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Human Machine Interface

XGT InfoU

XGT HMI Software

User Manual





Safety Instructions

- Read this manual carefully before installing, wiring, operating, servicing or inspecting this equipment.
- Keep this manual within easy reach for quick reference.



Revision History

Version	Date	Major Change	Revised Page
V 1.0	'07.07	The first edition is published	-
V 1.1	'08.06	Revised to version 1.1	-
V 1.5	'09.06	Revised to version 1.5	Full revision
V 1.9	'15.08	Revised to version 1.9	Full revision
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Chapter 1	XGT InfoU	1-1
1.1	Special Feature	1-1
1.1.1	Open Structure	1-1
1.1.2	Efficient Project Management	1-1
1.1.3	Tag Engineering	1-1
1.1.4	I/O Driver Convenience	1-2
1.1.5	Better Alarm Function	1-2
1.1.6	Convenient Logging Management	1-3
1.1.7	Define VBS and Action Trigger	1-4
1.1.8	Robust Graphic Engine	1-4
1.1.9	Cross Reference	1-5
1.1.10	Web Server	1-5
1.1.11	Mobile Monitoring System	1-6
1.2	System Requirement	1-7
1.3	License	1-7
1.4	Product Composition	1-8
1.5	Caution	1-9
Chapter 2	System Composition	2-1
2.1	Software Component	2-1
2.2	Stand Alone System	2-3
2.3	Client/Server System	2-3
2.4	Line Redundancy	2-4
2.5	Redundancy System	2-5
2.6	Web Server	2-6
2.7	Mobile Monitoring System	2-7

Chapter 3	Install and Start	3-1
3.1	Installation	3-1
3.1.1	Arrange Installation	3-1
3.1.2	Select a Package to Install	3-8
3.1.3	Start Installation	3-9
3.1.4	Complete Installation	3-10
3.1.5	Menu and Shortcut	3-10
3.2	Start and Stop	3-11
3.2.1	Start InfoU	3-11
3.2.2	Stop InfoU	3-12
3.3	Removal and Reinstallation of Programs	3-13
3.3.1	Removal of the InfoU	3-13
3.3.2	Reinstallation	3-16
Chapter 4	Engineering	4-1
4.1	Screen Composition	4-2
4.1.1	Main Screen Composition	4-2
4.2	Menu and InfoU Explorer	4-3
4.2.1	File	4-3
4.2.2	Tool	4-5
4.2.3	Help	4-9
4.2.4	Tool Bar	4-10
4.2.5	Pop-up Window	4-10
Chapter 5	Run Time	5-1
5.1	Start InfoU Run-Time	5-1
5.2	Shutdown InfoU Run-Time	5-3
5.3	Runtime Menu	5-6
5.3.1	Menu Item	5-6
5.4	Device Status	5-7
5.4.1	Controls	5-7
5.4.2	Station Staus Information Interface	5-7
2	Server	

5.5	Simulation settings	5-8
5.5.1	Controls	5-8
5.5.2	Simulation Information Interface	5-8
5.6	Device Data	5-10
5.6.1	Controls	5-10
5.6.2	Raw Data Information Interface	5-10
Chapter 6	System Settings	6-1
6.1	Project Property	6-1
6.1.1	Create New Project	6-1
6.1.2	Project Settings	6-4
6.2	Graphic Run-Time Settings	6-9
6.3	Alarm Property	6-11
6.4	Time Synchronization	6-18
6.4.1	Default Screen	6-18
6.4.2	Scenario for the Whole System	6-20
6.4.3	Time Synchronization Settings	6-22
Chapter 7	I/O Driver	7-1
7.1	I/O Driver Setting	7-1
7.1.1	Communication Channel	7-1
7.1.2	Station	7-3
Chapter 8	Tag Management	8-1
8.1	Overview	8-1
8.1.1	Definitions of Terms	8-1
8.1.2	Execution and Main Screen	
8.1.3	Conversion of Tag View	8-4
8.2	Configuration of Communication Equipment	8-6
8.2.1	Communication Channel	8-6
8.2.2	Station	8-9

8.3	Tag Property	8-12
8.3.1	Common Items	8-13
8.3.2	General Items	8-15
8.3.3	Details – Analog	8-17
8.3.4	Details – Digital	8-20
8.3.5	Details – String	8-21
8.3.6	Alarm – Analog	8-22
8.3.7	Alarm – Digital	8-24
8.3.8	Calculations	8-24
8.4	Tag Edition	8-28
8.4.1	Addition of Tags	8-28
8.4.2	Storage of Tags	8-29
8.4.3	Deletion of Tags	8-30
8.5	CSV Tag I/O	8-31
8.5.1	Export to CSV File	8-31
8.5.2	Import from CSV File	8-32
8.5.3	Tag Items of the CSV File	8-34
8.6	Cop/Paste/Cut of Tags	8-38
8.6.1	Copy	8-38
8.6.2	Paste	8-40
8.6.3	Cut	8-41
8.7	Sturcture Tag	8-42
8.7.1	Main Screen and Explanation of Terms	8-42
8.7.2	Addition of Structure of Tag Templates	8-43
8.7.3	Addition of Structure of Tag Items	8-44
8.7.4	Addition of Structure of Tag (Creating the instance of structure tags)	8-45
8.8	Others	8-47
8.8.1	Find/Replace	8-47
8.8.2	Configuration	8-49
8.8.3	License	8-49
Chapter 9	Graphic Editor	9-1
9.1	Configuration of Graphic Editor	9-2
9.2	Menu Configuration	9-3
9.2.1	File	9-5

9.2.2	Edit	9-8
9.2.3	View	9-10
9.2.4	Insert	9-14
9.2.5	Draw	9-16
9.2.6	Tool	9-17
9.2.7	Window	9-21
9.2.8	Help	9-21
9.3	Insert Image	9-22
9.3.1	Insert Image	
9.3.2	Difference between Bitmap and Vector	9-22
9.3.3	Characteristics of each Graphic File Format	9-23
9.4	Tag Link	9-25
9.4.1	Using Location	9-25
9.4.2	Find/Replace	9-26
9.5	Library	9-27
9.5.1	Use Symbol Objects	9-27
9.5.2	Register Symbol Objects	9-27
9.5.3	Library Dialog Box	9-27
9.6	Layer	9-29
9.6.1	Layer Settings	9-29
9.6.2	Layer Lock/Unlock	9-29
9.6.3	Layer Show/Hide	9-29
9.7	Object Property	9-30
9.7.1	General	9-30
9.7.2	Event Property	9-33
9.8	Define Dynamic Properties	9-34
9.8.1	Horizontal Size	9-34
9.8.2	Vertical Size	9-35
9.8.3	Horizontal Move	9-36
9.8.4	Vertical Move	9-37
9.8.5	Horizontal Fill	9-38
9.8.6	Vertical Fill	9-39
9.8.7	Color	9-40
9.8.8	Blink	9-41
9.8.9	Visible	9-42
9.8.10	Rotate	9-43

9.8.11	Display Value	9-44
9.8.12	Display String	9-46
9.8.13	GIF Animation	9-47
9.8.14	GIF Play Time	9-48
9.8.15	GIF Tag Image	9-49
9.8.16	Lamp	9-49
9.8.17	Click	9-50
9.8.18	Input Value	9-69
9.8.19	Horizontal Drag	9-70
9.8.20	Vertical Drag	9-71
9.9	Runtime Settings	9-72
9.9.1	Graphic Runtime Settings	9-72
9.9.2	Page Settings	9-74
9.10	Graphic Script	9-76
9.10.1	InfoU Graphic Function List	9-76
9.10.2	Explanation of InfoU Graphic Function	9-79
9.11	Tag Variable	9-101
9.11.1	Example Used by the Dynamic Property Settings for Graphic	9-101
9.11.2	Example of Using in Graphic Script	9-101
9.12	Objects Using Images	9-106
9.12.1	Button Image	9-106
9.12.2	Lamp Image	9-105
9.13	Smart Symbol	9-108
9.13.1	Creating Smart Symbol	9-108
9.13.2	Registering and Importing the Smart Symbol in the Library	9-109
9.13.3	Smart Symbol Instance Settings	9-110
9.14	Animation Editor	9-111
9.14.1	Execution and Composition of the Animation Editor	9-111
9.14.2	Creation of Animation	9-111
9.15	Lighting Function	9-115
9.15.1	Object Selection Settings in the Graphic Runtime	9-115
9.15.2	Object Highlight Settings in the Graphic Runtime	9-116

Chapter	10 Graphic Runtime	10-1
10.1	Run	10-1
10.2	Menu Composition	10-2
10.2.1	File	10-2
10.2.2	View	10-4
10.2.3	Operation	10-5
10.2.4	Help	10-9
10.3	Popup Menu	10-10
10.3.1	Detailed Realtime Trend	10-10
10.3.2	Realtime Trend	10-11
10.3.3	Realtime List Trend	10-11
10.3.4	Alarm Viewer	10-12
10.3.5	Input Value	10-12
10.3.6	Cross Reference	10-12
10.4	Cross Reference Function	10-13
10.4.1	Execution on the Plant Screen	10-13
10.4.2	Execution on the Tag View	10-14
10.4.3	Execution on the Alarm Pop-up Screen	10-15
10.4.4	Execution on the Graphic Object	10-15
Chapter	11 Graphic Object	11-1
11.1	How to Use Graphic Object	11-1
11.1.1	Object Insert	11-1
11.1.2	Using Script	11-3
11.2	Alarm Viewer	11-4
11.2.1	Prerequisite and Environment	11-4
11.2.2	Screen Configuration	11-4
11.2.3	Real-time Function	11-6
11.2.4	Settings	11-11
11.2.5	Filtering	11-14
11.2.6	Other Functions	11-16
11.2.7	How to Use Script	11-19
11.3	Trend Viewer	11-25
11.3.1	Prerequisite and Environment	11-25

11.3.2	Screen Configuration	11-25
11.3.3	Settings	11-27
11.3.4	Logging Search	11-45
11.3.5	Others	11-46
11.3.6	How to Use Script	11-47
11.4	List Trend Viewer	11-60
11.4.1	Prerequisite and Environment	11-60
11.4.2	Screen Configuration	11-60
11.4.3	Settings	11-61
11.4.4	How to Use Script	11-71
11.5	Recipe Viewer	11-79
11.5.1	Prerequisite and Environment	11-79
11.5.2	Screen Configuration	11-79
11.5.3	Real-Time Function	11-80
11.5.4	How to Use Script	11-85
11.6	Gauge Control	11-88
11.6.1	Prerequisite and Environment	11-88
11.6.2	Screen Configuration	11-88
11.6.3	Property Settings	11-89
11.7	How to Use External ActiveX	11-91
11.7.1	How to Use	11-91
Chapter	12 Alarm Management	12-1
12.1	Alarm Kind and Rules	12-1
12.1.1	Analog Alarm	12-2
12.1.2	Digital Alarm	12-4
12.1.3	Alarm Delay	12-5
12.2	Alarm Group Settings	12-7
12.2.1	Alarm Group Management	12-7
12.2.2	Alarm Group Settings	12-9
12.3	Alarm Service	12-12
12.3.1	Alarm Sound	12-12
12.3.2	Common Items for Alarm Service	12-13
12.3.3	Automatic Printout of the Line Printer	12-14
12.3.4	Mail Sending	12-15
	0.52	

12.3.5	SMS Transmission	12-20
Chapter	13 Logging Management	13-1
13.1	Logging Type	13-1
13.1.1	Logging Type	13-1
13.1.2	Calculation Method for Logging Data	13-2
13.2	Logging Settings	13-3
13.2.1	Configuration Interface	13-3
13.2.2	Add, Edit and Delete	13-4
13.2.3	General	13-5
13.2.4	Cycle	13-7
13.2.5	Statistics	13-7
13.2.6	Accumulation	13-8
13.2.7	String	13-9
13.2.8	Event	13-10
13.2.9	Selective Log	13-11
13.2.10	Event String	13-12
Chapter	14 Script	
14.2	Editor Screen	
14.3	How to Use	14.5
14.3.1	Use of Internal Fuctions	
14.3.2	Tag Name Delivery	
14.3.3	Editor Debugging	
14.3.4	How to use DLL	
14.3.5	How to use OLE object	
14.3.6	Error Handling	
14.4	Runtime Debug	14-15
Chapter [•]	15 Function	15-1
15.1	Funtion Inquire	15-1

Onapter	16 Action Trigger	
16.1	Start	16-1
16.2	Configuration	16-2
16.2.1	General Information	16-2
16.2.2	Schedule	16-7
16.2.3	Tag Value Change	16-10
16.2.4	Alarm Status	16-12
16.3	Holiday Settings	16-14
Chapter	17 User Settings	17-1
17.1	Setting Screen	17-1
Chapter	18 Recipe	18-1
18.1	Component	18-1
18.1.1	Model	18-1
18.1.2	Unit	18-1
18.1.3	Data	18-1
18.2	Settings	18-2
18.2.1	Model Information	18-3
18.2.2	Unit Information	
18.2.3	Data Information	18-6
18.3	Recipe Runtime	18-7
18.3.1	Function	18-7
18.3.2	Recipe Viewer OCX	
18.3.3	Internal Function	18-7
Chapter	19 Database	19-1
19.1	Database Connection	19-1
19.1.1	Demo	19-1
19.1.2	Database Connection Settings	19-2
19.2	Database Operation	19-4
-		

19.2.1	Operation Type	19-4
19.2.2	Demo	19-4
19.2.3	Database Operation Settings	19-5
19.3	Database Runtime	19-10
19.3.1	Function	19-11
19.3.2	Internal Function	19-11
Chapter 20	0 Report	20-1
20.1	Start	20-1
20.1.1	Report Menu	20-2
20.1.2	New	20-5
20.1.3	Report Property Settings	20-7
20.2	Layout	20-11
20.2.1	Report Layout	20-11
20.2.2	Sheet Property	20-12
20.3	Report Open	20-20
20.3.1	Edit	20-20
20.3.2	Report View	20-21
20.3.3	Refresh Auto Output Information	20-25
20.3.4	View History Information	
20.3.5	How to Use during the Runtime	20-26
Chapter 21	1 Utility	21-1
21.1	Unit	21-1
21.2	Alarm Message Registration	21-3
21.3	On/Off Display Message Registration	21-5
21.4	LS ELECTRIC Program Registration	21-7
21.5	LS PLC Tag Import	21-9
21.6	Application Registration	21-14

Chapter 2	Cross Reference22-1		
22.1	Function and Property	22-1	
22.2	Cross Reference DB Creation	22-2	
22.3	Engineering Function	22-4	
22.3.1	Search by Tag	22-4	
22.3.2	Search by Module	22-4	
22.3.3	Filtering	22-5	
22.3.4	Error Tag Search	22-6	
22.3.5	Jump Function	22-7	
22.3.6	Save File	22-9	
22.4	Runtime Function	22-11	
Chapter 2	3 Web	23-1	
23.1	InfoU Web Configuration	23-1	
23.1.1	Prerequisite	23-1	
23.1.2	Configuration Procedures	23-2	
23.2	Creating InfoU Web Site	23-2	
23.2.1	Execution of the Navigation Management	23-2	
23.2.2	Creating New Website	23-5	
23.2.3	Get Project Information	23-12	
23.2.4	Adding the Virtual Folder on the Existing Website	23-14	
23.2.5	Creation of a Website in Addition to the Existing One	23-19	
23.3	InfoU Website Configuration	23-25	
23.3.1	Overview	23-25	
23.3.2	Prerequisite	23-25	
23.3.3	Login Screen	23-25	
23.3.4	System Management	23-33	
23.3.5	Monitoring Web User	23-41	
23.3.6	Main Screen	23-45	
23.4	Web HMI Server	23-51	
23.4.1	Operation Settings	23-51	
23.4.2	Server Settings	23-52	

Chapter 2	24 Redundancy and Client Server	24-1
24.1	System Environment Settings	24-1
24.1.1	Cancel Network Security	24-1
24.2	Redundancy Settings	24-16
24.2.1	Procedure	24-16
24.2.2	Create Server Project	24-16
24.2.3	Project Property Settings	24-17
24.2.4	Redundancy Settings	24-18
24.2.5	RunTime Operation	24-24
24.3	Client-Server Settings	24-26
24.3.1	Procedure	24-26
24.3.2	Server Project Settings	24-26
24.3.3	Client Project Settings	24-31
Chapter 2	25 Mobile	25-1
25.1	Mobile Designer	25-1
25.1.1	Startup	25-1
25.1.2	Mobile Server Project	25-5
25.1.3	Mobile APP Page	25-8
25.1.4	Resolution Document	25-11
25.1.5	Object	25-16
25.1.6	Dynamic Properties	25-28
25.1.7	Service Settings	25-38
25.2	Mobile Server	25-42
25.3	Mobile Client	25-45
25.4	Mobile Network Settings	25-59
Appendix	x 1 Modbus Server	A1-1
1.1	Modbus Server Editor	A1-1
1.1.1	Execute Editer	A1-1
1.1.2	Registered Information	A1-2
1.1.3	Tag Setting	A1-4
1.1.4	Copy / Paste Clipboard	A1-8

1.1.5	Export to CSV file	A1-11	
1.2	Modbus Server Runtime	A1-14	
1.2.1	Execute Runtime	A1-14	
1.2.2	Runtime Menu		
Appendi	ix 2 LS ELECTRIC InfoU OPC Server	A2-1	
2.1	Introduction	A2-1	
2.2	Install Program	A2-1	
2.2.1	Installation	A2-1	
2.2.2	Modify/Repair/Remove Program	A2-5	
2.3	Configuration of Default Screen	A2-10	
2.3.1	Configuration	A2-10	
2.3.2	Monitoring	A2-13	
2.4	OPC Project Configuration	A2-15	
2.4.1	Create New OPC Project	A2-15	
2.4.2	Open or Modify OPC Project	A2-17	
2.5	Run Monitoring	A2-18	
2.5.1	Connect LS InfoU OPC Server / Start Monitoring	A2-18	
2.5.2	Disconnect LS InfoU OPC Server / Stop Monitoring	A2-20	
2.6	DCOM Configuration		
Appendi	ix 3 OPC DCOM Configuration	A3-1	
3.1	Windows 7 Configuration	A3-1	
3.1.1	Common(Client&Server) Settings	A3-1	
3.1.2	Client Settings	A3-11	
3.1.3	Server Settings	A3-15	
3.2	Windows XP Configuration	A3-23	
3.2.1	Client Settings	A3-23	
3.2.2	Server Settings	A3-33	

Appendix	4 Visual Basic Script Help	A4-1
4 .1	Script Function of Microsoft Script Engine	A4-1
Appendix	5 Function	A5-1
5.1	Function Classification	A5-1
5.1.1	List by Item	A5-1
5.1.2	List by Alphabetic Order	A5-6
5.2	Function Descriptions and Examples	A5-11
5.2.1	Project Function	A5-11
5.2.2	Screen Function	A5-14
5.2.3	Tag Function	A5-17
5.2.4	Script Function	A5-22
5.2.5	Event Function	A5-23
5.2.6	Log Function	A5-25
5.2.7	Network Function	
5.2.8	System Function	
5.2.9	Recipe Function	
5.2.10	Database Function	
5.2.11	Alarm Function	
5.2.12	External Device Function	
5.2.13	User Function	
5.2.14	Report Function	
5.2.15	History Data Function	
5.2.16	I/O Driver Function	A5-63
Appendix	6 InfoU Web Q&A Collection	A6-1
6.1	Q&A for Windows XP	A6-1
6.2	Q&A for Windows 7	A6-14
Appendix	7 XGT Monitoring	A7-1
7.1	PLC Information	A7-1
7 2	System Monitor	Δ7-5

7.3	Block Device Monitor	A7-9
7.3.1	Select and Search	A7-12
7.3.2	System Monitor	A7-12
7.4	User Device Monitor	A7-15
7.4.1	Add Record	A7-18
7.4.2	Apply Record	A7-19
7.4.3	Delete Record	A7-20
7.4.4 Display Data Type		A7-20
7.5	PLC Log Monitor	A7-22
7.5.1	Error Log Monitor	A7-23
7.5.2	Mode Change Log Monitor	A7-24
7.5.3	System Log Monitor	A7-25
7.5.4	Shut Down Log Monitor	A7-26
7.5.5	Save Log	A7-27
7.6	SOE Monitor	A7-29
7.6.1	SOE Log Monitor	A7-30
7.6.2	SOE Filter	A7-31
Append	ix 8 OPC UA Server	A8-1
8.1	Editor	A8-1
8.1.1	Execute editor	A8-1
8.1.2	Setting Project	A8-2
8.1.3	Setting Server	A8-5
8.1.4	Namespace Setting	A8-8
8.1.5	Item Setting	A8-10
8.2	Runtime	A3-23
8.2.1	Execute Runtime	A8-17
8.2.2	Verifying OPC UA Server	A8-17

Chapter 1 XGT InfoU

As a PC HMI(Human Machine Interface) software package for collecting real-time data on the device, setting up a data transmission system and playing a role of a central observer, InfoU allows the operator to monitor/analyze the overall operational status of the device in real time.

This software provides various useful functions that can run in the latest operation systems such as Windows7, Windows10 and enhances the reliability, fast processing speed and convenient use of the automatic system.

Data management function of this monitoring software helps the user to collect, store and calculate data on the device's operation status and to respond to requests for data. Its monitoring function also provides real-time data along with graphs configured by the operator on the display screen.

1.1 **Special Feature**

Open Structure 1.1.1

Its open structure with excellent extension and compatibility makes it possible to provide stable communication and effective interface with other systems.

- Supports industrial standard interface such as 10LE DB, OPC Server/Client
- Easy access to DBMS (Data Base Management System) Its database connection or work function ensures easy input or output by using tag values of universal databases such as MS, SQL or Oracle and efficient data sharing with MES or ERP system.
- It can be referred by other applications with OLE automation.
- It supports edition and compatibility of MS office software especially PowerPoint of the graphic editor for easy
- It also provides ActiveX component graphic objects and allows the user to use other company's components for his/her graphic works.

1.1.2 **Efficient Project Management**

InfoU project is treated as the unit subjected to engineering and real-time operation management and under each project unit, sub-paths such as tag, logging, alarm, graph, report and script are created and managed.

Therefore, it becomes much easier to move or copy a certain project to other system, drive or path.

The user can easily manage numerous projects while easily copying and transferring contents between projects and efficiently conducting engineering works.

In addition, the user can selectively execute only the modules he/she wants since each function works individually in its own execution unit,

1.1.3 Tag Engineering

It provides efficient engineering and convenient operation by providing two perspectives of tag management criteria.

(1) View by device

It is very convenient to use since device set-up and tag work can be executed at the same time as a treetype tag explorer according to device configuration.

(2) View by group

Logical tag groups are displayed in a window explorer type to allow the user to manage tags according to their purposes from the point of operator's view.

(3) Import/Export CSV

The user can output, add, edit or delete a large amount of tags by using CSV (Comma Separated Values)-type files editable with Excel or general text editors (notepad)

(4) Expression

Not only numeric expression but also logical expression can be used with memory tag values

(5) LS PLC Tag Sharing

GLOFA-LS ELECTRIC's PLC-shares its program tool GMWIN and engineering files to enable automatic input to InfoU tags.

1.1.4 I/O Driver Convenience

(1) Tag Simulator

Even though there is no device in place actually or it is before communication service is open, it can provide various rules of data to tags and significantly reduce debugging time since it can run the same applications with those in the site.

- Analog Simulator: Random, sign wave, chopping wave, saw tooth wave, control function
- Digital Simulator: Random, change, control function
- String Simulator: Random, control function
- XG5000 Simulator: For XGT PLC's tags, you can use the simulation function of XG5000 that is the program tool.
- (2) Create auto block

Even though the user does not set up additional communication blocks, it automatically creates blocks according to tag's I/O address setting when runtime runs.

(3) Automatically register system tag when adding a station

When registering a station, it also registers its communication status automatically to allow the user to check the station status and its communication performance.

1.1.5 Upgraded Alarm Function

Its improved alarm function using alarm group delivers more efficient problem solving.

(1) Manage alarm group

It can manage alarm groups of the tag designated by the user to execute alarm sound, printing, sending mails and SMS by the level of the alarm generated in the relevant tag.

(2) Batch assignment of alarm rank

If any alarm rank is not assigned in the tag setting, the user can assign a certain rank uniformly to all of the

alarms in a group by using this batch assignment function.

(3) Various analog alarms

Since Limit alarm, Gap alarm and Variation alarm occur for one tag at the same time, each process can be closely and thoroughly monitored.

(4) Change dynamic setting

Dynamic change in alarm's limit value, gap value, variation value and other setting values enables more flexible action processing.

(5) Convenience of alarm check

You can check alarms on the graphics screen using the Alarm viewer OCX. You can use mini alarm, backup alarm check, alarm filtering function, etc. for convenient and efficient management.

(6) Alarm-Linked to Action Trigger

You can realize various functions by specifying trigger operations linked with alarm-action trigger-script.

1.1.6 **Convenience of Logging Management**

The user can create and manage a data logging group for major data that need history management according to his/her purpose and assign one tag data to multiple logging groups.

(1) Type of logging group

Divided into Cycle, Statistics, Accumulation and String

(2) Save in excel file

Logging data inquired from trend and list trend can be immediately saved in excel files.

Inquire logging data

Data can be inquired from trend, report and list trend and API, which can be inquired from script, is provided

(4) Automatically calculated statistics/integrated data

Statistics/integrated data are created without the use of additional script or application.

- (5) Data to inquire according to type of history model
 - Cycle: Analog (current value), Digital (current status), String
 - Statistics:
 - Analog (current value, min value, min time, max value, max time, average value)
 - Digital (ON count, running time, change count)
 - Accumulation: Analog (change amount, current value)
- (6) Report

Daily report, monthly report, temporary report and etc can be generated. The user can easily select an Excel form and register data in the form. Data of logging group can be inquired and automatically printed from Report and this Report function provides copy of report model, drag & drop report tag, clipboard copy/paste,

(7) Backup

It is possible to backup all of the collected groups and backup files can be inquired from trend and list trend.

1.1.7 Define VBS and Action Trigger

It supports Action Trigger and VB Script for preparing robust and flexible applications

(1) Script Editor

It supports VB script, uses external OLE individuals such as ActiveX and registers and uses DLL's API.

(2) Action Trigger

It integrates execution action conditions of script, recipe and database work together to manage them and trigger actions. Changing tag value, generating alarm and action by schedule can be set up.

Also efficient management is possible by assigning one action to multiple tasks.

(3) Provide recipe

Recipe is used when the same production/process line generates various products according to the prescribed vales and this function is applicable to various fields including flexible manufacturing system and lighting control.

(4) Execute recipe

A recipe is provided by its exclusive graphic object and can be executed and controlled on the run time graphic screen. In addition, execution can be defined from Action Trigger. Providing API available in Script ensures control at more diverse situations.

(5) Transmit tag name with parameter value.

It is possible to implement effective applications by assigning various action triggers for script execution and transmitted tag name to script function with parameter value.

1.1.8 Robust Graphic Engine

(1) Symbol Library

It supports more than 1000 symbol library images and its drag & drop provides a more convenient usage way..

(2) Support various types of graphic files

BMP, GIF, JPEG, PNG, TIFF, ICON, WMF, EMF, Animation GIF and other various graphic files are supported.

(3) Engineering Template

A certain screen can be more frequently and conveniently reused with its template object and plant screens and transmitted parameter values.

(4) Provide exclusive graphic objects for stable extension:

Alarm view (real-time, history), trend (real-time, history), recipe view, list trend (real-time, history) and gauge control are provided for convenient use.

(5) Provide accurate and fast screen mobility

The user can display part of the screen or the entire screen or move to the work area he/she want with Zoom, panning or navigation function to more accurately and fast identify the relevant process.

(6) Layer

Hide/UnHide and Lock/UnLock functions can be used after selecting a graphic object.

(7) Built-in Graphic Script

When it is insufficient with the screen settings only because of complicate dynamic components of the graphic screen, various functions can be used from the built-in scripts and internal functions of the graphic editor.

(8) ActiveX Control

Direct control over the Company's unique control functions such as Alarm Viewer and Trend and other company's ActiveX enables efficient and high-functional graphic works. It supports virtual keyboard and window to input various values for panel PC.

(9) Use the prepared drawing screen.

It provides the template screens for frequently used functions to improve engineering workability remarkably. When clicking the mouse, it can display the prepared real-time/history trend, list, report retrieval screen, etc. without engineering works.

(10) Template screen

You can make the customized template screen; namely, you can draw the graphic works of the standardized device through Drag & Drop to improve productivity.

(11) Added convenient functions

Batch change of tag link and string, digital tag control (pulse control, momentary control), image button and image lamp functions are added.

1.1.9 **Cross Reference**

(1) Simple correction

With Cross Reference, the user can trace the interrelation and immediately correct engineering error without making unnecessary effort to find each error in the tag and the drawing to change or delete it.

(2) Accident Analysis during the run time

When alarm occurs during the run time, the user can use Cross Reference in the alarm screen and the alarm pop-up screen to move to the relevant plant screen or Trend and analyze the accident fast and conveniently.

1.1.10 Web Server

(1) Simple Web Conversion

In the InfoU Web server, existing projects can be automatically converted to the web through the Wizard function so that even a user who does not have any expertise on web server or website configuration can easily configure a website.

(2) Monitoring system without restriction to place

InfoU is possible to control monitoring only with web browser and monitor history data through Trend as well as real-time tag data without additional installation or restriction to place.

(3) Configuration with various types

The user can create a new web site by configuring a site he/she wants and form a link connection by adding virtual folders to existing web sites.

1.1.11 Mobile Monitoring System

(1) Graphic editor for mobile devices

Through the graphic editor for mobile devices, a user can make the plant screen that can be monitored in the smartphone. It also provides various dynamic properties and graphic library.

(2) Various functions

It provides various functions; monitoring through a plant screen, monitoring for registered tags, alarm monitoring, trend viewer, etc.

(3) Mobile app

It provides the client operating in the smartphone environment.

1.2 **System Requirement**

At least the following environment is required to execute this program;

- IBM-PC compatible computer with Intel Pentium 4 or higher
- Memory of 1GB or higher
- VGA graphic card and monitor with basic resolution 1024 X 768 or higher
- Hard disc space required of 10GB or more (Additional space required for logging)
- Port of USB 2.0 or higher
- Microsoft Win7 / Win8.1 / Win10 (Pro version or higher)
- Microsoft Windows 2008 Server / 2008 Server R2 / 2012 R2
- Microsoft Excel 32bit Version (MS Office 2010 When using excel reports)
- Ethernet Card 100Mbps higher
- Standard Serial Port

Notice

System requirements are the minimum specification for engineering and operating the XGT InfoU.

Due to the nature of the HMI package, high-performance software and hardware speicifications are required, depending on the level and load of the function, such as tags, data processing, scripting, logging and graphics.

1.3 License

- (1) Using USB lock key
 - The use of the project may be restircted depending on the following conditions (1-hour use)
 - Restriction to the number of I/O tags: When more number of I/O tags is using than the designated number
 - Project option: When using general local license key for web option project
 - Web version: Restrict to the number of concurrent users
- (2) Demo Mode
 - If the user uses excessive functions than the assigned ones to the lock key, demo mode will run for one hour
 - Example of use 1: If you run more than 500 I/O tags with the lock key for 500 tags, the program will end after one hour of run time and engineering tool execution.
 - Example of use 2: If you set up the web project with the lock key for a signal system, the program will end after one-hour run time.
- (3) Mobile Server
 - You do not need a separate license for your mobile server. If you have an InfoU license, you can use mobile features.

1.4 Product Composition

Classification	Production Name	I/O Tag	Other
	InfoU-RC-75	75 tags	
	InfoU-RC-150	150 tags	
Developer Version	InfoU-RC-500	500 tags	
(Engineering+Real-time operation)	InfoU-RC-1K	1000 tags	
operation)	InfoU-RC-2K	2000 tags	
	InfoU-RC-MAX	64000 tags	
	InfoU-RT-75	75 tags	
	InfoU-RT-150	150 tags	
	InfoU-RT-500	500 tags	
	InfoU-RT-1K	1000 tags	
F (V '	InfoU-RT-2K	2000 tags	
Executor Version	InfoU-RT-MAX	64000 tags	
(Real-time operation)	InfoU-OP-WEBMAX	Unlimited tags	Concurrent users: Unlimited Users
	InfoU-OP-WEBMAX/150	150 tags	Concurrent users: Unlimited Users
	InfoU-OP-WEBMAX/500	500 tags	Concurrent users: Unlimited Users
	InfoU-OP-WEBMAX/1K	1000 tags	Concurrent users: Unlimited Users
	InfoU-OP-WEBMAX/2K	2000 tags	Concurrent users: Unlimited Users

Caution 1.5

(1) Please, be cautious to keep and retain the enclosed license key.

block the program's communication port or service.

- Any lost license key will not be reissued and some program operations and functions may be restricted depending on the license key.
- (2) This software shall be operated only in the authorized OS and installation environment.
 - The entire or part of the program may generate some errors or malfunctions if it is installed and used in any unauthorized OS.
- (3) Checklist when any error occurs during the program installation or the initial execution Please, be aware that some program errors may occur because the vaccine program in your computer may
- (4) Check your history data volume
 - Accumulation of history data such as alarm history and data history may cause insufficient storage space in the system and lead to the occurrence of error.
- (5) When carrying out engineering works, take into account the system performance
 - If you register and use too many tags or log in excessive history data over the system performance, the program may become significantly slower or generate malfunctions during the engineering or run-time
 - Also, please use InfoU operating PC as an InfoU-only PC without using other programs as much as possible.
- (6) Be cautious when preparing a script
 - When preparing a script, excessive system load or malfunction may occur due to the script which is omitted from unlimited loop by logical error or the one that requires long processing time.
- (7) Be cautious about logging data loss when adding a tag after deleting it
 - There is no problem with the logging setting even though you delete a tag, which is set up in the logging group, from the tag database and then add it again with the same name, however, you may loss some logging data.
- (8) Instruction for use in Windows
 - Installed and executed by the administrator and cancelation of user-defined options
- - This software is a standard SCADA/HMI product that requires the hardware of a desktop or server class PC and runs on a general Windows operating system.
 - The products of XGT InfoU NTP series are sold together with InfoU products which are optimized for panel PC of specified size. If you install and operate the generic InfoU software on other third party panel PCs, you will not be warranted with regard to functionality or operation.

Chapter 2 System Composition

2.1 **Software Component**



InfoU software is made up of the components as seen in the figure above and the structure of this software allows the user to add other various components to its basic ones and those newly added components are internally connected through data communication and API to act dependently on each other.

In the engineering environment, integral engineering tool InfoUD and graphic editor InfoUG are provided in additional execution files and Report is provided as an additional Excel function.

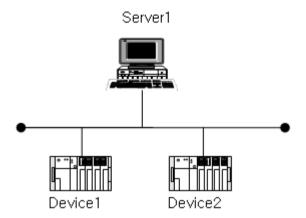
In the run time environment, the components above and I/O drivers are activated by additional execution files and play a each one's role depending on the engineering setting environment.

Chapter 2 System Composition



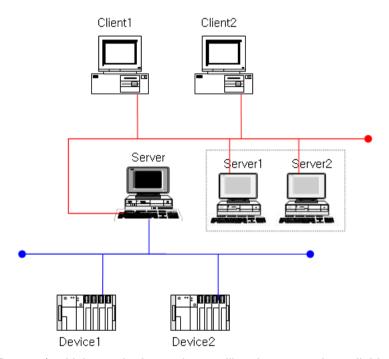
Various types of software packages can be provided by re-composing InfoU's functions and options as seen in the figure above.

2.2 Stand Alone System



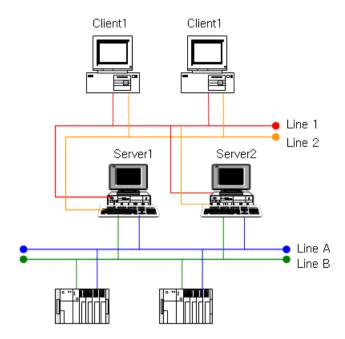
• Only with this stand alone system, the user can monitor and control the data status of multiple devices.

2.3 Client/Server System



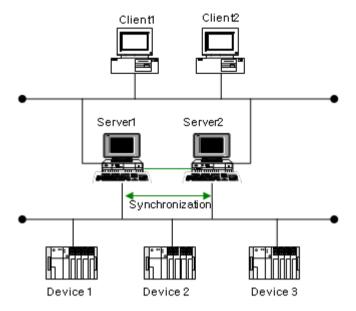
- Remote/multiple monitoring and controlling the system is available.
- Time synchronization between server and client is provided.

2.4 Line Redundancy



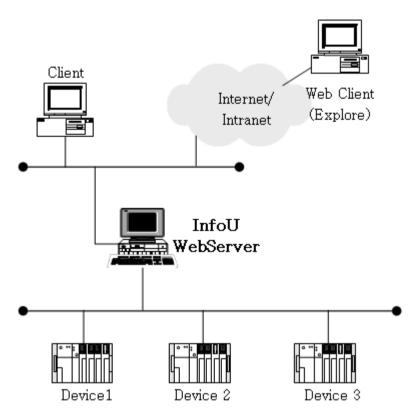
- Line redundancy with the device port such as PLC is available.
- Ethernet port redundancy of Server 1, Server 2 and Client
- An additional switcher is needed for signal communication between system and device,

Redundancy System 2.5



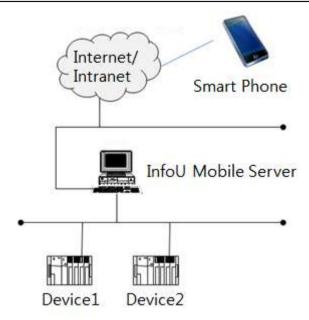
- When the Run Server is failed, the Standby Server will be activated through auto switching to provide a reliable service.
- Manual switching: The manual switching is available in menu operations and script.
- Time synchronization can be made among Server 1, Server 2 and Client.
- Monitoring to check for any error of the partner server is available through RS-232C communication line.
- Project duplication: A redundancy project can be automatically duplicated to prevent error and to provide convenience to the user.
- For signal communication between system and device, an additional switcher is needed.

2.6 Web Server



- Without any need to conduct additional engineering works for the projects in the InfoU server, real-time monitoring and controlling is available in the Web Client.
- Without installing any additional client program, monitoring is available only through MS Explore web browser.
- Data such as Trend (real-time history), Alarm (real-time history) can be monitored simultaneously as if the user is in the site.

2.7 **Mobile Monitoring System**



- It provides the graphic editor with which you can make a plant screen for the smartphone.
- Through a plant screen, monitoring, tag monitoring, alarm monitoring, real-time trend monitoring are available in the smartphone.

Chapter 3 Install and Start

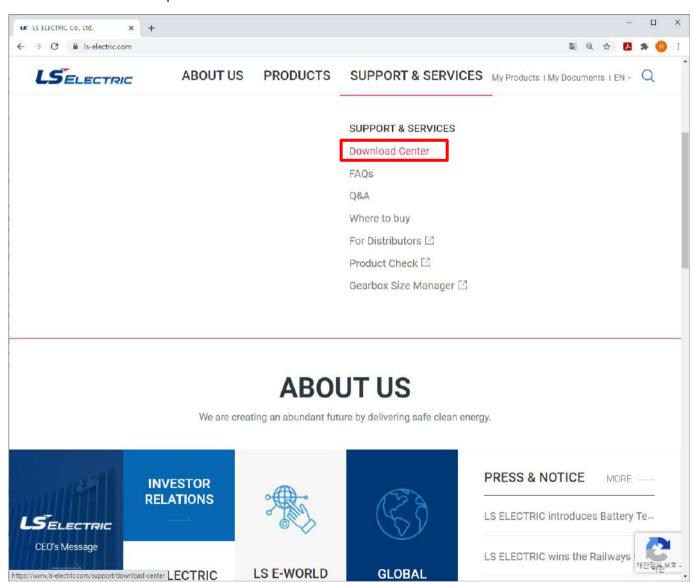
3.1 Installallation

3.1.1 **Arrange Installation**

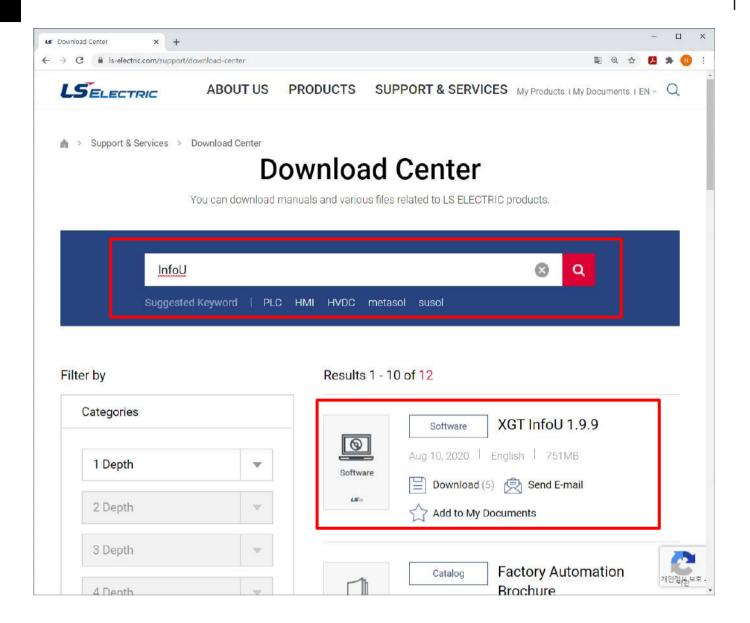
Once the setup CD are inserted in the computer's CD/DVD input device, the installation screen automatically appears in the user's computer as seen in the splash screen below.

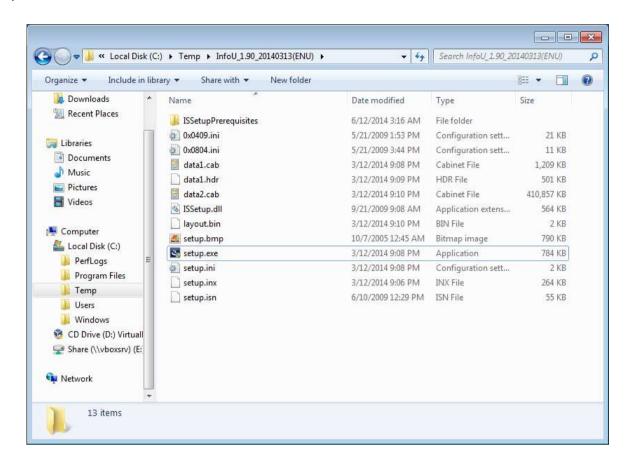
If it is not automatically executed, execute the CD's setup.exe file in the explorer.

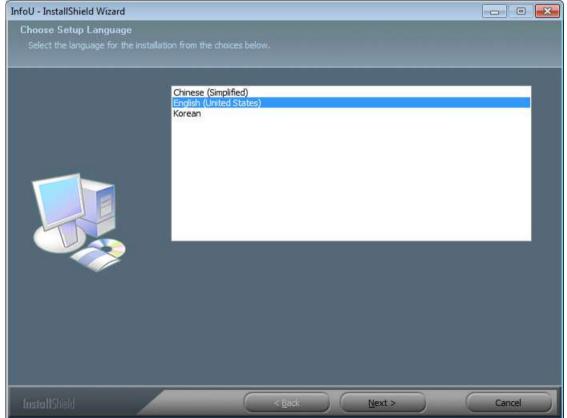
Otherwise, the latest version of InfoU is posted on our homepage (www.ls-electric.com) so feel free to download it and unzip a file for use.



Chapter 3 Install and Start

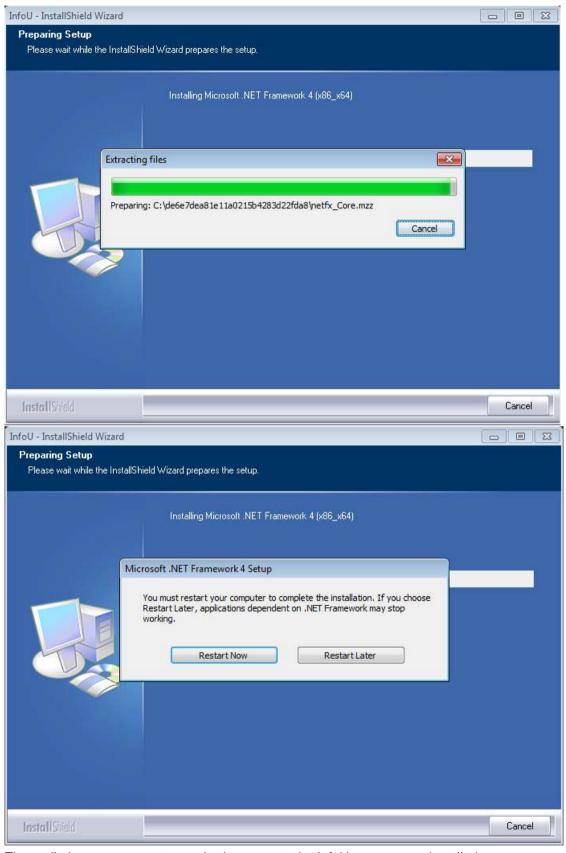






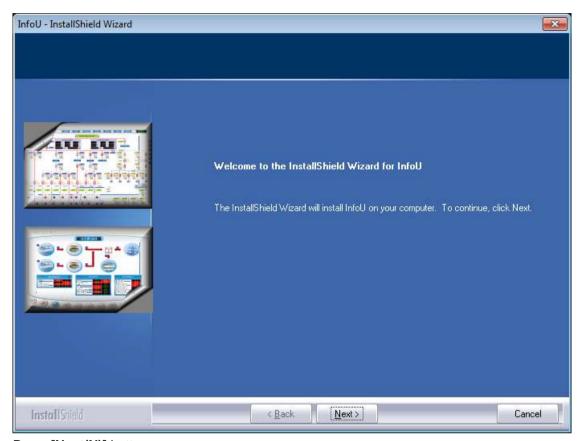
You can select available languages; Korean, English, Chinese version.

Chapter 3 Install and Start



The preliminary components required to execute the InfoU program are installed.

The installed preliminary components are "Microsoft Visual C++ 2008 Redistributable Package" and "HASP License Key", "Microsoft .NET Framework 4" installation program.



Press [Next(N)] button

If you want to change the previous screen's setting, press [<Back (B)] button or, if you stop installation, press [Cancel] button. Then, the installation work will stop.

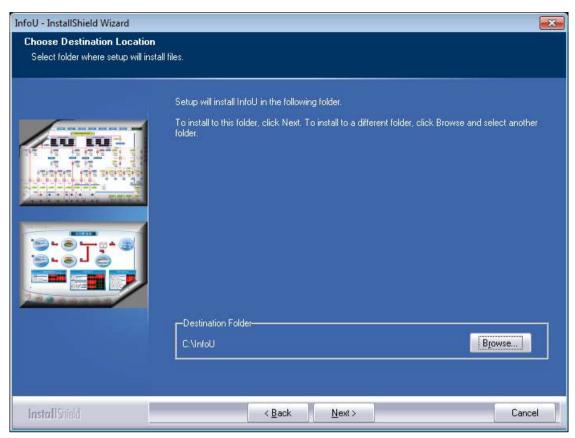
Chapter 3 Install and Start



This is License

Contract.

In case that the printer is already set up in the system, the terms and conditions of the license is printed upon the click on **[Print (P)]**. Only after you press the radio buttone of "I agree on the terms and condtions of this license", **[Next (N)>]** button becomes active and it moves to the next screen.



Then, you may select a path to install.

3.1.2 Select a Package to Install



There are three types of packages you may install.

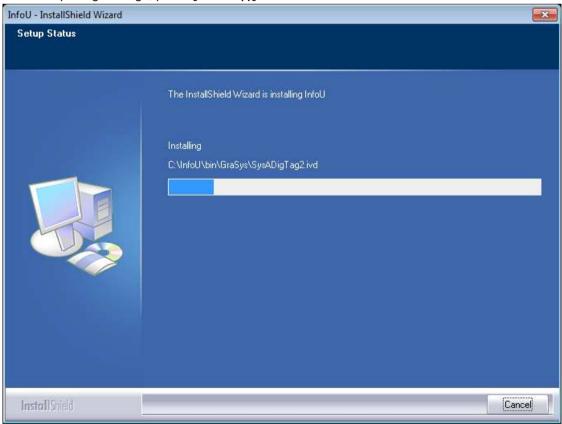
- InfoU Package Package that consists of a wider range of applications by using InfoU LS ELECTRIC's universal HMI software package.
- Web Package InfoU's extend package that allows the user to monitor and operate the screen functions presented by InfoU with Internet browser.
- InfoU + Web Package Package that allows the user to configure No 2 and No 3 packages in one computer.

Click [Next (N)>] button after selecting one,

3.1.3 **Start Installation**



After completing settings, press [Install (I)] button to start installation.



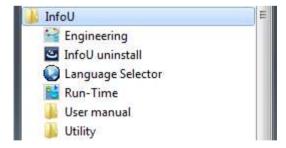
3.1.4 Complete Installation



Once installation is completed, the computer shall be restarted for the program's normal execution.

Select the radio button "Yes, I will restart the computer now" and press [Complete] button, the system will restart after few minutes. Once the system restarts, all of the installation works are completed.

3.1.5 Menu and Shortcut



If installation is normally completed, [User Manual] [Run-Time] [Engineering] and [Language Selector]menus are created in the new "InfoU" program list.



Shortcut icons for Runtime and Engineering are created in the desk top.

3.2 **Start and Stop**

3.2.1 Start InfoU

(1) How to execute engineering (InfoUD)

Select [Engineering] from the program menu to execute InfoUD- InfoU's integral engineering tool.

You may also click and execute the shortcut icons generated during the program installation.

(2) How to execute run time (InfoUD)

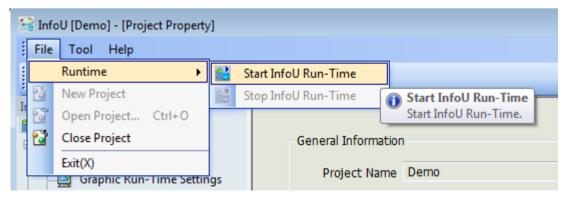
Select [File]-[Runtime]-[Start InfoU Run-Time] from the engineering (InfoUD) program menu or select the tool bar icon to execute InfoUR, InfoU's Run-Time, along with other Runtime component programs.

At this time, the default project that starts to run is the project on which the user worked most recently or the demo project included when installing.

You may also click and execute the shortcut icons generated during the program installation.





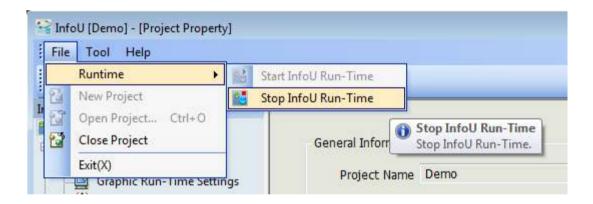


Chapter 3 Install and Start



3.2.2 Stop InfoU

- (1) How to stop engineering (InfoUD)Select [File]-[Exit] from the menu to end InfoU.At this time, only the engineering (InfoUD) program will end without having influence on the run time in effect.
- (2) How to stop run time (InfoUD) At this time, only the engineering (InfoUD) program will end without having influence on the run time in effect. Select [File]-[Runtime]-[Stop InfoU Run-Time] from the engineering (InfoUD) program menu or select the tool bar icon to end Runtime.





When the engineering (InfoUD) program is not in effect, you can also end the project when ending the graphic runtime.

You may select project end menu from the tray icons to end.

[See Chapter 5: Runtime]

Removal and Reinstallation of Programs 3.3

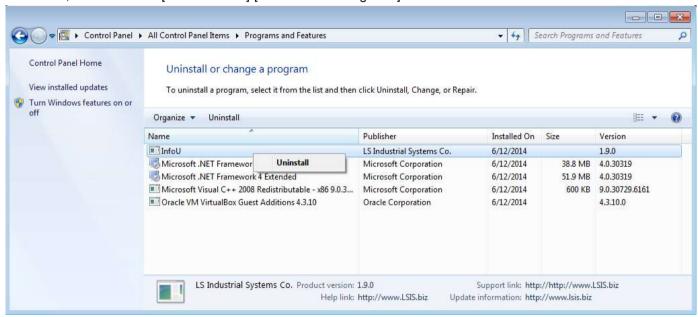
3.3.1 Removal of the InfoU

To remove the InfoU program installed in the system, exit the running InfoU runtime program and InfoU engineering program.

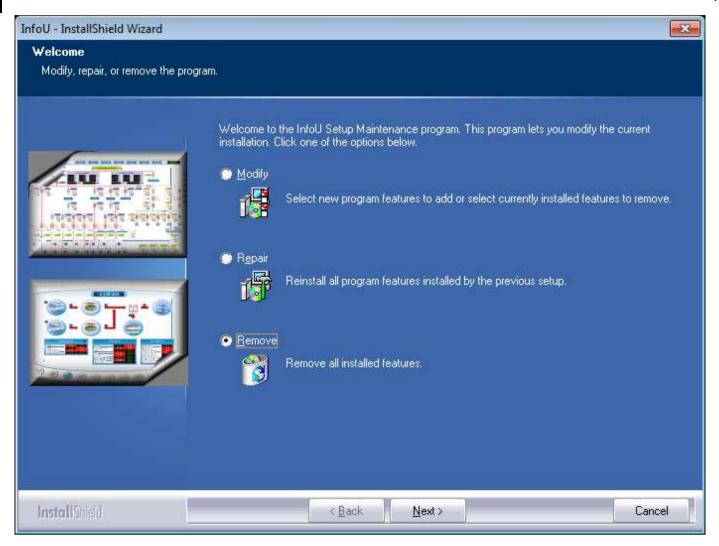
Select the [Delete InfoU] menu in the "InfoU" program list.



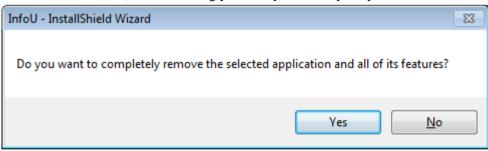
Otherwise, select InfoU in [Control Panel]-[Add/Remove Programs] and click the 'Remove' button.

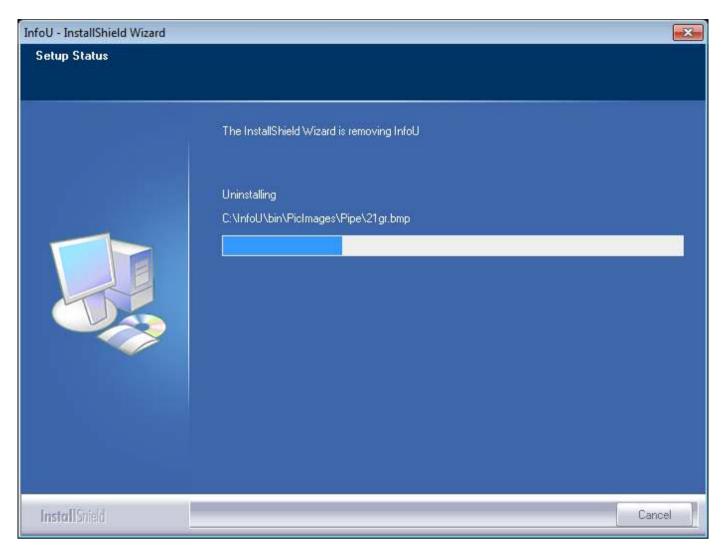


Chapter 3 Install and Start



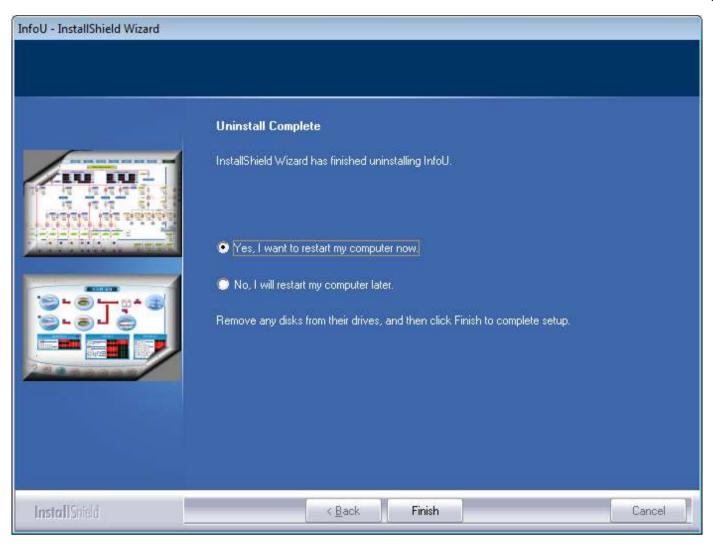
In the above screen, after selecting [Remove], click the [Next] button.





Program removal is in process.

Chapter 3 Install and Start



When you restart the computer, program removal will be completed.

3.3.2 Reinstallation

To modify or repair, remove the installed program, as shown in the fig., select [Delete InfoU].





- Modify: Change the installed package.
- Restore: Reinstall the previously installed package.
- Remove: Remove the installed InfoU.

Chapter 4 Engineering

As a tool used for configuring a monitoring and control system and developing an application, InfoU Engineering (InfoUD) allows the user to define system environments needed for executing Run-Time and set up device configuration, tag, logging and alarm. Engineering settings are managed on a project basis.

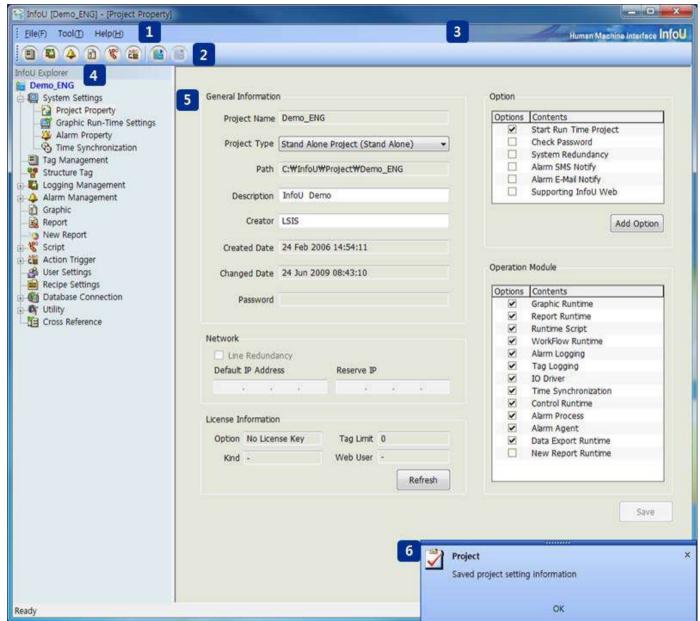
The screen below is the one that appears when the program starts executing and it is made up of menu, tool bar, tool (application) explorer and splash screen. If the program is executed, the default project will be loaded and the project information screen will appear. The project on which the user worked most recently or the project that is currently running is designated as the default project.

If Close Project is executed or Open Project fails, the project list screen will appear.

Since this chapter covers only the default screen, menu and tool bar, please refer to [Help] if you need more information on each application function.

4.1 Screen Composition

The default screen of engineering is as below.



4.1.1 Main Screen Composition

The main screen consists of the following;

- (1) Menu bar
 - The user can select a menu from the menu bar made up of functions that can be used for the application program.
- (2) Tool bar

The user can execute a frequently used application program with one click on the tool bar.

(3) Identity Zone

A zone to display the identity of the InfoU program.

(4) InfoU Explorer

Icons displayed in a tree type to select an application program.

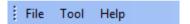
(5) Main View

An area in which the application program is executed.

(6) Pop-up Window

Notice is displayed on the system's status or the user event for application programs.

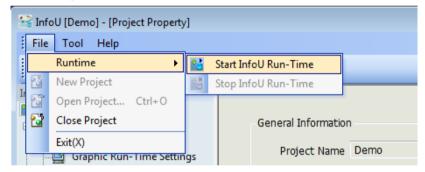
4.2 Menu and InfoU Explorer



Function menus to be used in InfoUD Engineering are provided.

4.2.1 File

Basic menus such as Start InfoU Run-Time/Stop InfoU Run-Time, Open Project/Close Project, Print and other menu are provided.



(1) Runtime

The user can start or stop InfoU Run-Time.

(2) New Project

The user can create a new InfoU Project.

1) Project Folder and File

Once a new project is create in InfoU, the following folders and files will be managed.

The following folders are created having the same names with projects.

Folder Name	Description	
Archive-AlarmLog	Path to save alarm event logging files	
Archive-TagLog	Path to save data logging files	
Config	Path for configuration files needed for running	
CrossRef	Path for files related to cross reference	
GraLS	Path for graphic screen files	
IO Driver	Path for driver configuration files	
Log	Path to save application logs	

Chapter 4 Engineering

Pacakage	Path for server package files	
Report	Path for configuration files related to report	
Report-Form	Path for report form files	
Report-Data	Path to save report creation files	
Script	Path for script files	
TagDB	Path to save all of the engineered setup information database	
Wav	Path for sound file to generate salarm sound	

Notice

The New report form file is automatically added to the path of Report \ NewForm when you add the first New Report form. The default path of New Report generation file is Report / NewData, which can be freely set by the user through the New Report Properties window menu.

2) File type related to project

Item	Extension	Description
Project	.lsp	Project information files
Alarm Logging	.adb	Alarm event logging database files
	.rec	Real-time alarm saving files
Tag Logging	.db	Logging database
Config	.ini	Configuration files needed for running
Database	.dbf	Engineered actual detakase files
	.cdx	Engineered setup database files
Graphic	.ivd	Graphic file
Serverdata	.sdp	Server data file where the server configuration information
	.sup	is saved
Report	.stg	Report settings information file
	.crf	
New Report	.cfg	New Report settings information file
	.rdlx	New Neport Settings information file
	.rpt	New Report output file
Sound	.wav	Wave sound file

(3) Open Project

The user can open an InfoU project.

(4) Close Project

The user can close the current project.

(5) Exit

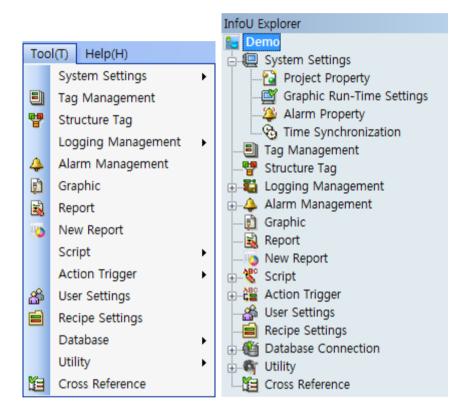
The screen displayed in the current menu view will end and a new empty screen will be displayed.

Notice

If any project is running in real-time, other project can not be selected even after the project is closed in the engineering.

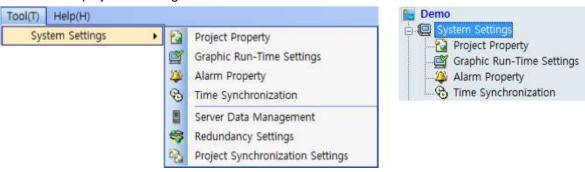
4.2.2 Tool

You can execute various functions that need for your engineering works. Tool menu and InfoU Explorer perform the same functions.



(1) System Settings

You can set up system settings needed for Runtime.



1) Project Property

The user can modify project information and options.

Graphic Run-Time Settings

The user can set up the splash screen and style of the graphic runtime screen.

Chapter 4 Engineering

3) Alarm Property

The user can set up overall settings related to activating an alarm.

4) Time Synchronization

The user can set up time synchronization property between system and device.

5) Server Data Management

Set the server data management.

6) Redundancy Settings

Select the tasks related to redundancy.

7) Project Synchronization Settings

Set the Project Synchronization.

(2) Tag Management

You can organize devices to be used for the projects, input, edit or delete tags.



(3) Structure Tag

A Structure Tag template and item list is displayed.

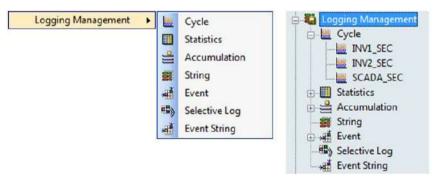


1) Structure Tag

The user can input, edit or delete structure tags.

(4) Logging Management

You can set up and manage logging groups of the tag data needed for the user's history management. Logging groups can be inquired from Trend, Report, List Trend and Script.



1) Cycle

The user can set up regular cycle logging groups.

2) Statistics

The user can set up statistics logging groups.

3) Accumulation

The user can set up accumulation logging groups.

4) String

The user can set up string logging groups.

Event

Set the event logging group.

6) Selective Log

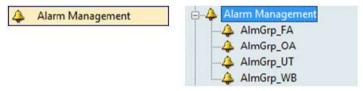
Set the logging group for selective storage.

7) Event String

Set the event string logging group.

(5) Alarm Management

You can manage alarm event information by setting up alarm groups.



1) Alarm Management

The user can input, edit or delete alarm groups.

(6) Graphic

A list of graphic files currently used for the project is displayed.



1) Graphic

The user can click a file from the InfoU Graphic file list in the project "GraLS" folder and edit it in the graphic editor.

(7) Report

A report list is displayed.



1) Report

If the user double-click a file in the report file list, Excel will run and the user can work on the report from the Excel menu.

(8) New Report

New Report runs the report program.



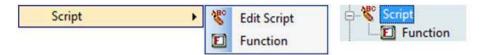
1) New Report

When you click the New report item, the New Report Editor is launched and you can work with the report.

(9) Script

You can edit a script and inquire an internal function list.

Chapter 4 Engineering



- 1) Edit Script
 - The user can edit a script document
- 2) Function List

A list of the internal functions presented in InfoU is displayed.

(10) Action Trigger

With this function, you can execute Edit Action Trigger and Holiday Settings for executing script, recipe and database.



1) Edit Action Trigger

The user can add, modify or delete action trigger.

2) Holiday Settings

The user can add, modify or delete holiday settings.

(11) User Settings

The user can set up user-related information and use these settings when receiving the authorization to control them in the alarm action and graphic



1) User Settings

The user can set up his/her personal information such as his/her authorization to control or contact information.

(12) Recipe Settings

The user can set up control over designated patterns by inputting items, units and data of a recipe.

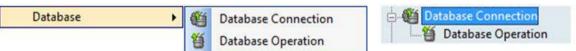


1) Recipe Settings

The user can add, modify or delete a recipe from the displayed recipe list.

(13) Database

Sharing data with other systems is possible by setting up Database Connection and Database Operation.



1) Database Connection

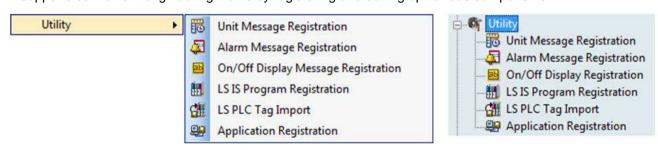
The user can manage settings to connect with external database

2) Database Operation

The user can define the data input and output relationship with external database

(14) Utility

It supports convenient engineering works by registering and setting up various components.



Chapter 4 Engineering

1) Unit Message Registration

Various industrial units registered in this menu are very helpful to select a unit easily during the tag edit.

2) Alarm Message Registration

If the user registers alarm messages that will be displayed in case of any alarm event and select those during the tag edit, he/she can inquire those messages when alarm actually takes place.

3) On/Off Display Registration

The user can register display methods according to the status of digital value to use them during the tag edit.

4) LS IS Program Registration

The user can register LS ELECTRIC's PLC Programs and execute them in the engineering screen and also input a tag automatically

5) LS PLC Tag Import

You can import the LS PLC tag for use.

6) Application Registration

The user can register external programs and execute them in the engineering screen.

(15) Cross Reference

The Cross reference relationship in the project between tag and object is displayed to allow the user to identify any engineering error.

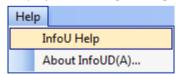


1) Cross Reference

The cross reference screen is displayed.

4.2.3 Help

Displays InfoU Engineering information



(1) InfoU Help

The Help screen is displayed

(2) InfoU Information

Information on the InfoU version is displayed.

4.2.4 Tool Bar

It displays the toolbar menu for each image.



Tool Bar	Name	
	Tag Management	
	Logging Management	
4	Alarm Management	
	Graphic	
	Script	
ABC	Action Trigger	
	Start InfoU Run-Time	
	Stop InfoU Run-Time	

4.2.5 Pop-up Window

It provides the function that gives a user the event information.



- (1) Notice to inform the system status and user event for application programs is displayed.
- (2) Notice is displayed in the messenger-style window.
- (3) This window disappears few minutes later after it pops up.

Chapter 5 Run Time

With this function, the user can execute the project registered for engineering settings.

After establishing a communication link between system and device according to the setting information on the channel and station, the user can monitor the real-time site status with the attained data in the plant screen. Also, the user can perform various functions such as history logging and report printing by generating alarms of the major monitoring points.

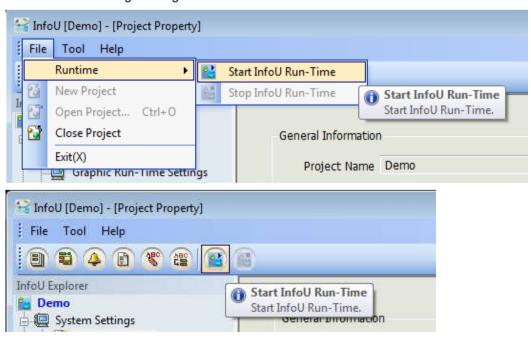
5.1 Start InfoU Run-Time

To start InfoU Run Time, click Start in the window screen to find a program directory or click the Run Time icon in the desk top..

(1) Start with the Shortcut icon.



(2) Start in the InfoU engineering menu.

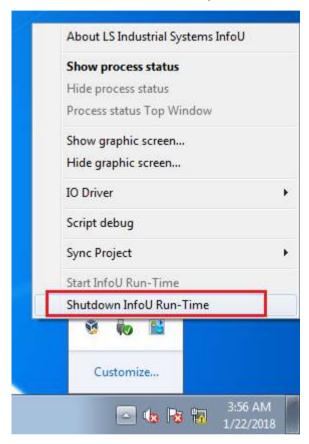




Shutdown InfoU Run-Time 5.2

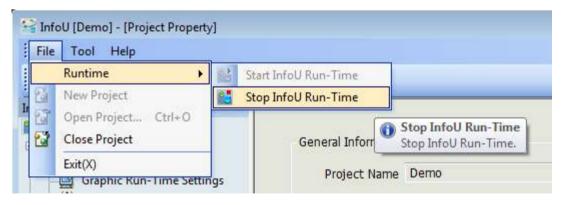
All of the functions operated during Runtime will stop when this function is selected. This function is executed as follow.

(1) Shutdown InfoU Run-Time at Tray icon



Click [InfoU Tray Icon] → Mouse right button click → [Shutdown InfoU Run-time]

(2) Stop InfoU Run-Time at engineering menu



Click [File] → [Runtime] → [Stop InfoU Run-Time]

Chapter 5 Run Time

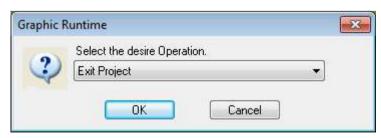


[InfoU Toolbar] → [Stop InfoU Run-Time]

(3) Exit the InfoU Run-Time



Click the menu [File] \rightarrow [Exit] or click the Windows system menu [X] button.



If you click the 'OK' button, InfoU runtime will end.





Once InfoU Run-time ends, the following splash screen appears to show the process status.

5.3 Runtime Menu

5.3.1 Menu Item



Tray icons of the system are displayed as seen in the figure above and the user may use the following menus by clicking one of them.

- Shutdown InfoU Run-Time: The project being operated in real time ends.
- Show process status: The monitoring screen for process status is displayed.
- Show graphic viewer: The graphic monitoring screen is displayed as an upper-level screen.
- Hide process status: The graphic monitoring screen is hidden. Even though it is not displayed, it is being executed in the background.
- I/O Driver --> Device Status: The status of a device connected and set up is displayed.
- I/O Driver --> Simulation settings: The simulation setting screen for the set tag is displayed to generate data on the device values.
- Device Data: A screen is displayed to allow the user to inquire device data.
- [Script debug] : A screen is displayed to allow the user to check script engine status
- [Sync Project] :The user can synchronize the project. This menus are enabled in server project only.

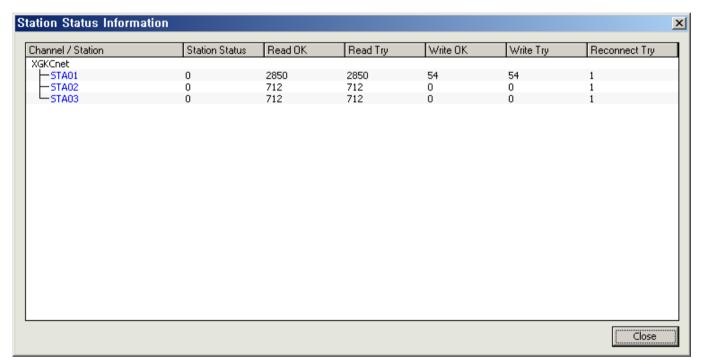
5.4 Device Status

The status screen of the connected device is displayed.

5.4.1 Controls

- Select [IO Driver] --> [Device Status] from Run-Time Tray icon Menu to execute.
- Select [Work] --> [IO Station Status] from Graphic Run-Time Program Menu to execute.
- The user may use ShowNetworkStatus() from Graphic Script Function to execute.

5.4.2 Station Staus Information Interface



- Channel/Station: The communication configuration and status of the device is displayed.
- Station OK: It shows the communication status of the device and 0 means normal, 1 means abnormal.
- Read OK: The number of cases in which device values have been successfully read since the project started is displayed.
- Read Try: The number of cases in which reading device values has been attempted since the project started is displayed.
- Write OK: The number of cases in which device values has been successfully written since the project started is displayed.
- Write Try: The number of cases in which writing device values has been attempted since the project started is displayed.
- Reconnect Try: The number of cases in which connecting with the device has been attempted is displayed.

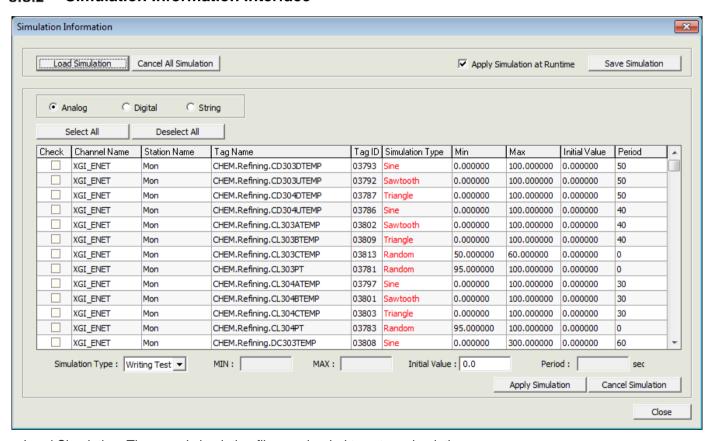
5.5 Simulation settings

As a function to generate virtual device values, the user can simulates virtual device values with this function before connecting a device to identify any error of the engineering work in advance.

5.5.1 Controls

Select [IO Driver] --> [Simulation settings] from Run-Time Tray icon Menu to execute.

5.5.2 Simulation Information Interface



- Load Simulation: The saved simulation files are loaded to set up simulation.
- Cancel All Simulation: All of the simulation settings that have been set up until now are cancelled.
- Apply Simulation at Runtime: When starting Runtime, the user can apply simulation immediately to set up.
- Save Simulation: The current simulation information is saved in a file.
- Select All: All of the tags displayed in the tag list window are selected.
- Deselect All: All of the selected tags in the tag list window are cancelled.
- Tags are displayed depending on the selection either analog or digital. Multiple selections are available.
- Simulation Type: Select a rule to generate simulation data.
 - Analog: The user can select one among Writing Test, Random, Sine, Sawtooth and Triangle,
 - Digital: The user can select one among Writing Test, Random and Change,
 - String: You can choose one; controllable, random
 - When selecting items of XG5000, in case of communication channel/station of LS ELECTRIC XGT PLC series, you

can use the simulation function of XG5000.

- MIN: The user can set up the lowest value of the range of change when generating data.
- MAX: The user can set up the highest value of the range of change when generating data.
- Initial Value: The user can input the initial value when applying the simulation rule.
- Period: Input a period of one cycle of the simulation type that has a certain cycle (Sine, Sawtooth and Triangle).
- Apply Simulation: The user can apply simulation to the selected tags.
- Cancel Simulation: The user can cancel applying simulation to the selected tags.
- Close: Close the current dialog box. Even after the screen ends, simulation data keep operating.

5.6 Device Data

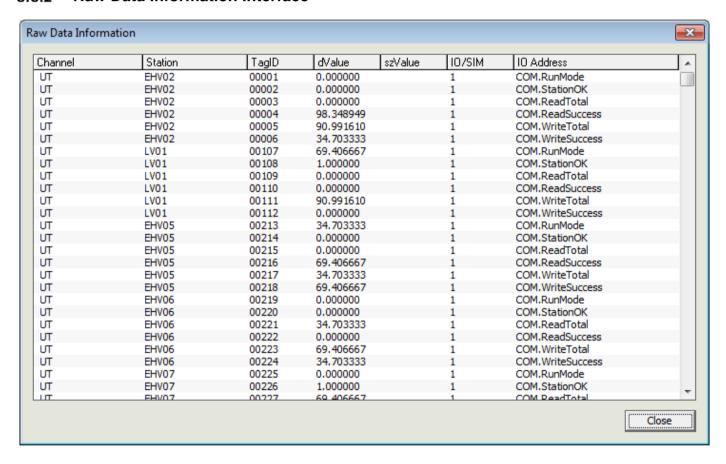
The user may monitor raw data values attained from the communication with the device.

Simulation data are displayed when device values are simulated.

5.6.1 Controls

Select [IO Driver]→[Device data] in the real time operation tray icon menu and run it.

5.6.2 Raw Data Information Interface



In this step, you may create a project and manage basic environment settings for Runtime.

6.1 **Project Property**

As the first step needed for Runtime, the user can create a project and manage configuration settings and options in this step.

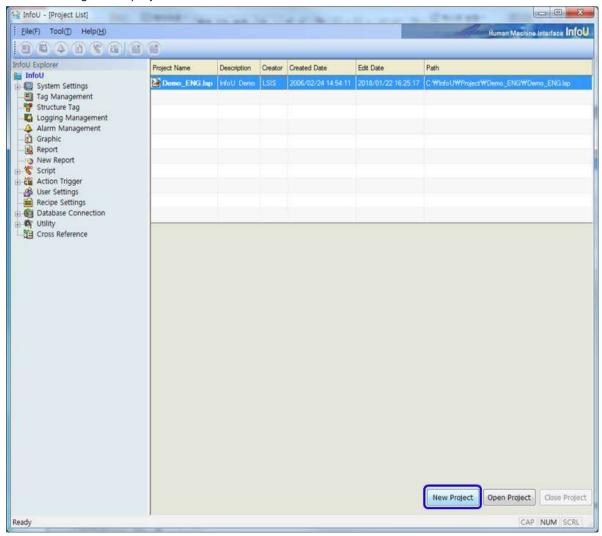
Each project becomes an unit subjected to Engineering and Run-time management and the user can move, copy or use projects to other system, drive or path since they are created and managed as a batch and under each project unit, sub-paths such as tag, logging, alarm, graph, report and script are created and managed.

It can easily manage numerous projects while providing easy copying and transferring contents between projects and efficient engineering works.

6.1.1 **Create New Project**

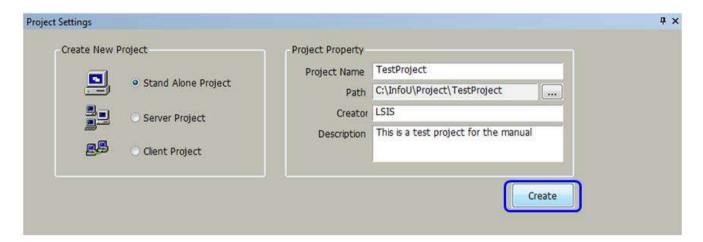
A function New Project can be executed after closing the previous project.

Once the project is successfully closed, the latest project list is displayed. Click [New Project] button to perform the work of creating a new project.



Notice

If any project is currently operated, a new project is not created.



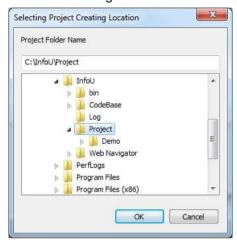
(1) Project Type

- Stand Alone Project
 A stand alone project is created
- Client -> Server Project
 A project that is activated by the server mode of the client to server system is created
- 3) Client -> Client ProjectA project that is activated by the client mode of the client to server system is created
- (2) Project Name

Input a project name The length of the Project name cannot exceed 63 characters of Korean/ 126 characters of English.

(3) Project Path

- 1) It refers to a path where a new project is created. If [...] button is selected, the following screen will appear to allow the user to select a path
- 2) A new folder with the same name as the project is created in the subfolder of the folder designated by the user to create a new project
- 3) The length of the Project path (include project name) cannot exceed 30 characters of Korean/ 60 characters of English.



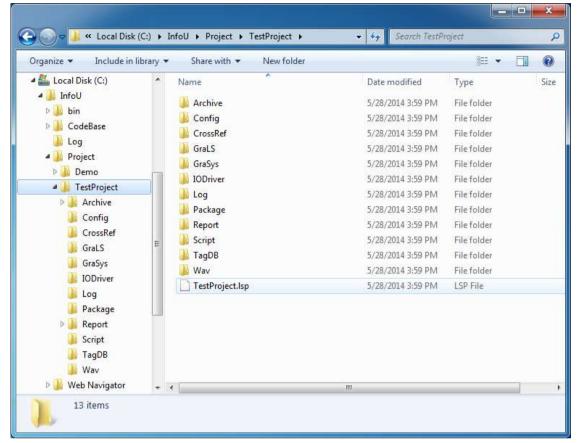
(4) Creator

Input a name or a department of the person who creates the project.

- (5) Description Input detailed information
- (6) Create

A new project is created. After the new project is created, the project will open

(7) Once the new project is created, a new project file with a project folder and extension ".lsp" will be created



6.1.2 **Project Settings**

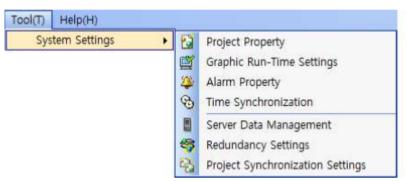
You may set up general properties of the project and basic configurations of the network. Also, you may set up project options and execution modules suitable for your purpose.

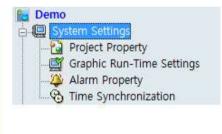
Notice

Project options can be set up depending on the authorized scope by the system license. Refer to the following example:

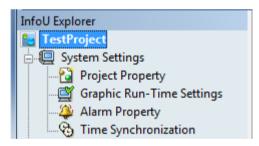
If the license key is of developer or executor version and "Web Function Support" is selected as an option, the demo mode will operated for one hour resulted from the violation of license.

- (1) How to display the screen
 - •If the engineering program is executed, the Project Property screen of the basic project is displayed
 - Select the 'Project Property' in the menu and tool explorer.



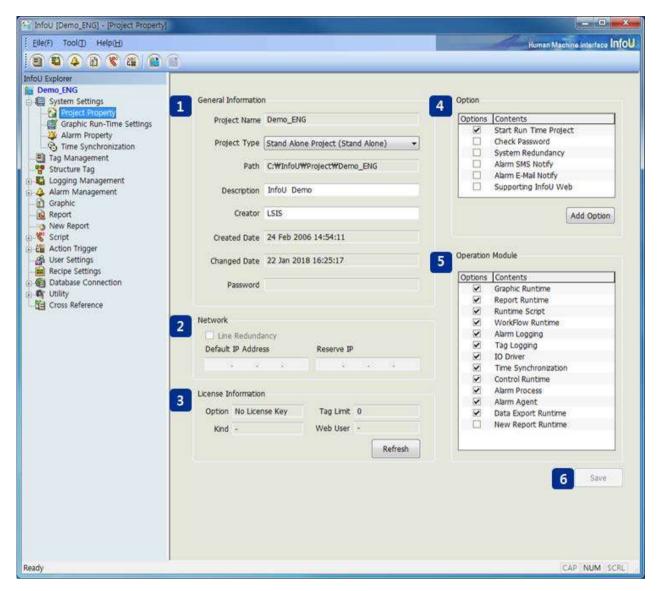


• Select the route item (project name) from InfoU Explorer.



(2) Project Property Interface

The screen configuration of 'Project Property' is as below.



1) General Information

a. Project Name

The name the user gives when creating a project is displayed and it is not editable

b. Project Type

The selected project type is editable

c. Path

The location of the project is displayed

d. Description

The user can give additional information on the project name

e. Creator

The name of the first creator is displayed

f. Generated Date

The date when the project is created for the first time is displayed

g. Changed Date

The date when the project is latestly changed is displayed

h. Password

If the option "Check password when the program opens" is selected, the user needs to input thepassword.

2) Network

a. Line Redundancy

If Line Redundancy was set up in the client and server project, this function is selected.

b. Default IP Address

The user needs to write the IP Address he/she will primarily use

c. Reserve IP Address

The user needs to write the IP Address he/she will use in emergency.

d. This setting is deactivated in a single project (Stand Alone).

3) Information of license

- a. The information of the license key is displayed.
- b. Option

Engineering, runtime-only, web server options are displayed.

c. Tag Limit

Number of available I/O Tag is displayed.

d. Kind

XGT-InfoU

e. Web User

When using a web license, the number of concurrent connected users.

4) Option

a. Start Run Time Project

It is automatically executed in a runtime mode while InfoUR is executed. If it is not set up, the standby mode is executed. When creating a project, the user may select default.

b. Check Password

The user needs to input the password to begin the engineering work when opening the project.

c. System Redundancy

When starting the server, the user needs to set up whether to start it as redundancy.

d. Alarm SMS Notify

The user needs to set up whether to provide the alarm message service by SMS or not when any alarm occurs.

e. Alarm E-Mail Notify

The user needs to set up whether to provide the alarm message service by e-mail or not whenany alarm occurs.

f. Supporting InfoU Web

As an option, the user needs to decide whether to provide the Web service support or not.

g. Additional Option

If you click the [Additional Options] button, the below screen will show up.



- When using this option, the Windows system key will be deactivated.
- Alt-Tab, Alt+Esc, Windows Start button, Task Manager, Ctrl+Alt+Del, Ctrl+Shift+Esc keys are not available.

Notice

This function is available for Windows XP only. It cannot be used for Windows Vista or Windows7.

- 5) Operation Module
 - a. The user can limit program functions by selecting functions to execute from the process list
 - b. This function is intended to restrict unnecessary functions for tests when using a low-capacityhardware

Notice

Select All is a default setting and if the user limits functions voluntarily, unexpected results may be prompted because the program settings may effect on the interrelation between functions

c. Graphic Runtime

If it is not selected, only data service is executed as background without the plant monitoring control.

d. Report Runtime

The function to automatically output or save the report is restricted.

e. Runtime Script

The function to execute the scrip is restricted.

f. WorkFlow Runtime

The function to designate the scrip operation is restricted.

g. Alarm Logging

The function to save alarm event history is restricted.

h. Tag Logging

The function to save history data is restricted.

i. IO Driver

The function to communicate with the device is restricted.

j. Time Synchronization

The function for time synchronization is restricted.

k. Control Manager

All of the functions set up not only in the screen but also in the scrip are restricted.

I. Alarm Process

Limitation on operational functions such as automatic printout of alarm sound, automatic printout, SMS, E-Mail and alarm logging, etc. when an alarm occurs.

m. Alarm Agent

Limitation of the alarm sound

n. Data Export Runtime

The function for data export is restricted.

o. New Report Runtime

New Report Runtime is restricted.

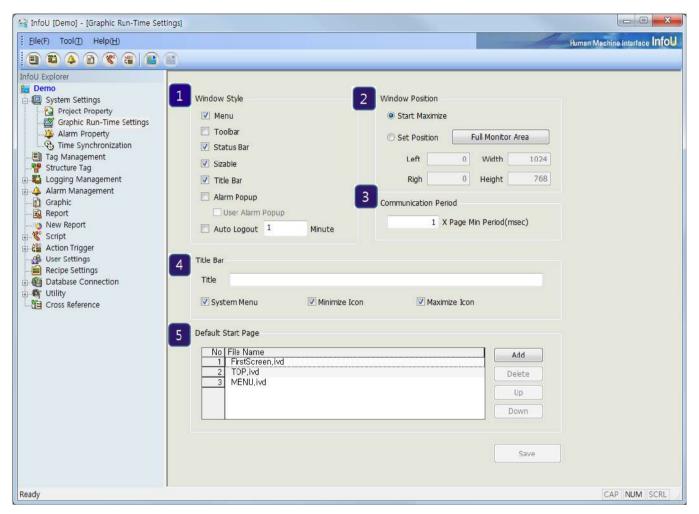
6) Save

- a. The selected options are saved.
- b. The options selected during Runtime are not applied; therefore, the user needs to restart the program after closing it to apply the selected options.

6.2 Graphic Run-Time Settings

In the graphic execution screen, the user can set up environment for the graphic run-time (InfoUX.exe).

For environment settings, the user can set up menu, view/hide toolbar, initial execution position, name to be displayed in the title bar, view/hide window control buttons and other options and also set up a default page to open as soon as it is executed.



(1) Window Style

- 1) Menu
 - Select whether to view the basic menu.
- 2) Toolbar
 - Select whether to view the toolbar.
- Status Bar
 - Select whether to view the status bar(d) Sizable: Select whether to allow the operator to change thescreen size.
- 4) Screen size adjustment
 - The operator can change the screen size.

5) Title Bar

Select whether to display the title window located in the top of the window.

6) Alarm Popup

Select whether to display the latest alarm in the pop-up window when any alarm occurs during RunTime

a. User Alarm Popup

The alarm popup screen of a user is displayed.

7) Auto Logout

In case there are no key inputs or mouse operations until the set time passes after login, it will be automatically logged out.

(2) Window Position

1) Start Maximize

Select whether to execute RunTime in the maximum screen.

2) Set Position

The user can designate the location and size of the screen during Run Time.

Click "Full Monitor Area" button, the area coordinates for the multiple monitors are displayed. The coordinates reference (0, 0) is for the main monitor.

(3) Communication Period

This is tag data polling period. The "page Min Period" means the value of the smallest period among the opened page.

(4) Title Bar

1) Title

Input the title of the screen.

2) System Menu

Select whether to display system menus in icon types in the left top of the screen.

3) Minimize Icon

Select whether to display minimized buttons in the right top of the screen.

4) Maximize Icon

Select whether to display maximized buttons in the right top of the screen

(5) Default Start Page

1) This is for selecting screens to be displayed at first when executing Run Time.

2) Add

All pages contained in the current project will be listed and among them, you can select one for the initial screen.

3) Delete

The selected screen file is deleted from the initial screen list.

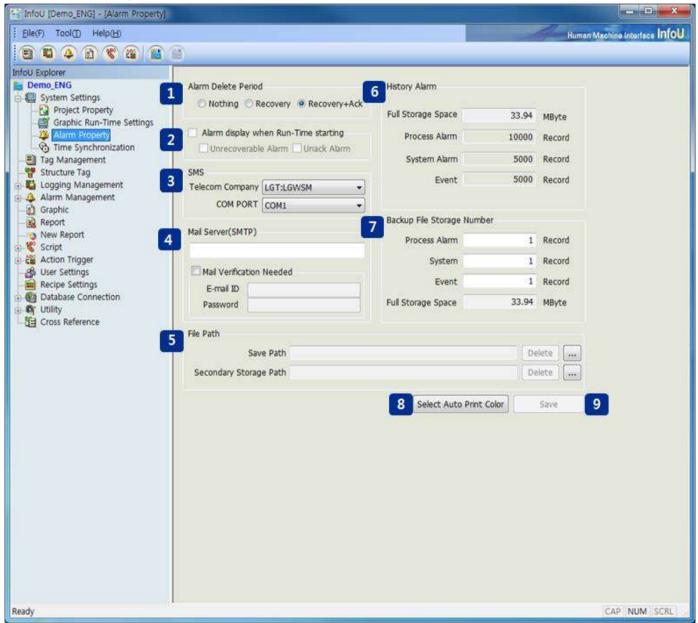
4) Up/Down

You can specify the order of opening the initial screen by moving the selected file up/down.

6.3 Alarm Property

You may set up items needed for handling and operating alarms. You may set up the number of alarm events to save and the criteria to handle real-time alarms (Criteria to delete or designate auto printing and color, etc) and also set up common options (SMS, mail) needed to handle alarms.

Select Alarm Property from InfoU Explorer.



(1) Alarm Delete Condition

Set up a time to delete alarm events from the real-time alarm memory.



1) Recovery

When the alarm is recovered, it is deleted form the real-time alarm memory (Default)

2) Ack.

You can delete the alarm only when it is acknowledged.

3) Recovery and Ack.

The alarm can be deleted only when it is recovered and acknowledged.

(2) Alarm display when Run-Time Starting

This feature is not currently supported.

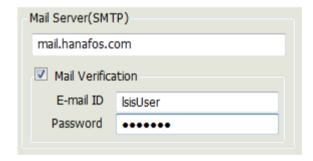
(3) SMS

Set up details on the SMS message service to send alarm information when it occurs.

Please refer to the alarm management section.

(4) Mail Server (SMTP)

A mail server (SMTP) shall be set up to send a mail related to alarm information to the user. Set up a mail server address.

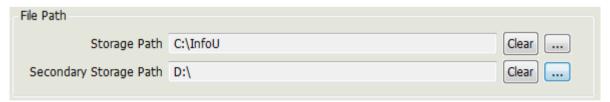


1) Mail Verification

If an account is needed to connect with the mail server, input the mail ID and password.

(5) Backup File Path

You may a path to save backup files.



1) Storage Path

A path to save backup files is set up.

2) Secondary Storage Path

To be prepared for the event that it fails to access to the storage path, set up a secondary storage path to access.

3) Delete button

It deletes the input path.

4) Path Search

A button to search folders to input each storage path and when this button is pressed, a folder search window will appear.

(6) History Alarm

The number of alarms for each alarm type is set up to save them in the history DB.

1) Total storage space

It calculates the storage space depending on the number of alarms set by a user and represents it to the user.

2) Process Alarm

Input the number of process history alarms to be saved.

3) System Alarm

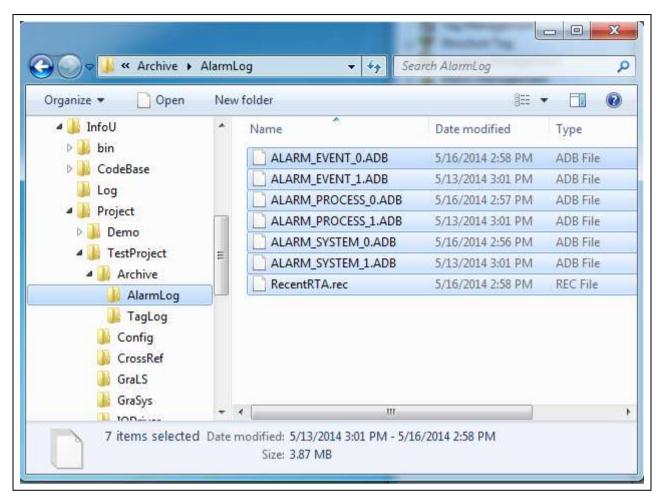
Input the number of system history alarms to be saved.

4) Event

Input the number of event history alarms to be saved.

Notice

If DB files already exist, editing is not available. To reset the storage period or the alarm number, it is needed to delete the existing alarm logging file.



(7) Backup File Storage Number

You may set up the number of backup DB files on history alarms.

- 1) Process Alarm
 - The number to backup DB files on process alarms
- 2) System Alarm

The number to backup DB files on system alarms

3) Event

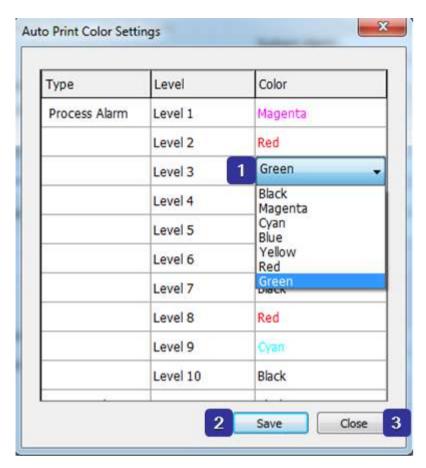
The number to backup DB files on event alarms

4) Full Storage Space

The storage space needed to maintain the selected number of backup files is displayed.

(8) Select Auto Print Color

You may set up print colors by levels and types when auto printing alarms. Click "Select Auto Print Color" button.



1) Auto Print Color Settings

Black is the default color and six colors such as pink, dark green, blue, yellow, red and green are available.

2) Save

Once color setting is completed, click 'Save' button to save the selected colors.

3) Close

The window for Auto Print Color Settings is closed.

(9) Save

Alarm settings are saved.

(10) SMSOption-Notepad

If any new modem control device is used in addition to the mandatory SMS terminal, additional instruction for users is presented.

1) SMSOption.ini File

There is SMSOption.ini file in the bin folder (ex>C:\InfoU\bin) of the InfoU installation folder (If there is no corresponding file, the file is automaticalled created when InfoU starts)

The file contains the following contents:

```
SMSOption - Notepad
File Edit Format View Help
[SMS]
Count=2
1=LGT:LGWSM
2=5KT:BSM-856
[LGT:LGWSM]
MSG=AT$SMSMO0=[ToTel],[FromTel],[Opt1],[Msg]
OptCount=1
MsgType=Text
opt1=4098
Timeout_msec=30000
SuccessMsg=$SMSMOACK0
Failmsg=$SMSMONAKO
Retry=3
[SKT:BSM-856]
MSG=AT$SMSMO=[ToTel],[FromTel],[Opt1],[Opt2],[Opt3],[Opt4],[Msq]
OptCount=4
MsgType=Hex
opt1=4098
opt2=16
opt3=
opt4=
Timeout_msec=30000
SuccessMsg=$006
FailMsg=$007
Retry=3
```

2) SMSOption.ini Edit

- a. [SMS] Item
 - Count: Specify the count number when adding the SMS terminal number to be displayed in the setting screen.
 - •1=LGT:LGWSM (Exist as many as the above count from 1. When setting SMS telecom company terminal, contents to be displayed in the combo box Count)
 - •2=SKT:BSM-856
 - •3= Telecom company: Terminal (write SMS terminal number and the telecom company name and terminal name to be newly added.)
- b. [Telecom Company: Terminal]: Set up sending and receiving options for the telecom company and terminal model. (see the terminal manual)
 - •MSG: Write message types to send/receive to/from the SMS terminal.

[ToTel]: Receiver's telephone number

[FromTel]: Sender's telephone number

[Opt1]: If there is any option, write it.

- •OptCount: Write the number of options
- MsgType: Select either Text or Hex (Be caution because specifications are different between

terminals)

- •Opt1,···:Option character to be entered in each option part.
- •Timeout_msec: Time to wait response from the telecom company
- •SuccessMsg: Message code to receive from the terminal when sending is successful.
- •FailMsg: Message code to receive from the terminal when sending is failed.
- •Retry: Retry number when sending is failed.

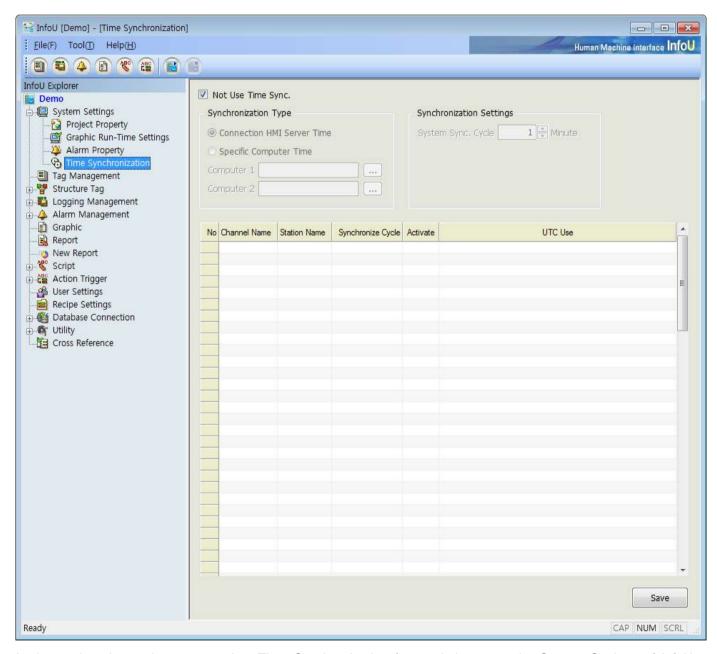
6.4 Time Synchronization

To prevent any improper time from being applied to all of the processes used in the system due to any wrong computer time during the real-time operation of the current project, time synchronization is executed by periodically obtaining time from the computer on which the project is executed or other computer.

This can be applied to the stand alone system provided in the InfoU system and other server/client systems and it also provides time synchronization with the I/O device station connected with the InfoU system.

For time in the system, basically UTC (Universal Time Coordinated) is used.

6.4.1 Default Screen



In the engineering main screen, select Time Synchronization from subclauses under System Settings of InfoU Explorer to display the setting screen above. Time Synchronization is selected as a default value he initial setting

screen.

- (1) General Settings
 - 1) Not Use Time Sync
 - a. If selected

Time synchronization is not used between the computer in which InfoU system is installed and I/O device.

- 2) Synchronization Type
 - a. Connection HMI Server Time

The computer in which the current InfoU project is operated is designated

b. Specific Computer Time

The computer on the network is designated.

- 3) Synchronizing cycle setting service by a user (Unit: Min.)
 - a. You can synchronize the computer time with the targeted subject in seconds set by the cycle.
- 4) System Sync. Cycle (Unit: Min.)
 - a. The interval of the computer's time synchronization can be set up by the user.
- 5) Synchronization of the device that provides time synchronization
 - a. Whether time synchronization is activated or not
 - b. Even though a device provides time synchronization, it does not perform it if it is not activated. Time synchronization cycle (Unit: sec), Time unit (UTC/ Local Time)
 - c. For time synchronization, UTC is used as basic time and if not specified, local time can be used.

(2) Device's Time Synchronization

Device's time synchronization is available only if full time synchronization is activated. Device's time synchronization does not apply to the entire devices but only to the stations that provide time synchronization while providing the following list to allow the user to select.

No.	Channel Name	Station Name	Synchronize Cycle	Activate	UTC Use	<u> </u>
						Ξ

Also, for device's time synchronization, it can be set up and executed separately depending on whether each device is activated or not even through the user selects a certain time. The user can select either UTC or local time since a certain time display way exist for each station of the device rather than using UTC in the entire stations such as in full time synchronization

6.4.2 Scenario for the Whole System

(1) Standalone

A time synchronization way used for projects that are executed independently.

1) Connection HMI Time

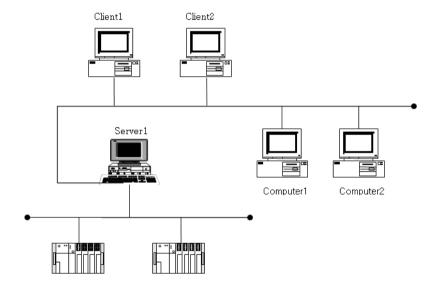
The stand-alone system does not support "Connection HMI Server Time" based time synchronization

2) Specific Computer Time

- a. Time synchronization is performed with the computer assigned as Computer 1.
- b. If time synchronization fails in Computer 1, it is carried out with the time of Computer 2 (if set up).

(2) Server/Client-Single System

A time synchronization way used for projects that form a server and client relation to execute.



1) Connection HMI Time

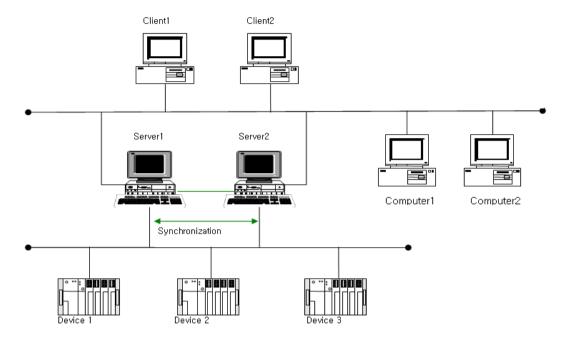
On the server, time synchronization is not performed, and on the client, time synchronization is performed with the connected server.

2) Specific Computer Time

- a. Time synchronization is performed with the computer assigned as Computer 1.
- b. If time synchronization fails in Computer 1, it is carried out with the time of Computer 2 (if set up).

(3) Server/Client-Redundancy System

A time synchronization way for projects that form a server and client relation and server redundancy



1) Connection HMI Time

- a. Server
 - On the default master server, time synchronization is not performed
 - On the default standby servert, time synchronization is performed with the default master server.

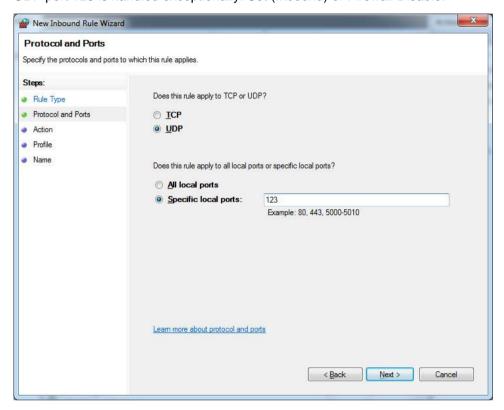
b. Client

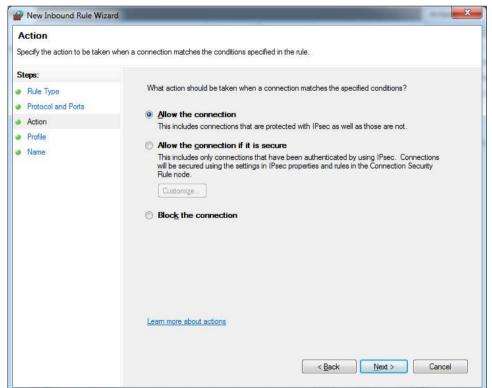
- •The client synchronizes time between the project under executing and the currently connected Server 1.
- •If Server 1 is abstained to Server 2, redundancy system, due to any failure in the network or the system, the client that receives this information changes automatically from Server 1 to Server 2 for time synchronization.

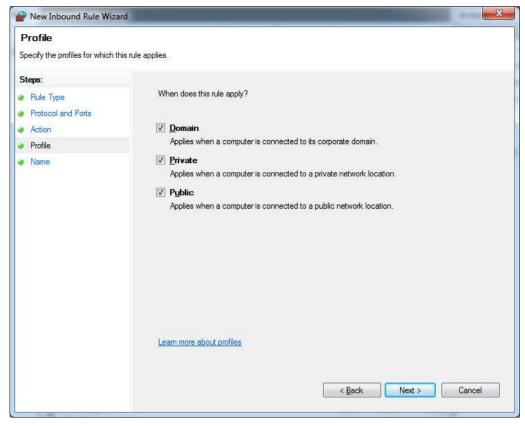
- 2) Specific Computer Time
 - a. Server/Client
 - •It is synchronized with the time of Computer 1 connected with the network.
 - •If time synchronization fails in Computer 1, it is carried out with the time of Computer 2 (if set up).

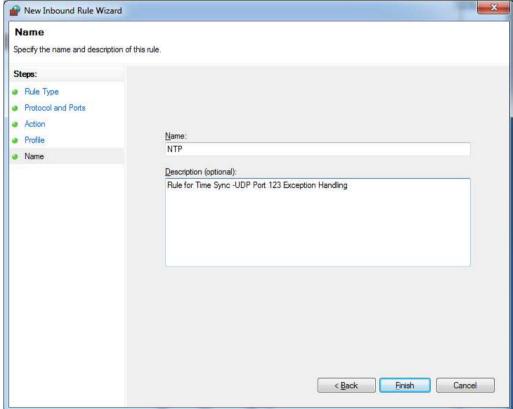
6.4.3 Time Synchronization Settings

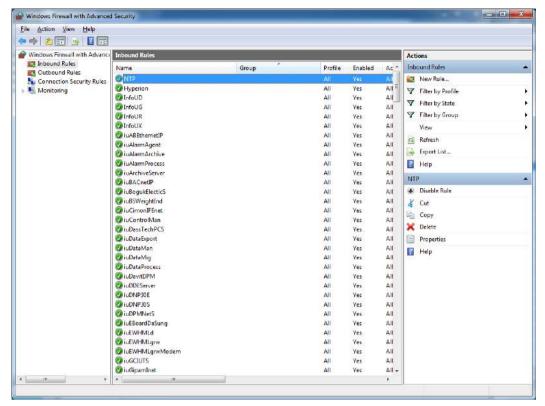
Exceptional settings of firewall [server]
 UDP port 123 is handled exceptionally. Set (Inbound) or Firewall Disable.

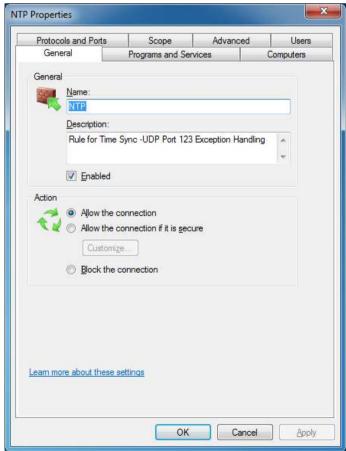






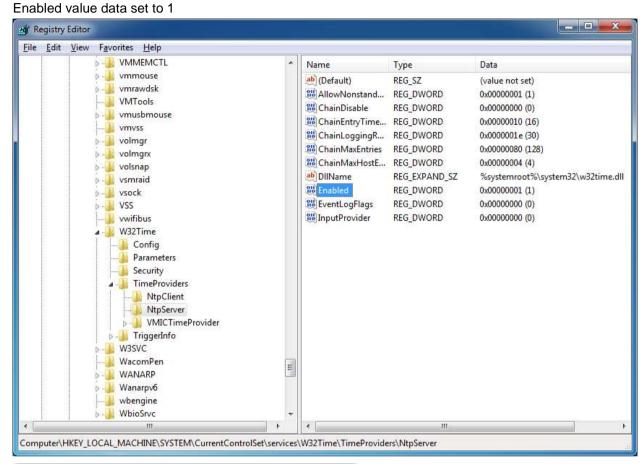


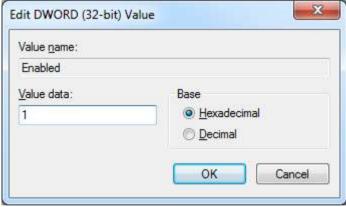




(2) Registry settings [Server, Client]

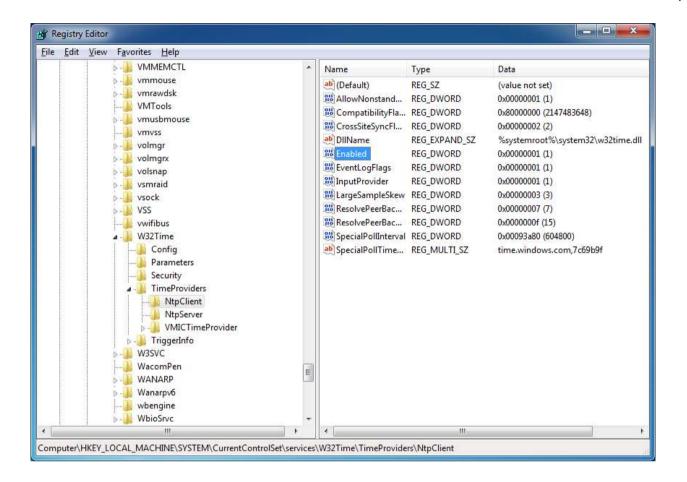
1) Server HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\TimeProviders\NtpServer





2) Client

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\TimeProviders\NtpClient Enabled value data set to 1

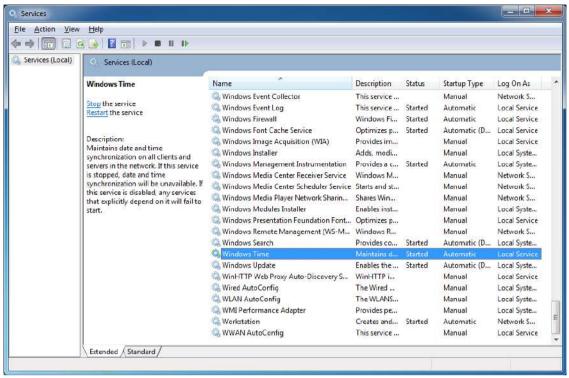


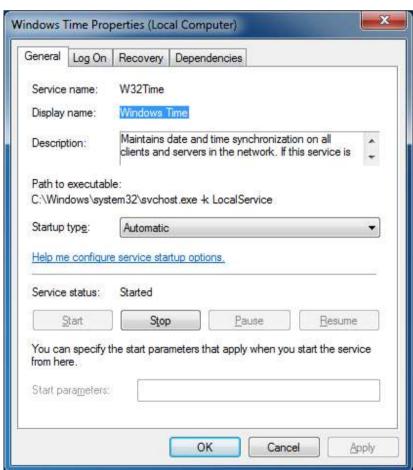
(3) Services running [Server]

Among the service items, check whether the Windows Time item has been started.

(The

"HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\TimeProviders\NtpServer\Enable d" item of the registry must be set to 1 before executing the "Windosw Time" service.)





Chapter 7 I/O Driver

This software is to collect data from a device and transfer to the upper process.

The user can add or set up Channel and Station in Tag Management.

7.1 I/O Driver Setting

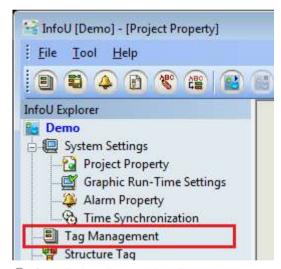
The user can add, delete or modify Channel and Station through pop-up menu if each device is displayed in a tree structure. This section briefly explains how to edit each item.

7.1.1 **Communication Channel**

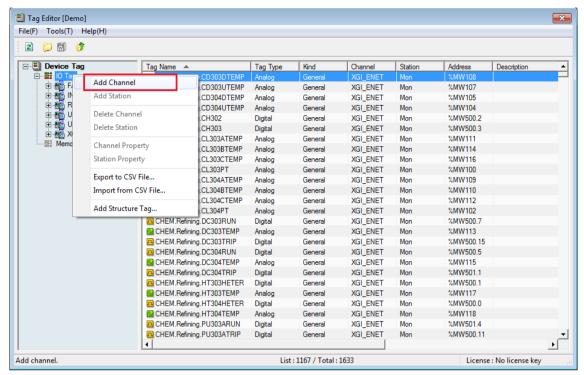
Channel refers to a channel to be communicated and selected among supporting I/O Drivers. Also, it basically provides a "memory" type of channels to classify input/out tags and memory tags in InfoU.

(1) Configuration

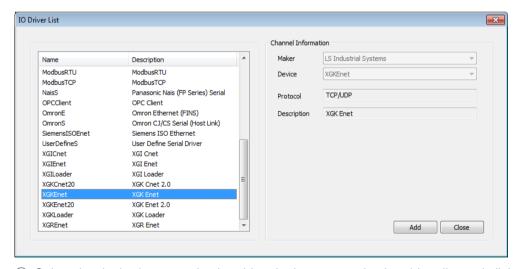
To add communication channels, run the menu based on the below procedures.



① Click [InfoU Explorer] → [Tag Management]



② Run [Device Tag] → [I/O Tag] → [Add Channel].

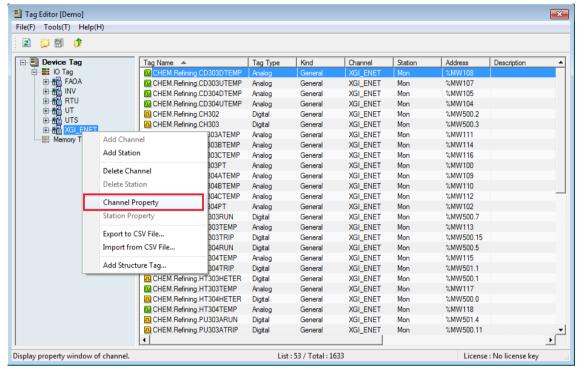


3 Select the desired communication driver in the communication driver list and click the [OK] button.

Notice

- The setting method may be different depending on the communication driver.
- For settings of each communication driver, refer to [Communication Driver] of the appendix.

(2) Edit



To edit the communication channel, double-click the relevant communication channel or click with the right mouse button then run [Communication Channel Property] in the popup menu.

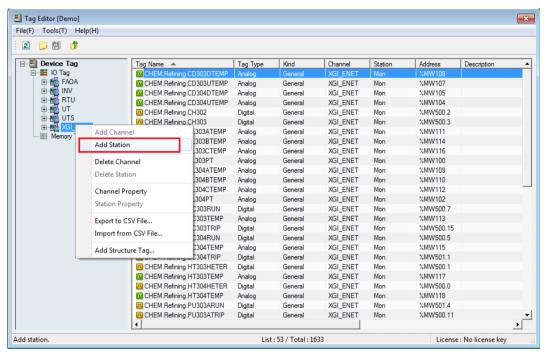
7.1.2 **Station**

The station means the actual device belonging to the upper communication channel such as PLC or Inverter.

Notice

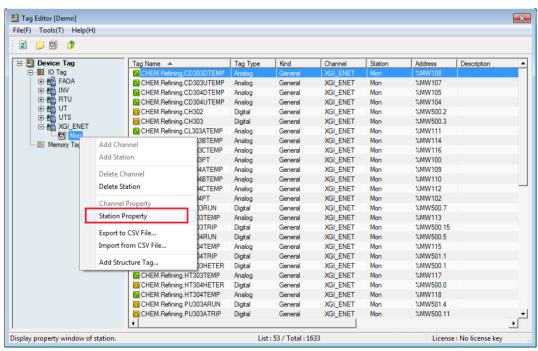
- The station cannot exist by itself so it should be added and subordinated to the communication channel.
- For some communication drivers, you can add the station even in the communication driver setting window.

(1) Add



After clicking with the right mouse button on [Device Tag] \rightarrow [I/O Tag] \rightarrow ["Communication Channel Name"], run [Add Station] in the popup menu.

(2) Edit



In [Device Tag] \rightarrow [I/O Tag] \rightarrow ["communication channel name"] \rightarrow ["station name"], double-click the station name that you want to edit or after clicking with the right mouse button, run [Station Property] in the popup menu.

Chapter 8 Tag Management

8.1 **Overview**

The tag editor is the tool to register and manage the tags that are the basis of the HMI system. All functions supported and operated by the HMI system runs based on the tags registered in the tag DB. Tags can be largely divided into I/O tags that receive signal from the on-site equipment and memory tags registered virtually by necessity of the upper system.

The InfoU shows the tag information obviously and neatly through the property window and a user can easily perform the tag engineering works through the InfoU. In addition, it supports the clipboard and CSV file's I/O so you can register and manage mass tag data easily and promptly.

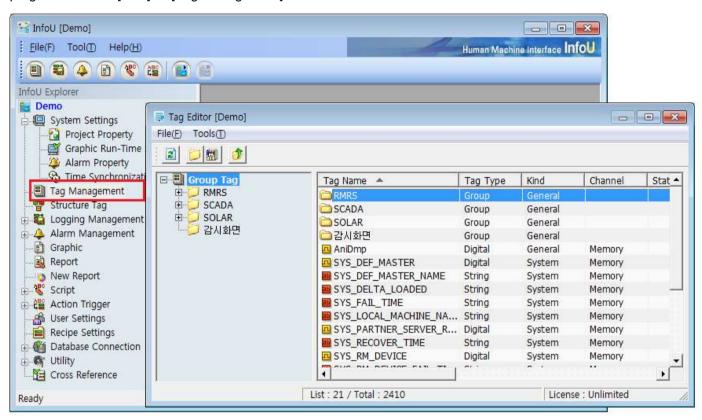
To execute the tag editor, click [Tag Management] from the menu tree items on the left side of the InfoU engineering module or select [Tag Management] in the main menu or toolbar of the InfoU engineering module.

8.1.1 **Definitions of Terms**

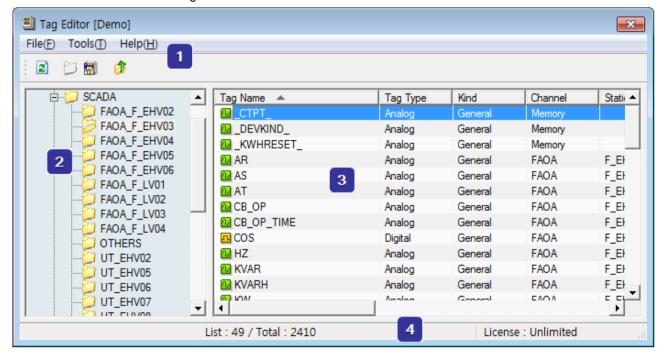
Terms	Description
Tag editor	It is the module of InfoU engineering program, which performs a variety of editions for
rag cuitor	tags.
Analog tag	It means the analog type of tags that can be largely divided into the integer and real
7 trialog tag	number type.
Digital tag	It has two tag values; 0 or 1 (Open/Close, ON/OFF).
Group tag	It is the virtual tag to constitute the tag with logical layer information. For example, it acts
Group tag	as a folder of the Explorer.
General tag	It means any tag created by a user's direct engineering.
	The tag is automatically created when registering the system. It is mainly related to the
System tag	unique status and operations of the equipment such as the conditions, the number of
	reading, etc.
	The alarm occurs for the analog tag. When the analog tag values exceed the limits of the
Analog alarm	range, variations, etc., the alarm will occur. After that, if the values come into the normal
	range, the alarm will be cleared.
Digital alarm	The alarm occurs for the digital tag. When the digital tag value is 0 or 1, or it varies, the
Digital alami	alarm is set up for processing.
CSV file	It is the text format file and each item is separated by a comma (,). It can be compatible
COV IIIE	with Excel and used to manage the mass tag in the tag editor.
Structure tag	In case there is the tag set of the specific device or the tag that should be created
template	repetitively since its structure is fixed, this template defines the name of the patterns of
terripiate	these tags as a bunch.
Structure tag item	It means the common prototype of each tag forming the structure tag template.

8.1.2 Execution and Main Screen

To execute the tag editor, click [Tag Management] from the menu tree on the left side of the InfoU engineering program or select [Tool] → [Tag Management] in the menu.



The screen of the executed tag editor is as shown below.



The composition of the tag editor is as shown below table.

(1) Menu / toolbar

It is composed of the basic menu and toolbar buttons such as Refresh, View Transition, Move to upper group, etc.

Toolbar icon	Description
2	The icon indicates Refresh. It refreshes the details of tag database.
25	The icon indicates Group Tag View. It converts the deployment scheme of the tag
	into Group View.
81	The icon indicates Device Tag View. It converts the deployment scheme of the tag
EMT	into Device View.
(*)	The icon indicates Move to Upper Group. It moves the tag to the upper tree items
	in the tree structure.

(2) Tag structure tree

It deploys the tag composition in a tree image to display many tags in an efficient manner. The deployment of the tag composition has two types; [Device View] deploying tags through the physical structure that is actually connected to devices; [Group View] composing the tag structure with logical groups. A user can select the desired tag structure to perform tag editions effectively.

(3) Tag list

It shows the list of the tags belonging to the items selected from the tag structure tree. The properties shown in the list are the typical items of the tags. A user can select the shown column or change the position of the column or specify the order of showing tags.

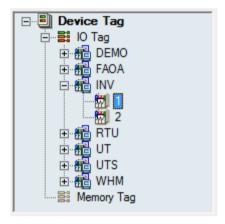
(4) License information

It shows the InfoU's license information simply. It also shows the validity of the license and the number of tags.

8.1.3 Conversion of Tag View

The conversion of tag view is the function to manage tags easier by converting the deployment method of the tag tree into a user's desired one. You can convert the deployment into [Device View] and [Group View] by clicking the appropriate button of the toolbar menu.

(1) Device view tree structure



It can be used when you want to view tags in the way physically connected to devices. The group is not visible in the device view. The device view tree structure is composed of the following tree items.

Tag management(fixed item) It shows the whole tags, however, the group tag is not visible.

2) I/O tag (fixed item)

It is the tag that is actually connected to the I/O point of the on-site device. There are communication channels for its sub-item. When selecting this, all I/O tag lists will be shown.

3) Communication channel (variable item)

It means the type of the channel to communicate and you can see the channel selected among available I/O Drivers. Namely, the channels only registered during tag engineering can be shown. When selected from the tree, the tag list belonging to the relevant communication channel is visible.

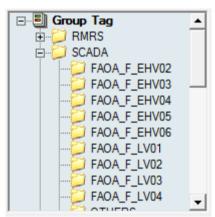
4) Station (variable item)

It is the sub-item of the communication channel and means the actual devices such as the PLC, inverter. When selecting this, the tag list belonging to the relevant station will be shown.

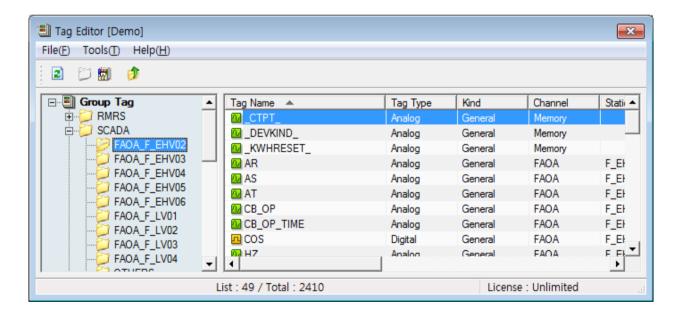
5) Memory tag (fixed item)

It means the virtual memory tag for operations in HMI system. When selecting this, all memory tags except the group tags will be shown.

(2) Group view tree structure



In contrast with the above, the group view tree structure shows tags by composing logical groups. The creation of each group leads to the creation of group tags and it includes the sub-tag. Each group can have the sub-group. When selecting one group, the tag belonging to the selected group will be shown with the sub-group.



8.2 Configuration of Communication Equipment

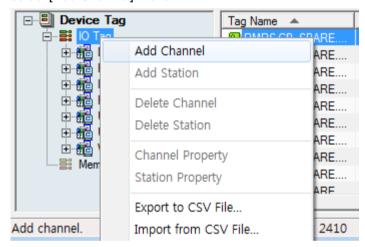
In the case of the device view tree structure, you can add, delete, and change the communication channels and stations through popup menus. This section briefly describes how to edit each time. For each property of the communication channels, stations with detailed usage, refer to the "I/O driver" manual.

8.2.1 Communication Channel

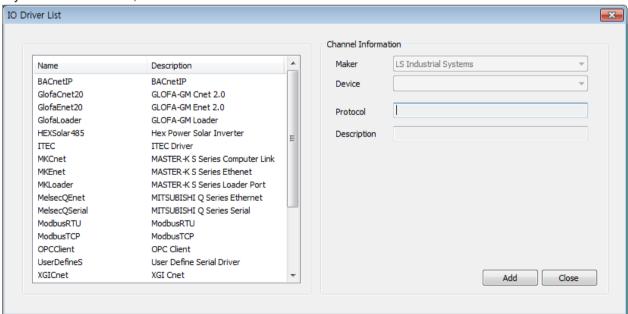
It means the type of the channel to communicate and can be selected among the available I/O drivers

(1) Addition

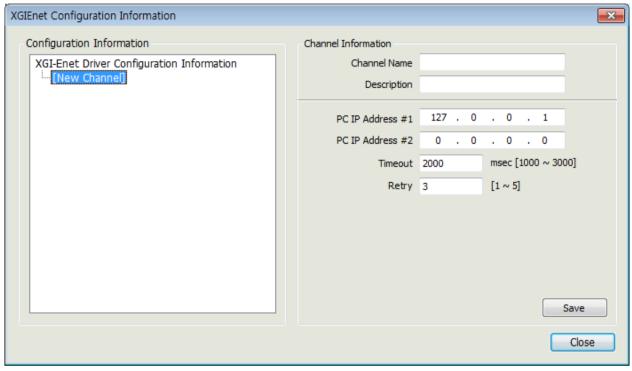
To add communication channels, after clicking with the right mouse button on the I/O tag items, select [Add Channel] menu.



If you select the menu, the available I/O diver lists will be shown.



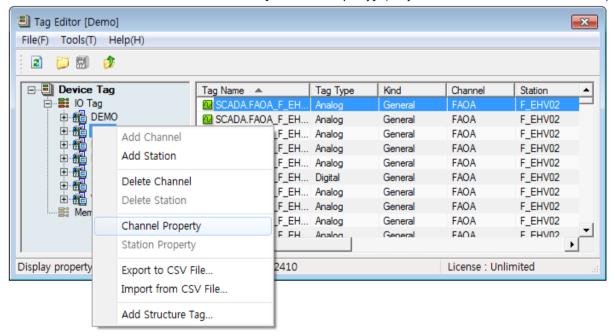
If you select the item to add in the communication driver list and click [Add], the window to edit the properties of the relevant communication channel will be shown.



For more details, refer to the "I/O Driver" manual.

(2) Edition of Properties

To edit the properties of the registered communication channel, click with the right mouse button on the relevant communication channel and select [Channel Property]. (Or you can double-click the tree item)

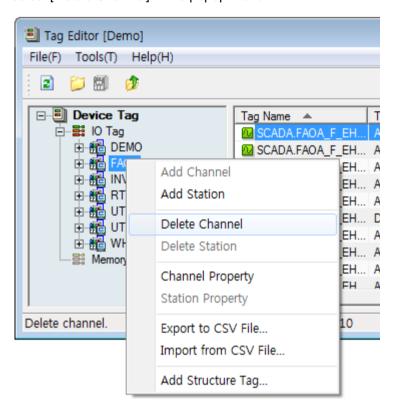


Chapter 8 Tag Management

If you select [Channel Property], the window displaying the properties for the registered communication channel will show up. Through this window, a user can change the properties of the communication channel and save them.

(3) Deletion

It is the function to delete the registered communication channel with the stations and tags belonging to the registered one. Select the communication channel to delete and click with the right mouse button and then, select [Delete Channel] in the popup menu.



If you select [Delete Channel], the following warning message will show up.



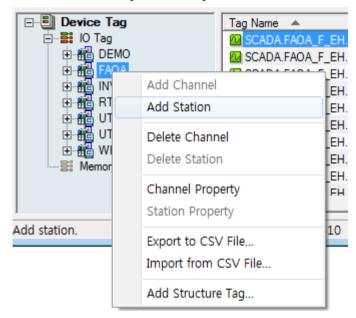
If you select [Yes], the 'Delete' function will be executed; if you select [No], the function will be canceled. When you delete the data once, it will be deleted permanently so be careful of this.

8.2.2 **Station**

The station means the actual devices such as the PLC, inverter acting as the communication channel, which is the type of communication channels. Its menu deployment method is similar to the communication channels. For more details on each station, refer to the "I/O Driver" manual.

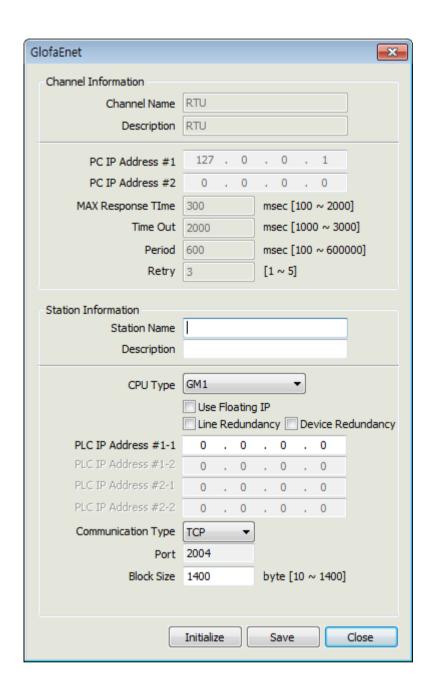
(1) Addition

To add stations, after selecting the type of the relevant communication channels, click with the right mouse button and execute [Add Station].



Then, you can see the screen for the relevant station.

If you input the details and save them, the relevant station will be added to the sub-item of the communication channel.



(2) Edition of Properties

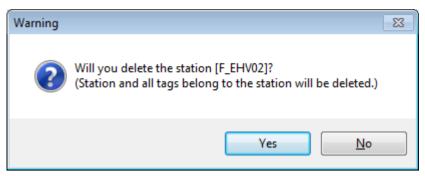
Then, you can see the screen for the relevant station.

If you input the details and save them, the relevant station will be added to the sub-item of the communication channel.

(3) Deletion

It is the function to delete the registered station with the tags belonging to the registered one. Select the station to delete and click with the right mouse button and then, select [Delete Station] in the menu.

Then, the following warning message will show up.



If you select [Yes], the 'Delete' function will be executed; if you select [No], the function will be canceled. In common with the communication channel, when you delete the data once, it will be deleted permanently so be careful of this.

Notice

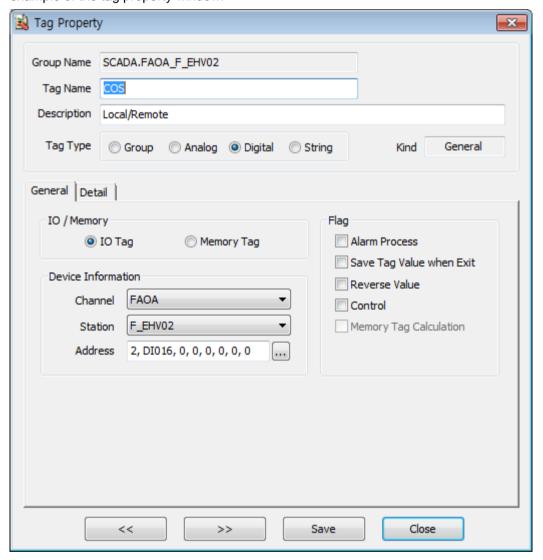
You should pay special attention to delete communication channels and stations.

- Deleting communication channels means the relevant communication channel with its all stations and tags will be removed.
- Deleting stations means the relevant station with its all stations and tags will be removed.

8.3 Tag Property

The tag is the basic unit that has the field or virtual value in the upper HMI system as well as the InfoU. The can be divided into the actual I/O tag connected to the I/O devices; the memory tag created by necessity. All tags can have their own values except group tags and they can be divided into Analog, Digital, String tags depending on the type of values.

The tag has several properties and the definable items are limited depending on each property. In this section, the properties of the tag are classified and the meaning of each property is defined. The figure shown below is an example of the tag property window.



The tag properties are divided into 5; common, general items, details, alarms, operation expressions. In the case of the detailed tab and alarm tab, the definable properties may be different depending on the tag types. As shown in the Fig., unsettable items are deactivated and depending on the tag types and the relevant property group tab is visible and invisible over and over again.

The following is the description on each property group tab.

Properties	Description
Description items	Property that the tags should have commonly
General items	I/O information of I/O and various flags
Details - Analog	The property that is related analog values can be settable when the tag is an analog type.
Details - Digital	The property that is related to digital values can be settable when the tag is a digital type.
Details - String	The property that is related to string values can be settable when the tag is a string type.
Alarm - Analog	The alarm property can be settable when the tag is an analog type.
Alarm - Digital	The alarm property can be settable when the tag is digital type.
Operation expression	Property related to operation expressions

8.3.1 **Common Items**

They are the most basic property sets of the tag that are commonly used for all types of tags.



(1) Group Name

Properties name	Description
Group name	Name to manage the tag in a logical group

(2) Tag Name

Properties name	Description
Tag name	It is the name of the tag and has the eigen value in the group. The length of the tag
	name cannot exceed 95 characters of Korean/ 190 characters of English. In this
	context, the length of the tag name means the full name including the group name.
	The rules applied to define the tag name are as shown below.
	 The length of the name is limited to 95 characters of Korean/ 190 characters of English, It must not begin with a number and cannot contain spaces.
	Except some cases, special characters are not available.
	• Available characters : # \$ [] _ { }

Chapter 8 Tag Management

(3) Description

Properties name	Description
Description	It is the comment on the tag.
	The string length is limited to 127 characters of Korean/ 254 characters of English.

(4) Tag Type

Properties name	Description
Tag type	It classifies the type of tag values. They can be divided into Group / Analog / Digital /
	String depending on the characteristics of values.
	Group : The value does not exist and it is deactivated in the device view so you
	cannot select it.
	Analog : Select this if you have the analog value.
	Digital : Select this if you have the digital value of 0 or 1.
	String : Select this if you have the string value.
	If the group tag has the tag as its sub-item, changing into the general tag is not
	allowed.

(5) Kind

Properties name	Description
Kind	It is the kind of tags. It is read-only property so cannot be changed by a user.
	General : Tags created by a user
	System : Tags to manage the status of the station. They are automatically created
	when adding stations.

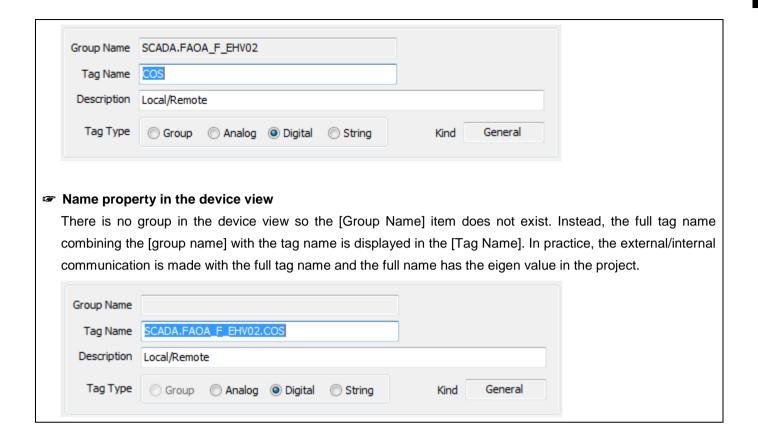
Notice

Among common items, the group name and tag name may work differently when executing the tag properties in the device view and group view.

In the group view, the full name of the tag is divided into the group name and tag name but in the device view, the group name column is empty and the full name of tags will be displayed in the tag name column.

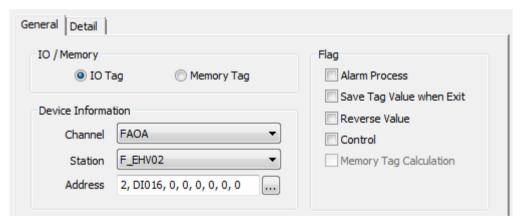
Name property in the group view

The full name of the tag is divided into the [group name] and [tag name]. In this case, the group name is read only so it cannot be changed by a user and the [tag name] should be the only one in the relevant group.



8.3.2 **General Items**

They are the items to set up the tag properties related to I/O and various flags.



(1) Separation

Properties name	Description
Separation	It distinguishes whether the tag is collected from the connected actual devices; or the
	tag is virtually created for engineering and convenience.
	• I/O tag: Select this if the tag is connected to the actual devices.
	Memory tag: Select this if the tag is logically used only.

Chapter 8 Tag Management

(2) Device Information

The item is activated only in case of I/O tag. You can set up the communication channel, station and I/O address of the tag.

Properties name	Description
Communication	Select the channel for communication of the tag. It can be selected only when the
channel	communication channel is registered in the tree items of the tag editor in advance.
Station	It is a subordinate concept belonging to the communication channel and means
	selecting the actual devices such the PLC, Inverter, etc. It can be selected only when
	the station is registered in the tree items of the tag editor in advance.
	Input the communication address of the actual tag of the relevant station. Depending
I/O address	on the types of communication channels, you can also select it from the list by
	pressing the button.
	The string length is limited to 127 characters of Korean/ 254 characters of English.
	The setup method may be different for each device. For more details, refer to the
	"I/O Driver" manual.

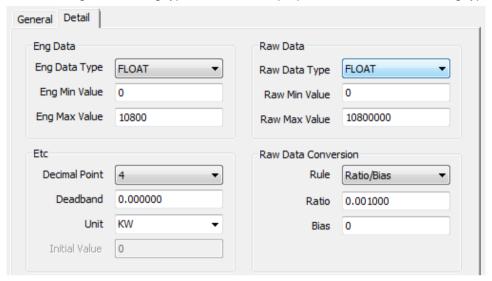
(3) Flag

It defines various settings for tags and operations of tag values during runtime

Properties name	Description
	It sets whether applying alarm to tag values or not. It can be selected only in case of
Alarm Process	the analog / digital tag. If this property is selected, the property tab is created to set up
	the detailed alarms.
	It determines whether recording the final value of the tag in the database when
Save Tag Value	ending the real-time operation.
When Exit	If this property is activated, the tag value will be saved when the program ends. The
	saved value will be used as the initial value of the tag when starting the project.
Write Tog Volue	It determines whether controlling tags is allowed or not. If this property is canceled,
Write Tag Value	you cannot control the tag even though the control command is given.
Reverse Value	It determines whether reversing the digital tag value obtained from the field. This
	property can be applied when the tag is I/O and digital type.
Memory Tag Calculation	It determines whether performing the operation expression in case the value is not
	the group tag but the memory tag. If this property is selected, the operation
	expression tab that can set up the operation expression will be created.

Details - Analog 8.3.3

When the tag is an analog type, it defines the properties related to the analog type.



(1) Engineering Data

It means the properties related to the data that a user recognize in the upper system.

Property Name	Description
	It is the type of the engineering value of the tag in the upper system.
	There might be a little difference from the pure data type due to the processing of tag
	values. The types of available values are as follows.
	• INT8: Signed 8 bit integer (-128 ~ 127)
	• INT16: Signed 16 bit integer (-32.768 ~ 32.767)
	• INT32: Signed 32 bit integer (-2,147,438,648 ~ 2,147,483,647)
Eng. Data Type	• UINT8: Unsigned 8 bit integer (0 ~ 255)
	• UINT16: Unsigned 16 bit integer (0 ~ 65535)
	• UINT32: Unsigned 32 bit integer (0 ~ 4,294,967,295)
	• FLOAT: 4 byte real number (-3.4028e+38 ~ 3.4028e+38)
	• DOUBLE: 8 byte real number (-1.797693e+308 ~ 1.797693e+308)
	[NOTE] When using the real number type of the tag in the upper system, it is
	recommended to apply the DOUBLE type rather than the FLOAT type to increase
	accuracy of the value and reduce the number of errors.
Eng. Min. Value	It is the minimum engineering value of the tag.
Ling. Willi. Value	If the engineering value of the tag is less than this, the value will be treated as 'Bad'.
	It is the maximum engineering value of the tag.
Eng. Max. Value	If the engineering value of the tag is greater than this, the value will be treated as
	'Bad'.

(2) Raw Data

It means the properties related to the tag data used for the equipment.

The property becomes active only in case of I/O tag so it cannot be settable for the memory tag.

Property Name	Description
	It is the type of the tags collected from the equipment.
	There might be a little difference from the pure data type due to the processing of tag
	values. The types of available values are as follows.
	• INT8: Signed 8 bit integer (-128 ~ 127)
	• INT16: Signed 16 bit integer (-32.768 ~ 32.767)
	• INT32: Signed 32 bit integer (-2,147,438,648 ~ 2,147,483,647)
	• INT64: Signed 64 bit integer (-9.007.199.254.740.990 ~ 9,007,199,254,740,990)
	• UINT8: Unsigned 8 bit integer (0 ~ 255)
	• UINT16: Unsigned 16 bit integer (0 ~ 65535)
	• UINT32: Unsigned 32 bit integer (0 ~ 4,294,967,295)
	• UINT64: Unsigned 64 bit integer (0 ~ 9,007,199,254,740,990)
Raw Data Type	• FLOAT: 4 byte real number (-3.4028e+38 ~ 3.4028e+38)
Naw Data Type	• DOUBLE: 8byte real number (-1.797693e+308 ~ 1.797693e+308)
	• BCD8: -79 ~ 79
	• BCD16: -7,999 ~ 7,999
	• BCD_32: -79,999,999 ~ 79,999,999
	• BCD_64: -7.999.999.999.990 ~ 7.999.999.999.990
	• UBCD_8: 0 ~ 99
	• UBCD_16: 0 ~ 9.999
	• UBCD_32: 0 ~ 99.999.999
	• UBCD_64: 0 ~ 9.007.199.254.740.990
	● BIT1: 0 ~ 1
	● BIT2: 0 ~ 3
	● BIT3: 0 ~ 7
	• BIT4: 0 ~ 15
Raw Min. Value	It is the minimum raw value of the tag.
	If the raw value of the tag is less than this, the value will be treated as 'Bad'.
Raw Max. Value	It is the maximum raw value of the tag.
I taw iviax. value	If the raw value of the tag is greater than this, the value will be treated as 'Bad'.

(3) Others (Etc.)

They are the other properties related to process and display of tag values.

Property Name	Description
Decimal Point	If the data is [Double] or [Float] type, the decimal places are displayed. When
	displaying tag values, you can apply this property and display it on the screen.

	Basically, to 4 decimal places are provided and you can set up to 10 decimal places.
Deadband	In case the tag value varies slightly, you can set up the range of deadband to ignore
	the micro variation of the tag value.
Unit	It indicates the unit of the engineering value.
Initial value	It means the initial value of the tag when starting the project and it is activated only in
	case of the memory tag. However, when storage options are enabled at the end of
	the project, please note that the initial value will be ignored and the final value of the
	saved tag will act as the actual initial value.

(4) Raw Data Conversion

It is the property related to changing the equipment data into the data type that users recognize in the upper system. This property is activated only in case of the I/O tag and it cannot be settable for the memory tag.

Property Name	Description
	It establishes the rules to change the raw value into the engineering value.
	You can choose one among 4 options; N/A, Ratio/Bias, ratio, ratio/Offset.
Data Conversion	N/A: The raw value is intactly applied as the engineering value without any conversion.
Rule	Ratio/Bias : Conversion method using gradient/intercept. engineering value=
	(Ratio X raw value) + Bias
	• Ratio: Converting the value into ratio using the Min./Max. values of the raw value
	and engineering value
	Ratio/Offset: Adding Offset to the above ratio value
Ratio	It indicates the value to be multiplied by the raw value.
Ratio	It is activated when the conversion rule is set as [Ratio/Bias].
Bias	It indicates the value to be added to the above value (ration x raw value).
	It is activated when the conversion rule is set as [Ratio/Bias].
Offset	It indicates the value to be added to the output of ratio conversion.
	It is activated when the conversion rule is set as [ratio/Offset].

8.3.4 Details - Digital

When the tag is a digital type, it defines the properties related to the digital type.



(1) Data

Property Name	Description
Eng. Data	It is the type of the engineering value of the tag. (BOOL fixed)
Raw Data	It is the type of the raw value of the tag. (BOOL fixed)

(2) String

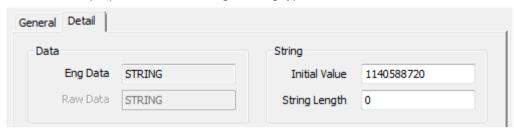
Property Name	Description
ON String	It sets up the sting to be output on the screen when the tag value is 1.
OFF String	It sets up the sting to be output on the screen when the tag value is 0.

(3) Initial Value

Property Name	Description
Initial value	It is activated in the memory tag, not the group tag. To specify the value to use at the
	beginning stage, you can choose one between OFF(0) and ON(1).

8.3.5 Detail - String

It is the set of properties when the tag is string type.



(1) Data

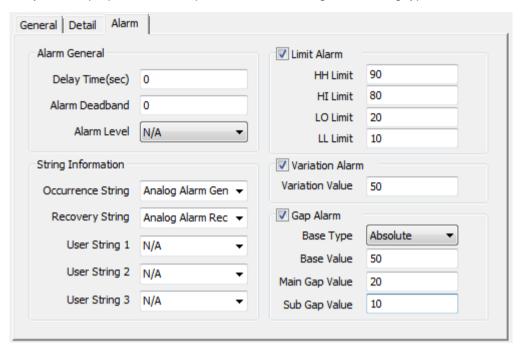
Properties name	Description
Eng. Data	It is the type of the engineering value of the tag. (STRING fixed)
Raw Data	It is the type of the raw value of the tag. (STRING fixed)

(2) String

Properties name	Description
Initial value	It means the initial value of the tag when starting the project and it is activated only in
	case of the memory tag.
String length	Input the size of string tag. It is used to control or collect the string tag from device.

8.3.6 Alarm – Analog

They are the properties to set up alarms when the tag is an analog type.



(1) Alarm-General

The property defines general and common items of alarms.

Properties name	Description
Delay time(sec.)	It is the delay time for alarm occurrence. It means an alarm does not occur
	immediately; after being putting on hold for the delay time, the alarm is generated by
	using the value of that point.
	For more details, refer to the manual on alarm functions.
Alarm Deadband	It means the deadband for an alarm.
	In case the data value varies slightly in the boundary, you can set up the alarm
	deadband to prevent the occurrence of unnecessary alarms.
Alarm Level	It can be set from 1 to 10 depending on the severity of alarms.

(2) String Information

It sets up strings related to alarms to display various expressions when an alarm occurs.

Properties name	Description
Occurrence String	It is displayed when an alarm occurs.
Recovery String	It is displayed when an alarm is restored.
User string1	It is defined for a user convenience.
User string2	It is defined for a user convenience.
User string3	It is defined for a user convenience.

(3) Limit Alarm

They are the properties defining the boundary alarm of tags.

Properties name	Description
HH alarm	The HH alarm setting value cannot exceed the max. engineering value and should be
	greater than the HI value.
HI alarm	The HI alarm setting value should be smaller than the HH setting value and should be
	greater than the LO setting value.
LO alarm	The LO alarm setting value should be smaller than the HI setting value and should be
	greater than the LL setting value.
LL alarm	The LL alarm setting value should be smaller than the LO setting value and should be
	greater than the min. engineering value.

(4) Variation Alarm

It is the property related to variations alarms of the tag value.

Properties name	Description
	It is the reference value to generate the variation alarm. It compares the current value
Variation value	with the previous one and if the data exceeds the variation value, the variation alarm
	will occur.

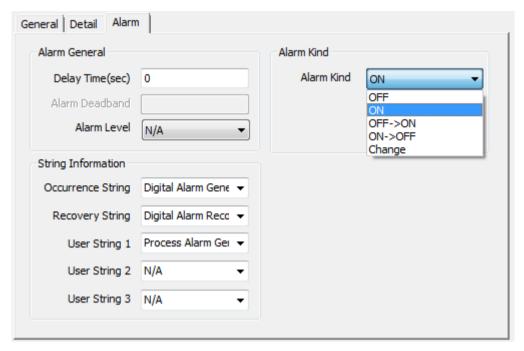
(5) Gap Alarm

They are the properties to set up the separation alarm.

Properties name	Description
Base type	It is the type of the reference value that acts as the baseline to generate the
	separation alarm. You can choose one between the absolute value and relative value.
Base value	It is the absolute value that acts as the baseline to generate the separation alarm
	when setting the separation type as the absolute value.
Basic tag name	You can set up the tag name that is the baseline to generate the separation alarm
	when setting the separation type as the relative value.
Main Gap Value	It means the main separation alarm value.
Sub. Gap Value	It means the secondary separation alarm value.

8.3.7 Alarm - Digital

They are the properties to set up an alarm when the tag is a digital type.

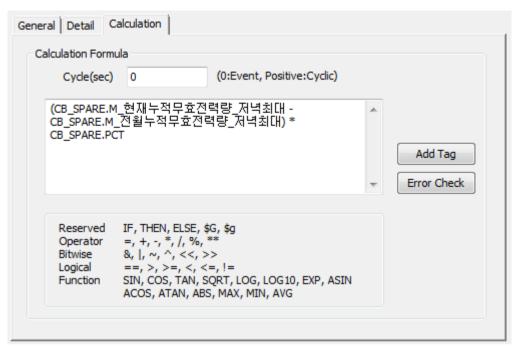


(1) Alarm Kind

Properties name	Description	
	In the case of a digital type, it establishes the rules of alarm occurrence depending on	
	the value. The kinds of alarms are as follows.	
	OFF: Occurs when the tag value is OFF.	
Alarm Kind	ON: Occurs when the tag value is ON.	
	OFF→ON: Occurs when the tag value is changed from OFF to ON.	
	ON→OFF: Occurs when the tag value is changed from ON to OFF.	
	Variation: Occurs when the tag value varies.	

8.3.8 Calculations

If you set up the [Memory Tag Operation] flag in the memory tag, the calculation can be settable.



Properties Name	Description	
	You can input the operating cycle.	
Operating cycle(sec.)	The default value is 0 and if it is set as 0, the operation expression sets up the context	
	of related tags and works based on the event method. In case it is set as a positive	
	number, each tag independently performs the operation expression in the fixed cycle.	
Calculation Formula	You can input the calculation formula.	

(1) Fundamental concept

You can calculate the memory tag using the operation expressions such as the four fundamental arithmetic operations, conditional statement, variables, etc. In addition, you can put the formula into the operation expression property of the subject tag that acts as the output of calculation. When starting the project, the data processing engine compiles all operation expressions belonging to the tag and determines each operation set and priorities for calculation.

For example

- The memory tag Tag A is intended to adopt the value of I/O tag Tag B added to 1.
- The memory tag Tag C is intended to adopt the value memory tag Tag A added to I/O tag Tag D.

The above assumption can be expressed as the below formula.

- TagA = TagB + 1
- TagC = TagA + TagD

When the tag DB engineering is applied to the above, you can get the below table. In this case, Tag A and Tag C act as the subject of the operation expression output. You can put the formula into the operation expression property of each tag.

Chapter 8 Tag Management

Tag Name	Operating Cycle	Operation Expression	Remarks
TagA	0	TagB + 1	memory tag
TagB	X	X	I/O tag
TagC	0	TagA + TagD	memory tag
TagD	Х	X	I/O tag

The above two formulas can be composed of one set with the cause-and-effect relationship. The data processing engine internally establishes the operation sequence of the above set to operate the memory tag. However, in case the tag operation is under cross reference or loop, the operation cannot be performed.

(2) Operation cycle

In the property window, the operation cycle is entered in seconds so you can input the value that is greater than 0. From the viewpoint of the engine performing the operation expression, the cycle can be divided into two types; event method and fixed cycle.

If the cycle is set as "0", it operates in the event method; if it is set as a positive number, it operates based on the fixed-cycle using a timer.

1) Event method

The operation expression based on the cause-and-effect relationship follows this method, which is derived from the above fundamental concept.

When a user inputs the data manifestly as if he(she) inputs the formula to the mathematical function, the internal engine will determine the order of operation expressions and performs the operations in the manner of artificial intelligence. However, as mentioned above, you need to be careful of the cross reference or loop.

2) Fixed-cycle method (sec.)

Unlike the even method, the operation expression belonging to the relevant cycle is performed. There is no correlation and in the case of operation expressions with the same cycle, the order of execution cannot be determined. It is used when you refer to other tag values in a fixed cycle.

(3) Syntax and usage

A user needs to input the operation expression to the property window of the tag and perform the error checking by pressing the [Error Check] button to confirm whether the operation expression is normal or not. The available syntax for the operation expression is as below.

Classification	Keywords		
Reserved word	IF, THEN, ELSE		
Operator	= , +, -, *, /, %, **		
Bit	8, , ~, ^, <<, >>		
Function	SIN, COS, TAN, SQRT, LOG, LOG10, EXP, ASIN, ACOS, ATAN, ABS, MAX, MIN, AVG		
Separator	(,)		

Notice

- The reserved word and function name should be in upper case.
- ☐ IF~THEN~ELSE statement should always be used together. (cannot be omitted)

[Example of using syntax]

Operation Expression	Description	
IF (A + B > 10) THEN 4 ELSE 5	If the value of tag A and tag B is greater than 10, 4 is returned; if the	
	value is smaller than 10, 5 is returned.	
ABS(A)	The absolute value of A is returned.	
IF (A & B) THEN C ELSE D	If A and B are True, the value of C is returned; if they are False, the	
	value of D is returned.	

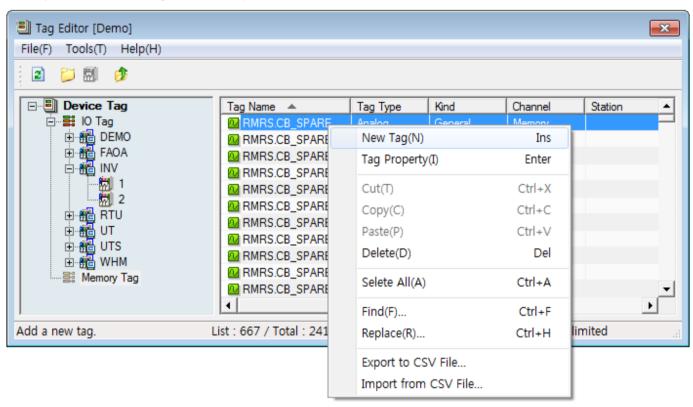
[Actual examples]

Tag Operation expression			
Current active electric newer by	Electricity No 01.Just 15 minutes ago_Max. current electric power +		
Current active electric power by	electricity No 02.Just 15 minutes ago_Max. current electric power +		
15minutes	electricity No 01.Just 15 minutes ago_Max. current electric power		
Current wattage 2	WDC.current electric power * meter constant.PCT		
Current wattage	WDC.current electric power * meter constant.PCT+		
Current wattage	meter constant.correction value		
Current electric power_ratio	(100 * MEM.current wattage) / 150000		
	IF ((WDC.demand time < 10) (WDC.demand time > 895)) THEN		
	(MEM. average current power) ELSE (WDC.current electric power*		
Current electiric power	meter constant.PCT*900+meter constant.correction value) /		
	(WDC.demand time)		
	Wattage = MEM.current electric power / 4		
Pulse integration	WDC.current electric power*5000/4000		
	IF(WDC.demand time < 60) THEN (MEM.current electric power)		
Predicted electric power	ELSE (WDC.predicted electric power * meter constant.PCT+		
	meter constant.correction value)		
	IF ((WDC.demand time < 61) (MEM.predicted electric power <=		
Load clastric power	MEM.current wattage)) THEN (MEM.current electric power) ELSE		
Load electric power	((MEM.predicted electric power - MEM.current wattage) * 900 /		
	MEM.demand time_remaining time)		
Base electric power	WDC.Base electric power * meter constant.PCT		
PCT	(Meter constant.PT * meter constant. CT)/(meter constant.PT_2 *		
FG1	meter constant.CT_2)		

8.4 Tag Edition

8.4.1 Addition of Tags

If you double-click the empty list on the tag list screen or select [New Tag] in the popup menu, the property window where you can add new tags will show up.



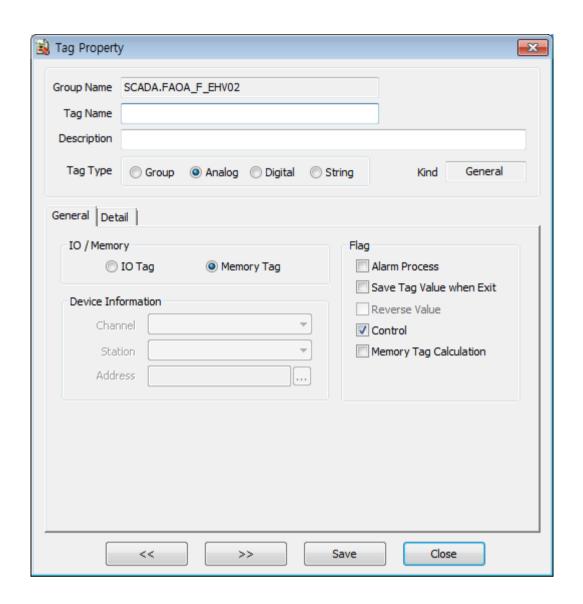
The basic items of the tag property window may be a little different depending on which part of the tag editor calls it up.

(1) Addition of tags in the device view

If you run [New Tag] on condition that the specific station is selected in the device view, the tag property window where the relevant communication channels and stations are basically entered will show up. Of course, although you change the communication channels and stations, tags can be registered.

In the device view, there is no logical tag group so the group name is deactivated and you cannot also select the group tag type. In this case, you need to input the full tag name and if there is a DOT(.) in the middle of the tag name, the parent group of the relevant tag will be automatically created.

Ex.) If the tag name of "HELLO.KOO" is entered and saved, the group name called "HELLO" will be internally searched and when the group named "HELLO" exists, "KOO" will be added as a sub-tag. In case the group named "HELLO does not exist, after adding the "HELLO" group and save it, add the tag called "KOO" as its sub-tag.



(2) Addition of tags in the group view

If you run the [New Tag] command on condition that the specific group is selected in the group view, the tag property window where the group is basically entered will show up. In this case, you cannot change the group name. Namely, in the group view, you can just add the child tag only under the its parent group.

When the tag is added at the top level (route) of the group view, the group name will be deactivated.

8.4.2 **Storage of Tags**

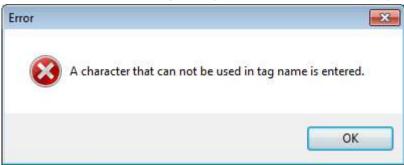
If you double-click the tag or select [Tag Property] in the popup menu on the right side of the tag, the property window will show up. When you click the [Save] button after editing tag properties, the information will be saved; when you click the [Close] button, the tag property window will be closed without saving the tag.

If you modify the tag name and save it in the tag property window, the tag with a new name will be added instead of tag modification.

Chapter 8 Tag Management

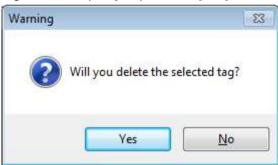
During saving the tag, perform the integrity check for the tag properties internally and save the data only when the result turns out to be normal. (For the integrity rules of tags, refer to the tag properties)

When the error occurs during the tag test, the below error message will shows up.



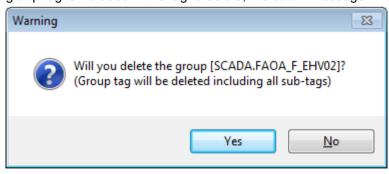
8.4.3 Deletion of Tags

After selecting the tag from the tag list, if you press the [Delete] button, the dialog box asking whether deleting the tag will show up. If you press the [Yes] button, the tag will be deleted



The deletion of tags can be divided into the individual deletion that selects and removes one tag; multiple deletion that selects and removes several tags.

In addition, when you delete tags including the group tags, all sub-tags of the groups will be deleted. When the group tag is included in the tag to delete, the below message will show up.



Notice

Please note that the deleted tags cannot be restored so you must be careful to delete tags.

8.5 CSV Tag I/O

For mass tags works, Not only tag edition using a clipboard but also tag engineering using the CSV file is available. The CSV file means the file whose each property is separated by a comma (,).

Notice

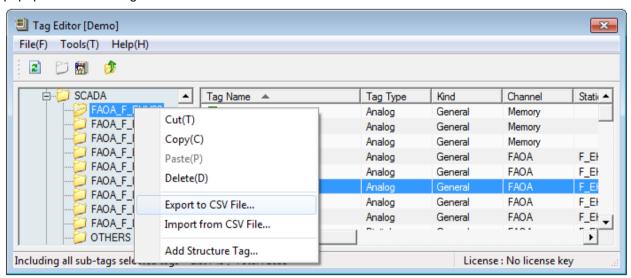
It cannot be compatible with the CSV file made in the existing InfoU engineering module.

(Cannot be compatible with the earlier versions than 1.9.0)

8.5.1 **Export to CSV File**

(1) Execution in the tag tree

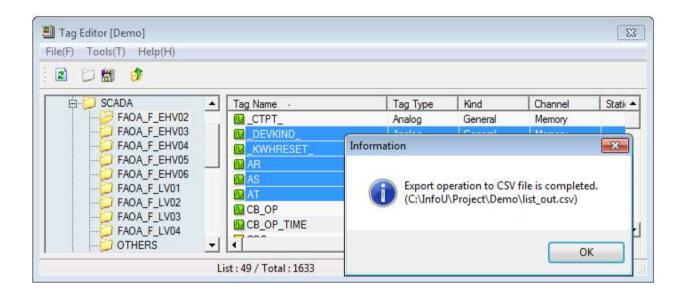
If you select the tag tree item, the tags included in the selected tag tree will be displayed in the tag list. A user can export the tag data shown in the tag list to the CSV file using the [Export to CSV file] function in the popup menu of the tag tree.



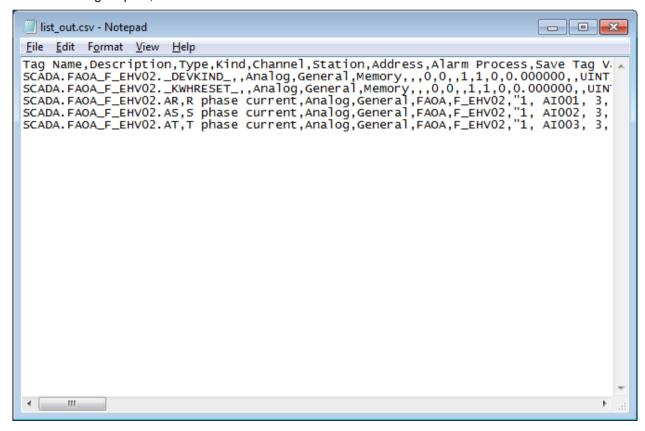
However, the tag data exported from the tree menu is the tags included in the tree item. If you execute [Export to CSV file] in a specific communication channel, the tags only included in the channel will be exported.

(2) Execution in the tag list

After selecting the tags to export in the tag list, if you select [Export to CSV file] in the popup menu, the selected tags only will be exported to the CSV file.



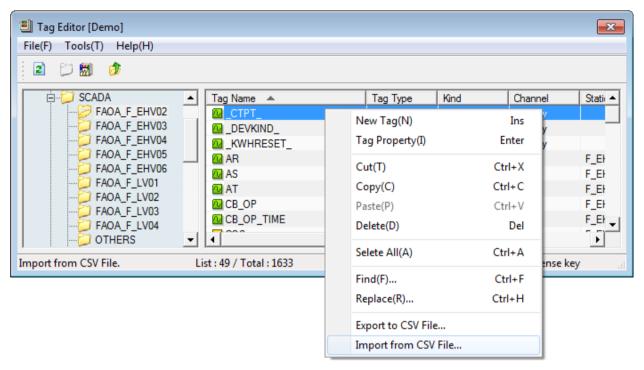
After executing 'Export', the below CSV file will be created.



8.5.2 Import from CSV File

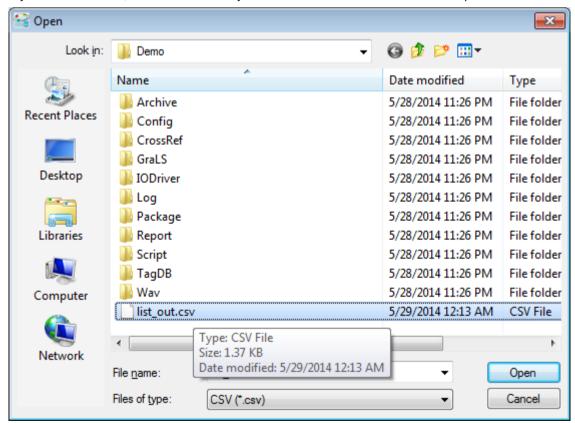
In the previous step, you can import the CSV file to the tag editor again through the [Import from CSV file] menu. However, the CSV file works of tags may internally cause I/O related to saving many tags so it is recommended to split the working unit into a small scale

(1) Running the menu



Unlike 'Export', the [Import from CSV file] menu imports the whole contents of the CSV file regardless of the tree or list, etc.

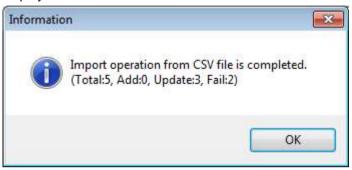
If you run the menu, the screen where you can select the CSV file will show up as below.



After selecting the CSV file to import to the tag editor, when you click the [Open] button, the details of the [Open] button will be imported. If there is the same tag name, the tag property will be changed and in the case of the new tag name, the tag will be added.

(2) Confirmation of the output

After performing the [Import from CSV file] menu, the message box showing a user the output will be displayed.

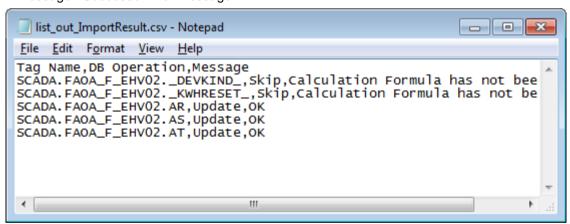


The output file for the works named XXX_ImportResult.csv will be created in the folder where the CSV file is located. The output file has three items by tags; tag name, DB works, message and the meaning of each item is as below.

• Tag name : Full tag name

DB works : Output of DB works

• Message : Success / Error message



However, in case the value of the item is omitted, the default value will be input so you must be careful of this.

8.5.3 Tag Items of the CSV File

Addition and modification of tags through the tag property window is the way to minimize errors of tag input such as automatic errors caused by the user interface, Enable/Unable by tag classification or input limit through list selection, etc. However, in the case of tag input through the CSV file, the properties of all tags should be written with the data such as text, number, etc. and the error of data integrity may occur so your attention is required.

Each item of tag properties saved as the CSV file is as below. The first line of the CSV file is recognized as the

column name and it is not saved as data. In addition, as shown in the below table, in the case of the CSV file's data, the number of 50 columns should match.

[Tag properties of the CSV file]

Order	Column name	Input details	Remarks
1	Tag name	Tag's full name	
2	Comment	Tag comment	If there is a comma in the text, put quotation marks "".
3	Туре	Group / Analog / Digital / String	-
4	Sort	General / system	-
5	Communication channel	communication channel name	-
6	Station	station name	-
7	I/O address	I/O address	-
8	Alarm process	0 / 1	flag items - 0 : Unable, 1 : Enabled
9	Save at the end	0 / 1	flag items - 0 : Unable, 1 : Enabled
10	Reverse of the actual data	0/1	flag items - 0 : Unable, 1 : Enabled
11	Write tag value	0/1	flag items - 0 : Unable, 1 : Enabled
12	Memory tag operation	0/1	flag items - 0 : Unable, 1 : Enabled
13	Decimal places	Decimal places	-
14	Value Deadband	Value Deadband	-
15	Unit	Unit	If there is a comma in the text, put quotation marks "".
16	Data type	BOOL INT8 / INT16 / INT32 / UINT8 / UINT16 / UINT32 / FLOAT / DOUBLE STRING	-
17	Raw value type	BOOL INT8 / INT16 / INT32 / INT64 / UINT8 / UINT16 / UINT32 / UINT64 FLOAT / DOUBLE BCD8 / BCD16 / BCD32 / BCD64 UBCD8 / UBCD16 / UBCD32 / UBCD64 BIT1 / BIT2 / BIT3 / BIT4 STRING	-
18	Min. tag value	Min. tag value	-

Chapter 8 Tag Management

19	Max. tag value	Max. tag value	-
20	Min. raw value	Min. raw value	-
21	Max. raw value	Max. raw value	-
22	Initial value	Initial value	If the tag type is string and there is a
			comma in the text, put quotation marks
23	Conversion rules	0/1/2/3	0 : N/A
			1 : Ratio/Bias
			2 : ratio
			3 : ratio/Offset
24	Ratio	Ratio	-
25	Bias	Bias	-
26	Offset	Offset	-
27	ON string	ON string	If there is a comma in the text, put
			quotation marks "".
28	OFF string	OFF string	If there is a comma in the text, put
			quotation marks "".
29	String length	String length	-
30	Alarm delay time	Alarm delay time	-
31	Alarm Deadband	Alarm Deadband	-
32	Alarm level	Alarm level	-
33	Occurred string	Occurred string	If there is a comma in the text, put
			quotation marks "".
34	Recovery string	Recovery string	If there is a comma in the text, put
			quotation marks "".
35	User-defined1	User-defined1	If there is a comma in the text, put
			quotation marks "".
36	User-defined2	User-defined2	If there is a comma in the text, put
			quotation marks "".
37	User-defined3	User-defined3	If there is a comma in the text, put
			quotation marks "".
38	HH boundary value	HH boundary value	-
39	HI boundary value	HI boundary value	-
40	LO boundary value	LO boundary value	-
41	LL boundary value	LL boundary value	-
42	Variation value	Variation value	-
43	Type of separation	0/1/2	0 : N/A
	reference value		1 : absolute value
			2 : relative value
44	Reference value	Reference value	-

45	Basic tag	Basic tag	-
46	Main separation	Main separation	
	value		-
47	Secondary	Secondary separation	
	separation value		-
48	Digital alarm types	1/2/3/4/5	1 : OFF
			2 : ON
			3 : ON → OFF
			4 : OFF → ON
			5 : CHANGE
49	Memory operating	memory operating cycle	
	cycle		-
50	Memory operation	memory operation expression	In case there is the line-break character
	expression		in the operation expression string,
			change it into the symbol ` (Grave key).

8.6 Copy/Paste/Cut of Tags

The InfoU tag editor supports the 'Copy' and 'Paste' functions besides the link with the CSV file that provides the function to edit mass tags. The copied tags are saved to a clipboard so you can paste them to the tag editor or Excel, notepad, etc. In addition, you can also copy the tag data from Excel and import it to the tag editor.

However, the 'Copy' and 'Paste' functions of tags are provided by the group view only and they are not available in the device view. Moreover, these functions may internally cause I/O related to saving many tags so it is recommended to split the working unit into a small scale.

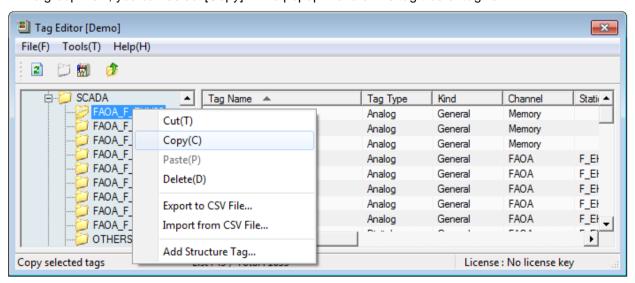
The data copied from the tag editor has basically the same structure and data as the output file exported to the CSV file. However, the data has the following characteristics.

[Restrictions and characteristics of clipboard tag data]

- It does not include the column name.
- The tag name is not the full name but the tag name excluding the parent groups.
- 'Paste' can be applied only when the data is composed of more than 3 columns of the tag name, comment, type.
- Each item is separated by the tab symbol. If the tab symbol is included in a certain property text of the tag, it does not work normally.

8.6.1 Copy

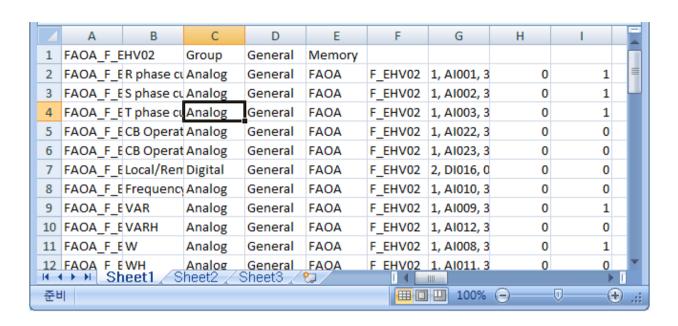
In the group view, you can select [Copy] in the popup menu of the tag tree or tag list.



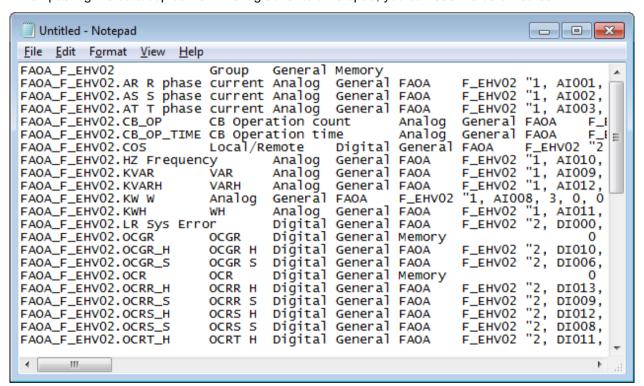
If the copied tag is a group tag, the group tag and all sub-tags belonging to the group are copied together.

When copying tags, in terms of the tag name, please note that the name will be copied from the name of the selected position is copied, not the full tag name. The copied tag data can be freely used in the programs such as a notepad or Excel, etc.

When pasting the data copied from the tag editor to Excel, you can see the below screen.



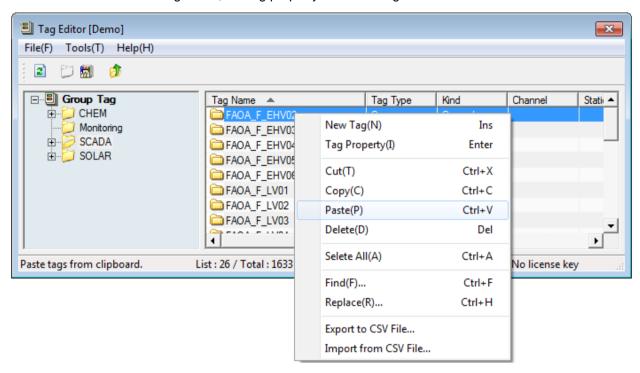
When pasting the data copied from the tag editor to a notepad, you can see the below screen.



8.6.2 Paste

The [Paste] menu is enabled after copying tags.

If you execute the [Paste] menu in the tree or list items of the tag to paste, the previously copied tag will be added. In case there is the same tag name, the tag property will be changed into new contents.



If you execute 'Paste' and save the data, the following message will be displayed.



The CSV file is executed with the full tag name so the same output is obtained even if it is performed anywhere of the tag editor, however, in the case of 'Paste', the relative path of the tag is used so the tag is saved depending on the position where the tag is pasted.

8.6.3 Cut

The [Cut] menu is the function to move the tag to other groups.

When executing [Cut], please note that the relevant tag will be removed from the tag database and the deleted data will be kept in a clipboard. After that, a user can paste the tag by using [Paste].

Notice

Please note that the tag will be deleted from the database right after executing [Cut]. At the same time, the information of the deleted tag will be kept in a clipboard.

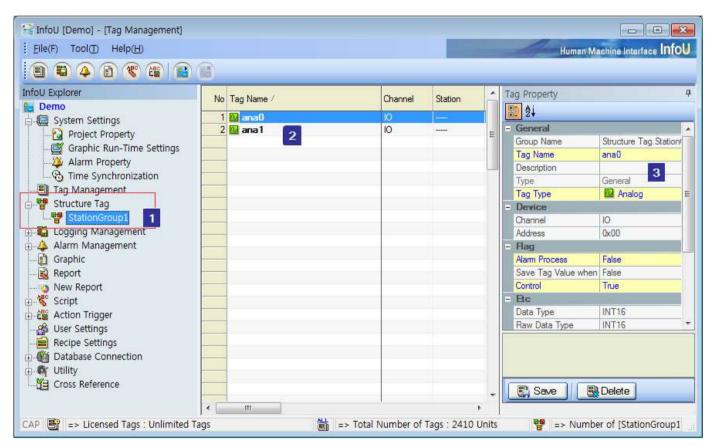
After that, if you recopy the other object or text in Windows without executing [Paste], the information of the previously [Cut] tag will be deleted.

8.7 Structure Tag

It is the function to prepare frequently used tag groups and add tags by the group in order to make tags more conveniently. This function can be mainly used to insert the tag sets expressing the physical devices or logical groups to the tag DB repetitively. If you can set the specific tags and register them in the structure tag template, the actual tags will be created by the template and can be added to the tag DB.

The definition of structure tags is performed by the InfoU engineering module and the instantiation process of structure tags is performed by the tag editor.

8.7.1 Main Screen and Explanation of Terms



You can see the registered structure tag templates and the tag's property window through [Structure Tag] in the Tool Search of the InfoU engineering.

No.	Item	Description
1	Structure tag template	Registered structure tag template list
2	Structure tag items	Items of the selected structure tag template
3	Item properties	Properties of the selected item

The description on each item is as shown below.

(1) Structure tag template

When the components of a specific equipment or unit device are the same, the structure tag template means making them into the structure tag template and specifying a framework.

For example, in the case of the scale device A, it is composed of the power supply part, measuring device, display device, etc. To register 100 scale devices in the HMI system, you need to register 100 groups and tags belonging to each group, etc.

In this case, if you specify the structure tag template named A, you can proceed with tag works easily.

(2) Structure tag item

It means each component belonging to one structure tag template. In the above case of the scale device A, you can specify each item such as power supply part, measuring device, display device, etc.

(3) Item property

It means the property of the item. You can specify the unique properties of the item such as name, type, Min./Max. values, etc.(Refer to the Tag Properties Manual)

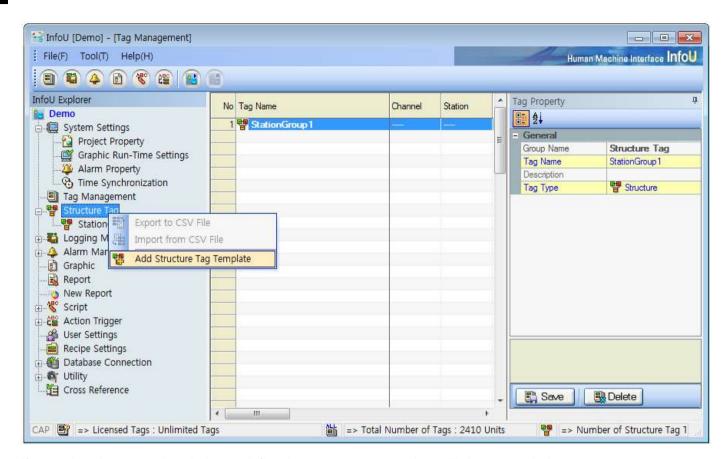
Notice

The definition of the structure tag is to define templates and does not mean the actual tag.

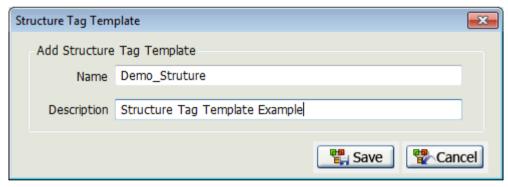
8.7.2 **Addition of Structure Tag Templates**

To add the structure tag templates, double-click the structure tag in the tool search or after clicking with the right mouse button, select [Add Structure Tag Template]. In addition, in the template list screen, after clicking with the right mouse button, you can select [Add Structure Tag Template] in the popup menu.

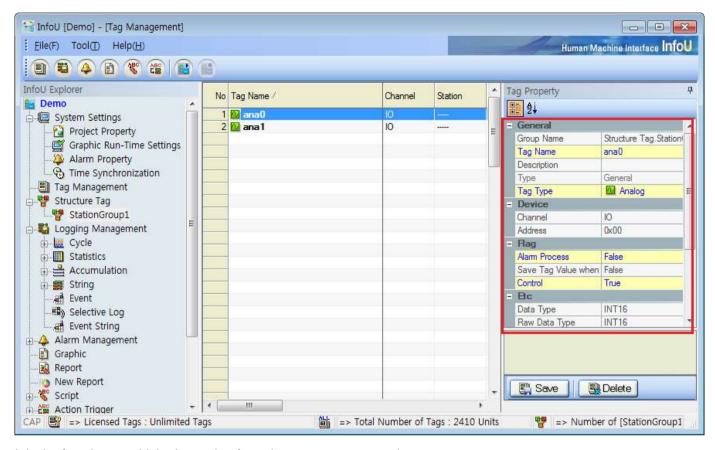
Chapter 8 Tag Management



If you select the menu, the window to define the structure tag template will show up as below.



8.7.3 **Addition of Structure Tag Items**



It is the function to add the items that form the structure tag template.

The structure tag items can be input in the property window on the right side of the InfoU engineering.

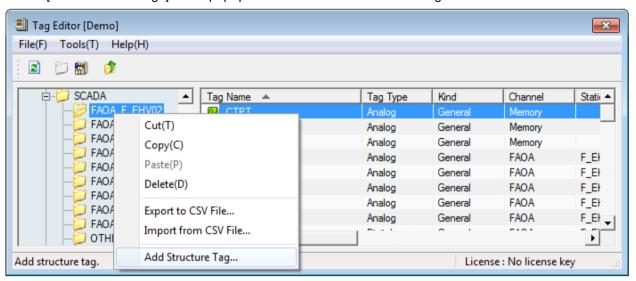
It is similar to the definition of tags but there are some differences. The characteristics of the structure tag items are as below. For more details on each item, refer to the properties of tags.

Item	Description		
Tog type	Unlike the general tag, the structure tag does not allow to set up [Group].		
Tag type	Choose one among analog / digital / string.		
	For the communication channel, you can select [I/O tag] and [Memory tag] only. If you		
Communication	choose [I/O tag], you can input the data at the time when the structure tag is actually input		
channel	to the tag DB, namely, at the time when the structure tag is added and instantiated. When		
	you select [Memory tag], set the relevant tag as the memory tag.		
Station	In common with the communication channel, the stations can be set all at once by adding		
Station	the relevant template to the structure tag at the time of instantiation.		

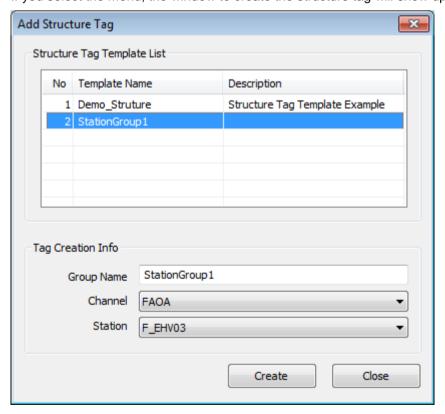
8.7.4 Addition of Structure Tags (Creating the instance of structure tags)

The previously performed works are to define the set structure of the tags that have specific pattern for creating the structure tag templates and structure tag items.

Definition of the structure tag is performed by the InfoU engineering module and the instantiation of the actual tag is performed by the tag editor. The creation of structure tags can be executed in the tree items of the tag editor. Select [Add Structure Tags] in the popup menu of the tree items of the tag editor.



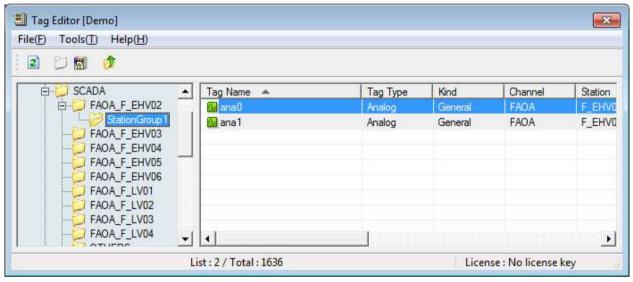
If you select the menu, the window to create the structure tag will show up.



The description on each item is as shown below.

Item	Description
Structure tog templete liet	The structure tag template list created in the InfoU engineering is shown.
Structure tag template list	A user can select the structure tag template to create.
Croup name to erecte	Input the parent group name at the time when the items of the structure tag are
Group name to create	instantiated.
Communication shannel	Input the communication channel at the time when the items of the structure tag
Communication channel	are instantiated.
Station	Input the station at the time when the items of the structure tag are instantiated.

After inputting the data as shown in the Fig., if you click the [Create] button, the structure tags of the structure tag templates will be made as follows.



The created tags can be used in the same manner as the general tag.

8.8 Others

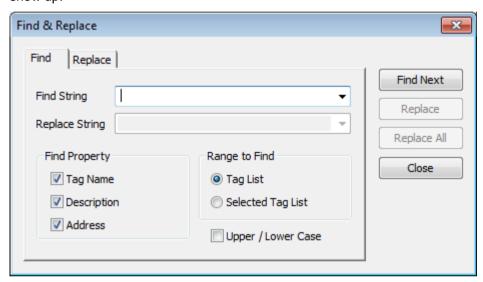
8.8.1 Find / Replace

Through the 'Find / Replace' function, you can easily find the tag that you want and save the changed details.

(1) Find

It is the function to find the items that correspond with the targeted string from the tag list.

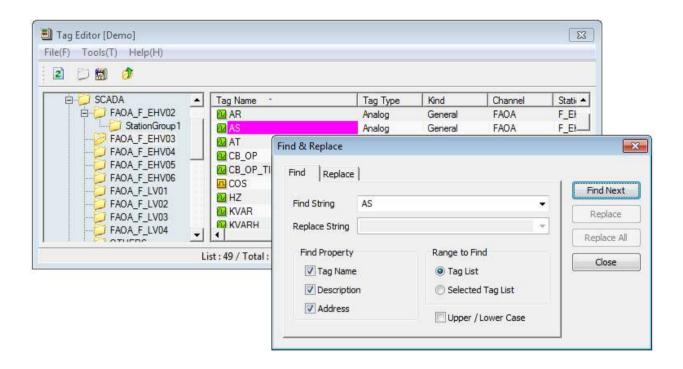
If you execute [Find] in the popup menu of the tag list, the below screen where a user can input data will show up.



The descriptions on the displayed properties are as follows.

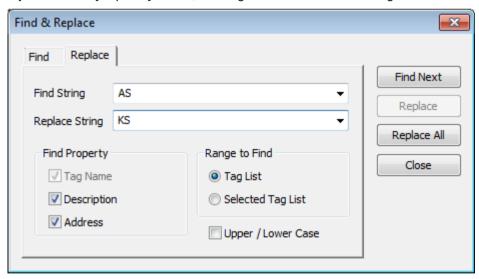
Item	Description	
String to find	Input the string that you are looking for.	
	Select the property that you are looking for.	
Property to find	The 'Find' function can be performed for the tag name, tag comment, I/O address	
	property.	
Pango to find	Tag list : Finds the string from the currently displayed tag list.	
Range to find	Selected list: Finds the string from the selected are of tag lists	
Upper/Lower Case Select this when you try to find case-sensitive items.		
Find Next Finds the next object.		
Close	Closes the window for Find.	

After inputting a specific string, if you execute the 'Find' function, the found items are displayed in a different color in the tag editor list. When you click the [Find Next] button, the screen will move to the next item automatically.



(2) Replace

It is the function to find the string to change from the tag list and replace it. If you execute [Replace] in the popup menu of the tag list, the below screen where a user can input data will show up. After selecting 'Find', if you click the [Replace] button, the targeted details will be changed.



The items of the 'Replace' screen are as follows.

Item	Description	
String to find	Input the string that you are looking for.	
String to replace	Input the string to replace.	
Droporty to Find	Select the property that you are looking for.	
Property to Find	The changeable properties are the tag command and I/O address.	

Chapter 8 Tag Management

Dongo to find	Tag list : Finds the string from the currently displayed tag list.	
Range to find	Selected list: Finds the string from the selected are of tag lists	
Upper/Lower Case	Select this when you try to find case-sensitive items.	
Find Next	Finds the next object.	
Replace Select this when you try to replace the targeted string.		
Replace All	Replaces all strings that correspond with the string to find within the range.	
Close	Close Closes the window for Change.	

8.8.2 Configuration

It is the item that can be settable for convenience and additional functions of the tag editor.

(1) Setting double-clicking of the group tag

It is the option to determine whether showing the properties for the group tag or entering into the relevant group when you double-click the group tag in the tag list.

When you execute [Tool] → [Option] menu, the following setup window will show up. After selecting the option that you want, if you click [OK] button, the option will be immediately applied.



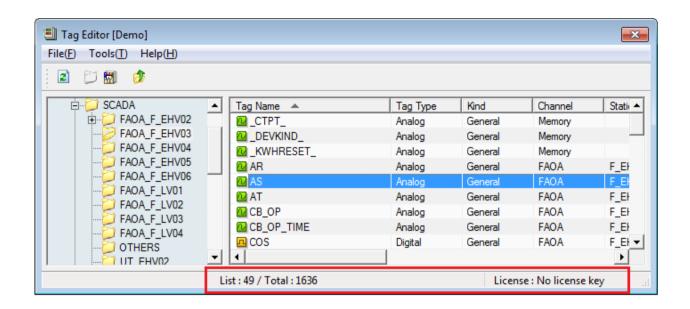
8.8.3 License

The InfoU's license uses the hard lock key of a USB type and the lock key should be applied in accordance with the number of tags. In case the license is not certified, there may be a variety of restrictions on functions. If you do not have the lock key, the system will shut down automatically 1 hour after startup.

The number of license tags is applied to the I/O tag only, not to the system tag. The group tags and memory tags are available regardless of the license.

The license information and the number of tags are displayed in a status bar of the tag editor.

The screen is as shown below.



For the license information, there are largely three items shown in the status bar as below table.

Items	Description	
No key	License : No license key	
Limitation on the number of tags	The number of the current license tags / The number of the total tags that can be registered License: 424 / 500	
Unlimited	License: Unlimited	

Notice

Here are a few things related to the license that you need to be aware of.

If the invalid license is used, the below warning message will show up in an hour and then, the program will be terminated.



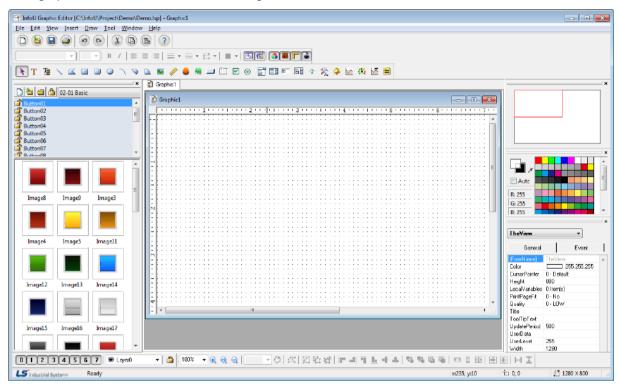
If the number of available licenses is exceeded, the tags cannot be saved so be careful of this.

This graphic editor provides the following various functions for editing the monitoring screen as a program used to edit the process screen.

- Graphic drawing tools
- Various graphic libraries
- Support of ActiveX container and its server, ActiveX control
- OLE automation interface for execution and manipulation from other application programs
- Visual basic script for robust applications
- Exclusive ActiveX control and availability of using ordinary ActiveX
- Function to inquire tag information used in the object and screen
- Function to save tag information used in the object and screen in the cross-reference database
- Function to prohibit or allow control according to the user's authorization
- Function to edit diverse and easy-to-use objects
- Support of various dynamic properties and user's action functions to display dynamic information through animation based on the site data
- Support of template screen

9.1 Configuration of Graphic Editor

This graphic editor consists of the following menus and tool collections.



As a system development tool, this InfoU graphic editor defines and sets up system components needed to perform projects such as defining dynamic properties of screen configuration, setting up execution environments and setting up page environments. The figure above shows an example of the InfoU graphic editor screen when a basic page is created and the main tool collection needed for the screen configuration is as follows.

- Standard tools: Command icons the most frequently used in the graphic editor.
- Object tools: Object icons needed when writing a page.
- Format tools: Icons needed to define font or line prosperities.
- Layer tools: Tools that enable to perform layer organization works useful for editing.
- Draw tools: Icons related to Zoom, Group/Regroup and Align.
- Color tools: A tool window that designate the color of page or object conveniently.
- Object Property Window: A window to define each object's properties or define events with scripts.
- Library: A window to register/delete/edit symbols in the library.
- Navigation: Tools to ensure easy moving to a work area the user wants to go.
- Status tools: Tools to show major properties such as object coordinates or Help

9.2 Menu Configuration

Upper-level Menu	Menu	Description
ivieriu	New	Create a new page.
	Open	Open one among existing documents
	Close	Close the current document.
	Close All	Close all documents
	Import From WMF File	Import WMF file in the currently activated document.
	Save	Save the activated document with the same name.
File	Save As	Save the activated document with the different name.
	Print	Print document.
	Print Preview	Display the contents to be printed in the screen.
	Print Setup	Set up print options
	Recent Files	Open documents that have been worked recently.
	Exit	Exit the graphic editor.
	Undo	Cancel the previously executed command.
	Redo	Re-input the cancelled command.
	Cut	Delete a certain range of data from the document and move it to the clipboard.
	Сору	Copy a certain range of data to the clipboard
	Paste	Paste the copied data to the document from the clipboard.
	Delete	Delete the selected data.
	Select All	Select the entire objects in the page.
	Find/Replace String	Find a certain string used for the object in the page and replace the found string with other string.
Edit	Find/Replace Tag Link	Find a certain tag used for the object in the page and replace the found
		tag with other tag
	Tag Link MS Excel	Send tags mapped in the page to Excel file.
	Export Smart Symbol Instance	
	Settings	Set the instance for the smart symbol.
	Batch Dynamic	It batch-changes the same types of properties mapped in the dynamic
	Monitoring Properties	property setting window.
	Dynamic Objects Show	The only object whose dynamic properties are mapped is displayed on
		the screen.
	Toolbars	Show or hide standard, object, format and draw tools.
View	Status Bar	Show or hide status tools.
	Library	Show or hide the symbol library dialog box.

	D. C. C. D	N. Parla and Mark Mark Mark Mark Mark Mark Mark Mark
	Project Page	It displays or hides the project page window.
	Page Tab	It displays the project page as the page tab style or hide it.
	Color	Show or hide color tools.
	Navigation	Show or hide navigation tools for moving to other screen.
	Layer	Show or hide layer tools.
	Dynamic Properties	Show or hide dynamic properties of the object and the screen for action
		settings.
	Object Properties	Show or hide the property screen for editing object types or shapes.
	Ruler	Show or hide the ruler.
	Snap to Grid	Setup or cancel snapping to grid.
	Grid Settings	Designate grid intervals and colors by displaying the grid setting dialog box.
	Zoom	Zoom in/out the page with setting rates.
	Full Screen	Convert the page into a full screen size.
	Figure	Draw various figure objects.
	Window Control	Draw various window control objects.
	Text	Input strings.
	Tag Value	Create an object with tag values.
	Image	Insert image files.
	Meter	Insert meter objects
	Image Button	Insert image button objects
Insert	Image Lamp	Insert image lamp objects
	ActiveX	Insert OCX objects.
	Alarm Viewer	Insert alarm viewer objects.
	Trend Viewer	Insert trend viewer objects.
	Gauge	Insert gauge viewer objects.
	List Trend	Insert list trend objects.
	Recipe	Insert recipe objects.
	Table Text	Insert table text objects.
	Group	Create one group object with several objects.
	Ungroup	Cancel the group object.
	Regroup	Recover the control function over the objects that have been grouped and then cancelled to re-create the group.
	Order	Bring the select object to the very front or sent it to the very end or
Draw	Edit Points	bring it to the front or send it to the rear. Change the shapes of multiple curves or looped curves freely.
	Open/Close	Convert multiple curves to looped curves and looped curves to multiple
	Align	curves. Align, assign and arrange the selected objects.
	Make Same Size	Make the sizes of the selected objects equivalent.
	Rotate	Rotate the selected objects freely to their original locations or
	Notate	Trotate the selected objects freely to their original locations of

		90°rotation to the right
	Run Mode	Preview the operation screen of the runtime.
	Objects	Change the order of the object list and set up the tap sequence for keyboard run.
	Declutter Settings	Set up a range of enlarge rate for each layer to be displayed in each screen during the runtime.
Tool	Animation Editor	Set up the Animation.
	Text Table Editor	Set up the text table.
	Graphic Runtime Settings	Set up the execution environment of graphic runtime.
	Option	Set up the environment such as number of cancellation or mode to select multiple options.
	Cascade	Arrange windows in a cascade form.
Windows	Tile	Arrange windows in a tile form.
	Arrange Icons	Arrange windows to the location to designate various tool bar defaults.
	User Manual	Show the Help items of the graphic editor.
Help	About Graphic Editor	Show version information of the graphic editor.

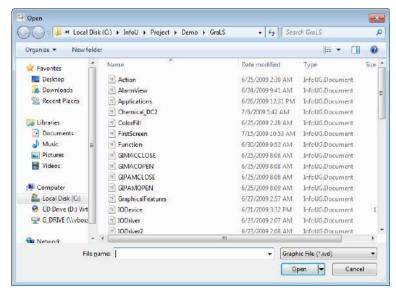
9.2.1 File

(1) New

A new graphic file is created.

(2) Open

This command is used to open one of the existing documents. If this command is made, a dialog box appears to allow the user to designate a file to open from it.



(3) Close

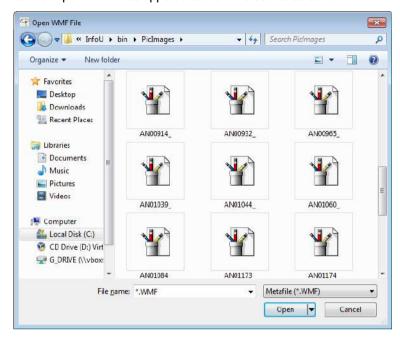
The currently activated document is closed with this command. Before the document is closed, it needs to be saved. If it is closed without saving, the changed contents that have been made before the latest saving will disappear. When it is closed, a dialog box appears to allow the user to designate a name and save it with the name.

(4) Close All

Currently open documents are all closed so you need to save them before closing.

(5) Import from WMF file

A WMF file is inserted to the current work screen in the graphic editor's own format type. If this command is made, a dialog box to import WMF files appears to allow the user to select one.

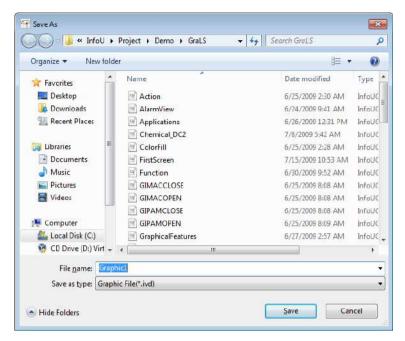


(6) Save

This command is used when saving the activated document with the same name as the current one. If the page document is saved for the first time, the "Save" dialog box appears to allow the user to designate its name. If the user wants to save the document with other name, he/she may choose "Save As" command.

(7) Save As

This command is used when saving the activated document with a different name from the current one. the "Save" dialog box appears to allow the user to designate its name. If the user wants to save it with the current name, he/she may use "Save" command.



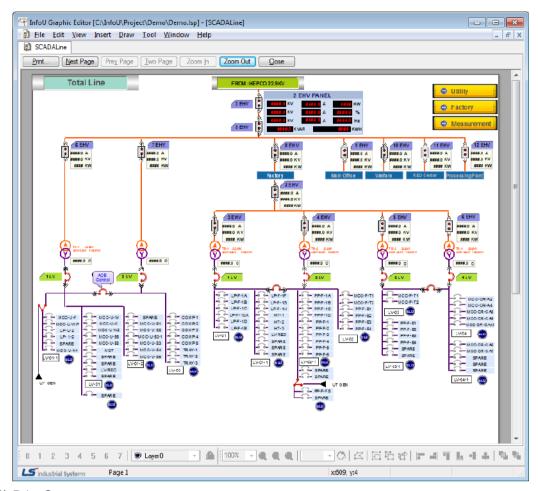
(8) Print

This command is used when printing document. If this command is executed, the "print" dialog box appears to allow the user to select a print range, number of copies, printer and printer option.



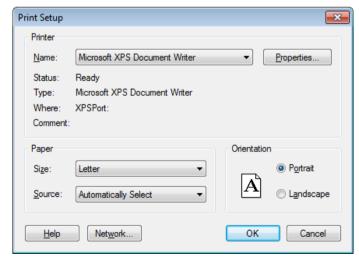
(9) Print Preview

This command allows to user to preview the content to be printed in an actual output format in advance. If this command is performed, a preview window is displayed. The user may perform various functions such as view one or two pages, view the front and rear page, zoom in/out and print command with the preview tool collection.



(10) Print Setup

Letter size and orientation for printing documents can be selective.



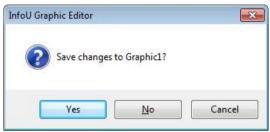
(11) Recent Files

The user can open the documents that have been worked recently in this graphic editor. Up to 10 recent documents can be displayed. The user can select one among the displayed files.

(12) Exit

The graphic editor is ended. If any changed content exists without being saved, a dialog box appears to ask the user

whether to save it or not. At this time, press "Yes" if he/she wants to save it otherwise press "No." If "Cancel" is selected, this 'Exit' command is cancelled.



9.2.2 Edit

(1) Undo

This command is used when the user wants to cancel the contents that have been recently inputted and return to the previous status. Up to 20 events of inputting can be cancelled.

(2) Redo

This command is used when re-performing the cancelled contents.

(3) Cut

This command is used to delete the selected data from the document and copy them to the clipboard. If no data is selected currently, this command cannot be used. If this "Cut" command is performed, the previous data in the clipboard is replaced.

(4) Copy

This command is used to copy the selected data to the clipboard. If no data is selected currently, this command cannot be used. If this "Copy" command is performed, the previous data in the clipboard is replaced.

(5) Paste

This command is used to copy data in the clipboard and insert them to the document. If the clipboard is empty, this command cannot be used.

(6) Delete

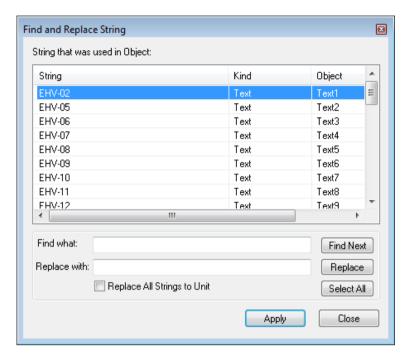
This command is used to delete the selected data. If no data is selected currently, this command can not be used. If important data are about to be deleted, a dialog box appears to ask the user whether he/she really wants to delete them, At this time, he/she may press "Yes" to delete them or he/she may press "No" to cancel the 'Delete' command.

(7) Select All

The entire objects in the page are selected.

(8) Find/Replace String

This command is used to find a string that was used throughout the objects in the page and replace the found one with other one. When this command is executed, the "Find and Replace String" dialog box appears.



1) Find what

Input the string to replace with.

2) Replace with

Click "Replace" button to display the planned strings in the list.

3) Apply

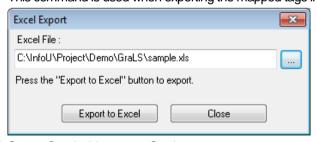
Click "Apply" button to replace the strings with the ones displayed in the list.

(9) Find/Replace Tag Link

This command is used when finding mapped tags among the entire objects or the selected objects in the page or replacing the found tags with others. When this command is executed, the "Find and Replace Tag Link" dialog box appears. For detailed explanation, refer to the "Tag Link" provision.

(10) Excel Export

This command is used when exporting the mapped tags in the page to excel.



(11) Smart Symbol Instance Settings

The dialog box is provided to set the instance for the smart symbol. For more details, refer to the items of 'Smart Symbol'.

(12) Batch Dynamic Monitoring Properties

An across the board change the same types of mapped properties in the dynamic property window. Optionally, you can specify whether to make batch changes by including the tag name / operator attribute. Among the selected objects, they are changed into the properties mapped to the master object in a lump.

Accordingly, in order to change the master object, select the relevant object with a mouse, while holding the CTRL key.

(13) Dynamic Objects Show

The only objects whose dynamic properties are mapped are displayed on the screen.

9.2.3 View

(1) Toolbars

There are [Standard], [Object], [Format] and [Draw] tools and they are either shown or hid with various related tools in the tool window upon clicking on each one.

1) Standard

It is used when showing or hiding standard tools. Standard tools are command icons the most frequently used in the graphic editor. When it is shown, the check mark appears in front of the menu.



2) Object Bar

It is used when showing or hiding object tools. Object bar has object icons needed to write pages. When it is shown, the check mark appears in front of the menu. For details, refer to the 'Insert' menu.



3) Format Bar

It is used when showing or hiding format tools. This format bar has various icons including font, size, bold, underline, italic, arrange to the left, center and right, line thickness, style and arrow type. When it is shown, the check mark appears in front of the menu.



4) Draw Bar

It is used when showing or hiding draw tools. This draw bar has various icons related to functions to arrange objects in the page and icons for Group/Regroup/Ungroup, Zoon in/out and Rotate. When it is shown, the check mark appears in front of the menu. For details, refer to the 'Draw' menu.



(2) Status Bar

It is used when showing or hiding status tools. 'Help' messages or coordinates are displayed in the status bar. When it is shown, the check mark appears in front of the menu.

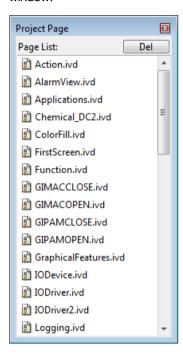


(3) Library

It is used when showing or hiding the library dialog box. In addition to the library provided by the system, the user may register/delete/edit his/her own library. For detailed explanation, refer to the "Library" provision.

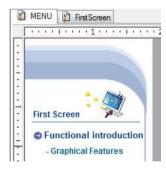
(4) Project Page

It displays or hides the project page window. You can delete the page file with the 'Delete' button in the project page window.



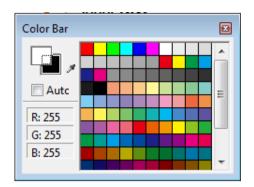
(5) Page Tab

It displays the project page as the page tab style or hides it. If you select the tab by clicking with the right mouse button on the page tab, the page will be closed.



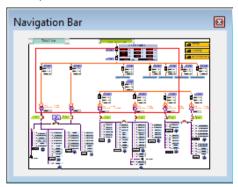
(6) Color

It is used when showing or hiding color tools. This color bar has a part to set up view colors, background colors and transparency setting. When it is shown, the check mark appears in front of the menu. A user can separately specify and maintain colors up to 10.



(7) Navigation

It is used when showing or hiding navigation tools. If the current work area is small, this navigation bar allows the user to move pictures to the work area he/she wants. When it is shown, the check mark appears in front of the menu.



(8) Layer

It is used when showing or hiding layer tools. This lay bar can either show or hid the relevant layer and it can also lock it. For detailed explanation, refer to the "Layer" provision.



(9) Dynamic Properties

It is used when setting up dynamic properties and action functions of the relevant object. First, select an object and execute this command to show a dialog box to set up its dynamic properties. The displayed dialog box allows the user to set up dynamic properties and action functions of the relevant object. For detailed explanation, refer to the "Dynamic Property Definition" provision.

- 1) Horizontal Size
 - A function to change the object's size in the horizontal direction according to tag values.
- 2) Vertical Size
 - A function to change the object's size in the vertical direction according to tag values.
- 3) Horizontal Move
 - A function to move the object in the horizontal direction according to the designated tag value.
- 4) Vertical Move
 - A function to move the object in the vertical direction according to the designated tag value.
- 5) Horizontal Fill
 - A function to fill the object in the horizontal direction according to the designated tag value.

6) Vertical Fill

A function to fill the object in the vertical direction according to the designated tag value.

7) Color

A function to change the object in the prescribed color according to the inputted tag value.

8) Blink

A function to blink the object in the specified interval according to the tag status.

9) Visible

A function either to show or hide the object according to the input tag value.

10) Rotate

A function to rotate the object by the designated angle degree according to the input tag value.

11) Display Value

It is used to create an object marked with its tag value.

12) Display String

A function to change the object with the prescribed string according to the inputted tag value.

13) Lamp

The function shows the On image or Off image depending on the input tag value.

14) Click

A control function to execute the defined action when clicking on the object with the mouse or keyboard.

15) Input Value

A function to select an object and input a value in the predefined dialog box with the mouse or keyboard.

16) Horizontal Drag

A function to drag the object in the horizontal direction with the mouse to convert coordinates values to tag values.

17) Vertical Drag

A function to drag the object in the vertical direction with the mouse to convert coordinates values to tag values.

(10) Object Properties

If an object is selected and [View] [Object Properties] is clicked, object properties of the selected object and the event list window appear. For detailed explanation, refer to the "Object Properties" provision.

(11) Ruler

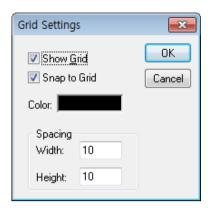
It is used when showing or hiding the rulers on the top and the left side in the current page.

(12) Snap to Grid

It is used to set up or cancel the 'Snap to Grid' command. If 'Snap to Grid.' is set up, objects move to adjust to the grid coordinates. If cancelled, objects can move freely.

(13) Grid Settings

It is used to designate grid spacing, color and whether to show grid. If this command is performed, the 'Grid Settings' window is displayed. Input grid spacing and check in the box of 'Show Grid,' grid appears in the screen.



(14) Zoom

To make a more delicate edition in the screen, use zoom in or out. From 400% to 25% zooming can be designated. It is used to display the full page to the screen size.

9.2.4 Insert

(1) Figure

1) Line

It is used to draw a line. If this command is executed, the edit mode is changed to the line draw mode.

It is used when drawing multiple curves or looped curves. If this command is executed, the edit mode is changed to the free draw mode.

3) Rectangular

It is used to draw a rectangular. If this command is executed, the edit mode is changed to the rectangular draw mode.

4) RoundRect

It is used to draw a round square. If this command is executed, the edit mode is changed to the round square draw mode.

5) Ellipse

It is used to draw a circle or an ellipse. If you execute this command, the editing mode will be changed into the drawing mode for an ellipse.

6) Arc

It is used when drawing a circle or an oval. If this command is executed, the edit mode is changed to the arc draw mode.

7) Chord

It is used to draw a fan shape. If this command is executed, the edit mode is changed to the chord draw mode.

8) Pie

It is used to draw a circular arc. If this command is executed, the edit mode is changed to the pie draw mode.

(2) Window Control

1) Button

It is used to draw a button. If this command is executed, the edit mode is changed to the button draw mode.

2) Group Box

It is used to draw a group box. If this command is executed, the edit mode is changed to the group box draw mode.

3) Check Box

It is used to draw a check box. If this command is executed, the edit mode is changed to the check box draw mode.

4) Radio Button

It is used to draw a radio button. If this command is executed, the edit mode is changed to the radio button draw mode.

5) Combo Box

It is used to draw a combo box. If this command is executed, the edit mode is changed to the combo box draw mode.

6) List Box

It is used to draw a list box. If this command is executed, the edit mode is changed to the list box draw mode.

7) Edit Box

It is used to draw an editor box. If this command is executed, the edit mode is changed to the edit box draw mode.

8) Multiple Edit Box

It is used to draw a multiple editor box. If this command is executed, the edit mode is changed to the multiple edit box draw mode.

9) Slider

It is used to draw a slider. If this command is executed, the edit mode is changed to the slider draw mode.

(3) Text

It is used to input text. If this command is executed, the edit mode is changed to the text input mode.

(4) Tag Value

It is used to create an object marked with its tag value. If this command is executed, the edit mode is changed to the object input with tag value mode.

(5) Image

It is used to insert various types of image files. If this command is executed, the edit mode is changed to the image insert mode and the 'Open' dialog box appears. Select an image file to insert in the displayed dialog box.

For detailed explanation, refer to the "Image Insert" provision.

(6) Meter

It is used to create the measuring instrument object. If you perform this command, the editing mode will be converted into the input mode for the measuring instrument object. You can specify the color, large/small gradation size, the number of large/small gradations, label, position, etc.

(7) Image Button

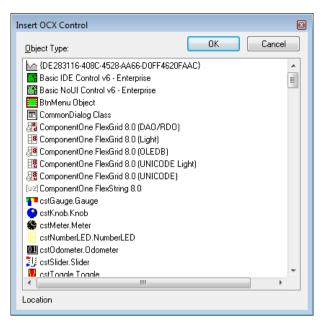
It is used to insert picture files with various formats into the Up/Down image that will be put into the button image. If you perform this command, the editing mode will be changed into the image button mode and the setting dialog box will be displayed. In the displayed dialog box, you can just select the picture file that you want to insert. For more details, refer to 'Objects using images'.

(8) Image Lamp

It is used to insert picture files with various formats into the On/Off image that will be put into the button image. If you perform this command, the editing mode will be changed into the image lamp mode and the setting dialog box will be displayed. In the displayed dialog box, you can just select the picture file that you want to insert. For more details, refer to 'Objects using images'.

(9) ActiveX

It is used to insert Active X object. If this command is executed, the edit mode is changed to the Active X insert mode and the 'Open' dialog box appears. Select an Active X object to insert in the displayed dialog box.



(10) Alarm Viewer

It is used to insert Active Viewer object. If this command is executed, the edit mode is changed to the Active Viewer object insert mode.

(11) Trend Viewer

It is used to insert Trend Viewer object. If this command is executed, the edit mode is changed to the Trend Viewer object insert mode.

(12) Gauge

It is used to insert Gauge object. If this command is executed, the edit mode is changed to the Gauge object insert mode.

(13) List Trend

It is used to insert List Trend object. If this command is executed, the edit mode is changed to the List Trend object insert mode.

(14) Recipe

It is used to insert Recipe object. If this command is executed, the edit mode is changed to the Recipe object insert mode.

(15) Table Text

It is used to insert Table Text object. If this command is executed, the edit mode is changed to the Table Text object insert mode.

9.2.5 Draw

(1) Group

If this command is executed while more than two objects are selected, those selected objects are bound into one. During the period between the time when selecting 'Group' and the time when canceling this 'Group,' the selected objects move together as a group.

(2) Ungroup

It is used to cancel the selected objects as a group and release them into individual objects. If this command is executed,

control functions defined for the group disappear. These control functions for the group can be recovered with the command 'Regroup'.

(3) Regroup

To edit some of the objects in a group with control functions, cancel the 'Group' command and edit them. After finishing editing, use this command to recover those control functions. Regrouping is not allowed if other objects are newly added or some of them are deleted. This command is available only when original objects are edited.

(4) Order

It is used to decide the order of the overlapped objects. There are [Bring to the Very Front], [Send to the Very Rear], [Bring to Front] and [Send to Back].

(5) Edit Points

It is used to change shapes of free curve, multiple curve and looped curve objects. If this command is executed, a black rectangular mark appears on each vertex. The user may change shapes by selecting the displayed mark and moving it with the mouse.

(6) Open/Close

It is used to convert from multiple curves to looped curves and looped curves to multiple curves. If this command is executed, multiple curves are converted to looped curves or looped curves are converted to multiple curves.

(7) Align

As a function to arrange more than two objects at the same position vertically and horizontally, distribute or sort them, there are [Align to left], [Align to center], [Align to right], [Align to top], [Align to middle], [Align to bottom], [Same horizontal spacing], [Same vertical spacing], [Vertical center] and [Horizontal center].

(8) Make Same Size

It is used to assign the same size to all of the selected objects.

(9) Rotate

It is used to rotate objects in the direction the user wants. [Free Rotate] allows the user to rotate them freely and [Rotate 90° to the right] allows the user to rotate them by 90°. [Original Status] sends the direction of objects to their own status.

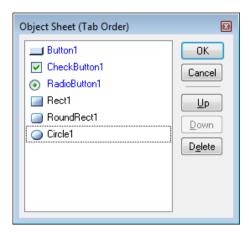
9.2.6 Tool

(1) Run Mode

If this command is executed, a new window is created and runtime begins to operate as in the Runtime screen. The user may test during the editing by loading its actual operation status to check whether it is properly operated.

(2) Objects

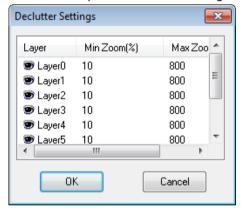
All of the activated objects are displayed in the screen. The user may set up the order among objects or rename or delete objects in the Object Sheet dialog box and he/she may also organize a sequence to move one object to the other one to ensure operation is enabled without mouse during the Runtime.

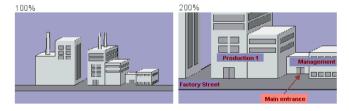


(3) Declutter Settings

During the Runtime, layers (the entire objects in the layers) can be shown or hid depending on the zoom in/ out rate. Therefore, overall objects can be seen in the zoom out screen while closer and more detailed objects can be displayed in the zoom in screen. The user can assign the minimum and maximum zoom rate unique to each layer. Each layer can be seen in the assigned range and the rate of its zoom in/ out are set in percentage.

For detailed explanation on how to assign to layers, refer to the "Layer" provision.





(4) Animation Editor

It is used to edit and create animation Image. If this command is executed, a "Animation Editor" dialog box appears. For detailed explanation, refer to the "Animation Editor" provision.

(5) Text Table Editor

It is used to edit Text Table. If this command is executed, a "Text Table Editor" dialog box appears. For detailed explanation, refer to the "Text Table Function" provision.

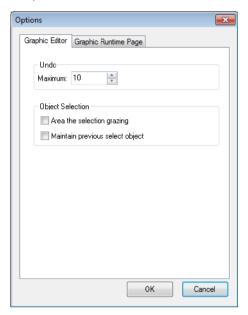
(6) Graphic Runtime Settings

It is used to edit settings during the Graphic Runtime such as window style, execution location, title bar or

start page. If this command is executed, a "Graphic Runtime Environment Setting" dialog box appears. For detailed explanation, refer to the "Execution Settings" provision.

(7) Options

1) Graphic Editor



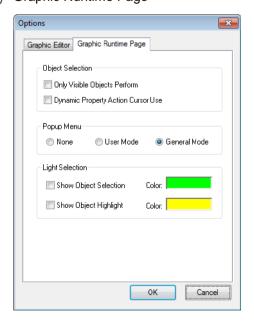
a. Undo

You can specify the maximum number of times of undo.

b. Object Selection

You can choose two options: Selecting the object of grazing area and maintaining the previous selected object.

2) Graphic Runtime Page



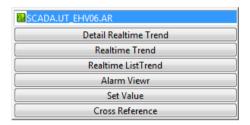
a. Object Selection

For the visible object only, you can specify whether applying dynamic property actions, whether using the dynamic property action cursor.

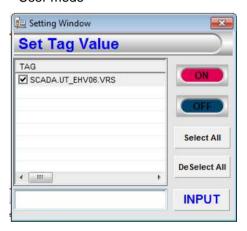
b. Popup Menu

A user can choose one of the three operations; Nonuse of the popup menu, user mode, general mode. In the user mode, a user can edit and control the popup menu page in a lump.

* General mode



* User mode



c. Light Selection

In the graphic runtime, through the lighting function, you can specify whether showing object selection, highlighting the object, in addition, you can also change the color. For more details, refer to 'Lighting Function'.

9.2.7 Window

(1) Cascade

Windows are arranged in a cascade style.

(2) Tile

Windows are arranged in a tile style.

(3) Arrange Icons

Windows are arranged to the location to designate various tool bar defaults.

9.2.8 Help

(1) User Manual

It is used to show 'Help' provisions. Step-by-step commands and instructions on the displayed provisions are presented. A content button is clicked in the Help screen, the corresponding provision screen appears.

(2) About Graphic Editor

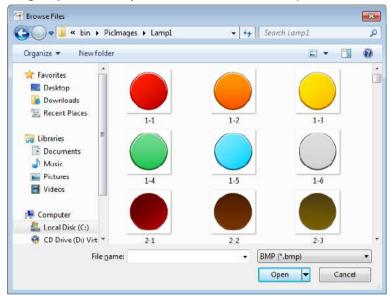
It is used to show the version information of the graphic editor. If this command is executed, version information and copyright message appear.

9.3 **Insert Image**

A graphic file format refers to the type of a file that contains graphic images. A graphic file can either lower or extend its image capacity and have a different file format depending on how the graphic images are compressed and saved. This InfoU Graphic Editor supports general-purpose graphic file formats.

9.3.1 Insert Image

If the user selects [Insert] [Image] in the menu or clicks 'Image' button in the Draw Bar to define an image area in the screen page, the 'Open' dialog box appears. The user may select an image file to insert in the displayed dialog box. The image file types that are supported by the Graphic Editor are BMP, JPG, GIF, PNG, TIF, WMF, EMF and etc. The user may also use the clip board to insert images by copying images from external APP and pasting them. Image names and formats can be checked and methods to save images, transparency degree and colors can be designated in 'Image Object Properties.' For animation image objects, a time cycle of each frame can be set up.



9.3.2 Difference between Bitmap and Vector

(1) Bitmap

Bitmap refers to a way to divide one image into several points when saving images. With this way, the user may use various colors and produce vivid colors and flexible pictures like photograph. However, it has some limitations to process delicate lines or shapes and the resolution becomes rough or deteriorated by zooming in/out. Because information is processed in pixel unit, file size is relatively large.

(2) Vector

Vector refers to a way to divide one image into several lines and shapes when saving images. This way is proper when expressing simple shapes and objects and it enables to express delicate lines or forms effectively. Zooming in/out does not have any influence on the resolution. However, available colors are limited and flexible works like photograph can not created in this way.

9.3.3 Characteristics of each Graphic File Format

This command is used to open the existing documents. If you perform this command, the dialog box is displayed and you can specify the file to open.

(1) BMP

As a format to save uncompressed bit map images, this file format is used basically in Windows and OS/2. Logo pictures displayed when the window starts or ends or background pictures in the wallpaper are all BMP-type files. Since BMP saves image data inefficiently, a file with larger capacity than the actually needed one is created. Both RGB mode and Indexed mode are supported and BMP-type files can be compressed in RLE compression method. Layers and alpha channels are not supported.

(2) JPG

It is not the file format that can be used only in particular software or platforms rather, as a data encoding method in which data files can be downloaded only after their size is lowered, this method has significant bigger merit than compression loss and is the one used the most when saving image files among other image saving methods. As one of the graphic file formats used the most on the Internet, its compression rate is the most excellent method. To compress image files, this method deletes overlapped information in the frame to compress color static image data. JPG can be applied to any picture regardless of image contents or resolution and it can also make it possible to use sequential decoding and gradual decoding that gradually decodes the entire picture. Unlike GIF format, JPEG maintains all of color information of RGB image. However, even though it has a high compression rate because it conducts loss compression, the quality becomes significantly deteriorated as compression increases. About 11.2MB is required when saving 24 bit color images, however, the file size lowers to 1.4MB if it is compressed in ratio of 8 to 1. This format is considered almost as a standard format on the Internet and file size is very low about 1/10 of that of other formats when saving the same number of colors under similar definition.

(3) GIF

As a graphic format developed by CompuServe, a leading PC computer company in the USA, it can be used in various device types for smooth interchange of graphic information between different device types. GIF files lower image capacity by reducing the number of colors so that this file format has remarkable compression rates to obtain high resolution images by reducing important transfer time. When saving, this method sorts 256 colors mostly used in the overall image to create a color index and the entire images are expressed in those 256 colors. Therefore, the file's capacity remarkably decreases. However, as its biggest shortcoming, the available number of colors may vary depending on the version of this format so that up to 256 colors are supported in version 87a. This way is rarely used for image saving today because a format with 256 colors is the smallest one. Therefore, it is mainly used when producing website icons. Gif 89a Format is mostly used for creating moving animation or files with transparent background.

(4) PNG

As an abbreviation word of Portable Network Graphics, it is introduced to support interface functions and increase the compression rate as PEG does. Like GIF, this image format lowers the number of colors to compress images but, unlike GIF which limits up to 256 colors, it can save 16,000,000 colors and provides more excellent compression rates of 10~30% than those of GIF. Basically, it supports true colors, uses no-loss compression and enables to express original images as they are without image deterioration on the web. PNG provides improved functions in the alpha channel related to image's transparency and supports 256 gray colors and 256 colors as well as true colors. This format can be called an emerging web image format after GIF and JPEG. PNG is currently used in Netscape and Explorer.

(5) TIF

TIFF means an image file format with a tag and it is co-developed by Aldus Corp and Microsoft Corp. This file format is used when files are exchanged between application and computer platform and even though most files are saved without being compressed under this format, it reduces file capacity most significantly by using a "no-loss compression method." Basically, it does not depend on OS so that it can describe resolution and compression methods and as a format to preserve image data from black and white to various colors, it is used to preserve dot-expression images. Most of scanner software or graphic software support this TIFF type and it is mainly used for scanning, saving or sending image files expressed in gray scale. It seems passable to think this format is used for image exchange in Macintosh and Window.

(6) WMF

As an abbreviation word of Windows Meta File, this is the format to support the vector method -drawing programs. As a common format of drawing programs, it is supported by Microsoft Office as clip arts. Not only it can enlarge into any size freely without lowering resolution but also this format is supported by many useful programs. This format also expresses graphic information displayed in the window screen with GDI Function.

(7) EMF

As an abbreviation word of Enhanced Meta File, this can provide enhanced 32bit definition even though it is the same as WMF.

9.4 Tag Link

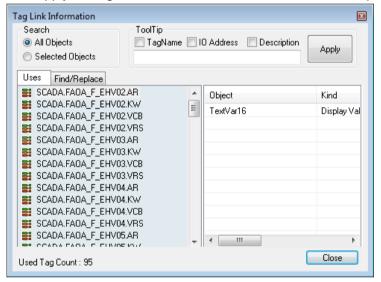
This command is used when finding mapped tags among the entire objects or the selected objects in the page or replacing the found tags with others. The user may define a range to be searched by selecting either 'All Objects' or 'Selected Objects'.

9.4.1 Using Location

The left area of the using location tab indicates the list of tags composed in the object selection. The right area shows the object using each tag and dynamic property list.

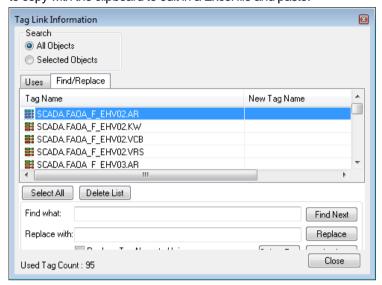
(1) ToolTip

Among objects into which the selected names are mapped, after choosing the desired object, you can batch-apply the tag information and user definition with a tooltip.



9.4.2 Find/Replace

The left area under 'Find/Replace' tab shows the names of the tags organized through selecting objects and it is used when tag link is re-organized for all of the selected objects. Preview is available through single or multiple selection and it is also possible to copy with the clipboard to edit in a Excel file and paste.



(1) Find What

When replacing the selected tag name, directly input a name of the new tag or click 'Select Tag' button and then input it in the 'Select Tag' dialog box.

(2) Select All

All of the tag lists are selected.

(3) Delete List

The selected tag lists are cancelled.

(4) Replace

Click 'Replace' button to check and inspect the planned replace.

(5) Apply

Click 'Apply' button to link the select tag link as seen in the displayed list.

9.5 Library

In addition to the library basically provided by the system, the user may register/delete/edit his/her own library. One of the strong points of this "Library Object" command is that several objects can be selected at the same time to be saved in the library list and at this time, the properties set up in those objects are also saved.

9.5.1 Use Symbol Objects

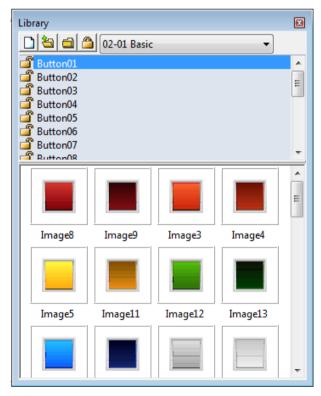
Any object registered in the library can be inserted in the screen. The user may drag any object he/she wants to edit in the library and drop to the page he/she is editing with the left button of the mouse or the user may copy relevant symbols and paste them to the edit page to insert objects. Then, these objects can be reformed to a desired shape through editing.

9.5.2 Register Symbol Objects

In addition to the library basically provided by the system, the user may add his/her own library. To register an object, the user can select an object in the edit page and drag and drop it to the Library dialog box while pressing 'Alt 'key or the user can copy the relevant symbol and paste it to a desire location in the Library dialog box.

When creating a new group, the user needs to input a group name. Library data are saved in location 'InfoU Installation Path\bin\PicLibs' in file type 'Group Name.dat.'.

9.5.3 Library Dialog Box



(1) New Name

It is used to create a new library group. If the name of an image to be registered in the library is inputted, the image with the new name is added to the library group.

(2) Open

It is used to open one of existing library groups. The opened library group is added to the list.

The relevant library group is closed. The closed library group is deleted from the list.

(4) Lock

If the relevant library group is locked, any symbol is not added nor deleted from the relevant library group.

(5) Copy/Paste/Delete

It is available to copy, paste or delete symbol objects from the library dialog box.

(6) Preview

The user may preview symbol objects in icon, name or icon & name type.

9.6 Layer

By using layers such as Show/Hide, Lock and Declutter function in the graphic editor, the user may simplify complicate process screen works into individual object processes. The contents in the process screen can be divided up to eight layers and Layer0 objects are located on the lowest layer while Layer7 objects are located on the top

9.6.1 Layer Settings

In default, all of the layers can be seen and Layer O is activated. Objects can be always added to the activated layer but, they can be quickly moved to other layer. The user may change to assign objects to layers by using the Object Property screen. If the user needs to move multiple objects in different layers to one layer, he/she may use multiple-selection to move them quickly. To change active layers, the user may use the Layer combo box.



9.6.2 Layer Lock/Unlock

The layer lock function makes selecting and editing objects either possible or impossible. By using Lock button, the user may lock the relevant layer and use it as background image.

9.6.3 Layer Show/Hide

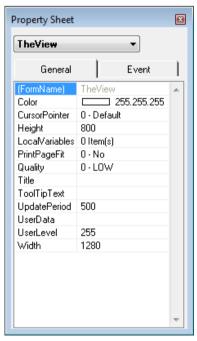
By using the Layer Palette, the user may show or hide the relevant layer individually. That is, it is possible to show/hide the objects assigned to the relevant layer.

9.7 **Object Property**

9.7.1 General

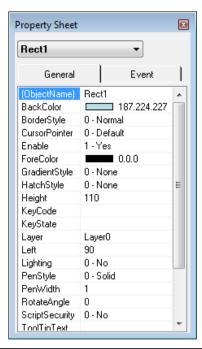
Static characteristics of each object such as page and object size, shape, location and color can be defined. After selecting objects on the screen, you can change the same properties in a lump.

(1) Page Property



Property	Descriptions
(FormName)	Name of page object
Color	Page background color
CursorPointer	Cursor shape when the mouse is on an object
Height	Page height
Width	Page width
PrintPageFit	Designate a rate to align print paper and page
Quality	Designate the quality level of an object to be drawn
UserData	Save data defined by the user
Title	Page name
ToolTipText	Tooltip when the mouse is on an object
UpdatePeriod	Screen update period during Runtime
LocalVariables	Designate variables used in the page
UserLevel	Specify the user class on object actions.

(2) Object Property

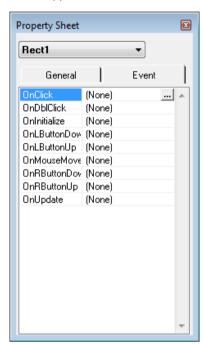


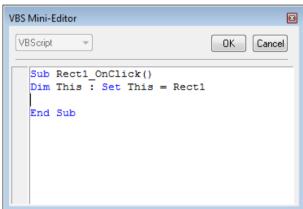
Property	Descriptions
(ObjectName)	Object name
Left	Left location of an object
Тор	Top location of an object
Width	Object width
Height	Object height
CursorPointer	Cursor shape when the mouse is on an object
ToolTipText	Tooltip when the mouse is on an object
Enable	Designate to assign event handling of an object
Visible	Designate whether to show an object
UserData	Save data defined by the user
BackColor	Object background color
ForeColor	Object line or letter color
Font	Designate font name, style, size
Layer	Designate layer where an object exists
RotateAngle	Designate a rotation angle of an object
PenWidth	Designate line width
HatchStyle	Designate a hatch pattern to fill
BorderStyle	Normal, 3D, Sunken or Raised.
GradientStyle	Designate a gradient pattern to fill
PenStyle	Designate a line style
Arrowhead	Designate arrow direction
ArrowheadHeight	Designate arrow size

Text	Designate text to be displayed	
Alignment	Designate text alignment	
Angle1	Designate the start angle	
Angle2	Designate the end angle	
BorderColor	Object border color	
ImageName	Name and format type of the displayed image	
ImageInclude	Designate a type to save images	
KeyCode	Dynamic property- Specify the shortcut key to click	
KeyState	Dynamic property- Specify the secondary shortcut key to click	
TransparentColor	Designate the transparent Color	
ButtonStyle	Designate the push button style	
Layout	How to specify the image size	
FrameIndex	Specify the animation frame	
ImageIndex	Designate the multi-image index	
UserLevel	Specify the user class on object actions	
Lighting	Customized lighting function	
ScriptSecurity	It is the function to specify the script security for the object. Once you apply the	
	security function, it will never be canceled so you need to keep the original all	
	the time.	

9.7.2 Event Property

The user may use scripts when designating complicate dynamic properties defined by the user or executing functions other than the predefined movements. 'Script Engine' provided by Microsoft Corp is used and it is very similar to visual basic programming. If 'Event' tab is selected in the Object Sheet and an event to be edited is selected, VBS Mini-Editor, a scripter editor, appears.





Event	Descriptions	
OnInitialize	Event that takes place when the relevant page is open(For setting-up)	
OnTerminate	Event that takes place when the relevant page is closed(For clean-up) - Only page properties	
OnClick	Event that takes place when the user clicks on an object	
OnDblClick	Event that takes place when the user double clicks on an object	
OnLButtonDown	Event that takes place when the user clicks the left of the mouse on an object	
OnRButtonDown	Event that takes place when the user clicks the right of the mouse on an object	
OnMouseMove	Event that takes place when the user moves the mouse	
OnLButtonUp	Event that takes place when the user moves up an object with the left mouse	
OnRButtonUp	Event that takes place when the user moves up an object with the right mouse	
OnUpdate	Event that takes place when screen updates regularly Only object properties	
OnSetFocus	Event that takes place when enable the page - Only page properties	
OnKillFocus	Event that takes place when disable the page - Only page properties	

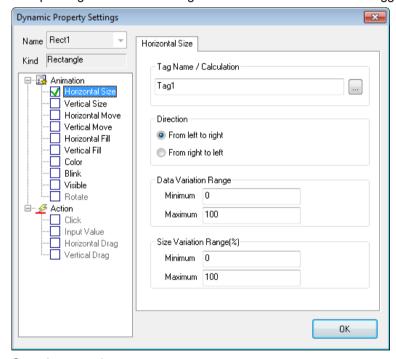
9.8 **Define Dynamic Properties**

Dynamic Properties are used when setting up dynamic properties and action functions of the relevant object. First, select an object and execute this command to show a dialog box to set up its dynamic properties. The displayed dialog box allows the user to set up dynamic properties and action functions of the relevant object.

9.8.1 **Horizontal Size**

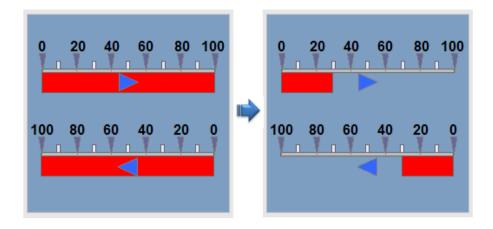
This is a function to change the size of objects in the horizontal direction according to tag values.

- (1) Tag Name
 - Input a tag name or expression that will be a baseline of horizontal size. A tag name can be designated with 'Search' (...) on the right.
- (2) Direction
 - Set up a base location and direction of change in size.
- (3) Data Variation Range
 - Set up a range of data to be referred when changed. The minimum value cannot be bigger than the maximum one.
- (4) Size Variation Range
 - Set up a range of size to be changed. The minimum size cannot be bigger than the maximum one.



(5) Sample examples

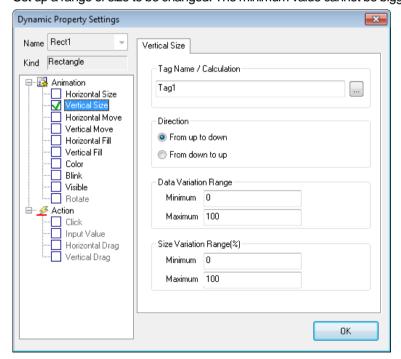
Action screen when changing the tag value: 100→30



9.8.2 Vertical Size

This is a function to change the size of objects in the vertical direction according to tag values.

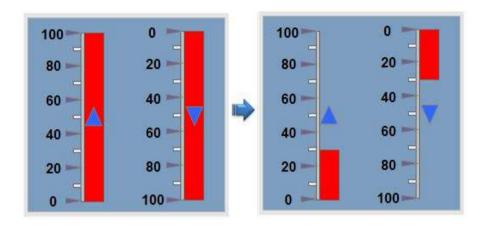
- (1) Tag Name
 Input a tag name or expression that will be a baseline of vertical size. A tag name can be designated with 'Search' (...).
- (2) DirectionSet up a base location and direction of change in size.
- (3) Data Variation Range
 Set up a range of data to be referred when changed. The minimum value cannot be bigger than the maximum one.
- (4) Size Variation Range
 Set up a range of size to be changed. The minimum value cannot be bigger than the maximum one.



(5) Sample examples

Action screen when changing the tag value: 100→30





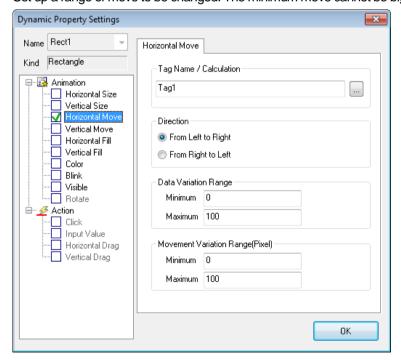
Horizontal Move 9.8.3

This is a function to move the object in the horizontal direction according to the designated tag value.

(1) Tag Name Input a tag name or expression that will be a baseline of horizontal move. A tag name can be designated with 'Search' (...) on the right.

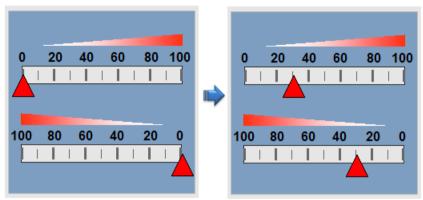
(2) Direction Set up a base location and direction of change in move.

- (3) Data Variation Range Set up a range of data to be referred when changed. The minimum value cannot be bigger than the maximum one.
- (4) Move Variation Range Set up a range of move to be changed. The minimum move cannot be bigger than the maximum one.



(5) Sample examples

Action screen when changing the tag value: 0→30

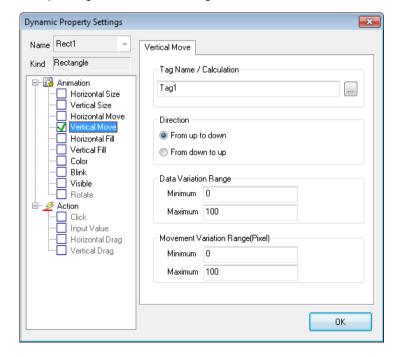


9.8.4 Vertical Move

This is a function to move the object in the vertical direction according to the designated tag value.

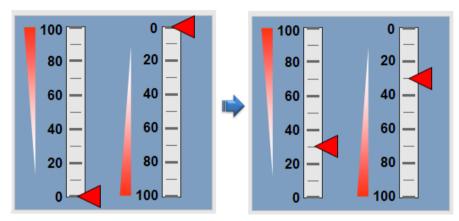
- (1) Tag Name
 - Input a tag name or expression that will be a baseline of vertical move. A tag name can be designated with 'Search' (...) on the right.
- (2) Direction
 - Set up a base location and direction of change in move.
- (3) Data Variation Range
 - Set up a range of data to be referred when changed. The minimum value cannot be bigger than the maximum one.
- (4) Move Variation Range

Set up a range of move to be changed. The minimum move cannot be bigger than the maximum one.



(5) Sample examples

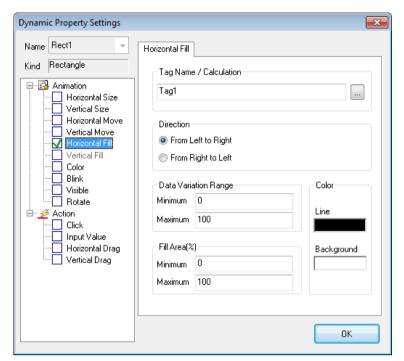
Action screen when changing the tag value: 0→30



9.8.5 **Horizontal Fill**

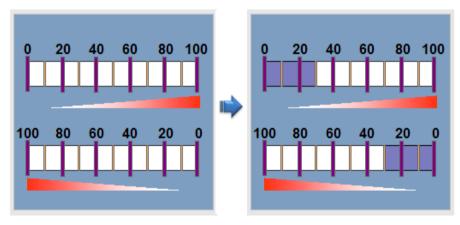
This is a function to fill in the object in the horizontal direction according to the designated tag value.

- (1) Tag Name
 - Input a tag name or expression that will be a baseline of horizontal fill. A tag name can be designated with 'Search' (...) on the right.
- (2) Direction
 - Set up a base location and direction of change in fill.
- (3) Data Variation Range
 - Set up a range of data to be referred when changed. The minimum value cannot be bigger than the maximum one.
- (4) Fill Area (%)
 - Set up an area to fill when changed. The start area cannot be bigger than the maximum one.
- (5) Color
 - Set up colors of line and background when filling.



(6) Sample examples

Action screen when changing the tag value: 0→30



9.8.6 Vertical Fill

This is a function to fill in the object in the vertical direction according to the designated tag value.

- (1) Tag Name
 - Input a tag name or expression that will be a baseline of vertical fill. A tag name can be designated with 'Search' (...) on the right.
- (2) Direction
 - Set up a base location and direction of change in fill.
- (3) Data Variation Range
 - Set up a range of data to be referred when changed. The minimum value cannot be bigger than the maximum one.

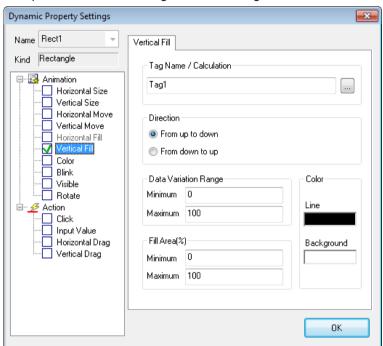


(4) Fill Area (%)

Set up an area to fill when changed. The start area cannot be bigger than the maximum one.

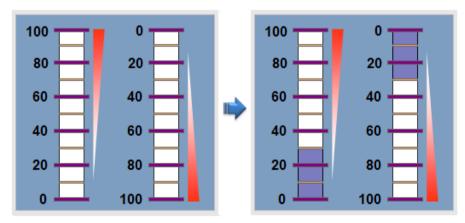
(5) Color

Set up colors of line and background when filling.



(6) Sample examples

Action screen when changing the tag value: 0→30



9.8.7 Color

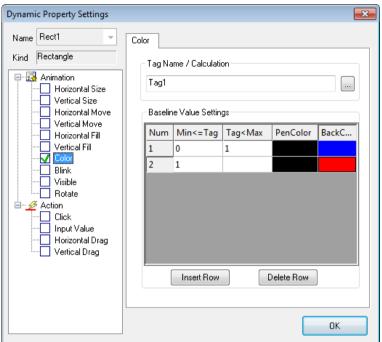
This is a function to change the object in the prescribed color according to the inputted tag value.

(1) Tag Name

Input a tag name or expression that will be a baseline of color change. A tag name can be designated with 'Search' (...) on the right..

(2) Baseline Value Settings

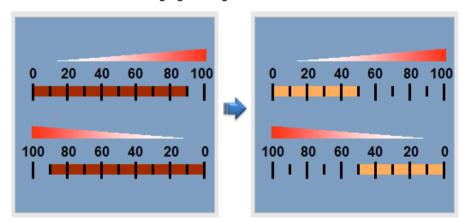
When colors are changed as new rows are inserted to grids, input the minimum and maximum value of the inputted tag or



expression and set up colors of line and background to display under the relevant condition.

(3) Sample examples

Action screen when changing the tag value: 90→50



9.8.8 Blink

This is a function to blink the object in the specified interval according to the tag status.

(1) Tag Name

Input a tag name or expression that will be a baseline of blink. A tag name can be designated with 'Search' (...) on the right.

- (2) Condition
 - 1) True

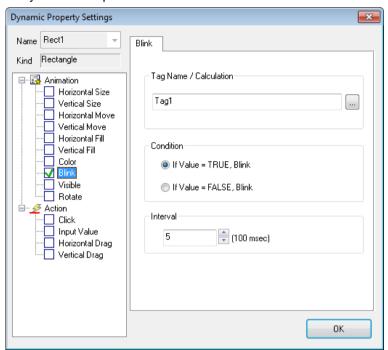
If the tag value designated above is true, blink the object. If false, do not blink it.

2) False

If the tag value designated above is false, blink the object. If true, do not blink it..

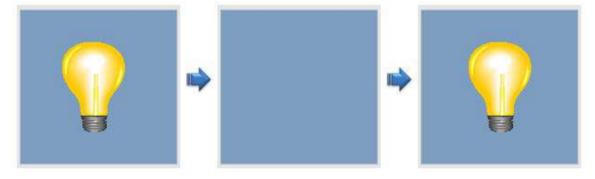
(3) Interval

Select a blink interval. Its unit is 100msec. That is, if 1 is inputted, it blinks every 100msec and if 10 is inputted, it blinks every second. Input one value between 1 and 999.



(4) Sample examples

Action screen when the tag value is TRUE



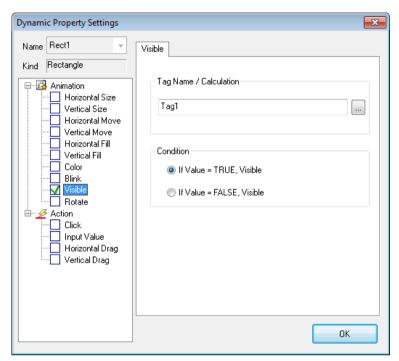
9.8.9 **Visible**

This is a function either to show or hide the object according to the input tag value.

- (1) Tag Name
 - Input a tag name or calculation that will be a baseline of pop in/out. You can select tag names by clicking the search icon (...) at right side of Tag Name / Calculation.
- (2) Condition
 - 1) True

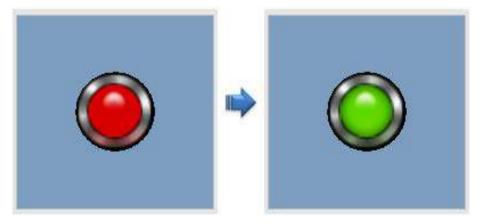
If the tag value designated above is true, pop in/out the object. If false, do not pop in/out it.

If the tag value designated above is false, pop in/out the object. If true, do not pop in/out it.



(3) Sample examples

Action screen when changing the tag value: TRUE→FALSE



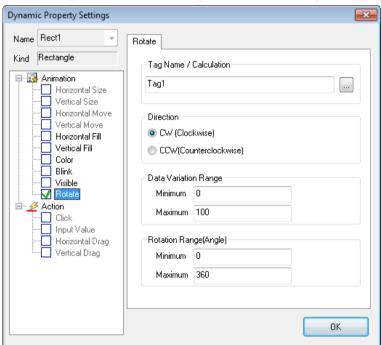
9.8.10 Rotate

This is a function to rotate the object by the designated angle degree according to the input tag value.

- (1) Tag Name
 - Input a tag name or expression that will be a baseline of rotation. A tag name can be designated with 'Search' (...) on the right.
- (2) Direction
 - Set up a rotation direction when rotation is changed.
- (3) Data Variation Range
 - Set up a range of data to be referred when changed. The minimum value can not be bigger than the maximum one.

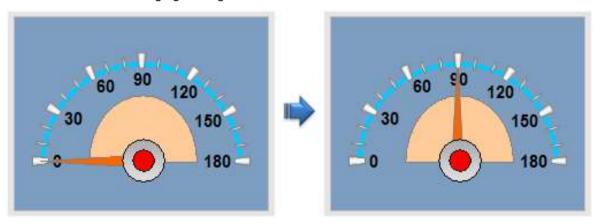
(4) Rotation Range (Angle)

Set up a range of rotation to be changed. The minimum angle can not be bigger than the maximum one.



(5) Sample examples

Action screen when changing the tag value: 0→90



9.8.11 Display Value

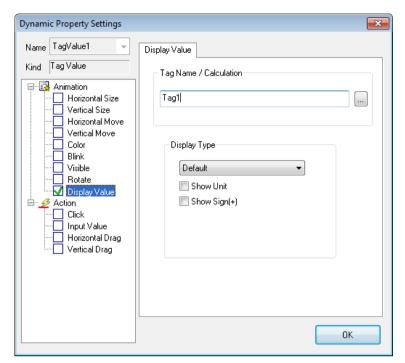
It is used to create an object marked with its tag value.

(1) Tag Name

Input a tag name or expression. A tag name can be designated with 'Search' (...) on the right.

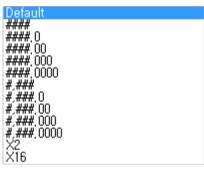
(2) Display Type

You can preview the format displaying the value on the screen. In the case of default setting, the value is applied in the InfoU engineering. In the case of the digital tag, the On/Off string is displayed and for the decimal places of the analog tag, the number of digits set in the InfoU engineering is applied. If you want to display a unit and a sign on the screen, just put a check 'Show Unit' and 'Display Sign'.



(3) Sample examples

The value is basically set as Default. You can specify the number of digits and decimal places for the tag value as shown below. When the value is set as 'Default', the value sent from the tag is displayed as it is.



1) (When selection ####.00)

36.70

2) (When selecting ####.00 and putting a check 'Show Unit' and 'Display Sign')

+146.62A

3) (When selecting 'Default' and putting a check 'Show Unit' and 'Display Sign')

+26.8200A



9.8.12 Display String

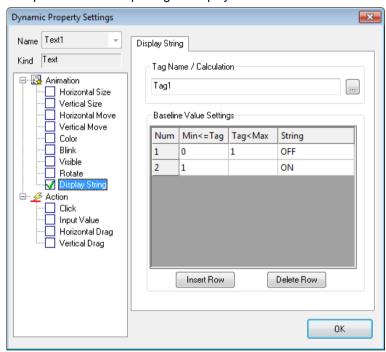
A function to change the object to the prescribed string according to the inputted tag value.

(1) Tag Name

Input a tag name or expression that will be a baseline to change strings. A tag name can be designated with 'Search' (...) on the right.

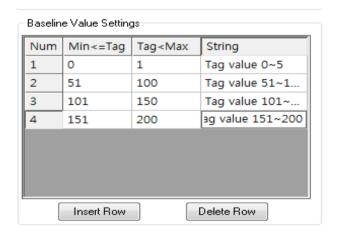
(2) Baseline Value Settings

When strings are changed as new rows are inserted to grids, input the minimum and maximum value of the inputted tag or expression and set up strings to display under the relevant condition.



(3) Sample examples

If you perform the runtime, the displayed string will change depending on the tag value.



Tag Value 0 ∼ 5	Tag Value 51 ~ 100
0.5667	61.5667
Tag Value 101 ~ 150	Tag Value 151 ~ 200
111.5667	161.5667

9.8.13 Frame Animation

This is a function to execute Frame animation according to the inputted tag values.

(1) Tag Name

Input a tag name or expression that will be a baseline to execute Frame animation. A tag name can be designated with 'Search' (...) on the right.

- (2) Condition
 - 1) True

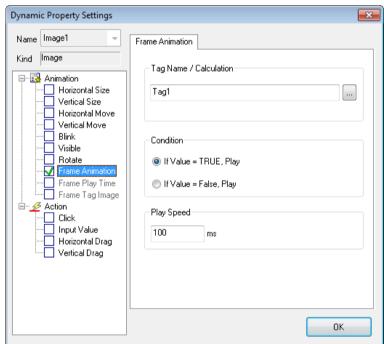
If the tag value designated above is true, execute Frame animation. If false, stop executing Frame animation.

2) False

If the tag value designated above is false, execute Frame animation. If true, stop executing Frame animation.

(3) Play Speed

Designate a play speed between frames.



(4) Sample examples

Action screen when the tag value is TRUE

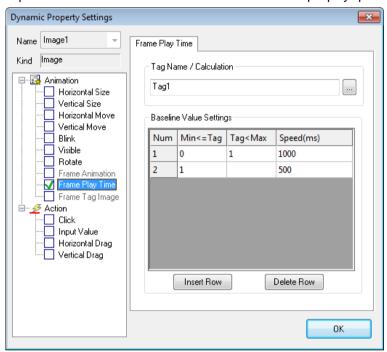


9.8.14 Frame Play Time

A function to designate a play speed of each Frame animation frame according to the inputted tag value.

- (1) Tag Name
 - Input a tag name or expression that will be a baseline of Frame play time. A tag name can be designated with 'Search' (...) on the right.
- (2) Baseline Value Settings

When strings are changed as new rows are inserted to grids, input the minimum and maximum value of the tag or expression that will be a baseline of conversion and set up a play speed under the relevant condition.



9.8.15 Frame Tag Image

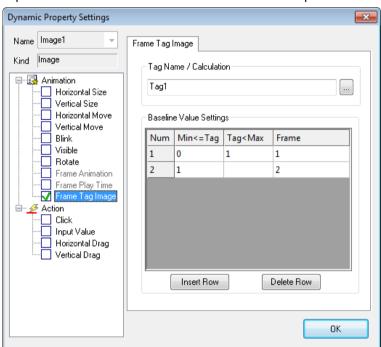
A function to show each Frame animation frame according to the inputted tag value.

(1) Tag Name

Input a tag name or expression that will be a baseline of showing each Frame animation frame. A tag name can be designated with 'Search' (...) on the right.

(2) Baseline Value Settings

When strings are changed as new rows are inserted to grids, input the minimum and maximum value of the tag or expression that will be a baseline of conversion and set up a frame to show under the relevant condition.



9.8.16 Lamp

It shows the On image or the Off image depending on the input tag value.

(1) Tag Name

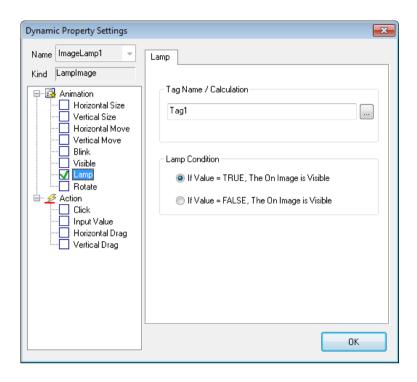
Input a tag name or calculation that will be a baseline of pop in/out. You can select tag names by clicking the search icon (...) at right side of Tag Name / Calculation.

- (2) Lamp Condition
 - 1) True

If the above specified tag value is True, the On image will be displayed; If it is False, the Off image will be displayed.

2) False

If the above specified tag value is False, the On image will be displayed; If it is True, the Off image will be displayed.

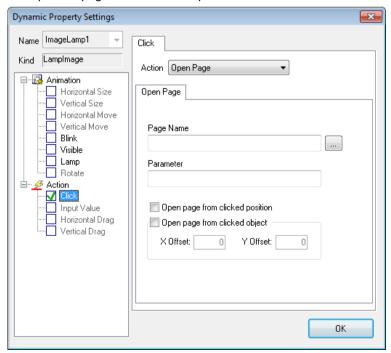


9.8.17 Click

This is a control function to execute the defined actions when clicking the object with the mouse or keyboard.

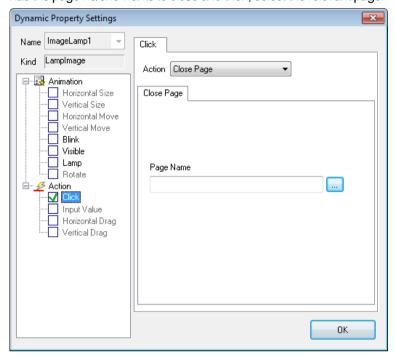
(1) Open Page

The user may directly input a name of the page he/she wants to open or use 'Search' (...) button to move the folder that has the page he/she wants to open and select the relevant page. When opening the page, the user can deliver parameter and open the page from the clicked position.



(2) Close Page

The user may directly input a name of the page he/she wants to close or use 'Search' (...) button to move the folder that has the page he/she wants to close and then, select the relevant page.



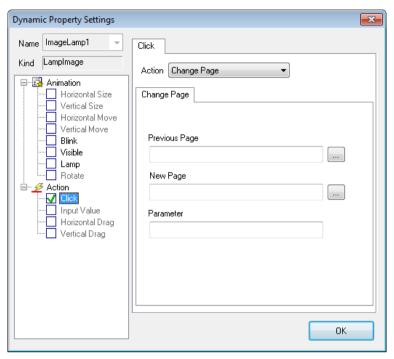
(3) Page Change

1) Previous Page

The user may directly input a name of the page to be closed or use 'Search' (...) button to move the folder that has the page and select the relevant page.

2) New Page

The user may directly input a name of the page to be newly displayed or use 'Search' (...) button to move the folder that has the page and select the relevant page.



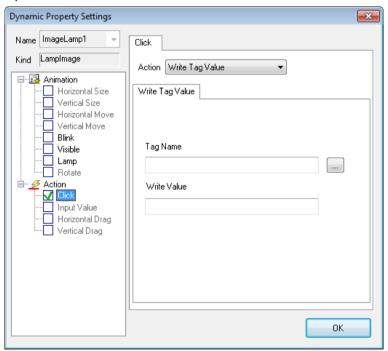
(4) Write Tag Value

1) Tag Name

Directly input a tag name or use 'Search' (...) on the right to designate a tag name.

2) Write Value

Input a value to write.



(5) Write Digital Value

1) Tag Name

Directly input a digital tag name or use 'Search' (...) on the right to designate a tag name.

2) Basic

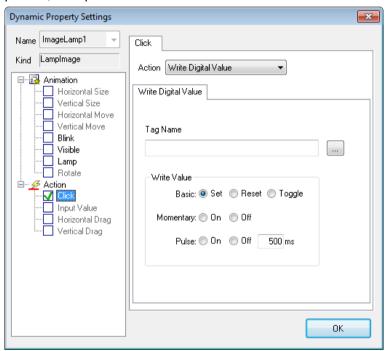
'Set' designates the value of the relevant digital tag as 1. 'Reset' designates the value as 0. 'Toggle' compares the value of the current digital tag and designates the value as 1 if the result is 0 and the value as 0 if the result is 1.

3) Momentary

In case of the On image, the digital tag value is specified as 1 in Mouse Down; 0 in Mouse Up. In case of the Off image, the digital tag value is specified as 0 in Mouse Down; 1 in Mouse Up.

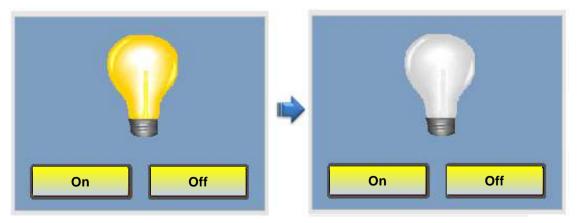
4) Pulse

In case of the On image, the digital tag value is specified as 1 and after the fixed time passes, it is specified as 0. In case of the Off image, the digital tag value is specified as 0 and after the fixed time passes, it is specified as 1.



5) Sample examples

Action screen when changing the tag value: TRUE→FALSE

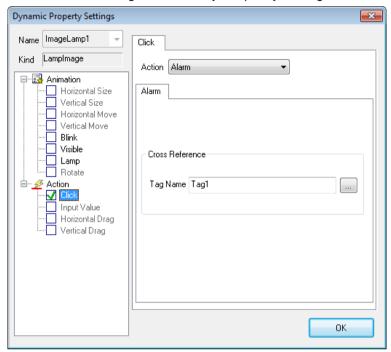


(6) Alarm

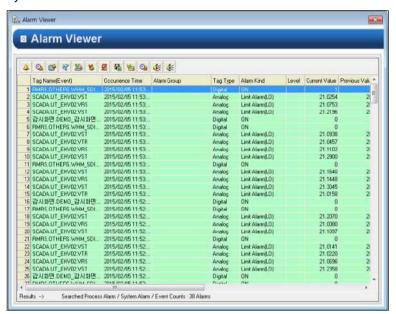
When you click the object, the system alarm page defined in the InfoU will be open. If you enter the tag name, the cross reference will be executed when opening the page.

1) Tag Name

You can enter the tag name directly or specify the tag name with the search (...) button on the right side.



2) System alarm viewer

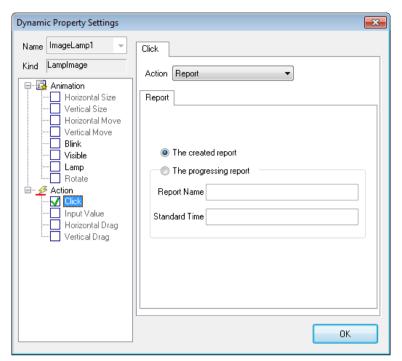


(7) Report

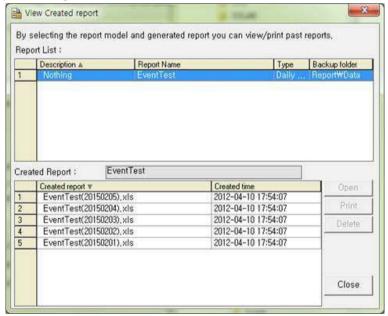
Click the object to run 'Report Settings'.

- 1) The created report
 - The created 'Report Settings' window is displayed.
- 2) The progressing report

The ongoing 'Report Settings' window is displayed. You need to set the report name and reference time for retrieval.



3) Report settings



(8) Realtime Trend

If you click the object, the system Realtime Trend page defined in the InfoU will be open.

1) Channel List

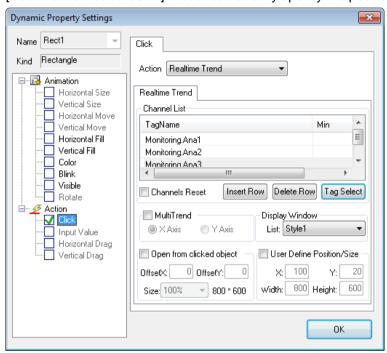
Among the channel properties, you can input the tag name, min. and max. value. If you put a check [Channels Reset], the previously saved channel list is reset and the list set in the current setting window only will be applied. If you enter -999 for the min. and max. value, the min, and max. value of the DB tag will be automatically mapped; if you enter 0 or "", the auto-scale will be set automatically.

2) MultiTrend

It sets to determine whether displaying the trend as the multi-trend style.

- 3) Display Window
 - Select the page style to apply.
- 4) Open from clicked object
 - [Open from clicked object] the page will be opened in the position of the relevant object. You can specify X, Y offset and the size.
- 5) User Define Position/Size

[User Define Position/Size] A user can directly specify the position and size of the page.



6) Display Window- Style1







(9) Archive Trend

If you click the object, the system Archive Trend page defined in the InfoU will be open.

1) Channel List

Among the channel properties, you can input the tag name, min. and max. value. If you put a check [Channels Reset], the previously saved channel list is reset and the list set in the current setting window only will be applied. If you enter -999 for the min. and max. value, the min, and max. value of the DB tag will be automatically mapped; if you enter 0 or "", the auto-scale will be set automatically.

2) MultiTrend

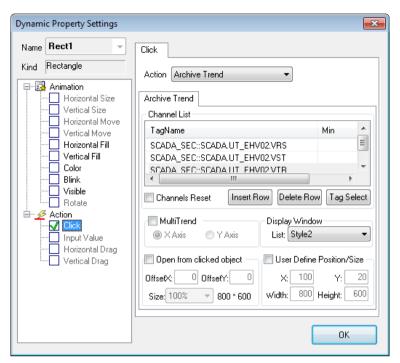
It sets to determine whether displaying the trend as the multi-trend style.

- 3) Display Window
 - Select the page style to apply.
- 4) Open from clicked object

[Open from clicked object] the page will be opened in the position of the relevant object. You can specify X, Y offset and the size.

5) User Define Position/Size

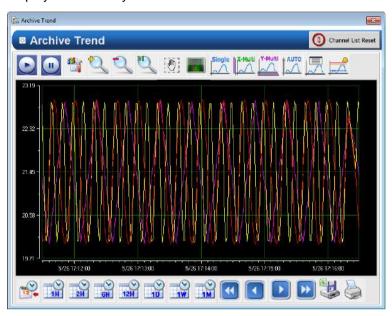
[User Define Position/Size] A user can directly specify the position and size of the page.



6) Display Window- Style1



7) Display Window- Style2



(10) Detail Realtime Trend

If you click the object, the system Detail Realtime Trend page defined in the InfoU will be open.

- 1) Tag Name
 - Directly input a digital tag name or use 'Search' (...) on the right to designate a tag name.
- 2) Trend axis

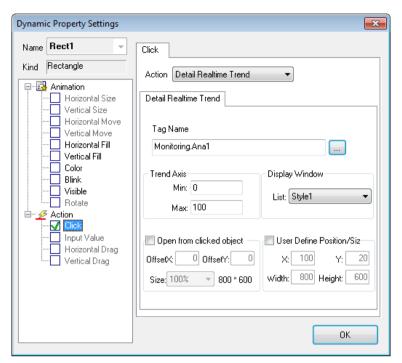
It can set the minimum and maximum values for y-axis. If you enter -999 for the min. and max. value, the min, and max. value of the DB tag will be automatically mapped; if you enter 0 or " ", the auto-scale will be set automatically.

- 3) Display Window
 - Select the page style to apply.
- 4) Open from clicked object

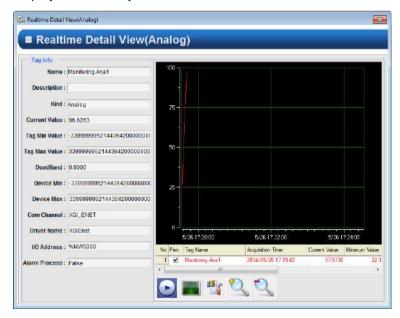
[Open from clicked object] the page will be opened in the position of the relevant object. You can specify X, Y offset and the size.

5) User Define Position/Size

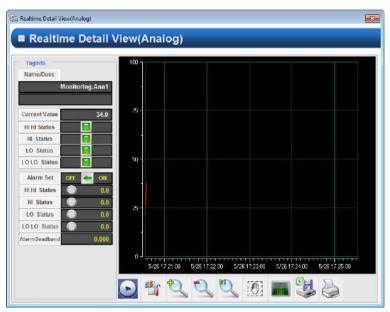
[User Define Position/Size] A user can directly specify the position and size of the page.



6) Display Window- Style1



7) Display Window- Style2



(11) Detail Archive Trend

If you click the object, the system Detail Archive Trend page defined in the InfoU will be open.

- 1) Tag Name
 - Directly input a digital tag name or use 'Search' (...) on the right to designate a tag name.
- 2) Trend axis

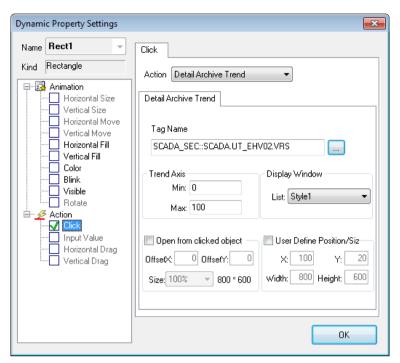
It can set the minimum and maximum values for y-axis. If you enter -999 for the min. and max. value, the min, and max. value of the DB tag will be automatically mapped; if you enter 0 or " ", the auto-scale will be set automatically.

- 3) Display Window
 - Select the page style to apply.
- 4) Open from clicked object

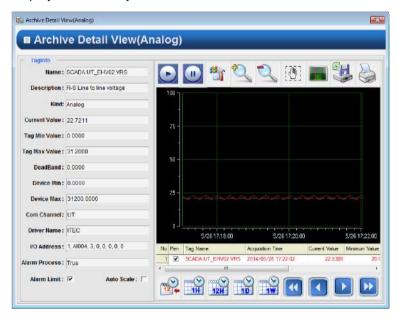
[Open from clicked object] the page will be opened in the position of the relevant object. You can specify X, Y offset and the size.

5) User Define Position/Size

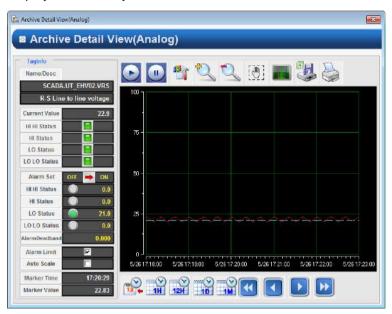
[User Define Position/Size] A user can directly specify the position and size of the page.



6) Display Window- Style1



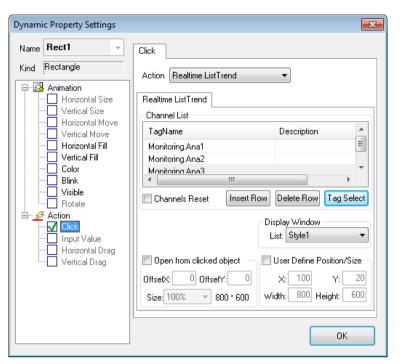




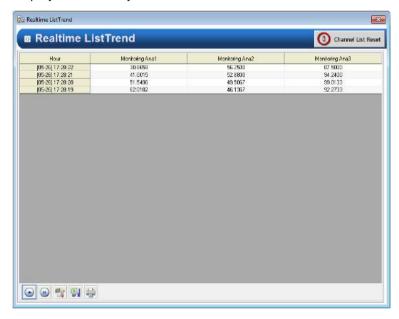
(12) Realtime List Trend

If you click the object, the system Realtime List Trend page defined in the InfoU will be open.

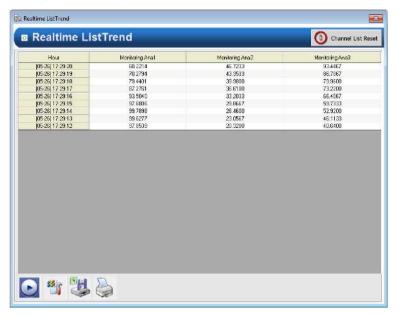
- 1) Channel List
 - Among the channel properties, you can input the tag names and descriptions. If you put a check [Channels Reset], the previously saved channel list is reset and the list set in the current setting window only will be applied.
- Display WindowSelect the page style to apply.
- 3) Open from clicked object [Open from clicked object] the page will be opened in the position of the relevant object. You can specify X, Y offset and the size.
- 4) User Define Position/Size [User Define Position/Size] A user can directly specify the position and size of the page.



5) Display Window- Style1



6) Display Window- Style2



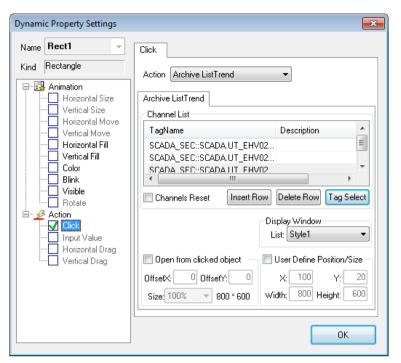
(13) Archive List Trend

If you click the object, the system Archive List Trend page defined in the InfoU will be open.

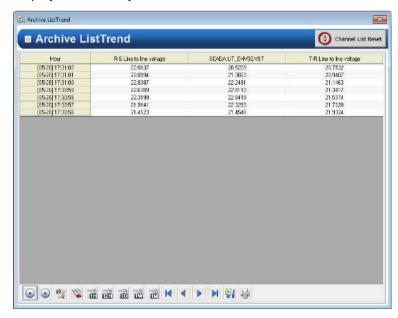
1) Channel List

Among the channel properties, you can input the tag names and descriptions. If you put a check [Channels Reset], the previously saved channel list is reset and the list set in the current setting window only will be applied.

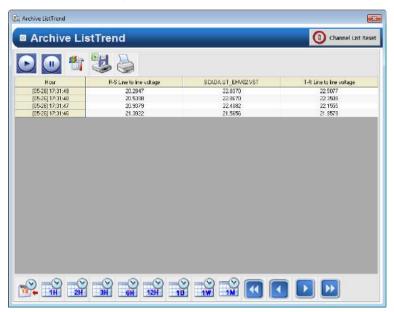
- Display WindowSelect the page style to apply.
- 3) Open from clicked object [Open from clicked object] the page will be opened in the position of the relevant object. You can specify X, Y offset and the size.
- 4) User Define Position/Size [User Define Position/Size] A user can directly specify the position and size of the page.



5) Display Window- Style1



6) Display Window- Style2



(14) Write BitFlag Value

1) Tag Name

You can directly enter the digital tag name or specify the tag name using the search button (...) on the right side.

2) Basic

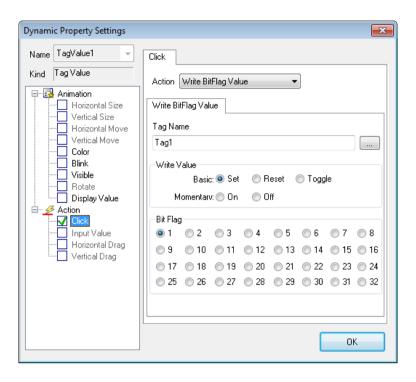
In 'Set' mode, specify the bit flat value of the tag as 1. In 'Reset' mode, specify the bit flat value of the tag as 0. In the Toggle mode, after comparing the bit flat values of the current tag, if the value is 0, specify it as 1; if the value is 1, specify it as 0.

3) Momentory

In 'On' mode, specify the bit flat value of the tag as 1 in Mouse Down; specify it as 0 in Mouse Up. In 'Off' mode, specify the bit flat value of the tag as 0 in Mouse Down; specify it as 1 in Mouse Up.

4) Bit flag

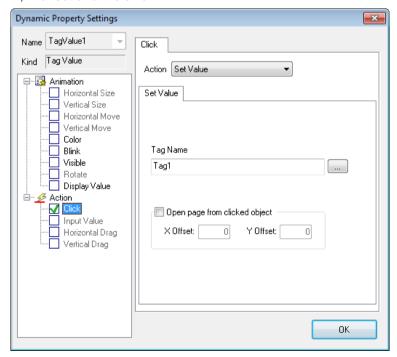
Specify the bit of the tag that you want to set.



(15) Set Value

- 1) Tag Name
 - Directly input a digital tag name or use 'Search' (...) on the right to designate a tag name.
- 2) Open page from clicked object

[Open from clicked object] the page will be opened in the position of the relevant object. You can specify X, Y offset and the size.



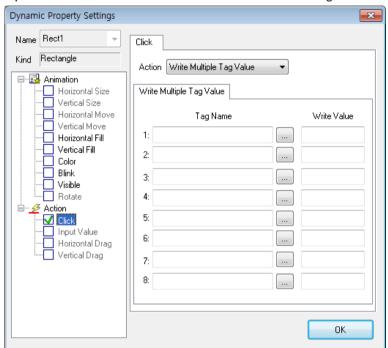
(16) Write Multiple Tag Value

1) Tag Name

Directly input a tag name or use 'Search' (...) on the right to designate a tag name.

2) Write Value

Input a value to write. The order of execution is ascending.



9.8.18 Input Value

A function to select an object and input a value in the predefined dialog box with the mouse or Keyboard.

(1) Tag Name

Input a name of the tag to which the inputted value will apply. A tag name can be designated with 'Search' (...) on the right.

(2) Input Type

The user may choose either 'Number' or 'String' to decide how to input a value.

(3) Input Value Range

Designate the minimum and maximum value to input. The minimum value can not be bigger than the maximum one.

(4) Display Type

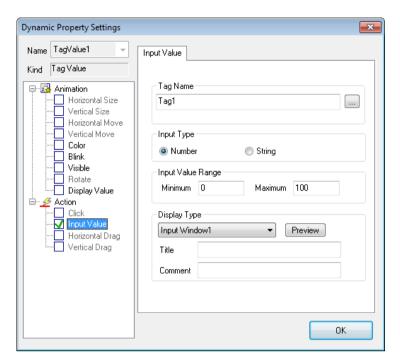
Designate a type of the window screen to be displayed in the screen.

(5) Title

Input a title of the screen..

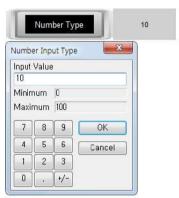
(6) Comment

Input comment on the window.



(7) Sample examples

Action screen when you input the tag value to 10.



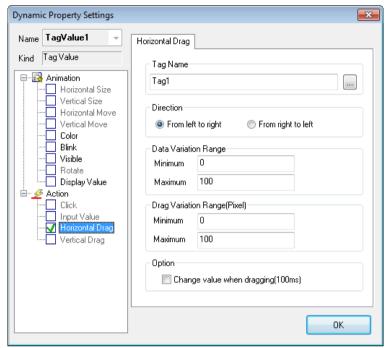
9.8.19 Horizontal Drag

This is a function to drag an object in the horizontal direction with the mouse to convert coordinate values to tag values.

- - Input a tag name to which the value of horizontal sliding will be inserted. A tag name can be designated with 'Search' (...) on the right.
- (2) Direction
 - Set up a base location and direction of horizontal sliding.
- (3) Data Variation Range
 - Set up a range of data to be referred during the horizontal sliding. The minimum value can not be bigger than the maximum one.
- (4) Drag Variation Range (Pixel)
 - Set up a range of move during the horizontal sliding. The minimum move can not be bigger than the maximum one.

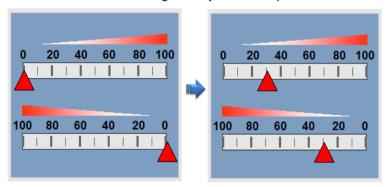
(5) Change value when dragging (100ms)

Check $\sqrt{ }$ in the box if the user wants to operate the dragging value while the mouse is moving.



(6) Sample examples

Action screen when moving the object: 0→30 pixel



9.8.20 Vertical Drag

A function to slide an object in the vertical direction with the mouse to convert coordinate values to tag values.

(1) Tag Name

Input a tag name to which the value of vertical sliding will be inserted. A tag name can be designated with 'Search' (...) on the right.

(2) Direction

Set up a base location and direction of vertical sliding.

(3) Data Variation Range

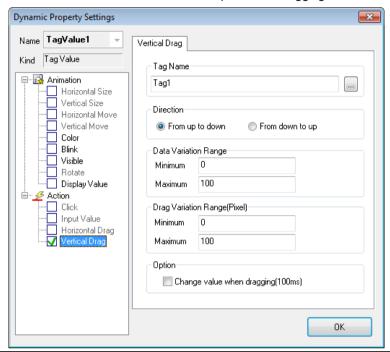
Set up a range of data to be referred during the vertical sliding. The minimum value cannot be bigger than the maximum one.

(4) Drag Variation Range (Pixel)

Set up a range of move during the vertical sliding. The minimum move cannot be bigger than the maximum one.

(5) Change value when dragging (100ms)

Check $\sqrt{ }$ in the box if the user wants to operate the dragging value while the mouse is moving.

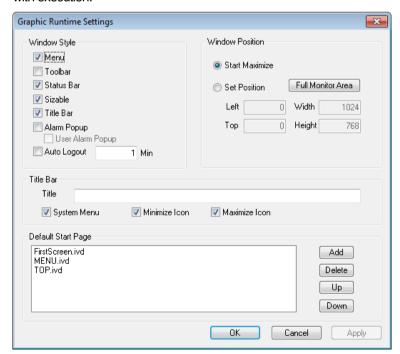


Runtime Settings 9.9

9.9.1 **Graphic Runtime Settings**

'Runtime settings' is to set up the environment for the graphic runtime (InfoUX.exe).

To set up the environment, the user can set up menu, view/hide toolbar, initial execution position, name to be displayed in the title bar, view/hide window control buttons and other options and also set up a default start page to open simultaneously along with execution.



(1) Window Style

1) Menu

Select whether to view the basic menu.

2) Toolbar

Select whether to view the toolbar.

3) Status Bar

Select whether to view the status bar.

4) Sizable

Select whether to allow the operator to change the screen size.

5) Title Bar

Select whether to display the title window located on the top of the window.

6) Alarm Popup

Select whether executing the alarm popup window when an alarm occurs.

7) Auto Logout

Select whether executing auto-logout when a mouse or a keyboard does not work within the fixed time.

(2) Window Position

1) Start Maximize

Select whether to execute RunTime in the maximum screen.

2) Set Position

The user can designate the location and size of the screen during Run Time.

Click 'Full Monitor Area' button, the area coordinates for the multiple monitors are displayed.

The coordinates reference (0, 0) is for the main monitor.

(3) Title Bar

1) Title

Input the title of the screen.

2) System Menu

Select whether to display system menus in icon types on the left top of the screen.

3) Minimize Icon

Select whether to display minimized buttons on the right top of the screen.

4) Maximize Icon

Select whether to display maximized buttons on the right top of the screen.

(4) Default Start Page

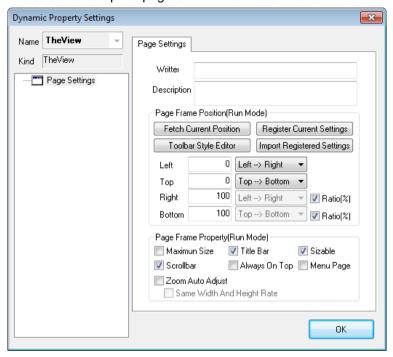
This is for selecting screens to be displayed at first when executing Run Time. If 'Add' button is pressed, all of the written pages for the current page are listed up and the user may select one to be used as a start page.



9.9.2 **Page Settings**

The page settings are used to designate a view (size and position, etc) when each graphic screen is displayed. In order to set up the page environment, click [View] [Object property] of the menu in the screen to display the 'page settings' screen.

The screen to set up the page environment is as follows.



(1) Window Style

1) Writer and Description

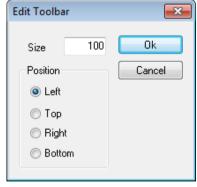
Input the writer of the relevant graphic file and describe on the file. (Optional and informative)

2) Fetch Current Position

Calculate the location and size during the editing in the graphic editor and display them on the location/size input box.

3) Toolbar Style Editor

It provides the editing window to set up the page in a simple toolbar style.



4) Register Current Settings

Register and save the current setting value in the page setting window.

5) Import Registered Settings

Import the registered and saved page setting value to the page setting window.

6) Left (Start X Position)

Show coordinates X in which the relevant page is located when executed. For the base of coordinates X, designate the number of pixels starting from the area displayed in the screen (except the left frame area in the window) out of the main window of the graphic runtime program.

7) Top (Start Y Position)

Show coordinates Y in which the page is located when executing. For the base of coordinates Y, designate the number of pixels starting from the area displayed in the screen (any location other than caption bar, menu bar and tool bar) out of the main window of the graphic runtime program.

8) Right

Designate pixel/ratio and width/right of the page when executing.

9) Bottom

Designate pixel/ratio and height/bottom of the page when executing.

10) Title Bar

Set up whether to show/hide the caption bar (title bar) of the page when executing.

11) Maximum size

Show the page in a full screen of the runtime frame when executing.

12) Sizable

Make the size of the page adjustable. When it is adjustable, the size of the window can be changed by clicking and dragging the edge of the window, and a thick window frame is used. If the size adjustment is not available, the size of the page cannot be changed, and a thin window frame is shown.

13) Scroll bar

Set up whether to show/hide the scroll bar of the page when executing.

14) Always On Top

If 'Always on Top' option is selected, the window is always located on top among various graphic pages and it exists above other windows (among graphic monitoring pages).

15) Menu page

Designate the relevant page as a menu page when executing. The file designated as menu page is not closed and continuously maintained even close (menu, toolbar) command is executed.

(If the user wants to close the page forcibly, he/she may execute 'closing' while pressing shift key.)

16) Zoom Auto Adjust

The zoom ratio (zoom in/out) is automatically adjusted (fit to the screen) by width and length ratio of the screen when opening the page.

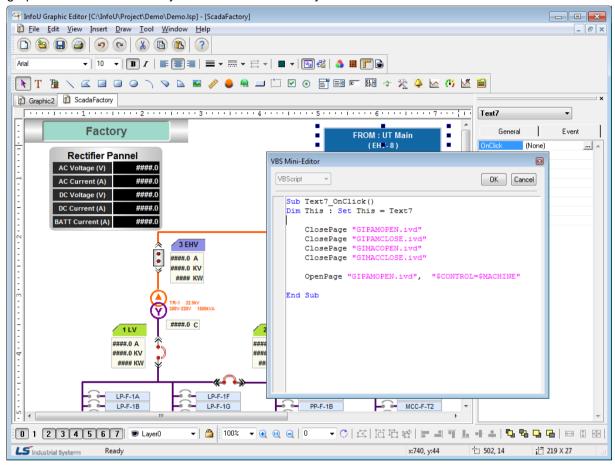
17) Same Width and Height Rate

When opening the page, the zoom ratio (zoom in/out) is automatically adjusted (fit to the screen) by maintaining the ratio of width and height.

9.10 Graphic Script

This Graphic Script is a function to define the activities for the object event (user's mouse action) or periodic execution (OnUpdate Function: Executed at every set-up time in the screen UpdatePeriod) as VB Script.

The available commands at this time are the ones provided by the standard Microsoft VB Script Engine and the graphic functions exclusively available in the InfoU system.



9.10.1 InfoU Graphic Function List

The functions available at the script of this graphic editor are composed of the standard VB script functions and the InfoU graphic functions. The InfoU graphic functions are as seen in the following table.

Function Type Function Declarations	
AckAllAlarm	void AckAllAlarm()
ChangePage	long ChangePage(BSTR OldPageName, BSTR NewPageName)
ChangaDagaEy	long ChangePageEx(BSTR OldPageName, BSTR NesPageName,
ChangePageEx	BSTR Tag Param)
ClosePage	long ClosePage(BSTR PageName)
ExecuteCommand	void ExecuteCommand(BSTR PathName)
GetAllAlarmCount	long GetAllAlarmCount(void)
GetGraLSPath	BSTR GetGraLSPath(void)

	long GetHistDataCount(LPCTSTR ModelName, LPCTSTR TagName,
	LPCTSTR DataKind, double ReferenceTime, long DataCount,
GetHistDataCount	long Direction, VARIANT FAR* ResultCount, VARIANT FAR* ArrTimeStamp,
	VARIANT FAR* ArrDblTagVal, VARIANT FAR* ArrLongTagStatus,
	VARIANT FAR* ArrLongRets)
	long GetHistDataCountStr(LPCTSTR ModelName, LPCTSTR TagName,
	LPCTSTR DataKind, double ReferenceTime, long DataCount,
GetHistDataCountStr	long Direction, VARIANT FAR* ResultCount, VARIANT FAR* ArrTimeStamp,
	VARIANT FAR* ArrStrTagVal, VARIANT FAR* ArrLongTagStatus,
	VARIANT FAR* ArrLongRets)
	long GetHistDataPeriod(LPCTSTR ModelName, LPCTSTR TagName,
	LPCTSTR DataKind, double FromTime, double ToTime,
GetHistDataPeriod	VARIANT FAR* ResultCount, VARIANT FAR* ArrTimeStamp,
	VARIANT FAR* ArrDblTagVal, VARIANT FAR* ArrLongTagStatus,
	VARIANT FAR* ArrLongRets)
	long GetHistDataPeriodStr(LPCTSTR ModelName, LPCTSTR TagName,
	LPCTSTR DataKind, double FromTime, double ToTime,
GetHistDataPeriodStr	VARIANT FAR* ResultCount, VARIANT FAR* ArrTimeStamp,
	VARIANT FAR* ArrStrTagVal, VARIANT FAR* ArrLongTagStatus,
	VARIANT FAR* ArrLongRets)
GetLoggingModelList	long GetLoggingModelList(long lOutCount,VARIANT arrModelName,
	VARIANT arrModelDesc, VARIANT arrModelType,
	VARIANT arrArchivingCycle,
	VARIANT arrSegmentPeriod)
GetLoggingTag	long GetLoggingTag(LPCTSTR ModelName,long lOutCount,
	VARIANT arrTagName, VARIANT arrTagType)
GetNoActionsTime	long GetNoActionsTime(void)
GetProjectPath	BSTR GetProjectPath(void)
GetRecentAlarmTagName	BSTR GetRecentAlarmTagName(void)
GetTagOFFSTR	BSTR GetTagOFFSTR(BSTR TagName)
GetTagONSTR	BSTR GetTagONSTR(BSTR TagName)
GetTagVal	VARIANT GetTagVal(BSTR TagVarName)
GetTagValMAX	VARIANT GetTagValMAX(BSTR TagName)
GetTagValMIN	VARIANT GetTagValMIN(BSTR TagName)
GetUnAckAlarmCount	long GetUnAckAlarmCount (void)
GetUnRecoverAlarmCount	long GetUnRecoverAlarmCount (void)
GetUserID	BSTR GetUserID()
GetUserInfoList	long GetUserInfoList(long lOutCount, VARIANT rrUserID,
	VARIANT arrUserName, VARIANT arrDesc,
	VARIANT arrPassword, VARIANT arrUserLevel,
	•

<u></u>	
	VARIANT arrHPhoneNo, VARIANT arrPhoneNo,
	VARIANT FAR* arrMailAdd)
GetUserLevel	long GetUserLevel()
HardCopy	long HardCopy()
HolidaySet	long HolidaySet()
FindPage	VARIANT FindPage(LPCTSTR PageName)
IsPageOpen	BOOL IsPageOpen(LPCTSTR PageName)
MsgTrace	void MsgTrace(VARIANT MessageValue)
OpenPage	long OpenPage(BSTR PageName, BSTR TagParam)
OpenPageEx	long OpenPageEx(VARIANT X,VARIANT Y, VARIANT cX, VARIANT cY, BSTR PageName, BSTR TagParam)
	long OpenPageObject(BSTR PageName, BSTR TagParam,
OpenPageObject	
PlaySound	BSTR ObjectName) void PlaySound(BSTR WaveFile)
PulseOff	void PulseOn(BSTR TagName, long MilliSec)
PulseOn	
	void PulseOff(BSTR TagName, long MilliSec)
Quit	long Quit()
QuitProject	long QuitProject()
QuitProjectAndShutdown	long QuitProjectAndShutdown()
QuitProjectAndRestart	long QuitProjectAndRestart ()
Reload	long ReLoad(BSTR PageName, BSTR TagParam)
ReportDatabase	long ReportDatabase(BSTR ReportName)
ReportDatabaseEx	long ReportDatabaseEx(BSTR ReportName, BSTR RefTime)
ReportDialog	long ReportDialog()
ReportPrint	long ReportPrint(BSTR ReportName)
ReportPrintEx	long ReportPrintEx(BSTR ReportName, BSTR RefTime)
ResetStatistic	long ResetStatistic(BSTR TagName)
RunScript	void RunScript(BSTR ScriptName)
SaveDeskTopToBmp	void SavePageToBmp(LPCTSTR FilePathName)
SavePageToBmp	void SavePageToBmp(LPCTSTR FilePathName)
SendData	BOOL SendData(LPCTSTR PageName, VARIANT FAR& VariantData)
SetLogging	void SetLogging(BOOL TrueFalse)
SetSystemKeyDisable	void SetSystemKeyDisable(VARIANT_BOOL bDisable)
SetTagVal	long SetTagVal(BSTR TagVarName, VARIANT Value, VARIANT_BOOL bRet)
SetCopyFile	void SetCopyFile(LPCTSTR SourceFile, LPCTSTR NewFile)
ShowAlarmPage	long ShowAlarmPage(BSTR AlarmTag)
ShowCrossReference	void ShowCrossReference (BSTR TagName)
ShowFileDialog	BSTR ShowFileDialog(VARIANT_BOOL bOpen)
ShowHelp	long ShowHelp(BSTR HelpFile, long idx)

ShowLayer	void ShowLayer(LONG Index, VARIANT_BOOL bVisible)
,	
ShowNetworkStatus	long ShowNetworkStatus()
ShowRawDataInfo	long ShowRawDataInfo()
ShowTagView	void ShowTagView(BSTR TagName)
ShowVirtualKeyboard	void ShowVirtualKeyboard(void)
Sleep	void Sleep(long Milliseconds)
StartAlarmSound	long StartAlarmSound(void)
StopAlarmSound	long StopAlarmSound()
TaskBarShow	void TaskBarShow(VARIANT_BOOL bShow)
TaskBarAutoHide	void TaskBarAutoHide(VARIANT_BOOL bAutoHide)
TimeOutMsgBox	void TimeOutMsgBox(BSTR Msg, BSTR Title, long nSec)
	void UserAdd(LPCTSTR UserID, LPCTSTR UserPassword, LPCTSTR UserLevel,
UserAdd	LPCTSTR UserName, LPCTSTR UserDesc, LPCTSTR UserCompany,
UserAdd	LPCTSTR UserPhoneNo, LPCTSTR UserHPhoneNo, LPCTSTR UserMailAdd,
	VARIANT_BOOL UserSMSCheck, VARIANT_BOOL UserMailCheck)
UserDel	void UserDel(LPCTSTR UserID)
UserCommand1	long UserCommand1(long nCmd, BSTR Str1, BSTR Str2,
OserCommand	BSTR Str3, BSTR Str4)
UserLogOff	void UserLogOff(void)
UserLogOn	BOOL UserLogOn(BSTR UserID, BSTR PassWord)
UserPassChange	void UserPassChange(void)

9.10.2 Explanation of InfoU Graphic Function

AckAllAlarm Function	
Description	ACK all alarms.
Syntax	AckAllAlarm()

ChangePage Function	
Description	Change the graphic page.
	ChangePage(BSTR OldPageName, BSTR NewPageName)
	OldPageName: Save the previous page. The previous page can be designated "abc.ivd" or "*."
Syntax	The page designated as the previous page will be closed, and the page designated in
	NewPageName will be opened.
	NewPageName: Designate a name of the page that will be newly opened.
	If the user does not designate this dPageName (empty string), the current page will be closed.
Reference	If the user designates "*" to this dPageName, all pages will be closed.

However, if the page designated to this dPageName is a menu page, it will not be closed. The menu page can be designated on the 'Page settings' screen in this Graphic Editor.

ChangePageEx Function		
Description	Change the graphic page	
	ChangePage(BSTR OldPageName, BSTR NesPageName, BSTR TagParam)	
Syntax	OldPageName: It specifies the previous page. You can set the previous page as "abc.ivd" or "*". Then, the page that was set as the previous one is closed and the page specified in 'NewPageName' will be open. NewPageName: You can specify the file name of the page to open newly. OldPageName: In case you do not specify the page(empty string), the current page will be closed.	
	TagParam: In the template screen, you can specify the name of the tag to replace. If you do not specify the tag to replace, just specify the empty string("").	
	If you enter "*" into the 'OldPageName', all pages will be closed.	
	However, the page is set as the menu page in the 'OldPageName', it will not be closed.	
	You can specify the menu page in 'Page Configuration' of the 'Dynamic Property Settings' screen	
Reference	of the graphic editor.	
	OldPageName: It specifies the old page. You can set the old page as "abc.ivd" or "*". Then, the	
	page that was set as the old one is closed and the page specified in 'NewPageName' will be	
	open.	

ClosePage Function	
Description	Close the graphic page.
Syntax	ClosePage (BSTR PageName) PageName: Designate the page to be closed. It is available to designate with either "abc.ivd" or "*".
Reference	If the user designates with "*" in the PageName, all pages will be closed. However, if the page designated to this PageName is a menu page, it will not be closed. The menu page can be designated on 'Page settings' screen in this Graphic Editor

ExecuteCommand Function	
Description	Executes an external program.
Syntax	ExecuteCommand(BSTR PathName)
Reference	PathName: Designate the program name to be exeuted.

FindPage Function	
Description	Find the designated page name from the opened pages.
Syntax	FindPage(LPCTSTR PageName)
Reference	The page pointer value is returned in the form of variant type.

GetAllAlarmCount Function	
Description	It notifies you of the number of all occurring alarms.
Syntax	GetAllAlarmCount()

GetGraLSPath Function	
Description	It notifies you the paths where the screen pages are located.
Syntax	BSTR GetGraLSPath(void)

GetHistData	Count Function
	For the specified history model and tag, it informs you of the history data (time stamp, tag value
Description	status value, result value) as much as the number of history data that occurred in the request
	time.
	long GetHistDataCount(LPCTSTR ModelName, LPCTSTR TagName,
	LPCTSTR DataKind, double ReferenceTime, long DataCount,
	long Direction, VARIANT FAR* ResultCount, VARIANT FAR* ArrTimeStamp,
	VARIANT FAR* ArrDblTagVal, VARIANT FAR* ArrLongTagStatus,
	VARIANT FAR* ArrLongRets)
	ModelName: History of model name TagName: Name of tag
	DataKind: Data type (default: current value)
Syntax	Argumentable string "CURRENT","Cur"
	"CHANGE","Var"
	"MIN","Min"
	"MAX","Max"
	"MIN_TIME","MinTime"
	"MAX_TIME","MaxTime"
	"AVERAGE","AVG"
	"SUM","Total"
	"SAMPLING", "Sampling"
	"ON_COUNT","ON"

"RUN_TIME","OnTime" "CHANGE_COUNT", "ChgCount" "LAST_UPDATE", "FChgTime" ReferenceTime: Request time DataCount: Number of history data Direction: Direction or time sequence ResultCount: Result of number of history data ArrTimeStamp: Time stamp array ArrDblTagVal: Tag value array ArrLongTagStatus: Tag status array ArrLongRets: Result of history data Dim ModelName Dim TagName Dim DataKind Dim RefTime Dim ICount Dim IDir Dim ResultCount Dim TimeStamp Dim NumValue Dim Status Dim Result ModelName = "INV1_SEC" Reference TagName = "INV_1.1_AI_CT" DataKind = "CURRENT" RefTime = Now() ICount = 5 IDir = 1GetHistDataCount(ModelName, TagName, DataKind, RefTime, ICount, IDir, ResultCount, TimeStamp, NumValue, Status, Result) For count = 0 To ResultCount -1 MsgBox("NumValue = " + CStr(NumValue(count)) + " Status = " + CStr(Status (count))) Next

GetHistDataCountStr Function

	For the energial string history model and too it informs you of the history date
D	For the specified string history model and tag, it informs you of the history data
Description	(time stamp, tag value, status value, result value) as much as the number of history data that
	occurred in the request time.
	long GetHistDataCountStr(LPCTSTR ModelName, LPCTSTR TagName,
	LPCTSTR DataKind, double ReferenceTime, long DataCount,
	long Direction, VARIANT FAR* ResultCount, VARIANT FAR* ArrTimeStamp,
	VARIANT FAR* ArrDblTagVal, VARIANT FAR* ArrLongTagStatus,
	VARIANT FAR* ArrLongRets)
	ModelName: History of model name
	TagName: Name of tag
Syntax	DataKind: Data type (default: current value)
Gymax	ReferenceTime: Request time
	DataCount : Number of history data
	Direction: Direction or time sequence
	ResultCount: Result of number of history data
	ArrTimeStamp: Time stamp array
	ArrDblTagVal: Tag value array
	ArrLongTagStatus: Tag status array
	ArrLongRets: Result of history data
	Dim ModelName
	Dim TagName
	Dim DataKind
	Dim RefTime
	Dim ICount
	Dim IDir
	Dim ResultCount
	Dim TimeStamp
	Dim NumValue
D. C	Dim Status
Reference	Dim Result
	ModelName = "SOLAR_INFO"
	TagName = " EQINFO_DATE "
	DataKind = "CURRENT"
	RefTime = Now()
	ICount = 5
	IDir = 1
	·-··
	GetHistDataCountStr(ModelName, TagName, DataKind,

```
RefTime, ICount, IDir, ResultCount,TimeStamp, NumValue, Status, Result)
For count = 0 To ResultCount -1
   MsgBox("NumValue = " + CStr(NumValue(count)) + " Status = " + CStr(Status (count)))
Next
```

GetHistData	Period Function
	For the specified history model and tag, it informs you of the history data
Description	
	(time stamp, tag value, status value, result value) that occurred within a given period. long GetHistDataPeriod(LPCTSTR ModelName, LPCTSTR TagName, LPCTSTR DataKind, double FromTime, double ToTime, VARIANT FAR* ResultCount, VARIANT FAR* ArrTimeStamp, VARIANT FAR* ArrDblTagVal, VARIANT FAR* ArrLongTagStatus, VARIANT FAR* ArrLongRets)
	ModelName: History of model name
	TagName: Name of tag
	DataKind: Data type (default: current value)
	Argumentable string
	"CURRENT","Cur"
	"CHANGE","Var"
	"MIN","Min"
	"MAX","Max"
Syntax	"MIN_TIME","MinTime"
	"MAX_TIME","MaxTime"
	"AVERAGE","AVG"
	"SUM","Total"
	"SAMPLING", "Sampling"
	"ON_COUNT","ON" "RUN_TIME","OnTime"
	"CHANGE_COUNT","ChgCount"
	"LAST_UPDATE", "FChgTime"
	FromTime: Starting time
	ToTime: Ending time
	ResultCount: Result of number of history data
	ArrTimeStamp: Time stamp array
	ArrDblTagVal: Tag value array
	ArrLongTagStatus: Tag status array
	ArrLongRets: Result of history data

	Dim ModelName
	Dim TagName
	Dim DataKind
	Dim dFrom
	Dim dTo
	Dim ResultCount
	Dim TimeStamp
	Dim NumValue
	Dim Status
	Dim Result
Reference	ModelName = "INV1_SEC"
	TagName = "INV_1.1_AI_CT"
	DataKind = "CURRENT"
	dFrom = Now() -1
	dTo = Now()
	GetHistDataPeriod(ModelName, TagName, DataKind, dFrom, dTo, ResultCount, TimeStamp,
	NumValue, Status, Result)
	For count = 0 To ResultCount -1
	MsgBox("NumValue = " + CStr(NumValue(count)) + " Status = " + CStr(Status (count)))
	Next

GetHistDataPeriodStr Function	
Decementic	For the specified string history model and tag, it informs you of the history data
Description	(time stamp, tag value, status value, result value) that occurred within a given period.
	long GetHistDataPeriodStr(LPCTSTR ModelName, LPCTSTR TagName,
	LPCTSTR DataKind, double FromTime, double ToTime,
	VARIANT FAR* ResultCount, VARIANT FAR* ArrTimeStamp,
	VARIANT FAR* ArrStrTagVal, VARIANT FAR* ArrLongTagStatus,
	VARIANT FAR* ArrLongRets)
Syntax	ModelName: History of model name
	TagName: Name of tag
	DataKind: Data type (default: current value)
	FromTime: Starting time
	ToTime: Ending time
	ResultCount: Result of number of history data
	ArrTimeStamp: Time stamp array

	ArrDblTagVal: Tag value array
	ArrLongTagStatus: Tag status array
	ArrLongRets: Result of history data
	Dim ModelName
	Dim TagName
	Dim DataKind
	Dim dFrom
	Dim dTo
	Dim ResultCount
	Dim TimeStamp
	Dim NumValue
	Dim Status
	Dim Result
Reference	ModelName = "SOLAR_INFO"
	TagName = " EQINFO_DATE"
	DataKind = "CURRENT"
	dFrom = Now() -1
	dTo = Now()
	GetHistDataPeriodStr(ModelName, TagName, DataKind, dFrom, dTo, ResultCount, TimeStamp,
	NumValue, Status, Result)
	For count = 0 To ResultCount -1
	MsgBox("NumValue = " + CStr(NumValue(count)) + " Status = " + CStr(Status (count)))
	Next

Description	It notifies the user on the list of models registered in the history.
	long GetLoggingModelList(long lOutCount,VARIANT arrModelName,
Syntax	VARIANT arrModelDesc, VARIANT arrModelType,
	VARIANT arrArchivingCycle, VARIANT arrSegmentPeriod)
	Sub Text2_OnClick()
	Dim This : Set This = Text2
	'Declare variable
	Dim nCount'Number of registered models
	Dim ModelName() 'Model Name
	Dim ModelDesc()'Model Description
	Dim ModelType()'Model Type
	Dim ArchivCycle()'Collection cycle (return string: 20 seconds = 20ss, 30 minutes=30mm,
	hours=05hh, 36 months = 36MM)
	Dim SavePeriod()'Save period
	Dim ret
	Call 'Graphic Script function (ret value is undefined) ret = GetLoggingModelList (nCount, ModelName, ModelDesc, ModelType, ArchivCycle SavePeriod)
Reference	Dim strMessage
	'The call result into string
	strMessage = "Model Name/Model Description/Model Type/collection cycle/save period" strMessage = strMessage + vbCrlf
	For idx = 0 To nCount -1
	strMessage = strMessage+ ModelName(idx)
	strMessage = strMessage+ "/"
	EditBox1.Text = ModelName(idx) ' Use it to search tag by model name.
	strMessage = strMessage+ ModelDesc(idx)

```
strMessage = strMessage+ ModelType(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ ArchivCycle(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ SavePeriod(idx)
strMessage = strMessage + vbCrlf
Next
'Check the result
MsgBox strMessage
End Sub
```

GetLoggingTag Function	
Description	It notifies the user on the list of tags registered in the given history model.
Syntax	long GetLoggingTag(LPCTSTR ModelName, long lOutCount, VARIANT arrTagName, VARIANT arrTagType)
Reference	Sub Text3_OnClick() Dim This: Set This = Text3 Dim nCount'Number of registered models Dim TagName()'Tag name array Dim TagType()'Tag type array Dim ret Dim modelName modelName = EditBox1.Text Call 'Graphic Script function (ret value is undefined) ret = GetLoggingTag (modelName, nCount, TagName, TagType) Dim strMessage

'The call result into string
strMessage = "Tag name/Tag type"
strMessage = strMessage + vbCrlf
For idx = 0 To nCount -1
strMessage = strMessage+ TagName(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ TagType(idx)
strMessage = strMessage + vbCrlf
Next
'Check the result
MsgBox strMessage
End Sub

GetNoActionsTime Function	
Description	After setting auto-logout and then, it gets the time value (ms) that elapsed after Mouse Down in
	the graphic runtime.
Syntax	LONG GetNoActionsTime(void)

GetProjectPath Function	
Description	It gets the path of the currently running project.
Syntax	BSTR GetProjectPath(void)
	Dim PrjName As String
	PrjPath = GetProjectPath()
	If IRet <> 0 Then
Reference	MsgBox "GetProjectPath() False"
	Else
	MsgBox "GetProjectPath() OK " + PrjPath
	End If

GetRecentAlarmTagName Function	
Description	It gets the tag name of the alarm that has recently occurred.
Syntax	BSTR GetRecentAlarmTagName(void)

GetUserInfo	List Function
Decemination	Get the list of all users and individual information on each user.
Description	The user information will be used for SMS call or mail sending.
Syntax	long GetUserInfoList(long lOutCount, VARIANT rrUserID, VARIANT arrUserName, VARIANT arrDesc, VARIANT arrPassword, VARIANT arrUserLevel,
	VARIANT arrHPhoneNo, VARIANT arrPhoneNo, VARIANT FAR* arrMailAdd)
	Sub Text1_OnClick()
	Dim This: Set This = Text1
	'Declare variable
	Dim nCount'Number of registered users Dim UserIDs()'User ID
	Dim UserNames() 'User name
	Dim Descs()'User description
	Dim Passwords()'Password
	Dim UserLevels()'User level
	Dim HPhoneNos()'Mobile phone number
	Dim PhoneNos() 'Telephone number
Reference	Dim MailAdds() 'Mail address
	Dim ret
	Call 'Graphic Script function (ret value is undefined)
	ret = GetUserInfoList (nCount, UserIDs, UserNames, Descs, Passwords, UserLevels, HPhoneNos, PhoneNos, MailAdds)
	Dim strMessage
	'The call result into string
	strMessage = "UserID/UserName/UserDesc/Password/UserLevel/HP No/TeINO/Mail" strMessage = strMessage + vbCrlf
	For idx = 0 To nCount -1

```
strMessage = strMessage+ UserIDs(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ UserNames(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ Descs(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ Passwords(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ cstr(UserLevels(idx))
strMessage = strMessage+ "/"
strMessage = strMessage+ HPhoneNos(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ PhoneNos(idx)
strMessage = strMessage+ "/"
strMessage = strMessage+ MailAdds(idx)
strMessage = strMessage + vbCrlf
Next
'Check the result
MsgBox strMessage
End Sub
```

GetTagOFFSTR Function	
Description	Return 'off string' of the digital tag.
	GetTagOFFSTR(BSTR TagName)
Syntax	
	TagName: Designate a name of the tag.
	Return "off string "of the tag whose name is designated in TagName.
Reference	Off string of the tag is the string defined in the tag engineering, and it is only applied to
	the digital tag.

GetTagONSTR Function	
Description	Return On String of digital tag.
	BSTR GetTagONSTR(BSTR TagName)
Syntax	
	TagName: Designate a name of the tag.
	Return "on string" of the tag whose name is designated in TagName.
Reference	On string of the tag is the string defined in the tag engineering, and it is only applied to
	the digital tag

GetTagVal Function	
Description	Return the tag value.
	Variant GetTagVal(BSTR TagVarName)
Syntax	TagVarName: Designate a name of the tag. The tag name includes the field name of the tag. Ex: "TagVarName:FieldName"
	The items listed in the tag selection dialogue can be used as the field name. For the details, see
	'Tag variable' described in the next clause.
	Return the designated tag value in a variant type.
Reference	Since the value of the returned tag is in a variant type, the type of the returned value should be
	used for the inspected number in order to use this appropriately.
	To inspect the type of the returned value, use IsNull(variant return value), IsEmpty(variant return
	value) or VarType(variant return value) functions. For more details on how to use these
	functions, see the MS VB Script manual or relevant appendix. If the type of returned variant value
	is null, it means it is in a bad status, that is, the tag value is not normal. If it is empty, it means
	there is no tag, tag property does not exist or it cannot get any tag value because of the system
	error.

GetTagValMAX Function	
Description	Return the maximum value of the tag.
	Variant GetTagValMAX(BSTR TagName)
Syntax	
	TagName: Designate a name of the tag.
Reference	The maximum value of the designated tag is returned in a variant type.

GetTagValMIN Function	
Description	Return the maximum value of tag.

	Variant GetTagValMAX(BSTR TagName)
Syntax	
	TagName: Designate a name of the tag.
Reference	The minimum value of the designated tag is returned in a variant type.

GetUnAckAlarmCount Function	
Description	It informs you the number of unacknowledged alarms.
Syntax	GetUnAckAlarmCount()

GetUnRecoverAlarmCount Function	
Description	It informs you the number of unrecovered alarms.
Syntax	GetUnRecoverAlarmCount()

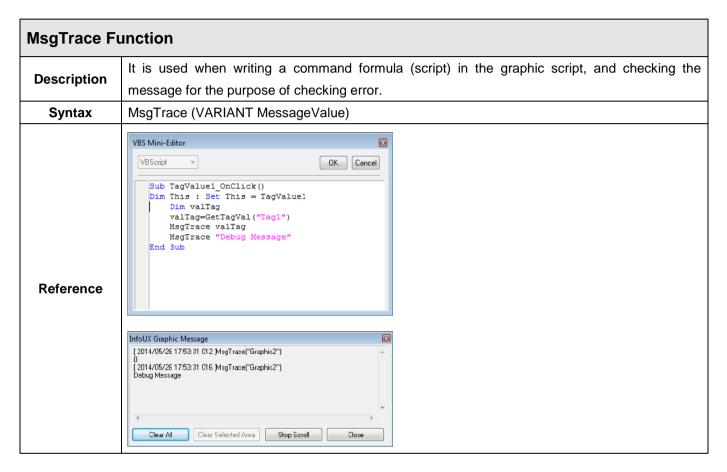
GetUserID Function	
Description	If it is called in the graphic runtime, return the ID of the user who is currently logged on.
Syntax	BSTR GetUserID()
Reference	Return the ID of the user logged on, and if there is no user logged on, the string with the length
	0 is returned.

GetUserLevel Function	
Description	If it is called in the graphic runtime, return the priority of the user currently logged on.
Syntax	LONG GetUserLevel()
	The level of the user (As the priority of the user authority, there are level 1 through level 255)
Reference	currently logged on is returned, and if there is no user logged on, it returns the default level 255
	(the lowest one).

HardCopy Function	
Description	Print the entire screen in the main window area of the Graphic runtime program.
Syntax	HardCopy()
Reference	Use the printer set up with default values.

HolidaySet Function	
Description	Show the setting screen window to set up holidays in the graphic runtime program.
Syntax	HolidaySet()

IsPageOpen Function	
Description	Inspect whether the designated page name is opened in the graphic runtime program.
Syntax	IsPageOpen(LPCTSTR PageName)
Reference	Return whether the designated file name is opened.



OpenPage Function	
Description	Open the graphic page.
	OpenPage(BSTR PageName, BSTR TagParam)
Syntax	PageName : Designate a name of the page to be opened.
	TagParam : Designate tags to be replaced on the template screen. If there is no tag to be replaced,
	designate empty string (" ").
	OpenPage "Panel_GIPAM.ivd', "\$MACHINE1=WB_EHV04, \$MACHINE2=WB_EHV05'
Reference	While opening "Panel_GIPAM.ivd" file, it converts the \$MACHINE1 tag or string into WB_EHV04, and \$MACHINE2 tag or string into WB_EHV05.' The template screen can be operated by using this function.

OpenPageEx Function	
Description	Open the graphic page.
Syntax	OpenPageEx(VARIANT X,VARIANT Y, VARIANT cX, VARIANT cY, BSTR PageName, BSTR
	TagParam)
Reference	The usage method is same as OpenPage Function, and the location to be opened can be designated.
	This function is not operated at local, and this supports to designate the location and size of a new page.
	The function which handles events about the object at HTML of web page should be realized.

OpenPageObject Function	
Description	Open the graphic page and mark the designated object.
	OpenPageObject(BSTR PageName, BSTR TagParam, BSTR ObjectName)
Symtox	PageName : Designate a name of the page to be opened.
Syntax	TagParam : Designate tags to be replaced on the template screen. If there is no tag to be replaced,
	designate empty string (" ").
	ObjectName: The name of the object to be marked

PlaySound Function		
Description	Create the sound.	
	PlaySound(BSTR WaveFile)	
Syntax	Syntax	
	WaveFile: This is the name of a sound file. It should be designated with the path.	

PulseOff Function	
Description	As the pulse (msec units) which comes to give the tag which is designated pulse off outputs.
Syntax	PulseOff(BSTR TagName, long MilliSec)

PulseOn Function	
Description	As the pulse (msec units) which comes to give the tag which is designated pulse on outputs.
Syntax	PulseOn(BSTR TagName, LONG MilliSec)

Quit Function	
Description	Quit the graphic runtime program.
Syntax	Quit()
Reference	The graphic runtime program is terminated.

QuitProject Function	
Description	Close the current project, and quit the InfoU monitoring system.
Syntax	QuitProject()
Reference	The current InfoU project is terminated and all of the processes are ended.

QuitProjectAndShutdown Function	
Description	Close the current project, and quit the InfoU monitoring system. Then shut down Windows system
Syntax	QuitProject()
Reference	The current InfoU project is terminated and all of the processes are ended.

QuitProjectAndRestart Function	
Description	Close the current project, and quit the InfoU monitoring system. Then restart Windows system
Syntax	QuitProject()
Reference	The current InfoU project is terminated and all of the processes are ended.

SaveDeskTopToBmp Function	
Description	It captures the currently running graphic runtime frame and saves it to the specified path in the
	format of BMP.
	void SaveDeskTopToBmp(LPCTSTR FilePathName)
Syntax	
	FilePathName

SavePageToBmp Function	
Description	It captures the currently selected graphic runtime page and saves it to the specified path in the format of BMP.
Syntax	void SavePageToBmp(LPCTSTR FilePathName) FilePathName

ReLoad Function	
Description	Load the current page again.
Syntax	ReLoad(BSTR PageName, BSTR TagParam)
	The usage method of the function is same as OpenPage()Function. The difference is that the designated
Reference	page is reopened in the same location with the same screen size instead of the currently loaded page.
	If the PageName is not designated, the currently opened page is reopened.

ReportDatabase Function	
Description	Create a report
Syntax	ReportDatabase(BSTR ReportName)

ReportDatabaseEx Function	
Description	Create a report for the designated period.
Syntax	ReportDatabaseEx(BSTR ReportName, BSTR RefTime)

ReportDialog Function	
Description	The report is created at the designated time.
Syntax	ReportDialog()
Reference	A screen is popped up to show the type of the report set up for the current project and the list of the created reports for searching and printing.

ReportPrint Function	
Description	Print a report.
Syntax	ReportPrint(BSTR ReportName)

ReportPrintEx Function	
Description	Print a report.
Syntax	ReportPrintEx(BSTR ReportName, BSTR RefTime)

ResetStatistic Function	
Description	Reset the tag's statistical value.
	ResetStatistic(BSTR TagName)
Syntax	
	TagName: Reset a tag whose statistical data is reset.
Reference	The statistical data is reset only for the tag designated as statistical tag.

RunScript Function		
Description	Execute a script that has been written in InfoUD.	
	RunScript(BSTR ScriptName)	
Syntax	Syntax	
	ScriptName: The script name written in InfoUD.	

SendData Function	
Description	Sent the factor value to the page name designated by the graphic runtime program.
Syntax	SendData(LPCTSTR PageName, VARIANT FAR& VariantData) OnReceiveData
Reference	The factor value is delivered in a variant type to the Event Function OnReceiveData of the designated page name.

SetLogging Function	
Description	It should be logged on to the 'Event' for the change (control) in tag values and tag variable values in InfoU

	graphic runtime.
	However, when any specific job is implemented in the specific system, this function is available for
	controlling or modifying tag variable values without any need to log onto the 'Event.'
	After implementing SetLogging(False), execute SetLogging(True) for the safe operation record of the
	system. If SetLogging(False) is implemented, the event logging for the control is not performed until
	SetLogging(True) is implemented.
Syntax	SetLogging(BOOL TrueFalse)

SetSystemKeyDisable Function		
Description	Set up Windows SystemKey lock/unlock.	
	void SetSystemKeyDisable(VARIANT_BOOL bDisable)	
Syntax	Syntax	
	bDisable: SystemKey Disable Flag	

SetCopyFile Function	
Description	Copy (controls) a tag value or a tag variable value.
Court con	void SetCopyFile(LPCTSTR SourceFile, LPCTSTR NewFile)
Syntax	SourceFile: Copy the file path name NewFile: New file path name

SetTagVal Function	
Description	Set up (controls) a tag value or a tag variable value.
	SetTagVal(BSTR TagVarName, VARIANT Value, VARIANT_BOOL bRet)
Syntax	TagVarName: Tag name or tag variant value.
	Value: Control value(tag name intended to change)
	bRet: Return control(True) or No-return control (False)
	Since this is a control function to change tag values, the description on the control is recorded upon the
Reference	occurrence of any event.
	For more details on the tag variable, see the 'tag variable' provision of the manual.

ShowAlarmPage Function	
Description	Open an Alarm page. The Bin\GraSys\SysAlarmPage.ivd file of the director where InfoU is installed (ex: :\InfoU\Bin\GraSys\SysAlarmPage.ivd) is opened as a default alarm page.

	16.1
	If the user wants to change the default alarm pgae, he/she may draw the "SysAlarmPage.ivd" page with the
	same name (saved in GraLS of the project) in the relevant project, then "SysAlarmPage.ivd" file of the
	project will be opened.
	ShowAlarmPage(BSTR AlarmTag)
Syntax	AlarmTag: The tag name is designated, then it finds the most recent alarm for the tag, and displays it on
	the alarm screen.

ShowCrossReference Function	
Description	Show the cross reference for the designated tag.
	ShowCrossReference(BSTR TagName)
Syntax	
	TagName: Designate a name of the tag.

ShowFileDialog Function		
Description	It shows the open and save dialog box for common window file.	
	BSTR ShowFileDialog(VARIANT_BOOL bOpen)	
Syntax	Syntax	
	bOpen: It specify the dialog box of open and save file	

ShowHelp Function	
Description	Open the help file.
	ShowHelp(BSTR HelpFile, long idx)
Syntax	
	HelpFile and idx parameter are not currently used. (Reserved parameters for expanding function)

ShowLayer Function	
Description	Open the layer file.
0	void ShowLayer(LONG Index, VARIANT_BOOL bVisible)
Syntax	Index: Layer index bVisible: Whether to show selected layer

ShowNetworkStatus Function	
Description	Open the screen to show the list and communication status of the device (station)
Syntax	ShowNetworkStatus()

ShowRawDataInfo Function	
Description	Open the screen to display the information of raw data in communication.
Syntax	ShowRawDataInfo

ShowTagView Function		
Description	Show the tag browser for the designated tag.	
	ShowTagView (BSTR TagName)	
Syntax	Syntax	
	TagName: Designate a name of the tag.	

ShowVirtualKeyboard Function	
Description	Shows the virtual keyboard window.
Syntax	ShowVirtualKeyboard()

Sleep Function	
Description	Delay the implementation of the function for the designated time.
Syntax	Sleep(long dwMilliseconds)

StartAlarmSound Function	
Description	It is the command to generate the alarm sound when an alarm occurs in the InfoU.
Syntax	StartAlarmSound()

StopAlarmSound Function	
Description	If the sound of alarm occurs, this command stops the sound.
Syntax	StopAlarmSound()

TaskBarAutoHide Function	
Description	Select whether applying the auto hide Windows task bar.
Syntax	void TaskBarAutoHide(VARIANT_BOOL bAutoHide)

TaskBarShow Function	
Description	Select whether applying the display Windows task bar.
Syntax	void TaskBarShow(VARIANT_BOOL bShow)

TimeOutMsgBox Function	
Description	Pop up the message box to be displayed for the designated time.
Syntax	TimeOutMsgBox(BSTR Msg, BSTR Title, long nSec)

UserAdd Function	
Description	Command for add users.
	void UserAdd(LPCTSTR UserID, LPCTSTR UserPassword, LPCTSTR UserLevel,
	LPCTSTR UserName, LPCTSTR UserDesc, LPCTSTR UserCompany,
	LPCTSTR UserPhoneNo, LPCTSTR UserHPhoneNo, LPCTSTR UserMailAdd,
	VARIANT_BOOL UserSMSCheck, VARIANT_BOOL UserMailCheck)
	UserID
	UserPassword
	UserLevel
Syntax	UserName
	UserDesc
	UserCompany
	UserPhoneNo
	UserHPhoneNo
	UserMailAdd
	UserSMSCheck
	UserMailCheck

UserCommand1 Function		
Description	This function is not operated at local, and it is reserved to be used for specific purpose by realizing the function that sends commands to the graphic page and handles events for the object at the HTML of the	
	web page.	
Syntax	UserCommand1(long nCmd, BSTR Str1, BSTR Str2, BSTR Str3, BSTR Str4)	

UserDel Function		
Description	It deletes the user ID from the user list	
Syntax	void UserDel(LPCTSTR UserID)	

UserLogOff Function		
Description	Log off the logged on user.	
Syntax	UserLogOff(void)	

UserLogOn Function		
Description	Log on the registered user.	
Syntax	UserLogOn(BSTR UserID, BSTR PassWord)	

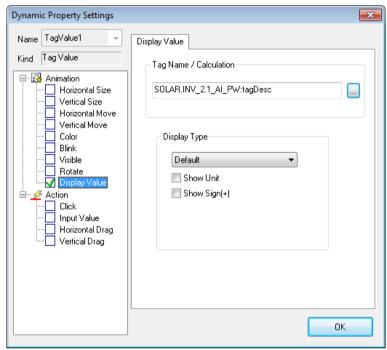
UserPassChange Function		
Description	Description It shows the window to change the user's password.	
Syntax	void UserPassChange(void)	

9.11 Tag Variable

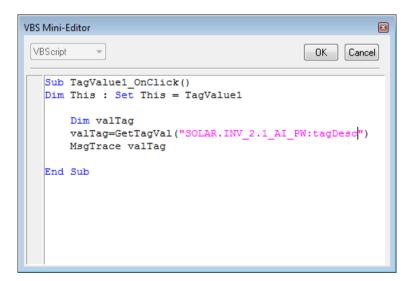
Tag variable is referred to variable or invariable related to tag defined by database. The tag variable can be referred by the same way of "Tag name: Tag variable name.".

9.11.1 Examples Used by the Dynamic Property Settings for Graphic

The functions that are available in the script of the graphic editor are composed of the standard VB script function and graphic function of the InfoU. The types of the graphic functions of the InfoU are as shown in the below table.



9.11.2 Examples of Using in Graphic Script



Tag Variable	Descriptions	Support	Remarks
tagValue	It means the current value of tag. It is the same as the	Read/Write	Analog/Digital/
	tag's name is used only		0
	(If only the tag's name is inputted, the default value		String
	appears)		
tagName	Tag name		
tagld	Tag unique index(long type)	Read	
tagDesc	Tag description (String)	Read/Write	
tagKind	Classification of system tags 0 : Normal tag 1 : System tag	Read	
tagType	Tag type 1:Analog, 2:Digital, 3:String, 4:Structure, 5:Block, 6:Groupp	Read	
	It is the type index of the structure tag. It indicates the device type and is used to represent the tag	Read	
structTagTypeId	information of the device for LS ELECTRIC only.		
Structragrypeid	0: The general tag does not need this information.		
	1 or higher: If it is structure tag, this information		
	must be filled.		
displayPrecision	It displays the decimal places. /String length	Read/Write	
tagPriority	Tag's priority value (Control ranking: 1~255)		
engValueType	It shows a type of industrial data value. 1: bool 2: char 3: short 4: long 5: longlong 6: unsigned char 7: unsigned short 8: unsigned long 9: ulonglong 10:float 11:double 101:string type 201:raw type More than 1000:Used for structure tag type.	Read	
devValueType	It shows device value type. 1: bool 2: int8 3: int16 4: int32 5: int64 6: uint8	Read	I/O Analog/Digital/ String

	7 : uint16			
	8 : uint32			
	9 : uint64			
	10: float			
	11: double			
	12: bcd_8			
	13: bcd_16			
	14: bcd 32			
	15: bcd_64			
	16: ubcd_8			
	17: ubcd_16			
	18: ubcd_32			
	19: ubcd_64			
	20: bit_1			
	21: bit 2			
	22: bit_3			
	23: bit_4			
	101:string			
	201: raw			
engUnitId	String index showing the unit of Analog Tag	Read	Analog	
onStrld	String index displayed when digital tag is 1	Read	Digital	
offStrld	String index displayed when digital tag is 0	Read	Digital	
onotria	Delimiter for tag members	Read	Analog/Digital/	
containerId	Parent tag's index when it is a member of structure tag	rtodd	String	
	Memory tag calculation flag	Read	Memory Tag	
memTagExprFlag	0 : Memory Tag is not calculated		Analog/Digital	
	1 : Memory Tag is calculated	Read	MamanaTag	
memTagExpr	Expression of memory tag	Reau	Memory Tag Analog/Digital	
	Expression cycle of memory tag	Read	Memory Tag	
memTagExprCycle			Analog/Digital	
initVal	Tag's initial value	Read	Analog/Digital/	
IIIIVal			String	
convertRule	Method to convert raw data to industrial data	Read/Write	I/O Analog Tag	
	0:None, 1:Ratio/Bios, 2:Scale			
rawMin	Minimum value of tag's raw data	Read/Write		
rawMax	Maximum value of tag's raw data	Read/Write	I/O Analog Tag	
dataMin	Minimum value of tag's industrial data	Read/Write	Analog Tag	
dataMax	Maximum value of tag's industrial data	Read/Write	Analog Tag	
dataEngRatio	Ratio value to change tag values	Read/Write	I/O Analog Tag	
dataEngBias	Bias value to change tag values	Read/Write	I/O Analog Tag	

valueDeadBand	DeadBand value (%)	ReadWrite	I/O Analog Tag	
alarmDelayTime	Alarm delay time(millisecond) Read Analo		Analog/Digital	
alarmDeadBand	Alarm Deadband (%)	Read/Write	Analog Tag	
	Alarm process kinds. It is shown in each bit.	Read/Write	Analog/Digital	
	[Analog]			
	0000 0000 0000 0001 : Boundary value(HH)			
	0000 0000 0000 0010 : Boundary value(HI)			
	0000 0000 0000 0100 : Boundary value(LO)			
	0000 0000 0000 1000 : Boundary value(LL)			
	0000 0000 0001 0000 : Changed amount			
alarmKind	0000 0000 0010 0000 : Main distance			
	0000 0000 0100 0000 : Sub distance			
	[Digital]			
	0000 0001 0000 0000 : OFF			
	0000 0010 0000 0000 : ON			
	0000 0100 0000 0000 : ON->OFF			
	0000 1000 0000 0000 : OFF->ON			
	0001 0000 0000 0000 : When changed			
	Value to show alarm level	Read	Analog/Digital	
alarmLevel	0 : None(Default Value).			
alarmGenStrId	1~10: Actual alarm level String index displayed when alarm is generated	Read	Analog/Digital	
alarmRcvStrld	String index displayed when alarm is recovered		Analog/Digital	
alarmHH	Analog Tag HIHI Alarm boundary value	Read/Write	Analog/Digital	
alarmHI	Analog Tag HI Alarm boundary value	Read/Write	Analog	
	Analog Tag LO Alarm boundary value		Analog	
alarmLO	Analog Tag LOLO Alarm boundary value	Read/Write Read/Write	Analog	
alarmLL	Absolute value of the alarm's changed value		Analog	
alarmChangeValue	Rule to process distance alarm	Read/Write	Analog	
alarmGapRule	0: Not used, 1: Absolute value used, 2:Relative value	ReadWrite	Analog	
	used(designating tag)			
alarmGapBaseValue	Base value of alarm distance(Absolute value)	Read/Write	Analog	
alarmGapBaseTagld	Tag index as base value of alarm distance	Read/Write		
alarmGapMain	Main fluctuation value of alarm distance Read/Write Analog		Analog	
alarmGapSub	Sub fluctuation value of alarm distance	Read/Write	dWrite Analog	
usrDefAlarmStr1Id	String 1 index of alarm defined by the user	Read	Analog/Digital	
usrDefAlarmStr2ld	String 2 index of alarm defined by the user	Read		
usrDefAlarmStr3ld	String 3 index of alarm defined by the user	Read		
usrDefAlarmStr4Id	String 4 index of alarm defined by the user	Read		
stationId	Station index connected to tag	Read	I/O Tag	
Julionia	1:Memory Tag, More than 2:Station index			

comAddr	Tag I/O address	Read	I/O Tag
stationName	Station name connected to tag		
devld	Device index Read		I/O Tag
devName			I/O Tag
driverName	Driver name	Read	I/O Tag
engUnitStr	String showing the unit of tag	Read	Analog
onStr	String index displayed when digital tag is On(1)	Read	Digital
offStr	String index displayed when digital tag is Off(0)	Read	Digital
alarmGenStr	String index displayed when alarm is generated	Read	Analog/Digital
alarmRcvStr	String index displayed when alarm is recovered	Read	Analog/Digital
alarmGapBaseTagName	Base tag name of distance alarm	Read	Analog
pOnOffStr	String index showing On when digital tag is On while showing Off when digital tag is OFF (String)	Read	Digital
pAlarmEn	Whether to process tag alarm	Read/Write	Analog/Digital
pStatEn	Whether to process tag statistics value	Read/Write	Analog/Digital
pAlarmEnHH	Whether to process HH alarm	Read/Write	Analog
pAlarmEnHI	Whether to process HI alarm	Read/Write	Analog
pAlarmEnLO	Whether to process LO alarm	Read/Write	Analog
pAlarmEnLL	Whether to process LL alarm	Read/Write	Analog
pAlarmEnCHG	Whether to process changed alarm	Read/Write	Analog
pAlarmEnMAIN	Whether to process main distance alarm	Read/Write	Analog
pAlarmEnSUB	Whether to process sub distance alarm	Read/Write	Analog
pAlarmEnDIG	Process kind of digital alarm 1:Off, 2:On,3:On->Off,4:Off->On,5:When changed	Read/Write	Digital
tagStatus	Information on tag status (Bit)	Read	Analog/Digital/
pTagStatus	Information on tag status (0:Normal, 1:Alarm, 2:bad)	Read	String

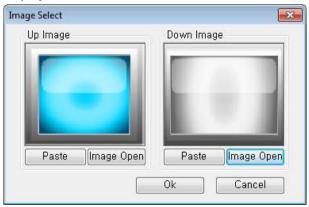
9.12 Objects Using Images

There are pictures, image buttons, and image lamps for the objects using various formats of images. You can specify the layout types and transparent color commonly. In the case of a picture object, you can use a clipboard and can specify storage method. The image button/image lamp provides the storage method based on image pixel data. In the case of the picture/image button object, you can specify the Push button style. In addition, after selecting the objects on the screen of the objects using images, you can change images in the sub-property at once.

9.12.1 Button Image

The image button object acts as the Push button. If you select this object and draw on the screen, the below setting window will be displayed. Then, you can just choose the desired image. The image can be reset by using [Sub-property] of the menu.

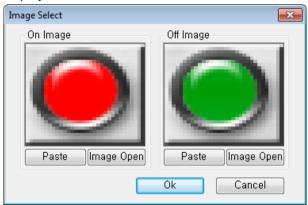
- (1) Up Image: Image that you want to display when dragging the mouse up.
- (2) Down Image: Image that you want to display when dragging the mouse down.
- (3) Library: If you click this button, the image selection window of 'InfoU installation path\bin\ PicImages' path will be displayed.
- (4) Image Open: If you click this button, the image selection window of GraLS path of the relevant project will be displayed.



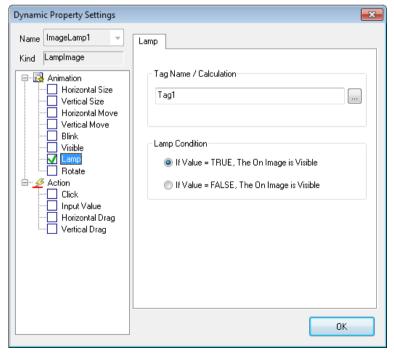
9.12.2 Lamp Image

The image lamp object acts as the lamp according to the tag value. If you select this and draw on the screen, the below setting window will be displayed. You can choose the desired image for each item and the image can be reset by using [Sub-property] of the menu.

- (1) On Image: Image that you want to display in case of Mouse-On
- (2) Off Image: Image that you want to display in case of Mouse-Off
- (3) Library: If you click this button, the image selection window of 'InfoU installation path\bin\ PicImages' path will be displayed.
- (4) Image Open: If you click this button, the image selection window of GraLS path of the relevant project will be displayed.



The figure shown blows the setting window for the lamp dynamic property. Depending on the input tag value during runtime, On Image or Off Image is displayed.



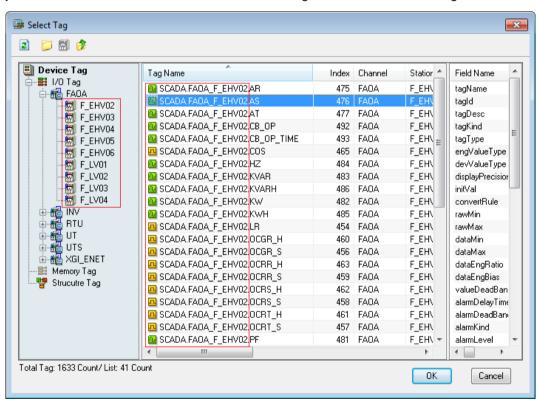
9.13 Smart Symbol

When configuring the dynamic properties of objects individually, the smart symbol aims at reuse of each tag name by arranging the alternative string for structure tags or the specific information excluding the member of a group in the almost same way as the instance method. The merit of the smart symbol is to define the object only once. Namely, you can just specify the alternative string every time you put the registered smart symbol on the page.

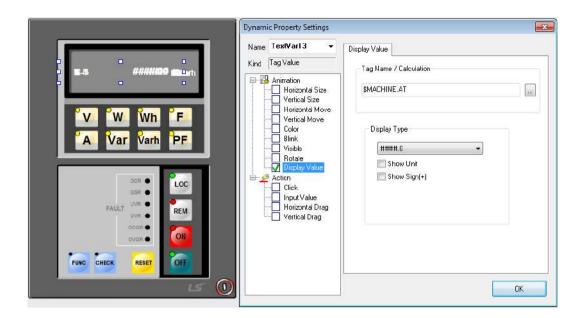
9.13.1 Creating Smart Symbol

A user can draw a desired picture like a regular object. During tag mapping of the dynamic properties of each object, it maps the structure tags or the specific information excluding the member of a group into the alternative string. For smart symbolization, you need to put \$ in front of the string to be replaced. If there is no \$ separator, you cannot use the window to set the smart symbol instance.

The figure shown blows the tag management of engineering. As shown in a blue mask, the tag name is composed of communication channel + station + member. The member name is repeated according to fixed rules so you can just convert communication channel + station string into the alternative string.

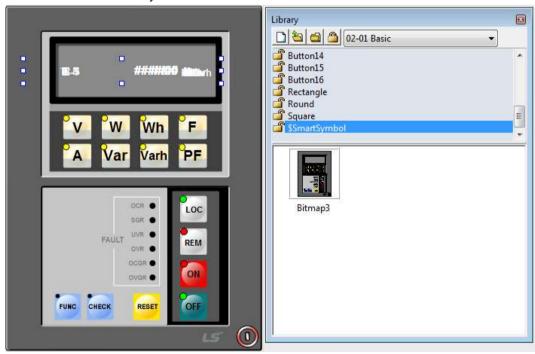


The below figure shows the example of mapping the tag name of the display value dynamic property into the alternative string (communication channel + station-> \$GIMAC) + member. (The remaining dynamic properties are also the same in usage.)



9.13.2 Registering and Importing the Smart Symbol in the Library

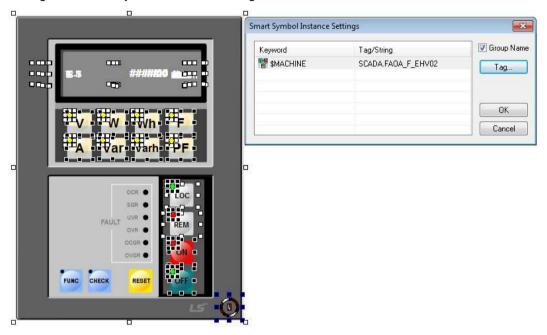
For registration, you can just copy/paste the object made with smart symbol to the library or drag & drop it as if you register general symbols. To use the smart symbol, if you copy/paste the smart symbol to the page or drag & drop it, the smart symbol instance setting window will be displayed. You cannot use the smart symbol setting window for items other than smart symbols.



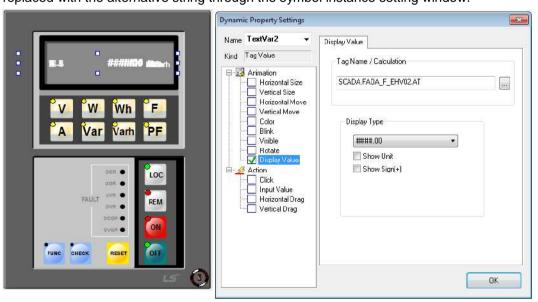
9.13.3 Smart Symbol Instance Settings

In order to import smart symbols registered in the symbol library to the relevant page and apply them to the runtime, you need to change the keywords of smart symbols into the alternative string by using the smart symbol instance setting window.

If there is no separator \$ in front of the first letter of the keyword, it cannot be displayed in the smart symbol instance setting window. The figure shown blows the process converting the keywords into the alternative string through the smart symbol instance setting window.



- (1) Keyword: It shows the list of strings (keywords) to be replaced, which are found in the smart symbol object.
- (2) Alternative string: Enter the string to replace the corresponding keyword.
 The below figure shows the changes in the tag name of dynamic properties of each object after being replaced with the alternative string through the symbol instance setting window.



9.14 Animation Editor

The InfoU animation editor is the animation editor program to display the monitoring screen more vividly by configuring different images with the multi frame without vexatious processes such as program download or installation. The InfoU animation editor provides various file formats (BMP, JPG, GIF, PNG, and TIF) to add/insert graphics but for the file format to read/save, TIF supporting the multi-frame is available only. You can easily add, replace and delete a number of image frames. The 'Preview' function of milliseconds is also provided

9.14.1 Execution and Composition of the Animation Editor

If you select [Tool] → [Animation Editor] in the menu, the below animation editor window will be displayed.

The animation editor is the tool to edit and create animation picture objects, which is composed of [Open],[Save],[Add],[Insert],[Delete],[Delete All],[Paste],[Forward],[Backward],[Start/Stop].

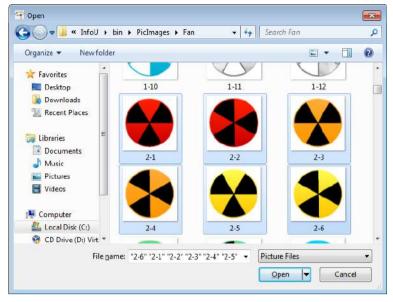


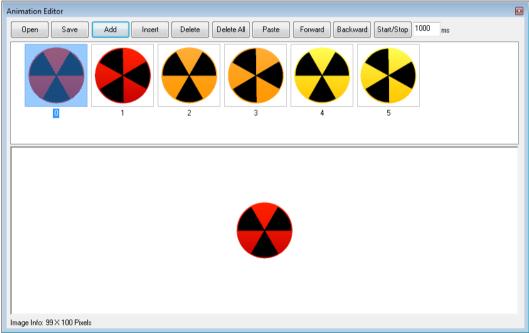
9.14.2 Creation of Animation

First of all, you need to prepare several image files with the same specification (width, height) or object to be used for each frame in the InfoU graphic editor. Generally, if the individual image and object has different sizes, image distortion may occur.

(1) Add Frame

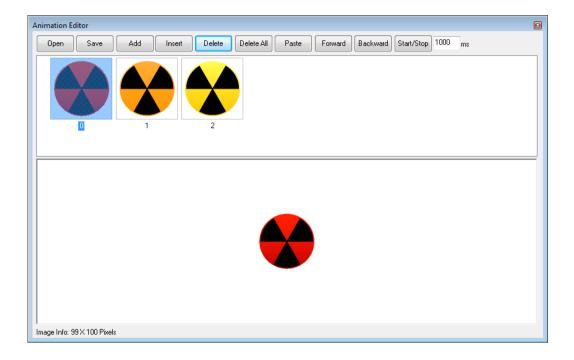
You can select several images with the [Add] button and add them to the frame or insert the image into the frame of the relevant sequence with the [Insert] button. To add the InfoU object to the frame, select the [Paste] button in a clipboard.





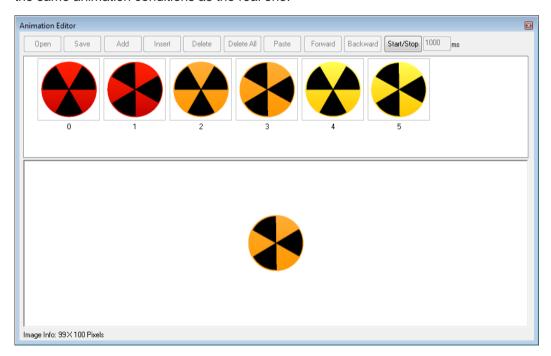
(2) Delete and Move Frame

To delete the whole frames, you can use the [Delete All] button. To delete the frame individually, after selecting the frame, press the [Delete] button. If you want to change the order of animated frames, you can use the [Forward] and [Backward] button.



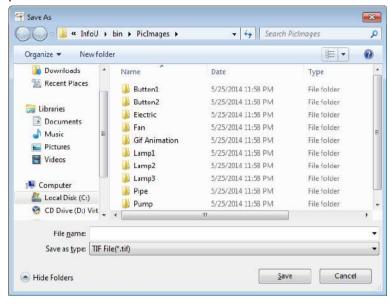
(3) Preview

If you select the thumbnail image of the frame, you can see the information on the width, height of the frame image. After specifying the speed (millisecond), if you select the [Start/Stop] button, you can make preview the same animation conditions as the real one.



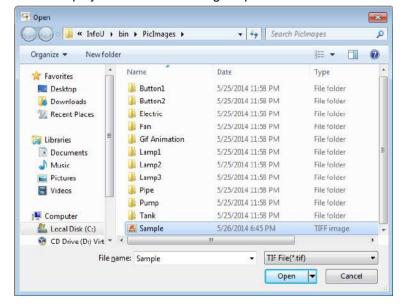
(4) Save (TIF)

If you select the [Save] button, the below dialog box where you can enter the file name to save will be displayed. After entering the file name, if you select the 'Save' button, the current animation file will be saved as the input name. For the format to save the graphic file TIF is available only and each frame image is preserved as it is.



(5) Open (TIF)

If you select the [Open] button, the below dialog box to open the file will be displayed. The available format to import the graphic file is TIF only. After selecting the file, if you press the 'Open' button, the animation frames will be displayed. Each frame image is preserved as it is and it can be added / edited.



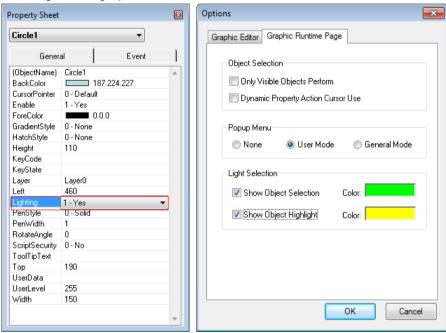
9.15 Lighting Function

It is the function to batch-control the tags mapped for the selected objects or highlight the objects with the same mapping ag by providing multi-selection of objects and highlight function in the graphic runtime.

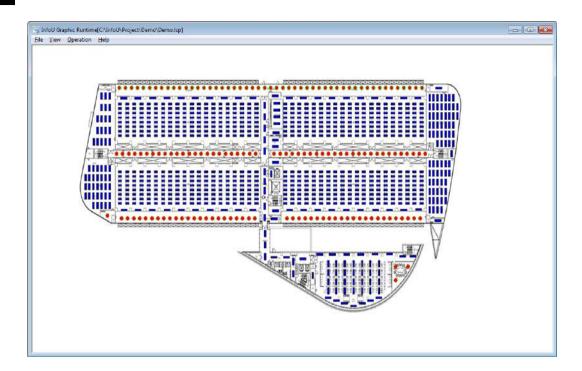
9.15.1 Object Selection Settings in the Graphic Runtime

Set the lighting property as 'Yes' in general property window of the object. Then, in the graphic runtime page tab of [Tools] → [Options], select 'Show Object Selection' and 'Color'. In the graphic runtime, multi-selection for the specified color is possible. If you set the popup menu mode as 'User Mode', you can control tags in a lump.

* Settings in the graphic editor



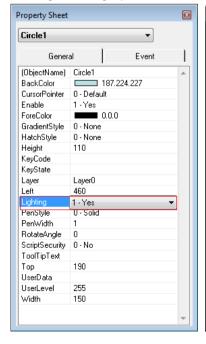
^{*} Object selection in the graphic runtime

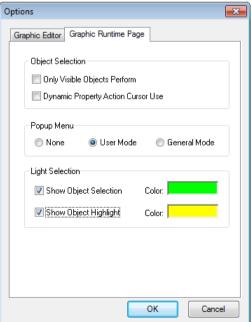


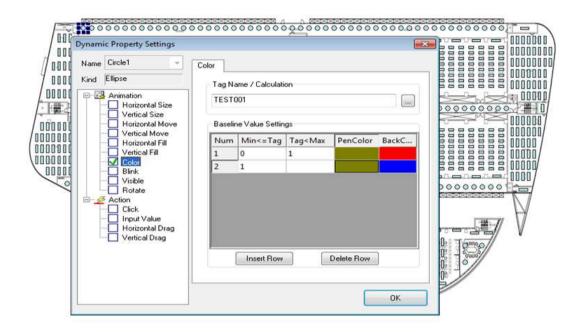
9.15.2 Object Highlight Settings in the Graphic Runtime

Set the lighting property as 'Yes' in general property window of the object. In the color section of the dynamic property setting window, after setting tag, then, in the graphic runtime page tab of [Tools] \rightarrow [Options], select 'Show Object Highlight' and 'Color'. It is the function to extract the mapped tag from the color dynamic property of the object selected by moving the mouse in the graphic runtime and then, to highlight the mapped objects with the same tag on the screen.

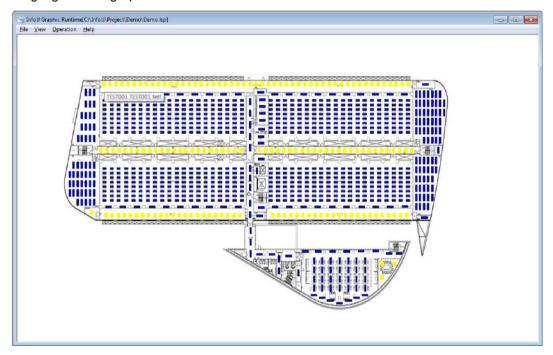
* Settings in the graphic editor







*Highlight in the graphic runtime



9.16 Text Table Function

String is configured as a table, and it can be displayed on the process screen through objects providing text table functions such as table text objects. To use a string in a text table, you need to specify a table number, a row number, and a column number. The table number and row number can be set in the corresponding object, and the column number can be set in the text table editor.

9.16.1 Text Table Editor

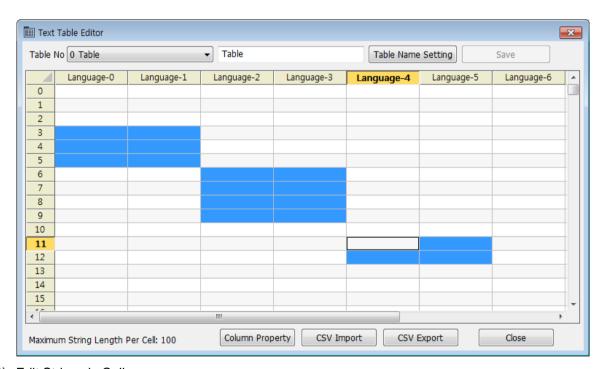
User can Select [Tools] \rightarrow [Text Table Editor] in the menu to display the Text Table Editor. Up to 10 text tables(0~9) can be created, and each text table has 5001 rows(0~5000) and 10 columns(0~9)

(1) Edit String

Text Table Editor provides text table functions that can be easily selected, inserted, deleted, and modified via mouse or keyboard

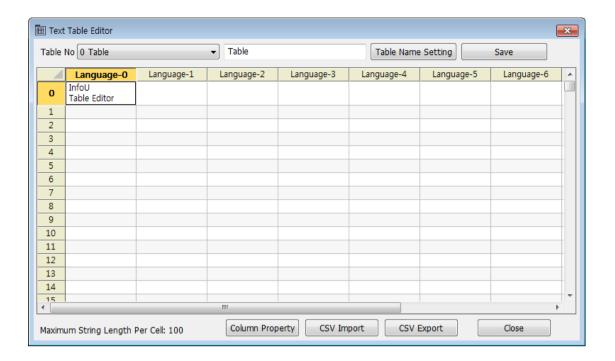
1) Select Cells

You can select entire cells, select rows, select columns, and select arbitrarily



2) Edit Strings in Cells

User can directly enter and modify string in a cell, or do it from the clipboard. Press Ctrl + Enter to switch to next line and create multi-lined string.

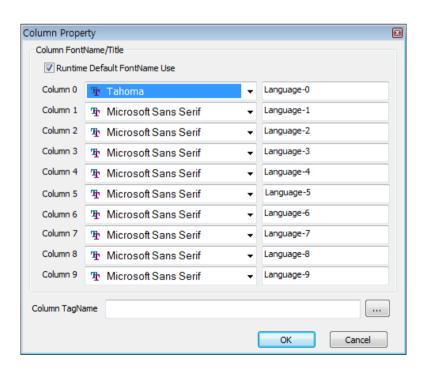


(2) Column Property

Column Property is set separately for each column and is applied to all text tables. Click [Column Property] to open property window.

1) Column Font Name

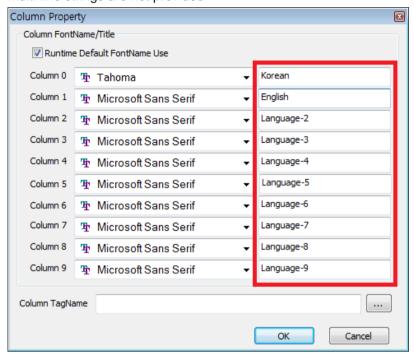
It is default to print out font names that are set in string objects during runtime, however, selecting "Runtime Default FontName Use" prints text table's font names instead.



2) Column Name

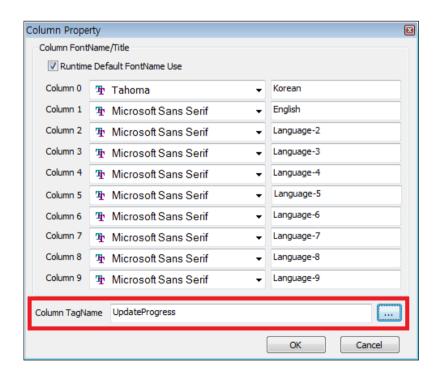
User is allowed to change column name to a single-line string as desired.

Multi-line strings are not provided



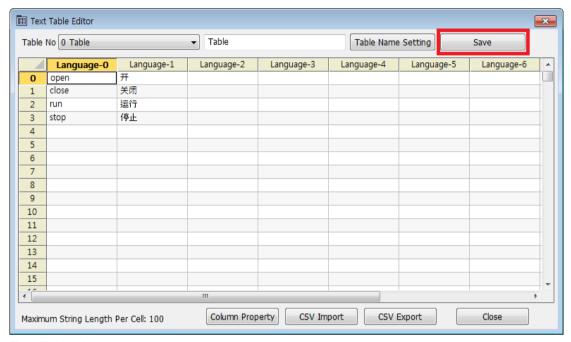
3) Column Tag Name

Column tag name can be entered directly or determined in tag viewer. At runtime, text table column number is set to tag value. Proper tag values are numbers from 0 to9, and improper tag values are automatically changed to 0.



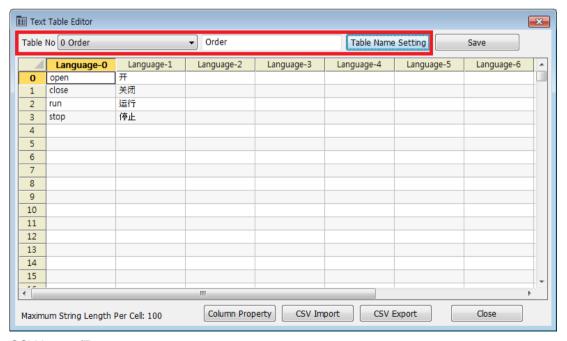
(3) Save Text Table

It saves the selected string table in DB. In order for the edited contents to be reflected, you have to save it by clicking the [Save] button. When reopening the string table without saving, the edited contents are not reflected



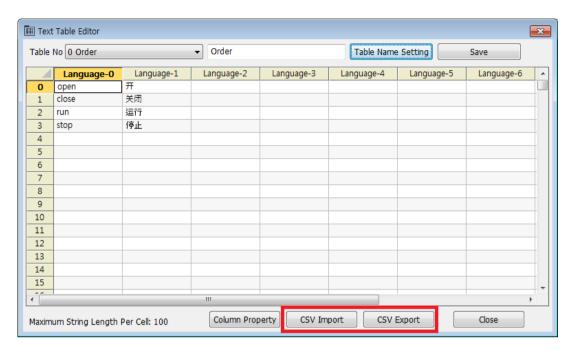
(4) Text Table Name

User can change text table's name to a string entered into editor box by clicking [Table Name Setting] button next to it.



(5) CSV Import/Export

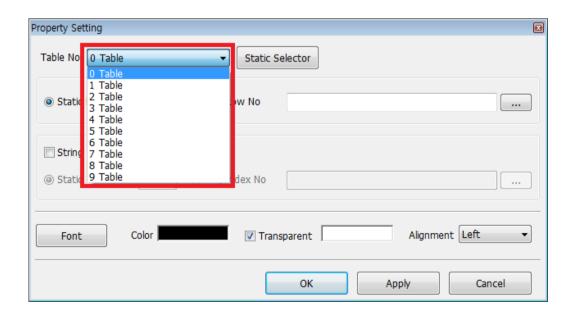
[CSV Export] button is to save the text table as a csv file, and [CSV Import] button is to open a csv file.



9.16.2 Table Text Object

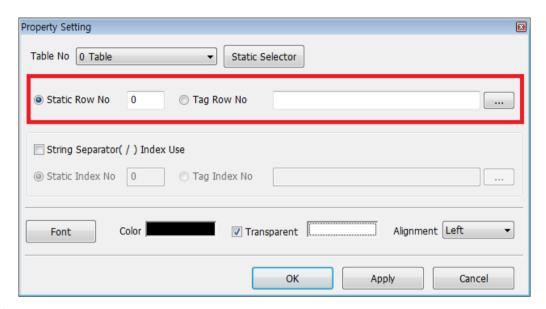
A text table object is created by selecting [Insert] \rightarrow [Table Text], or drawing "Table Text" from object tool bar on the screen. Double-click on a text table object to open property setting window. User can also right-click on the object and select [Property Setting]. Text table must be edited prior to using the object.

- Table/Row Number
 User needs to set the table number and row number of the text table to display the string.
 - Table Number
 Set table number from the list.



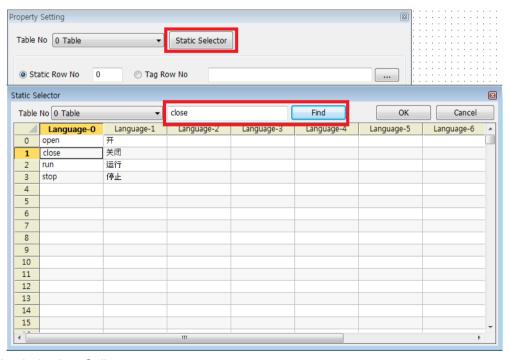
2) Row Number

Row number can be assigned to a number or a tag name user enters. Row values must be in range of 0 to 5000, and row values out of the range are automatically changed to 0.



3) Static Selector

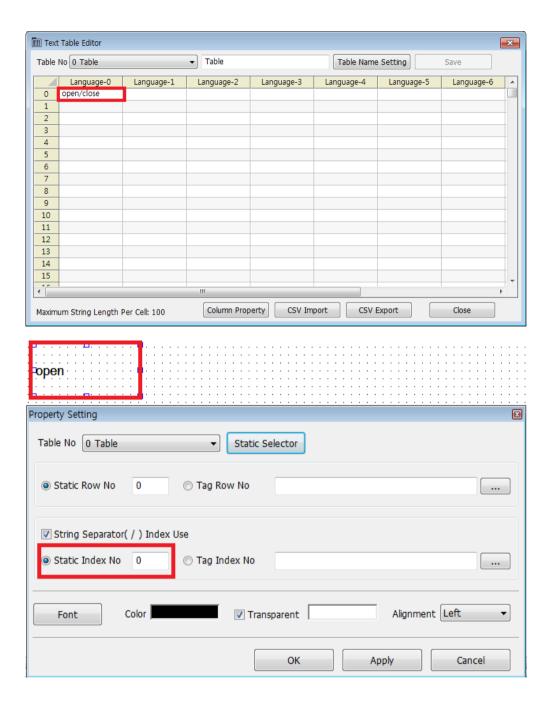
User can also input the table and row number on Static Selector. The Static Selector provides string search function

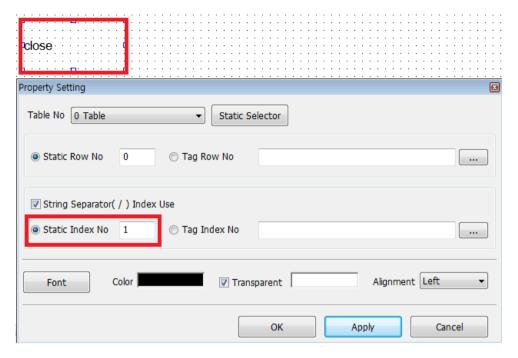


(2) String Index in a Cell

As "String Separator(/) Index Use" selected, user can input up to 10 strings in one cell, separate each string with "/". User assigns the index number or tag name to each string in the cell. Index number must be in range

of 0 to 9, and the indices out of the range are automatically changed to 0.



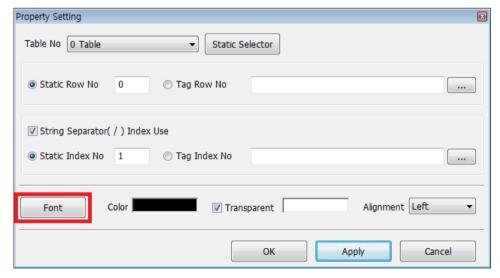


(3) Other Properties

In addition, font, color and alignment of the string as well can be set on property setting. User can select multiple objects and change the properties of the objects at once.

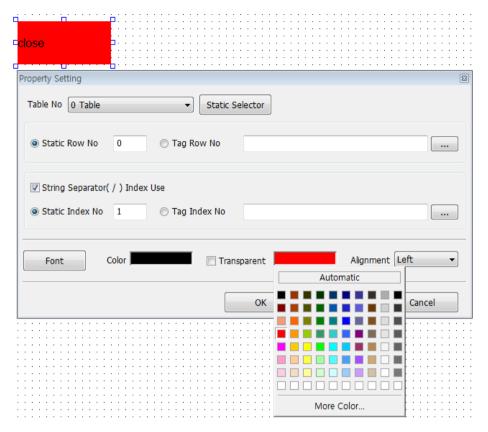
1) Font

Click [Font] button to change the string font. It is default to print out font names that are set in string objects during runtime, however, selecting "Runtime Default FontName Use" prints text table's font names instead.



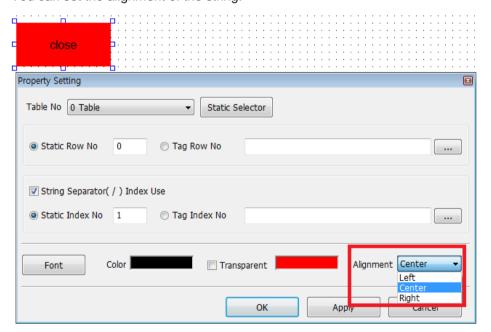
2) Color

User can set the text color, background color, and background transparency.



3) Alignment

You can set the alignment of the string.

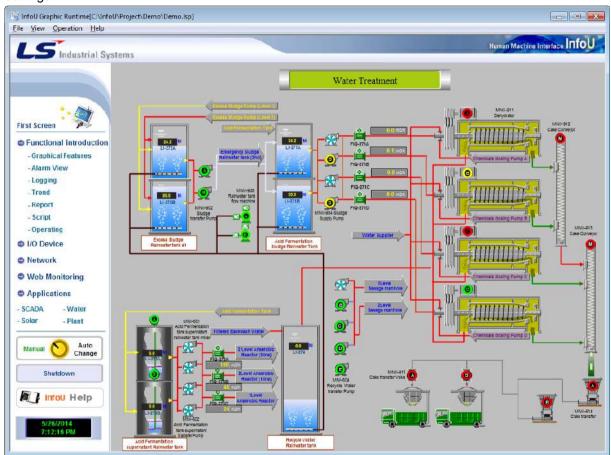


Chapter 10 Graphic Runtime

This Graphic Runtime helps to monitor or control real-time or history information through the graphic screen by using HMI real-time or history information.

10.1 Run

This Graphic Runtime runs if the runtime running starts and the initial screen are created in the Graphic Runtime settings.



10.2 Menu Composition

Upper-level Menu	Menu	Description		
	Default Page	Open the default page set up in the runtime execution environment.		
	Open	Open existing document.		
	Close	Close the current document.		
File	Close All	Close all of documents.		
	Hard Copy	Print the graphic runtime execution screen in a type of hard copy.		
	Print	Print document.		
	Print Setup	Set up print options		
	Exit	End the graphic runtime.		
	Standard Bar	Show or hide color tools.		
	Status Bar	Show or hide status tools.		
	Menu	Show or hide main menus.		
View	Zoom	Zoom in/out the page in set up ratios.		
View	Auto Adjust	Automatically adjust the screen size to a certain ratio fit to the		
		current view size.		
	Navigation	Show or hide navigation tools for screen moving.		
	Full Screen	Convert the page into a full screen size.		
	User Login	Log in the registered user.		
	User Logout	Log out the logged in user.		
	Change Password	Change the log-in password of the registered user.		
Operation	Alarm Popup	Show or hide the alarm pop-up screen.		
Operatin	Tag View	Show all of the tags registered in DB		
	Cross Reference View	Show Cross Reference information on the current project.		
	I/O Station Status	Show the communication status of the currently connected I/O driver.		
	Graphic Editor	It shows the currently open page in the graphic editor.		
Help	Graphic Runtime Information	Show the version information of the graphic runtime.		

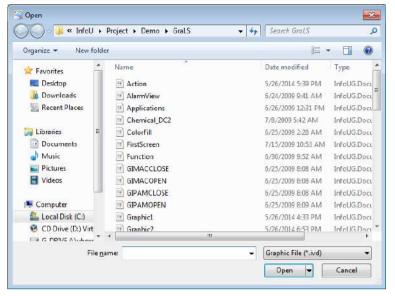
10.2.1 File

(1) Default Page

Open the default page set up in the runtime execution environment.

(2) Open

This command is used to open one of the existing documents. If this command is made, a dialog box appears to allow the user to designate a file to open from it.



(3) Close

The current document is closed.

(4) Close All

The currently opened documents are all closed.

(5) Hard Copy

Execute the graphic runtime execution screen as hard copy.

(6) Print

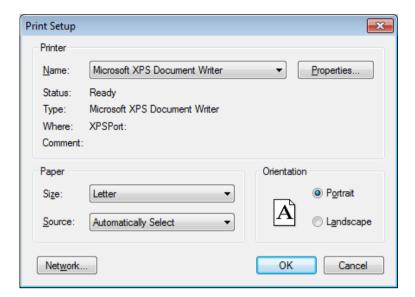
It is used when printing document. If this command is executed, "print" conversation box appears to allow the user to select a print range, number of copies, printer and printer option.



(7) Print Setup

Paper size and orientation for printing documents can be selective.

Chapter 10 Graphic Runtime



(8) Exit

The graphic editor is ended.

10.2.2 View

(1) Standard Bar

It is used when showing or hiding standard tools. Standard tools are command icons the most frequently used in the graphic editor. When they are shown, checkmark appears in front of the relevant menu.



(2) Status Bar

It is used when showing or hiding status tools. Status bar provides Help Message. When it is shown, checkmark appears in front of the relevant menu.



(3) Menu

It is used when showing or hiding main menus. When it is shown, checkmark appears in front of the relevant menu.

(4) Zoom

It is used when enlarging or reducing the screen in a predefined ratio during the page runtime.

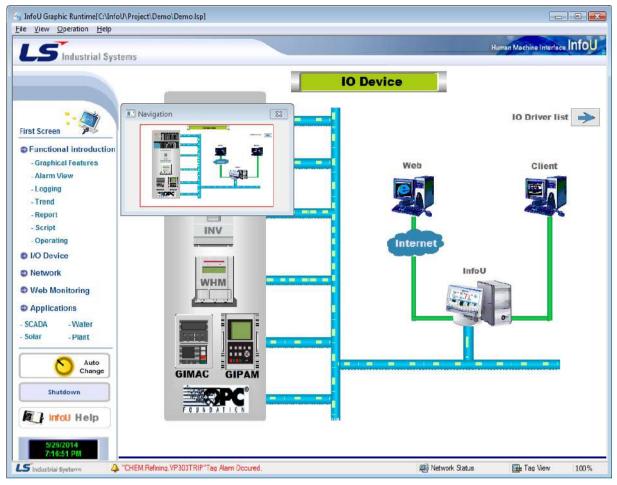
(5) Auto Adjust

It is used when adjusting the view size of the current runtime screen to a certain ratio or setting up to automatically adjust the horizontal and vertical proportions. When it is shown, checkmark appears in front of the relevant menu.

(6) Navigation

It is used when showing or hiding navigation tools.

If the current view screen is narrow, this navigation is used to move it to a desired screen area. When it is shown, checkmark appears in front of the relevant menu.



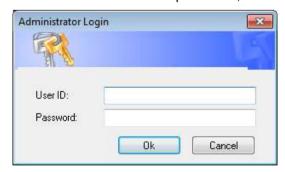
(7) Full Screen

It is used when displaying the current page in a full screen size.

10.2.3 Operation

(1) User Login

It is used when the registered user logs in. If login is done, the user may use the functions assigned to him/her. If this command is performed, the following InfoU Administrator Login window is displayed.



(2) User Logout

It is used when the logged in user logs out.

(3) Change Password

It is used when changing the registered user's login password.

Chapter 10 Graphic Runtime

(4) Alarm Popup

It is used when showing or hiding the alarm pop-up screen.

This menu is activated only when the user logs in.

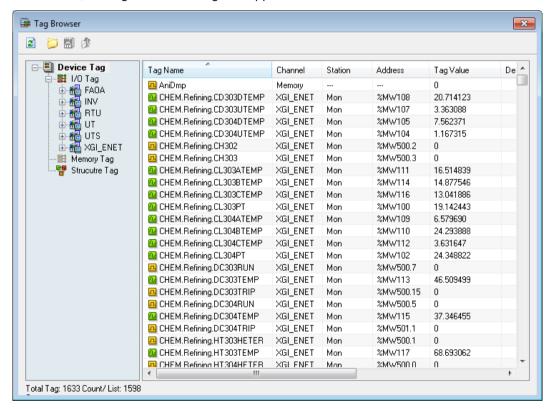
If this item is not checked, the following alarm pop-up window appears to call the operator's attention in case of the occurrence of a new alarm in the system.

If the Cross Reference button on the right is clicked, the Cross Reference Search screen is displayed to move to the Accident Analysis or Plant screen (See Cross Reference Function)



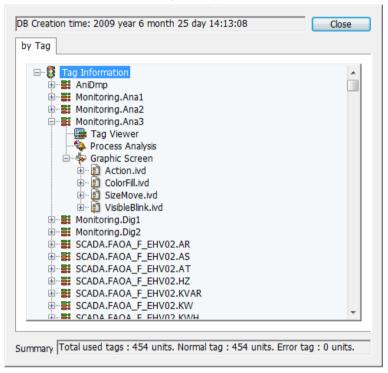
(5) Tag View

Information on the all of the tags registered in DB and status of tag values are displayed. Once this command is executed, the tag browser dialog box appears.



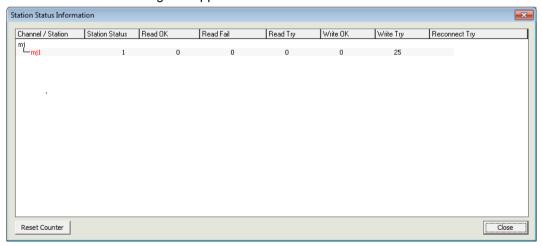
(6) Cross Reference View

The Cross Reference information on the current project is displayed. Once this command is executed, the Cross Reference View dialog box appears. For details, see 'Cross Reference'.



(7) I/O Station Status

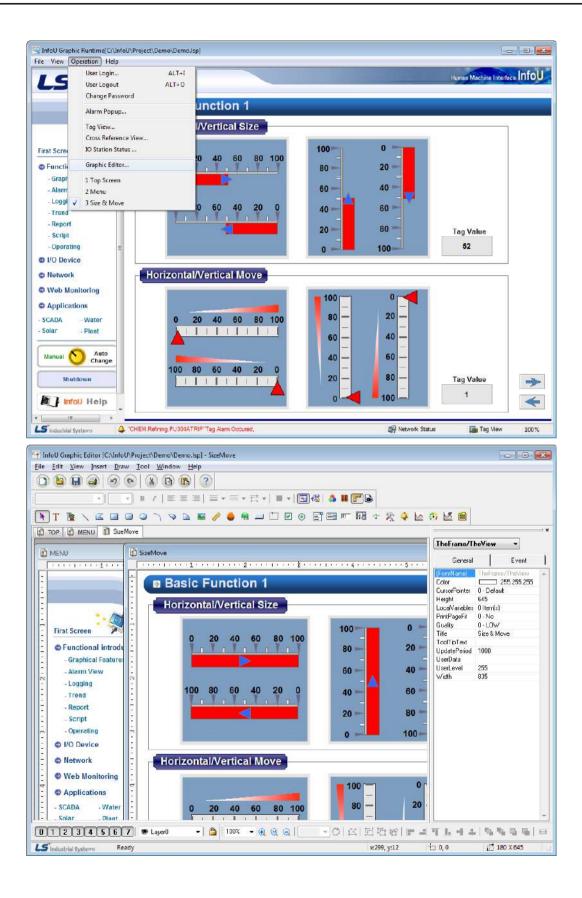
The communication status of the currently connected I/O driver is displayed. Once this command is executed, the I/O Station View dialog box appears.



(8) Graphic Editor

If you execute the [Graphic Editor], the pages that are opened in the current graphic runtime will move to the graphic editor. In case the graphic editor does not run, execute it and open the page. If you execute the [Graphic Editor], you can see the below.

Chapter 10 Graphic Runtime



10.2.4 Help

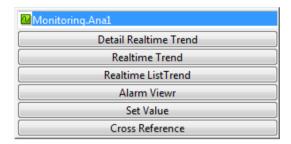
(1) Graphic Runtime Information

It is used to show the version information of the graphic runtime. If this command is executed, version information and copyright message appear.



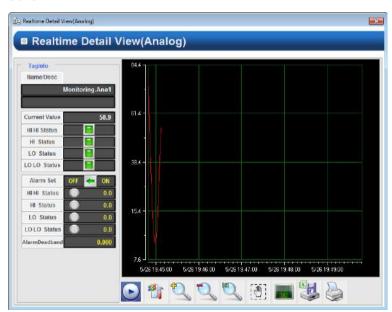
10.3 Popup Menu

In the graphic runtime, the popup menu supports three modes; none mode, user mode, general model. In a user mode, a user can directly edit the popup menu with the graphic editor and batch-control tags set for the object. A general mode does not allow a user to edit the popup menu but it provides the function to monitor/control tags set for the object in a variety forms.



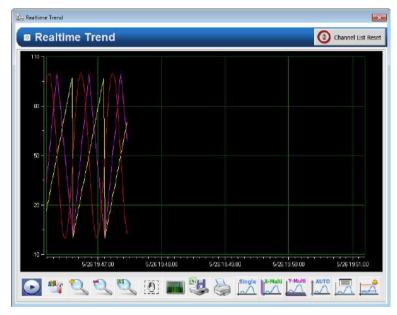
10.3.1 Detailed Realtime Trend

It shows the tags for the object in the form of detailed real time trend. You can edit the screen with the graphic editor.



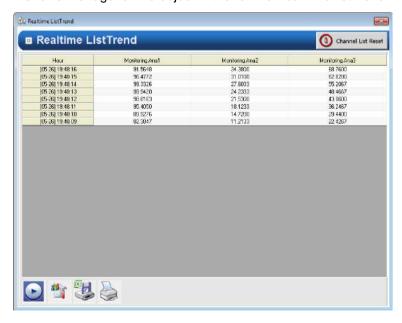
10.3.2 Realtime Trend

It shows the tags for the object in the form of real time trend. You can edit the screen with the graphic editor.



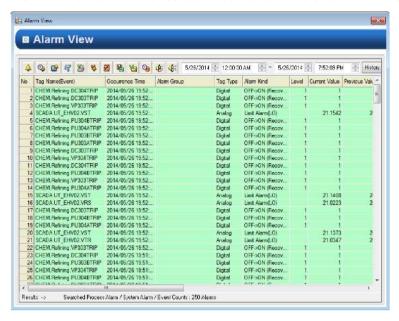
10.3.3 Realtime List Trend

It shows the tags for the object in the form of real time list trend. You can edit the screen with the graphic editor.



10.3.4 Alarm Viewer

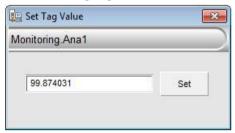
It shows the alarm viewer screen. You can edit the screen with the graphic editor.



10.3.5 Input Value

It shows the tag control window of tags set for the object. The value input in the analog screen is different from the value input in the digital screen. You can edit the screen with the graphic editor.

* In the analog tag



*In the digital tag



10.3.6 Cross Reference

It shows the cross reference information of the current project. If you perform this command, the dialog box of the cross reference view will show up. For more details, refer to 'Cross Reference'.

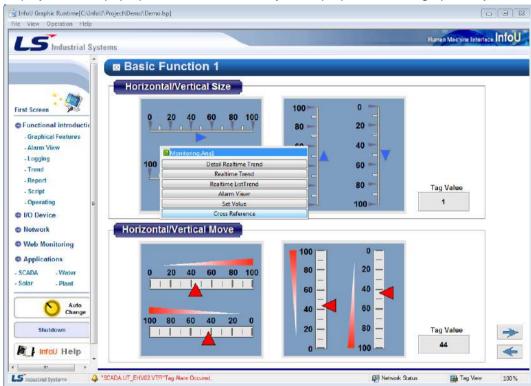
10.4 Cross Reference Function

The Cross Reference is available to use during the runtime.

This Cross Reference function is available not only on the plant screen or tag view but also the trend or alarm viewer, and if any alarm occurs during the running, it is possible to move to a relevant screen or trend for analysis by using this Cross Reference function.

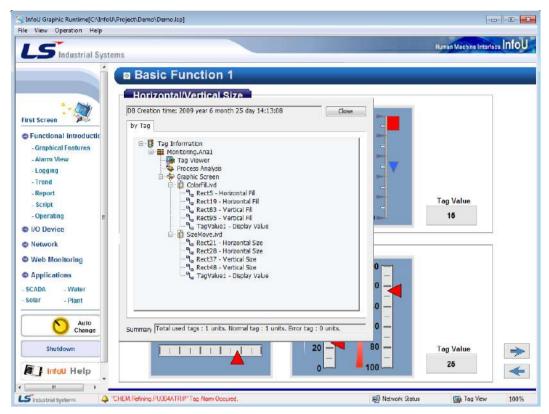
10.4.1 Execution on the Plant Screen

If a graphic object with dynamic properties is clicked with the right button of the mouse (MouseUP), the tag list is displayed on the pop-up screen used for the dynamic properties of the graphic object.



If the relevant tag is double clicked with the left button of the mouse on the Cross Reference pop-up screen,

Chapter 10 Graphic Runtime

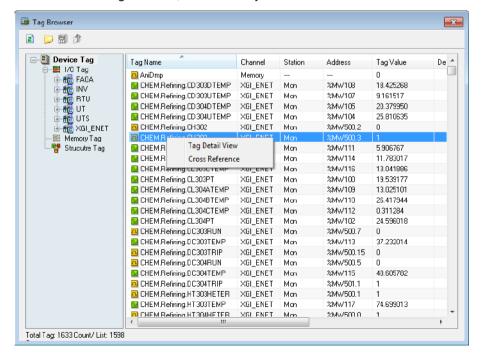


the Cross Reference screen is shown as seen in the figure below and if an item on the screen is double clicked, it moves to a point on the relevant screen and it shows the location of the designated graphic object.

10.4.2 Execution on the Tag View

The Cross Reference of a tag can be inquired on the tag browser.

To execute the tag browser, the user may use the menu or tool bar.



If a tag list is clicked with the right button of the mouse on the tag browser, a pop-up menu appears and at this time, if Cross Reference is selected, the Cross Reference screen is displayed.

Also, if the tag detailed view is selected, the detailed screen of the selected tag is displayed as seen in the figure below. At this time, if Cross Reference button is clicked on the tag detailed screen, the Cross Reference screen is inquired. Subsequent actions are the same.

10.4.3 Execution on the Alarm Pop-up Screen

In case that a new alarm occurs, the pop-up window as seen in the figure below appears as the top-level screen and if the 'Cross Reference' button is clicked on the right, the Cross Reference search screen is displayed, and 'Cross Reference' button is clicked with the mouse, the Cross Reference screen can be inquired.

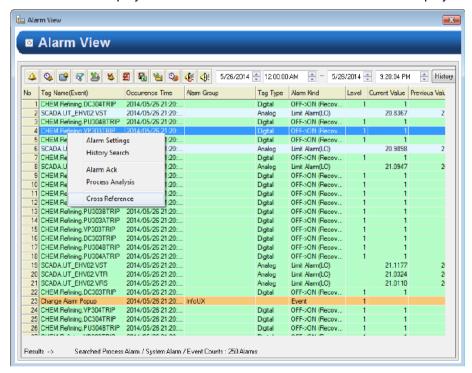


10.4.4 Execution on the Graphic Object

When a new alarm occurs, the alarm popup window will be displayed on the top screen. If you click the 'Cross Reference' button on the right side, the cross reference search screen will be displayed. You can retrieve the cross reference by clicking the 'Cross Reference' button.

(1) Alarm Viewer

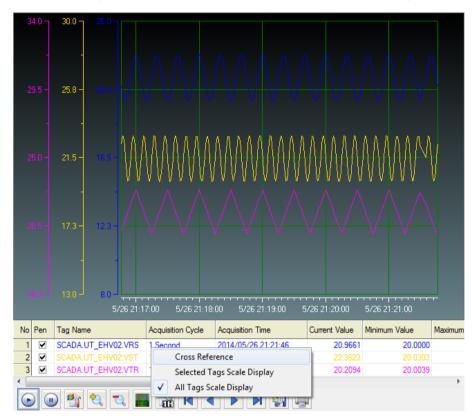
If an alarm item is selected on the alarm viewer graphic object and the right mouse is clicked, the pop-up menu below is displayed and 'Cross Reference' can be selected to display the 'Cross Reference' screen.



Chapter 10 Graphic Runtime

(2) Trend

If a data grid item is selected on the trend graphic object and the right mouse is clicked, the pop-up menu below is displayed and 'Cross Reference' can be selected to display the 'Cross Reference' screen.



Graphic Objects can provide various functions that can be implemented just with simple settings such as Alarm Monitoring, Logging Search, Recipe Control and Analog Gauge Display during the real-time running on the graphic screen since they are provided in a form of finished Active X.

In addition, the Graphic Page can be used by inserting external Active X control as a role of ActiveX's container. InfoU Graphic Objects include Alarm Viewer, Trend, List Trend, Recipe Viewer and Gauge Control and it is planned to add new objects continuously.

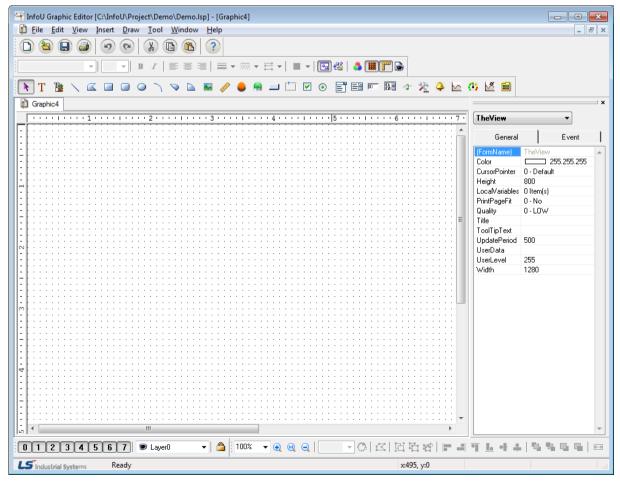
11.1 How to Use Graphic Object

11.1.1 Object Insert

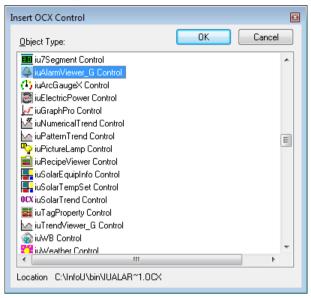
(1) To insert an object immediately, select a relevant shortcut icon on the tool bar.



on the tool menu of the graphic editor.



(3) Select an object.

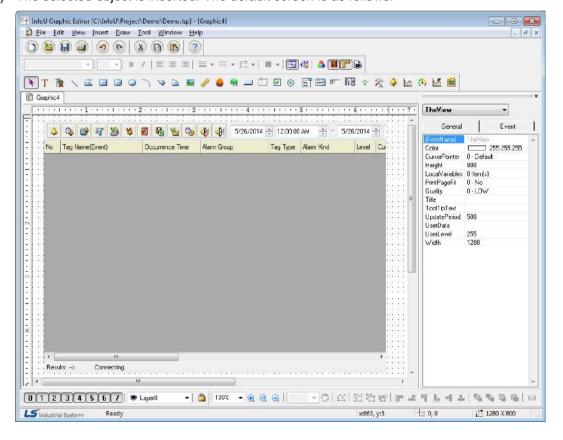


iuAlarmViewer: Alarm Viewer
 iuTrendViewer: Trend Viewer

3) iuNumericalTrend: List Trend Viewer

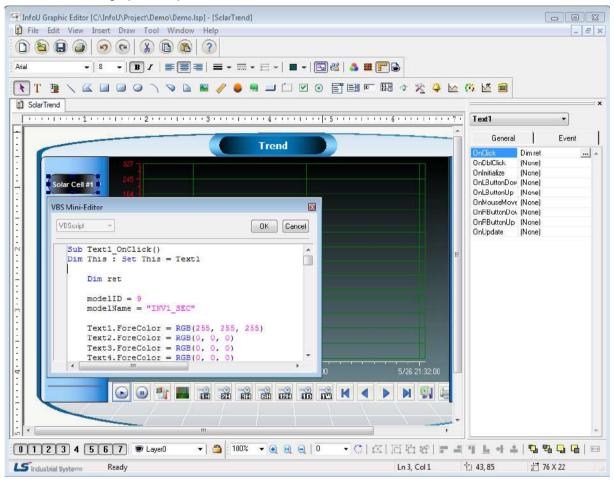
4) iuRecipeViewer: Recipe Viewer5) iuArcGaugeX: Gauge Control

(4) The selected object is inserted. The default screen is as follows.



11.1.2 Using Script

It is possible to organize a more diverse and simple screen by controlling the method and properties of the object inserted from the graphic script.



11.2 Alarm Viewer

The Alarm Viewer is an Active X module that searches and displays the occurrence details of alarms and events from the alarm server and performs various functions such as Filtering Search, Backup Alarm File Search and Print.

11.2.1 Prerequisite and Environment

Alarm properties can be set up only after the ActiveX module is inserted to the InfoU graphic editor.

Alarm properties such as update cycle, alarm color, alarm/event item can be selected. Since those alarm properties have been already set up with default values, they act with those default values if the user does not set up additionally.

The property values are saved and then displayed on the alarm/event monitoring screen when the screen opens in the runtime environment.

The engineering values are inserted in the following order on the alarm viewer.



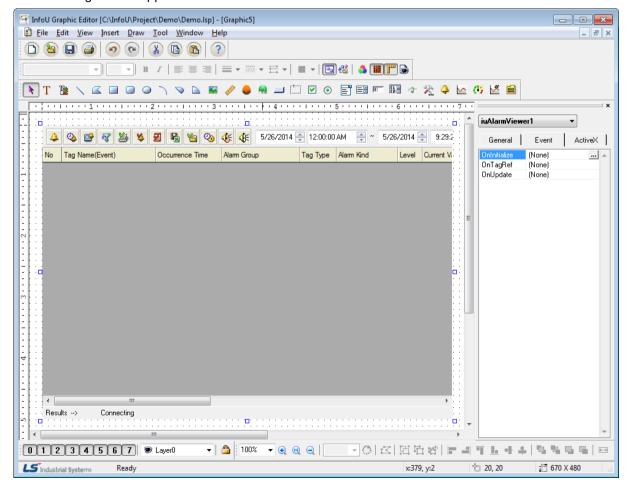


is selected without selecting on the InfoU explorer, those values are immediately inserted.

11.2.2 Screen Configuration

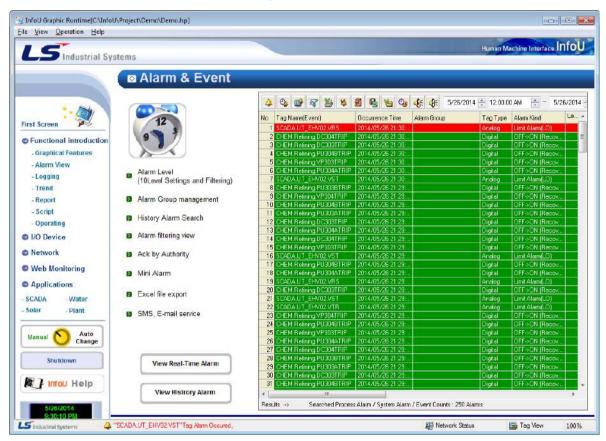
(1) Engineering Screen

The following screen appears after the alarm viewer is inserted.



(2) Runtime Screen

If default trend settings are completed on the engineering screen above and then, the runtime is executed, the screen shows that data values are changed over time.



The splash screen shows real-time alarms and it is for searching alarms, system alarms and events.

1) Tool Bar

Results of tool bar, which consists of necessary functions for operating the viewer, and search are presented in text.

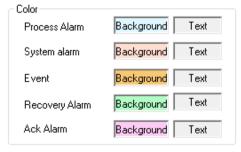
2) Status Display

The current search status is displayed in text.

3) Alarm/Event List

Alarm and event details searched from the Alarm Server are displayed in the Grid.

Various colors are displayed to distinguish progress alarm, system alarm, event, recovery alarm and Ack alarm to let the user easily identify them. Colors are as follows and text and background colors can be changed.



11.2.3 Real-time Function

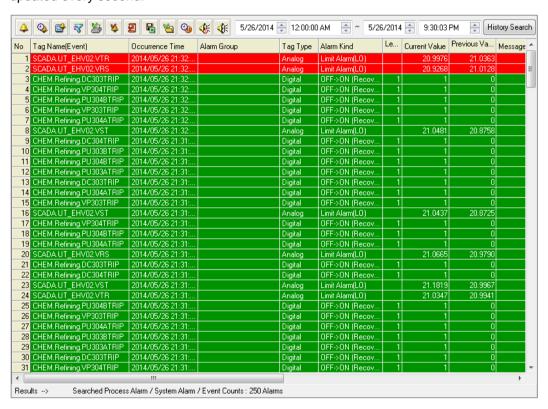
(1) Real-time Alarm Search (4)



All of the real-time alarms and events that currently take place are searched.

The number that marks real-time alarms is the value decided from alarm server settings and the number of process alarms and system alarms is twice of the number of tags and 500 is the default value of events.

Real-time alarms become invisible in the list through Alarm Recovery and Alarm Ack. That is, the alarm list is updated every second.



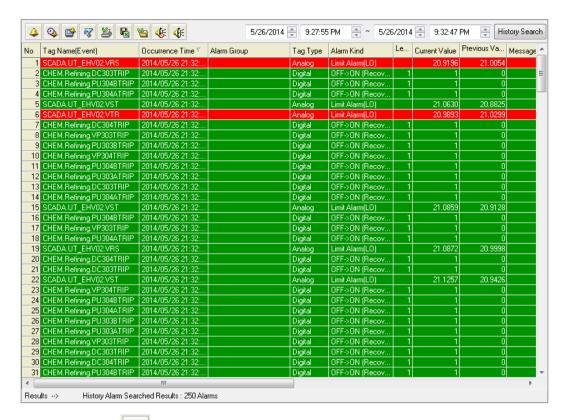
(2) History Alarm Search (



All of the real-time alarms and events that have taken place are searched

All of the alarms that have taken place are displayed in the chronicle order such as occurred alarms, recovered alarms, acknowledged alarms and events including invisible alarms in the real-time alarm list.

The storing reference for history alarms is decided from alarm server settings and the default values are set up to save up to 10,000 process alarms for 3 years, up to 5000 system alarms for 3 years and up to 5000 events for 3 years.



(3) Viewer Settings ()

Setting values of the current alarm viewer can be changed.

The setting window will be further explained later.

(4) History Inquiry Setting Screen (



It is used when the user wants to search history alarms after filtering by conditions.

The history searching setting window will be further explained later.

(5) Alarm retrieval using the history search bar

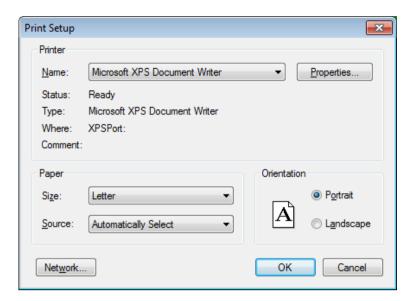
Through this function, a user can conveniently retrieve history alarms by filtering the start and end time with the search bar.



(6) Print ()

The screen is printed.

Select a printer on the Print window and click on Properties button to set up whether to print vertically or horizontally. Information is outputted from the selected printer.



(7) Individual Alarm Ack (

The currently selected alarm is acknowledged. For individual alarm ack, double click after selecting an alarm to acknowledge it.

For event and history alarms, Ack is not available.

(8) Page Ack ()

All of the alarms in the current page are acknowledged.

For event and history alarms, Ack is not available.

(9) Save as Excel File ()

Occurred alarms are saved in Excel files. Press Save button and insert a file name for each alarm to be saved.

(10) Backup File Import (

The alarm backup files saved on the server or other storage devices can be imported and viewed in a list. Detailed functions on Load Backup File are described later.

(11) Sound Stop (

Basically, sound is generated upon the occurrence of alarm, and this function is to stop the sound. If another new alarm occurs, sound is regenerated. To stop sound for the entire alarms, alarm settings shall be modified on the engineering program.

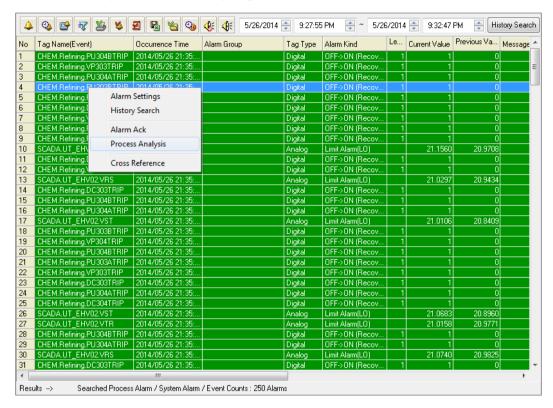
(12) Start () and Stop ()

Buttons to start and stop updating the alarm list in real-time.

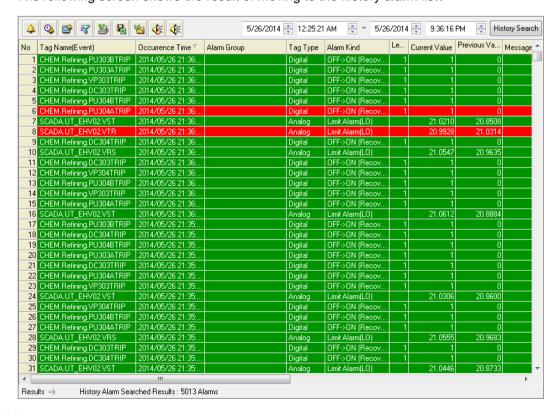
(13) Process Analysis

This function is to move the alarm that takes place on the real-time alarm list to the history alarm list for analyzing. Select an alarm from the real-time alarm list and press the right side of the mouse to display the following menu. If Process Analysis is selected here, it moves the relevant alarm, which will be highlighted in

red, to the history alarm list for analyzing.

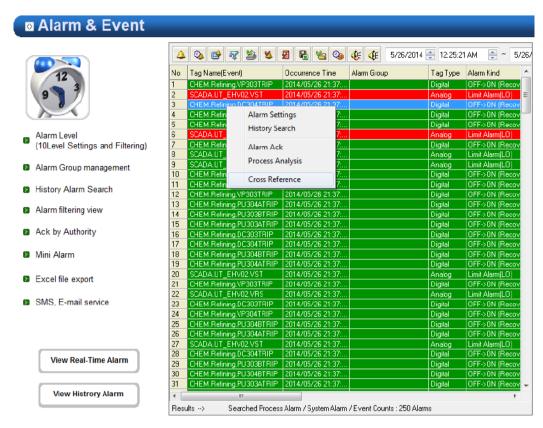


The following screen shows the result of moving to the history alarm list.

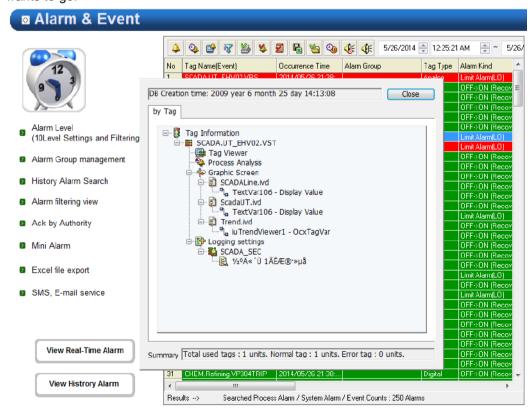


(14) Cross Reference

Cross Reference makes the screen move to the graphic screen to which the selected alarm belongs.



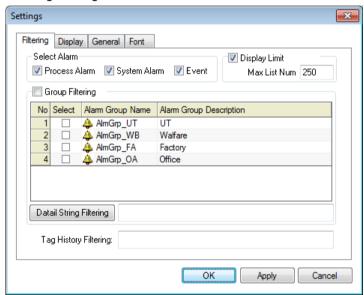
If an alarm is selected in the real-time alarm list and the right side of the mouse is clicked to select Cross Reference, the following Cross Reference screen is displayed. It is possible to move to the place the user wants to go.



11.2.4 Settings

If the right side of the mouse is clicked on Alarm Viewer ocx and the 'Properties' menu is selected, the setting window appears. The same setting screen is used for the engineering screen and the run-time screen. In addition, once property values are saved on the engineering screen, those values will be continuously valid however, if those property values are changed on the runtime screen, the changed values are applied only to the runtime screen. The changed values are cancelled if the runtime stops and the property values set up on the engineering screen are applied.

(1) Filtering Setting Items



Application range of Alarm viewer can be configured by filtering setting items such as Select Alarm and Group Filtering.

1) Select Alarm

You can set the alarm type to be displayed in the alarm viewer.

2) Display Limit

You can set the maximum number of list alarms to be displayed in the alarm viewer.

3) Group Filtering

You can determine whether applying the group filtering and which group you will view. When selecting the group filtering, the only relevant group will be applied to the alarm viewer and displayed. If you do not select the group filtering, it will be applied to the whole alarm tags and displayed.

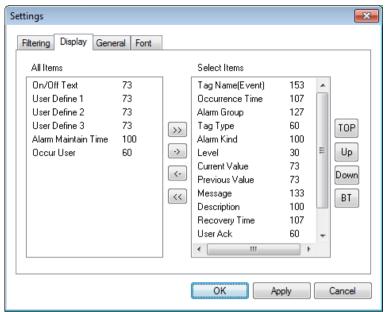
4) Detail String Flitering

In the alarm viewer, it is the function to filter detailed characters for the alarm group name. ";" is the separator in word unit and "+" is the separator in string unit. For example, if you type "UT;FA+Grp" on the above screen and press the detailed character filtering button, AlmGrp_UT and the group name of AlmGrp_FA will be automatically set in the alarm group name.

5) Tag History Filtering

Tag history filtering is applied to tag names generated in the history retrieval setting window of the graphic runtime and the only corresponding alarm is displayed. ";" is the separator in word unit and "+" is the separator in string unit.

(2) Alarm Display Item



It is the function to choose alarm items that you want to see in the alarm viewer. There are 18 alarm items; tag name(event), occurrence time, alarm group(occurrence area), tag type, alarm(event) type, grade, current value(status), previous value(status), message, description, recovery time, recognizing user, recognizing time, unit, user definition 1, user definition 2, user definition 3, user definition 4. The number next to the item is the column size of the item in the alarm viewer and it can be changeable. Double-click the item and just input the desired size.

1) >> Button

Move the marked item from the entire list to the selected list.

2) << Button

Move the unmarked item from the entire list to the selected list.

3) -> Button

Move from the entire list to the selected list.

4) <- Button

Move from the selected list to the entire list.

5) TOP Button

Move the marked location on the selected column from the selected list to the top left.

6) ▲ Button

Move the marked location on the selected column from the selected list to the next cell on the left side.

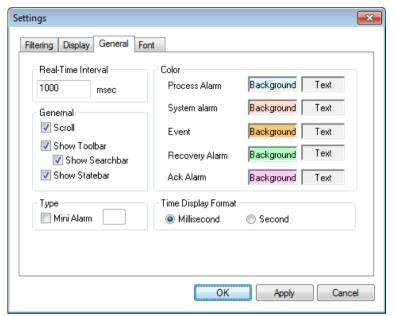
7) ▼ Button

Move the marked location on the selected column from the selected list to the next cell on the right side.

8) BT Button

Move the marked location on the selected column from the selected list to the end on the right side.

(3) General



1) Real-Time Interval

Enter a time to update the viewer. Alarms are searched on the relevant severs at the entered time and a list is displayed.

2) Scroll

Select whether to scroll or not on the viewer.

3) Show Toolbar

Set 'Show/Hide toolbar' of the viewer.

4) Show Searchbar

Set 'Show/Hide history search bar' of the viewer.

5) Show Statebar

Set 'Show/Hide status bar' of the viewer.

6) Mini Alarm

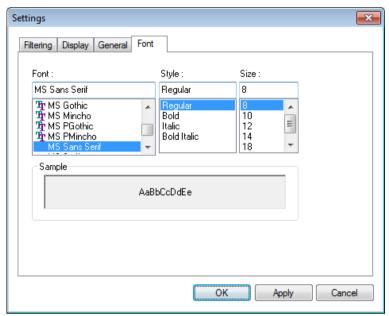
Select whether to use mini alarms.

If mini alarms are used, tool bars or scroll do not exist.

7) Color

Select each background color and text color of Process Alarm, System Alarm, Event, Recovery Alarm and Ack Alarm.

(4) Font



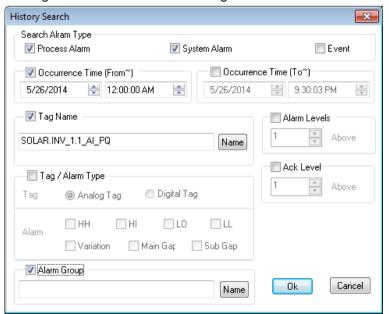
Decide Font, Style and Size to be displayed on the alarm viewer list.

11.2.5 Filtering

As a function used when the user wants filter history alarms with several conditions and searches only the history alarms that meet those conditions, it proceeds filtering as follows.

- (1) Select items to filter and search with the input condition 'And' condition.
- (2) The alarms that meet the search conditions are displayed on the alarm list.
- (3) The timer stops automatically.
- (4) To return to the real-time search, click on Real-Time Alarm Search button.

The Filtering Search Screen is as following



1) Search Alarm Type/Event

Select one among Process Alarm, System Alarm and Event to search.

2) Occurrence Time (From)

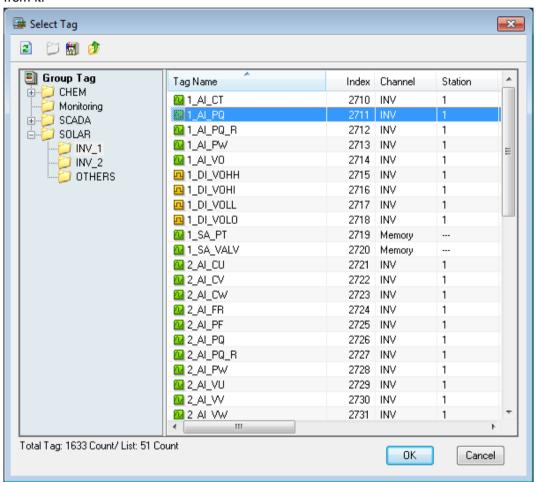
Only the alarms that have occurred since the occurrence time can be searched.

3) Occurrence Time (To)

Only the alarms that had occurred before the occurrence time can be searched.

4) Tag Name

Designate the tag name to search. Click on Name button to display the tag browser screen to select a tag from it.



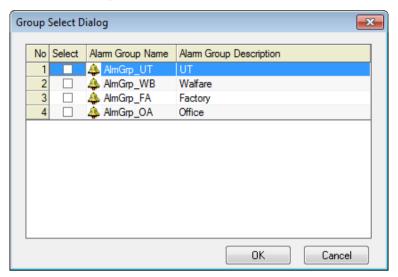
5) Tag/Alarm Type

Select either Analog Tag or Digital Tag and then, select an alarm kind that fits to it to search. If Digital Tag is selected, the following screen appears.



6) Select an alarm group

Select an alarm group to search.



7) Alarm Level

Only the alarms higher than the entered alarm level are searched. Levels 1 through 99 are available.

8) Ack Level

Only the alarms higher than the entered tag priority are searched. Levels 1 through 99 are available.

11.2.6 Other Functions

(1) Alarm Ack

As a function to acknowledge (Ack) the occurred alarm, it is available to acknowledge not only by alarm but also by page unit.

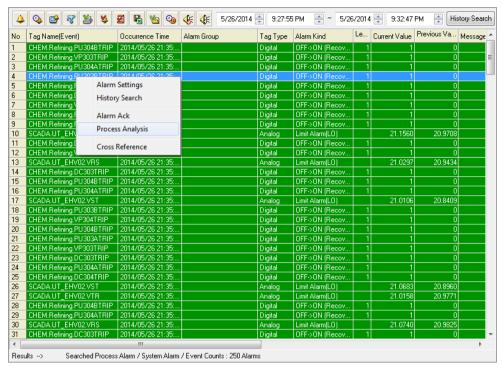
For individual alarm Ack, double click after selecting an alarm or press [Ack] button on the tool bar. It is also available to press the right button of the mouse. For Event and History Alarm, Ack is not available.

For Page Ack, press [Page Ack] button on the tool bar to acknowledge all of the alarms seen in the current page.

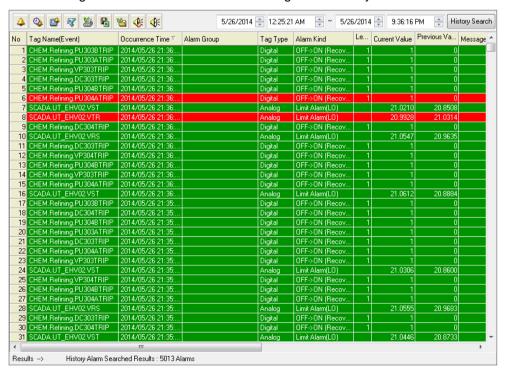
(2) Process Analysis

This function is to move the alarm that takes place on the real-time alarm list to the history alarm list for analyzing. Process Analysis is useful when viewing the alarms before and after the occurred alarm in the real-time.

Select an alarm on the real-time alarm list and press the right side of the mouse to display the following menu. Select Process Analysis from the menu to move the relevant alarm to the history alarm list for analyzing. Once moved to the history alarm list, the selected alarm is highlighted in red for convenient identification.



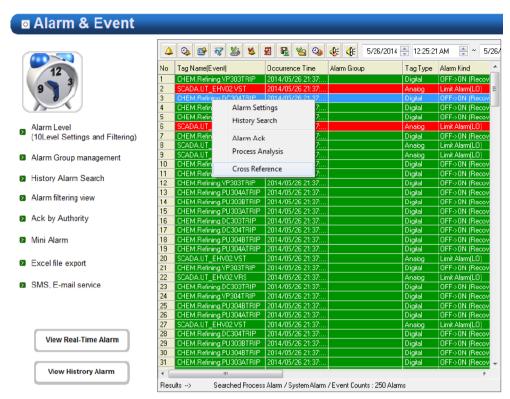
The following screen shows the result of moving to the history alarm list.



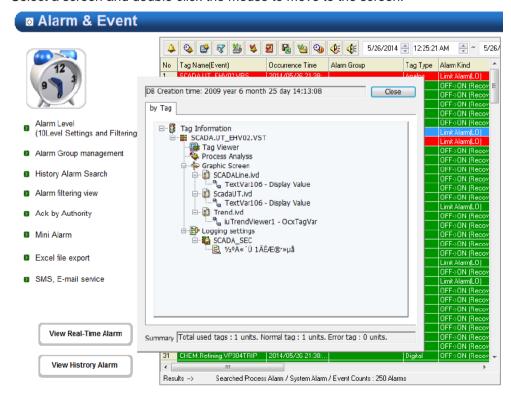
1) Cross Reference

This function is to make the screen move to the graphic screen to which the selected alarm belongs.

This function helps to immediately identify at which object the current alarm takes place and analyze the current situation by moving to the screen.

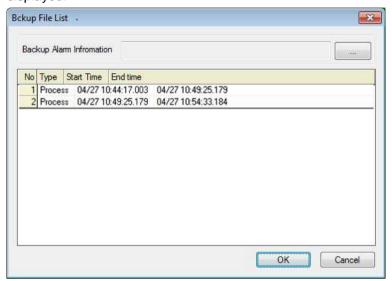


Select an alarm on the real-time alarm list and press the right side of the mouse to display the following menu. Select Cross Reference from the menu to display the following Cross Reference screen. If the user selects one among the screens to which the occurred alarm belongs, it moves to the relevant screen. Select a screen and double click the mouse to move to the screen.



2) Backup Alarm Import

If Backup Alarm Import button is selected, the following screen appears. The list shows backup files on the saving path. If a list is selected and Ok button is pressed, a list of the alarms in the backup files is displayed.



11.2.7 How to Use Script

(1) Function List

Function Name	Function Declaration
AckPageAlarm	long AckPageAlarm(void)
AckRecentAlarm	long AckRecentAlarm(void)
AckSelectAlarm	long AckSelectAlarm(void)
DisplayHistoryAlarm	long DisplayHistoryAlarm(void)
DisplayRealAlarm	long DisplayRealAlarm(void)
ExportToExcel	long ExportToExcel(void)
LoadPeriodSearch	void LoadPeriodSearch(LPCTSTR strFrom, LPCTSTR strTo)
SetAlarmGroupList	void SetAlarmGroupList(LPCTSTR strGroupList)
SetAlarmList	long SetAlarmList(long alarmKind, LPCTSTR str)
SetDetailStringFiltering	void SetDetailStringFiltering(LPCTSTR strGroupList)
SetHistoryList	long SetHistoryList(long alarmKind, LPCTSTR str)
SetFilteringOption	long SetFilteringOption(ushort almType, LPCTSTR startTime,
	LPCTSTR endTime, LPCTSTR tagName, short tagType, short almKind,
	short almOccurType, short almGrade, short ackGrade,
	LPCTSTR almGroup)
SetTagHistoryFiltering	void SetTagHistoryFiltering(LPCTSTR strTagFilter)
ShowConfigDlg	void ShowConfigDlg(void)
ShowFilteringDlg	long ShowFilteringDlg(void)

StartSound	long StartSound(void)
StopAlarm	long StopAlarm(long bFlag)
StopSound	long StopSound(void)
PrintList	long PrintList(void)

(2) Function Description

AckPageAlarm Function	
Description	It is used when the user wants to acknowledge the entire alarms seen on the current page of the
	alarm viewer.
Syntax	long AckPageAlarm(void)
Reference	To acknowledge the entire alarms on the page
	AckPageAlarm ()

AckRecentAlarm Function	
Description	It is used to recognize the currently visible latest alarm in the alarm viewer.
Syntax	long AckRecentAlarm(void)

AckSelectAlarm Function	
Description	It is used to recognize the currently selected alarm in the alarm viewer.
Reference	long AckSelectAlarm(void)

DisplayHistoryAlarm Function	
Description	It is used to display history alarms in the alarm viewer.
Syntax	long DisplayHistoryAlarm(void)

DisplayRealAlarm Function	
Description	It is used to display real time alarms in the alarm viewer.
Syntax	long DisplayRealAlarm(void)

ExportToExcel Function	
Description	It is used when the user wants to export the alarms taken place on the alarm viewer to Excel.
Syntax	long ExportToExcel(void)
Reference	To export the occurred alarms to Excel
	ExportToExcel ()

LoadPeriodSearch Function	
It is used to retrieve the section with the start time and end time in the alarm viewer.	
void LoadPeriodSearch(LPCTSTR strFrom, LPCTSTR strTo)	
strFrom: Search from start time strTo: Search to end time	
Ex> 2017/02/06 12:00:00, 2017-02-06 12:00:00, 2017-02-06 오후 01:00:00,	
2017-02-06 01:00:00 PM LoadPeriodSearch("2017/02/06 12:00:00", "2017/02/07 12:00:00")	

SetAlarmGroupList Function	
Description	This function is to allow the user to search only the alarm groups he/she wants and make them appear on the relevant list.
	With this function, the user can see the list by alarm groups in the early stages.
Syntax	void SetAlarmGroupList(LPCTSTR strGroupList) strGroupList: Insert the alarm groups in a form of string values. Be careful about distinguishing
	one alarm group from the other with ";" and not forgetting to insert ";" at the end.
Reference	To see AlarmGroup_1 and AlarmGroup_2
	SetAlarmGroupList ("AlarmGroup_1;AlarmGroup_2;")

SetAlarmList Function	
Description	This function is to allow the user to select an alarm kind to make it appear on the relevant list.
	With this function, the user can see the real-time alarm list by kinds in the early stages.
	long SetAlarmList(long alarmKind, LPCTSTR str)
	alarmKind: Enter an alarm kind. Insert the following values according to alarm kinds.
	O - AII
	1 - Process Alarm
Syntax	2 - System Alarm
	3 - Process Alarm + System Alarm
	4 - Event
	5 - Process Alarm + Event
	6 - System Alarm + Event
	str: enter empty value ("").
Reference	To see a process alarm list
	SetAlarmList(1, "")

SetDetailStringFiltering Function	
Description	It is the function to apply the string filtering value for the desired alarm groups only of the alarm viewer and retrieve and display them on the list.
Syntax	void SetDetailStringFiltering(LPCTSTR strGroupList) strGroupList: Input the string filtering value of the alarm group name to retrieve. ";" is the separator in word unit and "+" is the separator in string unit.
Reference	When you want to view the alarm groups called Group_1 and Group_2 with the string. SetAlarmGroupList ("Group_1;Group_2;")

SetHistoryList Function	
Decemention	This function is to allow the user to select an alarm kind to make it appear on the relevant list.
Description	With this function, the user can see the history alarm list by kinds in the early stages.
	long SetHistoryList(long kind, LPCTSTR str)
Syntax	kind: Enter an alarm kind. Insert the following values according to alarm kinds. 0 - All 1 - Process Alarm 2 - System Alarm 3 - Process Alarm + System Alarm 4 - Event 5 - Process Alarm + Event 6 - System Alarm + Event Str: enter empty value ("").
Reference	To see a process alarm list out of history alarm lists SetHistoryList(1, "")

SetFilteringOption Function	
Description	This function is to filter and see alarms by kind or group with several filtering options.
	This function applies only to history alarms. It does not apply to real-time alarms.
	long SetFilteringOption(ushort almType, LPCTSTR startTime, LPCTSTR endTime, LPCTSTR
	tagName, short tagType, short almKind, short almOccurType, short almGrade, short ackGrade,
	LPCTSTR almGroup)
Syntax	almType: Enter an alarm kind. Insert the following values according to alarm kinds. 0 - All 1 - Process Alarm 2 - System Alarm

	3 - Process Alarm + System Alarm
	4 - Event
	5 - Process Alarm + Event
	6 - System Alarm + Event
	startTime: Write a start time to search. Write a string value in a form of "2007/08/17."
	Enter empty value ("") if the user wants to search regardless of the start time.
	endTime: Write an end time to search. Write a string value in a form of "2007/08/17."
	Enter empty value ("") if the user wants to search until now.
	tagName: Write a tag name to search. Enter empty value ("") to search the entire tags.
	tagType: Enter a tag type. Enter 1 for analog tags and 2 for digital tags.
	almKind: Enter 0.
	almOccurType: A parameter to select one from occurrence, recovery or Ack of alarm and search
	Enter the following value.
	1 - Occurrence / Recovery / Ack
	2 - Occurrence / Recovery
	3 - Occurrence / Ack
	4 - Occurrence
	5 - Recovery / Ack
	6 - Recovery
	7 - Ack
	almGrade: Enter an alarm grade to search.
	ackGrade: Enter an ack grade to search.
	almGroup: Enter an alarm group to search.
	If the user wants to search multiple groups, he/she needs to distinguish one group from the other
	with ";".
	If empty value or 0 is entered for each parameter, searching is conducted regardless of the
	conditions of the relevant parameter.
	To search the recovered alarms and ack alarms among the alarms that took place in
Reference	Alarm_Group1 from August 15 through 17, 2007
	SetFilteringOption (0, "2007/08/15", "2007/08/17", "", 0, 0, 5, 0, 0, "Alarm_Group1")

SetTagHistoryFiltering Function	
Description	It is the function to apply the string filtering value for the desired history tags of the alarm viewer
	and retrieve and display them on the list.
	void SetTagHistoryFiltering(LPCTSTR strTagFilter);
Syntax	strTagFilter: Input the string filtering value of the tag history to retrieve. ";" is the separator in word unit and "+" is the separator in string unit.
Reference	When you want to view the history alarm tag called Tag_1 and Tag_2 with the string.
	SetAlarmGroupList ("Tag_1;Tag_2;")

ShowConfigDlg Function		
Description	The configuration setting window of the alarm viewer is shown.	
Syntax	void ShowConfigDlg(void)	
Reference	To show the configuration setting window	
	ShowConfigDlg()	

ShowFilteringDlg Function		
Description	The filtering search window of the alarm viewer is shown.	
Syntax	long ShowFilteringDlg(void)	
Reference	To show the filtering search window	
	ShowFilteringDlg ()	

StartSound Function		
Description	It is used to generate the sound when an alarm occurs.	
Syntax	long StartSound(void)	
Reference	When you want to turn on the alarm sound	
	StartSound ()	

StopAlarm F	StopAlarm Function	
Description	It is used when stopping for a while or restarting the alarm viewer.	
	long StopAlarm(long bFlag)	
Syntax	bFlag: - To stop the alarm: True	
	- To start the alarm: False To stop the alarm	
Reference	StopAlarm(True)	
The state of the s	To restart the alarm	
	StopAlarm(False)	

StopSound Function		
Description	It is used when stopping alarm sound.	
Syntax	long StopSound(void)	
Reference	To stop alarm sound	
	StopSound ()	

PrintList Function		
Description	It is used when printing the alarms that take place on the alarm viewer.	
Syntax	long PrintList(void)	
Reference	To print the occurred alarms	
	PrintList ()	

11.3 Trend Viewer

This Trend Viewer is an Active X module that displays charts monitoring online and logging data on the tags registered in the Trend.

As a screen to monitor changes in tag values over time, this Trend Viewer is an Active X module that displays online tag data graphs as well as logging data graphs stored in the logging server.

In addition, this Trend can be used in analyzing changes in logging data.

11.3.1 Prerequisite and Environment

Trend properties can be set up only after the ActiveX module is inserted to the InfoU graphic editor.

Channel assignment, tag assignment, X axis/Y axis value input and other tag properties to be monitored are designated in advance as Trend properties

Channels or tags are not basically assigned to the trend status inserted in the graphic editor. It is essential to display the Property Window before setting up the property values needed to run the Trend.

After the property values are saved, the Trend Monitoring Screen appears upon the opening of the screen under the Run time environment.

The engineering values are entered in the following order on the Trend viewer.

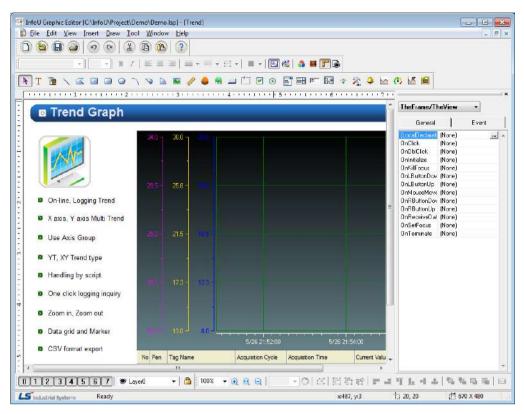


is selected from the tools, immediate inserting can be performed.

11.3.2 Screen Configuration

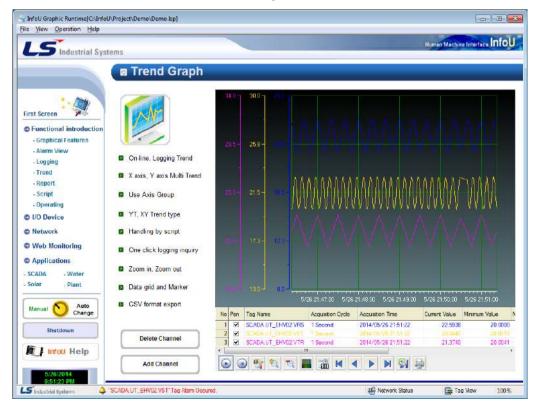
(1) Engineering Screen

If Trend is inserted and a tag to be monitored is selected and then settings are all completed, the following screen appears. The screen in this figure shows that three tags are selected and gradation effect is applied.



(2) Runtime Screen

If default trend settings are completed on the engineering screen above and then, the runtime is executed, the screen shows that data values are changed over time.

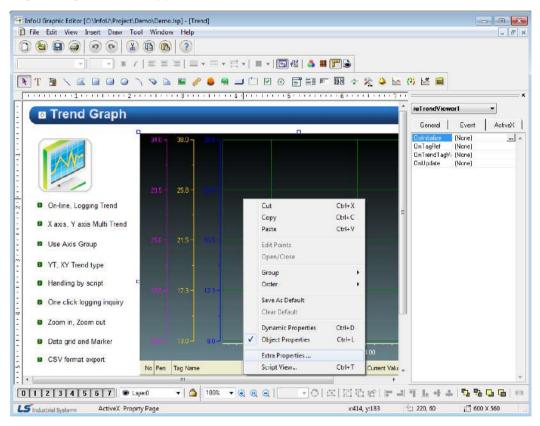


11.3.3 Settings

If the right side of the mouse is clicked on the Trend and the 'Active X Properties' menu is selected, the setting window appears.

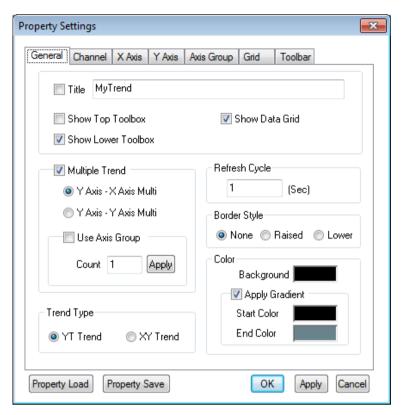
The same setting screen is used for the engineering screen and the runtime screen. But, the runtime screen does not have Grid Settings and Toolbar Selection functions.

In addition, once property values are saved on the engineering screen, those values will be continuously valid however, if those property values are changed on the runtime screen, the changed values are applied only to the runtime screen. The changed values are cancelled if the runtime stops and the property values set up on the engineering screen are applied.



(1) General

The Engineering Screen and the Runtime Screen have the same general functions.



1) Title

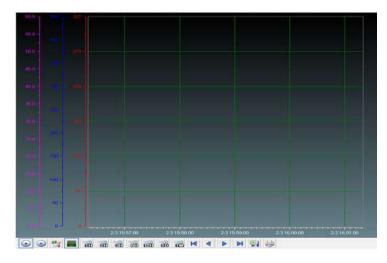
Designate a title of the trend.

2) Show Top Toolbox/Show Lower Toolbox

Set up whether to display Trend Toolbox on the top or the bottom during the running. Both can not be selected at the same time and it is allowed neither of them is selected. 'Show Lower Toolbox' has been selected as the default value.

3) Show Data Grid

Select whether to show or hide data grid during the running. The following figure shows the screen when 'Show Data Grid' is not selected. 'Show Data Grid' has not been selected as the default value.



a. Multiple Trend

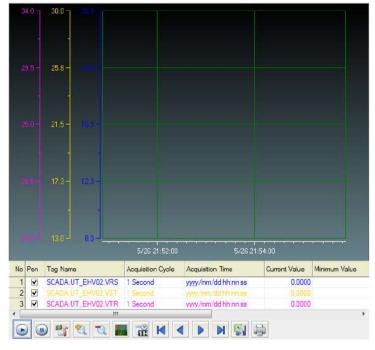
Select 'Multiple Trend.'

In general trends, the axis that takes the lowest value among the minimum values as the min value and the highest value among the maximum values as the max value is commonly used. However, if 'Multiple Trend' is selected, any axis can be used individually.

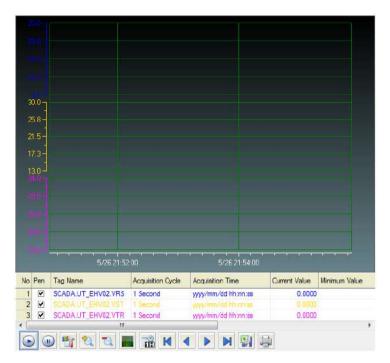
A general trend screen is as following.



A Multiple Trend screen that selects x-axis is as following.



A Multiple Trend screen that selects y-axis is as following.

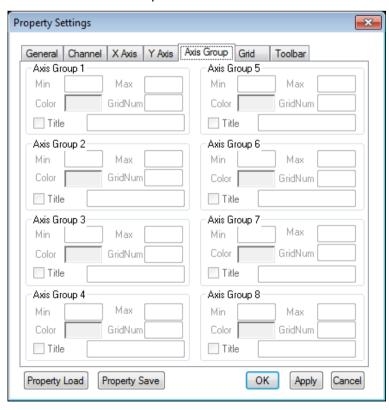


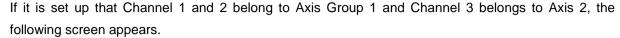
Multiple trends can use Axis Group.

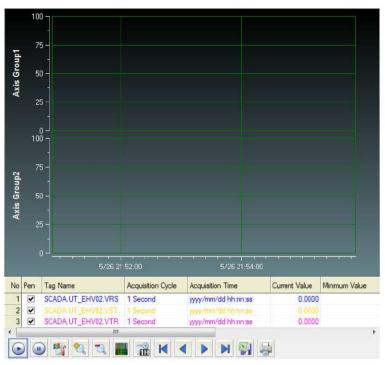
Axis Group is a function to re-divide several channels into desired groups to view them.

It is used as following.

- Check 'Use Axis Group.
- Input the number and press 'Apply' button.
- Once it moves to 'Axis Group' tap upon the 'Apply' button, Axis Groups as much as the inputted number are activated. Input the min value and max value here.







4) Refresh Cycle

Designate a refresh cycle. One second has been set up as the default value.

5) Color

Select a background color and set up 'Apply Gradient.' If 'Apply Gradient' is selected, the background color is not applied. In addition, it needs to set up 'Start Color' and 'End Color'.

6) Border Style

Select a Border Style for the relevant trend.

7) Trend Type

Select either YT Trend or XY Trend.

If YT Trend is selected, x axis indicates time and Y axis shows tag values while if XY Trend is selected, both X and Y axis consist of tag values.

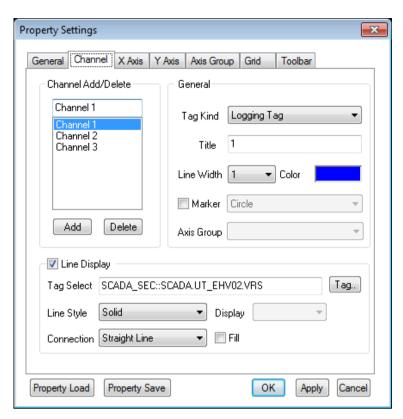
(2) Channel

The Engineering Screen and the Runtime Screen have the same Channel functions.

Up to 20 channels are provided in the Trend. There is at least one channel and it is available to designate Tag Kind, Title, Color, Marker, Tag, Line Style and Connection for each channel.

If one channel is an online tag, the rest channels have to be online tags. Likely, if one channel is a logging tag, the rest channels have to be logging tags.

Also, if any logging data needs to be saved or searched, the logging tag should be selected and used. Online tags do not provide the logging function.



1) Channel Add/Delete

A channel is added or deleted. At least one or more than one but not more than 20 channels can be selected.

2) Tag Kind

Select either Logging Tag or Online Tag.



3) Title

Designate a title of the channel.

4) Line Width

Select a Line Width of the channel. Numbers O through 4 are available.

5) Color

Decide color of the channel.

6) Marker

As a point to indicate the tag value of the relevant channel, the following shapes are available.



7) Tag Select

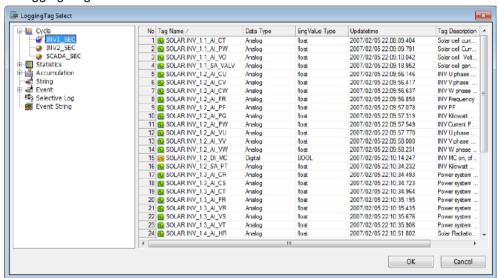
Assign a tag to the channel. One tag can be assigned to one channel.

If a logging tag is selected, the logging tag browser where the associated logging group is set up is called while the online tag browser is called for an online tag.

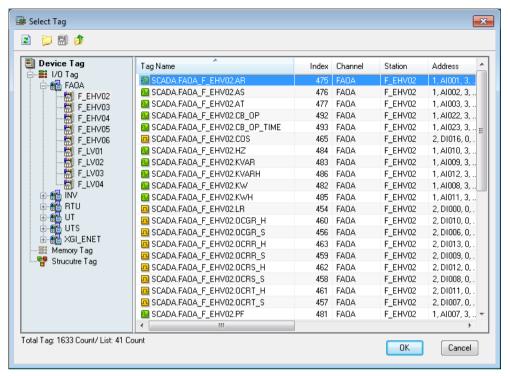
Be cautious that logging data can be searched only when a logging tag is selected.

If a tag is selected, the tag's minimum value and maximum values are displayed. These min/max values apply to Y-axis values for Y axis settings.

* 'Logging Tag Select' screen

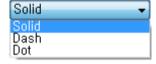


* 'Online Tag Select' screen



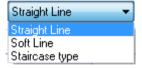
8) Line Style

Select one among Solid, Dash and Dot.



9) Connection

Select one among Straight Line, Soft Line and Staircase Type.



10) Display

This function becomes active only when a statistics tag is selected. For analog tags, select one value among current value, min value, max value, average value, sum and sample and for digital tags, select one value among current value, On count, On Time, Total count and sample. If the tag is not a statistics tag, it becomes inactive.

* Analog Tag



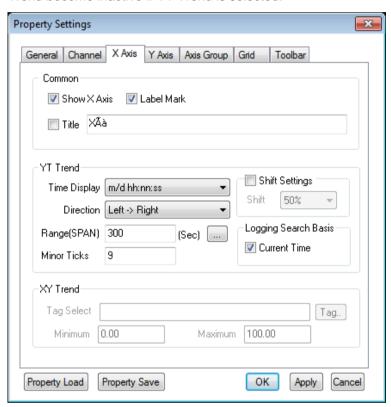
* Digital Tag



(3) X Axis

The Engineering Screen and the Runtime Screen have the same X axis functions.

If XY Trend is selected on the General tap, setting items for YT Trend become inactive while those for XY Trend become inactive if YT Trend is selected.



1) Common

a. Show X Axis

Decide whether to show or hide X Axis.

b. Label Mark

Select whether to mark labels on X axis or decide a title for identification.

c. Title

Decide whether to mark a title on X axis.

- 2) YT Trend
 - a. Time Display

Decide one among various Time Display types.



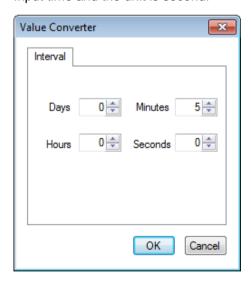
b. Direction

Select either 'Left->Right' or 'Right->Left.



c. Range (Span)

Save a range of X-axis values. Input a value directly or select one from the range window. Input time and the unit is second.



3) Shift Settings

The Shift function refers to moving the current value to the left as much as the shift setting value of x axis if the graph goes to the end. If the user wants this function, he/she needs to set up Shift and press 'Apply' button. Available values are from 0 through 100 %. Shift has not been set up as the default value and it starts after drawing a range of X axis.

4) History retrieval

In the case of Trend, basically, history retrieval is done at a distance of regular time. When selecting the current time, history retrieval will be performed based on the current time.

5) XY Trend

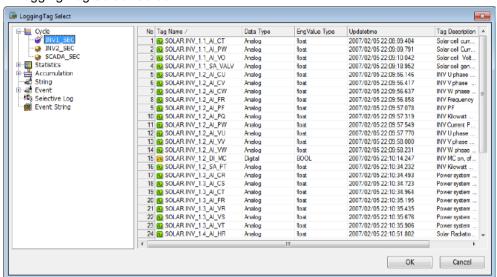
a. Minimum/Maximum

Specify the min/max value of the relevant tag to be marked on X-axis. Only one tag can be on X axis.

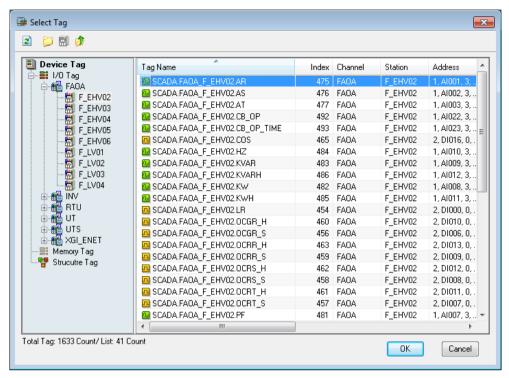
b. Tag Select

Assign a tag to the channel. If a logging tag is selected, the logging tag browser where the associated logging group is set up is called while the online tag browser is called for an online tag. Logging data can be searched only when a logging tag is selected.

* 'Logging Tag Select' screen

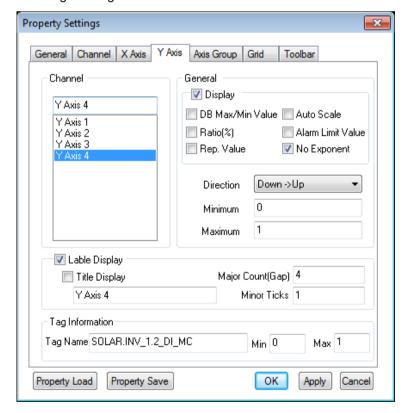


* 'Online Tag Select' screen



(4) Y Axis

The Engineering Screen and the Runtime Screen have the same Y axis functions.



- 1) Channel
 - Show the channels that are assigned to Y axis.
- 2) Display
 - Select either show/hide Y axis.

3) DB Max/Min Value

DB Max/Min Value is used instead of user's max/min value.

4) Auto scale

For Y-axis's min./max. value of each channel, use the min./max. value of the currently occurring channel.

5) Ratio (%)

Display Y axis value in Ratio not in tag value. If Display in Ratio is selected for even one Y axis, Y axis is displayed in percentage unless Multi Trend has selected. Also, if this item is selected, moving with the mouse becomes impossible along Y axis.

6) Alarm Limit Value

If this item is selected, HH value and LL value of tag alarm are drawn in lines and Alarm Limit Value is displayed.

HH value and LL value are not visible.

7) Use of typical value

It sets the min./max. value of a specific channel as the typical axis and displays them. It is not applied to the multi trend.

8) Direction

Select either 'Down->Up' or 'Up->Down'.



9) Minimum/Maximum

Set up max/min value needed to show Y axis. Tag's max/min value has been set up as the default value.

10) Use Tag Information

Show tag information of the channel, which has been set up on Channel tap. Tag name and tag's max/min value are displayed.

11) Label Display

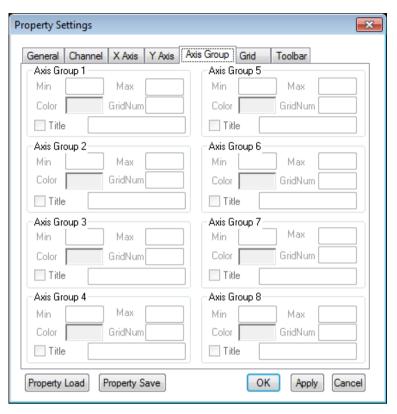
Select whether to display label and how to mark the title.

12) Grid Count

Grid Count is the number of lines for Y axis values visible on the screen. This value is adjusted to display max/min value. But, this value may not be adjusted in case that Y axis is too narrow to display channels.

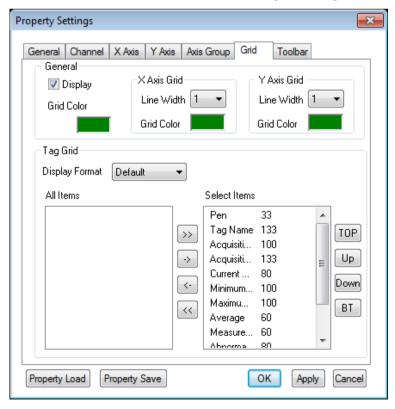
(5) Axis Group

This tap becomes active when 'Multi Trend' is selected on the General tap and Axis Group is applied. Input the min/max value and title if necessary for each Axis Group.



(6) Grid

This Grid setting function is only available on the Engineering Screen. It is not displayed on the Runtime Screen. It consists of General for color settings and Tag Grid for tag grid item and order settings.



1) General

a. Grid Color

Select a color of grid border.

b. X Axis Grid

Select Line Width and Grid Color for X Axis Grid.

c. Y Axis Grid

Select Line Width and Grid Color for Y Axis Grid.

2) Tag Grid

Select alarm items to display on the viewer.

'Select Items' include Pen, Tag Name, Acquisition Cycle, Acquisition Time, Current Value, Minimum, Maximum, Zero, Span, Tag Kind, Status and Tag Description.

Numbers next to items indicate the column size of each item on the Trend Viewer and they are changeable. Double click on the item to change and insert a new size.

a. >> Button

Move the marked item from the entire list to the selected list.

b. << Button

Move the unmarked item from the entire list to the selected list.

c. -> Button

Move from the entire list to the selected list.

d. <- Button

Move from the selected list to the entire list.

e. TOP Button

Move the marked location on the selected column from the selected list to the top left.

f. A Button

Move the marked location on the selected column from the selected list to the next cell on the left side.

g. ▼ Button

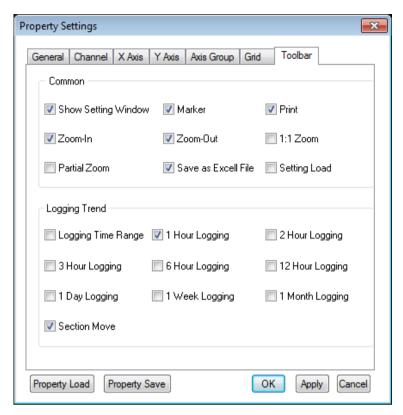
Move the marked location on the selected column from the selected list to the next cell on the right side.

h. BT Button

Move the marked location on the selected column from the selected list to the end on the right side.

(7) Toolbar

Select Toolbar (menus).



1) Start

This is a common function that applies to both online trends and logging trends,

Once trend monitoring starts, data is renewed every second and 5 minutes is set as the time for X axis.

To view the current screen again during the logging search, press this button and the current time screen is displayed.

This Start button can not be selected as the default value.

2) Stop

Trend Monitoring stops. This function is available only for logging trends. That is, this function exists only when logging tags are selected and online trends do not have this function.

This Stop button can not be selected as the default value like the Start button.

3) Show Setting Window

Setting values of the current trend can be changed. This is a common function that applies to both online trends and logging trends.

This Setting Window has been described before.

4) Zoom-in

The current trend screen is enlarged twice to search data. Zoom-in makes both of X axis and Y axis enlarged twice. This is a common function that applies to both online trends and logging trends.

5) Zoom-out

The current trend screen is reduced twice to search data. Zoom-in makes both of X axis and Y axis reduced twice. This is a common function that applies to both online trends and logging trends.

6) 1:1 Zoom

This function is used to return the enlarged or reduced trend screen into its original size -100% screen.

This is a common function that applies to both online trends and logging trends.

7) Partial Zoom

The trend screen is partly zoomed in/out to search data. A part of the trend screen is dragged with the mouse and it becomes enlarged as soon as the mouse is released. At this time, both X axis and Y axis are enlarged.

This is a common function that applies to both online trends and logging trends.

8) Save as Excel File

Convert and save the current trend being monitored into a csv file.

The csv file can be opened in Excel and it can be viewed as normal text.

9) Print

Print the current trend being monitored. In printing, the background screen is changed in white color.

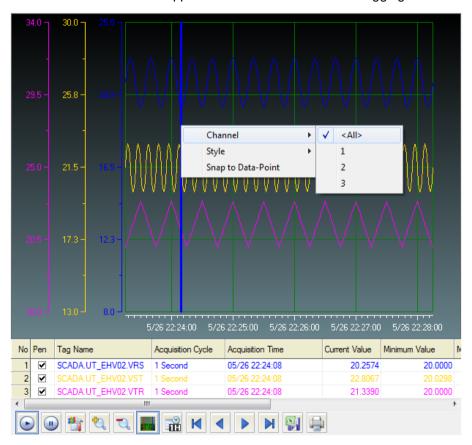
10) Load properties

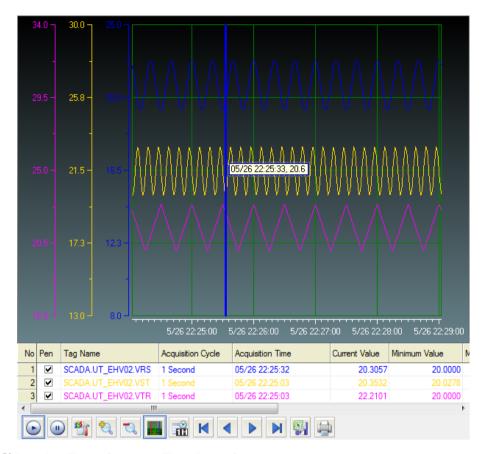
It shows the saved trend property setting file in the form of a list. If you select the desired property settings, they will be applied to the current trend. For more details, refer to 'Load/Save Properties'.

11) Marker

If Marker button is pressed, a yellow marker line is displayed and values of channels are also listed on the right screen. If the right button of the mouse is pressed on the marker, the channel value can be seen in a tool tip type. To see another channel value, select it on the right screen. At this time, the marker color is the same with the channel color.

To prevent the bar appeared on the screen from re-appearing, click on Marker button one more time. This is a common function that applies to both online trends and logging trends.





12) Logging Trend (Logging Time Range)

Input logging conditions (period and sampling conditions) to search past data. The logging search will be further explained later. This function is available only for logging trends.

13) 1 Hour Logging

View 1 hour logging data including the current time. For example, if it is 10:20, the logging data between 10 and 11o'clock are viewed. This function is available only for logging trends.

14) 2 Hour Logging

View logging data in the time range where the current time belongs to by dividing 24 hours into 0~2 o'clock, 2~4 o'clock, 4~6 o'clock, 20~22 o'clock and 22~midnight. For example, if it is 10:20, the logging data between 10 o'clock and noon are viewed. This function is available only for logging trends.

15) 3 Hour Logging

View logging data in the time range where the current time belongs to by dividing 24 hours into 0~3 o'clock, 3~6o'clock, 6~9o'clock,18~21 o'clock and 21~midnight. For example, if it is 10:20, the logging data between 9 o'clock and noon are viewed. This function is available only for logging trends.

16) 6 Hour Logging

View logging data in the time range where the current time belongs to by dividing 24 hours into 0~6 o'clock, 6~12o'clock, 12~18o'clock and 18~midnight For example, if it is 10:20, the logging data between 6 o'clock and noon are viewed. This function is available only for logging trends.

17) 12 Hour Logging

View logging data in the time range where the current time belongs to by dividing 24 hours into 0~noon and noon~ midnight. For example, if it is 10:20, the logging data between 0 o'clock and noon are viewed.

This function is available only for logging trends.

18) 1 Day Logging

View today's logging data. This function is available only for logging trends.

19) 1 Week Logging

View this week's logging data. The period is from Monday through the midnight of Sunday. This function is available only for logging trends.

20) 1 Month Logging

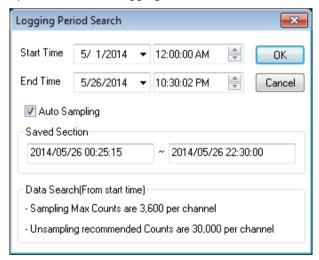
View this month's logging data This function is available only for logging trends.

21) Load Backup File

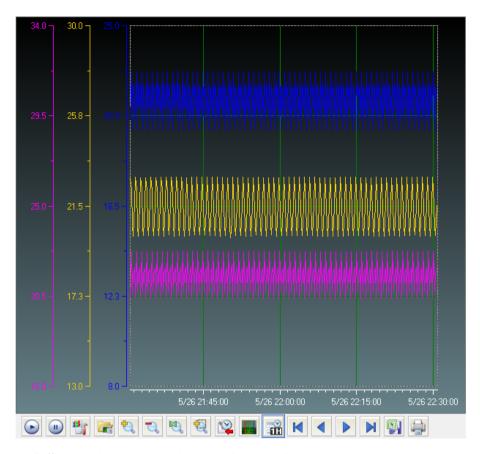
The trend backup files saved on the server or other storage devices can be imported and viewed in a list. Detailed functions on Load Backup File are described later.

11.3.4 Logging Search

This is a function to select logging search conditions. The following Logging Period Search window is displayed upon the click on Logging Search button.



The saved section indicates the start and end time of saving the whole data. You can determine the start and end time referring to this. Trend can express the data values up to 3600 and if it exceeds the limit, the data will be displayed through the automatic sampling.

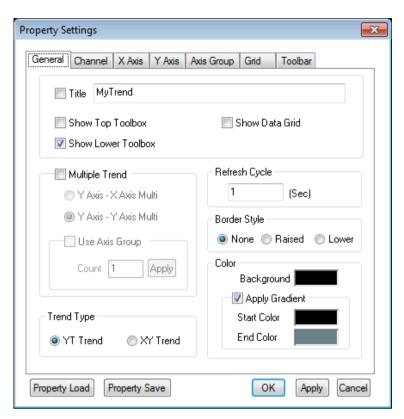


* Difference between logging search and online search

For online search, the mouse can be moved along the axis. Y axis can be selected with the mouse and moving is available with mouse wheel, mouse drag or keyboard arrow. For logging search, any axis can not be moved and only data in the search range are displayed.

11.3.5 Others

- (1) Save as Excel File
 - 'Save as Excel File' is a function to save data on the current screen in a csv files.
- (2) Print
 - The current trend screen is printed. Basically, the screen is changed from black to white when printing.
- (3) Properties Load/Save
 - You can import and save the properties applied to the trend in the format of a special file. They can be applied to the graphic editor/runtime. You can also individually import the saved file using the script.



1) Property Load

In the Property Settings window, if you click the toolbar button of 'Property Load' or 'Import Settings', the saved trend property file will be displayed in the format of a list as below. If a user selects the desired property, it will be applied to the trend.



11.3.6 How to Use Script

(1) Function List

Function Name	Function Declaration	
AddChannel_Archive	long AddChannel_Archive(long channelNo, LPCTSTR modelName,	
	LPCTSTR tagName, double minValY, double maxValY)	
AddChannel_ArchiveEx	long AddChannel_ArchiveEx(long channelNo, BSTR modelName,	
	BSTR tagName, double minValY, double maxValY, long LineWidth,	

	long LineColor, long LineStyle, long LineConnection, BSTR Labels)
AddChannel_RealTime	long AddChannel_RealTime(long channelNo, LPCTSTR tagName,
	double minValY, double maxValY)
AddChannel_RealTimeEx	long AddChannel_RealTimeEx(long channelNo, BSTR tagName,
	double minValY, double maxValY, long LineWidth, long LineColor,
	long LineStyle, long LineConnection, BSTR Labels)
AddTrendChannel	long AddTrendChannel(LPCTSTR dataSource, long channelNo, long modelID, LPCTSTR modelName, long tagID, LPCTSTR tagName, long
	minValueY,
	long maxValueY)
ApplyTrend	void ApplyTrend(void)
ApplyProperty	long ApplyProperty(VARIANT_BOOL bFlag)
DeleteTrendChannel	long DeleteTrendChannel(LPCTSTR channelStr, long channelNo)
GoFirstTrend	long GoFirstTrend(void)
GoLastTrend	long GoLastTrend(void)
GoNextTrend	long GoNextTrend(void)
GoPreviousTrend	long GoPreviousTrend(void)
Loadhistory12h	void Loadhistory12h (void)
Loadhistory1day	void Loadhistory1day (void)
Loadhistory1h	void Loadhistory1h (void)
Loadhistory1month	void Loadhistory1month (void)
Loadhistory1week	void Loadhistory1week (void)
Loadhistory2h	void Loadhistory2h (void)
Loadhistory3h	void Loadhistory3h (void)
Loadhistory6h	void Loadhistory6h (void)
LoadHistoryTrend	void LoadHistoryTrend(long year, long month, long week, long day,
	long hour, BOOL bFlag)
LoadPeriodDataStartTrend	void LoadPeriodDataStartTrend(BSTR strFrom, BSTR strTo)
LoadPeriodTrend	long LoadPeriodTrend(long days, BOOL bFlag)
LoadProperty	void LoadProperty(BSTR FileName)
Load_ArchivePeriod_Trend	long Load_ArchivePeriod_Trend(long type, long days,
	VARIANT_BOOL bFlag)
LoadPeriodDataTrend	long LoadPeriodDataTrend(LPCTSTR strFrom, LPCTSTR strTo,
	long bSample, LPCTSTR bFlag)
PauseTrend	void PauseTrend(void)
PrintTrend	void PrintTrend(void)
SaveProperty	void SaveProperty(BSTR FileName)
SetAlarmLimit	long SetAlarmLimit(long chanNo, VARIANT_BOOL bFlag, BSTR reserved)
SetAutoScale	long SetAutoScale(long chanNo, VARIANT_BOOL bFlag, BSTR reserved)
SetAxisXStartSpan	void SetAxisXStartSpan(VARIANT_BOOL bStartFromNowTime, long XSpan)

SetChannelMinMax	long SetChannelMinMax(long channelNo, double minValue,double maxValue)
SetTrendGridVisible	long SetTrendGridVisible(long isVisible)
SettSaveasexcel	void SettSaveasexcel(void)
SetZoom100	void SetZoom100 (void)
SetZoomIn	void SetZoomIn(void)
SetZoomOut	void SetZoomOut (void)
SetZoomRect	void SetZoomRect (void)
ShowMarkerValue	long ShowMarkerValue(void)
ShowSettingLoad	void ShowSettingLoad(void);
ShowTrendProperty	void ShowTrendProperty(void)
StartTrend	void StartTrend(void)

(2) Function Description

AddChannel	_Archive Function
Description	This function is to add a channel in a logging group name or a tag name to the trend if the tag is
	a logging trend.
	long AddChannel_Archive(long channelNo, LPCTSTR modelName, LPCTSTR tagName,
	double minValY, double maxValY)
	channelNo: Enter LONG-type numbers as the number of the channel to be added.
Syntax	modelName: Enter the logging group name of the logging tag to be added. This is a string value.
Sylitax	tagName: Enter the name of the logging tag to be added. This is a string value.
	minValY: Enter DOUBLE-type numbers as the tag's minimum value.
	maxValY: Enter DOUBLE-type numbers as the tag's maximum value.
	If minValY and maxValY is -999, the minimum value and maximum value of DB will be
	automatically set; if minValY and maxValY is 0, it will be set as an automatic scale.
Reference	To add three channels to the Trend
	AddChannel_Archive(1, "SCADA_SEC", "SCADA.UT_EHV02.VRS", 0, 400)
	AddChannel_Archive(2, "SCADA_SEC", "SCADA.UT_EHV02.VST", 0, 400)
	AddChannel_Archive(3, "SCADA_SEC", "SCADA.UT_EHV02.VTR", 0, 400)

AddChannel_ArchiveEx Function	
Description	The history trend is the function to add channels to the trend with the model name and tag name.
Syntax	long AddChannel_ArchiveEx(long channelNo, LPCTSTR modelName, LPCTSTR tagName, double minValY, double maxValY, long LineWidth, long LineColor, long LineStyle, long LineConnection, BSTR Labels) channelNo: Enter the number of LONG type for the channel No. to add.

	modelName: Enter the model name of the archive tag to add. It is the string value.
	tagName: Enter the tag name of the archive tag to add. It is the string value.
	minValY: Enter the number of DOUBLE type for the tag's minimum value.
	maxValY: Enter the number of DOUBLE type for the tag's maximum value.
	LineWidth: Enter the number of LONG type for the line thickness of the channel to add.
	LineColor: Enter the number of LONG type for the line color of the channel to add.
	LineStyle: Enter the number of LONG type for the line style of the channel to add.
	LineConnection: Enter the number of LONG type for the line connection style of the channel
	to add.
	If minValY and maxValY is -999, the minimum value and maximum value of DB will be
	automatically set; if minValY and maxValY is 0, it will be set as an automatic scale.
	To add three channels to the trend
	AddChannel_ArchiveEx(1, "SCADA_SEC", "SCADA.UT_EHV02.VRS", 0, 400, 2, RGB(255,0,0),
	0, 1)
Reference	AddChannel_ArchiveEx(2, "SCADA_SEC", "SCADA.UT_EHV02.VST", 0, 400, 400 ,2,
	RGB(255,255,0), 0, 1)
	AddChannel_ArchiveEx(3, "SCADA_SEC", "SCADA.UT_EHV02.VTR", 0, 400, 400, 2,
	RGB(0,0,0), 0, 1)

AddChannel_RealTime Function	
	This function is to add a channel in a tag name to the trend if the trend is an online tag. But, in
Description	most cases, online monitoring is possible with logging tags, therefore, AddChannel_Archive is
	more widely used than this function.
	long AddChannel_RealTime(long channelNo, BSTR tagName, double minValY,
	double maxValY)
	channelNo: Enter LONG-type numbers as the number of the channel to be added.
Syntax	tagName: Enter the name of the online tag to be added. This is a string value.
	minValY: Enter DOUBLE-type numbers as the tag's minimum value.
	maxValY: Enter DOUBLE-type numbers as the tag's maximum value.
	If minValY and maxValY is -999, the minimum value and maximum value of DB will be
	automatically set; if minValY and maxValY is 0, it will be set as an automatic scale.
	To add three channels to the trend
Reference	AddChannel_RealTime (1, "SCADA.UT_EHV02.VRS", 0, 400)
	AddChannel_RealTime (2, "SCADA.UT_EHV02.VST", 0, 400)
	AddChannel_RealTime (3, "SCADA.UT_EHV02.VTR", 0, 400)

AddChannel_RealTimeEx Function	
Description	It is the function to add the channel to the trend with the tag name in the real-time trend.
	However, in most cases, real-time monitoring can be performed through the archive tag so the
	AddChannel_Archive function is used more widely than this function.
	long AddChannel_RealTimeEx(long channelNo, BSTR tagName, double minValY,
	double maxValY, long LineWidth, long LineColor, long LineStyle, long LineConnection, BSTR Labels)
	channelNo: Enter the number of LONG type for the channel No. to add.
	tagName: Enter the tag name of the real-time tag to add. It is the string value.
	minValY: Enter the number of DOUBLE type for the tag's minimum value.
Syntax	maxValY: Enter the number of DOUBLE type for the tag's maximum value.
	LineWidth: Enter the number of LONG type for the line thickness of the channel to add.
	LineColor: Enter the number of LONG type for the line color of the channel to add.
	LineStyle: Enter the number of LONG type for the line style of the channel to add.
	LineConnection: Enter the number of LONG type for the line connection style of the channel to add.
	If minValY and maxValY is -999, the minimum value and maximum value of DB will be
	automatically set; if minValY and maxValY is 0, it will be set as an automatic scale.
	To add three channels to the trend
Deference	AddChannel_RealTimeEx (1, "SCADA.UT_EHV02.VRS", 0, 400, 2, RGB(255,0,0), 0, 1)
Reference	AddChannel_RealTimeEx (2, "SCADA.UT_EHV02.VST", 0, 400, 2, RGB(255,255,0), 0, 1)
	AddChannel_RealTimeEx (3, "SCADA.UT_EHV02.VTR", 0, 400, 2, RGB(0,0,0), 0, 1)

AddTrendChannel Function		
	This function is to add a channel to the trend. But, this function is rarely used because the user	
Description	needs to input ID information on the logging group and tag as parameters. It is recommended to	
	use AddChannel_Archive if the logging group ID or tag ID is unknown.	
	long AddTrendChannel(LPCTSTR dataSource, long channelNo, long modelID,	
	LPCTSTR modelName, long tagID, LPCTSTR tagName, long minValueY, long maxValueY)	
Syntax	dataSource: Enter the following string values to identify whether the tag to be added is a logging tag or an online tag. - Logging Tag: "Archive" - Online Tag: "OnLine" channelNo: Enter LONG-type numbers as the number of the channel to be added. modelID: Enter LONG- type numbers as the logging group ID of the logging tag to be added. modelName: Enter the logging group name of the logging tag to be added. This is a string value. tagID: Enter LONG- type numbers as the tag ID of the logging tag to be added.	

tagName: Enter the tag name of the online tag to be added.	
	minValY: Enter DOUBLE-type numbers as the tag's minimum value.
	maxValY: Enter DOUBLE-type numbers as the tag's maximu value.
	If minValY and maxValY is -999, the minimum value and maximum value of DB will be
	automatically set; if minValY and maxValY is 0, it will be set as an automatic scale.
Reference	To add three channels to the Trend
	AddTrendChannel("Archive", 1, 9, "INV1_SEC", 2710, "SOLAR.INV_1.1_AI_CT", 0, 327)
	AddTrendChannel("Archive", 2, 9, "INV1_SEC", 2714, "SOLAR.INV_1.1_AI_VO", 0, 450)
	AddTrendChannel("Archive", 3, 9, "INV1_SEC", 2713, "SOLAR.INV_1.1_AI_PW", 0, 60)

ApplyTrend Function	
Description	This function is to make the monitoring start after adding a channel to the trend.
Syntax	void ApplyTrend(void)
Reference	ApplyTrend ()

ApplyProperty Function		
Description	This function is to apply the trend properties to the trend after changing them.	
Syntax	long ApplyProperty(VARIANT_BOOL bFlag)	
	bFlag: Input TRUE	
Reference	ApplyProperty(TRUE)	

DeleteTrendChannel Function	
Description	This function is to delete a certain channel or the entire channels from the trend.
	long DeleteTrendChannel(LPCTSTR channelStr, long channelNo)
	channelStr: Enter the channel name to be deleted.
Syntax	channelNo: Enter the channel number to be deleted.
	But, when deleting the entire channels, enter empty character ("") in channelStr and '0' in
	channelNo.
	To delete 'Channel 3' from the trend (in case that the channel name is known)
	DeleteTrendChannel ("Channel3", 3)
Reference	To delete 'Channel 3' from the trend (in case that the channel name is unknown) DeleteTrendChannel ("", 3)
	The above two methods are used because there are same tags in channels.
	To delete the entire channels from the trend
	DeleteTrendChannel ("", 0)

GoFirstTrend Function	
Description	It is the function to retrieve sectional history for the next setting time based on the start of the first
	logging time.
Syntax	long GoFirstTrend(void)

GoLastTrend Function	
Description	It is the function to retrieve sectional history for the previous time based on the latest logging
	time.
Syntax	long GoLastTrend(void)

GoNextTrend Function	
Description	It is the function to retrieve sectional history for the next time based on the current logging time.
Syntax	long GoNextTrend(void)

GoPreviousTrend Function	
Description	It is the function to retrieve sectional history for the previous time based on the current logging time.
Syntax	long GoPreviousTrend(void)

Loadhistory12h Function	
Description	It is the function to retrieve the history for the section of previous 12 hours based on the current
	logging time.
Syntax	void Loadhistory12h (void)

Loadhistory1day Function	
Description	It is the function to retrieve the history for the section of previous day based on the current
	logging time.
Syntax	void Loadhistory1day (void)

Loadhistory1h Function	
Description	It is the function to retrieve the history for the section of previous an hour based on the current
	logging time.
Syntax	void Loadhistory1h (void)

Loadhistory1month Function	
Description	It is the function to retrieve the history for the section of previous a month based on the current logging time.
Syntax	void Loadhistory1month (void)

Loadhistory1week Function	
Description	It is the function to retrieve the history for the section of previous a week based on the current logging time.
Syntax	void Loadhistory1week (void)

Loadhistory2h Function	
Description	It is the function to retrieve the history for the section of previous two hours based on the current
	logging time.
Syntax	void Loadhistory2h (void)

Loadhistory3h Function	
Description	It is the function to retrieve the history for the section of previous three hours based on the
	current logging time.
Syntax	void Loadhistory3h (void)

Loadhistory6h Function	
Description	It is the function to retrieve the history for the section of previous six hours based on the current
	logging time.
Syntax	void Loadhistory6h (void)

LoadHistoryTrend Function	
	This function is to search logging data in a designated time zone. Enter year, month, week, day,
	hour to set the start and end time of a certain time zone and search logging data in the time
Description	zone. Enter a number in year, moth, week and day and enter 0 in the rest. Make bFlag TRUE to
	search data on a specific day/month/year or make it FALSE to search them as of the current
	time.
Syntax	void LoadHistoryTrend(long year, long month, long week, long day, long hour, BOOL bFlag)
	year: Enter the year to search in LONG-type numbers.
	month: Enter the month to search in LONG-type numbers.
	week: To search data in a certain week, enter 1. If not, enter 0.

	day: Enter the day to search in LONG-type numbers.
	hour: Enter the hour to search in LONG-type numbers.
	bFlag: To search data on a specific day/month/year, enter TRUE. If not, enter FALSE.
	To search logging data in the time zone in which a certain date belongs to
	Year Search - LoadHistoryTrend(2007, 0, 0, 0, TRUE)
	Month Search - LoadHistoryTrend(2007, 5, 0, 0, 0, TRUE)
	Week Search - LoadHistoryTrend(2007, 5, 1, 0, 0, TRUE)
	Day Search - LoadHistoryTrend(2007, 5, 0, 13, 0, TRUE)
	Hour Search- LoadHistoryTrend(2007, 5, 0, 13, 10, TRUE)
Reference	For One Hour Search as of the current time,
	LoadHistoryTrend(0, 0, 0, 0, 1, FALSE)
	For 2-Hour Search as of the current time,
	LoadHistoryTrend(0, 0, 0, 0, 2, FALSE)
	For 6-Hour Search as of the current time,
	LoadHistoryTrend(0, 0, 0, 0, 6, FALSE)

LoadPeriodTrend Function	
Description	As a function to search data in a certain period, it presents One Hour Search, One Day search,
Description	One Week Search and One Month Search as of the current time.
	long LoadPeriodTrend(long days, BOOL bFlag)
	days – Enter the following as parameters for searching.
	One Hour Search: 1
Syntax	One Day search: 2
	One Week Search: 3
	One Month Search: 4
	bFlag – Input TRUE
	For One Hour Search,
	LoadPeriodTrend (1, TRUE)
	For One Day Search,
	LoadPeriodTrend (2, TRUE)
Reference	
	For One Week Search,
	LoadPeriodTrend (3, TRUE)
	For One Month Search,
	LoadPeriodTrend (4, TRUE)

Load_Archiv	Load_ArchivePeriod_Trend Function	
Description	As a function to search data in a certain period, it presents Hour Search, One Day search, One	
	Week Search and One Month Search as of the current time. For Hour Search, 1, 2, 3, 6 and 12	
	hour search are available.	
	long Load_ArchivePeriod_Trend (long type, long days, VARIANT_BOOL bFlag)	
	type – Enter the following as period parameters for searching.	
	One Hour Search: 1	
Symtox	One Day Search: 2	
Syntax	One Week Search: 3	
	One Month Search: 4	
	days – This parameter is applied only when One Hour Search is entered for type.	
	Enter 1, 2, 3, 6 or 12 to search 1, 2, 3, 6 or 12 hour search.	
	bFlag – Input TRUE.	
	For One Hour Search after selecting Hour Search,	
	Load_ArchivePeriod_Trend(1, 1, TRUE)	
	For One Day Search,	
	Load_ArchivePeriod_Trend(2, 0, TRUE)	
Reference		
	For One Week Search,	
	Load_ArchivePeriod_Trend(3, 0, TRUE)	
	For One Month Search,	
	Load_ArchivePeriod_Trend(4, 0, TRUE)	

LoadPeriodDataStartTrend Function	
Description	It is the function to look up the section. You just need to enter the start and end time to look up.
Syntax	void LoadPeriodDataStartTrend ()
Reference	To search data from 13 o'clock on February 11, 2008 to 14 o'clock on February 11
	LoadPeriodDataStartTrend ("2008/02/11 13:00:00", "2008/02/11 14:00:00")

LoadPeriodDataTrend Function	
Description	As a function to search data in a certain period, if the user inputs the Start time and End time, this function searches logging data during the period.
Syntax	long LoadPeriodDataTrend(LPCTSTR strFrom, LPCTSTR strTo, long bSample, LPCTSTR bFlag)

	strFrom - Enter the following type as the Start time. Number 0 through 24 are used for Time
	Display.
	"2008/02/14 11:00:00"
	strTo – Enter the following type as the End time. Number 0 through 24 are used for Time Display.
	"2008/02/14 11:10:00"
	bSample – Decide whether to display data after applying sampling. Enter 0 as the default value.
	bFlag – This is a reserve parameter variable. Enter"".
	To search data from 13 o'clock on February 11, 2008 to 14 o'clock on February 11,
Reference	LoadPeriodDataTrend("2008/02/11 13:00:00", "2008/02/11 14:00:00", 0, "")
Reference	
	Remember that there is empty space between day and time.

LoadProperty Function	
Description	It is the function to import the saved property file.
Syntax	void LoadProperty (BSTR FileName)
Reference	LoadProperty ("file name")

PauseTrend Function	
Description	It is the function to stop the real-time lookup.
Syntax	void PauseTrend(void)

PrintTrend Function	
Description	It is the function to print out the current trend screen
Syntax	void PrintTrend(void)

SaveProperty Function	
Description	It is the function to save the set properties as a file.
Syntax	void SaveProperty (BSTR FileName)
Reference	SaveProperty ("file name")

SetAlarmLimit Function	
Description	It is the function to determine whether applying the alarm limit value to the channel to be specified.
Syntax	long SetAlarmLimit(long chanNo, VARIANT_BOOL bFlag, BSTR reserved)
Reference	SetAlarmLimit (1,True, "")

SetAutoScale Function	
Description	It is the function to determine whether applying the automatic scale to the channel to be specified.
Syntax	long SetAutoScale(long chanNo, VARIANT_BOOL bFlag, BSTR reserved)
Reference	SetAutoScale (1,True, "")

SetAxisXStarSpan Function	
Description	It is the function to determine whether setting the min. value of the X-axis as the current time with the interval.
Syntax	void SetAxisXStartSpan(VARIANT_BOOL bStartFromNowTime, long XSpan)
Reference	SetAxisXStartSpan (True,300)

SetChannelMinMax Function	
Description	It is the function to set the minimum and maximum value of the channel.
Syntax	long SetChannelMinMax(long channelNo, double minValue, double maxValue)

SettSaveasexcel Function	
Description	It is the function to show the dialog box where you can save the data displayed in the trend as the Excel file.
Syntax	void SettSaveasexcel(void)

SetZoom100 Function	
Description	It is the function to show the trend screen at the ratio of 100%.
Syntax	void SetZoom100 (void)

SetZoomIn Function	
Description	It is the function to zoom in the trend screen.
Syntax	void SetZoomIn(void)

SetZoomOut Function	
Description	It is the function to zoom out the trend screen.
Syntax	void SetZoomOut (void)

SetZoomRect Function	
Description	It is the function to zoom in the trend screen partially.
Syntax	void SetZoomRect (void)

ShowMarkerValue Function	
Description	This function is to show marker visible properties of the trend.
Syntax	void ShowMarkerValue()
Reference	ShowMarkerValue ()

ShowSettingLoad Function	
Description	It is the function to load the property.
Syntax	void ShowSettingLoad ()
Reference	ShowSettingLoad ()

ShowTrendProperty Function	
Description	This function is to show the property window of the trend.
Syntax	void ShowTrendProperty()
Reference	ShowTrendProperty(TRUE)

StartTrend Function	
Description	It is the function for real-time lookup based on the established screen cycle.
Syntax	void StartTrend(void)

11.4 List Trend Viewer

As a screen to monitor changes in tag values over time, this List Trend Viewer is an Active X module that displays online data as well as logging data stored in the logging server.

11.4.1 Prerequisite and Environment

List trend properties can be set up only after the ActiveX module is inserted to the InfoU graphic editor. Channel assignment, tag assignment and other tag properties to be monitored are designated in advance as List Trend properties. Channels or tags are not basically assigned to the list trend status inserted in the graphic editor. It is essential to display the Property Window before setting up the property values needed to run the List Trend. After the property values are saved, the List Trend Monitoring Screen appears upon the opening of the screen under the Run time environment.

The engineering values are entered in the following order on the List Trend viewer. If is selected tools, immediate inserting can be performed.

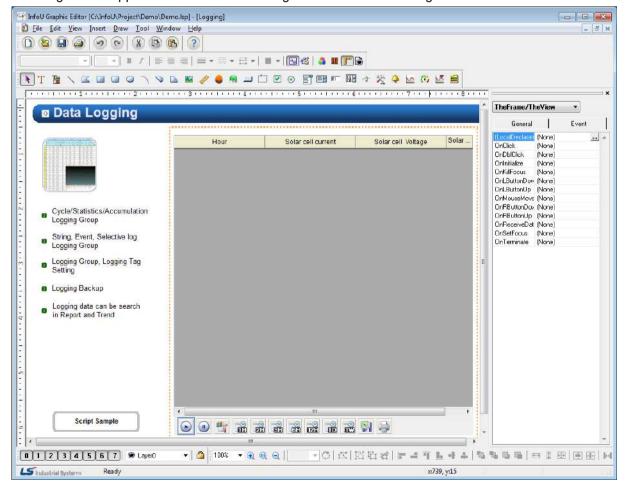


is selected from the

11.4.2 Screen Configuration

(1) Engineering Screen

If List Trend is inserted and a tag to be monitored is selected and then settings are all completed, the following screen appears. The screen in this figure shows that three tags are selected.



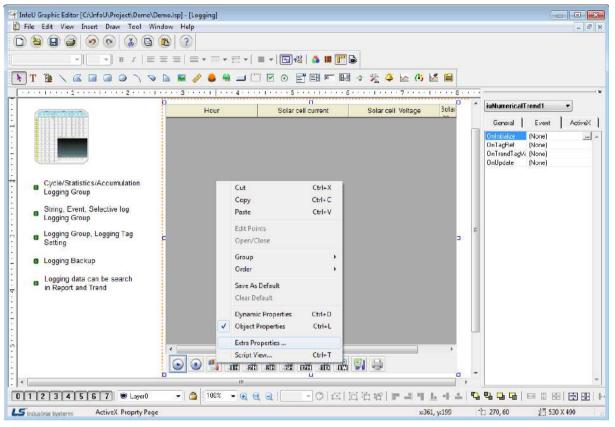
(2) Runtime Screen

If default list trend settings are completed on the engineering screen above and then, the runtime is executed, the screen shows that data values are changed over time.



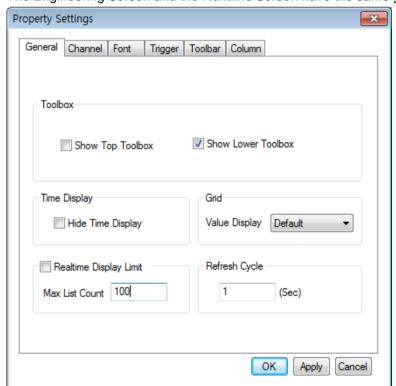
11.4.3 Settings

If the right side of the mouse is clicked on the List Trend and the 'Active X Properties' menu is selected, the setting window appears. The same setting screen is used for the engineering screen and the run-time screen. But, the runtime screen has Channel Setting function only. In addition, once property values are saved on the engineering screen, those values will be continuously valid however, if those property values are changed on the runtime screen, the changed values are applied only to the runtime screen. The changed values are cancelled if the runtime stops and the property values set up on the engineering screen are applied.



(1) General

The Engineering Screen and the Runtime Screen have the same general function.



1) Show Top Toolbox/Show Lower Toolbox

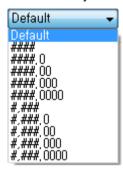
Set up whether to display Trend Toolbox on the top or the bottom during the running. Both can not be selected at the same time and it is allowed neither of them is selected. 'Show Lower Toolbox' has been selected as the default value.

2) Time Display

Select whether to show/hide Time Display column on the screen. 'Hide Time Display' has not been selected as the default value.

3) Grid (Value Display)

The user may select a method to display grid value.



Default: Display the default vale.

: Do not display decimal points regardless of tag DB

####.0 : Indicate down to one decimal point regardless of tag DB.

####.00 : Indicate down to two decimal points regardless of tag DB.

####.000 : Indicate down to three decimal points regardless of tag DB.

####.0000: Indicate down to four decimal points regardless of tag DB.

#,###: Do not display decimal points regardless of tag DB and indicate digit with comma.

#,###.0: Indicate down to one decimal point regardless of tag DB and indicate digit with comma

#,###.00: Indicate down to two decimal points regardless of tag DB and indicate digit with comma.

#,###.000: Indicate down to three decimal points regardless of tag DB and indicate digit with comma.

#,###.0000: Indicate down to four decimal points regardless of tag DB and indicate digit with comma...

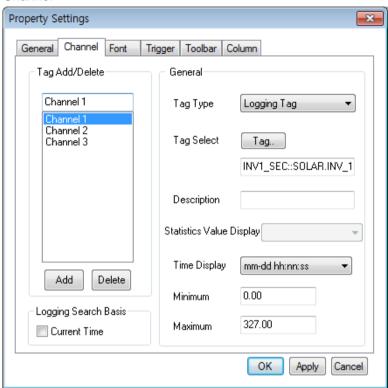
4) Realtime Display Limit

You can specify the number of real-time display lists. By default, the number of display lists is not limited.

5) Refresh Cycle

Designated a refresh cycle. One second has been set up as the default value

(2) Channel



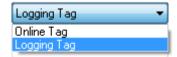
The Engineering Screen and the Runtime Screen have the same Channel functions. Up to 20 channels are provided in the List Trend. There is at least one channel and it is available to designate tags for each channel. If one channel is an online tag, the rest channels have to be online tags. Likely, if one channel is a logging tag, the rest channels have to be logging tags. Also, if any logging data needs to be saved or searched, the logging tag should be selected and used. Online tags do not provide the logging function.

1) Channel Add/Delete

A channel is added/deleted. At least one or more than one but not more than 20 channels can be selected.

2) Tag type

Select either Logging Tag or Online Tag.



3) Tag Select

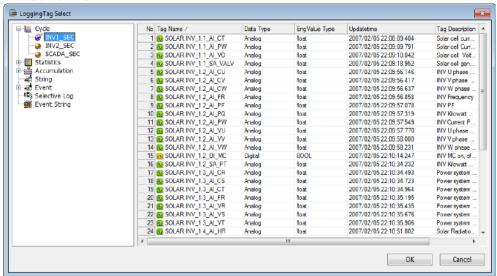
Assign a tag to the channel. One tag can be assigned to one channel.

If a logging tag is selected, the logging tag browser where the associated logging group is set up is called while the online tag browser is called for an online tag.

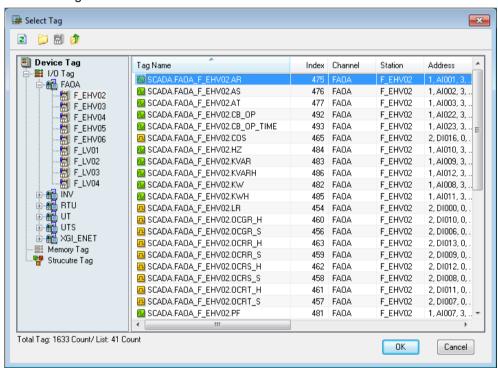
Be cautious that logging data can be searched only when a logging tag is selected.

If a tag is selected, the tag's minimum value and maximum values are displayed. These min/max values apply to Y-axis values for Y axis settings.

* 'Logging Tag Select' screen



* 'Online Tag Select' screen



4) Description

Describe the selected tag. If any description has already been written, this description is displayed instead of the tag name on the grid. If not, the tag name is displayed. If any tag description has been recorded in the tag DB, that description is displayed even the user skips this item.

5) Statistics Value Display

This function becomes active only when a statistics tag is selected. For analog tags, select one value among current value, min value, max value, average value, sum and sample and for digital tags, select one value among current value, On count, On Time, Total count and sample. If the tag is not a statistics tag, it becomes inactive.

* Analog Tag

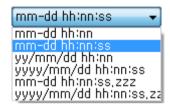


* Digital Tag



6) Time Display

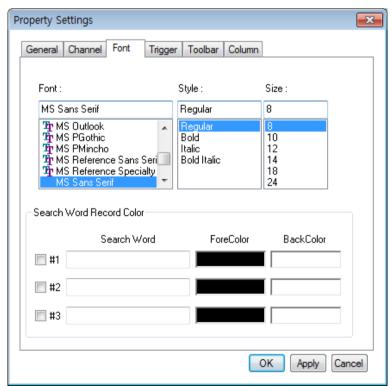
Select a time type to display on the grid.



7) History retrieval

In the case of Trend, basically, history retrieval is done at a distance of regular time. When selecting the current time, history retrieval will be performed based on the current time.

(3) Font



1) Font Setting

Decide Font, Style and Size to be displayed on the list trend viewer list.

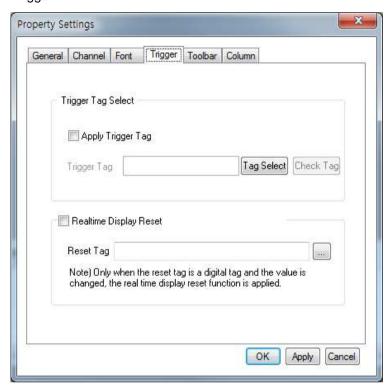
2) Search Word Record Color

The function to set the foreground and background colors of a record through search word.

You can set up to three search words and record colors, and the order of execution is ascending.

Please note that empty or NULL string are not allowed as search word, so the colors you set are not adjusted and Only applies if the string in the record cell is the same as the search word.

(4) Trigger



1) Trigger Setting

This Trigger is a function used to run the list trend only when the base tag for trigger is True.

If 'Apply Trigger Tag' is clicked, the trigger tag item becomes active. Press 'Tag Select' to select a tag. At this time, be cautious that the tag should be corresponding to the tag kind designated during the channel settings. Usually, they are corresponding to each other and the Tag Selection Window is displayed but, if Tag Kind is changed latter, trigger setting items shall be checked.

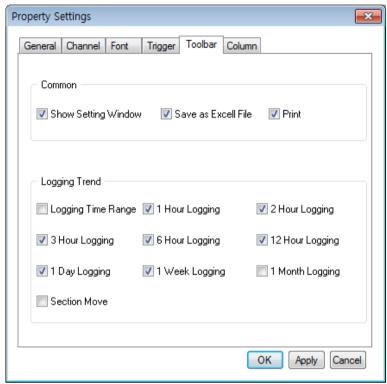
If the value of a trigger tag is O, that is, if it is False, the List Trend does not show any tag value. It shows tag values only the value is not O.

2) Realtime Display Reset

Specify a realtime display reset tag. If there is more than one record when the tag value is changed, the realtime display list is reset and only the most recent one is displayed.

(5) Toolbar

Select toolbar (menus).



1) Start ()

This is a common function that applies to both online trends and logging trends,

Once trend monitoring starts, data is renewed every second and 5 minutes is set as the time for X axis.

To view the current screen again during the logging search, press this button and the current time screen is displayed.

This Start button can not be selected as the default value.

2) Stop ()

Trend Monitoring stops. This function is available only for logging trends. That is, this function exists only when logging tags are selected and online trends do not have this function.

This Stop button can not be selected as the default value like the Start button.

3) Show Setting Window ()

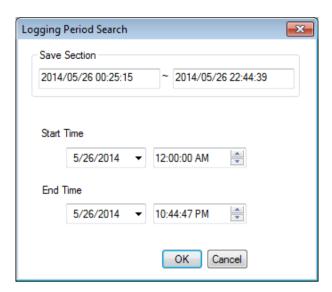
Setting values of the current trend can be changed. This is a common function that applies to both online trends and logging trends,

This Setting Window has been described before.

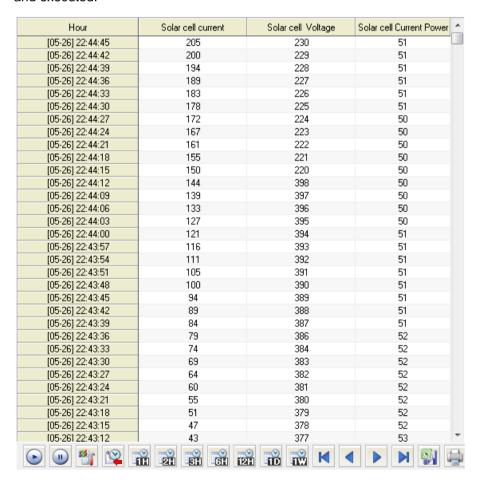
4) Logging Trend (Logging Time Range) ()



Input logging conditions (period and sampling conditions) to search past data. Click on the relevant icon to display the following window.



'Saved Section' shows the starting time and the end time to save the entire data and this is referred when deciding the start time and the end time. The following figure shows that 'One Hour Search' is selected and executed.



This function is available only for logging trends.

5) 1 Hour Logging ()

View 1 hour logging data including the current time. For example, if it is 10:20, the logging data between

10 and 11o'clock are viewed. This function is available only for logging trends.

6) 2 Hour Logging (21)

View logging data in the time range where the current time belongs to by dividing 24 hours into 0~2 o'clock, 2~4 o'clock, 4~6 o'clock, 20~22 o'clock and 22~midnight. For example, if it is 10:20, the logging data between 10 o'clock and noon are viewed. This function is available only for logging trends.

7) 3 Hour Logging ()

View logging data in the time range where the current time belongs to by dividing 24 hours into 0~3 o'clock, 3~6o'clock, 6~9o'clock, 18~21 o'clock and 21~midnight. For example, if it is 10:20, the logging data between 9 o'clock and noon are viewed. This function is available only for logging trends.

8) 6 Hour Logging ()

View logging data in the time range where the current time belongs to by dividing 24 hours into 0~6 o'clock, 6~12o'clock, 12~18o'clock and 18~midnight For example, if it is 10:20, the logging data between 6 o'clock and noon are viewed. This function is available only for logging trends.

9) 12 Hour Logging ()

View logging data in the time range where the current time belongs to by dividing 24 hours into 0~noon and noon~ midnight. For example, if it is 10:20, the logging data between 0 o'clock and noon are viewed. This function is available only for logging trends.

10) 1 Day Logging (iii)

View today's logging data. This function is available only for logging trends.

11) 1 Week Logging ()

View this week's logging data. The period is from Monday through the midnight of Sunday. This function is available only for logging trends.

12) 1 Month Logging ()

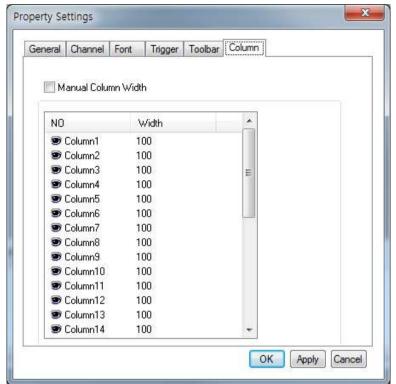
View this month's logging data This function is available only for logging trends.

13) Section Search (

When you applying the history retrieval, you can look up the section using the section retrieval function.

- a. If you press the very left button, the screen will be moved to the start time stored in the current DB server.
- b. If you press the second button, the screen will be moved to the previous section as far as the lookup distance from the current section. It can be movable to the very beginning.
- c. If you press the third button, the screen will be moved to the next section as far as the lookup distance from the current section. It can be movable to the very end.
- d. If you press the very right button, the screen will be moved to the current time. The section retrieval function is available only when applying the history retrieval. The function is not available in the real-time monitoring status, available only in the history trend.

(6) Column



This function is used when the width of the column is not displayed automatically and the custom manual column width is operated on the list trend. By default, there are 30 manual columns and a width of 100 pixels. Note that if the number of manual columns is greater than the number of channels, the corresponding manual columns are ignored.

Manual Column Width
 Set whether to apply the custom manual width of the column.

11.4.4 How to Use Script

(1) Function List

· /		
Function Name	Function Declaration	
AddChannel_Archive	long AddChannel_Archive(long channelNo, LPCTSTR modelName, LPCTSTR	
	tagName, LPCTSTR tagDesc)	
AddChannel_RealTime	long AddChannel_RealTime(long channelNo, LPCTSTR tagName,	
	LPCTSTR tagDesc)	
AddTrendChannel	long AddTrendChannel(LPCTSTR dataSource, long channelNo, long	
	modelID,	
	LPCTSTR modelName, long tagID, LPCTSTR tagName, LPCTSTR tagDesc)	
ApplyTrigger	void ApplyTrigger(bApply, modelName, tagName)	
GoFirstTrend	long GoFirstTrend(void)	
GoLastTrend	long GoLastTrend(void)	
GoNextTrend	long GoNextTrend(void)	
GoPreviousTrend	long GoPreviousTrend(void)	

Loadhistory12h	void Loadhistory12h (void)
Loadhistory1day	void Loadhistory1day (void)
Loadhistory1h	void Loadhistory1h (void)
Loadhistory1month	void Loadhistory1month (void)
Loadhistory1week	void Loadhistory1week (void)
Loadhistory2h	void Loadhistory2h (void)
Loadhistory3h	void Loadhistory3h (void)
Loadhistory6h	void Loadhistory6h (void)
LoadHistoryTrend	void LoadHistoryTrend(long year, long month, long week, long day, long hour,
	BOOL bFlag)
LoadPeriodTrend	long LoadPeriodTrend(long type, BOOL bFlag)
Load_ArchivePeriod_Trend	long Load_ArchivePeriod_Trend(long type, long hours,
	ARIANT_BOOL bFlag)
LoadPeriodDataTrend	long LoadPeriodDataTrend(LPCTSTR strFrom, LPCTSTR strTo,
	long bSample, LPCTSTR bFlag)
PauseTrend	void PauseTrend(void)
PrintTrend	void PrintTrend(void)
SaveCSV	void SaveCSV(LPCTSTR Filename)
SettSaveasexcel	void SettSaveasexcel(void)
SetVisibleChanGrid	long SetVisibleChanGrid(LPCTSTR strTagName, long chanNo, long bFlag)
ShowTrendProperty	void ShowTrendProperty(void)
StartTrend	void StartTrend(void)

(2) Function Description

AddChannel_Archive Function		
Description	This function is to add a channel in a logging group name or a tag name to the list trend if the tag	
Description	is a logging list trend.	
	long AddChannel_Archive(long channelNo, LPCTSTR modelName, LPCTSTR tagName,	
	LPCTSTR tagDesc)	
Syntox	channelNo: Enter LONG-type numbers as the number of the channel to be added.	
Syntax	modelName: Enter the logging group name of the logging tag to be added. This is a string value.	
	tagName: Enter the name of the logging tag to be added. This is a string value.	
	tagDesc: Enter the description of the logging tag to be added. If there is no value, use the	
	description value of the tag DB and if there is a value, use it. This is a string value.	
	To add three channels to the List Trend	
Reference	AddChannel_Archive(1, "SCADA_SEC", "SCADA.UT_EHV02.VRS", "VRS")	
	AddChannel_Archive(2, "SCADA_SEC", "SCADA.UT_EHV02.VST", "VST")	
	AddChannel_Archive(3, "SCADA_SEC", "SCADA.UT_EHV02.VTR", "VTR")	

AddChannel_RealTime Function		
	This function is to add a channel in a tag name to the trend if the trend is an online tag. But, in	
Description	most cases, online monitoring is possible with logging tags, therefore, AddChannel_Archive is	
	more widely used than this function.	
	long AddChannel_RealTime(long channelNo, BSTR tagName, LPCTSTR tagDesc)	
Syntax	channelNo: Enter LONG-type numbers as the number of the channel to be added.	
Syntax	tagName: Enter the name of the online tag to be added. This is a string value.	
	tagDesc: Enter the description of the logging tag to be added. If there is no value, use the	
	description value of the tag DB and if there is a value, use it. This is a string value.	
	To add three channels to the List Trend	
Reference	AddChannel_RealTime (1, "SCADA.UT_EHV02.VRS", "VRS")	
	AddChannel_RealTime (2, "SCADA.UT_EHV02.VST", "VST")	
	AddChannel_RealTime (3, "SCADA.UT_EHV02.VTR", "VTR")	

AddTrendChannel Function	
	This function is to add a channel to the list trend. But, this function is rarely used because the
Description	user needs to input ID information on the logging group and tag as parameters.
	It is recommended to use AddChannel_Archive if the logging group ID or tag ID is unknown.
Syntax	long AddTrendChannel(LPCTSTR dataSource, long channelNo, long modelID,
	LPCTSTR modelName, long tagID, LPCTSTR tagName, LPCTSTR tagDesc)

	dataSource: Enter the following string values to identify whether the tag to be added is a logging
	tag or an online tag.
	- Logging Tag: "Archive"
	- Online Tag: "OnLine"
	channelNo: Enter LONG-type numbers as the number of the channel to be added.
	modelID: Enter LONG- type numbers as the logging group ID of the logging tag to be added.
	modelName: Enter the logging group name of the logging tag to be added. This is a string value.
	tagID: Enter LONG- type numbers as the tag ID of the logging tag to be added.
	tagName: Enter the name of the online tag to be added. This is a string value.
	tagDesc: Enter the description of the logging tag to be added. If there is no value, use the
	description value of the tag DB and if there is a value, use it. This is a string value.
	To add three channels to the List Trend
Defenses	AddTrendChannel("Archive", 1, 9, "INV1_SEC", 2710, "SOLAR.INV_1.1_AI_CT", "CT")
Reference	AddTrendChannel("Archive", 2, 9, "INV1_SEC", 2714, "SOLAR.INV_1.1_AI_VO", "VO")
	AddTrendChannel("Archive", 3, 9, "INV1_SEC", 2713, "SOLAR.INV_1.1_AI_PW", "PW")

ApplyTrigger Function	
Description	This function is to apply the trigger tag properties to the list trend. A value appears unless the
Description	trigger value is O (True). If the value is O, it is not displayed.
	void ApplyTrigger(bApply, modelName, tagName)
	bApply:
	- Trigger is applied: True
Syntax	- Trigger is not applied: False
	modelName: Make sure to enter the logging group name if the list trend is logging.
	If the user fails to enter the logging group name, noting is recorded because the trigger tag can
	not be searched.
	tagName: Enter the tag name.
Reference	ApplyTrigger(TRUE, "SCADA_SEC", "Update"): In case that a tag, whose logging group is
	"SCADA_SEC"and name is "Update," is designated as a trigger tag.

GoFirstTrend Function	
Description	It is the function to retrieve sectional history for the next setting time based on the start of the first
	logging time.
Syntax	long GoFirstTrend(void)

GoLastTrend Function	
Description	It is the function to retrieve sectional history for the previous setting time based on the latest logging time.
Syntax	long GoLastTrend(void)
GoNextTrend Function	
Description	It is the function to retrieve sectional history for the next setting time based on the current logging
	time.
Syntax	long GoNextTrend(void)

GoPreviousTrend Function	
Description	It is the function to retrieve sectional history for the previous setting time based on the current
	logging time.
Syntax	long GoPreviousTrend(void)

Loadhistory12h Function	
Description	It is the function to retrieve the history for the section of previous12 hours based on the current
	logging time.
Syntax	void Loadhistory12h (void)

Loadhistory1day Function	
Description	It is the function to retrieve the history for the section of previous day based on the current
	logging time.
Syntax	void Loadhistory1day (void)

Loadhistory1h Function	
Description	It is the function to retrieve the history for the section of previous an hour based on the current
	logging time.
Syntax	void Loadhistory1h (void)

Loadhistory1month Function	
Description	It is the function to retrieve the history for the section of previous a month based on the current
	logging time.
Syntax	void Loadhistory1month (void)

Loadhistory1week Function	
Description	It is the function to retrieve the history for the section of previous a week based on the current
	logging time.
Syntax	void Loadhistory1week (void)

Loadhistory2h Function	
Description	It is the function to retrieve the history for the section of previous two hours based on the current
	logging time.
Syntax	void Loadhistory2h (void)

Loadhistory3h Function	
Description	It is the function to retrieve the history for the section of previous three hours based on the
	current logging time.
Syntax	void Loadhistory3h (void)

Loadhistory6h Function	
Description	It is the function to retrieve the history for the section of previous six hours based on the current
	logging time.
Syntax	void Loadhistory6h (void)

LoadHistoryTrend Function	
	This function is to search logging data in a designated time zone. Enter year, month, week, day,
	hour to set the start and end time of a certain time zone and search logging data in the time
Description	zone. Enter a number in year, moth, week and day and enter 0 in the rest. Make bFlag TRUE to
	search data on a specific day/month/year or make it FALSE to search them as of the current
	time.
	void LoadHistoryTrend(long year, long month, long week, long day, long hour, BOOL bFlag)
	year: Enter the year to search in LONG-type numbers.
Syntax	month: Enter the month to search in LONG-type numbers.
Sylitax	week: To search data in a certain week, enter 1. If not, enter 0.
	day: Enter the day to search in LONG-type numbers.
	hour: Enter the hour to search in LONG-type numbers.
	bFlag: To search data on a specific day/month/year, enter TRUE. If not, enter FALSE.
Reference	To search logging data in the time zone in which a certain date belongs to,
	Year Search - LoadHistoryTrend(2007, 0, 0, 0, TRUE)
	Month Search - LoadHistoryTrend(2007, 5, 0, 0, 0, TRUE)

Week Search - LoadHistoryTrend(2007, 5, 1, 0, 0, TRUE)
Day Search - LoadHistoryTrend(2007, 5, 0, 13, 0, TRUE)
Hour Search- LoadHistoryTrend(2007, 5, 0, 13, 10, TRUE)
For One Hour Search as of the current time,
LoadHistoryTrend(0, 0, 0, 0, 1, FALSE)
For 2-Hour Search as of the current time,
LoadHistoryTrend(0, 0, 0, 0, 2, FALSE)
For 6-Hour Search as of the current time,
LoadHistoryTrend(0, 0, 0, 0, 6, FALSE)

LoadPeriodTrend Function	
Description	As a function to search data in a certain period, this presents One Hour Search, One Day search, One Week Search and One Month Search as of the current time.
Syntax	long LoadPeriodTrend(long days, BOOL bFlag) type: Enter the following as parameters for searching. One Hour Search: 1 One Day search: 2 One Week Search: 3 One Month Search: 4
	bFlag – Input TRUE. For One Hour Search, LoadPeriodTrend (1, TRUE)
Reference	For One Day Search, LoadPeriodTrend (2, TRUE)
	For One Week Search, LoadPeriodTrend (3, TRUE)
	For One Month Search, LoadPeriodTrend (4, TRUE)

Load_ArchivePeriod_Trend Function	
Description	As a function to search data in a certain period, Hour Search, this presents One Day search, One

	Week Search and One Month Search as of the current time. For Hour Search, 1, 2, 3, 6 and 12
	hour search are available.
	long Load_ArchivePeriod_Trend (long type, long hours, VARIANT_BOOL bFlag)
	type: Enter the following as period parameters for searching.
	- One Hour Search: 1
Count ou	- One Day search: 2
Syntax	- One Week Search: 3
	- One Month Search: 4
	hours: This parameter is applied only when One Hour Search is entered for type.
	Enter 1, 2, 3, 6 or 12 to search 1, 2, 3, 6 or 12 hour search.
	bFlag – Input TRUE.
	For One Hour Search after selecting Hour Search,
	Load_ArchivePeriod_Trend(1, 1, TRUE)
	For One Day Search,
	Load_ArchivePeriod_Trend(2, 0, TRUE)
Reference	
	For One Week Search,
	Load_ArchivePeriod_Trend(3, 0, TRUE)
	For One Month Search,
	Load_ArchivePeriod_Trend(4, 0, TRUE)

LoadPeriodDataTrend Function	
Description	As a function to search data in a certain period, if the user inputs the Start time and End time,
	this function searches logging data during the period.
	long LoadPeriodDataTrend(LPCTSTR strFrom, LPCTSTR strTo, long bSample,
	LPCTSTR bFlag)
Syntax	strFrom: Enter the following type as the Start time. Number 0 through 24 are used for Time Display. "2008/02/14 11:00:00" strTo: Enter the following type as the End time. Number 0 through 24 are used for Time Display. "2008/02/14 11:10:00" bSample: Decide whether to display data after applying sampling. Enter 0 as the default value. bFlag: This is a reserve parameter variable. Enter"".
Reference	To search data from 13 o'clock on February 11, 2008 to 14 o'clock on February 11,
	LoadPeriodDataTrend("2008/02/11 13:00:00", "2008/02/11 14:00:00", 0, "")
	Remember that there is empty space between day to time.

PauseTrend Function	
Description	It is the function to pause the real-time lookup.
Syntax	void PauseTrend(void)

PrintTrend Function	
Description	It is the function to print out the current list trend screen.
Syntax	void PrintTrend(void)

SaveCSV Function	
Description	It is the function to show the dialog box where you can save the data displayed in the list trend as
	the Excel file.
Syntax	void SaveCSV(LPCTSTR Filename)
	Filename: File name for save as

SettSaveasexcel Function	
Description	It is the function to show the dialog box where you can save the data displayed in the list trend as
	the Excel file.
Syntax	void SettSaveasexcel(void)

SetVisibleChanGrid Function	
Description	This function is to show or hide channels.
Syntax	long SetVisibleChanGrid(LPCTSTR strTagName, long chanNo, long bFlag)
	strTagName: Enter the tag name of the channel to be shown or hidden.
	chanNo: Enter the number of the channel to be shown or hidden.
	bFlag: Input True if the channel is to be shown or input False if it is to be hidden.
Reference	ShowTrendProperty(TRUE)

ShowTrendProperty Function	
Description	This function is to show the property window of the trend.
Syntax	void ShowTrendProperty()
Reference	ShowTrendProperty(TRUE)

StartTrend Function	
Description	It is the function for real-time lookup based on the established screen cycle
Syntax	void StartTrend(void)

11.5 Recipe Viewer

This Recipe Viewer is an Active X module that displays the recipe contents set up during the engineering and has Recipe Control, Dynamic Data Loading and Dynamic Data Saving function.

11.5.1 Prerequisite and Environment

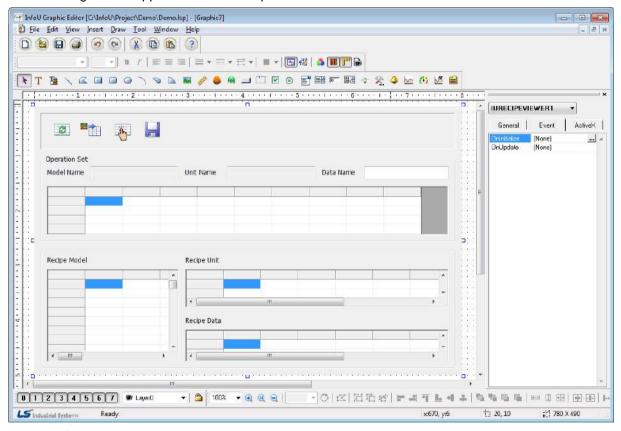
The ActiveX module is inserted to the InfoU graphic editor. The recipe viewer displays the data that have been set up during the engineering and does not have its own property.

The recipe viewer is executed in the following order. If is selected from the tools, immediate inserting can be performed.

11.5.2 Screen Configuration

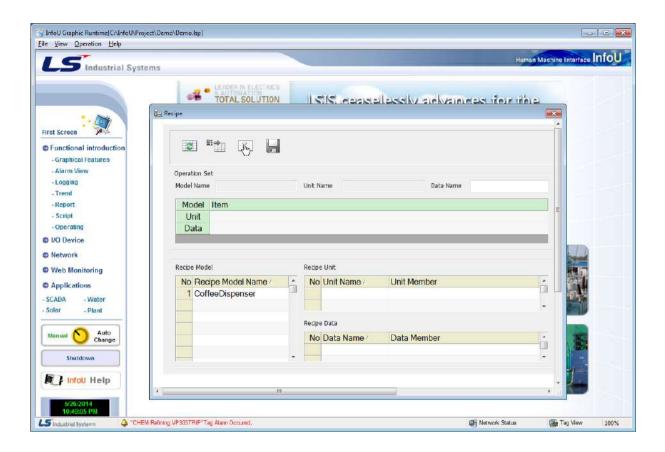
(1) Engineering Screen

The following screen appears after the recipe viewer is inserted.



(2) Runtime Screen

If the above Engineering Screen is executed on the runtime, the screen is as follows.

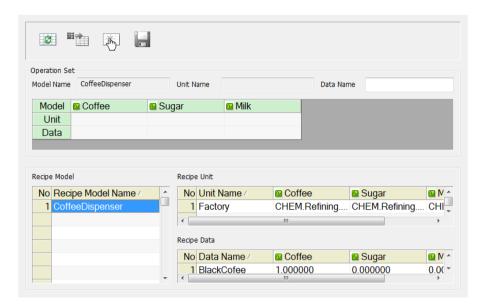


11.5.3 Real-Time Function

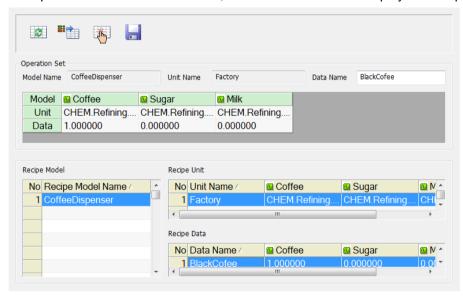
(1) Setting Data Diplay

The recipe viewer is largely divided into the upper Operation Set part and the lower setting data display and select part. The user may conduct various operations by selecting a recipe model and each unit and data item and combining them properly and the selected items are displayed on the upper Operation Set part. During the runtime, a recipe model list is displayed on the left and if a certain model is selected, the associated recipe units and data to the selected model appear.

* In case that only a recipe model is selected

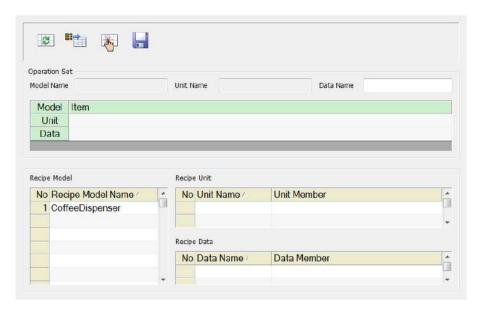


If recipe units and data are selected, the selected items are displayed on 'Operation Set' as seen in the figure.



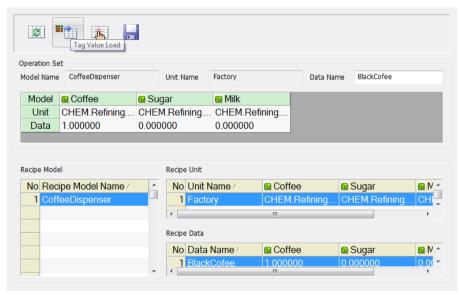
(2) Refresh ()

If Refresh button is selected, the existing operations are cleared and it is converted to the initial screen. (Only the model list is displayed)



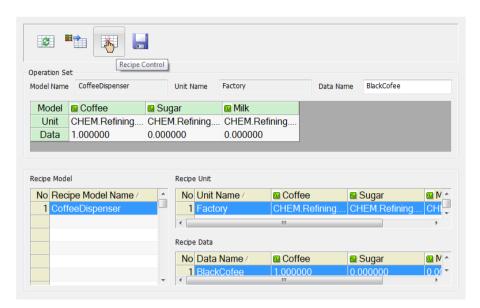
(3) Tag Value Load ()

If models and units are selected, 'Tag Value Load' becomes active. If this button is selected, the tag values displayed on the Operation Set are loaded from the real-time data service module and they are displayed on the Operation Set. In this status, the user may control the recipe since its requirements (model + unit + data) are met and also save this data in the DB. Of course, it is also available to edit it directly on the data cell of 'Operation Set' to control and save it in the DB.



(4) Recipe Control (

For Recipe Control, each Model, Unit and Data should be selected. Of course, if some data are secured through Tag Value Load instead of selecting data, Recipe Control is also possible even in such a case. Recipe Control is possible only when the current user's authority is higher than the required authority according to the recipe model.



If Recipe Control is performed, the following dialog box appears to confirm the function.

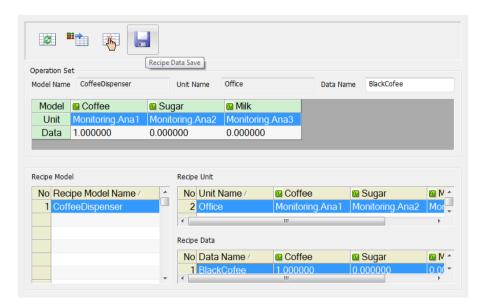


For 'Control Results,' two options-Returns or No Return-are presented. Select one and press OK to perform the Recipe Control. If the user has an insufficiently high authority to control the recipe model, he/she may not control it.

(5) Recipe Data Save ()

The recipe viewer presents a function to save recipe data during the runtime. But, only up to 64 recipe data can be saved in a model. The user may load the corresponding values to the unit displayed on the Operation Set from the real-time data service and save them through the recipe viewer or input data directly to cells to save them.

When saving data, use the same data name as set up on the Operation Set and if other recipe data has the same name, it is updated. If the data name item is empty, the default string value of "year + month+ day + hour+ minute+ second + msecond" is given as a data name.



(6) Recipe Control Result

The control result can be received if "Return" has been set during the Recipe Control (But, this is applied only when it is not under the web environment). The following screen is displayed automatically if the Recipe Control Result is received from I/O Manager.



11.5.4 How to Use Script

(1) Function List

Function Name	Function Declaration
SelectRecord	short SelectRecord(LPCTSTR ModelName, LPCTSTR UnitName, LPCTSTR
	DataName)
ControlWorkingSet	short ControlWorkingSet(short nMode)
ControlSet	short ControlSet(short nMode, LPCTSTR ModelName, LPCTSTR UnitName,
	LPCTSTR DataName)
LoadDynamic	short LoadDynamic(void)
ChangeWSDataName	short ChangeWSDataName(LPCTSTR DataName)
SaveData	short SaveData(void)
SelectRecord	short SelectRecord(LPCTSTR ModelName, LPCTSTR UnitName,
	LPCTSTR DataName)
ControlWorkingSet	short ControlWorkingSet(short nMode)
ControlSet	short ControlSet(short nMode, LPCTSTR ModelName,
	LPCTSTR UnitName, LPCTSTR DataName)
LoadDynamic	short LoadDynamic(void)
ChangeWSDataName	short ChangeWSDataName(LPCTSTR DataName)
SaveData	short SaveData(void)
SelectRecord	short SelectRecord(LPCTSTR ModelName, LPCTSTR UnitName,
	LPCTSTR DataName)
ControlWorkingSet	short ControlWorkingSet(short nMode)
ControlSet	short ControlSet(short nMode, LPCTSTR ModelName,
	LPCTSTR UnitName, LPCTSTR DataName)
LoadDynamic	short LoadDynamic(void)
ChangeWSDataName	short ChangeWSDataName(LPCTSTR DataName)
SaveData	short SaveData(void)
SelectRecord	short SelectRecord(LPCTSTR ModelName, LPCTSTR UnitName, LPCTSTR
	DataName)
ControlWorkingSet	short ControlWorkingSet(SHORT nMode)

(2) Function Description

SelectRecord Function	
	This function is to make WorkingSet organized by selecting model name, unit name and data
Description	name.
	Model name is an essential item while unit name and data name are optional.
	If this function is executed, the relevant items are selected on the Recipe Viewer Control to form
	WorkingSet.

	short SelectRecord(LPCTSTR ModelName, LPCTSTR UnitName, LPCTSTR DataName)
Syntax	ModelName: As the name of the model to be selected and it is a string value.
	UnitName: As the name of the unit to be selected and it is a string value.
	DataName: As the name of the data to be selected and it is a string value.
	Recipe Model Name: Coffee vending machine, Unit Name: Vending machine on the1 floor, Data
	Name: Milk coffee is selected,
Reference	SelectRecord("Coffee vending machine", "Vending machine on the1 floor", "milk coffee")
	To select only model and unit except data,
	SelectRecord("Coffee vending machine", "Vending machine on the1 floor", "")

ControlWorkingSet Function	
	A function used when controlling recipe with the WorkingSet data that have been already
Description	selected.
Docomption	Controlling is performed only model, unit and data are all equipped with.
	For local system (not web), it is available to select whether to receive the control result or not.
	short ControlWorkingSet(short nMode)
Syntax	
Symax	nMode: A flag whether to receive the control result or not.
	(1: Won't receive , 2: Will receive)
	To perform controlling WorkingSet (Will receive),
	ControlWorkingSet(2)
Reference	
Reference	To perform controlling WorkingSet (Won't receive),
	ControlWorkingSet(1)

ControlSet Function	
Description	A function used to perform controlling through a certain method without selecting directly on the recipe viewer control. Internally, this function derives the same result as SelectRecord and ControlWorkingSet are executed simultaneously.
Syntax	short ControlSet(short nMode, LPCTSTR ModelName, LPCTSTR UnitName, LPCTSTR DataName) nMode: A flag whether to receive the control result or not. (1: Won't receive, 2: Will receive) ModelName: As the name of the model to be selected and it is a string value.

	UnitName: As the name of the unit to be selected and it is a string value.
	DataName: As the name of the data to be selected and it is a string value.
	Recipe Model Name: Coffee vending machine, Unit Name: Vending machine on the1 floor, Data
	Name: Milk coffee is selected,
Reference	
	(Not received the result),
	Controlset(1, "Coffee vending machine", "Vending machine on the1 floor", "milk coffee")

LoadDynamic Function		
Description	This function is to load tag values that belong to the unit member from the InfoU real-time server controlling without using the values that have been set up during the engineering. This function	
	can be executed only when model and unit are selected.	
Syntax	short LoadDynamic(void)	
Reference	With this function, it is possible to load real-time values of a tag and save them as recipe data or	
	re-control them.	

ChangeWSDataName Function		
Description	This function is to rename the recipe data of WorkingSet.	
	short ChangeWSDataName(LPCTSTR DataName)	
Syntax		
	DataName: As the name of the data to be selected and it is a string value.	
Reference	With this function, the name of the data shown on the current WorkingSet can be modified.	
	This function only helps to modify the name seen on the screen and does not mean to save it in	
	the DB. After this function is used, the data can be saved in the DB with the following SaveData	
	function.	

SaveData Function		
Description	This function is to save the recipe data displayed on the WorkingSet.	
Syntax	short SaveData(void)	
Reference	This function is to save the data seen on the current WorkingSet in the DB. At this time, use the	
	data name on the WorkingSet of the recipe viewer control for the name of the saved data. This	
	name is changeable by using ChangeWSDataName function.	
	If the same data name already exists in the DB, a new data value is renewed in the DB, If the	
	same data name does not exists in the DB, a new recipe data is added to the DB.	
	Also, if any recipe data name is not given, a new name is created and saved by combining time	
	such as year, month, day, hour, minute, second and msecond.	

11.6 Gauge Control

This Gauge Control is an ActiveX module to display and monitor the registered tag information in a type of gauge that fits well to the user's purpose by selecting or setting up a proper gauge. A gauge can be formed in various types by designating basic range or degree.

11.6.1 Prerequisite and Environment

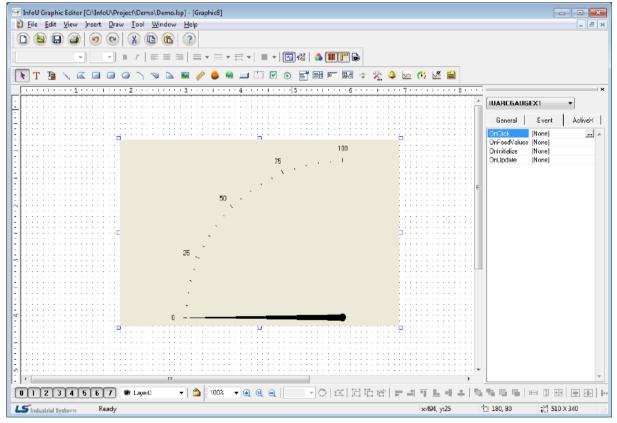
Gauge properties can be set up only after the ActiveX module is inserted to the InfoU graphic editor. Gauge properties broadly consist of General and Ticks. Since those gauge properties have been already set up with default values, they act with those default values if the user does not set up additionally.

The Gauge Control is executed in the following order. If is selected from the tools, immediate inserting can be performed.

11.6.2 Screen Configuration

(1) Engineering Screen

The following screen appears after the Gauge Control is inserted.



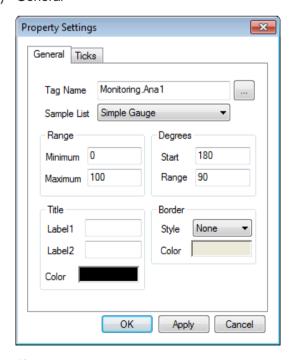
(2) Runtime Screen

If the above Engineering Screen is executed on the runtime, the screen is as follows.



11.6.3 Property Settings

(1) General



1) Tag Name

Enter a tag name to be gauged. A tag name can be designated with 'Search' () button on the right. Its

update cycle is the same with the screen cycle of the InfoU graphic editor.

2) Sample List

Various gauge samples are presented to fit to the user's purpose.

3) Range

Designate a gauge range, that is, enter the min/max value.

4) Degrees

Designate a gauge degree, that is, enter the start degree and the range degree.

5) Title

Designate a gauge title and color.

6) Border

Designate background color and border style.

(2) Ticks



1) Pointer

Designate a gauge pointer style and color.

2) Tick Label

Designate a tick label color and style (Reverse, Decimal).

3) Pointer Hub

Designate whether to show the pointer hub or not and decide its size and color.

4) Tick

Designate the size of the Major Tick and Minor Tick and color.

5) Tick Background Color

Designate the tick background color and the user may set up an additional risk reference value to designate a risk color.

If not checked, the background color is set up to display.

11.7 Database Viewer

The Database Viewer is an ActiveX module that allows you to display and monitor database table contents on the screen through database connection string and select query statement settings.

11.7.1 Prerequisite and Environment

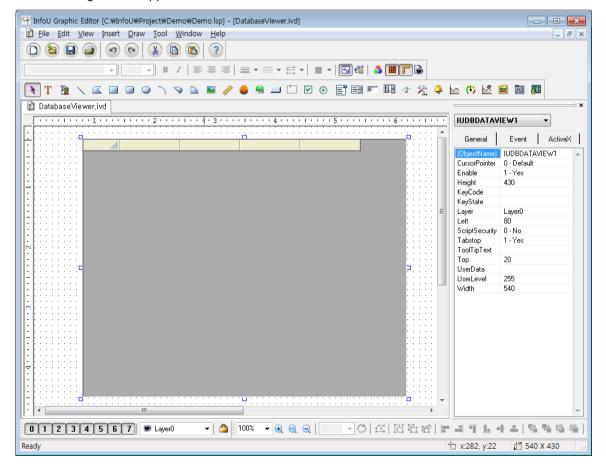
After you insert the ActiveX module into the InfoU graphical editor, you need to set the properties for the database viewer. The database viewer properties are largely composed of general properties and column property items. By default, the database viewer inserted into the graphical editor is not assigned a database connection string and a select query statement. Make sure to open the properties window and set the property values for running the database viewer. After saving the attribute values, the database viewer screen appears when you open the screen in the runtime environment.

The order of execution of the database viewer is as follows. If you select in the tool, you can insert it immediately

11.7.2 Screen Configuration

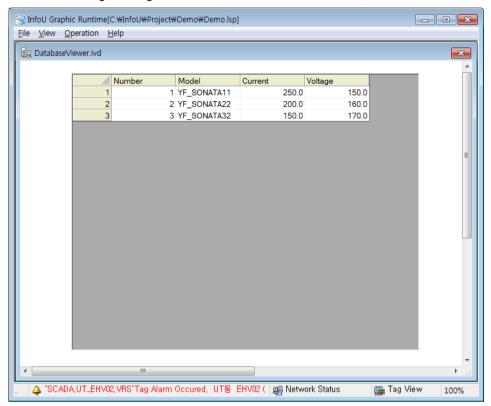
(1) Engineering Screen

The following screen appears after the Database Viewer is inserted.



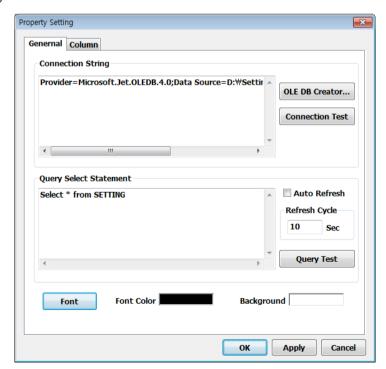
(2) Runtime Screen

If the above Engineering Screen is executed on the runtime, the screen is as follows.



11.7.3 Property Settings

(1) General



1) Connection String

Enter the database connection string. You can specify the connection string using the OLE DB Creator button on the right.

2) Connection Test

You can check the connection string for errors.

3) Query Select Statement

Enter the database query select statement.

4) Query Test

You can check for errors in query selection statement.

5) Refresh Cycle

If you set Auto Refresh, specify the refresh cycle.

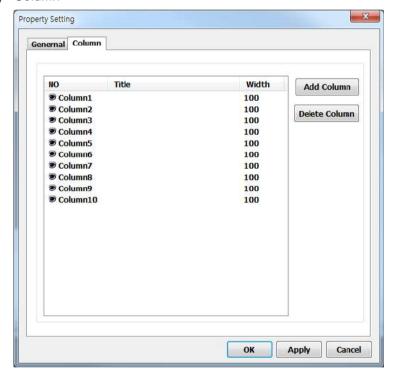
6) Font

You can specify the font, style, and size attributes of the font.

7) Font/Background Color

Designate font color and background color .

(2) Column



This sets the custom column title and width. By default, there are 10 custom columns and a width of 100 pixels. Note that if the number of corresponding table columns is greater than the number of custom columns, the table column title is displayed and the width is set to 100 pixels. If the number of user-defined columns is greater than the number of columns in that table, the user-defined columns are ignored. If the user defined column title is set to an empty string, the corresponding table column title is displayed.

1) Add Row

Add rows (columns) to edit user-defined columns.

2) Delete Row

Chapter 11 Graphic Object

Delete rows (columns) to edit user-defined columns.

11.7.4 Other Functions

(1) Excel export

This function is to save current screen data as csv or xls file.

11.7.5 How to Use Script

(1) Function List

Function Name	Function Declaration
ExportCSV	void ExportCSV(LPCTSTR FileName)
ExportXLS	void ExportXLS(LPCTSTR FileName)
PutAutoRefresh	void PutAutoRefresh(VARIANT_BOOL IsUse)
PutColumnTitleList	void PutColumnTitleList(LPCTSTR ColumnTitleList)
PutColumnWidthList	void PutColumnWidthList(LPCTSTR ColumnWidthList)
PutSelectStatement	void PutSelectStatement(LPCTSTR SelectStatement)
Refresh	void Refresh(void)

(2) Function Description

ExportCSV Function			
Description	This function allows you to save the data displayed in the database viewer as a CSV file.		
	void ExportCSV(LPCTSTR FileName)		
Syntax			
	FileName: File name to save		

ExportXLS Function			
Description	This function allows you to save the data displayed in the database viewer as a XLS file.		
	void ExportXLS(LPCTSTR FileName)		
Syntax			
	FileName: File name to save		

PutAutoRefresh Function			
Description	This function allows you to set whether or not to update automatically according to the update cycle set in the database viewer.		
	void PutAutoRefresh(VARIANT_BOOL IsUse)		
Syntax	IsUse: - automatic update: True - No automatic update: False		

PutColumnTitleList Function				
Description	This function allows you to set the column title of the database viewer.			
	void PutColumnTitleList(LPCTSTR ColumnTitleList)			
Syntax	x			
	ColumnTitleList: Column title list. Column separator: ";"			

PutColumnWidthList Function			
Description	This function allows you to set the column width of the database viewer.		
	void PutColumnWidthList(LPCTSTR ColumnWidthList)		
Syntax			
	ColumnWidthList: Column width list. Column separator: ";"		

PutSelectStatement Function			
Description	This function allows you to set the database select query statement.		
	void PutSelectStatement(LPCTSTR SelectStatement)		
Syntax			
	SelectStatement: select query statement.		

Refresh Function	
Description	This function allows you to query based on the database selection query statement.
Syntax	void Refresh(void)

11.8 How to Use External ActiveX

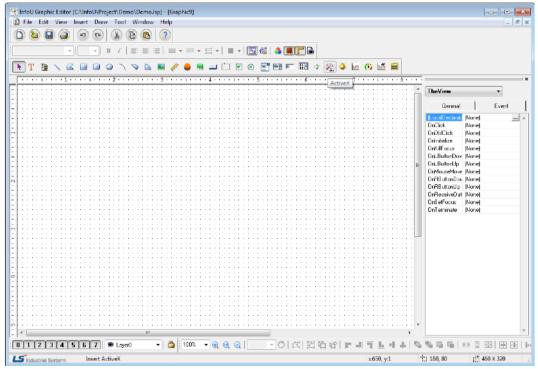
External ActiveX can be inserted and used on the graphic editor.

Here, Window Media Player OCX is used as an example of external The same way can be applied to other ActiveX.

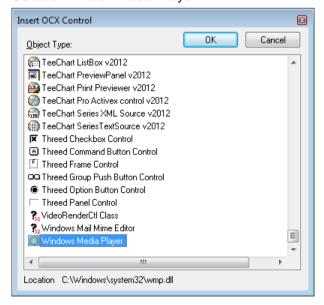
11.8.1 How to Use

Insert the ActiveX module into the InfoU graphic editor. You can run the Window Media Player Control based on the below procedures.

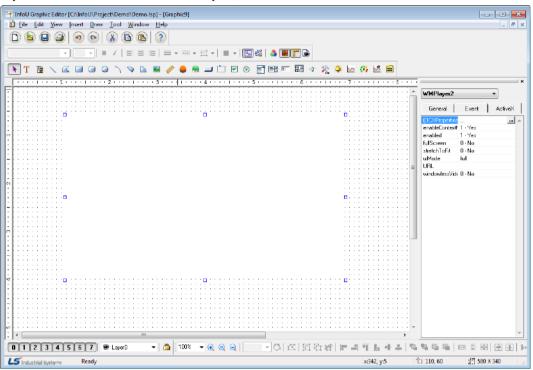
(1) Select in the tool menu of the graphic editor.

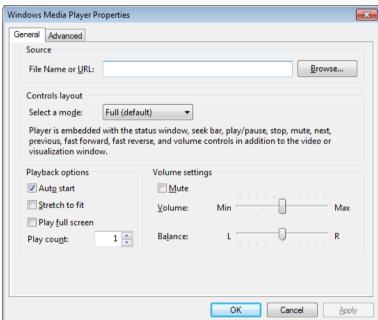


(2) Select a 'Window Media Player'









Alram function in HMI system, including the InfoU, is important.

This section describes about the process dealing with alarm, configuration of alarm group and alarm service.

12.1 Alarm Kind and Rules

Alarm settings are available only for analog and digital tags in the InfoU and alarms are processed only when the relevant tag value is normal.

Each alarm is prompted or cancelled according to the following rules.

Tag Type	Alarm Type	Alarm Kind	Occurrence rule	Cancel rule
			The alarm occurs when the	The alarm is cancelled if HH alarm has
		HH Alarm	tag value is more than HH	previously occurred and the tag value
				is less than HH.
			It occurs when the tag value	It is cancelled if HI alarm has
		HI Alarm	is more than HI but less than	previously occurred and the tag value
	Limit		HH.	is less than HI or more than HH.
	Alarm		It occurs when the tag value	It is cancelled if LO alarm has
		LO Alarm	is more than LL but less than	previously occurred and the tag value
			LO.	is less than LL or more than LO
			It occurs when the tag value	It is cancelled if LL alarm has
		LL Alarm	is less than LL	previously occurred and the tag value
				exceeds LL
Analog	Change	Change Value Alarm	It occurs when the tag value	It is cancelled if the Change Alarm has
	Value		is significantly changed from	previously occurred and the tag value
	Alarm		the past value by more than	is changed from the past value by less
	Alailli		the baseline value.	than the baseline value.
		Main Gap Alarm	It occurs when the tag value	It is cancelled if the Main gap Alarm
			is different from the base	has previously occurred and the tag
			value by more than the Main	value is different from the base value
	Gap		Gap Value.	by less than Main Gap Value
	Alarm	•	It occurs when the tag value	It is cancelled if the Sub gap Alarm has
	7 iidiiii		is different from the base	previously occurred and the tag value
			value by more than the Sub	is different from the base value by
			Gap Value but less the than	more than the Main Gap Value or less
			Main Gap Value.	than the Sub Gap Value.
	Digital Alarm	ON Alarm	It occurs when the tag value	It is cancelled if the On Alarm has
Digital			is "On."	previously occurred and the tag value
				is Off.

		It occurs when the tag value	It is cancelled if the Off Alarm has
	OFF Alarm	is "Off."	previously occurred and the tag value
			is On
	ON → OFF	It occurs when the tag value	Occurrence and cancellation takes
	Alarm	is changed from On to Off.	place at the same time
	OFF → ON	It occurs when the tag value	Occurrence and cancellation takes
	Alarm	is changed from Off to On	place at the same time
	Alarm When	It occurs when the tag value	Occurrence and cancellation takes
	Changed	is changed	place at the same time

12.1.1 Analog Alarm

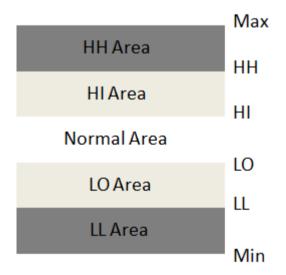
There are three types of analog tags; Limit Alarm, Variation Alarm, Gap Alarm.

There are four types of Limit Alarms; HH, HI, LO, LL alarm. The Gap Alarm can be divided into the Main Gap Alarm and the Sub. Gap Alarm.

(1) Limit Alarm

The border alarm is used most among other alarms for analog tags.

The user may set up four border values such as HH, HI, LO and LL for the border alarm when tag engineering. If the user divides the region corresponding to the tag values horizontally and locates the baseline values to relevant regions, the relevant alarm occurs when the tag value is in the corresponding region and it is cancelled when the tag value is out of the region.

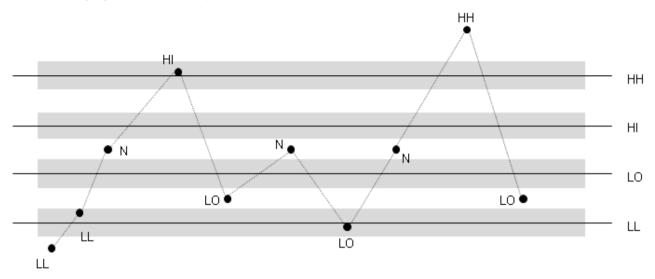


Each border alarm occurs in each corresponding region under the following condition:

- * HH Alarm: The tag value is in HH region.
- * HI Alarm: The tag value is in HI region
- * LO Alarm: The tag value is n LO region
- * LL Alarm: The tag value is in LL region

In addition, if any alarm Deadband value is set up, the Deadband rule applies according to the change trend of the tag value.

The following figure shows a simple example of this.

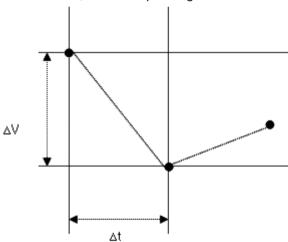


(2) Change Value Alarm

The change alarm occurs when the current tag value is significantly changed from the past tag value by more than the allowed change value designated to each tag property item.

Similarly, if the change alarm occurs and then, the tag value is changed afterward but it does not reach the designated value, the alarm is cancelled. This alarm is set to ensure the tag value is not change significantly. The alarm Deadband rule does not apply to the change alarm.

As shown in the below figure, the horizontal $\triangle t$ means the collecting cycle (not absolute time) and $\triangle V$ means the difference in values. If the variations between the previous value and the current value exceed the variation value, the corresponding alarm will occur.

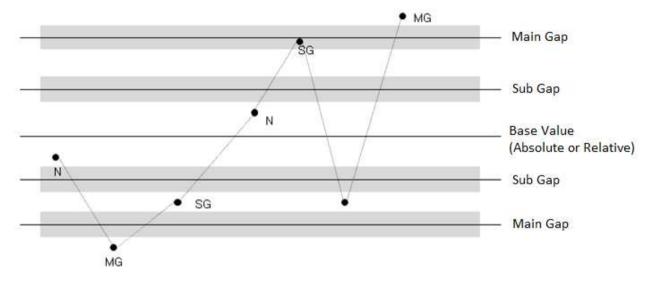


(3) Gap Alarm

The gap alarm occurs when the delta rule of the Main and Sub Gap applies based on the baseline value. Similarly to the border alarm, the alarm Deadband rule applies to the gap alarm.

The gap alarm is similar to the border alarm but several differences are as follows:

- -There is no upper or lower border. It is only divided into the Main and Sub Gap.
- -The base value can be set with an absolute value or a relative value (tag).



12.1.2 Digital Alarm

Digital alarms occur only for digital tags and they occur according to the previous value and the current value, consisting of five types such as On->On Alarm, Off Alarm, On->On->Off Alarm, Off->On->On Alarm, Alarm When Changed.

Alarm Kind	Description		
ON Alarm	The alarm occurs when the tag value is On.		
ON Alailli	The alarm is cancelled when the tag value is Off.		
OFF Alarm	The alarm occurs when tag value is Off		
OFF Alallii	The alarm is cancelled when the tag value is On		
ON → OFF Alarm	The alarm is occurred and cancelled at the same time when the tag value is		
ON 7 OFF Alarm	changed from On to Off.		
OFF → ON Alarm	The alarm is occurred and cancelled at the same time when the tag value is		
OFF 7 ON Alailli	changed from Off to On.		
Alarm When Changed	The alarm is occurred and cancelled at the same time when the tag value is		
Alarm When Changed	changed.		

12.1.3 Alarm Delay

(1) Alarm Delay Description

Alarm delay is a function to delay the occurrence of an alarm when some abnormal value is produced in the site by assigning a certain delay time to each tag and comparing the value after the specified time and the one before the initial occurrence of the alarm to prompt an alarm in stead of prompting an alarm immediately when some abnormal value is produced. The alarm delay diagram is as follows

Alarm Delay Logic Alarm Delay Alarm Delay Leave Enter Alarm Delay Zone PV: Prev Value CV: Current Value Time Zone AV: Alarm Occurrence Value MV: Middle Value

PV: The last value before entering the alarm delay zone

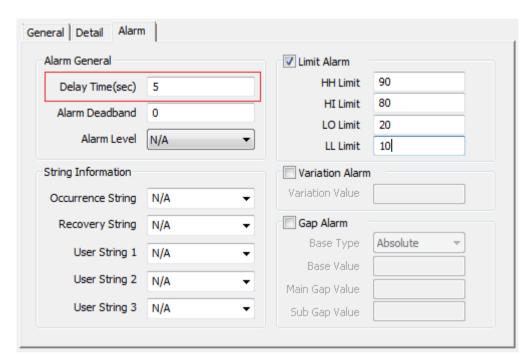
AV: The value when entering the alarm delay zone

MV: The value in the alarm delay zone

CV: The current value at the end of alarm delay zone

(2) Alarm Delay settings

You need to set the following two items to use the Alarm Delay function. First of all, enter the delay time value in the alarm setting property window when editing tags. This value should be set for each tag individually.



The alarm delay time is applied all alarms of the relevant tag. Then, for the item to be set next, in the bin directory of the InfoU installation directory, open the iuDataProcess.ini file with a notepad or other editing tools

After setting the value of the following item as TRUE in the ini configuration file, save it.

DP_ALARMDELAY_FLAG=TRUE

If you start up the InfoU runtime, you can check the alarm delay time is applied.

Notice

Setting the alarm delay time may cause considerable load when applying it to the InfoU runtime.

Alarm delay time settings should be used only if absolutely necessary.

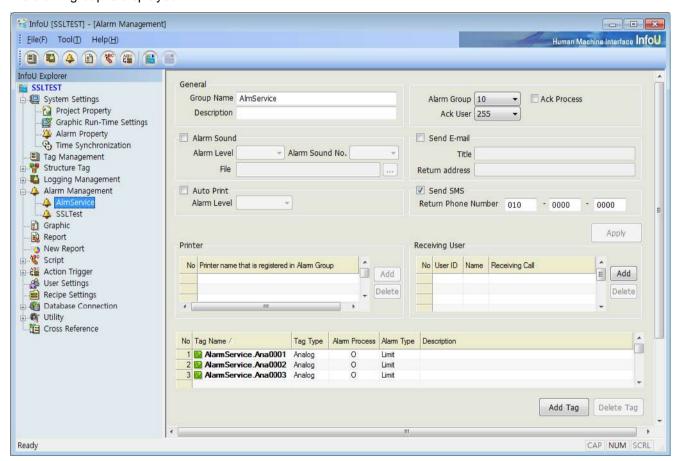
12.2 Alarm Group Settings

If any alarm occurs, alarm sounding, printing, sending SMS and sending e-mail are carried out as actions against the relevant alarm. Those actions are set up for each alarm group. Therefore, several tags are registered in one alarm group and if any alarm occurs in one of the registerd tags, the designated actions to the group are performed.

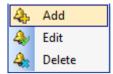
12.2.1 Alarm Group Management

(1) Basic Settings

Select 'Alarm Management' from InfoU Exploerer. If there are alarm groups that have been already registered, the alarm group list appears under the 'Alarm Management.' If one alarm group is selected, information on the alarm group is displayed.



1) Add

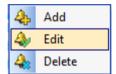


Click the right key of the mouse and check 'Add' menu.

An empty box in the Alarm Group Settings' is displayed.

If a new name is designated to the existing alarm group without any modification, a new alarm group is registered..

2) Edit



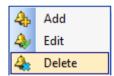
Click the right key of the mouse after selecting an alarm group and check 'Edit.'

Selecting an alarm group itself plays the same role as selecting 'Edit' does.

Existing settings are displayed in the 'Alarm Group Settings"

After modifying settings, finish editing with saving.

3) Delete



Select an alarm group to delete. Click the right key of the mouse and check 'Delete' menu.

The selected alarm group is deleted.

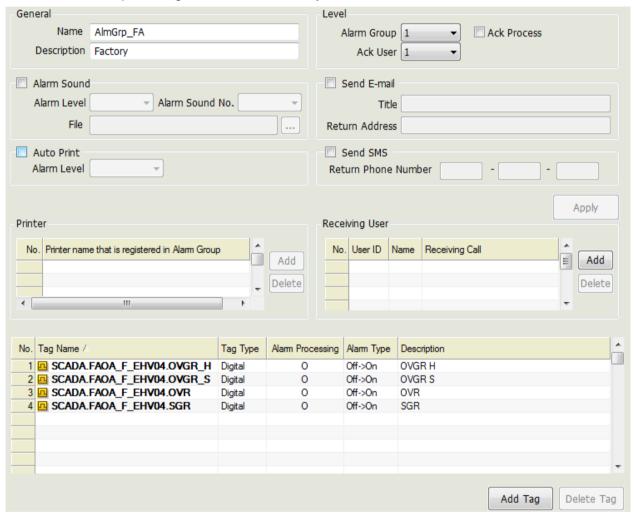
(2) Alarm group property window

If you select the alarm group name in the alarm group list or select the [Edit] menu, the settings of the alarm group will be displayed in the alarm group property widow on the right side. For the description on each item, refer to [Alarm Group Settings].

12.2.2 Alarm Group Settings

The alarm group setting screen is as below.

The single setting items at the top of the screen are saved only when you press the [Apply] button in the middle. After the single items setting is saved, multiple setting times such as printer and receiving user, tag list, etc. are activated. The multiple setting items are automatically saved.



(1) General

Items	Description	
	Input name of the alarm group.	
Name	If changing the existing name, the group is automatically acknowledged	
	additionally	
Description	Input description of the alarm group	

(2) Level and Ack Process

Items	Description	
Alarm Group	Select the level of alarm group. (1 ~ 10)	
Ack User	Select a level of the acknowledged users(1 ~ 255)	
	If 'Ack Process' is selected, any alarm can not be deleted from the alarm list	
	without the user's acknowledgement.	
Ack Process	Even though it has been set up in the 'Alarm Settings' that any alarm can be	
	deleted without acknowledgement,	
	'Ack Process' check should have priority over those settings.	

(3) Alarm Sound

Items	Description	
Alarm Sound	In case of the occurrence of any alarm, output of a wave file is set up for a	
Alaitii Souliu	particular group.	
Alarm Level	Alarm sound is generated only when the alarm level is higher than the	
	designated alarm level.	
Alarm Sound No.	Select the number of alarm sound. (Unlimited / No Sound)	
File	Select an alarm sound to generate. Select a wave file.	

(4) Send E-mail

Items	Description		
Send E-mail	Select whether to use Send E-Mail in case of the occurrence of any alarm in		
	the current group		
Title	Input a title of the mail when sending e-mail on alarm information		
Return Address	Input e-mail address of the sender when sending e-mail on alarm information.		

(5) Auto Print

Items	Description		
Auto Print	Select whether to use Auto Print in case of the occurrence of any alarm in the		
Auto Filit	current group.		
Alarm Level	Auto Print is processed only when the alarm level is higher than the designated		
	alarm level.		

(6) Send SMS

Items	Description	
Send SMS	Select whether to use SMS in case of the occurrence of any alarm in the current group.	
Return Phone Number	Input the phone number of the sender who will be displayed when sending SMS.	

(7) Printer

Indicate a printer to be used for alarm output.

Be cautious that only line printers are supported in this system.

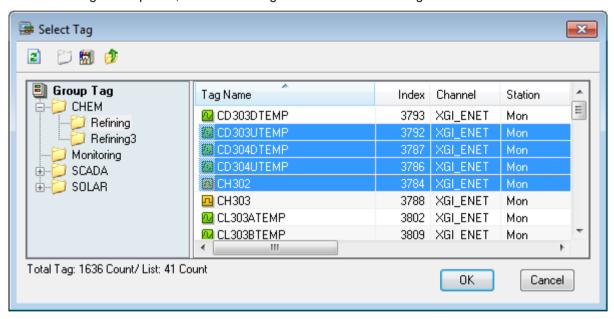
(8) Receiving User

Send e-mail or SMS to the registered users. The User must be registered previously when to use.

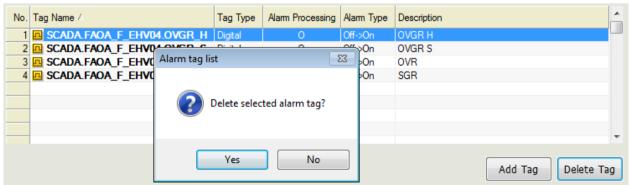
(9) Link Tag Settings

Link Tag Settings are to register a tag to an alarm group. For this, select a tag from the additional tag browser and register it. If any alarm occurs in the selected tag here, the actions that have been designated to the corresponding alarm group are processed.

If the tag browser is displayed, select a tag to add to the list. It is also available to select multiple tags. Once selecting is completed, the selected tag is added to the Link Tag list.



If you want to delete tags from the alarm group, after selecting the tag on the tag list screen of the alarm setting window, press the [Delete] button to remove the registered tag. Deleting the alarm tag in the alarm group setting window is just the function to cancel tag registration, it does not mean the registered tag is not actually deleted.



12.3 Alarm Service

When the events such as occurrence and cancellation of alarms are generated in the InfoU runtime, the alarm service items describe how a user recognizes it by various means and manage them.

12.3.1 Alarm Sound

Among alarm service items, the alarm sound is related to sounds. It shows you how to generate the preset sound and recognize and manage it when an alarm occurs.

(1) Occurrence of alarm sound

When the sound is set for the alarm group including the tag where the alarm occurred, the relevant WAVE file will be output. In the real-time alarm list, the sound is generated in the order of age with the highest priority (low level value). When a user recognizes the alarm tag, the alarm sound will be cleared.

(2) Alarm sound stop

You can stop the alarm sound by using the 'Sound Stop' function of the alarm viewer or the script. However, this is temporary suspension, namely, the sound conditions of the tag targeted by the alarm sound are not cleared. After stopping the sound, if a user commands restart of sound, the sound will resume for the previous alarm tag.

When the alarm is sounded, the sound will stop in the following cases.

[Cases to stop the alarm sound]

Sound stop cases	Description
When the alarm sound is	If a user recognizes the alarm, the sound will stop. Then, the next alarm
recognized	of the real-time alarm list will be sounded.
	If a user recognizes alarms fully, all currently occurring alarms will be
When full recognition is done	recognized. It means sound occurrence conditions on the real-time alarm
When full recognition is done	will be removed. After that, when a new alarm subject to sound occurs, it
	will be sounded.
When the alarm is deleted	The alarm sound is intended for the real-time alarm list. When the alarm
from the real-time alarm list	is deleted from the real-time list, the alarm will stop. Then, the next target
	will be selected and sounded.
	When a user stops the sound through the 'Sound Stop' button of the
Sound stop button / stop script	alarm viewer or the script, the sound will be suspended. This is just the
	temporary pause function of the sound so it does not mean the alarm
	sound will be removed completely. If you execute the 'Sound Start'
	command, the alarm will be sounded again.

(3) Alarm sound settings

The alarm sound engine gets the desired alarm group data from the real-time list on the specified cycle and generates sound. If you want to generate sound targeting the cycle to check the tags for alarm sound or the desired alarm group only, you can specify actions of the sound engine by editing the setting file.

Open [InfoU project folder]- [Config folder] -[iuAlarm.ini file] using a notepad, etc.

The item related to the alarm sound is [iuAlarmAgent] section and you can specify the following items.

Items	Description
	By using the vertical line(vertical bar), set the alarm group to generate
	the sound as the condition. The default is ALL(whole groups).
	For example, if you want to set up "AlmGroup1" and "AlmGroup2", set as follows.
	SoundAlarm groupFilter =AlmGroup1 AlmGroup2
SoundAlarm groupFilter	If you want to target the alarm group "A", "B", "C", set as follows. SoundAlarm groupFilter=A B C
	If you want to target all alarm groups rather than specifying a certain
	alarm group, set as ALL.
	SoundAlarm groupFilter=ALL
	Set the cycle to communicate with the alarm server. The unit is a
	millisecond. If the set value is too small, it may lower the performance of
SoundAlarmScanTime	the InfoU system.
	SoundAlarmScanTime=2000

12.3.2 Common Items for Alarm Service

The items required for the line printer output, sending out mails and SMS are performed through common and individual items of [InfoU project folder] - [Config folder] - [iuAlarm.ini file].

(1) AS_CONFIG section

Through AS_CONFIG section, you can specify the common and individual items to perform printer, mail and SMS functions.

Items	Description
PrinterColSize	It specifies the line printer's column length (printer).
ValuePrecision	It specifies the decimal points when using the value (common).

(2) Column specified items (Each service)

They are the basic items to specify columns for services.

The rule of "column name=length" is applied.

Column definition	Description	Remarks
TAG_NAME	Tag name	
ALM_TIME	Time	When the columns are specified for mail and SMS functions, enter the time of alarm occurrence. For the printer, enter the occurrence/recovery time according to the occurrence/recovery. [Format] YYYY/MM/DD HH24:MI:SS.MMM
41.14 T)/DE	A1	2013/05/31 11:19:46.971
ALM_TYPE	Alarm type	PROCESS / SYSTEM / EVENT
ALM_AREA	Alarm group	-
TAG_TYPE	Tag type	ANALOG / DIGITAL
ALM_KIND	Alarm kind	HH / HI / LO / LL Change Val, Main Gap / Sub Gap OFF / ON / ON→OFF / OFF→ON / CHANGE
ALM_LEVEL	Alarm level	-
ALM_CURVAL	Current value	-
ALM_PREVVAL	Previous value	-
ALM_MSG	Message	Occurring string / Recovery string
ALM_INFO	Tag information	-
UNIT_ONOFF	Unit ON/OFF STRING	In the case of the analog tat, unit is output. In the case of the digital tag, ON/OFF string is output.
USER_DEF1	User definition 1	-
USER_DEF2	User definition 2	-
USER_DEF3	User definition 3	-

Notice

For the SMS service has determined that the total length of characters that can be used for each modem. When selecting a service item does not exceed the total length required to set the value of each column and the length

* Special characters in some circumstances, depending on the language and type of modem you are using may differ from the actual values.

12.3.3 Automatic Printout of the Line Printer

It is the function to print out the items automatically with the registered line printer when an alarm occurs and is cleared. A user can perform the desired functions by specifying the item and length to print out and by editing [InfoU project folder]- [Config folder] -[iuAlarm.ini file]. Then, you can specify the column and length using [AS_COLLIST_PRINTER] section of the ini file. For using column, refer to the column specified items (common).

Example of Use) [AS_COLLIST_PRINTER] section of the iuAlarm.ini file

```
[AS_COLLIST_PRINTER]

ALM_TIME=25

ALM_TYPE=10

TAG_NAME=30

ALM_KIND=10

TAG_TYPE=10

ALM_CURVAL=20

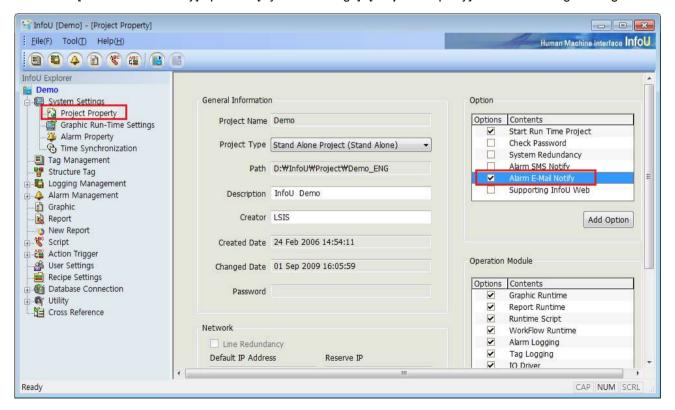
ALM_MSG=20

UNIT_ONIFF=10
```

12.3.4 Mail Sending

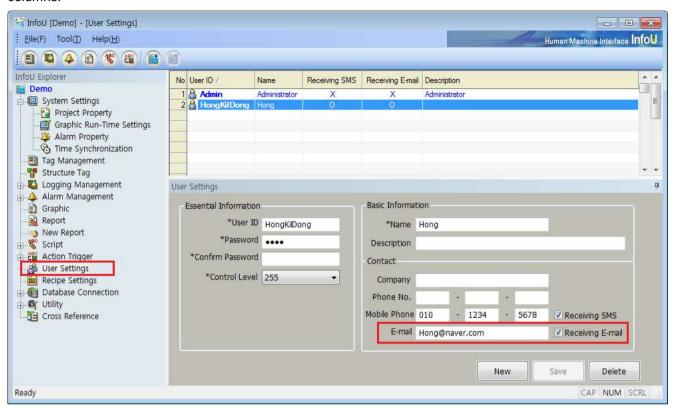
It is the function to send out the alarm details to a user's e-mail account, when the alarm occurs in the nfoU. The InfoU sends out an e-mail to users through the external mail server (SMTP server). This section describes how to set up the items to use the mail sending function stage by stage.

(1) Project option settings
Select the [Alarm E-Mail Notify] option in [System Settings]- [Project Property] of the InfoU engineering.



(2) User Settings

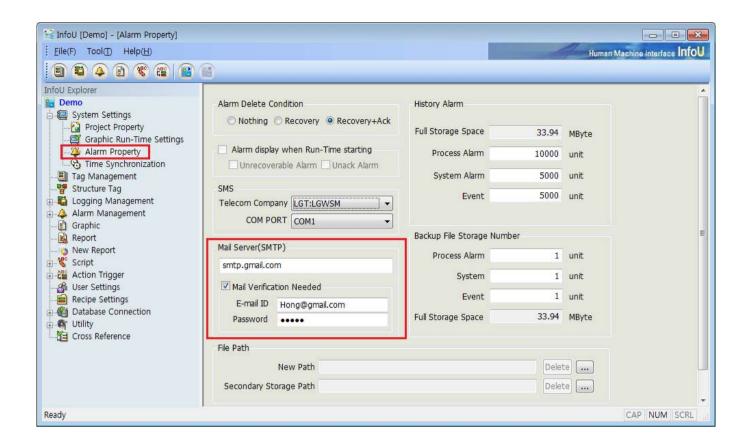
After registering the user in [User Settings] of the InfoU engineering, put a check the e-mail and reception columns.



(3) Alarm property settings

You can set up the following items in [System Settings] → [Alarm Property] of the InfoU engineering.

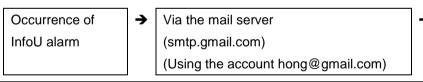
Item	Description	
Mail corver	Enter the mail server address.	
Mail server	Ex.) Google : smtp.gmail.com	
Mail Verification	If authentication is required, put a check Mail Verification.	
Mail ID	Enter the ID of a mail account.	
Password	Enter the password of a mail account.	



Notice

The InfoU adopts the external mail server to use mail function. The setting items of mail server means the foresaid mail server. (Not the final destination of the mail)

As shown in the fig., if you set the SMTP server as smtp.gmail.com, the flow of the mail data is as below.



Arriving at the destination (user E-mail) (hong@naver.com)

(4) SSL Settings

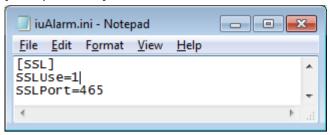
The majority of the previous SMTP servers were confined to simple SMTP mail servers without the security function. However, recently, the importance of security has been strengthened so the existing simple SMTP mail servers gradually disappear. In the InfoU, you can set the mail server using the SSL(Secured Socket Layer). To set up the SSL mail server, you can perform the function by editing [InfoU project folder]- [Config folder] – [iuAlarm.ini file] (SSL section).

[SSL Section]

Item	Description
SSLUse	To use the SSL function, the value should be set as 1.

SSLPort	Specify the port used for the SSL mail server.
SSLPUIT	(Ex.) For Google mail server: 465

[Example of Use]

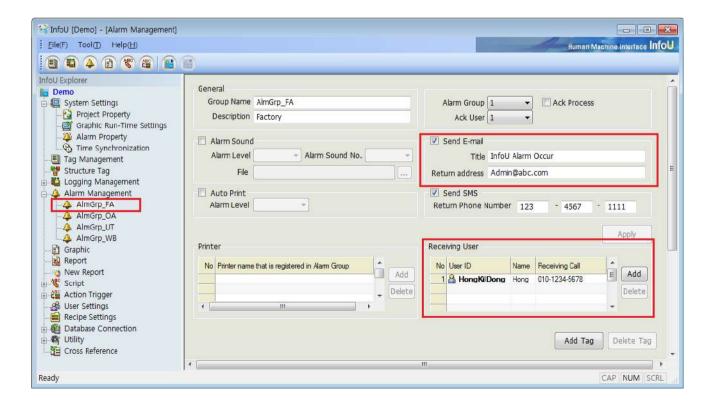


(5) Alarm group settings

Alarm group settings related to mail transmission are as follows.

For the overall settings of other alarm groups, refer to the items of [Alarm Group Settings].

Item	Description
Send E-mail (check)	When an alarm occurs, put a check this to use the mail transmission
	function.
Title	Set up the mail title.
Return Address	Set up the address of the mail to be sent out.
	When the alarm occurs in the tag registered in the alarm group, you
Receiving user	need to register the user who will receive the mail. It should be
	preregistered in User Settings.

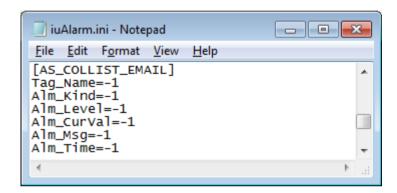


(6) Mail tag item settings

When an alarm occurs, the tag items received by a mail are similar to those of a printer.

You can choose the desired item by editing [InfoU project folder]- [Config folder] -[iuAlarm.ini file]. Then, specify the column and length through the [AS_COLLIST_EMAIL] section of the Ini file. For using column, refer to the column specified items (common).

```
[AS_COLLIST_EMAIL]
TAG_NAME =-1
ALM_LEVEL=-1
ALM_LEVEL=-1
ALM_CURVAL=-1
```



Notice

- When setting the column length as -1, the whole length of the tag column data is used instead of being cut in the specified length.
- Unlike a printer or SMS with the limit on the whole length, an e-mail has no limit so you can input -1.

12.3.5 SMS Transmission

It is the function to send a text message to a user's cell phone through the external CDMA(WCDMA) modem when an alarm occurs.

External modems supported by InfoU are as follows:

- BSM-856R: CDMA Type, Telit wireless solutions (Telecommunications company: SKTelecom)
- WM-215: WCDMA Type, M2M (Telecommunications company: SKTelecom)

After purchasing the modem, you need to enroll in the telecom companies to start up the service. Then, you can perform SMS functions only when the modem is connected to a computer through RS-232C



[BSM-856R]



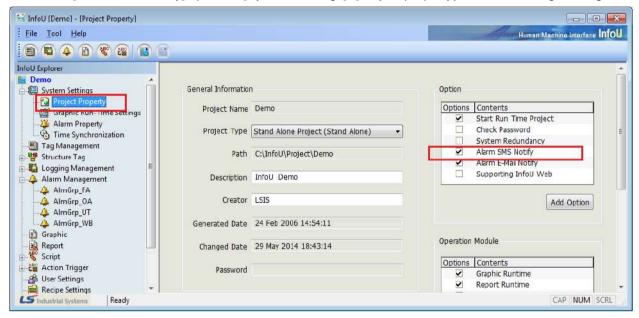
[WM-215]

LS ELECTRIC does not sell this device directly so for more details on purchasing the modem and starting services, refer to the manufacturer's website.

This section describes how to set up SMS functions stage by stage on the guess that your external CDMA modem is normally opened and connected to a computer.

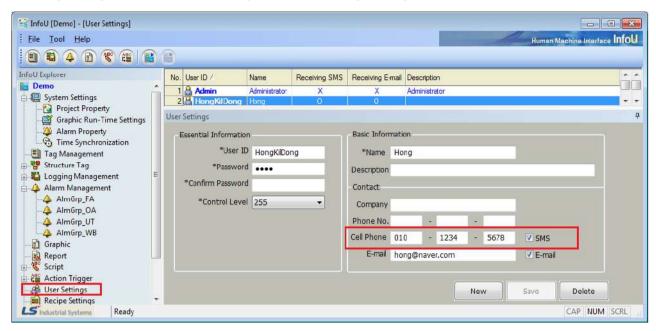
(1) Project Option Settings

Select the [Alarm SMS Notify] option in [System Settings]- [Project property] of the InfoU engineering.



(2) User Settings

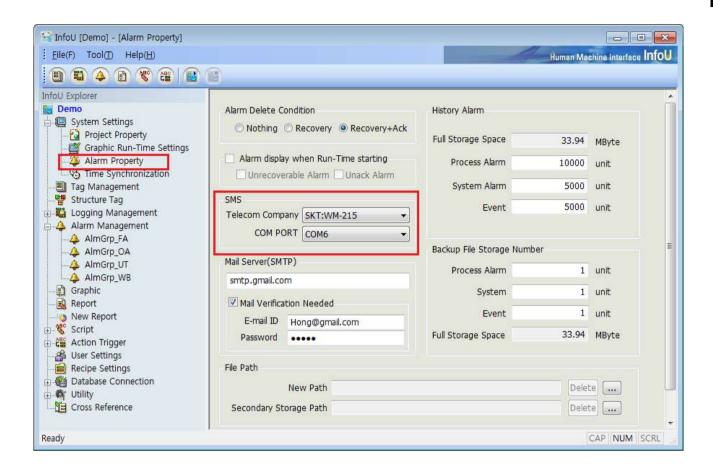
After registering the user in [User Settings] of the InfoU engineering, put a check the cell phone and SMS.



(3) Alarm Property of System Settings

You can set up the following items in [System Settings] → [Alarm Property] of the InfoU engineering.

Item	Description
Telecom Company	External Modem
COM PORT	Select the communication port connected to the external modem.



Notice

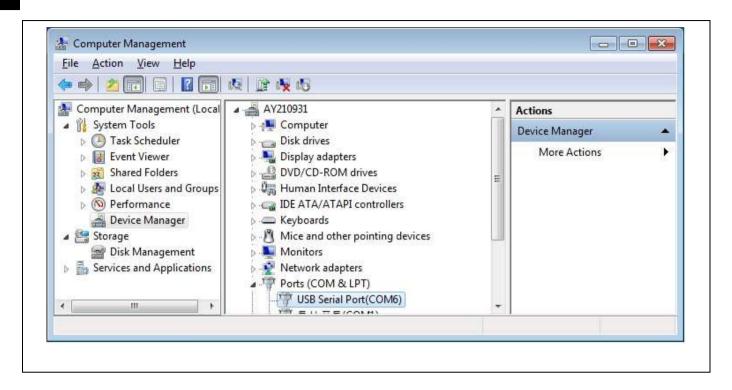
Recently, most of the computers do not have a serial port.

In this case, you can set up the serial port function using the USB port.

After purchasing USB and connecting it to a serial cable, if you install the driver, the system will work normally.

Then, the COM PORT No. will be registered and displayed in the device manager.

In the below fig., select [COM6] for InfoU settings.

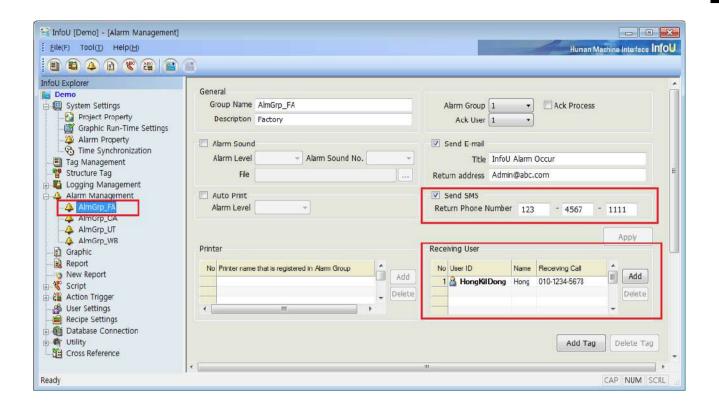


(4) Alarm Group Settings

Alarm group settings related to SMS transmission are as follows.

For the overall settings of other alarm groups, refer to the items of [Alarm Group Settings].

Item	Description
Send SMS(check)	In order to use the SMS transmission function when an alarm occurs,
	put a check this.
Return Phone Number	Set the return phone number.
	When the alarm occurs in the tag registered in the alarm group, you
Receiving user	need to register the user who will receive the SMS. It should be
	preregistered in User Settings.



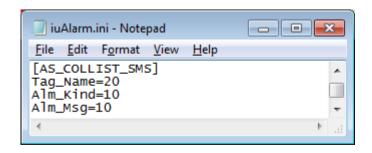
(5) SMS Tag Item Settings

When an alarm occurs, the tag items forming SMS are similar to those of a printer.

You can choose the desired item by editing [InfoU project folder]- [Config folder] -[iuAlarm.ini file]. Then, specify the column and length through the [AS COLLIST SMS] section of the Ini file. However, in the case of SMS (Short Message Service), the length of contents is limited so you need to specify the proper size of each item. For using column, refer to the column specified items (common).

Example of Use) [AS_COLLIST_SMS] section of the iuAlarm.ini file

[AS_COLLIST_SMS] TAG_NAME=20 ALM_KIND=10 ALM MSG=10



(6) Modem Parameters Settings

Setting the parameters of each modem will be made with reference to the file in the SMSOption.ini in InfoU installation directory.

[BSM-856R]

항목	설명	
MSG=AT\$SMSMO=	AT COMMAND	
[ToTel],[FromTel],[Opt1],[Opt2],[Opt3],[Opt4],[Msg]	AT COMMAND	
OptCount=4	Option Count of AT COMMAND	
MsgType=Hex	Message Type : Hexa	
Opt1=4098		
Opt2=16	The Option Value of AT COMMAND	
Opt3=		
Opt4=		
Timeout_msec=30000	Timeout (Millisecond)	
SuccessMsg=\$006	Success Message	
FailMsg=\$007	Fail Message	
Retry=3	Retry Count	

[WM-215]

항목	설명
Module=iuSMS_MT211.dll	Module Name
BaudRate=115200	Baud Rate
TP-DCS=84	Data Encoding
17-003=64	84 : KSC5601
SuccessMsg=+CMGS:	Success Message
FailMsg=+CMS ERROR:	Fail Message
Timeout_msec=3000	Timeout (Millisecond)
Retry=3	Retry Count

[※] The MT-211 and WM-215 models are fully protocol compliant.

Chapter 13 Logging Management

Important data needed for logging management can be managed under the data logging group created in accordance with the user's purpose.

It is possible to assign one tag data to multiple logging groups for diverse data analyses.

- Inquiry of Logging Data
 - Data can be inquired from Trend, Report or List Trend, and API, which can be inquired from script, is provided.
- Automatically calculated statistics/integrated data
 Statistics/integrated data are created without the use of additional scripts or applications.
- Backup

Backup is available for all of the logging groups and backup files can be inquired from Trend and List Trend.

13.1 Logging Type

The logging group editor sets up a logging group that the history server will collect during the Runtime and various logging data are acquired and saved based on the logging group.

13.1.1 Logging Type

Logging groups can be divided into Cycle, Statistics, Accumulation, String, Event, Selective Log and Event String groups depending on their type and they are acquired and saved in either periodic or event way.

Logging Group Type	Description
Cycle	Tag values are acquired in a certain cycle.
Statictics	Statistics data on the designated tag are created periodically.
Accumulation	Statistics data on the accumulation values of the tag in which values have been accumulated are created periodically.
String	String tag values are acquired in a certain cycle.
Event	Tag values are acquired in an event way according to event conditions.
Selective Log	Tag values are acquired periodically according to event conditions.
Event String	String tag values are acquired in an event way according to event conditions.

The following data can be inquired from Report or Trend according to the type of the logging group.

Logging Group	Description	
Туре		
Cycle	Analog (Current Value), Digital (Current Status)	
Statictics	Analog (Current Value, Min Value, Min Time, Max Value, Max Time, Average Value),	
	Digital(On Count, Operation Time, Change Count)	
Accumulation	Analog (Change Amount, Current Value)	
String	String(Current Value)	

Chapter 13 Logging Management

Event	Analog (Current Value), Digital(Current Status)
Selective Log	Analog (Current Value), Digital (Current Status)
Event String	String(Current Value)

13.1.2 Calculation Method for Logging Data

[HDD capacity calculation method for data collection]

Up to 40 tags can be registered in one logging group and 40 tag values can be saved at the same time with one saving.

Each logging group can save the following amount of data for one time:

• Cycle Logging: 1,048 byte

• Statistics and Accumulation: 3,768 byte

• Stirng Logging: 5,768 byte

Needed disc capacity: Data to be saved per time x logging count

If it is planned to save data every second for one day under cycle logging,
 1,048 X (60 X 60 X 24) = 90,547,200 byte (about 86.35 MB)

• If it is planned to save statistics data every hour for one year, 3,768 X (24 X 365) = 33,007,680 byte (about 31.47 MB)

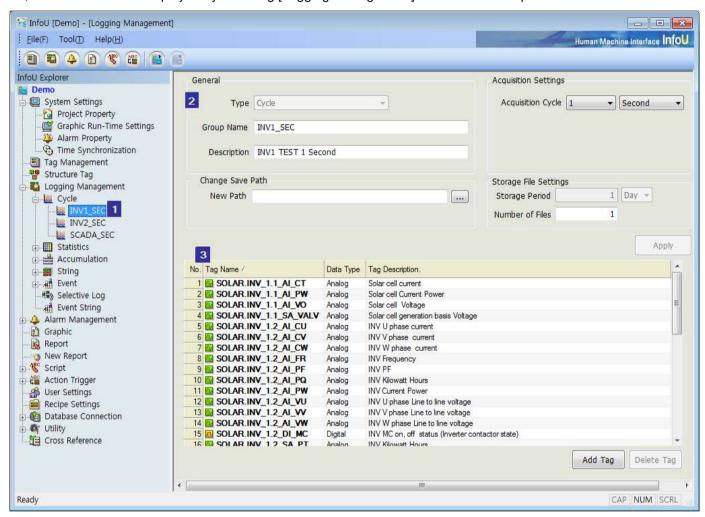
If it is planned to save string data every minute for one month,
 5,768 X (60 X 24 X 31) = 257,483,520 byte (about 245.55 MB)

13.2 Logging Settings

13.2.1 Configuration Interface

If [Tool] - [Logging Management] is selected from the InfoUD menu, a screen as seen in [Figure] appears.

Or, this screen can be displayed by selecting [Logging Management] from the InfoU explorer.



This screen consists of the following components:

(1) Logging Group Tree View

Logging group items are displayed in the InfoU explorer. The kinds of logging groups and the logging groups set up by the user are displayed in the tree. Logging groups can be newly added, edited or deleted by clicking on the right button of the mouse.

(2) Logging Group Property Settings

Properties of the set up logging group are displayed. Adding and editing logging groups are also available. Acquisition method items are displayed differently depending on the kinds of the logging groups and they can be saved by clicking on "Apply" button.

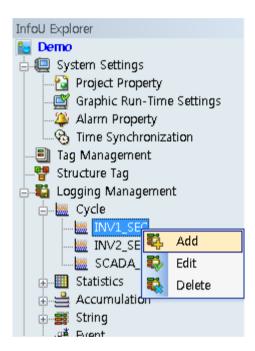
(3) Logging Tag List

Tags registered in the logging group are displayed in a list form.

The acquired tags can be registered or deleted with "Add Tag" or "Delete Tag,"

13.2.2 Add, Edit and Delete

By clicking the right button of the mouse on the "Logging Management" of the InfoU explorer, logging groups can be added, edited or deleted.



(1) Add

A new logging group is added. If "Add" is selected and the initialized right screen is filled in with new information, properties of the newly added logging group can be set up.

The logging group can be saved if "Apply" button is clicked after setting up is completed.

Detailed settings for each logging group type are explained below.

(2) Edit

Properties of the existing logging group are edited. The changed contents are saved if "Apply" button is clicked after property editing is completed.

Also, properties can be edited on the right view screen if the relevant item is selected with the mouse.

* A new logging group can be added by changing only the name of the existing logging group on the editing screen. At this time, the same property information as that of the previously displayed data will be saved.

(3) Delete

The selected logging group is deleted.

13.2.3 General

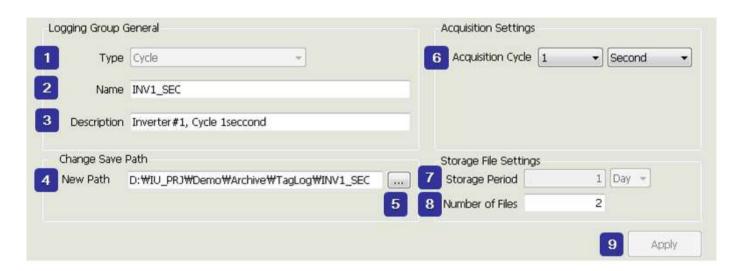
Logging group settings are carried out through the following two steps:

(1) Logging Group Settings

An acquisition method is set up along with logging group type, logging group name and logging group description, and storage and backup of logging groups are also set up. Up to 256 logging groups can be set up in a project.

Especially, a sufficient space shall be secured in the hard disc when setting backup.

Acquisition methods are displayed on different setting screens depending on the type of logging groups.



- 1) Logging Group Type: Select one among Cycle, Accumulation and String.
- 2) Logging Group Name: Input a name to identify the relevant logging group. Up to 31 letters are available to input.
- 3) Logging Group Description: Input description on the logging group. Up to 63 letters are available to input.
- 4) Saving path: It is used to change the saving path. When this is empty, the file is automatically saved to the default path ("Project/TagLog/LoggingGroupName") so it is recommended not to set this item.
- 5) Path Selection Button: Click the button to display the path selection dial log.
- 6) Acquisition Cycle: Select a cycle to acquire data. Acquisition cycle may set up differently depending on the type of the logging group.
- 7) Storage Period: Set up a storage period of the history file. For storage period, select one between number 1 and 100 and for unit, select one among time, day and month.
- 8) Number of files: The logging files are created as you enter and if the number exceeds the limit, the file will be deleted in order of age.
- 9) Apply: The inputted information on the logging group is saved.

Chapter 13 Logging Management

The storage period of the file depending on the archiving cycle is as below.

<u> </u>	· <u> </u>	<u> </u>	
Archiving cycle	Storage period	Number of files	Max. of storage period
1 ~ 30sec	1day	2 ~ 365	365 day
1 ~ 30min	1month	2 ~ 36	3 year
1 ~ 12hour	1year	2~ 3	3 year
1day	1year	2~3	3 year

Notice

Storage period settings

The "storage period" is fixed in accordance with the "archiving cycle" of the logging group.

Instead, you can set to create multiple logging files and the files are automatically connected to query.

To extend the storage period, you just set the "number of files" as long as you want.

Accordingly, the total logging period is "storage period" X "number of files".

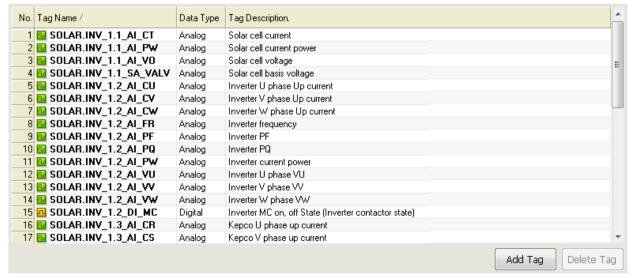
The logging file is created one by one as many as the number of files set during logging and if the number exceeds the limit, the oldest logging file will be deleted to maintain the number of files.

The default storage path of the file is Project/TagLog/Logging group name (when the "saving path" is a blank). If you input the "saving path", the file will be saved to the specified location.

(2) Tag Settings

Once adding logging groups is completed, select a tag that will acquire logging data.

One logging group can save up to 40 tags.



- 1) Add Tag: Select a tag to save from the tag selector.
- Delete Tag: Delete the selected tag.

13.2.4 Cycle

The minimum acquisition cycle is one second so that this cycle is suitable for fast real-time data logging and it is mainly used for inquiring sequential values from Trend or Report.

The current value (analog) and the current status (digital) can be inquired.



During the runtime, cycle logging groups are acquired and saved on time.

Ex) If the acquisition cycle is set 2 seconds, logging data are saved every 0, 2, 4, , ..., seconds.

Acquisition Settings: Select a cycle and unit. The following cycles can be selected for each unit:

Unit	Available cycles	
sec	1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30	
min	1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30	
hour	1, 2, 3, 4, 6, 8, 12	
day	1	

13.2.5 Statistics

The minimum acquisition cycle is one second so that this logging group type can automatically calculate and save various statistics data.

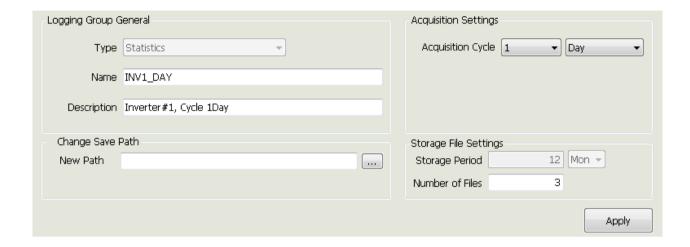
It is used to identify data status for a certain period and mainly used for inquiring statistics status from Report or Trend.

The following data can be inquired.

Analog: current value, min value, min time, max value, max time, average value

Digital: ON count, ON time, change count

Chapter 13 Logging Management



During the runtime, statistics logging groups are acquired and saved on time.

Ex) If the acquisition cycle is set 2 minutes, logging data are saved every 0, 2, 4, ..., minutes.

Acquisition Settings: Select a cycle and unit. The following cycles can be selected for each unit:

Unit	Available cycles
min	1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30
hour	1, 2, 3, 4, 6, 8, 12
day	1 ~ 31
month	1 ~ 12

13.2.6 Accumulation

Tags that have accumulation property such as power gauge and fuel indicator are registered and the change amount for a certain period is calculated and saved.

Change amount for every hour, day or month, that is, consumption amount can be inquired without using any additional scrip or memory tag.

The following data can be inquired.

Tag Type	Data
Analog	change amount, current value



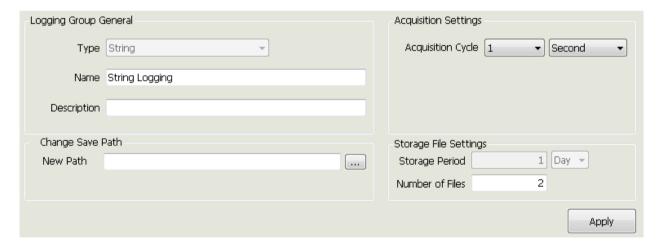
Accumulation statistics data for the accumulation logging group are automatically created every hour, day and month.

The created accumulation logging groups are classified into _HOUR, _DAY and _MONTH.

During the runtime, accumulation logging groups are acquired and saved on time.

- Ex) Data are acquired and saved on the hour for hourly logging groups, at 00:00:00 every day for daily logging groups and at 00:00:00 on the first day of every month for monthly logging groups.
- Mean of the control of the contro

13.2.7 String



During the runtime, string logging groups are acquired and saved on time.

Ex) If the acquisition cycle is set 2 seconds, logging data are saved every 0, 2, 4, , ..., seconds.

Mean of the control of the contro

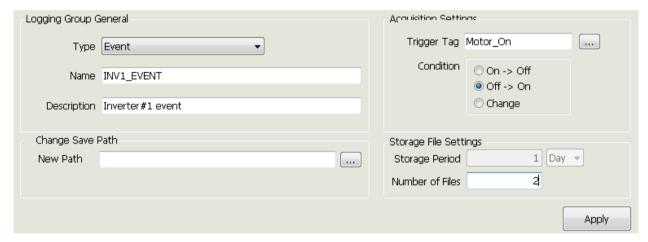
Chapter 13 Logging Management

Acquisition Settings: Select a cycle and unit. The following cycles can be selected for each unit:

Unit	Available cycles
sec	1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30
min	1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30
hour	1, 2, 3, 4, 6, 8, 12
day	1

13.2.8 Event

This logging group type is used for saving tag values according to event conditions. Here, changes in digital tag values play a role in constructing event conditions and these digital tags are called trigger tags. Event logging groups save the values of 40 tags that belong to the logging groups according to changes in trigger tags.



Event logging groups are set up as follows:

• Trigger Tag: Digital Tag

• Logging: Analog, Digital Tag

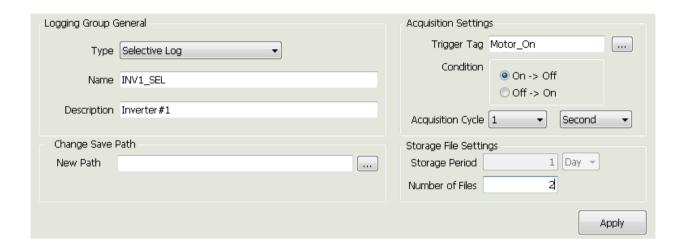
• Storage Method: Saved only one time when any event takes place

Event conditions available to be set up in trigger tags are as follows:

- When it is triggered off -> on
- When it is triggered on -> off
- When it is changed on <--> off

13.2.9 Selective Log

It is used to save the tag value periodically depending on the event condition. The event condition means the variation of a digital value that is called the action tag. While the variations of the selective storing logging group and the condition persist, 40 tag values belonging to the logging group are saved periodically.



Event logging groups are set up as follows:

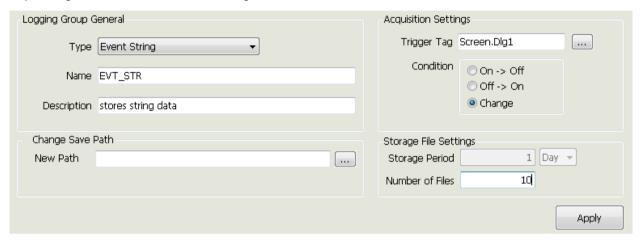
- Trigger Tag: Digital Tag
- Logging: Analog, Digital Tag
- Storage Method: Saved periodically while the conditions of trigger tags remain when any event takes place.
- Storage Cycle: 1 second ~ 1 Minute

Event conditions available to be set up in trigger tags are as follows:

- Saved periodically when it is triggered off -> on
- Saved periodically when it is triggered on -> off

13.2.10 Event String

It is used to save the string tag value depending on the event condition. The event condition means the variation of a digital value that is called the action tag. In the event logging group, 40 tag values are saved together depending on variations of the action tag.



You can set the event string logging group as below.

• Trigger Tag: Digital tag

Logging: String tag

• Storage method: Saves only 1 time when event occurs

The configurable event conditions in the action tag are as follows.

- When trigger to Off → On
- When trigger to On → Off
- When changes to On ←→ Off

Notice

Logging files may be corrupted due to sudden system shutdown, power off, etc., rather than a graceful shutdown. Please be careful when using the logging function.

Chapter 14 Script

The user can implement various functions he/she needs by writing programs freely.

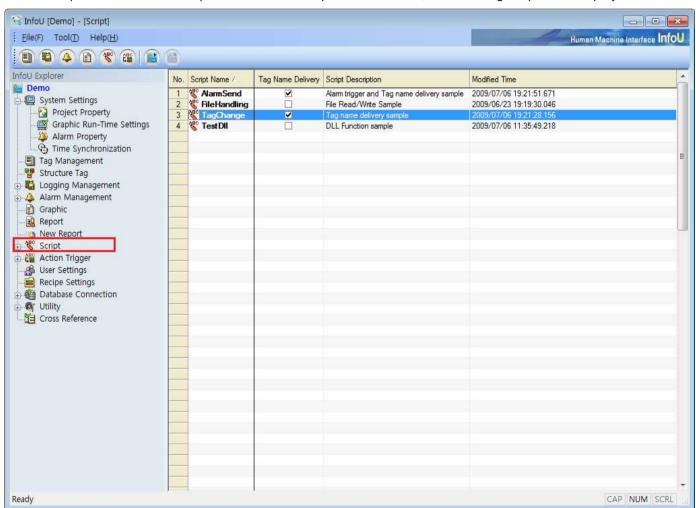
Since this program is of the Visual Basic Script Type, the user can implement various functions by directly using the internal functions provided in a type of OLE in addition to general functions provided by the Visual Basic Script:

- VB Script support
- COM, OLE Object Import
- VB Style Text Color and Dot Operation support
- Script grammar error check

The registered script is implemented during the runtime according to the Trigger rule defined in the 'Action Trigger.'

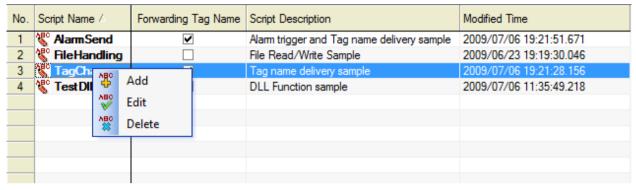
14.1 **Start**

If "Edit Script" from menu or "Script" from the InfoU explorer is selected, the following script list is displayed.



Chapter 14 Script

Click the right button of the mouse to show Add, Edit and Delete menu.



- Add: A new script is added. Double click on the empty item, the new input screen is displayed.
- Edit: The selected script is edited. If the item is double clicked, the edit screen is displayed
- Delete: The selected script is deleted.

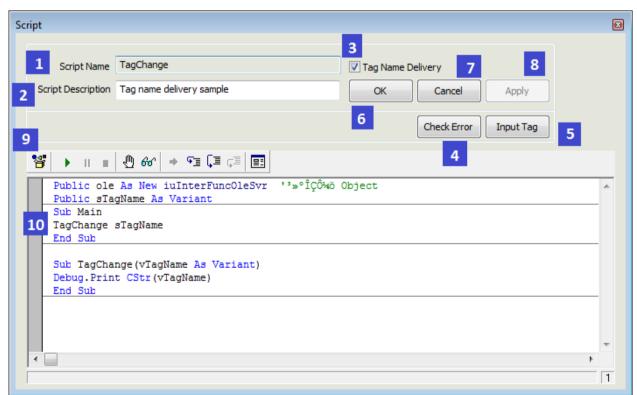
14.2 Editor Screen

The script editor screen is of Modaless dialog type and it is constructed as follow:

If other item is selected from the above script list while the screen is displayed, information on the selected script is displayed.

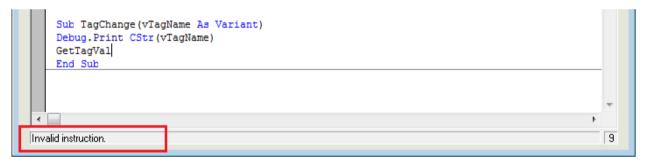
Except the following cases, script modifications along with other changes during the runtime are all reflected at the same time.

- When a script is added as a new one
- When the option 'Tag Name Deliver' is changed
- When the 'Action Trigger' is redefined



(1) Script Name

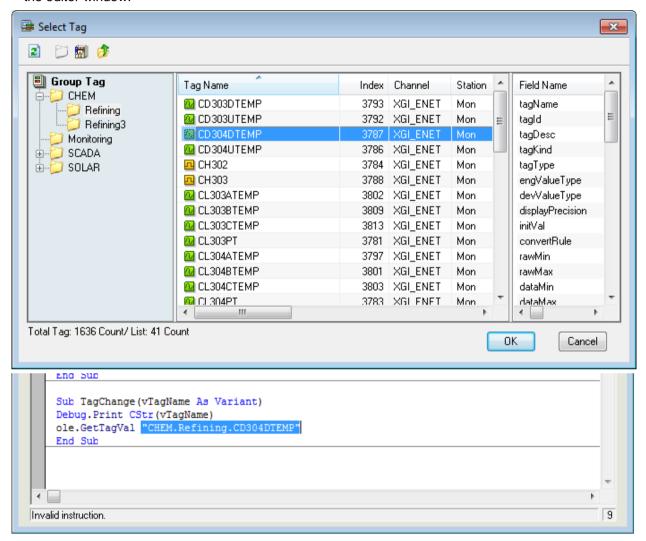
- The script name is displayed.
- If the script is renamed and saved, a new script is created and added automatically.
- Any two scripts shall not have the same name.
- Any script name can not be changed when the function option 'Tag Name Deliver' is selected.
- (2) Script Description
 - Input description on the script.
- (3) Tag Name Delivery
 - Tag names can be delivered in script functions during the runtime.
 - Be cautious that the contents that are still written is initialized and the mode is changed if this Tag Name Delivery is selected.
 - The tag name shall be the same with the one used when any "action upon the alarm status" or "action upon the change in tag values" takes place.
 - For details, refer to 'Hot to use script.
- (4) Check Error
 - The script that is still written is checked for grammar errors.
 - Only grammar errors are detected and neither logical errors nor error data during the runtime can detected.
 - If any error is detected, it is displayed on the 'Script Error Message window' and the error type and the line on which the error is detected are displayed in the status bar on the bottom of the editor.





(5) Input Tag

• The tag list of the current project is displayed and if a tag is selected, the relevant tag name is inputted on the editor window.



(6) OK

- The script is checked for grammar errors and if any error is not found, the script is saved and the screen is ended.
- (7) Cancel
 - Any modification is cancelled and the screen is ended.
- (8) Apply
 - The script is checked for grammar errors and if any error is not found, what has been edited is saved.
- (9) Editor Toolbar
 - The script is implemented on the editor screen and debugging work is also available. For details, refer to 'How to use.'

14.3 How to Use

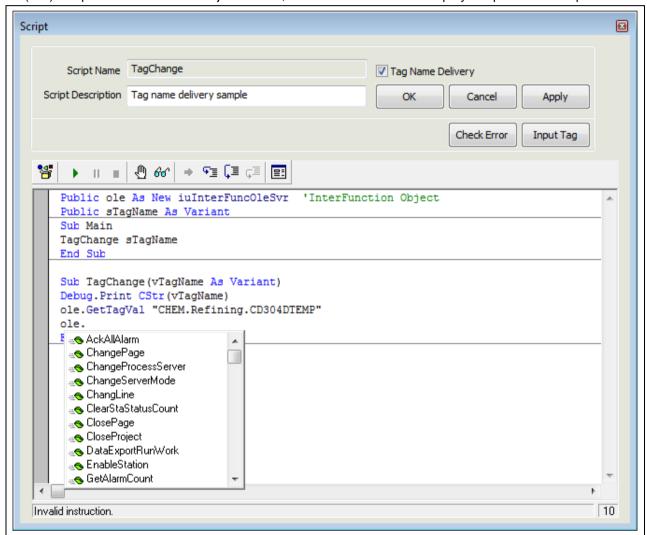
This explains how to register and use the script.

14.3.1 Use of Internal Fuctions

• Declare iuInterFuncOleSvr objects as follows and assign them by using Set command.

```
Public ole As New iuInterFuncOleSvr
                                     'InterFunction Object
```

• If "."(Dot) is inputted in a declared object variant, available functions are displayed upon the Dot Operation.

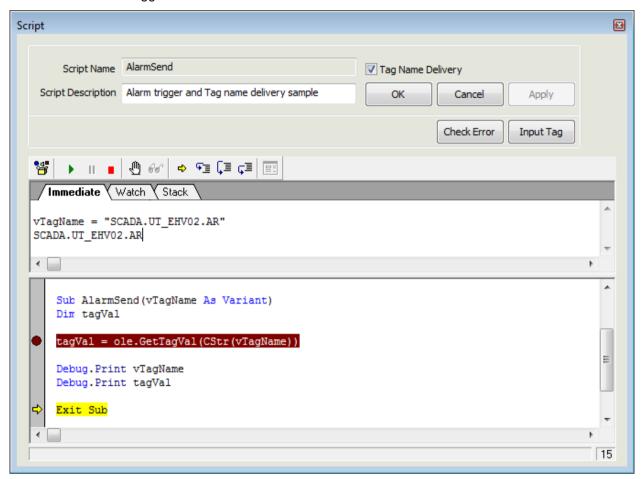


• Since even the function parameter as seen in the figure below is displayed, it ensures convenient inputting.

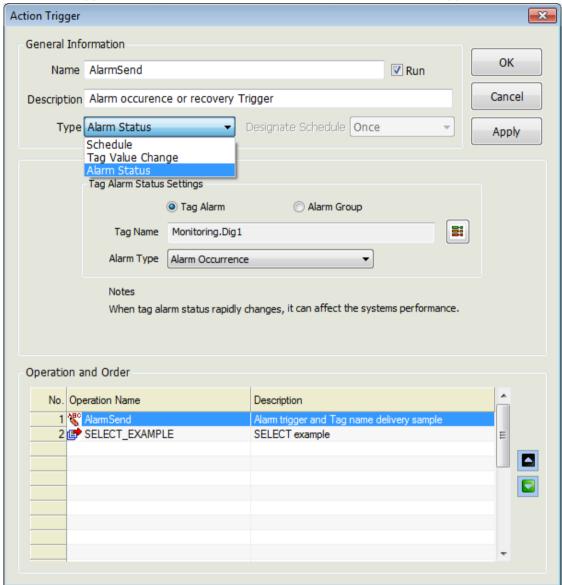
```
ole.GetTagVal
End GetTagVal( ByVal szTagName As String ) As Variant
```

14.3.2 Tag Name Delivery

A script function is registered as a 'Tag Name Delivery' script function and processes to trigger actions are explained on the 'Action Trigger' screen.

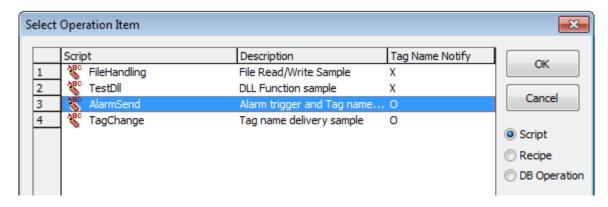


- Select 'Tag Name Delivery' option on the 'Script' screen.
- A sub-routine function (AlarmSend) is created with the same name with that of the script inputted among "Main" function scripts. At this time, Korean letters can not be used for script names.
- sTagName is declared as a Public variant and the Main function is structured to deliver variants upon the call of subroutine function.
- vTagName converted to the parameter of AlarmSend(vTagName As Variant) function in the subroutine function view can be used as a tag name.
- Since the process to deliver the actual tag name can not be carried out on the editor screen while debugging is performed, debugging can be done in a method of inputting variant values manually with a formula by directly substituting each tag name on the execution screen.



• Then, 'Action Trigger' is set up to execute the selected script on the 'Action Trigger' screen.

- Select a trigger type on the Action Trigger' screen. Available action trigger types for "Tag Name Deliver" are "Alarm Status" and "Tag Value Change."
- Select and assign a script available for "Tag Name Deliver" as following when selecting a work subject.

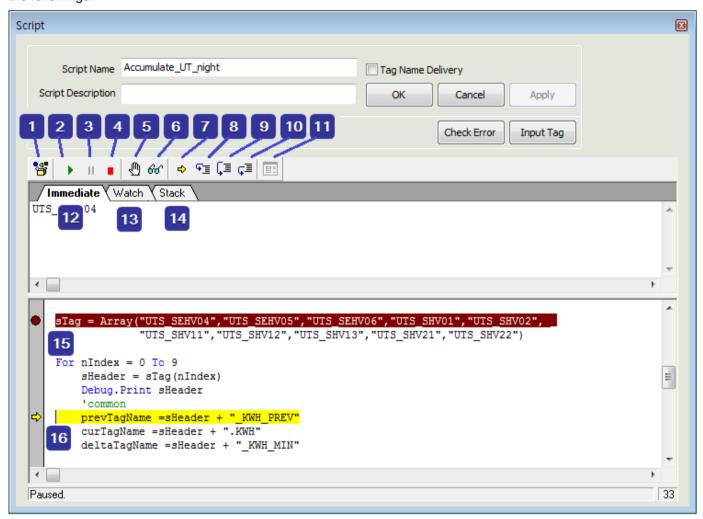


14.3.3 Editor Debugging

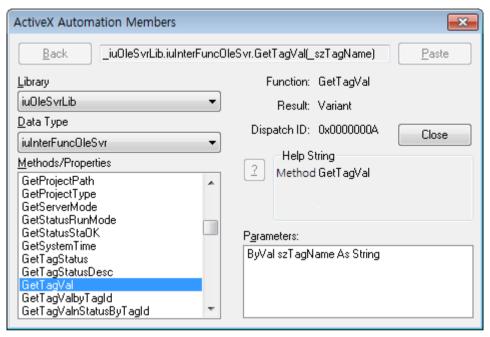
Debugging methods are explained on the 'Script' screen.

The inquiry of correct results is ensured only when debugging is worked while the Runtime is executed to have internal functions act correctly.

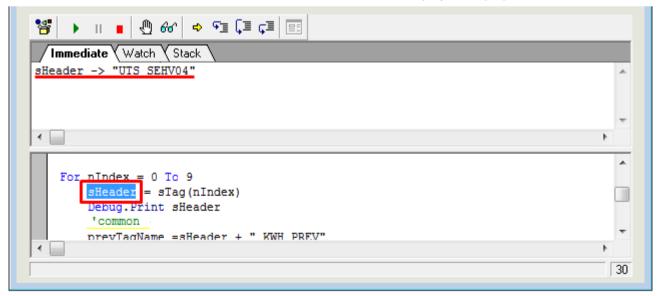
The following screen represents one of the script debug screen. Click on [2], [8], [9] and [10] on the 'Script' to show the followings.



- (1) Browse Object
 - Methods and Parameters of the referred ActiveX object are displayed.
 - As default settings, information on the InfoU Function is displayed.



- (2) Start/Resume:
 - The user may execute a script on the editor (Since the execution of a correct function is ensured only when it is executed during the runtime, a code shall start for debugging).
- (3) Pause
 - The script that is being played is paused.
- (4) End
 - The script that is being played is ended and the debug mode is terminated.
- (5) Toggle Break
 - A break point shall be either selected or cancelled.
 - When setting a break point, it should be ensured that it stops at the break point to perform debugging.
- (6) Evaluate Expression
 - If a variant selected and clicked on the editor window, values are displayed on [12] immediate window.



(7) Show Current Statement

• The current statement is shown when executing.

(8) Step Into

• Each line of the scrip is executed one by one. If any 'Sub Routine' exists in the relevant line, it steps into the sub routine for debugging.

(9) Step Over

- The script statement is executed step by step. If any 'Sub Routine' exists, it moves to the next step after the sub routine is executed and its result is returned.
- If any break point exists in the sub routine, it stops at the break point.

(10) Step Out

- It gets out of the current step and goes to upper procedure after completely executing all of the current functions and loop statements.
- If any break point exists in the sub routine, it stops at the break point.

(11) Edit User Dialog

- This dialog box editor can not be selective during the debugging and it is activated only in the 'Edit' mode.
- InfoU does not support this dialog box in the runtime environment.

(12) Immediate

- This 'Immediate' window is used as follows.
 - Result value when clicking on [6] Evaluate Expression
 - Show the return valued of debug. Print
 - Change variant values when any 'Immediate' formula is inputted.

```
| Immediate | Watch | Stack |
| SHeader -> "UTS_SEHV04" |
| UTS_SEHV04 |
| prevTagName = 100 |
| Debug.Print sHeader |
| common |
| prevTagName = sHeader + "_KWH_PREV" |
```

(13) Watch

- Variants are assigned and function or expression values can be inquired.
- For assigning, select a variant and click the right side of the mouse to select Debug-->Add Watch.

```
Immediate | Watch | Stack
1: prevTagName -> "UTS SEHV04 KWH PREV"
1: curTagName -> "UTS_SEHV04.KWH"
1: deltaTagName -> "UTS SEHV04 KWH MIN"
1: HourTagName -> "UTS_SEHV04_KWH_HOUR"
1: DayTagName -> "UTS SEHV04 KWH DAY"
1: MonthTagName -> "UTS_SEHV04_KWH_MON"
```

(14) Stack

• The call list of the current execution line is shown.

```
Immediate
          Watch Y Stack
                 ight.sba|Main# 37] prevTagName = sHeader + " KWH PREV"
```

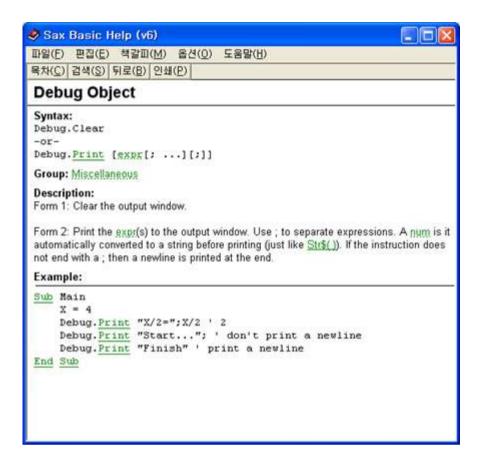
(15) Menu Function

• If the right side of the mouse is clicked, a menu is shown and it has functions available in the debug mode as well as functions available in the Edit mode.

```
deltaVal = curTagVal - prevTagVal
         HourTagVal =ole.GetTagVal(HourTagName) + deltaVal
         DayTagVal =ole.GetTagVal(DayTagName) + deltaVal
         MonthTagVal =ole.GetTagVal(MonthTagName) + deltaVal
         If deltaVal > 0 Then
             ole.SetTagVal deltaTagName,deltaVal
             ole.SetTagVal HourTagName,HourTagVal
             ole.SetTagVal DayTagName,DayTagVal
             ole.SetTagVal MonthTagName
                                             Edit
         End If
                                             <u>V</u>iew
         ole.SetTagVal prevTagName,cur[
                                             Macro ▶
                                             <u>D</u>ebug ▶
    Next nIndex
                                                         Editor Help
                                             <u>H</u>elp
    Set ole = Nothing
                                                         <u>L</u>anguage Help
                                                         Topic Search
    End Sub
                                                         About
Display help for the Basic language
```

(16) Help

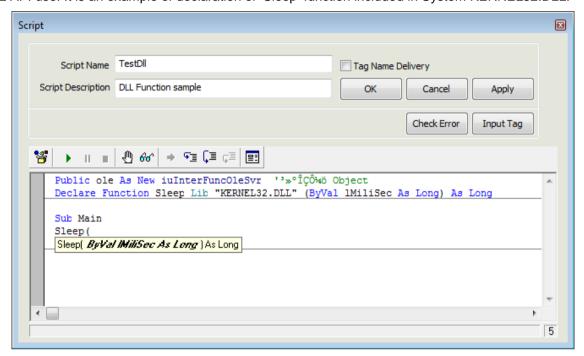
• Help' is available for overall information on various functions and script languages provided by the editor.



14.3.4 How to use DLL

How to use external DLL functions in the script is explained.

DLL API use: It is an example of declaration of 'Sleep' function included in System KERNEL32.DLL.



14.3.5 How to use OLE object

It is an example of file 'Open and Write'. (Refer to examples in Demo projects.)

```
Dim fso As Object
                         'file object
Dim cFile As Object
                         'file object
Set fso = CreateObject("Scripting.FileSystemObject")
'OpenTextFile(filename, mode, create) 'mode 1:Read, 2:Write, 8:Append
'write example
On Error GoTo ERR FILE WRITE OPEN
                                    'error handling
Writefile = filePath + "\Taglist.txt"
    If Not fso.FileExists(Writefile) Then
                                                         'find file
        Set cFile = fso.CreateTextFile(Writefile,True) 'nothing--> create
        Set cFile = fso.OpenTextFile(Writefile,2,True) 'exist--> write option = 2
    End If
    DataLine = ""
    For n = 0 To tagCount-1
        DataLine = CStr(sTag(n))
        DataLine = DataLine + vbrf
        cFile.WriteLine(DataLine)
    Next
    cFile.Close
```

14.3.6 Error Handling

It is an example of how to handle errors (Refer to examples in Demo projects.)

Write On Error statement on the top of the error to be handled. If any error occurs below the On Error statement, it moves to the Error Handle Statement written next to Goto Statement.

Since On Error statement is effective until it meets with the next On Error statement, 'Error Handle' is possible according to work steps by writing the On Error statement at several locations.

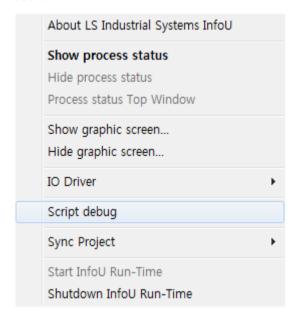
By using the 'On Error Resume Next Statement', the next codes can be performed seamlessly even any minor error occurs.

```
'append example
On Error GoTo ERR_FILE_APPEND_OPEN 'error handler
Appendfile = filePath + "\" + Format(Now(), "YYMMDD") + "_timelist.txt"
    If Not fso.FileExists(Writefile) Then
                                                         'find file?
        Set cFile = fso.CreateTextFile(Appendfile,True) 'No:create
        Set cFile = fso.OpenTextFile(Appendfile,8,True) 'yes:write option = 8
    End If
    DataLine = Format(Now(), "YYYY/MM/DD hh:mm:ss") + vbTab
    For n = 0 To tagCount-1
        tagVal = ole.GetTagVal(CStr(tagName(n)))
        AppendLine = AppendLine + CStr(tagVal) + ","
    Next
    DataLine = DataLine + AppendLine + vbrf
    cFile.WriteLine(DataLine)
    cFile.Close
    Debug. Print "File Append OK!"
Exit Sub
ERR FILE READ OPEN:
    errFlag = -1
    Debug. Print "ERR FILE READ OPEN"
    Exit Sub
ERR_FILE_WRITE_OPEN:
    errFlag = -1
    Debug.Print "ERR_FILE_WRITE_OPEN"
    Exit Sub
```

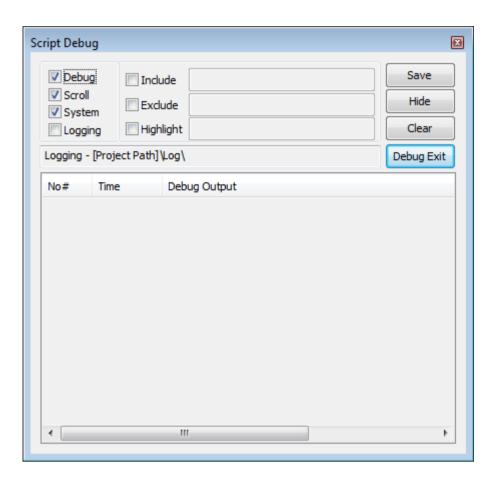
14.4 Runtime Debug

By providing the debug screen during the Runtime, this ensures the user inspects the current execution status of the script and check for any operational and logical error.

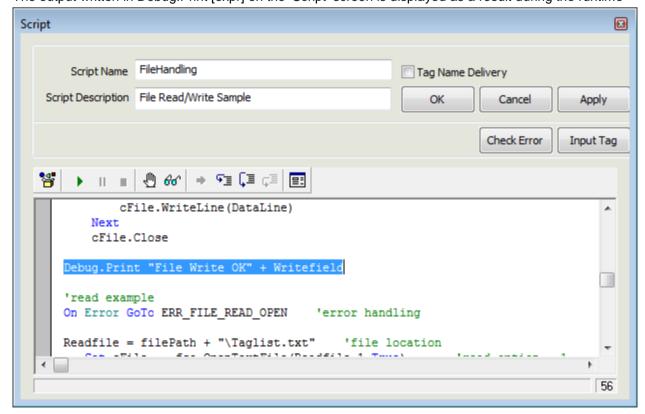
Execution



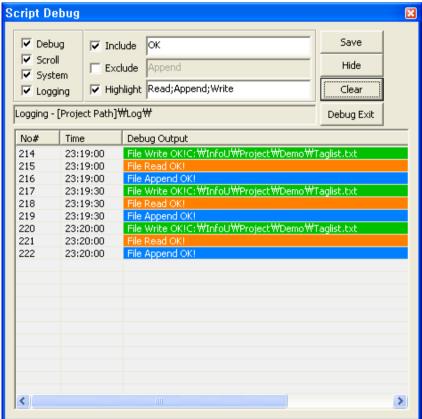
Click the right side of the mouse on the InfoU tray icon during the Runtime to select 'Scrip Debug' from the pop-up menu and show the screen below.



The output written in Debug.Print [expr] on the 'Script' screen is displayed as a result during the runtime



• Runtime Debugging



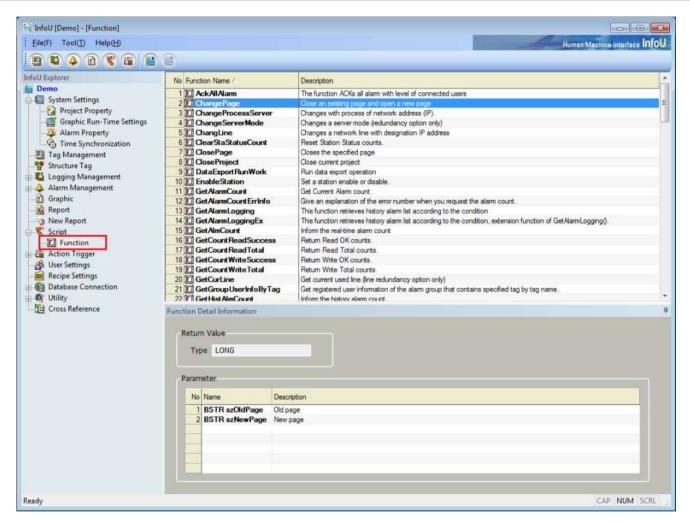
This screen is displayed as the highest window.

- -Debug: Select whether to conduct debug works,
- -Scroll: Scroll the screen to show the latest list.
- -System: Select whether to execute script except Debug.Print construction.
- -Logging: Save debugging contents in the \Log folder on the current project path.
- -Include: The letters to be displayed are filtered and displayed.
- -Exclude: The letters to be excluded are filtered and displayed.
- -Highlight: The contents included as inputted letters are highlighted with colors.
- -Include, Exclude and Highlight can be overlapped by using [;].
- -Save: The current settings and the debug screen size are saved and the current conditions will be displayed on the screen in the next execution.
- -Hide: The debug screen is hid.
- -Clear: All of the lists currently displayed are deleted.
- -Debug Exit: The runtime debug is ended and the screen is closed.

Chapter 15 Function

Various default functions are presented to perform various actions in the InfoU system. The following list shows functions that can be used for Script and OLE Automation.

15.1 Function Inquire



After logging in withInfoUD.exe, select 'Function' under 'Script' on the InfoU Explorer' To see detailed information on a certain function, select and click on the relevant function with mouse. Then, input 'Return Value' of the relevant function on the 'Function Detail Information' screen to display a list that shows the properties and description of each parameter requested in the relevant function in regular sequence

Notice

For the example of the internal function and detailed usage, refer to 'Internal Functions' of the Appendix.

Chapter 16 Action Trigger

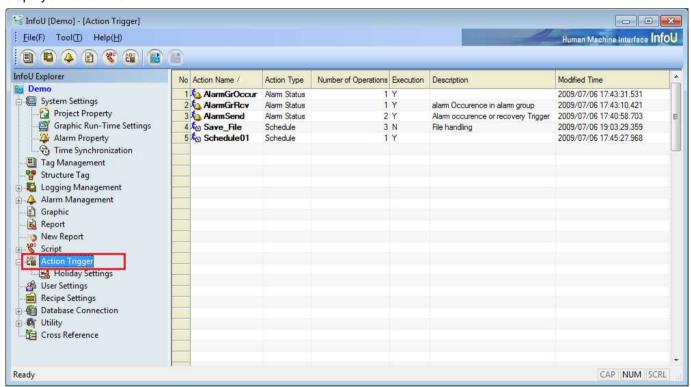
Action Trigger is set up during the runtime to execute input and output works of the script, recipe and database.

The relevant application can be executed by setting up Action Trigger according to 'Schedule', 'Tag Value Chang' or 'Alarm Status'.

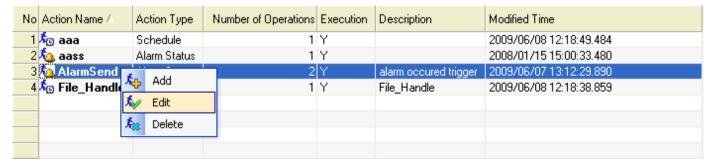
One-stop settings for various application actions at one place ensure an effective and systematic control.

16.1 Start

If 'Action Trigger' in the menu or 'Edit Script' in the InfoU explorer is selected, the list of action trigger is displayed as follows:



Click the right button of the mouse on the list of Action Trigger to show Add, Edit and Delete menu.



- Add: A new action trigger is added. Double click on the empty item to display the new input screen.
- Edit: The selected action trigger is edited. Double click an item to display the edition screen.
- Delete: Delete the selected action trigger.

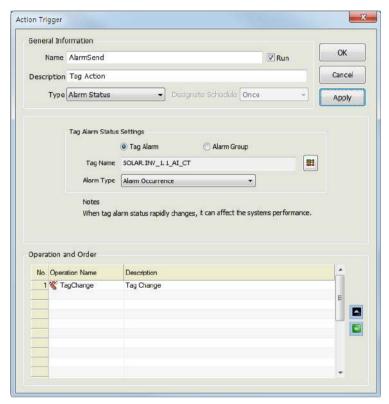
16.2 Configuration

16.2.1 General Information

The edition screen of action trigger is of the dialog type and it is organized as follows:

If other item is selected from the above action trigger list while the screen is displayed, information on the selected action trigger is displayed.

Any modification, which may be created during the edition of action trigger, is not reflected during the runtime and it is applied after the runtime is restarted.



- (1) Name
 - The action trigger name is displayed.
 - If the action trigger is renamed and saved, a new action trigger is created and added automatically.
 - Any two action trigger s shall not have the same name.
- (2) Description

Input description on the action trigger.

(3) Run

It displays whether to execute the actions during the runtime.

(4) Type

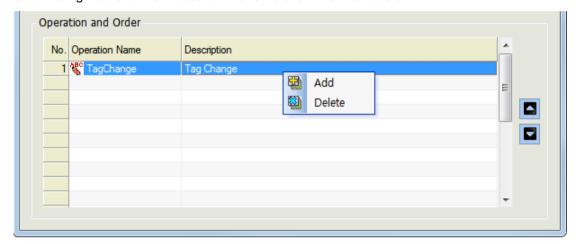
The actions are triggered by one of the following condition according to the designated settings:

- Schedule
- Tag Vale Change
- Alarm Status

(5) Operation and Order

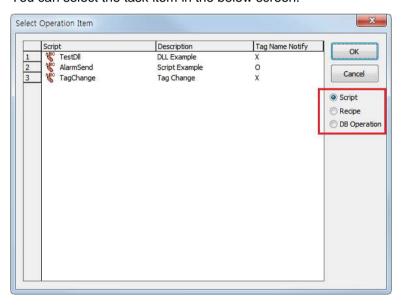
Select an operation to execute among the defined actions and designate the order.

Click the right side of the mouse on the list to show the menu below.



- Add: Click an additional menu or double click to show a screen for selecting a new operation.
- Delete: Delete the selected operation from the list.

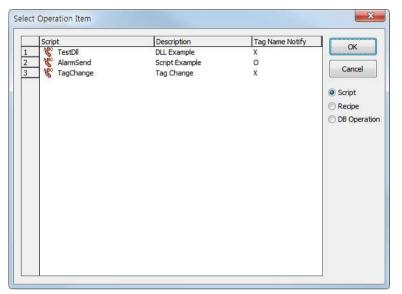
You can select the task item in the below screen.



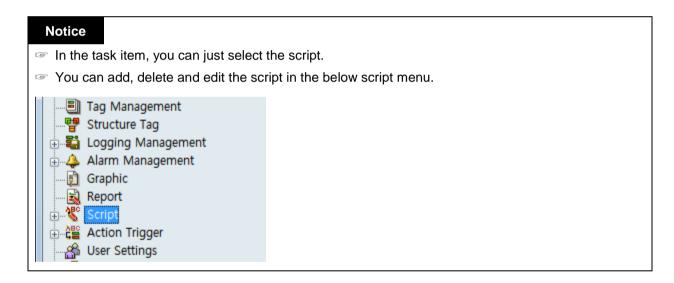
There are 3 types of task items; "script", "recipe", "DB works".

If you select the type of task items on the right side, the type will be displayed on the list.

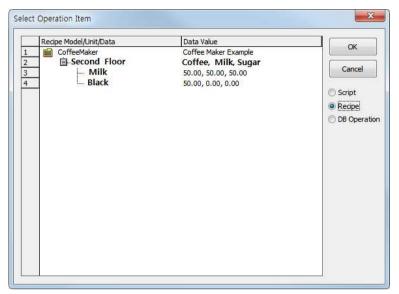
1) Script list



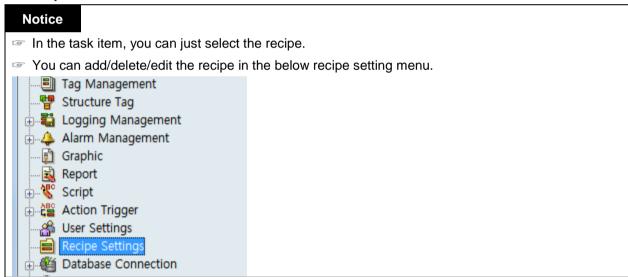
In case of the script, whether forwarding the tag name is displayed.



2) Recipe list

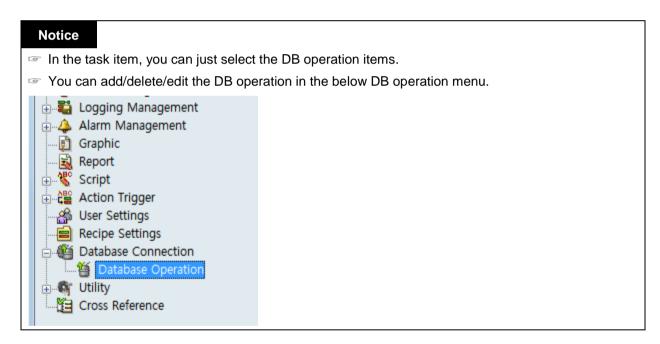


The recipe is based on the tree type of the model, unit and data; you can just select the item of the lowest level only.

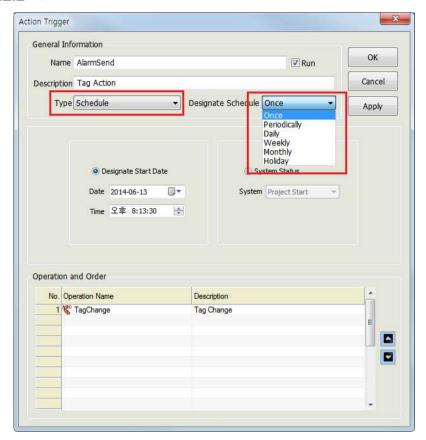


3) DB operation item





16.2.2 Schedule

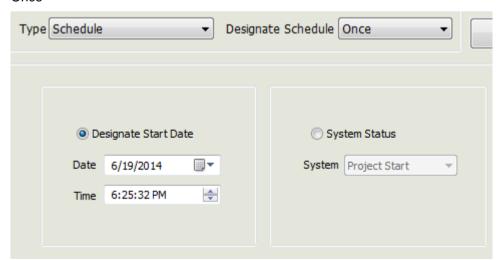


(1) General Information

If 'Schedule' is selected for 'Type',

Designate Schedule' becomes activated and here, one of [Once], [Periodically], [Daily], [Weekly], [Monthly] and [Holiday] can be selected.

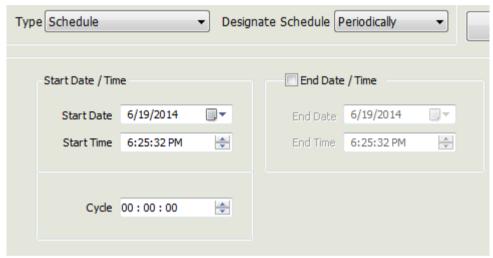
(2) Once



Chapter 16 Action Trigger

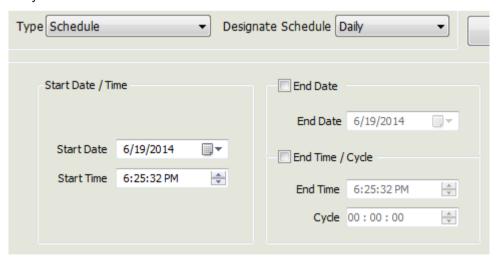
- Designate Start Date: If 'Designate Start Date' is selected, it is allowed to input date and time to start the selected operation and it is executed only once at the designated time.
- System Status: The operation is executed according to the system's management status over the project.
 - Project Start
 - Project Close
 - Redundancy Switch

(3) Periodically



- Start Date/Time: Time point at which the periodic cycle actions start
- Cycle: Input a cycle of actions.
- End Date/Time: Designate date and time to stop actions.

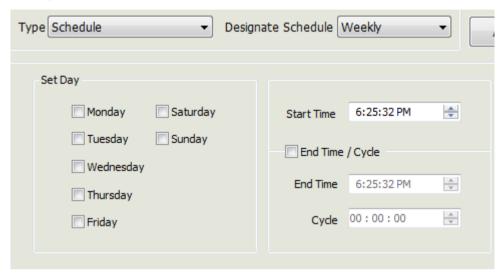
(4) Daily



- Start Date/Time: Time to start daily actions. If any time interval is not set up, actions are executed only once at the relevant time.
- End Date: Designate date to stop actions

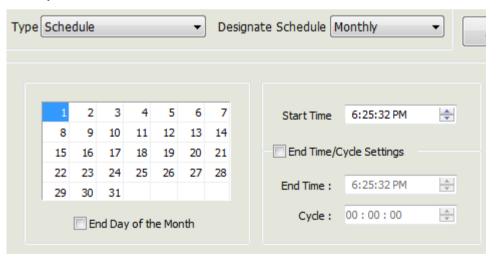
• End Time/Cycle: Input 'End time' and a cycle of actions executed from the time to execute to the time to end.

(5) Weekly



- Set Day: Select a day to execute actions. Multiple choices are allowed.
- Start Time: Time to start actions on the relevant day. If any time interval is not set up, actions are executed only once at the relevant time.
- Endtime/Cycle: Input 'End time' and a cycle of actions executed from the time to execute to the time to end.

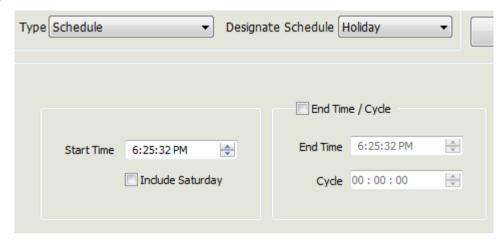
(6) Monthly



- Select Day: Select a day to execute actions in the relevant month. Click the mouse on a day to select and the selected day is highlighted in yellow.
- Start Time: Time to start actions on the relevant day and If any time interval is not set up, actions are executed only once at the relevant time.
- End Time/Cycle Setting: Input 'End time' and a cycle of actions executed from the time to execute to the time to end.

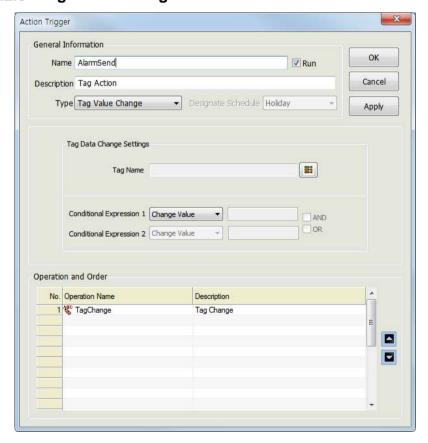
Chapter 16 Action Trigger

(7) Hoilday



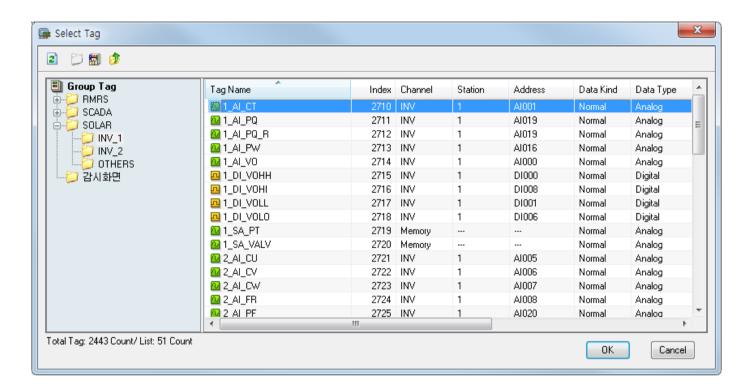
- Start Time: Time to start actions on the relevant date and If any time interval is not set up, actions are executed only once at the relevant time. It is possible to include Saturday.
- End Time/Cycle: Input 'End time' and a cycle of actions executed from the time to execute to the time to end.

16.2.3 Tag Value Change



• Type: Select [Tag Value Change].

- Tag Name: If [3] is clicked, the tag selection screen is displayed and the tag name is inserted in box for tag name if one of tags is selected.
- Tag Selection Button: Click on this button to display the screen below and select a tag on the screen.

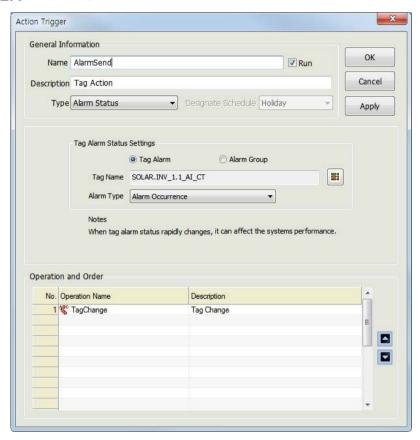


- Conditional Expression: Conditional Expression of the inputted tag value.
 - [Change Value]: The operation is conducted if the tag value is changed. Not available to set up Conditional Expression. Not available to input values
 - [=]: The action is performed if the tag value is equal to the set-up value.
 - [<>]: The condition is implemented when the tag value is different form the set-up value
 - [>]: The condition is implemented when the tag value is higher than the set-up value
 - [>=]: The condition is implemented when the tag value is higher or equal to the set-up value
 - [<]: The condition is implemented when the tag value is lower than the set-up value
 - [<=]: The condition is implemented when the tag value is lower or equal to the set-up value
- AND / OR: Implemented when Conditional Expression 1 and Conditional Expression 2 are AND(OR).

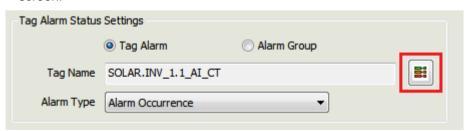
Notice

Excessive use of the action when changing the tag value can put a heavy load on the system and may interfere with normal operation.

16.2.4 Alarm Status



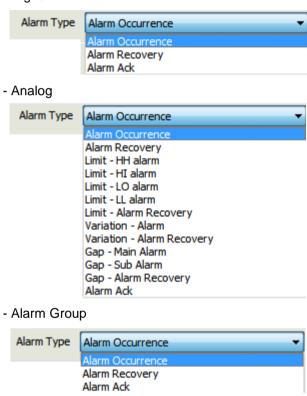
- Type: Select [Alarm Status]
- Tag Alarm: Set up actions for each tag upon the occurrence of alarm.
- Alarm Group: Set up actions for each tag that belongs to an alarm group upon the occurrence of alarm.
- The following items are displayed according to the mode of Tag Alarm and Alarm Group:
 - Tag Name: Click on [5] to display the tag selection screen and input the selected tag name on the screen.



- Alarm Group: Click on [5] to display the alarm group selection screen and input the selected alarm group name on the screen.
- Tag/Alarm Group Selection: Click to display the 'Tag/Alarm Group Selection' screen and select a tag (alarm group) on the screen.



- Alarm Type: Available alarm types are displayed differently between digital and analog tags.
 - Digital



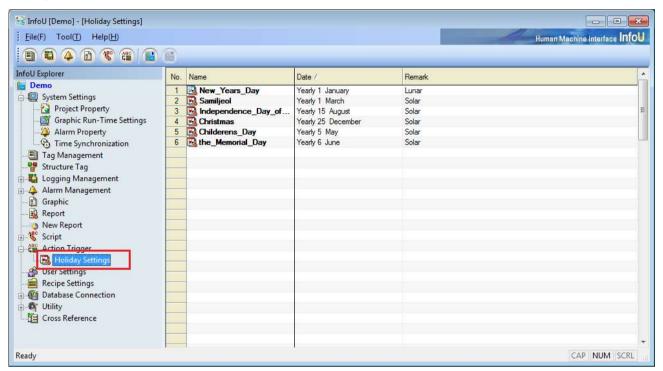
Notice

If there are a lot of alarms in the tag, it can put a heavy load on the system and interfere with normal operation.

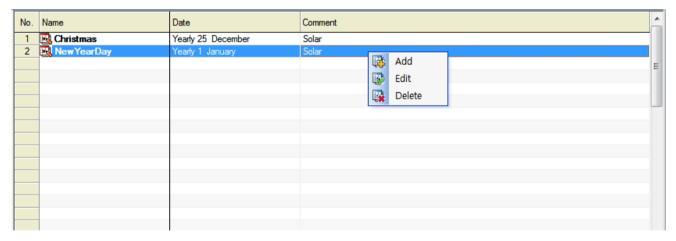
16.3 Holiday Settings

(1) Start

If 'Holiday Settings' in the menu or the InfoU explorer is selected, the list of action trigger is displayed as



Click the right button of the mouse on the list of Action Trigger to show Add, Edit and Delete menu.

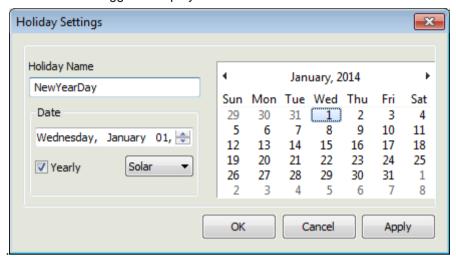


- Add: A new action trigger is added. Double click on the empty item to display the new input screen.
- Edit: The selected action trigger is edited. Double click on the item is double clicked to display the edition
- Delete: Delete the selected action trigger.

(2) Edition Screen

The holiday setting edition screen is of modaless dialog type and it is constructed as follows:

If other item is selected from the above action trigger list while the screen is displayed, information on the selected action trigger is displayed.



- Holiday Name: The selected holiday name is displayed or other holiday name can be newly inputted.
- Date: Input the holiday date.
- Yearly: Set up whether it is repeatedly executed every year or only one time.
- Solar/Lunar: Select either Solar or Lunar
- Calendar: If a date is selected, the date is inputted in the box for holiday date.
- OK: The contents newly designated are saved and the screen is closed.
- Cancel: The contents newly designated are not saved and the screen is closed.
- Apply: The contents newly designated are saved and the work is continued.

Notice

Any modification, which may be created during the edition of action trigger, is not reflected during the runtime and it is applied after the runtime is restarted.

Chapter 17 User Settings

Users are registered for each project and only the registered users are allowed to use InfoU. That is, the registered users are given authority to access to various InfoU functions but their access to some InfoU functions is limited according to their level of authority.

Alarm Notification Function

The users registered in Alarm Group are notified through e-mail or SMS in case of the occurrence of any alarm.

• Limited Functions by Level

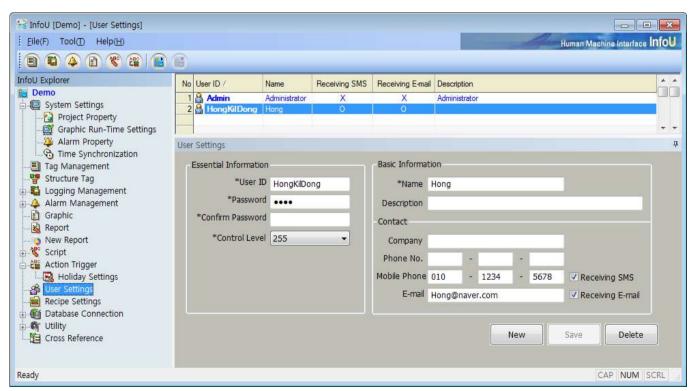
The same as tag levels (1~255), the users are assigned level 1 through 255 and according to this level, their authority to execute and use various InfoU functions such as tag control, inquiry and alarm acknowledgement is limited.

17.1 Setting Screen

(1) Start

Select User Settings in the InfoU explorer or the menu.

- 🔏 User Settings



(2) User List

A list of the registered users is displayed to allow the user to delete or modify.

Notice

Admin: System administrator's account as the user registered basically. This account can not be

Chapter 17 User Settings

changed except password.

(3) User Settings

When newly registering a user or modifying, input information on the user...

1) Essential Information

- a. User ID: Input User ID.
- b. Password: Input password.
- c. Confirm Password: Re-input password for confirmation.

2) Level (1~255)

Select a level. Level 1 through level 255 is available.

The lower the value of the number, the higher the rating.

3) Basic Information

- a. Name: Input the user name.
- b. Description: Give additional information except the user name.

4) Contract

- a. Company: The usesr's company
- b. Phone No.: Contactable wire telephone number
- c. Cell Phone: User's mobile phone number. This information is essential if Option SMS receiving has been selected.
- d. E-mail: User's e-mail information. This information is essential if Option e-mail receiving has been selected.
- e. SMS: Check $\sqrt{}$ in the box if the user wants to receive alarm information through SMS in case of the occurrence of alarm in the alarm group the user is registered in.
- f. E-mail: Check $\sqrt{\ }$ in the box if the user wants to receive alarm information through e-mail in case of the occurrence of alarm in the alarm group the user is registered in

5) New

The user information is initialized to allow the user to input new information.

6) Save

The registered new information or modified information is saved.

In case of new registration, the user is added to the list.

7) Delete

The selected user's information in the list is deleted from DB.

Chapter 18 Recipe

Recipe is a function used when producing various products on the same production/process line according to the prescribed values and it defines a model and controls the process with the combination of component tags (units) and defined values (data). As a method used for large varieties but in small volumes, this function is applicable to various fields.

18.1 Component

To perform the recipe functions, the user needs to understand model, unit and data concept.

18.1.1 Model

It defines a recipe template on the same production/process line and it also defines a model and its components (items). After a model is defined, settings on the model items are not changeable if units and data have been already inputted

18.1.2 Unit

It defines a tag collection subordinated to the defined model and it also defines the tags that have the same number with that of the defined items for the model. That is, it has information on the set for the actually controlled points.

18.1.3 Data

It defines a data set subordinated to the defined model and it also defines the actually controlled values.

• Example of Recipe Definition - Coffee Vending Machine

When a person is about to drink a cup of coffee from the vending machine, he/she needs to define its model.

The coffee vending machine (model) consists of three components- coffee, cream and sugar (item).

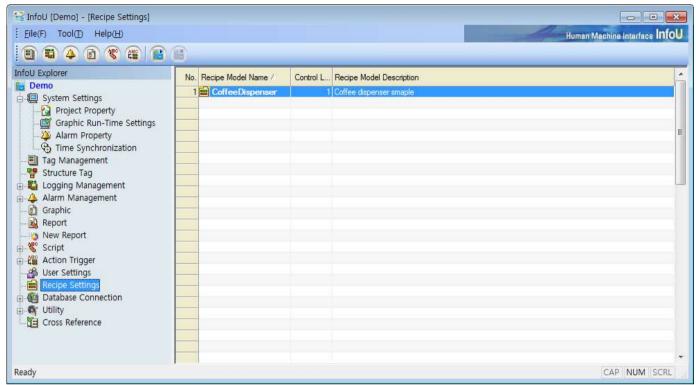
If the vending machine is in the building, its physical location (unit) has to be defined as a vending machine on the first floor or a vending machine on the second floor.

Then, the person needs to decide whether to drink black coffee, cream coffee or cream and sugar coffee and define data on the amount of coffee, milk or sugar that will be actually inserted.

If the person wants to drink a cup of milk coffee from the second floor vending machine, he/she can drink the coffee he/she wants at the place he/she wants with three combinations of model (coffee vending machine), unit (second floor) and data (milk coffee).

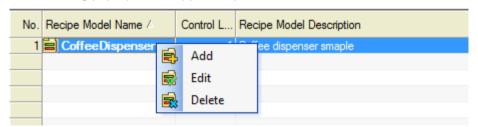
18.2 Settings

Select 'Tool'-'Recipe Settings' in the InfoU menu to display the screen as seen in [Figure].



A list of the registered recipe models appears on the screen and detailed information on the relevant model can be viewed or edited through double clicking on each item or pop-up menu.

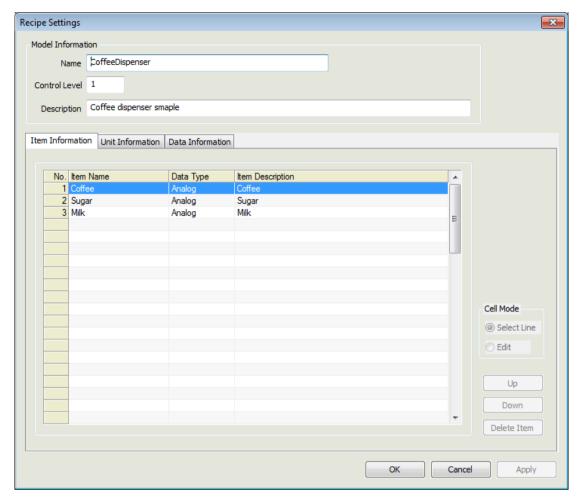
The following pop-up menu appears upon the click on the list screen.



- Add: This is a menu used when a new recipe model is registered. A blank screen appears if this menu is selected. Up to 64 models can be registered.
- Edit: This is a menu used when the information on the selected model is viewed or modified.
- Delete: If selected, a window appears to ask the user to confirm deleting. If "Yes" is selected, the relevant model is deleted and the units and data that belong to the model are also deleted.

18.2.1 Model Information

A screen to set up a recipe model. Item on the model and three items such as item, unit and data are divided with taps.



(1) Property

- Name: Register a name of the model. Duplication is not allowed.
- Control Level: Input a control level 1 through 255. The level of the InfoU user shall be higher than the control level of the recipe model to control the recipe (Level 1 is the highest one and Level 255 is the lowest one).
- Description: Register description on the recipe model.
- Item Information: Register items (components) that consist of the model. Up to 64 items are available to register for one model.
 - Item Name: A name of the item
 - Data Type: Nature of the item data. Select one among Analog, Digital and String.
 - Item Description: Description on the item

(2) Function Button

- Cell Mode
 - Select Line: An option used when selecting an item as a line mode.
 - Edit: An option used when editing grids. The user may directly input information on the grid by double clicking on the grid or selecting 'Edit' button.
- Up: It is activated upon the selection of an item and used for moving the selected item to higher order...
- Down: It is activated upon the selection of an item and used for moving the selected item to lower order.

Chapter 18 Recipe

• Delete Item: It is activated upon the selection of an item and used for deleting the selected item..

Notice

If the linked unit or data is added after a model is defined, the model can not be modified.

18.2.2 Unit Information

A screen to register a recipe unit

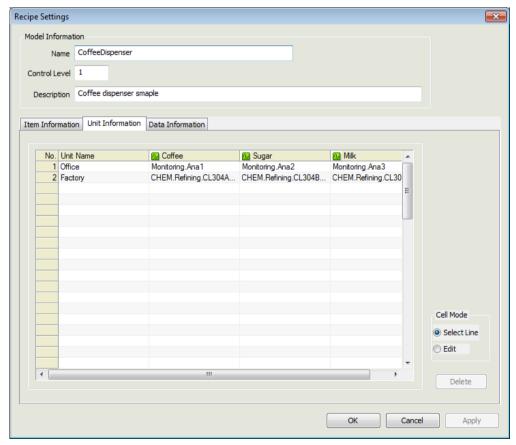
Here, a unit means a tag collection and 10 tags and memory tags can be used.

First, items that have been defined for a certain model appear on the unit screen and unit tags suitable for each item type are registered for the relevant unit.

An editing method to directly input in each cell is used.

Up to 64 unit sets are available for registering (64 unit sets per model).

As seen above, since the item number available to register for one model is 64, total 64 X 64 tags can be registered on the unit definition screen.

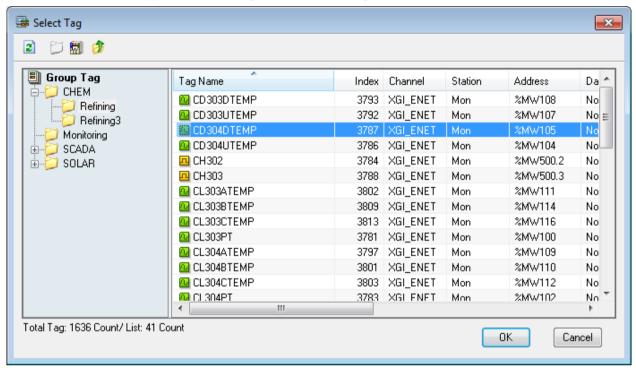


(1) Property

- Unit Name: Register a name of the unit.
- Unit: A screen to register units (tags) suitable for the item type defined for the model.

Directly input the tag name in the cell or click the cell [...] button to select a tag to register.

If [...] button is clicked, the tag selection screen appears and if a tag is double clicked on the tag selection screen, the screen disappears and the tag is marked on the grid.



(2) Function Button

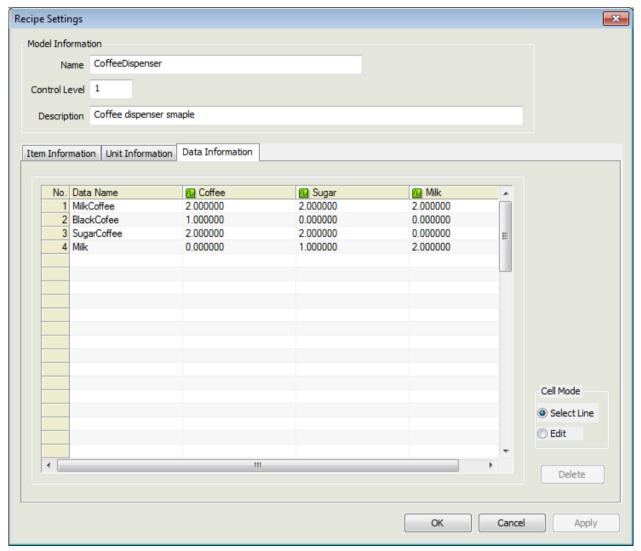
• Delete: The currently selected unit name is deleted.

18.2.3 Data Information

A screen to register a recipe data

Here, data mean the values that are actually controlled. Register a value suitable for the item type defined for the model. An editing method to directly input in each cell is used as done for unit information.

Up to 64 data per model are available for registering.



(1) Property

- Data Name: Register a name of the data..
- Data: Define the control value suitable for the item type defined for the model..

(2) Function Button

• Delete: The currently selected data name is deleted.

18.3 Recipe Runtime

To use recipe functions online, InfoU provides two methods- one is to use OCX components and the other is to use the internal functions. In addition, they can be used in the Script and Action Trigger.

Recipe functions that can be performed in the Runtime are broadly divided into three functions; Working Set, Realtime Data Inquiry and Saving, and Recipe Control.

18.3.1 Function

- (1) Working Set Composition (Working Set)
 - The recipe uses a virtual collection concept called working set.
 - The recipe's essential components are model, unit and data. Those three components are combined to perform recipe control.
 - For OCX, relevant components are clicked in the list to form a working set and the internal functions corresponding to each function have been already defined.
- (2) Real-time Data Inquiry and Saving
 - This is a function to import the defined tags for the unit from the real-time server during the runtime to form a working set.
 - The working set is formed with models and units and this function does not only import the predefined data from DB but also inquire the current tag values.
 - Surely, the real-time data can be saved in DB. But, only up to 64 data are available per model. OCX does not provide the 'Delete' function.
- (3) Recipe Control
 - The purpose of forming a working set is to perform recipe control.
 - Recipe control is ready for performing once the combination of the prescribed model, unit and data (realtime data) is equipped with.
 - Recipe viewer OCX can perform simple control in InfoU as well as direct control is also available by using data saved the control DB using the working set.

18.3.2 Recipe Viewer OCX

Recipe Viewer OCX provides specialized functions at control. For detailed functions, refer to 'Recipe Viewer of Graphic Object".

18.3.3 Internal Function

Recipe functions can be implemented by internal functions.

For internal functions that can perform recipe functions during the runtime, refer to 'Function Help.

Chapter 19 Database

Database Connection 19.1

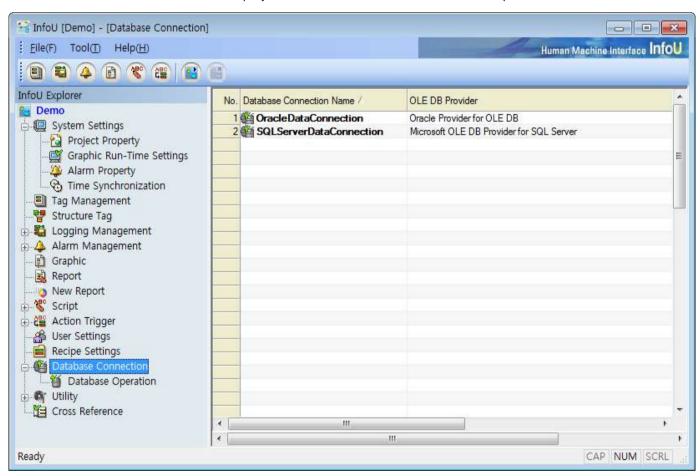
This Database Connection is a function to connect this InfoU system to universal database systems such as SQLServer and Oracle by using Microsoft OLE DB interface.

InfoU can define up to 64 connections.

For Database Operation, it is necessary to define connection with external databases in advance and the connection is used as follows.

19.1.1 Demo

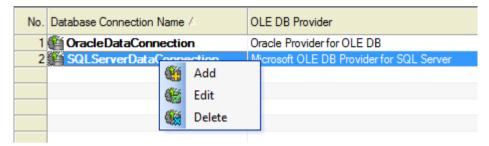
Select 'Tool'- 'Database Connection' in the InfoUD menu, the screen as seen in the [Figure] below is displayed. This 'Database Connection' menu is displayed on the lower-level of the Database Operation.



A list of the registered database for 'Database Connection' appears on the screen and detailed information on the relevant database can be viewed or edited through double clicking on each item or pop-up menu.

The following pop-up menus appear upon the click on the list screen.

Chapter 19 Database



(1) Add

- This is a menu used when a new database is registered for 'Database Connection'. If this menu is selected, an empty screen is displayed.
- Up to 64 databases can be registered for 'Database Connection.'.

(2) Edit

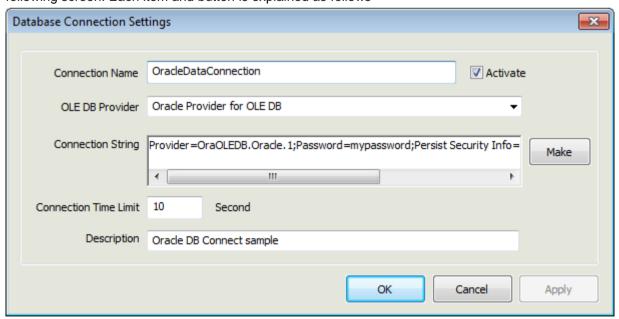
- This is a menu used when the information on the selected database is viewed or modified.
- If one of existing databases is renamed and saved, the database is automatically added and saved as a new database.

(3) Delete

• If selected, a window appears to ask the user to confirm deleting. If "Yes" is selected, the relevant database is deleted from the 'Database Connection' list and the 'Database Operation' that belongs to the database is also deleted..

19.1.2 Database Connection Settings

This screen is the one to define 'Data Connection.' Double click on the list or select the pop-up menu to display the following screen. Each item and button is explained as follows



(1) Connection Name

• Register its own name for identification and any duplicated name is not allowed.

(2) Active

 This 'Database Connection' is attempted only for activated data when the database engine is running. The user may register several Data Connections and designate this 'Activate' option only to the necessary connections to prevent the external database support from being wasted unnecessarily.

(3) OLE DB Provider

 Register OLE DB providers. The combo box shows the list of the registered OLEDB providers in the local computer and the user may either select one from the list or input the name of the OLEDB provider directly on the combo box..

(4) Connection String

 Register a Connection String used for the relevant OLEDB provider. (If the user does not know a Connection String, he/she may create a file with extension '.udl' and double click it to display a screen to define 'OLEDB Data Connection.' If the user opens the .udl file on the notepad after setting up each item as shown on the screen, he/she may check whether the Connection String has been saved. The user may copy and register this syntax. But, he/she needs to select [Allow saving password] on the checkbox of [Connect] tap to ensure the password is also saved when the .udl file is saved).

(5) Connection Time Limit (Second)

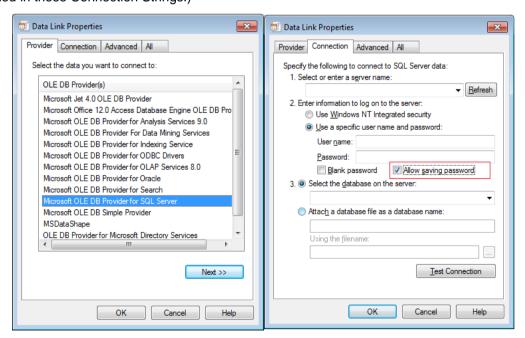
 Register a limit time when attempting connection with the designated database. The user needs to input a value higher than 0. If 0 is inputted, connecting is attempted endlessly until it is finally succeeded..

(6) Description

Input description on the 'Data Connection.'.

(7) Make

 Click 'Make' button to display a screen to define 'OLEDB Data Connection.' If [OK] button is clicked after setting Connection Strings in the order, those are automatically registered on the 4) Connection String text box. (If Check box [Allow saving password] is selected on the [Connection] tap, the password can be included in those Connection Strings.)



[Figure: Screen of Data Link Properties]

19.2 Database Operation

Database Operation is a function to ensure the InfoU system links to universal database systems such as SQLServer and Oracle. That is, the user can record and save InfoU tag values in an external database or import records from the external database to map to InfoU tag values.

For Database Operation, the user may use the predefined Database Connection and register up to 256 operations.

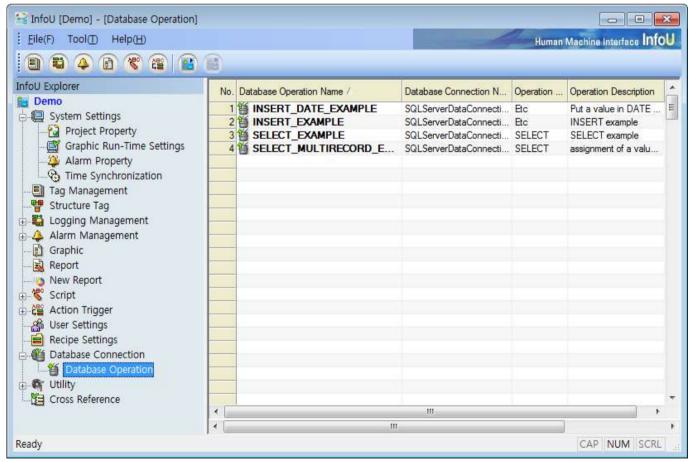
19.2.1 Operation Type

Database Operation can be divided into 'SELECT' Operation and 'ETC' Operation according to operation properties.

- (1) SELECT
 - This operation is to import records from an external database and save them in InfoU tag values.
- (2) ETC
 - This operation is to record and save InfoU tag values in an external database.

19.2.2 Demo

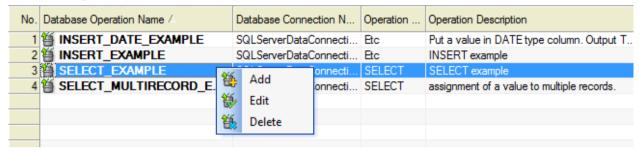
Select 'Tool'- 'Database Operation' in the InfoUD menu to display the following screen..



A list of the registered database operations is displayed on the screen. If an item is double clicked or selected from

the pop-up menu, the detailed information on the relevant operation can be viewed or modified.

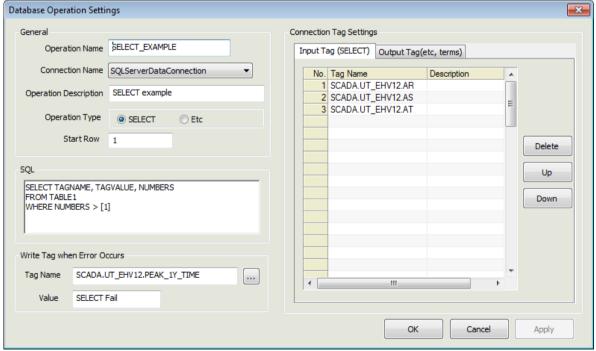
The following pop-up menu appears upon the click on the list screen.



- (1) Add
 - A menu to be used when registering a new database operation. An empty screen appears if this menu is selected. Up to 256 database operations can be registered
- (2) Edit
 - This is a menu used when the information on the selected database operation is viewed or modified.
- - If selected, a window appears to ask the user to confirm deleting. If "Yes" is selected, the relevant database operation is deleted.

19.2.3 Database Operation Settings

A screen to define 'Database Operation' Database Operation can be divided into 'SELECT' operation used to import data from an external database and set up them as tag values and 'ETC' operation used to conduct operation for an external database with the InfoU tag data.



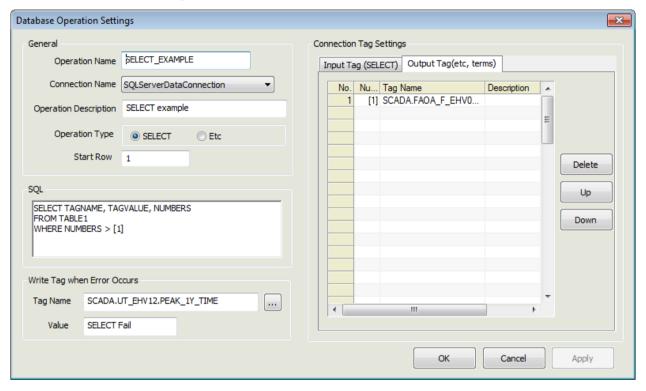
[Figure: Example of SELECT Operation (Input Tag)]

Chapter 19 Database

- (1) Operation Name
 - This is the name of a database operation and it has a unique value.
- (2) Connection Name
 - Select a name of the Database Connection to be used for the relevant operation.
 - The Connections set up in the Database Connection Settings are displayed on the combo box. If no Connection is set up, the database operation can not be saved. (Set up 'Database Connection' first to define 'Database Operation')
- (3) Operation Description
 - Describe the operation.
- (4) Operation Type
 - Specify a type of the Operation.
 - For 'SELECT', input and output tag taps are activated on the "Connection Tag Setting' window.
 - For 'ETC', only output tag tap is activated on the window (The input tag is not activated)
- (5) Start Row
 - When a record set is imported from a database, the user can define a record start number that will be a baseline when extracting data of the record set (The value shall not less than 1)
 - For example, if there are five record sets and the start row is 1, tag mapping starts from the first record while if the start row is designated 2, it starts from the second record, skipping the first record.
- (6) SQL Text
 - Input a proper SQL syntax (Refer to the following detailed information on SELECT and ETC)
- (7) Tag Name
 - The tag name that will record errors if the operation fails.
- (8) Value
 - The tag value that will record errors if the operation fails.
- (9) Input Tag
 - This menu is activated only when 'SELECT' is selected.
 - It is used when importing external data and controlling them with tag values.
 - It is used when importing external data and controlling them with tag values.
 - Date of the record set is applied in the order of input.
- (10) Output Tag
 - This menu is activated only when 'SELECT' and other is selected.
 - Up to 64 tags per operation can be registered.
 - It is used when carrying out operations external data with InfoU tag data.
 - Input order is not important. (Tag reservation numbers of SQL syntax and registered output tag numbers are mapped.)
 - If the same tag reservation numbers are repeated in the SQL syntax, the corresponding tags to those numbers are also repeated.
- (11) Delete
 - Delete the selected tag.
- (12) Up
 - Move the selected tag one step up.

(13) Down

Move the selected tag one step down.



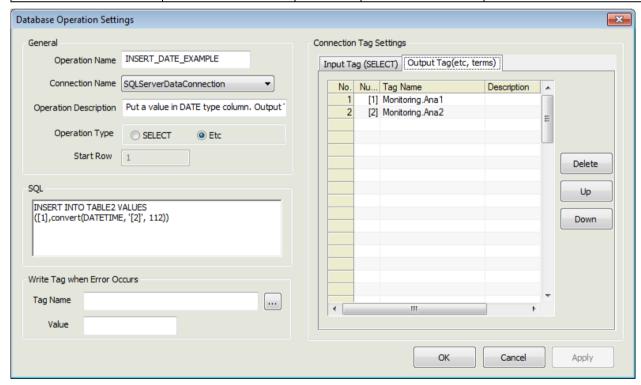
[Figure: EXAMPLE OF SELECT OPERATION(Output Tag)]

(14) SELECT

- It is used only when the operation type is 'SELECT'.
- The column name next to 'SELECT' is mapped with the tag defined on the phase of Input Tag one by one.
- Tag reservation numbers ([digit]) derived from FROM clause or WHERE clause are mapped with the output tags.
- Tag reservation numbers (numbers higher than 1) are recorded in positive numbers.
- Tag reservation numbers or the registered tag values (digit, character...) are expressed properly such as using quotation marks in the SQL syntax according to properties of each DB.
 - (ex.1) In case that tag values to be used are digits: SELECT COL1 FROM TAB1 WHERE ID = [1] (ex.2) In case that tag values to be used are characters: SELECT COL1 FROM TAB1 WHERE ID = [1]
- The record set to be inquired starts from the location where the Start Row is registered and controlling tag values starts from that location.
- Controlling tag values is applied in the order of being registered for input tags (It is not necessarily matched between the data number and the input tag number)

• Example of application

Case	SQL	Input Tag	Query Result	Tag Value Control Result
If the input tag number is less than the inquiry data number (Start Row 1)	SELECT ID, NAME FROM TABLE1	Tag01 Tag02 Tag03	ID NAME 1 Hong Gil Dong 2 KooSangYeop 3 SCOTT	Tag01 = 1 Tag02 = Hong Gil Dong Tag03 = 2
If the input tag number is less than the inquiry data number (Start Row 2)	SELECT ID, NAME FROM TABLE1	Tag01 Tag02 Tag03	ID NAME 1 Hong Gil Dong 2 KooSangYeop 3 SCOTT	Tag01 = 2 Tag02 = Hong Gil Dong Tag03 = 3
If the input tag number is more than the inquiry data number	SELECT ID, NAME FROM TABLE2	Tag01 Tag02 Tag03 Tag04 Tag05 Tag06	ID NAME 1 Hong Gil Dong 2 KooSangYeop	Tag01 = 1 Tag02 = Hong Gil Dong Tag03 = 2 Tag04 = KooSangYeop



[Figure: Example of ETC Operation]

(15) ETC (INSERT, UPDATE, DELETE)

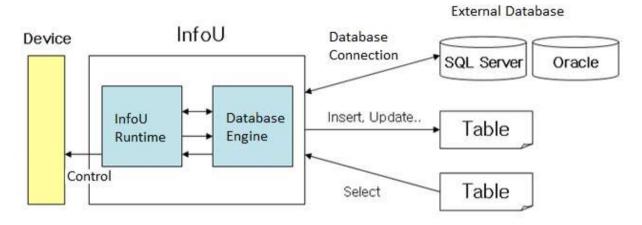
- It is used only when the operation type is 'ETC.'
- It can not used for input tags.
- Tag reservation numbers ([Number]) used in this syntax are mapped with output tags
- Tag reservation numbers are recorded in positive numbers equal to or higher than 1.
- Tag reservation numbers or the registered tag values (digit, character.) are expressed properly such as using quotation marks in the SQL syntax according to properties of each DB.
 - (ex.1) In case that tag values to be used are digits: INSERT INTO TAB1 VALUES([1], [2])
 - (ex.2) In case that tag values to be used are characters: INSERT INTO TAB1 VALUES('[1]', '[2]')
- Example of application

Case	SQL	Output tag and value	Query Result
If tag reservation	INSERT INTO TABLE1	[1] Tag01 20	INSERT INTO TABLE1
numbers are matched	VALUES	[2] Tag02 30	VALUES
with output tags	([1], [2], '[3]')	[3] Tag03 40	(20, 30, '40')
If tag reservation	UPDATE HYTAG	[2] Tag01 50	UPDATE HYTAG
numbers are not	SET VALUE = [1]	[1] Tag02 Dong	SET VALUE = 50
matched with output	WHERE NAME = '[2]'		WHERE NAME = 'Dong'
tags	AND TIME = [3]		AND TIME = [3]
	INSERT INTO TABLE1	[1] Tag01 20	INSERT INTO TABLE1
If tag reservation	VALUES	[2] Tag02 30	VALUES
numbers are repeated	([1], [2], [1])		(20, 30, 20)

19.3 Database Runtime

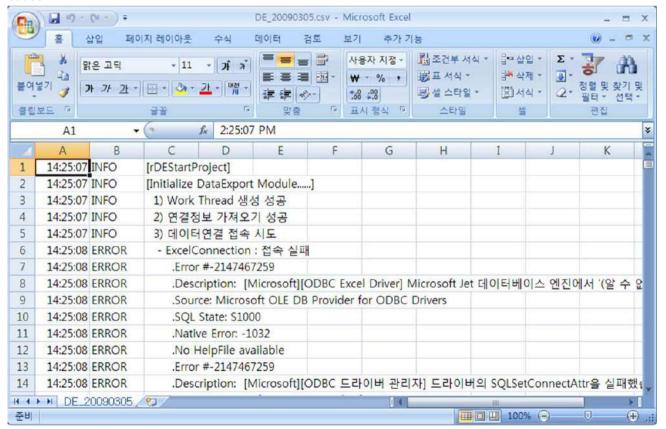
Database Runtime plays a role in performing operations linked to external databases during the Runtime by using the Connect Data and Operation Data set up during the engineering.

The user can perform Database Runtime Function in the stages of 'Script' or 'Action Trigger,'.



The log of the database work is daily created as the .csv file in the log folder of the project path.

This log includes the information on success/failure of the external database, success of each database work with the error information. If database task does not work normally, a user can open this file to determine the exact cause.



19.3.1 Function

- (1) SELECT
 - This function is to inquire data from the external database and control them as InfoU's internal tag data.
 - Even though the inquired data number is not equal to that of the registered input tags, it can control them by extracting common data.
- (2) ETC
 - This function is to record and save InfoU tag values in an external database. SQL syntaxes supported by each database can be used in various ways.

19.3.2 Internal Function

The internal functions that perform database operations are supported. For details and how to use, see 'Help' of 'Internal Function.'.

Chapter 20 Report

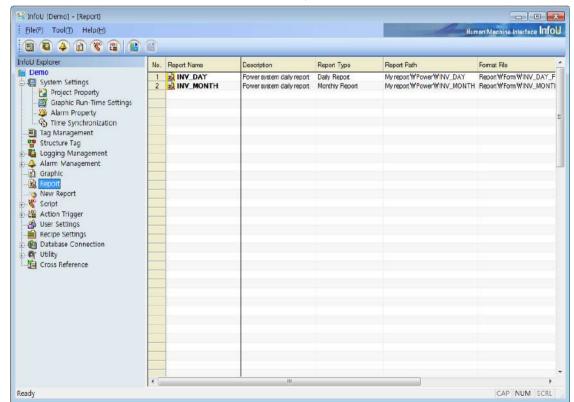
InfoU Report is to inquire the logging data defined in the logging group and create or output Excel files at a designated time. It can be outputted at any desired interval such as hourly, daily, weekly, monthly, yearly or freely.

- Conveniently create similar reports with the report copy function.
- Report layout formation is easy to use with dragging and dropping function.
- Editing is also available with copying/pasting to Excel.
- Since Excel is used, graph, diagram, formula, statistics and other functions supported by Excel program can be utilized.
- Since the tags used for report can be cross-referred, it is possible to check which tags are used when deleting or modifying tags.
- This manual is based on Microsoft Excel 2007.

20.1 Start

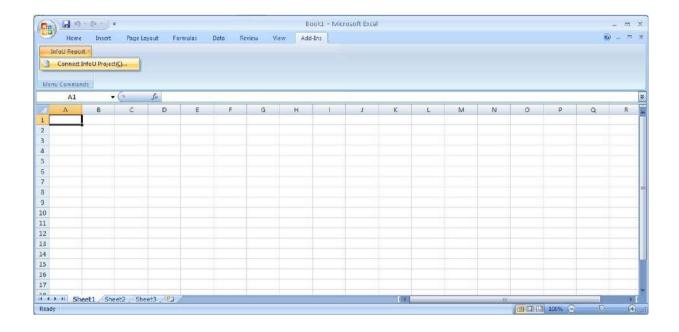
Select 'Report' from the menu or the InfoU explorer to display the report list.

Double click the list to execute Excel to make a report.



20.1.1 Report Menu

InfoU Report is produced with ActiveX COM and executed on the MS Excel menu and if it is normally installed, the following [Report] menu items are displayed to allow the user to select "Connect InfoU Project" menu.



Notice

In case [Additional Functions]→[InfoU report] menu is not displayed, take measures base d on the below procedures.

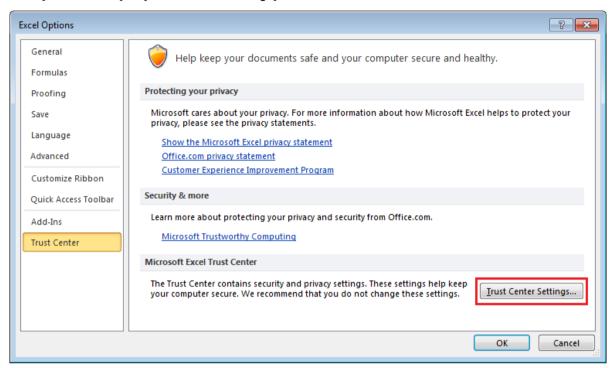
(1) Options of Excel

1) Click [File] → [Options]

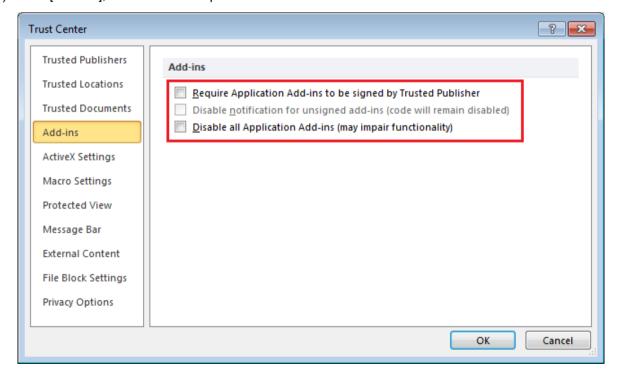




2) Click [Trust Center] → [Trust Center Settings]

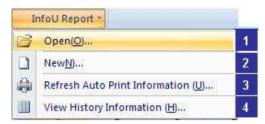


3) Click [Add-ins], uncheck the all options



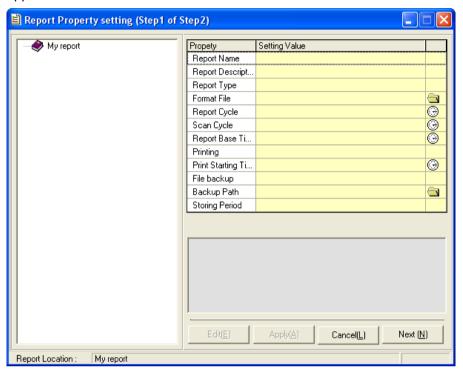
Chapter 20 Report

4) The following menu appears upon the selection of "Connect InfoU Project"if InfoU has been installed and it is available to download basic projects.



20.1.2 New

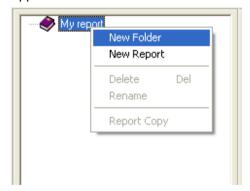
If [New] is selected from the menu, a screen for creating a new report for basic projects or the current project appears.



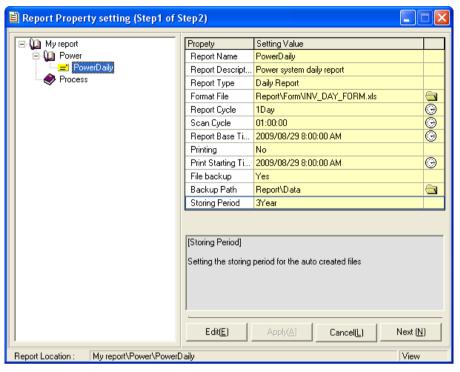
(1) Menu

If [New] is selected, the following dialog box appears.

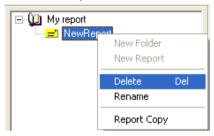
If the highest-level folder is selected and the right side of the mouse is clicked, the following pop-up menu appears.



- 1) New Folder: A new folder is created below the selected item.
- 2) New Report: The following screen appears to create a new report.



Select the report icon and click the right side of the mouse to display the following pop-up menu.



- 3) Delete: Delete the selected report.
- 4) Rename: Change the report name.
- 5) Report Copy: A report can be copied or moved to other folder.

Report Property setting (Step1 of Step2) My report Propety Setting Value Dower 🎾 Report Name NewReport ■ NewReport ■ PowerDaily Report Descript.. Report Type Report Cycle Scan Cycle 01:00:00 Report Base Ti... 2009/08/29 8:00:00 AM Printing () 2009/08/29 8:00:00 AM Print Starting Ti... File backup Nothing Backup Path Storing Period 1Month [Storing Period] 5 Setting the storing period for the auto created files 3 Cancel(L) Next (N) Report Location : My report\Power changed

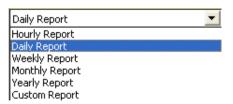
20.1.3 Report Property Settings

(1) Edit

- 1) Edit: Click Edit button to change the properties of the report.
- 2) Apply: The changed properties are saved.
- 3) Cancel: The edition is cancelled.
- 4) Next: The properties are saved and the next step [Report Layout] is displayed.
- 5) Help Window: If the relevant item is selected, instruction and information on its properties are displayed.

(2) Property

- 1) Report Name: (16 letters) A name to identify the report. Any two reports do no have the same name in the same folder. It is used to distinguish one from the other.
- 2) Description: (49 letters) In case that it is obscure to distinguish one from the other only by their names, the user may record details on the report.
- 3) Type: For regular reports (hourly, daily, weekly, monthly, annually reports), the [Report Interval] property on the bottom is automatically set up while for free reports, the user needs to select an interval. If a value area is selected, a list box showing report types is displayed to allow the user to select one among them.



- 4) Format File: Reports are made in Excel file format with functions edited by the user. Therefore, Excel file (.xls) or Excel format file (.xlt) shall be designated.
 - Click one of the right folder icons to display a selection screen. Then, select a file and click Open button to make the relevant file name automatically inserted. If these files are selected in the project folder,

previous project paths are omitted and saved and if other paths except them are selected, the computer name is also automatically added and displayed.



- 5) Report Cycle: Only Free Report can be set up a cycle to create a report. Data are collected according to the following cycle and once data are collected, a report is created.
 - Ex.1) Cycle of daily report = 1 day, Scan cycle = If it is set up one hour, one daily report is created once 24 set of one hour data are collected.
 - Ex.2) Cycle of daily report = 1 day, Scan cycle = If it is set up 15 minutes, one daily report is created once 96 set of 15-minute data are collected.



6) Scan Cycle: An interval displayed in the report as a time distance to collect data. If the clock mouse on the right side of the relevant item is clicked, the following screen appears to allow the user to select a cycle.



7) Report Base time: A report is written from the set up time on the set up date. Scan Cycle is the same with Report Cycle. That is, a report is created on 'the set up time every report cycle' based on the time to write a report.



- 8) Printing: It displays whether to execute 'Auto Print.' If 'No' is selected, 'Auto Print' is not executed and the following output time is ignored.
- 9) Printing Start Time: A report is outputted from the set up time on the set up date. For example, if it is set up as seen in the following figure, output or backup of the relevant report is executed at noon.



10) File Backup: It displays whether to execute 'Report Backup.' Backup is executed at the same time at the same interval with the 'Printer Output' above. If 'No' is selected, backup is not executed while if 'Yes' is selected, the user needs to designated a backup path.

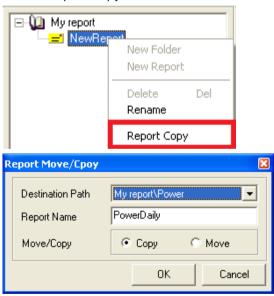
Chapter 20 Report

11) Backup Path: Select a backup path on the screen and press 'Ok' button. If these files are selected in the project folder, previous project paths are omitted and saved and if other paths except them are selected, the computer name is also automatically added and displayed.



- 12) Storing Period: The user may set up a period to store backup data. If this period passes, the backup data is automatically deleted.
- 13) Writer: Record a person who writes the report.
- (3) Copy / Move

Select 'Report Copy' from the menu below to display the following screen.

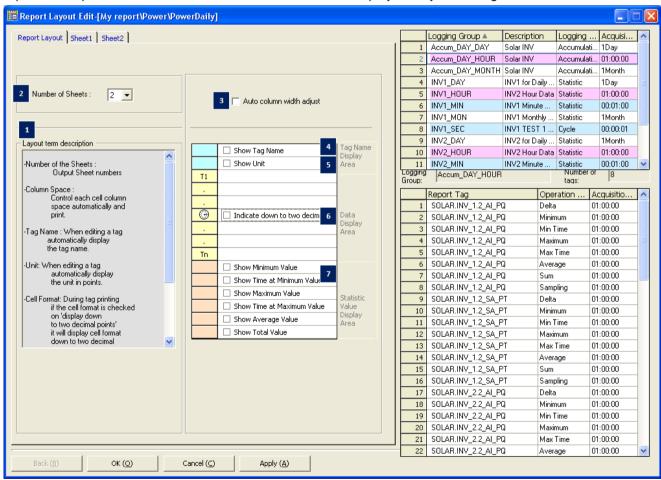


- 1) Destination Path: Designate a path to which a report is copied or moved.
- 2) Report Name: Designate a report name to be created after being copied. If the same name already exists, a new report is created in a form of [report name] (1).
- 3) After modifying the report properties, the user may select [Auto Print Information Renew] from the main menu to apply the modified information online.
- 4) OK: It performs the settings
- 5) Cancel: It performs exits the screen without changes.

20.2 Layout

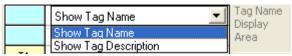
20.2.1 Report Layout

Once 'which tag is outputted on which date/time is defined, the next step is to define which type the outputted report has. Open the Excel file defined as a format file and display the layout setting screen.



- (1) Layout term description: Each item on the Report Layout screen is described.
- (2) Number of sheet: Set up the Excel sheet number of the relevant report. (Up to 5 sheets are available)
- (3) Auto column width adjust: The row distance of each cell is automatically adjusted and displayed.
- (4) Show Tag Name/Show Tag Description: During the tag edition, the selected tag name or description is

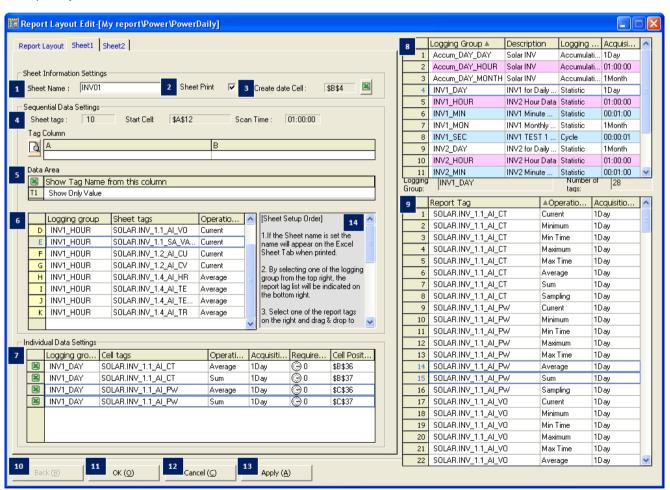
automatically displayed. To select a tag name or description, press the cell next to the check box.



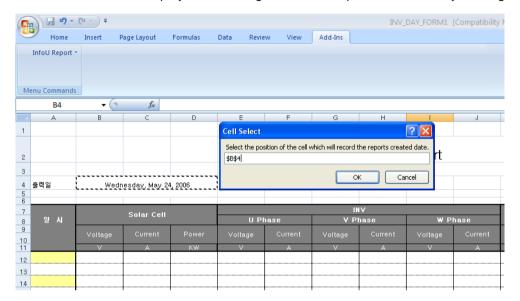
- (5) Unit: During the tag edition, properties of the selected tag unit are automatically displayed.
- (6) Statistics value: A desired statistics value is automatically computed and displayed. Statistics values are displayed on the report in the same order with the one currently displayed and if any specific statistics value is not selected, they are moved up one row and displayed.
- (7) The statistics values computed here will be those of cells and they are the same with the ones for which expressions are used. To obtain more precise data statistics values than the actual ones, it is desirable to designate data statistics values to cell tags and display them.

20.2.2 Sheet Property

Set up a layout for each sheet.



- (1) Sheet Name: Designate and save a name of the Excel sheet when saving a report backup.
- (2) Sheet Print: Set up whether to output the sheet.
- (3) Created Date Cell: Designate a cell to display the date on which the report is created.
 - Click on to display the following screen and input cell address by clicking the relevant cell of Excel.



(4) Sequential Data Settings

It is the report having the form that multiple tags are repeated at a regular time interval such as daily report, monthly report, annually report, etc. It has the same property so you can register report tags in the sequential settings.

- 1) Sheet tag: It displays the number of the currently set sequential data.
- 2) Start cell location: It displays the location where the sequential data will start. You can specify the location of the start cell by selecting of the data area.
- 3) Archiving cycle: It displays the archiving cycle of the logging data that will be output as the sequential data.
- 4) Tag column preview: If you click , you can preview the currently set layout and check the settings.

(5) Data area

It shows the shape of the start cell where the value is displayed depending on the layout property settings.

1) In case nothing is selected



The value is output and displayed in the start cell.

2) In case 'Show Tag Name' (description) is selected

1		l Tag	×	Show Tag Name from this column
ı	✓ Show Tag Name	Name	T1	Show Only Value
	☐ Show Unit	Display Area		-

Chapter 20 Report

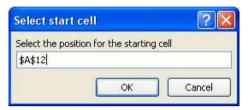
After the tag name is output in the start cell, the value is output and displayed from the next cell (Raw).

3) In case 'Show Tag Name', 'Show Unit' are selected



After the tag name and unit are output in the start cell, the value will be output and displayed from the next cell (Raw).

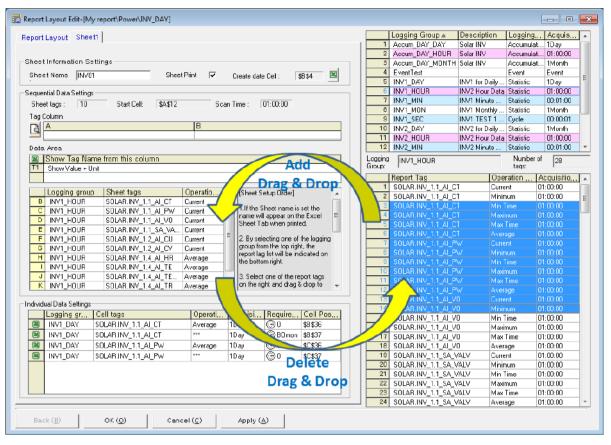
III, the below message box will show up. When you click the relevant cell of Excel, the cell address will 4) If you click be input and the locaiton where the sequential data starts will be specified.



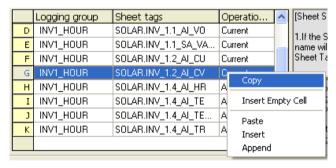
(6) Sequential data tag input:

You can set the tag list to be displayed as the sequential data.

- 1) If you select the logging collection model in the upper right corner, the tag list and operation types belonging to the relevant collection model will be displayed.
- 2) After selecting the targeted tag, add it to the list through Drag & Drop. (For deleting the tag, Drag & Drop in the opposite direction)
- 3) If you click the header of each list, the relevant column will be sorted.

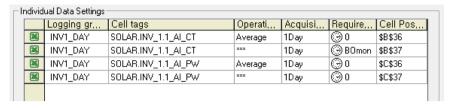


4) Copy/Paste: If you click with the right mouse button, the below menu will show up. After copying the list, you can Edit, Paste, Insert and Append it in excel and clipboard.



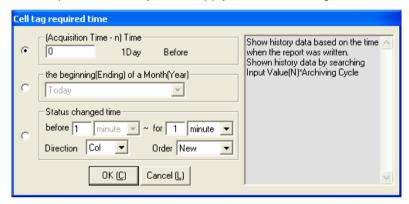
- a. Insert Empty Cell: If you want to add the column where the data is not displayed, select 'Insert Empty Cell'. Then, the column is not populated by the data so you can use the arithmetic function of Excel.
- (7) Individual Data Settings

Unlike the Sequential Data Settings, Individual Data Settings can be used when you want to display the report tag in the specific cell of the sheet. Accordingly, after inputting the tag of the logging group, you should set the required time to output the data in the desired time.



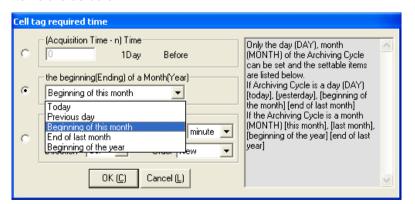
- 1) After selecting the targeted tag among the report tags on the right side, add it to the individual setting list through Drag & Drop (For deleting the tag, Drag & Drop in the opposite direction)
- 2) If you click the clock icon displayed in the required time column of the tag to which you want to apply individual settings, the below screen will show up.

For multiple selections, you can apply the same settings to the chosen cell tag.



- 3) The above screen describes the method how to bring the data from the point in the past based on the acquisition time of the report of the individual settings. It reads the previous data for the time of N* archiving cycle. If you enter "0" into the acquisition time, the data will be queried and output. Namely, if "00h 00m 00s" is the output time of the report, the data of the cell will be 00h 00m 00s. In the case of "12", the data of 12 hours earlier than "00h 00m 00s" will be queried and output.
- 4) Setting the Beginning (end) of the month/Beginning (end) of the year

 The below screen is available only when the archiving cycle is a DAY or a MONTH. The configurable items are as below.



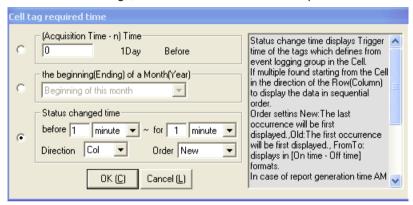
- a. If the archiving cycle is a DAY: "today", "yesterday", "beginning of the month", "end of the last month"
- b. If the archiving cycle is a MONTH: "this month", "last month", "beginning of the year", "end of last year" When setting as Today (Month), the same result as the set value "0" of the above acquisition time will be output.

5) Event logging output settings

	Logging gr	Cell tags	Operati	Acquisi	Require	Cell Pos
×	INV1_DAY	SOLAR.INV_1.1_AI_CT	Average	1Day	⊕0	\$B\$36
×	INV1_DAY	SOLAR.INV_1.1_AI_CT	xxx	1Day	⊕ B0mon	\$B\$37
×	INV1_DAY	SOLAR.INV_1.1_AI_PW	Average	1Day	⊕0	\$C\$36
×	INV1_DAY	SOLAR.INV_1.1_AI_PW	xxx	1Day	⊕0	\$C\$37
×	EventTest	AniDmp	Current	Event	©	
	EventTest	AniDmp	Trigger Ti	Event	Θ	
					_	

a. In the case of the event logging, the number of data output is not fixed. The trigger time and current value can be output.

If you click the clock icon displayed in the required time column of the tag to which you want to apply individual settings, the below screen will show up.



b. If you select the tag type other than the event logging, the below message will be displayed.



- c. For the event time, the trigger occurrence time of the tag defined from the event logging group is displayed in the cell.
- d. When multiple tags are searched, starting from the specified cell position, in the direction of Col (horizontal) or Row (vertical), the data is displayed in the sequential order.
- e. Order settings New: The latest occurrence is first displayed, Old: The first occurrence will be first displayed, FromTo: It is displayed in [On time – Off time] format.
- f. In case the acquisition time of the report is 00, when you select [1 day before], [for 1 day], the event occurrence data between 00:00 of the last day and 00:00 of today will be displayed. This condition is proper for the daily report.
- g. In case the acquisition time of the report is 00, when you select [3 hours before], [for 1 hour], the event occurrence data between 20:00 of the last day and 21:00 of today will be displayed.
- h. The below figure shows the example of outputting the event logging report.

	_			
Energy KWH	Integrating watthhour KWH	Motor running time	Status	
1,128	46	23:20:00	1	1
858	2	23:20:00	1	1
43	56	23:20:00	1	ı
1,047	43	23:20:00	1	ı
42	75	23:20:00	1	ı
1,000	17	23:20:00	1	I
16	32	23:20:00	1	I
61	47	23:20:00	1	I
4	94	23:20:00	1	I
980	94	23:20:00	1	I
1,020	25	23:20:00	1	I
44	2	23:20:00	1	I
1,009	75			_
12	45			
1,140	23			
	ı			

- 6) Copy/Paste: If you click with the right mouse button, the below menu will show up. After copying the list, you can Edit, Paste, Insert, Append it in Excel.
- 7) When inputting the cell position, there is inconvenience of clicking one by one for setting so it can be used when you input the cell tag having certain rules. For example, when the position value of the selected cell tag is \$B\$30", after selecting 5 ones, if you select [Sequential input of row(vertical)], \$B\$31" ~ "\$B\$34" will be automatically input in regular order; if you select [Sequential input of column(horizontal)], \$B\$31" ~ "\$B\$34" will be automatically input in regular order.

(8) History Data Collection Model

A list of the data collection models registered in the history data collection models.

- 1) Red Color: Collection models corresponding to the report data creation cycle. That is, they are data collection models that have one -hour collection cycle in case of daily reports.
- 2) Blue Color: Collection models that can create reports even though they are not corresponding. That is, they are data collection models that have collection cycle less than one hour and multiples of integers (one minute, 10 minutes, 30 minutes, etc).
- 3) White Color: Collection models that can not be applied to continual tag data areas.
- 4) If a certain collection model is selected, a list of tags that belong to the model is displayed at the bottom and the data kinds available to select vary according to the properties of the collection model.

Logging Group	Analog	Digital	Remarks
Cycle	Current value	Current status	Minimum collection 1second Mainly used for the history trend at fast time intervals(less than 1minute)
Statistics	Current value, Min value,	On count, Running time,	Minimum collection 1 minute Min value,

	Max value, Min time, Max time, Average value, Total value, Sampling count	Change count	Max value, Min time, Max time, Operation cycle 1 minute Mainly used for report of trend more than time unit
Accumulation	Change value, Sampling count	Not supported	Collection cycle: 1hour, 1day, 1month When tag data has incremental properties such as accumulation electric power meter or flow meter, data fluctuation is saved for each time unit.
Event	Trigger Time, Current Value	Trigger Time, Current Value	Display the trigger time and the current value of that time.

When an item is selected, the tag list to which the relevant collection model belongs and its data kind is displayed in the bottom list. The continual tags are limited to the available tags to be set up according to the report preparation rules but, individual data cells can be entered with any tag regardless of cycle or model kind.

(9) Tag List

As a tag list of the collection models selected above, it can be set up by dragging and dropped to the continual data or individual data table.

(10) Back

The screen moves back to the property edition screen after edition is stopped.

(11) Ok

The settings are saved and the screen is closed.

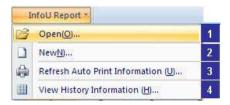
(12) Cancel

The edition work is stopped and the screen is closed.

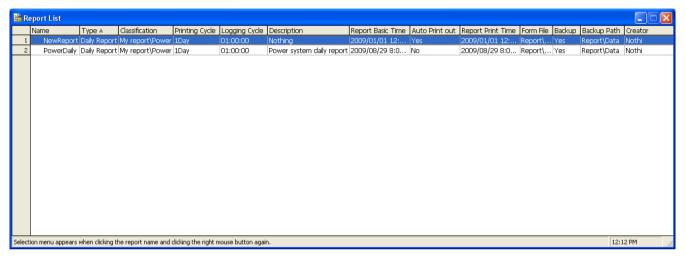
(13) Apply

Settings are saved.

20.3 Report Open



If [Open] is selected from the report main menu. The report list screen is displayed as seen in the figure below. All of the report information defined is displayed on this screen.



The following actions can be applied to the list.

- Click on the header of each column to rearrange the column contents in the ascending or descending order.

 (The arrangement order is displayed while the direction of the arrow displayed on the column header is changed)
- The column is rearranged if a certain column is clicked and held while moving the clicked column before other column.
- Double click on the border of the column on the right side to make the width of the column automatically adjusted.
- If some contents are not visible on a cell, bring the mouse on the cell to view all of the hidden part.
- Select an item and click the right side of the mouse to pop up available menus.

20.3.1 Edit

Two steps of [New] are editable individually. That is, operations such as property edition and layout are available individually.



- (1) Property Edit: The report property edition screen is displayed to allow the user to set up properties.
- (2) Layout: The report layout edition screen is displayed to allow the user to set up properties.

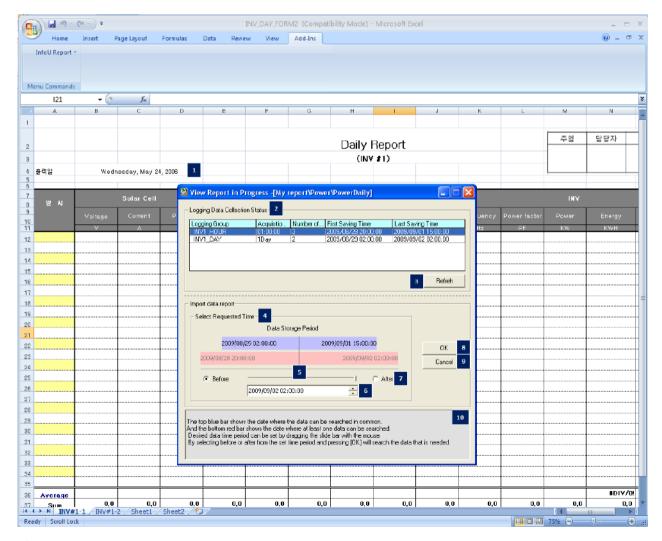
20.3.2 Report View

This function ensures not only the newly saved or created reports are properly searched but also the data retained by the history data collection model are searched during a certain period the user wants.



(1) Database

Reports are automatically printed or saved as backup files periodically. This section explains a function to view reports in the time zone the user wants on the screen unlike printer outputs. This function can run only in the runtime mode.



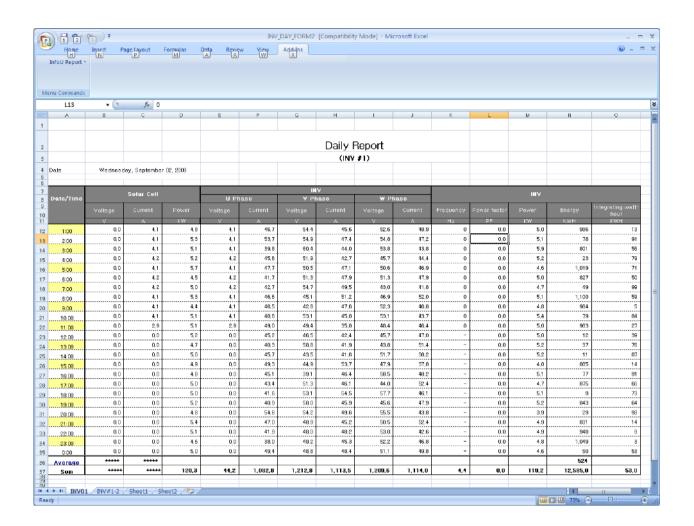
1) Format File

A setup Excel format file is opened and the [Progressing Report View] screen is displayed.

2) Report Data Collection status

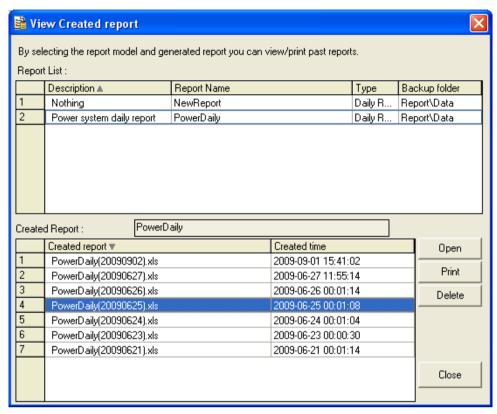
The data saving status of the history data collection models set up in the current report is displayed in a form of list and the list can be referred by the user when he/she searches data and each column is described as follows:

- a. Logging Group: The name of the data Logging Group.
- b. Acquisition Cycle: Data collection cycle of the relevant collection model.
- c. Number of records: The number of the stored data until now.
- d. First Saving time: The oldest data time
- e. Last Saving Time: The latest data time
- 3) Refresh: The list is renewed with the latest information.
- 4) Select Requested Time: Select a time period to inquire.
- 5) Data Storage Period: The blue upper bar shows the period during which all of the data can be displayed while the red bottom bar shows the period during which at least one data can be displayed.
- 6) Reference Date Designate: Set up data in the desired time zone by pressing and holding the slider knob of [Demand Time Select] and moving the mouse.
- 7) Reference Time: Enter and set up a reference time when the user wants to inquire.
- 8) Before/After: Previous or next data to the reference time can be inquired if either Previous or Next is selected.
- 9) OK: Data in the selected time zone are outputted (report cycle/collection cycle).
- 10) Cancel: The inquiry is stopped and the screen is closed.
- 11) Help: The user can be received on the information on how to inquire database reports.
- 12) The data inquiry results are as follows:



(2) Created Report

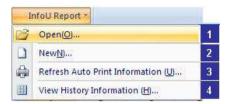
Periodic backup report files are inquired. Click on the menu to display the following screen.



At first, the created report list of the selected report models from the previous report list is displayed at the bottom [2],

- 1) Report List: The report list defined in the current project is displayed.
 - a. Click on the list header to arrange the created reports in the order and each column is described as
 - b. Type: Types of the report (Daily report, monthly report, free report, etc....)
 - c. Report Name: The report name including its folder is displayed.
 - d. Backup Folder: As the path in which report backup files are saved, the project path displays the corresponding path and any path other than the project path displays the entire paths including computer name.
- 2) Created Report: If the above report model item is selected, the report file list in which the relevant backup path is created appears.
- 3) Open: The report file selected from the bottom list is opened. The same actions are triggered by double click.

20.3.3 Refresh Auto Output Information



If [Refresh Auto Output Information] is clicked from the Report Main Menu after the report properties are modified, the modified contents are applied online.

This function is executed only in the runtime mode and it renews the report operation list by sending the Renewal Command to the report scheduler responsible for auto output and backup of the report after the report completes its modification process.

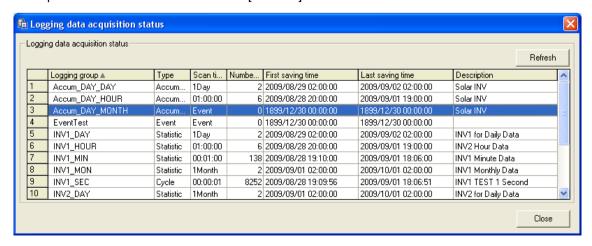


20.3.4 View History Information



If ④ [History Information View] is selected from the report main menu after Report Properties are edited, the following screen appears.

If it is executed only in the runtime mode and the data save status of the history data collection models can be inquired and data can be renewed if [Refresh] button is clicked.



20.3.5 How to Use during the Runtime

During the runtime, a report can be defined on the plant screen and [Created File] report view is called. Refer to 'Help' of 'Graphic Script.'

Chapter 21 New Report

The InfoU New Report can query Logging Data defined in the logging group to generate an Excel file at a specified time. Even in an environment without Excel, you can query Logging Data to generate or output a self-formatted report file at a specified time. You can query Alarm Logging Data to generate a self-formatted report file as well. In addition, you can generate an Excel report by querying a tag's current value and the tag attribute value. Various reports, such as hourly, daily, weekly, monthly, annual, random, and periodic reports can be output at the desired time.

- Report cloning makes it easy to create similar types of reports.
- The Excel report has a pre-defined format and the General report allows you to use an existing Excel form. You can generate reports without MS Excel installed.
- You can create a table-based report conveniently with the form editor.
- You can generate reports by filling out the Tag, Alarm, and Event Logging parameters in the form editor for the General report.
- You can generate reports in a variety of formats, such as PDF, DOC, XLS, and TXT.
- This manual is written for MS Excel 2010.
- The differences between Excel and General report are as follows:

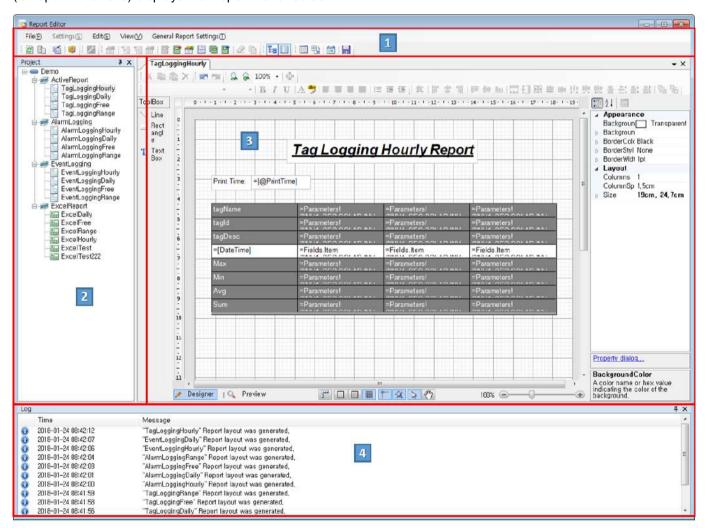
Features	Excel Report	General Report
Excel Form Support	0	X
Design of report forms	Available in Excel	0
Report Print	0	0
Exports PDF format	0	0
Exports XLS/DOC/TXT format	Excel only	0
Sheet support	0	X
Cell horizontal input	0	X
Tag name/unit auto output	X	0
Alarm report	X	0
Fixed-cycle report	0	0
Period report	0	0
User-defined report	0	0
Provides script support API	0	0
Simultaneous support of tag attributes and	0	0
historical data		
Report preview	Х	0
Statistical processing (maximum, minimum, average and sum value)	Using the Excel function	0

21.1 **Getting Started**

This function launches the Report Editor.

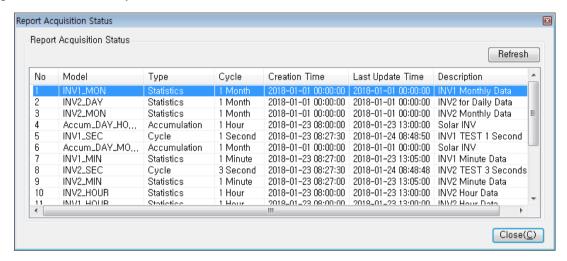
21.1.1 Report Editor

InfoU reports are published in C# based on the .NET Framework 3.5 and run as executable files. Microsoft Excel 2007 or later must be installed to create Excel reports. Running the Report Editor executable file (iuReportEditor.exe) displays the Report Editor screen.



(1) Menu

- Auto Update of Output Information: You can reflect the changes you made online by clicking [Auto Update of Output Information] in Report Editor.
- 2) History information: This displays the Report Acquisition Status dialog box, which allows you to view the data storage status of the history data collection model.



(2) Project Form

Displays a list of report groups and reports configured in the InfoU project in tree form. Select the top node and right-click to display a pop-up menu that allows you to manage report groups and report lists.

(3) Report Layout Editor

Displays the editor for editing the report layout. The Layout Editor is divided into an Excel report and a General report layout editor. The Report Runtime generates report results based on report forms created through the Layout Editor.

(4) Report Edit Log

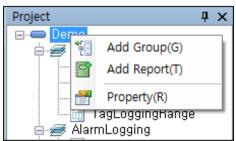
In the Report Editor, user actions are displayed in the log.

21.1.2 Edit Report

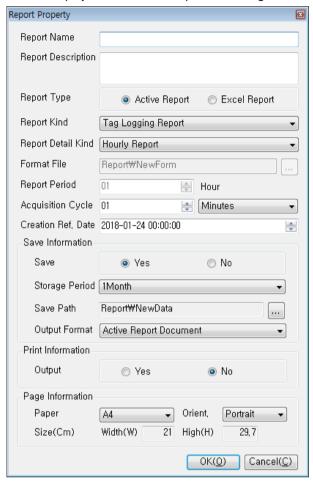
This function allows you to creates a report through the Project Form tree.

(1) Menu

Select the top node of the Project Form tree and right-click to display the following popup menu.



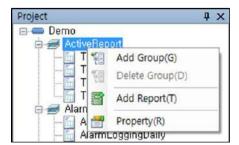
- 1) Add Group: A new group will be created under the selected item.
- 2) Add Report: The following screen is displayed and a new report can be generated.



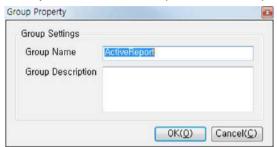
3) Property: Displays a screen where you can edit the Project Name or Project Description.



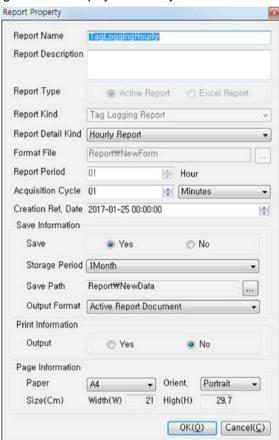
Select the group icon and right-click to display the following popup menu.

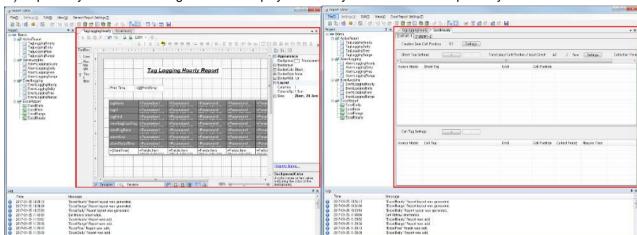


- 4) Add Group: A new group will be created under the selected item.
- 5) Delete Group: Deletes the selected group. If a child or group has a report, you cannot delete it.
- 6) Add Report: Generates a new report.
- 7) Property: Displays a screen where you can edit the Group Name or Group Description.



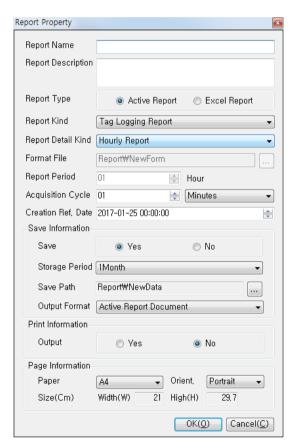
- 8) Delete Report: Deletes the selected report.
- 9) Report Property: The following screen is displayed where you can edit the report properties.





10) Report Layout: The following screen is displayed where you can edit the Report Layout.

21.1.3 Defining Report Properties



- (1) Edit
 - 1) OK: Saves your changes to the report properties.
 - 2) Cancel: Exits the Report Property screen.



(2) Property

- 1) Report Name: (16 characters) This is the name used to distinguish the report and cannot have the same name as another project. It is used to distinguish the report file from the contents of the report.
- 2) Report Description: (50 characters) Use this to record details about the report.
- 3) Report Type: It consists of Excel Report that uses an Excel file as a form and General Report that uses its own report form. You can use an existing Excel form or generate reports in environments where Excel is not installed.
- 4) Report Kind: You can select from Tag Logging Report, Alarm Report, and Event Report.



Kind	Remark	
Tag Logging Report	Queries tag logging data and creates a report.	
Alarm Report	Queries alarm data periodically and creates a report.	
	Queries alarm data by alarm group and a period [from, to].	
	The number of data points in the Alarm Report is variable.	
Event Report	This report is generated by querying logging tag data for an Event	
	based on the cycle of the logging group.	
	The number of data points in the Event Report is variable.	

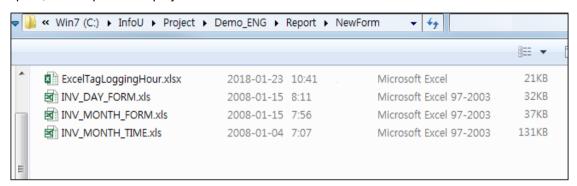
5) Report Detail Kind: In the case of commonly-used Periodic Reports (Hourly Report, Daily Report, Weekly Re port, Monthly Report, or Yearly Report), the attribute [Report Generation Cycle] at the bottom is automatically set. In the case of a Free Report, you can choose the Report Generation Cycle. For Range Reports, you can only select the Acquisition Cycle.



Kind	Remark	
Hourly, Daily, Weekly,	This is a basic report and the number of data points is fixed. The	
Monthly, Annual Report	Report Generation Cycle is fixed and the Data Acquisition Cycle is	
	set by the user.	
Free Report	The Report Generation Cycle and the Data Acquisition Cycle are set	
	by the user.	
Range Report	There is no Report Generation Cycle and only the Data Acquisition	
	Cycle is set by the user. It generates a report by entering a report	
	view period through a trigger, such as a script.	

6) Format File: You can select this for an Excel report. Excel reports are created using the Excel file forms and functions you have edited. Therefore, an Excel file (.xls) or Excel template (.xlt) must be selected for an Exc el report.

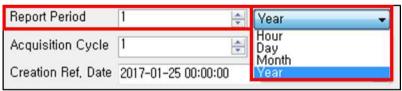
Click [...] on the right of the window to select the desired file and open it. The file name is inserted automatically. If you select these files from a project folder, the project path is omitted. If you select any other path, the full path is displayed.



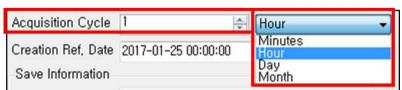
7) Report Generation Period (Report Period): You can set this report generation cycle only for a Free Report. It collects the data for each of Acquisition Cycle and generates a report when the Report Period/Acquisition C ycle data is collected.

Example 1: If the Daily Report Period = 1 day and the Acquisition Cycle = 1 hour, a Daily Report will be generated when 24, 1-hour data sets have been collected.

Example 2: If the Daily Report Period = 1 day and the Acquisition Cycle = 15 minutes, a Daily Report will be generated when 96, 15-minute data sets have been collected.



8) Data Acquisition Cycle (Acquisition Cycle): This is the data acquisition time interval used in the report (Hourly, Daily, Weekly, Monthly, or Annual Report). You can set the Acquisition Cycle for both Free and Range Rep orts.



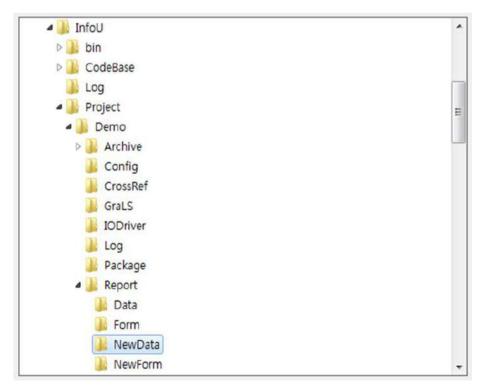
9) Creation Ref. Date: The report will be created from the set date / time. The creation cycle is the same as the e Report Period. Therefore, the report will be created every 'Creation Ref. Date + Report Period' from the set to me of report generation.



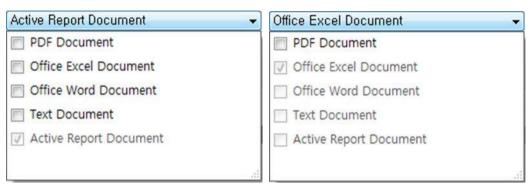
- 10) Save Information: Select whether or not to save the report file at the time of report creation. If you select 'No ', the report will not be saved. When selecting 'Yes', you must specify a Save Path.
- 11) Storage Period: Select how long to store the data. When the storage period expires, the data is automatically deleted. The Storage Period differs, based on the Report Kind.
 - Example 1: Yearly Report: 3, 6, or 10 years or set to "Unlimited" to retain the data permanently.
 - Example 2: Monthly Report: 3 or 6 months; 1, 2, or 3 years; or set to "Unlimited" to retain the data permanently.



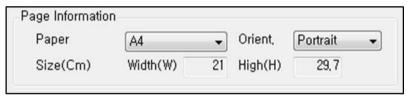
12) Save Path: On the path selection screen, select a storage location and click OK. If you select a Save Path f rom a project folder in the project, the project path is omitted. If you select any other path, the full path is di splayed.



13) Output Format: This saves the generated report in a different output format. Multiple output formats are availa ble. You can select PDF, Excel, Word, or Text formats. When you select Excel format, you can also select PDF output.



- 14) Print Information: Select whether or not to output the report automatically. The report auto-start time is the sa me as the report creation time.
- 15) Page Information: This can be set only for General reports. When you create a generic report form, you can specify the page size.



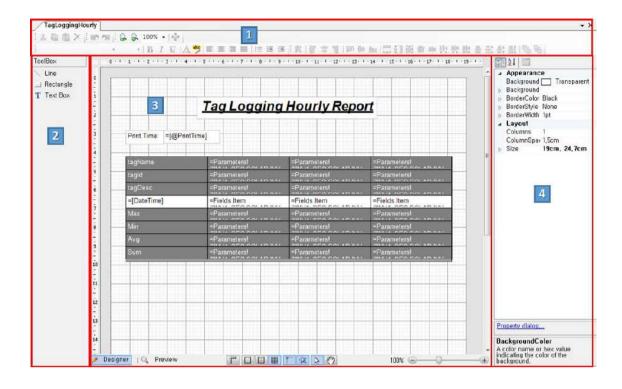
21.2 Defining Layouts

21.2.1 Report Layout

After you define what data will be output and when, the next step is to define a format for the output. In General reports, you can edit the report layout through the form editor. In Excel reports, you can edit the report layout based on the Excel (.xltx) by altering the file properties.

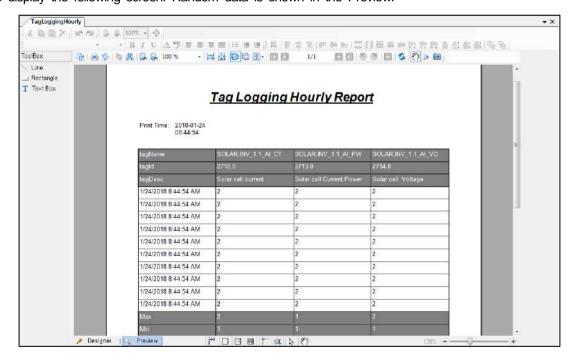
21.2.2 Tag Logging Report Layout

You can define the Tag Logging Report Layout by selecting General report in Report Property and selecting the Tag Logging Report as the Report Type. Right-click the report icon and click [Report Layout] in the pop-up menu. The following screen will be displayed, which allows the Report Layout to be edited.

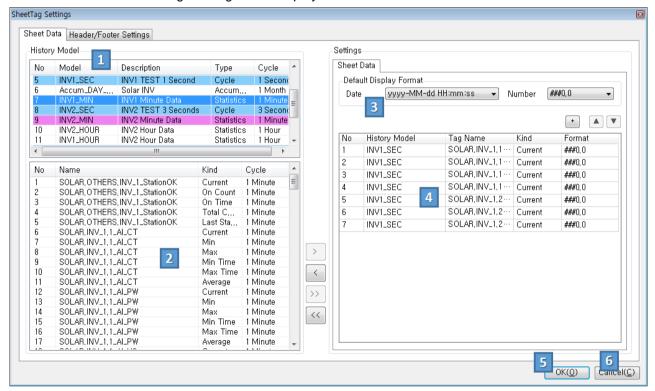


(1) Editor screen

- 1) Layout editing toolbar: This provides text format, sort, layout zoom in/out, control alignment and control size/sp acing alignment options for editing the report layout.
- 2) ToolBox: This provides line, rectangle, and text box functions for editing the report layout.
- 3) Design View: This is a screen that you can actually edit various report layouts using Toolbar and Toolbox. With Design View, you can preview the report before it is printed. Click Preview at the bottom of the Design View screen to display the following screen. Random data is shown in the Preview.



- 4) Property window: You can set properties of tables, lines, rectangles, and text boxes used for layout editing.
- (2) Tag Logging Report Table Property Click the continuous data setting tool () on the layout editing toolbar to display the following window and set the Tag Logging Report table properties. The window includes Continuous data and Header/Footer settings. The continuous data setting lists tags to be displayed as continuous data.



- 1) Logging Collection Model: All logging group information defined in InfoU is displayed.
- Tag list: The tag list and operation type belonging to the Collection Model are displayed.
- 3) Default Display Format: If the tag to use for the report is a date or numeric data, you can use the default fo rmat. If you select a tag from the tag list and add it to the continuous data, the date and number type of th e tags are set to the Default Display Format.
- 4) Continuous data: This lists the tags to include in the continuous data report and has the same characteristics as a report that repeats multiple tags at regular time intervals, such as Daily, Monthly, or Yearly Reports.
- 5) OK: Creates the tag logging table from the tags selected in the logging group and saves continuous data, H eader and Footer Settings, and individual tag settings.
- Cancel: Exits the continuous data setting screen without saving your changes.

When you select a logging acquisition model in the upper left of the window, the tag list and operation type belonging to that acquisition model is displayed. Select the tag you want to add to the report and click Add individual (→) to the continuous data list. Click Delete individual (<) to delete it. Add All and Delete All functions add or remove all tags from the report. Click Add Empty Tag ([+]) to add an empty column to the

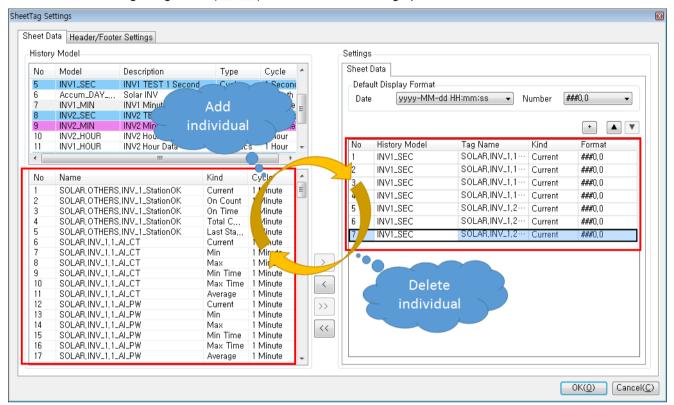
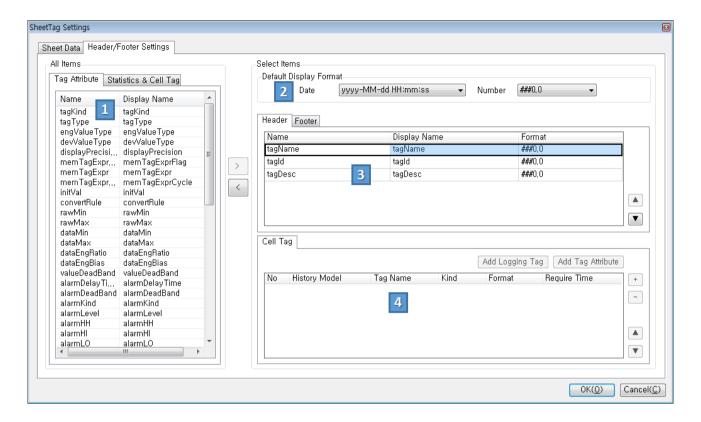


table. Click Change Tag Order () to move a selected tag up or down in the table.

Header/Footer Settings are displayed automatically in the table when generating the report by selecting the Name, Description, and Unit properties of the tag set at the time of continuous data editing. If you select a statistic value for maximum, minimum, average, and total value when you generate a report, the statistics for the tag are displayed in the table automatically.

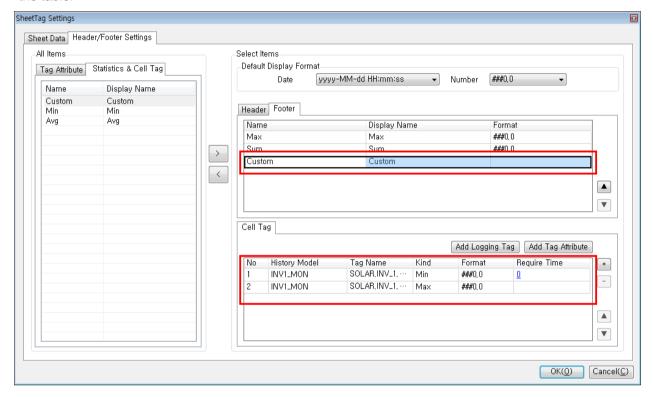
Chapter 21 New Report



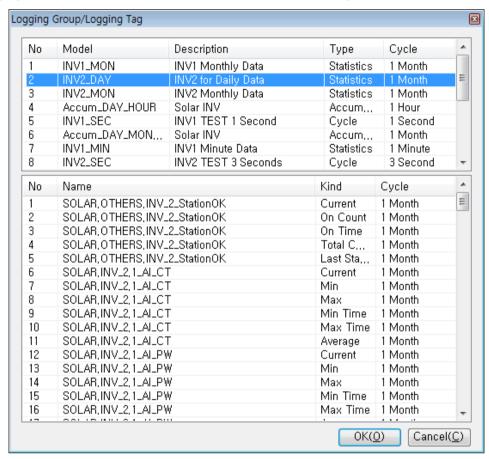
- 1) All items: Properties and statistics for the tag are displayed in the table, including tag properties, statistics, and individual tags.
- 2) Default Display Format: If the tag attribute or statistic to use for the report is a date or numeric value, you ca n set the default format. If you select the Header/Footer item and add it to the selection item, the date and numeric type is set to the Default Display Format.
- 3) Header/Footer: You can select the tag attribute and statistic to display at the top of the table in the Header ta b. You can select Footer attributes in the Footer tab.
- 4) Individual tag (Cell Tag): When you click [Add Logging Tag] or [Add Tag Attribute], the item is added to the Cell Tag and displayed in the table.

Changing Item Order (Y) moves the selected item up or down to change in the Header/Footer order that appears in the table. Click Add individual () to add a selected item. Click Delete individual () to delete it.

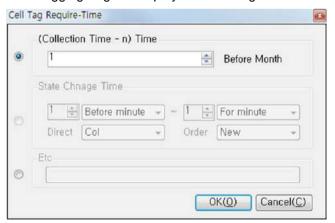
Individual tag settings can be added to the Cell Tag by selecting and adding custom values in All items and the Cell Tag tab. If you add a custom value to the header or footer and select the Custom item, the Cell Tag screen will activate. You can set individual tags by clicking [Add Logging Tag] and [Add Tag Attribute]. You can add an empty tag by clicking Add Empty Tag (+). Click Delete Tag (-) to delete the selected tag. Changing Item Order (•) moves the selected item up or down in the individual tag order that appears in the table.



Click Add Logging Tag to display the Logging Group/Logging Tag screen. Select the Logging Tag belonging to the Logging Group and click OK button to add it to the individual tag list.



Clicking Required Time of the Logging Tag will display the following screen for setting the required time.



The Cell Tag Request-Time screen is used to indicate when data is to be retrieved based on the report creation time. It will read historical data as long as the N*Acquisition Cycle time. If you enter "0" at the Collection Time, the data at the report creation time is retrieved and output. That is, when "00:00:00" is the report output reference time, the data of the cell is 00:00:00. In case of "12", the data of 12 minutes before the report output time "00:00:00" is retrieved and output.

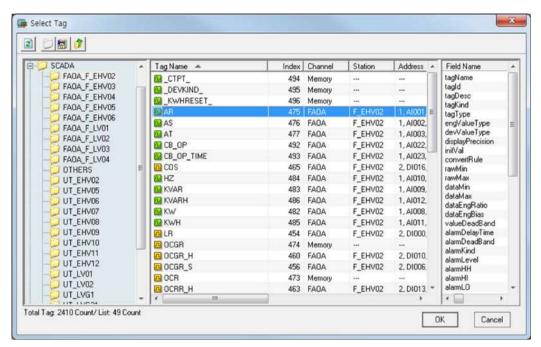
For other settings, you must enter a regular string. Keywords other than numbers are in English only. MM is the month, DD is the day, HH is the hour, and MI is the minute. For numbers, + means absolute time, - means relative time. Zeros are not allowed, and you cannot include negative numbers between numbers. You can enter months from January to December, days from 1-31, hours from 0-23, and minutes from 0-59. The following table contains examples of entries. The reference time is 2014/11/27 10:20:00.

Sample Entry	Description
-1MM25DD	It means 2014/10/25 10:20:00. "-1MM" means relative time minus
	1 month from the reference time. "25DD" means 25 days in
	absolute time.
-1MM-25DD	You cannot enter a negative value in the middle of the string, as in
	this example ("-25").
-1MM0DD	You cannot enter a zero, as in this example.
-1MM25DD30MI	This string means 2014/10/25 10:30:00.
-2MM40MI	This string means 2014/09/27 10:40:00 AM.

When you add Logging Tag to individual tags, the Required Time is not set. Therefore, if you click OK without setting the Required Time, you will be prompted to set the Required Time as below.



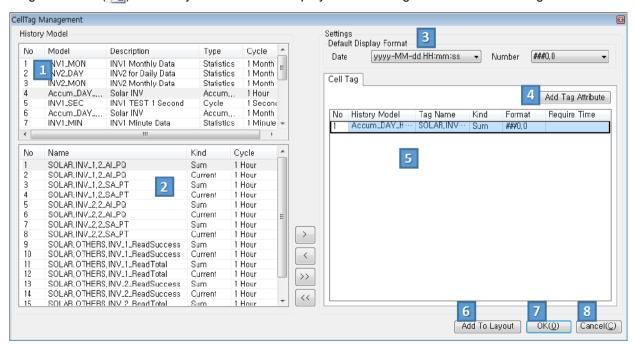
You can add tag attributes, such as Tag Name, Tag Description, Tag Unit and History to individual tags. Clicking Add Tag Attribute in an individual tag displays the following screen.



Select the Tab Name and the Field Name and click OK. The tag attribute is added to the individual tag list in the form of Tag Name and Field Name. If you do not select Field Name, the tagValue field is automatically assigned and saved by default.

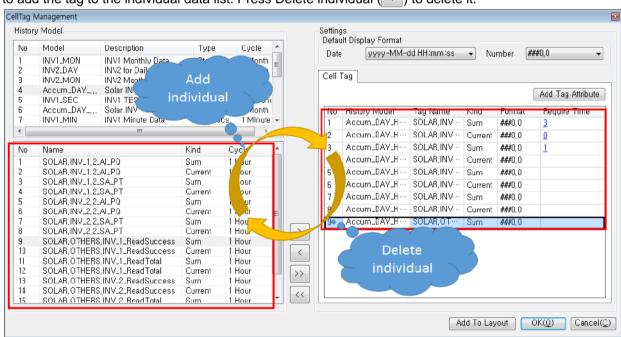
(3) Management of individual data

Unlike continuous data, this is used when you want report tags to appear in a specific location in a report, rather than in a table. The tags correspond to individual tags. You can add tag attributes, such as Tag Name, Tag Description, Tag Unit and History to individual tags. The data is not in a table format, but in the form of a text box. Each tag is mapped to a single box and appears in the Design View. Clicking the individual data management tool (📢) on the layout edit toolbar displays the following individual data management screen.



- 1) Logging Collection Model: All logging group information defined in InfoU is displayed.
- 2) Tag list: The tag list and operation type belonging to the Collection Model are displayed.
- 3) Default Display Format: If the tag to use for the report is a date or numeric type, you can set the default for mat. If you select the tag to use for the report and add it to the individual data, the date and number type t ags are set to the Default Display Format.
- 4) Add Tag Attribute: You can add tag attributes and History to individual tags. If you click Add Tag Attribute, the Tag Selection screen appears and you can add the tag attribute when selecting it.
- 5) Individual data: The History tags and Tag Attribute information to be used for individual tags are displayed.
- 6) Add To Layout: When you select an individual tag to add to the Design View from the individual data list, A dd to Layout button is activated. If you click it, the selected individual tag can be added to the Design View as a text box.
- 7) OK: The selected individual data is saved.
- 8) Cancel: Exits the individual data management screen without saving your changes.

Select the tag you want to add to the individual data from the report tags on the left, and click Add Individual () to add the tag to the individual data list. Press Delete individual () to delete it.



The Required Time setting and the Add Tag Attribute are the same as those of the individual tags in the continuous data setting. Select individual tags to add to the Design View and click Add to Layout to add individual tags to the layout screen. Individual tag contents in Design View that do not match the individual data modified in the individual data management screen are automatically deleted.

(4) Set Output Date

When you click the Set Output Date tool (on the Layout edit toolbar, a text box appears in Design View showing the output date. Select the text box and drag it to any position and the output date will be displayed when the report is generated.

(5) History Data Collection Model

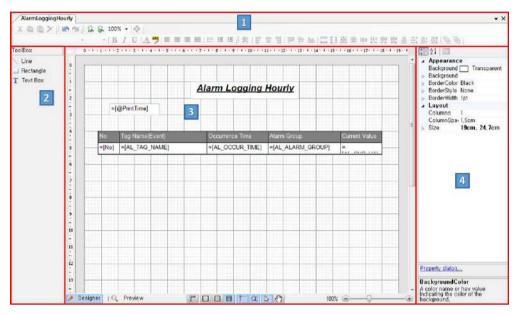
The list of logging groups that are set in the logging management is displayed by color according to the report generation cycle.

- 1) Red: It is a collection model that matches the report generation cycle. In the case of the Daily Report, it will be a data collection model of a one hour Acquisition Cycle.
- 2) Blue: It is a collection model that does not match but is reportable. In the case of Daily Report, it is a collec tion model with an Acquisition Cycle (1 minute, 10 minutes, 30 minutes, etc.) that is smaller than 1 hour and divided by an integer.
- 3) White: It displays collection models that are not applicable to the contiguous tag data area.
- 4) When you select a collection model, the tags list appears at the bottom, and the type of data that can be s elected depends on the nature of the collection model.

Logging group	Analog	Digital	Remark
Fixed cycle	Current value	Current status	Minimum Collection 1 second Mainly used in history trend of fast time period (less than 1 minute)
Statistical value	Current value, minimum value, maximum value, minimum time, maximum time, average value, total value, sampling number	Number of On, operating time, number of changes	Minimum collection: 1 minute The operation cycle of minimum value, maximum value, minimum time, maximum time: 1 minute. Mainly used in reports or trends of over time units.
Integrated value	Change value, sampling number	Not supported	Acquisition Cycle: 1 hour, 1 day, 1 month Saves the data change amount of the time unit when the tag data has accumulated characteristics such as the integrated electric power, flow meter.
Event	Current value	Current status, trigger time	Displays the data value and trigger time when the event occurs.

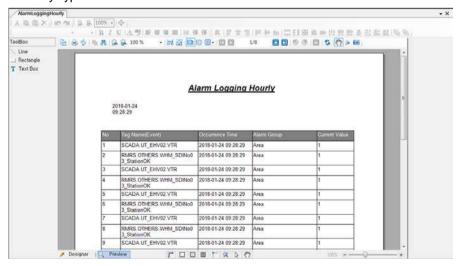
21.2.3 Alarm Logging Report Layout

You can define the Alarm Logging Report Layout by selecting General report as the report type in the Report Property and selecting the Alarm Logging Report as the Report Type. Right-click the report icon and then click the [Report Layout] menu in the pop-up menu that is displayed. The following screen will be displayed and the Report Layout can be edited.

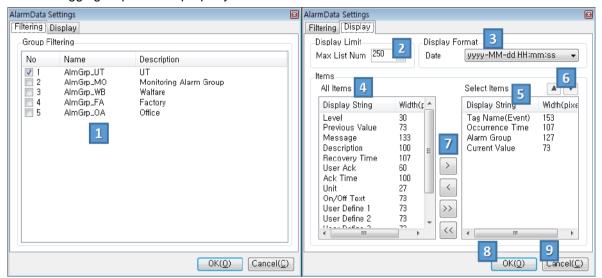


(1) Editor screen

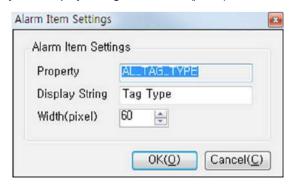
- 1) Layout edit toolbar: When editing Report Layouts, it provides text format, sort, layout zoom in/out, control alig nment and control size/spacing alignment.
- 2) ToolBox: When editing a layout, it provides line, rectangle, and text box functions.
- 3) Design View: This is a screen that you can actually edit various report layouts using Toolbar and Toolbox. With Design View, you can preview the report before it is printed. If you click Preview at the bottom of Design View s creen, the following screen will be displayed and you can preview it before the report is printed. The data in the Preview includes any type of alarm.



- 4) Property window: You can set the properties of tables, lines, rectangles, and text boxes used for layout editin g.
- (2) Alarm Logging Report Table Property Clicking Alarm Data setting tool (===)) on the layout edit toolbar displays the following screen and you can set the Alarm Logging Report table property.



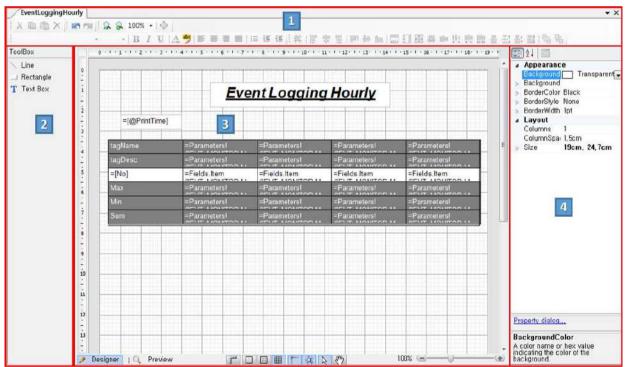
- 1) Alarm Group Filtering: You can select the alarm group to output. When the report is generated, only alarms belonging to the selected alarm group are filtered.
- 2) Max List Num: Enter the maximum number of alarms to output. The number of displayed alarms cannot exc eed the maximum number and reports will be generated in order of oldest alarm first.
- 3) Display Format: If the alarm item to use for the report is a date type, you can set the default format. When the report is generated an alarm item of the date type is created according to the default format.
- 4) All Items: All items available as alarm entries are displayed. If you move to Select Items, the item is not disp
- 5) Select Items: This displays the alarm items in All Items to the report. The item can be selected from All Item s and moved to the selected item. In addition to items, size information and the item length in pixels are als o displayed. Item length is applied when generating the report. Double-click the selected item to display the f ollowing screen. You can modify the Display String and Width (pixels).



- 6) Change of order: You can change the order of selected alarms. When generating the report, alarms are gen erated in the order of selection.
- 7) Add/Delete: Press Add individual (>) to move the selected item from All Items to the selection. Clicking Delet e individual (<) moves the selected alarm item to All Items. Click Add all (>>)to move the selected items from All Items to the selection. Clicking Delete all (<<) moves the selected alarm item to All Items.
- 8) OK: The alarm logging table with the group filtering/display item settings is created and displayed in the layou t. The settings are saved.
- 9) Cancel: Exits the AlarmData Settings window without saving your changes.

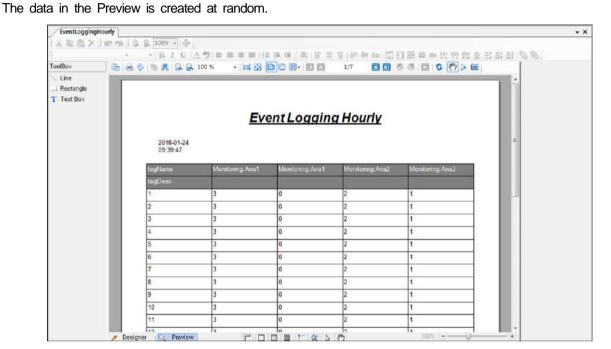
21.2.4 Event Logging Report Layout

You can define the Event Logging Report Layout by selecting General report as the report type in the Report Property and selecting the Event Logging Report as the Report Type. Right-click the report icon and then click the [Report Layout] menu in the pop-up menu that is displayed. The following screen will be displayed and the Report Layout can be edited.



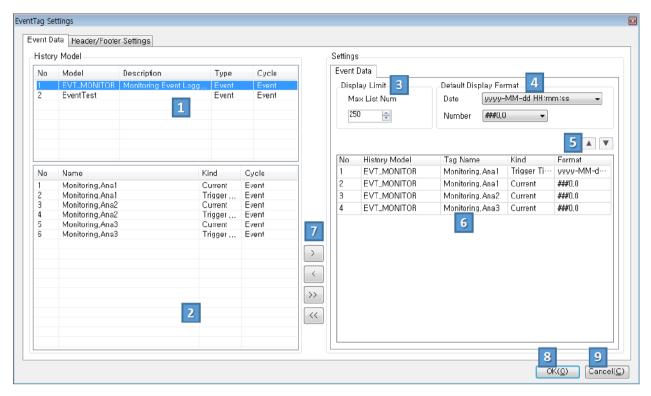
(1) Editor screen

- 1) Layout edit toolbar: When editing Report Layout, it provides text format, sort, layout zoom in/out, control align ment and control size/spacing alignment
- 2) ToolBox: When editing a layout, it provides line, rectangle, and text box functions.
- 3) Design View: This is a screen that you can actually edit various report layouts using Toolbar and Toolbox. With Desi gn View, you can preview the report before it is printed. If you click Preview at the bottom of Design View s creen, the following screen will be displayed and you can preview it before the report is printed.



4) Property window: You can set the properties of tables, lines, rectangles, and text boxes used for layout editin g.

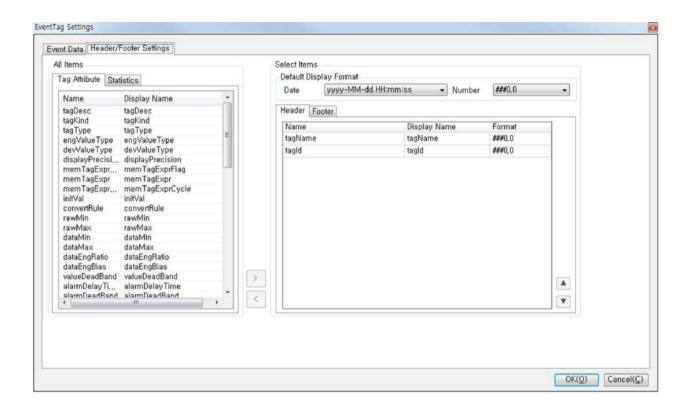
(2) Event Logging Report Table Property Clicking the Event Data setting tool () on the layout edit toolbar displays the following screen and you can set the Event Logging Report table property.



- 1) Event Collection Model: Among the logging groups defined in InfoU, the information of logging group with Event and Event String type is displayed.
- 2) Tag list: The tag list and operation type belonging to the Event Collection Model are displayed.
- 3) Display Limit: Enter the maximum number of events to output, because event logging does not specify the n umber of output data points. The number of displayed events cannot exceed the maximum and reports will b e generated in order of oldest event first.
- 4) Default Display Format: If the tag to use for the report is a date or numeric type, you can set the default for mat. If you select the tag to use for the report from the tag list at the bottom left and add it to the Event D ata, the date and number type tags are set to the Default Display Format.
- 5) Change of order: You can change the selected tags' order. When you generate a report, an event report is generated in the order of the selected tags.
- 6) Event Data: This registers and uses event tags to display in the report.
- 7) Add/Delete: If you click Add Individual (>), the tags selected from the tag list are added to the Event Data list. When clicking Delete Individual (<), the tags selected from the Event Data list are deleted. If you click Add all (>>), all tags selected from the tag list are added to the Event Data list. When clicking Delete all (<), all tags selected from the Event Data list are deleted.
- 8) OK: The event logging table is created using the report tag selected in the logging group and displayed in the layout. The changes are saved.
- 9) Cancel: Exits the EventTag Settings window without saving your changes.

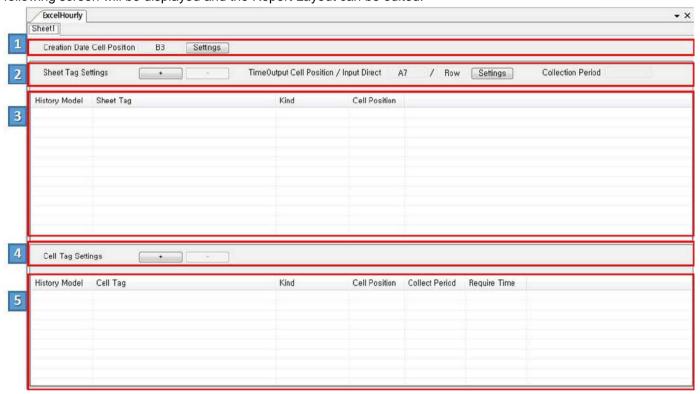
The Header/Footer Settings are the same as those in the continuous data setting screen. However, there is no individual tag setting function.

Chapter 21 New Report



21.2.5 Excel Report Layout

You can define the Tag Logging Report Layout by selecting Excel report as the report type in Report Property. Right-click the report icon and then click the Edit-Report Layout menu in the pop-up menu that is displayed. The following screen will be displayed and the Report Layout can be edited.



(1) Sheet Information

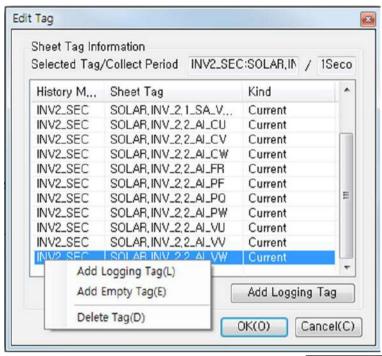
- 1) It is displayed in the Excel layout based on the template sheet set in Report Property.
- 2) Creation Date Cell Position: Click Settings (Settings) to apply the creation date to an Excel sheet.



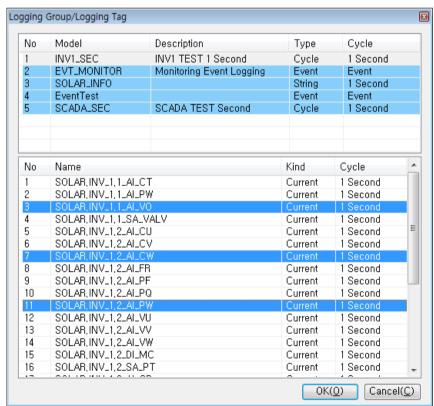
(2) Continuous data setting

An indication is displayed for continuous data setting.

- 1) Continuous data setting: This is used to edit and delete tags of continuous data.
 - Click "+" ()to edit the tag and "-" ()to delete the tag.
 - a. ____: The Edit Tag form appears.



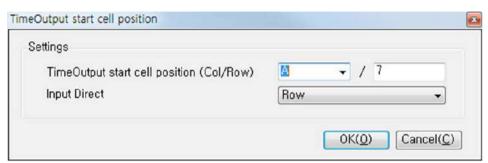
To add tags, right-click the list window and then click "Add Logging Tag" (로리테그 추가) in the pop-up menu.



If you select more than one tag to add and click OK, the tags selected in the Edit Tag form are displayed.

: It deletes tags from Edit Tag form.

Select one or more tags to be deleted and press " " to delete the tag. 2) TimeOut Cell Position/Input Direct: Click Settings (Settings) to apply the time out cell position and continu ous input direction.



- 3) Collection Period: At least one tag must be registered before the collection cycle is displayed.
- (3) Continuous data list window

This displays tags registered in continuous data.

1) The tag list registered in continuous data is displayed. Edit Tag and Delete Tag options are also provided w hen you right-click the list.

History Model	Sheet Tag	Kind	Cell Position
INV2_SEC	SOLAR, INV_2, 1_AI_CT	Current	B7
INV2_SEC	SOLAR, INV_2, 1_AI_PW	Current	C7
INV2_SEC	SOLAR, INV_2, 1_AI_VO	Current	D7
INV2_SEC	SOLAR, INV_2, 1_SA_VALV	Current	E7
INV2_SEC	SOLAR, INV_2, 2_AI_CU	Current	F7
INV2_SEC	SOLAR, INV_2, 2_AI_CV	Current	G7
INV2_SEC	SOLAR, INV_2, 2_AI_CW	star o	H7
INV2_SEC	SOLAR, INV_2, 2_AI_FR	Edit Tag(<u>E</u>)	17
INV2_SEC	SOLAR, INV_2, 2_AI_PF	Delete Tag(D)	J7

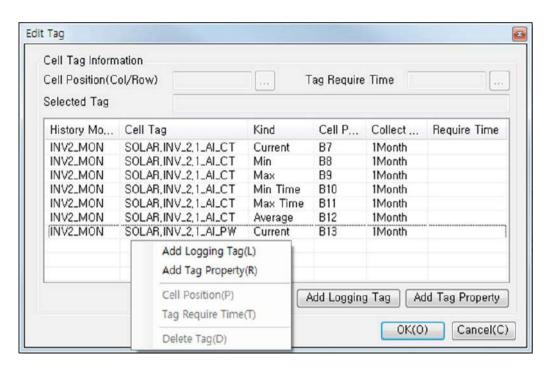
(4) Individual data settings

An indication is displayed for individual data setting.

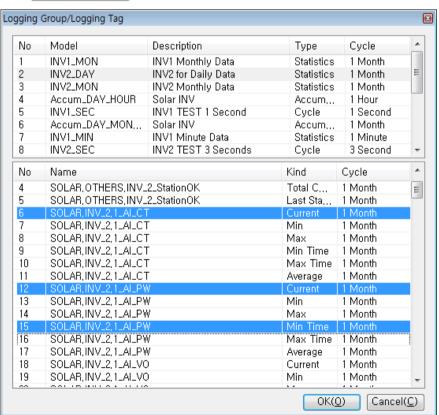
1) Individual data settings: This is used to edit and delete tags of individual data.

Click "+" () to edit the tag and the "-" () button to delete the tag.

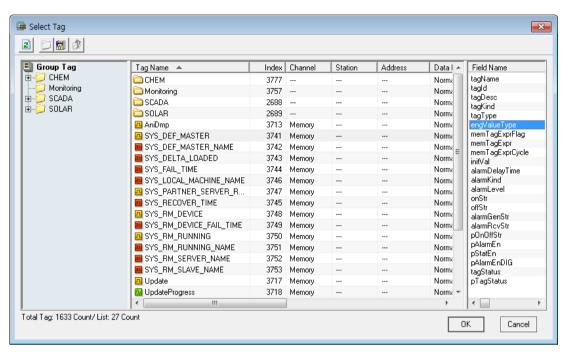
a. ____: The Edit Tag form appears.



To add or modify tags, right-click the list window and then click Add Logging Tag (Add Logging Tag) or Add Tag Property (Add Tag Property).



If you select more than one tag to add and click OK, the tags selected in the Edit Tag form are displayed.

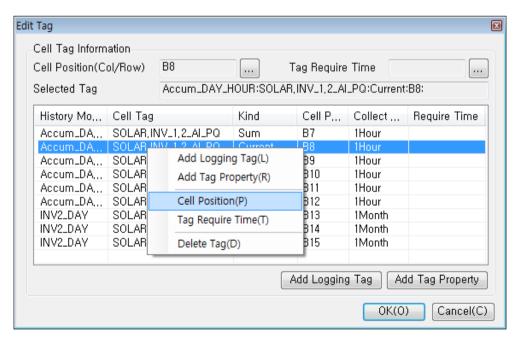


If you select one tag to add and click OK, the tags selected in the Edit Tag form are displayed.

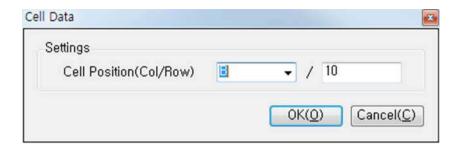
b. It deletes tags from Edit Tag form.

Select one or more tags to be deleted and click "___ " to delete the tag.

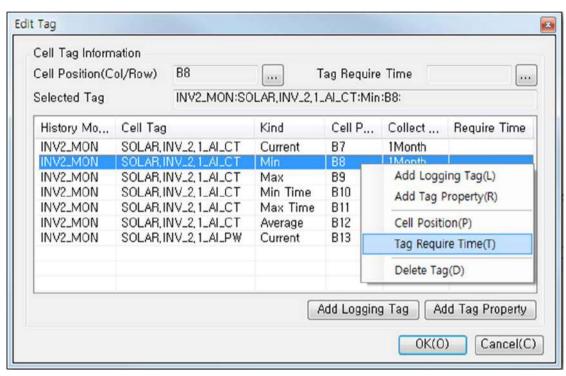
c. Cell Position (....): You can set cell position of a registered tag in the Edit Tag form.



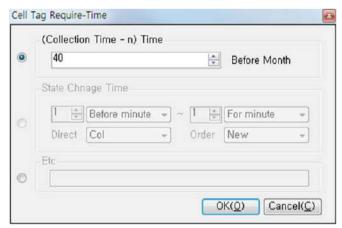
Select a registered tag and click Cell Position (....).



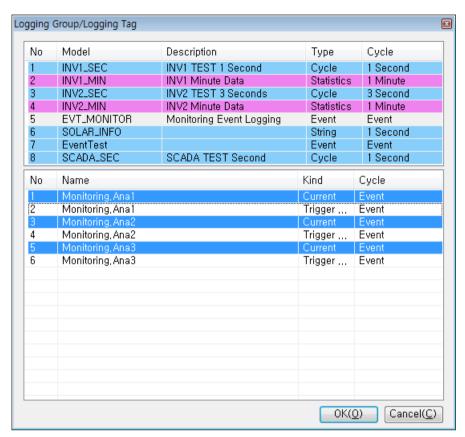
d. Tag Require Time (): This sets the required time for registered tags in the Edit Tag form.



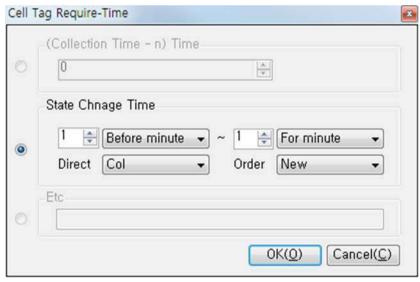
Select a registered tag and click Tag Require Time (...).



(Collection time-n) Time and others: Please refer to "(4) Individual Data Setting in 20.2.2 Tag Logging Report Layout".



State Change Time: When registering tags to individual data, only tags that have the collection mode registered as "Event" can be set.



The event time displays the tag's trigger occurrence time as defined in the event logging group to the cell.

If more than one is displayed, it starts from the specified cell position and displays Col (horizontal) and Row (vertical) directions sequentially.

The sort order setting is as follows: New: Recent occurrence first, Old: Last occurrence first, FromTo: [On time -Off time].

If the report creation time is 00:00, when selecting [1 day ago] or [1 day], the event occurrence data

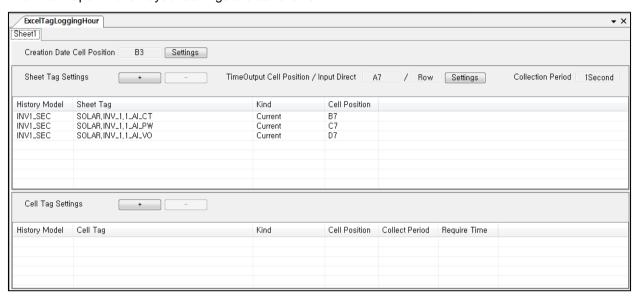
between the previous day 00 hour - and the current day 00 hour is displayed.

If the report creation time is 00 hour, when selecting [3 hours ago] or [1 hour], the event occurrence data between the previous day 21 hours - and the current day 00 hour is displayed.

When you have finished editing an Excel report, the runtime report's manual and automatic outputs are displayed as follows.

e. Excel report final output

The final Report Editor layout settings are as follows.



The output of the layout set is as follows.(Continuous data output screen)

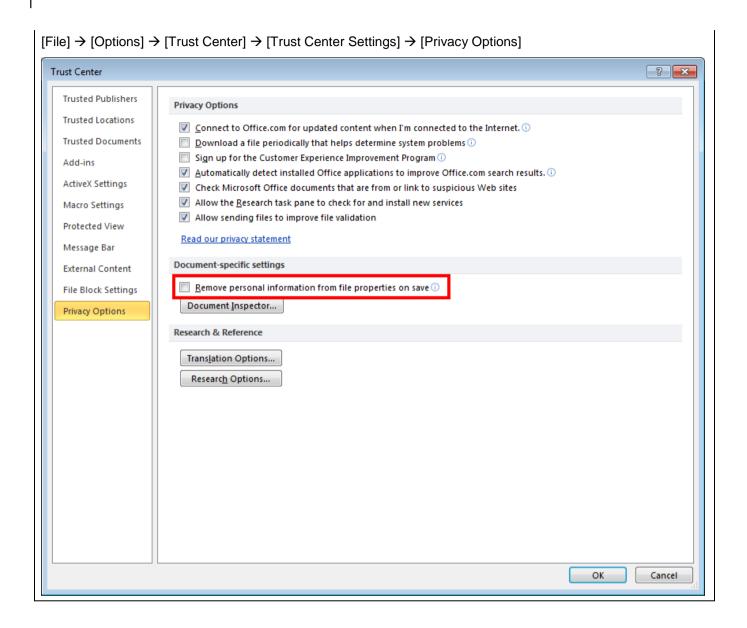
4	Α	В	С	D	Е
1			Tag Logging Report		
2					
3		2018-01-23 11:00:00			
4					
5					
6		SOLAR.INV_1.1_AI_CT	SOLAR.INV_1.1_AI_PW	SOLAR.INV_1.1_AI_VO	
7	00:00	0	8.9	0	
8	01:00	0	5.6	0	
9	02:00	0	7.4	0	
10	03:00	0	2.9	0	
11	04:00	0	2	0	
12	05:00	0	8.1	0	
13	06:00	0	9.2	0	
14	07:00	0	3.9	0	
15	08:00	0	2.8	0	
16	09:00	0	4.5	0	
17	10:00	0	1.3	0	
18	11:00	0	7.7	0	
19	12:00	0	6.2	0	

Remarks

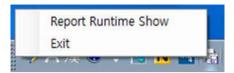
If the 'Document-specific-settings' is checked in the property of the 'Form file' used for 'Excel report', Excel report will not be generated.

Please uncheck the setting as shown in the following figure.

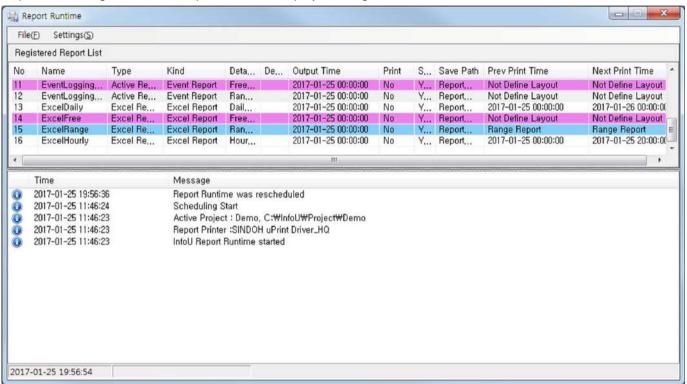




21.3 Report Runtime



When you select [Report Runtime Show] from the pop-up menu of the report runtime tray icon, the Report Runtime screen shown below is displayed. This screen displays all defined report information and logs the process that the Report Runtime generates the report and also displays the log information.



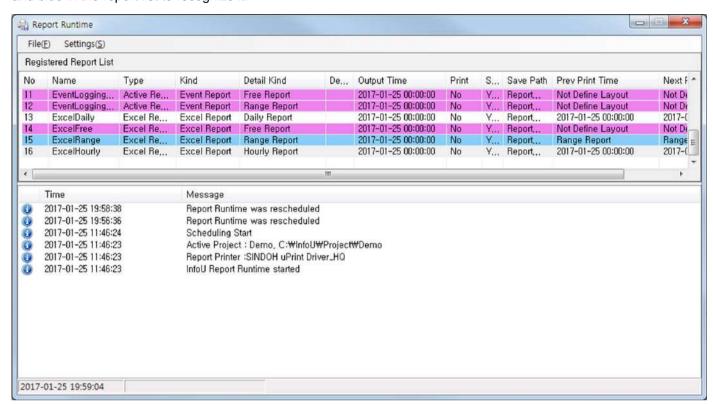
21.3.1 Registered Reports List

It displays a list of registered reports through the Report Editor. General reports and Excel reports can be distinguished by Type. If the report detail type is Range Report, it is displayed in blue and is excluded from automatic generation, as the reports can be generated only through manual generation or scripting. Reports with report properties set, but without a layout, is shown in red and excluded from automatic generation.

The following actions can be applied to the Registered Reports List:

- Calls the Report Editor to edit Report Layout.
- Calls the report view to view the report that has already been created.
- Calls the Create Report Manually screen, where you can generate a report for the time that you want to view the report.

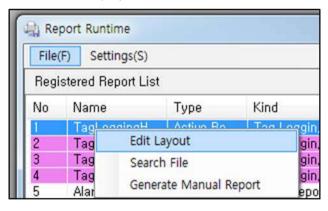
For registered reports, a report without a defined layout cannot be generated. Also, reports that are set to Range Report will not be generated automatically. Range reports can be generated by manual report generation or by entering a period of time via a graphical script. If the layout is undefined or for Range reports, you can see it in red



and blue in the report list to recognize it.

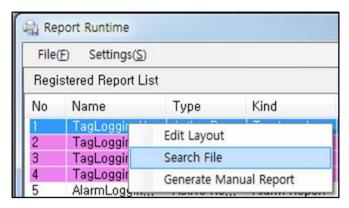
21.3.2 Edit Layout

Right-click the report list and select [Edit Layout] from the pop-up menu. The selected report can be opened in the Report Editor and the Edit Layout screen is displayed.

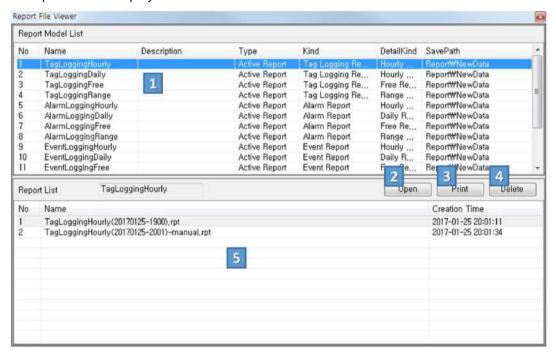


21.3.3 Search File

In addition to viewing the currently saved reports, you can open, print, and delete reports. Right-click the report list and select [Search File] from the pop-up menu. The generated report view screen and the list of generated reports of the selected report type are displayed.



The generated report view is displayed as below.



(1) Report Model List

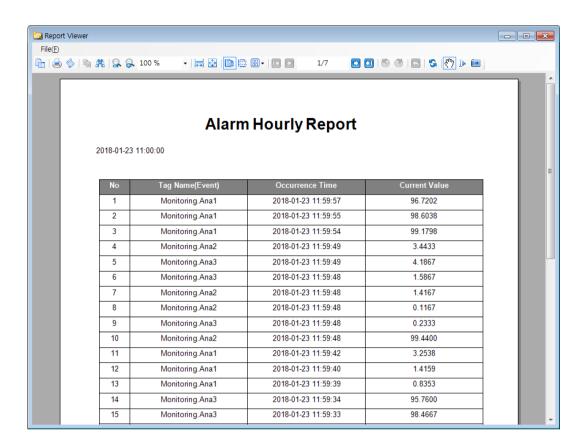
All edited report models are displayed through the Report Editor. When you select a report, the generated reports of the selected report type appear in the Generated Reports List at the bottom.

(2) Open Report

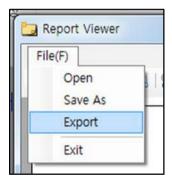
After selecting a report from the Generated Reports List, click [Open] to run the report viewer run and display the selected report. The Report Viewer displays General reports and MS Excel displays Excel reports. Reports in PDF, DOC, or TXT format are displayed by their corresponding applications. If you do not have Excel or the appropriate application installed, you will not be able to open the report. You should check if the application is installed.

1) General Report Viewer

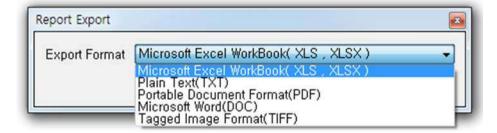
If the report type is set to General, the report will be generated with an RPT extension. When you open the RPT Report, the following screen is displayed.



The General Report Viewer generates reports in PDF, XLS, DOC, TXT, or TIFF format via the [Export] menu, in addition to the normal report output.



When you click [Export], the following screen is displayed for generating reports in the desired format.



2) Excel Report Viewer

Excel reports generate reports using Excel forms. When you click Open Excel, the report is generatied and MS Excel displays it.

(3) Print Report

Select a report from the Generated Reports List and click [Print] to print the report. Only reports in RPT format and Excel reports can be printed from this application. You can print reports in PDF, DOC, or TXT format with the corresponding applications.

(4) Delete Report

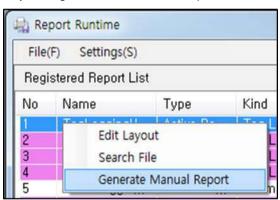
Select a report from the Generated Reports List and click [Delete] to delete the report. The deleted report contents are also output to the log.

(5) Generated Report List

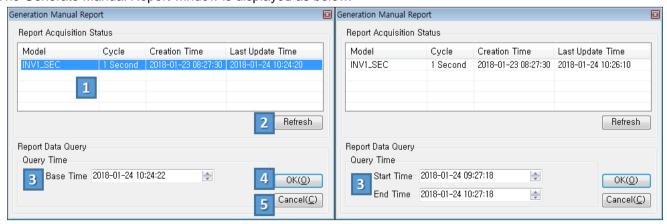
Whe you select the report model list at the top of the screen, the generated report of the selected report type appears in the Generated Reports List at the bottom.

21.3.4 Manual Generation

Right-click the report list and then select [Manual generation] from the pop-up menu. This displays the Generate Manual Report screen, which allows you to generate the desired report at the desired time.



The Generate Manual Report window is displayed as below.



(1) Report Acquisition Status

The status of the history data collection model set in the current report is displayed as a list. The description of each column is as follows.

- 1) Model: Data Collection Model Name
- 2) Cycle: The data acquisition cycle for this model
- 3) Creation Time: The time the data was originated
- 4) Last Update Time: The most recent time the data was saved

For Alarm Reports, the list is not displayed.

(2) Refresh

This updates the list with the latest information.

(3) Request time selection (Query Time):

This allows you to select a date range. Set the Base Time for Periodic Reports (Hourly, Daily, Weekly, Monthly, or Yearly Reports) and set the Start Time and End Time for Range Reports.

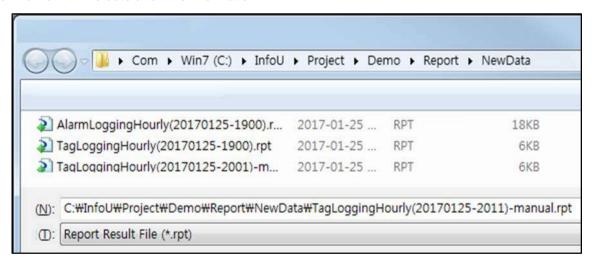
(4) OK

Output the number of data points in the request time zone to generate the report. The Manual Report Generation window closes and the generated report is displayed from the Report Viewer.

(5) Cancel

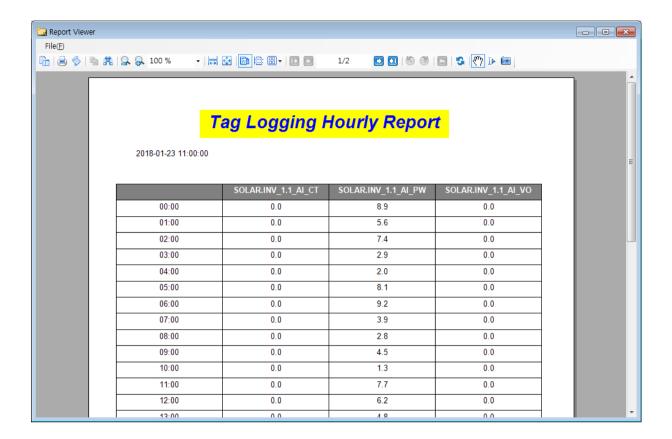
This exits the Manual Report Generation screen.

Enter the request time for the Manual Report Generation, and click OK. Manual report names include "manual" in the report name with the date and time information.



After you enter the report name, click Save button to save the report and run the Report Viewer to view the contents of the generated report.

Chapter 21 New Report



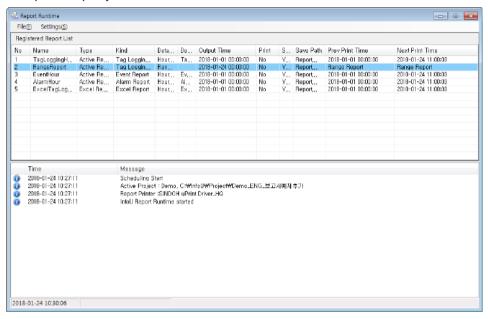
21.3.5 Auto Report Generation

The report runtime queries the reports list to check the report creation time. At the time of report generation, it refers to the report configuration, report layout, and related history data to create, save, and print the report.

When you select the [Update Auto Output Information] menu in the Report Editor, the report runtime reflects your changes.

The Auto Report Generation process is recorded in the log section at the bottom of the report runtime, and can be viewed later.

When generating a report, reports in PDF, XLS, DOC, or TXT format are also generated, depending on the output format specified in Report Property.



21.3.6 Script API support

The following APIs are available through InfoGU script editor or a script editor.

Features	Contents	
ShowReportListDlg	Shows Report list window.	
RefreshReportListDlg	Reorganizes Report list items.	
ShowReportScheduler	Shows Report schedule window.	
Dlg		
HideReportSchedulerD	Hides Report schedule window.	
lg		
MakeReportStd	Creates a report. [base time]	
	If base time is NULL, Report Base Time is used.	
	Param: char * szReportName, time BaseTime	
MakeReportRange	Creates a report. [from - to]	
	Param: char * szReportName, time From, time To	

The following figure shows an example using the script API through InfoUG's script editor.



Chapter 22 Utility

22.1 Unit

A function to set up unit for tag analog values such as length, width, current or voltage

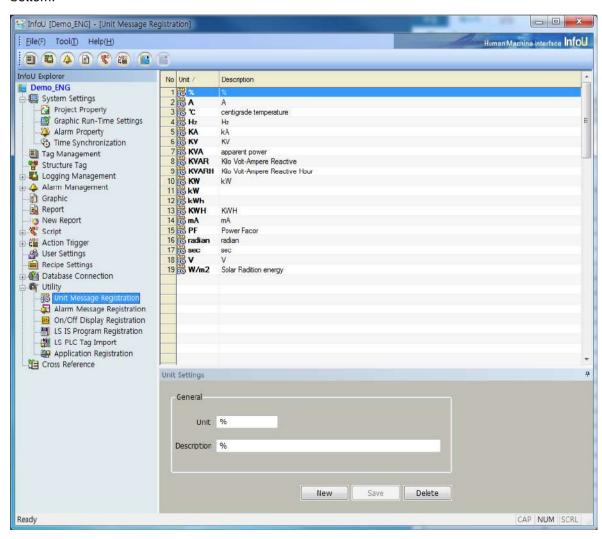
(1) Start

Select'Unit Message Registration'in the menu or the InfoU explorer.





A list of the registered units is displayed as seen in the figure below and the setting screen is shown on the bottom.



Chapter 22 Utility

(2) Settings

- 1) Unit
 - •Input a unit. If any existing unit is selected and changed, the changed unit is automatically added as a new unit.
 - •Up to 63 Korean letters and 126 Alphabet letters can be inputted and this item is one of essential information to be inputted.
- 2) Description
 - •Up to 127 Korean letters and 254 Alphabet letters can be inputted for this item and this item is allowed to be omitted.
 - •Briefly explain on the inputted unit.
- 3) New
 - •If this button is selected, [Unit] and [Descirption] are initialized to allow the user to input a new unit.
- 4) Save
 - •If [Save] button is selected, the inputted unit is saved and it is shown on the notice window.
- 5) Delete
 - •Select [Delete] button to delete the selected unit display it on the notice window.
 - •It is also available to select multiple items in the list and delete them at once.

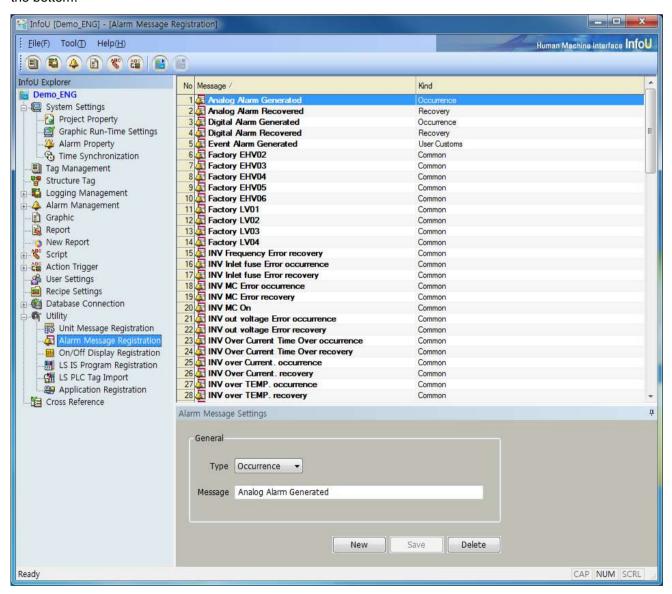
22.2 Alarm Message Registration

A function to register a string to be displayed in case of the occurrence or recovery of alarm

Start
 Select 'Alarm Message Registration' in the menu or the InfoU explorer.



A list of the registered alarm messages is displayed as seen in the figure below and the setting screen is shown on the bottom.



Chapter 22 Utility

(2) Settings

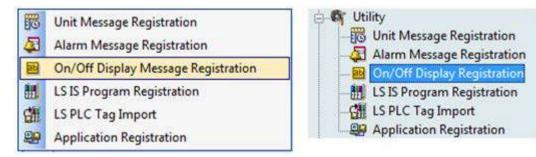
- 1) Type
 - •Select a type of the occurred alarm.
 - Four types such as [Common], [Occurrence], [Cancellation] and [User Customs] are available and this information is mandatory.
- 2) Message
 - •Input a string to be displayed in case of the occurrence of alarm.
 - •Up to 63 Korean letters and 126 Alphabet letters can be inputted and it is one of essential information to be inputted.
- 3) New
 - •The existing [Message] is initialized to allow the user to input a new message.
- 4) Save
 - •If [Save] button is selected, the inputted message is saved and it is shown on the notice window.
- 5) Delete
 - •Select [Delete] button to delete the selected item display it on the notice window.
 - •It is also available to select multiple items in the list and delete them at once.

22.3 On/Off Display Message Registration

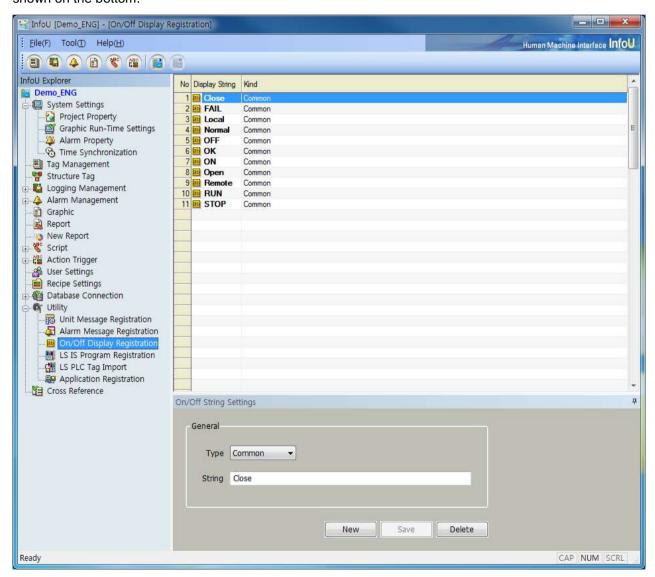
A function to set up a string to be displayed regarding to On/Off of the tag digital value.

(1) Start

Select 'On/Off Display Message Registration' in the menu or the InfoU explorer.



A list of the registered On/Off messages is displayed as seen in the figure below and the setting screen is shown on the bottom.



Chapter 22 Utility

(2) Settings

- 1) Type
 - •Three types such as [Common], [On (1)] and [Off (0)] are available and this information is mandatory
 - •Up to 63 Korean letters and 126 Alphabet letters can be inputted and it is one of essential information to be inputted.
- 2) String
 - •Input a string to be displayed.
 - •Up to 63 Korean letters and 126 Alphabet letters can be inputted and it is one of essential information to be inputted.
- 3) New
 - •The existing [String] is initialized to allow the user to input a new one.
- 4) Save
 - •Select [Save] button to save the inputted On/Off string and display it on the notice window.
- 5) Delete
 - •Select [Delete] button to delete the selected item display it on the notice window.
 - •It is also available to select multiple items in the list and delete them at once.

22.4 LS ELECTRIC Program Registration

A function to register GLOFA-GM programs such as GMWIN.exe, PLC products of LS ELECTRIC System, in the InfoUD to execute GMWIN programs and also to import information on the point engineered by GMWIN.exe in form of tag information

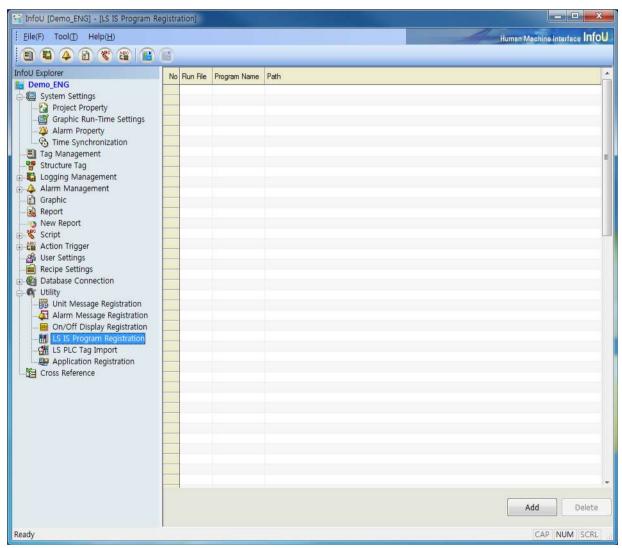
(1) Start

Select 'LS IS Program Registration' in the menu or the InfoU explorer.





A screen as seen in the figure below is displayed and [Add] and [Delete] button appear on the bottom.

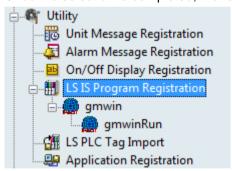


Chapter 22 Utility

- (2) Add
 - 1) Select [Add] button to display the [Open] dialog box. Select GMWIN.exe-LS PLC program-on the [Open] dialog box.



2) Once the selection is completed, the following menu is created on the InfoU Explorer.



3) Run

If [GMWIN Run], one of registered programs, is selected on the [InfoU Explorer], GMWIN.exe Program is run.

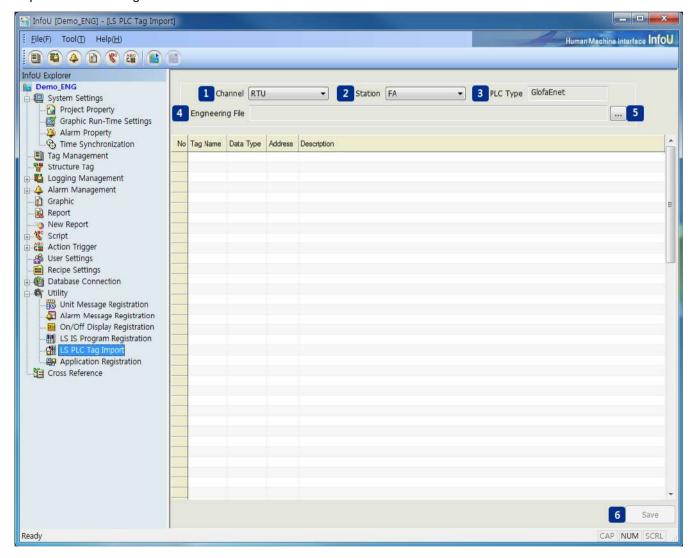
22.5 LS PLC Tag Import

(1) Start

Select 'LSPLC Tag Import' in the menu and tool explorer and then, run it.

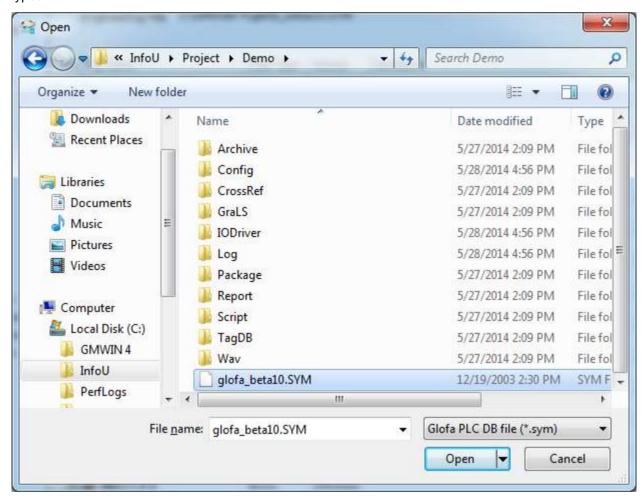


(2) Import a LS PLC Tag

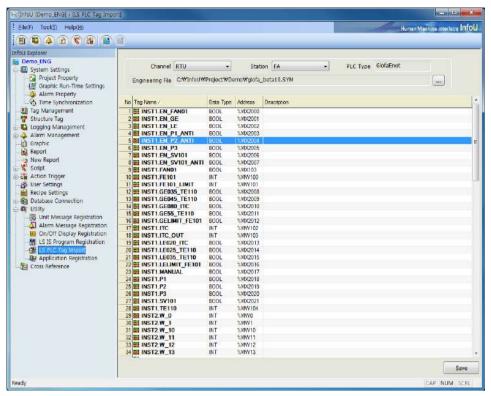


If [LS PLC Tag Import] is selected on the InfoU Explorer, menu bar or tool bar, the screen above is displayed.

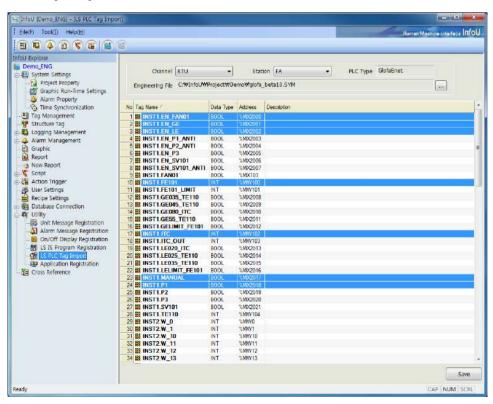
- 1) GLOFA, XGK or XGI communication channels registered in the current project are displayed (GLOFA-Enet/Cnet/Loader, XGK-Enet/Cnet, XGI-ENet/CNet).
- 2) If a communication channel is selected, a list of the stations registered in the relevant channel is displayed.
- 3) The PLC type of the currently selected communication channel is displayed.
- 4) The path of the PLC engineering file to be imported is is displayed.
- 5) A PLC engineering file can be slected.
- 6) For GMWIN files, a *.sym file, for XG5000 engineering files, a *.csv file can be slected according to their types.



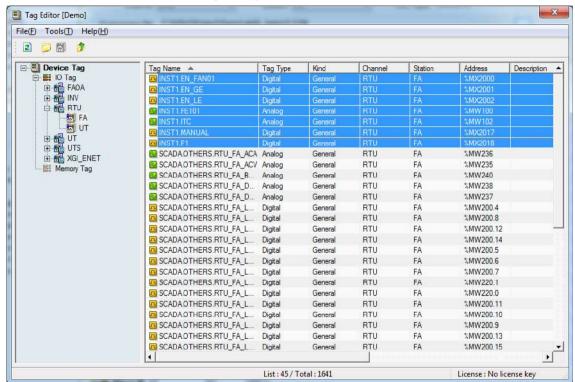
- a. Select an engineering file of the relevant PLC project.
- b. Click on [Open] to display the tag list below on the screen.



- 7) Save a PLC Tag
 - a. Select [IO Device] and [Device Name] to save.
 - b. Select the LS PLC Application through mouse drag or Ctrl + LClick, Shift + LClick, Grid RowColumn Header (Select All).
 - c. Click on [Save] button.



- If you select the menu, [Tag Management] you can check the tag list belonging to the IO Device/equipment selected during storage



- The program name created during the PLC engineering operation is inputted as a tag group and variables are inputted as individual tags.

Data types are saved according to PLC data types as follows:

PLC Type	Tag Type	Device Type	
tBOOL	BOOL	BOOL	
tBYTE	UINT8	UINT8	
tWORD	UINT16	UINT16	
tDWORD	UINT32	UINT32	
tLWORD	DOUBLE	UINT64	
SINT	INT8	INT8	
tINT	INT16	INT16	
DINT	INT32	INT32	
LINT	DOUBLE	INT64	
USINT	UINT8	UINT8	
tUINT	UINT16	UINT16	
UDINT	UINT32	UINT32	
ULINT	DOUBLE	UINT64	
REAL	FLOAT	FLOAT	
LREAL	DOUBLE	DOUBLE	
TIME	UINT32	UINT32	
tDATE	UINT16	UINT16	
TIME_OF_DAY	UINT32	UINT32	
DATE_AND_TIME	DOUBLE	UINT64	
PLC_STRING	STRING	STRING	
BIT	BOOL	BOOL	
NIBBLE	UINT8	BIT4	
DIRECT_TYPE			
ENUM_TYPE			
ENUM_MEMBER			
ARRAY_TYPE			
ARRAY_MEMBER			
STRUCTURE_TYPE			
STRUCTURE_MEMBER	Not supported		
FB_NAME			
LABEL_TYPE			
VAR_ARRAY_MEM			
FB_OUTPUT			
NOTYPE			
VAR_TYPE_NUM			

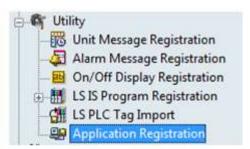
22.6 Application Registration

A function to register other programs of the computer in which InfoUD is installed in InfoUD to run external programs.

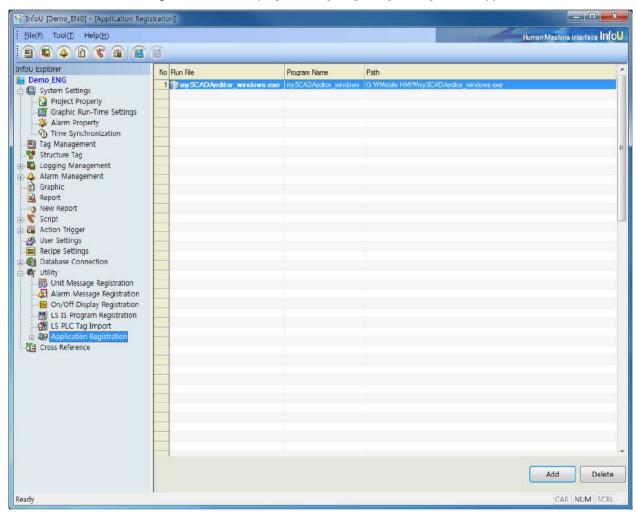
(1) Start

Select and run 'LS IS Program Registration' in the menu or the InfoU explorer.



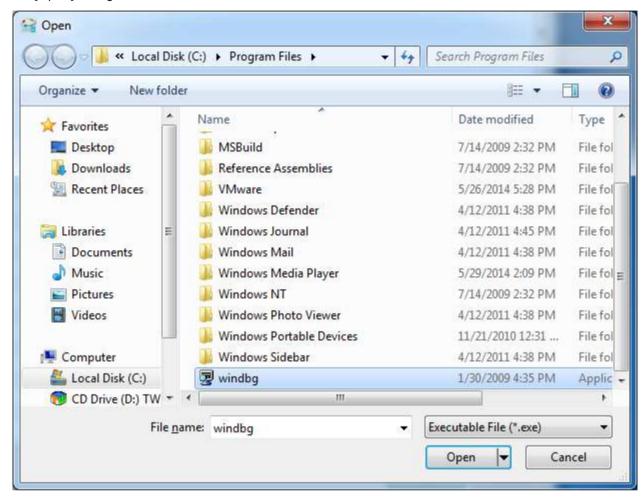


A screen as seen in the figure below is displayed and [Add] and [Delete] button appear on the bottom.

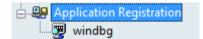


(2) Add

1) Select [Add] button to display the [Open] dialog box and select *.exe of the program to be registered on the [Open] dialog box.



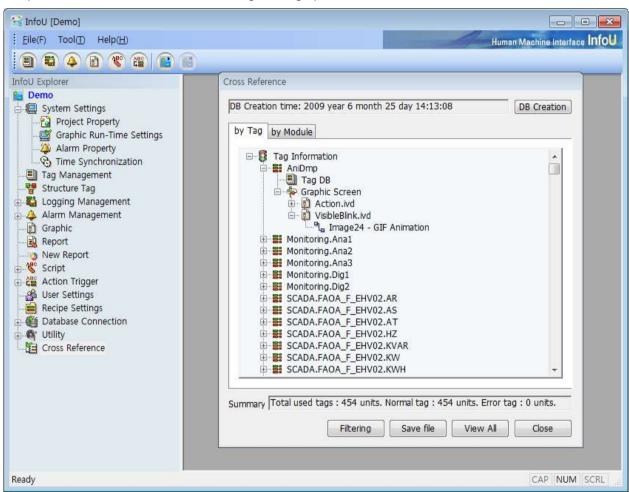
2) The list above is displayed and the relevant program is registered as an icon in the Application Registration menu of the InfoU Explorer.



- 3) Run: Click on the icon to run the relevant program.
- (3) Delete
 - 1) Select a program to delete and select [Delete] button to display the dialog box
 - 2) Once deleting is completed, the 'Delete Notice' window appears and the sub item that used to be displayed on the [InfoU Explorer] is also deleted.

Chapter 23 Cross Reference

The correlation of the registered tags such as graphic file, history settings (collection model), alarm group and report can be inquired on one screen. Especially, it has a function to detect any wrong use of deleted tags so that it is possible to conduct more effective engineering operations and in addition.

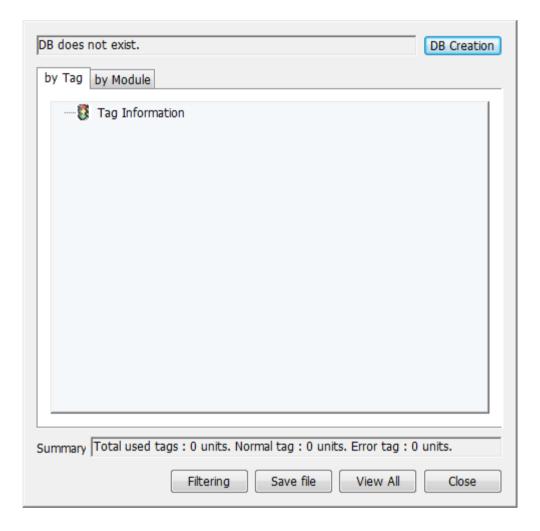


23.1 Function and Property

Functions	Descriptions		
Tag Use Trace	It is possible to inquire information on the modules used for each tag at one place		
	and the use details of each tag can be traced conveniently.		
Filtering	Through filtering by tag, the correlation can be inquired only among the desired		
	tags.		
File Save	The inquired contents are saved in CSV files to make it possible to edit and output		
	in various types of documents.		
Inquiry Function by tag or by	ction by tag or by Two types of correlation inquiry screens are presented, one is to compile the used		
module	modules by tag and the other is to compile the used tags by module.		
Jump	This jump function, which enables to skip to the graphic editor.		

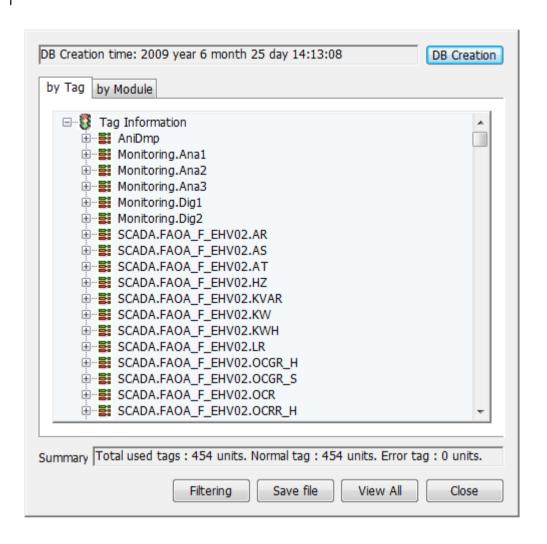
23.2 Cross Reference DB Creation

In order to use the cross reference, you need to create the DB manually after completing all engineering works. After engineering works, if you run the cross reference, the blank screen will show up as below.



To create the cross reference DB, click the [DB Creation] button.

The cross reference module retrieves the engineering data and creates the cross reference DB. The cross reference DB is the self-DB collecting correlations between modules and tags. In addition, afterward, if you perform InfoU engineering works such as addition and edition of tags and graphic pages, etc., the details will not be automatically applied to the cross reference DB so you should create the database manually.



The screen of the cross reference is composed of the following items.

Items	Descriptions		
	It indicates the time that the cross reference DB is created.		
DB creation time	You can determine whether the cross reference DB is up to date or whether it needs to be		
	created by comparing the creation time after engineering works.		
DB creation	It is the button to create the cross reference DB.		
By tag	It is the tab to retrieve the created data by tag.		
By module	It is the tab to retrieve the created data by module.		
Cummon	It shows the summarized information of the created data.		
Summary	You can correct the wrong engineering tasks by checking the normal and error tags.		
Filtering	It retrieves the cross reference DB by tag.		
Save File	It saves the retrieved details to the CSV file.		
View All	It is used to move to the 'View All' screen after filtering.		
Close	It closes the cross reference screen.		

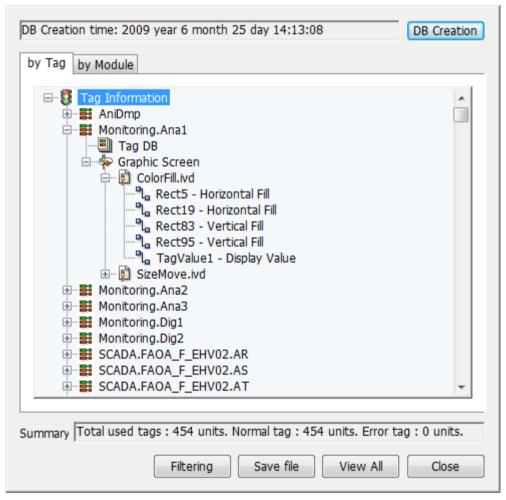
23.3 Engineering Function

You can perform the below functions using the created cross reference DB.

23.3.1 Search by Tag

The 'Search by tag' is the basic screen of the cross reference, which displays the tags used during engineering based on the tag name.

If you expand each tag, you can see which module is using the tag.



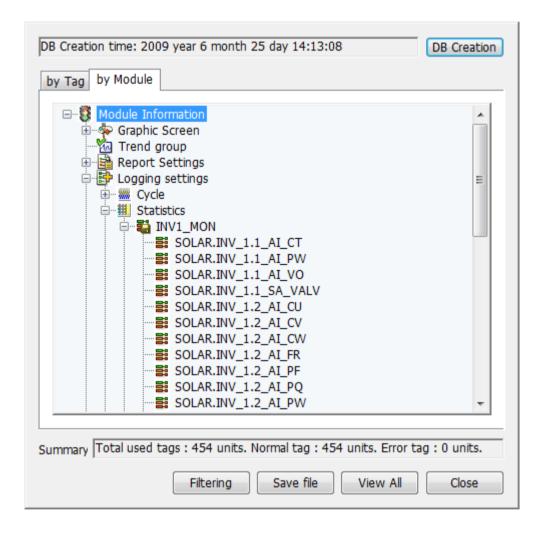
23.3.2 Search by Module

The function develops graphic screen, trend group, report settings, logging settings, tag used for the module of the alarm group based on the module.

If you expand each module, you will see which module is using the tag. ('Trend Group' is not currently used, it is the spare item specified for further expanding function).

The development order from each module to tags is as below.

Module	Development	
Graphic screen	Graphic page file(*.ivd) → object → tag and dynamic properties	
Report Settings	Report name → Sheet name → vale and tag types	
Logging Settings	Logging group types → logging group name → tag	
Alarm Group	Alarm group name → tag	



23.3.3 Filtering

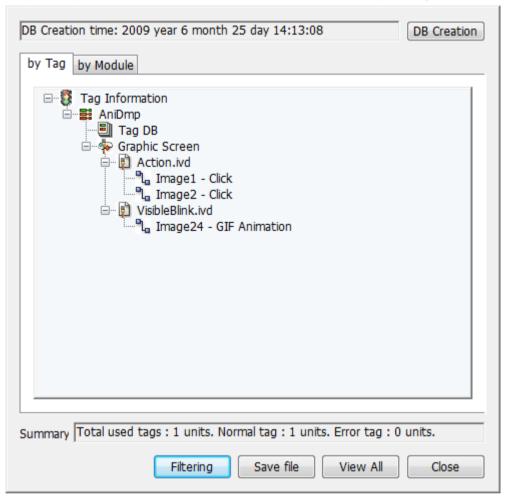
It is the function to search the cross reference DB by tag name.

If you click the [Filtering] button, the below screen where you can enter the tag name will show up.



Chapter 23 Cross Reference

A user can enter the tag name directly or select the tag by clicking the tag browser button[...]. Then, if you execute the [Search] function, the cross reference DB will be retrieved by the tag name and the result will be displayed.



In order to return to the previous full screen, click the [View All] button.

23.3.4 Error Tag Search

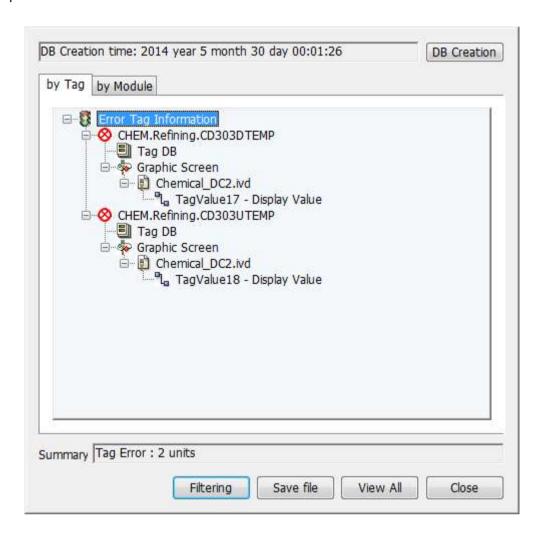
The cross reference provides the function to detect wrongly linked tags.

For error tag search, click the [Filtering] → [Error Tag Information] button.

Error tags may be generated due to the following causes.

- In case non-existent tag is registered during engineering.
- In case the used tags are deleted after engineering works such as graphics, report, etc.

The below figure shows there is an error with the CHEM.Refining.CD303DTEMP tag. This tag is misused in the "Chemical_DC2.ivd" graphic page file and the figure shows non-exist tag is applied in the TagValue17 object of the file of the relevant page.



23.3.5 Jump Function

If you double-click the item on the cross reference window, you can move to the relevant module through the Jump Function. The Jump Function is provided for the graphic screen only. If you click the object in the tree of the cross reference window, the page will be opened and the focus will move to the relevant object.

Drawing the graphic page is composed of drawing each object, mapping dynamic properties into each object. After graphic page works are done, each tag mapping is linked within the graphic object and it is not visible to a user directly.

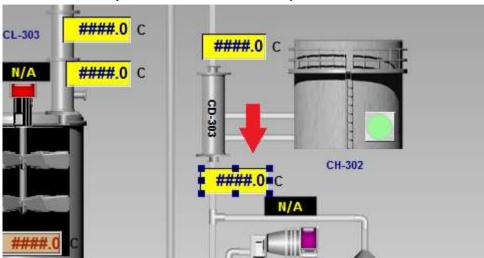
In many case, there are from tens of tags to thousands of tags mapped in one graphic page. If there is no cross reference function, you need to open each object one by one and check the tag manually. Through the Jump Function of the cross reference, you can perform such tasks more effectively.

This section describes the process from error tag search to finding the graphic object.

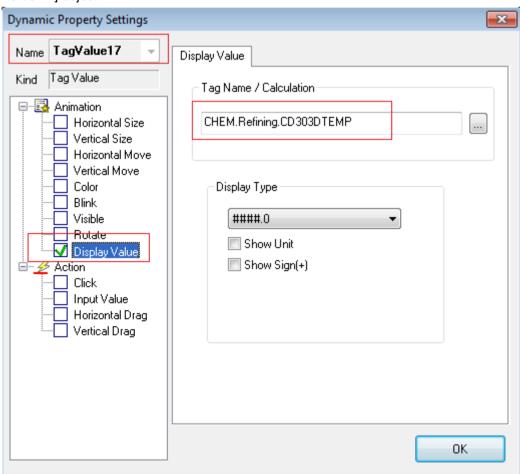
Chapter 23 Cross Reference

If you double-click "Line32 – Color" in the previous error tag information screen, the graphic page screen will be open with the situation that the Line32 object is selected.

The area marked by a red arrow indicates the object is selected.



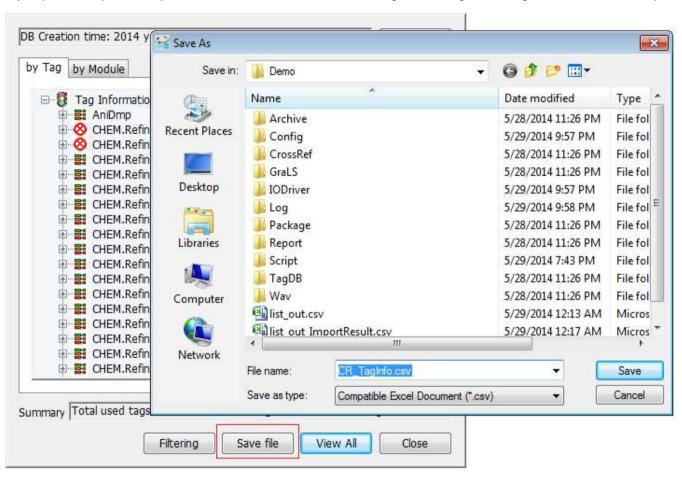
After clicking with the right mouse button on the object selected by a focus, if you run the [View Dynamic Properties] menu, you will see the tag called [CHEM.Refining.CD303DTEMP] is set in [Display Value] of the [Tag Value 17] object.



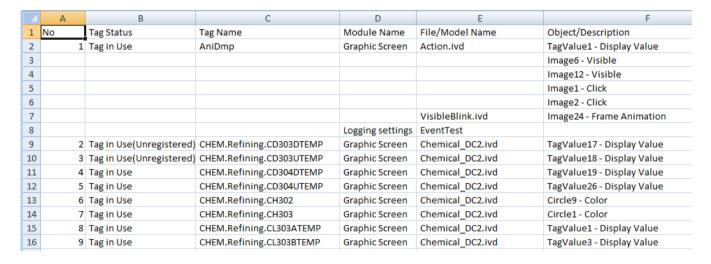
23.3.6 Save File

It is the function to save the results of the cross reference search to the CSV file.

If you press the [Save File] button in the search window, the dialog box asking the storage location will show up.



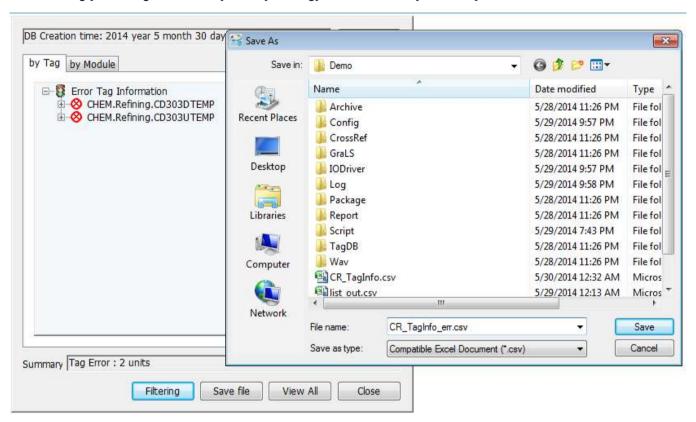
If you enter the file name and save it, the result of the cross reference retrieval will be saved to the CSV file. This file can be used for various purposes such as engineering summary report, etc.



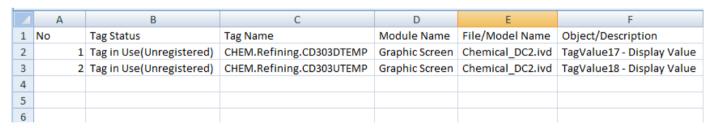
Chapter 23 Cross Reference

In addition, you can save the specific tag only using the filtering function or run [Save File] after searching error tags. In this case, the tag list displayed on the screen will be saved.

After running [Error Tag Information] in the [Filtering] menu, click the [Save File] button.



If you open the saved results in excel, you can see the below figure.



If you open the saved results in a notepad, you can see the below figure.

```
CR_TagInfo_err.csv - Notepad

File Edit Format View Help

No, Tag Status, Tag Name, Module Name, File/Model Name, Object/Description

1, Tag in Use(Unregistered), CHEM. Refining. CD303DTEMP, Graphic Screen, Chemical_DC2.ivd, TagValue17 - Display Value

2, Tag in Use(Unregistered), CHEM. Refining. CD303UTEMP, Graphic Screen, Chemical_DC2.ivd, TagValue18 - Display Value
```

23.4 Runtime Function

After engineering works are done, the created cross reference DB can be used for the plant screen of the InfoU runtime, tag view, alarm popup menu, graphic object, etc.

For the description on the cross reference function in the runtime, refer to [Cross Reference Functions] of the [Graphic Runtime] manual.

Chapter 24 Web

24.1 InfoU Web Configuration

24.1.1 Prerequisite

- (1) The web functions can be realized in the Microsoft Windows-based system and support Internet Explorer 6.0 or higher.
- (2) In the Windows XP or earlier version, among the components, the Internet Information Service (IIS) should be pre-installed and be running. For the method how to install the Internet Information Service (IIS) in Windows XP, refer to [InfoU Web Q&A Collection] of the Appendix. (In the Windows 7 or higher version, if the IIS is not pre-installed, it will be installed automatically.)
- (3) InfoU HMI Server has been installed.
- (4) The table shown below, whether supports the web functions by OS.
- (5) You need the license key that can support the web function.

Operation System		Availability	Pre-Installation of IIS	Internet Explorer
Windows	Home Edition	Х	X	IF 6 0 .
XP	Professional	0	^	IE 6.0 +
Windows 2003 Server		0	0	IE 6.0 +
	Home Edition	Х	0	IF 0.0 .
Mindows 7	Professional	0		IE 8.0 +
Windows 7	Business	0		(Browser security hardening policy does
	Ultimate	0		not support some graphics functions)
			О	IE 10 +
Windows 200	Windows 2008 Server			(Browser security hardening policy does
				not support some graphics functions)
Windows 2008 Server R2		0	0	IE 10 +
(64bit)				(Browser security hardening policy does
				not support some graphics functions)
Windows 8.1				IE 11 +
		0	0	(Browser security hardening policy does
				not support some graphics functions)
Windows 10 (64bit)			IE 11 +
		0	0	(Browser security hardening policy does
				not support some graphics functions)
Windows 2012 R2				IE 10 +
		0	0	(Browser security hardening policy does
				not support some graphics functions)

24.1.2 Configuration Procedures

- (1) To use the web functions of the InfoU, the installation should be done based on the below procedures.
 - 1) Put a check the items supporting web functions in [InfoU Engineering]→[Project Property]→ [Option].
 - 2) Run the InfoU Web Navigation Management to set the Web Navigator Site.
 - 3) Register the user and set the default screen by logging in with the InfoU (Admin account) in the InfoU Web screen.
 - 4) When you log in with the registered user in the InfoU Web screen, the web monitoring screen will be displayed.

Notice

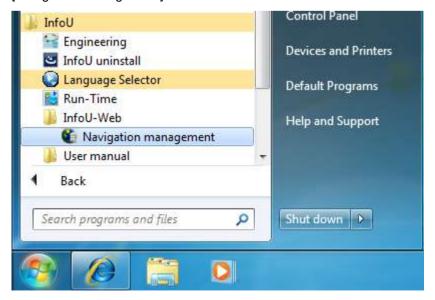
For your information, the manual was written in Windows 7 Enterprise K 32 Bit and Internet Explorer 9. In case the Internet Explorer version is different from the Internet Explorer 9, the screen may differ slightly. For errors occurred during installation or unexpected problems during operation, refer to [InfoU Web Q&A Collection] of the Appendix.

24.2 Creating InfoU Web Site

This Site Automatic Setup ensures even an inexperience user who does not have any expertise in web servers or website formation can configure a website easily and assess to the InfoU HMI system through the web browser from anywhere. The user can form a site he/she wants and create a new website. In addition, he/she may add a virtual folder to the existing website.

24.2.1 Execution of the Navigation Management

(1) Run the InfoU Web Navigator by selecting [Start]→[All Programs]→[InfoU]→ [InfoU-Web] → [Navigation management].





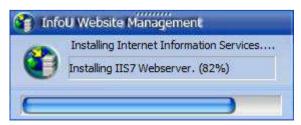
(2) Brief information on the program is displayed on the splash screen.

- 1) If the IIS7 is not installed, in Windows 7, it is installed automatically as below.
 - a. Message confirming installation of the IIS7
 To the install the IIS7, click the [Install] button.



Message on the progress of IIS7 installation
 When the installation proceeds is done 100%, it will be switched into the next screen automatically.





2) If the prerequisite is not satisfactory or automatic installation of the IIS7 is not performed normally, the below error message will be displayed and the program will not proceed any more. For more details on the error message and solutions, refer to [InfoU Web Q&A Collection] of the Appendix.

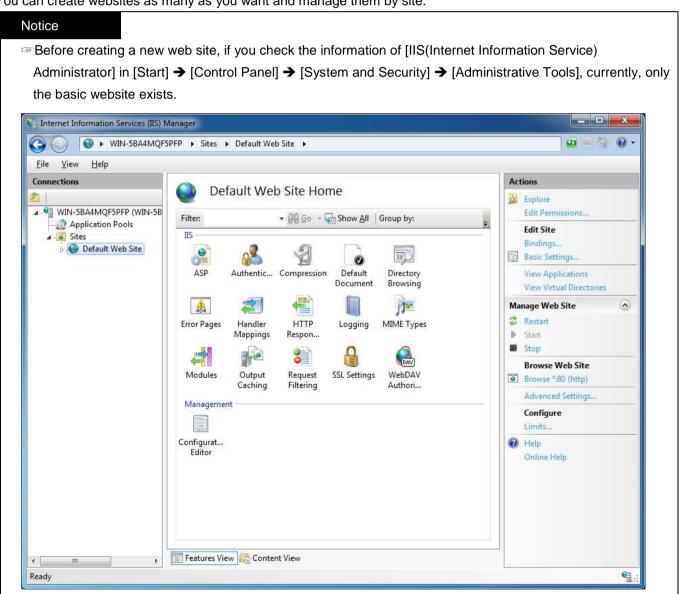


24.2.2 Creating New Website

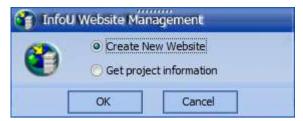
In the Internet Information server (IIS), you can create the website that you can directly manage. If there is no history of creating the InfoU Web site in the past, [Create New Website] is automatically selected as shown below.



You can create websites as many as you want and manage them by site.



(1) After selecting [Create New Website], click the [OK] button.



(2) After selecting [Create New Website], click the [Next] button.



(3) Enter the site name and port No. that the InfoU Web user wants. After entering the desired name of the new website, click the [Next] button. The default access port is set as 80. If another web server is operated by 80 access port, a user can set other port No. depending on the environment.



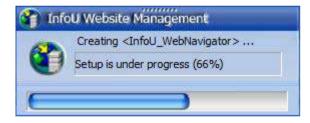
In the 64bit OS of Windows 7 or more, the default port is set as [7777] since the phenomenon that the default website is initialized into the basic site every time you reboot the system. You can freely change and use the port.



(4) To create the new website, click on [Create] button.



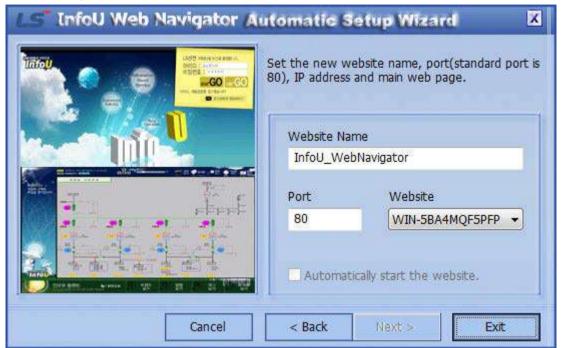
(5) The progress of creating the new website is shown on the program bar.



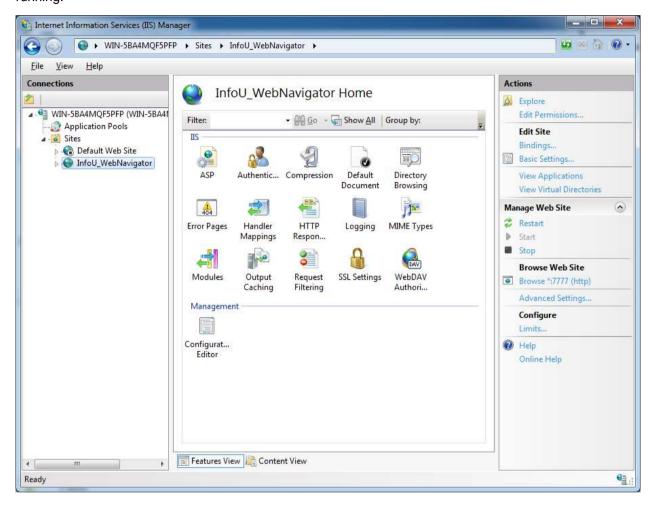
(6) The message of [Successfully created new website] is displayed.



(7) After creating the new web site, click the [Exit] button.



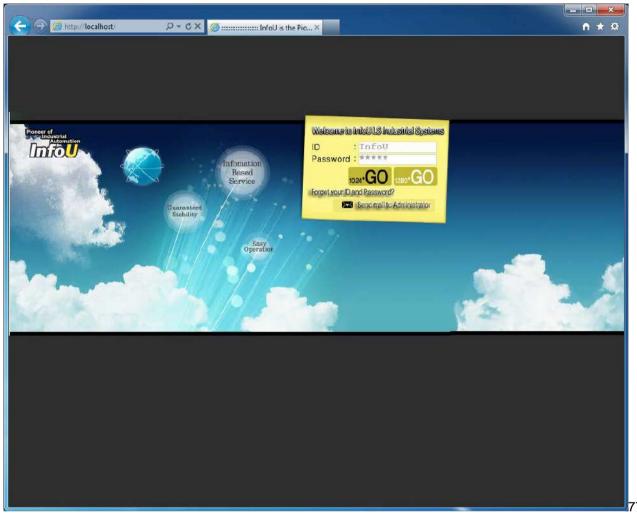
(8) When you check the information of [IIS(Internet Information Service) Administrator] in [Start] → [Control Panel] → [System and Security] → [Administrative Tools], you will see the new web site InfoU_WebNavigator is created. Currently, the default website is suspended and the InfoU_WebNavigator is running.



Chapter 24 Web

(9) After creating a new web site, you need to access to 'http://localhost' or 'http://user ip'. If you use a different port other than the default one, 80 port, you need to enter the using port into the address.

Ex.) http://user ip:8080

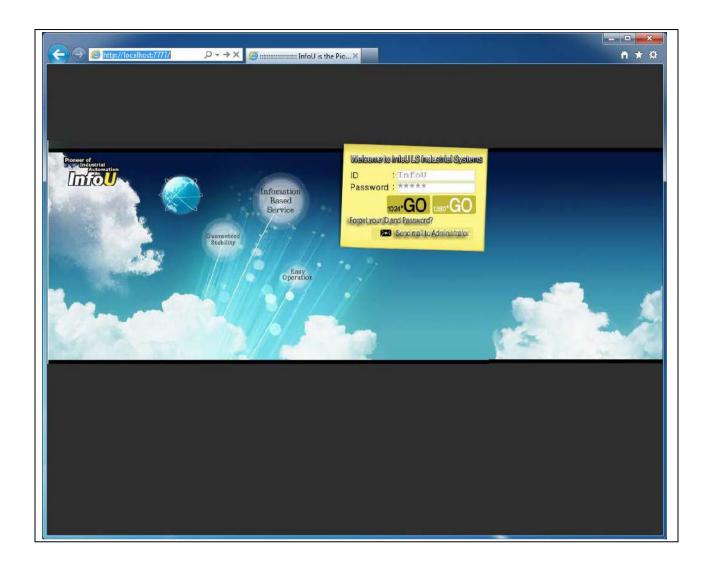


Notice

When creating a new web site, if you enter a different port other than the default port(80), you need to access to the web address including the entered port.

Ex.) http://localhost:7777

In Windows 7 64Bit OS, the default port is set as 7777 so if you want to apply another port, you need to enter the desired port when creating a new website.



24.2.3 Get Project Information

You can get the project information such as graphics and report file, etc. by selecting the project of the InfoU HMI server. To get the project information, the InfoU HMI server should be preinstalled. Then, you can get the graphic.ivd file and Report.xsl, information related cross reference.

If you create a new website, the project information is automatically obtained so you do not need separate works. However, when the graphics or report file is added or changed, you should execute [Get Project Information] to apply the variations to the nfoU Web newly.

(1) When [Get Project Information] is selected
If the InfoU Web site has already been created, [Get Project Information] is automatically selected.



(2) The projet name of the current InfoU server appears and the screen turns to the next step screen upon the click on [OK].



(3) You can see the message showing 'the project information loading is in progress'.



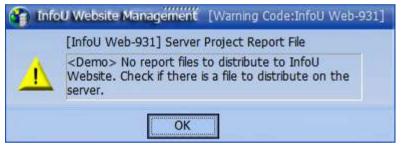
(4) Once the current InfoU server project is successfully distributed to the InfoU Website, the following success message window appears



Notice

- In case the server does not have the report file, you will get the warning message; 'No report files to distribute to InfoU website'. This is just a warning message so distribution for the remaining files except the report file will continue.
- To prevent the below warning message, you just need to put the prepared report file into the server.

 The report file is located under the currently running project with the report name.
- Ex.) C:\InfoU\Project\Demo\Report



- Because InfoU Web supports only a single project, if you want to read other project information, delete or rename the InfoUWebNavigator.mdb file in the InfoU installation path\Web Navigator\projectInfo folder and click [Read Project Information] and proceed the next step.
- Ex.) C:\InfoU\Web Navigator\projectInfo\InfoUWebNavigator.mdb ← Delete C:\InfoU\Web Navigator\projectInfo\InfoUWebNavigator_Demo.mdb ← Rename

24.2.4 Adding the Virtual Folder on the Existing Website

If it is difficult to add and operate a new website in the current system since the existing site has been already running, you can add the virtual folder under the existing one to manage the InfoU Web site.

(1) Select 'Adding virtual folder on existing website' in the below screen and press the [Next] button.



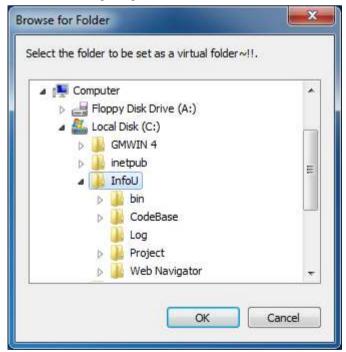
(2) You can enter the desired alias for the virtual folder that will be added. Then, the virtual folder is created on the site that is currently running. In the InfoU Web, basically, the site is created with InfoU WebNavigator name and the virtual folder is created on the site. If you want to change the default website, refer to [InfoU Web Q&A Collection] of the Appendix.



(3) Set the directory that will be added to the virtual folder. The default directory is set as Web Navigator under the directory where the InfoU system is installed. Ex.) C:\InfoU\Web Navigator



Click the [Search] button to select the directory that you want to specify as the virtual folder. The default setting is the InfoU Web folder so you can proceed with this without any changes. After setting the virtual folder, click the [Next] button.



- (4) Then, you will get the message; the virtual folder is successfully added to the web server.
 - 1) If the virtual directory with the same name is already being used.



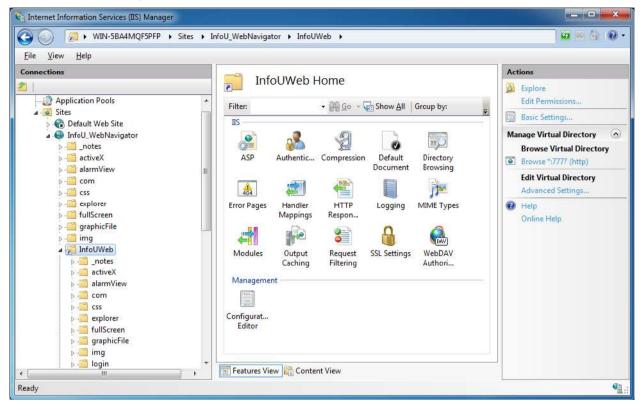
2) If the virtual directory is successfully created on the website.



(5) Click the [Exit] button to end the program.

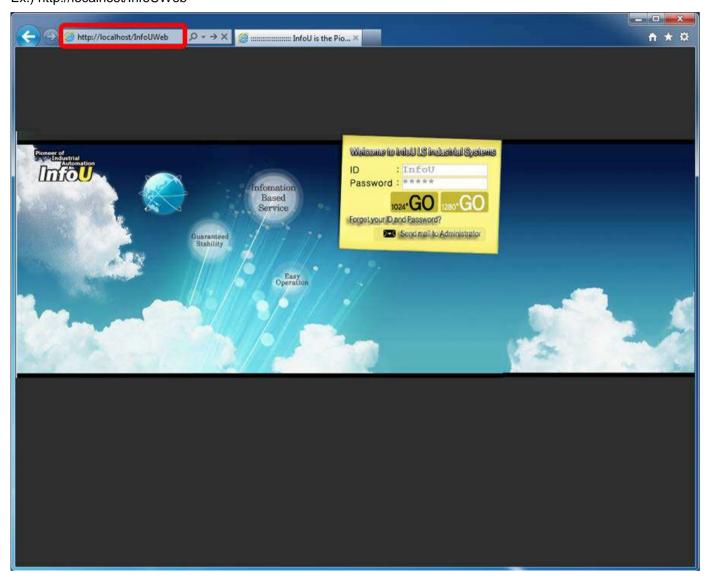


(6) If you check the information in [Start] → [Control Panel] → [System and Security] → [Administrative Tools] → [IIS(Internet Information Service) administrator], you will see the InfoUWeb that is a virtual folder is newly created on the existing web site.



Chapter 24 Web

(7) To access to the site, you need to connect to 'http://user ip: port/virtual folder' name. If you use a different port other than the default one, port 80, you need to enter the address including the using port. Ex.) http://localhost/InfoUWeb



24.2.5 Creation of a Website in Addition to the Existing One

(1) After selecting [Create New Website], click the [OK] button.



(2) If you installed the InfoU Web site previously and the InfoU default web site already exists, the below message will show up.



To create a new website additionally besides the existing website, click the [OK] button. If you want to exit the program without creating a new one, just click the [Cancel] button.

(3) After selecting [Create New Website], click the [Next] button.



(4) Enter the site name and port No. that the InfoU Web user wants. After entering the desired name of the new website, click [Next] button. The default access port is set as port 80.

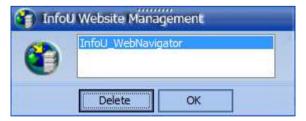
If another web server is operated by 80 access port, a user can set other port No. depending on the environment.



1) If you enter the same name as the existing website name, you will get the warning message as shown below.



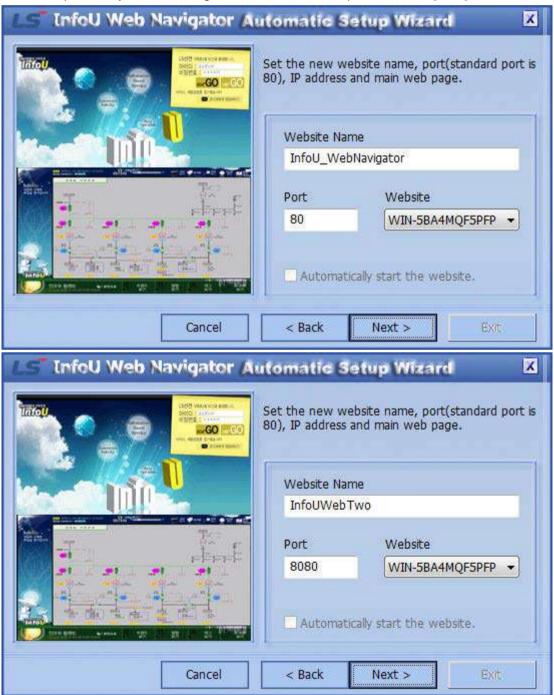
2) Select the existing website and click the [Delete] button. Then, press the [OK] button.



3) After deleting the existing website, click the [OK] button.



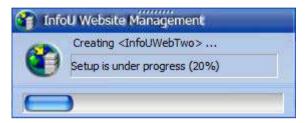
4) If you want to use the entered default information, just click the [Next] button. To change the website name and port newly, after entering the desired name and port, click the [Next] button.



(5) Click the [Create New Website] button.



(6) You can get the message; creating a new website is under progress.



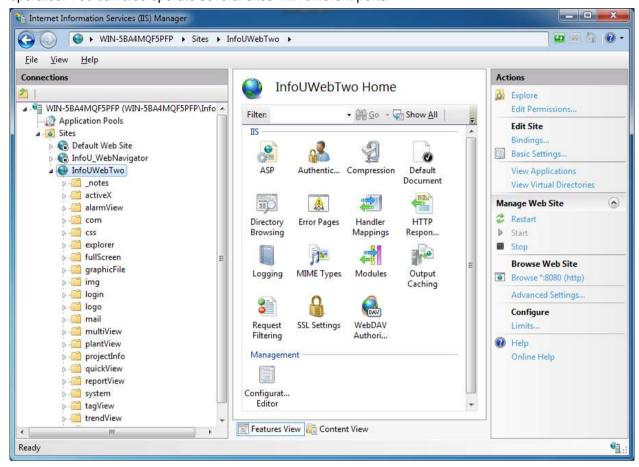
(7) Then, the below message will show up; [New website is successfully created]



(8) After creating a new website, click the [Exit] button.



(9) If you check the information in [Start] → [Control Panel] → [System and Security] → [Administrative Tools] → [IIS (Internet Information Service) administrator], you will see the new website InfoUWebTwo is additionally created. If you add the website newly, the previous website will stop and instead, the new one will be operated. You can also operate several sites with different ports.



Chapter 24 Web

(10) After creating a new web site, you need to access to 'http://localhost' or 'http://user ip'. If you use a different port other than the default one, 80 port, you need to enter the using port into the address.

Ex.) http://user ip:8080 ← → ★ Mittp://localhosts8000 P → → X @InfoU is the Pio... X **↑** ★ 🌣 Welsome to intol LS industrial Systems :InfoU Password: ***** 1024 GO Service Forget your ID and Password? Send mail to Administrato

24.3 InfoU Website Configuration

24.3.1 Overview

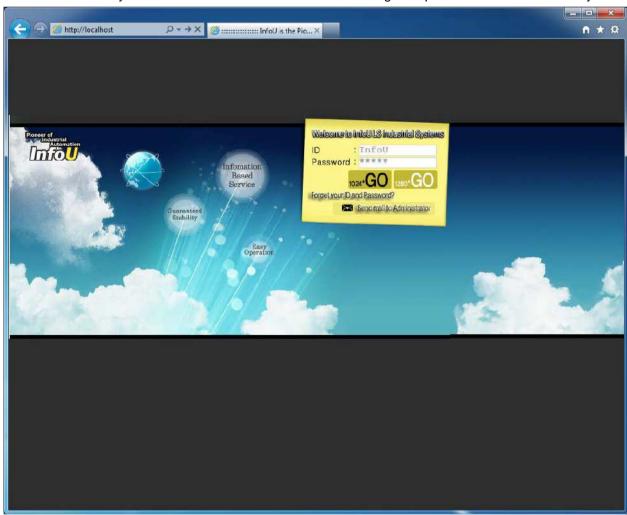
To use the web-based HMI function of the InfoU, you need to register the user account and the default screen.

24.3.2 Prerequisite

- (1) The InfoU web site should be created through [Navigation Management] and the web server should be running.
- (2) InfoU real-time operation should be executed.
- (3) The InfoU WebHMI server is running.

24.3.3 Login Screen

- (1) Enter the user ip into the web browser address bar. If you did not use the default port "80" when creating the InfoU web site, you need to enter the used port No. together. Ex.) http://localhost or http://userip:7777
- (2) Log in to the InfoU for initial settings. The default password of the InfoU is just "InfoU" and the default administrator account is InfoU/InfoU. They are case-sensitive so must be entered correctly. It is recommended that you use a new administrator account or change the password for further security.



(3) Description of Login Screen Menu

Enter the user ID and password after logging in the InfoU Website on the web browser. If the user is not authorized or the password is not correct, the error message is displayed.

- 1) Error Message when login fails
 - a. If the user ID is not correct



b. If the password is not correct



c. If there are communication problems or other issues for the solutions, refer to appendix 6, InfoU Web Q&A Collection.



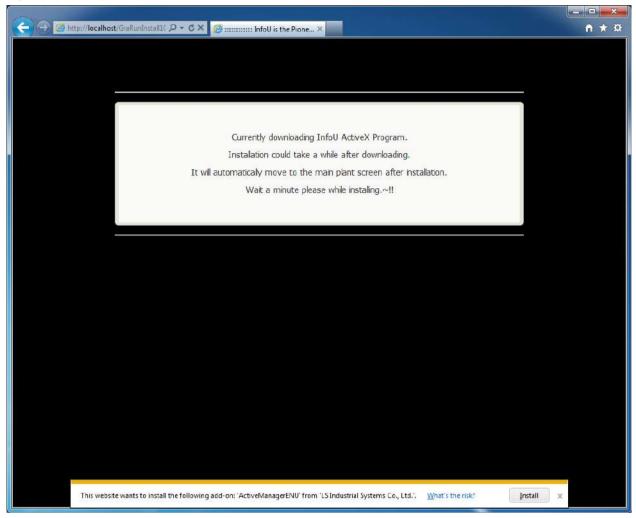
(4) Screen Mode Select

The user may select either 1024*768 or 1280*1024 mode as the optimized mode.

(5) Send Mail to Administrator

If the user ID or password is forgotten, send e-mail to the administrator

(6) If the message on installing additional functions of ActiveX is the displayed at the bottom of the page after login, press the [Install] button.



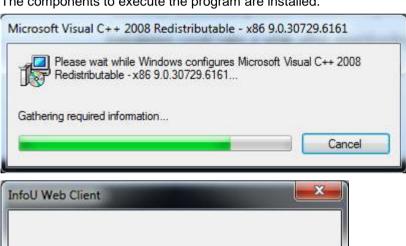
(7) If the security warning message is displayed as below, press the [Run] button.

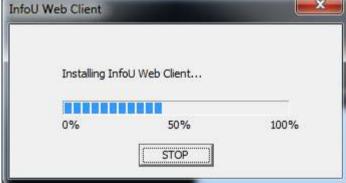


(8) If the security warning message on ActiveX installation is displayed, press the [Install] button.

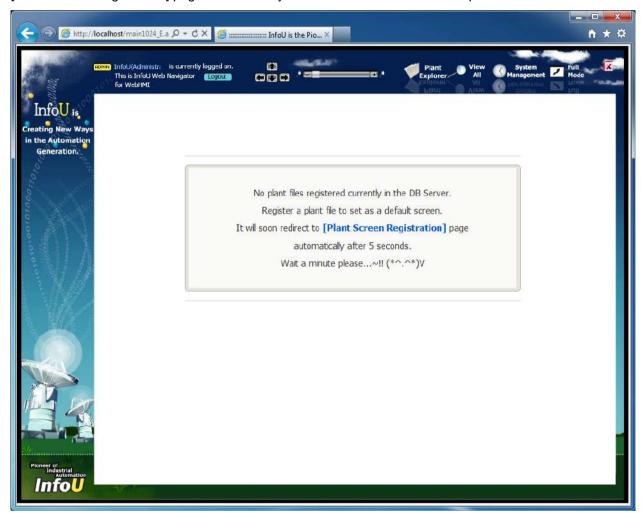


(9) The components to execute the program are installed.

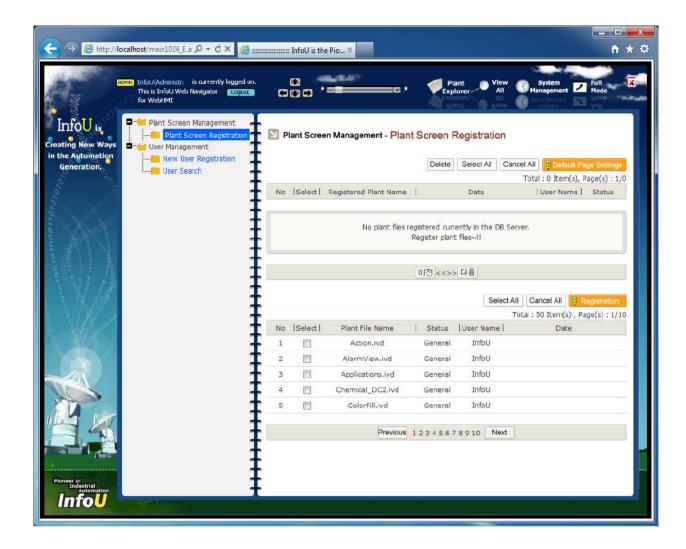




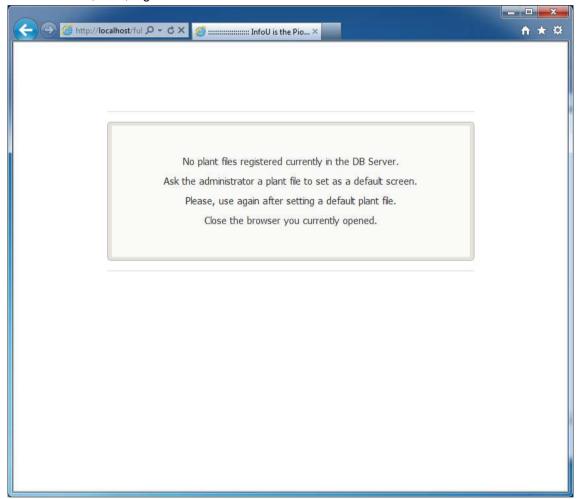
- (10) When logging in to the website for the first time after installation.
 - When logging in to the website with a administrator account: When you log in to the site for the first time, there is no plant screen registered in the server. If there is no plant screen registered in the server, you will get the message; "No plant files registered currently in the DB Server. Register a plant file to set as a default screen. It will soon redirect to [Plant Screen Registration] page automatically after 5 minutes. Wait a minute please."



Chapter 24 Web



- 2) When logging in to the website with a general user account
 - a. If you log in to the site with the general user account for the first time, you will get the message; "No plant files registered currently in the DB Server. Ask the administrator a plat file to set as a default screen. Please, use again after setting a default plant file. Close the browser you currently opened." As shown in the message, you need to request the administrator to register the plant file to set as a default screen, then, log in to the site.

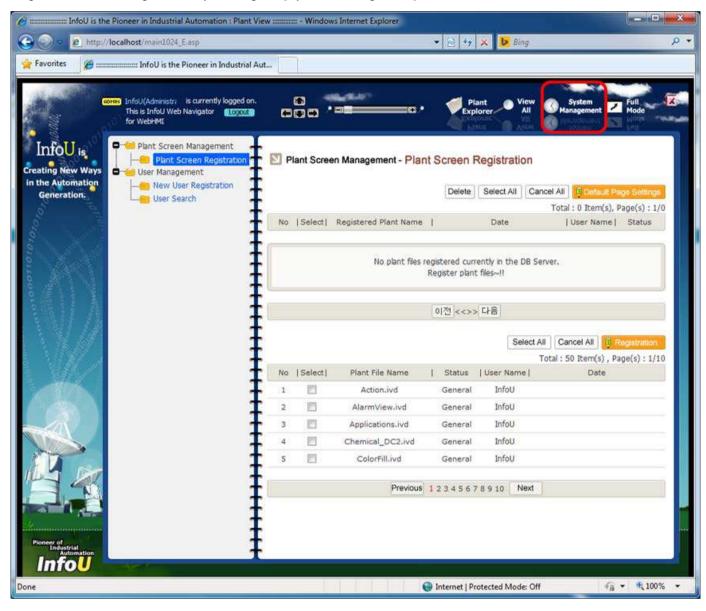


b. After logging in to the site with an administrator account, select the user who will register the default plant screen in [System Management]→[User Information]. If you click the ID, the user information screen will show up. In the dialog box of [User Management-User Modification], set the default screen. Under the situation of [Default screen: Nothing], click the list box in [Default Screen Settings] and select the plant screen to be set as the default.

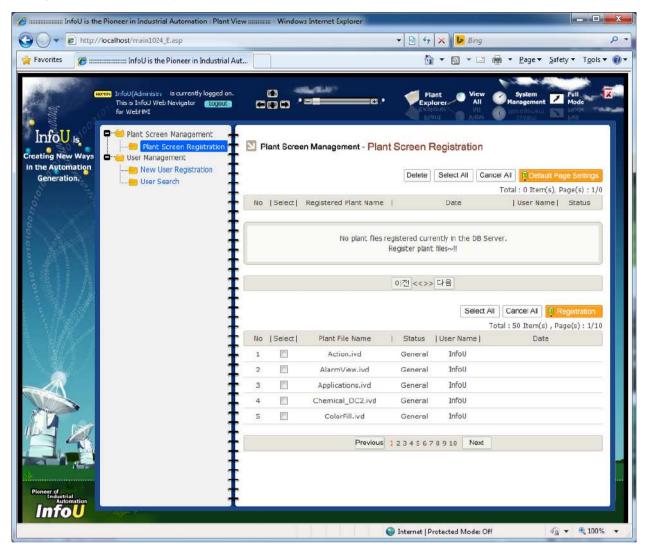


24.3.4 System Management

(1) Register the monitoring screen by clicking the [System Management] icon.



(2) If you log in to the sire for the first time, when the ActiveX and components are completely installed, the web setting screen will be displayed as below.

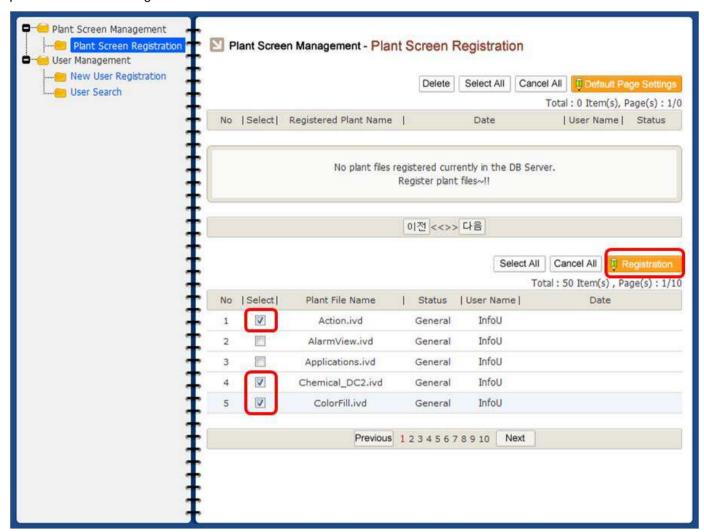


1) If the default screen is not set, the below message will be displayed and it will move to the system setting screen automatically. Otherwise, if you click the [System Management] icon, the screen will show up.

No plant files registered currently in the DB Server. Register a plant file to set as a default screen. It will soon redirect to [Plant Screen Registration] page automatically after 5 seconds. Wait a minute please...~!! (*^.^*)V

(3) Plant Screen Registration

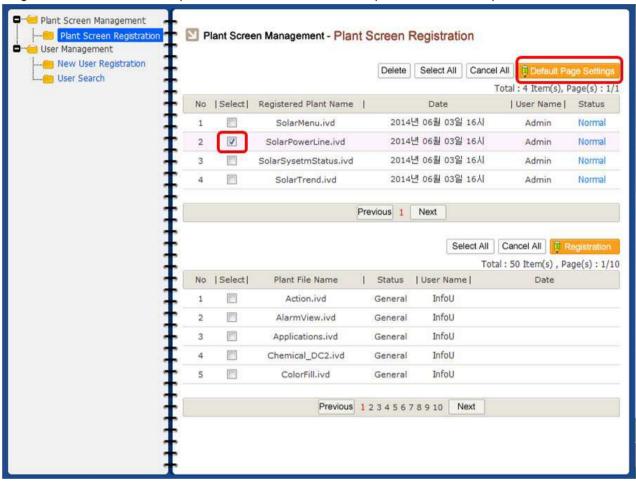
Select the plant file to be monitored and click the 'Registration' button. You can select and register multiple plant files for monitoring.



If you click the [Registration] button, the message asking whether registering the selected plant file(s) will be displayed.



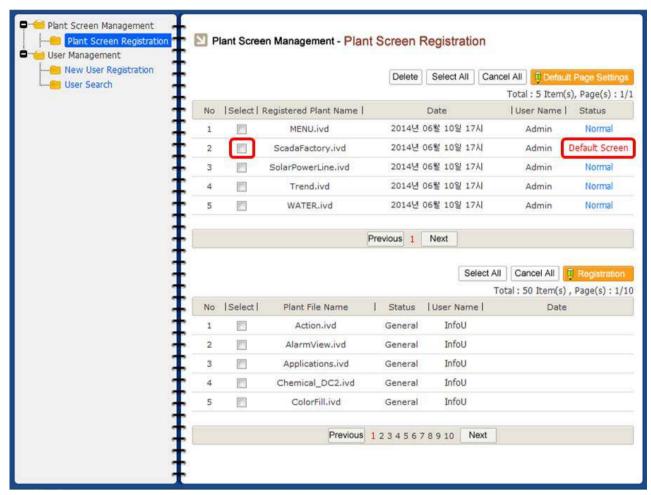
- (4) Default Page Settings
 - 1) You can specify the default screen that you want.
 - 2) After selecting the screen in the upper list, click the [Default Screen Settings] button.
 - 3) Single default screen can be specified for each user and it is impossible to set multiple screens.



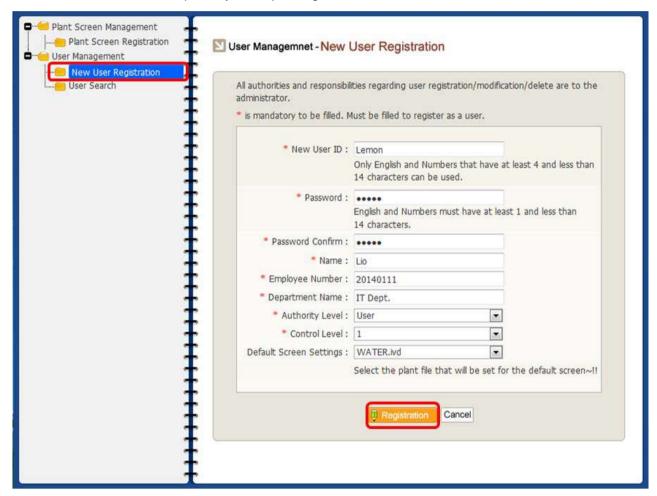
The message confirming whether you will set the plant file as the default screen will be displayed.



4) In the registration status, you can see the plant file that is set as the default screen is displayed as [Default Screen].



- (5) New User Registraion
 - 1) Register a general user.
 - 2) The "*" mark means the required input items.
 - 3) If a general user does not enter the default screen settings, the default screen set by the administrator will be displayed.
 - 4) If the default screen is selected, the default screen specified by the user who logs in to the site is displayed.
 - 5) The default screen can be separately set depending on the user.

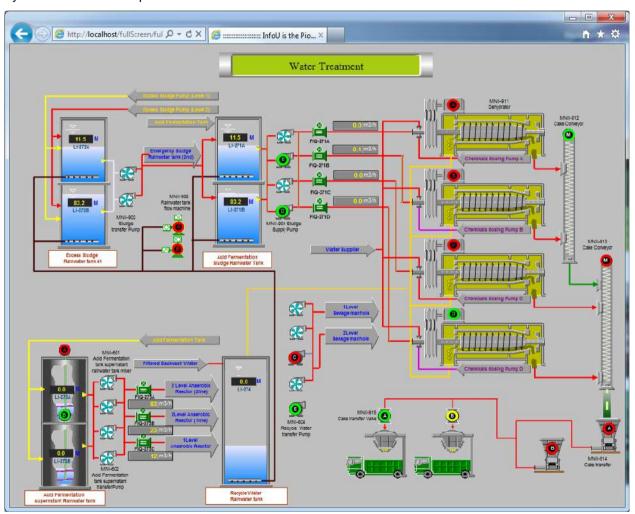


The message notifying whether a user is normally registered will show up.

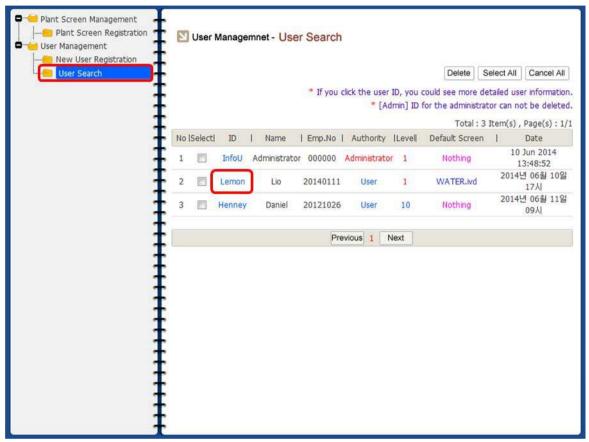
■ User Managemnet - New User Registration

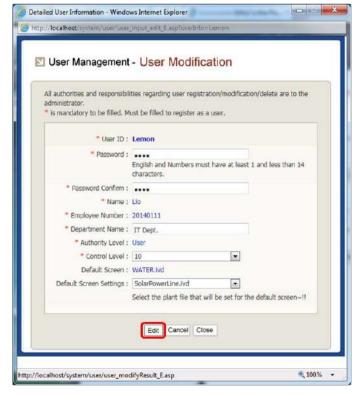


When you log in to the page with the newly registered user ID and password, the plant screen specified by the user will show up as the default screen.



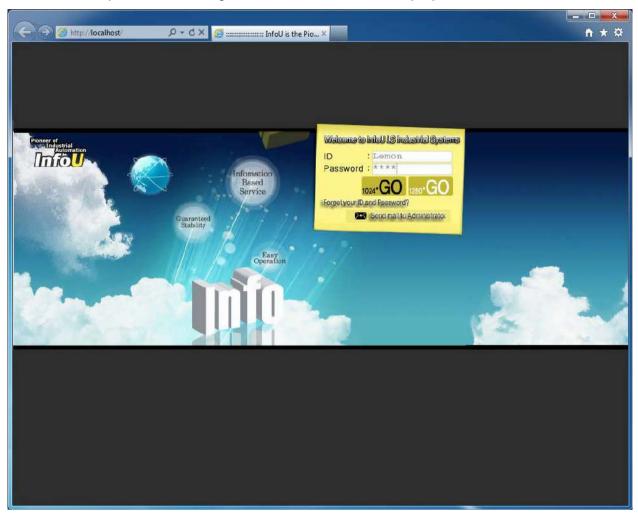
- (6) User Search
 - 1) You can search users to monitor and control the plant screen.
 - 2) If you click the user ID, you can check and edit the detailed information of the user.





24.3.5 Monitoring Web User

(1) Enter the ID and password of the registered user and then, click the [Go] button.



Chapter 24 Web

(2) If the security message asking whether executing ActiveX is displayed at the bottom of the page, click the [Allow] button.

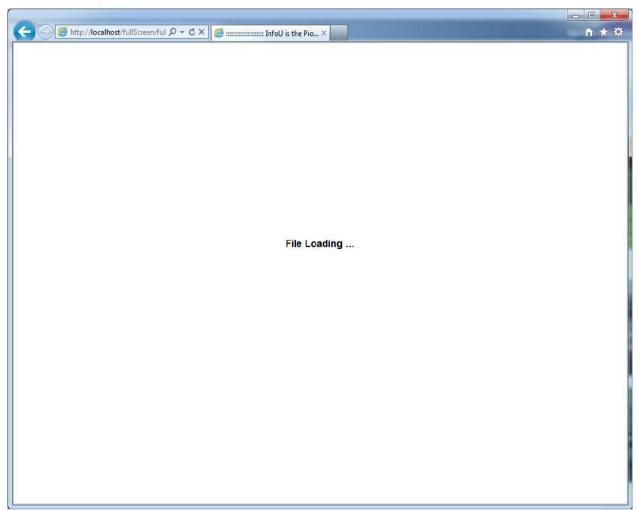


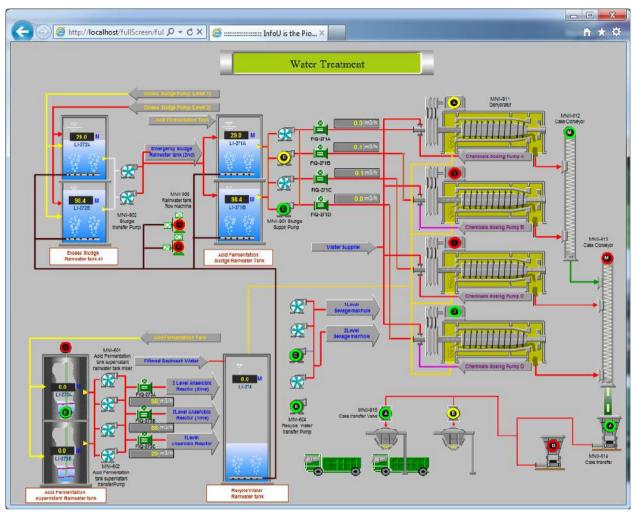
(3) If the message box related to firewall security is displayed, click the [Allow access] button.



Chapter 24 Web

- (4) The default screen specified by the user who logs in to the site is displayed in the Internet Explorer web browser
 - 1) The message on loading the plant screen shows up.





2) The main plant screen specified by a user is displayed.

24.3.6 Main Screen

This InfoU Plant main screen shows the relevant user's ID and the current system time after the user is successfully logged in. Click on a menu to show the functions the menu can perform on the InfoU Plant main screen. At first right after log in, the initial Plant screen which has been set up when the user registered the Plant Screen is loaded.



(1) Logout

If you press the logout button, you will log out from the InfoU (administrator) account and the login screen will be displayed.

(2) Up/Down/Left/Right Arrow

It pretypifies the Up/Down/Left/Right screen depending on the hierarchy diagram of the currently registered plant screen. (The function is not available in the current system.)

1) Currently, the available function is the middle arrow only. If you click the middle arrow, the plant screen that is set as the default screen will be displayed in the main screen.



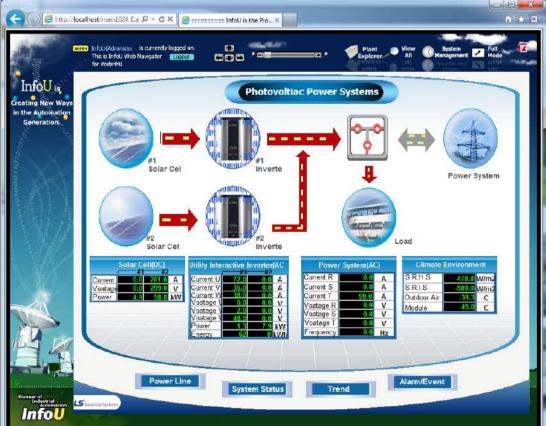
(3) Zoom In/Zoom Out

It zooms in and out the currently displayed plant screen. (The function is not available in the current system.)

(4) Plant Explorer

It shows the plant screens registered by a user in the format of tree structure. If you click the plant screen file, the plant screen will be displayed in the main screen. This function is useful to preview the whole plant screens.







View All

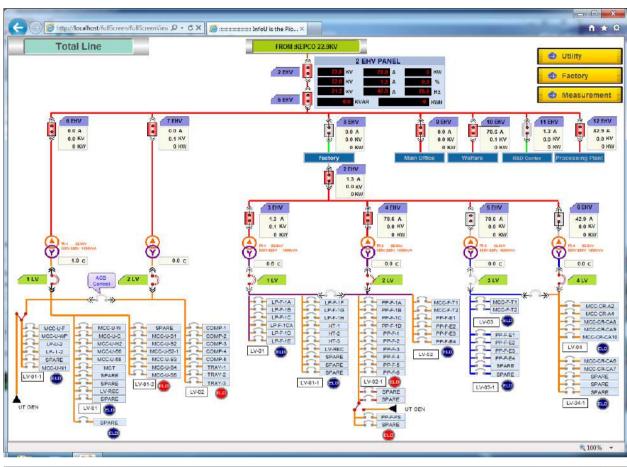
As a menu that makes the plant, trend, alarm, report screen better manageable, this menu show the entire menus on a single screen. (The function is not available in the current system.)

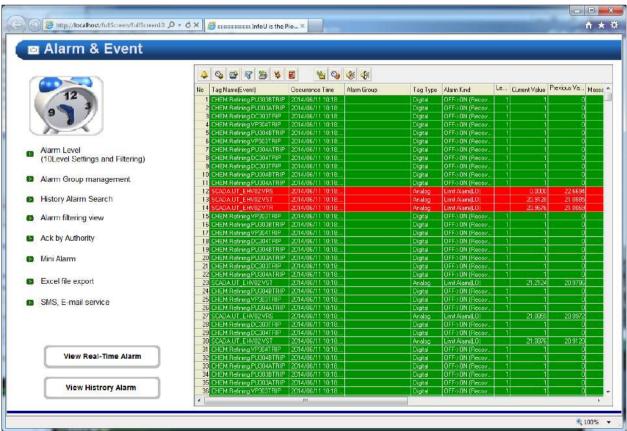
System Management

Through this menu, a new user is created and the management and plant screen is registered.

(7) Full Mode

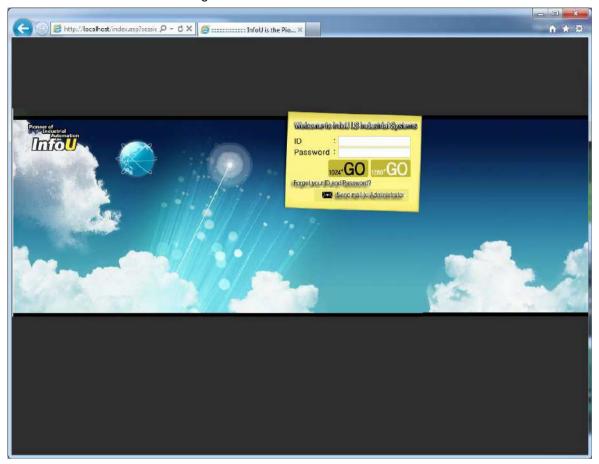
> The plant screen is shown in a full screen without administrator's system menu. The plant screen is displayed in a new browser.





(8) Close Window

It closes the current window to log out.



24.4 Web HMI Server

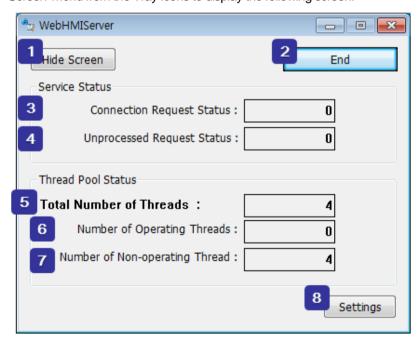
The Web HMI Server is to play a role in extending to access to the InfoU HMI through web. To present HMI service through the web, the Web HMI Server has to run on the server side. To make the Web HMI Server run normally, the InfoU project should run. Also, to access to the Web HMI Server, the Internet Information Server has to be installed and relevant files needed for the HMI service should be copied and installed.



If the system runs, the tray icons are created and Show Screen, Hide Screen, Settings and Exit function are performed through the pop-up menu.

24.4.1 Operation Settings

The Web HMI Server (web HMIServer, exe) runs automatically if the web is set up on the project option. Select 'View Screen' menu from the Tray Icons to display the following screen.



1 Hide this operation screen.2 The Web HMI Server stops.

Chapter 24 Web

The total number of request for connection from the client is displayed.

The number of remaining requests from the client, which has not been processed, is displayed.

The total number of the created threads in the thread pool is displayed to process connection.

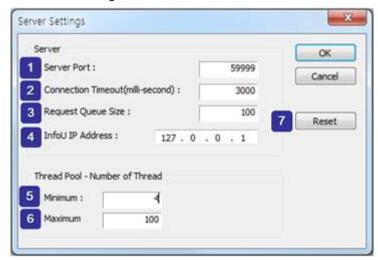
The number of operating threads after being assigned the current work is displayed.

The number of standby threads in the thread pool is displayed.

This button is used when opening the server setting screen to change setting values.

24.4.2 Server Settings

If you execute "Settings" menu in the tray icon or click the "Settings" button in the operation screen, you can see the Server Settings window as below.



Set up a server port.

Set up a timeout time (milliseconds) used for connecting to TCP/IP Socket.

When setting up, make sure to take into account of some delay due to the network status.

Set up a size of the request queue.

As the address of the PC where the InfoU HMI is located, it has been set up with "127.0.0.1" as the default address.

Set up the number of the created threads during the first running.

Set up the maximum number of the available threads to be created in the thread pool.

Initialize setting values as default values.

No.	item	Default value
1	Server Port	59999
2	Connection Timeout	3000
3	Request Queue Size	100
4	InfoU IP Address	127.0.0.1
5	Number of Thread-Minimum	4
6	Number of Thread-Maximum	100

Notice

If you can not communicate with the server via the Web, check the following points.

- 1) The Web HMI server must be started before the InfoU Web client and the Web HMI server start to communicate.
- 2) If the firewall of the server and the client PC is set, turn it off to check the communication.
- 3) Check whether the number of connection request status increases on the operation screen of Web HMI server.

Chapter 25 Redundancy and Client Server

This Chapter explains the methods on how to set the redundancy and client systems, and to control client monitoring at runtime.

25.1 System Environment Setting

25.1.1 Network security setting

The configuration of redundancy and client server system requires data exchange through the network, and therefore a security release between computers needs to be done in the following steps.

(1) Windows XP settings

1 Run Security Center at the Control Panel.



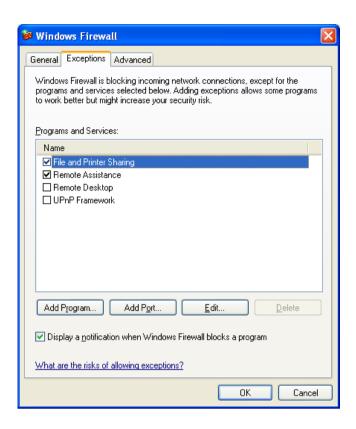
2 In the Security Center setting, run Windows Firewall.



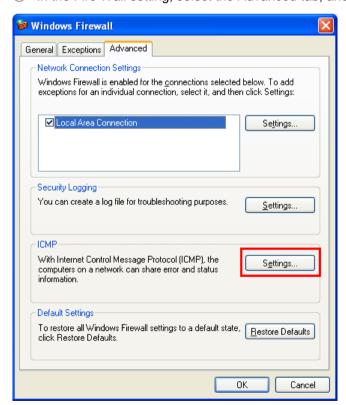
③ In the Windows Firewall setting, set exceptions in accordance with the following settings.



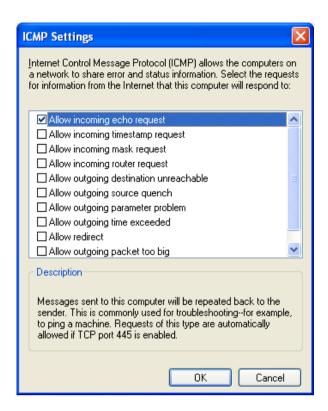
4 At the Exceptions tab, select and check File and Printer Sharing.



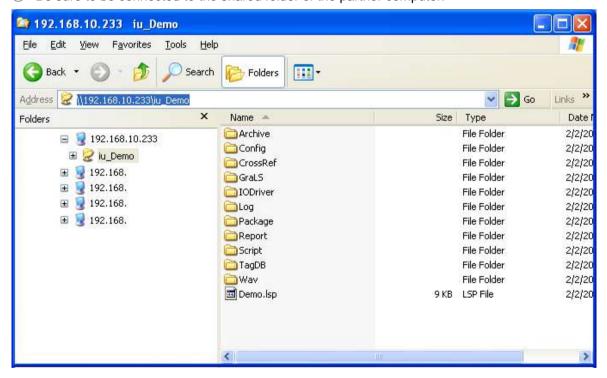
⑤ In the Fire Wall setting, select the Advanced tab, and click the [Setting] button of the ICMP item.



6 Select and check the [Allow incoming echo request] item.

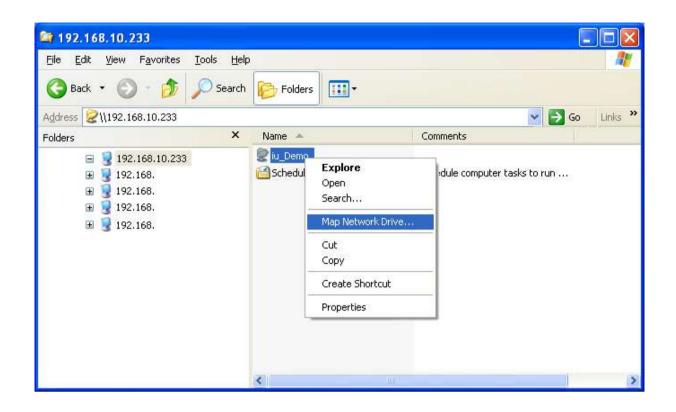


② Be sure to be connected to the shared folder of the partner computer.

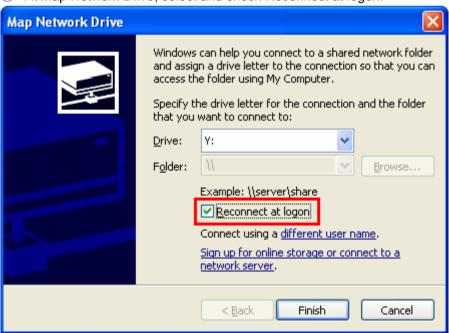


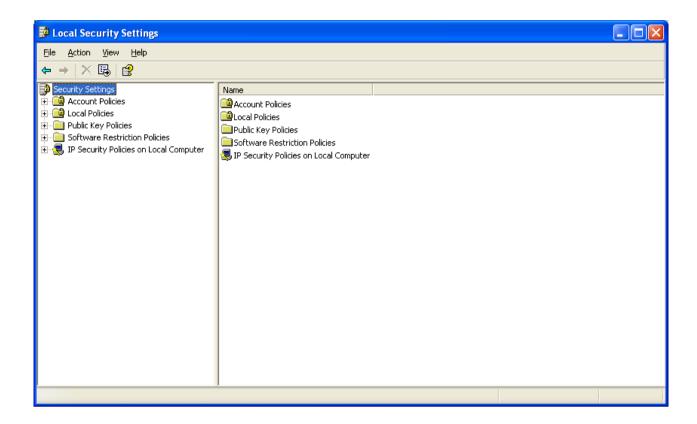
® In order to maintain accessibility after rebooting the computer, go to the Map Network Drive setting and check automatic reconnection to the folder at logon.



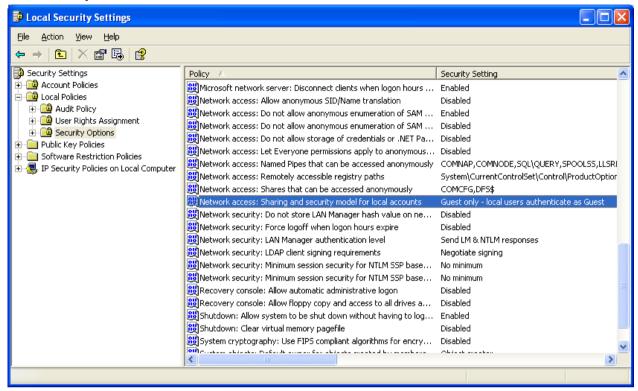


8 At Map Network Drive, select and check Reconnect at logon.

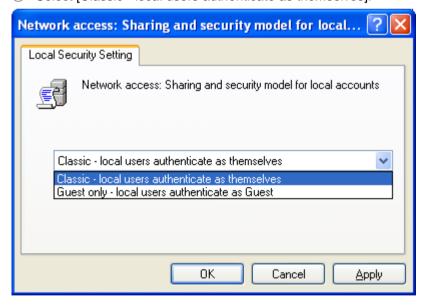




Run [Local Policies] → [Security Options] → [Network access: Sharing and security model for local accounts].



(1) Select [Classic - local users authenticate as themselves].



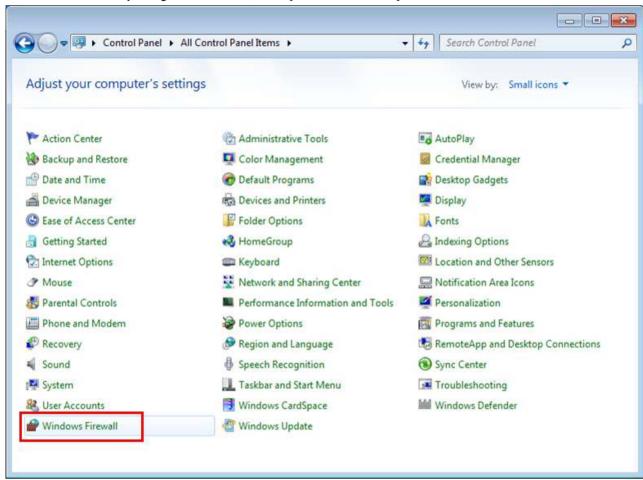
(2) Windows7 setting

- 1 Run the Windows Firewall at Control Panel.
 - a. In case of "View by: Category," go to [System and Security] → Windows Firewall].





b. In case of "View by: Large/Small Icons," click [Windows Firewall].



- 2 File and printer sharing setting
 - a. Click [Allow a program or feature through Windows Firewall].



OK

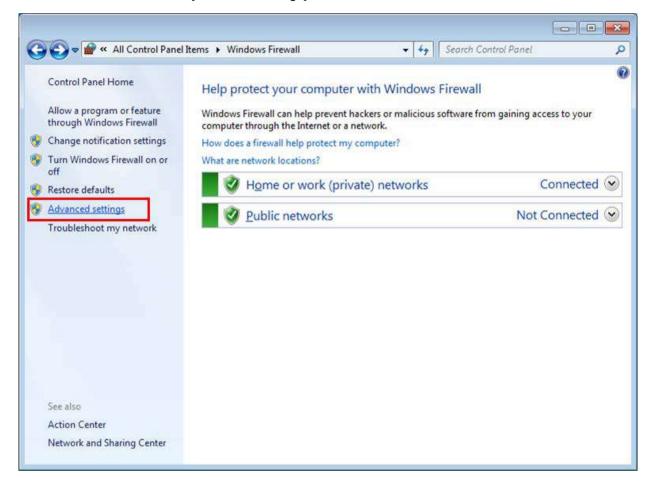
Cancel

- - X ▼ + Search Control Panel Allow programs to communicate through Windows Firewall To add, change, or remove allowed programs and ports, click Change settings. Change settings What are the risks of allowing a program to communicate? Allowed programs and features: Home/Work (Private) Public Name ☐ BranchCache - Content Retrieval (Uses HTTP) ☐ BranchCache - Hosted Cache Client (Uses HTTPS) ☐ BranchCache - Hosted Cache Server (Uses HTTPS) ☐ BranchCache - Peer Discovery (Uses WSD) ☐ Connect to a Network Projector ☑ Core Networking V V ☐ Distributed Transaction Coordinator File and Printer Sharing ☐HomeGroup ☑ Hyperion V V ☑ InfoUD V V **☑** InfoUG V V Details... Remove Allow another program...

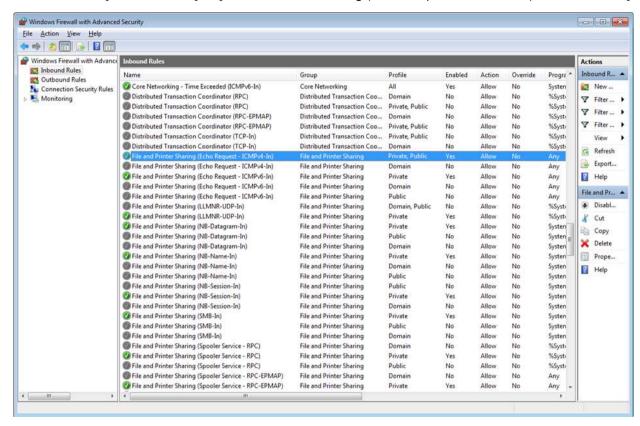
b. Select and check [File and Printer Sharing] item as showin the the figure below.

3"ICMP" setting

a. At Windows Firewall, click [Advanced settings].

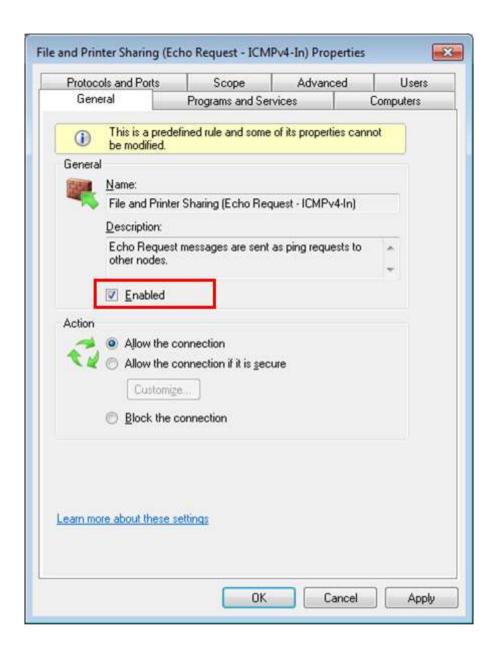


b. Double-click [Inbound Rules] → [File and Printer Sharing (Echo Request - ICMPv4-In), Private, Public].

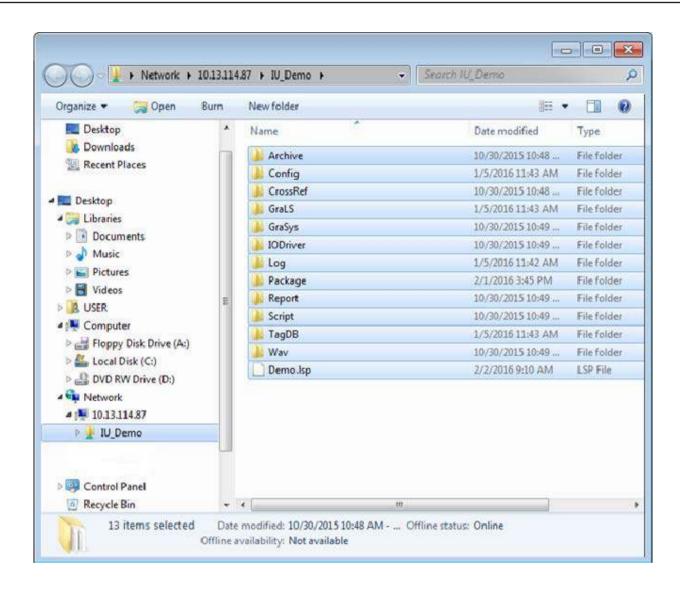


c. At the File and Printer Sharing (Echo Request - ICMPv4-In) Properties window, go to the [General] tab --> [General] → and check [Enabled]

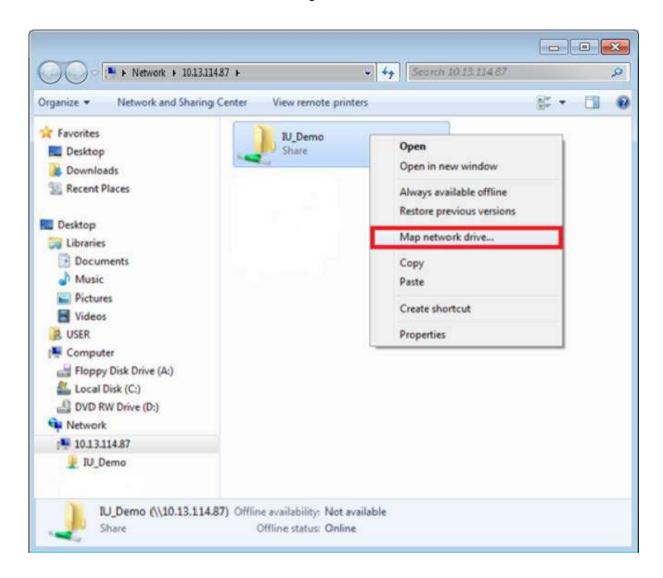
.



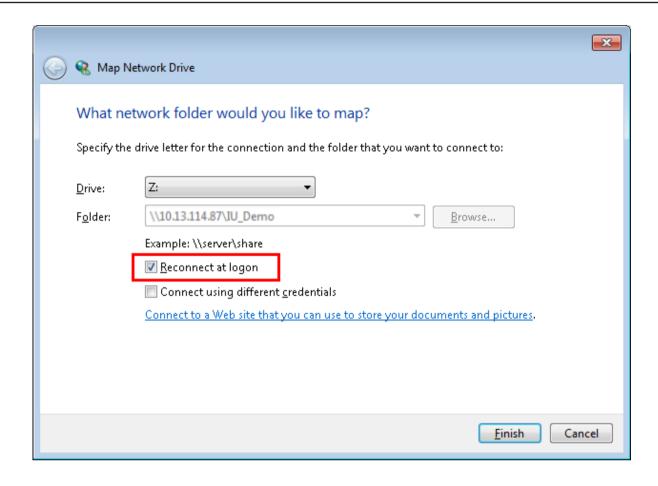
- 4 Shared Folder Connection Setting for the Partner Computer
 - a. Use File Explorer to view the shared folder of the partner computer.



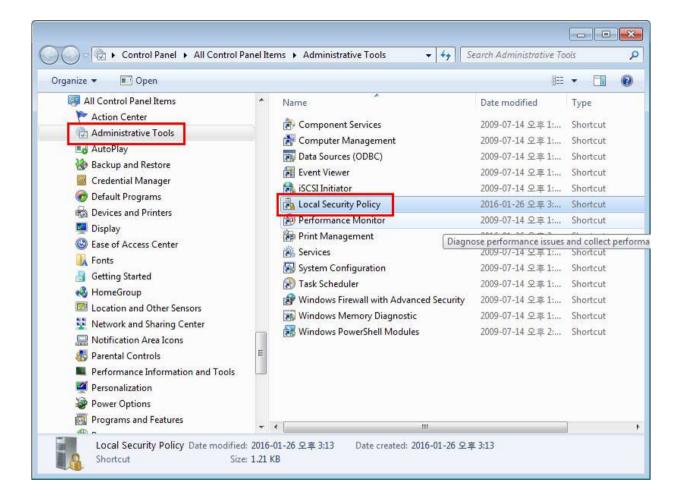
b. In order to maintain accessibility after rebooting the computer, go to the Map Network Drive setting and check automatic reconnection to the folder at logon.

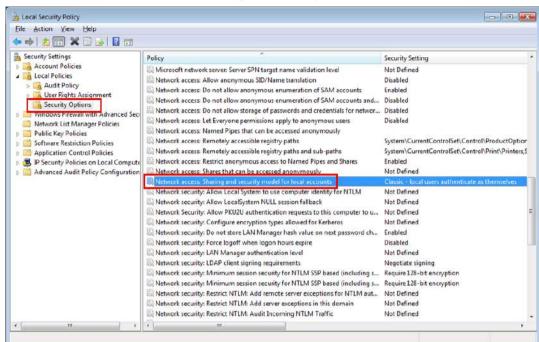


c. At Map network drive, check [Reconnect at logon] item.



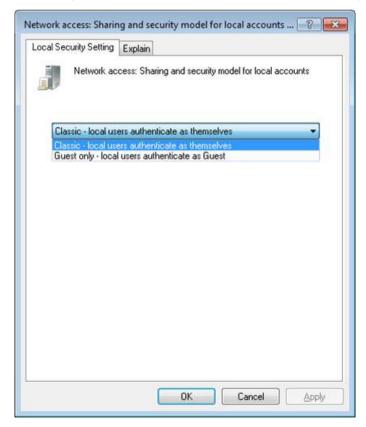
- 5 Local security policies setting
 - a. In case of "View by: Category," go to [Control Panel] → [System and Security] → [Administration Tools]
 - b. In case of "View by: Large/Small Icons," go to [Control Panel] → [Administration tools].
 - c. Double-click [Local Security Policy].





d. Doube-click [Network access: Sharing and security model for local accounts].

e. Select [Classic - local users authenticate as themselves] at the [LLocal Security Setting] tab.



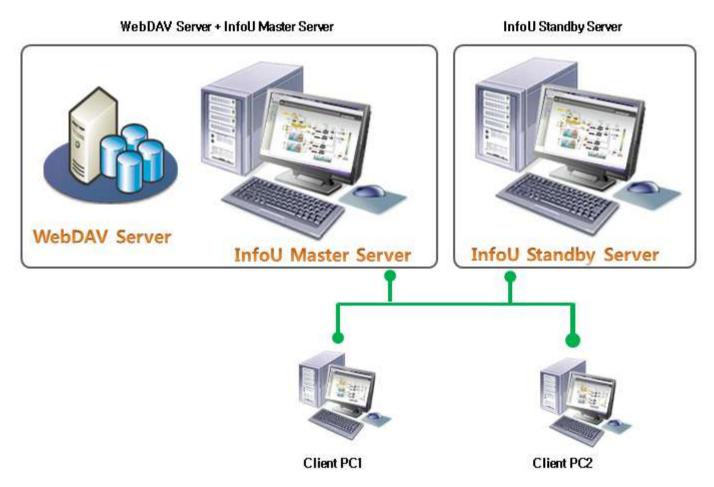
25.2 Project Synchronization Server Setting (WebDAV Setting)

In addition to the server and client setup method using the existing shared folder, a new method of using the WebDAV function of Internet Information Server (IIS) has been newly added.

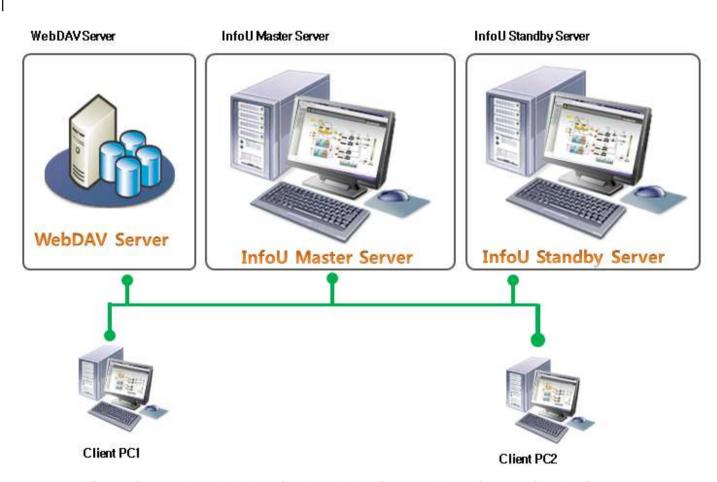
Under the new method, the redundancy server and client system requires pre-installing the IIS in the computer, and completing the WebDAV setting.

The master server uploads project files to the synchronization server after project engineering, and the standby server and client use the data downloaded from the project synchronization server.

The project synchronization server may be constructed at an independent server machine unrelated to the InfoU, or at a machine installed with the InfoU.



[Server Composition 1] - Master & Project Synchronization Server + Standby Server



[Server Composition 2] - Project Synchronization Server + Master Server + Standby Server

For further details on the WebDAV setting for the project synchronziatio nserver, please refer to the attached document.

25.3 Redundancy project setting (Master)

This Chapter explains how to construct the redundancy system and the client system, focusing on the actual procedures.

In case of a standalone server, not a redundancy server, you can skip the section on the redundancy setting for the master server, and the entire standby server setting section.

The master, standby, and client servers should share networks between each other, and should be assigned the authority to access each other.

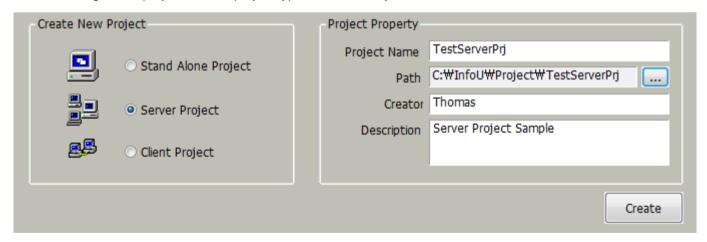
25.3.1 Procedures

The procedures to construct a redundancy system are as follows.

- a. Create a server project.
- b. Select and save an IP setting and redundancy option(Redundancy option omitted in case of a standalone server).
- c. Perform InfoU engineering.
- d. Perform redundancy setting.
- e. Create server data.
- Set the information of the project synchronization server, and upload the entire project.

25.3.2 Server project setting

When creating a new project, set the project type at Server Project.



You can change a project previously created as a Stand Alone project into a Server project at the Project Property

For server projects, the project folder is created as a shared folder by default.

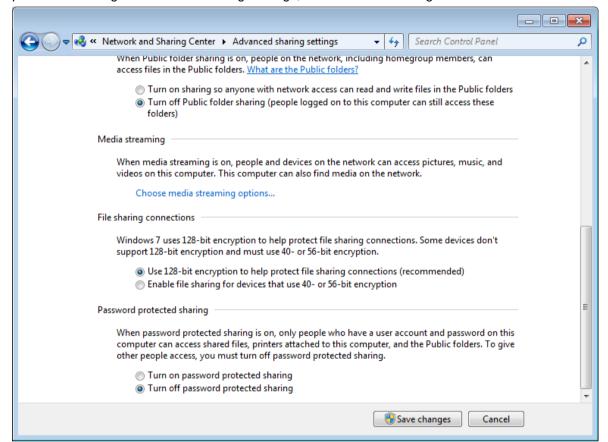
Notice

In Windows 10, the shared folder function of the existing OS may not work properly.

If this is the case, you will need to change the folder's shared properties and options in the control panel as

follows:

- 1. Select the InfoU project folder created in Explorer, then select the Properties pop-up menu
- 2. Click the Share button on the Share tab to add [Everyone] user.
- 3. Next, go to the Network and Sharing Center window in Control Panel, select Turn off password protection sharing in Advanced Sharing Settings, and click Save Changes.



4. Select the InfoU project folder on your computer as an explorer to see if you have permission to copy files in that folder.

25.3.3 Project property setting

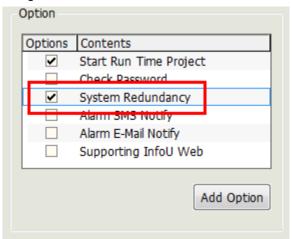
After creating a project (from other menus, go to [System Setting] → [Project Property] of the tree menu), set the basic properties.

Enter your IP address at the Default IP Address section.

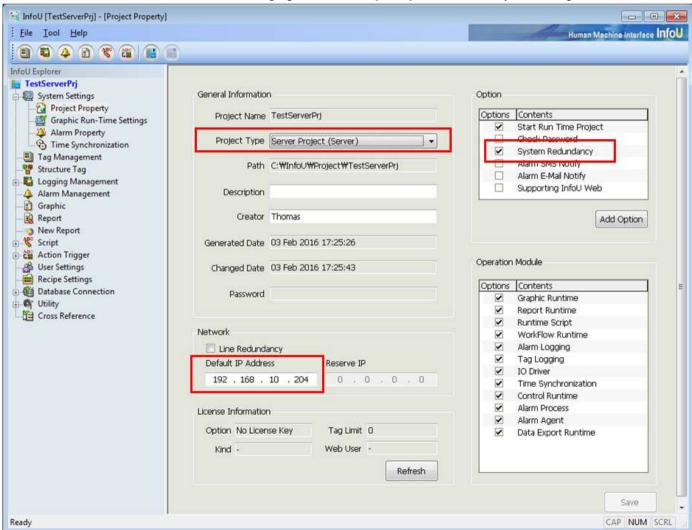


Select and check [System Redundancy] at the Option menu. Please uncheck System Redundancy, in case of

using a standalone server.



The result should be as shown in the following figure. Click the [Save] button to save your setting.

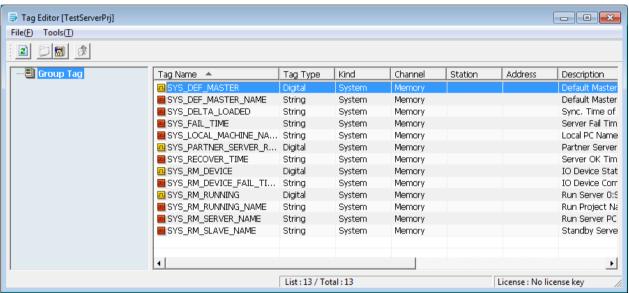


(1) Automatic Creation Redundancy System Tag

If you saved a project with the System Redundancy option, a tag will be generated which shows the redundancy system status.

You can compose and develop various logics within the script, graphics, and InfoU, by referring to these system tag values. (Tag composition and contents are subject to change.)





Tag Name	Description	Туре
SYS_DEF_MASTER	Default Master Server 0:No 1:Yes	Digital
SYS_DEF_MASTER_NAME	Default Master Server Name	String
SYS_DELTA_LOADED	Time of setting file synchronization	String
SYS_FAIL_TIME	Time of server failure	String
SYS_LOCAL_MACHINE_NAME	Local computer name	String
SYS_PARTNER_SERVER_RUN	Partner server status 0:Stop 1:Run	Digital
SYS_RECOVER_TIME	Time of server recovery	String
SYS_RM_DEVICE	IO Device connection (all) 0: 000 Fail	Digital
SYS_RM_DEVICE_FAIL_TIME	Time of IO device connection fail	String
SYS_RM_RUNNING	System running status 0:Standby 1:Run	Digital
SYS_RM_RUNNING_NAME	Name of Run project	String
SYS_RM_SERVER_NAME	Name of Run server computer	String
SYS_RM_SLAVE_NAME	Name of Standby server computer	String

25.3.4 Perform engineering

Now that the basic framework of the project is complete, you can move on engineering works such as setting

communication, adding tags, and drawing up graphics.

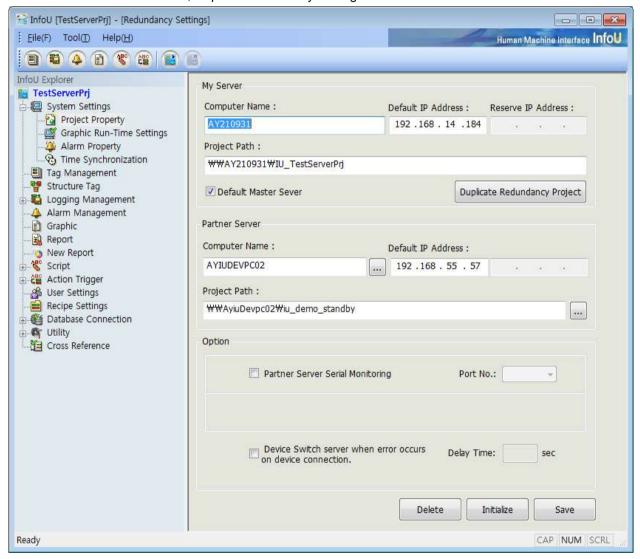
Refer to the related tips on how to perform each engineering work.

25.3.5 Redundancy setting

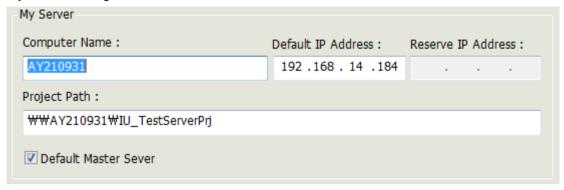
(1) Performing redundancy setting

At the upper menu, go to [Tool] → [Test ServerPri] → [Redundancy Setting].

In case of a standalone server, skip the redundancy setting.



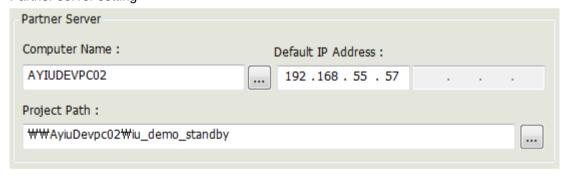
(2) My Server setting



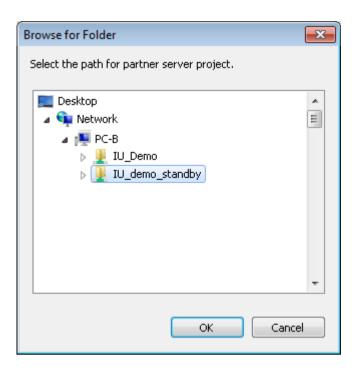
- a. Computer Name: enter the computer name identifiable under the computer's network environment.
- b. Default IP Address: Enter the default IP address of the computer. (The address must match your IP address you entered in the Project Property menu.
- c. Project Path: Enter the path of the current project accessible via network.
- d. Default Master Server: Set the server as the Master Server.

Notice When operating two servers at the same time, they will always run as master servers. The options above must be set at only one of the two servers. After the failover caused by the master failure, the server runs in a master server mode if the master machine becomes operational again.

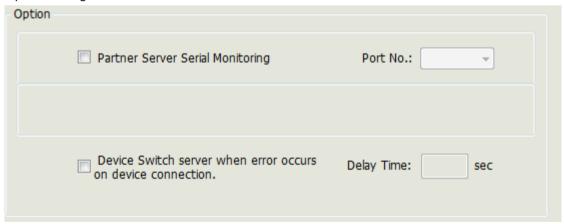
(3) Partner server setting



- a. Computer Name: enter the computer name identifiable under the computer's network environment.
- b. Default IP Address: Enter the default IP address of the computer.
- c. Project Path: Enter the path of the current project accessible via network. You can view and select the network exploration menu by clicking the button.



(4) Option setting



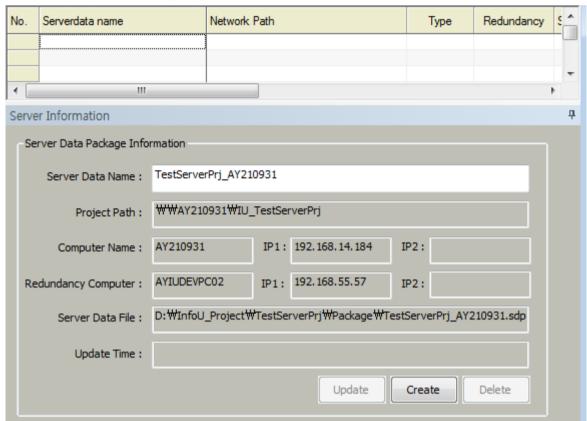
- a. Partner Server Serial Monitoring: Monitor the partner server status by connecting a serial cable.
- b. Port No: Indicates the serial port number to connect.
- c. Server failover when the device connection error occurs: Performs a failover operation when a communication error occurs on the overall device.
- d. Delay Time: Failover occurs when a communication error lasts for the set time. (Minimum setting: 5 seconds)

25.3.6 Creating server data

The server data generation is a feature to set the system composition and share with the client, so that the client

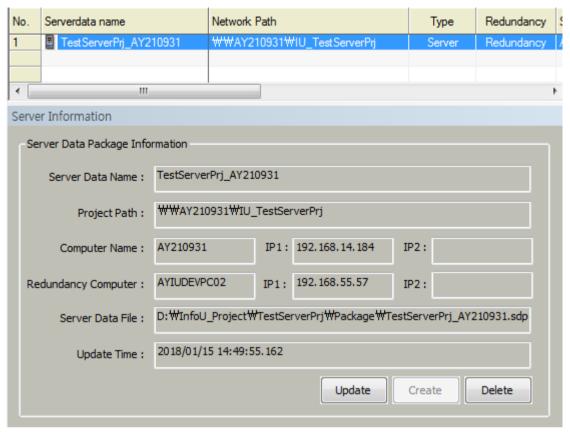
may connect to and manage the server.

Run [Tool] → [TestServerPrj] → [Server Information] menus.



The menu displays pre-defined items, such as server data name, path, and computer name.

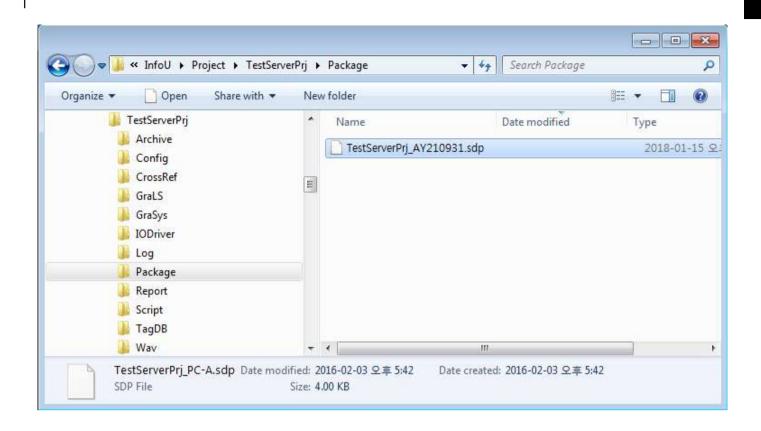
Create server data by clicking the [Create] button. Clicking the button will display the following list of server data.



- a. Update: In case of any changes in system composition engineering after creation, update and save the composition.
- b. Create: Create server data.
- c. Delete: Delete server data files.

Once server data is created, a file (Project Name_Computer Name.sdp) is created under the Package folder.

This file holds the system composition information, to be used when creating and running client projects in the future.



25.3.7 Project synchronization setting

After completing the project setting, engineering, and creating the server data, these files should be uploaded to the project synchronization server.

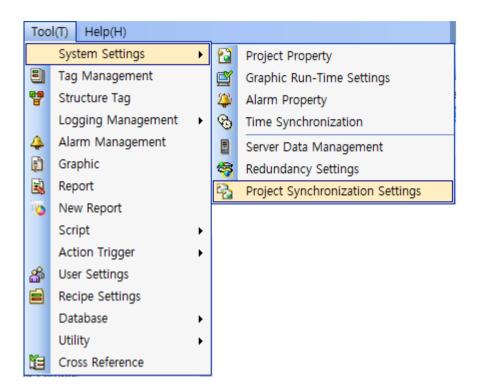
The WebDAV setting for the project synchronization server must be completed at the project synchronization server machine. (Please refer to the related section of the attachment)

The following table shows the enabled/disabled status of the properties and commands of menu objects across different project types.

Types	Master Server	Standby Server	Client
Features	(Single Server, Stand Alone)		
Upload setting	0	0	X
Download setting	0	0	0
Upload All (button)	0	X	X
Setting Download (button)	0	0	0
Setting Save	0	0	0

(1) Performing project synchronization setting

Run [Tool] → [TestServerPrj] → [Project Synchronization] menus.



(2) Entering project synchronization properties

User ID: webdavuse	r .	Password:	•••••	•••••
Server Address : 10 . 13	. 112 . 20	Port Number :	80	
Virtual Folder Name: InfoU				
n time Settings				
Upload Settings		Download Setti	ngs	
Cycle Setting: 0	Time	Cycle Setting	: 0	Time
Contents Sub Folde	r include	Contents	Sub	Folder include
GraLS True		☐ GraLS	Tru	e
Report True		Report	Tru	e
☐ Wav True		☐ Wav	Tru	e
ochronization Operation				
nchronization Operation Force Mode	et All			
	t All	Sub	Folder includ	le
☐ Force Mode	ct All	Sub True		le
Force Mode Selection				le
☐ Force Mode Contents Config		True		le
Contents Config CrossReference (CrossReference)		True True		le
Contents ✓ Config ✓ CrossReference (CrossReference) ✓ Graphic (GraLS) ✓ IODriver ✓ Package		True True True True True		de .
Contents ✓ Config ✓ CrossReference (CrossReference) ✓ Graphic (GraLS) ✓ IODriver ✓ Package ✓ Report		True True True True		le
Contents Config CrossReference (CrossRe Graphic (GraLS) IODriver Package Report Script		True True True True True True		de
Contents ✓ Config ✓ CrossReference (CrossReference) ✓ Graphic (GraLS) ✓ IODriver ✓ Package ✓ Report ✓ Script ✓ TagDB		True True True True True True True		le
Contents ✓ Config ✓ CrossReference (CrossReference) ✓ Graphic (GraLS) ✓ IODriver ✓ Package ✓ Report ✓ Script ✓ TagDB ✓ Wave (Wav)	rf)	True True True True True True True		le
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☐ Force Mode Contents Config CrossReference (CrossReference) Graphic (GraLS) IODriver Package Report Script TagDB Wave (Wav)	rf)	True True True True True True True		Download
Contents Config CrossReference (CrossReference) Graphic (GraLS) IODriver Package Report Script TagDB Wave (Wav)	rf)	True True True True True True True False		

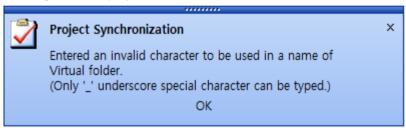
The following table provides descriptions of each item.

Property	Description	Constraints
User ID	Enter User ID	- 10 English characters
0361 12		- No Korean/Chinese characters

		- No special characters (except
		for _)
		- No space allowed
	Enter User Password	- 20 English characters
User Password	Effect Good Facoword	- No Korean/Chinese characters
		- No space allowed
	Enter the IP Address of the project	Numbers only
Server Address	synchronization server.	Numbers only
Port	Port of the project synchronization server	Numbers only
FOIL	r of the project synchronization server	Range of port numbers: 1~65536
Virtual Folder Name	Virtual Folder Name (fixed to InfoU)	
VIIIuai Foidei Name	Virtual Folder Name (fixed to filloo)	- 20 English characters - No Korean/Chinese characters
		- No special characters (except
		for _)
Haland / Ovela Catting	Time a social	- No space allowed
Upload / Cycle Setting	Time cycle	Numbers only
	0 :No periodical uploads from the server	Range: 0~8760 (up to 1 year)
	during runtime	
	1~: Periodical uploads from the server	
11.1. 1716	during runtime at the preset interval	
Upload / Items	GraLS / Report / Wav	
	Check one of the three items (may check	
	multiple items)	
Upload / Include Sub-	Whether to include sub-folders	
folders	T	
Download / Cycle Setting	Time cycle	
	0 :No periodical uploads from the server	
	during runtime	
	1~: Periodical uploads from the server	
	during runtime at the preset interval	
Download / Items	GraLS / Report / Wav	
	Check one of the three items (may check	
	multiple items)	
Download / Incldue Sub-	Whether to include sub-folders	
folders		
Forced Mode	Upload / Download regardless of the	
	lastest	
Select All	Upload / Download entire folders	
Contents	Config (Config)	
	Cross Reference (CrossRef)	

	Graphic (GraLS)	
	IODriver	
	Package	
	Report	
	Script	
	TagDB	
	Wave (Wav)	
	Project File (*.lsp)	
Include sub-folders	Whether to include subfolders	
Upload	Upload selection	
Download	Download selection	
Settings Save	Save the set contents	

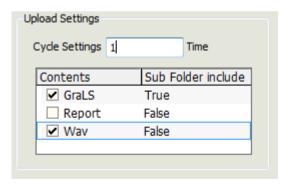
The set items are saved as the Package\FileServerInfo.ini file of the project, and the applicable error messages are displayed when the restrictive conditions of each setting is not complied.



(3) Run time settings - Upload Settings

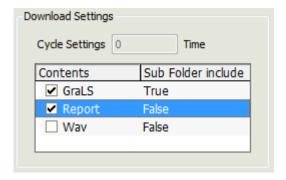
Automatically uploads at the InfoU runtime. For reports that are generated periodically, you can use the [Upload Settings] to perform synchronization at runtime.

In the screen below, GraLS and Wav folders are targeted at runtime when uploading.



(4) Run time settings – Download Settings

The screen below shows the GraLS and Report folders when downloading from the runtime.



25.3.8 Performing project synchronization

Project synchronization is a function to download or upload the engineered project data to the project synchronization server.

In configuration of a redundant project at the master server, [Upload] should be performed early on.

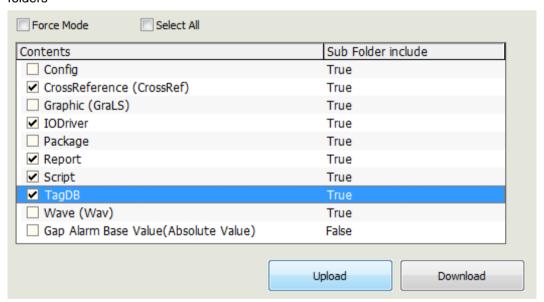
The descriptions on each function are as follows.

(1) Upload

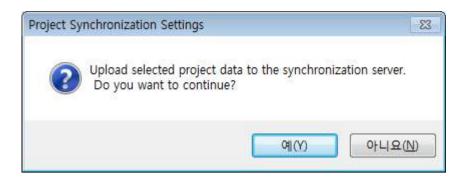
This function uploads the selected item's file to the server when it is partially modified or added.

The [Sync Server Settings] operation must be performed in advance to perform [Upload]. The action is performed according to the item selected in the project [Perform synchronization]

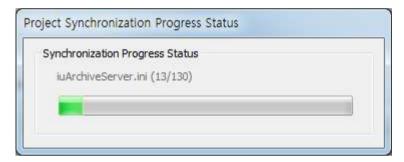
In the screen below, perform [Upload] for Cross Reference, IODriver, reports, scripts, and DB configuration folders



If you click the [Upload] button, a dialog box appears asking the user to proceed



If [Yes] is selected, the contents of the synchronization server and runtime settings are saved. Only when there is no error, [Upload] proceeds. As the upload sync progresses, a progress bar shows the progress of the task.



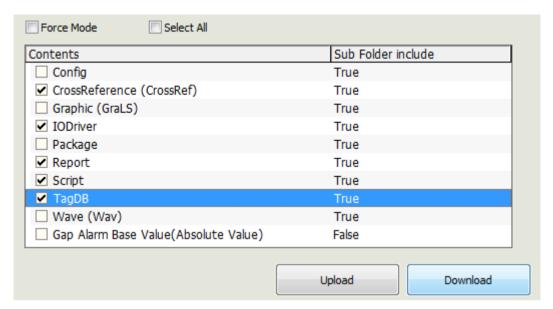
Upon completion, a message box is displayed which indicates that the upload is complete.



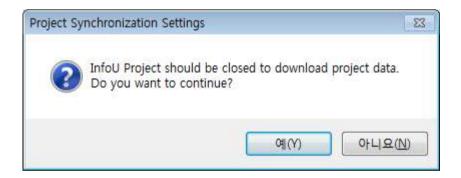
(2) Download

It downloads the project of the selected item from the project synchronization server. Mainly used to synchronize master project files on the standby server.]

When selecting db setting

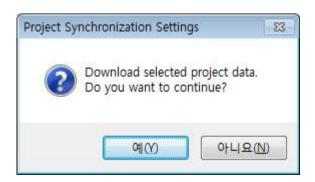


If [DB Setting (TagDB)] is checked among the selected items, if you click the [Download] button, a dialog box asking the user to proceed is displayed as follows. In [Download], the project is terminated internally and the operation is carried out. After [Download] is completed, the project is automatically restarted.



When Unselecting db setting

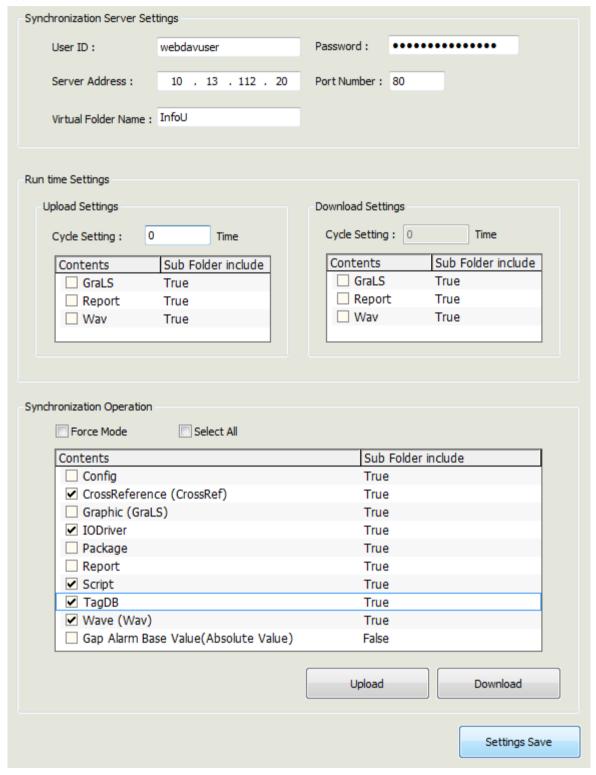
If [DB Setting (TagDB)] is not checked in the selected items, when you click the [Download] button, a dialog box asking the user to proceed is displayed.



(3) Settings Save

Synchronization server and runtime settings are saved, and the set items are saved as Package

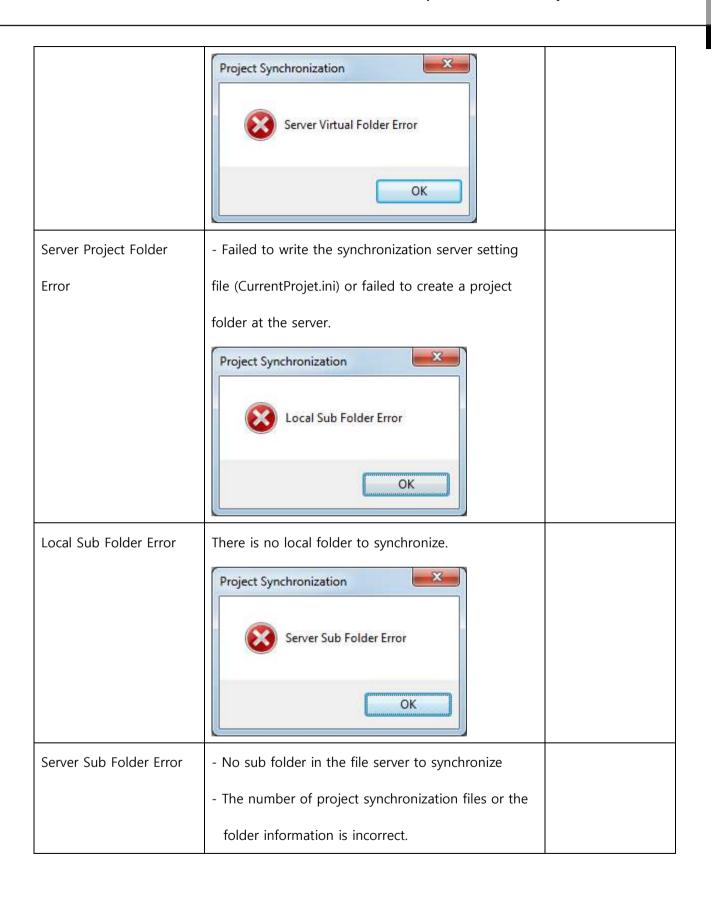
\FileServerInfo.ini file of the project. If it violates the constraints of each setting, an appropriate error message appears.



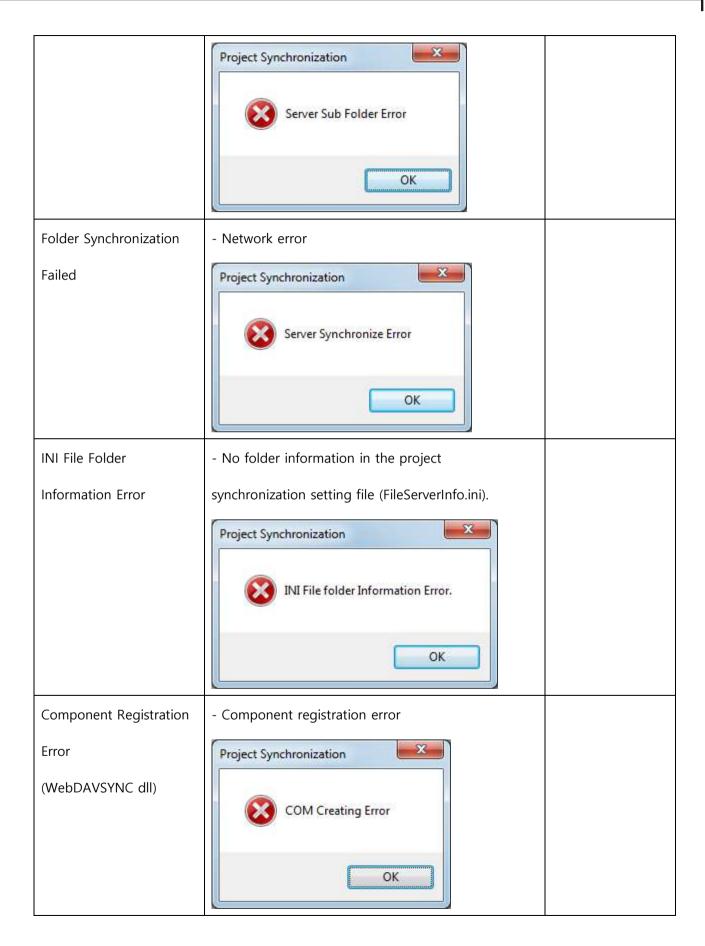
(4) Synchronization error meesages

The following table lists the success/fail messages after synchronization.

Definition	Error Message	Note
Sucess	- Synchronization is successful Project Synchronizat Success OK	
Initialization Failed	- The project synchronization setting file	
	(FileServerInfo.ini) does not exist.	
	Project Synchronization Server Synchronize Error OK	
Server Connection Failed	- WebDAV server address, port information is not	
	correct.	
	Project Synchronization Server Connection Failed OK	
Server Virtual Folder	- The virtual folder name is incorrect.	
Error	- IIS setting file size error	



Chapter 25 Redundancy and Client Server



25.4 Redundancy Project Setting (Standby)

25.4.1 Procedures

The procedure at the standby server to build the redundancy system is as follows.

- a. Create a server project.
- b. Select and save an IP setting and redundancy option
- c. Perform redundancy-related settings.
- d. Create server data.
- e. Set the information of the project synchronization server, and download the whole project.
- f. Revise engineering.

25.4.2 Creating server project

The procedure is the same as the master server.

Please refer to the Creating server project section of the redundancy master server.

25.4.3 Setting project properties

The procedure is the same as the master server.

Please refer to the Setting project properties section of the redundancy master server.

However, you should enter your own local IP address.

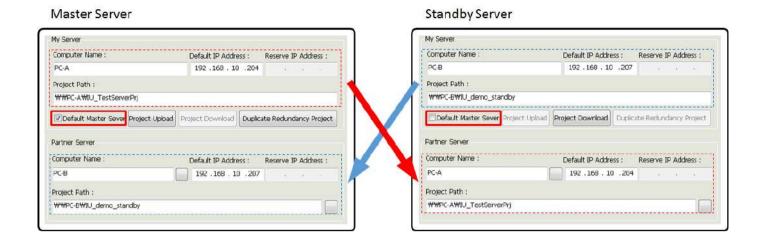
25.4.4 Redundancy setting

The setting and basic flow of the master server are as follows.

However, caution is required regarding the server setting section and the partner server setting section.

Under the master server settings shown below, the My Server information is input as the Partner Server information at the standby server. In addition, under the master server setting, the information of the Partner Server is input as the My Server information at the standby server. (cross)

In addition, the Default Master Server box for the standby server must be unchecked. (Important)



25.4.5 Creating server data

The procedure is the same as the master server.

Please refer to the Creating server data section of the redundancy master server.

25.4.6 Project synchronization setting

The procedure is the same as the master server.

Please refer to the Project synchronization setting section of the redundancy mastser server.

25.4.7 Performing project synchronization

At the standby server, the whole project should be downloaded from the project synchronization server.

Please refer to the [Performing project synchronization] → [Download all] section of the redundancy master server.

25.4.8 Revising engineering

In case of operating a redundancy server, when the master PC cannot be operated normally due to an emergency, the standby server is enabled to assume the role of the server.

After downloading the whole projet through the project synchronization server, the engineering revision for the IP addresses of the preset communication channels and stations should be performed.

WHen setting the local IP of the communication channels and stations at the master server, if the master server address entered is not 127.0.0.1, the IP information of the communication channels and stations at the standby server has the IP address of the master server, not the address of the standby machine. In such case, the IP address for the device should be changed manually at the standby server.

25.5 Client Project Setting

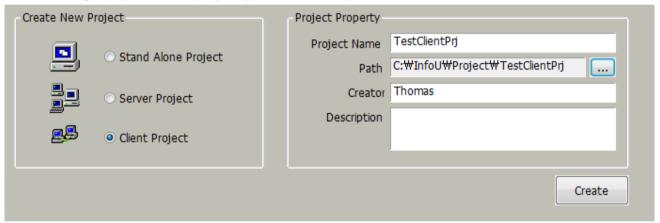
25.5.1 Procedures

The procedure to build a client is as follows.

- a. Create a client project.
- b. Perform IP setting.
- c. Load the server data by connecting the server project.
- d. Set the information of the project synchronization server, and perform [Set Download]

25.5.2 Creating client project

When creating a project, set the project type as Client Project.



The client project type cannot be changed once selected.

25.5.3 **Setting project properties**

Upon creating a project, enter your IP address at the network section and then click [Save].

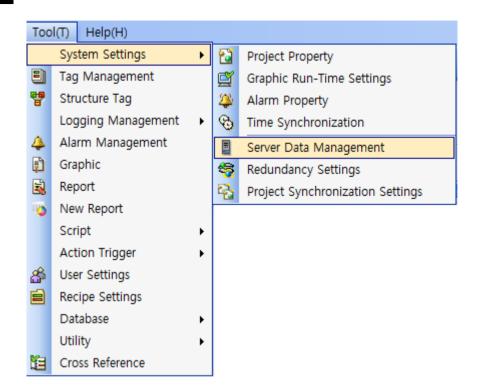


25.5.4 Connecting server project

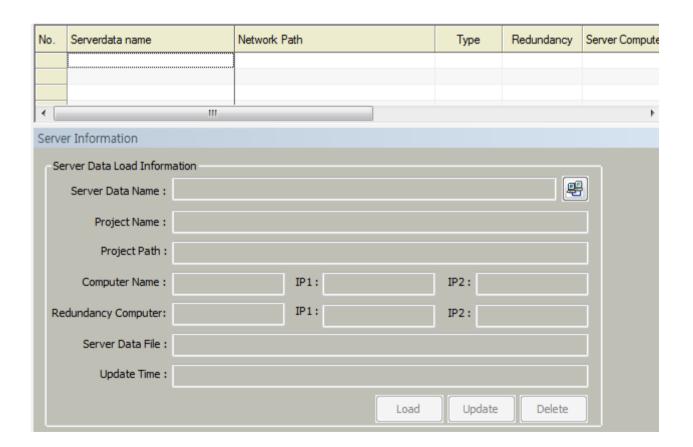
Connection with server must be performed in order to connect with the server.

Select [Tool] → [TestServerPrj] → [Server Data Management].

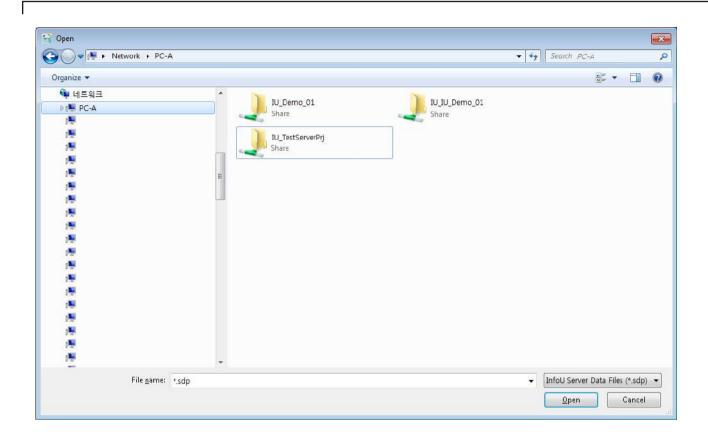
Chapter 25 Redundancy and Client Server



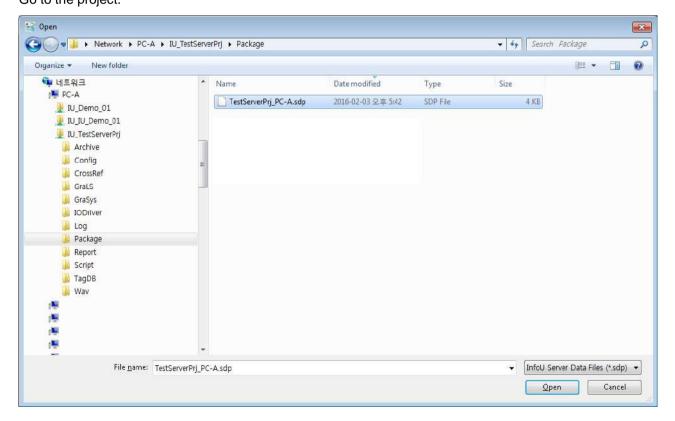
The menu for server project connection is displayed.



Click the button next to the server data name section, and look for the computer corresponding to the server.



The project created at the server computer is shared and displayed by default. Go to the project.

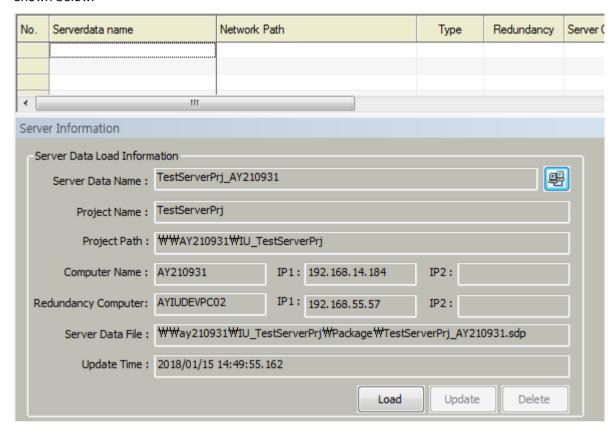


Select the *.sdp files of the package folder of the project, then click Open.

Chapter 25 Redundancy and Client Server

(The name of the sdp file follows the convention of project name_computername.sdp)

Completing this process will display the server data information on the client's server data management menu, as shown below.

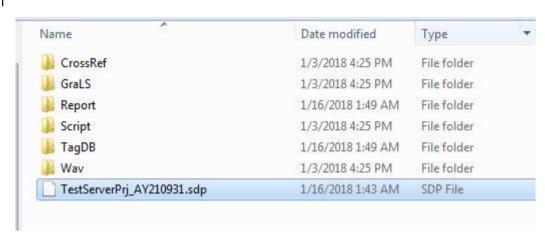


Click Load to register the information.

		Network Path	Туре	Redundancy	Server Compute
1	🖳 TestServerPrj_AY210931	₩₩AY210931₩IU_TestServerPrj	Loaded	Redundancy	AY210931

In addition, the necessary files for running the client project from the shared folder on the server are copied to the Package folder in the client project folder. (If the file size is large, it may take a long time.)

When the operation is completed, the files for starting the client project are copied into the Package folder of the client project as follows



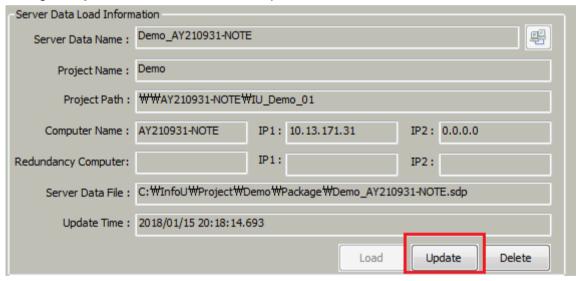
You are now ready to start the client.

If the server project is running at runtime, running the client project will connect to the server and be operational

25.5.5 Renew engineering files

In addition to the configuration of the client environment completed in the previous step, there may be additional files on the server for graphical representations (GraLS), report files (Report), and sound files (Wav).

In this case, if you click the [Update] button in InfoU Engineering's [Tools]→[System Settings]→[Server Data Management] menu, the added file will be copied to the client



25.5.6 Using the Project Synchonization Server

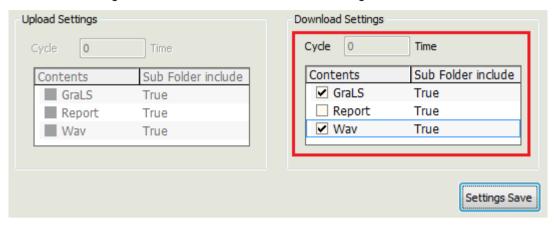
If a file such as graphical drawing is added on the server, you can execute the same function by executing InfoU Engineering and clicking the [Update] button on the [Server Data Load Information] screen during runtime.

However, in order to download the changed project files (graphics, reports, sounds) without launching InfoU engineering on the client machine, you must use the project synchronization server

To do this, first select the [Tools]→[System Settings]→[Project Synchronization] menu of InfoU Engineering and configure the information and settings of the project synchronization server. (See the Project Synchronization

Settings section of the duplication master setup)

In Runtime Settings section, select items to download during runtime and save them.



Once configured, you can download graphical changes, etc. from the menu of the InfoU runtime's tray icon on the client machine

25.6 Runtime Project synchronization

The composition and features of the projet synchronization server can be performed during engineering. However, they may be also performed during runtime.

Download All or Upload All cannot be perfored during runtime: only Setting Download/Upload can be performed.

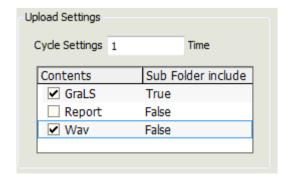
The runtime auto upload feature synchronizes the project at the cycle set within the InfoU. The runtime project synchronization can be performed through the tray icon menu of the InfoU runtime.

25.6.1 Runtime manual upload

If such changes as the revision or addition of graphic page occur during the runtime, the changes should be notified to the clients.

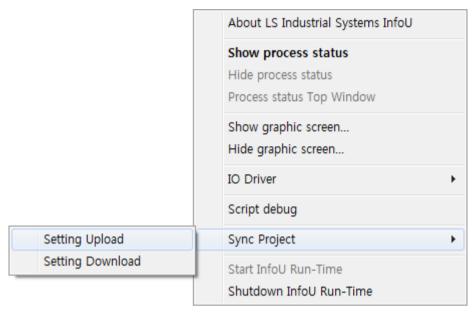
In such a case, the runtime manual upload function is to upload the changes to the project synchronization server.

The runtime manual upload settings must be specified in advance in the Runtime-Upload Settings section of InfoU Engineering's [Tools]→[System Settings]→[Project Sync menu]



The runtime manual upload feature allows you to upload changes to the project synchronization server through the menu of the tray icon in the InfoU runtime. (If the cycle is 0, automatic upload is not performed.)

At the tray icon of the InfoU runtime, run [Project Synchronization] \rightarrow [Setting Upload] menu.



The setting upload funtion can be performed only for the items set to be uploaded during the InfoU engineering.

25.6.2 Runtime automatic upload

During system operation, engineers do not monitor the server at all times.

The runtime automatic upload feature uploads any added report files, etc. to the project synchronization server.

The function runs at the cycle entered when setting the upload during the InfoU engineering stage.

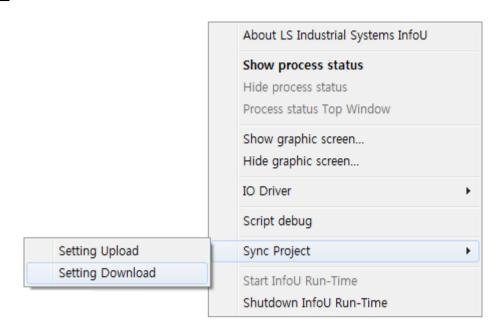
25.6.3 Runtime manual upload

When an engineering file such as graphic drawing s added/revised or a report file is added and uploaded to the project synchronization server, the client needs to download such changes into its local server.

The runtime manual upload feature can be used in such cases.

Similar to the runtime manual upload fueature, only the items set to be downloaded during the InfoU engineering stage can be downloaded.

The runtime manual download feature can be performed at the tray icon of the InfoU runtime, by rrunning [Project Synchronization] → [Setting Download] menu.



25.7 Client Management

The client management features include features designed to effectively manage clients at the server machine under the server and client system conposition.

The most frequently used features include: granting access of clients, monitoring client resource status, and using various actions on menus and scripts by creating tags reprsenting client's connection status. In addition, the features such as running, completion, re-run, project synchronization, etc. for the client can be monitored and controlled at the server computer.

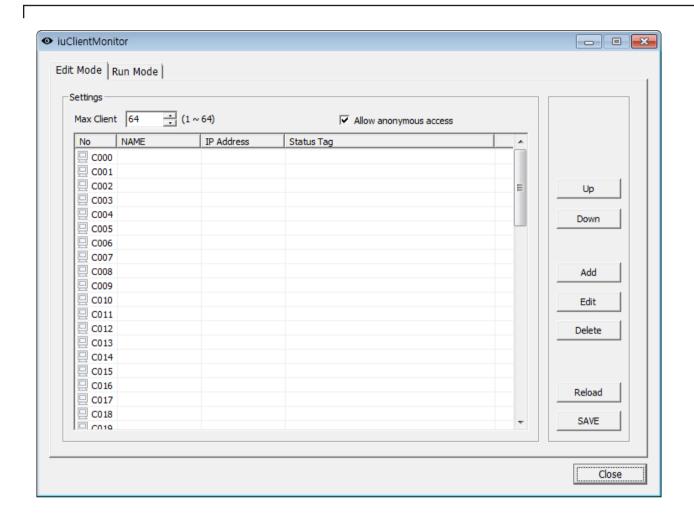
Client editing and management is performed using a separate program called iuClientMonitor. The InfoU engineering and project loading must be completed in advance.

25.7.1 Client management program

Client management requires registering the information of the clients wanting to acces the server.

At the InfoU installation directory of the server machine, run the iuClient Monitor program.

The following main menu is displayed.



The iuClientMonitor consists of the Edit tab and the Run tab.

The Edit tab includes menus for adjusting client management environment settings and editing each client. The Run tab includes menus for monitoring and issuing commands to clients during the InfoU runtime.

25.7.2 Client management environment setting

At the Edit tab, you can set the maximum number of clients, and the operation policies regarding client access. The environment setting itesm are as follows.

Item	Description
Max Client	Enter the maximum number of clients allowed to connect with the server.
	Any client other than the set number of clients cannot access the server. The
	maximum number can be set at up to 16.
	Please adjust the number of clients accordingly, considering the server computer's
	performance and the network status.
Allow anonymous access	This flag determines whether to grant access to unregistered clients.
	Please uncheck the checkbox if you want to allow only registered clients to access
	the server.

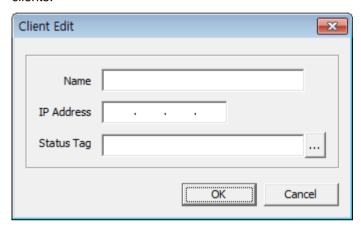
25.7.3 Editing clients

Use the iuClientMonitor program to edit clients.

After editing, clcick the [Save] button to save the edited information.

(1) Adding clients

Clicking the [Add] button at the Edit tab, or double-clicking on an empty list brings up a menu for adding clients.

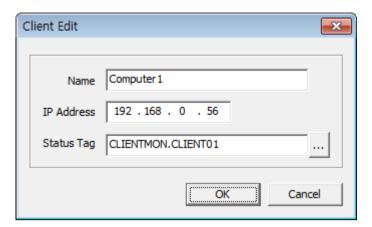


The following table provides descriptions of each item.

Items	Description	Note	
Name	Enter the client's name.	Must be filled. Names may not	
		overlap.	
		Length restrictied (32 Korean	
		chraters, 64 English	
		characters)	
		Special characters not	
		allowed, except for the	
		following.	
		(# \$ [] _ { } .)	
IP Address Enter the client's IP address.		No duplicate as a required	
		item	
Status Tag	Register the digital tags to verify the connection		
	status of the client. Clicking the [] button		
	displays a menu for selecting tags.		

(2) Editing clients

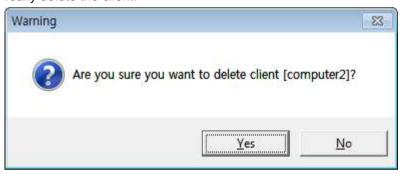
After selecting a client from the client list, click the [Eit] button or double-click a client to bring up a menu for editing the client.



Please refer to the Addint client section for description of each item.

(3) Deleting clients

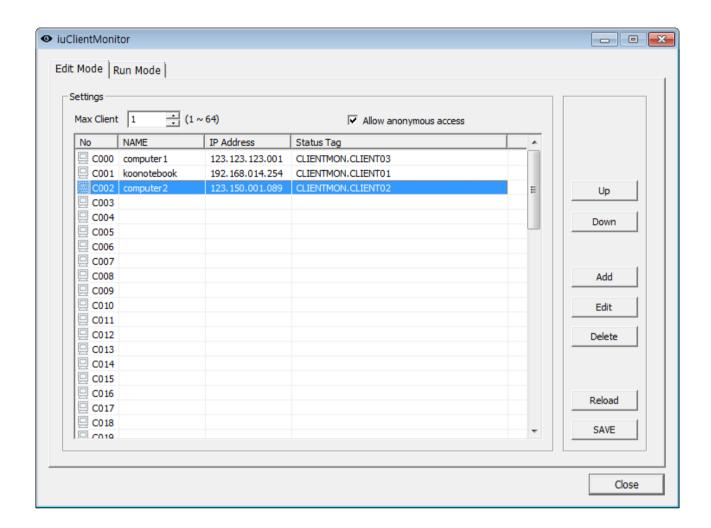
After selecting a client from the client list, click the [Delete] button to bring up a dialog box asking whether to really delete the client.



You can select either Yes or No, to set whether to continue with the deletion.

(4) Changing client position

The registered clients are shown in their order on the list.



To change the position of a client in the list, select a client on the list and click the [up] or [down[button to change the order of clients.

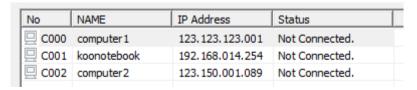
25.7.4 View client status (runtime)

When the InfoU runtime is performed, client status can be monitored in realtime using the iuClientNonitor m.

(1) Viewing connection status

From the client list, the connection statuses of each client can bem onitored.

The status is indicaed either Not Connected or Connected, for each client.



When a client connects to the server, the information is applied to the iuClient Monitor program in a relatively short time. However, when a client loses connection, the server checks the client's status several times and waits for the client's response. Therefore, it may take some time.

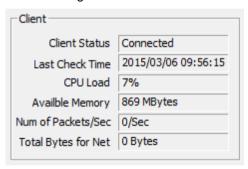
(2) Viewing resource status

After a client connects to the server, the resource status of the client's machine can be monitored at the server.

This feature receives information from the client and displays it, using a Windows feature.

The Windows of the client's machine collects resources and performs tatistics by combining various parameters. Therefore, it may take some time, and the client's resource status displayed at the server may not be correct.

The following resource status can be monitored from the server.



Item	Content
Client Status	Client Status
	Connected
	NOt connected
Last Check Time	Time of last resource check
CPU Load	CPU load factor
Available Memory	available memory
Num of Packets/Sec	number of packets per second
Total bytes for Net	number of bytes per second

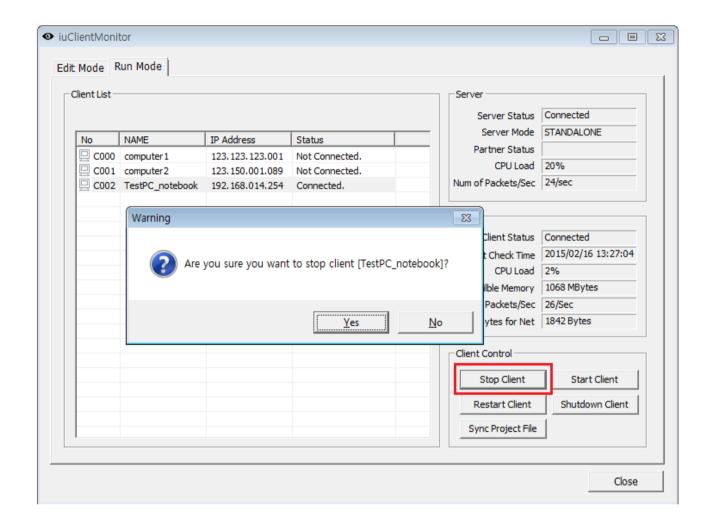
25.7.5 Client Command (Runtime)

The iuClientMonitor program not only allows a user to montor the connected clients, but also issues various commands to the clients.

(1) Stop Client

You can select a client from the connected clients list, and click the [Stop CLient] button to stop the client.

Chapter 25 Redundancy and Client Server

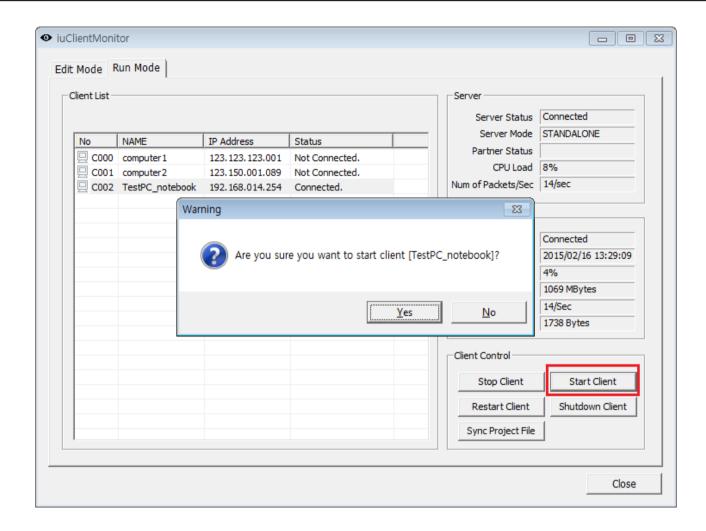


In such case, the client is not completely shutdown, but can receive commands afterwards. You can restart the client using the [Start Client] command.

(2) Start Client

This command selects and restarts the sopped clients.

Select a client, and restart the client using the [Start Client] command.

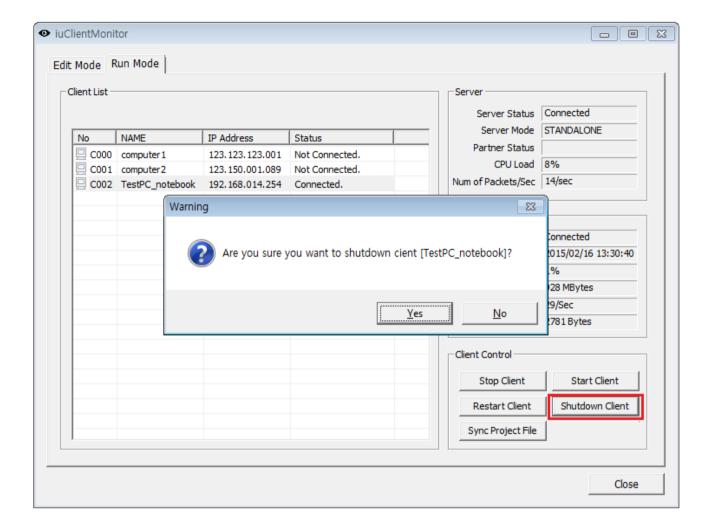


(3) Shutdown Client

Unlike Stop Client, this command shuts down a client completely.

Select a connected client, and select the [Shutdown Client] command to deliver the shutdown command to the client.

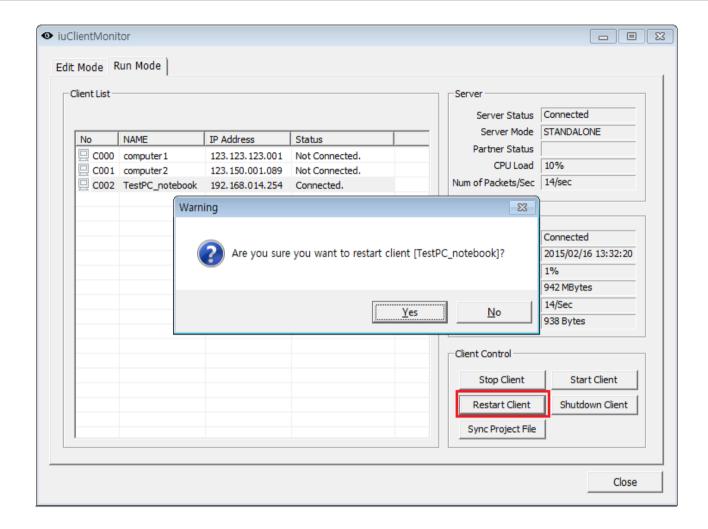
Chapter 25 Redundancy and Client Server



(4) Restart Client

This function restarts a client.

It performs Stop and Start at the same time. The restarted client shutsdowns its functions such as the graphic engine, and restarts in the initial mode.



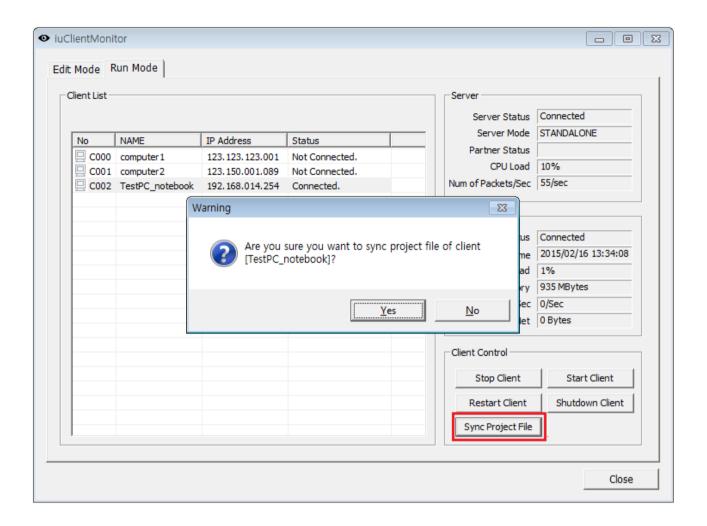
(5) Synchronize Client

When the engineering such as graphic is revised at the server machine, this feature uploads the files to the project synchronization server, and forces the client to download the revised files.

While runtime manual download is performed from the InfoU trayicon at the client machine, this function is to ssue a command by force in the server.

In this case, the Setting Download item at the client must be enabled first.

Chapter 25 Redundancy and Client Server



Chapter 26 Mobile

The InfoU mobile is based on the Client/Server structure. The mobile designer and mobile server are installed at the server side; mobile Client (app) is installed in mobile devices (smart phone, tablet, etc.) at the client side.

The plant screen drawn by the mobile designer is serviced through the mobile server. The mobile client can remotely monitor and control the field conditions by accessing to the mobile server. (Recommend 5 concurrent users,(i7, 4G memory, 150 tags / page))

26.1 Mobile Designer

The InfoU Mobile Graphic Editor (hereinafter referred to as mobile designer) is the graphic editor that provides various functions to make monitoring screens.

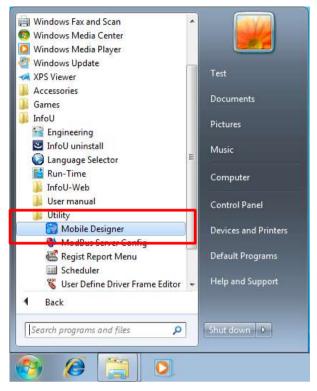
26.1.1 Startup

- (1) Functions
 - 1) Various graphic object tools are provided. (line, polyline, polycurve, rectangle, Rounded Rectangle, ellipse, image, text, tag value)
 - 2) Diverse animations and user action functions are provided by setting dynamic properties.

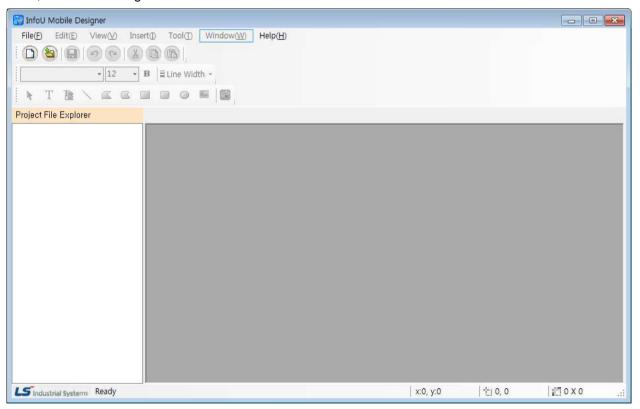
 (horizontal/vertical size, horizontal/vertical movement, color, blink, visible, rotation, writing tag values, etc.)
 - 3) Various resolution can be applied depending on the mobile device's screen and it also supports the multiresolution.
 - 4) It provides the Control Unable/Enable function by user authority.
 - 5) You can register the tags to be used in the mobile client by setting service tags. (tag group, alarm, trend group)
- (2) Startup

You can select [InfoU] → [Utility] → [Mobile Designer] in the program list to start up the mobile designer.

Chapter 26 Mobile



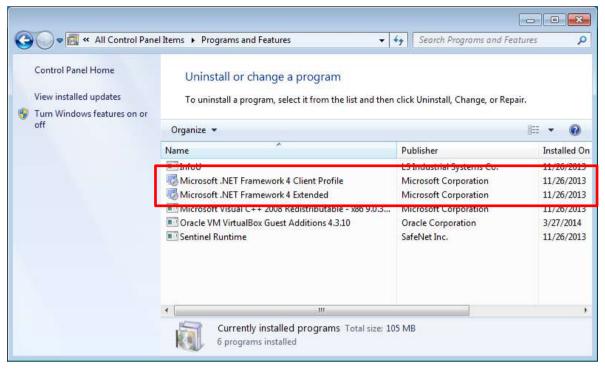
Then, the mobile designer will run as below.



Notice

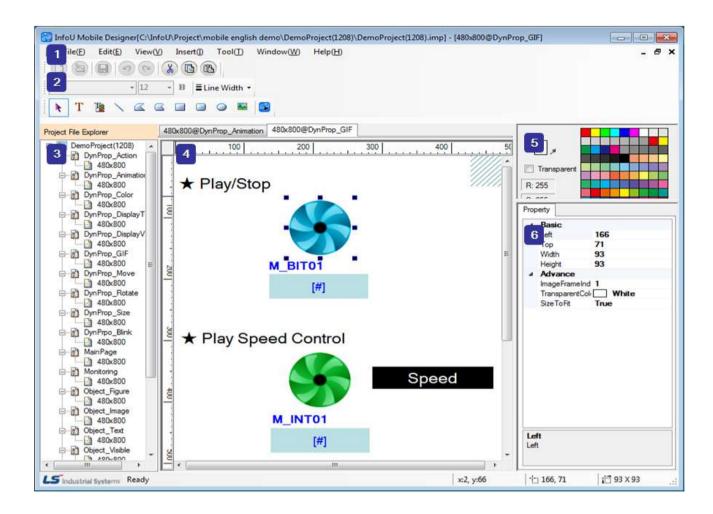
To run the mobile designer, .NET 4.0 full version should be installed.





(3) Configuration

The mobile designer is the system development tool, which defines and sets the system components required by the InfoU mobile Client such as screen composition, definition of dynamic properties, setup of project services, etc.



The descriptions on the screen components of the mobile designer are as follows.

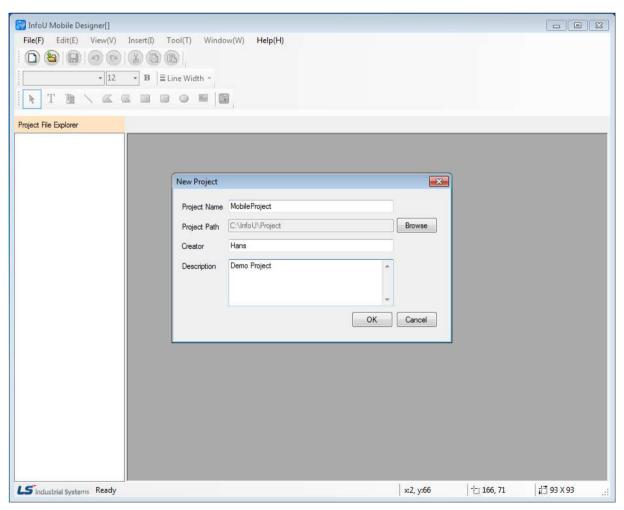
- Main menu: You can use the functions provided by the InfoU mobile graphic editor.
- Standard tool and object, form tools: They are the icons of standard tools frequently used in the graphic editor and object tools required to make a page, tools required to define the properties of texts and lines.
- **Project File Explorer**: It expresses the currently working project as a tree, which is composed of several resolutions for each page.
- Page editing screen: It is the screen to edit the page. You can draw images using diverse objects and define user actions such as definition of dynamic properties, etc.
- Color tool: You can conveniently specify the color of the page and object through this tool.
- 6 Object property window: You can change the properties of each object.

26.1.2 Mobile Server Project

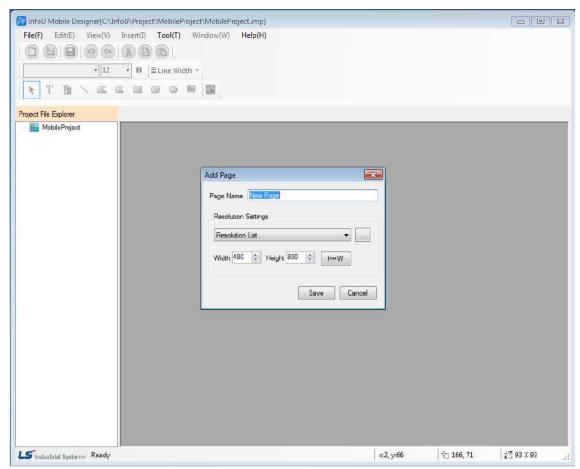
Creation of the project
 Create the mobile server project.



Run [File] \rightarrow [New Project] in the main menu.

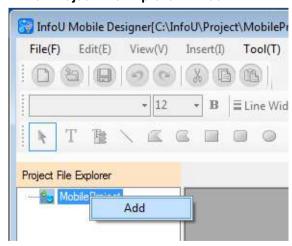


Input "Project name", "Project path", "Creator", "Project description" and click the "Create" button to make a new project. In this case, "Creator" and "Project description" can be omitted.



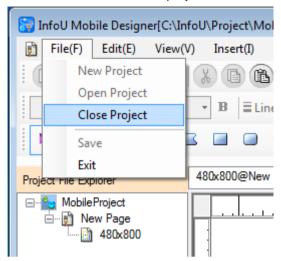
After the project is created, the window to add the page and resolution will be displayed as above. Input the "Page Name" and set the width and height of the page. Then, when you click the "Save" button, the page will be created.

You can also create the page and resolution by running the "Add" menu after executing the popup menu in the "Project File Explorer" window.



2) Close Project

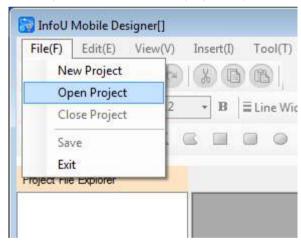
It closes the mobile server project.



If you run **[File]** → **[Close Project]** in the main menu, the project will be closed and it will be switched into the initial screen.

3) Open Project

It can open the mobile server project to perform tasks.



If you run [File] \rightarrow [Open Project] in the main menu, the dialog box to select the file will show up.

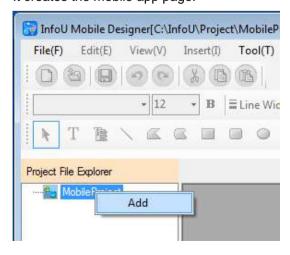


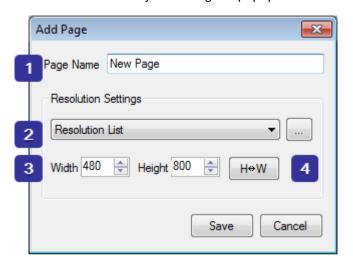
After selecting the mobile project file, if you click the "Open" button, the project will be open. The extension of the InfoU mobile project is "*.imp".

26.1.3 Mobile APP Page

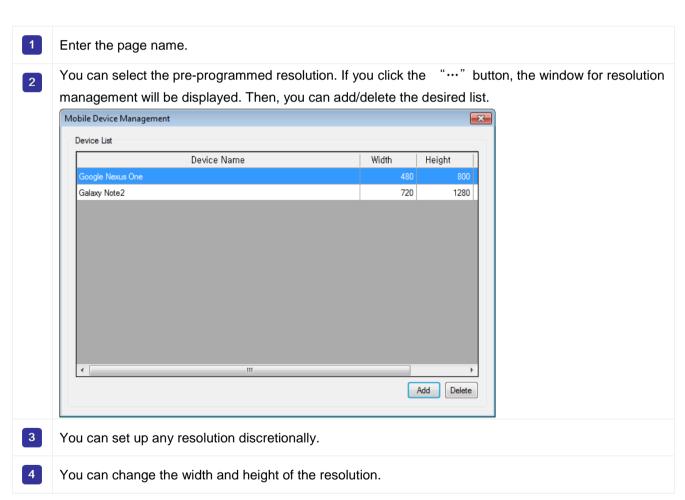
The mobile app page is the monitoring screen used for the mobile client. There are so various types of mobile clients with their own diverse resolutions. Even in the same mobile client, different resolution documents are required to provide the best monitoring screen depending on each viewpoint. Accordingly, the mobile app page should be expressed as several resolution documents even in the same monitoring screen. The InfoU mobile app page is composed of various resolution documents.

Add Page
 It creates the mobile app page.





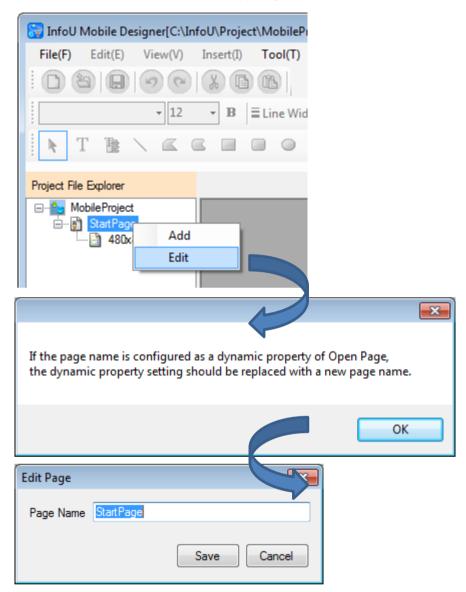
Run the "Add" menu by executing the popup menu in the "Project File Explorer" window.



If you press the "Save" button, 1 mobile app page and 1 resolution document will be created.

2) Edit Page

You can edit the name of the mobile app page.



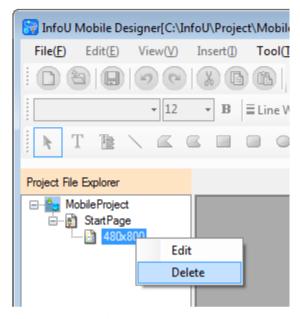
If you select "Edit" in the popup menu, the information window will be displayed. When you press the "OK" button in the information window, the 'Edit Page' window will be displayed. If you enter a new page name in the edition window and click the "Save" button, the page name will be modified.

Notice

In case the previous page name was applied to the dynamic property of transition, if you edit the page name, the relevant dynamic property will not run. Namely, if you edit the page name, you need to change the settings of the dynamic property of the page transition.

3) Delete Page

It deletes the mobile app page. The mobile app page is composed of resolution documents. If the resolution documents are all deleted, the relevant mobile app page will also be deleted.



You can delete the resolution document by running "Delete" in the popup menu.

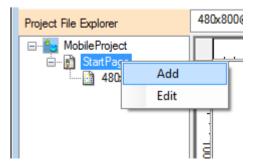
Notice

If there are several resolution documents, when you run "**Delete**", the selected resolution document only will be deleted.

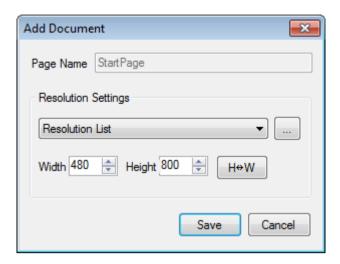
26.1.4 Resolution Document

It is the document that expresses the mobile app page with a specific resolution. The mobile app page can have multiple resolution documents to realize the screen optimized for the devices with various resolutions.

Add Resolution Document
 It adds the resolution document to the mobile app page.



Run "Add" in the popup menu of the mobile app page.



After setting the resolution of the resolution document, if you click the "Save" button, the document will be added.

Notice

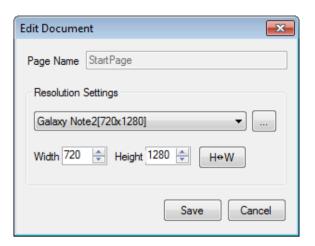
You cannot repetitively add the resolution document with the same resolution.

2) Edit resolution document

It edits the resolution of the resolution document.



You can run "Edit" in the popup menu of the resolution document.



If you edit the resolution (width, height) and click the "Save" button", the modified resolution will be saved.

Notice

If the resolution document to edit is open, edition works can be performed only after closing the relevant document.

3) Delete Resolution Document

It deletes the resolution document from the mobile app page.



You can urn "Delete" in the popup menu of the resolution document.

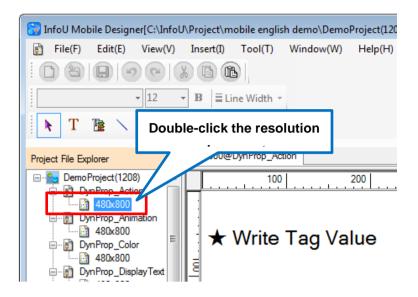
Notice

Refer to the following instructions to delete the resolution document.

- In case there is one resolution document in the mobile app page, when you delete the resolution document, the mobile app page will also be deleted.
- In case the resolution document to be deleted is open, deletion works can be performed only after closing the document.

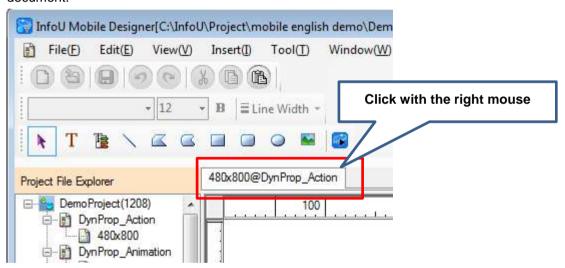
4) Open Resolution Document

You can open the resolution document and perform drawing works by double-clicking the resolution document in the project file explorer.



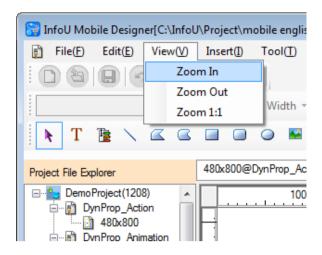
5) Close Resolution Document

To close the resolution document, click with the right mouse button on the tab of the open resolution document.



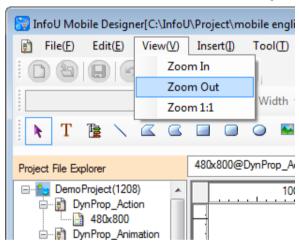
6) Zoom In Resolution Document

To zoom in the resolution document, select [View] \rightarrow [Zoom In] in the main menu.



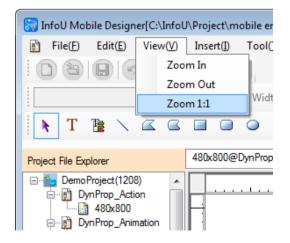
7) Zoom Out Resolution Document

To zoom out the resolution document, select [View] \rightarrow [Zoom Out] in the main menu.



8) View the original of the resolution document

To view the original size of the resolution document select [View] \rightarrow [1:1 ratio] in the main menu.

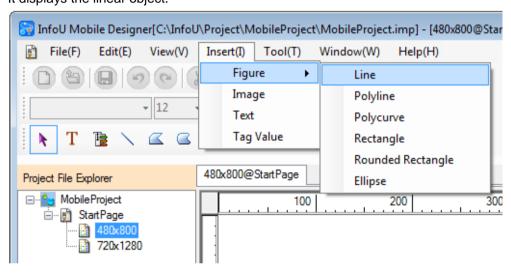


Chapter 26 Mobile

9) Scrolling of resolution document Under the status of Zoom In, you can move the screen while you click with the right mouse button on the resolution document. When scrolling starts, the mouse cursor will be changed into the shape of (standing for movement.

26.1.5 Object

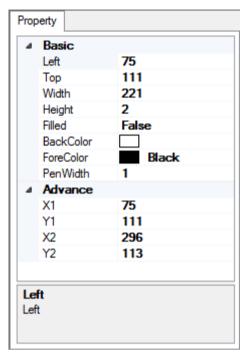
1) Line It displays the linear object.





For drawing a line, you can select [Insert] → [Figure] → [Line] in the main menu or select the icon in the shape of "Line" from the toolbar.

The properties of the linear object are as follows.

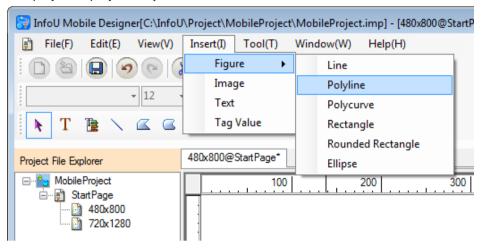


- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object
- Width, Height: Width and height of the object
- **Filled**: You can determine whether filling the inside of the object with the background color. It is not available in the line object.
- BackColor: You can select the color to fill the inside of the object. It is not available in the line object.
- ForeColor: You can select the color of the object.
- Line thickness: You can select the thickness of the line forming the object.
- Start point X coordinate, start point Y coordinate: Coordinate value of the upper left corner of the object
- End point X coordinate, end point Y coordinate: Coordinate value of the bottom right corner of the object

There is no limit on the range of value input, however, please note that you need to consider the screen size. If you input too large value, it will be displayed outside of the screen so the object may not be displayed on the screen or cut off.

2) Polyline

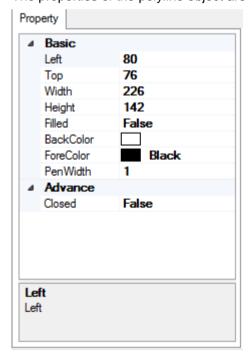
It displays the polyline object.





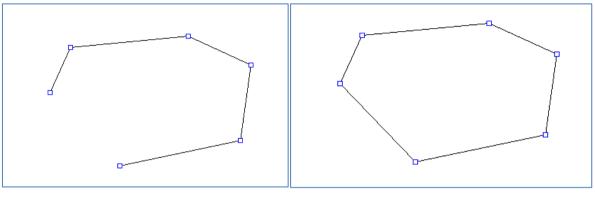
For drawing a polyline, you can select **[Insert]** \rightarrow **[Figure]** \rightarrow **[Polyline]** in the main menu or select the icon in the shape of "Polyline" from the toolbar. You can draw a figure in the manner of clicking the mouse and adding a dot. To exit Drawing Polyline, click with the right mouse button.

The properties of the polyline object are as follows.



- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object
- Width, Height: Width and height of the object
- Filled: You can determine whether filling the inside of the object with the background color.

- BackColor: You can select the color to fill the inside of the object.
- ForeColor: You can select the color of the object.
- Line thickness: You can select the thickness of the line forming the object.
 - Path Close: If it is TRUE, the open object will become the closed one; If it is FALSE, the closed object become the open one.

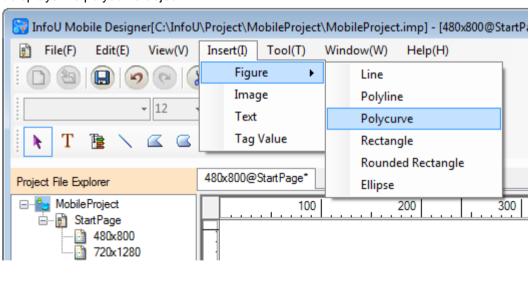


< Path Close: False>

< Path Close: True>

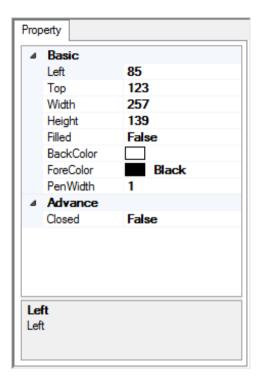
3) Polycurve

It displays the polycurve object.





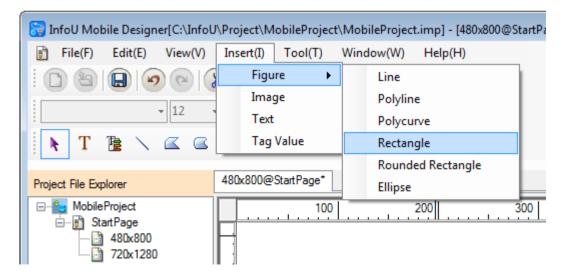
For drawing a polycurve, you can select **[Insert]** \rightarrow **[Figure]** \rightarrow **[Polycurve]** in the main menu or select the icon in the shape of "Polycurve" from the toolbar. The drawing method is the same as the polyline. The properties of the polycurve object are as follows.



- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object
- Width, Height: Width and height of the object
- Filled: You can determine whether filling the inside of the object with the background color.
- BackColor: You can select the color to fill the inside of the object.
- ForeColor: You can select the color of the object.
- Line thickness: You can select the thickness of the line forming the object.
- Path Close: If it is TRUE, the open object will become the closed one. If it is FALSE, the closed object become the open one. The way of Path Close is the same as the polyline's.

4) Rectangle

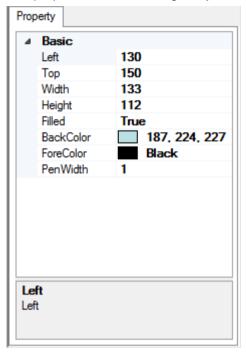
It displays the rectangle object.





For drawing a rectangle, you can select **[Insert]** \rightarrow **[Figure]** \rightarrow **[Rectangle]** in the main menu or select the icon in the shape of "Rectangle" from the toolbar.

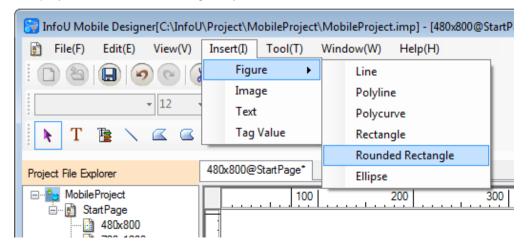
The properties of the rectangle object are as follows.



- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object
- Width, Height: Width and height of the object
- Filled: You can determine whether filling the inside of the object with the background color.
- BackColor: You can select the color to fill the inside of the object.
- ForeColor: You can select the color of the object.
- Line thickness: You can select the thickness of the line forming the object.

5) Rounded Rectangle

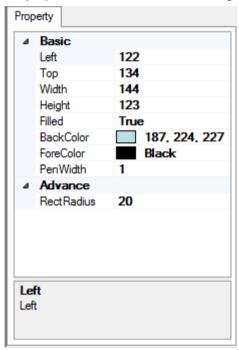
It displays the Rounded Rectangle object.



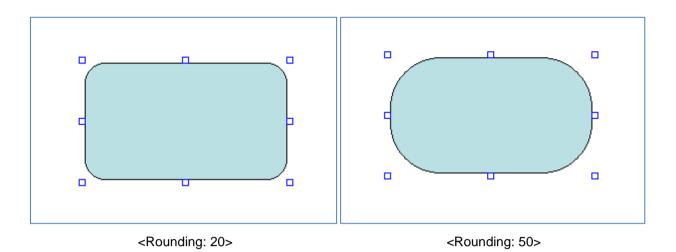


For drawing a Rounded Rectangle, you can select [Insert] → [Figure] → [Round rectangle] in the main menu or select the icon in the shape of "Rounded Rectangle" from the toolbar.

The properties of the Rounded Rectangle object are as follows.

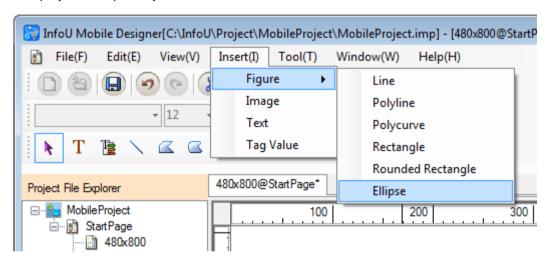


- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object
- Width, Height: Width and height of the object
- Filled: You can determine whether filling the inside of the object with the background color.
- BackColor: You can select the color to fill the inside of the object.
- ForeColor: You can select the color of the object.
- Line thickness: You can select the thickness of the line forming the object.
- Rounding: You can set the round value of a vertex. The greater the value is the bigger the rounding area is.



6) Ellipse

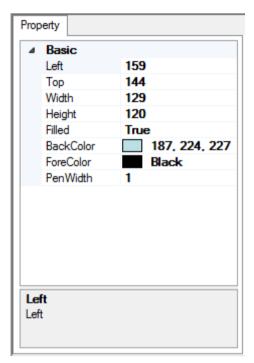
It displays the ellipse object.





For drawing an ellipse, you can select **[Insert]** \rightarrow **[Figure]** \rightarrow **[Ellipse]** in the main menu or select the icon in the shape of "Ellipse" from the toolbar.

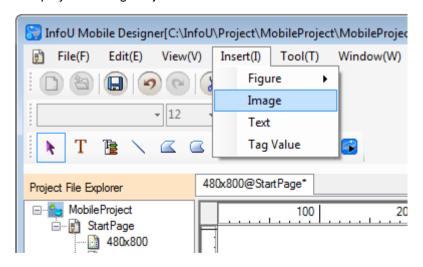
The properties of the ellipse object are as follows.



- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object.
- Width, Height: Width and height of the object
- Filled: You can determine whether filling the inside of the object with the background color.
- BackColor: You can select the color to fill the inside of the object.
- ForeColor: You can select the color of the object.
- Line thickness: You can select the thickness of the line forming the object.

7) Image

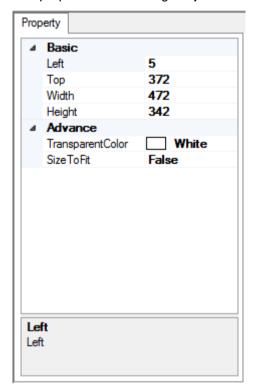
It displays the image object.





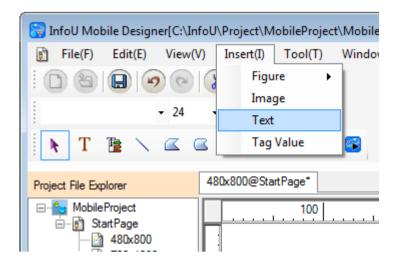
To insert an image into the screen, you can select [Insert] → [Image] in the main menu or select the icon in the shape of "Image" from the toolbar. After clicking with the mouse on the position to insert the image, if you select the targeted image file in the dialog box for file selection, the image will be inserted into the page. The available image formats are "bmp", "gif", "jpg", "png", tiff", etc.

The properties of the image object are as follows.



- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object
- Width, Height: Width and height of the object
- Transparent color: You can set the color to transparentize.
- Size to Fit: If it is TRUE, the image object size will be fit to the image size. In case users change the image object size randomly, it will be displayed as FALSE.
- 8) Text

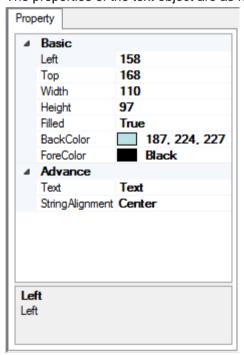
It displays the text object.





To insert a text, you can select [Insert] → [Text] in the main menu or select the icon in the shape of "Text" from the toolbar.

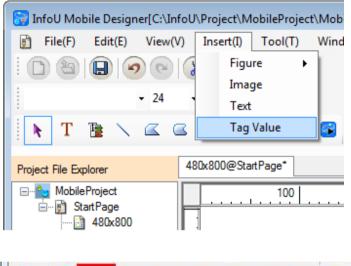
The properties of the text object are as follows.



- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object
- Width, Height: Width and height of the object
- Filled: You can determine whether filling the inside of the object with the background color.
- BackColor: You can select the color to fill the inside of the object.
- ForeColor: You can select the color of the object.
- Text: You can specify the text of the object.
- String Alignment: You can select the text alignment of the object.

9) Tag value

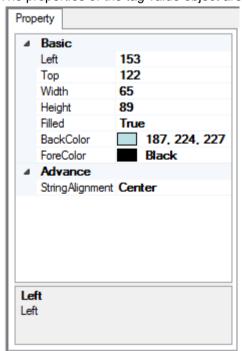
It displays the tag value object.





To insert the tag value object, you can select **[Insert]** \rightarrow **[Tag Value]** in the main menu or select the icon in the shape of "Tag Value" from the toolbar. If you select the tag through the dynamic property setting (value display), the tag value will be displayed.

The properties of the tag value object are as follows.

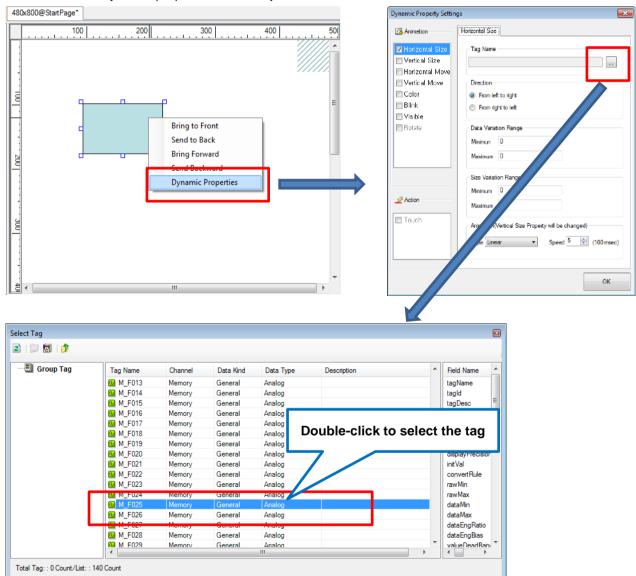


- LEFT coordinate, TOP coordinate: Coordinate values of the upper left corner of the object
- Width, Height: Width and height of the object
- Filled: You can determine whether filling the inside of the object with the background color.

- BackColor: You can select the color to fill the inside of the object.
- ForeColor: You can select the color of the object.
- String Alignment: You can select the text alignment of the object

26.1.6 Dynamic Properties

You can set the dynamic properties of the object.



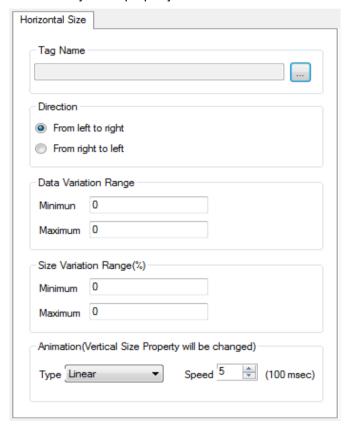
Click with the right mouse button on the object to run the popup menu. If you run "**Define Dynamic Properties**" in the popup menu, the window for setting dynamic properties will be displayed. The dynamic properties accompanying the animation are basically linked with tags. If you select the "..." button next to the tag name, the tag selection window will show up and then, double-click the targeted tag.

The instructions related to dynamic properties are as follows.

- The dynamic properties should be set for each object.
- The dynamic property can be visible only when the relevant property is checked.
- You can set up the multiple dynamic properties for one object.

1) Horizontal size

It sets the dynamic property whose size varies in the horizontal direction.



- Tag Name: You can select the tag that receives the input value for displaying the dynamic properties.
- Direction: You can select the direction to move.
- Data Variation Range: You can enter the range of tag input value used for dynamic properties. For example, if you set the minimum value (50), the maximum value (100), when the tag value is between 50 and 100, the dynamic properties will be displayed. Although there is no limit on the rage of input value, you need to consider the range of the input tag value.
- Size Variation Range (%): You can enter the size variation range by percent (%). The input value should be between 0 and 100.
- Animation (vertical size property will be changed): You can select animation effects among the below tree types.
 - -Linear: It is displayed according to the value without any special animation effects.
 - -Bounce: It shows the bounce effect at the last part.
 - -Elastic: It shows the elastic effect on the move.

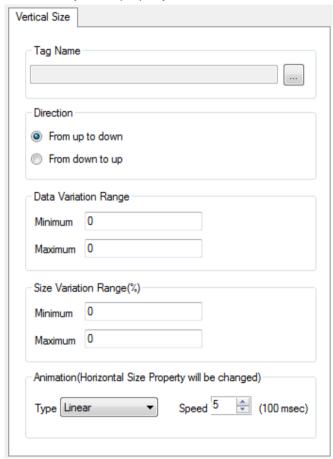
The speed indicates the time required to display the animation. The smaller the value is, the faster the dynamic properties are displayed. The input value should be between 0 and 100.

Notice

The animation property of the horizontal size dynamic property is also used for the vertical size dynamic property. Therefore, if you change the animation property of the former, the animation property of the latter will also be changed.

2) Vertical size

It sets the dynamic property whose size varies in the vertical direction.

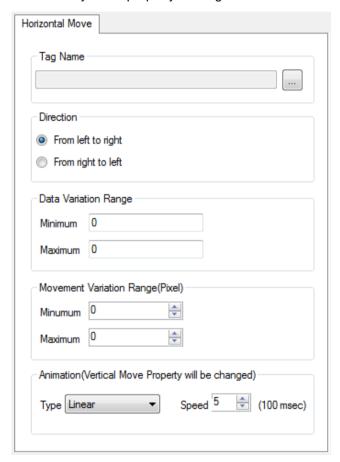


- Tag Name: You can select the tag that receives the input value for displaying the dynamic properties.
- Direction: You can select the direction to move.
- Data Variation Range: You can enter the range of tag input value used for dynamic properties. For example, if you set the minimum value (50), the maximum value (100), when the tag value is between 50 and 100, the dynamic properties will be displayed. Although there is no limit on the rage of input value, you need to consider the range of the input tag value.
- Size Variation Range (%): You can enter the size variation range by percent(%). The input value should be between 0 and 100.
- Animation (horizontal size property will be changed): You can select animation effects. Refer to the horizontal size dynamic property.

The animation property of vertical size dynamic property is also used for the horizontal size dynamic property. Therefore, if you change the animation property of the former, the animation property of the latter will also be changed.

3) Horizontal movement

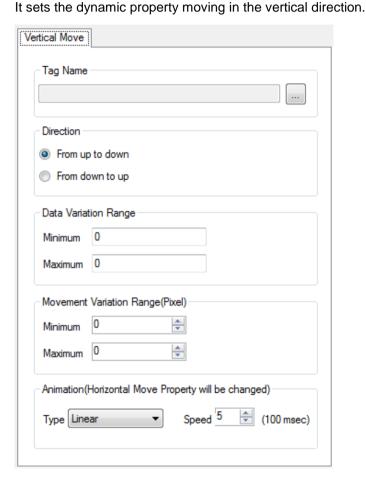
It sets the dynamic property moving in the horizontal direction.



- Tag Name: You can select the tag that receives the input value for displaying the dynamic properties.
- **Direction**: You can select the direction to move.
- Data Variation Range: You can enter the range of tag input value used for dynamic properties. For example, if you set the minimum value (50), the maximum value (100), when the tag value is between 50 and 100, the dynamic properties will be displayed. Although there is no limit on the rage of input value, you need to consider the range of the input tag value.
- Movement Variation Range (pixel): You can input the size variation range by pixel. There is no limit on the range of value input, however, you need to consider the screen size. If you input too large value, it will be displayed outside of the screen so the object may not be displayed on the screen or cut off.
- Animation (Vertical move property will be changed): You can select animation effects.
 Refer to the horizontal size dynamic property.

The animation property of the horizontal movement dynamic property is also used for the vertical movement dynamic property. Therefore, if you change the animation property of the former, the animation property of the latter will also be changed.

4) Vertical Movement

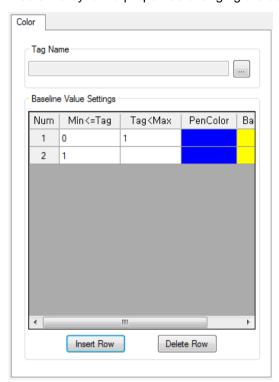


- Tag Name: You can select the tag that receives the input value for displaying the dynamic properties.
- **Direction**: You can select the direction to move.
- Data Variation Range: You can enter the range of tag input value used for dynamic properties. For example, if you set the minimum value (50), the maximum value (100), when the tag value is between 50 and 100, the dynamic properties will be displayed. Although there is no limit on the rage of input value, you need to consider the range of the input tag value.
- Movement Variation Range (Pixel): You can input the size variation range by pixel. There is no limit
 on the range of value input, however, you need to consider the screen size. If you input too
 large value, it will be displayed outside of the screen so the object may not be displayed on the screen
 or cut off.
- Animation (Horizontal move property will be changed): You can select animation effects. Refer to the horizontal size dynamic property.

The animation property of vertical movement dynamic property is also used for the horizontal movement dynamic property. Therefore, if you change the animation property of the former, the animation property of the latter will also be changed.

5) Color

It sets the dynamic properties changing the color.



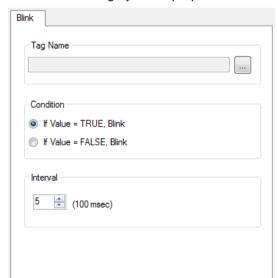
- **Tag Name**: You can select the tag that receives the input value for displaying the dynamic properties.
- Baseline Value Settings: Select the color to be displayed based on the value.

If you press the "**Insert Row**" button, you can add the value range and color.

If you press the "**Delete Row**" button, the last line will be deleted.

6) Blink

It sets the blinking dynamic properties.



- Tag Name: You can select the tag that receives the input value for displaying the dynamic properties.
- Blink Condition: You can select the condition to display the blinking dynamic properties.
- Blink Interval: You can select the time interval to display blink. The smaller the value is, the faster the property blinks. The input value should be between 0 and 100.

7) Visible

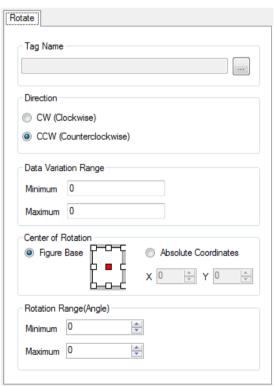
It sets the visible dynamic properties.



- **Tag Name**: You can select the tag that receives the input value for displaying the dynamic properties.
- Visible Condition: You can select the condition to display the visible dynamic property.

8) Rotation

It sets the rotating dynamic properties.



- **Tag Name**: You can select the tag that receives the input value for displaying the dynamic properties.
- Rotation Direction: Select the rotation direction.
- Data Variation Range: You can enter the range of tag input value used for dynamic properties. For example, if you set the minimum value (50), the maximum value (100), when the tag value is between 50 and 100, the dynamic properties will be displayed. Although there is no limit on the rage of input value, you need to consider the range of the input tag value.
- Center of Rotation: Select the center of rotation. For the absolute coordinate, you need to input the value between 0 and 9999. In the case of rotation based on the absolute coordinate, depending on the position of the center point, the object rotates outside of the screen and may not be displayed on the screen
- Rotation Range (Angle): You can set the rotation range according to the input value. The input value should be between 0 and 9999.

9) Display Value

It sets the dynamic properties to display the tag value.



- **Tag Name**: You can select the tag that receives the input value for displaying the dynamic properties.
- Value Display Type: You can select the type to display the value.

10) Frame animation

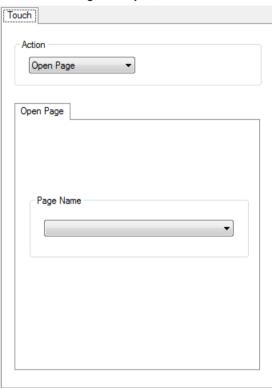
It sets the playing conditions and speed of the GIF animation.



- **Tag Name**: You can select the tag that receives the input value for displaying the dynamic properties.
- Playing Condition: You can determine whether paying the animation when the tag value is TRUE; when the tag value is FALSE.
- Animation Speed: Set the playing speed by 100 msec.

11) Touch: Open Page

When touching the object, the screen will be turned to the set page.



- Action: Select "Open Page".
- Open Page: Among pages registered in the project, select the page to turn.

12) Touch: Write Digital Value

When touching the object, the tag value will be changed into the selected digital value.



- Action: Select "Write Digital Value".
- Tag Name: Select the tag to be used for writing value.
- Write Value: Select the type of 'Write Value'.

Set: Writing TRUE vale

Reset: Writing FALSE value

Toggle: Writing the reverse of the current value

13) Touch: Set Value

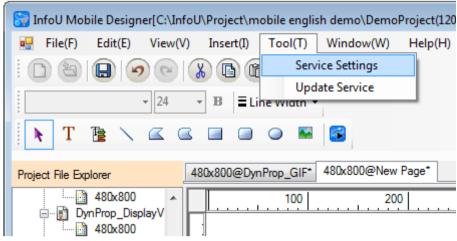
When touching the object, the tag value will be changed into the input analog value.



- Action: Select "Set Value".
- Tag Name: Select the tag to be used for setting value.

26.1.7 Service Settings

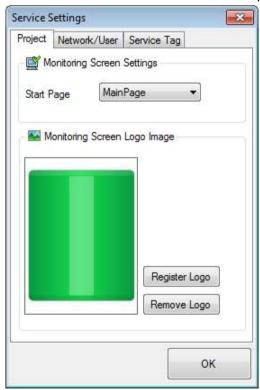
You can set the items required for the mobile project service.



Run [Tool] → [Service Settings] in the main menu.

1) Project

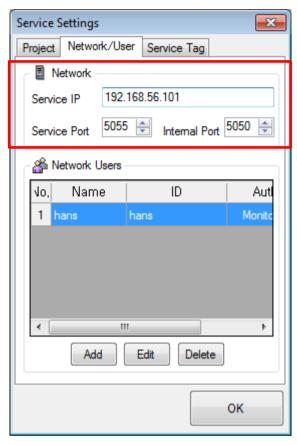
You can set the basic items for the mobile project service.



- **Monitoring Screen Settings**: You can select the initial page that will be displayed first when starting the monitoring screen among the registered projects.
- Monitoring Screen Logo Image: You can register the logo image in the format of bmp, gif, jpg, png, tiff. The logo image can be omitted.

2) Network

You can set the IP address and port No. of the mobile server.



- Service IP: You can input the service IP address or host name URL. It is used as the access address in the mobile app.
- Service Port and Internal Port: You can set the port No. between 1 and 65535.

Notice

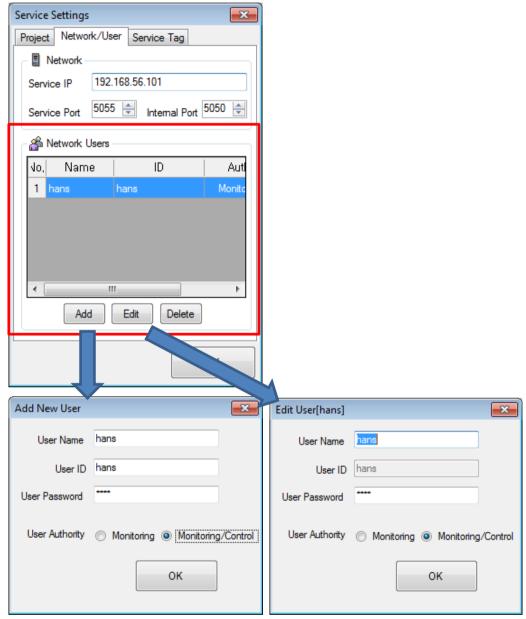
The instructions for network settings are as follows.

- In case the entered port No. is used in other processes, the server program does not work properly so make sure to avoid confliction of port No. during setting.
- Make sure to enter the service IP address.

You must enter user information to access the mobile server.

3) User

You can set the ID and password to be used when accessing to the mobile server in the mobile Client.



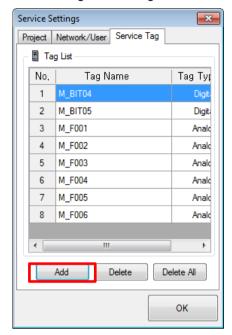
When registering a new user through the "Add New User" button, you can set the user name, ID and password, user authority. For the User Authority, you can choose one between Monitoring and Monitoring/Control. You can selectively "Edit" or "Delete" the registered users.

Notice

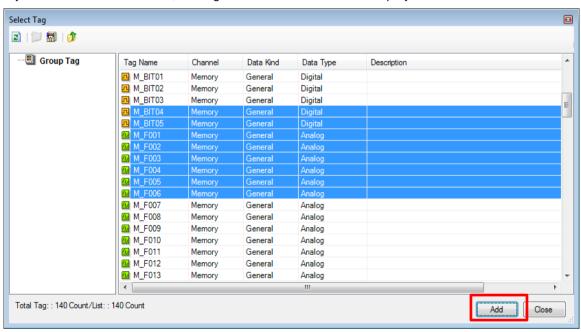
The 'User Name' is used for management only. When accessing to the mobile server, you need to "ID" and "password". "ID" can be deleted but cannot be modified.

Service tag

You can register the tag used for the mobile client.



If you click the "Add" button, the tag selection window will be displayed.



After choosing the targeted tag in the tag selection window, if you click "**Add**" button, the tag will be registered. Selecting several tags should be done with pressing the "Shift" key. The registered tags are used for monitoring tag values and creating trend groups in the mobile app.

Notice

To select tags, the InfoU project containing the relevant tag should be executed in runtime or be loaded

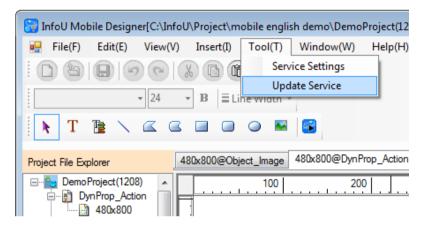
from the InfoU engineering.

26.2 Mobile Server

The mobile server provides the services to transmit the data of the mobile project and InfoU to the mobile client.

(1) Execution of the mobile server

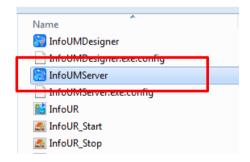
You can run the mobile server in the mobile designer.



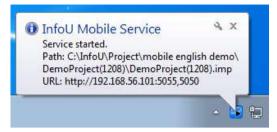


To run the mobile server select **[Tool]** → **[Service Update]** in the main menu of the mobile designer or select the "Service Update" icon in the toolbar. In this case, the project loaded to the mobile designer is serviced by the mobile server.

Otherwise, you can directly run "InfoUMServer.exe" in the InfoU\bin folder. In this case, the serviced project is the mobile project that was serviced last. If there is no service history, the server starts up only and you can select the project in the popup menu of the server.

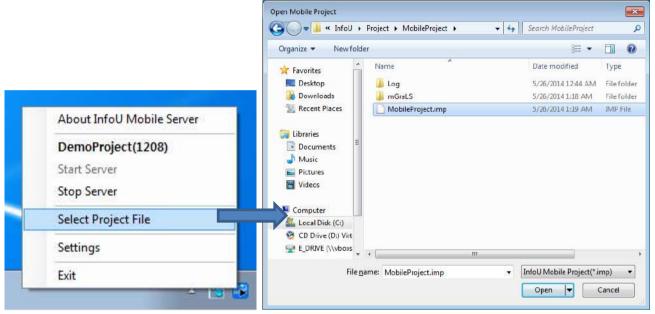


When the mobile server starts, the icon will be created in the taskbar and the starting message will be displayed.



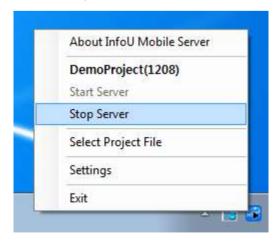
(2) Selection of the mobile project

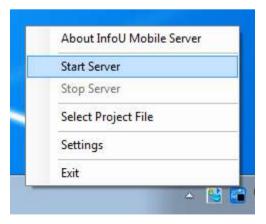
You can change the targeted project for service using 'Select Project File' menu of the mobile server.



To run the popup menu, clcik with the right mouse button on the icon of the taskbar of the mobile server. Then, run "**Select Project File**" in the popup menu. After choosing the mobile project file in the dialog box to open the mobile project, if you click the "**Open**" button, the selected project will be applied.

(3) Stop and Start of Mobile server You can stop or start the mobile service.





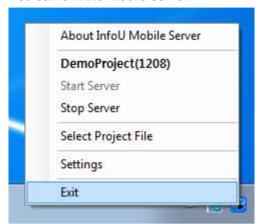
To run the popup menu, click with the right button on the icon of taskbar of the mobile server. Then, run "**Stop Server**" in the popup menu to stop the service. For the suspended server, you can resume the service by

Chapter 26 Mobile

running "Start Server" in the popup menu.

(4) Exit of the mobile server

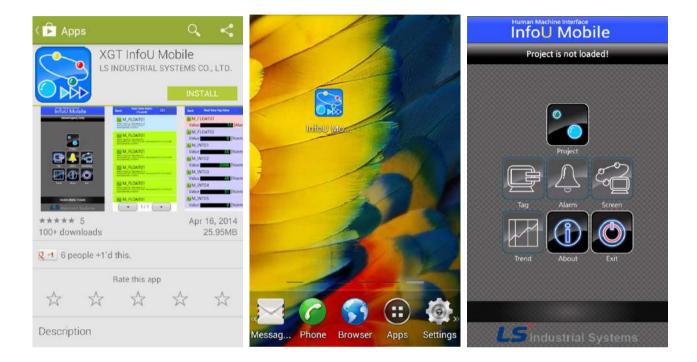
You can exit the mobile server.



To run the popup menu, click with the right mouse button on the icon of the taskbar of the mobile server. If you run "Exit" in the popup menu, the mobile server will end.

26.3 Mobile Client

The InfoU mobile app that is installed and executed in the smartphone or tablet acts as the client for the mobile server. The mobile Client (app) receives the project information serviced by the mobile server and performs monitoring.



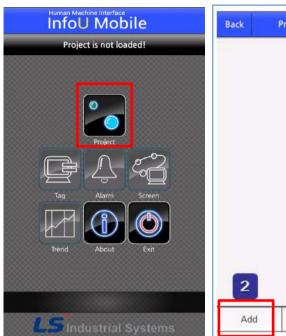
In Google Play Store, search for the "XGT InfoU" and find "XGT InfoU mobile" app, then, install it. If you run the installed "InfoU mobile" app by touching, the initial screen will show up.

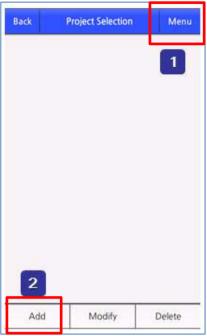
Notice

For normal operation of the mobile client, the InfoU runtime and mobile server should be running.

(1) Addition of the project

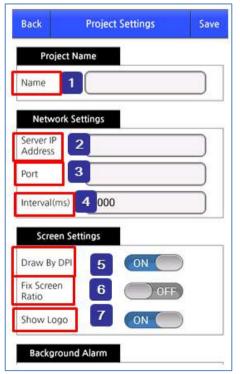
You can add the mobile project.

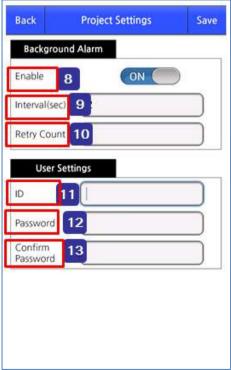




Run the "project" icon in the initial screen.

- If you touch the "Menu" item in the right upper corner of the project selection screen, the menu bar will be displayed at the bottom of the app screen.
- Run "Add" in the menu bar at the bottom of the screen.





Chapter 26 Mobile

1	Name: Enter the project name.
2	Server IP address: Enter the IP address or host name URL of the PC where the mobile server runs.
3	Port: Enter the set port No. into the mobile server project.
4	Interval (communication cycle) : Input the communication cycle of the mobile server. The input value should be between $500 \sim 10,000(0.5\sim10 \text{ sec.})$.
5	Draw By DPI: It displays the screen drawn in the mobile designer based DPI of the client device.
6	Fix Screen Ratio: It displays the screen created in the mobile designer with the proper ratio.
7	Show Logo: Select whether displaying the logo or not.
8	Background Alarm : Select whether displaying the background alarm when the mobile client program is hidden.
9	Background Alarm Interval: Set the cycle of checking the background alarm.
	Dackground Alarm Interval. Set the cycle of checking the background alarm.
10	Retry Count: Set the number of times to retry when communication fails during checking the background alarm.
	Retry Count: Set the number of times to retry when communication fails during checking the

Notice

The instructions for setting the project are as follows.

Confirm Password: To confirm the password, reenter the password.

- The smaller the communication cycle value is, the more frequent communication with the mobile server is and the faster the updating speed is. However, please note that it may also increase the battery consumption.
- If 'Draw By DPI' is ON, the most suitable resolution document will be displayed based on the screen size of the mobile device. If 'Draw By DPI' is OFF, the most suitable resolution document will be displayed based on the resolution of the mobile device.

(2) Deletion of the project

You can delete the mobile project.







Select the "Menu" button in the upper right corner of the project selection screen.

If you select "Delete" in the menu bar at the bottom, the set name displayed in the project list will be changed into red.

Select the project to delete.

If you press the "Yes" button in the information window, the project will be deleted.

(3) Addition of tag groups

You can check and control tags in real time by setting the tag group.







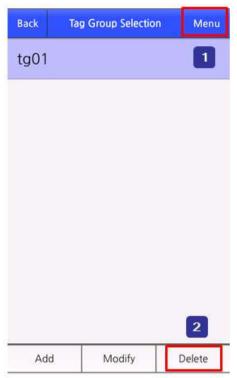
- Run the "Tag" icon on the initial screen. The "Tag" icon is activated only when you access to the mobile server. Choose the "Menu" button in the window to select the tag group.

Select "Add" in the menu bar at the bottom.

- In the tag selection screen, check the tag that you want to check and enter the group name.
- Save the tag group by selecting the "Save" button in the upper right corner of the tag selection screen.

(4) Deletion of tag groups

You can delete the tag group.







Choose the "Menu" button in the tag group selection screen.

If you select "Delete" in the menu bar at the bottom, the tag group name displayed in the tag group list will be changed into red.

Select the group to delete in the tag group list.

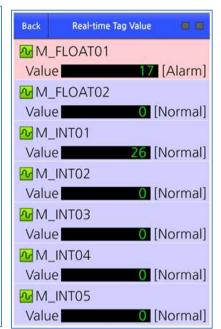
Press the "Yes" button in the information window to delete the tag group.

(5) Monitoring tag values

You can select the tag group and monitor the changes of tag values.

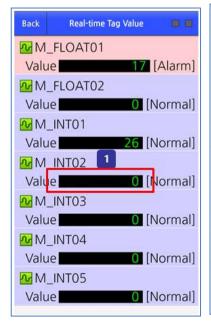




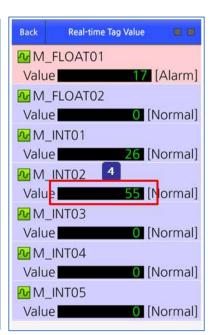


- Run the "Tag" icon in the initial screen. The "**Tag**" menu is activated only when you access to the mobile server.
- 2 Choose the tag group to monitor in the tag selection screen.
- (6) Control of tag values

You can control the tag values.







In the real-time tag value, double-touch the area where the targeted tag value is displayed
 Enter the desired value in the window to write the tag value.
 Choose the "OK" button.
 Then, you can see the control value is reflected.

Notice

Tag value control is only possible for integers.

(7) Real-time alarm check

You can check the alarm in real time.



Run the "Alarm" icon in the initial screen. The "Alarm" icon is activated only when you access to the mobile server. In the Real-time Alarm window, you can check the currently occurring alarm. If you have a large number of occurring alarms, the alarms will be dividedly displayed in several pages. You can move to the next page by pressing the paging button.

1) Alarm Groups Settings

You can filter alarms by group and check them through alarm group settings.





- If you touch the menu button in the upper right corner of the real-time alarm page, the menu bar will be displayed at the bottom.
- When you select "Alarm Groups Settings" in the menu bar at the bottom, the alarm group settings window will be displayed. In the alarm group settings window, check whether using the group filter.

 After checking the targeted group, if you press the "Save" button, the details will be applied.

2) Filter Selection

Through Filter Selection you can filter alarms by type and check them.



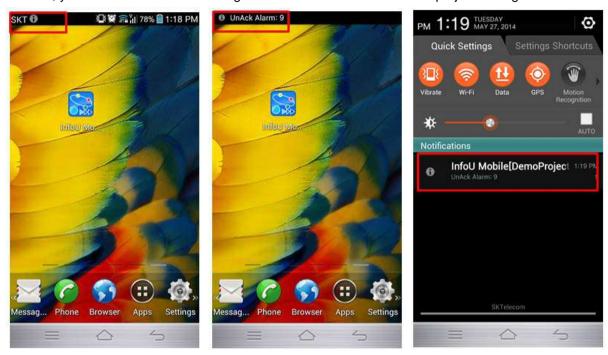


After setting the type and status of the alarm, if you press the "Save" button, the filter will be applied.



(8) Background Alarm Notice

In case the mobile client is hidden, you can get the background alarm notice. However, in order to use this function, you need to check "Use Background Alarm" in the mobile client project settings.



When an alarm occurs, the background alarm will be displayed as above.

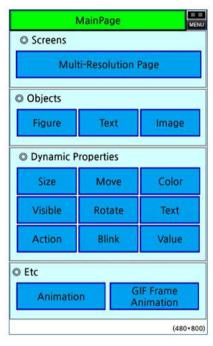
(9) Monitoring screen

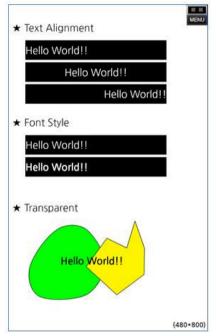
You can monitor/control the field conditions by downloading the screen drawn in the mobile designer.

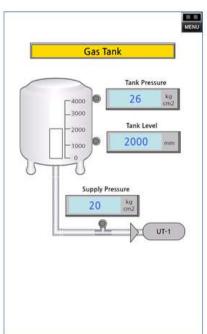


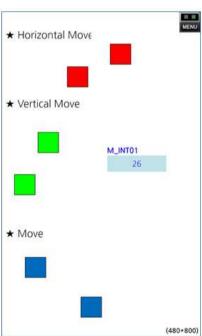
Run the "Monitoring Screen" icon in the initial screen. The "Monitoring Screen" icon is activated only when you access to the mobile server. It can display various screens as below.

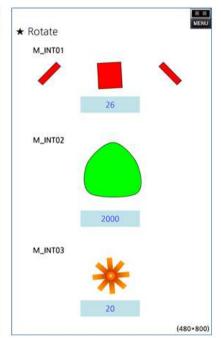
Chapter 26 Mobile







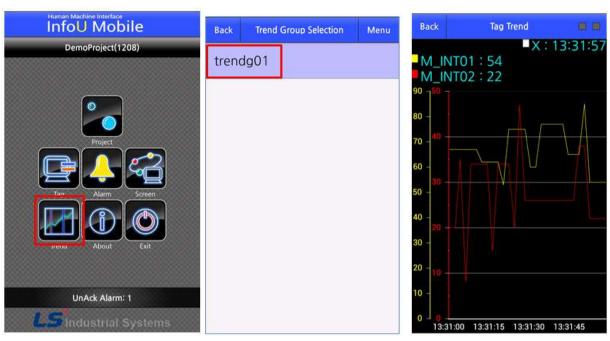






(10) Trend

You can monitor the variations of the tag data in real time by setting the trend group.



Run the "**Trend**" icon in the initial screen. The "**Trend**" icon is activated only when you access to the mobile server. If you select the desired trend group, the trend monitoring screen will be displayed.

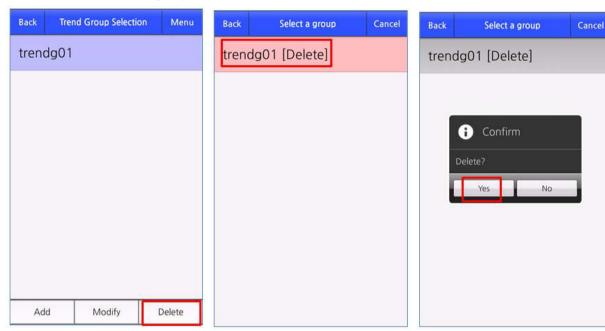
Addition of trend groups
 You can add the trend groups.



- If you choose the 'Menu' in the trend group selection page, the menu bar will be displayed at the bottom.
- 2 If you select "Add" in the menu bar at the bottom, the tag selection page will show up.
- Enter the group name and choose the tag to monitor. Then, if you press the "Save" button, the group will be created. The number of tags that you can choose is up to 2EA.

2) Deletion of trend groups

You can delete the trend group.



After selecting the "**Menu**" on the top, press the "**Delete**" button in the menu bar at the bottom. Select the trend group to delete. If you press the "**Yes**" button in the information window, the selected trend group will be deleted.

(11) Information

If you run the "Information" icon in the initial screen, you can check the version information of the mobile client.



(12) Exit

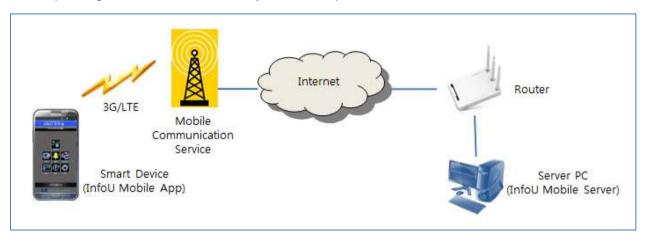
Run the "Exit" icon in the initial screen. If you press the "Yes" button in the information window, you can terminate the mobile client.





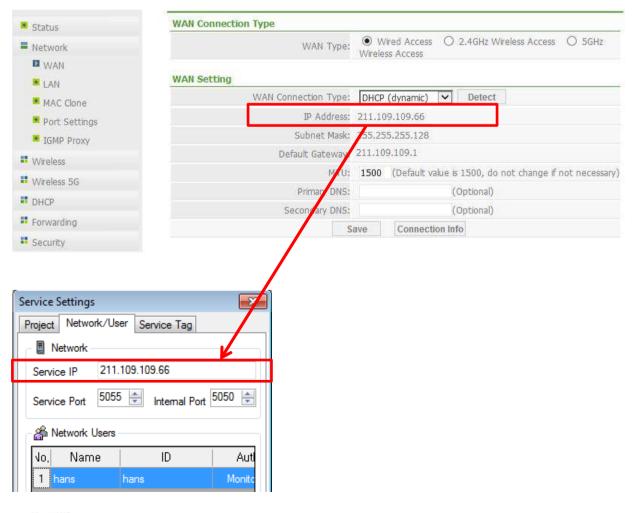
26.4 Mobile Network Settings

When operating the service with a router, you can set up the service as follows.



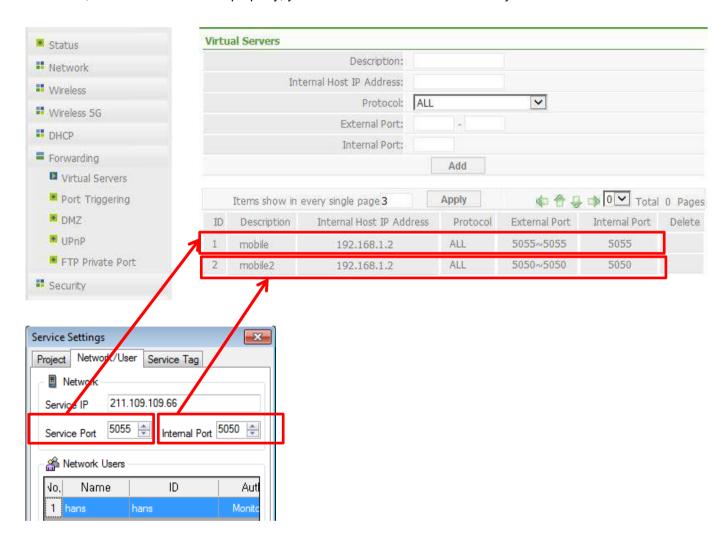
(1) IP setting for the mobile project service

For the IP address to set the mobile project service, enter the external IP address of the router. When using the DDNS, enter the host name URL. (Example of entering the host name URL: mserver.iptime.org)



(2) Setting port-forwarding of the router

For example, when accessing to the 5055 service port from the outside, set up the forwarding to 5055 port of the internal IP 192.168.0.70. The internal IP is the private IP address of the server PC where the InfoU mobile server is installed, which is given by the router. It can be checked by running the ipconfig in the command window. The internal IP should be handled so as not to be changed through manual settings in the router. Otherwise, in the network address property, you can enter the internal IP manually to fix it.



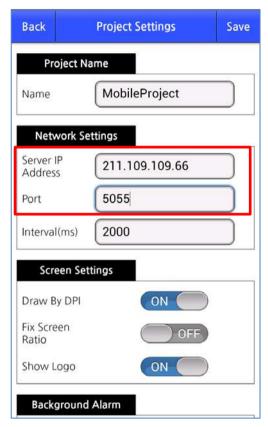
The port-forwarding should be respectively set up for the service port and internal port.

The internal port of service settings is used to update the service of the mobile server in the mobile designer.

Chapter 26 Mobile

(3) Mobile app address settings

For project settings of the mobile app, enter the IP address of the router for the server IP address and enter the service port where port-forwarding is done for the port value. If the service address is host name URL, enter the relevant URL into the server IP address. Ex) mserver.iptime.org



InfoU Web Plant consists of a client / server structure. On the server side, the Web Plant editor and Web Plant server are installed, and the Web Plant client runs in a web browser. Plant screens created using the Web Plant editor are serviced through the Web Plant server, and the Web Plant client can remotely access the Web Plant server to monitor and control.

Web Plant can be used in OS that can install .NET Framework 4.6.2, such as Windows 7 SP1, Windows 8.1 Update1, Windows 10, and Windows Server 2012.

27.1 WebPlant Editor

WebPlant Editor is a graphic editor and provides various functions for creating monitoring screens.

27.1.1 Start

(1) Functions

- 1) Various graphic object tools are provided (Line, rectangle, round rectangle, ellipse, triangle, polygon, continuous line, picture, GIF animation, text, tag value, alarm object, trend object, data view object, combo box object, etc.)
- 2) It provides various animation and user action functions by setting dynamic characteristics (Horizontal / Vertical size, Horizontal / Vertical movement, Color, Blink, Visible, Rotate, Tag value writing, etc.)
- 3) You can register users through user settings, and set pages and tag lists for each user.

(2) Start

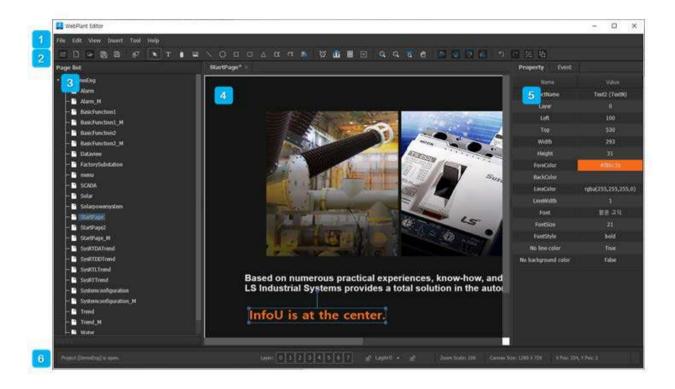
You can select "InfoU WebPlant-> WebPlant Editor" from the program menu to start the WebPlant editor.



<Program Menu>

(3) Screen Layout

The WebPlant editor is a system development tool that defines and configures the components necessary to perform in the WebPlant client such as screen composition, dynamic property definition, and service setting.

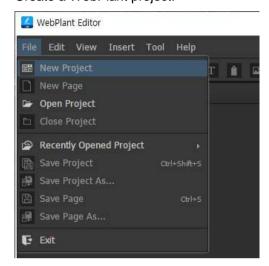


The description of the screen layout of the WebPlant editor is as follows:.

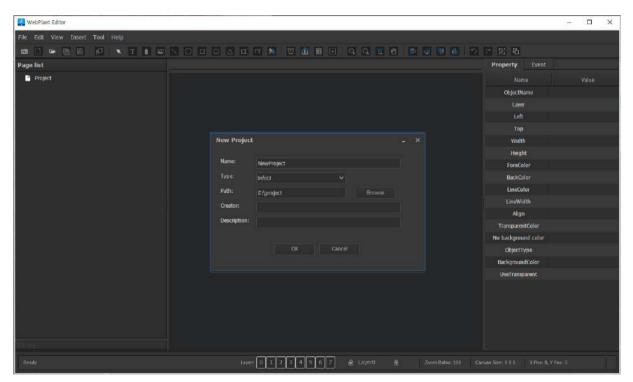
- main menu: You can use the functions provided by the WebPlant editor.
- toolbar: It is an icon of the standard tools frequently used in graphic editing and the object tools necessary for creating pages.
- page list: This is a list of pages that make up the current project.
- page edit screen: This is a page editing screen, you can draw various objects and set user actions 4 such as defining dynamic properties..
- property window: You can display or change the properties of each object.
- status bar: Displays layer settings and status values in relation to the page you are currently editing, such as layer on / off buttons, edit layer settings, zoom, canvas size, and mouse coordinates.

27.1.2 WebPlant project

Create project
 Create a WebPlant project.



Execute [File] -> [New Project] from the main menu.Or click the "New Project" button () on the toolbar.

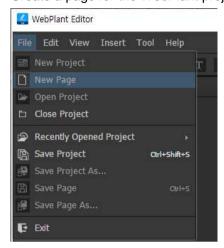


Enter the "Name", "Type", "Path", "Author", and "Description" of the project and click the "OK" button to create a new project. At this time, "author" and "description" can be omitted. "Type" is fixed as "InfoU".

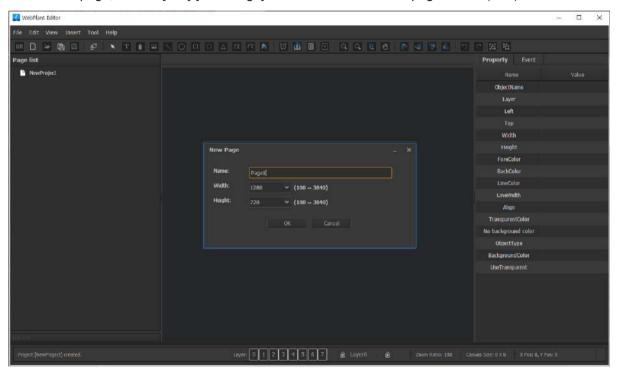
Notice

The project name can be up to 60 characters in combination of Korean/English / numeric words and "_".

Create a page for the WebPlant project.



To create a page, run the [File]-[New Page] menu.. Or click the new page button () on the toolbar.



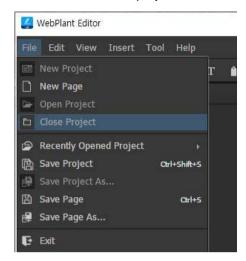
Enter the "Name", "Width", and "Height" of the page and click the "OK" button to create a new page.

Notice

The page name can be up to 60 characters in combination of Korean/English / numeric words and "_". You can enter an integer between 100 and 3840 for width and height.

2) Close project

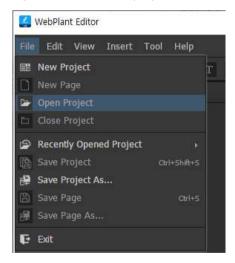
Close the WebPlant project.



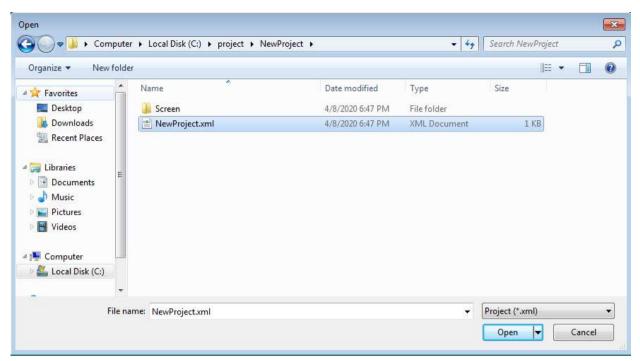
When the [File]-[Close project] menu is executed from the main menu, the project is closed and the initial screen is displayed.

3) Open project

Open the WebPlant project.



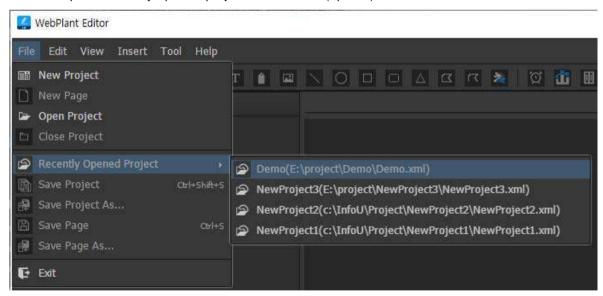
Execute [File] [[Open Project] in the main menu. Or click the Open Project button (on the toolbar. The file selection dialog is displayed.



Select the WebPlant project file and click the "Open" button to open the project. WebPlant project has the extension "* .xml".

4) Recently opened project

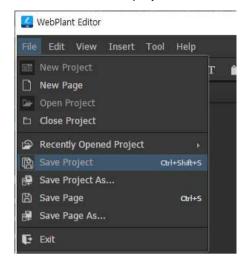
You can open a recently opened project to work on it (up to 6).



From the main menu, select a project item from [File]-[Recently opened project].

5) Save project

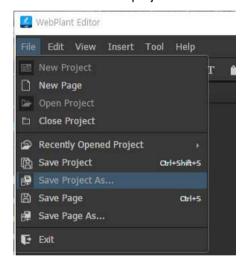
Save the WebPlant project.



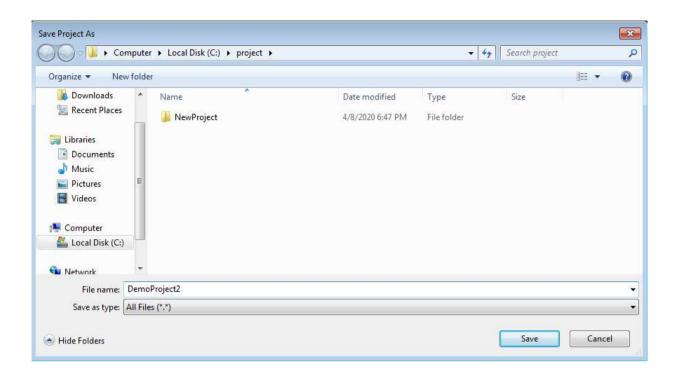
Execute [File]-[Save Project] on the main menu. Or click the Save Project button () on the toolbar.

6) Save project as

Save the WebPlant project as a different name.



Run [File]-[Save Project As] in the main menu. The file selection dialog is displayed.

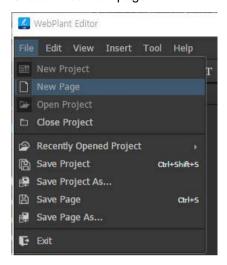


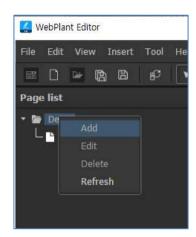
Enter the name of the project you want to save in the file name and click the "Save" button to create a project folder with the project name and save the project.

27.1.3 WebPlant Page

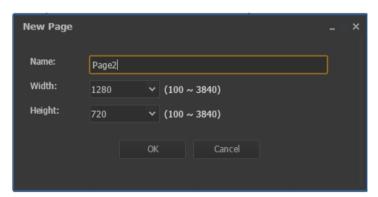
WebPlant page is a monitoring screen used by WebPlant client.

Add page
 Create WebPlant page.

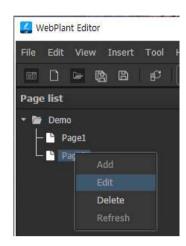


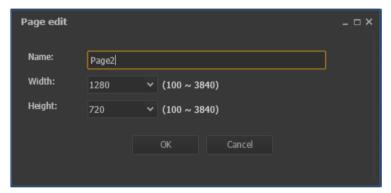


Open the [File]-[New Page] menu in the main menu. Or after selecting the project name in the "Page List" window, you can add a page by running the pop-up menu and clicking the "Add" menu.



- Name: Enter the page name. Up to 60 characters can be written with a combination of alphanumeric words and " ".
- Width: Select or enter the width of the page. You can enter an integer value between 100 and 3840.
- Height: Select or enter the height of the page. You can enter an integer value between 100 and 3840.
- OK: Create a page and close the window.
- Cancel: Cancel operation and close window.
- Edit page Edit WebPlant page name.





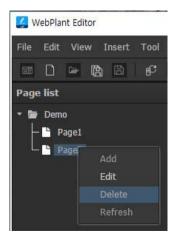
Select the page name and select the "Edit" menu from the pop-up menu to display the page edit window. Enter the new page name in the page edit window and click the "OK" button to modify the page name.

Notice

If the page name before modification was used for the change page dynamics, editing the page name will not trigger the dynamics. If you edit the page name, you must also change the change page dynamics setting using the page name.

3) Delete page

Delete WebPlant pages.



You can delete a WebPlant page by selecting the page name and running the "Delete" menu from the popup menu.

Notice

Deleting a page immediately deletes the file from the file system.

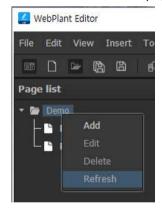
4) Close page

Close current page.



5) Refresh page list

Refresh the WebPlant page list.



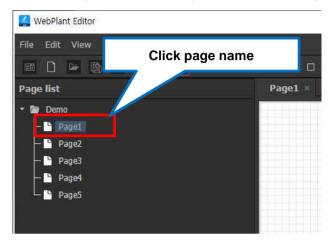
You can refresh the page list by selecting the project name from the page list and executing the "Refresh" menu from the pop-up menu. You can use it when copying and adding pages in File Explorer.

Notice

In order to refresh the page list, the project must be saved first and a project folder must be created.

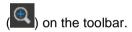
6) Open WebPlant page

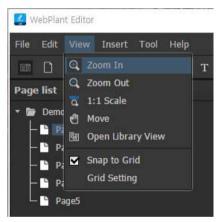
Click the page name in the page list to open the page and perform the drawing process.



7) Zoom In WebPlant page

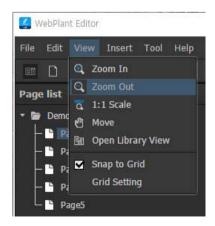
To zoom in the WebPlant page, select [View]-[Zoom In] from the main menu. Or click the zoom in button





8) Zoom out WebPlant page

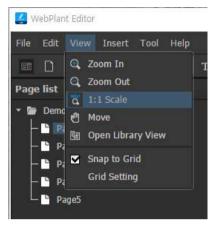
To zoom out the WebPlant page, select [View]-[Zoom Out] from the main menu. Or click the zoom out button () on the toolbar.



9) WebPlant Page 1: 1 Scale

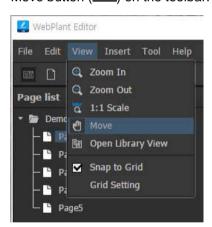
To view the original size of the WebPlant page, select [View]-[1:1 Scale] from the main menu. Or click the

1: 1 scale button () on the toolbar.



10) Move WebPlant page

If you want to move the screen of the WebPlant page, select [View]-[Move] in the main menu. Or click the Move button () on the toolbar.

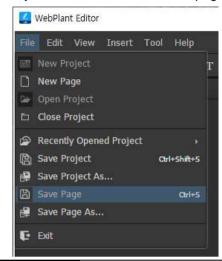


Notice

Clicking the toolbar's select button, object button, zoom, 1: 1 scale button, etc., stops move mode.

11) Save page

If you want to save the current page being edited, select [File]-[Save Page] from the main menu.

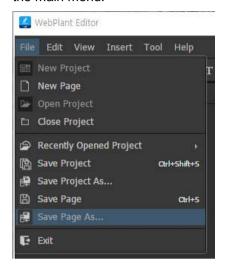


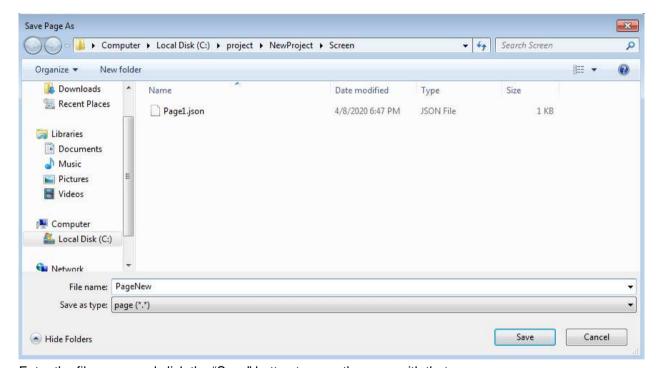
Notice

In order to save the current page, the project must be saved first and a project folder must be created.

12) Save page as

If you want to save the current page being edited under a different name, select [File]-[Save Page As] in the main menu.





Enter the file name and click the "Save" button to save the page with that name.

Path changes in "Save Page As" window are ignored. The page is saved in the "Screen" folder under the project folder with the name entered by the user.

Notice

In order to save the current page with a different name, the project must be saved first and a project folder must be created.

You can save it in the "Screen" folder under the project folder to manage it as a project page.

13) Layer

You can utilize the layer for editing by using the layer on / off button in the status bar at the bottom of the editor and the edit layer setting combo box.

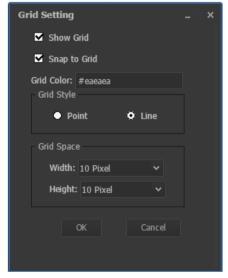


- 1 Layer On / Off button. Used to turn the layer on and off.
- This is a layer combo box. Displays the current editing layer. The lock status is indicated by the icon in front of the layer name.
- Layer lock button. You can lock or unlock the selected layer in the layer combo box. Layers with locks cannot be edited.

14) Grid settings

Display a grid on the page. Edit objects to fit the grid.

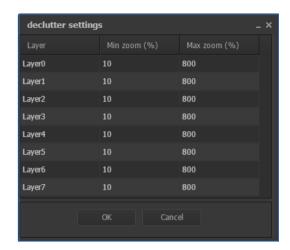
Select [View]-[Grid Setting] from the main menu.



- Show Grid: Display the grid.
- Snap to Grid: Edit objects to fit the grid.
- Grid Color: Select the color of the grid.
- Grid Style: Select the shape of the grid from point / line.
- **Grid Space**: Select the width and height of the grid in pixels.
- OK: Save the settings and close the window.
- Cancel: Cancel the settings and close the window.

15) Declutter Setting

For each layer in the currently open page, you can set the layer to be displayed at a specific zoom level. Select [Tools]-[Declutter Settings] from the main menu.

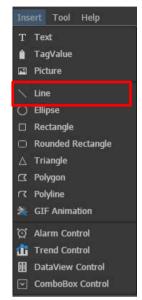


- Layer: layer name.
- Min zoom(%):Enter the minimum zoom ratio for the layer to be displayed.. You can enter an integer value between 10 and 800.
- Max zoom(%):Enter the maximum zoom ratio for the layer to be displayed. You can enter an integer value between 10 and 800.
- OK: Save the settings and close the window.
- Cancel: Cancel the settings and close the window.

27.1.4 **Graphic object**

1) Line

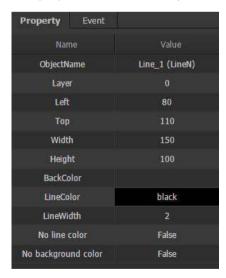
You can draw a line object.





You can draw a line by selecting the [Insert]-[Line] menu from the main menu or selecting the "Line" icon from the toolbar.

The properties of the line object are as follows.

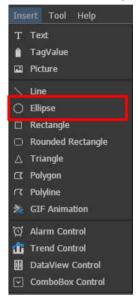


- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height
- BackColor: Select a color to fill the inside of the object. Not supported by line objects.

- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- No line color: If true, the line color of the object is transparent.
- No background color: If true, the background color of the object is transparent. Line objects have no effect.

2) Ellipse

You can draw a ellipse object.





You can draw a ellipse by selecting the [Insert]-[Ellipse] menu from the main menu or selecting the "Ellipse" icon from the toolbar.

The properties of the ellipse object are as follows.

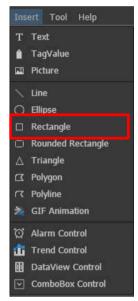


• ObjectName: Object name (object type)

- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height
- BackColor: Select a color to fill the inside of the object. Not supported by line objects.
- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- No line color: If true, the line color of the object is transparent.
- No background color: If true, the background color of the object is transparent. Line objects have no effect.

3) Rectangle

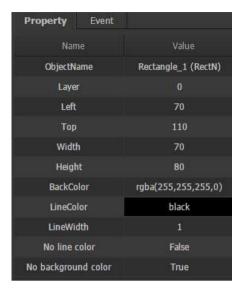
You can draw a rectangle object.





You can draw a rectangle by selecting the [Insert]-[Rectangle] menu from the main menu or selecting the "Rectangle" icon from the toolbar.

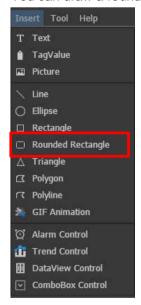
The properties of the rectangle object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height
- BackColor: Select a color to fill the inside of the object. Not supported by line objects.
- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- No line color: If true, the line color of the object is transparent.
- No background color: If true, the background color of the object is transparent. Line objects have no effect.

4) Rounded Rectangle

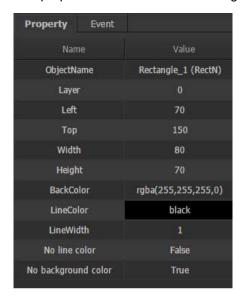
You can draw a rounded rectangle object.





You can draw a rounded rectangle by selecting the [Insert]-[Rounded Rectangle] menu from the main menu or selecting the "Rounded Rectangle" icon from the toolbar.

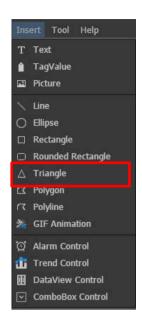
The properties of the rounded rectangle object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height
- BackColor: Select a color to fill the inside of the object. Not supported by line objects.
- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- No line color: If true, the line color of the object is transparent.
- No background color: If true, the background color of the object is transparent. Line objects have no effect.

5) Triangle

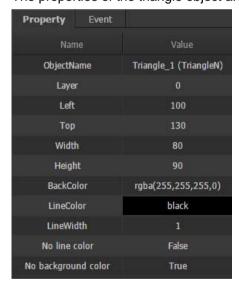
You can draw a triangle object.





You can draw a triangle by selecting the [Insert]-[Triangle] menu from the main menu or selecting the "Triangle" icon from the toolbar.

The properties of the triangle object are as follows.

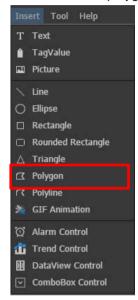


- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height
- BackColor: Select a color to fill the inside of the object. Not supported by line objects.
- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- No line color: If true, the line color of the object is transparent.
- No background color: If true, the background color of the object is transparent. Line objects have no

effect.

6) Polygon

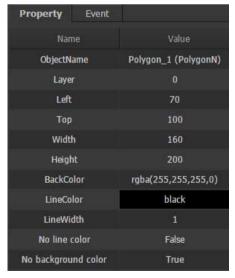
You can draw a polygon object.





In the main menu, you can select the [Insert]-[Polygon] menu or select the "Polygon" shape icon on the toolbar and draw a polygon shape. You can create a shape by clicking the mouse to add a point. Doubleclick to enter a point or press the "Esc" key to end the polygon shape drawing.

The properties of the polygon object are as follows.

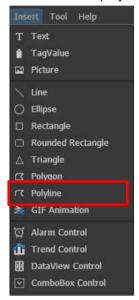


- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height

- BackColor: Select a color to fill the inside of the object. Not supported by line objects.
- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- No line color: If true, the line color of the object is transparent.
- No background color: If true, the background color of the object is transparent. Line objects have no effect.

7) Polyline

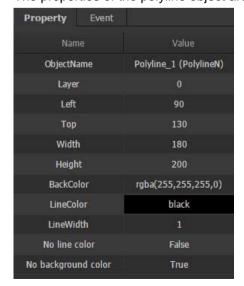
You can draw a polyline object.





You can draw a continuous line after selecting [Insert]-[Polyine] from the main menu or selecting the "Polyline" icon from the toolbar.. The drawing method is the same as the polygon shape.

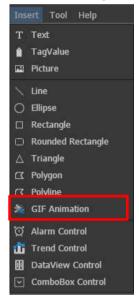
The properties of the polyline object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height
- BackColor: Select a color to fill the inside of the object. Not supported by line objects.
- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- No line color: If true, the line color of the object is transparent.
- No background color: If true, the background color of the object is transparent. Line objects have no effect.

8) GIF Animation

You can draw a gif animation object.





Select the [Insert]-[GIF Animation] menu in the main menu or select the "GIF Animation" shape icon on the toolbar to insert GIF animation objects on the screen. After clicking the location where the GIF animation will be inserted with the mouse, select the GIF file to be inserted in the file selection dialog displayed, and the GIF animation object is inserted into the page.

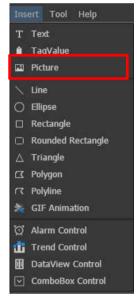
The properties of the gif animation object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height

9) Picture

You can draw a picture object.





In the main menu, select the [Insert]-[Picture] menu or select the "Picture" icon from the toolbar to insert the picture on the screen. After clicking the location where the picture is to be inserted, select the picture file to be inserted in the file selection dialog that appears, and the picture is inserted into the page. Available picture formats are "bmp", "gif", "jpg", "png", "svg", etc.

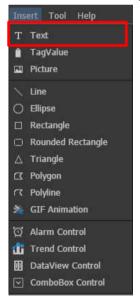
The properties of the picture object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height
- TransparentColor: Set the color to be transparent.
- **UseTransparent**: Select False to cancel applying the transparent color.

10) Text

You can draw a text object.





You can insert text by selecting the [Insert]-[Text] menu from the main menu or selecting the "Text" icon from the toolbar. Double-click on the text to edit its contents.

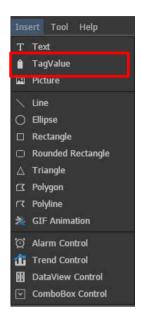
The properties of the text object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height
- ForeColor: Choose the color of the text
- BackColor: Select a color to fill the inside of the object. Not supported by line objects.
- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- Font: Choose font type.
- FontSize: Choose the font size.
- FontStyle: Select font o style.
- No line color: If true, the line color of the object is transparent.
- No background color: If true, the background color of the object is transparent. Line objects have no effect.

11) Tag Value

You can draw a tag value object.





You can insert tag value objects by selecting the [Insert]-[Tag Value] menu in the main menu or selecting the "Tag Value" icon from the toolbar. If you select a tag through dynamic property setting (display value), the tag value is displayed.

The properties of the tag value object are as follows.

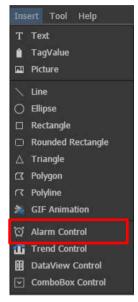


- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object

- Width, Height: Object width and height
- ForeColor: Choose the color of the text
- BackColor: Select a color to fill the inside of the object. Not supported by line objects.
- LineColor: Select the color of the line representing the object.
- LineWidth: Select the thickness of the line representing the object.
- Font: Choose font type.
- FontSize: Choose the font size.
- FontStyle: Select font o style.
- No line color: If true, the line color of the object is transparent.
- Align: Select the text alignment of the object.
- No background color: If true, the background color of the object is transparent. Line objects have no effect.

12) Alarm Control

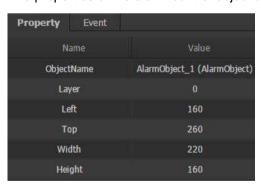
You can draw a alarm control object.





Select [Insert]-[Alarm Control] from the main menu or select the "Alarm Control" icon from the toolbar to insert the alarm control on the screen. After clicking and dragging the mouse to determine the size, an alarm control is inserted on the screen. The horizontal / vertical size must be greater than 100 pixels respectively to display the alarm control.

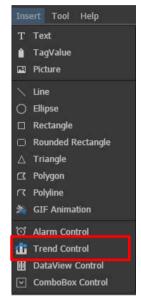
The properties of the alarm control object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height

13) Trend Control

You can draw a trend control object.





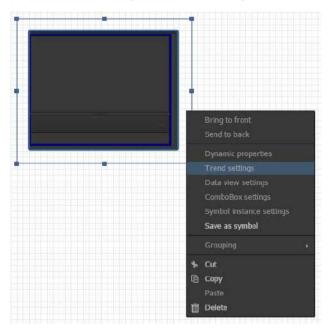
Select [Insert]-[Trend Control] from the main menu or select the "Trend Control" icon from the toolbar to insert the trend control on the screen. After clicking and dragging the mouse to determine the size, a trend control is inserted on the screen. The horizontal / vertical size must be greater than 100 pixels respectively to display the trend control.

The properties of the trend control object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height

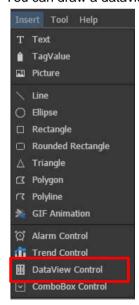
Select the edge area of the trend control and right click to display a popup menu. You can set trend properties by running the "Trend Settings" menu from the pop-up menu.



Trend setting details are explained in "27.3 WebPlant Client-> (6) Trend Control Setting".

14) DataView Control

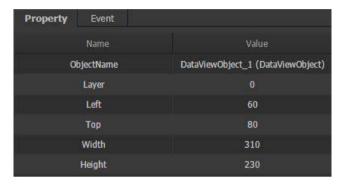
You can draw a dataview control object.





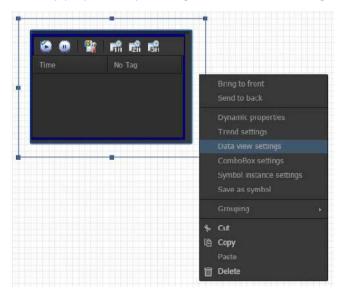
Select [Insert]-[DataView Control] from the main menu or select the "DataView Control" icon from the toolbar to insert the dataview control on the screen. After clicking and dragging the mouse to determine the size, a dataview control is inserted on the screen. The horizontal / vertical size must be greater than 100 pixels respectively to display the dataview control.

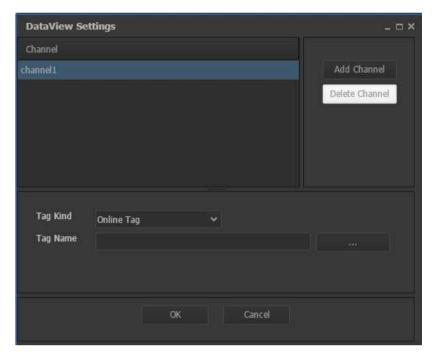
The properties of the dataview control object are as follows.



- ObjectName: Object name (object type)
- Layer: Layer number to which the object belongs
- Left, Top: Coordinate value at the top left of the minimum bounding rectangle containing the object
- Width, Height: Object width and height

Select the edge area of the Data View control and right-click to display a popup menu. You can set auxiliary properties by running the "Data View Settings" menu from the pop-up menu.





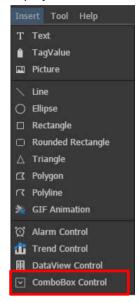
- Add Channel: Add a channel.
- Delete Channel: Delete the selected channel.
- Tag Kind: Choose between online tag / archive tag.
- Tag Name: Select a tag using the tag selection button.
- OK: Save the settings and close the window.
- Cancel: Cancel the settings and close the window.

Notice

Up to 10 channels of data view control can be added.

15) Combo box control

Displays the combo box control.

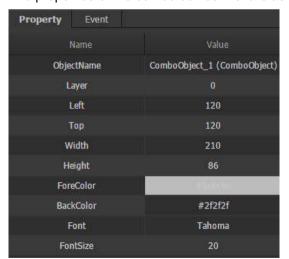




You can insert a combo box control on the screen by selecting the "Combo Box Control" icon from the toolbar or "[insert] → [combo box control]" menu from main menu. After clicking mouse and then dragging the mouse to determine the size, a combo box control is inserted on the screen.

The combo box control can only change the horizontal size.

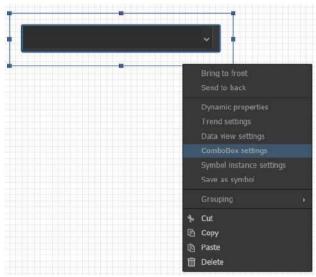
The properties of the combo box control are as follows.

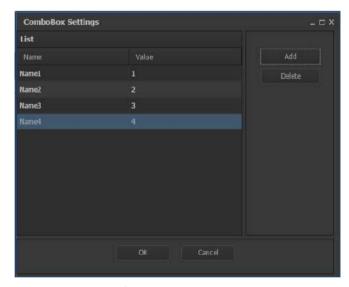


- ObjectName: Name of the object.(object type)
- Layer: Layer number to which the object belongs
- LEFT, TOP: Coordinate value at the top left of the object
- Top, Width: Object width and height. (the Height is read-only)
- ForeColor: Select the color of the text in the combo box.
- BackColr: Select the background color of the text in the combo box.

- Font: Select font type ot the text
- FontSize: Select fint size of the text.

You can display a popup menu by selecting the edge area of the combo box control and clicking the right mouse button. you can set the combo box auxiliary properties by running "Combo Box Settings" menu from the pop-up menu.





- Add: Add name / value.
- Delete: Delete name / value.
- Name: Enter the name displayed in the combo box.
- Value: Enter the value of the name in the combo box.
- OK: Save the settings and close the window.
- Cancel: Cancel the settings and close the window.

Notice

You can add up to 100 [Name/Value] items to a combo box.

You can add up to 6 combo box object in one view

Please refer to the manual "27.1.6 Event script 2)combo box script" for how to use the combo box event and script.

16) Zoom In

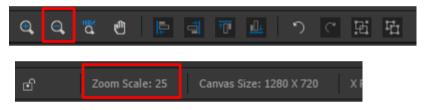
Zoom in the page screen.



You can check the current magnification ratio on the lower status bar.

17) Zoom Out

Zoom out the page screen.



18) 1:1 Scale

The page screen returns to the original status. (100% screen)



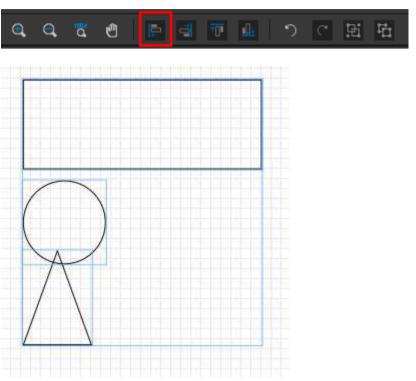
19) Move

You can easily move it by holding the screen.



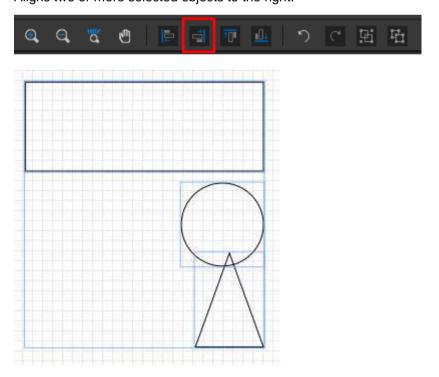
20) Align Left

Aligns two or more selected objects to the left.



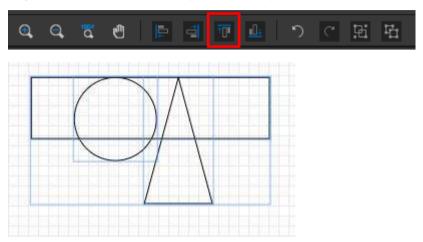
21) Align Right

Aligns two or more selected objects to the right.



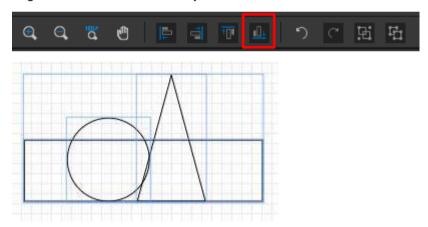
22) Align Top

Aligns two or more selected objects to the top.



23) Align Bottom

Aligns two or more selected objects to the bottom.



24) Undo

You can undo during editing to return to the previous state. (Store up to 100 histories)



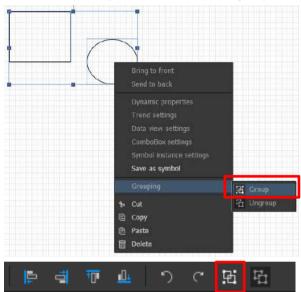
25) Redo

You can redo during editing to return to the original state. (Store up to 100 histories)



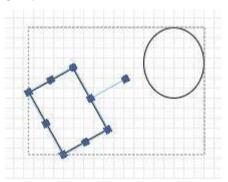
26) Group

Select multiple objects (2 or more) and group them into a one group. You can use it as one object.



Select 2 or more objects. And then run "Group" menu from the pop-up menu. Or "Group" icon on the toolbar. You can see the grouped objects.

If you click the sub-object once again in the group object, you can edit sub-objects within a group.

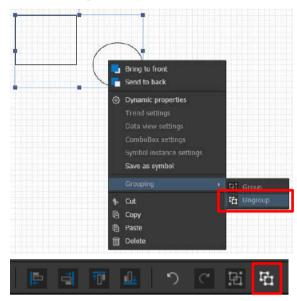


Notice

- Group object cannot be included in a another group.
- Alarm, trend, data view, and combo box controls cannot be included in the group.

27) Ungroup

Release the group object.



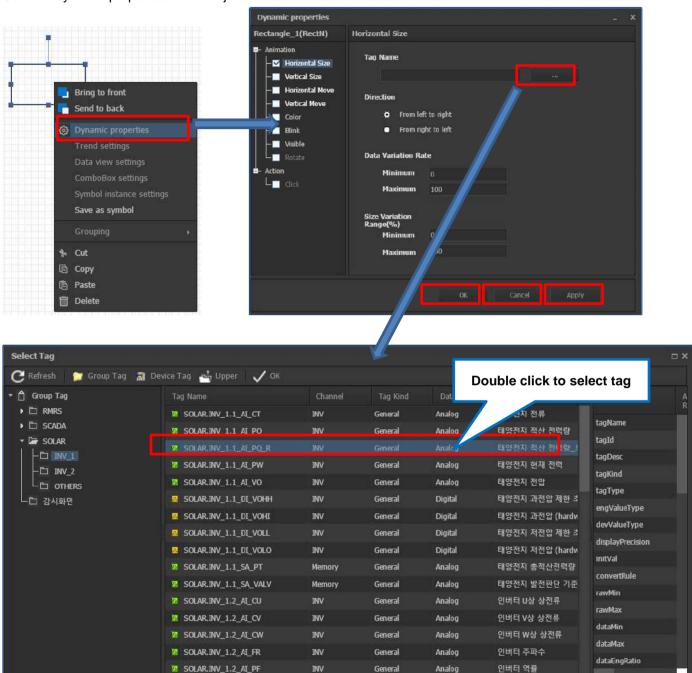
Select grouped object. And then run "Ungroup" menu from the pop-up menu. Or "Ungroup" icon on the toolbar. You can see it is ungrouped.

Notice

When the group object is released, the dynamic characteristics applied to the group are deleted.

27.1.5 Dynamic properties

Sets the dynamic properties of the object.



Select the object and right-click to launch the popup menu. In the pop-up menu, launch the "Defining Dynamic Properties" menu, you can see the Dynamic Property Settings window. Dynamic properties are associated with tags. Click the "…" button to display the tag selection window. You can select the tag you want to link.

Click the "OK" button to save your changes and close the window.

Click the "Cancel" button to cancel your changes and close the window.

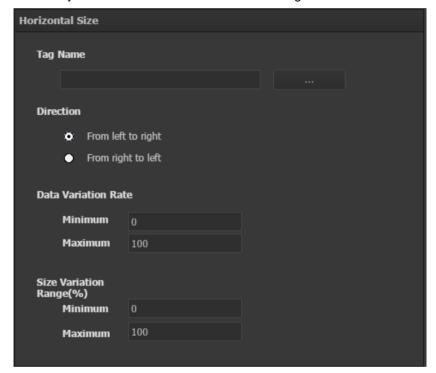
Click the "Apply" button to save your changes and keep the window.

Notice

- Dynamic properties must be set for each object.
- In order to run a dynamic property, the dynamic property must be checked.
- Multiple dynamic properties can be set for an object.

1) Horizontal Size

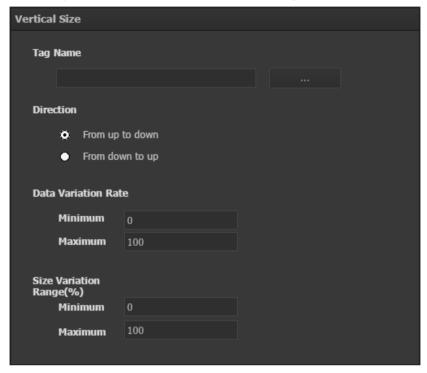
Set the dynamic characteristic whose size changes in the horizontal direction.



- Tag Name: Select tag for dynamic characteristic display.
- Direction: Select the direction to move.
- Data Variation Rate: Enter the range of tag values used for dynamic characteristics. For example you enter Min value(50), Max value(100), the dynamic characteristics are displayed when the tag value is between 50 and 100. You need to choose values considering the range of tag value.
- Size Variation Range(%):Enter the size variation range in percent (%) between 0 and 100.

2) Vertical Size

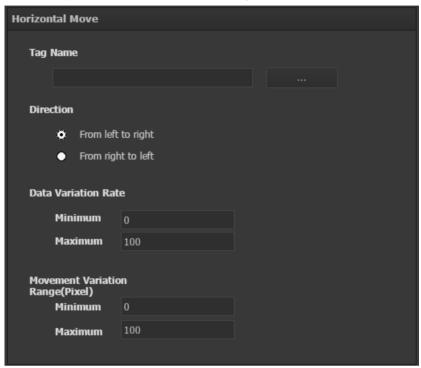
Set the dynamic characteristic whose size changes in the vertical direction.



- Tag Name: Select tag for dynamic characteristic display.
- Direction: Select the direction to move.
- Data Variation Rate: Enter the range of tag values used for dynamic characteristics. For example you enter Min value(50), Max value(100), the dynamic characteristics are displayed when the tag value is between 50 and 100. You need to choose values considering the range of tag value.
- Size Variatin Range(%):Enter the size variation range in percent (%) between 0 and 100.

3) Horizontal Move

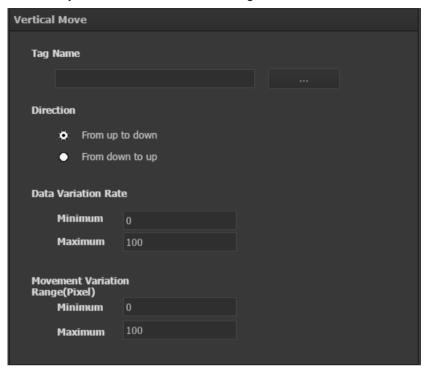
Sets the dynamic characteristic of moving in the horizontal direction.



- Tag Name: Select tag for dynamic characteristic display.
- Direction: Select the direction to move.
- Data Variation Rate: Enter the range of tag values used for dynamic characteristics. For example For example you enter Min value(50), Max value(100), the dynamic characteristics are displayed when the tag value is between 50 and 100. You need to choose values considering the range of tag value.
- Movement Variation Range(Pixel): Enter the size variation range in pixel between 0 and 999. If you enter a value larger than the canvas size, the object may not be displayed on the screen beacuse it moves off the screen. The minimum value is fixed at 0.

4) Vertical Move

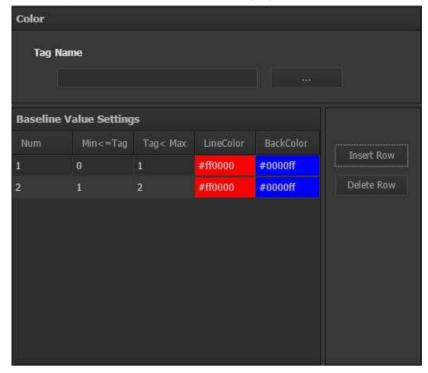
Sets the dynamic characteristic of moving in the Vertical direction.



- Tag Name: Select tag for dynamic characteristic display.
- Direction: Select the direction to move.
- Data Variation Rate: Enter the range of tag values used for dynamic characteristics. For example For example you enter Min value(50), Max value(100), the dynamic characteristics are displayed when the tag value is between 50 and 100. You need to choose values considering the range of tag value.
- Movement Variation Range(Pixel): Enter the size variation range in pixel between 0 and 999. If you enter a value larger than the canvas size, the object may not be displayed on the screen beacuse it moves off the screen. The minimum value is fixed at 0.

5) Color

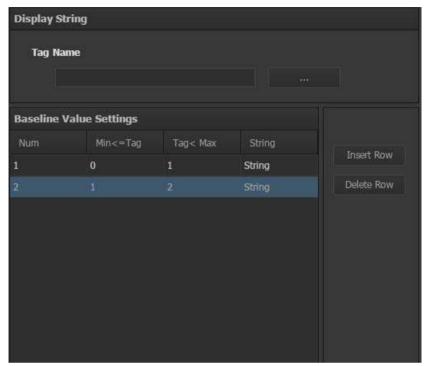
Set the dynamic characteristics for changing colors.



- **Tag Name**: Select tag for dynamic characteristic display.
- Baseline Value Settings: Select the color to display as the value changes.
 - "Row insert": Click the button to add a value range and color.
 - "Row delete": Click the button to delete the last line.

6) Display String

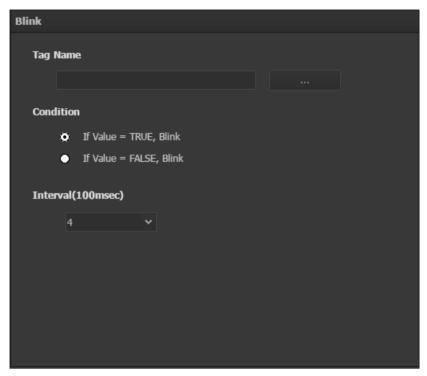
Set the dynamic characteristics for changing "display string".



- Tag Name: Select tag for dynamic characteristic display.
- Baseline value Settings: Select the color to display as the value changes.
 - "Row insert" Click the button to add a value range and "display string".
 - "Row delete": Click the button to delete the last line.

7) Blink

Set the dynamic characteristics for blinking.

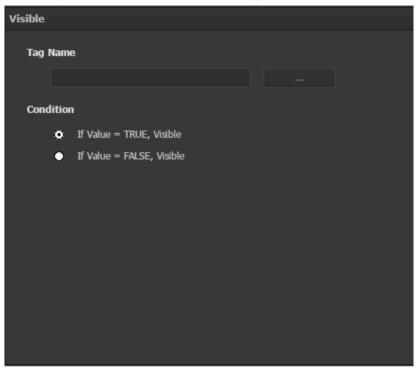


- Tag Name: Select tag for dynamic characteristic display.
- Condition: Select the conditions for the blinking dynamic characteristics.
- Interval: Select the time interval for blinking. The smaller the value, the faster it blinks.

Enter a value between 0 and 100. If the value is 0, it does not blink.

8) Visible

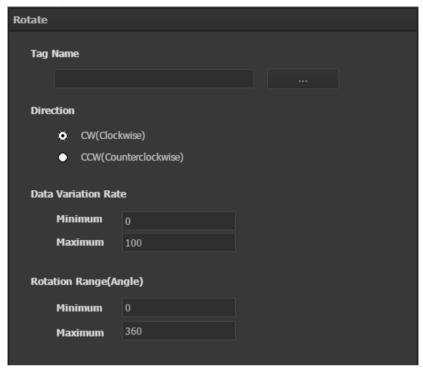
Set the dynamic characteristics for visibling



- Tag Name: Select tag for dynamic characteristic display.
- Condition: Select the conditions for the visibling dynamic characteristics.

9) Rotate

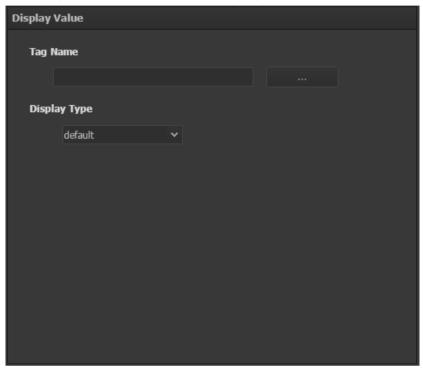
Set the dynamic characteristics for rotation



- Tag Name: Select tag for dynamic characteristic display.
- Direction: Select the direction of rotation.
- Data Variation Rate: Enter the range of tag values used for dynamic characteristics. For example For example you enter Min value(50), Max value(100), the dynamic characteristics are displayed when the tag value is between 50 and 100. You need to choose values considering the range of tag value.
- Rotation Range(Angle): Set the rotation range. Enter a value between 0 and 360.

10) Display Value

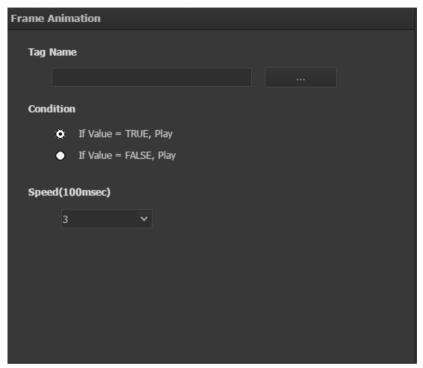
Set the dynamic characteristics for "Display Value".



- Tag Name: Select tag for dynamic characteristic display.
- **Display Type**: Select display type for displaying values.

11) Frame Animation

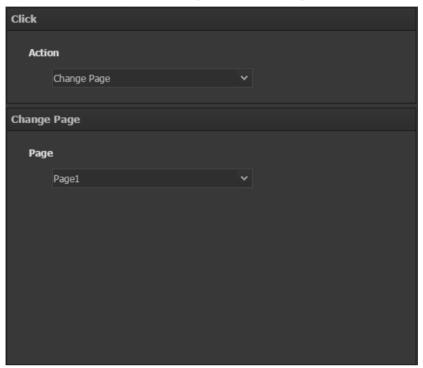
Set playback conditions and speed for GIF animation.



- Tag Name: Select tag for dynamic characteristic display. If you enter "1" then the animation always runs.
- Condition: Select whether to play if the tag value is True or if it is False.
- Speed: Set the playback speed in 100 msec increments. If 0 is selected, animation does not work.

12) Click: Change Page

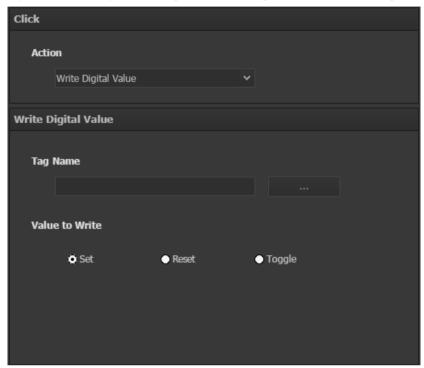
If you click on the object, it changes to another page.



- Action: Select "Change Page"
- Page: Select the page to change to.

13) Click: Write Digital Value

If you click the object, the tag value is changed to the selected digital value.

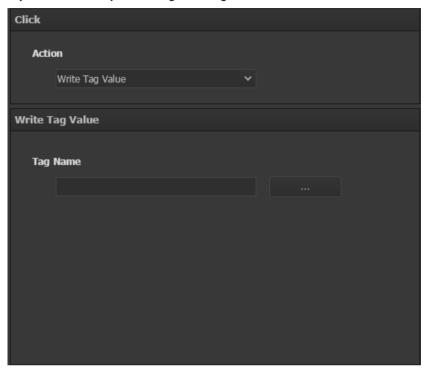


- Action: Select "Write Digital Value"
- Tag Name: Select the tag to be used to write the value.
- Value to Write: Select the writing type.

Set: Write "TRUE" value Reset: Write "FALSE" value Toggle: Write "Toggle" value.

14) Click: Write Tag Value

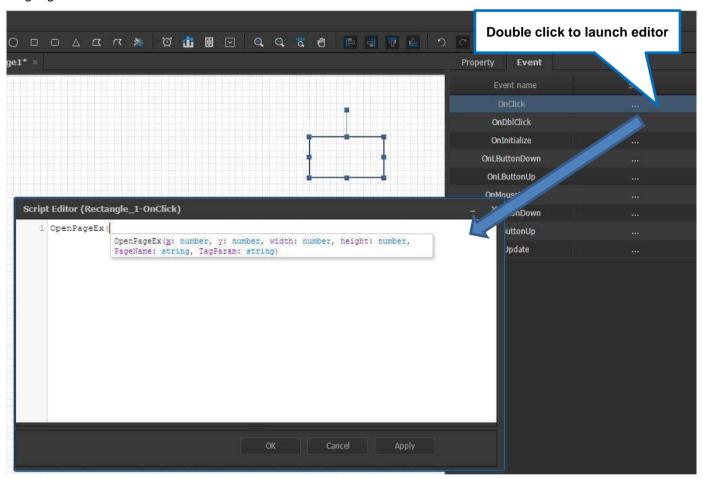
If you click the object, change the tag value with the entered value.



- Action: Select "Write Tag Value"
- Tag Name: Select the tag to be used to write the value.

27.1.6 Event script

You can write scripts to run when events occur on objects or pages. Scripts must be written in the JavaScript language.

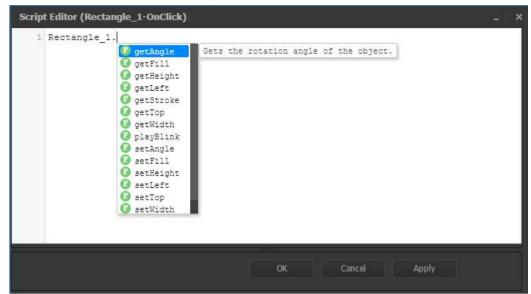


1) Basic script

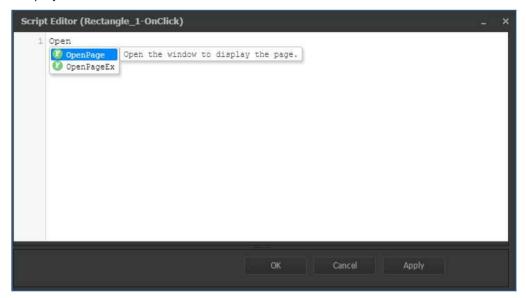
The events of general objects are shown in the following table..

Event Name	Description
OnClick	Mouse click event
OnDblClick	Mouse double-click event
OnInitialize	Object initialization events
OnLButtonDown	Mouse left button click event
OnLButtonUp	Mouse left button release event
OnMouseMove	Mouse move event
OnRButtonDown	Mouse right button click event
OnRButtonUp	Mouse right button release event
OnUpdate	Object update event





Use the "Ctrl + Alt + Space" key to complete the word. For example, enter "Open" and then use "Ctrl + Alt + Space", you can see the lists of word starting with "Open". If there is only one word, the completed word is displayed.



The following table shows the functions available in the general objects

Functin Name Description OpenPage(PageName, TagParam) Open another page in a popup window.	
L OpenPage(PageName, TagParam) L Open another page in a popup window.	
PageName: Page name to open	
TagParam: On the Template screen, enter a tag nam	ne
to use instead. Null string("") can also be used.	
ex) OpenPage("Page 1", "\$TagGroup=TagA")	
OpenPageEx(x, y, width, height, Please refer to OpenPage.	
pageName, TagParam); When you open a page, you can specify the position	
and size of the window.	
x: window position x coordinate	
y: window position y coordinate	
width: window width	
height: window hight	
ex) OpenPageEx(100, 100, 800, 600, "Page 1",	
"\$Tag=SOLAR")	
ChangePage(PageName) Change to another page.	
PageName: Page name to change	
ex) ChangePage("Page 2");	
ChangePageEx(PageName,TagParam) Please refer to ChangePage.	
When you change the page, you can specify the	
TagParam.	
PageName: Page name to open	
TagParam: On the Template screen, enter a tag nam	ne
to use instead. Null string("") can also be used.	
ex) ChangePageEx("Page 2", "\$Tag=SOLAR");	
SetTagVal(TagName, TagValue) Set tag value.	
TagName: Specify the tag name.	
TagValue: Specify the tag value.	
SetTagValAsync(TagName, TagValue) Please refer to SetTagVal	
You can call a synchronous function using await.	
ex) await SetTagValAsync("TagName","TagValue");	
GetTagVal(TagName) Get a tag value.	
TagName: Specify the tag name.	
GetTagValAsync(TagName) Please refer to GetTagVal	
You can call a synchronous function using await.	
ex) await GetTagValAsync("TagName");	

2) Combo box script

The event of combo box objects is shown in the following table..

Event Name	Description
OnClick	Mouse click event

The following table shows the functions available in the combo box script.

Function Name	Description
getSelectedValue();	Returns the selected item value.
	ex)var comboSelVal = ComboObject_1.getSelectedValue();
getSelectedText();	Returns the selected item text.
	ex)var comboSelText = ComboObject_1.getSelectedText();
getSelectedIndex();	Returns the selected item index.
	ex) var comboSelIndex = ComboObject_1.getSelectedIndex();
getAllItems();	Returns all items (type: array) in the combo box.
	Return value data structure = [{value:value1,
	text:text1},{value:value2, text:text2}]
	ex) var comboAllItems = ComboObject_1.getAllItems();
getItem(Index);	Returns the item (type: object) as a combo box index.
	Index: Combo box index to import items
	Return value data structure = {value:value1, text:text1}
	ex) var comboltem = ComboObject_1.getItem(1);
getItemCount();	Returns the item count of combo box.
	ex) var comboltemCount = ComboObject_1.getItemCount();
setSelectIndex(Index);	Select an item of combo box using index.
	Index: index of combo box to be selected
	ex) ComboObject_1.setSelectIndex(1);
setText(Text);	Set a text to display in combo box
	Text: string to be displayed
	ex) ComboObject_1.setText("Text 1");
setFontSize(FontSize);	Change font size of combo box
, ,	FontSize: font size to be changed
	ex) ComboObject_1.setFontSize(15);
setFontFamliy(FontFamliy);	Change font name of combo box
	FontFamliy: font name to be changed
	ex) ComboObject_1.setFontFamliy("Arial");
setBackgroundColor(Color);	Select background color of combo box.
-	Color: color to be changed
	ex) ComboObject_1.setBackgroundColor(#FFFFFF);
setForegroundColor(Color);	Select text color of combo box
, , , , , , , , , , , , , , , , , , ,	Color: color to be changed
	ex) ComboObject_1.setForegroundColor(#000000);
addItem(ItemText,	Add item to the combo box
ItemValue);	ItemText: item name
	ItemValue: item value
	ex) ComboObject_1.addItem("Item 1","value1");

addItemArray(ItemArray);	Add item lists(array) to the combo box
	ItemArray: array of items
	- Array format [{value:value1, text:text1},{value:value2,
	text:text2}]
	ex) ComboObject_1.addItem([{value:"value1",text:"String1"}]);
removeItem(Index);	Remove an item using index of combo box.
	Index: index of combo box
	ex) ComboObject_1.removeItem(1);
clear();	Clear all items of combo box.
	ex) ComboObject_1.clear();

27.1.7 Smart symbol

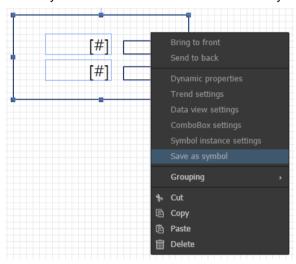
Smart symbols are symbols that can be reused when setting dynamic properties of objects. The advantage of smart symbols is that you only need to define the object once. When using a registered smart symbol, you only need to specify the replacement string.

1) Smart symbol registration

To register a smart symbol, enter a character string (keyword) to replace in the tag name of dynamic properties. The string to replace is a string starting with "\$". ex) \$screen

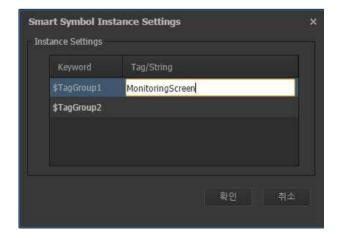
Select objects containing the replacement string and right-click to display a pop-up menu.

When you select the "Save Symbol" menu of the pop-up menu, the selected objects are saved as one smart symbol. The saved folder is the "User Symbol" folder, which can be checked in the library.



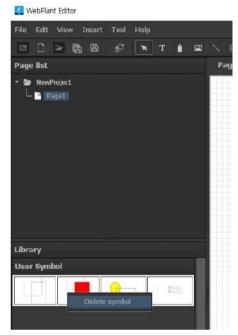
2) Setting smart symbol instnace

You can select a smart symbol from the "User Symbol" folder in the graphic library and drag & drop it to insert it into the page. When a smart symbol is inserted into the page, the Smart Symbol Instance Settings window is displayed on the screen. Enter a replacement string for each keyword.



3) Deleting smart symbol

Select a smart symbol from the "User Symbol" folder in the graphic library and right-click to display a popup menu. You can delete the selected symbol by selecting the "Delete Symbol" menu.



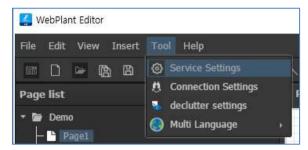
When you select the "Delete Symbol" menu from the pop-up menu, a confirmation window is displayed as follows.



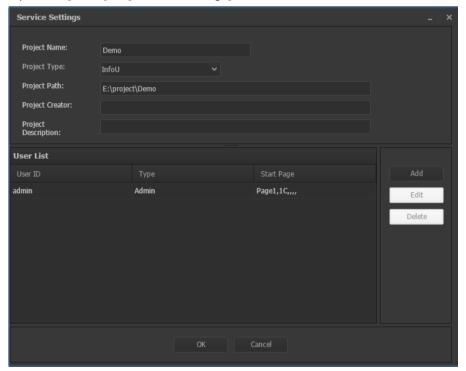
Click the "Yes" button to delete the selected smart symbol.

27.1.8 Service Settings

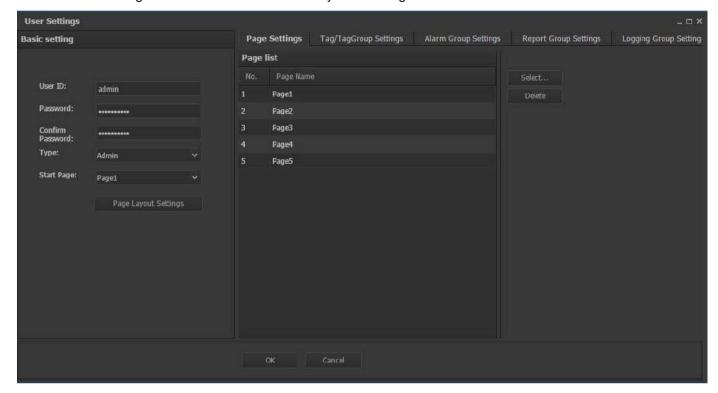
Set the properties for WebPlant project service.



Open the [Tools] → [Service Settings] menu on the main menu.

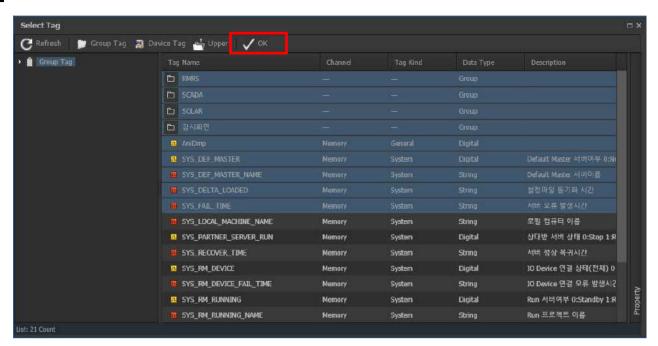


- Add: Display the user setting window on the screen to add a user,
- Edit: Modify settings for the selected user informations
- Delete: Delete the selected user.
- OK: Save your settings and close the window.
- Cancel: Cancel your settings and close the window.



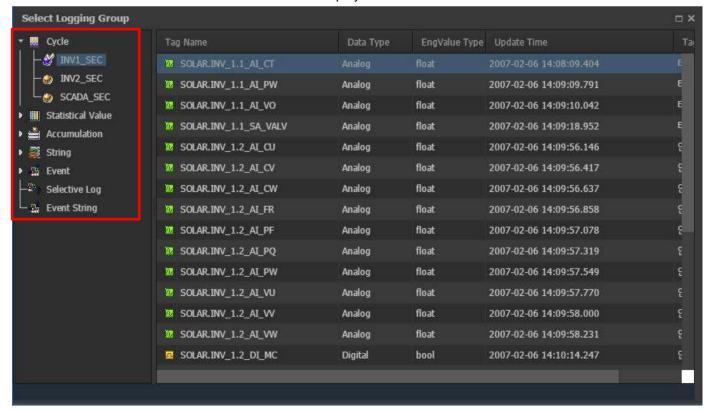
Use the User Settings window to add users or modify user settings.

- User ID: The user ID consists of 3 to 15 alphanumeric characters.
- Password: The user password consists of a mixture of English letters and numbers of 6 to 15 characters.
- Confirm Password: Enter the same password again.
- Type: Select user type (User or Admin)
- Start Page: Select the page to be displayed first when the user logs in from the web client.
- Page Layout Settings: Set the menu page and the location of the menu page. You can select the location of menu page (Top/Bottom/Left/Right)
- Page Settings: Assign pages to a user. The users can only access pages assigned to them.
- Tag/TagGproup Settings: Assign Tag or Tag group to users. It is applied when searching alarm or tag values. For example, If you want to search the alarm for a specific tag or tag group, you can search only ones assigned to you. Click the "Add" button to display the tag selection window on the screen.



When selecting tags, use the shift key to make a multi-select. You can add selected items to the tag / tag group list by clicking the "OK" button in the toolbar.

- Alarm Group Settins: Assign alarm groups for user access. It is applied when querying the alarm groups.
- Report Group Settings: Assign report groups for user acesss. It is applied when querying the report folder registered in the WebPlant server.
- Logging Group Settings: Assign logging groups for user access. It is applied when selection logging tag. Click the "Select" button and the selection window will be displayed on the screen.



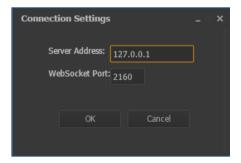
If you double-click the logging group name in the tree on the left of the Logging Group Selection window, the selected logging group is added to the logging group setting list.

Notice

InfoU Runtime or InfoU Engineering must be running to display the tag selection window.And The WebPlant server must be running.

In order to display the tag selector, you must be connected to the WebPlant server. If you call the tag selector without being connected to the server, it will try to connect to the server automatically. If the websocket port is not the default value, the server connection setting window may be displayed automatically.

The server connection setting window is displayed as follows.



27.2 WebPlant Server

The WebPlant server provides a service for transferring the data of the InfoU to the WebPlant client.

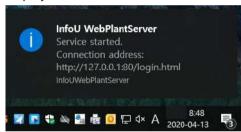
(1) WebPlant server running

You can select "InfoU WebPlant-> WebPlant Server" from the program menu to start the WebPlant Server.



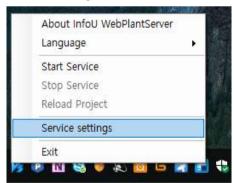
When the WebPlant server is started for the first time, it runs in a stopped state. After executing the service setting operation, you can start the service.

When the server is running, an icon is created on the taskbar as shown below and a startup message is displayed.



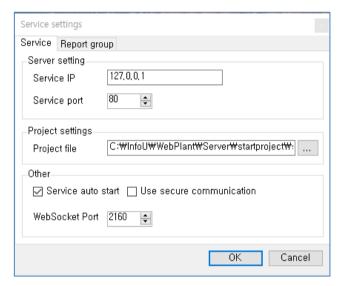
(2) Service setting

You can change server settings, project settings, report group settings, etc. using the WebPlant server's service settings menu.



Right-click on the taskbar icon of the WebPlant server and select the "Service Settings" menu to display the Service Settings dialog.

1) Service Settings



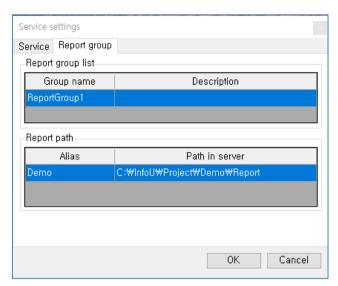
- Service IP: Set the IP address of the WebPlant server.
- Service Port: Set port for connecting to a web server.
- Project File: select the file you want to project services. If you click on the ".." button then the file selection dialog is diaplyed. The project file extension is "* .xml".
- Service auto start: when you run a server WebPlant set to automatically start the service.
- **Use Secure communication**: Enable the encrypted communication between the WebPlant server and the web client.
- WebSockets Port: Set port for connection to a web socket service.

Notice

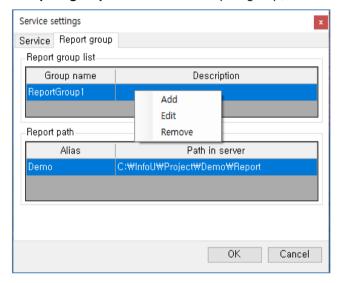
If you want to change the web socket port to issue a communication on security, you can change the socket port of WebPlant server.

If you change the web socket port of the WebPlant server, you must also change the web socket port of the web client login page to connect communication..

2) Report Group

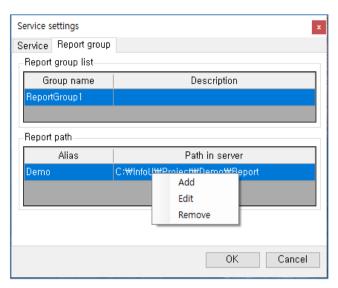


• Report group list: Generate a report group, and management.



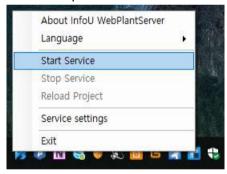
From the Report Group list list, click the right mouse button to display a pop-up menu. Use the "add", "Edit", "delete" function to manage the list of report groups.

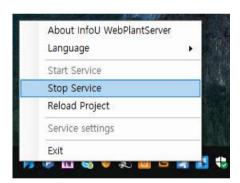
• Report Path: Generate and manage report paths. The report path belongs to the currently selected report group, and multiple report paths can be created for one report group.



Right-click on the report path list to display a pop-up menu. Manage report paths using "Add", "Edit" and "Delete" functions.

(3) WebPlant service start and stop Start or stop the WebPlant service.

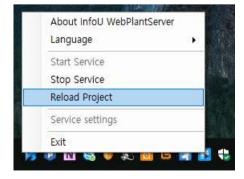




Right-click on the taskbar icon of the WebPlant server to launch the popup menu. If you run the "Start Service" menu in the pop-up menu, Servers will start.

For a running server, stop the service by running the "Stop Service" menu in the pop-up menu.

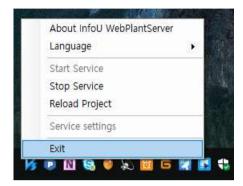
(4) Reloding WebPlant server project



On the taskbar icon for the WebPlant server, click the right mouse button to launch the pop-up menu.

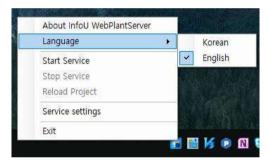
When you run the "Reload Project" menu in the pop-up menu of the server operating reloading the project and services in WebPlant server.

(5) WebPlant server shutdown Quit WebPlant server.



On the taskbar icon for the WebPlant server, click the right mouse button to launch the pop-up menu. When you run the "Exit" menu from the pop-up menu to quit WebPlant server.

(6) WebPlant server language change



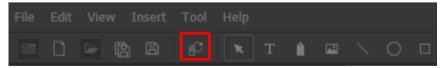
On the taskbar icon for the WebPlant server, click the right mouse button to launch the pop-up menu.

When you select the desired language in the "Language (Language)" menu, change the language of the WebPlant Server UI.

(7) Server Project reloading in WebPlant Editor

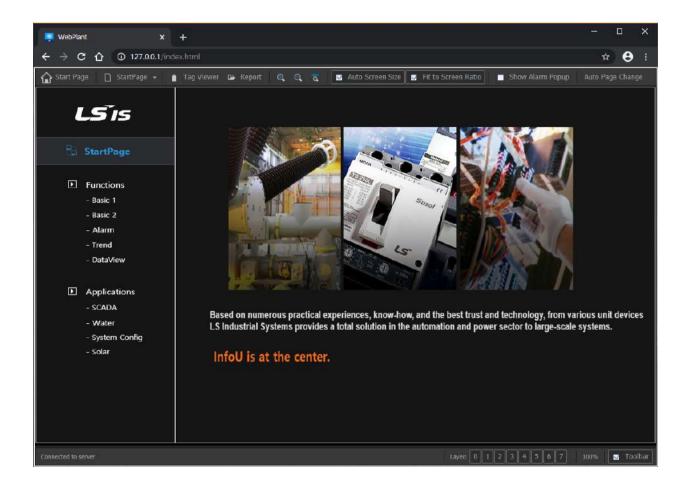
About the project and services in WebPlant server provides the ability to reload the project.

Open the project and service in WebPlant server, edit the page / Edit WebPlant Editor or by modifying the user / edit post by clicking on the "server project reload" button on WebPlant editor toolbar material has changed in the server immediately loaded to the service can.



27.3 WebPlant client

The WebPlant client consists of web pages and JavaScript using HTML5 technology. Launch using a web browser that supports the HTML5 standard. WebPlant client performs monitoring by receiving project information serviced by WebPlant server.



Notice

For the WebPlant client to run normally, the InfoU runtime and WebPlant server must be running.

WebPlant clients can run in web browsers that support the HTML5 standard.

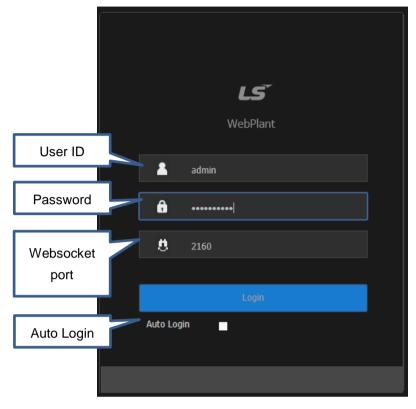
Available web browsers are Chrome, FireFox, etc., and the latest version of Chrome is recommended.

Notice

It is recommended that the maximum number of users that a WebPlant client can connect to is 10. If it exceeds 10 connections, service delay may occur due to overload of the server program.

(1) login

In order to run the WebPlant client, you must log in to the WebPlant server.



Enter the address of the WebPlant server in the address window of the web browser and press Enter to display the login screen.

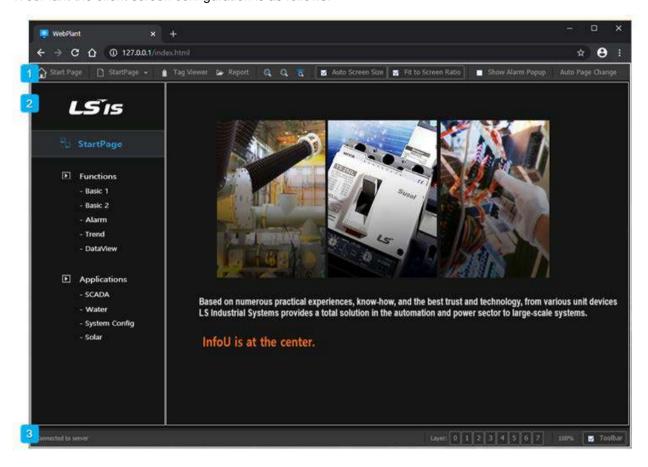
Example of WebPlant server address) "192.168.0.11"

Enter the user ID and password registered in the WebPlant project and click the "Login" button.

The "WebSocket Port" item displays 2160 by default. If the WebSocket port value of the WebPlant server has been changed, enter the same value as the WebSocket port setting value of the server in the "WebSocket Port" field and log in.

If you check the "Auto Login" item, the start screen is automatically displayed on the screen. You can turn off automatic login by selecting "Logout" in the upper right of the web client toolbar.

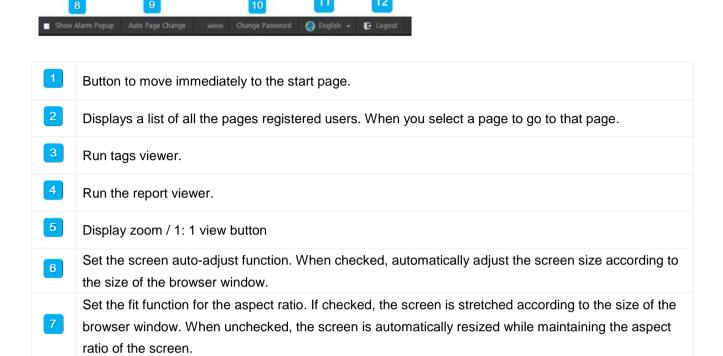
(2) WebPlant client screen configuration WebPlant the client screen configuration is as follows.



- Main Menu
 Canvas area for WebPlant page execution
 The status bar
- (3) Main Menu

The main menu of the WebPlant clients include features such as "start page", "Page List", "Alarm Viewer", "Log out"..





(4) Click dynamic characteristics

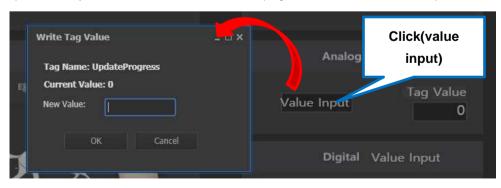
12

Auto page change

Change language

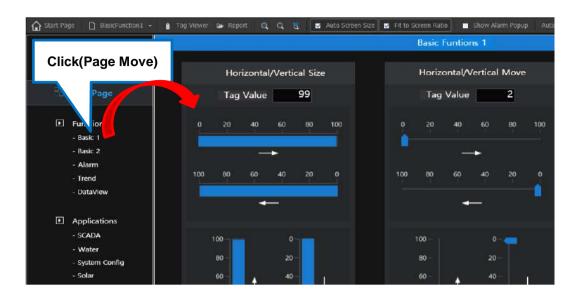
Change your password

The user performs the action using the mouse on the object with the click barrel property set. For objects with click click properties set, it displays a border in response to the mouse cursor. It performs dynamic characteristics such as page movement and value input.



If checked, an alarm popup message is displayed.

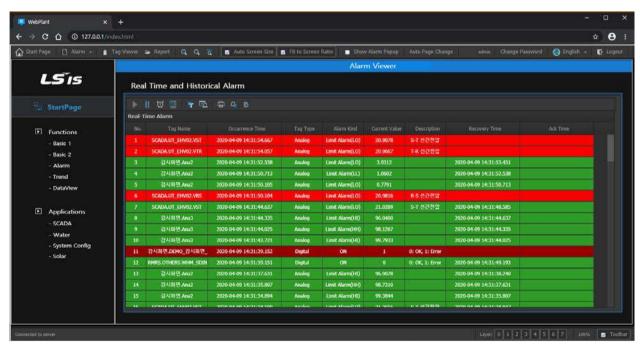
Log out the current user. Go to the login page



(5) Alarm control settings

Set the query conditions contained in the alarm control WebPlant page.

Alarm Query screen is as follows.



Description of the toolbar buttons is shown in the following figure.



1) Real-time alarm playback

Update the stopped real-time alarm back to the grid

2) Real-time alarm stop Stop the alarm real time updates.

3) Real-time alarm

Updates the real-time alarm to the grid.

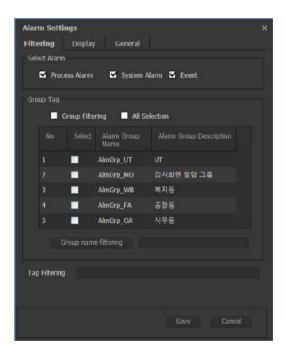
4) Alarm history

Displays the alarm history on the grid.

5) Alarm filter settings

Click the button to display the alarm setting window as follows.

The alarm setting window consists of three tab pages: "Filtering settings", "Display item settings", and "General settings".

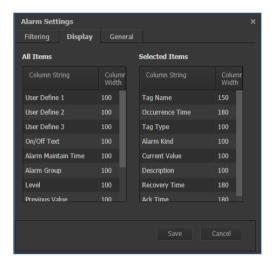


Filtering set

- Select Alarm: This is the part to set the type of alarm to be displayed in the alarm viewer
- Group Tag (Group Filtering): Determines whether group filtering is applied and which groups are viewed. When selecting group filtering, only the group is applied to the alarm viewer. If group filtering is not selected, it is applied to all alarm tags
- Group tag (select all): Select all items in the group list
- Group Tag (Detailed Text Filtering): Detailed text filtering function for the alarm group name in the alarm viewer. ";" Word unit separator and "+" string unit separator. For example, if you type "UT; FA +

Grp" in the above screen and press the detailed text filtering button, the group names of AlmGrp_UT and AlmGrp_FA are automatically set in the alarm group name

- Tag Filtering: In the real-time alarm and history alarm screens, only the applicable alarms are displayed by tag filtering on the tag names that have occurred. ";" Word unit separator and "+" string unit separator
- Save: Save the settings and close the window.
- Cancel: cancel the settings and close the window.

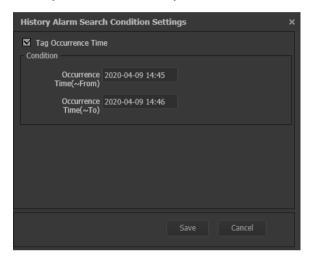


- b. **Display item setting**: Drag / drop the item you want to display from the entire item to the selected item, and the column will be displayed on the screen.
 - Save: Save the settings and close the window.
 - Cancel: cancel the settings and close the window.



- c. General settings: Drag / drop the items you want to display and move them to the selected item
 - General settings (color): Set the background color and string color of the row for each alarm type
 - General settings (Control): Check the Display Limits item to apply the maximum number of lists
 - Save: Save the settings and close the window.
 - Cancel: cancel the settings and close the window.
- 6) History alarm setting

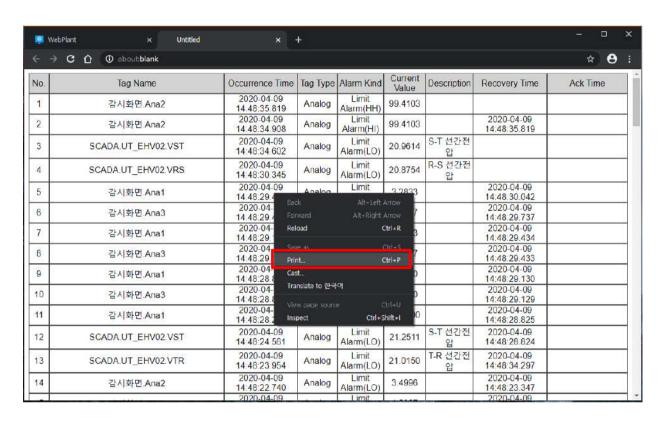
When you click the button, you will see the alarm history configuration.

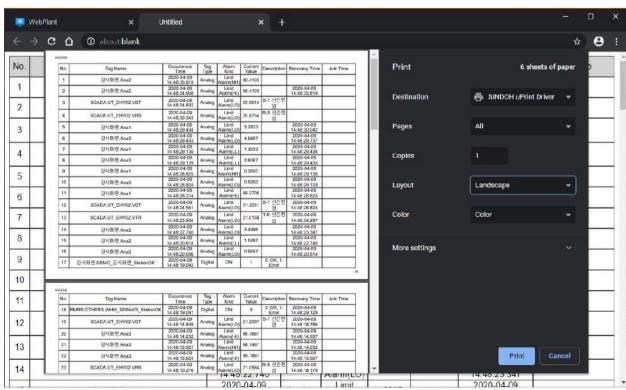


- Tag generation time: If checked, the time condition is applied and searched.
- Occurrence Time (From): Set the start time of the history alarm inquiry condition.
- Occurrence Time (up to): Set the end time of the inquiry condition for history alarm
- Save: Save the settings and close the window.
- Cancel: cancel the settings and close the window.

7) Print

When you click the button, a new web page containing an alarm list is displayed on the screen. Please print the table displayed on the screen using your browser's print function..





8) Indivisual acknowledge

Acknowledge and process the selected alarm item in the real-time alarm grid

9) Page ack

Only the alarm items on the page displayed in the real-time alarm grid are acknowledged.

Notice

Alarms recognized in the real-time alarm are deleted from the real-time alarm page.

Acknowledgment alarms that are not displayed in the real-time alarm list can be checked through history alarm inquiry..

Notice

Alarm Viewer can be viewed only by users authorized alarm. It is possible to query the alarm when the tag is when you set the alarm for the project that is set in the tag list.

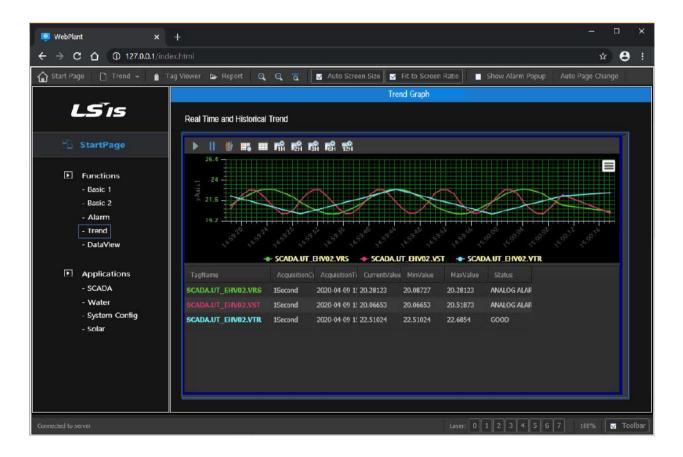
Notice

Control objects and alarm / trend / data view / combo box, you can insert a maximum of six on one screen.

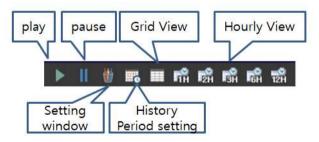
(6) Trend control settings

Change the runtime settings of the trend control contained in the WebPlant page.

Trend query screen is as follows.

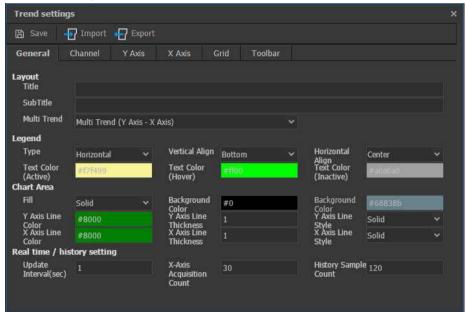


Trend of Control Toolbar are as follows



Click the "Show Settings Window" button to display the trend settings window.

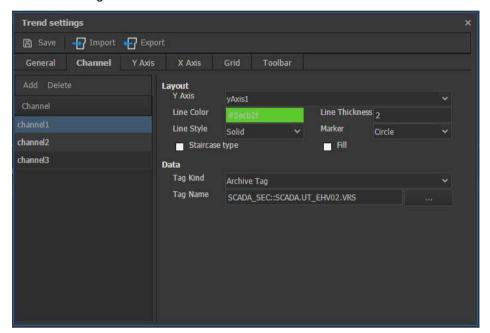
1) General Settings



- Save: Save the settings to the trend and restart trend control.
- Import: Import and apply saved settings. In the web client, it is taken from the web browser's internal DB. Locally, JSON files stored in the file system are read and imported.
- Export: Save settings. In the web client, the name is specified and stored in the web browser's internal DB. Locally, it is stored as a JSON file in the file system
- Layout (Title): Enter the title of the trend
- Layout (Subtitle): Enter the trend subtitle.
- Layout (Multi Trend): Select the trend type. Select between single trend / multi trend (X-Y) / multi trend (Y-Y).
- Legend (How to display): Select the vertical / horizontal position of the legend.
- Legend (Vertical Alignment): Select the top / bottom / bottom position of the legend.
- Legend (Horizontal Alignment): Select left / middle / right for the location where the legend will be displayed.
- Legend (Text Color (Active)): Select the text color when the legend is active.
- Legend (Text Color (Hover)): Select the text color when the mouse is over the legend.
- Legend (Text Color (Inactive)): Select the text color when the legend is inactive.
- Chart Area (Filled): Select how to display the chart background color.
- Chart Area (Background Color): Select the chart background color.
- Chart Area (Y-axis line color): Select the Y-axis grid color inside the chart.
- Chart area (Y-axis line width): Enter the Y-axis grid line thickness inside the chart.
- Chart Area (Y-axis line shape): Select the Y-axis grid line shape inside the chart.
- Chart Area (X-axis line color): Select the X-axis grid color inside the chart.
- Chart area (X-axis line thickness): Enter the X-axis grid line thickness inside the chart.
- Chart Area (X-axis line shape): Select the X-axis grid line shape inside the chart.
- Real-time / History setting (Update cycle): Enter the chart update cycle. You can enter from 1 to 600.

- Real-time / History setting (Number of X-axis collections): Enter the number of X-axis data displays. You can enter from 10 to 100.
- Real-time / History Setting (Historical Sample Count): Enter the number of historical samples. You can enter from 30 to 3600.

2) Channel settings

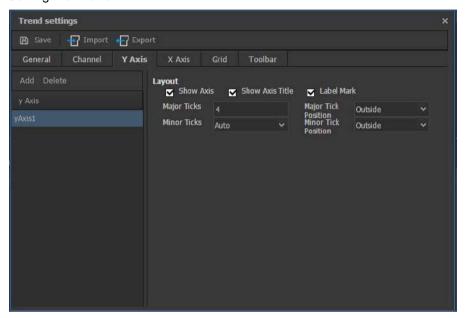


- Save: Save the settings to the trend and restart trend control.
- Import: Import and apply saved settings. In the web client, it is taken from the web browser's internal DB.
- Locally, JSON files stored in the file system are read and imported.
- Export: Save settings. In the web client, the name is specified and stored in the web browser's internal
- DB. Locally, it is stored as a JSON file in the file system.
- Layout (Y-axis setting): Select Y-axis to apply to the channel.
- Layout (Line Color): Select the color to display the channel.
- Layout (line thickness): Enter the line thickness of the channel.
- Layout (Line Shape): Select the line shape of the channel. Select from the list of solid lines and dotted lines.
- Layout (Measurement Point): Select a shape to display the data positions that make up the line of the channel.
- Layout (Staired): Displays the channel lines in a staircase.
- Layout (Fill): Fills and displays the bottom line of the channel.
- Data (Tag Type): Select the tag type to apply to the channel. Choose between online tag / archive tag.
- Data (tag name): Select the tag applied to the channel. "... You can use the tag selector by clicking the "button.

Notice

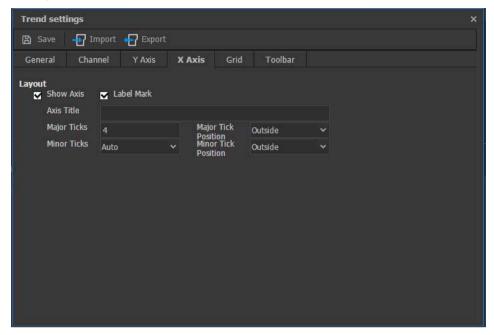
The channel of trend control can be add up to 10

3) Setting the Y-axis



- Save: Save the settings to the trend and restart trend control.
- Import: Import and apply saved settings. In the web client, it is taken from the web browser's internal DB.
- Locally, JSON files stored in the file system are read and imported.
- Export: Save settings. In the web client, the name is specified and stored in the web browser's internal
- DB. Locally, it is stored as a JSON file in the file system.
- Layout (Show axis): If checked, the Y axis will be displayed.
- Layout (Show axis title): When checked, displays the Y axis title.
- Layout (Show axis label): When checked, displays the Y axis label.

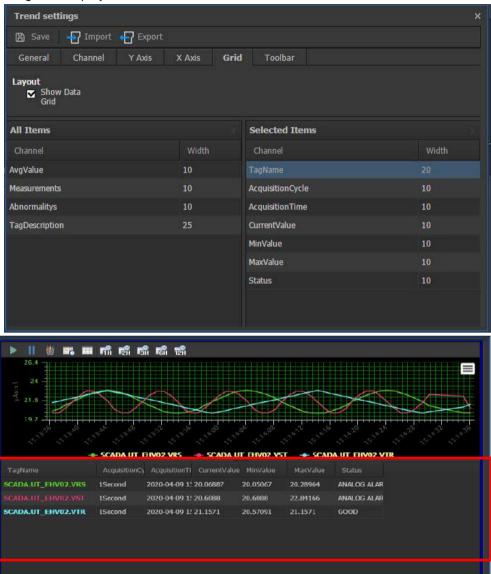
4) Setting the X-axis



- Save: Save the settings to the trend and restart trend control.
- Import: Import and apply saved settings. In the web client, it is taken from the web browser's internal DB.
- Locally, JSON files stored in the file system are read and imported.
- Export: Save settings. In the web client, the name is specified and stored in the web browser's internal
- DB. Locally, it is stored as a JSON file in the file system.
- Layout (Show axis): When checked, displays the X axis.
- Layout (Show axis label): When checked, displays the X axis label.
- Layout (axis title): Enter the axis title.
- Layout (weekly): Set the X-axis time interval.
- Layout (major scale): Set the position of the major tick marks on the X axis (outer, inner).
- Layout (Secondary unit): Select whether to display the X-axis auxiliary unit. (Auto, None)
- Layout (Secondary scale): Set the position of the secondary scale on the X axis (outside, inside).

5) Grid Settings

The grid is displayed in the lower trend.

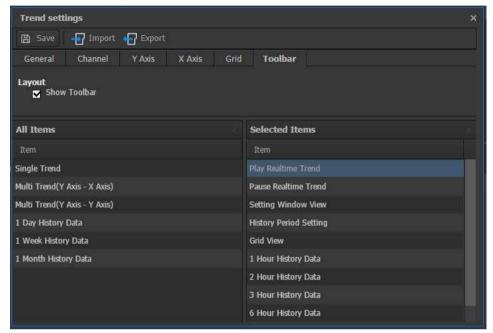


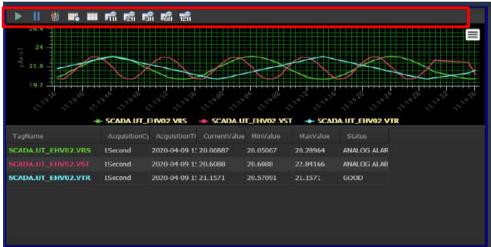
- Layout (Grid) Grid If checked, the grid is displayed at the bottom of the trend.
- Full entry / selection: Select to drag the item you want to display a grid on the trend.

The order of the selected item is displayed in the column of the grid.

6) Toolbar settings

The toolbar is displayed on the top of the trend.



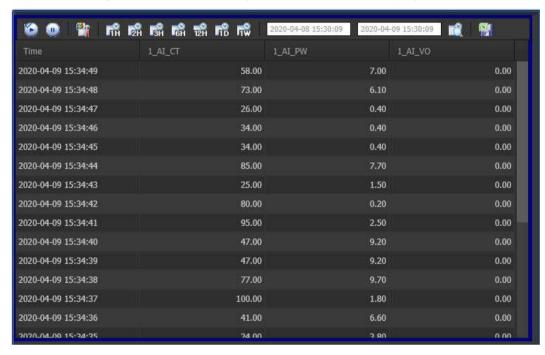


- layout (toolbar display) Toolbar Checkmark when the toolbar is displayed at the top of the trend.
- Full entry / selection: Select to drag the item you want to display in the trend toolbar.

The order of the selected item is displayed in the toolbar.

(7) Dataview Control Settings

Data View control provides the ability to view data in the form of a list. Tags can be set against the real-time and historical tag and provides the ability to download an Excel query screen

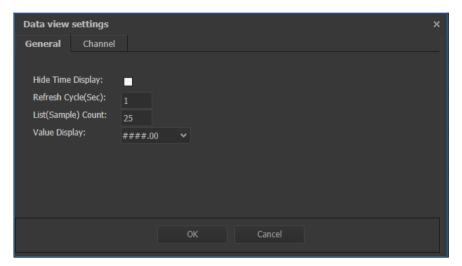


Description of the toolbar buttons is shown in the following figure.



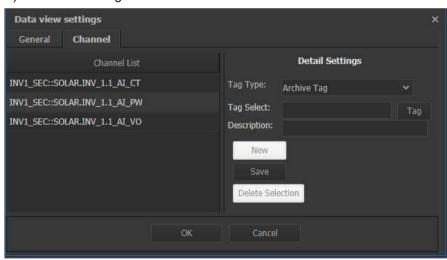
Among the toolbar buttons, hourly inquiry, date inquiry, etc. are displayed when the history tag is set. Click the Settings button to display the Data View Settings window

1) General Settings



- No time display: If checked, the time is not displayed on the list.
- Screen update cycle (seconds): Set the screen update cycle. You can set from 1 to 600.
- List (sample) count: Set the maximum number of lists. You can set from 10 to 3600.
- Value display format: Select how to display the number of decimal places.
- OK: Save the settings and close the window.
- Cancel: Cancel the settings and close the window.

2) Channel Settings



- Channel List: Displays the currently set channel list.
- Tag type: Select from online tag / archive tag.
- Tag selection: Click the "Tag" button to display the tag selector on the screen. The tag selected in the tag selector is displayed.
- Tag description: The character string entered in the tag description is used as the column name of the data view. The tag name is entered unless otherwise provided.
- New: Clicking the New button deletes the tag selection / tag description and allows you to set a new channel. Select a tag, enter a tag description, and click the Save button to register a new channel.

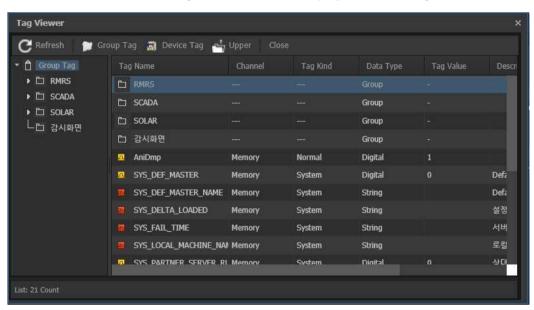
- Save: After setting a new tag or selecting and changing an existing channel, click the Save button to register the work.
- Delete Selected: Deletes the selected channel.
- OK: Save the settings and close the window.
- Cancel: Cancel the settings and close the window.

Notice

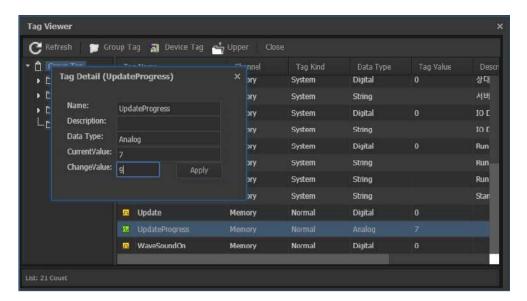
Channel of Data View control can add up to 10

(8) Tag Viewer

From the toolbar, click the "Tag Viewer" button to display the screen tag viewer.



If you double-click on the tag it can be displayed in a "tag detailed screen" screen.



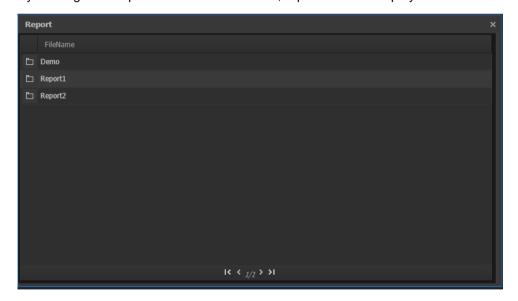
When you enter the "Change value" in the "Tag Detailed Screen" window and click the "Apply" button, you can change the value of the tag.

Notice

Tag / tag group is displayed on the viewer tag depends on a tag / tag group settings assigned to each user. However, if you have administrator privileges, all tags are displayed.

(9) Report Viewer

By clicking the "Report" button in the toolbar, reports can be displayed on the viewer screen.

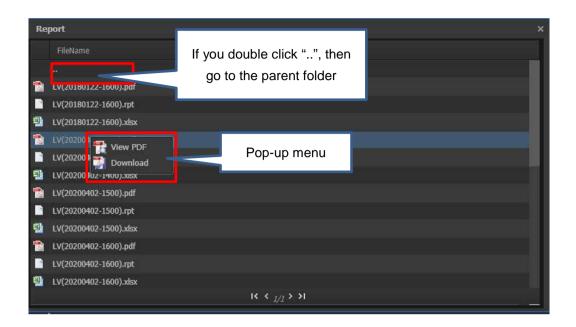


Folders belonging to the report group set in the logged-in user are displayed on the screen.

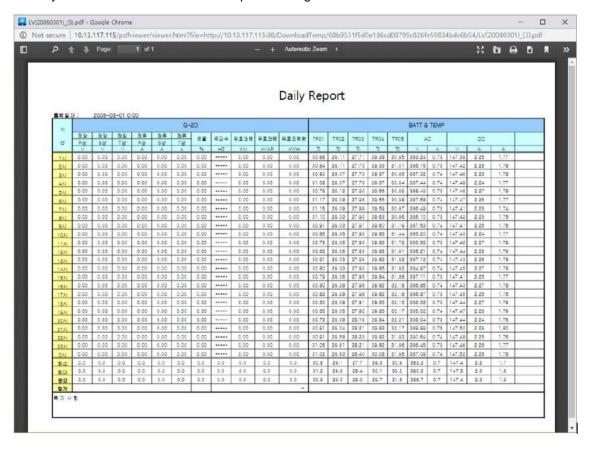
You can check the report files by double-clicking the folder. Among PDF files, "View PDF" and "Download" functions are supported. For Excel files, only "Download" function is supported.

Double-click the file to display a pop-up menu

.



When you run a "View PDF" to view reports through its own PDF viewer as follows.



(10) Remote editing capabilities

You can use the remote editing function for the project serviced by the WebPlant server.

The remote editing function can execute the WebPlant editor function through a web browser to edit the

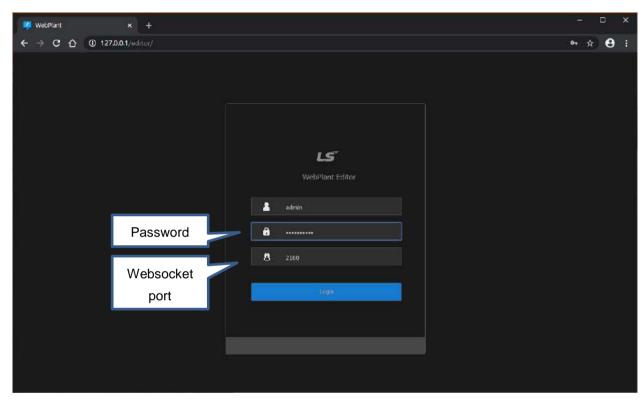
surveillance screen page and user information.

Notice

For remote editing, some functions are restricted when running the WebPlant editor in a web browser. Features such as graphic libraries, smart symbols, and project management are not available in the remote editor.

1) Remote Editor Login

To run the Remote Editor, you must log in with administrator privileges.



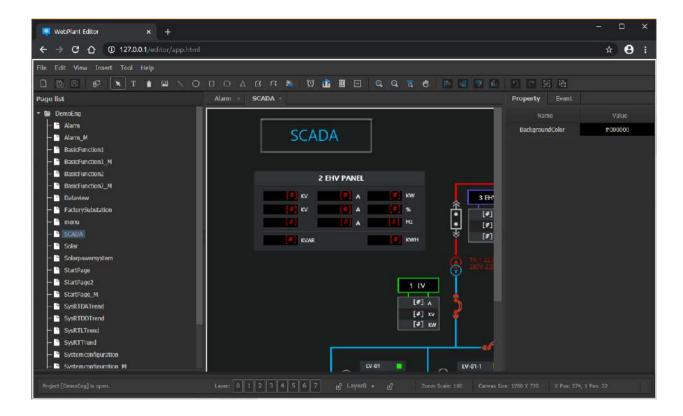
Enter the address of the remote editor in the address window of the web browser and press Enter to display the login screen.

The original editor server address is "http://IP Address: Port / editor". Ex) http://192.168.0.11:80/editor Enter the user ID and password registered in the WebPlant project and click the "Login" button.

The "WebSocket Port" item displays 2160 by default. If the WebSocket port value of the WebPlant server has been changed, enter the same value as the WebSocket port setting value of the server in the "WebSocket Port" field and log in.

Once logged in, the project is displayed in the remote editor.

Chapter 27 WebPlant



Can be used in the same way as the local web plant editor, such as page editing and project setting, except for some restrictions.

27.4 Mobile apps for alarm push

The mobile app for alarm push is a mobile application for real-time push service of alarms from InfoU HMI to a smartphone. Currently only Android phones are supported. You can search for "InfoU WebPlant" on the Google Play Store and install it.

- -Connect to InfoU WebPlant server with a registered account for real-time alarm reception.
- -When an alarm occurs, a notification from the smartphone occurs

(1) Screen Layout

Icon



Registered screen



Alarm push generation screen



(2) Push Alarm Registration

To register the push alarm, register it by entering the WebPlant server address, port, ID, password, etc.



- Server Address: Enter the address of the WebPlant server.
- WebSocket Port: Enter the WebSocket port of the WebPlant server.
- Web Server Port: Enter the web server port of the WebPlant server.
- ID: Enter the account ID of the WebPlant server.
- Password: Enter the password for the WebPlant server account.
- Register Push Alarm: Requests to register an alarm on the WebPlant server with the entered information.

27.5 Open Source Software Notice

Details about the open source software licenses used in WebPlant software development are as follows:

(1) CodeMirror MIT License

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Chapter 27 WebPlant

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Chapter 27 WebPlant

(4) fabric.js

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Chapter 27 WebPlant

(6) jquery

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Chapter 27 WebPlant

(8) Tern

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(9) webpack

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Appendix 1 Modbus Server

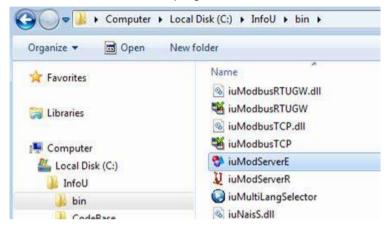
The Modbus sever program sends the tag information of the InfoU using the Modbus protocol. The editor and runtime (run-time module) are separated.

It targets the current project of the InfoU so if there is no using project, you cannot execute the Modbus sever.

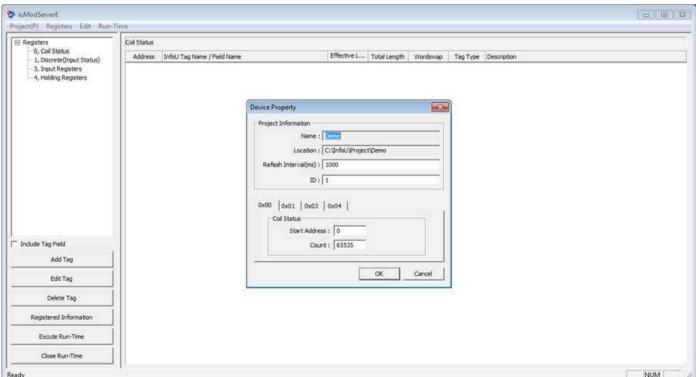
1.1 Modbus Server Editor

1.1.1 Execute Editor

Run the iuModServerE.exe program in the InfoU\bin folder.



If you run the editor, the below screen will show up. When executing the editor for the first time, there is no registered information (Device Property) so the window where you can input the registered information will also be displayed.



1.1.2 **Registered Information**

iuModServerE

New Project(N)

Open Project(O)

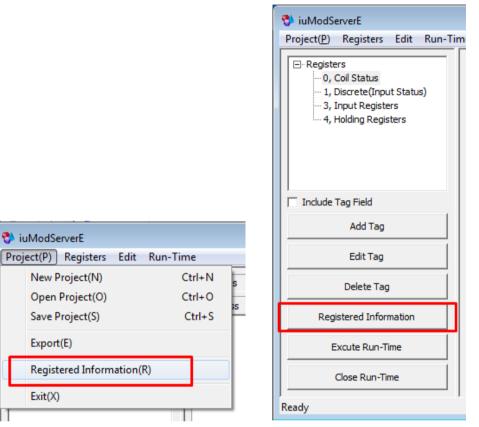
Save Project(S)

Registered Information(R)

Export(E)

Exit(X)

If you select [Project] → [Registered Information] in the upper menu or click the "registered information" button in the lower left side, you can run the 'Registered Information' window. You can also edit/enter the registered information by executing the 'Registered Information' window in the same way.



The composition of the registered information window is as below.



• Project settings (Project Information)

It displays the information of the currently used InfoU project.

- Name: Name of the currently used InfoU project
- Location: Location where the currently used InfoU project is stored
- Refresh Interval (ms): Data update cycle. It is entered in 1/1000 sec. (msec).
- ID: InfoU Modbus Server's ID

Notice

- You cannot change the InfoU project with this editor. To change the InfoU project, after changing the project in InfoUD, you need to rerun this editor.
- Register settings (Coil Status)

The Modbus Register used in InfoU are as below.

- 0x00: Coil Status (digital)
- 0x01: Discrete Inputs (digital)
- 0x03: Input Registers (analog)
- 0x04: Holding Registers (analog)

You can respectively specify the Start Address and Count for the above registers.

- Start Address: Start No. of the Register
- Count: Number of Registers

Notice

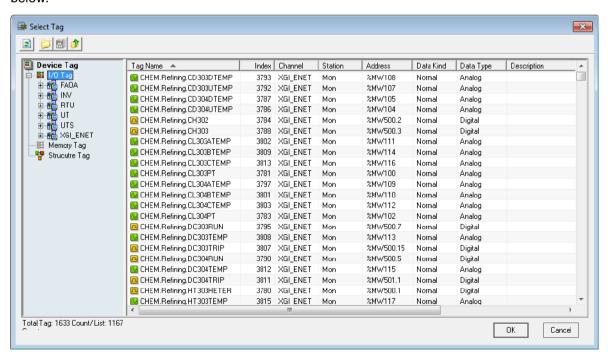
If you change the number of registers, the DB of the register will be reset so you must be careful. You are recommended to preset the sufficient number of registers before entering them.

1.1.3 **Tag Setting**

(1) Add Tag



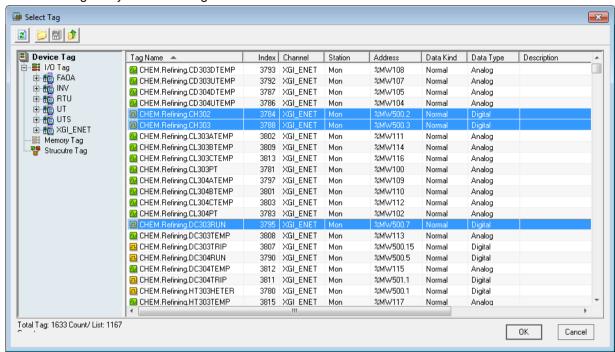
If you select the register to edit and click the 'Add Tag' button, the tag selection window will be executed as below.



Notice

- For the Coil Status(0x00) and Discrete Inputs(0x01) Register, you can input the digital data only.
- For the Input Registers(0x03) and Hold Registers(0x04), you can input the analog data only.



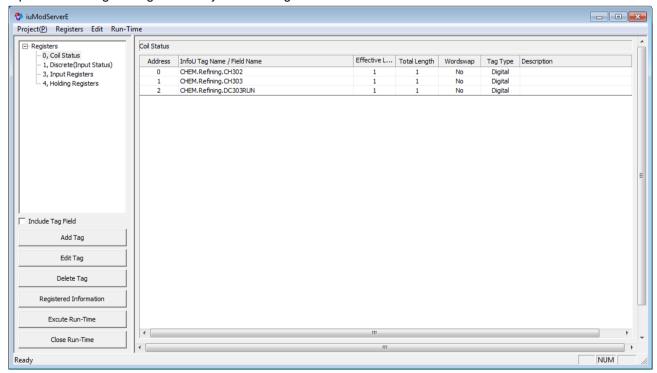


Select the tag that you want to register and click the OK button.

Notice

If "Include Tag Field" is checked in the left menu, you can select just one tag. For multi-selection of tags, "Include Tag Field" should be unchecked.

You can see three tags are input to the Coil Status Register. At this time, the start address is automatically input considering the tag size every time the tag is added.



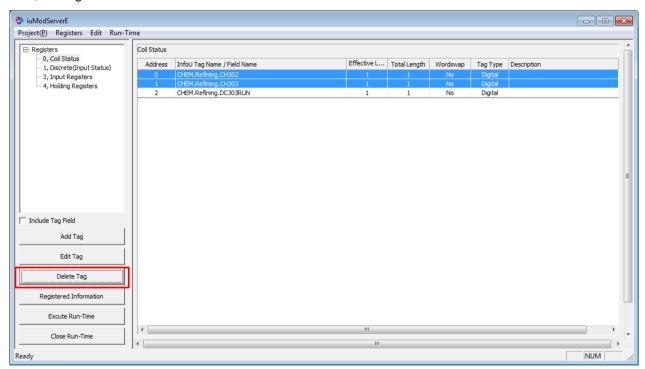
Appendix 1 Modbus Server

In the above figure, the start address (Register No.) of each tag is as below.

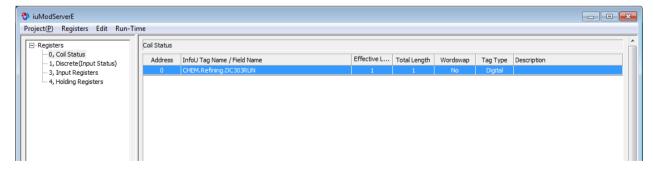
Register No.	Tag
0	Monitoring screen.DEMO_monitoring screen_StationOK
1	Monitoring screen.Dig1
2	Monitoring screen.Dig2

(2) Delete Tag

After selecting the tag that you want to delete from registered tags, if you click the 'Delete Tag' on the right side, the tag will be deleted.

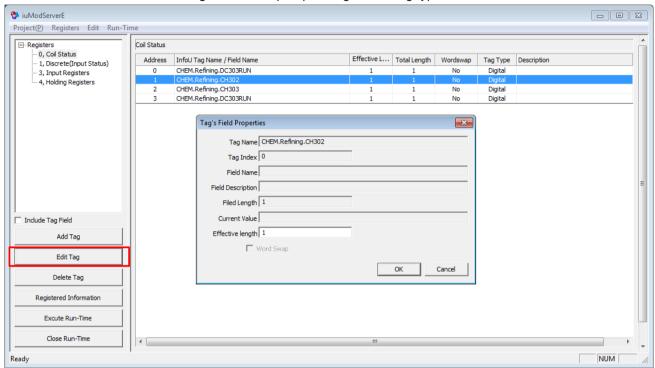


After deletion, the start address of the remaining tags are automatically modified considering the tag size.



(3) Edit Tag

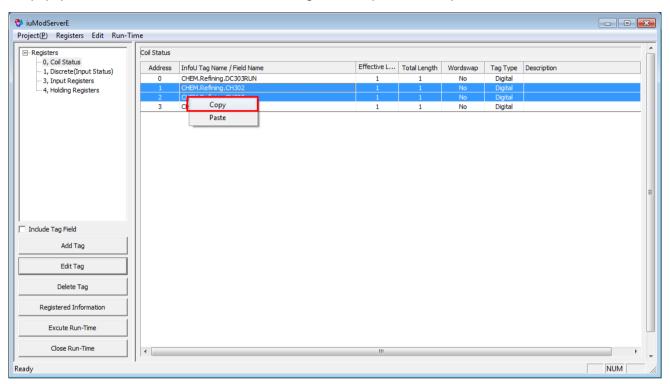
After selecting the tag that you want to edit from the registered tags, if you click the "Edit Tag" button on the left side, the menu where you can edit the information of the selected tag will be displayed on the screen. You can edit items of the effective length/Wordswap depending on the tag type.



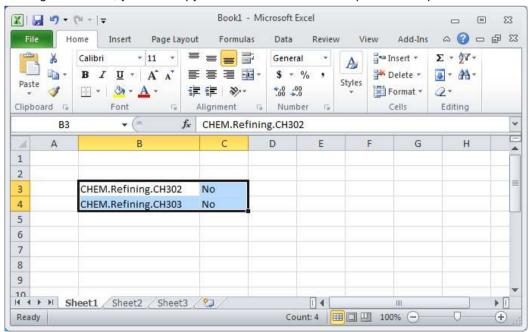
1.1.4 Copy / Paste Clipboard

(1) Copy to Clipboard

You can copy the tag registered in the editor to a clipboard. If you select the desired tag from the registered tags by dragging it and click with the right mouse, the below popup menu will show up. If you click [Copy] in the popup menu, the information of the selected tag will be copied to the clipboard.



Through the editor, you can copy the details saved in the clipboard and paste it to Excel.

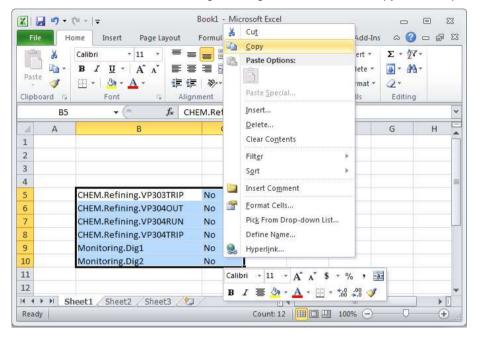


Notice

The tag information copied from a clipboard is the tag name and Wordswap information. When pasting them to Excel, the left column indicates the tag name and the right column indicates the Wordswap information.

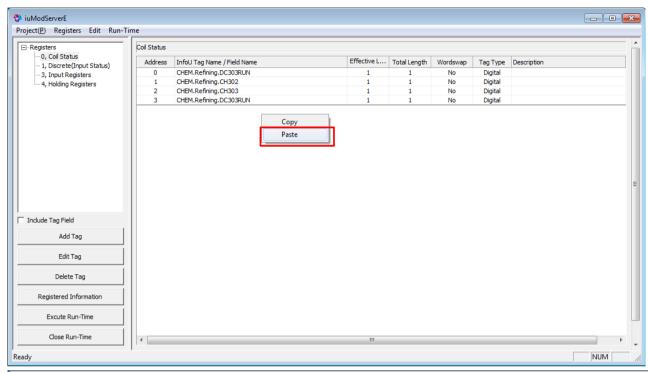
(2) Paste from Clipboard

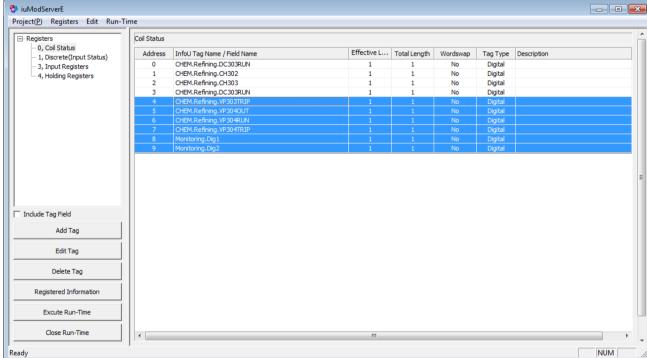
You can edit the information of the tag to be registered in Excel and copy it to the clipboard.



After selecting the register for the tags treated in Excel, if you click with the right mouse button on the tag registration, the below popup menu will show up. If you click [Paste] in the popup menu, the tags processed in Excel will be added to the editor.

Appendix 1 Modbus Server



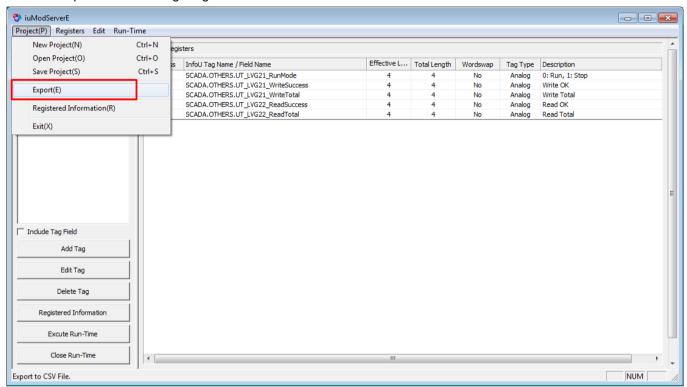


Notice

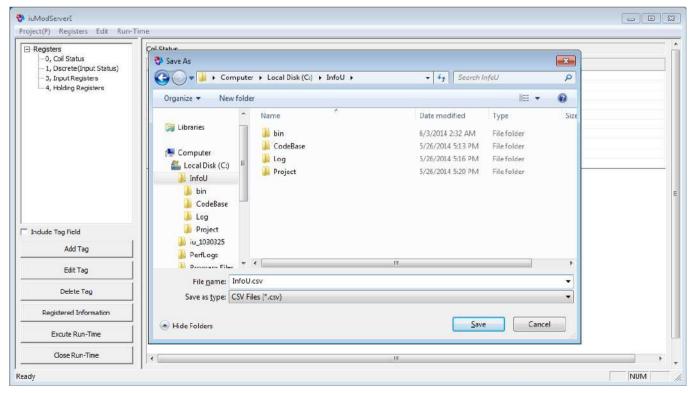
- When processing the tag information in Excel, the tag should be registered in the InfoU Project with the right spelling and style.
- Depending on the property of the register, you need to separate digital/analog data for Paste.
 - For the Coil Status (0x00) and Discrete Inputs (0x01) Register, you can input the digital data only.
 - For the Input Registers (0x03) and Hold Registers (0x04), you can input the analog data only.

1.1.5 Export to CSV file

You can export the whole tags registered in the editor to the CSV file at once.

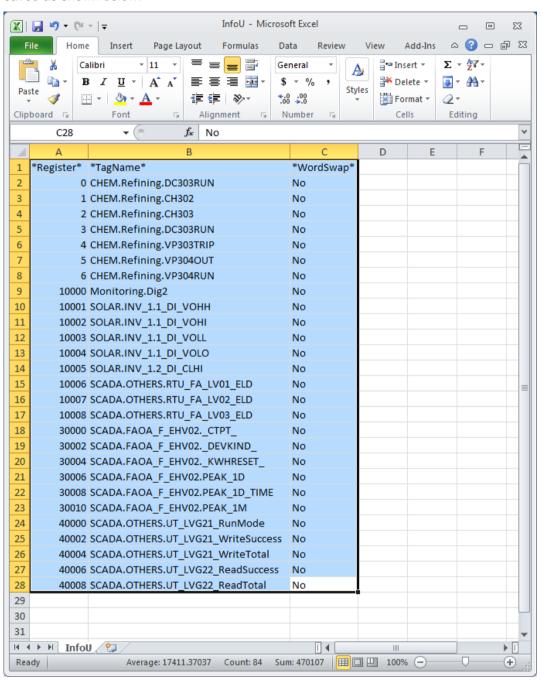


After selecting [Project] → [Export] in the upper menu, you can save the CSV file with the desired path and file name as below.



Appendix 1 Modbus Server

When you open the saved CSV file, you can see the information of the Register No., Tag name and Wordswap, is saved as shown below.

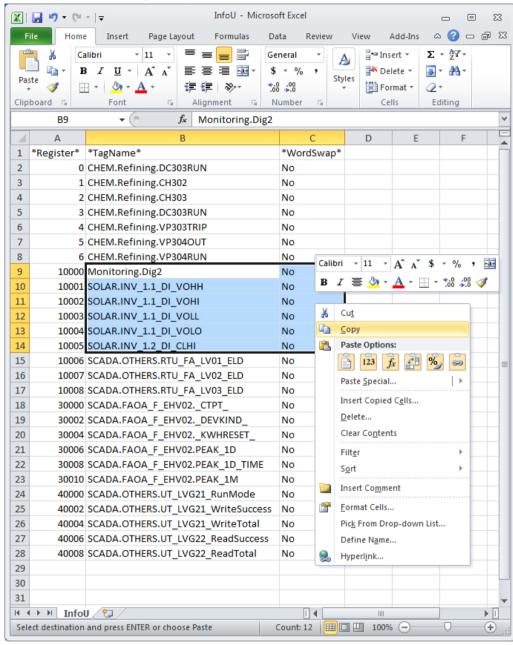


Notice

The start address (Register No.) registered by Register is as blow.

- \bigcirc Coil Status(0x00) \rightarrow 0, 1, 2, ...
- □ Discrete Inputs(0x01) → 10000, 10001, 10002, ...
- Input Registers(0x03) → 30000, 30002, 30004, ...
- Hold Registers(0x04) → 40000, 40002, 40004, ...

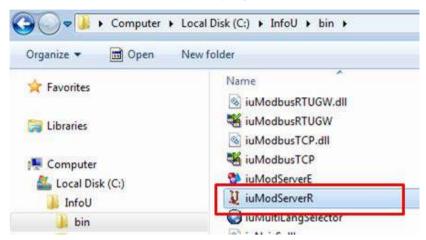
You can copy the second and thirtd row of the desired tags from the CSV file generated by 'Export' and paste them to the editor through a clipboard.



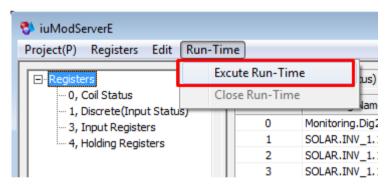
1.2 **Modbus Server Runtime**

1.2.1 **Execute Runtime**

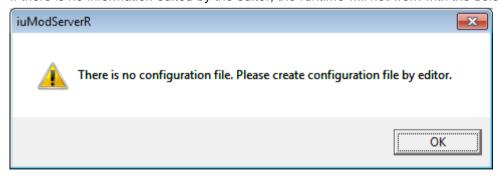
You can run the iuModServerR.exe program in the InfoU\bin folder.



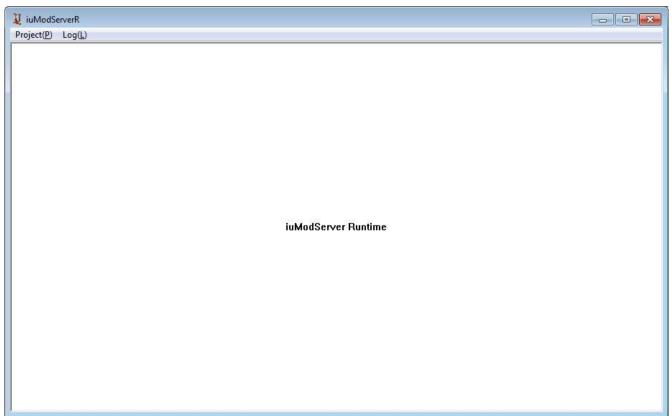
Or you can click [Run-time] → [Execute Run-Time] in the upper menu of the editor.



If there is no information edited by the editor, the runtime will not work with the below warning message.



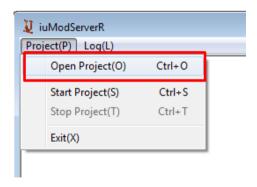
If the normal file exists, the file is read and the below runtime screen will be executed. Then, it will be switched over the Modbus standby mode.



1.2.2 Runtime Menu

(1) Open Project

If you click $[Project] \rightarrow [Open Project]$ in the upper menu of the runtime window, you can reread the configuration file treated by the editor



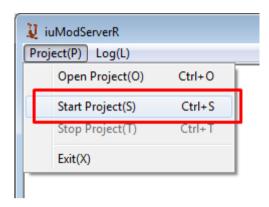
Notice

If the file is edited by the editor while the runtime is executed, it is not applied immediately so you need to reread it.

Appendix 1 Modbus Server

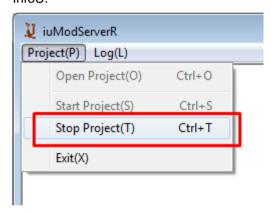
(2) Start Project

Click [Project] → [Start Project] in the upper menu of the runtime window and scan the InfoU data periodically based on the cycle (Refresh Interval) set by the editor. Then, the information is transmitted at the request of the Modbus Client.



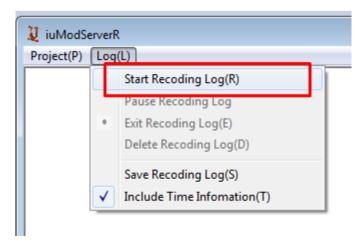
(3) Stop Project

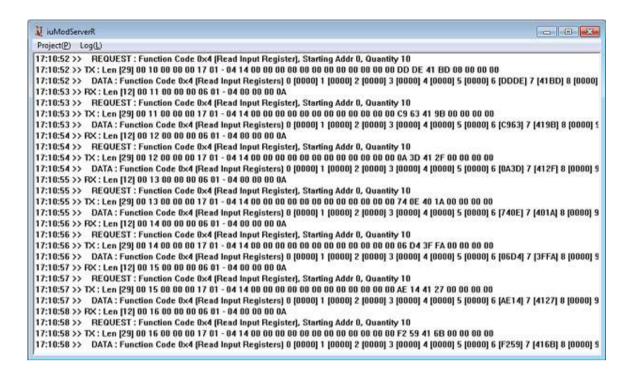
Click [Project] → [Stop Project] in the upper menu of the runtime window and exit the provision of data for the InfoU.



(4) Recoding Log

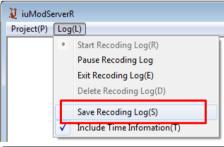
You can check the communication packet by clicking [Log] → [Start Recoding Log] in the upper menu of the runtime window.

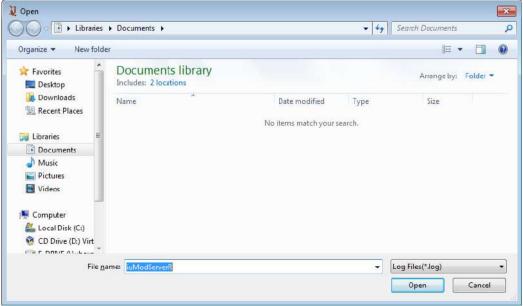




(5) Save Recoding Log

If you click [Log] \rightarrow [Save Recoding Log] in the upper menu of the runtime window, you can save the log as a file with the desired path and name.





Appendix 2 OPC DCOM Configuration

To connect to the OPC server in the remote computer, you need to set up DCOM. There are computer settings and settings for the LS InfoU OPC DA server for DCOM Settings. This section describes DCOM settings in Windows 7 and the similar procedures are required for another OS.

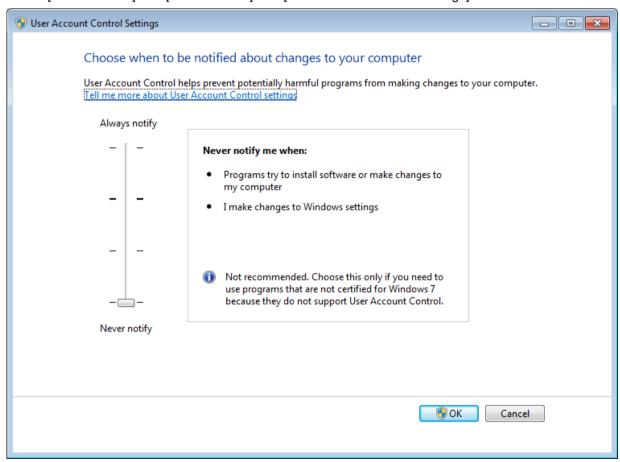
2.1 **Windows 7 Configuration**

2.1.1 Common (Client&Server) Settings

Common settings should be done for both the Client and the Server. You need to set up them in the Client PC and the Server PC respectively based on the below procedures.

(1) User Account

1) User Account Control Settings Select [Control Panel] → [User Account] → [User Account Control Settings]



Change the control value into "Never Notify" in the [User Account Control Settings] window. Then, restart Windows.

Appendix 2 OPC DCOM Configuration

2) User Name and Password Setting

To operate the OPC function normally, the user should be registered in the Client PC and Server PC under the same name with the same password. In addition, you need to log in to the Client PC and Server PC with the same account.

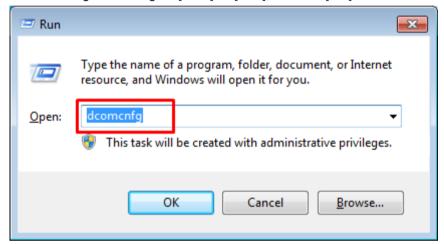
(2) Install OPC Core Components

Download the "OPC Core Components Redistributable" and install it to the PC. You are recommended to download the file of the latest version according to the specifications of the PC.

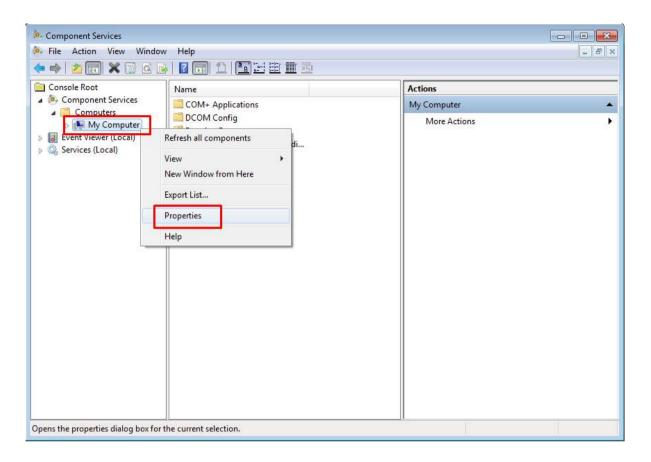
(3) Component Services Setting

1) Computer Setting

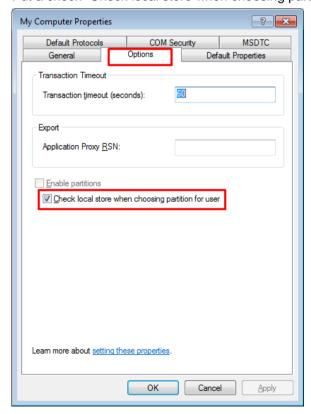
After entering "dcomcnfg" in [Start] → [Run], click the [OK] button.



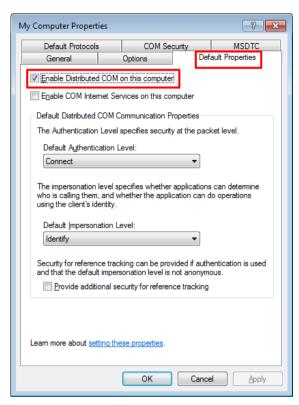
Then, "Component Services" window will be displayed as below. Expand the "Component Services" by clicking the Console Root, click the [Computer]. Click with the right mouse on [Computer]-[My Computer] and run the [Properties] menu.



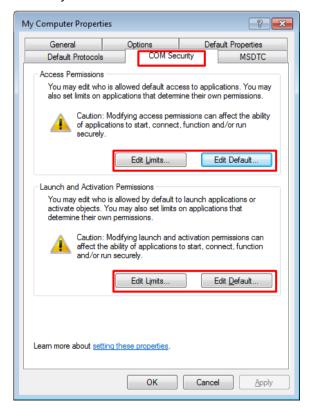
Put a check "Check local store when choosing partition for user" in the [Options] tab.



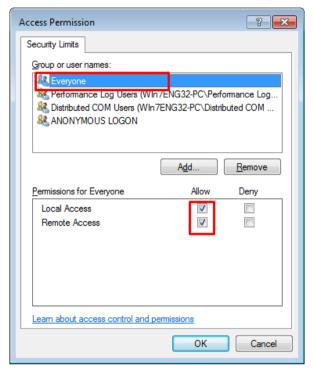


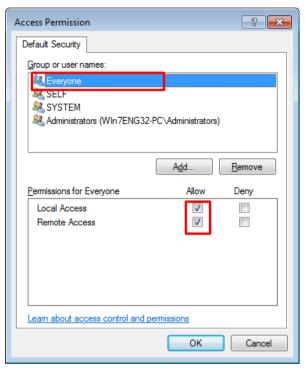


Add the "Everyone" account to "Access Permissions" of the [COM Security] tab and [Edit Limits] of "Launch and Activation Permissions" and [Edit Default] . Then, set the access permission as "Permissions for Everyone".

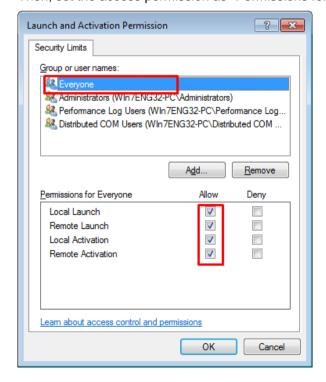


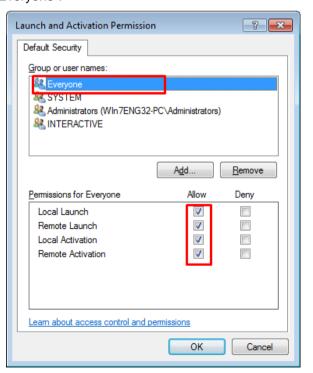
Add the "Everyone" account to [Edit Limits] of "Access Permission" and [Edit Default]. Then, set the access permission as "Permissions for Everyone".

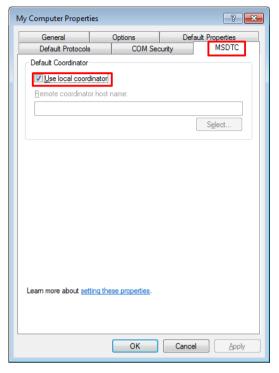




Add the "Everyone" account to the [Edit Limits] of "Launch and Activation Permission" and [Edit Default]. Then, set the access permission as "Permissions for Everyone".





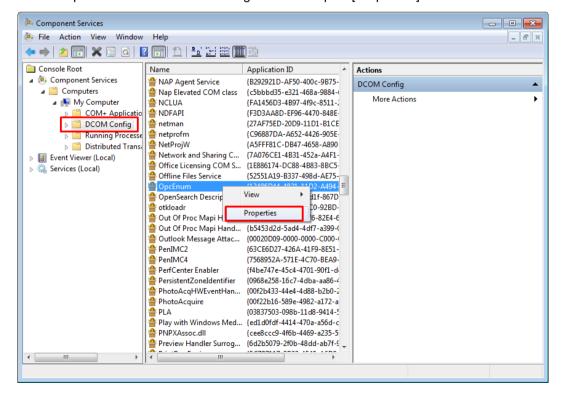


Put a check "Use local coordinator" in the [MSDTC] tab.

After the settings are completed, press the [Apply] → [OK] button and exit the task.

2) OpcEnum Setting

Select [Components Service] \rightarrow [Computer] \rightarrow [My Computer] \rightarrow [DCOM Configuration]. Select "OpcEnum" and click with the right mouse to pick [Properties].

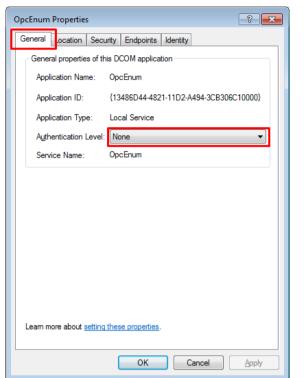




? X

Browse...

OK Cancel





OpcEnum Properties

General Location Security Endpoints Identity

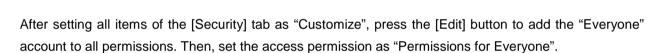
Run application on this computer.

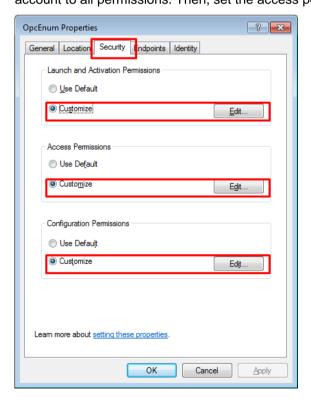
Run application on the following computer:

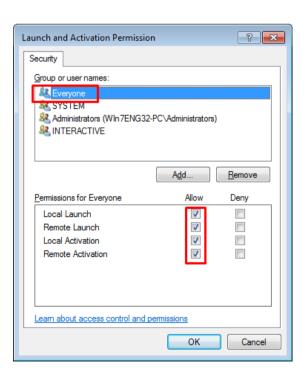
Learn more about setting these properties.

The following settings allow DCOM to locate the correct computer for this application. If you make more than one selection, then DCOM uses the first applicable one. Client applications may overide your selections.

Run application on the computer where the <u>d</u>ata is located.







Select "system account (services only)(S)" in the [ID] tab.



After settings are completed, press the [Apply] \rightarrow [OK] button and exit the task.

(4) Firewall Setting

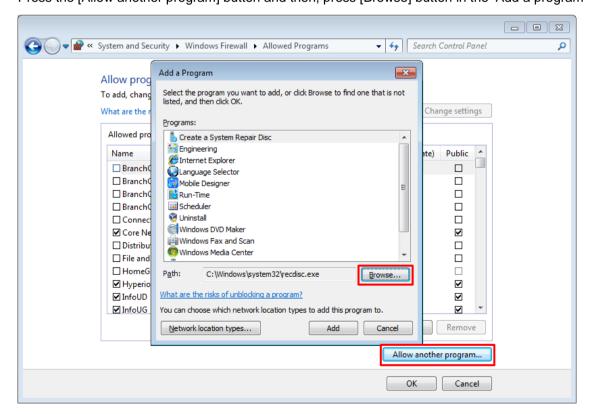
1) Add Program (OpcEnum)

Run [Control Panel] → [Windows Firewall].

Click "Allow a program or feature through Windows Firewall" on the left side.



Press the [Allow another program] button and then, press [Browse] button in the 'Add a program' window.



Appendix 2 OPC DCOM Configuration

Add the file C:\Windows\System32\OpcEnum.exe

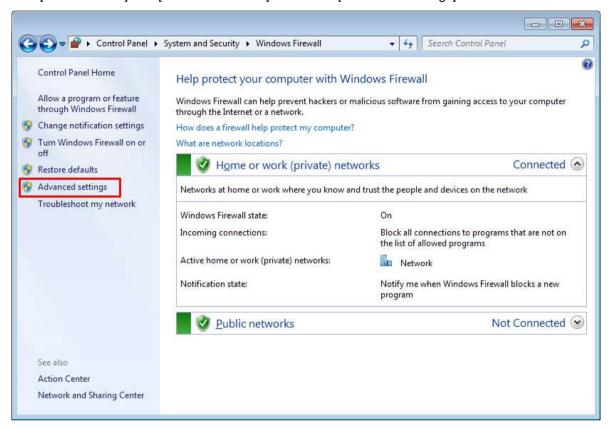


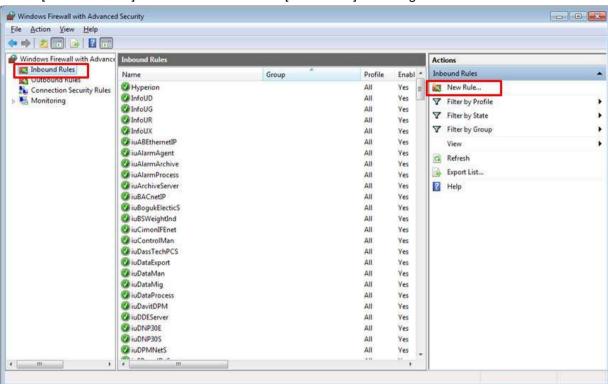
2.1.2 **Client Settings**

After setting the PC in accordance with the instructions of "Common (Client & Server) Setting", perform the additional settings based on the below procedures.

(1) Firewall Setting

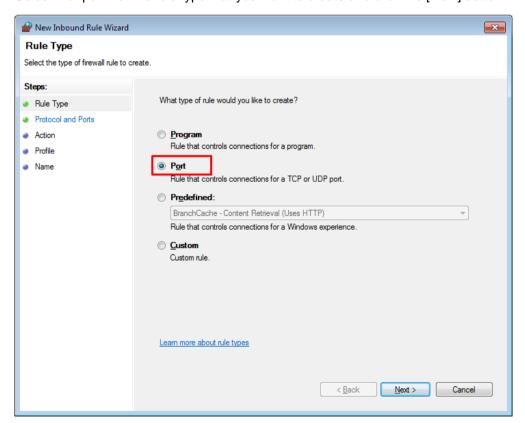
1) Inbound Rule Setting (Add Port: 135) Run [Control Panel] → [Windows Firewall] and select [Advanced Settings].



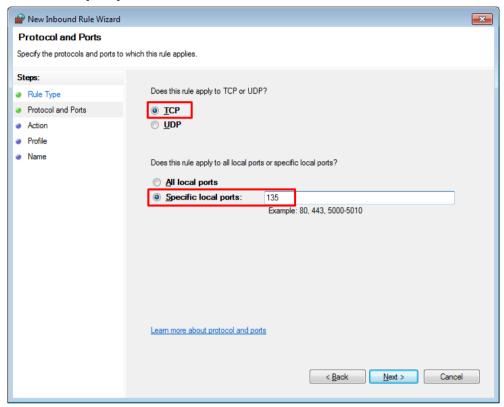


Select [Inbound Rules] on the left side and click [New Rules] on the right side.

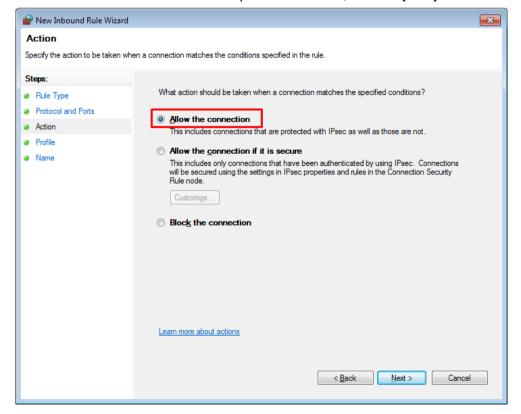
Select the "port" for the rule type that you want to create and click the [Next] button.

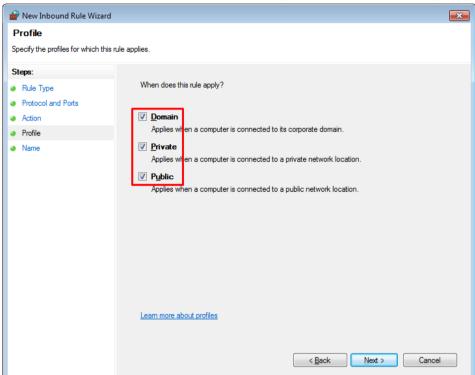


Select the "TCP" to be applied to the new rule and set the port as "Specific local ports". Then, enter "135" and click the [Next] button.



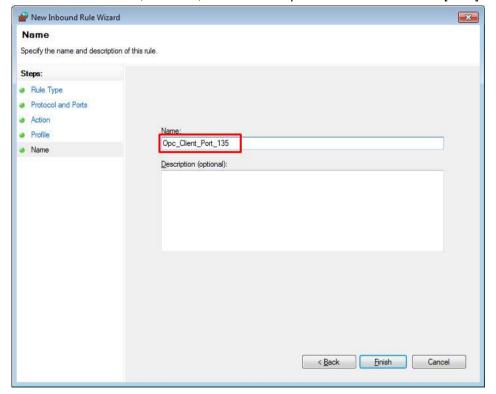
Select "Allow the connection" for the specified task item, click the [Next] button.





Put a check "Domain", "Private", "Public" in the profile items and click the [Next] button.

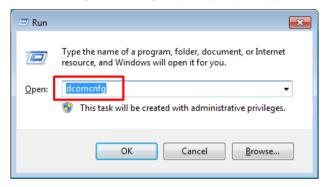
Put a check "Domain", "Private", "Public" in the profile items and click the [Next] button.



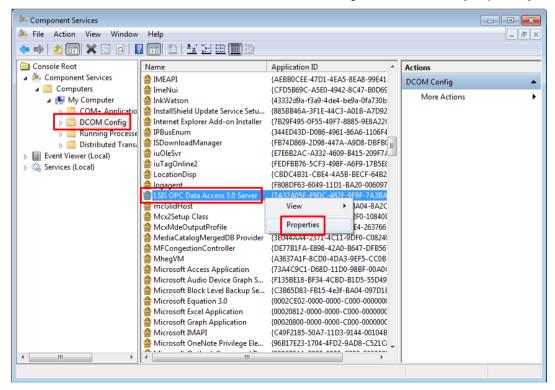
2.1.3 **Server Settings**

After setting the PC based on "Common (Client & Server) Setting" and perform the additional settings based on the below procedures.

- (1) Install LS ELECTRIC OPC Server Install the "LS ELECTRIC OPC Server For InfoU" program.
- (2) Component Service Setting
 - 1) LS ELECTRIC OPC Server Setting After entering "dcomcnfg" in [Start] → [Run], press the [OK] button.



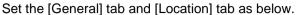
After selecting [Computer] → [My Computer] → [DCOM Configuration], click with the right mouse button on the "LS ELECTRIC OPC Data Access Server" of the right list and run the [Properties] menu.

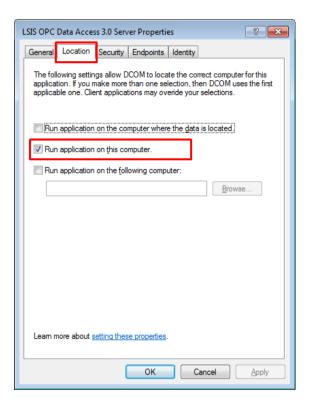


LSIS OPC Data Access 3.0 Server Properties ? X General cocation Security Endpoints Identity General properties of this DCOM application Application Name: LSIS OPC Data Access 3.0 Server {7A32A05F-F9DC-482F-9F9F-7A3BA0CFF925} Application ID: Application Type: Local Server Authentication Level: Default • Local Path: Learn more about setting these properties.

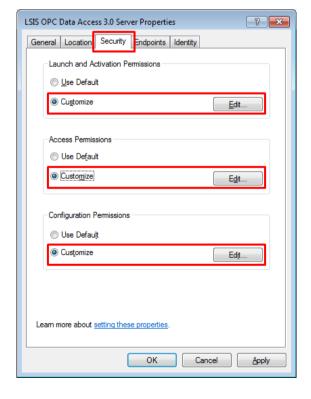
OK Cancel

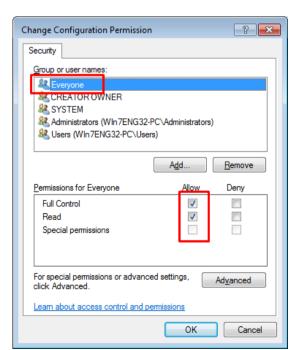
<u>Apply</u>

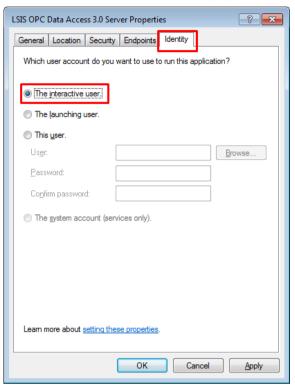




After setting all items of the [Security] tab as "Customize", press the [Edit] button to add the "Everyone" account to all permissions. Then, set the access permission as "Permissions for Everyone".



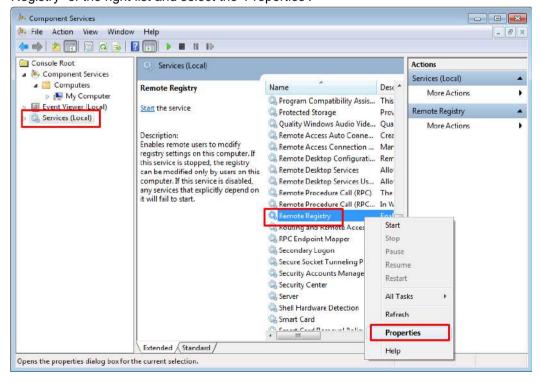




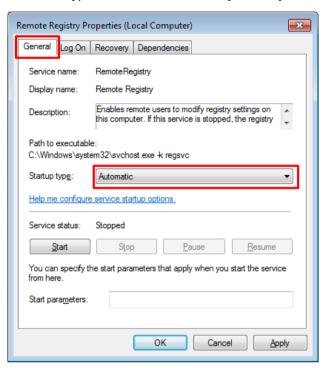
Select "The interactive user" in the [ID] tab.

2) RemoteRegistry Setting

After selecting [Services(local)] in the Dcomcnfg setting window, click with the right button on the "Remote Registry" of the right list and select the 'Properties'.



Set "Start type" as "Automatic" in the [General] tab.

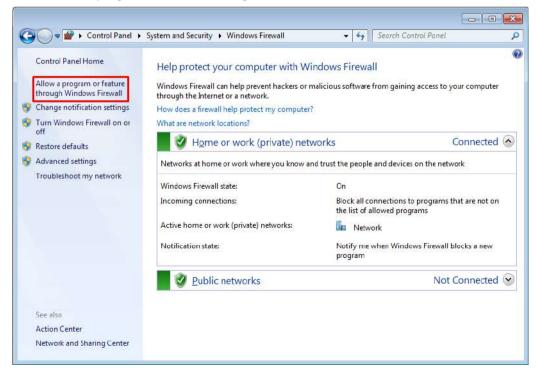


(3) Firewall Setting

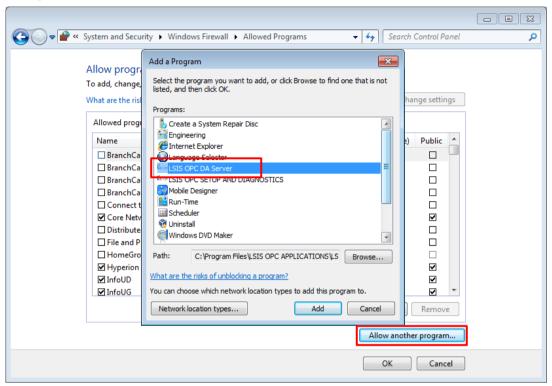
1) Add Program (LS ELECTRIC DA Server)

Run [Control Panel] → [Windows Firewall].

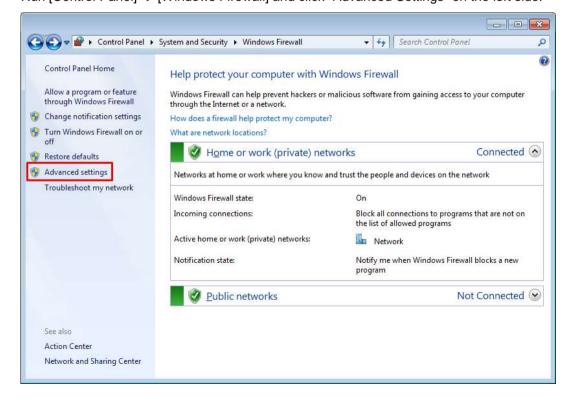
Click "Allow a program or feature through Windows Firewall" on the left side.

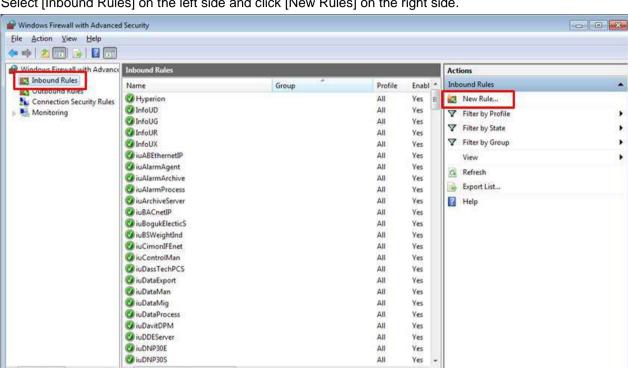


Press the [Allow another program] button. Then, select "LS ELECTRIC OPC DA Server" in the list of 'Add a program' window and press the [Add] button.



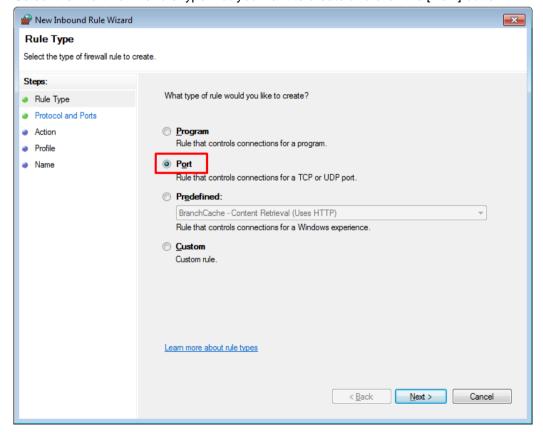
2) Inbound Rule Setting (Add Port: 135-139) Run [Control Panel] → [Windows Firewall] and click "Advanced Settings" on the left side.



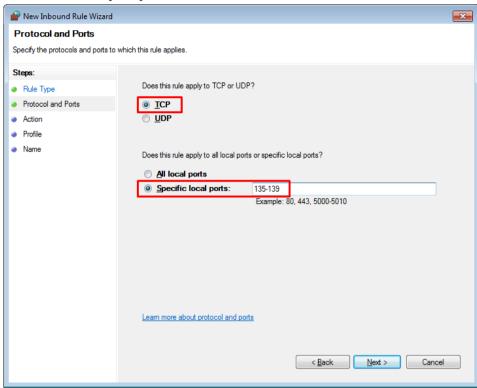


Select [Inbound Rules] on the left side and click [New Rules] on the right side.

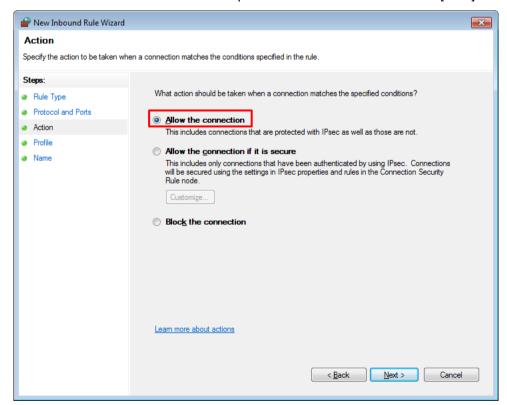
Select the "Port" for the rule type that you want to create and click the [Next] button.

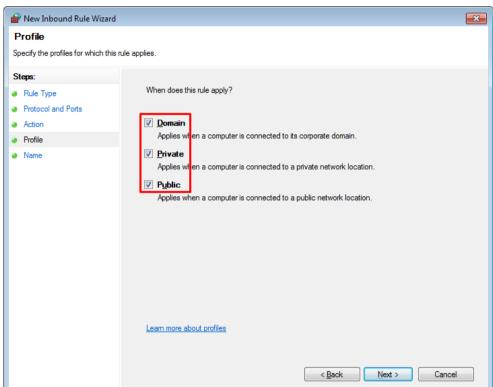


Select the "TCP" to be applied to the new rule and set the port as "Specific local ports". Then, enter "135-139" and click the [Next] button.



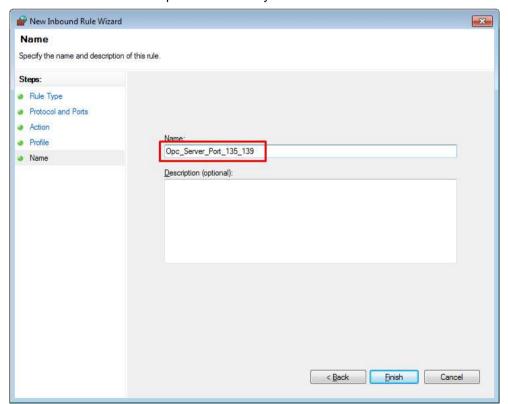
Select "Allow the connection" for the specified action items and click the [Next] button.





Put a check "Domain", "Private", "Public" in the profile items and click the [Next] button.

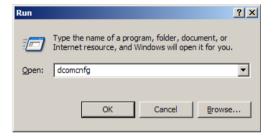
Enter the name and description of the newly defined rule.



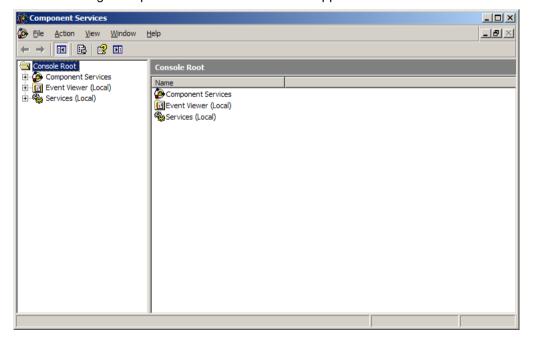
2.2 Windows XP Configuration

2.2.1 Client Settings

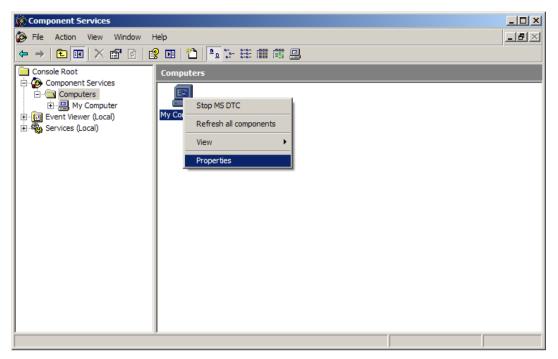
- (1) Default
 - The user needs to set up DOM to use the OPC servers installed on the remote PC.
 - DCOM is set up as the following procedure and the local PC and the remote PC are also applied the same settings as DCOM.
 - The following description is about DCOM settings in the window XP and for the DCOM settings in other OS, any similar type is used.
 - The same account shall be registered for both of the local PC and remote PC and the same password shall be used for both of them.
 - The local PC and remote PC shall be accessed with the same account.
 - The firewall in the remote PC shall be cancelled to log in to the system.
 - To use the OPC servers installed in the remote PC, basic OPC files shall be installed in the local PC. (Install the OPC Core Components Redistributable program first. Visit www.opcfoundation.org)
- (2) Component Service Settings



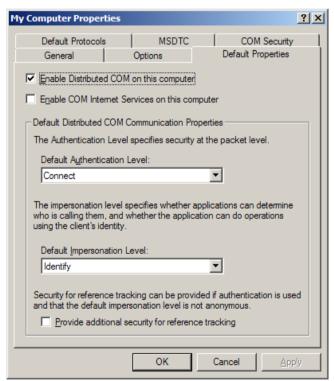
- Input "dcomcnfg" in the window and press OK.
- The following "Component Services" window will appear.



Appendix 2 OPC DCOM Configuration

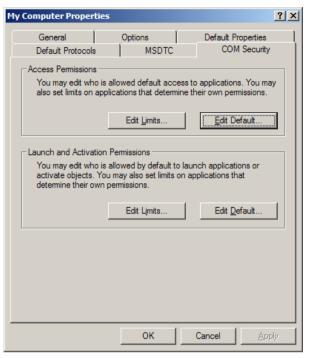


- Find "My Computer" and execute "Properties" menu.
- The following "My Computer Properties" window will appear.

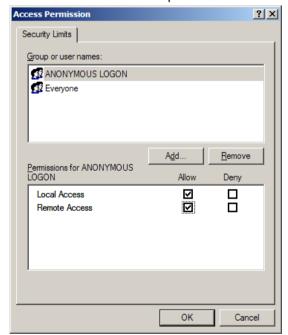


- Select "Default Properties"tap.
- ullet Check $\sqrt{\ }$ in the checkbox of "Enable Distributed COM on this computer".
- Select "Connect" for "Default Authentication Level" item.
- Select "ID" for "Default Impersonation Level" item.

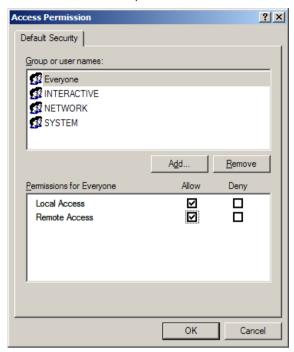




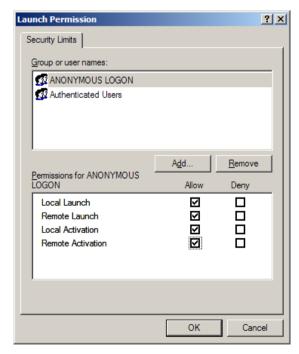
- Select"COM Security" tap.
- To set up "Access Permissions", press "Edit Limits" and "Edit Default" to set up as follow:
 - Edit Limits: Check √ in both of the boxes under "Allow" for "Local Access" and "Remote Access" to permit ANONYMOUS LOGON and Authenticated Users.



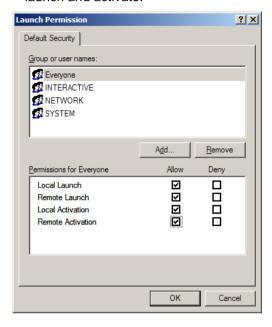
• Edit Default: - Edit Limits; Check ¡îin both of the boxes under "Allow" for "Local Access" and "Remote Access" to permit INTERACTIVE, NETWORK and SYSTEM users to log in.



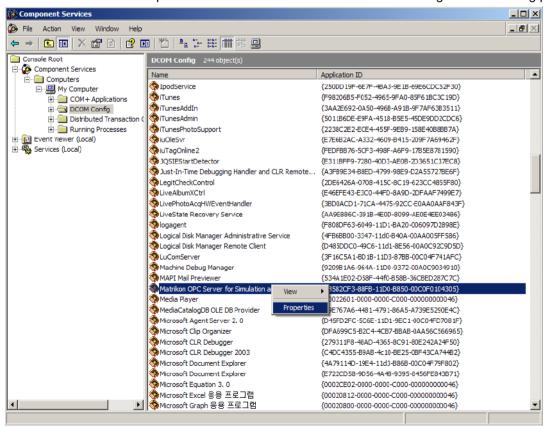
- To set up "authorization to launch and activate", press "Edit Default" and set up as follow:
 - Edit Limits: Check $\sqrt{}$ in all of the boxes under "Allow" for "Local Launch", "Remote Launch", "Local Activation" and "Remote Local Activation" to permit Authenticated Users to launch and activate.



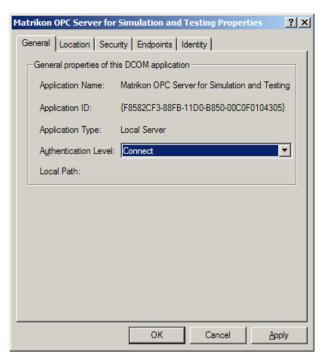
Edit Default: Check √ in all of the boxes under" Allow" for "Local Launch", "Remote Launch", "Local
Activation" and "Remote Local Activation" to permit INTERACTIVE, NETWORK and SYSTEM users to
launch and activate.



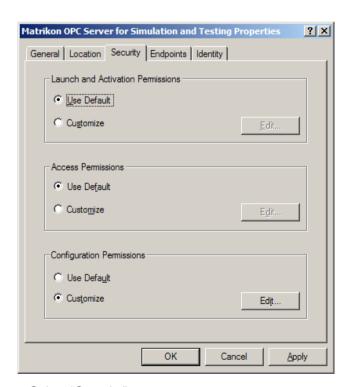
- In the next step, DOM settings are carried out on the OPC server to be used.
- The user needs to set up the OPC server he/she wants to use according to the following procedure:



• Find the OPC server the user wants to use and execute "Properties" menu.

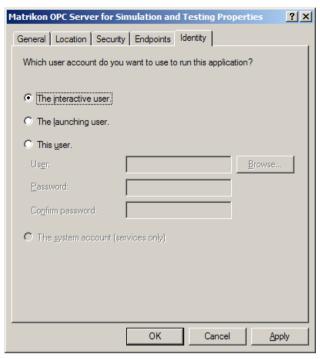


• Select "Connect" for "Authentication Level" from "General" tap.



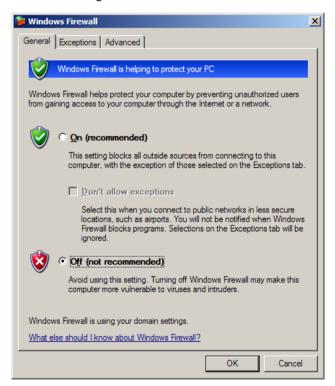
- Select "Security" tap.
- Select "Use Default" for "Launch and Activation Permissions."
- Select "Use Default" for "Access Permissions."





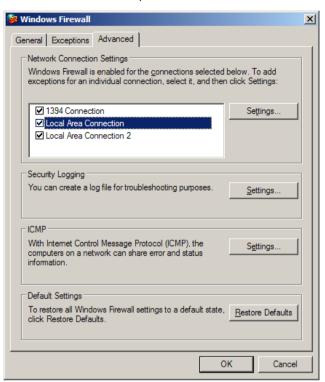
- Select "Identity" tap.
- Select "The Interactive User."

(3) Firewall Settings

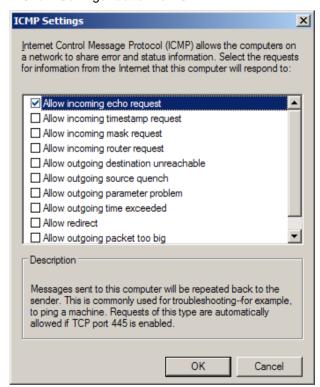


- The above Windows Firewall window is displayed.
- Select "Off (not recommended)".

Select "Advanced" tap.



• Click "Settings" button for ICMP.

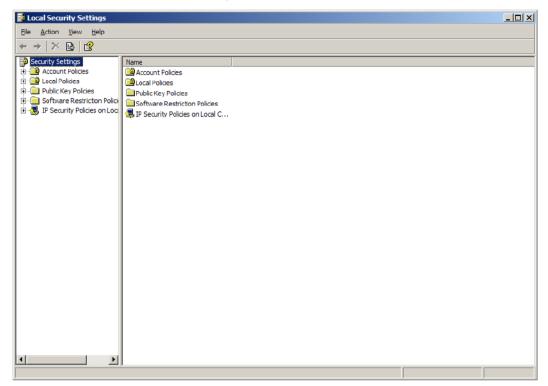


• Check "Allow incoming echo request".

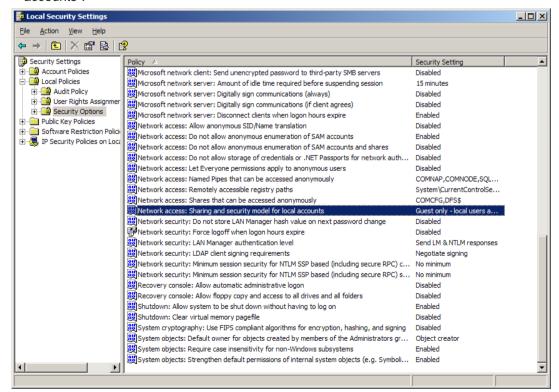


(4) Security Settings

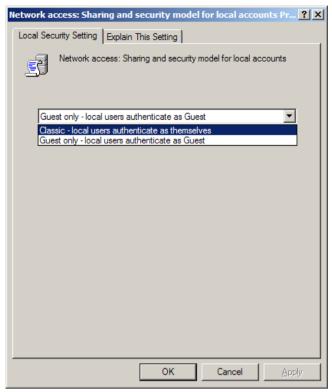
Execute [Control Board] → [Management Tool] → [Local Policies].



• [Local Policies] → [Security Options] → "Network Access: Execute "Sharing and security model for local accounts".



Appendix 2 OPC DCOM Configuration



• Select"Classic - Local users authenticate as themselves".

2.2.2 Server Settings

DCOM configuration is necessary to connect to OPC server on the remote computer. For DCOM configuration, there are computer configuration and LS InfoU OPC DA Server configuration. In this appendix, configuration is explained with an example of DCOM configuration on the Window XP service Pack 2 and similar procedure applies to other OSs, too.

Basic Procedure)

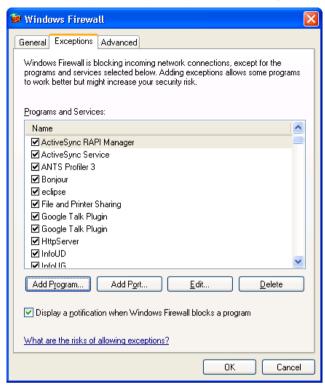
- The local computer and the remote computer should be registered with the same account, sharing the same password.
- The local computer and the remote computer should be logged in with the same account
- To use OPC DA Server on the remote computer, basic OPC files have been installed on the local computer.

(1) Firewall Setting

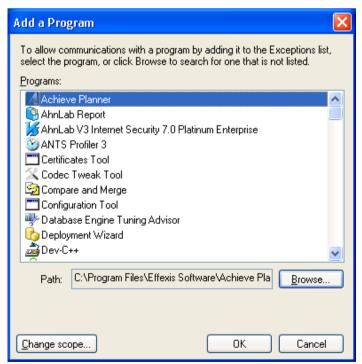
Select"Start → Control Board → Security Center → Window Firewall". "On (recommended)"has been set up
as the default configuration. This configuration is recommended to protect the computer from Microsoft and
OPC. However, select"Not Use" for OPC communication or follow the instruction below:



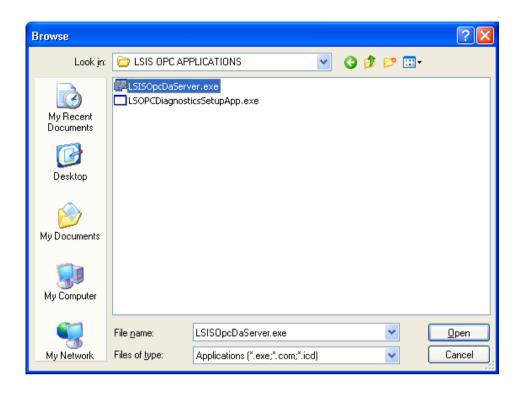
• Select "Exceptions" tap and press "Add Program" as below.



• Select "Browse" button to register LS ELECTRIC OpcDaServer.exe and LSOPCDiagnosticsSetuipApp.exe the runtime and the configuration program of LS ELECTRIC InfoU OPC DA Server respectively.



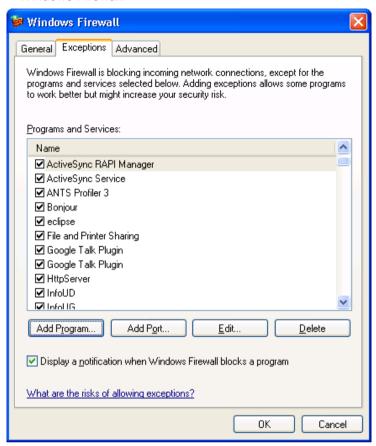






Appendix 2 OPC DCOM Configuration

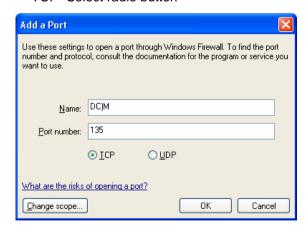
• Add TCP Port 135 to initialize DOCM communication. Click on "Add Port" button on "Exceptions" tap of Windows Firewall.



• Input the following items on "Add a Port" window.

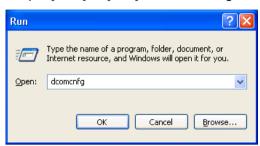
- Name: DCOM - Port Number: 135

- "TCP" Select radio button

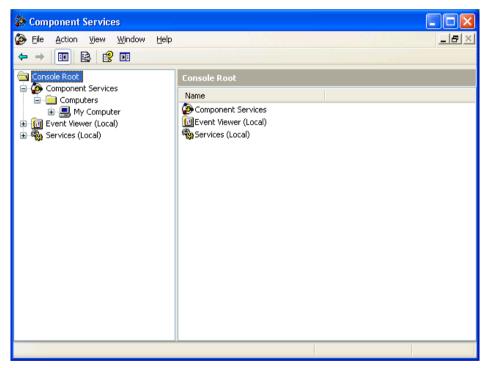


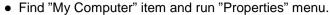


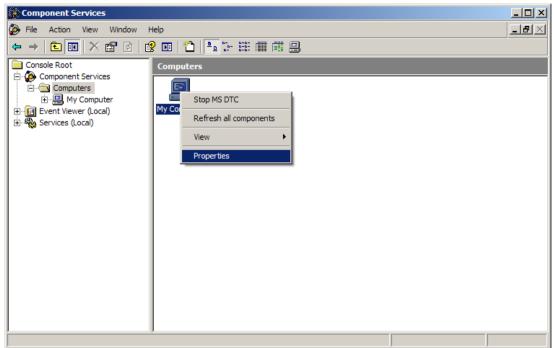
- (2) DCOM Setting
 - 1) Computer Setting
 - Input [Start] → [Run] → "DCOMCnfg" and then, press "OK" button.



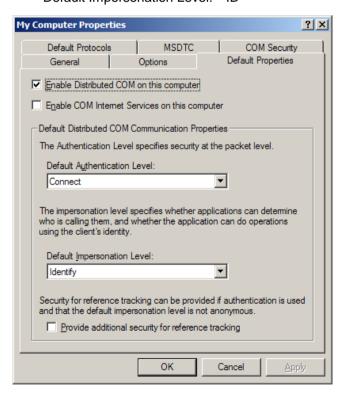
• "Component Services" window is displayed as below. Click on Console Root to enlarge the Component Services and then, click on My Computer.







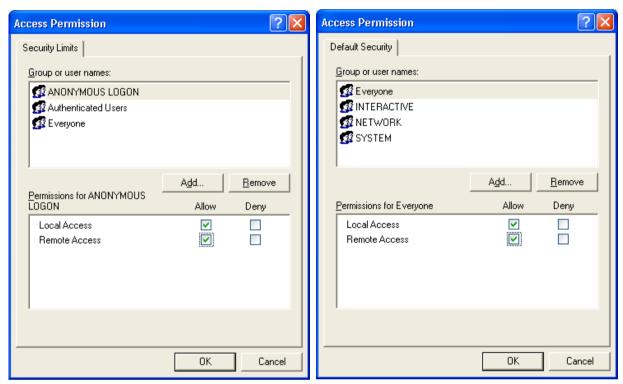
- Set up designated values for the following items on "Default Properties" tap as below.
 - "Enable Distributed COM on this computer": Check "Use."
 - Default Authentication Level: Connect.
 - Default Impersonation Level: ID



• After selecting "COM Security" tap, set up "Access Permission" and "Launch Permission" as below.

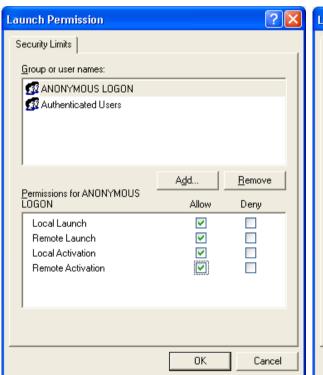


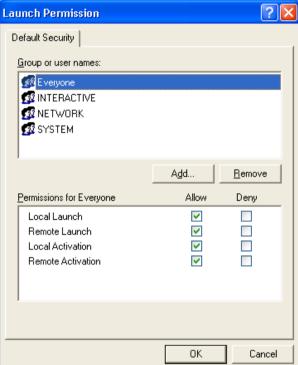
- For "Access Permission," set up "Security Limits" and "Default Security."
 - Security Limits: After adding ANONYMOUS LOGIN, Everyone and Authenticated Users to 'Group item, Check $\sqrt{}$ in all of the boxes under "Allow" for "Local Assess" or User Names' "Remote Access" .
 - Default Security: Check $\sqrt{\ }$ in all of the boxes under "Allow" for "Local Access" and "Remote Access" for Everyone, INTERACTIVE, NETWORK and SYSTEM user.



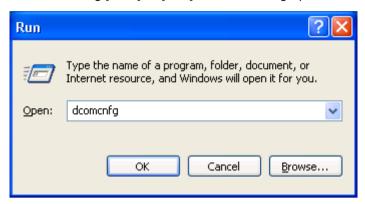
Appendix 2 OPC DCOM Configuration

- For "Launch Permission," set up "Security Limits" and "Default Security" as below.
 - Security Limits: Check $\sqrt{}$ in all of the boxes under "Allow" for "Local Launch", "Remote Launch", "Local Launch" and "Remote Launch" for ANONYMOUS LOGON and Authenticated Users.
 - Default Security: Check $\sqrt{\ }$ in all of the boxes under "Allow" for "Local Launch", "Remote Launch", "Local Launch" and "Remote Launch" for Everyone, INTERACTIVE, NETWORK and SYSTEM user.

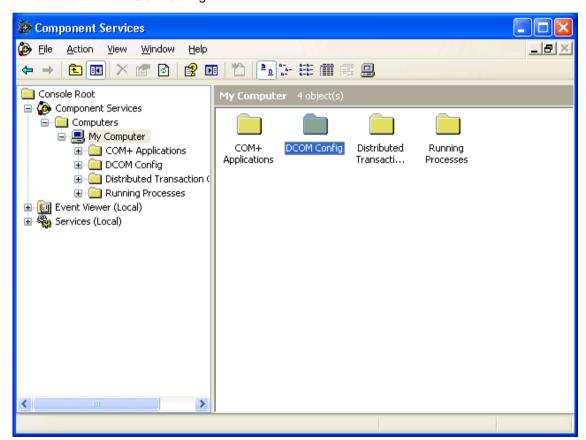




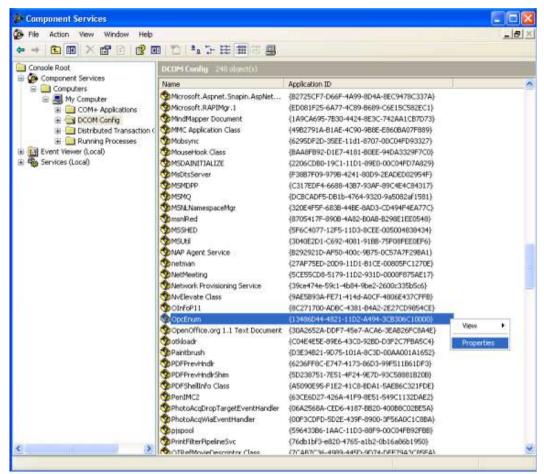
- 2) LS ELECTRIC InfoU OPC Server Setting
 - After entering [Start] → [Run] → "DCOMCnfg", press "OK" button.



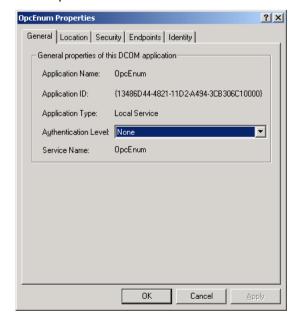
- "Component Services" window is displayed as below. Click on Console Root to enlarge the Component Services and then, click on Computers. Find My Computer and set up properties.
- Double click on "DCOM Config."



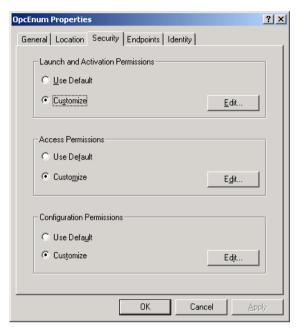
- Set up properties on "OpcEnum" to permit ANONYMOUS LOGON. (If "OpcEnum" is not used, Remote Access by any anonymous user is not permitted.)
- Find "OpcEnum" from the list and run "Properties" menu.



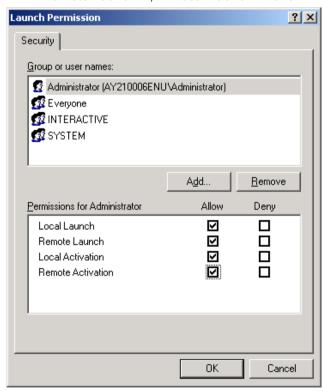
• Set up "None" for "Authentication Level" on "General" tap of "OpcEnum Property" Window.



• Select "Security" tap.

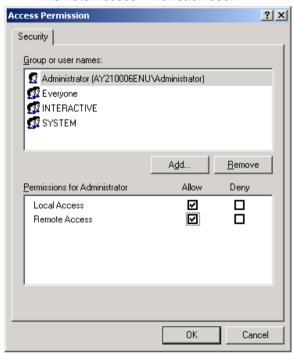


- After selecting "User Specified" for "Launch Permission" and pressing "Edit" button, set up as below.
 - "Group or User Names": Check $\sqrt{\ }$ in all of the boxes under "Allow" for "Local Launch", "Remote Launch", "Local Launch" and "Remote Launch" for each user.



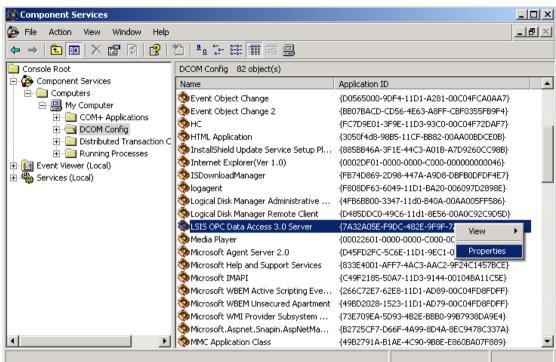
Appendix 2 OPC DCOM Configuration

- After setting up "Access Permission" and pressing "Edit" button, set up as below.
 - "Group or User Names" : Check √ in all of the boxes under "Allow" for "Local Access" "Remote Access" for each user.



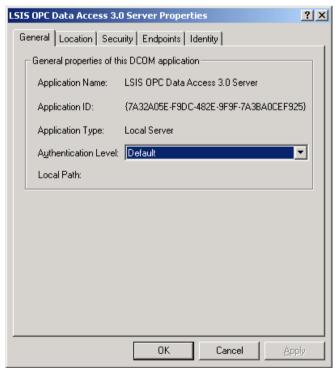
• After clicking on "ID" tap, select "The system account (services only)".





• Find" LS ELECTRIC OPC Data Access 3.0 Server" from the list and run "Properties" menu.

- "LS ELECTRIC OPC Data Access 3.0 Server Property" Window is displayed.
- Maintain "Default" for "Authentication Level" item on "General" tap.

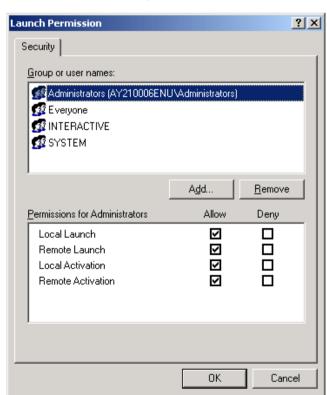


Appendix 2 OPC DCOM Configuration

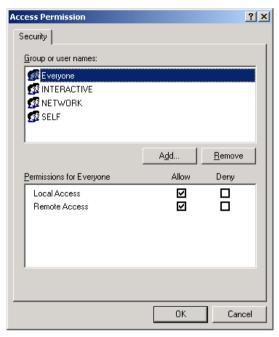
• Select "Security" tap.



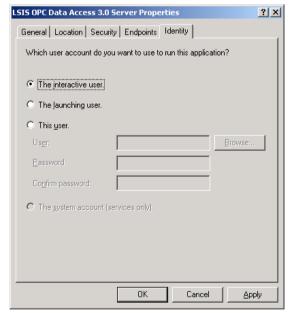
- After selecting "User Specified" for" Launch Permission" and pressing "Edit" button, set up as below.
 - "Group or User Names" : Check $\sqrt{\ }$ in all of the boxes under "Allow" for "Local Launch" , "Remote Launch", "Local Activation" and "Remote Activation" for each user.



- After setting up "Access Permission" and pressing "Edit" button, set up as below.
 - "Group or User Names" : Check $\sqrt{\ }$ in all of the boxes under "Allow" for "Local Access" and "Remote Access" for each user.



- Set up "Use Default" for "Configuration Authority".
- After selecting "Identity" tap, select "The interactive user".



• After clicking on "Apply" button, press "OK" button.

3.1 Script Function of Microsoft Script Engine

Function Name	Form	
Abs	Function Abs(Number)	
Array	Function Array(ArgList)	
Asc	Function Asc(String As String)	
Atn	Function Atn(Number As Double) As Double	
CBool	Function CBool(Expression) As Double	
CByte	Function CByte(Expression) As Byte	
CCur	Function CCur(Expression) As Currency	
CDate	Function CDate(Expression) As Date	
CDbl	Function CDbl(Expression) As Double	
Chr	Function Chr(CharCode As Long	
CInt	Function CInt(Expression) As Integer	
CLng	Function CLng(Expression) As Long	
Cos	Function Cos(Number As Double) As Double	
CreateObject	Function CreateObject(Class As String)	
CSng	Function CSng(Expression) As Single	
CStr	Function CStr(Expression) As String	
Date	Function Date() As Date	
DateAdd	Function DateAdd(Interval As String, Number As Double, Date)	
	Function DateDiff(Interval As String, Date1, Date2, [FirstDayOfWeek As	
DateDiff	VbDayOfWeek = vbSunday], [FirstWeekOfYear As VbFirstWeekOfYear	
	= vbFirstJan1])	
DatePart	Function DatePart(Interval As String, Date, [FirstDayOfWeek As VbDayOfWeek =	
Dateran	vbSunday], [FirstWeekOfYear As VbFirstWeekOfYear = vbFirstJan1])	
DateSerial	Function DateSerial(Year As Integer, Month As Integer, Day As Integer)	
DateValue	Function DateValue(Date As String)	
Day	Function Day(Date)	
Eval	Function Eval(Expression As String)	
Ехр	Function Exp(Number As Double) As Double	
Filter	Function Filter(InputStrings As Array, Value As String [, Include As Boolean	
riilei	[, Compare As VbCompareMethod = vbBinaryCompare]])	
Fix	Function Int(Number)	
FormatCurrency	Function FormatCurrency(Expression[,NumDigitsAfterDecimal	
i omiatounency	[, [,UseParensForNegativeNumbers [,GroupDigits]]])	
FormatDateTime	Function FormatDateTime(Date[, NamedFormat])	

FormatNumber	Function FormatNumber(Expression [,NumDigitsAfterDecimal	
	[,IncludeLeadingDigit [,UseParensForNegativeNumbers [,GroupDigits]]]])	
FormatPercent	Function FormatPercent(Expression[,NumDigitsAfterDecimal	
	[,IncludeLeadingDigit [,UseParensForNegativeNumbers [,GroupDigits]]]])	
GetObject	Function GetObject([PathName], [Class])	
Hex	Function Hex(Number)	
Hour	Function Hour(Time)	
InputBox	Function InputBox(Prompt, [Title], [Default], [XPos], [YPos], [HelpFile], [Context])	
Пригрох	As String	
InStr	Function InStr([Start], [String1], [String2], [Compare As VbCompareMethod =	
mou	vbBinaryCompare])	
InStrRev	Function InStrRev([Start], [String1], [String2], [Compare As VbCompareMethod =	
mourtov	vbBinaryCompare])	
Int	Function Int(Number)	
IsArray	Function IsArray(VarName) As Boolean	
IsDate	Function IsDate(Expression) As Boolean	
IsEmpty	Function IsEmpty(Expression) As Boolean	
IsNull	Function IsNull(Expression) As Boolean	
IsNumeric	Function IsNumeric(Expression) As Boolean	
IsObject	Function IsObject(Expression) As Boolean	
Join	Function Join(List As Array[, Delimiter As String])	
LBound	Function LBound(Arrayname[, Dimension As Number])	
LCase	Function LCase(String)	
Left	Function Left(String, Length As Long)	
Len	Function Len(Expression)	
LoadPicture	Function LoadPicture([filename], [widthDesired As Long], [heightDesired As	
LoadFicture	Long], [flags As LoadPictureConstants = Default]) As IpictureDisp	
Log	Function Log(Number As Double) As Double	
LTrim	Function LTrim(String)	
Mid	Function Mid(String, Start As Long, [Length])	
Minute	Function Minute(Time)	
Month	Function Month(Date)	
MonthName	Function MonthName(Month As Number[, Abbreviate As Boolean])	
MagDay	Function MsgBox(Prompt, [Buttons As VbMsgBoxStyle = vbOKOnly], [Title],	
MsgBox	[HelpFile], [Context]) As VbMsgBoxResult	
Now	Function Now()	
Oct	Function Oct(Number)	
	Function Replace(Expression As String, Find As String, ReplaceWith As String	
Replace	[, Start As Number[, Count As Number[, Compare As VbCompareMethod =	
	vbBinaryCompare]]])	

Right	Function Right(String, Length As Long)	
Rnd	Function Rnd([Number]) As Single	
RGB Function RGB(red, green, blue)		
Round	Function Round(Expression[, NumDecimalPlaces])	
RTrim Function RTrim(String)		
ScriptEngine Function ScriptEngine() As String		
ScriptEngineBuildVersion	Function ScriptEngineBuildVersion As Number	
ScriptEngineMajorVersion	Function ScriptEngineMajorVersion Function As Number	
ScriptEngineMinorVersion	Function ScriptEngineMinorVersion Function As Number	
Second	Function Second(Time)	
Sgn	Function Sgn(Number)	
Sin	Function Sin(Number As Double) As Double	
Space	Function Space(Number As Long)	
Colit	Split(Expression[, Delimiter As String [, Count As Number[, Compare As	
Split	Number]]])	
Sqr	Function Sqr(Number As Double) As Double	
StrComp	Function StrComp(String1, String2, [Compare As VbCompareMethod =	
StrComp	vbBinaryCompare])	
String	Function String(Number As Long, Character)	
StrReverse Function StrReverse(String)		
Tan	Function Tan(Number As Double) As Double	
Time Function Time() As Date		
TimeSerial Function TimeSerial(Hour As Integer, Minute As Integer, Second As Inte		
TimeValue	Function TimeValue(Time As String)	
Trim	Function Trim(String)	
TypeName	Function TypeName(VarName) As String	
UBound Function UBound(Arrayname[, Dimension As Number])		
UCase Function UCase(String)		
VarType	Function VarType(VarName) As VbVarType	
Weekday	Function WeekDay(Date, [FirstDayOfWeek As VbDayOfWeek = vbSunday])	
WeekdayName	Function WeekdayName(Weekday As Number, Abbreviate As Boolean,	
vveekuayivaiile	FirstDayOfWeek As Number)	
Year	Function Year(Date)	

Abs Function		
Description	The absolute value of a number is returned.	
	Abs(number)	
Syntax	The factor of a number should be a valid expression. If the number has the value zero, null is	
	returned. And if the number is a non-initialized variable, 0 is returned	

	The absolute value of a number shows only its size without code. For example, in both Abs(-1)	
	and Abs(1), 1 is returned.	
	In the following example, Abs Function calculates the absolute value of a number.	
Reference		
	Dim MyNumber	
	MyNumber = Abs(50.3) '50.3 is returned	
	MyNumber = Abs(-50.3) '50.3 is returned	

Array Funct	ion	
Description	n A Variant including Array is returned	
	Array(arglist)	
Syntax	The arglist factor consists of values distinguished with pauses and it designates the Array factor	
	included in the Variant to this value. If any factor is not designated, Array whose length is 0 is created.	
	This notation is used when referring to variable elements consisting of variable names next to a	
	bracket that has index numbers indicating essential elements. For example, the first statement	
	creates variable A equal to Variant. The second statement designates Array to variable A. The	
	last statement designates a value that includes the variable's second Array element.	
	Dim A As Variant	
	A = Array(10,20,30)	
	B = A(2)	
Reference	The minimum limit of the Array created with this Array Function is decided with the minimum limit	
	that Option Base statement designates.	
	The lower limit of the Array created with this Array Function is decided with the lower limit that	
	Option Base statement designates or the name of the Array Function is decided with the name of	
	the Form Library (ex: VBA.Array). Once the name is designated with the Form Library, this Array	
	Function is not influenced by Option Base statement anymore.	
	Even Variants not declared by Memo Array can include Array. Variant variables can include all	
	forms of Array except fixed-length string forms and customized forms. Even though Variant Form	
	including Array is different from Array, whose element is of variant form in terms of concept, the	
	elements of the relevant Array can be equally accessed.	

Asc Function		
Description	ANSI character code corresponding to the first character of a string is returned.	
Syntax	Asc(string)	
	The string factor should be a valid character expression. If there is no character in the string,	

	Runtime errors take place.	
	Asc returns the ANSI character code of the first character of each string as seen in the following	
	example.	
	Dim MyNumber	
	MyNumber = Asc("A") '65 is returned.	
	MyNumber = Asc("a") '97 is returned.	
Reference	MyNumber = Asc("Apple") '65 is returned.	
Reference		
	Memo	
	AscB Function uses Byte data that the string has. AscB does not return the character code of the	
	first character but the first Byte of the character. AscW Function is provided for 32bit platforms	
	using Unicode characters. Since this Function returns the character codes of Unicode, it is not	
	necessary to convert Unicode to ANSI code	

Atn Function		
Description	The arctangent of a number is returned.	
Syntox	Atn(number)	
Syntax	The number factor should be a valid expression.	
	This Atn Function uses the ratio between lengths of two sides of a right triangle and returns	
	alternate angles in radian unit. This ratio is obtained by dividing the length of the side facing the	
	relevant angle by the length of the side adjacent to this angle. The results are ranged between	
	pi/2 and pi/2 radian.	
	To convert angle to radian, multiply angle by pi/180 and to convert radian to angle, multiply	
	radian by	
	180/pi.	
Reference	In the following example, Atn calculates pi value.	
	Dim pi	
	pi = 4 * Atn(1) ' Calculate pi value	
	Memo: Atn Function is a reverse triangle function of Tan that returns the ratio between two sides	
	of a right triangle by using angle as a factor. Do not confuse Atn with cotangent, a reverse	
	tangent (1/tangent)	

CBool Function		
Description	The expression converted to a Boolean subtype of Variant is returned.	
Syntax	CBool(expression)	
	The expression factor should be a valid expression.	
Reference	If the expression is 0, False is returned or if not, True is returned. This expression can not be	

interpreted into number values and Runtime errors take place.	
In the following example, CBool Function converts the expression to Boolean. If the expression is	
not 0, CBool returns True or if it is 0, It returns False	
Dim A, B, Check	
A = 5: B = 5	' Initialize variables.
Check = CBool(A = B)	' Check gets True.
A = 0	' Define a variable.
Check = CBool(A)	'Check gets False

CByte Function		
Description	The expression converted to a Byte subtype of Variant is returned.	
Syntax	CByte(expression)	
Syntax	The expression factor should be a valid expression.	
	Typically, if a code is created with a subtype of conversion function, the operation result can be	
	seen in a particular data type rather than in a basic data type. For example, If Cbyte is used for	
	call, single precision, double precision or integer arithmetic operation, Byte arithmetic operation is	
	carried out.	
	If CByte Function is used, other types of data can be converted to a Byte subtype widely used	
	throughout the world. For example, symbols identified with different digit numbers such as	
Reference	symbols identified with a number in the thousands are properly recognized according to the	
Kelefelice	locale settings of the computer.	
	If an expression exceeds the tolerance range of Byte subtype, errors take place. In the following	
	example, Cbyte Function converts the expression to Byte.	
	Dim MyDouble, MyByte	
	MyDouble = 125.5678 ' MyDouble is equal to Double.	
	MyByte = CByte(MyDouble) 'MyByte gets value 126	

CCur Function	
Description	The expression converted to a Currency subtype of Variant is returned.
Syntox	CCur(expression)
Syntax	The expression factor should be a valid expression.
	Typically, if a code is created with a subtype of conversion function, the operation result can be
	seen in a particular data type rather than in a basic data type. For example, if Ccur is used for an
Reference	integer arithmetic operation, a call arithmetic operation is executed.
	If CCur Function is used, other types of data can be converted to a widely-used Currency
	subtype throughout the world. For example, symbols identified with different digit numbers such

as symbols identified with a number in the thousands are properly recognized according to the
locale settings of the computer.
In the following example, CCur Function converts the expression to Currency.
Dim MyDouble, MyCurr
MyDouble = 543.214588 'MyDouble is equal to Double.
MyCurr = CCur(MyDouble * 2) ' The value multiplied MyDouble by 2 (1086.429176) is
converted to Currency (1086.4292).

CDate Function	
Description	The expression converted to a Date subtype of Variant is returned
Syntox	CDate(date)
Syntax	The date factor should be a valid expression.
	If IsDate Function is used, it is decided whether to convert a date factor into date or time. CDate
	Function recognizes numbers within the tolerance range of date as well as date literal and time
	literal. If number is converted to date, the integer part is converted to date. The fractional part of
	number is converted to time of the day that starts from the midnight.
	CDate Function recognizes date type according to the computer's locale settings. If any
	unrecognized date type is provided, it is impossible to decide a correct order of year, month and
	day. It is also impossible to recognize the marked date type in detail even though there is a
	corresponding string to the day of the week.
Reference	
	In the following example, CDate Function converts a string to date. Typically, it is not good to use
	the date and hard coded time with strings as seen in this example. Instead, it is better to use date
	and time literal such as #10/19/1962# or #4:45:23 PM#,
	MyDate = "October 19,1962" ' Decide date.
	MyShortDate = CDate(MyDate) 'It is converted to Date data type.
	MyTime = "4:35:47 PM" ' Decide time
	MyShortTime = CDate(MyTime) 'It is converted to Time data type

CDbl Function	
Description	The expression converted to a Double subtype of Variant is returned.
Syntax	CDbl(expression)
	The expression factor should be a valid expression.
Reference	Typically, if a code is created with a subtype of conversion function, the operation result can be
	seen in a particular data type rather than in a basic data type. For example, if CDbl or CSng is
	used for a call or integer arithmetic operation, single or double precision arithmetic operation is
	carried out.

If CDbl Function is used, other types of data can be converted to a widely-used Double subtype
throughout the world. For example, symbols identified with different digit numbers such as
symbols identified with a number in the throusands are properly recognized according to the
locale settings of the computer.
In the following example, CDbl Function converts the expression to Double.
Dim MyCurr, MyDouble
MyCurr = CCur(234.456784) 'MyCurr is equal to Currency.
MyDouble = CDbl(MyCurr * 8.2 * 0.01) 'The result is converted to Double

Chr Function	
Description	A character related to the designated ANSI character code is returned.
Syntax	Chr(charcode)
Syritax	The charcode factor is a number to identify characters
	Numbers 0 through 31 are equal to the ASCII standard codes that can not be printed. For
	example, Chr(10) returns line feed characters. In the following example, Chr Function returns the
	character related to the designated ANSI character.
	Dim MyChar
	MyChar = Chr(65) ' A is returned.
	MyChar = Chr(97) 'a is returned.
Reference	MyChar = Chr(62) ' > is returned.
	MyChar = Chr(37) '%is returned.
	Memo
	ChrB Function uses Byte data that the string has. 1Byte is always returned rather than 1Byte or
	2Byte characters. ChrW Function is provided for 32bit platforms using Unicode characters. Since
	the factor of this Function is a Unicode character code, it is not necessary to convert ANSI to
	Unicode

CInt Function	
Description	The expression converted to an Integer subtype of Variant is returned
Cyntox	CInt(expression)
Syntax	The expression factor should be a valid expression.
	Typically, if a code is created with a subtype of conversion function, the operation result can be
	seen in a particular data type rather than in a basic data type. For example, if Clnt or CLng
Reference	Function is used for call, single precision or double precision arithmetic operation, integer
	arithmetic operation is carried out.
	If CInt Function is used, other types of data can be converted to a widely-used Integer subtype

throughout the world. For example, symbols identified with different digit numbers such as symbols identified with a number in the throusands are properly recognized according to the locale settings of the computer.

If an expression exceeds the tolerance range of Integer subtype, error takes place.

In the following example, CInt Function converts the value to integer.

Dim MyDouble, MyInt

MyDouble = 2345.5678 'MyDouble is equal to Double.

MyInt = CInt(MyDouble) 'MyInt gets value 2346.

Memo

Cint is different from Fix or Int Function that does not round off but cut away decimal points. If the decimal point is exactly 0.5, CInt Function always rounds off the nearest even number. For example, 0.5 is rounded off to 0 and 1.5 is rounded off to 2.

CLng Function	
Description	The expression converted to a Long subtype of Variant is returned.
Syntax	CLng(expression)
	The expression factor should be a valid expression.
	Typically, if a code is created with a subtype of conversion function, the operation result can be
	seen in a particular data type rather than in a basic data type. For example, if CInt or CLng
	Function is used for call, single precision or double precision arithmetic operation, integer
	arithmetic operation is carried out.
	If CLng Function is used, other types of data can be converted to a widely-used Long subtype
	throughout the world. For example, symbols identified with different digit numbers such as
	symbols identified with a number in the throusands are properly recognized according to the
	locale settings of the computer.
	If an expression exceeds the tolerance range of Integer subtype, errors take place.
Reference	In the following example, CLng Function converts the value to Long.
	Dim MyVal1, MyVal2, MyLong1, MyLong2
	MyVal1 = 25427.45: MyVal2 = 25427.55 'MyVal1 and MyVal2 are Doubles.
	MyLong1 = CLng(MyVal1) 'MyLong1 gets value 25427.
	MyLong2 = CLng(MyVal2) 'MyLong2 gets value 25428.
	Memo
	CLng Function is different from Fix or Int Function that does not round off but cut away decimal
	points. If the decimal point is exactly 0.5, CLng Function always rounds off the nearest even
	number. For example, 0.5 is rounded off to 0 and 1.5 is rounded off to 2.

Cos Function	
Description	The cosine of an angle is returned
Syntox	Cos(number)
Syntax	The number factor should be a valid expression showing the angle in a radian.
	Cos Function uses angles and returns the ratio between two sides of a right triangle that is, the
	ratio between the length of the adjoining side and the length of the oblique side of each angle.
	The results are between -1 through 1.
	To convert angle to radian, multiply angle by pi/180 and to convert radian to angle, multiply
Reference	radian by 180/pi.
Reference	In the following example, Cos Function returns the cosine value of the angle.
	Dim MyAngle, MySecant
	MyAngle = 1.3 ' Define an angle in a radian value.
	MySecant = 1 / Cos(MyAngle) 'Caculate the Secant value.

CreateObject Function	
Description	A reference for an automatic object is created and returned
	CreateObject(class)
	The class factor uses Syntax servername.typename and gets the following factors
Syntax	Description on factor
	servername: the name of an application program providing objects.
	typename: The type or class of an object to be produced.
	An automatic server provides at least more than one object type. For example, the word
	processing program provides application program objects, document object and toolbar objects.
	To create automatic objects, designate the returned object from CreateObject Function as an
	object variable.
	Dim ExcelSheet
	Set ExcelSheet = CreateObject("Excel.Sheet")
Reference	This code starts an application program while creating the relevant object, that is, Microsoft Excel
Reference	spread sheet. Once the object is created, the object can be referred by using customized
	variables. In the following example, properties and methods of the new object are accessed by
	using ExcelSheet object variables and Excel objects including Application objects and
	ActiveSheet.Cells collections. The application examples are as follows:
	' Make Excel program appear through Application objects.
	ExcelSheet.Application.Visible = True
	' Put the relevant text on the first cell of the sheet.
	ExcelSheet.ActiveSheet.Cells(1,1). Value = "Column A , Row 1."

' Save the sheet.
ExcelSheet.SaveAs "C:\DOCS\TEST.XLS"
' Close Excel program by using 'Quit' method of the Application object.
ExcelSheet.Application.Quit
' Release the object variable.
Set ExcelSheet = Nothing

CSng Function	
Description	The expression converted to a Single subtype of Variant is returned
Ota	CSng(expression)
Syntax	The expression factor should be a valid expression.
	Typically, if a code is created with a subtype of conversion function, the operation result can be
	seen in a particular data type rather than in a basic data type. For example, if CDbl or CSng is
	used for a call or integer arithmetic operation, single or double precision arithmetic operation is
	carried out.
	If CSng Function is used, other types of data can be converted to a widely-used Single subtype
	throughout the world. For example, symbols identified with different digit numbers such as
	symbols identified with a number in the throusands are properly recognized according to the
Reference	locale settings of the computer.
	If an expression exceeds the tolerance range of Byte subtype, errors take place.
	In the following example, CSng Function converts the value to Single.
	Dim MyDouble1, MyDouble2, MySingle1, MySingle2 'MyDouble1 and MyDouble2 are Doubles.
	MyDouble1 = 75.3421115: MyDouble2 = 75.3421555
	MySingle1 = CSng(MyDouble1) 'MySingle1 gets value 75.34211.
	MySingle2 = CSng(MyDouble2) 'MySingle2 gets value 75.34216.

CStr Function	on
Description	The expression converted to a String subtype of Variant is returned
Cuntav	CStr(expression)
Syntax	The expression factor should be a valid expression.
	Typically, if a code is created with a subtype of conversion function, the operation result can be
	seen in a particular data type rather than in a basic data type. For example, if CStr is used, the
	result is expressed in a String.
Deference	If CStr Function is used instead of Str Function, other types of data can be converted to a widely-
Reference	used String subtype throughout the world. For example, symbols identified with different digit
	numbers are properly recognized according to the computer's locale settings.
	The data used in an expression decide the returned results as seen in the table.

		Expression Data	CStr Returned Result	
		Boolean	String containing True or False	
		Date	String containing simplified date by computer settings.	
		Null	Runtime error	
		Empty	String whose length is 0 ("")	
		Error	String showing error number next to word 'Error'	
		Other	String containing numbers	
	In the following example, CStr Function converts the value to String. Dim MyDouble, MyString			
	MyDouble	= 437.324 ' MyDouble	e is equal to Double.	
	MyString =	CStr(MyDouble) 'MyString g	jets value "437.324.".	

Date Function			
Description	The Date of the current system is returned.		
Syntax	Date		
Reference	In the following example, Date Function returns the Date of the current system. Dim MyDate		
	MyDate = Date 'MyDate gets the date of the current system.		

DateAdd Function				
Description	The Date that adds the designated time interval is returned.			
	DateAdd(int	terval, nun	nber, date)	
	DateAdd Fu	ınction Sy	ntax has following factors.	
	Description	on Factor		
	interval	A mar	ndatory factor. A literal expr	ression indicating the date that adds interval.
	Interval	For the	e value, refer to the following	ng settings.
		A mai	ndatory factor. A numerica	al expression of the interval number to be
0	number	added	. In the numerical expressi	ion, a positive number refers to a future date
Syntax		while a	a negative number refers to	o a past date.
	date	A mar	ndatory factor. Variant or lite	eral indicating the date that adds interval.
	The value of the interval factor is as follows:			
		Setting	Description	
	У		Year	

	1	1	1	
		q	Quarter	
		m	Month	
		у	Year(As of one year)	
		d	Day	
		w	Weekday	
		ww	Week(As of one year)	
		h	Hour	
		n	Minute	
		S	Second	
				-
	If DateAd	d Function	is used, it is possible to	add the designated time interval to the date or
	subtract it	from the c	date. For example, if DateA	dd Function is used, it is possible to calculate the
	date that will be in 30 days from today or the time that will be in 45 minutes from the current time.			
	To add a certain day to the date, use year("y"), day("d") or weekday("w").			
	In DateAdd Function, any wrong date is not returned. In the following example, one month is			
	added to January 31.			
Reference				
Reference	NewDate = DateAdd("m", 1, "31-Jan-95")			
	In this case, DateAdd Function returns 28-Feb-95 rather than 31-Feb-95. If the date is 31-Jan-96,			
	29-Feb-96 is returned because year 1996 is a leap year.			
	If the date to be calculated is before AD 100, errors take place.			
	If it is not a	a number o	of Long value, the nearest in	nteger shall be rounded off before calculation.

DateDiff Fu	nction				
Description	The difference between two dates is returned				
	DateDiff(interval, date1, date2 [,firstdayofweek[, firstweekofyear]])				
	DateDiff	Function Synta	ax has following factors.		
		Factor	Description		
		interval	A mandatory factor. A literal expression of interval used to calculate		
0 - 11-			the difference between Date 1 and Date 2. For the value, refer to the		
Syntax			following settings.		
		date1, date2	A mandatory factor. Two dates used to calculate in the date		
			expression.		
		firstdayofwee k	An optional factor. Sunday is deemed as the day of the week if any		
			Constant is not designated to indicate which day of the week. For the		
			value, refer to the following settings.		

firstweekofye	An optional factor. A constant indicating the first week of the year. If
	not indicated, the week that contains January 1 is deemed as the first
ar	week in the year. For the value, refer to the following settings.

Description on Factor

interval: A mandatory factor. A literal expression of interval used to calculate the difference between Date 1 and Date 2. For the value, refer to the following settings.

date1, date2: A mandatory factor. Two dates used to calculate in the date expression.

firstdayofweek: An optional factor. Sunday is deemed as the day of the week if any Constant is not designated to indicate which day of the week. For the value, refer to the following settings.

firstweekofyear: An optional factor. A constant indicating the first week of the year. If not indicated, the week that contains January 1 is deemed as the first week in the year. For the value, refer to the following settings

Settings

The value of the interval factor is as follows:

Setting	Description
уууу	Year
q	Quarter
m	Month
У	Year(As of one year)
d	Day
W	Weekday
ww	Week(As of one year)
h	Hour
n	Minute
s	Second

The value of the firstweekofyearl factor is as follows:

Constant	Value	Description
vbUseSystem	0	NLS(National Language Support). Use API settings
vbSunday	1	Sunday(Default Value)
vbMonday	2	Monday
vbTuesday	3	Tuesday
vbWednesday	4	Wednesday
vbThursday	5	Thursday
vbFriday	6	Friday
vbSaturday	7	Saturday

Description on	Constant	Value
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Constant	Value	Description
vbUseSystem	0	NLS(National Language Support). Use API settings
vbFirstJan1	1	Start from the week that contains January 1 (Default Value)
vbFirstFourDays	2	Start from the week that contains the first four days in the
		new year.
vbFirstFullWeek	3	Start from the week that contains the first full week (7 days)
		in the new year.

If DateDiff Function is used, it is possible to know the time difference between two dates. For example, if DateDiff Function is used, it is possible to calculate the day number between two dates or the week number between today and the end of the year.

To calculate the day number between Date 1 and Date 2, use year ("y") or day ("d") as of the year. If interval is expressed with weekday ("w"), DateDiff Function returns the week number between two dates. If date1 is on Monday, DateDiff Function calculates how many Mondays are there by date2. That is, date2 is calculated instead of date 1. But, if interval is expressed with week ("ww"), DateDiff Function returns the calendar week numbers between two dates. That is, the Sunday number is calculated between date1 and date2. In DateDiff Function, if date2 is on Sunday, it calculates date2 but, if date1 is also on Sunday, it does not calculate date1.

If date1 is latter than date2, DateDiff Function returns a negative number.

Reference

The firstdayofweek factor has influence on the calculation using interval symbols such as "w" and "ww."

If date1 or date2 is a date literal, the designated year becomes the permanent element of the relevant date. But, if a pair of quotation marks (" ") is place around date1 or date2 and the relevant year is omitted, the current year shall be inserted to the user code whenever date1 or date2 expression is calculated. The code that can be used for the next year can be written in this way.

If December 31 is compared to the next January 1, DateDiff returns 1 to the year ("yyyy") factor even only one day is elapsed.

In the following example, DateDiff Function indicates the elapsed days until now from the given date.

Function DiffADate(theDate)

DiffADate = "Elapsed Day: " & DateDiff("d", Now, theDate)

End Function

DatePart Function Description The designated part of a given date is returned. DatePart(interval, date[, firstdayofweek[, firstweekofyear]]) DatePart Function Syntax has following factors. factor Description A mandatory factor. A literal expression of the time interval to be returned. interval For the value, refer to the following settings. A mandatory factor. A date expression to be calculated. date An optional factor. Sunday is deemed as the day of the week if any Constant is not designated to indicate which day of the week. For the value, refer to firstdayof week the following settings. An optional factor. A constant indicating the first week of the year. If not firstweekofyear indicated, the week that contains January 1 is deemed as the first week in the year. For the value, refer to the following settings. Settings The value of the interval factor is as follows: Description Settings уууу Year Quarter **Syntax** m Month Year (As of one year) d Day w Weekday Week(As of one year) ww Hour Minute n Second The value of the firstweekofyear factor is as follows:

Constant	Value	Description
vbUseSystem	0	NLS(National Language Support). Use API settings
vbSunday	1	Sunday(Default Value)
vbMonday	2	Monday
vbTuesday	3	Tuesday
vbWednesday	4	Wednesday
vbThursday	5	Thursday
vbFriday	6	Friday

		7	l'	luluay	vbSaturda		
	t Value	Description on Constan		D			
	Value		tant	Consta	Cor		
LS(N	0		m	eSystem	vbUseSys	v	
tart fi	1			stJan1	vbFirstJan	v	
tart f ew ye		vbFirstFourDays		V			
tart fi			'eek	stFullWe	vbFirstFull	v	
If DatePart Function is used, the date is calculated and a certain time interval is returned. For example, it is possible to calculate a weekday or the current time by using DatePart. The firstdayofweek factor has influence on the calculation using interval symbols such as "w" and "ww." If the date is a date literal, the designated year becomes the permanent element of the relevant date. But, if a pair of quotation marks (" ") is place around the date and the relevant year is omitted, the current year shall be inserted to the user code whenever the date expression is calculated. The code that can be used for the next year can be written in this way. The following example shows Quarter of the relevant year by using DatePart Function and date. Function GetQuarter(TheDate)				T Iff documents of the control of th	Reference		
GetQuarter = DatePart("q", TheDate) End Funtion							
tart fitter yet tart fitter the date a wuence signarke insused	1 2 3 used, the ocalculator has in a can be shows Quebate)	sible k fa tte I ir co nt ode mpl	Days Jeek Function Spossion Function	stJan1 stFourDa stFullWe stePart Fu ple, it is p irstdayofu date is a But, if a ed, the c lated. The ollowing of	vbFirstFoundary vbFirstFoundary vbFirstFoundary vbFirstFoundary vbFirstFoundary If DatePart example, it The firstdary "ww." If the date date. But, omitted, th calculated. The following Function G	Iff e. T iff d. C.	Reference

DateSerial Function						
Description	The Date subtype of Variant of the designated year, month and day is returned.					
	DateSerial(year, month, day) DateSerial Function Syntax has following factors					
	Factor	Description				
Syntax	year	Numbers 100 through 9999 or a numerical expression				
	month	All expressions				
	day					
	For example, to designate a certain date such as December 31, 1991, the number of each					
Dataman	DateSerial factor should be within the tolerance range of the relevant. That is, for day, it should					
Reference	be one from the first day through the thirty first day and it should be one from January through					
	December for month. But, the counter date of each factor can be designated by using a					

numerical expression showing the year, month or day before and after a particular date.
The following example uses a numerical expression instead of an absolute date number. Here,
DateSerial Function returns the date subtracted one day from the first day(1-1) on the month two
months before August (8-2) in the year 10 years before 1990 (1990-10).
DateSerial(1990 - 10, 8 - 2, 1 - 1)
If the value of the year factor is one from 0 through 99, it is interpreted from 1900 through 1999.
In all other year factors except that, a four-digit number such as 1800 is used.
If the tolerance range of the factor is exceeded, it goes to the next bigger unit For example, if the
thirty fifth day is designated, it is calculated to which day of one month according to the
applicated year. But, if a certain factor exceeds range -32,768~32 and 767 or a date designated
directly or through an expression by using three factors. Errors take place.

DateValue F	unction						
Description	The Date subtype of Variant is returned.						
	DateValue(date)						
Syntax	Typically, the date factor is a literal expression indicating from January 1, 100 to December 31,						
	9999 and the expression shows the date, time or date/time in this range						
	If the date factor contains time information, DateValue Function does not return the information.						
	However, some wrong information such as "89:98" is in the date factor, errors take place.						
	If the date factor is a string that has only the numbers divided by valid date separating symbols,						
	DateValue Function recognizes year, month and day according to the simplified date marking						
	type of the computer settings. Also, it is possible to recognize an accurate date that contains the						
	formal or informal date name. For example, DateValue Function recognizes December 30,						
	1991 or Dec 30, 1991 as well as 2/30/1991 or 12/30/91.						
Reference	If the year part is omitted from the date factor, DateValue Function uses the current year as set up on the computer.						
	In the following example, DateValue Function converts a string to date. It is possible to directly assign the date to Variant variable by using the date literal (ex. MyDate = #9/11/63).						
	Dim MyDate						
	MyDate = DateValue("September 11, 1963") Date is returned.						

Day Function					
Description	The integer indicating the date from 1 through 31 is returned.				
Syntax	Day(date)				

	The date factor is an expression showing the date. If the date factor has the value zero, Null is					
	returned					
Deference	Dim MyDay					
Reference	MyDay = Day("Oct 19, 1962") 'MyDay gets value 19.					

Eval Function	on						
Description	A sentence as a factor is calculated and Result Value or the stack value of variable is returned.						
Docompaion	Eval(Expr[, Depth])						
Syntax	Expr : As an expression to be operated. VB script syntax should be inputted as a string value.						
	Depth: Numbers should be inputted. Input the value location to the local variable's stack. If Depth						
	= 0, the current value at the operation stage is returned and if omitted, Depth is 0						
	The following example shows how Eval Function is used.						
	Ex1)						
	Dim Guess, RndNum RndNum = Int((100) * Rnd(1) + 1)						
	Guess = CInt(InputBox("Enter your guess:",,0))						
	Do						
	If Eval("Guess = RndNum") Then						
	MsgBox "Congratulations! You guessed it!"						
	Exit Sub						
	Else						
	Guess = CInt(InputBox("Sorry! Try again.",,0))						
	End If						
Reference	Loop Until Guess = 0						
	Ex 2)						
	Sub Main						
	Dim X As String						
	X = "Hello"						
	Debug.Print Eval("X") 'Return Hello						
	A						
	End Sub						
	Sub A						
	Dim X As String						
	X = "Bye" Debug Brint Eval("Y") 'Beturn Byo						
	Debug.Print Eval("X") 'Return Bye Debug.Print Eval("X",1) 'Retusn the previous value of Hello						
	End Sub						
	2.14 040						

Exp Functio	n					
Description	'e', a root of natural logarithms raised by the multiplier is returned					
Syntox	Exp(number)					
Syntax	The number factor should be a valid expression					
	If the number value exceeds 709.782712893, errors take place. Constant is about 2.718282.					
	Memo					
	Exp Function makes up for Log Function and it is sometimes called an antilogarithm.					
Reference	In the following example, Exp Function returns e for angle.					
	MyAngle = 1.3 ' Define an angle in a radian value.					
	MyAngle = 1.3 'Calculate the sine value of a hyperbola.					
	MyHSin = (Exp(MyAngle) - Exp(-1 * MyAngle)) / 2					

Filter Functi	ion							
Description	The Array based on 0, which has a subset of String Array according to the designated filter base, is returned							
	Filter(InputStrings, value[, Include[, compare]]) Filter Function Syntax has following factors							
	Factor	Description						
	InputString s	A man	A mandatory factor. One dimension Array of the String to be searched.					
	value	A man	A mandatory factor. The String to be searched.					
Syntax	Include	includir Array o	An optional factor. A boolean value showing whether to return the sub string including or excluding <i>value</i> . If it is True, Filter Function returns a subset of the Array corresponding to <i>value</i> as a sub string. If it is False, Filter Function returns a subset of the Array not corresponding to <i>value</i> as a sub string.					
	compare		An optional factor. A number value showing the <u>comparison</u> type to be used. For the value, refer to the following settings.					
	Settings Comparison	factors	have tl	he following values				
	Consta	ant	Value	Description				
	vbBinaryCo	mpare	0	Run Binary Comparison.				
	vbTextCom	pare	1	Run Text Comparison.				

	If there is no value agreed with InputStrings, Filter Function returns empty Array. If InputStrings has the value zero or it is not one dimension Array, errors take place. The returned Array in Filter Function has only the elements enough to contain the agreed item number.						
Reference	In the following example, Filter Function returns the Array that has "Mon" search reference.						
	Dim MyIndex						
	Dim MyArray (3)						
	MyArray(0) = "Sunday"						
	MyArray(1) = "Monday"						
	MyArray(2) = "Tuesday"						
	MyIndex = Filter(MyArray, "Mon") 'MyIndex(0) contains "Monday"						

Fix Function	ı					
Description	The integer part of a number is returned					
	Int(number)					
	Fix(number)					
Syntax						
	The number factor should be a valid expression. The number has the value zero, Null is					
	returned.					
	Both of Int Function and Fix Function return the integer value that shows the results of removing					
	the part after the decimal point.					
	If the difference between Int Function and Fix Function is a negative number, Int Function returns					
	the first negative integer that is lower or equal to the number but, Fix Function returns the					
	negative integer that is higher or equal to the number. For example, Int Function converts -8.4					
	to -9 and Fix Function converts -8.4 to -8.					
Deference	Fix (number) Function is equal to the following expression.					
Reference	San(number) * Int(Aba(number))					
	Sgn(number) * Int(Abs(number)) The following example characteristic and Fix Function convert the integer part of a number.					
	The following example shows how Int and Fix Function convert the integer part of a number. MyNumber = Int(99.8) '99 is returned.					
	MyNumber = Fix(99.2) ' 99 is returned. MyNumber = Int(-99.8) ' -100 is returned.					
	MyNumber = Fix(-99.8) '-99 is returned.					
	MyNumber = Int(-99.2) '-100 is returned.					
	MyNumber = Fix(-99.2) '-99 is returned.					

FormatCurr	ency Function							
Description	A formalized expression with the call values that use the defined call symbols on the computer's [Control Board] is returned.							
	FormatCurrency(expression[,NumDigitsAfterDecimal [,IncludeLeadingDigit [,UseParensForNegativeNumbers [,GroupDigits]]]) FormatCurrency Function Syntax has following factors.							
	Factor	T Oyritax rias	Description					
		A mandatory	/ factor. An expression whose format is specified.					
	NumDigitsAfterDecimal An optional factor. A number value indicating the number of digafter the decimal point. The Default Value is -1, showing the upof the computer's national settings.							
		An optional factor. A Tristate Constant showing whether to mark 0 before a valid number after the decimal point. For the value, refer to the following settings.						
	UseParensForNegative	An optional factor. A Tristate Constant showing whether to place a						
Syntax		negative value in a paranthesis. For the value, refer to the following settings.						
		An optional factor. A Tristate Constant showing whether to identify a number with the designated group distinguishing symbols according to the computer's national settings.						
	Settings IncludeLeadingDigit, UseParensForNegativeNumbers and GroupDigits factor have the following values							
	Constant	Value	Description					
	TristateTrue	-1	True					
	TristateFalse	0	False					
	TristateUseDefault	-2	Use of the computer's national settings.					
			he factor value that omits the computer's national setting symbols related to call values is decided by the computer's					
national setting value. Reference Memo								
	The entire setting information except previously acted 0 (zero) on [Number] tap is on [Call] tap of [National settings].							

FormatDate	teTime Function				
Description	A formalized exp	A formalized expression with date or time is returned			
	FormatDateTime(date[,NamedFormat])				
	FormatDateTime Function Syntax has following factors				
	Factor	Description			
	date	A mandatory factor. Specify a date expression.			
	NamedFormat	An optional factor. A number value showing the used date/time format.			
	Nameur omat	If this fac	tor is omitted, vbGeneralDate is used.		
	Settings NamedFormat factor has the following settings				
	Constant	Value	Description		
Syntax	vbGeneralDate	0	Mark date or time. If there is date part, mark the date in a simple date type, If there is time part, mark the time in a detailed time type. If date and time exist at the same time, mark both of them.		
	vbLongDate	1	Show date in the detailed date type designated by the computer's national settings.		
	vbShortDate	2	Show date in the simple date type designated by the computer's national settings.		
	vbLongTime		Show time in the time type designated by the computer's national settings.		
	vbShortTime	4	Show time in 24-hr type (hh:mm).		
	In the following example, FormatDateTime Function designates the expression in a long date				
	type and exports it to MyDateTime.				
Reference	Function GetCurrentDate				
1.010101100	'FormatDateTime specifies Date in a long date type.				
	GetCurrentDate = FormatDateTime(Date, 1)				
	End Function				

FormatNumber Function				
Description	A formalized expression with number is returned			
	FormatNumber(expression[,NumDigitsAfterDecimal [,IncludeLeadingDigit			
[,UseParensForNegativeNumbers [,GroupDigits]]])				
	FormatNumber Function Syntax has following factors			
Syntax				
	Factor Description			
	expression A mandatory factor. An expression whose format is specified.			

	An optional factor. A number value indicating the number of digits
NumDigitsAfterDecimal	after the decimal point. The Default Value is -1, showing the use
	of the computer's national settings.
	An optional factor. A Tristate Constant showing whether to mark 0
IncludeLeadingDigit	before a valid number after the decimal point. For the value, refer
	to the following settings.
Lloo Parano FarNagativa N	An optional factor. A Tristate Constant showing whether to place a
UseParensForNegativeN umbers	negative value in a parenthesis. For the value, refer to the
unibers	following settings.
	An optional factor. A Tristate Constant showing whether to identify
GroupDigits	a number with the designated group distinguishing symbols set up
	on [Control Board]. For the value, refer to the following settings.

Settings

IncludeLeadingDigit, UseParensForNegativeNumbers and GroupDigits factor have the following settings

Constant	Value	Description
TristateTrue	-1	True
TristateFalse	0	False
TristateUseDefault -2		The computer's national settings are used.

If more than one optional factor is omitted, the factor value that omits the computer's national setting value is used.

Memo

The entire setting information is on [Number] tap of [National Settings].

In the following example, FormatNumber Function specifies a number in a four-digit number of a decimal system.

Reference

Function FormatNumberDemo

Dim MyAngle, MySecant, MyNumber

MyAngle = 1.3' Define an angle in a radian value.

MySecant = 1 / Cos(MyAngle) 'Caculate the Secant value. .

FormatNumberDemo = FormatNumber(MySecant,4) ' Specify MySecant in a four-digit number of a decimal system.

End Function

FormatPerc	ent Function					
Description	An expression that h multiplied by 100 is re		racter % at the end and whose format is dea	signated in percentage		
	FormatPercent(expre	[,IncludeLeadingDigit				
	[,UseParensForNegativeNumbers [,GroupDigits]]]])					
	FormatPercent Function Syntax has following factors.					
	factor		Description			
	expression		A mandatory factor. A formalized expression	is returned.		
	NumDigitsAfterDecin	nal	An optional factor. A number value indicating after the decimal point. The Default Value is of the computer's national settings.	_		
	IncludeLeadingDigit		An optional factor. A Tristate Constant showing before a valid number after the decimal point to the following settings.			
Syntax	UseParensForNegativeNu mbers		An optional factor. A Tristate Constant show a negative value in a parenthesis. For the following settings.			
	GroupDigits		An optional factor. A Tristate Constant sidentify a number with the designated symbols set up on [Control Board]. For the following settings.	group distinguishing		
	Settings IncludeLeadingDigit, UseParensForNegativeNumbers, GroupDigits factor have the following settings					
	Constant	Value	Description			
	TristateTrue	-1	True			
	TristateFalse	0	False			
	TristateUseDefault	-2	The computer's national settings are used.			
	If more than one optional factor is omitted, the factor value that omits the computer's national					
	setting value is used.					
	Memo					
	The entire setting information is on [Number] tap of [National Settings].					
Reference	In the following example percentage.	In the following example, FormatPercent Function specifies an expression in a type of				
	Dim MyPercent					
	MyPercent = FormatPercent(2/32) 'MyPercent gets 6.25%.					

Description	A reference on automatic objects in the file is returned				
	Syntax	Syntax			
	GetObject([GetObject([pathname] [, class])			
	GetObject Function Syntax has following factors				
	Factor Description				
	pathname	An optional factor. A string showing the name and entire paths of a file that has the object to be searched. If <i>pathname</i> is omitted, <i>class</i> should exist.			
	class An optional factor. A string showing the Class of an object.				
0 4					
Syntax	The class follows	actor uses app	name.objectype syntax, and its configuration element is described		
Syntax	follows	actor uses app	name.objectype syntax, and its configuration element is described Description		
Syntax	follows				
Syntax	follows Configura		•		
Syntax	follows Configura		Description A mandatory factor. A string showing the name of the application		

Hex Function	on					
Description	A string showing the hexadecimal value of a number is returned					
Syntax	Hex(number)					
Cyritax	The number factor should be a valid expres	ssion				
	Numbers that are not integer are rounded of	off to the nearest integer before calculating.				
	Number Value	Result of Hex Function				
	Null	Null				
	Empty	0				
	Numbers other than two value above	Hexadecimal characters less than 8				
Reference	Hexadecimal can be expressed by attaching &H before the numbers in a valid range. For example, &H10 expresses hexadecimal mark of decimal number 16. In the following example, Hex Function returns the hexadecimal value of a number. Dim MyHex					
	MyHex = Hex(5) '5 is returned.					
	MyHex = Hex(10) 'A Is returned.					
	MyHex = Hex (459) '1CB is returned.					

Hour Function				
Description	An integer indicating the hour of a day from 0 through 23 is returned.			
Syntox	Hour(time)			
Syntax	The time factor is an expression showing time. If time has the value zero, Null is returned			
	In the following example, Hour Function exports hour from the current time.			
Reference	Dim MyTime, MyHour			
	MyTime = Now			
	MyHour = Hour(MyTime) ' MyHour gets a number showing the current hour			

Description	It displays a prompt in the dialog box or it waits until any text is inputted or a button is			
-	pressed or it returns the inputted information			
	InputBox(prompt[, title][, default][, xpos][, ypos][, helpfile, context])			
	InputBox Function Syntax has following factors.			
	factor	Description		
		A literal expression showing message in the dialog box. prompt is about 1,024		
		characters long at the most even though it varies depending on the width of the		
	prompt	characters. If prompt is long enough to take more than two lines, the lines ca		
		be divided by carriage return character (Chr(13)), line feed character(Chr(10)) of		
		a combination of carriage return and line feed characters (Chr(13) & Chr(10)).		
	title	A literal expression showing on the title line in the dialog box. If title< is omitted		
	lille	the application program title appears on the tile line.		
	default	A literal expression basically displayed on the text box if noting is inputted.		
Curatav		default is omitted, an empty text box appears.		
Syntax		A numerical expression specifying the horizontal length from the screen left en		
	xpos	to the dialog left end in a twip unit. If xpos is omitted, the dialog box is located in		
		the middle on the screen.		
		A numerical expression specifying the vertical length from the screen upper en		
	ypos	to the dialog upper end in a twip unit. If ypos is omitted, the dialog box is locate		
		on the point 1/3 above from the bottom of the screen.		
	halmfila	A literal expression identifying the 'Help' file to provide assistance according to		
	helpfile	the situation If helpfile is provided, it is necessary also to provide context.		
		A numerical expression identifying the Help context number as the relevant		
	context	Help items designated by the author. If context is provided, it is necessary als		
		to provide helpfile.		

box.

In InputBox Function, the contents in the text box are returned if [Ok] or Key is pressed. If [Cancel] is pressed, string ("") whose length is 0 is returned.

In the following example, InputBox Function displays a text box and assigns string to variable.

Dim Input

Input = InputBox("Input a name")

MsgBox ("The following name is inputted: " & Input)

InStr Function

Description The position on which a string firstly appears in other string is returned.

InStr([start,]string1, string2[, compare])

InStr Function Syntax has following factors

factor	Description
	An optional factor. A numerical expression specifying a position at which each
start	search starts. If omitted, search starts from the first character. The start factor is Null,
	errors takes place. To specify Compare, the start factor is needed.
string1	A mandatory factor. A literal expression to be searched.
string2	A mandatory factor. A literal expression subject to searching.
	An optional factor. A number value displayed in a comparison type to be used for
compare	assessing sub strings. For the value, refer to the following settings. If omitted, Run
	Binary Comparison.

Settings

Syntax

Comparison factors have the following values.

Constant	Val	Description
	ue	
vbBinaryCompare	0	Run Binary Comparison.
vbTextCompare	1	Run Text Comparison.

Result Value

InStr Function returns the following values.

Condition	Result of InStr Function
If the length of string1 is 0	0
If string1 is Null	Null
If the length of string2 is 0	start
If string2 is Null	Null

	If there is no string2	0	
	If string1 has string2	The relevant location in string1	
	start > Len(string2)	0	
	In the following example, InStr searches a string.		
	Dim SearchString, SearchChar, MyPos		
SearchString ="XXpXXpXXPXXP" 'String to be searched			
	SearchChar = "P"	' Search "P"	
	' A text comparison starts at position 4. 6 is returned.		
	MyPos = Instr(4, SearchString, SearchChar, 1)		
Reference	' A binary comparison starts at position 1. 9 is returned. MyPos = Instr(1, SearchString, SearchChar, 0)		
Kelelelice	'Comparison is binary by default (last argument is omitted). MyPos = Instr(SearchString, SearchChar) 'Returns 9. 'A binary comparison starting at position 1. Returns 0 ("W" is not found). MyPos = Instr(1, SearchString, "W")		
	Memo		
	InStrB Function uses Byte data that	at the string has. InStrB Function returns Byte position rath	
	than the position where a string appears in the other string for the first time.		

InStrRev Function				
Description	The position on which a string firstly appears in other string is returned at the end of the string.			
	InStrRev(string1, string2[, start[, compare]])			
	InStrRev Fu	nction Syntax has following factors.		
	factor	Description		
	string1	A mandatory factor. A literal expression to be searched.		
	string2	A mandatory factor. A literal expression subject to searching.		
Syntax	start	An optional factor. <u>A numerical expression</u> specifying a position at which each search starts. If omitted, -1 is used and it means search starts at the last character If <i>start</i> is <u>Null</u> , errors takes place.		
	compare	An optional factor. A number value displayed in a comparison type to be used for assessing sub strings. If omitted, Run Binary Comparison. For the value, refer to the following settings.		

Settings

Comparison factors have the following values

Constant	Valu	Description
	е	
vbBinaryCompare	0	Run Binary Comparison.
vbTextCompare	1	Run Text Comparison.

Result Value

InStrRev Function returns the following values

Condition	InStrRev FunctionResult of
If the length of string1 is 0	0
If string1 is Null	Null
If the length of string2 is 0	start
If string2 is Null	Null
If there is no string2	0
If string1 has string2	The relevant location in string1
start > Len(string2)	0

In the following example, InStrRev Function searches a string.

Dim SearchString, SearchChar, MyPos

SearchString ="XXpXXpXXPXXP" 'String to be searched

SearchChar = "P" ' Search "P"

' A binary comparison starts at position 10. 9 is returned.

MyPos = InstrRev(SearchString, SearchChar, 10, 0)

Reference

' A text comparison starts at the last position. 12 is returned.

MyPos = InstrRev(SearchString, SearchChar, -1, 1)

' For comparison, the Default Value is binary (The last factor is omitted). 0 is returned.

MyPos = InstrRev(SearchString, SearchChar, 8)

Memo InStrRev Function Syntax is different from InStr Function Syntax.

Int Function		
Description	The integer part of a number is returned.	
	Int(number)	
Syntax	Fix(number)	

	The number factor should be a valid expression. number에 Has the value zeroNull is returned.		
	Both of Int Function and Fix Function return the integer value that shows the results of removing		
	the part after		
	the decimal point.		
	If the difference between Int Function and Fix Function is a negative number, Int Function returns		
	the first negative integer that is lower or equal to the number but, Fix Function returns the		
	negative integer that is higher or equal to the number. For example, Int Function converts -8.4 to		
	-9 and Fix Function converts -8.4 to -8.		
Reference	Fix(number) Function is equal to the following expression.		
11010101100			
	Sgn(number) * Int(Abs(number))		
	The following example shows how Int and Fix Function convert the integer part of a number.		
	MyNumber = Int(99.8) '99 is returned.		
	MyNumber = Fix(99.2) '99 is returned.		
	MyNumber = Int(-99.8) '-100 is returned.		
	MyNumber = Fix(-99.8) '-99 is returned.		
	MyNumber = Int(-99.2) '-100 is returned.		
	MyNumber = Fix(-99.2) '-99 is returned.		

IsArray Fun	ction
Description	A boolean value showing whether variable is Array or not is returned
Syntax	IsArray(varname)
Syntax	The varname factor is variable.
	IsArray Function returns True if variable is Array and it returns False if variable is not Array.
	IsArray Function is especially useful if Variant that contains Array is used.
	In the following example, IsArray Function tests whether MyVariable is Array or not.
Reference	Dim MyVariable
Reference	Dim MyArray(3)
	MyArray(0) = "Sunday"
	MyArray(1) = "Monday"
	MyArray(2) = "Tuesday"
	MyVariable = IsArray(MyArray) ' MyVariable gets "True."

IsDate Function		
Description	A boolean value showing whether an expression is converted to date is returned	
Syntax	IsDate(expression)	
	The expression factor is a literal expression that can be recognized as a date expression or date	

	or time		
	IsDate Function returns True if the relevant expression is date or it can be converted to a valid		
	date while if not, False is returned. Even though a date range from January 1, AD 100 to January		
	1, AD 9999 is valid on the Microsoft Windows, its range varies depending on the operation		
	system.		
	In the following example, IsDate Function decides whether an expression can be converted to		
Deference	date.		
Reference			
	Dim MyDate, YourDate, NoDate, MyCheck		
	MyDate = "October 19, 1962": YourDate = #10/19/62#: NoDate = "Hello"		
	MyCheck = IsDate(MyDate)	'True is returned.	
	MyCheck = IsDate(YourDate)	'True is returned.	
	MyCheck = IsDate(NoDate)	' False is returned	

IsEmpty Fu	nction		
Description	A boolean value showing whether Variable is initialized or not is returned		
	IsEmpty(expression)		
Syntax	The expression factor can be any expression. However, a typical expression factor is the name		
Symax	of a single variable because IsEn	npty Function is used to ensure whether an individual variable is	
	initialized or not		
	IsEmpty Function returns True	if the variable is not initialized or the variable is expressly	
	designated as Empty or False is returned. If the expression has more than two variables, False is		
	always returned.		
	In the following example, IsEmpty Function judges whether the variable is initialized.		
	Dim MyVar, MyCheck		
Reference	MyCheck = IsEmpty(MyVar)	'True is returned.	
	MyVar = Null	' Assign Null.	
	MyCheck = IsEmpty(MyVar)	' False is returned.	
	MyVar = Empty	' Assign Empty.	
	MyCheck = IsEmpty(MyVar)	'True is returned.	

IsNull Function		
Description	A boolean value showing whether a Null expression has any valid date that is, it is Null or not is returned	
Syntax	IsNull(expression) The expression factor can be any expression	

	IsNull Function retunrs True i	f the expression is Null that is, it have no valid date, otherwise,
	False is returned. If the expres	ssion consists of more than two variables, Null that belongs to the
	entire configuration variables re	eturns True for the full expressions.
	Null value means the relevan	t variable has no valid data. Null is different from Empty, which
	shows the relevant variable is	s not yet initialized and it is also different from String (""), whose
	length is 0 and it is sometimes	called Null String.
	Memo	
	It is decided whether an expre	ession has Null value by using IsNull Function. In some cases, an
	expression is always False ev	en though True is expected as seen in expressions such as If Var
Reference	= Null and If Var <> Null. It bed	comes False because the expression itself contains Null.
	In the following example, IsNul	Il Function decides whether the variable has Null value.
	Dim MyVar, MyCheck	
	MyCheck = IsNull(MyVar)	' False is returned.
	NA. A / a a NI. II	I Designate Nell
	MyVar = Null	Designate Null.
	MyCheck = IsNull(MyVar)	'True is returned.
	MyVar = Empty	' Designate Empty.
	MyCheck = IsNull(MyVar)	Designate False.
	,	

IsNumeric F	unction		
Description	A boolean value showing whether an expression can be evaluated with numbers		
Syntax	IsNumeric(expression)		
Syntax	The expression factor can be ar	ny expression	
	If the expression is a date expre	ession, IsNumeric Function returns False.	
	In the following example, IsNum	neric Function decides whether the variable can be evaluated with	
	numbers.		
	Dim MyVar, MyCheck		
	MyVar = 53	' Designate a value.	
Reference	MyCheck = IsNumeric(MyVar)	'True is returned.	
	MyVar = "459.95"	' Designate a value.	
	MyCheck = IsNumeric(MyVar)	'True is returned.	
	MyVar = "45 Help"	Designate a value.	
	MyCheck = IsNumeric(MyVar)	' False is returned.	

IsObject Fu	nction		
Description	A boolean value showing whether an expression refers valid automatic objects is returned		
Syntox	IsObject(expression)		
Syntax	The expression factor can be any expression		
IsObject Function returns True if the relevant expression is a subtype variable of Obj			
	customized object, otherwise, False is returned.		
	In the following example, IsObject Function decides whether the identifier shows individual		
	variables.		
Reference			
	Dim MyInt, MyCheck, MyObject		
	Set MyObject = Me		
	MyCheck = IsObject(MyObject) 'True is returned.		
	MyCheck = IsObject(MyInt)		

	T	
Description	A string made by combining various sub strings included in Array is returned	
	Join(list[, delin	niter])
	Join Function	Syntax has following factors
	factor	Description
Syntox	list	A mandatory factor. A one-dimension Array including sub strings to be combined.
Syntax	delimiter	An optional factor. A character used to separate sub strings of the returned string. If omitted, empty character (" ") is used. If <i>delimiter</i> is a string whose length is 0, the entire items in the list are combined without any symbol to divide them.

LBound Function			
Description	The smallest subscript available in the designated Array level is returned		
	LBound(arrayname[, dimension])		
	LBound Function Syntax has following factors		
	Factor	Description	
Syntax	arrayname	Comply with the notation rule of general <u>variable</u> with Array variable name	
	dimension	An integer showing the lower limit of the returned level is returned. Use 1 for one dimension, 2 for two dimension, etc. If <i>dimension</i> is omitted, 1 is deemed.	

	LBound Function is used along with UBound Function to decide the size of Array. If UBound
Reference	Function is used, the upper limit can be known in the Array level.
	The lower limit of the entire dimensions is always 0

LCase Function		
Description	A string converted to decimal point is returned	
Syntox	LCase(string)	
Syntax	The string factor should be a valid character expression. If there is Null in string, Null is returned	
	This function converts only capital letters to small letters and makes other characters except	
	them remain as they are without converting.	
Reference	In the following example, CDate Function converts capital letters to small letters.	
Reference	Dim MyString	
	Dim LCaseString	
	MyString = "VBSCript"	
	LCaseString = LCase(MyString) ' LcaseString gets "vbscript."	

Left Functio	n	
Description	Characters as many as designated from the left are returned	
	Left(string, I	ength)
	Left Function	n Syntax has following factors
	Factor	Description
	otrina	A literal expression to be returned from the character at the left end. If there is
Syntax	string	Null in string, Null is returned.
		A numerical expression showing the character count to be returned. If it is 0, a
	length	string whose length is 0("") is returned. Their entire strings are returned if it is
		equal or more than the character count that is in string.
	To decide th	e character count of string, use Len Function.
	In the following example, Left Function returns the first three characters of MyString.	
	Dim MyString, LeftString	
Reference	MyString = "VBSCript"	
Reference	LeftString = Left(MyString, 3) 'LeftString gets "VBS."	
	Memo	
	LeftB Function uses Byte data that the string has. It designates Byte count rather than character	
	count to be	returned to length factor.

Len Functio	n	
Description	The Byte count needed for saving character count or variable that is in the string is returned	
	Len(string varna	ame)
	Len Function Syr	ntax has following factors
Syntox	Factor	Description
Syntax	string	A literal expression. If there is Null in string, Null is returned.
	varname	It should be a valid variable name. Varname has the value zero, Null is
		returned.
	In the following e	example, Len Function returns the character count of a string.
	Dim MyString	
	MyString = Len("VBSCRIPT") 'MyString gets value 8.	
Reference		
	Memo	
	LenB Function uses Byte data that the string has. Instead of returning character count to the	
	string, LenB returns Byte count used for expressing this string.	

LoadPicture Function		
Description	If a picture object is returned, it can be used only on the 32-bit platform	
Cuntou	LoadPicture(picturename)	
Syntax	The picturename factor is a literal expression showing the name of a picture file to be loaded	
	LoadPicture Function recognizes the following graphic types; bitemap files(.bmp), icon files(.ico),	
Reference	execution length symbolization files(.rle), meta files(.wmf), improved meta files(.emf), GIF	
	files(.gif) and JPEG files(.jpg).	

Log Functio	n
Description	A natural logarithm of a number is returned
Syntax	Log(number)
Symax	The number factor should be a valid expression more than 0
	A natural logarithm is a log whose base is e. Constant e is about 2.718282.
	Natural logarithm logn(x) whose base is n and whose value is x can be calculated by dividing
	natural logarithm logn(x) by natural logarithm logn(n).
Reference	Logn(x) = Log(x) / Log(n)
Kelelelice	The following example shows a customized Function that calculates Log Function whose base is
	10.
	Function Log10(X)
	Log10 = Log(X) / Log(10)
	End Function

LTrim Funct	tion
Description	LTrim Function returns a string copy which has no left empty space or no right empty space or
Description	neither left nor right empty space
	LTrim(string)
	RTrim(string)
Syntax	Trim(string)
	The string factor should be a valid character expression. If there is Null in string, Null is returned.
	In the following example, LTrim Function trims the left empty space, RtrimFunction trims the right
	empty space and Trim Function trims both of them.
Reference	Dim MyVar
	MyVar = LTrim(" vbscript ") 'MyVar gets "vbscript ."
	MyVar = RTrim(" vbscript ") 'MyVar gets " vbscript."
	MyVar = Trim(" vbscript ") 'MyVar gets "vbscript"."

Mid Function	on			
Description	Charaters as many as designated by string are returned.			
	Mid(string, start[, length	th])		
	Mid Function Syntax has following factors			
	factor	Description		
	atring	A literal expression containing the characters to be returned. If		
	string	there is Null in string, Null is returned.		
		A character position at which returning starts in the string. If start		
Syntax	start	factor is more than character count of string, Mid Function returns a		
		string ("") whose length is 0 is returned.		
		Character count to be returned. If omitted or the actual character		
	length	count is less than the character count of length factor including start		
		factor, the entire characters from the start position to the end		
		character of the relevant string shall be returned.		
	The character count o	f a string can be decided by Len Function.		
	In the following example, Mid Function returns six characters starting from the fourth character of			
	a string.			
Reference				
	Dim MyVar			
MyVar = Mid("VB Script is fun!", 4, 6) 'MyVar returns "Script."		pt is fun!", 4, 6) 'MyVar returns "Script."		

Appendix 3 Visual Basic Script Help

	Memo
	MidB Function uses Byte data that the string has. In this Function, Byte count is designated
	rather than character count.

Minute Function		
Description	An integer indicating the minute from 0 through 59 is returned	
Syntax	Minute(time)	
	The time factor is an expression showing time. The time has the value zero, Null is returned	
	In the following example, Minute Function returns minute.	
Reference	Dim MyVar	
	MyVar = Minute(Now)	

Month Function			
Description	The integer indicating month from 1 through 12 is returned		
Syntax	Month(date)		
	The date factor is an expression showing the date. If date has the value zero, Null is returned		
	In the following example, Month Function returns the current month.		
Reference	Dim MyVar		
	MyVar = Month (Now) ' MyVar gets a number corresponding to the current month		

MonthName Function				
Description	A string showing the designated month is returned			
	MonthName(mo	onth[, abbreviate])		
	MonthName Fu	nction Syntax has following factors.		
	Factor	Description		
Syntax	month	A mandatory factor. Number showing month such as 1 for January and 2 for February, etc.		
- Cymain	An optional factor. A boolean value showing whether to display a rabbreviate name in an abbreviated word type. If omitted, it become False, the D Value, and shows its full name.			
Reference	date expression Dim MyVar	example, MonthName Function returns the month name to be inputted to the in an abbreviated word type.		
	MyVar = MonthName(10, True) ' MyVar gets "Oct."			

	A value that shows whether any massage is displayed in the dialog box or whether it waits until					
Description	A value that shows whether any message is displayed in the dialog box or whether it waits ur					
		any text is inputted, or indicates the button pressed by the user is returned				
	MsgBox(prompt	il, buttor	ijį, titlejį, hel	pfile, context])		
	Mar Day English	. 0	Las Callas	See Contract		
	MsgBox Function	on Synta	ix nas follow			
	Factor	Δ 124		Description		
			•	on showing message in the dialog box. prompt is about		
				long at the most even though it varies depending on the		
	prompt		of the char	, , , ,		
				an be divided by carriage return character (Chr(13)), line		
				hr(10)) or a combination of carriage return and line fee		
		+	· · ·	3) & Chr(10)).		
			•	ression showing the kind and number of the button to be		
	button	'	•	/pes to be used, the sum of values designating targets of		
			basic button confirmation and message box. For the value, refer to the			
		following settings. If omitted, 0 appears, the Default Value of the button.				
	title		A literal expression showing on the line for the title in the dialog box. If <i>title is</i>			
		+	omitted, the application program title appears on the tile line.			
			A literal expression identifying the 'Help' file to provide assistance according			
Syntax	helpfile	to the situation If <i>helpfile</i> is provided, it is necessary also to provide <i>context</i> .				
,		+		ne 16-bit platform.		
	context I		A numerical expression identifying the Help context number as the relevant			
		- I	Help items designated by the author. If <i>helpfile</i> is provided, it is necessary			
	also to provide <i>context</i> . Not available in the 16-bit platform.					
	0-44					
	Settings The button factor	or boo th	o following o	actings		
	The button factor	ภ กลร แ	ie rollowing s	settings.		
	Constan	t	Value	Description		
	vbOKOnly		0	Display OK button only.		
	vbOKCancel		1	Display OK and Cancel button.		
	vbAbortRetryIgi	nore	2	Display Abort, Retry and Ingnore button.		
	vbYesNoCance		3	Display Yes, No, and Cancel button.		
	vbYesNo		4	Display Yes and No button.		
	vbYesNo		4 5	Display Retry and Cancel button.		

Display Warning Query Icon.

Display Warning Message Icon.

32 48

vbQuestion

vbExclamation

vbInformation	64	Display Information Message Icon.
vbDefaultButton1	0	The first button is the default one.
vbDefaultButton2	256	The second button is the default one.
vbDefaultButton3	512	The third button is the default one.
vbDefaultButton4	768	The fourth button is the default one.
	0	An application modal. The user has to answer to the
vbApplicationModal		questions in the message box before continuing to work
		on the current application program.
 vbSystemModal	4096	A system modal. All application programs aborts until the
VDSysternivioual		user answer to the questions in the message box.

The first group values (0-5) show the button types and numbers displayed in the dialog box. The second group (16, 32, 48, 64) shows icon types. The third group (0, 256, 512, 768) decides basic buttons and the fourth group (0, 4096) decides the modal of the message box. When the final value of the button factor is obtained by adding values, only one number is used from each group.

Result Value

MsgBox Function returns the following values

Constant	Value	Button
vbOK	1	OK
vbCancel	2	Cancel
vbAbort	3	Abort
vbRetry	4	Retry
vblgnore	5	Ignore
vbYes	6	Yes
vbNo	7	No

If both helpfile and context are provide, press F1 key to see Help items for each situation.

If the dialog box has [Cancel] button, pressing Esc key leads to the same results as pressing [Cancel] button. If the dialog box has [Help] button, Help items are provided for each situation. However, one of other buttons is pressed, any value is not returned.

Reference

In the following example, MsgBox Function returns the value that displays the message box and explains the selected button.

Dim MyVar

MyVar = MsgBox ("Hello?", 65, "MsgBox Example") ' MyVar gets value 1 or 2 according to the selected button

Now Function		
Description	The current date and time are returned according to the computer's system date and time	
Syntax	Now	
	In the following example, Now Function returns the current date and time.	
Reference	Dim MyVar	
	MyVar = Now ' MyVar gets the current date and time	

Oct Functio	n						
Description	An octal value of a number is returned.						
Syntox	Oct(number)						
Syntax	The number factor should be a valid expression						
	Numbers that are not integer are	e rounded off to the nearest integer be	fore calculating				
	Value Kind of a number	Result of Oct Function					
	Null	Null					
	Empty	0					
	Numbers other than two value	Octal characters less than 11					
	above						
Reference	Octal can be expressed by atta &O10 shows the octal notation of In the following example, Oct Fu		/alid range. For example,				
	Dim MyOct						
	MyOct = Oct(4) '4 is return						
	MyOct = Oct(8) ' 10 is retui						
	MyOct = Oct(459) '713 is ret	urned					

Replace Function				
Description	A string that replaces the designated sub string with other sub strings is returned			
	Replace(express	ion, find, replacewith[, start[, count[, compare]]])		
	Replace Function Syntax has following factors			
	factor	Description		
Syntax	expression	A mandatory factor. A literal expression containing the sub strings to be		
Syntax	expression	replaced.		
	find	A mandatory factor. A sub string to be found.		
	replacewith	A mandatory factor. A sub string to be replaced.		
	start	An optional factor. A position at which searching a sub string starts in the		

	expression. If omitted, 1 is deemed. It shall be used along with count.
	An optional factor. Number to replace the sub string. If omitted, Default
number	Value becomes -1 and replaces all of the relevant strings. It shall be used
	along with start.
	An optional factor. A number value showing the comparison type of the sub
compare	string to be used. For the value, refer to the following settings. If omitted,
	Default Value becomes 0 and performs binary comparison.

Settings

Comparison factors have the following values

Constant	Value	Description
vbBinaryCompare	0	Run Binary Comparison.
vbTextCompare	1	Run Text Comparison.

Result Value

Replace Function returns the following values

Condition	Result of Replace Function
If it is expression whose length is 0	A string whose length is 0("")
If expression is Null	Error
If it is find whose length is 0	Expression copy
If it is replacewith whose length is 0	Omission of the entire sesarches for find and expression
	сору
start > Len(expression)	A string whose length is 0
If number is 0	expression copy

Replace Function starts at the start position and replaces at the end of the expression string, and then, returns the string. That is, the returned string as a result is not the copy of the original strings.

In the following example, Replace Function returns the string.

Reference

Dim MyString

'If a Binary Comparison starts at the beginning of a string, "XXYXXPXXY" is returned.

MyString = Replace("XXpXXPXXp", "p", "Y")

'If a Text comparison starts at position 3, "YXXYXXY" is returned.

MyString = Replace("XXpXXPXXp", "p", "Y", 3, -1, 1)

Right Functi	ion		
Description	Characters as many as designated from the right are returned		
	Right (string	g, length)	
	Right Funct	ion Syntax has following factors.	
	Factor	Description	
Syntax	string	A literal expression to be returned from the right end character. If there is Null in string, Null is returned.	
		A numerical expression showing the character count to be returned. If it is 0, a	
	length	string whose length is 0("") is returned. Their entire strings are returned if it is equal or more than the character count that is in <i>string</i> .	
Reference	In the follow side of the side	ing, MyStr	
		ount to be returned to length factor.	

Description	A random number is returned			
Cuntav	Rnd[(number)]			
Syntax	The number factor should be a valid expression			
	Rnd Function returns	s a value that is bigger than 0 and smaller than 1. The number value dec		
	how Rnd Function generates random numbers			
	Number Value	Result of Rnd Function		
	< 0	Every time the same number by seed number		
Reference	> 0	Next random number created sequentially.		
	= 0	The latest random number		
	Omitted	Next random number created sequentially.		

previous numbers are used as seeds to have next sequential numbers in continual calls for Rnd Function at each time.

Before calling Rnd, use Randomize statement and initialize the random number generator with seed based on the system timer.

To make random integer in a given range, use the following formula:

Int((upperbound - lowerbound + 1) * Rnd + lowerbound)

upperbound refers to the biggest number and lowerbound refers to the smallest number in the range.

Memo

To repeat the sequence of generating random numbers, call Rnd Function with negative right before using Randomize with number factors. To use Randomize with the same value, the previous sequence is not repeated.

RGB Functi	on	
Description	The integers showing RGB color values are returned.	
	RGB(red, green, blue)	
	RGB Function has following factors	
	factor	Description
Syntax	red	A mandatory factor. Numbers 0 through 255 indicating red color elements.
	green	A mandatory factor. Numbers 0 through 255 indicating green color elements.
	blue	A mandatory factor. Numbers 0 through 255 indicating blue color elements.
	program reg	nowing RGB color values are necessary for methods and properties of the application ceiving color designation. RGB color values designate relative concentration of red, blue and shows particular colors. contains red value, middle byte contains green value and upper byte contains blue
Reference	Even though the following Function shows the reverse byte order, it provides the same	
	information	to the application programs that need that sequence.
	Function RevRGB(red, green, blue)	
	RevRG	B= CLng(blue + (green * 256) + (red * 65536))
	End Function	on
	For RGB Fu	inction's factor values that exceed 255, they are deemed as 255

Round Fund	ction		
Description	The number rounded off at the designated decimal place is returned		
	Round(expression[, numdecimalplaces])		
	Round Function Syntax ha	as following factors	
	Factor	Description	
Syntax	expression	A mandatory factor. A numerical expression to be rounded off.	
	numdecimalplaces	An optional factor. A number showing decimal place. If omitted,	
	Tiurnuecimaipiaces	Round Function returns integers.	
	In the following example, Round Function rounds off a number two-digit decimal.		
Reference	Dim MyVar, pi		
Reference	pi = 3.14159		
	MyVar = Round(pi, 2) 'MyVar gets 3.14		

RTrim Func	tion
Description	LTrim Function returns a string copy which has no left empty space or no right empty space or
Description	neither left nor right empty space.
	LTrim(string)
	RTrim(string)
Syntax	Trim(string)
	The string factor should be a valid character expression. If there is Null in string, Null is returned
	In the following example, LTrim Function trims the left empty space, Rtrim Function trims the
	right empty space and Trim Function trims both of them.
Reference	Dim MyVar
	MyVar = LTrim(" vbscript ") 'MyVar gets "vbscript ".
	MyVar = RTrim(" vbscript ") 'MyVar gets " vbscript".
	MyVar = Trim(" vbscript ") 'MyVar gets "vbscript".

ScriptEngine Function			
Description	A string showing the script language in use is returned		
	Result Value		
	ScriptEngine Function returns the following strings		
Syntax	String Description		
	VBScript	It shows that Microsoft(R) Visual Basic(R) Scripting Edition is the current	
		script engine.	

	JScript	It shows that Microsoft JScript(R) is the current script engine	
	VBA	It shows that Microsoft Visual Basic for Applications is the current script	
		engine	
	In the following e	xample, ScriptEngine Function returns the script language in use.	
	Function GetScri	ptEngineInfo	
	Dim s		
	s = "" 'Scrip	t a string with necessary information.	
Deference	s = ScriptEngir	ne & "Version"	
Reference	s = s & ScriptEngineMajorVersion & "."		
	s = s & ScriptEngineMinorVersion & "."		
	s = s & ScriptEngineBuildVersion		
	GetScriptEngir	eInfo = s 'Result is returned.	
	End Function		

ScriptEngin	eBuildVersion Function
Description	The configuration version number of the script language in use is returned
Syntax	ScriptEngineBuildVersion
	The returned Result Value is equal to the version information contained in the DLL of the script language in use. In the following example, ScriptEngineBuildVersion Function returns the configuration version number of the script engine.
Reference	Function GetScriptEngineInfo Dim s s = "" 'Script a string with essential information. s = ScriptEngine & "Version " s = s & ScriptEngineMajorVersion & "." s = s & ScriptEngineMinorVersion & "." s = s & ScriptEngineBuildVersion GetScriptEngineInfo = s 'Result is returned. End Function

ScriptEngineMajorVersion Function		
Description	The major version number of the script language in use is returned	
Syntax	ScriptEngineMajorVersion	
	The returned Result Value is equal to the version information contained in the DLL of the script	
Reference	language in use.	
	In the following example, ScriptEngineMajorVersion Function returns the version number of the	

script engine.
Function GetScriptEngineInfo
Dim s
s = "" 'Script a string with essential information.
s = ScriptEngine & " Version "
s = s & ScriptEngineMajorVersion & "."
s = s & ScriptEngineMinorVersion & "."
s = s & ScriptEngineBuildVersion
GetScriptEngineInfo = s 'Result is returned.
End Function

ScriptEngineMinorVersion Function				
Description	The minor version number of the script language in use is returned			
Syntax	ScriptEngineMinorVersion			
	The returned Result Value is equal to the version information contained in the DLL of the script			
	language in use.			
	In the following example, SScriptEngineMinorVersion Function returns the minor version number			
	of the script engine.			
	Function GetScriptEngineInfo			
Reference	Dim s			
Reference	s = "" 'Script a string with necessary information.			
	s = ScriptEngine & " Version "			
	s = s & ScriptEngineMajorVersion & "."			
	s = s & ScriptEngineMinorVersion & "."			
	s = s & ScriptEngineBuildVersion			
	GetScriptEngineInfo = s 'Result is returned.			
	End Function			

Second Function			
Description	An integer indicating the second from 0 through 59 is returned		
	Second(time)		
Syntax	The time factor is an expression showing time. If the time factor has the value zero, Null is		
	returned.		
	In the following example, Second Function returns the current second.		
Reference	Dim MySec		
	MySec = Second(Now) 'MySec has information on the current second.		

Sgn Function					
Description	An integer showing number sign is returned				
	Sgn(number)				
	The number factor should be a valid expression.				
	Result Value				
Syntax	Sgn Function returns the following values.				
	Number Value Result of Sgn Function				
	> 0 , 1				
	= 0, 0				
	< 0 -1				
	The sign of a number factor decides the result value of Sgn Function.				
	In the following example, Sgn Function decides number signs.				
Dim MyVar1, MyVar2, MyVar3, MySign					
Reference	MyVar1 = 12: MyVar2 = -2.4: MyVar3 = 0				
	MySign = Sgn(MyVar1) '1 is returned.				
	MySign = Sgn(MyVar2) '-1 is returned.				
	MySign = Sgn(MyVar3) ' 0 is returned.				

Sin Function	า	
Description	The sine value of an angle is returned	
Syntax	Sin(number)	
Symax	The number factor should be a valid expression showing the angle in a radian	
	Sin Function returns the ratio between lengths of two sides by using alternate angles of a right	
	triangle. This ratio is the one obtained by dividing the length of the count side to the relevant	
	angle by the length of the hypotenuse of a right triangle. The returned results are ranged	
between -1 and 1.		
	To convert angle to radian, multiply angle by pi/180 and to convert radian to angle, multiply	
Reference	radian by 180/pi.	
Reference	In the following example, Sin Function returns the tangent value of the angle.	
	Dim MyAngle, MyCosecant	
	MyAngle = 1.3 ' Define an angle in a radian value.	
	MyCosecant = 1 / Sin(MyAngle) 'Calculate cosine value.	

Space Func	Space Function				
Description	The string that contains empty space as ma	ny as designated is returned			
Syntox	Space(number)				
Syntax	be filled in the string with.				
	In the following example, Space Function	returns a string that contains spaces as many as			
	designated.				
Reference					
Dim MyString					
	MyString = Space(10)	' A string that has 10 spaces is returned.			
	MyString = "He" & Space(10) & "low?"	10 spaces are inserted between strings			

Split Function				
Description	One dimension Array based on 0, which contains sub strings as many as designated is returned.			
	Split (expression[, delimiter[, number[, compare]]])			
	Split Function Syntax has f	following	g factors.	
	Factor		Description	
			datory factor. A literal expression coushing symbols. If the length of	•
	expression	returns	empty Array, that is, Array that	
		elemer	nt and data.	
		An opt	ional factor. A string character used	to identify the limit of a
	delimiter	sub st	tring. If omitted, empty character	(" ") is deemed as a
		disting	uishing symbol. <i>Delimiter</i> is 0 lo	ong, a single element
		containing expression strings is returned.		
Syntax	number	An opt	tional factor. A number of a sub str	ring to be returned1
		shows	that all of sub strings are to be return	ned.
		An opt	ional factor. A number value showi	ng the <u>comparison</u> type
	compare	of the	sub string to be used. For the valu	e, refer to the following
		setting	S.	
	Settings			
Comparison factors have the following values				
	Constant	Value	Description	
	vbBinaryCompare	0	Run Binary Comparison.	
	vbTextCompare	1	Run Text Comparison.	
		0 11		
Reference	In the following example, Split Function returns the string. This Function executes text			
	comparison of distinguishing characters and returns all of sub strings.			

Dim MyString, MyArray MyString = Split("VBScriptXisXfun!", "x", -1, 1) ' MyString(0) gets "VBScript". ' MyString(1) gets "is" ' MyString(2) gets value"fun!"

Sqr Function	n	
Description	The square root of	a number is returned
Comptant	Sqr(number)	
Syntax	The number factor	is a valid expression that is equal or higher than 0.
	In the following exa	ample, Sqr Function calculates the square root of a number.
Reference	MySqr = Sqr(4) $MySqr = Sqr(23)$	' 2 is returned. ' 4.79583152331272 is returned.
	MySqr = Sqr(0)	' 0 is returned.
	MySqr = Sqr(-4)	' It causes runtime errors

StrComp Fu	StrComp Function				
Description	The result va	alue of cor	nparing	strings is returned	
	StrComp(str	ing1, string	g2[, con	npare])	
	StrComp Fu	nction Syn	ıtax has	following factors.	
	factor			Description	
	string1	A manda	tory fac	tor. A valid character expression.	
	string2	A manda	tory fac	tor. A valid character expression.	
		An option	nal facto	or. A number value displayed in a	comparison type to be used
	compare	for asses	sing str	ings. If omitted, Run Binary Compa	arison. For the value, refer to
		the follow	ving sett	tings.	
Syntax					
	Settings				
	Comparison	factors ha	ve the f	ollowing values.	
	Cons	tant	Value	Description	
vbBinaryCompare 0 Run Binary Comparison.				Run Binary Comparison.	
vbTextCompare 1 Run Text Comparison.					
	Result Value				
	StrComp Function returns the following values				

	Condition	Result of StrComp Function	
	If string1 is less than string2	-1	
	If string1 is equal to string2	0	
	If string1 is more than string2	1	
	If string1 or string2 is Null	Null	
	In the following example, StrComp Functi	on returns the result of comparing strings. If the	e third
	factor is 1, a text comparison is executed.	If the third factor is 0 or omitted, a binary Comp	arison
	is performed.		
Reference	Dim MyStr1, MyStr2, MyComp		
	MyStr1 = "ABCD": MyStr2 = "abcd"	' Define a variable.	
	MyComp = StrComp(MyStr1, MyStr2, 1)	' 0 is returned.	
	MyComp = StrComp(MyStr1, MyStr2, 0)	' -1 is returned.	
	MyComp = StrComp(MyStr2, MyStr1)	' 1 is returned.	

String Function			
Description	The expression converted to a String subtype of Variant is returned		
Syntax	CStr(expression)		
Symax	The expression factor s	should be a valid expression	
	Typically, if a code is o	created with a subtype of conversion function, the operation result can be	
	seen in a particular da	ta type rather than in a basic data type. For example, if CStr is used, the	
	result is expressed in a	String.	
	If CStr Function is used	d instead of Str Function, other types of data can be converted to a widely-	
	used String subtype th	proughout the world. For example, symbols identified with different digit	
	numbers are properly r	ecognized according to the computer's locale settings.	
Reference	Expression Data	CStr Returned Result	
	Boolean	String containing True or False	
	Date	String containing simplified date by computer settings	
	Null	Runtime error	
	Empty	String whose length is 0 ("")	
	Error	String showing error number next to word 'Error'	
	Other Numbers	String containing numbers	
	In the following exampl	e, CStr Function converts the value to String.	

Appendix 3 Visual Basic Script Help

Dim MyDouble, MyString	
MyDouble = 437.324	' MyDouble is equal to Double.
MyString = CStr(MyDouble)	' MyString gets value"437.324"

StrReverse Function		
Description	The reverse string of a designated string is returned	
	StrReverse(string1)	
Syntax	The string1 factor is a string of characters in the reverse order. If string1 is a string whose length	
	is 0(""), it returns a string whose length is 0 while if it is Null, errors takes place	
	In the following example, Replace Function returns a string in the reverse order.	
Reference	Reference Dim MyStr	
	MyStr = StrReverse("VBScript") 'MyStr gets "tpircSBV."	

Tan Function					
Description	The tangent value of an angle is returned				
Syntox	Tan(number)				
Syntax	The number factor should be a valid expression showing the angle in a radian.				
	Tan Function returns the ratio between lengths of two sides by using angles of a right triangle.				
	This ratio is obtained by dividing the length of the side facing the relevant angle by the length of				
	the side adjacent to this angle.				
	To convert angle to radian, multiply angle by pi/180 and to convert radian to angle, multiply				
	radian by 180/pi.				
Reference					
	In the following example, Tan Function returns the tangent value of the angle.				
	Dim MyAngle, MyCotangent				
	MyAngle = 1.3 'Define an angle in a radian value.				
	MyCotangent = 1 / Tan(MyAngle) 'Calculate cotangent Value				

Time Function	on
Description	A Date subtype Variant showing the current system time is returned.
Syntax	Time
	In the following example, Time Function returns the current system time.
Reference	Dim MyTime
	MyTime = Time 'The current system time is returned.

TimeSerial F	unction				
Description	The Date subty	The Date subtype of Variant of the designated year, month, day is returned			
	TimeSerial(hour, minute, second)				
	TimeSerial Fur	nction Syntax has following factors			
	Factor	Description			
Syntax	time	Numbers (Including 0 and 23) between 0(AM 12:00) and 23(PM 11:00) or a numerical expression			
	minute	All expressions			
	second	All expressions			
Reference	tolerance range between 0 and each factor by particular time. The following Function return TimeSerial(12 If the factor each minutes are defined between 0 and each factor between 0 and each factor	example is using an expression rather than an absolute time. Here, TimeSerial is the time 15 minutes before 6o'clock, that is AM 5:45. - 6, -15, 0) Exceeds the tolerance range, it goes to the next bigger unit. For example, if 75 lesignated, it is calculated into 1:15. But, if a certain factor exceeds range - 1767 or a date designated directly or through an expression by using three factors,			

TimeValue I	Function				
Description	The Date subtype of Variant that contains time is returned				
	TimeValue(time)				
Syntox	Typically, it is the time factor as a literal expression showing time from 0:00:00 (AM 12:00:00) to				
Syntax	23:59:59(PM 11:59:59), therefore, an expression showing time within this range can be a time				
	factor. The time has the value zero, Null is returned.				
	A valid time unit can be inputted to the 12-h or 24-h clock. That is, "2:24PM" and "14:24" are all				
	valid time factors. If the time factor contains time information, TimeValue Value Function does				
	not return the information. However, if the time factor has wrong date information, errors takes				
	place.				
Reference	In the following example, TimeValue Function converts a string to time. If the date literal is used,				
	it is possible to directly designate time to variant (Ex, MyTime = #4:35:17 PM#).				
	Dim MyTime				
	MyTime = TimeValue("4:35:17 PM") 'MyTime gets value"4:35:17 PM"				

Trim Function	on				
Description	LTrim Function returns a string copy which has no left empty space or no right empty space or				
Description	neither left nor right empty space				
	LTrim(string)				
	RTrim(string)				
Syntax	Trim(string)				
	The string factor should be a valid character expression. If there is Null in string, Null is returned				
	In the following example, LTrim Function trims the left empty space, RtrimFunction trims the right				
	empty space and Trim Function trims both of them.				
Deference	Dim MyVar				
Reference	MyVar = LTrim(" vbscript ") 'MyVar gets "vbscript."				
	MyVar = RTrim(" vbscript ") 'MyVar gets " vbscript."				
	MyVar = Trim(" vbscript ") 'MyVar gets "vbscript."				

ypeName	Function			
Description	A string that provides Variant subtype information on variable is returned			
	TypeName(varnan	ne)		
	A mandatory facto	r. The varname factor may be any kind of variable		
	Result Value			
	TypeName Function	on returns the following values		
	Value	Description		
	Byte	Byte Value		
	Integer	Integer Value		
	Long	Long integer Value		
Syntax	Single	Single precision floating point number value		
	Double	Double precision floating point number value		
	Currency	Call Value		
	Decimal	Decimal Value		
	Date	Date or Time Value		
	String	String Value		
	Boolean	Boolean Value True or False		
	Empty	Not initialized		
	Null	No valid data		
	<object type=""></object>	Real type name of object		
	Object	General object		

	Unknown	Unknown obje	ect type		
	Nothing	Object variable	Object variable that does not refer to object instance		
	Error	Error			
	In the following example, TypeName Function returns variable reference information.				
	Dim ArrayVar(4), MyType				
	NullVar = Null 'Null Designate a value.				
Reference	MyType = Typel	Name("VBScript")	' "String" is returned.		
	MyType = TypeName(4)		' "Integer" is returned.		
	MyType = Typel	Name(37.50)	' "Double" is returned.		
	MyType = Typel	Name(NullVar)	' "Null" is returned.		
	MyType = Typel	Name(ArrayVar)	' "Variant()" is returned		

UBound Fu	nction				
Description	The biggest sub	script available in the designated Array level is returned.			
	UBound(arrayna	ame[, dimension])			
	UBound Functio	n Syntax has following factors.			
	Factor	Description			
Syntax	arrayname	A mandatory factor. Comply with the notation rule of general <u>variable</u> with Array variable name			
	dimension	An optional factor. An integer showing the upper limit of the returned level is returned. Use integers 1 for one dimension, 2 for two dimension, etc. If dimension is omitted, 1 is deemed.			
Reference	Function is used The lower limit	n is used along with UBound Function to decide the size of Array. If Lbound I, the lower limit can be known in the Array level. of the entire dimensions is always 0. Therefore, UBound Function returns Array ing according to each dimension. Result Value 100 3 4			

UCase Fund	tion				
Description	A string converted to decimal point is returned				
Cyntox	UCase(string)				
Syntax	The string factor should be a valid character expression. If there is Null in string, Null is returned				
	This function converts only capital letters to small letters and remains other characters except				
Reference	those as they are without converting.				
	In the following example, UCase Function returns the capital version of a string.				
	Dim MyWord				
	MyWord = UCase("Hello World") ' "HELLO WORLD" is returned				

Description	The value showing variable subtype is returned				
	VarType(varname)				
	The varname fact	or may be	any kind of variable		
	Result Value				
	VarType Function	returns th	ne following values	,	
	Constant	Value	Description		
	vbEmpty	0	Empty(Not initialized)		
	vbNull	1	Null(No valid data)		
	vbInteger	2	Integer		
	vbLong	3	Long integer		
	vbSingle	4	Single precision floating point number		
Syntax	vbDouble	5	Double precision floating point number		
	vbCurrency	6	Call	7	
	vbDate	7	Date		
	vbString	8	String		
	vbObject	9	Automatic Object		
	vbError	10	Error		
	vbBoolean	11	Boolean Value		
	vbVariant	12	Variant(used only in variant Array)		
	vbDataObject	13	Data Access Object		
	vbByte	17	Byte		
	vbArray	8192	Array		

	Constant designated in the VBScript			
	VarType Function itself never returns the relevant Array value and shows a particular type of			
	Array by being combined with other values at all times. The value corresponding to Variant is			
	returned only when it shows that VarType Function is Array by being combined with a particular			
	value. For example, the integer value returned to Array is calculated to 2+8192 or 8194. If an			
	object that has basic properties, VarType (object) Function returns the basic properties of the			
Reference	relevant object.			
Reference	In the following example, VarType Function decides variable's subtype.			
	Dim MyCheck			
	MyCheck = VarType(300) '2 is returned.			
	MyCheck = VarType(#10/19/62#) ' 7 is returned.			
	MyCheck = VarType("VBScript") ' 8 is returned.			

Weekday Function Description An integer showing weekday is returned Weekday(date, [firstdayofweek]) Weekday Function Syntax has following factors. **Factor** Description An expression showing **Date**. If there is date **Null** in *date*, Null is returned. date firstdayofweek Constant that designates the first weekday. If omitted, vbSunday is deemed. Settings The firstdayofweek factor has the following settings Constant Value Description vbUseSystem 0 NLS(National Language Support). Use API settings **Syntax** vbSunday 1 Sunday 2 Monday vbMonday vbTuesday 3 Tuesday 4 vbWednesday Wednesday 5 vbThursday Thursday vbFriday 6 Friday 7 vbSaturday Saturday Result Value Typically, Weekday Function returns the following values

	Constant	Value	Description		
	vbSunday	1	Sunday		
	vbMonday	2	Monday		
	vbTuesday	3	Tuesday		
	vbWednesday	4	Wednesday		
	vbThursday	5	Thursday		
	vbFriday	6	Friday		
	vbSaturday	7	Saturday		
	In the following example, Weekday Function brings a weekday from the designated date				
Reference	Dim MyDate, MyWeekDay				
	MyDate = #October 19, 1962# ' Designate date.				
	MyWeekDay = W	eekday(MyDate)	' MyWeekDay gets value 6 because MyDate is on Frida	ay	

WeekdayName Function				
Description	A string showing the designated weekday is returned			
	WeekDayName(weekday, abbreviate	e, firstdayofweek)	
WeekDayName Function Syntax has following factors			s following factors	
	Factor		Description	
	weekday	,	or. A number showing weekday. Each weekday has a ording to <i>firstdayofweek</i> settings.	
	abbreviate	An optional factor. A boolean value showing whether weekday names are expressed with abbreviated words. If omitted, it becomes False, the Default Value, full names are displayed.		
	firstdayofweek	An optional factor. A number value showing the first weekday. For the value, refer to the following settings.		
Syntax	Settings The value of the	firstdayofweek facto	or is as follows	
	Constant	Value	Description	
	vbUseSystem	0	NLS(National Language Support). Use API settings	
	vbSunday	1	Sunday(Default Value)	
	vbMonday	2	Monday	
	vbTuesday	3	Tuesday	
	vbWednesday	4	Wednesday	
	vbThursday	5	Thursday	
	vbFriday	6	Friday	
	vbSaturday	7	Saturday	

	In the following example, WeekDayName Function returns the designated day.
Reference	Dim MyDate
	MyDate = WeekDayName(6, True) 'MyDate gets Fri

Year Function			
Description	An integer showing year is returned		
	Year(date)		
Syntax	The date factor is an expression showing the date. If the date factor has the value zero, Null is		
	returned		
	In the following example, YearFunction brings the date of the year from the designated date		
Reference	Dim MyDate, MyYear		
	MyDate = #October 19, 1962# ' Designate date.		
	MyYear = Year(MyDate) 'MyYear gets 1962		

Appendix 4 Function

Function Classification

List by Item 4.1.1

Item	Relevant Function
Project	LONG CloseProject ()
	BSTR GetProjectName ()
	BSTR GetProjectPath ()
	BSTR GetProjectType ()
	LONG OpenProject (BSTR szProjectName, BSTR szProjectPath)
	LONG QuitProject ()
	LONG QuitProjectAndRestart ()
	LONG QuitProjectAndShutDown ()
	LONG ClosePage (BSTR szPageName)
	VARIANT OpenMsgBox (VARIANT vtBoxType, BSTR szMsg)
	VOID OpenPage (BSTR szPageName, BSTR szPageParam)
	LONG ChangePage (BSTR szOldPage, BSTR szNewPage)
Screen	VOID GetHWND (ULONG* hwnd)
	VOID HardCopy ()
	BOOL IsRunning ()
	LONG OpenPageObject (BSTR szPageName, BSTR szObjectName)
	VOID Quit ()
	ULONG GetTagStatus (BSTR szTagName)
	BSTR GetTagStatusDesc (ULONG ITagStatus)
	VARIANT GetTagVal (BSTR szTagName)
	VARIANT GetTagValEx (BSTR szTagName, LONG* IRet)
	VARIANT GetTagValbyTagId (LONG ITagId)
	BSTR GetTagValnStatusByTagId (LONG ITagId, VARIANT* vtTagVal, LONG *IScanMode,
	LONG *IMainQ, LONG *ISubQCnt, LONG *ISubQ1, LONG *ISubQ2, LONG *ISubQ3, LONG
Tag	*ISubQ4, LONG *ISubQ5)
	ULONG GetTagValueStatus (BSTR szTagName, VARIANT* vtTagVal)
	LONG ResetStaticValue (BSTR szTagName)
	VOID SetTagVal (BSTR szTagName, VARIANT vtTagVal)
	LONG SetTagValEx (SHORT nMode, BSTR szTagName, VARIANT vtTagVal, BSTR
	szClientName, ULONG hClientHandle)
	LONG ShowCrossReference (BSTR szTagName)
	VOID ShowRawDataInfo ()

Item	Relevant Function		
Tag	VOID ShowSIMCfgInfo ()		
Script	VOID RunScript (BSTR szScriptName)		
	VOID StopScript (BSTR szScriptName)		
	VOID TimeOutMsgBox (BSTR Msg, BSTR Title, LONG ISec)		
	LONG NotifyAlarmEvent (DOUBLE IIOccur, USHORT nAlmLevel, BSTR szMessage, BSTR szArea, BSTR szOUser, BSTR zInformation, BSTR szUserDefine1, BSTR szUserDefine2, BSTR szUserDefine3, BSTR szUserDefine4, BSTR szPrev, BSTR szCur,		
Event	BSTR szObject)		
	VOID SendEmail (BSTR szMailAddTo, BSTR szMailAddFrom, BSTR szMailTitle , BSTR szMailMsg)		
	VOID SendSMS (BSTR szRecvPhoneNo, BSTR szCallBackPhoneNo, BSTR szSMSMsg)		
	VOID NotifyError (USHORT nLogCategory, BSTR szMsg, BSTR szDesc)		
	VOID NotifyHostError (BSTR szHostName, USHORT nLogCategory, BSTR szMsg, BSTR szDesc)		
	VOID NotifyHostInfo (BSTR szHostName, USHORT nLogCategory, BSTR szMsg, BSTR szDesc)		
	VOID NotifyHostLog (USHORT nLogType, USHORT nLogCategory, BSTR szHostName, BSTR szMsg, BSTR szDesc)		
Log	VOID NotifyHostWarn (BSTR szHostName, USHORT nLogCategory, BSTR szMsg, BSTR szDesc)		
	VOID NotifyInfo USHORT nLogCategory (USHORT nLogCategory, BSTR szMsg, BSTR szDesc)		
	VOID NotifyLog (USHORT nLogType, USHORT nLogCategory, BSTR szMsg, BSTR szDesc)		
	VOID NotifyWarn (USHORT nLogCategory, BSTR szMsg, BSTR szDesc)		
	LONG ChangLine (BSTR szLineMode, BSTR szTargetLineIP)		
	LONG ChangeProcessServer (BSTR szProcessName, BSTR szProcessIP)		
	LONG ChangeServerMode (BSTR szServerMode)		
N	LONG GetCurLine (int* nCurLine)		
Network	INT GetLineStatus (int nLineMode)		
	BSTR GetNodeCurIP (BSTR szNodeName)		
	BSTR GetServerMode ()		
	BOOL IsDualLine ()		
	VARIANT GetSystemTime ()		
	VOID ProcessSleep (LONG dwMiliseconds)		
System	VOID RunApp (BSTR szAppPath)		
	VOID Sleep (LONG dwMiliseconds)		
	VOID ShowAlarmPage (BSTR szAlarmTag)		

Item	Relevant Function	
Databasa	BSTR TimeConvert (DOUBLE dTimeValue, LONG ITimeType)	
Database	LONG DataExportRunWork (BSTR szWorkName)	
	LONG RecipeChangeData (BSTR ModelName, BSTR szDataName)	
	LONG RecipeChangeUnit (BSTR ModelName, BSTR UnitName)	
	SHORT RecipeControlSet (BSTR szModelName, BSTR szUnitName, BSTR szDataName)	
	LONG RecipeControlSetEx (SHORT nMode, BSTR szClientProgName, ULONG	
	hClientHandle, BSTR szModelName, BSTR szUnitName, BSTR szDataName, LONG*	
	plTransNo, SHORT* pnResult)	
	SHORT RecipeControlWorkingSet ();	
Paging	SHORT RecipeControlWorkingSetEx (SHORT nMode, BSTR szClientProgName, ULONG	
Recipe	hClientHandle, LONG* plTransNo, SHORT* pnResult);	
	LONG RecipeDeleteData (BSTR ModelName, BSTR RecipeName)	
	LONG RecipeDeleteModel (BSTR ModelName)	
	LONG RecipeDeleteUnit (BSTR ModelName, BSTR UnitName)	
	LONG RecipeLoadDynamic (BSTR ModelName, BSTR UnitName)	
	LONG RecipeLoadSet (BSTR ModelName, BSTR UnitName, BSTR szDataName)	
	LONG RecipeSaveAsArchive (BSTR ModelName, BSTR szDataName)	
	LONG RecipeSetData (BSTR ModelName, BSTR ItemName, VARIANT setValue)	
Externel	VOID PlaySound (BSTR szWaveFile)	
Device	VOID PlaySoundFile (BSTR szSoundFile)	
	BSTR GetUserID ()	
Lloor	LONG GetUserLevel ()	
User	LONG UserLogOff ()	
	LONG UserLogOn (BSTR szUserID, BSTR szPassWord)	
	VOID ReportDialog ()	
	VOID ReportListRefresh ()	
Donort	VOID ReportPrint (BSTR szReportName)	
Report	VOID ReportPrintEx (BSTR szReportName, BSTR szReqTime)	
	VOID ReportSchedulerHide ()	
	VOID ReportSchedulerShow ()	

Item	Relevant Function				
	BOOL AckAllAlarm ()				
	LONG GetAlarmCount (BSTR szAlarmGrName,LONG IStatus)				
	BSTR GetAlarmCountErrInfo (LONG ICount)				
	LONG GetAlarmLogging (DOUBLE dtFrom, DOUBLE dtTo, BSTR szTag, BSTR				
	szAlarmGr, LONG IAlarmType, LONG *IOutCount, SAFEARRAY **pszRstrTag,				
	SAFEARRAY **pszRstrGr, SAFEARRAY **pdbRdtOccAlarm, SAFEARRAY				
	**pdbRdtRevAlarm, SAFEARRAY **pdbRdtAckAlarm, SAFEARRAY **plRnAlarmType,				
	SAFEARRAY **pszRstrMsg, SAFEARRAY **pszRstrAlarmKind)				
	LONG GetAlarmLoggingEx (DOUBLE dtFrom,DOUBLE dtTo,BSTR szTag, LONG				
	nAlarmGroupCount, SAFEARRAY **pszAlarmGr,LONG IAlarmType, LONG IAlarmGrade,				
	BSTR szAlarmKind, LONG *lOutCount, SAFEARRAY**pRstrTag,SAFEARRAY**pRstrGr,				
	SAFEARRAY **pdbRdtOccAlarm, SAFEARRAY **pdbRdtRevAlarm, SAFEARRAY				
	**pdbRdtAckAlarm, SAFEARRAY **plRnAlarmType, SAFEARRAY **pszRstrMsg,				
	SAFEARRAY **pszRstrAlarmKind, SAFEARRAY **pdbRvOccDValue, SAFEARRAY**pszRvOccSValue, SAFEARRAY **plAlarmGrade)				
	LONG GetAlmCount (LONG Ikind, LONG IStatus)				
	LONG GetGroupUserInfoByTag (BSTR szTagName, LONG* lOutCount,				
Alarm	SAFEARRAY(BSTR) *pszUserID, SAFEARRAY(BSTR) *pszUserName,				
	SAFEARRAY(LONG) *plMailCheck, SAFEARRAY(LONG) *plSMSMCheck,				
	SAFEARRAY(BSTR) *pszMailAdd, SAFEARRAY(BSTR) *pszHPhoneNo)				
	LONG GetHistAlmCount (LONG Ikind, LONG IStatus)				
	LONG GetUserInfoList (LONG* IOutCount, SAFEARRAY(BSTR) *pszUserID,				
	SAFEARRAY(BSTR) *pszUserName, SAFEARRAY(BSTR) *pszDesc,				
	SAFEARRAY(BSTR) *pszPassword, SAFEARRAY(LONG) *plUserLevel, SAFEARRAY(BSTR) *pszPhoneNo, SAFEARRAY(BSTR) *pszPhoneNo,				
	SAFEARRAY(BSTR) *pszMailAdd)				
	LONG SetUserAlarm (BSTR szAlarmMessage, BSTR szAlarmGroup)				
	LONG SetUserAlarmEx (DOUBLE dOccur, LONG IAlarmLevel, BSTR				
	szAlarmMessage ,BSTR szAlarmGroup, DOUBLE dCur, DOUBLE dPrev)				
	LONG SetUserEvent (BSTR szEventMessage)				
VOID StopAlarmSound ()					
	VOID GetHistDataCount (BSTR szModelName, BSTR szTagName, BSTR szDataKind,				
	DOUBLE dRefTime, LONG ICount, LONG IDir, LONG* IResultCount,				
	SAFEARRAY(double) *psadblTimeStamp, SAFEARRAY(double) *psadblNumValue,				
	SAFEARRAY(LONG) *psalStatus, SAFEARRAY(LONG) *psalResult)				

Item	Relevant Function		
	VOID GetHistDataCountStr (BSTR szModelName, BSTR szTagName, BSTR szDataKind,		
	DOUBLE dRefTime, LONG ICount, LONG IDir, LONG* IResultCount, SAFEARRAY(double)		
	*psadblTimeStamp, SAFEARRAY(BSTR) *psadblNumValue, SAFEARRAY(LONG)		
	*psalStatus, SAFEARRAY(LONG) *psalResult)		
	VOID GetHistDataPeriod (BSTR szModelName, BSTR szTagName, BSTR szDataKind,		
	DOUBLE dFrom, DOUBLE dTo, LONG* IResultCount, SAFEARRAY(double)		
	*psadblTimeStamp, SAFEARRAY(double) *psadblNumValue, SAFEARRAY(LONG)		
	*psalStatus, SAFEARRAY(LONG) *psalResul)		
	VOID GetHistDataPeriodStr (BSTR szModelName, BSTR szTagName, BSTR szDataKind,		
	DOUBLE dFrom, DOUBLE dTo, LONG* IResultCount, SAFEARRAY(double)		
Alarm	*psadblTimeStamp, SAFEARRAY(BSTR) *psadblNumValue, SAFEARRAY(LONG)		
	*psalStatus, SAFEARRAY(LONG) *psalResult)		
	LONG GetLoggingModelList (LONG *IOutCount ,SAFEARRAY(BSTR) *psaszModelName,		
	SAFEARRAY(BSTR) *psaszModelDesc, SAFEARRAY(BSTR) *psaszModelType,		
	SAFEARRAY(BSTR) *psaszArchvingCycle, SAFEARRAY(BSTR) *psaszSegmentPeriod)		
	LONG GetLoggingTag (BSTR szModelName, LONG *IOutCount ,SAFEARRAY(BSTR)		
	*psaszTagName, SAFEARRAY(BSTR) *psaszTagType)		
	LONG SetHistData (BSTR szModelName, BSTR szTagName, BSTR szDataKind, LONG		
	IDataCount, SAFEARRAY(double) *psadblSaveTime, SAFEARRAY(double)		
	*psadblNumValue, SAFEARRAY(LONG) *psalTagStatus, SAFEARRAY(LONG)		
	*psalResult)		
	VOID ClearStaStatusCount (BSTR szChannelName, BSTR szStaName)		
	VOID EnableStation (BSTR szChannelName, BSTR szStaName, LONG IMode)		
	LONG GetCountReadSuccess (BSTR szChannelName, BSTR szStaName)		
	LONG GetCountReadTotal (BSTR szChannelName, BSTR szStaName)		
I/O Driver	LONG GetCountWriteSuccess (BSTR szChannelName, BSTR szStaName)		
., 0 5,,,,0,	LONG GetCountWriteTotal (BSTR szChannelName, BSTR szStaName)		
	LONG GetStatusRunMode (BSTR szChannelName, BSTR szStaName)		
	LONG GetStatusStaOK (BSTR szChannelName, BSTR szStaName)		
	VOID ShowNetworkStatus ()		
	VOID ShowStationInfo ()		

4.1.2 List by Alphabetic Order

Alphabet	Function Name	Item
Α	BOOL AckAllAlarm ()	Alarm
	LONG ChangePage (BSTR szOldPage, BSTR szNewPage)	Screen
	LONG ChangeProcessServer (BSTR szProcessName, BSTR szProcessIP)	Network
	LONG ChangeServerMode (BSTR szServerMode)	Network
С	LONG ChangLine (BSTR szLineMode, BSTR szTargetLineIP)	Network
	VOID ClearStaStatusCount (BSTR szChannelName, BSTR szStaName)	I/O Driver
	LONG ClosePage (BSTR szPageName)	Screen
	LONG CloseProject ()	Project
D	LONG DataExportRunWork (BSTR szWorkName)	Database
E	VOID EnableStation (BSTR szChannelName, BSTR szStaName, LONG IMode)	I/O Driver
	LONG GetAlarmCount (BSTR szAlarmGrName,LONG IStatus)	Alarm
	BSTR GetAlarmCountErrInfo (LONG ICount)	Alarm
G	BSTR szAlarmGr, LONG IAlarmType, LONG *IOutCount, SAFEARRAY **pszRstrTag, SAFEARRAY **pszRstrGr, SAFEARRAY **pdbRdtOccAlarm, SAFEARRAY **pdbRdtRevAlarm, SAFEARRAY **pdbRdtAckAlarm, SAFEARRAY **plRnAlarmType, SAFEARRAY **pszRstrMsg, SAFEARRAY **pszRstrAlarmKind)	Alarm
	LONG GetAlarmLoggingEx (DOUBLE dtFrom,DOUBLE dtTo,BSTR szTag, LONG nAlarmGroupCount, SAFEARRAY **pszAlarmGr,LONG lAlarmType, LONG lAlarmGrade, BSTR szAlarmKind, LONG *lOutCount, SAFEARRAY**pRstrTag,SAFEARRAY**pRstrGr, SAFEARRAY **pdbRdtOccAlarm, SAFEARRAY **pdbRdtRevAlarm, SAFEARRAY **pdbRdtAckAlarm, SAFEARRAY **plRnAlarmType, SAFEARRAY **pszRstrMsg, SAFEARRAY **pszRstrAlarmKind, SAFEARRAY **pdbRvOccDValue, SAFEARRAY**pszRvOccSValue, SAFEARRAY **plAlarmGrade)	Alarm
	LONG GetAlmCount (LONG lkind, LONG IStatus)	Alarm
	LONG GetCountReadSuccess (BSTR szChannelName, BSTR szStaName)	I/O Driver
	LONG GetCountReadTotal (BSTR szChannelName, BSTR szStaName)	I/O Driver
	LONG GetCountWriteSuccess (BSTR szChannelName, BSTR szStaName)	I/O Driver
	LONG GetCountWriteTotal (BSTR szChannelName, BSTR szStaName)	I/O Driver
	LONG GetCurLine (int* nCurLine)	Network

Alphabet	Function Name	Item
•	LONG GetGroupUserInfoByTag (BSTR szTagName, LONG* lOutCount, SAFEARRAY(BSTR) *pszUserID, SAFEARRAY(BSTR) *pszUserName, SAFEARRAY(LONG) *plMailCheck, SAFEARRAY(LONG) *plSMSMCheck, SAFEARRAY(BSTR) *pszMailAdd, SAFEARRAY(BSTR) *pszHPhoneNo)	Alarm
	LONG GetHistAlmCount (LONG lkind, LONG IStatus)	Alarm
	VOID GetHistDataCou nt (BSTR szModelName, BSTR szTagName, BSTR szDataKind, DOUBLE dRefTime, LONG lCount, LONG lDir, LONG* lResultCount, SAFEARRAY(double) *psadblNumValue, SAFEARRAY(LONG)*psalStatus, SAFEARRAY(LONG)*psalResult) * SZTagName, BSTR szDagName, BSTR szTagName, BSTR szDagName, BSTR szDagNam	History Data
	VOID GetHistDataCountStr (BSTR szModelName, BSTR szTagName, BSTR szDataKind, DOUBLE dRefTime, LONG ICount, LONG IDir, LONG* IResultCount, SAFEARRAY(double) *psadblTimeStamp, SAFEARRAY(BSTR) *psadblNumValue, SAFEARRAY(LONG) *psalStatus, SAFEARRAY(LONG) *psalResult)	History Data
G	VOID GetHistDataPeriod (BSTR szModelName, BSTR szTagName, BSTR szDataKind, DOUBLE dFrom, DOUBLE dTo, LONG* IResultCount, SAFEARRAY(double) *psadblTimeStamp, SAFEARRAY(LONG) *psalResul) * * * * * * * * * * * * * * * * * * *	History Data
	VOID GetHistDataPeriodStr (BSTR szModelName, BSTR szTagName, BSTR szDataKind, DOUBLE dFrom, DOUBLE dTo, LONG* IResultCount, SAFEARRAY(double) *psadblTimeStamp, SAFEARRAY(BSTR) *psadblNumValue, SAFEARRAY(LONG) *psalStatus, SAFEARRAY(LONG) *psalResult)	History Data
	VOID GetHWND (ULONG* hwnd)	Screen
	INT GetLineStatus (int nLineMode)	Network
	LONG GetLoggingModelList (LONG *IOutCount ,SAFEARRAY(BSTR) *psaszModelName, SAFEARRAY(BSTR) *psaszModelDesc, SAFEARRAY(BSTR) *psaszModelType, SAFEARRAY(BSTR) *psaszArchvingCycle, SAFEARRAY(BSTR) *psaszSegmentPeriod)	History Data
	LONG GetLoggingTag (BSTR szModelName, LONG *IOutCount ,SAFEARRAY(BSTR) *psaszTagName, SAFEARRAY(BSTR) *psaszTagType)	History Data
	BSTR GetNodeCurIP (BSTR szNodeName)	Network
	BSTR GetProjectName ()	Project
	BSTR GetProjectPath ()	Project

Appendix 4 Function

Alphabet	Function Name	Item
	BSTR GetProjectType ()	Project
	BSTR GetServerMode ()	Network
	LONG GetStatusRunMode (BSTR szChannelName, BSTR szStaName)	I/O Driver
	LONG GetStatusStaOK (BSTR szChannelName, BSTR szStaName)	I/O Driver
	VARIANT GetSystemTime ()	Systen
	ULONG GetTagStatus (BSTR szTagName)	Tag
	BSTR GetTagStatusDesc(ULONG ITagStatus)	Tag
	VARIANT GetTagVal (BSTR szTagName)	Tag
	VARIANT GetTagValbyTagId (LONG ITagId)	Tag
	LONG GetTagValEx (BSTR szTagName)	Tag
G	BSTR GetTagValnStatusByTagId (LONG ITagId, VARIANT* vtTagVal, LONG *IScanMode, LONG *IMainQ, LONG *ISubQCnt, LONG *ISubQ1, LONG *ISubQ2, LONG *ISubQ3, LONG *ISubQ4, LONG *ISubQ5)	Tag
	ULONG GetTagValueStatus (BSTR szTagName, VARIANT* vtTagVal)	Tag
	BSTR GetUserID ()	User
	LONG GetUserInfoList (LONG* IOutCount, SAFEARRAY(BSTR) *pszUserID, SAFEARRAY(BSTR) *pszUserName, SAFEARRAY(BSTR) *pszDesc, SAFEARRAY(BSTR) *pszPassword, SAFEARRAY(LONG) *plUserLevel, SAFEARRAY(BSTR) *pszHPhoneNo, SAFEARRAY(BSTR) *pszPhoneNo, SAFEARRAY(BSTR) *pszMailAdd)	Alarm
	LONG GetUserLevel()	User
Н	VOID HardCopy ()	Screen
	BOOL IsDualLine ()	Network
1	LONG IsHoliday (BSTR szDateTime)	Systen
	BOOL IsRunning ()	Screen
N	LONG NotifyAlarmEvent (DOUBLE IIOccur, USHORT nAlmLevel, BSTR szMessage, BSTR szArea, BSTR szOUser, BSTR zInformation, BSTR szUserDefine1, BSTR szUserDefine2, BSTR szUserDefine3, BSTR szUserDefine4, BSTR szPrev, BSTR szCur, BSTR szObject)	Event
	VOID NotifyError (USHORT nLogCategory, BSTR szMsg, BSTR szDesc)	Log
	VOID NotifyHostError (BSTR szHostName, USHORT nLogCategory, BSTR szMsg, BSTR szDesc)	Log
	VOID NotifyHostInfo (BSTR szHostName, USHORT nLogCategory, BSTR szMsg, BSTR szDesc)	Log

Alphabet	Function Name	Item
	VOID NotifyHostLog (USHORT nLogType, USHORT nLogCategory, BSTR	Log
	szHostName, BSTR szMsg, BSTR szDesc)	Log
	VOID NotifyHostWarn (BSTR szHostName, USHORT nLogCategory,	Log
	BSTR szMsg, BSTR szDesc)	209
N	VOID NotifyInfo (USHORT nLogCategory, USHORT nLogCategory, BSTR	Log
	szMsg, BSTR szDesc)	239
	VOID NotifyLog (USHORT nLogType, USHORT nLogCategory, BSTR	Log
	szMsg, BSTR szDesc)	_
	VOID NotifyWarn (USHORT nLogCategory, BSTR szMsg, BSTR szDesc)	Log
	VARIANT OpenMsgBox (VARIANT vtBoxType, BSTR szMsg)	Screen
0	LONG OpenPage (BSTR szPageName, BSTR szPageParam)	Screen
	LONG OpenPageObject (BSTR szPageName, BSTR szObjectName)	Screen
	LONG OpenProject (BSTR szProjectName, BSTR szProjectPath)	Project
	VOID PlaySound (BSTR szWaveFile))	External Device
Р	VOID PlaySoundFile (BSTR szSoundFile)	External Device
	VOID ProcessSleep (LONG dwMiliseconds)	Systen
	VOID Quit ()	Screen
	LONG QuitProject ()	Project
Q	LONG QuitProjectAndRestart ()	Project
	LONG QuitProjectAndShutDown ()	Project
	LONG RecipeChangeData (BSTR ModelName, BSTR szDataName)	Recipe
	LONG RecipeChangeUnit (BSTR ModelName, BSTR UnitName)	Recipe
	SHORT RecipeControlSet (BSTR szModelName, BSTR szUnitName, BSTR	Dogina
	szDataName)	Recipe
	LONG RecipeControlSetEx (SHORT nMode, BSTR szClientProgName,	
	ULONG hClientHandle, BSTR szModelName, BSTR szUnitName, BSTR	Recipe
	szDataName, LONG* plTransNo, SHORT* pnResult)	
R	SHORT RecipeControlWorkingSet ();	Recipe
	SHORT RecipeControlWorkingSetEx (SHORT nMode, BSTR	
	szClientProgName, ULONG hClientHandle, LONG* plTransNo, SHORT*	Recipe
	pnResult)	
	LONG RecipeDeleteData (BSTR ModelName, BSTR RecipeName)	Recipe
	LONG RecipeDeleteModel (BSTR ModelName)	Recipe
	LONG RecipeDeleteUnit (BSTR ModelName, BSTR UnitName)	Recipe
	LONG RecipeLoadDynamic (BSTR ModelName, BSTR UnitName)	Recipe

Alphabet	Function Name	Item
	LONG RecipeLoadSet (BSTR ModelName, BSTR UnitName, BSTR szDataName)	Recipe
	LONG RecipeSaveAsArchive (BSTR ModelName, BSTR szDataName)	Recipe
	LONG RecipeSetData (BSTR ModelName, BSTR ItemName, VARIANT setValue)	Recipe
	VOID ReportDialog ()	Report
Б	VOID ReportListRefresh ()	Report
R	VOID ReportPrint (BSTR szReportName)	Report
	VOID ReportPrintEx (BSTR szReportName, BSTR szReqTime)	Report
	VOID ReportSchedulerHide ()	Report
	VOID ReportSchedulerShow ()	Report
	LONG ResetStaticValue (BSTR szTagName)	Tag
	VOID RunApp (BSTR szAppPath)	Systen
	VOID RunScript (BSTR szScriptName)	Script
	VOID SendEmail (BSTR szMailAddTo, BSTR szMailAddFrom, BSTR szMailTitle , BSTR szMailMsg)	Event
	VOID SendSMS (BSTR szRecvPhoneNo, BSTR szCallBackPhoneNo, BSTR szSMSMsg)	Event
	LONG SetHistData (BSTR szModelName, BSTR szTagName, BSTR szDataKind, LONG IDataCount, SAFEARRAY(double) *psadblSaveTime, SAFEARRAY(double) *psadblNumValue, SAFEARRAY(LONG) *psalTagStatus, SAFEARRAY(LONG) *psalResult)	History Data
	VOID SetTagVal (BSTR szTagName, VARIANT vtTagVal)	Tag
S	LONG SetTagValEx (SHORT nMode, BSTR szTagName, VARIANT vtTagVal, BSTR szClientName, ULONG hClientHandle)	Tag
	LONG SetUserAlarm (BSTR szAlarmMessage, BSTR szAlarmGroup)	Alarm
	LONG SetUserAlarmEx (DOUBLE dOccur, LONG IAlarmLevel, BSTR szAlarmMessage ,BSTR szAlarmGroup, DOUBLE dCur, DOUBLE dPrev)	Alarm
	LONG SetUserEvent (BSTR szEventMessage)	Alarm
	VOID ShowAlarmPage (BSTR szAlarmTag)	Systen
	LONG ShowCrossReference (BSTR szTagName)	Tag
	VOID ShowNetworkStatus ()	I/O Driver
	VOID ShowRawDataInfo ()	Tag
	VOID ShowSIMCfgInfo ()	Tag

Alphabet	Function Name	Item
S	VOID ShowStationInfo ()	I/O Driver
	VOID Sleep (LONG dwMiliseconds)	Systen
	VOID StopAlarmSound ()	Alarm
	VOID StopScript (BSTR szScriptName)	Script
Т	BSTR TimeConvert (DOUBLE dTimeValue, LONG ITimeType)	Systen
	VOID TimeOutMsgBox (BSTR Msg, BSTR Title, LONG ISec)	Script
U	LONG UserLogOff ()	User
	LONG UserLogOn (BSTR szUserID, BSTR szPassWord)	User

4.2 **Function Descriptions and Examples**

Project Function 4.2.1

Item	Description
Туре	LONG CloseProject ()
Kind	Project Function
Description	Close current project
Example	Sub Main
	Dim IRet As Long
	IRet = ole.CloseProject()
	If IRet <> 0 Then
	MsgBox "CloseProject() False"
	Else
	MsgBox "CloseProject() OK"
	End If
	End Sub

Item	Description
Туре	BSTR GetProjectName ()
Kind	Project Function
Description	Get current project name.
Example	Sub Main
	Dim PrjName As String
	PrjName = ole.GetProjectName()
	If IRet <> 0 Then
	MsgBox "GetProjectName()False"
	Else
	MsgBox "GetProjectName() OK " + PrjName
	End If
	End Sub

Item	Description
Туре	BSTR GetProjectPath ()
Kind	Project Function
Description	Get current project path.
Example	Sub Main
	Dim PrjName As String
	PrjPath = ole.GetProjectPath()
	If IRet <> 0 Then
	MsgBox "GetProjectPath() False"
	Else
	MsgBox "GetProjectPath() OK " + PrjPath
	End If
	End Sub

Item	Description
Туре	BSTR GetProjectType ()
Kind	Project Function
Description	Get current project type
Example	Sub Main
	Dim PrjType As String
	PrjType = ole.GetProjectType
	MsgBox "GetProjectType : " + PrjType
	End Sub

Item	Description
Туре	LONG OpenProject(BSTR szProjectName, BSTR szProjectPath)
Kind	Project Function
Description	Open Project.
	szProjectName : Project Name
	szProjectPath : Project Path
Example	Sub Main
	Dim IRet As Long
	<pre>IRet = ole.OpenProject("ProjectName", "ProjectPath")</pre>
	If IRet <> 0 Then
	MsgBox "OpenProject() False"
	Else
	MsgBox "OpenProject() OK"
	End If
	End Sub

Item	Description
Туре	LONG QuitProject ()
Kind	Project Function
Description	Close current project
Example	Sub Main
	Dim IRet As Long
	IRet = ole.QuitProject()
	If IRet <> 0 Then
	MsgBox "QuitProject() False"
	Else
	MsgBox "QuitProject() OK"
	End If
	End Sub

항목	내용
형식	LONG QuitProjectAndRestart ()
종류	Project Function
내용	Shutdown InfoU runtime and system reboot.
예제	Sub Main
	Dim IRet As Long
	IRet = ole. QuitProjectAndRestart ()
	If IRet <> 0 Then
	MsgBox " QuitProjectAndRestart () False"
	Else
	MsgBox " QuitProjectAndRestart () OK"
	End If
	End Sub

항목	내용
형식	LONG QuitProjectAndShutDown ()
종류	Project Function
내용	Shutdown InfoU runtime and system shutdown
예제	Sub Main
	Dim IRet As Long
	IRet = ole. QuitProjectAndShutDown ()
	If IRet <> 0 Then
	MsgBox " QuitProjectAndShutDown () False"
	Else
	MsgBox " QuitProjectAndShutDown () OK"
	End If
	End Sub

4.2.2 Screen Function

Item	Description
Туре	LONG ChangePage (BSTR szOldPage, BSTR szNewPage)
Kind	Screen Function
Description	Close an existing page and open a new page
	szOldPage: Old page
	szNewPage: New page
Example	Sub Main
	Dim IRet As Long
	IRet = ole.ChangePage("Page1.ivd", "Page2.ivd")
	If IRet <> 0 Then
	MsgBox "ChangePage() False"
	Else
	MsgBox "ChangePage() OK"
	End If
	End Sub

Item	Description
Туре	LONG ClosePage (BSTR szPageName)
Kind	Screen Function
Description	Closes the specified page
	szPageName : Page name
Example	Sub Main
	Dim IRet As Long
	IRet = ole.ClosePage("page.ivd")
	If IRet <> 0 Then
	MsgBox "ClosePage() False"
	Else
	MsgBox "ClosePage() OK"
	End If
	End Sub

Item	Description
Туре	VOID GetHWND(ULONG* hwnd)
Kind	Screen Function
Description	Get handle of runtime program.
	hwnd: Get handle of runtime program
Example	Sub Main
	Dim IRet As Long
	IRet = ole.GetHWND
	If IRet <> 0 Then
	MsgBox "GetHWND()OK" + CStr(IRet)
	Else
	MsgBox "GetHWND() False => IRet : " + CStr(IRet)
	End If
	End Sub

Item	Description
Туре	VOID HardCopy()
Kind	Screen Function
Description	Prints the full screen associated with the graphic runtime window.
Example	Sub Main
	ole.HardCopy
	End Sub

Item	Description
Туре	BOOL IsRunning ()
Kind	Screen Function
Description	Get current run-time status.
Example	Sub Main
	Dim bRet As Boolean
	bRet = ole.IsRunning
	If bRet = True Then
	MsgBox "IsRunning OK"
	Else
	MsgBox "IsRunning FALSE"
	End If
	End Sub

Item	Description
Туре	VOID OpenPage (BSTR szPageName, BSTR szPageParam)
Kind	Screen Function
Description	Opens the file whose page name is specified by szPageName
	szPageName: Graphic page name
	szPageParam: Replace name for template screen.
Example	Sub Main
	Dim IRet As Long
	IRet = ole. OpenPage ("PAGE1.ivd", "\$GR=PLC1")
	If IRet <> 0 Then
	MsgBox "OpenPage() False"
	Else
	MsgBox "OpenPage () OK"
	End If
	End Sub

Item	Description
Туре	LONG OpenPageObject (BSTR szPageName, BSTR szObjectName)
Kind	Screen Function
Description	Opens the file whose pagename is specified by szPageName.
	szPageName: Graphic page name
	szObjectName: Replace name for template screen
Example	Sub Main
	Dim IRet As Long
	<pre>IRet = ole.OpenPageObject("Page.ivd", "ObjectName")</pre>
	If IRet <> 0 Then
	MsgBox "OpenPageObject() False"
	Else
	MsgBox "OpenPageObject() OK"
	End If
	End Sub

Item	Description
Туре	VOID Quit()
Kind	Screen Function
Description	Terminates the execution of InfoU rumtime.
Example	Sub Main
	ole.Quit
	End Sub

4.2.3 Tag Function

Item	Description
Туре	ULONG GetTagStatus (BSTR szTagName)
Kind	Tag Function
Description	Get the current tag status.
	szTagName : Tag Name
Example	Sub Main
	Dim IRet As Long
	IRet = ole.GetTagStatus("SCAnaTag")
	If IRet <> 0 Then
	MsgBox "GetTagStatus() OK"
	Else
	MsgBox "GetTagStatus() False"
	End If
	End Sub

Item	Description
Туре	BSTR GetTagStatusDesc (ULONG ITagStatus)
Kind	Tag Function
Description	Let you know the explanation of the tag status by string.
	ITagStatus: Tag Status Value
Example	Sub Main
	Dim IRet As Long
	Dim szDesc As String
	IRet = ole.GetTagValueStatus("tagName")
	szDesc = ole.GetTagStatusDesc(IRet)
	MsgBox szDesc
	End Sub

Item	Description
Туре	VARIANT GetTagVal (BSTR szTagName)
Kind	Tag Function
Description	Get tag value.
	szTagName: Tag Name
Example	Sub Main
	Dim Value As Variant
	Value = 12.0
	Value = ole.GetTagVal("FAOA_F_EHV02.AR")
	MsgBox "FAOA_F_EHV02.AR Value = " + CStr(Value)
	End Sub

Item	Description
Туре	VARIANT GetTagValbyTagId (LONG ITagId)
Kind	Tag Function
Description	Get tag values by tag id
	ITagld: Tag ID (Index)
Example	Sub Main
	Dim Value As Variant
	Dim Tagid As Long
	Value = ole.GetTagValbyTagId(Tagid)
	MsgBox "SCDigTag Value = " + Value
	End Sub

Item	Description
Туре	BSTR GetTagVaInStatusByTagId (LONG ITagId, VARIANT* vtTagVal, LONG
	*IScanMode, LONG *IMainQ, LONG *ISubQCnt, LONG *ISubQ1, LONG *ISubQ2,
	LONG *ISubQ3, LONG *ISubQ4, LONG *ISubQ5)
Kind	Tag Function
Description	Get tag status by tag id. The return values is the description of tag status
	ITagld: Tag ID (Index)
	vtTagVal: Tag Value
	IScanMode: The main mode of tag status. (1:SCANSTOP, 2:SCANSTART)
	IMainQ: Main Quality Code
	ISubQCnt: Detail Quality Code Count
	ISubQ1: Detail Quality Code1
	ISubQ2: Detail Quality Code2
	ISubQ3: Detail Quality Code3
	ISubQ4: Detail Quality Code4
	ISubQ5: Detail Quality Code5

Item	Description
Туре	LONG GetTagValueStatus (BSTR szTagName, VARIANT *vtTagVal)
Kind	Tag Function
Description	Inform the tag value and status. In this time, the return value let you know the
	status value
	szTagName : Tag Name
	vtTagVal: Tag Value
Example	Sub Main
	Dim IRet As Long
	Dim TagValue As Variant
	IRet = ole.GetTagValueStatus("Tag Name" , TagValue)
	If IRet <> 0 Then
	MsgBox " GetTagValueStatus () : SCAN START , Value"
	+ CStr(TagValue)
	Else
	MsgBox " GetTagValueStatus () : SCAN STOP False"
	End If
	End Sub

Item	Description
Туре	LONG ResetStaticValue (BSTR szTagName)
Kind	Tag Function
Description	Reset statistic value of specified tag
	szTagName: Tag Name
Example	Sub Main
	Dim IRet As Long
	IRet = ole.ResetStaticValue("SCAnaTag")
	If (IRet = 0) Then
	MsgBox "ResetStaticValue() OK "
	Else
	MsgBox "ResetStaticValue() FALSE "
	End If
	End Sub

Item	Description
Туре	LONG ShowCrossReference (BSTR szTagName)
Kind	Tag Function
Description	Inform you where specific tag is being used currently.
	szTagName : Tag Name
Example	Sub Main
	ole.ShowCrossReference("SCADA.UT_EHV07KWHRESET_")
	End Sub

Item	Description
Туре	VOID ShowRawDataInfo()
Kind	Tag Function
Description	Display Raw Data Information dialog.
Example	Sub Main
	ole. ShowRawDataInfo
	End Sub

Item	Description
Туре	VOID ShowSIMCfgInfo()
Kind	Tag Function
Description	Display Simulation Setting dialog.
Example	Sub Main
	ole. ShowSIMCfgInfo
	End Sub

Item	Description
Туре	VOID SetTagVal (BSTR szTagName, VARIANT vtTagVal)
Kind	Tag Function
Description	Control tag
	szTagName: Tag Name
	vtTagVal: Tag value which was controled
Example	Sub Main
	Dim Value As Variant
	MsgBox " Before : SetTagVal(SCDigTag) Value = "
	+ ole.GetTagVal("tagName")
	Value = 1
	ole.SetTagVal("tagName", Value)
	MsgBox " After : SetTagVal(Tag Name) Value = "
	+ ole.GetTagVal("tagName")
	End Sub

Item	Description
Туре	LONG SetTagValEx (SHORT nMode, BSTR szTagName, VARIANT vtTagVal,
	BSTR szClientName, ULONG hClientHandle)
Kind	Tag Function
Description	Control specified tag value
	nMode: Control Mode (Only No Return mode supported : 1)
	szTagName: Tag Name
	vtTagVal: Tag Value to Control
	szClientName : Client Program Name that perform control
	hClientHandle: Client Window Handle that perform control
Example	Sub Main
	Dim Value As Variant
	Dim TransNo As Long
	MsgBox " Before : SetTagValEx(SCDigTag) Value = "
	+ ole.GetTagVal("tagName")
	Value = 1
	TransNo = ole.SetTagVaLEx (1, "tagName", Value , "Script", NULL)
	MsgBox " After : SetTagValEx(tagName) Value = "
	+ ole.GetTagVal("tagName")
	End Sub

Script Function 4.2.4

Item	Description
Туре	VOID RunScript (BSTR szScriptName)
Kind	Script Function
Description	Run Script
	szScriptName: Script Name
Example	Sub Main
	Dim scTime As Variant
	ole.RunScript("Script Name")
	End Sub

Item	Description
Туре	VOID StopScript (BSTR szScriptName)
Kind	Script Function
Description	Stop Script
	szScriptName: Script Name
Example	Sub Main
	Dim scTime As Variant
	ole.StopScript("Script Name")
	End Sub

Item	Description
Туре	VOID TimeOutMsgBox (BSTR Msg, BSTR Title, Int nSec)
Kind	Script Function
Description	Display message box while time interval
	In case of use normal message box in script, be careful of closing script function
	Msg: message contents
	Title: title
	nSec: time interval (second)
Example	Sub Main
	ole.TimeOutMsgBox "Today is Holiday","Title",5
	End Sub

4.2.5 Event Function

Item	Descriptio
Туре	LONG NotifyAlarmEvent (DOUBLE IIOccur, USHORT nAlmLevel, BSTR
	szMessage, BSTR szArea, BSTR szOUser, BSTR szInformation, BSTR
	szUserDefine1, BSTR szUserDefine2, BSTR szUserDefine3, BSTR
	szUserDefine4, BSTR szPrev, BSTR szCur, BSTR szObject)
Kind	Event Function
Description	Occur Alarm & Event.
	I/Occur: Occurrence Time. NULL = current time
	nAlmLevel: The level of alarm
	szMessage: Message
	szArea: Occurrence Region
	szOUser. Occurrence User
	szInformation: Information
	szUserDefine1: User Definition1
	szUserDefine2: User Definition2
	szUserDefine3: User Definition3
	szUserDefine4: User Definition4
	szPrev: Pervious Value of Message
	szCur. New Value of Message
	szObject: Message Object
Example	Sub Main
	Dim IRet As Long
	Dim dDate As Double
	Dim iLevel As Integer
	ole.ChangeProcessServer("ALM_PROC","150.150.32.60")
	If IRet <> 0 Then
	MsgBox "ChangeProcessServer() False : ret = " + CStr(IRet)
	Else
	MsgBox "ChangeProcessServer() OK : ret = " + CStr(IRet)
	End If
	dDate = NUL
	iLevel = 1
	IRet = ole.NotifyAlarmEvent(dDate, iLevel,"NotifyAlarmEvent Test", _
	"Script", "Script", "Interfun API Success", "", "", "", _
	"", "before bun", "after Run","")
	If IRet <> 0 Then
	MsgBox "NotifyAlarmEvent() False : ret = " + CStr(IRet)
	Else
	MsgBox "NotifyAlarmEvent() OK : ret = " + CStr(IRet)

Appendix 4 Function

	End If
	End Sub

Item	Description
Туре	VOID SendEmail (BSTR szMailAddTo, BSTR szMailAddFrom, BSTR szMailTitle ,
	BSTR szMailMsg)
Kind	Event Function
Description	Send E-Mail
	szMailAddTo: E-Mail Sender
	szMailAddFrom: E-Mail Receiver
	szMailTitle: E-Mail Title
	szMailMsg : E-Mail Body
Example	Sub Main
	ole.SendEmail("receiver@ls-electric.com","sender@ls-electric.com",
	"title","message: Script Test Good~~!!")
	End Sub

Item	Description
Туре	VOID SendSMS (BSTR szRecvPhoneNo, BSTR szCallBackPhoneNo, BSTR
	szSMSMsg)
Kind	Event Function
Description	Send SMS.
	szRecvPhoneNo: The phone number of SMS receiver
	szCallBackPhoneNo : The phone number of SMS sender
	szSMSMsg: SMS Message (English:80, Korean:40)
Example	Sub Main
	ole.SendSMS("0194851234","0194850000","Script Test")
	End Sub

4.2.6 Log Function

Item	Description
Туре	VOID NotifyError (USHORT nLogCategory, BSTR szMsg, BSTR szDesc)
Kind	Log Function
Description	Error Logs are recorded.
	nLogCategory: Log Category (Default : LOG_CATE_SCRIPT= 1, 0)
	szMsg: Log Message
	szDesc: Log Description
Example	Sub Main
	ole.NotifyError(1, "ERROR", "Notify_ERROR")
	End Sub

Item	Description
Туре	VOID NotifyHostError (BSTR szHostName, USHORT nLogCategory, BSTR
	szMsg, BSTR szDesc)
Kind	Log Function
Description	Error Logs are recorded to specified computer.
	szHostName: Target computer Name
	nLogCategory: Log Category (Default : LOG_CATE_SCRIPT= 1, 0)
	szMsg: Log Message
	szDesc: Log Description
Example	Sub Main
	ole.NotifyHostError("127.0.0.1",1, "HOST_ERROR",
	"Notify_HOST_ERROR")
	End Sub

Item	Description
Туре	VOID NotifyHostInfo (BSTR szHostName, USHORT nLogCategory, BSTR
	szMsg, BSTR szDesc)
Kind	Log Function
Description	Information Logs are recorded to specified computer.
	szHostName: Target computer Name
	nLogCategory: Log Category (Default : LOG_CATE_SCRIPT= 1, 0)
	szMsg: Log Message
	szDesc: Log Description
Example	Sub Main
	ole.NotifyHostInfo ("127.0.0.1",1, "HOST_INFO",
	"Notify_HOST_INFO")
	End Sub

Item	Description
Туре	VOID NotifyHostLog (USHORT nLogType, USHORT nLogCategory, BSTR
	szHostName, BSTR szMsg, BSTR szDesc)
Kind	Log Function
Description	Logs are recorded to specified computer.
	nLogType: Log type(1 = INFO_LOG_TYPE(information), 2 =
	WARN_LOG_TYPE (warning), 3 = ERRO_LOG_TYPE(error))
	nLogCategory: Log Category (Default : LOG_CATE_SCRIPT= 1, 0)
	szHostName: Target computer Name
	szMsg: Log Message
	szDesc: Log Description
Example	Sub Main
	ole.NotifyHostLog(1, 1, "127.0.0.1", "HOST_INFO",
	"NotifyHostLog INFO")
	ole.NotifyHostLog(2, 1, "127.0.0.1", "HOST_WARN",
	"NotifyHostLog _ WARN")
	ole.NotifyHostLog(3, 1, "127.0.0.1","HOST_ERROR",
	"NotifyHostLog _ ERROR")
	End Sub

Item	Description
Туре	VOID NotifyHostWarn (BSTR szHostName, USHORT nLogCategory, BSTR
	szMsg, BSTR szDesc)
Kind	Log Function
Description	Warning Logs are recorded.
	szHostName: Target computer Name
	nLogCategory: Log Category (Default : LOG_CATE_SCRIPT= 1, 0)
	szMsg: Log Message
	szDesc: Log Description
Example	Sub Main
	ole.NotifyHostWarn ("127.0.0.1",1, "HOST_WARN", "Notify_HOST_WARN")
	End Sub

Item	Description
Туре	VOID NotifyInfo (USHORT nLogCategory, BSTR szMsg, BSTR szDesc)
Kind	Log Function
Description	Information Logs are recorded.
	nLogCategory: Log Category (Default : LOG_CATE_SCRIPT= 1, 0)
	szMsg: Log Message
	szDesc: Log Description
Example	Sub Main
	ole.NotifyInfo(1, "INFO", "Notify_INFO")
	End Sub

Item	Description
Туре	VOID NotifyLog (USHORT nLogType, USHORT nLogCategory, BSTR szMsg,
	BSTR szDesc)
Kind	Log Function
Description	Logs are recorded
	nLogType: Log type (1 = INFO_LOG_TYPE(Information), 2 = WARN_LOG_TYPE
	(Warning), 3 = ERRO_LOG_TYPE(Error))
	nLogCategory: Log Category (Default : LOG_CATE_SCRIPT= 1, 0)
	szMsg: Log Message
	szDesc: Log Description
Example	Sub Main
	ole.NotifyLog(1, "INFO", 1,"NotifyLog _ INFO")
	ole.NotifyLog(2, "WARN", 1, "NotifyLog _ WARN")
	ole.NotifyLog(3, "ERROR",1,"NotifyLog _ ERROR")
	End Sub

Item	Description
Туре	VOID NotifyWarn (USHORT nLogCategory, BSTR szMsg, BSTR szDesc)
Kind	Log Function
Description	Warning Logs are recorded
	nLogCategory: Log Category (Default : LOG_CATE_SCRIPT= 1, 0)
	szMsg: Log Message
	szDesc: Log Description
Example	Sub Main
	ole.NotifyWarn(1, "WARN", "Notify_WARN")
	End Sub

4.2.7 Network Function

Item	Description
Туре	BSTR ChangLine (BSTR szLineMode, BSTR szTargetLineIP)
Kind	Network Function
Description	Changes a network line with designation IP address
	szLineMode: line mode (DEFAULT, SUB)
	szTargetLineIP: line IP address
Example	Sub Main
	Dim bRet As Boolean
	bRet = ole.ChangLine("DEFAULT", "xxx.xxx.xxx")
	If bRet <> 0Then
	MsgBox "ChangLine FALSE"
	Else
	MsgBox "ChangLine OK"
	End If
	End Sub

Item	Description
Туре	LONG ChangeProcessServer (BSTR szProcessName, BSTR szProcessIP)
Kind	Network Function
Description	Changes with process of network address (IP).
	szProcessName: process name
	szProcessIP: target computer's IP address
Example	Sub Main
	Dim IRet As Long
	<pre>IRet = ole.ChangeProcessServer("ALM_PROC","xxx.xxx.xxx.xxx")</pre>
	If IRet <> 0 Then
	MsgBox "ChangeProcessServer() False"
	Else
	MsgBox "ChangeProcessServer() OK "
	End If
	End Sub

Item	Description
Туре	LONG ChangeServerMode (BSTR szServerMode)
Kind	Network Function
Description	Changes a server mode.(redundancy option only)
	szServerMode: target mode (NORMAL, RUN, STANDBY)
Example	Sub Main

Dim IRet As Long
<pre>IRet = ole.ChangeServerMode("NORMAL")</pre>
If IRet <> 0 Then
MsgBox "ChangeServerMode()False"
Else
MsgBox "ChangeServerMode() OK"
End If
End Sub

Item	Description
Туре	LONG GetCurLine (int* nCurLine)
Kind	Network Function
Description	Get current used line.(line redundancy option only)
	nCurLine: network line(0: Default IP, 1: Sub IP, 2: stop)
Example	Sub Main
	Dim IRet As Long
	Dim ILineSatus As Long
	IRet = ole.GetCurLine(ILineSatus)
	If IRet <> 0 Then
	MsgBox "GetCurLine()False => Status " + CStr(ILineSatus)
	Else
	MsgBox "GetCurLine() OK => Status " + CStr(ILineSatus)
	End If
	End Sub

Item	Description
Туре	INT GetLineStatus (INT nLineMode)
Kind	Network Function
Description	Get current line status
	nLineMode: line status
Example	Sub Main
	Dim IRet As Long
	Dim ILineStatus As Long
	ILineStatus = 0
	IRet = ole.GetLineStatus(ILineStatus)
	If (IRet = 1) Then
	MsgBox "GetLineStatus() OK: " + CStr(ILineStatus)
	Else
	MsgBox "GetLineStatus() FALSE: " + CStr(ILineStatus)
	End If
	End Sub

Item	Description
Туре	BSTR GetNodeCurIP (BSTR szNodeName)
Kind	Network Function
Description	Get current used node IP address
	szNodeName: node name(computer name)
Example	Sub Main
	Dim IP As String
	IP = ole.GetNodeCurIP("SERVER")
	MsgBox "GetNodeCurIP() => SERVER " + IP
	End Sub

Item	Description
Туре	BSTR GetServerMode ()
Kind	Network Function
Description	Get server mode(mode: run, standby)
Example	Sub Main
	Dim SvrMode As String
	SvrMode = ole.GetServerMode
	MsgBox "GetServerMode : " + SvrMode
	End Sub

Item	Description
Туре	BOOL IsDualLine ()
Kind	Network Function
Description	Get network line redundancy settings
Example	Sub Main
	Dim bRet As Boolean
	bRet = ole.IsDualLine
	If bRet = True Then
	MsgBox "IsDualLine OK"
	Else
	MsgBox "IsDualLine FALSE"
	End If
	End Sub

4.2.8 System Function

Item	Description
Туре	VARIANT GetSystemTime ()
Kind	System Function
Description	Get current system time
Example	Sub Main
	Dim scTime As Variant
	scTime = ole.GetSystemTime
	If IRet <> 0 Then
	MsgBox "GetSystemTime() False"
	Else
	MsgBox "GetSystemTime() OK" + scTime
	End If
	End Sub

Item	Description
Туре	LONG IsHoliday (szDateTime)
Kind	System Function
Description	It informs you of whether the date delivered as a factor is a holiday or not.
	szDateTime: YYYY/MM/DD HH:MM:SS
	Return Value: 0=Weekday, 1=Saturday, 2=Sunday, 3=Holiday
Example	Sub Main
	Dim szDateTime
	Dim IRetn
	szDateTime = Format(Now(),"YYYY/MM/DD HH:MM:SS")
	IRetn = ole.lsHoliday(szDateTime)
	If IRetn = 0 Then
	Debug.Print "Today is a Weekday"
	Elself IRetn = 1 Then
	Debug.Print "Today is Saturday"
	Elself IRetn = 2 Then
	Debug.Print "Today is Sunday"
	Elself IRetn = 3 Then
	Debug.Print "Today is Holiday"
	End If
	End Sub

Item	Description
Туре	VOID ProcessSleep(LONG dwMiliseconds)
Kind	System Function
Description	Suspends the current process for a specified time
	dwMiliseconds: millisecond
Example	Sub Main
	Dim scTime As Variant
	ole.ProcessSleep(1000)
	End Sub

Item	Description
Туре	VOID RunApp (BSTR szAppPath)
Kind	System Function
Description	Excute application. (include path)
	szAppPath: application path
Example	Sub Main
	Dim scTime As Variant
	ole.RunApp("C:\WINDOWS\System32\mspaint.exe")
	End Sub

Item	Description
Туре	VOID ShowAlarmPage (BSTR szAlarmTag)
Kind	System Function
Description	This function displays the alarm page with tag which is occured alram
	szAlarmTag: Tag name
Example	Sub Main
	Dim scTime As Variant
	ole. ShowAlarmPage ("Tag name")
	End Sub

Item	Description
Туре	VOID Sleep(LONG dwMiliseconds)
Kind	System Function
Description	Suspends the current script for a specified time
	dwMiliseconds: millisecond
Example	Sub Main
	Dim scTime As Variant
	ole. Sleep(1000)
	End Sub

Item	Description
Туре	BSTR TimeConvert(DOUBLE dTimeValue, INT nTimeType)
Kind	System Function
Description	According to format outputs a time in string
	dTimeValue current time. (ex <=0 : curent time)
	nTimeType:
	0 : HH:MM
	1 : HH:MM AM/PM
	2 : HH:MM:SS
	3 : HH:MM:SS AM/PM
	7 : mm/dd
	8 : mm-dd
	10 : yy/mm/dd
	11 : yy-mm-dd
	13 : yyyy/mm/dd
	14 : yyyy-mm-dd
	15 : mm/dd HH:MM
	16 : mm/dd HH:MM AM/PM
	17 : mm/dd HH:MM:SS
	18 : mm/dd HH:MM:SS AM/PM
	19 : mm-dd HH:MM
	20 : mm-dd HH:MM AM/PM
	21 : mm-dd HH:MM:SS
	22 : mm-dd HH:MM:SS AM/PM
	23 : yy/mm/dd HH:MM
	24 : yy/mm/dd HH:MM AM/PM
	25 : yy/mm/dd HH:MM:SS
	26 : yy/mm/dd HH:MM:SS AM/PM
	27 : yy-mm-dd HH:MM
	28 : yy-mm-dd HH:MM AM/PM
	29 : yy-mm-dd HH:MM:SS
	30 : yy-mm-dd HH:MM:SS AM/PM
	31 : yyyy/mm/dd HH:MM
	32 : yyyy/mm/dd HH:MM AM/PM
	33 : yyyy/mm/dd HH:MM:SS
	34 : yyyy/mm/dd HH:MM:SS AM/PM
	35 : yyyy-mm-dd HH:MM
	36 : yyyy-mm-dd HH:MM AM/PM
	37 : yyyy-mm-dd HH:MM:SS
	38 : yyyy-mm-dd HH:MM:SS AM/PM

Item	Description
Туре	BSTR TimeConvert(DOUBLE dTimeValue, INT nTimeType)
Kind	System Function
	45 : yy/mm
	47 : yyyy/mm
	49 : yy
	50 : yyyy
	51 : mm
	52 : dd
	53 : HH
	54 : MM
	55 : SS
	65 : "SUN" ~ "SAT"
Example	Sub Main
	Dim szTime As String
	szTime = ole.TimeConvert (1, 33)
	MsgBox szTime
	End Sub

Recipe Function 4.2.9

Item	Description
Туре	LONG RecipeChangeData (BSTR szModelName, BSTR szRecipeName)
Kind	Recipe Function
Description	Change Data Set of the workingset (Model must be the workingset's model)
	szModelName: Recipe Model Name
	szRecipeName: The data name belonging to the recipe model
Example	Sub Main
	Dim Result As Long
	Result = ole.RecipeLoadSet("CoffeDispenser2",NUL,"CreamCoffee")
	If (Result <> 0) Then
	MsgBox("RecipeLoadSet : Error~~!!")
	Else
	Result = ole.RecipeChangeData("CoffeDispenser2","CoffeeA")
	16.65
	If (Result <> 0) Then
	MsgBox("RecipeChangeData : Error~~!!")
	Else
	MsgBox("RecipeChangeData : OK~~!!")
	End If
	End If
	End Sub

Item	Description
Туре	LONG RecipeChangeUnit (BSTR szModelName, BSTR szUnitName)
Kind	Recipe Function
Description	Change Unit Set of the workingset (Model must be the workingset's model)
	szModelName: Recipe Model Name
	szUnitName: The unit name belonging to the recipe model
Example	Sub Main
	Dim Result As Long
	Result = ole.RecipeLoadSet("CoffeDispenser2",NUL,NUL)
	If (Result <> 0) Then
	MsgBox("RecipeLoadSet : Error~~!!")
	Else
	Result = ole.RecipeChangeUnit("CoffeDispenser2", _
	"OfficeDispenser")

If (Result <> 0) Then
MsgBox("RecipeChangeUnit : Error~~!!")
Else
MsgBox("RecipeChangeUnit : OK~~!!")
End If
End If
End Sub

Item	Description
Туре	LONG RecipeControlSet (BSTR szModelName, BSTR szUnitName, BSTR
	szDataNamet)
	LONG RecipeControlSetEx (SHORT nMode, BSTR szClientProgName, ULONG
	hClientHandle, BSTR szModelName, BSTR szUnitName, BSTR szDataName,
	LONG* plTransNo, SHORT* pnResult)
Kind	Recipe Function
Description	Perform recipe control with the model, unit and data information. (This function has
	no connection with workingset)
	nMode: Control Mode (nMode : 1: no return, 2: Return)
	szClientProgName: The program name that want to recipe control.
	hClientHandle: The client handle that want to recipe control.
	szModelName : Recipe Model Name
	szUnitName: The unit name belonging to the recipe model
	szDataName: The data name belonging to the recipe model
	plTransNo: In the case of recipe control return mode, The transaction number
	when control was succefully completed
	pnResult: Result of function
Example	Sub Main
	Dim TransNo As Long Dim Result As Long
	Dim Result2 As Integer
	Result = ole.RecipeLoadSet("CoffeDispenser2",NUL,"CoffeeA")
	Treadit = did.ired.ipezaddest(deired.isperiodiz ;rrez, deired.rr)
	If (Result <> 0) Then
	MsgBox("RecipeLoadSet : Error~~!!")
	Else
	Result2 = ole.RecipeControlSetEx(2,"Script",this, _
	"CoffeDispenser2","OfficeDispenser","CoffeeA",TransNo)
	Result2 = ole.RecipeControlSet("CoffeDispenser2", _

```
"OfficeDispenser", "CoffeeA")
    If (Result2 <> 0) Then
     MsgBox("RecipeControlSet : Error~~!!")
     MsgBox("RecipeControlSet : OK~~!! , TransNO = " _
     + CStr(TransNo))
    End If
 End If
End Sub
```

Item	Description
Туре	LONG RecipeControlWorkingSet ();
	LONG RecipeControlWorkingSetEx (SHORT nMode, BSTR szClientProgName,
	ULONG hClientHandle, LONG* plTransNo, SHORT* pnResult);
Kind	Recipe Function
Description	Control workingset data with unit name. (There is no control return)
	nMode: Control Mode (nMode: 1:No Return, 2:Return)
	szClientProgName: The program name that want to control
	hClientHandle: The client handle that want to control
	plTransNo: In the case of recipe control return mode, The transaction number
	when control was succefully performed
	pnResult: Result of function
Example	Sub Main
	Dim TransNo As Long
	Dim Result As Long
	Dim Result2 As Integer
	Result = ole.RecipeLoadSet("CoffeDispenser2",NUL,"CoffeeA")
	If (Result <> 0) Then
	MsgBox("RecipeLoadSet : Error~~!!")
	Else
	Result2 = ole.RecipeControlWorkingSetEx(2,"Script",this, TransNo)
	Result2 = ole.RecipeControlWorkingSet()
	If (Result2 <> 0) Then
	MsgBox("RecipeControlWorkingSet : Error~~!!")
	Else
	MsgBox("RecipeControlWorkingSet : OK~~!! , TransNO = " +

CStr(TransNo))
End If
End If
End Sub

Item	Description
Туре	LONG RecipeDeleteData (BSTR szModelName, BSTR szRecipeName)
Kind	Recipe Function
Description	Delete Recipe Data
	szModelName : Recipe Model Name
	szRecipeName: The data name belonging to the recipe model
Example	Sub Main
	Dim Result As Long
	Result = ole.RecipeDeleteData("CoffeDispenser2","Amerian")
	If (Result <> 0) Then
	MsgBox("RecipeDeleteData : Error~~!!")
	Else
	MsgBox("RecipeDeleteData : OK~~!!")
	End If
	End Sub

Item	Description
Туре	LONG RecipeDeleteModel (BSTR szModelName)
Kind	Recipe Function
Description	Delete Recipe Model (The recipe unit and data will be deleted belonging to recipe
	model)
	szModelName: Recipe Model Name
Example	Sub Main
	Dim Result As Long
	Result = ole.RecipeDeleteModel("CoffeDispenser3")
	If (Result <> 0) Then
	MsgBox("RecipeDeleteModel : Error~~!!")
	Else
	MsgBox("RecipeDeleteModel : OK~~!!")
	End If
	End Sub

Appendix 4 Function

Item	Description
Туре	LONG RecipeDeleteUnit (BSTR szModelName, BSTR szUnitName)
Kind	Recipe Function
Description	Delete Recipe Unit
	szModelName: Recipe Model Name
	szUnitName: The unit name belonging to the recipe model
Example	Sub Main
	Dim Result As Long
	Result = ole.RecipeDeleteUnit("CoffeDispenser2","SubOfficeDispenser")
	If (Result <> 0) Then
	MsgBox("RecipeDeleteUnit : Error~~!!")
	Else
	MsgBox("RecipeDeleteUnit : OK~~!!")
	End If
	End Sub

Item	Description
Туре	LONG RecipeLoadDynamic (BSTR szModelName, BSTR szUnitName)
Kind	Recipe Function
Description	Get real-time data of the unit and put recipe model and data on workingset
	szModelName: Recipe Model Name
	szUnitName: The unit name belonging to the recipe model
Example	Sub Main
	Dim Result As Long
	Result = ole.RecipeLoadDynamic("CoffeDispenser2","MainOfficeDispenser ")
	If (Result <> 0) Then
	MsgBox("RecipeLoadDynamic : Error~~!!")
	Else
	MsgBox("RecipeLoadDynamic : OK~~!!")
	End If
	End Sub

Item	Description
Туре	LONG RecipeLoadSet (BSTR szModelName, BSTR szUnitName, BSTR
	szRecipeName)
Kind	Recipe Function
Description	Put recipe model, unit and data on workingset
	szModelName: Recipe Model Name
	szUnitName: The unit name belonging to the recipe model
	szRecipeName: The data name belonging to the recipe model
Example	Sub Main
	Dim Result As Long
	Result = ole.RecipeLoadSet("CoffeDispenser2",NUL,"CreamCoffee")
	If (Result <> 0) Then
	MsgBox("RecipeLoadSet : Error~~!!")
	Else
	MsgBox("RecipeLoadSet : OK~~!!")
	End If
	End Sub

Item	Description
Туре	LONG RecipeSaveAsArchive (BSTR szModelName, BSTR szRecipeName)
Kind	Recipe Function
Description	Save workingset data as recipe name of the model name. (Model must be the
Description	workingset's model)
	szModelName: Recipe Model Name
	szRecipeName: The data name belonging to the recipe model
Evample	Sub Main
Example	
	Dim Result As Long
	Result = ole.RecipeLoadSet("CoffeDispenser2",NUL,"BlackCoffee")
	If (Result <> 0) Then
	MsgBox("RecipeLoadSet : Error~~!!")
	Else
	Result = ole.RecipeSaveAsArchive("CoffeDispenser2", _
	"BlackCoffee")
	If (Result <> 0) Then
	MsgBox("RecipeSaveAsArchive : Error~~!!")
	Else
	MsgBox("RecipeSaveAsArchive : OK~~!!")
	End If
	End If
	End Sub

Item	Description
Туре	LONG RecipeSetData (BSTR szModelName, BSTR szItemName, VARIANT
	szSetValue)
Kind	Recipe Function
Description	Change position value of the item in the workingset (Model must be the
	workingset's model)
	szModelName : Recipe Model Name
	szltemName: Item in the workingset
	szSetValue: The change value of the item position in the workingset
Example	Sub Main
	Dim vtSetValue As Variant
	Dim Result As Long
	Result = ole.RecipeLoadSet("CoffeDispenser2",NUL,NUL)
	vtSetValue = 55
	If (Result <> 0) Then
	MsgBox("RecipeLoadSet : Error~~!!")
	Else
	Result = ole.RecipeSetData("CoffeDispenser2", _
	"Coffee",vtSetValue)
	If (Result <> 0) Then
	MsgBox("RecipeSetData : Error~~!!")
	Else
	MsgBox("RecipeSetData : OK~~!!")
	End If
	End If
	End Sub

4.2.10 Database Function

Item	Description
Туре	VOID DataExportRunWork (BSTR szWorkName)
Kind	Database Function
Description	Run data export operation
	szWorkName : Operation Name
Example	Sub Main
	ole. DataExporRuntWork ("OperationName")
	End Sub

4.2.11 Alarm Function

Item	Description
Туре	BOOL AckAllAlarm()
Kind	Alarm Function
Description	The function ACKs all alarm with level of connected users.
Example	Sub Main
	ole. AckAllAlarm
	End Sub

Item	Description
Туре	LONG GetAlarmCount (BSTR szAlarmGrName,LONG IStatus)
Kind	Alarm Function
Description	The function returns real time alarm counts.
	szAlarmGrName: Alarm Group
	IStatus: Alarm Status
	O : All
	1 : Unrecovered
Example	Sub Main
	Dim AlmCount As Long
	AlmCount = ole. GetAlmCount("AlmGrp_FA", 1)
	If AlmCount > 0 Then
	MsgBox "Alarm Count = " + CStr(AlmCount)
	End If
	End Sub

Item	Description
Туре	BSTR GetAlarmCountErrInfo (LONG ICount)
Kind	Alarm Function
Description	Give an explanation of the error number when you request the alarm count.
	ICount: Function GetAlmCount(),The Return Value of GetHistAlmCount() < 0
Example	Sub Main
	Dim szErrDesc As String
	Dim AlmCount As Long
	AlmCount = ole. GetHistAlmCount (1, 0)
	If AlmCount < 0 Then
	szErrDesc = ole.GetAlarmCountErrInfo (AlmCount)
	MsgBox szErrDesc
	End If
	End Sub

Item	Description
Туре	LONG GetAlarmLogging (DOUBLE dtFrom, DOUBLE dtTo, BSTR szTag, BSTR
	szAlarmGr, LONG IAlarmType, LONG *IOutCount, SAFEARRAY **pszRstrTag,
	SAFEARRAY **pszRstrGr, SAFEARRAY **pdbRdtOccAlarm, SAFEARRAY
	**pdbRdtRevAlarm, SAFEARRAY **pdbRdtAckAlarm, SAFEARRAY
	**pIRnAlarmType, SAFEARRAY **pszRstrMsg, SAFEARRAY **pszRstrAlarmKind)
Kind	Alarm Function
Description	This function retrieves history alarm list according to the condition
	dtFrom: Beginning Time (from the first data, if 0)
	dtTo: End Time (to the last data, if 0)
	szTag: Tag Name (NULL: ALL)
	szAlarmGr. Alarm Group (NULL: ALL)
	IAlarmType: Alarm Type
	(0: ALL,
	1: Alarm(Occurrence),
	2: Event,
	3: Alarm(Recovery),
	4: Alarm (Occurrence+Recovery))
	IOutCount: Alarm List Count
	pszRstrTag: Tag Name List
	pszRstrGr. Alarm Group List
	pdbRdtOccAlarm: List of Alarm Occurrence Times
	pdbRdtRevAlarm: List of Alarm Occurrence Times
	pdbRdtAckAlarm: List of Alarm Ack Times
	plRnAlarmType: List of Alarm Types
	pszRstrMsg: List of Alarm Messages
	pszRstrAlarmKind: Alarm Type
	(HH,HI,LO,LL,Achange,MGap,SGap,On,Off,OnOff,OffOn,DChagne)

Example	Sub Main
	Dim dtFrom As Date
	Dim dtTo As Date
	Dim szTag As String
	Dim szAlarmGr As String
	Dim lAlarmType As Long
	Dim lOutCount As Long
	Dim aRstrTag() As String
	Dim aRstrGr() As String
	Dim aRdtOccAlarm() As Double
	Dim aRdtRevAlarm() As Double
	Dim aRdtAckAlarm() As Double
	Dim aRnAlarmType() As Long
	Dim aRstrMsg() As String
	Dim aRstrAlarmKind() As String
	dtFrom = Now() - 27
	dtTo =Now()
	szTag =""
	szAlarmGr = "AlmGrp_UT"
	IAlarmType = 0
	IRet = ole.GetAlarmLogging(dtFrom ,dtTo , szTag ,
	szAlarmGr,lAlarmType,lOutCount, aRstrTag, aRstrGr,
	aRdtOccAlarm, aRdtRevAlarm,aRdtAckAlarm, aRnAlarmType,
	aRstrMsg,aRstrAlarmKind)
	For i = 0 To IOutCount - 1
	MsgBox (aRstrTag(i) + " " + aRstrGr(i) + " "+
	CStr(CDate(aRdtOccAlarm(i))) + " "+
	CStr(CDate(aRdtRevAlarm(i))) + " "+
	CStr(CDate(aRdtAckAlarm(i))) + " " +
	CStr(aRnAlarmType(i)) + " " +
	aRstrMsg(i) + " " + aRstrAlarmKind(i))
	Next i
	End Sub

Item	Description
Туре	LONG GetAlarmLoggingEx (DOUBLE dtFrom,DOUBLE dtTo,BSTR szTag,
	LONG nAlarmGroupCount, SAFEARRAY **pszAlarmGr,LONG lAlarmType,
	LONG IAlarmGrade, BSTR szAlarmKind, LONG *IOutCount,
	SAFEARRAY**pRstrTag,SAFEARRAY**pRstrGr, SAFEARRAY
	**pdbRdtOccAlarm, SAFEARRAY **pdbRdtRevAlarm, SAFEARRAY
	**pdbRdtAckAlarm, SAFEARRAY **plRnAlarmType, SAFEARRAY **pszRstrMsg,
	SAFEARRAY **pszRstrAlarmKind, SAFEARRAY **pdbRvOccDValue,
	SAFEARRAY**pszRvOccSValue, SAFEARRAY **plAlarmGrade)
Kind	Alarm Function
Description	This function retrieves history alarm list according to the condition, extension
	function of GetAlarmLogging()
	dtFrom: Beginning Time (from the first data, if 0)
	dtTo: End Time (to the last data, if 0)
	szTag: Tag Name (NULL: ALL)
	nAlarmGroupCount. Alarm Group Count
	pszAlarmGr. Alarm Group List (NULL: ALL)
	IAlarmType: Alarm Type (Event has only Occurrence.)
	(0: ALL,
	1: Alarm(Occurrence),
	2: Event,
	3: Alarm(Recovery),
	4: Alarm (Occurrence+Recovery))
	IAlarmGrade: Alarm Level.
	You can get the alarm lists that have higher level than this level. Level1 is higher
	than Level10.
	ex) If input is level5, returns level1 ~ level5.
	szAlarmKind:: Alarm Type
	(NULL: ALL, HH,HI,LO,LL,Achange,MGap,SGap,
	On,Off,OnOff,OffOn,DChagne)
	IOutCount: Alarm List Count
	pszRstrTag: List of Tag Names
	pszRstrGr. List of Alarm Groups
	pdbRdtOccAlarm: List of Alarm Occurrence Times
	pdbRdtRevAlarm: List of Alarm Recovery Times
	pdbRdtAckAlarm: List of Alarm Ack Times
	pIRnAlarmType: List of Alarm Types
	pszRstrMsg: List of Alarm Messages
	pszRstrAlarmKind: Alarm Type
	(HH,HI,LO,LL,Achange,MGap,SGap,On,Off,OnOff,OffOn,DChagne)

	pdbRvOccDValue List of Current Values (Only if Alarm)
	pszRvOccSValue: List of Current Values (only if Event)
	plAlarmGrade: List of Alarm Levels
Example	Sub Main
	Dim dtFrom As Double
	Dim dtTo As Double
	Dim szTag As String
	Dim nAlarmCount As Long
	Dim aAlarmGr(0) As String
	Dim IAlarmType As Long
	Dim IAlarmGrade As Long
	Dim szAlarmKind As String
	Dim lOutCount As Long
	Dim aRstrTag() As String
	Dim aRstrGr() As String
	Dim aRdtOccAlarm() As Double
	Dim aRdtRevAlarm() As Double
	Dim aRdtAckAlarm() As Double
	Dim aRnAlarmType() As Long
	Dim aRstrMsg() As String
	Dim aRstrAlarmKind() As String
	Dim aOccDvalue() As Double
	Dim aOccSValue() As String
	Dim aAlarmLevel() As Long
	dtFrom = Now() - 27
	dtTo = Now
	szTag =""
	nAlarmCount = 1
	aAlarmGr(0) = "AlmGrp_UT"
	IAlarmType = 4
	IAlarmGrade = 10
	szAlarmKind = "LO"
	IRet = ole.GetAlarmLoggingEx (dtFrom ,dtTo , szTag , nAlarmCount,
	aAlarmGr,lAlarmType,lAlarmGrade, szAlarmKind,
	lOutCount, aRstrTag, aRstrGr, aRdtOccAlarm,
	aRdtRevAlarm,aRdtAckAlarm, aRnAlarmType,

```
aRstrMsg,aRstrAlarmKind, aOccDvalue,
aOccSValue, aAlarmLevel)

For i = 0 To lOutCount
MsgBox (aRstrTag(i) + " " + aRstrGr(i) + " "+
CStr(CDate(aRdtOccAlarm(i)))+ " "+
CStr(CDate(aRdtRevAlarm(i)))+ " "+
CStr(CDate(aRdtAckAlarm(i))) + " " +
CStr(aRnAlarmType(i)) + " " +
aRstrMsg(i) + " " + aRstrAlarmKind(i))

Next i
End Sub
```

Item	Description
Туре	LONG GetAlmCount (LONG IKind, LONG IStatus)
Kind	Alarm Function
Description	Inform the real-time alarm count.
	IKind: Alarm Kind
	0 : All
	1 : Process Alarm
	2 : System Alarm
	3 : Process + System
	4 : Event
	5 : Process + Event
	6 : System + Event
	IStatus: Alarm Status
	0 : All
	1 : Unrecovered
	2 : Unrecognized
	3 : Unrecovered + Unrecognized
Example	Sub Main
	Dim AlmCount As Long
	AlmCount = ole. GetAlmCount(1, 0)
	If AlmCount > 0 Then
	MsgBox "Real-time Alarm Count = " + CStr(AlmCount)
	End If
	End Sub

Item	Description
Туре	LONG GetGroupUserInfoByTag (BSTR szTagName, LONG* lOutCount,
	SAFEARRAY(BSTR) *pszUserID, SAFEARRAY(BSTR) *pszUserName,
	SAFEARRAY(LONG) *plMailCheck, SAFEARRAY(LONG) *plSMSMCheck,
	SAFEARRAY(BSTR) *pszMailAdd, SAFEARRAY(BSTR) *pszHPhoneNo)
Kind	Alarm Function
Description	Get registered user information of the alarm group that contains specified tag by
	tag name.
	It is used to call the relevant user with tag information (alarm information)
	szTagName: Tag Name
	IOutCount: Count of the returned user information
	pszUserID: User ID
	pszUserName: User Name
	plMailCheck:: Check whether to receive a mail notice in case of the occurrence of
	alarm
	pISMSMCheck: Check whether to receive a SMS notice in case of the occurrence
	of alarm
	pszMailAdd: Mail address registered by the user
Fyerenie	pszHPhoneNo: Mobile phone number registered by the user
Example	Sub Main
	Dim lOutCount As Long
	Dim aUserID() As String
	Dim aUserName() As String
	Dim aMailCheck() As Long
	Dim aSMSCheck() As Long
	Dim aMailAdd() As String
	Dim aHPhoneNo() As String
	ole.GetGroupUserInfoByTag("AlmGrpTestTag", lOutCount, aUserID,
	aUserName, aMailCheck, aSMSCheck, aMailAdd, aHPhoneNo)
	For i = 0 To IOutCount
	MsgBox (aUserID(i) + " " + aUserName(i) + " "
	+ CStr(aMailCheck(i)) + " " + CStr(aSMSCheck(i))
	+ " " + aMailAdd(i) + " " + aHPhoneNo(i))
	Next i
	End Sub

Item	Description
Туре	LONG GetHistAlmCount (LONG IKind, LONG IStatus)
Kind	Alarm Function
Description	Inform the history alarm count
	IKind: Alarm Kind
	0 : All,
	1 : Process Alarm,
	2 : System Alarm,
	3 : Process + System,
	4 : Event,
	5 : Process + Event,
	6 : System + Event
	IStatus: Alarm Status
	0 : All,
	1 : UnRecover,
	2 : UnAck
Example	Sub Main
	Dim AlmCount As Long
	AlmCount = ole. GetHistAlmCount (1, 0)
	If AlmCount > 0 Then
	MsgBox "History Alarm Count = " + CStr(AlmCount)
	End If
	End Sub

Item	Description
Туре	LONG GetUserInfoList(LONG* IOutCount, SAFEARRAY(BSTR) *pszUserID,
	SAFEARRAY(BSTR) *pszUserName, SAFEARRAY(BSTR) *pszDesc,
	SAFEARRAY(BSTR) *pszPassword, SAFEARRAY(LONG) *plUserLevel,
	SAFEARRAY(BSTR) *pszHPhoneNo, SAFEARRAY(BSTR) *pszPhoneNo,
	SAFEARRAY(BSTR) *pszMailAdd)
Kind	Alarm Function
Description	The function returns all user's list and informations.
	IOutCount: Returned list count
	pszUserID : User ID
	pszUserName: User name
	pszDesc : User's description
	pszPassword : User's password
	plUserLevel: User's level

	pszHPhoneNo: User's cell phone number
	pszPhoneNo: User's phone number
	pszMailAdd: User's e-mail address
Example	Sub Main
	Dim IRet As Long
	Dim lOutCount As Long
	Dim aUserID() As String
	Dim aUserName() As String
	Dim aDesc() As String
	Dim aPassword() As String
	Dim aUserLevel() As Long
	Dim aMailAdd() As String
	Dim aHPhoneNo() As String
	Dim aPhoneNo() As String
	IRet = ole.GetUserInfoList(IOutCount, aUserID, aUserName, aDesc,
	aPassword, aUserLevel, aHPhoneNo, aPhoneNo, aMailAdd)
	For i = 0 To lOutCount - 1
	MsgBox (aUserID(i) + " " + aUserName(i) + " "+
	CStr(aUserLevel(i))+ " " + aHPhoneNo(i) + " "
	+ aPhoneNo(i)+ " " + aMailAdd(i))
	Next i
	End Sub

Item	Description
Туре	LONG SetUserAlarm (BSTR szAlarmMessage, BSTR szAlarmGroup)
Kind	Alarm Function
Description	This is the alarm function that user occurs. The alarm occurrence and recovery are
	generated at the same time
	szAlarmMessage: Alarm Message
	szAlarmGroup : Alarm Group
	Automatic entry
	user: Current logon user
	Occured Time, Recovery Time: current system time
	Alarm type: Process Alarm
	AlarmLevel: Input 10 level. Input "\$Script" in tag name
Example	Sub Main
	ole.SetUserAlarm "UserAlarm ", "AlarmGroup"
	End Sub

Item	Description
Туре	LONG SetUserAlarmEx (DOUBLE dOccur, LONG IAlarmLevel, BSTR
	szAlarmMessage ,BSTR szAlarmGroup, DOUBLE dCur, DOUBLE dPrev)
Kind	Alarm Function
Description	This is the extended alarm function that user occurs. The alarm occurrence and
	recovery are generated at the same time
	dOccur. Time Input - If you set this value by 0, current time value will be applied
	IAlarmLevel: Alarm Level - If you set this value from 0 to 10, then setting value will
	be applied. Else 10 will be applied automatically
	szAlarmMessage : Alarm Message
	szAlarmGroup : Alarm Group
	dCur: Current Value
	dPrev: Previous
	Automatic entry
	user: Current logon user
	Alarm type : Process Alarm
	Input "\$Script" in tag name
Example	Sub Main
	ole.SetUserAlarmEx Now(), 2, " UserAlarm ", "AlarmGroup", _
	22.34, 44.56
	End Sub

Item	Description
Туре	LONG SetUserEvent (BSTR szEventMessage)
Kind	Alarm Function
Description	This is the event function that user occurs.
	szEventMessage : Event Message
	Auto input Item
	Event time: Current system tme
	Event occur: Current logon user
	Occurred Computer. This Computer Name
	Alarm type: Event Alarm
Example	Sub Main
	ole.SetUserEvent "UserEvent"
	End Sub

Item	Description
Туре	VOID StopAlarmSound ()
Kind	Alarm Function
Description	The function stops playing sound of the alarm.
Example	Sub Main
	ole. StopAlarmSound
	End Sub

4.2.12 External Device Function

Item	Description
Туре	VOID PlaySound(BSTR szWaveFile)
Kind	External Device Function
Description	Play sound (Async)
	szSoundFile: wave file path
Example	Sub Main
	ole.PlaySound ("wave file .wav")
	End Sub

Item	Description
Туре	VOID PlaySoundFile (BSTR szSoundFile)
Kind	External Device Function
Description	Play sound (Sync)
	szSoundFile: wave file path
Example	Sub Main
	ole.PlaySoundFile("SoundFile.wav")
	End Sub

4.2.13 User Function

Item	Description
Туре	BSTR GetUserID ()
Kind	User Function
Description	The function returns ID of the user
Example	Sub Main
	Dim szUserID As String
	szUserID = ole. GetUserID
	MsgBox " User ID = "szUserID
	End Sub

Item	Description
Туре	LONG GetUserLevel ()
Kind	User Function
Description	The function returns Level of the user
Example	Sub Main
	Dim IRet As Long
	IRet = ole. GetUserLevel
	MsgBox " User Priority = "+ CScr(IRet)
	End Sub

Item	Description
Туре	LONG UserLogOff ()
Kind	User Function
Description	Notifies InfoU Runtime that a user has logged off
Example	Sub Main
	Dim IRet As Long
	IRet = ole.UserLogOff
	If IRet <> 0 Then
	MsgBox "UserLogOff() False"
	Else
	MsgBox "UserLogOff() OK"
	End If
	End Sub

Item	Description
Туре	LONG UserLogOn (BSTR szUserID, BSTR szPassWord)
Kind	User Function
Description	Notifies InfoU Runtime that a user has logged on
	szUserID: User ID
	szPassWord: User Password
Example	Sub Main
	Dim IRet As Long
	<pre>IRet = ole.UserLogOn("UserID", " UserPassword ")</pre>
	If IRet <> 0 Then
	MsgBox "UserLogOn() False"
	Else
	MsgBox "UserLogOn() OK"
	End If
	End Sub

4.2.14 Report Function

Item	Description
Туре	VOID ReportDialog ()
Kind	Report Function
Description	Shows the report windows
Example	Sub Main
	ole. ReportDialog
	End Sub

Item	Description
Туре	VOID ReportListRefresh()
Kind	Report Function
Description	Refresh a report list
Example	Sub Main
	ole. ReportListRefresh
	End Sub

Item	Description
Туре	VOID ReportPrint (BSTR szReportName)
Kind	Report Function
Description	Outputs the report
	szReportName : report name
Example	Sub Main
	ole. ReportPrint ("ReportName")
	End Sub

Item	Description
Туре	VOID ReportPrintEx (BSTR szReportName, BSTR sz ReqTime)
Kind	Report Function
Description	Outputs the report
	szReportName : report name
	szReqTime : request report start time
Example	Sub Main
	ole. ReportPrintEx ("ReportName", "2007/02/01")
	End Sub

Item	Description
Туре	VOID ReportSchedulerHide ()
Kind	Report Function
Description	Hide the report schedule windows
Example	Sub Main
	ole.ReportSchedulerHide
	End Sub

Item	Description
Туре	VOID ReportSchedulerShow ()
Kind	Report Function
Description	Shows report schedule list
Example	Sub Main
	ole. ReportSchedulerShow
	End Sub

4.2.15 History Data Function

Item	Description
Туре	VOID GetHistDataCount (BSTR szModelName, BSTR , BSTR szDataKind,
	DOUBLE dRefTime, LONG ICount, LONG IDir, LONG* IResultCount,
	SAFEARRAY(double) *psadblTimeStamp, SAFEARRAY(double)
	*psadblNumValue, SAFEARRAY(LONG) *psalStatus, SAFEARRAY(LONG)
	*psalResult)
Kind	History Data Function
Description	This function returns logging data from the logging group you specified according
	to the base time, direction and logging data count. (TimeStamp, Tag Value, Tag
	Status, Result)
	szModelName : Logging Group Name
	szTagName : Logging Tag Name
	szDataKind: Value Type (Default : Current Value)
	Argumentable string
	"CURRENT"
	"CHANGE"
	"MIN"
	"MAX"
	"MIN_TIME"
	"MAX_TIME"
	"AVERAGE"
	"SUM"
	"SAMPLING"
	"ON_COUNT"
	"RUN_TIME"
	"CHANGE_COUNT"
	"LAST_UPDATE"
	dRefTime: Base Time
	ICount, : Logging Data Count
	IDir: Direction (forward or backward from base time)
	IResultCount: Logging Data Count
	psadblTimeStamp: Array of TimeStamps
	psadblNumValue: Array of Tag Values
	psalStatus: Array of Tag Status
	psalResult: Result
Example	Sub Main
	Dim ModelName As String

```
Dim TagName As String
 Dim DataKind As String
 Dim RefTime As Date
 Dim ICount As Long
 Dim IDir As Long
 Dim ResultCount As Long
 Dim TimeStamp() As Double
 Dim NumValue() As Double
 Dim Status() As Long
 Dim Result() As Long
 ModelName = "INV1_SEC"
 TagName = "INV_1.1_AI_CT"
 DataKind = "CURRENT"
 RefTime = Now()
 ICount = 5
  IDir = 1
 ole.GetHistDataCount(ModelName, TagName, DataKind,
                             RefTime, ICount, IDir, ResultCount,
                             TimeStamp, NumValue, Status, Result)
 For count = 0 To ResultCount -1
   MsgBox("NumValue = " + CStr(NumValue(count))
                 + " Status = " + CStr(Status (count)))
 Next
End Sub
```

Item	Description
Туре	VOID GetHistDataCountStr (BSTR szModelName, BSTR szTagName, BSTR
	szDataKind, DOUBLE dRefTime, LONG ICount, LONG IDir, LONG* IResultCount,
	SAFEARRAY(double) *psadblTimeStamp, SAFEARRAY(BSTR)
	*psadblNumValue, SAFEARRAY(LONG) *psalStatus, SAFEARRAY(LONG)
	*psalResult)
Kind	History Data Function
Description	This function returns string logging data from the logging group you specified
	according to the base time, direction and logging data count. (TimeStamp, Tag
	Value, Tag Status, Result)
	szModelName : Logging Group Name
	szTagName : Logging Tag Name
	szDataKind: Value Type (Default : Current Value)
	dRefTime: Base Time
	ICount, : Logging Data Count
	IDir. Direction (forward or backward from base time)
	IResultCount: Logging Data Count
	psadblTimeStamp: Array of TimeStamps
	psadblNumValue: Array of Tag Values
	psalStatus: Array of Tag Status
	psalResult: Result
Example	Sub Main
	Dim ModelName As String
	Dim TagName As String
	Dim DataKind As String
	Dim RefTime As Date
	Dim lCount As Long
	Dim IDir As Long
	Dim ResultCount As Long
	Dim TimeStamp() As Double
	Dim NumValue() As Double
	Dim Status() As Long
	Dim Result() As Long
	ModelName = "SOLAR_INFO"
	TagName = "EQINFO_DATE"
	DataKind = "CURRENT"
	RefTime = Now()

```
ICount = 5
IDir = 1

ole.GetHistDataCountStr (ModelName, TagName, DataKind,
RefTime, ICount, IDir, ResultCount,
TimeStamp, NumValue, Status, Result)

For count = 0 To ResultCount -1
MsgBox("NumValue = " + CStr(NumValue(count)))
+ " Status = " + CStr(Status (count)))
Next
End Sub
```

Item	Description
Туре	VOID GetHistDataPeriod (BSTR szModelName, BSTR szTagName, BSTR
	szDataKind, DOUBLE dFrom, DOUBLE dTo, LONG* IResultCount,
	SAFEARRAY(double) *psadblTimeStamp, SAFEARRAY(double)
	*psadblNumValue, SAFEARRAY(LONG) *psalStatus,
	SAFEARRAY(LONG) *psalResul)
Kind	History Data Function
Description	This function returns logging data from logging group you specified within a given
	period of time. (TimeStamp, Tag Value, Tag Status, Result)
	szModelName : Logging Group Name
	szTagName : Logging Tag Name
	szDataKind: Value Type (Default : Current Value)
	Argumentable string
	"CURRENT"
	"CHANGE"
	"MIN"
	"MAX"
	"MIN_TIME"
	"MAX_TIME"
	"AVERAGE"
	"SUM"
	"SAMPLING"
	"ON_COUNT"
	"RUN_TIME"
	"CHANGE_COUNT"
	"LAST_UPDATE"
	dFrom: Beginning Time
	dTo: End Time
	IResultCount: Logging Data Count
	psadblTimeStamp: Array of TimeStamps
	psadblNumValue: Array of Tag Values
	psalStatus: Array of Tag Status
	psalResult: Result
Example	Sub Main
	Dim ModelName As String
	Dim TagName As String
	Dim DataKind As String
	Dim dFrom As Date

```
Dim dTo As Date
 Dim ResultCount As Long
 Dim TimeStamp() As Double
 Dim NumValue() As Double
 Dim Status() As Long
 Dim Result() As Long
 ModelName = "INV1_SEC"
 TagName = "INV_1.1_AI_CT"
 DataKind = "CURRENT"
 dFrom = Now() -1
 To = Now()
 ole.GetHistDataPeriod( ModelName, TagName, DataKind, _
                            dFrom, dTo, ResultCount, TimeStamp, _
                            NumValue, Status, Result)
 For count = 0 To ResultCount -1
   MsgBox("NumValue = " + CStr(NumValue(count))
                 + " Status = " + CStr(Status (count)))
 Next
End Sub
```

Item	Description
Туре	VOID GetHistDataPeriodStr (BSTR szModelName, BSTR szTagName, BSTR
	szDataKind, DOUBLE dFrom, DOUBLE dTo, LONG* IResultCount,
	SAFEARRAY(double) *psadblTimeStamp, SAFEARRAY(BSTR)
	*psadblNumValue, SAFEARRAY(LONG) *psalStatus, SAFEARRAY(LONG)
	*psalResult)
Kind	History Data Function
Description	This function returns string logging data from logging group you specified within a
	given period of time. (TimeStamp, Tag Value, Tag Status, Result)
	szModelName : Logging Group Name
	szTagName : Logging Tag Name
	szDataKind: Value Type (Default : Current Value)
	dFrom: Beginning Time
	dTo: End Time
	IResultCount: Logging Data Count
	psadblTimeStamp: Array of TimeStamps
	psadblNumValue: Array of Tag Values
	psalStatus: Array of Tag Status

	psalResult: Result
Example	Sub Main
·	Dim ModelName As String
	Dim TagName As String
	Dim DataKind As String
	Dim dFrom As Date
	Dim dTo As Date
	Dim ResultCount As Long
	Dim TimeStamp() As Double
	Dim NumValue() As Double
	Dim Status() As Long
	Dim Result() As Long
	ModelName = "SOLAR_INFO"
	TagName = "EQINFO_DATE"
	DataKind = "CURRENT"
	dFrom = Now() -1
	To = Now()
	ole.GetHistDataPeriodStr (ModelName, TagName, DataKind, _
	dFrom, dTo, ResultCount, TimeStamp, _
	NumValue, Status, Result)
	For count = 0 To ResultCount -1
	MsgBox("NumValue = " + CStr(NumValue(count))
	+ " Status = " + CStr(Status (count)))
	Next
	End Sub

Item	Description
Туре	LONG GetLoggingModelList (LONG *IOutCount ,SAFEARRAY(BSTR)
	*psaszModelName, SAFEARRAY(BSTR) *psaszModelDesc, SAFEARRAY(BSTR)
	*psaszModelType, SAFEARRAY(BSTR) *psaszArchvingCycle,
	SAFEARRAY(BSTR) *psaszSegmentPeriod)
Kind	History Data Function
Description	This function returns Logging Group Lists
	IOutCount: Logging Group count
	psaszModelName: List of Logging Group Names
	psaszModelDesc: List of Logging Group Descriptions
	psaszModelType: List of Logging Group Types
	psaszArchvingCycle: List of Acquisition Cycles
	psaszSegmentPeriod: List of Storage Periods
Example	Sub Main
	Dim IRet As Long
	Dim lOutCount As Long
	Dim aModelName() As String
	Dim aModelDesc() As String
	Dim aModelType() As String
	Dim aArchivingCycle() As String
	Dim aSegmentPeriod() As String
	IRet = ole.GetLoggingModelList(IOutCount, aModelName, _
	aModelDesc, aModelType,aArchivingCycle, aSegmentPeriod)
	For i = 0 To IOutCount -1
	MsgBox (aModelName(i) + " " + aModelDesc(i) + " "+ _
	aModelType(i)+ " " + aArchivingCycle(i) + _
	" " + aSegmentPeriod(i))
	Next i
	End Sub

Item	Description
Туре	LONG GetLoggingTag(BSTR szModelName, LONG
	*IOutCount ,SAFEARRAY(BSTR) *psaszTagName, SAFEARRAY(BSTR)
	*psaszTagType)
Kind	History Data Function
Description	This function returns Logging Tags according to the Logging Group.
	szModelName: Logging Group Name
	IOutCount: Logging Tag Count in the Logging Group
	psaszTagName: List of Tag Names
	psaszTagType: List of Tag Types
Example	Sub Main
	Dim IRet As Long
	Dim lOutCount As Long
	Dim aTagName() As String
	Dim aTagType() As String
	IRet = ole.GetLoggingTag ("INV1_MON", IOutCount, aTagName,
	aTagType)
	For i = 0 To IOutCount -1
	MsgBox ("INV1_MON " + aTagName(i) + " " + aTagType(i))
	Next i
	End Sub

Item	Description
Туре	VOID SetHistData (BSTR szModelName, BSTR szTagName, BSTR szDataKind,
	LONG IDataCount, SAFEARRAY(double) *psadblSaveTime, SAFEARRAY(double)
	*psadblNumValue, SAFEARRAY(LONG) *psalTagStatus, SAFEARRAY(LONG)
	*psalResult)
Kind	History Data Function
Description	This function saves tag values as logging data in the logging group user specified.
	szModelName: Logging Group Name
	szTagName : Logging Tag Name
	szDataKind: Value Type (Default : Current Value
	IDataCount : Data Count
	psadblSaveTime: TimeStamp
	psadblNumValue : Tag Value
	psalTagStatus : Tag Status
	psalResult: Result
Example	Sub Main
	Dim szModelName As String
	Dim szTagName As String
	Dim szDataKind As String
	Dim ICount As Long
	Dim dtSaveTime(3) As Double
	Dim dblTagNumValue(3) As Double
	Dim ulTagStatus(3) As Long
	Dim IResult() As Long
	Dim IRet As Long
	szModelName = "INV1_SEC"
	szTagName = "INV_1.1_AI_CT"
	szDataKind = "Current Value"
	ICount = 3
	For count = 0 To ICount -1
	dtSaveTime(count) = Now() + count*0.1
	dblTagNumValue(count) = 100 + count + 1
	ulTagStatus(count) = 0
	Next
	IRet = ole.SetHistData(szModelName ,szTagName , szDataKind,
	lCount , dtSaveTime, dblTagNumValue, ulTagStatus, lResult)
	If IRet <> 0 Then
	MsgBox("SetHistData Error!!!1")
	Else
	For count = 0 To ICount -1

MsgBox("Result = " + CStr(IResult (count)))
Next
End If
End Sub

4.2.16 I/O Driver Function

Item	Description
Туре	VOID ClearStaStatusCount (BSTR szChannelName, BSTR szStaName)
Kind	I/O DRIVE FUNCTION
Description	Reset Station Status counts.
	szChannelName : Channel Name
	szStaName : Station Name
Example	Sub Main
	ole. ClearStaStatusCount ("ChannelName", "StationName")
	End Sub

Item	Description
Туре	VOID EnableStation (BSTR szChannelName, BSTR szStaName, LONG IMode)
Kind	I/O DRIVE FUNCTION
Description	Set a station enable or disable.
	szChannelName : Channel Name
	szStaName : Station Name
	IMode: 0: Enable, 1: Disable
Example	Sub Main
	Dim SuccessCount As Long
	SuccessCount = ole. EnableStation ("ChannelName", StationName",0)
	End Sub

Item	Description
Туре	LONG GetCountReadSuccess (BSTR szChannelName, BSTR szStaName)
Kind	I/O DRIVE FUNCTION
Description	Return Read OK counts
	szChannelName : Channel Name
	szStaName : Station Name
Example	Sub Main
	Dim SuccessCount As Long
	SuccessCount = ole. GetCountReadSuccess ("ChannelName", "StationName")
	MsgBox "Read Success Count = " + CStr(SuccessCount)
	End Sub

Item	Description
Туре	LONG GetCountReadTotal (BSTR szChannelName, BSTR szStaName)
Kind	I/O DRIVE FUNCTION
Description	Return Read Total counts
	szChannelName: Channel Name
	szStaName: Station Name
Example	Sub Main
	Dim ReadCount As Long
	ReadCount = ole. GetCountReadTotal ("ChannelName", "StationName")
	MsgBox "Read Count = " + CStr(ReadCount)
	End Sub

Item	Description
Туре	LONG GetCountWriteSuccess (BSTR szChannelName, BSTR szStaName)
Kind	I/O DRIVE FUNCTION
Description	Return Write OK counts.
	szChannelName: Channel Name
	szStaName: Station Name
Example	Sub Main
	Dim SuccessCount As Long
	SuccessCount = ole. GetCountWriteSuccess ("ChannelName", "StationName")
	MsgBox "Write Success Count = " + CStr(SuccessCount)
	End Sub

Item	Description
Туре	LONG GetCountWriteTotal (BSTR szChannelName, BSTR szStaName)
Kind	I/O DRIVE FUNCTION
Description	Return Write Total counts.
	szChannelName: Channel Name
	szStaName: Station Name
Example	Sub Main
	Dim WriteCount As Long
	WriteCount = ole. GetCountWriteTotal ("ChannelName", "StationName")
	MsgBox "Write Count = " + CStr(WriteCount)
	End Sub

Item	Description
Туре	LONG GetStatusRunMode (BSTR szChannelName, BSTR szStaName)
Kind	I/O DRIVE FUNCTION
Description	Return Station Runmode.
	szChannelName: Channel Name
	szStaName: Station Name
Example	Sub Main
	Dim RunModeCount As Long
	RunModeCount = ole. GetStatusRunMode ("ChannelName", "StationName")
	MsgBox "Station Run Mode Count = " + CStr(RunModeCount)
	End Sub

Item	Description
Туре	LONG GetStatusStaOK (BSTR szChannelName, BSTR szStaName)
Kind	I/O DRIVE FUNCTION
Description	Return Station OK status.
	szChannelName: Channel Name
	szStaName: Station Name
Example	Sub Main
	Dim OKCount As Long
	OKCount = ole. GetStatusStaOK ("ChannelName", "StationName")
	MsgBox "OK Count = " + CStr(OKCount)
	End Sub

Item	Description
Туре	VOID ShowNetworkStatus ()
Kind	I/O DRIVE FUNCTION
Description	Display Station Status dialog.
Example	Sub Main
	ole.ShowNetworkStatus
	End Sub

Item	Description
Туре	VOID ShowStationInfo ()
Kind	I/O DRIVE FUNCTION
Description	Display Station Status dialog.
Example	Sub Main
	ole.ShowStationInfo
	End Sub

Appendix 5 InfoU Web Q&A Collection

5.1 Q&A for Windows XP

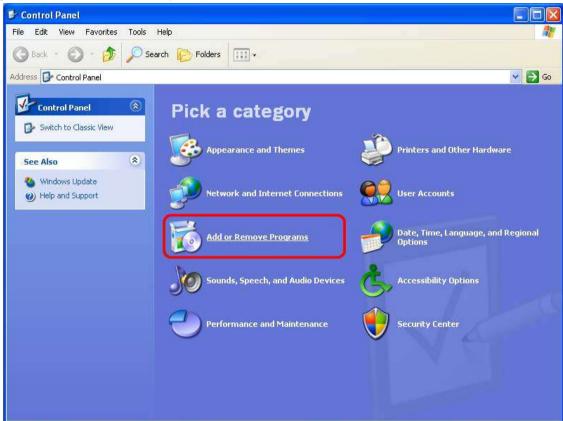
5.1.1 Q: How can I install the Internet Information Service (IIS) in Windows XP?

A: In order to install the internet information service (hereinafter referred to as 'IIS') in Windows XP, you need the CD to install Windows XP OS in your computer. On condition that you have the Windows XP OS installation CD, you can refer to the below installation procedures. Namely, if you do not have the OS installation CD, you cannot install IIS.

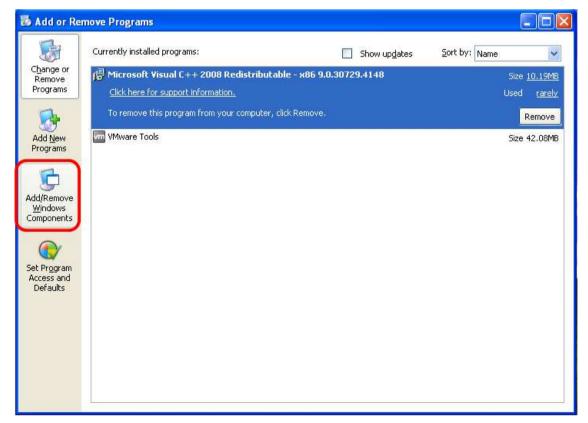
(1) Click the [Start]→[Control Panel] menu.



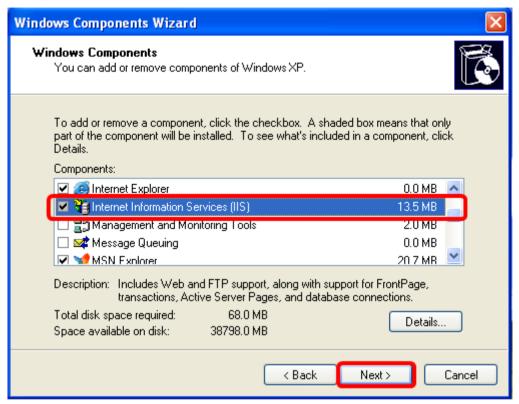
(2) Click the [Add/Remove Programs] in the [Control Panel].



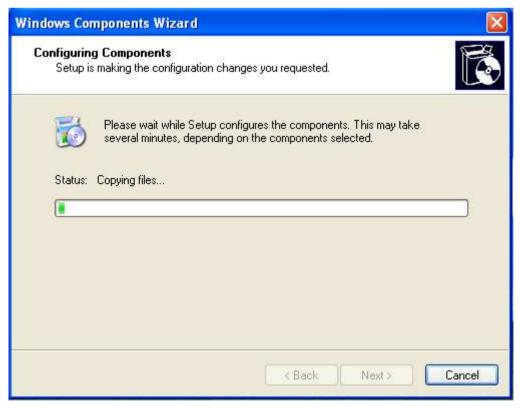
(3) Click the [Add/Remove Windows Components(A)] menu.

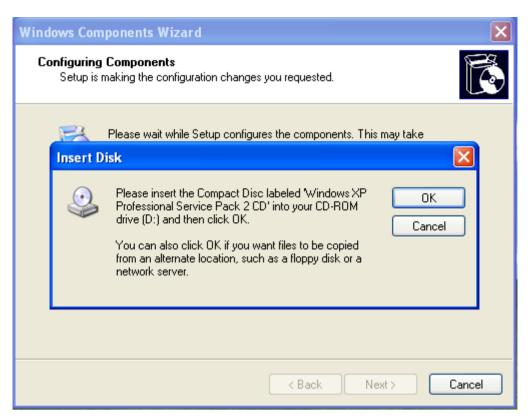


(4) After selecting internet information service (IIS) in the dialog box of [Windows Components Wizard], click the [Next] button.

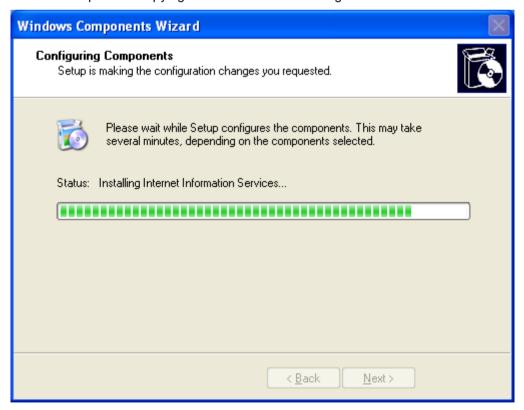


If the message is displayed; 'There is no Windows installation CD', insert the CD', insert the CD and wait until file copying is completed.





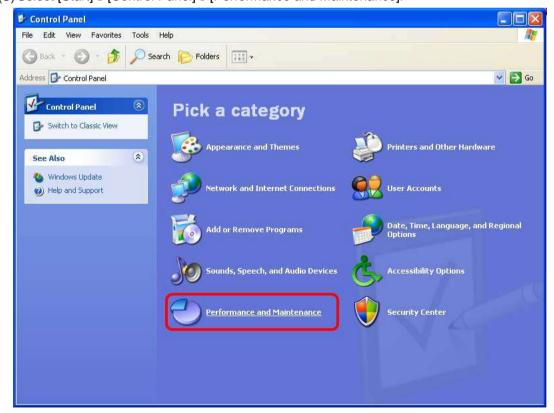
It shows the process copying file from the Windows original CD.



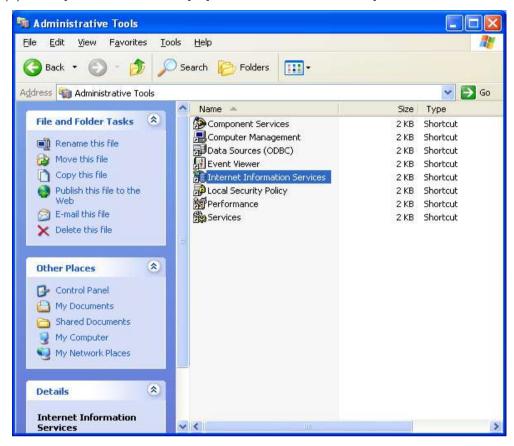
(5) If the message is displayed; Windows Components Wizard is completed, click the [Finish] button.



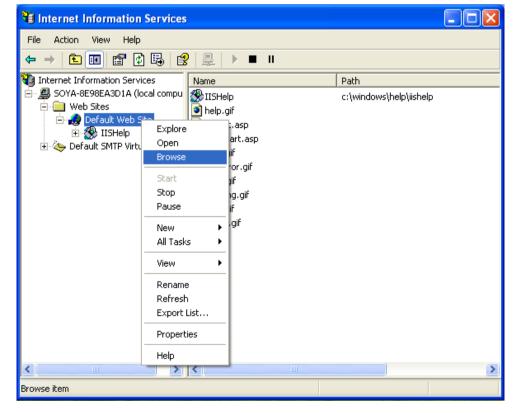
(6) Select [Start]→[Control Panel]→[Performance and Maintenance].



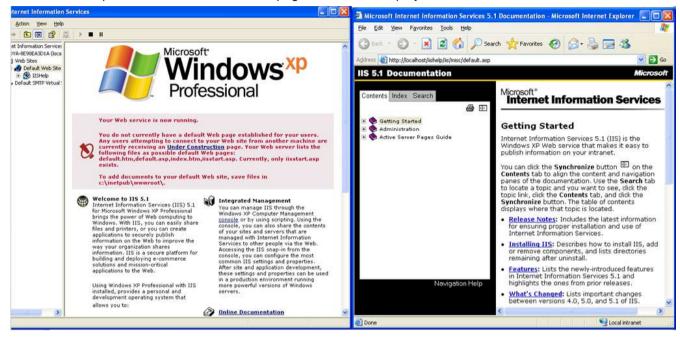
(7) Select [Administrative Tools]→[Internet Information Service].



After selecting [Default Web Site], click with the right mouse button. Then, choose the [Browse] menu.



(8) When IIS is normally installed, the default page will show up as below. Alternatively, if you open the web browser and input the local host, the default page will also be displayed.



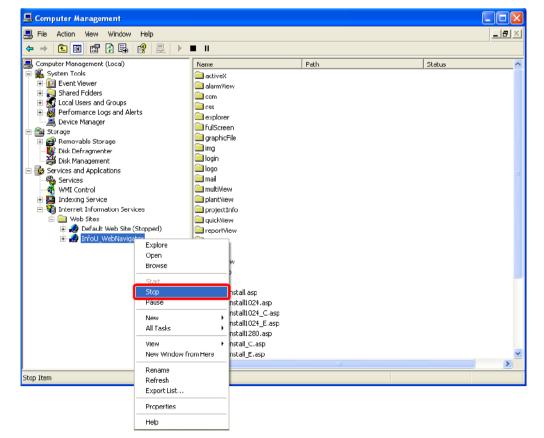
5.1.2 Q: After installing IIS in Windows XP and operating the web server, if I access to http://127.0.0.1, the below message is displayed; Internet Explorer cannot display the webpage.

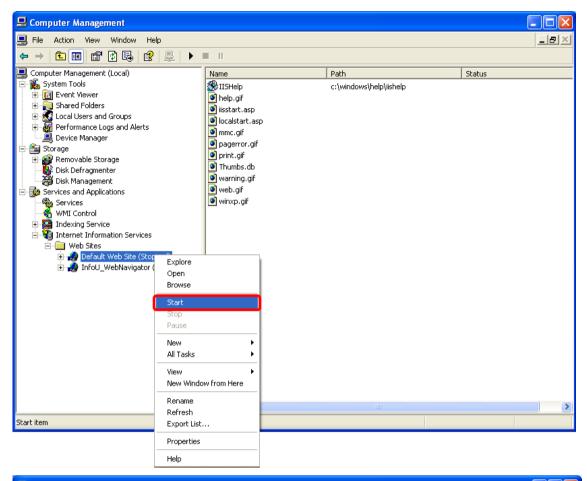


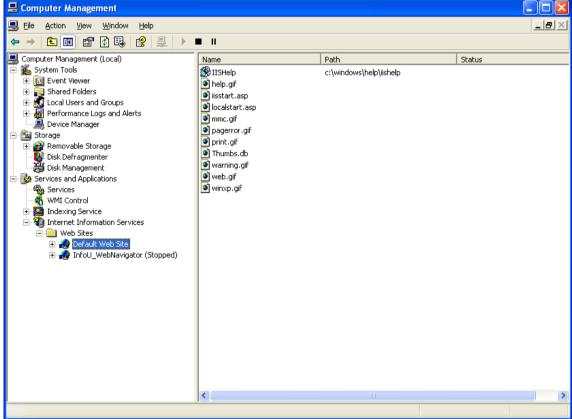
A: In case the above massage; [Internet Explorer cannot display the webpage] shows up instead of IIS error code page, it means IIS is not normally installed.

(1) Select [Start]→[My computer]→[Right Mouse]→[Manage]. In [Service and Applications]→
[Internet Information Service]→[Web Sites], stop all other websites and change [Default Web Site] into 'Start'.

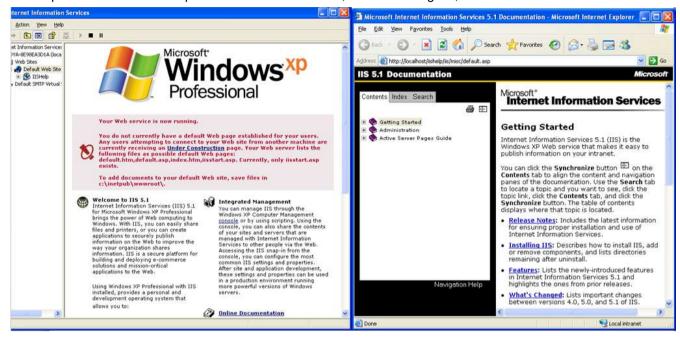








(2) Open the web browser and input http://localhost or http://127.0.0.1. Then, the default page will be normally opened as shown below. If the default page is not opened, it means IIS installation is wrong or there are some problems with the components of IIS. In this case, after removing IIS, reinstall it.

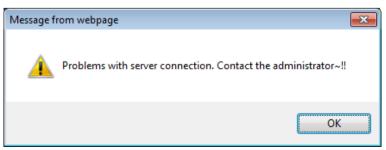


5.1.3 Q: When entering the ID and password in the login screen, the below message shows up.

(1) Windows XP version



(2) Windows 7 version



A: It means the project information was not obtained properly. After running the [Navigation Management], select [Get project information] to read the project information.

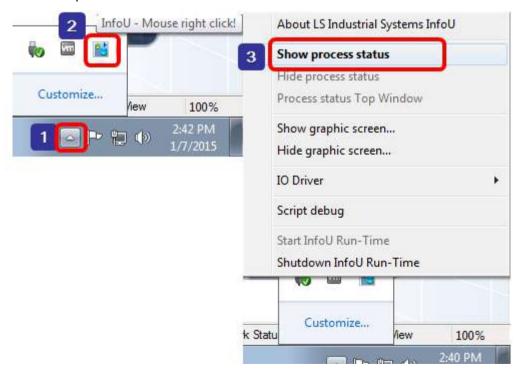




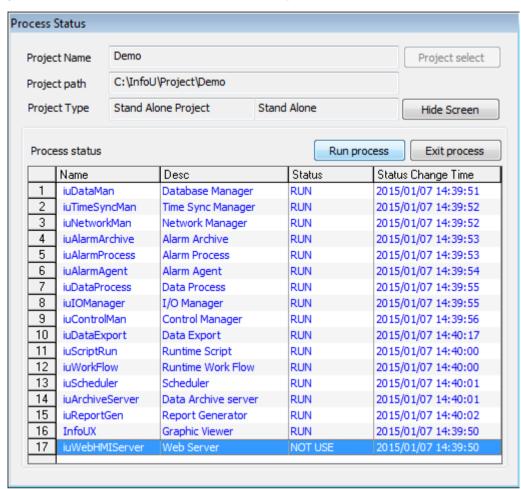
5.1.4 Q: When logging in to the site, the page is executed and the below message is displayed.



- A: To access to the InfoU Web site, real-time operation should run and the Web HMI Server should be running. To run the Web HMI Server, follow the procedures shown below.
- (1) After selecting the tray icon of real-time operation, if you click with the right mouse button, the below screen will show up.



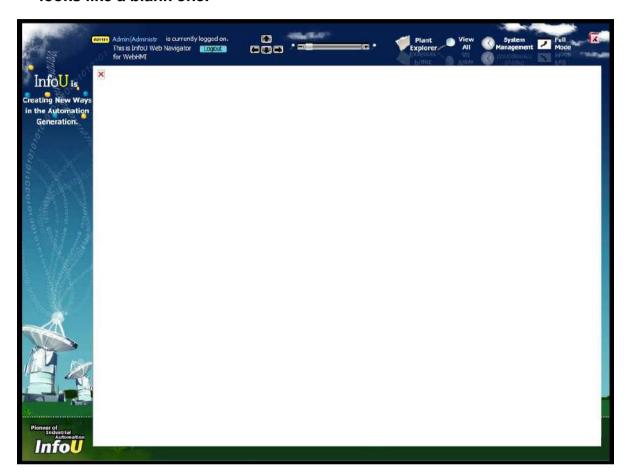
(2) Select [Show Process Status]. After selecting 17th item, iuWebHMIServe, click [Run process].



(3) Check the tray icon in the lower right corner of Windows to confirm whether the Web HMI Server works properly.



5.1.5 Q: Although I log in to the monitoring screen, there is nothing on the screen. It looks like a blank one.



A: If the server version does not match up with the web system version when you update the file randomly, such a problem may occur. Namely, it means the version of GraRun.dll involved in a web plant screen does not match with the local one so the screen is not loaded. In this case, you need to match dll of C:\InfoU\bin with C:\InfoU\Web Navigator\activeX\InfoUWebClient dll version.

Q&A for Windows 7 5.2

Q: If IIS7 is not automatically installed in Windows 7, how can I install it manually? 5.2.1

A: In order to use InfoU Web, you can install Windows7 IIS7 based on the following procedures.

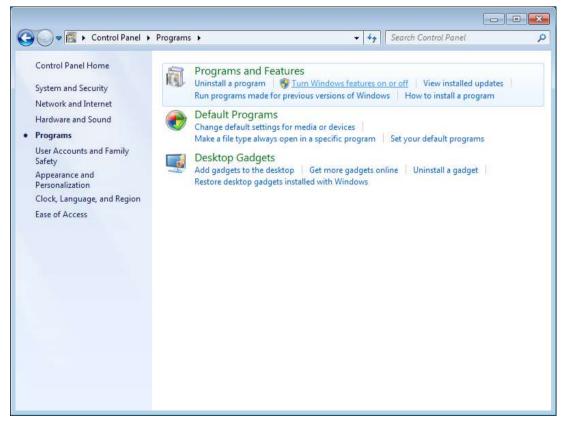
< How to install IIS 7 in Windows 7 >

(1) Click [Start] → [Control Panel]

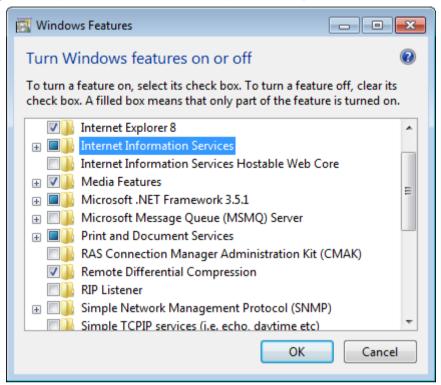


(2) After selecting the [Programs] menu in the Control Panel, click the [Turn Windows features on or off] menu.

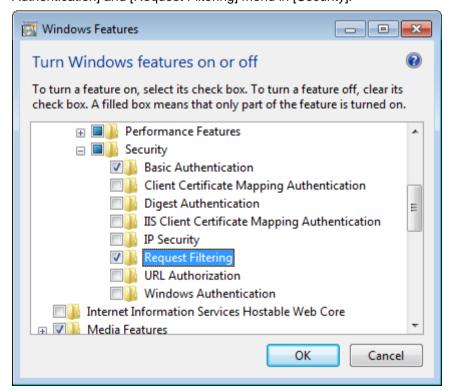




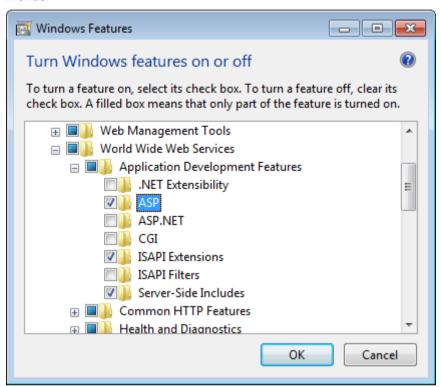
(3) Click the [Internet Information Service] in the dialog box of the Windows Features.



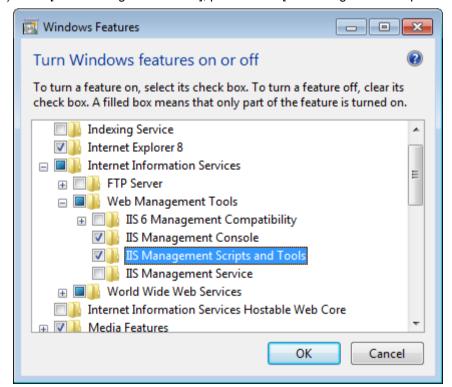
(4) After expanding [Internet Information Service]-[World Wide Web service], put a check the [Basic Authentication] and [Request Filtering] menu in [Security].



(5) In the [Application Development Features], put a check [ASP], [ISAPI Extensions], [Server-Side Includes] menus.



(6) In the [Web Management Tools], put a check [IIS Management Script and Tools].

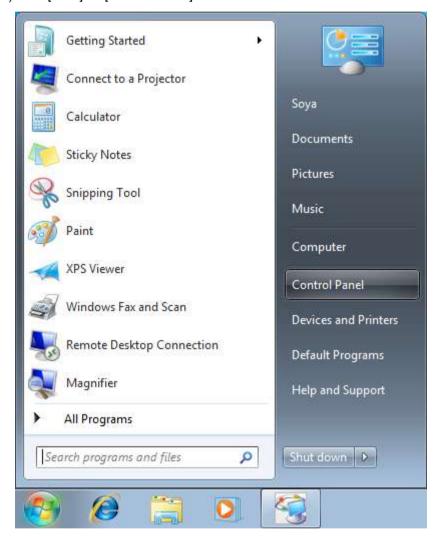


5.2.2 Q: The site seems not to work properly due to wrong settings of the InfoU Web IIS7. How can I configure IIS7 in Windows 7?

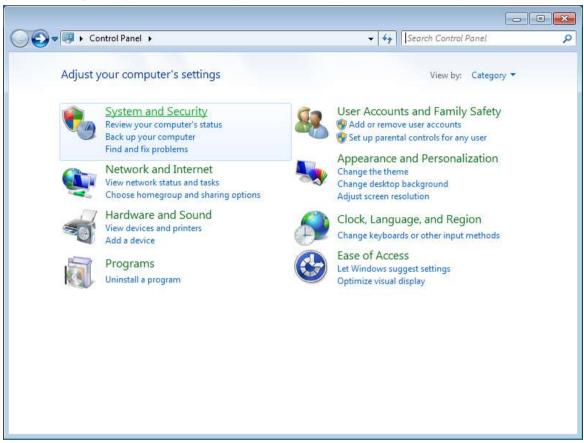
A: In order to use InfoU Web, you can install Windows7 IIS7 based on the following procedures.

< How to set IIS7 (internet information service) administrative tools in Windows 7>

(1) Click [Start] → [Control Panel].

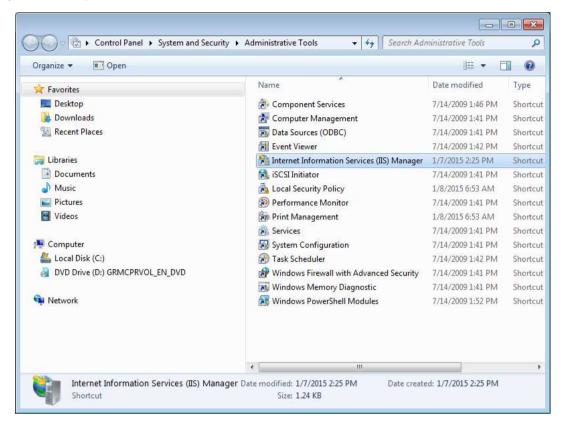


(2) After selecting the [System and Security] menu, choose [Administrative Tools].

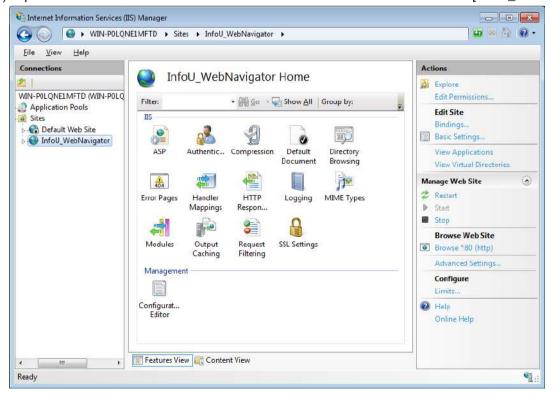




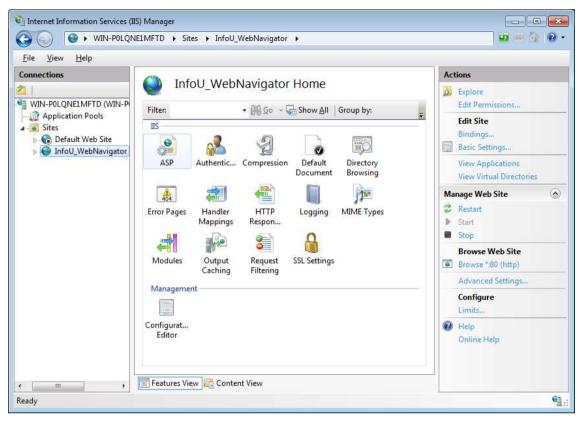
(3) After clicking the [Administrative Tools] menu, click the [Internet Information Service (IIS) Manager].



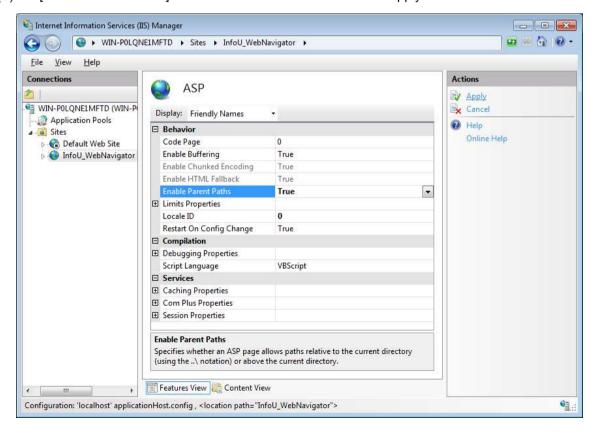
(4) Expand the site in the tree structure on the left side of the screen and click the [InfoU WebNavigator] site.



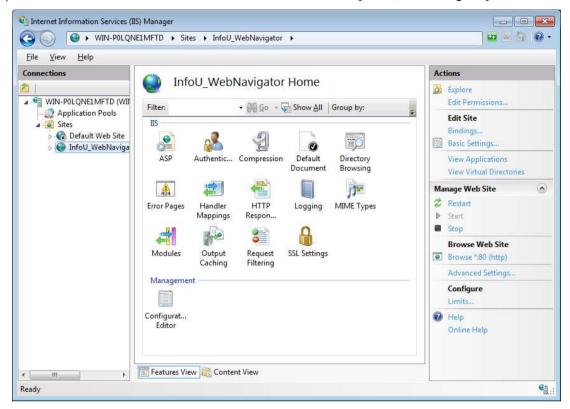
(5) After selecting [IIS] \rightarrow [ASP] in the [Features View] window, double-click it.



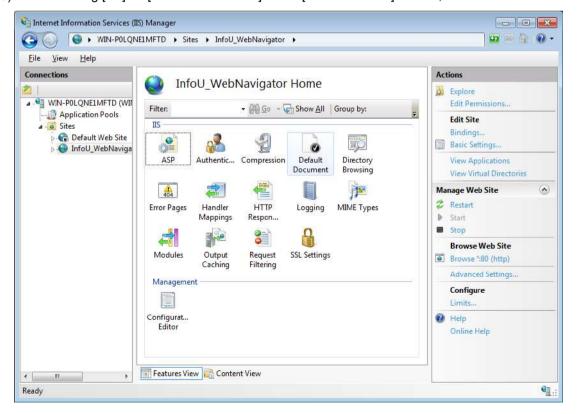
(6) Set [Enable Parent Paths] as True in the ASP screen and click Apply in the Actions.

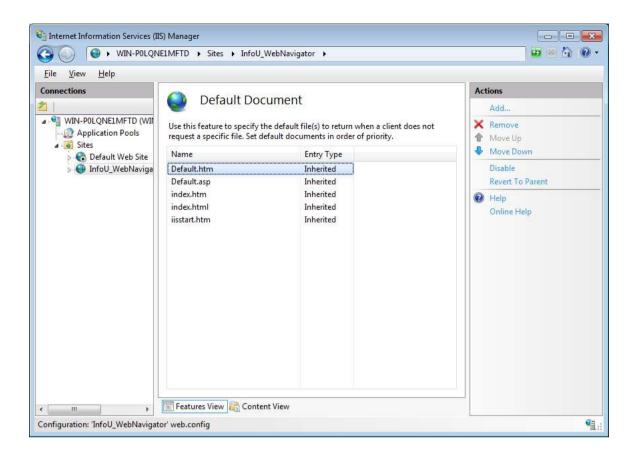


(7) In the tree structure on the left side of the screen, click the [InfoU_WebNavigator] site.

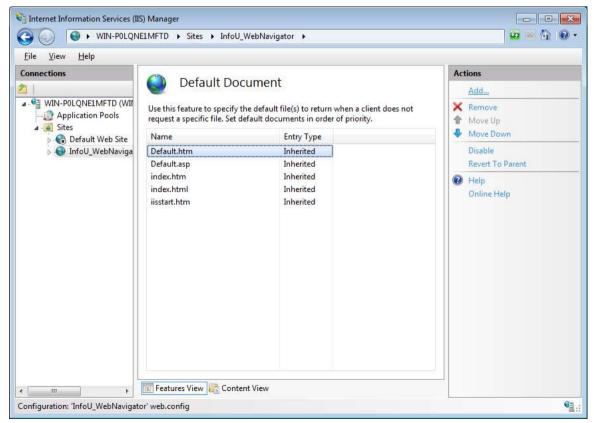


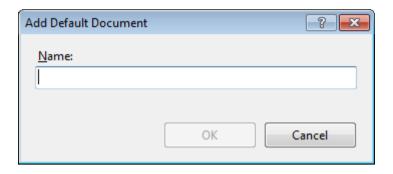
(8) After selecting [IIS] → [Default Document] in the [Features View] screen, double click it.



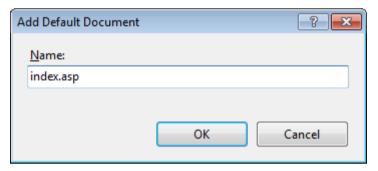


(9) In the [Actions] on the right side of the Default Document page, select the [Add] menu.

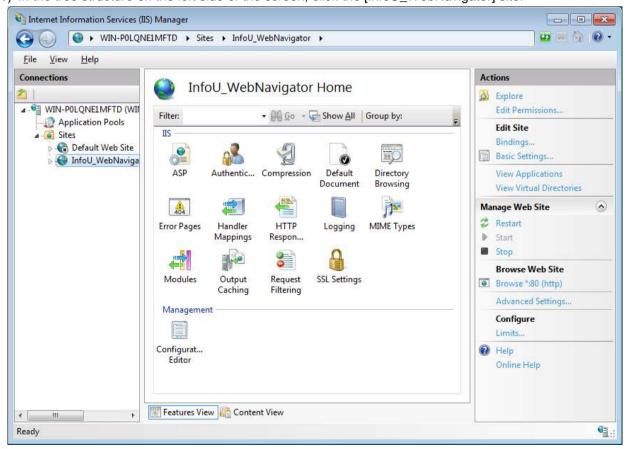




(10) In the dialog screen of Add Default Document, after entering index.asp into the Name column, click the OK button.



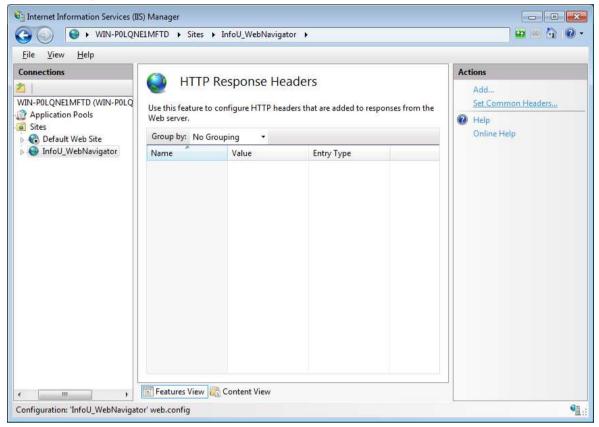
(11) In the tree structure on the left side of the screen, click the [InfoU_WebNavigator] site.



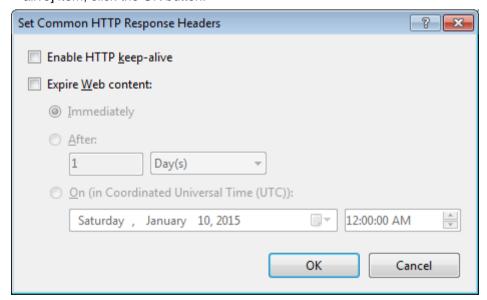
(12) After selecting [IIS] → [HTTP Response Headers] in the [Features View] screen in the center of the screen, double-click it.

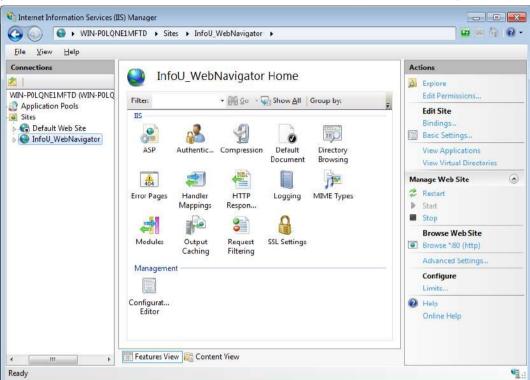


(13) Select the [Set Common Headers] menu in Actions the screen on the right side of the HTTP Response Headers page.



(14) In the dialog box of the Set Common HTTP Response Headers, after unchecking the [Enable HTTP keepalive] item, click the OK button.

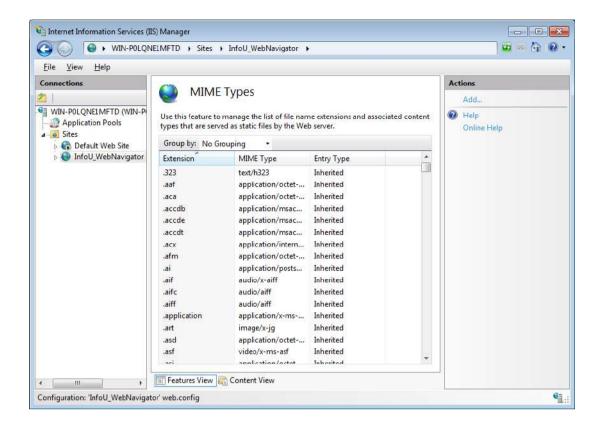




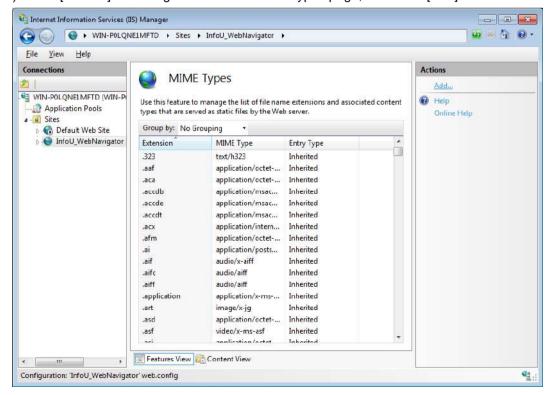
(15) In the tree structure on the left side of the screen, click the [InfoU_WebNavigator] site.

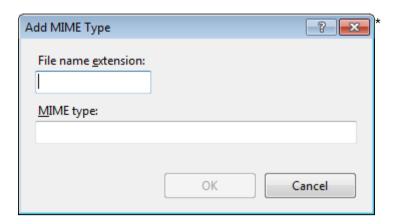
(16) After selecting [IIS] → [MIME Types] in the [Features View] screen in the center of the screen, double-click it.



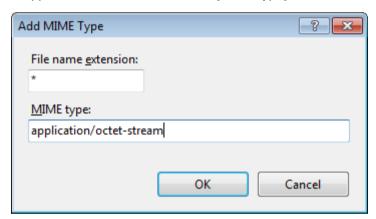


(17) In the [Actions] on the right side of the MIME Types page, select the [Add] menu.

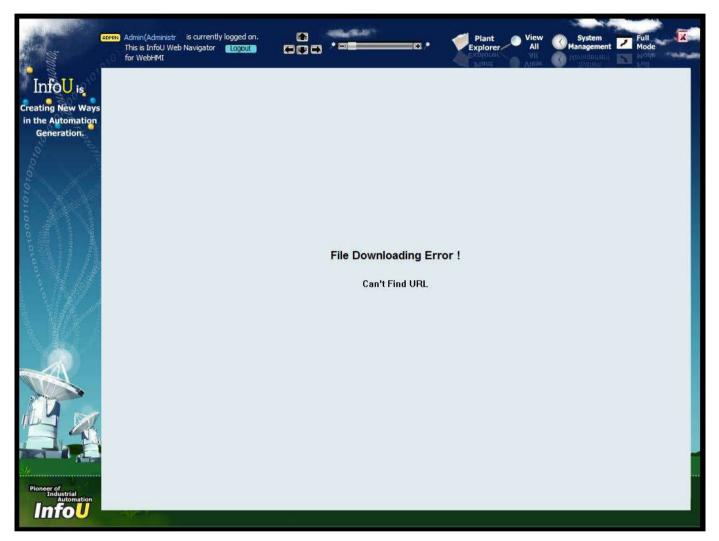




(18) In the dialog box of [Add MIME Type], enter * into the [File name extension] column and enter application/octet-stream into the [MIME type] column. Then, click the OK button.

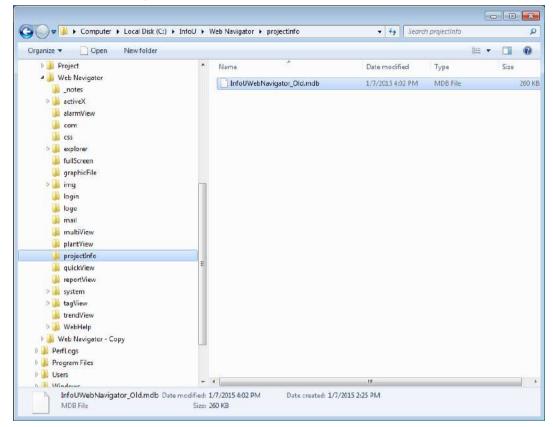


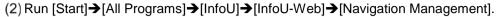
5.2.3 Q: After deleting the file by mistake during version update, the web site does not work and in addition, the monitoring screen is not displayed as below. How can I check on normal operation?

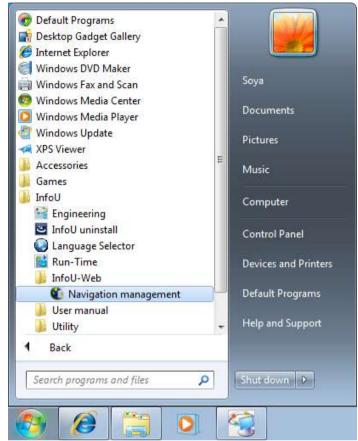


A: It seems the project file is damaged during update. After creating the project file newly and check whether the web site works normally.

(1) C:\InfoU\Web Navigator\projectInfo\InfoUWebNavigator.mdb ← Change the name of the project information file into InfoUWebNavigator_Old.mdb.



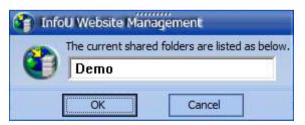




(3) After selecting [Get project information], click the [OK] button.

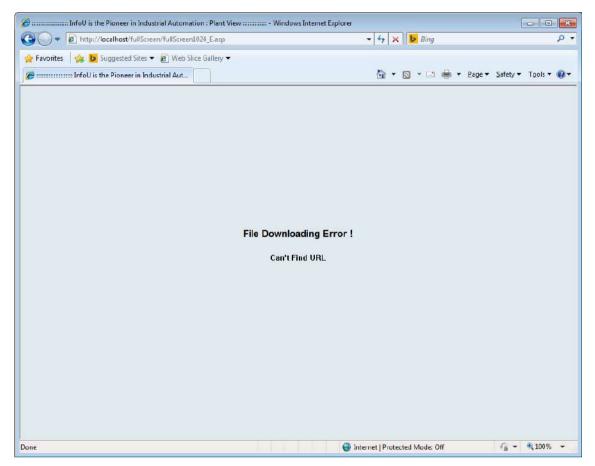


(4) To get the project information, click the [OK] button.



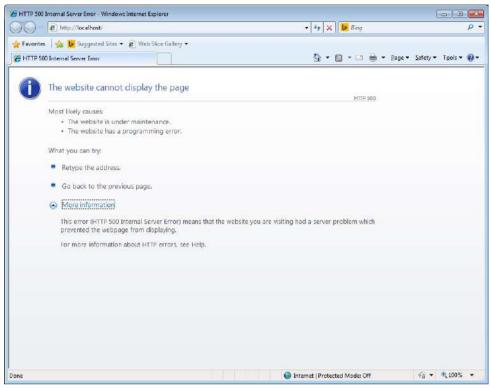
After getting the project information again as above, you can try to access to the plant screen.

5.2.4 Q: After logging in to the site, the monitoring screen is not displayed with the message 'Can't Find URL'



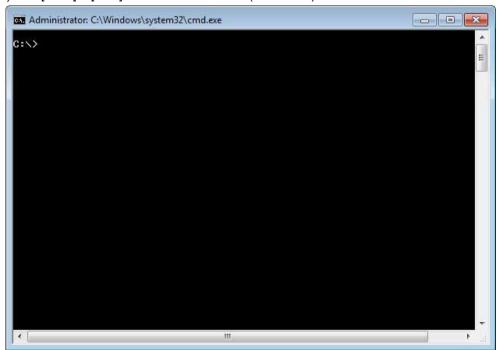
A: As you see from the error message, please check whether the file exists in the web site path. This problem may occur when a user deletes the file or change the name so check whether the file properly exists. In terms of the web site folder, you need to check if the plant file exists in the Web Navigator\graphicFile folder located in the drive where the InfoU is installed. If the InfoU system is installed in C:\ drive, the C:\InfoU\Web Navigator\graphicFile\system status.ivd file must exist.

5.2.5 Q: If I access to the InfoU Web site, the error message is displayed instead of the login screen as below.

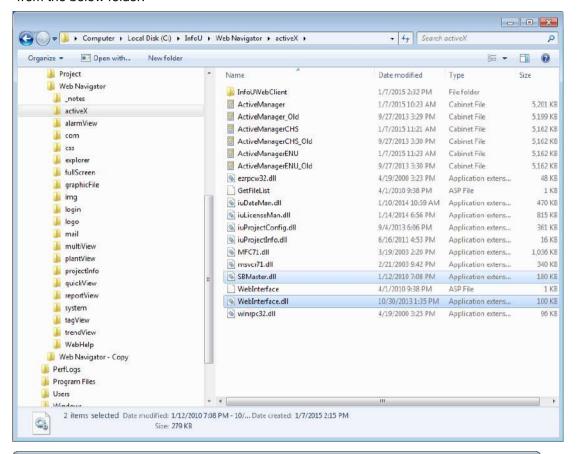


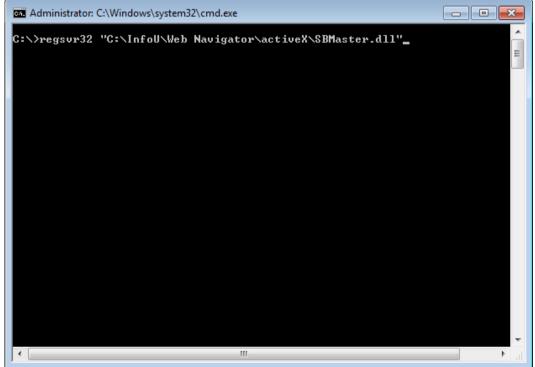
A: Such a screen may be displayed when InfoU Web is not installed normally. In case DLL registration is not properly done, the screen is not displayed. In this case, register DLL manually as shown below.

(1) Run [Start]→[Run]→ and enter the cmd(command).

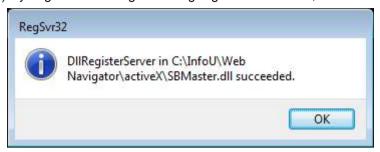


(2) Enter regsvr32 SBMaster.dll in the command widow or drag it from the below folder. After getting the message showing registration is done, reenter regsvr32 WebInterface.dll in the command window or drag it from the below folder.

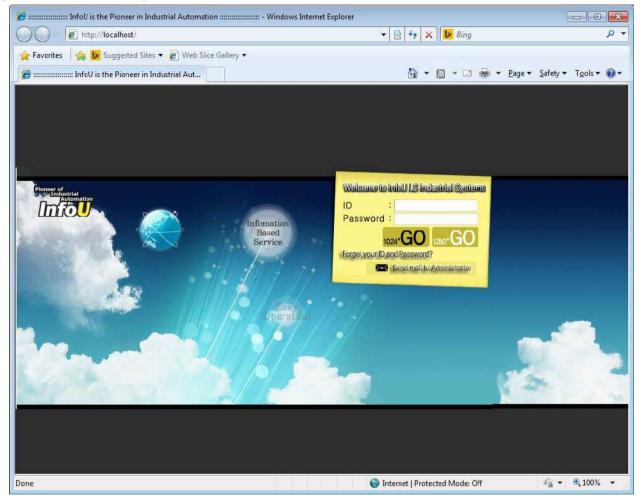




(3) If you get the message showing registration is done, it means DLL registration is normally completed.



(4) Confirm it by accessing to the InfoU Web site.



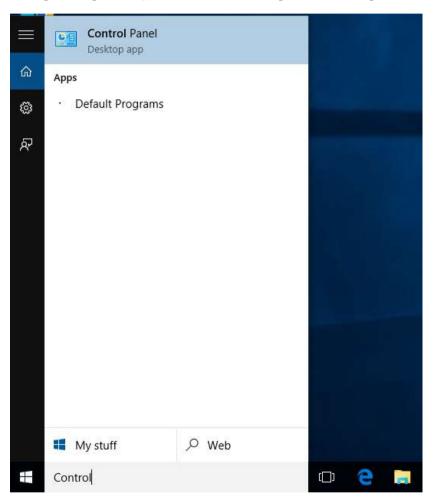
5.3 Q&A for Windows 10

5.3.1 Q: If IIS is not automatically installed in Windows 10, how can I install it manually?

A: In order to use InfoU Web, you can install Windows10 IIS based on the following procedures.

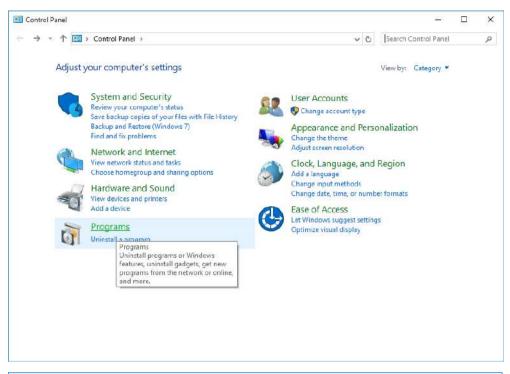
< How to install IIS in Windows 10>

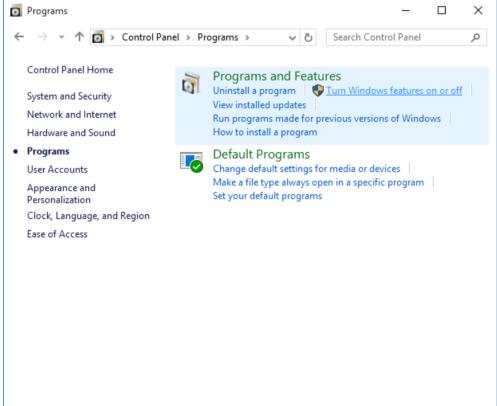
1. Click [Search], then Type Control and select [Control Panel].



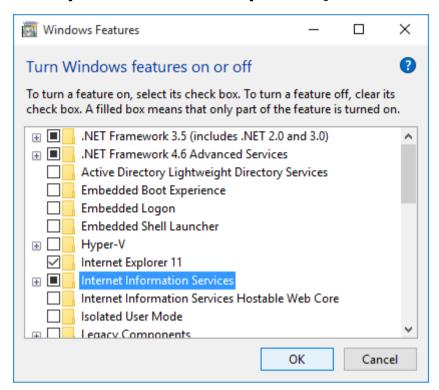
2. After selecting the [Programs] menu in the Control Panel, click the [Turn Windows features on or off]

Appendix 5 InfoU Web Q&A Collection

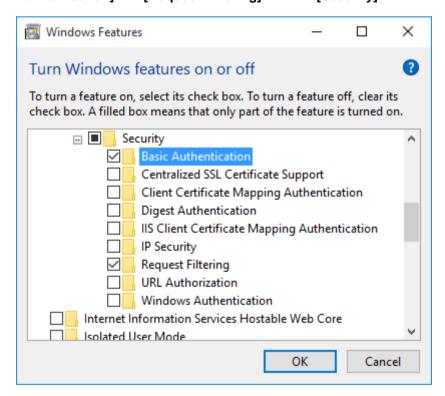




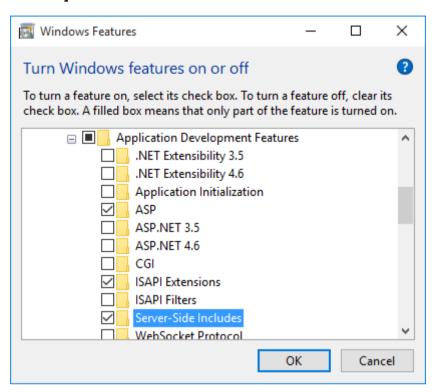
3. Click the [Internet Information Service] in the dialog box of the Windows Features.



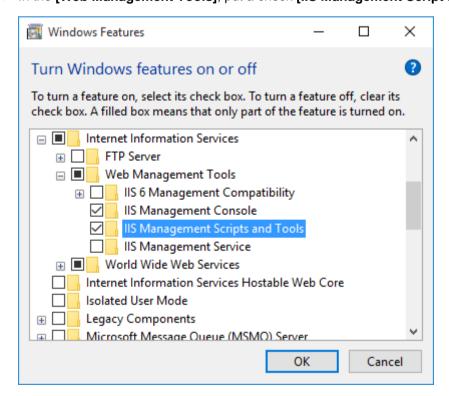
4. After expanding [Internet Information Service]-[World Wide Web service], put a check the [Basic Authentication] and [Request Filtering] menu in [Security].



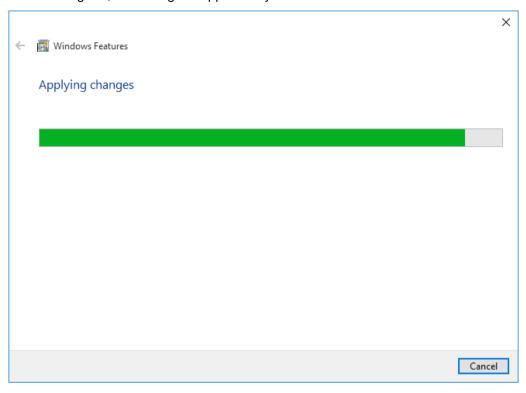
5. In the [Application Development Features], put a check [ASP], [ISAPI Extensions], [Server-Side Includes] menus.

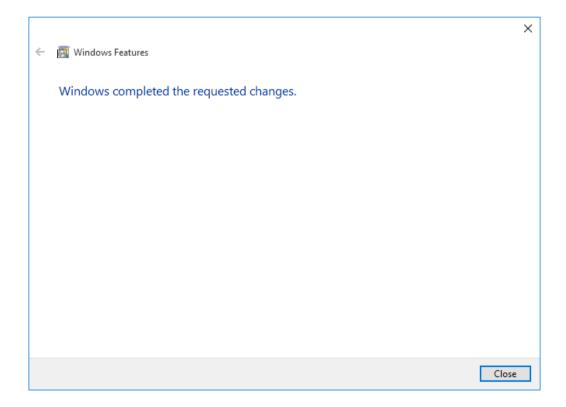


6. In the [Web Management Tools], put a check [IIS Management Script and Tools].



7. After clicking OK, this dialog will appear on your screen for a while.



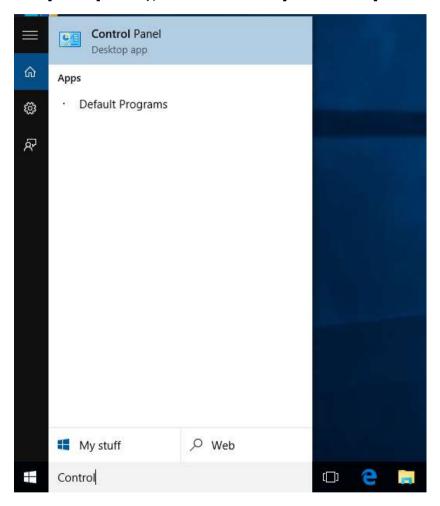


5.3.2 Q: The site seems not to work properly due to wrong settings of the InfoU Web IIS. How can I configure IIS in Windows 10?

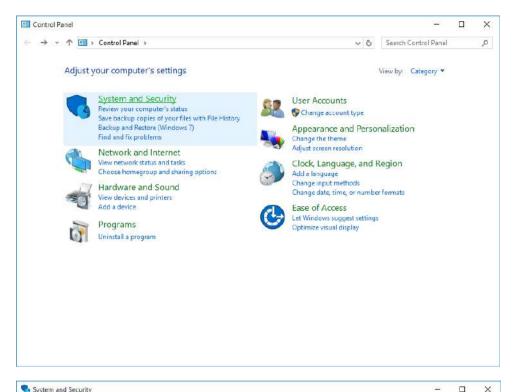
A: In order to use InfoU Web, you can install Windows10 IIS based on the following procedures.

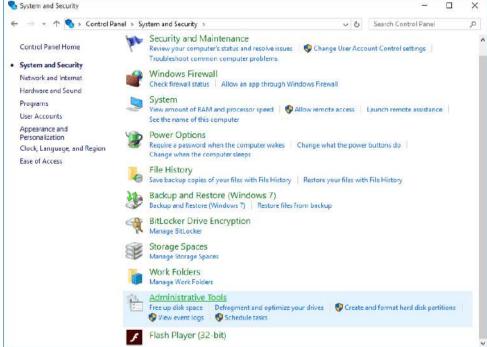
< How to set IIS (internet information service) administrative tools in Windows 10>

1. Click [Search], then Type Control and select [Control Panel].



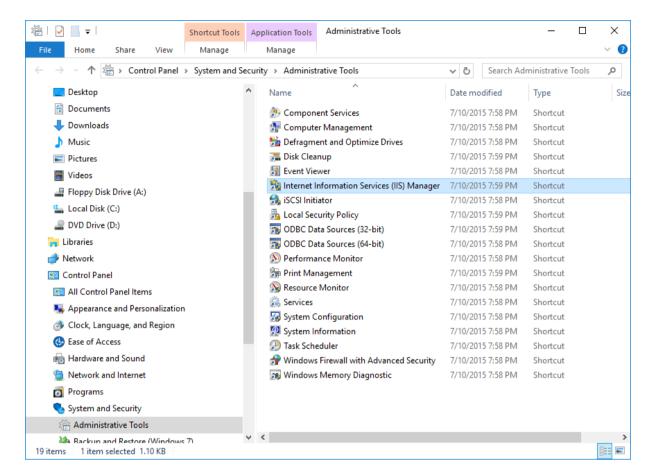
2. After selecting the [System and Security] menu, choose [Administrative Tools].





3. After clicking the [Administrative Tools] menu, click the [Internet Information Service (IIS) Manager].

Appendix 5 InfoU Web Q&A Collection



4. The rest of the settings are the same as <How to set up IIS7 (Internet Information Services) administrative tools in Windows 7>, please refer to page 5.2.2.

5.4 Flash Player Download Problem

5.4.1 Q: If log in Windows Server 2012 or Windows 8 64bit operating system, Flash Player will be down. How do I solve the problem?

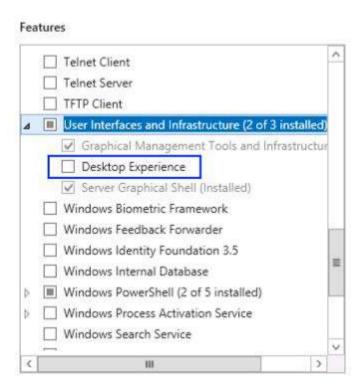
A: This issue occurs because Flash Player is not properly installed on Windows Server 2012.

<How to install Flash Player on Windows Server 2012>

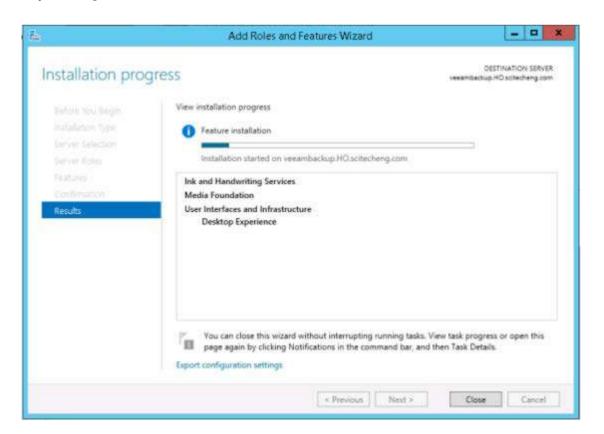
- 1. Go into [server manager]
- 2. Click [add roles and features]



- 3. Continue to click [Next] to display the function selection screen.
- 4. Scroll down and select [Desktop Experience] from the [User Interface and Infrastructure] feature and click Next.



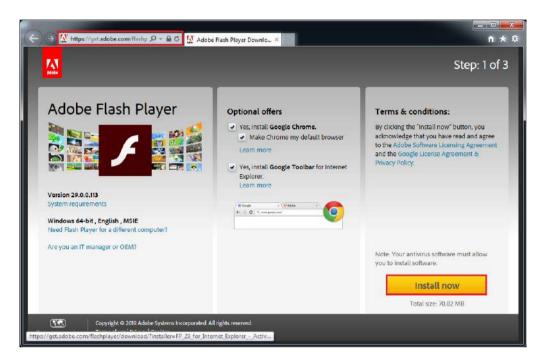
5. You will then have to accept the installation of some other features to support the installation of [Desktop Experience]



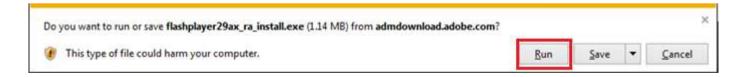
- 6. The features are installed and the server is rebooted:
- 7. After the installation is completed, restart the server to confirm that Adobe Flash Player has been properly installed.

<How to install from Windows Server 2008>

- 1. Launch Explorer and type [get.adobe.com/flashplayer] in the address bar.
- 2. The following page appears.



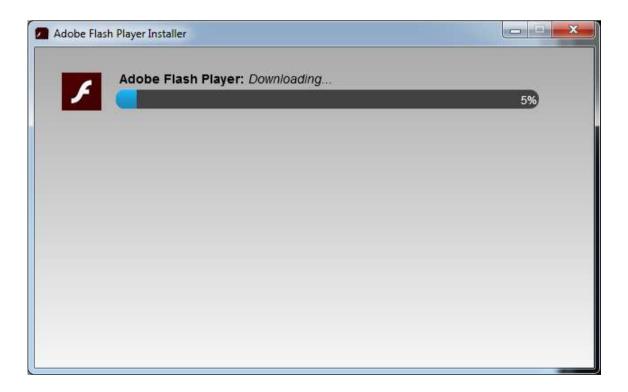
- 3. In the [Optinal offers] screen, select the desired option.
- 4. Click the [Install Now] button.
- 5. A screen to run flashplayer file or save it will appear at the bottom of the explorer as shown below. You can save it and run it immediately.



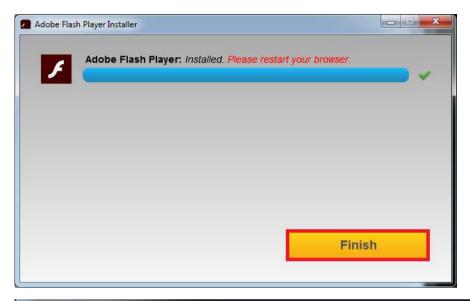
6. If you run flash as below, the Flash Player environment setting update window will appear. Select the desired option and click **[Next]**.



7. If you run flash as below, Flash will be installed after a while.



8. Click [Finish] to restart the Explorer browser. This completes the installation.





9. You can see that the screen appears normally when you access InfoU Web site.

Appendix 6 WebDAV Server Settings

WebDAV server is configured by using the WebDAV function of Internet Information Services (IIS) provided by Microsoft Corporation.

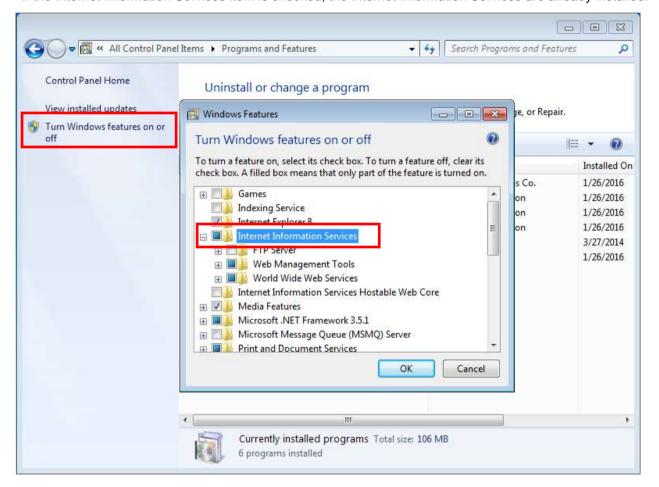
6.1 Installation of Internet Information Services

6.1.1 Installation of internet information services

If Internet Information Services (IIS) are not installed, you can install Internet Information Services according to the following procedures.

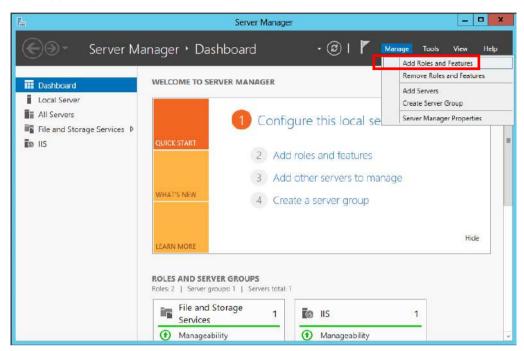
Select "Control Panel -> Programs and Features->Windows features on / off and then check "Internet Information Services", and you will be able to install Internet Information Services.

If the Internet Information Services item is checked, the Internet Information Services are already installed.

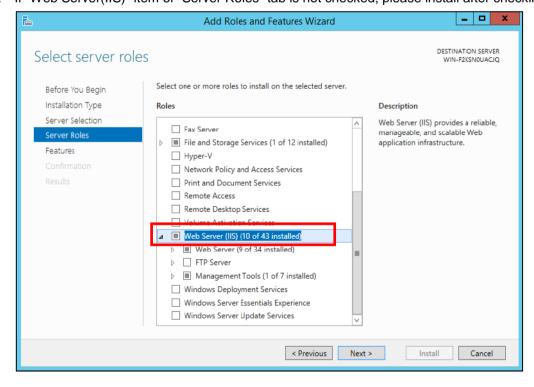


Notice

- IIS settings on the Windows Server
 - 1. Select "Manage->Add Roles and Features" in the 'Server Manager" and run the "Add Roles and Features Wizard".



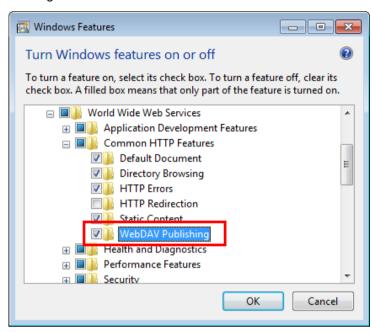
2. If "Web Server(IIS)" item of "Server Roles" tab is not checked, please install after checking it.



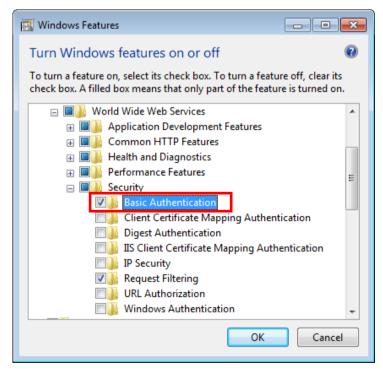
6.1.2 Adding WebDAV functionality

In order to use Internet Information Services as a WebDAV server, "WebDAV Publishing" and "Basic Authentication" features should be added.

Check the "Internet Information Services->World Wide Web Services->Common HTTP Features->WebDAV Publishing" items.



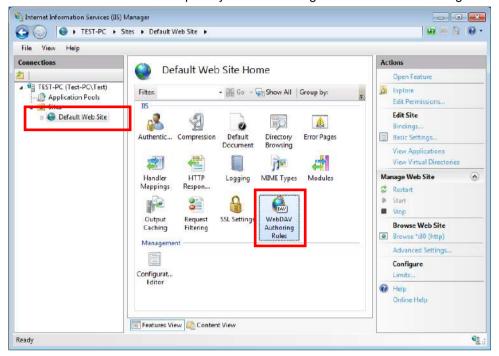
Check "Internet Information Services->World Wide Web Services->Security->Basic Authentication" items.



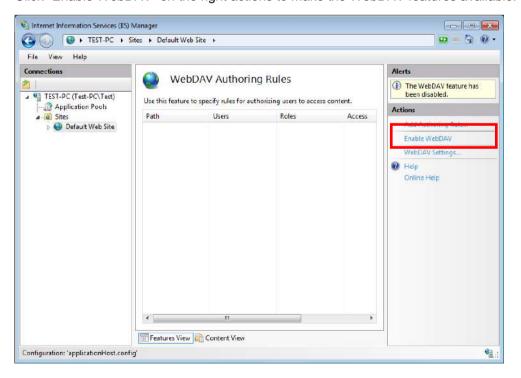
6.2 **WebDAV Setting**

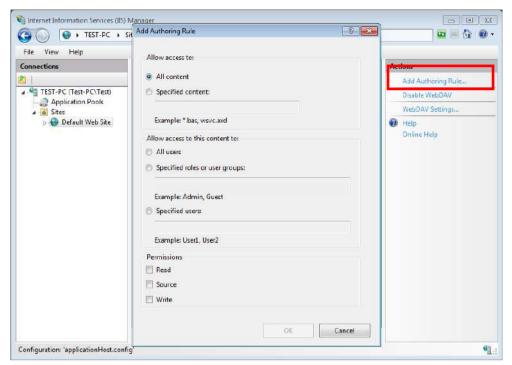
6.2.1 WebDAV authoring rules setting

Run"Control Panel->Administrative Tools->IIS (Internet Information Services) Manger". Select the Web Site and the open by double clicking the "WebDAV Authoring Rules"



Click "Enable WebDAV" on the right actions to make the WebDAV features available.





After setting up Enable WebDAV, you can select "Add Authoring Rules" on the right actions.

Check the "Specified Users" item and set "webdavuser" to the specified user.

For permissions, check all itms..



Notice

Please preregister WebDAV users as Windows users.

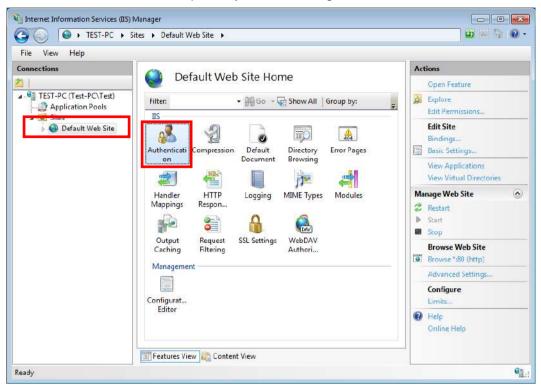
Example of WebDAV user account) webdavuser

Webdavuser is any user account to describe directions for use, and can be changed to another name if

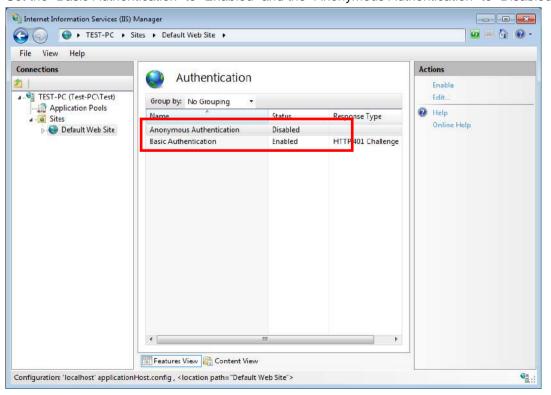
necessary.

6.2.2 Authentication setting

Select the Web Site and then open it by double-clicking the "Authentication".



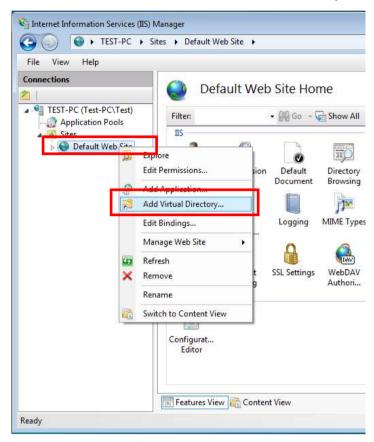
Set the "Basic Authentication" to "Enabled" and the "Anonymous Authentication" to "Disabled" as follows.



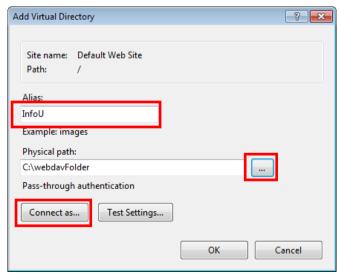
6.2.3 Adding virtual reality

Select the directory to use on the server and set the name.

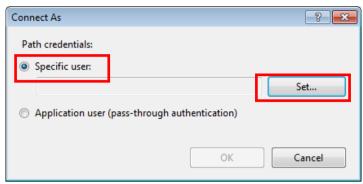
Select the Web Site and then select "Add Virtual Reality" in the pop-up menu.



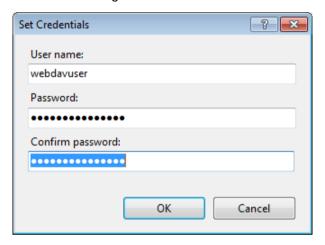
Enter the name of the virtual directory in the Alias in the "Add Virtual Directory" dialog and select a local folder on the physical path.



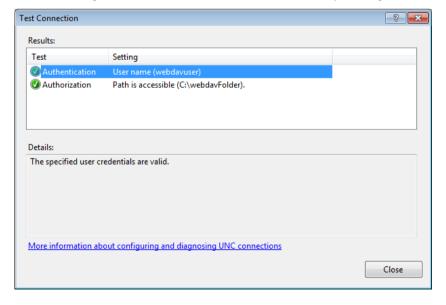
Click "Connection Account" button and then check "Specify Users".



Press the "Setting" button to set webdavuser as a user.

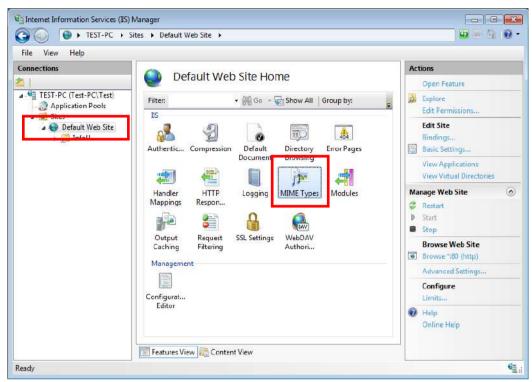


Press "Setting Test" button in the "Add Virtual Directory" dialog to confirm the setting results.



6.2.4 MIME type setting

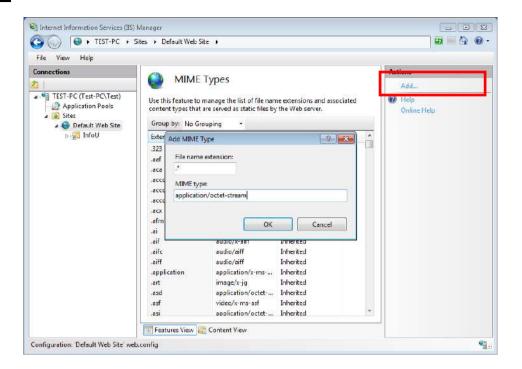
Select the Web Site and then open it by double-clicking "MIME Types".



Add the following content by clicking Add on the right actions.

File	name	.*
extension		
MIME type		application/octet-stream

Appendix 6 WebDAV Server Settings



Other IIS setting 6.3

6.3.1 **Authentication settings**

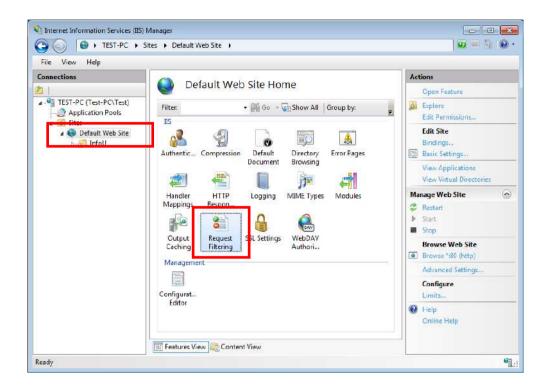
In order to add the WebDAV virtual folers to the Web Site for InfoU Web, authentication settings are divided as follows.

- 1) Whole website (InfoU_WebNavigator) authentication setting
 - Basic authentication: Disabled
 - Anonymous authentication: Enabled
- 2) WebDAV virtual directory (InfoU) authentication setting
 - Basic authentication: Enabled
 - Anonymus authentication: Disabled

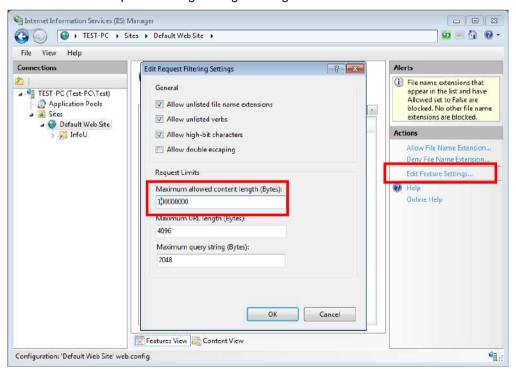
6.3.2 IIS file size

The default of the file size is set to 30M bytes in the IIS.

To register a file larger than 30M bytes in the server via WebDAV, you should change the default setting value. Select the Web Site and then open it by double-clicking "Request Filtering".



Click "Edit Feature Settings" on the right actions. Enter a value into the "Maximum allowed content length bytes)" item in the "Edit request filtering settings" dialog to set the maximum file size.



Appendix 7 XGT Monitoring

XGT Monitoring, a PLC(XGK, XGI, XGR) automatic diagnosis during graphic runtime, provides PLC information monitoring, system monitoring, device monitoring, user device monitoring, PLC log monitoring, and SOE monitoring.

Multiple monitorings can be executed simultaneously in template form, and the maximum number of executions depends on the PC system environment and the network environment.

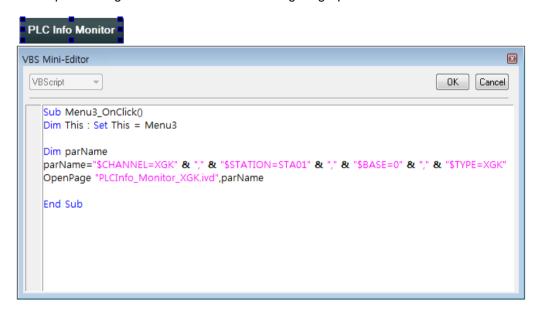
7.1 PLC Information Monitor

Using built-in PLC information monitoring system files, user can monitor errors, warnings, operation status of the PLC(XGK, XGI, XGR) system. The system files are located in GraSys folder of the project. With OpenPage, the script function, information of the PLC can be monitored during graphic runtime. First factor is the system file name, and second factors are the channel name, station name, base number, and PLC type. Tags related to the system information must be determined in the station to monitor the station. The system files are modifiable to fit the user's

purpose. Indicates that the status bit value is 1, and indicates the value of 0.

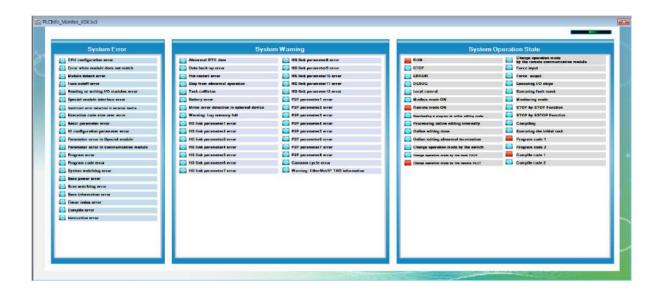
If the communication with the PLC of the station is unreliable, a gray icon and communication error message will be displayed on the screen.

* Example. Settings of XGK PLC info monitoring on graphic editor

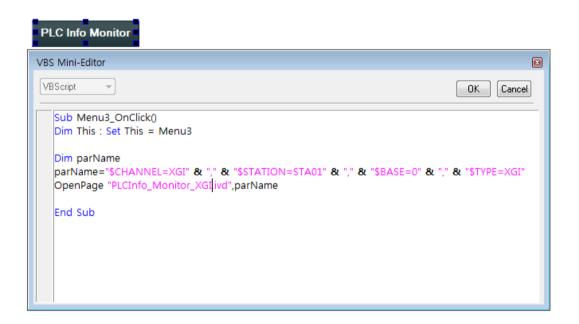


* Example. Screen of XGK PLC info monitoring during graphic runtime

Appendix 7 XGT Monitoring



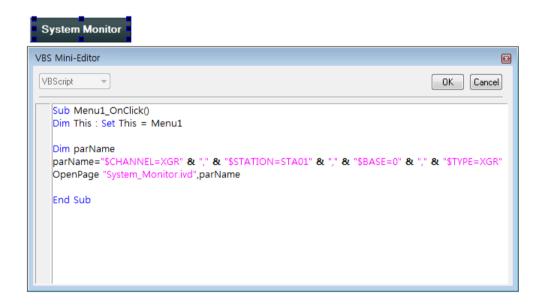
*Example. Settings of XGI PLC info monitoring on graphic editor



*Example. Screen of XGI PLC info monitoring during graphic runtime



*Example. Settings of XGR PLC info monitoring on graphic editor



*Example. Screen of XGR PLC info monitoring during graphic runtime

Appendix 7 XGT Monitoring

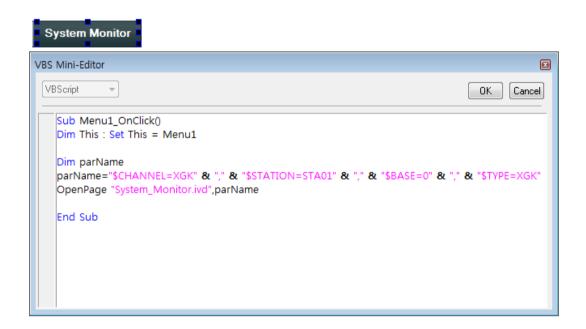


7.2 System Monitor

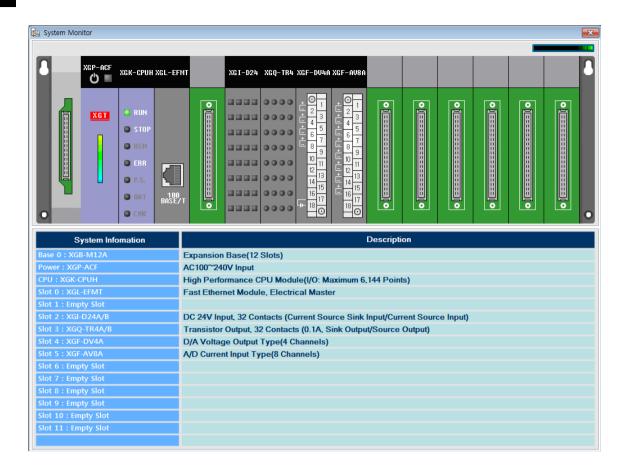
Using built-in PLC system monitoring system files, user can monitor the information of the slot and CPU module of the PLC(XGK, XGI, XGR) system. The system files are located in GraSys folder of the project. With OpenPage, the script function, system of the PLC can be monitored during graphic runtime. First factor is the system file name, and second factors are the channel name, station name, base number, and PLC type. The system files are modifiable to fit the user's purpose.

If the communication with the PLC of the station is unreliable, a communication error message will be displayed on the screen.

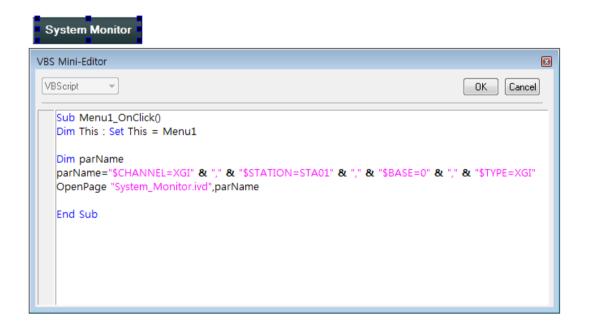
*Example. Settings of XGK PLC system monitoring on graphic editor



*Example. Screen of XGK PLC system monitoring during graphic runtime



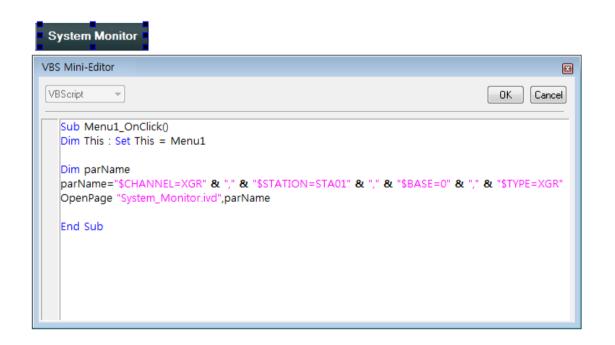
*Example. Settings of XGI PLC system monitoring on graphic editor



*Example. Screen of XGI PLC system monitoring during graphic runtime

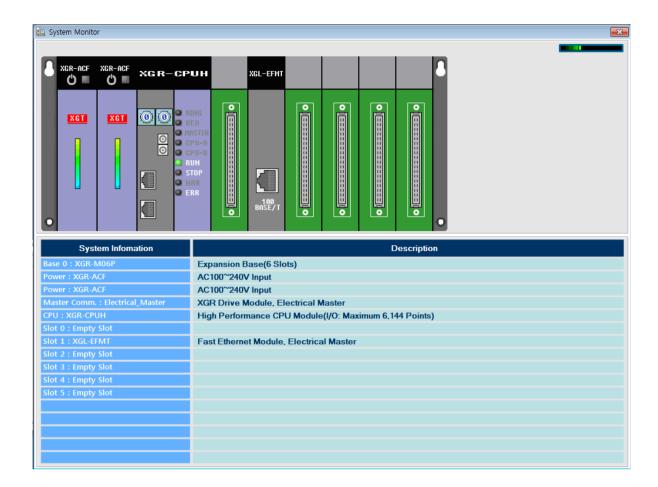


*Example. Settings of XGR PLC system monitoring on graphic editor



*Example. Screen of XGR PLC system monitoring during graphic runtime

Appendix 7 XGT Monitoring

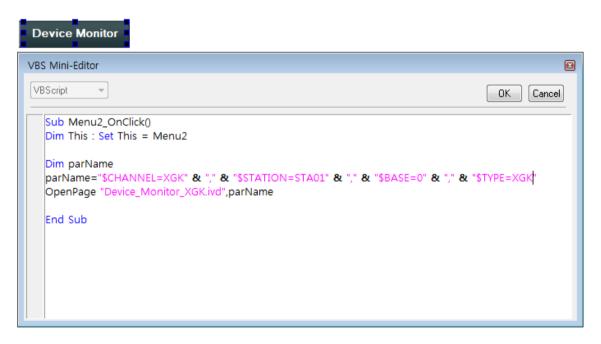


7.3 Block Device Monitor

Using built-in PLC block device data monitoring system files, user can monitor the block device data of the PLC(XGK, XGI, XGR) which is set in InfoU engineering. The system files are located in GraSys folder of the project. With OpenPage, the script function, block devices of the station can be monitored during graphic runtime. First factor is the system file name, and second factors are the channel name, station name, base number, and PLC type. The system files are modifiable to fit the user's purpose.

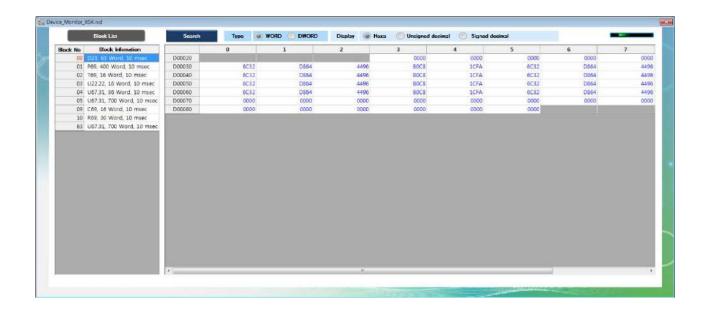
If the communication with the PLC of the station is unreliable, a communication error message will be displayed on the screen.

*Example. Settings of XGK PLC device monitoring on graphic editor

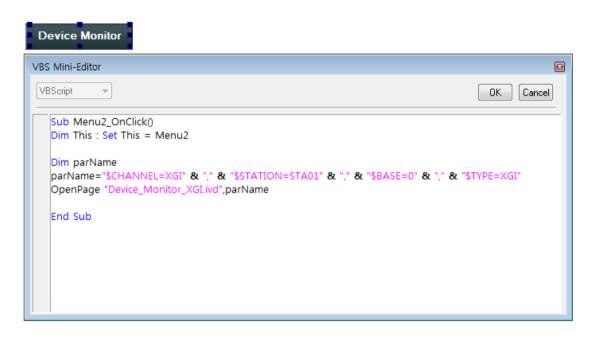


*Example. Screen of XGK PLC device monitoring during graphic runtime

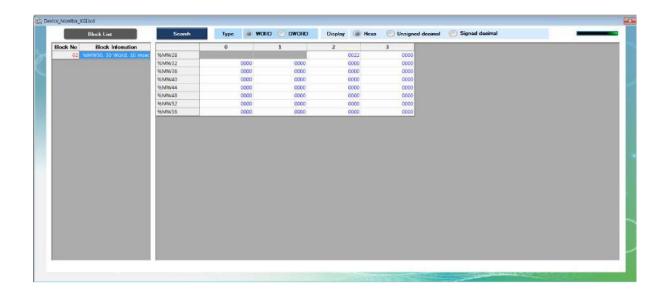
Appendix 7 XGT Monitoring



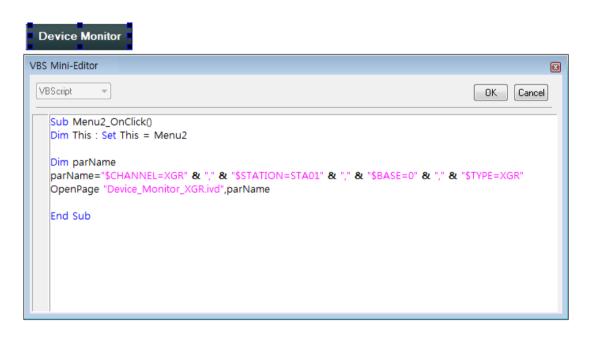
*Example. Settings of XGI PLC device monitoring on graphic editor



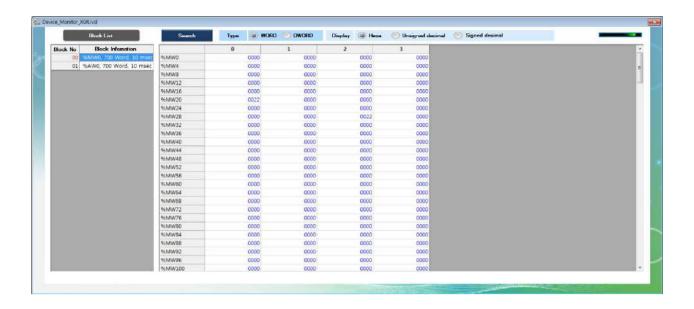
*Example. Screen of XGI PLC device monitoring during graphic runtime



*Example. Settings of XGR PLC device monitoring on graphic editor

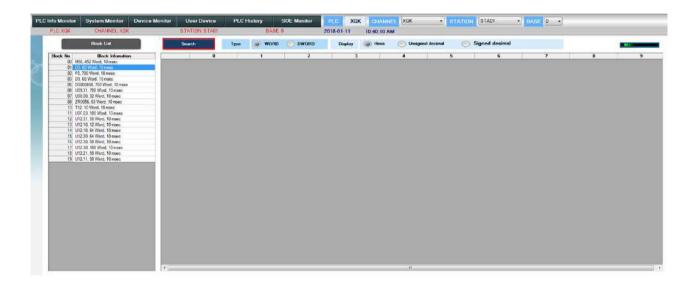


*Example. Screen of XGR PLC device monitoring during graphic runtime



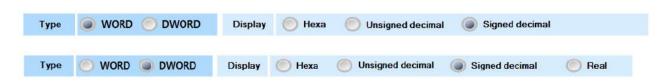
7.3.1 Select and Search

Select block, type and display type, and click the [Search] button.



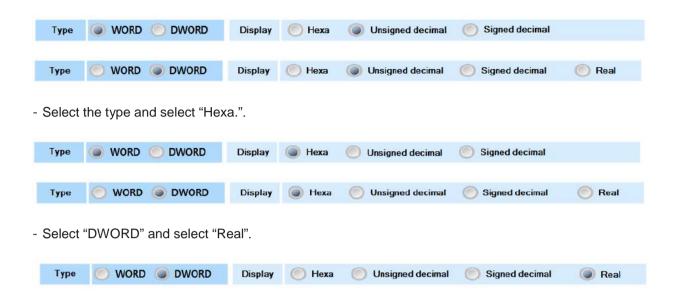
7.3.2 Display Data Type

- Select the type and select "Signed decimal".



- Select the type and select "Unsigned decimal".





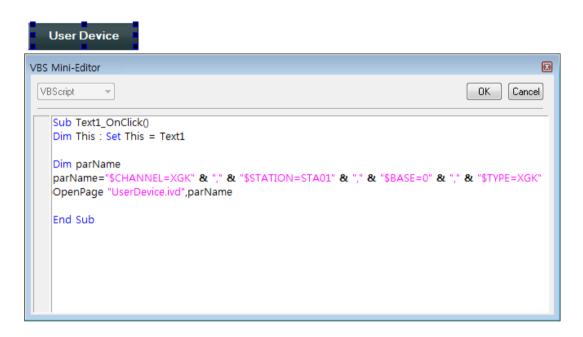
Type Display	16 Bit	32 Bit
Hexadecimal	0	0
Unsigned decimal	0	0
Signed decimal	0	0
Real	X(No type)	0

7.4 User Device Monitor

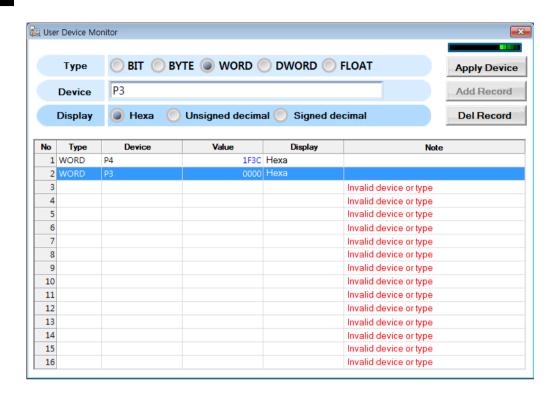
Using built-in PLC user device monitoring system files, user can monitor user device data of the PLC(XGK, XGI, XGR) which is set in InfoU engineering. The system files are located in GraSys folder of the project. With OpenPage, the script function, user devices of the PLC can be monitored during graphic runtime. First factor is the system file name, and second factors are the channel name, station name, base number, and PLC type. Tags related to the devices must be determined in the station to monitor the station. The system files are modifiable to fit the user's purpose.

If the communication with the PLC of the station is unreliable, the records' values will become "####", and a communication error message will be displayed on the screen.

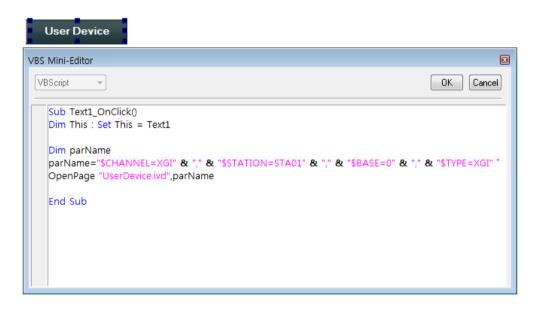
*Example. Settings of XGK PLC user device on graphic editor



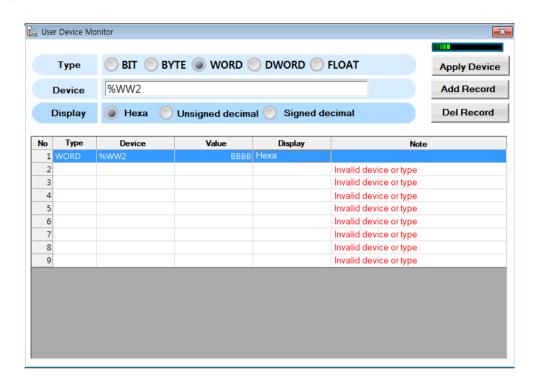
*Example. Screen of XGK PLC user device during graphic runtime



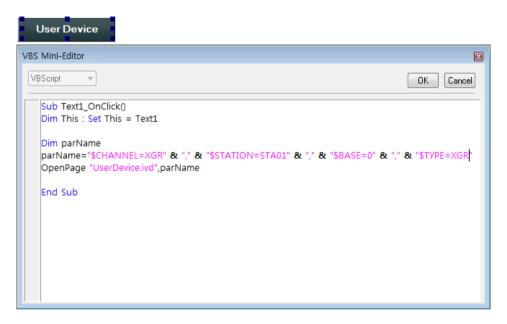
*Example. Settings of XGI PLC user device on graphic editor



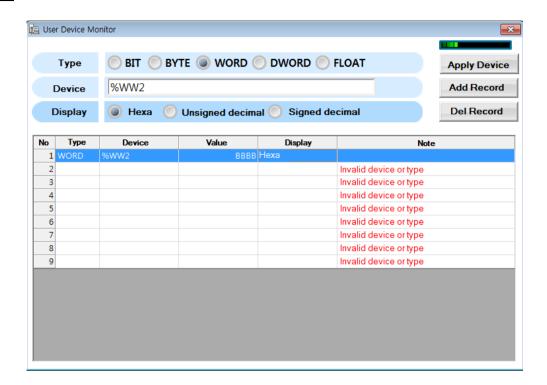
*Example. Screen of XGI PLC user device during graphic runtime



*Example. Settings of XGR PLC user device on graphic editor



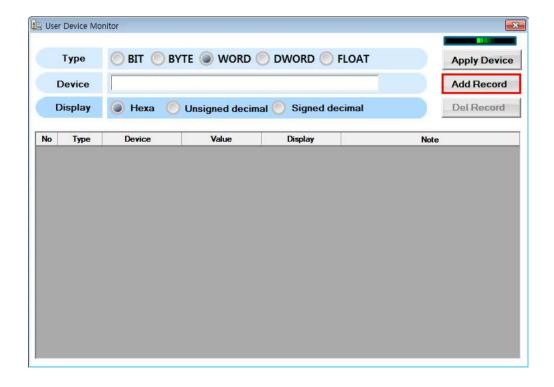
*Example. Screen of XGR PLC user device during graphic runtime



7.4.1 **Add Record**

Click [Add Record] button to add a new record.

Up to 16 records can be created, and [Add Record] button gets disabled when the number of records reaches 16. A confirmation message is displayed in the "Note" column because the device is not in use.



7.4.2 Apply Device

After selecting the type and display type, input device address for the PLC type and click [Apply Device] button.

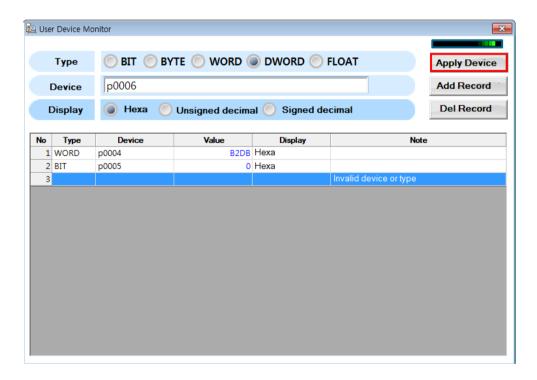
< Examples of correct address >

- XGK: D0002, P0010

- XGI: %IW1.1.1, %MW100

- XGR: %QW1.2.3, %AW50

(The address and the type should match.)



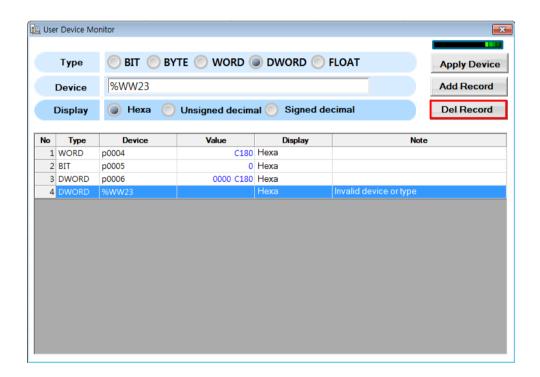
Display Type	Unsigned decimal	Signed decimal	Hexadecimal
BIT	0	X(No type)	0
ВҮТЕ	0	0	0

WORD	0	0	0
DWORD	0	0	0
FLOAT	X(No type)	0	X(No type)

7.4.3 **Delete Record**

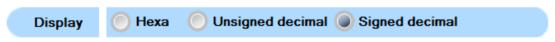
Click [Del Record] button to delete a record.

If the record does not exist, [Del Record] button is disabled.



7.4.4 **Display Data Type**

- Select "Signed decimal".



- Select "Unsigned decimal".



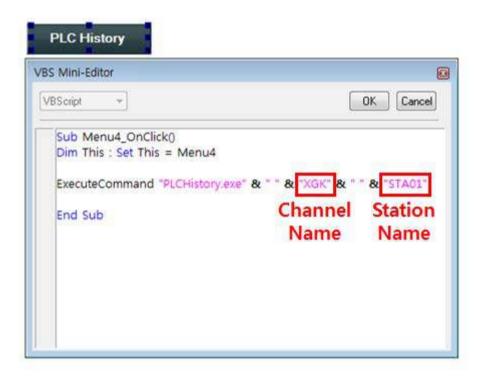
- Select "Hexa".

Display	Unsigned decimal	Signed decimal	Hexadecimal
BIT	0	X(No type)	0
ВҮТЕ	0	0	0
WORD	0	0	0
DWORD	0	0	0
FLOAT	X(No type)	0	X(No type)

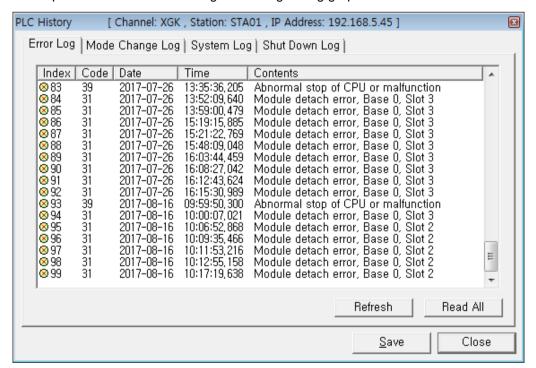
7.5 **PLC Log Monitor**

XGT Monitoring stores log of error, mode switching, system and power down in PLC. User can inquire the log or save it as a csv file.

*Example. Settings of XGK PLC log monitoring on graphic editor

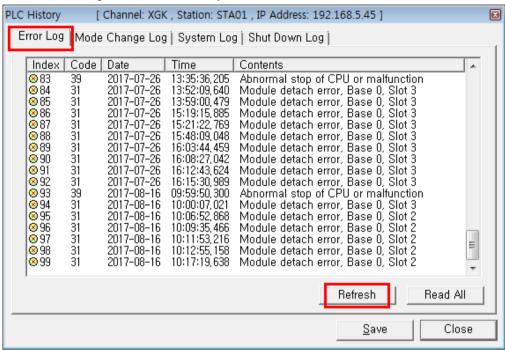


*Example. Screen of XGK PLC log monitoring during graphic runtime



7.5.1 Error Log Monitor

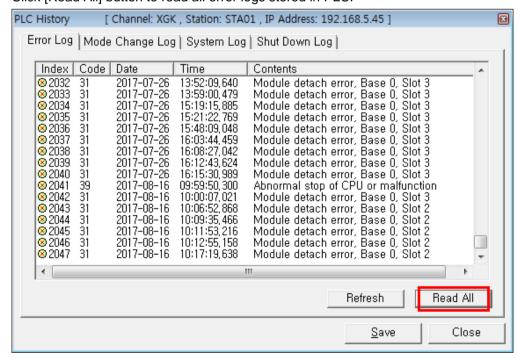
Select "Error Log" tab on PLC History window.



"Error Log" tab shows last 100 error logs stored in PLC. In case the number of logs is less than 100, "Error Log" tab displays all available logs.

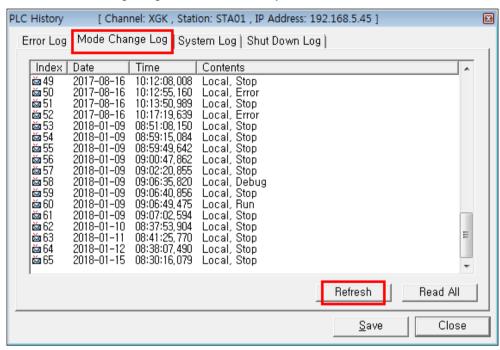
When there's an update, click [Refresh] button to view the most recent logs.

Click [Read All] button to read all error logs stored in PLC.



7.5.2Mode Change Log Monitor

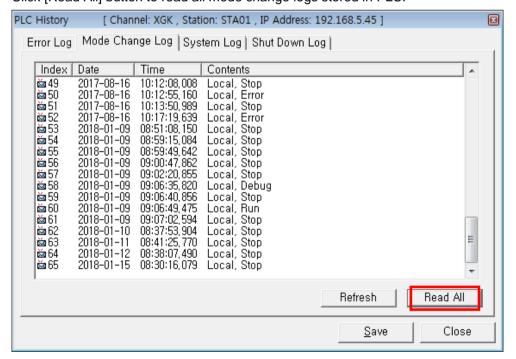
Select "Mode Change Log" tab on PLC History window.



"Mode Change Log" tab shows last 100 mode change logs stored in PLC. In case the number of logs is less than 100, "Mode Change Log" tab displays all available logs.

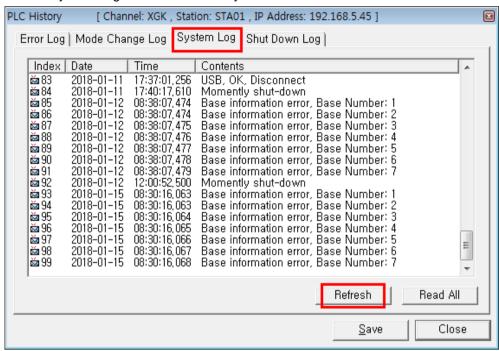
When there's an update, click [Refresh] button to view the most recent logs.

Click [Read All] button to read all mode change logs stored in PLC.



7.5.3System Log Monitor

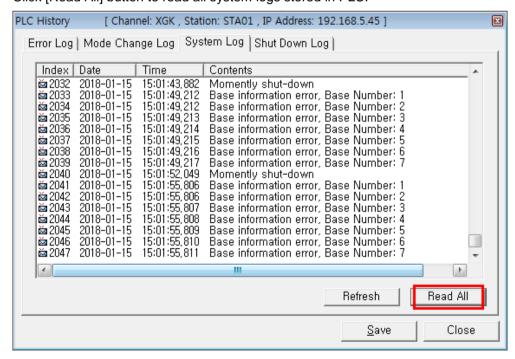
Select "System Log" tab on PLC History window.



"System Log" tab shows last 100 system logs stored in PLC. In case the number of logs is less than 100,

When there's an update, click [Refresh] button to view the most recent logs.

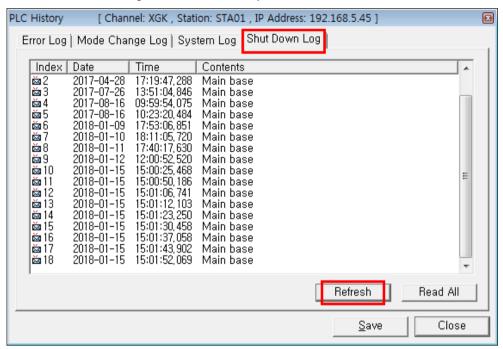
Click [Read All] button to read all system logs stored in PLC.



[&]quot;System Log" tab displays all available logs.

7.5.4 Shut Down Log Monitor

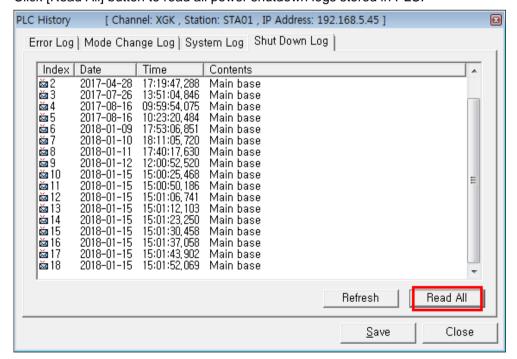
Select "Shut Down Log" tab on PLC History window.



"Shut Down Log" tab shows last 100 power shutdown logs stored in PLC. In case the number of logs is less than 100, "Shut Down Log" tab displays all available logs.

When there's an update, click [Refresh] button to view the most recent logs.

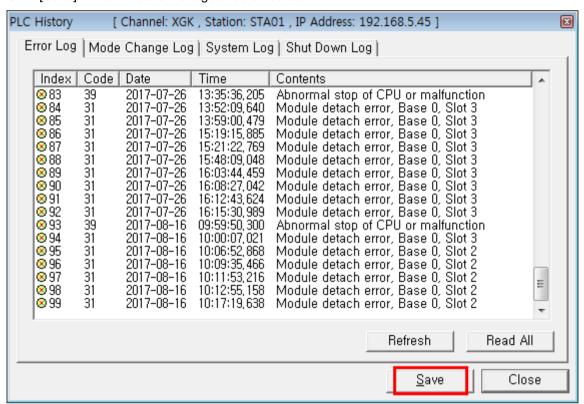
Click [Read All] button to read all power shutdown logs stored in PLC.



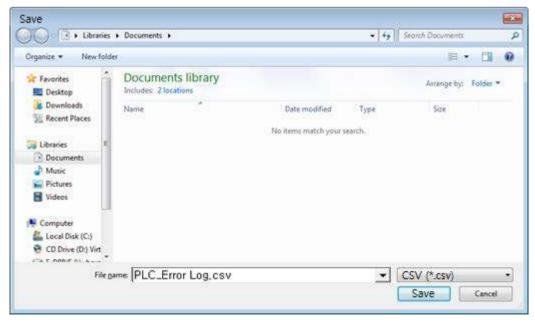
7.5.5 **Save Log**

User can save the logs displayed on PLC History window as a csv file.

Click [Save] button to save the logs of selected tab.



Set the filename and location.



Appendix 7 XGT Monitoring

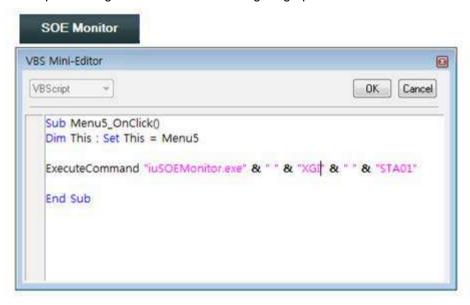
The stored PLC Log can then be viewed in the csv file when needed.

	Α	В	С	D	E	F	G	Н	
1	PLC_Error	Log							
2									
3	Index	Code	Date	Time	Contents				
4	0	0	1984-01-01	0.000.0					
5	1	39	2015-07-17	20:37.3	Abnormal	stop of CF	OU or malfu	unction	
6	2	31	2015-09-01	45:51.2	Module de	Base 0	Slot 7		
7	3	23	2015-12-01	42:04.3	Program v	alidation o	heck error		
8	4	24	2015-12-01	42:05.6	I/O param	eter error			
9	5	24	2015-12-01	42:30.7	I/O param	eter error			
10	6	23	2015-12-01	42:30.7	Program v	alidation o	heck error		
11	7	23	2015-12-01	42:36.0	Program v	alidation o	heck error		
12	8	24	2015-12-01	42:37.1	I/O param	eter error			
13	9	24	2015-12-01	42:39.3	I/O param	eter error			
14	10	23	2015-12-01	42:39.3	Program v	alidation o	heck error		
15	11	24	2015-12-01	03:42.2	I/O param	eter error			
16	12	29	2015-12-01	04:36.8	Special pa	rameter er	ror		
17	13	29	2015-12-01	04:53.4	Special pa	rameter er	ror		
18	14	29	2015-12-01	08:17.2	Special pa	rameter er	ror		
19	15	24	2015-12-01	09:40.1	I/O param	eter error			
20	16	24	2015-12-01	09:54.1	I/O param	eter error			
21	17	29	2015-12-01	09:56.4	Special pa	rameter er	ror		
22	18	29	2015-12-01	13:50.2	Special pa	rameter er	ror		
23	19	31	2016-02-11	53:58.1	Module de	Base 0	Slot 5		
24	20	31	2016-02-11	00:41.3	Module de	Base 0	Slot 4		
25	21	31	2016-02-11	01:56.6	Module de	Base 0	Slot 1		
26	22	31	2016-02-11	41:18.5	Module de	Base 0	Slot 1		
27	23	31	2016-02-11	43:22.8	Module de	Base 0	Slot 1		
20	24	21	2016 02 11	/6·11 5	Madula di	Paca 0	Clot 1		
4	-	PLC_Error I	Log +						

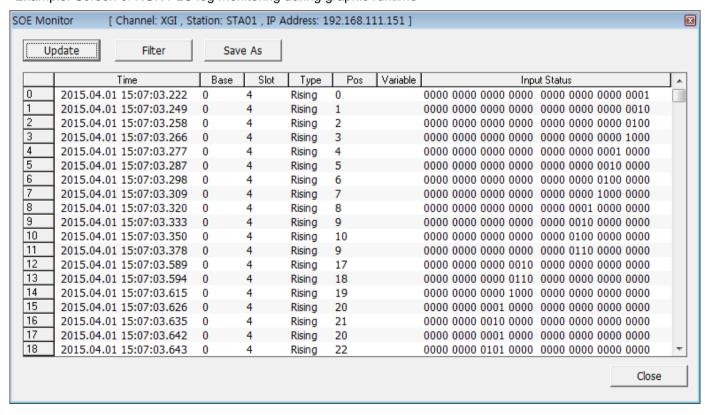
7.6 **SOE Monitor**

XGT Monitoring stores SOE history in PLC. User can inquire the SOE history or save it as a csv file.

*Example. Settings of PLC SOE monitoring on graphic editor

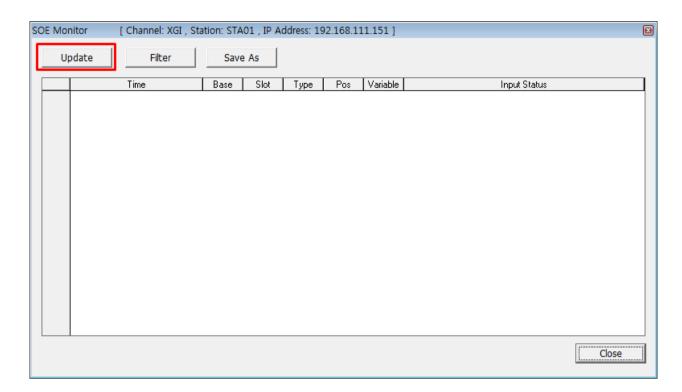


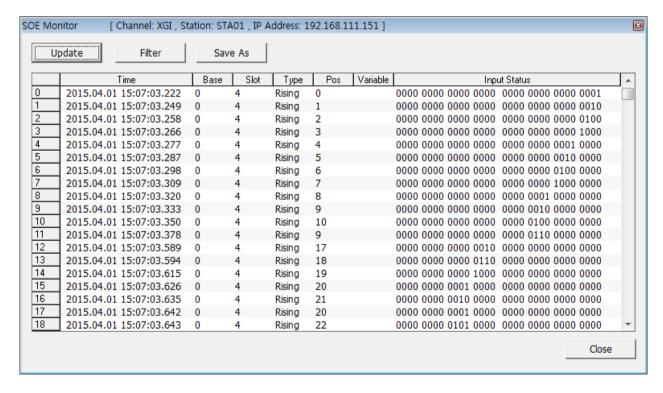
*Example. Screen of XGK PLC log monitoring during graphic runtime



7.6.1 **SOE Log Monitor**

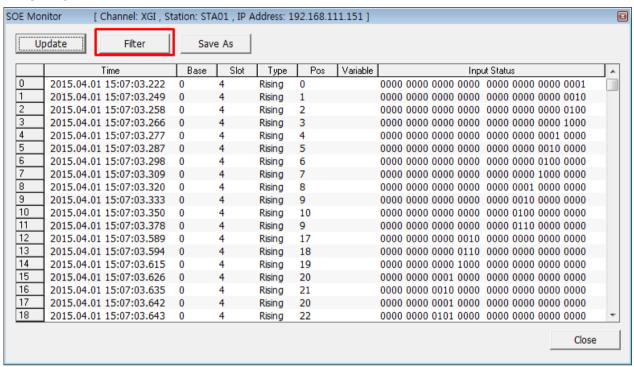
Click [Update] button on SOE Monitor window to view the logs stored in PLC.



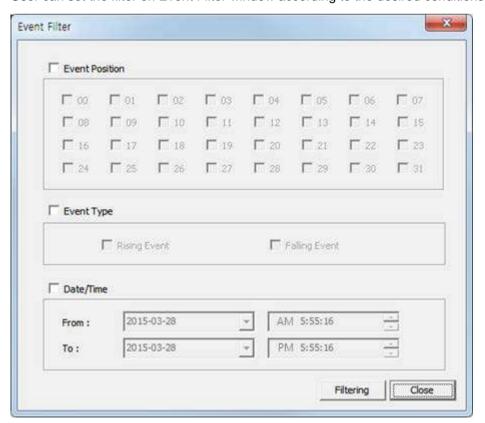


7.6.2 SOE Filter

Click [Filter] button on SOE Monitor window.



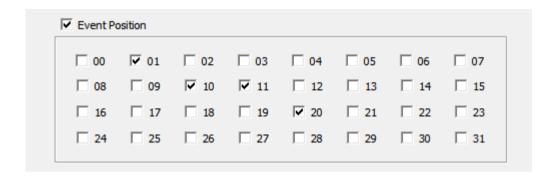
User can set the filter on Event Filter window according to the desired conditions.



Appendix 7 XGT Monitoring

(1) Event Position

Events that occur at the selected positions only are displayed.



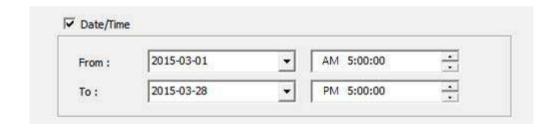
(2) Event Type

User can filter rising and falling state.



(3) Data/Time

User can set the date and time range.



After settings are done, click [Filtering] button to apply the filtered conditions. The filtered SOE log will display.

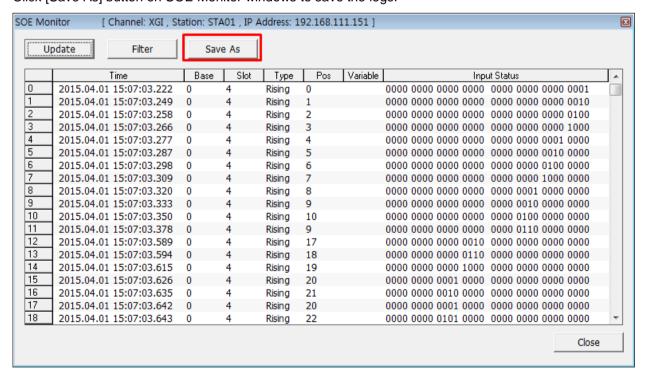
(4) SOE Log Update

Click [Update] button to view the most recent SOE logs.

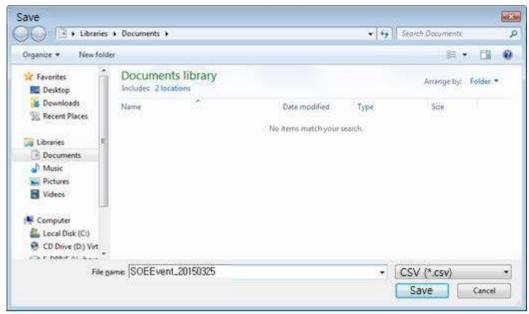
Up	odate Filter	Sav	e As						
	Time	Base	Slot	Туре	Pos	Variable	Inp	ut Status	1
1	2015.04.01 15:07:03.222	0	4	Rising	0		0000 0000 0000 0000	0000 0000 0000 0001	_
	2015.04.01 15:07:03.249	0	4	Rising	1		0000 0000 0000 0000	0000 0000 0000 0010	
2	2015.04.01 15:07:03.258	0	4	Rising	2		0000 0000 0000 0000	0000 0000 0000 0100	
}	2015.04.01 15:07:03.266	0	4	Rising	3		0000 0000 0000 0000	0000 0000 0000 1000	
	2015.04.01 15:07:03.277	0	4	Rising	4		0000 0000 0000 0000	0000 0000 0001 0000	
i	2015.04.01 15:07:03.287	0	4	Rising	5		0000 0000 0000 0000	0000 0000 0010 0000	
i	2015.04.01 15:07:03.298	0	4	Rising	6		0000 0000 0000 0000	0000 0000 0100 0000	
'	2015.04.01 15:07:03.309	0	4	Rising	7		0000 0000 0000 0000	0000 0000 1000 0000	
}	2015.04.01 15:07:03.320	0	4	Rising	8		0000 0000 0000 0000	0000 0001 0000 0000	
)	2015.04.01 15:07:03.333	0	4	Rising	9		0000 0000 0000 0000	0000 0010 0000 0000	
0	2015.04.01 15:07:03.350	0	4	Rising	10		0000 0000 0000 0000	0000 0100 0000 0000	
1	2015.04.01 15:07:03.378	0	4	Rising	9		0000 0000 0000 0000	0000 0110 0000 0000	
2	2015.04.01 15:07:03.589	0	4	Rising	17		0000 0000 0000 0010	0000 0000 0000 0000	
3	2015.04.01 15:07:03.594	0	4	Rising	18		0000 0000 0000 0110	0000 0000 0000 0000	
4	2015.04.01 15:07:03.615	0	4	Rising	19		0000 0000 0000 1000	0000 0000 0000 0000	
5	2015.04.01 15:07:03.626	0	4	Rising	20		0000 0000 0001 0000	0000 0000 0000 0000	
6	2015.04.01 15:07:03.635	0	4	Rising	21		0000 0000 0010 0000	0000 0000 0000 0000	
17	2015.04.01 15:07:03.642	0	4	Rising	20		0000 0000 0001 0000	0000 0000 0000 0000	
18	2015.04.01 15:07:03.643	0	4	Rising	22		0000 0000 0101 0000	0000 0000 0000 0000	7

(5) Save SOE Log

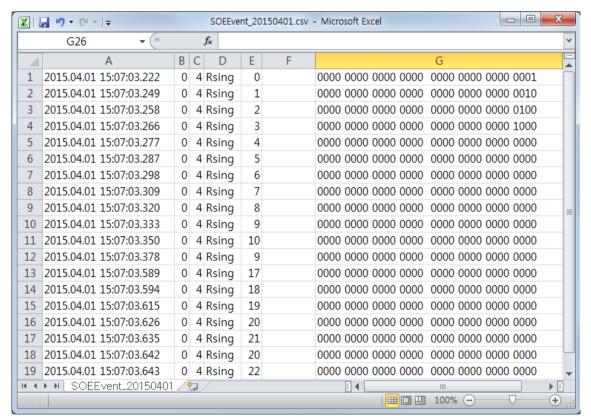
Click [Save As] button on SOE Monitor windows to save the logs.



Set the filename and the location, and click [Save] button.



The stored SOE Log can then be viewed in the csv file when needed.



Appendix 8 OPC UA Server

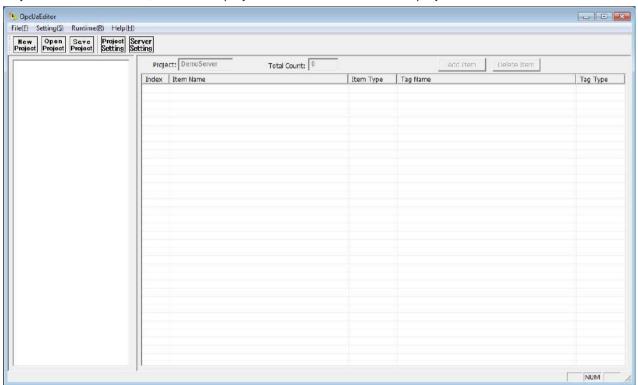
The OPC UA Server program performs the task of associating the Tag information of InfoU using the OPC UA protocol. OPC UA Server consists of Editor (Editor) and Runtime (Server Module).

Mapping Tag of InfoU Project and OPC UA Item to be linked with the data through the Editor, and perform settings necessary for other server operations. Runtime runs the server service with the contents set in the Editor.

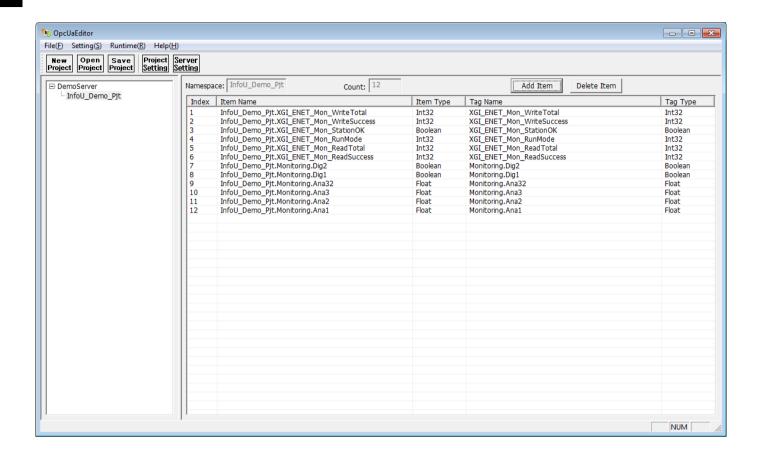
8.1 **Editor**

8.1.1 **Execute editor**

When you run the first editor, it will be displayed on the screen as a blank project.



If you have an existing work history, when you run the editor, the most recently worked project is loaded and displayed.

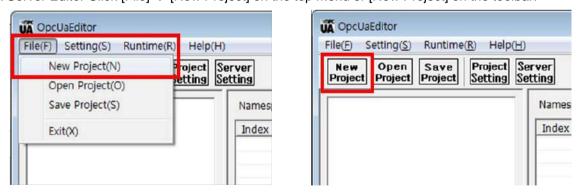


8.1.2 **Setting Project**

The settings of OPC UA Server are managed by Project unit. The project used by OPC UA Server is different from the project of InfoU to be linked with data. Project setting information of OPC UA Server includes Project information, Tag-Item mapping information, and other OPC UA Server Setting information of InfoU to be linked data.

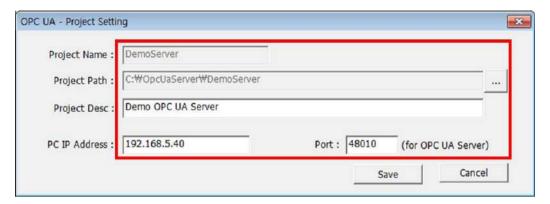
(1) Create Project

OPC UA Server Editor Click [File] → [New Project] on the top menu or [New Project] on the toolbar.



After inputting contents in the Project setting screen, click [Save] button.

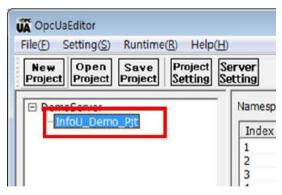




- Project Name: Set the name of the project to be used by OPC UA Server.
- Project Path: Set the path to save the project setting file to be used by OPC UA Server.
- Project Desc: Enter the description of the project to be used by the OPC UA Server.
- PC IP Address: Set the IP address to use for the OPC UA Server URL.
- · Port: Set the port to use for the OPC UA Server URL.

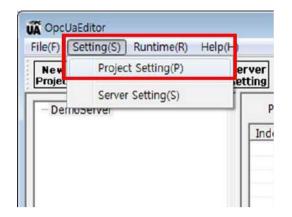
PC IP Address can be set only the address registered in Local PC. Port must be set to Port that can be used with OPC UA Server. Server Url is set as PC IP Addess and Port in the following format. opc.tcp: // (IP Address) :(Port)

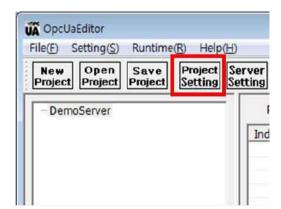
When the project setting is completed, the root item is created as the project name set at the top of the editor left tree as below.



(2) Modify Project

OPC UA Server Editor Click [Setting] → [Project Setting] on the top menu or [Project Setting] on the toolbar.

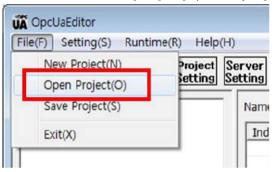


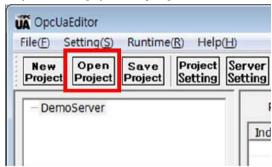


After editing the settings in the existing project settings, click the [Save] button.

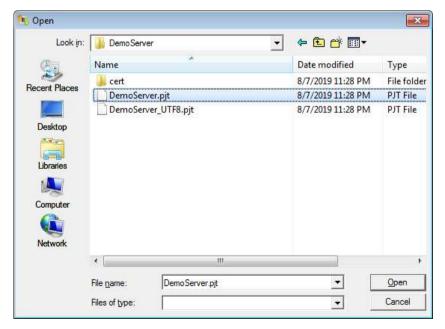
(3) Open Project

OPC UA Server Editor Click [File] → [Open Project] on the top menu or [Open Project] on the toolbar.



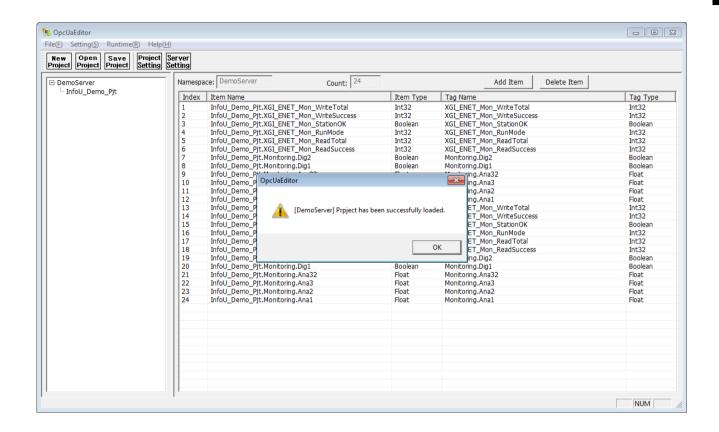


Select the Project configuration file (.pjt) to be loaded from the 'Open file dialog' screen and click the [Open] button.



The project is loaded into the Editor with the settings of the selected project settings file (.pjt).





Notice

The project configuration file (.pjt) will be created in two ways:

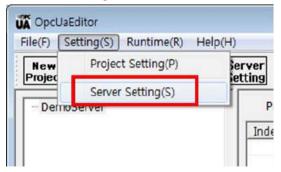
- '(project name).pjt' and '(project name _UTF8).pjt'

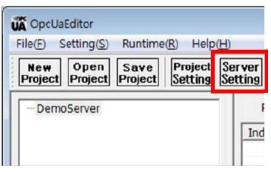
'(project name).pjt' is the file used by the Editor and '(project name _UTF8).pjt 'is the file used by Runtime. If you want to open the project in the Editor, you need to select '(project name).pjt'.

8.1.3 **Setting Server**

OPC UA Server requires Server setting for OPC UA Server service in addition to Project setting. There are three categories of Server settings: General Information, Authentication, and Security Policy.

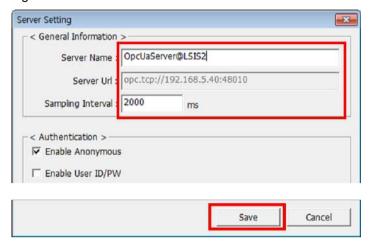
OPC UA Server Editor Click [Setting] → [Server Setting] on the top menu or [Server Setting] on the toolbar to display the Server Setting screen.





(1) General Information

In the Server Setting screen, enter the General Information setting items and click the [Save] button at the bottom of the Server Setting screen.



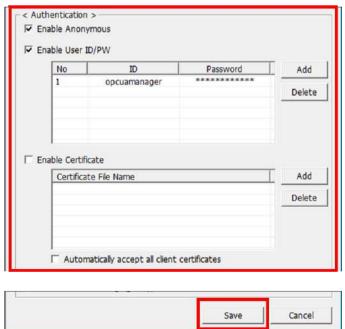
- Server Name: Set the name of the server to be used by the OPC UA Server service.
- Server Url: It is automatically set to PC IP Address and Port entered in Project setting.
- · Sampling Interval: Set the interval for sampling the data source (InfoU Tag) from OPC UA Server.

Notice

- To modify Server Url, please change PC IP Address and Port in Project Setting.
- Server Url is set as PC IP Addess and Port in the following format. opc.tcp://(IP Address):(Port)

(2) Authentication

Enter the authentication setting items in the Server Setting screen, and click the [Save] button at the bottom of the Server Setting screen.





There are three options to set up Authentication: Enable Anonymous, Enable User ID / PW, and Enable Certificate. 3 options can be set in multiple, and OPC UA Server endpoints are created as many as the set number of options, and OPC UA Client matching the endpoints and settings can access.

- · Enable Anonymous: Checking this item allows connection of OPC UA Client with Authentication set to Anonymous.
- · Enable User ID / PW: When this item is checked, the authentication is set to Uesr ID / PW and only the OPC UA Client using the registered User ID / PW is allowed.
- Enable Certificate: Check this item to set Authentication to Certificate and allow only OPC UA Client access using registered Certificate. In this case, 'Automatically accept all client certificates' also allows access to OPC UA clients that use unregistered certificates.

Notice

When 'Enable Certificate' function is used in Authentication setting of Server Setting, the certificate used by OPC UA Client to be allowed to connect must be stored in advance on PC where OPC UA Server is installed. You can add this certificate by selecting it through the Authentication [Add] menu in Server Setting.

(3) Security Policy

In the Server Setting screen, enter the security policy setting items and click the [Save] button at the bottom of the Server Setting screen.



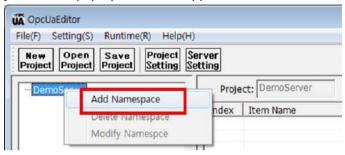
The Security Policy setting has seven options: 'No Security', which does not use encryption, and six encryption methods. These 7 options can be set as multiple, and OPC UA Server endpoints are created as many as the set number of options, and OPC UA Client that matches the endpoint setting can access the corresponding endpoint and communicate with the password.

8.1.4 **Namespace Setting**

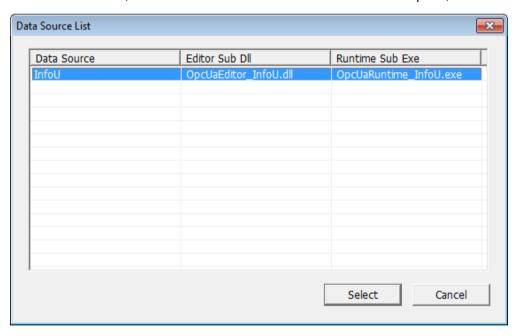
OPC UA Server requires modeling for OPC UA Server service in addition to project setting. To do this, add Namespace and Item. The LS ELECTRIC OPC UA Server's Namespace can be thought of as a concept equivalent to a Project in InfoU, the data source to which data is to be linked.

(1) Add Namespace

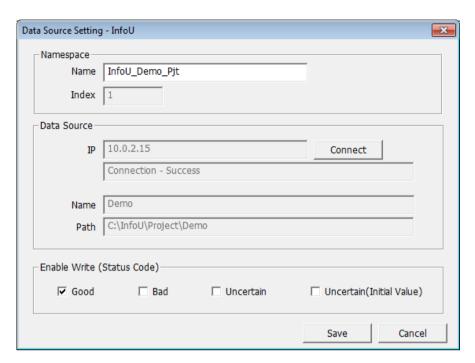
OPC UA Server Editor Right-click on the root entry of the generated project name in the left tree view and click the [Add Namespace] item in the pop-up menu that appears.



In the 'Data Source List' window, select the Data Source to connect to the Namespace, and then click [Select].



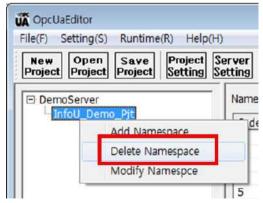
Enter the setting items in the 'Data Source Setting - InfoU' setting window, and click the [Save] button.



- · Namespace Name: Sets the name of the Namespace used by OPC UA Server Modeling.
- Namespace Index: The Namespace Index to use with OPC UA Server Modeling. This item can not be set by the user but is assigned in order of registration added in Editor.
- Data Source IP: The IP address of the InfoU to connect to the Namespace. Click the [Connect] button on the right side to check whether the current InfoU can be connected (InfoU Runtime program must be activated). In addition, if the connection is successful, the name (name) and path (Path) of the InfoU project loaded in the currently running real-time operation can be checked on the screen.
- Enable Write (Status Code): Set whether or not to allow control according to the status code of the item when controlling the item in OPC UA Client. Multiple status codes can be set, such as Good, Bad, Uncertain, and Uncertain (Initial Value).

(2) Delete Namespace

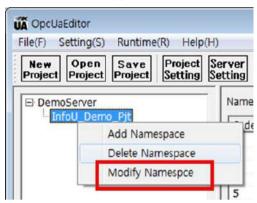
OPC UA Server Editor Right-click on the Namespace you want to delete from the left-hand tree view and click the [Delete Namespace] item in the pop-up menu that appears.



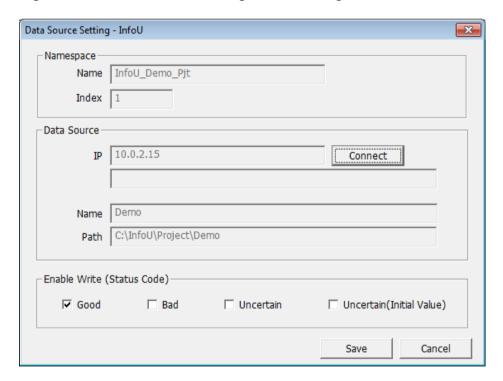
If you delete a Namespace, Tag-Item information of the corresponding Namespace added to the right table of OPC UA Server Editor will also be deleted.

(3) Modify Namespace

OPC UA Server Editor Right-click the Namespace you want to modify in the left-hand tree view and click the [Modify Namespace] item in the pop-up menu that appears.



Modify the setting items in the 'Data Source Setting - InfoU' setting window, and click the [Save] button.



8.1.5 Item Setting

If you set the Namespace of the data source to be linked with the OPC UA Server, you must register the Item in the corresponding Namespace.

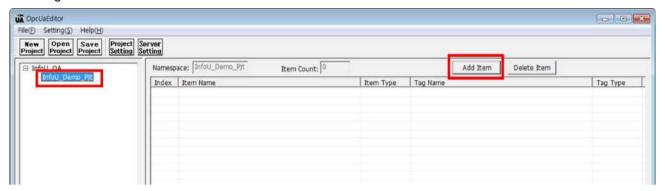
The LS ELECTRIC OPC UA Server's Namespace is equivalent to the InfoU project, which is the data source to be linked with data. Item is equivalent to Tag registered in the linked InfoU Project. Therefore, it is necessary to set the mapping of Namespace Item and InfoU Tag to 1: 1.

Notice

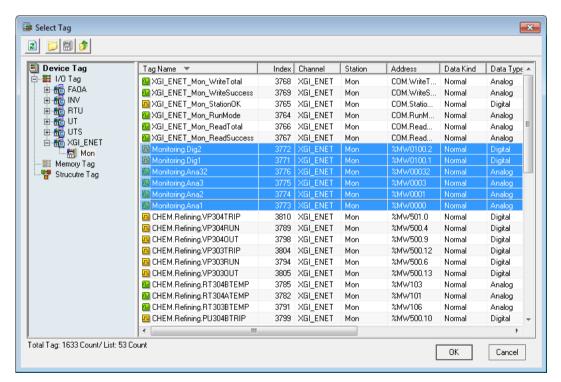
The modeling provided by LS ELECTRIC OPC UA Server Editor is available only in a form in which Item is listed in 1 dimension under Namespace.

(1) Add Item

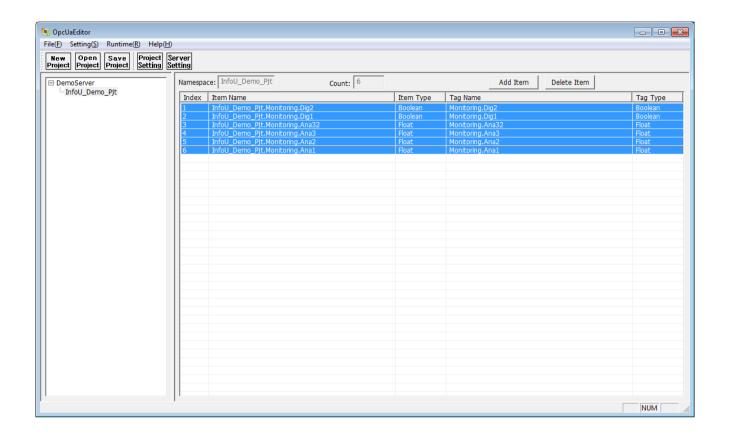
Select the Namespace you want to add the item to in the left tree, then click the [Add Item] button at the top of the right table.



In the 'InfoU Tag Selector', select the Tag you want to add and click the [OK] button.



The tags selected in the 'InfoU Tag Selector' are registered as Items of the corresponding Namespace, and the Item-Tag information is displayed in the right table of OPC UA Server Editor.



Notice

Click the [Add Itme] button and use the 'InfoU Tag Selector' to set the Name of the added Item in the following manner and registered in the table.

(Name of currently selected Namespace).(Name of InfoU Tag)

(Example)

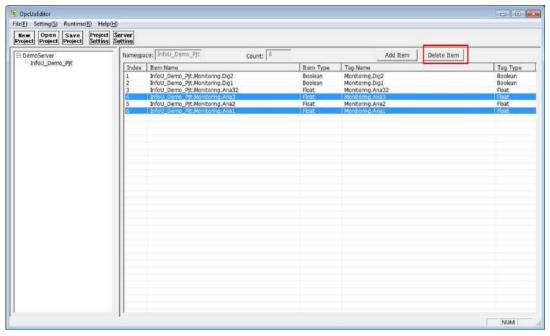
Namespace Name: InfoU_Demo_Pjt

InfoU Tag Name: Ana1

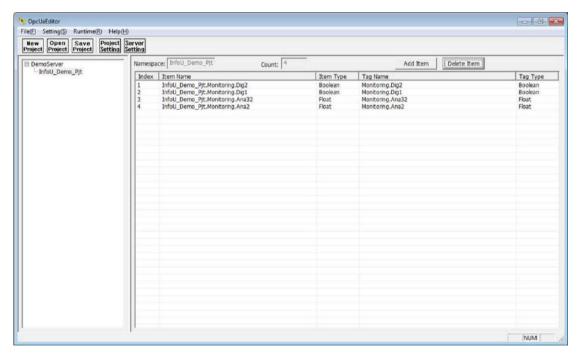
Item Name: InfoU_Demo_Pjt.Ana1

(2) Delete Item

Select the Item(s) to delete and click the [Delete Item] button at the top.



The item(s) are updated with the deleted Item-Tag Mapping information and the table is displayed on the screen.

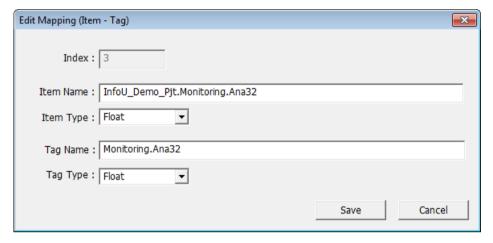


Notice

The Item's Index is automatically incremented from 1 without missing in the order of the Item-Tag mapping items registered in the Table. If deleted, the Index is re-allocated in the order of the item-to-tag mapping remaining after deletion.

(3) Edit Item

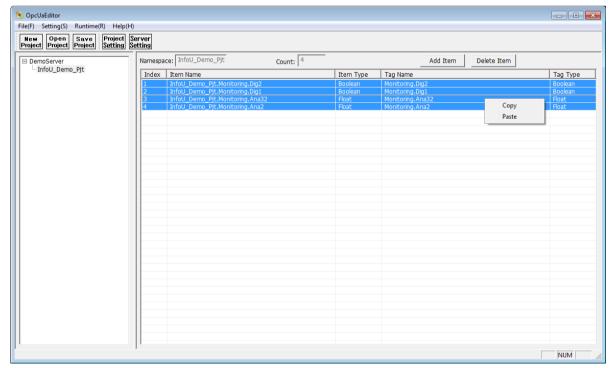
If you double-click the item to be edited, the 'Edit Mapping (Item-Tag)' setting window will be displayed on the screen. After editing the Item-Tag mapping information in the 'Edit Mapping (Item-Tag)' setting window, click the [Save] button.

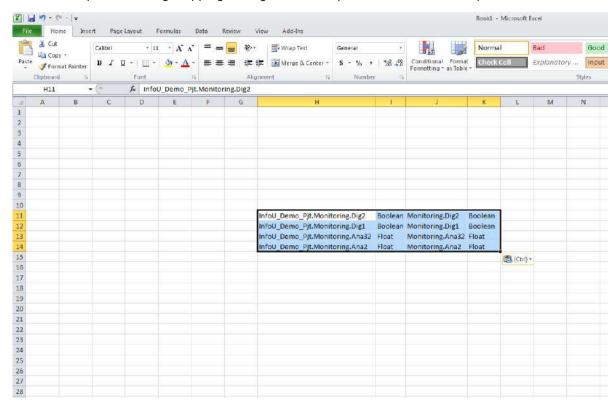


The table is updated and displayed on the screen with the Item-to-Tag mapping information modified in the 'Edit Mapping (Item-Tag)' setting window.

(4) Clipboard Copy/Paste

Editor provides the function to link Clipboard and Copy / Paste to improve the efficiency of Item-Tag Mapping setting. Select the item(s) you want to copy with the clipboard, then right-click and select [Copy] from the popup menu.

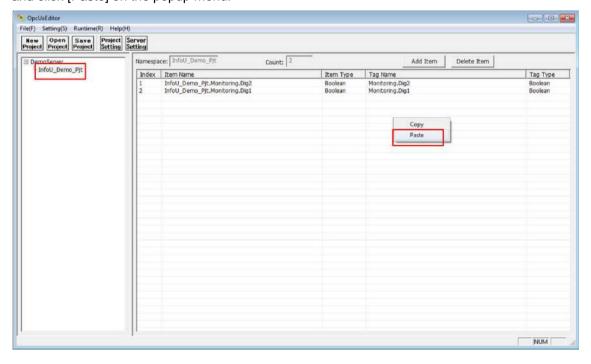




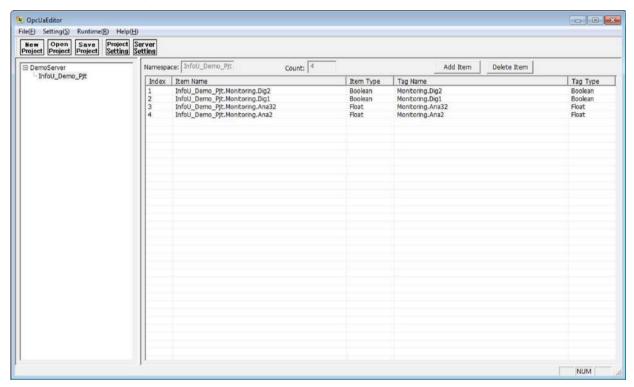
Paste the copied Item-Tag Mapping settings into the clipboard in Excel or Notepad.

In contrast to the functions described above, create the Item-Tag Mapping information to be added in Excel or Notepad, and copy (copy) it to the clipboard.

In the left tree view of OPC UA Server Editor, select the Namespace to add Item, right click on the right table and click [Paste] on the popup menu.



Item-Mapping information is added to the corresponding Namespace with Item Mapping information that you have worked on the clipboard.



Notice

Item Modification, Clipboard Copy / Paste function is implemented in consideration of extensibility. When using this function, it is necessary to use caution because validation (name, type, etc.) of Tag registered in InfoU is not performed.

8.2 Runtime

8.2.1 Execute Runtime

Run OPC UA Server Runtime by clicking [Runtime] → [Start] in the menu at the top of OPC UA Server Editor.



When the OPC UA Server Runtime is running, the following 'UARuntimeTraylcon' Tray icon will be displayed in the Windows task bar.



Right click on the 'UARuntimeTraylcon' Tray icon on the Windows task bar and click [Exit] on the popup menu to close the OPC UA Server Runtime.

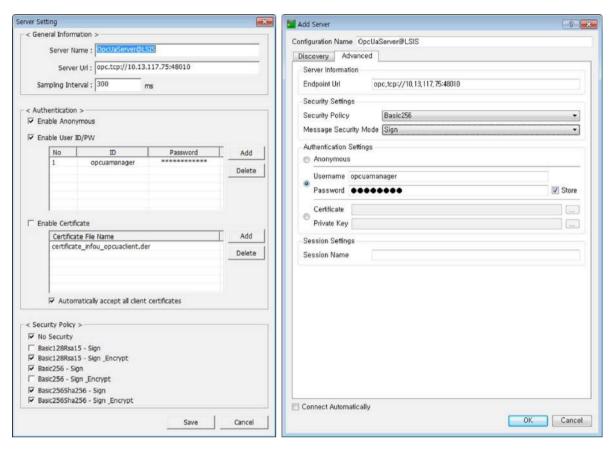


8.2.2 Verifying OPC UA Server

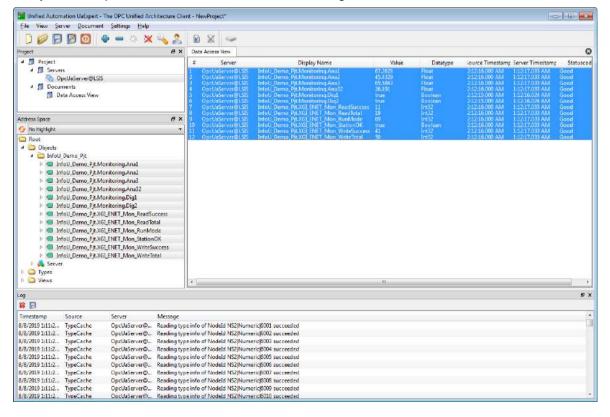
OPC UA Server Runtime can be confirmed by using commercial OPC UA Client program.

You can check the Server Setting and Modeling information set up using the Editor. You can check whether the data linkage function between Item-Tag works properly through the tag viewer of the InfoU real-time operation which is the data source.

Set the OPC UA Client (right side) so that it can connect to the endpoint provided in the Server Setting information (left side) of the OPC UA Server Editor as shown below.



You can browse the address space with the modeling information set in the Editor by accessing the OPC UA Server, and you can inquire the value and status code of the registered item.





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Specifications in this instruction manual are subject to change without notice due to continuous products development and improvement.

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