

User Manual

Comprehensive Device Management
Program

DAQMaster

Thank you for purchasing an Autonics product.

This user manual contains information about the product and its proper use,
and should be kept in a place where it will be easy to access.

Preface

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User Manual Guide

This user manual contains information about the product and its proper use, and should be kept in a place where it will be easy to access.

- Please familiarize yourself with the information in this manual before using the product.
- This manual provides detailed information on the product's features. It does not offer any guarantee concerning matters beyond the scope of this manual.
- This manual may not be edited or reproduced in either part or whole without permission.
- A user manual is not provided as part of the product package. Visit www.autonics.com to download a copy.
- The manual's content may vary depending on changes to the product's software and other unforeseen developments within Autonics, and is subject to change without prior notice.
- This manual is produced based on DAQMaster 3.1 version.

User Manual Symbols





Symbol	Description
 Note	Supplementary information for a particular feature.
 Warning	Failure to follow instructions can result in serious injury or death.
 Caution	Failure to follow instructions can lead to a minor injury or product damage.
 Ex.	An example of the concerned feature's use.
※1	Annotation mark.

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1 DAQMaster Overview

1.1 Main Features

DAQMaster is a comprehensive device management program that provides GUI control for easy and convenient management of parameters and multiple device data monitoring.

The version of program is divided into general, pro, and application. Pro version supports variety of additional functions such as user convenience, device and data management as compared with general version.

All the features will be available for use for 30 days after installation. After the trial period, Pro version features will be limited without the purchase of the license.

※ For the information about application version, refer to the user manual.

Please visit Autonics website (www.autonics.com) to download the user manual.

(1) General Version

- **Multiple Device Support**
Simultaneously connect and monitor multiple devices and set parameters.
- **Device Scan**
In cases of multiple units (with different addresses) connected together, the unit scan function automatically searches for units.
- **Convenient User Interface**
Freely arrange windows for data monitoring, properties, and projects.
Saving a project also saves the screen layout.
- **Project Management**
Saving and loading data as a project file includes added device information, data monitoring screen layouts, and I/O source selection. Organizing project list makes managing project files easier.
- **Data Analysis**
Analyses DAQMaster data files (*.ddf) or database using data analysis tool by grid and graph. Grid data can be saved directly to .rtf, .txt, .html, or .csv files in Data Grid.
- **Monitoring Data Log**
When monitoring, data log files can be saved in either DAQMaster data files (*.ddf) or CSV (*.csv) files. Define log data file naming/saving rules and destination folders to make file management convenient.
- **Tag Calculation Editing**
Read tag value is available to calculate the set formula for the desired value.
- **Print Modbus Map Table Report**
Print address map reports of registered Modbus devices. Modbus map table reports can be saved in html (*.html) and pdf (*.pdf) formats.
- **Script Support**
Uses the Lua Script language and deals with different I/O processes for individual devices.
- **Multilingual Support**
Supports Korean, English, Japanese, and Simplified/Traditional Chinese. It is also possible to customize the default language and to add new language by user.

(2) Pro Version

- Modbus Device Editor
Can add the any Modbus devices which are not supported at DAQMaster to set and monitor the property and I/O.
- Trigger Event, Scheduler
Conducts preset action by user set condition (Trigger) and time (Schedule) automatically.
- Push Server
Transmits push message to the client device. It is possible to use with Trigger Event, Scheduler.
- Database
Database managing system turns information into database in real-time, making creation and management easier.
- OPC DA Server/Client, OPC AE Client
It is Interface method for better compatibility among application programs based on OLE/COM and DCOM technology of Microsoft. It provides industry standard mechanism for communication and data conversion between client and server.
- TCP/IP Server
Displays and monitors the communication data through TCP/IP protocol.
- DDE Server/Client
Supports communication among process embedded in Microsoft Window system (IPC), allowing application programs to share and exchange information between the applications.
- Fieldbus Master
Supports Fieldbus network by using PC card of Hilscher Inc.
- Modbus Slave
Conducts read and write request from the outside through Modbus protocol.
- And more various functions

1.2 DAQMaster Function Comparison Table by Version

Function			General	Pro
Runtime Screen			O	O
Data Monitoring			O	O
Parameter Setting			O	O
Project Management			O	O
Multi Device Support			O	O
Device Scan			O	O
Data Log			O	O
Lua Script			O	O
Tag Data Calculation			O	O
Modbus Map Table Report			O	O
Scheduler			X	O
Data Analysis	ddf (DAQ Data File)	Grid	O	O
		Graph		
		Alarm Spread		
		Analysis Spread		
	Database	DB Grid		
		DB Graph		
Utility (Tool)		Modbus Device Editor	X	O
		Script Editor		
Trigger Event Action	Log Start		X	O
	Log Stop			
	Send to Telegram			
	Alarm Sound Play			
	Tag Error Message			
	Tag Alarm			
	Tag output			

Function			General	Pro			
Realtime Log	CSV		O	O			
	SQL	Oracle	X	O			
		SQL Server					
		MySQL					
		DB2					
		SQLite					
		PostgreSQL					
		InterBase					
		Nexus DB					
		Firebird					
		Sybase ASE					
		Sybase ADS					
		MS Access					
		DBF					
Advantage							
NoSQL	Mongo DB	X	O				
Protocol	TCP/IP Server	Monitoring	X	O			
		Security (Login)					
		Tag Reading					
	OPC	DA	1.0(Format)	X	O		
			2.0(Format)				
			3.0(Format)				
			Server				
			Client				
		AE	1.0(Format)			X	O
			1.10(Format)				
			Client				
	DDE	CF_Text(Format)	X	O			
		XL_Table(Format)					
		Server					
		Client					
	WMI Manager		X	O			
	Push Server						

Function			General	Pro
	Fieldbus Master (Hilscher PCI)	ProfiBus	X	O
		ProfiNet		
		EtherCAT		
		EtherNet/IP		
		DeviceNet		
		CC-Link IE Field Basic		
	Modbus Slave	RTU	X	O
		TCP		
		ASCII		
Multi Language (English, Korean, Japanese, Simplified/Traditional Chinese)			O	O

※ For registering Pro version license, refer to '5.2 License'.

2 Getting Started

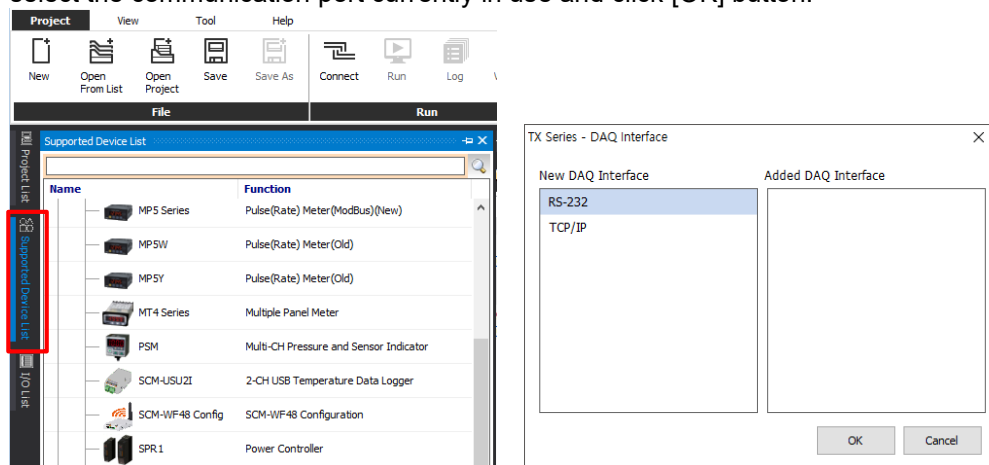
This chapter explains the basic contents in sequence to use DAQMaster for the first time. For specific information on each function, refer to the related chapter in the user manual.

Device connection, parameter setting and basic monitoring will be proceeded when using TX Series as follows. Above all, you have to check the instruction manual of the product to connect and then apply it to the following steps.

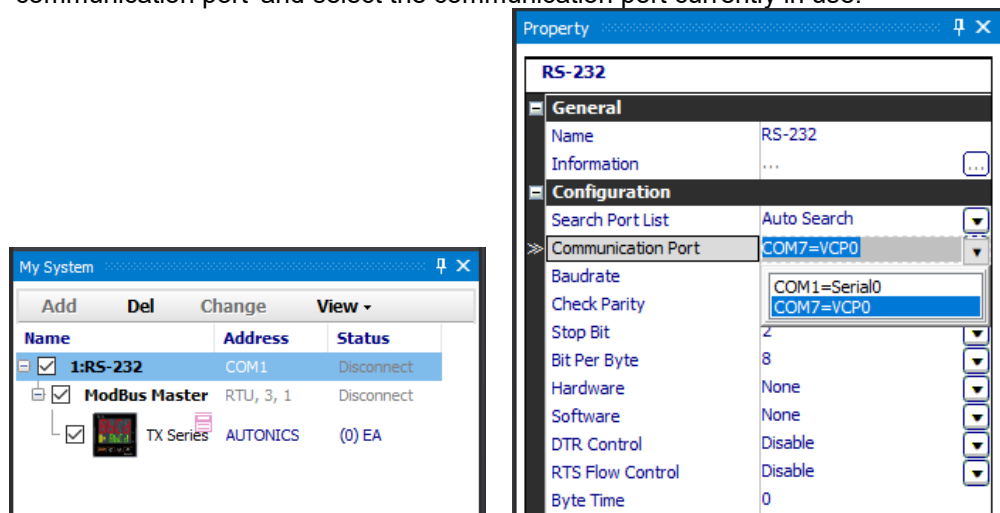
1st Install DAQMaster program at Master device (ex. PC), connect to the product and run DAQMaster.

※ You can download DAQMaster program at www.autonics.com.

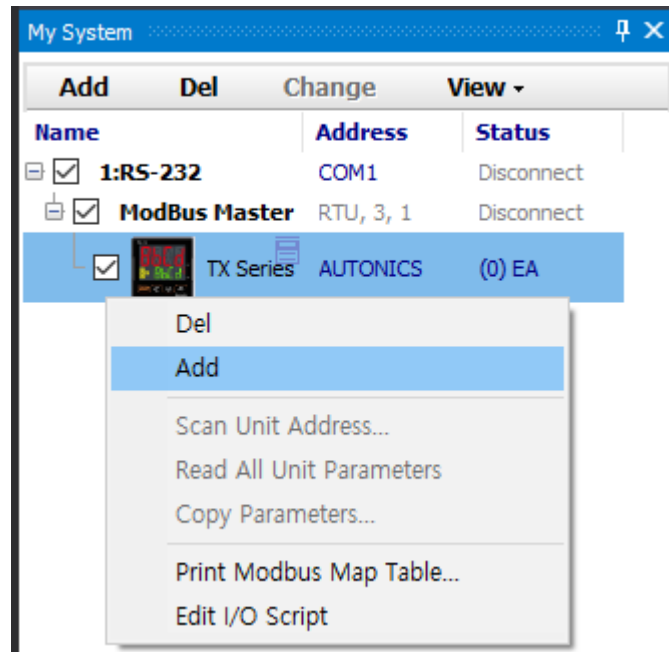
2nd Open the control panel by clicking [Support Device List] button and double-click the series or model name to communicate with. When DAQ Interface panel pops up, select the communication port currently in use and click [OK] button.



3rd Proper communication port setting is needed to connect the device. Select RS-232 in 'My System' control panel. In 'Property' control panel, click pull-down icon (▼) on 'communication port' and select the communication port currently in use.

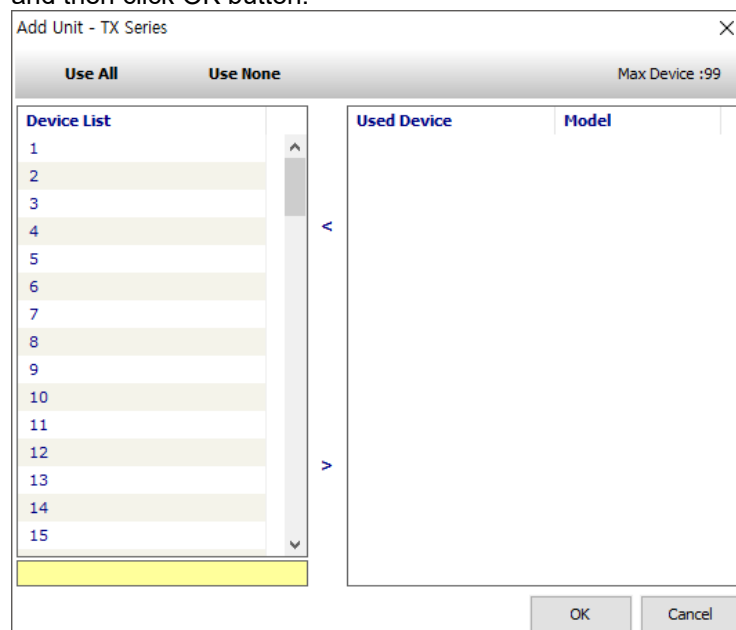


4th In control panel, right-click a newly added 'Support Device name' (TX Series) and click 'Add'.

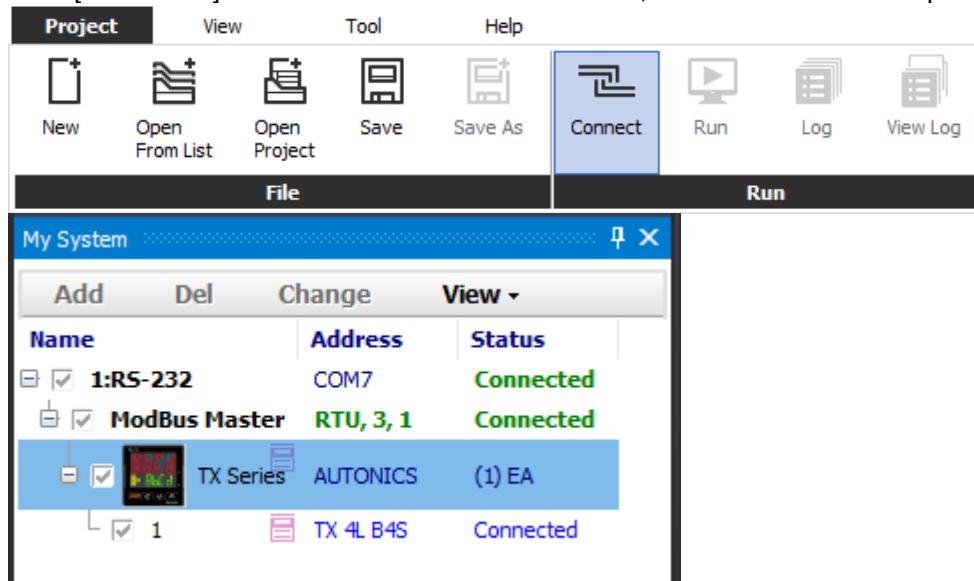


※ For more information about adding a unit to My System, refer to '5.10.1 Add'.

5th When 'Add Unit' window pops up, double-click the connected device address to add and then click OK button.



6th Click the [Connect] button on the 'Project – Run' menu and check the 'My System' control panel. If the connection is successful, 'Statues' row displays 'Connected'. Click [Disconnect] button to unlink the communication, then continue with setup.

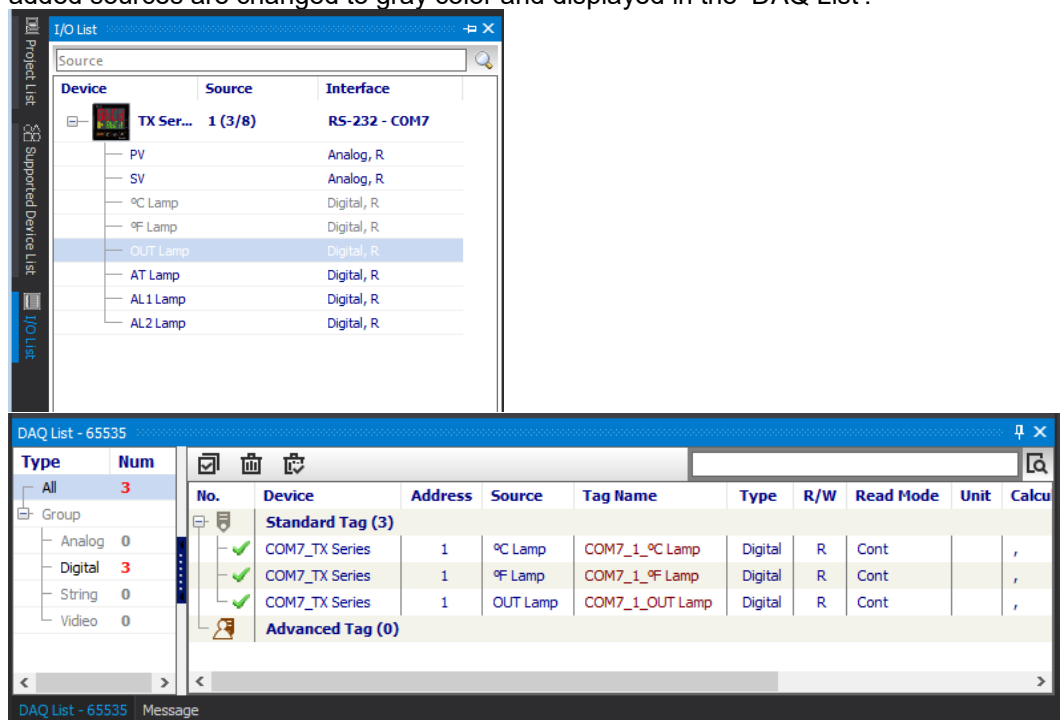


Note

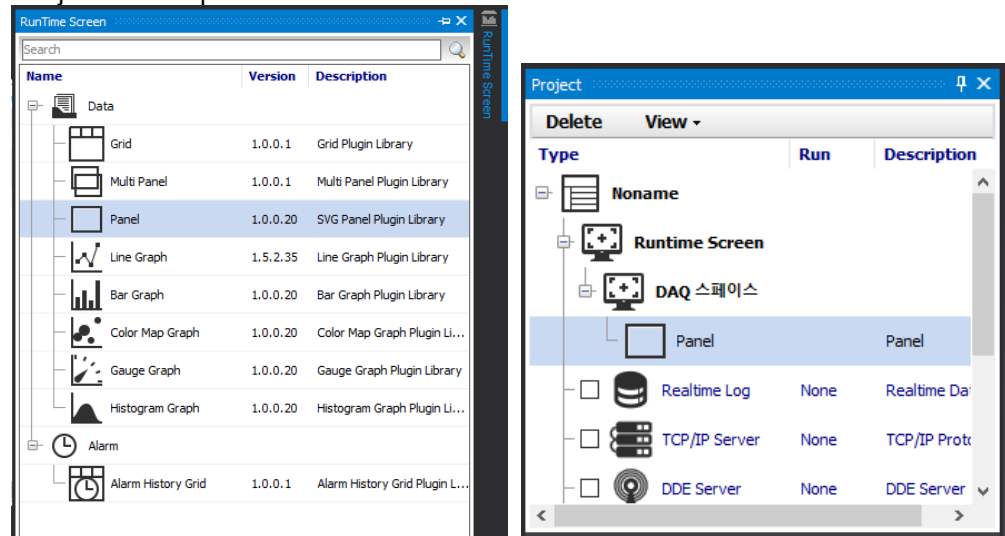
For more information about the default address and setting method of each device, refer to the manual of the device.

If there is a problem in connection, check the related settings again in the previous step '2nd Communication type' and '3rd Communication port'.

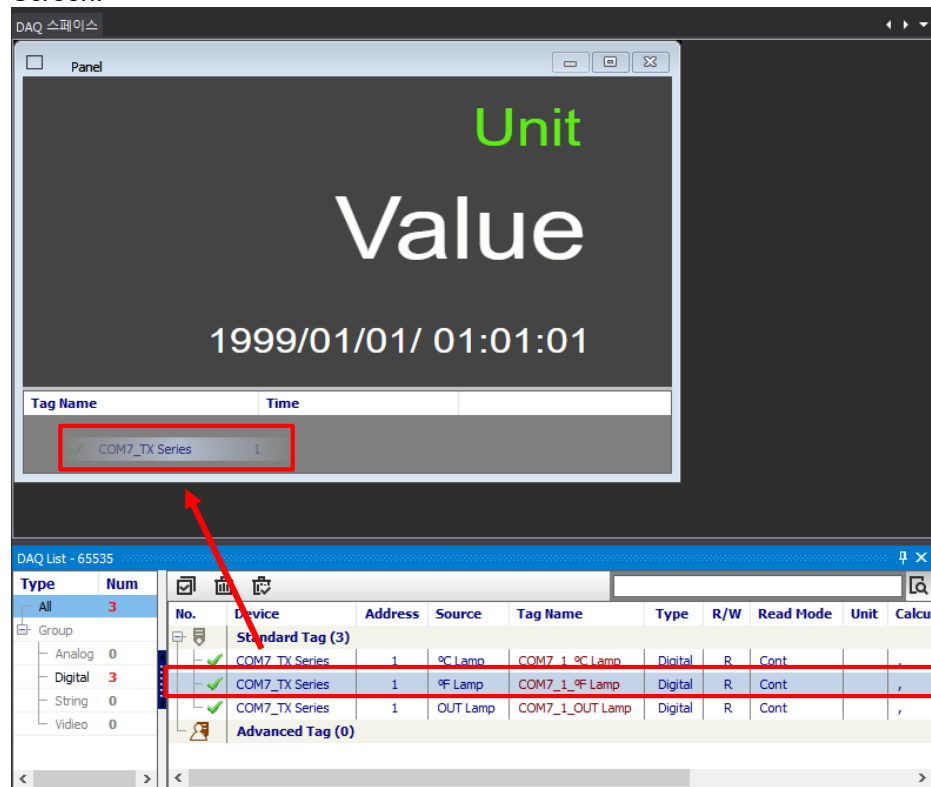
7th To monitor the data of the device that user needs, add I/O sources to DAQ List. Double-click I/O source in the 'I/O List' control panel, then adds to the 'DAQ List'. The added sources are changed to gray color and displayed in the 'DAQ List'.



- 8th For visualized monitoring, double-click the desired runtime screen in the 'RunTime Screen' and import to 'DAQ Space'. Imported runtime screen is displayed in the 'Project' control panel as well.



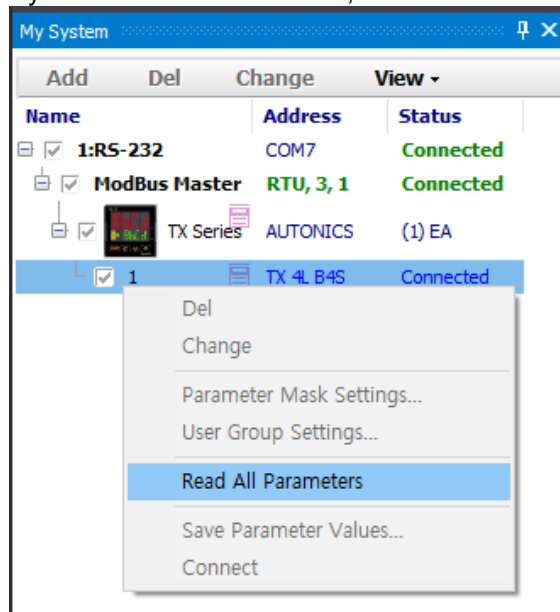
- 9th Drag the I/O source to be monitored from the 'DAQ List' and drop it onto the RunTime Screen.



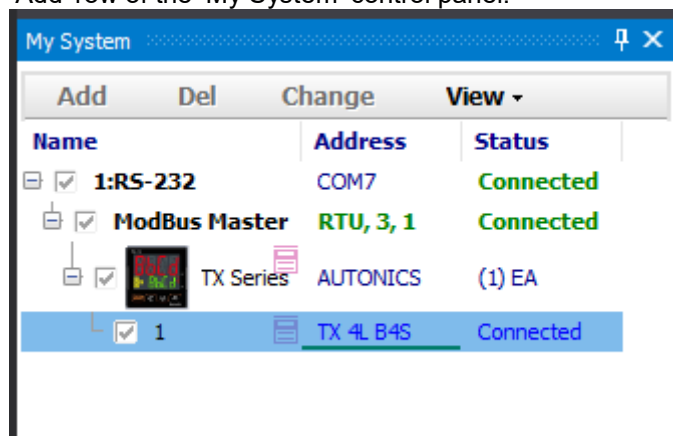
- 10th Basic settings for monitoring is finished now.

To connect the device to DAQMaster, click the [Connect] button in the 'Project-Run' menu.

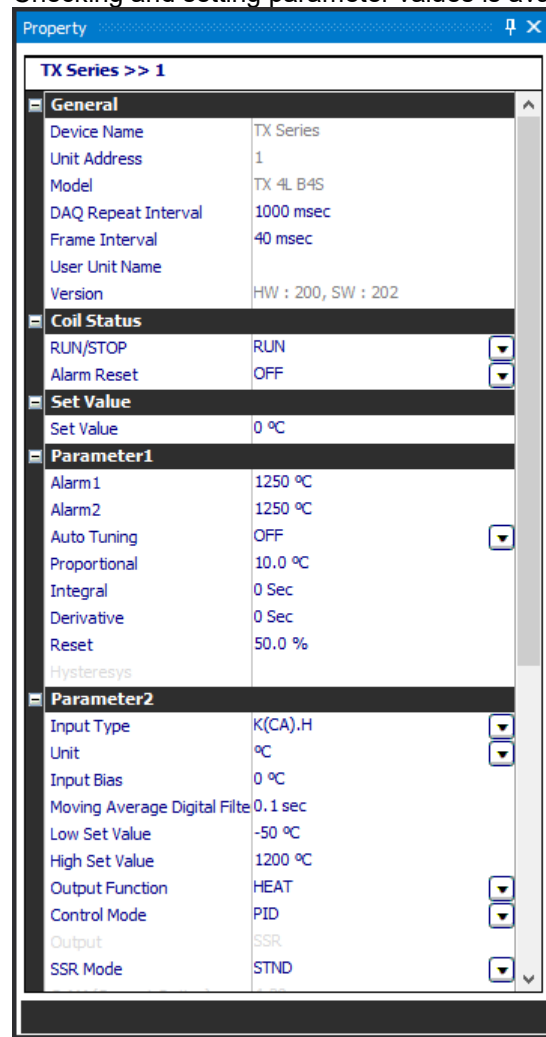
To check parameters of the device, right-click either the 'Series name' in the 'My System' or 'address number', then click 'Read All Parameters'.



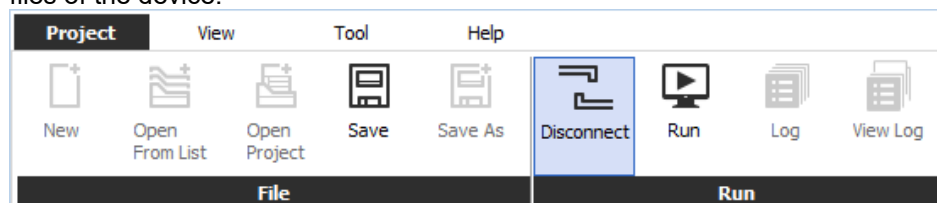
It is possible to check the progress for 'read parameters' at the bottom of the model in 'Add' row of the 'My System' control panel.



Checking and setting parameter values is available in the 'Property' control panel.



12th Click the [Run] button in the 'Project – Run' menu to record data monitoring and data files of the device.



13th It is possible to monitor real-time data and use the data logging function in the DAQ WorkSpace.

3 Installation

3.1 System Requirements

Item	Minimum specifications
System	IBM PC compatible computer with Intel Pentium III or above
Operations	Windows 98/NT/XP/Vista/7/8/10
Memory	256 MB+
Hard disk	1GB+ of available hard disk space
VGA	Resolution: 1024×768 or higher
Others	RS232C serial port (9-pin), USB port

3.2 Installing the Program

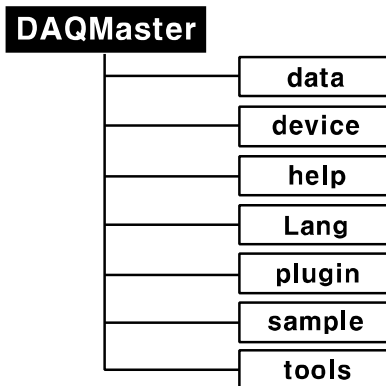
- 1st Download DAQMaster program at Autonics web page(www.autonics.com).
- 2nd Close all programs before installing DAQMaster. Double-click DAQMaster setup.exe to start installation.
- 3rd Installer Language window appears. Select the language and click [OK] button.
- 4th If you click [OK] button, the 'Setup Wizard' window appears in the selected language. Click [Next] to proceed or click [Cancel] to stop the installation.
- 5th If click [Next] button, the 'License agreement procedure' window appears. Read all the details of the 'License agreement'. After considering the information, click [Agree] button to continue the installation.
- 6th If click [Agree] button, 'Installation components' window appears. Choose the components to setup and click [Next].
- 7th If click [Next] button, 'Install Location' window appears. Default installation path is already set. If you need to change the default path, click [Browse] button and select the desired destination folder. And then click [OK] to start installation.
- 8th If click [OK] button, installation progress is displayed. Wait until the installation is complete.
- 9th 'Installation Complete' window appears after installation is completed. Click [Finish] button to run DAQMaster. It is possible not to run the program by unchecking the box of [Run DAQMaster (R)] and click [Finish] button.

3.3 Installation Folder Structure

This section explains the folder structure created when you installed DAQMaster.

After DAQMaster installs completely, folders are created as below. The program and all relevant documents are stored in these folders.

If you select the default installation path during installation, a DAQMaster folder is created under [C:\Program Files] as a subfolder. If you select a new destination folder, DAQMaster folder is located in that folder.



(1) Device folder

Device folder contains the device information files (*.dev), which can be monitored and set with DAQMaster. When the program is executed, the files in this folder automatically add related devices to the program.

If devices are added or upgraded after the program is installed, copy the device information file and put it into this folder. The list of available devices will be updated. However, if a communication related function is added or modified, it also changes the contents of the [plug-in] folder. Therefore, changes may or may not be applied depending on the level of upgrade.

(2) Lang folder

The language information files (*.lang) available in this program are contained here. The program reads all files in the folder and automatically adds them to the program when it runs.

The language information files are written in a text file format, so you can modify and add text using XML Notepad.

(3) Plug-in folder

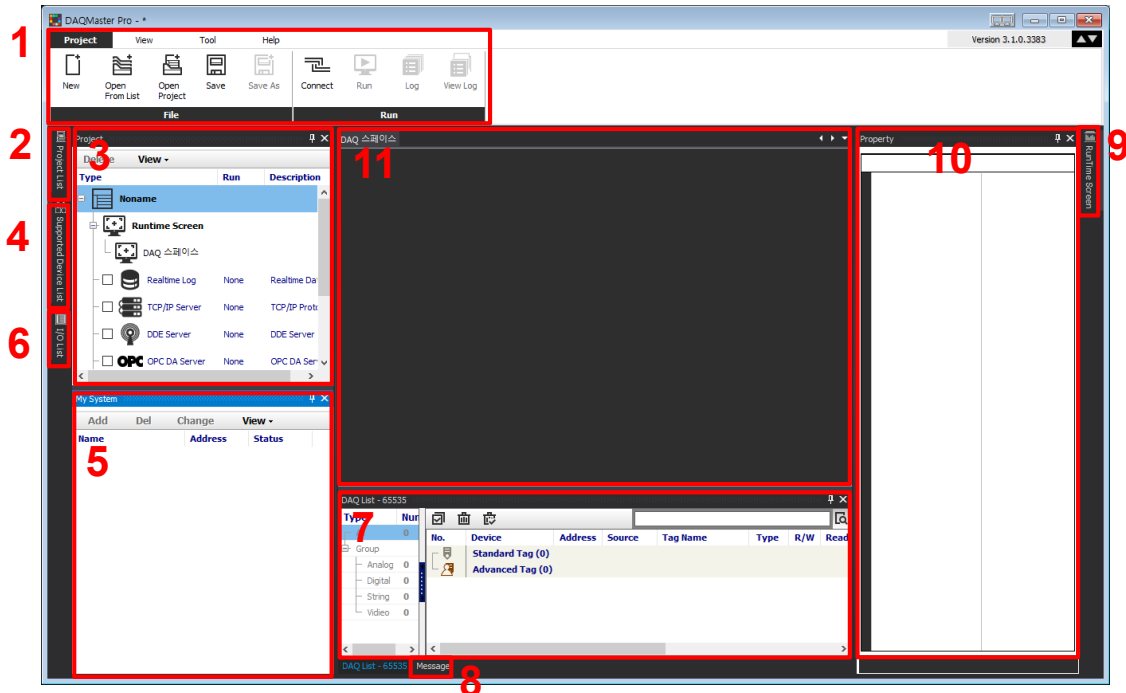
This folder contains core library files (*.dll) for ModBus communications as well as runtime screen files (*.rpu). The [prop] folder under the [plug-in] folder stores library files that have special functions for each specific device.

3.4 Uninstalling the Program

There are procedures to uninstall DAQMaster. Select Start > Program > DAQMaster > Uninstall or Start > Setting > Control Panel > Add/Remove a Program > DAQMaster.

If you select Remove, a confirmation window will appear. Click Yes to remove DAQMaster from the computer.

4 DAQMaster Screen Layout

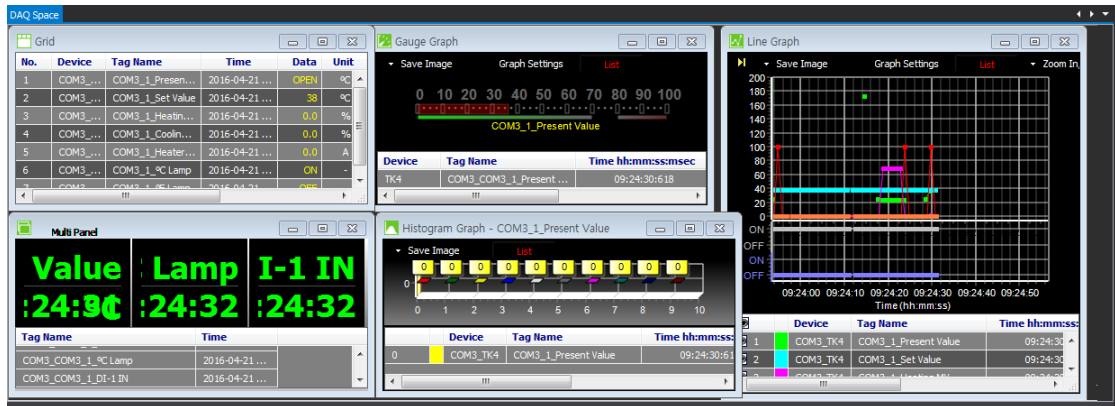


The program screen is divided into sections as shown in the preceding screenshot and each section is composed of the following items.

NO.	Item	Description
1	Menu	Displays DAQMaster menus by category. If you select a menu, submenus appear.
2	Project List	Displays recent projects or usually used project list to manage the files.
3	Support Device List	Displays a list of devices supported by DAQMaster.
4	I/O List	Displays parameter items of devices added to My System.
5	Project	Shows the basic information of the current project.
6	My System	Shows list and connection status of devices connected to DAQMaster.
7	DAQ List	Shows added parameter items in I/O List.
8	Message	Records events. It displays communication connection and disconnection, errors.
9	DAQ WorkSpace	Displays added UI items in RunTime Screen.
10	Property	Allows checking and modification of information for items in Project, My System, DAQ List and setting unit parameters.
11	DAQ Space	Displays added user interfaces.

4.1 DAQ Space

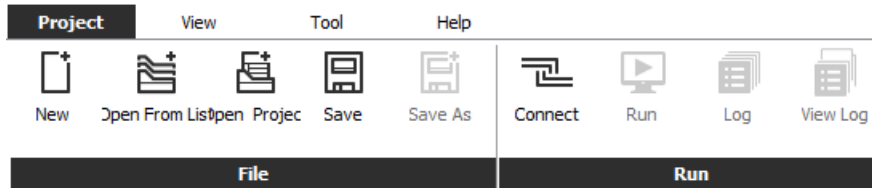
DAQ WorkSpace displays 'Runtime screen' and runs the programs of the functions that the DAQMaster supports. The DAQ Space shows each UI and program screen.



- Settings: Right-click 'DAQ Space' tab to add or delete the DAQ Space, or change DAQ Space name.
- Switch: Click left/right icon(◀/▶) on the upper right side of the DAQ space window to switch among the different spaces. Click pull-down icon (▼) to select activating space in the list.

4.2 Menu

(1) Project



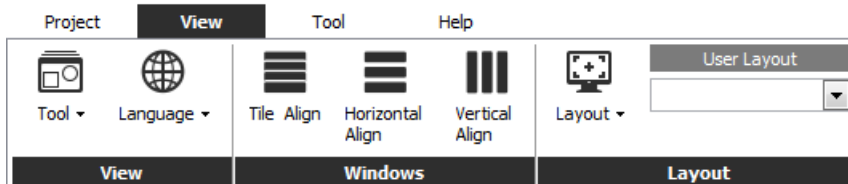
1) File

- New: Creates a new project.
- Open From List: Opens a project from the project list.
- Open Project: Opens a saved project.
- Save: Saves the project you are working on.
- Save As: Saves the project as a file name.

2) Run

- Connect/Disconnect: Connects or disconnects the device and communication.
- Run/Stop: Starts or stops monitoring data in the connected devices.
- Log/Stop logging: Saves or stops logging currently monitored data.
- View Log: Views log data during logging. You can check data between Log running point and View Log executing point.

(2) View



1) View

- Tool: Set for Property, Support Device List, My System, Project, I/O List, Run Time Screen, DAQ List, Message of the project.
- Language: Changes the program language.

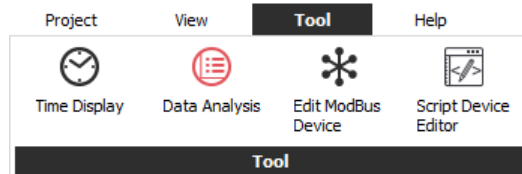
2) Windows

Aligns multiple runtime screens (Data: Grid, Multi Panel, Panel, Line Graph, Bar Graph, Color Map Graph, Gauge Graph, Histogram Graph, Device: Alarm History Grid) diagonally, horizontally, and vertically.

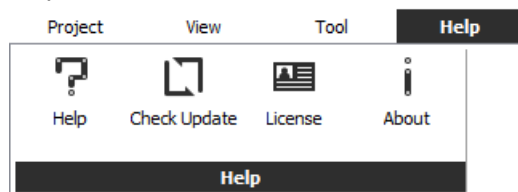
3) Layout

Applies the default layout or executes saving, deleting, and loading user-defined layout.

- Default: Changes control panels to the default layout.
- Runtime: Displays the run time screen only. It is possible to load the hidden control panel at 'View-Tool' menu.
- Save Layout: Saves the current layout. Click [OK] in the 'Save Layout' window and add the user layout.
- Delete layout: Select the saved layout and delete it. Click [OK] in the 'Delete Layout' window.

(3) Tool

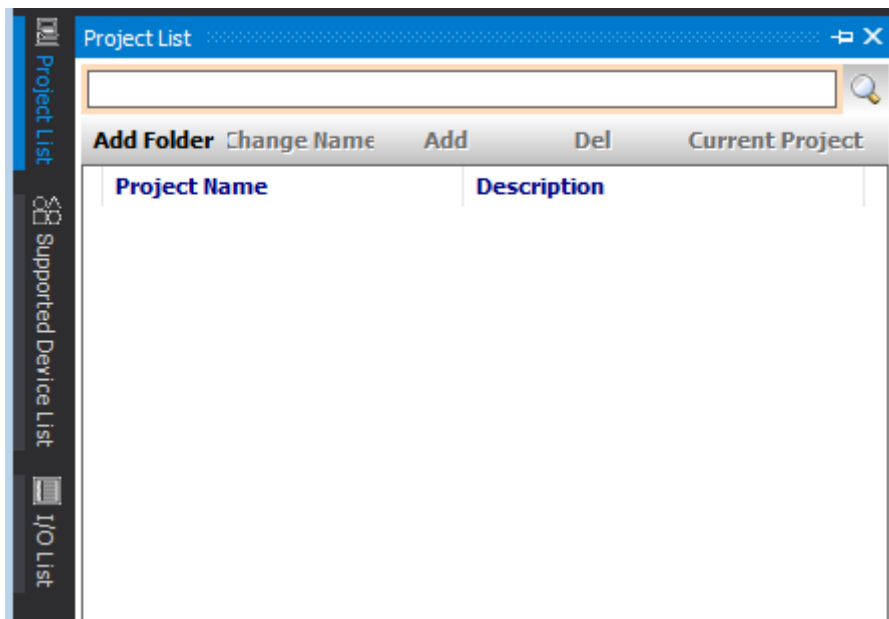
- Time Display: Displays monitoring time.
- Data Analysis: Runs the data analysis program. Allows analysis of DAQMaster data file (*.ddf).
- Edit ModBus Device: Executes Modbus Editor.
- Script Editor: Runs Script Device Editor

(4) Help

- Help: Opens the help file.
- Check Update: Checks the version of the program via the internet update server and automatically updates to the latest version.
- License: Registers and checks license.
※ For registering license, refer to '5.2 License'.
- About: Checks the DAQMaster version.

4.3 Project List

It is possible to conveniently open and manage frequently used project files by adding to the list.



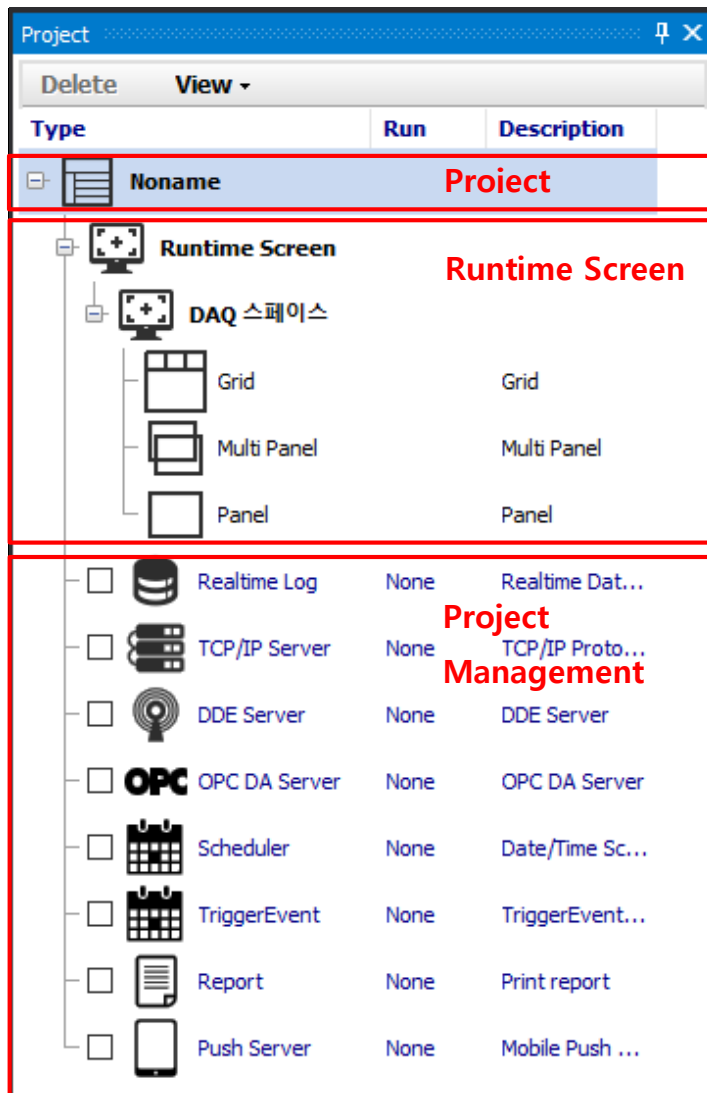
※ For more information about 'Project List', refer to '5.3 Project List'.

4.4 Project

Displays the basic information of the current project and the runtime screen.

It is possible to check the status of project management function DAQMaster supported and execute the program.

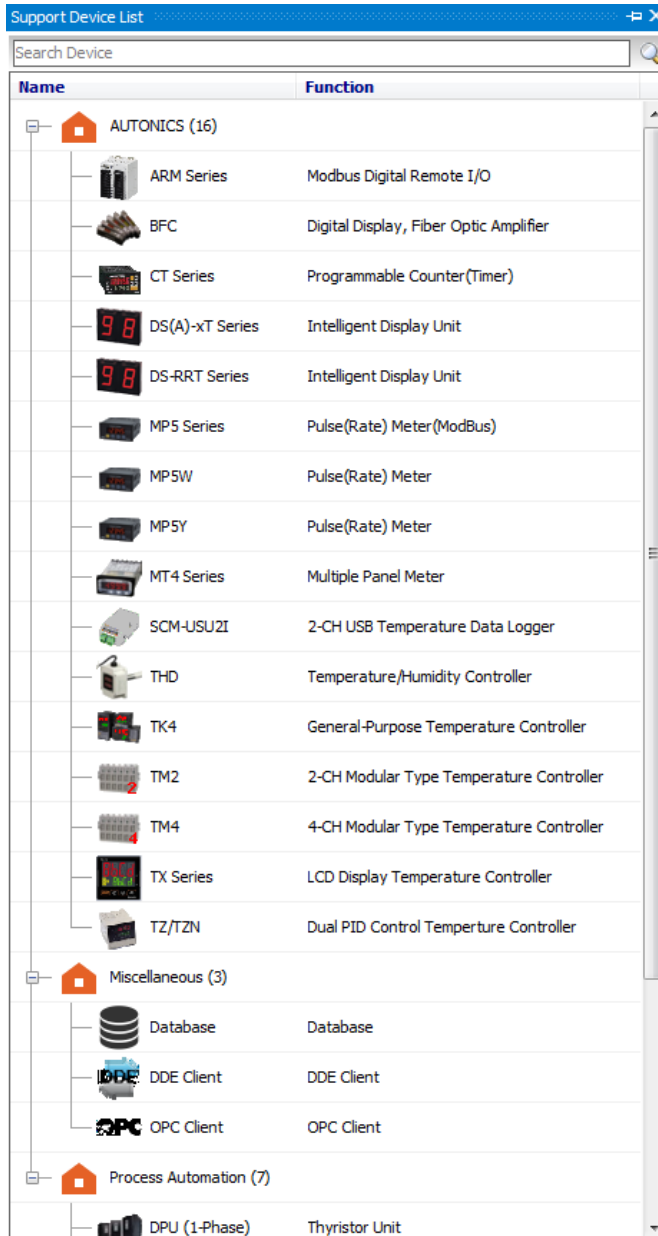
- Project, RunTime screen: After select the related item on the project control panel, it is possible to set it in the 'Property' control panel. Refer to '5.9.1 Property In Project'.
- Project management: You can check and execute the conditions of project management functions supported by the DAQMaster.



4.5 Support Device List

'Support Device List' control panel shows a list of devices supported by DAQMaster.

Support device list will be updated continuously.

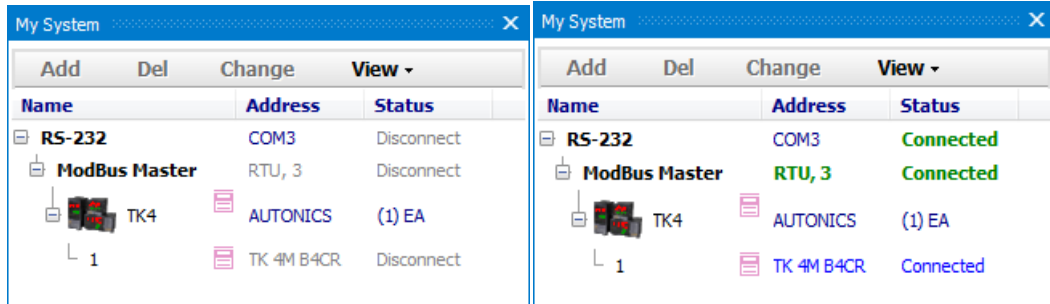


Name	Function
AUTONICS (16)	
ARM Series	Modbus Digital Remote I/O
BFC	Digital Display, Fiber Optic Amplifier
CT Series	Programmable Counter(Timer)
DS(A)-xT Series	Intelligent Display Unit
DS-RRT Series	Intelligent Display Unit
MP5 Series	Pulse(Rate) Meter(ModBus)
MP5W	Pulse(Rate) Meter
MP5Y	Pulse(Rate) Meter
MT4 Series	Multiple Panel Meter
SCM-USU2I	2-CH USB Temperature Data Logger
THD	Temperature/Humidity Controller
TK4	General-Purpose Temperature Controller
TM2	2-CH Modular Type Temperature Controller
TM4	4-CH Modular Type Temperature Controller
TX Series	LCD Display Temperature Controller
TZ/TZN	Dual PID Control Temperture Controller
Miscellaneous (3)	
Database	Database
DDE Client	DDE Client
OPC Client	OPC Client
Process Automation (7)	
DPU (1-Phase)	Thyristor Unit

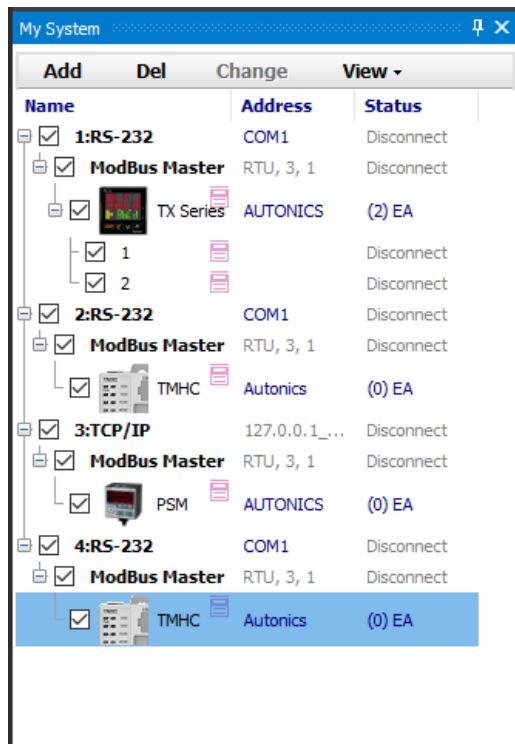
4.6 My System

'My System' displays devices and units added from the device list in a tree structure. It is also possible to check and configure connection status.

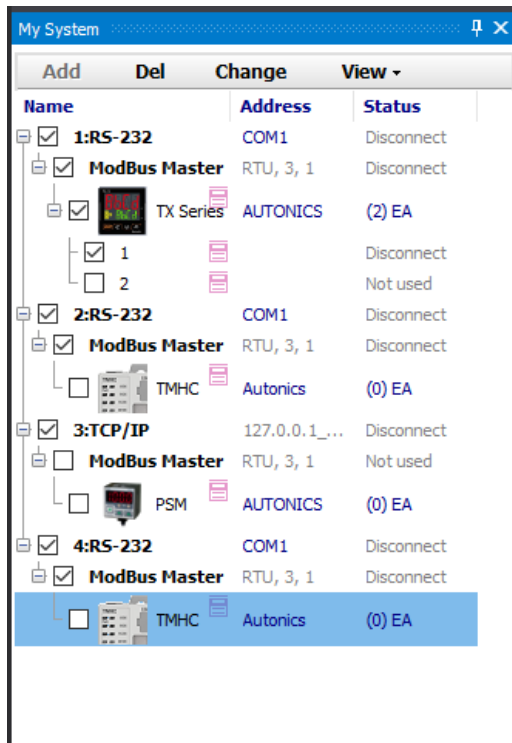
You can add/change/delete devices and units (addresses) of My System.



- RS-232: Allows property modification related to RS-232 communications in 'Property' control panel when devices are disconnected.
- ModBus Master: Allows property modification related to ModBus Master protocol in 'Property' control panel when devices are disconnected (mode name and the number of re-try are displayed).
- Device (TK4): Allows you to see connected device information.
- Unit (1): Allows read and write of parameters as well as check the reading process while devices are connected.
- Connects a device to multiple communications ports as displayed in following image.



- Select enable/disable by checking check box on the left side of items.

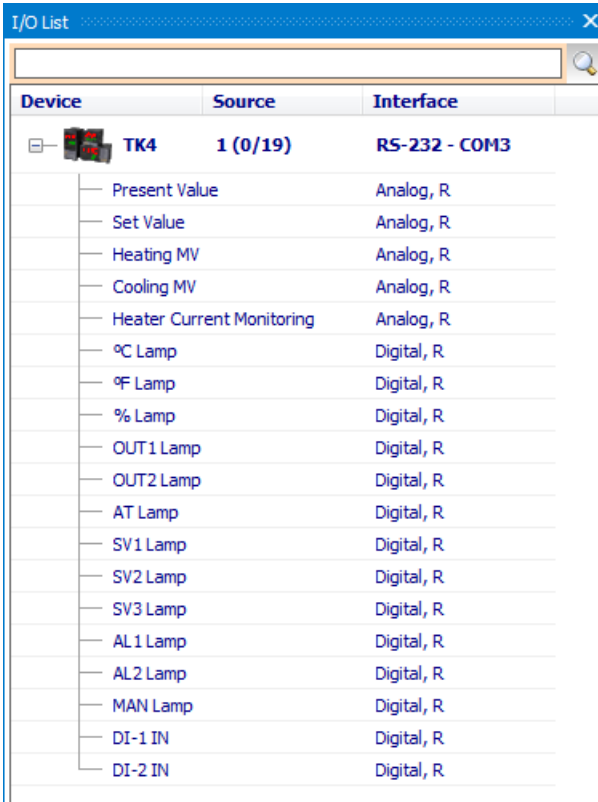



4.7 I/O List

After connecting the device, 'I/O List' shows parameters for monitoring the added devices.

To monitor connected device, it is needed to add the source from 'I/O list' to 'DAQ list'.

Searching function is available and added sources are shown in gray.



Device	Source	Interface
 TK4	1 (0/19)	RS-232 - COM3
— Present Value		Analog, R
— Set Value		Analog, R
— Heating MV		Analog, R
— Cooling MV		Analog, R
— Heater Current Monitoring		Analog, R
— °C Lamp		Digital, R
— °F Lamp		Digital, R
— % Lamp		Digital, R
— OUT1 Lamp		Digital, R
— OUT2 Lamp		Digital, R
— AT Lamp		Digital, R
— SV1 Lamp		Digital, R
— SV2 Lamp		Digital, R
— SV3 Lamp		Digital, R
— AL1 Lamp		Digital, R
— AL2 Lamp		Digital, R
— MAN Lamp		Digital, R
— DI-1 IN		Digital, R
— DI-2 IN		Digital, R



Note

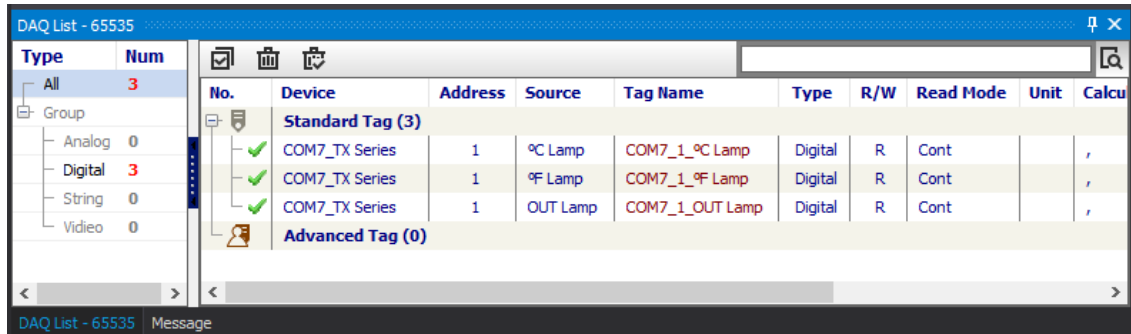
I/O source cannot be added to 'DAQ List' in 'Run' status.

For more information about 'Run' status, refer to '5.10.3 Run'.

4.8 DAQ List

'DAQ List' shows added source lists from I/O list.

To add DAQ list, double-click each source, or right-click and select 'Add to DAQ list.'



DAQ List - 65535

Type	Num	No.	Device	Address	Source	Tag Name	Type	R/W	Read Mode	Unit	Calcu
Standard Tag (3)											
		✓	COM7_TX Series	1	°C Lamp	COM7_1_°C Lamp	Digital	R	Cont		,
		✓	COM7_TX Series	1	°F Lamp	COM7_1_°F Lamp	Digital	R	Cont		,
		✓	COM7_TX Series	1	OUT Lamp	COM7_1_OUT Lamp	Digital	R	Cont		,
Advanced Tag (0)											

DAQ List - 65535 Message



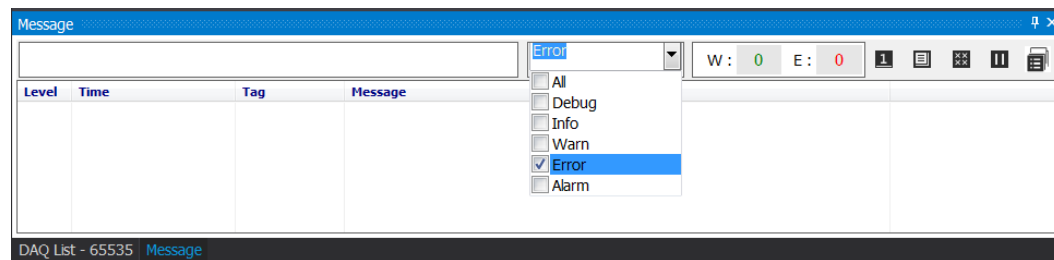
Note

Elements of the DAQ List cannot be added to 'Runtime Screen' in 'Run' status.

For more information about 'Run' status, refer to '5.10.3 Run'.

4.9 Message

Records events (communication status (start/stop communication, error), log status (start/stop log), etc.) during running the program.



Message

W: 0 E: 0

Level	Time	Tag	Message

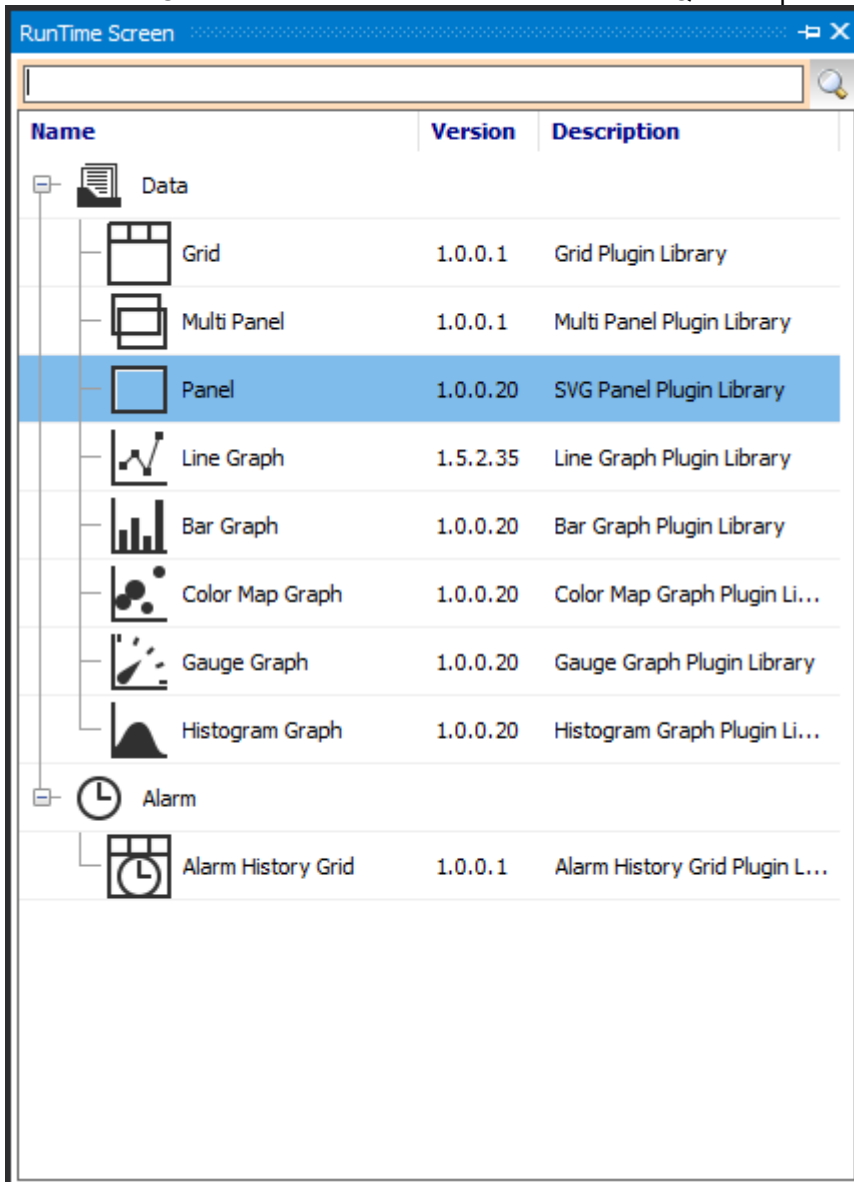
- All
- Debug
- Info
- Warn
- Error
- Alarm

DAQ List - 65535 Message

Messages are saved as *.txt file or log file. Log file is reside in 'Message' folder in the installation folder.

4.10 RunTime Screen

Double-click UI item in 'RunTime Screen' to add it to 'DAQ WorkSpace'.

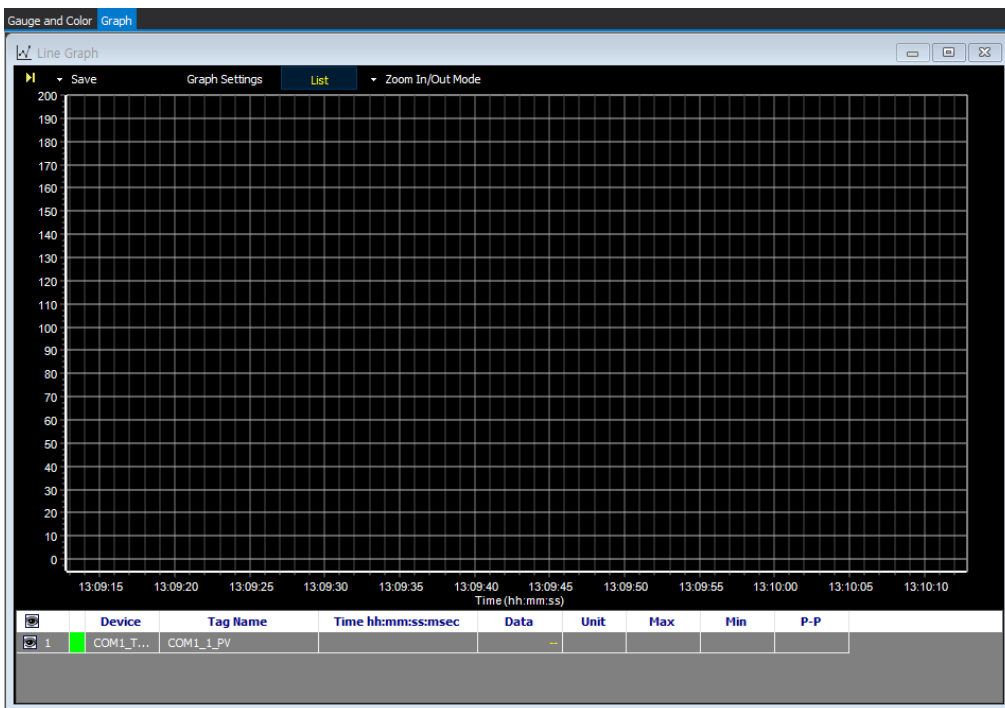
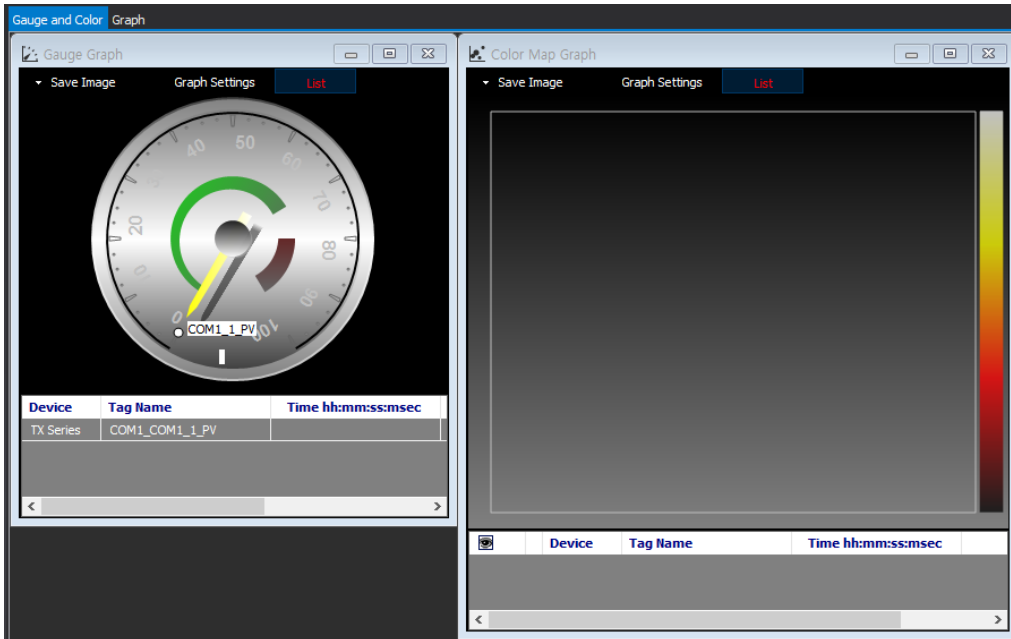


Note

Refer to '5.8 RunTime Screen' to know how to add a library displayed in the 'RunTime Screen'.

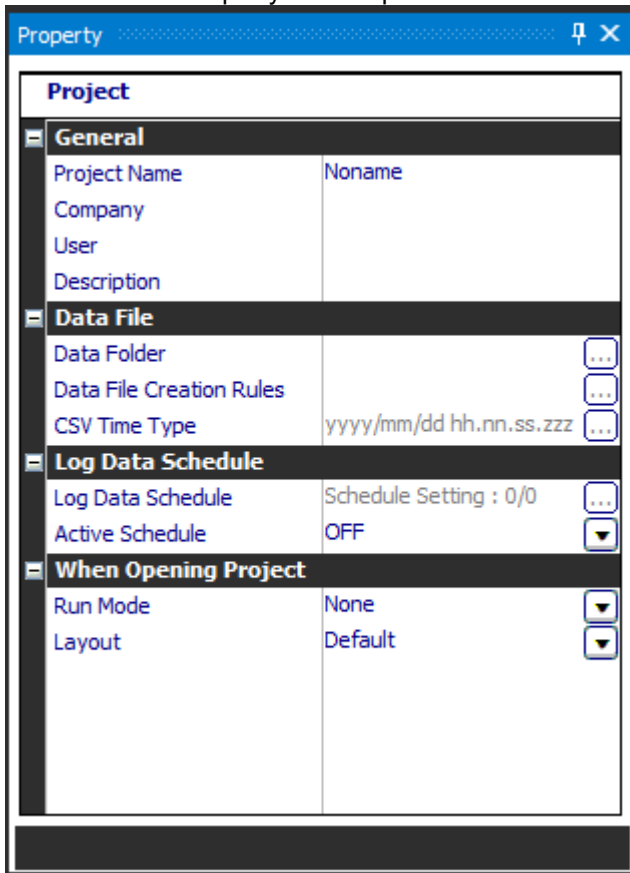
 Ex.

The name of the DAQ WorkSpace is changed to 'Gauge and Color' and 'Graph' space is added.



4.11 Property

It is possible to check the conditions and change the values of 'Project', 'My System', and 'DAQ List' etc in the 'Property' control panel.



Project	
General	
Project Name	Noname
Company	
User	
Description	
Data File	
Data Folder	...
Data File Creation Rules	...
CSV Time Type	yyyy/mm/dd hh.nn.ss.zzz ...
Log Data Schedule	
Log Data Schedule	Schedule Setting : 0/0 ...
Active Schedule	OFF ▼
When Opening Project	
Run Mode	None ▼
Layout	Default ▼



Note

For more information about setting properties of each parameter, refer to '5.9 Property'.

5 Basic Function

This chapter explains the basic function to use DAQMaster.

5.1 Start and Exit

5.1.1 Start

Double-click DAQMaster icon on the desktop or select 'Start > Program > DAQMaster' to execute DAQMaster.

5.1.2 Exit

Click [X] button on the top right corner of the screen to end the program.

Projects are not saved automatically. Please make sure whether the project is saved when close the program.

5.2 License

'DAQMaster Pro' demo version is provided when installing at first time.

When installing DAQMaster, it provides pro demo version.

After demo period (30 days) is over, pro functions are deactivated. But the function of general version is still available.

For the information about the differences of function between pro and general version, refer to '1.2 DAQMaster Function Comparison Table by Version'.

For purchasing licenses, contact the retailers by referring to the web site (www.autonics.com).

(1) Registration

1st Click [License] button of the 'Help' menu.

2nd When 'License' window pops up, click [Request Serial Number].

3rd When 'Request Serial Number' pops up, enter user information (last name, family name, company, etc.) and click [Save clipboard]. Based on the information, ask the serial number and register code to the retailer.

4th Enter the provided serial number and register code from retailer.

5th Click [Register] button to register pro version and it will be able to use pro functions continuously.

(2) Connecting USB dongle

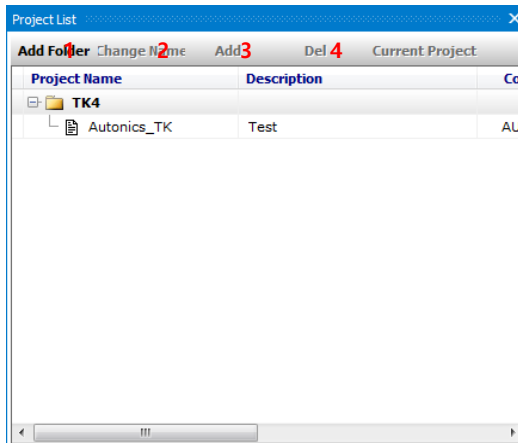
Plug the USB dongle for DAQMaster Pro license to your PC and run the DAQMaster Pro. The license key is installed automatically. (it may take some time.)

5.3 Project List

You can manage the project files conveniently by adding frequently used projects like the favorites menu of the Internet browser.

You can create a folder in the Project List by clicking [Add Folder] and manage saved project files under the parent folder. You can also change folder/file names as well as add or delete folders/files.

Selecting a folder in the Project List activates Add Folder, Change Name, Add, and Delete menus. Selecting a project file in the Project List activates Add folder, Add and Delete menus.

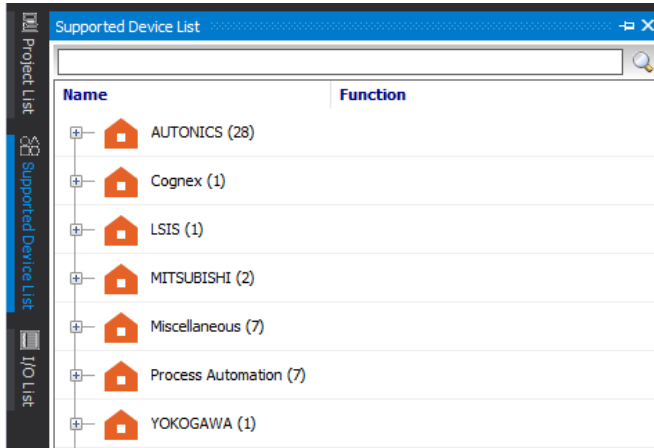


No	Item	Description
1	Add Folder	Adds a folder.
2	Change Name	Changes the name of folder
3	Add	Adds a project file. Click add opens 'Project List' control panel.
4	Delete	Removes selected folder or file.

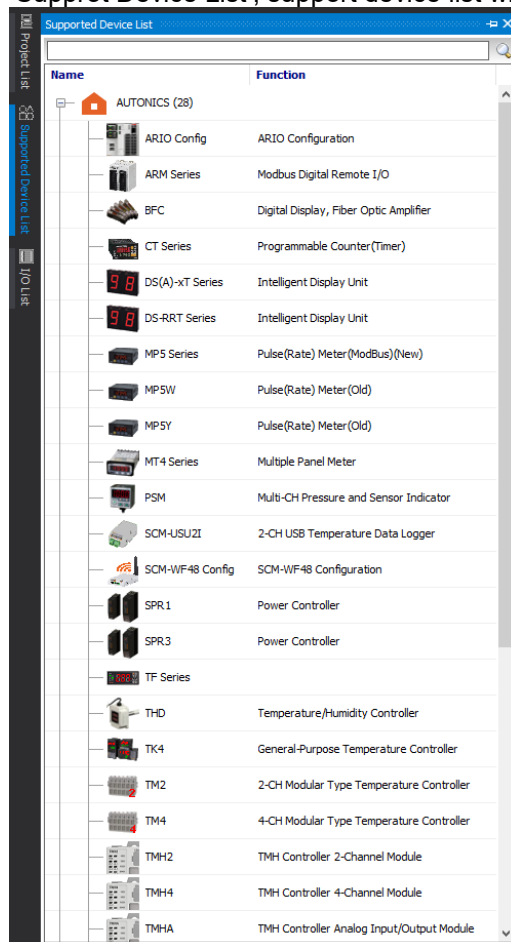
5.4 Support Device List

The displayed devices are only able to communicate. (The Support Device List will be updated continuously.)

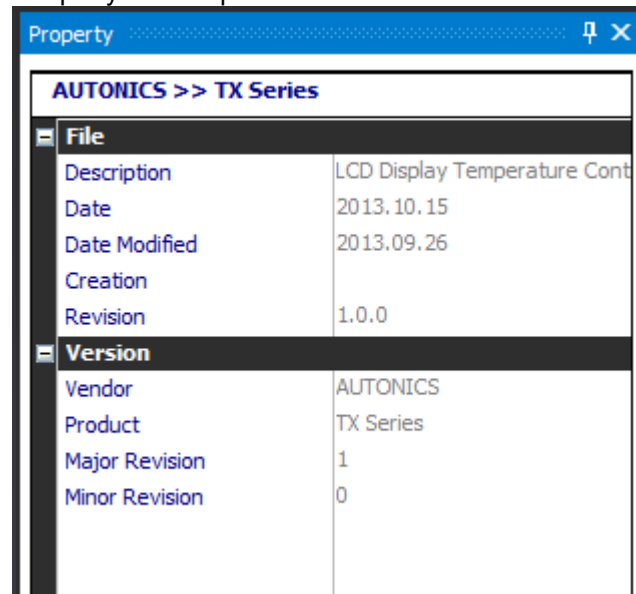
These lists are the devices supported by the DAQMaster.



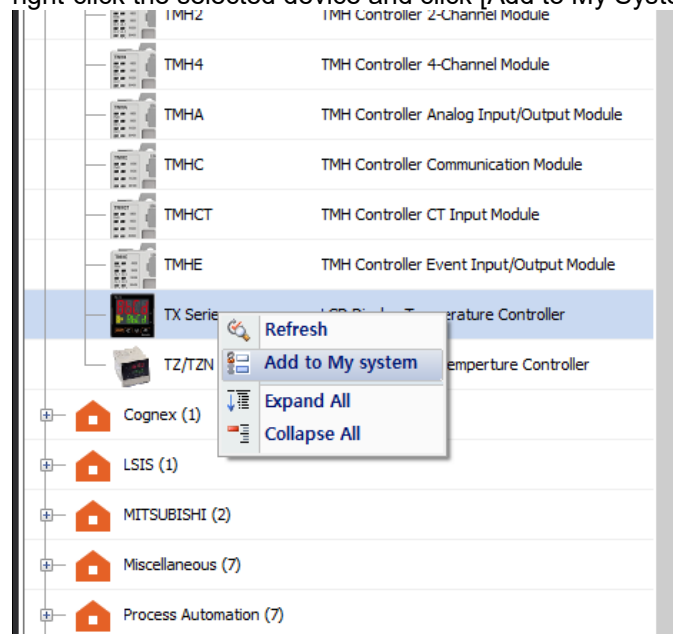
- 1st If you double-click a name of series/model or click the device expand button [+] in the 'Support Device List', support device list will appear.



2nd When selecting a device, you can see the basic information about the device in the 'Property' control panel as follows.



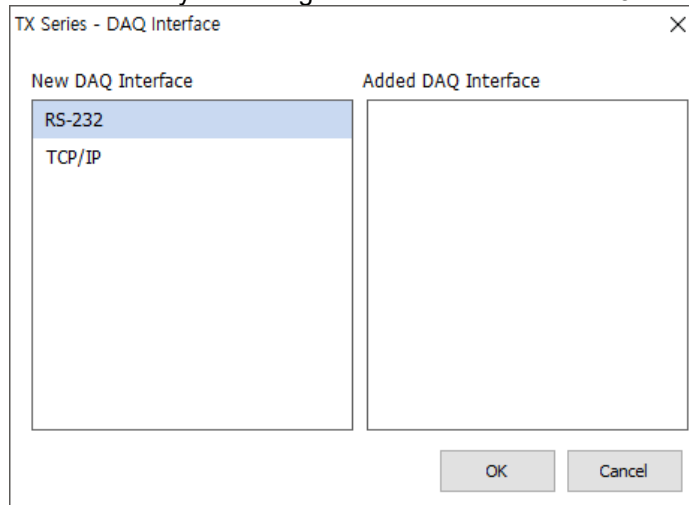
3rd Select the series/device name (TK4) you want to add to 'My System'. Double-click or right-click the selected device and click [Add to My System] to add the device.



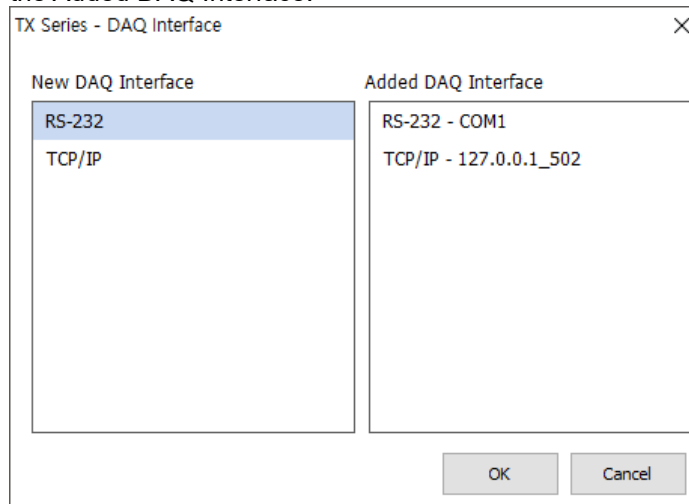
- Refresh: Updates 'Support Device List' control panel when device files (*.dev) are added.
- Add to my system: Adds device to My System to communicate.
- Expand all: Shows the list of all supported devices.
- Collapse all: Hides the list of all supported devices.

4th Select RS-232 or TCP/IP on the new 'DAQ interface' and click [OK] or double-click the interface.

You can modify the configuration of the added RS 232 or TCP/IP in properties.



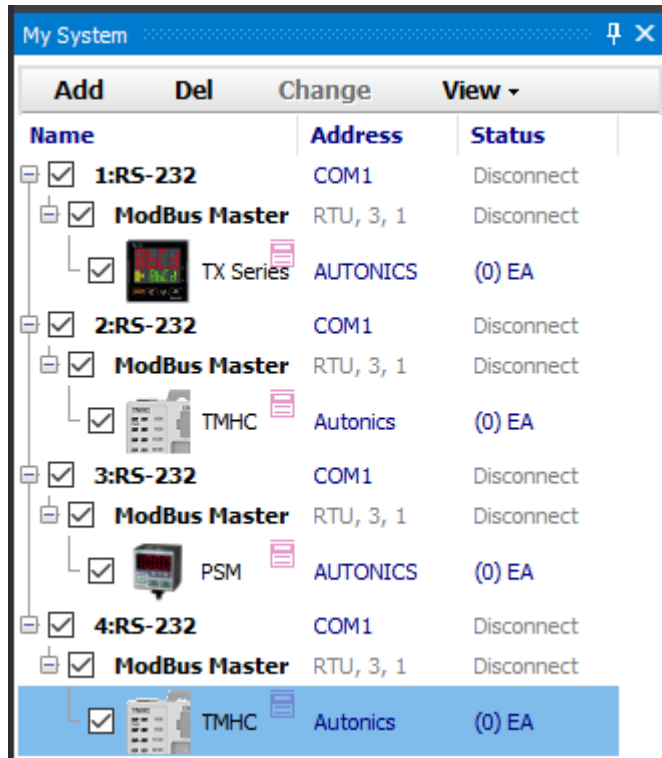
5th If there is another devices added earlier, you can see added 'Protocol-Port Name' on the Added DAQ Interface.



5.5 My System

'My System' control panel displays device and communication interfaces added from the 'Support Device List' control panel in a tree structure as well as connection status. You can also add, change and delete device units.

It is possible to set or modify by selecting an item in 'Property' control panel.



- Select the protocol (RS-232, TCP/IP etc.): modify communication related items in the 'Property' control panel.
- Select Modbus Master: check the information about Modbus Master and set the preferences in the 'Property' control panel.
- Select the device name (TX Series): check the information about the connected device in the 'Property' control panel.
- Select Unit (1): displays parameter information of the connected device in the 'Property' control panel.



Note

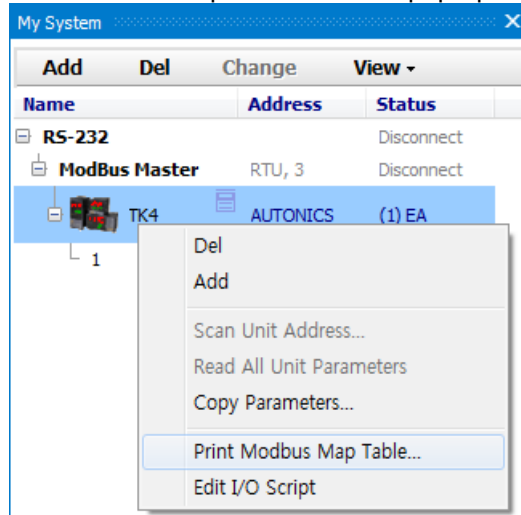
Some of the communication-related items are able to be changed in 'Disconnect' status only. For more information about setting properties of each parameter, refer to '5.9 Property'.

5.5.1 Modbus Map Table Report

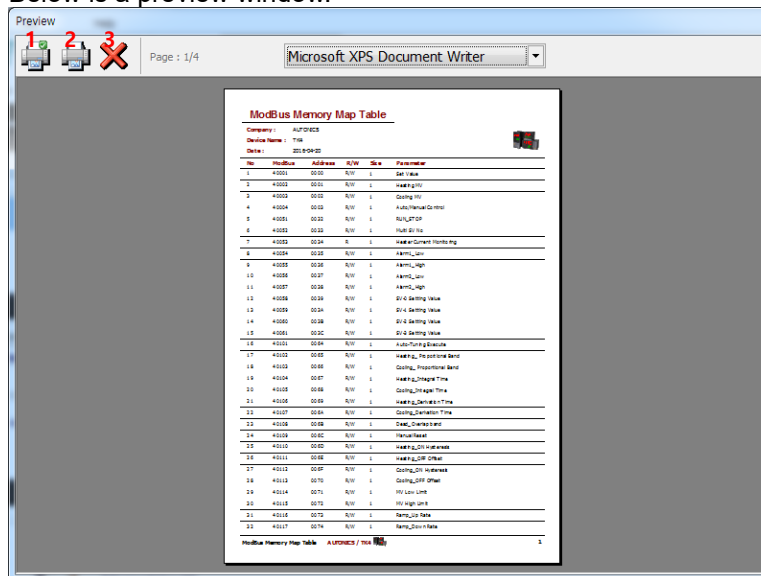
This feature outputs ModBus map table of a device, which uses ModBus communications, as a report.

Direct print out is available and you can save in a PDF File (*.pdf) or Html File (*.html) format.

- 1st In the status that a device is added, right-click the device in My System and Select Print ModBus Map Table from the pop-up menu.



- 2nd Below is a preview window.

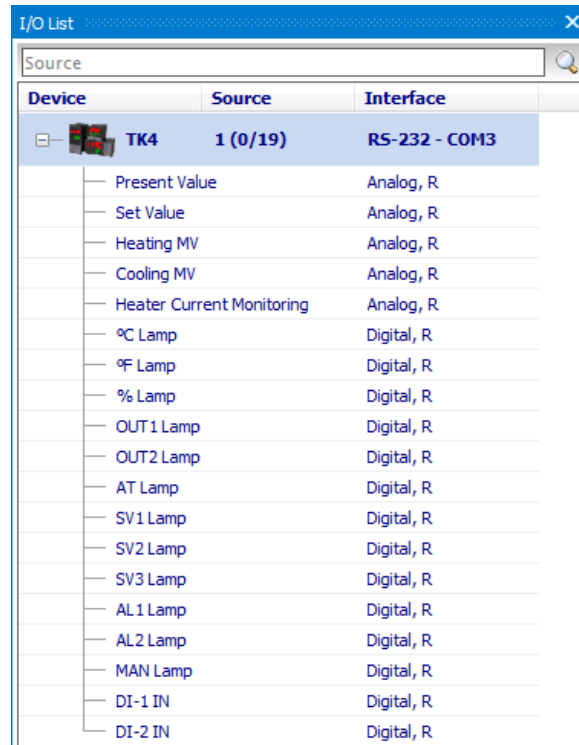


No	Item	Description
1	Printer Setup	Configures the printer to print. Printer setting options vary by a printer model.
2	Print	Prints the ModBus map table.
3	Close	Closes the print preview window.

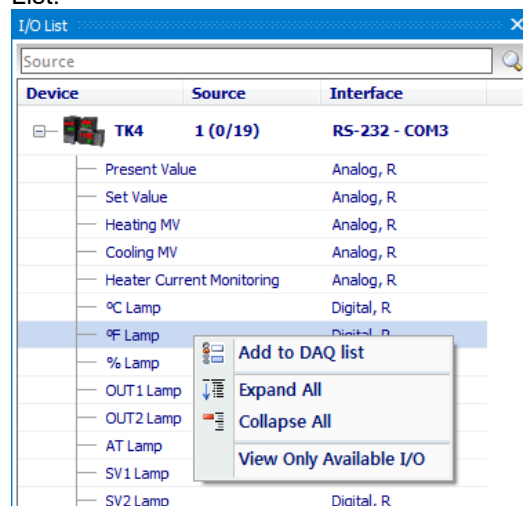
5.6 I/O List

I/O sources are used to read and control data. To monitor a source listed in the I/O List, you must add the source to DAQ List.

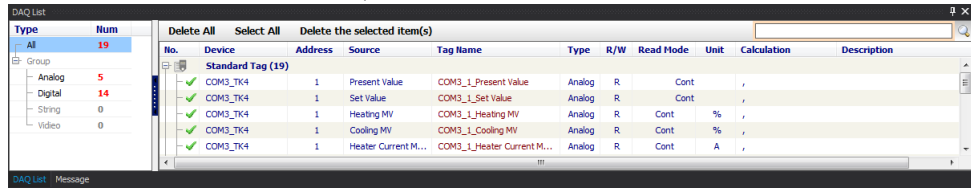
I/O List shows which units are added to My System. If you click expand button (+), it displays a list of available I/O sources to add. You can search the desired I/O and add it.



1st Double-click or right-click sources you want to communicate, and select Add to DAQ List.



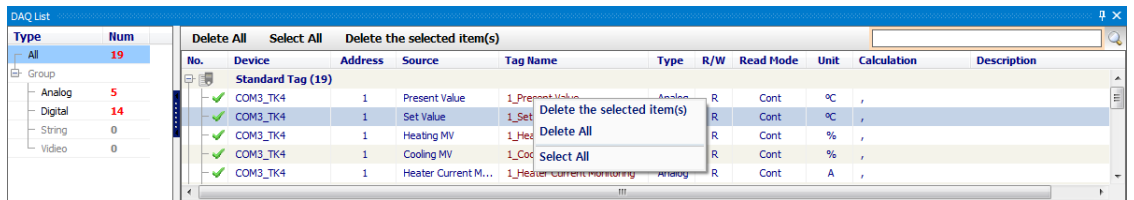
2nd I/O sources are added to DAQ List as below.



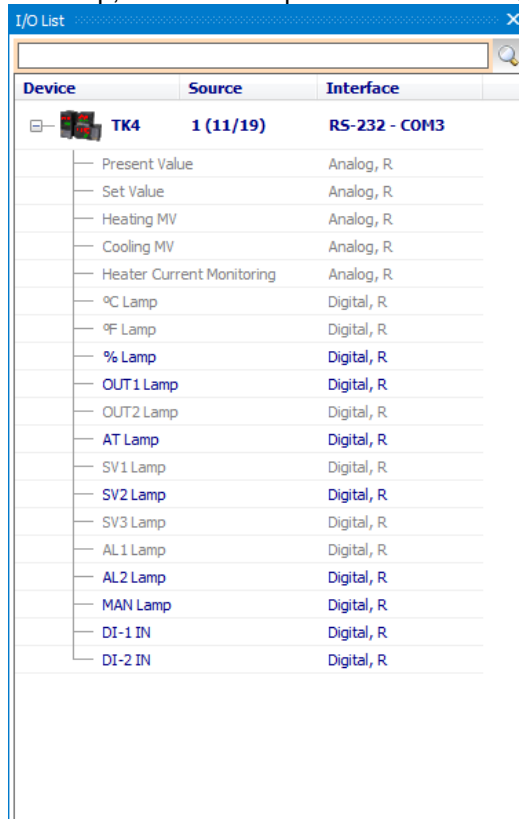
Note

I/O source cannot be added to DAQ List in 'Run' status.

- 1st To delete added source in DAQ List, select and right-click the source. If you select a source or sources you want to delete and right-click on mouse, a pop-up menu will appear as below. Then click 'Delete the selected item(s)', 'Remove all' or 'Select All' to delete.



2nd Sources added to DAQ List are grayed out in the I/O List. The image below shows that Present Value, Set Value, Heater Current Monitoring, OUT1 Lamp, OUT2 Lamp, AL1 Lamp, and AL2 Lamp are added to DAQ List.



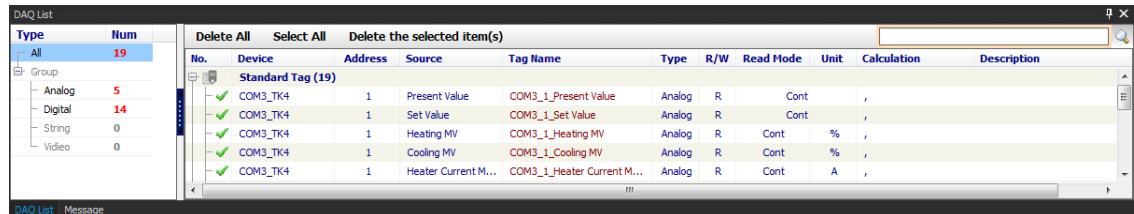
5.7 DAQ List

'DAQ List' displays a list of sources added from I/O List.

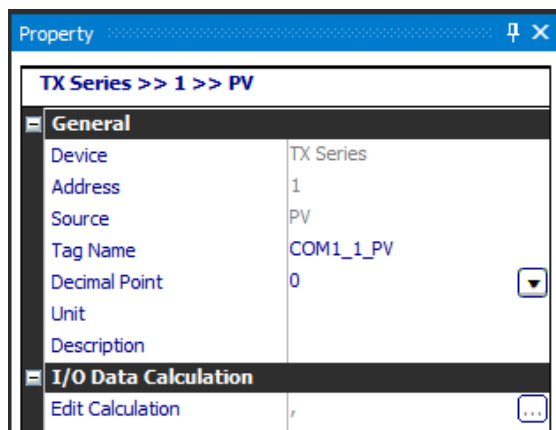
The left side of the control panel shows the number of I/O sources and if select that number, the devices are rearranged by the signal type.

It is easy to find the general and user-defined tag by the function for searching tag on the right corner of the 'DAQ List'.

In the property control panel, calculating I/O data and setting the trigger is available by selecting the name of I/O source in the right side.



When selecting a source in the 'DAQ List', it is possible to check/modify it in Property control panel.



General items of Property is as below.

- Device: Device name
- Address: Unit address
- Source: I/O source name
- Tag name: Saves tag name as 'address_I/O source name' and is changeable.
- Decimal point: Changes the decimal point of data.
- Unit: Allows you to change the unit of data.
- Script Variable: Tag value
- Description: Allows you to enter the description. (Read/write mode)

I/O Data Calculation items of 'Property' is as below.

- Edit Calculation: When reading a tag value, apply the data formula to get the desired data.
- Trigger: Set the event is activated when a tag value matches the user-defined conditions.



Note

For certain I/O sources, decimal point and unit will be set automatically. In this case, they conform to the parameter set values.

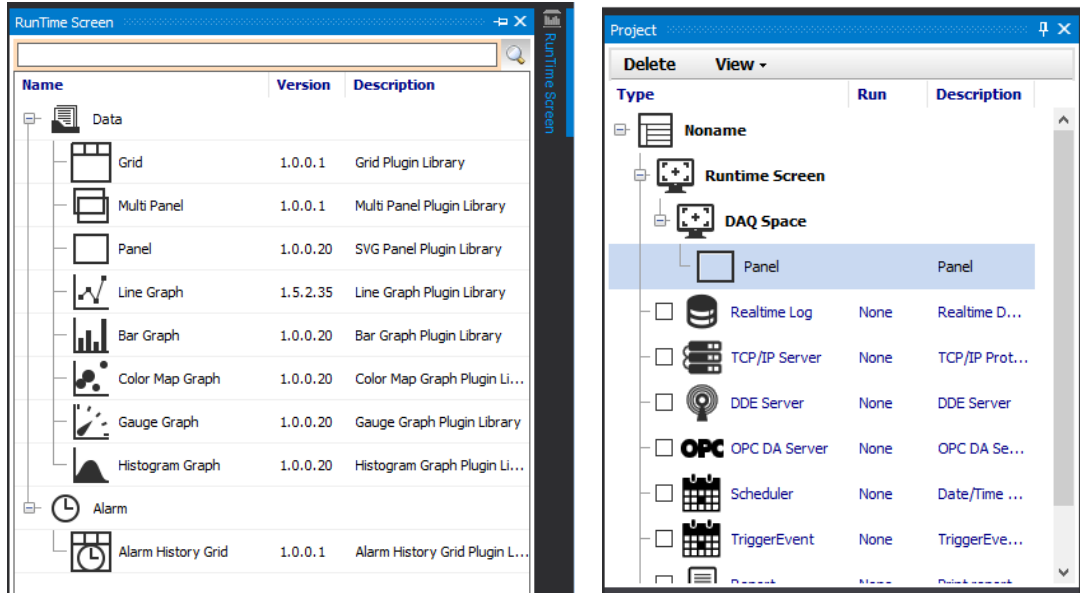
For more information about setting properties of each parameter, refer to '5.9 Property'.

5.8 RunTime Screen

This function is for visual data monitoring.

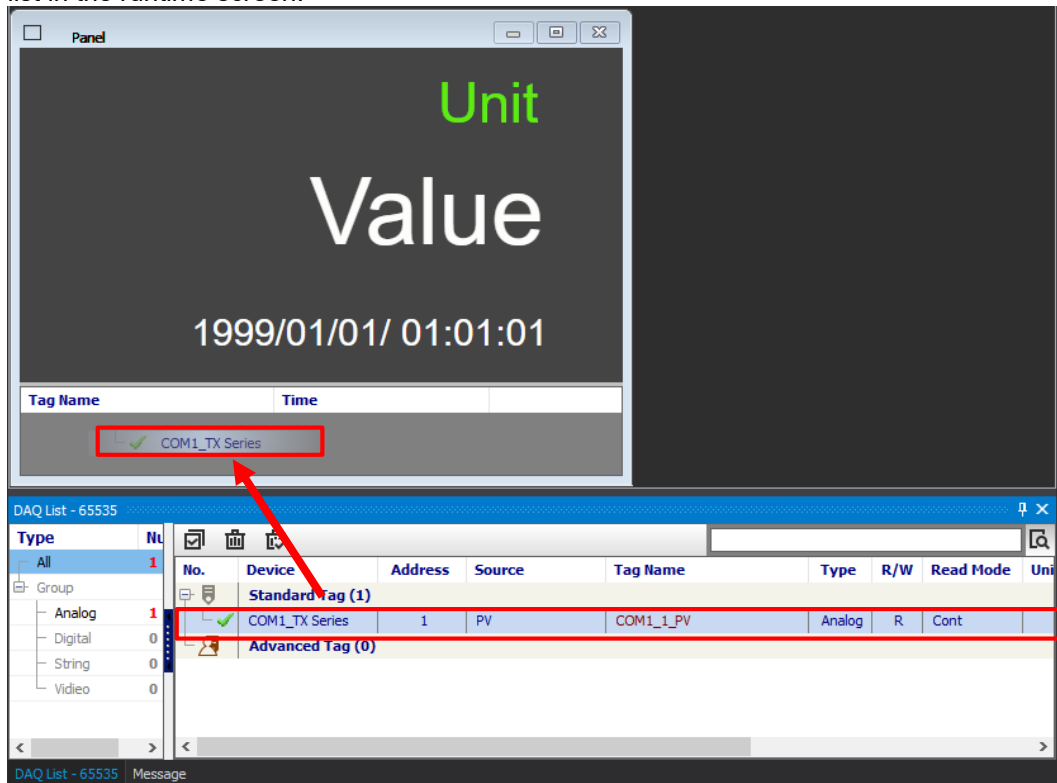
(1) Load RunTime Screen

Double-click UI item in the Runtime Screen Library to load to the 'DAQ WorkSpace'. The loaded runtime screen is also displayed in the 'Project' control panel.



(2) Add I/O sources

Click the I/O source to be monitored in the 'DAQ list' window and drag it to the panel of that list in the runtime screen.





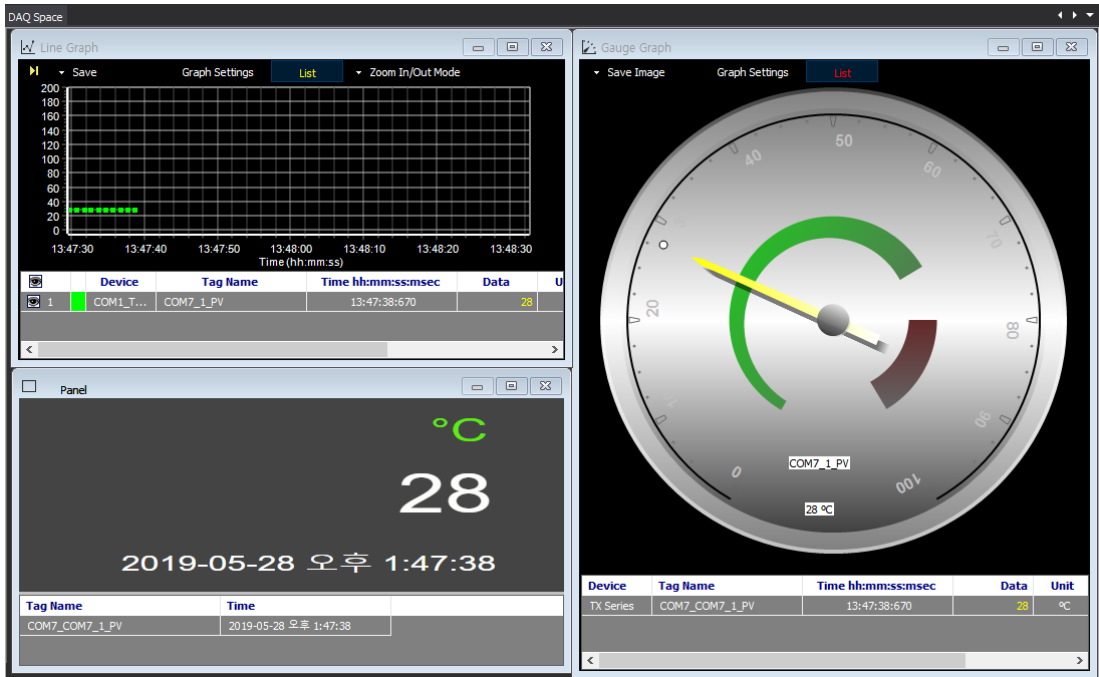
Note

Panel library displays I/O source data as Flash type. (If an error occurs while adding Panel to Runtime Screen Library, install Adobe Flash Player.)



Ex.

This is the example of the Runtime Screen Library. (Line Graph, Panel and Gauge Graph are applied.)

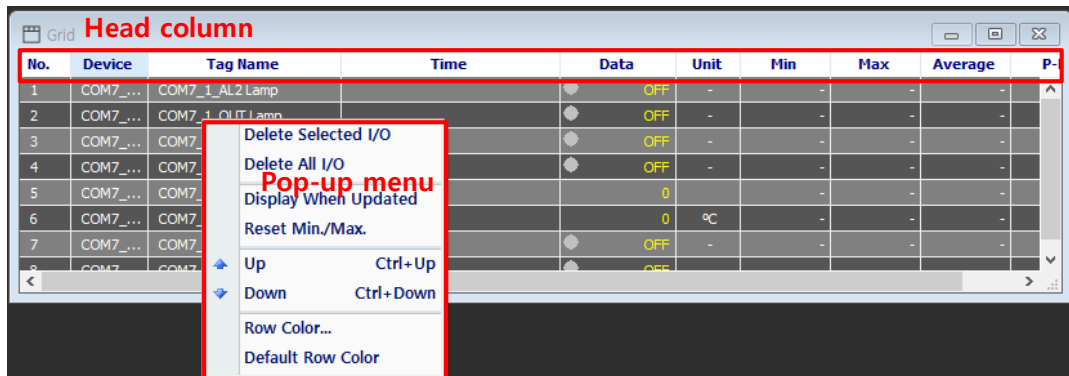


5.8.1 Data

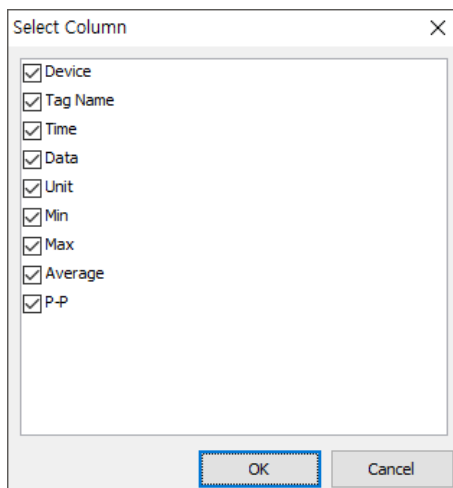
5.8.1.1 Grid

Grid displays multiple I/O source data in text for monitoring.

Whenever data is updated in 'Run' status, the color of 'Time' column inverts.



- Edit grid column: Right-click the head of grid, 'Select Column' dialog box appears. You can check the desired item to show.



- Display updates: The color of 'Time' column inverts upon updates by checking 'Display When Updated' from the pop-up menu.
- Reset: Select 'Reset Min./Max.' in the pop-up menu to renew the time of data collection.
- Display alarm: If a parameter value causes an alarm, it flashes as below.

No.	Device	Tag Name	Time	Data	Unit	Min	Max	Aver
1	COM3_...	1_Present V...	2016-04-20 ...	OPEN	°C	26	28	
2	COM3_...	1_Set Value	2016-04-20 ...	38	°C	38	38	
3	COM3_...	1_Heating MV	2016-04-20 ...	0.0	%	0.0	66.2	
4	COM3_...	1_Cooling MV	2016-04-20 ...	0.0	%	0.0	0.0	
5	COM3_...	1_Heater C...	2016-04-20 ...	0.0	A	0.0	0.0	
6	COM3_...	1_°C Lamp	2016-04-20 ...	ON	-	-	-	
7	COM3_...	1_°F Lamp	2016-04-20 ...	OFF	-	-	-	
8	COM3_...	1_OUT2 Lamp	2016-04-20 ...	OFF	-	-	-	
9	COM3_...	1_SV1 Lamp	2016-04-20 ...	OFF	-	-	-	
10	COM3_...	1_SV3 Lamp	2016-04-20 ...	OFF	-	-	-	

※ For more information about the alarm, refer to the manual of the device.

- The Output by bit: Only in case of the device that supports this function, the output data is represented by bit as below. Double-click the value of a row of 'data' and edit it.
- ※ For more information about the output by bit, refer to the manual of the device.

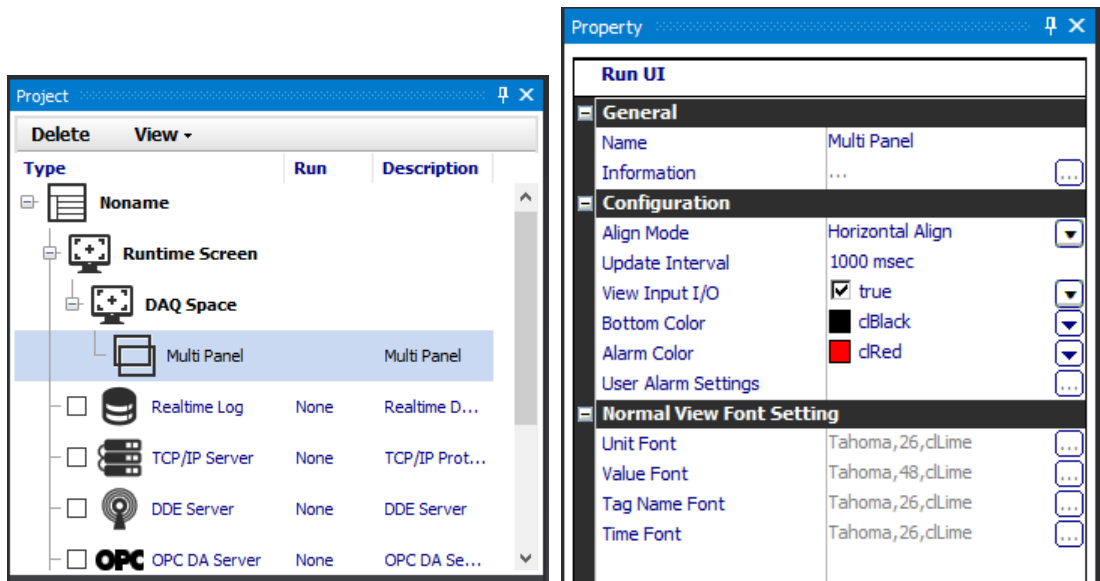
No	Device	Tag Name	Time	Data	Unit	Min	Max	Average
1	ARM Slim	1_Input IO#1		[Bit Pattern]		-	-	-
2	ARM Slim	1_Input IO#2		[Bit Pattern]		-	-	-
3	ARM Slim	1_Input IO#3		[Bit Pattern]		-	-	-
4	ARM Slim	1_Input IO#4		[Bit Pattern]		-	-	-
5	ARM Slim	1_Output IO#1		[Bit Pattern]		-	-	-

5.8.1.2 Multi panel

It displays I/O source data as Flash type. Multi Panel Viewer can display several I/O source in a screen. If alarm of parameter value occurs among data (refer to the manual of the device) and it flashes in the set alarm color.

Tag Name	Time
COM3_COM3_1_Present Value	2016-04-20 ...
COM3_COM3_1_°C Lamp	2016-04-20 ...

You can change align mode, color, update interval and etc. in the 'Property' control panel by selecting 'Runtime screen – Multi Panel' in the 'Project' control panel.

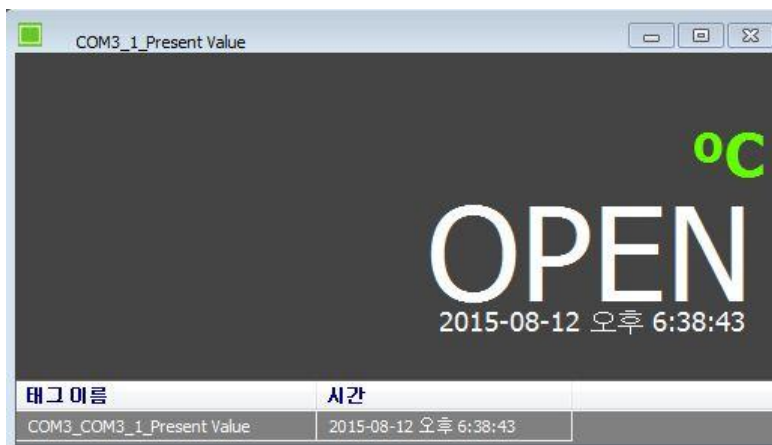


- Align mode: Set the align mode for several I/O source. It supports horizontal, vertical, horizontal grid align and vertical grid align.
- User Alarm Settings: Sets user alarm option to the user-defined items.

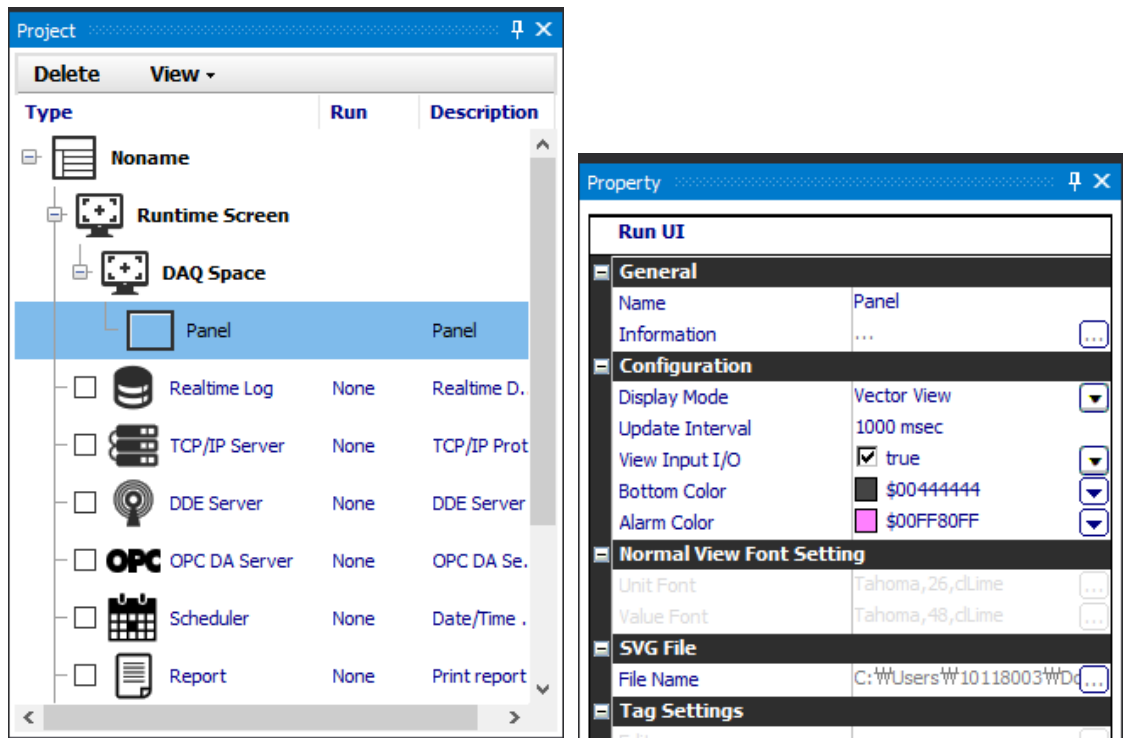
※ The other settings are same as 'Panel graph'. Refer to the '5.8.1.3 Panel'.

5.8.1.3 Panel

Panel displays a I/O source data in character. A Panel can display one I/O source only. If a parameter value causes an alarm (refer to the manual of the device), it flashes as the set alarm color.



Select Panel on the runtime screen in the 'Project' control panel to modify properties (such as color, update interval) in the 'Property' control panel.



(1) Setting Preferences

Display Mode: You can select Normal or Vector.

※ When the number of registered tag item is under 1, switching 'View mode' is available.

- Vector View: It is possible to display by the mapping process of a tag in SVG file and device tag item. The character property edit is possible by the SVG editor except the color of background and alarm.
- Normal View: Display 1 information of device tag item, and changing the color of character is possible through 'Normal View Font Setting' in 'Property' control panel.

- Update Interval: Interval of the panel update.
- View Input I/O: Show/hide settings of the I/O source list.

Bottom Color: Sets the background color of the panel. In case of the SVG file, it is possible to apply the background color when the name of SVG tag ID is designated as 'DAQMasterSvg'.

- Alarm Color: The value of the device tag item exceeds the limit, the background color of the panel flashes as defined alarm color. In case of the SVG file, it is possible to apply the background color when the name of SVG tag ID is designated as 'DAQMasterSvg' and it is applied when the number of registered tag item is under 1.

(2) Normal View Font Setting

- Unit Font: Unit font setting for normal view of display mode.
- Value Font: Value font setting for normal view of display mode.

(3) SVG file

- File name: Select registered SVG file list, preview it, and apply it to the 'Panel'. Selected file path saved as a project file of each panel, but the SVG Panel does not display data if there are differences between save path and actual file path.

(4) TAG settings

TAG setting is activated when 1 or more tag item of device is registered in 'Vector View' mode.

- Edit (OBJECT ID & TAG Editor): Mapping the information of text tag and device item is possible in the SVG file. After mapping is complete, refresh the screen as the information of the actual device item when connecting the communication. If delete the device tag item of registered panel, related mapping data is also deleted.

Object ID	Use Javascript	Item	Type
Unit1	<input type="checkbox"/>	COM1_1_PS(2) Set	<input type="radio"/> Value <input checked="" type="radio"/> Unit <input type="radio"/> Time
Value1	<input type="checkbox"/>	COM1_1_PS(2) Set	<input checked="" type="radio"/> Value <input type="radio"/> Unit <input type="radio"/> Time
Time1	<input type="checkbox"/>	COM1_1_PS(2) Set	<input type="radio"/> Value <input type="radio"/> Unit <input checked="" type="radio"/> Time

- + (Add): The item is created by base on 'OBJECT ID', and it is possible to connect to value of item
- - (Delete): The last added item is deleted.
- Clear (Delete all): All items are deleted.
- Interlocking SVG file

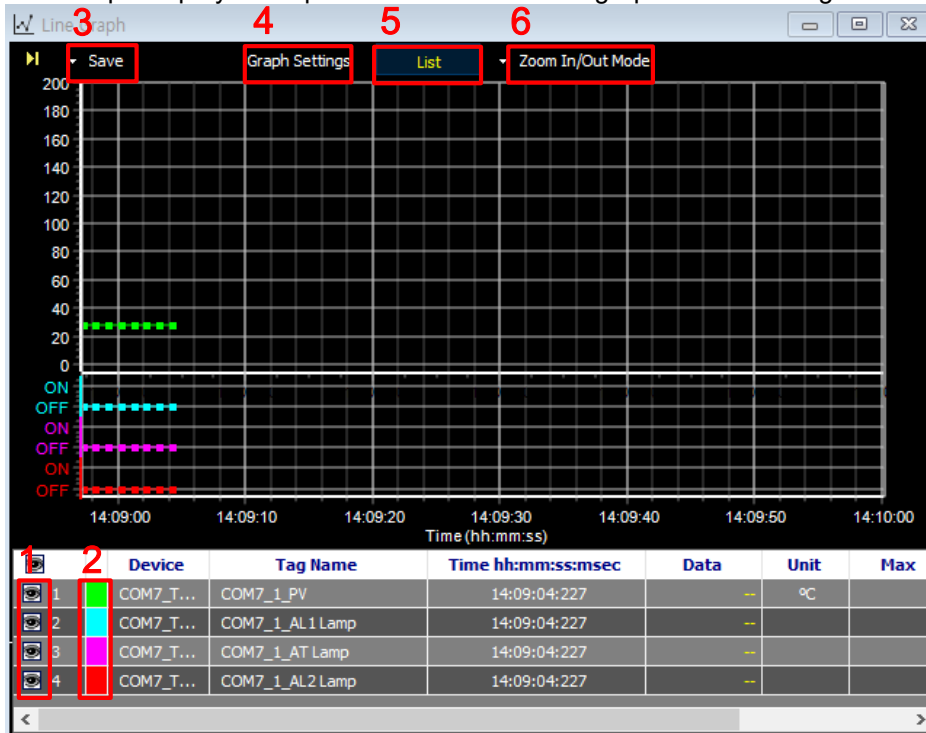
- ① Enter the text ID information in the SVG file to OBJECT ID in the 'OBJECT ID & TAG Editor'.

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE svg PUBLIC "-//W3C//DTD SVG 1.1 B
<svg xmlns="http://www.w3.org/2000/svg" ver
<text id="Unit1" x="137.5" y="20" t
<text id="Value1" x="139" y="53" te
<text id="Time1" x="140" y="80" tex
</svg>
```

- ② Select the device tag item and type (Value, Unit and Time).
 - Check the 'Use JavaScript option': Convert background color and DATA (information of Unit, Value, and Time) set by DAQMaster to JavaScript code.
 - Show JavaScript Sample code: The item which 'Use JavaScript option' is checked call the data of panel display internally through the specific JavaScript function. It is possible to deal with the data by referring to the sample code which contain the source information.

5.8.1.4 Line Graph

Line Graph displays multiple I/O source data as a graph for monitoring.



(1) I/O source list

Use the checkbox of  to show/hide the graph.

(2) Change graph color

To change the color by each I/O source, double-click the color in front of the device.

(3) Save image

Save image feature saves the current graph screen as an image.

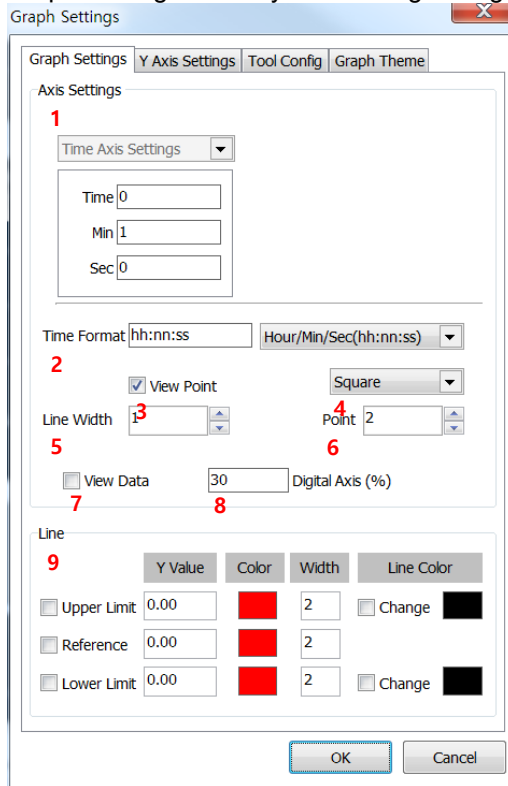
Save To File: Saves in Bitmap (*.bmp) or Windows metafile (*.wmf).

- Save To Clipboard (Bitmap): To use this image directly for other application program, saves in Bitmap (*.bmp) file to clipboard.
- Save To Clipboard (MetaFile): To use this image file directly for other application program, saves in MetaFile (*.wmf) to clipboard.
- Save CSV: Saves in CSV file(*.csv).

(4) Graph settings

- Graph Settings tab

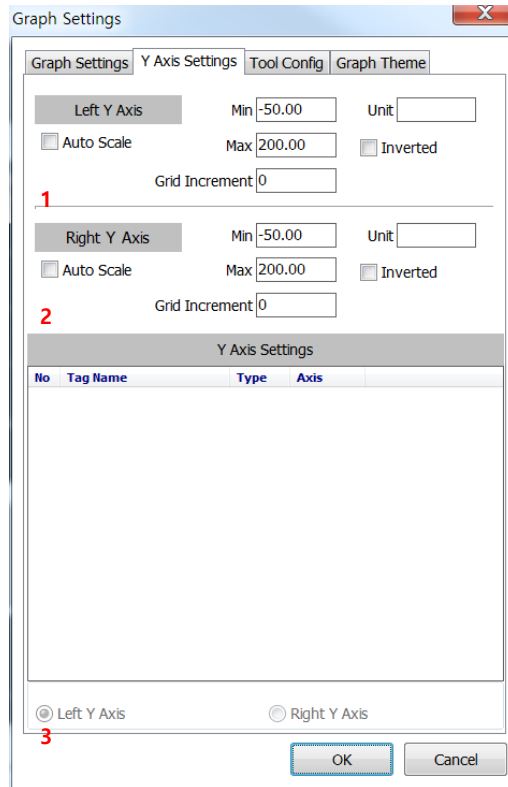
Graph Settings allows you to change the general Graph environment.



No	Item	Description
1	Axis Settings	Sets time (Hours, Min and Sec).
2	Time Format	Sets time expression for the Time Axis (X Axis)
3	View Point	Shows data point when selected (hides data point when not selected).
4	Point Type	Sets point type.
5	Line Width	Sets thickness of the graph line.
6	Point	Sets point size.
7	View Data	Shows data value when selected (hides data value when not selected).
8	Digital Axis (%)	Sets digital axis as a percentage.
9	Line	Sets displaying or not upper limit, reference, lower limit line. Sets Y value, color, width and line color of upper limit, reference, lower limit line.

- Y Axis Settings tab

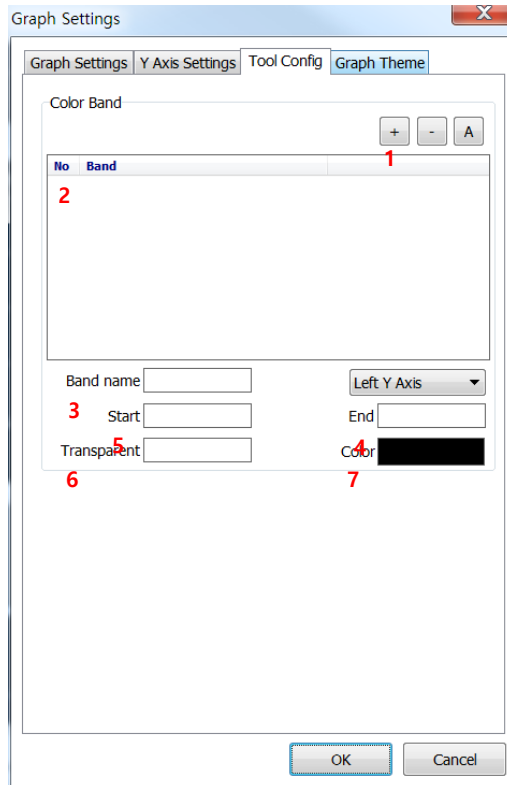
Set Y axis direction and range of each tag.



No	Item	Description
1	Left/Right Y Axis Setting	Sets the left/right Y axis auto scale, max/min range, and unit of the selected tag. Sets the inversion of Y axis.
2	Tag List	Shows a list of tag added at the graph. Selects the tag to be appeared as Y axis.
3	Left/Right Y Axis	Sets the Y axis type (left/right) of the selected tag.

- Tool Config tab

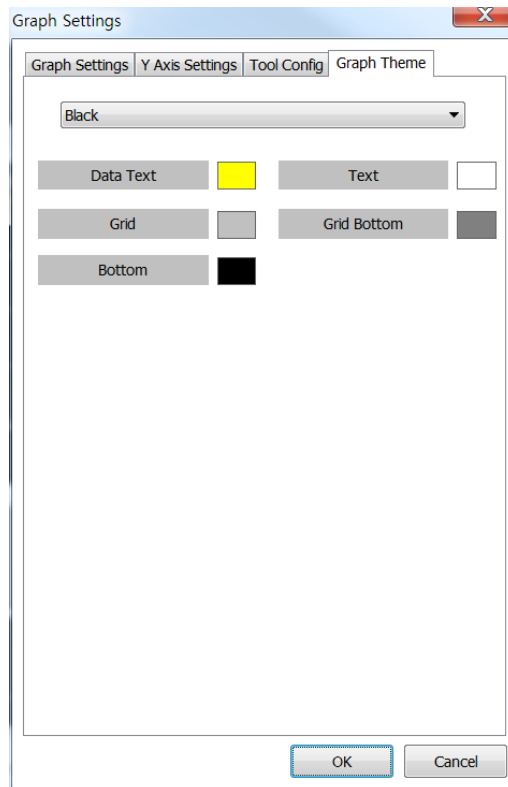
You can set the color band to recognize and emphasize the desired range.

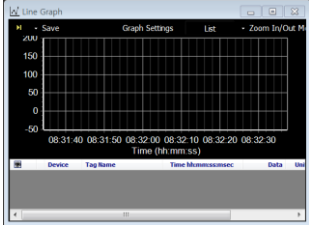
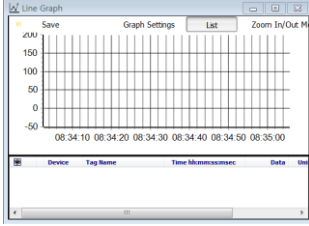


No	Item	Description
1	Add/Delete/Delete all	Adds/Deletes/Deletes all color band.
2	Band list	Displays the added color bands list.
3	Band name	Sets color band name.
4	Band standard	Sets Y axis (left/right) of color band standard.
5	Start/End range	Sets color band's start/end range.
6	Transparent	Sets color band transparent.
7	Color	Sets color band color.

- Graph Theme

You can set the graph theme (text color, grid color, background color).



No	Item	Description
1	Graph theme	<p>Selects graph theme.</p> <p>- Black</p>  <p>- White</p> 
2	Data text/Text/Grid/ Grid bottom/Bottom	According to the set graph theme, sets colors of data text/ text/grid/grid bottom/bottom separately.

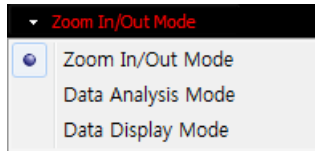
(5) List

List displays or hides I/O source list items at the bottom of the graph.

Whenever click the List button, the graph screen switched between On and Off mode.

(6) Graph display mode

Zoom controls Zoom In/Zoom Out of the graph.



- Zoom

- ③ Zoom In



On the graph, hold left mouse button and drag to lower right-hand corner to enlarge the selected area.

- ④ Zoom Out



On the graph, hold left mouse button and drag to upper left-hand corner to return to default scale.

- ⑤ Change X/Y Axis



On the graph, hold right mouse button and drag to change positions of X/Y axes. If the graph is enlarged or X/Y axes positions have changed, X axis does not automatically move when data has updated.

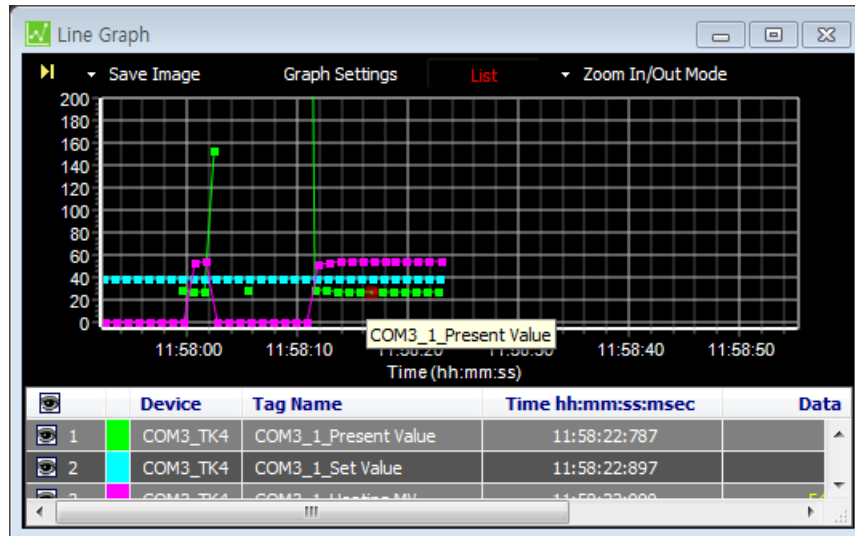
The program preserves user-changed graph scale and axes positions. It considers this as graph analysis mode.

- Mouse wheel functions

Operation	Function
Ctrl + mouse wheel up	Increases X axis
Ctrl + mouse wheel down	Decreases X axis
Shift + mouse wheel up	Increases Y axis
Shift + mouse wheel down	Decreases Y axis
Mouse wheel	Increases/decreases X/Y axes at the same time.

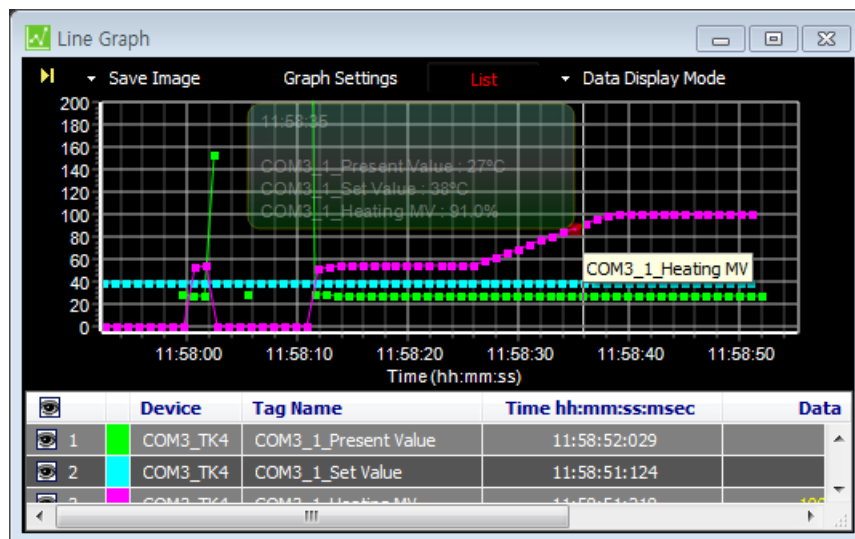
- Data Analysis Mode

Shows X axis (Time) and Y axis values of the mouse position on the graph.



- Data Display Mode

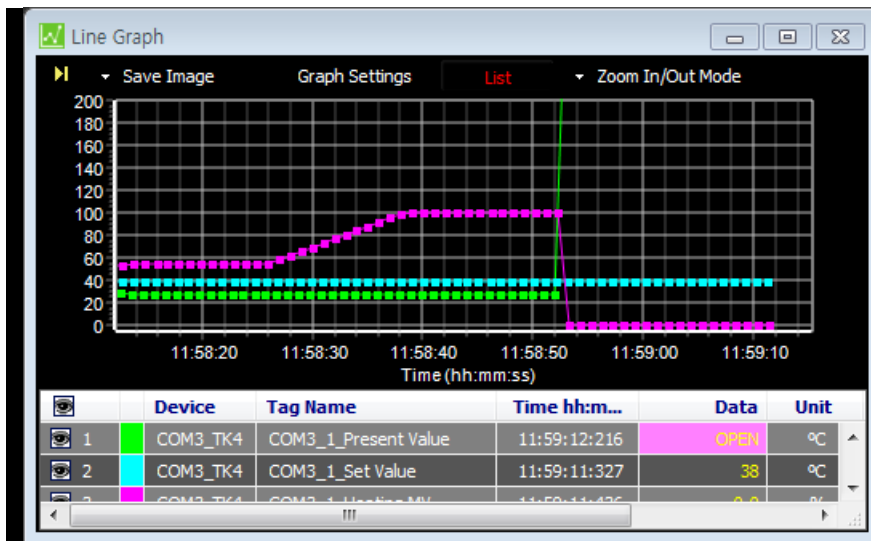
Displays all data values of the mouse position on the graph.





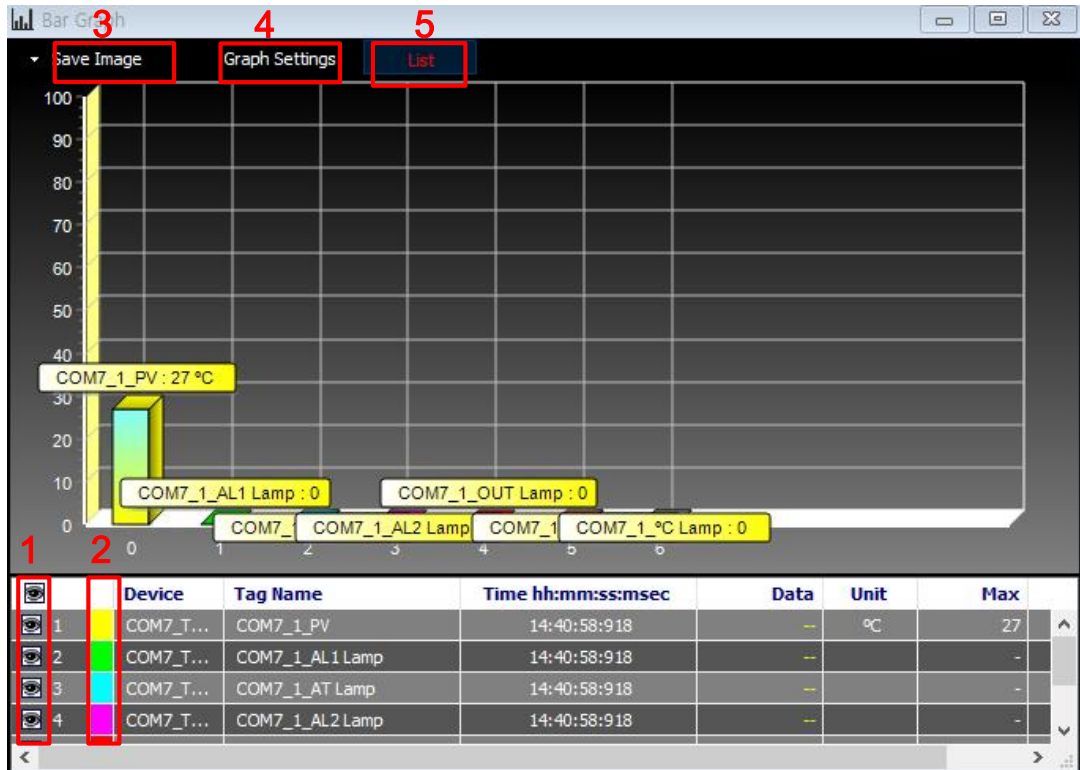
Note

If any parameter value causes an alarm (refer to the manual of the device), it flashes as below.



5.8.1.5 Bar Graph

Bar graph displays multiple I/O source data as a bar graph for monitoring. Added I/O source list items are displayed at the bottom of the graph.



(1) I/O source list

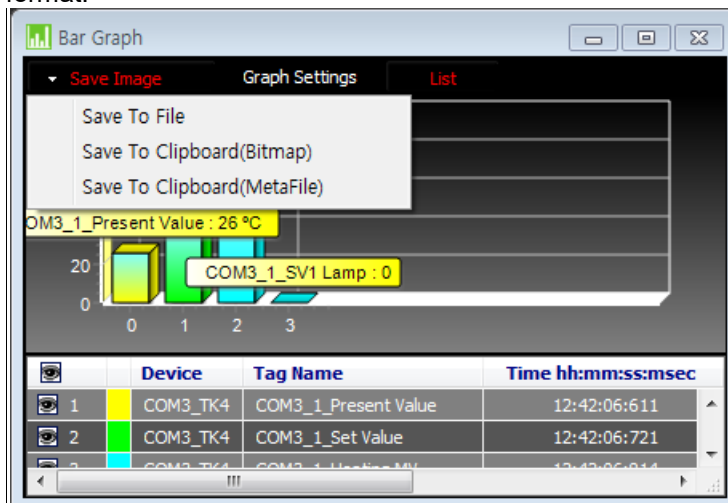
Use the checkbox of '☑' to show/hide the graph of each I/O source.

(2) Change graph color

To change the color of each I/O source, double-click the color in front of the device.

(3) Save image

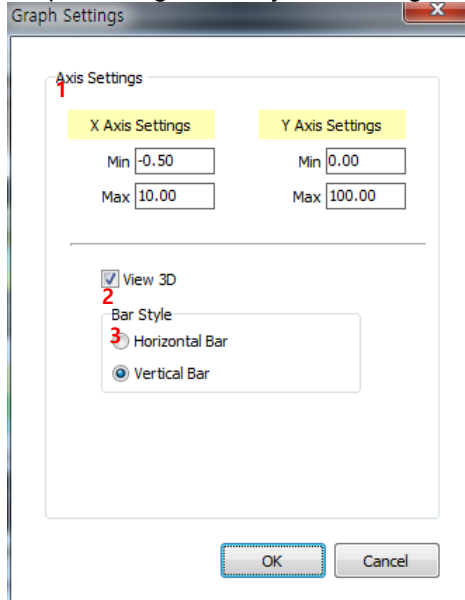
Save Image feature saves the current graph screen as an image. Save Image dialog appears when Save Image button is clicked. Images can be saved in '*.bmp', or '*.wmf' format.



- Save To File: Saves in Bitmap (*.bmp) or Windows metafile (*.wmf).
- Save To Clipboard (Bitmap): To use this image directly for other application program, saves in Bitmap (*.bmp) file to clipboard.
- Save To Clipboard (MetaFile): To use this image file directly for other application program, saves in MetaFile (*.wmf) to clipboard.

(4) Graph settings

Graph Settings allows you to change the general Graph environment.



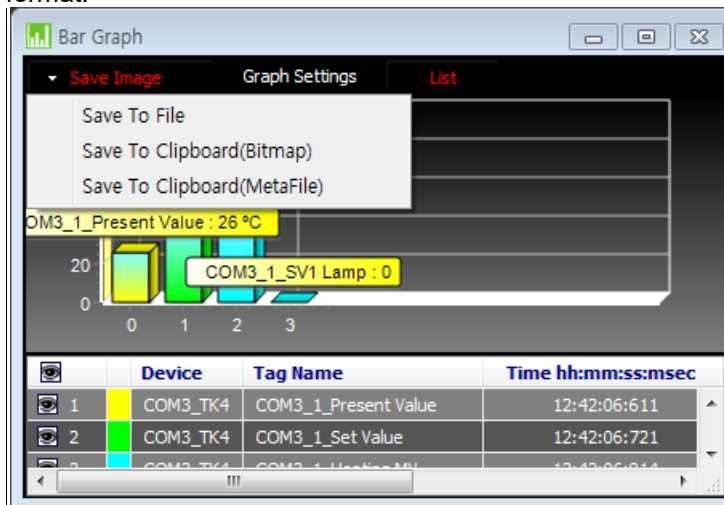
No	Item	Description
1	Axis Set	Sets the range of Min. and Max. values of the X/Y axes.
2	3D View	Sets the display status of the bar.
3	Bar Style	Sets the horizontal and vertical styles of the bar.

(5) List

List displays or hides the I/O source list at the bottom of the graph. Clicking the List button toggles item display on and off.

(6) Save image

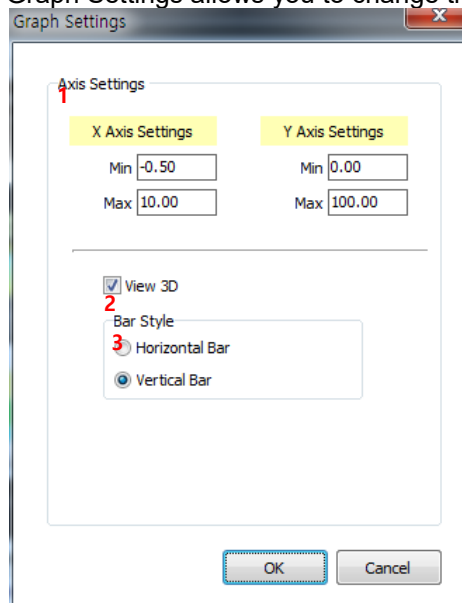
Save Image feature saves the current graph screen as an image. Save Image dialog appears when Save Image button is clicked. Images can be saved in '*.bmp', or '*.wmf' format.



- Save To File: Saves in Bitmap (*.bmp) or Windows metafile (*.wmf).
- Save To Clipboard (Bitmap): To use this image directly for other application program, saves in Bitmap (*.bmp) file to clipboard.
- Save To Clipboard (MetaFile): To use this image file directly for other application program, saves in MetaFile (*.wmf) to clipboard.

(7) Graph settings

Graph Settings allows you to change the general Graph environment.

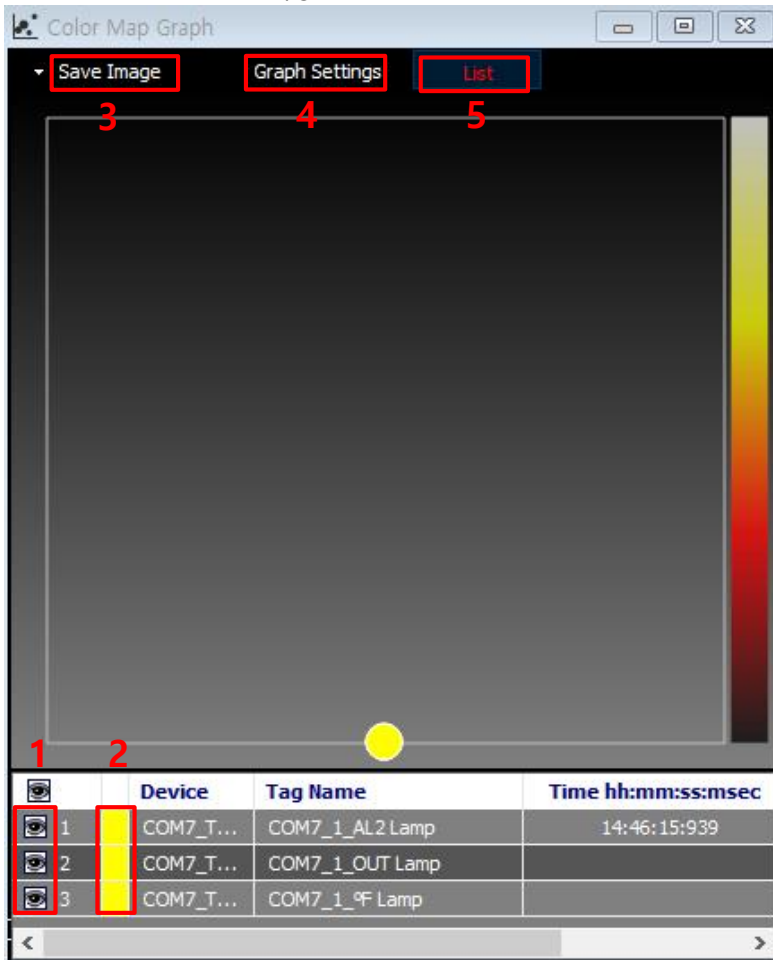


No	Item	Description
1	Axis Set	Sets the range of Min. and Max. values of the X/Y axes.
2	3D View	Sets the display status of the bar.
3	Bar Style	Sets the horizontal and vertical styles of the bar.


5.8.1.6 Color Map Graph

Color Map Graph displays multiple I/O source data as a color map graph for monitoring.

At the bottom is added I/O source list.



(1) I/O source list

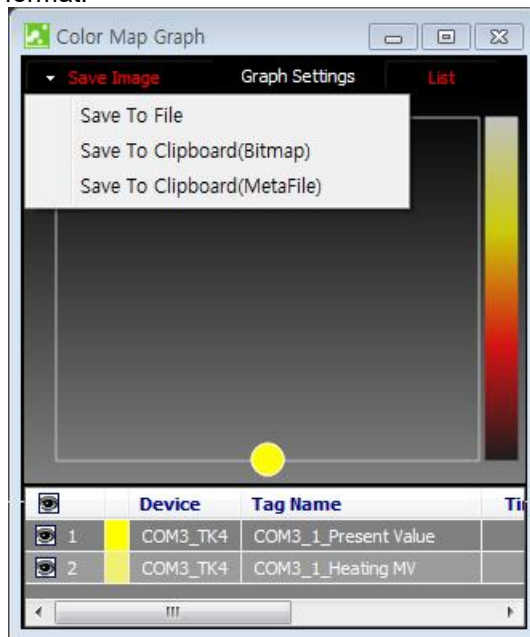
Use the checkbox of  to show/hide the graph of each I/O source.

(2) Change graph color

To change the color of each I/O source, double-click the color in front of the device.

(3) Save image

Save Image feature saves the current graph screen as an image. Save Image dialog appears when Save Image button is clicked. Images can be saved in '*.bmp', or '*.wmf' format.



- Save To File: Saves in Bitmap (*.bmp) or Windows metafile (*.wmf).
- Save To Clipboard (Bitmap): To use this image directly for other application program, saves in Bitmap (*.bmp) file to clipboard.
- Save To Clipboard (MetaFile): To use this image file directly for other application program, saves in MetaFile (*.wmf) to clipboard.

(4) Graph settings

Graph Settings

Graph Type: Normal

Color Map: 5 HOT

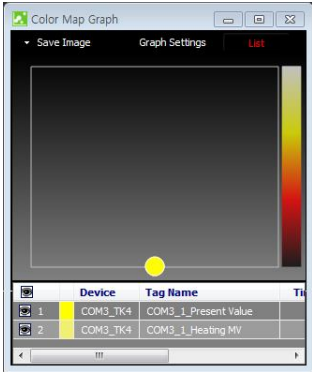
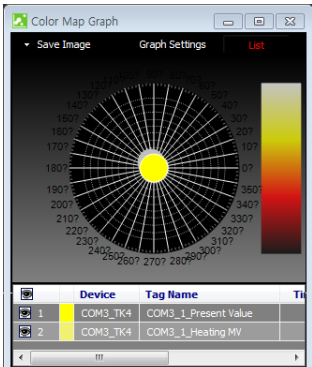
X Axis Settings: Min 0.00, Max 100.00

Y Axis Settings: Min 0.00, Max 100.00

Circle Size: 3, Circle Size 10

	Tag Name	X Po...	Y Po...	Min	Max
0	COM3_1_Present Value	0.00	0.00	-1999.00	9999.00
1	COM3_1_Heating MV	0.00	0.00	0.00	1000.00

OK Cancel

No	Item	Description
1	Graph Type	<ul style="list-style-type: none"> Normal  Polar 

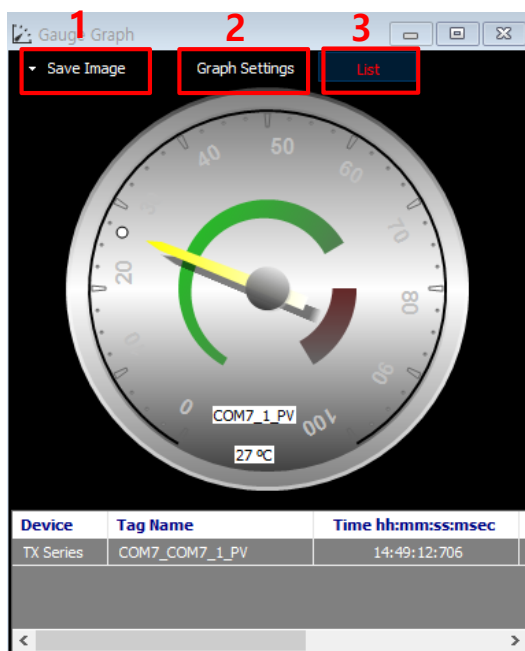
No	Item	Description
2	X/ Y Axes set	Sets max./min. value of X/Y axes range.
3	Circle size	Sets displayed circle size.
4	List	Shows s list of tag added at the graph. Double-click an item to set X, Y coordinate (Normal) or angle and distance (Polar Bar) depending on graph type setting.
5	Color Map	Sets color map. Color map supports HSV, JET, HOT, COOL, and GRAY mode.

(5) List displays or hides the I/O source list at the bottom of the graph. Clicking the List button toggles item display on and off.

5.8.1.7 Gauge Graph

A Gauge Graph can display only one I/O source.

One Gauge Graph represents the only one I/O source.

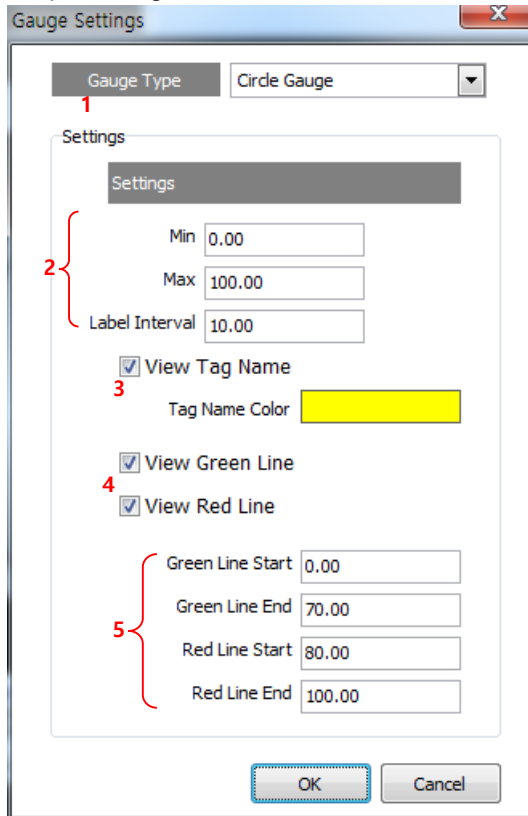


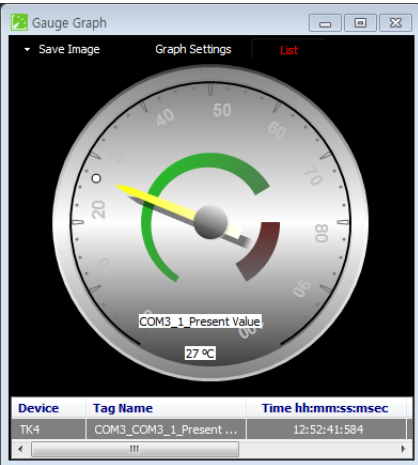
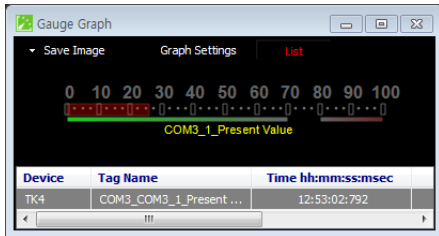
(1) Save Image

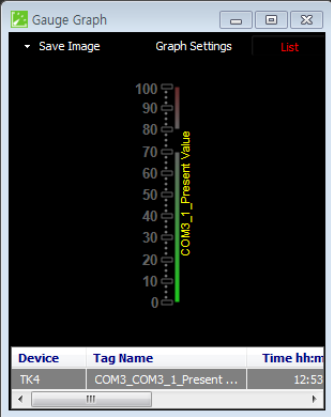
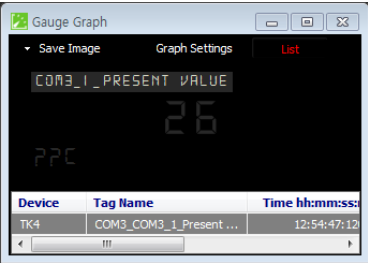
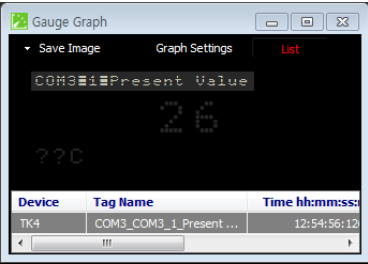
Save Image feature saves the current graph screen as an image.

- Save To File: Saves in Bitmap (*.bmp) or Windows metafile (*.wmf).
- Save To Clipboard (Bitmap): To use this image directly for other application program, saves in Bitmap (*.bmp) file to clipboard.
- Save To Clipboard (MetaFile): To use this image file directly for other application program, saves in MetaFile (*.wmf) to clipboard.

(2) Graph settings

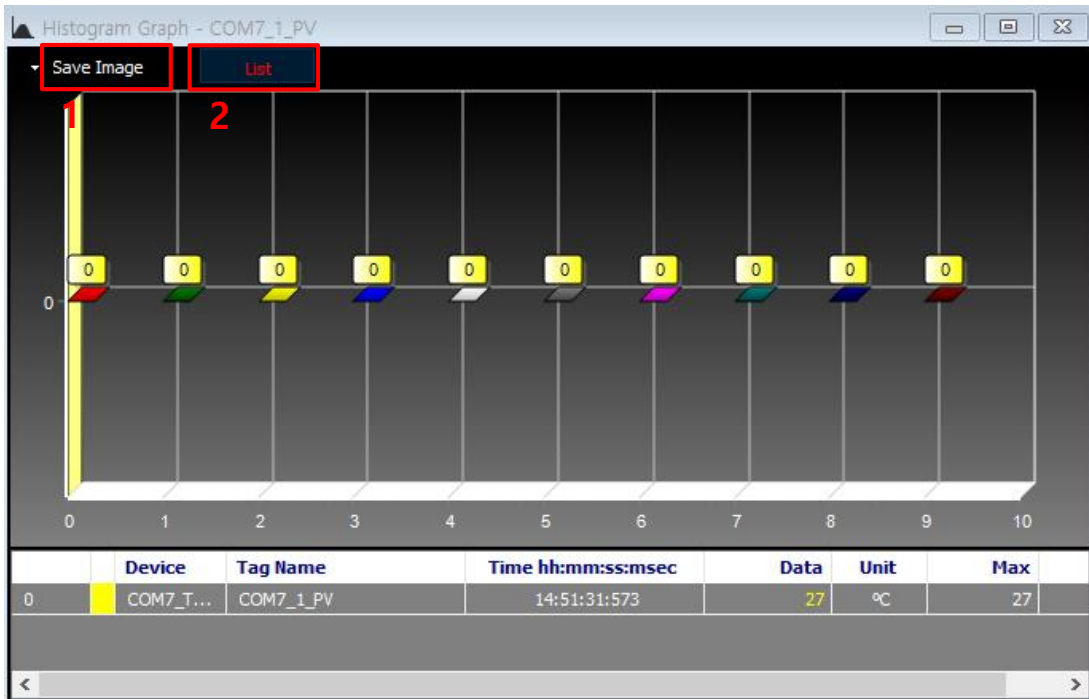


No	Item	Description
1	Gauge Type	<p>Sets gauge graph type.</p> <ul style="list-style-type: none"> Circle Gauge  Horizontal Liner 

No	Item	Description
		<ul style="list-style-type: none"> Vertical Linear  Numeric Gauge  LED Gauge 
2	Minimum, Maximum, Label Interval	Sets minimum/maximum value and label interval displayed on graph.
3	TagName Visible	Sets display and color option of tagname
4	Green/Red Line Visible	Sets display option of green/red line in graph.
5	Green/Red Line Setting	Sets start/end value of green/red line.

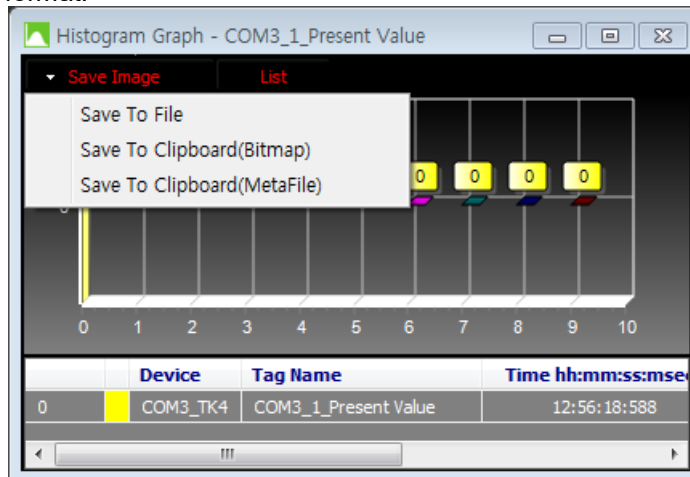
5.8.1.8 Histogram graph

It divides and displays data by the set update interval and the number of division. You can specify the update interval, upper/lower limit and the number of division at Property.



(1) Save image

Save Image feature saves the current graph screen as an image. Save Image dialog appears when Save Image button is clicked. Images can be saved in '*.bmp', or '*.wmf' format.



- Save To File: Saves in Bitmap (*.bmp) or Windows metafile (*.wmf).
- Save To Clipboard (Bitmap): To use this image directly for other application program, saves in Bitmap (*.bmp) file to clipboard.
- Save To Clipboard (MetaFile): To use this image file directly for other application program, saves in MetaFile (*.wmf) to clipboard.

(2) List

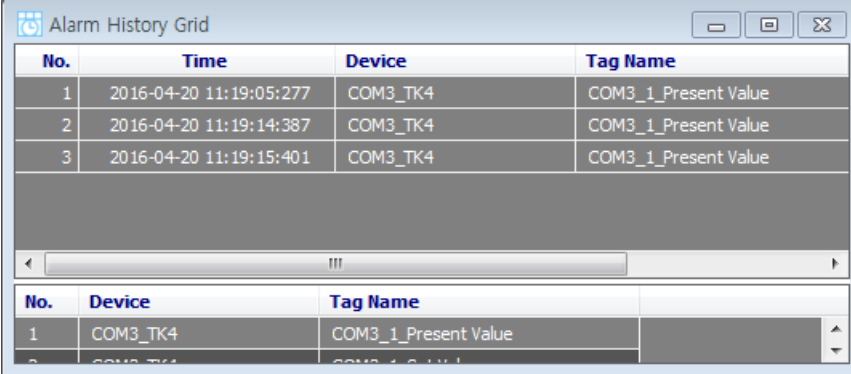
List displays or hides the I/O source list at the bottom of the graph. Clicking the List button toggles item display on and off.

5.8.2 Alarm

5.8.2.1 Alarm History Grid

Alarm History Grid displays alarm data of I/O source in text for monitoring.

Whenever an alarm occurs in Run status, the alarm list is updated directly.



The screenshot shows a window titled "Alarm History Grid" with a table of alarm data. The table has four columns: No., Time, Device, and Tag Name. The data is as follows:

No.	Time	Device	Tag Name
1	2016-04-20 11:19:05:277	COM3_TK4	COM3_1_Present Value
2	2016-04-20 11:19:14:387	COM3_TK4	COM3_1_Present Value
3	2016-04-20 11:19:15:401	COM3_TK4	COM3_1_Present Value

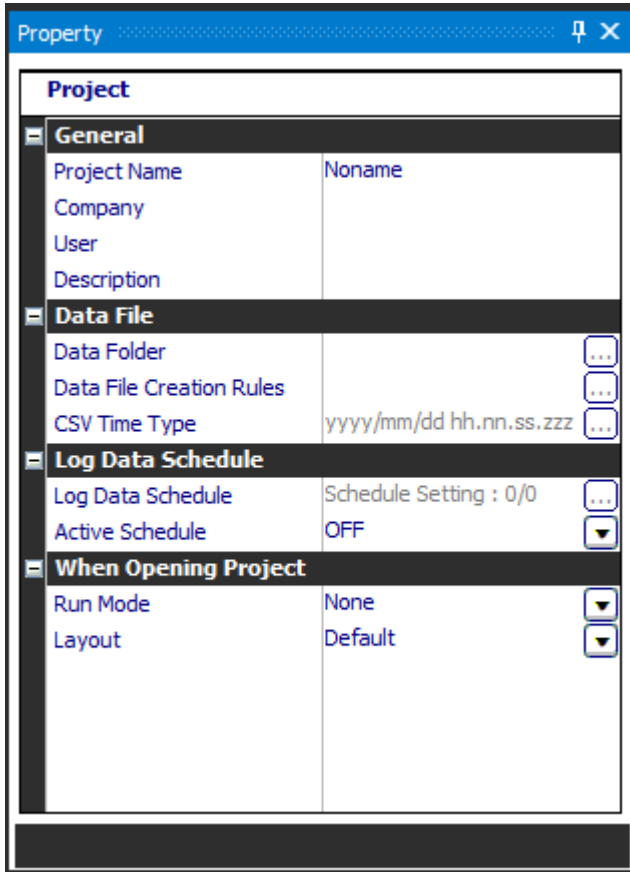
Below the main table, there is a scroll bar and a smaller table with the following data:

No.	Device	Tag Name
1	COM3_TK4	COM3_1_Present Value

5.9 Property

5.9.1 In Project

After click the project name (default: noname) in the 'Project' control panel, can change the values of parameter in the 'Property' control panel.



(1) General

It is possible to describe the basic project information such as project name, company name, worker and other descriptions.

(2) Data File

It is possible to set the value of the path of 'Data Folder', 'Data File Creation Rules', and 'CSV Time Type'.

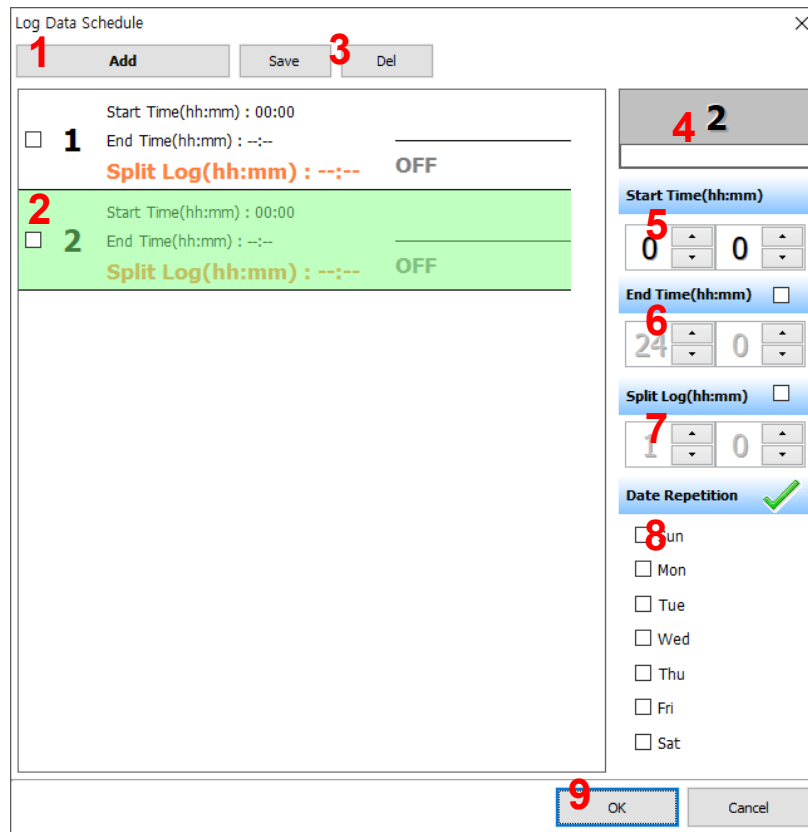
Log data files are saved in *.csv or *.ddf file format.

- Data Folder: Sets the path of the folder that project data is saved.
- 'Data File Creation Rules: Sets the rules of making file name, format and path of the folder.
- CSV Time Type: Sets the form of time to be recorded in the log data.

(3) Log Data Schedule

Saves log data at the scheduled time automatically.

- Log Data Schedule: Sets time of log data to be saved.



No	Description
1	Adds log data schedule items.
2	Displays scheduled log data items. You can delete the scheduled item by checking the left check box and the ③. 'Delete' button.
3	Saves or deletes the set items.
4	Sets log data name. After select the data schedule item and enter the desired data name. The file name of data file creation rule is displayed next to the data name.
5	Sets start time.
6	Sets end time.
7	Sets split save time. In case of setting 1 hour 30 minutes, it saves the file for 1 hour 30 min. and creates another file to save.
8	Sets repetition day of week.
9	Saves log data schedule items.

- Active Schedule: Sets whether to activate log data schedule.

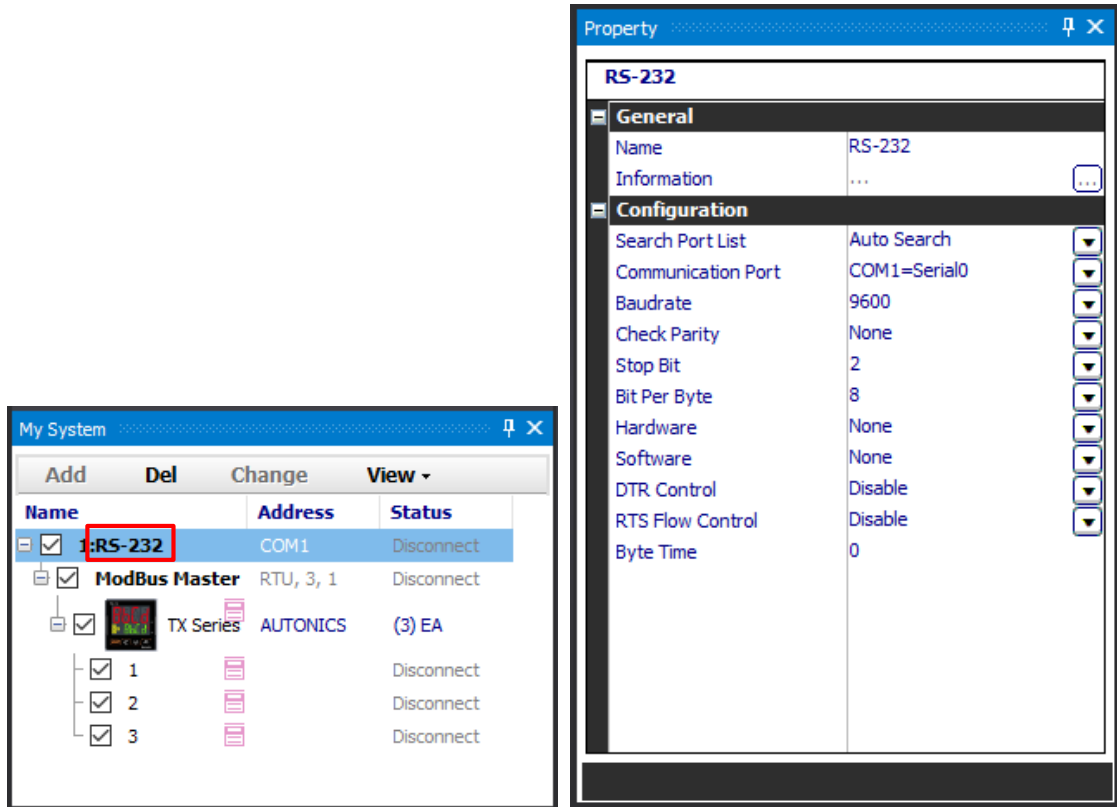
(4) When Opening Project

- Run Mode: Sets running mode when opening the saved project file.
- Layout: sets the screen layout (default, runtime, current layout) when opening the project.

5.9.2 In My System

(1) RS-232

It is possible to change the RS-232 related settings. Click RS-232 in 'My System' control panel and check the 'Property' control panel.

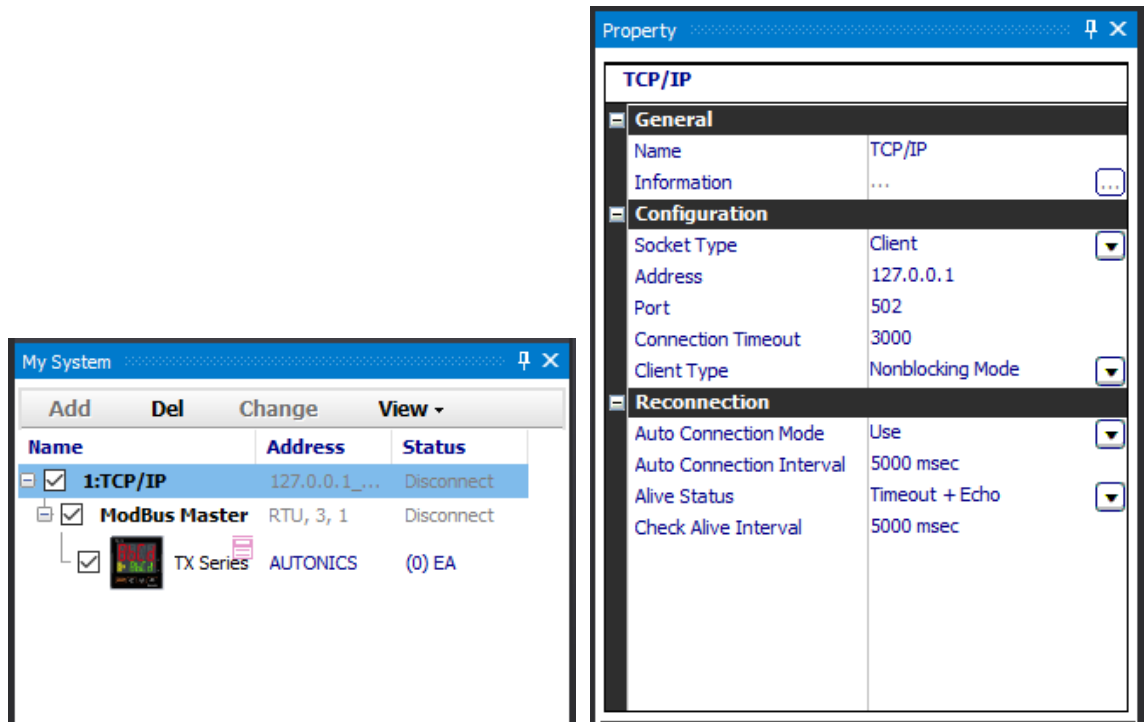


The 'Property' control panel displays the information about the communication port currently in use.

Item		Description
Search Port List	Fix Init List	Loads communication port list of computer at the time when RS-232 is added, saves it to the port list and then fixes it.
	Auto Search	Rearranges the port list automatically when it is changed.
Communication Port		Shows available COM Ports and can select it. Set the connected COM Port.
Baud rate		1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps
Check Parity		Selects the parity bit for communication. (none, odd, even, mark, space)
Stop Bit		Selects the stop bit for communication. (1, 1.5, 2)
Bit per Byte		Selects Byte Size. (5, 6, 7, 8)
Hardware		None, RTS/CTS
Software		None, XON/XOFF
DTR Control		Disable, enable, handshake
RTS Flow Control		Disable, enable, handshake. toggle
Byte Time		Sets transfer interval of packet per byte.

(2) TCP/IP

Sets TCP/IP protocol for communication. Select the TCP/IP in 'My System' and check 'Property' control panel.



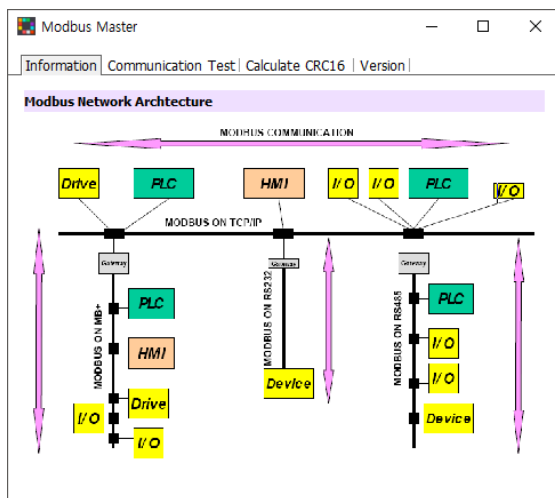
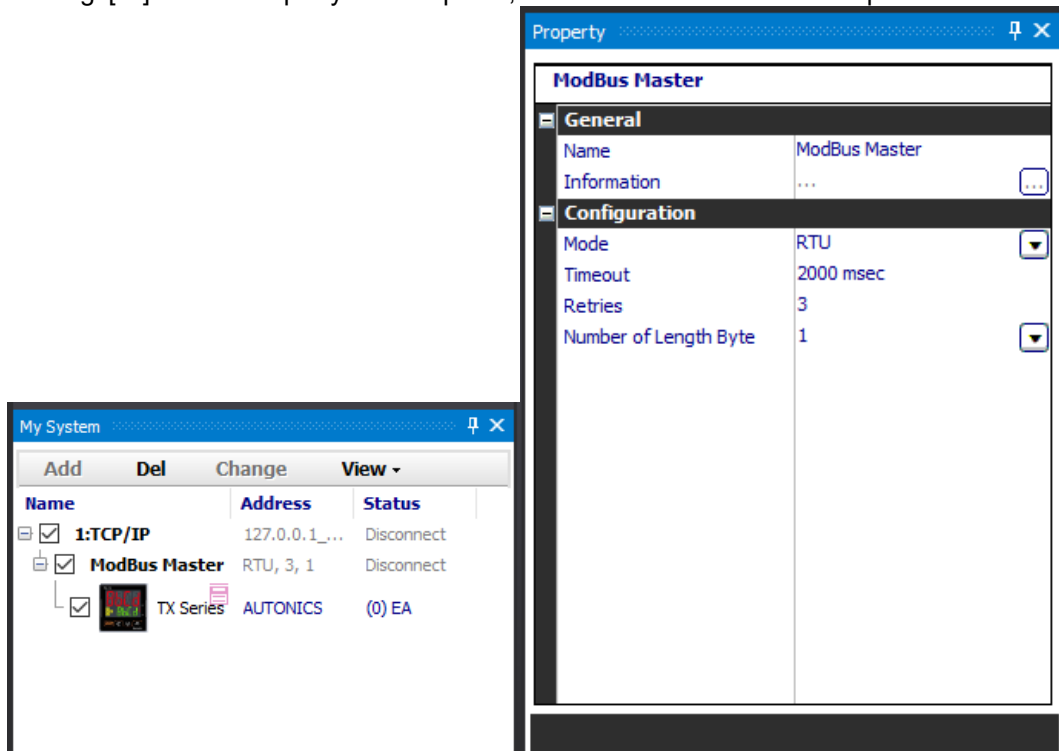
'Property' control panel displays information about the communication port currently in use. The name that is displayed in 'Property' control panel can be modified by clicking 'Name' in 'Property' control panel

Refer to the following table to check the 'Configuration' items.

Item		Description
Socket Type	Client	Sets as Client Mode.
	Server	Sets as Server mode.
Address		Enters the designated IP Address from the main device.
Port		Sets port number.
Connection Timeout		Sets the time of the timeout for connection.
Client Type	Non-Blocking	Progresses next transmission without the response.
	Blocking	Progresses next transmission after receiving response.
Auto Connection Mode	Use	Attempts to reconnect when TCP/IP is disconnected or connection failure occurred for the first time.
	Not Used	Not use auto connection mode.
Auto Reconnection Interval		Sets interval time of Auto Reconnection.
Alive Status		Attempts to reconnect after receiving the error message (Timeout, Echo) from TCP/IP Server without disconnection.
Check Alive Interval		Sets check cycle of the Alive status.

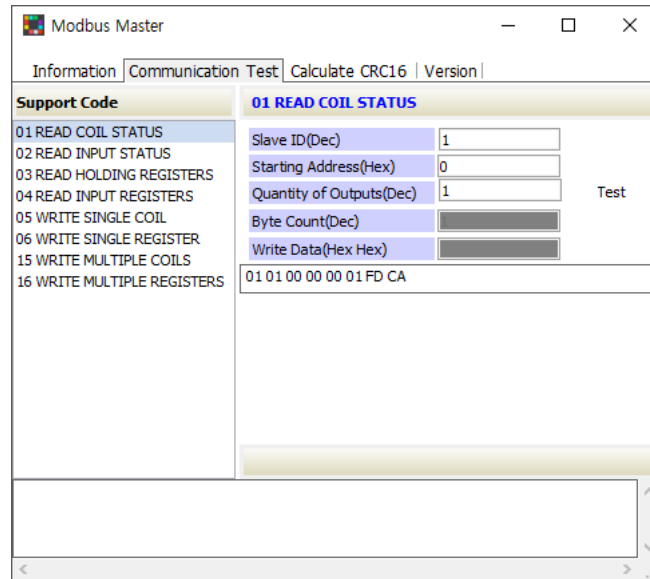
(3) Modbus Master

Can change protocol related setting for ModBus. After selecting 'ModBus Master' and clicking '[...]' of the 'Property' control panel, 'ModBus Master' window is opened.



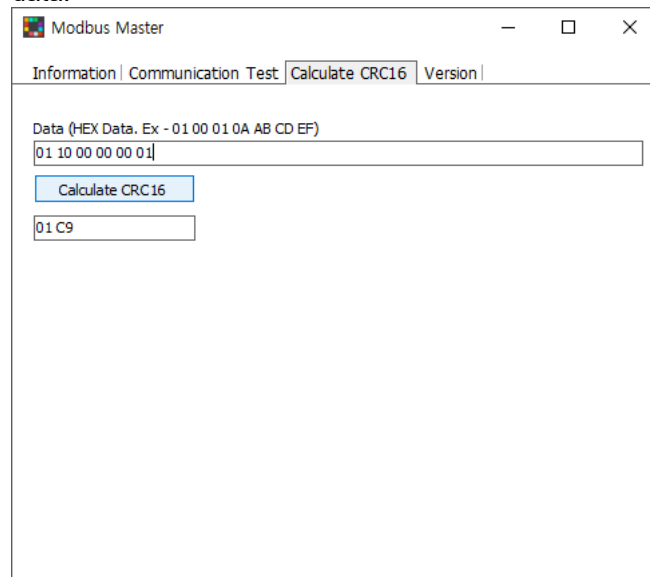
1) ModBus Master Communication Test

Conducts the test to check whether the communication is normal.
 Enter the 'Communication Test' tab, and click [Test] button to execute communication test.



2) Calculate CRC16

Verifies the protocol by CRC16.
 Input the Hex data to 'Data' section and click [Calculate CRC16] to convert CRC16 data.



(4) Device (TX Series)

Click the device name (TX Series) in 'Name' of 'My System' control panel to see basic device information in 'Property' control panel.

The 'My System' control panel displays a table with the following data:

Name	Address	Status
1:TCP/IP	127.0.0.1_...	Disconnect
ModBus Master	RTU, 3, 1	Disconnect
TX Series	AUTONICS	(0) EA

The 'Property' control panel shows the following details for the 'TX Series' device:

TX Series	
File	
Description	LCD Display Temperature Cont
Date	2013. 10. 15
Date Modified	2013.09.26
Creation	
Revision	1.0.0
Version	
Vendor	AUTONICS
Product	TX Series
Major Revision	1
Minor Revision	0

(5) Address

Click the connected address number in 'My System' control panel to see detailed device information.

The 'My System' control panel displays a table with the following data:

Name	Address	Status
1:TCP/IP	127.0.0.1_...	Disconnect
ModBus Master	RTU, 3, 1	Disconnect
TX Series	AUTONICS	(2) EA
1		Disconnect
2		Disconnect

The 'Property' control panel shows the following detailed information for 'TX Series >> 1':

TX Series >> 1	
General	
Device Name	TX Series
Unit Address	1
Model	
DAQ Repeat Interval	1000 msec
Frame Interval	40 msec
User Unit Name	
Version	
Coil Status	
RUN/STOP	RUN
Alarm Reset	OFF
Set Value	
Set Value	0
Parameter1	
Alarm1	0
Alarm2	0
Auto Tuning	OFF
Proportional	100
Integral	

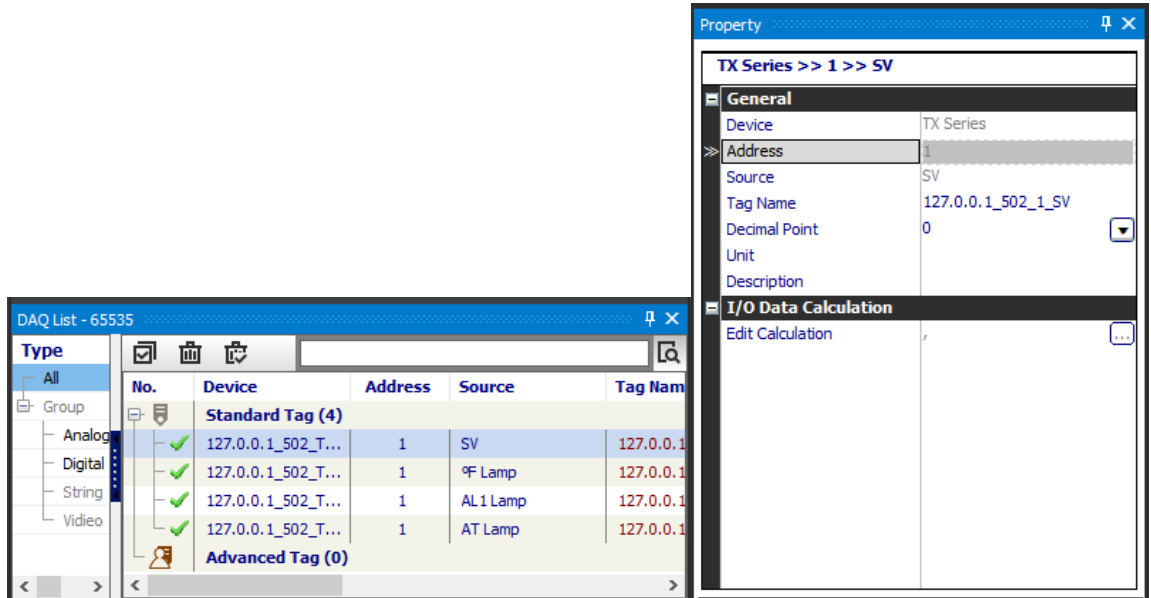
**Note**

You can check and modify device parameters by reading parameters while devices are connected.

For the information about reading parameters, refer to '5.10.2 Connect'.

5.9.3 In DAQ List

If you select items in 'DAQ List' that were added from 'I/O List', 'Property' control panel displays item information, I/O Data calculation and Trigger setting.



(1) General

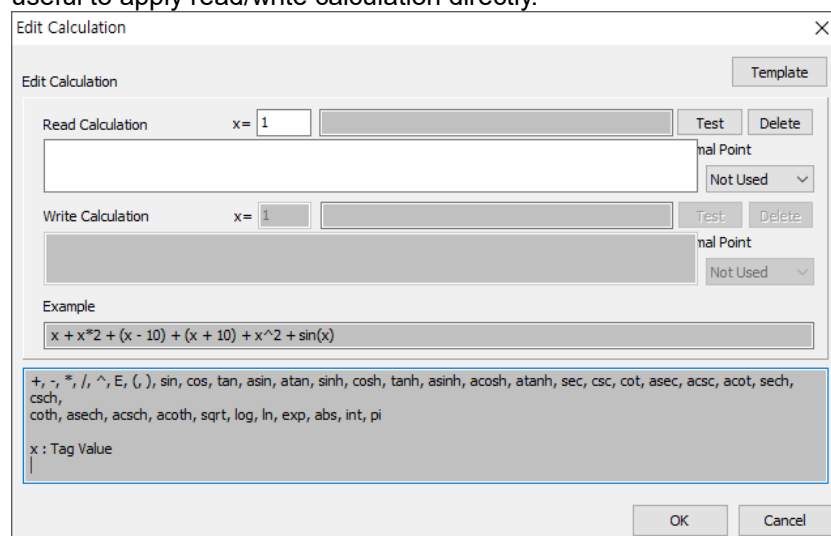
You can also change Tag Name, Decimal Point, Unit, and Script variables in General properties and edit Tag value formulas in I/O Data Calculation.

(2) I/O Data Calculation

You can get the calculated data by editing formula. 'x' is input or output tag value from the device.

1st Click [...] button next to 'Edit Calculation' to open 'Edit Calculation' window.

2nd Click 'Template' at the top-right of the 'Edit Calculation' window to edit and save. It is useful to apply read/write calculation directly.



- 3rd Enter the desired formular and click the 'Save' and 'Apply'.
The saved template is applied the 'Edit Calculation' dialog box.

Template

Add Del Delete All Save

온도 단위 변환
Change Temperature Unit

Name
Change Temperature Unit

Description
°C -> °F

Read Calculation Apply
x+32 Decimal P 0.000

Write Calculation Apply
Decimal P 0.000

+, -, *, /, ^, E, (,), sin, cos, tan, asin, atan, sinh, cosh, tanh, asinh, acosh, atanh, sec, csc, cot, asec, acsc, acot, sech, csch, coth, asech, acsch, acoth, sqrt, log, ln, exp, abs, int, pi

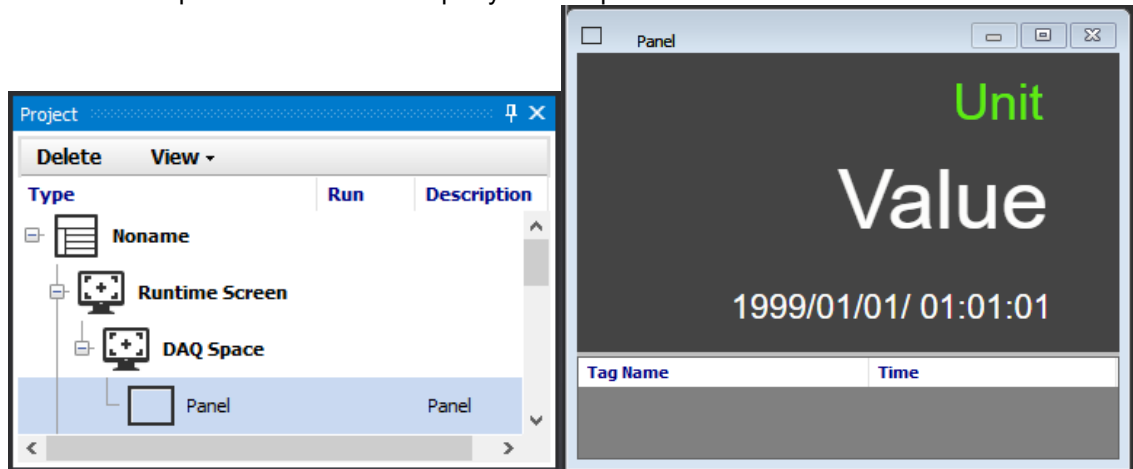
x : Tag Value

Apply Close

- 4th This function displays the value on DAQMaster or enter the value to device which is calculated from x. the calculated output value at DAQMaster or enter a value.

5.9.4 In RunTime Screen

Select the items of RunTime screen in the 'DAQSpace' or 'Project' control panel, to change the value of basic parameters in the 'Property' control panel.



The property parameters have a different option per each item.
For the details, refer to '4.10 RunTime Screen Library'.

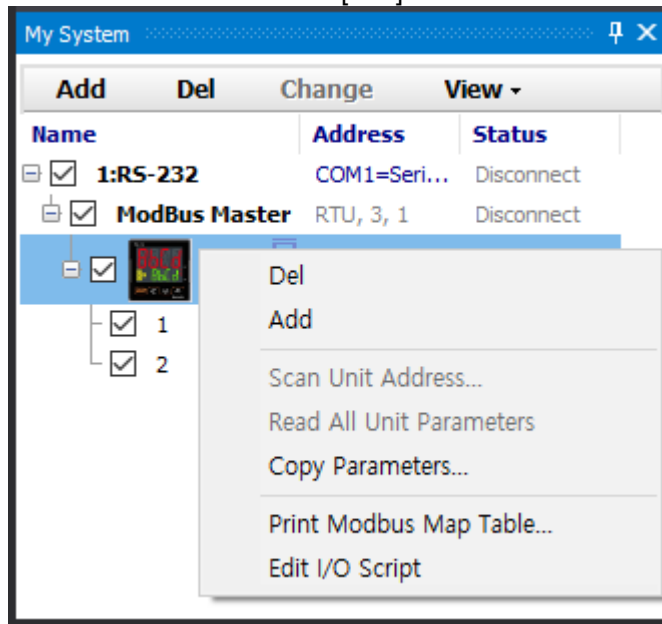
5.10 Add, Connect, Run, Log

5.10.1 Add

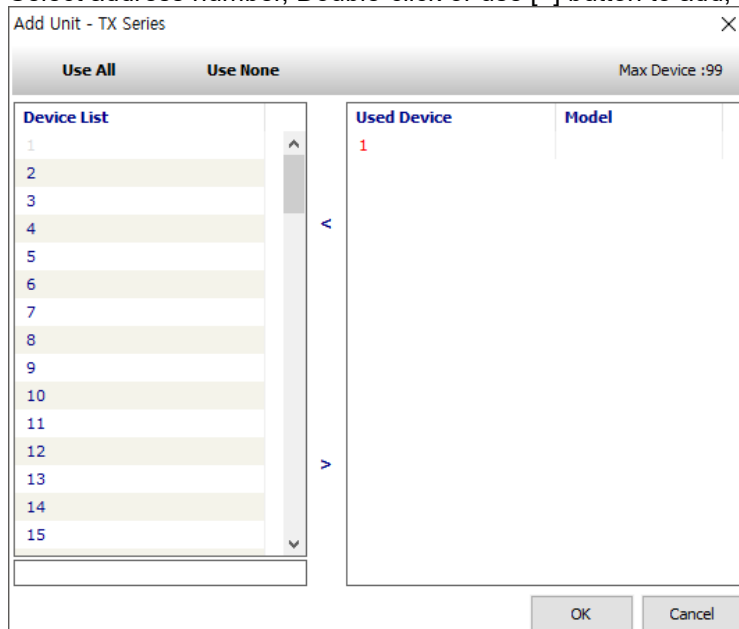
5.10.1.1 Adding a Unit to My System

This is used to connect few of devices or when you know the address number of each unit.

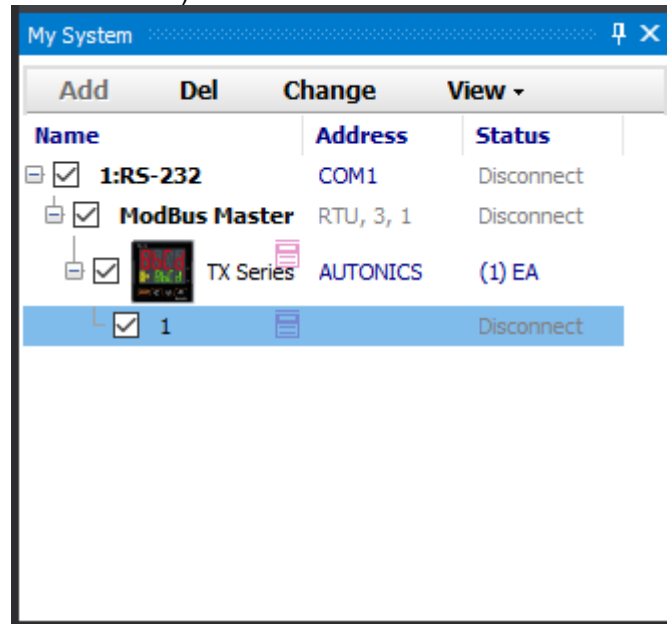
- 1st When selecting the device name in 'My System' control panel, [Add] button is enabled. To add a unit (address), click the [Add] button in upper menu, or right-click the device name and select [Add].



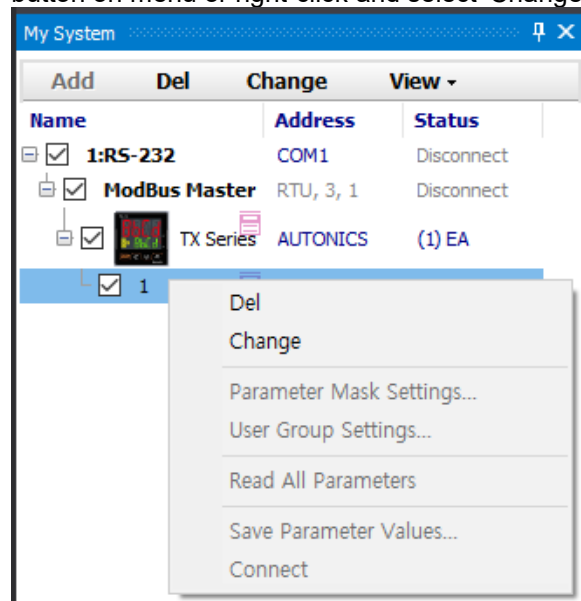
- 2nd Select address number, Double-click or use [>] button to add, and click [OK] button.



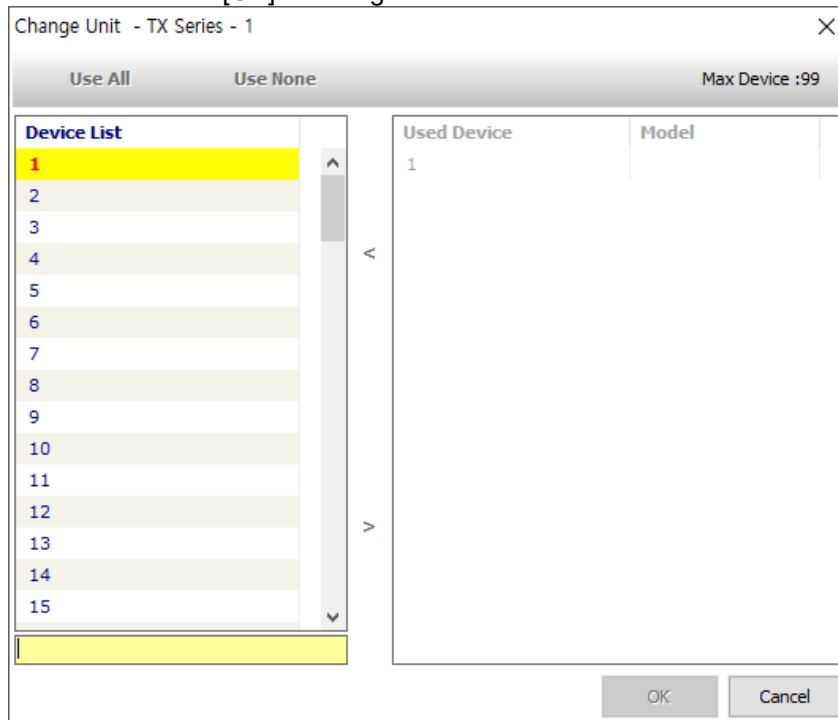
3rd You can see the unit (address: 1) added under the device in My System after click [OK] button. If you want to add multiple devices, click [Add] button. (Up to 99 devices can be added.)



4th When selecting the unit address (1) activates [Change] button, click the [Change] button on menu or right-click and select 'Change'. To change the unit address,



5th If you click [Change] button, the current address (1) highlights in yellow. Select a new address and click [OK] to change the unit address.



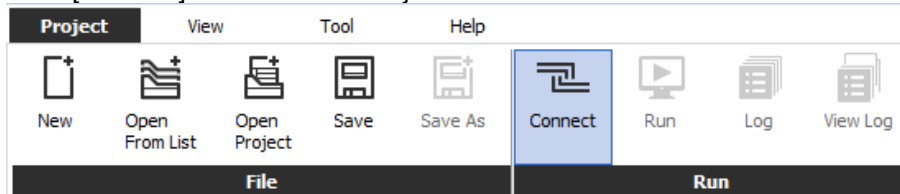
Note

Unit (address) cannot be deleted, changed or added while the status is 'Connect'.

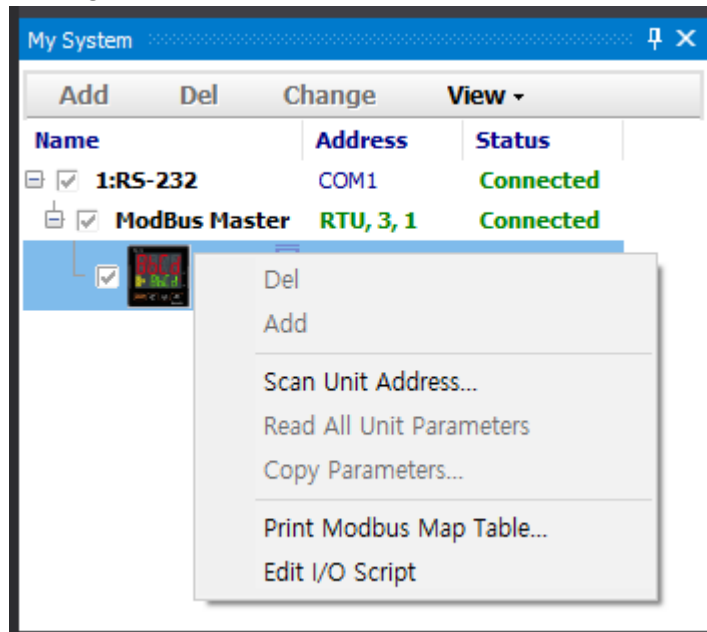
5.10.1.2 Scan Unit

'Scan Unit' features scanning multiple connected device units or adding the units you does not know the address number per each unit.

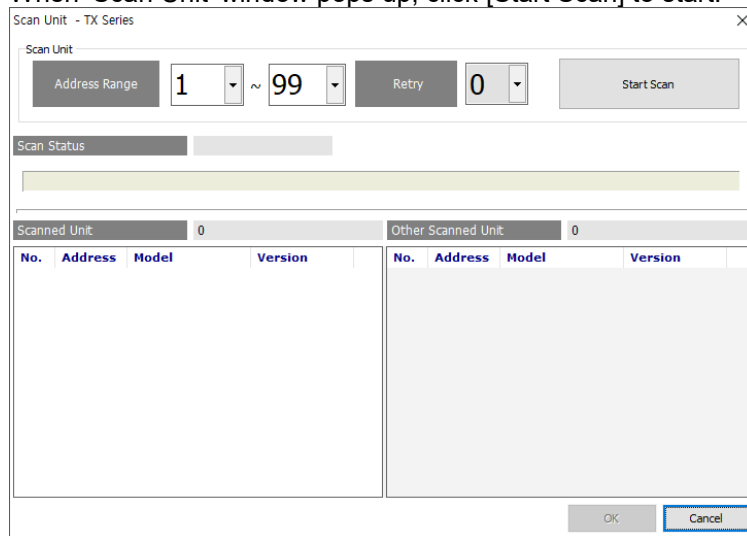
1st Click [Connect] button on the 'Project – Run' menu to connect.



2nd Right-click the series name (ex. TX Series) in 'My System' control panel and click the 'Scan Unit Address'.



3rd When 'Scan Unit' window pops up, click [Start Scan] to start.



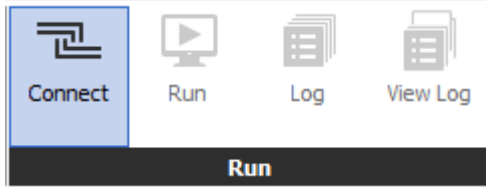
- 4th All desired units are listed in the window, click [Stop Scan] to stop scanning and select the Unit. Click [OK] button to add it to the 'My System'.

- 5th If 'Status' rows are marked as 'Connected' in 'My System' control panel, the connection status is normal. Click [Disconnect] to disconnect, and go on the settings.

Name	Address	Status
1:RS-232	COM1	Connected
ModBus Master	RTU, 3, 1	Connected
TX Series	AUTONICS	(0) EA

5.10.2 Connect

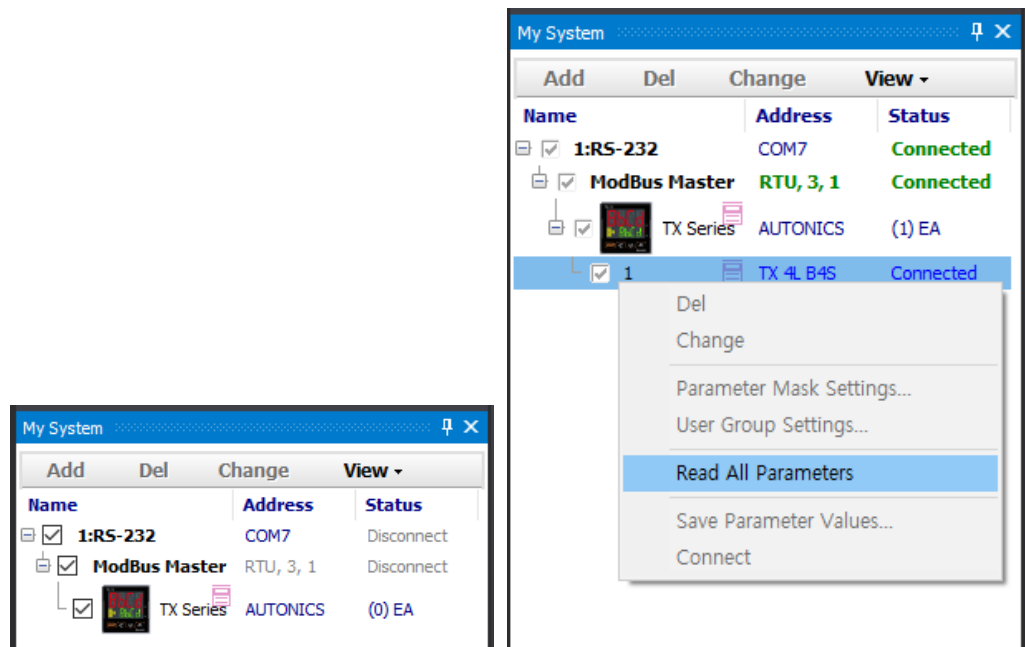
If click the [Connect] button on the 'Project - Run' menu, DAQMaster attempt to connect to the device unit that added in my system. Checking the connection status in My System is available. If the connection is successful, Status displays 'Connected'.



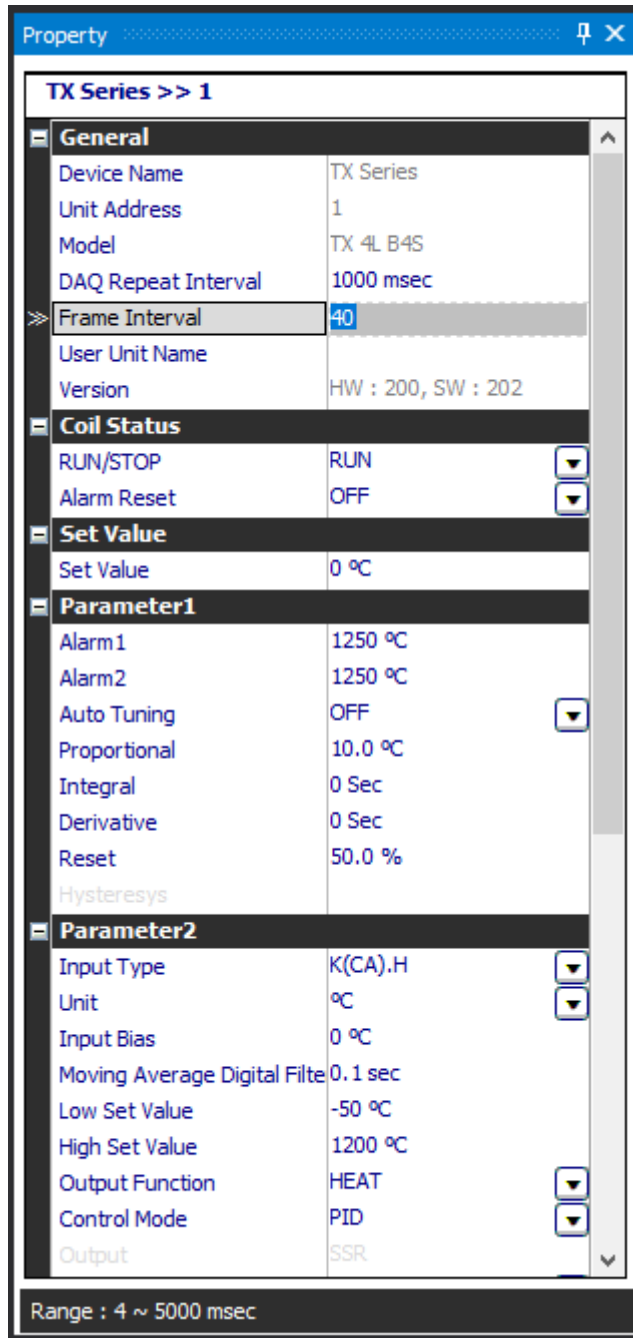
- Parameter setting

To edit a parameter of a connected unit in DAQMaster, it is needed to load parameters of the connected unit.

1st Select 'Unit address number' in 'My System' control panel and then right-click it to execute the 'Read All Parameters'.



2nd When the reading is completed, the 'Property' control panel displays the parameters. Checking and changing parameter is also available.



- If you only want to monitor parameter without editing, click [Run] button on 'Project – Run' menu.
- When parameter values are changed in the 'Property' control panel, changed values are immediately applied through communication with the device.
- During a parameter value change, all property values are displayed in gray (not modifiable). After changing, they are restored to the original color.
- To apply the changed value, change the value and press Enter key (for edit type), or select an item with the mouse or the Alt + arrow keys, and press enter (for list type).
- If a unit or a range related parameter is changed, all the parameters related to both are changed.

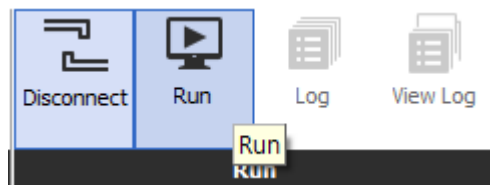
- If an out-of-range value is entered, the input is ignored and the value is restored to the original. The range is displayed at the bottom of the 'Property' control panel.
- The input format fixed parameter is only editable in the format.
- Values of parameters in 'Disable' status are not displayed and the item names are grayed out.
- In Reading mode, name and value of parameters are grayed out.
- The language of the parameters is not changed regardless of the selected language when installing the program.

5.10.3 Run

Starts real-time monitoring between the DAQMaster and unit device through the communication.

- Run

Click the [Run] button on the 'Project – Run' menu in 'Connect' status between the DAQMaster and unit device.



- Switch to the monitoring screen

Click [Runtime] button on the 'View – Layout' menu.

Switch to the monitoring mode based on the Runtime screen and the size of windows is minimized except for the upper menu.

※ To open the minimized window, click each window in [Tool] button on the 'View-Tool' menu or click [Default] button on the 'View – Layout' menu to restore default.



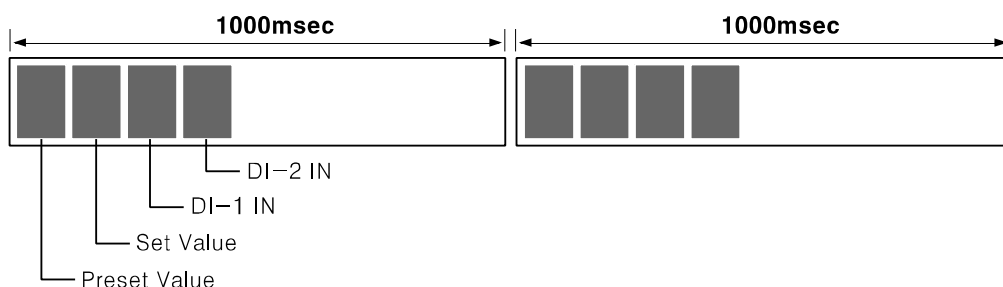
Note

- Setting a reading repetition of the unit (DAQ Repeat Interval)

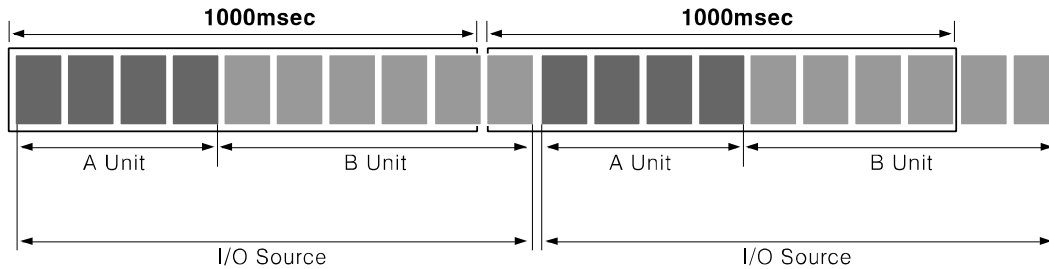
Click the connected 'Address number' in the 'Name' row of 'My System' control panel, and set 'DAQ Repeat Interval' under 'General' in 'Property' control panel.

It is a reading repetition time of the I/O source from connected unit in 'Run' status. The default value is 1000 msec.

If four I/O sources are added to DAQ List, the program receives data of four I/O sources from connected units and another four after 1000 ms passed, as shown in the diagram below. When the number of I/O do not exceed the Repeat Interval value(1000 ms), the program brings data base on the cycle.



When a large number of I/O sources are added, data reading cycle may exceed the defined Repeat Interval, as shown in the image below.



In this case, the program has the minimum interval instead of 'DAQ Repeat Interval' set value.

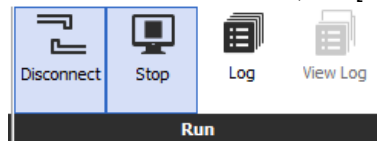
As a result, if actual I/O data reading time exceeds the set 'DAQ Repeat Interval' set value(time), the program and the units communicate on the minimum time interval required to read all I/O sources.

※ If the environment requires a precise set value and rapid repetition interval, add RS-232 port(s) and split the device connection.

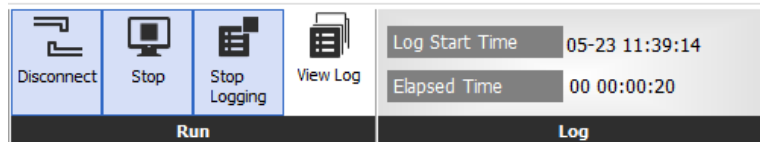
5.10.4 Log

Saves communication data between DAQMaster and the device to the user-defined file.

1st When the status is 'Run', the [Log] button is activated on the upper menu.



2nd If you start logging, log start time and elapsed time are displayed on the right side.



3rd If you click [Stop Logging], saving file is available. Files are saved as DAQ Data File (*.ddf) and CSV File (*.csv) format.

4th If you click [View Log], the data analysis program is activated.

※ For the information about data analysis program, refer to '8.1 Data Analysis'.

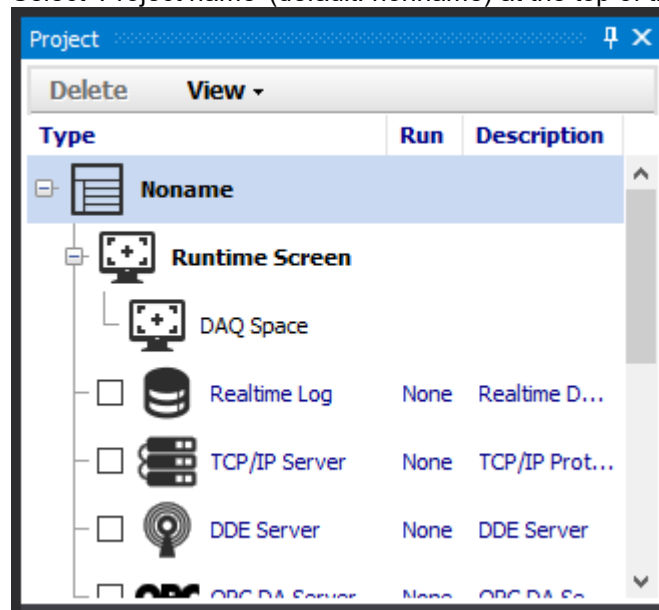
5.11 Save and Open Project

5.11.1 Save

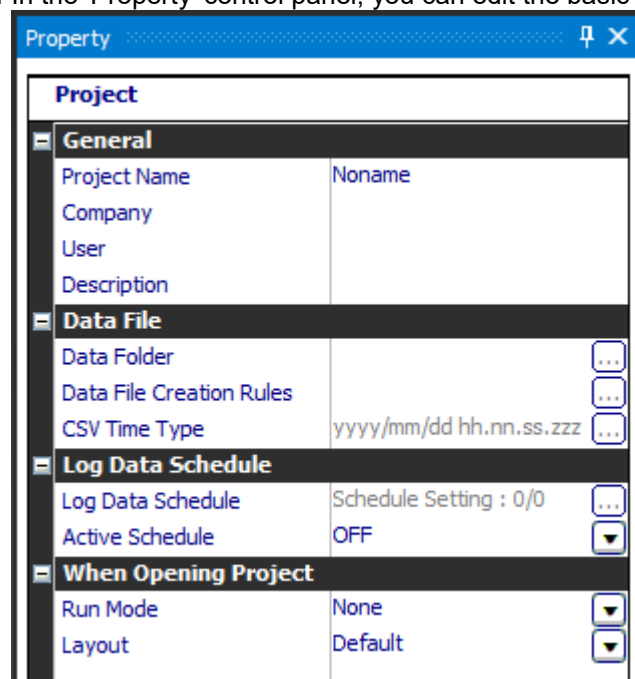
Saves the project on monitoring.

Set values of device, RS-232 configuration, repeat interval, runtime screen are saved. Before saving, it specify project properties as follows.

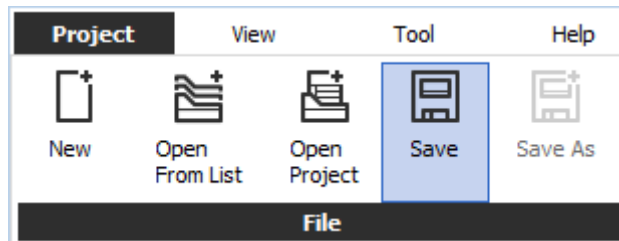
1st Select 'Project name' (default: nonname) at the top of the project tree.



2nd In the 'Property' control panel, you can edit the basic project information.



3rd Click [Save] button in the 'Project - File' menu and save the project in the desired location.



5.11.2 Open Project

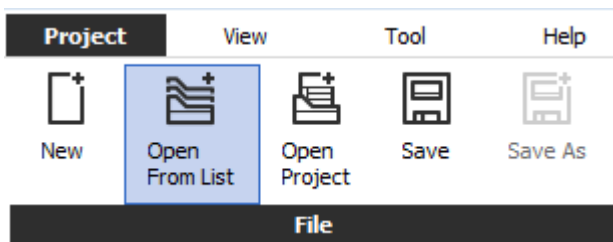
Opens a saved file.

There are two ways to open a project, 'Open Project' and 'Open From List'. It is possible to open a project when communication is not connected.

- Open project

Directly selecting a project file is the most common way to open a project file.

Click [Open] button in the 'Project - File' menu and select a file.

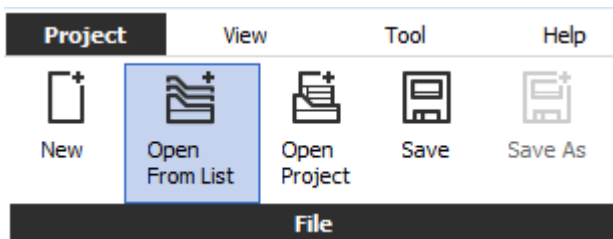


- Open From List

It is used to open a file from a list of frequently used projects.

'Project List' control panel opens by clicking [Open From List] button in the 'Project - File' menu.

Select the desired project name in the 'Project List' control panel.



Note

For more information about 'Project List', refer to '5.3 Project List'.

5.12 Program Language

5.12.1 Change Language

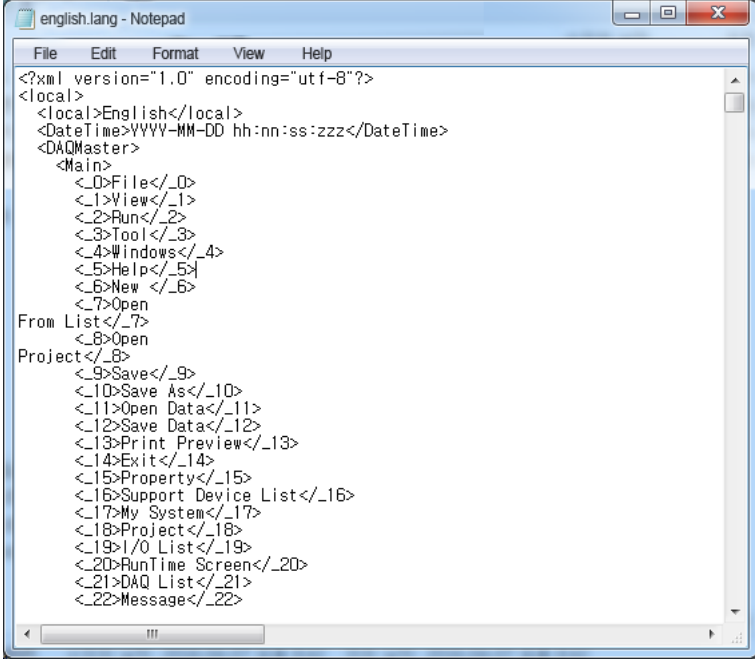
Changes the language of DAQMaster. Default language is the program installation language.

Click [Language] button to select the language option in the 'View - Language' menu.

5.12.2 Modifying and Adding Languages

DAQMaster program allows users to add and modify the language. Language files reside in 'lang' folder in the installation folder. Its default format is XML.

To modify or add language, open the language file in Notepad as below.



```
english.lang - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<local>
  <local>English</local>
  <DateTime>YYYY-MM-DD hh:nn:ss:zzz</DateTime>
  <DAQMaster>
    <Main>
      <_0>File</_0>
      <_1>View</_1>
      <_2>Run</_2>
      <_3>Tool</_3>
      <_4>Windows</_4>
      <_5>Help</_5>
      <_6>New </_6>
      <_7>Open
From List</_7>
      <_8>Open
Project</_8>
      <_9>Save</_9>
      <_10>Save As</_10>
      <_11>Open Data</_11>
      <_12>Save Data</_12>
      <_13>Print Preview</_13>
      <_14>Exit</_14>
      <_15>Property</_15>
      <_16>Support Device List</_16>
      <_17>My System</_17>
      <_18>Project</_18>
      <_19>I/O List</_19>
      <_20>RunTime Screen</_20>
      <_21>DAQ List</_21>
      <_22>Message</_22>
```

To add a language, copy and rename the existing language file.

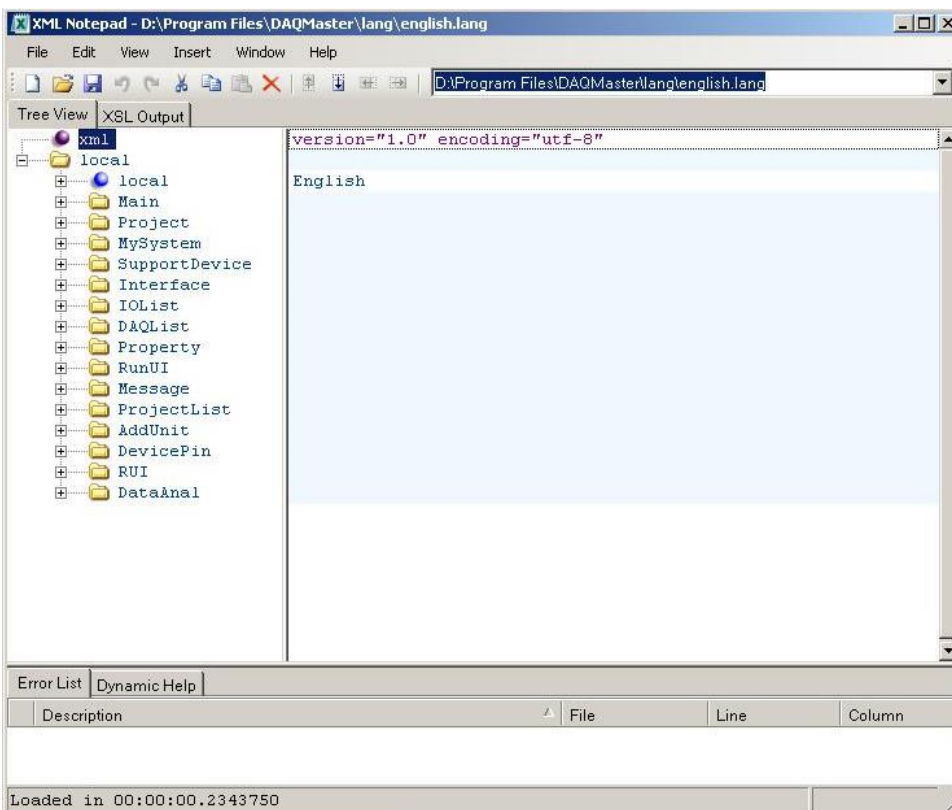
Change the title of language In <local>English</local> section in English. (highlighted with a square in the image below), change the English contents to your desired language and save.

(For example, to change to Korean: Change 'File' to '파일'.)

```

K?xml version="1.0" encoding="utf-8"?
<local>
<local>Korean</local>
<DateTime>YYYY-MM-DD hh:nn:ss:zzz</DateTime>
<DAQMaster>
  <Main>
    <_0>파일</_0>
    <_1>보기</_1>
    <_2>설정</_2>
    <_3>도구</_3>
    <_4>윈도우즈</_4>
    <_5>도움말</_5>
    <_6>새 작업</_6>
    <_7>리스트에서
열기</_7>
    <_8>열기</_8>
    <_9>저장</_9>
    <_10>다른 이름
으로 저장</_10>
    <_11>데이터 열기</_11>
    <_12>데이터 저장</_12>
    <_13>인쇄 미리보기</_13>
    <_14>종료</_14>
    <_15>속성</_15>
    <_16>지원 디바이스 리스트</_16>
    <_17>내 시스템</_17>
    <_18>프로젝트</_18>
    <_19>I/O 리스트</_19>
    <_20>러타임 화면</_20>
    <_21>DAQ 리스트</_21>
    <_22>메시지</_22>
  
```

Since the default language file is in XML format, you can edit the file using XML Notepad (a freeware provided by Microsoft) as below.

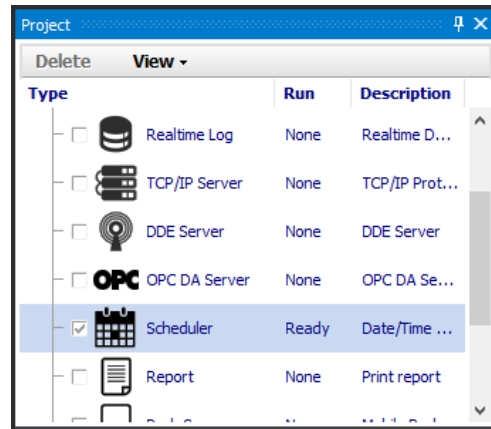


6 Project management

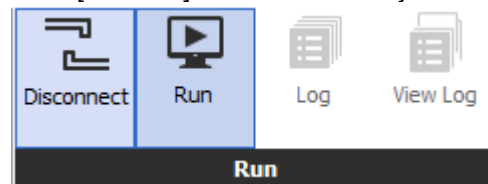
This chapter explains how to manage the DAQMaster projects.

6.1 Run

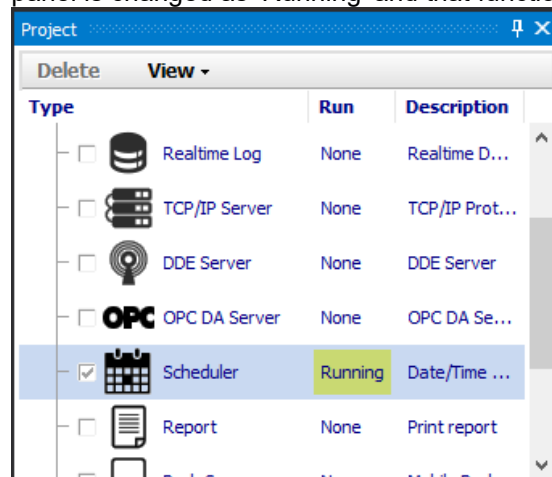
- 1st Check the checkbox next to the name of project management in the 'Project' control panel whether activate it.
Select the checkbox. When the phrase of 'Run' row is changed as 'Ready', function is activated to use.



- 2nd Click [Connect] button in the 'Project - Run' menu.



- 3rd Click [Run] button in the 'run' tab. The phrase of 'Run' row in the 'Project' control panel is changed as 'Running' and that function is activated.

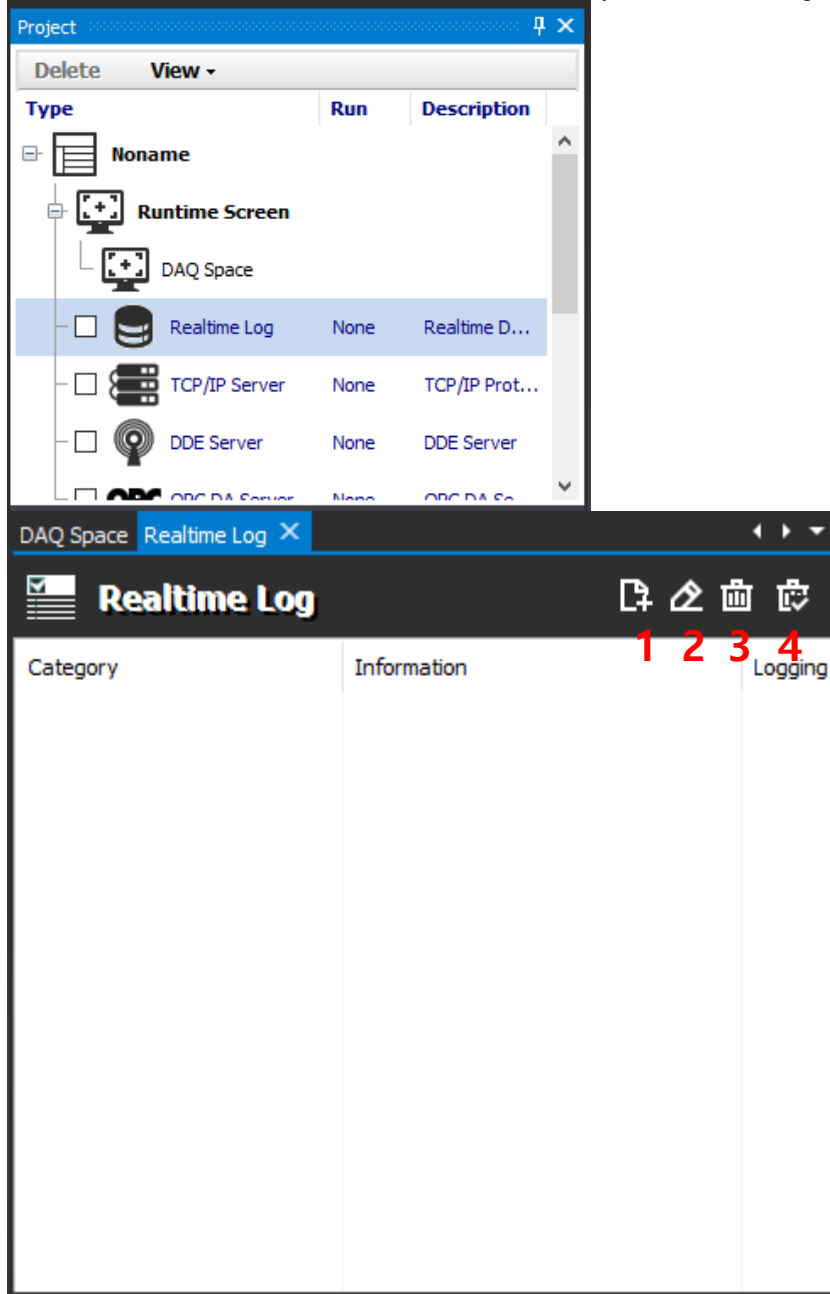


6.2 Realtime log

Executes logging per each I/O following to set cycle and condition.

6.2.1 Setting

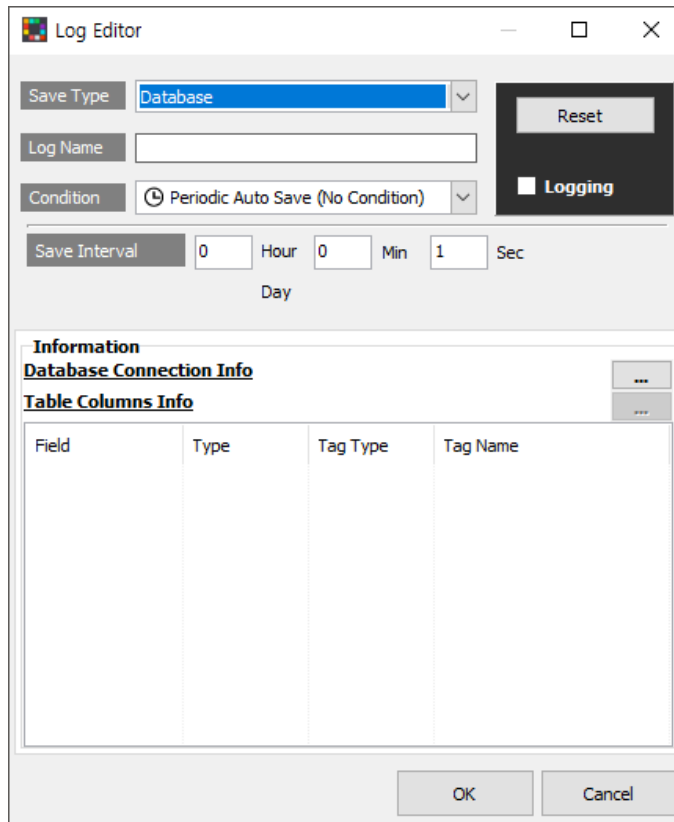
When double-click [Realtime Log] button in the 'Project' control panel, 'Realtime Log' window is opened on 'DAQ Space' and it is possible to modify the detail setting.



No	Item	Description
1	Log Editor	Executes the Log Editor
2	Edit	Edits the value of selected log
3	Del	Deletes selected log
4	Delete All	Deletes all logs on the list.

(1) Log Editor

- Save Type: Database



- Log Name: Enter a log name
- Condition: Select the condition which log follow.

Condition		Description
No condition	🕒	No condition
Equal	=	When selected tag value is equal to the set value, logging starts.
Less Than	<	Execution when selected tag value is less than the set value.
Greater Than	>	Execution when selected tag value is greater than the set value.
Equal or Less than	≤	Execution when selected tag value is equal or less than the set value.
Equal or Greater than	≥	Execution when selected tag value is equal or greater than the set value.
Not equal	≠	Execution when selected tag value is not equal to the set value.
Rising edge	↗	Execution when selected tag value is rising edge, logging starts.
Falling edge	↘	Execution when selected tag value is falling edge, logging starts.

- Save Interval: set time interval to save log.
- Logging: Starts logging when DAQMaster is executed. A File (*.prf) is created in the designated folder.
- Reset: Initialize all parameter settings of the Log Editor.
- Information: Sets the database related items.

※ For more information about database, refer to '7.2 Database'.

▪ Save Type: CSV File

The screenshot shows the 'Log Editor' dialog box with the following settings:

- Save Type:** CSV File
- Log Name:** (empty text box)
- Condition:** Periodic Auto Save (No Condition)
- Save Interval:** 0 Hour, 0 Min, 1 Sec
- File Devison:** 1 Day, 0 Hour, 0 Min
- Buttons:** Reset, Logging (checkbox), OK, Cancel
- Information Section:**
 - File Path Information:** Folder, File Name, File Name Rule
 - Tag List Information:** Table with columns Device and Tag Name

- Log Name: Enter a log name
- Condition

Condition		Description
No condition	🕒	No condition
Equal	=	When selected tag value is equal to the set value, logging starts.
Less Than	<	Execution when selected tag value is less than the set value.
Greater Than	>	Execution when selected tag value is greater than the set value.
Equal or Less than	≤	Execution when selected tag value is equal or less than the set value.
Equal or Greater than	≥	Execution when selected tag value is equal or greater than the set value.
Not equal	≠	Execution when selected tag value is not equal to the set value.
Rising edge	↗	Execution when selected tag value is rising edge, logging starts.
Falling edge	↘	Execution when selected tag value is falling edge, logging starts.

- Save Interval: Set time interval to save log.
- Logging: Starts logging when DAQMaster is executed. A File (*.prf) is created in the designated folder.
- Reset: Initialize all parameter settings of the Log Editor.
- File Path Information: In information box, set 'File Path Information' and 'Tag List Information.' Proceed the file path information settings as below.

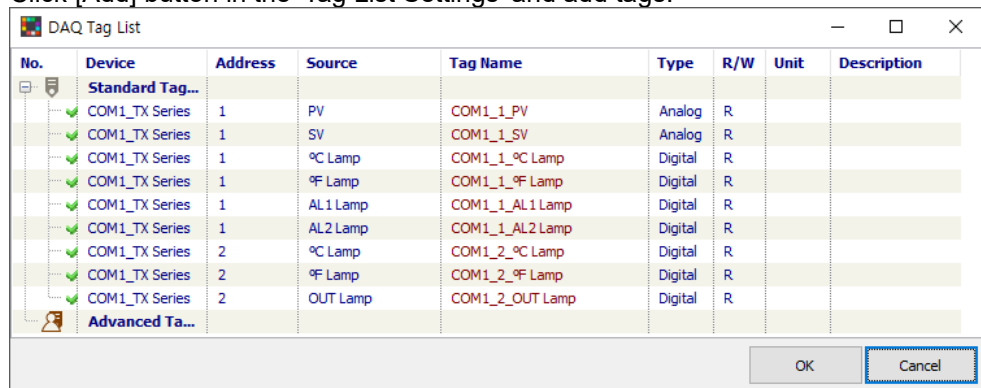
1st Click [...] button in 'File Path Information' to set 'File Path Settings: Folder, File Name, File Name Rule'.

The screenshot shows the 'CSV Log Editor' dialog box with the 'File Path Settings' section active. It contains three input fields: 'Folder', 'File Name', and 'File Name Rule'. The 'File Name Rule' field is populated with the text '[Time(hh.nn.ss)] + [Date(yyyy-mm-dd)]'. Below these fields is a list of available tokens: 'Automatic Sequential Numbers', 'File Name', 'Space', 'Date(yyyy-mm-dd)', and 'Time(hh.nn.ss)'. The 'Date(yyyy-mm-dd)' token is currently selected. To the right of this list is a preview area showing the selected tokens: 'Time(hh.nn.ss)' and 'Date(yyyy-mm-dd)'. A 'Delete All' button is located below the preview area. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

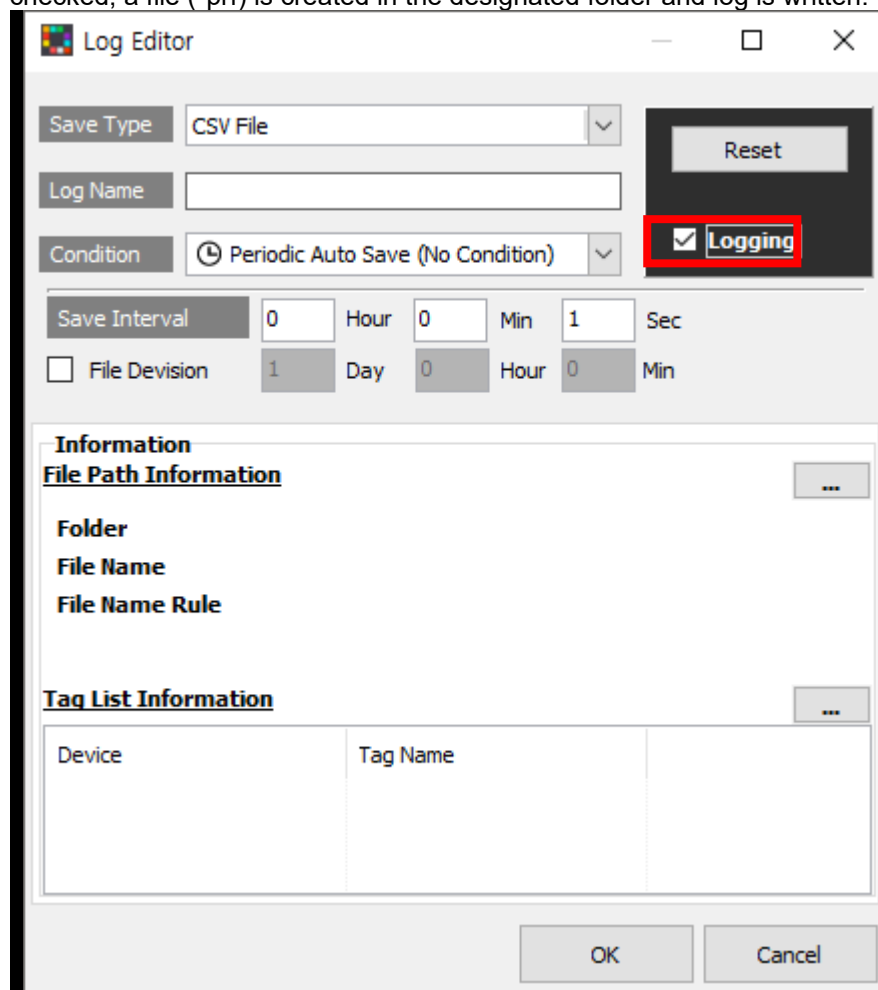
2nd Click [...] button in 'Tag List Information' to set 'Tag List Settings'.

The screenshot shows the 'CSV Log Editor' dialog box with the 'Tag List Settings' section active. It features three buttons at the top: 'Add', 'Del', and 'Delete All'. Below these is a table with two columns: 'Device' and 'Tag Name'. The table is currently empty. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

3rd Click [Add] button in the 'Tag List Settings' and add tags.



4th To start logging when DAQMaster is executed, check 'logging'. If 'logging' is checked, a file (*.prf) is created in the designated folder and log is written.

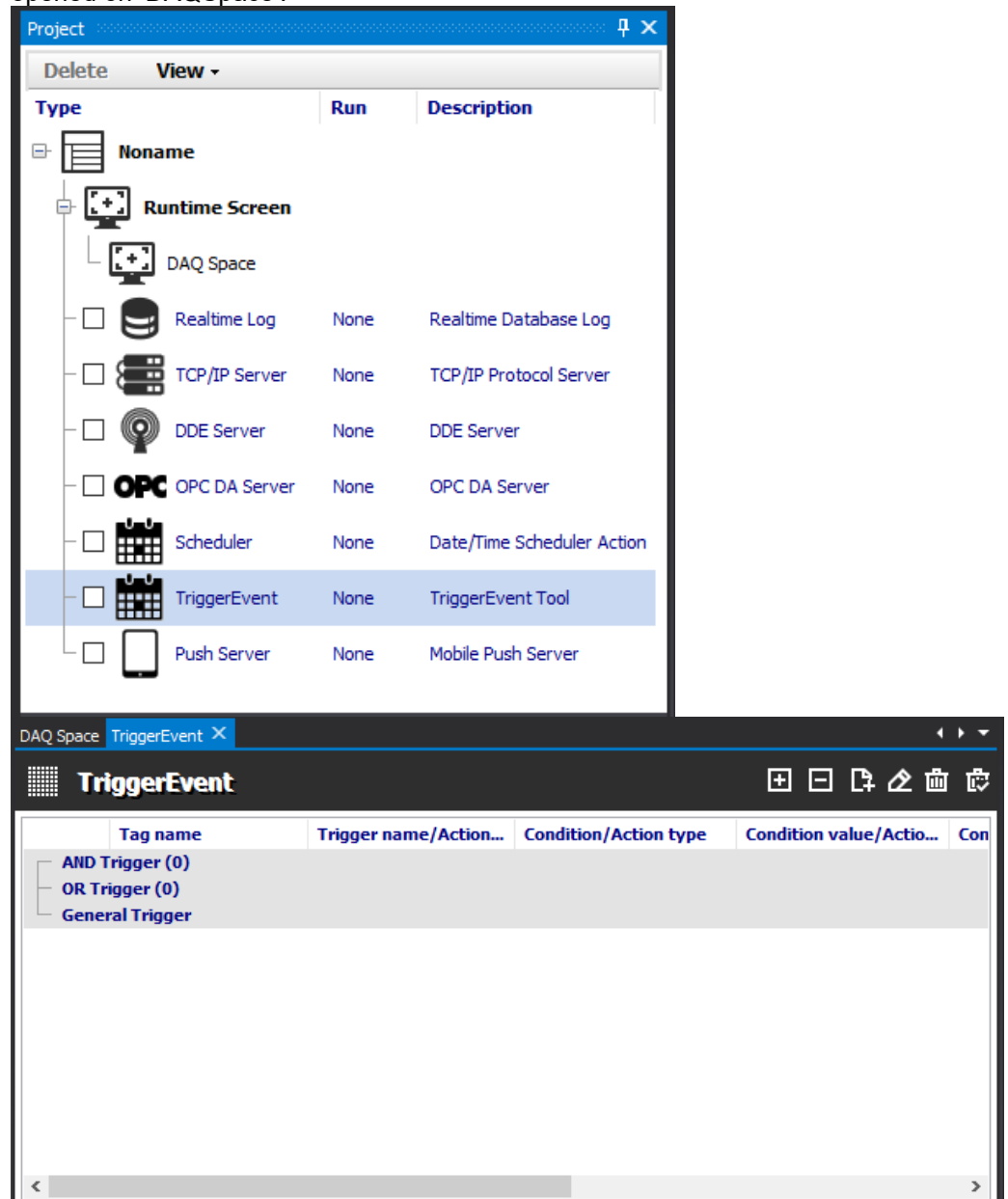


6.3 Trigger Event

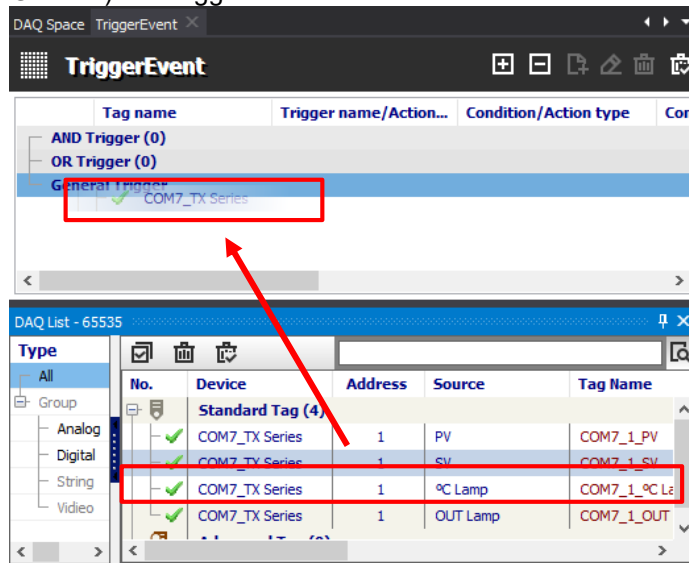
Conducts preset action by user set condition (Trigger) automatically.

6.3.1 Setting

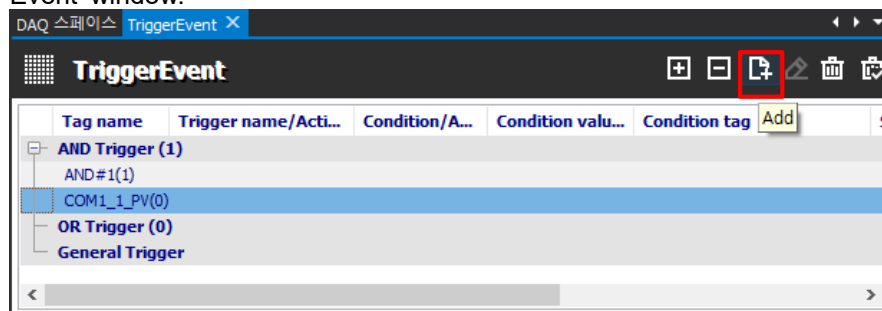
1st Double click [TriggerEvent] button in 'Project' control panel, 'TriggerEvent' window is opened on 'DAQSpace'.



2nd Drag I/O tag from 'DAQ List' control panel to one of the trigger types (AND, OR, General) on 'TriggerEvent' window.



3rd Select I/O tag on 'TriggerEvent' window and click [Add] button to open 'Tag Trigger Event' window.








4th Input the items in 'Tag Trigger Event' by referring to below descriptions.

- Trigger name
Set the name of trigger.
- Trigger conditions

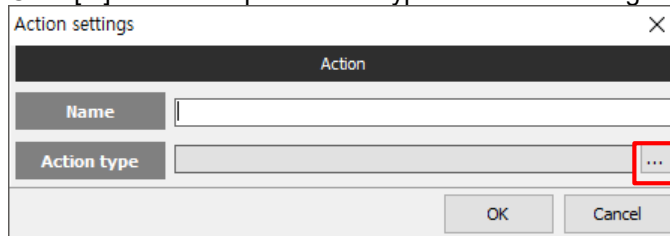
Condition		Description
No Condition		No Condition
Equal	=	When selected tag value is equal to the set value, trigger starts.
Less than	<	When selected tag value is less than the set value, trigger starts.
Greater than	>	When selected tag value is greater than the set value, trigger starts.
Equal or Less than	≤	When selected tag value is equal or less than the set value, trigger starts.
Equal or Greater than	≥	When selected tag value is equal or greater than the set value, trigger starts.
Not Equal	≠	When selected tag value is not equal to the set value, trigger starts.
Rising Edge		When rising edge signal is input, trigger starts.
Falling Edge		When falling edge signal is input, trigger starts.
Static Maintain		When the value is maintained during the set time, trigger starts.

- Static Maintain Time
Execute an action after set time.

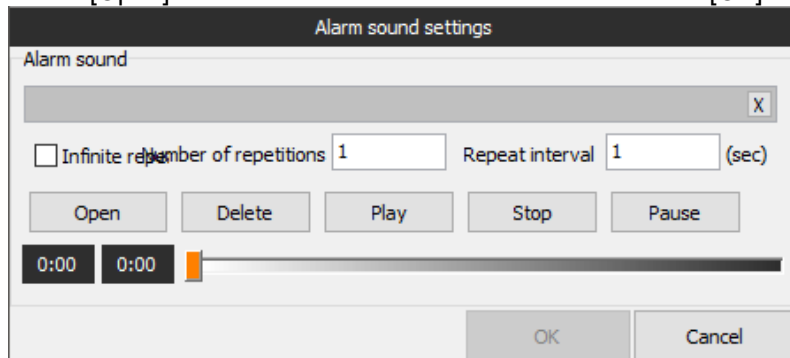
- Check Time
When the set trigger condition is satisfied during the set check time, trigger starts.
- Action management

Management		Description
Add an action		Adds an action. You can set an action name and type.
Modify an action		Modify an action on the list.
Copy an action		Copy an action on the list.
Delete an action		Delete a trigger on the trigger list.
Delete all an actions		Delete all triggers on the trigger list.

5th Click [...] button to open 'Action type' in 'Action settings' window.



- Action type
 - Start log: starts the log function.
 - End log: stops/ends the log function.
 - Send a telegram message: sends a telegram message.
※ For more information about the telegram settings, refer to '6.3.2 Telegram setting'.
 - Play alarm sound: plays the selected sound file.
Select [Open] button to choose desired sound file and click [OK] to apply it.



- Tag Out: Outputs user-defined value to the specified tag in the 'Tag Out' Settings. Click [Tag list] and select the desired tag. And enter the value to the 'Value' and click [OK] to apply it.

- Tag error: Outputs the user-defined tag error to the specified tag. Click [Tag list] and select the desired tag. And click [OK] to apply it.

- Tag alarm: prints the user-defined tag alarm to the specified tag. Click [Tag list] and select the desired tag. And click [OK] to apply it.

- Send push alarm: transfers the tag information to the added device.
 - ※ For more information about the 'Push Server', refer to '6.8 Push Server'.
 Select the desired push server, select tag value to transfer (Time, Tag Name, Present Value) and click [OK] button.

Push Server Config

No	Name	Description

Push Server

GUID

Name Description

Tag settings

Tag

Device

TagName

Description

Message settings

Time Tag Name Present Value

- Realtime log: execute the real time log which have already set.
 ※ For the information about realtime log, refer to '6.2 Realtime log'.
 Select realtime log name on the list and click [OK] button.

RealtimeLog Setting

No	Name	Description

Report

GUID

Name Start log

6.3.2 Telegram setting

Telegram is a nonprofit open source internet messenger, available in diverse operating system such as Android, iOS, Window, MAC and Linux. It provides users with source code, encouraging them to develop desired functions with the messenger.

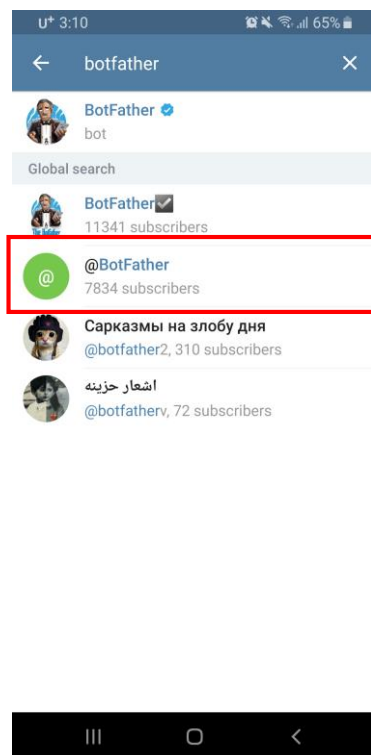
By the Bot, virtual conversation contact, when tag value matches the set condition,

Telegram message is sent to the designated person. (Internet connection is required.).

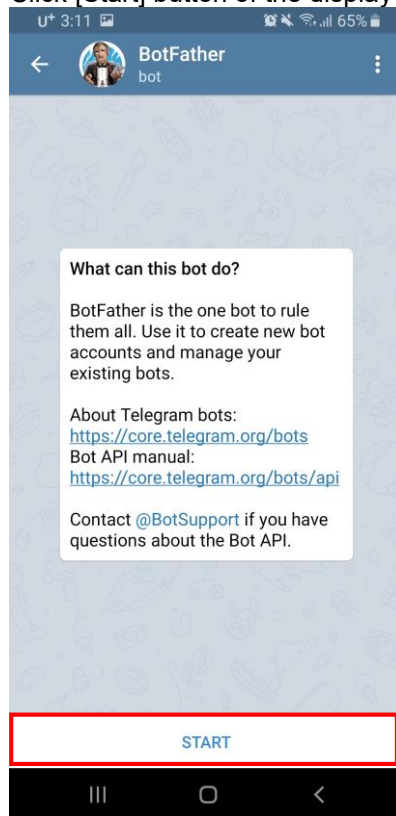
By telegram functions, you can share the message to the other groups and search the messages. Please refer to the telegram usage. (Android and iOS system have an identical setting process. This manual explains with Android)

1st Search “Telegram” at the Andriod Play store and download the application.

2nd You have to create and register a virtual robot called Bot to receive messages from DAQMaster. In the telegram (at the upper the magnifying glass icon), search and select @Botfather.



3rd Click [Start] button of the display as below.



4th According to the BotFather message, name a Bot name, Bot user name (must end with 'bot' or 'Bot').
identifying name at the telegram. If the other named the designated name already, it is not used in duplicate.

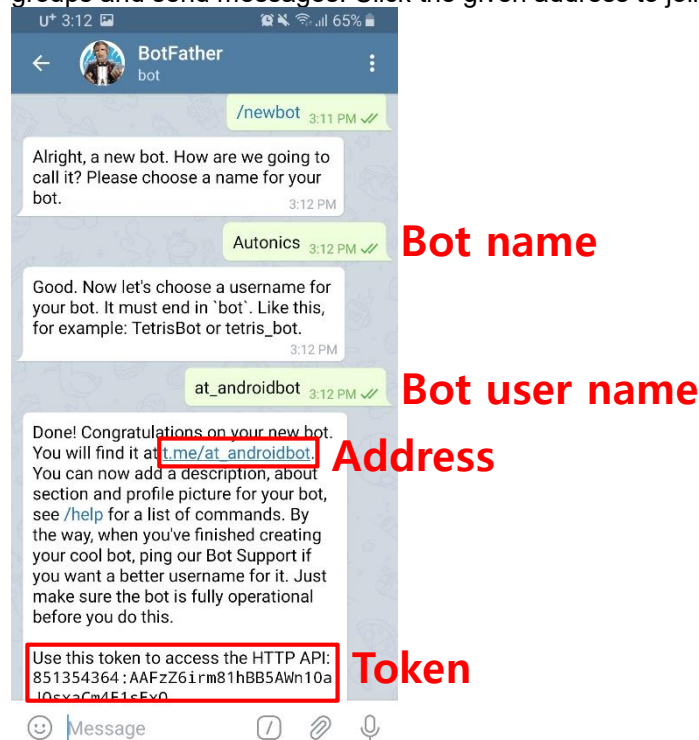
(E.g. Bot name: Autonics, user name:at_androidbot)



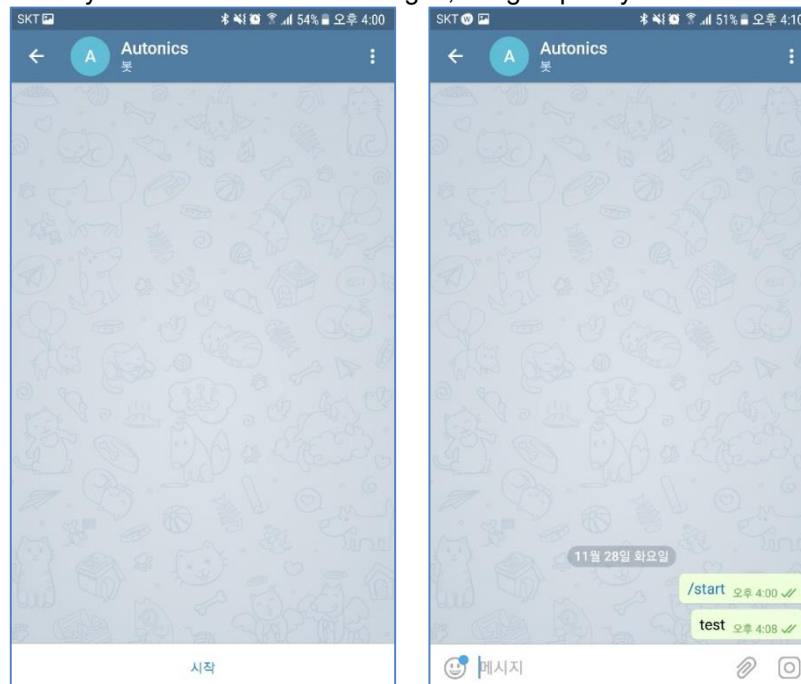
Bot name

Bot user name

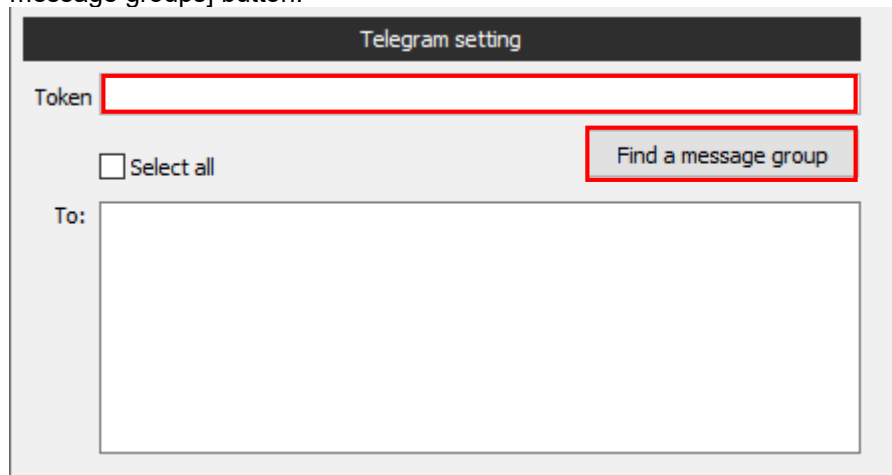
5th Then you are provided with address to chat with the created Bot and token. Token is as same function as the serial number or register code, so it is essential to find chat groups and send messages. Click the given address to join chat with the Bot.



6th Click [Start] at the button of the display. One or two times of message are necessary prior to receiving message from your Bot. If you do not send the messages, the group may not be searched.

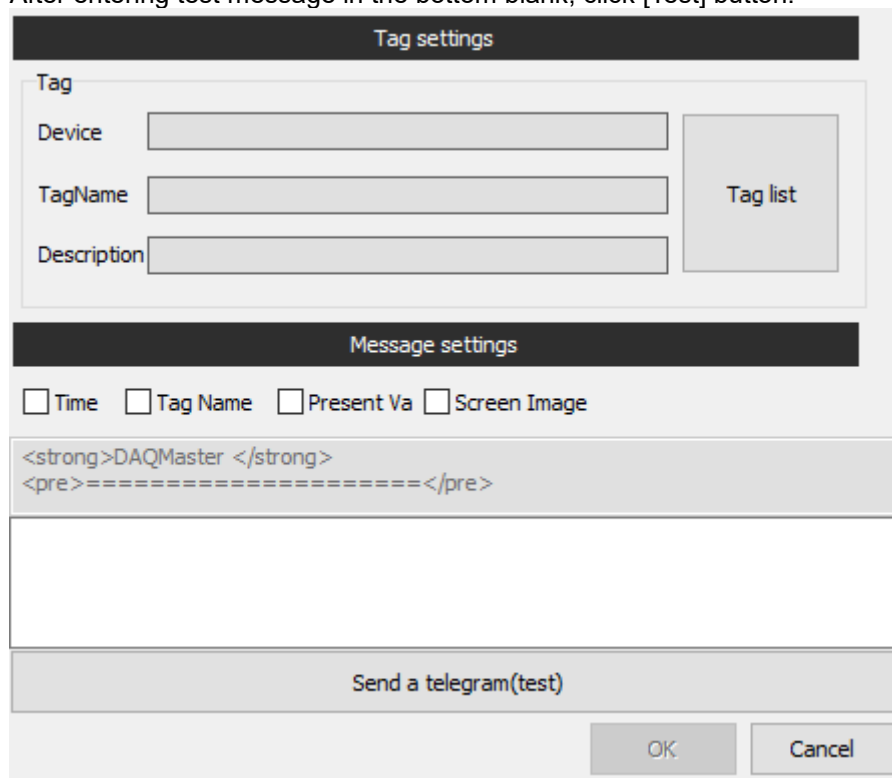


- 7th Go back to the DAQMaster, the function that supports sending Telegram message is executed. Enter the token issued in 5th step to the 'Telegram Setting' and click [Find a message groups] button.



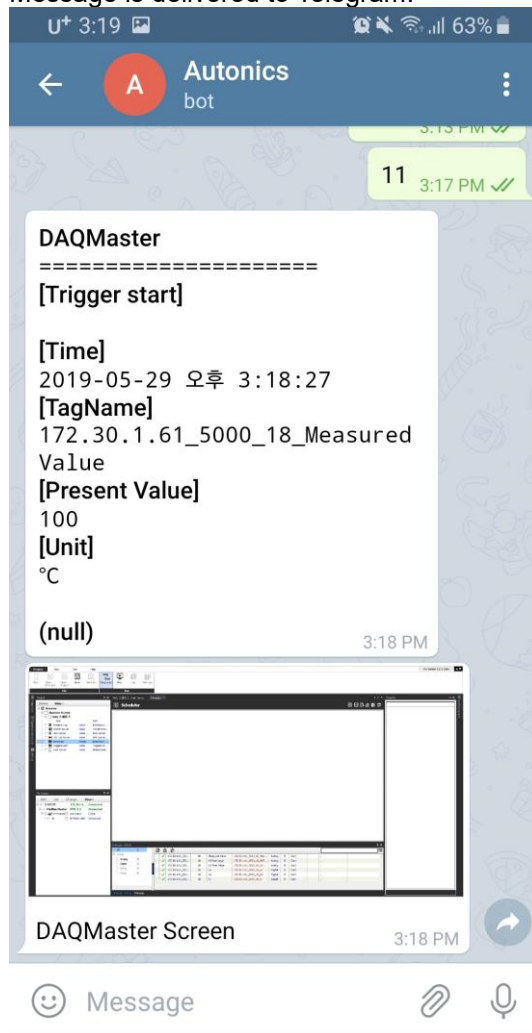
The screenshot shows a dialog box titled "Telegram setting". It contains a "Token" input field, a "Select all" checkbox, and a "Find a message group" button. Below these is a "To:" label followed by a large empty text area.

- 8th Check the desired receiver, select chat to use and choose alarm message format among 'Time', 'Tag Name', 'Present Value' and 'Screen Image'. After entering test message in the bottom blank, click [Test] button.



The screenshot shows two stacked dialog boxes. The top one is titled "Tag settings" and has a "Tag" section with "Device", "TagName", and "Description" input fields, and a "Tag list" button. The bottom one is titled "Message settings" and has four checkboxes: "Time", "Tag Name", "Present Va", and "Screen Image". Below the checkboxes is a text area containing the code: `DAQMaster ` and `<pre>=====</pre>`. At the bottom of the dialog is a "Send a telegram(test)" button and "OK" and "Cancel" buttons.

9th Message is delivered to Telegram.



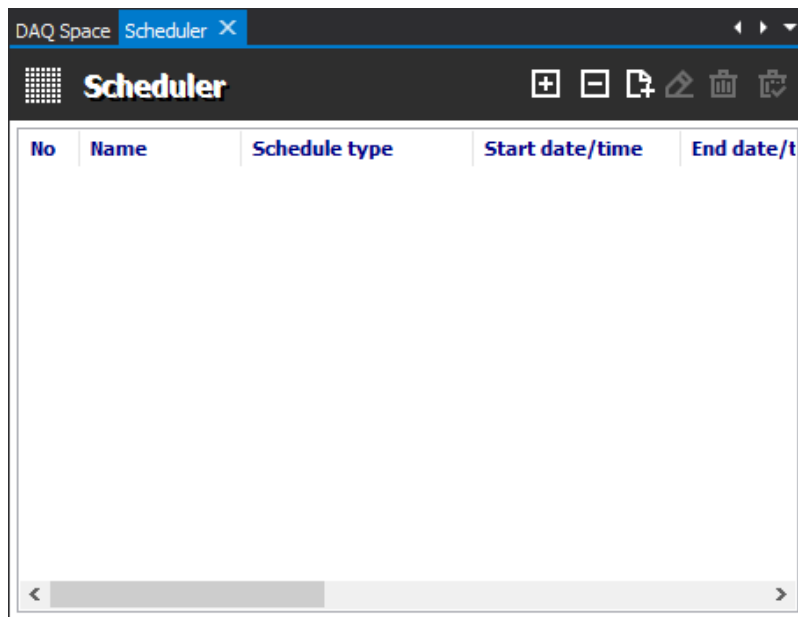
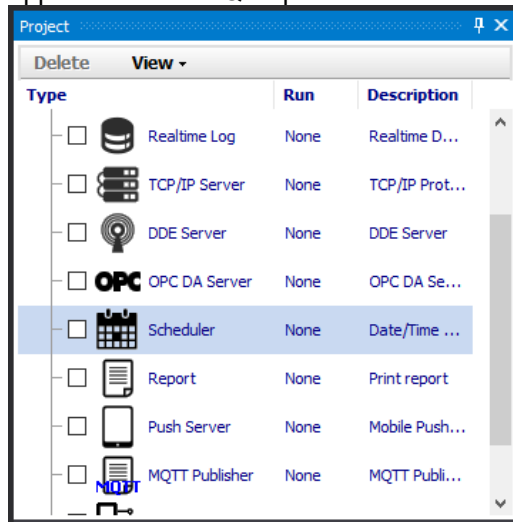
6.4 Scheduler


Conducts preset action by user set time (Schedule) automatically.

6.4.1 Setting

- Schedule the event

1st Double-click [Scheduler] in the 'Project' control panel, then 'Scheduler' window appears in the DAQ Sapce.



2nd To add a schedule, click  icon and open the 'Scheduler settings' window.

3rd Select the date and time to execute an event in the date/time tab.

Schedule type: Sets the time delay of the execution after the scheduler starts.

Item	Description
Once	Run once when the scheduler starts.
Every day	Run every day
Every week	Run for every week on certain day
Monthly	Run for every month on certain day or week.
Every year	Run for every certain year.

Advanced Settings: Set repetition interval, repetition period and end date/time.

Item	Description
Repetition interval	Sets the repetition interval of the schedule.
Repetition period	Sets the repetition period of the schedule to be executed.
End date/time	Sets the date/time to end repetition interval of the schedule.



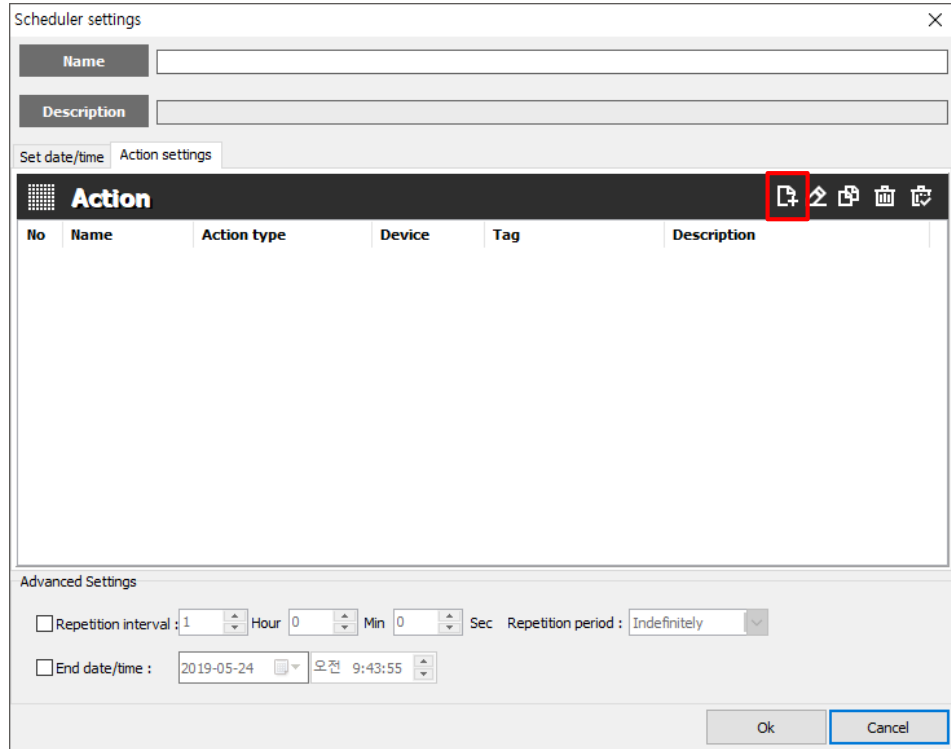
Ex.

This is an example of advanced settings. Repetition interval and period is 1 hour and 1 days.

4th Click 'Action settings' tab to set the detailed event of schedule. To add an action, click [Add] button and then 'Action settings' window appears.

※ Setting an action related to the tag is only available to the I/O items that is added to the DAQ List.

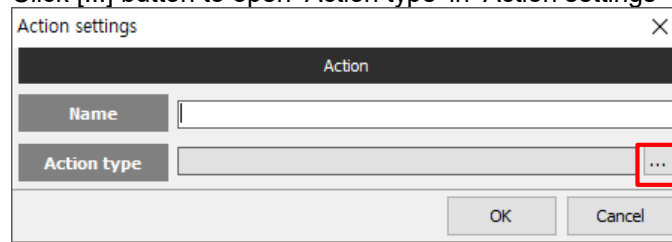
※ For the method of Adding I/O items to the DAQ List, refer to '5.6 I/O List'.



- Action management

Management		Description
Add an action		Adds an action. You can set an action name and type.
Modify an action		Modify an action on the list.
Copy an action		Copy an action on the list.
Delete an action		Delete a trigger on the trigger list.
Delete all an actions		Delete all triggers on the trigger list.

5th Click [...] button to open 'Action type' in 'Action settings' window.



The screenshot shows a dialog box titled "Action settings" with a close button (X) in the top right corner. Below the title bar is a dark header labeled "Action". There are two input fields: "Name" and "Action type". The "Action type" field has a red box around its right side, which contains three dots (...). At the bottom right are "OK" and "Cancel" buttons.

- Action type
Action type of 'Scheduler' is same as action type of 'Trigger Event'.
For the details, refer to '6.3 Trigger Event'.

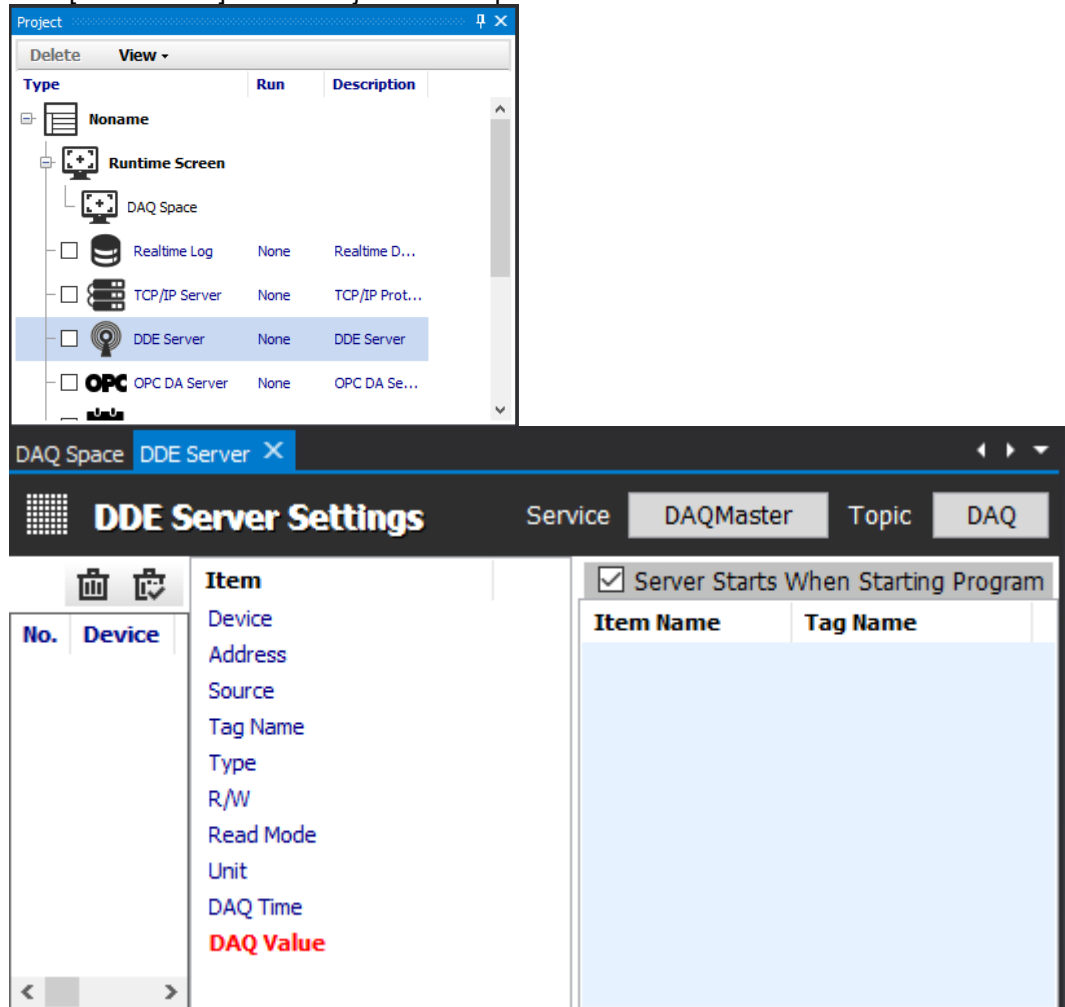
6.5 DDE Server

Performs as a DDE(Dynamic Data Exchange) Server, allowing communication among programs in Microsoft Windows system and provides protocol or format of instructions and message to applications.

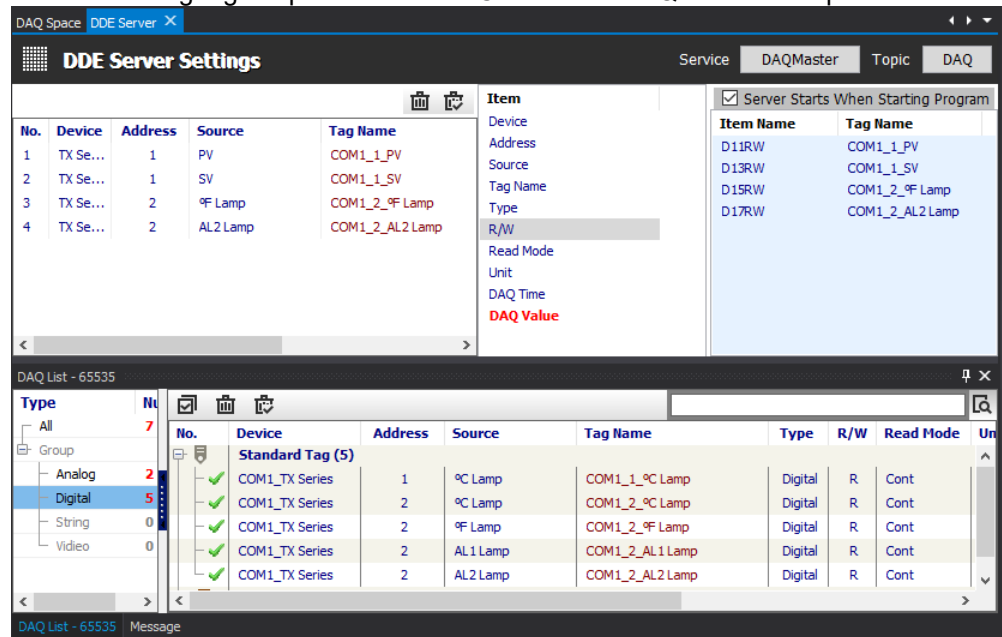
External programs can exchange data of DAQMaster with each other through DDE Server.

6.5.1 Setting

- 1st To open 'DDE Server Settings' window appears in the DAQ Space window, double-click [DDE Server] in the 'Project' control panel.



2nd Enter a each name of 'Sevice' and 'Topic' (e.g. Service: DAQMaster, Topic: DAQ) and select and drag tags to provide to DDE Client from 'DAQ List' control panel.



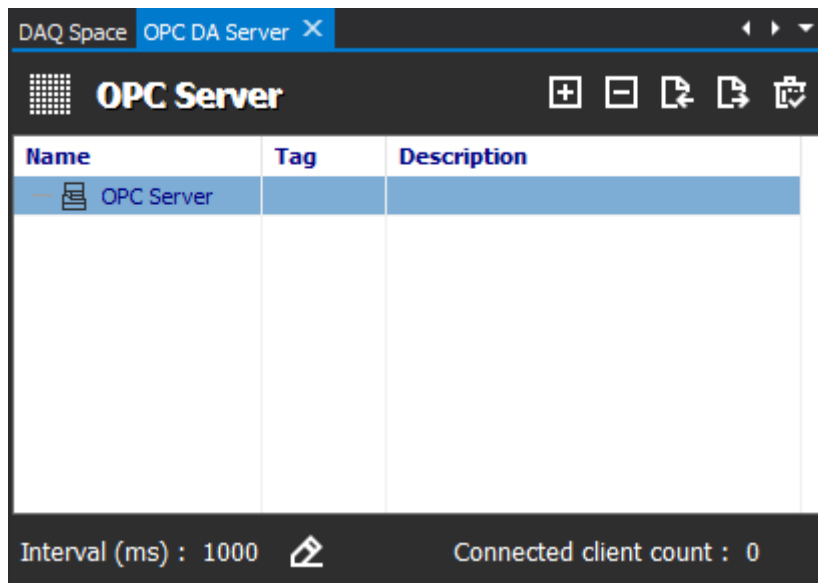
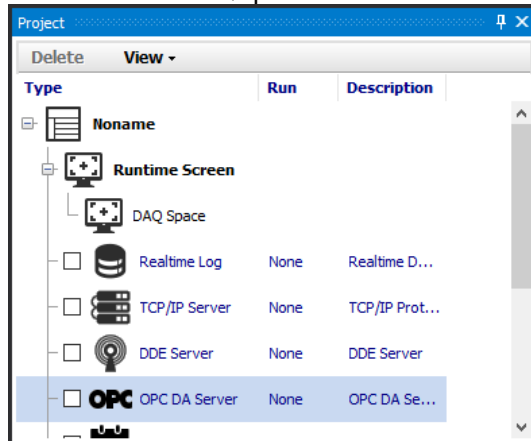
6.6 OPC DA Server

It is Interface method for better compatibility among application programs based on OLE/COM and DCOM technology of Microsoft. It provides industry standard mechanism for communication and data conversion between client and server..

For more information about the OPC Client, refer to '7.6 OPC Client'.

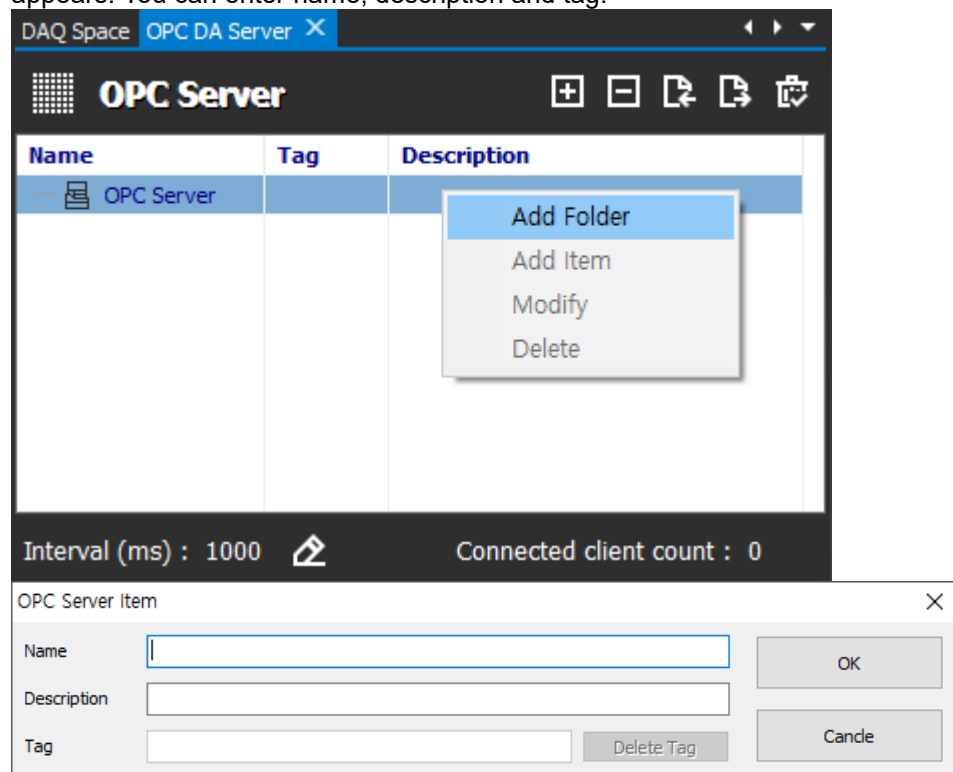
6.6.1 Setting

- 1st Double-click [OPC DA Server] in the 'Project' window to open 'OPC DA Server' window in the DAQSpace window.

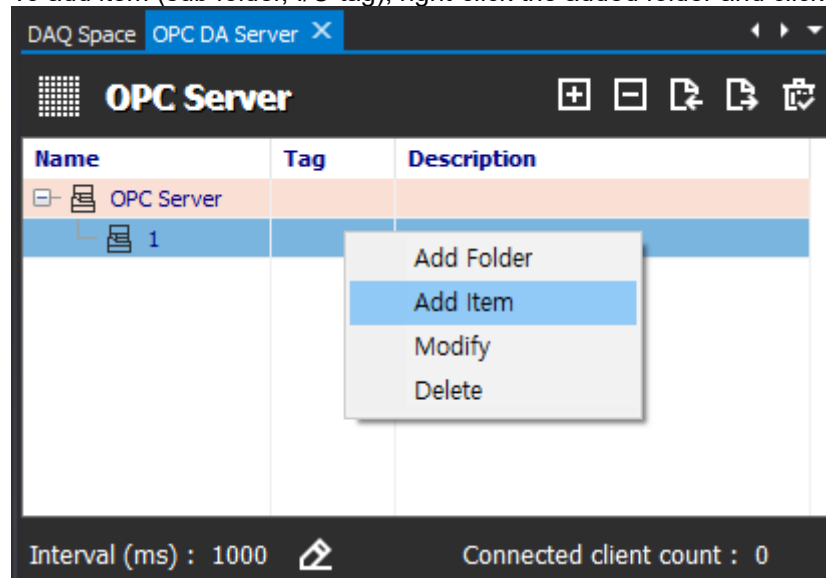


※ Top-level folder is only available to add folders.

2nd Right-click 'OPC Server' and select [Add Folder], then 'OPC Server Item' window appears. You can enter name, description and tag.



3rd To add item (sub folder, I/O tag), right-click the added folder and click [Add item].



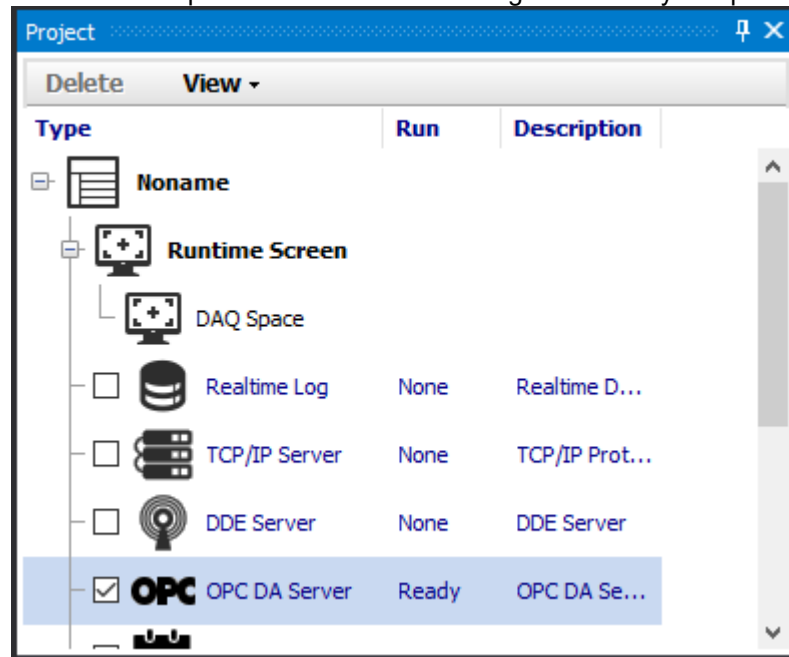
4th 'OPC Server Item' window appears showing I/O list that is registered to the DAQ List. Double-click the name of I/O list item to register the name. You can load the desired I/O item by dragging it from the DAQ List. But, two or more I/O items with same name are not registered in an one folder.

※ Register the I/O items with same name is available on the folders with different locations.

Gene...	Device	Address	Source	Tag Name	Type	R/W
✓ 1	COM1_TX Series	1	PV	COM1_1_PV	Analog	R
✓ 2	COM1_TX Series	1	°C Lamp	COM1_1_°C Lamp	Digital	R
✓ 3	COM1_TX Series	1	SV	COM1_1_SV	Analog	R
✓ 4	COM1_TX Series	2	°C Lamp	COM1_2_°C Lamp	Digital	R
✓ 5	COM1_TX Series	2	°F Lamp	COM1_2_°F Lamp	Digital	R
✓ 6	COM1_TX Series	2	AL1 Lamp	COM1_2_AL1 Lamp	Digital	R
✓ 7	COM1_TX Series	2	AL2 Lamp	COM1_2_AL2 Lamp	Digital	R

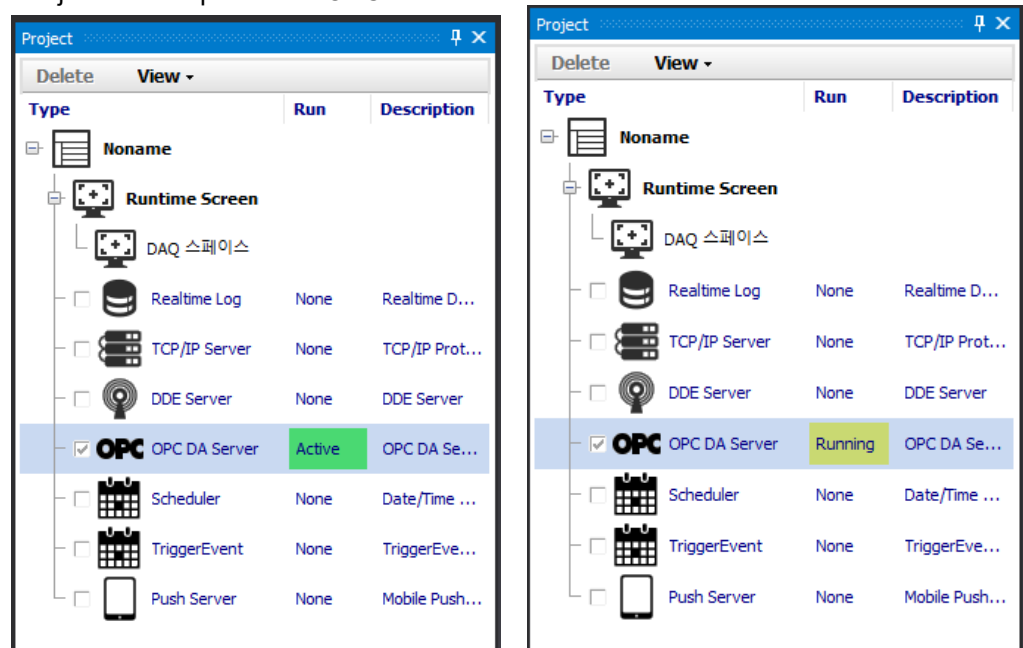
5th To change 'OPC Server' running interval, click [Change Interval] button. When 'OPC Interval' window pops up, enter a value of interval.

6th Above all, click the checkbox next to the OPC DA Server in the 'Project' control panel. And check the phrase of 'Run' row is changed to 'Ready' to operate OPC Server.



7th Click [Connect] button on the 'Project - Run' menu, then 'Ready' is changed to 'Active' on 'Project' control panel.

Click [Run] button in the 'Project - Run' menu, then 'Active' is changed to 'Running' on 'Project' control panel and OPC Server is activated.



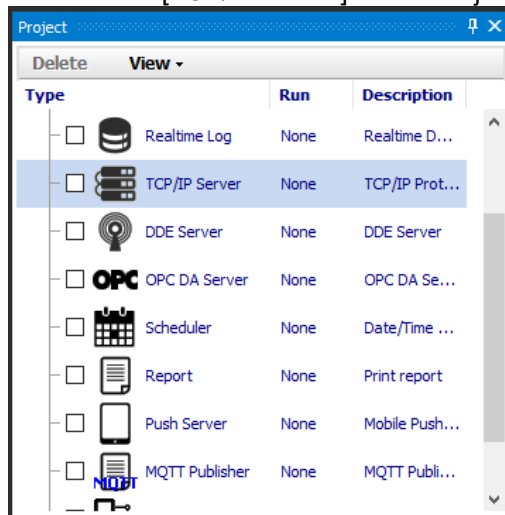
6.7 TCP/IP Server

DAQMaster performs as TCP/IP Server and exchanges monitoring data with DAQMaster Client in JSON format. Network data can be displayed in server, allowing data monitoring.

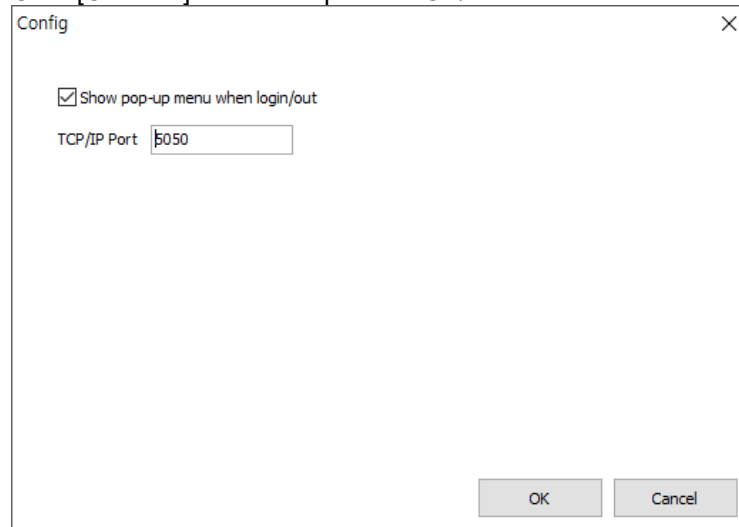
Below is the setting guide for DAQMaster application.

6.7.1 Setting

1st Double-click [TCP/IP Server] in the 'Project' control panel to operate TCP/IP server.

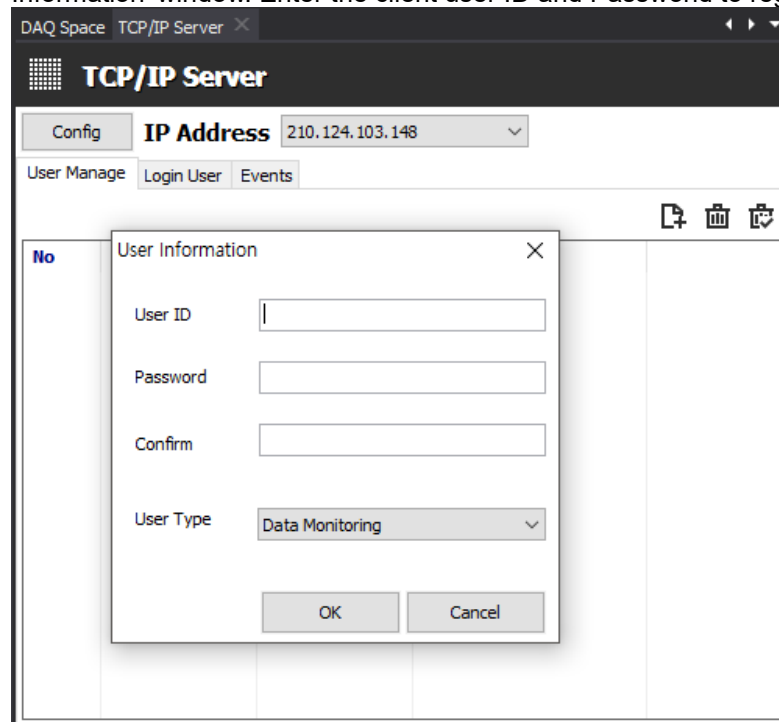


- 2nd Select IP Address item as the currently connected wifi address and click [Config] button to connect the port. (Default: 5050)
Click [Connect] button to operate TCP/IP Server.



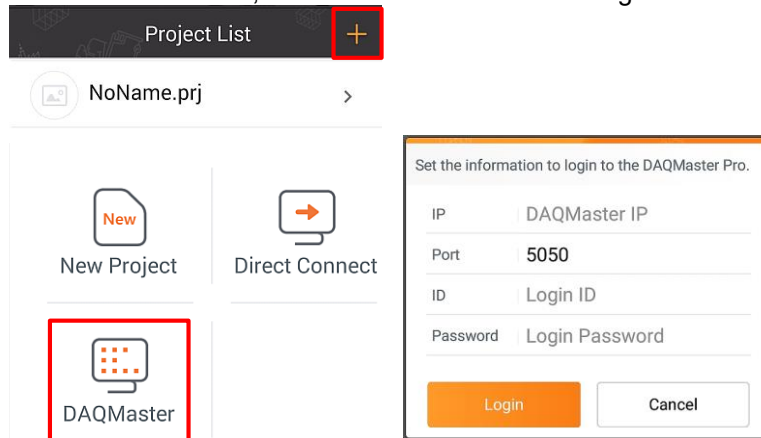
The image shows a 'Config' dialog box with a close button (X) in the top right corner. It contains a checked checkbox labeled 'Show pop-up menu when login/out'. Below this is a text input field labeled 'TCP/IP Port' with the value '5050'. At the bottom right, there are two buttons: 'OK' and 'Cancel'.

- 3rd In 'User Manage' tab, you can manage a authority of client to TCP/IP Server by adding, deleting, editing user ID and password. Click [Add] button and open the 'User Information' window. Enter the client user ID and Password to register.



The image shows the 'TCP/IP Server' application window. The title bar reads 'DAQ Space TCP/IP Server'. The main window has a 'Config' tab selected, showing 'IP Address' as '210.124.103.148'. Below this are tabs for 'User Manage', 'Login User', and 'Events'. The 'User Manage' tab is active, showing a table with one row containing 'No'. A 'User Information' dialog box is open over the table, containing fields for 'User ID', 'Password', 'Confirm', and 'User Type' (set to 'Data Monitoring'). There are 'OK' and 'Cancel' buttons at the bottom of the dialog.

- 4th To open the setup window, click [+] button in the Project list of DAQMaster Mobile and select [DAQMaster].
Enter the IP address, ID and Password that were registered at the 3rd and 4th steps.



- 5th Click [Connect] button to contact the server.



Note

In 'Login User' tab, you can check log-in/log-out time and detailed connection information of the client users. In 'Events' tab, you can see every events related to logged communication.

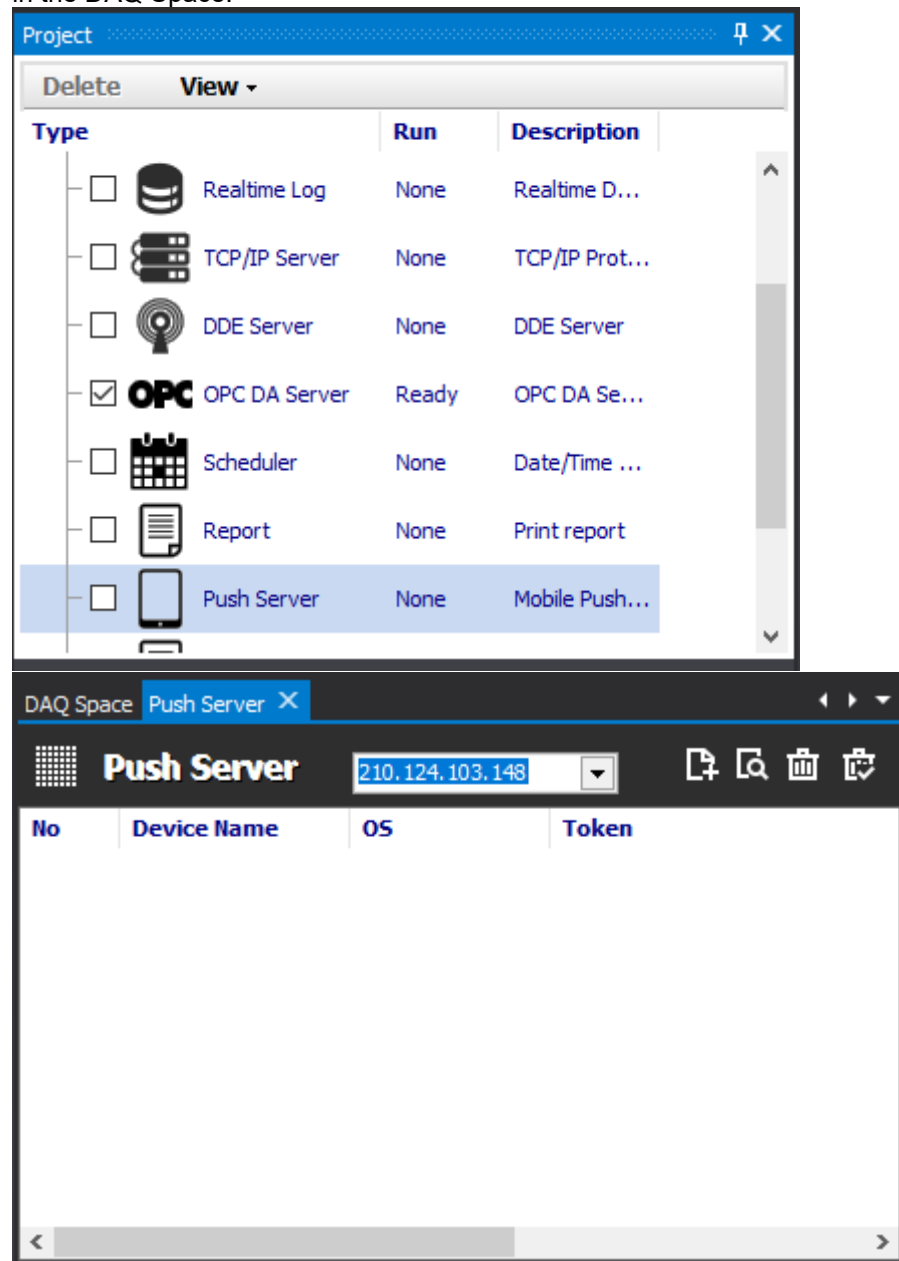
6.8 Push Server

It transmits push message to the client device and is possible to use with Trigger Event, Scheduler.

Below is the setting guide for DAQMaster application.

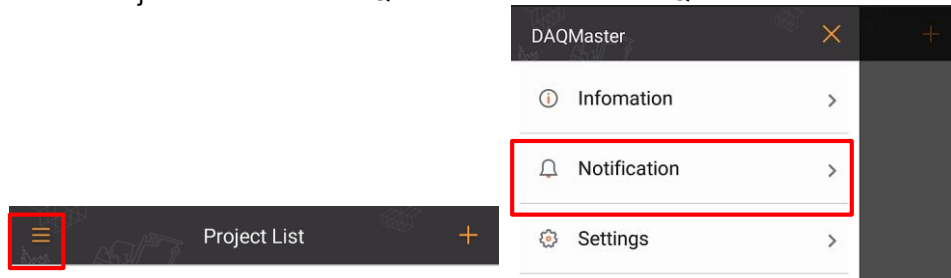
6.8.1 Setting

1st Double-click [Push Server] in the 'Project' control panel to open 'Push Server' window in the DAQ Space.



2nd Select the same IP address with the Client. The same wifi network should be used to send push messages.

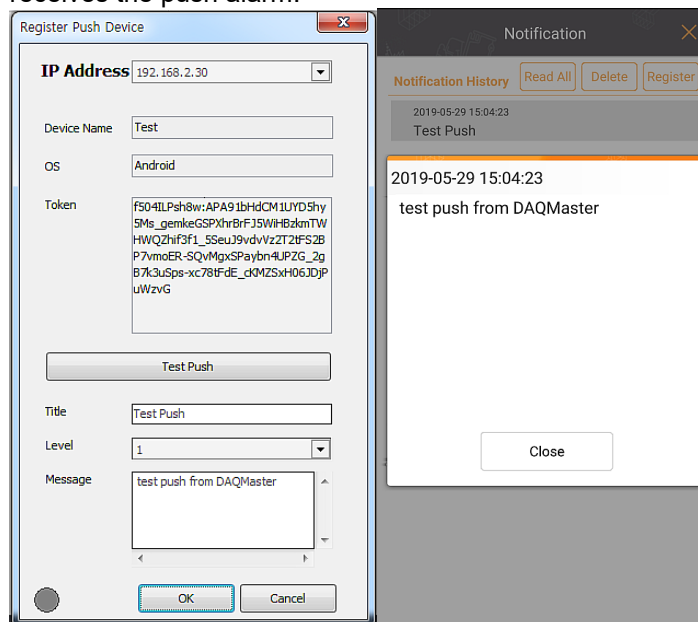
- 3rd To register a push device, click [Add] button or right-click in the 'Push Server' window and click [Add].
- 4th When 'Register Push Device' window pops up, check the circle indicator (Waiting register) on the bottom left corner of the window. When the indicator blinks in gray, you can register an alarm in the DAQMaster Mobile.
- 5th Select 'Project List Menu – DAQMaster Alarm' in the DAQMaster Mobile.



- 6th When 'Alarm' window pops up in the DAQMaster Mobile, push [Register] button, enter the device name and the IP address already used at 2nd step, and push [Register] button.

- 7th When connection is complete, the circle indicator which was referred to at 4th step blinks in green and receives the device name, OS and token data.

- 8th In connected status, enter a message and click [Test Push] to check DAQMobile receives the push alarm.



9th In the 'Push Server' window, double-click the client item or click [Modify] button to edit setting information.

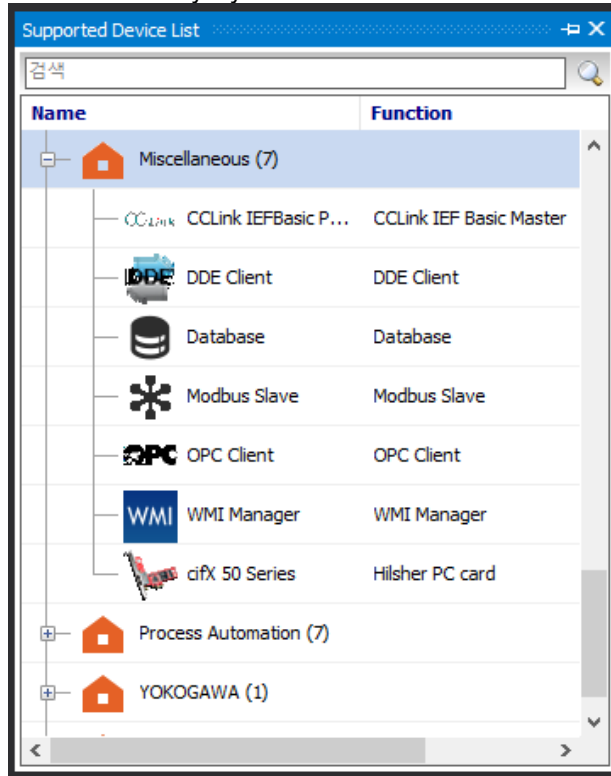
10th Select the client item in the 'Push Server' window and click [Delete] button to remove/delete separately, or click [Delete All] button to delete all.

7 Miscellaneous (User-defined device)

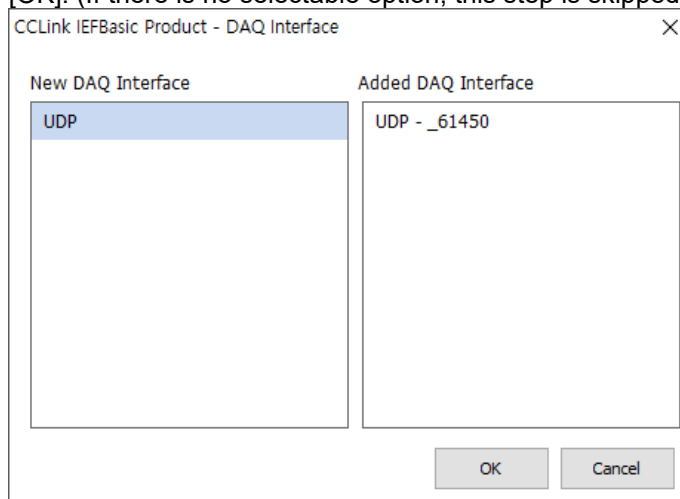
You can add or edit the miscellaneous devices which are not supported at DAQMaster.

7.1 Add

- 1st Double-click the device type of 'Miscellaneous' in 'Support Device List' control panel and add it to 'My System'.



- 2nd When 'DAQ Interface' window pops up, select the currently used interface and click [OK]. (If there is no selectable option, this step is skipped)



- 3rd When selecting the device name in 'My System' control panel, [Add] button is enabled. To add a unit (address), click the [Add] button in upper menu.

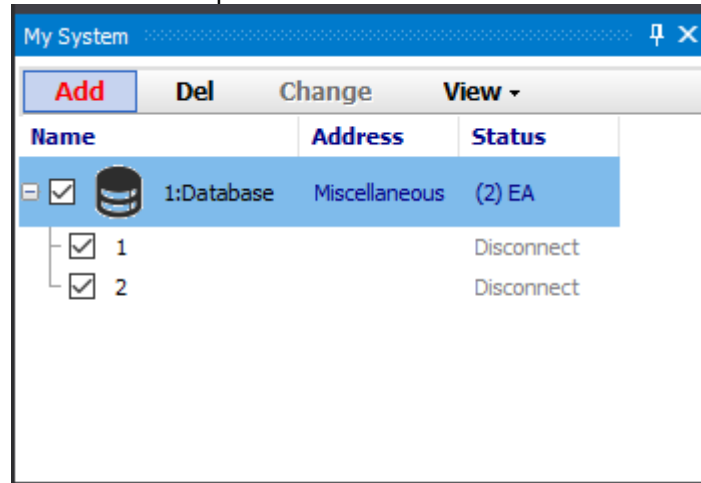
- 4th Select each item in 'My System' control panel to check and edit the detailed information in 'Property' control panel.

7.2 Database

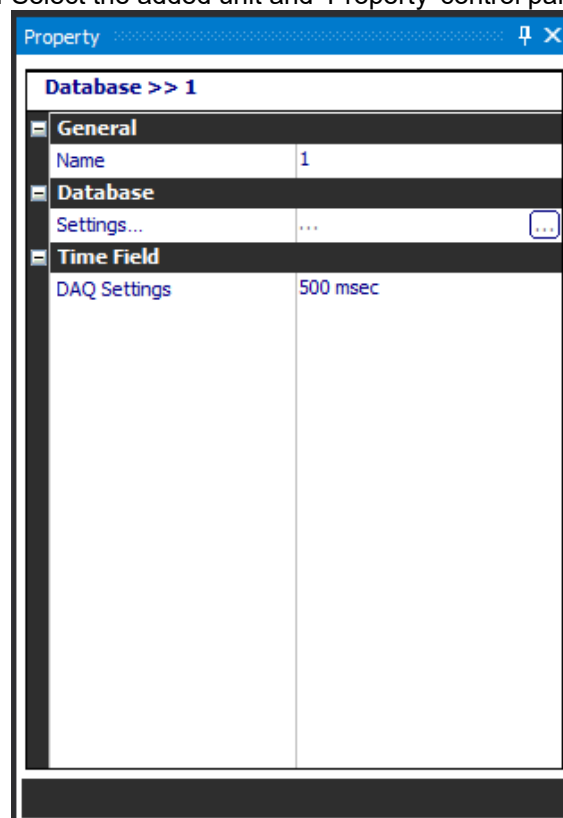
Database managing system turns information into database in real-time, making creation and management easier.

7.2.1 Setting

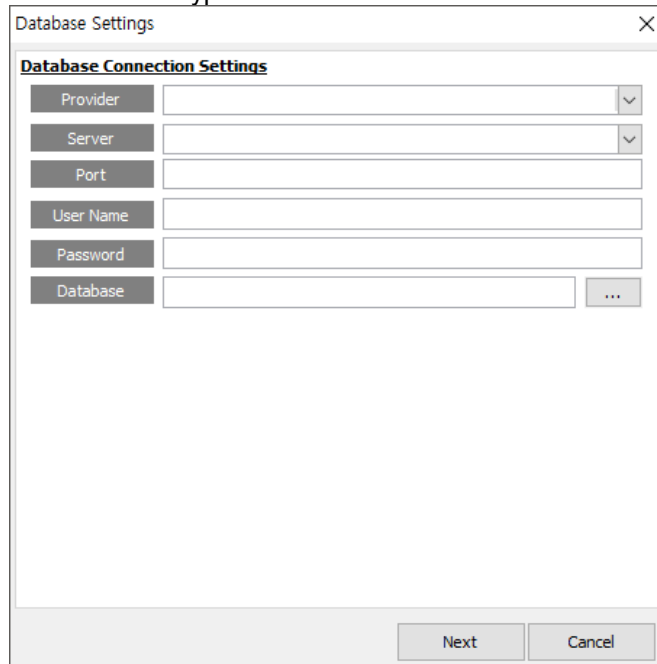
- 1st Double-click the 'Database' of 'Miscellaneous' in 'Support Device List' control panel and add it to 'My System' control panel. To add the unit, push [Add] button on the top-left of the control panel.



- 2nd Select the added unit and 'Property' control panel shows Database property.



- 3rd In the 'Property' control panel, click [...] button of Settings and 'Database Settings' window appears. You can setup the Provider, Server, Port, User Name, Password and Database type.

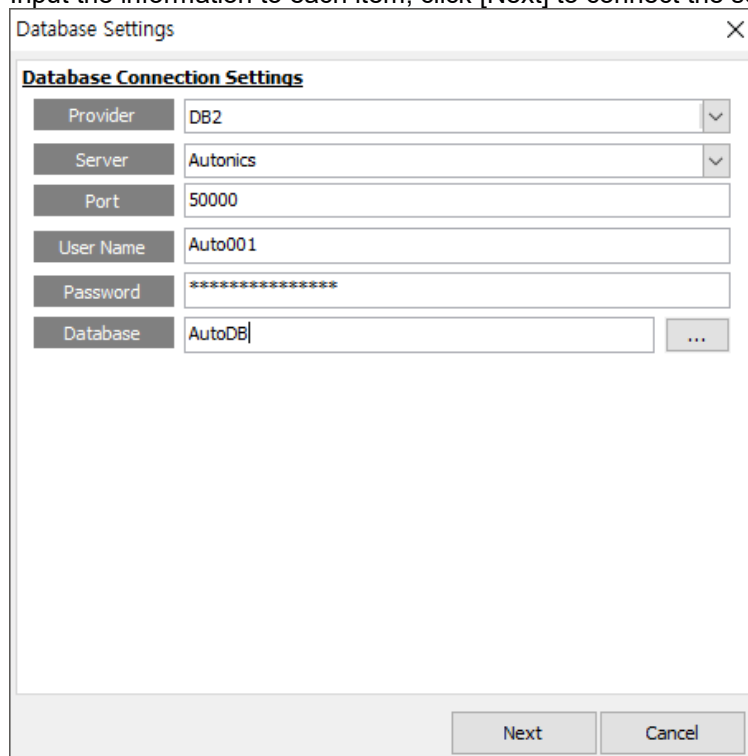


The screenshot shows the 'Database Settings' dialog box with the following fields:

Database Connection Settings	
Provider	<input type="text"/>
Server	<input type="text"/>
Port	<input type="text"/>
User Name	<input type="text"/>
Password	<input type="text"/>
Database	<input type="text"/> ...

Buttons: Next, Cancel

- 4th Input the information to each item, click [Next] to connect the server.



The screenshot shows the 'Database Settings' dialog box with the following fields filled:

Database Connection Settings	
Provider	DB2
Server	Autonics
Port	50000
User Name	Auto001
Password	*****
Database	AutoDB ...

Buttons: Next, Cancel

- 5th If the connection with the server is successful, 'Database Table Settings' window appears. You can select a table to be added and click [Add] button to edit the database. When the settings is complete, click [Next].

Database1.accdb

Database Table Settings

Table

Add Del Delete All

New Table

Table

Field	Type
-------	------

Field

Type

Scale 1

Precision 0

Add Field Delete Field

Edit Field Delete All

New Table Cancel

Prev Next Cancel

- 6th Select 'Save Type' and 'Time Field' in 'Database Time Field Settings' window.

Database1.accdb

Database Time Field Settings

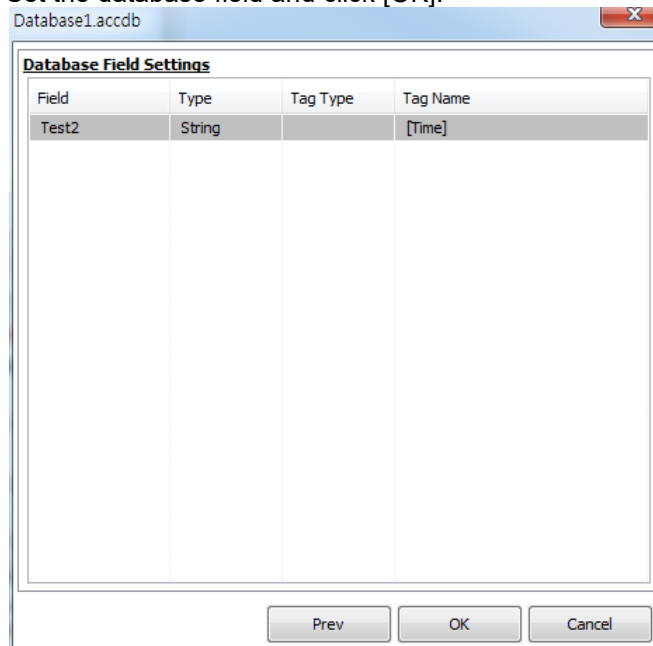
Save Type

DB Field : Tag DB Field : Tag List

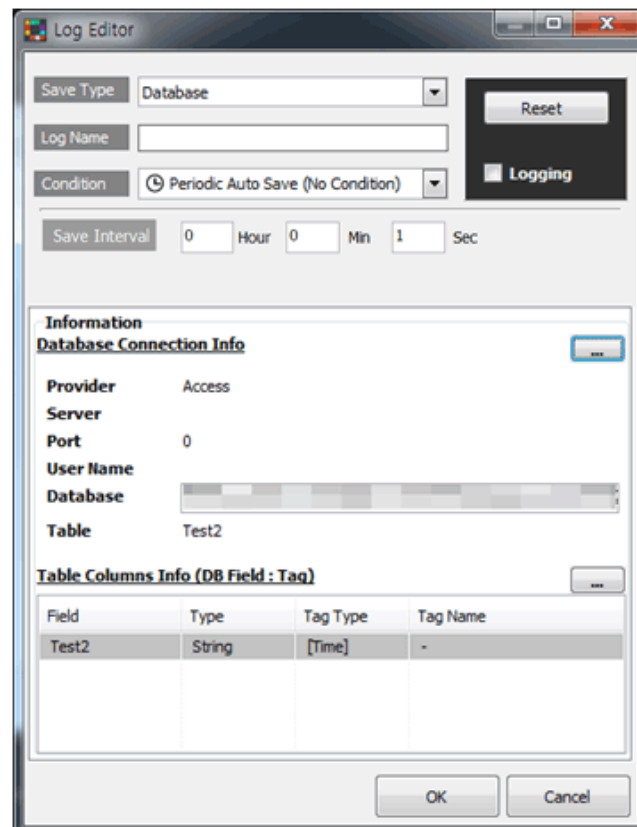
Time Field

Prev Next Cancel

7th Set the database field and click [OK].



8th After the settings is complete, executes 'Realtime Log', then the information about database connection is displayed and [...] button of 'Table Column Information' is activated.



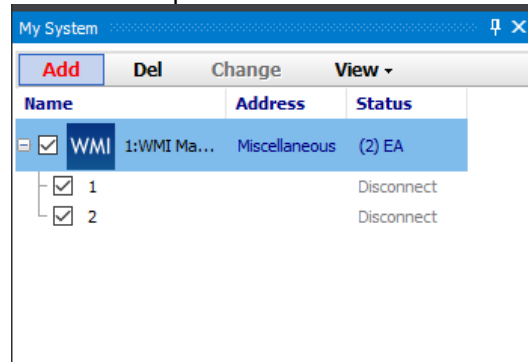
※ For checking the database list supported by DAQMaster, refer to '1.2 DAQMaster Function Comparison Table by Version'.

7.3 WMI Manager

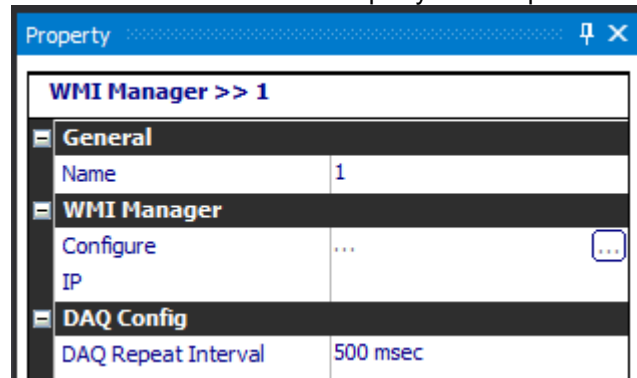
This function features that DAQMaster accesses and shares the management information in the network using the Window Standards. It is able to collect and show the system configuration.

7.3.1 Setting

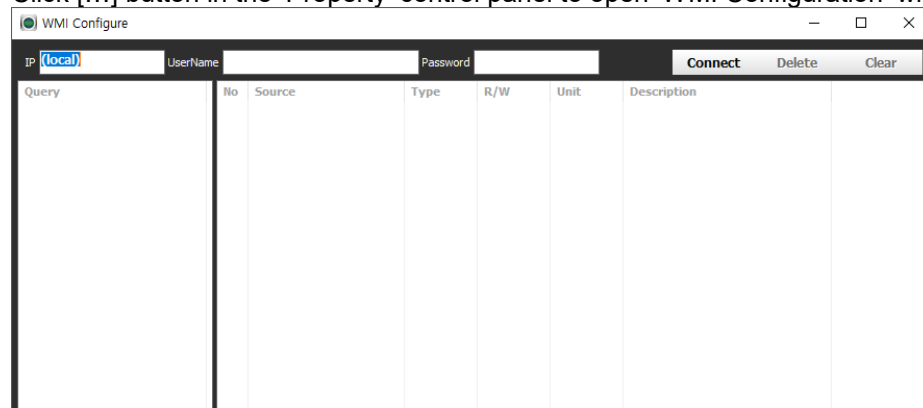
- 1st Double-click 'WMI Manager' of Miscellaneous in 'Support Device List' control panel to add it to 'My System' control panel. To add the unit, push [Add] button on the top-left of the control panel.



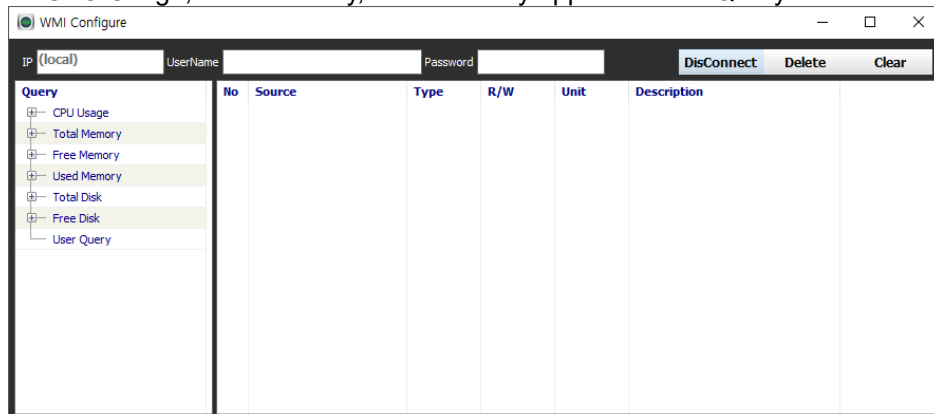
- 2nd Select the added unit and 'Property' control panel shows Database property.



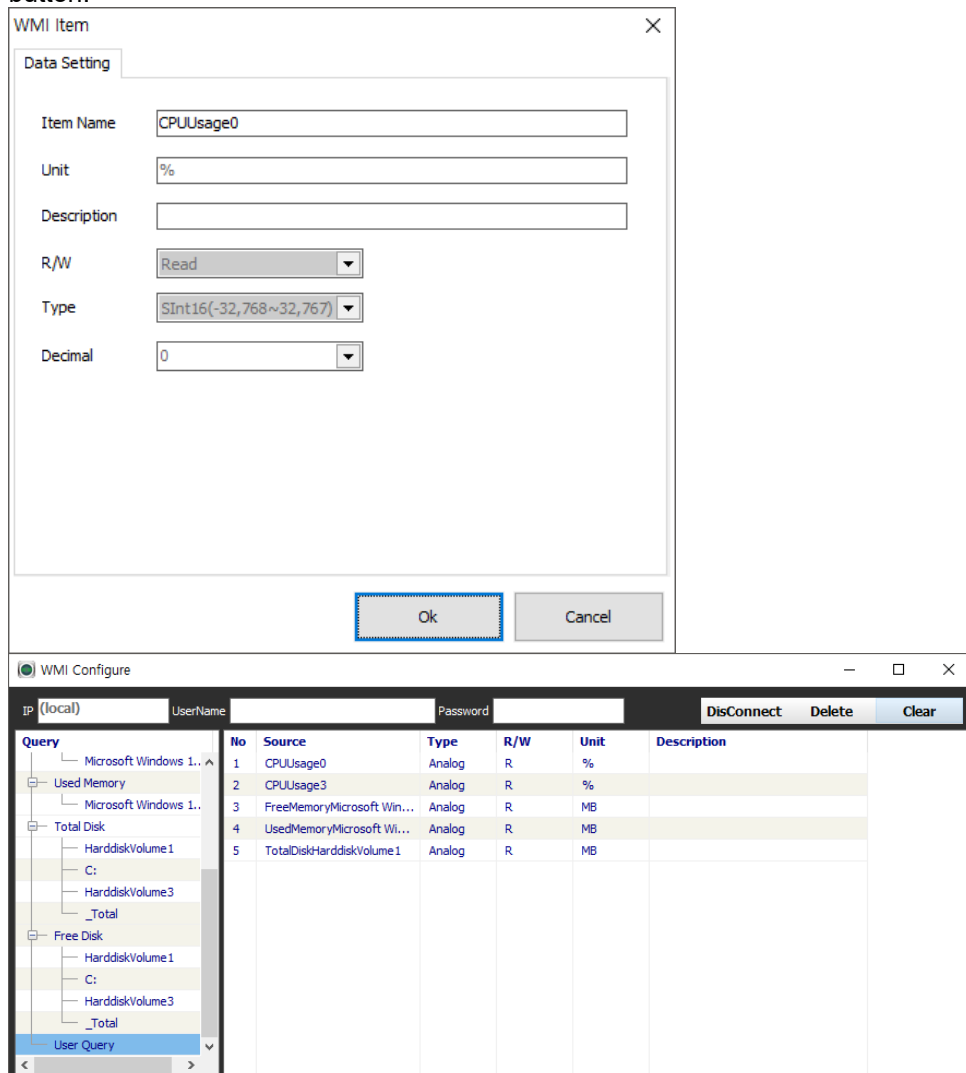
- 3rd Click [...] button in the 'Property' control panel to open 'WMI Configuration' window.



4th Click 'Connect' to monitor local CPU load. When connecting is completed, items such as CPU Usage, Total Memory, Free Memory appears in the Query list.

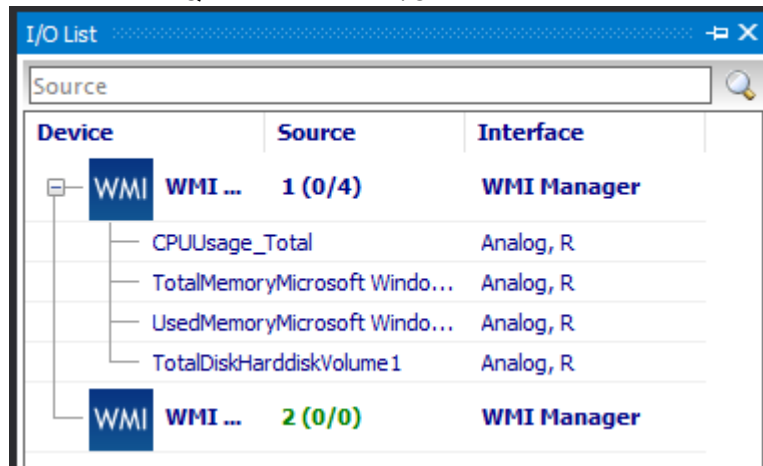


5th Double-click item to monitor in order to open setting dialog and click 'OK' in dialog to add in source list in the right side. You can edit the source list with 'Delete' and 'Clear' button.

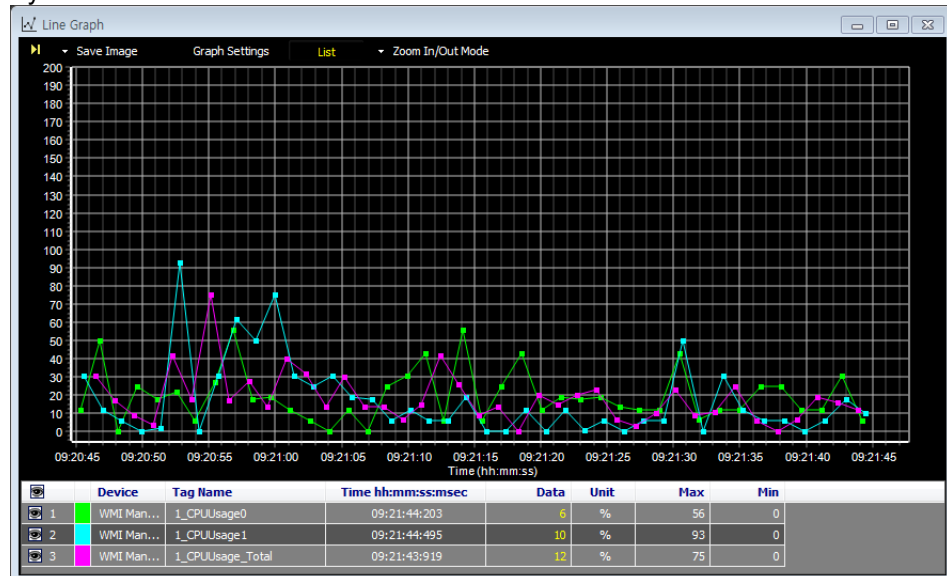


In User Query, you can preview a result in diverse WMI Query format.

6th Added query items to source list are registered automatically in I/O list. The items can be listed in DAQ list like another I/O source.



7th You can monitor selected query items at the runtime screen in various kinds of graph style.

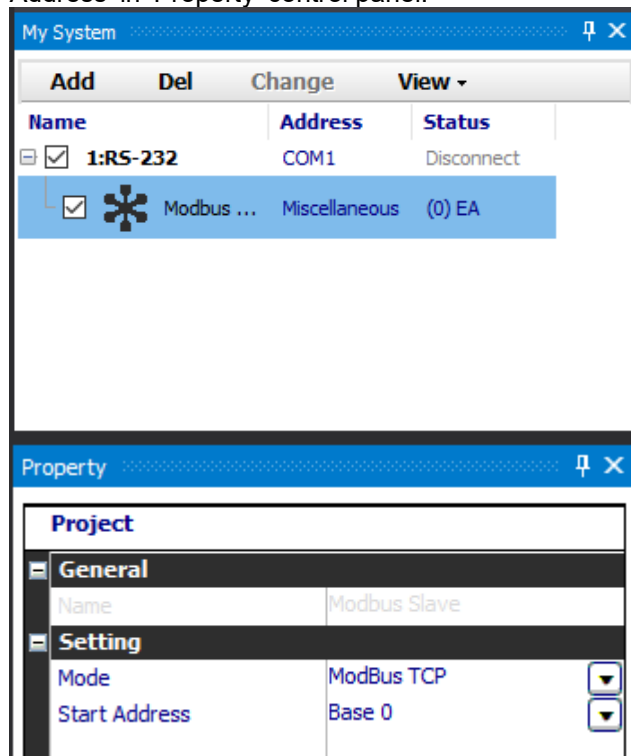


7.4 Modbus Slave

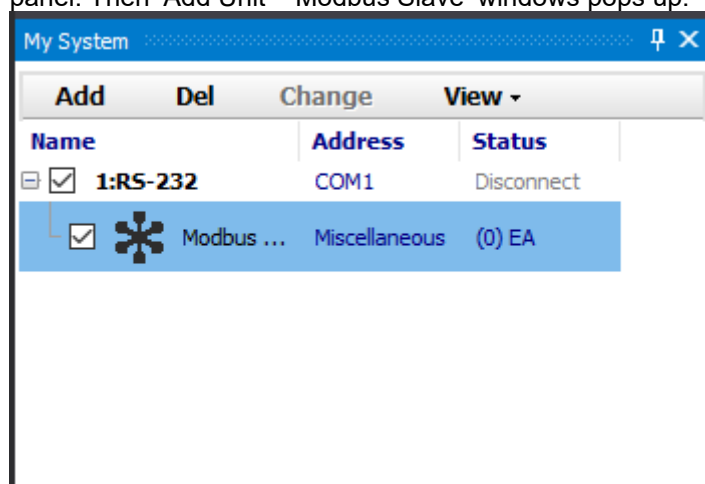
DAQMaster performs as a Modbus Slave responding to the reading and writing requirements. It supports RS-232, TCP/IP interface and RTU, ASCII, ModbusTCP Protocol.

7.4.1 Setting

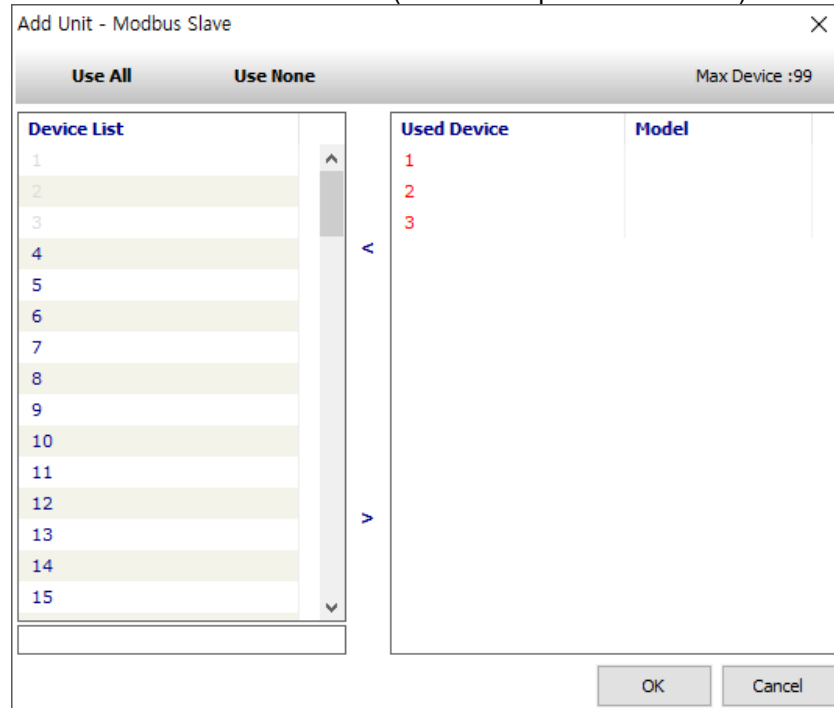
- 1st Double-click 'Modbus Slave' of Miscellaneous in 'Support Device List' control panel to add it to 'My System'. Click 'Modbus Slave' in 'My System' and set 'Mode' and 'Start Address' in 'Property' control panel.



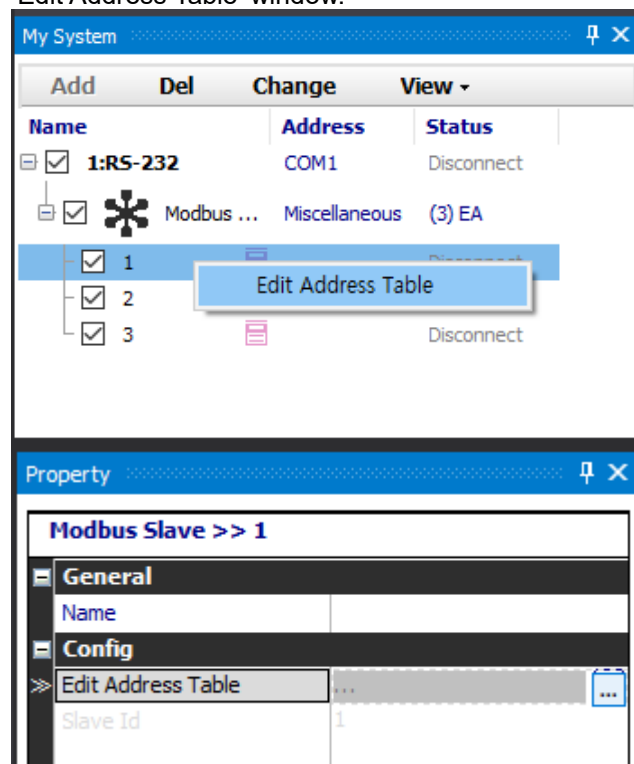
- 2nd Click 'Modbus Slave' in 'My System' and then click [Add] button on the top of control panel. Then 'Add Unit – Modbus Slave' windows pops up.

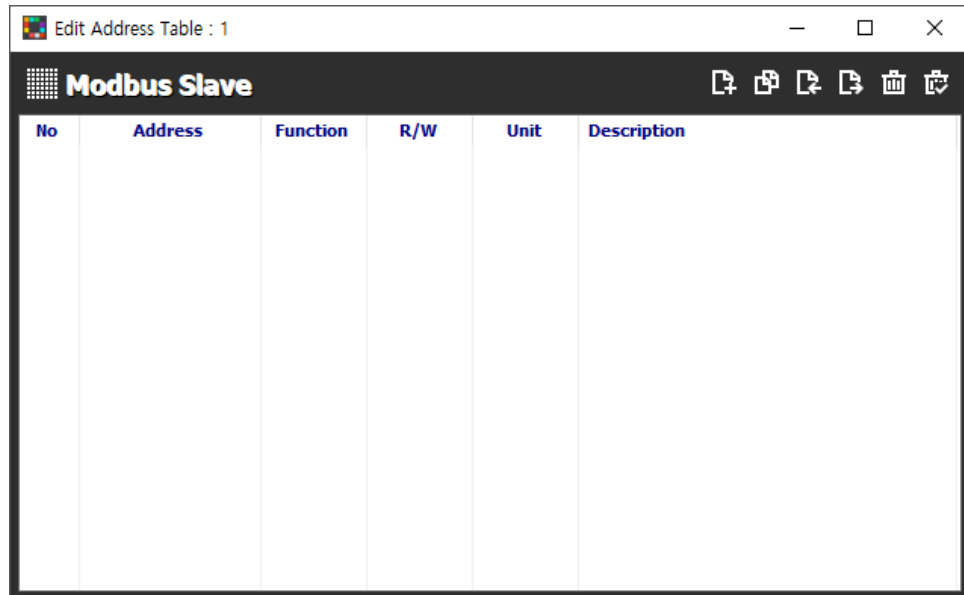


3rd Select the desired unit address (allows multiple unit selection) and click [OK].



4th Right-click the added slave unit address in 'My System' control panel and click 'Edit Address Table'. Or click [...] of Edit Address Table of 'Property' control panel and open 'Edit Address Table' window.





5th Click [Add] button on the top of the 'Edit Address Table' window, then 'Edit Address' window pops up. In 'Edit Address' window, setting the detailed information on the slave device is available. Edit the value of these items and click [OK] to set up.

※ The added I/O tags from 'Edit Address Table' are added automatically to the I/O List.

Use	Name	On	Off
-----	------	----	-----

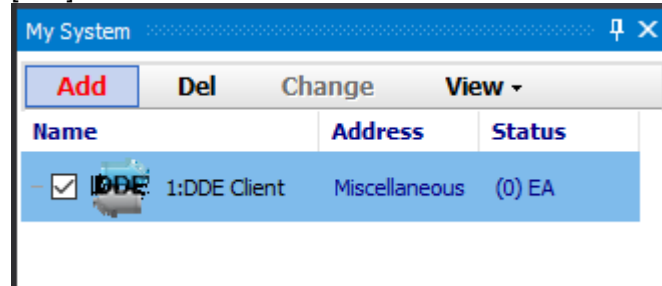
6th Click [Copy] button of 'Edit Address Table' window to copy the added item. Click [Import] / [Export] button to import and export the csv file.

7.5 DDE Client

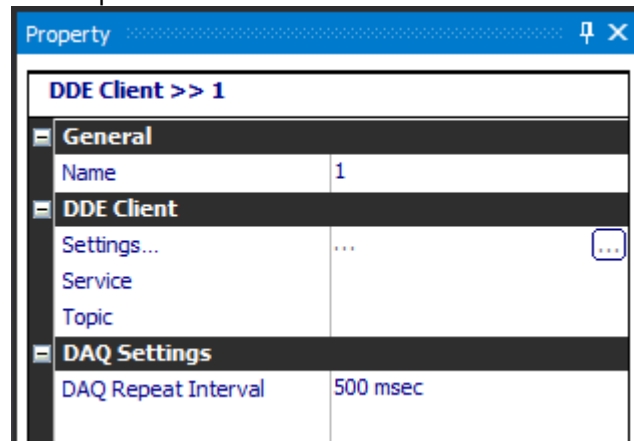
DAQMaster performs as a DDE Client, connecting to DDE Server and data communication.

7.5.1 Setting

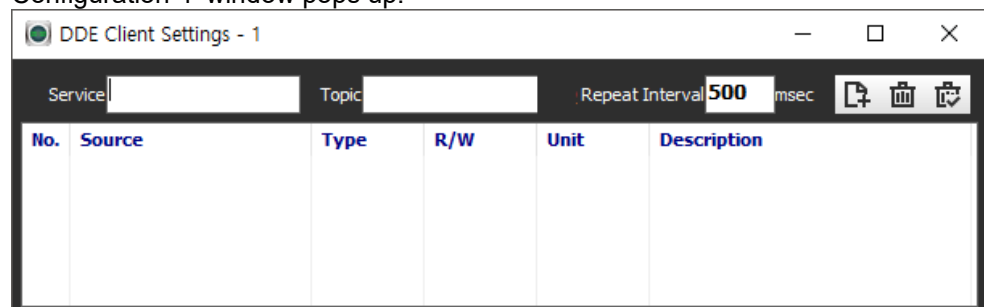
- 1st Double-click 'DDE Client' of 'Miscellaneous' in 'Support Device List' control panel to add it to 'My System' control panel. Click on the top of 'My System' control panel [Add] to add unit.



- 2nd Click the added unit in 'My System' and check property of DDE Client in 'Property' control panel.



- 3rd In 'Property', click [...] next to 'Settings...' in 'DDE Client' menu and then 'DDE Client Configuration-1' window pops up.



- 4th For connecting DDE Server, enter 'Service' and 'Topic' of DDE Server as same as DDE Client Configuration-1.

5th Click 'Add' of 'DDE Client Configuration-1' window to add DDE Item.

DDE Item
✕

Service		Topic	
Item Name			
Description			
Unit			
R/W	R		
Type	Int16	Decimal Point	0

No	Name	Value	

Delete All Del OK Cancel

Item	Description
Item Name	Enters the name of DDE Server item.
Unit	Sets data unit.
Description	Enters description of the item.
R/W	R Reading is only available.
	W Writing is only available.
	R/W Reading and Writing are available.
Type	Set method of data display.
Decimal Point	Set decimal point.
List	Displays item list.

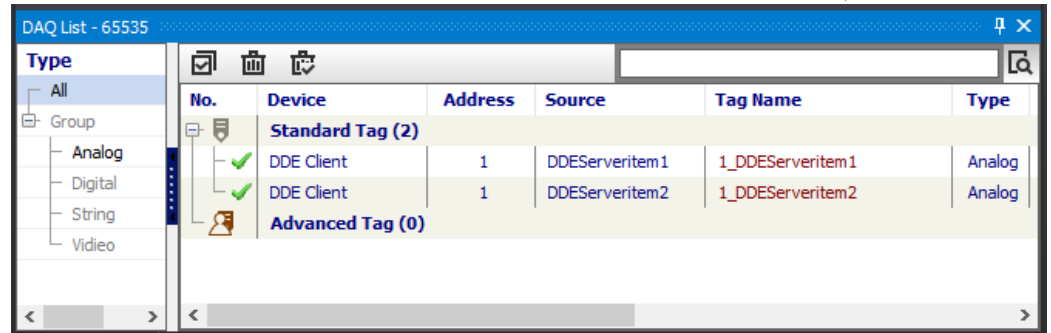
Below is when two items are added.

DDE Client Settings - 1
— □ ✕

Service		Topic		Repeat Interval	500	msec	📄 🗑️ 🔄
---------	--	-------	--	-----------------	-----	------	---

No.	Source	Type	R/W	Unit	Description
1	DDEServeritem1	Analog	RW	mm	DDEServeritem1
2	DDEServeritem2	Analog	RW	unit	DDEServeritem2

6th Check the added item at I/O List and it is available to be added to DAQ List.



The screenshot shows a software window titled "DAQ List - 65535". On the left is a tree view under "Type" with categories: All, Group, Analog, Digital, String, and Video. The main area is a table with columns: No., Device, Address, Source, Tag Name, and Type. The table contains two sections: "Standard Tag (2)" and "Advanced Tag (0)".

No.	Device	Address	Source	Tag Name	Type
Standard Tag (2)					
	DDE Client	1	DDEServeritem1	1_DDEServeritem1	Analog
	DDE Client	1	DDEServeritem2	1_DDEServeritem2	Analog
Advanced Tag (0)					

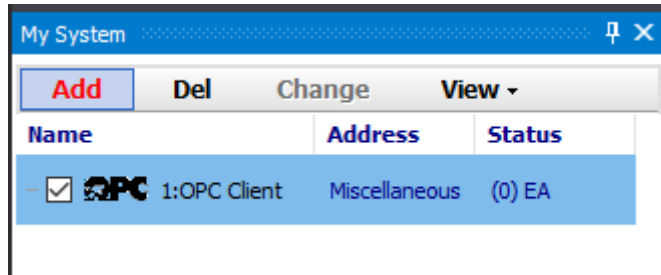
7th At runtime screen, monitoring is available by various graph types.

7.6 OPC Client

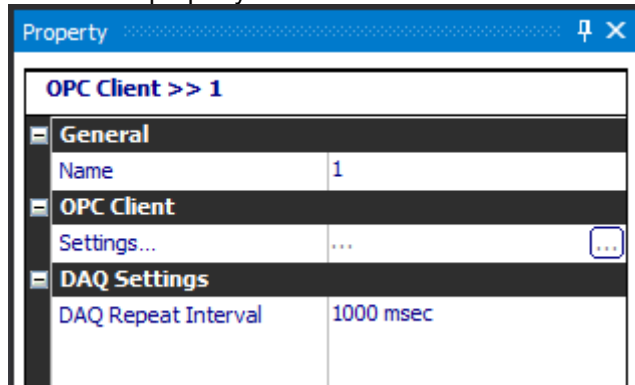
DAQMaster performs as a OPC Client, transmitting collected data to the connected OPC Server.

※ For more information about OPC Server, refer to '6.6 OPC DA Server'.

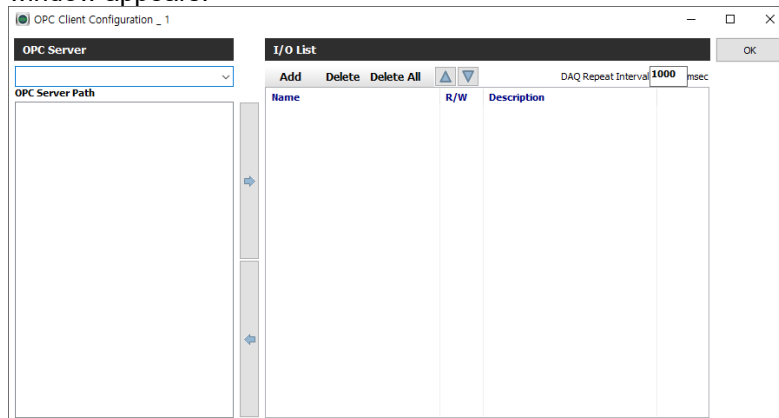
- 1st Double-click 'OPC Client' of 'Miscellaneous' in 'Support Device List' control panel to add it to 'My System' control panel. In the top of 'My System' control panel, click [Add] to add unit.



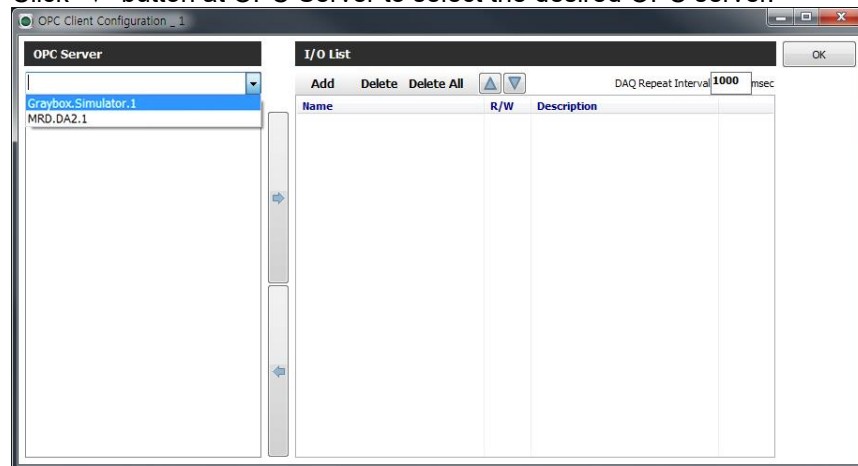
- 2nd Click the added unit in 'My System' control panel and 'Property' control panel displays OPC Client property.



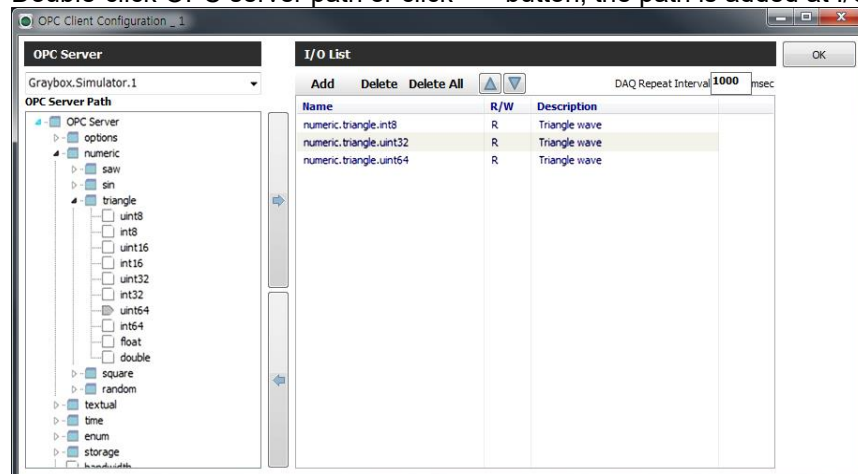
- 3rd Click [...] button of Settings in OPC Client menu and 'OPC client Configuration_1' window appears.



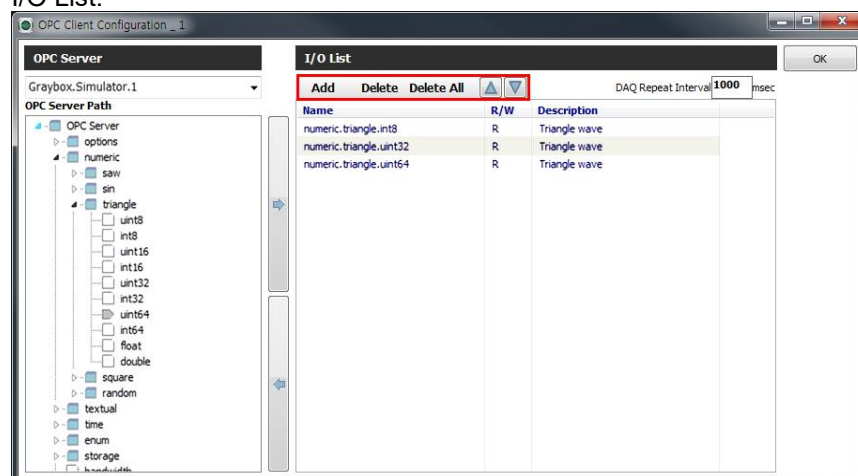
4th Click '▼' button at OPC Server to select the desired OPC server.



5th When selecting OPC Server, OPC server path is displayed as list. Double-click OPC server path or click '→' button, the path is added at I/O List.



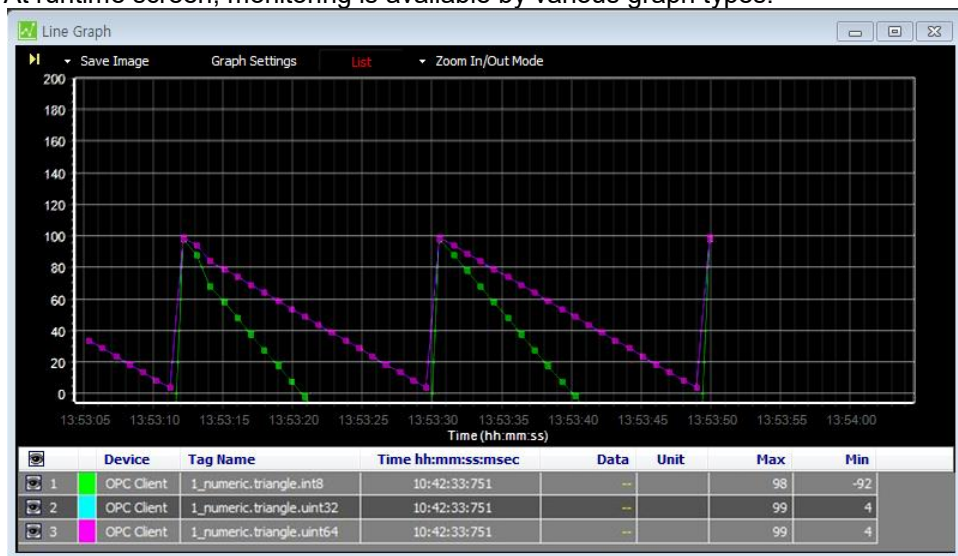
6th You can add or delete OPC server path by 'Add, Delete, Delete All' of upper menu of I/O List.



7th Check the added path at I/O List and and it is available to be added at DAQ List.



8th At runtime screen, monitoring is available by various graph types.



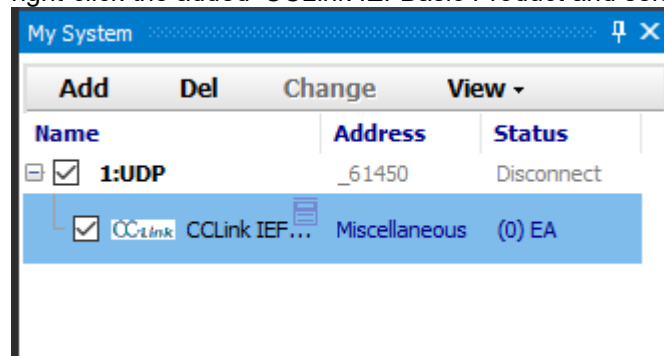
7.7 CCLink IEF Basic Product

DAQMaster performs as a master of CC-Link Field Basic device, supporting I/O monitoring and the function outputs the tag.

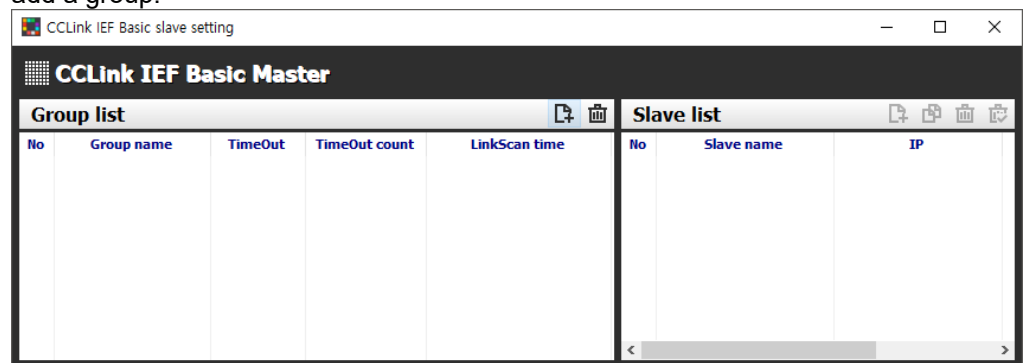
- CC-Link IE Field Basic Device: HMI, I/O Unit, Inverter of Mitsubishi Electric.

7.7.1 Add Slave Device

1st Double-click 'CCLink IEFBasic Product' of 'Miscellaneous' in 'Support Device List' control panel to add it at 'My System' control panel. In the 'My System' control panel, right-click the added 'CCLink IEFBasic Product and select 'Slave setting'.



2nd When 'CCLink IEF Basic slave setting' window pops up, click [Add] of 'Group list' to add a group.



3rd In 'Group setting' window, enter 'Name', 'TimeOut', 'TimeOut count' and 'LinkScan Time' (check a checkbox to use) to add a group.

Group setting

Name: Group No.1

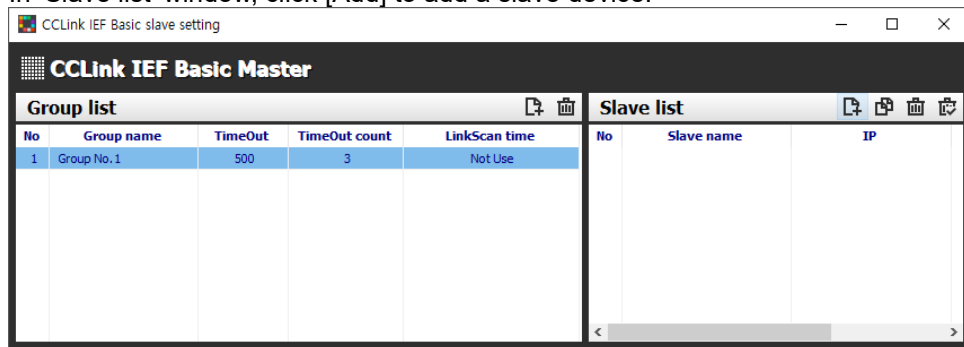
TimeOut: 500 (100 to 65535 ms)

TimeOut count: 3

LinkScan time: 0 (1 to 2000 ms)

Ok Cancel

4th In 'Slave list' window, click [Add] to add a slave device.



5th When 'Slave setting' window pops up, enter 'Name', 'IP address' and 'Occupied number' and click [OK] to add a slave device.

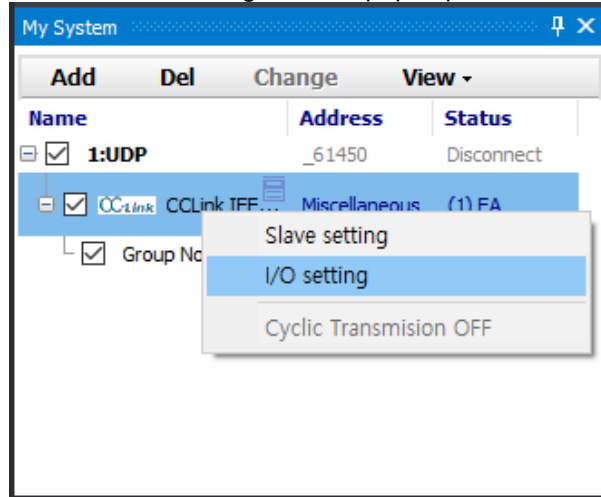
The 'Slave setting' dialog box is shown with the following fields and values:

- Name: slave No.1
- IP address: 192 . 168 . 0 . 1
- Port: 61450
- Occupied number: 1 (selected from a dropdown menu)

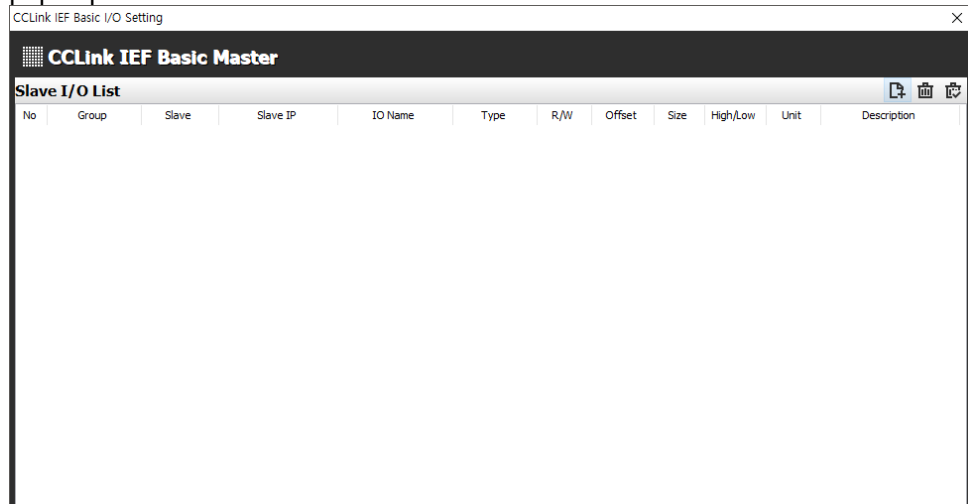
Buttons for 'Ok' and 'Cancel' are visible at the bottom of the dialog.

7.7.2 Add Slave I/O

1st After adding 'IEFBasic Product' to 'My System' control panel and add 'Slave device', right-click the added 'CCLink IEFBasic Product and select 'I/O setting'. Then, 'CCLink IEF Basic I/O Setting' window pops up.



2nd Select an item of 'Slave I/O List' and click [Add] to add, then 'Add Slave IO' window pops up.



3rd Check the descriptions of the items and fill out the items in this window. Click [Add] to add a slave I/O.

NO	Item	Description
1	Group number	Select group number.
2	Slave IP	Select the added slave IP address.
3	Name	Enter I/O tag name.
4	READ/WRITE	Select I/O type either READ or WRITE
5	Data type	RWr / RWw: Word type (64Byte), RX/RX: Bit type (8Byte) RWr or RX
6	Offset	I/O Offset
7	Size	Size of 1Byte
8	High/Low	Select Little-endian or Big-endian, when the size is 1.
9	Unit	Unit of I/O tag
10	Description	I/O description
11	I/O Optional input	Automatically set by clicking I/O offset.

7.7.3 IP Setting

You must set Master IP address and Slave IP address on the same network router.

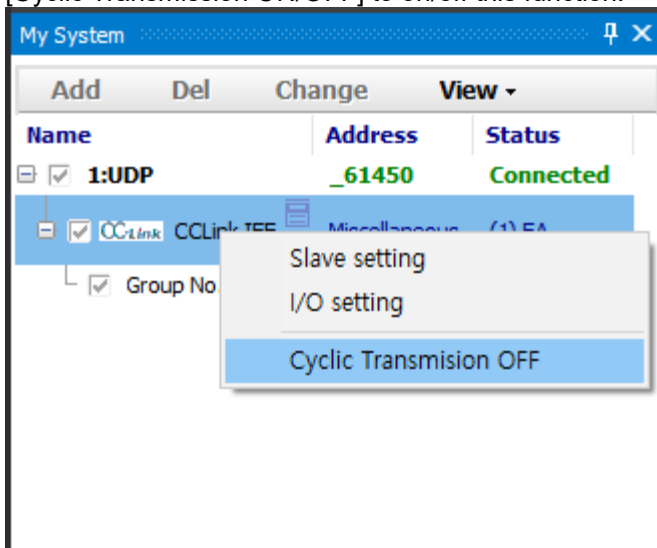
When a range of Master IP is from x.x.x.1 to x.x.x.255, a Slave IP should be set in the range from x.x.x.1 to x.x.x.255. (set a slave IP address excepts for the mater IP.)

- The example of IP setting
In case the Master IP address is 192.168.3.250,
Slave 1 IP is 192.168.3.1
Slave 2 IP is 192.168.3.2
Slave 3 IP is 192.168.3.3

7.7.4 Cyclic Transmission ON/OFF

This function features the constant packet transmission among the connected devices on the same network

In the 'My System' control panel, right-click the added 'CCLink IEFBasic Product' and select [Cyclic Transmission ON/OFF] to on/off this function.



7.8 cifX 50 Series (Fieldbus Master)

Supports Fieldbus network communication through PC card (cifX50, cifX50E) of Hilscher Inc.. EtherCAT, EtherNet/IP, ProfiNet, ProfiBus and DeviceNet connections are available.

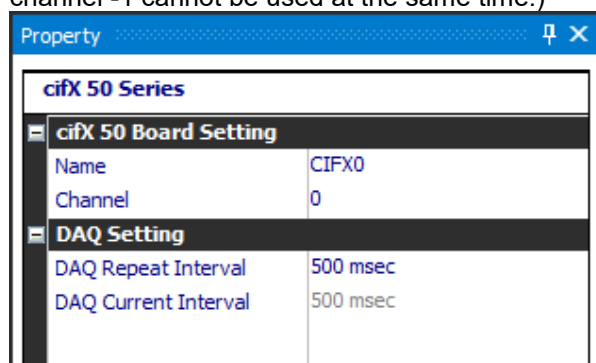
7.8.1 Setting

1st Above all, it is needed to proceed pre-installation through the SYCON.NET of Hilscher corp. to use cifX 50 Series.

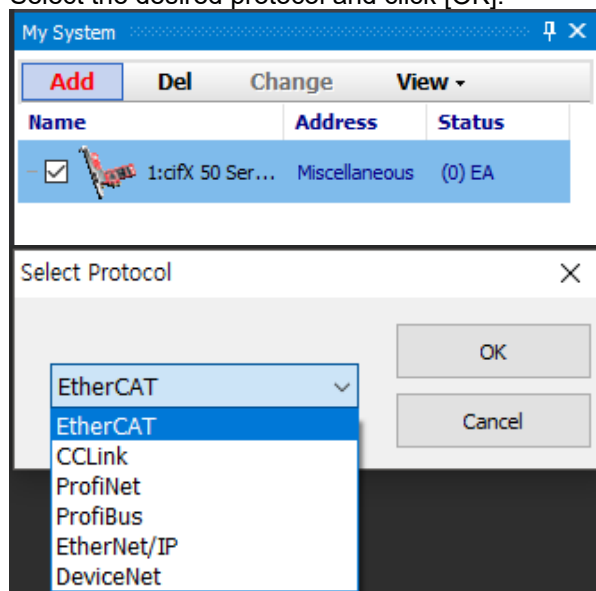
※ Refer to the manual of SVCON.NET.

2nd Double-click 'cifX 50 Series' of 'Miscellaneous' at 'Support Device List' control panel to add it to 'My System' control panel. In the 'Property' control panel, check 'Name' and 'Channel' of 'cifX 50 Board Setting' menu.

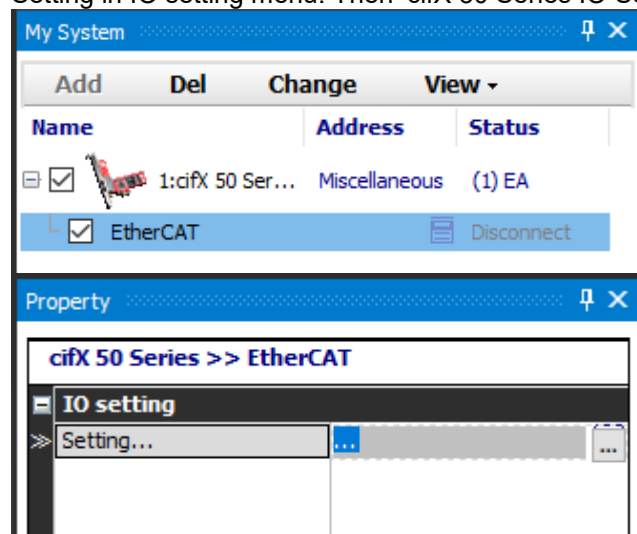
※ It is possible to use one channel only per one board. (cifx channel – 0 and cifx channel -1 cannot be used at the same time.)



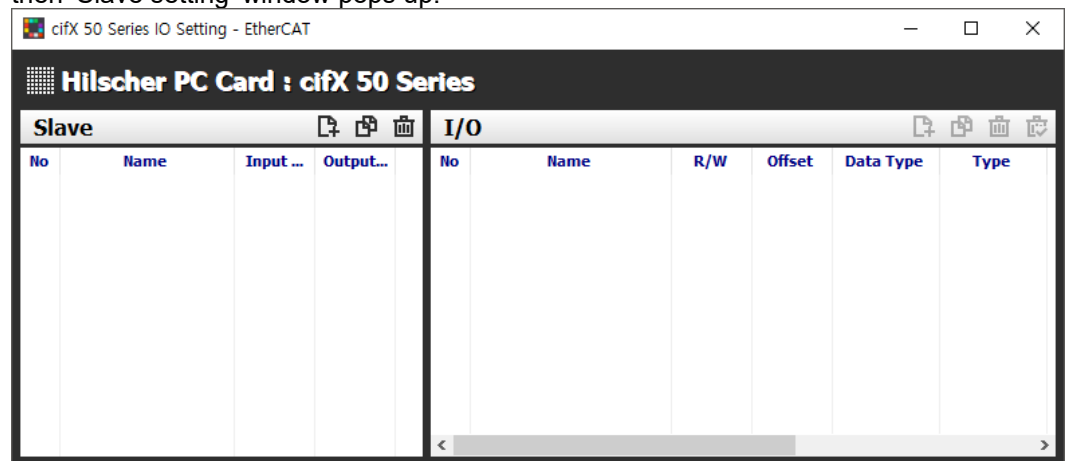
3rd Click [Add] on the top-left of 'My System', then 'Select Protocol' window appears. Select the desired protocol and click [OK].



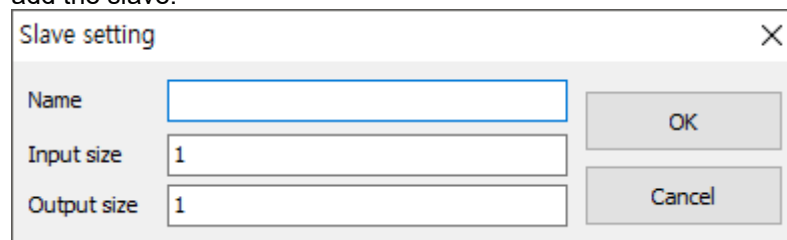
- 4th In 'My System', click the added protocol and in 'Property' control panel, click [...] of Setting in IO setting menu. Then 'cifX 50 Series IO Setting' window pops up.



- 5th The left side of 'cifX 50 Series IO Setting' window is 'Slave' (Coupler) and the right side of the window shows items related to the I/O. In the 'Slave' screen, click [Add], then 'Slave setting' window pops up.



- 6th In 'Slave setting' window, enter 'Name', 'Input size' and 'Output size' and click [OK] to add the slave.



- 7th Double-click the added slave in 'Slave' screen. Then 'Slave setting' window pops up again and the values are modifiable. Click [Copy] to copy the Slave contained the I/O. Select the added Slave in 'Slave' window and then 'I/O' menu is activated at the right side of the screen. In 'I/O' screen, click [Add], then 'I/O setting' window pops up.

8th In 'IO setting' window, enter Item Name, Offset, Data Type and etc. Fill out the values that the device is to use.

No	Name	Value	Off

9th Click [Copy] of I/O screen menu, the value of offset is automatically increased and I/O is copied.

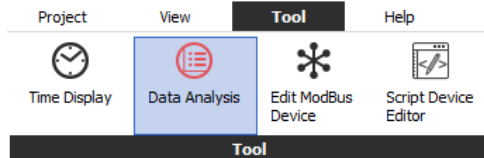
※ The added IO from 'IO Setting' window is added to I/O List automatically and 8 kinds of State showing the board status is added as well.

8 Tool

8.1 Data Analysis

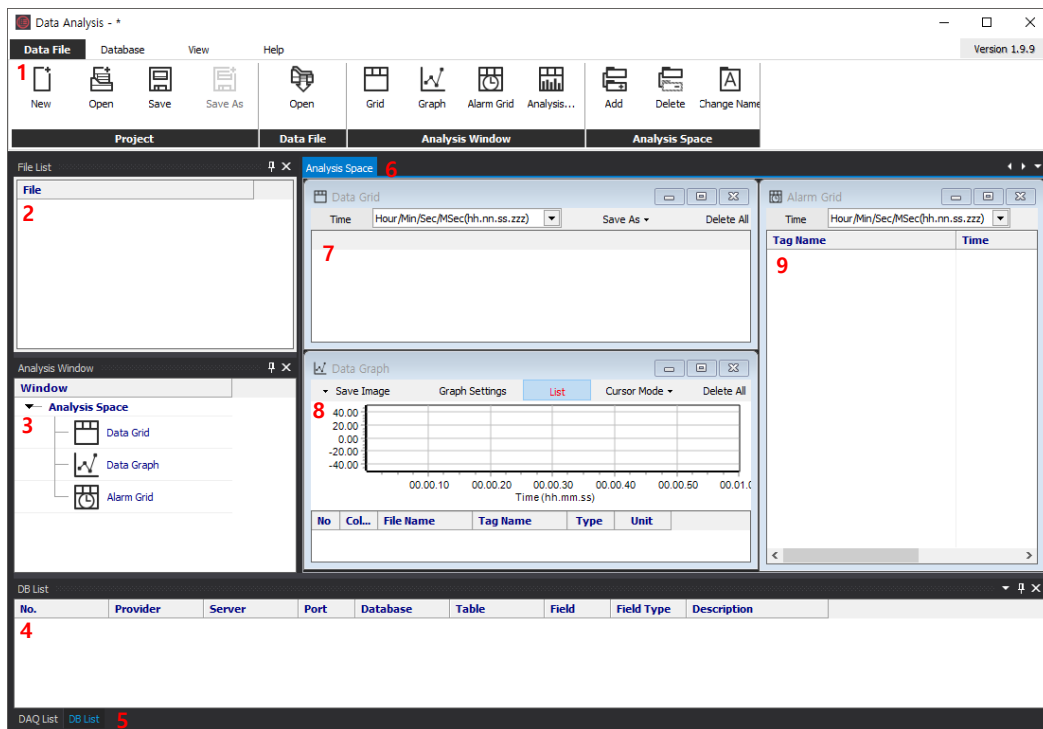
With this program, it is possible to analyze monitored data files (*.ddf) through Grid, Graph, Alarm Grid and Analysis Spread.

Click [Data Analysis] of 'Tool' menu to run this function.



8.1.1 Screen Layout

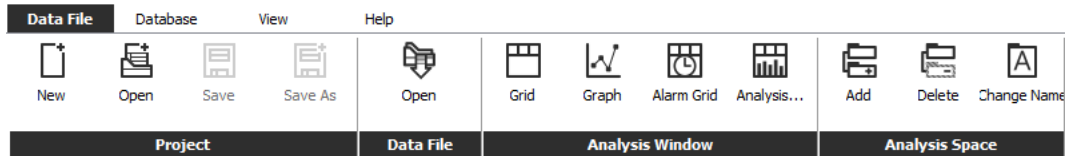
DAQMaster data analysis screen is divided into sections as shown in the below screenshot and each section is composed of following items.



No	Item	Description
1	Menu	Menus are displayed by category. Select a menu to display submenus.
2	File List	Shows a list of project files to analyze.
3	Analysis Window	Shows items at the Analysis Space.
4	DAQ List	Shows I/O source list is saved in the data file.
5	DB List	Shows DB list.
6	Analysis Space	Space for displaying data grid, data graph, Alarm Grid.
7	Data Grid	Shows I/O data as grid data.
8	Data Graph	Shows I/O data as graph data.
9	Alarm Grid	Shows alarm data as grid data.

8.1.1.1 Menu

▪ Data File



(1) Project

- New: Initializes the opened Data file and the analysis screen.
- Open: Opens the saved data file (*.dap).
- Save: Saves the opened data file or analysis windows.
- Save As: Saves the opened data file or analysis windows as other file name.

(2) File

- Open: Opens DAQMaster log file (*.ddf, *.krd, *.t5d).

(3) Analysis Window

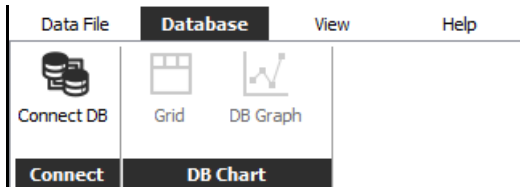
You can add the items (grid, graph, alarm grid) for displaying Analysis Space.

(4) Analysis Space

You can add and delete a tab, or change the tab name at the Analysis Space.

▪ Database

This menu is available only for DAQMaster Pro version.



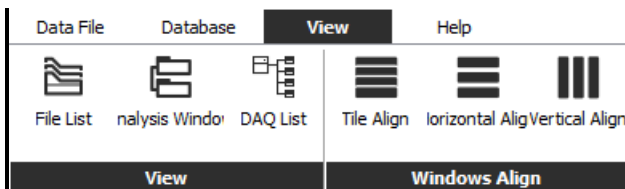
(1) Connect

You can check the data of connected database.

(2) DB Chart

It displays database data as grid or graph via field setting, etc.

▪ View

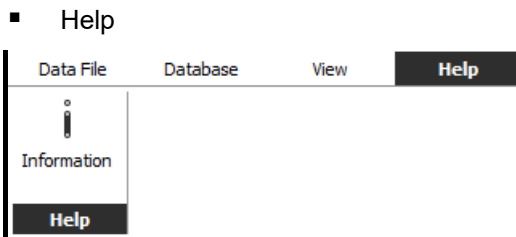


(1) View

Opens file list, analysis window, DAQ List at Data Analysis.

(2) Align Windows

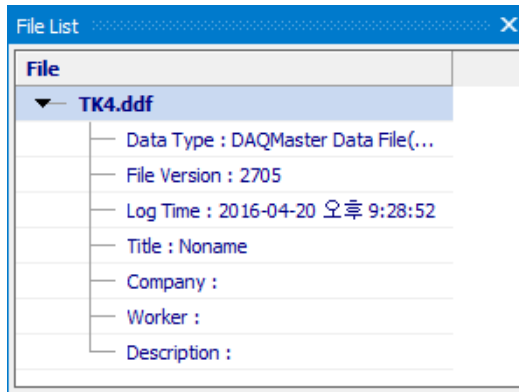
Aligns analysis windows. Select Tile Align, Horizontal Align, or Vertical Align according to the environment.



Information for DAQMaster data analysis program.

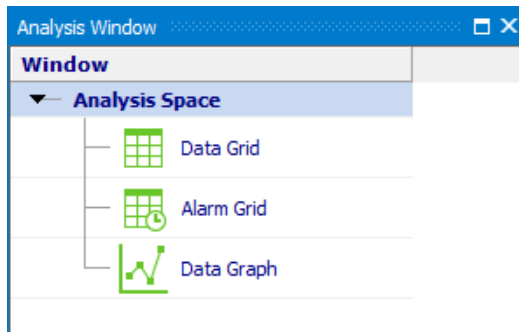
8.1.1.2 File List

Shows a list of opened Data Files (*.ddf).



8.1.1.3 Analysis Window

Shows items at the Analysis Space.



8.1.1.4 DAQ List

DAQ List shows I/O source list saved in the data file.

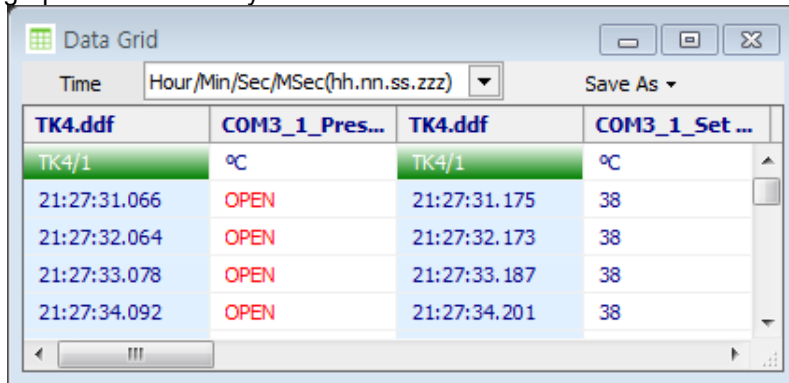
I/O sources can be analyzed through the analysis screen.

No.	File	Device	Address	Source	Tag Name	Type	Variable ...	Unit	Start Time	End Time	Record Tir
1	TK4.ddf	TK4	1	Present Value	COM3_1_Present ...	AI	Int32	°C	2016-04-20 21:27...	2016-04-20 21:28...	00 00:0
2	TK4.ddf	TK4	1	Set Value	COM3_1_Set Value	AI	Int32	°C	2016-04-20 21:27...	2016-04-20 21:28...	00 00:0
3	TK4.ddf	TK4	1	Heating MV	COM3_1_Heating ...	AI	Int16	%	2016-04-20 21:27...	2016-04-20 21:28...	00 00:0

8.1.1.5 Analysis Space

(1) Grid

Analyzes I/O data in grid. Drag the I/O source from the DAQ List and drop onto the data graph screen to analyze it.



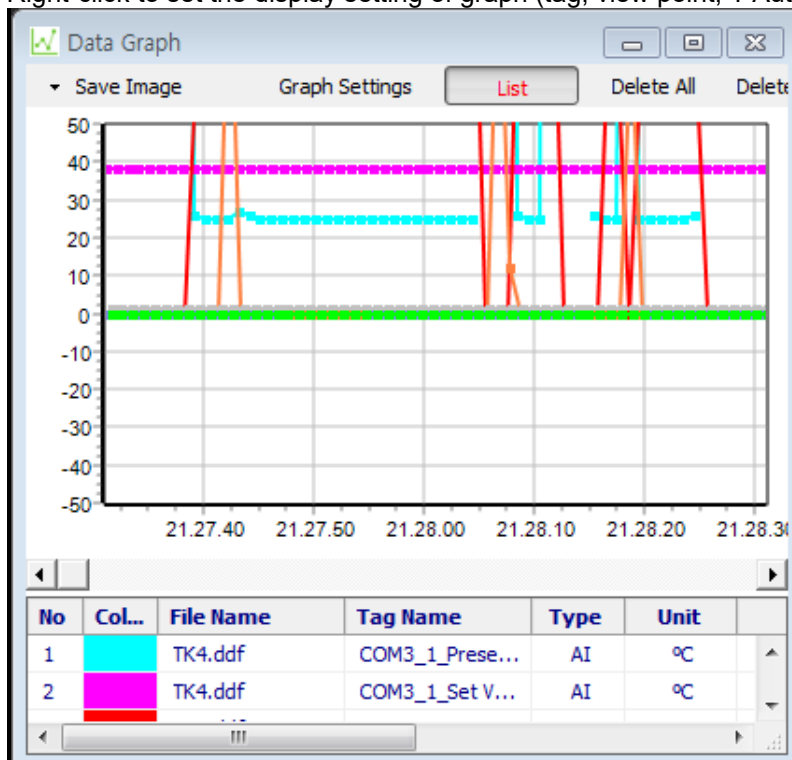
The screenshot shows the 'Data Grid' window with a table of data. The table has four columns: 'TK4.ddf', 'COM3_1_Pres...', 'TK4.ddf', and 'COM3_1_Set ...'. The first row is highlighted in green and contains 'TK4/1', '°C', 'TK4/1', and '°C'. The following four rows contain time stamps and the word 'OPEN' in red, followed by a value of 38.

TK4.ddf	COM3_1_Pres...	TK4.ddf	COM3_1_Set ...
TK4/1	°C	TK4/1	°C
21:27:31.066	OPEN	21:27:31.175	38
21:27:32.064	OPEN	21:27:32.173	38
21:27:33.078	OPEN	21:27:33.187	38
21:27:34.092	OPEN	21:27:34.201	38

(2) Graph

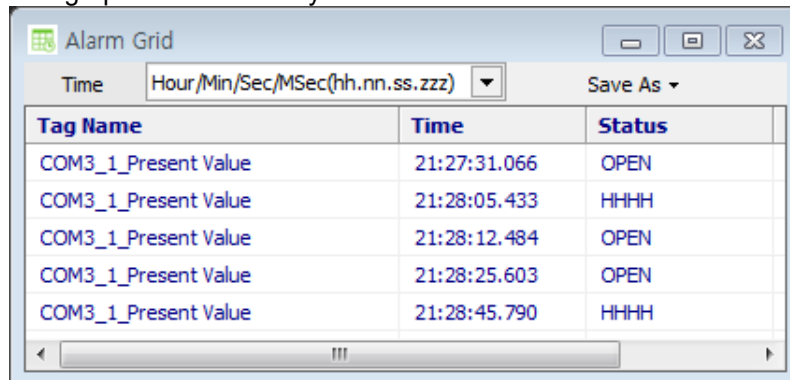
Analyzes I/O data in graph. Drag the I/O source from the DAQ List and drop onto the data graph screen to analyze it.

Right-click to set the display setting of graph (tag, view point, Y Auto scale).



(3) Alarm Grid

Analyzes alarm data in grid. Drag the alarm source from the DAQ List and drop onto the data graph screen to analyze it.



Tag Name	Time	Status
COM3_1_Present Value	21:27:31.066	OPEN
COM3_1_Present Value	21:28:05.433	HHHH
COM3_1_Present Value	21:28:12.484	OPEN
COM3_1_Present Value	21:28:25.603	OPEN
COM3_1_Present Value	21:28:45.790	HHHH

(4) Analysis Spread

This function is only for KRN1000.

Analyzes tag values in spread. Displays data with in designated range, which is set by users.

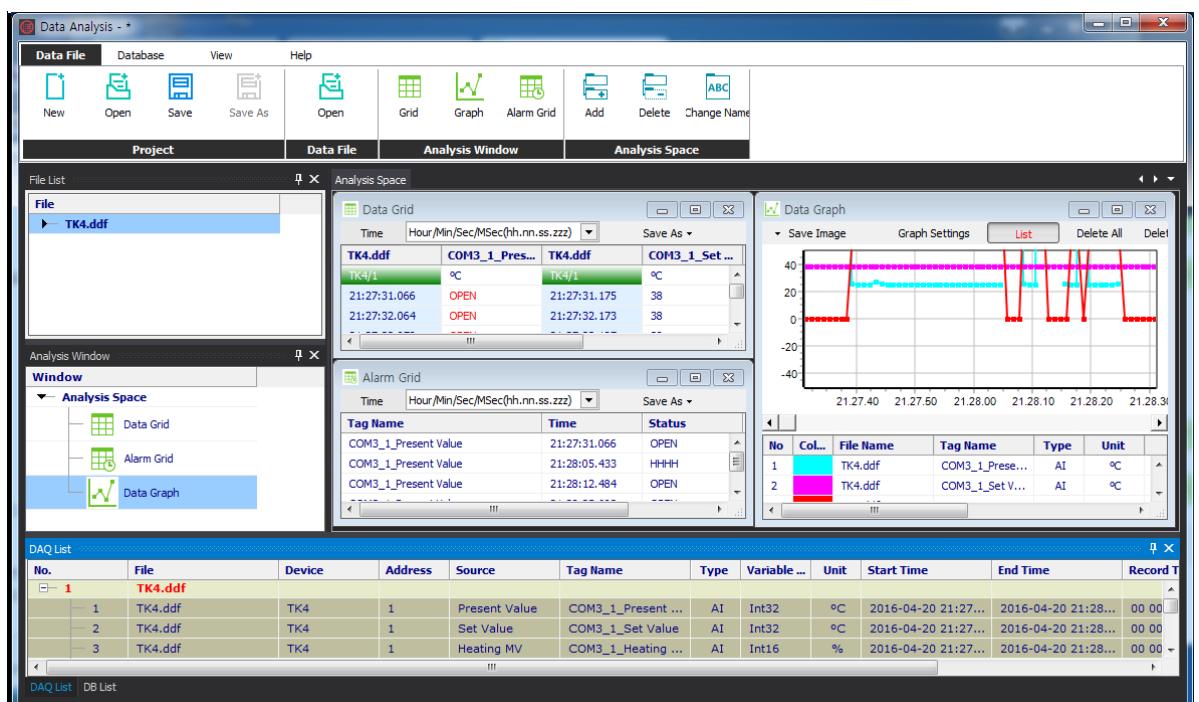
8.1.2 Opening Data Files

Select "Data File > Project > Open" to open a data file.

8.1.3 Add Analysis Screen

DAQ List contains I/O source list of the file. At 'Data File > Analysis Window', select the added Data Grid, Data Graph, Alarm Grid for Analysis Space.

Select I/O source on the DAQ List screen, then drag and drop onto the Data Grid, Data Graph, Alarm Grid.



The screenshot shows the 'Data Analysis' software interface with several windows open:

- File List:** Shows a file named 'TK4.ddf'.
- Analysis Window:** Shows a tree view for 'Analysis Space' with 'Data Grid', 'Alarm Grid', and 'Data Graph' selected.
- Data Grid:** Displays a table with columns for 'Time', 'Tag Name', and 'Status'. It shows data for 'TK4/1' with values like 21:27:31.066, 21:27:31.175, and 21:27:32.173.
- Alarm Grid:** Displays a table with columns for 'Tag Name', 'Time', and 'Status'. It shows alarm data for 'COM3_1_Present Value' with statuses like 'OPEN' and 'HHHH'.
- Data Graph:** Shows a line graph with a y-axis ranging from -40 to 40 and an x-axis showing time from 21:27:40 to 21:28:30. The graph displays multiple data series with different colors.
- DAQ List:** A table listing data acquisition sources. The first row is highlighted:

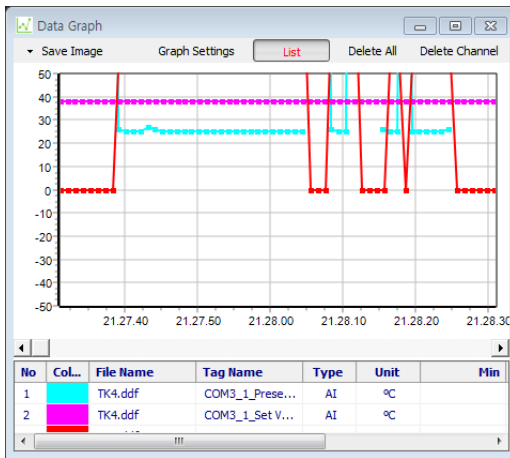
No.	File	Device	Address	Source	Tag Name	Type	Variable ...	Unit	Start Time	End Time	Record T
1	TK4.ddf	TK4	1	Present Value	COM3_1_Present ...	AI	Int32	°C	2016-04-20 21:27...	2016-04-20 21:28...	00 00
2	TK4.ddf	TK4	1	Set Value	COM3_1_Set Value	AI	Int32	°C	2016-04-20 21:27...	2016-04-20 21:28...	00 00
3	TK4.ddf	TK4	1	Heating MV	COM3_1_Heating ...	AI	Int16	%	2016-04-20 21:27...	2016-04-20 21:28...	00 00

The file displayed on the Data Grid screen and the Alarm Grid can be saved as a different file name in *.txt, *.csv, *.html or *.rtf formats.

Time	Hour/Min/Sec/MSec(hh.mm.ss.zzz)	Save As	Delete All	Delete Channel	Print
TK4.ddf	COM3_1_Pres...	TK4.ddf			
21:27:36.120	OPEN	21:27:36.	*.txt	TK4.ddf	COM3_1_Hea...
21:27:37.119	OPEN	21:27:37.	*.csv	21:27:36.339	0.0
21:27:38.133	512	21:27:38.	*.html	21:27:37.337	0.0
21:27:39.147	26	21:27:39.	*.rtf	21:27:38.351	0.0
21:27:40.161	25	21:27:40.270		21:27:39.349	62.8
21:27:41.175	25	21:27:41.284	38	21:27:40.363	62.8
21:27:42.189	25	21:27:42.298	38	21:27:41.377	62.9
21:27:43.203	27	21:27:43.312	38	21:27:42.391	59.8
21:27:44.217	26	21:27:44.326	38	21:27:43.405	61.9
21:27:45.215	25	21:27:45.324	38	21:27:44.419	63.0
				21:27:45.418	63.2

You can use zoom with the mouse wheel feature on the data graph screen for analysis.

In Save Image, You can save the currently shown graph screen as an image .



You can set time axis, time format, graph line width, etc of the graph in Graph Settings.

Graph Settings

Axis Settings

Time Axis Settings

Hour: 0, Min: 1, Sec: 0

Y Axis Settings

Min: -50.00, Max: 50.00

Time Format: hh.mm.ss (selected), Hour/Min(hh.mm)

View Point

Line Width: 2, Point: 2

DI Axis(%): 30

Line

	Y Value	Color	Width
<input type="checkbox"/> Upper Limit	0.00	Red	2
<input type="checkbox"/> Reference	0.00	Red	2
<input type="checkbox"/> Lower Limit	0.00	Red	2

View Tag Name Panel
 View Tag Check Box

OK Cancel

8.1.4 Print

Data Analysis program supports printing graph, grid, etc.

Time	TK4.dff	COM3_1_Pres...	TK4.dff	COM3_1_Set...	TK4.dff	COM3_1_Hea...
21:27:31.066	TK4/1	°C	TK4/1	°C	TK4/1	%
21:27:32.064		OPEN	21:27:31.175	38	21:27:31.284	0.0
21:27:33.078		OPEN	21:27:32.173	38	21:27:32.283	0.0
21:27:34.092		OPEN	21:27:33.187	38	21:27:33.297	0.0
21:27:35.106		OPEN	21:27:34.201	38	21:27:34.311	0.0
			21:27:35.215	38	21:27:35.325	0.0

Click the 'Print' and the 'Preview' dialog box appears.

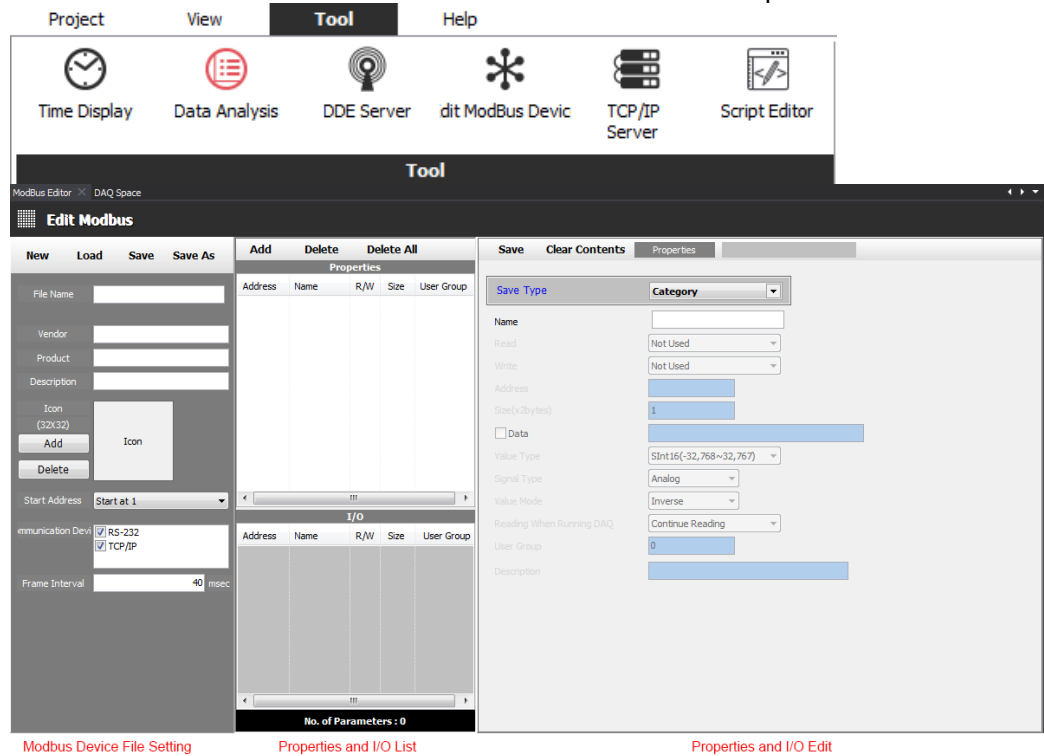
Time/dff	COM3_1_Present Value	COM3_1_Set Value	COM3_1_Heating HW
21:27:31.066	OPEN	21:27:31.175	0.0
21:27:32.064	OPEN	21:27:31.175	0.0
21:27:33.078	OPEN	21:27:33.187	0.0
21:27:34.092	OPEN	21:27:34.201	0.0
21:27:35.106	OPEN	21:27:35.215	0.0
21:27:36.120	OPEN	21:27:36.229	0.0
21:27:37.134	OPEN	21:27:37.243	0.0
21:27:38.148	51.2	21:27:38.244	0.0
21:27:39.162	35	21:27:39.258	63.8
21:27:40.176	35	21:27:40.272	63.8
21:27:41.190	35	21:27:41.286	63.9
21:27:42.204	35	21:27:42.299	64.0
21:27:43.218	35	21:27:43.313	63.9
21:27:44.232	35	21:27:44.327	63.0
21:27:45.246	35	21:27:45.341	63.3
21:27:46.260	35	21:27:46.355	63.3
21:27:47.274	35	21:27:47.369	63.3
21:27:48.288	35	21:27:48.383	63.3
21:27:49.302	35	21:27:49.397	63.3
21:27:50.316	35	21:27:50.411	63.0
21:27:51.330	35	21:27:51.425	62.9
21:27:52.344	35	21:27:52.439	63.0
21:27:53.358	35	21:27:53.453	63.0
21:27:54.372	35	21:27:54.467	64.0
21:27:55.386	35	21:27:55.481	66.5
21:27:56.400	35	21:27:56.495	75.4
21:27:57.414	35	21:27:57.503	76.7
21:27:58.428	35	21:27:58.537	81.3
21:27:59.442	35	21:27:59.571	85.9
21:28:00.456	35	21:28:00.605	89.5
21:28:01.470	35	21:28:01.639	84.1
21:28:02.484	35	21:28:02.673	86.3

8.2 Edit ModBus Device

You can add the any modbus device which are not supported at DAQMaster and set and monitor the property and I/O.

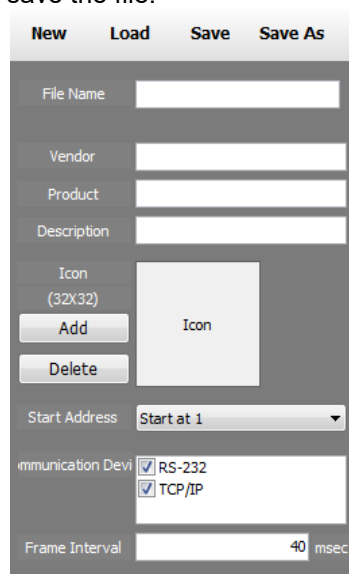
(1) Creating Device File

1st Double-click 'Tool' of menu and Edit Modbus executes at DAQ Space.



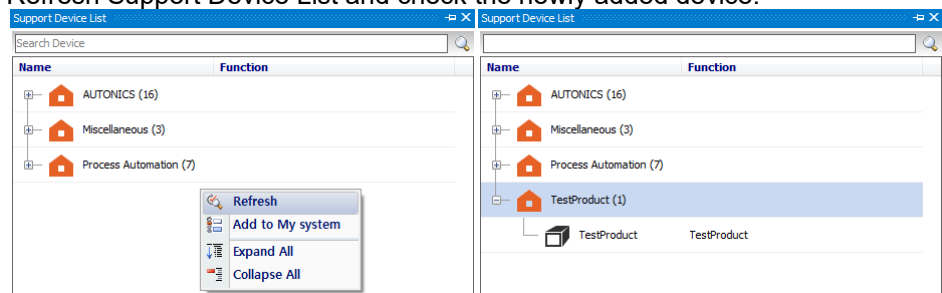
2nd At Modbus Device File Settings, you can create new device file (*.udv) or load the saved user device file (*.udv).

Enter vender name, product name, description, etc. and click 'Save' or 'Save As' to save the file.



3rd 'Save' or 'Save As' dialog box appears. Enter file name. The save file name is displayed at File Name of Modbus Device File Settings

4th Refresh Support Device List and check the newly added device.

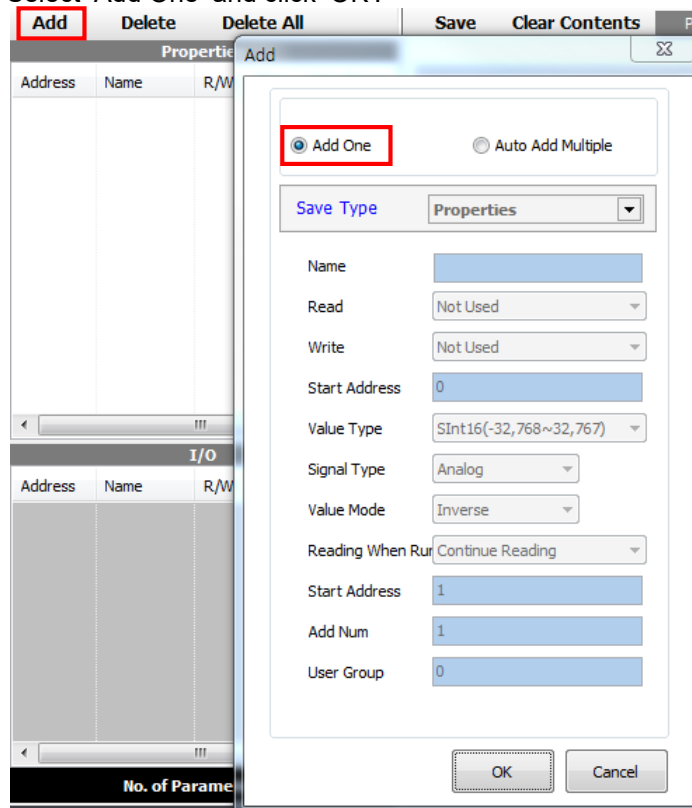


※ Refreshing 'Support Device List' is only possible when any device is not added to 'My System'.

(2) Adding device properties and I/O

1) Add One

1st Click 'Add' at Properties and I/O List' of Edit Modbus and 'Add' dialog box appears. Select 'Add One' and click 'OK'.



2nd Set save type and the desired contents at Properties and I/O Edit of Edit Modbus. In case of add one, set the one save type among category, properties, or I/O.

3rd When save type is 'category', set the category name. Click 'Save' and the category is added at the properties list.

Properties				
Address	Name	R/W	Size	User Group
0	PA1		0	0

4th When save type is 'properties', set name, read/write type, address, size, value type, etc of properties. Click 'Save' and the properties is added at the properties list.

Properties				
Address	Name	R/W	Size	User Group
20001	Alarm 1	R	1	0

I/O				
Address	Name	R/W	Size	User Group

No. of Parameters: 2

5th When save type is 'I/O', set name, read/write type, address, size, value type, etc of I/O. Click 'Save' and the properties is added at the I/O list.

Properties				
Address	Name	R/W	Size	User Group
20001	Alarm 1	R	1	0
130001	PV1	R	1	0

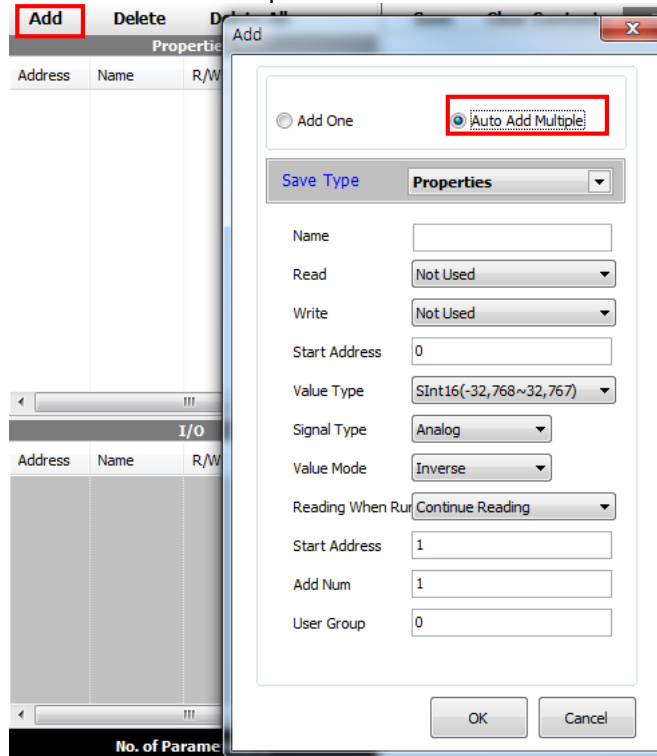
I/O				
Address	Name	R/W	Size	User Group
130001	PV1	R	1	0

No. of Parameters: 3

6th To edit the properties and I/O, click the desired one at Properties or I/O List. At the Properties and I/O Edit, the contents are displayed. After the edit, click 'Save'.

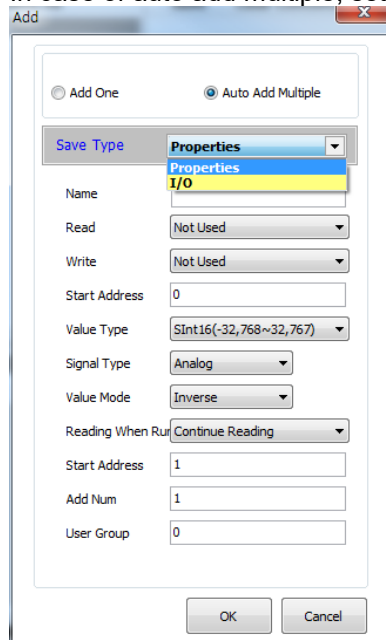
2) Auto Add Multiple,

- 1st Click 'Add' at Properties and I/O List' of Edit Modbus and 'Add' dialog box appears. Select 'Auto Add Multiple' and below menu is activated.



- 2nd Select save type at 'Add' dialog box.

In case of auto add multiple, set the one save type between properties, or I/O.



3rd Set name, read/write type, address, size, value type, etc of properties or I/O for auto add multiple.

Set start number and add number to add multiple properties or I/O.

For example, property name: AL, Start number: 1, Add number: 5, total 5 properties are automatically added as AL1 to AL5 name.

Add	Delete	Delete All		
Properties				
Address	Name	R/W	Size	User Group
00000	AL0	R	1	0
00001	AL1	R	1	0
00002	AL2	R	1	0
00003	AL3	R	1	0
00004	AL4	R	1	0

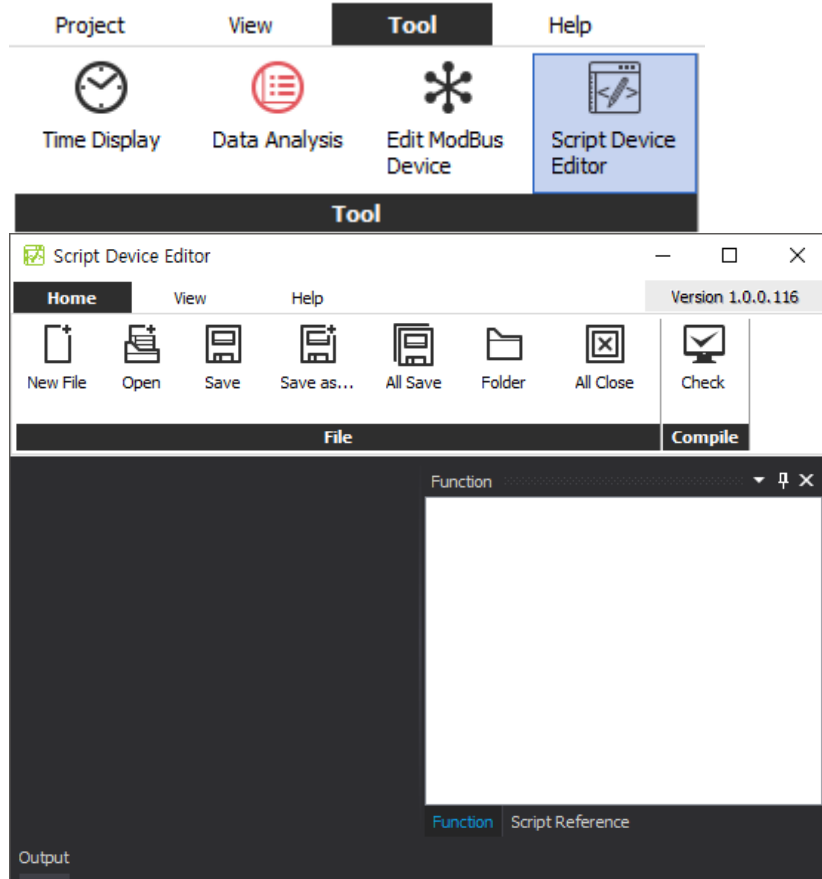
Set user group which helps to reduce time for reading/writing data for the same group.

4th To edit the properties and I/O, click the desired one at Properties or I/O List. At the Properties and I/O Edit, the contents are displayed. After the edit, click 'Save'.

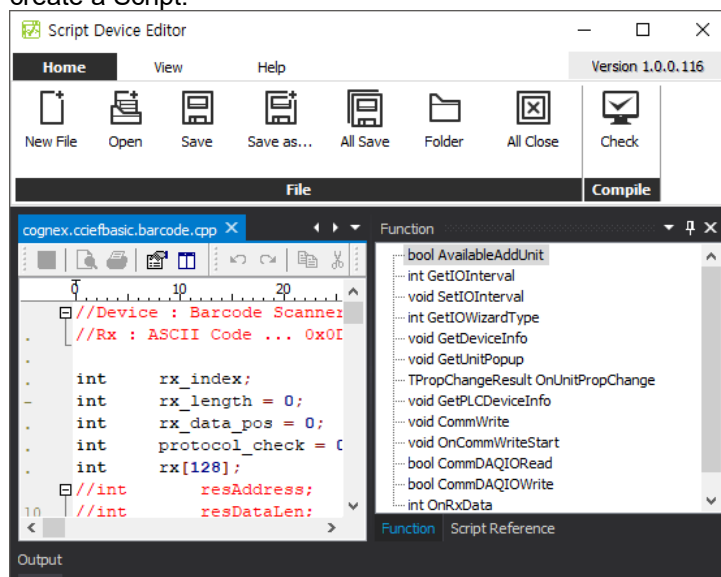
8.3 Script Editor

With Script Editor, it is possible to use and add the any device which is not supported by DAQMaster, and analyze input/output data.

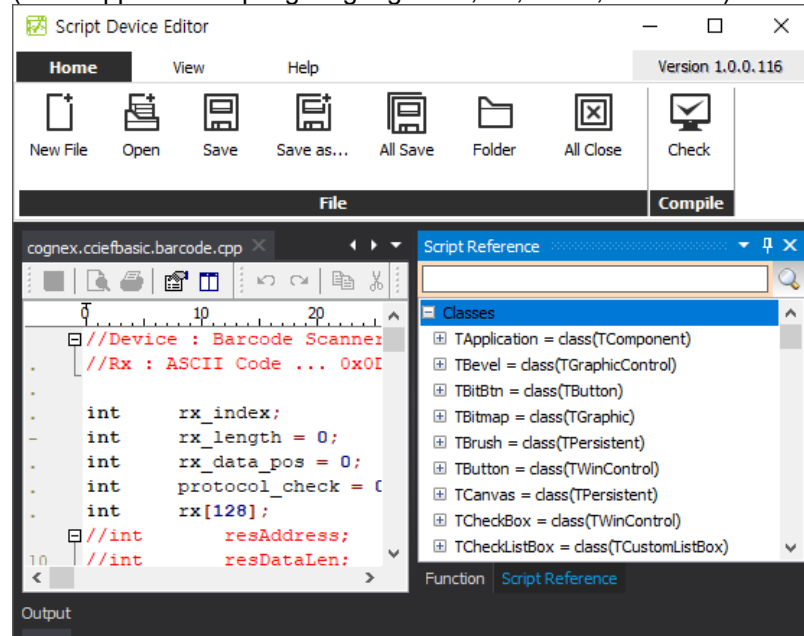
1st Click [Script Editor] in 'Tool' menu to execute 'Script Device Editor'.



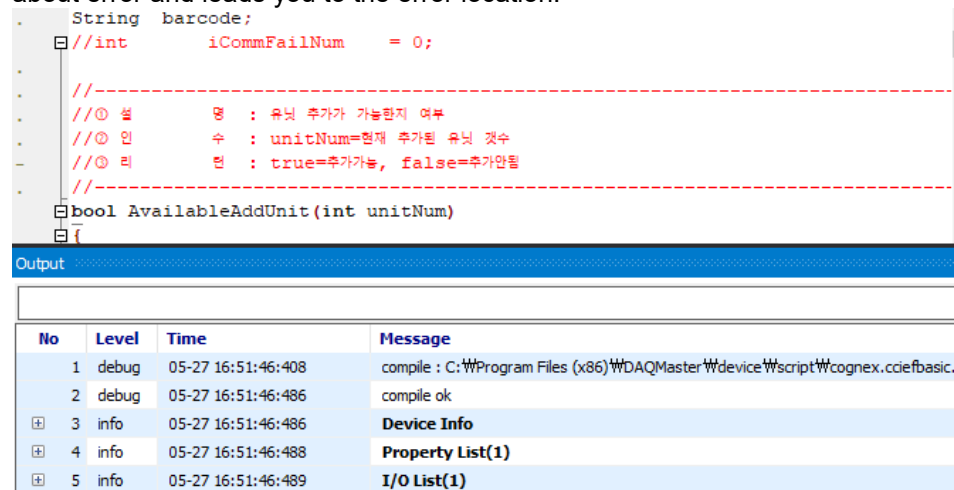
2nd On the top of 'File' menu, click [Open] to open the file to edit or click [New File] to create a Script.



- 3rd The 'Function' window at the right side of screen shows the list of functions that are being used. Double-click the function name to move that location.
- 4th Click 'Script Reference' tab on the bottom of the screen, 'Script Reference' window is activated and provides list of script reference supported by the script editor. (The supported scripting language is C, JS, Basic, and PAS.)



- 5th Click [Check] on the top of 'Compile' menu whether scripting language has error or not. When errors are detected in the scripting language, output window shows the details about error and leads you to the error location.



If checking is over without error, modified script language is loaded automatically and is ready to use when running DAQMaster.

9 Special Features

This chapter describes special features when connecting the device and DAQMaster. Each special feature is different by the device, refer to the below descriptions of each device.

9.1 TK Series (High accuracy standard PID control temperature controller) TF3 Series (Refrigeration temperature controller) KPN Series (High performance and high accuracy process controller)

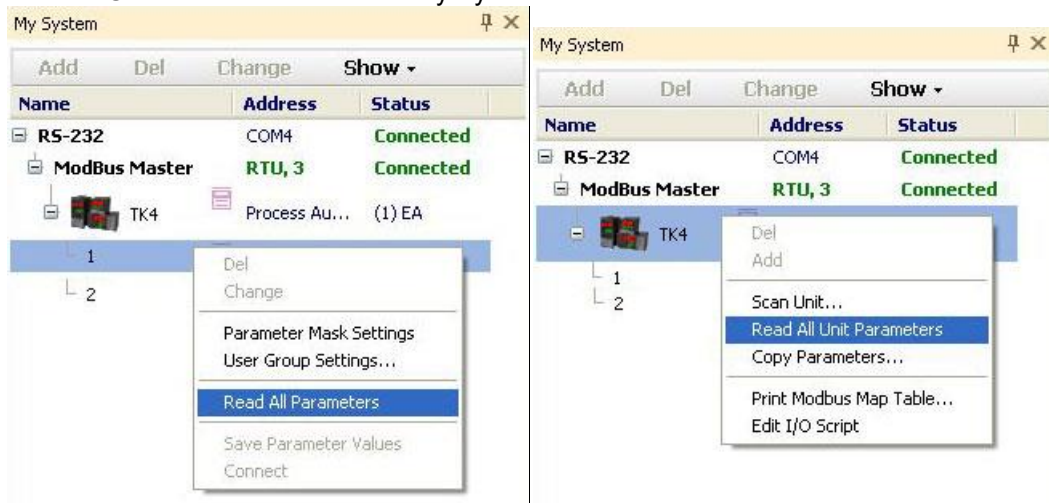
Save parameter values, copy parameters, parameter mask and user parameter group is available by DAQMaster. (Following explanation is based on TK)

(1) Save parameter values

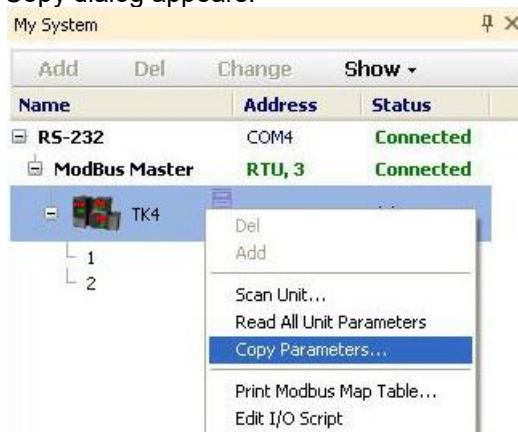
When several same model units cannot be connected to DAQMaster at once and parameter copy is not available, you can save the setting of the device as a file and utilize the file at a later.

1st Connect the TK device which parameters are saved.

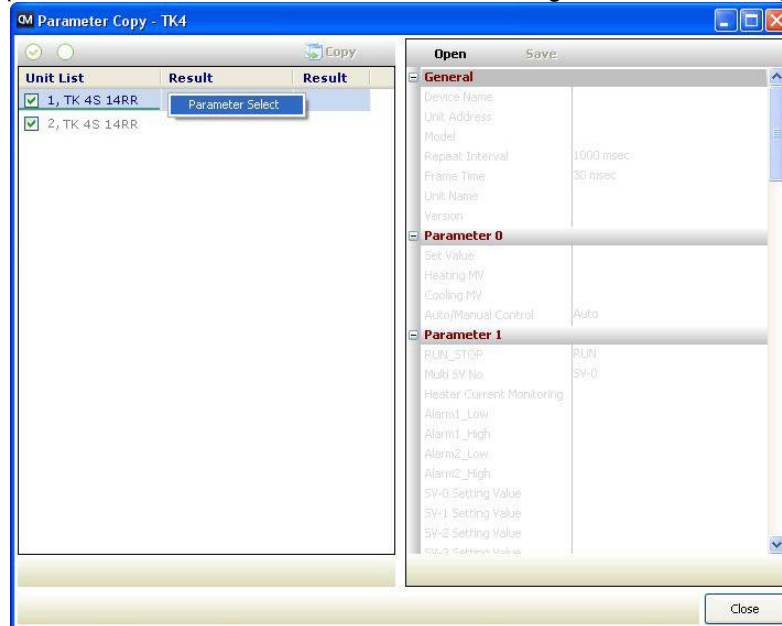
2nd Click 'Read All Parameters' of the unit device which parameters are saved or 'Read All Unit Parameters' of TK at My System.



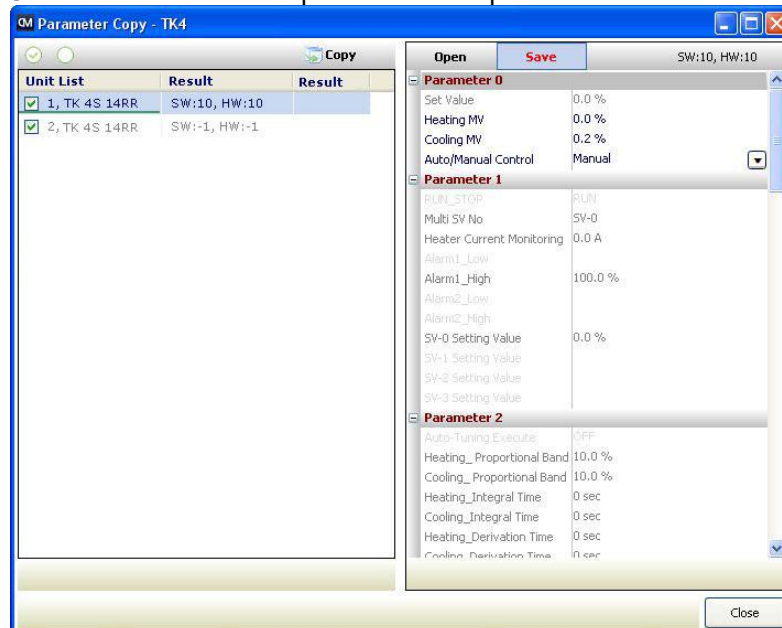
3rd Select TK at My System and right-click to select 'Copy Parameters' and Parameter Copy dialog appears.



- 4th Right-click the unit which parameters are saved and select 'Parameter Select'. The parameter values of the unit is loaded at the right side of the dialog.



- 5th Click 'Save' and it saves parameters in *.prx file.



(2) Copy parameters

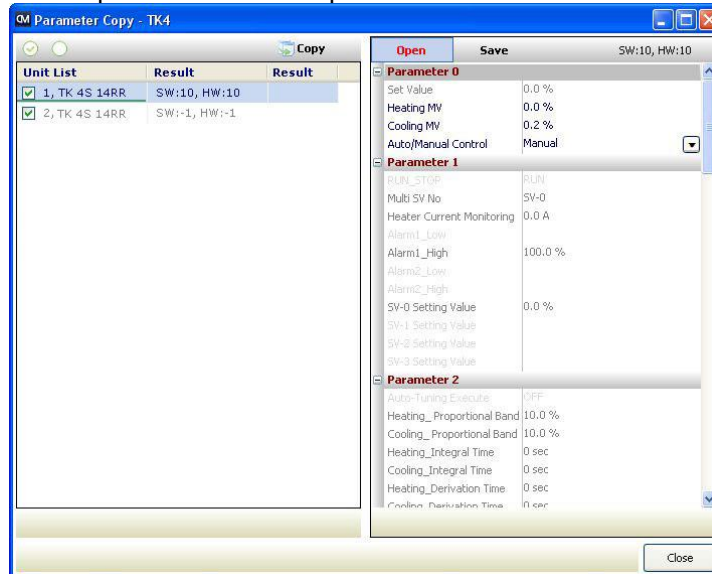
To connect the several same model units at once, you can copy the parameters. You can copy the saved parameter file or the parameter settings of the dedicated device (standard unit) to the other devices(target units).

- To copy the saved parameter file,

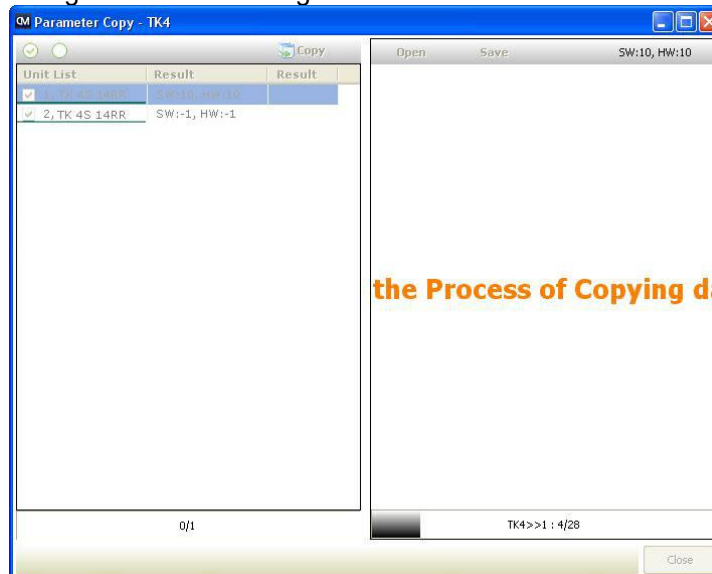
1st Same orders 1st to 3rd of the Save parameter values.

2nd Check the units to be copied at the check box of the left side of the dialog.

3rd Click 'Open' and select the parameter file and it loads at the right side of the dialog.



4th Click 'Copy' and copy is progressing. 'the Process of Copying data' text appears at the right side of the dialog.



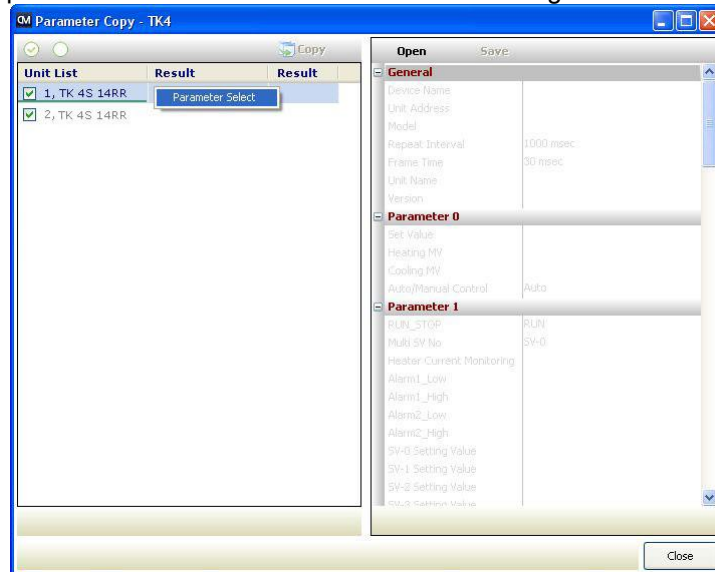
5th After completing copy, 'Copy Complete!' dialog box appears. Click 'OK' and copy is finish.

- To copy the parameter settings of the dedicated device (standard unit) to the other devices(target units),

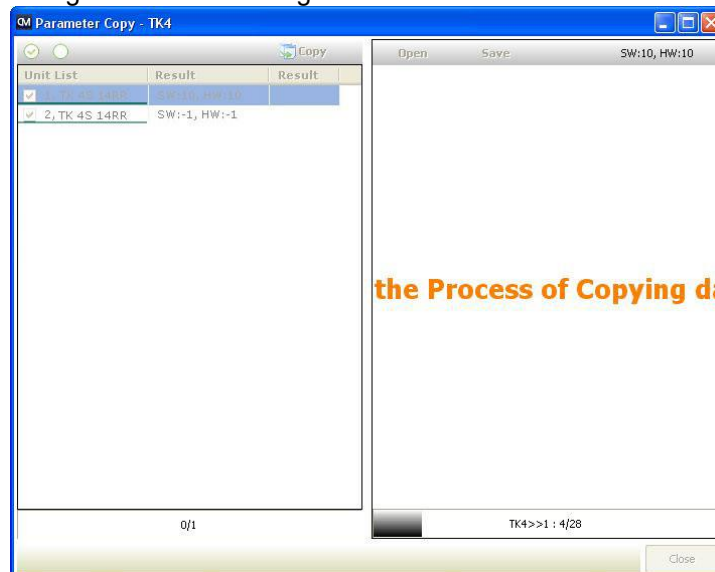
6th Same orders 1st to 3rd of the Save parameter values.

7th Check the units to be copying (standard unit) and to be copied (target unit) at the check box of the left side of the dialog.

8th Right-click the unit to be copying(standard unit) and select 'Parameter Select'. The parameter values of the unit is loaded at the right side of the dialog.



9th Click 'Copy' and copy is progressing. 'the Process of Copying data' text appears at the right side of the dialog.

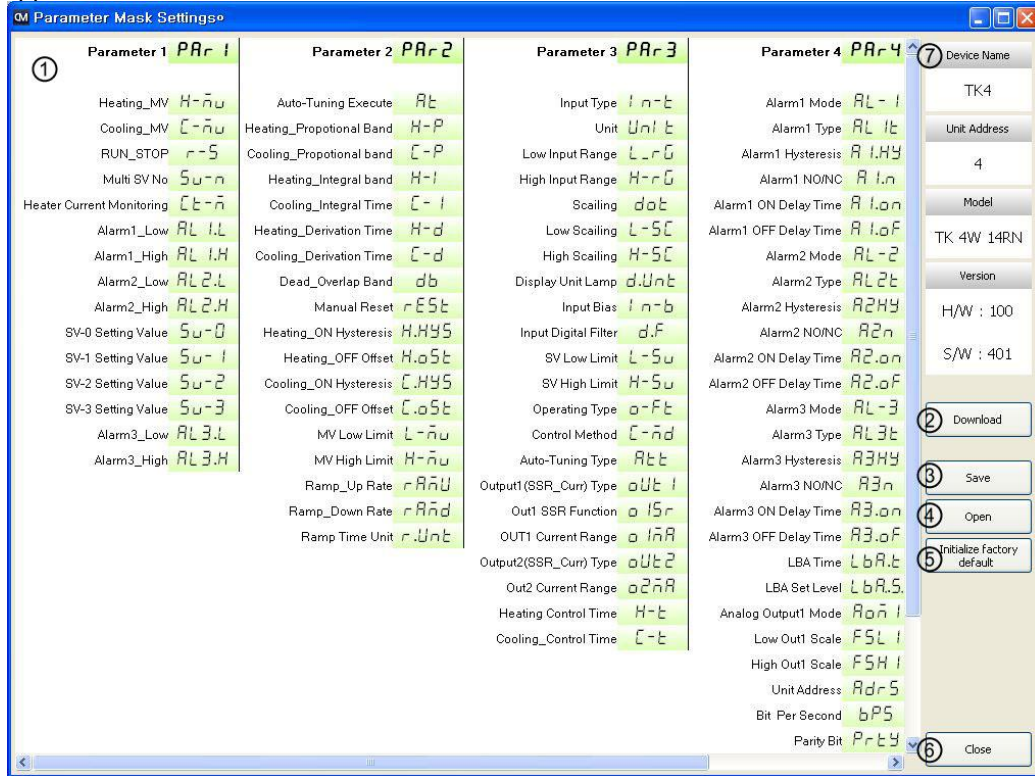


10th After completing copy, 'Copy Complete!' dialog box appears. Click 'OK' and copy is finish.

(3) Parameter mask

This feature is able to hide unnecessary parameters to user environment or less frequently used parameters in parameter group.

Masked parameters are not only displayed. The set values of masked parameters are applied.



No	Item	Description
①	Parameter mask selection	Select the to-be masked parameters. Right-click the to-be masked parameters and they turn gray.
②	Download	Applies the set masked parameters to the device.
③	Save	Saves the set masked parameters as a mask information file.
④	Open	Opens the saved mask information file.
⑤	Initialize factory default	Clears the set for the masked parameters. Download this setting to apply it to the device.
⑥	Close	Closes the Parameter Mask Settings dialog.
⑦	Device information	Displays device name, unit address, model name, and version.

 Ex.



The screenshot shows the 'Parameter Mask Settings' window for a device named 'TK4'. The window is divided into four columns for Parameter 1 (PAR 1), Parameter 2 (PAR 2), Parameter 3 (PAR 3), and Parameter 4 (PAR 4). Each parameter group contains various settings such as heating/cooling limits, hysteresis, and control times. A right-hand sidebar displays device information including Unit Address (4), Model (TK 4W 14RN), and Version (H/W : 100, S/W : 401). Below the sidebar are buttons for 'Download', 'Save', 'Open', 'Initialize factory default', and 'Close'.

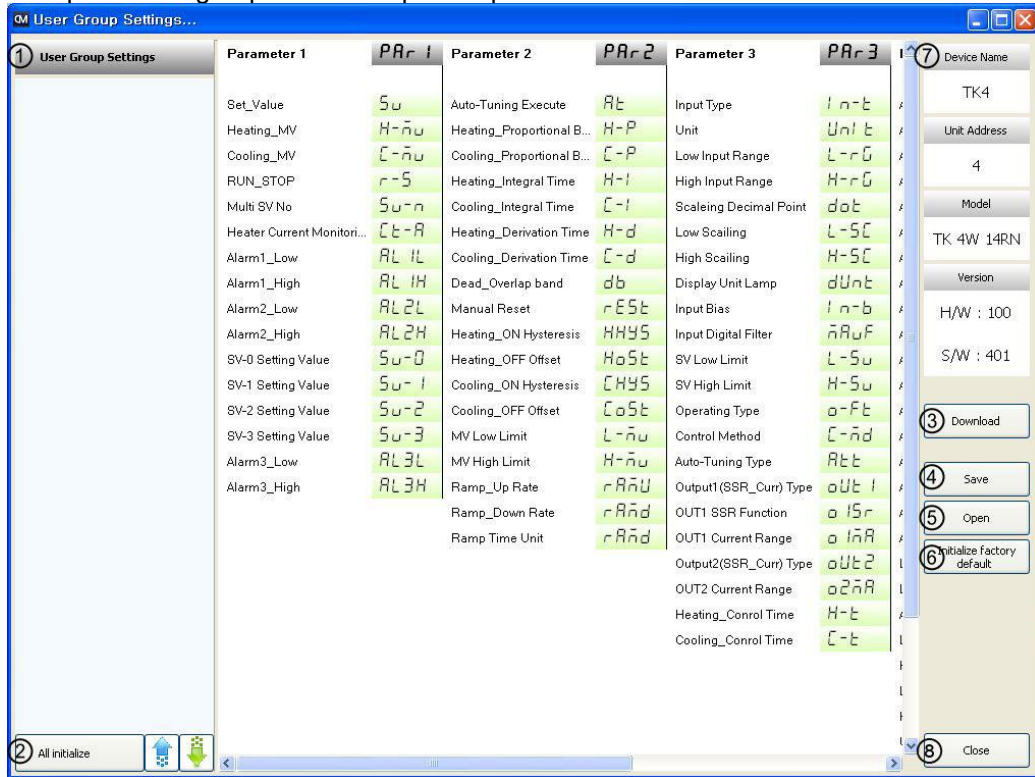
Parameter 1 (PAR 1)	Parameter 2 (PAR 2)	Parameter 3 (PAR 3)	Parameter 4 (PAR 4)
Heating_MV: H-nu	Auto-Tuning Execute: Rt	Input Type: In-t	Alarm1 Mode: RL-1
Cooling_MV: C-nu	Heating_Proportional Band: H-P	Unit: Unit-t	Alarm1 Type: RL-tt
RUN_STOP: r-s	Cooling_Proportional band: C-P	Low Input Range: L-rG	Alarm1 Hysteresis: R1H4
Multi SV No: Su-n	Heating_Integral band: H-I	High Input Range: H-rG	Alarm1 NO/NC: RL-n
Heater Current Monitoring: Ct-n	Cooling_Integral Time: C-I	Scaling: dot	Alarm1 ON Delay Time: R1onF
Alarm1_Low: RL1L	Heating_Derivation Time: H-d	Low Scaling: L-SC	Alarm1 OFF Delay Time: R1ofF
Alarm1_High: RL1H	Cooling_Derivation Time: C-d	High Scaling: H-SC	Alarm2 Mode: RL-2
Alarm2_Low: RL2L	Dead_Overlap Band: db	Display Unit Lamp: d.Unt	Alarm2 Type: RL2t
Alarm2_High: RL2H	Manual Reset: rESt	Input Bias: In-b	Alarm2 Hysteresis: R2H4
SV-0 Setting Value: Su-0	Heating_ON Hysteresis: H.H45	Input Digital Filter: d.F	Alarm2 NO/NC: RL2n
SV-1 Setting Value: Su-1	Heating_OFF Offset: H.o5t	SV Low Limit: L-Su	Alarm2 ON Delay Time: R2onF
SV-2 Setting Value: Su-2	Cooling_ON Hysteresis: C.H45	SV High Limit: H-Su	Alarm2 OFF Delay Time: R2ofF
SV-3 Setting Value: Su-3	Cooling_OFF Offset: C.o5t	Operating Type: o-Ft	Alarm3 Mode: RL-3
Alarm3_Low: RL3L	MV Low Limit: L-nu	Control Method: C-n-d	Alarm3 Type: RL3t
Alarm3_High: RL3H	MV High Limit: H-nu	Auto-Tuning Type: Rt-t	Alarm3 Hysteresis: R3H4
	Ramp_Up Rate: rRnU	Output1(SSR_Cur) Type: oUt1	Alarm3 NO/NC: RL3n
	Ramp_Down Rate: rRnD	Out1 SSR Function: o1Sr	Alarm3 ON Delay Time: R3onF
	Ramp Time Unit: r.Unt	OUT1 Current Range: o1nA	Alarm3 OFF Delay Time: R3ofF
		Output2(SSR_Cur) Type: oUt2	LBA Time: LbA-t
		Out2 Current Range: o2nA	LBA Set Level: LbA.S
		Heating Control Time: H-t	Analog Output1 Mode: RAon1
		Cooling Control Time: C-t	Low Out1 Scale: F5L1
			High Out1 Scale: F5H1
			Unit Address: Rd-r5
			Bit Per Second: bP5
			Parity Bit: P-t4

Example of masking alarm, SV setting parameters of parameter 1 group, input type, unit of parameter 3 group, and all of parameter 4 group.

(4) User parameter group [PAR-U]

This feature is able to set the frequently used parameters to the user parameter group. You can quickly and easily set parameter settings.

User parameter group can have up to 30 parameters.



No	Item	Description
①	User parameter group	Displays the selected parameters as user group parameter Double-click the parameters for the user group, and these parameters turn gray. To delete the parameters at the user group, double-click the parameters.
②	User group selection	- All initialize: Initializes the set user group. - ↑, ↓ : Changes the selected parameter order up/down.
③	Download	Applies the set user group to the device.
④	Save	Saves the set user group as a user group information file.
⑤	Open	Opens the saved user group file.
⑥	Initialize factory default	Clears the set for the user group. Download this setting to apply it to the device.
⑦	Close	Closes the User Group Settings dialog.
⑧	Device information	Displays device name, unit address, model name, and version.



Ex.

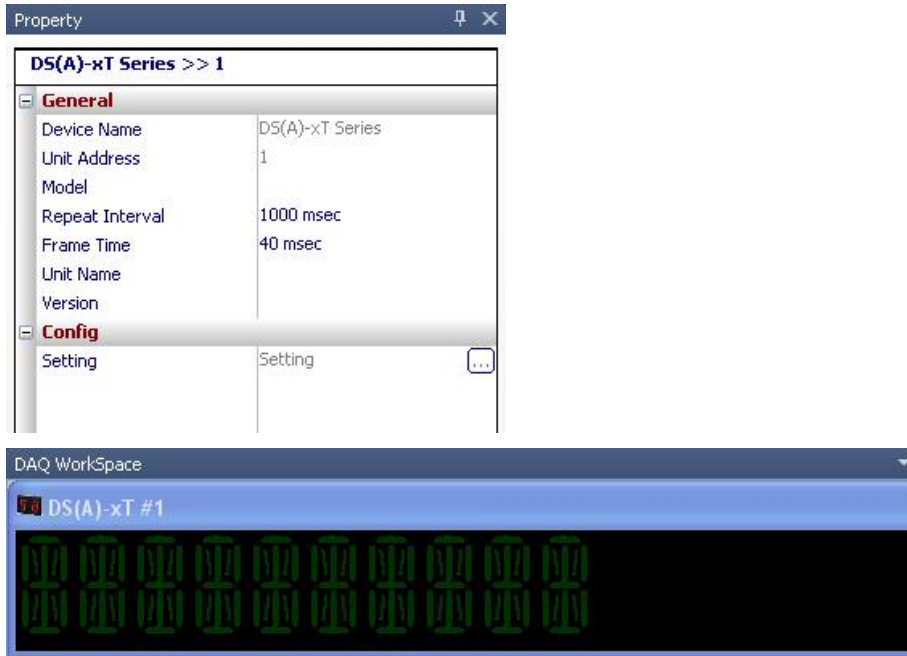
Parameter 1	PAR-1	Parameter 2	PAR-2	Parameter 3	PAR-3	Parameter 4	PAR-4
Set_Value	Su	Auto-Tuning Execute	At	Input Type	int	Alarm1 Mode	AL-1
RUN_STOP	r-S	Heating_Proportional B...	H-P	Unit	Unit	Alarm1 Type	AL-1t
SV-0 Setting Value	Su-0	Cooling_MV	C-nu	Low Input Range	L-rG	Alarm1 Hysteresis	AL-1H
SV-1 Setting Value	Su-1	RUN_STOP	r-S	High Input Range	H-rG	Alarm1 NO/NC	AL-1n
SV-2 Setting Value	Su-2	Multi SV No	Su-n	Scaling Decimal Point	dot	Alarm1 ON Delay Time	AL-1on
SV-3 Setting Value	Su-3	Heater Current Monitor...	Ct-A	Low Scaling	L-Sc	Alarm1 OFF Delay Time	AL-1of
Manual Reset	r-EST	Alarm1_Low	AL-1L	High Scaling	H-Sc	Alarm2 Mode	AL-2
Input Bias	in-b	Alarm1_High	AL-1H	Display Unit Lamp	dUnit	Alarm2 Type	AL-2
Alarm1 Mode	AL-1	Alarm2_Low	AL-2L	Input Bias	in-b	Alarm2 Hysteresis	AL-2H
Alarm1 Type	AL-1t	Alarm2_High	AL-2H	Input Digital Filter	in-dF	Alarm2 NO/NC	AL-2n
Alarm1 Hysteresis	AL-1H	Manual Reset	r-EST	SV Low Limit	L-Su	Alarm2 ON Delay Time	AL-2on
Alarm1 NO/NC	AL-1n	SV-0 Setting Value	Su-0	SV High Limit	H-Su	Alarm2 OFF Delay Time	AL-2of
Alarm1 ON Delay...	AL-1on	SV-1 Setting Value	Su-1	Operating Type	o-Ft	Alarm3 Mode	AL-3
Alarm1 OFF Delay...	AL-1of	SV-2 Setting Value	Su-2	Control Method	C-d	Alarm3 Type	AL-3t
		SV-3 Setting Value	Su-3	Auto-Tuning Type	At	Alarm3 Hysteresis	AL-3H
		Alarm3_Low	AL-3L	Output1 (SSR_Curr) Type	oUt1	Alarm3 NO/NC	AL-3n
		Alarm3_High	AL-3H	OUT1 SSR Function	o1Sr	Alarm3 ON Delay Time	AL-3on
				OUT1 Current Range	o1rA	Alarm3 OFF Delay Time	AL-3of
				Output2 (SSR_Curr) Type	oUt2	LBA Time	LbAt
				OUT2 Current Range	o2rA	LBA Band	LbAb
				Heating_Control Time	H-t	Analog Output Mode	AOA-1
				Cooling_Control Time	C-t	Low Out1 Scale	F5L1
						High Out1 Scale	F5H1
						Low Out2 Scale	F5L2
						High Out2 Scale	F5H2
						Unit Address	Ad-5
						Bit Per Second	bPS

Example of the set user group with SV setting, control output RUN/STOP, alarm output 1 low/high-limit, SV-0/1/2/3 set value, manual reset, input correction, alarm output 1 mode/option/hysteresis/contact type/ON delay time/OFF delay time parameters.

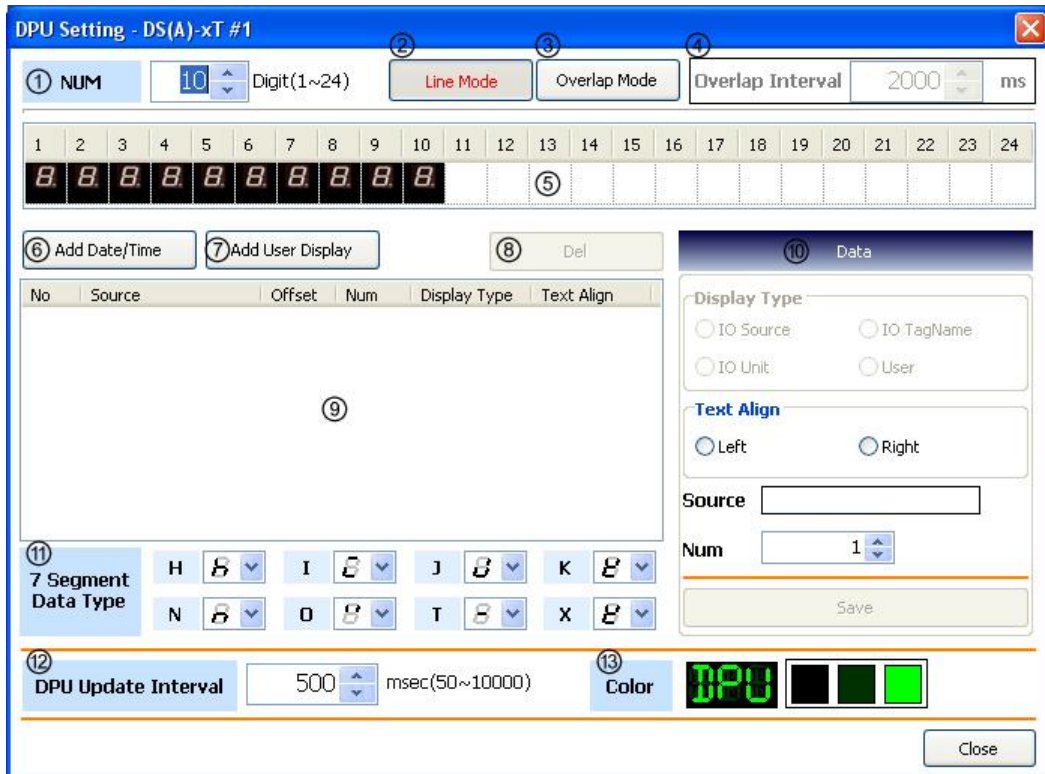
9.2 DS/DA-□T(Intelligent Display Unit)




DS/DA displays I/O source value, unit, and user set value by DAQMaster.

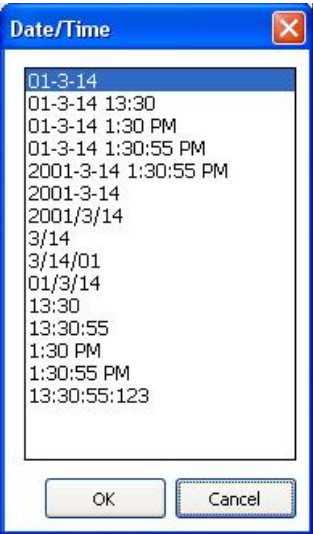
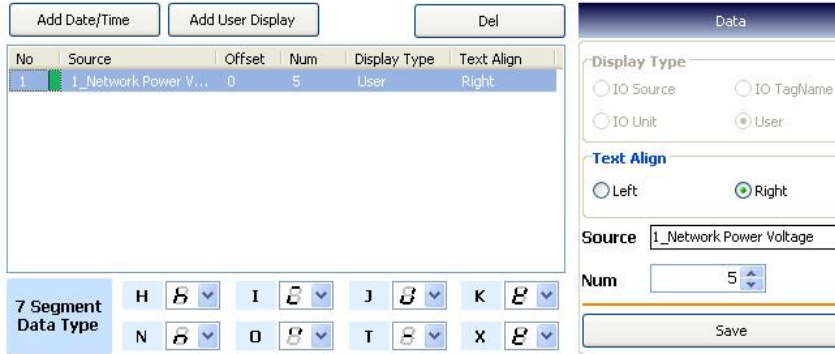
Connect DAQMaster and DS, DA(RS485 input type) and click '...' button located on the right of Setting at Config in the 'Property' control panel. A display unit screen is open at DAQ Workspace.




Double-click a monitoring screen of a display unit screen at DAQ Workspace and Setting dialog appears.



No.	Item	Description
①	NUM	Set the number of display units. Set range is 1 to 24.
②	Line Mode	Displays the added sources of list at the connected display units in a line.
③	Overlap Mode	Displays the added sources of list at the connected display units by overlapping at the set interval time.
④	Overlap Interval	Activated for overlap mode. Set the interval time for overlap display.
⑤	Display parts	<p>Displays the connected display units and sources in the set color. Right-click this part to select the segment.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p> 7 segment</p> <p> 16 segment</p> <p> unit segment</p> </div> <p>When selecting unit segment, Unit Type dialog box appears to select the unit display mode.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Unit Type</p> <p>Unit Type</p> <p><input checked="" type="radio"/> none unit <input type="radio"/> Upper Unit ON <input type="radio"/> Flash Up Unit</p> <p><input type="radio"/> Upper-Lower Unit OFF <input type="radio"/> Lower Unit ON <input type="radio"/> Flash Down Unit</p> <p><input type="radio"/> Upper-Lower Unit ON <input type="radio"/> Flash Up/Down Unit</p> <p style="text-align: right;">OK</p> </div>

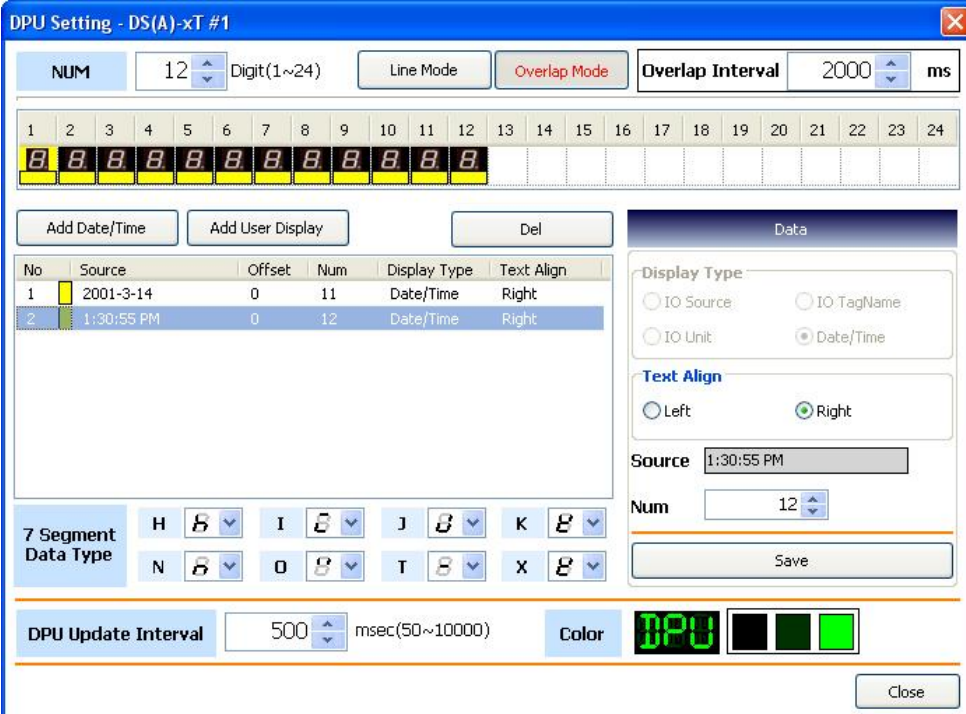
⑥	Add Date/Time	<p>Select one of date and time information types.</p> 
⑦	Add User Display	<p>Add the desired characters. Enter the characters at Source of DPU Data.</p>
⑧	Del	<p>Delete the added source of list.</p>
⑨	List	<p>Displays the added I/O sources. Add I/O sources by dragging them at DAQ list. Press 'Ctrl+ ↑ or ↓' to change the order of sources.</p>
⑩	Data	 <ul style="list-style-type: none"> ▪ Display type <ul style="list-style-type: none"> - IO Source: Displays the value of the source. - IO TagName: Displays the name of the source. - IO Unit: Displays the unit of the source. ▪ Text Align: Sets the alignment at the display units. ▪ Source: Displays the name of I/O source and it is editable. ▪ Num: Sets the desired number of display units. ▪ Save: Saves the settings.
⑪	7 Segment Data Type	<p>Sets the display type for H, I, J, K, N, O, T, X characters.</p>
⑫	DPU Update Interval	<p>Sets the update interval for data value.</p>

⑬	Color	Sets the displayed color at run time screen.
---	-------	--




Ex.

Example of adding two date/time sources, overlap mode and 2000ms of overlap interval.



It displays 2012-04-13 for 2 sec.(2000ms) at first then displays 03:20:06 PM for 2 sec. alternately.



9.3 SCM-WF48 (Wi-Fi/RS485-USB Communication Converter)

Communication setting of SCM-WF48 is editable with DAQMaster. Connect DAQMaster and SCM-WF48 after setting communication mode to USB with USB/485 communication mode switch on the side of the SCM-WF48 device.

Double-click SCM-WF48 in My System to open SCM-WF48 Config tab in DAQ Space.



(1) Connecting device

You can connect SCM-WF48 to DAQMaster in manual mode or auto mode.

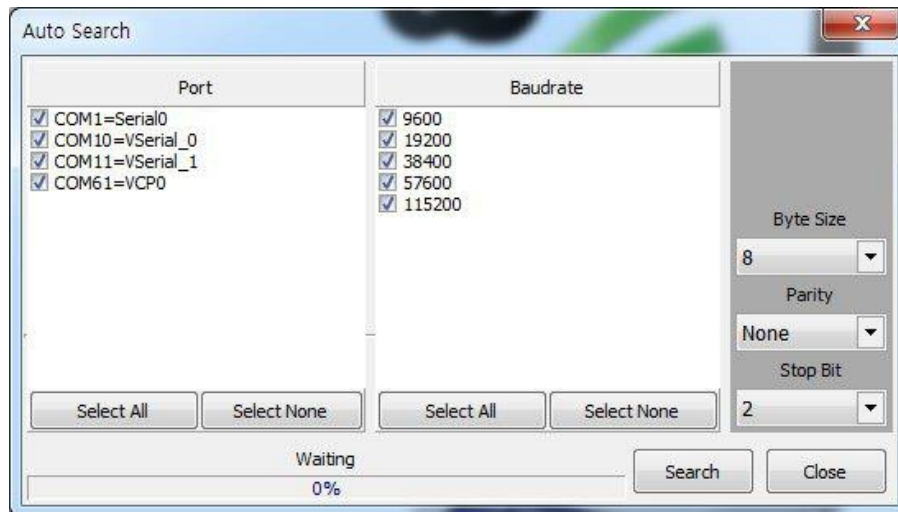
1) Manual connection



Enter the port, baudrate, byte size, parity, stop bit values in the upper side of the SCM-WF48 Config tab equal to SCM-WF48 device and click 'Connect'. Followings are default values of SCM-WF48.

Baudrate	9600
Byte Size	8
Parity	None
Stop Bit	1

2) Auto connection



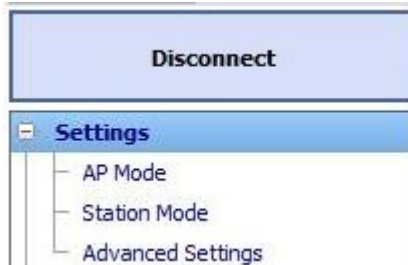
Click 'Auto Search' to open 'Auto Search' dialog.

If you select items to search and click 'Search' button, DAQMaster displays accessible SCM-WF48.

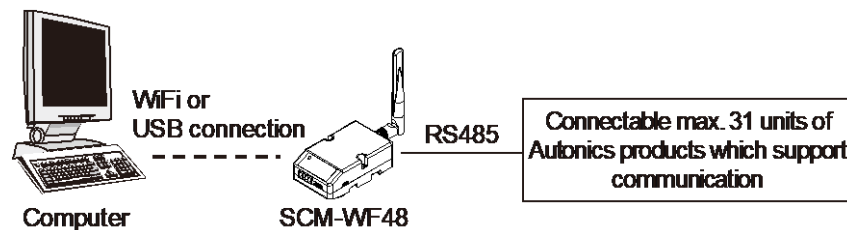
When PC is connected with over 2 SCM-WF48 devices, DAQMaster is automatically connected with first SCM-WF48 in numerical order of port number.

(2) Setting communication mode

Select communication mode of SCM-WF48 from AP mode and Station mode.



1) AP mode

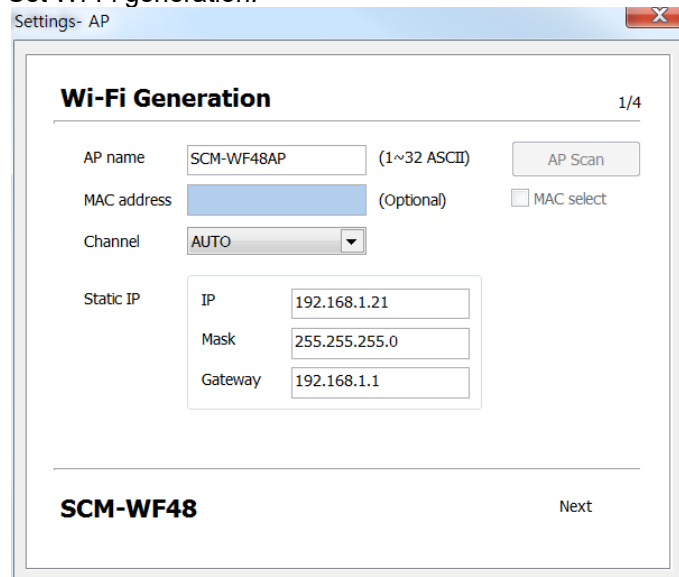


SCM-WF48 performs as AP (access point).

PC, smart phone, PLC are connected directly with SCM-WF48 using Wi-Fi to communicate with other devices which are connected to SCM-WF48 with RS485 wired connection.

1st Click 'AP Mode' to operate AP mode setup wizard.

2nd Set Wi-Fi generation.

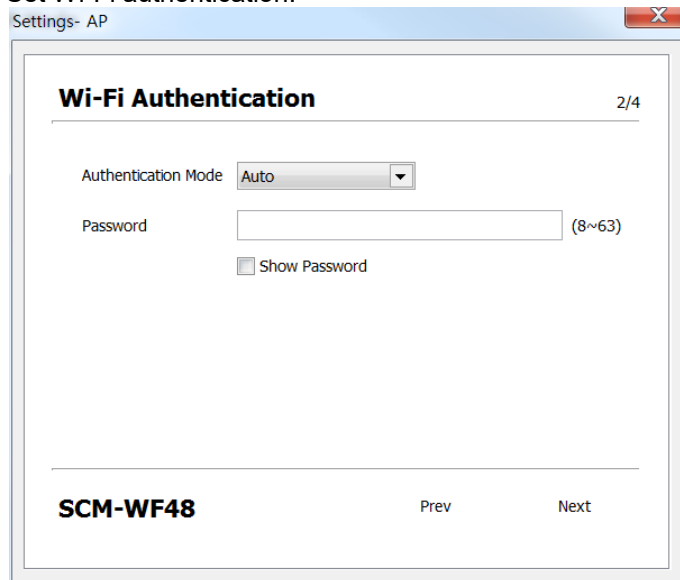


- ◆ AP name: Sets displaying name.
Default is SCM-WF48AP.
- ◆ Channel: Sets Wi-Fi frequency. (setting range: Auto, 1~14)
If the number of channel is same or next to each other with another wirelessly connected devices, communication interference occurs and makes communication status unstable.

- ◆ Static IP: Sets IP, Mask, Gateway as follows.
Please check network environment ahead of setting.

IP	192.168.1.1
Mask	255.255.255.0
Gateway	192.168.1.1

3rd Set Wi-Fi authentication.



Followings are types of authentication.

Type	Description							
Auto	Selects mode of authentication automatically. Passphrase is required for connection. If you enter passphrase at the first time, DAQMaster connects automatically without passphrase.							
Open	Selecting SSID connects AP, without passphrase.							
PWA	<table border="1"> <tr> <td>WEP</td> <td rowspan="6"> Encrypts connection and communication. In order to strengthen security, PWA mode is recommended. Passphrase is required for connection. Order of security safety: WPA2TKIP > WPA2AES > WPAAES, WPA2 > WPA > WEP </td> </tr> <tr> <td>WPA</td> </tr> <tr> <td>WPA2</td> </tr> <tr> <td>WPAAES</td> </tr> <tr> <td>WPA2AES</td> </tr> <tr> <td>WPA2TKIP</td> </tr> </table>	WEP	Encrypts connection and communication. In order to strengthen security, PWA mode is recommended. Passphrase is required for connection. Order of security safety: WPA2TKIP > WPA2AES > WPAAES, WPA2 > WPA > WEP	WPA	WPA2	WPAAES	WPA2AES	WPA2TKIP
WEP	Encrypts connection and communication. In order to strengthen security, PWA mode is recommended. Passphrase is required for connection. Order of security safety: WPA2TKIP > WPA2AES > WPAAES, WPA2 > WPA > WEP							
WPA								
WPA2								
WPAAES								
WPA2AES								
WPA2TKIP								

4th Set Wi-Fi protocol.



Settings- AP

Wi-Fi Protocol 3/4

Protocol: TCP

Mode: Server

Port: 5000

SCM-WF48 Prev Next

- ◆ Protocol: Select Wi-Fi protocol from TCP, UDP.
- ◆ Mode: 'AP mode' only supports Server mode.
- ◆ Port: A set of server and client has set in same port value.
(In Modbus communication, 502 port is used in general)

5th Set UART.



Settings- AP

UART(USB/485) 4/4

Baudrate: 9600

Byte Size: 8

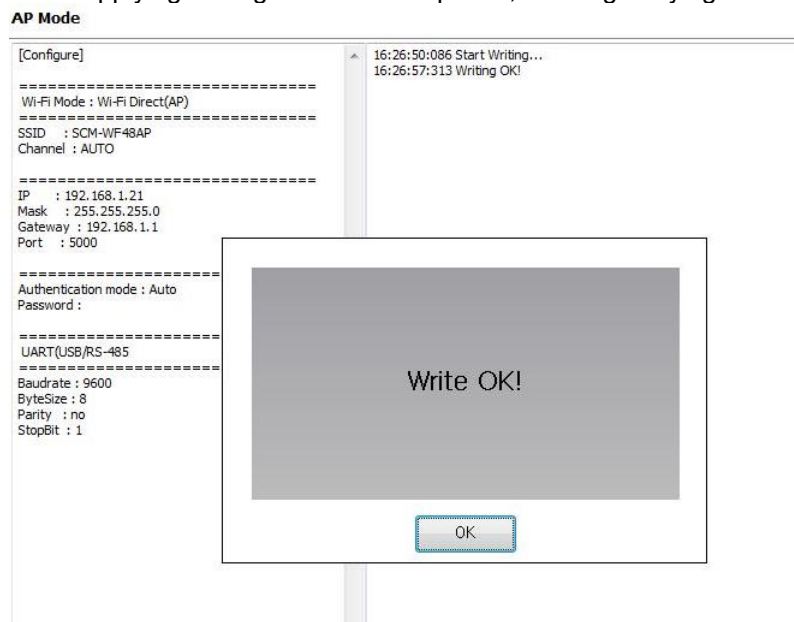
Parity: no

Stop Bit: 1

SCM-WF48 Prev Write

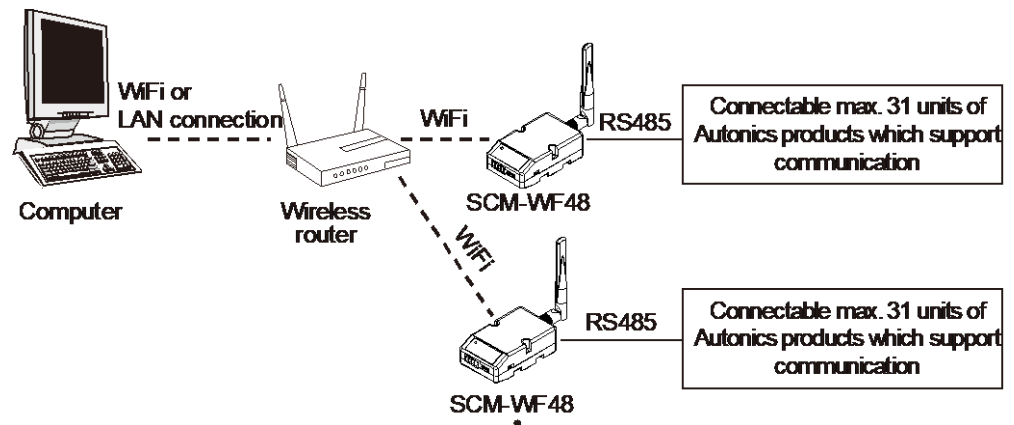
Enter the Baudrate, Byte Size, Parity, Stop Bit values equal to the device which is connected to SCM-WF48 device with RS485 or USB and click 'Write'.

- 6th On the SCM-WF48 Config tab, setting values are displayed on the left side and progress for connection is shown on the right side.
When applying setting values is completed, message saying 'Write OK!' pops up.



- 7th AP mode setting is finished.
Please reboot SCM-WF48 device in order to apply setting values to the device.

2) Station mode



SCM-WF48 is linked to another AP.

Wireless router and SCM-WF48 is connected using Wi-Fi therefore PC, smart phone, PLC connected to wireless router can communicate with other devices which are connected to SCM-WF48 with RS485 wired connection.

1st Click 'Station Mode' to operate Station mode setup wizard.

2nd Set Wi-Fi generation.

The screenshot shows a software window titled 'Settings- Station'. The main content area is titled 'Wi-Fi Generation' with a page indicator '1/4' in the top right. The configuration options are as follows:

- AP name:** SCM-WF48AP (1~32 ASCII) with an 'AP Scan' button.
- MAC address:** (Optional) with a 'MAC select' checkbox.
- Channel:** AUTO (dropdown menu).
- IP:** DHCP (dropdown menu).
- Static IP:** A sub-section with three input fields: IP (192.168.1.21), Mask (255.255.255.0), and Gateway (192.168.1.1).

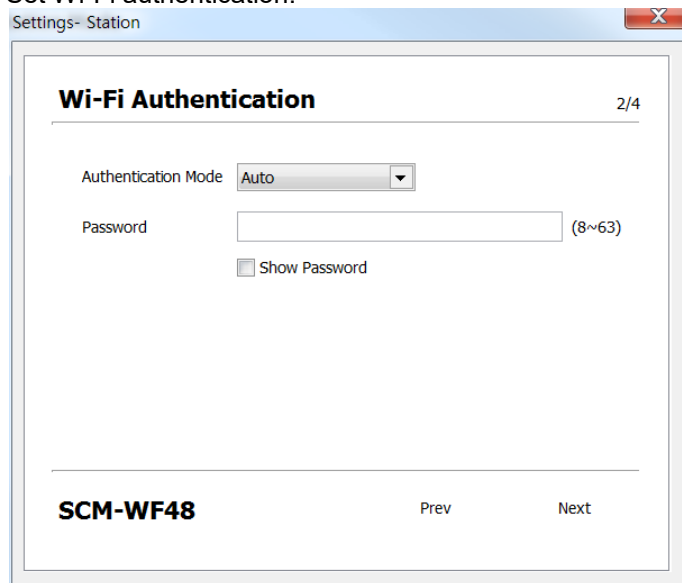
At the bottom of the window, the device name 'SCM-WF48' is displayed on the left and a 'Next' button is on the right.

- ♦ AP name: Sets displaying name.
Default is SCM-WF48AP.
- ♦ AP Scan: Scans AP.
When scanning AP, it may be necessary to repeat again.
- ♦ MAC select/address: Check the 'MAC select' and you can enter MAC address.
When the same SSIDs exist, enter the MAC address and connect the desired SSID.
- ♦ Channel: Sets Wi-Fi frequency. (setting range: Auto, 1 to 14)
If the number of channel is same or next to each other with another wirelessly connected devices, communication interference occurs and makes communication status unstable.

- ◆ IP: Selects IP from DHCP and Static IP.
DHIP: DAQMaster sets IP automatically.
Static IP: User sets IP manually.
- ◆ Static IP: Sets IP, Mask, Gateway as follows.
Please check network environment ahead of setting.

IP	192.168.1.1
Mask	255.255.255.0
Gateway	192.168.1.1

3rd Set Wi-Fi authentication.



Followings are types of authentication.

Type	Description							
Auto	Selects mode of authentication automatically. Passphrase is required for connection. If you enter passphrase at the first time, DAQMaster connects automatically without passphrase.							
Open	Selecting SSID connects AP, without passphrase.							
PWA	<table border="1"> <tr> <td>WEP</td> <td rowspan="6"> Encrypts connection and communication. In order to strengthen security, PWA mode is recommended. Passphrase is required for connection. Order of security safety: WPA2TKIP > WPA2AES > WPAAES, WPA2 > WPA > WEP </td> </tr> <tr> <td>WPA</td> </tr> <tr> <td>WPA2</td> </tr> <tr> <td>WPAAES</td> </tr> <tr> <td>WPA2AES</td> </tr> <tr> <td>WPA2TKIP</td> </tr> </table>	WEP	Encrypts connection and communication. In order to strengthen security, PWA mode is recommended. Passphrase is required for connection. Order of security safety: WPA2TKIP > WPA2AES > WPAAES, WPA2 > WPA > WEP	WPA	WPA2	WPAAES	WPA2AES	WPA2TKIP
WEP	Encrypts connection and communication. In order to strengthen security, PWA mode is recommended. Passphrase is required for connection. Order of security safety: WPA2TKIP > WPA2AES > WPAAES, WPA2 > WPA > WEP							
WPA								
WPA2								
WPAAES								
WPA2AES								
WPA2TKIP								

4th Set Wi-Fi protocol.

Wi-Fi Protocol 3/4

Protocol: TCP

Mode: Client

Server IP: 192.168.1.21

Port: 5000

SCM-WF48 Prev Next

- ◆ Protocol: Select Wi-Fi protocol from TCP, UDP.
- ◆ Mode: Select Mode from Server and Client.
Server: SCM-WF48 operates as server.
Client: SCM-WF48 operates as client. Connecting information of server is required.
- ◆ Server IP: Enter server IP.
- ◆ Port: A set of server and client has set in same port value.
(In Modbus communication, 502 port is used in general)

5th The other settings are same as AP mode. Refer to the '1) AP mode'.

3) Advanced settings

**Set network communication at once without setup wizard.
You can save/ load/save as the communication settings.**

Advanced Settings S2W APP VERSION=5.2.3

Wi-Fi Mode: **AP Mode** Write

Wi-Fi

AP name: SCM-WF48IAP AP Scan

MAC address: MAC select

Channel: 6

IP: Static IP

Static IP: IP: 192.168.50.100
Mask: 255.255.255.0
Gateway: 192.168.50.1

Authentication Mode: Auto

Password: (8~63) Show Password

Destination

Protocol: TCP

Mode: Client

Destination IP: 192.168.50.100

Port: 5000

Local Port: 5000

UART(USB/485)

Baudrate: 9600 Parity: no

Byte Size: 8 Stop Bit: 1

**Note**

Notes for SCM-WF48 communication setting

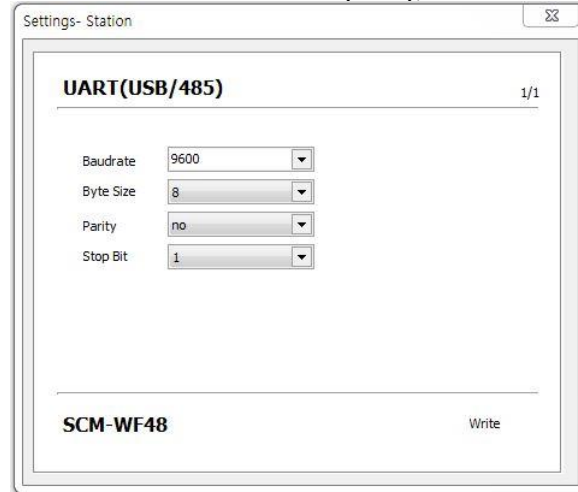
- Single Wi-Fi network needs at least one AP.
- Single network consisting of wire and wireless connection needs at least one DHCP server.
- At least one set of server and client is necessary.

(3) Utility

'UART Settings', 'Reset Factory Default', 'Profile' allows you to check or edit the setting value.

**1) UART Settings**

You can check or edit VCP(USB), RS-485 communication setting values.

**2) Reset Factory Default**

Initializes Baudrate, Byte Size, Parity, Stop Bit of SCM-WF48 to its factory default settings.

Reset Factory Default



3) Profile


Displays Wi-Fi setting information of SCM-WF48.


Profile

Profile	No	Value
ACTIVE	1	C1 &Y0 E0 V1 B=9600,8,N,1 &K0 &R0
STORED 0	2	+NDHCP=1 +NSET=192.168.1.99,255.255.255.0,192.168.1.1
STORED 1	3	+DNS1=0.0.0.0, +DNS2=0.0.0.0
	4	+WM=0 +WALTO=0,"SCM-WF48AP",,
	5	+WRETRY=8 +WP=0 +WRXPS=1 +WRXACTIVE=0
	6	+NAUTO=1,1,0.0.0.0,5000
	7	+WAUTH=0 +WVPA="Serial2Wifi"+PSK-valid=0 +SSID=
	8	+WVPEP1=1234567890 +WVPEP2=
	9	+WVPEP3= +WVPEP4=
	10	S0=01000 S1=00500 S2=07500 S3=00003 S4=00010 S5=00150 S...
	11	+BDATA=0 +WSEC=0 +ASYNMSG=0

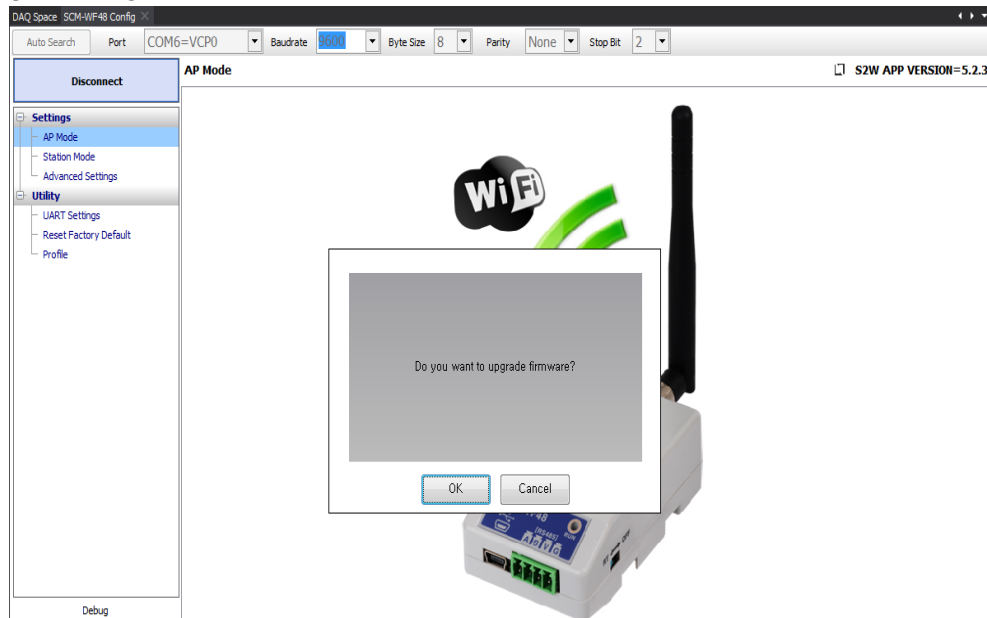
(4) Firmware version upgrade

After connecting SCM-WF48, you can check the firmware version and upgrade it at top-right of SCM-WF48 Config tab. (your computer should have wireless lan and Internet connection is required.)

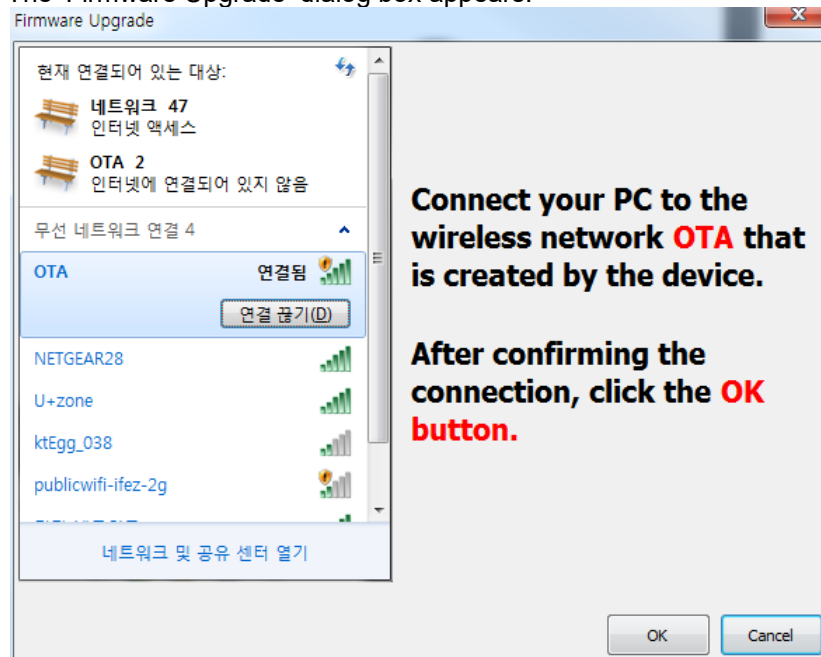
 **S2W APP VERSION=5.2.3**

1st Click the  icon.

2nd The dialog for firmware version upgrade appears. Click the 'OK' button.

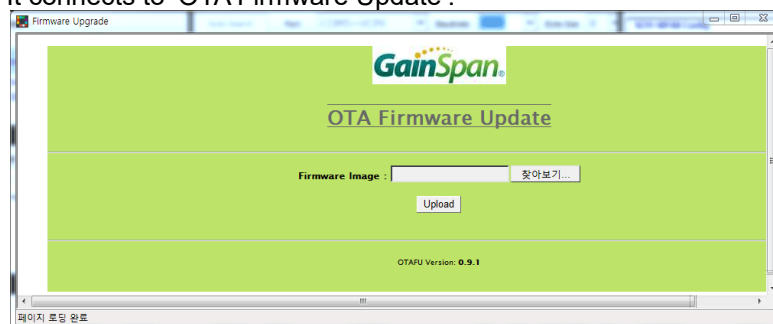


3rd The 'Firmware Upgrade' dialog box appears.



Wireless network connection of PC sets as OTA and click 'OK'.

4th It connects to 'OTA Firmware Update'.



Add the SCM-WF48 firmware which is downloaded at Autonics web site. Click the 'Upload' button.

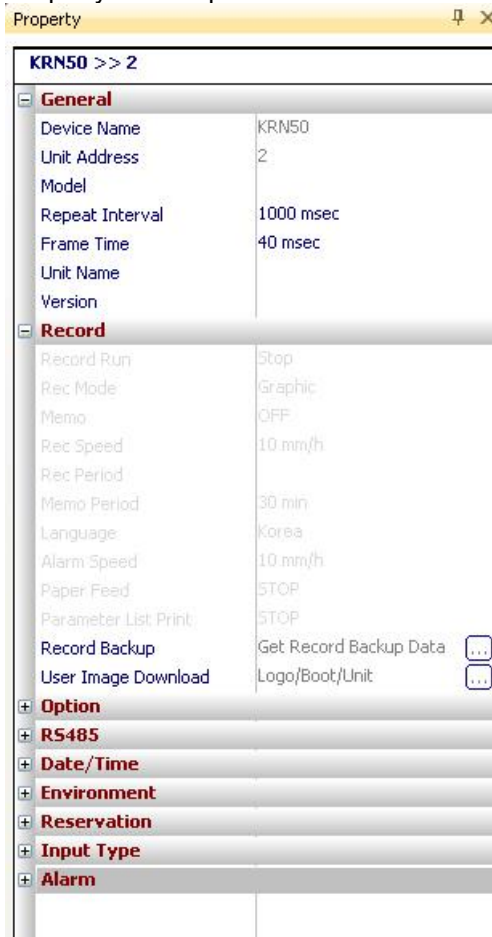
5th Firmware upgrade is completed.

9.4 KRN50 (50mm compact hybrid recorder)

The following are special features for KRN50 while in communication with DAQMaster.

(1) Accessing Record Backup Data

To get the recorded data, click '...' button located on the right of Record Backup in the 'Property' control panel.



To read memory information, the device status must be Connected and not Run. There are also cases in which you cannot read from memory depending on KRN50 parameter setting. (Refer to 'KRN50 user manual'.)

KRN50 Record Memory Data

Memory Information Upload Data

Memory Information

Start Time

End Time

Upload Data Size

Start Time 12 Mon 12 Day 12 Hour 12 Min

End Time 12 Mon 12 Day 12 Hour 12 Min

Available depending on Environment >> Setting Lock (R/W - Off)

Setup

Data Upload Status

Cancel Reading Data

To do this, device should be connected to the network.

OK Cancel

Once all conditions are met and ready to get memory data, follow the steps below:

- 1st Run [Memory Information] in KRN50 Record Memory Data window. It gets the information from currently saved memory.
- 2nd Set [Uploaded Data Size].
- 3rd Run [Upload Data].
- 4th You can cancel the operation while data is being uploaded. When data reading is complete, OK button is enabled.
- 5th If you click OK, recorded data will be shown in two screens - the Grid and the Graph.

(2) Downloading User Images

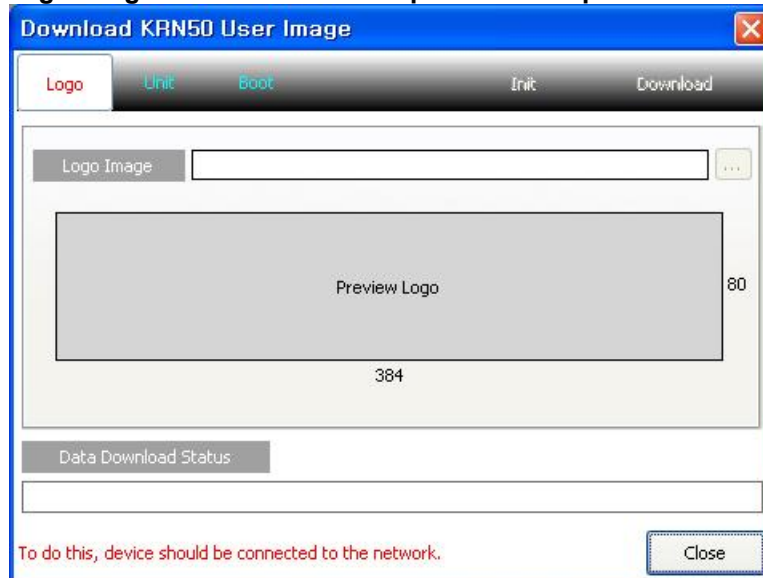
User Image allows you to download images to KRN50 and change logo, unit and boot images.

You can also reset images back to the original status. This is also a self protocol, so cannot download images during Run.

1) Download logo

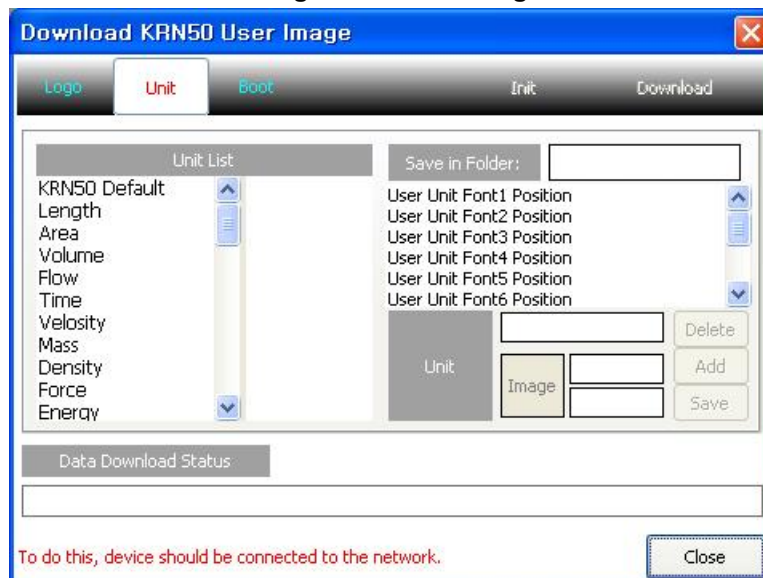
You can change the company logo image on contents that are printed on recording paper.

Logo image should be 384 X 80 pixel of bitmap file.

**2) Download Units**

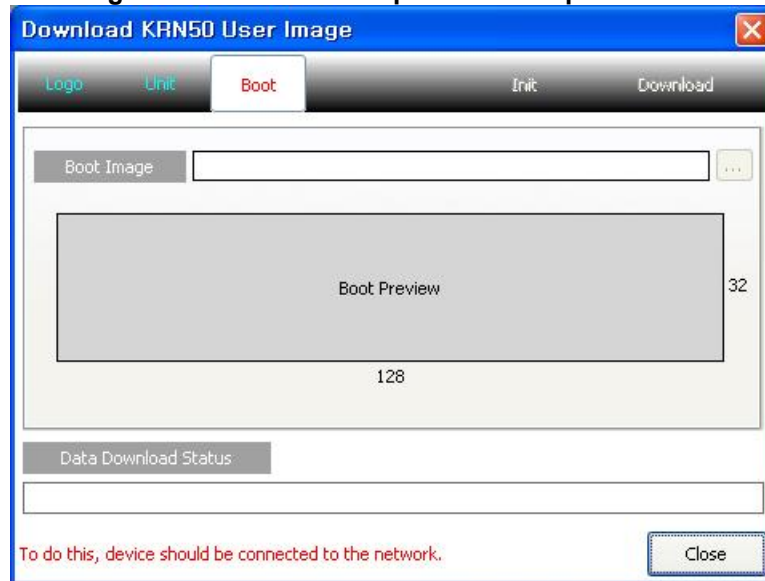
There are 0-9 user units.

The download procedure is: select a unit list → select a destination to save → double-click a unit image to add the image → download.



3) Download boot images

The boot image (logo image) appears on LCD upon initial power supply to KRN50. You can change booting logo image which displays when KRN50 is power ON. The image should be 128 X 32 pixel of bitmap file.



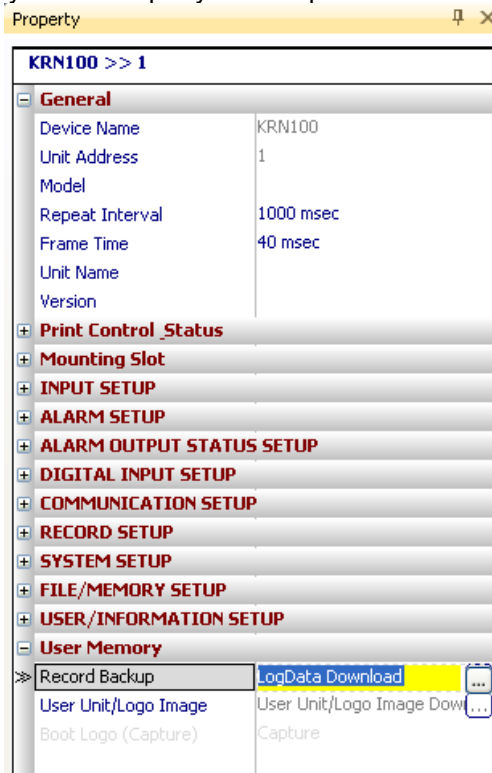
9.5 KRN100 (100mm hybrid recorder)

The following are special features for KRN100 while in communication with DAQMaster.

(1) Accessing Record Backup Data

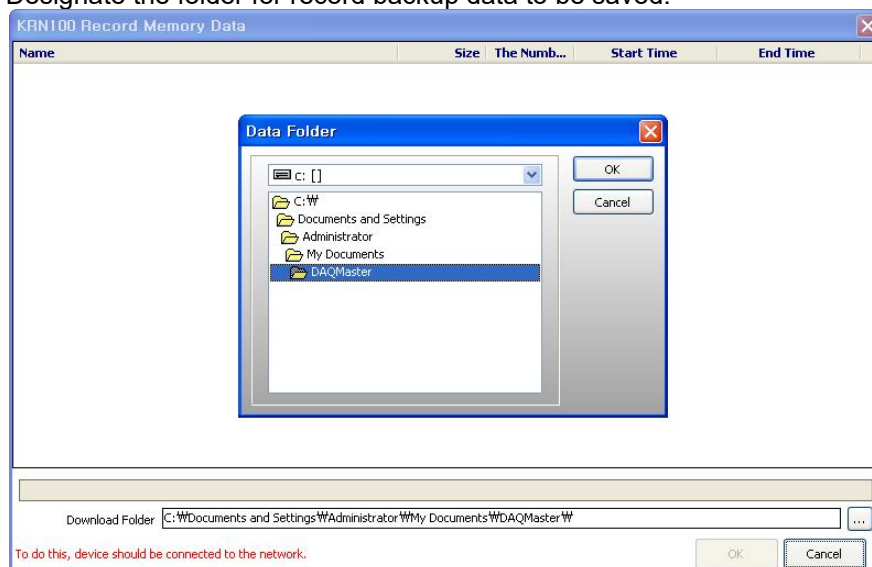
It is available to access saved backup data of KRN100 and to analyze backup data by data analysis feature.

To get the recorded data, click '...' button located on the right of Record Backup from User Memory in the 'Property' control panel.



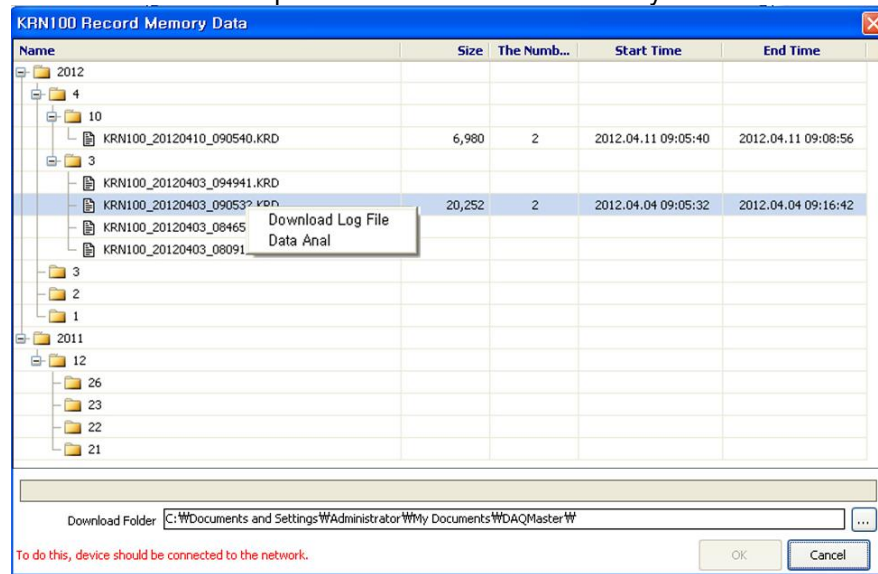
According to the USER INFORMATION SETUP of KRN100, it cannot read the memory. (Refer to the user manual for KRN100.)

1st Designate the folder for record backup data to be saved.

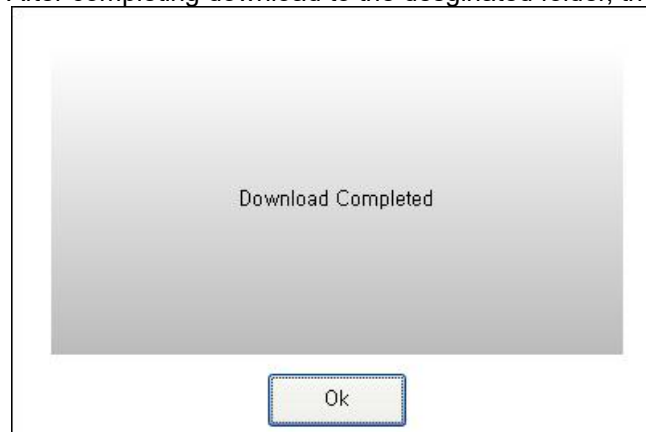


2nd Select the record backup data to download. Click the right mouse button and select 'Download Log File'.

Double click the backup data and it enters to data analysis.



3rd After completing download to the designated folder, the below message appears.



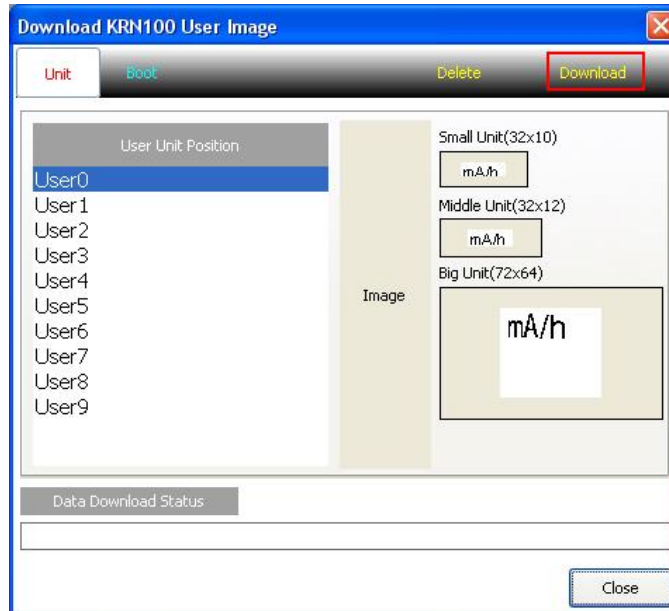
(2) Downloading User Images

You can add user unit and boot images of KRN100.

1) Download units

There are 0-9 user units.

The download procedure is selecting User Unit Position, double-click Small Unit, Middle Unit, Big Unit image, and selecting the image. After this, Download button is active.

**2) Download boot images**

The boot image (logo image) appears on LCD upon initial power supply to KRN100. You can change booting logo image which displays when KRN100 is power ON.

The image should be 320×120 pixel of bitmap file.



9.6 KRN1000 (LCD touch screen paperless recorder)

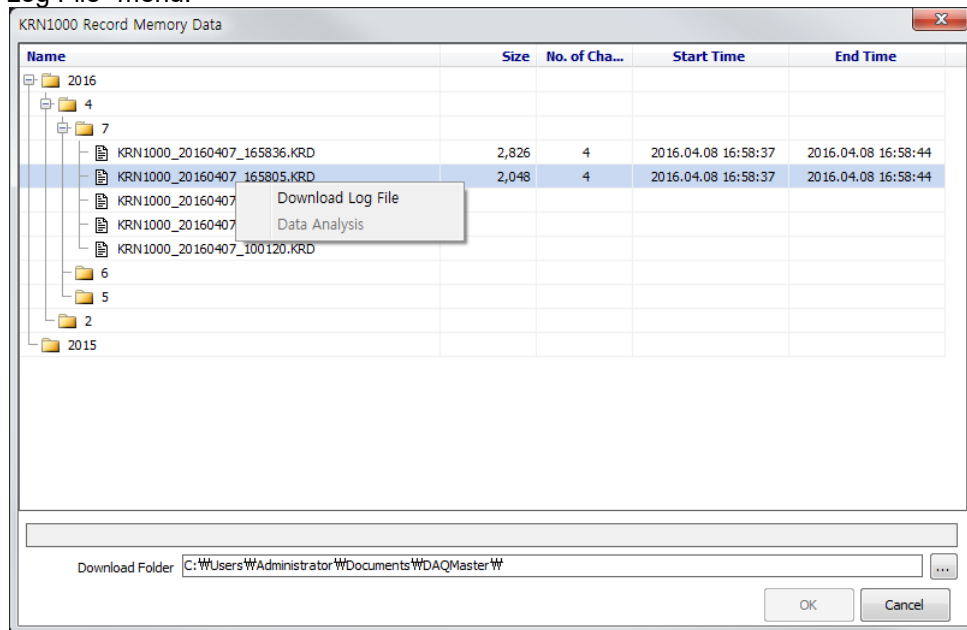
The following are special features for KRN1000 while in communication with DAQMaster.

(1) Record Backup

You can download backup data which is saved in KRN1000 internal memory from "Record Backup" section.

Directory form is year, month, day. Click the relevant icon and check below list.

To download backup file, click the file name with right mouse button and select "Download Log File" menu.



Backup files are structured as tree type directory at KRN1000 internal memory. You can easily find and download the desired file.

9.7 ARIO (Autonics Remote I/O)

Through the DAQMaster, it is possible to read or edit the Information about the coupler/module of Remote I/O, and also control input/output signals of each module. In addition, simulation function is provided to configure the virtual system.

9.7.1 Communication mode

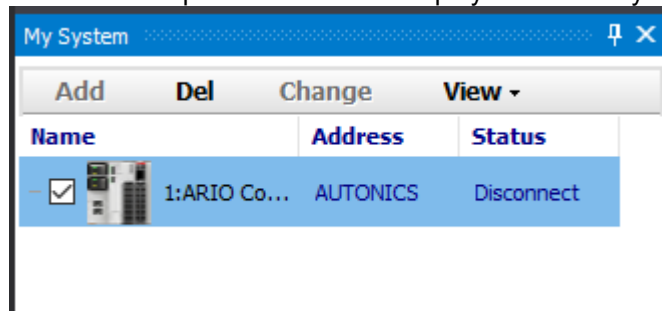
This chapter explains information about communication with ARIO and DAQMaster for practical use.

(1) Connection

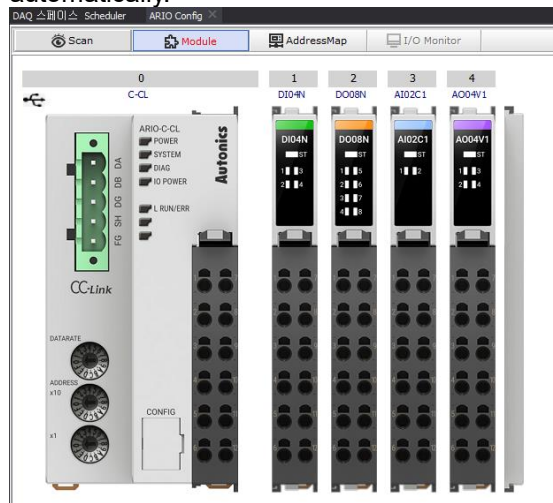
Explains how to connect it to the DAQMaster.

1st Connect the ARIO product to the device which DAQMaster is installed.

2nd Double-click the 'ARIO Config' in the 'Supported Device List' control panel of DAQMaster. Then the currently connected ARIO product is searched and the connected coupler information is displayed on the 'My System' control panel.



3rd Through the 'ARIO Config' in the DAQ Space, you can check the ARIO product list. If the USB HID information is changed, searching the connected ARIO product list automatically.





Note

If there is a problem in updating the ARIO product list although the product and the DAQMaster properly connected to each other, click the [Scan] button in the upper side of 'ARIO Config' window to refresh the information on the connected ARIO product.



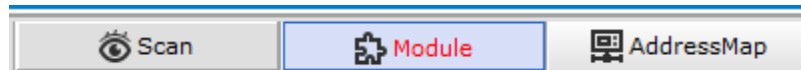
(2) Setting module and Controlling I/O signals

It is possible to read or edit the property value of the connected module, also control I/O signals as well.

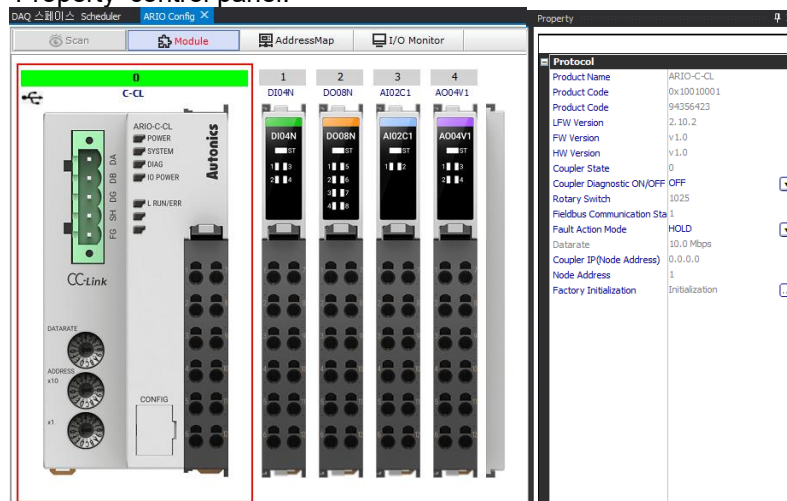
Connect the ARIO product to the DAQMaster by referring to '9.7 ARIO (Autonics Remote I/O) - (1) Connection' and. Click the [Connect] button in the 'Project - File' menu.

※ The settings may not be applied properly unless the connection is complete.

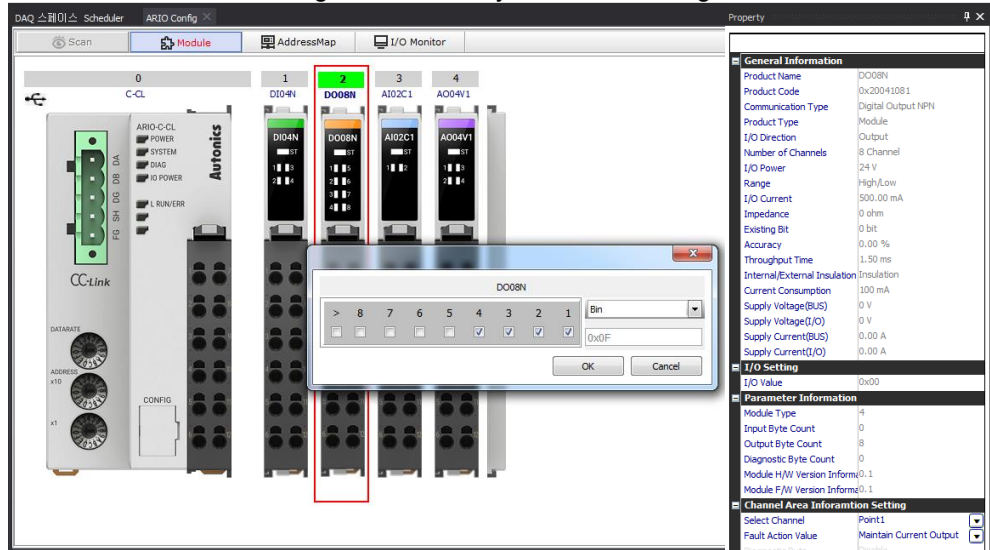
1st Click the [Module] button in the upper side of 'ARIO Config' window to open the module tab..



2nd In the module tab, select the module that is set up and proceeds settings in the 'Property' control panel.



3rd To control the output signal of the output module, double-click the module in the module tab and edit the signal value that you want to change.

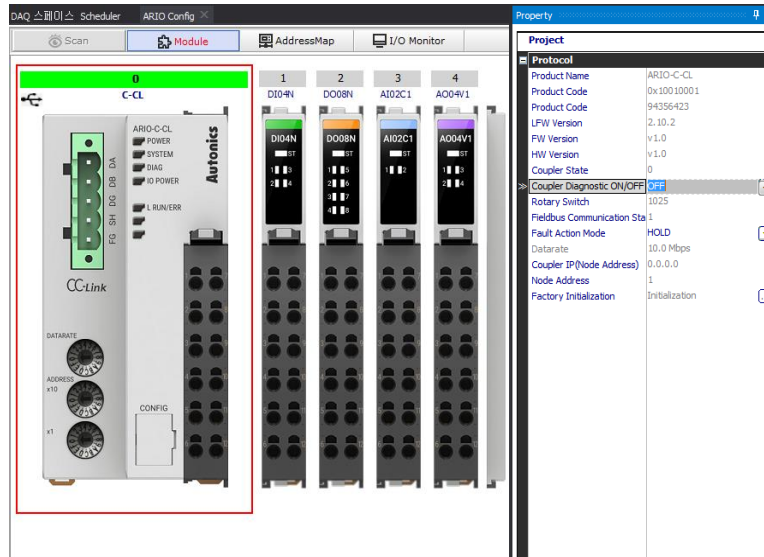


(3) Diagnostic function

The ARIO system consists of coupler and module provides the diagnostic function to send the information about checking the unit condition and problem to the parent device.

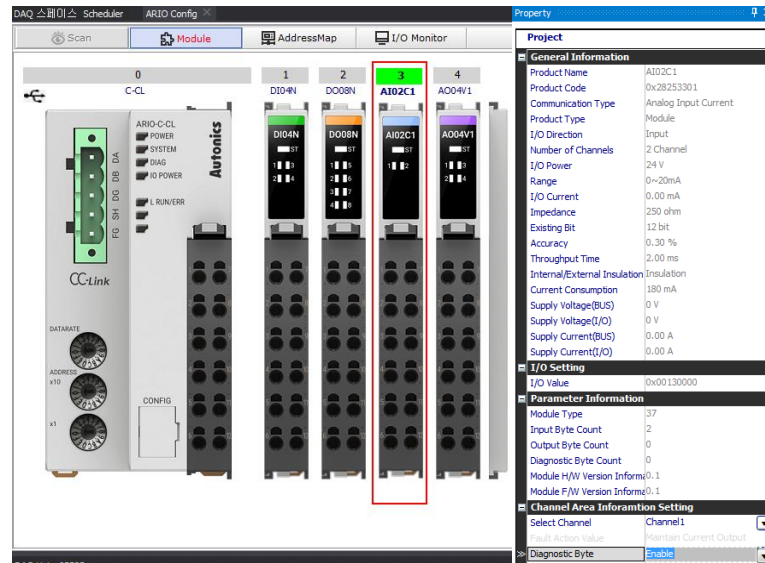
- Coupler

Click the coupler image in the Module tab and select 'Coupler diagnosis ON/OFF' item as 'ON' in the 'Property' control panel.



- Module

Click the analog input module image in the module tab and select 'diagnosis byte' item as 'use' in the right side of the 'property' control panel.



Note

- The function of selecting diagnostic On/OFF (Coupler: coupler diagnosis on/off, analog input module: diagnose byte) changed, the ARIO system is required to reboot. (The monitoring tab activates when the device is in the 'Run' condition.)
- ※ ARIO-C-PN(ProfNet) and ARIO-C-PB(ProfBus) don't provide diagnostic function.

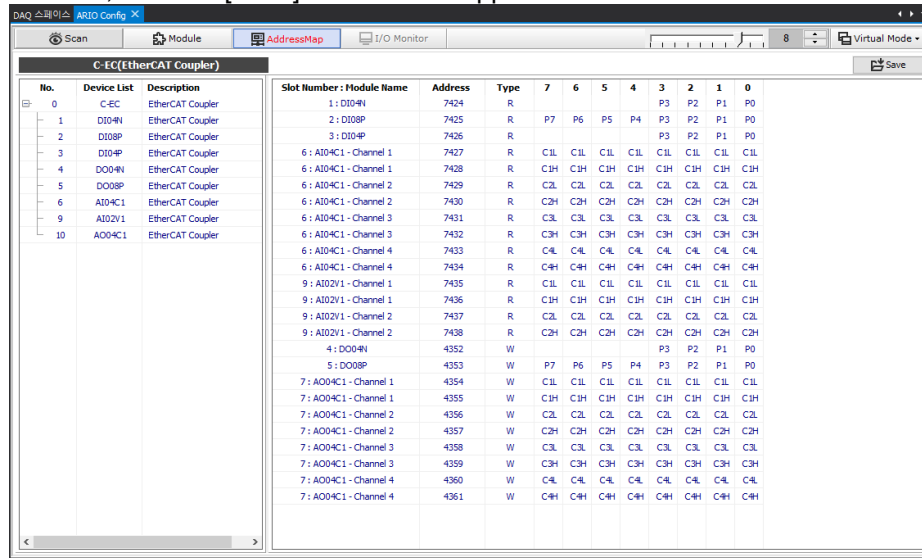
(4) Checking the Address map

You can check the communication address of the connected module.

- 1st Click the [Address map] button in the upper side of 'ARIO Config' window and open the address map tab.



- 2nd There are lists of the connected devices in the left side of the window and the communication addresses of each device on the right side. If you want to save as CSV file, click the [Save] button in the upper side.

**(5) I/O monitor**

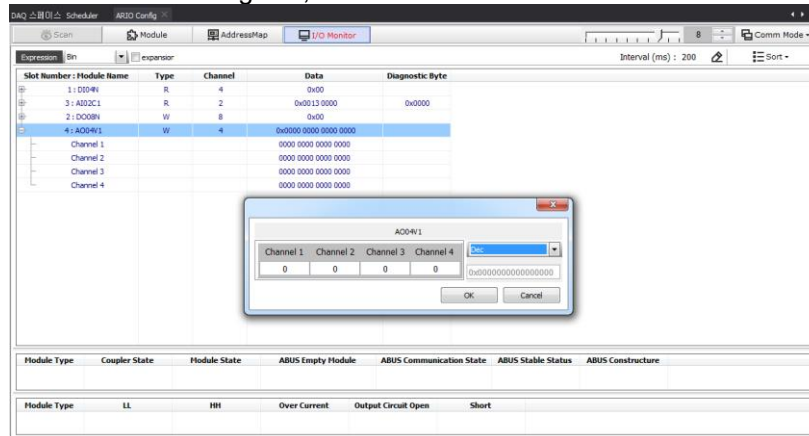
Check or set the I/O signal from the connected module through the I/O Monitor.

- ※ The settings may not be applied properly unless the connection is complete.
Connect the ARIO product and click the [Connect] button in the 'Project – File' menu.

- 1st Click the [Run] button in the 'Project – Run' menu and activate 'I/O monitor' tab in the 'ARIO Config' window. Click the [I/O monitor] button and move to that tab.

- 2nd The related I/O data can be arranged as either Channel or Address by clicking [Arrangement] button at the top.

3rd To control the I/O signals, select the related module and double-click.



9.7.2 Virtual mode

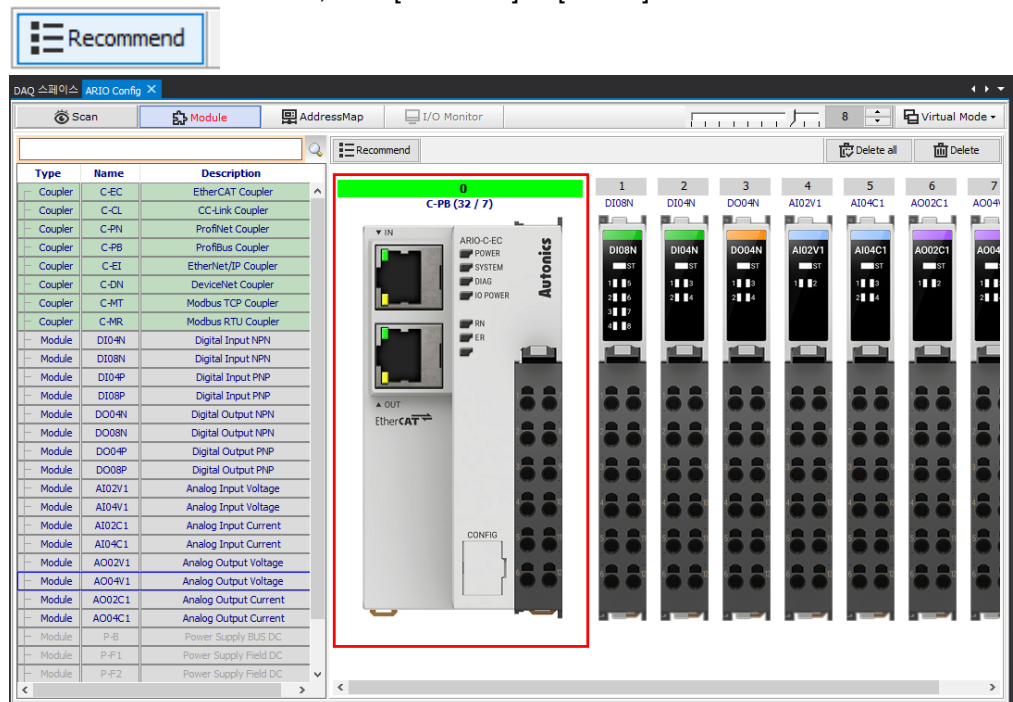
This chapter explains the simulation function that configures the virtual system without product connections.

1st Connect the ARIOD product to the DAQMaster by referring to '9.7 ARIOD (Autonics Remote I/O) - (1) Connection'.

2nd Click the [Mode] button in the 'ARIOD Config' window and select 'Virtual Mode'.



3rd In the module tab, it is possible to configure the coupler and module virtually. Double-click the module in the left side of the module list and add it to the module tab. To remove the added module, click [Delete all] or [Delete] button.





Note

The Coupler module can be removed only if there is not connected I/O module.

4th If you click the [Recommend] button, rearranging the customized product family by Autonics' recommendation module order and adding the power module automatically. Enter the value of current consumption in the 'Property' control panel and click the [Recommend] button. Then all modules are rearranged based on the input value of current consumption.

5th In the Address map tab, you can check the communication address in each unit of virtually configured modules. Click the [Save] button to save it as CSV file (.csv).

Slot Number	Module Name	Address	Type	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0		
3	AI02C1 - Channel 1, 1 : DI04N	RW0	R							P3	P2	P1	P0	C3H	C2H	C1H	C0H	C3H	C2H	C1H	C0H
3	AI02C1 - Channel 1	RW1	R	C1L	C1L	C1L	C1L	C1L	C1L	C1L	C1L	C1L	C1L	C2H	C2H	C2H	C2H	C2H	C2H	C2H	C2H
3	AI02C1 - Channel 2	RW2	R	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L
4	A004V1 - Channel 1, 2 : DO...	RW0	W	P7	P6	P5	P4	P3	P2	P1	P0	C1H	C1H	C1H	C1H	C1H	C1H	C1H	C1H	C1H	C1H
4	A004V1 - Channel 1	RW1	W	C1L	C1L	C1L	C1L	C1L	C1L	C1L	C1L	C1L	C1L	C2H	C2H	C2H	C2H	C2H	C2H	C2H	C2H
4	A004V1 - Channel 2	RW2	W	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C2L	C3H	C3H	C3H	C3H	C3H	C3H	C3H	C3H
4	A004V1 - Channel 3	RW3	W	C3L	C3L	C3L	C3L	C3L	C3L	C3L	C3L	C3L	C3L	C4H	C4H	C4H	C4H	C4H	C4H	C4H	C4H
4	A004V1 - Channel 4	RW4	W	C4L	C4L	C4L	C4L	C4L	C4L	C4L	C4L	C4L	C4L								

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* Dimensions or specifications on this manual are subject to change and some models may be discontinued without notice.

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