



TOP Design Studio User Manual

Manual Revision List

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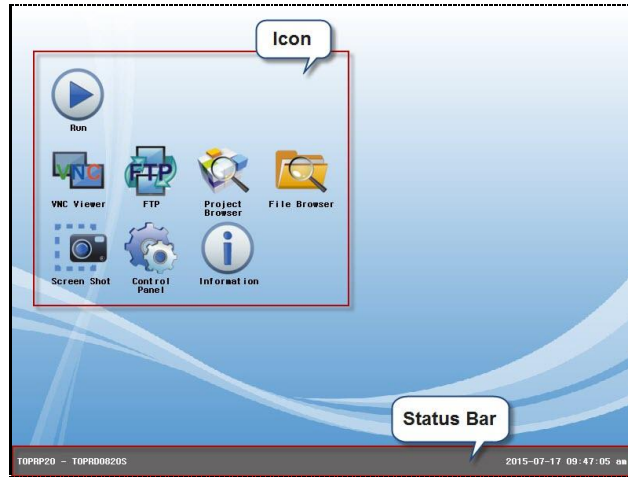
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CHAPTER 1 TOPR Main Screen

CHAPTER 1 - TOPR Main Screen

1.1 Screen composition

The main screen of TOPR is composed as follows.



[Fig. TOPR screen composition]

On the screen are the icons [Run], [VNC Viewer], [FTP], [Project Browser], [File Browser], [Screenshot], [Control Panel], and [Information]. At the bottom is the [Status bar].

1.2 Icons

The functions of the main icons of TOPR are explained.

| Icon | Description |
|-----------------|---|
| RUN | A project loaded into TOPR is run, and the run screen is brought up. |
| VNC viewer | A VNC login window for accessing VNC servers on other devices (PCs, etc.) appears. |
| FTP | A use FTP window for accessing FTP servers on other devices (PCs, etc.) appears. |
| Project Browser | A window for searching and running project files appears. |
| File Browser | A File Browser window for copying/deleting files appears. |
| Screenshot | A screenshot window where the screen can be captured appears. |
| Control Panel | A Control Panel window that shows Project, System, Optional Devices, Communication Device Services, and Diagnostic Tools appears. |
| Information | A TOPR information window appears. |

1.3 VNC viewer

VNC stands for Virtual Network Computing. This is a function that allows monitoring and control of other TOPRs or PCs connected remotely. This is the VNC Viewer icon. Using this icon, other TOPRs or PCs connected through external Internet or in-company ethernet can be viewed or controlled.



When the icon is clicked, the following log-in window appears. Enter the IP of the other TOPR or PC, etc., to be monitored from the TOPR. If there is a password set for the TOPR or PC, enter the password. If there is no password, this field can be left blank. Press the OK button to begin monitoring.



[Fig. VNC viewer]

<VNC viewer usage method>

Set and run the VNC server program on the PC.

Enter the IP address and password for the PC in [Fig. VNC Viewer], and run the program.

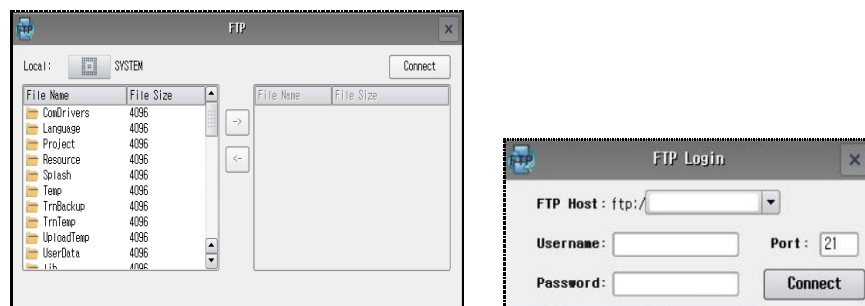
(Here, the TOPR must be connected to ethernet. The IP address of the TOPR can be viewed in [Control Panel]-[Ethernet].)

1.4 FTP

FTP stands for File Transfer Protocol. This is a protocol based on the TCP/IP protocol, for file transfers between servers and clients. It is a function that allows for easy sharing and importing of files on other computers through the network.



When the icon is clicked, the following FTP window appears. This function allows the TOPR FTP to be used to connect to the FTP server of another PC. The user is able to share files between the TOPR and the PC.



[Fig. FTP]

< FTP usage method >

Set and run the FTP server program on the PC.

Press the [Connect] button of the TOPR FTP. The [Fig. FTP Login] window appears.

In [FTP Host], the FTP server address and port of the PC are entered.

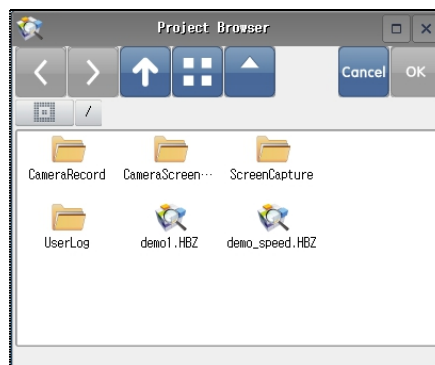
Enter the user name and password, then run.

(Here, the TOPR must be connected to ethernet. The IP address of the TOPR can be viewed in [Control Panel]-[Ethernet].)







1.5 Project Browser



When the icon is clicked, the following Project Browser window appears. Project Browser is a function that is used to find and import project transfer files made in TOP Design Studio. As shown in the figure below, only folders and files with the extension *.HBZ (project file) appear. When a project (.HBZ) is selected and the [OK] button is clicked, the [File Copy] window opens, and a few projects will start.



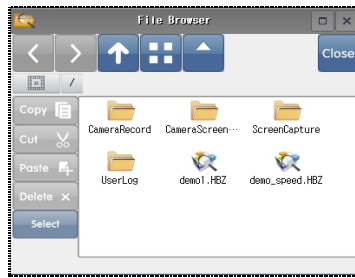
[Fig. Project Browser]

| Button | Description |
|---|--|
|  | This is the back button. |
|  | This is the forward button. |
|  | This button brings up the root directory. |
|  | This button is used to switch between small icon and list views. |
|  | This is the align by name function. |
|  | This button is used to select external memory. |

1.6 File Browser



When the icon is clicked, the following File Browser window appears. This function can be used to search all files saved in TOPR. Files can be deleted from, or copied and pasted to external memory.



[Fig. File Browser]

| Button | Description |
|--------|--|
| | This button is used to copy files and folders. |
| | This button is used to cut files and folders. |
| | This button is used to paste files and folders. |
| | This button is used to delete files and folders. |
| | This button is used to select files and folders. |

1.7 Screenshot



When the icon is clicked, the following Screenshot window appears. This function is used to capture the screen. When the camera-shaped button in the center is clicked, the TOPR screen is captured. By clicking on the left button, the save path can be changed. By clicking a file name, the file name can be changed.



[Fig. Screenshot]

| Button | Description |
|--|---|
| | Select the save path. |
| | Start capture. |
| <input type="text" value="20150107-23.jpg"/> | The name of the save file can be changed. |

1.8 Control Panel



When the icon is clicked, the following Control Panel window appears. The system settings and project settings for TOPR can be made here. The communication and other options of peripheral devices can be set. Also, VNC / FTP servers and diagnostic tools can be used.

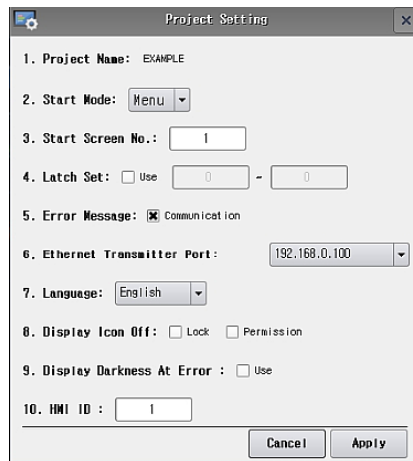


[Fig. Control Panel]

| Menu | Description |
|----------------------|---|
| Project | Basic project settings, advanced settings, and optimized settings can be made here. |
| System | TOPR system device settings and reset can be performed here. |
| Optional devices | Settings can be made for the options of devices attached to TOPR. |
| Communication device | PLC communication settings are made here. |
| Services | FTP and VNC server settings can be made here. |
| Diagnostic tools | The protocol analyzer and log viewer can be used for diagnostics. |

1.8.1 Project property

This function is used to set the active project in the TOPR. The start mode, menu screen language, and ethernet transmission port can be set.



[Fig. Project settings]

| No | Project setting menu | Description |
|----|----------------------|---|
| 1 | Project name | This is the name of the project that is run in run mode. |
| 2 | Start mode | This is the mode that is entered when power is switched on. Options are [Menu mode] and [Run mode]. |
| 3 | Start screen number | Set the project start screen number. |

| | | |
|----|------------------------------------|--|
| 4 | Latch set | TOP has internal addresses from 0 to 10239. Internal addresses are in word units. All address data is erased if power is reset. However, if latches are set, data is preserved even if power is reset. |
| 5 | Error Message | Set to use the communication error message display function. |
| 6 | Ethernet transmission port | Set the ethernet transmission port. |
| 7 | Language | Set the language (Korean, English). |
| 8 | Display icon off | This function turns the lock and permissions display of project objects on or off. [Lock]: If a project is locked, 'Lock' is displayed. [Permission]: If a security level is set for an object, 'Not Permission' is displayed. |
| 9 | Display darkness when error occurs | In this setting, the screen goes dark when an error occurs. |
| 10 | HMI ID | When multiple TOPRs are connected, they are differentiated using IDs. |

1.8.2 Advanced settings

The operation speed and draw speed of active projects in the TOPR can be set.



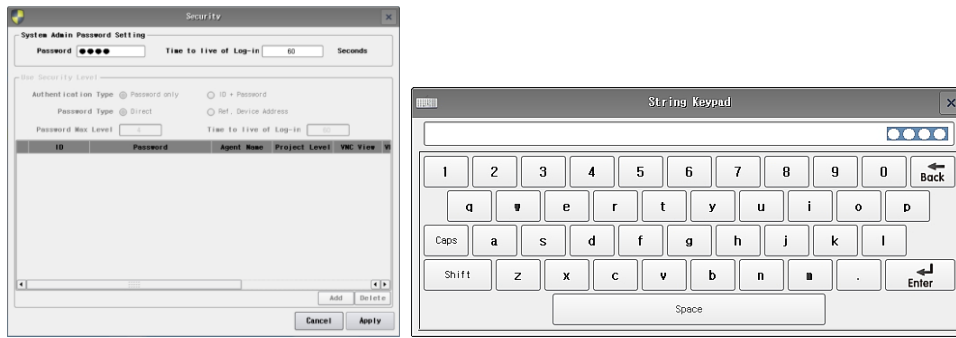
[Fig. Advanced settings]

| No | Advanced settings menu | Description |
|----|---------------------------------------|--|
| 1 | Operation speed | Set the operation speed for a project. [Ultra Fast], [Fastest], [Fast], [Normal], [Slow] |
| 2 | Draw speed | Set the speed at which the project screen is refreshed. [Ultra Fast], [Fastest], [Fast], [Normal], [Slow] |
| 3 | Project load type | Set the project load type. [Screen], [All] |
| 4 | Data clearance when screen is changed | When the screen is changed, the data in the communication table of the previous screen is cleared. |
| 5 | ErrorLog write | When an error occurs, the details of the error are recorded. The error log is recorded in [File Browser]-[App_Log]. |

1.8.3 Security

In this function, the security settings for TDS can be set and changed from the TOPR. The security settings need to be made first in the draw project. Here, screen access and icon use can be restricted

by setting administrator passwords and security levels.

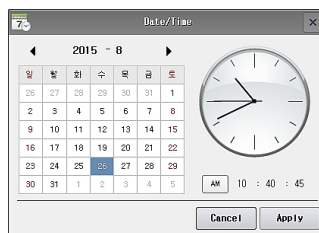


[Fig. Security]

| Security properties | | Description |
|-------------------------------|------------------------|---|
| System admin password setting | Password | This password is used when transitioning from the run screen to the menu screen, and when accessing the VNC viewer, project browser, and control panel. |
| | Time to live of log-in | Set the time for which access permissions are maintained. |
| Use security level | Authentication type | Set the authentication type. |
| | Password type | Set the password type. |
| | Password Max Level | The Password Max Level may be between 1 and 15. Accounts with a high level can access locked parts of accounts with lower levels. |
| | Time to live of log-in | Set the time for which access permissions are maintained. |
| Account | | Set the user account. |
| Password | | Set the user password. |
| Name | | Set the user name. |
| Level | | Set the user level. |
| VNC view | | Set the VNC view access permissions for the user. |
| VNC control | | Set the VNC control access permissions for the user. |
| System | | Set the [Control Panel], [VNC Viewer], and [Project Browser] access permissions of the user. |

1.8.4 Date / Time

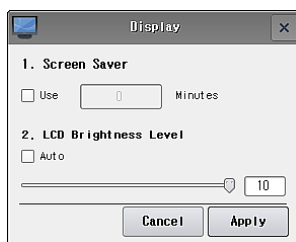
Set the date/time for the TOPR body.



[Fig. Date / Time]

1.8.5 Display

Set the brightness and screen saver functions for the TOPR main screen.



[Fig. Display]

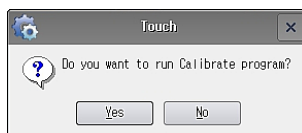
| No | Display menu | Description |
|----|----------------------|-------------------------------------|
| 1 | Screen saver | Enable or disable the screen saver. |
| 2 | LCD brightness level | Set the brightness of the LCD. |

1.8.6 Touch

When the touch position is distorted during use of the product, run touch calibration.

In the touch calibration screen, touch the message [Push Hear] until the [Ok] message is displayed.

Once this process has been completed, the touch position can be corrected.



[Fig. Touch]

1.8.7 Sound

Volume and buzzer settings can be made for the TOPR body.

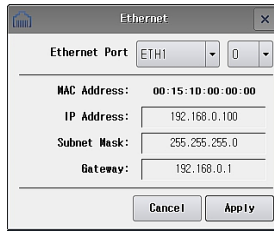


[Fig. Sound]

| No | Sound menu | Description |
|----|------------|-----------------------|
| 1 | Buzzer | Set the buzzer sound. |
| 2 | Volume | Set the volume. |

1.8.8 Ethernet

Set the ethernet connected to the TOPR process. The IP, subnet, and gate address must be set appropriately to the user network environment.

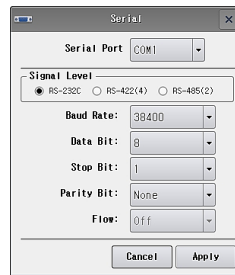


[Fig. Ethernet]

| Ethernet menu | Description |
|------------------|--|
| Ethernet port | Select the ethernet port. |
| Physical address | The ethernet MAC address is displayed. |
| IP Address | Set the ethernet IP address. |
| Subnet mask | Set the ethernet subnet mask. |
| Gateway | Set the ethernet gateway. |

1.8.9 Serial

Set the serial port connected to the TOPR process.



[Fig. Serial]

| Serial menu | Description |
|--------------|--|
| Serial port | Select the COM port. |
| Signal level | Set the signal level (RS-232C/422/485) of the controller connected to the COM port. |
| Baud rate | Set the communication speed (baud rate) of the controller connected to the COM port. |
| Data bit | Set the data bits for the controller connected to the COM port. |
| Stop bit | Set the stop bit for the controller connected to the COM port. |
| Parity bit | Set the parity bits for the controller connected to the COM port. |
| Flow | Enable or disable flow control for the controller connected to the COM port. |

1.8.10 HDMI

Set whether to use the HDMI connected to the HDMI. If this is turned ON, the TOPR reboots.



[Fig. HDMI]

1.8.11 Initialization

The backup data (log, alarm, recipe) of the project saved in TOPR is deleted and backed up. Factory reset can also be performed. (Here, deleted files cannot be restored.)

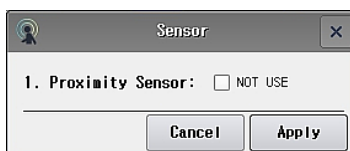


[Fig. Initialize]

| No | Initialize menu | Description |
|----|-------------------------------|---|
| 1 | Erase project | The project file is erased. |
| 2 | Backup (logging/alarm/recipe) | Project logging, alarm, and recipe data is backed up to external memory. |
| 3 | Clear logging data | Project logging data is deleted. |
| 4 | Clear alarm data | Project alarm data is deleted. |
| 5 | Clear recipe data | Project recipe data is deleted. |
| 6 | Make factory initialization | Delete project files and all data at once. (Here, the status of the TOPR OS, Hydra, Daemon, and Util are not reset. Also, external devices are excluded.) |
| 7 | Clear system buffer | |
| 8 | Clear latch buffer | |

1.8.12 Sensor

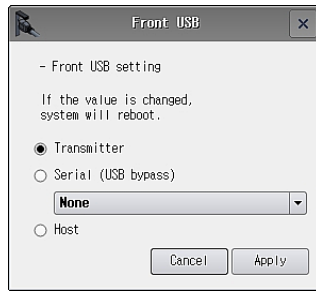
Set whether to use the TOPR proximity sensor. The proximity sensor automatically controls the [Screen saver] of the screen. If no object is detected by the sensors, the screen enters screen saver mode. If the touch is used or an object is detected, the screen saver mode is exited.



[Fig. Sensor]

1.8.13 Front USB

Settings can be made for the front USB of the TOPR.

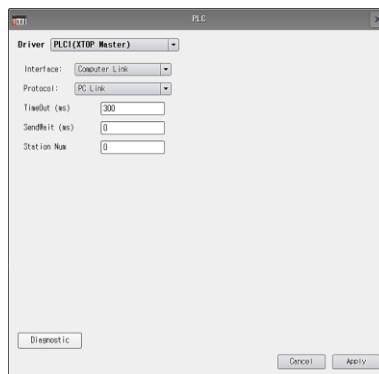


[Fig. Front USB]

| Front USB menu | Description |
|----------------------|---|
| Transmission mode | Set the front USB to transmitter mode. |
| Serial (USB by pass) | Connect the front USB with a PLC device in serial mode. |
| Host | Set the front USB to Host mode. |

1.8.14 PLC

The PLC settings of the project active in TOPR can be set. The communication settings may vary according to the type of PLC.



[Fig. PLC]

| PLC Menu | Description |
|---------------|---|
| Driver | PLC communication drivers are displayed. |
| Interface | Set the PLC communication method. |
| Protocol | Set the PLC communication protocol. |
| TimeOut (ms) | Set the timeout for the PLC. (Time out: Time during which controller (PLC) response is waited for) |
| SendWait (ms) | Set the pre-transmission wait time for the PLC. (Delay before send: When the touch screen requires communication, communication is performed after the set delay.) |
| Station Num | Set the station number (used for communication diagnostics) of the PLC. |
| Network No | Set the network number of the PLC. |
| PC No | Set the PC number of the PLC. |
| Diagnostic | Perform PLC communication diagnostics. |

☞ Communication options vary according to the controller. Please refer to the [Communication Manual] provided by HQ when marking settings.

1.8.15 FTP server

FTP server is a function that allows TOPR files to be accessed through the FTP client program on the PC. (The TOPR must be connected to ethernet. Connect after verifying the IP address. [Verification method: Control Panel -> Ethernet])



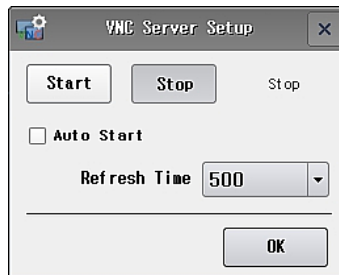
[Fig. FTP server]

FTP server usage method

- 1) Set and apply the user name and password.
- 2) Enter the ethernet IP address of TOPR into the FTP client program on the PC, and run.

1.8.16 VNC server

This function allows the TOPR screen to be controlled and monitored from the PC. (The TOPR must be connected to ethernet. Connect after verifying the IP address. [Verification method: Control Panel -> Ethernet])



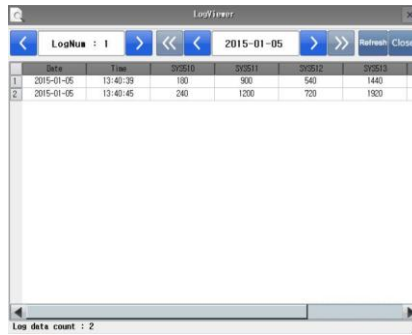
[Fig. VNC server]

VNC server usage method

- 1) Start the TOPR VNC server.
- 2) Enter the ethernet IP address of TOPR into the VNC client program on the PC, and run.

1.8.17 View log

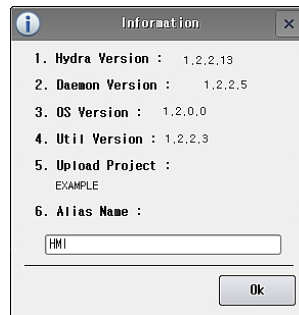
This function allows viewing of log data from the project active in the TOPR. Log data can be viewed according to the set log conditions. Select a date and log number to view the log from that time.



[Fig. View log]

1.8.18 Information

Verify the info of the project active in TOPR, and the version of the program used.

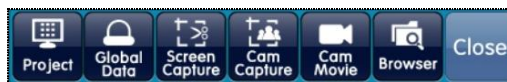


[Fig. Info]

| No | Information menu | Description |
|----|------------------|---|
| 1 | Hydra Version | This is the version of the program that is run when a project is executed. |
| 2 | Daemon Version | This is the version of the program that runs in the menu screen. |
| 3 | OS Version | This is the OS version of TOPR. |
| 4 | Util Version | This is the version for management of all icons on the menu screen. |
| 5 | Upload Project | This is the name of the currently active project. |
| 6 | Alias Name | The name of the folder that is automatically created in external memory can be set. |

1.9 External memory

When external memory such as USB memory sticks or SD cards are inserted, the menu shown in the following figure appears. This facilitates copy and paste functions for users.



[Fig. External memory menu]

| External memory menu | Description |
|----------------------|---|
| Project | Perform project file uploads and downloads. [Upload]: Upload a file in the TOPR to external memory. [Download]: Download a file in external memory to the TOPR. |

| | |
|----------------|---|
| Global Data | Import log and alarm data to external memory. [Log Upload]: Move log data to external memory. [Alarm Upload]: Move alarm data to external memory. |
| Screen Capture | Import screenshot data to external memory. [Copy All]: Copy all to external memory. [Move All]: Move all to external memory. [Browser]: Select and copy using the file browser. |
| Cam Capture | Import camera screenshot data to external memory. [Copy All]: Copy all to external memory. [Move All]: Move all to external memory. [Browser]: Select and copy using the file browser. |
| Cam Movie | Import camera movie data to external memory. [Copy All]: Copy all to external memory. [Move All]: Move all to external memory. [Browser]: Select and copy using the file browser. |
| Browser | [File browser] is opened. |
| Close | The external memory menu is closed. |

1.10 Status bar

As shown in the following, the process model name, display model name, and the date and time are displayed in the status bar.



[Fig. Status bar]

CHAPTER 2 Starting TOP Design Studio

CHAPTER 2 - Starting TOP Design Studio

TOP Design Studio is a software program used to create and edit projects to load in TOPR.

2.1 TOP Design Studio Installation

2.1.1 TOP Design Studio Installation Environment

These are the minimum PC specifications for normal operation of TOP Design Studio.

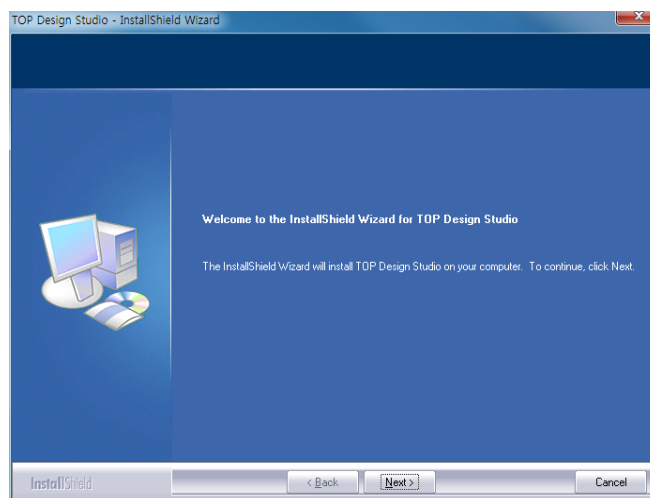
| Item | Minimum requirement | Recommended specifications |
|-----------------------------|-------------------------------------|--------------------------------------|
| CPU | Pentium4 1GHz or higher | Pentium4 2Ghz Dual CPU or higher |
| Memory | 1 GB or higher | 1 GB or higher |
| Graphic Adapter and Monitor | SVGA(800*600) 16bit color or higher | SVGA(1024*768) 32bit color or higher |
| HDD Space | 500 MB or more | 1 GB or more |
| Key Board | Windows compatible keyboard | Windows compatible keyboard |
| Mouse | Windows compatible mouse | Windows compatible mouse |
| Printer | Windows compatible printer | Windows compatible printer |
| OS | Windows 2000/XP or higher | Windows 2000/XP or higher |

2.1.2 TOP Design Studio Download

The TOP Design Studio installation file can be downloaded from the [Download Software] message board of the website (www.m2i.co.kr). The file name is [TOP Design Studio Setup (Version).exe].

2.1.3 TOP Design Studio Installation

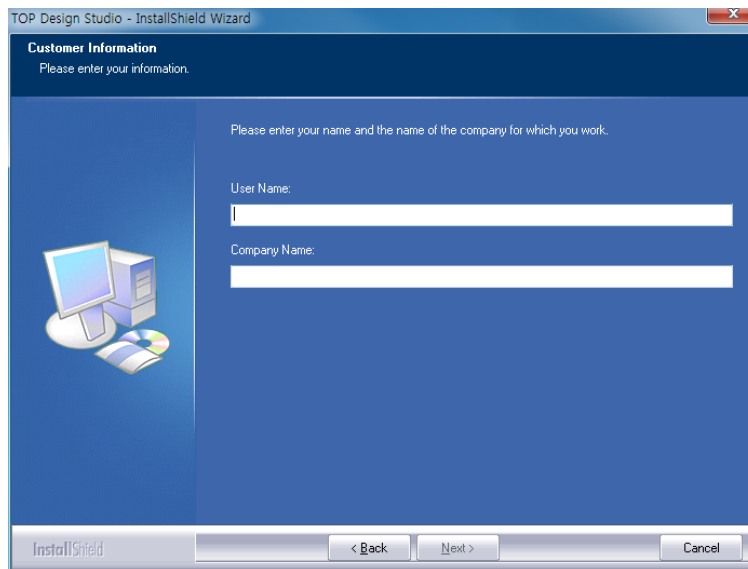
When the installation file is double clicked, the installation start screen appears. Click the [Next] button to proceed with installation.



[Fig. Starting installation]

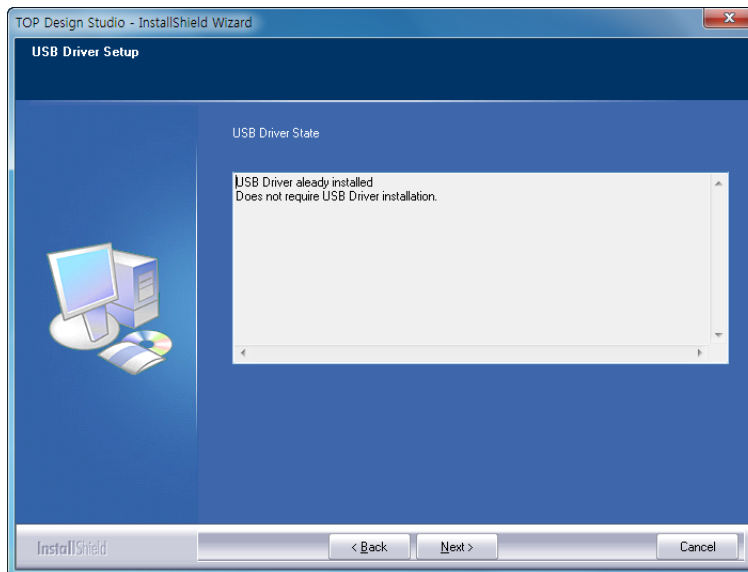
(1) A screen for entering the user name and company name appears.

Enter the user name and company name, then press the [Next] button.



[Fig. Enter user name and company name]

(2) After checking whether the USB driver (for connecting the TOPR and PC) is installed on the PC, the USB driver is automatically installed if not already. If the driver is already installed, a message indicating the driver has already been installed is displayed, as shown below. Press the [Next] button.

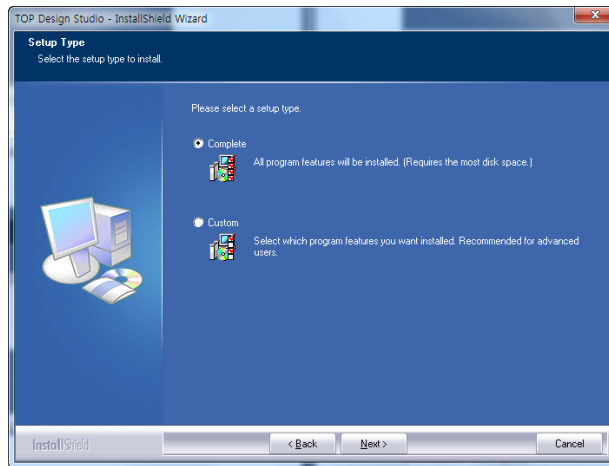


[Fig. USB driver installation]

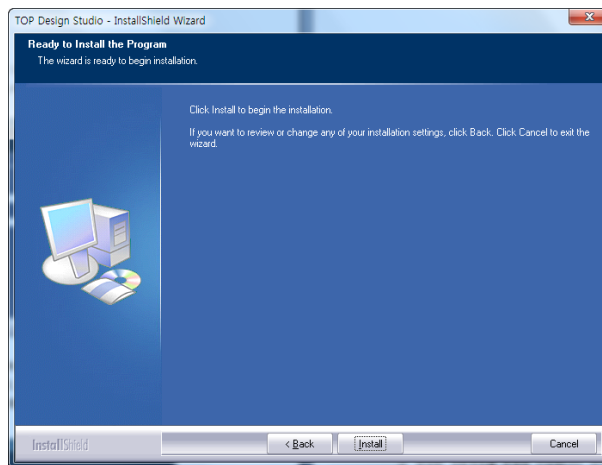
(3) Select the installation type.

Complete – All items are installed, and the installation path is automatically set to [C:\program Files\WM2I Corp\TOP Design Studio]. (Recommended)

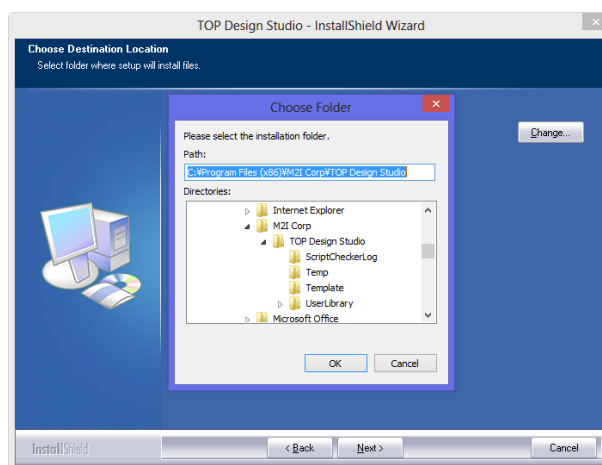
Custom – The items to install, and the installation path can be designated.



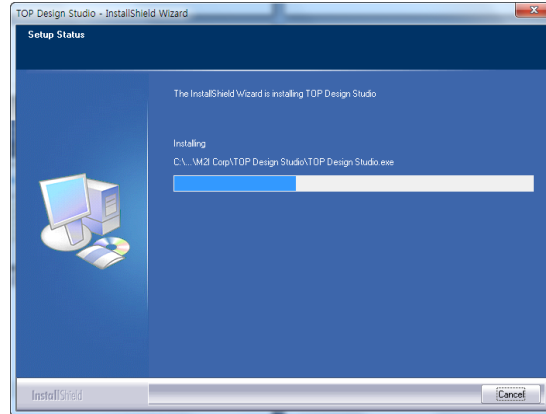
- ① When Complete is selected, the installation start screen is brought up. Press the [Next] button.



- ② When Custom installation is selected, a screen for designation of the installation path appears. Designate the desired installation path, and press the [Next] button.



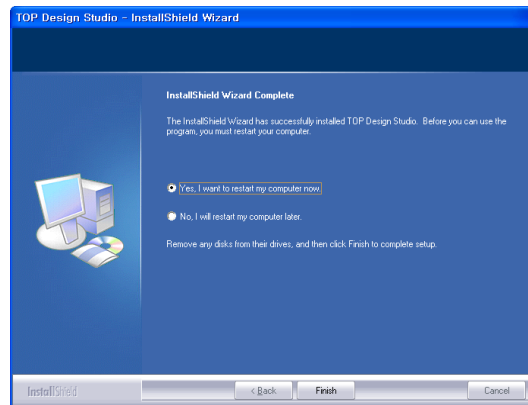
(4) The installation proceeds.



(5) The installation is completed.

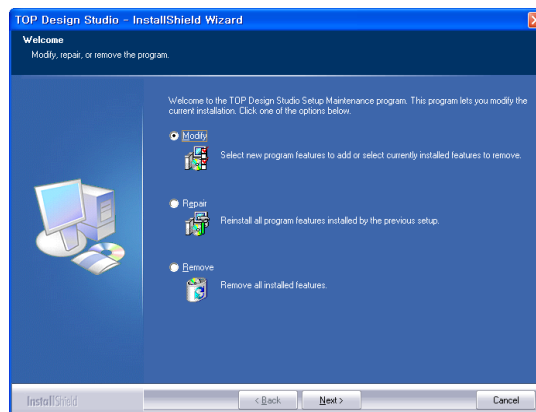
Select [Yes, I want to restart my computer now] and press the [Finish] button to restart the PC.

If [No, I will restart my computer later] is selected and the [Finish] button is pressed, the PC does not restart.

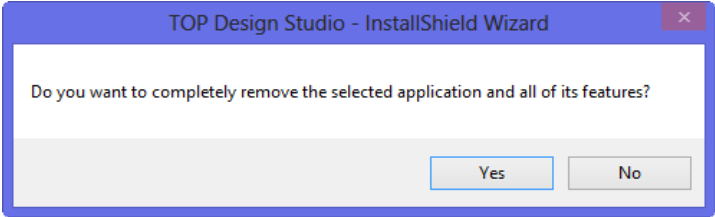


2.1.4 TOP Design Studio Updates

When the latest version of TOP Design Studio is installed on a PC where TOP Design Studio is already installed, the following screen is displayed.



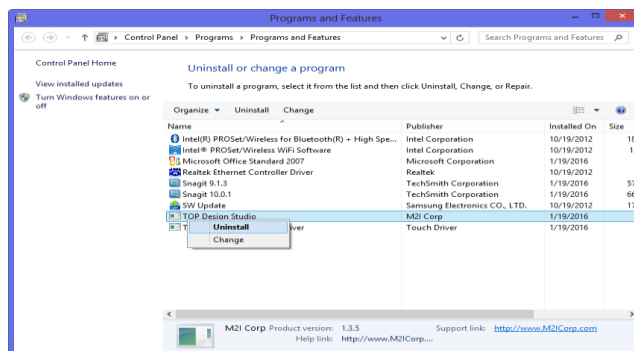
Select options and click the [Next] button. Installation proceeds according to the selected options.

| List | Description |
|--------|--|
| Modify | Change only modified functions. |
| Repair | Performs general installation |
| Remove | <p>Remove TOP Design Studio from the PC. Select [Remove] and click the [Next] button to bring up the following program removal confirmation message.</p>  <p>When [Yes] is pressed at this prompt, the TOP Design Studio program is removed.</p> |

2.1.5 TOP Design Studio removal

To remove the TOP Design Studio program from the PC, select [Add/Remove Programs] from the [Control Panel] of Windows, then bring up the Add/Remove programs screen as shown in [Fig. Add/Remove Programs].

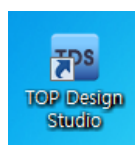
Select TOP Design Studio and click the [Remove] button on the right side. This completes the TOP Design Studio removal process.



[Fig. Add/Remove Program]

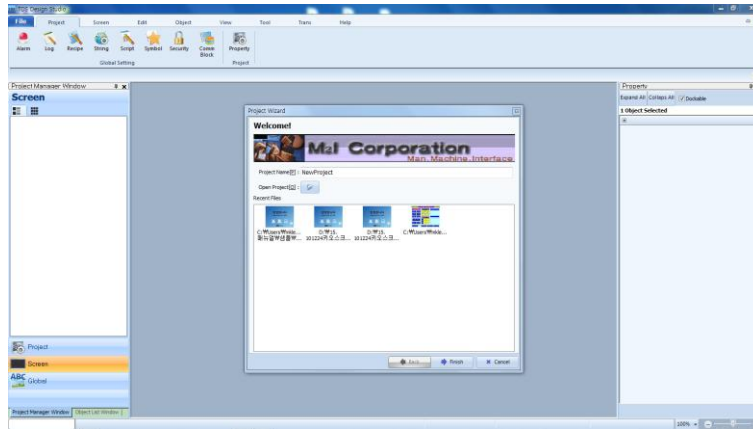
2.2 Running TOP Design Studio

When TOP Design Studio is installed, a TOP Design Studio icon is created on the desktop. Also, a TOP Design Studio shortcut icon is created in the path [Start]-[All programs]-[M2I Corp]-[TOP Design Studio] of Windows.




[Fig. Icon on the desktop]

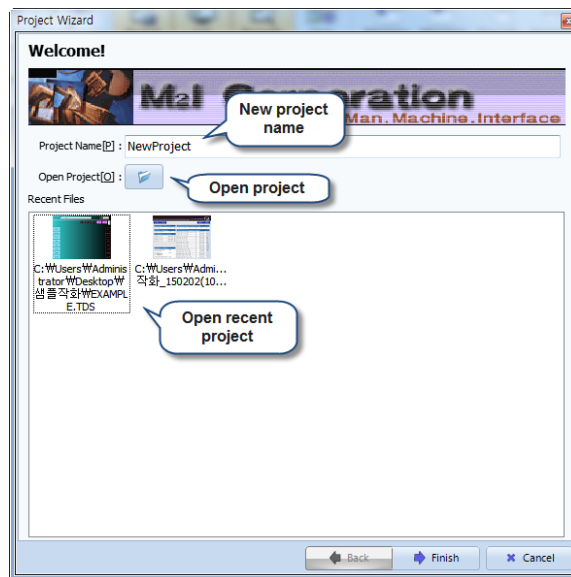
When the icon is double-clicked, or the TOP Design Studio icon is clicked from the [Start] menu of Windows, the TOP Design Studio program is run.



[Fig. TOP Design Studio run screen]

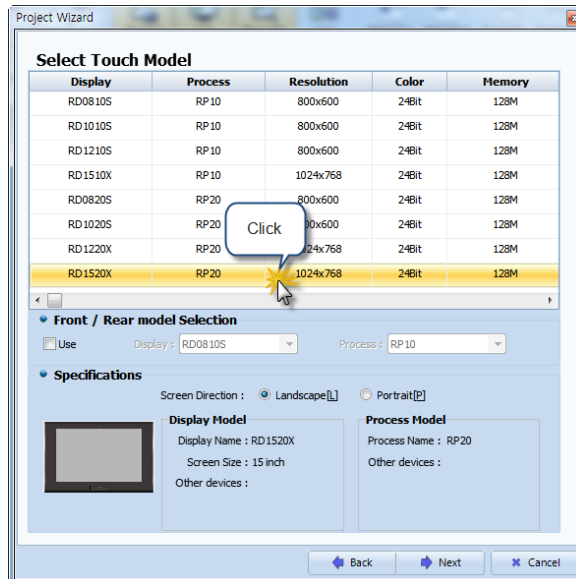
In the [Project Wizard] window, a new project can be created, or an existing project can be opened.

| Menu | Description |
|--------------|--|
| Project Name | Enter the project name when creating a new project. |
| Open Project |  Use this button to select a saved project. |
| Recent Files | A list of recently opened projects is shown. Select the project to open. |



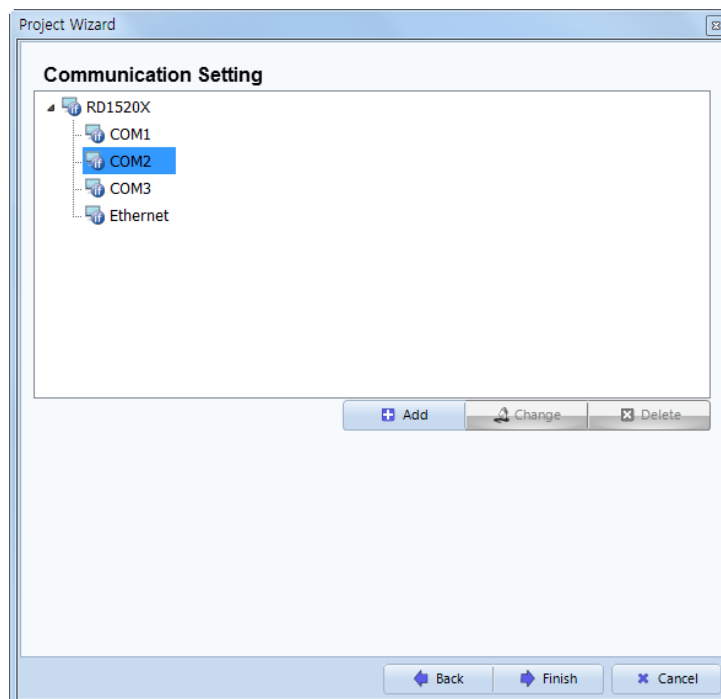
[Fig. Project Wizard]

When the [Finish] button is pressed, the selected project is opened. If an existing project has not been selected, a screen for TOPR model name selection for new project creation is brought up. Select the display and process model names from the table, and press the [Next] button.



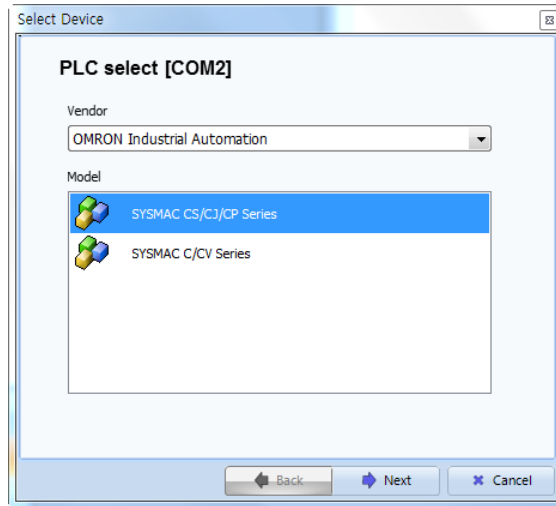
[Fig. TOPR model name selection screen]

A settings screen for the controller that communicates with TOPR appears. TOPR can communicate by connecting controllers to the three serial ports COM1, COM2, and COM3, and an ethernet port. Set the controller connected to the TOPR ports. These settings can be made in [Project Options] later. To skip controller settings, press the [Finish] button and complete project creation.



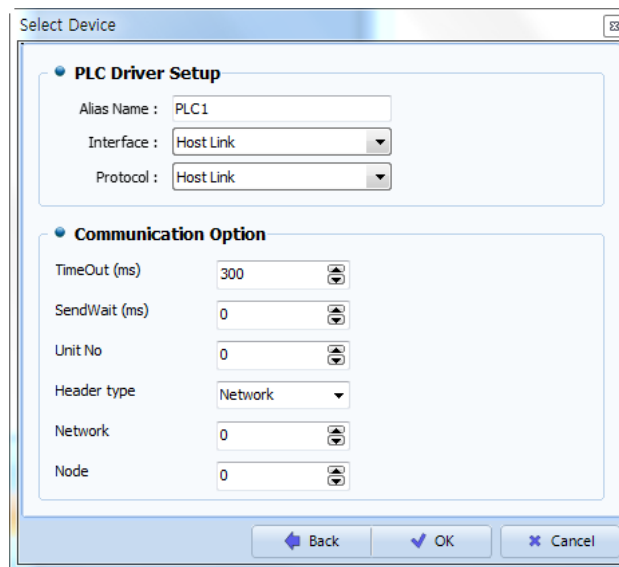
[Fig. Setting the controller to communicate with]

To perform controller settings, select the port the controller is connected to, and press the [Add] button. The [Select Device] screen appears. The controller can be selected from here.



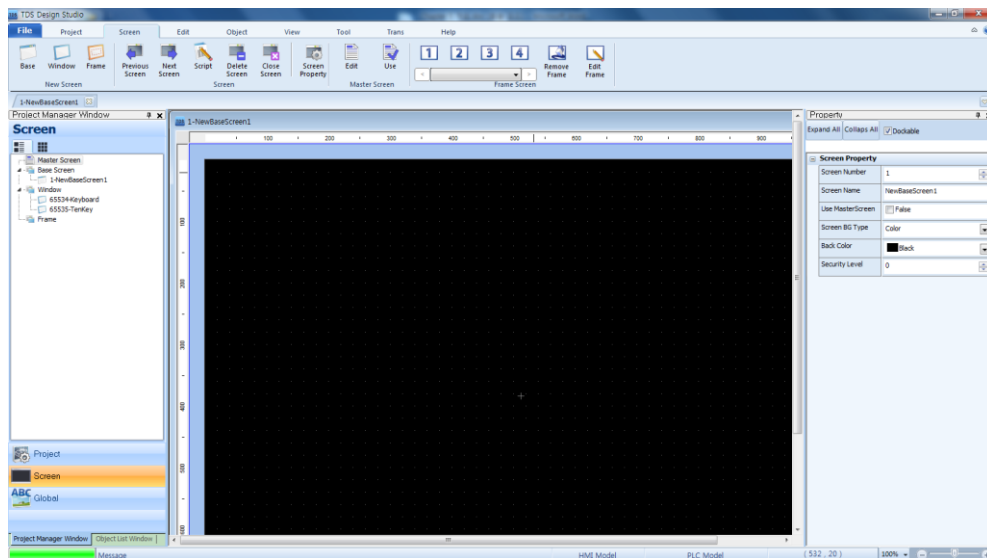
[Fig. PLC Selection]

Select the vendor and model (Series) of the PLC, then press the [Next] button. After completing detailed settings such as PLC name and communication options in the following screen, end PLC settings by pressing the [OK] button.



[Fig. PLC setup]

After completing PLC settings, press the [Finish] button from the [Project Wizard] screen to create the new project.



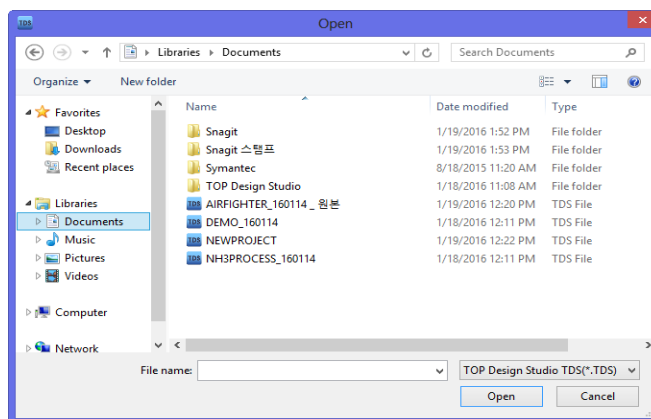
[Fig. Project has been created]

In [Language] under the [View] menu, select between Korean and English to change the language of the program.

2.3 Compatibility between TOP Design Studio and old software versions

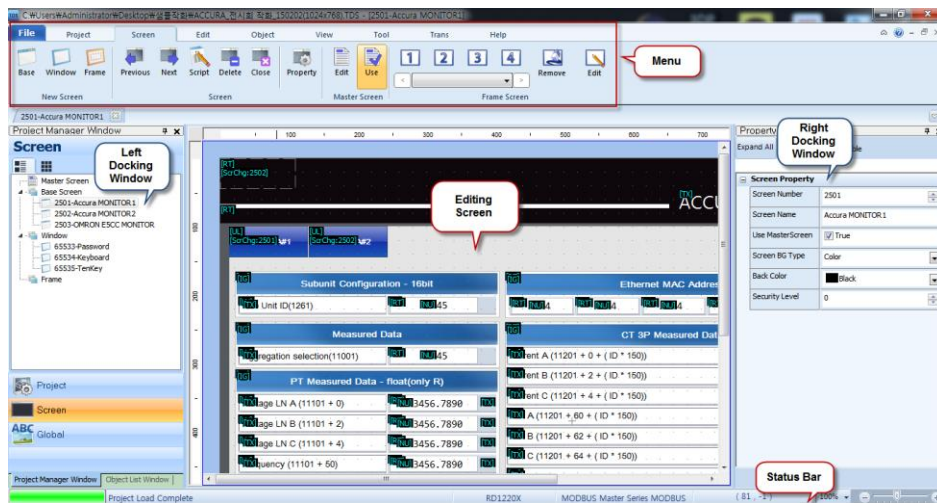
This software is compatible with project files prepared in XDesignerPlus, which is an older version of XTOP software. That is, when [*.DPX/*.DPX4] files are opened and saved, they are automatically converted and saved as TOP Design Studio files ([*.TDS]).

In TOP Design Studio, enter [File]>[Open] and change the file format to [*.DPX]. [*.DPX] files drawn using the old XDesignerPlus software can be opened in TOP Design Studio. However, [*.TDS] files cannot be converted into [*.DPX] files.



2.4 Overall composition of TOP Design Studio

The overall composition of TOP Design Studio is explained in the following. As seen in the figure below, the program comprises the menu, edit screen, docking window, and status bar.



[Fig. Overall composition]

2.4.1 Menu

Menu items required for creation, editing and transmitting projects are provided in a ribbon menu. This makes them easy to find and use. The ribbon menu combines the conventional menu and toolbar.

| Menu | Description |
|----------|--|
| File | Create/save/open/close projects, and create/import templates. |
| Project | General project settings that apply to the project as a whole and are not limited to single screens can be made in this menu. Various types of data can be set, passwords can be set, and script syntax can be written. Also, using the Project Property menu, the touch model name and controller (PLC) can be set. |
| Screen | Base screens, window screens, master screens, and frame screens can be created and managed using this menu. |
| Edit | From this menu, objects registered on the screen can be edited. |
| Object | Various types of objects required for screens are provided. Data is displayed or operations are performed using objects. |
| View | Set the view status of the program. Language (Korean/English), Status (0/1), hints, zoom in/out, docking windows, and screen alignment, etc., can be set. |
| Tool | Functions such as address/object search, address conversion, screen management, screen preview, project image management, image library, and make recovery disk, etc., are provided. |
| Transfer | Transfer a file to TOPR, or upload a file from TOPR. Simulation can be performed. The simulation and actual TOPR operation are 100% identical. |
| Help | Software help can be viewed. In product information, the product version can be viewed. |

2.4.2 Edit screen



To enhance efficiency of functions, various types of screen are provided. Register and design objects in each screen, and implement functions.

| Screen | Description |
|---------------|---|
| Base screen | This is the main screen that is shown when a project has been transferred to TOPR. When screens are created, screen number 1 is generated first. A maximum of 65535 base screens with numbers up to 65535 can be created. |
| Window screen | Window screens can pop up over the base screen and disappear when not needed, depending on settings. When screens are created, screen number 1 is generated first. A maximum of 65535 Window screens with numbers up to 65535 can be created. (Note) Screen numbers from 65400 upward are designated for windows of particular functions (tenkey, etc.) which are automatically created. These should be avoided by users. |
| Master screen | A page call function can be implemented on this type of screen. Background images that apply generally to all screens, or repetitively used functions can be implemented on a master screen, then called to the base screen. When 'Use' is checked in base screen properties, the master screen is registered to the base screen like a background image. Only 1 master screen can be composed. By reusing common functions, memory and editing efficiency can be enhanced. |
| Frame screen | The screen call function can be implemented from this type of screen. Up to 65535 frame screens can be generated. In a frame screen, the content of areas that can be used commonly is organized into a frame. This frame can be reused in multiple base screens. Using frame screens, repetitive work can be minimized, and the size of the overall project can be reduced as well. The maximum number of frame screens that can be registered to a single base screen is 4. |

2.4.3 Docking window

Docking means that the window sticks like a magnet. A docking window is a window that can be stuck(docked) to the left/right side of a main window, or viewed separately from the main window.

TOP Design Studio has left and right side docking windows. Docking windows are windows that perform special functions, and can be removed as necessary. Types of docking windows are project management windows / list windows / property windows / user library windows.

On the top right corner of docking windows, there is a  mark. When the thumbtack is clicked, the thumbtack turns on this side (). Left docking windows move to the left, and right docking windows move to the right.

When the button is pressed one more time, the thumbtack turns upright again, and the docking window is fixed in place.

Press the [X] button to dismiss. Docking windows that have been dismissed can be brought up again from the [View] menu.

| Docking window | Description |
|-----------------|--|
| Project manager | From this window, project settings, screens, general settings, and resources can be viewed and |

| | |
|--------------|--|
| | managed at a glance. |
| Object list | Shows a list of shapes, tags, and groups registered to the currently opened screen. |
| Properties | The properties of the selected objects registered to the screen are shown. When nothing has been selected, the properties of the screen are shown. Multiple objects of the same type can be selected, and their properties can be modified in batch. |
| User library | Using this library, the user can register objects and screens which can be added conveniently to the desired project. The user library can be divided into folders for management. |

2.4.4 Status bar

This bar displays the project status on the bottom of the TOP Design Studio screen.

The model name and PLC name set for the project are displayed, and the task status is indicated.

The cursor coordinates are displayed when the mouse is moved, and edit screen zoom in/zoom out functions are provided.

2.5 Shortcut list

| Parent menu | Child menu | Shortcut |
|--------------|---------------------------------------|--------------|
| File menu | New project | Ctrl+N |
| | Create template | Shift+Ctrl+N |
| | Importing templates | Shift+Ctrl+O |
| | Open | Ctrl+O |
| | Save | Ctrl+S |
| | Save as | Shift+Ctrl+S |
| | Print | Ctrl+P |
| | Close | Alt+F4 |
| | Close screen | Ctrl+F4 |
| Project menu | Global settings - Alarm | Ctrl+Alt+A |
| | Global settings - Log | Ctrl+Alt+L |
| | Global settings - Recipe | Ctrl+Alt+R |
| | Global settings - Multilanguage | Ctrl+Alt+S |
| | Global settings - Script | Ctrl+Alt+C |
| | Global settings - Symbol | Ctrl+Alt+Y |
| | Global settings - Security | Ctrl+Alt+E |
| | Global settings - Communication block | Ctrl+Alt+B |
| | Project - Properties | Ctrl+Alt+P |
| Screen menu | Create screen - Base | Ctrl+B |
| | Create screen - Window | Ctrl+W |
| | Create screen - Frame | Ctrl+F |
| | Screen - Previous | PageUp |

| | | |
|---------------------------------|-----------------------------------|------------------|
| | Screen - Next | PageDown |
| | Screen - Script | Ctrl+Alt+T |
| | Screen - Delete | Alt+D |
| | Screen - Close | Alt+C |
| | Screen - Screen properties | Alt+N |
| | Master screen - Edit | Alt+E |
| | Master screen - Use | Alt+U |
| | Frame screen - 1 | Shift+Ctrl+1 |
| | Frame screen - 2 | Shift+Ctrl+2 |
| | Frame screen - 3 | Shift+Ctrl+3 |
| | Frame screen - 4 | Shift+Ctrl+4 |
| | Frame screen - Remove frame | Shift+Alt+O |
| | Frame screen - Edit frame | Shift+Alt+E |
| Edit menu | Undo | Ctrl+Z |
| | Redo | Ctrl+R |
| | Clipboard - Copy | Ctrl+C |
| | Clipboard - Multicopy | Ctrl+T |
| | Clipboard - Paste | Ctrl+V |
| | Clipboard - Paste (Same position) | Shift+Ctrl+V |
| | Clipboard - Cut | Ctrl+X |
| | Group - Group | Ctrl+G |
| | Group - Ungroup | Ctrl+U |
| | Rotate - Left | Ctrl+, |
| | Rotate - Right | Ctrl+. |
| | Rotate - Cancel | Ctrl+/ |
| | Align - Align to left | Shift+Ctrl+Left |
| | Align - Align to middle | Shift+Ctrl+M |
| | Align - Align to right | Shift+Ctrl+Right |
| | Align - Align to center | Shift+Ctrl+C |
| | Align - Align to bottom | Shift+Ctrl+Down |
| | Align - Align to top | Shift+Ctrl+Up |
| | Align - Same horizontal interval | Shift+Ctrl+Z |
| | Align - Same vertical interval | Shift+Ctrl+E |
| | Align - Align to center of screen | Shift+Ctrl+R |
| | Align - Align to middle of screen | Shift+Ctrl+I |
| | Align - Match to widest width | Shift+Ctrl+B |
| | Align - Match to narrowest width | Shift+Ctrl+T |
| Align - Match to highest height | Shift+Ctrl+G | |
| Align - Match to least height | Shift+Ctrl+L | |

| | | |
|-----------|--|--------------|
| | Align -Send to front | Ctrl+Home |
| | Align -Send to back | Ctrl+End |
| | Align -Send forward | Home |
| | Align -Send back | End |
| | Popup - Select all | Ctrl+A |
| | Popup - Select same type | Shift+Ctrl+A |
| | Popup - Delete | Delete |
| | Popup - Symmetry - Vertical symmetry | Alt+, |
| | Popup - Symmetry - Horizontal symmetry | Alt+. |
| | Popup - View object list | Shift+Enter |
| | Show Grid | Ctrl+Alt+F2 |
| | Edit option - SnapObj | Ctrl+Alt+O |
| | Edit options - SnapGrid | Ctrl+Alt+G |
| | Edit option - Draw base screen | Ctrl+Alt+D |
| | Edit options - Set options | Shift+O |
| | Font - Bold | Alt+B |
| | Font - Italic | Shift+Alt+I |
| | Font - Underline | Shift+Alt+U |
| | Font - Double line | Shift+Alt+S |
| | Font - Align left | Shift+Alt+L |
| | Font - Align center | Shift+Alt+C |
| | Font - Align right | Shift+Alt+R |
| | Font - Align top | Shift+Alt+T |
| | Font - Align middle | Shift+Alt+M |
| | Font - Align bottom | Shift+Alt+B |
| | Next element | F5 |
| | Previous element | F6 |
| | Cancel task | Esc |
| | Snap Move Up | Ctrl+Up |
| | Snap Move Down | Ctrl+Down |
| | Snap Move Left | Ctrl+Left |
| | Snap Move Right | Ctrl+Right |
| | Adjust top measurement | Shift+Up |
| | Adjust bottom measurement | Shift+Down |
| | Adjust left measurement | Shift+Left |
| | Adjust right measurement | Shift+Right |
| | Snap Move | Space |
| | Modify Text | F2 |
| View menu | Docking window - Project management | F7 |

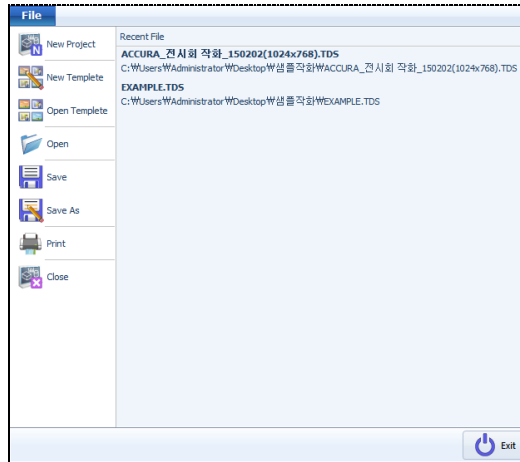
| | | |
|----------------|----------------------------------|---------------|
| | Docking window - List window | F8 |
| | Docking window - Property window | F11 |
| | Docking window - User library | F3 |
| | Hint - Show hint | Ctrl+H |
| | Zoom in/Zoom out - Zoom out | Ctrl+- |
| | Zoom in/Zoom out - Default zoom | Ctrl+0 |
| | Zoom in/Zoom out - Zoom in | Ctrl+= |
| | Hint - Enable hint | Ctrl+Alt+H |
| | Minimize | Alt+[|
| | Maximize | Alt+] |
| | Cascade | Shift+[|
| | Tile | Shift+] |
| | Close all | Ctrl+Alt+F4 |
| Tool menu | Tool - Search address / object | Ctrl+F2 |
| | Tool - Convert address | Ctrl+F3 |
| | Tool - Manage screen | Ctrl+F5 |
| | Tool - Preview screen | Ctrl+F6 |
| | Tool - Project image management | Ctrl+F7 |
| | Tool - Image library | Ctrl+F8 |
| | Tool - Make recovery disk | Ctrl+F9 |
| Transfer Menu | Transfer - Run simulator | F12 |
| | Transfer - Built project | F9 |
| | Transfer - Download | Alt+F10 |
| | Transfer - Upload | Alt+F11 |
| | Transfer - Connection settings | Alt+F12 |
| Help menu | Help - Online update | Alt+F3 |
| | Help - Help | F1 |
| | Help - Product info | Shift+Ctrl+F2 |
| Layout | Enable menu | Ctrl+1 |
| | Enable project management | Ctrl+2 |
| | Enable object list | Ctrl+3 |
| | Enable properties | Ctrl+4 |
| | Enable user library | Ctrl+5 |
| | Enable screen edit | Ctrl+6 |
| Docking window | Open dialogue | Ctrl+Enter |
| | Project - Properties | Alt+P |
| | Screen | Alt+S |
| | Resource | Alt+R |

CHAPTER 3 File Menu

CHAPTER 3 - File Menu

The file menu performs the role of creating and saving new projects.

Also, saved project files can be opened or closed, and multiple projects can be added and opened.

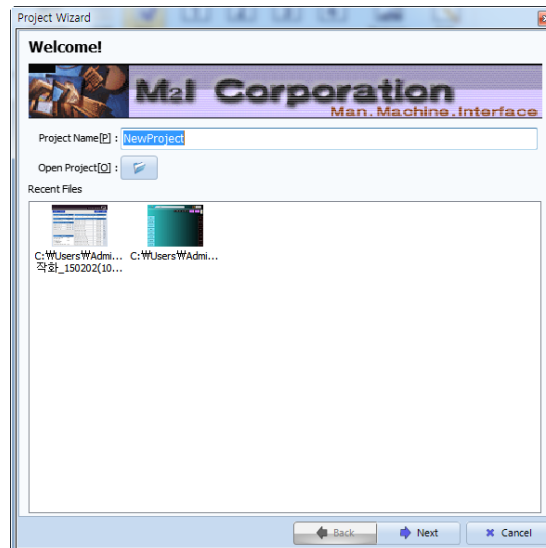


[Fig. File menu]

3.1 New project (Ctrl + N)

New projects and screens can be created, or existing projects can be imported and opened.

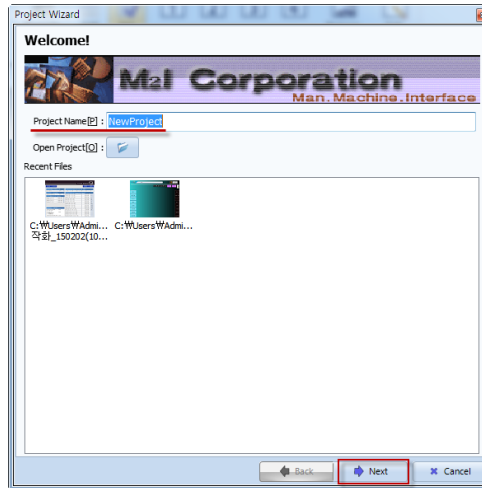
Select the [New Project] menu in the [File Menu]. The following [Project Wizard] screen appears.



[Fig. Project Wizard]

3.1.1 Creating a new project

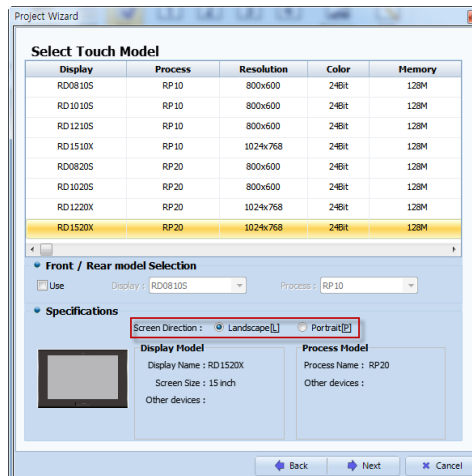
Create a new project.



[Fig. Project Wizard]

(1) Touch model selection

[Project Name] is automatically set to the temporary name [NewProject]. NewProject can be erased, and another name can be entered. Enter a name and press the [Next] button. A screen for selecting the TOPR model appears. Select the TOPR model.



[Fig. Touch model selection]

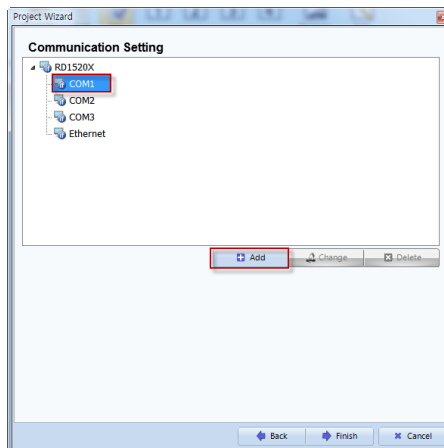
| Menu | Description |
|----------------------------|---|
| Touch model selection | Check the model names on the display and process, and accurately choose the model. |
| Front/Rear model selection | If the model name of the display and the process are different, the model names can be selected separately. |
| Screen direction | The screen direction can be chosen between landscape and portrait. |
| Specifications | Shows information on the selected model. |

Select the touch model and screen direction, then press the [Next] button to bring up a communication settings screen.

(2) Communication settings: Add PLC

Here, settings are made for the controller (PLC) connected with TOPR.

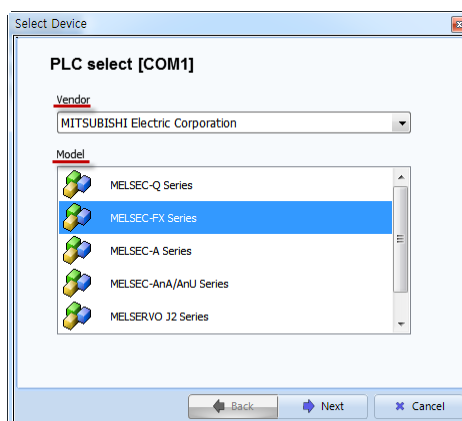
[Communication settings] are not set here, and can be set later in the [Project settings] menu. To perform settings later, press the [Finish] button. To perform communication settings at this point, select the port (COM1/COM2/COM3/Ethernet) connected with the controller (PLC), and press the [Add] button.



[Fig. Communication settings]

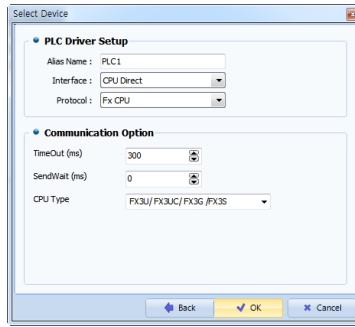
| Menu | Description |
|--------|--|
| Add | Add a PLC. |
| Modify | Change a PLC that has been added to another PLC. |
| Delete | Delete a PLC that has been added. |

Select a port and press the [Add] button to bring up the [Device Selection] screen below, where the PLC type is selected. Select the vendor and model (Series) of the PLC, then press the [Next] button.



[Fig. Add PLC]

Enter the name of the PLC, and make detailed settings according to the selected PLC.



[Fig. Add PLC]

In PLC settings, the three settings below are made.

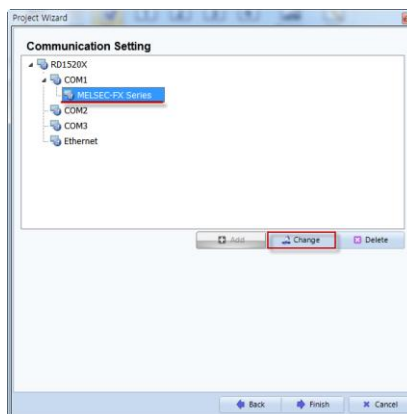
| Menu | Description |
|-----------|--|
| Alias | The alias is the user name for the PLC. In settings, the address of the PLC is set using this name. |
| Interface | Select the PLC communication method. For example, select whether to communicate directly with the CPU, or to use a communication card. |
| Protocol | Select the protocol type for the selected PLC. |

Next, set communication options.

| Menu | Description |
|----------|--|
| TimeOut | This is the time that the TOPR waits for a response after sending data to the selected PLC. |
| SendWait | When TOPR sends data to a PLC, communication is established after waiting for the set time (SendWait). |
| CPU Type | Depending on the PLC selected, select the CPU type (series) of that PLC. |

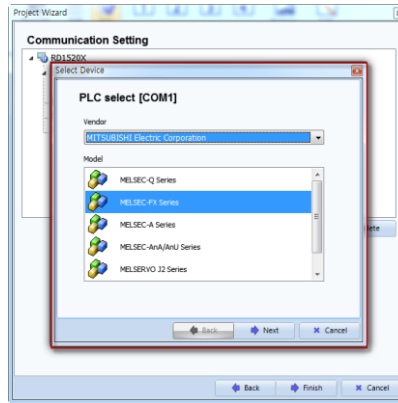
(3) Communication settings: PLC Change

Change a PLC that has been set to another PLC. Select the PLC to change, and press the [Change] button.



[Fig. PLC Change]

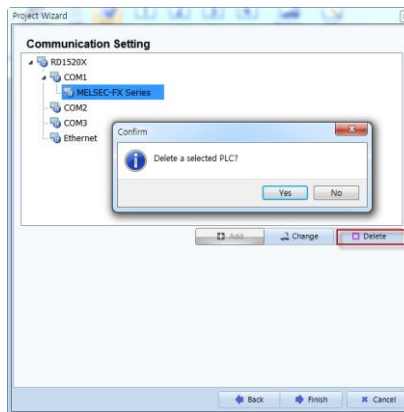
The following [Device Selection] screen appears again, and another PLC can be changed to.



[Fig. PLC Change]

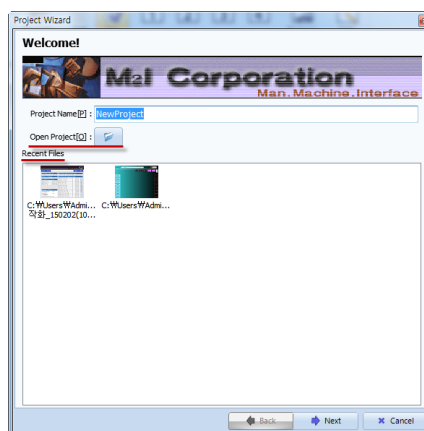
(4) Communication settings: Delete PLC

Select the PLC to delete, and press the [Delete] button. When [Yes] is pressed at the delete confirmation message, that PLC is deleted.



[Fig. Delete PLC]

3.1.2 Open existing project



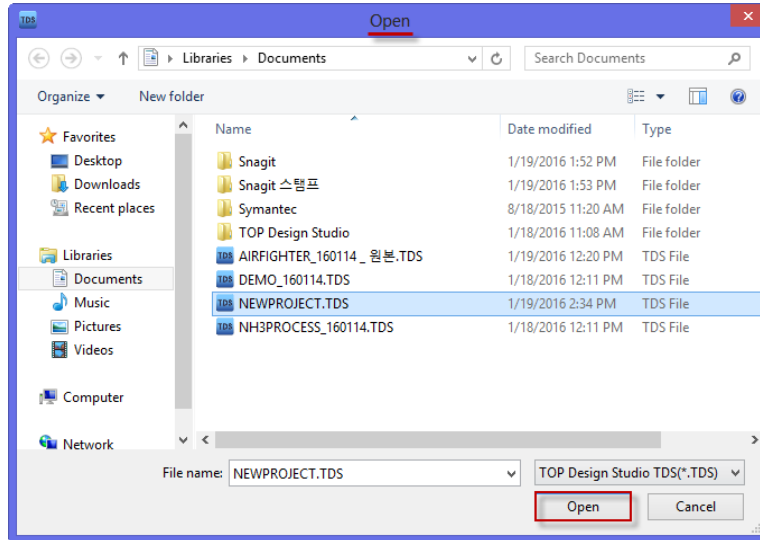
[Fig. Project Wizard]

The [Open project] or [Recent files] menu can be used to open existing project files.

(1) Opening projects using the File Browser.

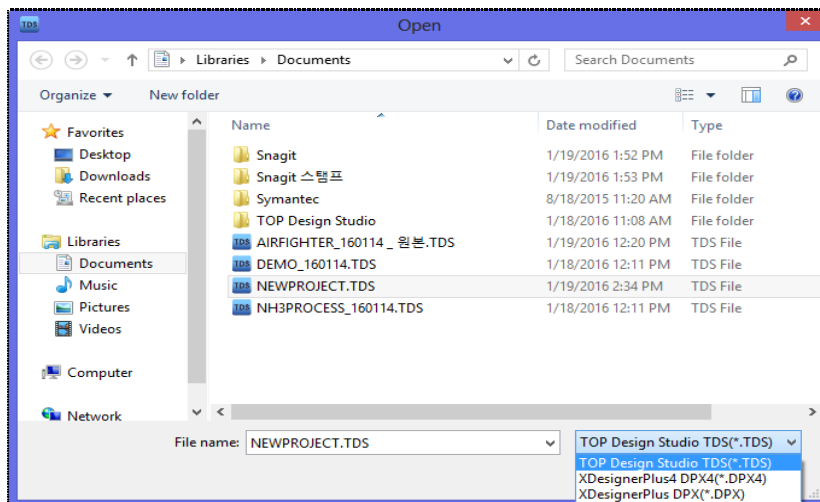


When the button is pressed, the [Open] screen appears. Browse to the path the project is saved, select the project file to open, and press the [Open] button to open the project.



[Fig. Opening a project]

The extension for TOPR project files is [*.TDS]. However, if the extension is changed, as seen in the figure below, not only TDS files but also files created in the old software (XDesignerPlus, *.DPx, *.DPX4) can also be loaded.

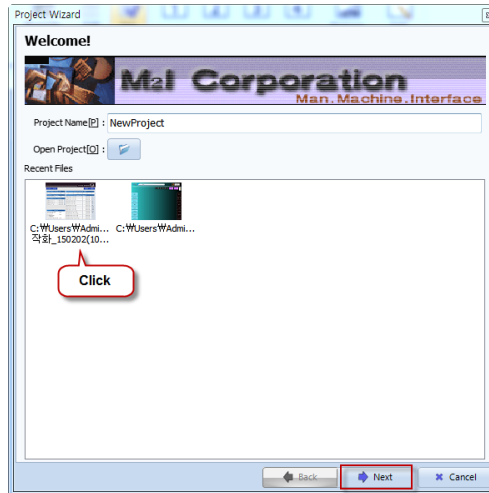


After opening a [*.DPX, *.DPX4] file created in the old program, the file must be saved as a [*.TDS] file to be converted into a TOP Design Studio file for transmitting to TOPR products or editing.

(2) Opening projects using Recent files

Files recently opened or worked on in TOP Design Studio are listed in Recent Files.

The list shows the path of each file and an image of the first base screen for ease of identification. To open a file in the Recent Files list, [Double Click] the desired item, or select the item and press the [Finish] button. This opens the selected project.



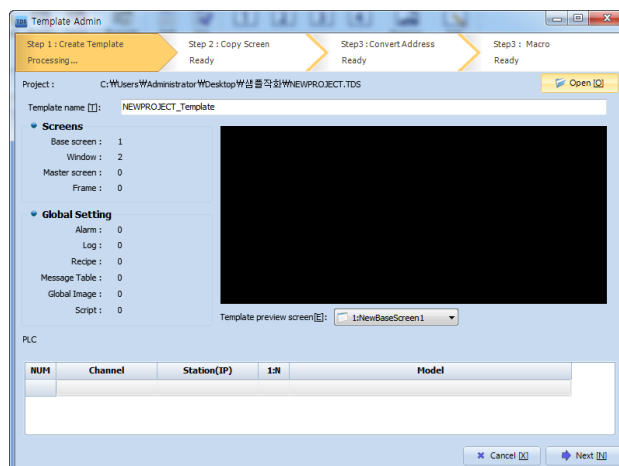
[Fig. Opening projects using Recent Files]

3.2 Create template

If there is a large number of similar projects, projects can be created easily and quickly by using templates. A template refers to the basic framework of a project. If a single completed project is used frequently with small modifications, it is advisable to create a template. Instead of creating projects from scratch, templates made and saved previously are opened and supplemented to create a project.

There are two template functions: Create template and import template.

Using Create template, a template is made using a currently open project. In Import template, a created template is opened in TOP Design Studio to create a new project.

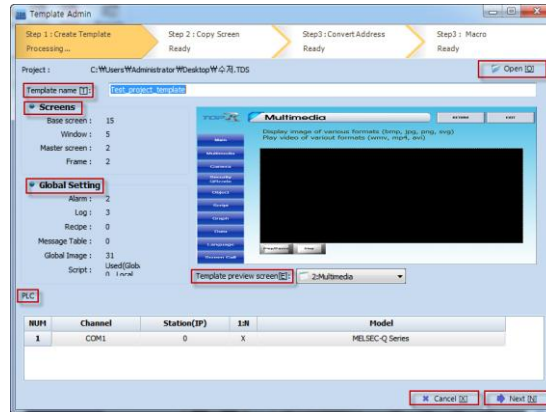


[Fig. Create template]

When [Create template] is run, the screen shown in the figure above is shown.

[Create template] has 4 steps: [Create template]-[Copy screen]-[Convert address]-[Macro].

3.2.1 Step 1 : Creating a template



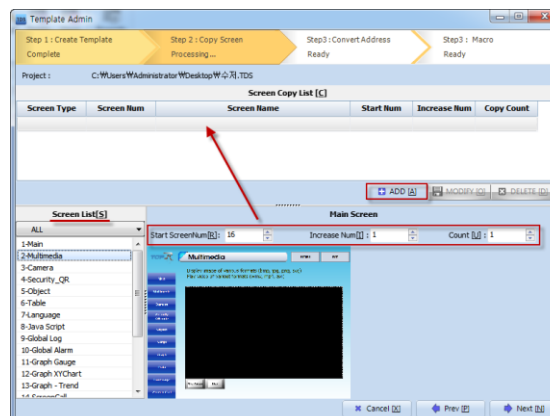
[Fig. Step 1: Creating a template]

| Menu | Description |
|-------------------------|---|
| Open | Import a project file (*.TDS). If the create template menu has been selected with a project open in TOP Design Studio, the template is created from the open project. |
| Template name | By default, [_Template] is added to the project name. The name can be modified. |
| Template preview screen | By changing the screen number, the representative screen of the template can be changed. |
| Screen | The number of registered screens is shown. |
| Global settings | Whether global settings are used, and the number of lists is shown. |
| PLC | Information on the set PLC is displayed. Channel: Communication port, Model: The PLC model, station number, and 1:N communication Y/N status, etc., are displayed. |

To cancel template creation, press the [Cancel] button. To proceed to the next step, press the [Next] button.

3.2.2 Step 2 : Copying screens

Multiple selected screens can be copied.



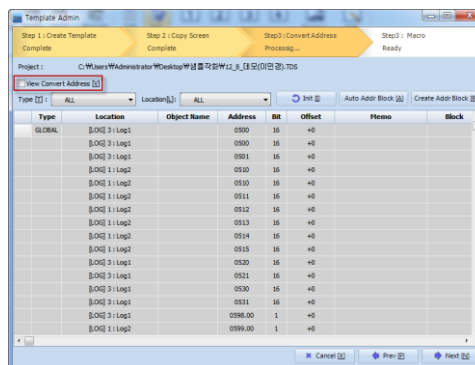
[Fig. Step 2 : Copying screens]

From the [Screen List] shown in the bottom left, select the screen for multiple copy. When a screen is selected, an image of the selected screen is shown in [Main screen] on the right, and the [Add] button above the [Main screen] is activated. Set [Start screen number/Increase num/Count], then press the [Add] button. The multi-copy content of the selected screen is added to the [Screen copy list].

| Menu | Description |
|---------------------|---|
| Start screen number | This is the number of the copy of the first screen selected in the screen list. Be careful to ensure that this number does not overlap with the existing screen numbers currently in the [Screen list]. |
| Increase num | The numbers for the copies increases by this number. If the increase num is 1, screen numbers increase by increments of 1: |
| Count | Set the number of copies. |

3.2.3 Step 3 : Address conversion

An address block is created. An address block can be created only for the same address of the same screen. When the same addresses are grouped, they can be converted at once. Double click the list to view the object type in the popup screen.



[Fig. Step 3 : Address conversion]

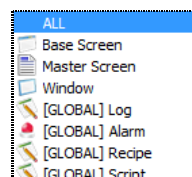
(1) View address convert

Show only addresses with address blocks in the list.

(2) Type / location

By designating the type and location, all addresses of the project can be seen, or addresses can be displayed by type and by location. The type can be set according to screen type and general setting type, as shown in the figure below.

Address in all locations can be designated or addresses of just one location can be designated.



[Fig. Type list]

(3) Initialize

Cancel block settings to this point, and initialize.

(4) Auto address block

Automatically create a block for all addresses.

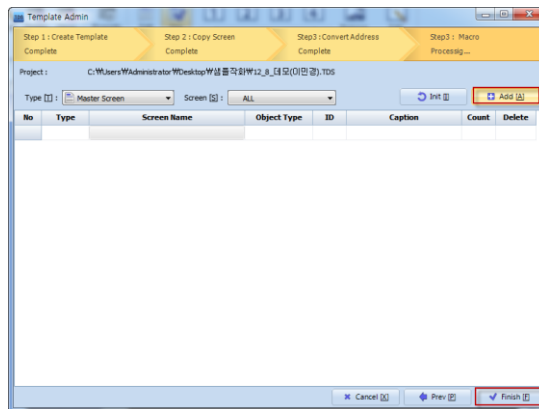
(5) Create address block

Manually create an address block.

| Menu | Description |
|-------------|--|
| Type | The location type and general setting type are shown. |
| Position | The location number and location name are shown. |
| Object name | The name of the object is displayed. The number in parentheses is the ID. |
| Address | The address used for the object is shown. |
| Bit | The length of the address is shown, in bits. |
| Offset | The difference between the block and the address is shown. |
| Memo | Memos can be recorded in lists set as blocks. |
| Block | When a block is set, the [REMOVE ALL] button is created. When this button is clicked, the block is deleted. Lists not designated as blocks have the [REMOVE] button. When this button is clicked, the item is deleted. |

3.2.4 Step 4 : Macro

Shapes or tags on the same screen can be selected for multiple copies. Press the [Add] button to bring up the [Select object] screen.



[Fig. Step 4 : Macro]

| Menu | Description |
|--------|--|
| Number | This number is the object number, assigned sequentially. |
| Type | The screen type and general setting type are shown. |

| | |
|-------------|---|
| Screen name | The screen number and screen name are shown. |
| Object type | The type of the object is displayed. |
| ID | The ID of the object is shown. |
| Caption | The caption of the object is modified. Double click a cell to modify. |
| Count | Set the number of copies. Double click a cell to modify. |
| Delete | By clicking this button, registered objects can be deleted. |

When the type and screen are selected, the corresponding screens are displayed, as shown in the figure below. From the screen, select the shape or tag to copy, and click the [Close] button on the bottom.

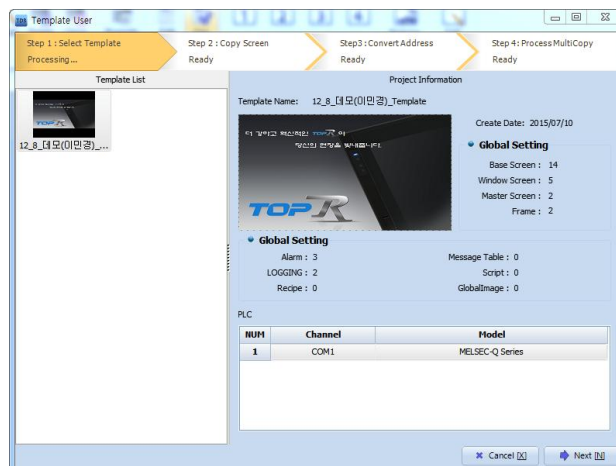


[Fig. Object selection]

The selected objects (shape, tag) are added as lists to the macro screen. After adding, the captions and copy count can be modified from the list. Step 4: After completing macro settings, click the [Finish] button to finish creating the template. The template file is saved in the following path, with the extension [*.tml].

3.3 Importing templates

A saved template file [*.tml] is imported, and a project for actual use is created.



[Fig. Importing templates]

(4) Initialize

The address conversion is initialized.

(5) All apply

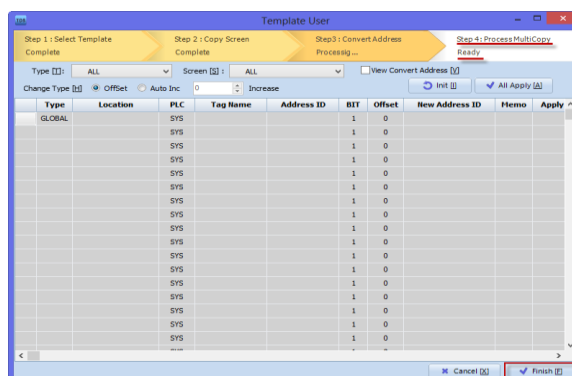
When the all apply button is used, the addresses of the list are changed depending on the address completion method setting. In the case that the [New Address ID] for the group has been double clicked in the list, and the address has been manually changed as well, settings are applied to all addresses in the block.

| Menu | Description |
|----------------|---|
| Type | The screen type and general setting type are shown. |
| Location | The screen number and screen name are shown. |
| PLC | The name of the PLC is displayed. |
| Tag Name | The name of the tag is displayed. The number in parentheses is the ID. |
| Address ID | The address used in the address is shown. |
| Bit | The length of the address is shown, in bits. |
| Offset | The difference between the block and the address is shown. |
| New Address ID | The changed address is displayed. By double clicking, the address of the group and each object can be changed. When the changed address is wrong, the address is shown in red. When the [Next] button is clicked, a warning message is shown. |
| Memo | Memos are shown. |
| Apply | When the APPLY button is clicked, the addresses of the current block are changed according to the address increase method. Depending on the group address, changed addresses are applied to all objects within the group. |

Click the [Next] button to move to Step 4: Multi-copy.

3.3.4 Step 4 : Multi-copy

The objects registered in [Step 4: Macro] of template creation are shown in a list. Using the [EDIT] button of each list, the properties of the objects can be changed. In each list, multi-copy can be performed using [Count] and [Address Increment].



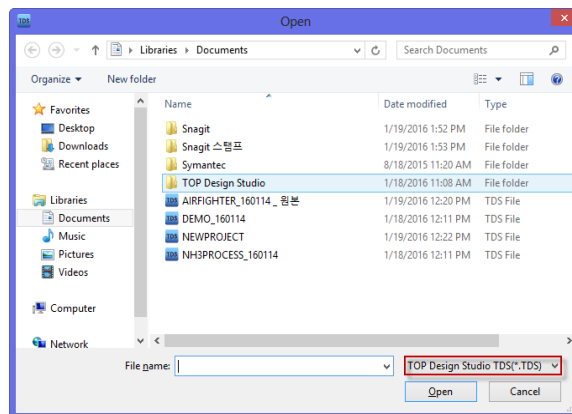
[Fig. Step 4 : Multi-copy]

Click the [Finish] button to create a project based on the selected template.

| Menu | Description |
|-------------------|---|
| No | This number is the object number, assigned sequentially. |
| Type | The screen type and general setting type are shown. |
| Screen Name | The screen number and screen name are shown. |
| Object Type | The type of object is shown. |
| ID | The ID of the object is shown. |
| Caption | The caption of the object is modified. Double click a cell to modify. |
| Count | Set the number of copies. Double click a cell to modify. |
| Address Increment | Set the increment to increase addresses by in Multi-copy. Double click to modify. |
| Option | By clicking the [Edit] button, object properties can be modified. |

3.4 Open (Ctrl + O)

Open an existing project.

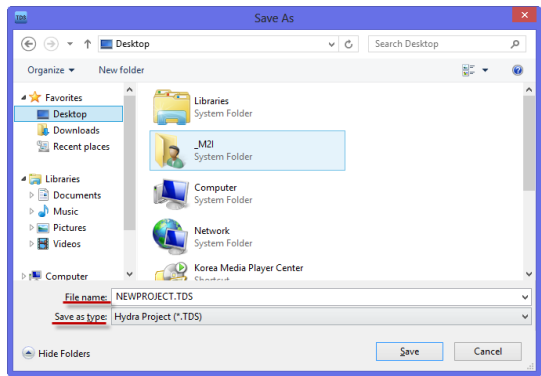


[Fig. Opening a project]

The extension of projects is set to [*.TDS] by default. When the extension is changed to a file created in the old software (XDesignerPlus, *.DPX, *.DPX4), old project files can also be opened. After selecting a file, click the [Open] button to open the project.

3.5 Save (Ctrl + S)

Save the project that is currently open. If the project has already been saved as a file, changes are saved to that file. If the project has not been saved as a file, the [Save as] screen is brought up for designation of the save path and file name.



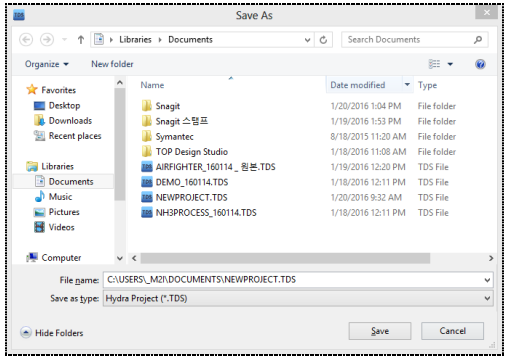
[Fig. Save project]

Designate the file path and the file name. The default [File name] is [NEWPROJECT.TDS]. The desired name can be entered. The extension for projects is [*.TDS]. Click the [Save] button to save.

3.6 Save as (Shift + Ctrl + S)

Save the project that is currently open with a different name. This function is used to create a new file and save with a different name. When [Save as] is run, a [Save as] screen is brought up for designation of the new save path and file name.

The file name and file path of the [Save as] screen is preset using existing file info. Enter a new file path and new file name. Click the [Save] button to save with a different name.



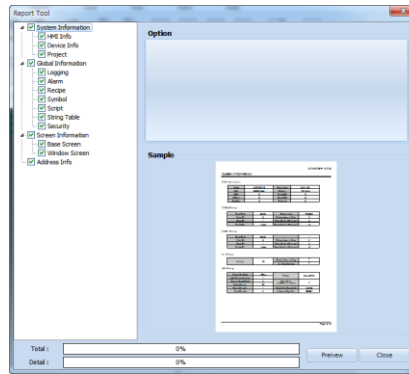
[Fig. Save as]

3.7 Print (Ctrl + P)

The content of the project is printed. When [Print] is run, the [Report] screen is brought up. The content shown in the [Report] screen can be printed according to the format shown in the [SAMPLE], or printed after editing.

3.7.1 Printed items

Items that can be printed are system information, global information, screen information, and address info.



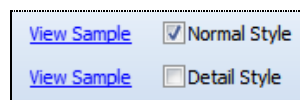
[Fig. Print]

| Print | Description |
|--------------------|--|
| System information | Print all system info. |
| HMI info | Info on the set touch screen. |
| Device information | Info on the set PLC (controller). |
| Project | Project info set in [Project settings] |
| Global settings | Print all global info. |
| Logging | Logging settings. |
| Alarm | Alarm settings. |
| Recipe | Recipe settings. |
| Symbol | Symbol settings. |
| Script | Script content. |
| Text table | Multilanguage table settings. |
| Security settings | Password settings. |
| Screen info | Print all screens. |
| Base screen | Base screen. |
| Window screen | Window screen. |
| Address info | Print a list of addresses used in the project. |

3.7.2 Option

Here, print options can be set.

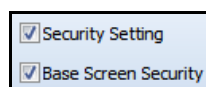
(1) Logging print options



[Fig. Logging print options]

| Option | Description |
|----------------|---|
| Standard style | Print logging settings in the standard style. |
| Detail | Print logging settings in detail. |

(2) Security settings

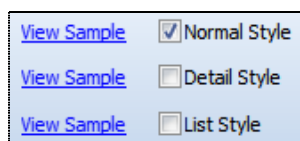


[Fig. Security setting options]

| Option | Description |
|----------------------|---|
| Security settings | Set the security settings for the project. |
| Base screen security | Set base security settings for the project. |

(3) Screen information

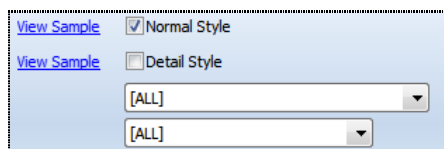
In screen information, types of base screen and window screen are shown.



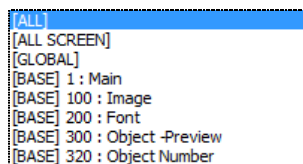
[Fig. Screen info]


| Option | Description |
|----------------|---|
| Standard style | Set the project screen to standard style. |
| Detail | Set the project screen to detail style. |
| View list | Enable view list for the project. |

(4) Address info



[Fig. Address print options]

| Option | Description |
|----------------|--|
| Standard style | Print a list of used addresses. |
| Detail | When the list of used addresses is printed, the ID and name of the tags where the addresses are used is also printed. |
| Screen | <p>Select the screen range for the list of addresses to be printed.</p>  <p>[ALL] stands for all addresses used in the project, [ALL SCREEN] stands for all addresses used in the screen, and [GLOBAL] stands for all addresses used in global settings. To print only a list of addresses used in a single screen, select the desired page.</p> |

| | |
|--------|---|
| Device | <p>Select the type of address to print. [ALL] stands for all addresses, [HMI] stands for internal addresses of the touch screen, and [PLC] stands for PLC addresses.</p>  |
|--------|---|

3.7.3 View sample

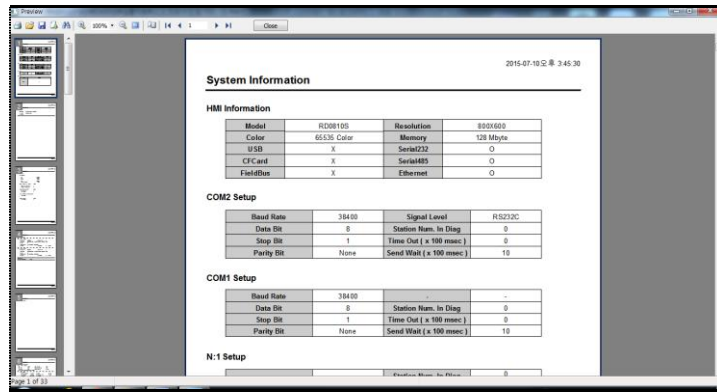
After selecting the list to print, press [View sample] to view the content to be printed.

3.7.4 Preview

Check the items to print on the list to the left of the [Report] screen, then click the [Preview] button on the bottom. A new [Preview] screen composed of the checked items is brought up, showing the actual file to be printed.






In the [Preview] screen, the print format can be set, and the [Preview] can be edited.

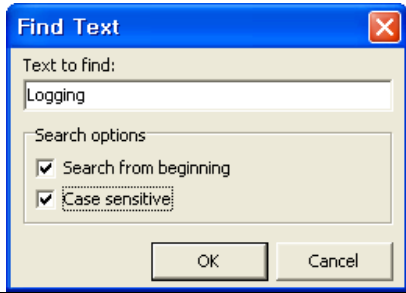
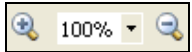


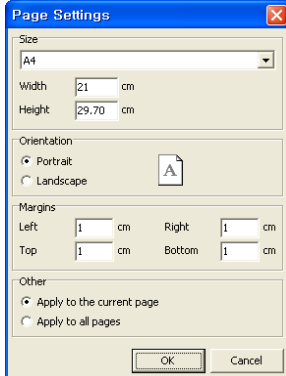

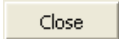
Also, the current [Preview] screen can be saved, or a saved [Preview] file can be imported.



[Fig. Preview]

When the Print button is pressed from the [Preview] screen, the print is performed.

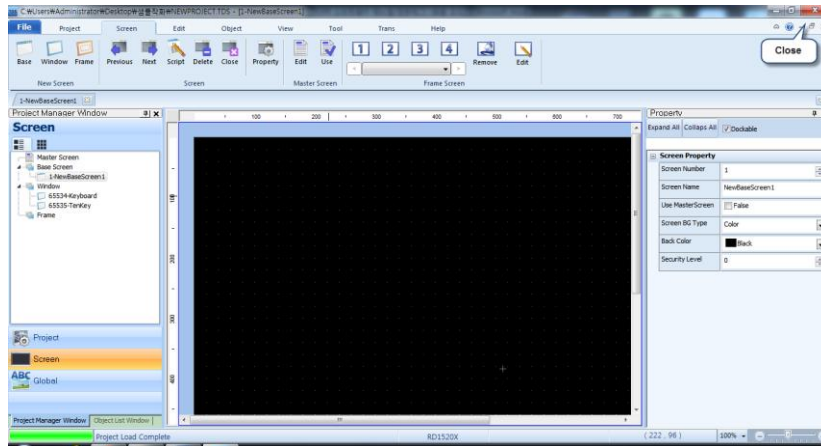
| Toolbar | Description |
|---|--|
|  | Print the current preview file. |
|  | Import a saved preview file [*.fp3]. |
|  | Save the current preview file. The file extension is [*.fp3]. |
|  | Export to another file. The available export file types are as follow. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Excel table (OLE)...</p> <p>RTF file...</p> <p>BMP image...</p> <p>JPEG image...</p> </div> |
|  | This is the [Find] function. Enter text (a word) and click the [OK] button to search. In [Search options], [Search from beginning] searches from the top. [Case |

| | |
|---|--|
| | <p>sensitive] can be set to perform a case sensitive search.</p>  |
|  | <p>This is the [Zoom in/Zoom out] function. This is used to zoom into or zoom out of the preview screen. The (+) zooms in in 25% increments, and the (-) button zooms out in 25% increments. The zoom in/out ratio can also be entered manually.</p> |
|  | <p>This is the [Full Screen]. This function is used to view the preview screen in full screen mode. To return from the full screen mode to the original preview screen, right click the mouse to bring up the popup menu. Click [Full Screen] in the popup menu to return to the preview screen.</p> |
|  | <p>[Page settings]. The printing paper is set in [Size]. [Orientation] is the direction of the paper. Select between portrait and landscape. In [Margins], page margins can be set. In [Other], [Apply to the current page] applies settings to the current page. Select [Apply to all pages] to print all pages.</p>  |
|  | <p>Navigate pages using the page navigation buttons. The current page number is displayed.</p> |
|  | <p>Close the preview screen.</p> |

3.8 Close (Alt + F4)

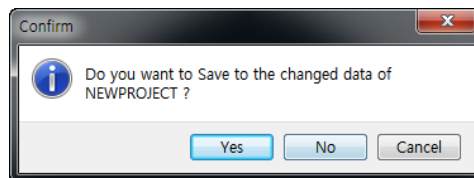
Close the TOP Design Studio program.

Select [File]-[Exit] from the menu, or click the Close[X] button on the top right corner of the TOP Design Studio screen.



[Fig. Exiting with the [X] button]

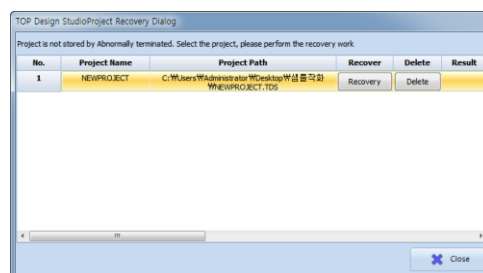
Messages appear asking whether to save each of the open projects that have been changed. The program is exited after the projects are saved.



[Fig. Close confirmation message]

3.8.1 Restore dialogue

If a project has been terminated abnormally, the project file is not completely lost. This is because TDS is set to automatically back up the project every 5 minutes. The project must have been operating normally to begin with, and the restore function is not possible without an auto saved backup file. The following figure appears when TDS is restarted after abnormal termination.



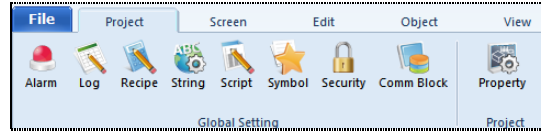
[Fig. Restore dialogue]

| Restore dialogue button | Description |
|-------------------------|---|
| Save as and open [S] | The previous project is saved with a different name, and is then run. |
| Restore and open [R] | The previous project is restored then opened. |
| Ignore backup data [I] | Backup data is ignored, and a new project is begun. |

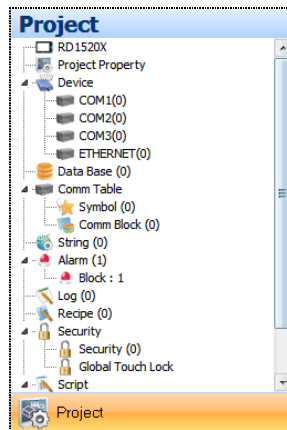
CHAPTER 4 Project Menu

CHAPTER 4 - Project Menu

The [Project] menu is explained. In the project menu, settings that apply to the overall project are made. These settings can be made using the [Top menu] and the [Project Management] window on the left side. The settings are the same.



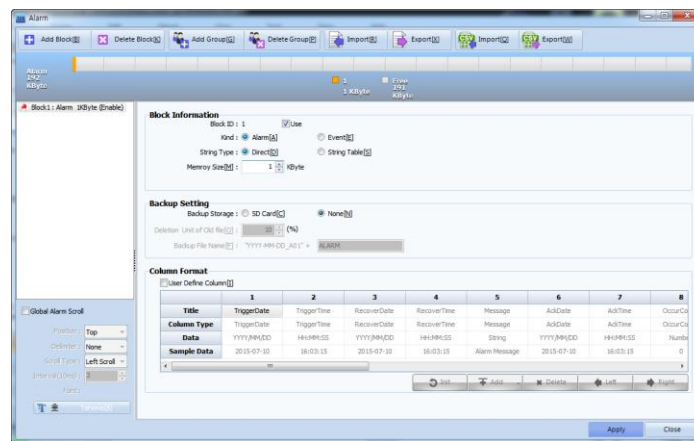
[Fig. Top project menu]



[Fig. Project management]

4.1 Alarm setting

The alarm message, monitoring data, and action method for various situations that may occur in the controller can be set.



[Fig. Alarm setting]

(1) Alarm group

The alarm group is a collection of alarm lists. Up to 64 groups with IDs from 1 to 64 can be made. The alarms within a group include alarm conditions (addresses) and alarm contents.

Up to 5000 alarm can be registered to a single alarm group.

(2) Alarm block

An alarm block is a parent category that includes alarm groups. Up to 16 alarm blocks with block numbers from 1 to 16 can be made. In a single alarm block, up to 64 alarm groups can be registered. Separate memory can be designated for storing alarm lists that have occurred in different alarm blocks.

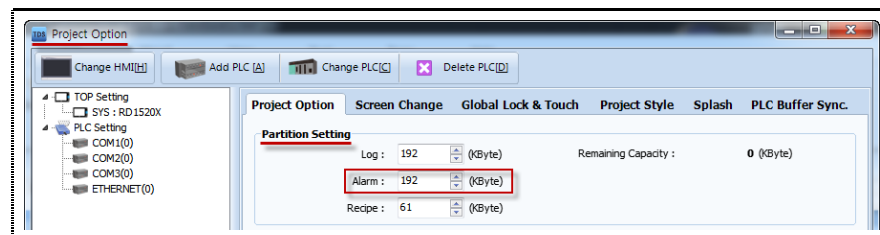
| Menu | Description |
|------------------|---|
| Add Block [B] | Add an alarm block. |
| Delete block [K] | Delete the selected alarm block. |
| Add group [G] | Add a group to the selected block. |
| Delete group [P] | Delete the selected group. |
| Read [R] | A saved alarm file (.halm) is read, and alarm settings are shown. |
| Export [X] | Export alarm setting details to an alarm file (.halm). |
| Read CSV [R] | Import alarm settings saved as a CSV file. |
| Export CSV [X] | Export alarm setting details to a CSV file. |

4.1.1 Alarm memory settings

To use the alarm function, the alarm memory must be set first.

This is the memory region where alarm data is saved. Overall alarm memory settings can be made from [Partition Settings] under the [Project]-[Properties] menu.

(1) Partition settings



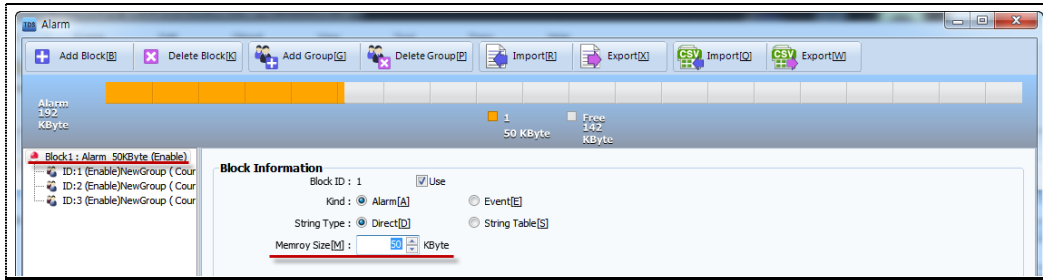
[Fig. Partition settings]

Set the memory to save alarm data to, from the total 445KB memory of TOPR.

If log/recipe functions are used in the project, be sure to distribute memory well. The default value is set to 192KB. If alarm data exceeds the set memory size, the oldest alarm data is erased to make space for the latest alarm data to be saved.

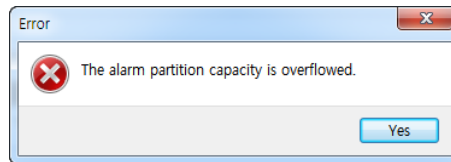
(2) Alarm block memory settings

Separate memory capacity to be used by each alarm block is set. In the alarm settings window, set the [Memory capacity] to be used by the alarm block.



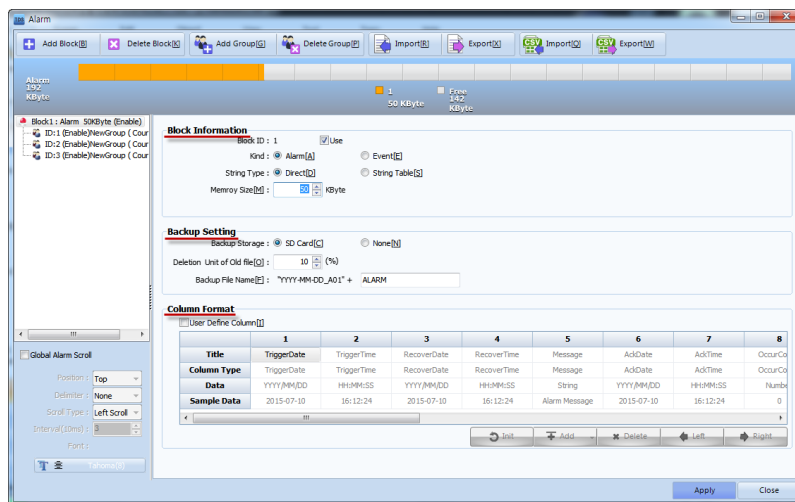
[Fig. Alarm block memory settings]

Select the applicable [Alarm Block ID] from the alarm block and alarm group list on the left. Then set [Memory Capacity] in [Block info] on the right. The default setting is 5KB. Ensure that the total of the memory capacity set for each alarm block does not exceed the total alarm memory set in [Partition settings] under the [Project]-[Settings] menu. If the [Apply] button is pressed when the total exceeds the total alarm memory, the following error message occurs.



[Fig. Memory capacity exceeded message]

4.1.2 Alarm block setting



[Fig. Alarm block setting]

In block info, basic block settings are made.

| Properties | | Description |
|------------|--------------|---|
| Block info | Block number | This number is assigned when alarm blocks are created. Numbers are assigned sequentially, beginning with 1. This cannot be modified. For example, when a new alarm block is added with alarm blocks number 1 and 2 |

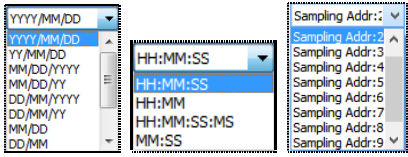
| | | |
|--|--------------|---|
| | | existing, alarm block number 3 is created. Also, when alarm block number 2 is deleted and a new alarm block is created, alarm block 2, not 4, is created. |
| | Use block | Set whether to use the alarm block. When this item is left unchecked, the settings for the current alarm block are excluded when transmitting. |
| | Block type | Set the block type. Select between [Alarm] and [Event]. When Alarm is selected, the trigger and clearing process is saved. When Event is selected, the trigger process is saved only. That is, when Alarm is selected, the alarm trigger time, alarm details, alarm clear time, and the time the alarm was recognized by the worker can be recorded in the column. However, when Event is selected, the time of event occurrence and the event details are recorded only. |
| | String type | Select the method for displaying alarm content. Select between [Normal] and [Multilanguage]. In Normal, alarm content is entered and registered manually. In Multilanguage, a string registered in the multilanguage table is registered. |
| | Memory usage | Set the TOPR internal memory capacity to be used by the alarm block. |

In backup setting, set whether to use TOPR internal memory only, or to use a separate SD memory card. When a separate SD memory card is inserted into TOPR, and the [Backup storage] is set to SD card in backup setting, data saving is not limited to TOPR data memory, and alarm data can be saved in the SD card memory as well. 1 backup file is created per day.

| Properties | | Description |
|----------------|---------------------------|--|
| Backup setting | Backup storage | Set whether or not to use an SD card. When the setting is [SD Card], the alarm data of the current alarm block is backed up (saved) to the SD card. If the setting is [None], the data is not backed up to the SD card. |
| | Deletion unit of old file | When the SD card is full, the oldest files are deleted in sequence. Set the ratio of files to be deleted. The ratio is calculated as [(Number of files to delete / Total number of alarm files in the current alarm block) x 100]. The number of files to be deleted is calculated as [(Ratio/100)x Total number of alarm files in the current alarm block]. If this setting is 1, 1 file is deleted. If the number of remaining files is 1 or less, no files are deleted. |
| | Backup file name | Set the name of the backup file. 1 alarm file is created per day. |

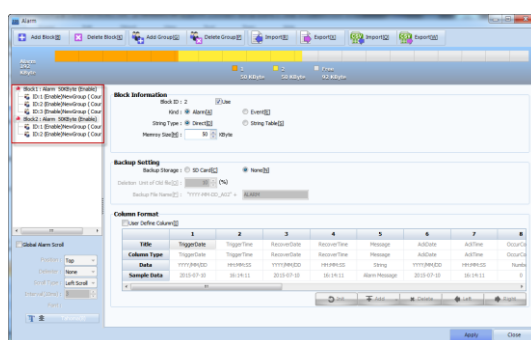
In Column Format, set the default column to display in the [Alarm View] object. The [Alarm View] object is displayed according to the settings here. The settings here can be used as-is in the [Alarm View], or re-defined to change the column. The [Initialize] button restores the initial settings format. The

[Add/Delete] buttons can be used to add or delete columns. The [Left/Right] buttons are used to move columns to the right or left. The columns for trigger date / trigger time / recover date / recover time cannot be moved or deleted.

| Properties | | Description |
|---------------|--------------------|---|
| Column format | User define column | Check whether or not to use defined columns. |
| | Title | Set the title of the column. |
| | Column type | Set what type of data to display. Trigger date, trigger time, alarm content, recover date, recover time, acknowledge date, acknowledge time, occurrence count, and monitor address, etc., can be set. Trigger date / trigger time / recover date / recover time cannot be deleted. These columns are displayed regardless of the settings. |
| | Data | Select the format for date/time data. When using the data sampling function, up to 10 data sampling addresses can be set. Designate the number of the address whose data will be displayed in the column. The setting should be between 1 and 10.  |
| | Sample data | A sample is displayed. |

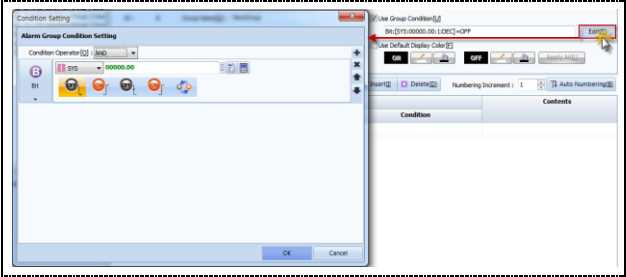

4.1.3 Group settings page

Up to 64 alarm groups can be created. To display alarm lists on the screen according to group, draw up the list with different groups.



[Fig. Alarm group setting]

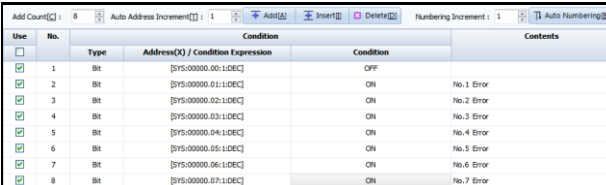
| Properties | Description |
|------------|---|
| ID | This number is assigned sequentially whenever an alarm group is created. The number cannot be modified. |
| Group name | Designate the name of the alarm group. This name is displayed when selecting groups in the [Alarm View / Graph] object. |

| | |
|----------------------------|---|
| Use | Set whether to use alarm groups. When unchecked, the content for the current alarm group is excluded when transmitting. |
| Use data sampling | At the time point when an alarm is triggered or recovered, the data at designated addresses can be recorded. The maximum setting for [Sampling address count] is 10. |
| Use group condition | Trigger conditions can be set for the entire alarm group. In the case of an alarm for which group conditions have been set, the alarm is triggered only if both alarm group conditions and individual alarm conditions are satisfied.  |
| Use default display colors | Used to set the color for each alarm. When Use default display colors is checked, the color set for each alarm in the alarm settings screen is displayed, instead of the color set in the [Alarm View] object.  ON indicates the font color/background color when an alarm is triggered. OFF indicates the font color/background color when an alarm is recovered. When the [Apply All] button is pressed, the colors set for ON and OFF are applied to all alarms registered below. Individual alarms can be selected, and their colors can be changed. |

4.1.4 Alarm list registration and editing

Individual alarms are registered. Up to 5,000 alarms can be registered in a given alarm group.

Use the [Add] button to add new alarms, and set alarm conditions/alarm content/color/sound/sampling address, etc.



| Use | No. | Type | Address(X) / Condition Expression | Condition | Contents |
|-------------------------------------|-----|------|-----------------------------------|-----------|------------|
| <input type="checkbox"/> | | | | | |
| <input checked="" type="checkbox"/> | 1 | Bit | [SYS-00000.00:1:DEC] | OFF | |
| <input checked="" type="checkbox"/> | 2 | Bit | [SYS-00000.01:1:DEC] | ON | No.1 Error |
| <input checked="" type="checkbox"/> | 3 | Bit | [SYS-00000.02:1:DEC] | ON | No.2 Error |
| <input checked="" type="checkbox"/> | 4 | Bit | [SYS-00000.03:1:DEC] | ON | No.3 Error |
| <input checked="" type="checkbox"/> | 5 | Bit | [SYS-00000.04:1:DEC] | ON | No.4 Error |
| <input checked="" type="checkbox"/> | 6 | Bit | [SYS-00000.05:1:DEC] | ON | No.5 Error |
| <input checked="" type="checkbox"/> | 7 | Bit | [SYS-00000.06:1:DEC] | ON | No.6 Error |
| <input checked="" type="checkbox"/> | 8 | Bit | [SYS-00000.07:1:DEC] | ON | No.7 Error |

[Fig. Alarm registration]

(1) Add/insert/delete alarm

After writing the first alarm, enter the number of alarms to create in [Add count]. Use [Auto address increment] to make the addresses of newly created alarms increase by increments automatically.

After creating an alarm using the [Add] button, set [Alarm content] and detailed settings.

| Button | Description |
|------------------------|--|
| Add count | Enter the Add Count and press the Add button to add new alarms. The number of new alarms is equal to the Add count. Up to 1000 can be entered. |
| Auto address increment | When Auto Address Increment is set to 1, the address of a new alarm becomes the station of the previous alarm + 1. |
| Add [A] | Add a new alarm to the bottom of the alarm list. |
| Insert [I] | Add a new alarm on top of the selected alarm. |
| Delete [D] | Delete the selected alarm. |
| Auto numbering [G] | Use the alarms to use auto numbering for by [Dragging the mouse] or by using [Shift + Arrow Key]. The selected alarms are assigned new numbers, beginning with the first of the selected alarms. For example, if the number of the first alarm selected is 100, the remaining alarms are numbered 101, 102, 103... |

(2) Copy/paste

After dragging and selecting the alarm list with the mouse, the list can be copied (Ctrl+C) and pasted in a different group (Ctrl+V). Also, the copied alarm list area can be pasted in an Excel file. Content registered in an Excel file can be copied and pasted into the alarm list.

| No. | Type | Address(X) / Condition Expression | Condition | Contents |
|-----|------|-----------------------------------|-----------|------------|
| 1 | Bit | [SYS-00000.00:1:DEC] | OFF | |
| 2 | Bit | [SYS-00000.01:1:DEC] | ON | No.1 Error |
| 3 | Bit | [SYS-00000.02:1:DEC] | ON | No.2 Error |

[Fig. Selected alarm list area]

4.1.5 Basic alarm list settings

Set alarm trigger conditions and content.

| Properties | Description | |
|-----------------|---|---|
| Use | Whether individual alarms are used can be set. If this is not checked, alarm data is not saved to memory, even if the corresponding alarm occurs. | |
| Number | This number is the number of the alarm list, assigned in sequence automatically. The alarm number can be modified by users. However, the same alarm number may not be registered redundantly in the same group. | |
| Alarm condition | Address type | If the alarm address is a bit address, select [Bit]. If the address is a word address, select [Word]. |
| | Address | Set the address to use as the alarm trigger condition. |
| Alarm condition | Set the conditions to trigger alarms. If the address type is [Bit], select whether the alarm is triggered by ON or OFF. If the address type is [Word], set the address value condition range (a<x, a<x<b). | |
| Alarm content | This is the content of the alarm to be saved and displayed when an alarm is triggered. | |

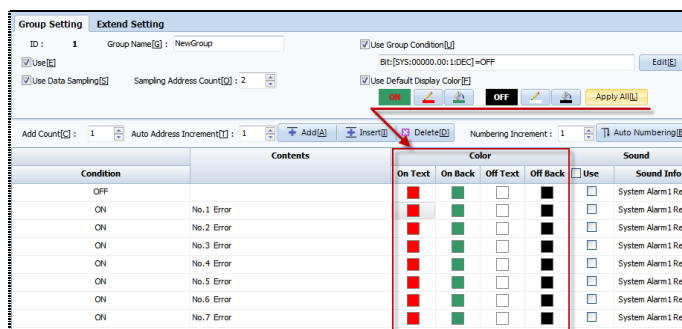
4.1.6 Additional alarm list settings

| Color | | | | Sound | | Sampling | | |
|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-----------------------|-----------|--------------------|--------------------|
| On Text | On Back | Off Text | Off Back | Use | Sound Info | Condition | Address1 | Address2 |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | System Alarm 1 Replay | Occur | [SYS:00001:16:DEC] | [SYS:00001:16:DEC] |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | System Alarm 1 Replay | Occur | [SYS:00003:16:DEC] | [SYS:00004:16:DEC] |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | System Alarm 1 Replay | Occur | [SYS:00006:16:DEC] | [SYS:00007:16:DEC] |

[Fig. Additional alarm list settings]

(1) Use default display colors

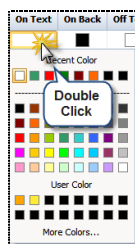
As explained in 5.1.3, when [Use default display colors] is checked, colors appear in the columns of the alarm list below.



[Fig. Use default display colors]

| Color | Description |
|----------------------|--|
| ON font color | The font color for triggered alarms. |
| ON background color | The background color for triggered alarms. |
| OFF font color | The font color for recovered alarms. |
| OFF background color | The background color for recovered alarms. |

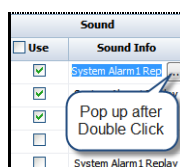
By double clicking the squares showing individual colors in the alarm list, other colors can be assigned.




[Fig. Changing colors]

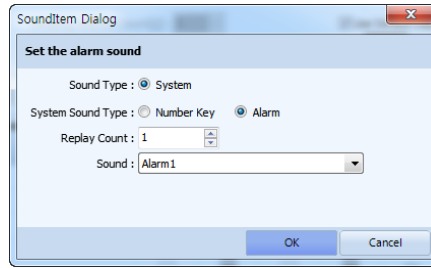
(2) Sound settings

Set the alarm sound to use when an alarm is triggered. Check [Use] in the [Alarm registration] list. Properties can be edited using the [Alarm sound info] button.



[Fig. Alarm sound setting]

When the button  is clicked, a screen for sound settings appears.

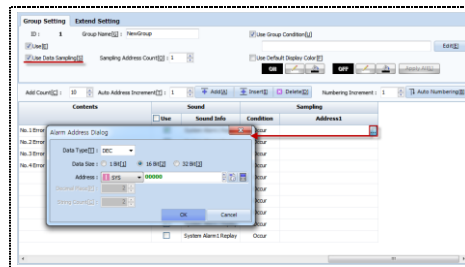


[Fig. Sound settings]

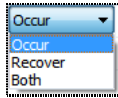
| Properties | Description |
|-------------------|--|
| Sound type | Use system sound as the default setting. |
| System sound type | Set the system sound type. Options are [Number Key] and [Alarm]. |
| Replay count | Set the number of times to replay sounds. |
| Sound | Select the sound. |

(3) Data sampling

This function saves the data of the designated address at the time point when the alarm is triggered or cleared. Up to 10 addresses can be set. Check [Use data monitoring], then enter the [Address count] to monitor between 1 and 10. Sampling address columns are created; the number of columns is equal to the [Address count setting].



[Fig. Data sampling address setting]

| Properties | Description |
|------------|---|
| Sampling | Condition  <p>Set the time point when the data of the sampling address is recorded.</p> <p>With [Occur], data is recorded only when the alarm is triggered.</p> <p>With [Recover], data is recorded only when the alarm is recovered.</p> <p>With [Both], data is recorded both when the alarm is triggered and recovered.</p> |
| | Address1~Address10 Set the address to record data for. |

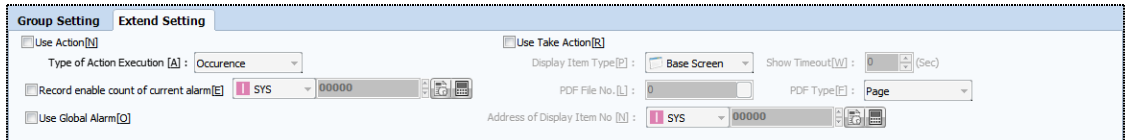
Press the enter address button to set the address.

| Properties | Description |
|------------|-------------|
|------------|-------------|

| | |
|-----------|--|
| Data type | Set the data type of the address. Options are [DEC], [UDEC], [HEX], [BCD], and [FLOAT]. |
| Data size | Set the size of the data address. Options are [1Bit], [16Bit], and [32Bit]. |
| Address | Set the address to record data for. |

4.1.7 Extend settings page

Extended settings can be set in addition to the basic alarm block settings: [Use Action], [Record enable count of current alarm], [Use global alarm], and [Use take action].

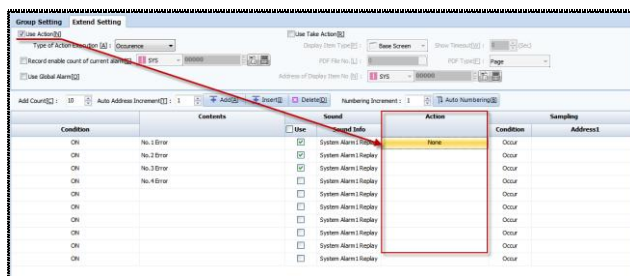


[Fig. Extend setting]




| Properties | Description |
|--------------------------------------|--|
| Use action | Set the action or operation to be performed when an alarm is triggered. |
| Record enable count of current alarm | Record the number of alarms currently triggered in the corresponding address. |
| Use global alarm | Alarm groups set as global alarms can be used in the global alarm scroll. Global alarm scroll is a function where the content of a triggered alarm is scrolled on the top or bottom of the current screen. |
| Use take action | Set the action to be taken when an alarm is triggered: the action may be a screen transition or a popup screen. |

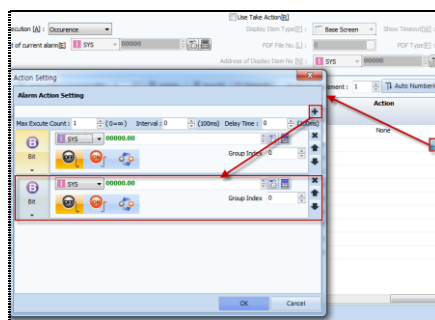
(1) Use action

Use action is a function that allows an operation or action to be performed when an alarm is triggered. When this is checked, a column with the title [Action] is added, as shown in the figure below.



[Fig. Use action]

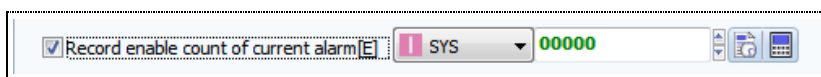
When the column is double clicked, the  button appears. When the button  is clicked, the action setting screen appears. The action to be performed is set from this screen. By clicking the button , up to 5 operations can be added.



[Fig. Use action setting]

(2) Record enable count of current alarm

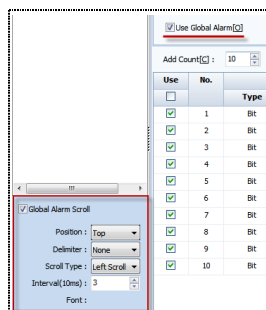
Records the number of alarms currently triggered in the set address. When a [Number] object set with this address is registered to the screen, the current number of triggered alarms can be displayed on the screen during operation.



[Fig. Record enable count of current alarm]

(3) Use global alarm

Alarm groups with the [Use global alarm] function checked are used when the [Global alarm scroll] function is used. In global alarm scroll, content of triggered alarms is scrolled at a designated location on the active screen.



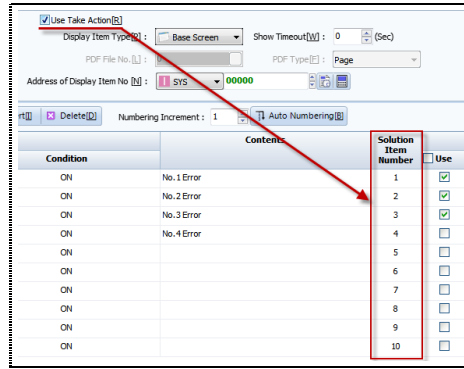
[Use global alarm]

| Properties | Description |
|------------------|--|
| Position | Set the display location on the screen. [Top]: Top of screen, [Bottom]: Bottom of screen |
| Separator | If multiple alarms are triggered and displayed, a separator is displayed between alarms. |
| Scroll direction | Select which direction the alarm content displayed on the screen will scroll. [Left Scroll]: The letters scroll to the left. [Right Scroll]: The letters scroll to the right. |
| Interval (10ms) | Set the scroll interval. |
| Font | Set the font for the alarm content displayed on the screen. |

(4) Use take action

Set the action to be taken when an alarm is triggered. If [Use take action] is checked, a column with the

title [Action item number] is added.

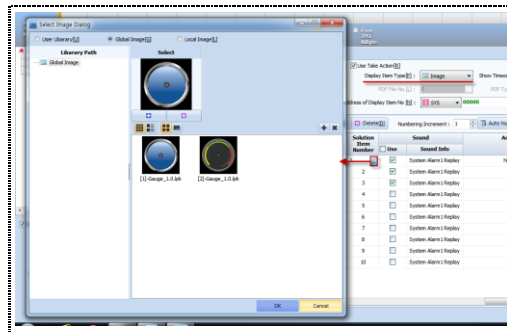


[Fig. Use take action]

| Properties | | Description |
|----------------------------------|--------------|---|
| Display Item Type | Base Screen | Use the base screen number of the project as the action item number. When an alarm is triggered, clicking an item in the alarm view brings up the set base screen. |
| | Window | Use the window screen number of the project as the action item number. When an alarm is triggered, clicking an item in the alarm view brings up the set window screen. |
| | Image | Use an image file registered in global image as the action item. When an alarm is triggered, clicking an item in the alarm view displays the image of the registered number. |
| | Text | Use a text file registered in global image as the action item. When an alarm is triggered, clicking an item in the alarm view displays the text of the registered number. |
| | PDF | Use a PDF file registered in global image as the action item. When an alarm is triggered, clicking an item in the alarm view displays the PDF of the registered number. |
| | Address | Record the action item number in the value of the [Display item number save address]. |
| | PDF Ext | In a single PDF file, use [PDF type] as the action item. |
| PDF file number | | When using [PDF Ext], a single PDF file must be set. |
| PDF type | Page | Use the action item number as the PDF Page number when using [PDF Ext]. |
| | Keyword | Use the action item number as the Keyword of the PDF when using [PDF Ext]. |
| | Page+Keyword | Use the action item number as the Keyword and page number of the PDF when using [PDF Ext]. |
| Display item number save address | | This is the address where the item number is saved, when [Display item type] is set to [Address]. |
| Show timeout | | Set the time for which the display item action is performed when an alarm is triggered. |

① Using images, text, and PDFs as actions

When [Display item number] is clicked after changing the [Display item type] to [Image], the image library is displayed. Images that are loaded are automatically assigned numbers. This number becomes the [Action item number].



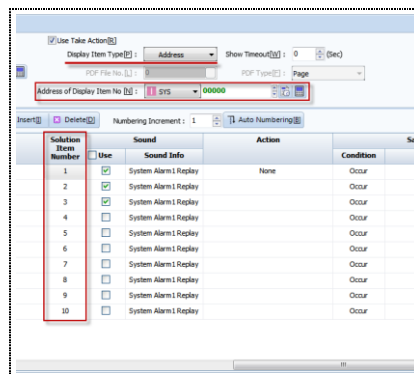
[Fig. Image action]

The same process is used for [Text] and [PDF].

② Using an address as the action

Change the [Display item type] to [Address], then set the [Display item number save address].

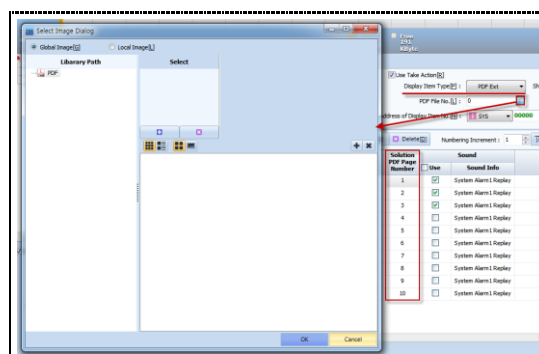
When an alarm is triggered, the numeric value of [Action item number] is saved to the address.



[Fig. Address action]

③ Using PDF Ext as the action

Change the [Display item type] to PDF Ext, then click the [PDF file number] button. The following image selection window is displayed. Select a PDF file, and perform settings according to [PDF type].



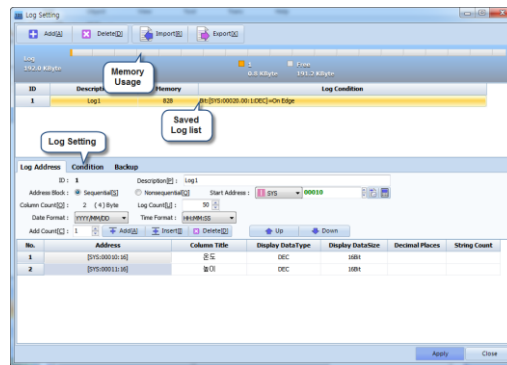
[Fig. Using PDF Ext]

[PDF type Page]: The page number becomes the action item number. [PDF type Keyword]: An [Action PDF keyword] column is created. Here, the keyword is searched for in the PDF file, and the corresponding page is displayed.

[PDF type Page+Keyword]: Set the page number and Keyword as the action item. Here, the page number is searched first. The keyword is then searched, and the corresponding page is displayed.

4.2 Log

Log is a function where specific data of a user-designated PLC or internal address is recorded according to conditions. Data can be saved in the TOPR internal memory or in extended memory.



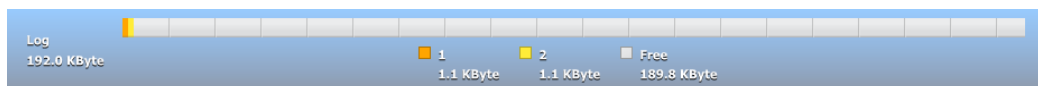
[Fig. Log setting]

| Menu | Description |
|------------|----------------------------------|
| Add [A] | Add a log. |
| Delete [D] | Delete the selected log. |
| Read [R] | Import a saved log file (.hlog). |
| Export [X] | Export a log file (.hlog). |

4.2.1 Log memory settings

To use the log function, the log memory must be set first.

Like alarm memory settings, log memory settings can be made in [Project]-[Property]-[Partition settings].



[Fig. Log memory settings]

4.2.2 Logging list

A list of set logs is displayed. When the [Add] button is clicked, a lot list is registered.

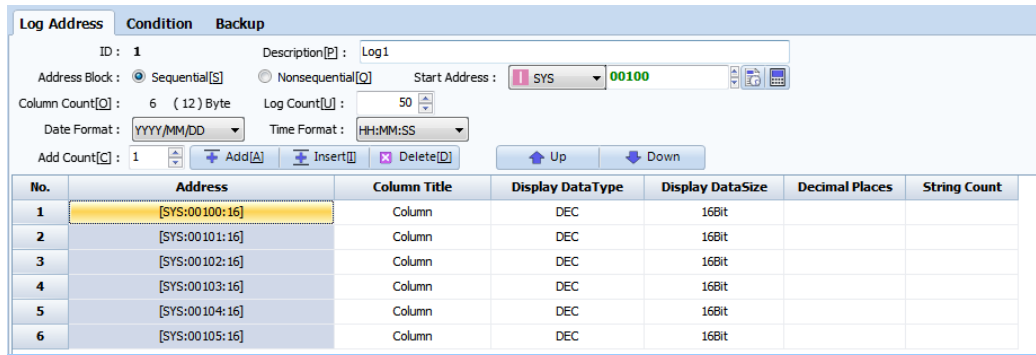
| ID | Description | Memory | Log Condition |
|----|-------------|--------|----------------------------------|
| 1 | Log1 | 928 | Bit:[SYS:00020.00:1:DEC]=Reverse |
| 2 | Log2 | 728 | Bit:[SYS:00000.00:1:DEC]=Reverse |

[Fig. Logging list]

| Properties | Description |
|---------------|--|
| ID | Shows the log number. This cannot be modified arbitrarily by the user. |
| Description | Shows the log description. |
| Memory | Shows the memory usage of the log. |
| Log condition | This is the condition for performing logging. |

4.2.3 Log address

Manage and set the log action and logging conditions.



[Fig. Logging address]

| Menu | Description | |
|-------------------|--|---|
| ID | This is the logging number. This cannot be modified arbitrarily by the user. | |
| Description | Enter the log description. | |
| Address Block | Sequential | Beginning from the [Start address], consecutive addresses are added as log target addresses. The number of addresses is equal to [Address count]. |
| | Nonsequential | The log target addresses are designated individually by the user. |
| Star address | When [Address block] is set to sequential, set the first logging address. | |
| Data size | When [Address block] is [Sequential], set the size of the log target addresses. When [Address block] is nonsequential, different address sizes can be set. | |
| Address count | This is the number of target addresses for logging. | |
| Log count | This is the maximum number of logs to be recorded in the log list. By default, the maximum memory capacity of the log partition is 192KB. | |
| Column title | Set the title of the column displayed in [Log view]. | |
| Display data type | Set the data type displayed in [Log view]. | |
| Display data size | Set the data size displayed in [Log view]. | |
| String count | If [Display Data Type] is set to ASCII, the length of the ASCII code value entered in the address value must be set. Two ASCII letters equal 1 Word (16Bit). If [String Count] is changed to 6 as seen in the figure below, a 3 Word address is set. | |

| No. | Address | Column Title | Display Data Type | Display Data Size | Decimal Places | String Count |
|-----|----------------|--------------|-------------------|-------------------|----------------|--------------|
| 1 | [SYS:00100:16] | Column | ASCII | | | 2 |
| 2 | [SYS:00101:16] | Column | DEC | 16Bit | | |
| 3 | [SYS:00102:16] | Column | DEC | 16Bit | | |

If [Address Block] is set to [Nonsequential], individual addresses can be entered and individual sizes can be set, as seen in the figure below.

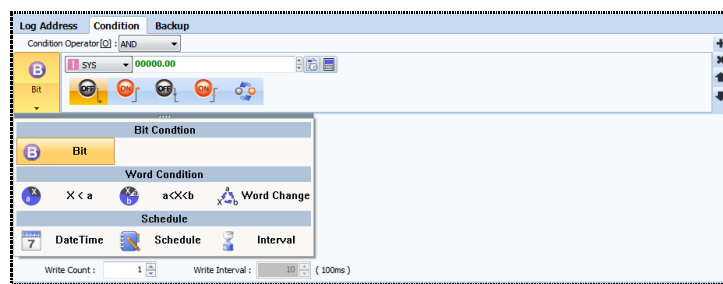
| No. | Address | Column Title | Display Data Type | Display Data Size |
|-----|----------------------------|--------------|-------------------|-------------------|
| 1 | SYS 00000 | Column | DEC | 16Bit |
| 2 | SYS:00101:16 | Column | DEC | 16Bit |
| 3 | Special LATCH SYS:00102:16 | Column | DEC | 16Bit |
| 4 | OffsetA SYS:00103:16 | Column | DEC | 16Bit |
| 5 | [SYS:00104:16] | Column | DEC | 16Bit |
| 6 | [SYS:00105:16] | Column | DEC | 16Bit |

[Fig. Nonsequential log addresses]

4.2.4 Log condition

Set the conditions for recording data in the target addresses registered in [Log address].

For details on setting conditions, refer to [Chapter 7 Object - Common] - [7.5 Effects and action].

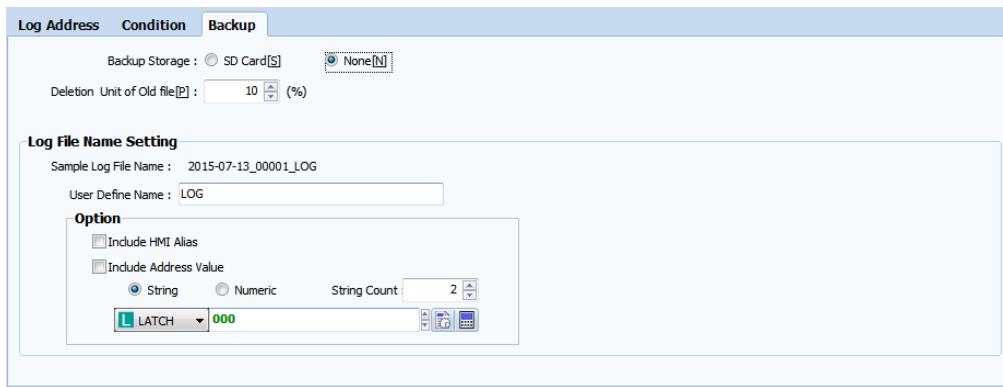


[Fig. Log condition]

| Setting | Description |
|---------------------|---|
| Operation condition | This is used when setting 2 or more conditions. [AND]: Operates when all of 2 or more conditions are satisfied. [OR]: Operates when 1 or more conditions is/are satisfied. |
| Select condition | [Bit condition]: Set the condition address value as Bit. [Word condition]: Set the condition address value as Word. [Schedule]: Set the condition as time, date and interval. |
| Write count | Set the number of logs recorded when a condition is satisfied. When the number of logs is 2 or greater, set the interval between logs. |
| Write interval | When [Write count] has been set to 2 or more, set the interval between logs. Units are in milliseconds (ms). The default value is 10x100ms (1 second). ※ 1 second = 1,000ms |

4.2.5 Log backup

Log data is recorded up to the user designated capacity in the TOPR internal memory. When the user defined internal memory capacity is filled, the oldest data is deleted in sequence, and new log data is continuously recorded. To save old data in external memory (SD Card) instead of deleting, [Storage media] must be designated on the backup page.



[Fig. Log backup]

| Setting | | Description |
|--------------------------------|-----------------------|--|
| Storage media | | [None]: Save to TOPR internal memory. [SD card]: Save options can be set. |
| Deletion unit of old log files | | If the external memory capacity is full, the oldest data is deleted. The number of files to be deleted is designated as a ratio. If the setting is 10%, 10% of the total number of log files is deleted. The default setting value is '10%.' |
| Log file name setting | User defined name | The user can designate an arbitrary log file name. |
| | Include HMI alias | An HMI alias can be added to the name of the log file. |
| | Include address value | An address value can be added to the name of the log file. |

4.2.6 Viewing log data

Log data files are saved in the CSV (*.CSV) format. These files can be viewed or edited using Excel or text editor (Memopad) programs on PCs.

There are many ways of viewing logging data saved in the main device.

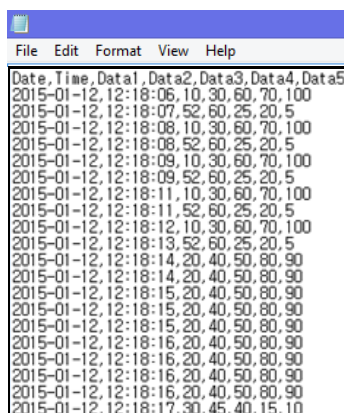
| Method | Description |
|----------------------------|---|
| Run screen | Using [Objects] such as Log View and Graph, log data can be viewed in real time from within the project screen. |
| File Browser (Menu screen) | Using the [File Browser] icon on the main device menu, logging data recorded in CSV format can be viewed. If the user does not use the logging data backup function, data in memory cannot be viewed in the File Browser. |
| PC | Logging data recorded in the main device can be edited and viewed from the PC by uploading through Ethernet or USB, or by copying using a USB memory stick. |

(1) Logging data upload

TOPR log data can be received through a transmitter.

(2) Viewing logging data saved in CSV format

CSV (Comma Separated Value) is a text file that separates items or values using commas (.). Therefore, these files can be viewed or edited using MS-Excel or Memopad. Logging data is recorded in the format of Date, Time, Data1, Data2.....



The screenshot shows a text editor window with a menu bar (File, Edit, Format, View, Help) and a list of CSV data rows. Each row contains a date, time, and five numerical data points separated by commas.

| Date | Time | Data1 | Data2 | Data3 | Data4 | Data5 |
|------------|----------|-------|-------|-------|-------|-------|
| 2015-01-12 | 12:18:06 | 10 | 30 | 60 | 70 | 100 |
| 2015-01-12 | 12:18:07 | 52 | 60 | 25 | 20 | 5 |
| 2015-01-12 | 12:18:08 | 10 | 30 | 60 | 70 | 100 |
| 2015-01-12 | 12:18:08 | 52 | 60 | 25 | 20 | 5 |
| 2015-01-12 | 12:18:09 | 10 | 30 | 60 | 70 | 100 |
| 2015-01-12 | 12:18:09 | 52 | 60 | 25 | 20 | 5 |
| 2015-01-12 | 12:18:11 | 10 | 30 | 60 | 70 | 100 |
| 2015-01-12 | 12:18:11 | 52 | 60 | 25 | 20 | 5 |
| 2015-01-12 | 12:18:12 | 10 | 30 | 60 | 70 | 100 |
| 2015-01-12 | 12:18:13 | 52 | 60 | 25 | 20 | 5 |
| 2015-01-12 | 12:18:14 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:14 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:15 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:15 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:15 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:16 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:16 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:16 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:16 | 20 | 40 | 50 | 80 | 90 |
| 2015-01-12 | 12:18:17 | 30 | 45 | 40 | 15 | 10 |

[Fig. Saved logging data]

(3) Copying log data to USB/SD Card memory

Logging data can be copied to a USB memory storage device or CF memory card, and viewed from the PC. Using the [File Browser] icon provided by default on the main device menu, logging data can be copied conveniently to USB memory or an SD card.

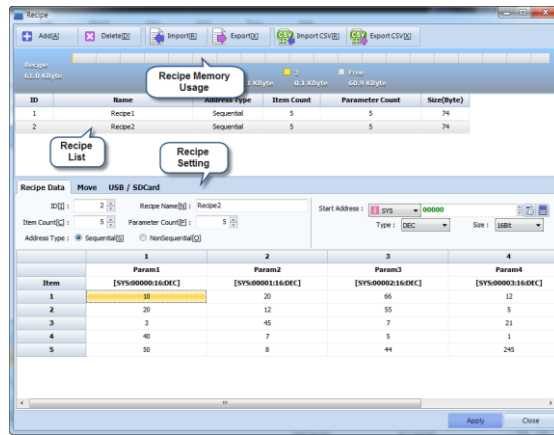
(4) Displaying logging data using objects

Using the objects such as [Number/Log View/Graph/Trend], logging data can be displayed in real-time on the touchscreen.

The [Number] object allows viewing of 1 designated logging data. Using the [Log table] object, logging data can be viewed in table format. Using the [Graph] and [Record] objects, logging data can be viewed in graph format, and data change trends can be viewed as well.

4.3 Recipe

A recipe is also known as a parameter move. Data required by the PLC (controller) or touchscreen is saved in the touchscreen internal memory or in external memory (SD card) in the form of a table, and data is moved depending on conditions from the touch to the PLC, or from the PLC to the touch. The recipe list can be managed using the [Add] and [Delete] buttons of the top toolbar. Up to 32 recipes can be registered.

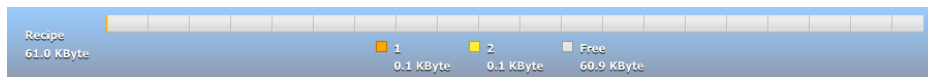


[Fig. Recipe]

| Button | Description |
|----------------|--|
| Add [A] | Add a recipe. |
| Delete [D] | Delete the selected recipe. |
| Read [R] | Load recipe settings as a file (.hrcp). |
| Export [X] | Export recipe settings as a file (.hrcp). |
| Read CSV [R] | Load recipe settings as a CSV file. [Replace all], [Add], and [Change] options are provided. |
| Export CSV [X] | Export recipe setting details to a CSV file. |

4.3.1 Recipe memory settings

To use the recipe function, the recipe memory must be set first. Like alarm memory settings, recipe memory settings can be made in [Project]-[Property]-[Partition settings].



[Fig. Recipe memory settings]

4.3.2 Recipe list

A list of set recipes is displayed. When the [Add] button is clicked, a recipe list is registered.

| ID | Name | Address Type | Item Count | Parameter Count | Size(Byte) |
|----|---------|--------------|------------|-----------------|------------|
| 1 | Recipe1 | Sequential | 5 | 5 | 74 |
| 2 | Recipe2 | Sequential | 5 | 5 | 74 |

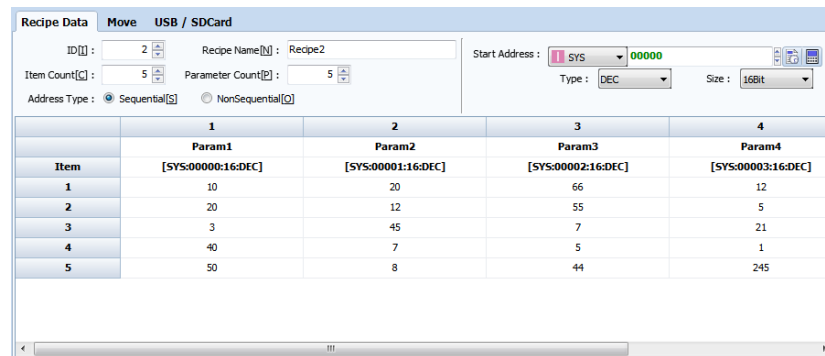
[Fig. Recipe list]

| List | Description |
|-----------------|---|
| ID | This is the ID of the registered recipe. |
| Name | This is the name of the registered recipe. |
| Address type | This is the address type of the registered recipe. |
| Item count | This is the number of registered recipe items. |
| Parameter count | This is the number of registered recipe parameters. |

| | |
|------|---------------------------------|
| Size | This is registered recipe size. |
|------|---------------------------------|

4.3.3 Recipe data

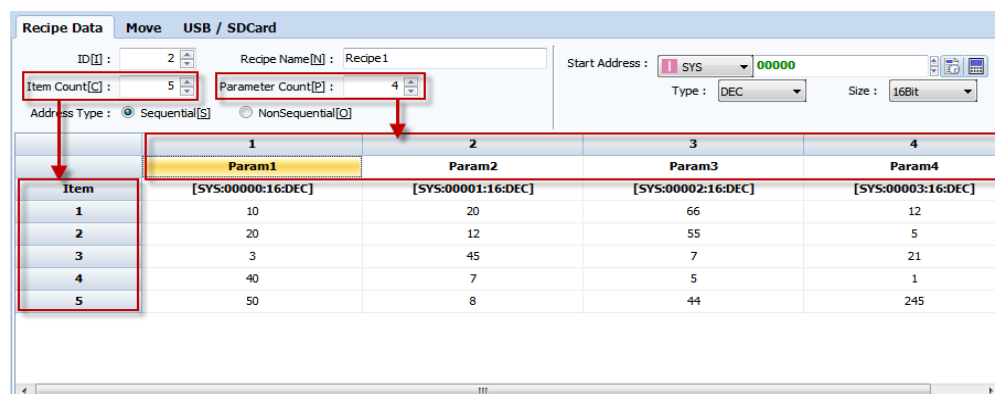
Manage and set recipe data.



[Fig. Recipe data]

| List | Description |
|-----------------|--|
| ID | Set the recipe number. |
| Recipe name | Set the recipe name. |
| Item count | An item is the unit that makes up recipes. Up to 5,000 items can be registered to one recipe. |
| Parameter count | A parameter is the unit that makes up items. Up to 100 parameters can be registered to one item. |
| Address type | Set the recipe address type. [Sequential]: Addresses that increase automatically from the start address are set. The number of addresses is equal to the parameter count. [Nonsequential]: Addresses can be set as desired by the user. The number of addresses is equal to the parameter count. |
| Start address | If the [Address type] is set to [Sequential], the Start Address is set. The remaining addresses are assigned automatically in sequence, beginning with the start address. If the addresses are not sequential and are scattered, select [Nonsequential] as the [Address type]. Individual dates can be designated separately. |

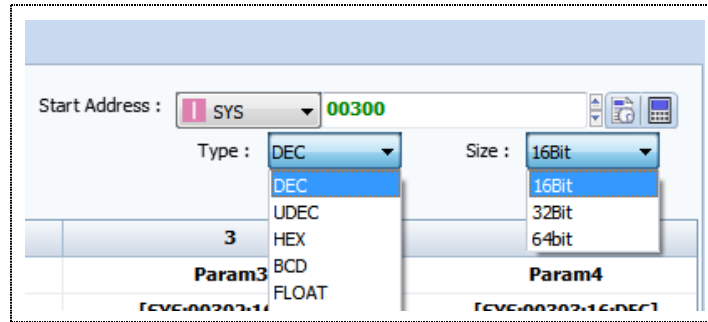
(1) Sequential recipe table



[Fig. Sequential recipe table]

[Item count] is the number of parameter values retrieved. This is the number of rows.

[Parameter count] refers to the number of parameter addresses to be moved. This is the number of columns in the table.



[Fig. Start address]

In [Sequential] address type, the parameter addresses increase beginning from the [Start address]. Also, [Type] and [Size] can be set.

(2) Nonsequential recipe table

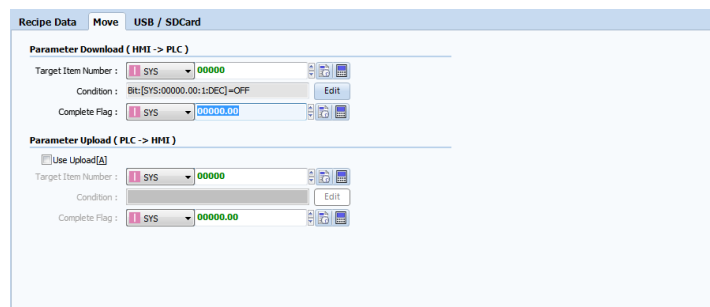
| | 1 | 2 | 3 | 4 |
|------|------------------------------|------------------------------|------------------------------|------------------------------|
| Item | Param1 [SYS:00300:16:DEC] | Param2 [SYS:00301:16:DEC] | Param3 [SYS:00302:16:DEC] | Param4 [SYS:00303:16:DEC] |
| | DEC 16Bit | DEC 16Bit | DEC 16Bit | DEC 16Bit |
| 1 | 10 | 20 | 66 | 12 |
| 2 | 20 | 12 | 55 | 5 |
| 3 | 3 | 45 | 7 | 21 |
| 4 | 40 | 7 | 5 | 1 |
| 5 | 50 | 8 | 44 | 245 |

[Fig. Nonsequential recipe table]

In the [Nonsequential] address type, [Type] and [Size] can be set individually for items.

4.3.4 Moving recipes

Recipe parameter movement between the TOPR and PLC is defined here. Parameters can be moved in two ways. in [Download], parameters are moved from the TOPR to the PLC. In [Upload], parameters are moved from the PLC to the TOPR.

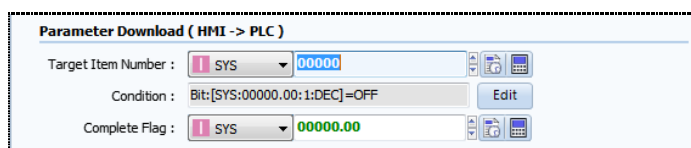


[Fig. Moving recipes]

(1) Parameter download (HMI->PLC)

Among the recipes in HMI internal memory, specific items can be moved to PLC memory.

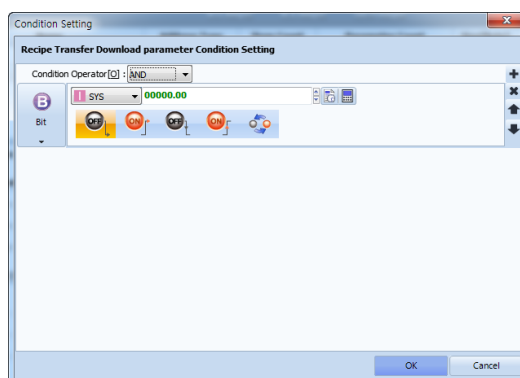
Designate the number of the recipe item to move and set the move condition to conveniently move recipe items.



[Fig. Parameter download]

| Properties | Description |
|--------------------|---|
| Target item number | Set the address with the unique item number of the recipe to be moved. PLC addresses and HMI internal addresses can be designated. |
| Condition | Set the move conditions. |
| Complete flag | When recipe movement has been completed, the bit value of the corresponding address is recorded as 'On.' Note: A complete flag that has been turned 'On' does not automatically transition to 'Off.' To turn a complete flag 'Off,' a function for the user to manually change the flag to 'Off' must be implemented. |

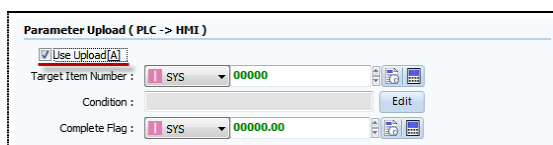
If the [Edit] button is clicked to set move conditions, the following window is shown. Up to 8 conditions can be set. For details on setting conditions, refer to [Chapter 7 Object - Common] - [7.5 Effects and action].



[Fig. Move condition setting]

(2) Parameter upload (PLC->HMI)

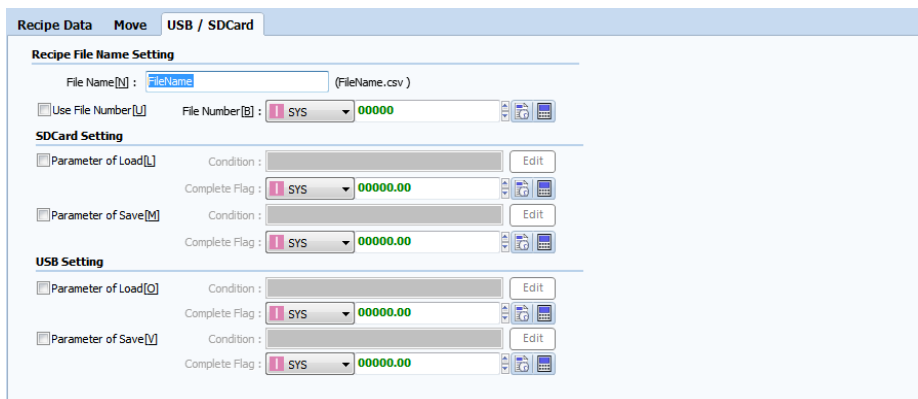
Recipe data in PLC memory can be moved to HMI internal memory. Designate the number of the recipe item to move and set the move condition to conveniently move recipe items, as in parameter downloads.



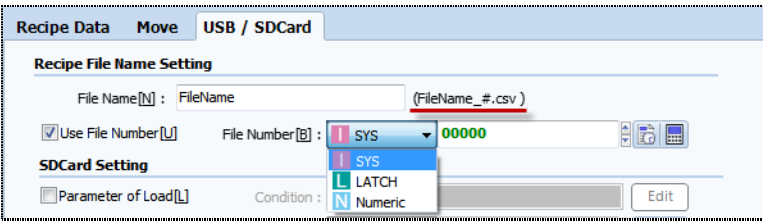

[Fig. Parameter upload]

4.3.5 Recipe external memory (SD Card / USB)

Recipe data saved in external memory can be saved and loaded. For loading, the file name must be the same.

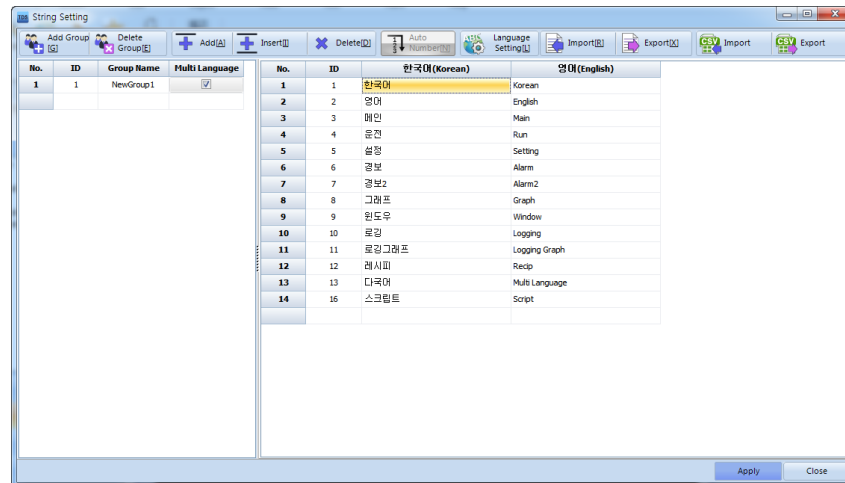


[Fig. Recipe external memory]

| Properties | Description |
|-----------------|--|
| File name | Set the file name for loading or saving recipe data. |
| Use file number | <p>To load and save multiple recipe data, file numbers must be used.</p> <p>As seen in the figure below, numbers are added behind the file names.</p>  |
| File number | <p>The file number can be designated using addresses.</p> <p>When loading and saving, the file number is read or written through the address.</p> |
| Load parameter | <p>Set the conditions for loading recipe data in external memory.</p> <p>When the set conditions are satisfied, recipe data in external memory is loaded.</p> <p> Note: The file name must be identical to the set file name.</p> |
| Save parameter | <p>Set the conditions for saving recipe data in external memory.</p> <p>When the set conditions are satisfied, recipe data in external memory is saved.</p> |

4.4 String/multilanguage

This function is used to collect strings or multilanguage strings used in a project in a table for batch management. Normally, in objects, strings entered manually by users can be displayed. For more systematic and efficient management, it is better to use the string/multilanguage table function. It is also possible to conveniently apply settings using other projects or Excel files.



[Fig. String/multilanguage settings]

| Button | Description |
|----------------------|--|
| Add group [G] | Adds a group. The name of the newly created group is 'NewGroup#.' The name can be edited. |
| Delete group [E] | Delete the selected group. |
| Add [A] | Adds a new string. Add using the [Enter] key and arrow keys on the keyboard. The IDs of newly added strings increase in increments of 1. String IDs can also be edited. |
| Insert [I] | Insert a new string above the selected row. |
| Delete [D] | Delete the selected string. |
| Auto Numbering [N] | The ID values for multiple strings can be designated automatically. Enter the start number in the ID of the first string to be numbered. Designate an area by [dragging with the mouse] or using [Shift + Arrow key] on the keyboard, then press the [Auto numbering] button to assign new IDs that increase in increments of 1 beginning with the start number. |
| Language setting [L] | Set the language. Columns are added to the string table, and multiple languages can be used. |
| Import | Import a saved string file (.hstr). |
| Export | Save a string file (.hstr). |
| CSV Import | Import a string file in CSV format. |
| CSV Export | Save as a CSV format string file. |

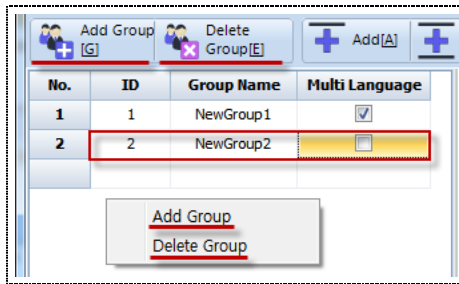
4.4.1 Editing groups and tables

To use strings or multi-language tables, a group must be added first before adding tables.

(1) Editing groups

To add groups, use the [Add group] button or [Right mouse click]-[Add group].

To delete groups, use the [Delete group] button or [Right mouse click]-[Delete group].

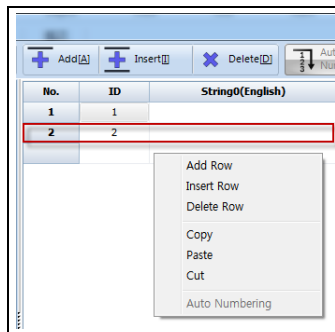


[Fig. Adding and deleting groups]

(2) Editing tables

To add tables, use the [Add] button or [Right mouse click]-[Add row].

To insert tables, place the [Cursor] in the location to insert the table. Use the [Insert] button or [Right mouse click]-[Insert row]. To delete tables, select the row to delete and use the [Delete] button or [Right mouse click]-[Delete row]. [Copying], [Pasting], and [Cutting] tables can be performed by dragging the mouse or using [Shift + Arrow key].



[Fig. Adding, inserting and deleting tables]

4.4.2 Text table

When using fixed text, it is convenient to create and manage a table.

For example, if strings such as 'Temperature,' 'Humidity,' and 'Pressure' are entered into a table, and this string table is registered for use as the strings of objects, when the project is changed in the future or the string needs to be edited, batch edits can be performed conveniently in the string table. Also, when working with a similar project, strings registered in one project can be reused with the 'Export/Import' functions.

| No. | ID | Group Name | Multi Language |
|-----|----|------------|--------------------------|
| 1 | 1 | NewGroup1 | <input type="checkbox"/> |
| 2 | 2 | NewGroup2 | <input type="checkbox"/> |

| No. | ID | String |
|-----|----|-----------|
| 1 | 1 | Korean |
| 2 | 2 | English |
| 3 | 3 | Main |
| 4 | 4 | Run |
| 5 | 5 | Setting |
| 6 | 6 | Alarm |
| 7 | 7 | Alarm2 |
| 8 | 8 | Graph |
| 9 | 9 | Window |
| 10 | 10 | Logging |
| 11 | 11 | Log graph |
| 12 | 12 | Receipte |
| 13 | 13 | String |
| 14 | 14 | Script |
| 15 | 15 | |

[Fig. Text table]

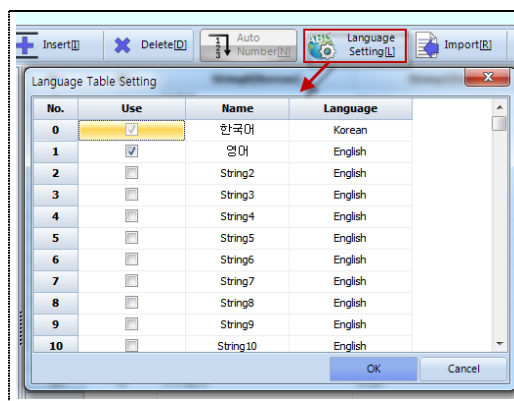
4.4.3 Multilanguage table

Unlike the text table, this table allows batch management and handling of multiple languages at once.

For example, to export project A written in Korean to the United States, English needs to be added. If the strings are entered directly into objects, object properties need to be changed one by one. However, using the multi-language function, strings can be added/changed relatively easily.

(1) Language setting

To use multi-language, language settings must be performed first. Up to 16 different languages can be registered.



[Fig. Language setting]

(2) Multilanguage

When [multi-language] is checked, the previous string table is changed into the language registered in [Language setting].

| No. | ID | Group Name | Multi Language |
|-----|----|------------|-------------------------------------|
| 1 | 1 | NewGroup1 | <input checked="" type="checkbox"/> |
| 2 | 2 | NewGroup2 | <input type="checkbox"/> |

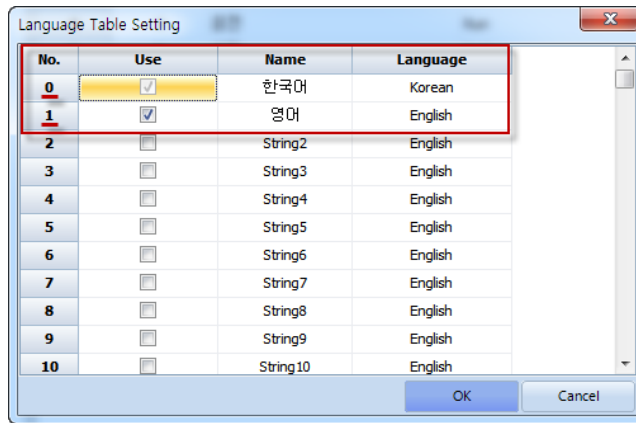
| No. | ID | 한국어 (Korean) | 영어 (English) |
|-----|----|--------------|----------------|
| 1 | 1 | 한국어 | Korean |
| 2 | 2 | 영어 | English |
| 3 | 3 | 메인 | Main |
| 4 | 4 | 실행 | Run |
| 5 | 5 | 설정 | Setting |
| 6 | 6 | 경보 | Alarm |
| 7 | 7 | 경보2 | Alarm2 |
| 8 | 8 | 그래프 | Graph |
| 9 | 9 | 윈도우 | Window |
| 10 | 10 | 로깅 | Logging |
| 11 | 11 | 로깅 그래프 | Logging Graph |
| 12 | 12 | 레시피 | Recip |
| 13 | 13 | 다국어 | Multi Language |
| 14 | 14 | 스크립트 | Script |

[Fig. Text table]

Strings to be used in the project can be registered by manually entering strings for each language, or by copying and pasting in Excel files, etc.

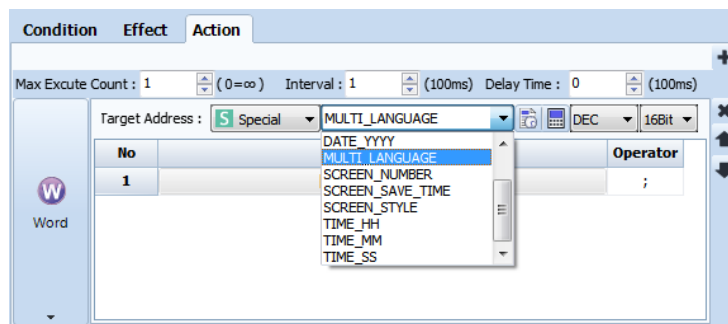
(3) Selecting the multilanguage

By changing the data of the special object address [MULTI_LANGUAGE] from the run screen, the language displayed can be changed.



[Fig. Multi-language language]

The unique [Number] of a multi-language language is created as shown above. [0] is Korean and [1] is English. The language can be changed using the number value.




[Fig. changing the object Multi-language]

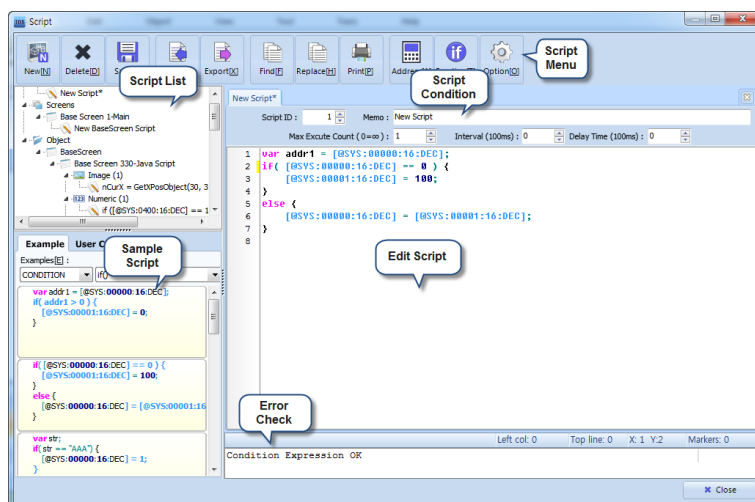
In the object, set [MULTI_LANGUAGE] for the [Special] address. Multi-language can be selected using [0] and [1] set above in this address.

4.5 Script

Conditions and actions can be registered conveniently using TDS objects, but objects are limited in their ability to handle complicated conditions and operations. In these cases, scripts can be used to handle various conditions and operations. Also, scripts can be applied globally or to individual screens and objects.

TDS uses the JavaScript Engine, which is one of the most widely used scripts in the Internet environment. Therefore, the same syntax as JavaScript can be used to write.

 Note: Too many scripts can reduce the operating speed. Slow communication between the PLC and TOPR can result in a delayed response speed for script results.

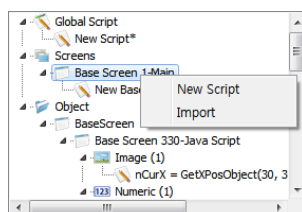


[Fig. Script]

| Button | Description |
|--------------|---|
| New [N] | Add a new item to the selected script list. |
| Delete [D] | Delete the selected script list. |
| Save [S] | Save the script. |
| Read [R] | Read a saved script file (.hsrt). |
| Export [X] | Export a saved script file (.hsrt). |
| Find [F] | Find text in the script edit window. |
| Replace [H] | Enter the text to find and the text to replace with, and run. |
| Print [P] | Print the script edit window. |
| Address [A] | Run the address keypad. |
| Function [F] | Run find function list. |
| Options [O] | Set script options. |

4.5.1 Script list

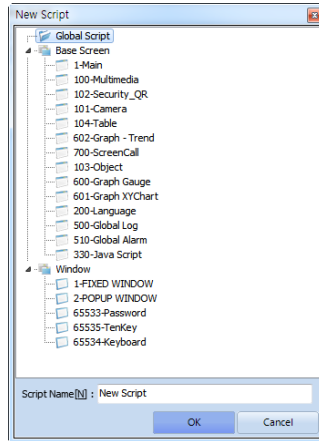
As seen in the following figure, a global script list, and lists of scripts that can be applied individually to screens and objects are provided. Lists can be added by using the [New] button, or by selecting a list and using [Right mouse click] - [New script].



[Fig. Script list]

(1) Adding [Global] and [Screen] scripts

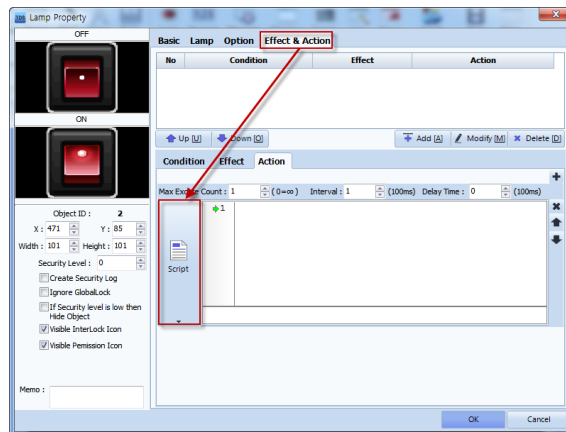
When the [New] button is pressed to add a script, the window shown in the following figure is displayed. Select the part to apply to, and click the [OK] button to add.



[Fig. Adding items to the script list]

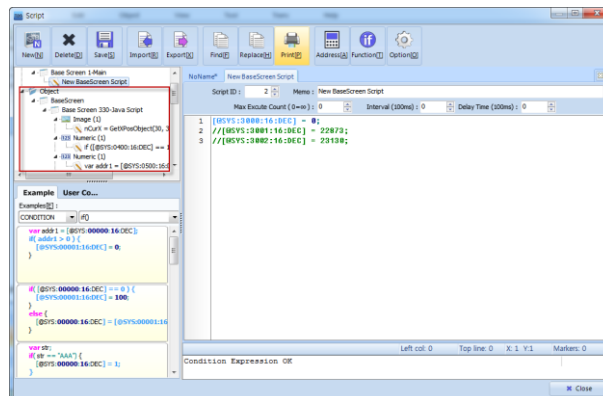
(2) Adding [Object] scripts

To add a script to [Objects], script conditions must be added in [Effects and Actions]-[Action] in [Objects].



[Fig. Object script]

As shown in the figure above, codes can be applied in the [Object edit window] by applying scripts to [Objects]. As shown in the figure below, this is also possible from the [Script] menu.

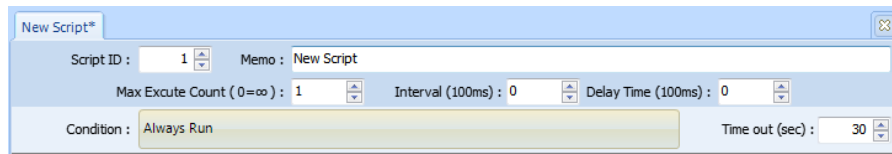


[Fig. Script object]

An even simpler method is to use the sample code in [Scripts].

4.5.2 Script conditions

Set the conditions for script operation.

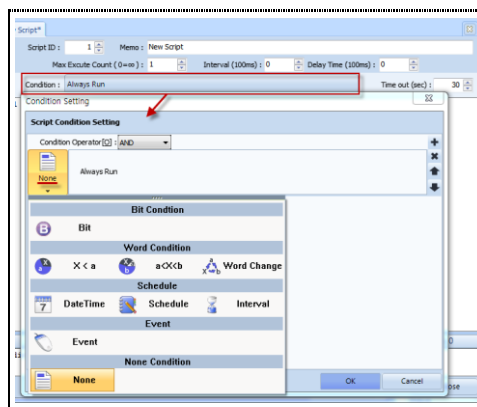


[Fig. Script conditions]

| Properties | Description |
|-------------------|---|
| Script ID | Set the unique script number. |
| Memo | Enter the script description. |
| Max execute count | Set the maximum times the script is executed when the script conditions are satisfied. When the setting is [0], the script is executed infinitely. |
| Interval | Set the execution interval of the script. |
| Delay time | Set the delay time for script execution. |
| Condition | Set the condition for script execution. |
| Time out | This is the maximum response wait time after the script is executed once. This function is used to prevent errors when scripts communicating with the PLC continue to be executed past the response time. |

(1) Condition

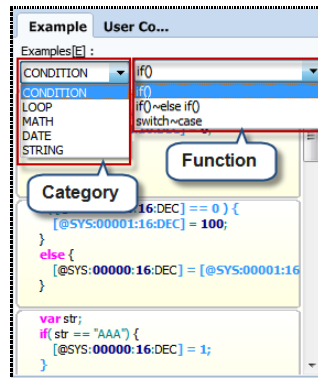
To set script execution conditions, click [Execute conditions] as shown in the figure below to bring up the condition settings window.



[Fig. Execute condition]

4.5.3 Script sample

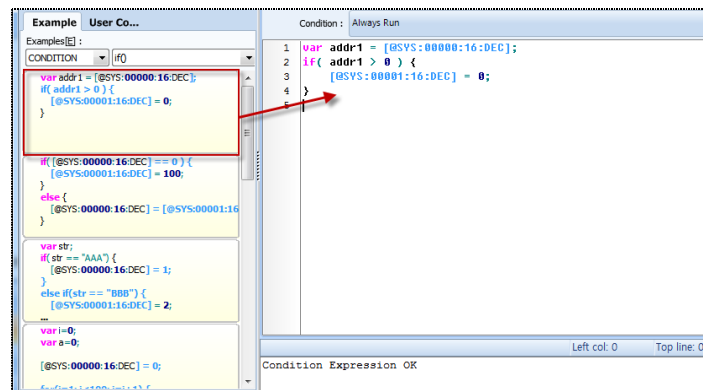
Script samples are divided into [Examples] and [User samples]. The user can manually write the code from beginning to end and apply. To use [Examples], first choose the category and the function. The sample codes that are displayed beneath can be used.



[Fig. Script samples]

(1) Script examples

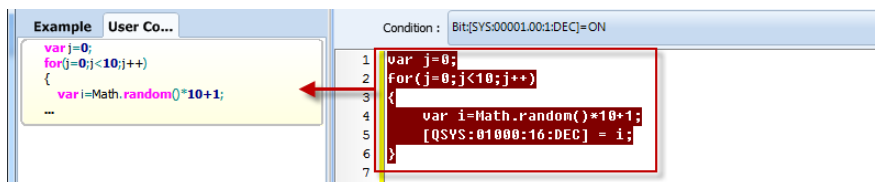
To use script examples, select [Category] and [Function], then drag & drop the desired code with the mouse onto the edit window, as shown in the figure beneath.



[Fig. Script examples]

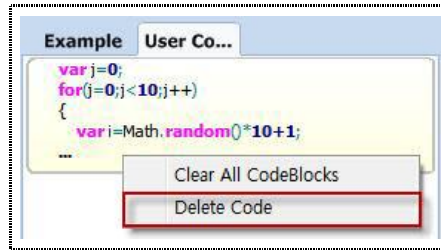
(2) User script

User script is a function that allows code written by the user to be loaded and used in the same way as examples. As illustrated in the figure below, drag & drop user code onto the user code area.



[Fig. Adding user script]

To delete a user script, select the sample as shown in the figure below, and right click with the mouse.



[Fig. Deleting user script]

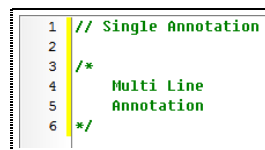
| Menu | Description |
|----------------------|-----------------------------|
| Clear All CodeBlocks | Delete the selected sample. |
| Delete Code | Delete all user code. |

4.5.4 Script edit window

While a normal JavaScript edit window is provided, by using an address keypad using HMI and PLC address values, occurrence of script errors can be reduced.

(1) Entering comments

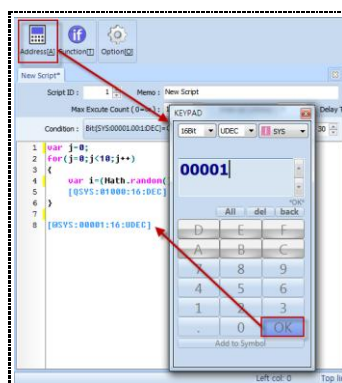
Comments are used when entering descriptions, etc., that are unrelated to the program. In the edit window, single line and multiline remarks can be entered.



[Fig. Entering comments]

(2) Script address keypad

When using scripts, logic is built using variable declarations and functions. By default, PLC and HMI addresses are entered and used. An address keypad is provided for convenient entry of these address values. Also, it is possible to eliminate the cause for errors when entering addresses into scripts.



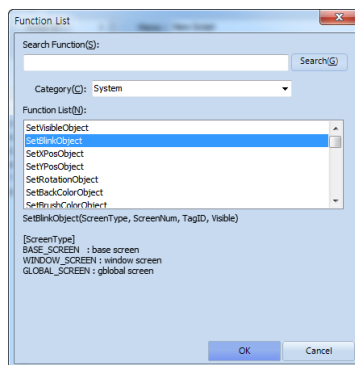
[Fig. Entering addresses into scripts]

Place the [Cursor] on the location where the address will be inserted. Click the [Address] button to

bring up the [Address Keypad] window. Select [Address size], [Address type], and [Address], enter the value, and press the [OK] button to enter the address into the edit window.

4.5.5 Script functions

TDS provides basic functions. When the [Function] button is clicked, the following [Search Function] window appears. The desired function can be searched using [Search Function] or [Category]-[Function List]. A simple description of each function is shown on the bottom.



[Fig. Script functions]

Categories are [System], [Math], [Standard], and [ALL]. An explanation of each function follows.

| Function | Category | Description |
|------------------|-------------------------|--|
| SetVisibleObject | Format | SetVisibleObject(ScreenType, ScreenNum, TagID, Visible) |
| | Description | This function is used to [Show] or [Hide] objects. The TagID is the object ID. [Hide]: Enter Visible as false. [Show]: Enter Visible as true. |
| | Example of registration | SetVisibleObject(BASE_SCREEN,15,1,true); Set [Object 1] on [Screen 15] of the [Base Screen] to [Show]. |
| SetBlinkObject | Format | SetBlinkObject(ScreenType, ScreenNum, TagID, Blink) |
| | Description | This function is used for [Blinking] of objects. The TagID is the object ID. |
| | Example of registration | SetBlinkObject t(BASE_SCREEN,15,1,true); Set [Object 1] on [Screen 15] of the [Base Screen] to [Blink]. |
| SetXPosObject | Format | SetXPosObject(ScreenType, ScreenNum, TagID, Xpos) |
| | Description | Move the X coordinate position of the object. [Xpos]: Absolute coordinates are used. |
| | Example of registration | SetXPosObject(BASE_SCREEN, 15, 1, 100); Set the X coordinate of [Object 1] on [Screen 15] of the [Base Screen] to 100. |
| SetYPosObject | Format | SetYPosObject(ScreenType, ScreenNum, TagID, Ypos) |
| | Description | Move the Y coordinate position of the object. [Ypos]: Absolute coordinates are used. |
| | Example of registration | SetYPosObject(BASE_SCREEN, 15, 1, 100); Set the Y coordinate of [Object 1] on [Screen 15] of the [Base Screen] to 100. |

| | | |
|---------------------|-------------------------|---|
| SetRotationObject | Format | SetRotationObject(ScreenType, ScreenNum, TagID, Rotation) |
| | Description | Rotates an object. |
| | Example of registration | SetRotationObject (BASE_SCREEN, 15, 1, 100); |
| SetBackColorObject | Format | SetBackColorObject(ScreenType, ScreenNum, TagID, Red, Green, Blue) |
| | Description | Change the background color of an object. |
| | Example of registration | SetBackColorObject (BASE_SCREEN, 15, 1, 255,255,255); Set the color (RGB) of [Object 1] on [Screen 15] of the [Base Screen] to 255,255,255. |
| SetBrushColorObject | Format | SetBrushColorObject(ScreenType, ScreenNum, TagID, Red, Green, Blue) |
| | Description | Change a brush color object. |
| | Example of registration | SetBrushColorObject (BASE_SCREEN, 15, 1, 255,255,255); Set the fill color (RGB) of [Object 1] on [Screen 15] of the [Base Screen] to 255,255,255. |
| SetPenColorObject | Format | SetPenColorObject(ScreenType, ScreenNum, TagID, Red, Green, Blue) |
| | Description | The line color of an object is changed. |
| | Example of registration | SetBrushColorObject (BASE_SCREEN, 15, 1, 255,255,255); Set the line color of [Object 1] on [Screen 15] of the [Base Screen] to 255,255,255. |
| GetXPosObject | Format | GetXPosObject(ScreenType, ScreenNum, TagID) |
| | Description | Read the X coordinate of an object. |
| | Example of registration | [Address] = GetXPosObject(BASE_SCREEN,15,3); Enter the value of the X coordinate of [Object 3] on [Screen 15] of the [Base Screen] in [Address]. |
| GetYPosObject | Format | GetYPosObject(ScreenType, ScreenNum, TagID) |
| | Description | Read the Y coordinate of an object. |
| | Example of registration | [@SYS:00011:16:UDEC] = GetYPosObject(BASE_SCREEN,15,3); Enter the value of the Y coordinate of [Object 3] on [Screen 15] of the [Base Screen] in [Address]. |
| SetTouchLock | Format | SetTouchLock(VisibleMode) |
| | Description | Enables touch lock for a screen where a script is applied. The password value in [Project]-[Property]-[Global lock option] is used as the touch password. |
| | Example of registration | SetTouchLock(1); [0]: Window can be closed, [1]: Window cannot be closed When a screen with a script applied is accessed, touch lock is enabled, and the lock window does not disappear until the password is unlocked. |
| GetScreenNum | Format | GetScreenNum(ScreenNum) |
| | Description | Returns the screen number. |

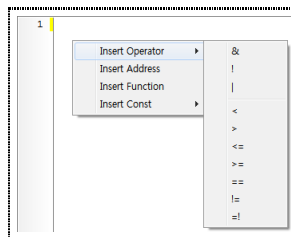
| | | |
|----------|-------------------------|--|
| | Description | Stop playback of all sound. |
| | Example of registration | StopSoundAll(); Stops playback of all sound currently playing. |
| PI | Format | Math.PI |
| | Description | The PI value of 3.14*** is returned. |
| | Example of registration | [@SYS:00011:32:FLOAT] =Math.PI; 3.14 is inserted into [Address]. |
| cos | Format | Math.cos(n) |
| | Description | Variable n is the angle. cos(n) is converted into digits. |
| | Example of registration | [@SYS:00011:16:UDEC] = Math.cos(0); The value of cos(0 degrees) is inserted into [Address]. |
| sin | Format | Math.sin(n) |
| | Description | Variable n is the angle. sin(n) is converted into digits. |
| | Example of registration | [@SYS:00011:16:UDEC] = Math.sin(0); The value of sin(0 degrees) is inserted into [Address]. |
| tan | Format | Math.tan(n) |
| | Description | Variable n is the angle. tan(n) is converted into digits. |
| | Example of registration | [@SYS:00011:16:UDEC] = Math.tan(0); The value of tan(0 degrees) is inserted into [Address]. |
| random | Format | Math.random() |
| | Description | A random number is generated. |
| | Example of registration | [@SYS:01000:16:DEC]=(Math.random()*10)+1; A random number between 0 and 10 is inserted into [Address]. |
| round | Format | Math.round(n) |
| | Description | Rounds up to the whole number closest to the value of n. |
| | Example of registration | [@SYS:00011:16:UDEC] = Math.round(10.1); [10.1] is rounded to the nearest whole number and inserted into [Address]. |
| Number | Format | Number(var) |
| | Description | The string var is converted into a number. |
| | Example of registration | [@SYS:00011:16:UDEC] =Number("12"); The number 12 is inserted into [Address]. |
| String | Format | String(var) |
| | Description | The number var is converted into a string. |
| | Example of registration | [@SYS:00011:16:UDEC] =String(12); The string "12" is inserted into [Address]. |
| NowToUTC | Format | NowToUTC() |
| | Description | The current time is returned as TIMESTAMP(seconds). |
| | Example of registration | [@SYS:00011:16:UDEC]= NowToUTC(); The current time is converted into TIMESTAMP(seconds) and inserted into |

| | | |
|------------|-------------------------|--|
| | | [Address]. |
| ParamToUTC | Format | ParamToUTC(year, month, day, hour, min, sec) |
| | Description | The designated time is converted into TIMESTAMP(seconds). |
| | Example of registration | [@SYS:00011:16:UDEC]=ParamToUTC(2015,1,1,5,18,10); 5:18:10 January 1, 2014 is converted into seconds and inserted into [Address]. |
| DayToSec | Format | DayToSec(day) |
| | Description | Calculates the set date in seconds. |
| | Example of registration | [@SYS:00011:16:UDEC]=DayToSec(100); 100 days is converted into seconds and inserted into [Address]. |
| HourToSec | Format | HourToSec(hour) |
| | Description | Calculates the set time into seconds. |
| | Example of registration | [@SYS:00011:16:UDEC]=HourToSec(100); 100 hours is converted into seconds and inserted into [Address]. |
| MinToSec | Format | MinToSec(min) |
| | Description | Calculates the set minutes into seconds. |
| | Example of registration | [@SYS:00011:16:UDEC]=MinToSec(100); 100 minutes is converted into seconds and inserted into [Address]. |
| SecToSec | Format | SecToSec(min) |
| | Description | Calculates the set seconds into seconds. |
| | Example of registration | [@SYS:00011:16:UDEC]=MinToSec(100); 100 seconds is converted into seconds and inserted into [Address]. |
| UTCToYear | Format | UTCToYear(value) |
| | Description | The TIMESTAMP value is converted into Years. |
| | Example of registration | [@SYS:00011:16:UDEC]= UTCToYear (12500); 12500 is converted into years and inserted into [Address]. |
| UTCToMonth | Format | UTCToMonth(value) |
| | Description | The TIMESTAMP value is converted into Months. |
| | Example of registration | [@SYS:00011:16:UDEC]= UTCToMonth (12500); 12500 is converted into months and inserted into [Address]. |
| UTCToDay | Format | UTCToDay(value) |
| | Description | The TIMESTAMP value is converted into days. |
| | Example of registration | [@SYS:00011:16:UDEC]= UTCToDay (12500); 12500 is converted into days and inserted into [Address]. |
| UTCToHour | Format | UTCToHour(value) |
| | Description | The TIMESTAMP value is converted into hours. |
| | Example of registration | [@SYS:00011:16:UDEC]= UTCToHour (12500); 12500 is converted into hours and inserted into [Address]. |
| UTCToMin | Format | UTCToMin(value) |
| | Description | The TIMESTAMP value is converted into minutes. |

| | | |
|-----------|-------------------------|--|
| | Example of registration | [@SYS:00011:16:UDEC]= UTCToMin (12500); 12500 is converted into minutes and inserted into [Address]. |
| UTCToSec | Format | UTCToSec(value) |
| | Description | The TIMESTAMP value is converted into seconds. |
| | Example of registration | [@SYS:00011:16:UDEC]= UTCToSec (12500); 12500 is converted into seconds and inserted into [Address]. |
| UTCToWeek | Format | UTCToWeek(value) |
| | Description | The TIMESTAMP value is converted into the weekday. [1: Sun], [2: Mon], [3: Tue], [4: Wed], [5: Thu], [5: Fri], [6: Sat] |
| | Example of registration | [@SYS:00011:16:UDEC]= UTCToWeek(12500); 12500 is converted into weekday and inserted into [Address]. |

4.5.6 Script operations and functions

Script operators can be inserted using the keyboard. Also, various operators and functions can be accessed by [Right clicking the mouse].

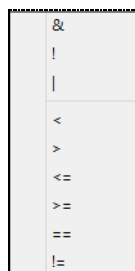


[Fig. Script operators and functions]

| Right click menu | Description |
|---------------------|---|
| Insert operator [G] | Select an operator and insert into the [Cursor] position. |
| Address [X] | Run the [Address keypad]. |
| Function [Y] | Run the [Function searcher]. |
| Constant [Z] | Inserts a TDS constant into the [Cursor] position. |

(1) Insert operator

The operators provided are shown in the figure below. The selected operator is inserted into the [Cursor] position.

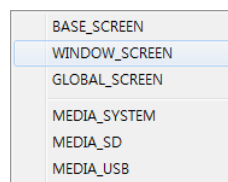


[Fig. Insert operator]

| Operators | Description |
|-----------|--|
| & | This operator performs a bit AND operation on the binary values of two operands. |
| ! | This operator reverses the value of the operand. |
| | This operator performs a bit OR operation on the binary values of two operands. |
| < | This operator is used to compare the size of two operands, to indicate that the operand on the right is greater. |
| > | This operator is used to compare the size of two operands, to indicate that the operand on the left is greater. |
| <= | This operator is used to compare the size of two operands, to indicate that the operand on the right is greater or equal to the operand on the left. |
| >= | This operator is used to indicate that the values of two operands are the same. |
| == | This operator is used to indicate that the values of two operands are the same. |
| != | This operator is used to indicate when the values of two operands are not the same. |

(2) Constant

As shown in the following figure, the constants designated in TDS appear. These can be inserted into the [Cursor] position.

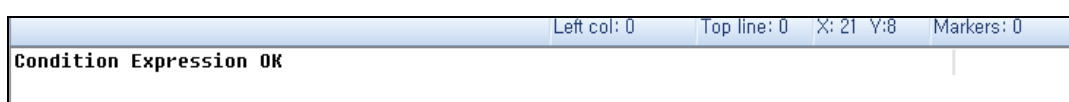


[Fig. Constant]

| Constant | Description |
|---------------|--|
| BASE_SCREEN | This is the base screen constant. |
| WINDOW_SCREEN | This is the window screen constant. |
| GLOBAL_SCREEN | This is the global screen constant. |
| MEDIA_SYSTEM | This constant refers to TOPR system sound. |
| MEDIA_SD | This constant refers to SD card sound. |
| MEDIA_USB | This constant refers to USB memory sound. |

4.5.7 Script error check

In the script result window, the script code entered in the [Edit window] is checked, and the result is returned.



[Fig. Script result window]

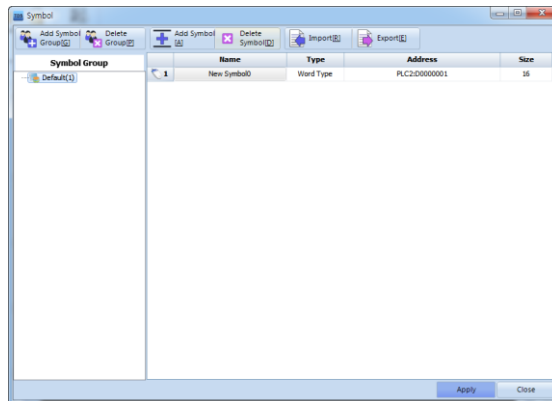
[No error]: Condition Expression OK

[Error]: [Error] message, code line, cause of error

4.6 Symbol

A symbol address is an address where a different name has been assigned to an address.

The program can be used more conveniently if PLC or internal addresses are assigned with names indicating their actual usage in the system, etc. To use symbol addresses, which are a type of address, the appropriate setting must be set in [Symbol setting].

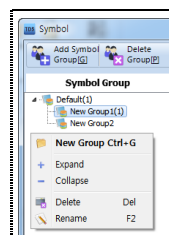


[Fig. Symbol setting]

| Symbol setting buttons | Description |
|------------------------|--|
| Add group [G] | Adds a symbol group. |
| Delete group [P] | Delete the selected symbol group. |
| Add symbol [A] | Add a symbol to the selected symbol group. |
| Delete symbol [D] | Delete the selected symbol. |
| Read [R] | Reads a symbol file (.CSV). |
| Export [E] | Exports a symbol file (.CSV). |


4.6.1 Symbol group

Press the [Add group] button or [Right mouse click]-[New Group] to add a group as shown in the figure.



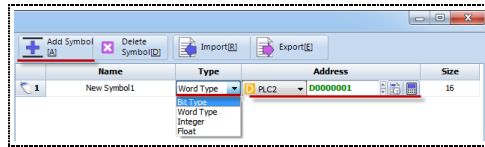
[Fig. Symbol group]

To change the name of the symbol group, [Right mouse click]-[Rename].

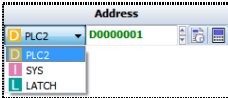
 Default symbol groups cannot be deleted. New groups can be added to the default group.

4.6.2 Symbol setting

Register a symbol group and click the [Add symbol] button to bring up the following window.



[Fig. Symbol setting]

| Symbol property | Description |
|-----------------|---|
| Name | Set the symbol name. |
| Type | Set the symbol address type. |
| Address | Set the address to perform symbol settings for.  |
| Size | The size is automatically changed depending on [Type]. |

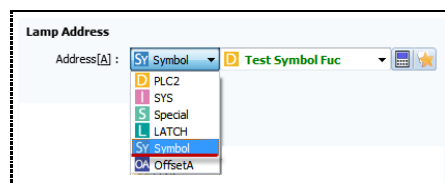
4.6.3 Using symbols

The method of using set symbols is very simple.

| | Name | Type | Address | Size |
|---|-------------|----------|------------|------|
| 1 | New Symbol1 | Bit Type | PLC2:X0001 | 1 |

[Fig. Using symbols 1]

As shown in the figure above, symbol settings have been applied. Next, select the object to be used.



[Fig. Using symbols 2]

Select [Symbol] in the object address entry window to bring up the symbol settings list. Set and use as shown in the figure above.

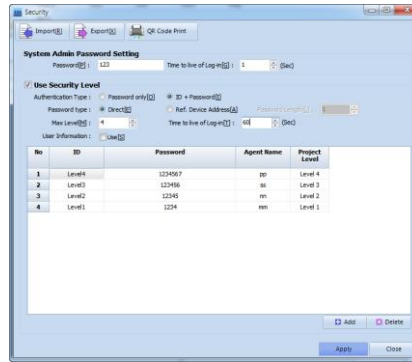
4.7 Security

Security settings are divided into admin and user settings. In user settings, security settings can be made for the [Run screen], [Menu screen], and [Objects]. The set passwords can be managed conveniently using the [Export] and [Import] buttons, and passwords can be replaced with [QR Code].

Admin password settings apply to [Menu screen] transitions and system settings.

User password settings refer to permissions used for [Run screen] and [Object] security. Through [Menu

screen]-[Control panel]-[Security] settings, system permissions can be assigned.

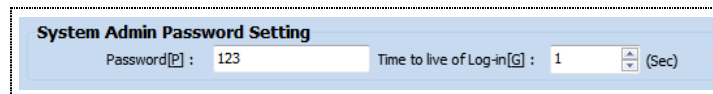


[Fig. Security]

| Security setting button | Description |
|-------------------------|---|
| Read [R] | Read a security setting file (.hsec). |
| Export [X] | Export a security setting file (.hsec). |
| Print QR code | A QR code is printed. |

4.7.1 Admin settings

Admin password settings restrict access to the [Menu screen], and manage TOPR system settings and security settings.



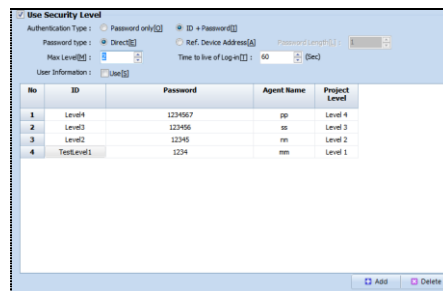
[Fig. Admin password setting]

| System admin property | Description |
|----------------------------|--|
| Password [P] | Set the system admin password. |
| Time to live of log-in [G] | Set the time for which admin permissions are maintained after the password is entered. |

4.7.2 User settings

Check Use Security Level to enable user settings.

Security levels 1~15 are available. Permissions at a higher level can use permissions of lower levels. For example, if the [Push button] is clicked with [Level 1] permissions, [Level 2] permissions are able to use the push button whose security level is Level 1.



[Fig. Use security level]

| User property | | Description |
|------------------------|-------------------------|---|
| Use security level | | Check Use security level to enable user settings. |
| Authentication type | Password [O] | Set the login authentication type to password. |
| | Account+Password [I] | Set the login authentication type to account + password. |
| Password type | Direct [P] | Set the login password type to direct user input. |
| | Ref. device address [A] | Set the login password by referring to an address. |
| Max. level [M] | | Set the security level. The security level can be entered between 1 and 15. |
| Time to live of log-in | | Set the time for which permissions are maintained after the password is entered. |
| User info | | Info on the set user permissions can be entered. User permission info cannot be viewed in TDS. |
| ID | | Set the login account. |
| Password | | Set the login password. |
| Agent Name | | Set the user name. |
| Project Level | | Set the security level. |

4.7.3 Use user settings

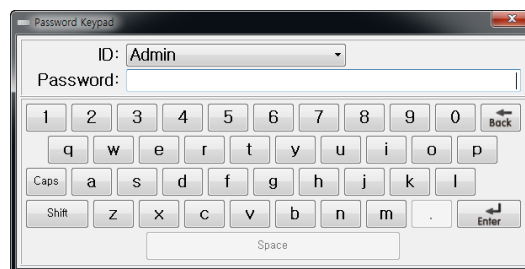
When the [Add] button is clicked, settings are created automatically as shown below. Enter each property. The [Project level] setting can be set up to the [Maximum level].

| No | ID | Password | Agent Name | Project Level |
|----|---------|----------|------------|---------------|
| 1 | Level 1 | 12345678 | User Name | Level 1 |

[Fig. User setting method]

(1) Authentication type, password type

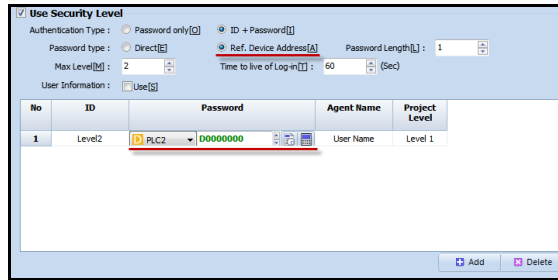
Set the password type as user input.



[Fig. Authentication type]

When [Password] is selected in [Authentication type], the password is entered to log in with the corresponding permissions. If [Account + Password] is selected, the ID must first be selected before entering the password.

Set the [Password type] to [Ref. device address].

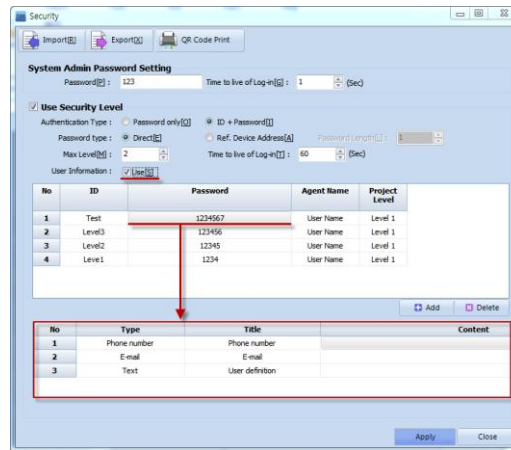


[Fig. Ref. device address]

The password is entered through an address. Login is only possible if the password is entered in the PLC internal memory address.

4.7.4 User info

User info is provided for detailed user settings.



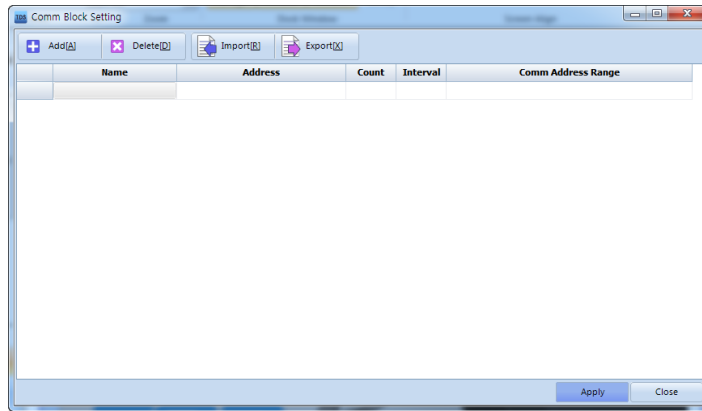
[Fig. User info]

Select an ID value or a row with the same value, then enter user info.

4.8 Communication block

Communication block is a setting for batch handling of all communication occurring on the screen. For example, if PLC1D000 and PLC1D0001 are used on one screen, for enhanced convenience and communication speed, a communication block can be designated. The 2 addresses are made into 1 block, reducing the number of communications with the PLC from 2 to 1.

Registration of blocks will be possible under symbol functions from the PC HMI later. This way, users will be able to automatically assign addresses according to the number of registered communication blocks, without designating addresses manually. Multiple communications will be handled in batch, using block units.

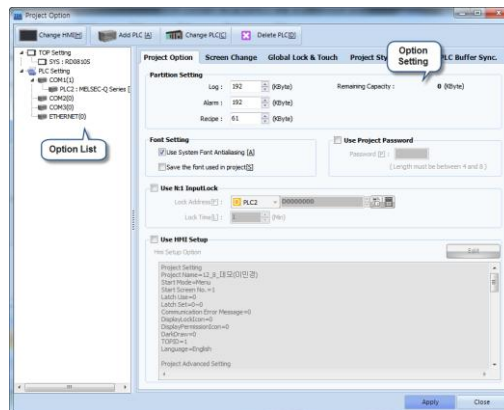


[Fig. Communication block]

| Communication block settings | Description |
|------------------------------|--|
| Add [A] | Add a communication block. |
| Delete [D] | Delete the selected communication block. |
| Read [R] | Read a saved communication block file (*.alm) into the current project. |
| Export [X] | Export the communication blocks set for the current project to a file (*.alm). |

4.9 Project properties

In project options, HMI and PLC properties and equipment can be changed. Also, general project options can be set. Also, many global functions other than the functions provided by default in the edit screen are provided.

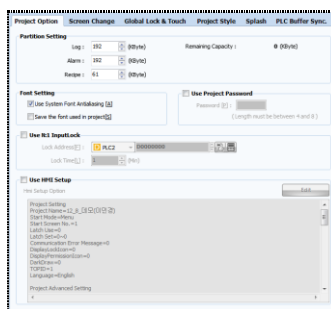


[Fig. Project option]

| Project option button | Description |
|-----------------------|---|
| Change HMI | The HMI is changed. |
| Add PLC | Select the port to connect with, and add a PLC. |
| PLC Change | Change the selected PLC. |
| Delete PLC | Delete the selected PLC. |

4.9.1 Project option

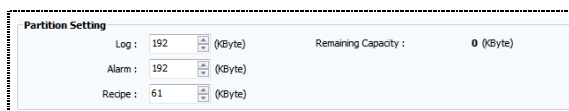
Project option provides memory usage and HMI settings.



[Fig. Project option]

(1) Partition settings

Set the memory for logs, alarms, and recipe data.

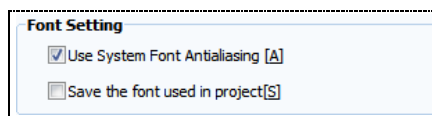


[Fig. Partition settings]

| Partition settings | Description |
|--------------------|---------------------------------|
| Log | Set the memory for log data. |
| Alarm | Set the memory for alarm data. |
| Recipe | Set the memory for recipe data. |

(2) System font setting

If the outlines of low resolution images are curved, these curves are created by connecting square pixels. This results in ragged corners. Anti-aliasing is a rendering technology that smoothens out these corners to create a smooth curve.

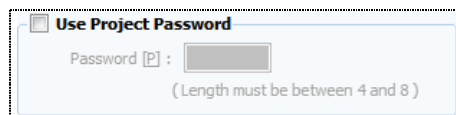


[Fig. System font setting]

Use anti-aliasing on the TDS menu font.

(3) Use project password

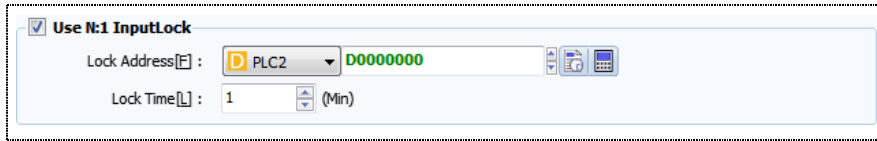
Set a password for the project. A password must be entered when running project files.



[Fig. Use project password]

(4) Use N:1 input lock

When connecting 1 PLC and multiple TOPR(HMI), enable lock to prevent issues occurring when multiple HMIs communicate with the PLC simultaneously.

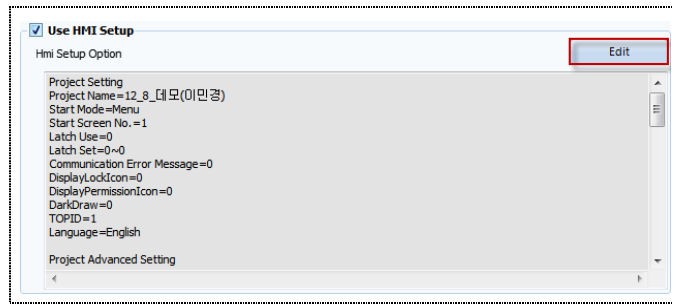


[Fig. Use N:1 input lock]

| N:1 input lock property | Description |
|-------------------------|------------------------------------|
| Interlock address [F] | Set the lock address. |
| Interlock time [L] | Set the lock time for the address. |

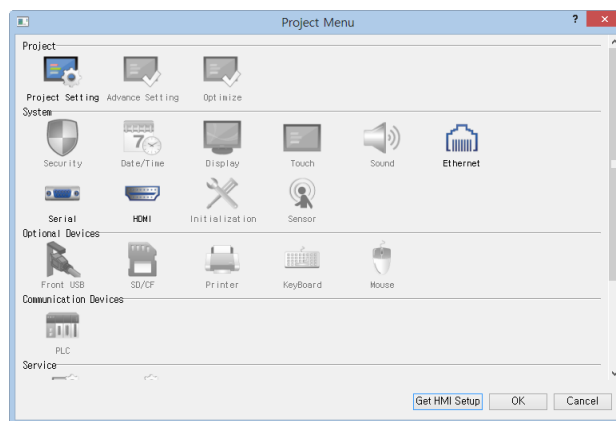
(5) Use HMI setup

The TOPR settings in [Menu Screen]-[Control Panel] are changed.



[Fig. Use HMI setup]

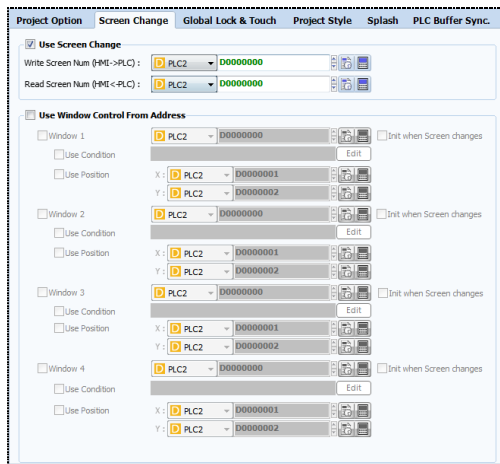
This function can be used to change and apply [Control Panel] functions of the TOPR from the TDS. Click the [Edit] button to bring up the [Control Panel].



[Fig. Project menu screen]

4.9.2 Screen change

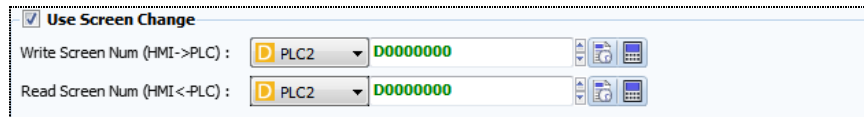
Allows use of PLC and internal memory address values to change screens, instead of using special object functions. Here, window control is also possible.



[Fig. Screen change]

(1) Use screen change

Check the screen change checkbox. Here, the screen change function is implemented using PLC and internal memory address values, instead of implementing the function from the object.



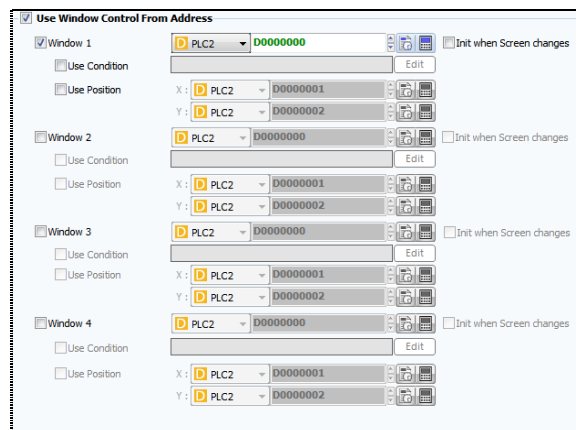
[Fig. Use screen change]

| Screen change property | Description |
|-----------------------------|---|
| Write screen num (HMI->PLC) | Enter the screen number shown on the run screen into the PLC address. |
| Read screen num (HMI->PLC) | When the screen number is entered into the PLC, the run screen transitions to the screen of the number entered. |

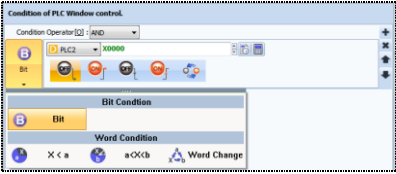
(2) Use window control from address

Check the window control checkbox for the address.

Here, PLC and internal memory address values are used for window screen control, instead of using objects. Also, the maximum number of addresses is 4.

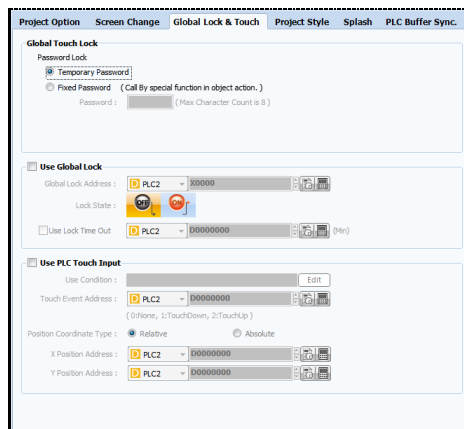


[Fig. Use window control from address]

| Window control property | Description |
|-------------------------|--|
| Window | Set the window control address. (ex, when key input is received at the set address, the window screen for the input value is displayed.) |
| Use condition | Set a condition for the window screen control address. When the [Edit] button is selected, the following image is displayed.  |
| Window coordinates | Use address values to designate the coordinates for display of the window screen. |

4.9.3 Global lock option

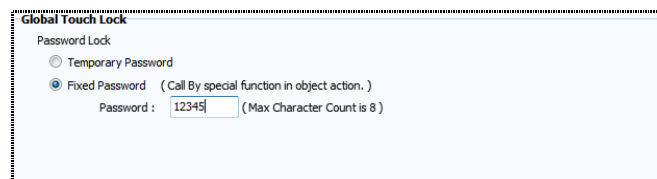
Security setting lock is a lock setting using objects. In global lock option, lock can be enabled for all screens.



[Fig. Global lock option]

(1) Global touch lock

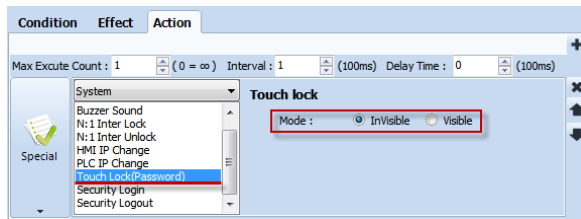
Lock touch actions on the screen.



[Fig. Global touch lock]

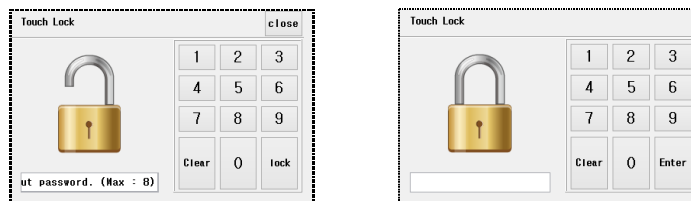
| Global touch lock property | Description |
|----------------------------|---------------------------------------|
| Temporary password | Set a password each time lock is set. |
| Fixed password | Set a fixed password. |

To use global touch, [Object]-[Effects and Actions]-[Special Address]-[Touch Lock] must be used.



[Fig. Using global touch lock 1]

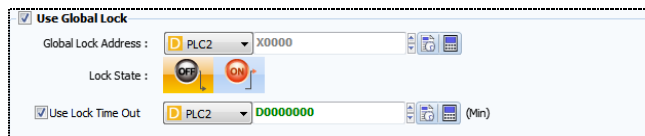
As shown in the figure above, [Touch Lock] is divided into [Visible] and [Invisible] modes. In [Invisible mode], the lock window can be hidden. In [Visible mode], the lock window cannot be hidden.



[Fig. Using global touch lock 2]

(2) Use global lock

Enable global lock for the entire TOPR.

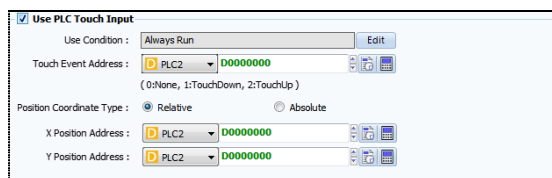


[Fig. Using global lock]

| Global lock property | Description |
|----------------------|---|
| Global lock address | Set the lock address, and set the ON/OFF condition. |
| Use lock time out | Set an address with a time out registered. |

(3) Use PLC touch input

TOPR touch is not input directly by the user. Instead, the touch is entered from the PLC.



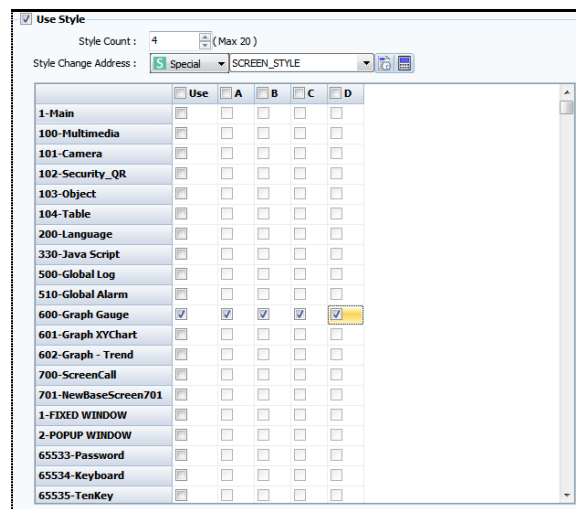
[Fig. Use PLC touch input]

| PLC touch input property | Description |
|--------------------------|--|
| Use condition | Set the conditions when PLC touch input occurs. |
| Touch event address | Set the PLC touch address. The events according to PLC touch address input values are set as follows. |

| | |
|--------------------------|---|
| | [0]: None, [1]: Touch-down, [2]: Touch-up |
| Position coordinate type | Select the coordinate type. [Relative]: The coordinates are based on the screen, instead of the TOPR resolution. (ex. the coordinates are set based on the size of the window screen.) [Absolute]: These coordinates are based on the TOPR resolution. |
| X position address | Set the address to enter the X coordinate value. |
| Y position address | Set the address to enter the Y coordinate value. |

4.9.4 Project style

Unlike frame and master screens, project styles allow various styles to be applied to individual screens in batch. Up to 20 styles can be applied to a single screen.

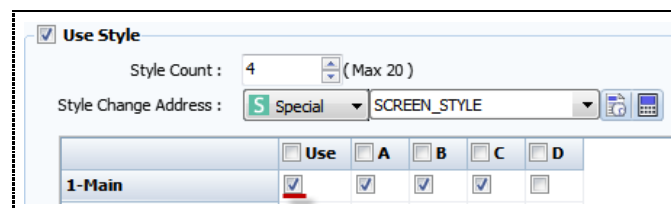


[Fig. Project style]

| Project style property | Description |
|------------------------|---|
| Style count | Set the number of styles. Project styles increase in alphabetical order. |
| Style change address | Select the project style change address. Apply using [Special Address]-[SCREEN_STYLE]. |

(1) Style registration method

Check [Use] for the screen to apply the style to. Then activate by selecting the style number.



[Fig. Style registration method 1]

Styles applied in project options can be registered in the base screen edit window as well, as shown in the figure below.

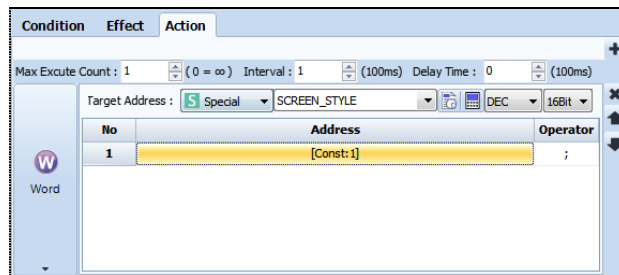


[Fig. Style registration method 2]

When a registered style is clicked in the edit window for the [Base Screen], the images applied to the base screen turn transparent, as shown in the figure above. Using the desired objects and shapes, new styles can be applied to the same screen.

(2) How to use styles

To change a registered style, use the previous [Style change address]. For example, if 1 is entered as this value using [Object]-[Effects and Actions]-[Special Address]-[SCREEN_STYLE], project style A is activated when touch occurs.

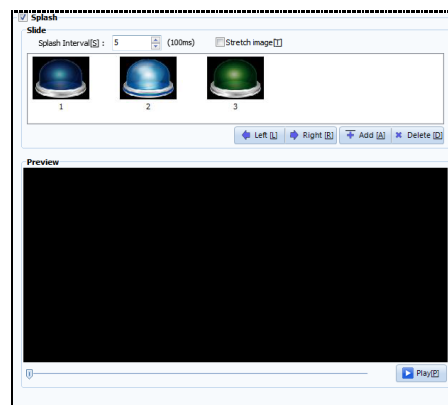


[Fig. How to use styles]

Style values are [0]-Default, [1]-A, [2]-B

4.9.5 Splash

In this effect, a load screen is displayed as TOPR is turned on. Images can be combined and displayed like an animation.



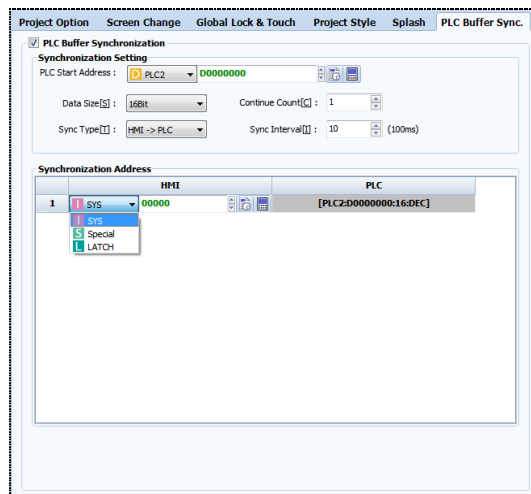
[Fig. Splash]

| Splash property | Description |
|-----------------|--|
| Splash | Enable to use splash. |
| Splash interval | Set the interval for repetition of images. |

| Splash button | Description |
|---------------|--|
| Left [L] | Move the selected image to the left. |
| Right [R] | Move the selected image to the right. |
| Add [A] | Add an image. [User Library]: This is the library provided by TDS. [Global Library]: This is the library registered with global images. [Local Image]: Find and register images on the user PC. |
| Delete [D] | Delete the selected image. |
| Play [P] | Play the image added to the preview. |

4.9.6 PLC buffer sync

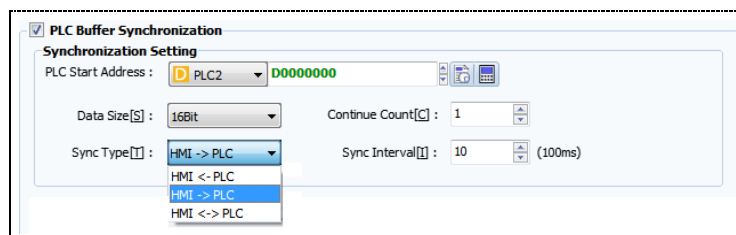
Syncing the TOPR internal address and the PLC address is a function that is used to automatically apply changes values to each other. By setting properties, the conditions for sync can be set.



[Fig. PLC buffer sync]

(1) Sync setting

Set the PLC target address for syncing, and properties

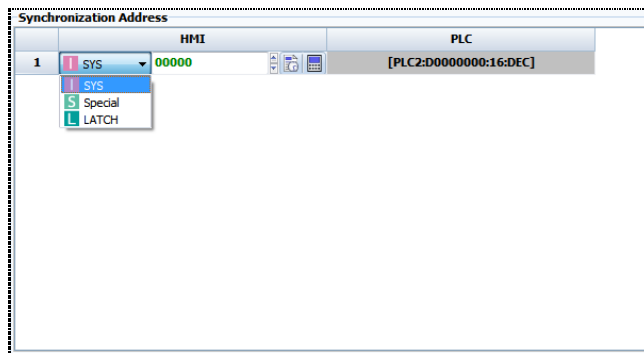


[Fig. Sync setting]

| Properties | Description |
|-----------------------|---|
| PLC start address | Set the PLC sync start address. |
| Data size [S] | Set the data size for the sync address. |
| Consecutive count [C] | Set the number of consecutive addresses from the PLC sync start address. Select between [16Bit] and [32Bit]. |
| Sync type [T] | Set the standard for sync. [HMI<-PLC]: Sync occurs when the value of the PLC target address changes. [HMI->PLC]: Sync occurs when the value of the HMI target address changes. [HMI<->PLC]: Sync occurs when the value of either the PLC or HMI target address changes. (Ex. When [HMI<-PLC] is set and the value of the PLC target address is changed, the HMI target address value is automatically changed as well.) |
| Sync interval [I] | Set the interval at which sync occurs. |

(2) Sync address

Set the sync address for HMI. The sync address can be set to [SYS], [Special], or [LATCH].

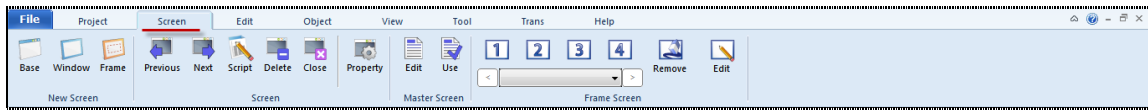


[Fig. Sync address]

CHAPTER 5 Screen Menu

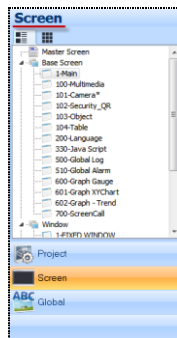
CHAPTER 5 - Screen Menu

This menu is used to manage screens.



[Fig. Screen menu]

There are four types of screen: master, base, window, and frame. All screens can be viewed at once in the list in the [Project Management] window.

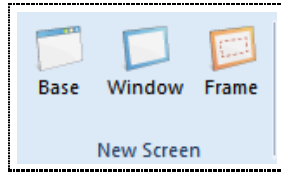


[Fig. Project Management screen]

| Screen | Description |
|---------------|---|
| Base screen | This is the main screen that is shown when a project has been transferred to TOPR. Therefore, the size of the base screen is the same as the resolution of the TOPR model. When screens are created, screen number 1 is generated first. A maximum of 65535 base screens with numbers up to 65535 can be created. |
| Window screen | Window screens can pop up over the base screen and disappear when not needed, depending on settings. When screens are created, screen number 1 is generated first. A maximum of 65535 Window screens with numbers up to 65535 can be created. (Note) Screen numbers from 65400 upward are designated for windows of particular functions (tenkey, etc.) which are automatically created. These should be avoided by users. |
| Master screen | A page call function can be implemented on this type of screen. Background images that apply generally to all screens, or repetitively used functions can be implemented on a master screen, then called to the base screen. When 'Use' is checked in base screen properties, the master screen is registered to the base screen like a background image. Only 1 master screen can be composed. By reusing common functions, memory and editing efficiency can be enhanced. |
| Frame screen | The screen call function can be implemented from this type of screen. Up to 65535 frame screens can be generated. In a frame screen, the content of areas that can be used commonly is organized into a frame. This frame can be reused in multiple base screens. Using frame screens, repetitive work can be minimized, and the size of the overall project can be reduced as well. The maximum number of frame screens that can be registered to a single base screen is 4. |

5.1 Screen creation menu

Create base screens, window screens, and frame screens.



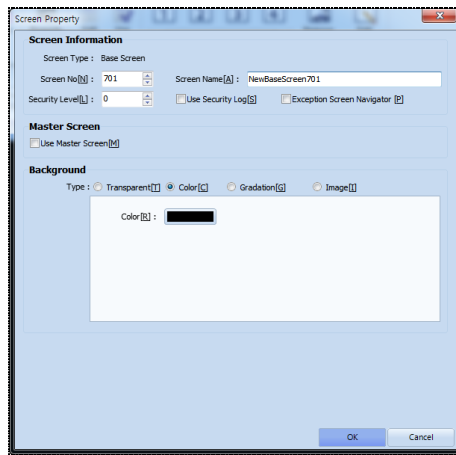
[Fig. Screen creation menu]

Select [Base] to create a base screen, [Window] to create a window screen, and [Frame] to create a frame screen. There is only 1 master screen, which is already created when the project is created.

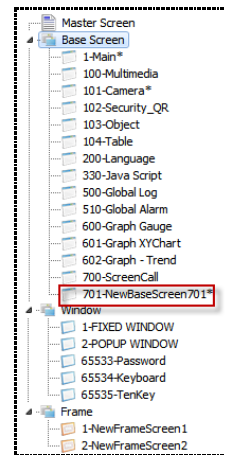
5.1.1 Base screen creation

Create a new base screen. Press the [Base] button to bring up the [Screen properties] screen for the new base screen.

The number of the newly created screen is automatically designated as the number following the last number for each screen type. For example, if a new base screen is created when 700 is the number of the last base screen, 701 is designated as the number when the [Screen properties] screen appears, as shown in the image below. In the [Screen Properties] screen, set the screen number/screen name, etc., and press the [OK] button to create the new screen.

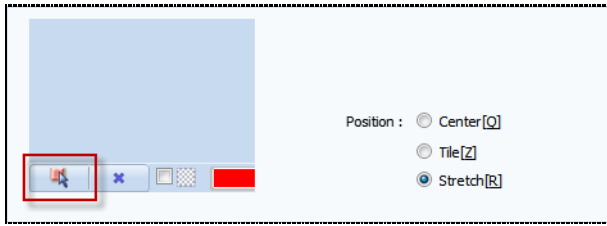


[Fig. Base screen properties]



[Fig. Create new base screen]

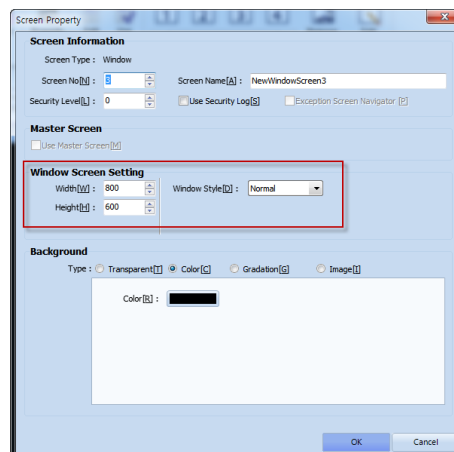
| Properties | Description |
|---------------|---|
| Screen type | Displays the screen type. There are 4 screen types : Master screen, Base screen, Window screen, and Frame screen. |
| Screen number | Up to 65535 base/window/frame screens can be created, and screen numbers can be designated from 1 to 65535. In the same type of screen, redundant screen numbers cannot be set. |
| Screen name | Enter the name of the screen. |

| | |
|------------------|--|
| Security level | <p>This can only be used if the [Security] function is enabled in the [Project] menu. If a level other than 0 is set, the corresponding password is set for the screen. When transitioning to that screen, the screen can be viewed only after logging in from the password screen.</p> <p>In [Project]-[Security], passwords can be set for up to 16 levels. The higher the level number, the higher the level. When moving to a screen with a higher level, the corresponding password must be entered. When moving to a screen with a lower level, no password is required.</p> |
| Use security log | When a security level is set, a user log is recorded when the screen is accessed. |
| Master screen | When [Use master screen] is checked, all objects registered on the master screen are called and registered to the current base screen. |
| Background | <p>Set the background of the screen.</p> <p>(1) Transparent means there is no background color. By default, the background is black in TOPR.</p> <p>(2) The color is set to the selected color.</p> <p>(3) Gradation adds a directional gradation effect that transitions between two background colors.</p> <p>(4) Image: An image file is loaded and registered as the background. JPG, BMP, PNG, and SVG image files can be loaded. The image can be centered, tiled, or stretched.</p>  |

5.1.2 Window screen creation

Create a new window screen. The method for creation is the same as for base screens. Therefore, only the differences will be explained.

Press the [Window] button to bring up the [Screen properties] screen for the new window screen. In the [Screen Properties] screen, set the screen number/screen name, etc., and press the [OK] button to create the new screen.



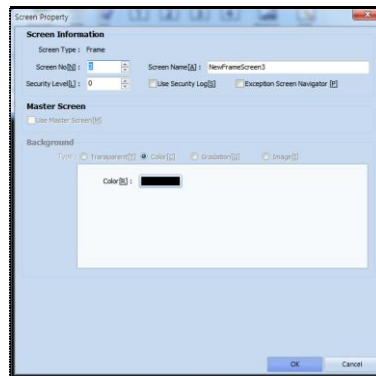
[Fig. Window screen properties]

| Properties | | Description |
|-----------------------------|--------------|--|
| Master screen | | The master screen can only be called from a base screen. Therefore, this setting is disabled. |
| Window screen Setting | Width | Set the width of the window screen. |
| | Height | Set the height of the window screen. |
| | Window style | Window style options are Normal and Always Top. Normal is used for normal mode, while Always Top is used to always display the window on top, even when overlapping with another window. |

5.1.3 Frame screen creation

Create a new frame screen. The method for creation is the same as for base screens. Therefore, only the differences will be explained.

Press the [Frame] button to bring up the [Screen properties] screen for the new frame screen. In the [Screen Properties] screen, set the screen number/screen name, etc., and press the [OK] button to create the new screen.

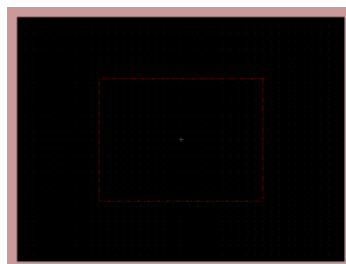


[Fig. Frame screen properties]

| Properties | Description |
|---------------|---|
| Master screen | The master screen can only be called from a base screen. Therefore, this setting is disabled. |
| Background | A frame screen is a screen where the whole screen or part of the screen area is called to and registered in a base screen. Therefore, a background cannot be set. |

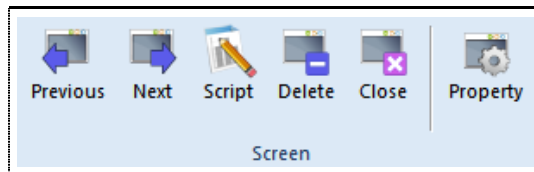
In a created frame screen, a red frame area is registered, as shown in the figure below.

The size and position of this area are freely adjustable. When called to the main screen, only objects within the frame area are called.

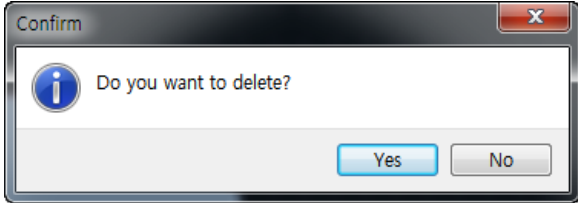


[Fig. New frame screen]

5.2 Screen transition / delete menu



[Fig. Screen management menu]

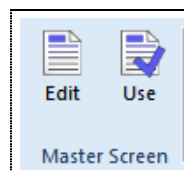
| Menu | Description |
|----------|--|
| Previous | Move from the current base screen, window screen, or frame screen to the screen with the previous number. |
| Next | Move from the current base screen, window screen, or frame screen to the screen with the next number. |
| Script | The script screen is brought up, for script settings on the screen being edited. Scripts can be set for base or window screens. Alternatively, objects registered on base screens/window screens can be set. |
| Delete | Delete the screen being edited. When [Yes] is pressed at the delete confirmation message, the screen is deleted.  |
| lose | Close the screen being edited. |

5.3 Screen properties

When the [Screen properties] menu is selected, the properties screen for the screen being edited is shown.

Screen properties are properties on base screens, window screens, and frame screens. For details, refer to [5.1 Screen creation menu].

5.4 Master screen menu

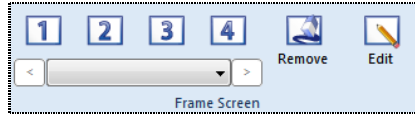


[Fig. Master screen menu]

| Menu | Description |
|------|---|
| Edit | The master screen is opened for editing. |
| Use | The master screen is called and registered to the base screen being edited. |

5.5 Frame screen menu

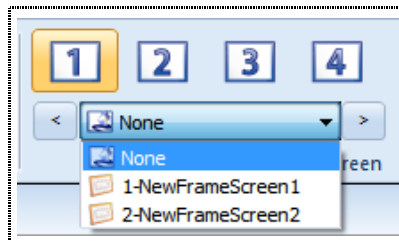
A frame screen is called and registered to a base screen or window screen, or removed.



[Fig. Frame screen menu]

The number of frame screens that can be called to the screen and registered is 4 : 1/2/3/4.

To call and register one frame screen that has been made beforehand, select 1, and select the frame screen to be registered from the combo box below. Up to 4 such screens can be added. The [Remove frame] and [Edit frame] buttons are used.



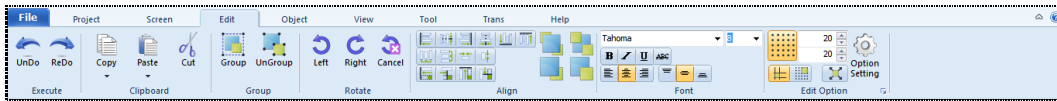
[Fig. Frame selection]

| Menu | Description |
|--------------|--|
| Remove frame | Frame screens registered to base screens are removed when [None] is selected from the combo box, or when the [Remove frame] button is pressed. Here, only the frame screen called to the base screen is removed. The frame screen itself is not deleted. |
| Edit frame | Edit a frame that exists in the selected screen. To edit frames, the frame screens registered to numbers 1/2/3/4 must first be selected. To edit the frame screen set to number 1, press the 1 button. Then press the [Edit frame] button to bring up the corresponding frame screen for editing. |

CHAPTER 6 Edit Menu

CHAPTER 6 - Edit Menu

The edit menu provides general object editing functions such as copy/paste/rotate/align, and edit functions such as edit screen/edit designer options/edit user defined options.



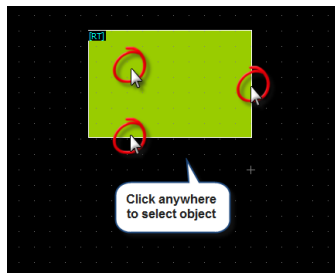
[Fig. Edit menu]

6.1 Object selection

6.1.1 Normal selection

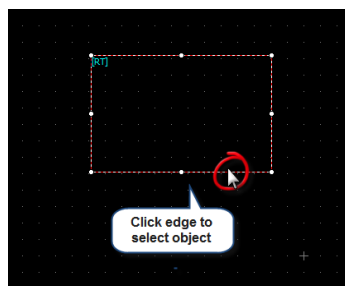
All objects registered on the screen can be selected using the left mouse button.

The method of selecting shapes is different depending on whether fill is used. In the case of objects that are filled, clicking any part of the shape selects the shape.



[Fig. Selecting filled shapes]

If there is no fill property, the border, that is the line forming the border must be selected in order to select.



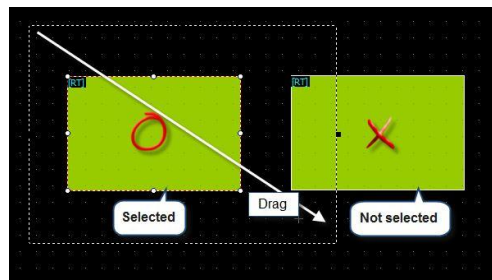
[Fig. Selecting non-filled shapes]

6.1.2 Range (drag) selection of objects

In this method, the dotted rectangular area that is shown when the mouse is dragged in the edit screen is used to select.

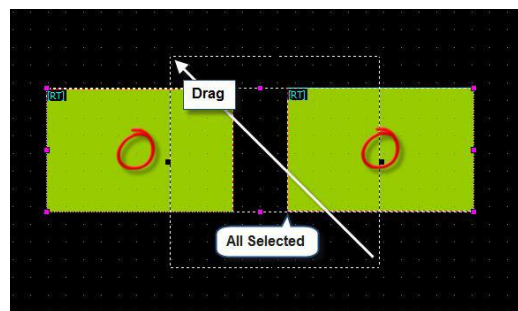
There are two methods of range selection. Using these two methods depending on the editing situation, objects can be selected or deselected conveniently.

1. When dragging the selection area from the left to right, only objects that are fully included within the area are selected.



[Fig. Select only objects that are fully included]

2. When dragging the selection area from the left to right, all objects that overlap with the selection area are selected.

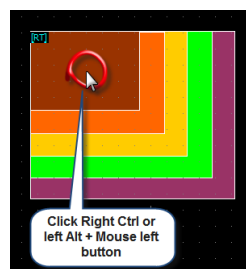


[Fig. Select objects that overlap partially with the selection area]

6.1.3 Selecting partially overlapping objects

When two or more objects are overlapping, it may be difficult to select the object desired.

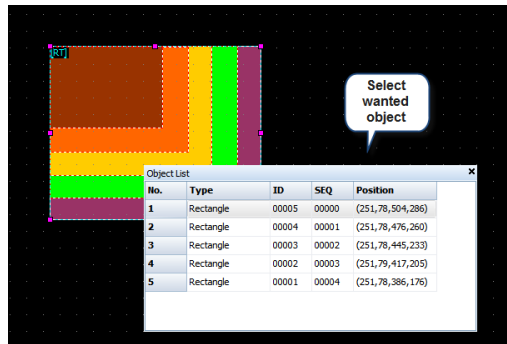
[Fig. Selecting overlapping shapes] shows a situation where multiple shapes are overlapping. In this case, left click the mouse with the right [Ctrl] button on the key board pressed. Each time the mouse is clicked, the shapes in the area are selected in sequence.



[Fig. Selecting overlapping shapes]

6.1.4 Selecting overlapping objects using the POP-UP menu

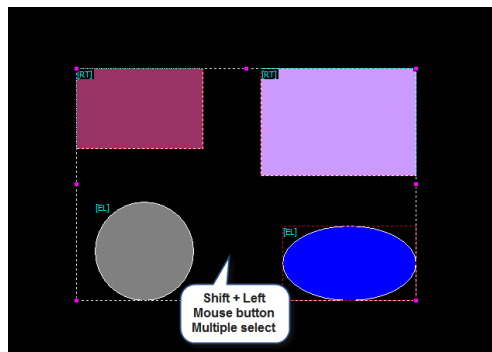
When objects are overlapping, to select only the desired objects, a pop-up menu may be used. Using range selection, Select all the objects in the location where the desired object is located, and double click. A pop-up menu showing the list of selected items is shown, as seen in [Fig. Pop-up menu selection]. Select the objects in the list to conveniently select the desired objects.



[Fig. Pop-up menu selection]

6.1.5 Multiple select and deselect

With an object selected, select another object with the [Shift] key on the keyboard pressed to select or deselect additional objects.

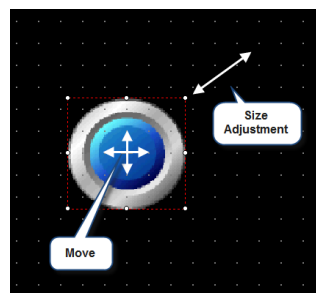


[Fig. Multiple select]

6.2 Move and resize

6.2.1 Moving and resizing using the mouse

When an object is selected, a tracker is shown as seen in [Fig. Tracker and mouse cursor]. The tracker has 8 directions. The tracker in the direction desired by the user can be clicked with the left mouse button and dragged to resize. If the mouse cursor is above a filled object or above the border of a non-filled object, the cursor turns into a cross-shaped arrow. By dragging with the left mouse button, the object can be moved to the desired location.



[Fig. Tracker and mouse cursor]

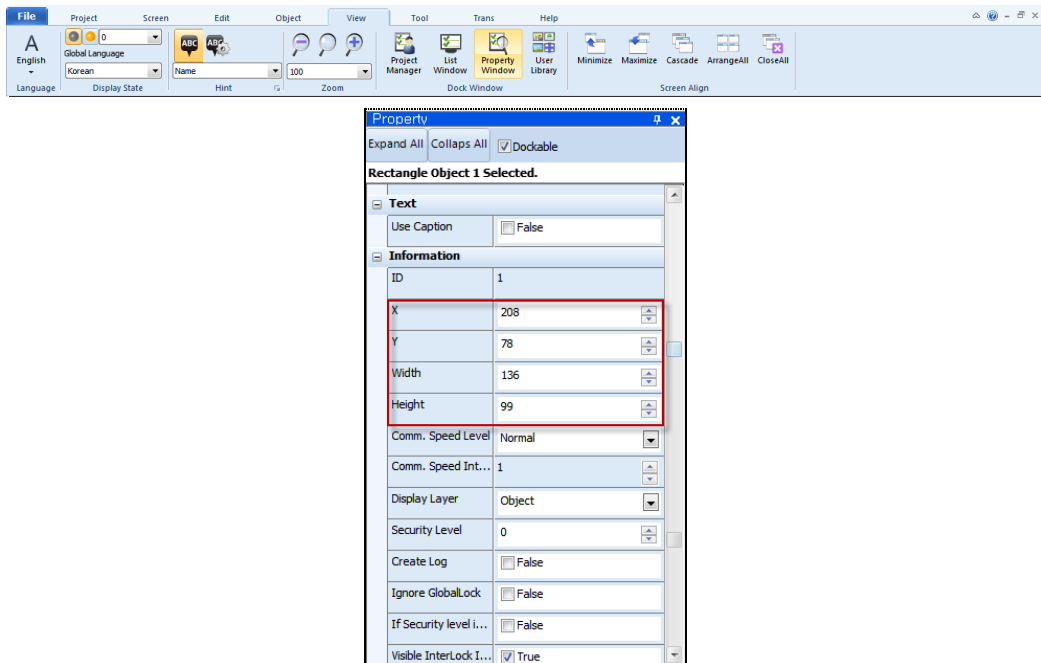
6.2.2 Moving and resizing using the keyboard

With an object selected, the direction keys on the keyboard can be used to move the shape in pixel units. Pressing the space bar changes the move units from pixels to the grid units shown on the screen. The move unit is changed each time the space bar is pressed.

By pressing the direction keys with the Shift button of the keyboard pressed, the object can be resized. Resizing is only possible to the right along the X axis, and down along the Y axis.

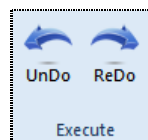
6.2.3 Moving and resizing in the properties page

By changing the coordinates and size info in the [Properties] page of tag properties, the location and size can be changed. The left and top trackers shown on the tag are the standards for the coordinates. The size is indicated in pixels.



[Fig. Moving and resizing in the properties window]

6.3 Run menu



[Fig. Execute menu]

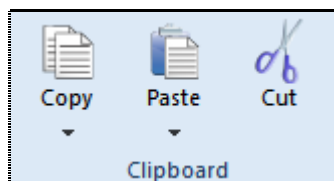
6.3.1 Undo (Ctrl + Z)

Actions such as object creation, moves, copies, pastes, and deletions performed on project screens can be canceled in order. Up to 50-undo can be performed on each screen. Select [Edit]-[Undo] from the menu.

6.3.2 Redo (Ctrl + R)

An [Undo] performed in the project edit screen can be reversed in sequence to the immediately previous status. Up to 50-redo can be performed on each screen. Select [Edit]-[Redo] from the menu.

6.4 Clipboard menu



[Fig. Clipboard menu]

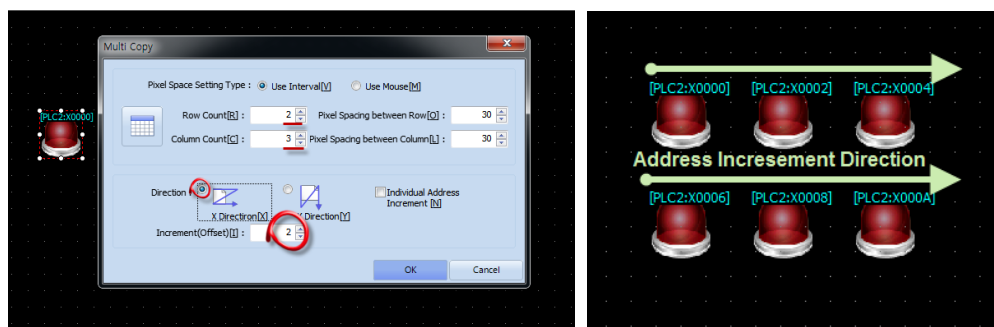
6.4.1 Copy

(1) Copy (Ctrl + C)

Use the copy function to create copies of objects. Select an object to copy and select [Edit]-[Copy] in the menu, or right-click the mouse. In the pop-up menu that appears, select [Copy]. When a copy is performed, the selected object is saved in the WINDOWS clipboard until the next copy or cut is performed.

(2) Multi copy (Ctrl + T)

This function can be used for convenient copying of one or many objects. In the case of tags, the addresses used for tags can be increased automatically, depending on options. Select a tag and click the [Edit]-[Copy]-[Multi copy] icon [Multi copy] is shown, as seen in [Fig. Multi copy].



[Fig. Multi copy]

| Multi copy | Description |
|----------------------------------|--|
| Pixel space setting type | Decide whether to set the space between objects using pixels or by using the mouse. |
| Row count/Column count | Copies are made according to the values for row count (vertical), and column count (horizontal). |
| Pixel spacing between row/column | Set the distance among objects created in the row (vertical) and column (horizontal) directions, in pixels |

| | |
|--|--|
| Copy direction | Set the copy direction. (1) X (horizontal) first: Set the copy direction as left to right, horizontal first. (2) Y (vertical) first: Set the copy direction as top to bottom, vertical first. |
| Address increment Individual address increment | When copying two or more objects, the address increments for each can be set individually. |
| Address increment | The addresses of the copied items automatically increase according to the value set in [Increment], beginning from the station of the address set for the original. e.g.) If the address of the original item is [0000.00], with 6 multi-copy items, and an increment of 2, the addresses of the created items become [0000.00, 0000.02, 0000.04, 0000.06, 0000.08, 0000.10]. |

6.4.2 Paste

(1) Paste (Ctrl + V)

This function is used to insert objects saved to the clipboard by copying or cutting in the position desired by the user.

Select [Edit]-[Paste] in the menu, or select [Paste] from the pop-up menu that appears when the right mouse button is clicked. Then decide the location to paste to, using the left mouse button. If paste is performed without performing a cut or copy beforehand, nothing happens.

(2) Paste (same location) (Shift + Ctrl + V)

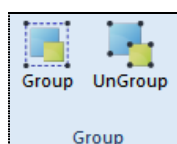
[Paste (same location)] copies an object along with its object. The object is pasted in the same location on a different screen. When Paste (same location) is used on the same screen, overlapping objects are created. In the screen to paste to, select [Edit]-[Paste (same location)], or select [Paste (same location)] in the pop-up menu that is displayed when the right mouse button is clicked.

6.4.3 Cut (Ctrl + X)

Cutting is the same function as performing copy and delete sequentially.

Select an object and select [Edit]-[Cut] in the menu, click the toolbar, or right-click the mouse. In the pop-up menu that appears, select [Cut]. When a cut is performed, the selected object is saved in the WINDOWS clipboard.

6.5 Group Menu



[Fig. Group]

6.5.1 Group (Ctrl + G)

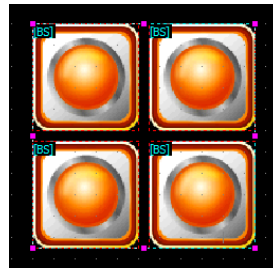
Multiple objects can be designated as a group for editing. Select two or more objects, and select [Edit]-[Group] in the menu, click the tool bar, or right click the mouse. In the pop-up menu that appears, select [Group] to group the selected items. The trackers for grouped objects are shown in yellow.



[Fig. Grouped]

6.5.2 Ungroup (Ctrl + G)

Ungroup grouped objects. Select [Edit]-[Ungroup] in the menu, or right click the mouse. In the pop-up menu that appears, select [Ungroup] to ungroup the group.



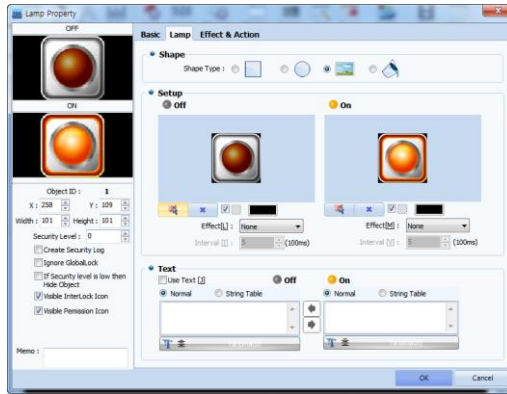
[Fig. Group has been ungrouped]

6.5.3 Editing objects in groups

Properties such as color or address can be changed for grouped objects without ungrouping. Select a group and right click the mouse. Select [View object list] in the popup menu. A list of objects included in the group appears, as shown in [Fig. Object list]. Double click the object to change properties for in the list. A property editing window can be brought up as shown in [Fig. Object properties].

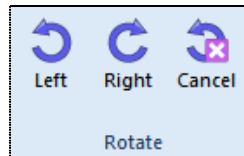


[Fig. Object list]



[Fig. Object properties]

6.6 Rotate Menu



[Fig. Rotate]

This function rotates objects to the right or to the left by 90 degrees. Select the objects to align, and select the desired rotation direction in [Edit]-[Rotate] of the menu, or right-click the mouse and select [Rotate] in the pop-up menu.

6.6.1 Rotate left (Ctrl + ,)

The selected object is rotated left by 90°



[Fig. Rotate left]

6.6.2 Rotate right (Ctrl + .)

The selected object is rotated right by 90°



[Fig. Rotate right]

6.6.3 Cancel rotate (Ctrl + /)

A rotated object is reverted to the original state.

6.7 Align Menu



[Fig. Align]

Top Design Studio provides various align functions. Alignment allows for simpler and more accurate editing. Select the objects to align, and select the desired rotation direction in [Edit]-[Rotate] of the menu, or right-click the mouse and select [Rotate] in the pop-up menu.

6.7.1 Align top/bottom/right/left/center



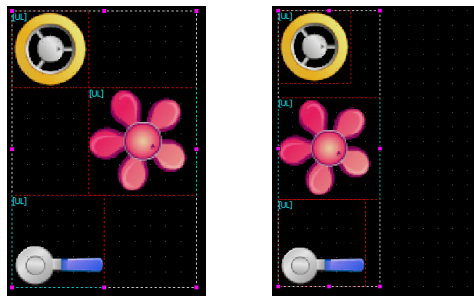
[Fig. Align top/bottom/right/left/center]

The location of objects is changed by aligning along reference points.

Icons are aligned according to left/horizontal middle/right/vertical center/bottom/top reference points, in that order.

(1) Align left (Shift + Ctrl + ←)

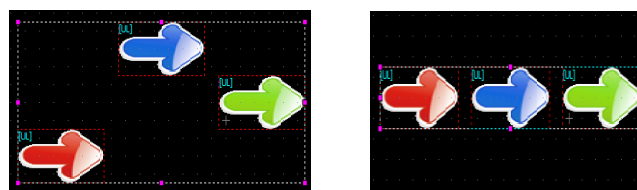
The selected objects are aligned according to the object located farthest to the left.



[Fig. Align to left]

(2) Align horizontal middle (Shift + Ctrl + M)

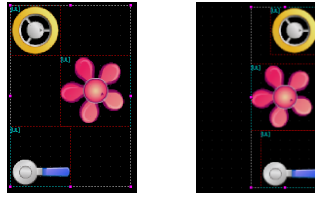
The selected objects are aligned along the middle X axis.



[Fig. Align to middle]

(3) Align right (Shift + Ctrl + →)

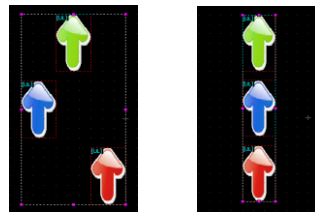
The selected objects are aligned according to the object located farthest to the right.



[Fig. Align to right]

(4) Align vertical center (Shift + Ctrl + C)

The selected objects are aligned along the central Y axis.



[Fig. Align to center]

(5) Align bottom (Shift + Ctrl + ↓)

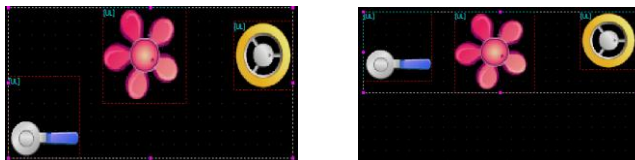
The selected objects are aligned according to the object located farthest to the bottom.



[Fig. Align to bottom]

(6) Align top (Shift + Ctrl + ↑)

The selected objects are aligned according to the object located farthest to the top.



[Fig. Align to top]

6.7.2 Space / Align to center of screen

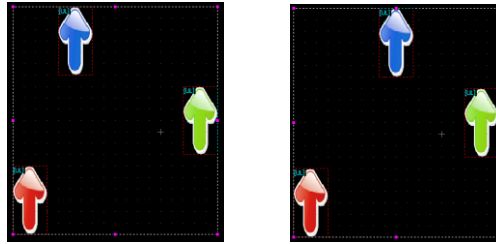


[Fig. Space / Align to center of screen]

Objects are spaced equally, or moved to the center of the screen.

(1) Same horizontal space

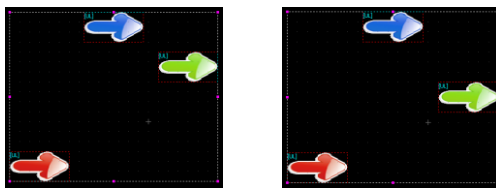
Moves the selected objects to make their horizontal spacing equal.



[Fig. Same horizontal space]

(2) Same vertical space

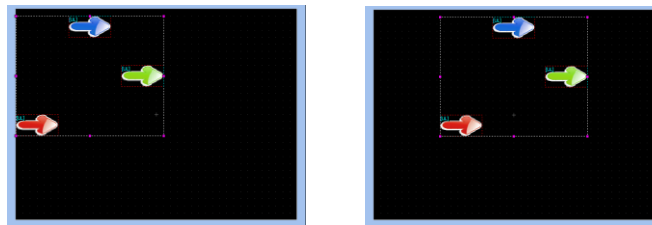
The selected objects are moved and spaced equally vertically.



[Fig. Same vertical space]

(3) Move to horizontal middle of screen

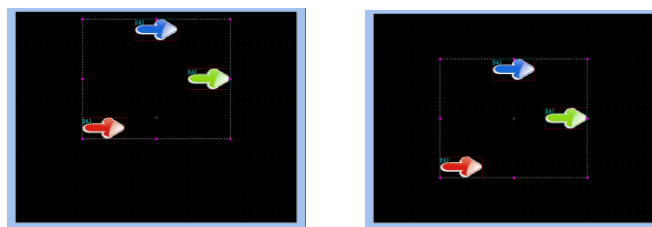
The selected objects are centered horizontally in the edit screen.



[Fig. Move to horizontal middle of screen]

(4) Move to vertical center of screen

The selected objects are centered vertically in the edit screen.



[Fig. Move to vertical center of screen]

6.7.3 Match size

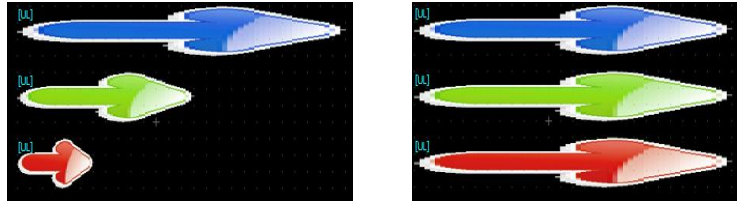
The vertical/horizontal sizes of the selected objects are changed to match one object.



[Fig. Match size]

(1) Match to widest width

The selected objects are resized to the width of the widest item.



[Fig. Match to widest width]

(2) Match to narrowest width

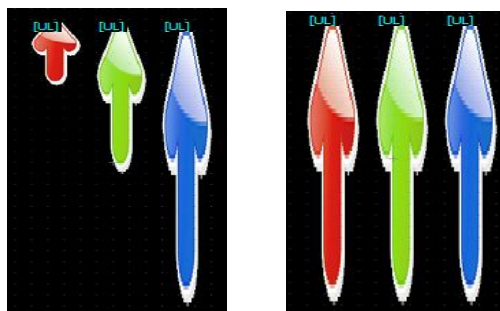
The selected objects are resized to the width of the smallest item.



[Fig. Match to narrowest width]

(3) Match to highest height

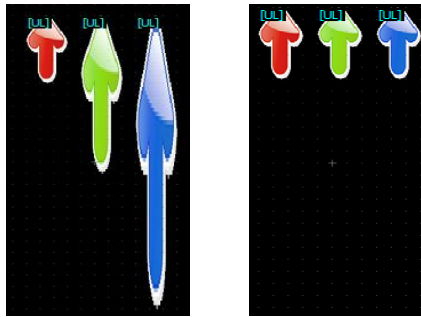
The selected objects are resized to the height of the highest item.



[Fig. Match to highest height]

(4) Match to least height

The selected objects are resized to the height of the smallest item.



[Fig. Match to least height]

6.7.4 Move forward/back

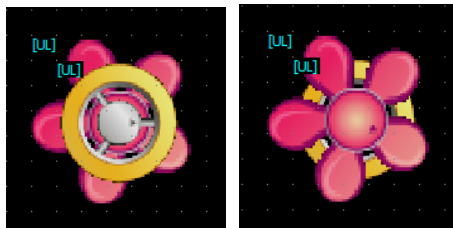
With overlapping objects, the selected object is moved forward or back.



[Fig. Move forward/back]

(1) Bring forward (Home)

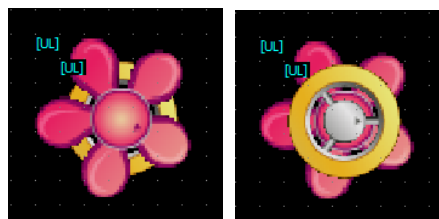
If shapes are overlapping, the selected shape is drawn one step forward.



[Fig. Bring forward]

(2) Sent backward (End)

If shapes are overlapping, the selected shape is drawn one step behind.



[Fig. Send backward]

(3) Send to front (Ctrl + Home)

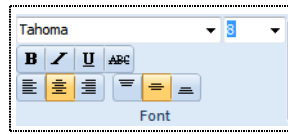
The action is the same as [Bring forward], but when multiple items are overlapping, the selected item is brought to the very front.

(4) Send to back (Ctrl + End)

The action is the same as [Send backward], but when multiple items are overlapping, the selected item

is sent to the very back.

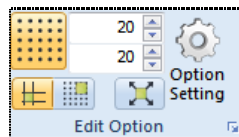
6.8 Font menu



[Fig. Font]

| Font | Description |
|------|--|
| | The font for text is changed. Top Design Studio provides a wide variety of some 400 fonts. |
| | Set the text size. |
| | Bold/italic/underline/cancel line effects can be applied to text. |
| | When multiple line has been entered, select left, center, or right alignment. |
| | When text is entered inside a shape or image the position of the text can be aligned to the top, center or bottom. |

6.9 Edit options menu

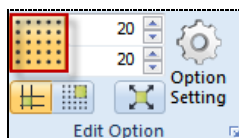


[Fig. Edit options]

6.9.1 Grid options

(1) Use grid settings

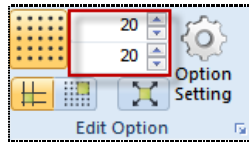
Causes the grid to be shown or not shown on the screen. A grid comprises points that are equally spread across the screen to facilitate placing of objects.



[Fig. Show grid]

(2) Grid spacing

By adjusting grid spacing, more precise or approximate design is possible. The horizontal and vertical grid spacing can both be adjusted. In [Fig. Grid spacing], the top adjusts the vertical grid spacing, while the bottom adjusts the horizontal grid spacing.



[Fig. Grid spacing]

6.9.2 Snap type setting

The dictionary definition of snap is 'to make a clicking sound.' The snap function, which is also known as the magnet function, provides a function where shapes and tags stick to a certain reference line when drawing, moving, or resizing.

(1) Grid snap

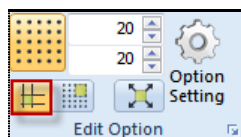
In grid snap, objects are moved and resized according to the grid when the show grid option of the edit screen is used. When the mouse is used, the mouse pointer moves not by pixels but according to the grid spaces. When the keyboard is used, each time a direction key is pressed, the cursor moves along the grid.



[Fig. Grid snap]

(2) Object snap

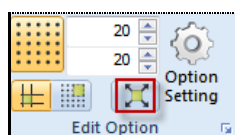
While in grid snap, the snap function is provided along the preset grid, in object snap, the snap function is provided along the left or top, etc., of an object already registered in the screen by the user. Various snap-related options are provided in [Edit]-[Option settings]-[Screen edit options] of the menu. Object snap options can be set to show a line at the point where snap occurs.



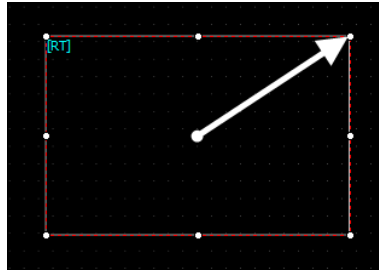
[Fig. Object snap]

6.9.3 Draw out from center option

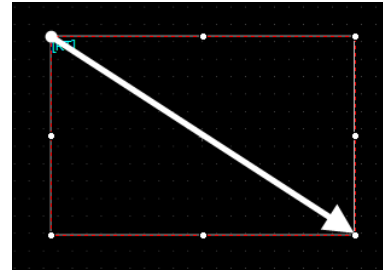
When an object is drawn, the point selected first becomes the center, and the object is drawn outward. If this function is not selected, the first point becomes a corner of the object.



[Fig. Drawing a base screen]



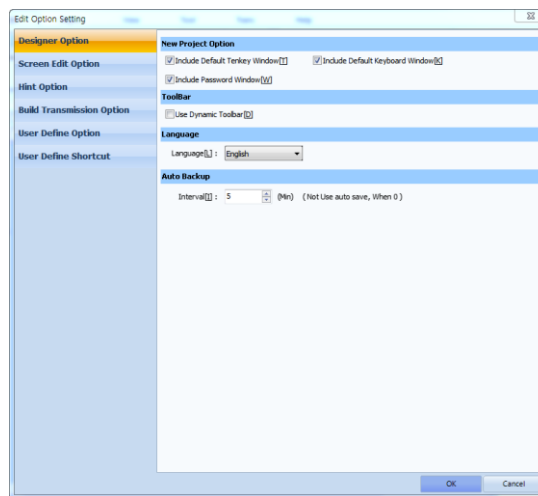
[Fig. Draw out enabled]



[Fig. Draw out disabled]

6.9.4 Option settings

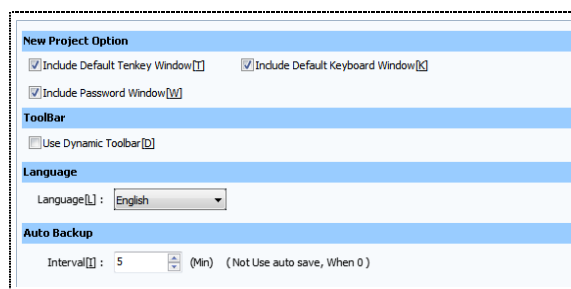
Option setting provides options for modifying the TDS environment to suit the user. Designer, Screen Edit, Hint, Build Transmission, and User Define options are provided.



[Fig. Option settings]

(1) Designer option

These are settings relating to project options, toolbars, languages, and backup for TOP Design Studio.



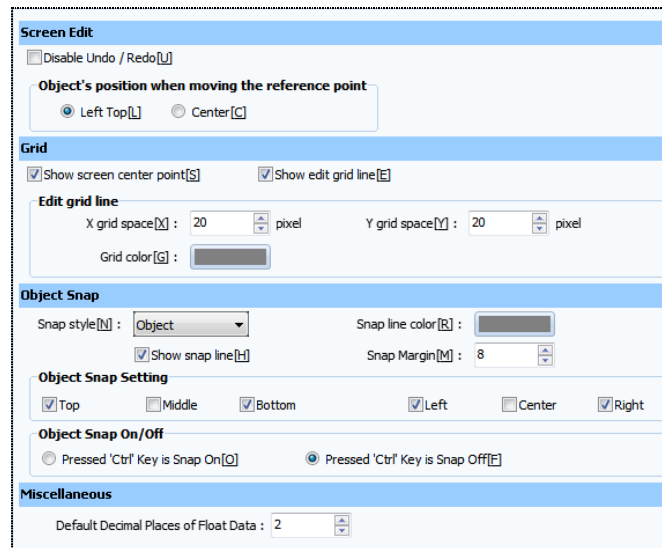
[Fig. Designer option]

| Menu | | Description |
|--------------------|---------------------------------|---|
| New project Option | Include default ten-key window | A ten-key window automatically created when a new project is created. |
| | Include default keyboard window | A keyboard window is automatically created when a new project is created. |

| | | |
|------------------|---------------------|--|
| Toolbar | Use dynamic toolbar | When the screen background is clicked while using a different menu, the object menu is brought up. When an object is selected, the edit menu is automatically brought up. The object menu and edit menu, which are the most frequently used, can be used frequently. |
| Language | Language | Top Design Studio provides two languages : Korean and English. |
| Automatic Backup | Cycle | Top Design Studio provides an automatic backup feature to protect files written by users. The cycle can be set by the user in minutes. When this is set to 0, the automatic backup feature is disabled. |

(2) Screen edit option

Set options such as grid and snap for the edit screen.



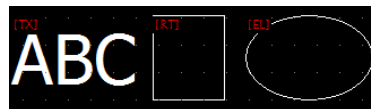
[Fig. Screen edit options]

| Menu | | Description |
|-------------|---|---|
| Screen edit | Turn off Undo / Redo | Undo/Redo are turned off |
| | Object's position when moving the reference point | Set the default object position for reference to top left or center. |
| Grid | Show screen center point | The center point of the screen is shown. |
| | Show edit grid line | Grid lines are shown on the screen. This option is identical to the [Show grid] function in [Edit options]. |
| | Edit grid line | This function is identical to [Edit options]-[Grid space]. Grid spacing and grid color can be set. |

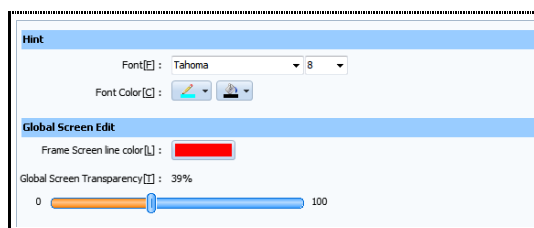
| | | |
|-------------|---------------------|---|
| Object snap | Snap style | This function is identical to [Edit options]-[Snap Grid/Object]. Object movement can be set to snap by grid or object. |
| | Show snap line | When snap object is used, snap lines can be used for more precise design. The file needs to be started again after selecting this option. |
| | Snap line color | The color of the snap line can be set. |
| | Snap margin | Set the margin between snaps. |
| | Object snap setting | Use of top, center, bottom, left, middle and right snap lines can be set individually. |
| | Object snap on/off | Object snap on/off can be set using the Ctrl key. |
| Multi copy | Copy count | Set how many copies to perform on each row and column. |
| | Space | Set the space between the objects to be copied, in pixels. |
| | Address increment | Set what kind of interval the addresses of the objects to be copied will increase by. |
| | Copy direction | Select 'Row' to copy in the vertical direction. Select 'Column' to copy horizontally. |

(3) Hint option

Hints are text that indicate that type of object, and are located in the top left corner of objects.



[Fig. Hints]

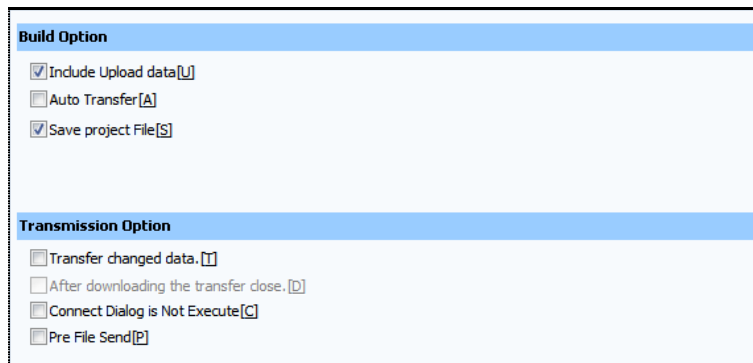


[Fig. Hint options]

| Menu | | Description |
|--------------------|-----------------------------|---|
| Hint | Font | Set the font and size of hints. |
| | Font color | Set the desired hint color. |
| Global screen edit | Frame screen line color | Set the line color for the frame screen to be used. |
| | General screen transparency | Set the general screen transparency. |

(4) Build and transmission option

Set options for building and transmitting projects to TOPR.



[Fig. Build and transmission option]

| Menu | | Description |
|---------------------|----------------------------------|---|
| Built option | Include upload data | The [Include upload data] option determines whether to include the upload file when transmitting. If the project is transmitted to the touch without checking this option, the project file cannot be uploaded. It is recommended that [Include upload data] is checked for later editing/supplementation of the project. |
| | Auto transfer | Project transfer is performed immediately when the transmitter is run. |
| | Save project file | The project file is saved when building. |
| Transmission option | Transfer changed data | The project file in the touch and the project file to be transmitted are compared, and only changed data is transmitted. If the project has been modified only by a little, the amount of data to be transmitted becomes small. This allows for faster project transmission. |
| | Close transmitter after download | The transmitter is automatically closed after downloading the project file. |
| | Do not run reconnect dialog | The [Connection settings] screen is not brought up when connecting, and the transmission is performed using the previous settings. |
| | Send previous file | The file transmitted previously is sent, without selecting files for transmission. |

(5) User define option

Se the color, image library path, and font desired by the user.

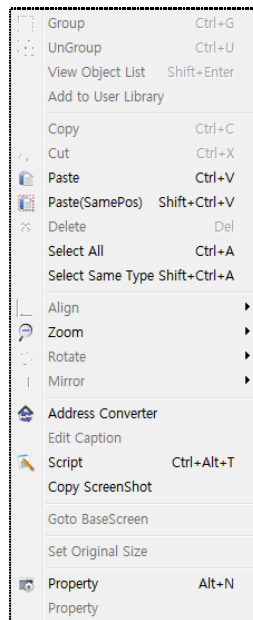


[Fig. User define option]

| Menu | | Description |
|------------------------|--------------------|--|
| User define color | User color palette | 16 colors frequently used by the user can be set manually to facilitate work. |
| Image library path | Path | Set the path of the library used when adding images. If the wrong path has been set, and images cannot be added, use Set Default Path to reset to the default path. |
| Default object Font | Font | Set the type and size of the font that appears when an object is first created. |

6.10 Popup Menu

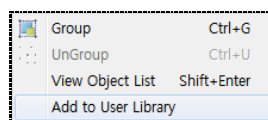
The popup window is a window that appears when a screen or object is right clicked. Edit, tools, frequently used project menu functions, or additional functions that do not exist in the menu are provided.



[Fig. Popup window]

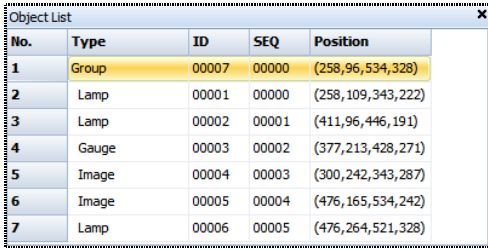
6.10.1 Group / View object list

Using popup windows, grouping, ungrouping, and view object list functions can be used conveniently.



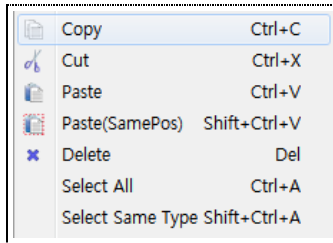
[Fig. Group]

| Popup window | Description |
|--------------|--|
| Group | Group the selected objects. See [6.5.1 Grouping] for a detailed explanation on grouping. |
| Ungroup | Ungroup the selected group. See [6.5.2 Ungrouping] for a detailed explanation on ungrouping. |

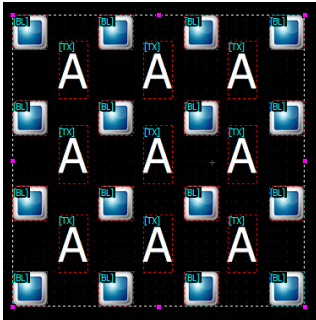
| View object list | <p>Shows a list of currently selected objects. The type, ID, order, and coordinates of the objects are shown. When an item is clicked, the properties screen of the clicked object is brought up.</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>No.</th> <th>Type</th> <th>ID</th> <th>SEQ</th> <th>Position</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Group</td> <td>00007</td> <td>00000</td> <td>(258,96,534,328)</td> </tr> <tr> <td>2</td> <td>Lamp</td> <td>00001</td> <td>00000</td> <td>(258,109,343,222)</td> </tr> <tr> <td>3</td> <td>Lamp</td> <td>00002</td> <td>00001</td> <td>(411,96,446,191)</td> </tr> <tr> <td>4</td> <td>Gauge</td> <td>00003</td> <td>00002</td> <td>(377,213,428,271)</td> </tr> <tr> <td>5</td> <td>Image</td> <td>00004</td> <td>00003</td> <td>(300,242,343,287)</td> </tr> <tr> <td>6</td> <td>Image</td> <td>00005</td> <td>00004</td> <td>(476,165,534,242)</td> </tr> <tr> <td>7</td> <td>Lamp</td> <td>00006</td> <td>00005</td> <td>(476,264,521,328)</td> </tr> </tbody> </table> | No. | Type | ID | SEQ | Position | 1 | Group | 00007 | 00000 | (258,96,534,328) | 2 | Lamp | 00001 | 00000 | (258,109,343,222) | 3 | Lamp | 00002 | 00001 | (411,96,446,191) | 4 | Gauge | 00003 | 00002 | (377,213,428,271) | 5 | Image | 00004 | 00003 | (300,242,343,287) | 6 | Image | 00005 | 00004 | (476,165,534,242) | 7 | Lamp | 00006 | 00005 | (476,264,521,328) |
|------------------|---|-------|-------|-------------------|-----|----------|---|-------|-------|-------|------------------|---|------|-------|-------|-------------------|---|------|-------|-------|------------------|---|-------|-------|-------|-------------------|---|-------|-------|-------|-------------------|---|-------|-------|-------|-------------------|---|------|-------|-------|-------------------|
| No. | Type | ID | SEQ | Position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Group | 00007 | 00000 | (258,96,534,328) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Lamp | 00001 | 00000 | (258,109,343,222) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Lamp | 00002 | 00001 | (411,96,446,191) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Gauge | 00003 | 00002 | (377,213,428,271) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Image | 00004 | 00003 | (300,242,343,287) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Image | 00005 | 00004 | (476,165,534,242) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Lamp | 00006 | 00005 | (476,264,521,328) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

6.10.2 Copy / Paste / Delete / Select

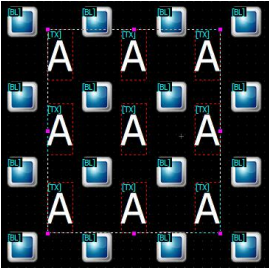
Using the popup window, copy, cut, paste, paste (same location), delete, select all, and select same type can be used.



[Fig. Copy, paste, delete, select]

| Popup window | Description |
|-----------------------|--|
| Copy | Copy the selected object. The copied object is saved in the Windows clipboard. For details on copying, refer to [6.4.1 Copying]. |
| Cut | Cut the selected object. Cutting is the same function as performing copy and delete sequentially. For details, refer to [6.4.5 Cutting]. |
| Paste | An object saved in the clipboard is inserted in the desired location after copying or cutting. For details, refer to [6.4.3 Pasting]. |
| Paste (same location) | An object saved by copying or cutting is pasted in the same location as the original when pasted. For details, refer to [6.4.4 Pasting (same location)]. |
| Delete | Delete the selected object. The function is identical to the Delete key. |
| Select all (Ctrl + A) | <p>Select all objects on the current screen.</p>  |

[Fig. Select all]

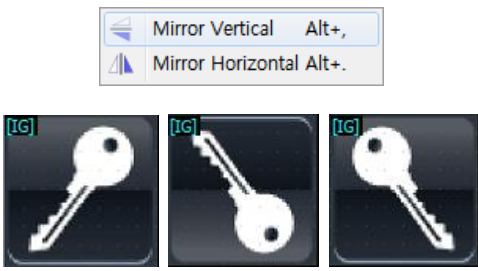
| | |
|------------------|---|
| Select same type | <p>All objects of the same type as the currently selected object are selected.</p>  <p>[Fig. Select same type (text)]</p> |
|------------------|---|

6.10.3 Align / Zoom / Rotate / Mirror

Using the popup window, align, zoom, rotate and mirror functions can be used.

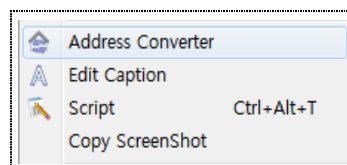


[Fig. Align / Zoom / Rotate / Mirror]

| Menu | Description |
|--------|---|
| Align | Align the selected objects. For details on aligning, refer to [6.7 Align]. |
| Zoom | Set the zoom in/zoom out ratio for project screens. Set between 40% and 300%. For details, refer to [19.4 Zoom in/Zoom out]. |
| Rotate | Rotate the selected object by 90 degrees. For details on rotating, refer to [6.6 Rotate]. |
| Mirror | <p>Mirror the selected object vertically or horizontally. Vertical mirror reverses the object vertically, and horizontal mirror reverses the object horizontally.</p>  <p>[Fig. Original, Vertical mirror, Horizontal mirror]</p> |

6.10.4 Address converter / Edit caption / Script / Copy screenshot

Using the popup window, address converter, edit caption, script, and copy screenshot options can be used.

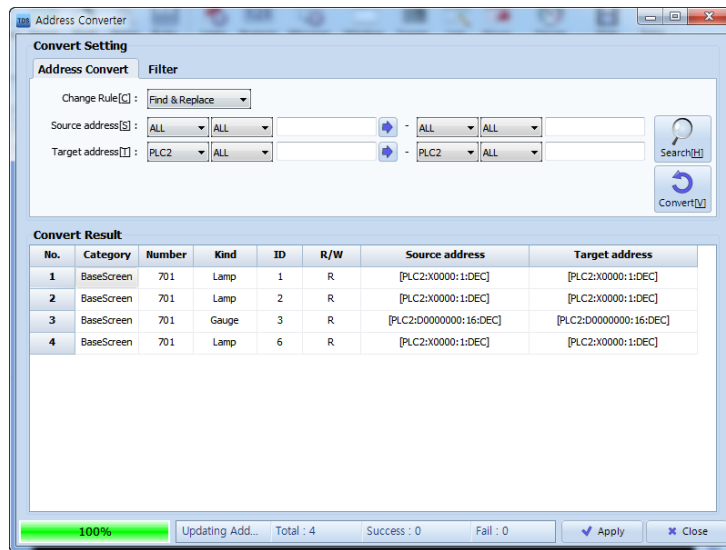


[Fig. Address converter / Edit caption / Script / Copy screenshot]

(1) Address converter

Addresses registered to the project can be searched and converted. Address values within a certain range can be converted in batch, and values can also be changed individually.

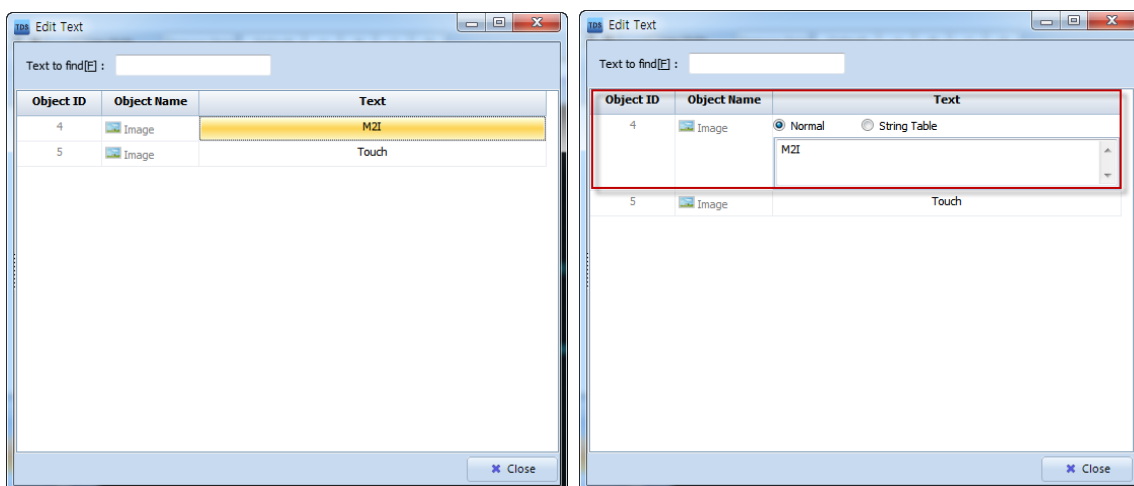
For details on address conversion, refer to [20.3 Address conversion].



[Fig. Address Convert]

(2) Edit caption

This is the edit caption window. The text of selected objects can be searched and converted conveniently. When edit caption is run, a list of currently selected objects appears, as shown in the figure below. By entering a search word, particular text can be searched for. The text of the object to be converted can be double clicked in the list and edited.



[Fig. Edit text]

(3) Script

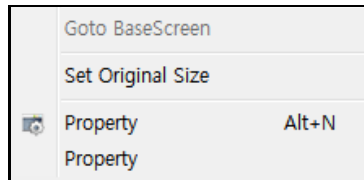
Add a script to the current screen. When this option is selected, the script settings screen is entered.

For details on script settings, refer to [4.5 Script].

(4) Copy screenshot

Copy the current screen and save to the clipboard. [Paste] can be used to paste the saved screen in the desired location.

6.10.5 Go to base screen / Set original size / Screen property / Property



[Fig. Base screen / Original size / Screen property / Property]

| | Description |
|-------------------|--|
| Go to base screen | <p>This is enabled when there is a screen transition object among the currently selected objects. Screen transition is enabled from the project screen. When clicked, the applicable screen is brought up.</p> <p>[Fig. Go to base screen]</p> |
| Set original size | <p>Set the image set for the selected image object to the original size.</p> <p>[Fig. Set original size]</p> |
| Screen property | <p>The screen properties window of the current screen is shown. For details on screen properties, refer to [5.3 Screen properties].</p> |
| Properties | <p>Shows the properties screen for the currently selected object. When more than one object is selected, this is disabled. For details on the properties screen, refer to the property settings for each object.</p> |

CHAPTER 7 Object - Common

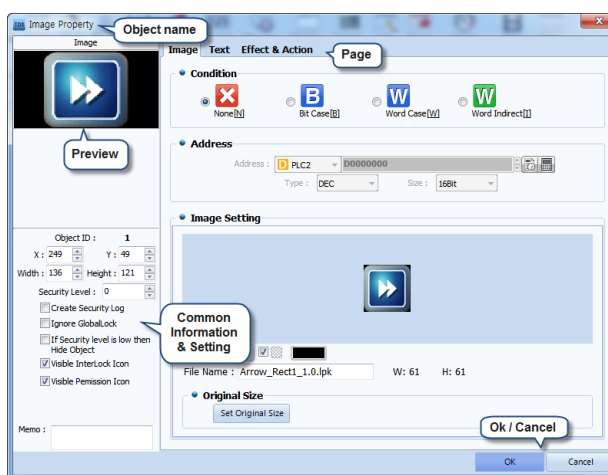
CHAPTER 7 - Object - Common

7.1 Overview of the properties dialog

Detailed shape and function settings can be made for all objects using a properties dialog. The properties dialog has a similar structure. Therefore, common parts will be explained first in this chapter. For functions unique to each object type, please refer to the chapter that explains each object.

7.1.1 Composition of the properties dialog

The properties dialog for each object can be divided into a fixed left portion, and a right portion comprising multiple pages. The left portion is the same for all object properties. A preview is provided, and the position and size of the object, along with other information, are displayed and can be set. The right portion comprises multiple pages. Some pages are common to all objects, and objects may have unique pages as well.





[Fig. Composition of the properties dialog]

| Properties | Description |
|--------------------|--|
| Object name | The name of the object is indicated in the title bar in the top left corner of the dialog. |
| Preview | Below the title in the top left corner, the appearance of the object as set in properties is shown. |
| Common information | In the bottom left corner, the object ID, position, size, and security information is displayed and can be set. |
| Page | Multiple setting pages are provided, depending on the object. |
| OK/cancel buttons | When the [OK] button on the bottom is pressed, changed settings are applied. When [Cancel] is pressed, the changed settings are not applied, and the previous settings are restored. |

(1) Common information

In the bottom left corner of the properties dialog, object info can be viewed, and settings can be changed.

| Properties | Description |
|-------------------------------|---|
| ID | This number is assigned in the order that objects are registered to the screen. This number is assigned automatically, and cannot be set arbitrarily. |
| X | This is the X coordinate of the top left corner of an object registered to the screen. The position can be changed by changing the value. The position of the top left corner of the screen is (0,0). The position of the bottom right corner of the screen becomes the resolution of the model. If the product has 800x600 resolution, the position of the bottom right corner becomes (800, 600). |
| Y | This is the Y coordinate of the top left corner of an object registered to the screen. The position can be changed by changing the value. |
| Width | The horizontal size of the object is displayed, and can be changed. |
| Height | The vertical size of the object is displayed, and can be changed. |
| Security level | This can be set if security level is enabled in [Project]-[Security]. Level 0 is an object that does not use security settings. When a level of 1 or higher is set, if a level 1 login is not performed, the object is visible, but the set action is not performed. |
| Create security log | A log is created and saved when security is disengaged. |
| Ignore global lock | This applies when the [Global lock option] is enabled in the [Project]-[Property] menu. While the program is locked, the object does not operate. However, if [Ignore global lock] is checked, the object keeps operating, even when the program is locked. |
| Hide if security level is low | When a security level of 1 or higher is set, if a login is not performed at the appropriate level, the object is not visible on the screen. The object only becomes visible when a login of the appropriate level is performed. |
| Show interlock icon | In an object for which interlock has been set, if the object is clicked without disabling interlock, the [LOCK] interlock icon is displayed, as shown in the figure below.  |
| Show permission icon | If the user does not have access privileges for the current object, the icon [Not allowed] is shown on top of the object.  |
| Memo | Memos can be recorded for objects. |

The ID, memos, and addresses set in the properties dialog can be displayed in the top left corner of each object using [View]-[Hint].



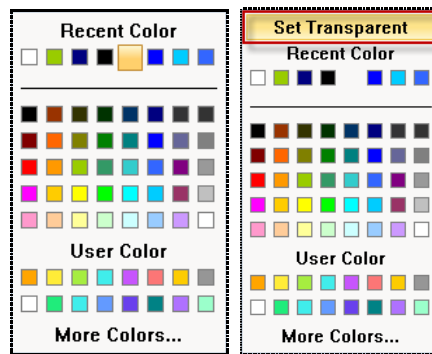
[Fig. View-Hint]

7.2 Color selection dialog

In parts of the program where colors are set, the color dialog is used.


Colors are used in various parts, such as object colors and screen background colors. When the color setting part is clicked, the following color palette appears. Colors are shown in small squares.

Click the square of the desired color to select.



[Fig. Color selection]

A [Set Transparent] button is shown in the color dialog on the right. This appears when setting

the background color () for the font of each object. [Set Transparent] is a function that

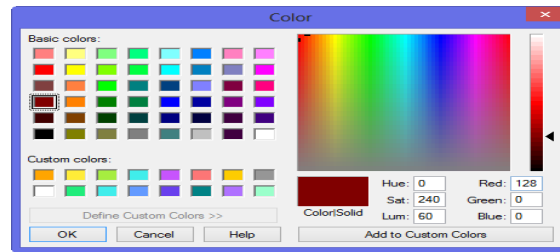
makes the background transparent. The color dialog is divided into 3 major parts.

| Color | Description |
|---------------|--|
| Recent Color | A list of recently used colors is shown. A total of 8 colors is saved. |
| Color Palette | In the center, there is a default color palette with 48 colors. |
| User Color | These are user designated colors. Colors that are used frequently or not registered in the default palette can be registered here. |

Using the [More colors...] button on the bottom, more detailed color settings can be made.

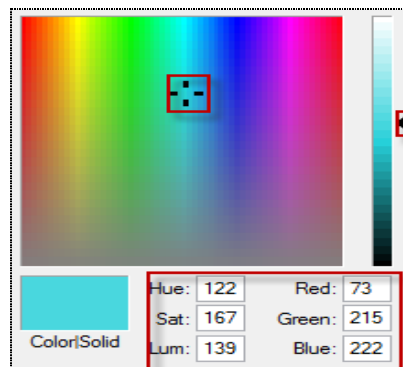
When the button is pressed, the following screen appears.

7.2.1 Color selection



[Fig. Color setting]

Colors registered under default colors or user colors can be selected conveniently. 48 fixed colors are provided as default colors. User color is a function where the user can register/edit colors frequently used by the user but are not registered among default colors. This function allows for convenient color selection. Detailed color selections can be made in the color palette to the right. Colors can be selected by moving the cross shaped icon in the color palette (✚), adjusting the arrows in the brightness bar on the far right (↕), or manually entering the values for, [Color/Hue/Brightness and Red/Green/Blue.



[Fig. Detailed color selection]

The selected color is shown in the [Color] part. Press [OK] to select the current color.



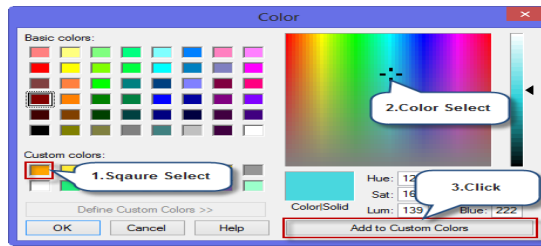
[Fig. A selected color]

7.2.2 Editing user colors

User colors are edited in the following manner.

First, among the 16 boxes under [User color], select the box to register the user color.

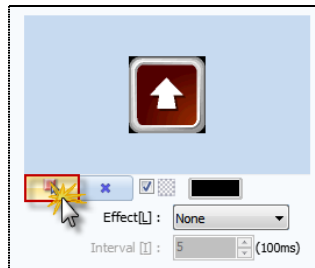
Second, select the color to select from the color palette on the right. Lastly, click the [Add to user colors] button on the bottom right corner. The color selected is registered as a user color in the selected box.



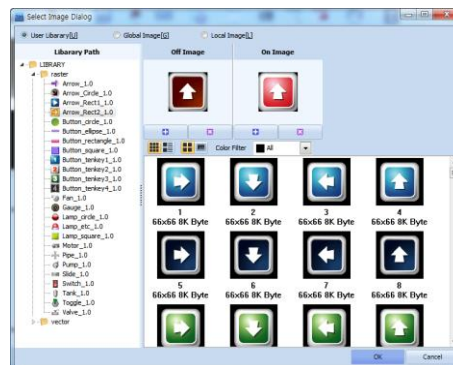
[Fig. Adding user colors]

7.3 Image selection dialog

When the image selection icon is clicked in an object, the image selection dialog appears.



[Fig. Image selection icon]



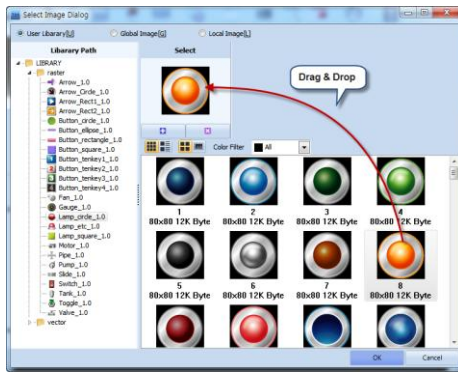
[Fig. Image selection dialog]

7.3.1 Image selection method

Images can be selected from the user library which contains images provided by TDS. Images registered in global images can be selected, or local images saved in a PC path can be selected.

Select the desired group from [Image path] on the left, and select the desired image from the image list on the right. Drag & drop the selected image in the [Select] box, or press the [+] button followed by the [OK] button to complete selection.

| Button | Description |
|--------|---|
| | Select the image clicked in the image list. |
| | Remove the selected image. |



[Fig. Image selection]

7.3.2 User library

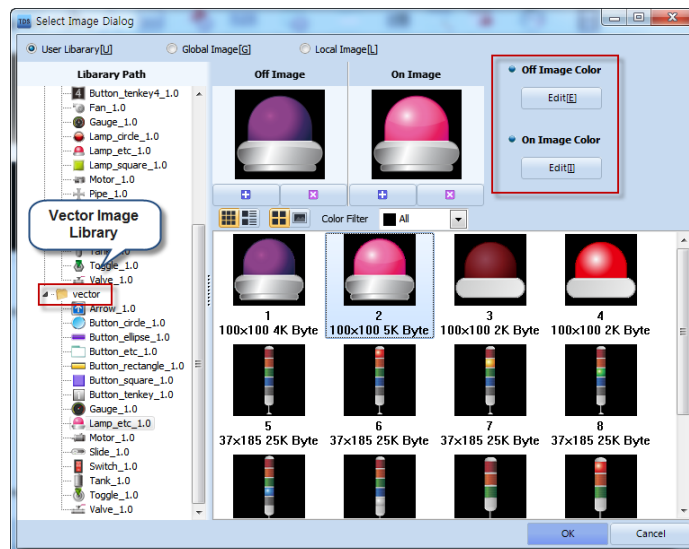
The user library is the default image library provided by TDS. This library is included in the TDS installation path [C:\Program Files (x86)\M2I Corp\TOP Design Studio\Library].

In [Library path] on the left, a list of image groups can be seen. When a group name is selected, the images included in the selected group can be seen on the right.

There are two types of images in the user library: Raster and Vector.

A Raster image refers to images such as BMP, PNG, and JPG. These are clearest when registered using the original size. When they are zoomed in or zoomed out from the original size, the image becomes pixelated, depending on the degree of zoom.

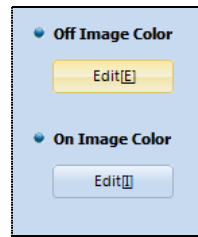
A Vector image refers to an SVG image.



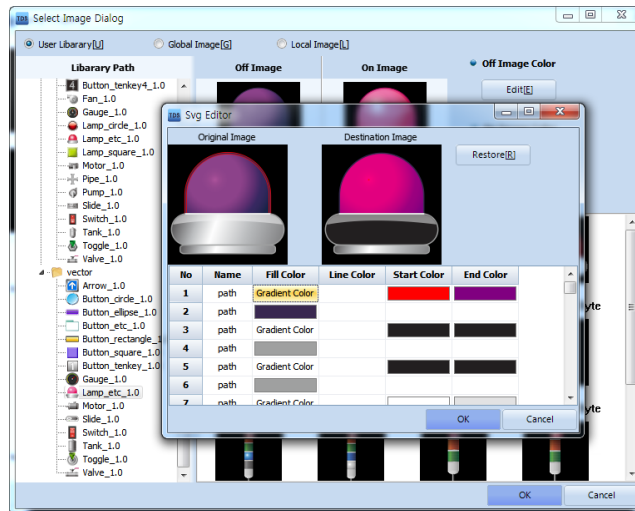
[Fig. Vector image]

Even when registered with a size smaller or greater than the original size, the image is not pixelated. Also, the colors can be edited for vector images. To select the selected vector image, press the [Edit] button.

Using the SVG editor, individual colors can be edited.



[Fig. Vector image editing]



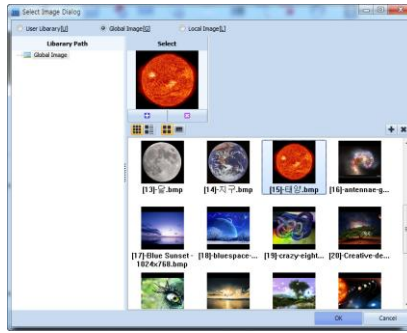
[Fig. Vector image editing]

When an item is selected from the color list on the bottom, the applicable area is shown in red in the [Original image]. Edit the image by changing the [Fill color/Line color/Start Color/End Color] settings. When the desired color box is clicked, the [Color selection dialog] appears for color changes. If the [Destination image] is not the desired image, the [Restore image] button can be used to restore the original image.


7.3.3 Global image

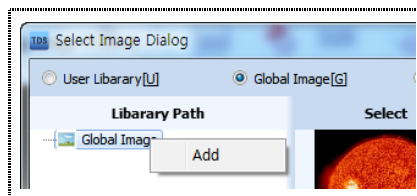
Global images are images registered by the user out of necessity. BMP, PNG, and JPG images can be loaded and registered. Images are assigned sequential numbers [1], [2], [3] ... according to the order of registration.

Global images can be registered in [Resources] of the [Project Management] screen, as well as from [Tools]-[Image Library]. Also, global images can be registered from the image selection dialog.



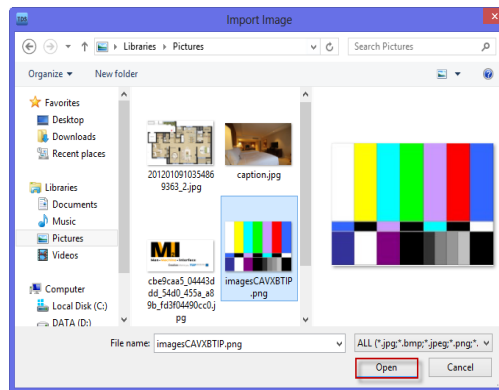
[Fig. Global image]

In the image selection dialog, press the  button, or select the [Global image] list from the [Library path]. Then click the [Add image] item that appears when the right mouse button is clicked. In the [Import image] dialog that appears, an image can be imported and registered as a global image.





[Fig. Add global image]

In the [Import image] dialog, select the image to register as a global image, and press the [Open] button.



[Fig. Importing an image into global images]

| Button | Description |
|---|--|
|  | Register a global image. |
|  | Delete the selected image from the registered global images. |

The [ID] is a sequential number that is automatically assigned to the file names.

This ID number can be used as the [Action item number] in [Alarms]-[Action], or in the [Word indirect] function for image objects.



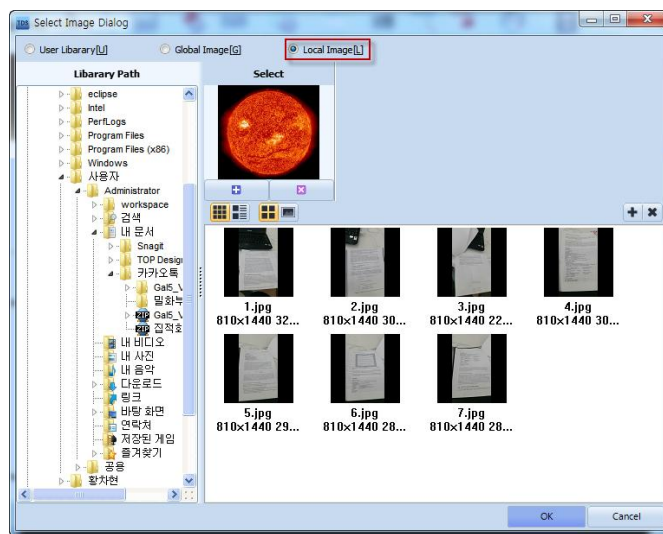
[Fig. Registered global image]

To use a registered global image, select the image and press the [OK] button.

7.3.4 Local image

Local image is used when importing images from the user PC.

BMP, PNG, and JPG images can be imported.



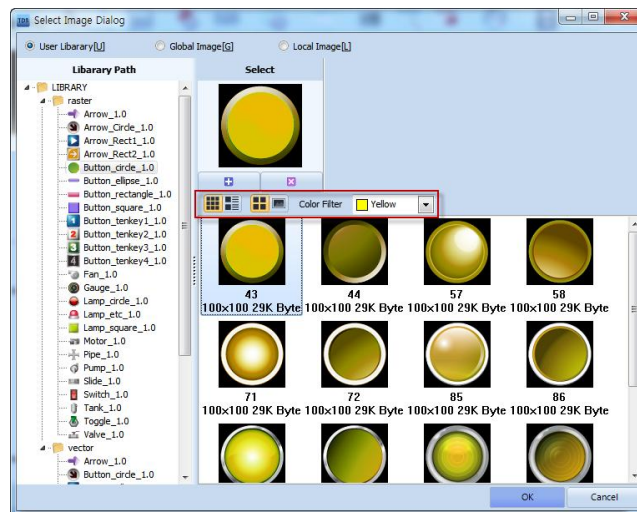
[Fig. Local image]

In the library path, a list similar to that in the Windows Explorer of the PC appears. From the path of the image, select the image and press the [OK] button.


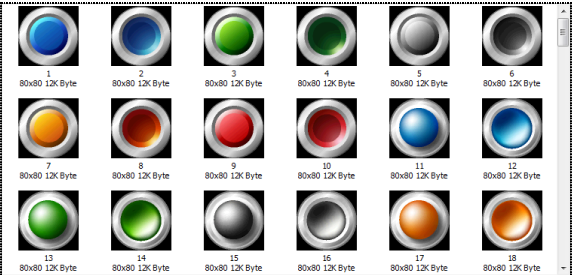

















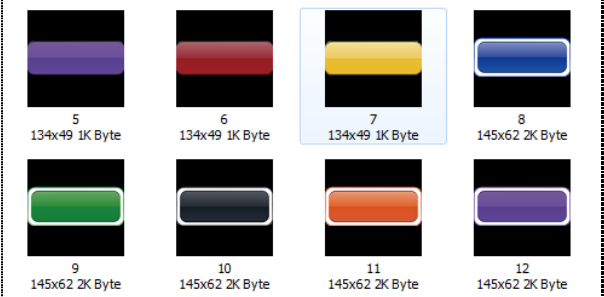
| Button | Description |
|--------|---|
| | Import and register a new image from a local path on the PC. |
| | Delete the selected image. Before deleting, the following confirmation language is shown. <div> </div> |


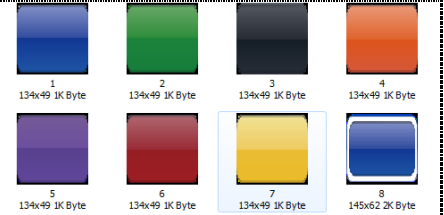
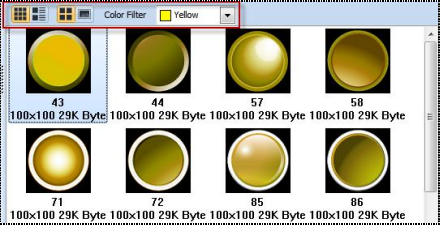
7.3.5 Image list view type

The image list view type can be changed for added convenience.



[Fig. [Changing the view type]

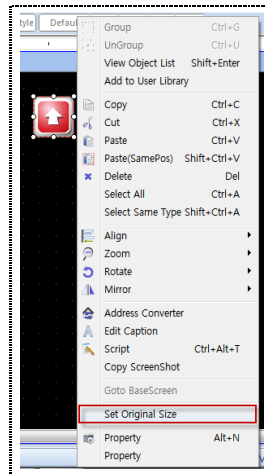
| View type | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|----------------|-----------|-------------|-----------|-------------|---|---|----------------|---|------|-----|--|---|---|----------------|---|------|-----|--|---|---|----------------|---|------|-----|--|---|---|----------------|---|------|-----|--|---|---|----------------|---|------|-----|--|
|  | <p>The list of images is shown using icons.</p>  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>A detailed list of images is shown.</p> <table border="1"> <thead> <tr> <th>Image</th> <th>ID</th> <th>Type</th> <th>File Size</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td></td> <td>1</td> <td>80x80 12K Byte</td> <td>0</td> <td>.bmp</td> <td>12K</td> <td></td> </tr> <tr> <td></td> <td>2</td> <td>80x80 12K Byte</td> <td>0</td> <td>.bmp</td> <td>12K</td> <td></td> </tr> <tr> <td></td> <td>3</td> <td>80x80 12K Byte</td> <td>0</td> <td>.bmp</td> <td>12K</td> <td></td> </tr> <tr> <td></td> <td>4</td> <td>80x80 12K Byte</td> <td>0</td> <td>.bmp</td> <td>12K</td> <td></td> </tr> <tr> <td></td> <td>5</td> <td>80x80 12K Byte</td> <td>0</td> <td>.bmp</td> <td>12K</td> <td></td> </tr> </tbody> </table> | Image | ID | Type | File Size | Description |  | 1 | 80x80 12K Byte | 0 | .bmp | 12K | |  | 2 | 80x80 12K Byte | 0 | .bmp | 12K | |  | 3 | 80x80 12K Byte | 0 | .bmp | 12K | |  | 4 | 80x80 12K Byte | 0 | .bmp | 12K | |  | 5 | 80x80 12K Byte | 0 | .bmp | 12K | |
| Image | ID | Type | File Size | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1 | 80x80 12K Byte | 0 | .bmp | 12K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 2 | 80x80 12K Byte | 0 | .bmp | 12K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 3 | 80x80 12K Byte | 0 | .bmp | 12K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 4 | 80x80 12K Byte | 0 | .bmp | 12K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 5 | 80x80 12K Byte | 0 | .bmp | 12K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>The aspect ratio of the images is identical to the original.</p>  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|--|
|  | <p>The aspect ratio of the images is matched to fill a square.</p>  |
| <p>Color filter</p> | <p>This only applies to user libraries. Among the images in the folder, only images with the color selected in the color filter can be viewed. For example, if Yellow is selected in the color filter, a list of only yellow images is shown.</p>  |

7.3.6 Set to original size

All images appear clearest when registered with their original size.

After selecting an image, right click the mouse. In the popup menu that appears, select [Set to original size]. This restores the image to its original size.



[Fig. Set original size]

7.4 Address entry

This is the method of setting the address in a project.

7.4.1 Address types

The types of address are PLC address, SYS address, Special address, LATCH address, Symbol address, and Offset address. A detailed explanation of each address follows.



[Fig. Address types]

| Address | Description |
|-----------------|----------------------------------|
| PLC address. | [D] stands for device. |
| SYS address | [I] stands for internal address. |
| Special address | [S] stands for special address. |
| LATCH address | [L] stands for Latch Address. |
| Symbol | [SY] stands for symbol address. |
| Offset address | [O] stands for offset address. |

7.4.2 PLC address.

This is the address of the controller that communicates with the TOPR. List items are created. The number of list items is equal to the number of controllers connected.

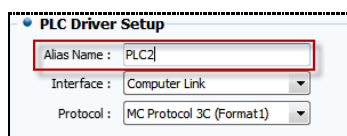
(1) PLC name

Multiple controllers can be connected to one TOPR. When multiple controllers are connected, PLC names are generated as [PLC1], [PLC2], [PLC3], by default, as seen in the figure below.



[Fig. PLC names]

By selecting each PLC in [Project]-[Project property], the name of each PLC can be changed in [Alias] under [Device information].



[Fig. Changing the PLC name]

(2) Characteristics of PLC addresses

In PLC addresses, each address has a separate area (identifier), station, and place number.

In the project, addresses must be entered appropriately to the address format of each PLC.

For example, the addresses for the MASTER_K series from LSIS are as seen in the following table.

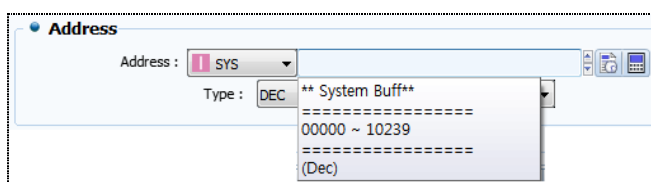
| Identifier | Range of stations used | Number of places in the station |
|------------------------|------------------------|---------------------------------|
| P (Input/output relay) | P0000 ~ P0063 | 4 |
| M (internal relay) | M0000 ~ M0191 | 4 |
| K (Keep relay) | K0000 ~ K0031 | 4 |
| L (Link relay) | L00000 ~ L00063 | 5 |
| F (Special relay) | F0000 ~ F0063 | 4 |
| T (Timer) | T0000 ~ T0255 | 4 |
| C (Counter) | C000 ~ C0255 | 4 |
| S (Step relay) | S000 ~ S099 | 3 |
| D (Data register) | D00000 ~ D09999 | 5 |

Details on the address of each PLC are provided in the [Communication Manual] provided separately for each PLC. The range of the address range and stations which can be used when entering PLC addresses program are indicated. When a wrong address has been entered, an error is displayed, preventing entry of wrong addresses.

7.4.3 SYS address

This is the internal address of the touch screen. The touch screen has an internal address range.

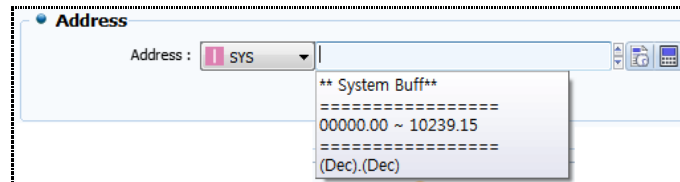
This area is all in [16 bit], that is, in word units. Also, as seen in the description of the figure below, there is no separate identifier. The range of stations that can be used is from [0000] to [10239].



[Fig. Internal address used as a word address]

When using a word address, as the internal address is in word units, the station number can be entered as is. When using as a bit address, the bit place must be entered after the station number.

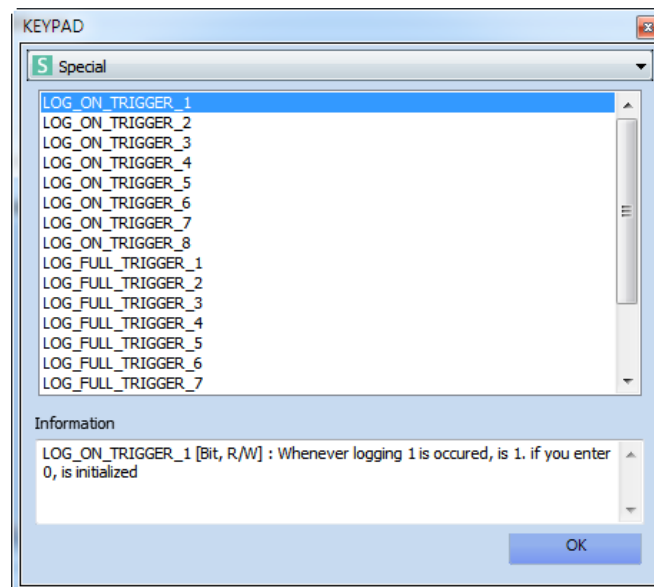
For example, when using the 6th bit of internal address station 10, [10.05] is entered.



[Fig. Internal address used as a bit address]

7.4.4 Special address

This is the internal special address of the touch screen. A special address is an internal address assigned with individual names for special functions. Separate special addresses are provided for objects using bit addresses, and objects using word addresses. Objects that use bit addresses include bit lamps, buttons, switches, and bit messages. Objects that use word addresses include word lamps, stings, numbers, and word messages. When special address is selected in the [Address keypad] as seen in the figure below, a description of each special address can be seen in the information part on the bottom.

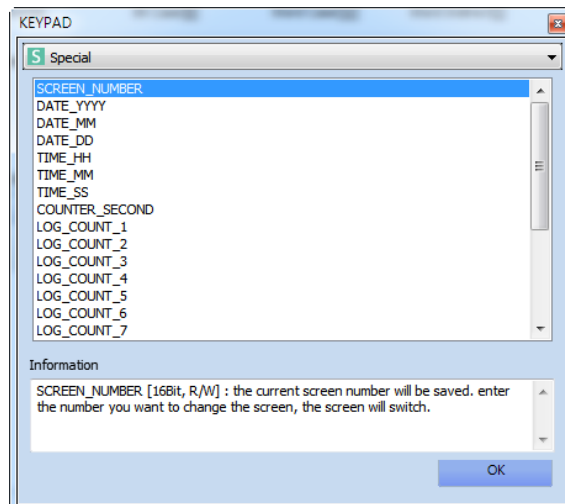


[Fig. Bit special address]

Bit special addresses are as follow.

| No | Special address | Description |
|----|------------------|---|
| 1 | LOG_ON_TRIGGER_1 | This value becomes 1 whenever logging occurs once in Log1. Enter 0 to initialize. |
| 2 | LOG_ON_TRIGGER_2 | This value becomes 1 whenever logging occurs once in Log2. Enter 0 to initialize. |
| 3 | LOG_ON_TRIGGER_3 | This value becomes 1 whenever logging occurs once in Log3. Enter 0 to initialize. |
| 4 | LOG_ON_TRIGGER_4 | This value becomes 1 whenever logging occurs once in Log4. Enter 0 to initialize. |
| 5 | LOG_ON_TRIGGER_5 | This value becomes 1 whenever logging occurs once in Log5. Enter 0 to initialize. |

| | | |
|----|--------------------|--|
| 6 | LOG_ON_TRIGGER_6 | This value becomes 1 whenever logging occurs once in Log6. Enter 0 to initialize. |
| 7 | LOG_ON_TRIGGER_7 | This value becomes 1 whenever logging occurs once in Log7. Enter 0 to initialize. |
| 8 | LOG_ON_TRIGGER_8 | This value becomes 1 whenever logging occurs once in Log8. Enter 0 to initialize. |
| 9 | LOG_FULL_TRIGGER_1 | When logging 1 fills the set memory, [Full] becomes 1. |
| 10 | LOG_FULL_TRIGGER_2 | When logging 2 fills the set memory, [Full] becomes 1. |
| 11 | LOG_FULL_TRIGGER_3 | When logging 3 fills the set memory, [Full] becomes 1. |
| 12 | LOG_FULL_TRIGGER_4 | When logging 4 fills the set memory, [Full] becomes 1. |
| 13 | LOG_FULL_TRIGGER_5 | When logging 5 fills the set memory, [Full] becomes 1. |
| 14 | LOG_FULL_TRIGGER_6 | When logging 6 fills the set memory, [Full] becomes 1. |
| 15 | LOG_FULL_TRIGGER_7 | When logging 7 fills the set memory, [Full] becomes 1. |
| 16 | LOG_FULL_TRIGGER_8 | When logging 8 fills the set memory, [Full] becomes 1. |
| 17 | BACK_LIGHT | If the value is not [0], the backlight is turned off. If the value of [0], the backlight is turned on. When the touch screen is touched when the backlight is off, the backlight is turned on, and the value automatically becomes 0. |
| 18 | SCREEN_CHANGE | When screen change is completed, this becomes 1 at the time of the first scan. |
| 19 | SD_INSERT | Indicates whether an SD card has been inserted. |



[Fig. Word special address]

Word special addresses are as follow.

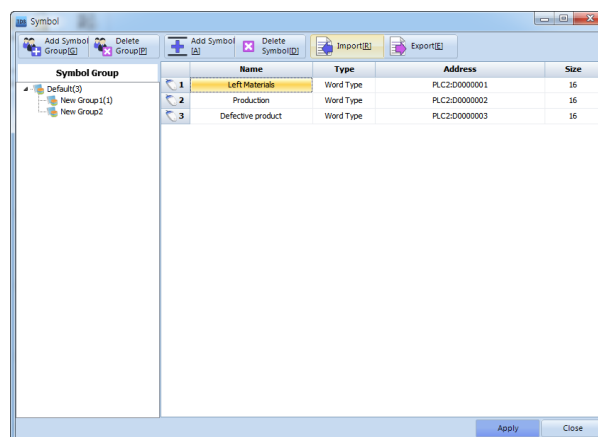
| No | Special address | Description |
|----|-----------------|--|
| 1 | MULTI_LANGUAGE | This changes the type of language set in the text table. |
| 2 | SCREEN_STYLE | This is the active Screen Style Index. |

| | | |
|----|----------------------|---|
| 3 | SCREEN_NUMBER | The current screen number is saved. By entering the screen number to transition to the page is transitioned. |
| 4 | DATE_YYYY | This is the year data of the touchscreen RTC. [BCD 1999 ~ 2098] |
| 5 | DATE_MM | This is the month data of the touchscreen RTC. [BCD 1 ~ 12] |
| 6 | DATE_DD | This is the day (date) data of the touchscreen RTC. [BCD 1 ~ 31] |
| 7 | TIME_HH | This is the hour data of the touchscreen RTC. [BCD 0 ~ 23] |
| 8 | TIME_MM | This is the minute data of the touchscreen RTC. [BCD 0 ~ 59] |
| 9 | TIME_SS | This is the seconds data of the touchscreen RTC. [BCD 0 ~ 59] |
| 10 | COUNTER_SECOND | Increases by 1 every second during operation |
| 11 | LOG_COUNT_1 | The current number of logs in Log1 is displayed. |
| 12 | LOG_COUNT_2 | The current number of logs in Log2 is displayed. |
| 13 | LOG_COUNT_3 | The current number of logs in Log3 is displayed. |
| 14 | LOG_COUNT_4 | The current number of logs in Log4 is displayed. |
| 15 | LOG_COUNT_5 | The current number of logs in Log5 is displayed. |
| 16 | LOG_COUNT_6 | The current number of logs in Log6 is displayed. |
| 17 | LOG_COUNT_7 | The current number of logs in Log7 is displayed. |
| 18 | LOG_COUNT_8 | The current number of logs in Log8 is displayed. |
| 19 | BACK_LIGHT_LEVEL | This is the LCD brightness level. [0 ~ 7] |
| 20 | DATE_WEEK | This is the day of week for the date set in the touchscreen. [0-Sunday, 1-Monday, 2-Tuesday, 3-Wednesday, 4-Thursday, 5-Friday, 6-Saturday] |
| 21 | SCREENSAVE_TIME | Indicates the screen saver time (minutes). |
| 22 | SECURITY_LOGIN_LEVEL | The level of the user currently logged in is displayed. |
| 23 | INPUT_MAX_VALUE | The max. input value for input using Display keypad is shown. |
| 24 | INPUT_MIN_VALUE | The min. input value for input using Display keypad is shown. |
| 25 | DISPLAY_BUFFER | The value currently being entered using Display keypad is shown. |

7.4.5 Symbol address

A symbol address is an address where the address has been substituted with an alias.

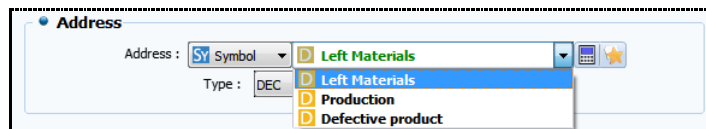
Assign an alias to addresses in [Symbol manager] in the [Project] menu.



[Fig. Symbol setting]

| Symbol setting | Description |
|-------------------|---------------------------------------|
| Add group [G] | Add a new group. |
| Delete group [P] | Delete a group that has been created. |
| Add symbol [A] | Add a symbol to the selected group. |
| Delete symbol [D] | Delete the selected symbol. |
| Read [R] | Imports a saved symbol. |
| Export [E] | Save the currently registered symbol. |

Symbols are shown in the address input window only when a symbol has been registered in symbol settings. When an address is entered, the address is saved with the newly assigned alias.



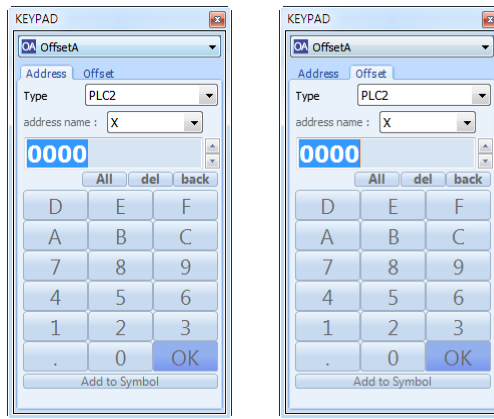
[Fig. Symbol address entry]

7.4.6 Offset address

An offset address can additionally be set for each address. In this function, the station number resulting from adding the value of the offset address to the actual address can be used. There are two types of offset address: Offset address and Offset value.

| Offset A | Offset V |
|--|--|
| | |
| <p>Address = Initial address Offset address = Address to use as the offset value Actual address = [Station of the address + Data value of the offset address]</p> <p>e.g.) [Address =00013, Offset address = 00020]</p> <div style="text-align: center;"> </div> | <p>Offset V = Address data value + Offset address data value</p> <p>e.g.) [Address =00003, Offset address = 00004]</p> <div style="text-align: center;"> </div> |

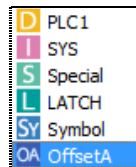
If the type is set to offset, the keypad is changed as seen in the figure below. The actual address, address, and the offset address, Offset, can be set.



[Fig. Offset address]

7.4.7 Entering addresses using the keyboard

Addresses are manually entered using the keyboard. First, select [Address type] from the address list.

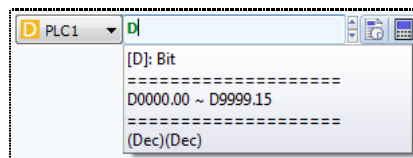


[Fig. Address type]

Next, manually enter the address, according to the format of the selected address type.

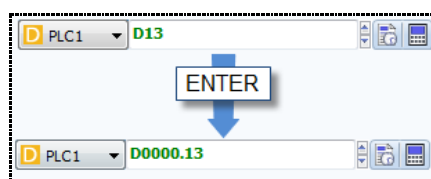
(1) Automatic address display function

The address range, station range, and the number of places in the station number are displayed automatically in a popup hint.



[Fig. Automatic address range display]

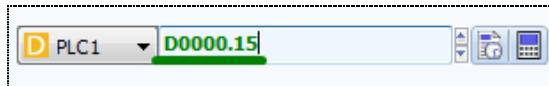
When an address range is selected, a simple explanation of the selected address range, and the range of available stations are displayed. Enter the station number, according to the range of available station numbers. After entering the station number, press [ENTER] key on the keyboard. The number of places in the addresses is matched automatically.



[Fig. Automatic station number place number matching function]

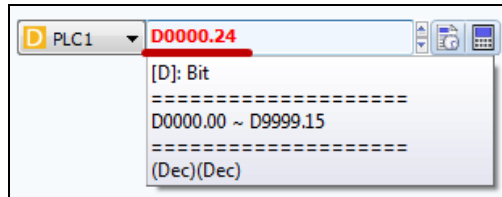
(2) Automatic error display function

If an accurate address is entered, the address is displayed in green.




[Fig. When an accurate address has been entered]

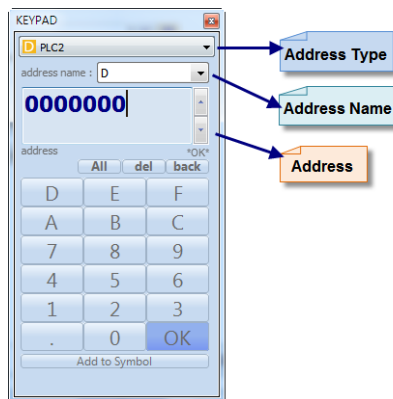
If an improper address has been entered, the address is displayed in red. This prevents entry of improper addresses.



[Fig. When an improper address has been entered]

7.4.8 Entering addresses using the address keypad

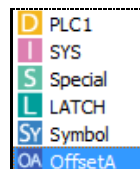
Enter addresses using the calculator shaped button () to the right of the address input area.



[Fig. Address keypad]

(1) Address input order

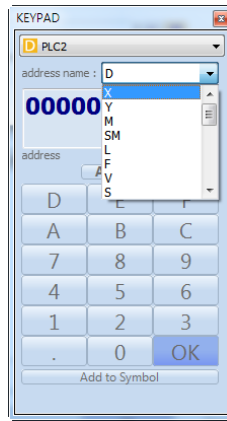
First, select [Address type].



[Fig. Address type]

Next select the [Address range] according to the address type selected.

When an address type is selected, a list of address names is automatically generated and displayed.



[Fig. Address range]

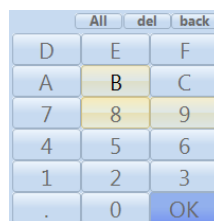
When PLC is selected as the [Address type], the address ranges of the applicable PLC are automatically displayed as a list in [Address name], as shown in the figure above.

Lastly, enter address, according to the range and number of places in the address. The address can be entered using the keyboard, or using the number keypad toward the bottom of the address keypad. In the address keypad, like address entry using the keyboard, when a station number is entered, whether the entered address conforms to the format of the address is displayed.

(2) Input button

This button is used to enter the station number.

| Button | Description |
|--------|---|
| | Select all stations of the entered address. |
| | Deletes the selected address. |
| | The function is the same as the backspace key; the station numbers of the address entered are erased one by one from the right. |



[Fig. Numeric keypad of the address keypad]

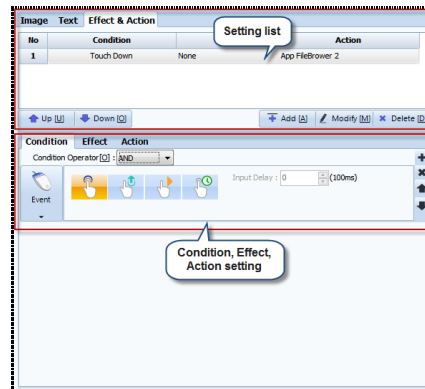
| Numeric keypad | Description |
|----------------|--|
| A ~ F | These keys are for entry of hexadecimal data. |
| 0 ~ 9 | These are the 10 numeric keys. |
| . | This is the decimal key. |
| OK | After completing address entry, press the [OK] button to complete address entry. |

7.5 Effect & action

Conditions, effects and actions which can be used in only specific objects can be used for most objects in TDS. Said again, [Effects & Actions] can be applied to almost all objects. [Effects & Actions] can be used to display [Effects] according to the [Condition settings] for objects, and trigger [Actions] in the addresses of other objects.

Up to 32 [Effects & Actions] can be added. The added [Effects & Actions] are shown in the list window.

(Note: To apply settings, the [Add] or [Edit] button must be pressed.)



[Fig. Effects & actions]

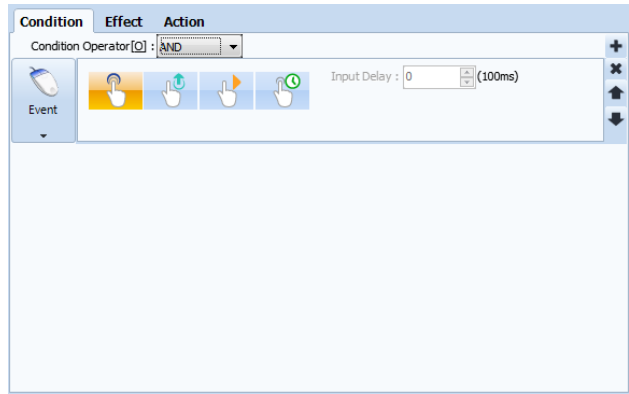
| Button | Description |
|------------|--|
| Up [U] | Move the selected result item up. |
| Down [O] | Move the selected result item down. |
| Add [A] | Add [Effects & actions]. |
| Modify [M] | Modify the [Effects & actions] for the selected list item. |
| Delete [D] | Delete the selected list item. |

7.6 Condition

[Effects & actions] are triggered by setting specific conditions for an object. The maximum condition count is 8. These can be set using event or bit conditions.

The conditions provided are [Bit], [Word], [Schedule], [Event], and [None]. If the [None] condition is applied, the effects & actions are triggered all the time.

(Note: To apply settings, the [Add] or [Edit] button must be pressed.)



[Fig. Condition]

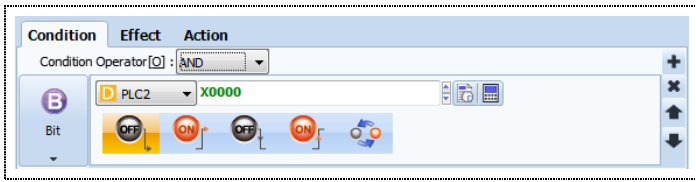
| Button | Description |
|-------------------------|---|
| | Add a [Condition] option. |
| | Move the selected result item up. |
| | Move the selected result item down. |
| | Delete the selected list item. |
| Operation condition [O] | If there are multiple [Condition] option settings, set the operation condition. [AND]: Run if multiple conditions are all [True]. [OR]: Run if any one among multiple conditions is [True]. |

7.6.1 Bit condition

In bit condition, the condition status of a [Bit address] value is set.

Possible status settings are [ON/OFF/REVERSE], and the address can be set as PLC or SYS, etc.

Ex) Set the condition to PLC station D0000.01 [ON]. When the bit at PLC station D0000.01 becomes [ON], the effects & actions are triggered.



[Fig. Bit condition]

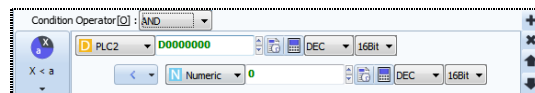
| Properties | Description |
|-----------------|--|
| Address setting | Set the address to use in the bit condition. |
| | Set the bit address condition to [OFF continue]. |
| | Set the bit address condition to [ON continue]. |
| | Set the bit address condition to [OFF edge]. |
| | Set the bit address condition to [ON edge]. |
| | Set the bit address condition to [REVERSE]. |

7.6.2 Word condition

In a word (16bit) condition, size comparison and change conditions are set for a [Word address] value. For [Word addresses], the size of address values can be compared, or conditions for the status of a word value to change can be set. (Ex. Set the condition to PLC station D00001 is smaller than 10. If the value 9 is entered into PLC station D00001, the effects & actions are triggered.)

(1) X < a

This condition compares two word values.

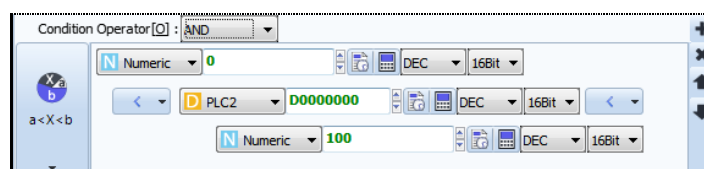


[Fig. X<a]

| Properties | | Description |
|----------------------|----|--|
| Address | | Set the word address value to compare. |
| Comparison condition | < | This operator is used to compare the size of two operands, to indicate that the operand on the right is greater. |
| | > | This operator is used to compare the size of two operands, to indicate that the operand on the left is greater. |
| | <= | This operator is used to compare the size of two operands, to indicate that the operand on the right is greater or equal to the operand on the left. |
| | >= | This operator is used to compare the size of two operands, to indicate that the operand on the left is greater or equal to the operand on the right. |
| | = | This operator is used to compare the size of two operands, to indicate that the operands are the same. |
| | != | This operator is used to compare the size of two operands, to indicate that the operands are not the same. |

(2) a < X < b

This condition compares three word values. The properties are the same as two words value comparison. (Ex. Set the condition to PLC station D00001 is greater than 0 and smaller than 10. If the value 5 is entered into PLC station D00001, the effects & actions are triggered.)

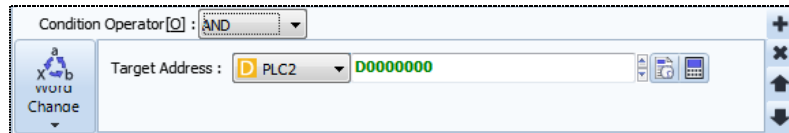


[Fig. a<X<b]

(3) Word change

Set the condition for word change. (Ex. Set the condition to PLC station D00001. If the value of PLC station

D00001 is changed, the effects & actions are triggered.)



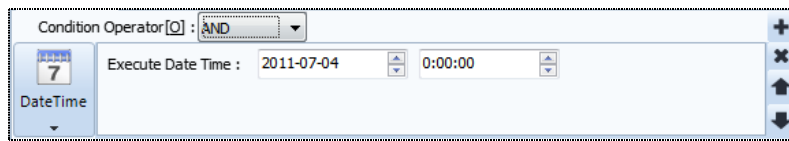
[Fig. Word change]

7.6.3 Schedule

In a schedule condition, a particular date, time or interval is set as the condition. Said again, the condition for an object is set as a particular date, time, or interval to trigger effects & actions.

(1) Schedule

Set all the execute dates and times to trigger [Effects & Actions].

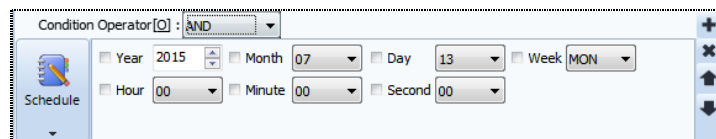


[Fig. Schedule]

| Properties | Description |
|--------------------|--|
| Year/Month/Date | Set the date to trigger [Effects & Actions]. |
| Hour/Minute/Second | Set the time to trigger [Effects & Actions]. |

(2) Date time

Unlike in [Schedule] settings, the date and time to trigger [Effects & Actions] is set by designating the year, month, day, week, hour, minute, and second. Using this function, [Effects & Actions] can be set to be triggered at intervals during a certain period. (Ex. If the condition is set to Day 1 of 2015, the condition is set at 00:00:00 on the first day of each month in 2015.)



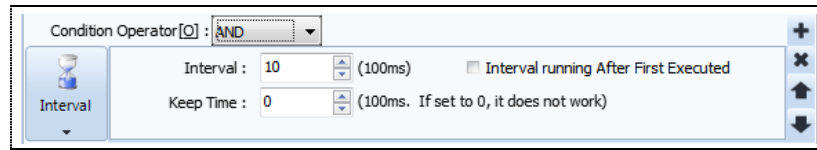
[Fig. Date time]

| Properties | Description |
|--|----------------|
| <input type="checkbox"/> Year 2015 | Set the year. |
| <input type="checkbox"/> Month 07 | Set the month. |
| <input checked="" type="checkbox"/> Day 13 | Set the day. |
| <input type="checkbox"/> Week MON | Set the week. |
| <input type="checkbox"/> Hour 00 | Set the hour. |
| <input type="checkbox"/> Minute 00 | Set minutes. |
| <input type="checkbox"/> Second 00 | Set seconds. |

(3) Interval

Set the interval to trigger [Effects & Actions].

Ex) If the interval is set to [10] in the condition, [Effects & Actions] are triggered at 1 second (10x100=1000ms=1s) intervals.

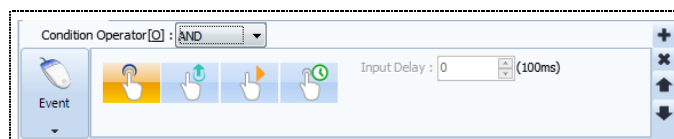


[Fig. Interval]

| Properties | Description |
|--|--|
| Interval | Set the interval to trigger [Effects & Actions]. |
| Maintain time | Set the time for which to trigger [Effects & Actions]. |
| Run in intervals after first execution | In this option, the [Effects & Actions] are triggered immediately after a project is started. If this option is not set, the [Effects & Actions] are triggered after the time set in [Interval] has elapsed. |

7.6.4 Event

In event conditions, a touch condition is set for the object. Said again, the condition for an object is set as a touch action to trigger effects & actions.



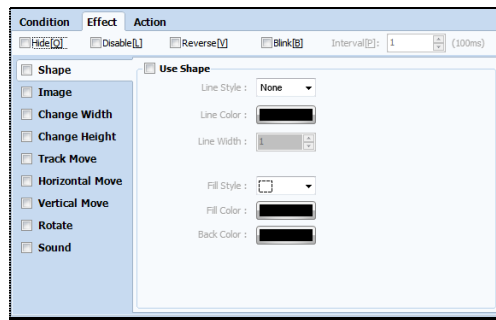
[Fig. Schedule]

| Properties | Description |
|------------|---|
| | [Effects & Actions] are triggered when the object is touched. |
| | [Effects & Actions] are triggered when object touch is released. |
| | [Effects & Actions] are continuously triggered if the duration of the touch exceeds the [Input delay] time. EX) If the input delay is set to [10], [Effects & Actions] are continuously triggered if the object is touched for more than 1 second. |
| | [Effects & Actions] are triggered once if the duration of the touch exceeds the [Input delay] time. EX) If the input delay is set to [10], [Effects & Actions] are triggered once if the object is touched for more than 1 second. |

7.7 Effect

Set an effect that is triggered when the object condition is satisfied. In object effects, shape, sound, and position, etc., can be changed. Also, hide, disable, reverse, and blink functions are provided.

(Note: To apply settings, the [Add] or [Edit] button must be pressed.)

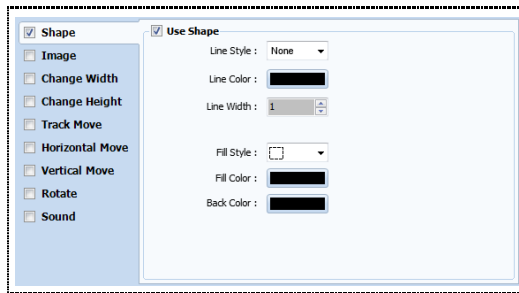


[Fig. Effect]

| Effect properties | Description |
|-------------------|--|
| Hide | The object is hidden. |
| Deactivate | The object is deactivated. |
| Reverse | Object colors are reversed. |
| Blink | The object blinks at the set [Interval] |
| Cycle | Set the interval for the [Blink] effect. The maximum value is 60,000 (6,000 seconds). |
| Shape | Change the line, fill style, and color of the object. |
| Image | Set an image effect for the object. (Only applies to objects using images.) |
| Text | The text of the object is modified. (Only applies to objects using strings.) |
| Font | The font of the object is modified. (Only applies to objects using strings.) |
| Change width | The width of the object is changed. |
| Change height | The height of the object is changed. |
| Track move | Move the object to a particular path. |
| Horizontal move | Move the object horizontally. |
| Vertical move | Move the object vertically. |
| Rotate | Rotates an object. |
| Sound | Set a sound effect for the object. |

7.7.1 Shape

When a condition is satisfied, the line, fill style, or color is changed. First, the [Shape] checkbox must be checked.

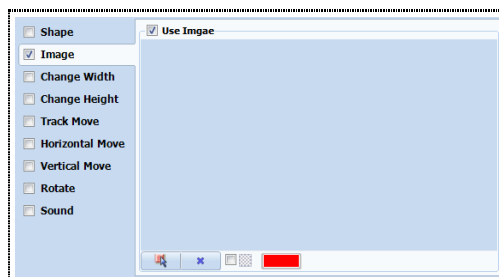


[Fig. Shape]

| Shape properties | Description |
|------------------|---|
| Line style | Set the line style for the object. After selecting the style, the [Enter] key must be pressed. |
| Line color | Set the line color for the object. |
| Line width | Select the line width for the object. |
| Fill style | Set the fill style for the object. After selecting the style, the [Enter] key must be pressed. |
| Fill color | Set the fill color for the object. |
| Background color | Set the background color for the object. |

7.7.2 Image

When a condition is satisfied, the image is changed. This can only be used for objects using images. First the, [Image] checkbox must be checked.

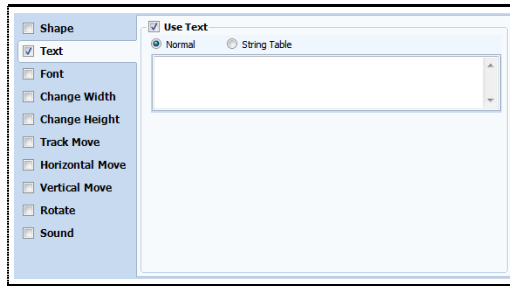


[Fig. Image]

| Image button | Description |
|--------------|---|
| | Using the import image button, set the change image from the image library. |
| | Use the delete image button to delete the set image. |
| | Using the checkbox for object color transparency, set color transparency for the applied image. |

7.7.3 Text

When a condition is satisfied, the text is changed. This can only be used for objects using strings. First, the [Text] checkbox must be checked.

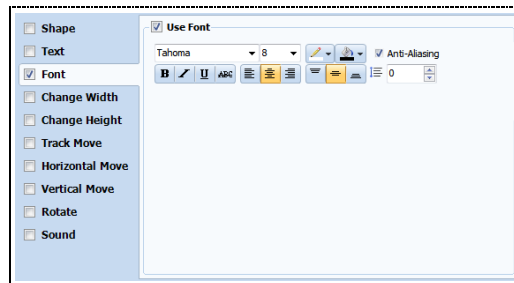


[Fig. Text]

| Text property | Description |
|---------------|--|
| Direct input | Manually enter the text into the edit window. |
| Text table | The text table set in [Project]-[Multilanguage] is used. |

7.7.4 Font

When a condition is satisfied, the font is changed. This can only be used for objects using strings. First, the [Font] checkbox must be checked.

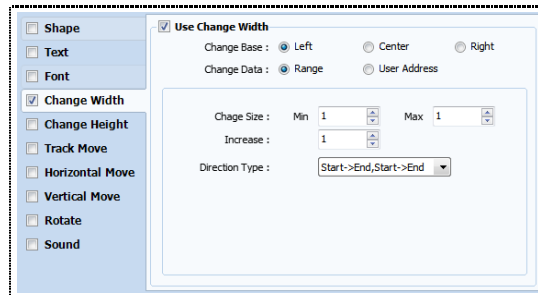


[Fig. Font]

| Font properties | Description |
|-----------------|---|
| Font type | Set the font to change to. |
| Font size | Set the size of the change font. |
| Font color | Set the color of the change font. |
| | Set the background color of the change font. |
| Font Effects | Set the change font to bold. |
| | Use italics on the change font. |
| | Underline the change font. |
| | Use a cancel line on the change font. |
| Font alignment | Left align the change font. |
| | Center align the change font. |
| | Right align the change font. |
| | Top align the position of the change font. |
| | Center align the position of the change font. |
| | Bottom align the position of the change font. |
| | Set the vertical spacing of the change font. |
| Antialiasing | Improve font quality at low resolutions. |

7.7.5 Change width

When a condition is satisfied, the object width is changed. The width can be changed within a user defined range by setting reference points (left, center, right), or according to address data.



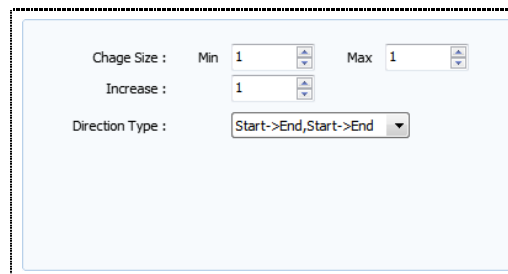
[Fig. Change width]

| Change width properties | | Description |
|-------------------------|--------------|---|
| Base Modify | Left | When changing width, width increases or decreases from a left reference point. |
| | Center | When changing width, width increases or decreases from a central reference point. |
| | Right | When changing width, width increases or decreases from a right reference point. |
| Data Modify | Range | Set width using a range, increase value, and direction type. |
| | User address | Set width using an address value. |

(1) If data change has been set to width

Set a range, increase value, and direction.

Direction type refers to the direction used when the width exceeds the maximum value.

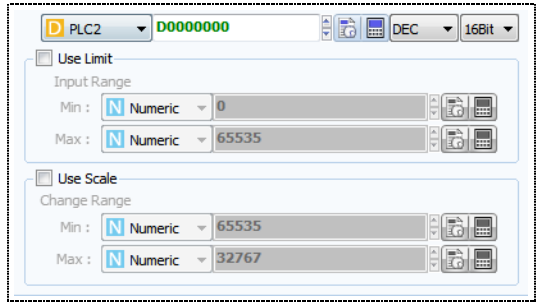


[Fig. Range]

| Range properties | | Description |
|------------------|---------------------------|--|
| Size Modify | Minimum | Set the minimum width for the object. |
| | Maximum | Set the maximum width for the object. |
| Increase value | | Set the increase value for width. |
| Direction Type | Start->End, Start->End | If the increased width exceeds the maximum value, the width is reset to the minimum value. |
| | Start->End - >Start | If the increased width exceeds the maximum value, the width decreases. |

(2) If data change has been set to user address

The width is changed according to the data in the address. Said again, the constant value of the address is designated as the width.

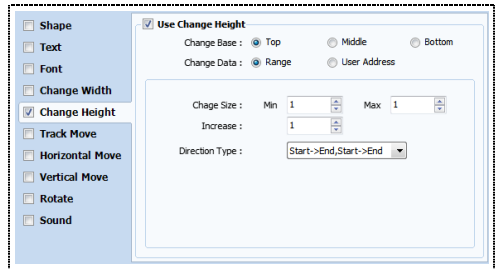


[Fig. User address]

| Address properties | | Description |
|--------------------|---------|--|
| Address setting | | Set the address to use to change the object width. |
| Use Restriction | Minimum | Set the minimum value of the address value. |
| | Maximum | Set the maximum value of the address value. |
| Use scale | Minimum | Set the minimum value of the data to be shown proportionally to the address value. |
| | Maximum | Set the maximum value of the data to be shown proportionally to the address value. |

7.7.6 Change height

When a condition is satisfied, the object height is changed. The height can be changed within a user defined range by setting reference points (top, center, bottom), or according to address data.



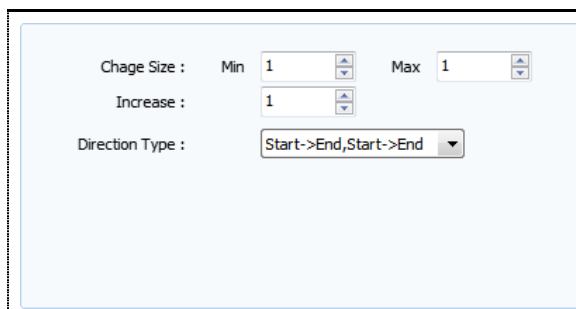
[Fig. Change height]

| Change height properties | | Description |
|--------------------------|--------------|--|
| Base Modify | Top | The height increases or decreases from the top of the object. |
| | Center | The height increases or decreases from the center of the object. |
| | Bottom | The height increases or decreases from the bottom of the object. |
| Data Modify | Range | Set height using a range, increase value, and direction type. |
| | User address | Set height using an address value. |

(1) If data change has been set to width

Set a range, increase value, and direction.

Direction type refers to the direction used when the height exceeds the maximum value.

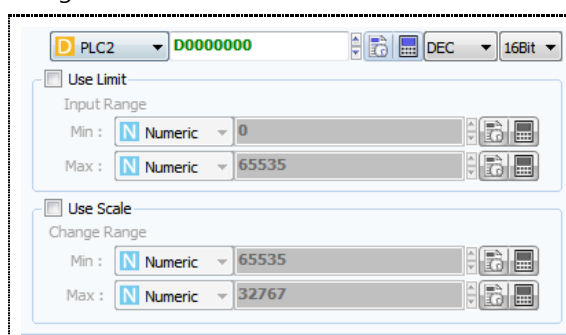


[Fig. Range]

| Range properties | | Description |
|-------------------|---------------------------|--|
| Size Modify | Minimum | Set the minimum height for the object. |
| | Maximum | Set the maximum height for the object. |
| Increase value | | Set the increase value for height. |
| Direction Type | Start->End, Start->End | If the increased height exceeds the maximum value, the height is reset to the minimum value. |
| | Start->End- >Start | If the increased height exceeds the maximum value, the height decreases. |

(2) If data change has been set to user address

The height is changed according to the data in the address. Said again, the constant value of the address is designated as the height.

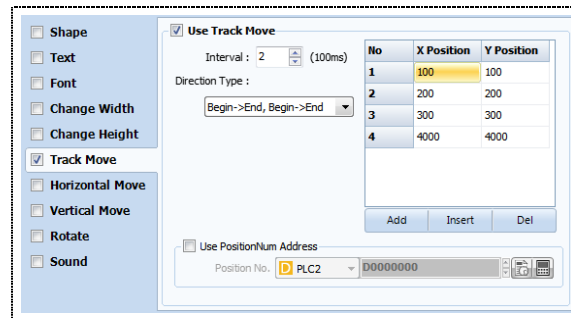


[Fig. User address]

| Address properties | | Description |
|--------------------|---------|--|
| Address setting | | Set the address to use to change the object height. |
| Use Restriction | Minimum | Set the minimum value of the address value. |
| | Maximum | Set the maximum value of the address value. |
| Use scale | Minimum | Set the minimum value of the data to be shown proportionally to the address value. |
| | Maximum | Set the maximum value of the data to be shown proportionally to the address value. |

7.7.7 Track move

When the condition is satisfied, the object is moved to a registered track. Set the target track and set the interval and direction. Alternatively, set to move according to address data.

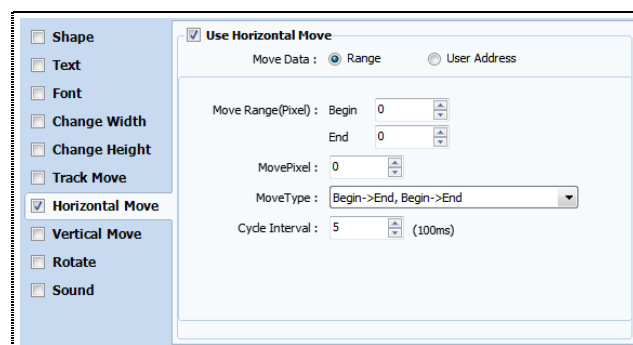


[Fig. Track move]

| Track move properties | | Description | |
|---------------------------------|----------------------------|--|--|
| Interval | | Set the interval for object move | |
| Direction | Begin->End, Begin->End | The object is moved in the order [No]. The move is executed to the end, and is started again from the beginning. | |
| | End->Begin, End-> Begin | The object is moved in the reverser order of [No]. The move is executed to the end, and is started again from the beginning. | |
| | Type | Begin->End -> Begin->End | The object is moved in the order [No]. When executed to the last number, the move is executed in reverse. |
| | | End->Begin-> End->Begin | The object is moved in the reverser order of [No]. When executed to the last number, the move is executed again in order. |
| Use position designated address | | The [No] value in the registered position list is imported using an address. (Here, if position designated addresses are used, [Interval] and [Direction type] are not used.) Ex) If the value [1] is entered into the position designated address, the object moves to the [1] position data in the position list [No]. | |

7.7.8 Horizontal move

When the condition is satisfied, the object is moved horizontally. Set the move range and set the interval and direction. Alternatively, set to move according to address data.

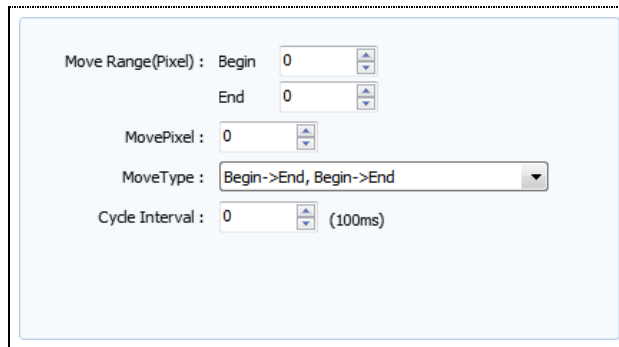


[Fig. Horizontal move]

| Horizontal move properties | Description |
|----------------------------|--|
| Range | Set the horizontal move using the range, pixel value, move type, and interval. |
| User address | Set horizontal move using an address value. |

(1) If data change has been set to width

Set the move range, pixel value, move direction, and interval to use. Move type refers to the direction used when the maximum value of the range is exceeded.



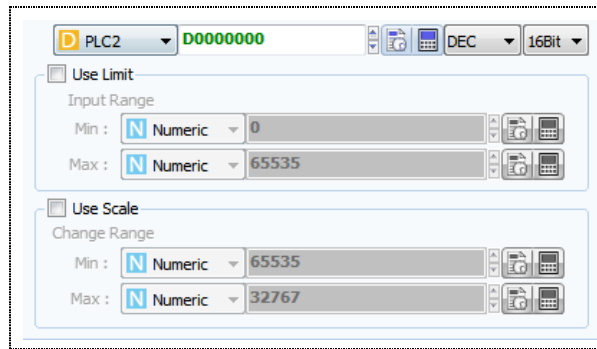
Move Range(Pixel) : Begin 0
End 0
MovePixel : 0
MoveType : Begin->End, Begin->End
Cycle Interval : 0 (100ms)

[Fig. Range]

| Range properties | | Description | |
|------------------|----------------------------|---|-----------------------------|
| Move Range | Start | Set the start position value for horizontal move. | |
| | End | Set the end position value for horizontal move. | |
| Pixel move | | Set the pixel value to increase/decrease during horizontal move. | |
| Direction Type | Begin->End , Begin->End | The object is moved horizontally from the start value to the end value. When the end location is exceeded, the move begins again from the start location. | |
| | End->Begin , End->Begin | The object is moved horizontally from the end value to the start value. When the start location is exceeded, the move begins again from the end location. | |
| | Begin->End ->Begin->End | The object is moved horizontally from the start value to the end value. When the end location is exceeded, the object moves toward the start location again. | |
| | End->Begin ->End->Begin | The object is moved horizontally from the end value to the start value. When the start location is exceeded, the object moves toward the end location again. | |
| | Cycle | | Set the execution interval. |

(2) If data change has been set to user address

The object is moved horizontally according to address data. Said again, the constant value of the address is designated as the move value.

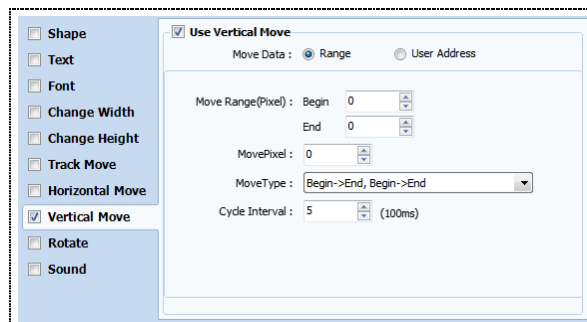


[Fig. User address]

| Address properties | | Description |
|--------------------|---------|--|
| Address setting | | Set the address to use to move the object horizontally. |
| Use Restriction | Minimum | Set the minimum value of the address value. |
| | Maximum | Set the maximum value of the address value. |
| Use scale | Minimum | Set the minimum value of the data to be shown proportionally to the address value. |
| | Maximum | Set the maximum value of the data to be shown proportionally to the address value. |

7.7.9 Vertical move

When the condition is satisfied, the object is moved vertically. Set the move range and set the interval and direction. Alternatively, set to move according to address data.

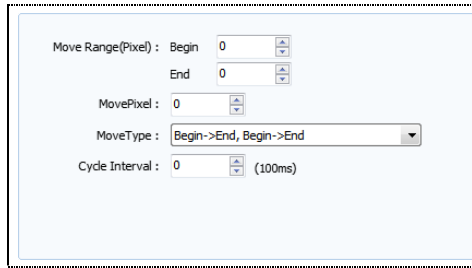


[Fig. Vertical move]

| Vertical move properties | Description |
|--------------------------|--|
| Range | Set the vertical move using the range, pixel value, move type, and interval. |
| User address | Set vertical move using an address value. |

(1) If data change has been set to width

Set the move range, pixel value, move direction, and interval to use. Move type refers to the direction used when the maximum value of the range is exceeded.

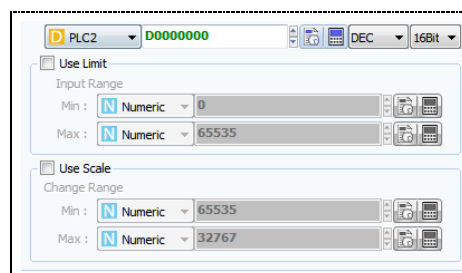


[Fig. Range]

| Range properties | | Description | |
|------------------|-----------------------------|---|-----------------------------|
| Move Range | Start | Set the start position value for vertical move. | |
| | End | Set the end position value for vertical move. | |
| Pixel move | | Set the pixel value to increase/decrease during vertical move. | |
| Direction Type | Begin->End , Begin->End | The object is moved vertically from the start value to the end value. When the end location is exceeded, the move begins again from the start location. | |
| | End->Begin , End-> Begin | The object is moved vertically from the end value to the start value. When the start location is exceeded, the move begins again from the end location. | |
| | Begin->End ->Begin->End | The object is moved vertically from the start value to the end value. When the end location is exceeded, the object moves toward the start location again. | |
| | End->Begin ->End->Begin | The object is moved vertically from the end value to the start value. When the start location is exceeded, the object moves toward the end location again. | |
| | Cycle | | Set the execution interval. |

(2) If data change has been set to user address

The object is moved vertically according to address data. Said again, the constant value of the address is designated as the move value.

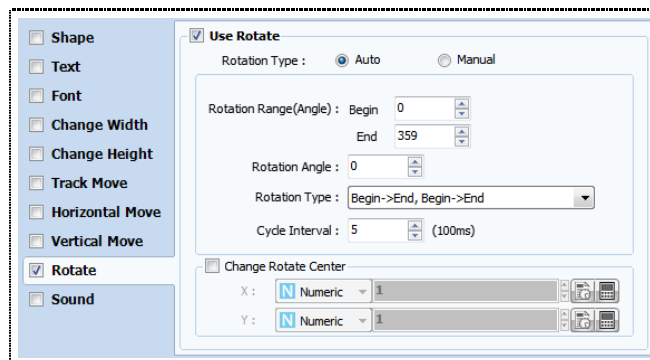


[Fig. User address]

| Address properties | | Description |
|--------------------|---------|--|
| Address setting | | Set the address to use to move the object vertically. |
| Use Restriction | Minimum | Set the minimum value of the address value. |
| | Maximum | Set the maximum value of the address value. |
| Use scale | Minimum | Set the minimum value of the data to be shown proportionally to the address value. |
| | Maximum | Set the maximum value of the data to be shown proportionally to the address value. |

7.7.10 Rotate

When the condition is satisfied, the object is rotated. Set the move range and set the interval and direction. Alternatively, set to rotate according to address data.

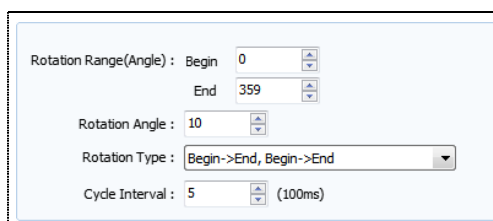


[Fig. Rotate]

| Rotate properties | | Description |
|----------------------|--------|--|
| Rotate Type | Auto | Set the rotate range, angle, type, and interval to set the object to rotate automatically. |
| | Manual | The object is rotated according to user address data. |
| Change rotate center | X | Change the central X coordinate for rotate. This is used when the object rotates around a central coordinate. The distance between the central coordinate to the object coordinate becomes the rotation radius. (If the rotate center is not changed, only the object rotates.) |
| | Y | Change the central Y co-ordinate for rotate. This is used when the object rotates around a central coordinate. The distance between the central coordinate to the object coordinate becomes the rotation radius. (If the rotate center is not changed, only the object rotates.) |

(1) Auto

Auto rotate is an effect where the rotate range, angle, type, and interval are set to automatically rotate the object.



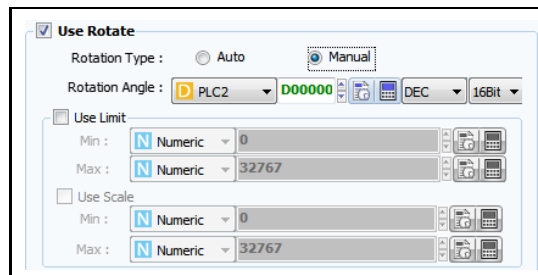
[Fig. Auto]

| Rotate type auto properties | | Description |
|-----------------------------|--------------|---|
| Rotation range | Start | Set the start position for rotate. |
| | End | Set the end position for rotate. |
| Rotation angle | | Set the rotation angle for a single interval. |
| Direction | Begin->End , | Set the object rotation to clockwise. |

| | | |
|-------|-----------------------------|--|
| Type | Begin->End | |
| | End->Begin , End-> Begin | Set the object rotation to counterclockwise. |
| | Begin->End -> Begin->End | Rotation is clockwise when rotation begins. When the end position is reached, rotation becomes counterclockwise. |
| | End->Begin-> End->Begin | Rotation is counterclockwise when rotation begins. When the end position is reached, rotation becomes clockwise. |
| Cycle | | Set the interval for execution of the [Rotate angle]. |

(2) Manual

The object is rotated according to user address data.

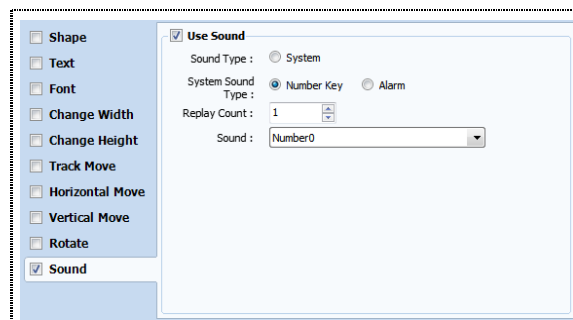


[Fig. Manual]

| Rotate type manual properties | | Description |
|-------------------------------|---------|--|
| Rotation angle | | Set the address to use as the rotate angle. |
| Use Restriction | Minimum | Set the minimum value of the address value. |
| | Maximum | Set the maximum value of the address value. |
| Use scale | Minimum | Set the minimum value of the data to be shown proportionally to the address value. |
| | Maximum | Set the maximum value of the data to be shown proportionally to the address value. |

7.7.11 Sound

When the condition is satisfied, a sound is played. Select the sound type and set the number of repetitions to use.



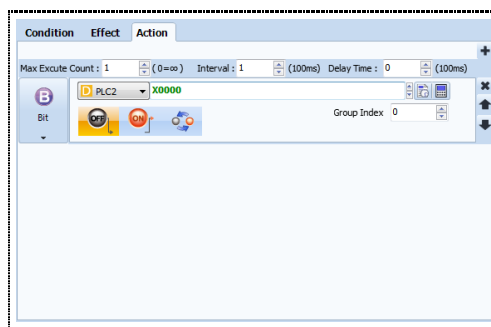
[Fig. Sound]

| Properties | | Description |
|-------------------|------------|--|
| Sound type | | Set the sound type. The default setting is system sound. |
| System Sound Type | Number Key | Set the number key sound. |
| | Alarm | Set the alarm sound. |
| Repetitions | | Set the number of times to replay sounds. |
| Sound | | Select the sound type. |

7.8 Action

An action is created to trigger an address, script, or event when the condition is satisfied. The repetitions, intervals, and delay time for this action can be set. Up to 5 action settings can be added.

(Note: To apply settings, the [Add] or [Edit] button must be pressed.)



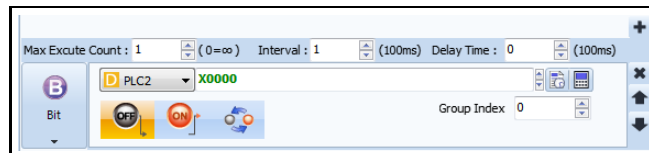
[Fig. Action]

| Action properties | Description |
|-------------------|---|
| Max execute count | Set the number of times to execute the action. (The default setting 0 executes the action infinitely.) |
| Interval | Set the interval to execute the action. |
| Delay time | Set the delay time for initial action execution. |


7.8.1 Bit action




(1) Bit

When the condition is satisfied, the bit address is turned to [ON], [OFF], or [Reverse].



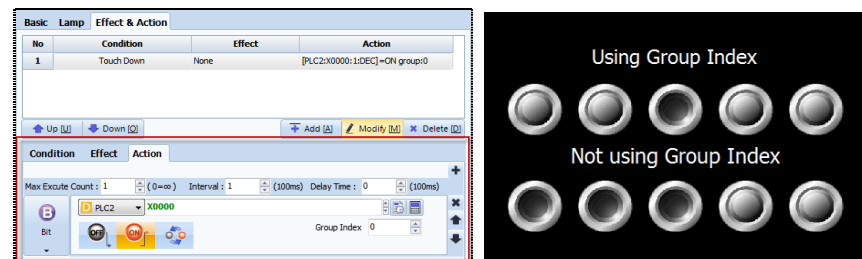
[Fig. Bit]

| Bit properties | Description |
|-----------------|---|
| Address setting | Set the address to use in the bit action.  |

| | |
|---|---|
| Group index | <p>Group index refers to a method that operates similarly to the [Radio] button.</p> <p>If multiple bit addresses are in the same group index, when one address is triggered, the rest of the group members are changed to inactive status.</p> <p>When not using group index, set this to 0.</p> |
|  | When the condition is satisfied, the set address is changed to "OFF continue." |
|  | When the condition is satisfied, the set address is changed to "ON continue." |
|  | When the condition is satisfied, the set address is changed to "ON" if it is "OFF," and to "OFF" if it is "ON." |

(2) Bit (Group index)

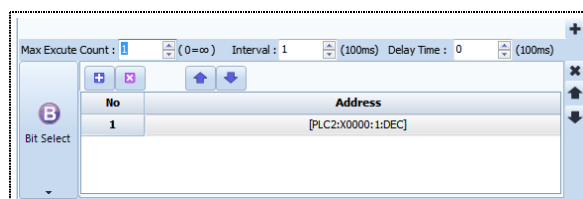
The operating principle is similar to the radio button. To use, set as the same [Group index] as a different address in [Effects & Actions], as shown below. The operation is different from the [Select switch] object. The addresses using group indexes are from PLC1 M00100 to 104. The group index is set to [1]. The addresses not using group indexes are from PLC1 M00105 to 109. The group index is set to [0].








[Fig. Use group index]

(3) Bit selection

When the condition is satisfied, the bit is turned [ON]. Unlike [Bit] actions, up to 8 addresses can be used at once.

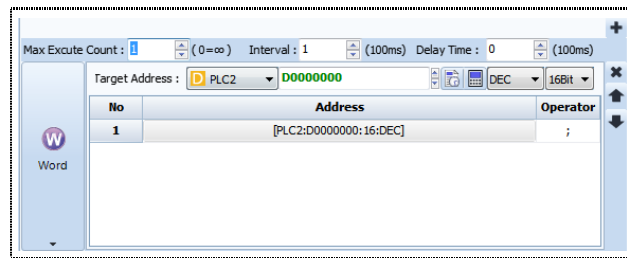


[Fig. Bit selection]



| Bit properties | Description |
|---|--|
| Address setting | <p>Set the address to use in bit selection.</p>  |
|  | Add an address to use in bit selection. Up to 8 can be added. |
|  | Delete the selected address. |
|  | Move the selected address up. |
|  | Move the selected address down. |

7.8.2 Word action

When a condition is satisfied, a particular constant or address value can be entered in the current word address. Also, arithmetic operations or bit operations can be performed.

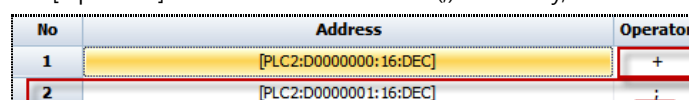


[Fig. Word]

| Word properties | | Description |
|-----------------|--|--|
| Target Address | | First, select the target addresses to be used in the word operation.  |
| Address | | Select the addresses to be inserted in the target address or used in the operation.  |
| Operators | + | Add the addresses of two operands, and insert into the target address. |
| | - | Subtract the addresses of two operands, and insert into the target address. |
| | * | Multiply the addresses of two operands, and insert into the target address. |
| | / | Divide the addresses of two operands, and insert into the target address. |
| | ^ | Perform an XOR operation on the addresses of two operands, and insert into the target address. |
| | % | Divide the addresses of two operands, and insert the remainder into the target address. |
| | & | Perform an AND operation on the addresses of two operands, and insert into the target address. |
| | | Perform an OR operation on the addresses of two operands, and insert into the target address. |
| | << | Among two operands, the first operand is moved to the left by the number of bits designated in the second operand. EX) If there is a value [1] in [PLC D00001] and the word operation is [PLC D00001 << 3], D00001 moves 3 bits to the left and turns into the value 8. |
| >> | Among two operands, the first operand is moved to the right by the number of bits designated in the second operand. EX) If there is a value [1] in [PLC D00001] and the word operation is [PLC D00001 >> 3], D00001 moves 3 bits to the right and turns into the value 1. | |
| ; | | End the operation. |

(1) Add address

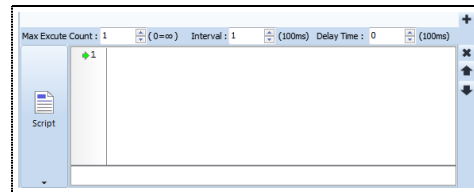
To add addresses, use an [Operator] other than a semicolon (;). This way, a new address can be added.



[Fig. Add address]

7.8.3 Script action

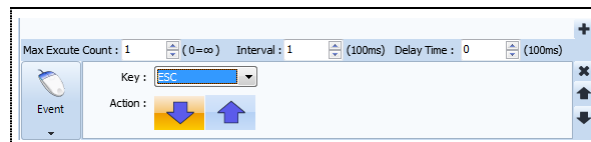
When the condition is satisfied, the script can be executed. JavaScript is supported for convenient execution. When a script is used for an object action, edits and changes can be performed in [Project]-[Script]. For details on how to use scripts, refer to [4.5 Script].



[Fig. Script action]

7.8.4 Event

For event actions, library ten-keys and keyboards used in the window screen are made here. Numbers or strings can be entered.

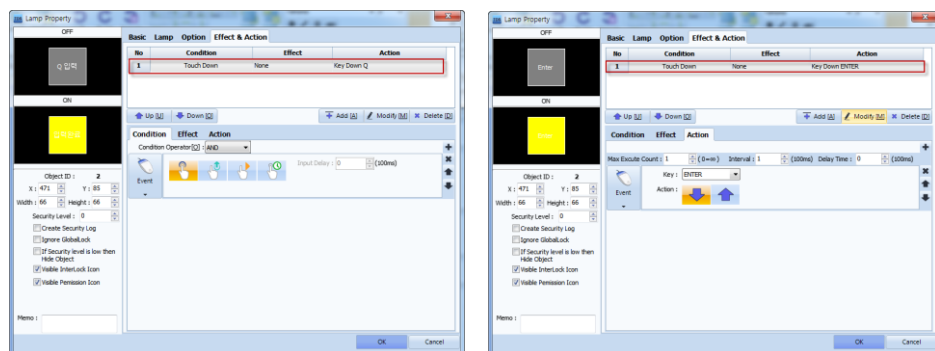


[Fig. Event]

| Event properties | | Description |
|------------------|--|---|
| Key | | All keys used for keyboard input are provided. Set the keys to enter. |
| Action | | When the condition is satisfied and the object is pressed, the [Key] value is entered. |
| | | When the condition is satisfied and the object is pressed and released, the [Key] value is entered. |

(1) Using action events - Register object key to window screen

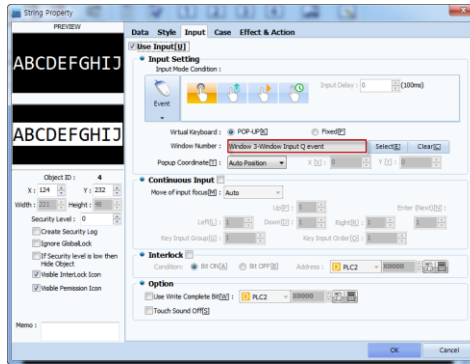
To restrict string input to the value Q, create two objects for Q input and ENTER input on the window screen, as shown in the following.



[Fig. Action event 1]

(2) Using action events - Register string input window screen

Designate the string input as a window screen with the two objects above, as shown in the following figure.



[Fig. Action event 2]

(3) Use action event

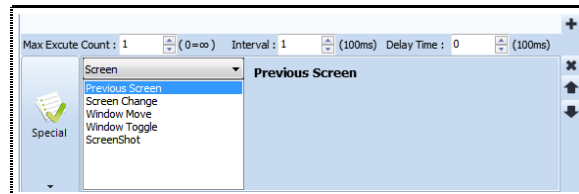
In the simulation screen or run screen, this can be used as follows.



[Fig. Use action event window]

7.8.5 Special

In special functions, the functions used for screen change or open window, and TOPR internal memory and TOPR application execution functions are provided.



[Fig. Special]

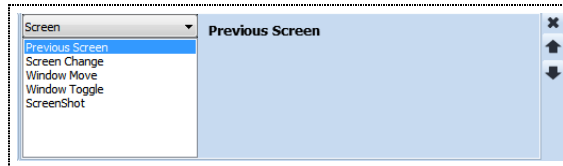
| Special properties | Description |
|--------------------|---|
| Screen | Previous screen, change screen, move window, toggle window, and screenshot functions are provided. |
| Storage | This function moves data saved in TOPR to the SD card. |
| Memory | Memory copy, and address indirect copy functions are provided. |
| System | System shutdown, buzzer sound, N: 1 Interlock, N: 1 Inter unlock, touch lock, secure login, and secure logout functions are provided. |
| App | File browser, shot, FTP, VNC, USB by PassCall, and Global Media Call functions are provided. |
| Camera | Using the camera connected to the TOPR, capture, record, and CCTV functions can be started and ended to save SD card or USB or Internal memory. |

7.8.6 Special (Screen)

These are actions relating to the screen. Window and screen change, and screenshot functions are provided.

(1) Previous screen

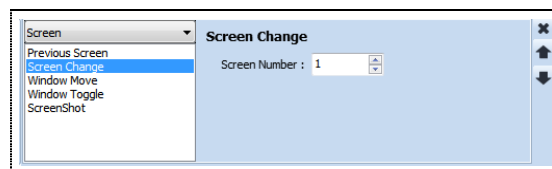
If the condition is satisfied, the previous page is brought up.



[Fig. Previous Screen]

(2) Screen Change

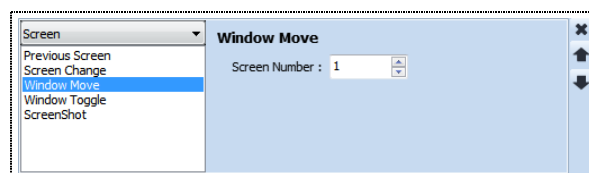
When the condition is satisfied, the set screen number is brought up.



[Fig. Screen Change]

(3) Window move

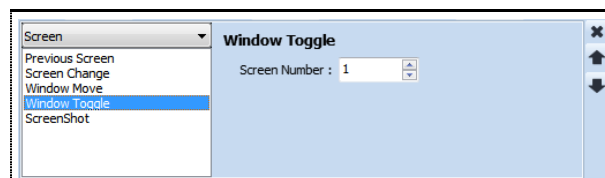
When the condition is satisfied, the set window number is moved. Window move can be used when the window screen is open. When an object action occurs, and the move position is selected, the window screen is moved.



[Fig. Window Move]

(4) Window toggle

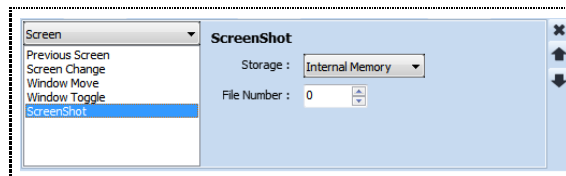
When the condition is satisfied, the set window screen number is brought up or closed.



[Fig. Window Toggle]

(5) Screenshot

When the condition is satisfied, the current screen is saved as a screenshot.

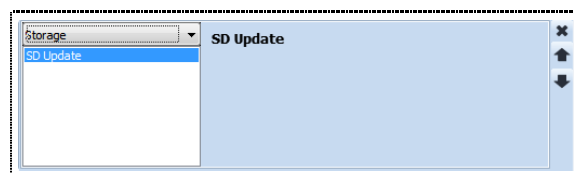


[Fig. Screenshot]

| Properties | | Description |
|-------------|-----------------|--|
| Storage | Internal Memory | Save the screenshot file in TOPR internal memory. |
| | SD Card | Save the screenshot file in the SD card inserted in the TOPR. |
| | USB | Save the screenshot file in the USB memory inserted in the TOPR. |
| File number | | Set the start number for the file names to be saved. |

7.8.7 Special (Storage)

This function is used to move saved data, and is used when moving log, recipe and alarm data saved in the TOPR to the SD card. After the condition is set, data is moved to the SD card if the condition for the current object is satisfied.



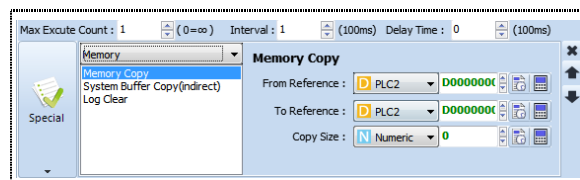
[Fig. SD Update]

7.8.8 Special (Memory)

This is a memory related function. This is used when copying the data for a PLC or address, or when copying data by exchanging addresses.

(1) Memory copy

Copy the value of the reference address to the target address.



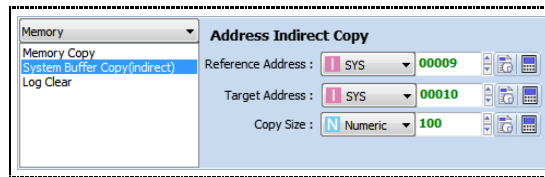
[Fig. Memory Copy]

| Properties | Description |
|-------------------|--|
| Reference address | Set the address to copy. |
| Target Address | Set the target address for copy. |
| Copy size | Set the size of the data to be copied. |

(2) System Buffer Copy (indirect)

This function exchanges addresses. The station of the address referenced for the change must be entered in the reference address, and the station of the target address for the change must be entered in the target address.

EX) If the reference address is set to station 9 and the target address is set to 10 as shown in the figure below, when the value 90 is set for the [Reference address], and the value 100 is set for the [Target address], the value at station [00090] is entered into the value of station [00100] when the object action occurs.



[Fig. System Buffer Copy]

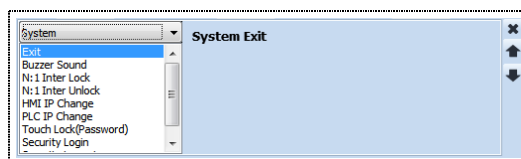
| Properties | Description |
|-------------------|--|
| Reference address | Set the address to copy. (The reference address station must be entered into the address.) |
| Target Address | Set the target address for copy. (The change address station must be entered into the address.) |
| Copy size | Set the size of the data to be copied. |

7.8.9 Special (System)

Functions associated with the TOPR system are provided. Functions used for system shutdown, global touch lock and security level login are provided.

(1) System shutdown (Exit)

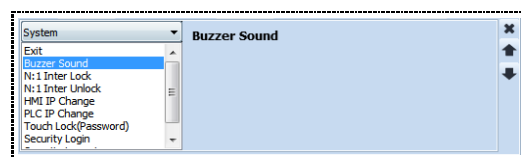
The project is closed when the condition is satisfied.



[Fig. Exit]

(2) Buzzer Sound

The buzzer sound is played when the condition is satisfied.

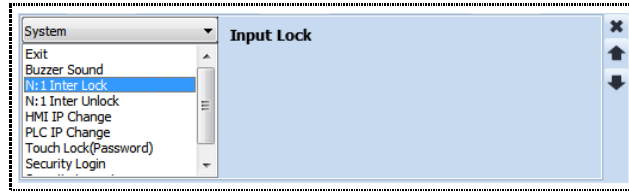


[Fig. Buzzer Sound]

(3) N: 1 Interlock

When the condition is satisfied, N:1 input lock is engaged.

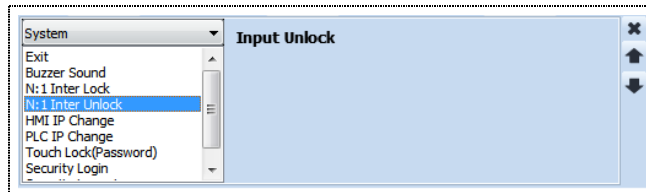
When connecting 1 PLC and multiple TOPR(HMI), enable lock to prevent issues occurring when multiple HMIs communicate with the PLC simultaneously.



[Fig. N: 1 Inter Lock]

(4) N: 1 Inter unlock

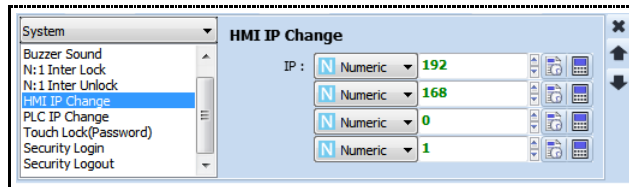
When the condition is satisfied, N:1 input lock is disengaged.



[Fig. N: 1 Inter Unlock]

(5) IP change

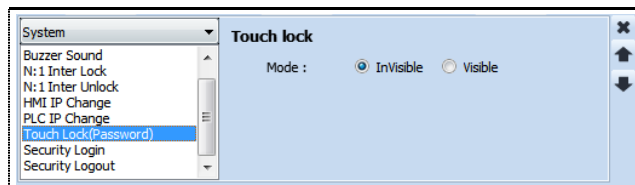
Change the IP address set for TOPR. When the condition is satisfied, the set IP address is changed to. (EX. To change the IP address to 192.168.0.1, the following setting can be used.)



[Fig. IP Change]

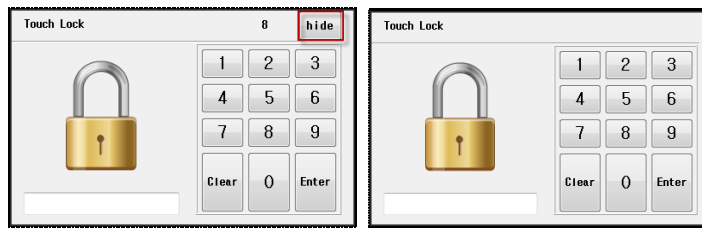
(6) Touch Lock (Password)

When using [Global touch lock] in [Project property]-[Global lock options], the following actions are required. This can be said to be the login window for [Global touch lock].



[Fig. Touch Lock]

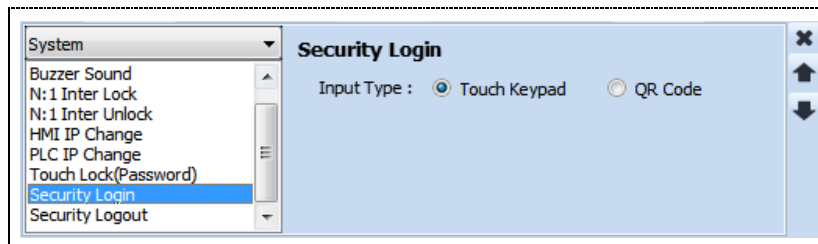
| Properties | Description |
|------------|--|
| Invisible | The touch lock screen window can be set to be invisible. |
| Use | The touch lock screen window can be set to be visible. |



[Fig. Invisible, Visible]

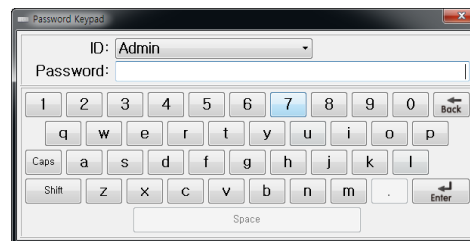
(7) Security login screen

This action is used when logging in after making security settings. When the condition is satisfied, the security login window is shown.



[Fig. Security Login]

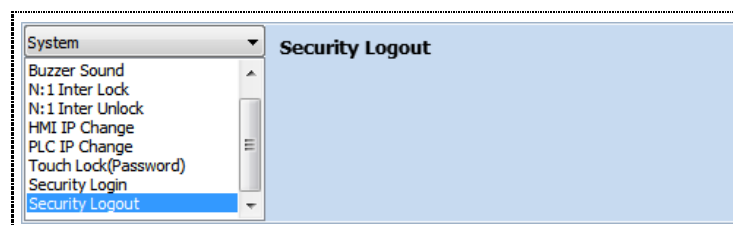
| Properties | Description |
|--------------|---------------------------|
| Touch keypad | Login using keypad input. |
| QR Code | Login using a QR code. |



[Fig. Use security login]

(8) Security logout

This action is used to log out after logging in with security settings. When the condition is satisfied, security level logout is performed.



[Fig. Security Logout]

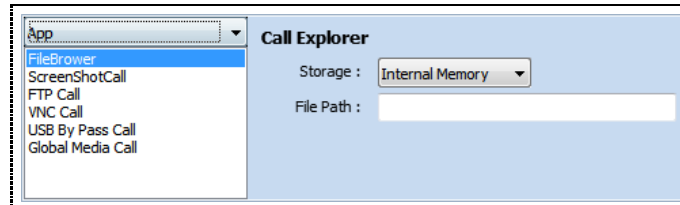
7.8.10 Special (App)

Functions to call applications in the menu screen to projects in the TOPR are provided.


(1) File Browser

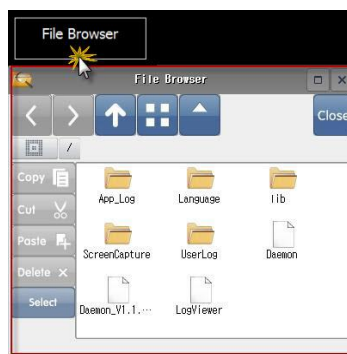
When the condition is satisfied, the File Browser, which is a TOPR application, is called.

By setting the TOPR file path, files can be browsed more easily.



[Fig. File Browser]

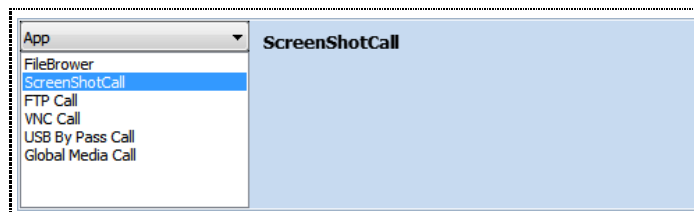
When the condition for a rectangular object is set as an event  and the action is set to File Browser, the operation when the rectangular event is touched in the run screen is as follows.




[Fig. Use File Browser]

(2) Screenshot call

When the condition is satisfied, Screenshot, which is a TOPR application, is called.



[Fig. ScreenShotCall]

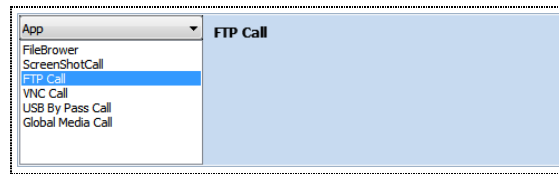
When the condition for a rectangular object is set as an event  and the action is set to Screenshot, the operation when the rectangular event is touched in the run screen is as follows.




[Fig. Use Screenshot Call]

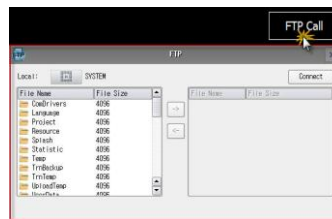
(3) FTP Call

When the condition is satisfied, FTP, which is a TOPR application, is called.



[Fig. FTP Call]

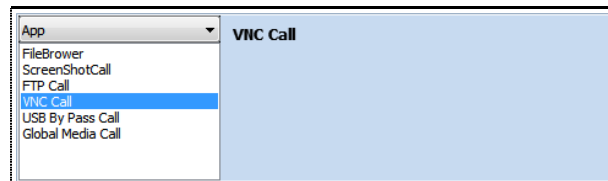
When the condition for a rectangular object is set as an event  and the action is set to FTP call, the operation when the rectangular event is touched in the run screen is as follows.




[Fig. Use FTP Call]

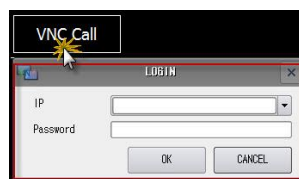
(4) VNC Call

When the condition is satisfied, VNC, which is a TOPR application, is called.



[Fig. VNC Call]

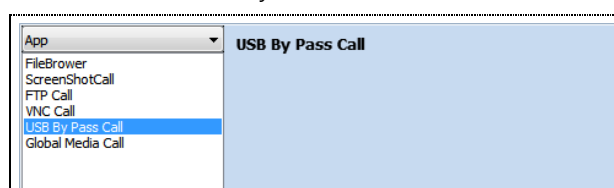
When the condition for a rectangular object is set as an event  and the action is set to VNC call, the operation when the rectangular event is touched in the run screen is as follows.




[Fig. Use VNC Call]

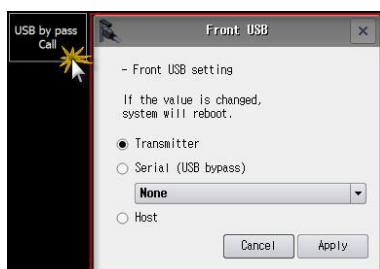
(5) USB bypass call

When the condition is satisfied, the USB memory inserted in the TOPR is called.



[Fig. USB ByPass Call]

When the condition for a rectangular object is set as an event  and the action is set to USB ByPass Call, the operation when the rectangular event is touched in the run screen is as follows.



[Fig. Use USB ByPass Call]

(6) Global media call

Registered global media is called.



[Fig. Global Media Call]

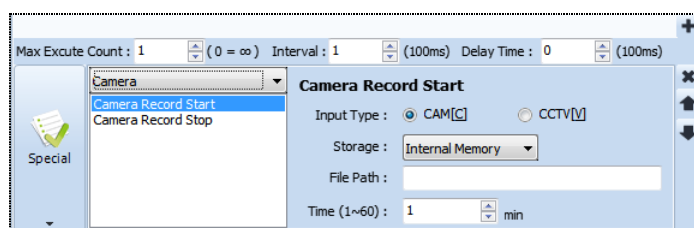
7.8.11 Special (Camera)

This function uses the camera for recording, capture, or CCTV.

After a video is recorded, a video file with the data recorded as the name is created in the [Camera Record] folder of the set media. To view recorded videos, files can be loaded and played in the [Video] function.

(1) Camera record start

When the condition is satisfied, the connected camera is started.

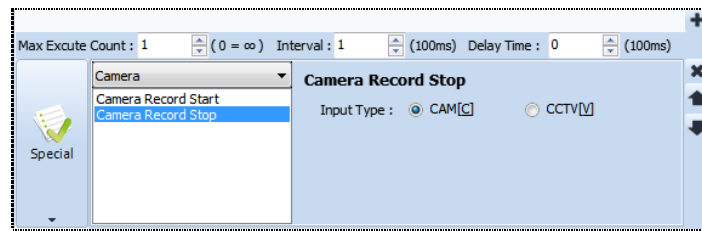


[Fig. Use Camera Record Start]

| Properties | Description |
|---------------|--|
| Input type | Set the camera input type. |
| Save location | Set the media to save data to. |
| File path | Set the path to save data. |
| Time (1~60) | Set the time for which the camera will be run. |

(2) Camera record stop

When the set condition is satisfied, the camera is stopped.



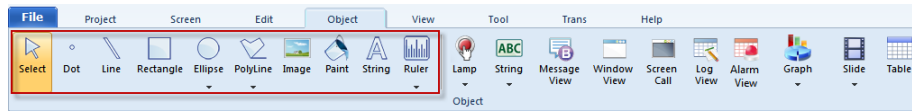
[Fig. Use Camera Record Stop]

CHAPTER 8 Objects (1)

CHAPTER 8 - Objects (1)

An object can be used to design and register lines, shapes, texts or lamps to the screen, or perform actions.

After registering an object on the screen, properties can be changed, along with location and size. Also, the [Effects & Actions] function is provided for basic objects. Effects and actions other than the basic functions are provided.



[Fig. Objects (1)]

8.1 Select



Select object is a function used to select objects on the screen. When the ESC key is pressed while an object is selected, or object draw is exited, selection mode is entered automatically.

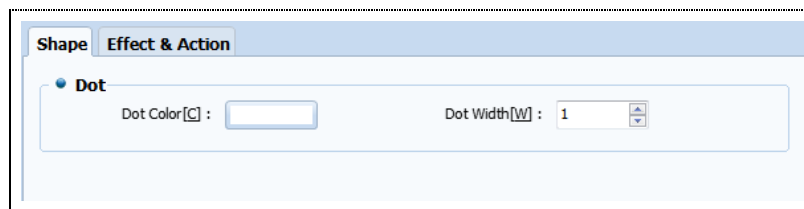
8.2 Dot



The dot object is a function that draws dots. Dots of size 1~10dot can be drawn in various colors. Also, other functions can be added using [Effects & Actions].

8.2.1 Shape page

Set the color and size of the dot.



[Fig. Shape page]

| Dot | Description |
|-----------|--|
| Dot color | Set the dot color using the color palette. |
| Dot size | Select the dot size, from 1~10dot. |

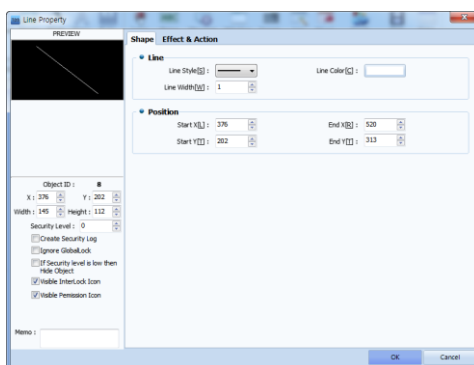
8.3 Line



Draws a line. Lines of thickness 1~10dot can be drawn in various colors and line shapes.

After clicking the screen to begin the line, drag to draw the line. Drag with the [Shift] key on the keyboard

pressed down to draw vertical or horizontal lines. Also, other functions can be added using [Effects & Actions].

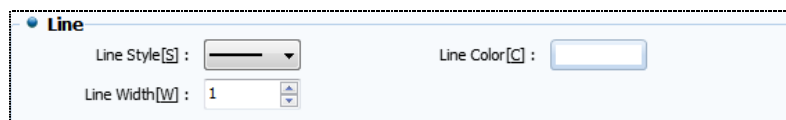


[Fig. Line properties screen]

8.3.1 Shape page

Set the line style/color/width. The values of the XY coordinates where the line is currently located as displayed. These values can be set manually.

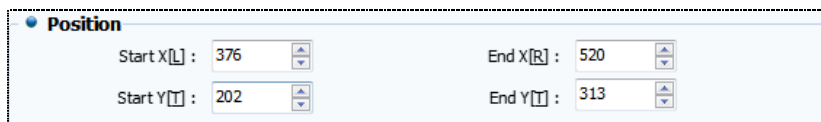
(1) Line



[Fig. Line]

| Line | Description |
|------------|--|
| Line style | Select the style of the line from the combo box. |
| Line color | Set the line color using the color palette. |
| Line width | Select the line width, from 1~10dot. |

(2) Position



[Fig. Position]

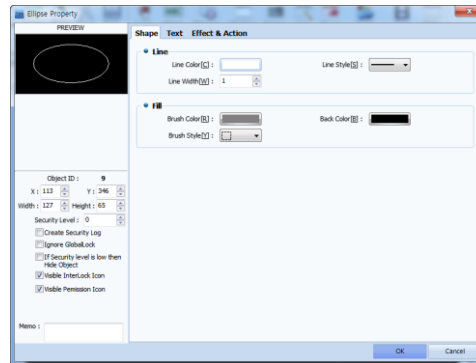
| Position/size | Description |
|---------------|---|
| Start point X | Set the x coordinate position of the point where the line starts. |
| Start point Y | Set the Y coordinate position of the point where the line starts. |
| End point X | Set the x coordinate position of the point where the line ends. |
| End point Y | Set the y coordinate position of the point where the line ends. |

8.4 Ellipse



Draws an ellipse. Drag with the [Shift] key on the keyboard pressed down to draw a circle.

Various colors and line styles are supported. The fill function can be used to fill the ellipse with color. Also, other functions can be added using [Effects & Actions].

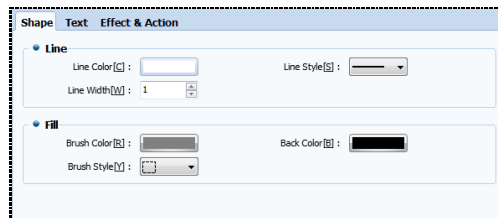


[Fig. Circle properties screen]

8.4.1 Shape page

Set the color, thickness, and style of the lines forming the circle. The setting method is the same as for line objects.

The inside of the circle is filled with color. Using fill colors and background colors, patterns can be applied.



[Fig. Shape page]

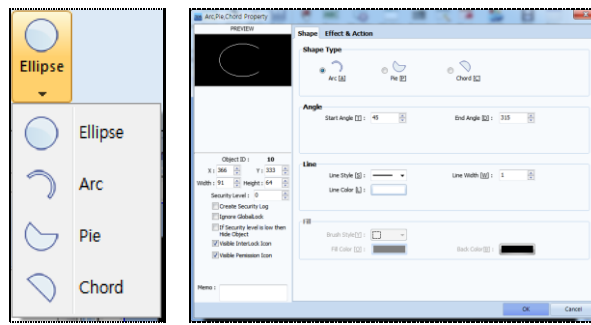
| Fill | Description |
|------------------|---|
| Fill method | Select the internal color pattern for the circle from the list. |
| Fill color | Set the color of the parts shown in black in the patterns in [Brush style]. |
| Background color | Set the color of the parts shown in white in the patterns in [Brush style]. |

8.4.2 Text page

Refer to 8.10 Text object

8.5 Arc, pie, chord

When the More Icon for ellipse objects is clicked, a list of objects for drawing arcs, pies, and chords appears, as shown in the figure below. Here, the type of color and line can be changed, as which ellipses and lines. Also, other functions can be added using [Effects & Actions].



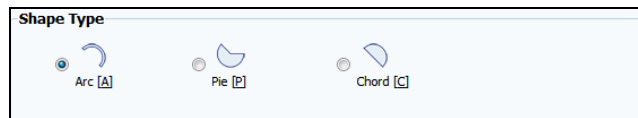
[Fig. Arc, pie, and chord selection and properties screen]

8.5.1 Shape page

Set the shape type, angle, and line.

(1) Shape Types

Select from arc, pie, and chord.



[Fig. Shape Types]

Various colors and line types are supported; by setting angle degrees, various shapes can be expressed.

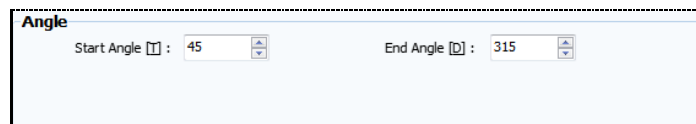


[Fig. Arc, pie, chord]

By dragging the white trackers, the size can be adjusted manually. By dragging the yellow tracker, it is possible to adjust to the desired angle.

(2) Angle

Set the start angle and end angle.

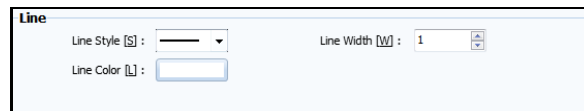


[Fig. Angle]

0 degrees is the 3 o'clock direction. The angle rotating counterclockwise from 0 degrees is the start angle, and the angle rotating clockwise from the 3 o'clock direction is called the end angle.

(3) Line

Set the color, thickness, and style of the line.

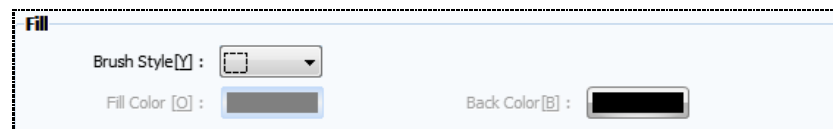


[Fig. Line]

| Line | Description |
|------------|---|
| Line style | Select the style of the line. |
| Line width | Select the line width, from 1~10dot. |
| Line color | Set the line color using the color palette. |

(4) Fill

Set the fill color of the pie or chord. Arcs are not closed areas. Therefore, the fill function is not provided. The setting method is the same as for filling ellipse objects.



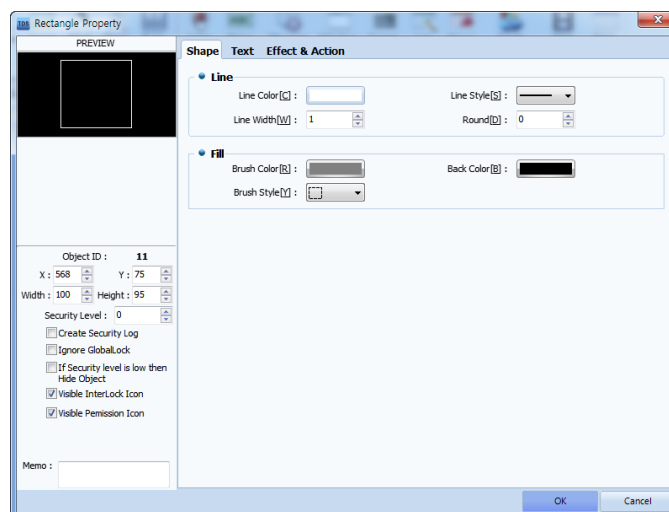
[Fig. Fill]

8.6 Rectangle



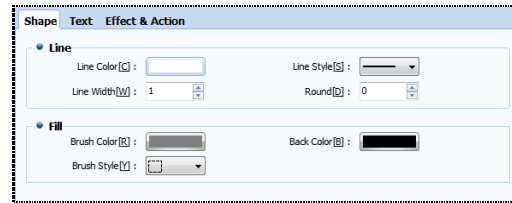
Draws a rectangle. Click the start point on the screen, and draw by dragging.

Drag with the [Shift] key on the keyboard pressed down to draw a square. Also, other functions can be added using [Effects & Actions].



[Fig. Rectangle properties screen]

8.6.1 Shape page



[Fig. Shape page]

(1) Line

Set the color, thickness, and style of the lines forming the rectangle. The setting method is the same as for line objects. A rectangle with rounded corners is made. The range of values that can be set for each rectangle is different. The larger the value, the closer the rectangle is to a circle.

(2) Fill

The inside of the rectangle is filled with color. The setting method is the same as for filling ellipse objects.

8.6.2 Text page

Refer to 8.10 Text object

8.7 Polyline, polygon

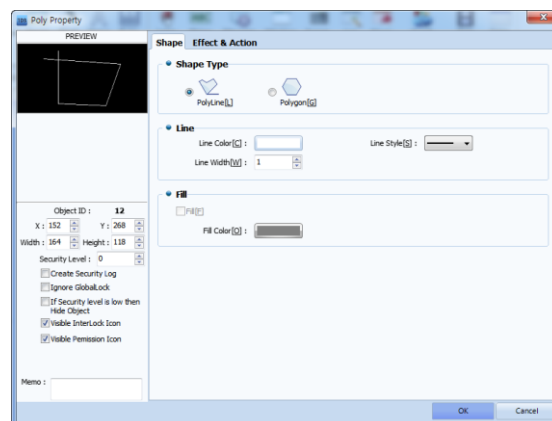


PolyLines or polygons are registered on the screen.

PolyLines and polygons are created by connecting lines. Polygons have closed areas.

When dots are plotted consecutively, polygons or polyLines with these points as corners are drawn.

Left click the mouse on the screen multiple times to draw the desired polyline or polygon. End by right clicking the mouse. Yellow trackers are displayed on the corners. The shape can be changed by dragging these trackers. Also, other functions can be added using [Effects & Actions].



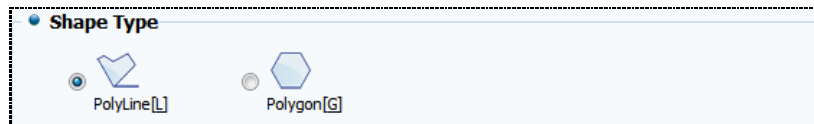
[Fig. Polyline properties screen]

8.7.1 Shape page

Set the shape type, line and fill color for the polygon.

(1) Shape Types

Select between polygon and polyline.

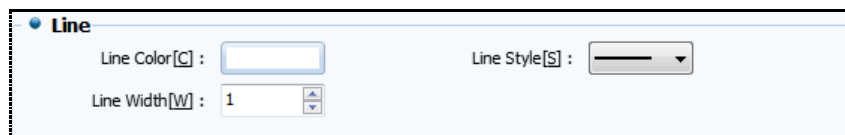


[Fig. Shape Types]

A polyline is a shape that is created by connecting multiple lines plotted with the left mouse button. The same applies to polygons, but a polygon forms a closed area.

(2) Line

The setting method is the same as for line objects.

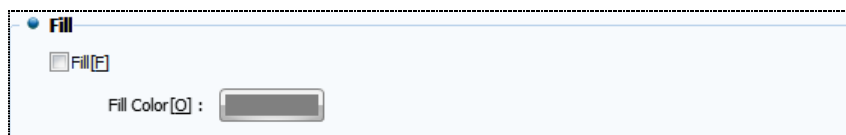


[Fig. Line]

(3) Fill

Fill can be used to fill the inside of a polygon with color.

Check [Fill], then set the [Fill color].



[Fig. Fill]

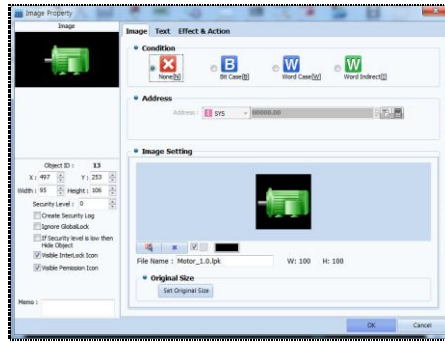
8.8 Image



Registers and image (user library image, global image, local image). Images saved on the PC are displayed on the screen in the desired size. BMP, PNG, JPG and SVG images can be loaded and registered. Depending on conditions, the corresponding images can be displayed.

8.8.1 Condition - Not use

No conditions are set for the image. Therefore, the set image is always displayed.



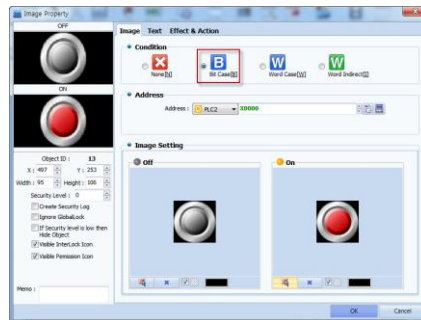
[Fig. Image not use condition]

[Image settings] are performed using the following buttons.

| Image | Description |
|---------------|--|
| | Select the image using the [Image selection dialog] screen. |
| | Delete the selected image. |
| | Show the selected color as transparent in the image. If transparency is enabled, the color to make transparent can be designated. |
| File name | The name of the loaded image is displayed. |
| Original size | When the [Original size] button is pressed, the image is displayed in the original size. |

8.8.2 Condition - Bit case

If the bit address is ON, the ON image is displayed; when OFF, the OFF image is displayed. In [Address], enter the bit address to use as the condition address. In [Image setting], set the images to display when ON/OFF.



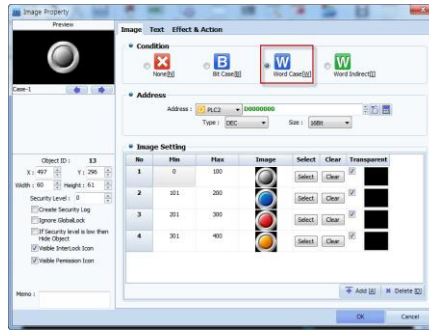
[Fig. Bit case condition of an image object]

8.8.3 Condition - Word case

Different images are displayed according to the data range of the word address entered.

Set the word address to use as the condition address in [Address].

Use the [Add] button to create, according to the number of images to be displayed. Set the [Min] and [Max] values. Use the [Select] button to select the images to be displayed when the data satisfies the range. When the [Clear] button is pressed, the selected image is deleted. When [Transparency] is enabled, the selected color is made transparent in the image.



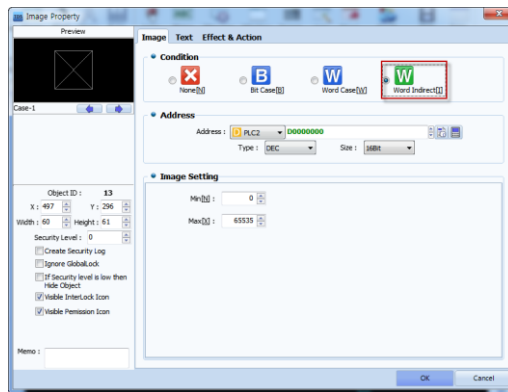
[Fig. Word case condition of an image object]

8.8.4 Condition - Word indirect

Depending on the data of the word address, the image corresponding to the number in the global image list is displayed.

If the data of the condition address entered in [Address] is 1, image 1 is displayed. If the data is 2, image 2 is displayed.

That is, the image with the same number as the data is displayed.

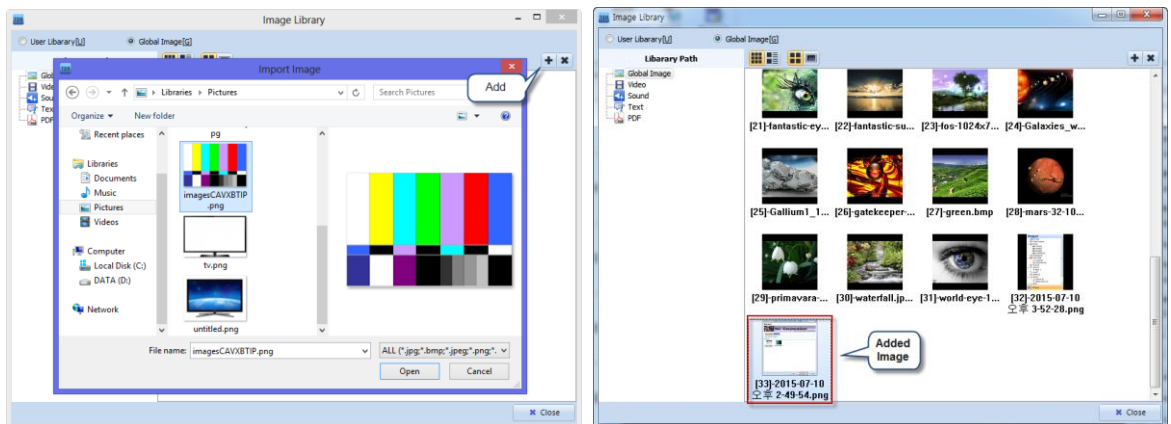


[Fig. Word indirect condition of an image object]

In [Image setting], set the [Min] and [Max] values of the image numbers.

The images to be displayed are registered in [Tools]-[Image Library]-[Global image].

In the image library screen use the [+] button to select and add the images to add. Sequential numbers are automatically assigned to image names. These numbers cannot be modified.



[Fig. Add global image]

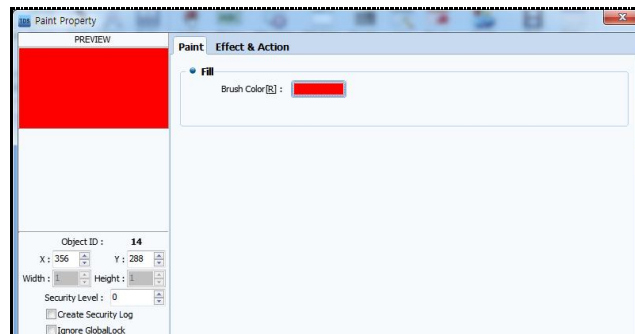
8.8.5 Text page

Refer to 8.10 Text object

8.9 Paint



Fills a closed area with color. Normally, this is used to fill a designated area such as a rectangle with color.



[Fig. Fill properties screen]

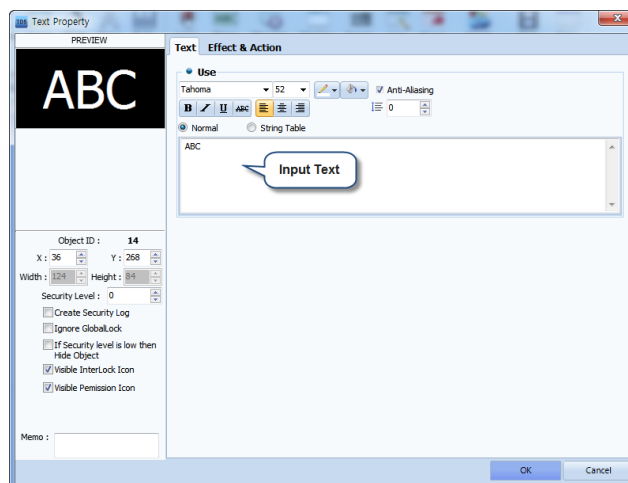
8.9.1 Fill

Set the color to use in [Fill Color].

8.10 Text



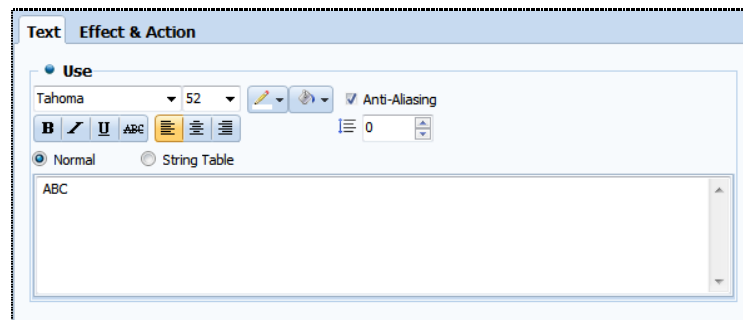
Register text. Through text properties, the text can be edited freely.



[Fig. String properties screen]

8.10.1 Text page

Enter text and set the font, size and style.



[Fig. Text page]

| Font | Description |
|--------------|--|
| | The font for text is changed. Top Design Studio provides a wide variety of some 400 fonts. |
| | Set the text size. |
| | Designate the font color of the text. |
| | Designate the background color of the text. |
| Antialiasing | If the outlines of low resolution images are curved, these curves are created by connecting square pixels. This results in ragged corners. Antialiasing is a rendering technology that smoothens out these corners to create a smooth curve. . |
| | Bold/italic/underline/cancel line effects can be applied to text. |
| | When multiple line has been entered, select left, center, or right alignment. |
| | This is the line space. The space between the first line and second line is set when entering multiline text. The default value is 0. The larger the value entered, the larger the space. |
| Manual entry | Manually enter text into the input box. |
| Text table | This is used when displaying multiple languages according to conditions. Select and enter text that has been entered beforehand using [Project]-[Multilanguage]. |

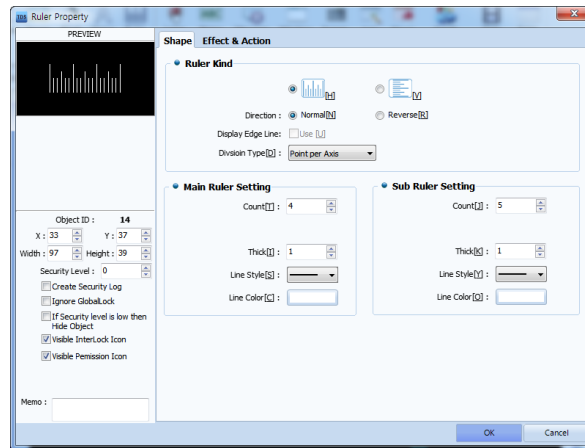
8.11 Ruler



Register a ruler on the screen. [Rectangular] and [Circular] rulers are provided.

8.11.1 Rectangular ruler

Register a rectangular ruler on the screen. These are usually used together with graphs, to show vertical and horizontal grids. As when drawing rectangles, click the position of the top left corner and drag to the desired size. Small grid marks are displayed between the large grid marks.



[Fig. Rect ruler]

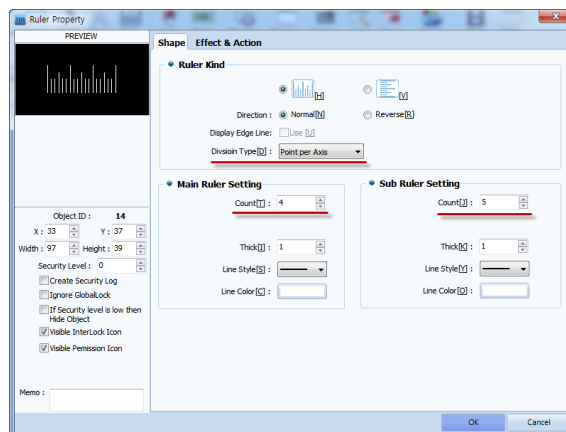
(1) Ruler type

First, select between horizontal ruler () and vertical ruler ().

| Ruler | Description |
|--------------------|--|
| Division direction | Set the direction of the small divisions. Set whether the small divisions are placed inside the graph, or outside the graph. |
| Show outline | This function shows or hides the circular outline for circular rulers, and is only used for circular rulers. |
| Division type | Different types of divisions can be used depending on the division type. [Point per Axis] is a method where the drawn rectangle is divided by the number of large and small divisions, and divisions are shown at equal intervals. [Desired Increment] is a method where a pixel interval is designated for the spacing of large divisions and small divisions. |

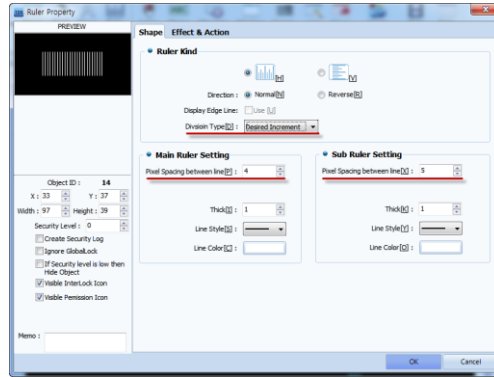
(2) Large division setting/small division setting

If the [Division type] is set to [Point per Axis] in [Ruler type], set the [Count] for large divisions and the [Count] for small divisions. The drawn rectangle is divided by the number of large and small divisions, and divisions are shown at equal intervals



[Fig. Division Type-Point per Axis]

If the [Division type] is set to [Desired Increment] in [Ruler type], set the [Line pixel interval] for the small and large divisions. Within the drawn rectangle, large divisions are drawn according to the large division pixel interval, and small divisions are drawn according to the set small division pixel interval.



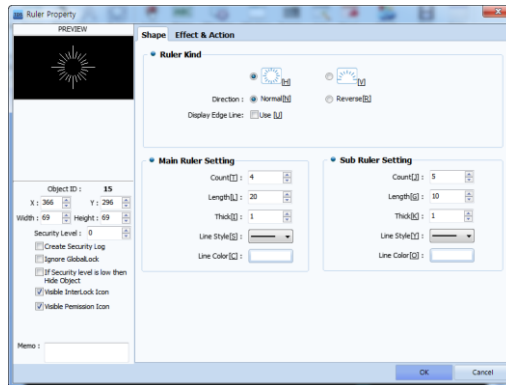
[Fig. Division Type-Desired Increment]

Set the width, style, and color of the divisions.

| Ruler | Description |
|--------------------|---|
| Division thickness | Select the division line width between 1~100dot. |
| Line style | Select the style of the divisions. |
| Line color | Select the color for the lines that form the ruler. |

8.11.2 Circular ruler

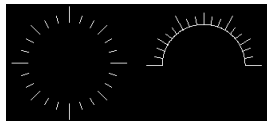
Draw a circular ruler.

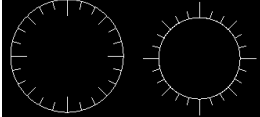
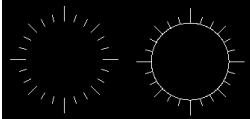


[Fig. Circular ruler]

(1) Ruler type

Set the shape, direction, color and thickness of the ruler.

| Ruler | Description |
|------------|---|
| Ruler type | Select between circle/semicircle ruler.  [Circle ruler -> Semicircle ruler] |

| | |
|--------------------|--|
| Division direction | <p>Select whether to draw the small divisions inward or outward along the circle.</p>  <p>[Outward -> Inward]</p> |
| Show outline | <p>Draw the outline for the circle/semicircle that the divisions form.</p>  <p>[Outline not use -> Use]</p> |

(2) Large division setting/small division setting

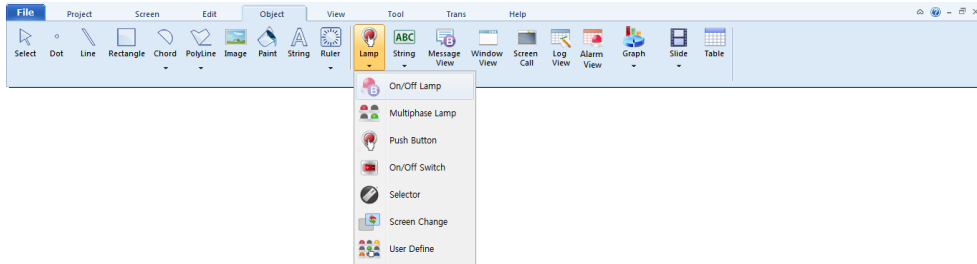
Set the number, length, thickness, style, and color of the divisions.

| Ruler | Description |
|-----------------|---|
| Division count | Set the number of small divisions to be inserted between large divisions. |
| Division length | Set the length of the small divisions and large divisions. |
| Line width | Select the division line width between 1~100dot. |
| Line style | Select the style of the divisions. |
| Line color | Select the color of the divisions. |

CHAPTER 9 Lamp Objects

CHAPTER 9 - Lamp Objects

Lamps are the most commonly used objects in projects. Instead of providing only a lamp function, other various functions are provided together. These functions are similar to lamps and switches which show the operating status or processes of a machine. In other words, lamps help to identify the state of the equipment at a glance. Bit lamps and multi-phase lamps, etc. are provided depending on the status indication method. Also, data can be entered using buttons and switches.

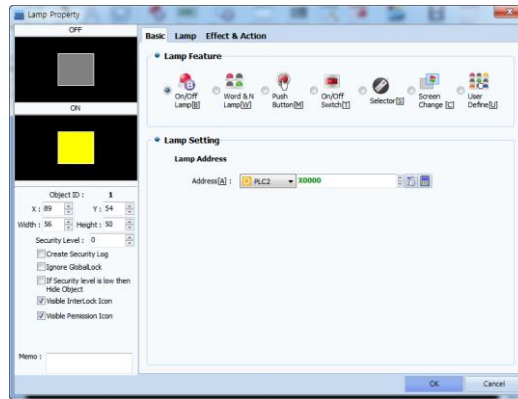


[Fig. Lamp icon]

9.1 Bit lamp



A bit lamp object is an object that indicates the ON/OFF status of a set bit address using a colored circle/rectangle or image.

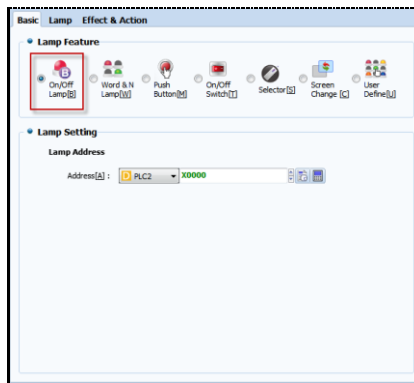


[Fig. Bit lamp]

| Properties tab | Description |
|-----------------|--|
| Basic | The type of lamp is changed and set here, and the object address is set. |
| Lamp | Here, the lamp shape, color, and text are set. |
| Effect & action | Effects and actions other than lamp functions are added here. |

9.1.1 Basic

The lamp type can be changed, as shown in the figure below. Also, depending on the lamp used, the address of the corresponding object can be set.



[Fig. Basic tab for bit lamps]

| Basic tab | Description |
|---------------|---|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |
| Lamp address | This is the address of the bit lamp. The lamp status is indicated based on the bit value of this address. |

9.1.2 Lamp

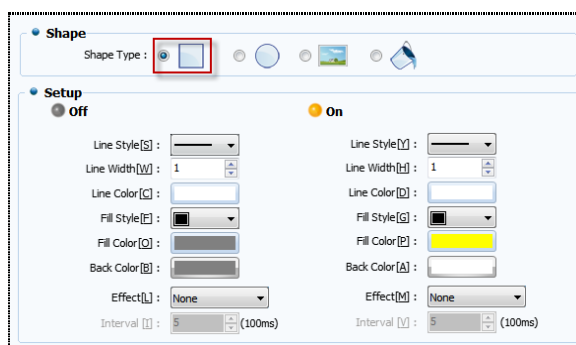
The shape of the lamp, and the line color/width/effect when the lamp is ON/OFF can be set. Also, captions can be added. Depending on the shape of the lamp, different settings are provided.



[Fig. Lamp settings]

(1) Rectangular, Circular / Settings

When the shape is set to rectangular as shown in the figure below, the shape effects for ON/OFF statuses, line, and color can be changed.

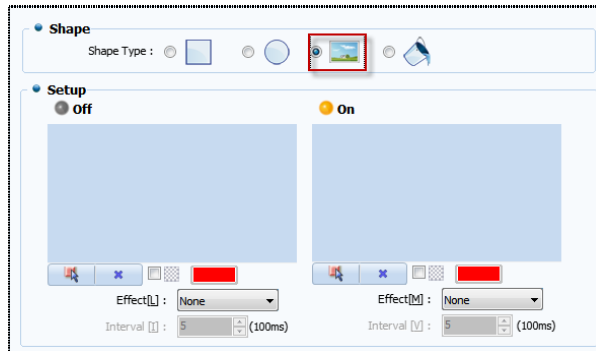


[Fig. Rectangular/Setting]

| OFF/ON setting | Description |
|--------------------------|--|
| Line properties [S]/[Y] | Select the line style for the shape. 6 line styles, including no line, are provided. |
| Line width [W]/[H] | Select the line width for the shape. The line width can be set between 1 and 10. |
| Line color [C]/[D] | Set the line color for the shape. |
| Fill style [F]/[G] | Set the style for filling the lamp. |
| Fill color [O]/[P] | Set the color to fill the lamp with. |
| Background color [B]/[A] | Set the color to fill the background for the fill style with. |
| Effect [L]/[M] | Set the effect for the lamp. [None], [Blink], [Hide], [Reverse] are provided. |
| Interval [I]/[V] | When [Blink] is selected as the effect, the interval for lamp blinking can be set. |

(2) Image / Setting

Change the lamp to an image registered in the user library, global images, or local images.



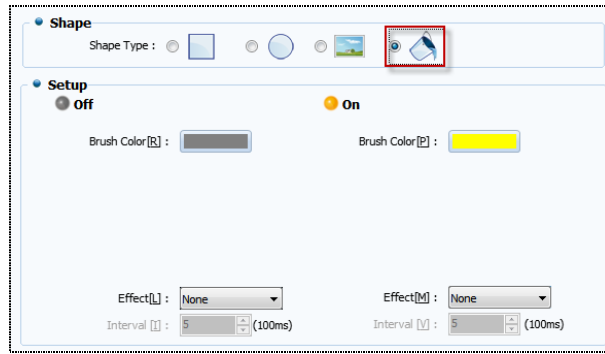
[Photo. Lamp properties]

| OFF/ON setting | Description | |
|----------------|--|---|
| | Import an image to register to the lamp. | |
| | Cancel a registered image. | |
| | Enable transparency. Select a single color in the image to make transparent. | |
| Effect | None | No effect function is used. |
| | Blink | The lamp appears and disappears (turns on/turns off) at the set interval. When the blink option is checked for OFF, the [OFF] lamp appears and disappears. When the blink option is checked for ON, the [ON] lamp appears and disappears. |
| | Hide | This function is used to hide the lamp. When this option is checked for OFF, the [OFF lamp] is not shown when OFF. When this option is checked for ON, the [ON lamp] is not shown when ON. |
| | Reverse | This function is used to emphasize the ON state. When ON, the ON and OFF lamps are alternately displayed at 0.5 second intervals. |
| Interval | When [Blink] is selected as the effect, the interval for lamp blinking can be set. | |

(3) Fill closed area / Setting

Instead of creating a new shape or image lamp, a closed area that has already been drawn is filled. The

properties of [Object]-[Fill closed area] and lamp properties are provided together.

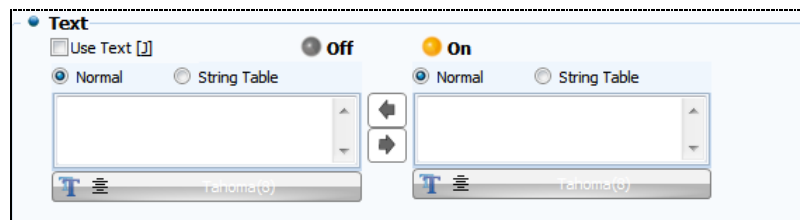


[Photo. Fill closed area]

| OFF/ON setting | Description |
|--------------------|--|
| Fill color [R]/[P] | Set the fill color to use when the lamp is ON and OFF. |
| Effect [L]/[M] | Set the effect for the lamp. [None], [Blink], [Hide], [Reverse] are provided. |
| Interval [I]/[V] | When [Blink] is selected as the effect, the interval for lamp blinking can be set. |

(4) Text

Text can be used for all shapes, regardless of type. The type of text can be selected between [Normal] and [String table]. Also, different text can be set for ON and OFF statuses.



[Fig. Text]

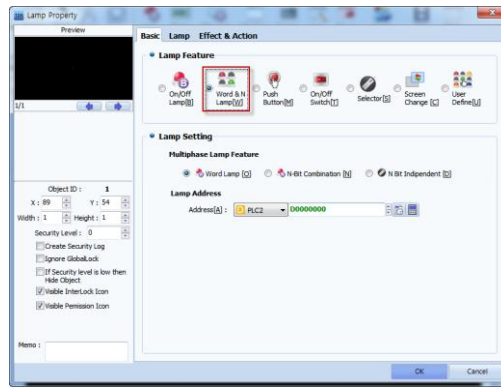
| Text properties | Description |
|-----------------|---|
| Use text [J] | Enable use of text. |
| Direct input | Manually enter and set the text that is displayed according to the ON/OFF status. |
| Text table | Set the text that is displayed according to the ON/OFF status using a text table. |
| | Copy the text for the ON status to the text for the OFF status. |
| | Copy the text for the OFF status to the text for the ON status. |
| | Select the font of the string. |
| Font setting | Set the size, font type, and font effects for the text. |

9.2 Multiphase lamp



A multiphase lamp is a lamp that can show more than two states, instead of just the ON/OFF states.

Multiphase lamps include word lamps, N-bit combination lamps, and N-bit independent lamps.

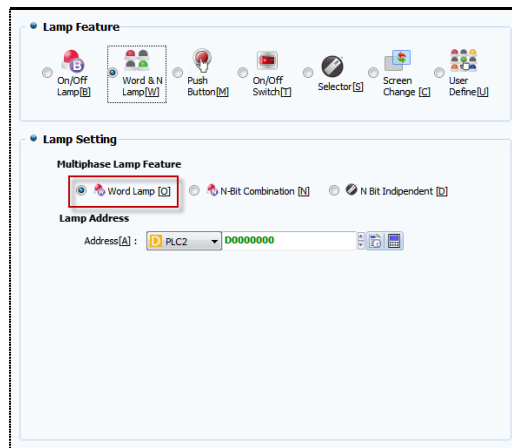


[Fig. Multiphase lamps]

| Properties tab | Description |
|-----------------|---|
| Basic | The type of basic lamp can be changed and set. In the case of multiphase lamps, settings must be made individually for [Word], [N-bit combination], and [N-bit independent], and the corresponding addresses must be set. |
| Lamp | The lamp display settings are made depending on the characteristics of the selected multiphase lamp. |
| Effect & action | Effects and actions other than lamp functions are added here. |

9.2.1 Word lamp - Basic

A word lamp object is an object that shows the data for a set word address using a colored circle/rectangle or image. A word address generally refers to a [16bit] address.

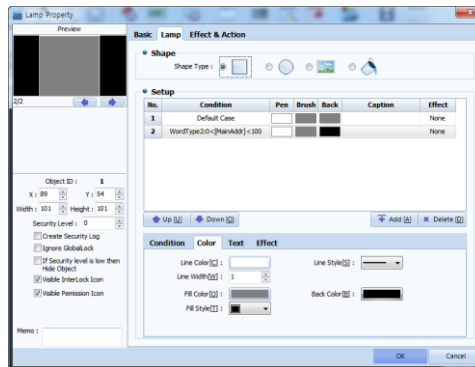


[Fig. Basic tab for word lamps]

| Basic properties | Description |
|----------------------------|--|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |
| Multiphase lamp properties | Set the type of multiphase lamps. Types are [Word], [N-bit combination], and [N-bit independent]. |
| Lamp address | This is the bit lamp address. The lamp status is indicated based on the bit value of this address. |

9.2.2 Word lamp - Lamp

Word lamp is a function that is used to set a range for address values and change the shape, color, and text of the lamp. Said again, a range must be set for the [Word] value.



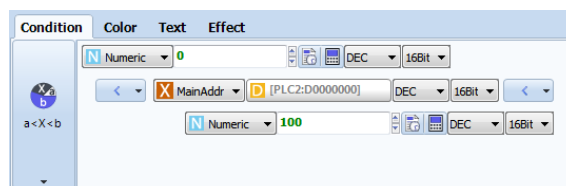
[Fig. Lamp tab for word lamps]

| Settings list | Description |
|---------------|--|
| Condition | The set condition is displayed. |
| Line color | The set line color is displayed. |
| Fill | The set fill color is displayed. |
| Background | The set background color is displayed. |
| Caption | The set text is displayed. |
| Effect | The set effect options are displayed. |






| Settings list button | Description |
|----------------------|---|
| Up[U] | Move the selected setting to a list that is one step above. |
| Down [O] | Move the selected setting to a list that is one step lower. |
| Add [A] | Set conditions, color, text, and effect, and add to the list. |
| Delete [D] | Delete the selected setting. |

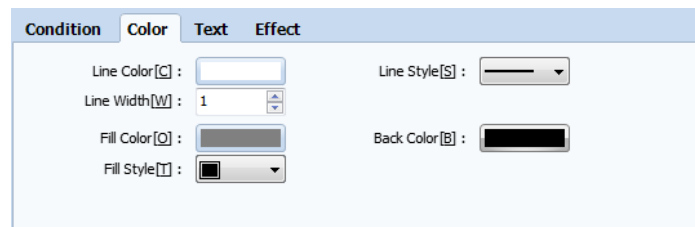
(1) Rectangular / Circular / Fill closed area setting

These settings are for adding to the settings list. Color, text, and effect tabs are provided. After completing settings, the [Add] button must be used to add to the list.



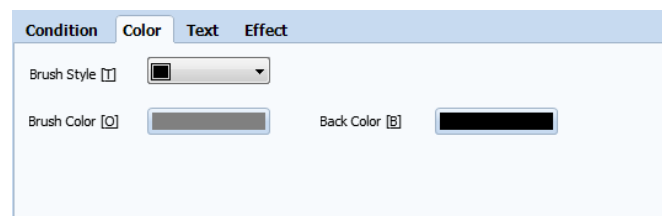
[Fig. Condition setting]

| Condition properties | | Description |
|----------------------|--|--|
| Condition Setting |  Bit | Set a bit address, and set [ON], [OFF], and [REVERSE] conditions for the bit. If the conditions are satisfied, the set color, text, and effect are triggered. |
| |  $X < a$ | Set a word address, and set a size comparison between the word address and a constant value. If the conditions are satisfied, the set color, text, and effect are triggered. |
| |  $a < X < b$ | Set a word address, and set a size comparison between the word address and two constant values. If the conditions are satisfied, the set color, text, and effect are triggered. |
| |  Change word | In this condition, a word address is set, and a change to the address triggers the condition. If the conditions are satisfied, the set color, text, and effect are triggered. |
| |  Event | In this setting, the condition is satisfied when the corresponding object is touched. If the conditions are satisfied, the set color, text, and effect are triggered. |



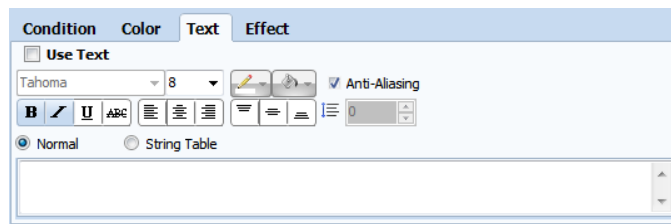
[Fig. Rectangular/Circular color setting]

| Color properties | Description |
|----------------------|--|
| Line color [C] | Set the line color for the shape. |
| Line style [S] | Select the line style for the shape. 6 line styles, including no line, are provided. |
| Line width [W] | Select the line width for the shape. The line width can be set between 1 and 10. |
| Fill color [O] | Set the color to fill the lamp with. |
| Background color [B] | Set the color to fill the background for the fill style with. |
| Fill style [T] | Set the style for filling the lamp. |



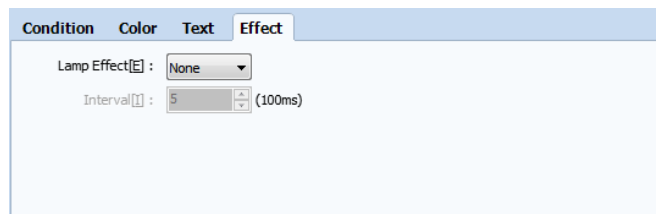
[Fig. Closed area color setting]

| Color properties | Description |
|----------------------|---|
| Fill style [T] | Set the style for filling the lamp. |
| Fill color [O] | Set the color to fill the lamp with. |
| Background color [B] | Set the color to fill the background for the fill style with. |



[Fig. Text setting]

| Text properties | Description |
|-----------------|---|
| Use text | Enable use of text. |
| Direct input | Manually enter and set text. |
| Text table | Set text using a text table. |
| Font setting | Select the font of the string. Set the size, font type, and font effects for the text. |

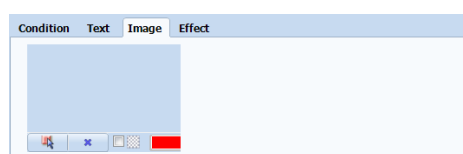


[Fig. Effect setting]




| Effect properties | Description | |
|-------------------|--|---|
| Lamp Effect [E] | None | No effect function is used. |
| | Blink | The lamp appears and disappears (turns on/turns off) at the set interval. When the blink option is checked for OFF, the [OFF] lamp appears and disappears. When the blink option is checked for ON, the [ON] lamp appears and disappears. |
| | Hide | This function is used to hide the lamp. When this option is checked for OFF, the [OFF lamp] is not shown when OFF. When this option is checked for ON, the [ON lamp] is not shown when ON. |
| | Reverse | This function is used to emphasize the ON state. When ON, the ON and OFF lamps are alternately displayed at 0.5 second intervals. |
| Interval[I] | When [Blink] is selected as the effect, the interval for lamp blinking can be set. | |

(2) Image settings

Change the lamp to an image registered in the user library, global images, or local images.

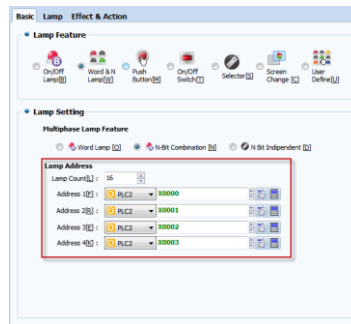


[Fig. Image settings]

| Image property | Description |
|---|--|
|  | Import an image to register to the lamp. |
|  | Cancel a registered image. |
|  | Enable transparency. Select a single color in the image to make transparent. |

9.2.3 N-bit combination - Basic

An N-bit combination object is an object that is made using a combination of a number of bit lamps. In this type of lamp, multiple bit lamps are set, and a colored circle/rectangle or image is illuminated depending on the conditions for the bits. Up to 16 lamps can be used. (Ex. 2 lamps = 1 address, 3~4 lamps = 2 addresses, 5~8 lamps = 3 addresses)

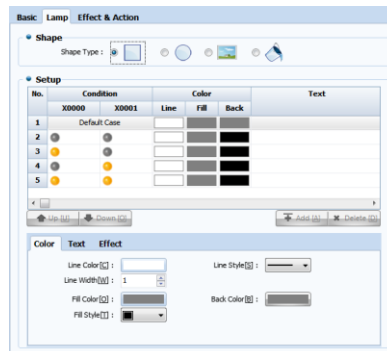


[Fig. Basic tab for N-bit combination]

| N-bit combination properties | Description |
|------------------------------|--|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |
| Multiphase lamp properties | Set the type of multiphase lamps. Types are [Word], [N-bit combination], and [N-bit independent]. |
| Lamp address | When the number of lamp addresses is set, bit addresses are automatically added. The lamp status is indicated based on the bit value of these addresses. |

9.2.4 N-bit combination - Lamp

N-bit combination is a function that is used to set bit statuses and change the shape, color, and text of the lamp. Said again, depending on the number of bits, the conditions for the bit ON and OFF statuses are automatically set and added.

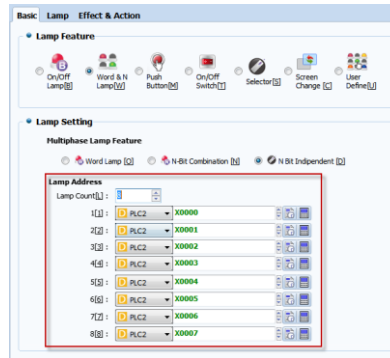


[Fig. Lamp tab for N-bit combination]

The conditions for the settings list are created automatically when the number of bits is set. For details on the [Color], [Text], and [Effect] options, refer to [9.2.2 Word lamp (lamp page)].

9.2.5 N-bit independent - Basic

In an N-bit independent object, the bit lamps are operated with individual conditions. Unlike N-bit combination lamps, multiple bit lamps are set, and individual colored circles/rectangles or image are illuminated depending on the conditions for the bits. Up to 8 lamps can be used.

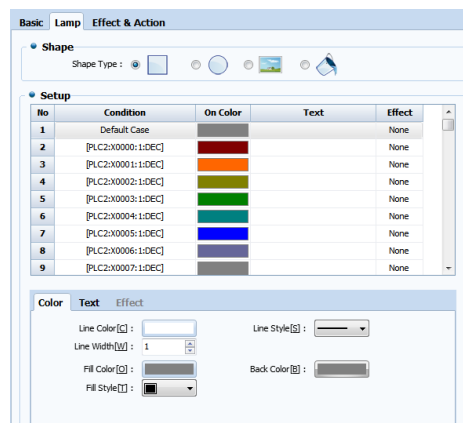


[Fig. Basic tab for N-bit independent lamps]

| N-bit independent properties | Description |
|------------------------------|--|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |
| Multiphase lamp properties | Set the type of multiphase lamps. Types are [Word], [N-bit combination], and [N-bit independent]. |
| Lamp address | When the number of lamp addresses is set, bit addresses are automatically added. The lamp status is indicated based on the bit value of these addresses. |

9.2.6 N-bit independent - Lamp

For N-bit independent, unlike N-bit combination, the conditions for bit statuses can be set individually. N-bit independent is a function that is used to set bit statuses and change the shape, color, and text of the lamp. Said again, depending on the number of bits, the conditions for the bit ON status are set individually, and the same condition is set for the OFF statuses.



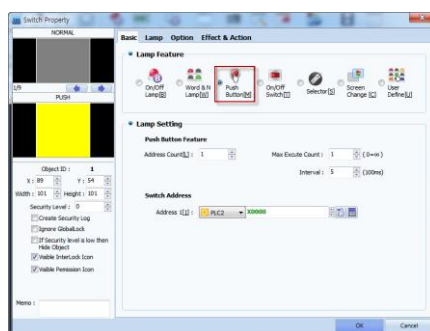
[Fig. Lamp tab for N-bit independent lamps]

The conditions for the settings list are created automatically when the number of bits is set. For details on the [Color], [Text], and [Effect] options, refer to [9.2.2 Word lamp (lamp page)].

9.3 Push button



The push button is an object that has the functions of lamps and touch. The signal is sent to the given switch address only when the button is pressed, turning the status of the button 'ON.' Conversely, when the button is released, the signal is turned off, and the status of the button becomes 'OFF.'

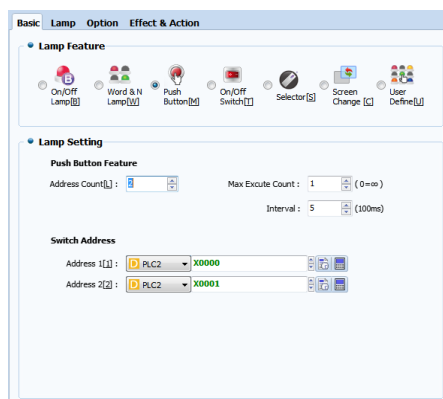


[Fig. Push button]

| Properties tab | Description |
|-----------------|--|
| Basic | The type of basic lamp can be changed and set, and the corresponding address must also be set. |
| Lamp | Lamp display settings are used depending on the lamp selected. |
| Touch option | Here, the touch conditions and buzzer sound are set. |
| Effect & action | Effects and actions other than lamp functions are added here. |

9.3.1 Basic tab

The lamp type can be changed, as shown in the figure below. Also, number of addresses to be controlled by the buttons are set in switch properties. Next, adjust the maximum execute count and intervals for the switch. Lastly, set the switch address. If there are multiple addresses, the switches for the corresponding addresses are triggered when the push button is pressed.

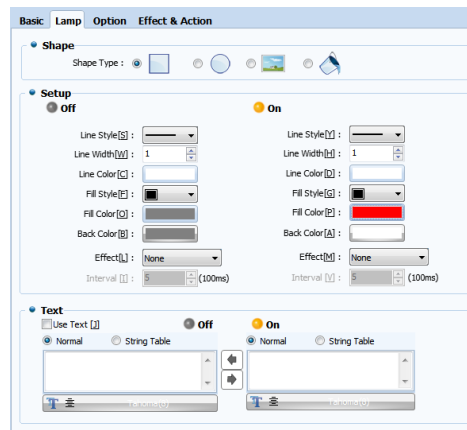


[Fig. Basic tab push buttons]

| Basic properties | Description |
|-------------------|---|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |
| Switch properties | Set the number of addresses using the push button, execute count, and interval. |
| Switch address | This is the address of the bit lamp. The lamp status is indicated based on the bit value of this address. |

9.3.2 Lamp tab

The shape of the lamp, and the line color/width/effect when the lamp is ON/OFF can be set depending on the status of the address. Also, strings can be added. Depending on the shape of the lamp, different settings are provided.

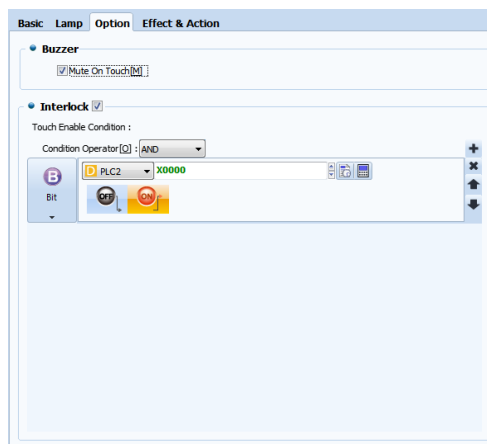


[Fig. Push button lamp settings]

The push button lamp settings are identical to the lamp tab for bit lamps. For details, refer to Chapter 13.1.1 Lamp tab of bit lamps.

9.3.3 Touch option

In the case of objects where touch is possible, an interlock function that interlocks the touch sound (buzzer sound) and the touch can be enabled.



[Fig. Push button touch options]

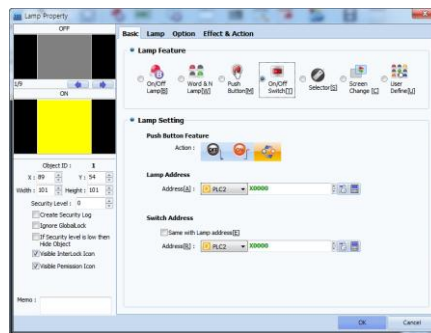
| Properties | Description |
|-------------------|--|
| No touch sound[M] | The buzzer sound is the sound that is played when a touch occurs. To use the buzzer sound, keep the No touch sound option unchecked. |
| Interlock | Interlock is a function used to lock the touch action of an object. [Bit] and [Word] interlock conditions are provided. Up to 6 conditions can be set. |

9.4 ON/OFF switch



The ON/OFF switch, like the push button, is an object that has the functions of lamps and touch.

However, an ON/OFF switch performs the set action when clicked once, then maintains that status until the next click.

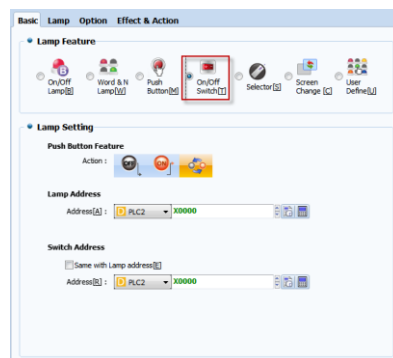


[Fig. ON/OFF switch]

| Properties tab | Description |
|-----------------|--|
| Basic | The type of basic lamp can be changed and set, and the corresponding address must also be set. |
| Lamp | Lamp display settings are used depending on the lamp selected. |
| Touch option | Here, the touch conditions and buzzer sound are set. |
| Effect & action | Effects and actions other than lamp functions are added here. |

9.4.1 Basic tab

The lamp type can be changed, as shown in the figure below. Also, switch properties are used to set the action for the switch, the address that is displayed, and the switch address.

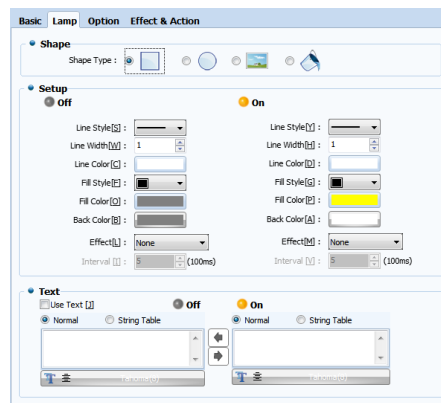


[Fig. Basic tab for ON/OFF switches]

| Properties | Description |
|-------------------|---|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |
| Switch properties | Set the switch action when a switch is pressed. The types of switch action are [ON], [OFF], and [REVERSE]. |
| Lamp address | Set the address of the lamp that shows the status of the object. |
| Switch address | Set the address of the switch that shows the action for the object. When the option [Same as lamp address] is set, the address is set as the same address as [Lamp address]. When the object is triggered, the lamp status also changes. |

9.4.2 Lamp tab

The shape of the lamp, and the line color/width/effect when the lamp is ON/OFF can be set. Also, captions can be added. Depending on the shape of the lamp, different settings are provided.

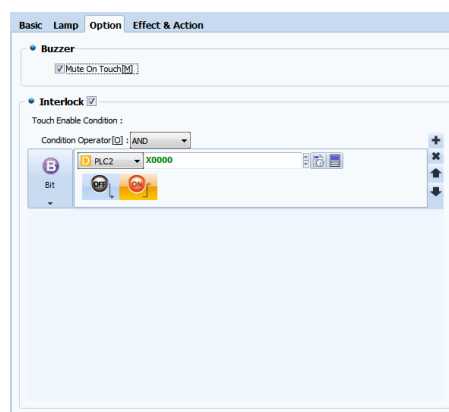


[Fig. Lamp settings for ON/OFF switches]

The ON/OFF switch lamp settings are identical to the lamp tab for bit lamps. For details, refer to Chapter 13.1.1 Lamp tab of bit lamps.

9.4.3 Touch option

In the case of objects where touch is possible, an interlock function that interlocks the touch sound (buzzer sound) and the touch can be enabled.

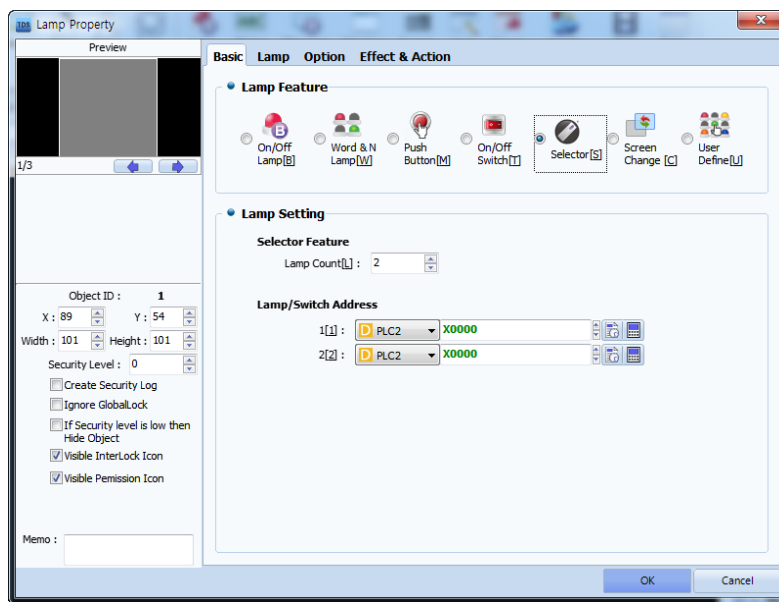


[Fig. Touch options for ON/OFF switches]

| Touch option properties | Description |
|-------------------------|--|
| No touch sound [M] | The buzzer sound is the sound that is played when a touch occurs. To use the buzzer sound, keep the No touch sound option unchecked. |
| Interlock | Interlock is a function used to lock the touch action of an object. [Bit] and [Word] interlock conditions are provided. Up to 6 conditions can be set. |

9.5 Select switch

Select switches do not have On/Off lamps. The number of lamps is designated by the user. Whenever the user touches once, the next lamp is turned on, beginning with lamp number 1. At the last lamp, lamp number 1 is returned to. These actions are performed only for individual addresses.

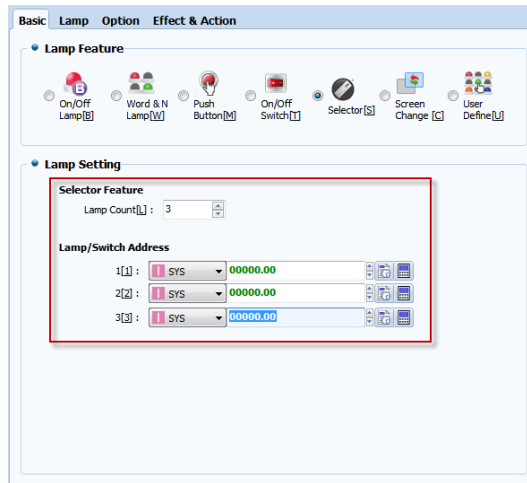


[Fig. Select switch]

| Properties tab | Description |
|-----------------|--|
| Basic | The type of basic lamp can be changed and set, and the corresponding address must also be set. |
| Lamp | Lamp display settings are used depending on the lamp selected. |
| Touch option | Here, the touch conditions and buzzer sound are set. |
| Effect & action | Effects and actions other than lamp functions are added here. |

9.5.1 Basic tab

The lamp type can be changed, as shown in the figure below. Also, lamp addresses can be added, and the shape can be changed according to the address selected. Said again, the switch operates as one, but the number of lamps shown changes to the set value. These conditions are possible when the lamp & switch address are not identical.

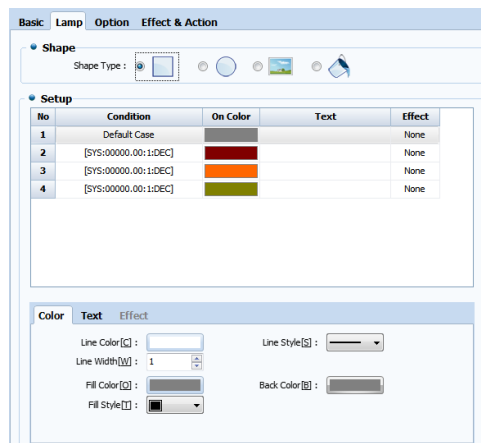


[Fig. Basic tab for select switches]

| Properties | Description |
|-----------------------------|--|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |
| Lamp address | This is the address of the bit lamp. The lamp status is indicated based on the bit value of this address. |
| Lamp count [L] | Set the number of lamps. |
| Lamps & switches Address | Action addresses are created depending on the lamp count setting. For these actions to work as select switches, different addresses must be set. |

9.5.2 Lamp tab

The number of items in the list is equal to the number of lamps. The shape of the lamp, and the line color/width/effect when the lamp is ON/OFF can be set. Also, captions can be added.

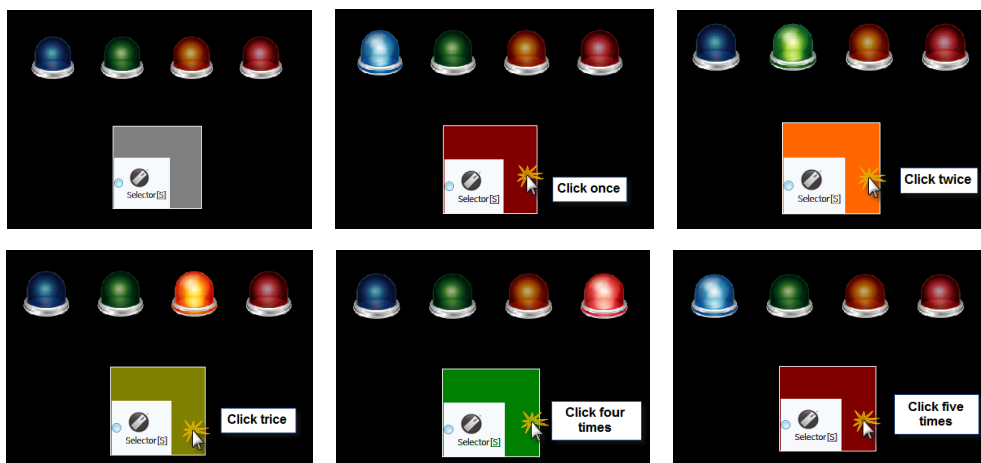


[Fig. Lamp settings for select switches]

The conditions for the settings list are created automatically when the number of lamps is set.

For details on the [Color], [Text], and [Effect] options, refer to [12.2.2 Word lamp (lamp tab)].

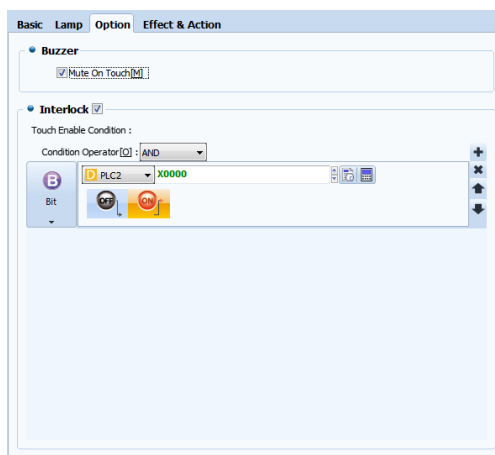
The select switch can be used as follows. If the select switch address is set to SYS0000.00~0000.03, the operation is as follows.



[Fig. Using select switches]

9.5.3 Touch option

In the case of objects where touch is possible, an interlock function that interlocks the touch sound (buzzer sound) and the touch can be enabled.



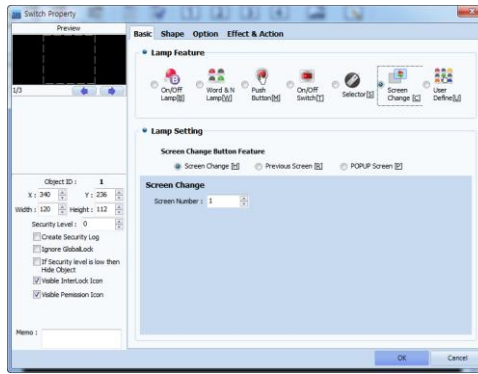
[Fig. Touch options for select switches]

| Properties | Description |
|-------------------|--|
| No touch sound[M] | The buzzer sound is the sound that is played when a touch occurs. To use the buzzer sound, keep the No touch sound option unchecked. |
| Interlock | Interlock is a function used to lock the touch action of an object. [Bit] and [Word] interlock conditions are provided. Up to 6 conditions can be set. |

9.6 Screen change



Screen change is an object that brings up the set screen when touched. The object can be moved to or loaded in base screens and window screens, and can be set to bring up the previous screen as well.

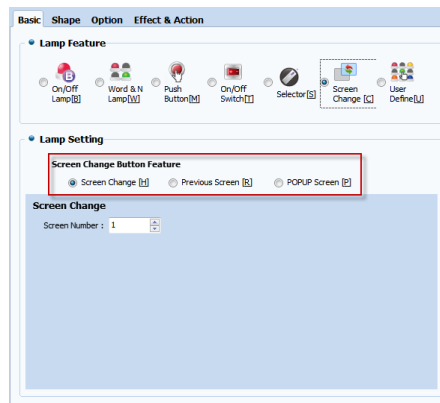


[Fig. Screen change]

| Properties tab | Description |
|-----------------|--|
| Basic | The type of basic lamp can be changed and set, and the corresponding address must also be set. For screen changes, set the screen number. |
| Shape | Set the shape of the object that uses screen change. |
| Touch option | Here, the touch conditions and buzzer sound are set. |
| Effect & action | Effects and actions other than lamp functions are added here. |

9.6.1 Basic tab

The lamp type can be changed, as shown in the figure below. Also, the type of screen change can be changed. Normal and window can be used for the screen type. Previous screen refers to the screen before the current screen.

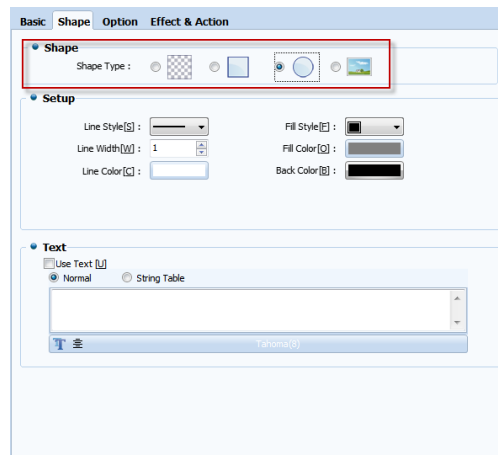


[Fig. Basic tab for screen changes]

| Properties | Description |
|---------------------|--|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |
| Screen change [H] | This setting transitions to a base screen. The screen number is the number of the base screen. |
| Previous screen [R] | This setting moves to the immediately previous screen. |
| Window popup [P] | A window screen popup is displayed. The screen number is the number of the window screen. |

9.6.2 Shape tab

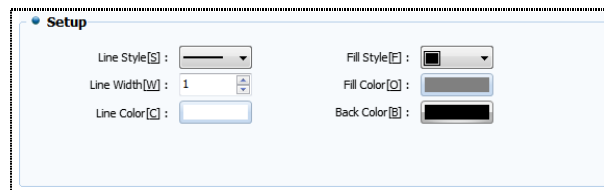
This function changes the shape of the object used for screen change. The shape can be set as none, rectangular, circular, or image.



[Fig. Shape tab for screen change]

(1) Rectangular, Circular / Settings

When the shape is set to rectangular as shown in the figure below, the lines and color for the shape can be changed.

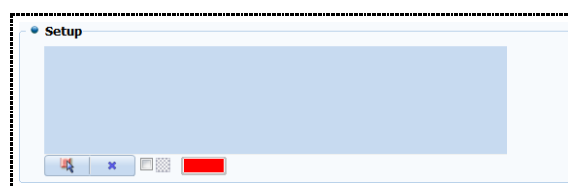


[Fig. Rectangular, Circular / Settings]




| Properties | Description |
|----------------------|--|
| Line properties [S] | Select the line style for the shape. 6 line styles, including no line, are provided. |
| Line width [W] | Select the line width for the shape. The line width can be set between 1 and 10. |
| Line color [C] | Set the line color for the shape. |
| Fill style [F] | Set the style for filling the shape. |
| Fill color [O] | Set the color to fill the shape with. |
| Background color [B] | Set the color to fill the background for the fill style with. |

(2) Image / Setting

When using an image as the screen change object, images registered in the user library, global images, or local images can be set.

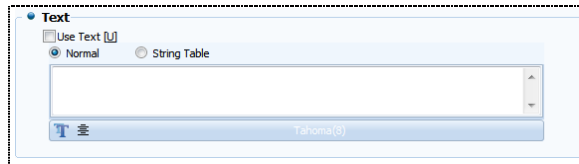


[Photo. Screen change image settings]


| Properties | Description |
|---|--|
|  | Import an image to register to the lamp. |
|  | Cancel a registered image. |
|  | Enable transparency. Select a single color in the image to make transparent. |

(3) Text

Text can be used for all shapes, regardless of type. The type of text can be selected between [Normal] and [String table].

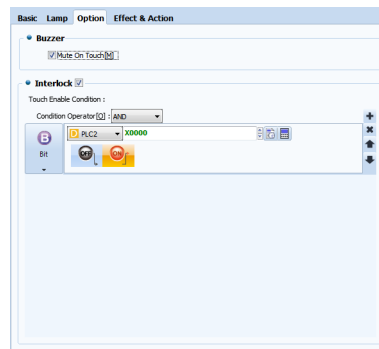


[Fig. Text]

| Properties | Description |
|--|---|
| Use text [U] | Enable use of text. |
| Direct input | Manually enter and set text. |
| Text table | Set text using a text table. |
|  Font setting | Select the font of the string. Set the size, font type, and font effects for the text. |

9.6.3 Touch option

In the case of objects where touch is possible, an interlock function that interlocks the touch sound (buzzer sound) and the touch can be enabled.

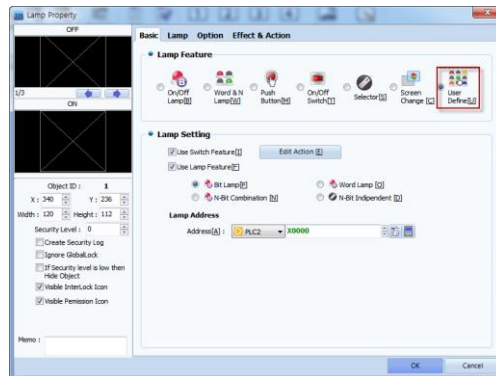


[Fig. Screen change touch options]

| Properties | Description |
|--------------------|--|
| No touch sound [M] | The buzzer sound is the sound that is played when a touch occurs. To use the buzzer sound, keep the No touch sound option unchecked. |
| Interlock | Interlock is a function used to lock the touch action of an object. [Bit] and [Word] interlock conditions are provided. Up to 6 conditions can be set. |

9.7 User defined

In [User defined], switches and lamps selected by the user can be used. Switches and lamps can be used individually, or as various switch + lamp combinations.

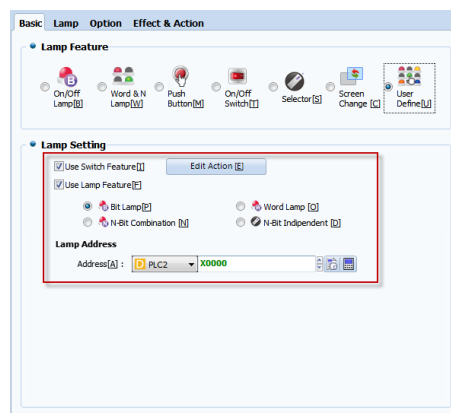


[Fig. User defined]

| Properties tab | Description |
|-----------------|--|
| Basic | The type of basic lamp can be changed and set, and the corresponding address must also be set. |
| Lamp | Lamp display settings are used depending on the lamp selected. |
| Touch option | Here, the touch conditions and buzzer sound are set. |
| Effect & action | Effects and actions other than lamp functions are added here. |

9.7.1 Basic tab

In the basic tab, the lamp type can be set, and the corresponding properties can also be set. The combination of objects desired by the user can be set. To use the switch function, the [Use switch function] can be enabled, and settings can be made in [Switch action settings]. [Switch action settings] are identical to [Effects & Actions]. Also, lamps can be selected, and lamp functions can also be added. The properties of each type of lamp are identical to the lamp properties dealt with previously.



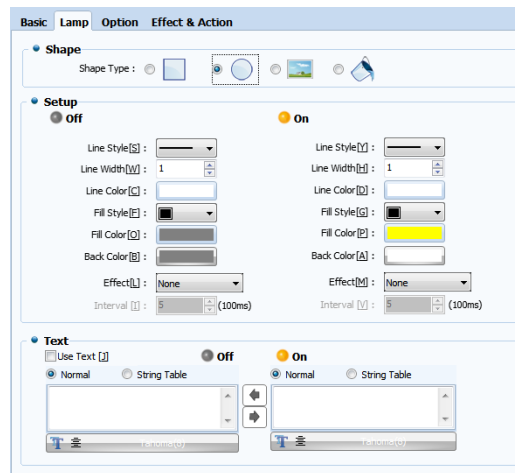
[Fig. Basic tab for user defined]

| Properties | Description |
|---------------|--|
| Lamp features | The currently selected type of lamp is shown. The type of lamp can be changed. |

| | |
|-------------------------|--|
| Lamp address | This is the lamp address. The lamp status is indicated based on the bit value of this address. |
| Use switch function [I] | Set the switch function to be enabled. |
| Use lamp function [F] | Set the lamp function to be enabled. |
| Bit lamp [P] | Set the user defined lamp to be used as a bit lamp. |
| Word lamp [O] | Set the user defined lamp to be used as a word lamp. |
| N-bit combination [N] | Set the user defined lamp to be used as an N-bit combination lamp. |
| N-bit independent [D] | Set the user defined lamp to be used as an N-bit independent lamp. |

9.7.2 Lamp tab

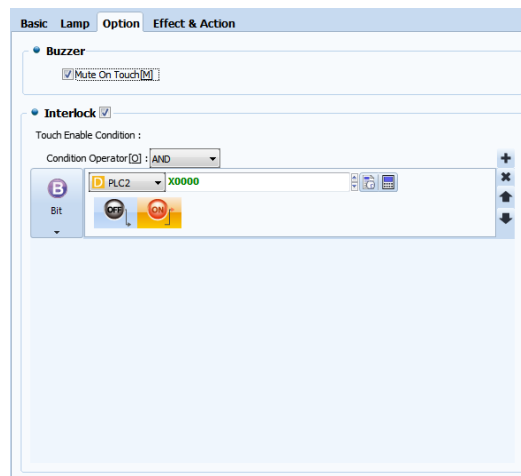
In the lamp tab, line color/width/effects depending on the lamp status can be added. Also, captions can be added. The options change for [Bit], [Word], [N-bit combination], and [N-bit independent]. The options provided are identical to the settings in their respective lamp tabs.



[Fig. Lamp tab for user defined]

9.7.3 Touch option

In the case of objects where touch is possible, an interlock function that interlocks the touch sound (buzzer sound) and the touch can be enabled.



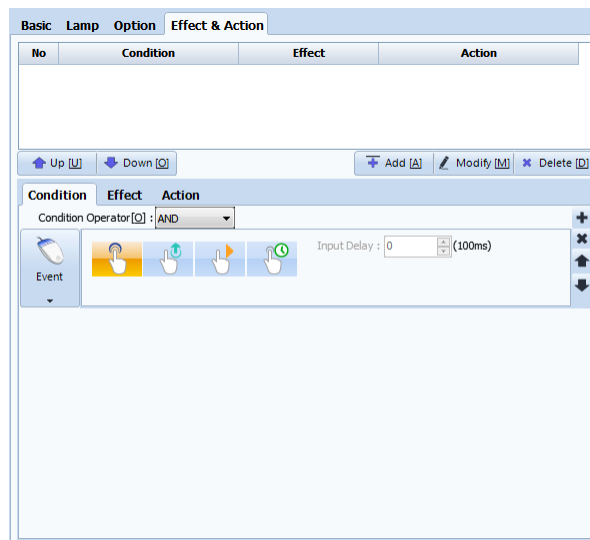
[Fig. Touch options for user defined]

| Properties | Description |
|--------------------|--|
| No touch sound [M] | The buzzer sound is the sound that is played when a touch occurs. To use the buzzer sound, keep the No touch sound option unchecked. |
| Interlock | Interlock is a function used to lock the touch action of an object. [Bit] and [Word] interlock conditions are provided. Up to 6 conditions can be set. |

9.8 Effect & action for lamps

In addition to lamp actions, various effects and actions can be added for objects.

For details, refer to [Chapter 7 Object - Common] -[7.5 Effects and action].

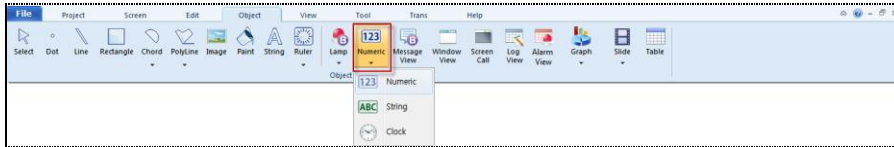


[Fig. Effects & actions]

CHAPTER 10 Numeric/String Objects

CHAPTER 10 - Numeric/String Objects

Numeric/string objects provide a function for entering and displaying addresses used by the user. Also, numbers and strings are displayed as word (16bit) values. In addition to this function, a [Clock] function is also provided. Here, what is important is the number object. Knowing the exact function of number objects, objects regarding numbers/letters can be used. The following figure shows icons relating to numbers/strings.

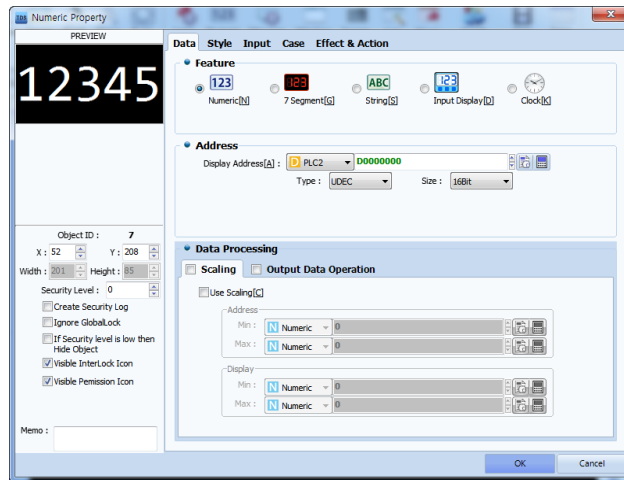


[Fig. Numeric/string objects]

10.1 Number object



Number is a function where data saved at an address is displayed with numbers. Through the preview screen on the top left corner, the numbers can be previewed. Additional operations can be performed on data and results can be displayed. Also, by setting conditions, the font color and background colors of the numbers can be set differently.



[Fig. Number object]

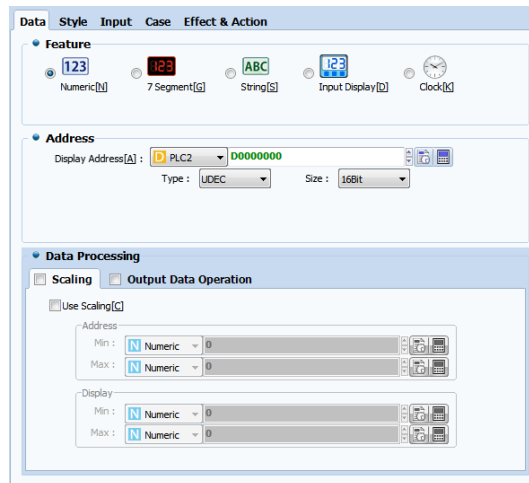
| Menu | Description |
|-------|---|
| Data | From this page, the number display type and address are selected, and additional operations are performed on the numbers displayed, according to data processing. |
| Style | From this page, the font and size of the numbers displayed can be changed. Also, the length and the display format can be set. |
| Input | Input is made according to the status of the bit/word condition. From this page, the virtual keyboard that appears for input can be set, or consecutive input can be performed. |
| Case | Using the bit/word address state as conditions, the color and background color of the numbers can be set differently according to the condition. |

| | |
|-----------------|--|
| Effect & action | On this page, the status of the condition/effect is used as the condition, and the action can be set for the number displayed. |
|-----------------|--|

10.1.1 Data tab

In the data tab, the display type and address of the number object is set. Also, the user can add other operations to the address displayed, changing the data value. This is called data processing.

Data processing can be used when displaying and entering numbers. When entered, the properties are displayed with [Input restriction] and [Input data operation] added.



[Fig. Data tab]

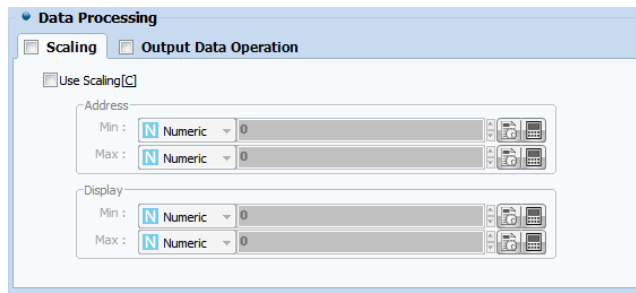
| Data properties | Description |
|-----------------|--|
| Type shown | Set the type of display for the object. Options are [Number], [Segment], [String], [Display input], and [Clock]. |
| Address | Set the address of the object to be shown. |
| Data processing | This function changes the displayed address value, or performs other operations. |

(1) Data processing - Scaling

In [Data Processing], [Scaling] has the function of setting the data in [Address] to minimum and maximum, and displaying the data according to the scale. Said again, this function reduces or increases the applicable data values. The displayed values are calculated as follows.

Display value = [(Max. value of display value - Min. value of display value)/(Max. value of address value - Address value)] x Address value

For example, if the minimum value for [Address value] is [0] and the maximum value is [4000], and the minimum and maximum values for [Display value] are [0] and [100], respectively, the display value becomes $(100-0)/4000-0 = 1/40$. Therefore, if [Address] is [4000], [Display] is [100], and if [Address] is [1000], [Display] is $1000 \times (1/40)$, therefore [25]. Also, if Address is a value of [0] or less, [0] is shown. If [Device] is [4000] or greater, [4000] is displayed.

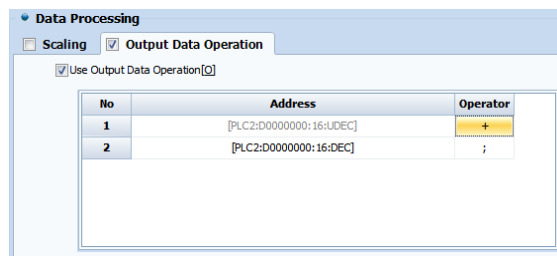


[Fig. Data processing]

| Scaling properties | Description |
|--------------------|---|
| Address value | This is the actual data of the address set in [Address]. Set the minimum value (Min) and maximum value (Max) appropriate to the data range of the address. |
| Display value | Set the minimum value (Min) and maximum value (Max) of the data to display, proportionally to the [Address value]. |

(2) Data processing - Output data operation

This function performs additional operations on the data of the [Address] and displays the results. When [Output data operation] is checked, the [Use output data operation] screen in the following figure appears. Here, address number 1 is the address value that displays the default setting value. Also, using operators, the address of the operation can be changed. Using [;] and other symbols, operation addresses can be added.



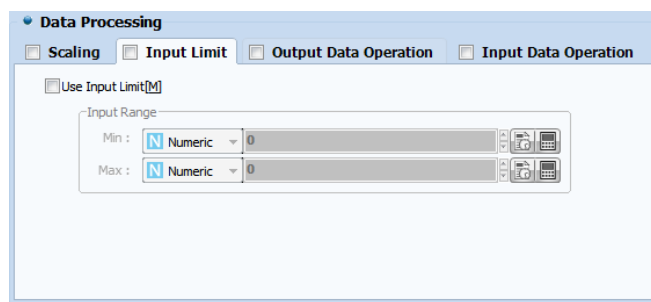
[Fig. Output data operation]

| Operators | Description |
|-----------|--|
| + | [Adds] the data of two operation addresses. |
| - | [Subtracts] the data of two operation addresses. |
| * | [Multiplies] the data of two operation addresses. |
| / | [Divides] the data of two operation addresses. |
| ^ | This is a bit operator. [Bit XOR] operation is performed with the data of two operation addresses. |
| % | This is the remainder operator. After dividing the data of two operation addresses, the remainder is calculated. |
| & | This is a bit operator. [Bit AND] operation is performed with the data of two operation addresses. |
| | This is a bit operator. [Bit OR] operation is performed with the data of two operation addresses. |
| << | This is a bit operator that performs the [Bit left shift] operation. This operator performs a left bit |

| | |
|----|--|
| | shift operation on the data on the right of the operator. The size of the shift is equal to the data on the left of the operator. |
| >> | This is a bit operator that performs the [Bit right shift] operation. This operator performs a right bit shift operation on the data on the left of the operator. The size of the shift is equal to the data on the right of the operator. |
| ; | Denotes the end of the operation. |

(3) Data processing - Input restriction

If the user is able to enter [Number] objects, the input restriction property can be used. To use as input, settings can be made in the [Input] tab. Input restriction means setting the minimum and maximum values for values that can be inserted into addresses.



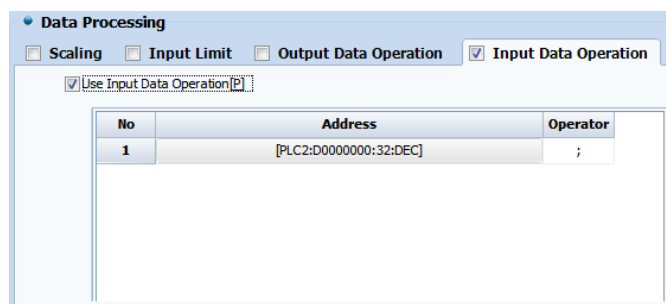
[Fig. Input restriction]

| Input restriction properties | Description |
|------------------------------|--|
| Minimum | Set the minimum value that can be entered into an address. |
| Maximum | Set the maximum value that can be entered into an address. |

(4) Data processing - Input data operation

If the user is able to enter [Number] objects, the input restriction property can be used. To use as input, settings can be made in the [Input] tab.

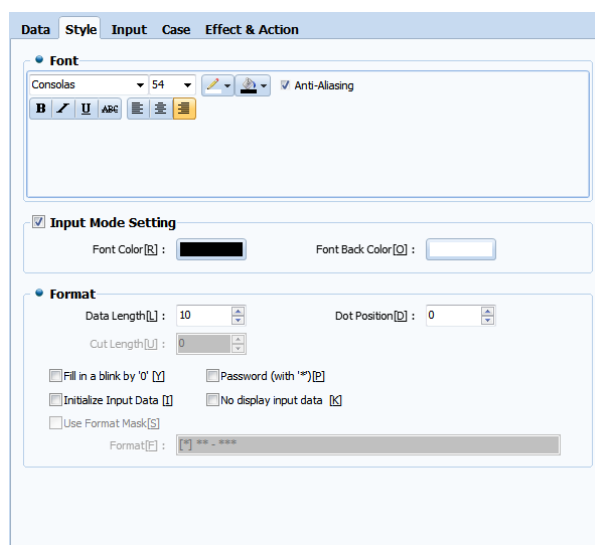
Input data operation is a function that adds operations to the address entered, similarly to output data operation. When an operation other than the semicolon operator is selected, an operation address is automatically added.



[Fig. Input data operation]

10.1.2 Style tab

In the style tab, the font and display format of the object can be changed. Here, the display format refers to the format in which the data is displayed. For example, to display only 3 places, the display format can be changed accordingly.

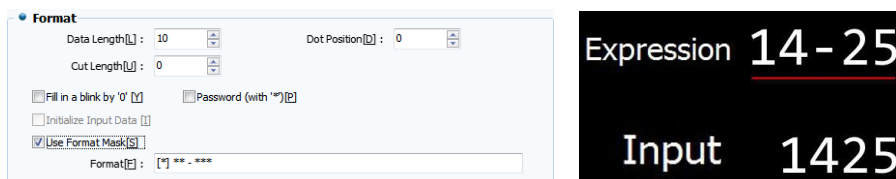


[Fig. Style tab]

| Style | | Description |
|-----------------------|----------------|--|
| Font | | The size, color, width, italics, underline, cross line properties of numbers and the color of the background can be set. When [Antialiasing] is selected, when the size of numbers increases or high resolutions are required, the number image is prevented from having jagged edges, and is displayed with smooth curves. |
| Input mode setting | | Set the font color and background color of the font. |
| Display format | Data length | Set the length of the number shown on the screen. If 7 is set, the numbers in places 1 through 7 are displayed. The maximum data length setting is 10. |
| | Decimal places | Decimals are inserted in the number. If the data length has been set to 5 (12345), the maximum value for this setting is 4 (1.2345). |
| | Cut length | Cut the number by the length of the number shown on the screen. Like decimal places, if the data length has been set to 5 (12345), the maximum value for this setting is 4 (1). |
| Fill with '0' | | Parts not entered are filled with '0.' |
| Password (with '*') | | When passwords are used, the numbers entered are displayed as '*.' |
| Initialize input data | | This option is enabled when [Input]-[Use Input] is selected. Select whether to use. If initialize input data is selected, data is initialized when data is entered. |
| No display input data | | This option is enabled when [Input]-[Use Input] is selected. Select whether to use. If no display input data is selected, data is not displayed when data is entered. |
| Use format mask | | Designate a format address and receive data using that address value. |

(1) Using format masks

Format mask refers to the changing of display data according to the set format. For example, if the user wishes to insert the character [-] when displaying numbers such as 00-00, Format Mask can be used. If the object is used as [Input], format mask cannot be used. Said again, it can only be used as a display object.

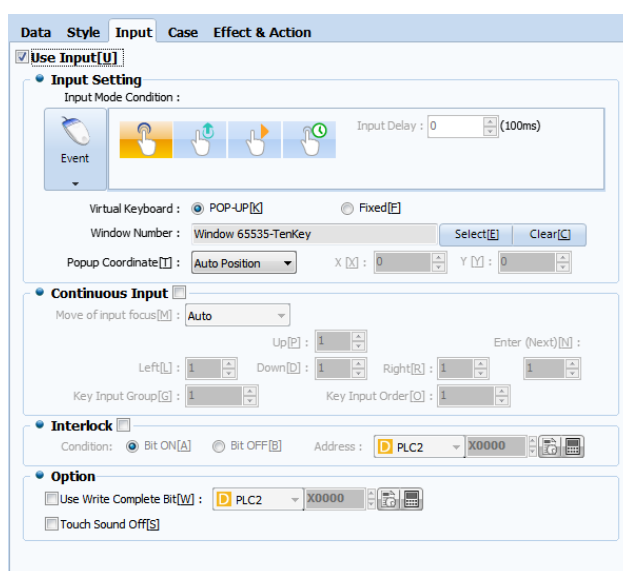


[Fig. Using format masks]

10.1.3 Input tab

This function is used to enable input of number objects. Said again, this object enables number object input and display possible. To use as input, input conditions and virtual keyboard must be selected. Other functions are consecutive input, interlock, and options.

To use input, Use input [U] must first be enabled.



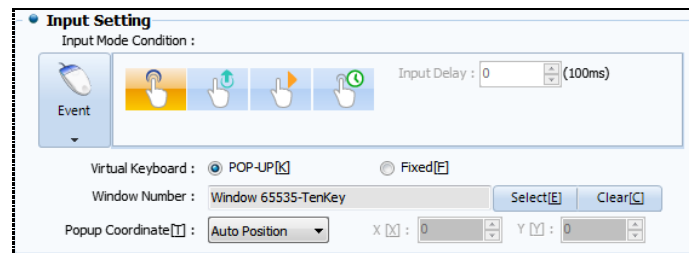
[Fig. Input tab]

| Properties | Description |
|-------------------|---|
| Input method | The input condition must be set. Input conditions available are [Event], [Bit], and [Word]. |
| Consecutive input | If multiple number input objects are used, this function allows consecutive input into multiple objects from a single input, without having to use individual input conditions. |
| Interlock | This function locks input for number objects. |
| Option | The input sound and the bit indicating write complete can be set. |

(1) Input method

This function is used to enable input of number objects. The input condition and the virtual keyboard used

must be set. Also, the popup position of the keyboard can be set. By default, input conditions that are used frequently are used as touch [Events].



[Fig. Input method]

| Input method properties | | Description |
|-------------------------|-----------------------|---|
| Input mode conditions | | The input condition must be set. Input conditions available are [Event], [Bit], and [Word]. |
| Virtual keyboard | Popup [K] | Set the keyboard used for key input as popup. In popup type, the keyboard object appears when the input conditions for the number object are satisfied. |
| | Fixed [F] | Set the keyboard used for key input as fixed. When fixed is selected, the key input window must be manually positioned on the screen for input. |
| Window number | | Select the keyboard used for key input. Default options are Default Tenkey and Keyboard. |
| Popup coordinates [T] | Automatic calculation | The position of the popup is set automatically, based on the position of the number object. |
| | Manual | The user enters X and Y coordinates to set the popup position. |

In the following figure, the input mode condition has been used as [Event]. In the case of popup type, the [TENKEY] window is displayed as a popup when the number object is touched. On the other hand, for fixed, the [TENKEY] window is located on the base screen.

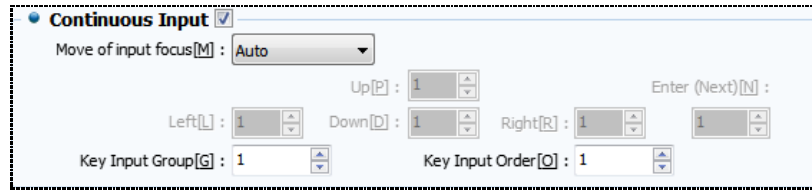


[Fig. Popup/fixed input types]

(2) Consecutive input - Auto

Consecutive input is a function where, when there are multiple number input objects, the user is able to use number input from a single input mode. Consecutive input mode provides Auto/Manual options. Auto means that numbers are entered sequentially automatically. Manual is a function that provides consecutive input in the direction desired. When using [Auto], the key input group and key input order

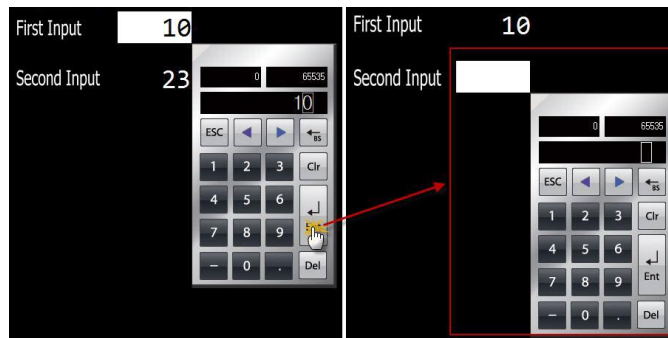
are entered, and number keys are entered sequentially. The key input group must be the same, and objects with the same key input group and order cannot be used.



[Fig. Auto]

| Consecutive input properties | Description |
|------------------------------|--|
| Key input group [G] | Set the key input group. The number objects for consecutive input must be set to the same group. |
| Key input order [O] | Within the same key input group, the key input order must be decided. Repeating orders cannot be used. |

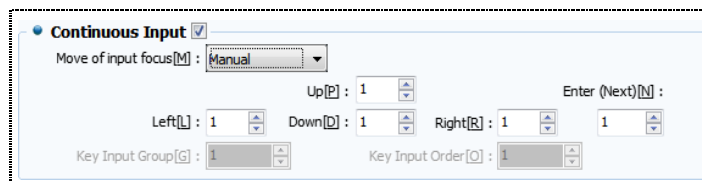
Set the same consecutive input group for 2 number objects, set input 1 as first in the input order, and input 2 as second in the input order. The resulting operation is as follows.



[Fig. Use Auto]

(3) Consecutive input - Manual

In [Manual], instead of sequential input, a [Key] object can be used to change the input order. This function allows consecutive input when the user enters the desired key. To use this function, the [ID] value of the number object must be entered in the direction.

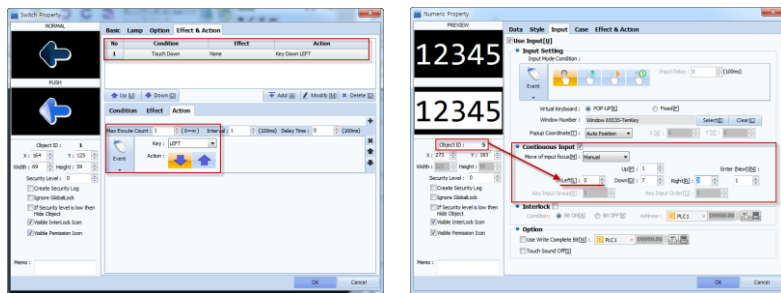


[Fig. Manual]

| Consecutive input properties | Description |
|------------------------------|--|
| Up [P] | When [Up] is used in the key object, an object ID number that moves according to the input order is set. |
| Down [D] | When [Down] is used in the key object, an object ID number that moves according to the input order is set. |

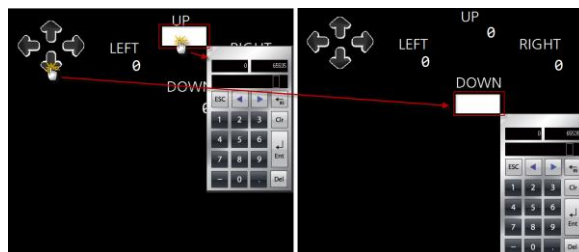
| | |
|-----------|---|
| Left [L] | When [Left] is used in the key object, an object ID number that moves according to the input order is set. |
| Right [R] | When [Right] is used in the key object, an object ID number that moves according to the input order is set. |
| Enter [N] | When [Enter] is used in the key object, an object ID number that moves according to the input order is set. |

As seen in the following figure, direction keys must be registered in order to use a key object. As for the arrow key, the key must be set as [RIGHT] in the [Event]. Also, in the case of number objects, the ID number of the desired number object must be entered for the [LEFT] key.



[Fig. Manual settings]

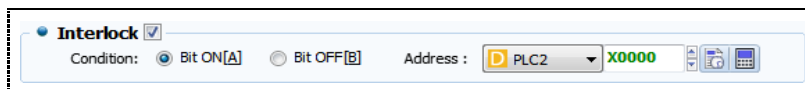
When initial input mode is started and the down key is pressed, the input mode moves to the number object assigned to Down, as seen in the following figure.



[Fig. Using Manual]

(4) Interlock

Interlock is a function that restricts input modes in number objects where input is possible. Said again, this is a function that locks input. The bit condition and address must be set.

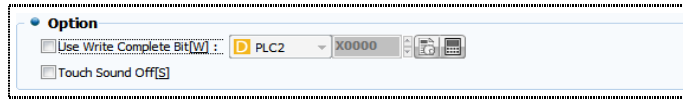


[Fig. Interlock]

| Interlock properties | Description |
|----------------------|---|
| Bit ON [A] | If the interlock address is ON, number object input is locked. |
| Bit OFF [B] | If the interlock address is OFF, number object input is locked. |
| Address | Set the address to use interlock for. |

(5) Option

Along with the method of using number objects, functions are provided to turn the touch sound off, or notify using a different address when input is completed.

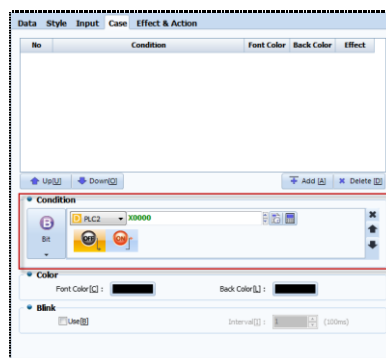


[Fig. Option]

| Option | Description |
|----------------------------|--|
| Use write complete bit [W] | When writing is completed for a number object, the bit is turned ON. Set the applicable bit address. |
| Touch sound off [S] | Remove the touch sound used for input. |

10.1.4 Case tab

Case is a function where specific conditions are set to enable font colors, background colors, and blink effects for number objects. Said again, the user can set automatic effect and color changes for displayed number objects.

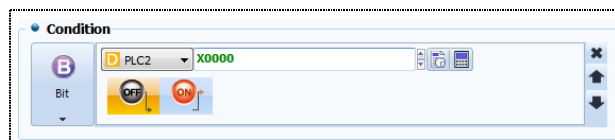


[Fig. Case tab]

| Case list button | Description |
|------------------|---|
| Up [U] | The selected setting item is moved up by one. |
| Down [O] | The selected setting item is moved down by one. |
| Add [A] | Add a condition, color, or effect. |
| Delete [D] | Delete the selected setting list item. |

(1) Case condition setting

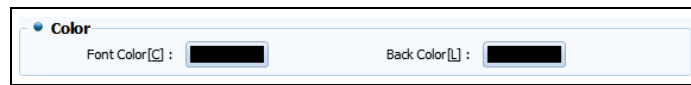
Set the conditions to enable color and blink functions. Said again, if the condition is satisfied, the set effect is triggered. Condition settings provided are bit condition and word condition.



[Fig. Case condition setting]

(2) Case color setting

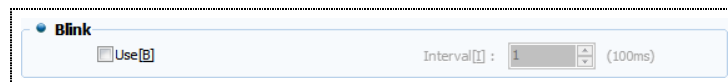
When the condition is satisfied, the color of the number object changes. Set the font and background colors as shown in the figure below.



[Fig. Case color setting]

(3) Case blink setting

When the condition is satisfied, the text of the number object blinks. As shown in the figure below, Use blink function and the blink interval must be set.

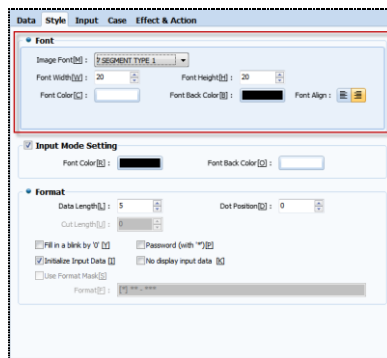


[Fig. Case blink setting]

10.2 Segment object



A segment refers to an element that operates with 8 LEDs. A segment object can be used to display a segment. All settings are identical to number objects, except for font settings. Said again, knowing the number object usage method, segment objects can also be used. Here, only the parts that are different from number objects will be described.



[Fig. Segment object style tab]

| Font properties | Description |
|--------------------------|--|
| Image font | Segment font type provides are 7 segment type fonts and 1 bitmap font type. |
| Font width | The font width of the segment is set here. The maximum setting is 200. |
| Font height | The font height of the segment is set here. The maximum setting is 200, as with width. |
| Font color | Set the font color for the segment. |
| Segment background color | Set the font background color for the segment. |
| Font align | Align the segment font to the right or left. |

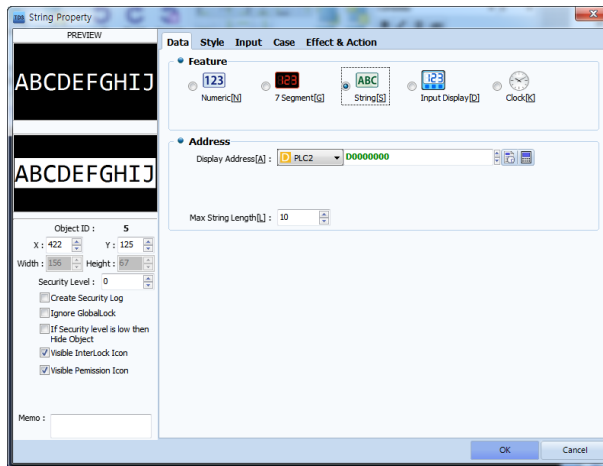
10.3 String object



A string object can be thought of as a number object with the numbers replaced with a string.

Input and display functions are provided, like number objects. Most functions are identical to number objects. Up to 255 letters can be entered for strings.

For a description of other functions, which are identical to [Number object], refer to Chapter 14.1 Number objects



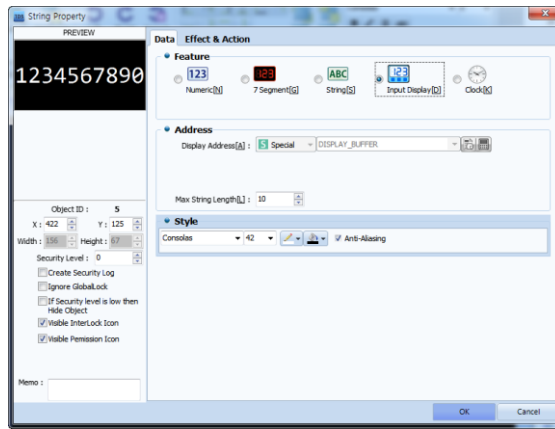
[Fig. String object]

| Menu | Description |
|-----------------|---|
| Data | Set the display type and display address, and set the maximum number of letters that can be entered into the address. |
| Style | From this page, the font and size of the numbers displayed can be changed. Also, the length and the display format can be set. |
| Input | Input is made according to the status of the bit/word condition. From this page, the virtual keyboard that appears for input can be set, or consecutive input can be performed. |
| Case | Using the bit/word address state as conditions, the color and background color of the numbers can be set differently according to the condition. |
| Effect & action | Set additional effects and actions to be used. |

10.4 Input display object



An input display object is an object that displays input on the screen. Said again, only display function is available, and write functions cannot be used. Also, instead of displaying the input for a single object, the input of all strings on the same screen is displayed.



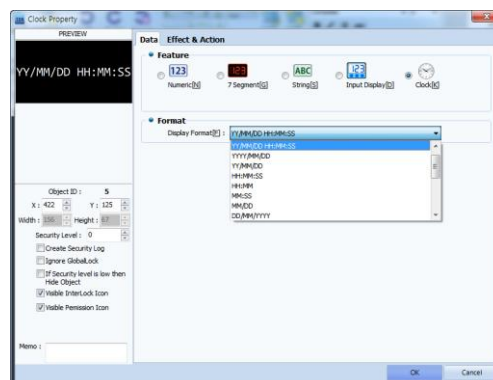
[Fig. Input display]

| Menu | Description |
|-----------------|--|
| Data | Set the display type and font style. As for display address, the fixed DISPLAY_BUFFER in special address is used. |
| Effect & action | Set additional effects and actions to be used. |

10.5 Clock object



The date and time are displayed. Also, in the special addresses for, TOPR, time data is contained in [DATE_DD(day)], [DATE_MM(month)], [DATE_WEEK(week)], [DATE_YYYY(year)], [TIME_HH(hour)], [TIME_MM(minute)], and [TIME_SS(second)]. Date and time can be changed in the menu screen. When special address data is changed, all date and time settings are changed.



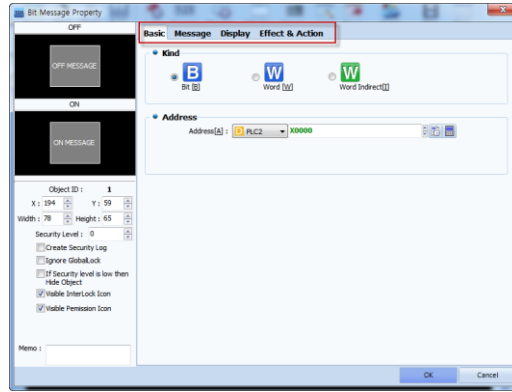
[Fig. Clock]

| Menu | Description |
|-----------------|--|
| Data | Select the format for date and time display. Y-Year, M-Month, D-Day indicate the date, and H-HOUR, M-MINUTE, and S-SECOND indicate time. If [Year] is YYYY, [2015] is displayed. If this is YY, then [15] is displayed only. |
| Style | Set the font and color for date and time display. |
| Effect & action | Set additional effects and actions to be used. |

CHAPTER 11 Message Object

CHAPTER 11 - Message Object

This type of object displays messages according to the status of an address. This message is commonly referred to as a bit word bit variable message, and can be changed according to the address value. The message that is displayed can be manually entered and used, or entered using a text table. Using the effects & actions properties, various functions can be added.

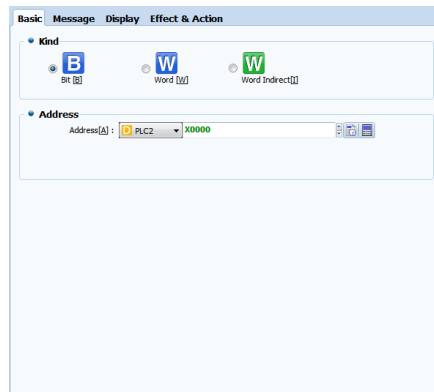


[Fig. Message]




| Properties tab | Description |
|-----------------|---|
| Basic | Set the message type and the address to be used. |
| Message | Set the message type to be used; select between direct input and text table. |
| Display | Set the shape and message expression for the object, as well as scroll. Scroll makes the message move automatically. This function adds other keys to the message. |
| Effect & action | Effects and actions are added to the current object. |

11.1 Basic tab

Set the address to use as the message object, and the message type. Using a bit message, only 2 messages can be used. By using word messages, multiple messages can be used according to specific conditions.



[Fig. Basic tab]

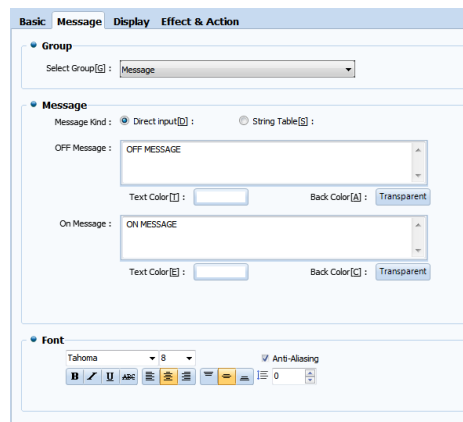
| Properties | | Description |
|-------------|--|--|
| Type |  Bit [B] | Set as an ON/OFF message using bit addresses. |
| |  Word [W] | Set as message object using a word address. |
| |  Word variable [I] | Set as message object using a word address. Unlike bit and word messages, an address is used. |
| Address [A] | | Set the object address. |

11.2 Message tab

Depending on the type of message, the message tab settings vary. Generally, the string displayed according to the address status, and the font of the message can be set. The message string can be entered manually or chosen from registered strings on a text table.

11.2.1 Message (bit)

With a bit message, different messages are displayed as the bit address status switches between ON and OFF. The ON and OFF messages can be entered manually, or groups in text tables can be selected and used.



[Fig. Bit message]

| Properties | | Description |
|-------------------|------------------|--|
| Message group [G] | | Set the message group when using text tables. The text table can be used by setting in [Project]-[Multilanguage]. |
| Message Type | Direct input [D] | The message displayed in the ON/OFF message edit window is entered manually. |
| | Text Table [G] | Set a message from the selected string group. |
| Font | | Set the type and size of font, and select font alignment and effects. If antialiasing is used, font display quality is enhanced at low resolutions. |

A bit message reads the bit status and displays the ON/OFF message. This can be used with an

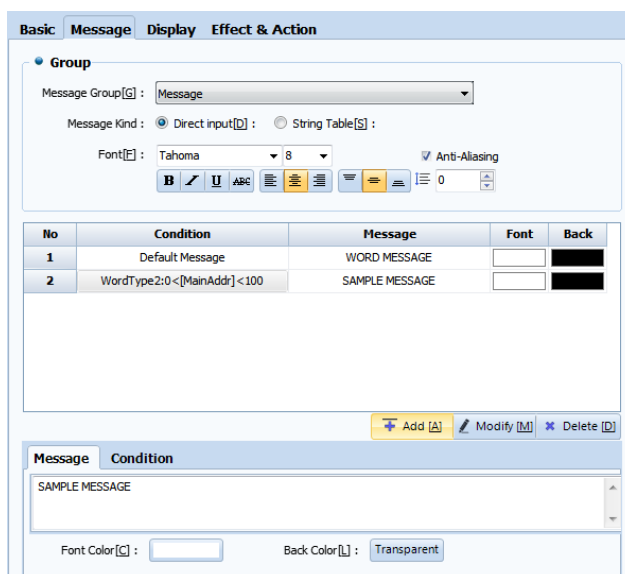
[ON/OFF switch] object. Alternatively, [Effects & Actions] for bit messages can be used to change the bit status when touched.



[Fig. Using bit message]

11.2.2 Message (Word)

In a word message, address status conditions are set, and messages corresponding to these conditions are displayed. Conditions for word message use size comparisons. Messages can be entered manually, or selected from groups in text tables.



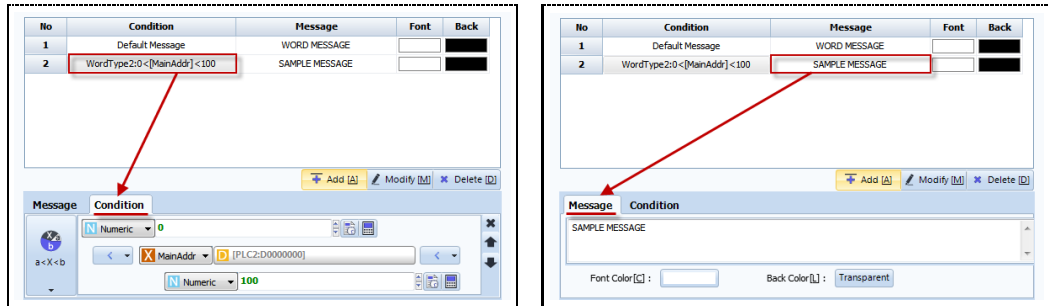
[Fig. Word message]

| Message properties | | Description |
|--------------------|------------------|--|
| Message group [G] | | Set the message group when using text tables. The text table can be used by setting in [Project]-[Multilanguage]. |
| Message Type | Direct Input [D] | The message displayed in the ON/OFF message edit window is entered manually. |
| | Text Table [G] | Set a message from the selected string group. |
| Font | | Set the type and size of font, and select font alignment and effects. If antialiasing is used, font display quality is enhanced at low resolutions. |

| Message list button | Description |
|---------------------|----------------------------------|
| Add [A] | Add a word condition or message. |
| Modify [M] | Modify the selected message. |
| Delete [D] | Delete the selected message. |

(1) Word message condition setting

For word message, a default message must be set. When word conditions are added, the [Condition] and [Message] tabs are enabled, as shown in the figure below. The conditions are identical to the word conditions in [Effects & Actions]. Messages can be entered manually or by using text tables. Also, the font color and background color can be set using properties under the message. After setting all conditions, click the [Add] or [Modify] button to complete.



[Fig. Word message condition and message settings]

| Condition properties | | Description |
|----------------------|----------------------|--|
| Address | | Set the word address value to compare. |
| Comparison condition | < | This operator is used to compare the size of two operands, to indicate that the operand on the right is greater. |
| | > | This operator is used to compare the size of two operands, to indicate that the operand on the left is greater. |
| | <= | This operator is used to compare the size of two operands, to indicate that the operand on the right is greater or equal to the operand on the left. |
| | >= | This operator is used to compare the size of two operands, to indicate that the operand on the left is greater or equal to the operand on the right. |
| | = | This operator is used to compare the size of two operands, to indicate that the two operands are equal. |
| | != | This operator is used to compare the size of two operands, to indicate that the operands are not equal. |
| Message | Edit window | Insert a string, or use a text table. |
| | Font color [C] | Set the font color. |
| | Background color [L] | Set the background color. |

A word message reads a word value, and displays the set message. Unlike bit status, this can be used with an object for word value input, or [Effects & Actions] where word value is increased.

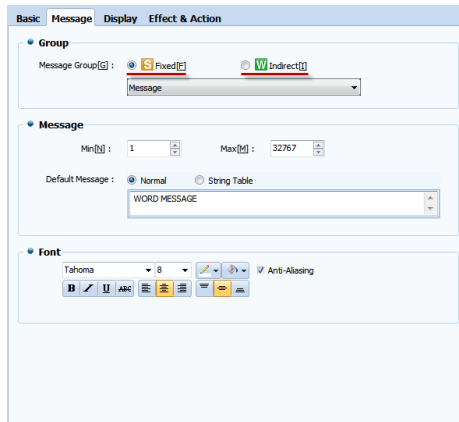


[Fig. Using word message]

11.2.3 Message (Word variable)

A word variable message is a function used to select and call messages registered in text tables. Also, using the address variable function, the selected group can be changed.

Using word variable messages, various messages registered in text tables can be called.

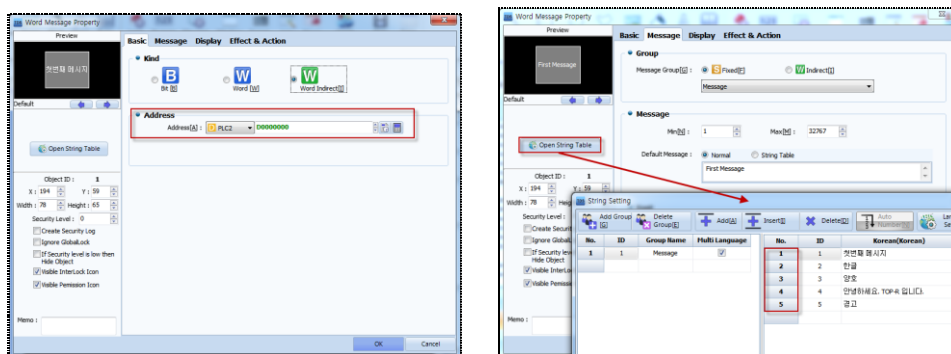


[Fig. Word variable message]

| Message properties | | Description |
|--------------------|----------------------|--|
| Message Group [G] | Fix selection [F] | Set a message group and use only one group. Use ID values registered in the [Text Table]. |
| | Address variable [I] | Set the address to change the message group. The [String group] ID value and [Text table] ID values are used. |
| Message | Minimum value [N] | Set the minimum ID value that can call the text table. |
| | Maximum value [M] | Set the maximum ID value that can call the text table. |
| Default message | Manual entry | Manually enter the default text. |
| | Text table | Register the default text using the text table. |
| Font | | Set the type and size of font, and select font alignment and effects. If antialiasing is used, font display quality is enhanced at low resolutions. |

(1) Using fix selection

When using fix selection for message groups, a text group must first be selected. Also, the address value set in the [Basic tab] is used to call messages using ID values registered in the text table.



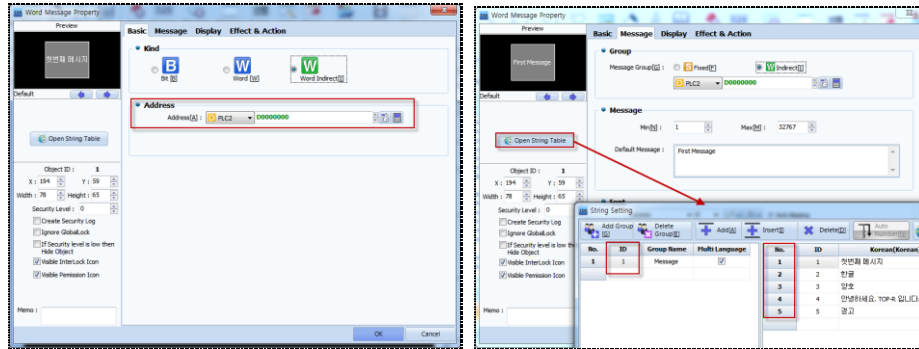
[Fig. Fix selection]

As shown above, with word variable messages, when the ID value of the text table is entered into the set message object address (SYS 10000), the message that is called changes.

Here, the text table ID values that can be called are restricted depending on the settings for [Minimum value] and [Maximum value].

(2) Use address variable

This is used when selecting text from multiple groups, without fixing the message group. Here, address variable is used to select the message group ID. The text table ID is selected and called using the message address set in the [Basic tab].



[Fig. Address variable]

As shown above, with word variable messages, when the ID value of the text table is entered into the message object address set as address variable (SYS 01000), and the text table ID value is inserted in to the message object address (SYS 10000), the message that is called changes.

Here, the text table ID values that can be called are restricted depending on the settings for [Minimum value] and [Maximum value].

EX) When [1] is inserted into address variable (SYS 01000) and [2] is inserted into object address (SYS 10000), the message is changed to the string [English].

A word message reads a word value, and displays the set message. Unlike bit status, this can be used with an object for word value input, or [Effects & Actions] where word value is increased.

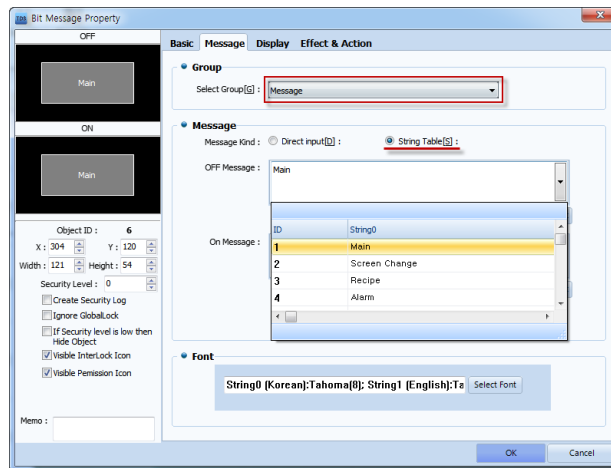


[Fig. Using word message]

11.2.4 Use text table

To register messages using the text table, [Multilanguage table] must first be enabled.

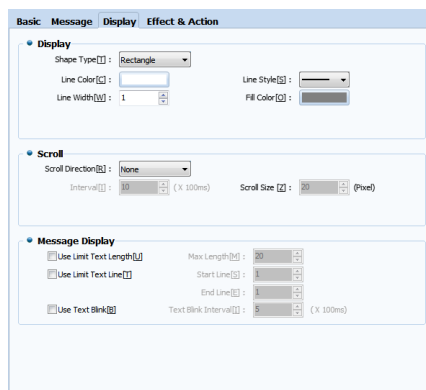
Using the set multilanguage table, the text table can be used as seen in the following figure.



[Fig. Use text table]

11.3 Display tab

Here, the shape and message display of the message object are set. When Use scroll is added, the message can be made to move. Issues where text is not displayed can be resolved using Display message.



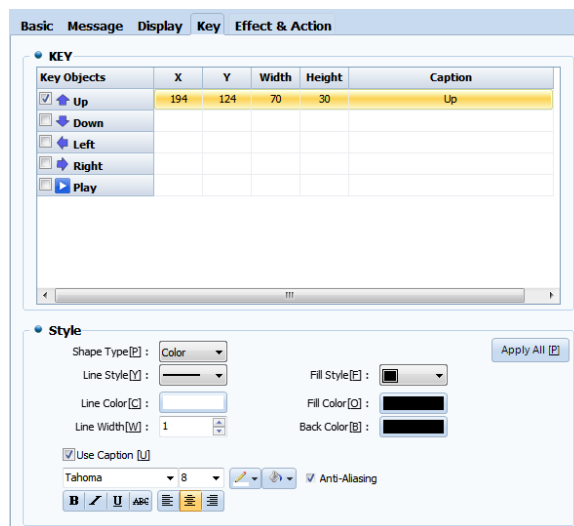
[Fig. Display tab]

| Display properties | | Description |
|--------------------|----------------------|---|
| Expression | Shape [T] | Set the shape of the shape to [Rectangular] or [Image]. |
| | Line color [C] | If the shape is rectangular, set the line color. |
| | Line style [S] | If the shape is rectangular, set the line style. |
| | Line width [W] | If the shape is rectangular, set the line width. |
| | Fill color [O] | If the shape is rectangular, set the fill color. |
| Scroll | Scroll direction [R] | Set the direction for text scrolling in the object. [Left Scroll]: The string scrolls to the left at the set interval. [Right Scroll]: The string scrolls to the right at the set interval. [Up Scroll]: The string scrolls up at the set interval. [Down Scroll]: The string scrolls down at the set interval. [Manual Scroll]: The string does not scroll automatically, and is scrolled using the arrow keys instead. |

| | | |
|-----------------|-------------------------|---|
| | Interval [I] | Set the scroll interval for the string. |
| | Scroll size [Z] | Set the scroll distance for the string. (in pixel units.) |
| Message Display | Limit max. length [U] | Restricts the maximum length for message display. Messages exceeding the set length are cut. |
| | Max. length [M] | Check limit max length and enter the length. |
| | Limit text line [T] | Set the number of lines used to display the message. A line refers to rows of a message. |
| | Start line [S] | Set the start line for message display. |
| | End line [E] | Set the end line for message display. |
| | Blink message [B] | Set the message to blink. |
| | Text blink interval [I] | Set the text blink interval. |

11.3.1 Use scroll

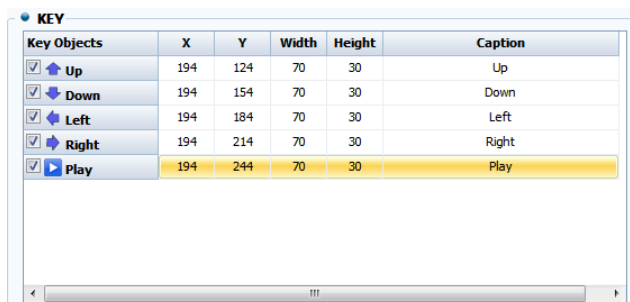
Scroll is a function that automatically moves the message of the current object. The message moves up, down, right or left within the object. By adding a [Key], movement can be controlled.



[Fig. Use scroll]

(1) Key setting

Set a key used for scrolling. Using the key, the message for the current object can be moved. Set the position, size, and text.

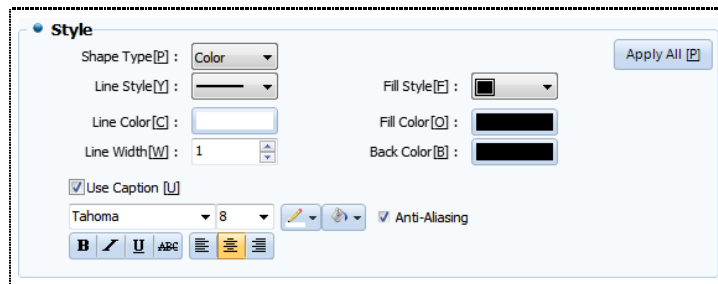


[Fig. Key setting]

| Properties | Description |
|------------|--|
| Up | Move the text of the current object up. |
| Down | Move the text of the current object down. |
| Left | Move the text of the current object to the left. |
| Right | Move the text of the current object to the right. |
| Play | Automatically move the text of the current object. |
| X | Set the x coordinate position of the selected key. |
| Y | Set the y coordinate position of the selected key. |
| Width | Set the width of the selected key. |
| Height | Set the height of the selected key. |
| Caption | Change the name of the selected PLC. |

(2) Shape setting

Change the shape of the current key. The name and shape used by the key can be set.

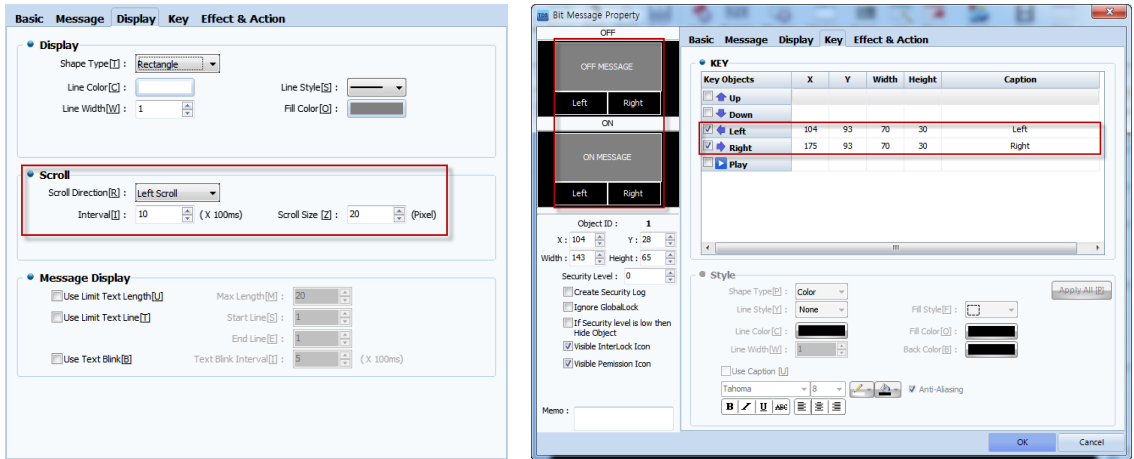


[Fig. Shape setting]

| Properties | Description | |
|----------------------|--|--|
| Shape type [P] | Color | Set the color for an object used as a key. |
| | Image | Set an image as an object used as a key. |
| Line style [Y] | Set the line style of a key used as shape. | |
| Line color [C] | Set the line color of a key used as shape. | |
| Line width [W] | Set the line width of a key used as shape. | |
| Fill method [F] | Set the fill method of a key used as shape. | |
| Fill color [O] | Set the fill color of a key used as shape. | |
| Background color [B] | Set the background color of a key used as shape. | |
| Use caption [U] | Set a key used as shape to use captions. | |
| Font | Set the type and size of font, and select font alignment and effects. If antialiasing is used, font display quality is enhanced at low resolutions. | |

(3) Using scroll

To use scroll, the direction, interval, and size must be set, as shown below. Also, to control text movement, keys must be added. The shape of the added keys can be changed as desired by the user.



[Fig. Using scroll]

Enable scroll and add [Left] and [Right] keys. The scroll operates in the manner shown in the figure below.

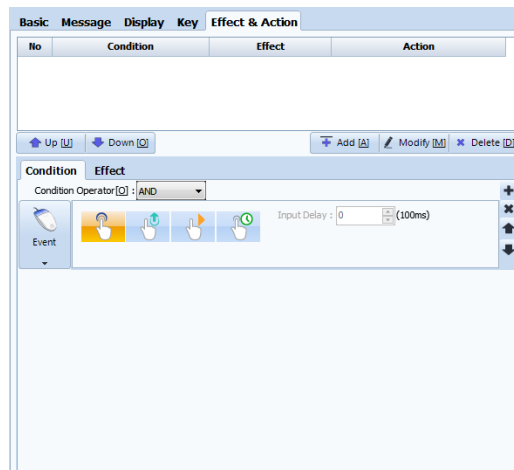


[Fig. Using scroll keys]

11.4 Effect & action tab for messages

Aside from the functions of the current object, special functions can be added. When conditions are set and the set conditions are satisfied effects and actions are triggered.

For details, refer to [Chapter 7 Object - Common] -[7.5 Effects and action].

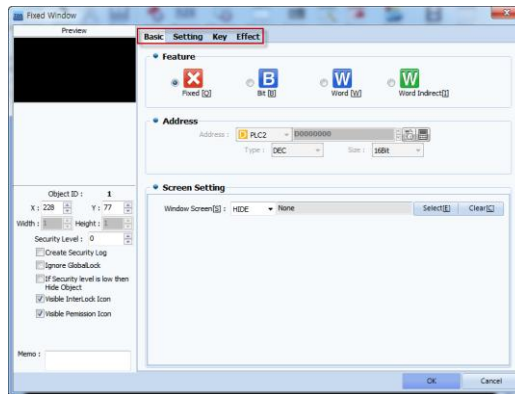


[Fig. Effects & actions]

CHAPTER 12 Window Objects

CHAPTER 12 - Window Objects

This object calls a fixed window screen, or using an address. This object is commonly referred to as a bit word bit indirect window. The window screen called by the address value can be changed. Also, keys for controlling the current window can be registered, and effect & action properties can be used to add various functions.

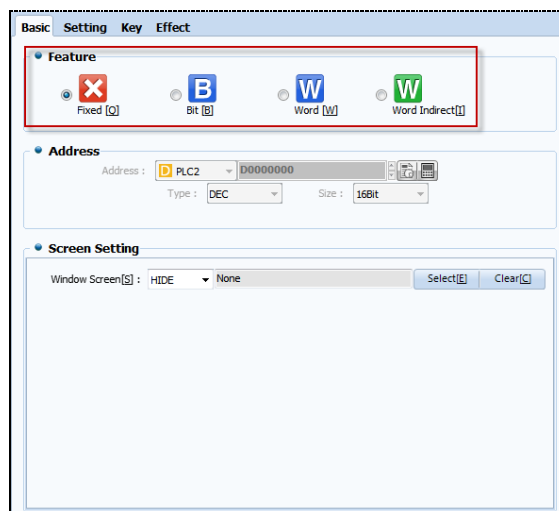


[Fig. Message]





| Properties tab | Description |
|-----------------|---|
| Basic | Set the window type, address used, and the window screen. |
| Setting | Set the style and position of the window that is called. |
| Key | Register keys to control the called window. Using the toggle key, window calls can be controlled. |
| Effect & action | Effects and actions are added to the current object. |

12.1 Basic tab

Set the address to use as the window object, and the window screen. Types of window object are bit, word, and word indirect window.

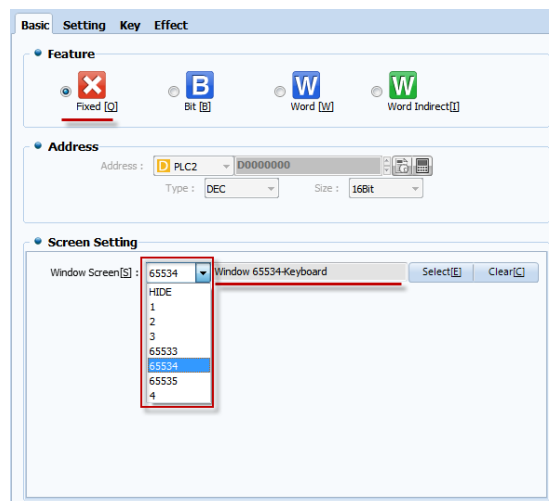


[Fig. Basic tab]

| Characteristic | Description |
|--|---|
|  Fixed [Q] | Set the object to use a fixed window screen, without using addresses. |
|  Bit [B] | Set the window screen that is called when a bit address is used to change between ON and OFF. |
|  Word [W] | Set the window screen using a word address. |
|  Word indirect [I] | Set and use a word address as the window screen number. |

12.1.1 Fixed window

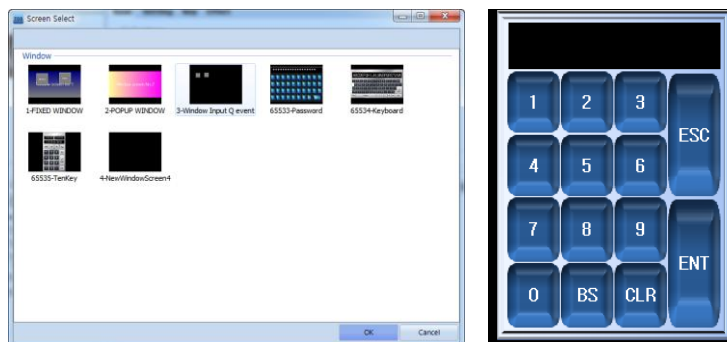
Fixed window is a window object where the screen is fixed. Addresses are not used in the object, and only 1 Window screen can be set.



[Fig. Fixed window]

(1) Use fixed window

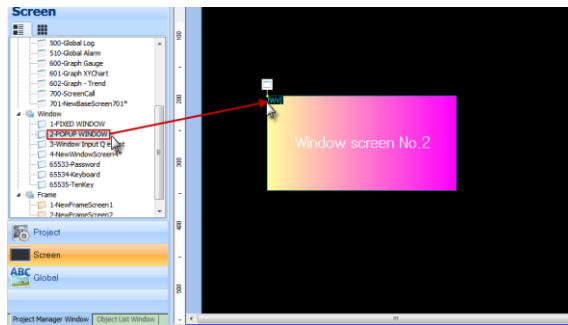
To set the window list to be used for fixed window screens, press the Select [E] button to bring up the selection window shown in the figure below. The window screens to be used must be registered beforehand.



[Fig. Screen selection and execute screen]

(2) Use fixed window

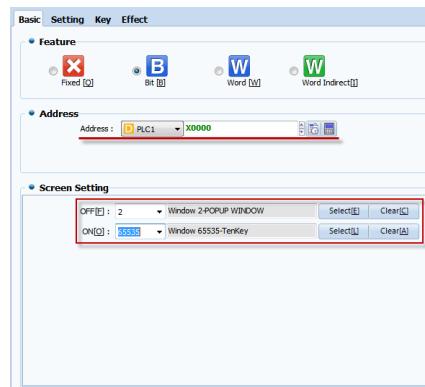
Fixed windows can be made using window objects, but by dragging a window screen manually using the mouse and placing it in the edit screen, a fixed window screen can be made as shown in the figure below.



[Fig. Use fixed window screen]

12.1.2 Bit window

A bit window object is an object where a bit address is set, and the window that is called changes according to the state of the bit. Two window screens can be called. The method for setting bit window screens is as shown in the following figure. Set the window screen by selecting from the window list, or with the Select[E] button.



[Fig. Bit window]

(1) Use bit window

A bit window reads the value of a bit address, and displays the window screen set according to the ON/OFF status. Using an [Object] or [Effects & Actions] that can be switched between ON and OFF, the bit window can be triggered.

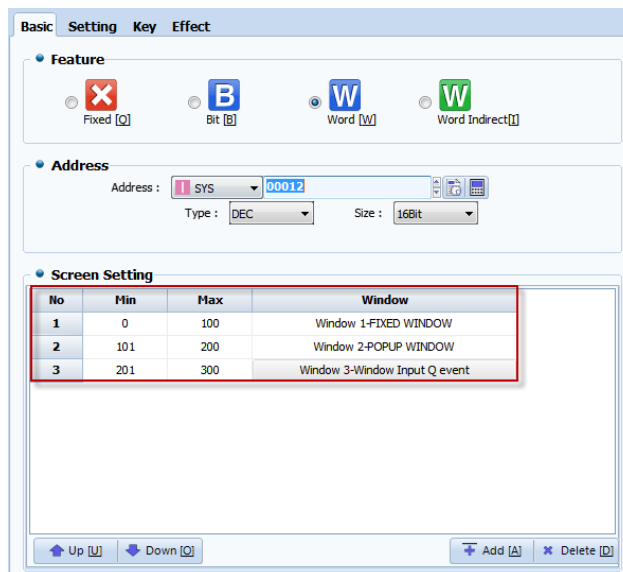


[Fig. Use bit window]

12.1.3 Word window

A word window calls multiple window screens using word addresses. When the min and max range is set, and the value of the word address falls within that range, the set window screen is called. Also, by adding window screen setting list items, multiple window screens can be set. To add items to the list, use the [Add] button. To delete list items, use the [Delete] button.

Ex) If the word window is set as shown in the figure below, and the value [50] is entered into the address (SYS 00012), the [Window 20-LOG ON] screen is called. If [120] is inserted in the address, the [Window 65535-TenKey] screen will be called.



[Fig. Word window]

(1) Use word window

The value of a word address is read, and the window screen appropriate to the range is shown. To use this feature, create an [Object] that changes the word value, or use [Effects & Actions]. The execute screen is as shown in the figure below.



[Fig. Use word window]

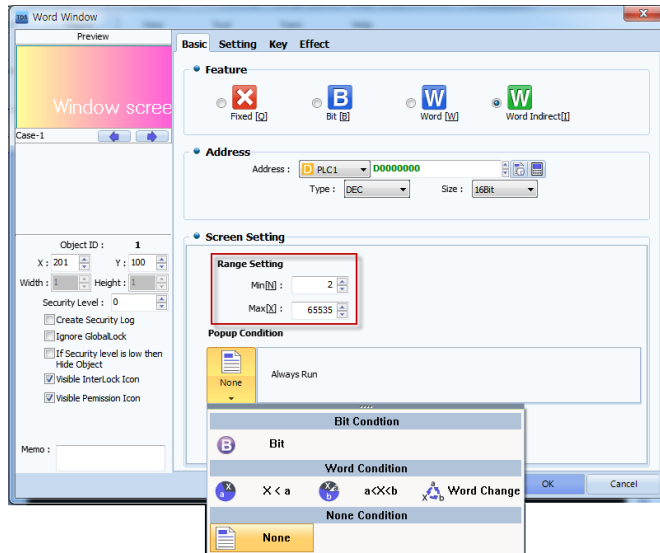
12.1.4 Word indirect window

Unlike word windows, when a window screen number is entered using an object address, the window screen is called. Said again, the value entered into the address must be a screen number for the corresponding window screen to be called.

In the min and max value settings, enter the min and max values for the window screen number. The

window screen does not need to be selected. Also, a none condition can be set to restrict window calling.

Ex) If the word indirect window is set as shown in the figure below, and the value [1] is entered into the address (SYS 02000), window screen number 1 is called. If [10] is inserted in the address, window screen number 10 is called.



[Fig. Word indirect window]

(1) Use word indirect window

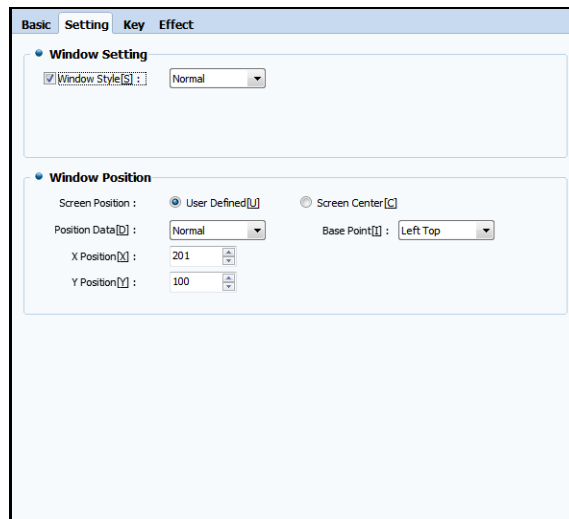
Unlike word windows, in word indirect, the value entered into the address is the window screen number. Said again, the value of the address is read, and the window screen appropriate to the value is displayed. To use this feature, create an [Object] that changes the word value, or use [Effects & Actions]. The execute screen is as shown in the figure below.



[Fig. Use word indirect window]

12.2 Settings tab

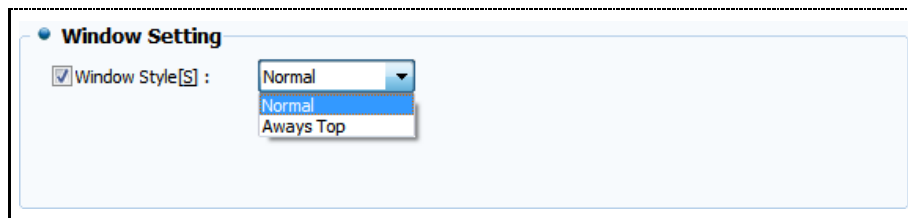
Set the window screen to be called. By setting the window style, other window objects and the display position are set. The screen position can be entered as an address or fixed.



[Fig. Bit message]

12.2.1 Window settings

Window style is used to prevent overlap when multiple objects are in similar positions.

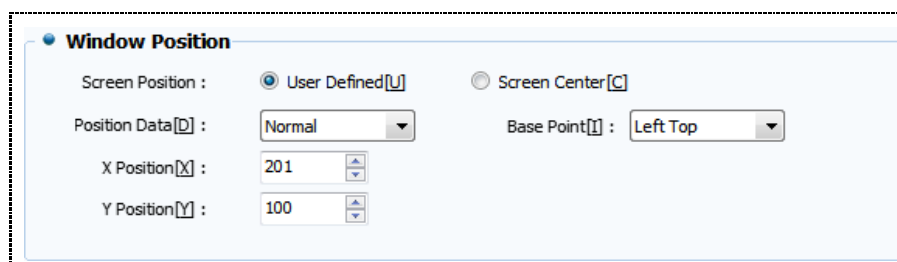


[Fig. Window settings]

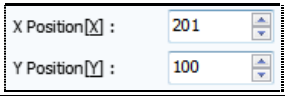


| Properties | Description |
|------------|---|
| Normal | Normal denotes a normal window object. The window called last is displayed on top. |
| Always Top | The window screen is set to always appear on top. The window is not overlapped by other window screens. |

12.2.2 Window position

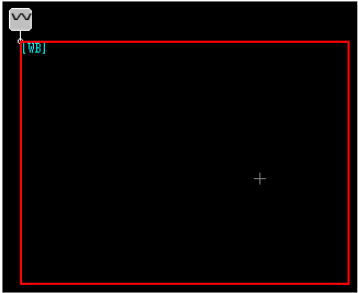
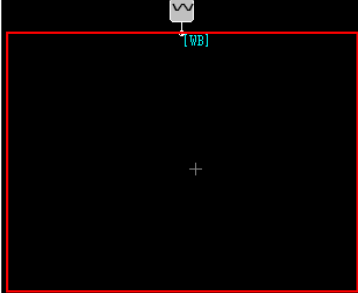

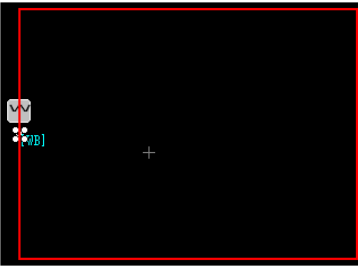
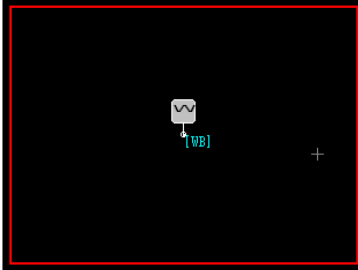

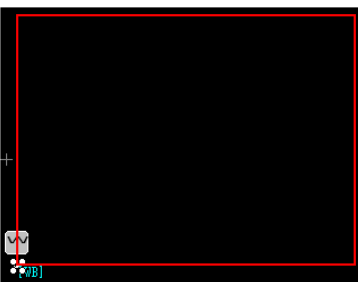
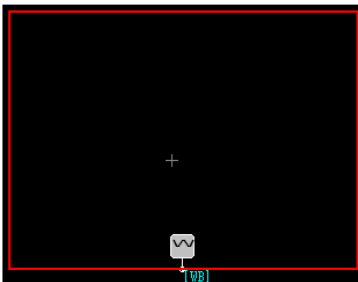
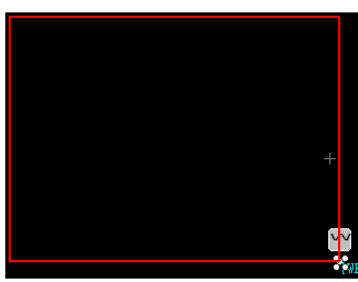
In window position, the position of the object and the window screen are set. The user can use a fixed position, or change the position using address values. The display reference point for the window can be set here as well.



[Fig. Window position]

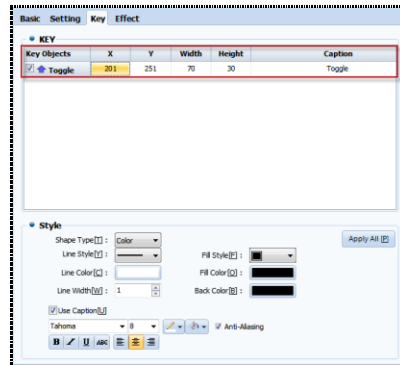
| Properties | | Description |
|-------------------|-------------------|---|
| Screen position | User defined [U] | The user manually sets the window position. |
| | Screen center [C] | Set screen center as the window position. |
| Position data [D] | Normal | Set the position of the window using X and Y coordinate values.  |
| | Address Offset | Set the position of the window using X and Y coordinate values with address data added.  |
| | Address | Set the position of the window using a set address.  |

Reference point [B] refers to the reference point where the window screen is called in the object. The property values are shown as follows.

| Left Top | Middle Top | Right Top |
|---|--|---|
|  |  |  |
| Left Middle | Center Middle | Right Middle |
|  |  |  |
| Left Bottom | Center Bottom | Right Bottom |
|  |  |  |

12.3 Key tab

Set the keys to control the window. Here, control means to bring up or dismiss a window screen. By setting the appropriate toggle keys, the position and description can be entered. Like other rectangular objects, the object can be decorated.

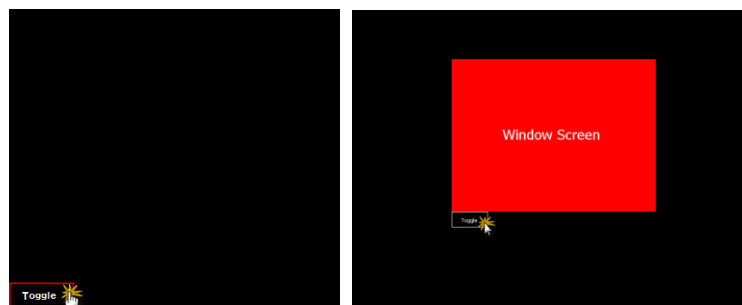


[Fig. Key tab]

| Properties | | Description |
|----------------------|-------|--|
| Shape type [P] | Shape | Set the color for an object used as a key. |
| | Image | Set an image as an object used as a key. |
| Line style [Y] | | Set the line style of a key used as shape. |
| Line color [C] | | Set the line color of a key used as shape. |
| Line width [W] | | Set the line width of a key used as shape. |
| Fill method [F] | | Set the fill method of a key used as shape. |
| Fill color [O] | | Set the fill color of a key used as shape. |
| Background color [B] | | Set the background color of a key used as shape. |
| Use caption [U] | | Set a key used as shape to use captions. |
| Font | | Set the type and size of font, and select font alignment and effects. If antialiasing is used, font display quality is enhanced at low resolutions. |

12.3.1 Use key

By adding toggle keys, the following actions are possible. Using a key that does not disappear from the window object, the window screen can be called or dismissed using the toggle key.

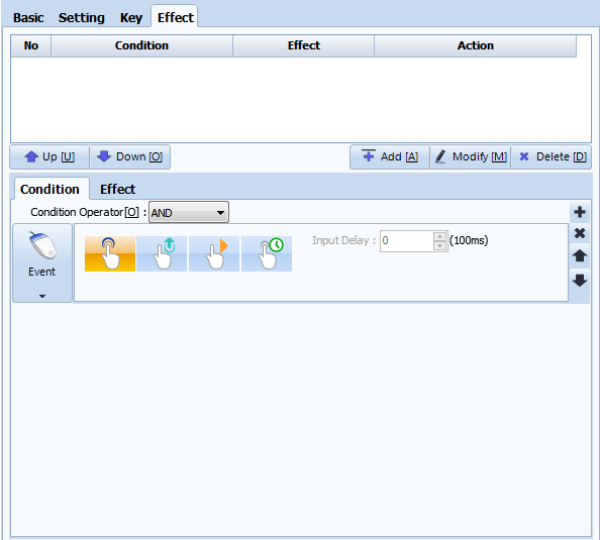


[Fig. Use key]

12.4 Effects tab

Aside from the functions of the current object, special functions can be added. When conditions are set and the set conditions are satisfied effects and actions are triggered.

For details, refer to [Chapter 7 Object - Common] -[7.5 Effects and action].

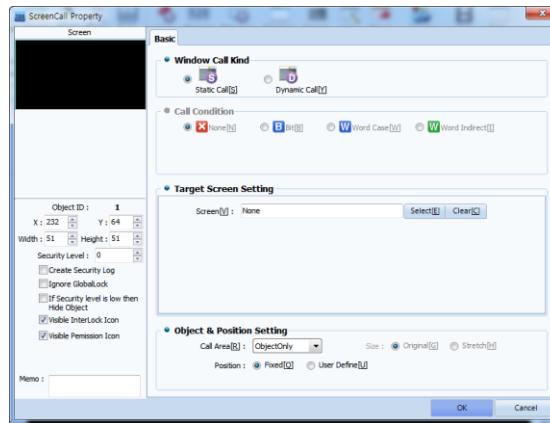


[Fig. Effects & actions]

CHAPTER 13 Screen Objects

CHAPTER 13 - Screen Objects

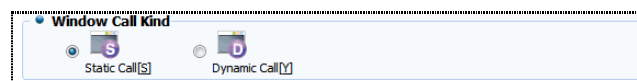
Screen call is a function that calls multiple screens to a single base screen. Said again, this function is used to view multiple screens from the base screen, or navigate to a given screen. The types of screens that can be called are base screens and frame screens. This function enables an intuitive, collective view of screens that require frequent monitoring.





[Fig. Screen call]

13.1 Screen call types

Static and dynamic screen call types are provided. In static call, the screen called is displayed directly without conditions. In dynamic call, call conditions are used to control screen calls.

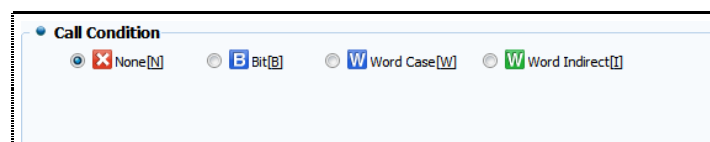


[Fig. Basic tab]




| Properties | Description |
|---|---|
|  Static call [S] | The called screen is displayed directly on the screen, without using call conditions. |
|  Dynamic call [Y] | Screen call is controlled using call conditions. |

13.2 Call conditions

When using [Dynamic call], call conditions must be set. This conditions allows more screens to be called to a limited number of screens. Using bit, word and word indirect conditions, screens can be replaced with other screens.

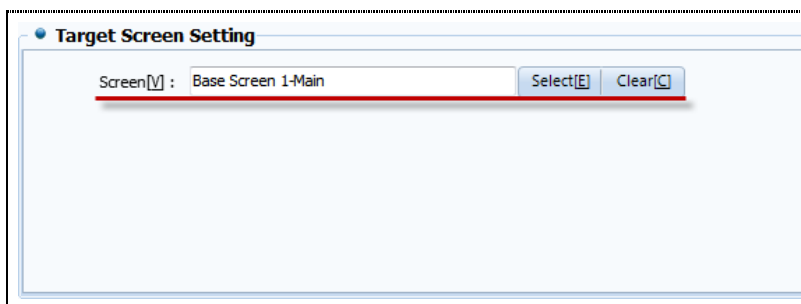


[Fig. Call conditions]

| Properties | Description |
|-------------------|---|
| Not use [N] | If call conditions are not used, the screen is called in the same manner as static call. Unlike static call, the screen size can be adjusted. |
| Bit [B] | Using bit addresses, the screen that is called is varied depending on the ON/OFF status.  Address : D PLC1 X0000 |
| Word case [W] | Using a word address, word ranges are set using size comparisons, and multiple screens are called.  Address : D PLC1 D0000000 Type : DEC Size : 16Bit |
| Word indirect [I] | Word addresses are used as the screen numbers. That is, the screen changes according to the address value.  Address : D PLC1 D0000000 Type : DEC Size : 16Bit |

13.3 Target screen setting

Here, the call type and call conditions are set, and the applicable screen is selected. Here, the settings vary depending on the call type and call condition. Also, call conditions can be set and the size of the called screen can be adjusted only in dynamic call. In static call, a [Call area] can be set for screens, and only the necessary parts can be called to the call destination screen.

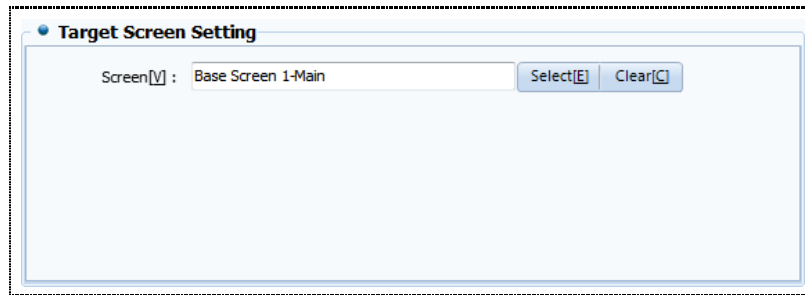


[Fig. Static call; dynamic call not used]

| Properties | Description |
|------------|--|
| Screen [V] | Displays the title of the selected screen. |
| Select [E] | Use the screen selection window to select the call screen. |
| Clear [C] | Remove the set call screen. |

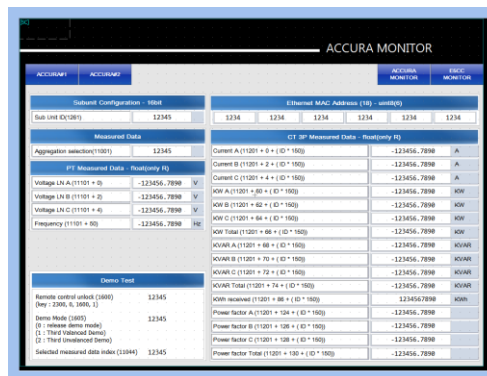
13.3.1 Static call

Static call means that the method of call is fixed. Said again, only one screen is set for one screen call object. Unlike static call, [Call area] can be set.



[Fig. Static call]

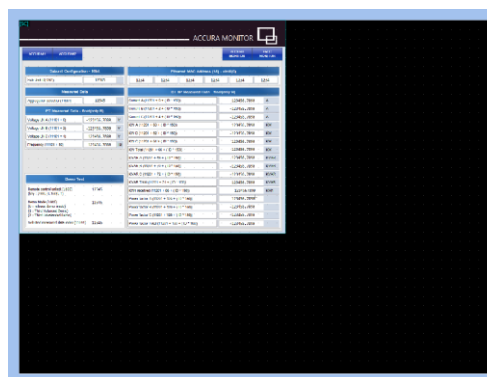
The screen set as shown above is displayed in the edit window as shown in the following figure. The screen in [Static call] is fixed, and size cannot be adjusted.



[Fig. Use static call]

13.3.2 Dynamic call

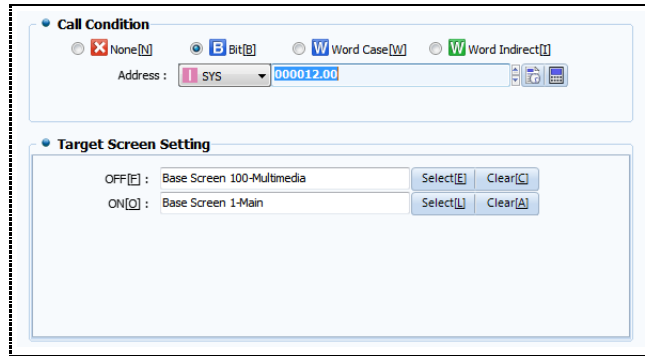
If the [Not use] condition is set for dynamic call, only one screen is called, as in the static call method. Here, unlike static call, the screen size can be adjusted. To adjust the screen size, [Object and position setting] must be used. The call area is set as the entire screen, and cannot be changed.



[Fig. Use dynamic call]

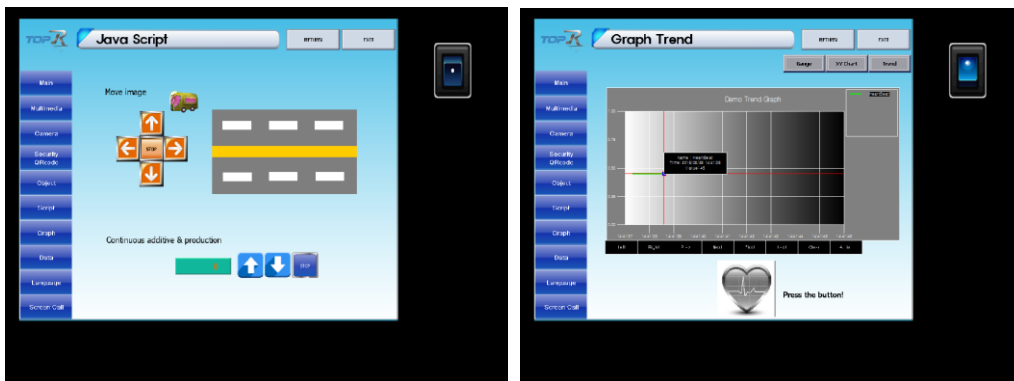
13.3.3 Dynamic call (bit)

If the dynamic call condition is bit, different screens can be called depending on the ON/OFF status. Said again, the action is similar to ON/OFF lamps, with the call target being screens. Also, because a bit condition is used, two screens can be called alternately.



[Fig. Dynamic call bit]

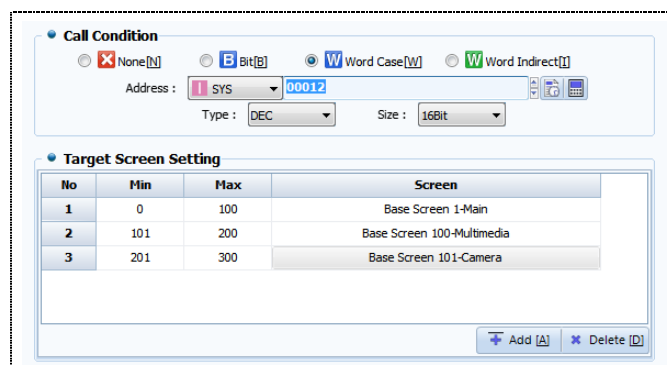
By making and triggering an ON/OFF switch that changes the status of [SYS 00012.01] which is the screen call address, the following operation can be performed.



[Fig. Use dynamic call bit]

13.3.4 Dynamic call (word case)

The screen can be set depending on the word range. Here, the range for size comparison of word values is set, and the screen that is called according to the range is varied depending on status. The action is similar to word lamps, with the call target being screens. Also, depending on the set range, the number of screens that can be called varies.

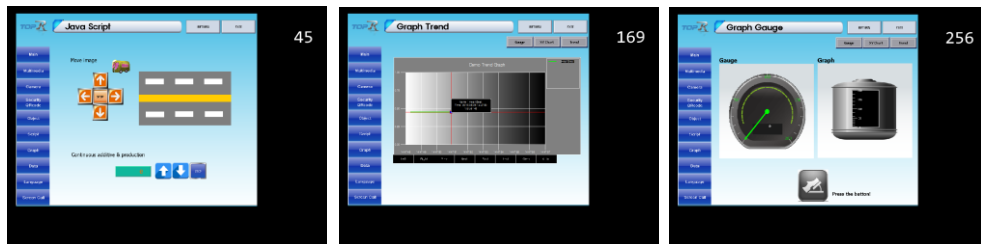


[Fig. Dynamic call word case]

| Properties | Description |
|------------|--------------------------------------|
| Minimum | Set the minimum value for the range. |
| Maximum | Set the maximum value for the range. |

| | |
|------------|---|
| Screen | Set the screen that is called if the value entered in the word address falls within the applicable range. |
| Add [A] | By setting the word setting range, the screen that is called can be set. |
| Delete [D] | Delete the selected word setting range. |

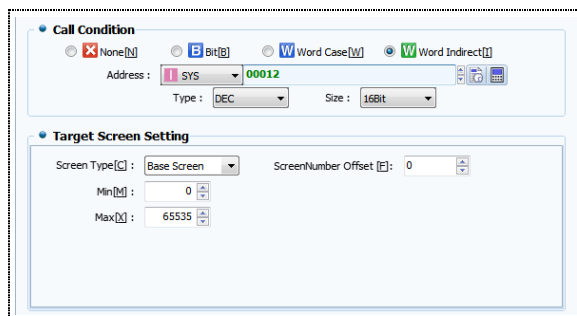
In the following figure, it can be seen that when the values 45, 169 and 256 are entered into [SYS 00012], the screen changes to the screen set for the word range.



[Fig. Use dynamic call word case]

13.3.5 Dynamic call (word indirect)

In word indirect, the value entered into the word address becomes the screen number. Said again, the action is similar to word indirect window objects, with the call target being screens. Also, settings can be made for the current screen, and the min and max screen numbers can be set.



[Fig. Dynamic call word indirect]

| Properties | | Description |
|--------------------------|-------------|--|
| Screen Type [C] | Base Screen | Set the screen that is called as an area of a base screen. |
| | Frame | Set the screen that is called as a frame area. |
| Screen number offset [F] | | Add the set screen offset to the address value of the call condition, and call the corresponding page. |
| Min [M] | | Set the minimum number of the screen called. |
| Max [X] | | Set the maximum number of the screen called. |

(1) Using dynamic call word indirect

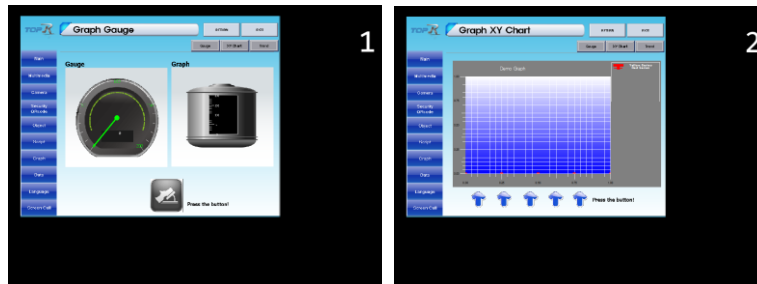
In the following figure, it can be seen that when the values 8 and 12 are entered into the screen call address [SYS 00012], the registered screen number is called.



[Fig. Use dynamic call word indirect]

(2) Use dynamic call word indirect offset

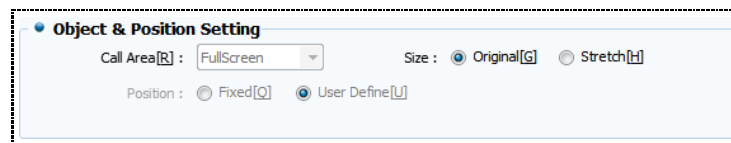
For example, if the offset is set to 10, when the values 1 and 2 are entered in to the screen call address [SYS 00012], screen numbers 11 and 12 are called.



[Fig. Use dynamic call offset]

13.4 Object and position settings

Here, the area, position, and size of screen call objects are set. Here, the areas that can be set are designated depending on the call type. In the case of [Static call], the call area position can be set. For [Dynamic call], [Size] and [Position] can be set.



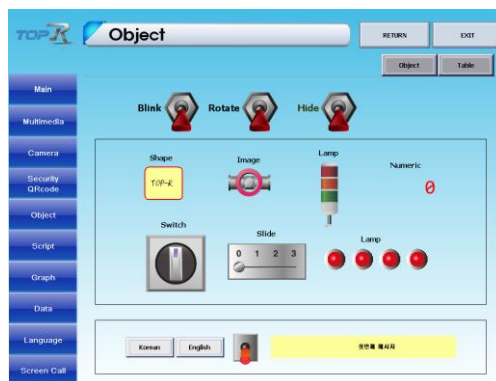
[Fig. Object and position settings]

| Object and position settings | | Description |
|------------------------------|---------------|--|
| Call Area [R] | Object Only | Only objects included in the call screen are displayed. This is enabled when static call is set. |
| | Object+Global | Only objects and global parts included in the call screen are displayed. This is enabled when static call is set. |
| | FullScreen | All elements of the call screen are displayed. This is enabled when static call is set. |
| Position | Fixed [Q] | Fix the position of the call screen. The fix position is the top left corner or the screen. |

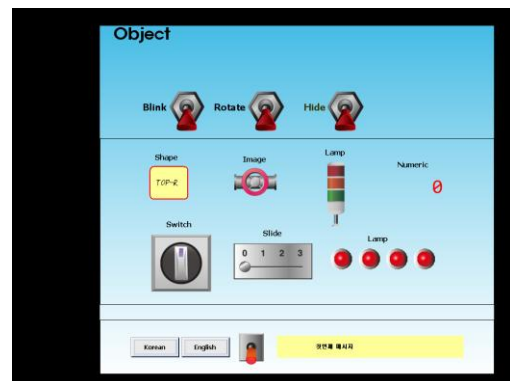
| | | |
|------|------------------|--|
| | | This is enabled when static call is set. |
| | User defined [U] | The position of the call screen can be moved using the mouse. This is enabled when static call is set. |
| Size | Original [G] | The original size of the call screen is displayed. This is enabled when dynamic call is set. |
| | Stretch [H] | The size of the call screen can be increased or reduced by dragging with the mouse. This is enabled when dynamic call is set. |

(1) Setting the call area

Call area is a function that allows setting of only the parts that the user wants to call. Here, settings can be made to call only certain parts, or the entire screen.



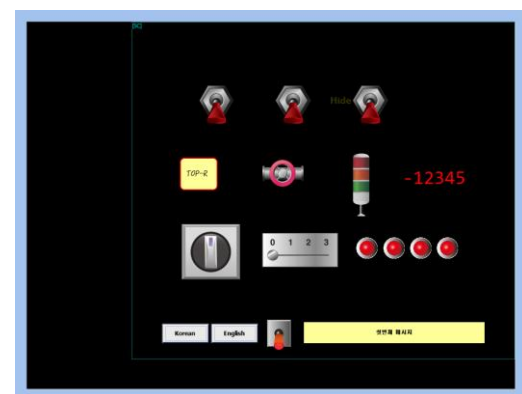
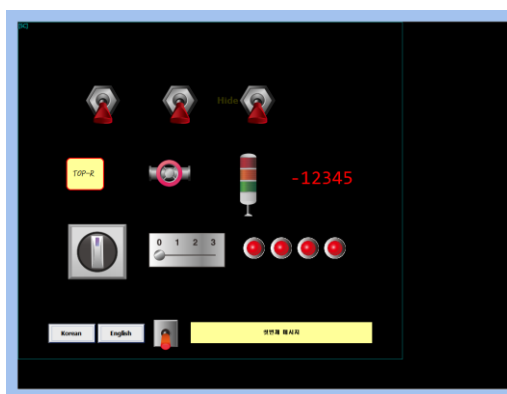
[Fig. Full Screen]



[Fig. Object Only]

(2) Position setting

The position of the call screen can be designated. When using fixed position, the screen is called to the top left corner. When using user defined, the mouse can be used to reposition.



[Fig. User defined position]

(3) Size setting

The size of the call screen can be designated. If the size is set to original, the screen is called with the original size. If stretch is set, the size can be adjusted using the mouse.



[Fig. Reducing the size setting]

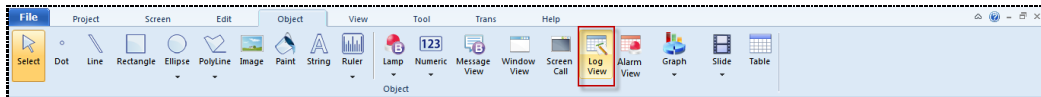
CHAPTER 14 Log View Objects

CHAPTER 14 - Log View Objects

A log view can be thought of as a function where the data of the set addresses is recorded when a particular condition is satisfied. To register a log, use the [Project]-[Log] setting. Before using log view, a [Log] must first be registered. For details, refer to [Chapter 4.2 Log].

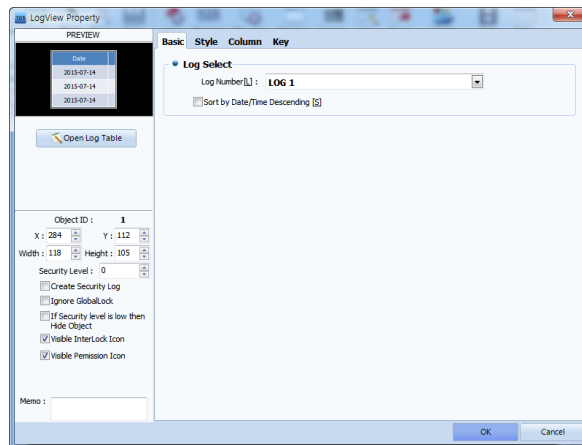


The log view object location is as shown in the figure below. When the log condition set in [Project]-[Log] is satisfied, log data is recorded.



[Fig. Log view object]

In log view objects, a function that displays recorded data as a table is used. The following figure is the settings screen for log view objects. Here, the function that converts applicable log data into a table can be used. The desired columns and styles for the table can be designated as well. Also, the log view can be controlled by adding keys.

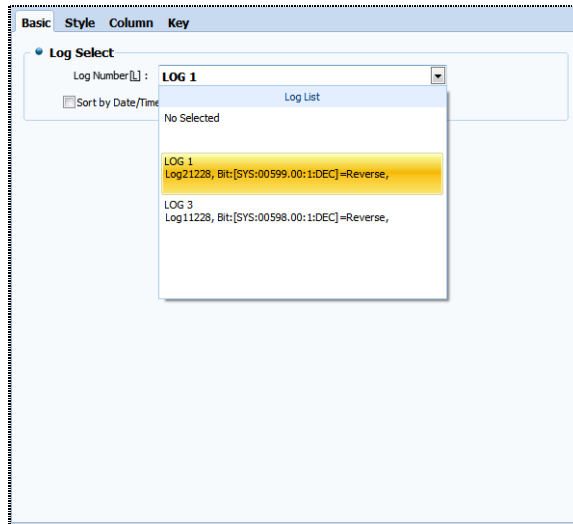


[Fig. Log view]

| Properties tab | Description |
|----------------|--|
| Basic | Select the log data registered in [Project]-[Log]. |
| Style | Set the style of the log view. |
| Column | Set the title, size, and alignment, etc., of the log view. |
| Key | Set keys for controlling the log view. |

14.1 Basic tab

Select the log number set in [Project]-[Log]. When the log number is clicked as shown in the following figure, a log list is shown. A summary of set log conditions can be viewed. Also, the order in which recorded log data is displayed can be set.

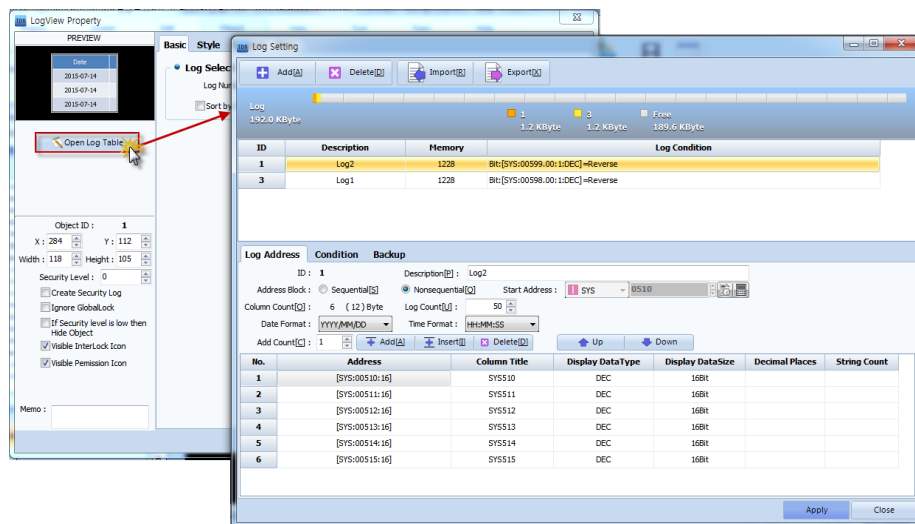


[Fig. Basic tab

| Properties | Description |
|---|--|
| Log number [L] | A summary of the log conditions and numbers of the log list is shown. Select the log list. |
| Align date/time in descending order [S] | The log view list is aligned by date and time in descending order. The list is displayed from the top. If this function is not set, the list is sorted by date and time in ascending order. If the list exceeds one table, new items are added to the bottom, and cannot be viewed in the table. |

14.1.1 Viewing the log table

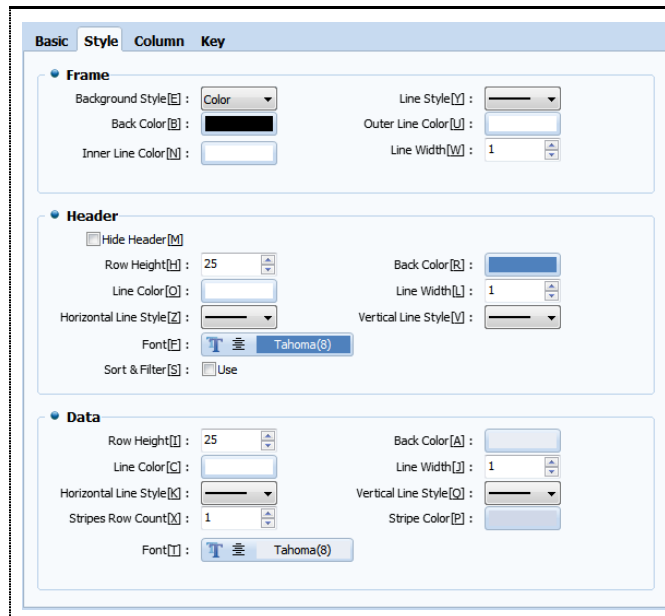
There are three methods of viewing the log table : [Open log table], [Project]-[Log], [Left Project Management Window]-[Project]-[Log]. When [Open log table] is used, the table can be viewed immediately with the object window open.



[Fig. Open the log table]

14.2 Style tab

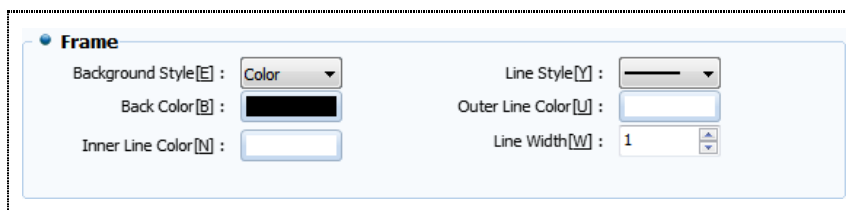
This function is used to decorate the table for the set log list. It is divided into table frame settings, the title bar to show the table title, and the data area where data is shown. Using this function, a simpler and more easily identifiable table structure can be made.



[Fig. Style tab]

14.2.1 Frame

This is the frame of the table. Here, the background, table line color, and style can be set.

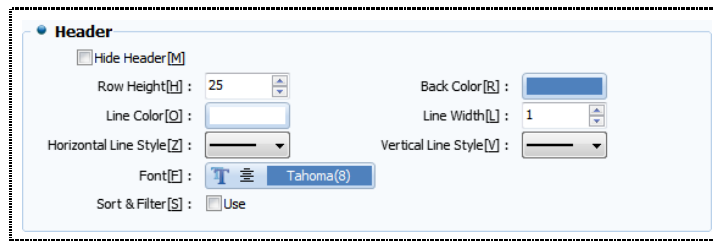


[Fig. Frame]

| Properties | | Description |
|----------------------|-----------|---|
| Background | Color | Set a color for the table. |
| | Shape [E] | Set an image for the table. |
| Background color [B] | | Set the background color for the table. |
| Line style [Y] | | Select the line style for the table. |
| Outer line color [U] | | Select the color for the outer line of the table. |
| Inner line color [N] | | Select the color for the inner line of the table. |
| Line width [W] | | Select the line width for the table. |

14.2.2 Title bar

These are the settings for the title bar which shows the titles of the columns. Here, set the background color of the title bar, row height, and line width, etc.

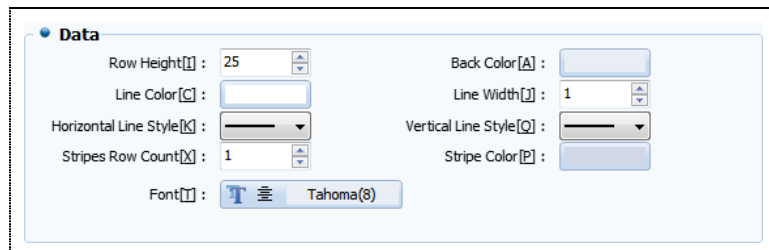


[Fig. Title bar]

| Properties | Description |
|---------------------------|--|
| Hide title bar [M] | When the title bar is hidden, the table has no title part. |
| Row height [H] | Set the row height for the title bar. |
| Line color [O] | Set the line color for the title bar. |
| Horizontal line style [Y] | Set the horizontal line style for the title bar. |
| Background color [R] | Set the background color for the title bar. |
| Line width [L] | Set the line width for the title bar. |
| Vertical line style [Y] | Set the vertical line style for the title bar. |
| Font [F] | Set the font shown in the title bar. |

14.2.3 Data area

Set the area of the table where data is displayed. Here, set the background color, row height, and line width, etc. for the data area.

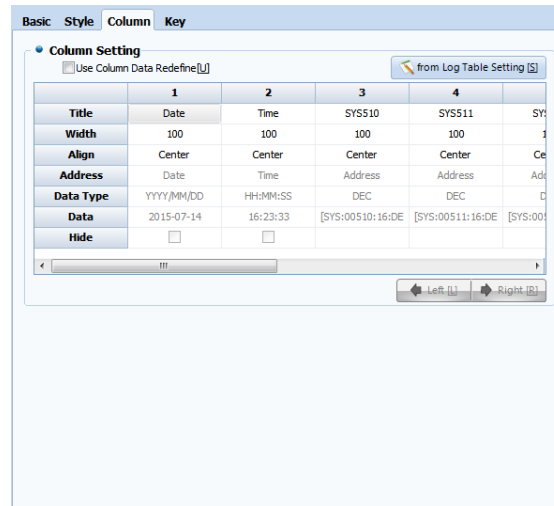


[Fig. Data area]

| Properties | Description |
|---------------------------|---|
| Row height [H] | Set the row height for the data area. |
| Line color [O] | Set the line color for the data area. |
| Horizontal line style [Y] | Set the horizontal line style for the data area. |
| Background color [R] | Set the background color for the data area. |
| Line width [L] | Set the line width for the data area. |
| Vertical line style [Y] | Set the vertical line style for the data area. |
| Stripe row count [X] | Set the number of stripe rows, which indicate the number of items in the data area. |
| Stripe color [P] | Set the color of the stripes set for the data area. |
| Font [F] | Set the font shown in the data area. |

14.3 Column tab

Here, the columns for the log view are set. Said again, the configuration of the log table is changed. Elements for displaying the log data are time, date, and date, etc. Also, the log table can be opened to change elements.

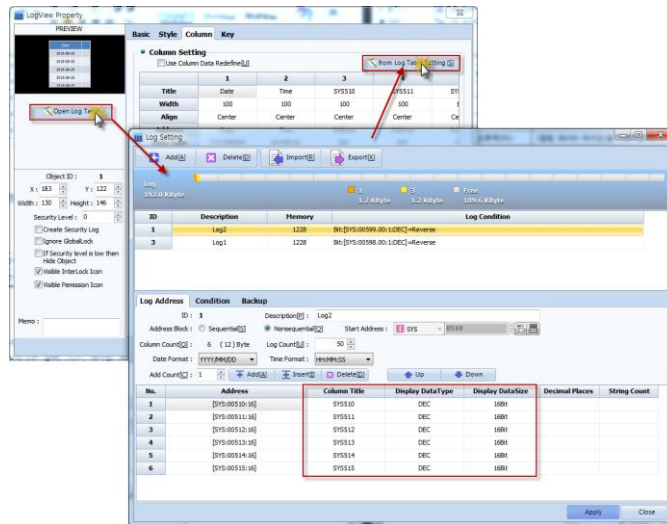


[Fig. Column tab]

| Properties | | Description |
|------------------------------|--------|--|
| Use column data redefine [U] | | Apply the column data set in the current object to the log view. |
| From log table settings [S] | | Set the column list set in the log table to the current object. |
| Title | | Set the title of the column. |
| Width | | Set the width of the column. |
| Align | Left | Left align the column data. |
| | Center | Center align the column data. |
| | Right | Right align the column data. |
| Address | | Show the address of the column data. |
| Data type | | Show the type of the column data. |
| Data | | Show the actual data of the column data. |
| Hide | | Hide the date and time. |
| Left [L] | | When using [Redefine column data], the selected column is moved left by one column. |
| Right [R] | | When using [Redefine column data], the selected column is moved right by one column. |

14.3.1 Setting columns using the log table

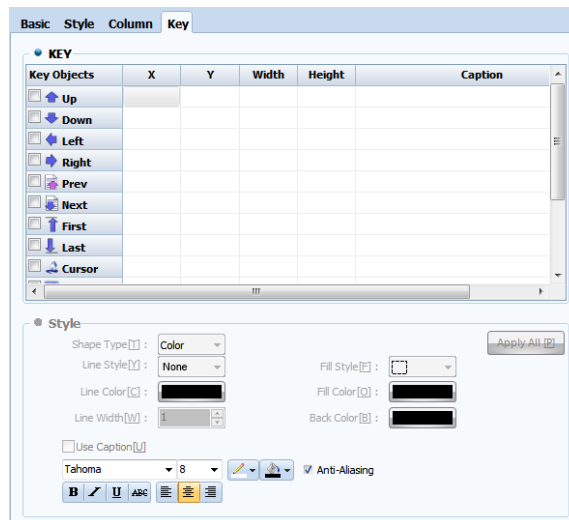
The column configuration for log view is created when the log table is initially created. It can be changed in [Log view object] and [Log table]. To create a new table in log view, the [From log table settings] button must be pressed.



[Fig. Log table column designation]

14.4 Key tab

To control data displayed on the table, the key properties shown in the following figure are used. These are used when the amount of data recorded exceeds the current page and continues to the next page, to return to the previous page. The shape of the set key can also be changed.



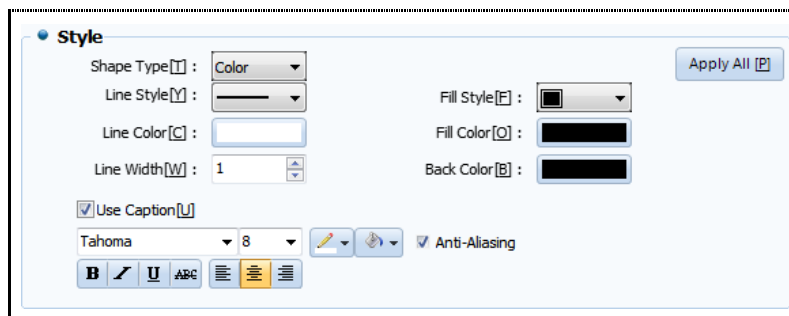
[Fig. Key tab]

| Properties | Description |
|------------|--|
| X | Set the x coordinate position of the selected key. |
| Y | Set the y coordinate position of the selected key. |
| Width | Set the width of the selected key. |
| Height | Set the height of the selected key. |
| Caption | Set the text for the selected key. |
| Up | Move the table list item up. |
| Down | Move the table list item down. |

| | |
|--------|---|
| Left | Move the table list item selected using the cursor to the left column. |
| Right | Move the table list item selected using the cursor to the right column. |
| Prev | Move the table item to the previous list. |
| Next | Move the table item to the next list. |
| Last | The table item is moved to the end. |
| Cursor | Select the table list. |

14.4.1 Key shape

Change the shape of the set key. When the key list is selected, the shape function is enabled, and can be set. The line, line color and line width of the key can be changed.



[Fig. Key shape]

| Properties | | Description |
|----------------------|-------|--|
| Shape type [P] | Color | Set the color for an object used as a key. |
| | Image | Set an image as an object used as a key. |
| Line style [Y] | | Select the line style of the key. |
| Line color [C] | | Set the line color of the key. |
| Line width [W] | | Select the line width for the key. |
| Fill style [F] | | Set the fill style. |
| Fill color [O] | | Set the fill color. |
| Background color [B] | | Set the background color. |
| Use caption [U] | | Enable use of text in the key. |
| Font | | Set the type and size of font, and select font alignment and effects. If antialiasing is used, font display quality is enhanced at low resolutions. |

CHAPTER 15 Alarm View Objects

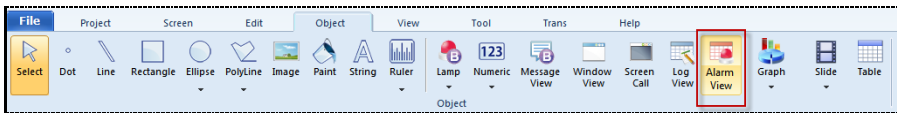
CHAPTER 15 - Alarm View Objects

Alarm is a function where an alarm address is registered, and alarm conditions are set to record addresses where problems occur. To register alarms, first register the settings in [Project]-[Alarm].

For details, refer to [Chapter 4.1 Alarm].

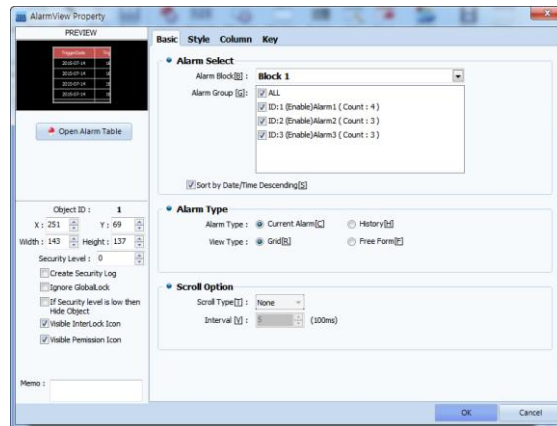


The alarm view object location is as shown in the figure below. When the alarm condition set in [Project]-[Alarm] is satisfied, the alarm is triggered.



[Fig. Alarm view objects]

In alarm view object, a function to change the alarm trigger list into a table is provided. The following figure is the alarm view settings screen. Here, the desired column and style can be designated by the user. Also, the alarm view can be controlled by adding keys.

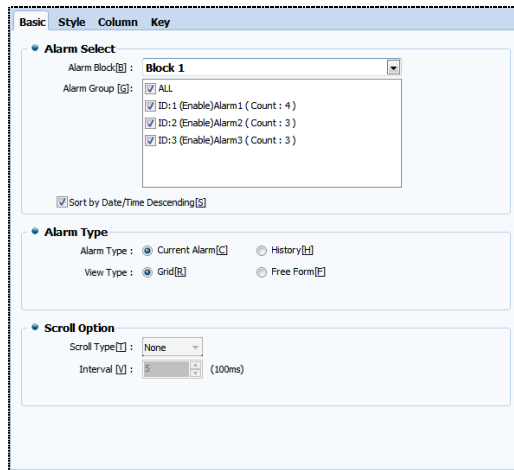


[Fig. Alarm view]

| Properties tab | Description |
|----------------|---|
| Basic | The alarm block and group are selected. The display type and the scroll function displayed when an alarm occurs is set. |
| Style | Set the style of the alarm view. |
| Column | Set the title, size, and alignment, etc., of the alarm view. |
| Key | Set keys for controlling the alarm view. |

15.1 Basic tab

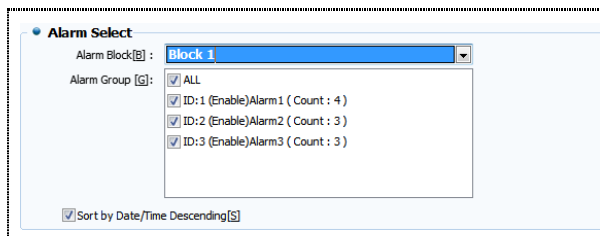
Select the alarm block and group set in [Project]-[Alarm]. When an alarm group is selected, a simplified list of alarm blocks can be viewed, as shown in the following figure. Also, the table shown in the alarm view, and the scroll function that displays triggered alarms on the screen as scrolling text can be set.



[Fig. Basic tab]

15.1.1 Alarm selection

In the alarm view, up to 1 alarm block can be registered. Here, an entire alarm block can be registered, or groups within the block can be selected.

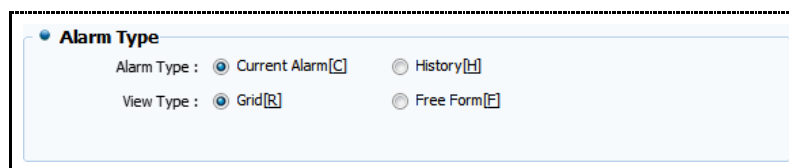


[Fig. Alarm selection]

| Properties | Description |
|---|--|
| Alarm block [B] | Set the alarm block to be registered in the alarm view. |
| Alarm group [G] | Set the alarm groups that exist in the alarm block. The default setting is ALL. This means that all alarm groups are displayed in the alarm view. |
| Align date/time in descending order [S] | In the alarm view, the data recorded is sorted by date and time in descending order. This means that the alarm record that occurred latest is brought to the top of the list. If this function is not checked, the list is sorted in ascending order. |

15.1.2 Alarm type

Set the type of table displayed in the alarm view. A table that shows only current alarms can be made, or a table that retains an alarm history can be made. Also, the table style can be designated, and the scroll function, which displays alarms on the current screen as scrolling text can be used.

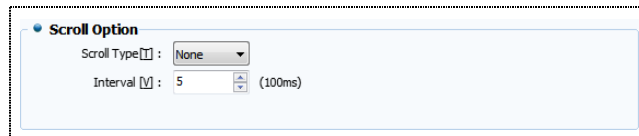


[Fig. Alarm type]

| Properties | | Description |
|--------------|-------------------|--|
| Alarm Type | Current alarm [C] | The current alarm is added to the table. When the alarm is recovered, the record disappears from the alarm view. |
| | Alarm History [H] | Current alarm history is added to the table. Even when the alarm is recovered, the record remains in the alarm view. |
| Display type | Table style [R] | Set the table style of the alarm view to default. Here, the frame, title bar, and data region can be changed to the shape and color desired by the user. |
| | Free format [F] | Set the table style of the alarm view to free format. This can be applied in the same manner as the table style, but a view that displays alarms that occurs with scrolling text can be created. |

15.1.3 Scroll option

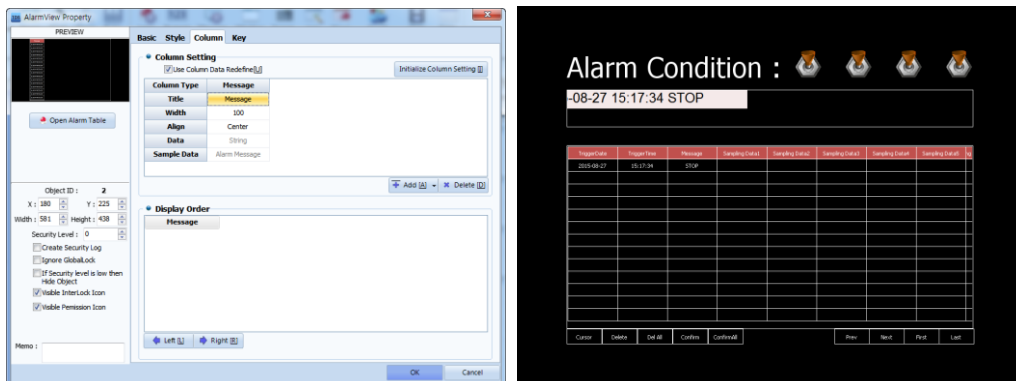
To use scroll options, the display type must be set to [Free format]. Scroll option is a text table that can intuitively display alarms that occur to the user. This function applies only to screens where alarms are used. To display on all screens, global scroll must be used.



[Fig. Scroll option]

| Properties | | Description |
|-----------------|--------------|--|
| Scroll Type [T] | None | Text is displayed without movement when an alarm occurs. |
| | Left Scroll | When an alarm occurs, left scrolling text is displayed. |
| | Right Scroll | When an alarm occurs, right scrolling text is displayed. |
| | Up Scroll | When an alarm occurs, up scrolling text is displayed. |
| | Down Scroll | When an alarm occurs, down scrolling text is displayed. |
| Interval [V] | | Set the scroll interval. |

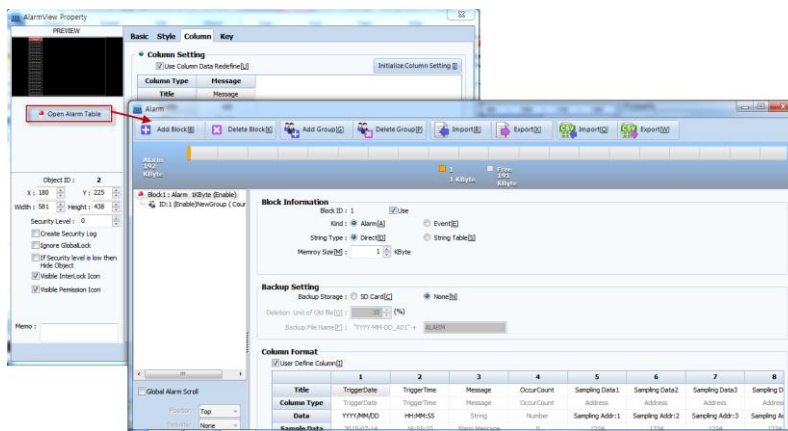
When the "STOP" message is triggered, the message is shown on the top of the screen, as shown in the figure below. This message scrolls left.



[Fig. Use scroll]

15.1.4 Viewing the alarm table

There are three methods of viewing the alarm table : [Open alarm table], [Project]-[Alarm], [Left Project Management Window]-[Project]-[Alarm]. When [Open alarm table] is used, the table can be viewed immediately with the object window open.

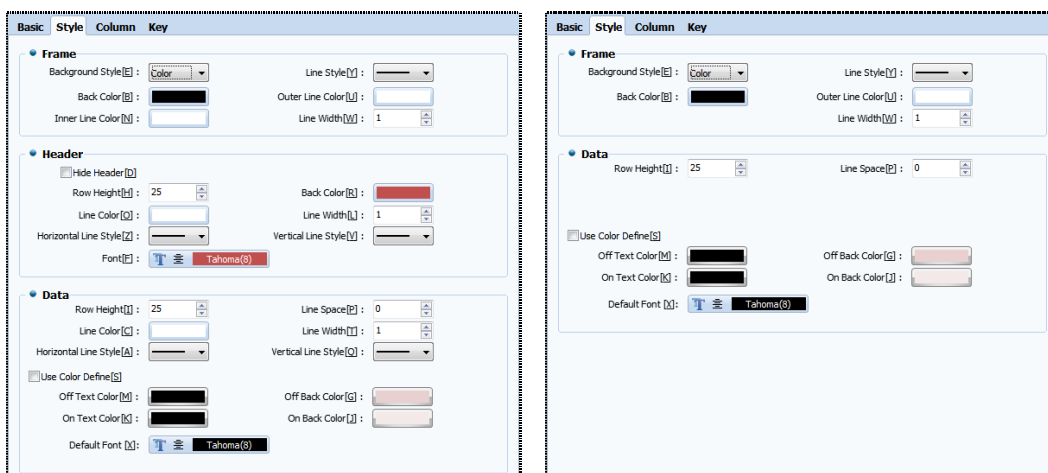


[Fig. Open the alarm table]

15.2 Style tab

This function is used to decorate the table shown in the alarm view. There are two parts. When [Table style] has been set under display type, the frame, title bar, and data areas can be changed. After setting the display type to [Free form], all settings can be made, excluding the header settings. The left side of the figure below is the style tab when [Table style] is set. The right side shows the style tab when [Free form] is set.

Here, the colors of the data area registered in [Alarm settings] do not apply if color designation is used in the current object.



[Fig. Style tab]

15.2.1 Frame

This is the frame of the table. Here, the background, table line color, and style can be set in [Table style]. In [Free form], the colors for the frame and the data area can be set.

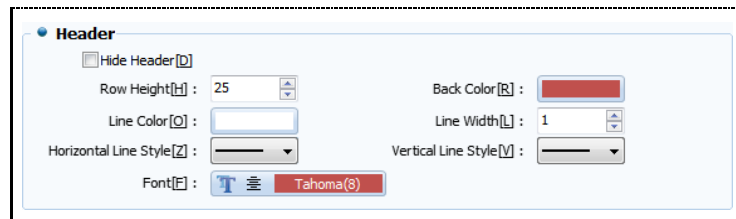


[Fig. Frame]

| Properties | | Description |
|----------------------|-------|---|
| Background | Color | Set a color for the table. |
| Shape [E] | Image | Set an image for the table. |
| Background color [B] | | Set the background color for the table. |
| Line style [Y] | | Select the line style for the table. |
| Outer line color [U] | | Select the color for the outer line of the table. |
| Inner line color [N] | | Select the color for the inner line of the table. |
| Line width [W] | | Select the line width for the table. The maximum width setting is 10. |

15.2.2 Title bar

These are the settings for the title bar which shows the titles of the table columns. Here, set the background color of the title bar, row height, and line width, etc.

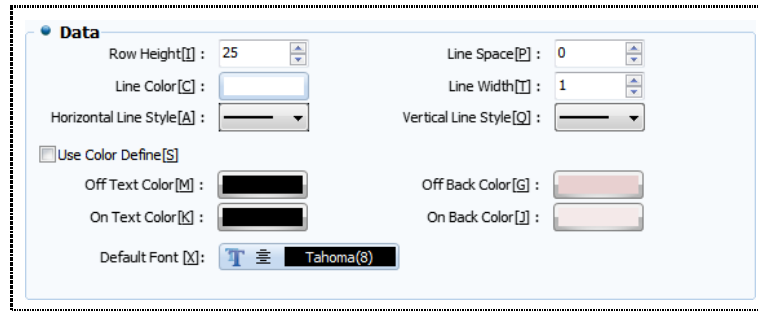


[Fig. Title bar]

| Properties | Description |
|---------------------------|--|
| Hide title bar [M] | When the title bar is hidden, the table has no title part. |
| Row height [H] | Set the row height for the title bar. |
| Line color [O] | Set the line color for the title bar. |
| Horizontal line style [Y] | Set the horizontal line style for the title bar. |
| Background color [R] | Set the background color for the title bar. |
| Line width [L] | Set the line width for the title bar. |
| Vertical line style [Y] | Set the vertical line style for the title bar. |
| Font [F] | Set the font shown in the title bar. |

15.2.3 Data area

Set the area of the table where alarm data is displayed. Here, set the background color, row height, and line width, etc. for the data area. Here, the colors of the data area registered in [Alarm settings] do not apply if color designation is used in the current object.



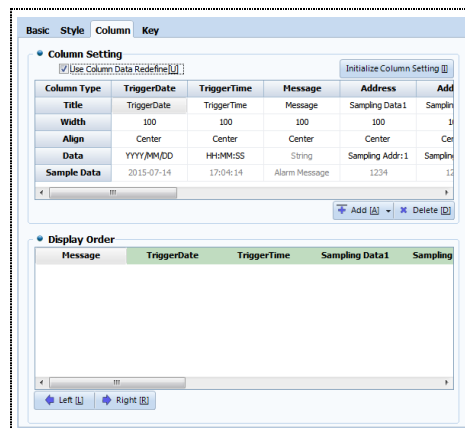
[Fig. Data area]

| Properties | Description |
|---------------------------|--|
| Row height [I] | Set the row height for the data area. |
| Line color [C] | Set the line color for the data area. |
| Horizontal line style [A] | Set the horizontal line style for the data area. |
| Line space [P] | Set the line space for the data area. |
| Line width [T] | Set the line width for the data area. |
| Vertical line style [Q] | Set the vertical line style for the data area. |
| Use color designation [S] | Enable to designate the colors shown in the data area. |
| Off text color [M] | Set the alarm text color when the status of alarm data is OFF. |
| On text color [K] | Set the alarm text color when the status of alarm data is ON. |
| Off background color [G] | Set the background color when the status of alarm data is OFF. |
| On background color [J] | Set the background color when the status of alarm data is On. |
| Default font [X] | Set the font shown in the data area. |

15.3 Column tab

Here, the columns for the alarm view are set. Said again, the configuration of the alarm table is changed. Elements for displaying the data in the alarm list are trigger date, trigger time, acknowledge date, acknowledge time, and data, etc. Also, the display order of elements can be set. Column settings can be changed by opening the alarm table.

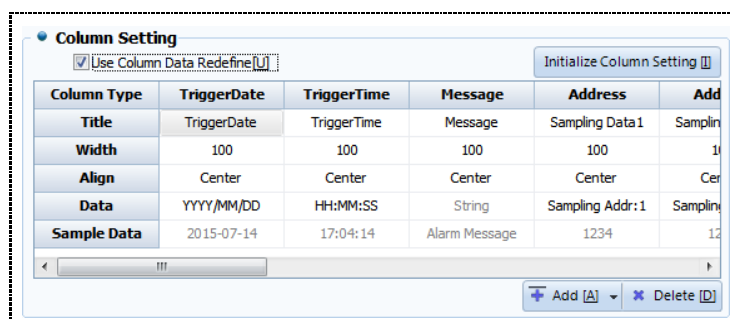
When using [Alarm history], recovery time, date, and trigger count can be added to the elements.



[Fig. Column tab]

15.3.1 Column setting

These are the table elements that are recorded when an alarm occurs. Here, the column title, size, and column data can be edited and deleted.

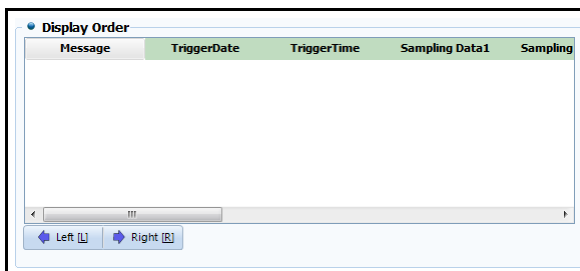


[Fig. Column setting]

| Properties | | Description |
|-------------------------------|--------|--|
| Use column data re-define [U] | | Use the column settings set in the object. When these settings are not used, the column data registered in the alarm table is used. |
| Initialize column setting [I] | | Initializes the column list of the alarm table. |
| Title | | Set the title of the column. |
| Width | | Set the width of the column. |
| Align | Left | Left align the text in the column. |
| | Center | Center align the text in the column. |
| | Right | Right align the text in the column. |
| Data | | Set the data format for the column. Here, date and time formats can be set. Also, sampling addresses can be selected. Here, to use data sampling, sampling addresses must be registered in alarm settings. |
| Sample data | | The data displayed in the column is displayed. |
| TriggerDate | | This column displays the alarm trigger date. |
| TriggerTime | | This column displays the alarm trigger time. |
| RecoverDate | | This column displays the alarm recovery date. |
| RecoverTime | | This column displays the alarm recovery time. |
| Message | | This column displays the alarm details. |
| AckDate | | This column displays the alarm acknowledge date. |
| AckTime | | This column displays the alarm acknowledge time. |
| OccurCount | | This column displays the alarm occurrence count. |
| Address | | Sampling data is displayed in this column. |
| Add [A] | | Add a column. New columns are added from the left. |
| Delete [D] | | Delete the selected column. |

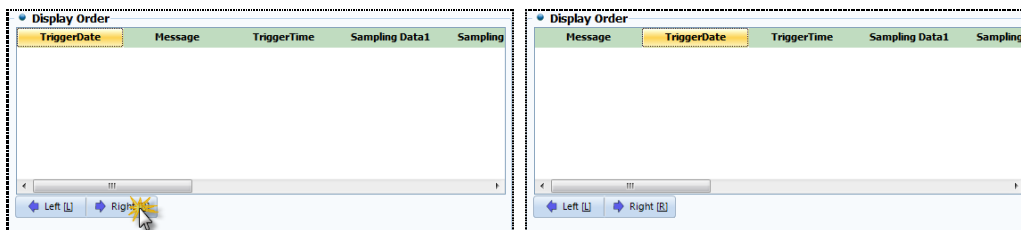
15.3.2 Display order

The display order for the elements displayed in the alarm table is set. Said again, this function is used to change the position of the columns in the table.



[Fig. Display order]

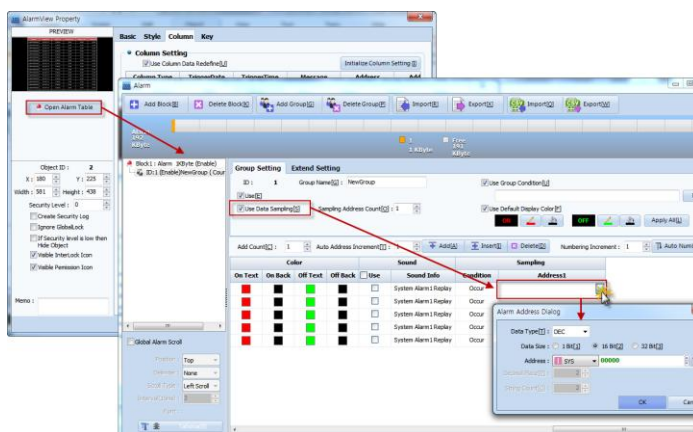
| Properties | Description |
|------------|--------------------------------------|
| Left [L] | Move the selected data to the left. |
| Right [R] | Move the selected data to the right. |



[Fig. Change display order]

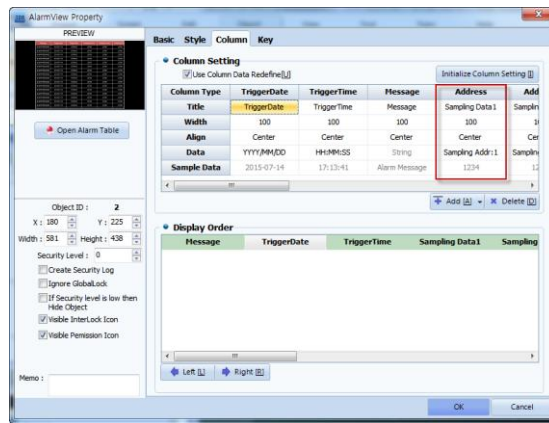
15.3.3 Using sampling data

Sampling data can be viewed only if enabled in [Alarm] settings. In [Alarm table], the addresses that are sampled when the alarm is triggered must be set, as shown in the figure below.



[Fig. Log table column designation]

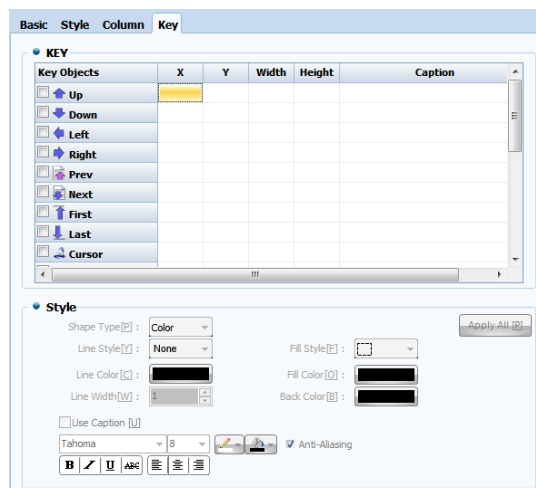
To view the data sampling addresses registered above, the alarm view must be set as follows. Up to 10 sampling data can be added. The sampling addresses can be set in [Data].



[Fig. Adding sampling data]

15.4 Key tab

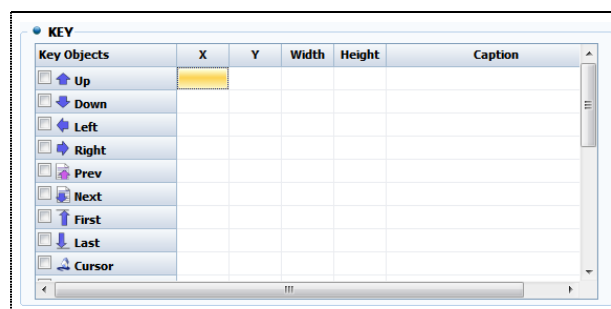
To control data displayed on the table, the key properties shown in the following figure are used. These are used when the amount of data recorded exceeds the current page and continues to the next page, to return to the previous page. The shape of the set key can also be changed.



[Fig. Key tab]

15.4.1 Key

Add keys to control the table. The position of these keys can be changed by the user. By default, they are added to the bottom of the table.

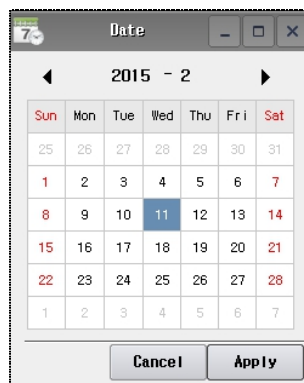


[Fig. Key]

| Key | Description |
|-----------------|---|
| Up | Move the table list item up. |
| Down | Move the table list item down. |
| Left | Move to the data on the left column. |
| Right | Move to the data on the right column. |
| Prev | Move the table item to the previous list. |
| Next | Move the table item to the next list. |
| First | The table item is moved to the beginning. |
| Last | The table item is moved to the end. |
| Cursor | Select data in the table list. |
| Delete | Delete the selected alarm list item. |
| Del All | Delete all list items on the table. |
| Clear Occur | Initialize the selected alarm acknowledge list item. |
| ClearAll Occur | Initialize all alarm acknowledge list items. |
| Confirm | Confirm the selected alarm trigger list item. |
| Confirm All | Confirm all alarm trigger list items. |
| Solution | When an alarm trigger list item is clicked, a solution is displayed. The solution must be registered beforehand in [Alarm] settings. |
| Data Search | Set the alarm list to be searched using a particular date. The search date must be selected using the date entry window. |
| Statistics View | A list of alarms triggered is displayed by day, week, month, or for the set date. |
| Current Alarm | Previous alarm history is dismissed, and only current alarms are displayed. To view alarm history again, press [First]. If the alarm type is set to [Alarm history], alarm trigger and acknowledge history remains on the table. |
| To Day | Display a column showing a list of alarms triggered today. |

(1) Data Search

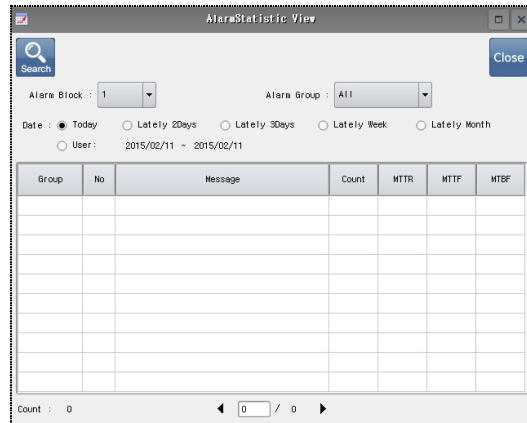
When the key is clicked, the following window appears. When an alarm history search date is selected, only the alarm data for that date is displayed in the alarm view.



[Fig. Data Search]

(2) Statistics View

When the key is clicked, the following window appears. This function searches alarm history for a particular date range.

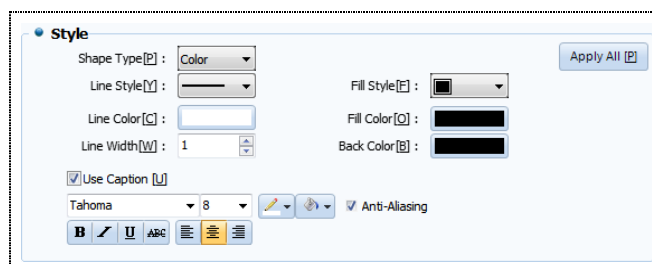


[Fig. Statistics View]

| Properties | Description |
|------------------|---|
| Alarm Block | Set the alarm block to be searched. |
| Alarm Group | Set the alarm group to be searched. |
| Today | Set the search date to today. |
| Lately 2 Days | Set the search date to the last two days. |
| Lately 3 Days | Set the search date to the last three days. |
| Lately Week Days | Set the search date to the last week. |
| Lately Month | Set the search date to the last month. |
| User | Set the search date using user input. |

15.4.2 Key shape

Change the shape of the set key. When the key list is selected, the shape function is enabled, and can be set. The line, line color and line width of the key can be changed.



[Fig. Key shape]

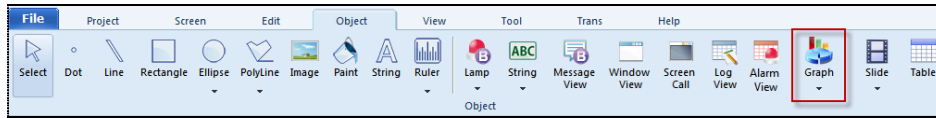
| Properties | Description | |
|----------------|--|--|
| Shape type [P] | Color | Set the color for an object used as a key. |
| | Image | Set an image as an object used as a key. |
| Line style [Y] | Set the line style for the key object. | |

| | |
|----------------------|--|
| Line color [C] | Set the line color for the key object. |
| Line width [W] | Select the line width for the key object. |
| Fill style [F] | Set the fill style for the key object. |
| Fill color [O] | Set the fill color for the key object. |
| Background color [B] | Set the background color for the key object. |
| Use caption [U] | Enable use of text in the key object. |
| Font | Set the type and size of font, and select font alignment and effects. If antialiasing is used, font display quality is enhanced at low resolutions. |

CHAPTER 16 Graph Objects

CHAPTER 16 - Graph Objects

A graph objects converts address values in the desired object into graphs, trends, log graph, and gauges. Said again, it is a function that can express changing values in internal addresses as images.

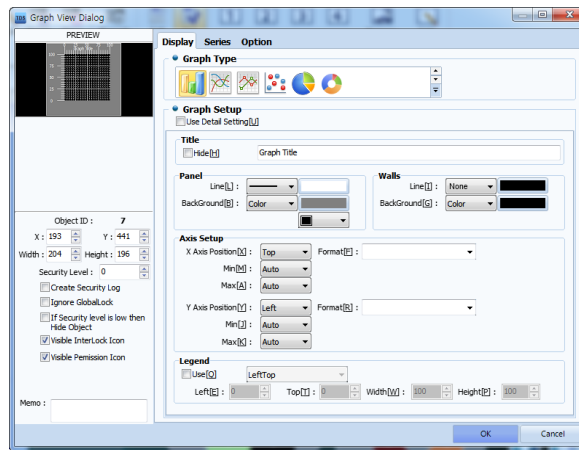


[Fig. Graph objects]

16.1 Graph



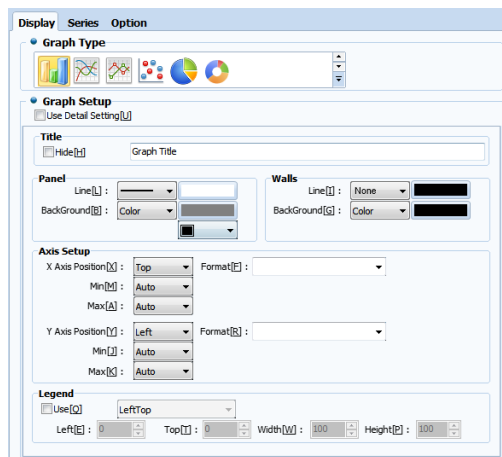
Using graphs, the data of designated addresses can be shown in bar graphs, line graphs, point-line graphs, point graphs, scatter graphs, and pie graphs. This makes faster graph interpretation possible, according to the data used in the graph.



[Fig. Graph]

16.1.1 Displays

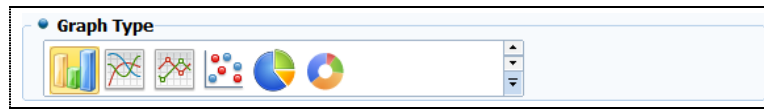
In the display graph of the graph, the graph type, title, and shape can be changed.



[Fig. Display]

(1) Graph type

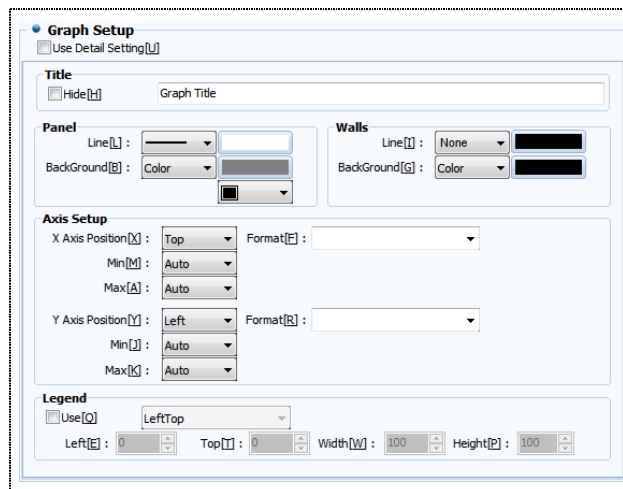
Set the graph type. Graph types provided are bar graph, line graph, point-line graph, point graph, scatter graph, and pie graph. When a graph type is selected, setting options corresponding to each graph type are shown. When using pie graphs, the hole size can also be set.



[Fig. Graph type]

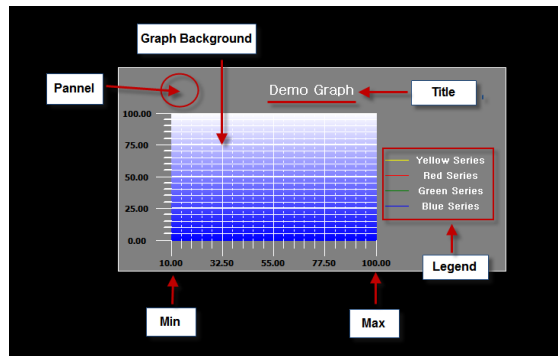
(2) Graph general settings

If detailed settings are not used, only basic graph settings are used.



[Fig. Detailed settings not used]

| General settings | | Description |
|------------------|------------------|--|
| | Title | Set the title of the graph. Using Hide(H), the title can be hidden. |
| | Panel | Select the line and background for the panel surrounding the graph. |
| | Graph background | Select the outline or the graph, and the background in the graph. |
| Axis Setting | Axis position | Set the positions of the X axis and the Y axis. The X axis can be moved up and down, and the Y axis can be moved left or right. |
| | Minimum | Set the minimum values for the X axis and Y axis. Here, the minimum value means the value at which the graph divisions begin. Auto: The value is set automatically. Const: The user manually enters a constant. Address: Set the data value of the designated address to the minimum value. |
| | Maximum | Set the max. value of the axis. The method for setting is the same as for the minimum value. |
| | Format | Set the unit for the numbers on the axis divisions. One or two decimal places can be set. |
| | Legend | Set the legend that shows a list of the current graph series. The location desired by the user can be designated. |

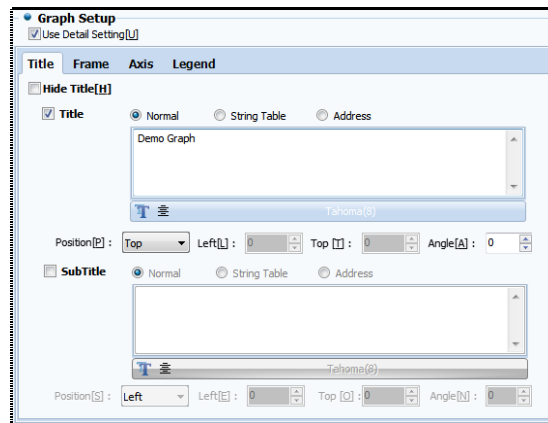


[Fig. Graph setting names]

(3) Graph setting details-Title

Using detailed graph settings, more detailed graph settings can be made. Detailed settings can be made in the [Title], [Frame], [Axis] and [Legend] tabs.

In Title, the title of the graph can be set. The title and font for the current graph can be set, and a sub title can be made as well.

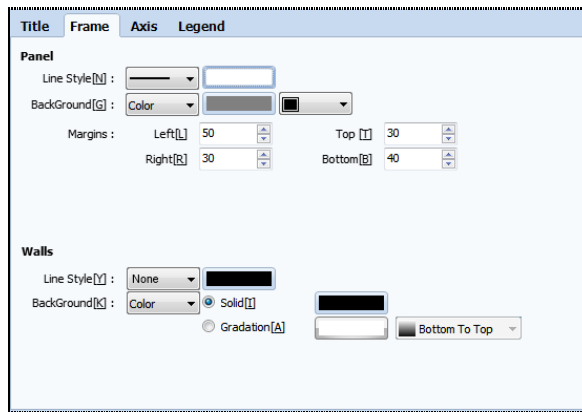


[Fig. Title]

| Title setting | | Description |
|-----------------|---------------|--|
| Hide title [H] | | Hide the title of the graph. |
| Title /Subtitle | font setting | Set the font, size, and effects for the title. |
| | Input setting | The title is displayed using [Manual input], [Text table], and [Address]. When [Address] is used, there must be an address that is used as a title. |
| Position [P] | | Set the position of the title. Settings available are [Left], [Right], [Top], [Bottom], and [UserDefine]. |
| Left [L] | | If [Position]-[UserDefine] has been set, the position of the title is set to the left end of the graph. |
| Top [T] | | If [Position]-[UserDefine] has been set, the position of the title is set to the top of the graph. |
| Angle [A] | | If [Position]-[UserDefine] has been set, the angle of the title is set. |

(4) Graph setting details-Frame

In the frame, the line and background of the graph can be set.

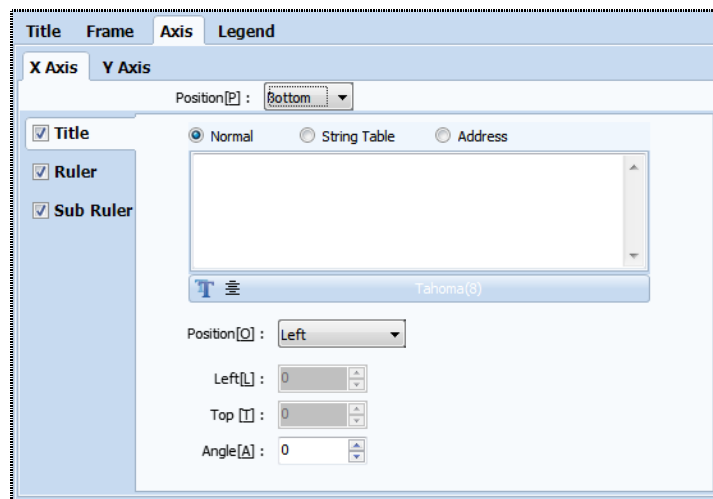


[Fig. Frame]

| Frame setting | | Description |
|------------------|----------------|---|
| Panel | Line style [N] | Set the style and color of the lines surrounding the graph. |
| | Background [G] | Set the background surrounding the graph, background effects, and background color. |
| | Margin | The margins of the graph can be set to manually designate the size. |
| Graph Background | Line style [Y] | Set the background color of the graph. |
| | Background [K] | Set the background of the graph, background effects, and background color. |

(5) Graph setting details-Axis

Here, the X and Y axes of the graph can be set. The axis title, divisions on the axis, and subdivisions can be set.



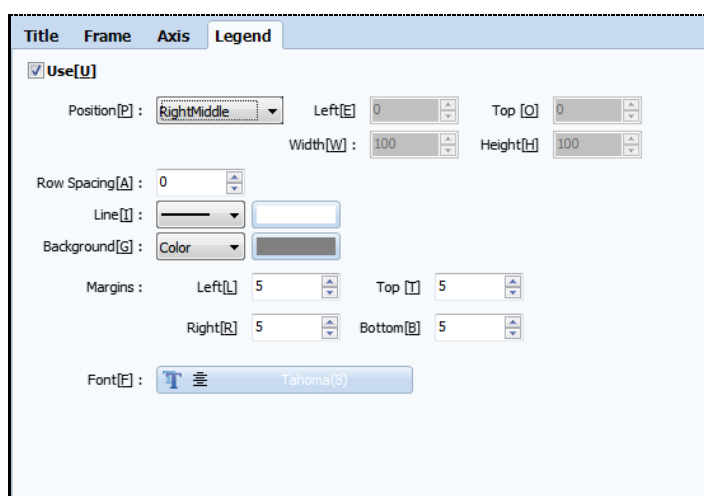
[Fig. Axis]

| Axis settings | | Description |
|---------------|--------------|---|
| Title | font setting | Set the font, size, and effects for the axis title. |

| | | |
|--------------|---------------------|--|
| | Position setting | Set the position of the axis title. Types are [Left], [Right], [Top], [Bottom], and [UserDefine]. When [UserDefine] is set, [Left], [Top], and [Angle] can be set. |
| Ruler | Format [F] | Set the format for the text displayed on the axis. |
| | Min. type [N] | Set the type of division and the minimum value. |
| | Max. type [X] | Set the type of division and the maximum value. |
| | Count [C] | Set the number of divisions. |
| | Width [K] | Set the width of the divisions. |
| | Length [E] | Set the length of the divisions. |
| | Line style [S] | Select the line style for the divisions. |
| | Line color [O] | Set the line color for the divisions. |
| | Use grid line [G] | Add grid lines to the divisions. |
| | Grid line style [D] | Select the style of the grid line. |
| | Grid line color [Q] | Set the color of the grid line. |
| | Use label [B] | Use division labels. |
| | Font [Z] | Set the font for division labels. |
| | Angle [A] | Set the angle for division labels. |
| Sub division | Count [C] | Set the number of subdivisions. |
| | Length [L] | Set the length of the subdivisions. |
| | Width [T] | Set the width of the subdivisions. |
| | Line style [S] | Select the line style for the subdivisions. |
| | Line color [O] | Select the line color for the subdivisions. |
| | Use grid line [G] | Add grid lines to the subdivisions. |
| | Grid line style [Y] | Select the style of the grid line. |
| | Grid line color [R] | Set the color of the grid line. |

(6) Graph setting details-Legend

A legend can be set to show the type of lines in the graph.



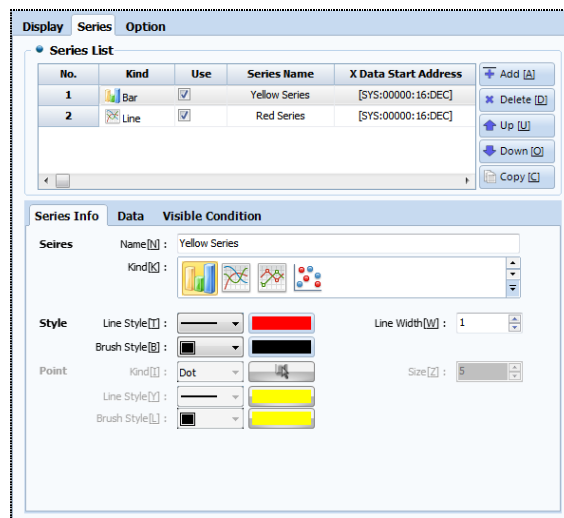
[Fig. Legend]

| Legend setting | | Description |
|----------------|------------|--|
| Use [U] | | Enable use of a legend showing the axes. |
| Position [P] | | Set the position of the legend. [Left], [LeftTop], [LeftMiddle], [LeftBottom], [Right], [RightTop], [RightMiddle], [RightBottom], and [UserDefine] settings are available. |
| Left [E] | | If [Position]-[UserDefine] has been set, the left position is set. |
| Top [O] | | If [Position]-[UserDefine] has been set, the top position is set. |
| Width [W] | | If [Position]-[UserDefine] has been set, the width is set. |
| Height [H] | | If [Position]-[UserDefine] has been set, the height is set. |
| Line space [A] | | If [Position]-[UserDefine] has been set, the line space is set. |
| Line [I] | | If [Position]-[UserDefine] has been set, the line type and color are set. |
| Background [G] | | If [Position]-[UserDefine] has been set, the background and background color are set. |
| Margin | Left [C] | Set the left margin for the internal text surrounding the legend. |
| | Right [L] | Set the right margin for the internal text surrounding the legend. |
| | Top [T] | Set the top margin for the internal text surrounding the legend. |
| | Bottom [S] | Set the bottom margin for the internal text surrounding the legend. |
| Font [F] | | Set the font size, font type, and font effects. |

16.1.2 Series

This is the series page for graph. A series is a group of graphs with the same series data.

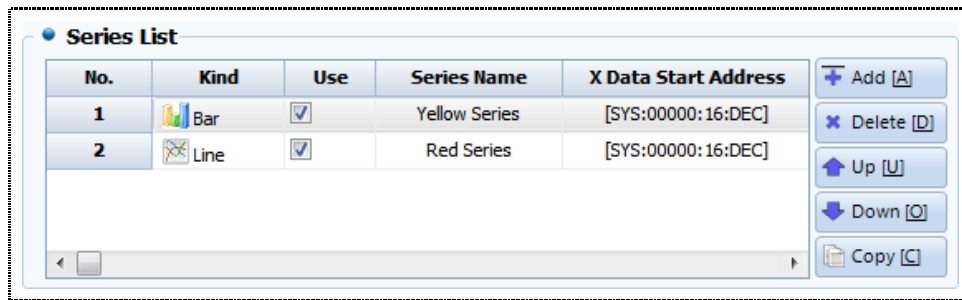
For example, in the following figure, there are two series : the bar type yellow series, and the point line type red series.



[Photo. Series]

(1) Series list

Add or delete a series. The order of the list can be rearranged using the UP and DOWN keys. Also, the copy function can be used. Individual settings can be made for series selected in the series list can be made in the series information and data options below.

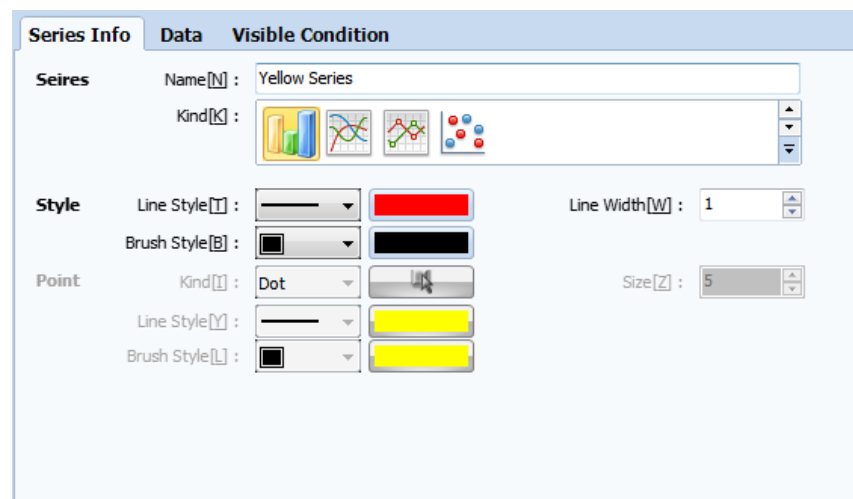


[Fig. Series list]

| Series list button | Description |
|--------------------|--|
| Add [A] | Add series information. |
| Delete [D] | Delete the selected series information. |
| Up [U] | The selected series info list item is moved up by one. |
| Down [O] | The selected series info list item is moved down by one. |
| Copy [C] | Copy the selected series information. |

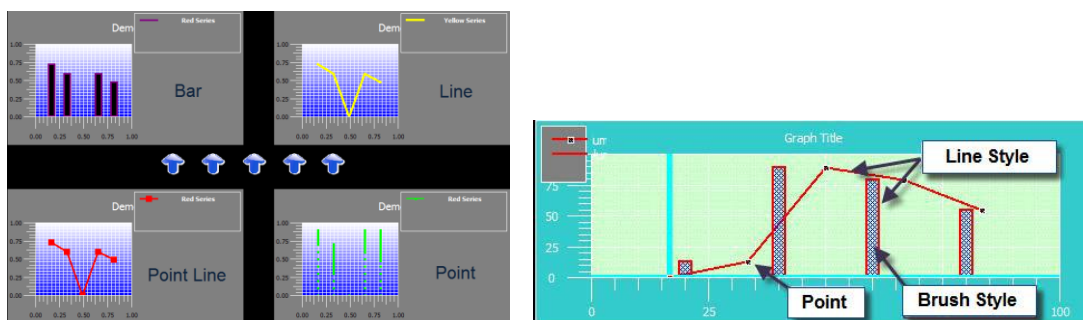
(2) Series information

Set the appearance of the selected series. The name, type, and line of the series can be set. Series types are Bar, Line, Point line, and Point. The line style, type and color can be set according to the applicable series.



[Fig. Series information]

| Series type | Description |
|-------------|--|
| Bar | Create a bar graph series. |
| Line | Create a line graph series. |
| Point Line | Create a graph where breaks in the line graph are marked with points (dots). |
| Point | Create a graph made using only points (dots). |

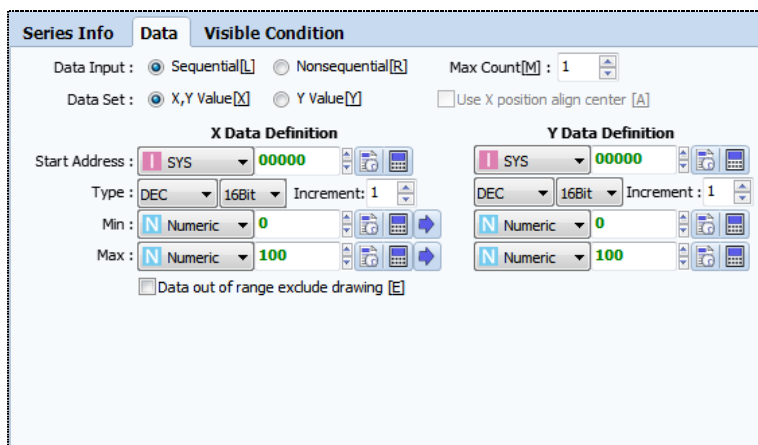


[Fig. Series type, style and points]

In series style and points, the shape, color and width of lines and brushes can be set. Style-Brush style (internal fill properties) can be used only in bar graphs. Also, points can only be used in point line and point graphs, which are graphs that contain points.

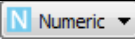

(3) Series data

Define the data values for the series. X and Y data can be set individually.



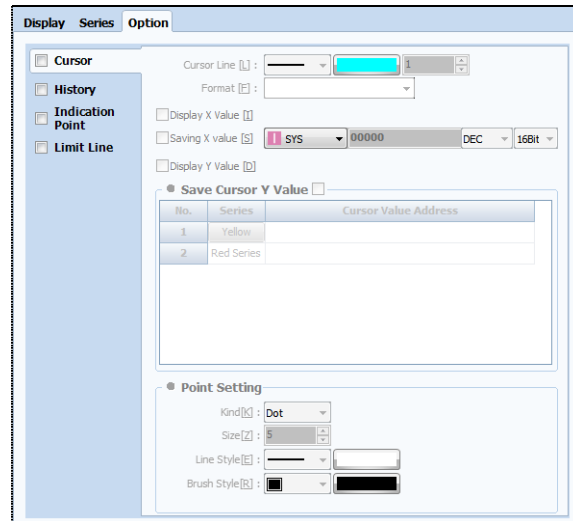
[Fig. Series data]

| Data setting | | Description |
|----------------|-------------------|---|
| Data set | X, Y values [X] | Both X and Y axis data are used as variables. Both X and Y must be set. |
| | Y value [Y] | Only data from the Y axis is used as variables. If the number of data is N, N number of start points are arranged automatically along the X axis, with the same intervals. |
| Data input | Sequential [L] | When the start address, maximum count, and increase value for data are set, addressing increasing sequentially by the increase value are displayed, beginning with the start address. |
| | Nonsequential [R] | Individual addresses are set. The number of addresses is equal to the data count setting. |
| Start address | | When sequential is used, this is the start address for the data that is set. |
| Increase value | | Select the data increase value in sequential. |
| Type | | Set the type of address. The address type (DEC, UDEC, HEX, BCD, FLOAT) and address size (16Bit, 32Bit) can be decided. |
| Minimum | | Set the minimum value of data variables. The constant values can be set by designating |

| | |
|---------|---|
| | an address, or using  |
| Maximum | Set the maximum value of data variables. The constant values can be set by designating an address, or using  |

16.1.3 Option

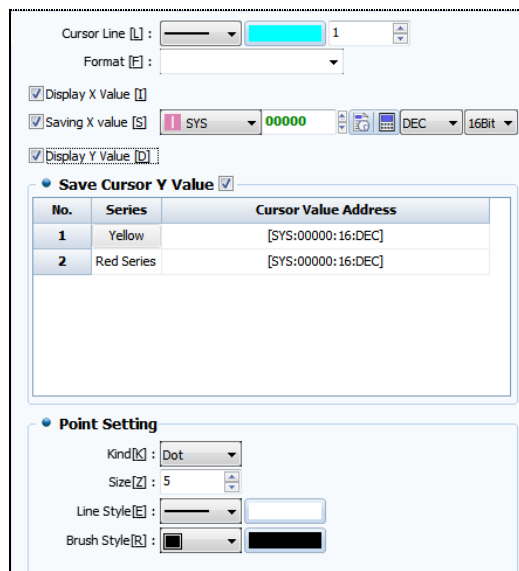
This is the graph options page. Various user convenience functions such as cursor, history, indication point, and limit lines, etc., can be added to the graph.



[Fig. Options]

(1) Cursor

Create a cursor that indicates the end point of the graph. The cursor is composed of two cursor lines parallel with the X and Y axes, and points indicating the end points.

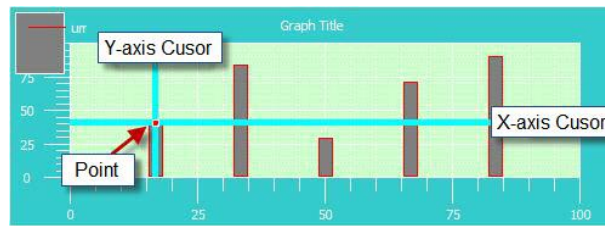


[Fig. Cursor]

| Caption settings | Description |
|------------------|---|
| Cursor line | The cursor line is edited. Type, color, width, and format (decimal units) can be set. |
| Show X value | The X value indicated by the cursor is displayed. |

| | |
|---------------------|--|
| Save X value | The X value indicated by the cursor is saved to the set address. For details on addresses, refer to [7.4 Address input]. |
| Show Y value | The Y value indicated by the cursor is displayed. If selected together with the X value, both types of info are shown. |
| Save Y cursor value | The Y value indicated by the cursor is saved to the set address. The setting method is the same as for save X value. |
| Point setting | Set the point that appears at the intersection of the X and Y axis cursor lines. The point type, size, line style, and brush style can be set. |

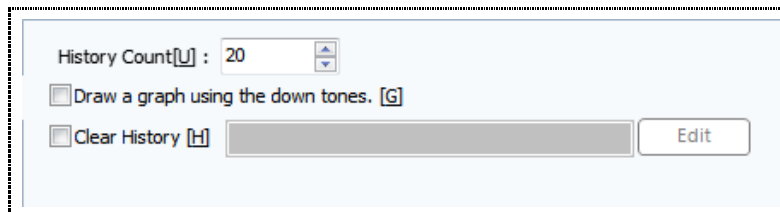
When cursors and points are set, the graph is displayed as shown in the following figure.



[Fig. Show cursor]

(2) History

History is a function used to save previous data. Set how many previous data to save, and whether to draw previous data after toning down. Also, initialize conditions can be set.

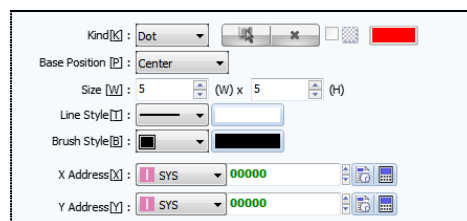


[Fig. History]

| History | Description |
|---------------|--|
| Write count | Set the number of previous data to record. |
| Use down tone | Set whether to down tone previous data when displaying on the graph. |
| Erase history | Set the conditions to erase saved data. |

(3) Indication point

Using indication points, the desired points in the graph can be indicated.

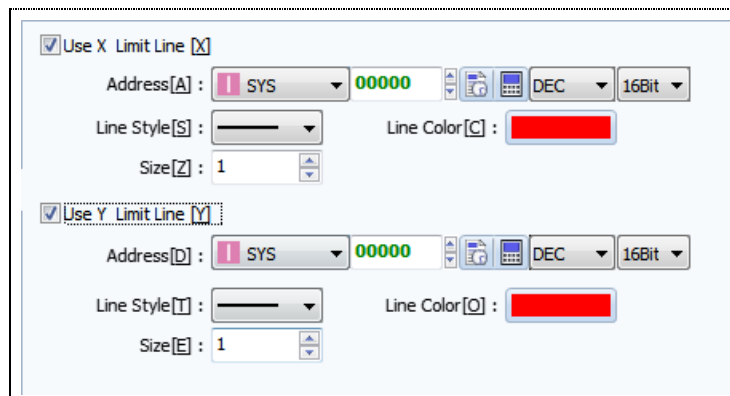


[Fig. Indication point]

| Indication point | Description |
|------------------|---|
| Type | Point, rectangle, circle, and image indication points are available. |
| Base position | The position of the point is designated based on the X, Y address values. |
| Size | Set the size of the indication point. Set the W(width) and H(height). |
| Line style | Set the line style for the point. The line forms the corners surrounding the point. |
| Brush style | Set the brush style for the point. The brush is the fill color. |
| X, Y address | Set the address of the indication point. Set both the X and Y addresses. |

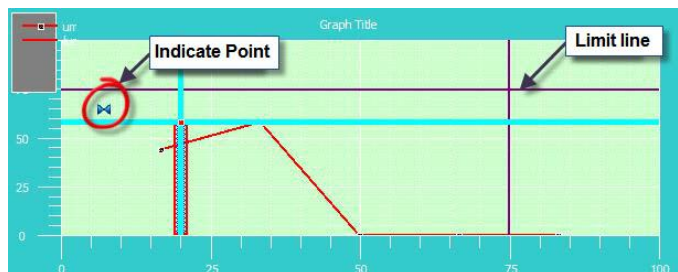
(4) Limit line

A limit line is drawn at the designated address value of the graph to enable the user to enable the set limit.



[Fig. Limit line]

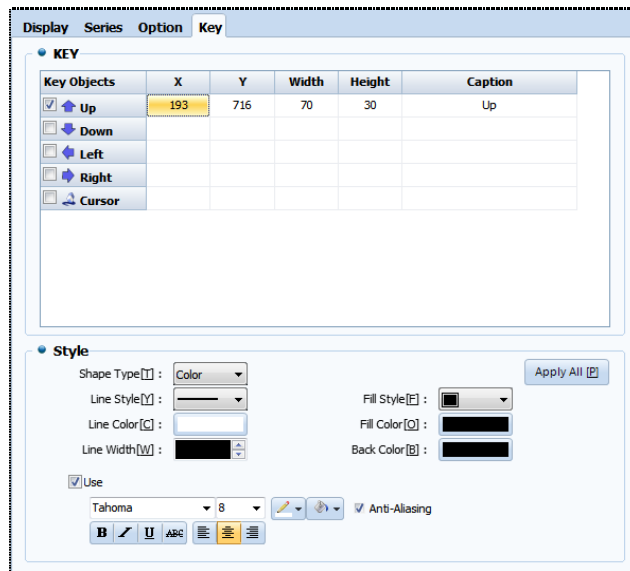
| Limit line settings | Description |
|---------------------|---|
| Address | Set the address to place the X and Y axis limit lines. |
| Line style | Set the line style for the limit lines. |
| Line color | Set the line color of the limit lines. |
| Size | Set the size of the limit lines. The settings range from 1 to 10. |



[Fig. Indication points & limit lines]

16.1.4 Key

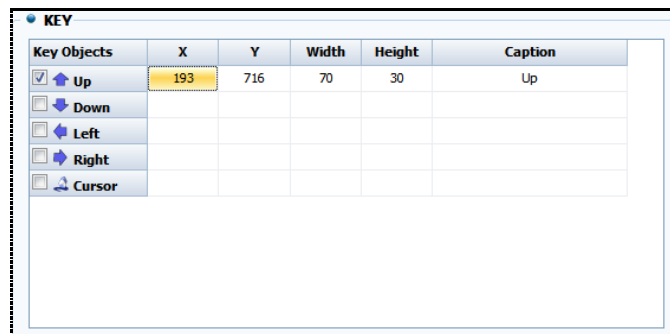
When [Option]-[Key] is used, a [Key] can be created. Here, the [Key] is a button that can change the position of the cursors.



[Fig. Key]

(1) Key list

Create keys to move the cursor on the graph. The keys created are automatically created beneath the graph, and are created as a single object.

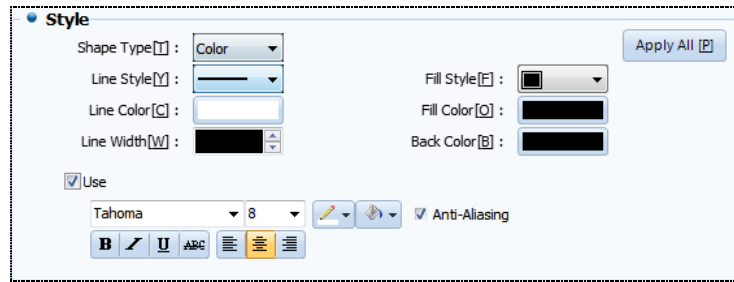


[Fig. Key list]

| Key object | Description |
|------------|---|
| Up | Create a key that can move the cursor up. |
| Down | Create a key that can move the cursor down. |
| Left | Create a key that can move the cursor left. |
| Right | Create a key that can move the cursor right. |
| Cursor | Create a key that indicates the cursor of the current position. |

| Key column | Description |
|------------|--|
| X | Set the x coordinate position of the selected key. |
| Y | Set the y coordinate position of the selected key. |
| Width | Set the width of the selected key. |
| Height | Set the height of the selected key. |
| Caption | Set the name of the selected key. |

(2) Style settings



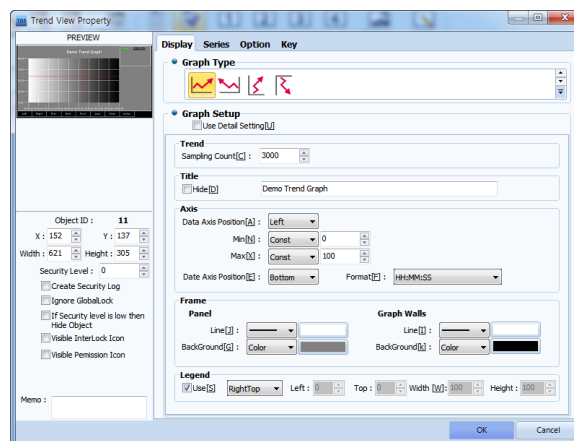
[Fig. Style settings]

| Style settings | Description |
|----------------------|--|
| Shape type [T] | Select the shape of the key. The shape can be set as shape or image. |
| Line style [Y] | If the key shape is color, set the line style. |
| Line color [C] | If the key shape is color, set the line color. |
| Line width [W] | If the key shape is color, set the line width. |
| Fill style [F] | If the key shape is color, set the fill style. |
| Fill color [O] | If the key shape is color, set the fill color. |
| Background color [B] | Set the background color of the key. |
| Use caption [U] | Enable display of the key name. |
| Font setting | Set the font, size, and effects for the caption. |
| Apply all [P] | The set style is applied to all keys. |

16.2 Trend



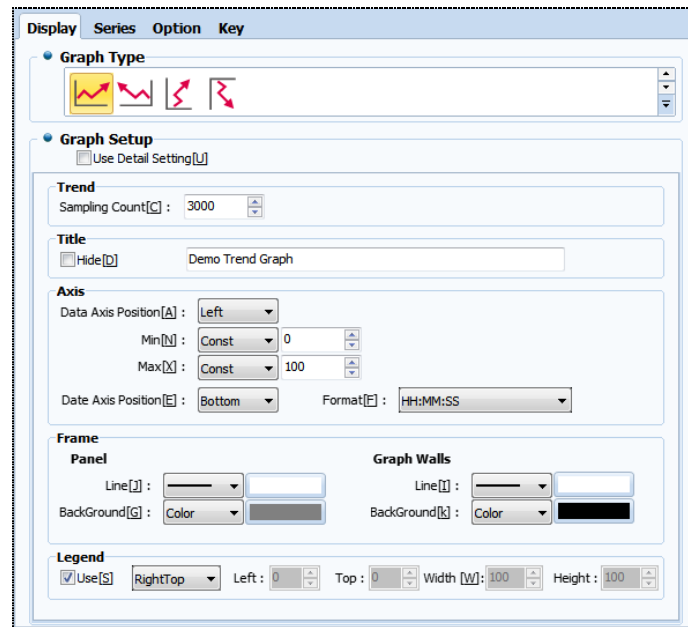
A trend graph is a type of graph that shows the change of data over time. Unlike [20.1 Graph], only one axis (X or Y) can be set as a variable. The other axis shows the date.



[Fig. Trend]

16.2.1 Display

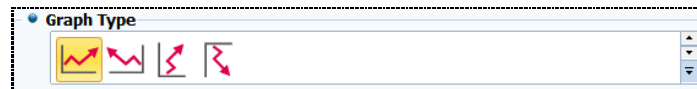
In the display page, the trend type and appearance are set. Like [20.1 Graph], general and detailed settings are provided. For more details, refer to [Graph] settings.



[Fig. Display]

(1) Graph type

Set the type of the graph. Depending on the type of graph, the parts expressed vary.

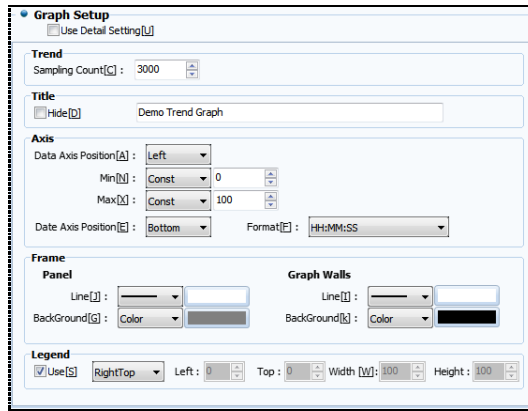


[Fig. Graph type]



| Graph type | Data variable | Description |
|------------|--|--|
| | The Y axis is the data variable, and the X axis is time. | With the Y axis as the data variable, the graph is drawn from left to right. |
| | | With the Y axis as the data variable, the graph is drawn from right to left. |
| | The X axis is the data variable, and the Y axis is time. | With the X axis as the data variable, the graph is drawn from top to bottom. |
| | | With the X axis as the data variable, the graph is drawn from bottom to top. |

(2) Graph general settings

Here, graph settings are made. the number of samples for which the trend is displayed, the title, axis settings, frame, and legend, etc. can be set.

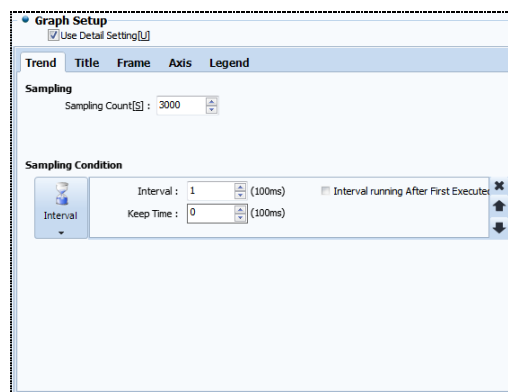


[Fig. Graph general settings]

| General settings | Description |
|------------------|---|
| Trend | Set the number of samples for the trend. Trend graph info is saved in samples. By setting the number of samples, set how much data will be saved. |
| Title | Enter the title manually. <input type="checkbox"/> Hide can be used to hide the title. |
| Axis | Axis refers to the divisions shown on the graph. Adjust the positions of the data and date axes, and set the minimum and maximum values. The axis positions vary according to the graph type, as shown below. |
| |  As the Y axis is data and the X axis is the date, the options for the data axis are left and right, and the options for the date axis are top and bottom. |
| |  As the X axis is data and the Y axis is the date, the options for the data axis are top and bottom, and the options for the date axis are left and right. |
| Format | Set the date display format. Year, month, day, hour, minute, and second can be displayed using various combinations. |
| Frame | Set the panel and graph background. This function is the same as the display settings in [20.1 Graph]. |
| Legend | Set the legend. This function is the same as the display settings in [20.1 Graph]. |

(3) Graph setting details-Trend

Trend, title, frame, axis, and legend can be set in more detail than in general graph settings.

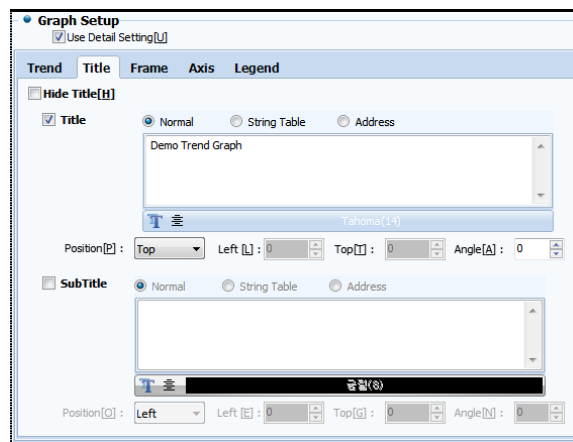


[Fig. Use detailed settings]

| Detailed settings | Description |
|---------------------|--|
| Sampling | Sampling count refers to the number of data for which the trend is displayed. A minimum of 100 can be set. |
| Sampling conditions | Set the conditions when sampling occurs. This is identical to the condition settings in [Effects & Actions]. For details on settings on the [Effects & Actions] page, refer to [Chapter 7 Object - Common] -[7.5 Effects and action]. |

(4) Graph setting details-Title

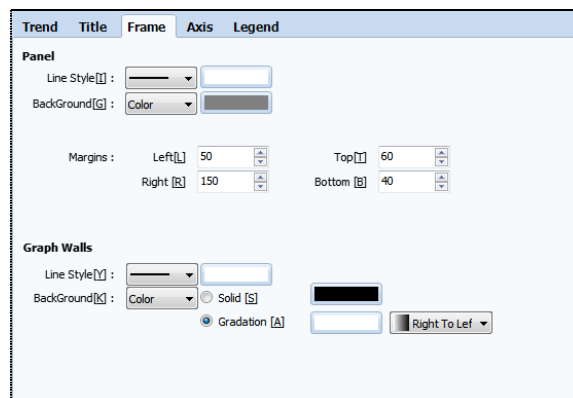
The title is the title of the trend. This function can be used to decorate the title, or add a sub title. This can be set using the same method as [20.1 Graph]. For details, refer to [20.1 Graph].



[Fig. Title]

(5) Graph setting details-Frame

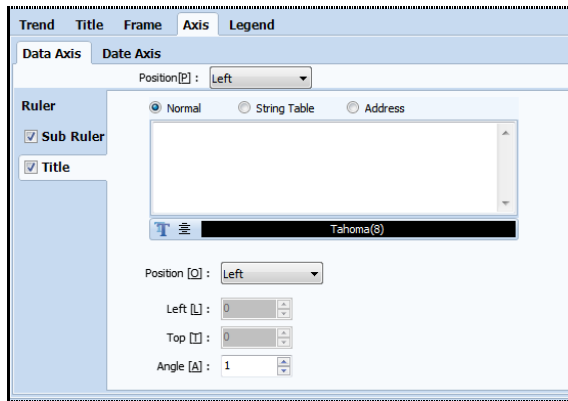
Frame is divided into a part where the trend background and line can be set, and a panel where the appearance of the trend object can be decorated. For details, refer to [20.1 Graph].



[Fig. Frame]

(6) Graph setting details-Axis

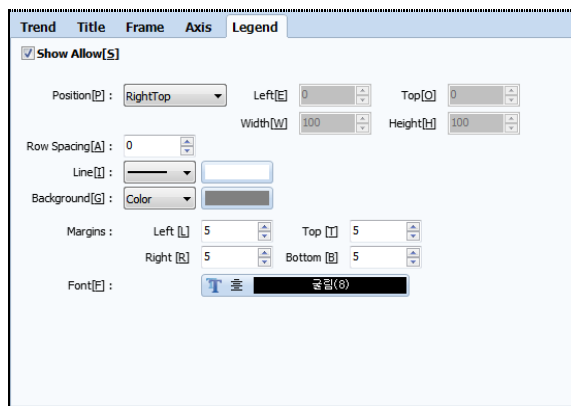
The trend has a data axis and a date axis. Normally, in axis settings, functions for adding divisions and titles are provided. The title can be decorated. For details, refer to [20.1 Graph].



[Fig. Axis]

(7) Graph setting details-Legend

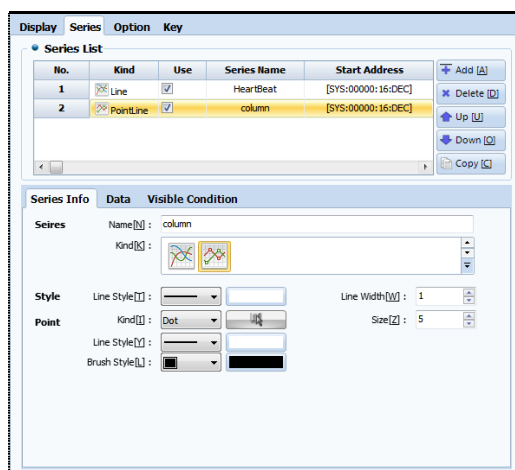
The legend function displays trend series. Like graphs, series information is distinguished, and titles are attached to series for easy identification by the user.



[Fig. Legend]

16.2.2 Series

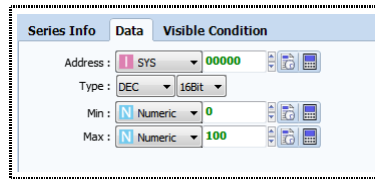
This is the series page for trends. Basic series functions are identical to [20.1 Graph]. Unlike the series for [Graph], only [Line] and [Point Line] can be used. The Bar and Point types cannot be used. Other styles and points are identical to [20.1 Graph].



[Fig. Series]

(1) Data

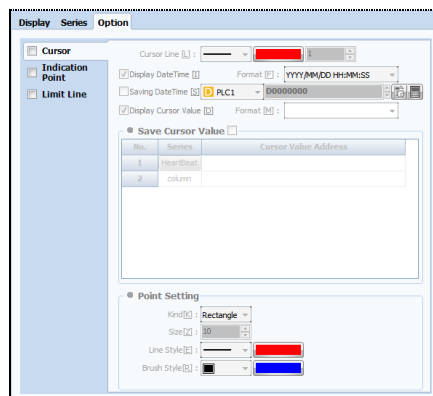
Series data is set from this page. In trend, only one type of data can be set, since one axis is used for data. Set the type and address of the data to be displayed, as shown in the figure below. Next, set the minimum and maximum value of the data.



[Fig. Series data]

16.2.3 Option

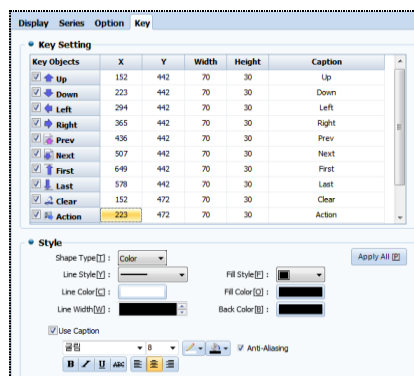
This is the trend options page. Various user convenience functions such as cursor, indication point, and limit lines, etc., can be added to the graph. Aside from the history option, the options here are identical to those in [20.1 Graph]. When using [Cursor], a [Key] can be created to control the cursor position for the current trend.



















[Fig. Options]

16.2.4 Key

When [Option]-[Key] is used, then key can be created. On the key page, keys for screen move and cursor position adjustment can be created. To use, select the checkbox to the right of the key to create. The cursor shows the name, size, and value of the current point. This function is the same as cursors in [20.1 Graph].



[Fig. Key]

| Key object | Description |
|------------|--|
| Up | Move the cursor position up.   This only applies when using graphs. |
| Down | Move the cursor position down.   This only applies when using graphs. |
| Left | Move the cursor position to the left.   This only applies when using graphs. |
| Right | Move the cursor position to the right.   This only applies when using graphs. |
| Prev | Show the previous page of the graph screen.   graph : the page beneath the current page is shown.   graph : the page to the left of the current page is shown. |
| Next | Show the nextpage of the graph screen.   graph : the page above the current page is shown.   graph : the page to the right of the current page is shown. |
| First | Move the cursor to the first sample data. |
| Last | Move the cursor to the last sample data. |
| Clear | Delete all graphs drawn to this point. |
| Action | Start/stop the graph. |
| Cursor | Enable or disable the graph cursor. |

If [Cursor] is used, cursor position information desired by the user is displayed, as shown in the figure below. These cursors can be controlled using keys.

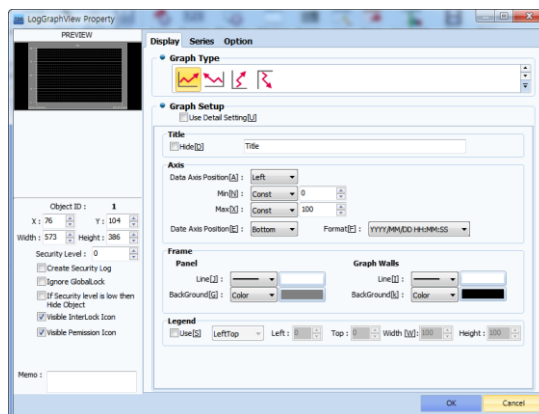


[Fig. Cursor]

16.3 Log graph



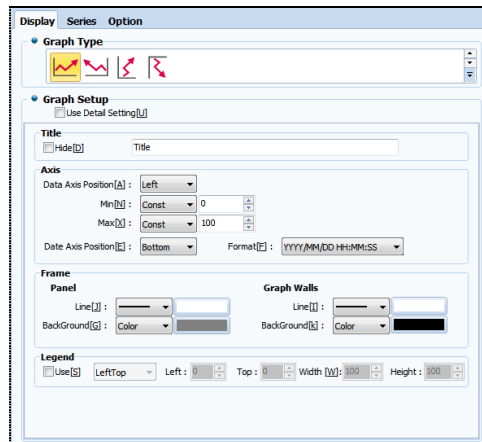
A log graph, unlike [Log view], draws data in the [Trend] format. The method of drawing graphs is the same as trend. However, in log graphs, data of a log address set as data must be used.



[Fig. Log graph]

16.3.1 Display

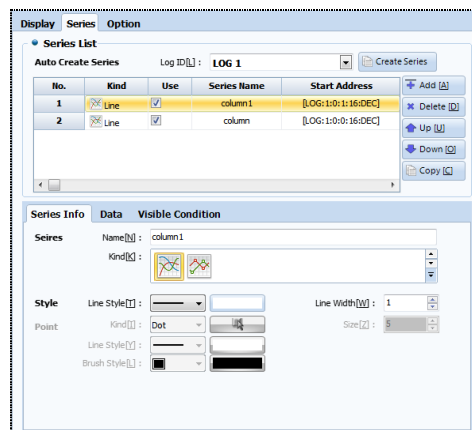
This is the display page for log graph. Here, the type and appearance of the log graph are set. The settings here are identical to log graph display, and display in [20.2 Trend].



[Fig. Display page]

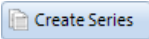
16.3.2 Series

This is the series page for log graph.

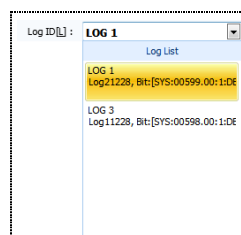


[Fig. Series]

(1) Series list

The series list is displayed. A series auto generate function is provided. Usually, info registered in the log is used. The log ID is selected in the following figure to create a series. In log ID, only logs registered currently in log settings are displayed. Next, the  key is pressed to create the set log series.

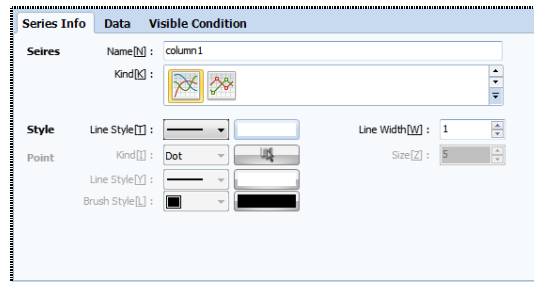
The created series can be edited in series info and data.



[Fig. Series auto create]

(2) Series information

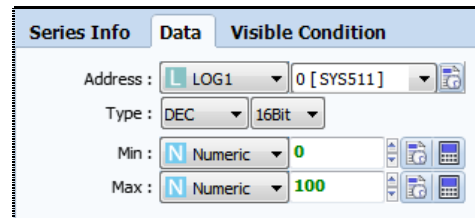
This is the series info for the log graph. This is the same as the series info in [20.2 Trend].



[Fig. Series information]

(3) Series data

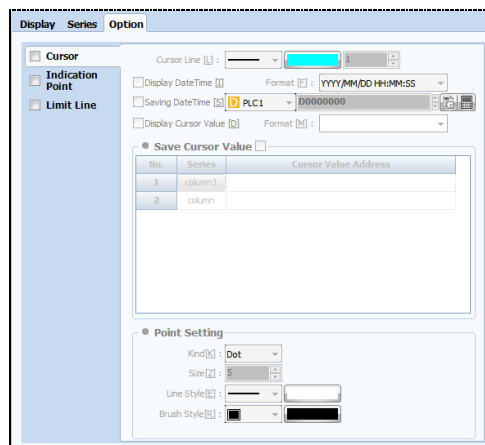
This is the series data settings page. Because log graph is drawn with log data, the log address is set. After setting the log number first, designate and set the address value.



[Fig. Series data]

16.3.3 Option

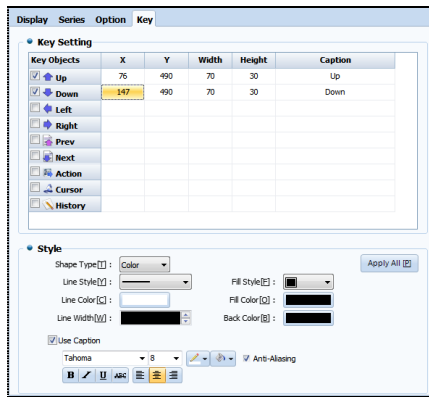
This is the log graph options page. Various user convenience functions such as cursor, indication point, and limit lines, etc., can be added to the graph. Aside from the history option, the options here are identical to those in [20.1 Graph].



[Fig. Touch options]

16.3.4 Key

The log graph key is created from this page. These settings can be made when using [Option]-[Cursor]. Using the key, the cursor can be controlled. This function is the same as the options in [16.1 Graph].

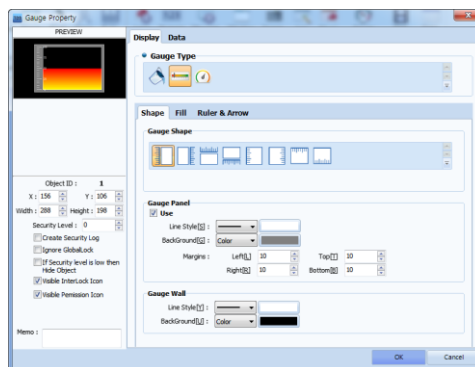


[Fig. Key]

16.4 Gauge



Gauge is a general term referring to measurements such as length, angle, and shape. In Top Designer Studio, gauge expresses data changes in familiar gauge type, allowing for data to be identified at a glance. Gauge types are fill closed area, bar, and circular.

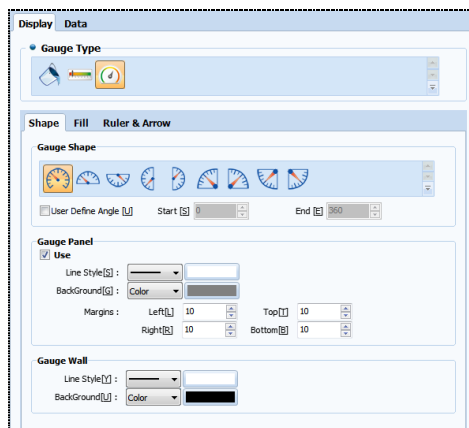


[Fig. Gauge]

16.4.1 Display - Appearance setting

This is the gauge display page. Depending on the gauge type, the shape and fill properties vary.

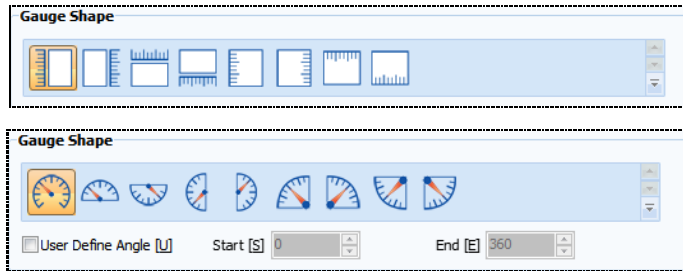
In shape settings, the shape of the gauge can be set.



[Fig. Gauge display]

(1) Gauge shape

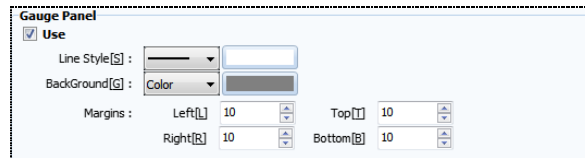
In paint closed area, there is no gauge shape. The shape can be changed only for [Bar] and [Circular]. For [Circular], the angle desired by the user can be set.



[Fig. Gauge shape]

(2) Gauge panel

Gauge panel refers to all gauge objects. Line, background, and margin can be set.

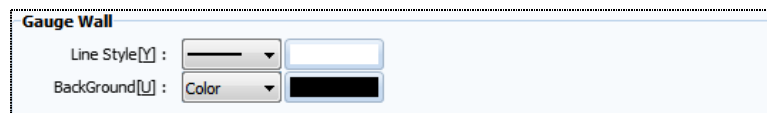


[Fig. Gauge panel]

| Panel setting | | Description |
|----------------|-----------|--|
| Line style [S] | | Set the style and color of the lines surrounding the object. |
| Background [G] | | Set the background and background color for the object. |
| Margin | Left [L] | Set the left margin between gauges within the object. |
| | Right [R] | Set the left margin between gauges within the object. |
| | Top [T] | Set the left margin between gauges within the object. |
| | Bottom[B] | Set the left margin between gauges within the object. |

(3) Gauge background

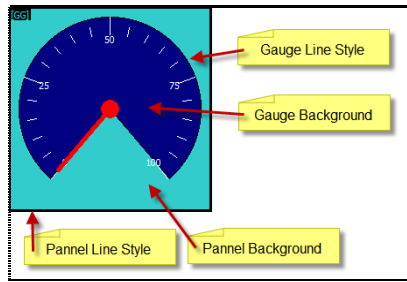
Set the background for the gauge only, and not the whole object.



[Fig. Gauge background]

| Panel setting | Description |
|----------------|---|
| Line style [Y] | Set the outline style and line color of the gauge. |
| Background [U] | Set the background and background color of the gauge. |

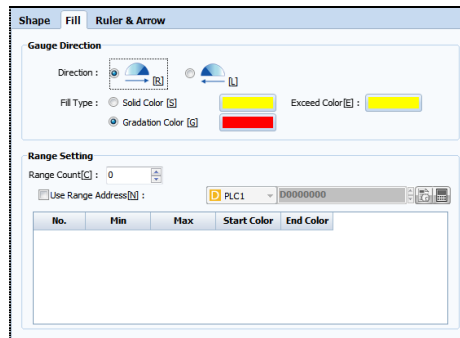
The areas displaying gauge and panel changes are shown in the following figure.



[Fig. Gauge penal, background]

16.4.2 Display - Fill setting

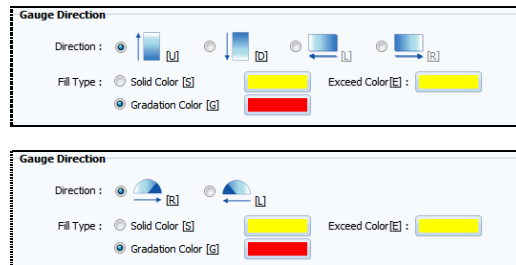
Set the gauge fill direction and fill method. Here, ranges can be set to change the fill color.



[Fig. Fill]

(1) Gauge direction

The gauge display direction can be set. Also, the color that is filled when the gauge is displayed can be set. When using fill closed area, the direction and color can be set in the same manner as bar type.

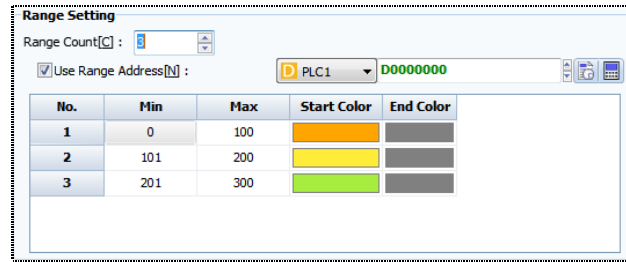


[Fig. Gauge direction]

| Gauge direction setting | | Description |
|-------------------------|-----------------------|--|
| Thick direction | [U] | Set the direction the gauge is filled, from bottom to top. |
| | [D] | Set the direction the gauge is filled, from top to bottom. |
| | [L] | Set the direction the gauge is filled, from right to left. |
| | [R] | Set the direction the gauge is filled, from right to left. |
| | [L] | Set the direction the gauge moves, from left to right. |
| | [R] | Set the direction the gauge moves, from left to right. |
| Fill method | Single color [S] | Set the gauge fill color to a single color. |
| | Exceed fill color [E] | Set the color that is filled if the gauge range is exceeded. |
| | Gradation color [G] | Set the gauge fill color to a gradation color. |

(2) Range setting

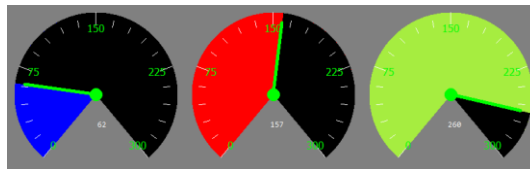
In range setting, ranges are set to change the color the gauge is filled with. The number of ranges is set, with the minimum and maximum values.



[Fig. Range setup]

| Range setting | Description |
|--|---|
| Range count [C] | Set the number of ranges. |
| Use range address Use reference address [N] | Set the address to use for range display. When using together with the address of the data, the color that is filled according to data change can be changed. |
| No | This is the number of the range. |
| Min | Set the minimum value of the range. |
| Max | Set the maximum value of the range. |
| Fill Color | Set the color that is filled in the range. |

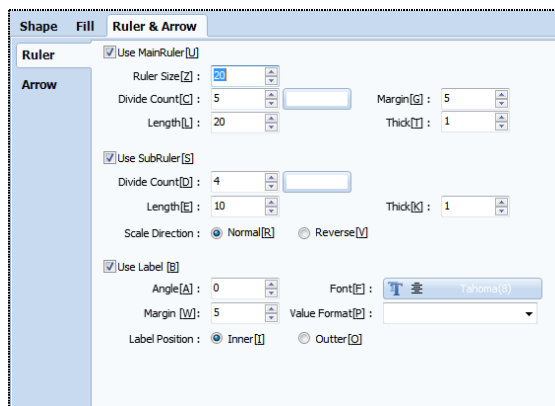
If a range is set, the color can be changed according to changes in the gauge value, as shown in the following figure.



[Fig. Range setting gauge]

16.4.3 Display - Ruler & arrow setting

The rulers and arrows displayed for gauges are set here.

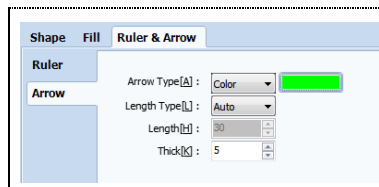


[Fig. Ruler]

| Ruler settings | | Description |
|-------------------|------------------------|---|
| Main ruler Use | Ruler size | Set the size of the main ruler. |
| | Minimum | Set the minimum value, that is, the start point of the ruler. |
| | Maximum | Set the maximum value, that is, the end point of the ruler. |
| | Number of divisions | Set the number of large divisions to divided the gauge with. |
| | Margin | Set the margin for the large divisions. |
| | Length | Set the length of the large division. The maximum length setting is 100. |
| | Line width | Set the width of the large division. The line width can be set up to 10. |
| Use subruler | Number of divisions | Enter the number of small divisions to insert between the large divisions. |
| | Length | Set the length of the small divisions. The maximum length setting is 24. |
| | Line width | Set the width of the sub ruler. The line width can be set up to 10. |
| | Use scale Direction | Set the scale direction of the sub ruler. In normal, the divisions are drawn outward, and in reverse, the divisions are drawn inward. |
| Use label | Angle | Set the angle for the label. |
| | Font | Set the font for the label. |
| | Margin | Set the distance of the label from the inner or outer standard. |
| | Value format | Set the label units to the first or second decimal place. |
| | Label position | Set the label position to inside or outside the border. |

(1) Arrows

Arrows are used when the gauge type is circular. The length and arrow shape desired by the user can be set and used.

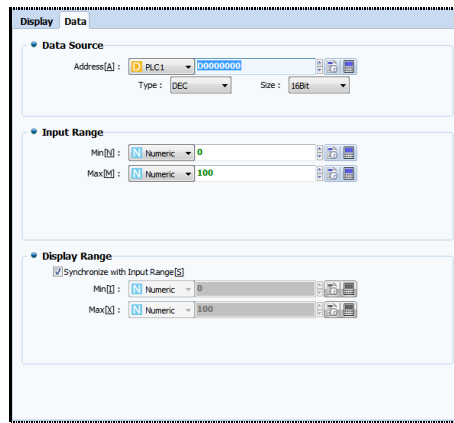


[Fig. Arrows]

| Range setting | Description |
|---------------|--|
| Arrow shape | Set the shape of the arrow indicating the gauge. Set color or image to use. |
| Length type | Set the type of length. When Auto is selected, the length of the arrow is set automatically according to the gauge size. When Value is selected, the length is manually designated by the user. The arrow length does not change even if the gauge size is adjusted. |
| Length | Manually set the length of the arrow. This is disabled when the value is selected as the length type. |
| Line width | Set the width of the arrow. Possible settings are from 1 to 10. |

16.4.4 Data

This is the gauge data page. The address and input range of the data source, and the display range can be set.




[Fig. Data]

| Data | Description |
|---------------|--|
| Data source | Set the source address for the data displaying the gauge value. |
| Input range | Set the data input range. If the data reaches the maximum value of the input range, the gauge is filled. |
| Display range | Set the display range for the data. The display range indicates the numbers displayed on the ruler of the gauge. |

CHAPTER 17 Slide Object

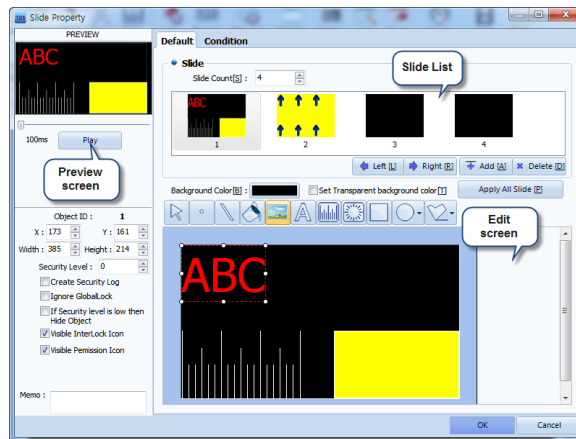
CHAPTER 17 - Slide Object

17.1 Slide

In this  function, multiple screens are displayed on the screen in sequence with a certain time interval, giving an animation effect. The number of slides that can be used is 64. Only shapes can be registered.

The slide can be set to play or stop depending on the value of the bit address or word address. By adjusting the slide speed and using the [Play] button, the slide can be previewed.

The play speed can be set to a maximum of 500ms (0.5 seconds).

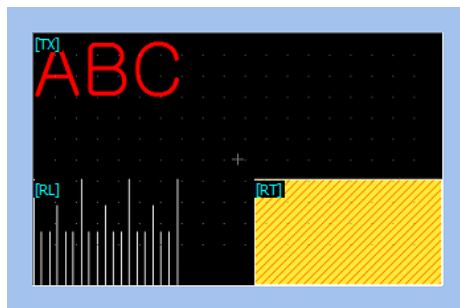


[Fig. Slide properties screen]

The slide preview screen shows the screen of the first slide. To preview another slide, change the order of the slide to be previewed to first.

| Slide properties | Description |
|------------------|---|
| Basic | On this page, the number of slides is set, and each slide screen is edited. |
| Condition | On this page, bit/word address value trigger conditions, the slide display interval, and the interval type are set. |

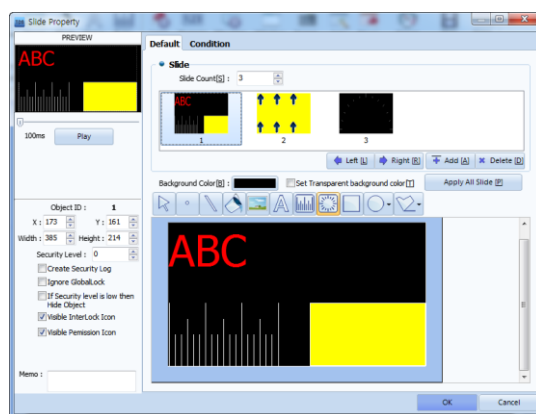
This is a slide tag registered to the screen. The screen of the first slide is displayed.



[Fig. Slide tag registered to the edit screen]

17.1.1 Basic

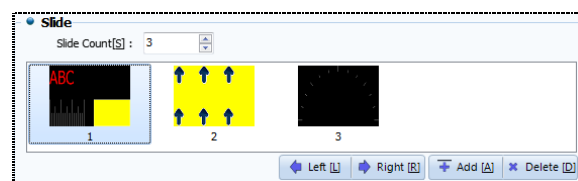
On this page, the number of slides is set, and shapes are registered on each slide screen and edited.



[Fig. Basic page]

(1) Slide

Set the number of slides to be used. Up to 64 slides can be used, and thumbnails are provided for all screens. When a slide is clicked from the slide list, the edit screen is shown below, and shapes can be registered.

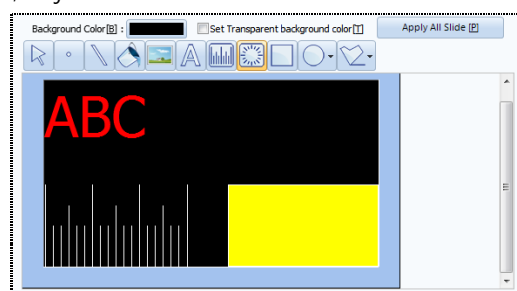


[Fig. Slide]

| Slide settings | Description |
|-----------------|--|
| Slide count [S] | Set the number of slides. When the count is set, slides are added automatically. |
| Left [L] | Move the selected slide to the left. |
| Right [R] | Move the selected slide to the right. |
| Add [A] | Add a slide in the selected position. |
| Delete [D] | Delete the selected slide. |

(2) Slide edit screen

The slide edit screen has the same settings as the base screen edit screen. Using the icons on top, slides can be decorated. Also, objects can be added and set.

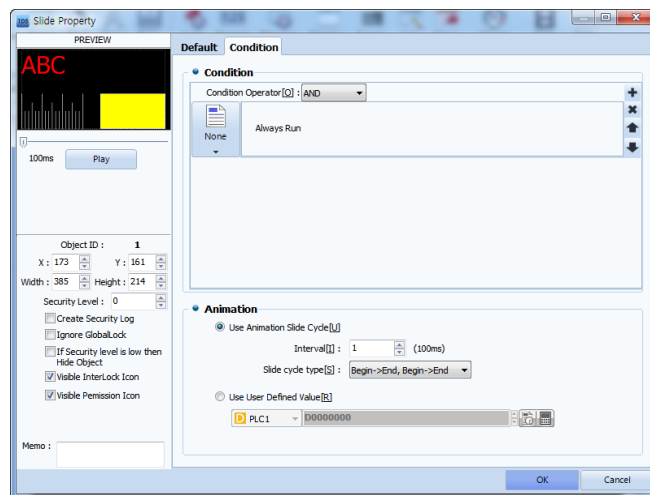


[Fig. Slide edit]

| Slide edit | Description |
|--------------------------------------|---|
| Background color [B] | Designate the background color of the slide. |
| Set transparent background color [T] | Set the selected background color to transparent. |
| Apply to all slides [P] | Apply the selected background color to all slides. |
| Edit screen object | Shapes can be registered to each slide screen. The objects are shown on top of the edit screen as a toolbar. The settings are the same as the base screen edit screen. Also, as for the screen size, the slide tag is identical to the size registered to the slide tag. Using Ctrl + mouse wheel, the size of the edit screen can be increased or reduced. |

17.1.2 Condition

The slide tag can be set to play or stop depending on conditions. The interval time and interval type for slide display can be set from this page.

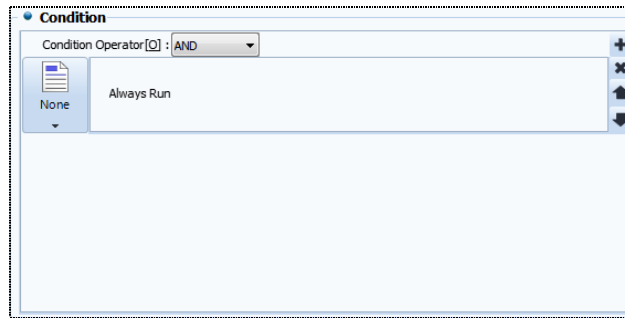


[Fig. Condition page]

| Slide condition | Description |
|-----------------|---|
| Bit condition | The slide plays or stops depending on the ON/OFF/Reverse status of the bit address. |
| Word condition | Depending on the range value of the word address, slides can be set, or word change can be set. |
| Schedule | The slide can be set by date and time. |
| Date time | Like schedule, date and time are set. However, the desired date can be selected, and the slide can be played at the time desired, like an alarm. For example, if the hour is set to 1 o'clock without setting the date, the slide plays at 1 o'clock each day. |
| Interval | A value is inserted into the interval, and the slide is set to play at the interval. |
| Event | The slide is set to play according to a touch condition. |
| None | The slide plays at all times, without conditions. |

(1) Condition setting

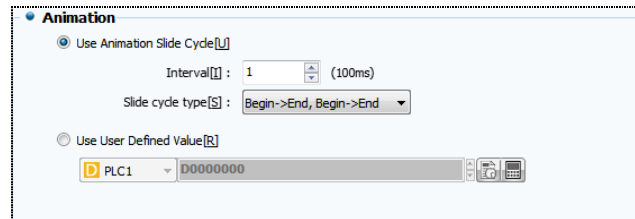
Slide condition setting refers to the condition the slide is played. The conditions are identical to the conditions for [Effects & actions]. For details on [Effects & actions] page settings, refer to [Chapter 7 Object - Common] -[7.5 Effects and action].



[Fig. Slide condition settings]

(2) Animation

Set the animation cycle and cycle type, and set a word address to display slides depending on the value.



[Fig. Animation setting]

| Animation | | Description |
|---------------------------|---------------------------|--|
| Use animation slide cycle | | An interval is entered for the slide registered by the user. The screen is set to play at the set interval. |
| Cycle | | The interval is set in 100ms (0.1 second) intervals. The maximum setting is 65535ms (approximately 66 seconds). |
| Cycle Type Slide | Begin->End. Begin->End | The slides are repeated in sequence from slide 1 to the slide with the last number. |
| | End->Begin, End->Begin | The slides are repeated in sequence from the last slide to slide 1. |
| | Begin->End->Begin->End | The slides are played from slide 1 to the last slide. Then slide 1 is returned to, and the slides are repeated. |
| | End->Begin->End->Begin | The slides are played from the last slide to slide 1. Then the last slide is returned to, and the slides are repeated. |
| Use user defined value | | This function is used to play slides by entering numbers using the data in a user defined value address. If 1 is entered into the data of a user designated value address, the number 1 screen is displayed. |

17.2 Video

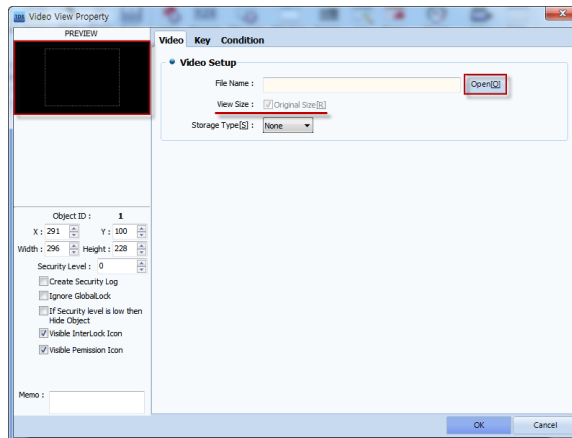


This function displays and plays video files on the screen.

Using the [Open] button, video files can be opened, and the video view size can be changed.

By default, the video file extensions are set to *.wmv and *.mp4.

Also, video view keys can be added or removed. Using conditions, playback can be set according to the situation. Video views for which settings have been completed can be viewed in the preview in the top left corner. However, the view cannot be played. To play, TOPR must be used.

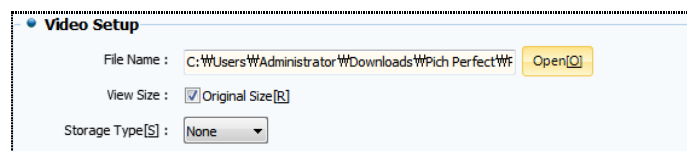


[Fig. Video view settings page]


| Video properties | Description |
|------------------|--|
| Video | Video files can be opened, and the video view size can be changed. The storage type can be set to none or SD card. |
| Key | Video view keys can be added/removed, and the key style can be changed. |
| Condition | If conditions are not used, the file can be played without conditions. If conditions are used, the video can be played according to bit/word conditions. |

17.2.1 Video

From this page, the video file to be played is loaded. The size of the view and the storage media type can be set.



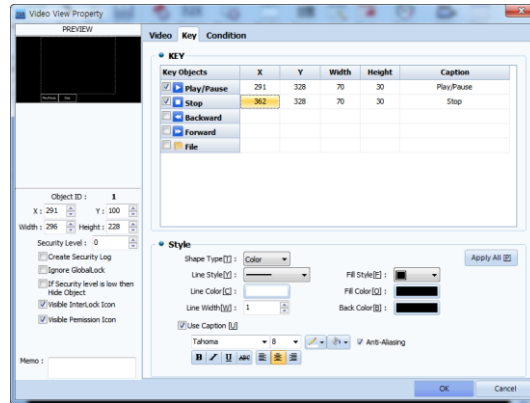
[Fig. Video setting]

| Video view | Description |
|------------|--|
| File name | The name of the video file is displayed. Using the  button, the desired video file can be opened. |

| | | |
|--------------------|---|---|
| View size | Set the view size as the original size, or change the size arbitrarily. | |
| Storage media type | None | If the storage media type is set to none, the recorded file is saved in TOPR. |
| | SD Card | The recorded file is saved in the SD card inserted in TOPR. |

17.2.2 Video key

The keys displayed on the video screen can be set. Using the set keys, the video can be played.



[Fig. Video key page]

(1) Video key list

There are 5 types of video key settings. The desired key can be selected and added or removed.

Also, the [Coordinate(X, Y)] values can be entered to change the position of keys. Also, by changing the values for [Width] and [Height], the size of the key can be changed, and the name of the key can be changed by setting a [Caption].

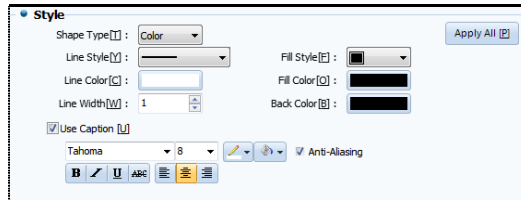
| Key Objects | X | Y | Width | Height | Caption |
|--|-----|-----|-------|--------|------------|
| <input checked="" type="checkbox"/> Play/Pause | 291 | 328 | 70 | 30 | Play/Pause |
| <input checked="" type="checkbox"/> Stop | 362 | 328 | 70 | 30 | Stop |
| <input checked="" type="checkbox"/> Backward | 433 | 328 | 70 | 30 | Backward |
| <input checked="" type="checkbox"/> Forward | 504 | 328 | 70 | 30 | Forward |
| <input checked="" type="checkbox"/> File | 291 | 358 | 70 | 30 | File |

[Fig. Video key list]


| Video key list | Description |
|-------------------------------------|--|
| <input type="checkbox"/> Play/Pause | The video is played or paused. |
| <input type="checkbox"/> Stop | Video playback is stopped, and the video is played from the beginning. |
| <input type="checkbox"/> Backward | Move the video playback section back |
| <input type="checkbox"/> Forward | Move the video playback section forward. |
| <input type="checkbox"/> File | A video file saved in the TOPR is loaded. |

(2) Video style

This option is activated when the video key function is selected. The style of the selected key can be changed.



[Fig. Video style]

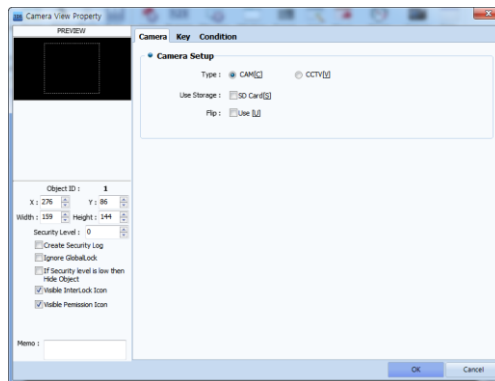
| Style | Description | |
|-----------------------|--|----------------------------------|
| Shape type | Color | Set the key shape to fill color. |
| | Image | Set the key shape to image file. |
| Line style | In the following list, the line style can be changed. By selecting [None], the line can be removed. | |
| Line color/width | The color and width of the line can be set. The maximum width setting is 10. | |
| Fill method | The fill method of the key is set. The  button can be used for a transparent fill method so that the background color is visible. | |
| Fill/background color | Set the fill/background color when the key shape is set to [Color]. | |
| Use caption | Set the size, color, width, italics, underline, crossline, and alignment for the caption (name) of the key. | |
| Apply all | Apply the current style to all keys. | |

17.3 Camera



This function uses the camera for recording, capture, or CCTV.

After a video is recorded, a video file with the data recorded as the name is created in the [Camera Record] in the TOPR. To view recorded videos, files can be loaded and played in the [Video] function.

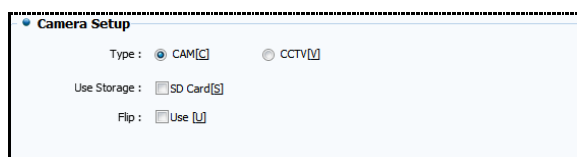


[Fig. Camera view settings page]

| Camera properties | Description |
|-------------------|--|
| Camera | This page is used to set the camera type and storage type. |
| Key | The keys shown in the camera view are set on this page. |
| Condition | The camera execute conditions are set from this page. |

17.3.1 Camera view

The use can be changed according to the camera type.



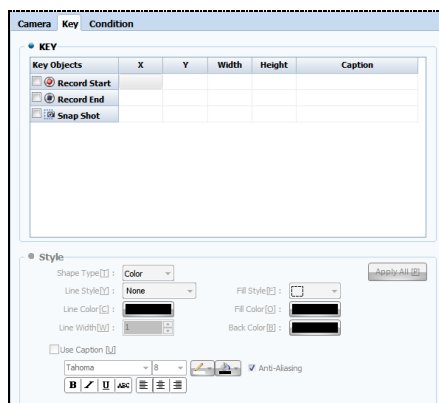
[Fig. Camera view settings page]

| Camera view | | Description |
|-------------|------|---|
| Type | Cam | This option can be used only if a camera is attached. The view captured by the camera is shown in TOPR. |
| | CCTV | The TOPR and CCTV are connected, and the view captured by the CCTV is shown in TOPR. If there is no connected CCTV, a blue screen is displayed. |
| Use storage | | The playback file recorded by the camera is saved in the SD card inserted into the TOPR. |
| Flip | | This function reverses and records the screen (top, bottom) of the camera. |

17.3.2 Camera key

The keys displayed on the camera screen can be set. Using the set keys, the capture or record can be performed.

Like [Video], the size, position, and name can be changed. Depending on the user, the style can also be changed. There are 3 types of camera key settings. The desired key can be selected and added or removed.



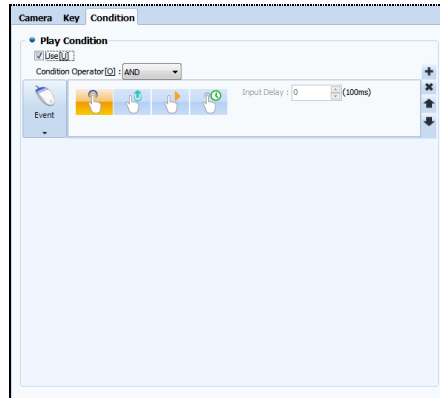
[Fig. Camera key page]

| Camera key list | Description |
|-----------------|---|
| | This button starts recording. When recording is started, a red dot blinks in the top left corner of the camera screen as recording is performed. |
| | This is the button that ends recording. When recording is ended, the red dot vanishes. The file is automatically saved, and the [Video] function can be used to play the recorded file. |
| | A screenshot of the camera screen is saved. |

17.3.1 Camera conditions

This setting operates the camera when the conditions are satisfied. To use conditions, the [Use] checkbox must be selected. The condition settings are the same as [Effects & Actions].

For details on settings on the [Effects & Actions] page, refer to [Chapter 7 Object - Common] -[7.5 Effects and action].



[Fig. Camera conditions]

17.3.2 CCTV

By connecting a CCTV to the terminal on the rear of the TOPR, observation, capturing and recording can be performed.

IN and OUT terminals are provided. When connecting the CCTV, the IN terminal is used. When using the audio terminal, the OUT terminal is used.

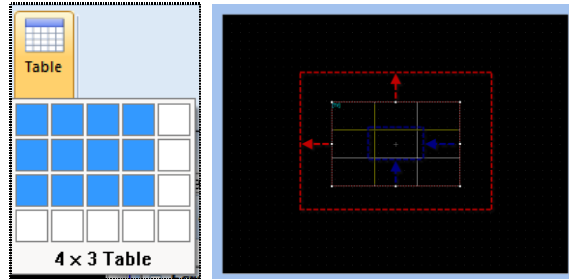
The IN terminal is used for the CCTV because external input is displayed on the internal screen of the TOPR. The OUT terminal is used for audio, because sound is sent out from inside the TOPR.

CHAPTER 18 Table Object

CHAPTER 18 - Table Object

Tables are used when making charts or lists. For user convenience, various tables can be drawn.

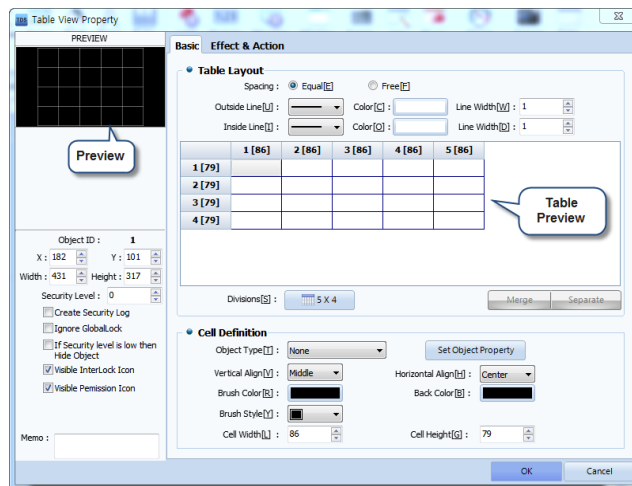
As shown in the following figure, the white dots on either end and the center can be used to adjust the table size. The maximum number of tables that can be created is 5X4(20cells). Also, by double clicking a created table, or right clicking with the mouse, the table view properties page can be entered.



[Fig. Create table]

18.1 Table

The table spacing, line type, color, and line width can be set. As for the table preview screen on the bottom, the table shown on the table preview screen is 5X4 (20 cells) because the table was created as 5X4 (20 cells) in the beginning. Also, using [Grid size] on the bottom, the size of the table can be increased or reduced. By setting [Cell definition] for each table cell, various types of tables can be created.

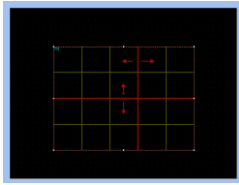


[Fig. Table view properties page]

18.1.1 Grid shape

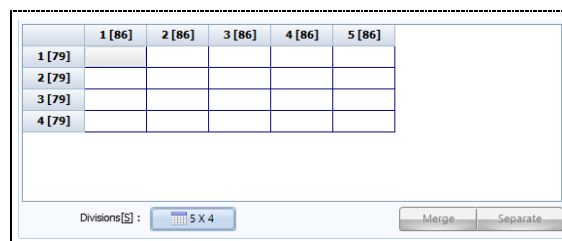
The grid spacing, and the shape, color and width of the outer and inner lines can be adjusted.

| Table view properties | | Description |
|-----------------------|-------|---|
| Spacing | Equal | The table spacing is set as equal. The spacing cannot be adjusted separately. |

| | | |
|------------|------|--|
| | Free | <p>The table spacing can be adjusted freely.</p> <p>To adjust, place the mouse cursor on the table lines after setting. The cursor turns into a hand, and the spacing can be changed by dragging. If the spacing is changed to [Equal] again, the table spacing is restored again to equal.</p>  |
| Outer line | | Change the outer line of the table. |
| Inner line | | Change the inner lines of the table, excluding the outer (border) lines. |
| Color | | Set the color for the inner/outer lines of the table. |
| Line width | | Set the width of the inner/outer lines of the table. The maximum setting is 10. |

18.1.2 Template preview screen

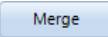
This function shows the created table. The grid size can be changed, and table cells can be merged or divided.



[Fig. Table preview screen]

When grid size is selected, the size of the table can be changed, as when the table was first created. To change the shape of cells, cells must be selected. Cells can be selected by clicking with the mouse, or moving to the desired cell using the keyboard arrow keys.

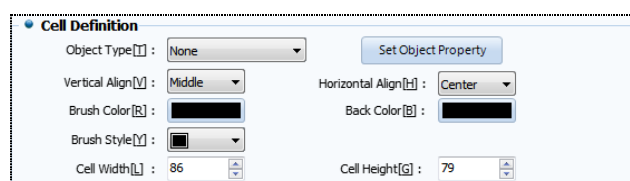
To select multiple cells, drag with the mouse, or select with the Shift key.

If multiple cells (2 or more) are selected, the  button on the bottom is activated, and merge is enabled.




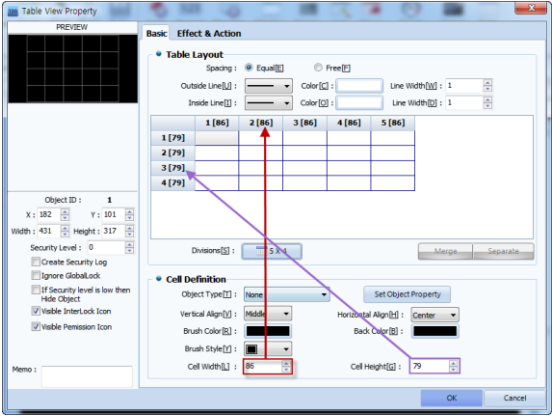
Merged cells can be divided again with the  button.

18.1.3 Cell definition

The object type can be set for each cell. Depending on what object is inserted, various types of tables can be made.



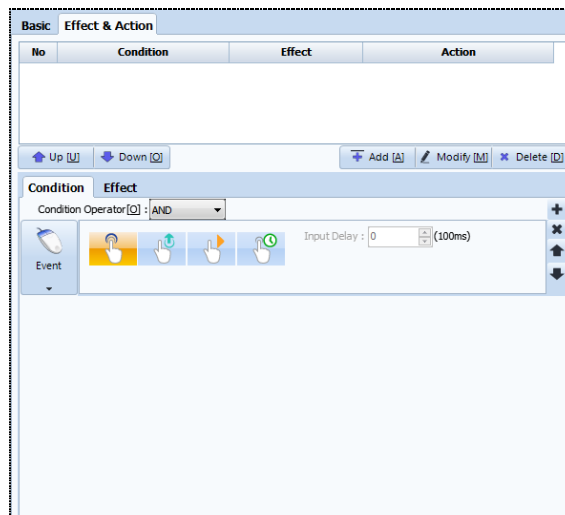
[Fig. Cell definition]

| Cell definition | Description |
|-----------------------|--|
| Object type | Objects can be selected from the following list. If an object is selected, the object is designated for the selected cell. Also, if the  button is used, the object properties screen appears, and properties can be set. |
| Vertical align | This function aligns objects set for the cell along the Y axis. The position changes when the Top, Middle, and Bottom settings are selected. |
| Horizontal align | This function aligns objects set for the cell along the X axis. The position changes when the Left, Center, and Right settings are selected. |
| Fill/background color | In fill color, the color for the brush style is set. In background color, the background of the cell is set. If the brush style is selected as  (fill), only the fill color is set, as there is no background. |
| Brush style | The cell can be filled using points, lines, or fill. When  (none) is selected, fill/background colors are not applied, even if they are set. |
| Cell width/height | The width/height of the cell can be set. The changed values can be viewed in the table preview screen as well. <div style="text-align: center;">  </div> |

18.1.4 Effect & action

Depending on bit/word conditions, effects and actions can be assigned to the table.

For details on [Effects & Actions], refer to Chapter 7 Object-Common.



[Fig. Effects & actions]

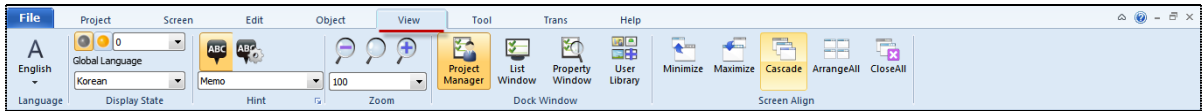
CHAPTER 19 View Menu

CHAPTER 19 - View Menu

The [View] menu is explained.

In the view menu, editing of the items visible in the TOP Design Studio program is possible.

The display language, whether to display hints, and zoom in/zoom out can be set. Also, docking windows displayed on the right/left can be managed, and screens can be aligned in a variety of ways.

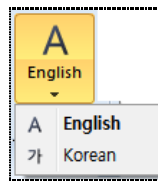


[Fig. View Menu]

19.1 Display language

Select the language to display in the TOP Design Studio program.

When first installed, English is displayed. The language can be changed to Korean in [View]-[Language].

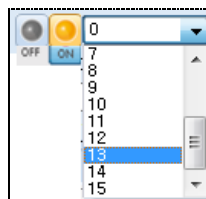


[Fig. Language]

19.2 View status

19.2.1 Status number

[Status number] is a function that displays the object shape in actual TOPR operation, depending on the data status of addresses set for lamps.



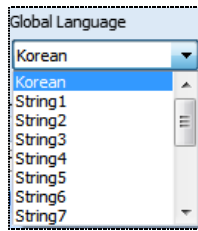
[Fig. Status number]

In the case of a bit address, the object is displayed according to the [ON/OFF] status. In [ON status], the shape of the object when object data is [ON] is shown. This corresponds to status number 1. In [OFF status], the shape of the object when object data is [OFF] is shown. This corresponds to status number 0.

In the case of word addresses, the status of the object is displayed according to the [ON/OFF] statuses of bit 00 through bit 15.

19.2.2 Selecting the multilanguage language

In multilanguage selection, the languages set for each string registered beforehand in [Project]-[Multilanguage] are displayed on the screen. Strings can be registered from 0 to 15.

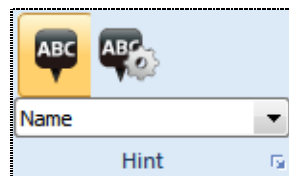


[Fig. Selecting the multilanguage language]

19.3 Hint

A hint is a help message shown on the top left corner of the object. Hint types are Name, Read Address, Write Address, ID, and Memo. In hint options, font and color, etc., can be edited.

19.3.1 Show hint



[Fig. Hint]

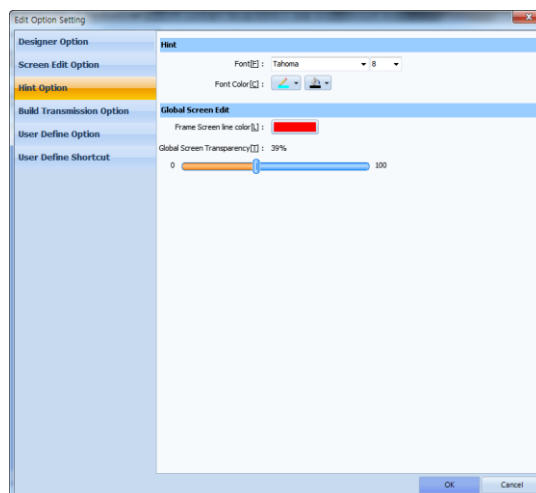
In the [Show hint] menu, whether to display hints can be set.

When the menu is run once, hints are shown. If the menu is run again, hints are not shown.

19.3.2 Hint option settings

Set the [Font color/background color/font size] for hints.


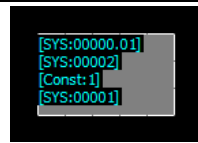
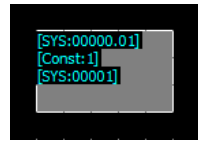
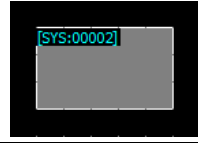
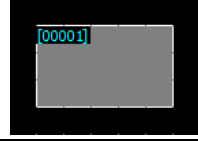
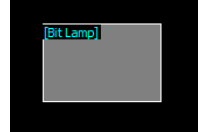
This is the same as [Edit]-[Option setting]-[Hint option] in 9.10.3 of Chapter 9.



[Fig. Hint option]

19.3.3 Hint selection

The type of hint desired by the user can be selected. Options provided are Name, All Address, Read Address, Write Address, ID, and Memo.

| Type | Description | |
|---------------|--|---|
| Name | The name of the object is displayed on the top left corner of the object. The object name is shown as an abbreviation. The names can be viewed in [Table. Show object name]. |  |
| All address | Display both Read Address and Write Address. No address is displayed if there is no object address. |  |
| Read Address | The address of the data read into the current object is displayed. |  |
| Write Address | The target address used to send data from the current object to another object is displayed. |  |
| ID | This is the ID of the object. The number is assigned in the order registered to the screen. The ID of the object registered first to the screen is [00001], and the ID of the object registered second is [00002]. |  |
| Memo | The memo entered in [Memo] of the object properties window is displayed. |  |

The object name is displayed as shown in the following table.

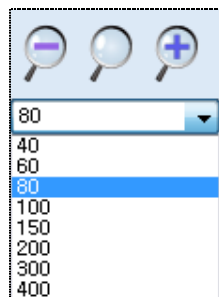
| Object | English | Tag name display |
|-----------------|-----------------|------------------|
| Dot | Dot | [DT] |
| Line | Line | [LN] |
| Ellipse | Ellipse | [EL] |
| Arc | Arc | [AC] |
| Pi | Pi | [PI] |
| Chord | Chord | [CD] |
| Rectangle | Rectangle | [RT] |
| Polyline | Polyline | [PL] |
| Polygon | Polygon | [PG] |
| Image | Image | [IG] |
| Text | Text | [TX] |
| Rectangle scale | Rectangle Scale | [RL] |
| Circle scale | Circle Scale | [CL] |

| | | |
|--------------------|-------------------|------|
| On/off lamp | Bit Lamp | [BL] |
| Multiphase lamp | Multiple Lamp | [ML] |
| Push button | Push Switch | [PS] |
| ON/OFF switch | Bit Switch | [BS] |
| Select switch | Select Switch | [SS] |
| Screen change lamp | Screen Change | [SC] |
| User defined lamp | User defined Lamp | [UL] |
| Numeric | Numeric | [NV] |
| String | String | [ST] |
| Clock | Clock | [CK] |
| Message | Message | [MV] |
| Window | Window | [WV] |
| Screen call | Screen Call | [SC] |
| Log view | Log View | [LV] |
| Alarm view | Alarm View | [AV] |
| Graph | Graph | [GV] |
| Trend | Trend | [TV] |
| Log graph | Log Graph | [LG] |
| Gage | Gauge Graph | [GG] |
| Slide | Slide | [SL] |
| Video | Video | [VV] |
| Camera | Camera | [CV] |
| Table | Table | [TV] |

19.4 Zoom in/Zoom out




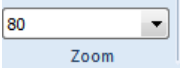
Set the zoom in/zoom out ratio for project screens.

The default setting is 100%, and the setting can be adjusted between 40% and 400%.



[Fig. Zoom in/Zoom out]

Zoom in/out is also possible using the mouse wheel with the [Ctrl key] pressed down.

| Zoom in/Zoom out | | Function |
|--------------------|---|---|
| Zoom in |  | Magnify the screen from the current screen. The maximum zoom in value is 400%. |
| Default zoom |  | Return to the original 100% size. |
| Zoom out |  | Reduce the size of the screen from the current screen. The minimum zoom out value is 40%. |
| User setting value |  | The % zoom in/zoom out is shown. The desired % can be set. |

19.5 Docking window

Docking means that the window sticks like a magnet.

The user can add and use the desired docking window to the basic work screen.

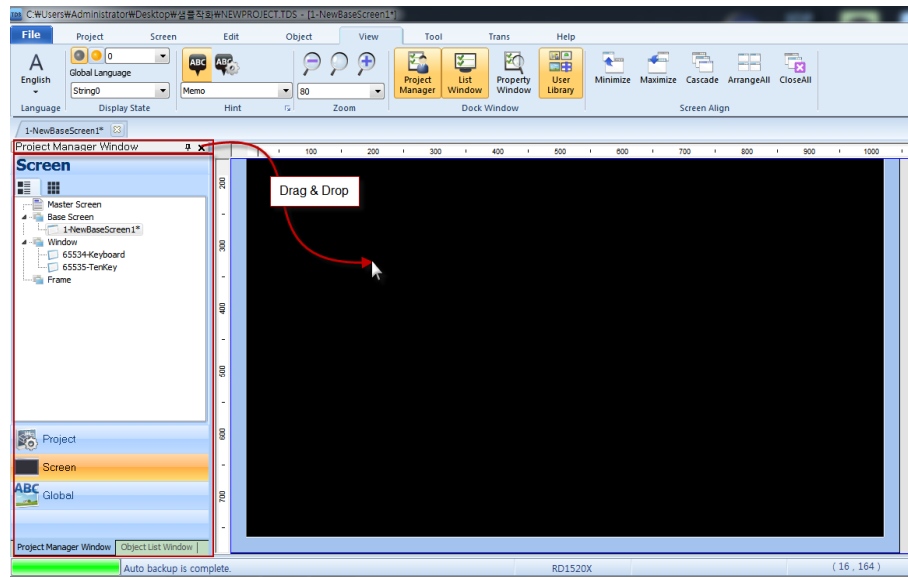
The functional docking windows provided in Top Design Studio are [Project Management], [List], [Properties], and [User library].

19.5.1 Handling docking windows

All docking windows can be docked or used separately, and can be shown or hidden as needed.

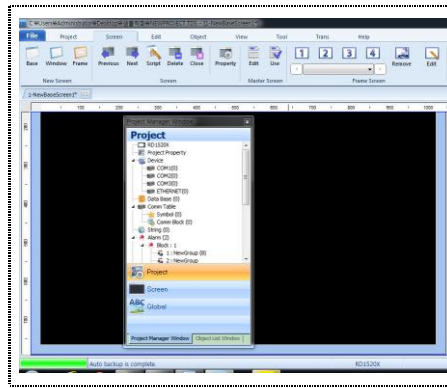
(1) Separating docking windows

Docking windows that have been docked can easily be separated by dragging with the mouse.



[Fig. Separating docking windows]

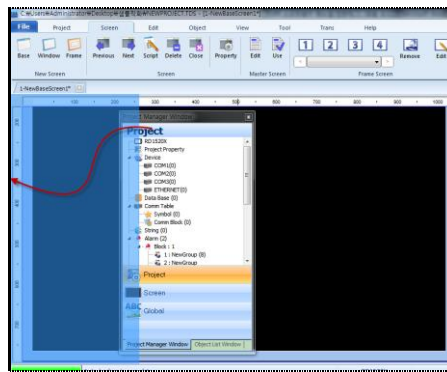
Click the [Title] part of a fixed docking window, and drag outward with the mouse. This separates the docking window, as seen in the figure below.



[Fig. Separating docking windows]

(2) Left and right docking

Separated docking windows can be docked by dragging the [Title] with the mouse and [Dropping] in the vertical list section. All docking windows can be docked to the right or left side.

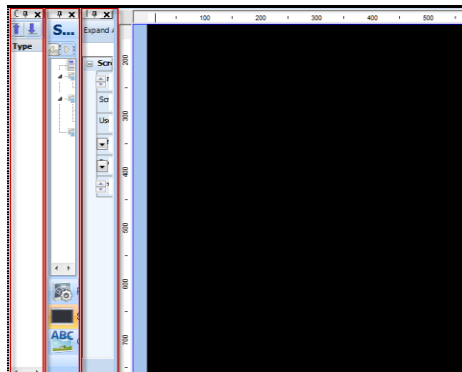


[Fig. Fixing docking windows in place]

(3) Auto hide

When using multiple types of docking windows simultaneously, the docking windows to be used can all be docked and hidden with the Auto Hide option, then brought up when needed.

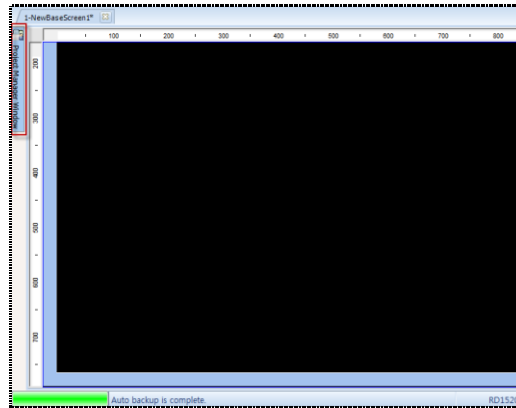
① Auto hiding docking windows



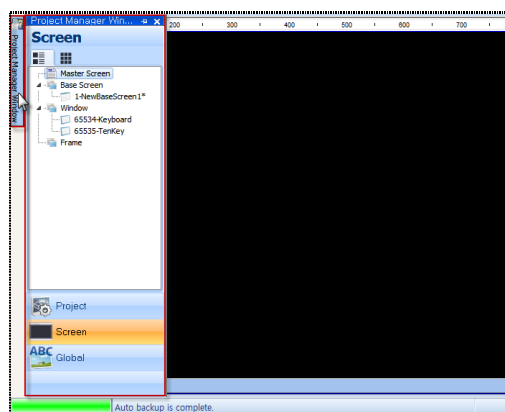
[Fig. Auto Hide not used]

If Auto Hide is not used, and multiple docking windows are run, a lot of space is occupied, as shown in the figure above, and not enough space is left for the project. In cases like this, Auto

Hide can be used to hide the docking windows, showing only the title in the corner. This frees up space for the project. Normally, as shown in [Fig. Using Auto Hide] below, only the title is displayed. To use, place the mouse cursor over the title. The window is expanded as in [Fig. Window title selection] below, and can be used. To fix this expanded window, the thumbtack image is changed to fixed [📌]. To unfix and minimize, change the thumbtack image to unfix [📌].



[Fig. Auto Hide used]



[Fig. When a window title is selected]

The position of docking windows can be adjusted to suit the user by dragging the top title portion with the mouse.

19.6 Project management

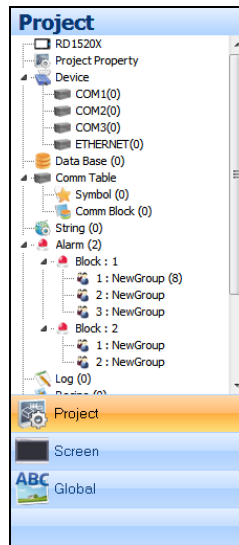
From the [Project Manager] window, the project screens and settings can be viewed and managed at a glance.

[Project management] is divided into project, screen, and resource parts. When the program is run, and a new project is created or an existing project is opened, a list of screens and general settings is shown in the project manager.


19.6.1 Project

[Project manager]-[Project] is a general setting that applies to all projects. All project menu settings -

properties, symbol, communication block, multilanguage, alarm, log, recipe, security, and script are displayed. Double click each list to bring up the corresponding setting screen.



[Fig. Project]

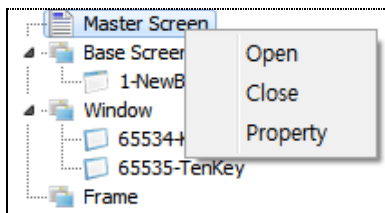
| Project | Description |
|--|---|
|  Select HMI | The currently set touch model can be viewed and changed. |
| Project properties | The current project property settings can be viewed. (For project properties, refer to [4.9 Project Properties].) |
| Device | Set the currently connected device. (For device, refer to [4.9 Project Properties].) |
| Symbol | Symbol settings are shown. Double click to open the symbol settings window. (For symbol, refer to [4.6 Symbol].) |
| Communication block | Communication blocks are displayed. Double click to open the communication block settings window. (For communication block, refer to [4.8 Communication block].) |
| Text table | The text table is shown. (For text table, refer to [4.4 Multilanguage].) |
| Alarm | Alarm data is displayed. (For alarm settings, refer to [4.1 Alarm].) |
| Log | Log data is displayed. (For log settings, refer to [4.2 Log].) |
| Recipe | Recipe data is shown. (For recipe settings, refer to [4.3 Recipe].) |
| Security | Security settings are shown. (For security settings, refer to [4.7 Security].) |
| Script | Script settings are shown. (For script settings, refer to [4.5 Script].) |

19.6.2 Screen

The screen composition of the project can be seen at a glance.

Master screens, base screens, window screens, and frame screens are displayed in a tree structure.

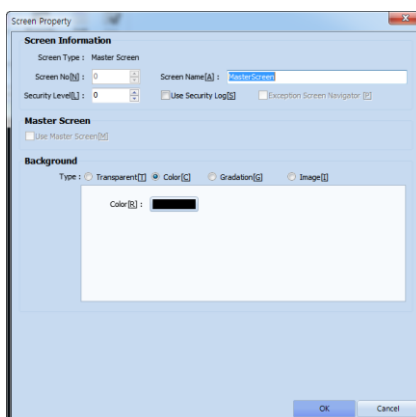
(1) Master screen



[Fig. Master screen]

| Pop-up menu | Description |
|-------------|-----------------------------------|
| Open | Open the selected master screen. |
| Close | Close the selected master screen. |

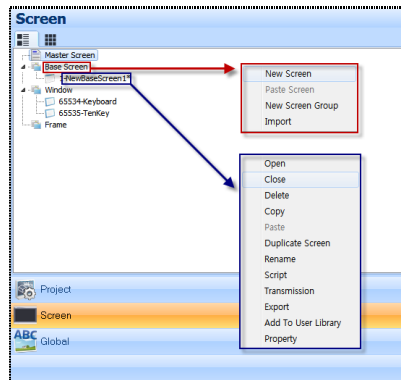
① Master screen properties



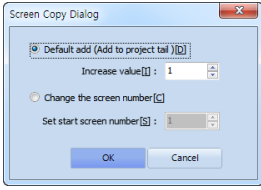
[Fig. Master screen properties]

| Properties | Description |
|------------------|---|
| Screen number | The screen number of the master screen is displayed. There is only 1 master screen, and the screen number cannot be changed. |
| Screen name | The name of the master screen is displayed. |
| Security level | Set the security level of the master screen. Security settings are from 0 to 15. The password set beforehand in [Project]-[Security] is used. (A security level of 0 means that no security setting has been made.) |
| Use security log | When enabled, a save log is created in internal memory. For details on security, refer to [Chapter7] [7.7 Security]. |
| Background type | Select the master screen background type. Background types are [Transparent], [Color], [Gradation], and [Image]. |

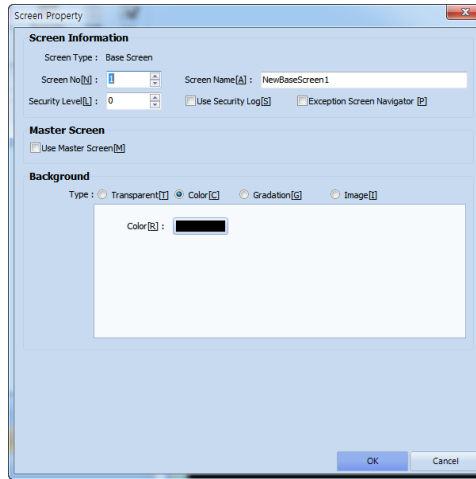
(2) Base screen



[Fig. Base screen]

| Pop-up menu | Description |
|---------------------|--|
| New screen | Create a new base screen. |
| New screen group | A new screen folder can be made to categorize base screens. |
| Import | Add a saved base screen. |
| Open | Open the selected base screen. |
| Close | Close the selected base screen. |
| Delete | Delete the selected base screen. |
| Copy | Copy the selected base screen. |
| Paste | This can be used if the [Copy] function has been used first. The copied base screen can be pasted as a base screen of the current project, or as the base screen of another project. |
| Copy screen | <p>The selected base screen is copied and added according to settings.</p> <p>When copy screen is pressed, the settings screen appears. When [Default add] is used, the copied screens are added from the number following the largest number of the registered base screens. Set the screen number increase value used here. In [Change the screen number], the [Start screen number] is entered, and the copied screens are added using the number that is entered.</p>  |
| Change name | Change the name of the selected base screen. |
| Script | Set the script that applies to the selected base screen only. |
| Transfer | The project illustration is compared with the illustration of the connected TOPR, and the selected screens can be transferred separately. |
| Export | Save the selected base screen with a different name. Screens saved this way can be added using [Import]. |
| Add to user library | The selected screen can be added to the user library. |

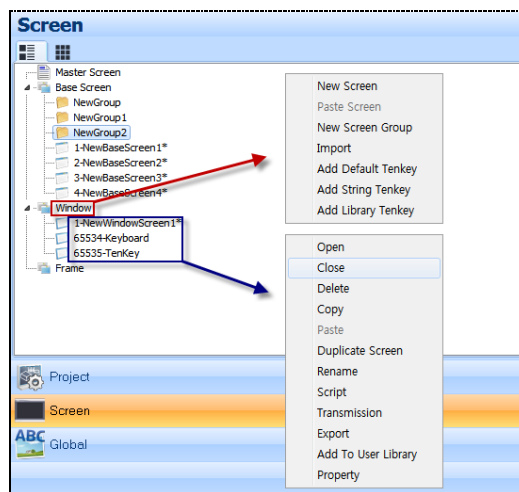
① Base screen properties



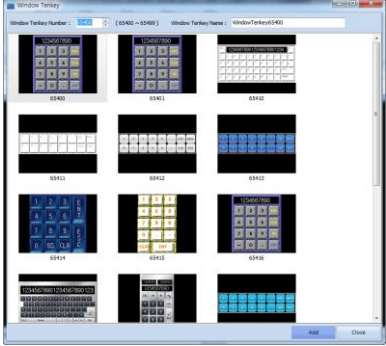
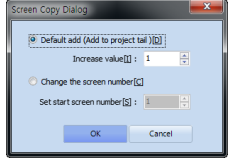
[Fig. Base screen properties]

| Properties | Description |
|-------------------|---|
| Screen number | Shows the screen number of the base screen. |
| Screen name | The name of the base screen is displayed. |
| Security level | Set the security level of the base screen. Security settings are from 0 to 15. The password set beforehand in [Project]-[Security] is used. (A security level of 0 means that no security setting has been made.) |
| Use security log | When enabled, a save log is created in internal memory. For details on security, refer to [Chapter7] [7.7 Security]. |
| Use master screen | Apply the master screen to the base screen. Details on using the master screen can be viewed in [Chapter 8. Screen]. |
| Background type | Select the base screen background type. Background types are [Transparent], [Color], [Gradation], and [Image]. |

(3) Window screen

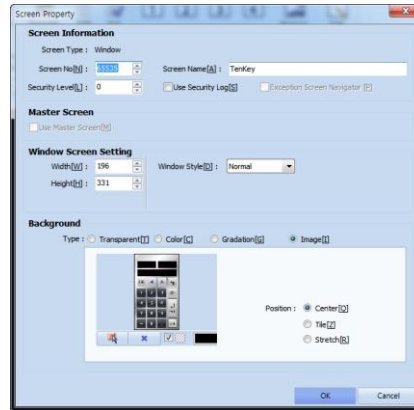


[Fig. Window screen popup menu]

| Pop-up menu | Description |
|--------------------|---|
| New screen | Create a new window screen. |
| Paste window | Paste a copied window screen. |
| New screen group | Create a new window screen group. |
| Import | Add a saved window screen. |
| Add default tenkey | Add the default tenkey. If a tenkey has already been created, another tenkey is not added. |
| Add string tenkey | Add a keyboard for entering strings. If a keyboard has already been created, another keyboard is not added. |
| Add library tenkey | <p>A tenkey (keypad) window screen registered to the library is added. Various small/large tenkeys are registered. Select the tenkey to register as a window screen, then enter the [Window number], and click the [Add] button on the bottom. The window numbers that can be registered for library tenkeys are fixed: [65400~65499].</p>  |
| Open | Open the selected base screen. |
| Close | Close the selected base screen. |
| Delete | Delete the selected base screen. |
| Copy | Copy the selected base screen. |
| Paste | This can be used if the [Copy] function has been used first. The copied base screen can be pasted as a base screen of the current project, or as the base screen of another project. |
| Copy screen | <p>The selected base screen is copied and added according to settings. When copy screen is pressed, the settings screen appears. When [Default add] is used, the copied screens are added from the number following the largest number of the registered base screens. Set the screen number increase value used here. In [Change the screen number], the [Start screen number] is entered, and the copied screens are added using the number that is entered.</p>  |
| Change name | Change the name of the selected base screen. |
| Script | Set the script that applies to the selected base screen only. |
| Transfer | The project illustration is compared with the illustration of the connected TOPR, and the |

| | |
|---------------------|--|
| | selected window screens can be transferred separately. |
| Export | Save the selected base screen with a different name. Screens saved this way can be added using [Import]. |
| Add to user library | The selected window screen can be added to the user library. |

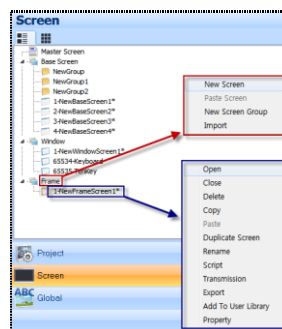
① Window screen properties



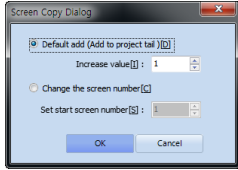
[Fig. Window screen properties]

| Properties | Description |
|------------------------|---|
| Screen number | Shows the screen number of the window screen. |
| Screen name | The name of the window screen is shown. |
| Security level | Set the security level of the window screen. Security settings are from 0 to 15. The password set beforehand in [Project]-[Security] is used. (A security level of 0 means that no security setting has been made.) |
| Use security log | When enabled, a save log is created in internal memory. For details on security, refer to [Chapter7] [7.7 Security]. |
| Window screen settings | Set the width, height, and style of the window screen. |
| Background type | Select the window screen background type. Background types are [Transparent], [Color], [Gradation], and [Image]. |

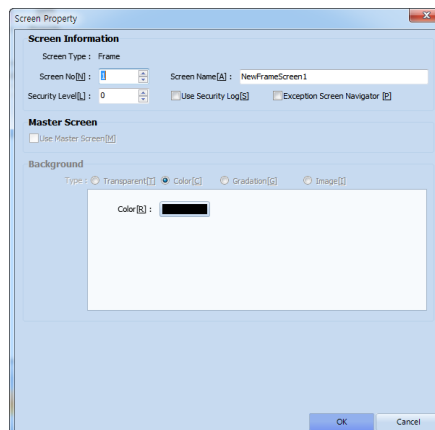
(4) Frame screen



[Fig. Frame screen popup menu]

| Pop-up menu | Description |
|---------------------|---|
| New screen | Create a new frame screen. |
| Paste window | Paste a copied window screen. |
| New screen group | A new screen folder can be made to categorize frame screens. |
| Import | Add a saved frame screen. |
| Open | Open the selected frame screen. |
| Close | Close the selected frame screen. |
| Delete | Delete the selected frame screen. |
| Copy | Copy the selected frame screen. |
| Paste | This can be used if the [Copy] function has been used first. The copied frame screen can be pasted as a frame screen of the current project, or as a frame screen of a different project. |
| Copy screen | The selected frame screen is copied and added according to settings. When copy screen is pressed, the settings screen appears. When [Default add] is used, the copied screens are added from the number following the largest number of the registered frame screens. Set the screen number increase value used here. In [Change the screen number], the [Start screen number] is entered, and the copied screens are added using the number that is entered. |
| |  |
| Change name | Change the name of the selected frame screen. |
| Script | Set the script that applies to the selected frame screen only. |
| Transfer | The project illustration is compared with the illustration of the connected TOPR, and the selected frame screens can be transferred separately. |
| Export | Save the selected frame screen with a different name. Screens saved this way can be added using [Import]. |
| Add to user library | The selected frame screen can be saved to the user library. |

① Frame screen properties



[Fig. Frame screen properties]



| Properties | Description |
|------------------|--|
| Screen number | Shows the screen number of the frame screen. |
| Screen name | The name of the frame screen is shown. |
| Security level | Set the security level of the frame screen. Security settings are from 0 to 15. The password set beforehand in [Project]-[Security] is used. (A security level of 0 means that no security setting has been made.) |
| Use security log | When enabled, a save log is created in internal memory. For details on security, refer to [Chapter7] [7.7 Security]. |
| Master screen | In the frame screen, master screen settings are not possible. |
| Background | In the frame screen, background settings are not possible. |

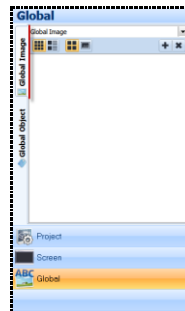
19.6.3 Resource part

Project resources - global images and global objects - can be viewed at a glance.

(1) Global image

Global images, videos, sound, text and PDFs can be registered, and used in word indirect, etc.

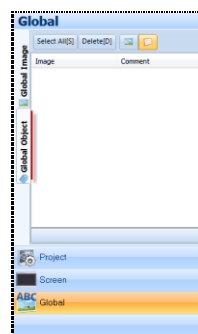
Global images are assigned numbers according to the order of registration. This number is the station of the word. Registered images can be added/deleted using  and  on the top.



[Fig. Global image]

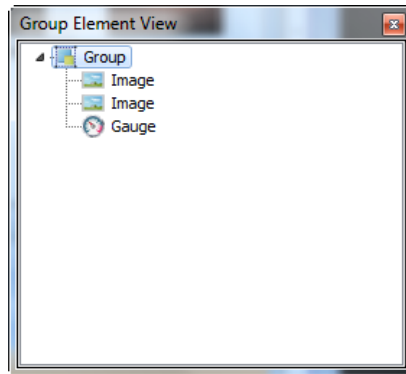
(2) Global object

Global object is a function for registration and easy retrieval and use of shapes, tags, and groups that are frequently used. Inheritance is applied, facilitating editing.



[Fig. Global object]

Click the [Yes] button to delete, and click the [No] button to cancel deletion. If an object is left clicked in the global object window, the property can be selected in the popup window, and changed. If the global object is a group, the screen shown in the figure below is displayed, and the properties of individual objects in the group can be changed.

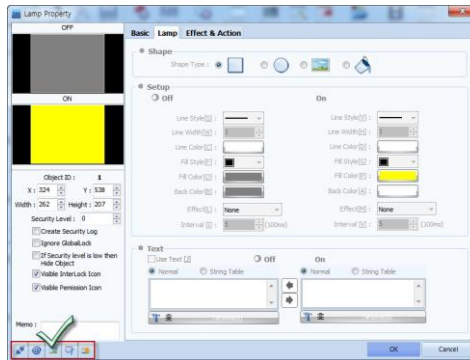


[Fig. Group properties list]

④ Cancel inheritance

Properties can be edited by partially or globally canceling inheritance.

If inheritance is canceled, changes to properties in the global object list are not applied to the cancelled item.



[Fig. Canceling inheritance for a shape]

Double clicking a shape that has been retrieved from global objects and registered on the screen brings up the following properties screen. Cancel inheritance and redefine effect are common to all objects. Partial cancel inheritance varies slightly depending on the object characteristics. The functions are as follow.

| Partial cancel | Image | Description |
|--------------------|-------|---|
| Cancel Inheritance | | Inheritance is canceled. All properties can be edited. |
| Redefine address | | Among properties, the address can be redefined. |
| Redefine image | | Among properties, the image can be redefined. |
| Redefine caption | | Among properties, the text can be redefined. |
| Redefine effect | | Among properties, [Effects & Actions] can be redefined. |

If inheritance is canceled, the settings part is enabled, and properties can be changed. However, because inheritance is canceled, later changes to global object properties are not inherited, and these changes are not reflected.

19.7 List window

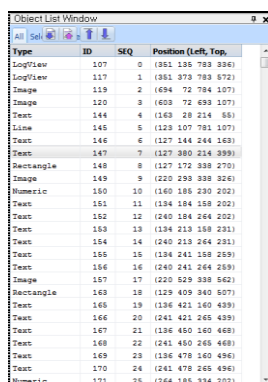
The list window shows a list of objects/groups registered to the current edit screen for general management. The list window comprises the [All], [Select], and [User] pages.

19.7.1 Page type

The list window comprises the [All], [Select], and [User] pages.

(1) All

All objects on the screen, and object groups are displayed. ID, order, and position are displayed.

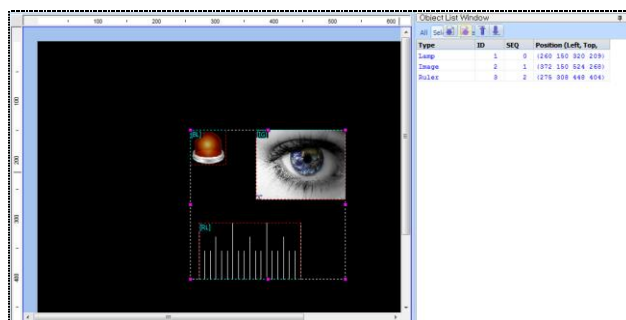


| Type | ID | SEQ | Position (Left, Top) |
|-----------|-----|-----|----------------------|
| LogView | 107 | 0 | (351, 135, 793, 336) |
| LogView | 137 | 1 | (351, 379, 793, 572) |
| Image | 119 | 2 | (694, 72, 794, 107) |
| Image | 120 | 3 | (603, 72, 693, 107) |
| Text | 144 | 4 | (163, 28, 214, 55) |
| Line | 145 | 5 | (123, 107, 791, 107) |
| Text | 146 | 6 | (127, 144, 244, 143) |
| Text | 147 | 7 | (127, 380, 214, 399) |
| Rectangle | 148 | 8 | (127, 172, 338, 270) |
| Image | 149 | 9 | (220, 293, 338, 326) |
| Numeric | 150 | 10 | (160, 180, 230, 202) |
| Text | 151 | 11 | (134, 184, 158, 202) |
| Text | 152 | 12 | (240, 184, 264, 202) |
| Text | 153 | 13 | (134, 213, 158, 231) |
| Text | 154 | 14 | (240, 213, 264, 231) |
| Text | 155 | 15 | (134, 241, 158, 259) |
| Text | 156 | 16 | (240, 241, 264, 259) |
| Image | 157 | 17 | (220, 329, 338, 362) |
| Rectangle | 158 | 18 | (129, 409, 340, 507) |
| Text | 159 | 19 | (136, 421, 160, 439) |
| Text | 160 | 20 | (241, 421, 265, 439) |
| Text | 161 | 21 | (136, 450, 160, 468) |
| Text | 162 | 22 | (241, 450, 265, 468) |
| Text | 163 | 23 | (136, 478, 160, 496) |
| Text | 170 | 24 | (241, 478, 265, 496) |
| Numeric | 171 | 25 | (264, 180, 334, 202) |

[Fig. List window - All]

(2) Select

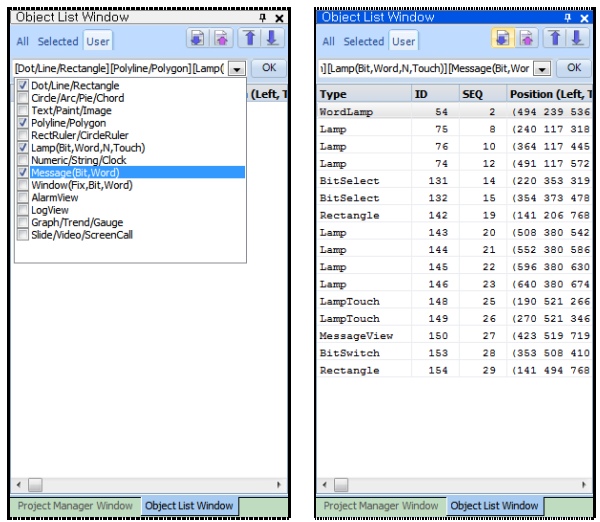
Only objects selected by the current user are displayed.



[Fig. List window - Select]

(3) User

Among all objects, only objects of the type selected by the user are shown. As shown below, if the desired object type is selected, a list of selected objects is displayed.



[Fig. List window - User]

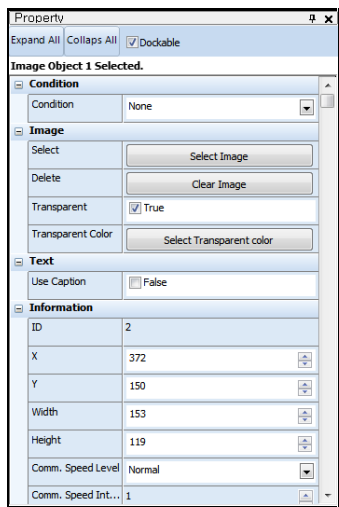
19.7.2 List order

In the top right corner of the list window screen, the order for the object list can be set. The functions of each are as follow.

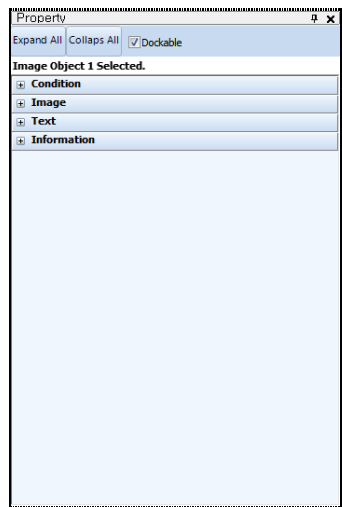
| Align order | Image | Description |
|----------------|-------|---|
| Send down | | The selected object is sent down one step in the order. |
| Send up | | The selected object is sent up one step in the order. |
| Send to top | | The selected object is sent to the top of the order. |
| Send to bottom | | The selected object is sent to the bottom of the order. |

19.8 Properties window

The properties window shows screen properties and the properties of tags and shapes registered to the screen, and allows editing.



[Fig. Property – Expand all]



[Fig. Property – Collapse all]

19.8.1 Composition of the properties window

The details of the properties window are explained.

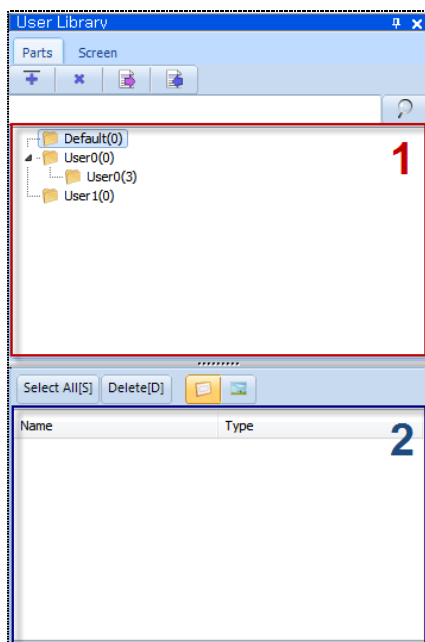
| Item | Description |
|--------------|---|
| Expand all | Expands and shows all properties |
| Collapse all | Collapses all properties, and displays items. |
| Dockable | If checked, the properties window can be docked on the right. If this is not checked, the properties window is separated, and cannot be docked. |

19.9 User library window

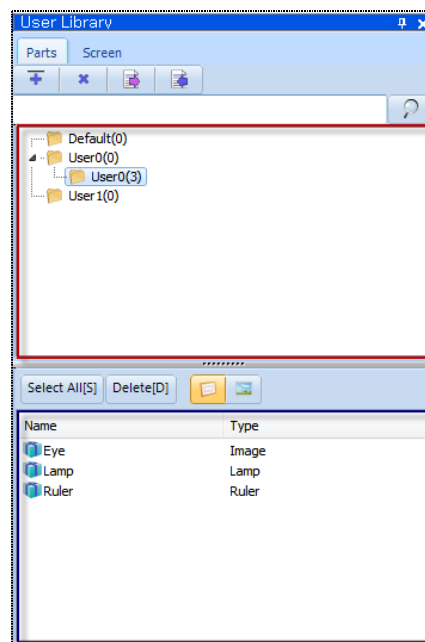
Frequently used objects or screens can be registered in the user library window, and used conveniently.

19.9.1 Register user library window

In area 1 of [Fig. User library window] below, the folders composing the user library can be set. After completing folder settings, the desired folder can be selected, and the objects to be added can be added by dragging and dropping into area 2.



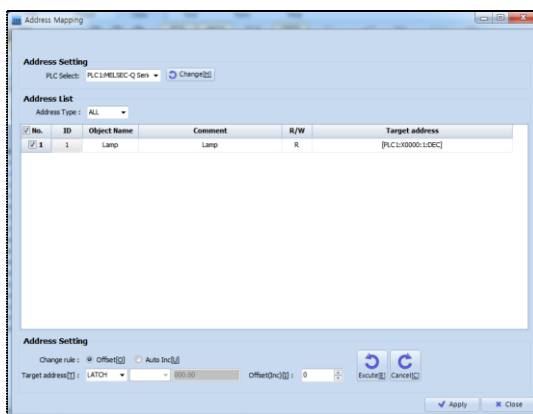
[Fig. User library]



[Fig. Add object]

19.9.2 Use user library window

Objects and screens registered in the user library can be dragged and dropped into the desired screen for use, using the same method as register user library. When added, the window shown in [Fig. Address mapping] appears, and the current address setting and the address to be changed to can be set.



[Fig. Address mapping]

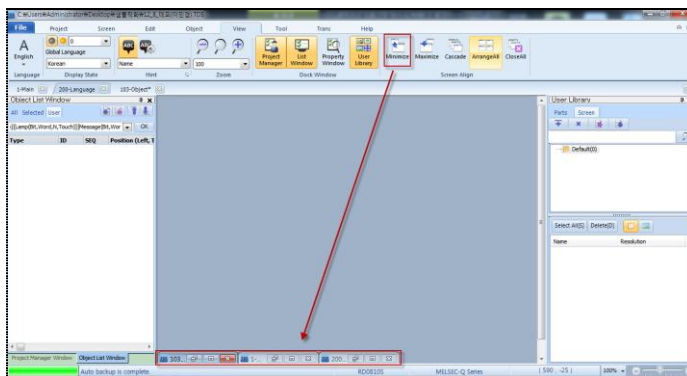
19.9.3 User library window properties

| Properties | Description |
|------------|---|
| | Open a folder for saving objects in the user library. |
| | Open a folder for saving screens in the user library. |
| | Add a new folder. To create a subfolder, right click the desired parent folder, and select Add group. |
| | Delete the selected folder. |
| | Import a saved user library. |
| | Save the current user library. |
| | Delete all files contained in the folder. |
| | Delete the selected files. |
| | View files by name. |
| | View files by image. |

19.10 Screen alignment

19.10.1 Minimize

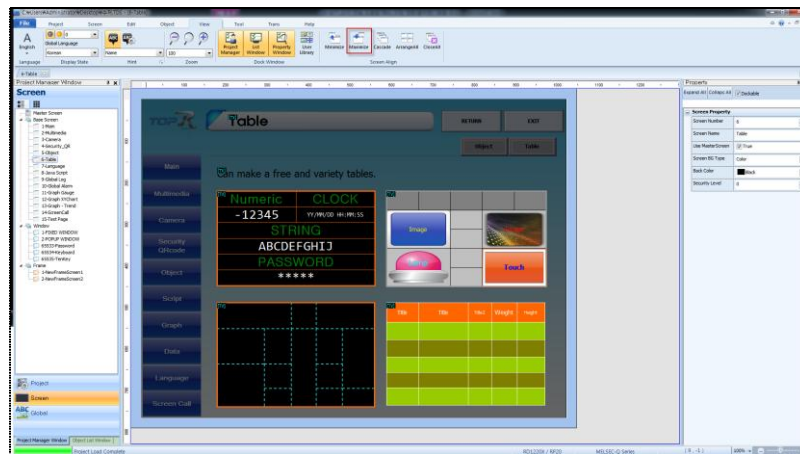
All screens open in the program are minimized, and aligned on the bottom of the screen.



[Fig. Minimize]

19.10.2 Maximize

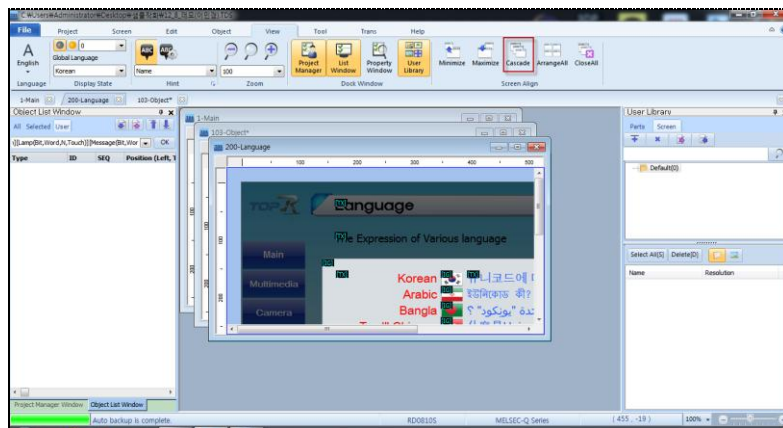
All screens open in the program are shown in the maximum size.



[Fig. Maximize]

19.10.3 Cascade

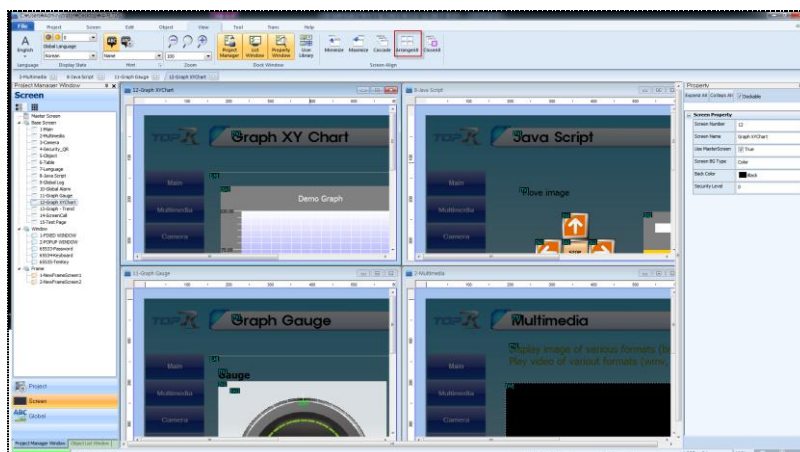
All screens open in the program are aligned in cascading order.



[Fig. Cascade]

19.10.4 Tile

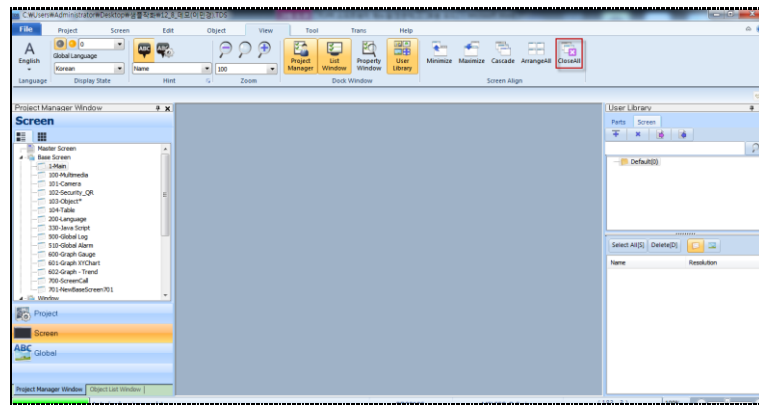
All screens open in the program are tiled.



[Fig. Tile]

19.10.5 Close all

All screens open in the program are closed.



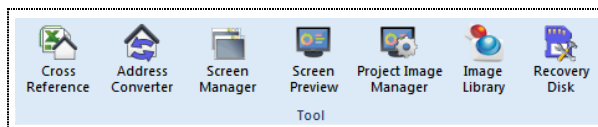
[Fig. Close all]

CHAPTER 20 Tool Menu

CHAPTER 20 - Tool Menu

20.1 Tool

The [Tool] tab provides useful project editing and management functions. A function for searching used objects and addresses, and a function for address conversion are provided. This facilitates applying to other projects, or batch application.



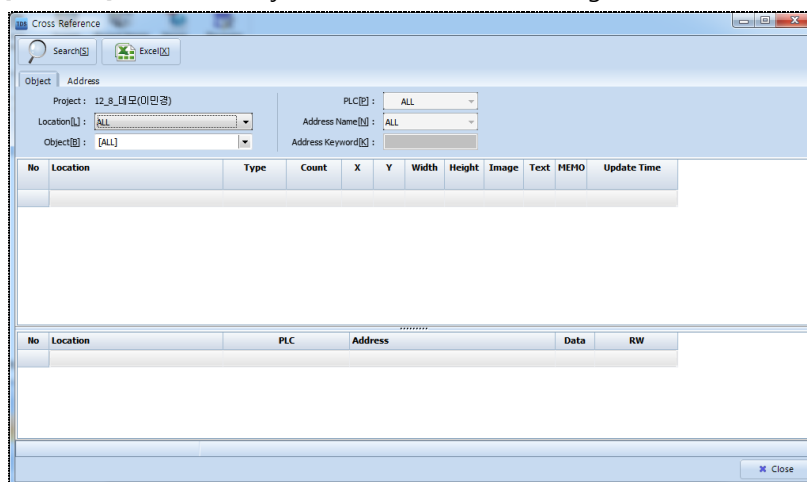
[Fig. Tool]

| Tool menu | Description |
|--------------------------|--|
| Address/object | This tool is used to search addresses and objects used in the project, and managed as an Excel file. |
| Address Convert | This tool is used for batch change and editing of addresses used in the project. |
| Screen Manager | This tool is used to manage base, window, and frame screens. |
| Screen preview | This tool is used to save illustration screen previews as images. |
| Project image management | This tool is used to manage images used in the project. |
| Image library | This tool is used to manage libraries used in the project. |
| Make recovery disk | This tool is used to make a disk to initialize all programs and data of the TOPR. |

20.2 Search address / object



A function for searching addresses and objects being used in the project is provided. By organizing results into an [Excel file], numerous objects/addresses can be managed more conveniently.



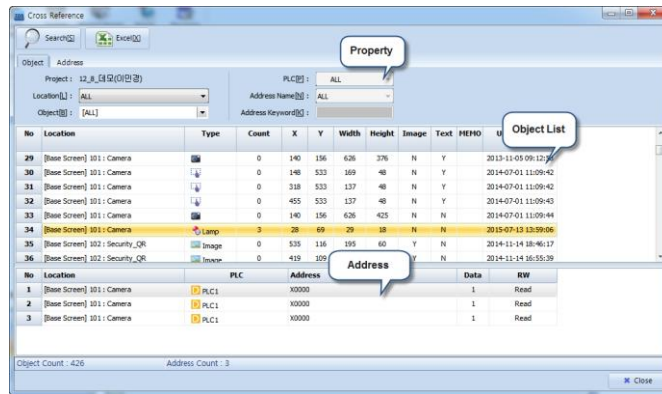
[Fig. Address/object]

| Address / object search button | Description |
|--------------------------------|---|
| Search [S] | Using the set properties, search project addresses and objects. |
| Convert Excel [X] | Export the search results to an Excel file. |

20.2.1 Object search

Using the search property settings, all objects used in the project are searched.

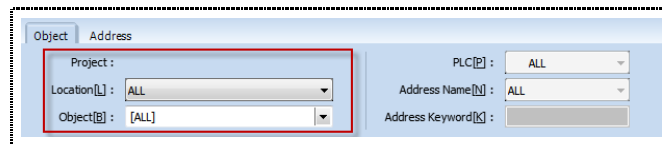
By double clicking addresses/objects in search results, property values can be edited.



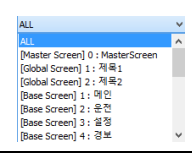
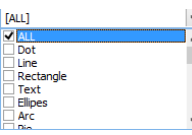
[Fig. Object]

(1) Object search properties

Objects are searched based on the filtering settings. Set the search conditions by selecting the filtering values - object position and data.



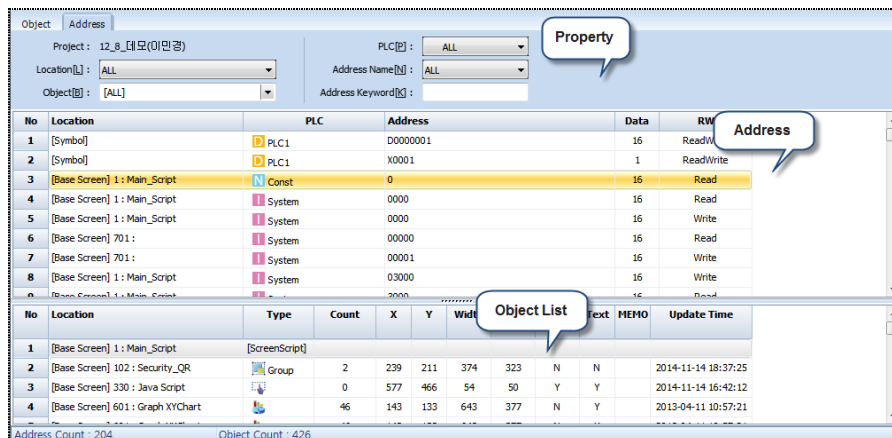
[Fig. Properties]

| Object search properties | Description |
|--------------------------|--|
| Project | The name of the current illustration project is shown. |
| Location [L] | The type of screen to be searched can be set and searched. Global, base, window, and all screen types can be searched.  |
| Object [B] | The type of object to be searched can be set and searched.  |

20.2.2 Address search

Using the search property settings, all addresses used in the project are searched.

By double clicking addresses/objects in search results, property values can be edited.



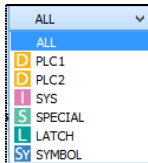
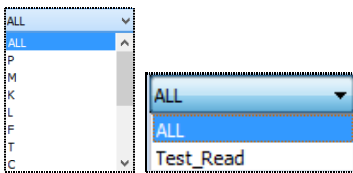
[Fig. Address search]

(1) Address search properties

Addresses are searched based on the filtering settings. Select the filtering values - PLC address, address name, and address station - to set search conditions.



[Fig. Address properties]

| Address search properties | Description |
|---------------------------|---|
| Project | The name of the current project is shown. |
| Location [L] | Select the screen to search. |
| Object [B] | Select the type of object to search. |
| PLC [P] | Select the type of address to search.  |
| Address name [N] | If [PLC], [Symbol] address have been selected, select the address name.  |
| Address keyword [K] | Enter the search address value. Ex) Search for the address with station 00010 and the name PLC M. |

20.2.3 Search result

The search results are displayed as a list. Each column can be aligned, and the properties window of the [Object] or [Address] can be opened and modified.

(1) Object search results

If the search is performed using [Object], the object search results list is positioned in the center. If an [Object] is selected, the corresponding address is displayed at the bottom of the result list. In the [Status bar], the number of search results is displayed.

| No | Location | Type | Count | X | Y | Width | Height | Image | Text | MEMO | Upd |
|-----|----------------------|-------------|-------|-----|-----|-------|--------|-------|------|------|--------|
| 122 | [Base Screen] 8 : 로깅 | Text | 0 | 7 | 156 | 32 | 25 | N | Y | | 2014-1 |
| 123 | [Base Screen] 8 : 로깅 | 028 Numeric | 3 | 132 | 154 | 90 | 38 | N | Y | | 2014-1 |
| 124 | [Base Screen] 8 : 로깅 | 028 Numeric | 3 | 232 | 154 | 90 | 38 | N | Y | | 2014-1 |
| 125 | [Base Screen] 8 : 로깅 | 028 Numeric | 3 | 332 | 154 | 90 | 38 | N | Y | | 2014-1 |
| 126 | [Base Screen] 8 : 로깅 | 028 Numeric | 3 | 432 | 154 | 90 | 38 | N | Y | | 2014-1 |
| 127 | [Base Screen] 8 : 로깅 | 028 Numeric | 3 | 532 | 154 | 90 | 38 | N | Y | | 2014-1 |
| 128 | [Base Screen] 8 : 로깅 | 028 Numeric | 3 | 132 | 202 | 90 | 38 | N | Y | | 2014-1 |

| No | Location | PLC | Address | Data | RW |
|----|----------------------|-------|---------|------|-----------|
| 1 | [Base Screen] 8 : 로깅 | SYS | 00100 | 16 | ReadWrite |
| 2 | [Base Screen] 8 : 로깅 | CONST | 0 | 16 | Read |
| 3 | [Base Screen] 8 : 로깅 | CONST | 100 | 16 | Read |

Object Count : 380 Address Count : 3

[Fig. Object search results]

(2) Address search result

If the search is performed using [Address], the object search results list is positioned in the center. If an [Address] is selected, the corresponding object is displayed at the bottom of the result list. In the [Status bar], the number of search results is displayed.

| No | Location | PLC | Address | Data | RW |
|-----|----------------------|--------|----------|------|-----------|
| 342 | [Base Screen] 4 : 경보 | System | 00020.03 | 1 | ReadWrite |
| 343 | [Base Screen] 4 : 경보 | System | 00020.04 | 1 | Read |
| 344 | [Base Screen] 4 : 경보 | System | 00020.04 | 1 | Write |
| 345 | [Base Screen] 4 : 경보 | System | 00020.04 | 1 | ReadWrite |
| 346 | [Base Screen] 4 : 경보 | System | 00020.05 | 1 | Read |
| 347 | [Base Screen] 4 : 경보 | System | 00020.05 | 1 | Write |
| 348 | [Base Screen] 4 : 경보 | System | 00020.05 | 1 | ReadWrite |
| 349 | [Base Screen] 4 : 경보 | System | 00020.06 | 1 | Read |

| No | Location | Type | Count | X | Y | Width | Height | Image | Text | MEMO | Upd |
|----|----------------------|-----------|-------|-----|----|-------|--------|-------|------|------|--------|
| 1 | [Alarm] 1 : Block1 | [Alarm] | | | | | | | | | |
| 2 | [Base Screen] 4 : 경보 | BitSwitch | 3 | 388 | 61 | 50 | 82 | Y | N | | 2014-1 |
| 3 | [Base Screen] 4 : 경보 | BitSwitch | 3 | 388 | 61 | 50 | 82 | Y | N | | 2014-1 |
| 4 | [Base Screen] 4 : 경보 | BitSwitch | 3 | 388 | 61 | 50 | 82 | Y | N | | 2014-1 |

Address Count : 388 Object Count : 380

[Fig. Address search result]

| Search result list | | Description |
|--------------------|--------|--|
| Object | No | The order number of the data is shown. |
| | Type | The type of object is shown. |
| | Count | The number of objects is shown. |
| | X | The X coordinate of the object on the screen is displayed. |
| | Y | The Y coordinate of the object on the screen is displayed. |
| | Width | The horizontal length of the object is shown. |
| | Height | The height of the object is shown. |

| | | |
|---------|-------------|--|
| | Image | Shows whether the object uses images. |
| | Text | Shows whether the object uses text. |
| | MEMO | Shows the memo recorded in the object edit window. |
| | Update Time | The date of the last update is shown. |
| Address | No | The order number of the data is shown. |
| | Location | The location of the address is shown. |
| | PLC | The type of the address is shown. |
| | Address | The address value is shown. |
| | Data | The length of the data used by the address |
| | RW | Whether the address if ReadOnly or Read&Write |

(3) Search result alignment method

For the [Ascending] and [Descending] alignment methods, when a column title in the results list is clicked, the following small arrow is displayed, and the column is aligned.

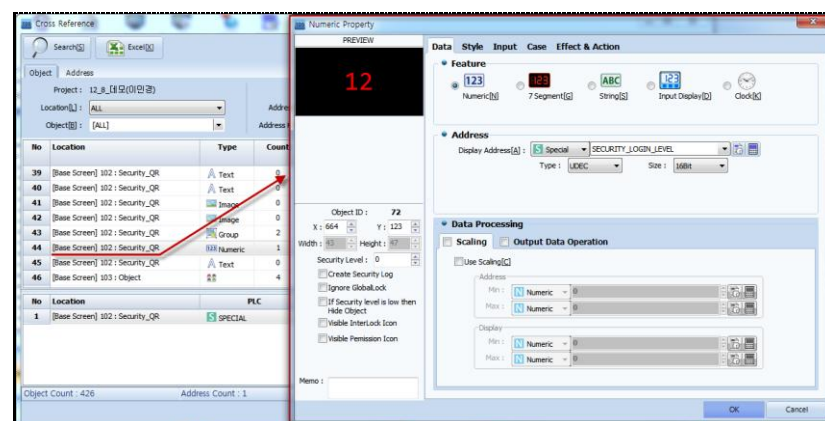
| No | Location | PLC | Address | Data | RW |
|----|---------------------------|-----------|---------|------|------|
| 1 | [Window] 65534 : Keyboard | S Special | 65535 | 32 | Read |
| 2 | [Window] 65535 : TenKey | S Special | 65535 | 32 | Read |
| 3 | [Window] 65535 : TenKey | S Special | 65534 | 32 | Read |
| 4 | [Window] 65535 : TenKey | S Special | 65533 | 32 | Read |
| 5 | [Base Screen] 9 : 로깅그래프 | L SYS | 2;0;2 | 16 | Read |
| 6 | [Base Screen] 9 : 로깅그래프 | L SYS | 2;0;1 | 16 | Read |
| 7 | [Base Screen] 8 : 로깅 | S Special | 17665 | 16 | Read |
| 8 | [Base Screen] 9 : 로깅그래프 | L SYS | 2;0;0 | 16 | Read |

[Fig. Search result alignment]

| Alignment option | Description |
|------------------|------------------------------|
| | Align in [Ascending] order. |
| | Align in [Descending] order. |

(4) Object and address edit

The method of editing [Object] or [Address] search results is simple. As shown in the figure below, double click the object or address to edit. The edit screen for the clicked object appears.

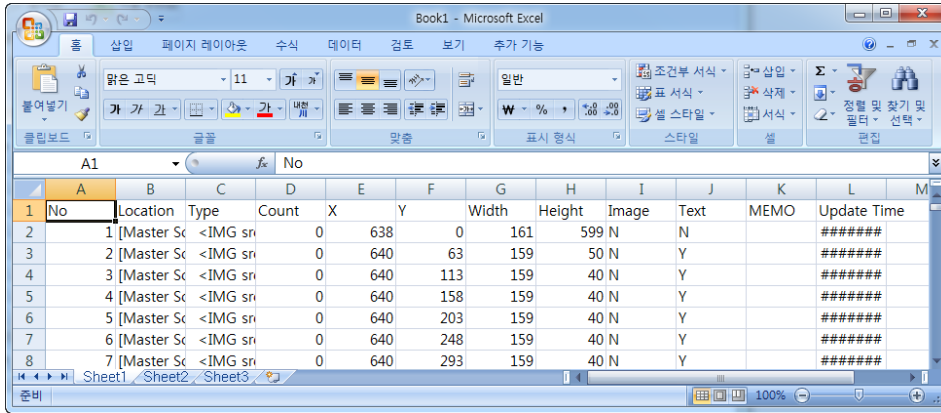


[Fig. Object and address edit]

20.2.4 Excel conversion

The search results can be converted into an Excel file and saved.

When the [Excel conversion] button is clicked, an Excel file is created automatically, as shown in the figure below.

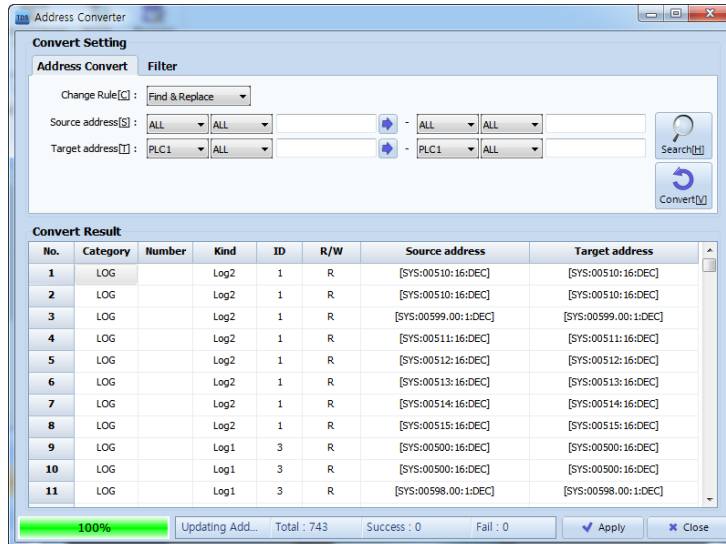


[Fig. Excel conversion]

20.3 Address Convert



Addresses registered to the project can be searched and converted. Address values within a certain range can be converted in batch, and values can also be changed individually.



[Fig. Address Convert]

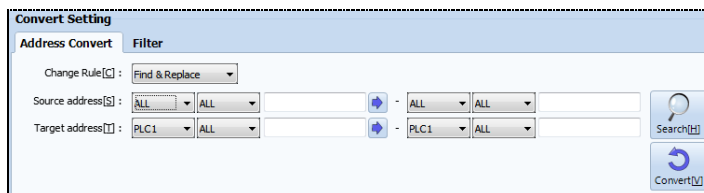
| Address conversion button | Description |
|---------------------------|---|
| Convert [V] | Convert the source address to the target address. |
| Search [S] | Search the target address. |
| Apply [A] | Apply the target address to the source address. |
| Close | Close the address conversion window. |

20.3.1 Conversion settings

This is the target address to convert to. By setting search options, all addresses or a certain range can be searched. Also, using the target filter option, search can be performed using the screen and data type.

(1) Address conversion

After setting the address type and range of the [Target address], press the [Search] button.

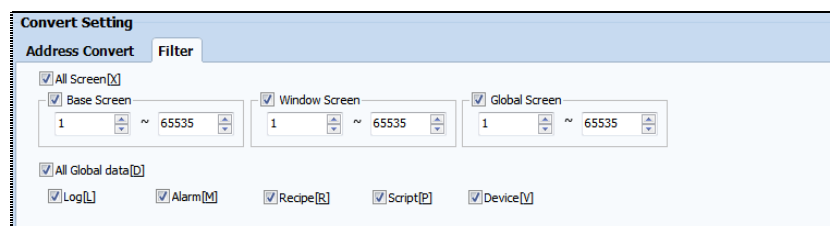


[Fig. Address]

| Convert address properties | | Description |
|----------------------------|---|---|
| Convert Rule [C] | Find & Replace | Convert the source address to the target address. |
| | Increase/Decrease | The address is assigned by converting the source address using the increase value. <div style="border: 1px dashed black; padding: 2px; display: inline-block;">Inc/Decrease value[I] : 0</div> |
| | Calculation | Using the source address, addresses are assigned by increasing the offset value. <div style="border: 1px dashed black; padding: 2px; display: inline-block;">Start Address[A] : Increase Value[N] : 0</div> |
| | User Define(1:1) | |
| | User Define(1:N) | |
| Source address [S] | Set the address type and range of the source address. <div style="border: 1px dashed black; padding: 2px; display: inline-block;">Source address[S] : ALL ALL ALL PLC2 SYS LATCH Special</div> | |
| Target address [T] | Set the address type and range of the target address. <div style="border: 1px dashed black; padding: 2px; display: inline-block;">Target address[T] : PLC2 ALL PLC2 SYS LATCH Special</div> | |
| Search [H] | Search using [Address type] and [Source address]. | |
| Convert [V] | Convert the [Address type] to the [Target address], according to the rule. | |

(2) Filter

The result values returned in address search can be filtered using the desired conditions.



[Fig. Filter]

| Filter properties | Description |
|---------------------|---|
| All screen [X] | This setting allows filtering of all screens. |
| Base screen | Add base screen to the filtering conditions. |
| Window screen | Add window screen to the filtering conditions. |
| Global screen | Add global screen to the filtering conditions. |
| All global data [D] | This setting allows filtering of global data. |
| Log [L] | Add log to the filtering conditions. |
| Alarm [M] | Add alarm to the filtering conditions. |
| Recipe [R] | Add recipe to the filtering conditions. |
| Script [P] | Add script to the filtering conditions. |
| Device [V] | Add device (PLC) with PLC address assigned to the filtering conditions. |

20.3.2 Conversion result

A list of results from using the [Search] or [Convert] button on the values set for the [Source address] and [Target address] is shown.

| Convert Result | | | | | | | |
|----------------|----------|--------|------|----|-----|----------------------|----------------------|
| No. | Category | Number | Kind | ID | R/W | Source address | Target address |
| 1 | LOG | | Log2 | 1 | R | [SYS:00510:16:DEC] | [SYS:00510:16:DEC] |
| 2 | LOG | | Log2 | 1 | R | [SYS:00510:16:DEC] | [SYS:00510:16:DEC] |
| 3 | LOG | | Log2 | 1 | R | [SYS:00599.00:1:DEC] | [SYS:00599.00:1:DEC] |

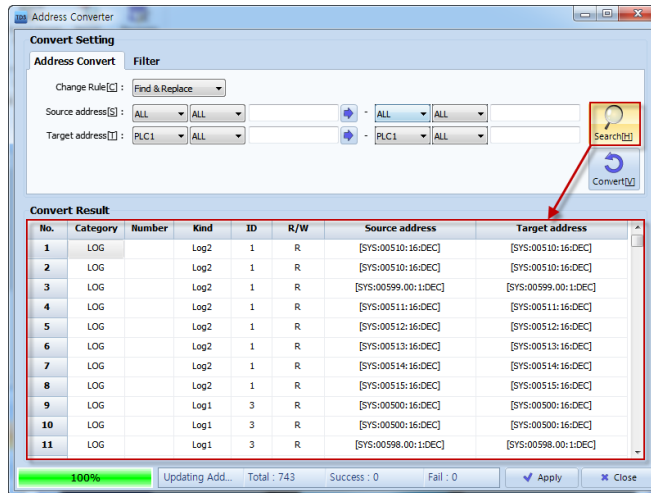
[Fig. Search & conversion results]

| Conversion result properties | Description |
|------------------------------|---|
| Number | The order number of the searched data is shown. |
| Position | The position of the object where the address is used is shown. |
| Screen number | The screen number of the object where the address is used is shown. |
| Type | The type of the object where the address is used is shown. |
| ID | The ID value of the object is shown. |
| Read/Write | Shows whether the address is a write or read object. |
| Target Address | This is the address to change to. The search results for [Target address]-[Search] are displayed. |
| Target address | This is the address that is changed using the [Target address] setting. These can be changed individually. |

20.3.3 Use address conversion

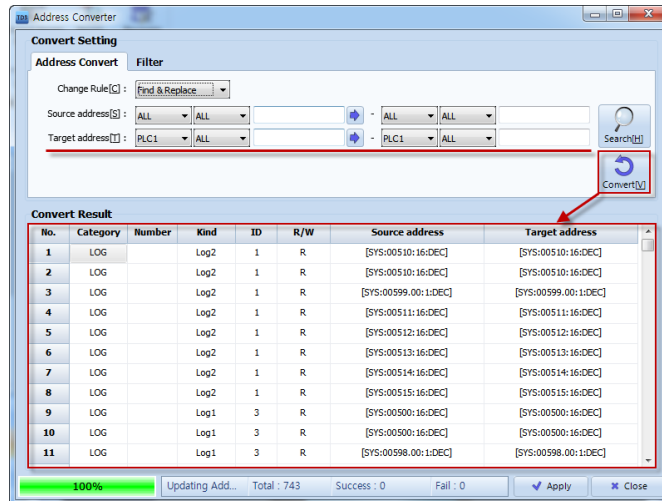
Address conversion can be used in the order [Search]-[Convert]-[Apply].

(1) Set the [Address] and [Filter] for [Target Address], and [Search].



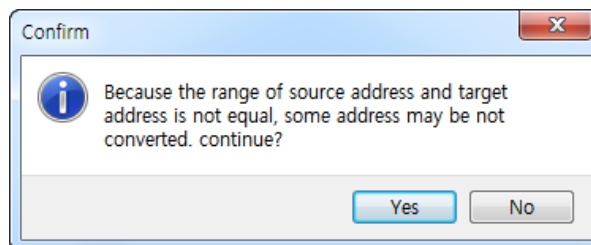
[Fig. Use Address Convert 1]

(2) Set the [Target Address] and [Convert].



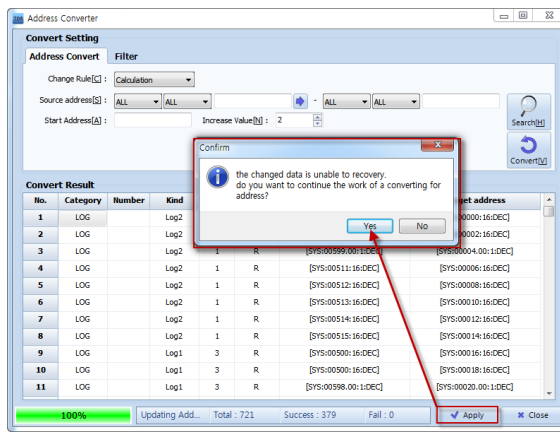
[Fig. Use Address Convert 2]

(3) If an address error occurs, the following warning window appears. The address where the error has occurred can be viewed and edited.



[Fig. Use Address Convert 3]

(4) Confirm using the [Apply] button. When Yes is selected, address conversion is completed.

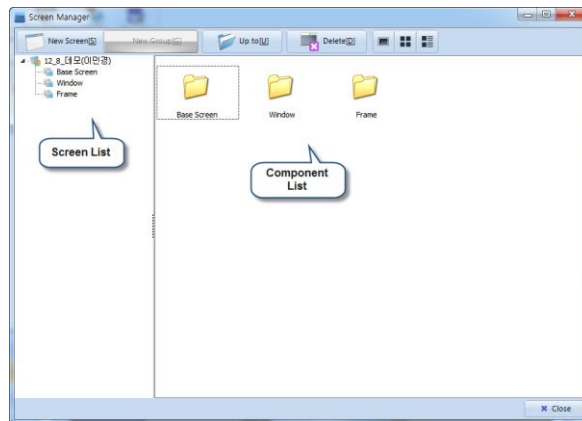


[Fig. Use Address Convert 4]




20.4 Screen Manager



All screens used in the project can be managed simply and conveniently. Functions are provided for viewing multiple screens, changing individual properties, and multiple copy and delete. These functions can be used more conveniently in illustration projects that require a large number of screens.

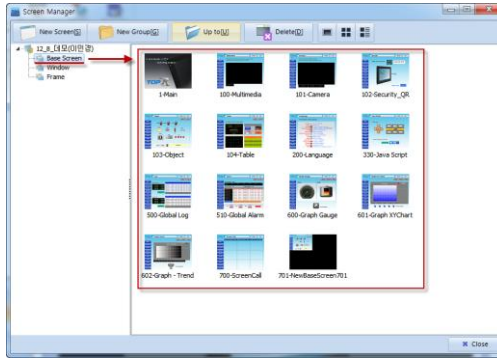


[Fig. Screen Management]

| Screen management button | Description |
|---|---|
| New screen [S] | Add a new screen to the selected screen list. |
| New group [G] | Create a new group in the selected screen list. |
| Up [U] | Move to the parent folder. |
| Delete [D] | Delete the selected list. |
|  | Change the list style to large icons. |
|  | Change the list style to small icons. |
|  | Change the list style to details. |

20.4.1 Screen / composition list

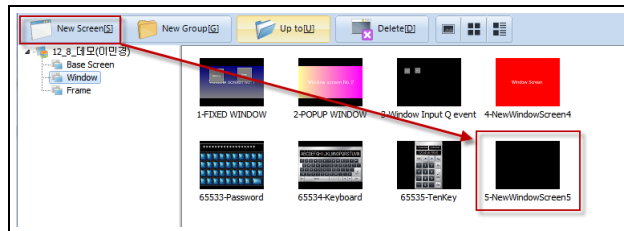
If [Screen list] is selected, a list is shown. In [Screen management], [Ctrl+C] and [Ctrl+V] can be used to copy and paste multiple screens in batch.



[Fig. Screen Management]

(1) Add new screen

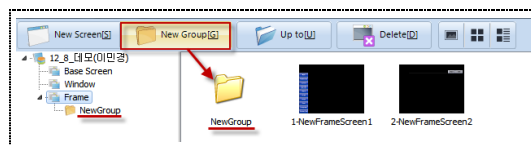
When a screen list is selected and the [New screen] button is pressed, a new screen is added, as shown in the figure below. Also, by selecting a screen and pressing [Ctrl+C] and [Ctrl+V], a new screen can be added.



[Fig. Add new screen]

(2) Add new group

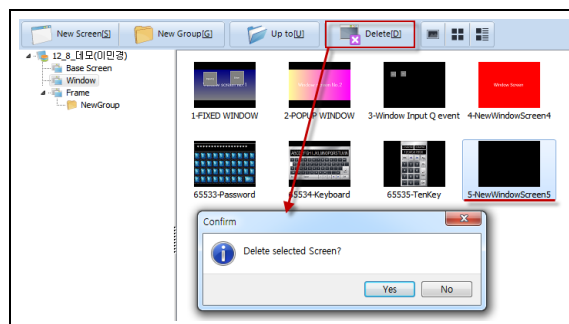
When a screen list is selected and the [New group] button is pressed, a new folder is added, as shown in the figure below. The screen can be managed by folder.



[Fig. Add new group]

(3) Delete

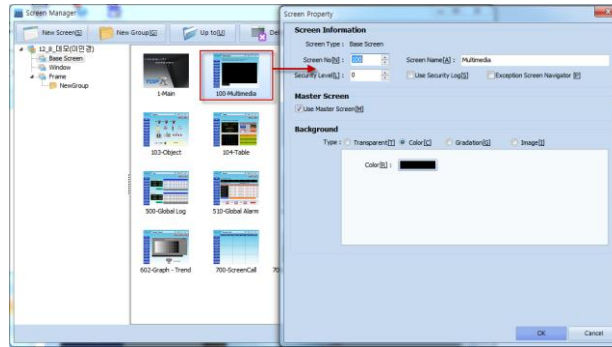
If a screen is selected and the [Delete] button is pressed, the delete confirmation screen appears, as shown in the following figure.



[Fig. Delete]

(4) Screen properties

Through [Screen management], [Screen properties] can be changed and viewed. If a screen is selected and double clicked with the mouse as shown in the figure below, the [Screen properties] window appears.

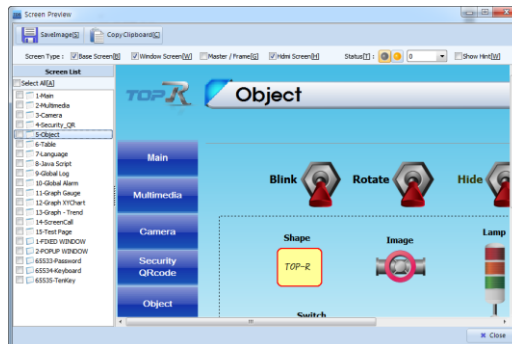


[Fig. Screen properties]

20.5 Screen preview





[Screen preview] is a function that saved the screen of an illustration project as an image file. This tool is used to conveniently save illustration screens as image files when documenting a project.



[Fig. Screen preview]

| Screen preview button | Description |
|-----------------------|--|
| Save image [S] | Save the selected screen. |
| Copy to clipboard [C] | Copy the selected screen to the clipboard. |

| Screen preview properties | | Description |
|---------------------------|---|---|
| Screen type | Base screen [B] | Add a base screen to the screen list. |
| | Window screen [W] | Add a window screen to the screen list. |
| | Master/frame [G] | Add a master/frame screen to the screen list. |
| Status [I] |  | Change the status of the object image on the screen to OFF. |
| |  | Change the status of the object image on the screen to ON. |
| | 0 | Images with a security level setting are shown. |

| | | |
|---------------|----------------|---|
| | | The security level is set between 1 and 15. |
| Show hint [H] | | The [Hint] for the object is displayed. [Hint] shows the name of the object. |
| Screen list | Select all [A] | Select all images in the screen list. |

20.5.1 Save screen image

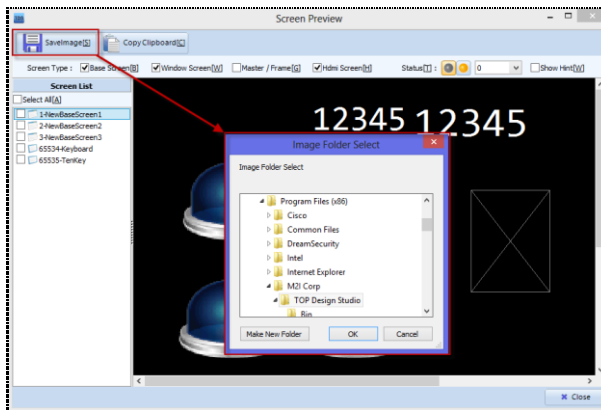
If the [Status] info is changed to 'ON' as shown in the figure below, and [Show hint] is checked, the object is activated, and the name is shown on the screen.



[Fig. Save screen image 1]

Select the screen to save and press the [Save image] button. A window for selecting the save path appears, as shown in the figure below. The save image is saved as a bitmap (.BMP) file.

If the [Copy to clipboard] button is selected, the item can be copied and used.

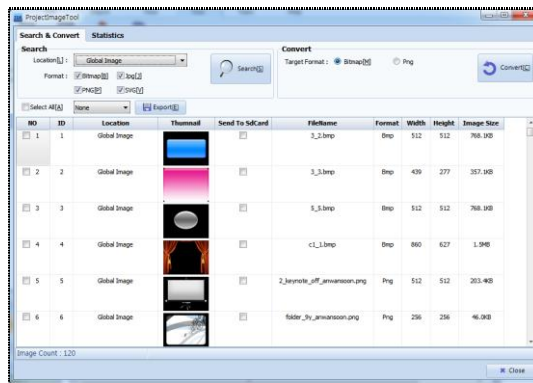


[Fig. Save screen image 2]

20.6 Project image management



This function is used to search images used in the project. The save type is selected and exported to a file, or the size of the images used can be viewed and managed. Select [.bmp] or [.png] to save the image.

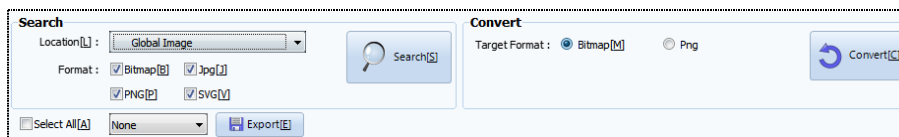


[Fig. Project image management]

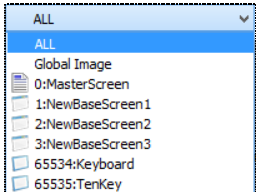
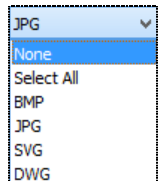
| Button | Description |
|-------------|---------------------------------------|
| Search [S] | Search project images. |
| Convert [C] | Convert to the selected image format. |
| Export [E] | Export the selected image. |

20.6.1 Search & conversion

Search by selecting the image position and format. Results can be converted into different formats or the same format, and saved as a file.









[Fig. Search & conversion]


| Search & conversion properties | | Description |
|--------------------------------|---------------|--|
| Search | Location [L] | Set the image search path.  |
| | Format | Select the image format and search. Bmp[B], Jpg[J], Png[P], Svs[B] |
| Convert | Target format | Set the format to change the selected image to. Bmp[B], Png[P] |
| Select all [A] | | All searched images can be selected, or images can be selected by setting the file format.  |

20.6.2 Search list

This list shows the image search and image conversion results. The file size and file name can be viewed, and files in the list can be selected for saving and conversion.

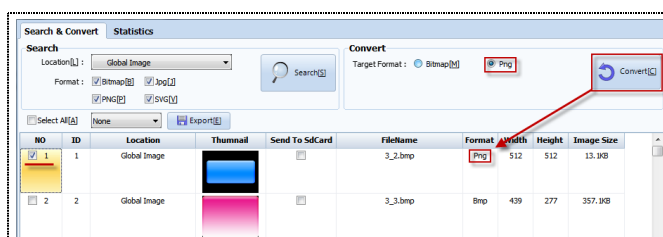
| NO | ID | Location | Thumbnail | Send To SdCard | FileName | Format | Width | Height | Image Size |
|--------------------------|----|--------------|---|--------------------------|-----------------------------|--------|-------|--------|------------|
| <input type="checkbox"/> | 1 | Global Image |  | <input type="checkbox"/> | 3_2.bmp | Bmp | 512 | 512 | 768.1KB |
| <input type="checkbox"/> | 2 | Global Image |  | <input type="checkbox"/> | 3_3.bmp | Bmp | 439 | 277 | 357.1KB |
| <input type="checkbox"/> | 3 | Global Image |  | <input type="checkbox"/> | 5_5.bmp | Bmp | 512 | 512 | 768.1KB |
| <input type="checkbox"/> | 4 | Global Image |  | <input type="checkbox"/> | c1_1.bmp | Bmp | 860 | 627 | 1.5MB |
| <input type="checkbox"/> | 5 | Global Image |  | <input type="checkbox"/> | 2_keynote_off_anwansoon.png | Png | 512 | 512 | 203.4KB |
| <input type="checkbox"/> | 6 | Global Image |  | <input type="checkbox"/> | folder_sy_anwansoon.png | Png | 256 | 256 | 46.0KB |

[Fig. Search list]

| Search list properties | Description |
|---|---|
| NO | This is the order of the searched image list. Check to select images. |
| ID | The ID values used in the project are shown. |
| Location | The image save location of the project is shown. |
| Thumbnail | The images used in the project are shown. |
| Send To SD card | The selected image is saved to the SD card. (Warning: If an SD card is not inserted, the image may not be displayed properly.) |
| FileName | The image file name is shown. |
| Format | The image file format is shown. |
| Width | The width of the image is shown. |
| Height | The height of the image is shown. |
| Image Size | The image file size is shown. |
|  | If the title of the column is clicked, image alignment is performed. [Descending], [Ascending] |

(1) Change image format

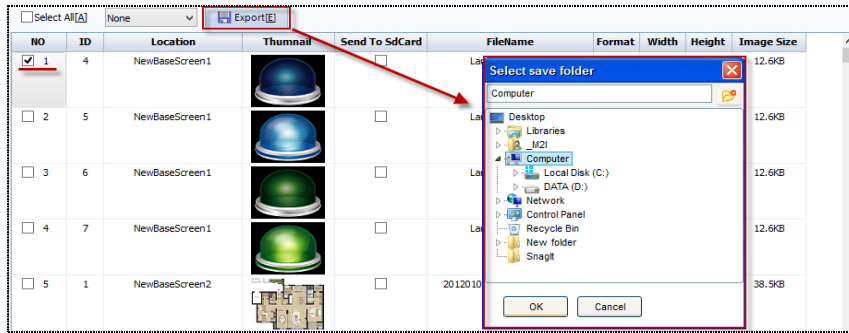
To change the image format, select [Target format] and [Target image]. Click the [Convert] button. As shown in the image below, the image file format is changed.



[Fig. Change image format]

(2) Exporting images

The selected image can be saved as a file using the [Export] button.



[Fig. Exporting images]

20.6.3 Statistics

The size and number of all image files used in the project are shown by location. The total number used, and the capacity can be viewed.

| Location | | Bitmap | | Jpg | | Svg | | Mbs | | Total | |
|----------|------------------|-----------|---------------|----------|----------------|-----------|----------------|----------|-----------|-----------|---------------|
| | | Count | Size | Count | Size | Count | Size | Count | Size | Count | Size |
| 1 | Global Image | 24 | 44.9MB | 2 | 73.6KB | 0 | 0B | 0 | 0B | 26 | 45.0MB |
| 2 | MasterScreen | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 3 | NewFrameScreen1 | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 4 | NewFrameScreen2 | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 5 | Main | 0 | 0B | 1 | 57.6KB | 0 | 0B | 0 | 0B | 1 | 57.6KB |
| 6 | Multimedia | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 7 | Camera | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 8 | Security_QR | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 9 | Object | 2 | 25.1KB | 0 | 0B | 16 | 141.6KB | 0 | 0B | 18 | 166.7KB |
| 10 | Table | 0 | 0B | 0 | 0B | 4 | 11.9KB | 0 | 0B | 4 | 11.9KB |
| 11 | Language | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 12 | Java Script | 6 | 880.4KB | 0 | 0B | 1 | 2.1KB | 0 | 0B | 7 | 882.5KB |
| 13 | Global Log | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 14 | Global Alarm | 0 | 0B | 0 | 0B | 2 | 15.3KB | 0 | 0B | 2 | 15.3KB |
| 15 | Graph Gauge | 1 | 260.8KB | 1 | 5.9KB | 1 | 6.1KB | 0 | 0B | 3 | 272.4KB |
| 16 | Graph XYChart | 1 | 15.4KB | 0 | 0B | 0 | 0B | 0 | 0B | 1 | 15.4KB |
| 17 | Graph -Trend | 0 | 0B | 2 | 130.0KB | 0 | 0B | 0 | 0B | 2 | 130.0KB |
| 18 | ScreenCall | 2 | 21.7KB | 0 | 0B | 0 | 0B | 0 | 0B | 2 | 21.7KB |
| 19 | NewBaseScreen701 | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 20 | FIXED WINDOW | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| 21 | POPUP WINDOW | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B | 0 | 0B |
| | TOTAL | 37 | 46.4MB | 8 | 437.9KB | 24 | 177.0KB | 0 | 0B | 69 | 47.0MB |

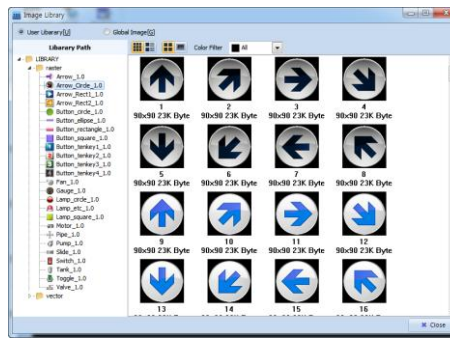
[Fig. Statistics]

| Statistic properties | | Description |
|----------------------|-------|--|
| Location | | The location of base, window, and global screens are displayed. |
| File format | Count | The total number of image files in the screen is displayed. |
| / Total | Size | The total size of the image files in the screen is displayed. |
| | | If the title of the column is clicked, image alignment is performed. [Descending], [Ascending] |







20.7 Image library



Functions for registration and management of [User images] provided by default or [Global data] are provided. Data used in [Alarm]-[Solution] (pdf, text, image) must be registered in [Global image] to be used. When a local image is registered once, the image can be conveniently applied to a project.



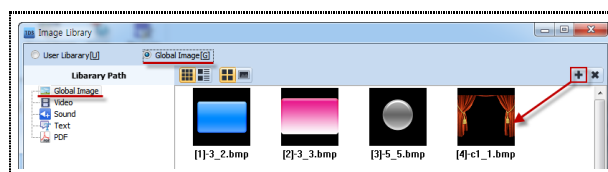
[Fig. Image library]

| Image library button | Description |
|---|--|
|  | Images are shown with large icons. |
|  | Images are shown using the details view. |
|  | Images are shown with a small size. |
|  | Images are shown with a large size. |
| Color filter | Select the colors to be shown in the image list. |
|  | Add an image to the selected path. |
|  | Delete the selected image. |

| Image library properties | Description |
|--------------------------|---|
| User library [U] | This is the order of the searched image list. Check to select images. |
| Global image [G] | The ID values used in the project are shown. |

20.7.1 Global image

This data is registered manually by the user. The list is divided into Image, Video, Sound, Text, and PDF. Select [Library path] and click the [+] button to register the image. If the image is registered, an [ID value] is assigned automatically next to the file name. This value can be used as the [Solution item number] for [Alarm]-[Solution], or used through [Word indirect].

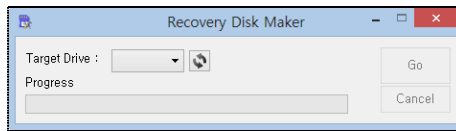


[Fig. Global image]

20.8 Make recovery disk

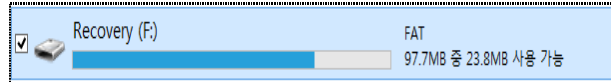


If the TOPR does not operate, and a critical error has occurred, the TOPR must be initialized by using a booting disk to initialize the TOPR, an SD card must be used. The OS, Hydra, Daemon and Util of the TOPR are initialized, together with all data. (Warning: If initialize is begun, previous data cannot be restored.)



[Fig. Make recovery disk]

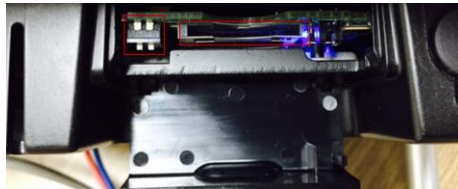
Select the Target Drive and create a recovery disk. The disk created is shown in the figure below.



[Fig. Recovery disk]

20.8.1 Recovery disk usage method

If the SD card case in the TOPR process part is opened, the SD card slot and white switches in the following figure can be seen. These are used for TOPR initialization and restoration.



[Fig. TOPR process part (SD Card)]

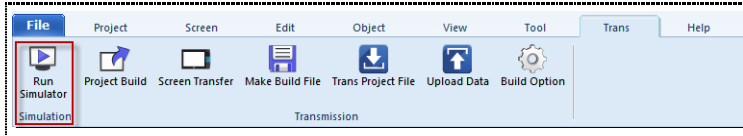
- (1) Open and view the SD Card case of the process part.
- (2) Insert the SD card made as the recovery disk into the slot.
- (3) Lower the two white switches.
- (4) Wait until the TOPR automatically reboots and starts.
- (5) When recovery is completed, remove the SD card, and return the switch to the previous status.

CHAPTER 21 Simulator and Transmission Menu

CHAPTER 21 - Simulator and Transmission Menu

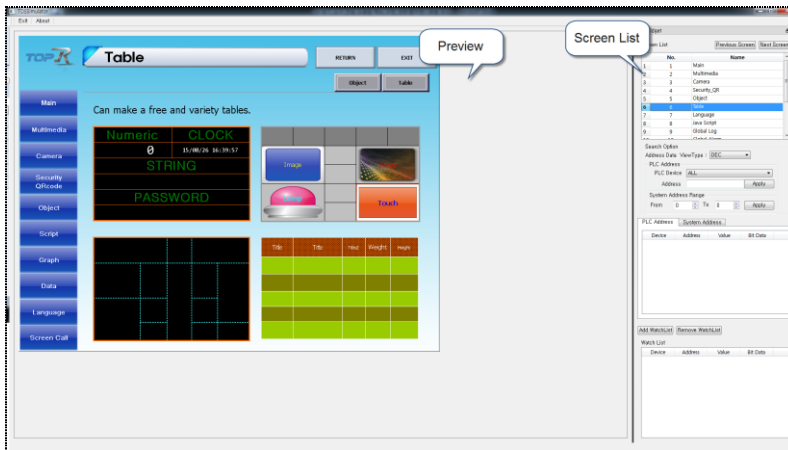
21.1 Simulator

The [Simulator] function allows the project to be operated on the PC, without sending to the touchscreen. Said again, the simulator runs on the PC, like screens executed in the TOPR. The address info used can be observed in detail. To execute, click the execute icon as shown in the figure below. Alternatively, use the [F9] shortcut.



[Fig. Simulator menu]

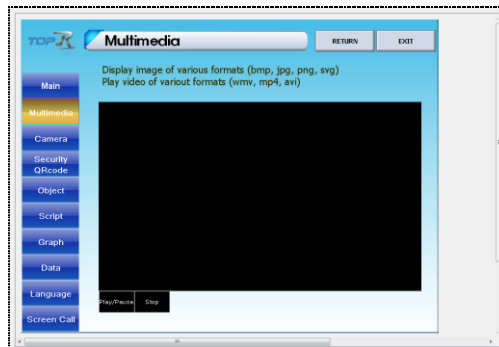
If the play screen is clicked with the mouse cursor, the operation is identical to pressing the TOPR screen with the finger. In the preview screen on the left, the play screen can be viewed. in the screen list on the right, the status or value of the address can be displayed and controlled.



[Fig. Simulator window]

21.1.1 Preview screen

The preview screen is identical to the TOPR screen. If the mouse is used to click instead of touch, the touch action of the illustration can be seen.

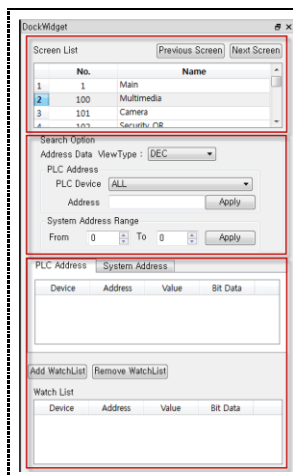


[Fig. Preview screen]

21.1.2 Address List

The address list has a function that shows info on the objects and PLC addresses used in the preview, and a function for manual input into the address. This function is provided to verify that the current object and address operate normally, while viewing screen information.

The address list is divided into three major parts. the [Screen list] shows a screen list. [Search options] are used to search addresses, and [Watch list] is used to observe address info.

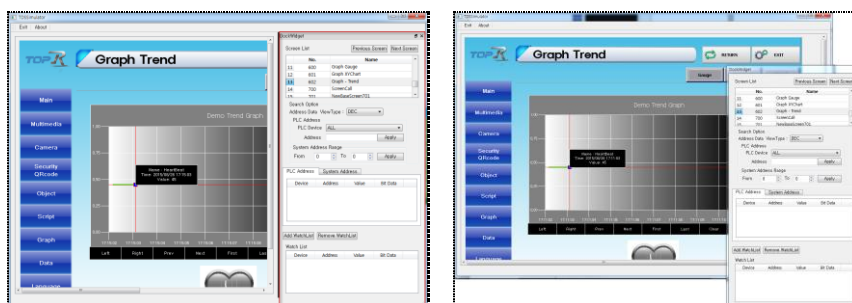


[Fig. Address List]

| Address list menu | Description |
|-------------------|--|
| Screen List | A screen list is displayed. By selecting with the mouse, the corresponding screen can be brought up. |
| Search Option | This function is used to search addresses used in the illustration project. |
| Watch List | This function is used for intensive observation of object operation and address changes. |

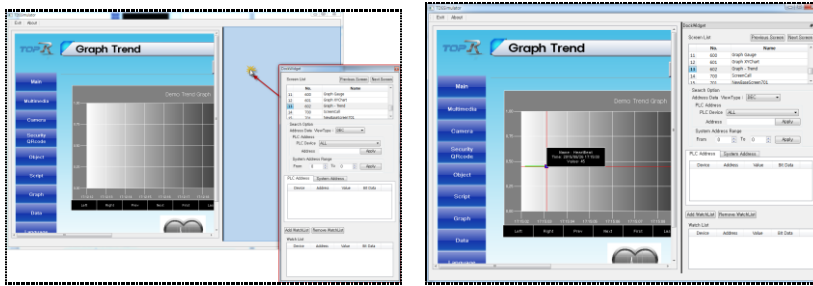
(1) Unfix address list

Like the docking windows in the screen edited in the TDS, windows fixed on the screen can be released using the address list of the simulator. If the address list window is dragged with the mouse as shown in the figure below, the window can be pulled out.



[Fig. Unfix address list]

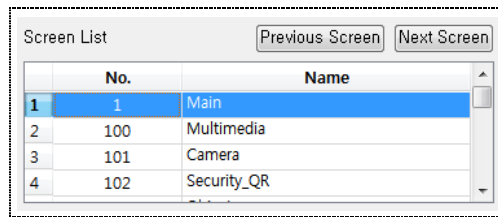
To fix the address list window in place again, drag with the mouse and restore to the original position. As seen in the following figure, the part that is fixed turns blue.



[Fig. Fix address list]

21.1.3 Address list

A screen list of the illustration that is run is shown. To view the screen, click the [Button] or [Screen number]. The screen is brought up immediately.

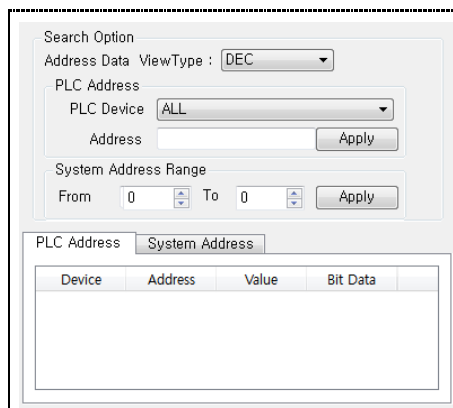


[Fig. Screen list]

| Screen list properties | Description |
|------------------------|--------------------------------|
| Previous Screen | Brings up the previous screen. |
| Next Screen | Brings up the next screen. |
| No | Shows the screen number. |
| Name | Show the screen name. |

21.1.4 Search Option

This function is used to search or change addresses that are active in the preview screen. PLC address and SYS address parts are provided. A SYS address refers to the TOPR internal address.

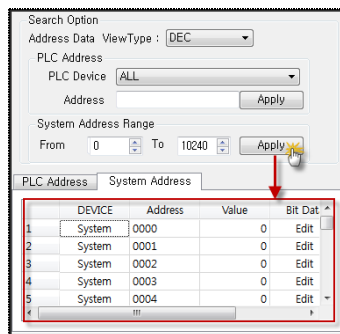


[Fig. Search options]

| Search Option | | Description |
|------------------------|------------|--|
| Address Data View Type | | Set the type of the address to search. [DEC], [UDEC], [HEX], and [BIN] options are provided. |
| PLC Address | PLC Device | Set the PLC device. |
| | Address | Set the PLC address. |
| | Apply | Set the PLC device and address, then click the button to display the PLC address search list. |
| System Address Range | From | Enter the start address to begin system address search. Input from 0 to 10240 is possible. |
| | To | Enter the end address for system address search. Input from 0 to 10240 is possible. |
| | Apply | Set the system search address and click the button. The system address search list is displayed. |
| PLC Address list | | The PLC address search list is displayed. |
| System Address list | | The system address search list is displayed. |

(1) PLC Address, System Address search

When the search address is set and the [Apply] button is clicked, the search results are shown.



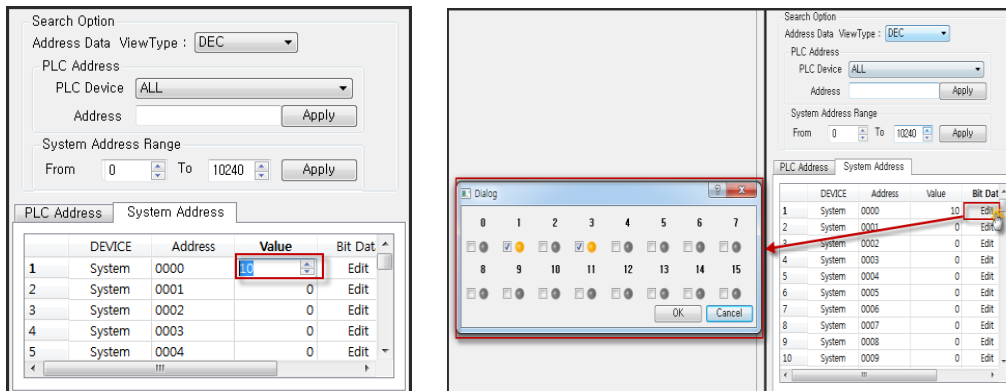
[Fig. Address search]

| Address properties] | Description |
|---------------------|---|
| Device | The name of the searched device is displayed. |
| Address | The address of the searched device is displayed. |
| Value | The status value of the address is displayed, using decimal numbers. Here, the value can be entered manually by the user. |
| Bit Data | The status value of the address is displayed, using binary numbers. Here, the bit status can be entered manually by the user. |

(2) PLC Address, System Address value change

Using the [Value] and [Bit Data] of the searched addresses, the value of these addresses can be changed. The value is shown using decimal numbers, and Bit data is shown using binary numbers. If the

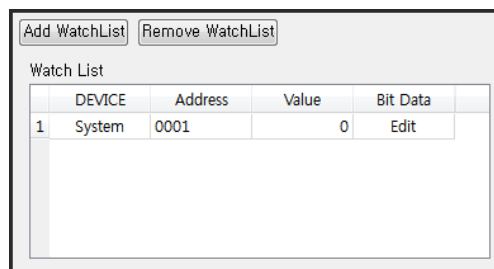
address value is changed, the Value and Bit values change. To change Value or Bit, double click the applicable column with the mouse.



[Fig. Address value change]

21.1.5 Watch list

The searched address is placed in the watch list, and the address value can be seen changing with the action. This function is used to view addresses of interest to the user, or addresses used frequently in detail.

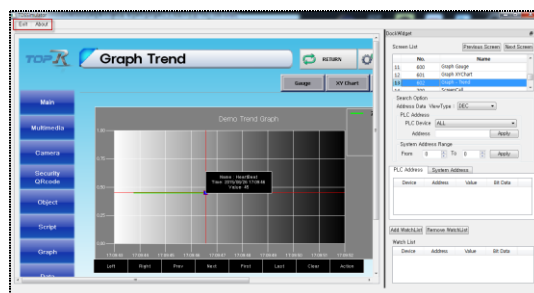


[Fig. Address watch list]

| Watch List button | Description |
|-------------------|---|
| Add WatchList | Add an address selected in the search results list to the watch list. |
| Remove WatchList | Remove the selected address from the watch list. |

21.1.6 Simulator information and exit

The simulator is a program provided in TDS, and therefore has versions. To see the version, use the [About] button.

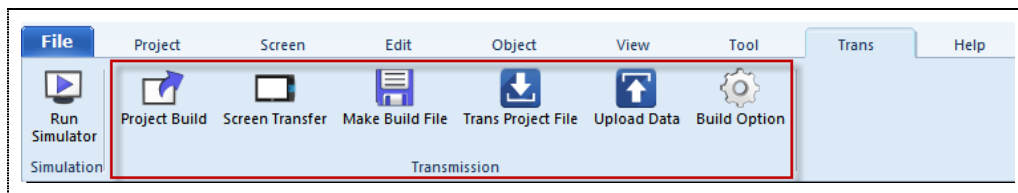


[Fig. Simulator information and exit]







| Simulator button | Description |
|------------------|-------------------------------------|
| About | View the simulator program version. |
| Exit | Exit the simulator. |

21.2 Transfer

These functions are used to transfer an illustration project to the TOPR. These functions are [Project build], [Screen transfer], [Make build file], [Trans project file], [Upload data], and [Build option]. Functions to transfer the project to the TOPR, download projects or global data in the TOPR, upload other illustration projects, and set connections are provided.



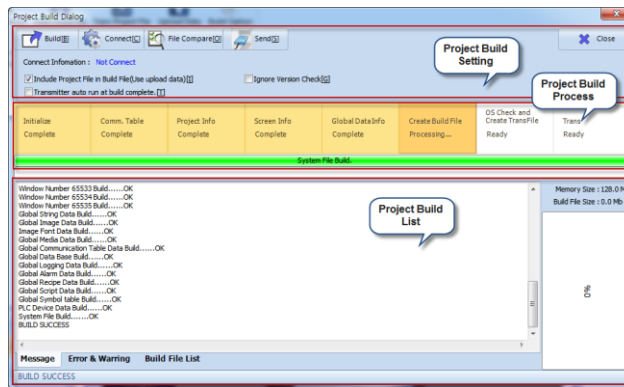
[Fig. Transfer]

| Icon | Description |
|---|---|
|  Project build | An illustration project is built to check for errors and transfer to the TOPR. |
|  Screen transfer | The illustration in the TOPR and the PC project illustration are compared. If they are different, only the selected screens can be transferred. |
|  Make build file | Create a file for transfer using TOPR. Unlike project transfers from the PC to the TOPR, only a transfer file that can be transferred by the TOPR is created. |
|  Trans project file | Download a build (.hbx) on the PC to the TOPR. |
|  Data upload | Upload projects or global data in the TOPR to the PC. |
|  Build option | Set the built settings for the illustration project, and the connection with the TOPR. |

21.2.1 Project build

This is used to build an illustration project for which work has been completed. It is used to transmit to TOPR. Also, it is used when creating an illustration project file.

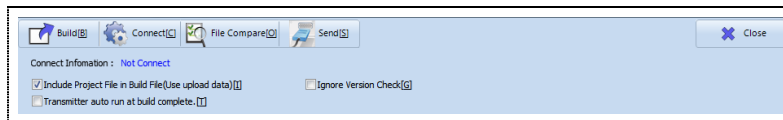
Project build is divided into three major parts, as shown in the figure below. A project built settings part, a build progress part, and a list that is generated during the build are shown.



[Fig. Project build]

21.2.2 Project build setting


TOPR connection settings, build, transfer, and properties functions are provided in project build settings. Also, a function for creating a build file is provided. The TOPR connection settings part is especially important.

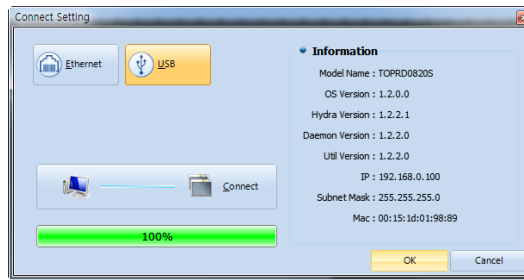


[Fig. Project build setting]



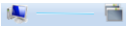
| Project build setting | Description |
|--|--|
| Build [B] | Begin TDS project build. |
| Connection [C] | A connection settings window to connect the TOPR to the TDS on the PC appears. |
| Compare files [O] | The project saved in the TOPR and the project file on the PC are compared. |
| Transfer [S] | Transfer a project built using TOPR. |
| Connection info | The status of the TOPR and TDS connection is displayed. |
| Include project file in build file [I] | This setting is used to transfer the project build file directly after building, without using [Upload]. |
| Ignore version check [G] | When transferring to TOPR, transfer without checking the OS, Daemon, Hydra, and Util versions. |
| Transmitter auto run at build complete [T] | If the TOPR is connected, the file is transferred automatically to the TOPR after building. |
| Close | Close the project build window. |

21.2.3 Project build connection setting

These are the settings for connecting the TOPR and TDS.  When [Transfer] is clicked, the connection settings window in the following figure appears. The settings window changes depending on the connection device set by the user. Also, info on the connected TOPR can be viewed. To use and connect only once, refer to [Transfer tab]-[Connection settings].

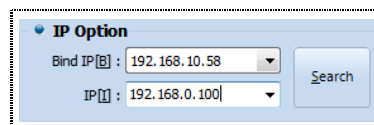


[Fig. Project build connection]

| Connection setting | Description |
|---|---|
|  Ethernet [E] | Set the TOPR and TDS connection to Ethernet. To use this option, the Pc and TOPR must be connected with ethernet. When making the setting, the assigned IP info must be checked. |
|  USB [U] | Set the TOPR and TDS connection to USB. This option can be used by connecting to the front USB port of the TOPR, without making settings. |
|  Connection [C] | Connect with the TOPR using Ethernet or USB, depending on the setting. |
| Connection info | Info on the connected TOPR is shown. |
| OK | Save the current status, and close. |
| Cancel | Close, without saving the current status. |

(1) Ethernet connection method

To use ethernet, IP settings must be made. Check the IP status of the PC connecting to the TOPR, and the status of the IP set for TOPR. Also, when using a certified IP, the setting can be performed as-is. However, when using private IPs, the same network position must be used.



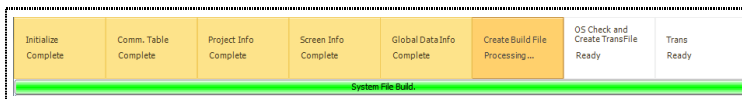
[Fig. Ethernet connection method]

| Ethernet connection | Description |
|---------------------|--|
| Bind IP [B] | Select the IP of the PC. |
| IP [I] | Select the IP set for the TOPR. |
| Search [S] | If private IP is used, and the same network is used, the IP connected to TOPR can be searched and found. |

To check own IP, use the Command window in Windows. If [Window]+[R] is pressed on the keyboard, the following CMD window appears. By entering [ipconfig-all], assigned IP info can be viewed.

21.2.4 Project build process

The project built completion process is shown. The parts where problems occur in the built process can be identified.

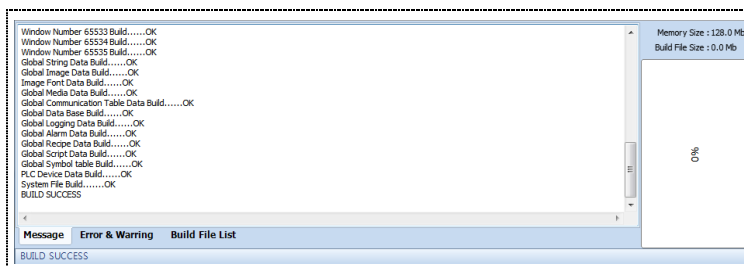


[Fig. Project build process]

| Build process | Description |
|-----------------------------------|---|
| Initialize | The build file is initialized. |
| Create comm. table | Set a comm table to communicate with the PLC. |
| Project info | Create HMI setting info for the project. |
| Screen info | Create project screen info. |
| Global data info | Create global data info such as log, alarm, and security info, etc. |
| Create build file | Create a build file using previous data. The build process has been completed up to this stage. |
| Build system file | Build the system file to run TOPR. |
| Check OS and create transfer file | The version of the OS transferred in TDS and the version of the OS in TOPR are checked, and a transfer file is created. |
| Transfer | The illustration project is transferred to TOPR. |

21.2.5 Project build list

A list indicating project built progress and an error list are shown. Also, build file memory can be viewed.

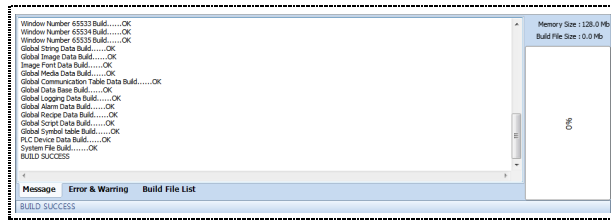


[Fig. Project build list]

| Build list properties | Description |
|-----------------------|---|
| Message | Build process messages are shown. |
| Errors and warnings | A list of errors and warnings that occur during the build is shown. |
| Build file list | The size and description of the built file is shown. |
| Memory size | The memory size of TOPR is displayed. |
| Build file size | The size of the built file is shown. |

(1) Message

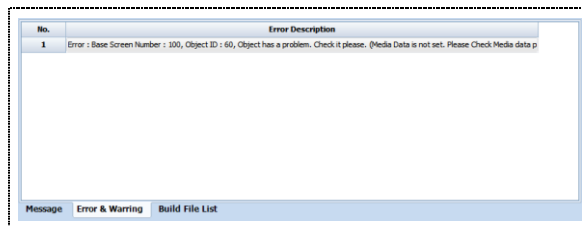
The items completed in the build process are shown as messages.



[Fig. Message]

(2) Error list

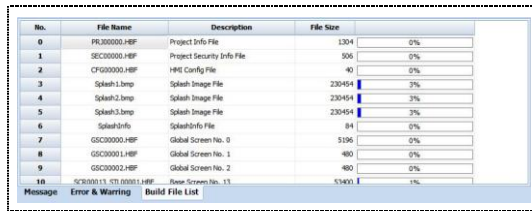
Errors that occurred during the build are shown in a list. Also, descriptions of the errors that occurred are shown.



[Fig. Error list]

(3) Build file list, memory info

The name, description, and file size of the file created after the build is completed are shown in a list.

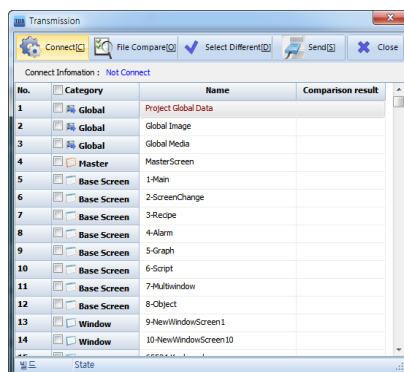


| No. | File Name | Description | File Size | Progress |
|-----|-----------------------|----------------------------|-----------|----------|
| 0 | PR00000.HBF | Project Info File | 1304 | 0% |
| 1 | SEC00000.HBF | Project Security Info File | 506 | 0% |
| 2 | CF00000.HBF | HMS Config File | 40 | 0% |
| 3 | Splash1.tmp | Splash Image File | 230454 | 3% |
| 4 | Splash2.tmp | Splash Image File | 230454 | 3% |
| 5 | Splash3.tmp | Splash Image File | 230454 | 3% |
| 6 | SplashInfo | SplashInfo File | 84 | 0% |
| 7 | GSC0000.HBF | Global Screen No. 0 | 5196 | 0% |
| 8 | GSC0001.HBF | Global Screen No. 1 | 480 | 0% |
| 9 | GSC0002.HBF | Global Screen No. 2 | 480 | 0% |
| 10 | SC00011_071_00011.HBF | Screen Screen No. 11 | 51400 | 1% |

[Fig. Build file list]

21.2.6 Transfer screen

The illustration project currently being drawn in the PC and the illustration saved on the connected TOPR are compared. The projects are compared, and if there are screens that differ, particular screens can be selected and transferred to the TOPR.

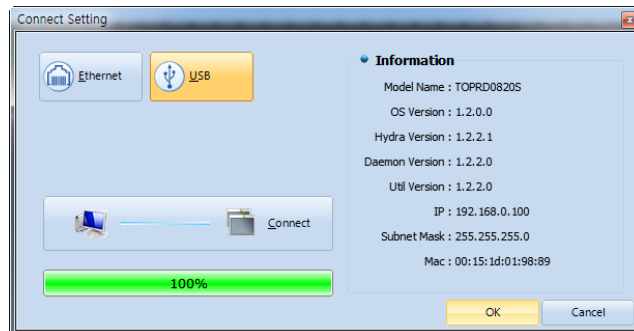


[Fig. Transfer screen]

| Screen transfer properties | Description |
|----------------------------|---|
| Connect [C] | Connect the PC and TOPR. |
| File Compare [O] | The illustration project currently being drawn in the PC and the illustration file active in the connected TOPR are compared. |
| Select Different [D] | If the comparison shows the files to be different, all of the different screens are selected. |
| Send [S] | Among the different screens, the screens selected are transferred to the TOPR. |
| Close | Close screen transfer. |

(1) Connect

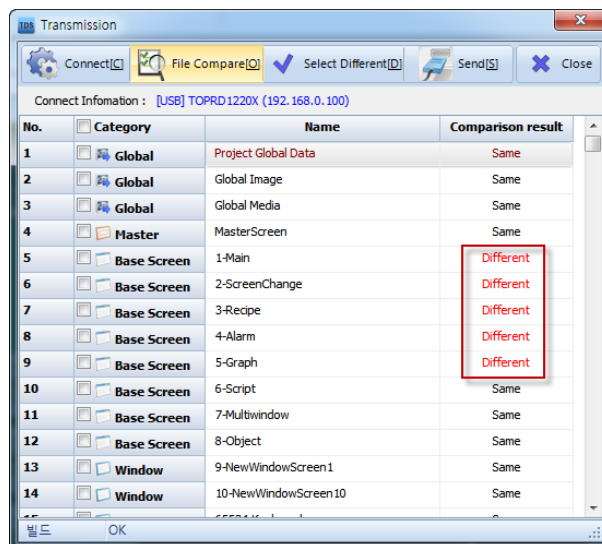
The PC and TOPR are connected for transfer of the illustration project.



[Fig. Connect]

(2) File compare

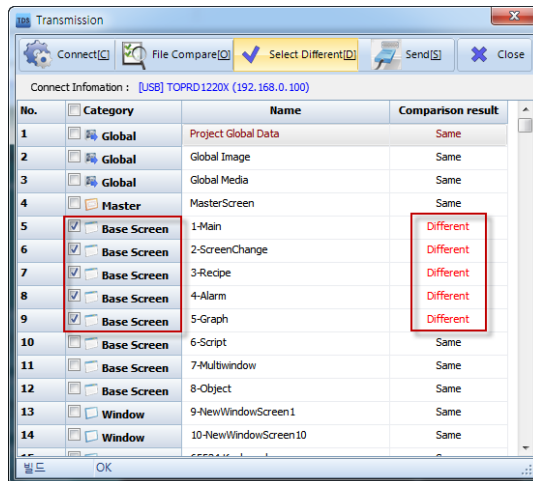
The illustration being drawn on the PC and the illustration file active in the TOPR are compared, and the comparison result is displayed.



[Fig. File compare]

(3) Select different

The illustration being drawn on the PC and the illustration file active in the TOPR are compared. If the projects are different, all of the difference screens are selected.



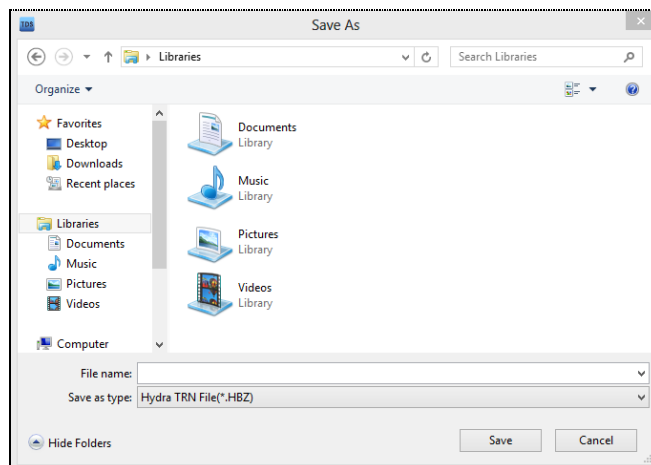
[Fig. Select different]

(4) Transfer

The illustration being drawn on the PC and the illustration file active in the TOPR are compared. The different screens are selected, and the selected files are transferred to the TOPR from the PC. If the 'Send[S]' button is pressed, the transfer is performed immediately.

21.2.7 Make build file

A transfer file (*.HBZ) is created. This option is used to create a transfer file (*.HBZ) only, instead of building the project. By transferring a transfer file (*.HBZ) to the TOPR, more than one project can be run in the TOPR.

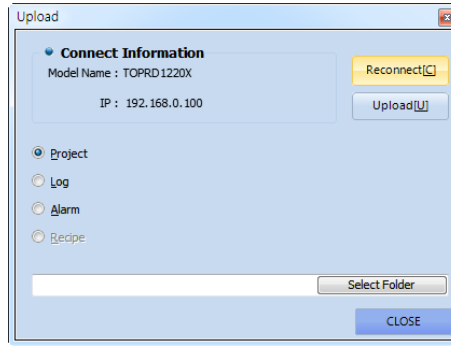


[Fig. Make build file]

The connection settings process can be seen in detail in [Project build connection settings].

21.2.8 Data upload

This is used when project info or global data on the TOPR is uploaded to the PC. Said again, if the user wishes to view log, alarm, recipe or project files in the PC environment, this function can be used. To upload, the connection settings must first be performed, as with [Download].

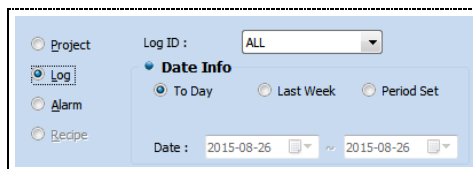


[Fig. Data upload]

| Upload properties | Description |
|-------------------|---|
| Reconnect [C] | If the connection has not been established, or when connecting with a different TOPR, the connection settings window is brought up again. |
| Upload [U] | Begin upload for the selected file. |
| Project | Select an illustration project active in TOPR as the upload data. |
| Log | Select logging data in the TOPR as the upload data. |
| Alarm | Select logging data in the TOPR as the upload data. |
| Recipe | Select recipe data in the TOPR as the upload data. |
| Save path | Set the path to save upload data. |

(1) Logging/alarm upload settings

When uploading logging and alarm data, the log/alarm info and date can be set and imported.

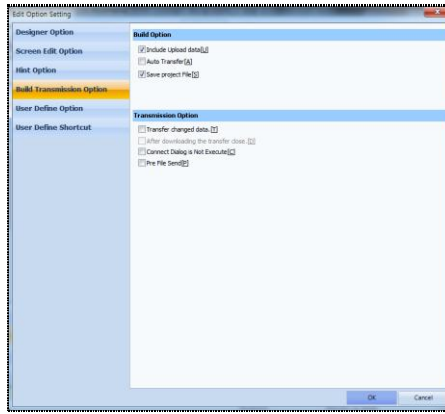


[Fig. Logging/alarm upload]

| Upload properties | Description | |
|-------------------|--|---|
| Log, alarm ID | Select the log or alarm info to be uploaded. | |
| Date info | Today | Select the log and alarm data recorded today as the data to upload. |
| | This week | Select the log and alarm data recorded this week as the data to upload. |
| | Period set | Select log and alarm data recorded during the set period as the data to upload. |

21.2.9 Build option

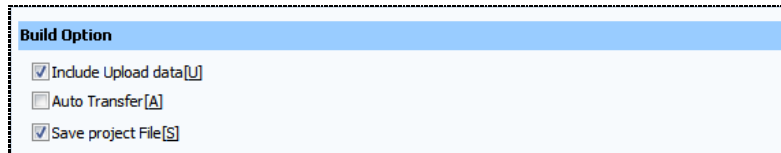
As for build options, the same options exist in [Chapter 6.9.4 Option settings]. More detailed settings can be made from here. Build option refers to build transfer options. This is divided into build options and transfer options, and facilitates build and transfer for the user.



[Fig. Build option]

(1) Build option

In build option, the data desired by the user can be included, or auto transfer after build completion can be set.

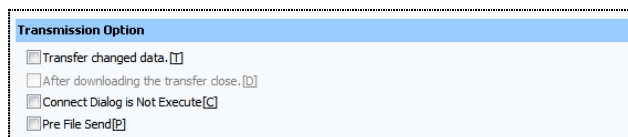


[Fig. Build option]

| Build properties | Description |
|-------------------------|--|
| Include upload data [U] | Upload data is included when building. If the build is performed without using this function, TOPR data cannot be uploaded from TDS. |
| Auto transfer [A] | After building, if the TOPR is connected, the file is transferred automatically. If this function is not enabled, the [Transfer] button must be clicked after building to transfer. |
| Save project file [S] | Before building, the project file is saved automatically. If this function is not enabled, the project file is not automatically saved in the build process. |

(2) Transfer options

Using transfer options, users can perform transfers faster and more conveniently. These functions relate to connection settings, file transfer, and data transfer.



[Fig. Transfer options]

| Transfer properties | Description |
|--------------------------------------|---|
| Transfer changed data [T] | If the same project is transferred, only changed data is transferred. By using this function, transfer can be performed faster. |
| Close transmitter after download [D] | After [Download], the transmitter is automatically closed. If this function is not used, the transmitter remains open after the download. |
| Connect dialog is not executed [C] | When transferring, the TOPR connect dialog is not executed. If this function is not used, the connection settings window appears when transferring. |
| Pre file Send [F] | The same project file as the file transferred previously is transferred. Using this function, the project file does not need to be designated again. |