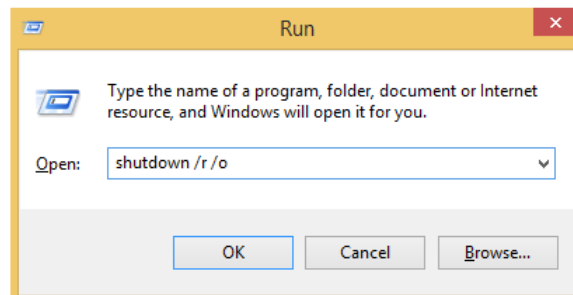
T.1	Input type information				
Code	Input Type		Measuring Range	Resolution	Accuracy (%FS) (Temp. 25 °C)
0	Not Use		—	—	—
1	Thermocouple	R	0 – 1700 °C	1 °C	±0.2% (3.4°C)
2		S	0 – 1700 °C	1 °C	±0.2% (3.4°C)
3		K	(-)250.0 – 1300.0 °C	0.1 °C	±0.2% (2.6°C)
4		E	0.0 – 1000.0 °C	0.1 °C	±0.2% (2.0°C)
5		J	(-)200.0 – 700.0 °C	0.1 °C	±0.2% (1.4°C)
6		T	(-)250.0 – 400.0 °C	0.1 °C	±0.2% (0.8°C)
7		B	600 – 1800 °C	1 °C	±0.2% (3.6°C)
20	R.T.D	Cu10	0 – 150 °C	1 °C	±0.1% (1.5°C)
21		Pt100	(-)200.0 – 800.0 °C	0.1 °C	±0.1% (0.8°C)
22		Pt1000	(-)200.0 – 800.0 °C	0.1 °C	±0.1% (0.8°C)
30	R (Ohm)	600 Ω	0.00 – 600.00 Ω	0.01 Ω	±0.01% (0.06 Ω)
31		1200 Ω	0.0 – 1200.0 Ω	0.1 Ω	±0.02% (0.24 Ω)
32		4000 Ω	0.0 – 4000.0 Ω	0.1 Ω	±0.02% (0.8 Ω)
40	Voltage(mV)	0 – 80	0.000 – 80.000 mV	1 μV	±0.1% (8μV)
41		0 – 150	0.00 – 150.00 mV	10 μV	±0.02% (30μV)
42	Voltage (V)	0 – 1	0.0000 – 1.0000 V	100 μV	±0.05% (500μV)
43		0 – 5	0.000 – 5.000 V	1 mV	±0.04% (2mV)
44		0 – 15	0.000 – 15.000 V	1 mV	±0.02% (3mV)
45		0 – 30	0.00 – 30.00 V	10 mV	±0.033% (10 mV)
60	Current(mA)	4 – 20	4.000 – 20.000 mA	1 μA	±0.01% (5μA)
61		0 – 20	0.000 – 20.000 mA	1 μA	±0.01% (5μA)
62		0 – 40	0.000 – 40.000 mA	1 μA	±0.05% (0.0A)

A. How to solve problem Error USB Driver on Windows 8, 8.1

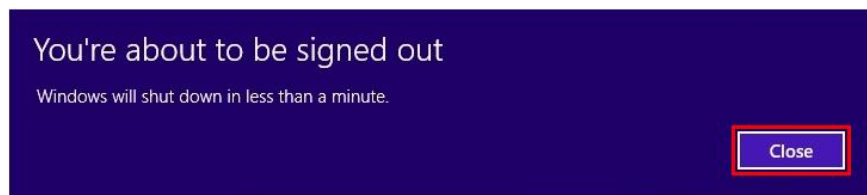
For Windows 8 or 8.1 Signature Driver function should be turn off. In order to turn it off you can to by:

1) Click Windows () + R nat Keyboard to open "Run window"

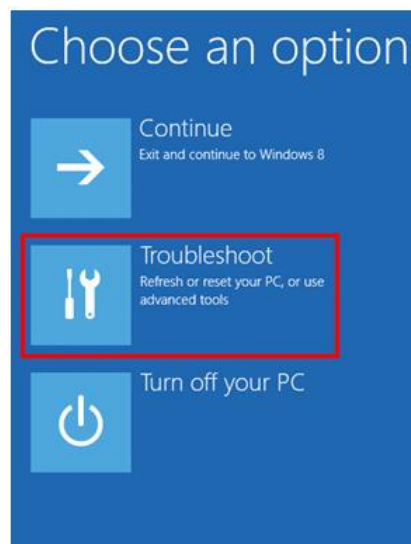
2) Type in "Shutdown/r/o" as show in figure below then click 



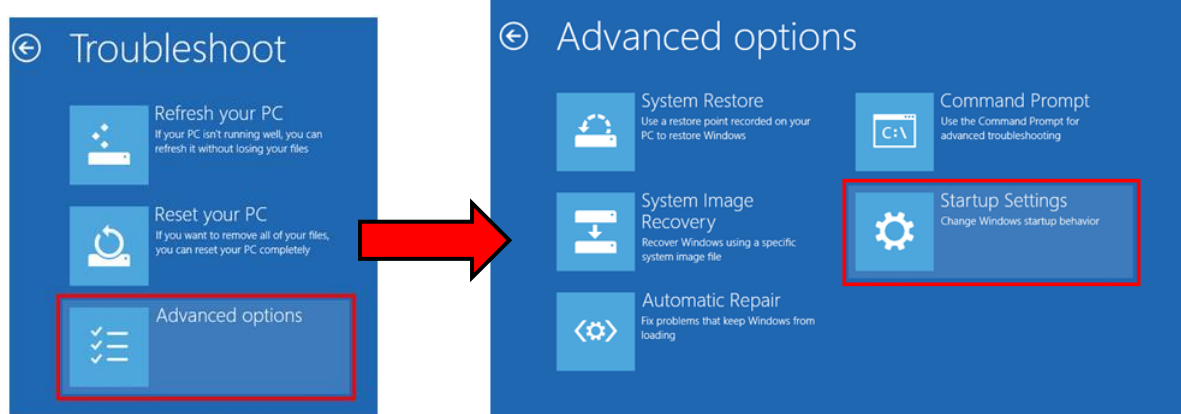
3) Windows will show message "You're about to be signed out" then click



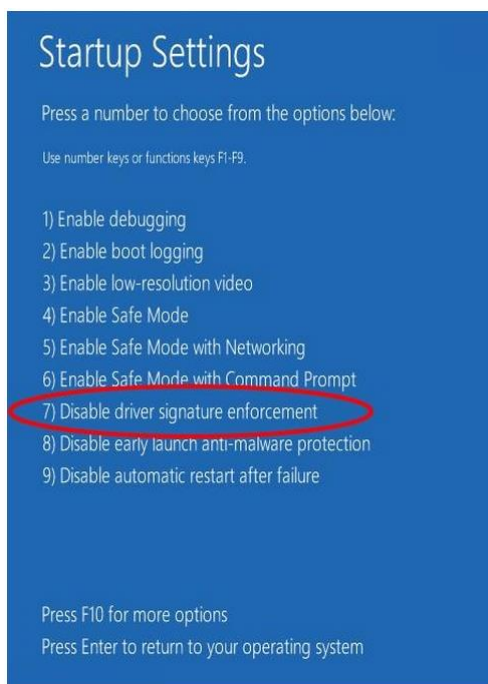
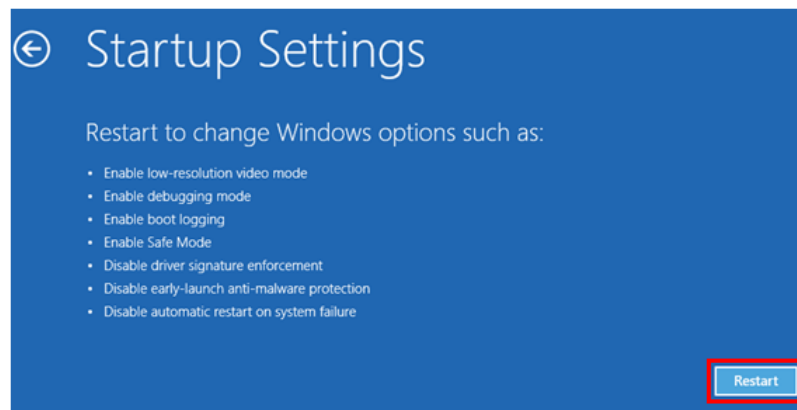
4) Windows will Restart then click "Troubleshoot"



5) And choose "Advance Option" then click on "Startup Settings" as show in figure



6) Then click 



7) after Restart "Startup Settings" window will show up then click F7 or 7 at Keyboard to selecting "Disable driver signature enforcement" action

8) then computer will automatically Restart again. After complete restart install USB Driver one more time

Edit: 23/06/2023