TOP DESIGN STUDIO

Manual

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CHAPTER 1 - Base Screen on the Main Body

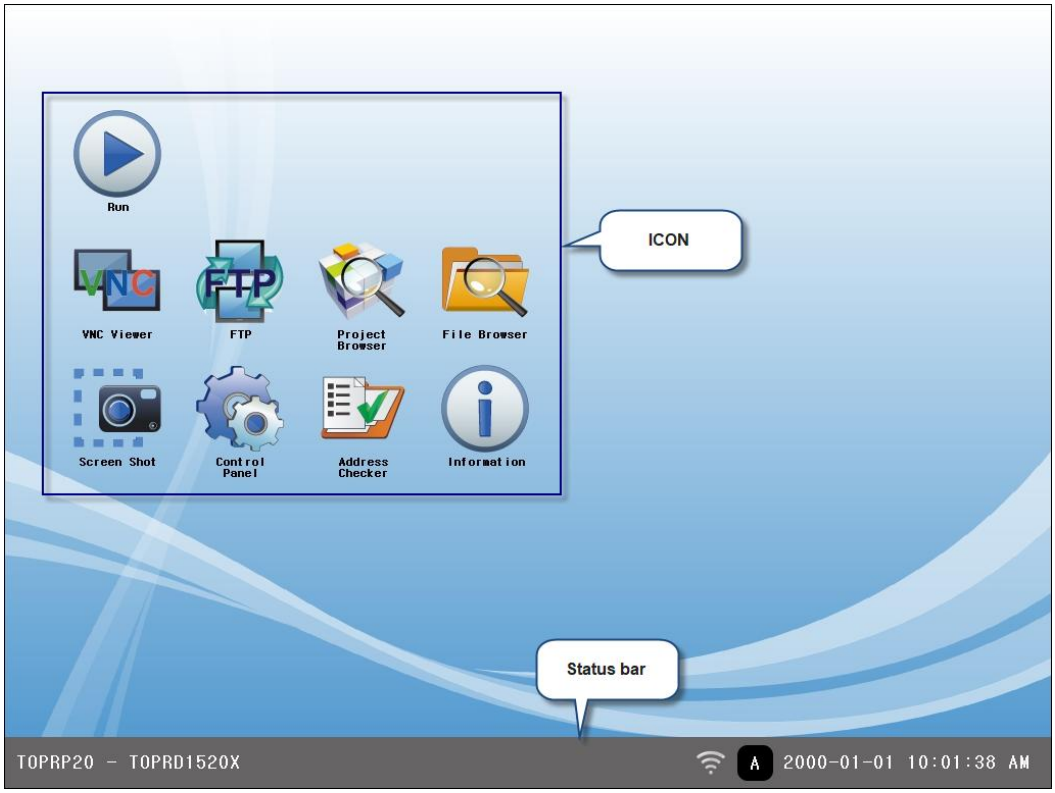
Turning on the product's power will display Screen. If [Control Panel]-[Project Setting]-[Start Mode] are set as [Menu], Menu Screen will be displayed. If it is set as [Operation], the loaded Project will be displayed.

Composition of Menu Screen

As shown in the picture below, the Menu Screen consists of 9 Icons and Status Bar at the bottom. [Execute] icon is displayed on the first row, [VNC Viewer/FTP/Project Explorer/File Explorer] are on the second row, and [ScreenShot/Control Panel/Address Validation/Information] are on the third row. Touch each icon to configure detailed settings.

Status bar on the bottom displays product model name and date/time, Wi-Fi status, and display language.

Wi-Fi, display language, and date/time can be touched to change settings.



[Pic. Composition of Menu Screen]

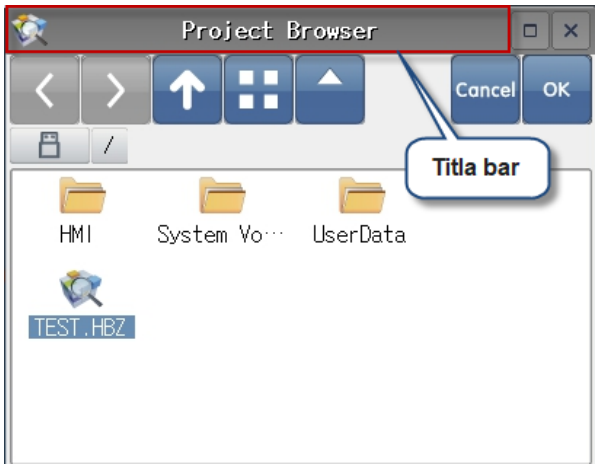
Detailed Description of Icons

The 9 Icons have the following functions:

No	Icon	Description
1	Execute	The Project loaded on TOP will execute and you will be moved to the operation screen.
2	VNC Viewer	VNC login window for VNC server connection will be displayed.
3	FTP	FTP Use Screen to connect to the FTP Server will be displayed.
4	Project Explorer	Search project files (*.HBZ) saved in TOP memory, installed SD card, installed USB memory, etc. and execute selected project files immediately.
5	File Browser	Search and open files saved in TOP memory, installed SD card, installed USB memory, etc.,

		copy/paste selected files to other storage medium, or delete them.
6	ScreenShot	Capture the current screen and save it as an image file. Select a storage medium (TOP/USB/SD) to save the captured image.
7	Control Panel	This section manages and configures TOP in general. It manages TOP by categorizing it into System/Device/Service/Option.
8	Check Address	Search invalid addresses from addresses that were used in projects. It communicates with the controller set to the project, search uncommunicable addresses and show them in a list. If there is any address that is not communicable in a project, the screen where that address is registered will have communication error.
9	Information	It checks information such as the version of the firmware loaded to TOP, upload project file information, etc.

Execute each icon and their respective screen will be displayed.
Let us use the example of the Project Explorer screen that is displayed when running Project Explorer icon to learn about the common composition of the screen.
Touch and scroll the title bar at the top to move the position of [Project Explorer] screen.
Click the [Full Screen] button on the right side of the title bar to switch to the full screen mode. Click [X] button to close the screen.



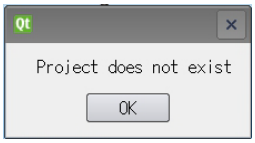
[Pic. Common part of the screen]

The ☒ marker at the tick box means that it is ticked (enabled). The ☐ marker means that it is not ticked.

1.1.1 Execution Dialog Icon

Touch the 

Execute icon to run the unloaded project and go to the operation screen.
Go to the set screen number at [Control Panel]-[Project Setting]-[Start Screen Number].
If there is no project file, a [Project does not exist] message will be displayed.



[Pic. Message displayed when there is no project file]

To navigate back to menu screen from operation screen, touch the top of the operation screen and scroll down. Run the first [Exit] menu on the top menu.
This will end the operation screen and return to the menu screen.



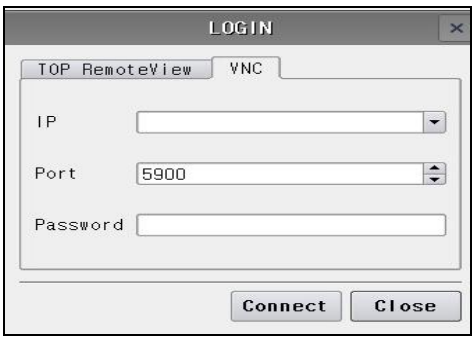
[Pic. Top menu of operation screen]

1.1.2 VNC Viewer Icon

VNC (Virtual Network Computing) is a function that enables monitoring and control of TOP screen that is set as VNC server on other TOP or mobile/PC device. VNC viewer is a program that allows remote access to TOP screen with VNC server setting.
This VNC viewer is included in TOP, while it can also be installed in a PC and a mobile device. For PC version, search for [VNC Viewer] on the website and download the file. For mobile version, search [VNC Viewer] in Play Store on mobile and install the app.
To activate VNC function, it must be connected to Ethernet network. On local Ethernet networks, you can connect VNC to PC that has been assigned with the same network IP bandwidth to the server TOP. VNC connection is also available on mobile devices with Wi-Fi function. On public IP Ethernet networks, access to all online PC is available.
Connection of multiple VNC Viewer on VNC server is available, and TOP offers both VNC server and VNC viewer functions. VNC Viewer is the program that allows remote access to TOP that has VNC server setup.

Click 

icon and the following login window will be displayed.



[Pic. VNC Viewer]

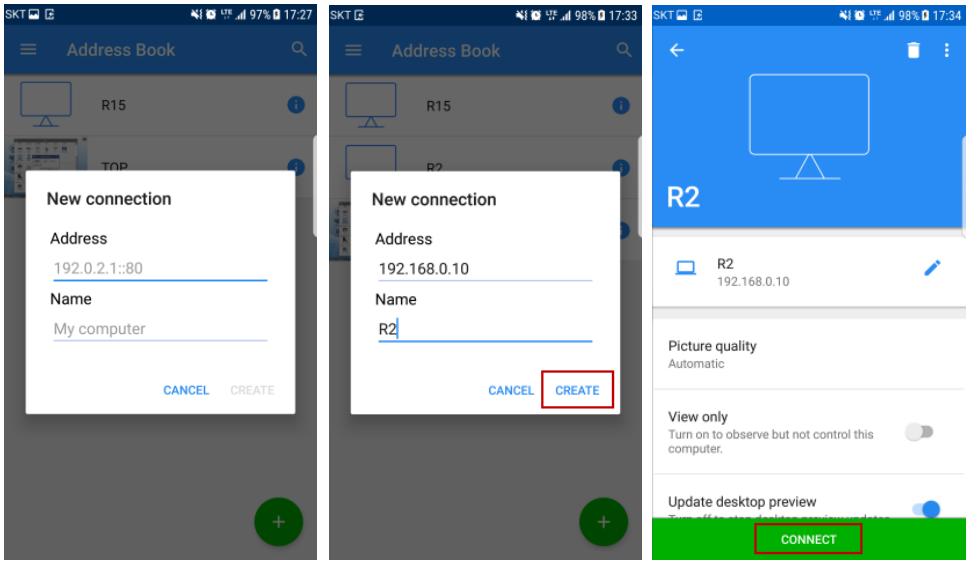
Enter the IP address and port number of the VNC server. If VNC server's TOP has an administrator password ([Control Panel]-[System]-[Security]), enter that password. Do not enter administrator password if there is none. Click [OK] button and monitoring will begin.
Next, if you run VNC viewer on mobile device or PC, proceed with the following steps.

(1) Run VNC Viewer.

(2) Click  button on the bottom left.

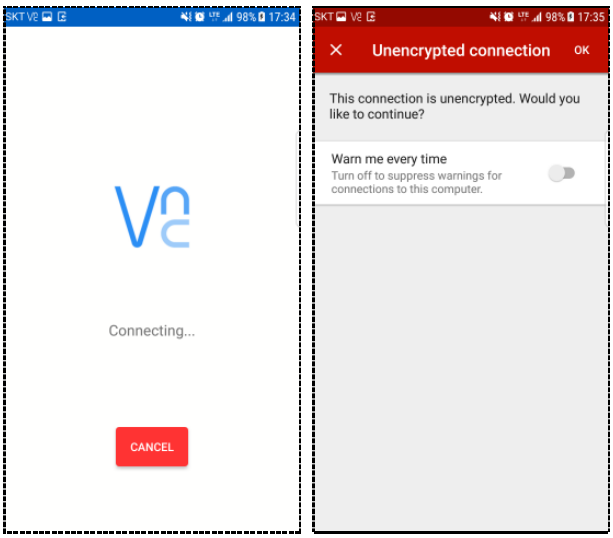
(3) New connection screen will pop up. Enter VNC server's IP in Address and the name of the connected server in Name at your discretion.

(4) Click [CREATE] button to move to Connection Screen. Click [CONNECT] at the bottom to connect.



[Pic. Mobile VNC Viewer]

(5) Uncheck [Warn me every time] on unencrypted connection screen to disable password message from being displayed when there is none.
Click [OK] to complete the settings.
When there is a password, enter the pass and check [Remember Password]. With this setting, you do not need to enter password the next time you log in.



[Pic. Mobile VNC Viewer]

When it has been successfully connected, you can monitor TOP screen of the VNC server as below. Also, you can click the mouse icon on the top to remote control if VNC server uses [Remote Control] function. Click the mouse icon and a mouse cursor will be displayed on screen. Move the cursor and click to control.



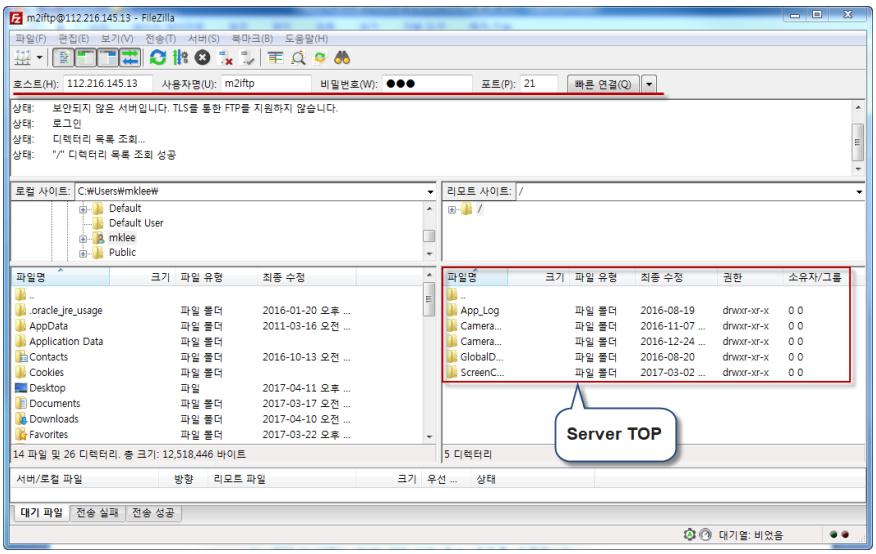
[Pic. Mobile VNC Viewer]

1.1.3 FTP Icon

FTP (File Transfer Protocol) is a protocol that enables file transmission between the server and a client based on TCP/IT protocol. This function allows sharing and transmission of files from server through Ethernet network.

TOP offers both FTP server and FTP client functions.

To access TOP with FTP server setting from a PC, install FileZilla which is a free FPT client program. Search the installation file on the website (**filezilla**-project.org) to install. After installing it, the following screen will be displayed.



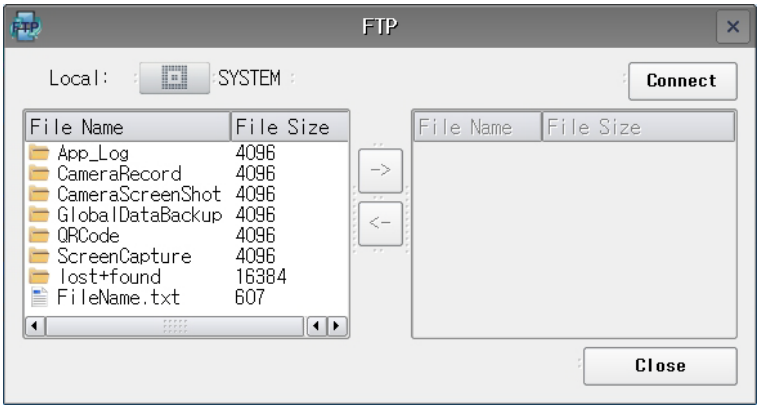
[Pic. PC FTP client]

Set the following four items and click [Quick Connection] to connect to the server.

No	Detailed Settings	Description
1	Host	Enter FTP server IP. You can find it at [Control Panel]-[System]-[Ethernet] at the server TOP.
2	User name	It is fixed to m2iftp.
3	Password	Enter the password set at [Control Panel]-[Service]-[FTP Server].
4	Port	It is fixed to no. 21.

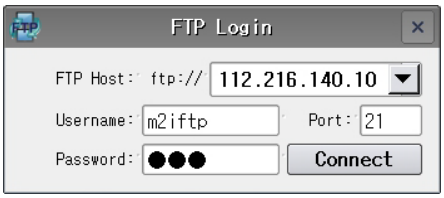
When successfully connected to the server, you can see server TOP's folders and files on the right and select them with the mouse to send them to PC.

To access FTP server from TOP, click  icon.



[Pic. FTP]

Click [Connect] button on the top right corner of FTP screen, and FTP login screen will be displayed.



[Pic. FTP login screen]

Use the same method as PC FTP client. Configure the 4 settings below and click [Connect] button to access the server.

No	Detailed Settings	Description
1	FTP Host	Enter FTP server IP. If TOP is the server, it can be checked at [Control Panel]-[System]-[Ethernet]. If PC is the server, check the IP of PC at [Control Panel]-[Network setting].
2	User name	The name of the FTP server. It is fixed to m2iftp if TOP is the server.
3	Port	It is fixed to no. 21.
4	Password	Enter the password of the FTP server. Enter the password set at [Control Panel]-[Service]-[FTP Server] if TOP is the server.

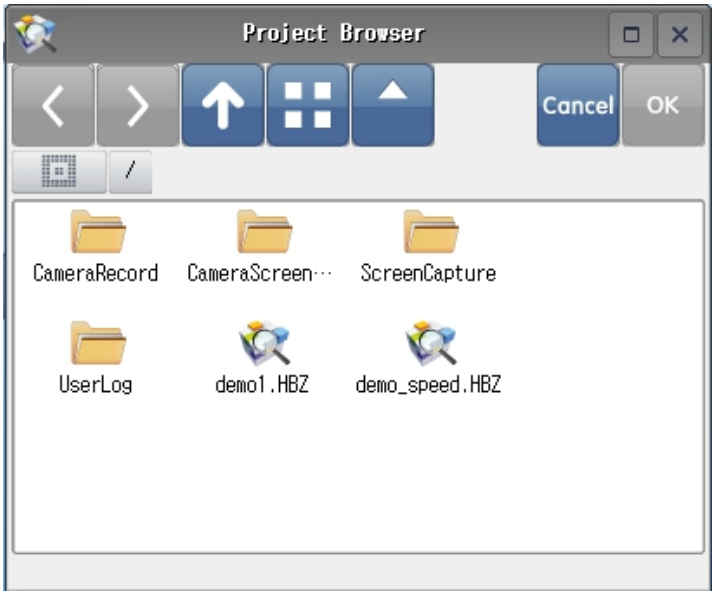
When connected to FTP server, the server files will appear on the right side of the FTP screen. Use the arrow in the center to transmit files.

1.1.4 Project Explorer Icon



Run the icon and [Project Explorer] screen will appear. Project Explorer can find [Project Files] and select and run them instantly. Others files will not appear and only project files will be visible.

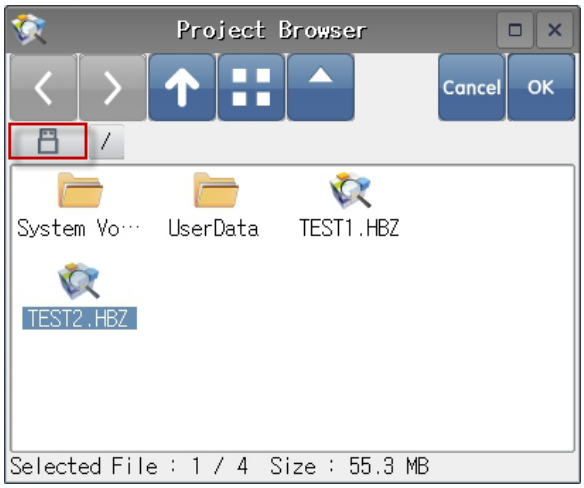
Creating, editing, and saving a project in TDS will leave a [*.TDS] file. While this file is open, run [Transmit]-[Create a Transmission File] menu to create [*.HBZ] file. This file can be transmitted using [Trans Project File]. Also, you can save multiple transmission project files in main body/USB memory/SD card at TOP and instantly run the project file you wish to execute. This file [*.HBZ] is stored in main body/USB memory/SD card.
Run Project Explorer and [*.HBZ] file will appear as below.



[Pic. Project Explorer]

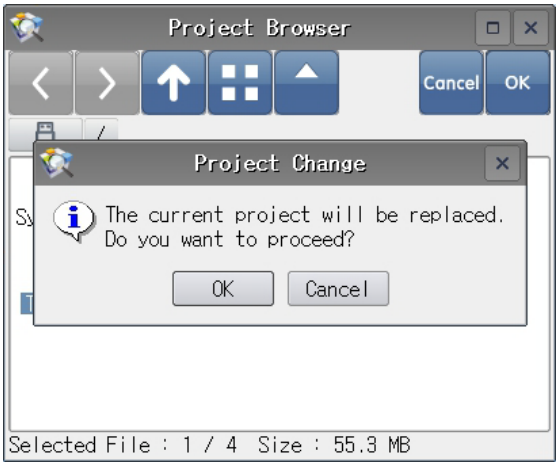
No	Button	Description
1		This is Back button.
2		This is Forward button.
3		This button navigates you to the top directory.
4		This button switches between [See Small Icons/See List].
5		Clicking [Sort by name] will switch the sorting method.
6		Select an internal memory/external memory (USB memory/SD card, etc.).

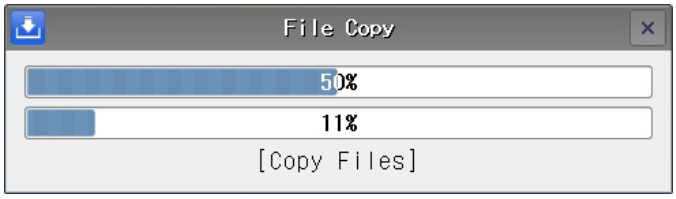
To select and run a project file, select the project file to run [*.HBZ] and click [OK].



[Pic. Project Explorer]

As shown below, a confirmation message for changing project will be displayed. Click [OK], then a file copy message will appear and also, the selected project file will be executed.





[Pic. Run a project file from Project Explorer]

After completing file copy, TOP will restart and the selected project file will be run.

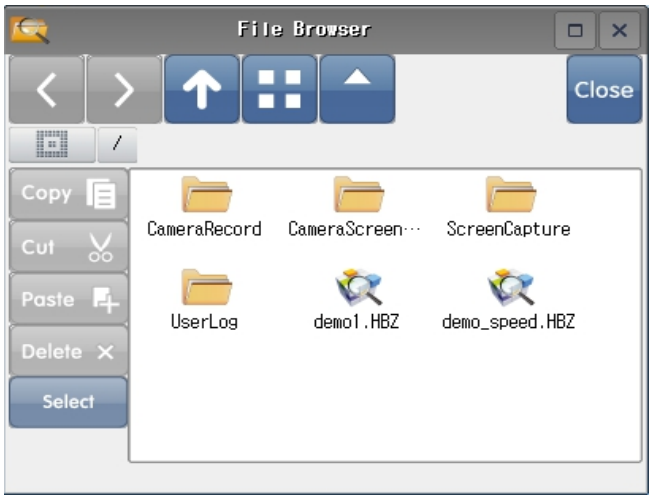
After restarting, if menu screen shows, click [Execute].

1.1.5 Project Explorer Icon

Touching 

icon will display [File Explorer] screen.

File Explorer is for exploring files saved in TOP internal memory or in USB memory/SD card etc. that are installed to TOP and selecting files and using Edit button on the left to [Copy/Cut/Paste/Delete]. Also, double click the file to instantly open the file.



[Pic. File Explorer]

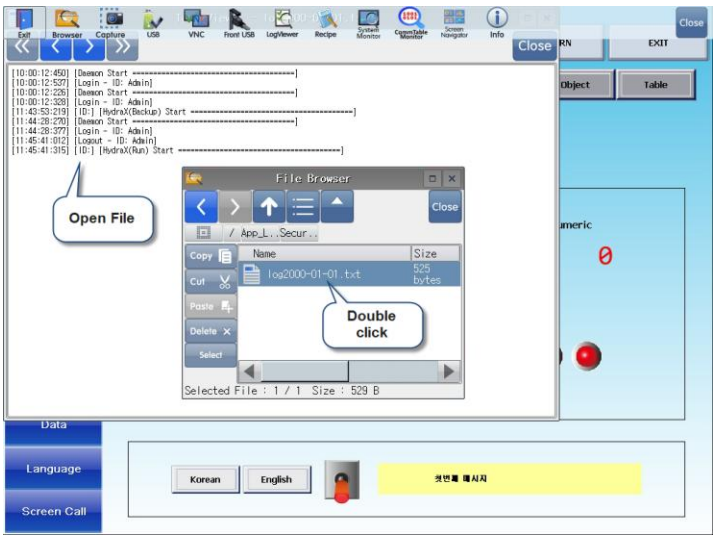
File explorer button.

No	Button	Description
1		This is Back button.
2		This is Forward button.
3		This button navigates you to the top directory.
4		This button switches between [See Small Icons/See List].
5		Clicking [Sort by name] will switch the sorting method.
6		Select an internal memory/external memory (USB memory/SD card, etc.).

Edit file button.

No	Button	Description
1	Copy	Copy selected files or folders.
2	Cut	Cut selected files or folders.
3	Paste	Paste selected files or folders.
4	Delete	Delete selected files or folders.
5	Select	Select multiple files. When selecting other files after selecting a file, the previously selected files will be kept in selection.

Select a file and double click it to instantly open the file.



[Pic. Open file in File Explorer]

5 types of folders will be created depending on the type of file saved in the system unit.

No	Folder	Description
1	App_Log	When there is an error in TOP, error description is saved in [UserLog] folder in [*.txt] format.
2	Global Data	[Alarm], [Logging], and [Recipe] folders are located inside [HMI] folder. Each of them stores Alarm, Logging, and Recipe data.
3	ScreenCapture	ScreenShot data saved in TOP memory is stored in this folder.
4	CameraRecord	When camera video data is saved using [Record Start/Record End] button in [Camera Object], it will be stored in this folder. (Camera function is available on TOPR Premium Model.)
5	CameraScreenShot	When camera screenshot data is saved using [Snap Shot] button in [Camera Object], it will be stored in this folder. (Camera function is available on TOPR Premium Model.)

1.1.6 ScreenShot Icon

Run 

icon and ScreenShot screen will be displayed. It captures and saves the current screen. The screenshot screen that appears when the shot is taken is not included in the image.



[Pic. ScreenShot]

No	Button	Description
1		Choose storage. The default setting is TOP memory. If USB memory/SD card is installed, each click of the button will change the storage.
2		Clicking the button will instantly capture the image.

3	20150107-23.jpg	The saved file's name will be the combination of the date of the capture and sequential image numbers. Touch to change file name.

If TOP Memory is the Storage, check it with [File Explorer] and you will see that the storage path is set to [ScreenCapture] folder. If USB memory/SD card are used as storage, they will be saved in [HMI]-[ScreenCapture] folder.

1.1.7 Control Panel Icon – System

Run 

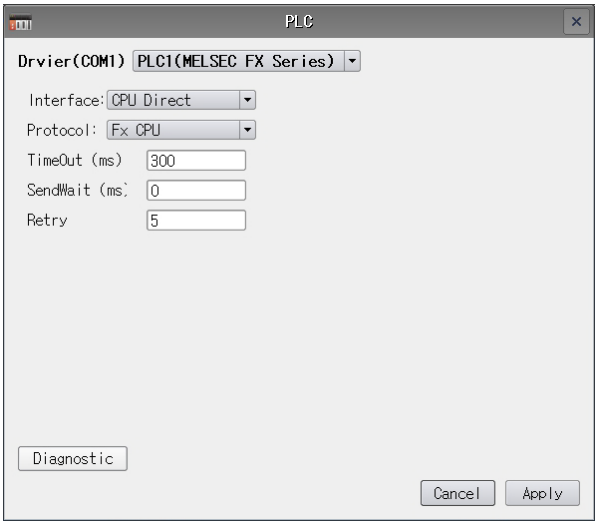
icon to display Control Panel screen. Control Panel is categorized into System / Device / Service / Option.



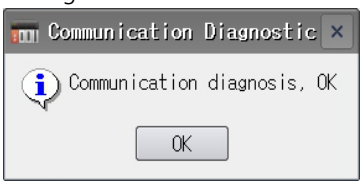
[Pic. Control Panel]

(1) PLC

Check the set [PLC Driver Setup] in a TDS project, and edit settings other than the driver.
This content may vary by the type of the selected PLC.

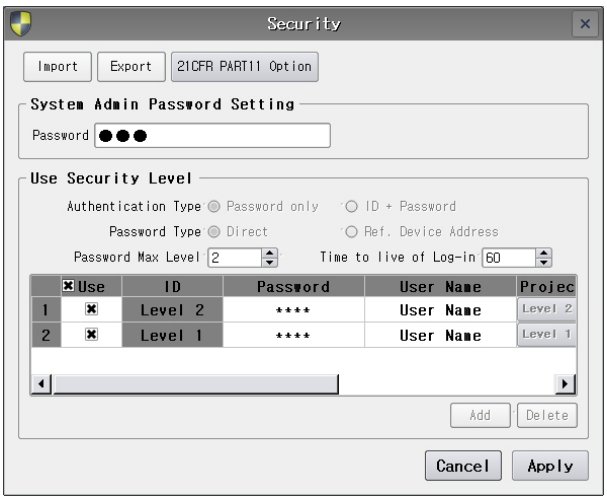


[Pic. PLC]

No	PLC	Description
1	Driver	PLC driver will be displayed. The driver set in TDS cannot be changed in the system unit of TOP.
2	Interface	Display PLC interface set in the driver and change the settings. E.g.,) Select CPU Direct or Computer Link
3	Protocol	Display PLC Protocol set in the driver and change its settings. E.g.) MC Protocol, Modbus, etc.
4	TimeOut (ms)	Set the TimeOut for PLC communication. TimeOut is the time for waiting the response of a controller (PLC). TOP begins communication with a controller, waits for the length of the set TimeOut for the response from the controller. When there is no response within the time, an error will be issued.
5	SendWait (ms)	SendWait is the pre-transmission delay time for PLC communication. Pre-transmission delay time frees communication overload on controller by allowing TOP to send the next request after SendWait time rather than sending one immediately after TOP sending the initial request as Master and receiving a response from the controller. It is used when communication scan of the controller is not fast.
6	Retry	It is the number of re-sent communication protocols by TOP. First, TOP commences communication with controller, waits for the TimeOut time length when there is no response from the controller, and sends communication protocols again. It repeatedly sends protocols after waiting for the TimeOut time. If there is no response after the set amount of re-sent protocols, it issues an error.
7	Communication Diagnostics	Check if it can communicate normally with the PLC. When an error occurs, double check communication settings and communication cable as the message in the picture. To see the [Comm Manual], navigate to PLC Driver Setup at the left side of the screen at TDS [Project]-[Property]. Click each PLC name and [Comm Manual] button will be displayed on the left side of the screen. Comm Manual has descriptions for communication such as cable wiring diagram and communication settings method.  

(2) Security

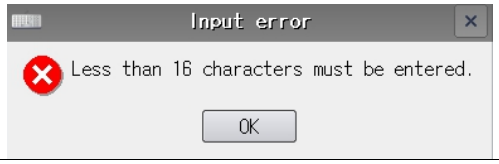
This function allows setting and changing the security settings applied on TDS at the system unit of TOP. There are two types of passwords: administrator password and security level password.



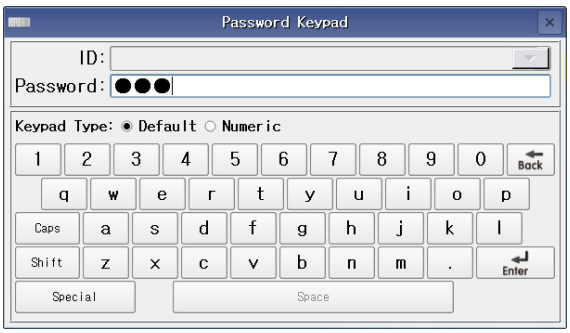
[Pic. Security]

▶ System Admin Password

System Admin Password is the password that manages the system unit of TOP and is used to restrict [transmission of projects, data uploads, access to menu screen, and use of icons]. To take above actions, admin password must be entered. It can be set at TDS by navigating to [Project]-[Security] or at menu screen by navigating to [Control Panel]-[System]-[Security].

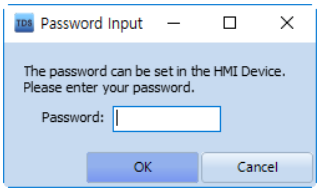
No	System Admin Password	Description
1	Password	Set the Admin Password. Password can have up to 16 characters including numbers and capital/lower case alphabets. Capital and lower case alphabets are differentiated. When you set a password with capital letters and enter lower case letters, the password will not be recognized. Touch the password box and the following text keypad will appear.  If you enter more than 16 letters and press [Enter], the following error message will be displayed. 
2	21CRF PART11	21 CFR Part 11 is an FDA legislation that states specific topics of electronic history and signature and has a wide scope of influence across many areas. (For more detailed information, please see Chapter 4.7.4 21 CFR Part11 Option.)
3	Option	You can choose between basic or number keypad as the password input keypad type.

If System Admin Password is set, the below [Password Keypad] will appear when accessing menu screen, icons, etc. for entering the password.



[Pic. Password Keypad]

Admin password must be entered in the below password input window when sending projects or uploading data from TDS to TOP.



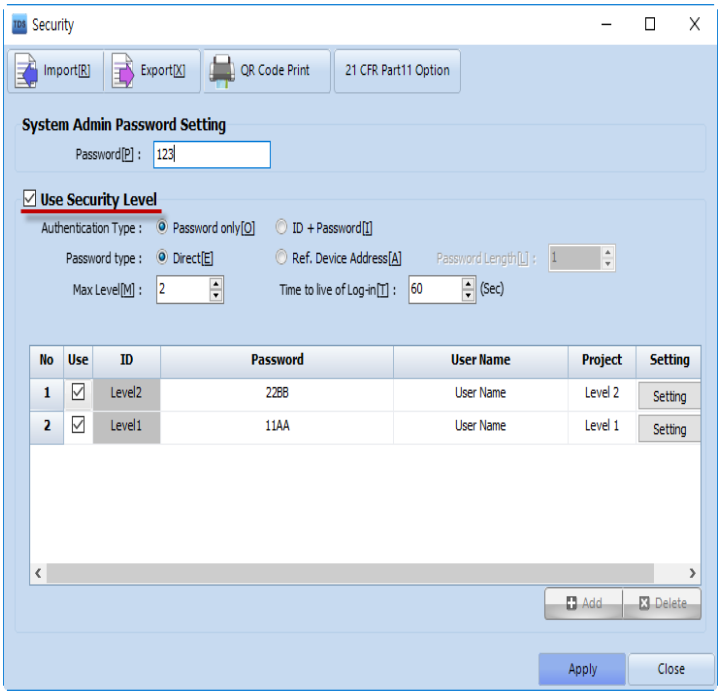
[Pic. Password input screen for transmission]

▶ If admin password is lost, you can create a recovery disk and initialize TOP.
(For more detailed information, please see Chapter 23.10 Recovery Disk.)

▶ Security Level

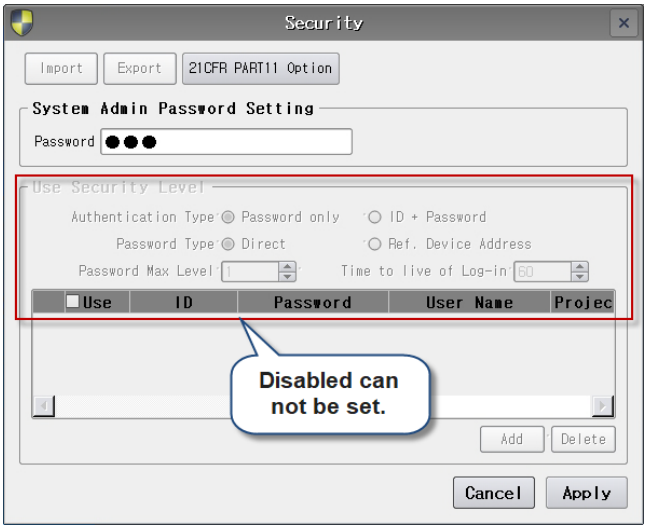
Security level is a security setting for project screens and objects. When applied to a screen, you must enter the password to access the screen. When applied to an object, it can hide or deactivate the object if not logged in.

If [Use Security Level] is checked at TDS [Project]-[Security] section, it can be edited in the TOP system unit's [Control Panel]-[System]-[Security].

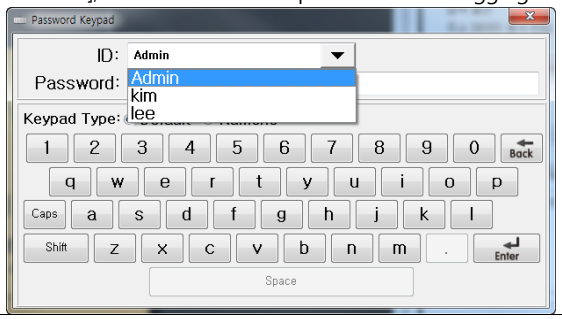


[Pic. TDS security]

If [Use Security Level] is not checked in TDS, you cannot set Use Security Level in the system unit as below picture. Even if [Use Security Level] is set, it is meaningless not to apply security level in [Screen and Object] of a project. Application of security level to [Screen and Object] is available only at TDS. (To set security level at TDS, please see Chapter 4.7.2 Use Security Level.)



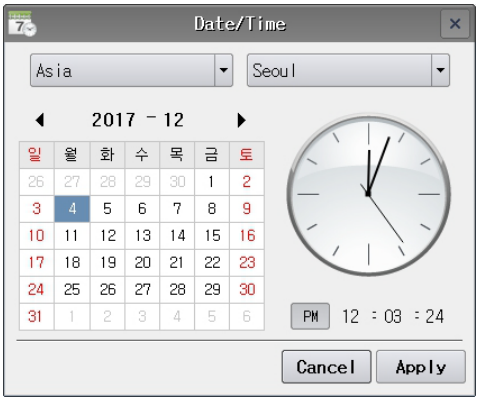
[Pic. Security of TOP system unit]

No	Security Level	Description
1	Authentication Type	Settings cannot be changed in the system unit of TOP. For Authentication Types, there are [Password] and [Account + Password]. For [Password], you need to enter password only when logging in. For [Account + Password], select ID and enter password when logging in. 
2	Password type	Settings cannot be changed on the main body of TOP. There are two password types: [User Input] and [Address Reference]. As for [User Input], you manually set the password. As for [Address Reference], you set the address. Set the password of the address on the operation screen to use. If you set it with PLC address, you can change the password with not only PLC program but also TOP program.
3	Max Level	The number of levels to use. You can set between 0-16 level(s).
4	Login Pulse Time	Refers to the length of time where login status is maintained after entering the password. Set to the unit of seconds.
5	Use	Check for the use of the security level.
6	Administrator	Check the security level to use on the Administrator account. (Must check at least 1 level)
7	Account	This is a user account.
8	Password	Set up the user password.
9	User name	Set up the user name.
10	Level	User level can be changed. The higher the number, the higher the level.
11	Setting	Gives the security system user authority for each account. Other than VNC View/Control authority settings, it can be set if [User Management and Authorization] on the [FDA 21 CRF Part 11 (Security) Option] screen that is displayed when [21 CFR Part 11 Option]

		menu is run. (For more detailed information of [21 CRF Part11 Option], please see Chapter 4.7.4 21 CFR Part11 Option.) 

(3) Date/Time

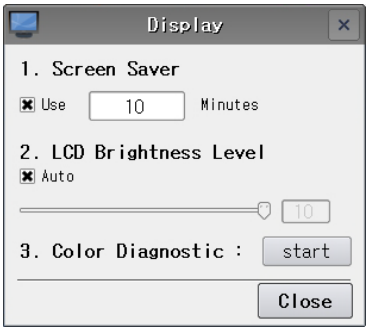
Set the Date/Time of the main body of TOP. The main body of TOP has a built-in clock. This clock continues to operate with a built-in battery even if the power is off. Set the Date by selecting [Year/Month] with the both-way arrow and [Date] on the calendar. For Time, set [AM/PM] at [Hour/Minute/Second] at the bottom of the clock, and then touch the time to set.



[Pic. Date/Time]

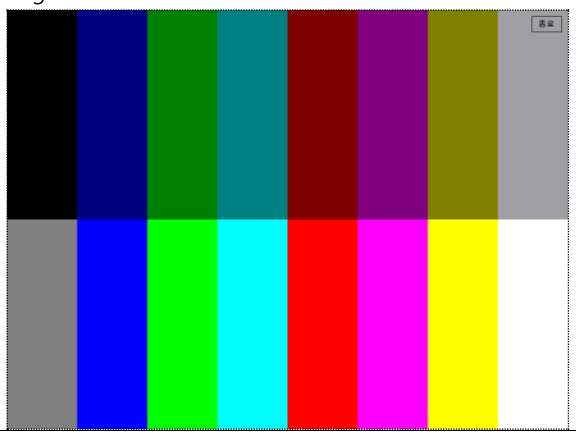
(4) Display

This part manages the TOP screen. You can set battery saver, adjust brightness, and diagnose colors.



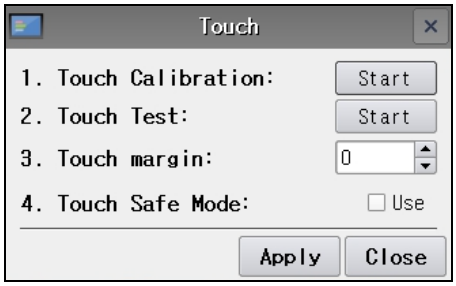
[Pic. Display]

No	Display	Description
1	Battery Saver	Battery Saver is the same feature as Screensave. Tick [Use], set [Minute] unit time, and leave TOP for the set length of time, then the screen backlight will be turned off. Touch the screen while the backlight is off to turn it back on. Use this Battery Saver feature to extend the lifespan of backlight.

2	LCD Brightness	Set LCD brightness from level 1 to 10. 1 is the darkest and 10 is the brightest. TOPR Premium Model has a built-in [Photoresistor] on the top left side of its front. When [Auto] is checked, the screen brightness will be automatically adjusted according to the brightness of the surrounding place.
3	Color Diagnostics	Click Start button to display screen color table. Use this to check if colors are displayed correctly. Touch the Color Diagnostics screen to move to next screens that each shows various colors. Click [Close] to end color diagnostics. 

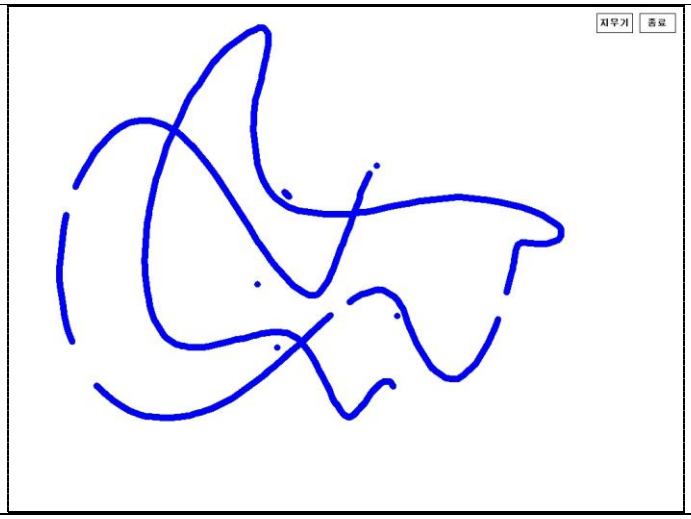
(5) Touch

Touch section of the TOP main body. Using Analog Touch may result in distortion in Touch position due to the temperature change. Check Touch position with [Touch Test], and if distorted, recalibrate Touch position with [Touch Calibration].



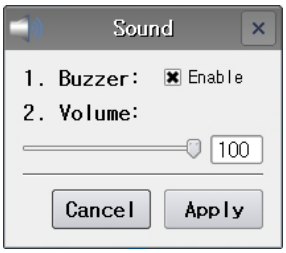
[Pic. Touch]

No	Touch	Description
1	Touch Calibration	Clicking [Start] will send you to [Touch Calibration] screen, then start Touch Calibration. 10 seconds countdown begins. If you do not provide any touch input within 10 seconds, Touch Calibration terminates. If you do not have 10 seconds touch input, I will terminate automatically. [If touch input is not provided within 10 seconds, it is automatically terminated. Touch and hold the crosshair on the screen where [push here!] is written until [OK] message shows. The four corners and center need to be touched to complete calibration, and the screen will be closed.
2	Touch Test	Clicking [Start] will send you to Touch Test screen. Touch white screen and the touched position will be marked in blue. See if the touched position is correctly marked. Click [Erase] on the top right corner to erase all marks on the screen. Click [Finish] to close [Touch Test] screen.

		
3	Touch Margin	Touch Margin can be set between range 0-5. (The unit of the margin is pixel.) If the margin is set to [0], you have to touch the precise position in the registered button to activate it. If the margin is set to [5] pixels, objects that are within 5 pixel range from the touched position will be activated. For example, touching 5 pixels away from the registered button will still activate the button.
4	Touch Safety Mode	Touch Safety Mode allows software touches rather than hardware touches.

(6) Sound

This section manages sound and sets the use of buzzer and audio volume.



[Pic. Sound]

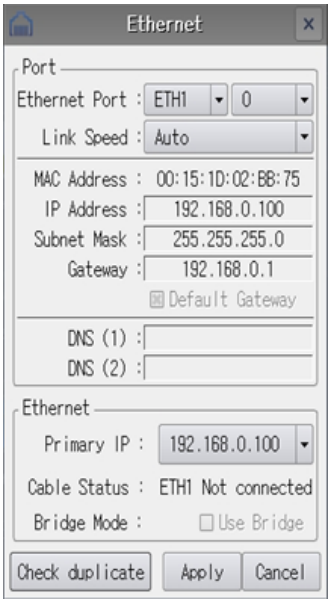
No	Sound	Description
1	Buzzer	Set the use of buzzer sound that sounds when screen buttons are touched. Check [Activate] to sound a [short Buzz! sound] when touching the screen. Uncheck it to leave it silent.
2	Volume	TOPR Premium model has a built-in audio output port. Connecting speaker/headset, etc. to the audio speaker to produce sounds. Set the audio volume between the range of 0-100. 0 has no sounds and 100 is the maximum sound.

(7) Ethernet

Configure Ethernet settings for products that support Ethernet communication. Some TOP models have 2 Ethernet ports and some have 1 or none. Ethernet network allows communication with controller, PC, or other TOP.

Connect Ethernet cable for Ethernet communication. For direct connection with TIP without Ethernet hub connection, connect it with Ethernet cross cable. For hub connections, use Ethernet direct cable to connect.

Set the IP Address/Subnet Mask/Gateway that fit the user's network environment.



[Pic. Ethernet]

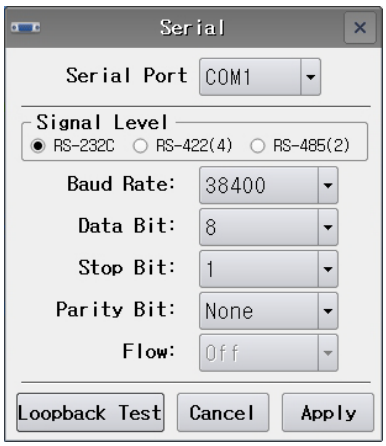
No	Ethernet	Description
1	Ethernet port	Select an Ethernet port.
2	Link Speed	Set the Ethernet link speed.
3	MAC Address	Shows Ethernet MAC Address.
4	IP Address	Set Ethernet IP address.
5	Subnet Mask	Set the Subnet Mask of Ethernet.
6	Gateway	Set the Gateway of Ethernet.
7	DNS Server (1)	Set the DNS server address of Ethernet.
8	DNS Server (2)	Set the DNS server address of Ethernet.
9	Default IP	Choose one IPfrom two Ethernet ports to use as a default port. ThiDatas IP address is used when TOP is used as Slave. It is mainly used when sending or uploading [Project/Data] from PC to TOP or TOP communicates with Ethernet PLC as a Slave.
10	Cable Status	Displays the connection status.
11	Bridge Mode	When TOP supports 2 Ethernet ports, this function connects them to one.
12	Confirm Crash	Checks for IP duplication.

(8) Serial

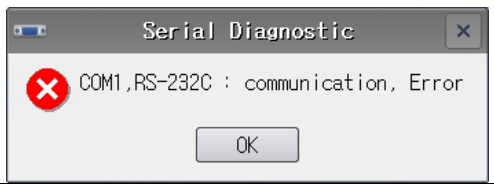
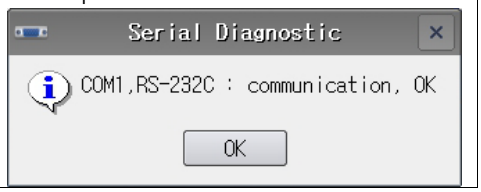
Set communication setting of TOP serial port. According to the model, there are 1-3 serial ports. [All TOPR Series/TOPRX Series 10" or up/TOPRW 10" or up] models have 3 serial ports. COM1 and COM2 supports [RS-232C/RS-422/RS-485] while COM3 supports RS-485 communication only.

[TOPRX Series 8" or lower/TOPRW 8" or lower/TOPRH Wired] models have 2 serial ports. Both COM1/COM2 support [RS-232C/RS-422/RS-485]. [TOPRE Series] model has 1 serial port and COM1 supports [RS-232C] and COM2 supports [RS-422/RS-485].

Match communication setting to devices (controller, etc.) connected to TOP serial [COM1/COM2/COM3].

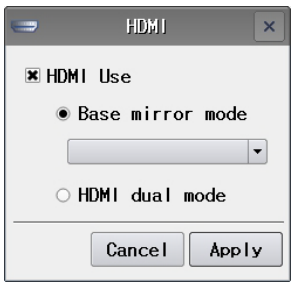


[Pic. Serial]

No	Serial	Description
1	Serial Port	Select one from [COM1/COM2/COM3] as COM Port.
2	Signal Level	Set the signal level of the controller that is connected to the COM Port from [RS-232C/RS-422/RS-485].
3	Baud Rate	Set the communication speed (bit/sec) of the controller connected to the COM port.
4	Data Bit	Set the data bit of the controller that is connected to the COM Port.
5	Stop Bit	Set the stop bit of the controller that is connected to the COM Port.
6	Parity Bit	Set the parity bit of the controller that is connected to the COM Port.
7	Flow Control	Set the flow control of the controller that is connected to the COM Port.
8	Auto Search	Search controller that is connected to the COM port.
8	Port diagnostics	Run diagnostics for faults of each serial port of TOP. To diagnose ports, TOP sends data to ports and see if it returns to TOP. If data returns, the port is normal. ▶ For RS-232C, select signal level as RS-232C, connect SD-RD of the COM port and run diagnostics. To diagnose RS-232C of COM1/COM2 ports, connect pin no.2 (RD) and no.3 (SD), then run the diagnostics. ▶ For RS-422, select signal level as RS-422, connect RDA-SDA and RDB-SDB of the COM port, then run the diagnostics. For COM1/COM2 ports, connect pin no.1 (RDA) and no.6 (SDA) and pin no.4 (RDB) and no.9 (SDB) to run the diagnostics. ▶ For RS-485, it cannot be diagnosed due to the communication feature. Run diagnostics for RS-422 and if the result is normal, assume that RS-485 is normal as well. When an error occurs as the message below, the port is faulty. When there is a communication error, the port must be repaired.  

(9) HDMI

TOPR Premium model has built-in HDMI port and can monitor TOP screen by connecting to a projector/monitor/TV/PC etc. with a HDMI cable. Set the use and mode of HDMI port to activate the settings when a cable is connected. When activating HDMI port by checking [HDMI On/Off], TOP will reboot and HDMI port will be turned on.



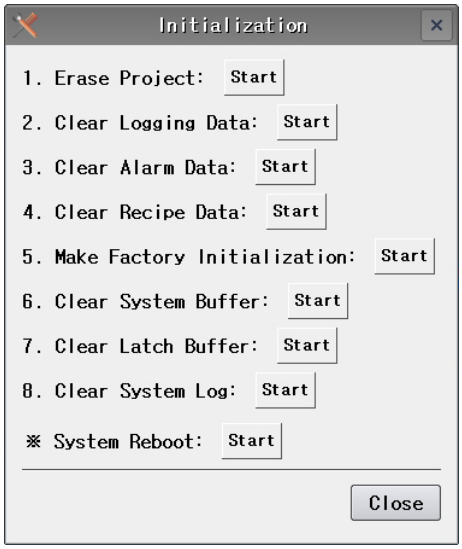
[Pic. HDMI]

No	HDMI	Description
1	Default Copy Mode	Monitor the TOP screen to the device connected by HDMI.
2	External Dual Mode	Form a separate HDMI Screen in TDS to TOP screen.

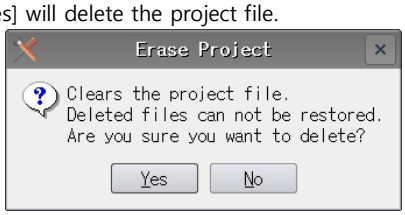
(10) Initialization

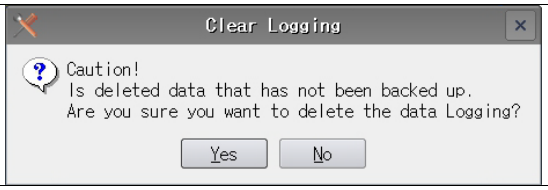
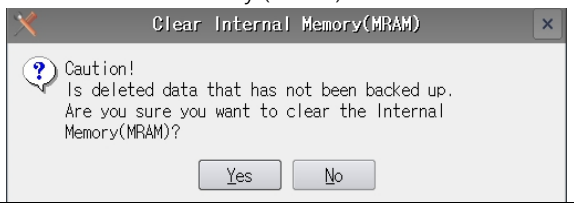
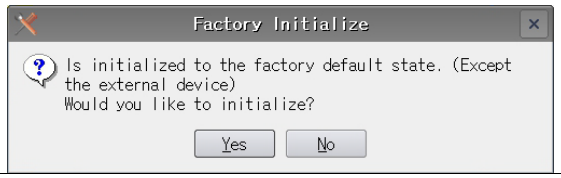
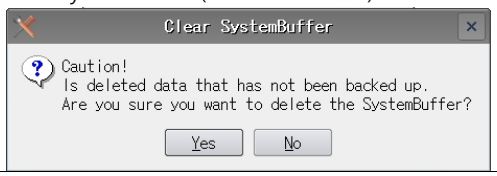
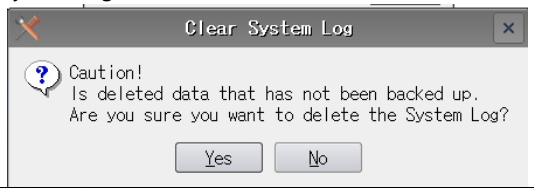
Initialize TOP system unit. Proceed with care as initialization cannot be reversed.

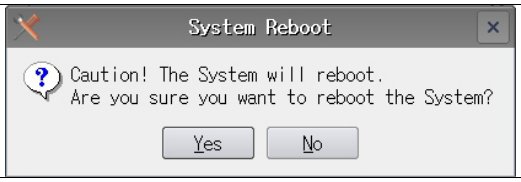
Delete project/each data/internal buffer or initialize menu screen settings.



[Pic. Initialization]

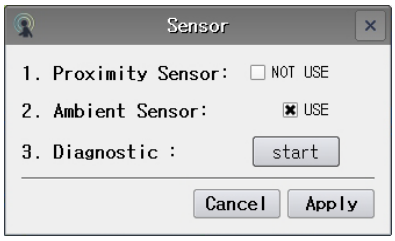
No	Initialize	Description
1	Erase Project	Delete the running project file. Below message will be displayed when deleting a project file. Clicking [Yes] will delete the project file.  After deleting the file, move to operation screen and below message will be displayed. There is no project file to run and clicking [OK] will not move you to operation screen. 
2	Clear Log Data	Delete all log data saved in backup memory.

		
3	Clear Alarm Data	Delete all alarm data saved in backup memory. 
4	Clear Recipe Data	Delete all recipe data saved in backup memory. 
5	Clear Memory Initialization	Delete all data saved in internal memory (MRAM). 
6	Factory Initialize	Delete project files and all data and reset menu screen settings. [OS/Hydra/Daemon] files are not reset. Also, external devices (USB memory/SD card) will also not be reset. 
7	Clear System Buffer	Initialize all data of TOP System Buffer (address 0-10239) to 0. 
8	Clear Latch Buffer	Initialize all data of TOP Latch Buffer (address 0-128) to 0. 
9	Clear System Log	Delete all Touch System Log Data. 
10	System Reboot	Restart TOP.

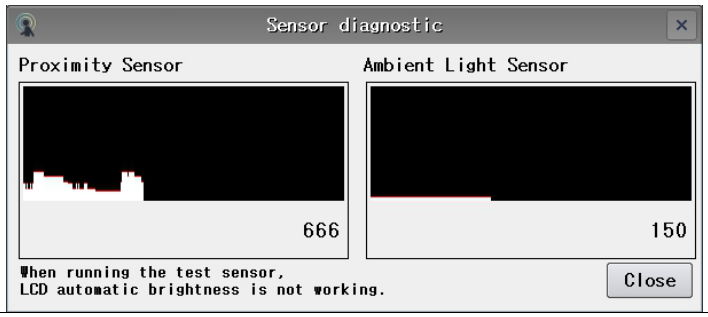


(11) Sensor

TOPR Premium model has a built-in sensor on the top left side of the front display. Proximity sensor and photoresistor are located below LED lighting. Set whether or not to use these sensors and diagnose any faults in them.

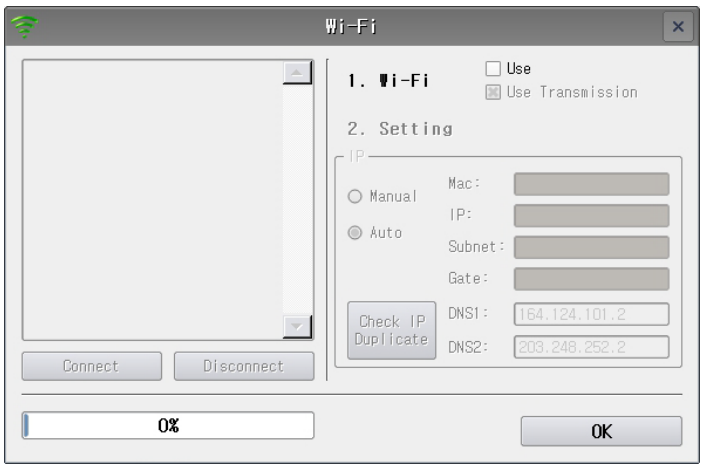


[Pic. Sensor]

No	Sensor	Description
1	Proximity Sensor	Proximity sensor detects an object when it approaches the screen and turns the screen on. If the touch screen is off in [Power Saver Mode], it deactivates [Power Saver Mode] and turns on the screen when the proximity sensor detects an object.
2	Auto Brightness Sensor	Auto brightness sensor is photoresistor. It controls the screen brightness of TOP to automatically darken when the surrounding areas darken, and brighten when the surrounding areas get brighter.
3	Diagnostics	Diagnose whether or not proximity sensor and photoresistor are running normally. Proximity sensor's graph rises when it approaches close to the screen and falls when distances from the screen. Photoresistor's graph rises when the surrounding area's brightness increases and falls as it gets darker. 

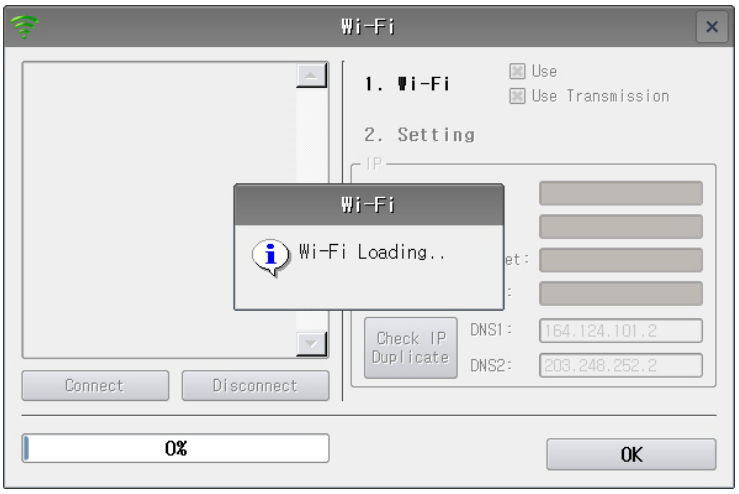
(12) Wi-Fi

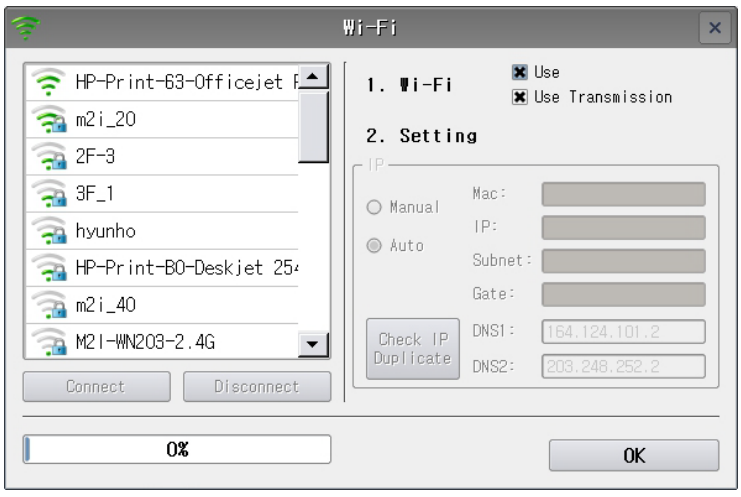
Set Wi-Fi settings for models that support wireless Wi-Fi connection
(TOPR Premium model//TOPRH0700WD-W model).



[Pic. Wi-Fi]

Check [Use] to search available Wi-Fi on the left window.





[Pic. Wi-Fi Search]

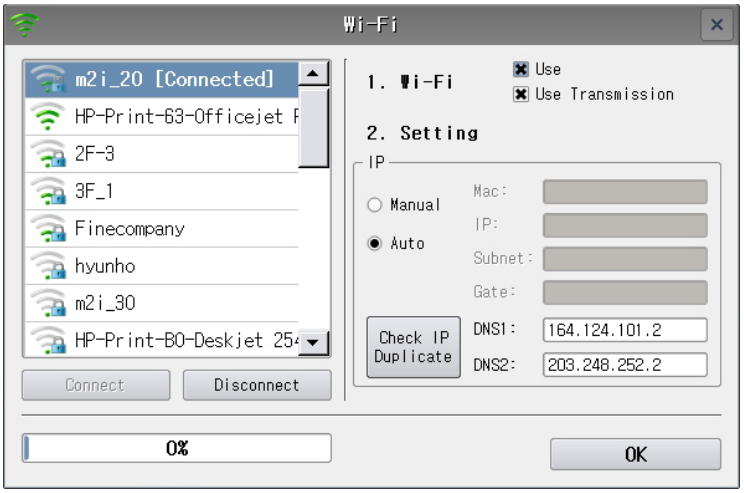
Select the Wi-Fi to connect to. Click [Connect] to connect.
Protected Wi-Fi will display a keypad to enter password.



[Pic. Wi-Fi connection password]

Enter the password to connect.

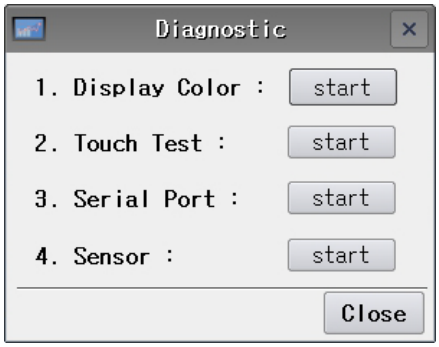
To disconnect, click [Disconnect].



[Pic. Wi-Fi Connection]

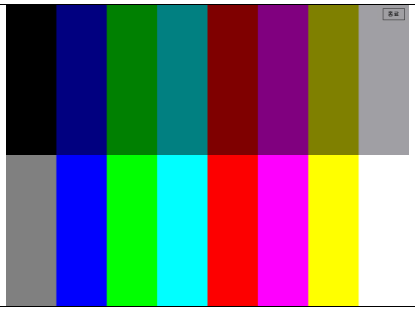
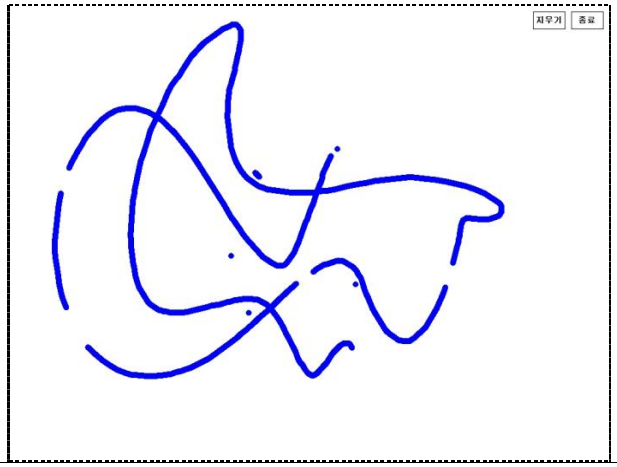
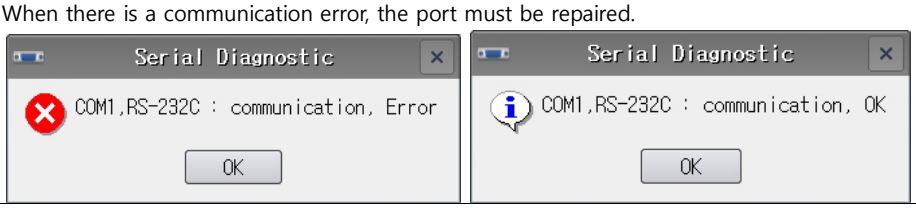
(13) Self Diagnostics

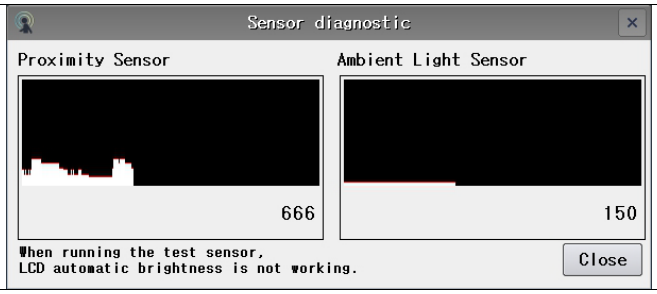
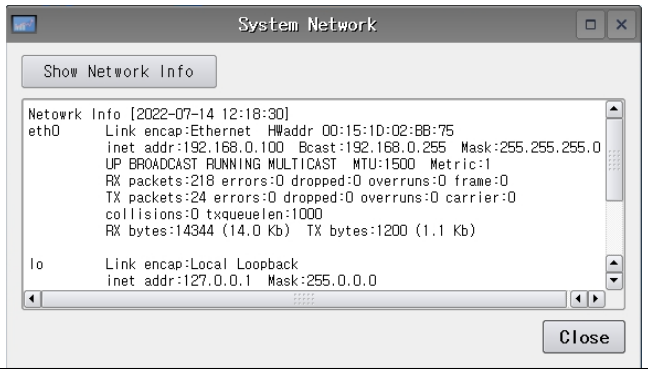
Test whether TOP runs normally or has issues. Diagnose each part and contact Customer Center (+82 31-465-3366(3)) for repairs if there is an issue.



[Pic. Self Diagnostics]

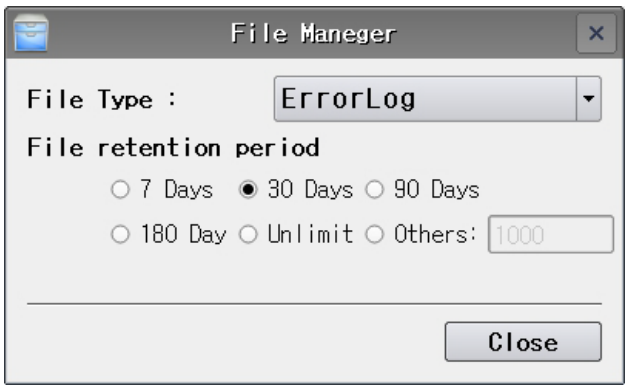
No	Self Diagnostics	Description
1	Display Color	Click [Start] to display screen color table. Use this to check if colors are displayed correctly. Touch the Color Diagnostics screen to move to the next screens that show various colors. Click [Close] to end color diagnostics.

		
2	Touch Test	Clicking [Start] will send you to Touch Test screen. Touch white screen and the touched position will be marked in blue. See if the touched position is correctly marked. Click [Erase] on the top right corner to erase all marks on the screen. Click [Finish] to close [Touch Test] screen. 
3	Serial Port	Run diagnostics for faults of each serial port of TOP. To diagnose ports, TOP sends data to ports and see if it returns to TOP. If data returns, the port is normal. ▶ For RS-232C, select signal level as RS-232C, connect SD-RD of the COM port and run diagnostics. To diagnose RS-232C of COM1/COM2 ports, connect pin no.2 (RD) and no.3 (SD), then run the diagnostics. ▶ For RS-422, select signal level as RS-422, connect RDA-SDA and RDB-SDB of the COM port, then run the diagnostics. For COM1/COM2 ports, connect pin no.1 (RDA) and no.4 (SDA) and pin no.6 (RDB) and no.9 (SDB) to run the diagnostics. ▶ For RS-485, it cannot be diagnosed due to the communication feature. Run diagnostics for RS-422 and if the result is normal, assume that RS-485 is normal as well. When an error occurs as below message, the port is faulty. When there is a communication error, the port must be repaired. 
4	Sensor	Click [Start] to diagnose whether or not proximity sensor and photoresistor are running normally. Proximity sensor's graph rises when it approaches close to the screen and falls when distances from the screen. Photoresistor's graph rises when the surrounding area's brightness increases and falls as it gets darker.

			
5.	System Network	Click [Start] to display network information data. Click [See Network Information] to renew data. 	

(14) File Manager

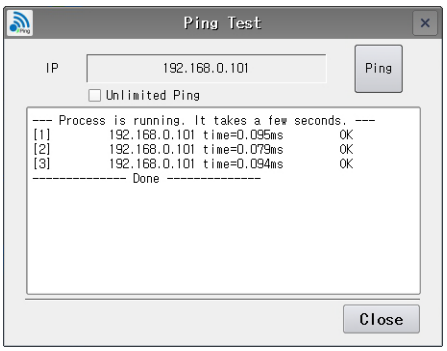
There are 8 types of automatically created folders in TOP system unit: [ErrorLog/SystemLog/UserLog/Screen Capture/Camera data/securityLog/Log Backup File/Alram Backup File]. Set the file storage period in these folders to [7 Days/30 Days/90 Days/180 Days/Forever/Others]. With [Others] option, you may enter a number between [1-10000 Days] to set the storage period. Files saved in each folder will be deleted automatically after the storage period unless the setting is at [Forever].



[Pic. File Manager]

(15) Ping

Ping is a test to find out whether or not the communication to TOP via Ethernet runs normally. Enter the IP address of the controller connected with Ethernet to TOP and click [Ping] to receive the test result.

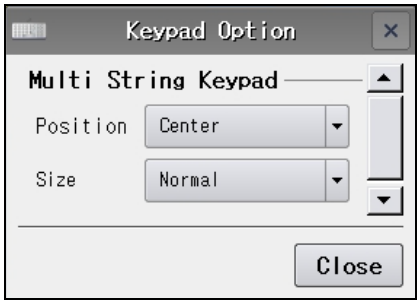


[Pic. Ping Test]

(16) Keypad Options

Set the position and size of Multi String Keypad from Keypads. Multi String Keypad is the keypad that is displayed when [Use Korean] is checked in [String Keypad] object and is a different keypad to normal string keypads.

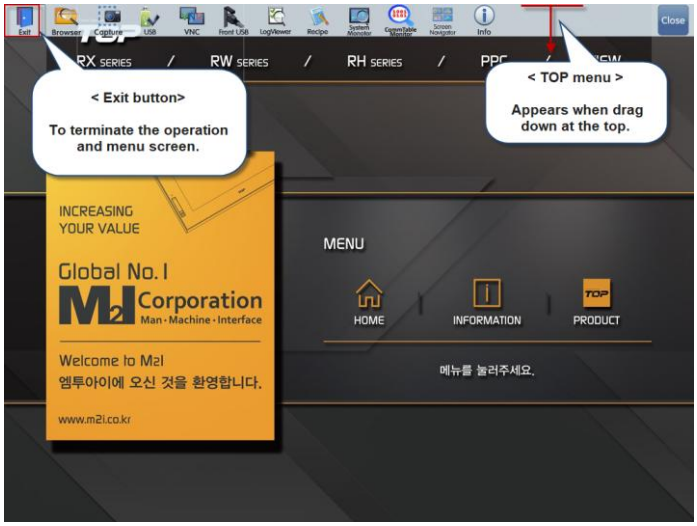
You may choose center or bottom for its position and normal or maximum for the size.



[Pic. Multi String Keypad Options]

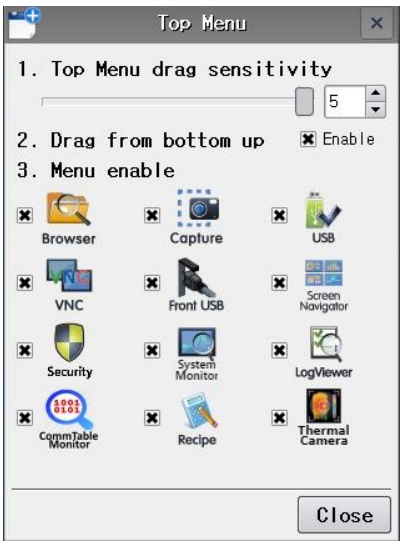
(17) Top Menu

[Top Menu] is located on top corner of the operation screen. Touch and drag down the top part of the screen to display [Top Menu].



[Pic. Top Menu in the operation screen]

The composition of this top menu may be modified at [Control Panel]-[System]-[Top Menu]. Checked menus will be activated on top menu. Unchecked menus will be hidden.



[Pic. Top Menu]



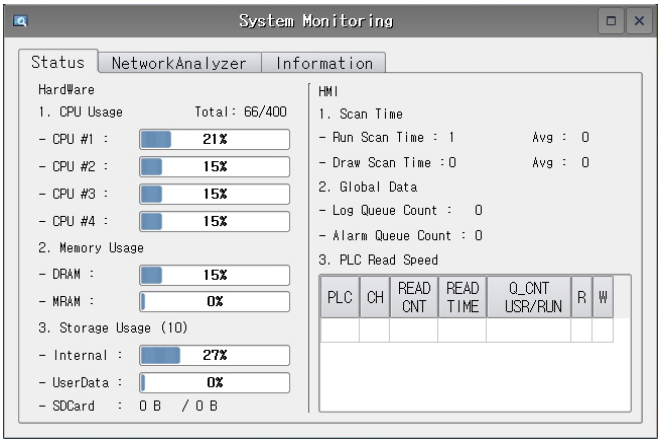
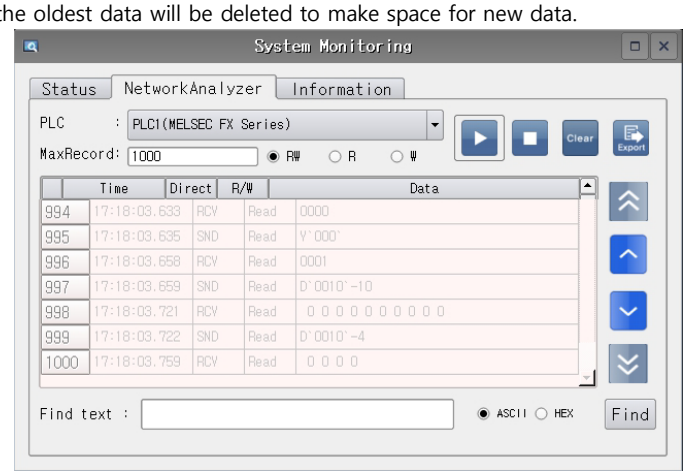
[Pic. Top Menu hidden]

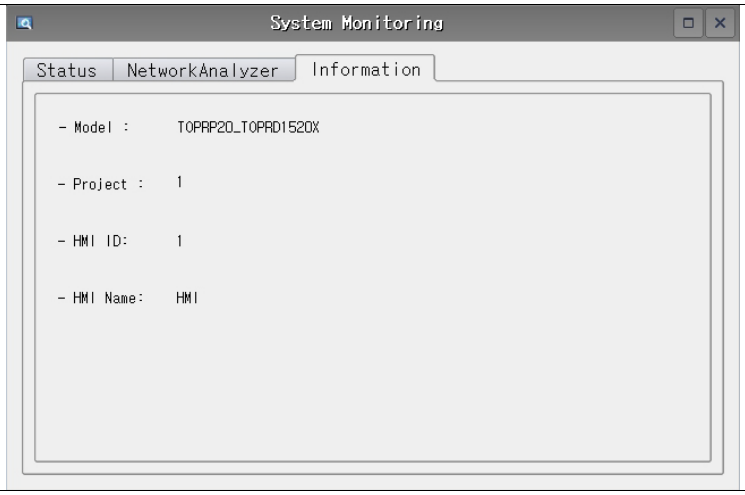
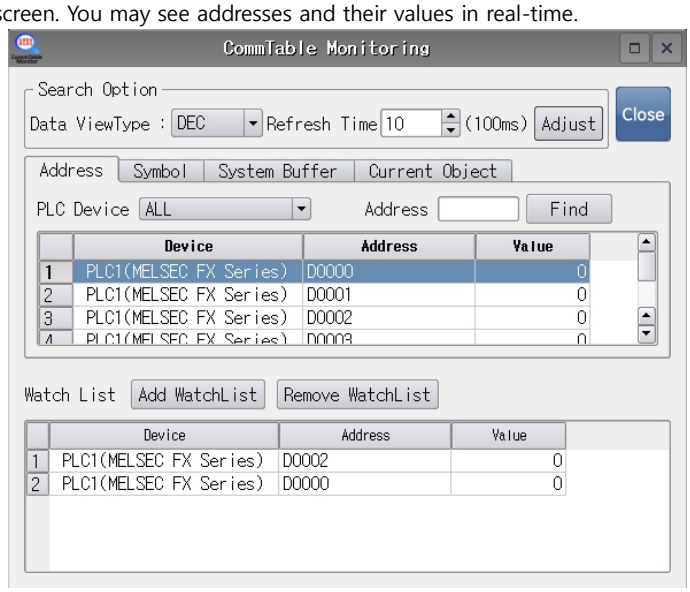
These 3 buttons are included by default and cannot be deleted from the menu.

No	Top Menu	Description
1	Exit	End the operation screen and return to the menu screen.
2	Info	This has the same function as the [Information] icon on the menu screen. It shows each version of TOP, upload information/TOP time, etc. You may also enter TOP alias.
3	Close	Close the top menu.

If you do not wish to use it on the top menu, deactivate it with the following buttons.

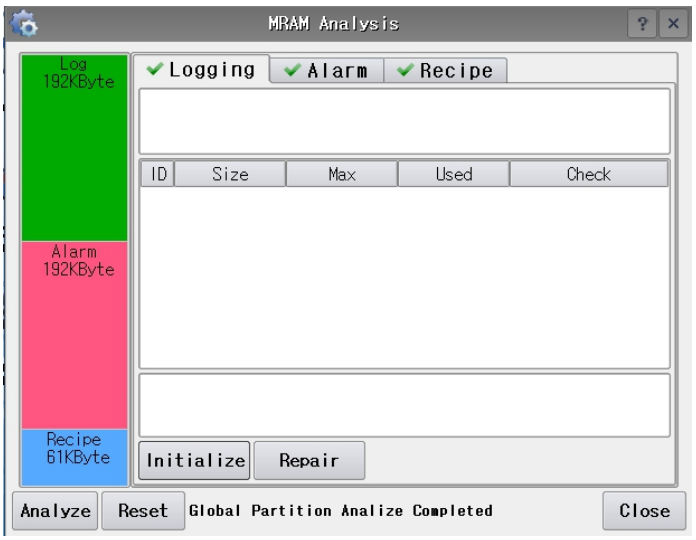
No	Top Menu	Description
1	Brower	Run [File Explorer] screen. (For more detailed information for File Explorer, please see Chapter 1.2.5 [File Explorer Icon].)
2	Capture	Run [ScreenShot] screen. (For more detailed information for ScreenShot, please see Chapter 1.2.6 [ScreenShot Icon].)
3	USB	USB Memory execution menu will be displayed in the center of the screen. This screen will also be displayed when a USB is connected.  [Project] downloads project files (HBZ) in a USB device to TOP or uploads projects (HBZ) running in TOP to a USB device. [Global Data] copies log/alarm data of TOP to a USB device. [Screen Capture] copies captured images of TOP to a USB device. [Cam Capture] copies SnapShot images captured by camera to a USB device. [Cam Movie] copies SnapShot images captured by camera to a USB device. Use [Browser] to execute [File Explorer] that has set Storage as USB device. Use [Close] to close the USB Run menu.
4	VNC	Run [VNC Viewer]. For more detailed information of VNC Viewer, please see Chapter 1.2.2 [VNC Viewer Icon].

5	Front USB	Run [Control Panel]-[Option Device]-[Front USB]. Change the purpose of front USB port (Transmission/Host). (For more detailed information, please see Chapter 1.2.10 [Control Panel Icon-Options].)
6	Screen Navigator	See all project screens at a glance and select and run a screen. 
7	Security	Run [Security]. (For Security function, please see Chapter 1.2.7 [Control Panel Icon – System]-[(2) Security].)
8	System Monitor	Use [System Monitoring] to monitor [Top System Status/Network Analysis/Information]. On [Status] page, you can monitor [CPU Usage/RAM Usage/Storage] and [TOP Scan Time/Connection] status.  You may check the selected PLC's communication data on [Network Analysis] page. Records are kept to [Max Count] and when the number of records exceeds the [Max Count], the oldest data will be deleted to make space for new data.  [Start] records communication data. [Stop] stops recording of communication data. [Clear] deletes all recorded communication data. [Export] saves recorded communication data in file. [Close] closes the system monitoring screen. [RW] records all Source Data/Writing Data. [R] records Source Data only while [W] records Writing Data only. (Data loading by TOP is called Source.) [Information] page shows TOP information such as [Model Name/Project Name/HMI ID/HMI Name].

		
9	LogViewer	The search screen for TOP log data. (For more detailed information of LogViewer, please see Chapter 4.2.5 [View Log Data].)
10	Communication table Monitor	See Comm. Table of the current screen. Comm. Table has addresses that are used in the current screen. You may see addresses and their values in real-time.  Setting [Data Type] will display [Value] in the set data type. [Refresh Time] updates addresses and values by a set interval. Select [Address] and click [Add Watch List] to register the address to Watch List. Addresses registered in this Watch List will always be available for monitoring even if the screen changes.
11	Recipe	Use [Recipe Editor] to check or modify recipe data. (For Recipe Editor, please see Chapter 4.3.8 [Recipe Editor on Top Menu in Operation].)
12	Thermal Camera	Run Thermal Camera View.

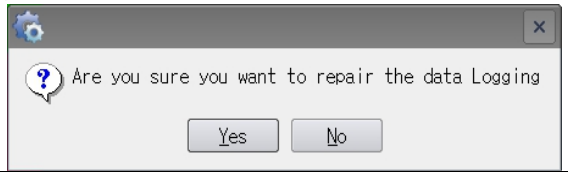
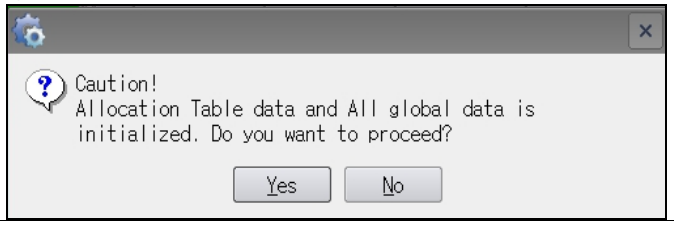
(18) MRAM Analysis

Analyze MRAM (internal memory) to check the size, maximum, and usage of each partition of [Log/Alarm/Recipe] and initialize/recover them.



[Pic. MRAM Analysis]

On the left, MRAM capacity 445 Kbyte that is set for [Log/Alarm/Recipe] is displayed in different colors. You can set internal memory partition at [Project]-[Property]-[Project Option] to divide capacity.

No	MRAM Analysis	Description
1	Initialize	Initialize data in the partition. 
2	Repair	Recover data in the partition. 
3	Analysis	Analyze all Global partition data. 
4	Reset	Reset all Global partition data. 

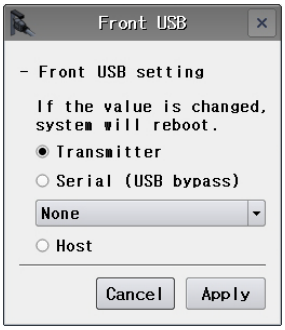
1.1.8 Control Panel Icon – Device Section

(1) Front USB

Set the purpose of the front Micro 5-pin USB port on the bottom right of the TOP screen. Change settings and click [Apply]. TOP will reboot.



[Pic. Front USB]



[Pic. Front USB]

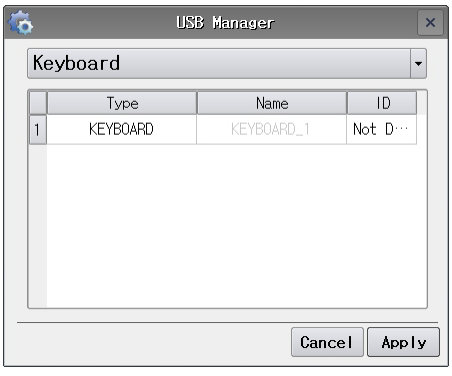
No	Front USB	Description
1	Transfer mode	Set the front USB to Transmission Mode. Connect a PC and TOP with a USB cable to transmit project files from TDS to TOP or upload TOP data to a PC.
2	Serial (USB bypass)	If TOP and Mitsubishi Q Series is in serial communication, you can connect to Mitsubishi Q Series through the front USB of TOP. (Transmission to TOP is not available in this status.)
3	Host	Set front USB to Host mode. Use USB gender to install [USB Memory/USB Barcoder/USB Keyboard/USB Mouse/USB Camera], etc.

(2) USB Administrator

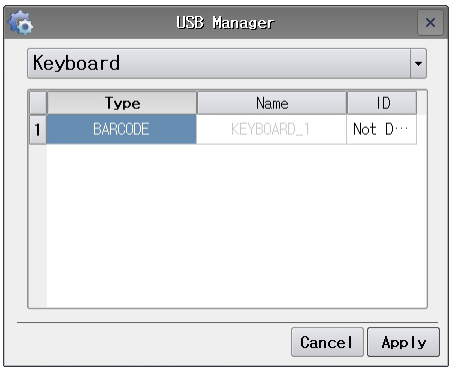
Manages devices installed to USB Host port. [USB Memory/USB Barcoder/USB Keyboard/USB Mouse/USB Camera], etc. can be installed at USB Host port.

When USB Keyboard/USB Mouse is installed, choose keyboard from [Keyboard/USB Camera] in USB Administrator. Select KEYBOARD [Type] from KEYBOARD/BARCODE, enter ID, and click [Apply] button to let the keyboard/mouse to be recognized. You can use a keyboard to input numbers/letters instead of a keypad and a mouse to click/drag to operate TOP instead of touches.

The same method can be applied to USB bar code and USB camera. Designate USB bar code as BARCODE and USB camera to CAMERA, enter ID, and click [Apply] button to configure them.



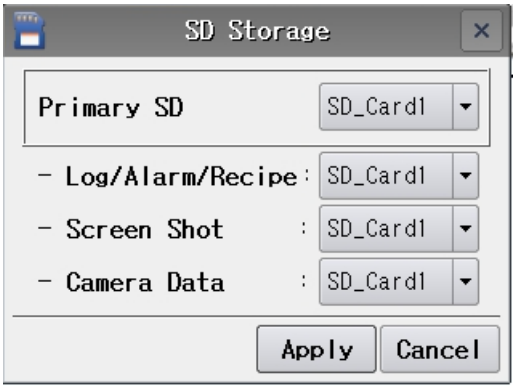
[Pic. Keyboard settings at USB Administrator]



[Pic. Barcode settings at USB Administrator]

(3) SD Card

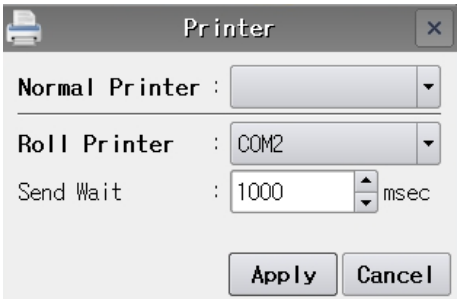
SD Storage can be configured only when SD Card is inserted in HMI. When SD Card is inserted, the name of the SD Card will be displayed as below picture, showing the SD Card when each data is saved.



[Pic. SD Card]

(4) Printer (Normal printer/Roll Printer]

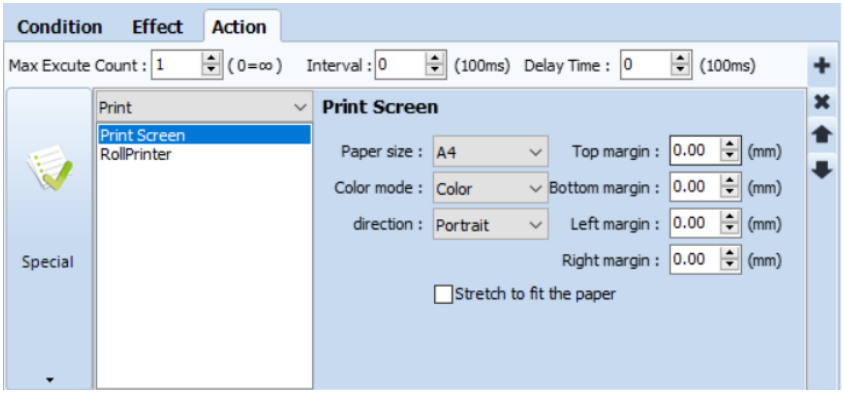
Printers are categorized into normal printers and roll printers. A normal printer can print operation screen. Roll Printer is a mini printer that prints on roll paper.



[Pic. Roll Printer]

▶ Normal Printer

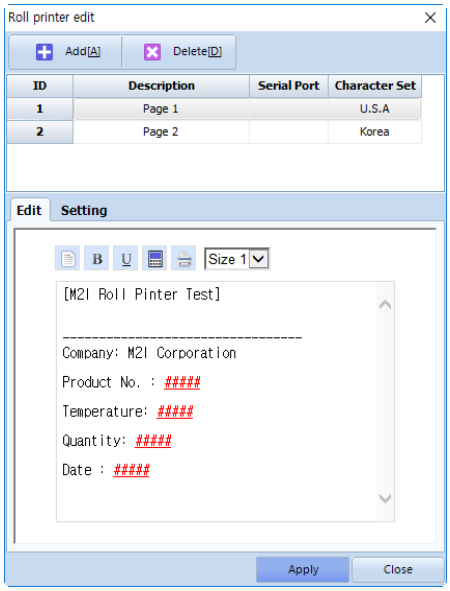
You can print operation screen by connecting a normal printer with USB. As shown above, when a normal printer is connected and recognized, its model name will be displayed. To print, set the ActionPage of [Effect & Action] at TOP Design Studio as below picture. When the [Condition] is met, the current full screen will be printed.



[Pic. Effect & Action - printer]

▶ Roll Printer

Roll Printer is a mini printer that prints on roll paper. Connect a Roll Printer to TOP's serial port and print using RS-232C communication. Roll Printer Specifications: All Roll Printers with built-in Epson protocol can be used. Edit the print format at [Project]-[Roll Printer] as following:

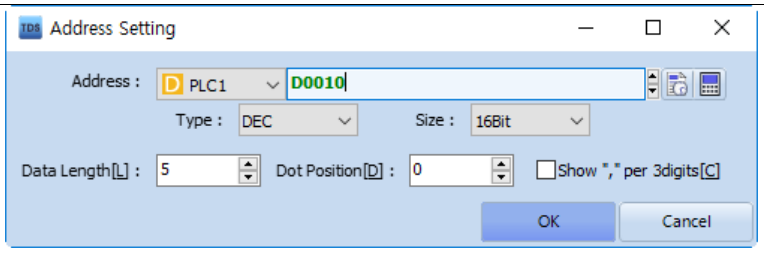


[Pic. Fill out roll printer format]

Create [Page 1] with [Add] button. You can add up to 1000 pages.

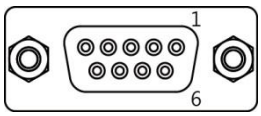
Write text in the below [Edit] page and use  to edit.

No	Button	Description
1	Source	Switch to View Source. Click it again to switch to Edit Mode.
2	Bold	Bold the selected text.
3	Underline	Underline the selected text.
4	Address	Add an address to print.

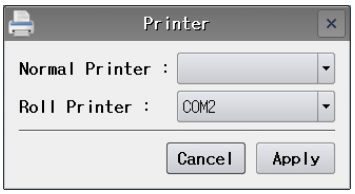
		 Set [Address/Type/Size/Data Length (total no. of digits)/Dot Position]. Check [Fill Empty Cell with '0'] to display places other than the address value in the set data length as 0. E.g.) If address value: 10, data value: 5, it will be displayed as 00010. [Check "," every 3 digits] to mark [Currency]. Click [OK] and ##### will be displayed on the Edit Screen. Click ##### on the screen and [Enter Address && Format] screen will appear to edit the address.
5	Print	Run a test print.
6	Size 1	Edit the text size in the selected area. You may set the size from 1 to 7. Size 1 is the smallest. Size 2 is double, Size 3 is triple, ... Size 7 is seven times Size 1, etc.

▶ Communication setting between TOP and Roll Printer

COM1/COM2 ports of TOP are as follows:

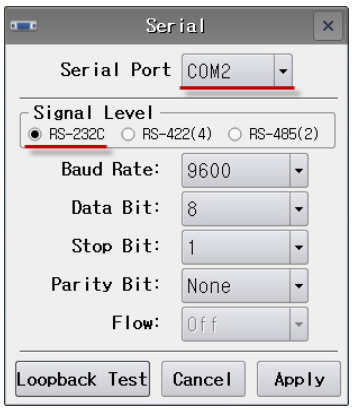
Type	Pin number	Signal name	Direction	Contents
9Pin Female 	1	RDA(RD+)	Input	RS-422/485 Data Reception (+)
	2	RD(RxD)	Input	RS-232C Data Reception (+)
	3	SD(TxD)	Output	RS-232C Data Transmission
	4	RDB(RD-)	Input	RS-422/485 Data Reception (-)
	5	SG		Signal Ground
	6	SDA(SD+)	Output	RS-422/485 Data Transmission (+)
	7	Power	Output	5V
	8	Power	Input	Power Ground
	9	SDB(SD-)	Output	RS-422/485 Data Transmission (-)

For the cable between TOP and Roll Printer, SDof TOP is connected with RD of Roll Printer,RD of TOP with RD ofRoll Printer, and SG of TOP with SG of Roll Printer. Set the port that connects to Roll Printer from COM1/COM2 of TOP in [Control Panel]-[Printer] in menu screen.



[Pic. Port settings for TOP that is connected with a Roll Printer]

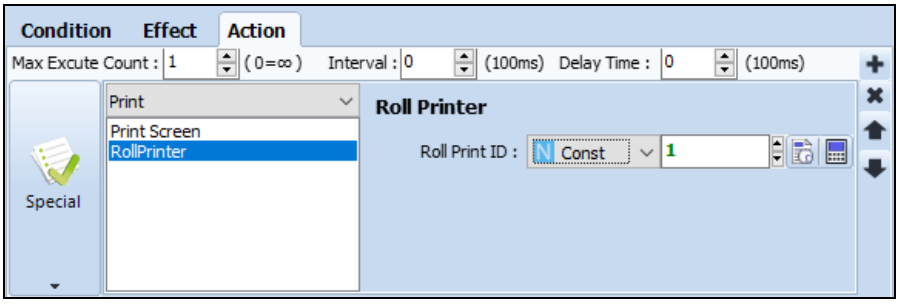
Configure Communication Setting of Roll Printer at [Control Panel]-[Serial] in the menu screen.



[Pic. Enter communication setting for roll printer]

▶ Run the Print button for Roll Printer

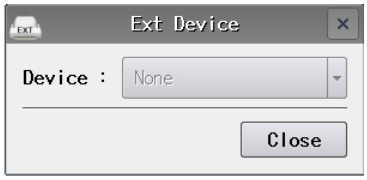
Print Action button is in [Special Function] on [Action] page. Select RollPrinter at [Action]-[Special]-[Print] in [Effect & Action] page and set the print format ID written in [Project]-[Roll Printer]. Run this action and the connected Roll Printer will print in the ID format.



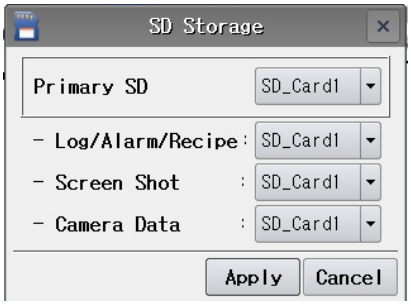
[Pic. Print button]

(5) Extension Device

When EXT Port of TOP has an Extension Module installed, define the device. Install CAM 32 option module and it will be displayed as following picture. You may select the installed CAM 32 memory in [SD Card] at the Device section of [Control Panel].



[Pic. Extension Device - CAM 32]



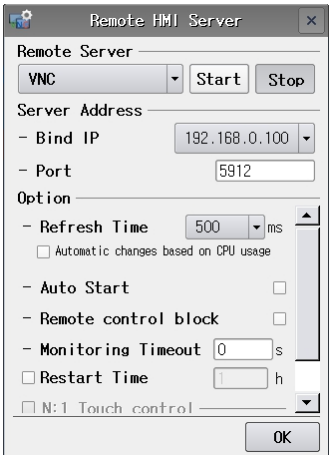
[Pic. SD Card - CAM 32]

1.1.9 Control Panel Icon – Service

(1) Remote HMI Server

1) Before running VNC server, set Administrator Password at [Control Panel]-[System]-[Security] for security. When the Administrator Password is set, you are required to enter the password when entering the menu screen.

2) Run [Control Panel]-[Service]-[Remote HMI Server].



[Pic. VNC Server]

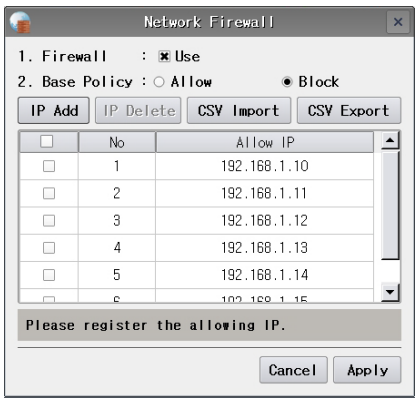
3) Click Start button to activate VNC server. The below Detailed Setting will be switched to Disabled.

4) The description of the below detailed setting part is as follows and it can be configured when its status is in [Stop].

No	Detailed Settings	Description
1	Bind IP	Sets the IP of VNC server. IP and Wi-Fi IP set in [Control Panel]-[System]-[Ethernet] will be displayed in the list. Select the IP of the Ethernet to use.
2	Port	Set the connection port number of VNC server.
3	Refresh Time	It means the response speed of VNC viewer. Set the time short to have quick response time, but it may slow TOP's speed (Option to change refresh time according to the CPU usage of VNC server).
4	Auto start	VNC server will automatically started when TOP power resets and starts.
5	Ban Remote Control	Allow monitoring only and ban remote control function.
6	Monitoring TimeOut	Waits for the set length of time when the monitoring function has been stopped and then issues an error.
7	Restart time	Restart the VNC server according to the set interval.
8	Control timeout	Waits for the set length of time when the control function has been stopped and then issues an error.

(2) Firewall

Firewall is used to block TOP from accessing network.



[Pic. Firewall]

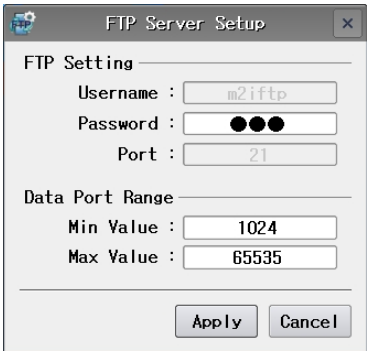
Check the use of [Firewall] and select [Allow/Block] at [Basic Policy]. [Allow] allows all networks excluding the below added IPs (register IPs to block below). [Block] blocks all networks except the below added IPs (register IPs to block allow).

Run [Export CSV] to save the registered IP List as a CSV file.

[Import CSV] loads a CSV file saved by [Export CSV].

(3) FTP Server

Ethernet connection must be on. Set Ethernet settings in [Control Panel]-[System]-[Ethernet]. Navigate to and run [Control Panel]-[Service]-[FTP Server], set a password, and click [Apply] to complete FTP server setting.



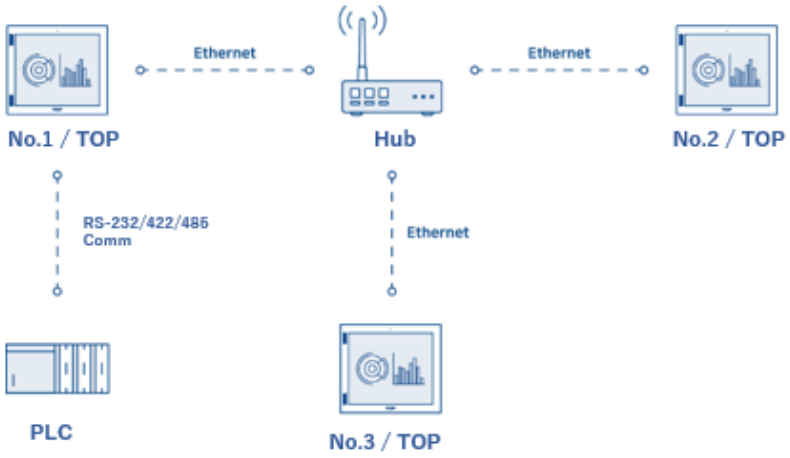
[Pic. FTP Server]

(4) MBUS

MBUS is the function that supports N:1 communication between one controller that uses serial and multiple TOP.

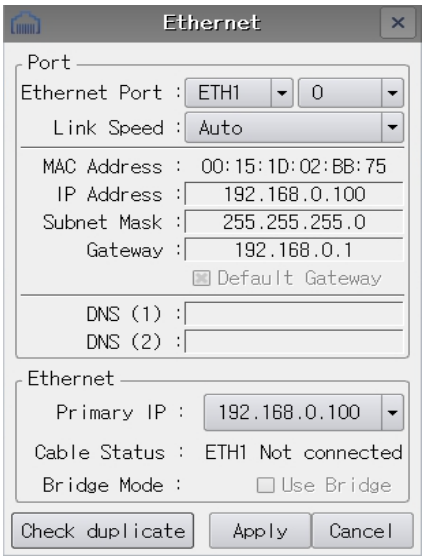
- Use MBUS function when the controller (PLC) and TOP are connected by serial communication (RS-232C/RS-422/RS-485) and you wish to purchase one additional TOP and connect it.
- TOP no. 1 that is connected to one controller (PLC) with serial is called [MBUS Server]. Other connected TOPs are connected through Ethernet. TOP no. 2 and onwards are called [MBUS Client]. There are no limit to the number of MBUS clients, but the more clients you connect, the slower the speed become. It is recommended to use 4 or less clients.
- TOP project files that run with MBUS client can be used if the set PLC in [Project]-[Property] in TDS Design Studio is the same. Project files do not need to match 100%.
  TOP that runs on MBUS client communicates with the controller (PLC) that is connected with MBUS server by serial through Ethernet port.

- Configuration is as below picture.

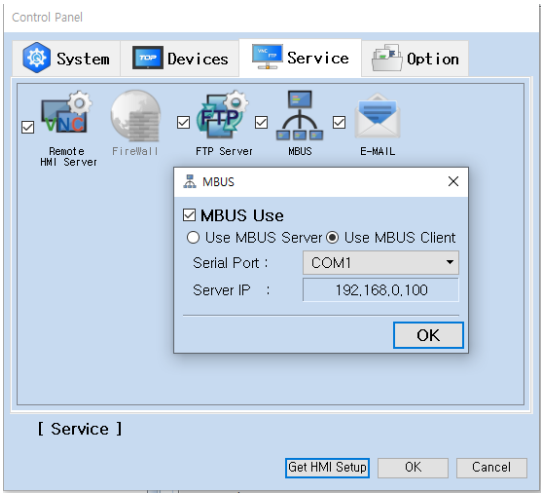


- Let us look at the MBUS server setting.

1) Ethernet connection must be on. Set Ethernet settings in [Control Panel]-[System]-[Ethernet].



2) Run [Control Panel]-[Service]-[MBUS].

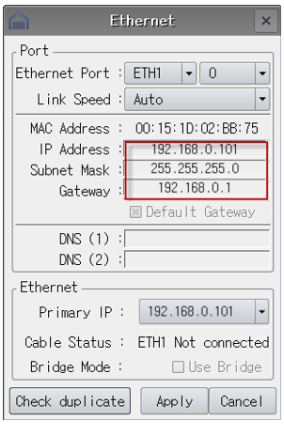


3) Select [MBUS Server] and select the serial port connected to a controller (PLC).

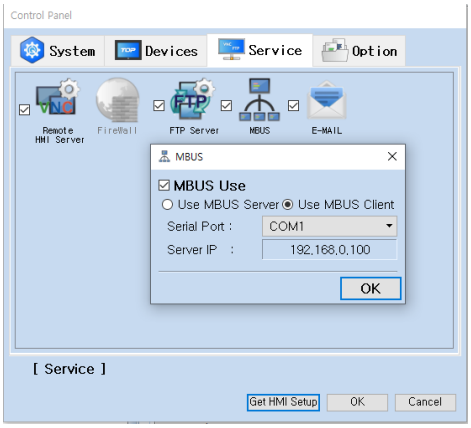
*Note: MBUS server must be connected to an actual controller (PLC) by a serial.

- Let us look at the MBUS Client setting.

1) Ethernet connection must be on. Set Ethernet settings in [Control Panel]-[System]-[Ethernet].



2) Run [Control Panel]-[Service]-[MBUS].



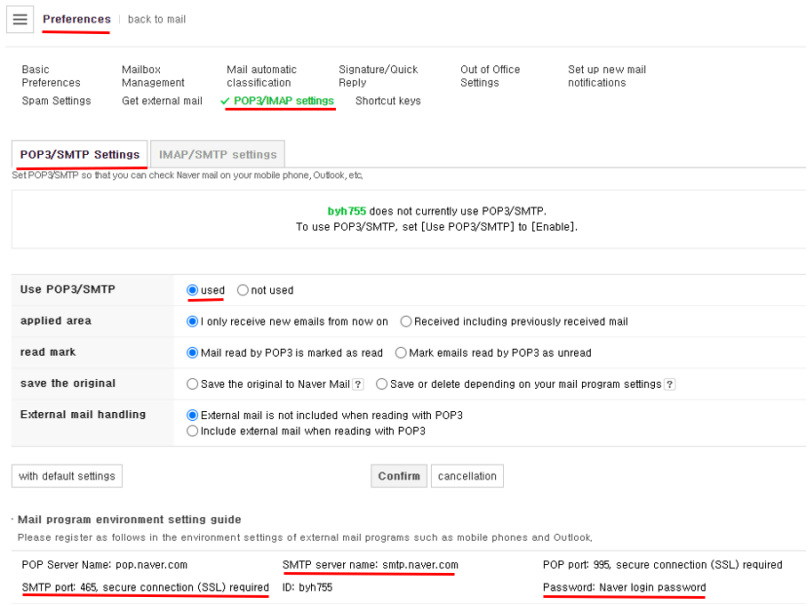
3) Select [MBUS Client] and select the serial port connected to a controller (PLC). Enter the IP set in MBUS Server as the server ID. The current manual setting is 192.168.0.100.

(5) Email

Email function sends emails saved in [Project]-[Send Message] with the [Send Message] action from TOP.

▶ Naver email settings

Let me explain further with the example of Naver email. To use Naver email, access Naver email as shown below and configure settings at [Settings]-[POP3/IMAP Setting].

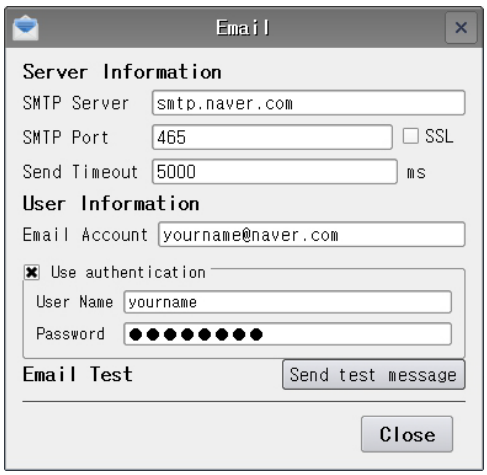


[Pic. Naver SMTP setting]

Set as above picture and check SMPT Server Name/SMPT Port/User Name (ID)/Password (Naver login password) at the bottom and enter them in [Control Panel]-[Email] in TOP menu screen.

▶ Menu screen [Control Panel]-[Email] setting

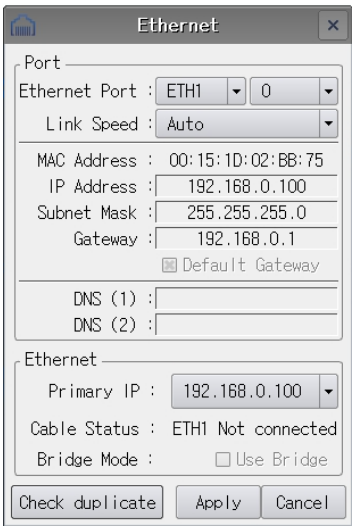
Click [Send a test email] button to send the email and a [Successfully Sent/Failed to Connect] message will be displayed.



[Pic. [Menu Screen]-[Email] setting]

▶ Menu screen [Control Panel]-[Ethernet] setting

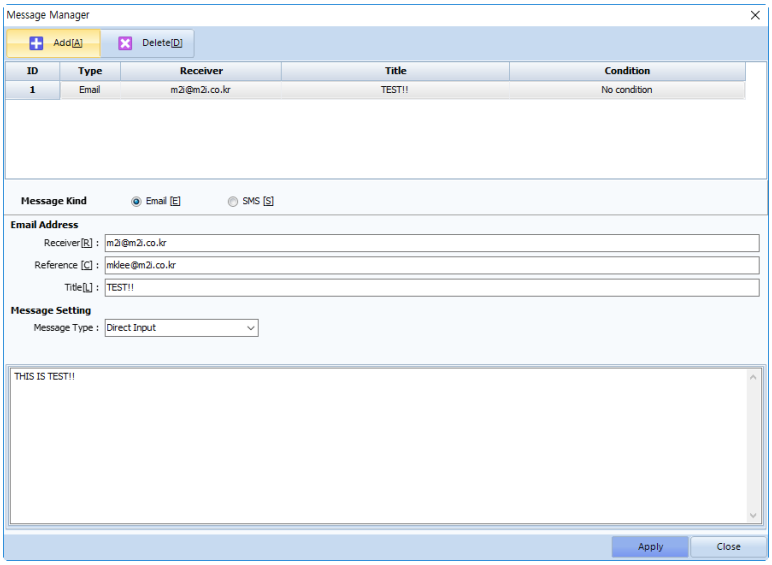
Connect TOP and PC with an Ethernet cable and set [IP/Subnet mask/ Gateway/DNS Server] at TOP [Control Panel]-[System]-[Ethernet]. With a different [Gateway], cannot go to external network. Without [DNS] address, the actual IP address of Naver email cannot be found.



[Pic. [Menu Screens]-[Ethernet] setting]

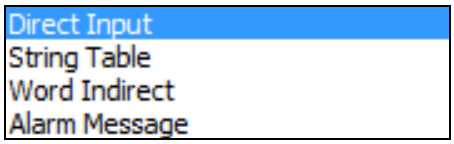
▶ Write email at [Project]-[Send Message]

Run [Project]-[Send Message] in TDS and write an email in [Message Manager].



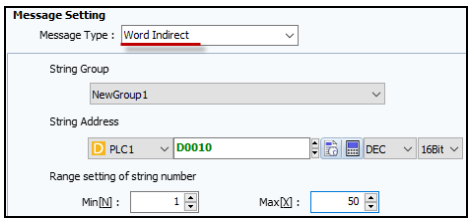
[Pic. Message Manager_Email]

Select [Email] as [Message Type] and click [Add] menu on the top to register an email with ID of [1].
Enter [Recipient Email Address/Title] in [Email Address]. First, select [Message Type] in [Message Setting] and enter texts.



[Message Type]

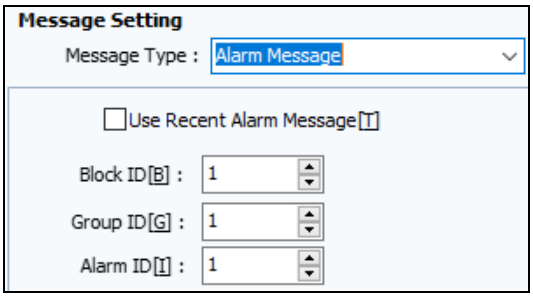
Enter message yourself with [Normal]. Load contents from [Project]-[String] with [String Table]. Select a string group and select a string to register as content from the list.
[Indirect Word] loads the string address data that sets the string registered in [Project]-[String]. The string of ID that corresponds to the set address data is used as the content.



[Pic. Email Contents_Indirect Word]

[Alarm Message] loads [Alarm Contents] from [Project]-[Alarm].

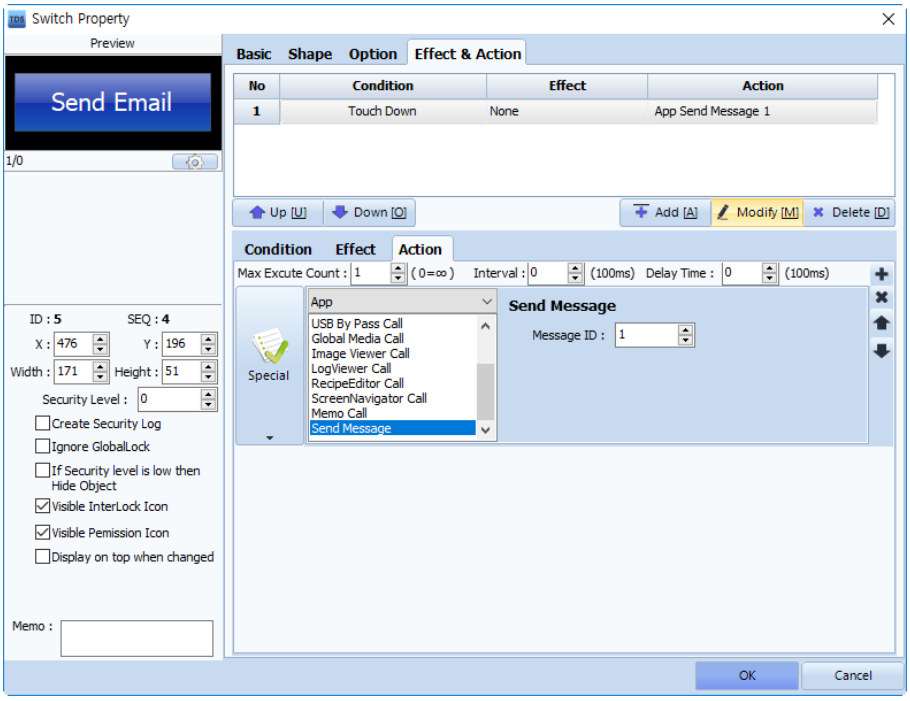
[Alarm Contents] that corresponds to [Block ID/Group ID/Alarm ID] is used as the email's content.



[Pic. Email Contents_Alarm Message]

▶ Send Email

Emails written in [Message Manager] are sent by below action. Go to [Action] page and select [Special]-[App]-[Send Message] and enter the message ID.



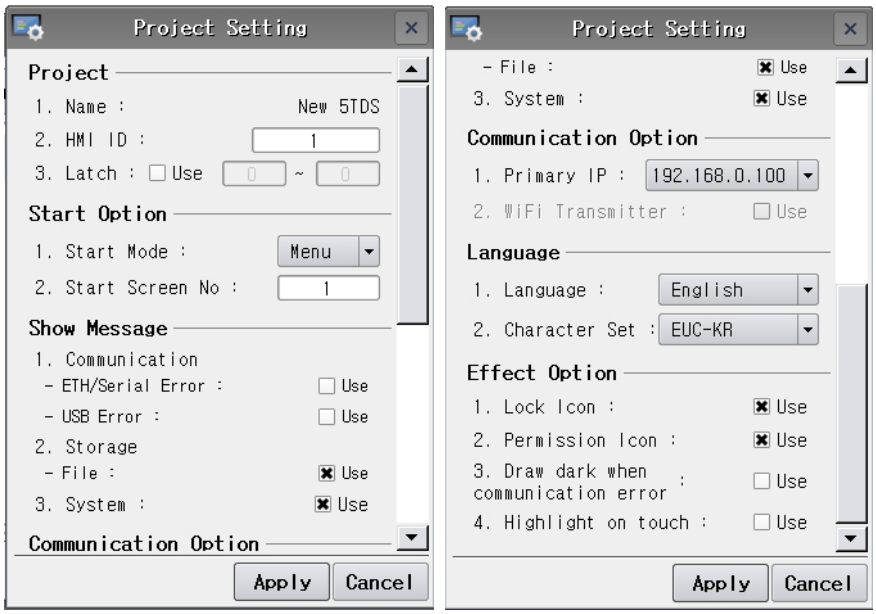
[Pic. Send message button]

Email is sent when above action is taken.

1.1.10 Control Panel Icon – Options

(1) Project setting

These are settings to run a project.

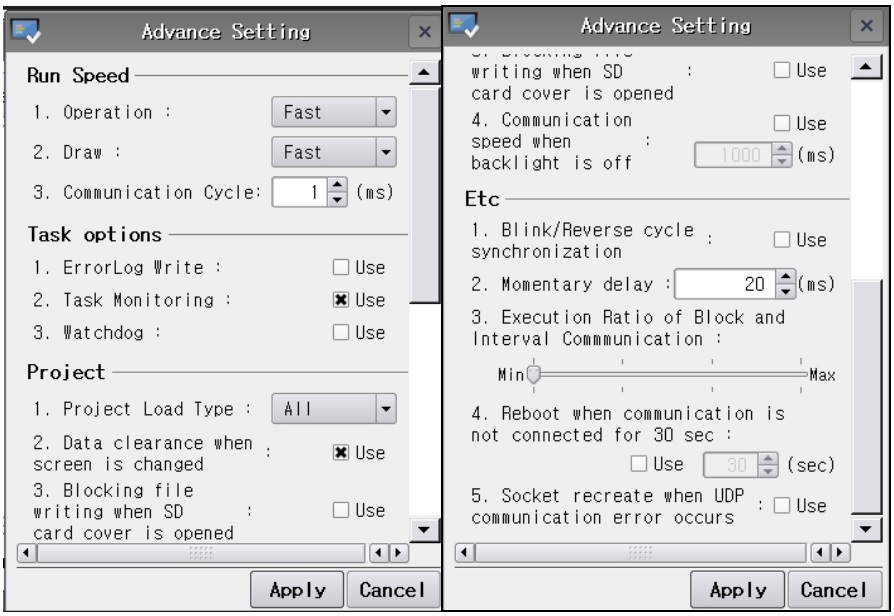


[Pic. Project setting]

No	Detailed Menu	Description
1	Project Name	The name of project file run in TOP.
2	HMI ID	This ID is used to differentiate TOPs when multiple TOPs are connected to one controller via N:1 communication.
3	Latch	TOP has SYS internal addresses that are set in [0-10239]. SYS internal addresses are set in 16 Bit word unit and all saved data are deleted when TOP power is off and become 0. Therefore, you need to set project's [SYS Internal Address in Use] range in [Latch Setting] to save data even when the power resets.
4	Start Mode	Select the starting screen mode when TOP power is turned on. [Menu] shows the menu screen and [Operation] shows the operation screen.
5	Start Screen Number	The Basic Screen Number that is initially run when a project file is executed.
6	Show Message	Set the message display at the bottom or center of the operation screen. Check [Ethernet/Serial Error] to display messages that alert communication errors between the controller. Check [USB Error] to display messages that alert communication errors of USB bar code connected to TOP. Check [File] to display messages USB or SD Card-related issues. Check [System] to display messages that alert system errors.
7	Primary IP	TOP has 2 Ethernet ports that support different networks (2 IPs). Select the IP of the Ethernet port that you will be mainly using from the 2 IPs. (Some TOP models support only 1 Ethernet network.)
8	Wi-Fi Transmission	Check when using Wi-Fi transmission feature. (Available for Wi-Fi models only)
9	Language	Select the menu screen language. There are [Korean] and [English] options.
10	Character Set	Select the character set to use.
11	Lock/Permission Icon	Touch an object with lock/permission function setting and the lock and permission marker will appear on the top left corner of the object. Set to display this icon or not. If [Lock] and [Permission] is unchecked, below icon will be displayed. [Lock]: If Interlock/Touch Lock is set to object, Lock icon will be displayed. [Permission]: If the security level is set to object, Not Permission icon will be displayed.
12	Dark draw when communication error.	Darken the monitor when an error occurs.
13	Highlight on touch	Marks will be displayed every time the screen is touched.

(2) Advanced Setting

Configure advanced settings for running projects.



[Pic. Advanced setting]

No	Advanced Setting Menu	Description
1	Opearation	Set the project calculation speed. Calculation speed refers to the speed that a project conducts its calculation at. Choose from [Maximum Speed], [High Speed], [Speedy], [Normal], and [Slow].
2	Draw	Set the screen update speed. Screen update speed refers to the speed of painting picture on a screen. Choose from [Maximum Speed], [High Speed], [Speedy], [Normal], and [Slow].
3	Communication Cycle	Set the communication interval.
4	ErrorLog Write	When an error occurs, the error description will be recorded in the [App_Log]-[UserLog] folder in TOP. It can be accessed by running File Explorer.
5	Task Monitoring	Check Work Monitoring as [Use] to allow TOP to leave 1 system log for every hour to check the system status. System logs are kept in txt file format by date in [App_Log]-[SystemLog] folder in TOP. Use [File Explorer] and select files to see them in Text Viewer.
6	Watch Dog	Check Watchdog to return to operation screen in 3-4 seconds when TOP switches to menu screen by some reason during operation.
7	Project Load Type	Choose between [Screen] and [All] type to load a project. [Screen] will load each screen. It loads fast as it loads only one screen initially when the project is run. Each screen will be loaded when changing screens. [All] type will load all screens when the project is run. It takes longer time to load, but it runs faster when changing screens as all screens are already loaded.
8	Data clearance when screen is chaged	When switching screen, this function deletes all communication table data on the previous screen and loads, displays, or calculates the new screen's communication table data on the screen.
9	Blocking file writing when SD card cover is opended	Writing/Reading file is restricted when the SD card cover of the touch is opened..
10	Communication speed when backlight is off	Set the communication speed when the backlight on the touch screen is off.
11	Blink/Reverse cycle	When multiple objects that use Blink/Reverse effects operate at the same time on

	synchronization	the screen, objects with the same interval may have different effect action time. Check Synchronize to run objects that have the same Blink/Reverse effect interval at the same time.
12	Momentary delay	Touch the screen and hold for longer than the set time to let the touch to be recognized.
13	Execution Ratio of Block and Interval Communication	Set the ratio of [Project]-[Communication Block]'s communication interval and normal communication interval for TDS. Addresses registered in TDS conduct communications at a certain interval and addresses registered in [Communication Block] conduct additional communication by the set interval.

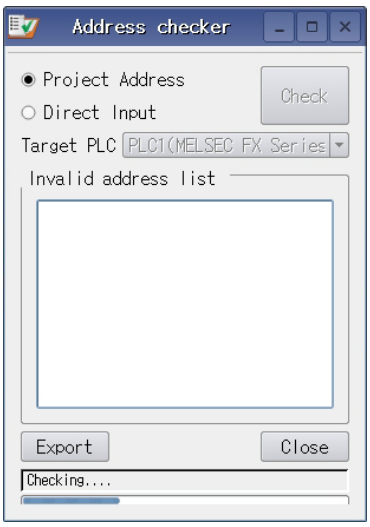
1.1.11 Check Address Icon

Running 

icon will display [Check Address]. It communicates with PLC set in the project and searches for any wrong address (i.e., invalid/incommunicable address) from all addresses used in the [Project].

Select [Project Address] and run [Check] menu to communicate with the connected PLC and begin the checking.
Wrong addresses are displayed on [Invalid Address List]. This list can be saved as a file by using [Export] button below.

Communication error occurs if there is any address used in TOP that cannot communicate with PLC. Therefore, addresses in the [Invalid Address List] must be modified in the project or check them in PLC.



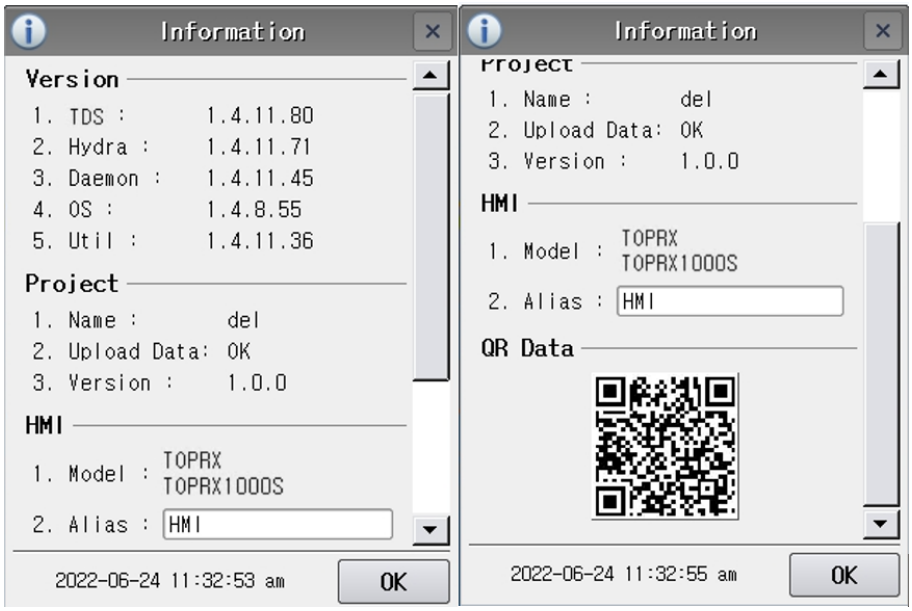
[Pic. Address validity check]

1.1.12 Information Icon

Run 

icon and information screen will be displayed. It shows each version of TOP and some information.

Click [OK] or [X] to close information screen.



[Pic. Information]

No	Information	Description
1	TDS	The TOP Design Studio's software version
2	Hydra	The version of the program that runs projects.
3	Daemon	The version of the menu screen.
4	Util	The app version.
5	OS	The OS version.
6	Name	Shows the name of the project file currently running.
7	Upload Data	Checks the existence of upload data of the project file.
8	Version	The project version.
9	Model	HMI model name.
10	Alias	The alias name of TOP. Touch to enter.
11	QR Data	QR data of HMI.
12	Time	Shows the time of TOP.

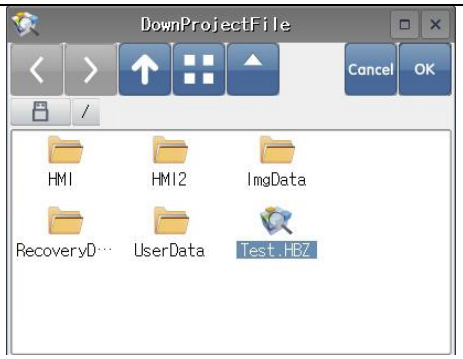
Menu for Installation of External Memory

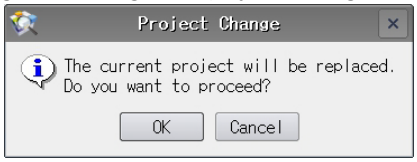
Installing a USB memory to TOP will pop up below menu on the screen.



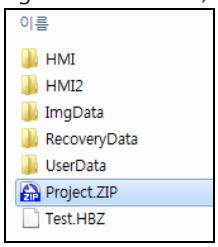
[Pic. Menu for installation of external memory]

No	Menu	Description
1	Project	Click Project and Download button and Upload button will be displayed below. Download [Download]: Download the project file [*.HBZ] in external memory to TOP. Click [Download] and below screen will be displayed. Select project file [*.HBZ] in external memory and click [OK].

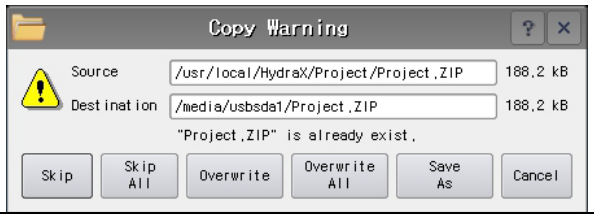
<table>
<tr>
<td></td>
<td></td>
<td>


A project change confirmation message will be displayed. Click [OK] to this message and project download will begin and changes the project running on TOP.




[Upload]: Upload project file in TOP system unit to external memory.
This upload function is available only when file [*.HBZ] is built with [Include Project File in Build File (Use upload data)] checked at TDS [Send]-[Project Build] and sent to TOP. With this checked, the transmission file [*.HBZ] will include a compressed file [*.TDS] for editing. Therefore, when uploading a project file, a compressed file [Project.ZIP] of the editing file [*.TDS] will be saved in the external memory. This file can be decompressed in a PC and opened and edited in TDS (TDS Design Studio software).


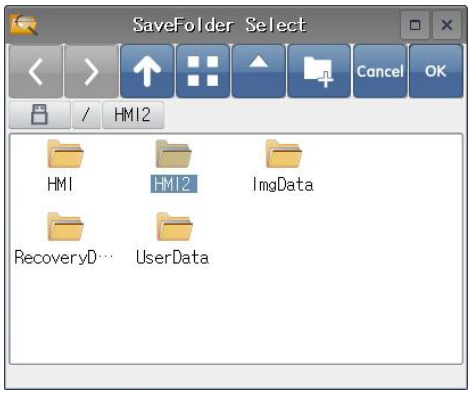
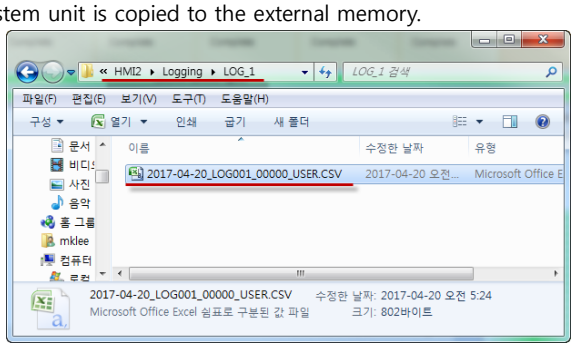
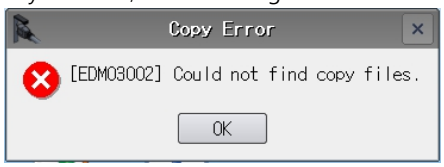
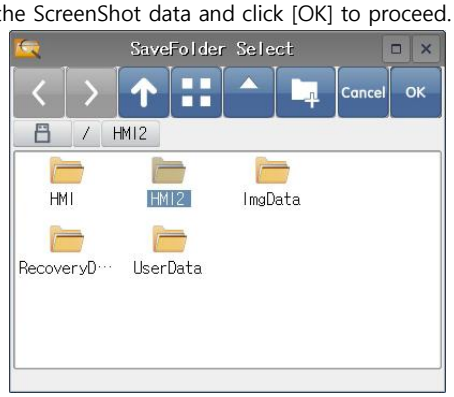
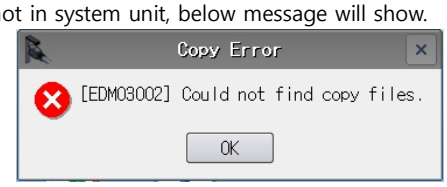
If [Include Project File in Build File (Use upload data)] is not checked before sending and uploading a file, the process cannot be proceeded as there is no upload file and below message will appear.

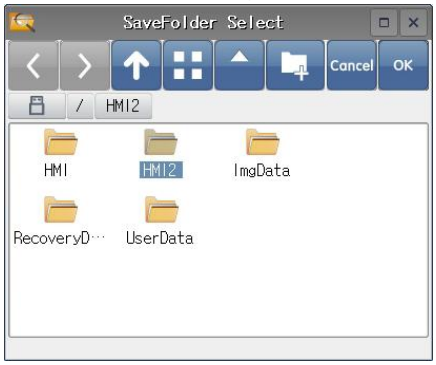
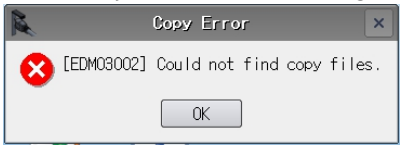
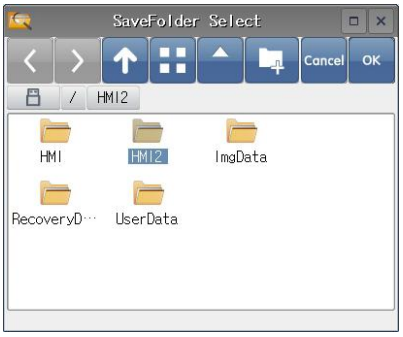
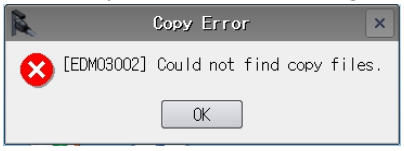

Also, if there is already a [Project.ZIP] file in the path of the external memory that you intend to upload the file to, below message will be displayed, asking if you wish to replace it with the name or save it as a different name.


</td>
</tr>
<tr>
<td>2</td>
<td>Global Data</td>
<td>
Copy log data/alarm data saved in the system unit of TOP to an external memory.
When a log data/alarm data is issued in the system unit, it will be saved in [Global Data]-[HMI]-[Alarm], [Global Data]-[HMI]-[Logging] folder.


[Log Upload]: Copy log data to external memory.


[Alarm Upload]: Copy alarm data to external memory.
</td>
</tr>
</table>

		Click [Log Upload] and the screen that sets external memory path will appear. Select a folder in the external memory to save and click [OK]. All log data will be copied to the designated path.  If you see external memory as below picture, you can see that the entire Logging folder saved in TOP system unit is copied to the external memory.  If there is no log data in system unit, below message will show.  [Alarm Upload] process is the same as [Log Upload].
3	Screen Capture	Copy/Cut all ScreenShot data in TOP system unit to external memory. ScreenShot data is saved in [ScreenCapture] folder in TOP system unit. Click [Copy All]/[Move All] and a path designation screen will appear as below. Set the path to move the ScreenShot data and click [OK] to proceed.  If there is no ScreenShot in system unit, below message will show.   [Copy All]: Copy all ScreenShot data to external memory.

		Move All [Move All]: Move all ScreenShot data to external memory. Browser [Browser]: Select and copy files using File Explorer.
4	Cam Capture	Copy/Cut camera ScreenShot data to external memory. Camera ScreenShot data is saved in [CameraScreenShot] folder in TOP system unit. Click [Copy All]/[Move All] to display the below path assignment screen. Set the path to move Camera ScreenShot data and click [OK] to proceed.  If there is no Camera ScreenShot in system unit, below message will be displayed.  Copy All [Copy All]: Copy all Camera ScreenShot data to external memory. Move All [Move All]: Move all Camera ScreenShot data to external memory. Browser [Browser]: Select and copy files using File Explorer.
5	Cam Movie	Copy/Cut camera video data to external memory. Camera video data is saved in [CameraRecord] folder in TOP system unit. Click [Copy All]/[Move All] and a path designation screen will appear as below. Set the path to move camera video data and click [OK] to run.  If there is no camera video data in system unit, below message will appear.  Copy All [Copy All]: Copy all camera video data to external memory. Move All [Move All]: Move all camera video data to external memory. Browser [Browser]: Select and copy using File Explorer.

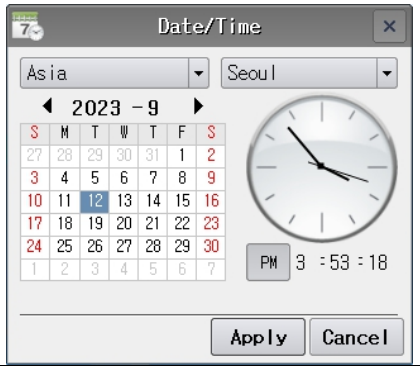
6	Browser	Open [File Explorer].
7	Close	Close the menu.

Status Bar

There is the status bar at the bottom of the menu screen. TOP model name is marked on the left side of the status bar, and [Wi-Fi status/menu screen language/TOP time] will be displayed on the right in the order. Touch [Wi-Fi status/menu screen language/TOP time] to edit them.



[Pic. Status bar on the bottom of the menu screen]

No	Status Bar	Description
1	Wi-Fi Setting	Set Wi-Fi. (Please see Chapter 1.2.7 [Control Panel Icon – System]-[(12) Wi-Fi].)
2	Language Setting	Touch to change the language of the menu screen. Each touch will switch the language between [Korean/English].
3	Date/Time Setting	Display the time of the built-in clock in TOP. Touch to display below Date/Time Setting screen where you can modify date and time. 

CHAPTER 2 - Start TOP Design Studio

TOP Design Studio is the software that creates and edits projects that can be loaded to TOP.

TOP Design Studio Installation

2.1.1 TOP Design Studio Installation Environment

This is the minimum PC system requirement to run TOP Design Studio.

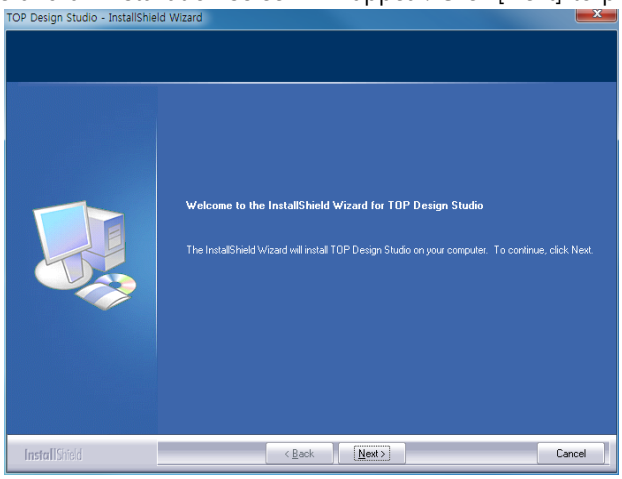
Items	Minimum requirements	Recommended requirements
CPU	Pentium4 1GHz or higher	Pentium4 2GHz Dual CPU or higher
Memory	4 GB or more	8 GB or more
Graphic Adapter and Monitor	SVGA (800*600) 16bit color or higher	SVGA(1024*768) 32bit color or higher Recommended to use laptop models that support separate graphics card.
HDD Space	2 GB or more	10 GB or more
Key Board	Keyboard compatible to Windows	Keyboard compatible to Windows
Mouse	Mouse compatible to Windows	Mouse compatible to Windows
Printer	Printer compatible to Windows	Printer compatible to Windows
OS	Windows 2000/XP or higher	Windows 7 or higher

2.1.2 Download TOP Design Studio

You can download TOS Design Studio setup file in [Software Download] page on the website (www.m2i.co.kr). The file name is [TOP Design Studio Setup (version mark).exe].

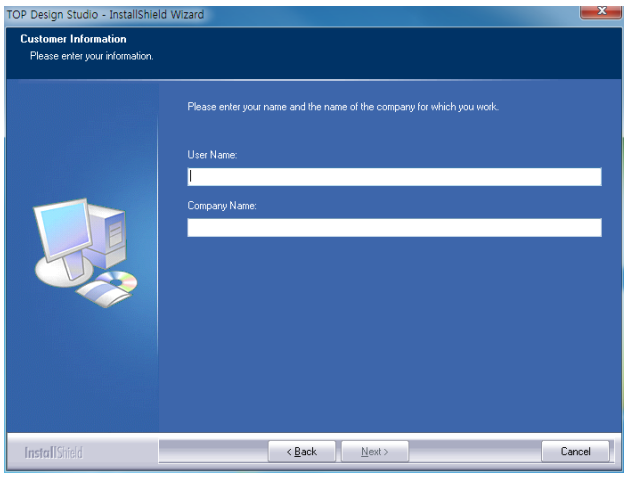
2.1.3 TOP Design Studio Installation

Double click the setup file and an installation screen will appear. Click [Next] to proceed to installation.



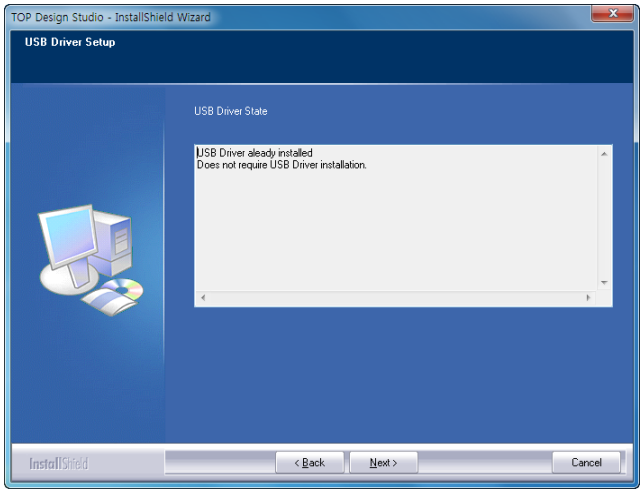
[Pic. Start installation]

(1) A screen to enter user name and company name appears. Enter user name and company name and click [Next].



[Pic. Enter user and company name]

Search if a USB driver (for connecting TOP and PC) is installed in the PC. If not installed, it will automatically install USB driver. If installed, it will notify you that it is already installed. Click [Next].

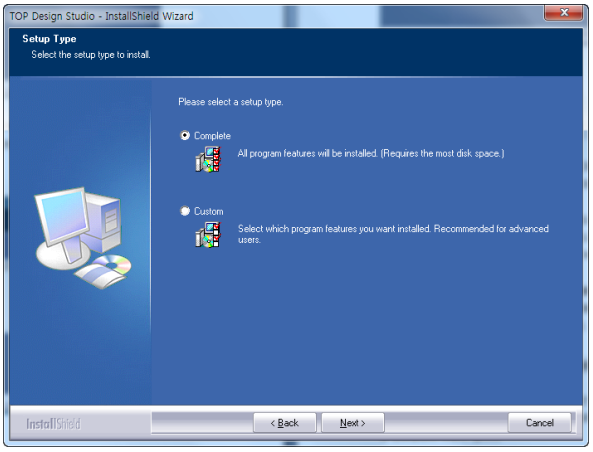


[Pic. USB installation]

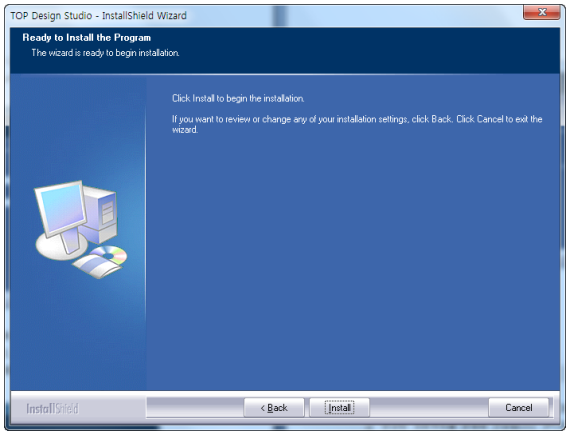
(3) Select installation type.

[Complete] - Install all items and the installation path is automatically designated as [C:₩program Files₩M2I Corp₩TOP Design Studio]. (Recommend)

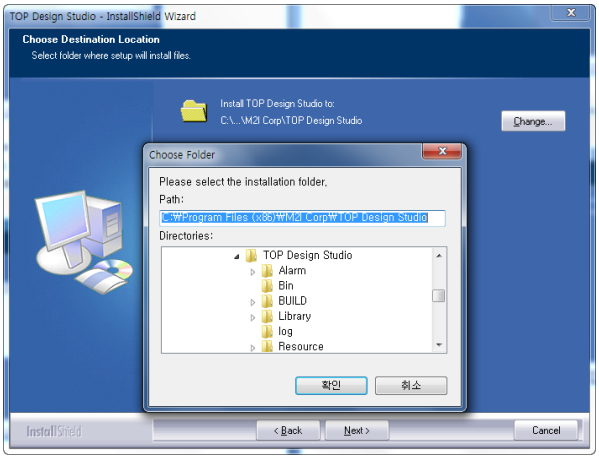
[Custom] - Designate items to install and installation path to your liking.



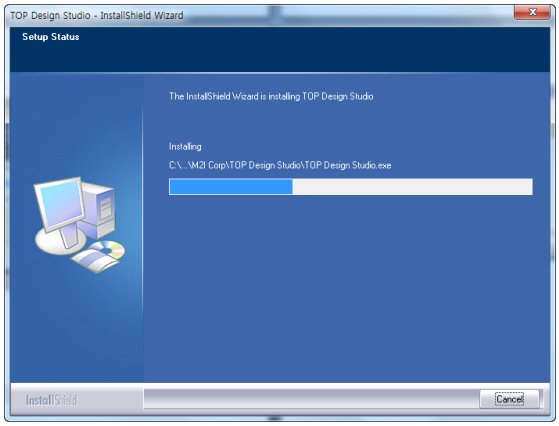
① Select Complete Type to instantly display installation screen. Click [Next].



② Select Custom Type and a screen where you can designate an installation path will appear. Set the installation path and click [Next].



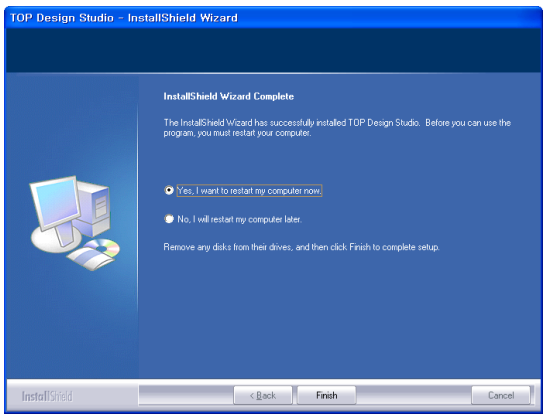
(4) Installation starts.



(5) Installation finished.

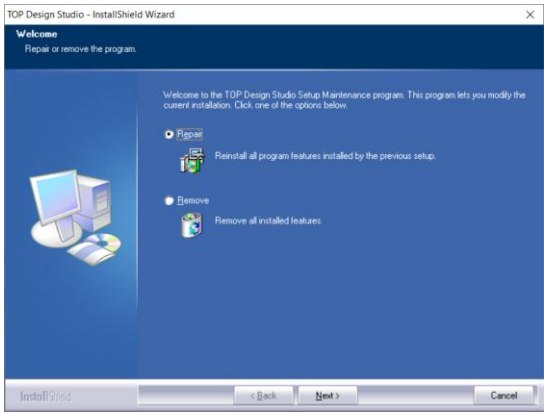
Select [Yes, I want to restart my computer now] and click [Finish] to restart the PC.

Selecting [No, I will restart my computer later] and clicking [Finish] will not restart the PC, but you must restart later to start TOP Design Studio normally.

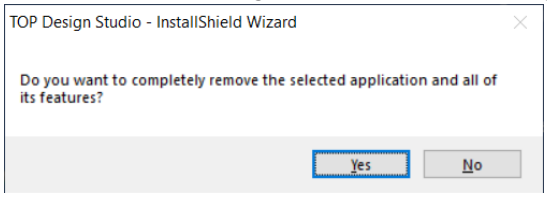


2.1.4 Update in TOP Design Studio

Installing the latest version of TOP Design Studio to a PC where a previous version of TOP Design Studio is already installed will display below screen.

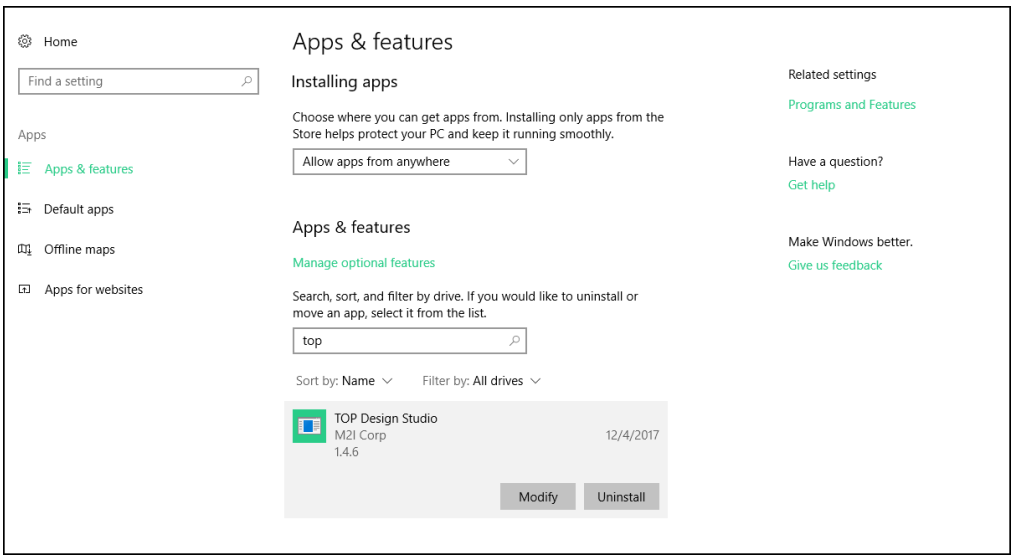


Select option and click [Next]. Installation will proceed according to the selected options.

No	List	Description
1	Repair	Reinstall the program.
2	Remove	Remove the installed TOP Design Studio. Select [Remove] and click [Next] and the following remove confirmation message will appear.  Click [Yes] to remove TOP Design Studio program.

2.1.5 Remove TOP Design Studio

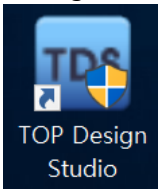
To remove TOP Design Studio program installed in a PC, go to [Control Panel] in Window and select [Add/Remove Programs] to open [Add/Remove Program] screen as [Pic. Add/Remove Program].
Select TOP Design Studio and click [Remove] on the right to complete the removal of the program.



[Pic. Add/Remove Program]

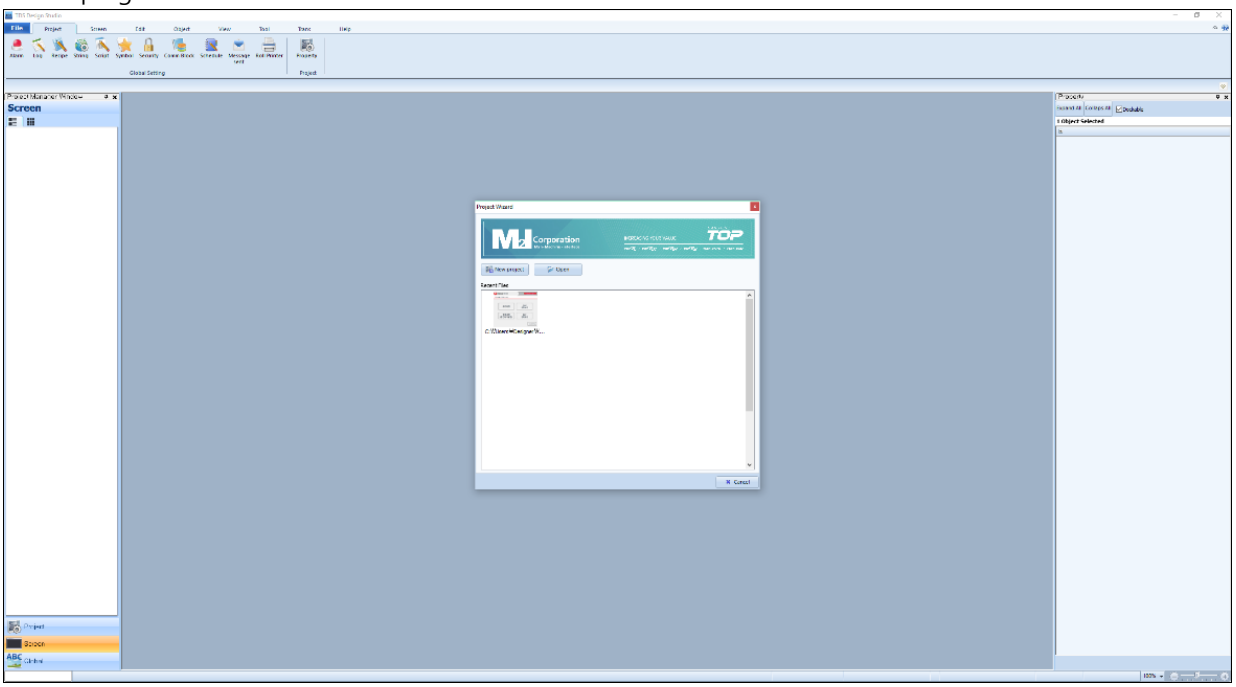
Run TOP Design Studio

Installing TOP Design Studio will create a TOP Design Studio icon on desktop. Also, a shortcut icon to TOP Design Studio will be created in [Start]-[All Programs]-[M2I Corp]-[TOP Design Studio] in Window.



[Pic. Desktop icon]

Double click the icon or click TOP Design Studio icon in [Start] menu in Window to run TOP Design Studio program.

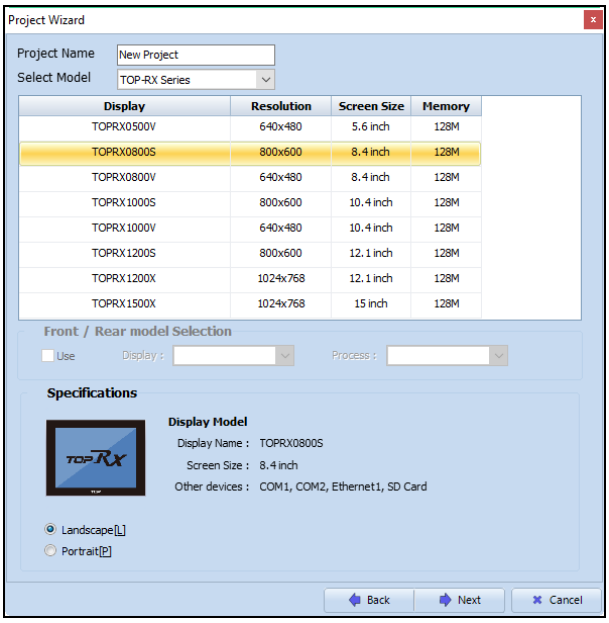


[Pic. Starting screen of TOP Design Studio]

You can create a new project using [Project Wizard] or open an existing project.

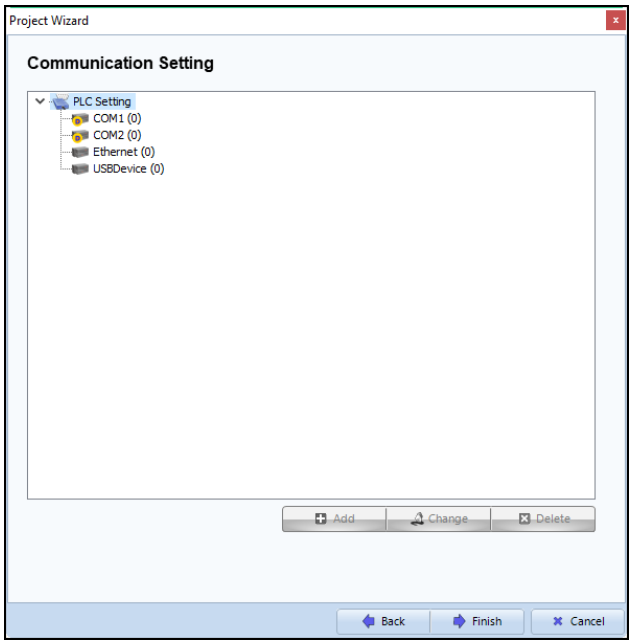
No	Menu	Description
1	New Project	Enter the name of a new project.
2	Open	Use  button to select an existing project.
3	Recent Files	Displays the list of recent files. Select a file to open.

Double click Recent Files List to open the selected project. Clicking New Project will bring you to the screen where you can select a TOP model name to create a new project. Select product series in Select Model to display the models.



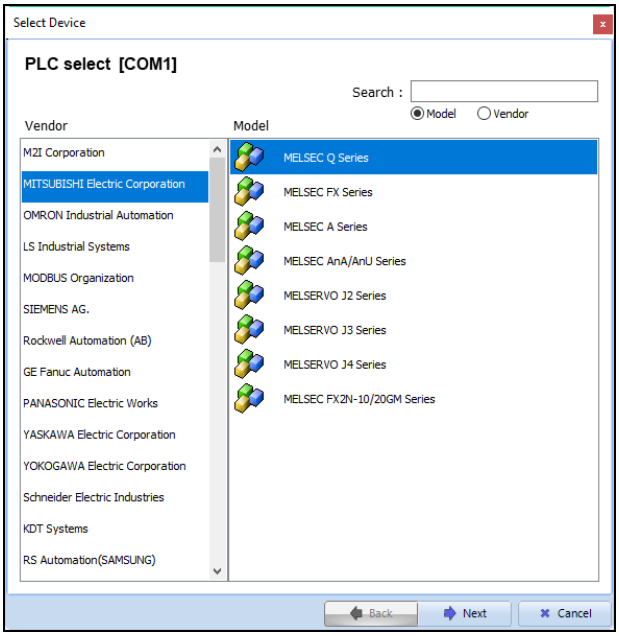
[Pic. TOP Model name selection screen]

A screen for setting the controller that communicates with TOP will be displayed. TOP can use 1-3 COM1 and COM2 (some COM3 models) serial ports and Ethernet ports to connect controller and communicate. Set the controller that is connected to TOP port. This part can be set at a later stage in [Project Option]. Click [Finish] to complete project creation if you do not wish to configure the controller setting.



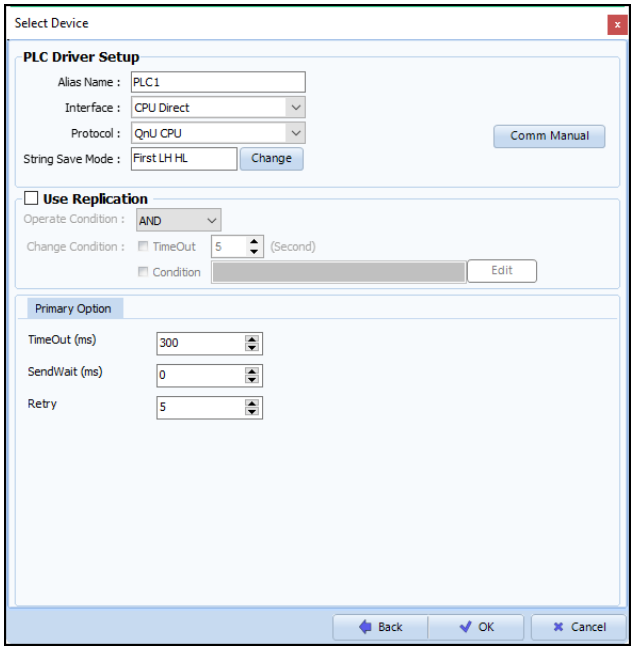
[Pic. Set the controller to communicate]

To set the controller, select the port where the controller is connected to and press [Add]. [Select Device] screen will appear to set the controller.



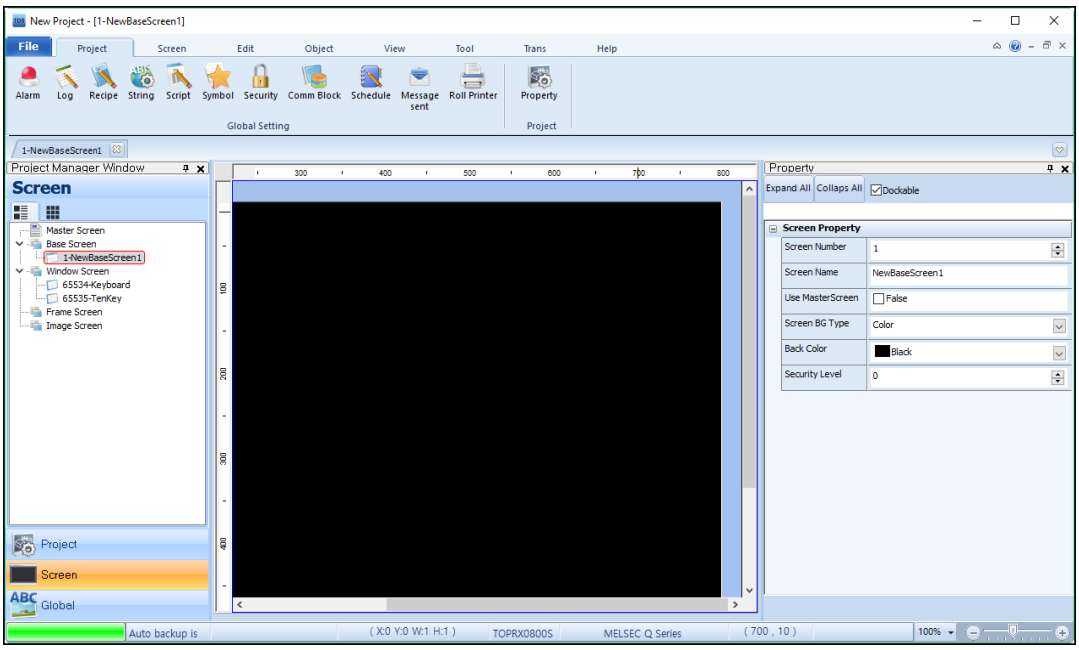
[Pic. Select PLC]

Select PLC vendor and model (series) and press [Next]. In the next screen, complete the settings for details isuch as PLC name, communication option, etc. and click [OK] to finish PLC Driver Setup.



[Pic. PLC Driver Setup]

Finish PLC Driver Setup and click [Finish] in [Project Wizard] screen to create a new project.



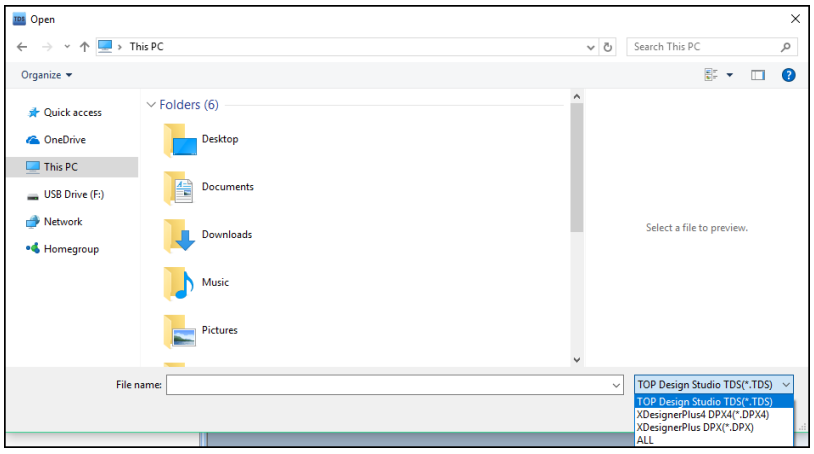
[Pic. Screen with a project created]

Change the program's language at [Language] in [View] menu.

Compatibility between TOP Design Studio and Older Software

This software is compatible to project files created in XDesignerPlus, an older version of XTOP's software. Therefore, if you open [*.DPX/*.DPX4] files and newly saving them, it will be automatically converted to TOP Design Studio [*.TDS] file.

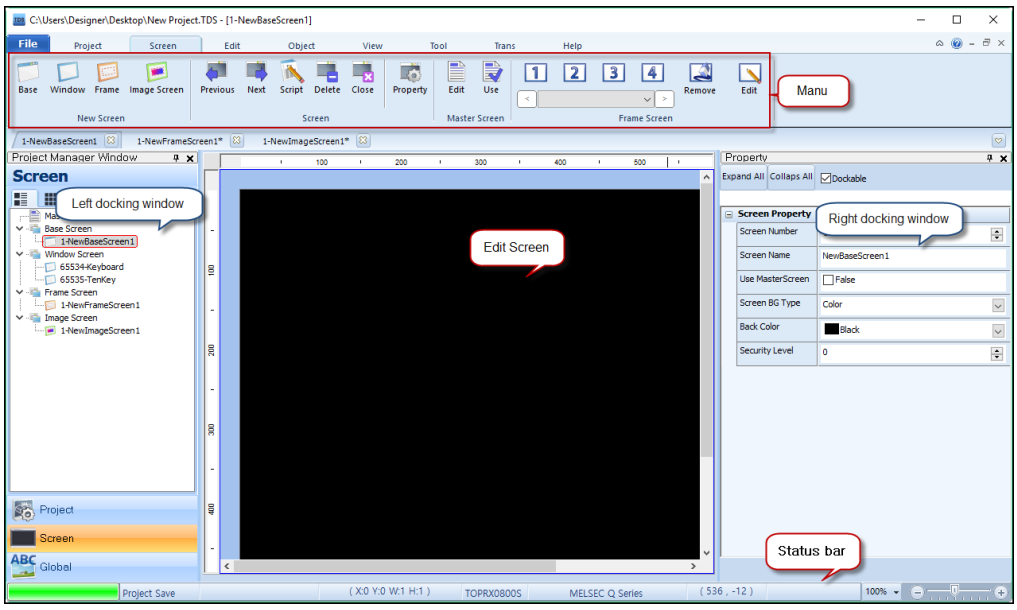
Go to [File]>[Open] and change the file format to [*.DPX] and you can load XDesignerPlus [*.DPX] files to TOP Design Studio. However, please note that [*.TDS] files cannot be converted to [*DPX] files.



[Pic. Opening an old version of project file in TDS]

Overall Configuration of TOPS Design Studio

The configuration of TOP Design Studio is composed of menu, editing screen, dock window, and status bar as shown in below picture.



[Pic. Configuration]

2.1.6 Menu

Configure menus to create, edit, and send projects in a ribbon menu format for more convenient use.
Ribbon menu is a combination of the existing menus and toolbar.

No	Menu	Description
1	File	It creates/saves/opens/closes projects, creates/loads templates and so on.
2	Project	Global Setting is the menu that configures overall project settings that are not confined to screens. It sets various data, password, or write scripts. You can also set touch model name and controller (PLC) with the project property menu.
3	Screen	This menu creates and manages default screen, window screen, master screen, frame screen, and image screen (auxiliary screen).
4	Edit	This menu is for editing objects registered in screen.
5	Object	It provides various types of objects that configure a screen. Use objects to mark data or calculation. There are shape objects and tag objects.
6	View	Sets the view condition of the program. Set TDS language, status (0/1), hint, zoom, dock window, screen align, etc.
7	Tool	Provides convenient functions such as Cross Reference, Address Converter, Screen Manager, Screen Preview, ProjectImageTool, Image Library, Create Recovery Disk, and Condition/Effect /Action Search.
8	Transmission	Send files to TOP or upload files from TOP. You can run simulation. You can also use online simulation to communicate with the actual controller and simulate at the same time.
9	Help	You may check software help or check the version in product information.

2.1.7 Editing Screen

We provide various screens for effective uses.
You can assign objects in each screen to design and implement features.

No	Screen	Description
1	Base Screen	The main screen that appears and operates when sending a project to TOP. Default screen number will start from no.1 and can be created up to no. 65535.
2	Window	This screen can be conditionally popped up from the base screen or removed when not needed.

	Screen	Window screens can be created from no. 1 up to no. 65535. (Warning) From screen no. 65400, certain functions (Tenkey, etc.) that are automatically created are fixed to window assignment screen and cannot be used as user screen.
3	Master Screen	A screen that can implement the screen call function. By implementing the background screen that is commonly applied to every screen or any repeatedly used functions to the master screen, you can call them to the base screen. Check its use at the base screen's property section to register a master screen to the default screen like a background. Only 1 master screen can be made. Increase memory and editing efficiency by reusing common functions.
4	Frame Screen	This screen can perform Call Screen function and can create up to 65535 frame screens. Frame Screen is a screen that forms contents in areas that can be used in common into frames to reuse them in various base screens. Using Frame Screen can minimize repetitive works and reduce the capacity of the whole project. You may register maximum 4 Frame Screens in base screen.

2.1.8 Dock Window

Docking means sticking something on like a magnet. Dock Window is placed (docked) on the left or right corner of the screen or separated from Main Window. TOP Design Studio has Dock Windows on the left and right side. These windows are special features and can be removed if unnecessary. The types of Dock Window are Project Manager Window/List Window/Property Window/User Library Window.

There is a  sign on the top right corner of Dock Window. Clicking this pinshaped icon changes it to a horizontally placed one (), moving the left Dock Window to the left and the right Dock Window to the right.
Clicking it again will stand the pin icon and fix the Dock Window. Clicking [X] will remove the window. The removed Dock Window can be loaded back at [View] menu.

No	Dock Window	Description
1	Project Manager	This window identifies and manages Project setting, Screens, Global Setting, and Global.
2	Object List	Displays all objects registered in the window that is currently open in a list format.
3	Property	Shows the property of the -object that is registered to the screen and selected. If nothing is selected, it shows the screen property. Select multiple objects of the same type to change their properties at once.
4	Global	Users can register objects and screens in this library and simply add those to projects that they want. It can be managed by folder.

2.1.9 Status Bar

This bar displays the project status at the bottom of TOP Design Studio.
It displays the model name and PLC name set to the project and shows the work status.
Display the cursor coordinate when the mouse moves and zoom in/out of the edit screen.

Shortcut Key List

Top Menu	Subsidiary Menu	Shortcut Keys
File Menu	New Project	Ctrl+N
	New Template	Shift+Ctrl+N
	Open Template	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 Information - Alarm	Ctrl+Alt+A
	Global Information - Log	Ctrl+Alt+L
	Global Information - Recipe	Ctrl+Alt+R
	Global Information - Multi Language	Ctrl+Alt+S
	Global Information - Script	Ctrl+Alt+C
	Global Information - Symbol	Ctrl+Alt+Y
	Global Information - Security	Ctrl+Alt+E
	Global Information - Comm Block	Ctrl+Alt+B
	Project - Property	Ctrl+Alt+P
Screen Menu	Create Screen - Default	Ctrl+B
	Create Screen - Window	Ctrl+W
	Create Screen - Frame	Ctrl+F
	Screen - Previous	PageUp
	Screens - Next	PageDown
	Screens - 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 - Erase 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 - Left	Shift+Ctrl+Left
	Align - Middle	Shift+Ctrl+M
	Align - Right	Shift+Ctrl+Right
	Align - Center	Shift+Ctrl+C
	Align - Bottom	Shift+Ctrl+Down
	Align - Top	Shift+Ctrl+Up
	Align - Same horizontal space	Shift+Ctrl+Z

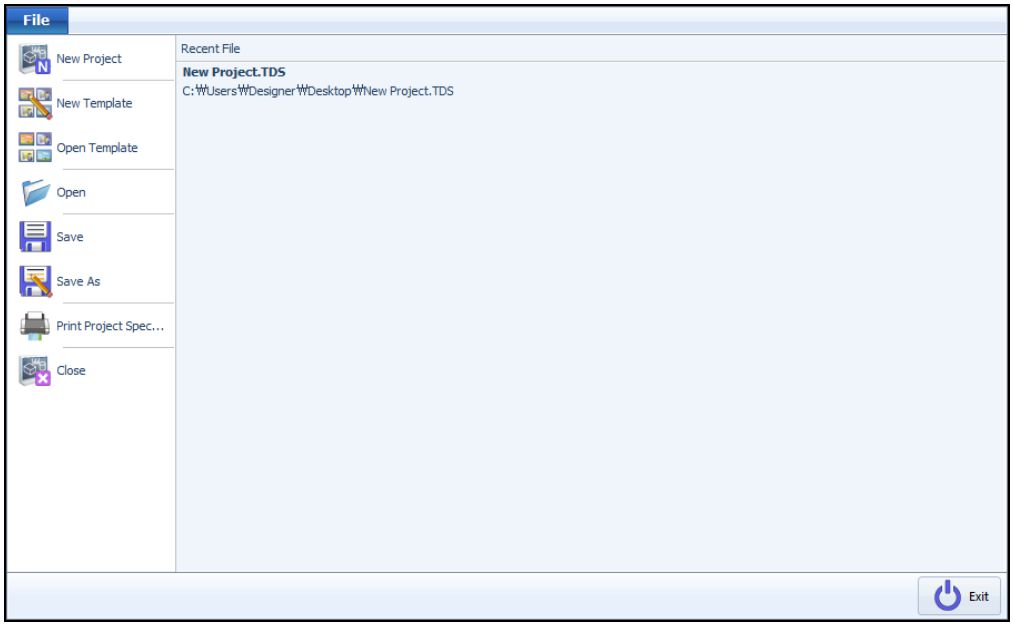
	Align - Same vertical space	Shift+Ctrl+E
	Align - Center in window	Shift+Ctrl+R
	Align - Middle in window	Shift+Ctrl+I
	Align - to the maximum width	Shift+Ctrl+B
	Align - to the minimum width	Shift+Ctrl+T
	Align - to the maximum height	Shift+Ctrl+G
	Align - to the minimum height	Shift+Ctrl+L
	Align - Send to the front end	Ctrl+Home
	Align - Send to the back end	Ctrl+End
	Align - Send front	Home
	Align - Send back	End
	Popup - Select all	Ctrl+A
	Popup - Select same types	Shift+Ctrl+A
	Popup - Delete	Delete
	Popup - Mirror - Mirror Vertical	Alt+,
	Popup - Mirror - Mirror Horizontal	Alt+.
	Popup - View object list	Shift+Enter
	View Grid	Ctrl+Alt+F2
	Edit Option - SnapObj	Ctrl+Alt+O
	Edit Option - SnapGrid	Ctrl+Alt+G
	Edit Option - Draw default screen	Ctrl+Alt+D
	Edit Option - Option Setting	Shift+O
	Font - Bold	Alt+B
	Font - Italic	Shift+Alt+I
	Font - UnderLine	Shift+Alt+U
	Font - Strike	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 Work	Esc
	Snap Move Up	Ctrl+Up
	Snap Move Down	Ctrl+Down
	Snap Move Left	Ctrl+Left
	Snap Move Right	Ctrl+Right
	Adjust Top Size	Shift+Up
	Adjust Bottom Size	Shift+Down
	Adjust Left Size	Shift+Left
	Adjust Right Size	Shift+Right
	Snap Move	Space
	Modify Text	F2
View Menu	Dock Window - Project Manager	F7
	Dock Window - List Window	F8
	Dock Window - Property Window	F11
	Dock Window - User Library	F3
	Hint - Show Hint	Ctrl+H

	Zoom - Zoom Out	Ctrl+-
	Zoom - Zoom Default	Ctrl+0
	Zoom - Zoom In	Ctrl+=
	Hint - Hint Setting	Ctrl+Alt+H
	Minimize	Alt+[
	Maximize	Alt+]
	Cascade	Shift+[
	Arrange All	Shift+]
	Close All	Ctrl+Alt+F4
Tool Menu	Tool - Search Address/Object	Ctrl+F2
	Tool - Convert Address	Ctrl+F3
	Tool - Screen Manager	Ctrl+F5
	Tool - Screen Preview	Ctrl+F6
	Tool - Project Image Manager	Ctrl+F7
	Too - Image Library	Ctrl+F8
	Tool - Make Recovery Disk	Ctrl+F9
Send Menu	Send - Run Simulation	F12
	Send - Project Build Dialog	F9
	Send - Download	Alt+F10
	Send - Upload	Alt+F11
	Send - Connection Setting	Alt+F12
Help Menu	Help - Online Update	Alt+F3
	Help - Help	F1
	Help - About	Shift+Ctrl+F2
Layout	Active Menu	Ctrl+1
	Active ProjectManager	Ctrl+2
	Active ObjectList	Ctrl+3
	Active Property	Ctrl+4
	Active UserLibrary	Ctrl+5
	Active ScreenEditor	Ctrl+6
Dock Window	Open Dialog	Ctrl+Enter
	Project - Property	Alt+P
	Screen	Alt+S
	Global	Alt+R

CHAPTER 3 - File Menu

[File Menu] creates and saves new projects.

Also, it can open or close saved project files and add multiple projects to open.



[Pic. File Menu]

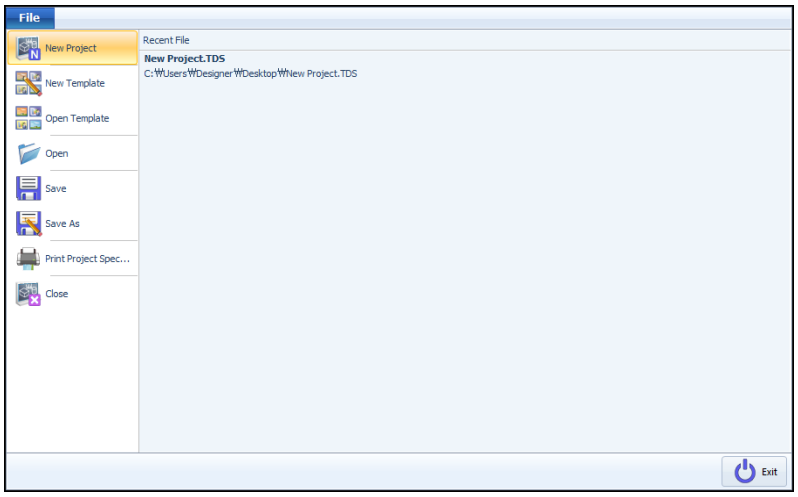
New project (Ctrl + N)

Create a new project and screen, or load existing projects to open.

Choose [New project] menu in [File menu] to display [Project Wizard] screen.

3.1.1 Create New Project

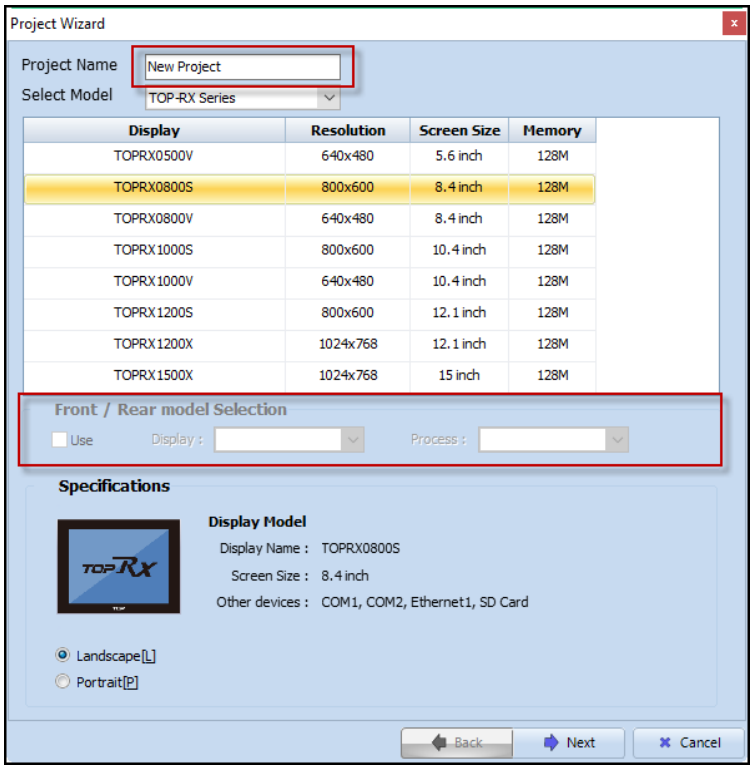
Create a new project.



[Pic. Run new project]

(1) Select product model

[NewProject] is the automatically given temporary name of a project. However, you can replace it with a different name. Enter the name, select a TOP series at the bottom, and select the TOP model corresponding to the selected series.



[Pic. Select product model]

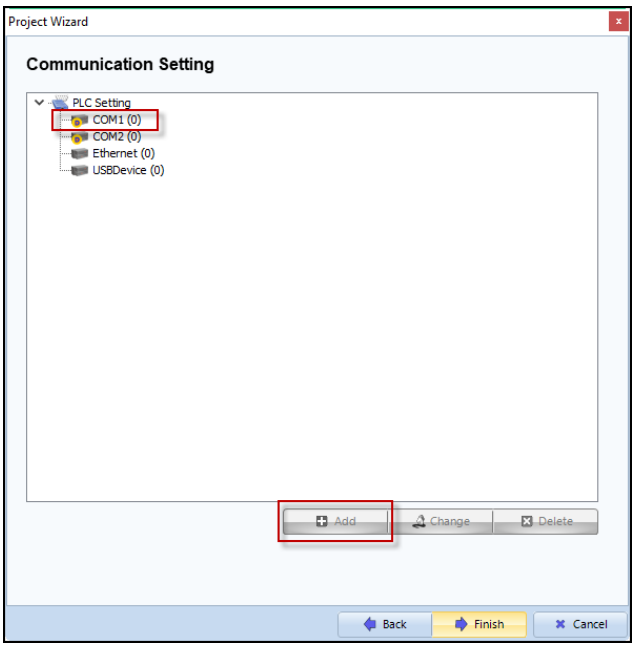
No	Menu	Description
1	Project Name	Assign the project name.
2	Select Model	Select the product series and choose the product to use from the series models. For some series, you need to choose display and process parts separately.
3	Front/Rear Separate Selection	For TOPR series, you may select display and process parts separately.
4	Screen Direction	Choose from horizontal/vertical screen to work with.
5	Specifications	Shows the specifications of the selected model.

Select touch model and screen direction and click [Next] button. Communication setting screen will be displayed.

(2) Communication setting: Add PLC

In this part, the controller (PLC) to be connected to TOP can be set. [Communication Setting] can be set later at [Project Setting] menu. If you wish to set it at a later stage, press [Finish].

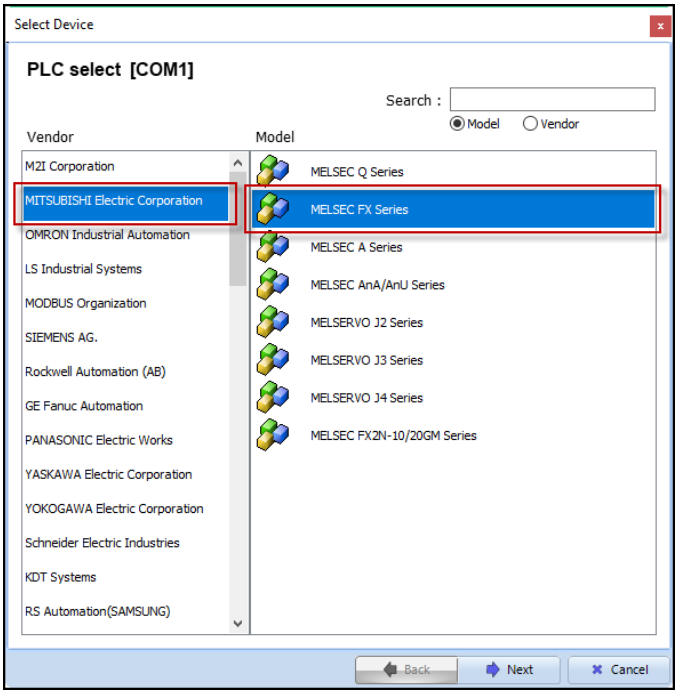
If you wish to configure communication settings here, select port that is connected to the controller (PLC) from [COM1/COM2/COM3 (some models)/Ethernet] and press [Add].



[Pic. Communication setting]

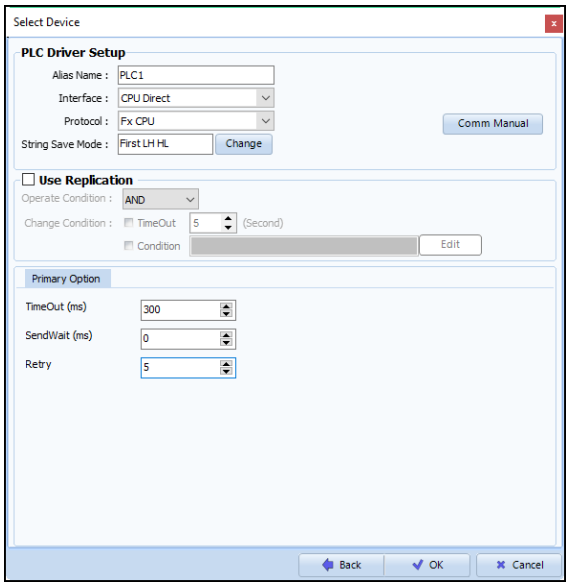
NO	MENU	DESCRIPTION
1	Add	Add a PC.
2	Change	Change the selected PLC to another PLC.
3	Delete	Delete the selected PLC.

Select a port and press [Add] to display the following [Select Device] screen where you can select the type of PLC. Select the vendor of PLC and model (series) and press [Next]. You can search controller at [Search].



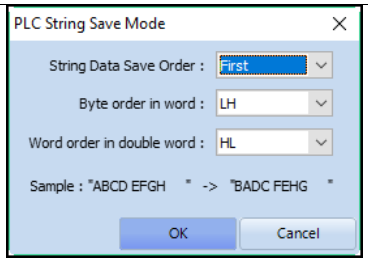
[Pic. Add PLC 1]

Input PLC name and configure detailed settings according to the selected PLC.



[Pic. Add PLC 2]

In PLC Driver Setup, configure the below items.

NO	MENU	DESCRIPTION
1	Alias Name	Alias name is the user name of PLC. The address is set with this name for screen layout.
2	Interface	Select the communication method of PLC. E.g.,) Choose whether to communicate through direct connection to CPU, use a communication card, etc.
3	Protocol	If there are multiple protocols supported by the controller, choose the protocol type of the selected PLC.
4	String Save Mode	 Each controller has a different order of saving string in memory. Save order can be set to respond to different string handling. 1 string is 1 byte. Choose either [First/Last] for [String Data Save Order]. Choosing First will enter the first input string as the first address. When entered "ABCDEFGH", it will be input -> "ABCDEFGH". Choosing Last will input "ABCDEFGH" as -> "ABCDEFGH". (Assuming Byte order in word: HL, Word order in double word: HL) In [Byte order in Word], H refers to High (higher bytes) and L refers to Low (lower bytes). [HL] inputs ABCDEFGH as -> ABCDEFGH. [LH] inputs ABCDEFGH as -> BADCFEHG. In [Word Order in Double Word], H refers to High (higher word) and L to Low (lower word). [HL] inputs ABCDEFGH as -> ABCDEFGH. [LH] inputs ABCDEFGH as -> CDABGHEF.

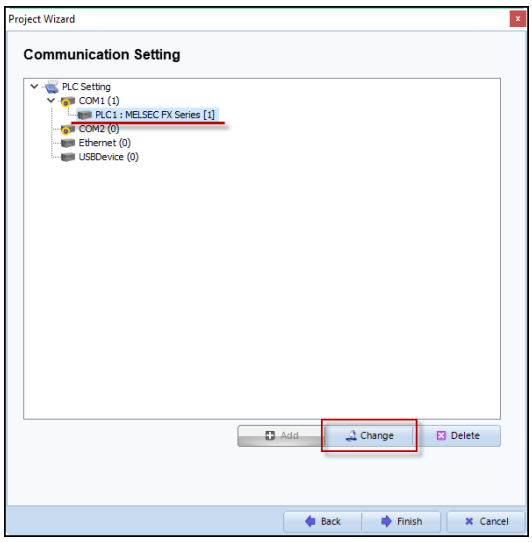
Next, set communication option.

NO	MENU	DESCRIPTION
1	TimeOut	Set the TimeOut for PLC communication. TimeOut is the time for waiting the response of a

	(ms)	controller (PLC). TOP begins communication with the controller, waits for the length of the set TimeOut for the response from the controller. When there is no response within the time, an error will be issued.
2	SendWait (ms)	SendWait is the pre-transmission delay time for PLC communication. Pre-transmission delay time frees communication overload on controller by allowing TOP to send the next request after SendWait time rather than sending one immediately after TOP sending the initial request as Master and receiving a response from the controller. It is used when communication scan of the controller is not speedy.
3	Retry	It is the number of re-sent communication protocols by TOP. First, TOP commences communication with controller, waits for the TimeOut time length when there is no response from the controller, and sends communication protocols again. It repeatedly sends protocols after waiting for the TimeOut time. If there is no response after the set amount of re-sent protocols, it issues an error.

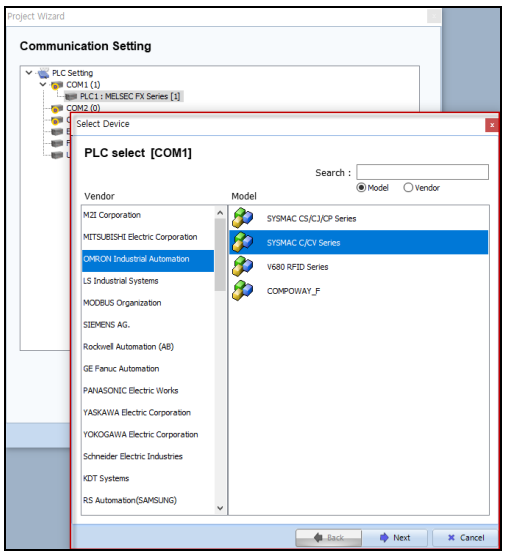
(3) Communication Setting: Change PLC

Change the selected PLC to another PLC. Select the PLC to change to and click [Change].



[Pic. Change PLC 1]

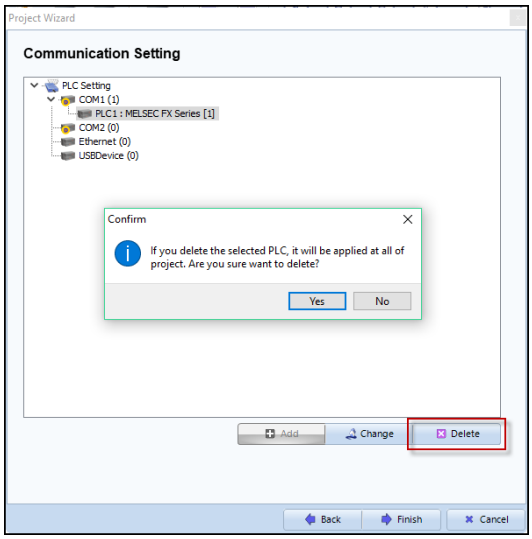
As shown in the picture, [Select Device] screen will be displayed again to change to a different PLC.



[Pic. Change PLC 2]

(4) Communication Setting: Delete PLC

Select the PLC to delete and click [Delete]. Click [Yes] at the delete confirmation message to delete the PLC.



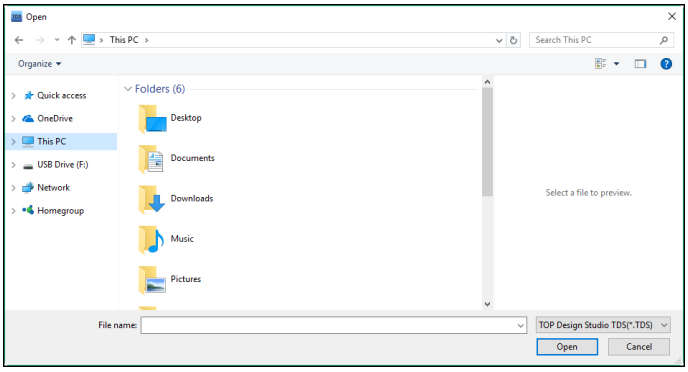
[Pic. Delete PLC]

3.1.2 Open Existing Project

Use [Open Project] or [Recent Files] menu to open recent project files.

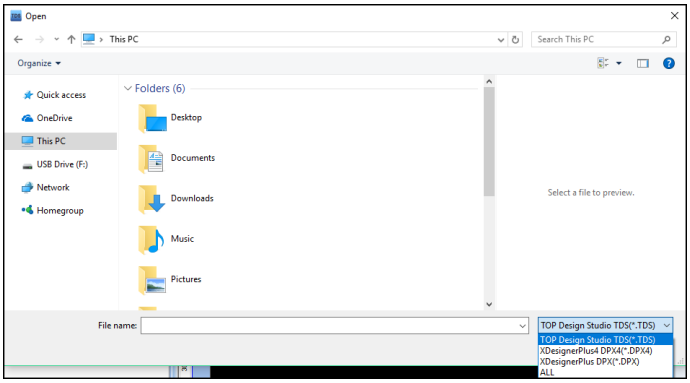
(1) Open project using File Explorer

Click  to display [Open] screen. Explore the path where the project to load is saved and select the project file. Click [Open] and the project will be open.



[Pic. Open]

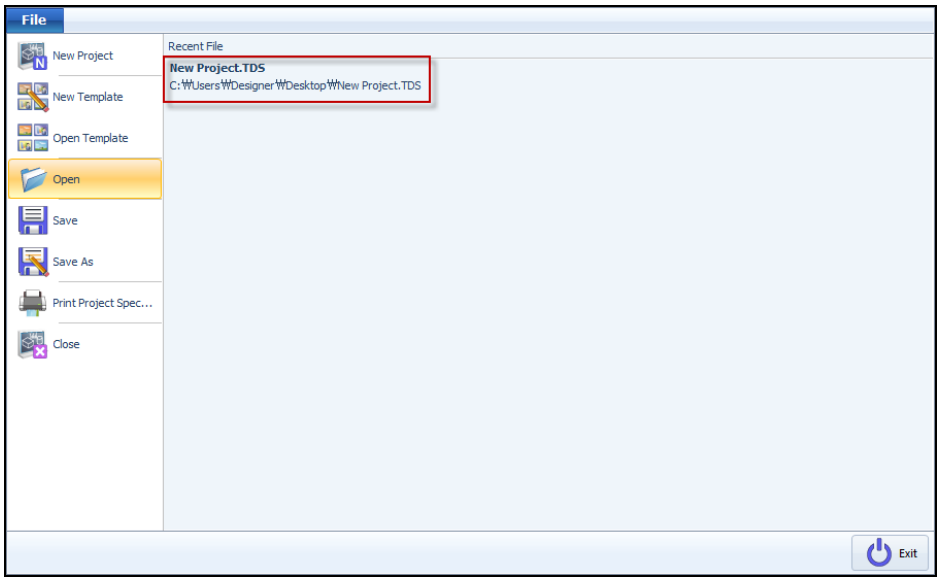
The file extension of TOP project file is [*.TDS]. However, if you change the extension as below picture, you can also load files (*.DPX, *.DPX4) in the older version of the software (XDesignerPlus) as well as TDS files.



If you loaded [*.DPX, *.DPX4] files, they need to be saved again in [*.TDS] file format to be converted to TOP Design Studio files to be sent to TOP products or edited.

(2) Open a project using Recent Files

Recent files opened or worked in TOP Design Studio are listed in Recent Files. The list is an easy tool as it shows pictures in the default screen along with each file's path. When you want to open a file in Recent Files, you may [Double Click] the list or select a file and click [Finish].



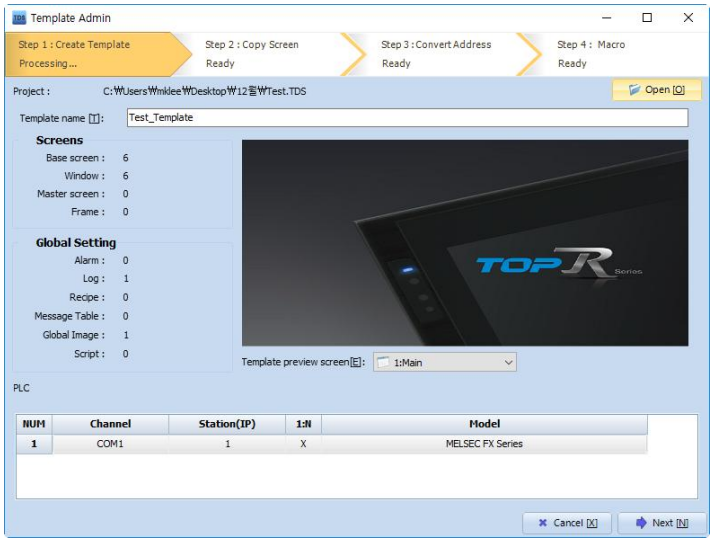
[Pic. Open a project in Recent Files]

New Template

If there are multiple projects in similar formats, an easy and quick way to make a new project is using templates. Templates mean the basic frame of projects. You may make a template by editing a complete project that you use often to make new projects.

In this way, you will make a new project by editing a pre-made template rather than creating a project from scratch. Template function is composed of Create Template and Open Template functions.

Create Template allows you to make a new template by editing the currently opened project. Open Template allows you to open an existing template in TOP Design Studio to make a new project.

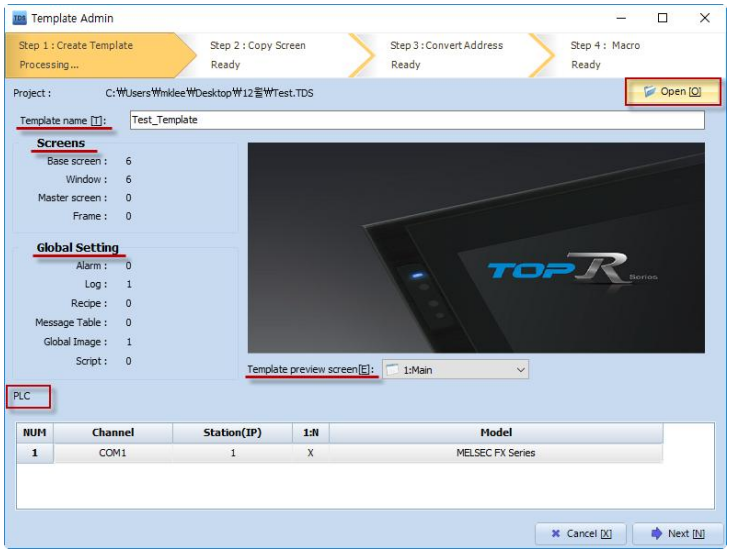


[Pic. New Template]

Running [New Template] will display the screen in above picture.

[New Template] consists of 4 steps: [Create Template]-[Copy Screen]-[Convert Address]-[Macro].

3.1.3 Step 1: Create Template



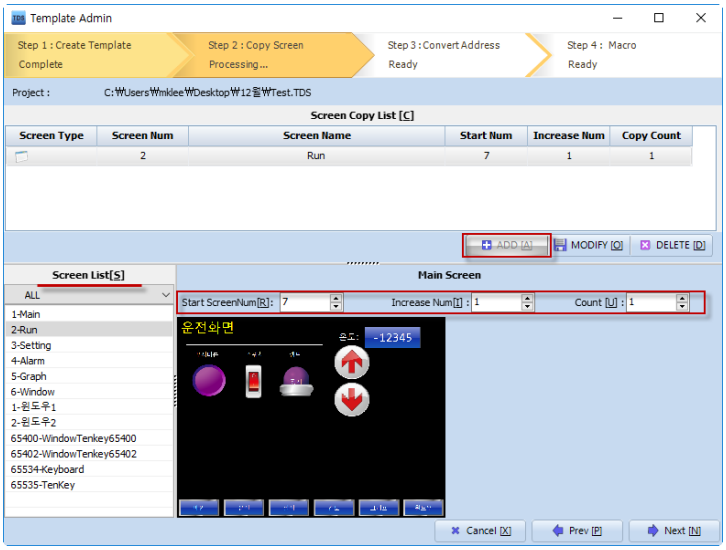
[Pic. Step 1: Create Template]

MENU	DESCRIPTION
Open	Load a project file (*.TDS). If you have proceeded to Create Template menu with the project open in TOP Design Studio, the template will be created with the opened project.
Template Name	It will be named as a project name plus [_Template]. The name can be modified.
Template Preview Screen	Screen can be modified to set the main template screen.
Screen	Displays the number of each registered screen.
Global Information	Use status and the number of list from Global Information are displayed.
PLC	Display PLC settings. Channel: Comm port, Model: PLC model, station number, 1:N communication status, etc. are displayed.

Click [Cancel] to cancel creating a new template and click [Next] to proceed to the next step.

3.1.4 Step 2: Copy Screen

Make multiple copies of the selected screen.



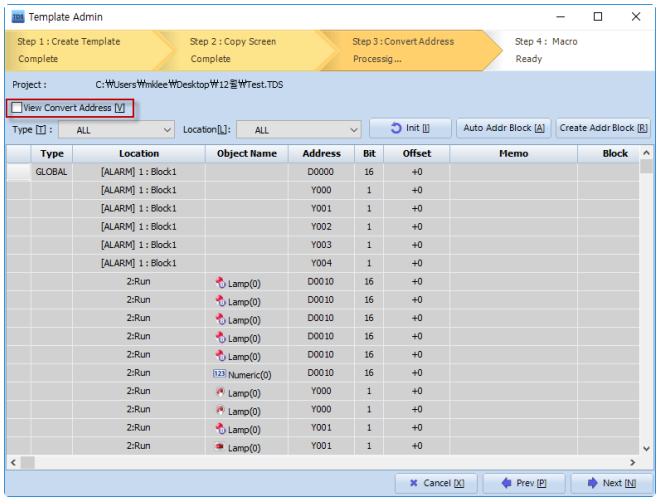
[Pic. Step 2: Copy screen]

Select the screen to Multi Copy from the [Screen List] on the bottom left corner of the screen. Selecting the screen will display the corresponding screen image on the right side of the [Main Screen] and [Add] button will be activated on top of the [Main Screen]. Set [Start Screen Number/Increase Number/Count] and click [Add] to add Multi Copied content of the selected screen to [Screen Copy List].

No	MENU	DESCRIPTION
1	Start Screen Number	The first screen number of the copy of the screen selected in Screen List. Ensure to not duplicate the existing number in the current [Screen List].
2	Increment Number	The incremental unit for copies. If the incremental unit is 1, the screen numbers will increase by 1, e.g., 10, 11, 12, ... etc.
3	Count	Set the count of copies.

3.1.5 Step 3: Convert Address

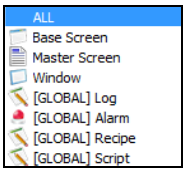
Address blocks that have the same address on the same screen can be created. Categorize them as the same address to convert the addresses in one stroke. Double click the list to see which object it is on the popup screen.



[Pic. Step3: Convert Address]

(1) View Convert Address: Only show addresses with set address block on the list.

(2) Type/Location: You can select the type and location to see all address of a project or categorize them by type or location. Type can be categorized by Screen Type, Global Information, etc. Only all or one locational address can be set for location.



[Pic. Type List]

(3) Initialization: Initialize current block setting and reset it to default status.

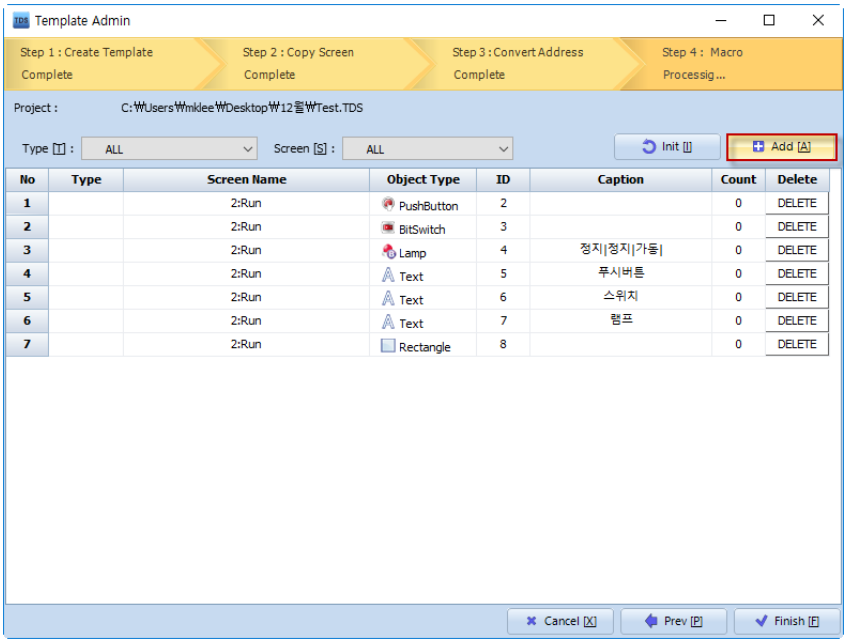
(4) Auto Address Block: Automatically create blocks for all addresses.

(5) Create Address Block: Manually create address blocks.

No	Menu	Description
1	Type	Display location and global information type.
2	Location	Display location number and name.
3	Object Name	Display object name. The numbers in brackets are ID.
4	Address	Display addresses used to object.
5	Bit	Display the length of address in a bit unit.
6	OffSet	Display the difference between a block and its address.
7	Memo	Record memo on the list set as a block.
8	Block	When the block is set, [REMOVE ALL] button is created. Clicking this button delete the block. A list that is not set as a block displays [REMOVE] button. Clicking this button will create the item.

3.1.6 Step 4: Macro

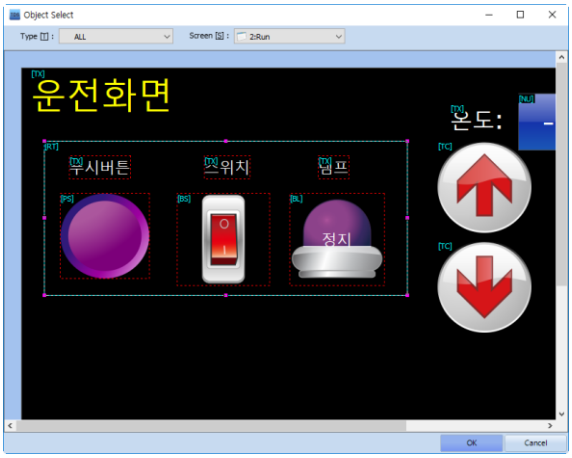
Copy multiple items by selecting shapes and tags on the same screen. Click [Add] and [Select Object] screen will be displayed.



[Pic. Step 4: Macro]

No	MENU	DESCRIPTION
1	Number	Sequentially assigned object numbers.
2	Type	Display the screen type and the global information type.
3	Screen Name	Display the screen number and name.
4	Object Type	Display the object type.
5	ID	Display the object ID.
6	Caption	Change the object caption. Double click the cell to edit.
7	Count	Set the number of copies. Double click the cell to edit.
8	Delete	Click the button to delete registered objects.

Select the type and screen and the screen will be displayed as below picture. Select shapes or tags to select on the screen and click [OK] at the bottom.

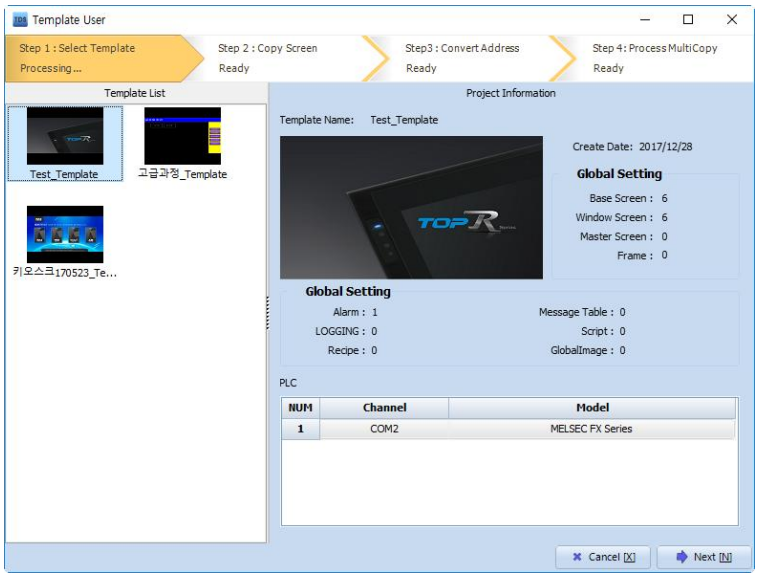


[Pic. Select Object]

It will add the selected objects (shapes and tags) in the form of a list on the macro screen. After adding them, you can edit the captions and the number of copies on the list. Finish Step 4: When you finish Macro setting, complete Create Template with [Finish] button. Template files' extension is [*.tml] and saved in the following path.

Open Template

Open a saved template file [*.tml] to create a new project to use.



[Pic. Open Template]

3.1.7 Step 1: Load Template

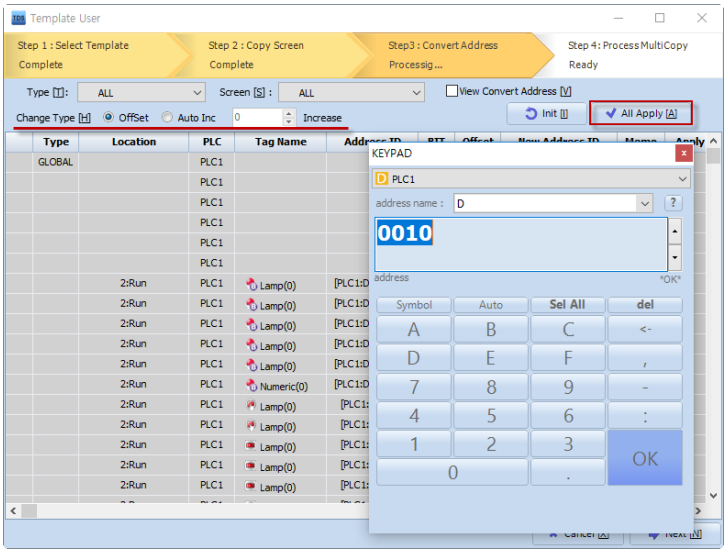
Run [File]-[Open Template] menu and the above screen will be displayed. Copy template files in other PC and paste it to the above path to load the template. Unnecessary template files may be deleted from the above path. Select a template file from the template list and [Project Information] will be displayed on the right. Click [Next] to the second step.

3.1.8 Step 2: Copy Screen

[Step 2: Copy Screen] in Open Template is the same as [Step 2: Copy Screen] in Create Template. Choose and copy a screen from the template screens. You may copy multiple screens at the same time to one screen.

3.1.9 Step 3: Convert Address

The object that uses the same address in the same screen has been made into a block at [Step 3: Convert Address] in Create Template process. In this stage, an address will be set for this block. Double click the list to see a popup screen that tells which object it is.



[Pic. Step 3: Convert Address]

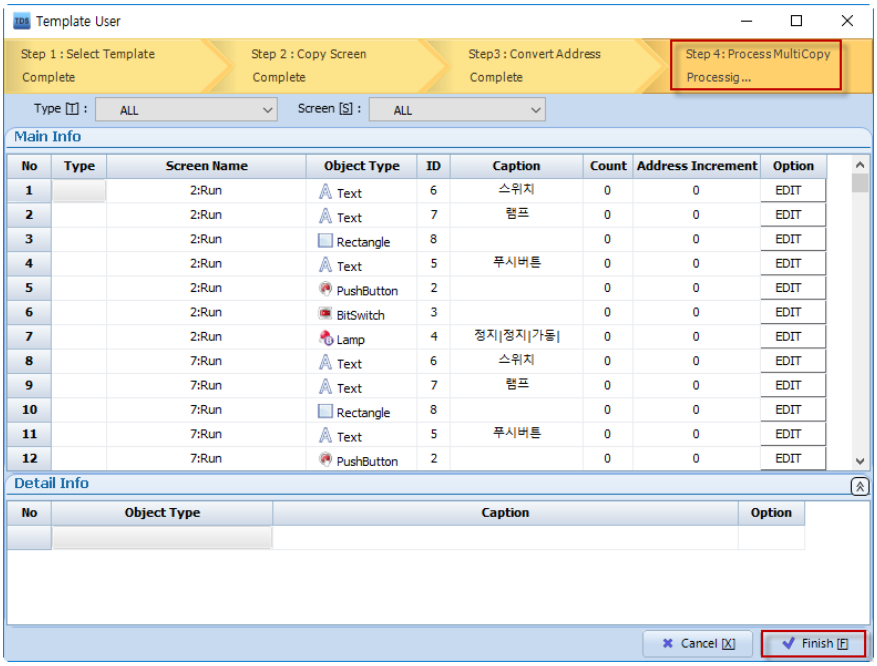
(1) Type/Screen: Lists are categorized by the screen type/global information type and by each screen.
(2) View Converted Address: Only addresses that have set address blocks are displayed in the list.
(3) Conversion Type: There are offSet and auto increment method for address completion. Offset method increases addresses by the amount set in the list's offset column. Auto increment method increases addresses of all blocks by the entered incremental value.
(4) Initialization: Initialize address conversion contents.
(5) Apply All: Click the Apply All button to modify addresses in the lists according to the address completion method. Also, when the addresses are manually edited by double-clicking [New Address ID] of the group in the list, every address of the block is applied all.

No	MENU	DESCRIPTION
1	Type	Display the screen type and the global information type.
2	Location	Display the screen number and name.
3	PLC	Display the PLC name.
4	Tag Name	Display the tag name. The numbers in brackets are ID.
5	Address ID	Display addresses used to tags.
6	Bit	Display the length of address in a bit unit.
7	Offset	Display the difference between a block and its address.
8	New Address ID	Display the modified address. Double click to modify addresses of the group and each object. Wrong addresses appear in red. Clicking [Next] will display a warning message.
9	Memo	Display the memo.
10	Apply	Click the Apply button to modify the block's address by the Address Increment method and apply the modified address to all objects in the group.

Click [Next] to move to Step 4: Multi Copy.

3.1.10 **Step 4: Multi Copy**

Display the objects registered at [Step 4: Macro] at Create Template in a list. Click [EDIT] button at each list to modify objects' property. Use [Count] and [Address Increment] buttons for multi copy from each list.



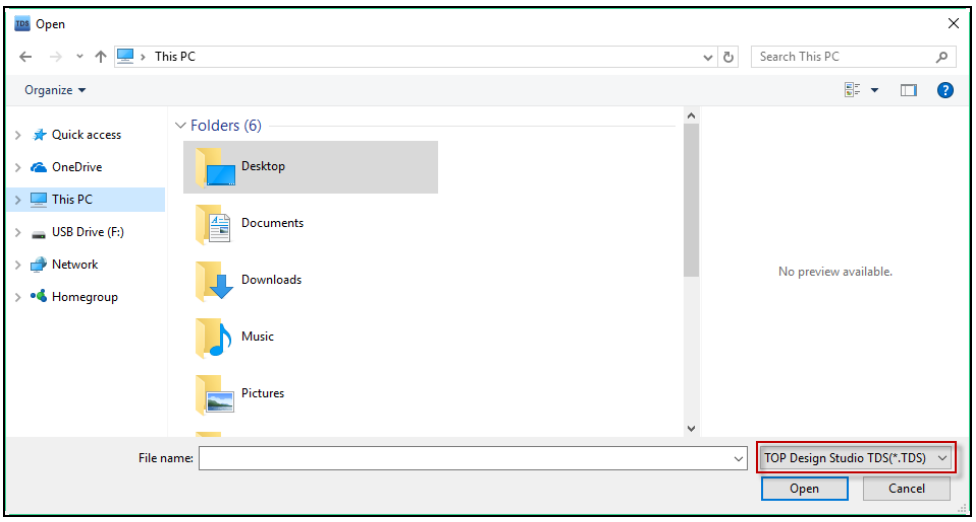
[Pic. Step 4: Multi Copy]

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

No	MENU	DESCRIPTION
1	No	Sequentially assigned object numbers.
2	Type	Display the screen type and the global information type.
3	Screen Name	Display the screen number and name.
4	Object Type	Display the object type.
5	ID	Display the object ID.
6	Caption	Change the object caption. Double click the cell to edit.
7	Count	Set the number of copies. Double click the cell to edit.
8	Address Increment	Set the incremental value of addresses for multi copy. Double click the cell to edit.
9	Option	Click [EDIT] button to edit the object property.

Open (Ctrl + O)

Open existing projects. The default file extension of projects is set to [*.TDS] automatically. If you modify the file extension to the one (*.DPX, *DPX4) created in the older version of the software (XDesignerPlus), you may open older project files. Select a file and click [Open] to open the project.



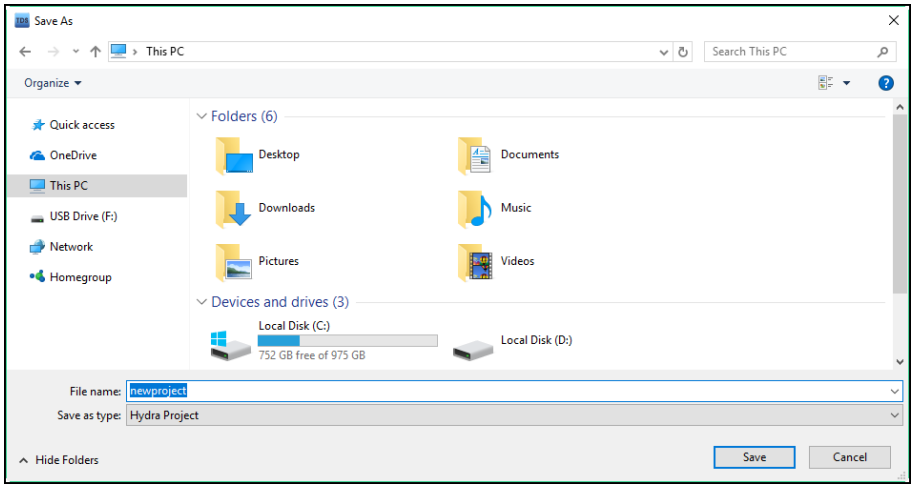
[Pic. Open]

Save (Ctrl + S)

Save the currently opened project. If the project has been already saved as a file, save the changes. If the project is not yet saved as a file, [Save As] screen will be displayed for you to set a save path and a file name to save the project.

Assign a file path and enter a file name. The default [File Name] is set as [NEWPROJECT.TDS]. However, you may assign a new file name yourself. The project file's file extension is [*.TDS].

Click [Save] to save the file.



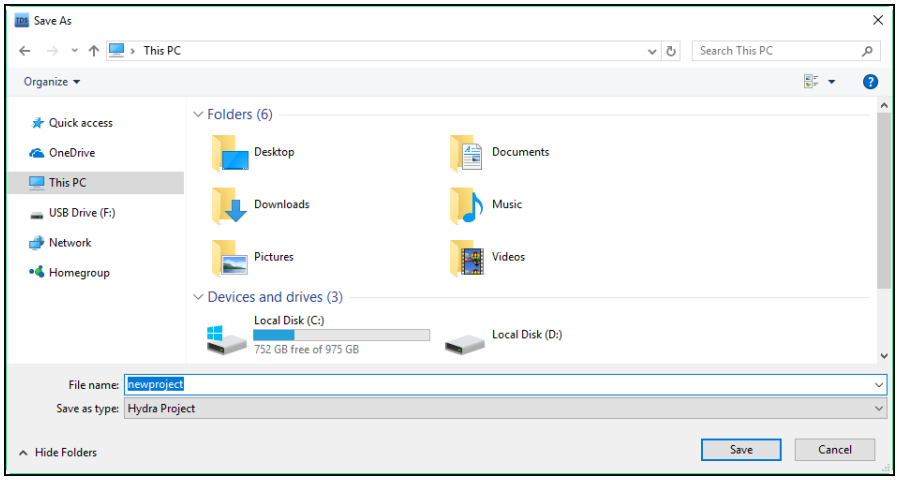
[Pic. Save Project]

Save As (Shift + Ctrl + S)

Save the currently opened file under a different name.

It is used to create and save a new file under a new name rather than the existing file. Using [Save As] will display [Save As] screen to assign a new save path and a file name to save. [Save As] file name and file path are set to the existing file information. However, a new file will be saved after assigning a new

file path and file name and clicking [Save].



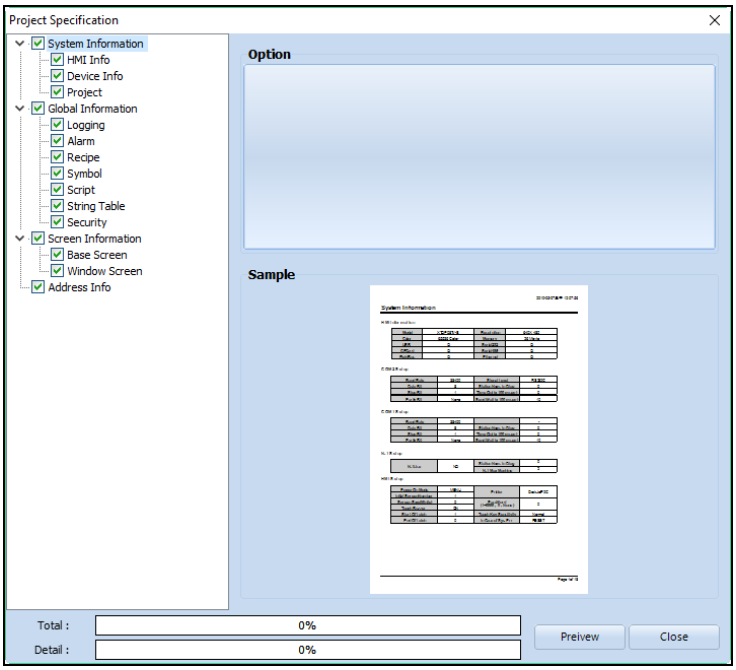
[Pic. Save As]

Print/Project Statement (Ctrl + P)

Print the content of project. Use [Print] to display [Report] screen. You may print the list shown on the [Report] screen according to the format that appears in [SAMPLE] or edit it to print.

3.1.11 Print item

Content available for printing are system information, global information, screen information, and address info.



[Pic. Print]

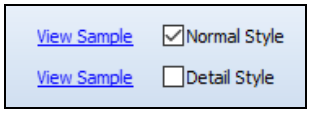
No	PRINT	DESCRIPTION
1	System Information	Print all system information.
2	HMI Info	It is information of the set TOP.
3	Device Info	It is information of the set PLC (controller).
4	Project	Project information set at [Project setting].

5	Global Information	Print all global information.
6	Logging	Log settings contents.
7	Alarm	Alarm settings contents.
8	Recipe	Recipe settings contents.
9	Symbol	Symbols settings contents.
10	Script	Script settings contents.
11	String Table	String Table settings contents.
12	Security	Password settings content.
13	Screen Information	Print all screens.
14	Base Screen	The default screen.
15	Window Screen	Window screen.
16	Address Info	Print the address list used in the project.

3.1.12 **Option**

Set print options here.

(1) Log printing options

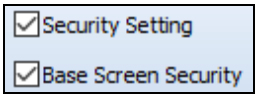


[Pic. Log printing options]

OPTION	DESCRIPTION
Normal Style	Print the log setting contents in normal style.
Details	Print the log setting contents in detail.

Click View Sample for a preview.

(2) Security Setting

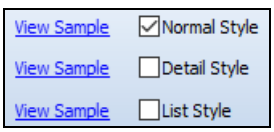


[Pic. Security Setting Options]

Option	Description
Security Setting	Print the security of the project.
Base Screen Security	Print the base screen security setting of the project.

(3) Screen Info

There are base screen and window screen as screen information types.

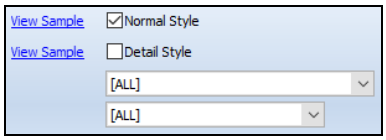


[Pic. Screen Info]

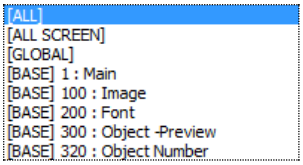
Option	Description
Normal Style	Set the project screen in normal style.
Detail Style	Set the project screen in detail.
List Style	Set the list style of the project.

Click View Sample for a preview.

(4) Address Info



[Pic. Hex address's print options]

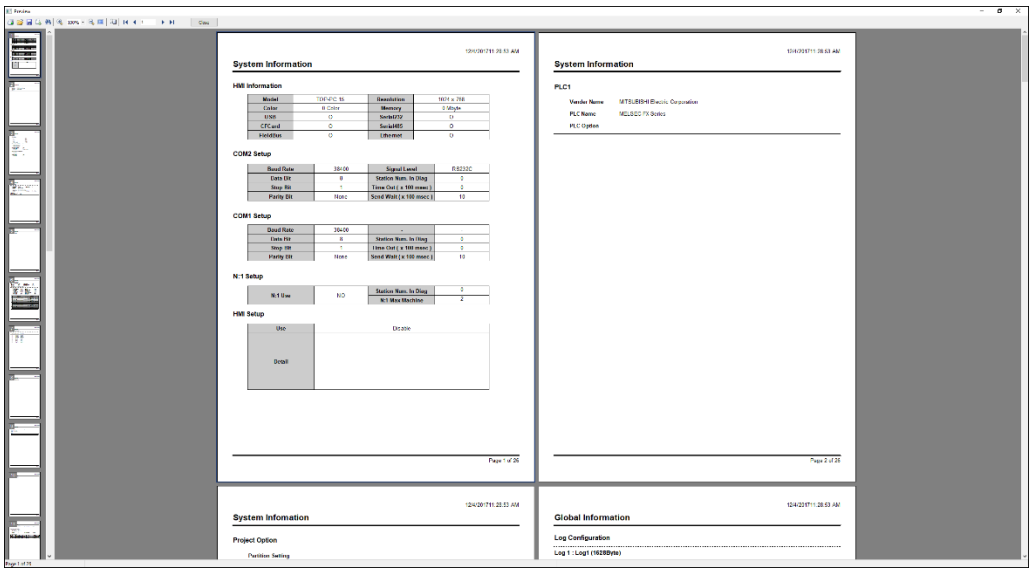
Option	Description
Normal Style	Print the address list used.
Detail Style	When printing the address list used, the IDs and names of tags where addresses are used will also be printed.
Screen	Select the screen range of the address list to print.  [ALL] refers to all addresses used in a project, [ALL SCREEN] refers to all addresses used in the screen, and [GLOBAL] refers to all addresses used in the global setting. To print a list of addresses used in one screen, click the screen.
Device	Select the address type to print. [ALL] is all addresses, [HMI] is internal addresses in TOP, and [PLC] is PLC addresses. 

3.1.13 View Sample

Set the list to print and click [View Sample] to preview the content to be printed.

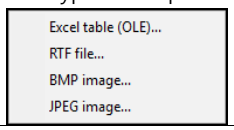
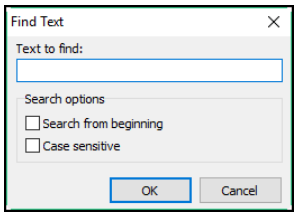
3.1.14 Preview

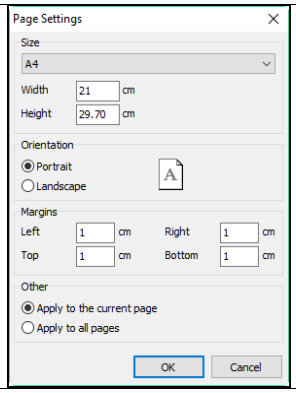
Check the list that you wish to print from the list on the left of the [Report] screen and click [Preview] at the bottom. A new [Preview] screen that displays the checked items will appear and show files that will actually be printed. Set the print format at [Preview] screen and edit [Preview] content.
You can also save current [Preview] screen or load saved [Preview] file.



[Pic. Preview]

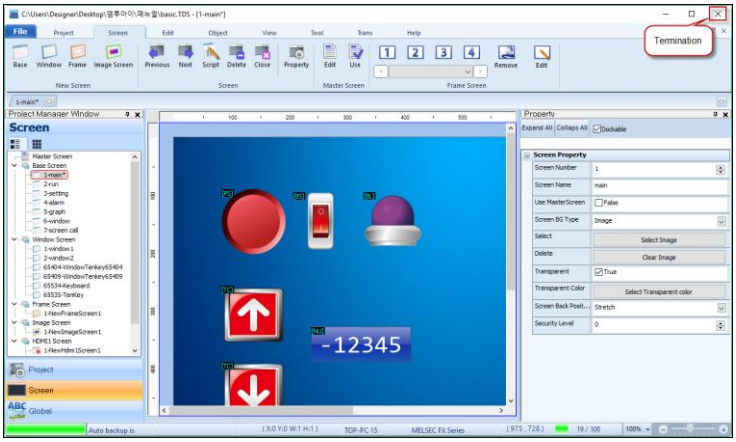
Click the Print button on [Preview] screen to print the screen.

TOOLBAR	DESCRIPTION
	Print the file that is on preview now.
	Load the saved preview file [*.fp3].
	Save a preview file. The file extension is [*.fp3].
	Export to other file types. Available file types for export are as following: 
	[Find] feature. Enter text (words) and click [OK] to search. [Search from beginning] in [Search Option] will search files from beginning. [Case sensitive] will differentiate capital and lower case letters. 
	This is [Zoom] feature, used to zoom in and out of the preview screen. Clicking (+) button zooms in by 25% and (-) button zooms out by 25%. You can enter zoom rate yourself.
	[Full Screen] feature. Use it to see preview screen in a full screen. To return to the initial preview screen from [Full Screen], right click the mouse and display popup menu. Click [Full Screen] menu from Popup menu to return to the preview screen.
	[Page Settings]. [Size] sets the print paper size. Use [Orientation] to set the paper vertically or horizontally. Set the paper margin at [Margins]. In [Other], [Apply to the current page] is for printing the current page and [Apply to all pages] is for printing all pages.

	
	Navigate pages with Move Page button and it displays the current page number.
	Exit the preview screen.

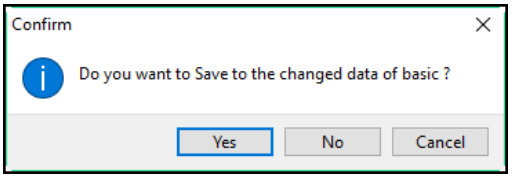
Close (Alt + F4)

End TOP Design Studio program. Select [File]-[Close] in the menu or click [X] button on the top right corner of the TOP Design Studio screen.



[Pic. Close with [X] button]

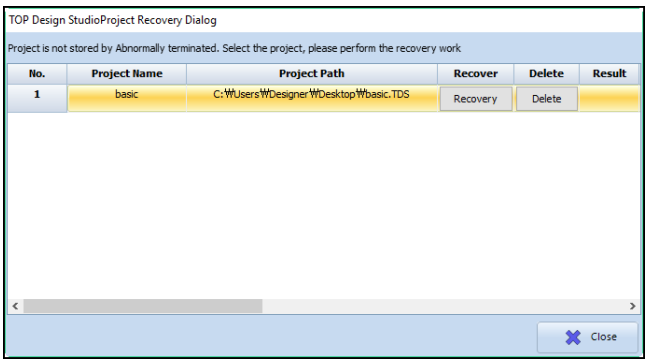
For currently opened projects having edited parts, messages asking the user whether or not to save the project will be displayed. The program will close after projects are saved.



[Pic. Close confirm message]

3.1.15 Recovery Dialog

Even when a program has been closed abnormally, previous project files are not completely lost because TDS runs auto backup for projects' content every 5 minutes. However, this requires the initial project to run normally and Auto Backup is not available if there is no auto backup file. The next image will be displayed when TDS is run again after the program has been closed abnormally.

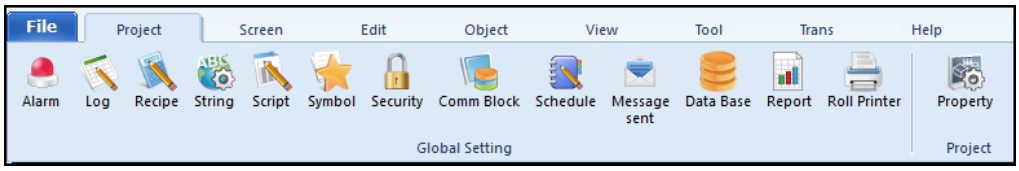


[Pic. Recovery Dialog]

RECOVERY DIALOG BUTTON	DESCRIPTION
Save As and Open [S]	Save the previous project as a different name and run the project.
Recover and open [R]	The previous project will be recovered and open.
Ignore backup data [I]	Ignore backup data and start a new project.

CHAPTER 4 - Project Menu

Describes the [Project] menu. Project menu has features corresponding to the global information settings such as [Alarm/Log/Recipe/String/Script/Symbols/Security/Communication Block/Schedule/Send Message/Roll Printer] and [Project Property].



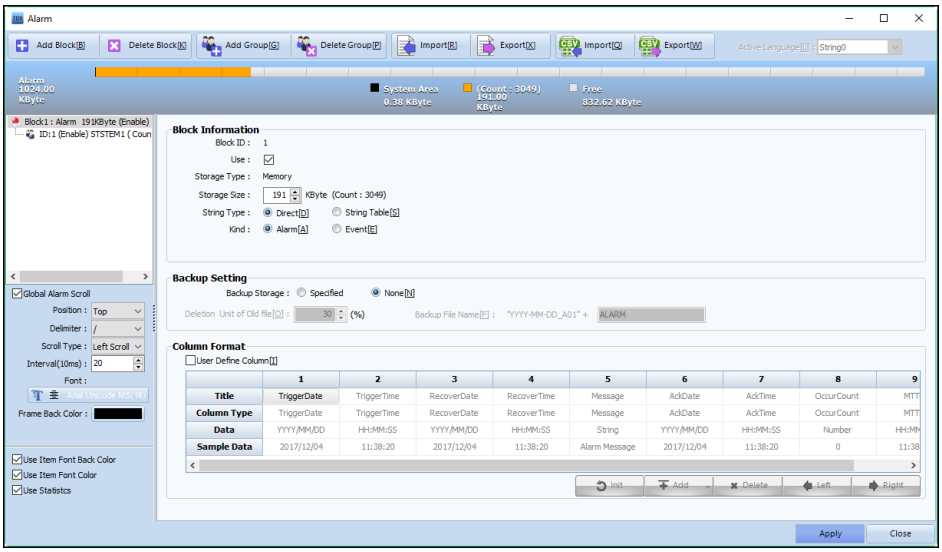
[Pic. Project Menu]

Alarm

Alarm is a list of various issues/warnings that can occur at the equipment. At [Alarm], an alarm list is written and at [Alarm View], the issued/deactivated alarm data are indicated.

One [Alarm] consists of [Alarm Condition] and [Alarm Contents]. When [Alarm Condition] is true, the alarm is issued.

Write an [Alarm] list in [Project]-[Alarm] screen and set various alarm-related settings. Click [Alarm] menu and the below screen will be displayed.

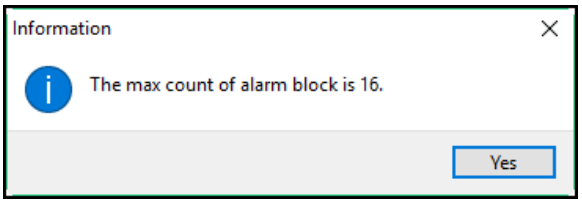


[Pic. Alarm Screen]

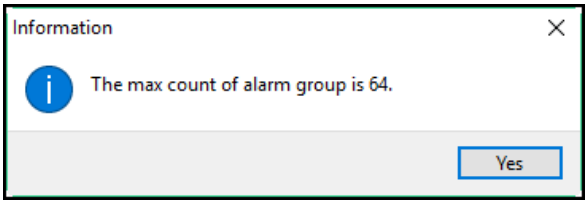
[Button] and [Memory Display] sections are located at the top of alarm screen. On the left, there are [Block/Group] list and [Global Alarm Scroll] setting section. On the right, the settings screen for the selected Block/Group from [Block/Group] list will appear. Add [Group] to [Block] and write [Alarm List] that belongs to the group selected from the right hand side.

4.1.1 Add/Delete Block and Group

Alarms are categorized into [Block] and [Group]. Blocks are the higher category of the Group. You may create up to 16 blocks and one block may have up to 64 groups. One group may have up to 5,000 alarm lists.



[Pic. Max No. of Block]



[Pic. Max No. of Group]

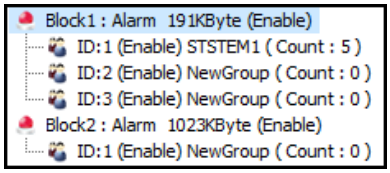
As below picture, use the button at the top of alarm screen to add/delete blocks and groups.



[Pic. Add Block/Group]

No	Alarm	Description
1	Add Block	Add a new block. Creating a project automatically creates one block. Clicking [Add Block] will assign block numbers in order and add a block.
2	Delete Block	Delete the selected block.
3	Add Group	Add a group to the selected block. The IDs of the created group are assigned in order, e.g., ID: 1, ID: 2, ID: 3, ... etc.
4	Delete Group	Delete the selected group.

Add a block and group to see their information on [Block and Group List] screen on the top left side.

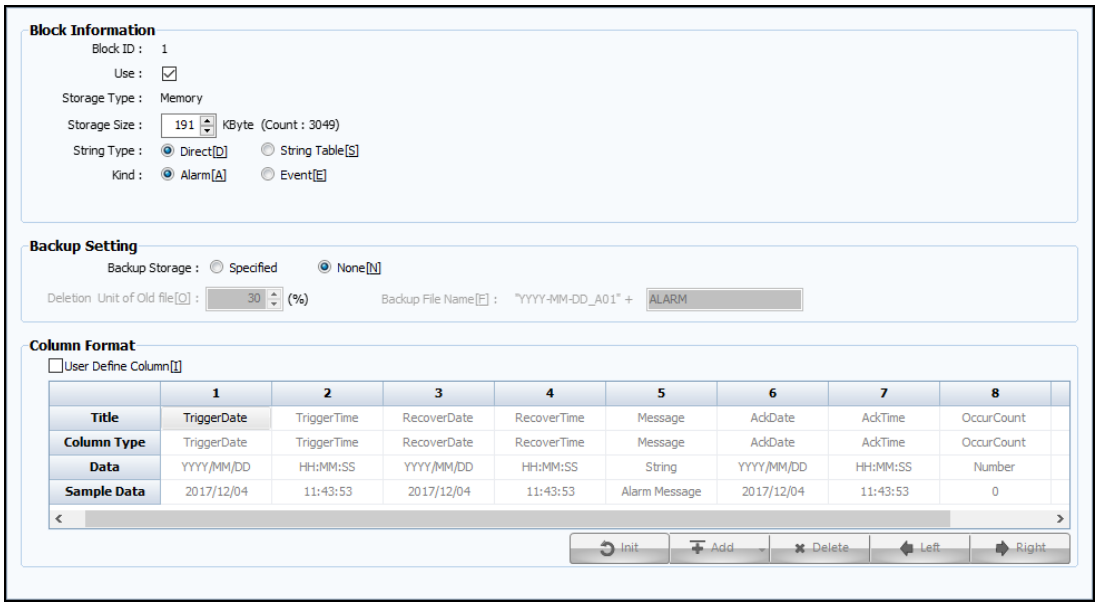


[Pic. Block and Group List]

Block displays block number, block type (alarm/event), memory capacity, and its use.
Group displays group ID, its use, group name, and the number of alarms.

4.1.2 Block Setting

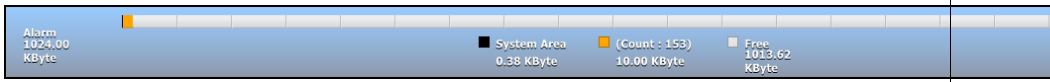
Select a block from [Block and Group List] from the top left side and the selected block's setting contents will appear. Configure [Block Information/Backup Setting/Column Format] of the selected block.

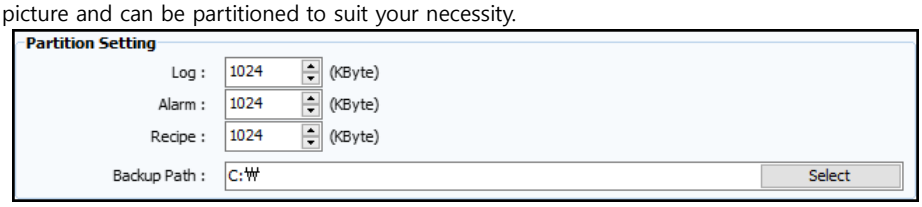
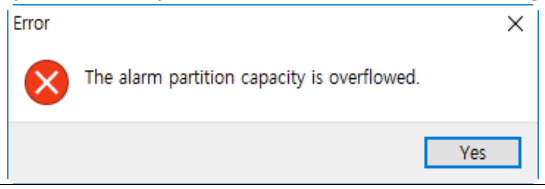
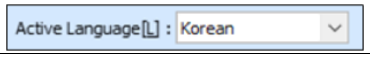


[Pic. Block setting]

(1) Block Information

Detailed description of block information is as follows.

No	Block Information	Description
1	Block ID	This is the number assigned to blocks when they are created and cannot be modified. Creating a new block when there are Block1 and Block2 will add a third called block (Block3). Deleting Block2 when there are Block1, Block2 and Block3, and creating a new block will create Block2 rather than Block4.
2	Use	Set the use of block. If not checked, the block will be excluded from project transmission and not run. Therefore, even if the block's [Alarm/Event] occurs, its occurrence history will not be saved or displayed.
3	Storage Type/ Size	Set the memory capacity for blocks to use by a [KByte] unit. Setting capacity will display [Number of Alarms] that can be saved in [Count]. Count is rough numbers and can have errors.  Alarms issued after the memory reached its full capacity will be saved after the oldest alarm data is deleted. Setting memory capacity will display the storage capacity in a graph at the top of the screen.  Set the memory capacity for all backup memory of TOP at [Project Option] screen that appears at [Project]-[Property] menu. Select [TOP Setup] from the list on the left side of the [Project Option] screen and [Partition Setting] will be displayed on the right. Set the memory capacity for [Alarm] at Partition Setting. Total backup memory of TOP is storage for [Log/Alarm/Recipe] data as shown in the below

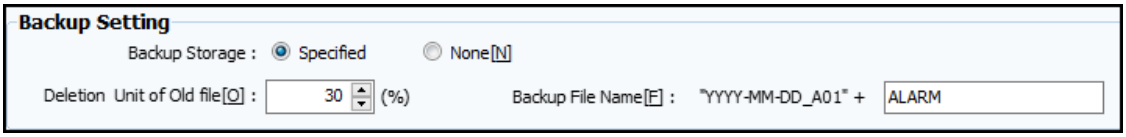
		picture and can be partitioned to suit your necessity.  Partition the memory capacity for each block to use within the capacity of the alarm memory capacity set at Partition Setting. Note) If it is set to 192KB as above in Partition Setting, setting [Block] capacity at 192KB will display a capacity overload message. It is because alarms are displayed in the black [System Area] on the above graph and it takes 0.38KB of storage capacity. Therefore, the sum of memory capacity set in each block cannot exceed the above set alarm memory capacity. If the total memory capacity of each block on the alarm screen exceeds the alarm capacity set at Partition Setting and you click [Apply] button at the bottom, below message will be displayed. 
4	String Type	Select the alarm content input method. You can choose from [Normal/Multi Language Table]. With [Normal], you may enter alarm message yourself. With [Multi Language Table], you may register alarm content with strings on the Multi Language Table. If you choose [Multi Language Table], select the Language Table to display when editing the alarm content at [Active Language] on the top right side of the screen. (Please see Chapter 4.4 String for Multi Language.) 
5	Kind	Select a block type from [Alarm/Event]. [Alarm] records when it is [issued/deactivated], and [Event] records when it is [issued]. Therefore, alarms can record [Time of Issue/Alarm Contents/Time of Deactivation/User Check Time], but events record [Time of Issue/Event Contents] only. Therefore, in case of alarm, [Alarm Type] of [Alarmview] object can be selected from [Current Alarm/Alarm History]. However, events do not classify alarm types. [Group Comm Interval Not Applied] does not apply [Comm Interval Apply] function that checks alarm on/off by the set [Interval] to groups.

(2) Backup Setting

Backup Setting is done to backup alarm data saved in TOP memory to SD Card.

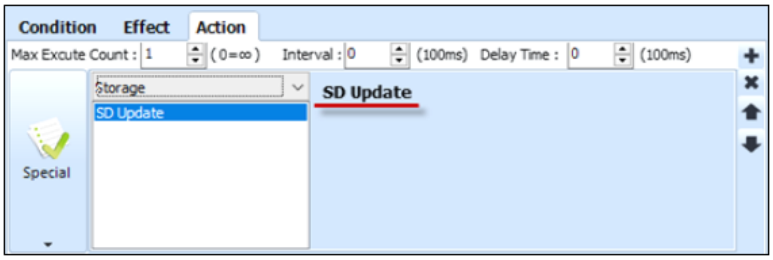
When an alarm is issued, the alarm data is saved in the memory assigned to the block from alarm memory in TOP.

As TOP has limited memory space, old alarm data will be deleted to save new alarm data if memory is full. If storage is set as [SD Card] at [Backup Setting], you can save more alarm data in the SD card without deleting old alarm data. If storage is selected as [None], no separate backup will be taken.



[Pic. Backup Setting]

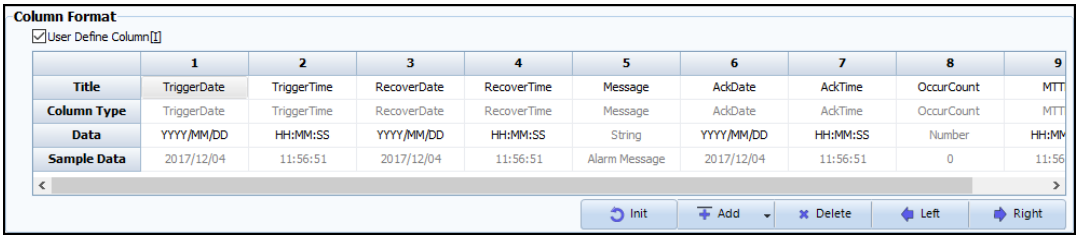
No	Backup Setting	Description

1	Backup Storage	Choose from [SD Card/None] storage to backup Alarm Data saved in TOP memory. ▶ [None] deletes from the oldest alarm data one by one when the block's memory capacity is full to save new alarm` data. (No separate backup.) ▶ [SD Card] is used to save more alarm data as block's memory capacity is limited. When the block's memory in TOP is full, old alarm data is backed up to the SD card by the [Old File Deletion Unit] and delete the backed-up alarm data. E.g.) When the capacity of Block1 is 100 KB, the [Old File Deletion Unit] is at 30%, and the [Back-up File Name] is ALARM, if 100 KB of alarm data has been saved, 30 KB of old alarm data will be saved under the file name of [2017-07-04_A01_ALARM] in the SD card. The 30 KB of old alarm data that has been backed up to the SD card will be deleted from the block memory in TOP. (Note 1: SD card files) When alarm data is saved in TOP memory, they are saved in the form of [Data] and they are saved as [File] when saved in SD Card/USB Memory. And when alarm data is backed up in SD card, only 1 alarm file will be created per day. Even when multiple alarm files are created in a day, they will be recorded in the existing alarm file that has been initially created in the day continuously. (A new file will be created when the date changes.) (Note 2: Check the installation of SD card) TOP must have a SD card installed. When an SD card is correctly installed to a TOP and recognized, the data of Special Address [SD_INSERT] will be [1]. Remove the SD card and the data of Special Address [SD_INSERT] will be [0].  (Note 3: SD card updates) Before removing an SD card, navigate to [Effect & Action] page and go to [Action]-[Special]-[Storage] and run [SD Update].  [SD Update] backs up all alarm/log data remaining in TOP memory to SD card and deletes TOP memory's alarm/log data. (This is applicable to blocks/logs of alarms that use SD card backup function.)
2	Deletion Unit of Old file	Set if [SD Card] is set at the storage. [Old File Deletion Unit] is used for two purposes. ▶ The unit of deletion of old alarm data and its movement to SD card when block's memory capacity is full ▶ The unit of deletion of files when SD card is full <Calculation method for files to be deleted when SD card is full> As alarms are saved as [Data] in TOP memory, they are calculated and deleted by the amount to be deleted per the total capacity. SD cards store alarm data in file format, it is calculated based on the file counts. The number of files to be deleted is calculated as [(Old File Deletion Unit/100) x Total number of files in the alarm block]. The oldest files will be deleted first. If the number of files to be deleted is less than [1], 1 file will be deleted.

		E.g.) If the unit of deleting old files is at 30% and there are 2 files in total, the number of files to be deleted is: (30/100)x2=0.6 file (In this case, 1 file will be deleted). If there are less than [1] total files left, no file will be deleted.
3	Backup File Name	Set if [SD Card] is selected as the storage medium. Set the file name when saving the file to the SD card. Default file name is set to YYYY-MM-DD_A (short for Alarm)01_(block number) with added number at the end. Only one alarm file is created per day, and when multiple alarm files are backed up in the SD card in a day, they will be recorded continually in the existing alarm file that has been initially created in the day. If there is no back-up alarm data for the day, no alarm file will be created.

(3) Column Format

Check [User Defined Column] and edit Type/Format of column to be displayed. When [Alarm View] object is registered, a column will appear in this exact format. This format can be edited in [Column] page in each [Alarm View] object.



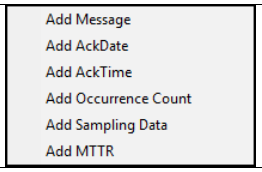
[Pic. Column Format]

Types of column are as follows.

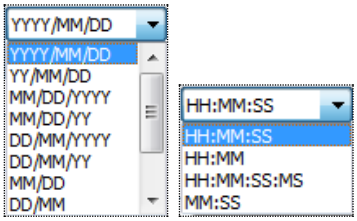
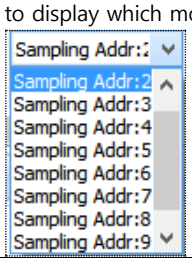
No	Column Type	Description
1	Trigger Date	The date when the alarm is issued.
2	Trigger Time	The time when the alarm is issued.
3	Recover Date	The date when the alarm is deactivated.
4	RecoverTime	Time when alarm is deactivated.
5	Message	Description of issued alarm.
6	AckDate	The date when the user checked the alarm.
7	AckTime	The time when the user checked the alarm.
8	Sampling Data	Use if [Use Data Sampling] is checked in [Group Setting]. [Add -Sampling Data] with [Add] button on the bottom to add to the Column. Using data sampling will save alarm with the set monitoring address data at the moment the alarm is issued and display them on Alarm View. You may set up to 10 monitoring addresses.
9	OccurCount	Displays the number of the alarms occurred. This feature is only displayed when [Use Statistics] is checked on the bottom left of the Alarm Screen.
10	MTTR	Click [Add] button at the bottom to [Add MTTR] to the column. MTTR is the time taken from an issue of the alarm to its deactivation. (For Use Alarm Statistics, please see Chapter 4.1.5 [Use Alarm Statistics].)

Use below button to add/delete column or move its position.

No	Button	Description
1	Initialize	Resets to the pre-edit column format.
2	Add	Add a column.

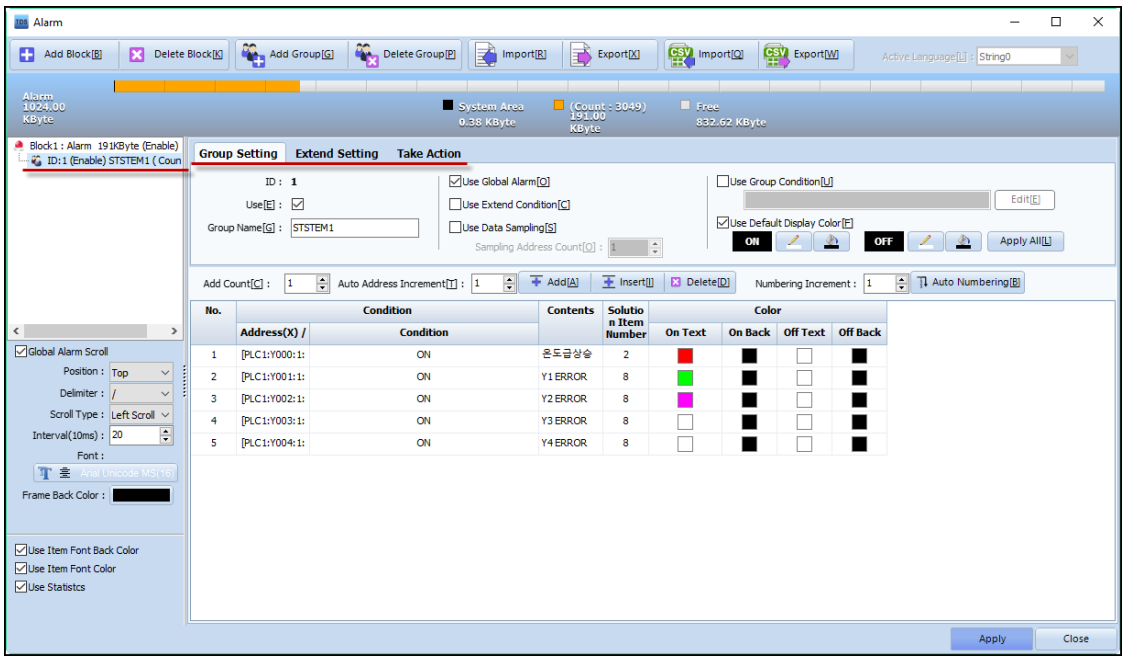
		
3	Delete	Delete the selected column.
4	Left	Move the selected column to one unit left.
5	Right	Move the selected column to one unit right.

Column name and column type can be changed.

No	Column Format	Description
1	Title	Change the name of the column.
2	Column Type	Displays the type of column. Date of occurrence/time of occurrence/alarm content/date of deactivation are permanent columns and cannot be deleted.
3	Data	Select the format of date and time.  If using the data sampling function, select monitoring address to display. Up to 10 monitoring addresses can be set. You can choose to display which monitoring address will be displayed. 
4	Sample Data	Previews each column's format type through sample.

4.1.3 Group Setting

Complete block setting and create group. Select Group from [Group/Group List] and a page on the right window will be displayed to set group. Configure detailed settings on the [Group Setting/Expanded Setting/Take Action] pages.



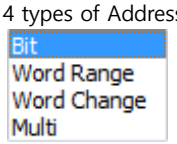
[Pic. Group setting]

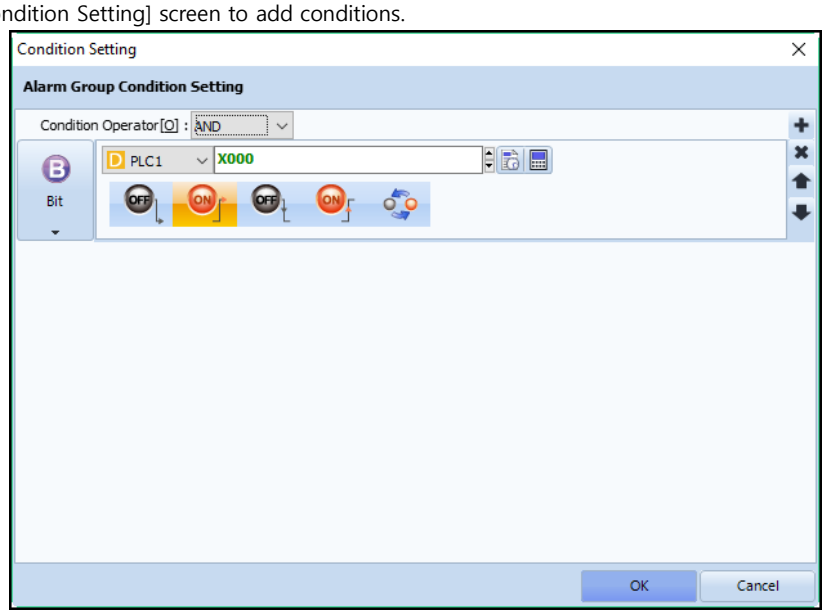
(1) Group Setting Page

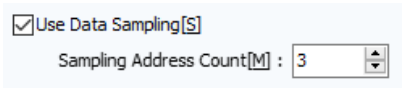
There are various settings for [Group] at the top of [Group Setting] page and [Alarm List] registration part for the group is located at the bottom of the page. First, we will look at the various settings located at the top.

No	Group Setting	Description
1	ID	The number that is given in order when creating groups. (Cannot be modified.)
2	Use	Sets the use of group. If unchecked, the group alarm will be excluded and will not be issued when transmitted.
3	Group Name	The group's name.
3	Use Global Alarm	[Global Alarm Scroll] setting is located at the bottom left of the alarm screen. This function displays content of issued alarms on the top or bottom of the screen in scroll (flow) format regardless which screen you are currently on. If using [Global Alarm Scroll] function, set whether or not to use group alarm list as [Use Global Alarm]. When [Use Global Alarm] is checked and an alarm is issued from the group's alarm list, it will be displayed on [Global Alarm Scroll]. If not checked, it will be excluded from [Global Alarm Scroll]. (For Global Alarm Scroll function, please see Chapter 4.1.4 [Global Alarm Scroll Settings].)
	Use Extend Condition	Expands alarm condition to enable setting of various conditions as well as bit condition. Without using [Expand Condition], you can use bit condition only for alarm condition. ☑Use Extend Condition[C] Checking [Expand Condition] creates the [Address Type] slot on alarm list.

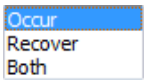
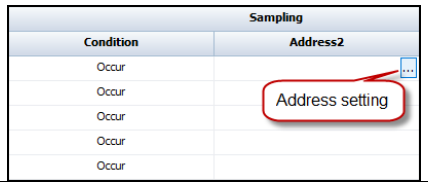
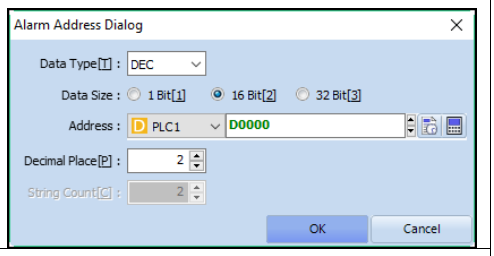
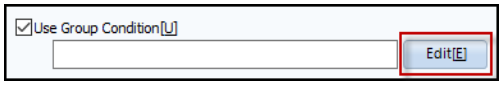
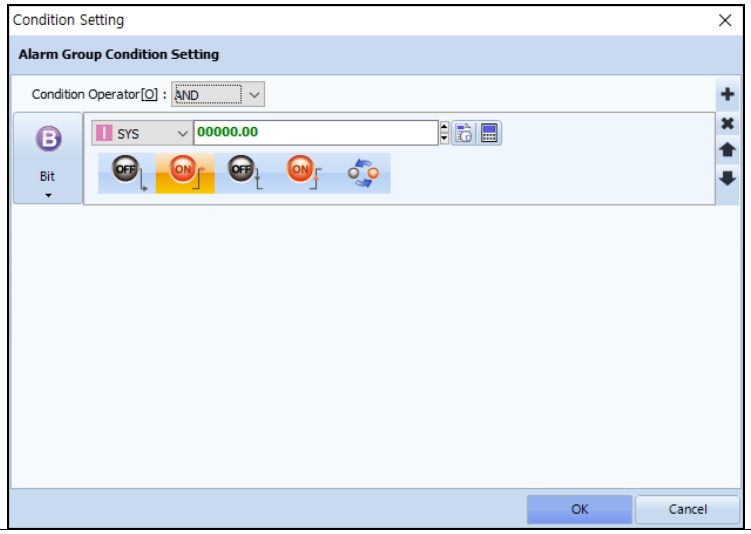
Condition		
Type	Address(X) /	Condition
Bit	[PLC1:Y000:1:	ON
Bit	[PLC1:Y001:1:	ON
Bit	[PLC1:Y002:1:	ON
Bit	[PLC1:Y003:1:	ON
Bit	[PLC1:Y004:1:	ON

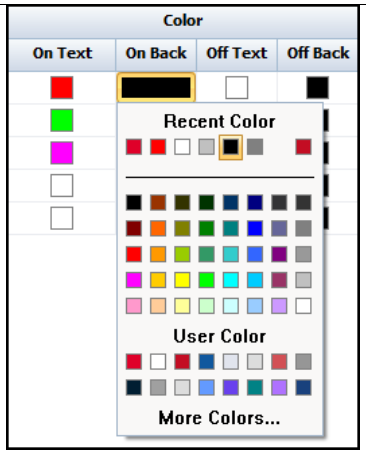
<table>
<tr>
<td></td>
<td></td>
<td>Double click [Address Type] slot and 4 types of Address Type will appear as below.
 

[Bit] is bit condition that issues alarm according to the ON/OFF condition of the bit address.
[Word Range] is the condition for word range and issues alarm when a word address's data meet the configured range. This condition is only checked at the moment when the word address data is modified and issues an alarm when the range condition is met. If not, the alarm is deactivated.
Set word address in [Address] slot and set the range at [Alarm Condition].
[Word Change] is word change condition that issues an alarm every time word address data is modified.
With [Multi], you can set multiple conditions. Double click [Address] slot and click button that appears to display [Condition Setting]. Click button on the right side of [Condition Setting] screen to add conditions.
 

Set [AND/OR] at [Calculation Condition] at top. Selecting [AND] will issue an alarm when all conditions are met. Selecting [OR] will issue an alarm when one condition is met.</td>
</tr>
<tr>
<td>4</td>
<td>Use Data Sampling</td>
<td>This function saves alarm with an address value. Record the value of set address at the moment when an alarm is on/off. Check [Use Data Sampling] and set [Number of Sampling Address].
You can set [Number of Sampling Address] up to 10.
 

Checking [Use Data Sampling] creates a column in the below alarm list where you can set sampling addresses. Addresses are created according to [Number of Sampling Address], e.g., Address 1, Address 2, Address 3, ... etc.
<table>
<tr><th colspan="4">Sampling</th></tr>
<tr><th>Condition</th><th>Address1</th><th>Address2</th><th>Address3</th></tr>
<tr><td>Occur</td><td>[SYS:00000:16:DEC:0]</td><td>[SYS:00002:16:DEC:0]</td><td>[SYS:00004:16:DEC:0]</td></tr>
<tr><td>Occur</td><td>[SYS:00000:16:DEC:0]</td><td>[SYS:00002:16:DEC:0]</td><td>[SYS:00004:16:DEC:0]</td></tr>
<tr><td>Occur</td><td>[SYS:00000:16:DEC:0]</td><td>[SYS:00002:16:DEC:0]</td><td>[SYS:00004:16:DEC:0]</td></tr>
<tr><td>Occur</td><td>[SYS:00000:16:DEC:0]</td><td>[SYS:00002:16:DEC:0]</td><td>[SYS:00004:16:DEC:0]</td></tr>
<tr><td>Occur</td><td>[SYS:00000:16:DEC:0]</td><td>[SYS:00002:16:DEC:0]</td><td>[SYS:00004:16:DEC:0]</td></tr>
<tr><td>Occur</td><td>[SYS:00000:16:DEC:0]</td><td>[SYS:00002:16:DEC:0]</td><td>[SYS:00004:16:DEC:0]</td></tr>
</table>
</td>
</tr>
</table>

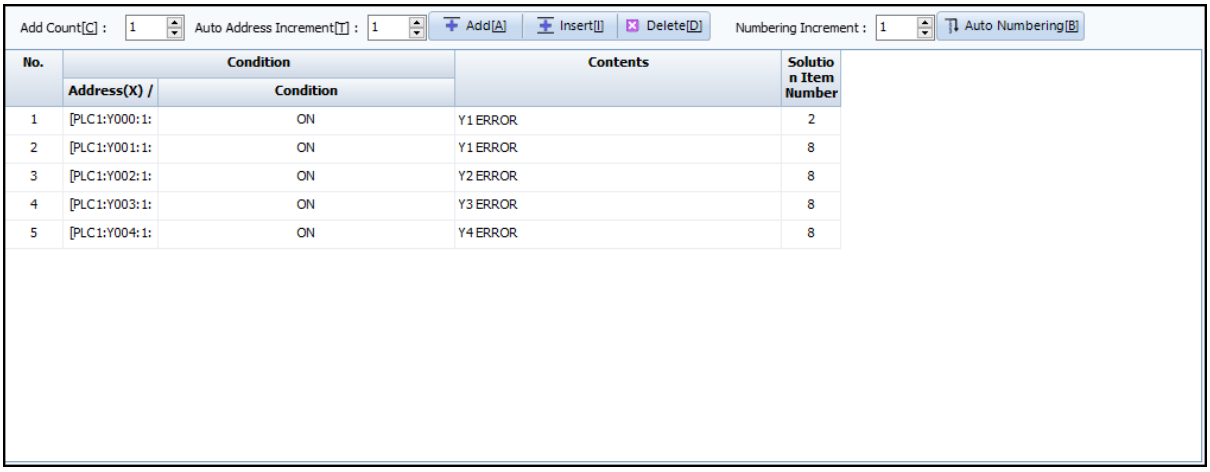
		Select [Occur] to save sampling address values together when an alarm is [Issued] at [Condition]. Select [Recover] to save sampling address values together when an alarm is [Deactivated]. Select [Both] to save sampling address values together when an alarm is [Issued/Deactivated].  Sampling address can be set in [Alarm Address Setting Screen] that pops up by clicking ... button. This button appears when you double click each address cell as below picture. The set address can be copied and pasted into other cells.  
6	Use Group Condition	Set conditions to a group to allow alarms work when the group condition is met. If the group condition is not met, there will not be an alarm even if the [Alarm Condition] of the group's alarm list is True/False.  Check [Use Group Condition] and click [Edit] to display [Condition Setting] screen. You may set group conditions on this screen. (Please see Chapter 7.7 [Setting Condition Page] to learn how to set conditions.) 
7	Use Default Display Color	Used for assigning different color to each alarm.  Check [Use Default Display Color] to set colors for [On] and [Off]. [On] is for text color/back color for issued alarms. [Off] is for text color/back color for alarm deactivation. Back color is the text background color. Set the main color and click [Apply All] to apply the color to all alarm list items as below picture.



This is [Color Pallet] that appears when double clicking each color slot at alarm list [Color] as above picture. In this section, you can set separate text color/back color for each alarm's on/off. Using this function will disable [Use Color Define] set in [Alarm View] object as below picture.

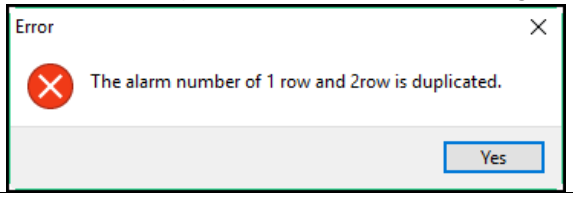


Next, we will look at the registration of alarm list below. You may register up to 5000 alarm lists per one group.



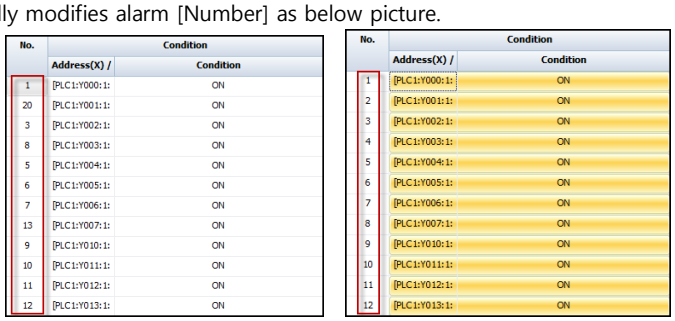
[Pic. Registration of Alarm List]

First, set alarm no. 1.

No	Alarm	Description
1	Number	The number that is given in order when adding alarms. The numbers can be changed, but the same number cannot be assigned to groups. If you click [Apply] when there is a duplicate number, below error message will show. 
2	Condition	Set the condition in which alarms are issued. Set bit address in [Address (X)/Condition Expression] and select [ON/OFF] in [Alarm Condition]. If [Expand Condition] is checked at the top, you can set more diverse conditions other than bit condition.
3	Contents	Enter description texts that will be displayed with an alarm. If [String Type] is set as [Multi

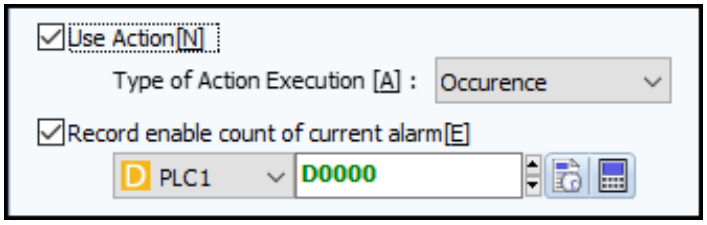
		Language Table] at block, enter the alarm description in multi-language table and select registered text.

Set the first alarm and use [Add/Insert/Delete] buttons to add alarm list.
When adding alarms, set [Add Count] to the number of alarms to add and click [Add].

No	Alarm	Description
1	Add Count	Enter the number of new alarms to add and click [Add]. You may add up to 1000 alarms at the same time.
2	Auto Address Increment	When a new alarm is added, it is created with the number of set increments configured at [Auto Address Increment] added to the last number of alarm address. If [Auto Address Increment] is [1] and the last alarm address is [Y100], the new alarms' addresses will be [Y101], [Y102], ... and so on.
3	Add [A]	Add a new alarm. The new alarm's number will be assigned to the following number to the last numbered alarm.
4	Insert [I]	Add a new alarm above a selected alarm. The alarm's number will be assigned to the following number to the last numbered alarm.
5	Delete [D]	Delete the selected alarm.
6	Auto Numbering [G]	It sequentially modifies alarm [Number] as below picture.  Select multiple alarms with [Mouse Drag] or select one alarm then use [Shift + Direction key] to select multiple alarms to modify in order. Set numbering increment and click [Auto Numbering]. The numbers will be modified by the value set at [Numbering Increment], starting from the first alarm number from the selected alarms. Setting [Numbering Increment] to [2] will modify the numbers as: [1, 3, 5, 7, 9, ...].

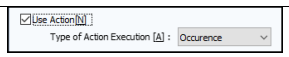
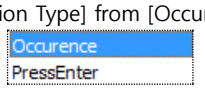
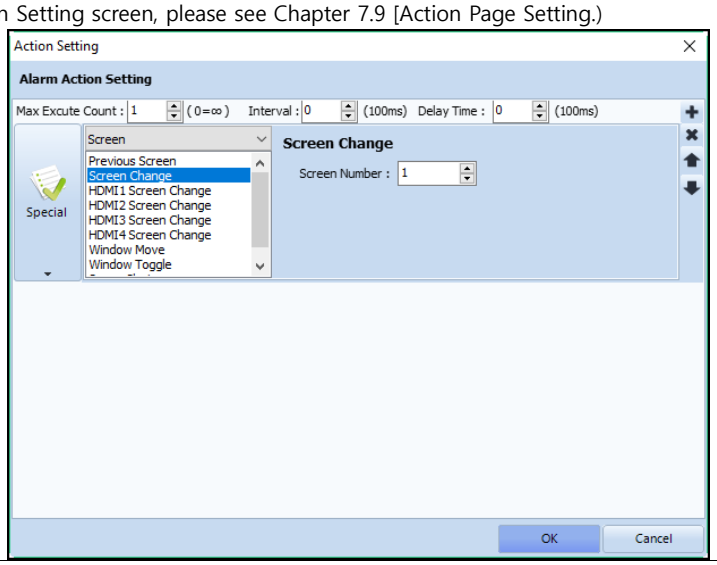
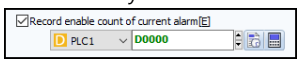
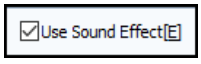
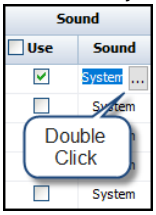
You may select an areas of registered alarm list and [Copy (Ctrl+C)] and [Paste (Ctrl+V)] it to other group. The copied alarm list area can be pasted to an Excel file to save. Vice versa, alarm list saved in an Excel file can be copied and pasted in an alarm list.

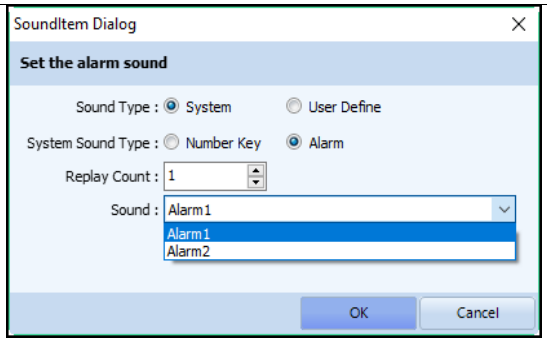
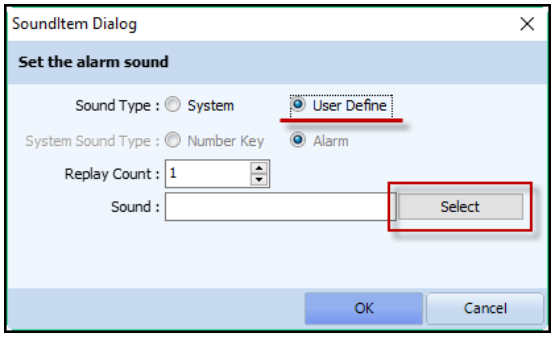
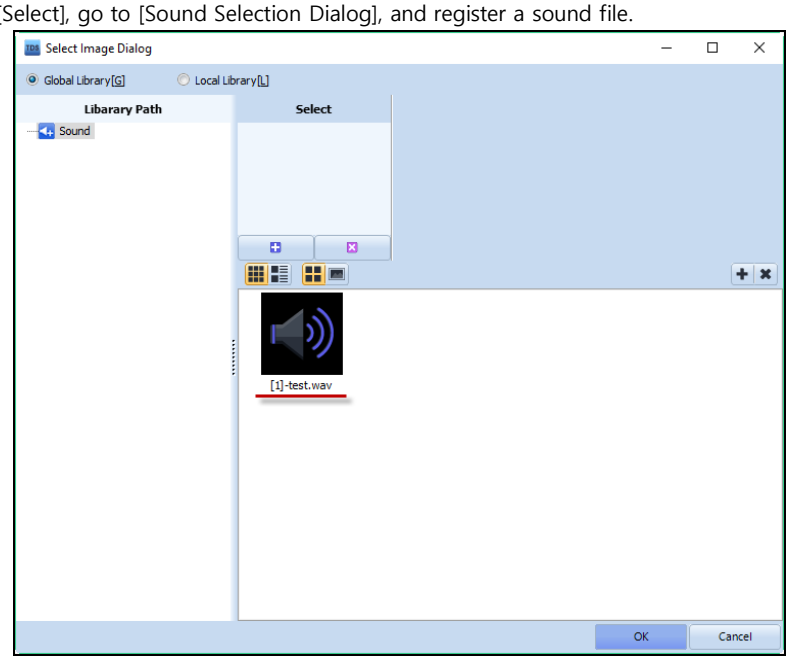
(2) Extension Setting Page



[Pic. Extend setting]

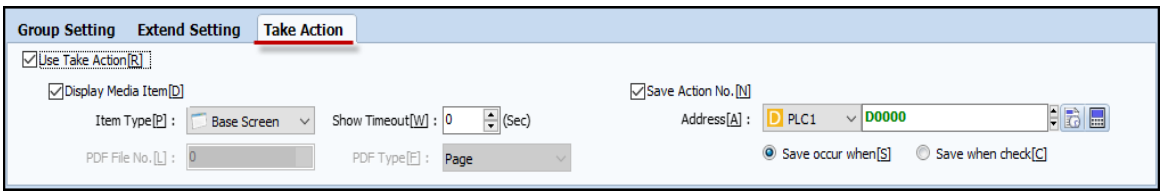
No	Extension Setting	Description
1	Use Action	Set the action to take when an alarm is issued.

		 Check [Use Action] and select a [Action Type] from [Occurrence/PressEnter].  [Occurrence] option allows to take action at the moment where the alarm is issued. [PressEnter] option allows to take action when the alarm issued at Alarm View is touched. Setting [Use Action] will create [Action] column in the below alarm list. Set each alarm's Action Type. Click  button that shows when double-clicking [Action] column and [Action Setting] screen will appear.  Set the action to take when an alarm is issued in the below [Action Setting] screen. Use  button on the top left to add up to 5 actions. (For Action Setting screen, please see Chapter 7.9 [Action Page Setting.) 
2	Record enable count of current alarm	Record the number of alarms issued currently to the set address.  If there are 5 alarms issued at the moment, record [5] in [D0000]. Register [Numeric] object and display [D0000] value on the screen to see the number of alarms currently issued.
3	Use Sound Effect	[Use Sound Effect] makes alarm sounds when an alarm is issued. Checking [Use Sound Effect] will create a [Sound] section in the alarm list.  Check [Use] for the alarm to use alarm sounds in [Sound] section and set the alarm sound at [Alarm Sound Info]. Default alarm sound is set to [System] sound [Alarm1].  Click  button which appears when double-clicking [Alarm Sound Info] section. [Alarm Sound Setting] screen as below will appear.

		 [System] in [Sound Type] is sound provided by TOP. There are [Alarm1/Alarm2]. [User Define] sets sound files owned by the user as alarms. Users can use [*.wav] files. (Supports PCVIEW products only)  Click [Select], go to [Sound Selection Dialog], and register a sound file.  [Play Time] is the number of repeats for the sound. Select a sound, click [OK] and finish [Alarm Sound Info] setting. ☞ This feature is available on TOPR Premium model that supports audio output feature.
4	Use Comm Interval	Set [Use Comm Interval] to confirm alarm on/off by the set [Interval]. [0] Interval checks alarms in real-time. 
5	Use Text To Speech	This function translates alarm text to speech. ☞ This function is available on TOPView (SCADA) only.

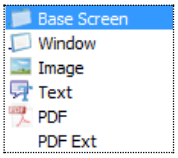
(3) Take Action Page

Set Actions for alarms.



[Pic. Take Action]

Check [Take Action] and [Call Screen and Media].
Select [Show Item Type] from the six options as below.



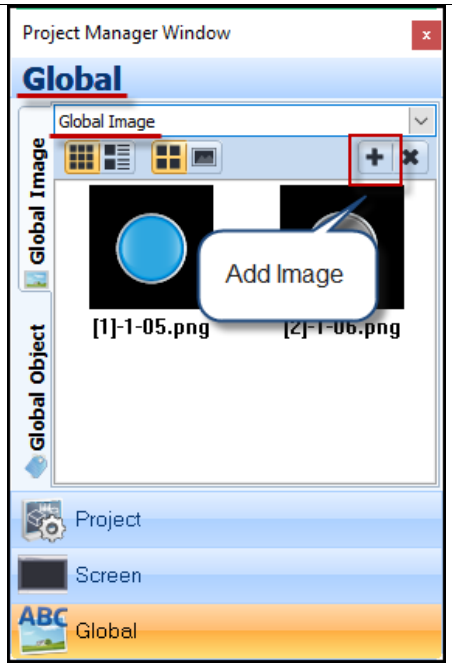
[Pic. Show Item Type]

Checking [Solution] will add a column called [Solution Item Number].
[Solution Item Number] is the number of item selected in [Show Item Type]. [Base Screen] is the number of Base Screen, and [Window] is the number of window screen. [Image] is the number of [Global Image] registered in [Global], [Text] is the number of [Text File] registered in [Global], and PDF is the number of [PDF File] registered in [Global].

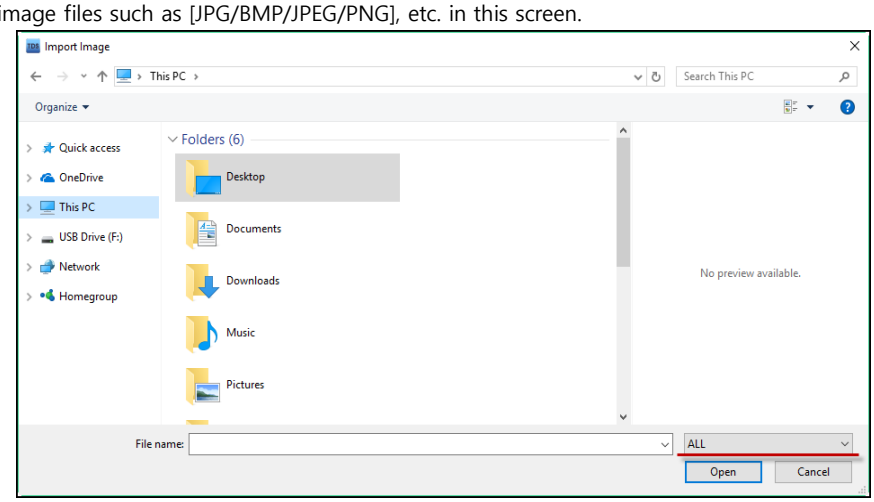
Contents	Solution Item Number
ERROR	2
Y1 ERROR	8
Y2 ERROR	8
Y3 ERROR	8
Y4 ERROR	8

[Pic. Solution Item Number Column]

No	Show Item Type	Description
1	Base Screen	As a solution for an issued alarm, it switches to the designated [Base Screen]. When executing the solution, it moves to the base screen that corresponds to the [Solution Item Number].
2	Window	As a solution for an issued alarm, it calls the designated [Window Screen]. When executing the solution, the window screen that corresponds to the [Solution Item Number] will pop up in the center of the screen.
3	Image	As a solution for an issued alarm, it displays [Image] file on the screen. Image files can be registered in [Global] as below.



Click  button on the top right corner and [Import Image] screen will appear. Register image files such as [JPG/BMP/JPEG/PNG], etc. in this screen.



Registered images are assigned with numbers. The numbers cannot be modified and are given in a sequential order. When executing the solution, the PDF file that corresponds to the [Solution Item Number] will be displayed on the screen as shown in the below picture.

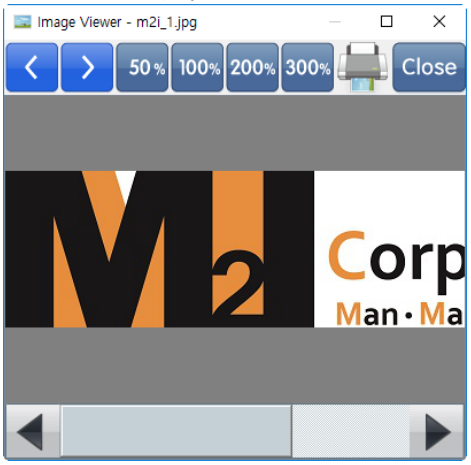
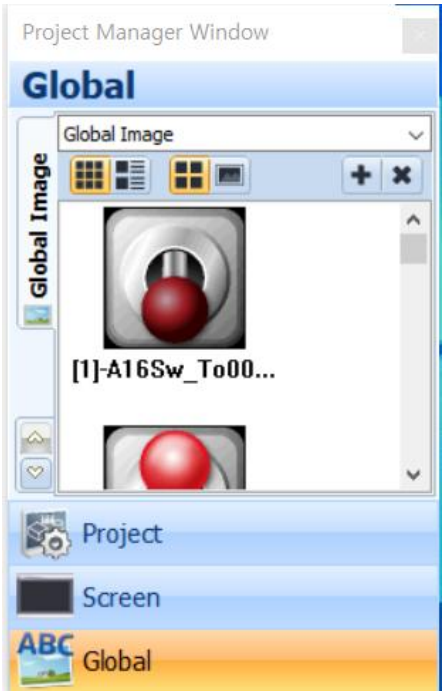
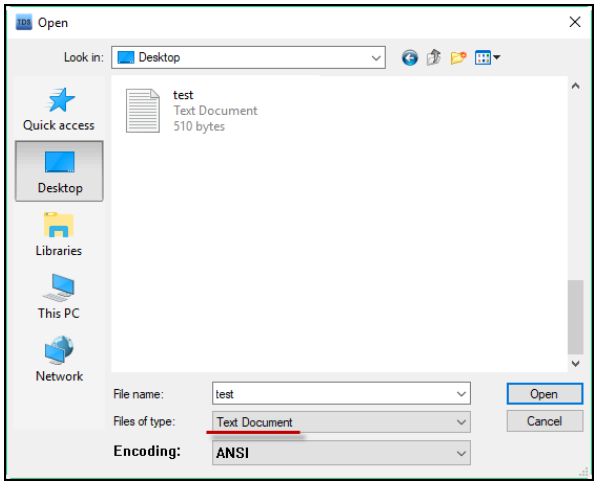
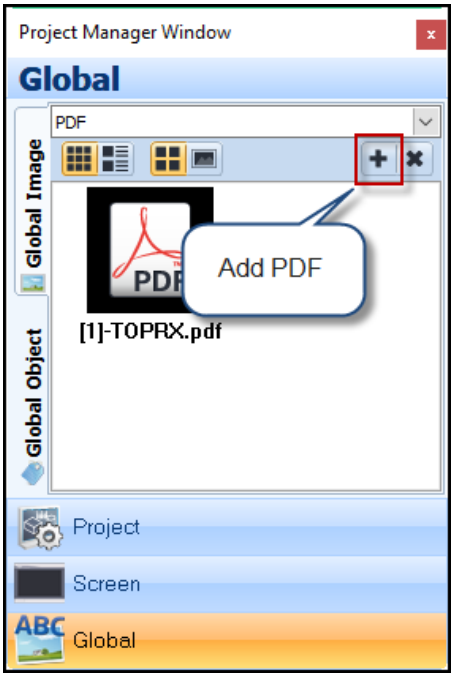
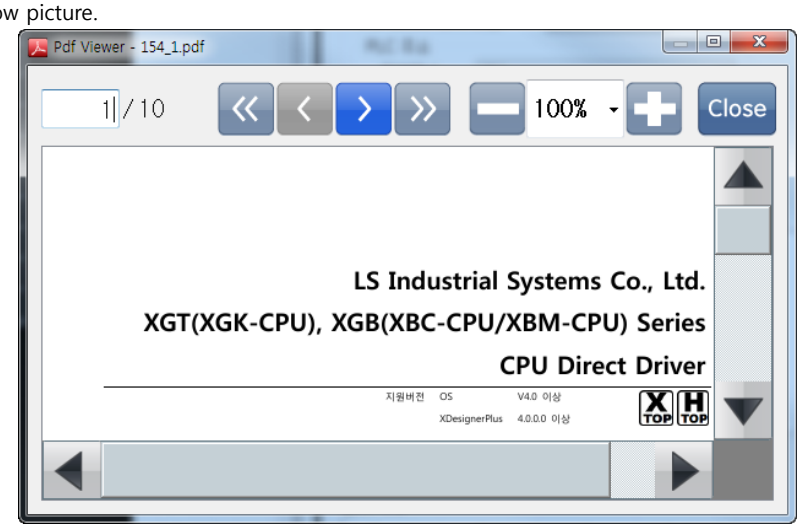
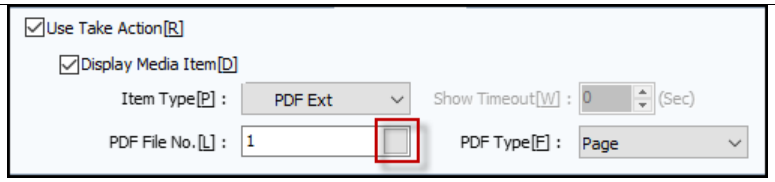


Image files can be zoomed in/out with [50%, 100%, 200%, 300%] button.

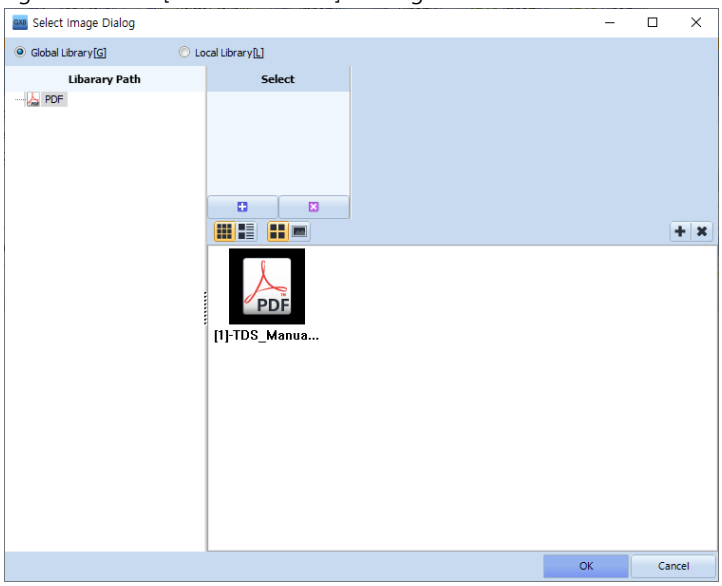
Click [Close] to close [Image Viewer] screen. Click the maximize screen button to maximize [Image Viewer] screen to fit the whole TOP screen size or scroll with the scroll bar on the bottom and right side of the screen to view the file.

4	Text	As a solution for an issued alarm, it loads an assigned text file. Text files can be registered in [Global] as below.  Click  button on top right corner of the screen and [Open] screen will pop up. You may register the text files here.  Registered text files are assigned with numbers. This number cannot be modified. Numbers are given in a sequential order. When executing the solution, a text file that corresponds to the [Solution Item Number] will be displayed on the screen as shown in the below picture. 

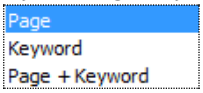
		If a text file is long, you may navigate the page with the top button.
5	PDF	As a solution for an issued alarm, it loads an assigned PDF file. PDF files can be registered in [Global] as below.  Click button on top right corner of the screen and [Open] screen will pop up. You may register PDF file here. Registered PDF files are assigned with numbers. This number cannot be modified. Numbers are given in a sequential order. When executing the solution, the PDF file that corresponds to the [Solution Item Number] will be displayed on the screen as shown in the below picture.  You may navigate PDF file's pages and zoom in/out with the arrow buttons on the top. Click the maximize screen button to see the screen to fit the whole TOP screen size or scroll with the scroll bar on the bottom and right side of the screen to view the file. Click [Close] to close the screen.
6	PDF Ext	As a solution for an issued alarm, it loads an assigned PDF file. While [PDF] is the function that calls a PDF file that corresponds to [Solution Item Number], [PDF Ext] calls single PDF file and shows set pages or searches by keyword and shows the page.



Click the right button on [PDF File Number] and register the PDF file in the below screen.



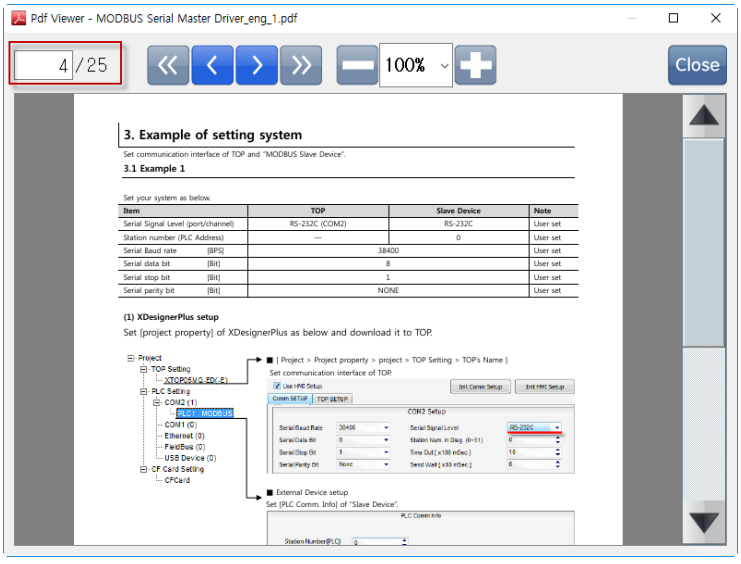
Choose the [PDF Type] from [Page/Keyword/Page+Keyword].



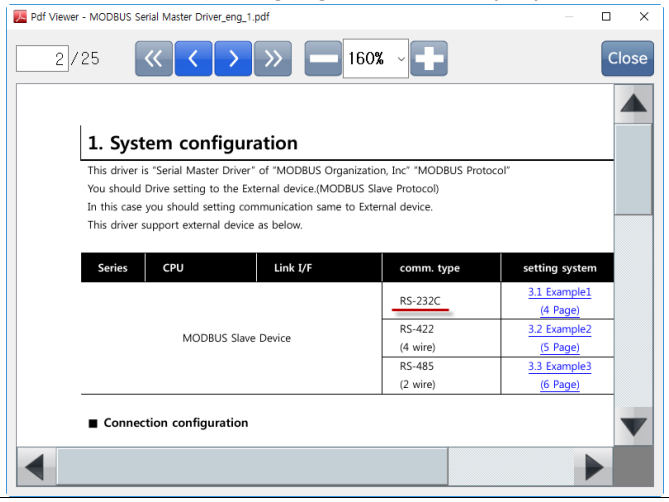
Select [Page] and [Solution PDF Page No.] column will be created on alarm list as shown in the below picture. Selecting [Keyword] will create a [Solution PDF Keyword] column. Select [Page+Keyword] and both [Solution PDF Page No./Solution PDF Keyword] columns will be created.

Solution PDF Page	Solution PDF Keyword
4	CPU
2	232
7	ERROR
7	LAMP
7	SPEED

[Page] shows the PDF file by the page of [Solution PDF Page No.] as shown in the below picture when solution is executed.



When solution is execution, [Keyword] function searches keywords recorded in [Solution

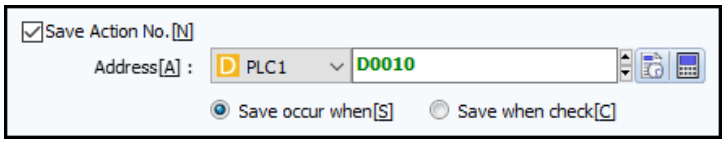
		PDF Keyword] and shows the corresponding page as shown in the below picture. The picture below is the result of searching keyword [232]. If there is no result, it shows the page no. [1]. [Page+Keyword] finds the corresponding page and searches by keyword to show the page. 

[Display Limit Time] refers to the time that activates solution and is set by [Second] unit. Set it to [0] to not use the display limit time.

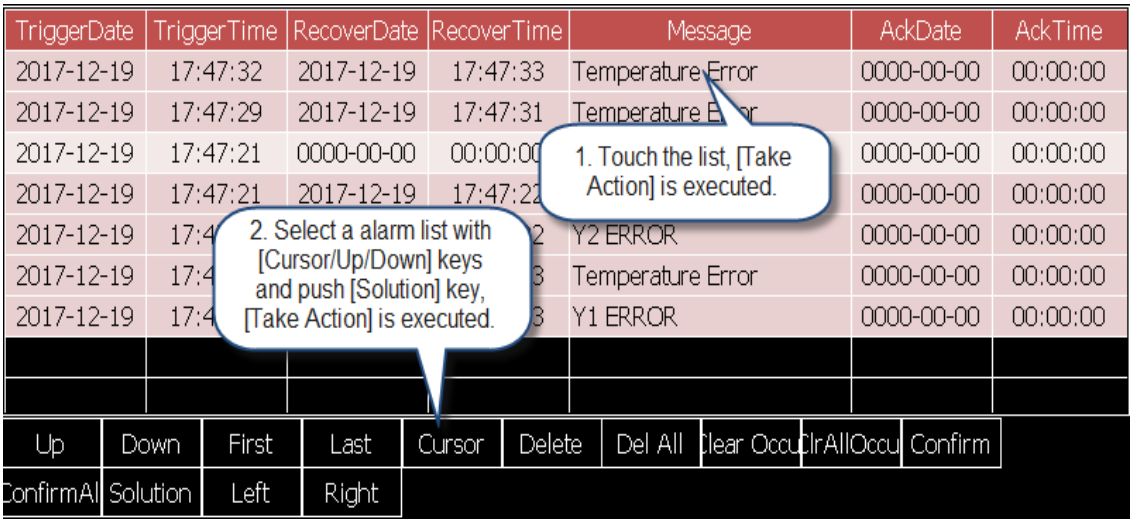


When it is set to [10] as above and the display item type is [Base Screen], the solution will be executed to switch the screen to the base screen and return to the alarm view screen after 10 seconds. If it is set to [0], it will not return to the alarm view screen again. [Window] displays the set window screen when the solution is executed and closes the window screen after 10 seconds. Set it to [0] to leave the popup window screen open. [Image/Text/PDF] closes the displayed [Image/Text/PDF] file on the screen after 10 seconds. Set it to [0] to not close the file.

[Save Solution No.] records [Solution Item Number] as a data in [Save Address] when the solution is executed.



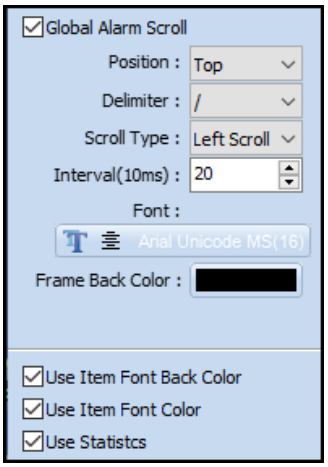
[Save when on] records [Solution Item Number] when an alarm is on. Therefore, the item number of the most recently issued alarm is recorded. [Save when checked] records [Solution Item Number] when the user touches and selects the alarm to take action against in [Alarm View] or when the solution is executed by selecting it with a [Cursor] button. Set Solution is activated when the user touches and selects the alarm to take action against in [Alarm View] or when the solution is activated by selecting it with a [Cursor] button.



[Pic. Execute Solution]

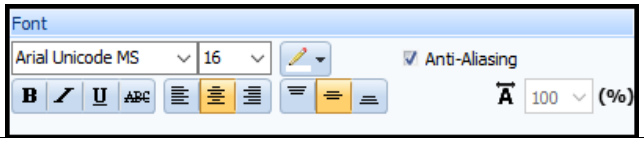
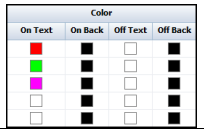
4.1.4 Global Alarm Scroll Settings

[Global Alarm Scroll] setting is located at the bottom left of the alarm screen. This function displays [Alarm Content] on the top or bottom of the screen in scroll (flow) format regardless which screen you are currently on.

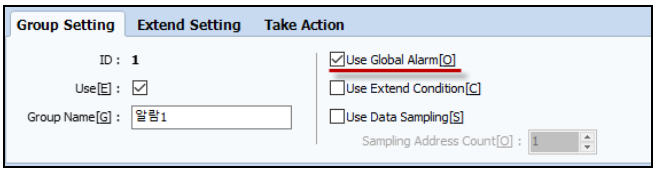


[Pic. Global Alarm Scroll Settings]

No	Property	Description
1	Position	Choose from [Top/Bottom] for the position to display flow alarm on the screen. With [Top], the alarm will be displayed at the top of the screen. With [Bottom], the alarm will be displayed at the bottom of the screen. Top Bottom
2	Delimiter	Delimiter is marked between alarms when there are multiple alarms displayed. None / , | :
3	Scroll Type	Select the flow alarm direction from [Left Scroll/Right Scroll]. [Left Scroll]: Alarm content will flow left. [Right Scroll]: Alarm content will flow right. Left Scroll Right Scroll
4	Interval (10ms)	Set the movement interval as 10ms unit.

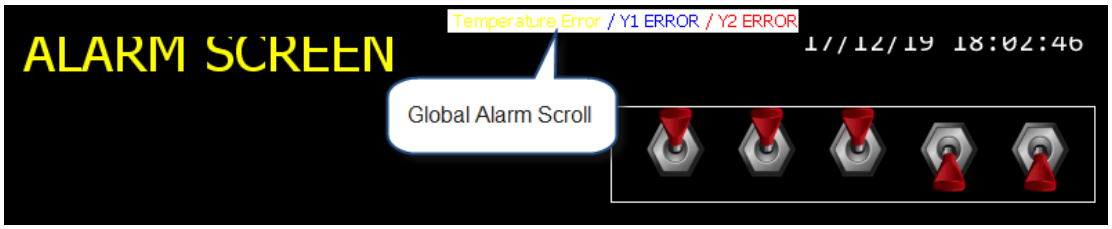
5	Font	Set the alarm content font shown on screen. 
6	Frame Back Color	Set color appears as the background frame color of the flow alarm. Set it to [Set Transparent] to make the frame invisible.
	Use Item Font Back Color	Applied when [Use Default Display Color] function is used in a group. Each alarm will be displayed in the [On Background] color.
7	Use Item Font Color	Applied when [Use Default Display Color] function is used in a group. Each alarm will be displayed in the [On Character] color. 

If using [Global Alarm Scroll] function, set whether or not to use the alarm list at [Group] as [Use Global Alarm].



[Pic. Use global alarm]

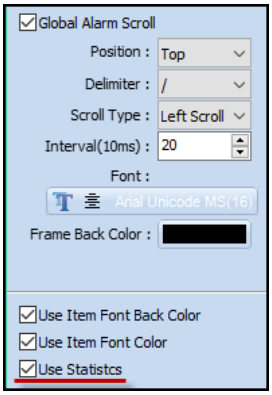
When [Use Global Alarm] is checked and an alarm is issued from the group's alarm list, it will add marker on [Global Alarm Scroll]. If not checked, it will be excluded from [Global Alarm Scroll].



[Pic. Global alarm scroll]

4.1.5 Use Alarm Statistics

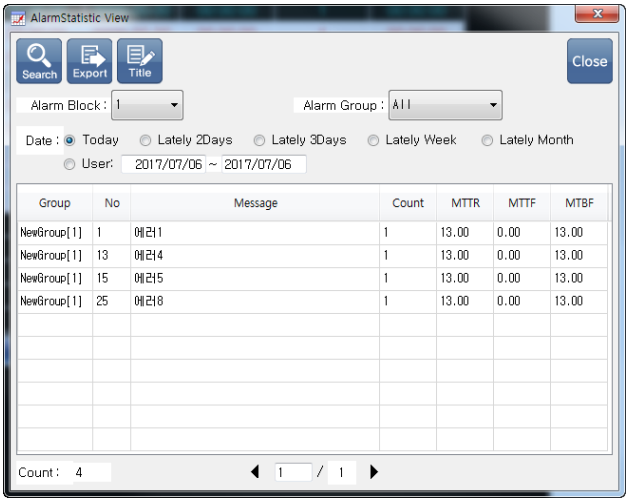
Accumulated daily statistical data for issued alarms.



[Pic. Use Statistics]

Record alarm occur count, accumulated alarm pulse time, accumulated alarm off time, time of the previous alarm on, time of the previous alarm off, alarm on to off time, and the time between alarms.

Recorded alarm statistics data is kept for 10 days (basic storage time) then deleted.
Register [Statistics View] key in [Alarm View] object and use this key to display the following [AlarmStatistics View] screen. You may check alarm statistics on this screen.



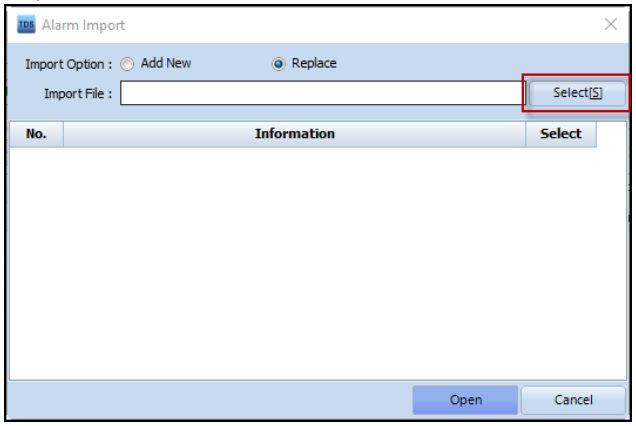
[Pic. AlarmStatistics View]

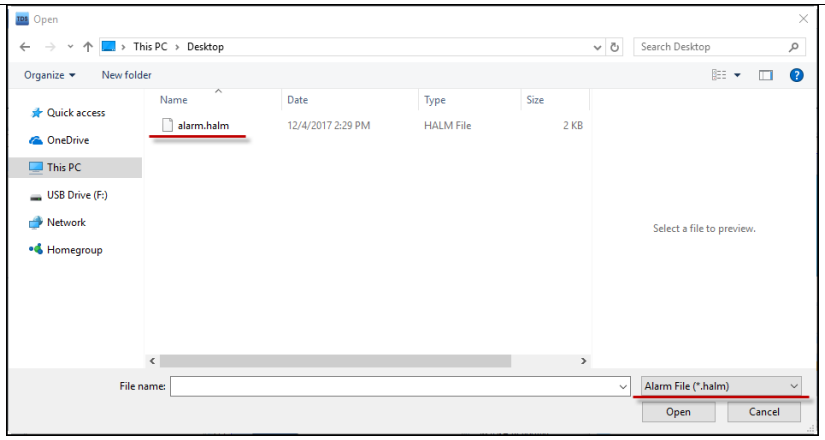
Set Alarm Block/Alarm Group/Date and click [Search] button at the top to search the corresponding alarm data. [Count] means the occurrence count, [MTTR] means the time from alarm on to off, [MTTF] means the time between alarm off to on, and [MTBF] means the time from one alarm on to another alarm on.

4.1.6 Import/Export Alarm File

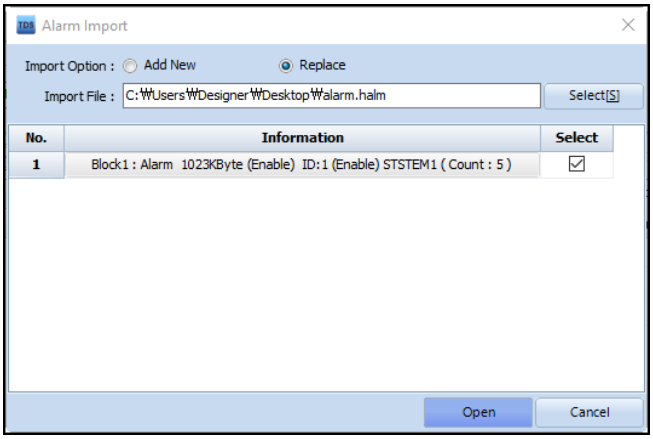


[Pic. Import/Export]

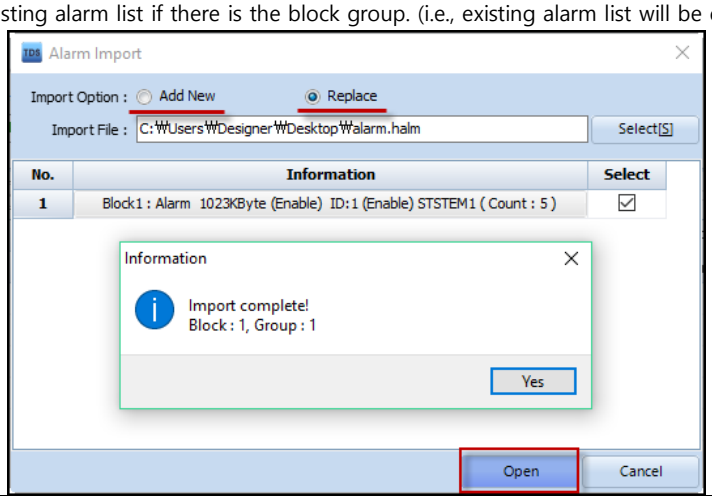
Alarm	Description
Import [R]	Loads alarm file [*.halm] saved with [Export] and registers alarm list in the block. Click [Import] to display the below screen.  Click [Select File] to display [Open] screen. Select an alarm file [*.halm] to load and click [Open] button below.



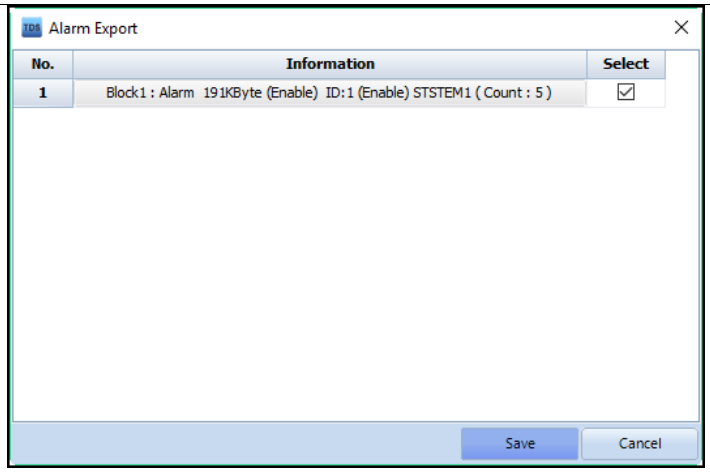
Open an alarm file to see below information.



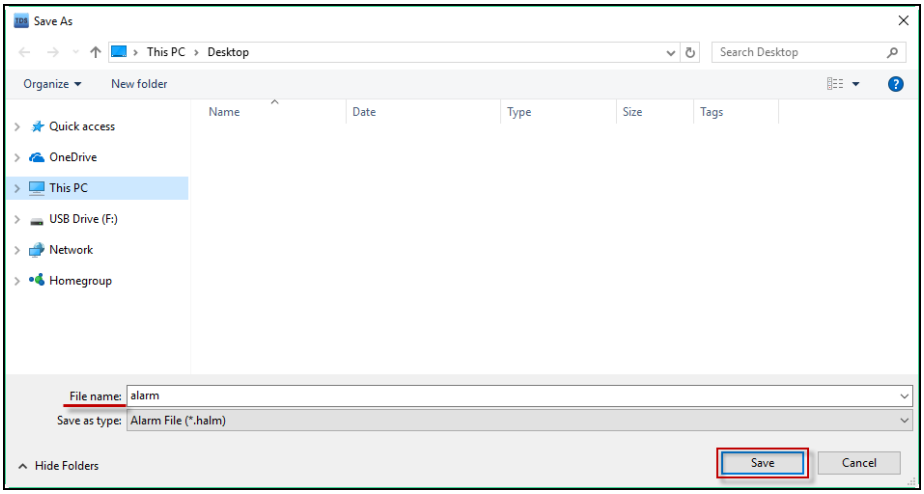
Choose from [Add New/Replace] in [Import Option] and click [Open] to import. [Add New] adds a new group to the block and alarm list is registered to the added group. [Replace] replaces the file's alarm list with the existing alarm list if there is the block group. (i.e., existing alarm list will be deleted.)



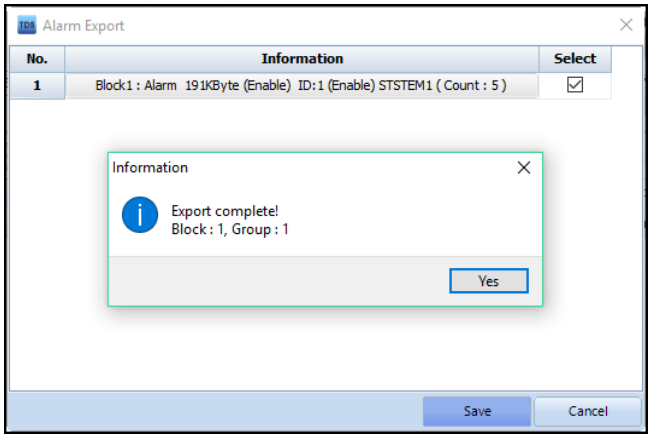
Export [X]	Save the alarm setting content as an alarm file [*.halm]. The saved halm file cannot be opened or edited. Click [Export] button to display below screen.



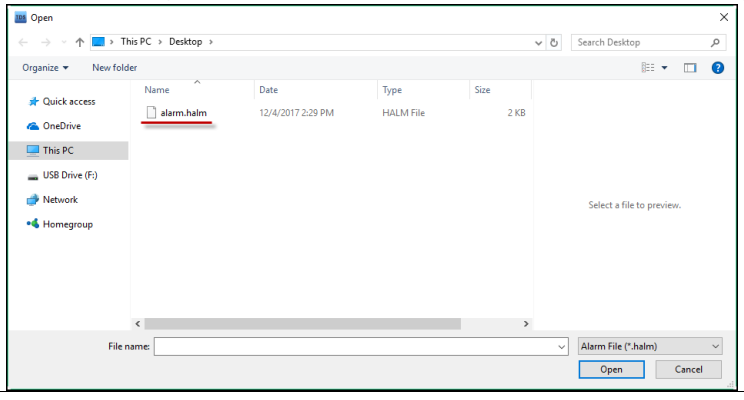
Select the group to save as an alarm file and click [Save] button below to display [Save As File] screen. Set [Path] to save the alarm file and enter [File Name].

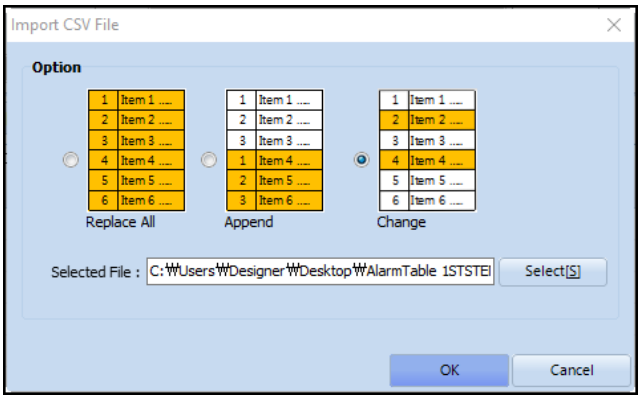
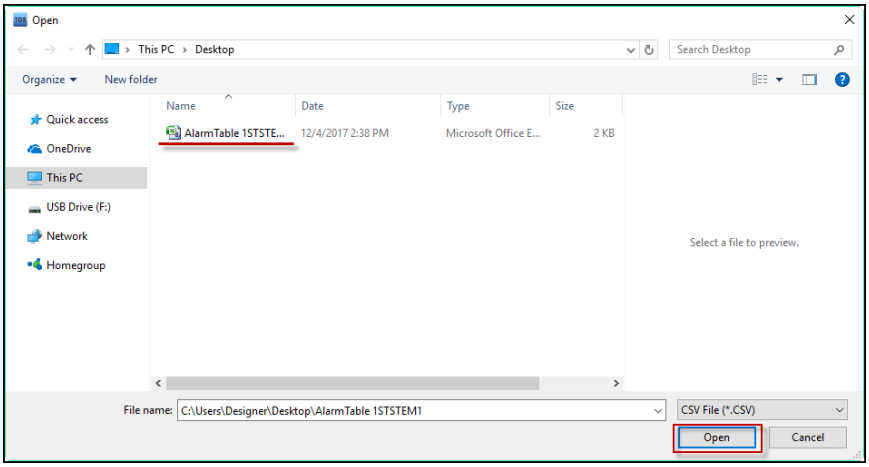
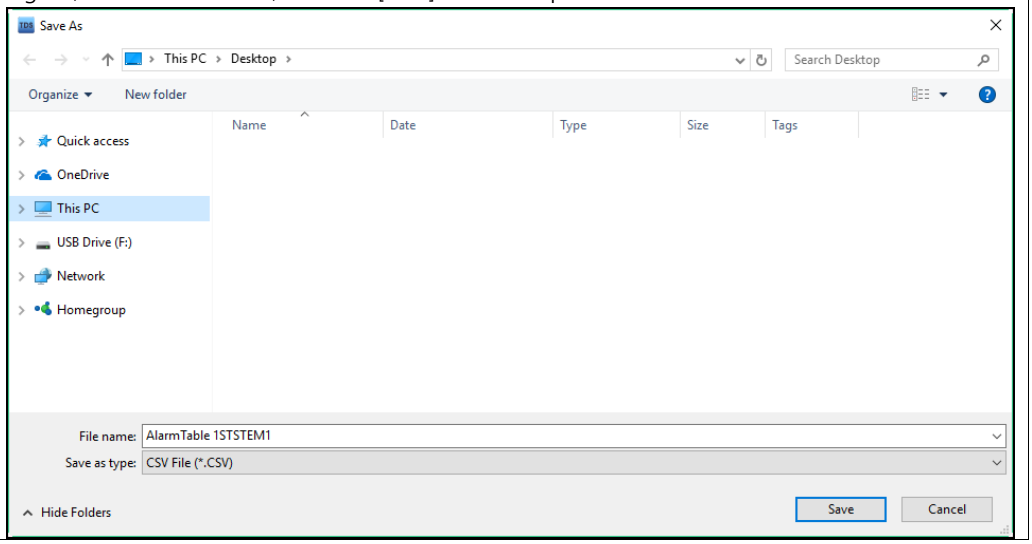


Click [Save] button below to complete [Export].



Alarm file will be saved in the path under the name of [222.halm] as shown in the below picture.

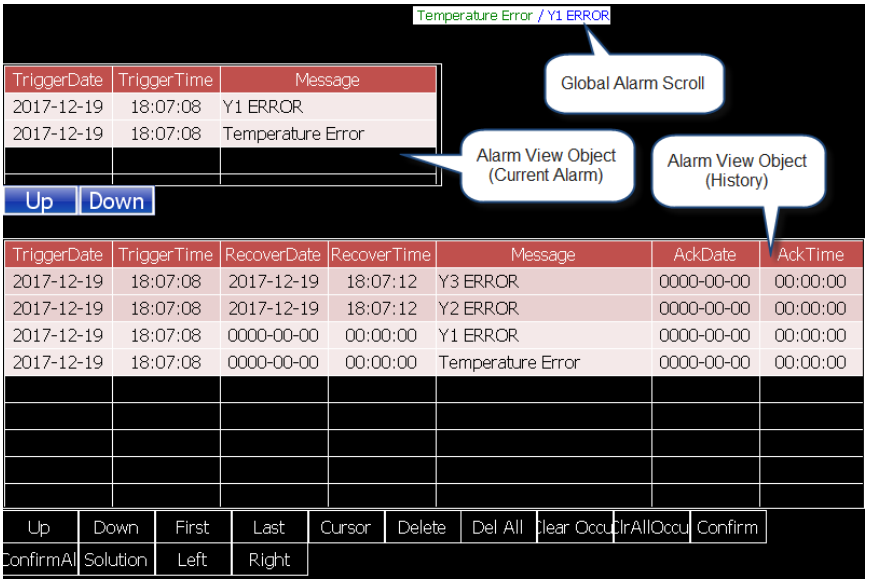


Import CSV [R]	Import alarm file saved with [Export CSV] button to the [Selected Group]. Clicking [Import CSV] will display below screen. Click [Select] to open [Open] screen. Select a CSV alarm file saved with [Export CSV] and click [Open]. Select [Replace All/Add/Modify] in the option and click [Apply] to register alarm list.   [Replace All] deletes all alarm list of the selected group and registers the file's alarm list. [Add] adds file's alarm list behind the selected group's alarm list. [Modify] replaces the same numbers of the file's alarm lists among the alarm lists of the selected group. Alarms with new numbers will be added new.
Export CSV [X]	Save the select group's alarm list as a [*.CSV] file. The saved file can be open and edited with Excel program. Click below [Export CSV] button and [Save As] screen will appear as below. Set the save path of the log file, enter the file name, and click [Save] to finish export. 

4.1.7 View Alarm Data

Alarm Data can be displayed on screen by registering [Alarm View] object. If [Global Alarm Scroll] is set, the issued alarm's content can be shown in the screen in a flow form.

(Please see Chapter 16 [AlarmView object] for alarm view objects.)

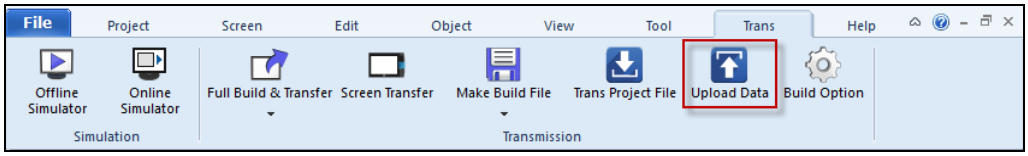


[Pic. View alarm data]

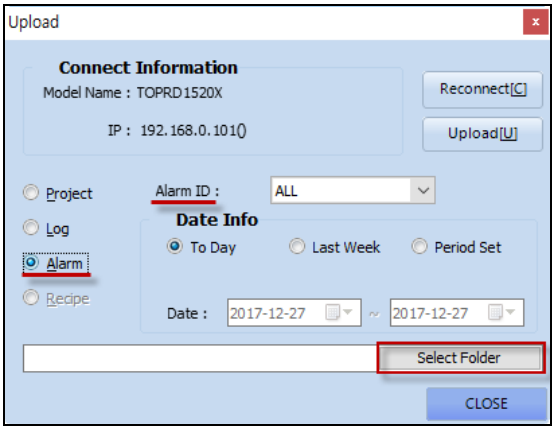
4.1.8 Copy Alarm Data

(1) Copy alarm data in TOP memory to PC

Connect TOP and PC and run [Transmission]-[Upload Data] menu.

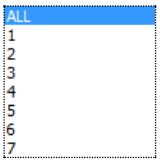


[Pic. Upload data]

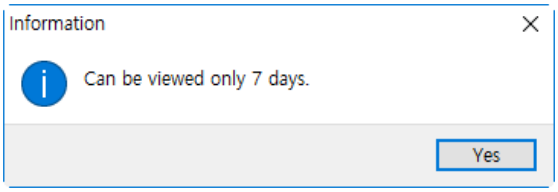


[Pic. Upload]

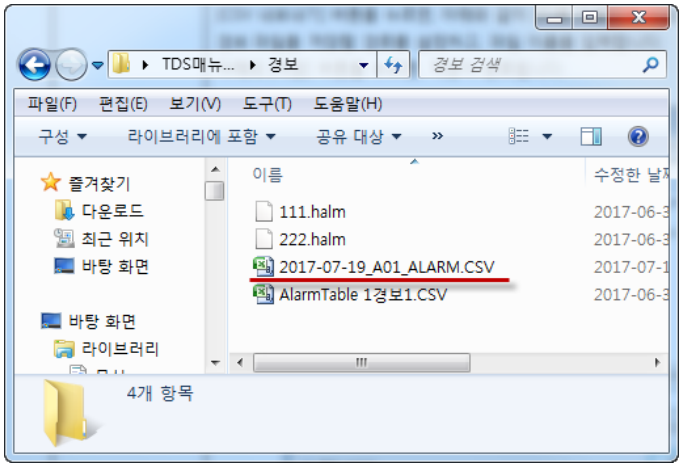
Select [Alarm] in [Upload] screen and set [Alarm ID].



[Alarm ID] is the alarm block number. Select [ALL] to upload all alarm data and select ID to upload the block's alarm only. Select [Today/Last Week/Period Set] for [Date Info].
If [Period Set] is chosen, you may set the period within 7 days. If the number exceeds 7, below message will be displayed and you cannot proceed to upload. Alarm data of the date will be uploaded.

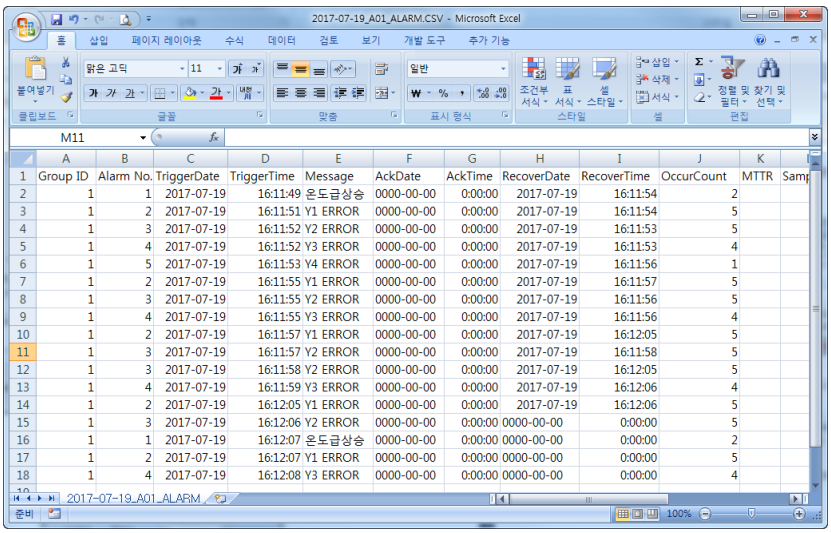


Set the file's save path with [Select Folder] button and click [Upload] button to proceed uploading and save as a file as below.



[Pic. Upload result]

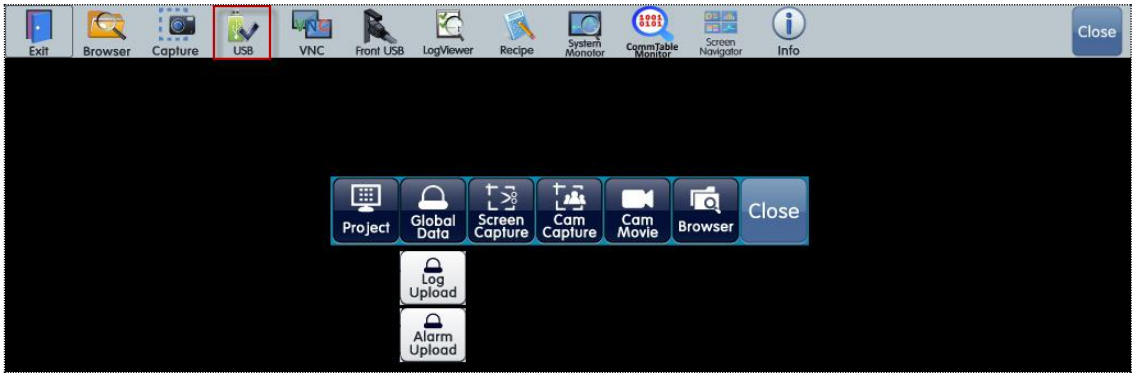
CSV files can be opened in Excel as shown below.



Group ID	Alarm No.	TriggerDate	TriggerTime	Message	AckDate	AckTime	RecoverDate	RecoverTime	OccurCount	MTTR
1	1	2017-07-19	16:11:49	온도급상승	0000-00-00	0:00:00	2017-07-19	16:11:54	2	
1	2	2017-07-19	16:11:51	Y1 ERROR	0000-00-00	0:00:00	2017-07-19	16:11:54	5	
1	3	2017-07-19	16:11:52	Y2 ERROR	0000-00-00	0:00:00	2017-07-19	16:11:53	5	
1	4	2017-07-19	16:11:52	Y3 ERROR	0000-00-00	0:00:00	2017-07-19	16:11:53	4	
1	5	2017-07-19	16:11:53	Y4 ERROR	0000-00-00	0:00:00	2017-07-19	16:11:56	1	
1	2	2017-07-19	16:11:55	Y1 ERROR	0000-00-00	0:00:00	2017-07-19	16:11:57	5	
1	3	2017-07-19	16:11:55	Y2 ERROR	0000-00-00	0:00:00	2017-07-19	16:11:56	5	
1	4	2017-07-19	16:11:55	Y3 ERROR	0000-00-00	0:00:00	2017-07-19	16:11:56	4	
1	2	2017-07-19	16:11:57	Y1 ERROR	0000-00-00	0:00:00	2017-07-19	16:12:05	5	
1	3	2017-07-19	16:11:57	Y2 ERROR	0000-00-00	0:00:00	2017-07-19	16:11:58	5	
1	3	2017-07-19	16:11:58	Y2 ERROR	0000-00-00	0:00:00	2017-07-19	16:12:05	5	
1	4	2017-07-19	16:11:59	Y3 ERROR	0000-00-00	0:00:00	2017-07-19	16:12:06	4	
1	2	2017-07-19	16:12:05	Y1 ERROR	0000-00-00	0:00:00	2017-07-19	16:12:06	5	
1	3	2017-07-19	16:12:06	Y2 ERROR	0000-00-00	0:00:00	0000-00-00	0:00:00	5	
1	1	2017-07-19	16:12:07	온도급상승	0000-00-00	0:00:00	0000-00-00	0:00:00	2	
1	2	2017-07-19	16:12:07	Y1 ERROR	0000-00-00	0:00:00	0000-00-00	0:00:00	5	
1	4	2017-07-19	16:12:08	Y3 ERROR	0000-00-00	0:00:00	0000-00-00	0:00:00	4	

(2) Copy Alarm Data in TOP Memory to USB Device

Connecting a USB memory to TOP or clicking [USB] button at the top menu in the operation screen will display the below USB menu.

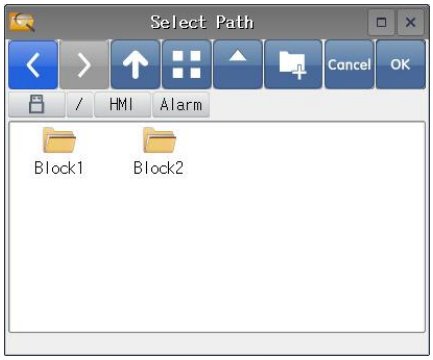


[Pic. Click USB button on the top menu]

Click [Global Data] and [Log Upload/Alarm Upload] buttons will be displayed at the bottom.

Run [Alarm Upload] and [Select Path] screen will be displayed as below.

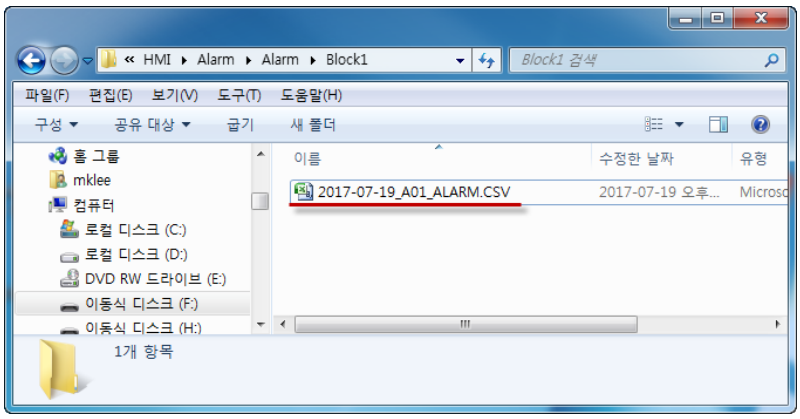
Set the path to save the alarm file on this screen and click [OK] to upload.



[Pic. Select path screen]

When upload is finished, alarm data is saved in CSV file format in the USB memory as below.

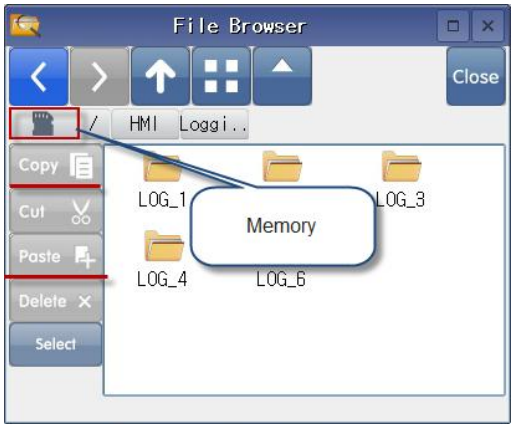
CSV [*.CSV] files can be opened with Excel or general editor (notepad) programs.



[Pic. Copy result to USB memory]

(3) Copy SD Card Alarm Data to USB Memory

If [Storage] is set as [SD Card] in [Backup Setting], you may copy alarm files saved in SD card to USB memory. Run [File Explorer] in the menu screen and change [Memory] at the top left corner to SD card. Select an alarm data to copy and click [Copy] button. Then change [Memory] to USB and click [Paste] to copy the file to the USB device.



[Pic. File explorer in menu screen]

4.1.9 Delete Alarm Data

Alarm data saved in TOP memory can be all deleted by clicking [Start] in [Control Panel]-[Initialization]-[Delete Alarm Data] from menu screen.



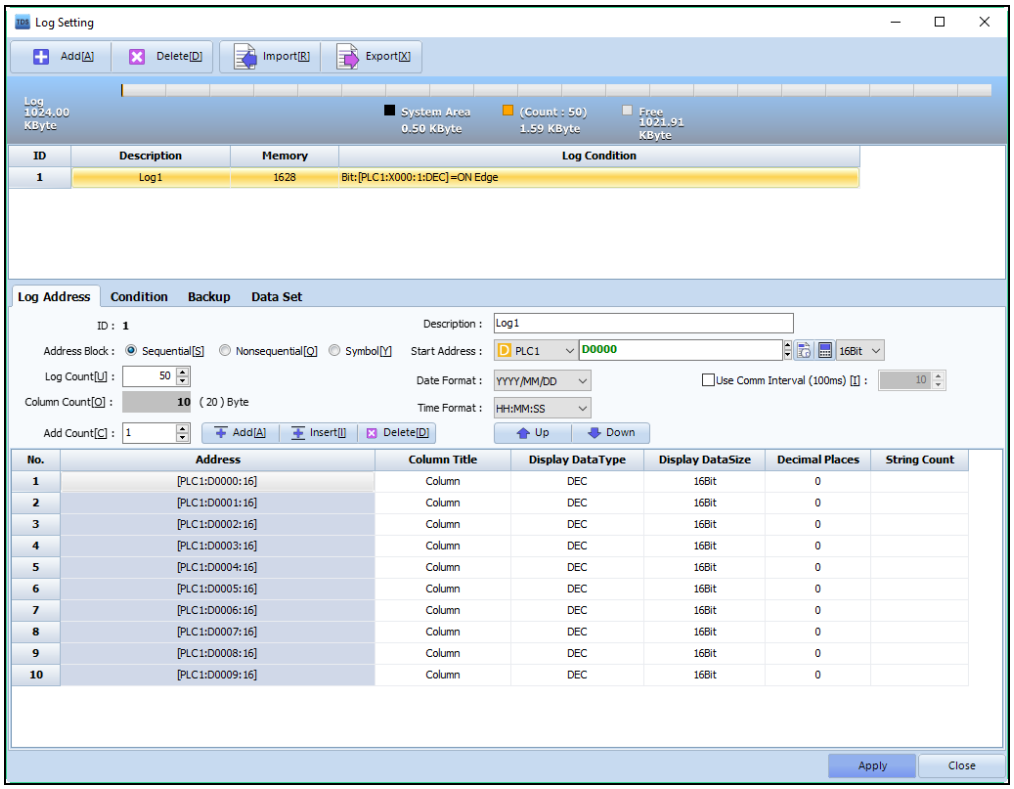
[Pic. Control panel of menu screen]



[Pic. Delete alarm data]

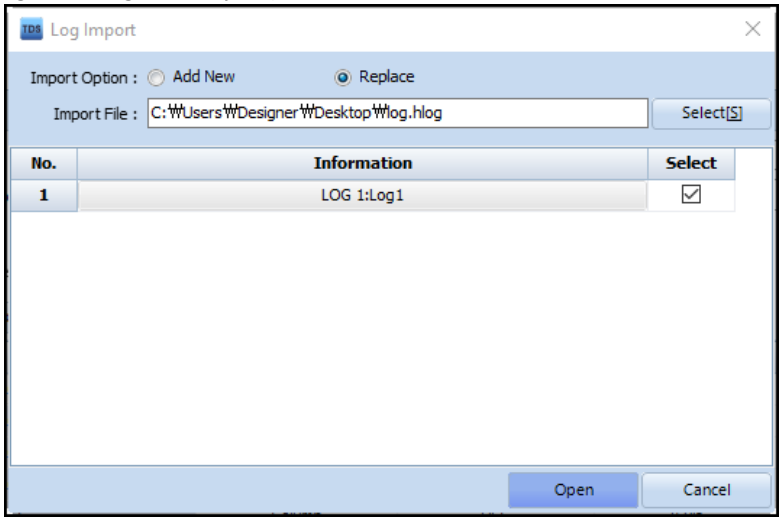
Log

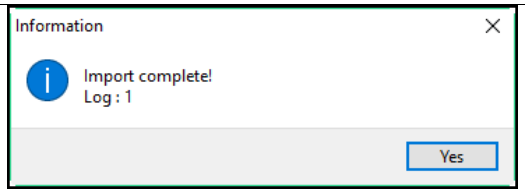
Log is a feature that records address data according to condition. Recorded log data will be marked with [Log View] objects registered.



[Pic. Log Setting]

(1) Top Button

No	Top Button	Description
1	Add [A]	Add a log. You can add up to 32 logs.
2	Delete [D]	Delete the selected log.
3	Import [R]	Import log files (.hlog) saved by [Export].  Click [Select File] to load a log file and click [Open] to complete import as shown in the below message.



In [Import Option], [Add New] adds the logs of a log file after the existing logs.
When [Add New] is executed while there are log 1 and log 2, new logs will be added as log 3 and log 4 as shown in the below picture.

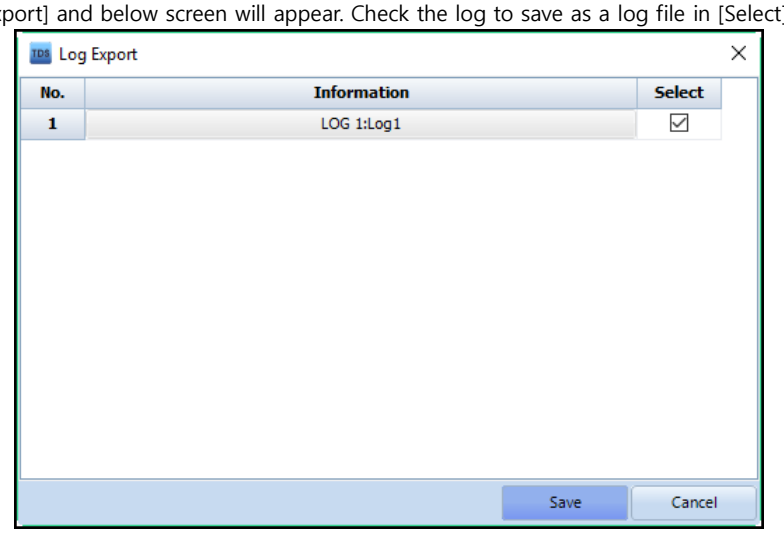
ID	Description	Memory	Log Condition
1	Log1	1628	Bit:[PLC1:X000:1:DEC]=ON Edge
2	Log1	1628	Bit:[PLC1:X000:1:DEC]=ON Edge

[Replace] replaces the logs of log files in the one with the same ID. When [Replace] is executed while there are log 1 and log 2, the logs will be replaced with the loaded logs as shown in the below picture.

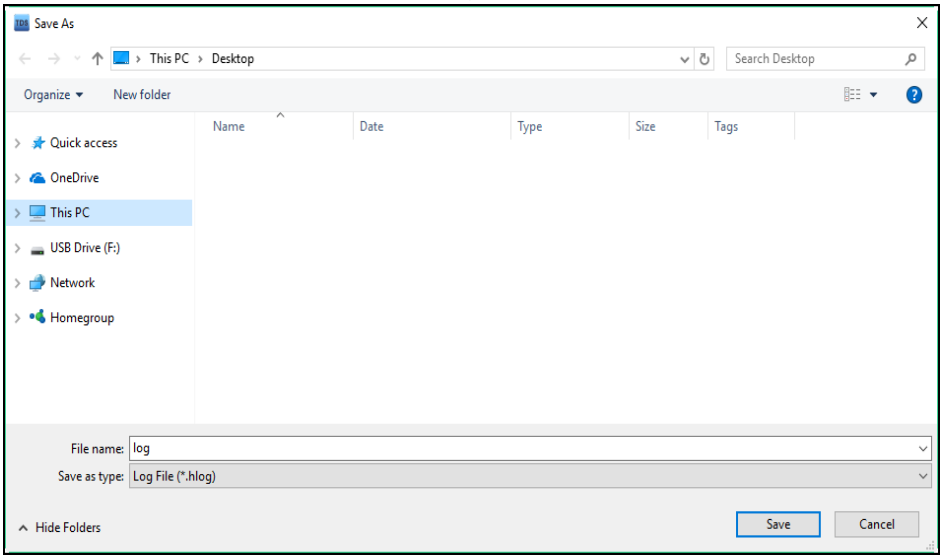
ID	Description	Memory	Log Condition
1	Log1	1628	Bit:[PLC1:X000:1:DEC]=ON Edge

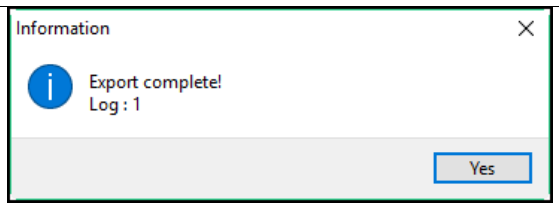
4 Export [X]

Save the currently set log as log file (.hlog). Saved hlog files cannot be opened and edited. Click [Export] and below screen will appear. Check the log to save as a log file in [Select] list.

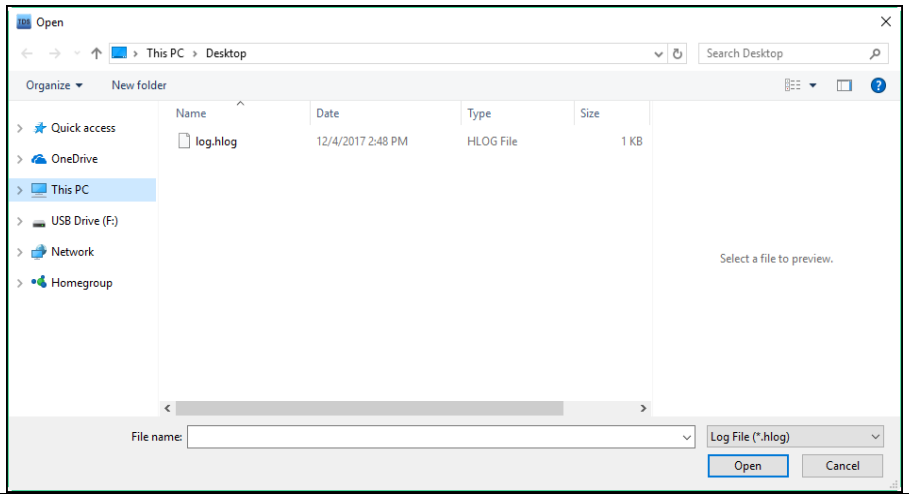


Click below [Save] button and [Save As] screen will appear. Set the save path of the log file, enter the file name, and click [Save] to finish export.





As shown in below picture, the saved log file will be in [temperature data log.hlog] in the set path.



(2) Log Memory Setting

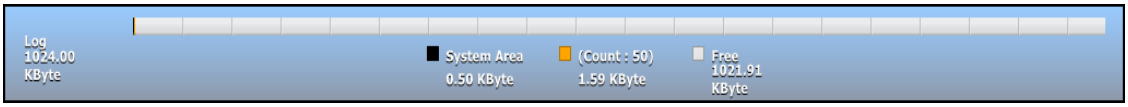
For logs, set the memory first at [Project]-[Property]-[Partition Setting].

TOP backup memory is 445 KB in total. Distribute it well to store [Log/Alarm/Recipe] data.



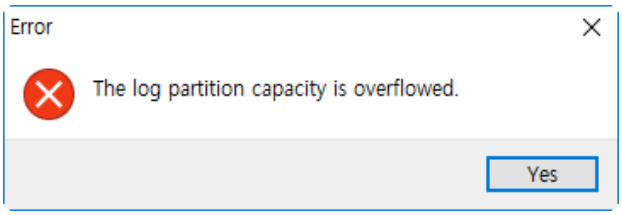
[Pic. Partition Setting]

From 192 KB that has been set for log in the partition setting, the memory that each log uses is shown in a graph at the top of the log setting screen as shown in the below picture.



[Pic. Log Memory Setting]

If the total sum of the memory used by each log exceeds the memory assigned to logs in the partition setting (192KB), below error message will be displayed.



[Pic. Log Capacity Full Message]

(3) Log List

A log list shows a list of registered logs. ([ID/Description/Memory/Log Condition])

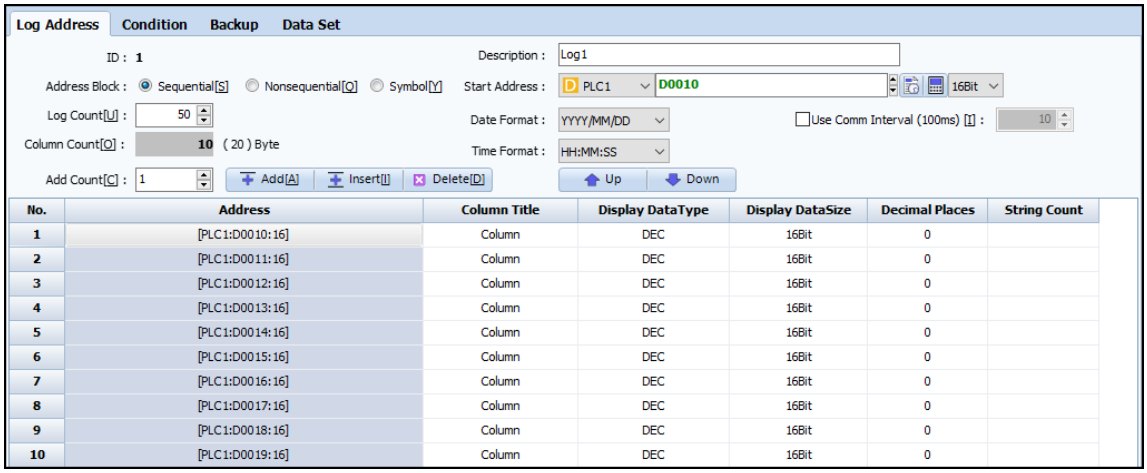
ID	Description	Memory	Log Condition
1	Log1	1628	Bit:[PLC1:X000:1:DEC]=ON Edge

[Pic. Log List]

No	Log List	Description
1	ID	Displays log numbers. Log numbers are sequentially assigned to logs when they are added and cannot be edited by the user.
2	Description	Shows the log description.
3	Memory	Shows the log's memory use amount.
4	Log Condition	Shows the log condition.

4.1.10 Log Address Page

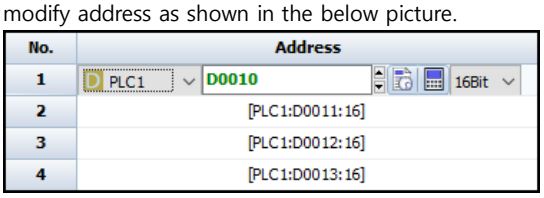
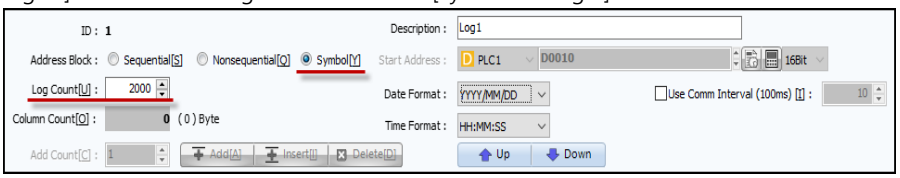
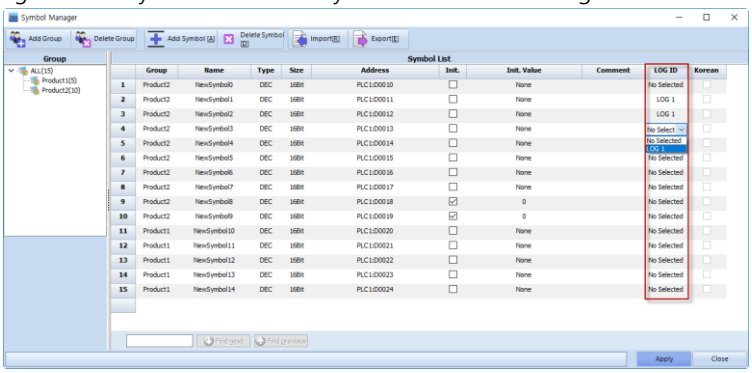
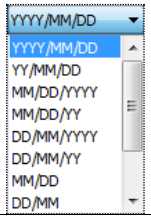
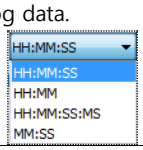
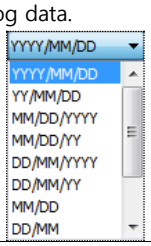
Set the log address (the address to record data). Check log [ID] and enter [Description] of the log. Set the [Date] and [Time] format that are recorded together when data is being recorded.

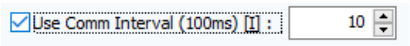


[Pic. Log Address Page]

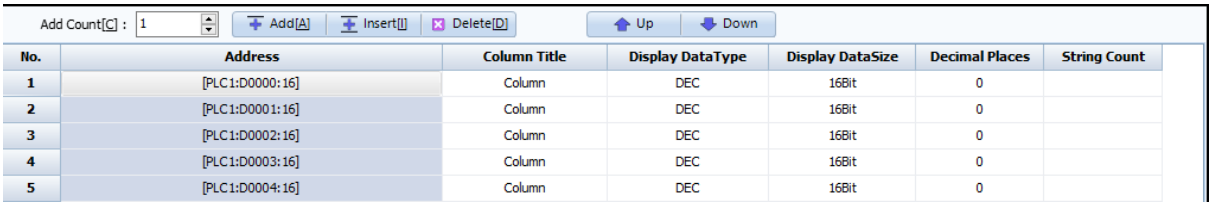
See the top settings first.

No	Log Condition	Description
1	ID	Displays log numbers. Log numbers are sequentially assigned to logs when they are added and cannot be edited by the user.
2	Description	Enter log description.
3	Address Block	Select from [Sequential/Non-sequential/Symbol]. Select [Sequential] if the log address is consecutive. Set the first address to record at [Start Address] and choose the address size from [16 Bit/32 Bit]. Log address no. 1 is already registered, so enter [Add Count] as [Address Count-1] and click [Add] to create log address in sequence in the below [Log Address List]. [Address] column in the [Log Address List] cannot be modified. When you wish to edit address, modify [Start Address] to automatically modify addresses in [Address] column. Select [Nonsequential] if the log address types are different and are not sequential. Enter [Add Count] as [Address Count-1] and click [Add] to create log address. Set/Modify

		individual address in the [Address] column in below [Log Address List]. Double click the address column to modify address as shown in the below picture.  [Symbol] sets some of the symbol addresses registered in [Symbol Manager] as log address. [Symbol Manager] is displayed by running [Project]-[Symbol] menu. Select address block as [Symbol] in [Log Condition] and you may select the [ID] of the log selected as a symbol in [Log ID] column of the registered address in [Symbol Manager].  Set the log ID to the symbol address that you wish to use as the log address.  When set as above, Log2 is selected as the symbol address. Log2 records the symbol address 1, 2, 3, and 8 data to memory according to [Log Condition].
4	Log Count	This is the total log count and is set to assign memory. If log count is [1000], it assigns memory space to save 1000 log data. When [Log Condition] is met and the log data accumulates to 1000, the oldest data is deleted and new data is saved continually. A total of 1000 data is stored.
5	Date Format	Set the date format to be saved with log data. 
6	Time Format	Set the time format to be saved with log data. 
7	Date Format	Set the date format to be saved with log data. 
8	Column Count	This is the number of columns added with [Add] button and is automatically calculated. In 5(10) Byte, [5] is the number of columns and [10] is the memory capacity in a Byte unit.
9	Column Title	With [Normal], enter strings manually.

		[String Table] loads the string registered in [Project]-[String]. (For String Table, please see Chapter 4.4 [String].)
10	Use Comm Interval	Setting [Use Comm Interval] enables log condition checks at every set time. Not setting [Use Comm Interval] will run real-time log condition checks. Set as shown in the below picture and [Log Condition] will be checked at every second (10x100ms = 1s). 

Next, we will see [Log Address List] at the bottom.



No.	Address	Column Title	Display DataType	Display DataSize	Decimal Places	String Count
1	[PLC1:D0000:16]	Column	DEC	16Bit	0	
2	[PLC1:D0001:16]	Column	DEC	16Bit	0	
3	[PLC1:D0002:16]	Column	DEC	16Bit	0	
4	[PLC1:D0003:16]	Column	DEC	16Bit	0	
5	[PLC1:D0004:16]	Column	DEC	16Bit	0	

As we have covered before, [Add Count] is the number of addresses to add. Click [Add] or [Insert] to add/insert log addresses by the number of [Add Count]. [Add Count] can have maximum 1000 counts.

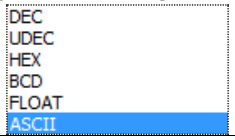
Use [Add] button to add a new log address after the last list.
Use [Insert] button to add a new log address above a selected log address.
Use [Delete] button to delete a selected log address.

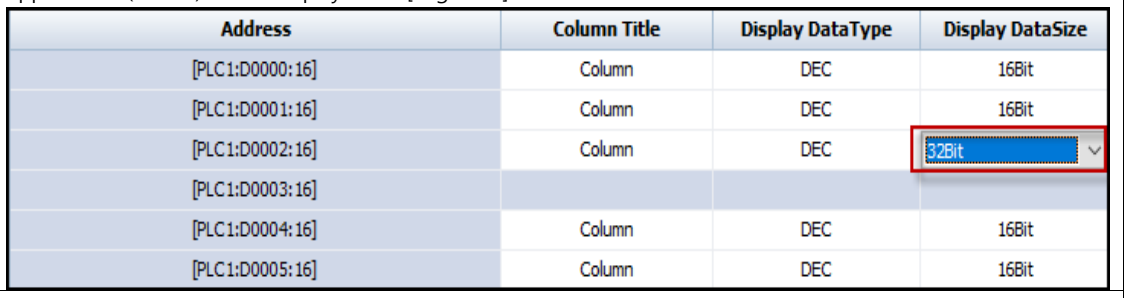
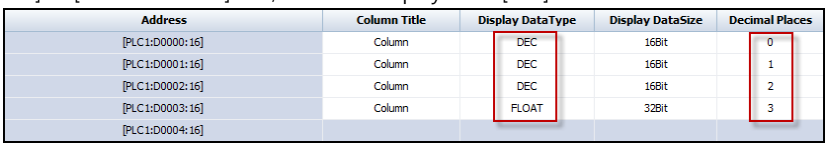
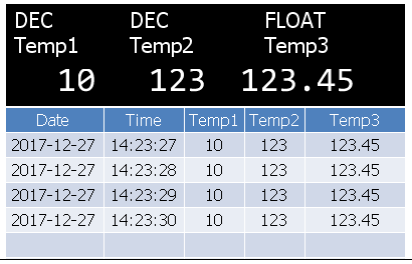
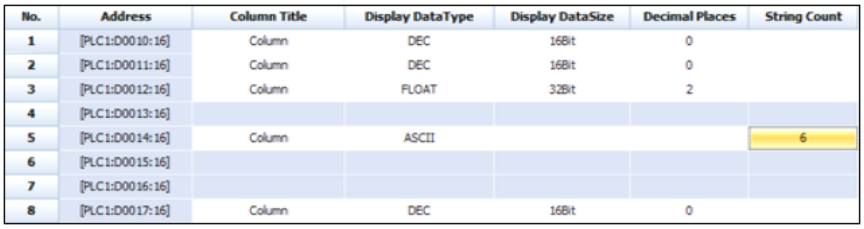
If [Address Block] is set to [Sequential], addresses newly added will be created in sequence. Using [Insert] will also create new addresses before the selected log address. New addresses will be added on the cells above the selected log address and later addresses will be also edited in order. Even if the middle log addresses are [Deleted], log addresses will be modified in sequence.

If [Address Block] is set to [Nonsequential], a default address will be created when an address is [Added/Inserted]. Therefore, addresses need to be modified after they are [Added/Inserted]. Deleting the middle log address will not affect other log addresses above/below them.

Click [Up] to push a selected log address up a cell.
Click [Down] to push a selected log address down a cell.

Log address list has many columns other than [Address] column.

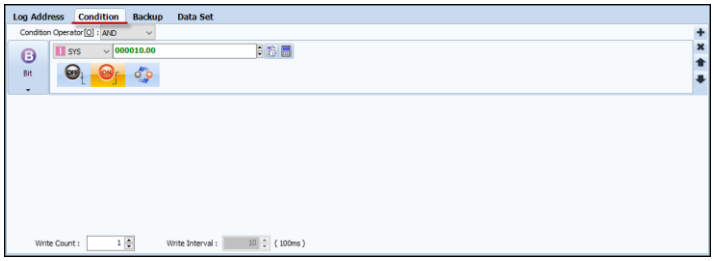
No	Log Address Column	Description
1	Address	If Address Block is set to sequential, addresses cannot be modified. Modify [Start Address] to automatically modify the address.
2	Column Title	Column title that is displayed on [Log View] object as the title of each log address.
3	Display Data Type	The data type to be displayed on [Log View] object. Read log data recorded in memory to display them according to [Display Data Type] on [Log View]. 

		[DEC] is the sign decimal number. [UDEC] is non-sign decimal number. [HEX] is hexadecimal number. [BCD] is hexadecimal number used like decimal number. [FLOAT] is decimal point data. [ASCII] is text string.
4	Display Data Size	The data size to be displayed on [Log View] object. It reads log data recorded in memory to display them according to [Display Data Type] on [Log View].  [1 Bit] displays the first (0th) bit value of the set word address. [16 Bit] displays the set address data as word address is in 16 Bit. [32 Bit] is calculated as 32 Bit with the following address. As the below picture, the current address becomes the lower word (D0015), the next address is calculated as upper word (D0016) and is displayed on [Log View]. 
5	Decimal Places	Set the decimal places to be displayed on [Log View]. In case the displayed data type is [Float], it loads decimal place data and displays decimal place data as is. If the actual Float data is [123.45] and [Decimal Places] is 2, it will be displayed as [123.45]. If [Decimal Places] is 1, it will be displayed as [123.4]. If [Decimal Places] is 0, it will be displayed as [123]. In case the displayed data type is [DEC], it loads integer data and applies decimal places to the value. If the actual DEC data is [123] and [Decimal Places] is 2, it will be displayed as [1.23]. If [Decimal Places] is 1, it will be displayed as [12.3]. If [Decimal Places] is 0, it will be displayed as [123].  
6	String Count	It sets the number of strings when [Display Data Type] is set as [ASCII]. One string of ASCII code is 8 bit. A word address (16 bit) saves two strings. When a string has six strings, it needs three word addresses. Therefore, as shown in the below picture, [D0015/D0016] will be assigned to model name column. In Log View, [D0014~D0016] strings are read and displayed. 

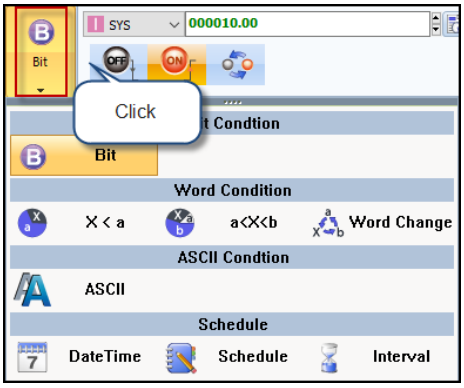
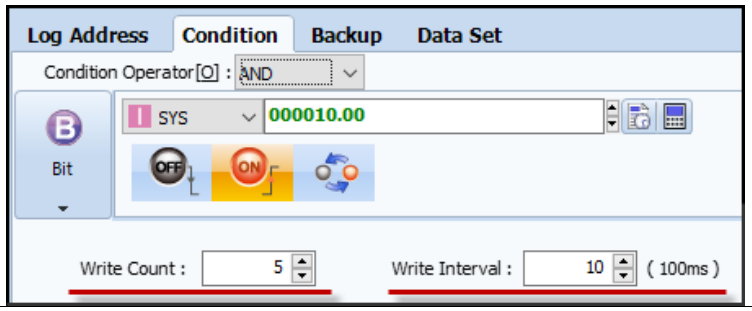
			D0014 1AB-RT Date | Time | Temp1 | Temp2 | Temp3 | Model 2017-12-27 | 14:29:27 | 0 | 0 | 0.00 | 1AB-RT 2017-12-27 | 14:29:31 | 0 | 0 | 0.00 | 1AB-RT 2017-12-27 | 14:29:32 | 0 | 0 | 0.00 | 1AB-RT

4.1.11 Log Condition Page

You can set data record condition in Log Condition Page.



[Pic. Log Condition]

No	Log Condition	Description
1	Calculation Condition	Use ✚ button on the top right corner to set more than two conditions. AND OR [AND] marks true when all set conditions are true. [OR] marks true when at least one set condition is true.
2	Select Condition	Click the button on the left and a condition list will be displayed. You may select [Condition Type] from this list.  You may set conditions in the same way you did in [Condition] page in the object [Effect & Action] page. (Please see Chapter 7.7 [Setting Condition Page] to learn how to set conditions.)
3	Write Count Write Interval	This can only be set in the bit condition. When the bit condition is true, set the frequency of running logs. If [Write Count] is [1], the log is run once when the condition is true. If [Write Count] is set to [2 or more], the log is run once when the condition is true and run again at every [Write Interval] by the set [Write Count-1]. 

		If [Write Count] is set to [5] and Write Interval is [10] as above, it will be logged once when the internal address [10.00] turns to [ON] from [OFF] and logged 4 more times at every [10x100ms = 1 sec]. (There is no need to keep the internal address [10.00] as [ON] while the log is run as the Write Count (Log will be run by Write Count even if it is OFF))

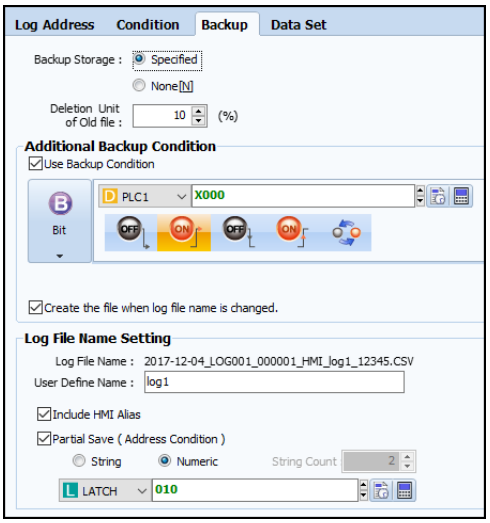
Warning) If the log condition is set to very short interval (100ms, etc.), there may be any lost log data. Therefore, it is recommended to place 2-5 sec term depending on the number of log addresses when setting the log condition.

4.1.12 Backup Page

It is set when performing backup for log data to the SD Card installed in TOP. Log occurs by the [Log Count] and when the assigned TOP memory is full, oldest log data is deleted and a new log data is saved in its space.

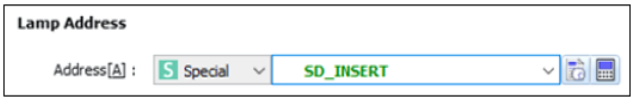
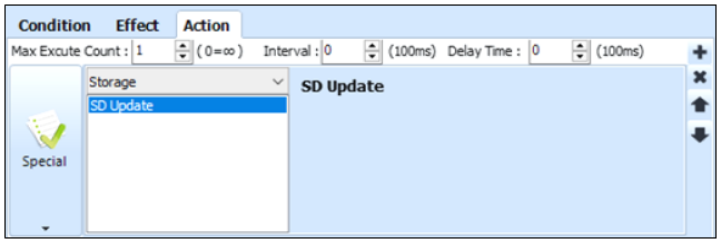
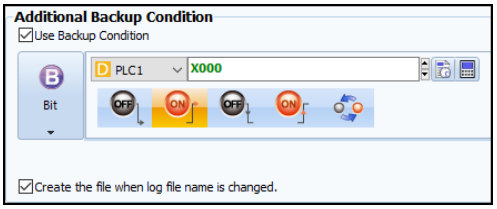
If you backup to SD card, you can store them in SD Card before deleting old data.

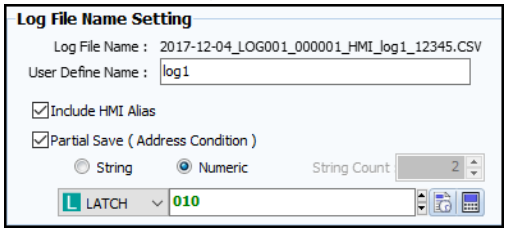
Backup by the [Old Log File Deletion Unit (%)] amount to SD and delete the backed up log data from TOP memory. New log data is recorded in the empty space that has been cleared up by the [Old Log File Deletion Unit (%)] in TOP memory.



[Pic. Log Backup]

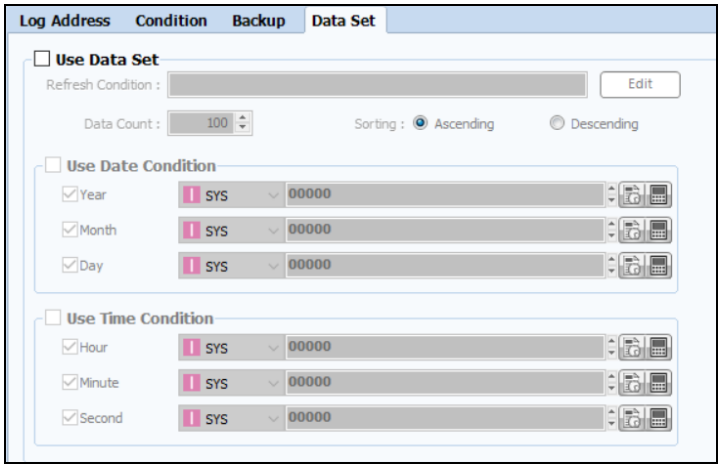
No	Backup	Description
1	Backup Storage	Choose a backup storage from [None/SD Card] to backup log data saved in TOP memory. ▶ [None] deletes from the oldest log data one by one when the block's memory capacity is full to save new log data. There is no any separate backup and therefore, [Old Log File Deletion Unit/Backup Condition/Log File Name Setting] settings are meaningless. ▶ [SD Card] is used to save more log data as the log memory's data capacity is limited. When the log memory of the corresponding ID is full, log data is backed up to the SD card by the [Old Log File Deletion Unit] and delete the backed up log data. (Note 1: SD card files) When log data is saved in TOP memory, they are saved in the form of [Data] and they are saved as [File] when saved in a SD card/USB memory. When log data is backed up in a SD card, the number of log files will be the count of backup condition.

		When multiple backups are made on the same date, multiple CSV files will be created. (Note 2: Check the installation of SD card) TOP must have a SD card installed. When an SD card is correctly installed to a TOP and recognized, the data of special address [SD_INSERT] will be [1]. Remove the SD card and the data of special address [SD_INSERT] will be [0].  (Note 3: SD card updates) Before removing an SD card, navigate to [Effect & Action] page and go to [Action]-[Special]-[Storage] and run [SD Update].  [SD Update] backs up all alarm/log data remaining in TOP memory to SD card and deletes TOP memory's alarm/log data. (This is applicable to blocks/logs of alarms that use SD card backup function.)
2	Deletion Unit of Old file (%)	Set if [SD Card] is set at the storage. [Old File Deletion Unit] is used for two purposes. ▶ The unit of deletion of old log data and its movement to SD card when log memory's capacity is full ▶ The unit of deletion of files when SD card is full <Calculation method for files to be deleted when SD card is full> As they are saved as [Data] in TOP memory, they are calculated and deleted by the amount to be deleted per the total capacity. SD cards store log data in [File] format and therefore, it is calculated based on the file counts. The number of files to be deleted is calculated as [(Old Log File Deletion Unit/100) x Total number of files in the log]. The oldest files will be deleted first. If the number of files to be deleted is less than [1], 1 file will be deleted. E.g.) If the Old Log File Deletion Unit is at 30% and there are 2 files in total, the number of files to be deleted is (30/100)x2=0.6 file (In this case, 1 file will be deleted). If there are less than [1] total files left, no file will be deleted.
3	Additional Backup Condition	Applicable only when [SD Card] is set as [Storage] and log data is backed up in a SD card. With this function, log data backup will be directed to a SD card even if TOP log memory is not full.  You may set [Backup Condition] as [Use Backup Condition] or [Create at Log File Name Change]. (1) Backup Condition: Perform a total backup whenever the set condition is met. Also, a separate backup will be performed with a new CSV file even if there is a CSV file with the

		same date of creation. At this time, the file name will be the same but file number will be added by 1. (2) Create when log file name is changed: Perform a total backup every time the name of a CSV file that is saved to SD card is changed. File name is automatically set to [Date(YY/MM/DD)_LogID_FileNumber(Sequential CSV file number starting rom 000000).CSV]. Backup is performed when the date or file name is changed.
4	Log File Name Setting	Applicable only when [SD Card] is set as [Storage] and log data is backed up in a SD card. Logs are stored as data in the TOP memory and files in the SD card. Therefore, set the file name for their backup to the SD card.  File name is created to [Date_Log ID_File number created in a day_HMI Alias_User Define Name_Partition save address value]. For [File number created in a day], the first file created will be assigned with number [000001], the second one with [000002], ... etc. One SD card backup log file will be created per day. Even though log data backup is performed multiple times a day, from the second backup, backup data is added to the file created at the first backup. [Partial Save] condition creates a new file and save as a log file. [String] reads the set address data in strings by [String Count] and add it to the file name. [Numeric] reads the set address data in decimal numbers and add it to the file name. When [Create When Log File Name Is Changed] is checked, [Partial Save] creates a new file according to [Log File Name Setting] when the set address value is changed and backs up the log data. The backed-up log data will be deleted from the TOP memory. If [Create When Log File Name Is Changed] is not checked, [Partial Save] will not perform backup even when the address value is changed.

4.1.13 Data Set Page

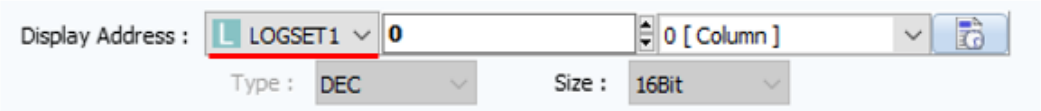
[Data Set] is the function that extracts the amount of [Data Count] from the [Year/Month/Day/Hour/Minute/Second] from the saved log data and move them in a separate memory. Dataset is created when [Refresh Condition] is met.



[Pic. Data Set Page]

Used when searching and analyzing part of the saved log data. Data set's data can set and display

address as LOGSET in [Numeric/Trend/Gauge] object as shown in the below picture.



[Pic. Data Set Address]

4.1.14 View Log Data

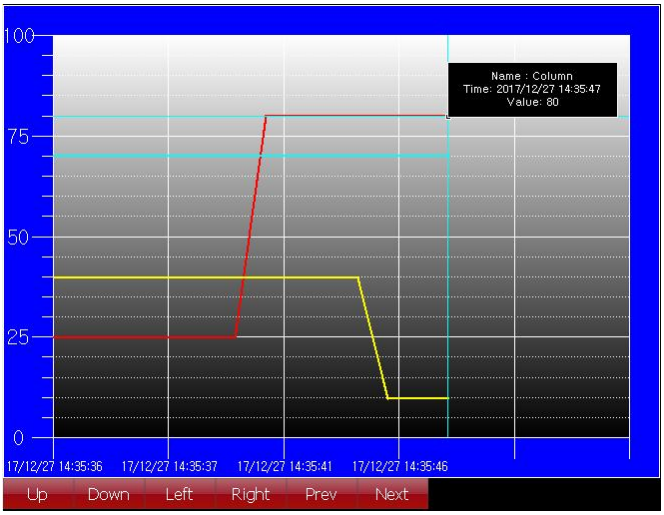
Log data in the TOP memory is saved as data, not file.
This log data can be viewed in various ways or sent/copied.

(1) Use [Log View/Record Graph] object to see log data
Use [Log View] object to display log data as is or use [Record Graph] object to display as graphs.
Please see Chapter 15 [Log View Object] for log view object.
Please see Chapter 17.3 [Record Graph] for record graph object.

No	Date	Time	Temp1	Temp2	Temp3	Temp4	Temp5
2	2017-12-27	14:35:36	25	40	70	70	0
3	2017-12-27	14:35:36	25	40	70	70	0
4	2017-12-27	14:35:37	25	40	70	70	0
5	2017-12-27	14:35:37	25	40	70	70	0
6	2017-12-27	14:35:37	25	40	70	70	0
7	2017-12-27	14:35:38	25	40	70	70	0
8	2017-12-27	14:35:41	80	40	70	70	0
9	2017-12-27	14:35:42	80	40	70	70	0
10	2017-12-27	14:35:42	80	40	70	70	0
11	2017-12-27	14:35:42	80	40	70	70	0
12	2017-12-27	14:35:46	80	10	70	70	0
13	2017-12-27	14:35:47	80	10	70	70	0
14	2017-12-27	14:35:47	80	10	70	70	0

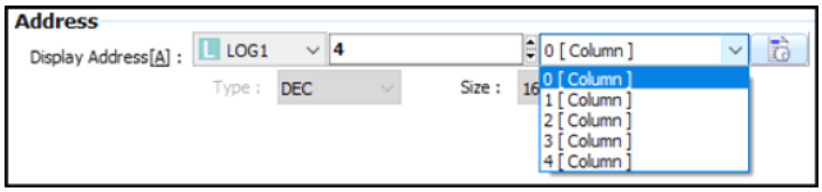
Up Down

[Pic. Log view object]



[Pic. Record graph object]

(2) Use [Numeric] object to see log data.
Use numeric object to set log address as below to display 1 log data on the screen.



[Pic. Numeric object]

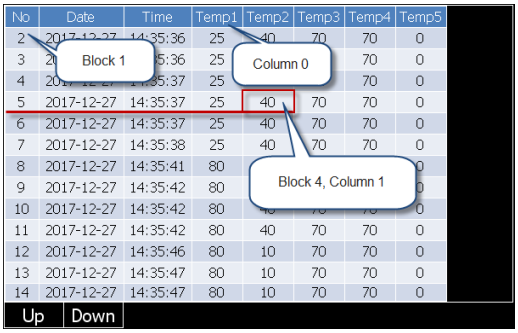
Select a column as above and select a block number to display the log data on the screen as below.



[Pic. Numeric object]

For detailed settings for numeric object, please see Chapter 10.1 [Numeric Object].

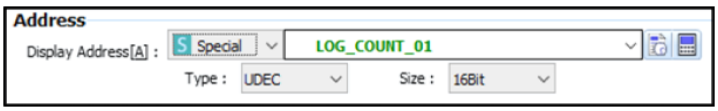
Saved log data consists of columns and blocks as shown in the log view below and the numbers of columns and blocks start from [0].



[Pic. Log view object]

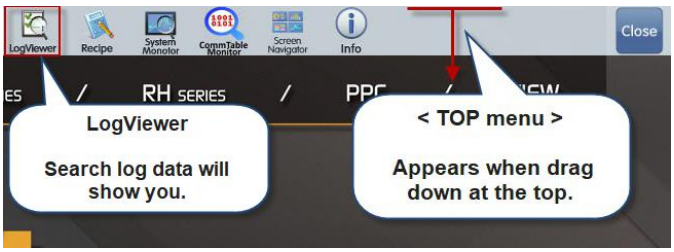
(3) Use [Numeric] object to see log count.

Register [Numeric] object to set the display address as [Special Address] LOG_COUNT_1 to display the count of current logs that has log ID of [1].



[Pic. Numeric object]

(4) Use [LogViewer] menu on top of the operation screen to see log data

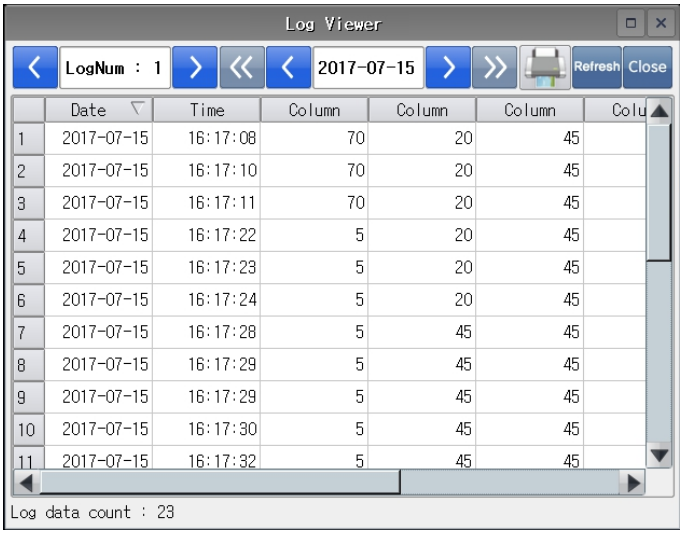


[Pic. LogViewer menu]

Run LogViewer menu to display [View Log] screen as below. Enter [Log ID/Date] on [View Log] screen

to retrieve log data saved in TOP.

You can also print the retrieved log data.

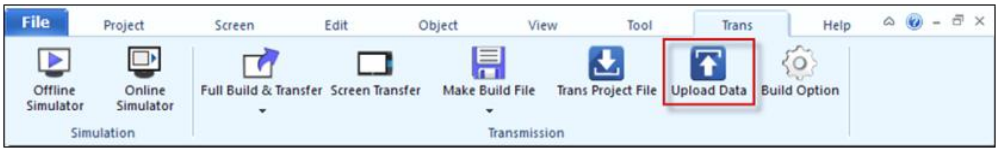


[Pic. LogViewer]

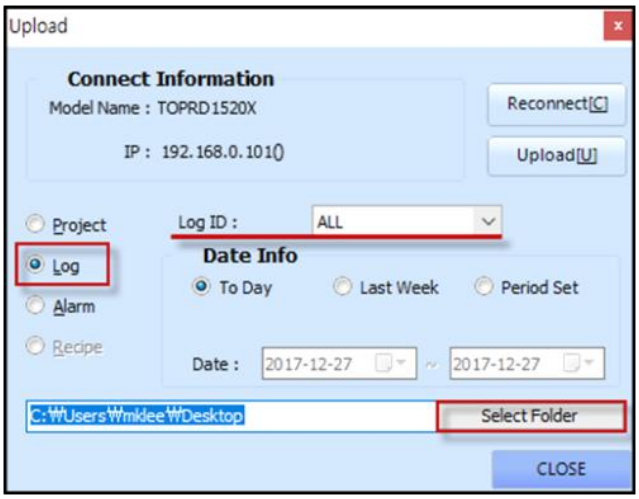
4.1.15 Copy Log Data

(1) Copy log data in TOP memory to PC

Connect TOP and PC and run [Transmission]-[Upload Data] menu.

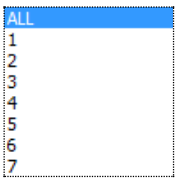


[Pic. Upload data]



[Pic. Upload]

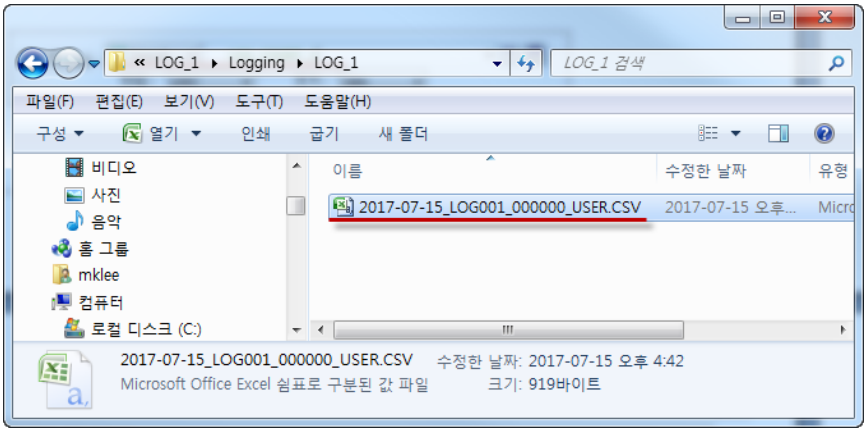
Select [Log] in [Upload] screen and set [Log ID].



Selecting [ALL] for [Log ID] will upload all log data and selecting [ID] will upload that ID's log only. You must choose from [Today/Last Week/Period Set] for [Date Info]. If [Period Set] is chosen, you may set the period within 7 days. If the number exceeds 7, below message will be displayed and you cannot proceed uploading. Alarm data of the date will be uploaded.

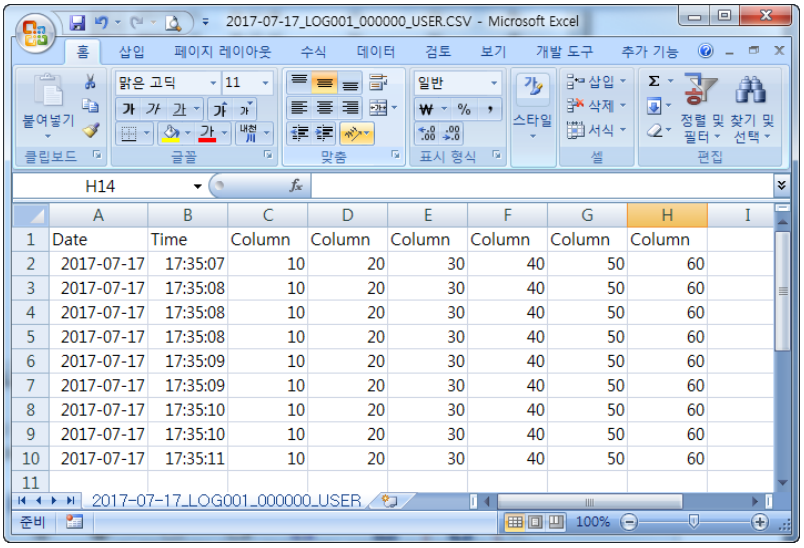
0

Click [Select Folder] button to set the log file's save path and click [Upload] to upload. It will be saved as a file as below.



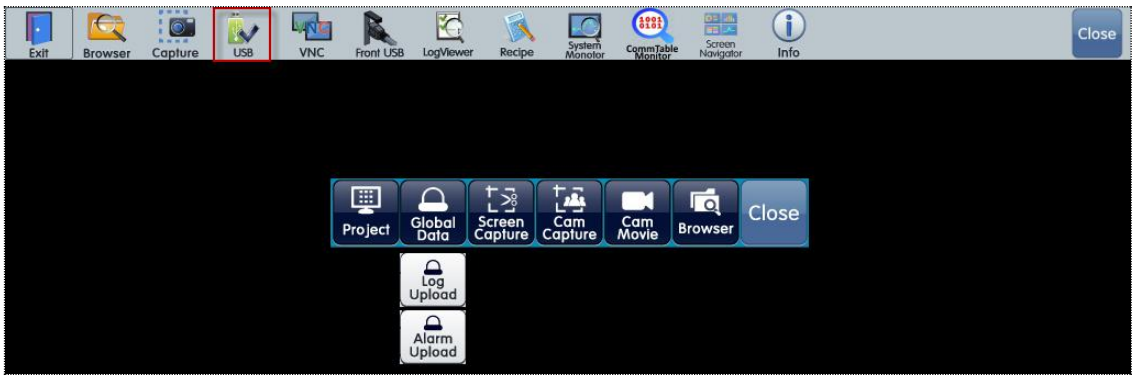
[Pic. Upload result]

CSV files can be opened in Excel as shown below.



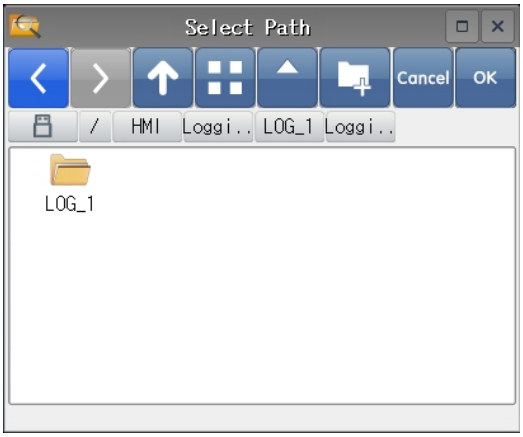
(2) Copy Log Data in TOP Memory to USB

Connecting a USB memory to TOP or clicking [USB] button at the top menu in the operation screen will display the below USB menu.



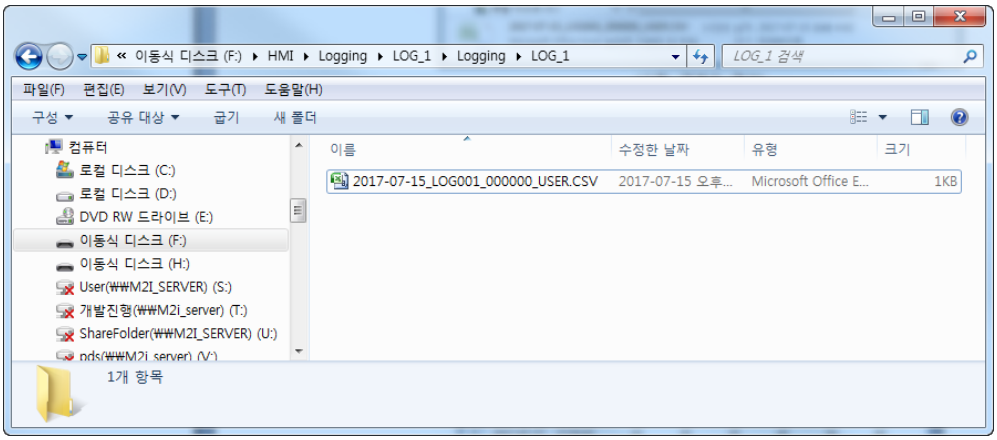
[Pic. Click USB button on the top menu]

Click [Global Data] and [Log Upload/Alarm Upload] buttons will be displayed at the bottom. Click [Log Upload] and [Select Path] screen will appear as shown below. Set the path to save a log file in this screen and click [OK] to upload.



[Pic. Select path screen]

When upload is finished, the log data is saved in a CSV file format in the USB memory as shown below. CSV [*.CSV] files can be opened with Excel or general editor (notepad) programs.

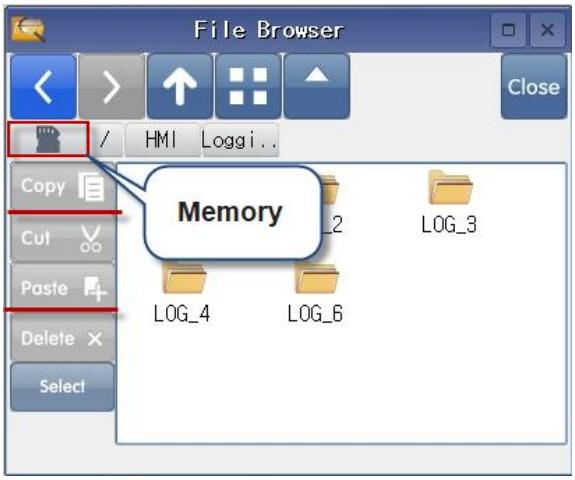


[Pic. Copy result to USB memory]

(3) Copy Log Data in SD Card to USB

If [Storage] is set as [SD Card] in [Backup] page of the log screen, you may copy log files saved in a SD card to a USB memory. Run [File Explorer] in the menu screen as below and change [Memory] at the top left corner to a SD card. Select log data to copy and click [Copy] button. Then change [Memory] to

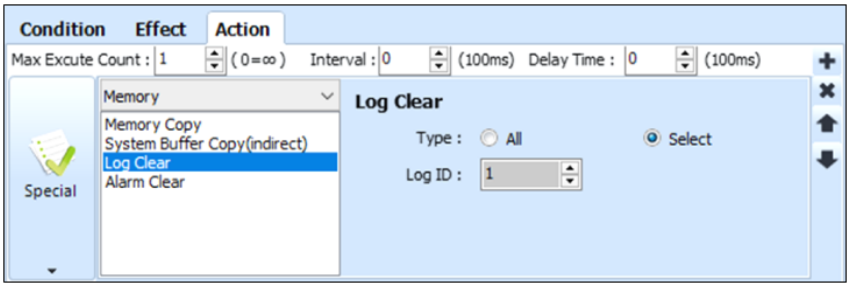
USB and click [Paste] to copy the file to the USB device.



[Pic. File explorer in menu screen]

4.1.16 Delete Log Data

Log data saved in TOP memory can be deleted in two ways. First, create a button on the screen and configure settings as below in [Effect & Action] page. Select [Special]-[Memory]-[Log Clear] and set whether to delete [All] log data or just the [Log ID].



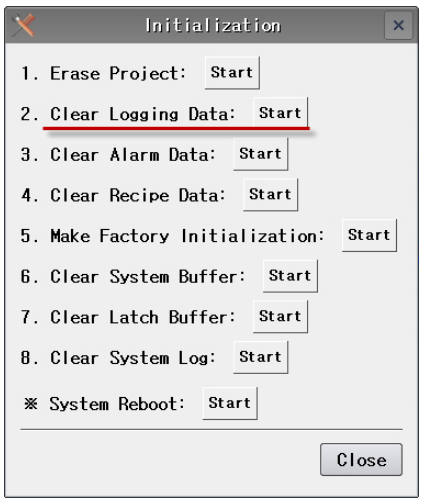
[Pic. Delete log action]

Run the action set as above and log data will be deleted.

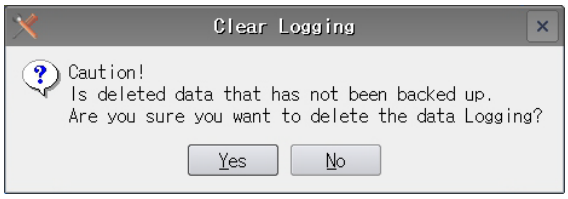
With the second method, you may initialize on menu screen. Select [Control Panel]-[Initialization]-[Delete Log Data] and all log data in TOP memory will be deleted.



[Pic. Control panel of menu screen]



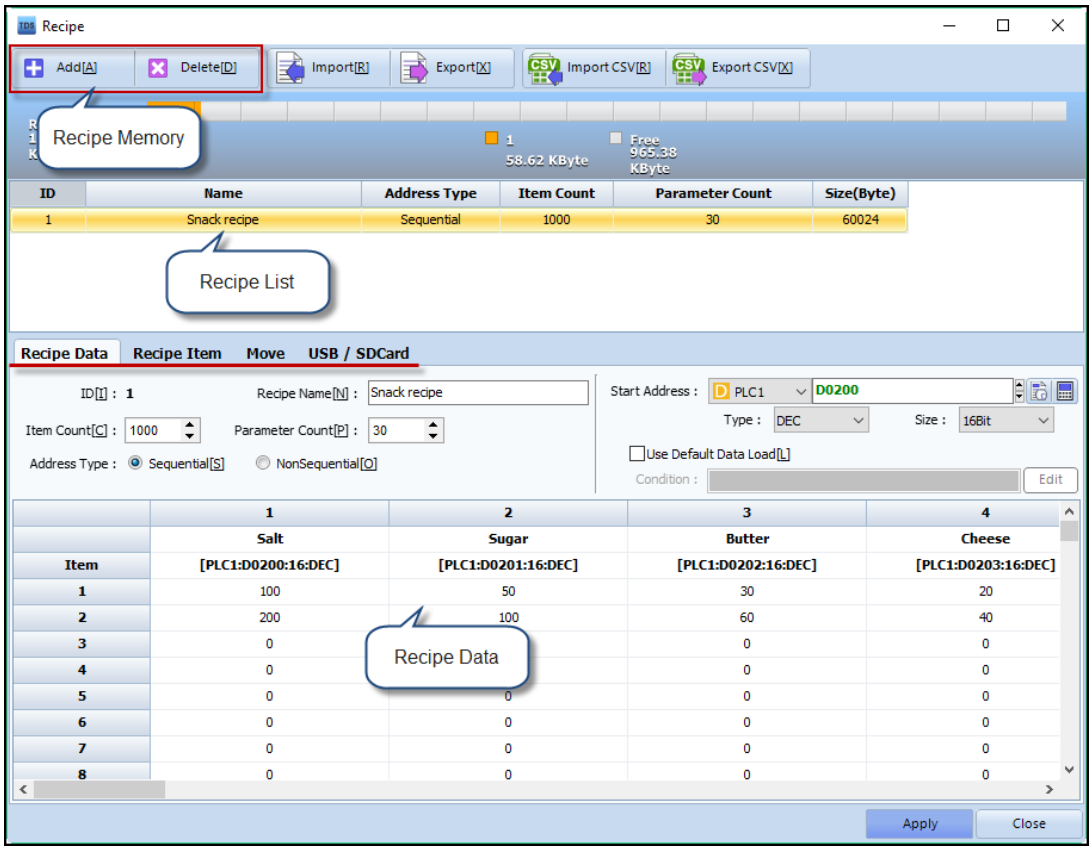
[Pic. Initialization on menu screen]



[Pic. Delete confirmation message]

Recipe

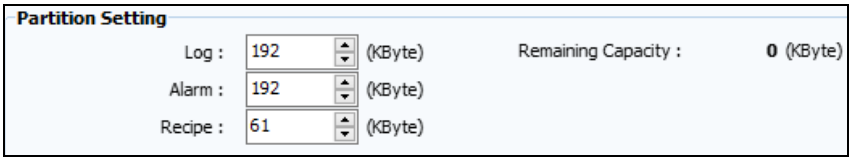
Recipe saves data in a table format in the memory (TOP/SD card/USB) and moves the data to controller's address according to [Condition].



[Pic. Recipe]

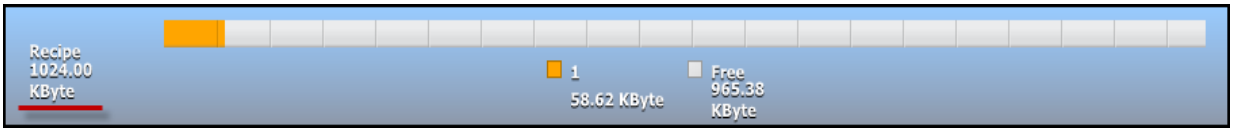
4.1.17 Recipe Memory Setting

Set the area for recipe data in TOP memory. Recipe data area can be set at [Project]-[Property]-[Partition Setting]. In [Partition Setting], assign the [Log/Alarm/Recipe] area in TOP memory.



[Pic. Partition setting]

Recipe memory capacity and the memory in use are displayed on top of the recipe screen.



[Pic. Recipe memory in use displayed on screen]

4.1.18 Recipe List

Manage [Recipe List] with [Add/Delete] button on the top. You may register up to [32] recipes.

No	Recipe	Description
1	Add	Add set recipe to the list.
2	Delete	Delete selected recipe from the list.

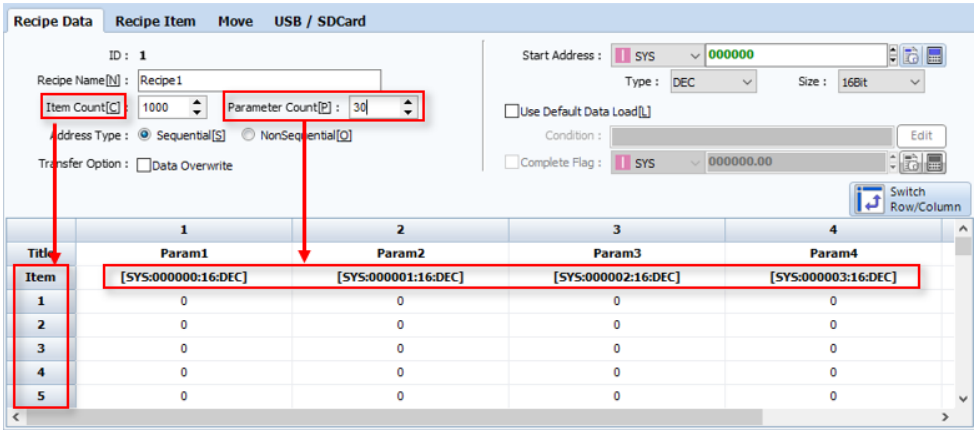
ID	Name	Address Type	Item Count	Parameter Count	Size(Byte)
1	Snack recipe	Sequential	1000	30	60024

[Pic. Recipe list]

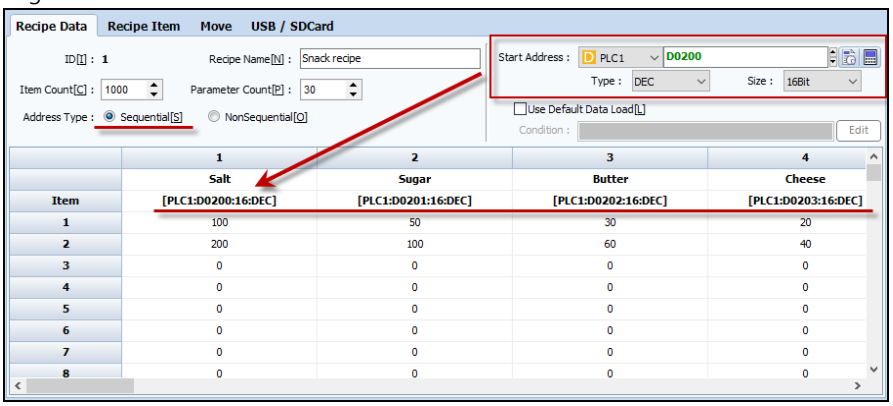
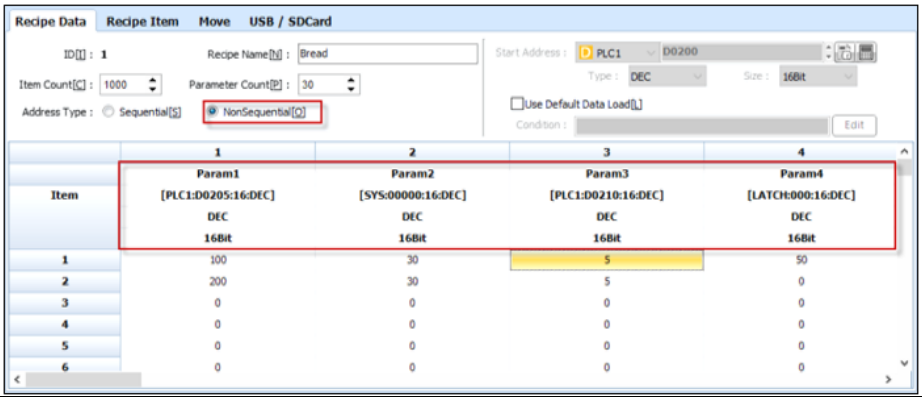
No	Recipe List	Description
1	ID	ID of the registered recipe.
2	Name	Name of the registered recipe.
3	Address Type	The address type of the registered recipe (sequential/random, nonsequential/random).
4	Item Count	The number of items of registered recipe.
5	Parameter Count	The number of parameters of registered recipe.
6	Size	The memory capacity (Byte) of registered recipe. It is calculated as item count/parameter count/address size, etc.

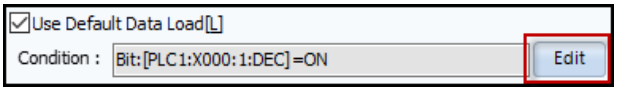
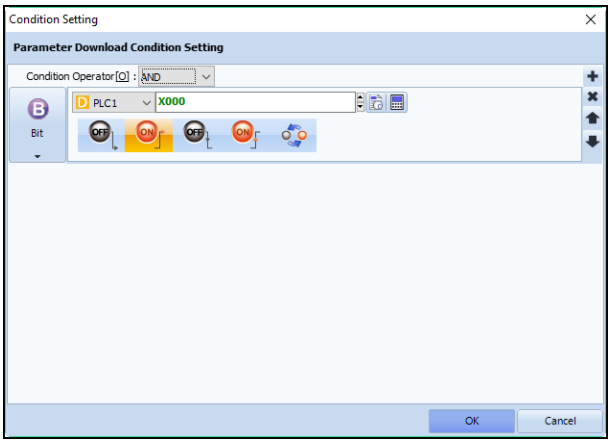
4.1.19 Recipe Data Page

Set and manage the recipe data. Set [Item Count/Parameter Count] and the address to move. You may also enter the recipe data yourself.



[Pic. Recipe data page]

No	Recipe Data	Description
1	ID	This is the recipe data given in sequence every time [Add] button is clicked.
2	Recipe Name	Enter the recipe name.
3	Item Count	Item is the count of retrieving parameters, meaning the number of rows in a table. You may register up to 65,535 items in one recipe.
4	Parameter Count	The number of data that composes one item. It means the number of rows in a table. Up to 5,000 parameters can be registered for one item.
5	Address Type	Choose from [Sequential/Nonsequential] for the address type. With [Sequential], parameter addresses will be registered in sequence. Addresses are automatically set based on the start address and therefore, addresses cannot be changed in the below table.  [Nonsequential]: Set address by the parameter count. You may modify address/data type/data size etc. in the table below. 
6	Transfer Option	Data Overwrite replaces recipe data when a project is sent to HMI.
7	Start Address	When setting [Address Type] in [Sequential], set the start address. Set [Address/Type/Size]. If sequential, the same type and size will be applied.

8	Basic Data Use Import	When the set condition is met, this function imports recipe data set in project's [Recipe Data] page to TOP recipe page. Recipe data can be edited or updated using [Parameter Upload] function in [Move] page while TOP is in operation. Therefore, project's recipe data and TOP memory's recipe data may be different. When the set condition is met, TOP memory's recipe data is replaced with project's recipe data.   Click [Edit] button to set conditions in the below [Condition Setting] page. (Please see Chapter 7.7 [Condition Page Setting] to learn how to set conditions.)
9	Complete Flag	The address value of [Complete Flag] becomes [1] when Use Default Data Load process is completed. [Complete Flag] is not automatically reset to [0] once it turns [1]. Therefore, when using Complete Flag, you need to implement an action that resets it to [0] after it turns [1].

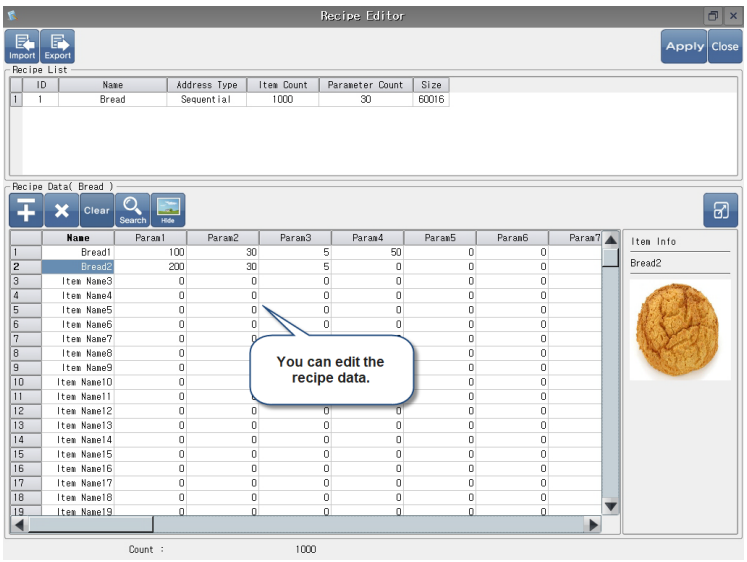
Enter the recipe data in the below table manually.

	1	2
	Salt	Sugar
Item	[PLC1:D0200:16:DEC]	[PLC1:D0201:16:DEC]
1	100	50
2	200	100
3	0	0
4	0	0
5	0	0

[Pic. Recipe data table]

Use [Parameter Upload] in [Move] page to save recipe data while TOP is in operation.
(Please see Chapter 4.3.5 [Move Page] for Parameter Upload function.)

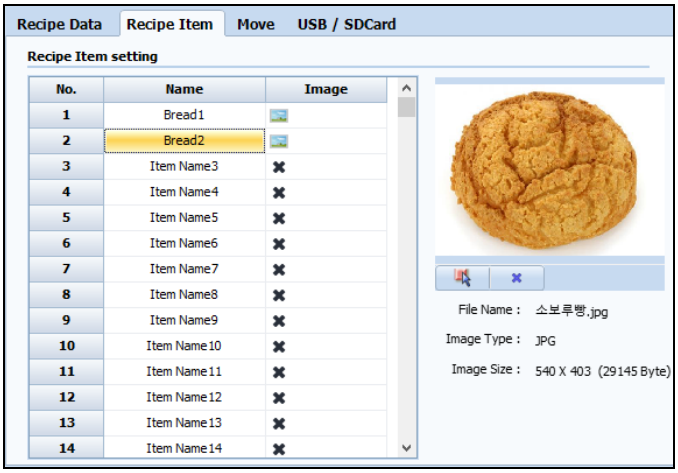
Also, you may edit recipe data in [Recipe Editor] that is displayed when clicking [Recipe] button in the top menu of TOP during its operation.
(For Recipe Editor, please see Chapter 4.3.8 [Recipe Editor on Top Menu in Operation].)



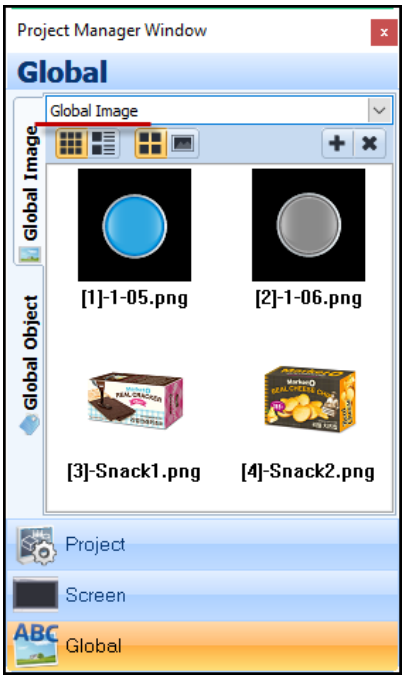
[Pic. Recipe Editor]

4.1.20 **Recipe Item Page**

In Recipe Item page, you may enter each item's [Name] and input [Image].



[Pic. Recipe item page]



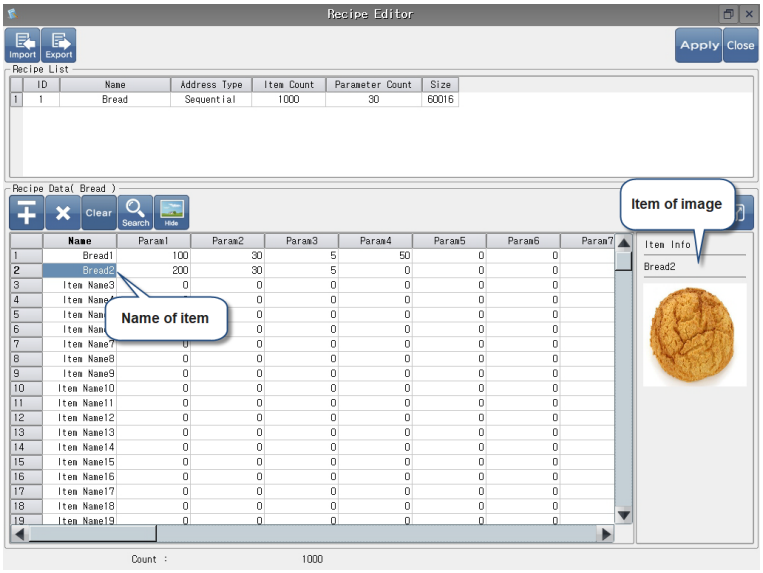
[Pic. Global image]

The registered images are automatically registered to [Project Manager]-[Global]-[Global Image]. Image registered in the global image can be taken out by Drag&Drop on the screen. It can be used in various objects that can use images, e.g. selecting global image in the display item/[Lamp] object in [Image] object/alarm action, etc.
(For the global image, please see Chapter 7.3.3 [Global Image].)

In this page, you can see the registered item's [Name] and [Image] in the recipe editor that is displayed when the [Recipe] menu in the TOP upper menu is run.



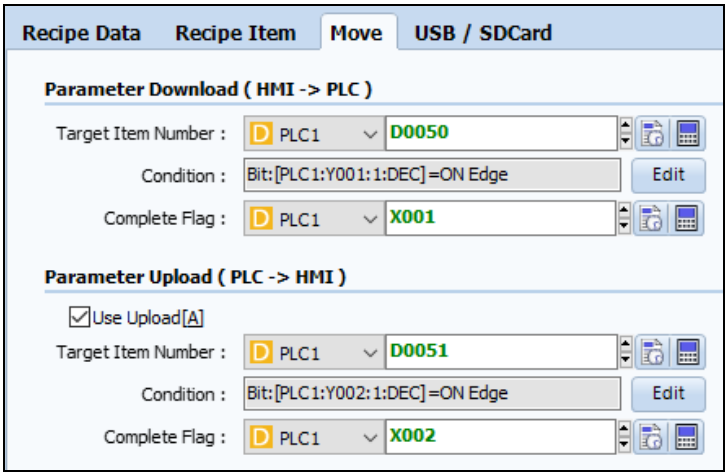
[Pic. Recipe in top menu]



[Pic. Recipe editor]

4.1.21 **Move Page**

Set the movement condition of recipe data. [Parameter Download (HMI -> PLC)] moves recipe data saved in memory to the set address area. [Parameter Upload (PLC -> HMI)] saves recipe data in address area as a recipe memory.

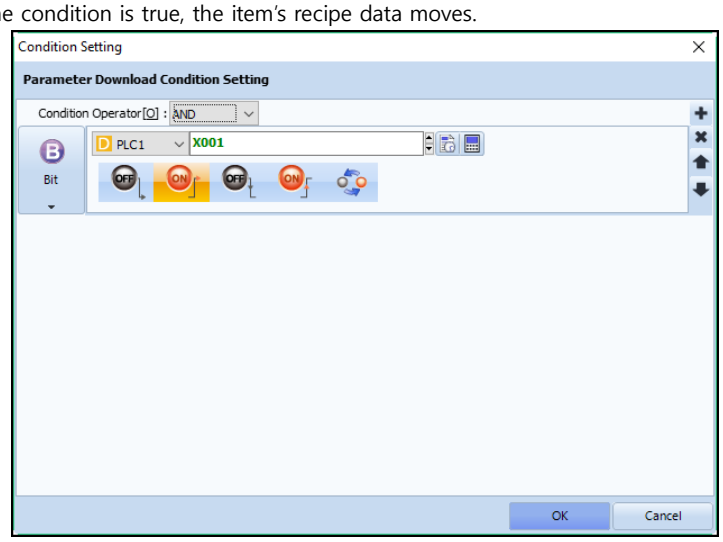


[Pic. Recipe movement]

(1) Parameter Download (HMI -> PLC)

Move a certain item's recipe data in the memory to the set [Parameter Address].

No	Parameter Download	Description
1	Target Item Number	The number of item to move from recipe data. Item number is set as address. The set address's data becomes the item number. When configured as above and the value of [D0050] is [2] and [Y001] changes from [OFF]

		to [ON], the recipe data of item no. 2 moves to the parameter address area.
2	Movement Condition	Set the condition of movement. When the condition is true, the item's recipe data moves.  When [On edge] condition is set as [Bit] condition as above, the item's recipe data will move only when the value of [Y001] changes from [0]->[1]. For [Off edge], it moves when the value changes from [1]->[0], and for [Reverse], when the value of [Y001] changes. [On continue] condition moves every time the [Target Item Number] is modified while the bit address is On [1]. [Off continue] condition moves every time the [Target Item Number] is modified while the bit address is Off[0]. (Please see Chapter 7.7 [Condition Page Setting] to learn how to set conditions.)
3	Complete Flag	When the recipe data import is completed, the address value of [Complete Flag] becomes [1]. [Complete Flag] is not automatically reset to [0] once it turns [1]. Therefore, when using Complete Flag, you need to implement an action that resets it to [0] after it turns [1].

(2) Parameter Upload (PLC -> HMI)

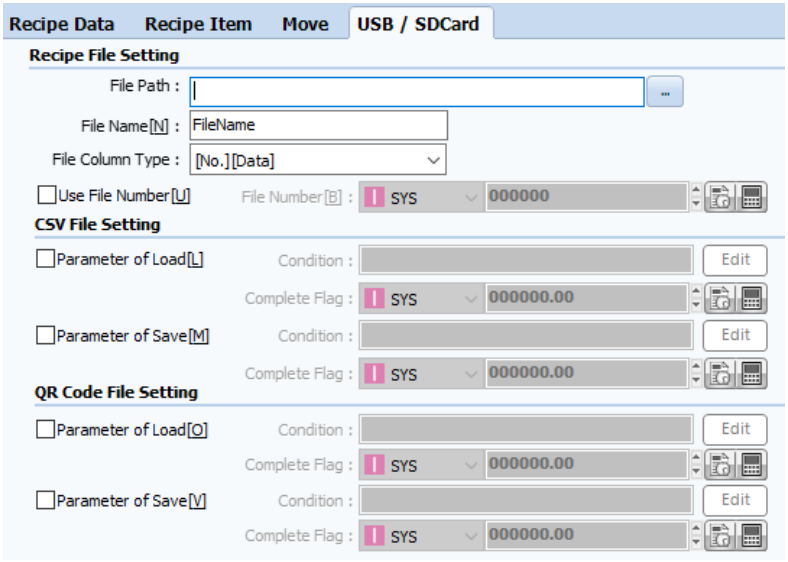
This is the reverse function to Parameter Download. It saves actual data in parameter address area as a specific item's recipe data. Check [Use Upload] to set its use.

No	Parameter Upload	Description
1	Target Item Number	The item number to save the actual data of the parameter address area. The item number is set as address. The set addresses' data becomes the item number. When configured as above and the value of [D0051] is [3] and [Y002] changes from [OFF] to [ON], the actual data of parameter address area will be same as item no. 3.
2	Movement Condition	Set the save condition. When the condition is true, the actual data in the parameter address area is saved in the item. (Please see Chapter 7.7 [Condition Page Setting] to learn how to set conditions.)
3	Complete Flag	The address value of [Complete Flag] becomes [1] when saving the recipe data is completed. [Complete Flag] is not automatically reset to [0] once it turns [1]. Therefore, when using Complete Flag, you need to implement an action that resets it to [0] after it turns [1].

4.1.22 **SD Card / USB Page**

Use it to save all recipe data (all Items) of the corresponding ID in the TOP memory in an external

memory (SD card/USB) or to replace the recipe data saved in an external memory to the corresponding ID's TOP memory. Files saved in an external memory will be in a CSV file format.



[Pic. Recipe extension memory]

Choose from [SD Card/USB] as a storage to save the recipe data. When the recipe data is saved in TOP memory, it is saved as [Data], but it will be saved as [File] when saved to an external memory (SD Card/Ext Cam32, or USB) and therefore, you must set the file name.

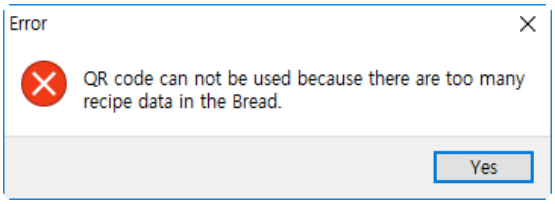
No	SD Card/USB Page	Description
1	File Name	Enter the file name to save the recipe data.
2	File Column Type	Assign the column of files that are saved. [Data] means data and [No.][Data] means number and data. [No.][Name][Data] means number, name, and data.
3	Use File Number	Check [Use File Number] and set [File Number] to add a file number to the file name. If [D0002] data is 3 when it is saved to an external memory, the file name will be [Bread Ingredients_3.CSV].

Set [Parameter of Import/Parameter of Save] in [CSV File Setting].

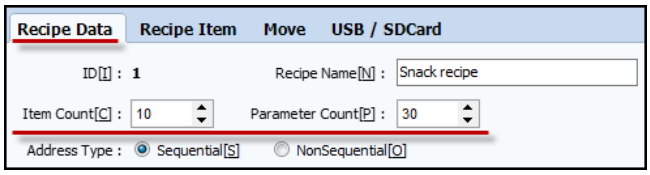
No	CSV File Setting	Description
1	Parameter of Load	When the set [Condition] is met, it loads the recipe of the file name (File Name_File Number.CSV) saved in [SD Card/USB] and replaces TOP recipe memory with it. When the recipe data import is completed, the address value of [Complete Flag] becomes [1]. [Complete Flag] is not automatically reset to [0] once it turns [1]. Therefore, when using the complete flag, you need to implement an action that resets it to [0] after it turns [1].
2	Parameter of Save	When the set [Condition] is met, it saves recipe data under the set file name (File Name_File Number.CSV) in [SD Card/USB]. When the recipe data import is completed, the address value of [Complete Flag] becomes [1]. [Complete Flag] is not automatically reset to [0] once it turns [1]. Therefore, when using Complete Flag, you need to implement an action that resets it to [0] after it turns [1].

[QR Code File Setting] is a function that saves the recipe data in the TOP system unit in QR Code. Take a picture of the QR code with a camera and the recipe data saved in the code will be transferred to TOP system unit memory. This function can be activated by using the front camera if you are using TOPR premium model, or a 2D barcode scanner that can recognize QR codes if you are using other models.

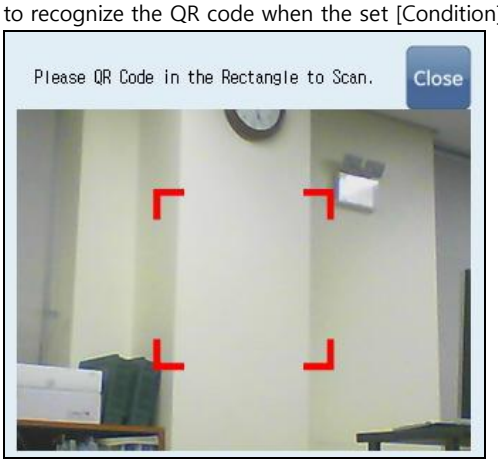
The limit of the storage capacity depends on the QR code's data size. Therefore, if there are too many recipe data, following error occurs. In this case, [Item Count] and [Parameter Count] must be modified in [Recipe Data] page.



[Pic. QR code capacity limit exceeded]



[Pic. Item count/parameter count]

No	QR Code File Setting	Description
1	Parameter of Load	Camera is activated to recognize the QR code when the set [Condition] is met.  Put the QR code saved by [Parameter of Save] inside the square and let it be recognized. Load the recipe data saved in the QR code to the TOP recipe memory. When the recipe data import is completed, [Complete Flag] address value becomes [1]. [Complete Flag] is not automatically reset to [0] once it turns [1]. Therefore, when using the complete flag, you need to implement an action that resets it to [0] after it turns [1].
2	Parameter of Save	When the set [Condition] is met, a QR code is created under the name of [FileName.jpg] in the [MHI-Recipe] folder in [SD Card/USB]. This QR code holds the recipe data from TOP memory. When this QR code is printed from the PC and being run with [Parameter of Import], the QR code is recognized and the recipe data saved in it is imported to the TOP recipe memory.



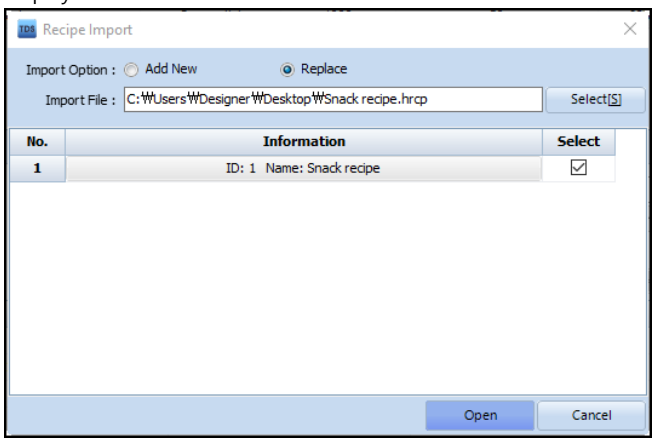
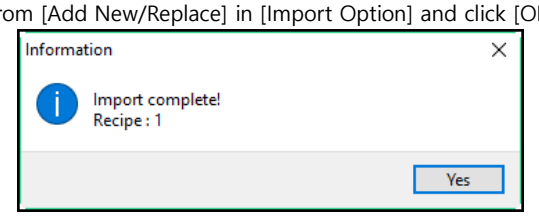
The address value of [Complete Flag] becomes [1] when saving the recipe data is completed.

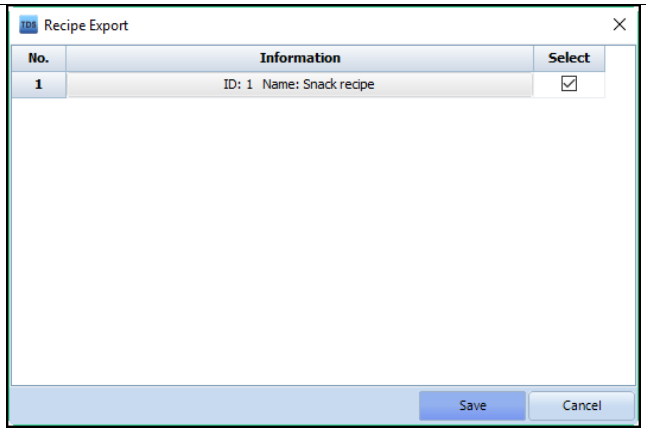
[Complete Flag] is not automatically reset to [0] once it turns [1]. Therefore, when using Complete Flag, you need to implement an action that resets it to [0] after it turns [1].

4.1.23 Import/Export Recipe File

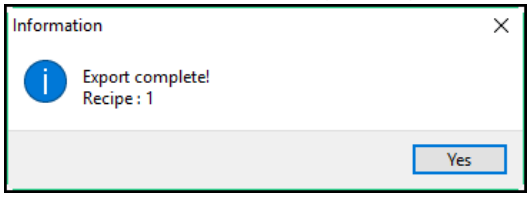
Save the recipe setting as file or retrieve saved recipe files.



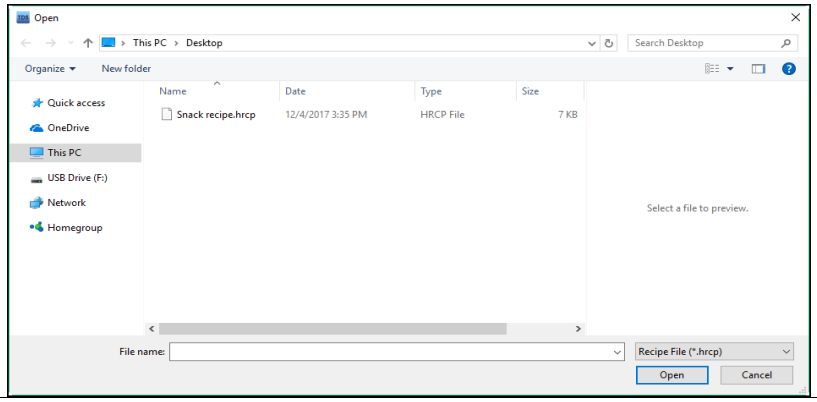
Alarm	Description
Import	Retrieve recipe files [*.hrcp] that are saved with [Export]. Click [Import] to display the below screen.  Click [Select File] to display [Open] screen. Select the alarm file [*.hrcp] file to load and click [Open] button below. Select from [Add New/Replace] in [Import Option] and click [OK] to complete import.  [Add New] will add a recipe with new ID. [Overwrite] replaces the imported recipe setting to the existing one.
Export	Saves the recipe settings as a file [*.hrcp]. Click [Export] to display the below screen.



Select the ID to save and click [Save] button to display [Save As] screen. Set [Path] to save the file and enter [File Name]. Click [Save] button below to complete [Export].



The recipe file will be saved as shown in the below picture.

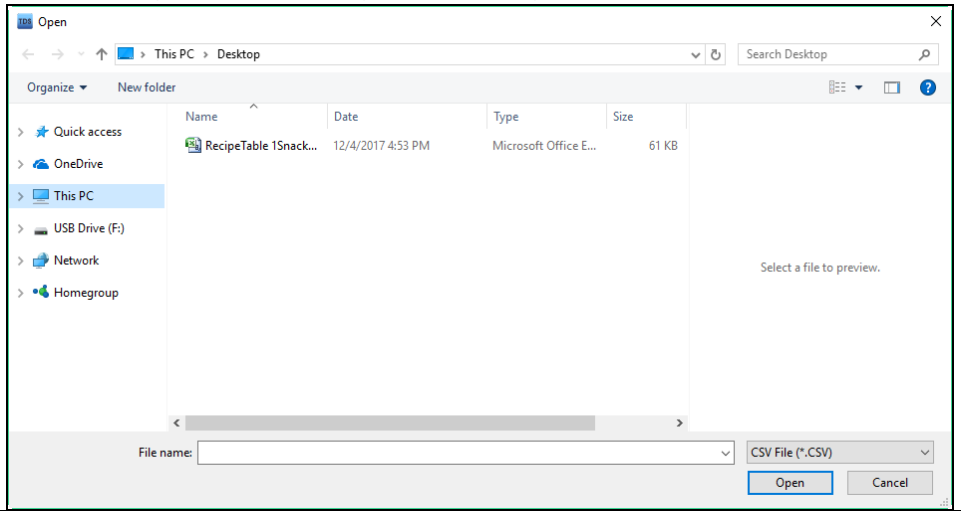


CSV Import

Import a recipe file saved with [Export CSV] button to the [Selected Group].

Click [Import] to display the below screen.

Select a CSV recipe file saved with [Export] and click [Open].



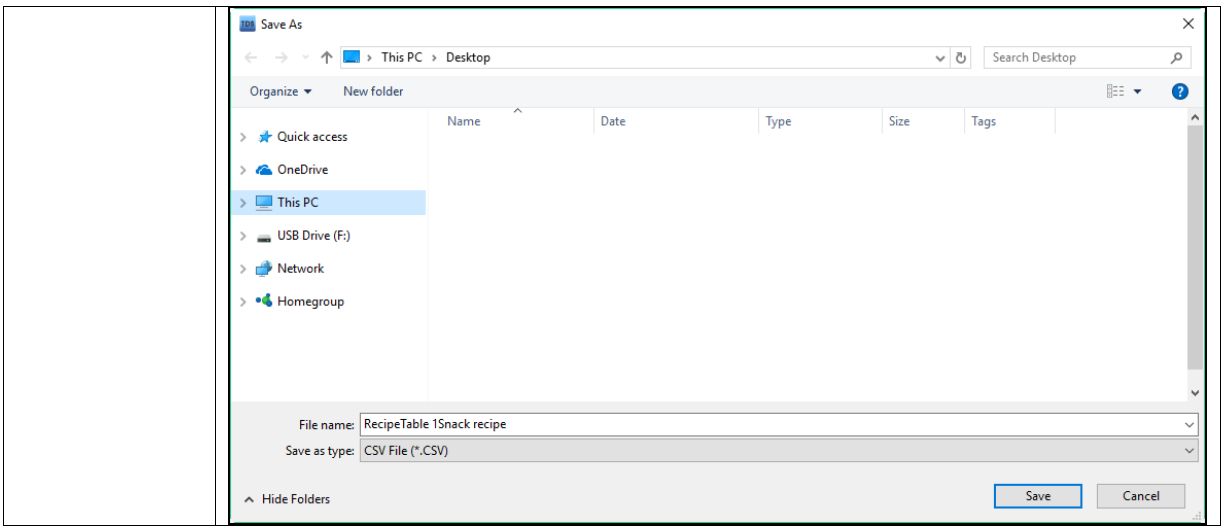
Export CSV

Save the selected recipe setting as a [*.CSV] file.

The saved file can be opened and edited with Excel program.

Click below [Export CSV] button and [Save As] screen will appear.

Set the save path of the log file, enter the file name, and click [Save] to finish export.

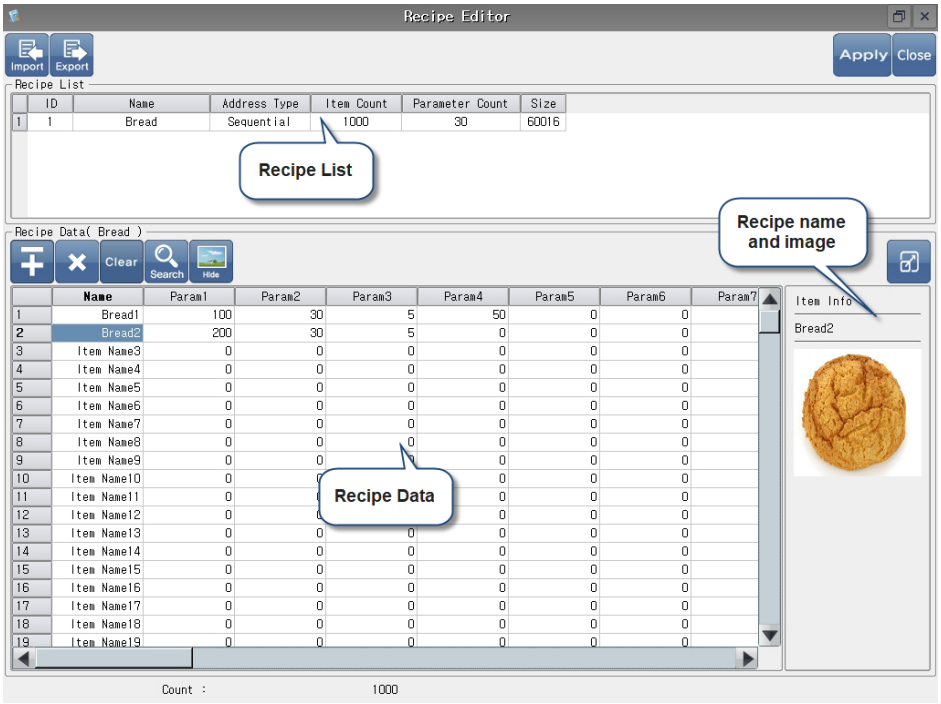


4.1.24 Recipe Editor on Top Menu in Operation

Run [Recipe] on the TOP upper menu to run [Recipe Editor]. You may edit the recipe data in [Recipe Editor].



[Pic. Recipe in top menu]



[Pic. Recipe editor]

A recipe list is shown at the top and the selected recipe items and data are shown at the bottom. Information of the recipe list cannot be modified, but you may modify item name and recipe data.

(1) Modify Item Name

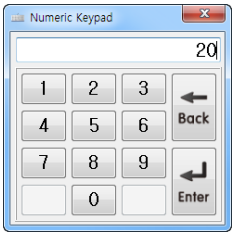
To modify item name, touch the name of the item to modify and enter a new item name in [String Keypad] as below.



[Pic. String Keypad]

(2) Modify Recipe Data

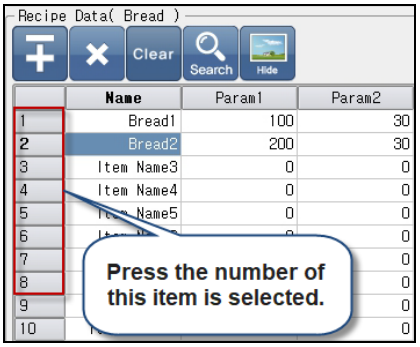
▶ Touch the data to modify and [Number Keypad] will pop up to allow you to enter new data.



[Pic. Number Keypad]

▶ 

Use (Add Item/Delete Item/Delete All Data) menu to modify data. To select an item, touch [Number] menu on the left.

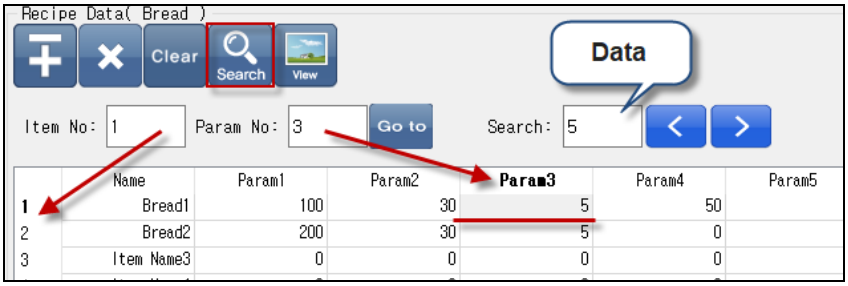


[Pic. Select item]

No	Recipe Editor	Description

1	Add Item	Add a new item under the selected item number. The item number of the selected item will be moved back by 1 cell, the last item will be deleted and a new item will be added to the selected number. The last item is deleted and therefore, the total number of items will remain the same.
2	Delete Item	Delete item name and recipe data of the selected number.
3	Clear Delete All Data	Delete all recipe data.

▶ You can search data.



[Pic. Search data]

Touch Search and a search window will be displayed below. Touch again to close it.
[Item No] is the item number and [Param No] is the parameter number. Enter as above picture and touch [Go to] button to move to the position. Enter data in Search and touch < button to find and navigate to the same data from the area before the selected position. Touch > button to find and navigate to the same data from the area after the selected position.

▶ See the name and image of the selected item.

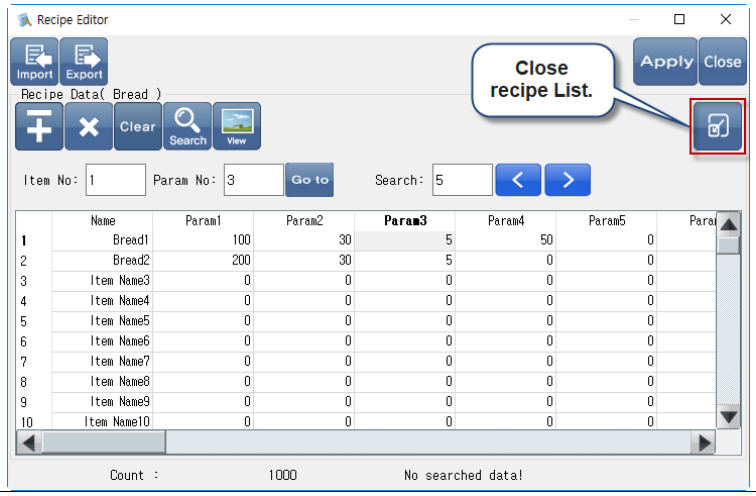
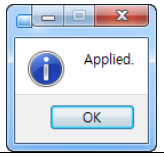
Click View (View) button to change the button to Hide (Hide) and item information will be displayed on the right.

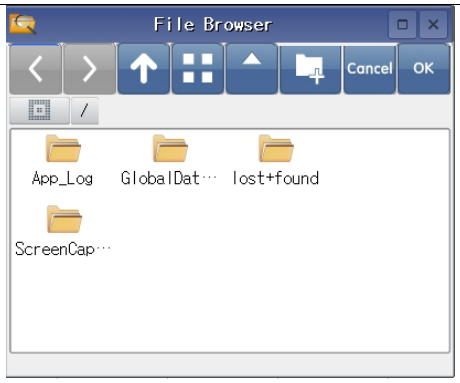
Click Hide (Hide) button to change the button to View (View) and the item information on the right will be closed.

Select the recipe item [Number] to show the item's name and image. Each item's name and image can be set in [Project]-[Recipe]-[Recipe Item] page.



[Pic. Item information]

No	Recipe Editor	Description
1	Close Recipe List	Close the recipe list window. 
2	Apply Apply	Save the modification. 
3	Close Close	Close the recipe editor.
4	Import Import	Retrieve a recipe file saved with [Export].
5	Export Export	Save the recipe data as a CSV file. Set the file name in the [String Keypad] popup and press [Enter].  Set the save path in the following [File Explorer] popup screen.

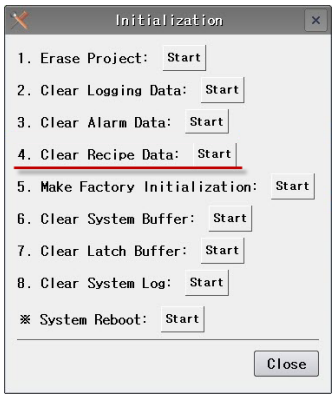
		 Press [OK] and the recipe data will be saved under the entered file name in the path.

4.1.25 **Delete Recipe Data**

Initialize the recipe data in the menu screen. Navigate to [Control Panel]-[Initialization]-[Delete Recipe Data] to initialize TOP memory's recipe data.



[Pic. Control panel of menu screen]

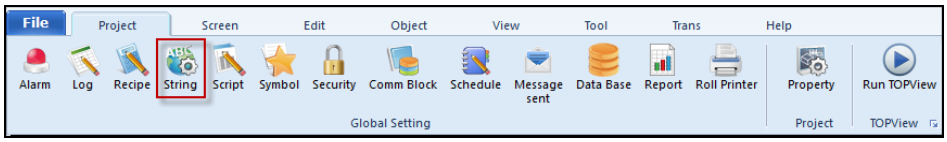


[Pic. Delete recipe data delete]

String

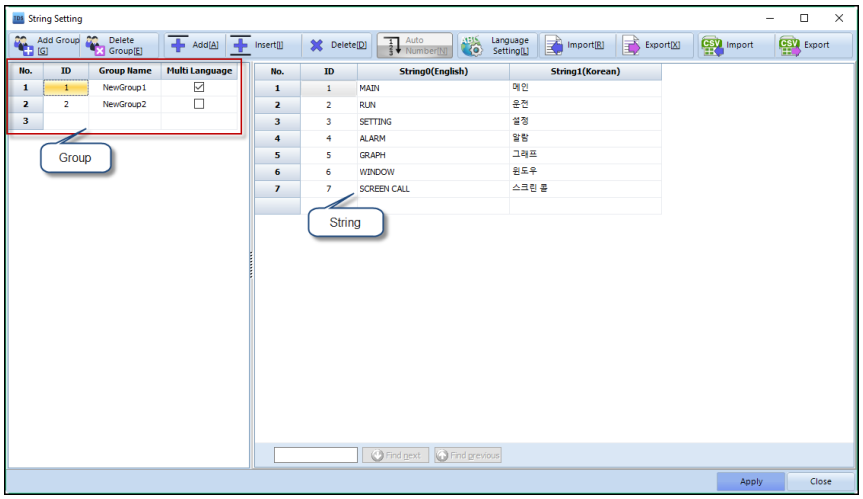
Register and manage strings used in the project in a table format. Project strings may be entered manually, but it is recommended to use String Setting to manage them more systematically and efficiently.

1) When the same string is used multiple times in a project, modify it once in the string table to apply the modification to all strings.
2) Registered strings can be applied to other projects with [Export/Import] function.
3) Use the multi language function to register multiple language tables and modify all languages of texts operating in project.



[Pic. String]

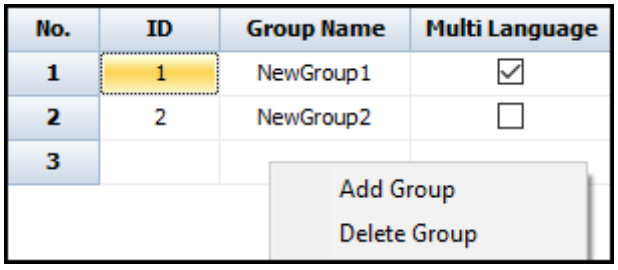
Create a group and register strings that belong to the group.



[Pic. String setting]

4.1.26 Edit Group

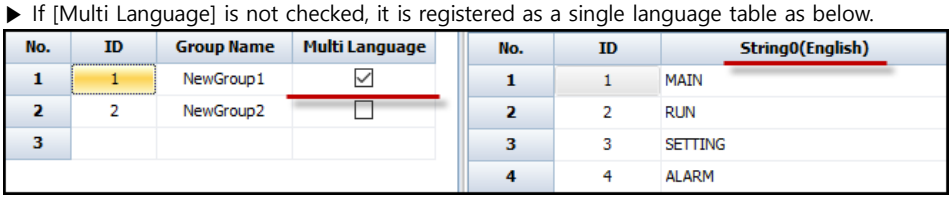
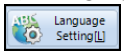
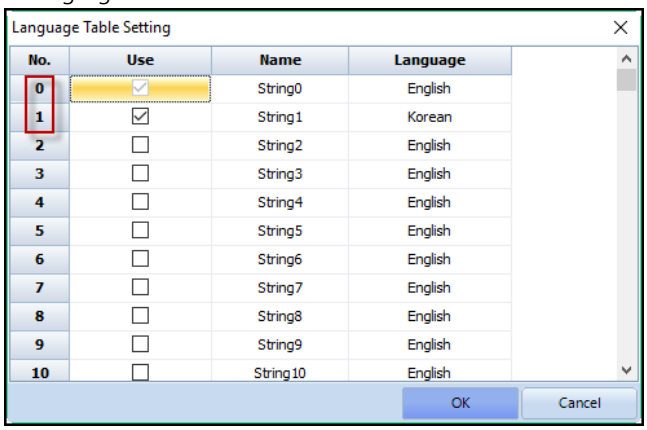
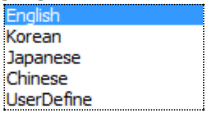
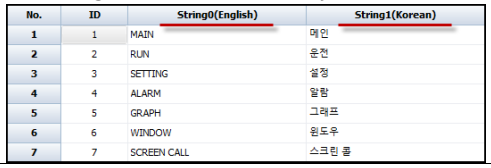
Group is for categorizing strings. You may create up to 65535 groups.
One group can save up to 50000 strings.



[Pic. Edit group]

No	Group	Description
1	Add Group	Add a new group. Press [Add Group] on the top or select [Add Group] on the menu that appears with a right-click.
2	Delete Group	Delete the selected group. Press [Delete Group] on the top or select [Delete Group] on the menu that appears with a right-click.

Group has [ID/Group Name/Multi Language] properties.

No	Group	Description
1	ID	This is a number assigned after the l number of the last group that has been registered when the group is created. It can be modified.
2	Group Name	It is created as NewGroup# when a group is created. It can be modified.
3	Multi Language	Check whether or not to register a string as Multi Language. ▶ If [Multi Language] is not checked, it is registered as a single language table as below.  ▶ Check [Multi Language] to register multiple languages. When [Multi Language] is in use, run the  button at the top to set the [Language Table]. You can set 1 to 31 language tables.  No. [0] language is a default language and cannot be deleted. Check [Use] from language no. [1] to [31] to add new language tables. Enter [Name] and select [Language]. [Name (Language)] will be the name of the language table. Choose language from [English/Korean/Japanese/Chinese] and select [UserDefine] to use the other languages.  When a language is added, a string table will be added by [Number of Language]. 

4.1.27 **Edit String**

Register and edit the string. Strings can be edited in Excel and [Copy(Ctrl+C)/Paste(Ctrl+V)].



[Pic. String]

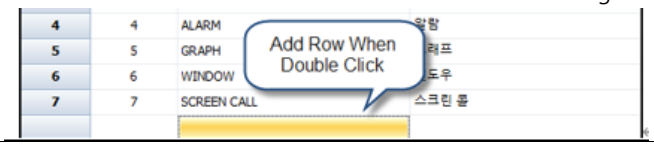
Not selecting [Multi Language] in the group, there will be 2 [ID/String] string columns. When [Multi Language] is selected, columns will be added by the number of the languages selected in [Language Table Setting].

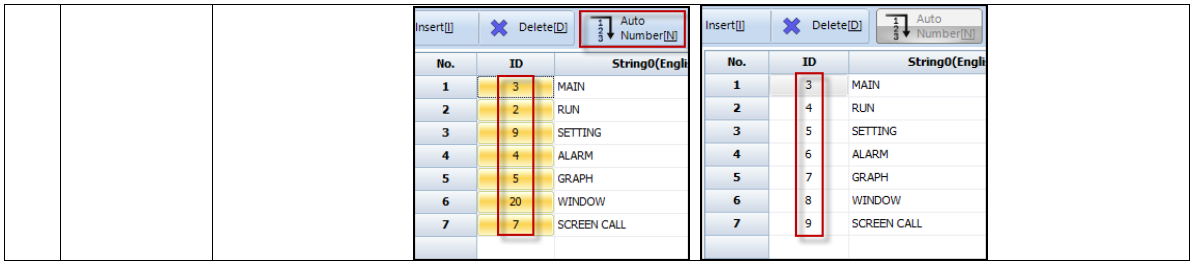
No	String	Description
1	ID	The string number. It is automatically assigned when string is added as a number that is added by 1 to the ID of the last string. IDs can be modified.
2	String	Enter the string to use in the project. When Multi Language is selected, the number of string columns is added according to the number of languages.

Edit [String Table] with [Add/Insert/Delete/Automatic Numbering].



[Pic. String edit button]

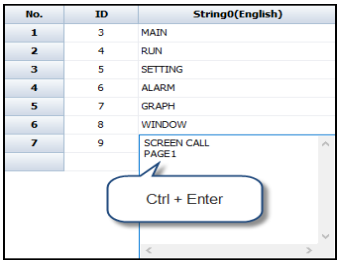
No	Edit String	Description
1	Add	Add a new row to add a new string. Method 1) Click [Add] button on the top or select [Add Row] from the mouse right-click menu to add a new row after the last string to enter a new string. Method 2) Double click the last row to add a new row and enter a new string. 
2	Insert	Insert a new row on top of the selected row. Select the position you wish to enter the string and click [Insert] button on top or click [Insert Row] from the menu that appears when you right-click the mouse to add a new row on top of the selected row to enter a new string.
3	Delete	Delete the selected string's row.
4	Automatic Numbering	Modifies all string's IDs in sequential order. Drag or use Shift and direction arrow keys to select the ID area to apply [Automatic Numbering]. Click [Automatic Numbering] will assign a new ID that increased by 1 from the first string's ID.



String is edited as below.

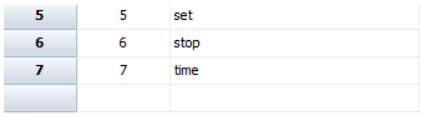
No	Edit String	Description
1	Copy	Execute [Copy] from the menu that appears when you right-click the mouse or enter [Ctrl+C]. Copy one or multiple strings. To copy multiple strings, drag them with the mouse or click one string and enter Shift with direction key to select files.
2	Paste	Execute [Paste] from the menu that appears when you right-click the mouse or enter [Ctrl+V]. Paste the copied string to the selected area.
3	Cut	Execute [Cut] from the menu that appears when you right-click the mouse or enter [Ctrl+X]. Delete one or multiple strings. To delete multiple strings, drag them with the mouse or click one string and enter Shift with direction key to select files. Only strings will be deleted and rows will remain. [Cut] strings can be [Pasted] in other areas.

Enter [Ctrl + Enter] key to enter multiple rows of string. Press [Ctrl + Enter] and the cursor will move to the row below.



[Pic. Entering multiple rows of string]

Below the Multi Language Setting screen, there is String Search function. Enter the string to find and it will find the topmost string on the table. You can find the same next/previous texts with [Find Next/Find Previous].



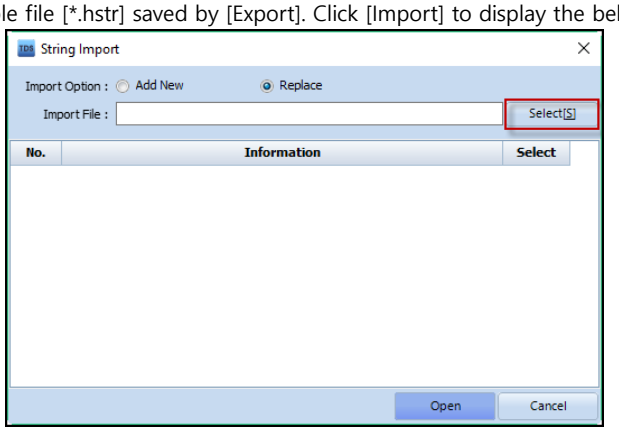
[Pic. String Search]

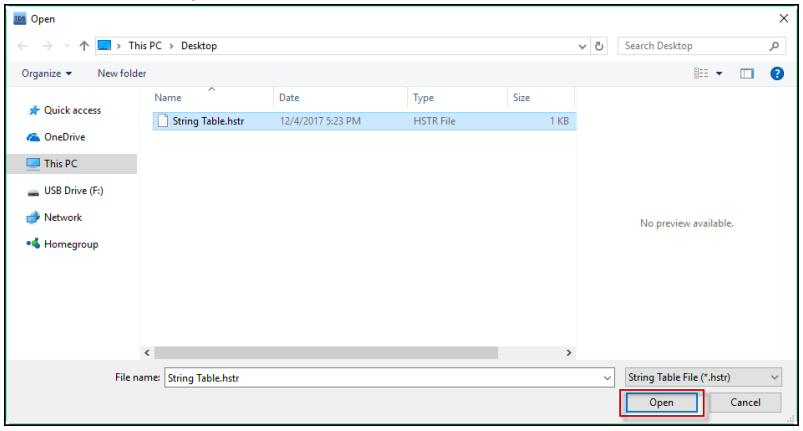
4.1.28 Import/Export String Table

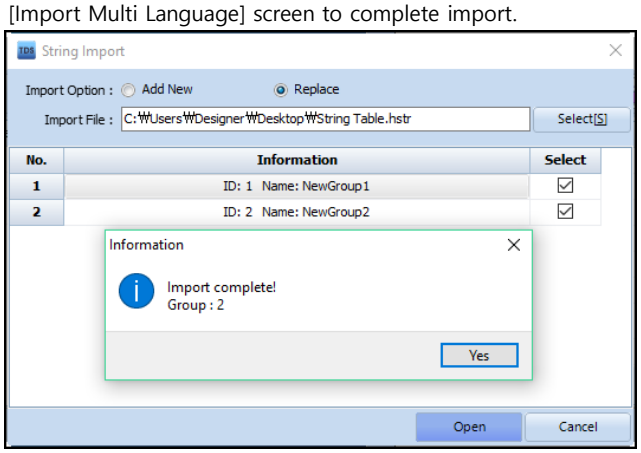
Save String Table content as file or import recipe file saved by [Export].



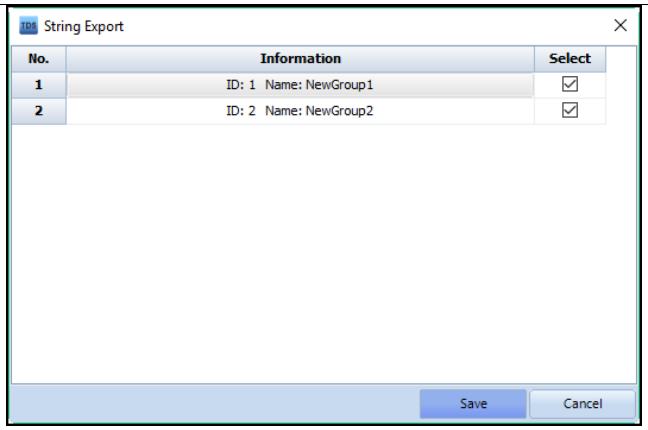
[Import/Export] saves and loads hstr file. Saved files cannot be modified. [Import CSV/Export CSV] saves and loads CSV files. CSV files can be modified in Excel.

<table>
<tr><th>No</th><th>String</th><th>Description</th></tr>
<tr><td>1</td><td>Import</td><td>Loads String Table file [*.hstr] saved by [Export]. Click [Import] to display the below screen.
 

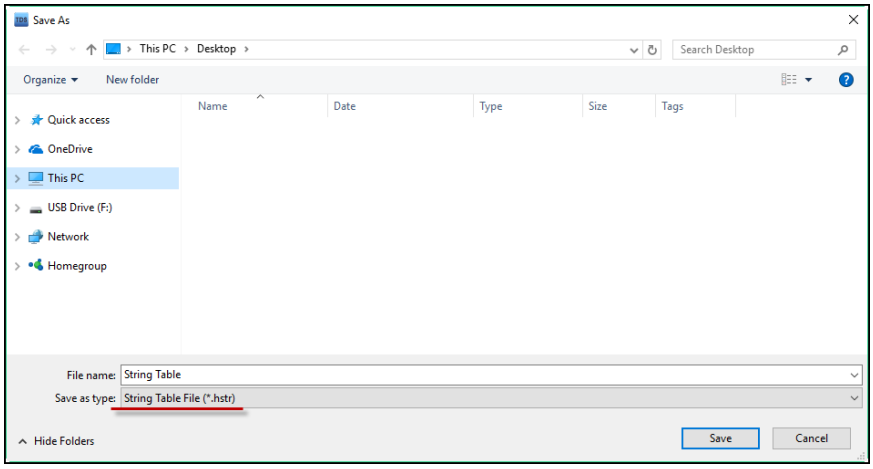
Click [Select File] to display [Open] screen. Select [hstr] file and click [Open].
 

Click [Open] in [Import Multi Language] screen to complete import.
 

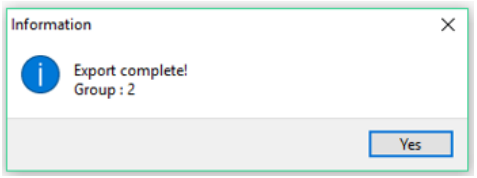
[Add New] creates a new group and adds the loaded String Table.
[Overwrite] replaces String Table that is loaded to the same Group ID.</td></tr>
<tr><td>2</td><td>Export</td><td>Save Multi Language Table file in [*.hstr] format. Click [Export] button to display the following screen.</td></tr>
</table>



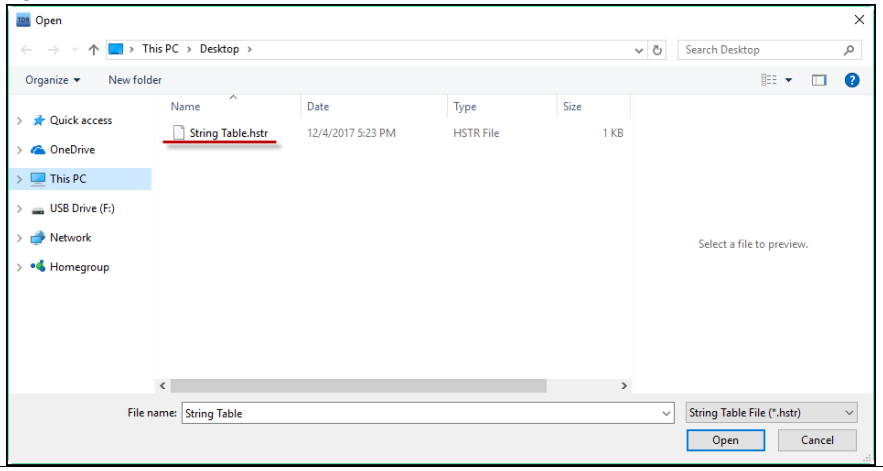
Select the ID to save and click [Save] button to display [Save As] screen. Set [Path] to save the file and enter [File Name].



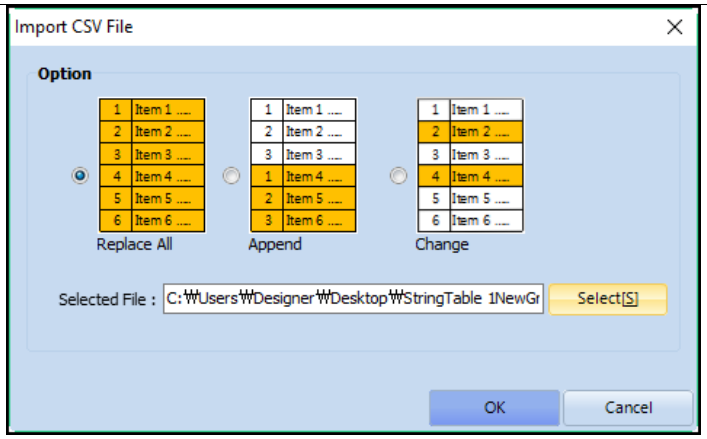
Click [Save] button below to complete [Export].

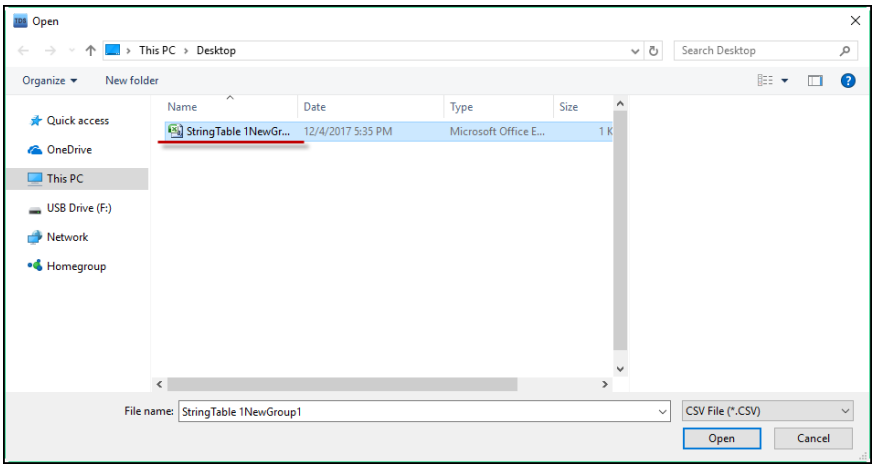


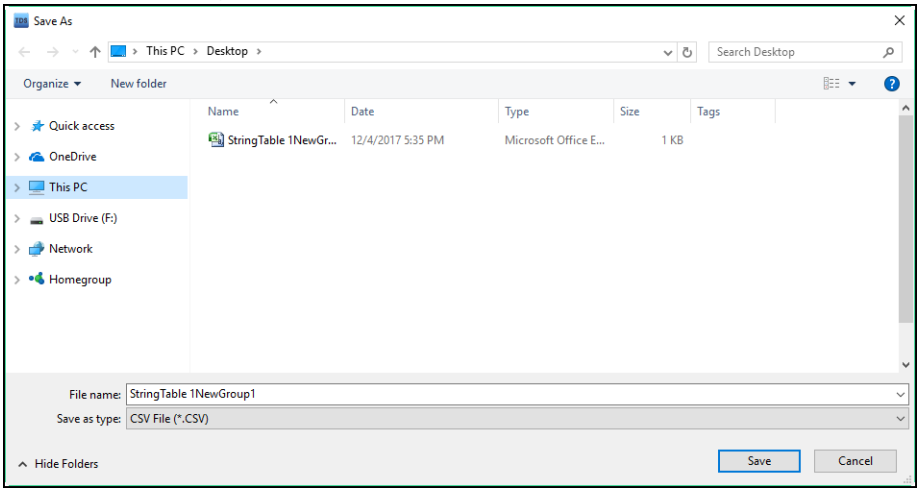
String Table content will be saved as shown in the below picture.



3	CSV Import	Import String Table file saved with [Export CSV] button to the [Selected Group]. Click [Import CSV] to display [Import CSV File] screen. Click [Select] button to load the String Table file saved with [Export CSV] in [Open] screen.

<table>
<tr>
<td></td>
<td></td>
<td> 



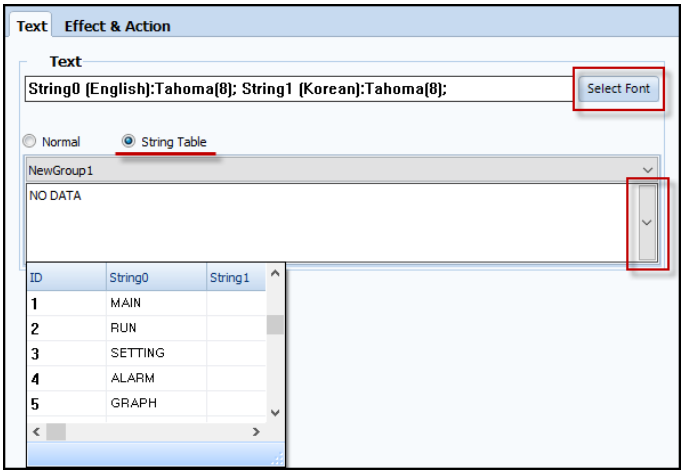
With [Replace All], the group's string table will all be deleted and registered as file string table.
[Add] adds the file's string table after the selected group's string table.
[Modify] replaces the numbers that are same with the file's string table from the string table of the selected group. Strings with new numbers will be added anew.</td>
</tr>
<tr>
<td>4</td>
<td>Export CSV</td>
<td>Save the selected group's multi language table as a [*.CSV] file. Click below [Export CSV] button and [Save As] screen will appear. Set the save path of the file, enter the file name, and click [Save] to finish export.
 

The saved file can be opened and edited with Excel program.</td>
</tr>
</table>

	A	B	C
1	3	MAIN	메인
2	4	RUN	운전
3	5	SETTING	설정
4	6	ALARM	알람
5	7	GRAPH	그래프
6	8	WINDOW	윈도우
7	9	SCREEN CALL PAGE1	스크린 콜

4.1.29 Use String Table to Text

To use text registered in the String Table, select [String Table] as below when you set [Text] in [Object/Alarm Contents], etc. and select the [String]'s group and String.



[Pic. Apply String Table to Text]

4.1.30 Use in Multi Language

▶ How to set a string table as multi language

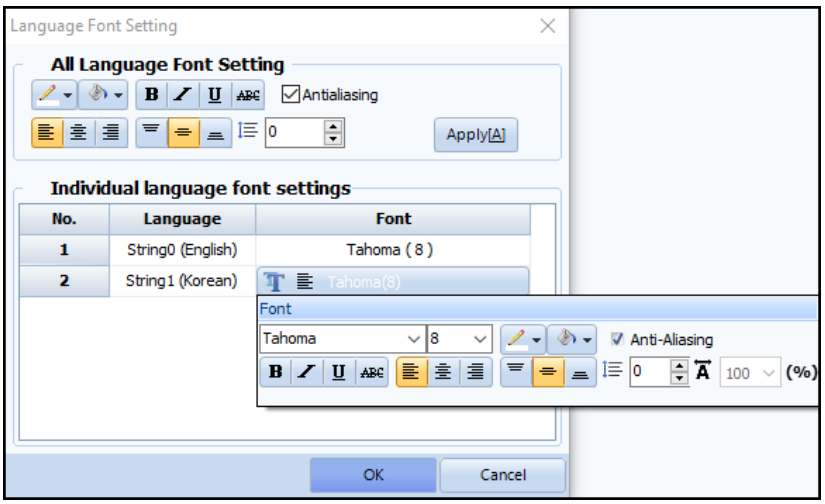
1) When [Project]-[String] menu is run, check [Multi Language] in the [Group] on the [String Setting] screen.

2) Run [Language Table Setting] button in [String Setting] screen to create multiple language tables.

3) Write strings that correspond to each language in each string table.

▶ Font Settings for Multi Language

Click [Font Setting] for the text applied with the multi language, you can set different fonts to each language at [Individual Language Font Setting] as shown in the below picture.

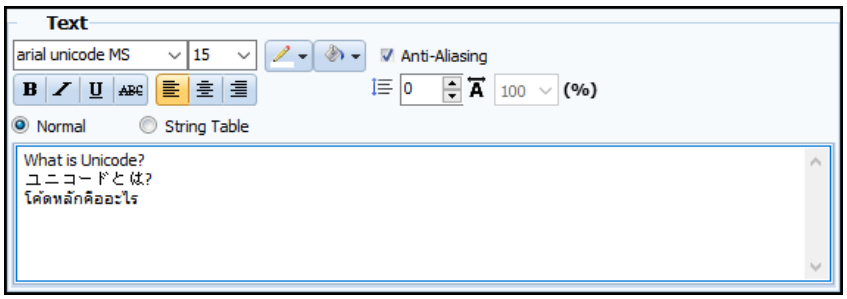


[Pic. Font setting]

Supported fonts by each language vary and therefore, you must set appropriate fonts. Using unsupported fonts will appear garbled.

Set the common font property at [All Language Font Setting]. Click [Apply] to apply the property for all languages. To set different font properties for individual language, double click each font in [Individual Language Font Setting] table to set.

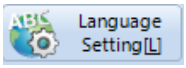
If you use multiple languages at once, set the font to [Arial Unicode MS]. This font supports most languages.



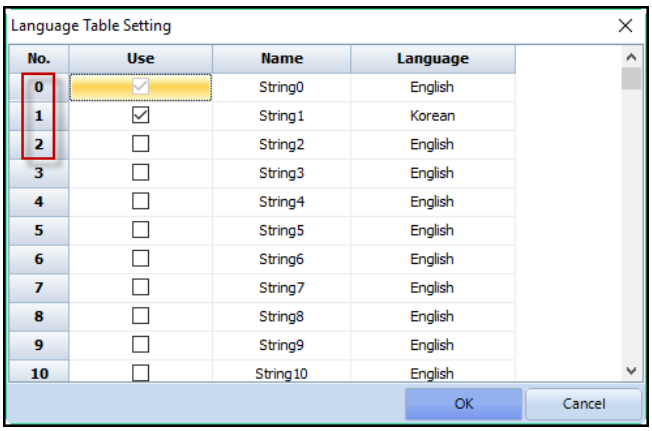
[Pic. Arial Unicode MS font setting]

▶ Replacing languages in projects when using multi languages

Insert [Language Number] to special address [MULTI_LANGUAGE] to change all texts that use the string table to that language table.

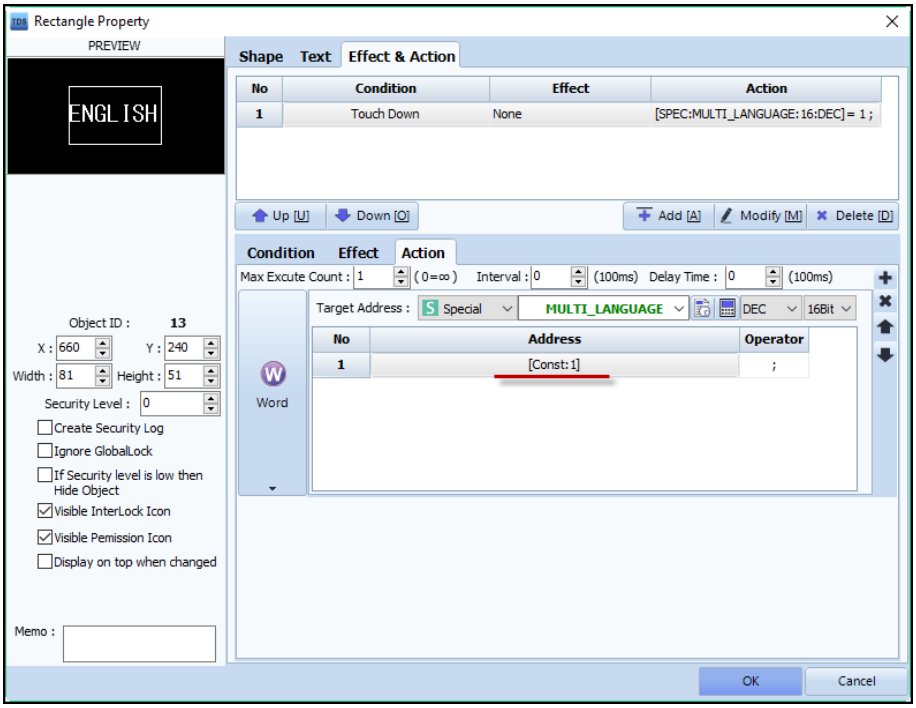
Language [Number] can be seen in the screen that is displayed when the 

button at the top is clicked.



[Pic. Language setting screen]

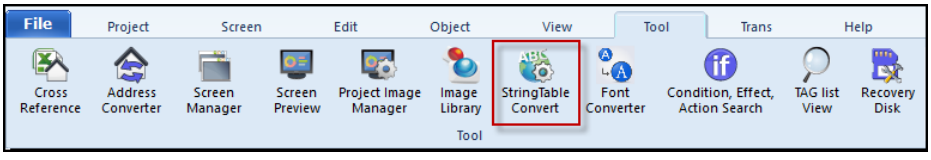
When set as above picture, if the special address [MULTI_LANGUAGE]'s value is [0], it will be displayed in Korean, and if it is [1], in English.



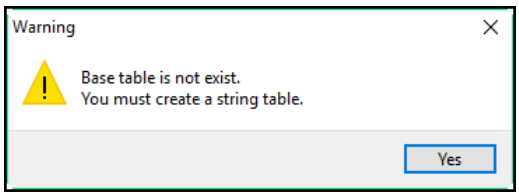
[Pic. The button that changes string table language]

4.1.31 Automatic Conversion Using [Tool]-[Convert String] Menu

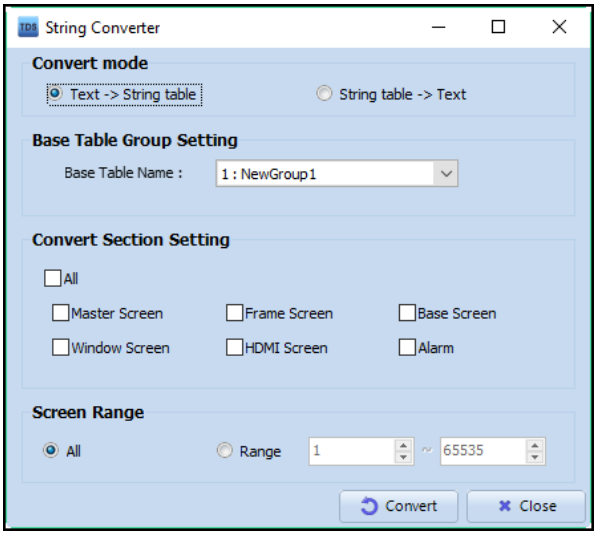
[Tool]-[Convert String] automatically converts projects without string setting to have strings set. On the contrary, it can also convert projects with string tables applied to normal texts.



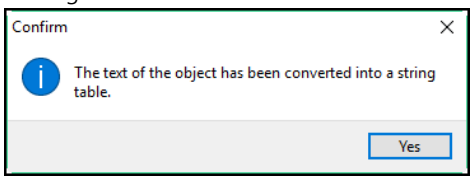
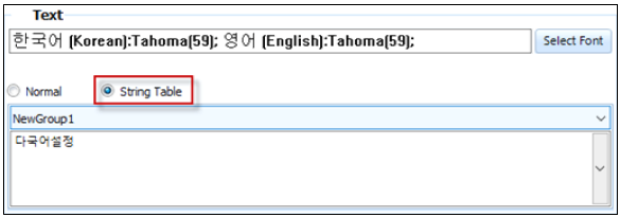
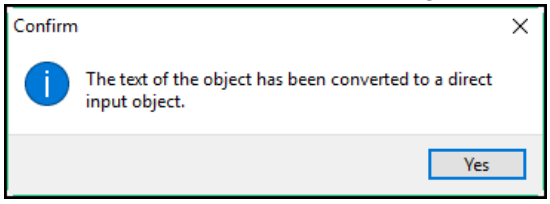
First, run [Project]-[String] and add a [Group] in [String Setting] screen. Without a group, a warning message as below will be displayed and [Convert String] will not run.

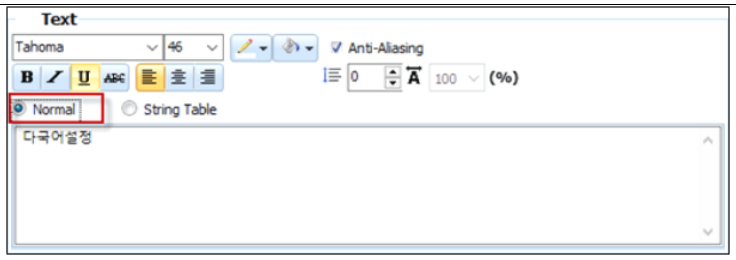


When [Convert String] is run, [String Table Converter] screen will be displayed.



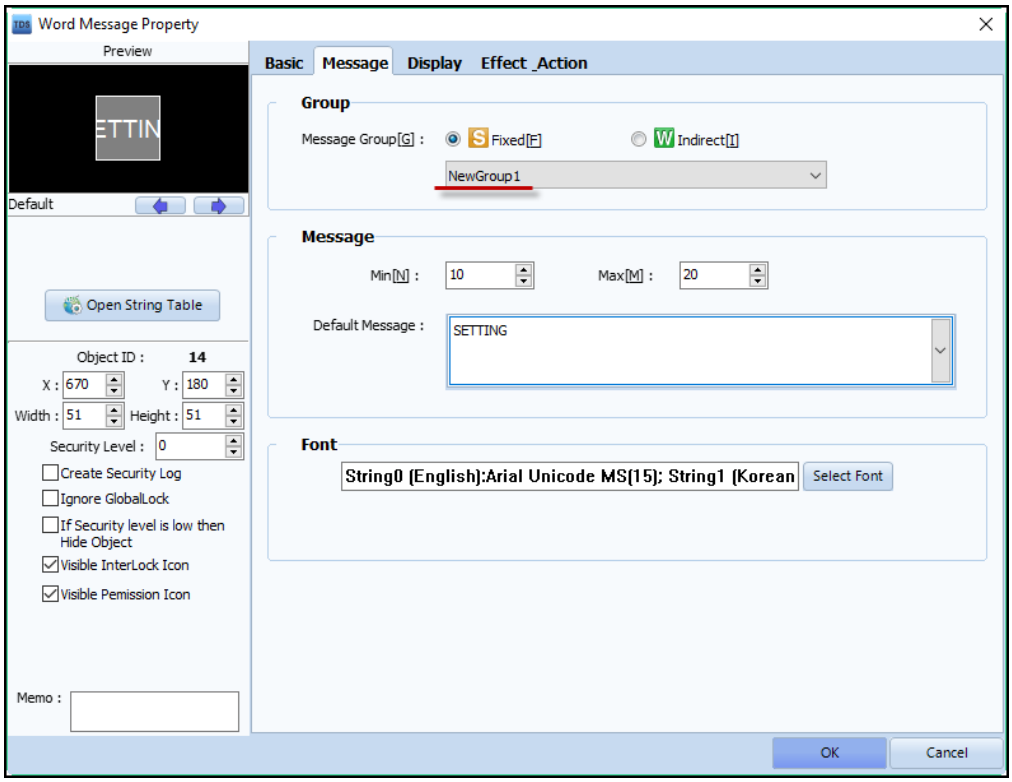
[Pic. String Table Converter]

No	String Table Converter	Description
1	Conversion Mode	▶ [Text -> String Table] converts projects that do not use [Project]-[String] function to automatically use the string function.  1) It registers all texts used in a project to the string table in [Project]-[String]. 2) All texts in a project is set as [String Table] and the same string to the existing texts are selected.  ▶ [String Table -> Text] converts texts that are set to [String Table] to [Normal]. 

		 String Tables in [Project]-[String] remain as they are.
2	Base Table Group Setting	Select the [String] group to register all texts in a project.
3	Convert Section Setting	Set the area to convert. [All] applies to texts in the entire project. Choosing one from [Master Screen/Frame Screen/Base Screen/Window Screen/HDMI Screen/Alarm] will apply the setting to texts in that area.
4	Screen Range	When [Master Screen/Frame Screen/Base Screen/Window Screen/HDMI Screen] is chosen in Convert Section Setting, you may set the range of the screen number to apply String Convert. With [All], the range is applied to all screens. With [Range], string conversion is applied to the corresponding screen numbers.

4.1.32 Use from Message Object

Strings written in a String Table may be displayed according to the condition of [Message] object.
(For more detailed settings of Message object, please see Chapter 11 [Message Object].)



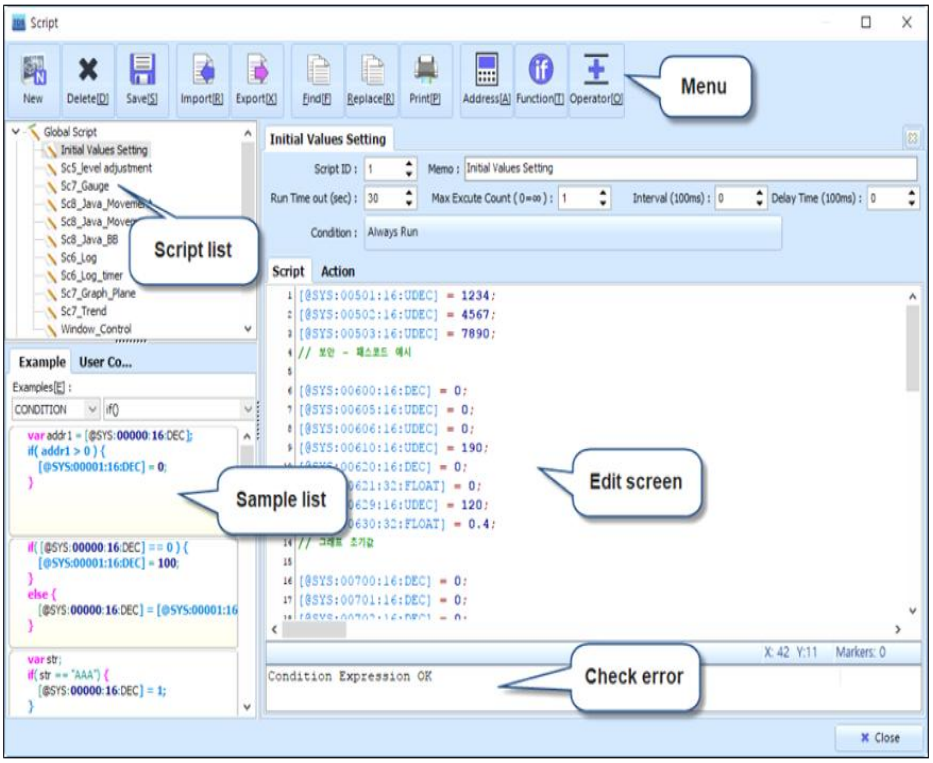
[Pic. Message Object]

Script

Calculations can be easily registered with [Object], but complicated conditions/calculations can be processed more systematically with [Script]. The application range of script may be individually set to [Global (All Screens), Screens, Object].

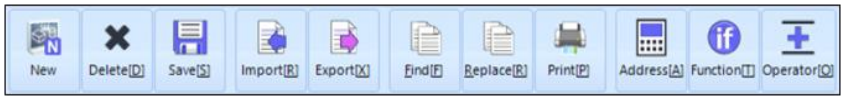
TDS uses Javascript Engine which is one of the most widely used scripts in the Internet environment. Therefore, you can write scripts with the [Javascript] grammar.

☞ Note: Using many scripts may reduce the action speed and the result value of scripts may be displayed slowly due to the communication speed between PLC and TOP.

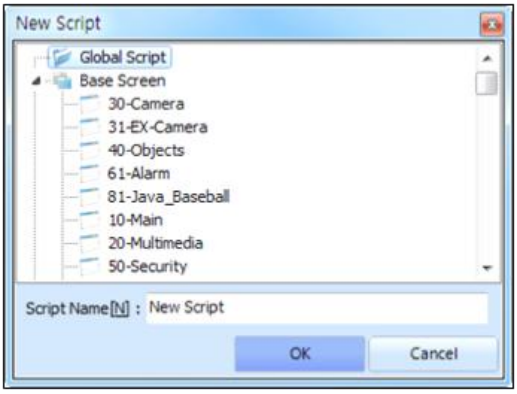


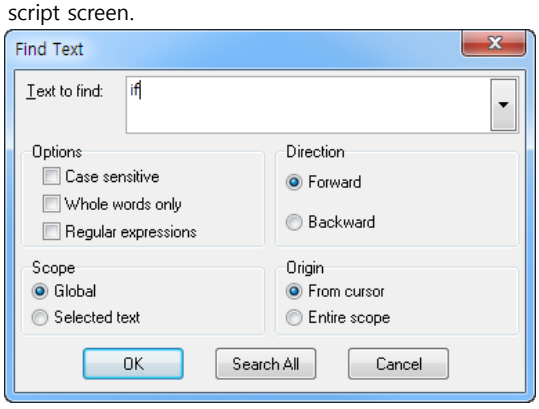
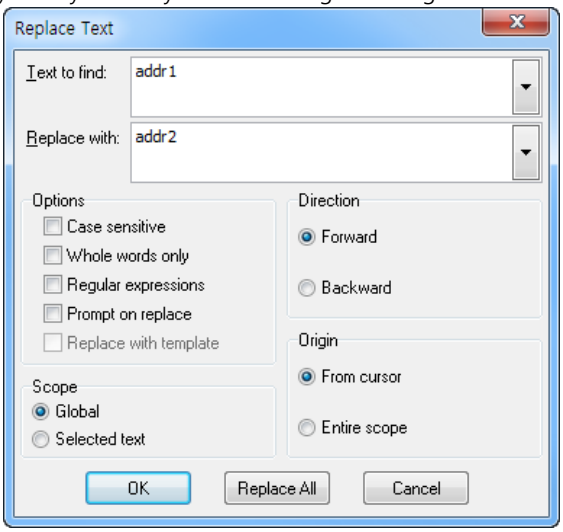
[Pic. Script]

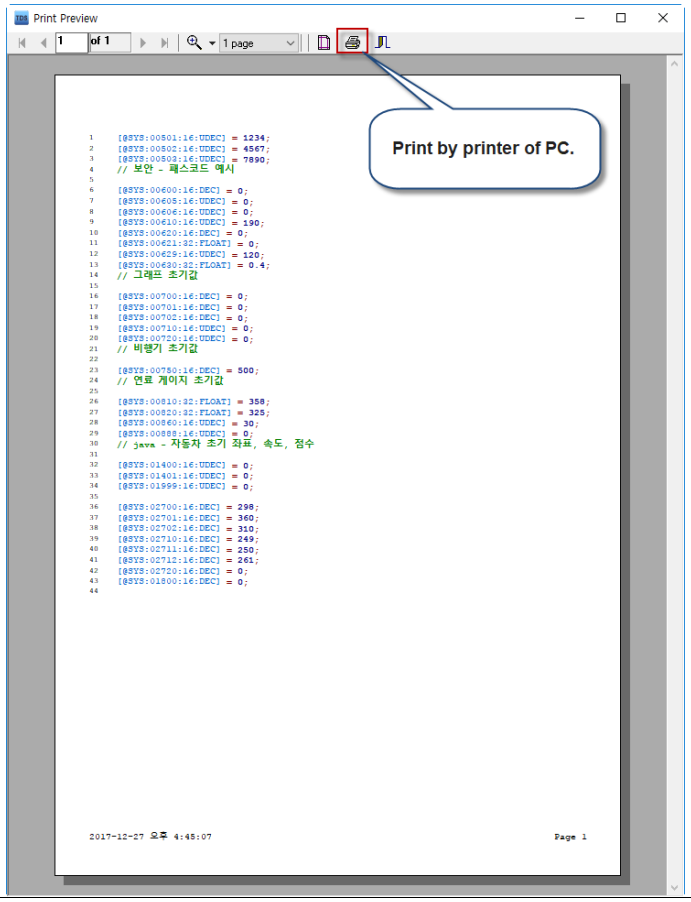
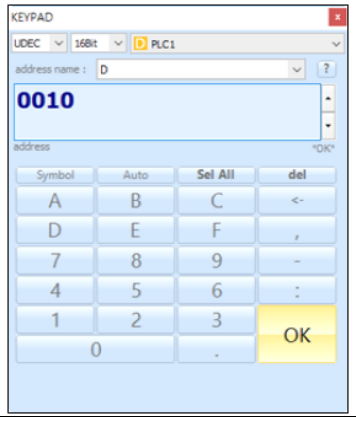
4.1.33 Script Top Menu

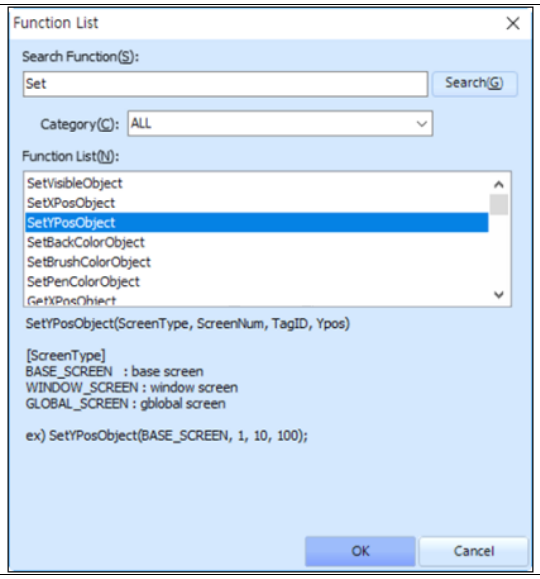
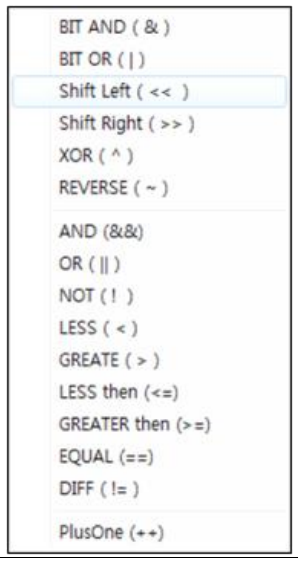


[Pic. Script Top Menu]

No	Top Menu	Description
1	New	Create a new script. Run [New] menu to display [New Script] screen.  Select [Global Script] to apply the new script to all screens. Select a screen if you wish to apply it to that screen only. Enter [Script Name] and click [OK].

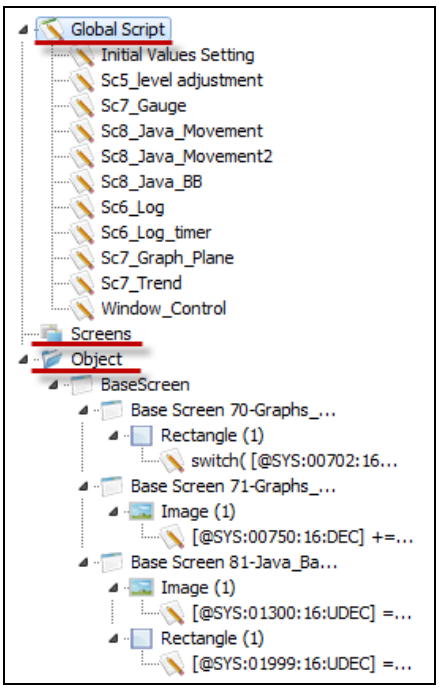
2	Delete	Delete the selected script from a script list.
3	Save	Save the script.
4	Import	Retrieve all script files (.hsrt) saved with [Export].
5	Export	Save all script setting as a file (.hsrt).
6	Find	Search text in the edit script screen.  With [Text to find], you may manually enter the string to find. Also, select String in Editing Screen and run [Find] menu to enter the selected text in the [Text to find] section automatically. [Options (search option)] is [Case sensitive, Whole words only (ignore spaces and find whole words only), Regular expressions (apply regular expressions, one or more word is matched)]. For [Direction], there are [Forward (Down)] and [Backward (Up)] [Scope] is [Global (all) or Selected text (selected area)]. [Origin] is [from cursor] to [Entire scope]. Click [OK] to find one of the string from the Editing Screen. Click [Search All] to find all of the strings from the Editing Screen. Click [Cancel] to close the window.
7	Replace	Search text in the edit script screen and change them all to a different text. With [Text to find], you may manually enter the string to find. Also, select String in Editing Screen and run [Find] menu to enter the selected text in the [Text to find] section automatically. With [Replace with], you may manually enter the strings to change.  [Options (search option)] is [Case sensitive, Whole words only, Regular expressions (apply regular expressions, one or more word is matched), Prompt on replace (change and move), Replace with template (whether or not to change string to template)]. For [Direction], there are [Forward (Down)] and [Backward (Up)] [Scope] is [Global (all) or Selected text (selected area)]. [Origin] is [from cursor] to [Entire scope]. Click [OK] to find one of the strings from the Editing Screen. Click [Replace All] to find all of the strings from the Editing Screen. Click [Cancel] to close the window.

8	Print	Print Edit Script screen. 
9	Address	Run address keypad. The set address in keypad is registered in the Editing Screen. 
10	Function	Run Function List screen to register a function. Enter the function you wish to find in [Search Function] and click [Search] to show all functions that include the entered function. Select a function in [Select Function] to display description of the selected function at the bottom. Click [OK] to register the function in the Editing Screen.

		
11	Operator	Select an Operator from the Operator List and the operator will be registered to the Editing Screen. 

4.1.34 **Script List**

Script List is on the top left corner of Script Setting screen. Double click the list to see its contents on the Editing Screen on the right.

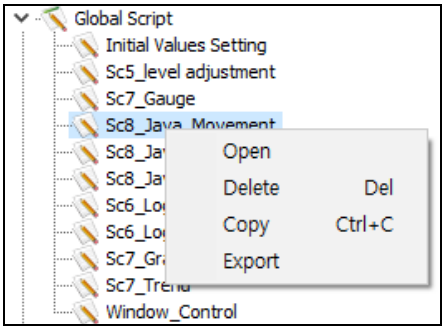


[Pic. Script list]

Script List shows scripts registered in [Global/Screen/Object].

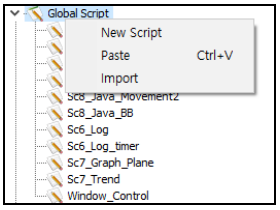
[Global] is the script that is applied to all screens. Therefore, it is run when condition is met regardless of the screen in operation. [Screen] is the script that is run only in the corresponding screen. [Object] is the script that is run when the object's condition is met.

Select a script from the script list and right-click it. The following menu will be displayed.



No	List	Description
1	Open	Displays the selected script in the Editing Screen.
2	Delete	Delete the selected script.
3	Copy	Copy the selected script.
4	Export	Save one selected script as a file (.hsrt).

Select [Global Script/Script registered screen] from the script list and right-click it. The following menu will be displayed.



No	List	Description
1	New Script	Create a new script.
2	Paste	[Paste] a copied script. One script will be created with the copied content.
3	Import	Retrieve one script file (.hsrt) saved with [Export].

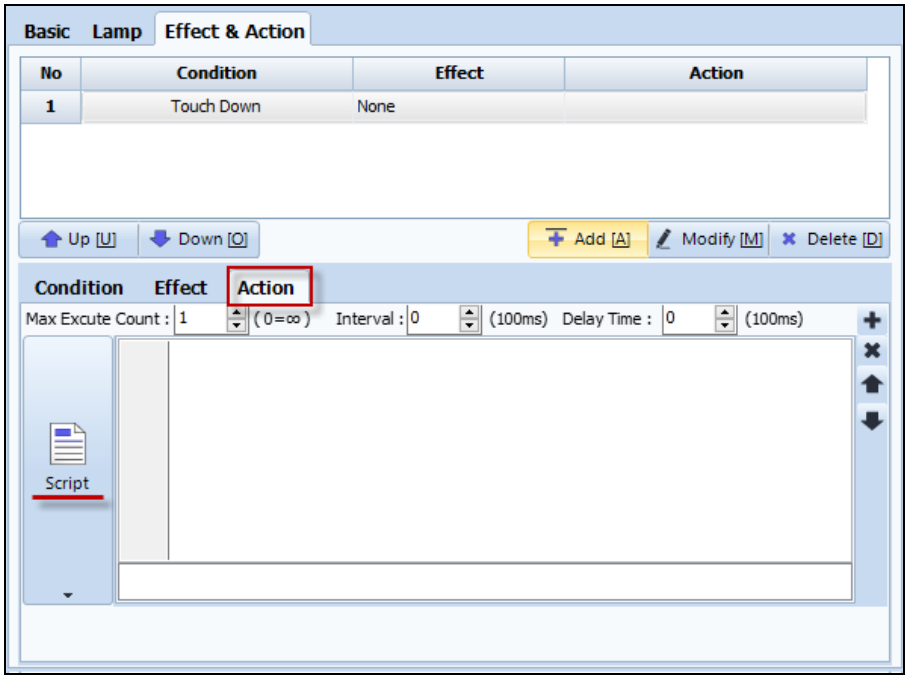
4.1.35 How to Add Script

(1) Add a script to the screen

Add a script with [New] menu on the top or select [Global Script/Script registered screen] from the script list and right-click it. Use [New Script] menu to add.

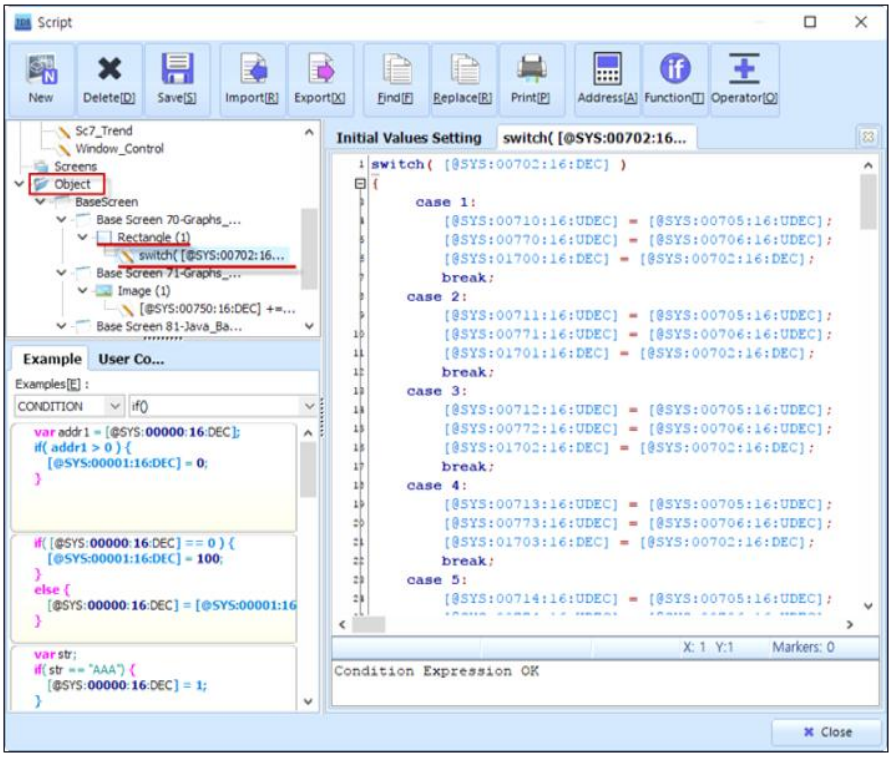
(2) Add a script to object.

To add a script to [Object], add [Script] from [Effect & Action]-[Action] in [Object].



[Pic. Object script]

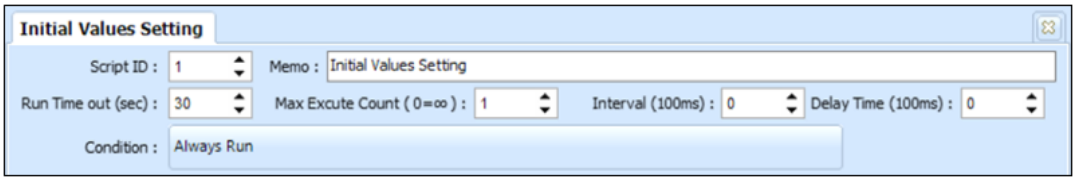
You may write codes on Edit Script screen of object. However, it is recommended to write codes in [Script Setting] to use Sample Code/Function/Address that are provided by [Script Setting].



[Pic. Object script]

4.1.36 Script Condition

Set the condition where a script is activated.



[Pic. Script condition]

No	Property	Description
1	Script ID	Set a unique script number.
2	Memo	Enter the script description.
3	Run Time out (sec)	The maximum time of script execution. If a script falls into an infinite loop or is waiting for PLC's response while communicating with PLC, it ends the script after waiting for the time set by [Run Time Out] from the time when the script has commenced. This function is for ending errors.
4	Max Execute Count/ Interval	It sets the maximum counts that run when a script condition is met. If set to [3], when [Execution Condition] is true, it will be run three times with the [Execution Interval (100 ms)]. If set to [0], when [Execute Condition] is true, it will be run continually with the [Execution Interval (100 ms)]. [Execution Interval] is set when the [Max Execution Count] is set above [2] and it means the script execution interval.
5	Delay Time	When [Execution Condition] is true, run the script after [Delay Time (100 ms)].

Click [Execution Condition] to display [Condition Setting] screen. Set the condition to run script on [Condition Setting] screen.



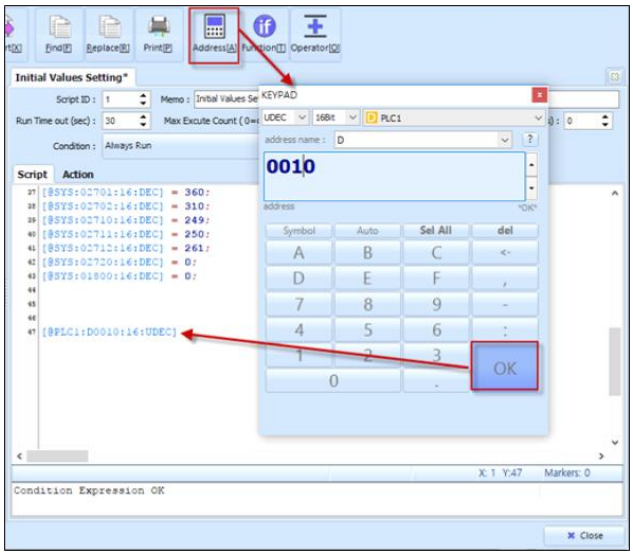
[Pic. Condition Setting screen]

4.1.37 How to Write Script Editing Screen 1. Address/Comment/Semicolon

If HMI or PLC address value is used, write it using address input device to reduce script errors.

(1) Entering Address

You may insert address yourself, but it is easier and creates less errors if you use [Address Input Device (Keypad)] in [Address] menu on the top.



[Pic. Insert address]

Place [Cursor] on the position where you wish to input address on [Editing Screen] and click [Address] menu to display [Address Input Device (Keypad)]. Select [Address Type/Address Size/Address Kind], set the address, and click [OK] to input the address in [Editing Screen].

(2) Entering Comment

Comment is used when entering parts that are not related to program on the Editing Screen. It is used for inserting description or syntax that needs to be removed from the program. There are [Single-line

Comment] and [Multi-line Comment].

```
// A line comment


/*

  Multiple threan comment

*/
```

[Pic. Insert comment]

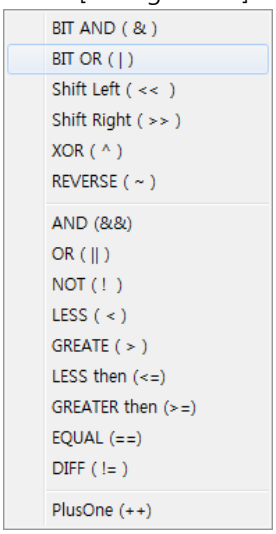
(3) Semicolon (;)

Usually, semicolon (;) is entered at the end of command syntax. This semicolon is not essential and can be omitted.

4.1.38 How to Write Script Editing Screen 2. Operator

Operators are registered by using [Operator] menu. This also can be input with keyboard.

Running [Operator] menu will display the following list. Select an Operator to use and it will be registered at the position of the cursor on the [Editing Screen].



[Pic. Operator]

No	Operator	Description
1	BIT AND (&)	This bit operator is used between two operands, performing [Bit AND] calculation for the binary values. 12 & 6 = 1100 & 0110 = 0100 = 4
2	BIT OR (|)	This bit operator is used between two operands, performing [Bit OR] calculation for the binary values. 12 | 6 = 1100 | 0110 = 1110 = 14
3	Shift Left (<<)	This bit operator is used between two operands, performing [Bit Left Shift] calculation. Perform Bit Shift Calculation in a leftward direction for the binary value of the operand on the left side of the operator as much as the data on the right side. 12 << 2 = 0000 1100 << 2 = 0011 0000 = 48
4	Shift Right (<<)	This bit operator is used between two operands, performing [Bit Right Shift] calculation. Perform Bit Shift Calculation in a rightward direction for the binary value of the operand on the left side of the operator as much as the data on the right side. 12 >> 2 = 0000 1100 >> 2 = 0000 0011 = 3

5	XOR (^)	This bit operator is used between two operands, performing [Bit XOR] calculation for the binary values. 12 ^ 6 = 1100 ^ 0110 = 1010 = 10
6	REVERSE (~)	This bit operator is used before one operand, performing [Bit REVERSE] calculation for the binary values. ~ 6 = ~ 0110 = 1001 = 9
7	AND (&&)	This is used between two conditional syntaxes. The result becomes true when both conditional syntaxes are true.
8	OR (||)	This is used between two conditional syntaxes. The result becomes true when one of the conditional syntaxes is true.
9	NOT (!)	This is used before one conditional syntax. The result is false if the conditional syntax is true and the result is true if the conditional syntax is false.
10	LESS (<)	This is the operator used when comparing the sizes of two operands and is used to show when the right operand is larger.
11	GREATE (>)	This is the operator used when comparing the sizes of two operands and is used to show when the left operand is larger.
12	LESS then (<=)	This is the operator used when comparing the sizes of two operands and is used to show when both are the same or the right operand is larger.
13	GREATER then (>=)	This is the operator used when comparing the sizes of two operands and is used to show when both are the same or the right operand is smaller.
14	EQUAL (==)	This is used to show that both operand values are the same.
15	DIFF (!=)	This is used to show that both operand values are not the same.

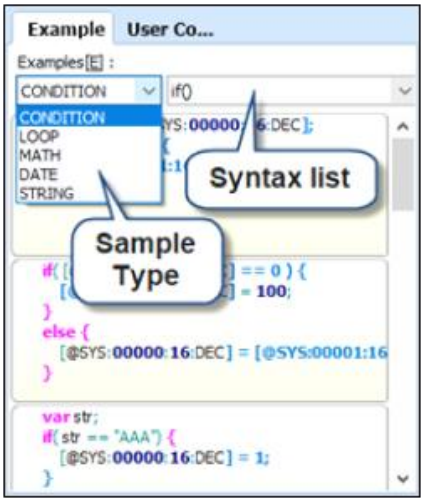
16	PlusOne (++)	This operator is used to one operand and adds 1. The result of using this after an operand is not the same as using before the operand.
		a++ //Add 1 to a.
		b = ++a//Substitute the value of a plus 1 to b.
		b = a++ //Substitute a value to b and add 1 to a.

4.1.39 How to Write Script Editing Screen 3. Sample Registration

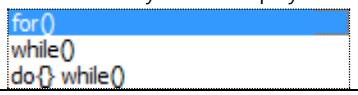
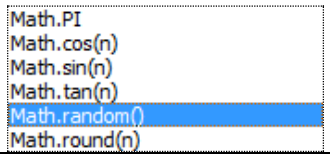
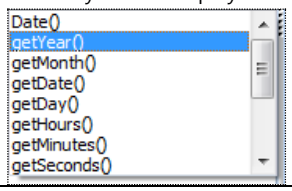
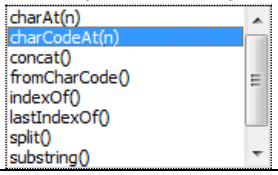
There are samples on the bottom left corner of Script Setting screen. Frequently used syntaxes are provided as [Basic Sample] here and you may register syntaxes you use often as [User Sample].
Use the samples to simply register syntaxes and reduce syntax errors.

(1) Use Sample

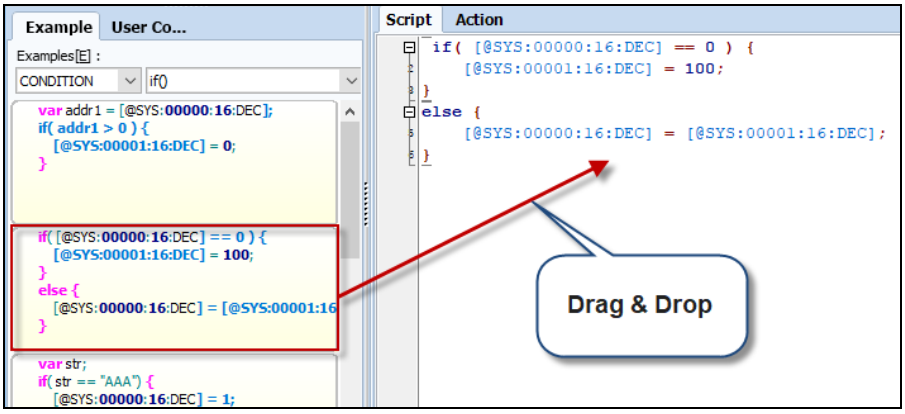
Select [Sample Type] and select the syntax to display the syntaxes' list below.



[Pic. Example]

No	Sample Type	Description
1	CONDITION	The following syntax is a Conditional. Select a syntax to display a sample list that uses the syntax. 
2	LOOP	The following syntax is a Iteration. Select a syntax to display a sample list that uses the syntax. 
3	MATH	The following syntax is an Operation. Select a syntax to display a sample list that uses the syntax. 
4	DATE	This is a Time Function sample. Select a syntax to display a sample list that uses the syntax. 
5	STRING	This is a String Function sample. Select a syntax to display a sample list that uses the syntax. 

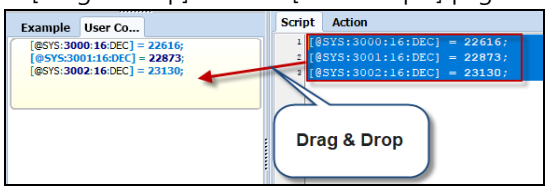
Select [Sample Type] and [Syntax Type], and [Drag & Drop] the syntax to use from the displayed syntax list and bring it to the Editing Screen. Edit and use the address or operator in the sample syntax.



[Pic. Use Sample]

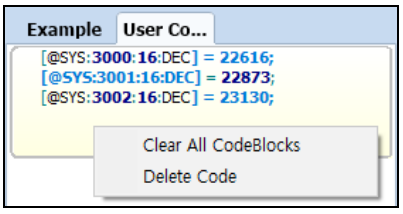
(2) Register as User Sample

Frequently used samples can be registered in [User Sample]. Drag the frequently used syntax with the mouse and set the area, then [Drag & Drop] it in the [User Sample] page to register.



[Pic. Register as user sample]

To delete registered user samples, select the sample to delete in [User Sample] page and right-click with the mouse to run [Delete Code] menu.

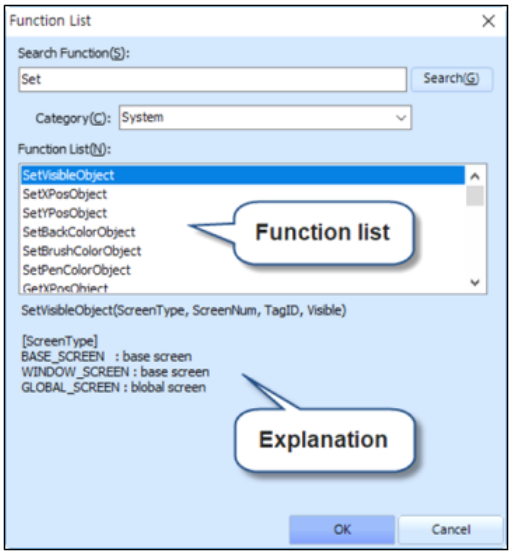


[Pic. Delete user sample]

No	User Sample	Description
1	Clear All CodeBlocks	Delete the all user samples.
2	Delete Code	Delete the selected samples.

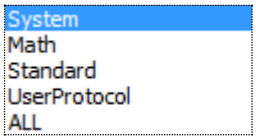
4.1.40 How to Write Script Editing Screen 4. Function Registration/Constant

Run [Function] menu on top to register functions.

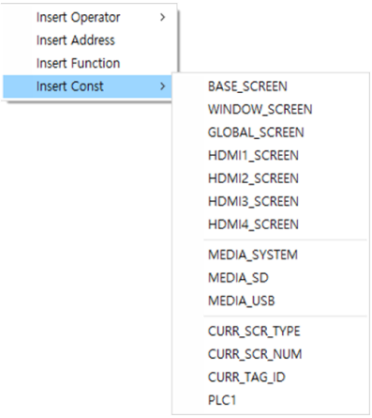


[Pic. Registration of Function]

Enter the function you wish to find in [Search Function] and click [Search] to show all functions that include the entered function.
Select the type of function from [Category].



Select a function from [Select Function] to display the function's description at the bottom. Click [OK] to register the function to the Editing Screen. In some cases, [Constant] is used among the function parameters. For Constant, right-click the Editing Screen and below menu will be displayed.



[Pic. Insert Constant]

Insert Operator is the same as [Operator] menu and shows [Operator List]. Insert Address is the same as [Address] menu and calls [Address Input Device (Keypad)]. Insert Function is the same as [Function] menu and calls [Function List].

Insert Constant shows Constant List. Constants are used as function parameters.

No	Constant	Description
1	BASE_SCREEN	The default screen.
2	WINDOW_SCREEN	Window screen.
3	GLOBAL_SCREEN	Frame Screen.
4	HDMI1_SCREEN	The HDMI1 screen.
5	HDMI2_SCREEN	The HDMI2 screen.
6	HDMI3_SCREEN	The HDMI3 screen.
7	HDMI4_SCREEN	The HDMI4 screen.
8	MEDIA_SYSTEM	TOP memory.
9	MEDIA_SD	SD card.
10	MEDIA_USB	USB memory.
11	CURR_SCR_TYPE	Current screen type.
12	CURR_SCR_NUM	Current screen number.
13	CURR_TAG_ID	Current object ID.
14	PLC1	PLC1. (PLC alias)

Description of each function is as follows.

Function	Category	Description
SetVisibleObject	Format	SetVisibleObject (ScreenType, ScreenNum, TagID, Visible)
	Description	The function that shows the objects' [Show/Hide]. TagID is the object ID. [Hide]: Enter [Visible] as [false]. [Show]: Enter [Visible] as [true]. [ScreenType]: Enter constant of BASE_SCREEN, WINDOW_SCREEN, GLOBAL_SCREEN
	Example	SetVisibleObject(BASE_SCREEN,15,1,true)
		Set object no. 1 in the base screen no. 15 as [Visible].
SetXPosObject	Format	SetXPosObject(ScreenType, ScreenNum, TagID, Xpos)
	Description	Move the position of X coordinate of the object. [Xpos]: Operates as absolute coordinate.
	Example	SetXPosObject(BASE_SCREEN, 15, 1, 100)
		Move the [X coordinate] of object no. 1 in the base screen no. 1 to 100.

SetYPosObject	Format	SetYPosObject(ScreenType, ScreenNum, TagID, Ypos)
	Description	Move the Y coordinate of object.
		[Ypos]: Runs as an absolute coordinate.
	Example	SetYPosObject(BASE_SCREEN, 15, 1, 100)
		Move the [Y coordinate] of object no. 1 in the base screen no. 1 to 100.
SetBackColorObject	Format	SetBackColorObject(ScreenType, ScreenNum, TagID, Red, Green, Blue)
	Description	Modify the [Background Color] of object.
	Example	SetBackColorObject(BASE_SCREEN, 15, 1, 255,255,255)
		Set [Background Color] of object no. 1 in the base screen no. 15 as [255,255,255].
SetBrushColorObject	Format	SetBrushColorObject(ScreenType, ScreenNum, TagID, Red, Green, Blue)
	Description	Modify the [Fill Color] of the object.
	Example	SetBrushColorObject (BASE_SCREEN, 15, 1, 255,255,255)
		Set [Fill Color] of object no. 1 in the base screen no. 15 as [255,255,255].
SetPenColorObject	Format	SetPenColorObject (ScreenType, ScreenNum, TagID, Red, Green, Blue)
	Description	Modify the [Line Color] of object.
	Example	SetBrushColorObject (BASE_SCREEN, 15, 1, 255,255,255)
		Set [Line Color] of object no. 1 in the base screen no. 15 as [255,255,255].
GetXPosObject	Format	GetXPosObject(ScreenType, ScreenNum, TagID)
	Description	Retrieve X coordinate of the object.
	Example	[@SYS:00011:16:UDEC] = GetXPosObject(BASE_SCREEN,15,3)
		Enter the value of [X coordinate] of object no. 3 from the base screen no. 15 in [Address].
GetYPosObject	Format	GetYPosObject(ScreenType, ScreenNum, TagID)
	Description	Retrieve Y coordinate of the object.
	Example	[@SYS:00011:16:UDEC] = GetYPosObject(BASE_SCREEN,15,3)
		Enter the value of [Y coordinate] of object no. 3 from the base screen no. 15 in [Address].
GetWidthObject	Format	GetWidthObject(ScreenType, ScreenNum, TagID)
	Description	Retrieve the object width.
	Example	[@SYS:00011:16:UDEC] = GetWidthObject(BASE_SCREEN,15,3)
		Enter the [Width] of object no. 3 from the base screen no. 15 in [Address].
GetHeightObject	Format	GetHeightObject(ScreenType, ScreenNum, TagID)
	Description	Retrieve the height of the object.
	Example	[@SYS:00011:16:UDEC] = GetHeightObject(BASE_SCREEN,15,3)
		Enter the [Height] of object no. 3 from the base screen no. 15 in [Address].
SetWidthObject	Format	SetWidthObject (ScreenType, ScreenNum, TagID, Width)
	Description	Modify the width of object.
	Example	SetWidthObject(BASE_SCREEN,1,1,100)
		Modify the [Width] of object no. 1 from the base screen no. 1 to 100.
SetHeightObject	Format	SetHeightObject(ScreenType, ScreenNum, TagID, Height)
	Description	Modify the height of the object.
	Example	SetHeightObject(BASE_SCREEN,1,1,100)
		Modify the [Height] of object no. 1 from the base screen no. 1 to 100.
SetTouchLock	Format	SetTouchLock(VisibleMode)
	Description	Set Touch Lock to the scripted screen. Password value set in [Project]-[Property]-[Global Lock Option]--[Global Touch Lock] will be set as the touch password.

		[VisibleMode]: [0: InVisible Mode, 1: Visible Mode]
	Example	SetTouchLock(1);
		Approaching to a screen with script will enable setting the touch lock. The lock window will remain until the password is entered.
GetScreenNum	Format	GetScreenNum()
	Description	Return the currently operating base screen number.
	Example	[@SYS:00011:16:UDEC] = GetScreenNum()
		Substitute the currently operating base screen number in [Address].
OpenWindow	Format	OpenWindow(ScreenNum)
	Description	Popup the window screen of ScreenNum. [ScreenNum]: Window Screen Number
	Example	OpenWindow(1)
		Popup the [Window no. 1] screen.
CloseWindow	Format	CloseWindow(ScreenNum)
	Description	Close the window screen of ScreenNum. [ScreenNum]: Window Screen Number
	Example	CloseWindow(1)
		Close [No. 1 Window] screen.
CloseSystem	Format	CloseSystem()
	Description	Project operation will be finished.
	Example	CloseSystem()
		Project's operation is finished. Moving to [Menu Screen].
CopyMem	Format	CopyMem(src,dest,count)
	Description	Copy all counts of data (or constant value) with the src and des address configured as a start address. [src]: Target to copy (address or constant value), [dest]: Target address, [count]: Target address length (address or constant value)
	Example	1. CopyMem([@SYS:00021:16:UDEC], [@SYS:00016:16:UDEC], [@SYS:00030:16:UDEC]) 2. CopyMem(10, [@SYS:00011:16:UDEC], 8)
		1. If [00030]'s data is [5], it copies all 5 data of [00021-00025] to [00016-00020]. 2. Substitute constant value [10] to 8 addresses in [00011-00018].
CopyMemEx	Format	CopyMemEx(src,dest,count)
	Description	Copy all counts of data (or constant value) with the src and des address configured as a start address. [src]: Address to copy [dest]: Target address [count]: Target address length (constant value only)
	Example	CopyMemEx([@PLC1:D0000:16], [@SYS:00011:16:UDEC], 7);
		Copy 7 address data of [D0000~D0006] and copy them to [00011~00017].
ChangeScreen	Format	ChangeScreen(ScreenNum)
	Description	Switch the screen. [ScreenNum]: base screen number
	Example	ChangeScreen(1)
		Switch to the base screen 1.
ChangeScreenByname	Format	ChangeScreenByName(ScreenName)
	Description	Switch to the base screen with the name of ScreenName.

		[ScreenName]: base screen name
	Example	ChangeScreen('MainScreen')
		Switch to the screen that has the base screen name of MainScreen.
PlaySoundFile	Format	[@SYS:00000:16:UDEC] = PlaySoundFile(MediaType, FileName, Count)
	Description	Play a sound file and return ID. [MediaType]: MEDIA_SYSTEM (Use a sound file in TOP.) MEDIA_SD (Use a sound file in SD Card.) MEDIA_USB (Use a sound file in USB.) [FileName]: Sound file path and file name [Count]: number of times the sound is played
	Example	PlaySoundFile(MEDIA_USB, "TEST", 5)
		Play the sound file with the name of TEST in USB memory 5 times.
StopSoundFile	Format	StopSoundFile(ID)
	Description	Pause playing the sound of the corresponding ID.
	Example	StopSoundFile([@SYS:00000:16:UDEC])
		Stop playing the sound of the corresponding ID.
StopSoundFileAll	Format	StopSoundFileAll()
	Description	Stop all sounds that are playing.
	Example	StopSoundFileAll()
		Stop all sounds that are playing.
GetPLCIP1Address	Format	GetPLCIP1Address(PLCNAME)
	Description	Retrieve the first value of the PLC IP address. [PLCNAME]: PLC's alias
	Example	var ip1 = GetPLCIP1Address(PLC1)
		Retrieve the first value of the PLC1 IP address.
GetPLCIP2Address	Format	GetPLCIP2Address(PLCNAME)
	Description	Retrieve the second value of the PLC IP address. [PLCNAME]: PLC's alias
	Example	var ip2 = GetPLCIP2Address(PLC1)
		Retrieve the second value of the PLC2 IP address.
GetPLCIP3Address	Format	GetPLCIP3Address(PLCNAME)
	Description	Retrieve the third value of the PLC IP address. [PLCNAME]: PLC's alias
	Example	var ip3 = GetPLCIP3Address(PLC1)
		Retrieve the third value of the PLC3 IP address.
GetPLCIP4Address	Format	GetPLCIP4Address(PLCNAME)
	Description	Retrieve the fourth value of the PLC IP address. [PLCNAME]: PLC's alias
	Example	var ip4 = GetPLCIP4Address(PLC1)
		Retrieve the fourth value of the PLC4 IP address.
SetPLCIPAddress	Format	SetPLCIPAddress(PLCNAME, ip1, ip2, ip3, ip4)
	Description	Modify the PLC IP address. [PLCNAME]: PLC's alias, ip1-ip4: IP address
	Example	SetPLCIPAddress(PLC1, 192, 168, 4, 42)
		Modify PLC1 IP address to [192, 168, 4, 42].
GetPLCTimeout	Format	GetPLCTimeout(PLCNAME)
	Description	Retrieve the time (second) spent from the moment of Timeout during PLC communication. [PLCNAME]: PLC's alias
	Example	var timeout = GetPLCTimeout(PLC1)
		Retrieve the time (second) spent from the moment of Timeout during the communication of PLC1.

GetPLCErrorCount	Format	GetPLCErrorCount(PLCNAME)
	Description	Retrieve the count of errors that occurred during PLC communication. [PLCNAME]: PLC's alias
	Example	var count = GetPLCErrorCount(PLC1)
		Retrieve the count of errors that occurred during PLC1 communication.
StrToInt	Format	StrToInt(src, dest, size)
	Description	Find string in constant. [src]: string address, [dest]: address to save result in, [size]: string length (constant)
	Example	StrToInt([@SYS:0300:16:ASCII], [@SYS:0400:16:DEC], 10)
		Convert strings in 5 addresses of [0300~0304] to number (constant) and substitute to [0400] address.
IntToStr	Format	IntToStr(src, dest, size)
	Description	Convert numbers to strings. [src]: address with constant value, [dest]: address to save the result in, [size]: string length (constant)
	Example	IntToStr([@SYS:0300;16:UDEC],[@SYS:0400:16:ASCII], 4)
		Convert numbers in [0300] address to strings and substitute to [0400~0401].
StrToFloat	Format	StrToFloat(src, dest, size, format)
	Description	Get float data with strings. [src]: string address, [dest]: address to save result in, [size]: string length, [format]: string format (Default: "%f")
	Example	StrToFloat([@SYS:0300:16:ASCII], [@SYS:0400:32:FLOAT], 4, "%f")
		Convert strings in [0300-0301] address to float data and insert in [0400].
FloatToStr	Format	FloatToStr(src, dest, size, format)
	Description	Convert float data to string. [src]: address with float, [dest]: address to save result in, [size]: string length, [format]: string format (Default: "%f")
	Example	FloatToStr([@SYS:0300:32:FLOAT], [@SYS:1000:16:ASCII], 4, "%f")
		Convert numbers in [0300] address to strings and substitute to [1000~1001].
SetDateTime	Format	SetDateTime(year, month, day, hour, min, sec)
	Description	Set time.
	Example	SetDateTime(2016, 12, 25, 10, 30, 0)
		Set time as 2016/12/25 10:30:00.
SetComboListBoxIndex	Format	SetComboListBoxIndex(ScreenType, ScreenNum, TagID, Index)
	Description	Modify item index in Combo Box/List Box.
	Example	SetComboListBoxIndex(BASE_SCREEN, 1, 1, 0)
		Modify the index in ID no.1 Combo Box/List Box in the base screen no. 1 to 0.
GetComboListBoxIndex	Format	GetComboListBoxIndex(ScreenType, ScreenNum, TagID)
	Description	Retrieve the index of current item in Combo Box/List Box.
	Example	var index = GetComboListBoxIndex(BASE_SCREEN, 1, 1)
		Retrieve the index of the current item of ID no.1 Combo Box/List Box in the base screen no. 1.
GetComboListBoxValue	Format	GetComboListBoxValue(ScreenType, ScreenNum, TagID)
	Description	Retrieve the selected item's value from Combo Box/List Box.
	Example	var value = GetComboListBoxValue(BASE_SCREEN, 1, 1)
		Retrieve the value of the selected item from ID no. 1 Combo Box or List

		Box in the base screen no. 1.
GetComboListBoxText	Format	GetComboListBoxText(ScreenType, ScreenNum, TagID)
	Description	Retrieve the selected item's text from Combo Box/List Box.
	Example	var text = GetComboListBoxText(BASE_SCREEN, 1, 1)
		Retrieve the text of the selected item from ID no. 1 Combo Box or List Box in the base screen no. 1.
GetComboListBoxItemCount	Format	GetComboListBoxItemCount(ScreenType, SceenNum, TagID)
	Description	Retrieve the item count in Combo Box/List Box.
	Example	var count = GetComboListBoxItemCount(BASE_SCREEN, 1, 1)
		Retrieve the item count from ID no.1 Combo Box or List Box in the base screen no. 1.
SystemShutdown	Format	SystemShutdown()
	Description	Close the system. Close TOP.
	Example	SystemShutdown()
		Close the system. Close TOP.
SystemReboot	Format	SystemReboot()
	Description	Reboot TOP.
	Example	SystemReboot()
		Reboot TOP.
ExecuteFile	Format	ExecuteFile(file, param)
	Description	Run file. [file]: The name of the file to run [param]: Parameter of the file to run (Optional/can be passed)
	Example	ExecuteFile('C:₩Run.exe')
		Run C:₩Run.exe'
IsChanged	Format	IsChanged(addr)
	Description	Check if the address value is modified. [addr]: Address
	Example	var changed = IsChanged([@SYS:00010:16]);
		Return true(1) if address [00010] is modified, and return false(0) is not modified.
LogOut	Format	LogOut()
	Description	Log out.
	Example	LogOut()
		Log out.
NowToUTC	Format	NowToUTC()
	Description	Calculate current time in (UTC) TIMESTAMP(sec) unit and return.
	Example	[@SYS:00011:32:UDEC] = NowToUTC()
		Convert current time in TIMESTAMP(sec) and substitute to [Address].
ParamToUTC	Format	ParamToUTC(year, month, day, hour, min, sec)
	Description	Calculate the designated time in (UTC) TIMESTAMP(sec) unit.
	Example	[@SYS:00011:32:UDEC] = ParamToUTC(2015,1,1,5,18,10)
		Calculate 2014/1/1 5:18:10 in second unit and insert it to [Address].
DayToSec	Format	DayToSec(day)
	Description	Calculate the set date in seconds.
	Example	[@SYS:00011:16:UDEC] = DayToSec(100)
		Calculate 100 days in seconds and insert it to [Address].
HourToSec	Format	HourToSec(hour)
	Description	Calculate the set time in seconds.
	Example	[@SYS:00011:16:UDEC] = HourToSec(100);

		Calculate 100 hours in seconds and insert it to [Address].
MinToSec	Format	MinToSec(min)
	Description	Calculate the set minutes in seconds.
	Example	[@SYS:00011:16:UDEC] = MinToSec(100)
		Calculate 100 minutes in seconds and insert it to [Address].
SecToSec	Format	SecToSec(sec)
	Description	Calculate the set second in second. This function exists to ensure compatibility with the previous version.
	Example	[@SYS:00011:16:UDEC] = MinToSec(100)
		Calculate 100 seconds in second and insert it to [Address].
UTCToYear	Format	UTCToYear(TIMESTAMP value)
	Description	Convert (UTC) TIMESTAMP (sec) value to year.
	Example	[@SYS:00011:16:UDEC] = UTCToYear (12500)
		Calculate 12500 value in year to [Address].
UTCToMonth	Format	UTCToMonth(TIMESTAMP value)
	Description	Convert (UTC) TIMESTAMP (sec) value to month.
	Example	[@SYS:00011:16:UDEC] = UTCToMonth (12500)
		Calculate 12500 value in month and substitute the value to [Address].
UTCToDay	Format	UTCToDay(TIMESTAMP value)
	Description	Convert (UTC) TIMESTAMP (sec) value to day.
	Example	[@SYS:00011:16:UDEC] = UTCToDay (12500)
		Calculate 12500 value in day to [Address].
UTCToHour	Format	UTCToHour(TIMESTAMP value)
	Description	Convert (UTC) TIMESTAMP (sec) value to hour.
	Example	[@SYS:00011:16:UDEC] = UTCToHour (12500)
		Calculate 12500 value in hour and substitute it to [Address].
UTCToMin	Format	UTCToMin(TIMESTAMP value)
	Description	Convert (UTC) TIMESTAMP (sec) value to minutes.
	Example	[@SYS:00011:16:UDEC] = UTCToMin (12500)
		Calculate 12500 value in minutes and substitute it to [Address].
UTCToSec	Format	UTCToSec(TIMESTAMP value)
	Description	Convert (UTC) TIMESTAMP (sec) value to seconds.
	Example	[@SYS:00011:16:UDEC] = UTCToSec (12500)
		Calculate 12500 value in seconds and substitute it to [Address].
UTCToWeek	Format	UTCToWeek(TIMESTAMP value)
	Description	Convert TIMESTAMP (sec) value to a day of the week.
		[1: SUN], [2: MON], [3: TUE], [4: WED], [5: THU], [6: FRI], [7: SAT]
	Example	[@SYS:00011:16:UDEC] = UTCToWeek(12500)
		Calculate 12500 value in a day of the week and substitute it to [Address].
TextToSpeach	Format	TextToSpeach(Text)
	Description	Convert text data to sound and output it to audio. [Text]: String
	Example	TextToSpeach('Warning The temperature is high')
		Convert 'Warning The temperature is high' texts to sound and output it to audio.
PI	Format	Math.PI
	Description	PI value returns 3.14...
	Example	[@SYS:00011:32:FLOAT] = Math.PI
		Insert 3.14 to [Address].
cos	Format	Math.cos(n)
	Description	'n' means a radian value. Use Math.cos (Angle x Math.PI / 180) to use an

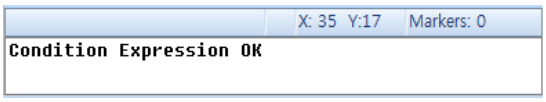
		angle.
	Example	[@SYS:00011:16:UDEC] = Math.cos(0)
		Insert cos(0) value to [Address].
sin	Format	Math.sin(n)
	Description	'n' means a radian value. Use Math.sin (Angle x Math.PI / 180) to use an angle.
	Example	[@SYS:00011:16:UDEC] = Math.sin(0)
		Insert sin(0) value to [Address].
tan	Format	Math.tan(n)
	Description	'n' means a radian value. Use Math.sin (Angle x Math.PI / 180) to use an angle.
	Example	[@SYS:00011:16:UDEC] = Math.tan(0)
		Insert tan(0) value to [Address].
random	Format	Math.random()
	Description	Create random numbers between Float 0.000 ~ 0.999.
	Example	[@SYS:01000:16:DEC]=(Math.random()*10)+1
		Insert random numbers between 1-10 to [Address].
round	Format	Math.round(n)
	Description	Insert the rounded up constant value. [n]: float address or float
	Example	[@SYS:00011:16:UDEC] = Math.round(10.1)
		Insert 10, the constant value rounded up from [10.1] to [Address].
Number	Format	Number(var)
	Description	Convert string called var to number.
	Example	[@SYS:00011:16:UDEC] =Number("12")
		Insert number 12 in [Address].
String	Format	String(var)
	Description	Return var number to string.
	Example	[@SYS:00011:16:UDEC] =String(12)
		Insert string “12” in [Address].
CommAsciiWrite	Format	CommAsciiWrite(value)
	Description	Use Aski data in the device. [value]: Aski value
	Example	CommAsciiWrite('Date Value')
		Use the Aski data of ‘Date Value’ in the device.
CommAsciiRead	Format	CommAsciiRead(size)
	Description	Retrieve Aski data from the device. [size]: Data count (text length)
	Example	var sReadData = CommAsciiRead(10)
		Retrieve 10 Aski data from the device.
CommReset	Format	CommReset()
	Description	Initialize the communication status with the device.
	Example	CommReset()
		Initialize the communication status with the device.
CommWait	Format	CommWait(msec)
	Description	Set latency. [msec]: msec unit time
	Example	CommWait(1000);
		Set latency to 1 sec (1000msec).
CommErrorMsg	Format	CommErrorMsg(value)
	Description	Display communication error message. [value]: Aski value(strings)
	Example	CommErrorMsg('time out')

		Display the communication error as 'time out'.
CommErrorClear	Format	CommErrorClear()
	Description	Delete the communication error message.
	Example	CommErrorClear()
		Delete the communication error message.
HsmsHeader	Format	HsmsHeader(type)
	Description	Send HSMS protocol header. [Type]: Header type (1: Select.req, 3: Deselect.req, 5: Linktest.req, 9: Separate.req)
	Example	HsmsHeader(1)
		Send 'Select.req' of HSMS protocol.
HsmsDataMessage	Format	HsmsDataMessage(S, F, SUB)
	Description	Send HSMS communication data. [S]: Stream ID, [F]: Function ID, [SUB]: Sub ID
	Example	HsmsDataMessage(2, 6, 0)
		Send Stream ID no. 2 and Function ID no. 6 of HSMS.
HsmsEventReport	Format	HsmsEventReport(CEID)
	Description	CEID: Event ID
	Example	HsmsEventReport(101)
		Event 101
HsmsAlarmReport	Format	HsmsAlarmReport(ALID, flag)
	Description	[ALID]: Alarm ID, [flag]: on(1)/off(0)
	Example	HsmsAlarmReport(200, 0)
		ALID: 200, flag: off
HsmsControlStateOFFLINE	Format	HsmsControlStateOFFLINE()
	Description	Offline HSMS.
	Example	HsmsControlStateOFFLINE()
		Offline HSMS.

4.1.41 Scrip Error Check

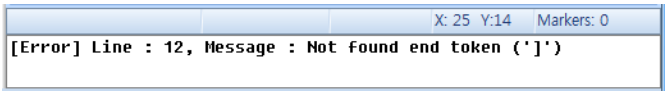
Shows whether or not there is any error in the content written in [Editing Screen] on the script outcome window in real-time.

When there is no error, it will be displayed as below.



[Pic. No error]

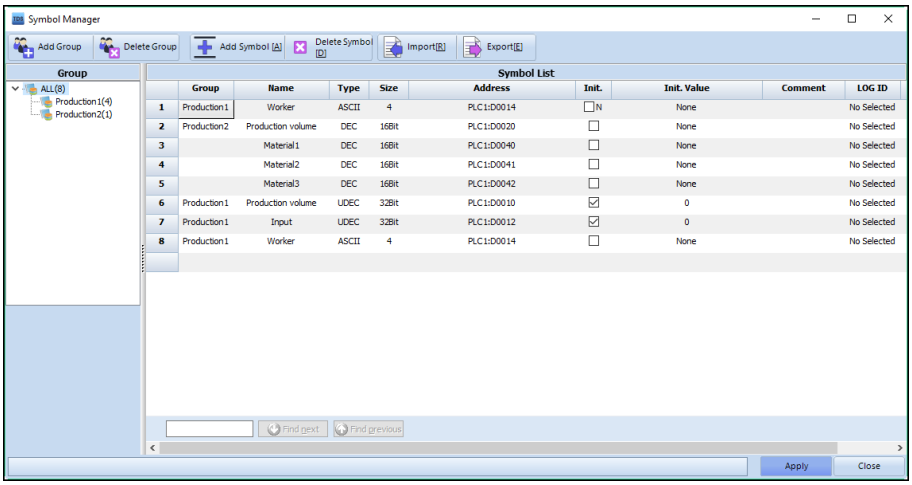
When there is an error, it shows the content of the error with its location.



[Pic. Error occurred]

Symbols

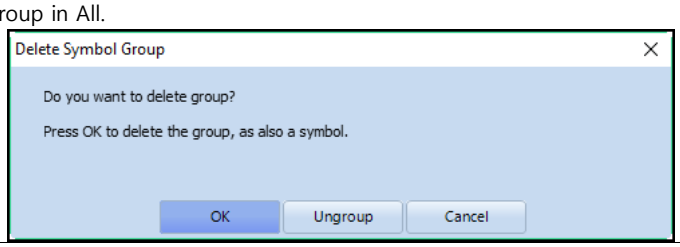
Symbol address is an address given with a different name. Name an address in [Controller/Internal Address] for actual use in the system to make programming easier.
To use Symbol Address which is a type of address, you must write a Symbol List in [Symbol Manager] which is displayed when running [Project]-[Symbol].

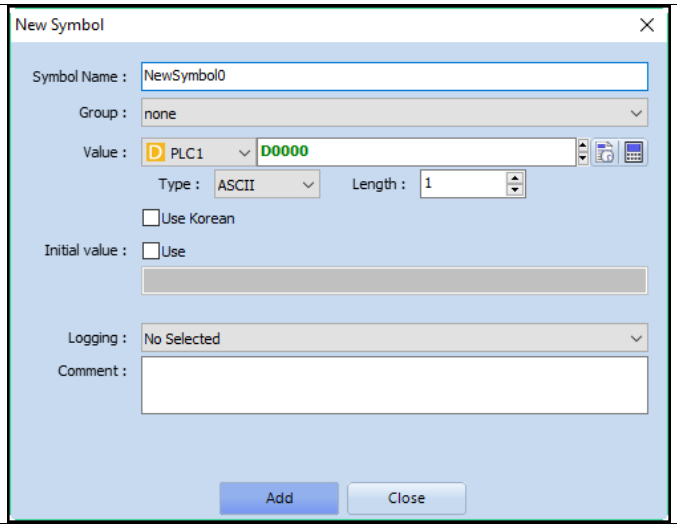
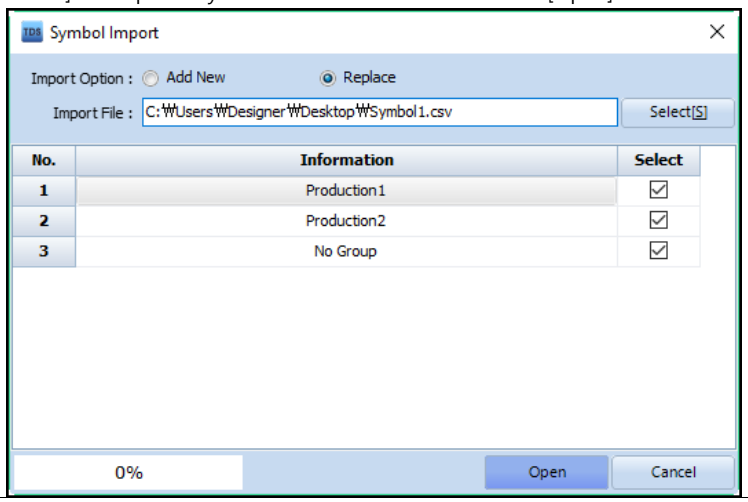
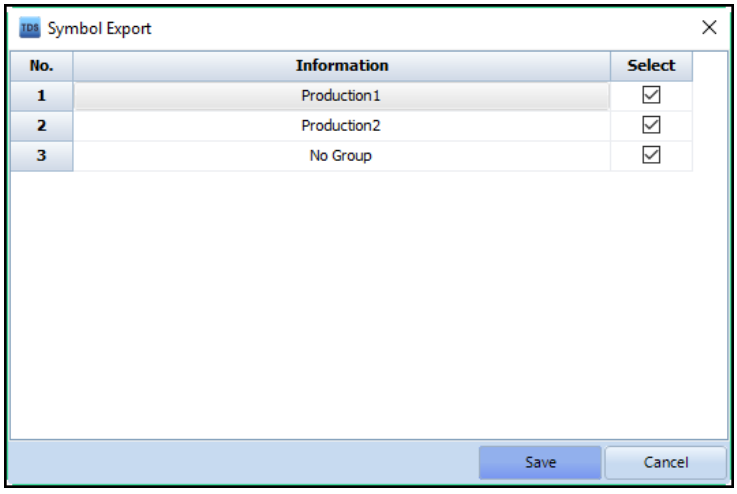


[Pic. Symbol Manager]

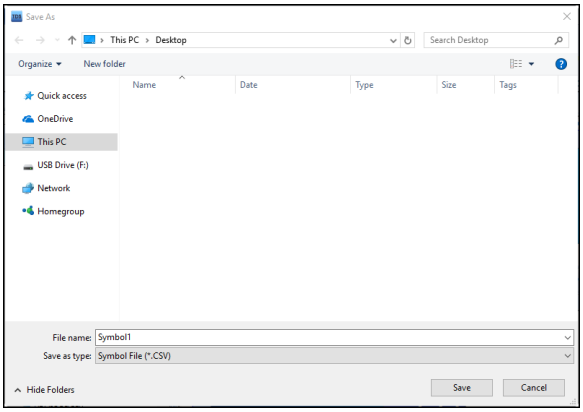
4.1.42 Top Menu

The following is the menu on top of Symbol Manager.

No	Symbol Manager	Description
1	Add Group	Add a new group as a subsidiary group to the group selected in Group List. Add a group and you can see it on the [Group] window in the left. Under [All], you can create a group and continually create more [Subsidiary Group] under the group. [All] shows the symbol lists of all groups.
2	Delete Group	Delete a selected group. Click [Ungroup] to delete the group but keep the group's symbol list without the group in All. 
3	Add Symbol [A]	Add a symbol list. Symbols can be added without assigning them to a group. If a group is selected in Group window, a symbol will be added to the group. Click [Add Symbol] to display [New Symbol] window. Configure various settings for symbol address and click [Add] to add.

		
4	Symbols Delete [D]	Delete the selected symbol address from the symbol list.
5	Import [R]	Read a saved symbol address list. The symbol address list must be a file saved by [Export] function. Click [Import] to run the following [Import Symbol] window. Choose whether to [Add New] or [Replace] the imported symbol address list file to the existing symbol address list. Choosing [Add New] will create all imported symbol address list imported to the current project's symbol address list new. [Replace] only adds other symbol address lists by replacing symbol addresses that are the same as the existing ones. Go to [Select File] and open a symbol file in CSV format and click [Open]. 
6	Export [E]	Save the currently registered symbol address list. Click [Export] to display the following [Export Symbol] window.  Click [Save] and [Save As] window will be displayed for you to enter the PC's save path and file

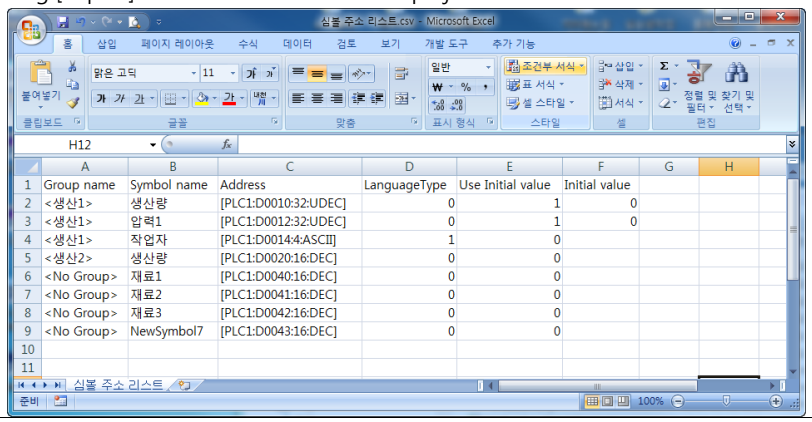
name.



When it is saved, below message will be displayed. Click [Yes] and a message will appear and the Export window will be closed.



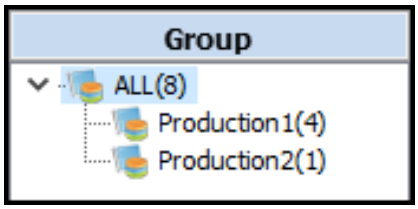
The saved symbol file can be opened and edited as an Excel file. You can add a symbol address list by using [Import] button for this file in other projects.



	Group name	Symbol name	Address	LanguageType	Use Initial value	Initial value
2	<생산1>	생산량	[PLC1:D0010:32:UDEC]	0	1	0
3	<생산1>	압력1	[PLC1:D0012:32:UDEC]	0	1	0
4	<생산1>	작업자	[PLC1:D0014:4:ASCII]	1	0	
5	<생산2>	생산량	[PLC1:D0020:16:DEC]	0	0	
6	<No Group>	재료1	[PLC1:D0040:16:DEC]	0	0	
7	<No Group>	재료2	[PLC1:D0041:16:DEC]	0	0	
8	<No Group>	재료3	[PLC1:D0042:16:DEC]	0	0	
9	<No Group>	NewSymbol7	[PLC1:D0043:16:DEC]	0	0	
10						
11						

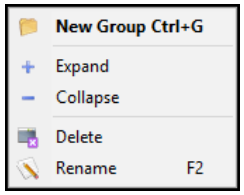
4.1.43 Symbol Group List

[Group List] is located on top left corner of [Symbol Manager] screen. It shows all symbol groups and selecting a group displays its symbol list on the right hand side.

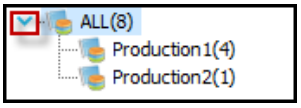
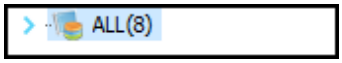
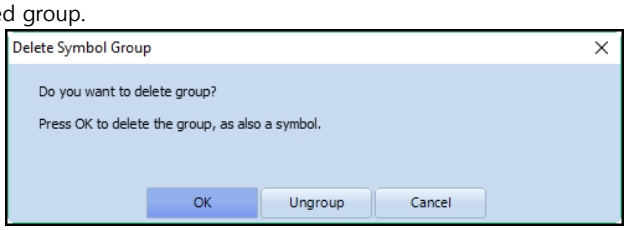


[Pic. Symbol group]

Right-click with the mouse in Group List and the following popup menu will be displayed.

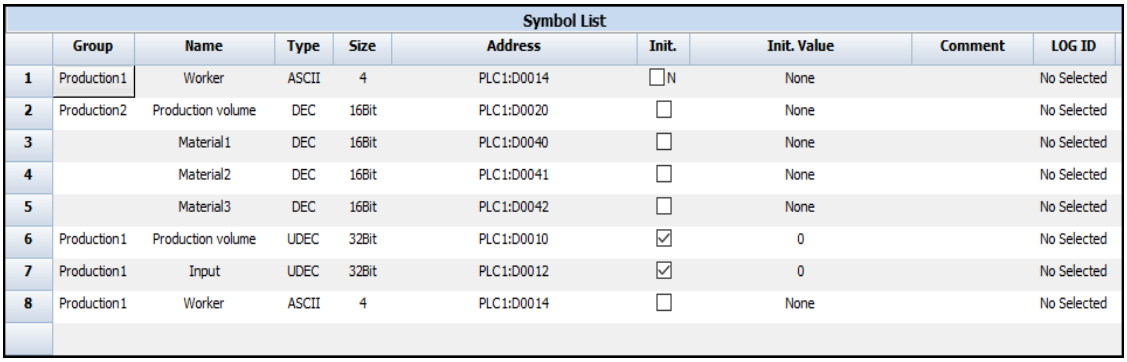


[Pic. Popup menu of symbol group]

No	Group Menu	Description
1	New Group	Add a new group as a subsidiary group of the selected group.
2	Expand	Expand to see the subsidiary lists of the selected list.  Click the rectangular part to [Collapse].
3	Collapse	Collapse to hide the subsidiary lists of the selected list.  Click the rectangular part to [Expand].
4	Delete	Delete the selected group.  Please note that deleting a group will also delete the symbol list that belongs to the group. If you wish to delete a group but keep its symbol list, select [Ungroup]. [Ungroup] will delete the selected group but keep the symbol list in the group in [All].
5	Rename	Change the selected group's name. 

4.1.44 Symbol Address List Column (Details)

Describes the detailed items of the symbol address. Symbol addresses can be modified in each column of the symbol list. Addresses registered to a symbol list is used in many parts of the project. Therefore, you must take caution when modifying it and the modification of symbol list is available only to [Symbol Manager].

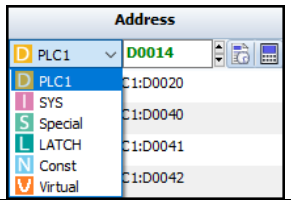
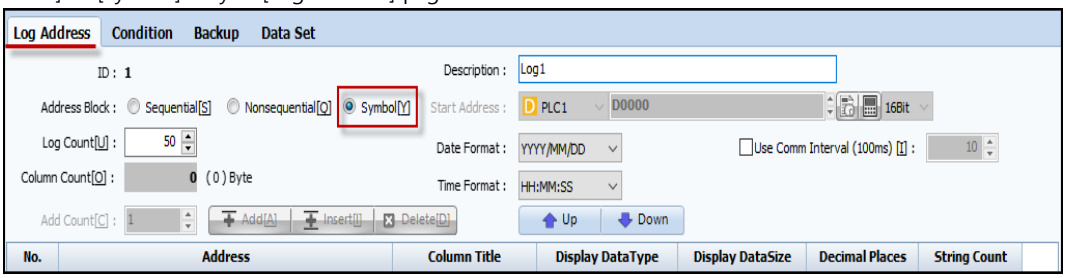
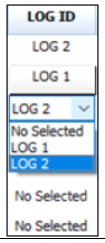


Symbol List

	Group	Name	Type	Size	Address	Init.	Init. Value	Comment	LOG ID
1	Production1	Worker	ASCII	4	PLC1:D0014	☐N	None		No Selected
2	Production2	Production volume	DEC	16Bit	PLC1:D0020	☐	None		No Selected
3		Material1	DEC	16Bit	PLC1:D0040	☐	None		No Selected
4		Material2	DEC	16Bit	PLC1:D0041	☐	None		No Selected
5		Material3	DEC	16Bit	PLC1:D0042	☐	None		No Selected
6	Production1	Production volume	UDEC	32Bit	PLC1:D0010	☑	0		No Selected
7	Production1	Input	UDEC	32Bit	PLC1:D0012	☑	0		No Selected
8	Production1	Worker	ASCII	4	PLC1:D0014	☐	None		No Selected

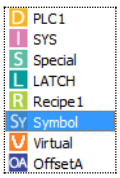
[Pic. Symbol list column]

No	Symbol Column	Description
1	Group	This is the number assigned in sequential order when a symbol list is added.
2	Name	Enter the alias of the address. Use this alias when writing a project instead of an address.
3	Type	Set the address type. Select one from (DEC, UDEC, HEX, BCD, FLOAT, ASCII).
4	Size	Set the address size. If you have chosen one from [DEC, UDEC, HEX, BCD] in Type, choose from (1 Bit, 16

		Bit, and 32 Bit). If you have chosen [FLOAT] in Type, it will be fixed to (32 Bit). If you have chosen [ASCII] in Type, set the number of strings.
5	Address	Set the actual address. 
6	Initialize	Check whether or not to use Initialization. When in use, it will be reset to the initialization value every time project is started.
7	Initialization Value	Set the Initialization Value to use if [Initialization] function is checked.
8	Comment	Describe the symbol address.
9	Log ID	This function uses symbol address as log address. Run [Project]-[Log] and select logs that set [Address Block] as [Symbol] only in [Log Address] page.  If [Address Block] of Log 1 is set as [Symbol], data of the addresses that has [LOG 1] in [Log ID] column of Symbol Manager is recorded when the [Log Condition] of [Log 1] is met. 
10	Use Korean	It can only be configured when the type is set to ASCII. Use this setting to enter Korean or use to save Korean text as screen-displayed address.

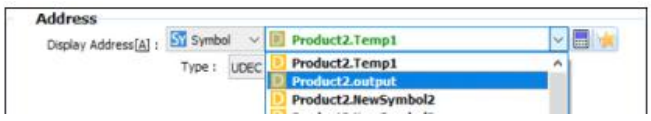
4.1.45 How to Use the Symbol Address

This is how to use the symbol address list registered in [Symbol Manager]. When using symbol address in Insert Address window, select [Symbol] as address type.



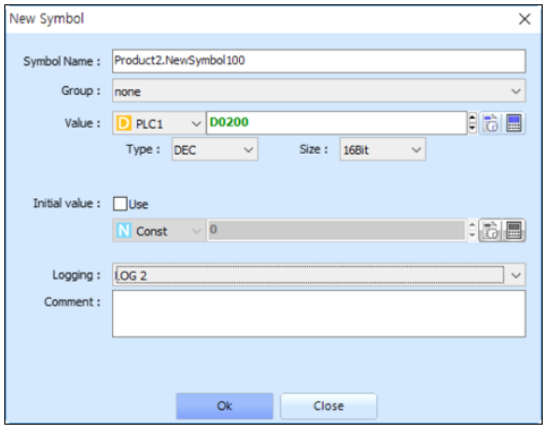
[Pic. Set address type as Symbol]

Selecting address type as Symbol will display the symbol address list in Insert Address section. Choose the symbol address from the symbol address list.



[Pic. Insert symbol address]

Click the yellow star-shaped icon on the right to display [New Symbol] window. You can create a new symbol in this window but cannot modify registered symbol addresses. Modifying symbol addresses can be done in [Symbol Manager] only.

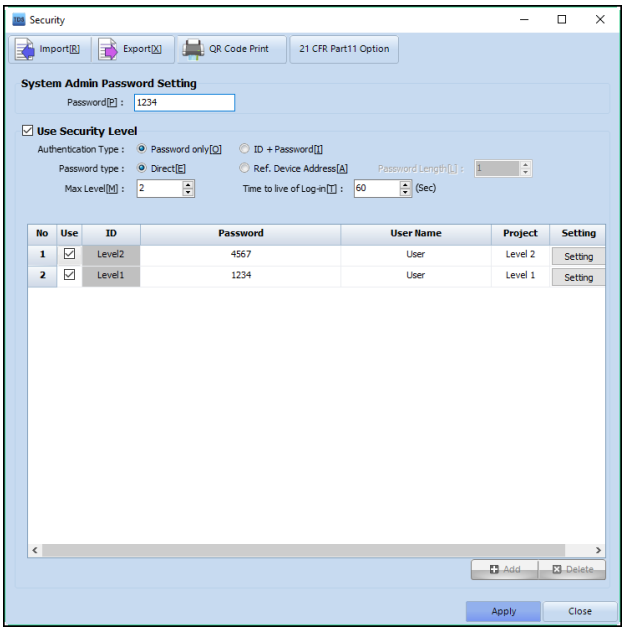


[Pic. View and edit symbol address]

For more detailed information of [New Symbol], please see Chapter 4.6.1–4.6.3.

Security

For Security, there are [System Admin Password Setting] and [Security Level Setting].



[Pic. Security]

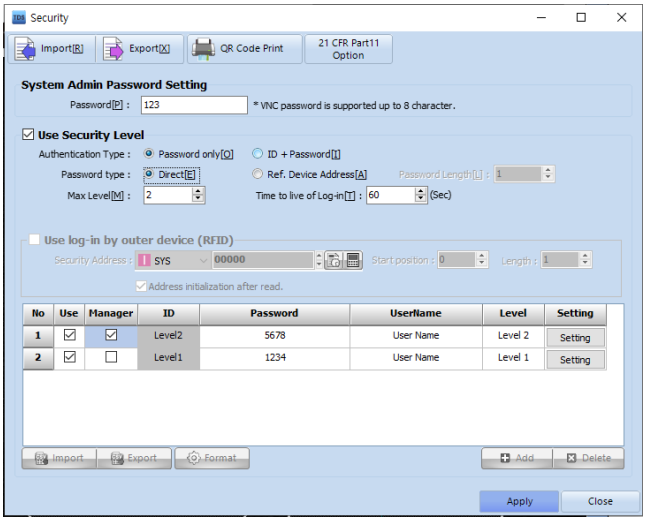
4.1.46 System Admin Password Setting

System Admin Password is the password that manages TOP. It restricts [Project Transmission/Upload Data] functions to protect data. It restricts access to [Menu Screen] to protect TOP settings.



[Pic. System Admin Password Setting]

System Admin Password can have up to 16 characters in a combination of [Number/Upper&Lower Case Alphabets/Special Characters]. For VNC password, it may have up to 8 characters.
Send a project set with System Admin Password to set TOP with a System Admin Password.
This password can be edited/removed from [Control Panel]-[System]-[Security] in TOP menu screen.
On contrary, if a project has been sent without a set System Admin Password, user may set it on TOP menu screen.



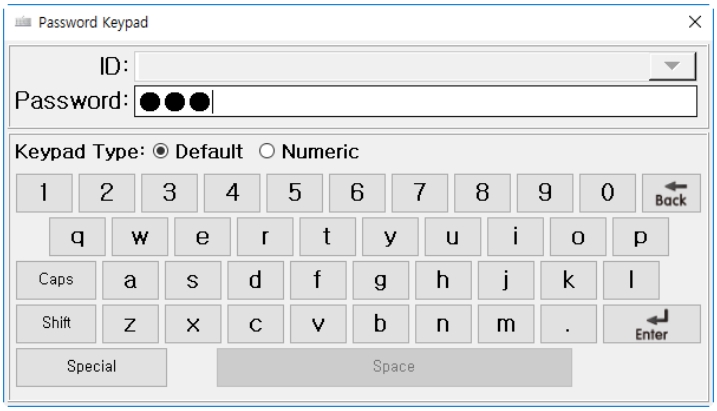
[Pic. Security on TOP menu screen]

▶ Sending a project or uploading data from TDS to TOP with a set System Admin Password will display an Input Password window as below. Enter the correct System Admin Password and click [OK] to proceed to [Send/Upload].



[Pic. Input Password window (PC)]

▶ Below Input Password window will be displayed when user enters TOP menu screen.
Type in the password and press [Enter] to open the menu screen.



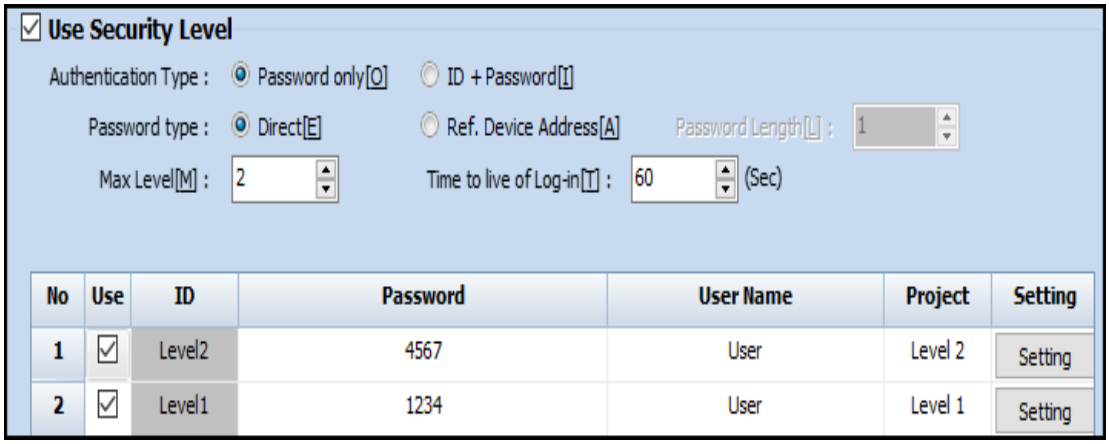
[Pic. Input Password window (TOP)]

▶ If you forget the password, you may not be able to access the menu screen or send/upload projects. The only way to remedy this is to Recover TOP. Recovering TOP will delete all data including projects in the TOP.

(Please see Chapter 23.10 [Create Recover Disk] to learn how to recover TOP.)

4.1.47 Use Security Level

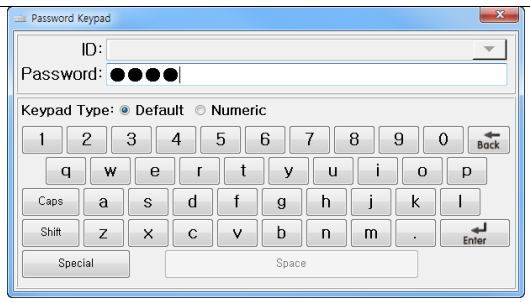
With Security Level, you may set up to 16 passwords for each security level from [1-16]. Set this level to [Base Screen/Object] to restrict access with a password that corresponds to the level when accessing Base Screen or Object.

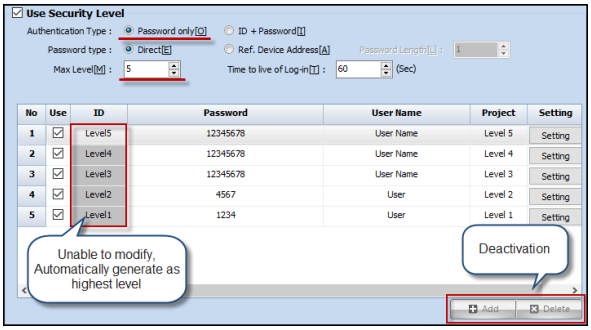


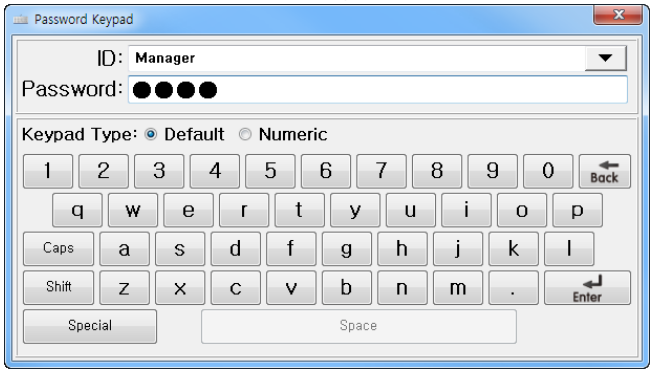
[Pic. Use Security Level]

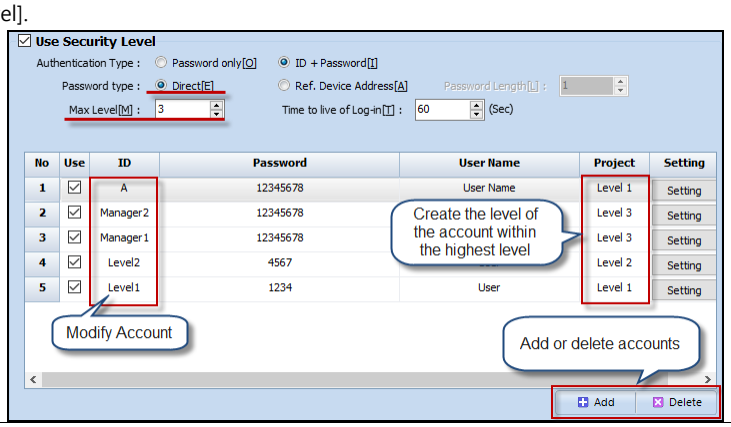
To use a security function that requires a user to enter a password when switching to a certain screen in a project or to activate an object after entering a password, check [Use Security Level] and create a password.

No	Security Level	Description
1	Authentication Type	Select from [Password/Account+Password]. For [Password], you may enter password only when logging in.

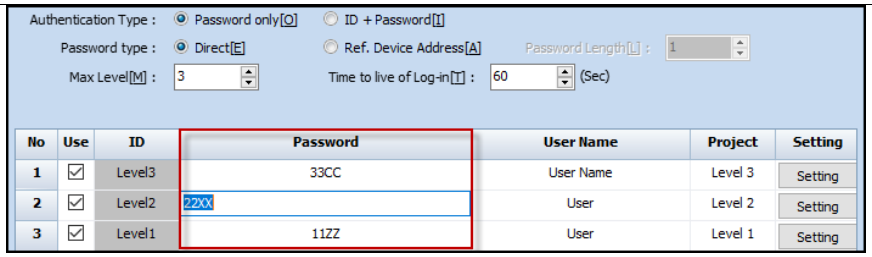
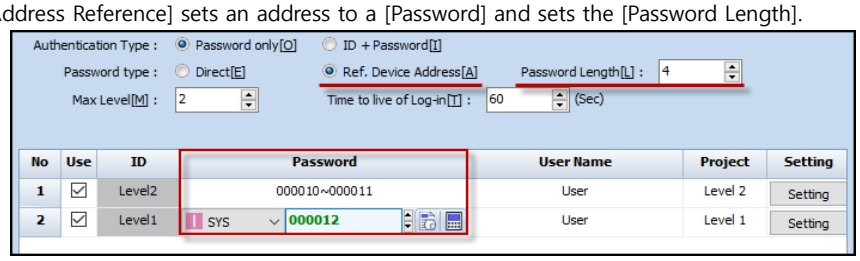
<table>
<tr>
<td></td>
<td></td>
<td>


[ID/Project] column cannot be modified and it will be automatically created by the number of [Max Level].
[Add/Delete] buttons at the bottom for adding/deleting account are deactivated as account is not used.


For [Account + Password], select [ID] and enter password.


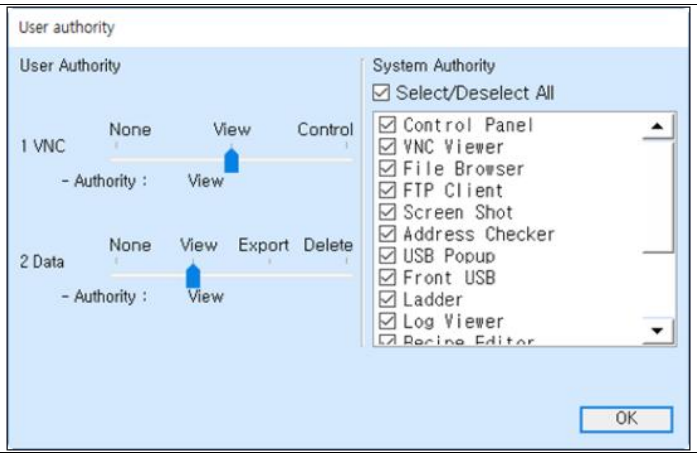
If [Account+Password] is chosen, you may add/delete account with the [Add/Delete] button at the bottom and you may add up to 65535 accounts. Each account's [ID (Account)/Project (Security Level)] columns can be modified. [Project] set the level of the account within the [Max Level].


</td>
</tr>
<tr>
<td>2</td>
<td>Password Type</td>
<td>Choose from [Normal/Address Reference]. With [Normal], the user must enter password in [Password] manually.</td>
</tr>
</table>

		 [Address Reference] sets an address to a [Password] and sets the [Password Length].  [Password Length] refers to the number of characters included in a password. If it is [4] as shown above, it means that the password has 4 characters in it. [D0010] which is a 16 Bit word address stores 2 characters and therefore, it is automatically assigned to [D0010-D0011] to load 4 characters. Login is successful when the string in the address matches the entered string. With this function, login is available when a password is recorded in the set address area. You can Enter/Modify data in the address area in PLC or TOP program while the TOP is in operation to enter, modify or reset the password.
3	Max Level	Set the max level from [1-16]. Level 2 is higher than level 1.
4	Time to live of Log-in (Sec)	The login status will be maintained from the moment when TOP touch input is not recognized to the set time after the initial login and then automatically logged out. When set to [0], this deactivates Login Pulse Time and will not automatically log out the user.
5	User Information	Check [Use] to display a section where you can enter user information at the bottom. You can enter user information by Security Level/Account. In the item, [Phone Number/Email] are fixed and cannot be modified, but [User Define] can be modified. You may enter User Information in the content.

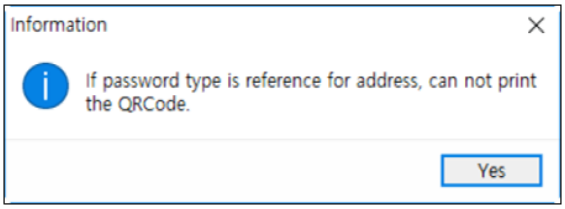
Columns (detailed items) of Security Level is as follows.

No	Security Level	Description
1	Use	Check to use this function.
2	ID	The account.
3	Password	The password.
4	UserName	The user name.
5	Level	Set the account (ID) level.
6	Setting	Set the user permission of each account. It can be set if [User Management and Authorization] on the [FDA 21 CRF Part 11 (Security) Option] screen that is displayed when [21 CFR Part 11 Option] menu is checked. Set user permission by Security Level/Account. (For more detailed information of [21 CRF Part11 Option], please see Chapter 4.7.4 21 CFR Part11 Option.)



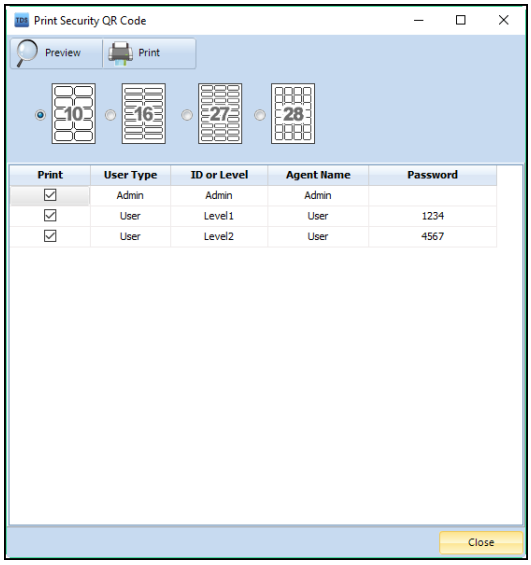
4.1.48 **QR Code Print**

You may create and print the set password as a QR code in [Use Security Level] or recognize the QR code with TOP camera to log in. This function is supported when the password type is set as [User Input]. This function can be activated by using the front camera if you are using TOPR premium model, or a 2D barcode scanner that can recognize QR codes if you are using other models.



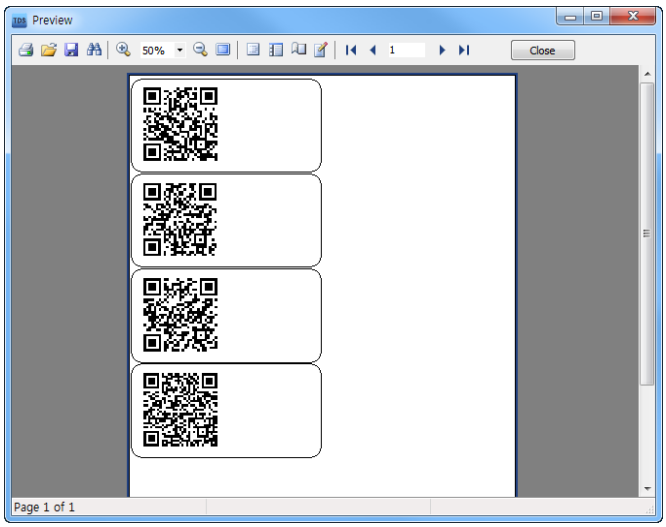
[Pic. Error message when password type is [Address Reference]

Run [QR Code Print] menu at the top and [Print Security QR Code] screen will be displayed as below.



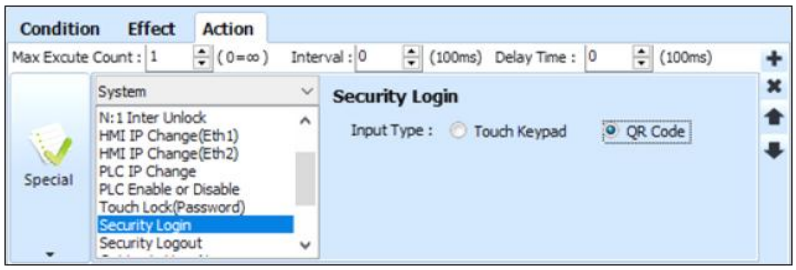
[Pic. QR Code Print]

Select the QR code print size at the top and check the Level/Password that you wish to print from Security Level List. Run [Preview] menu to display the following print preview screen. Run [Print] menu to print the code from the printer connected to PC.

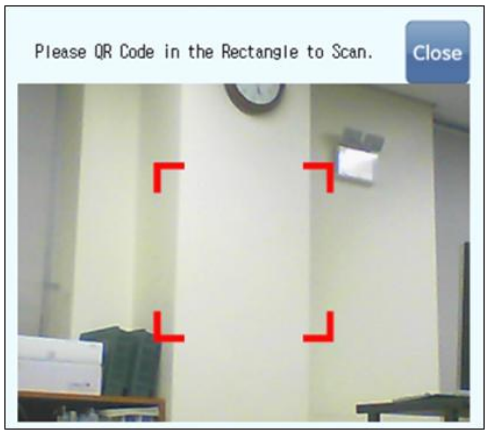


[Pic. QR Code Print Preview]

Below action is required when logging in with a QR code. Run [Special]-[System]-[Security Login]-[QR Code] action in object [Effect & Action] page to activate camera and recognize the QR code.



[Pic. QR Code Login]

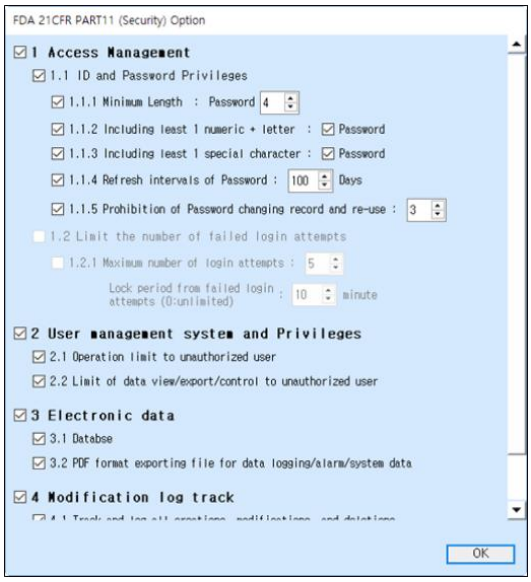


[Pic. Activate camera to recognize QR code]

Fit the QR code in the box. When the code is recognized, you will be logged in at the corresponding level.

4.1.49 **21CFR Part11 Option**

21 CFR Part 11 is an FDA legislation that states specific topics of electronic history and signature and has a wide scope of influence across many areas. Check the items to apply.



[Pic. 21 CRF Part11 option]

(1) Access Management

1.1 ID and password policy

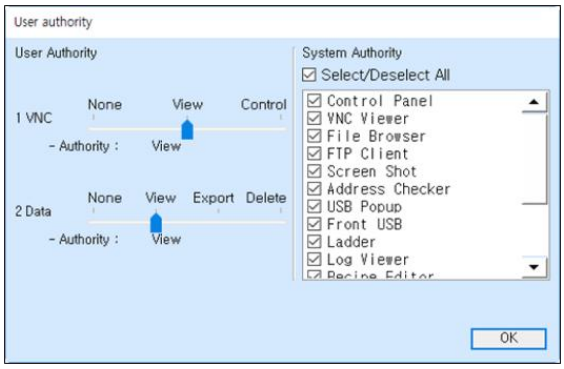
No	ID and Password Policy	Description
1	Min Length	Set the minimum length of strings used for password.
2	Min 1 number + character	Strings used for a password must include at least 1 number and 1 character.
3	Min 1 special character	Strings used for a password must include at least 1 special character.
4	Password Update Period	User must modify the password after a set date.
5	Record password change history and ban password reuse	Keep a record of password changes and ban from using previously used passwords.
6	Ban on consecutive duplicate characters	Consecutive duplicate characters cannot be used in passwords.
7	Request update of password at initial login	Request to update password at the initial login.

1.2 Incorrect login attempts limit

If incorrect login attempts exceed the [Incorrect Login Attempts Limit], it will be locked for [Login Fail Lock Time (0: unlimited)]. User may not log in while it is locked.

(2) User Management and Permission

Click [Setting] in [Setting] column at [Project]-[Security]-[Use Security Level] to display [User Authorization] screen where you can set [Authorization] for each level.



[Pic. User authorization]

2.1 Restrict app execution by unauthorized user

Select/Disengage app of [System Authorization] according to the level to set the permission to run the app.

Only the checked apps can be run on the level.

2.2 Restrict View Data/Export/Delete by unauthorized user

Set the [data] authorization by level.

(3) Electric data

3.1 Database

Record in file (Security_YYYYMMDD.log) or database (Security) (available only in TOPView (SCADA)).

3.2 Convert to PDF when Log/Alarm/System Log are exported and copied

When alarm data is exported/copied, it will be automatically converted to PDF file.

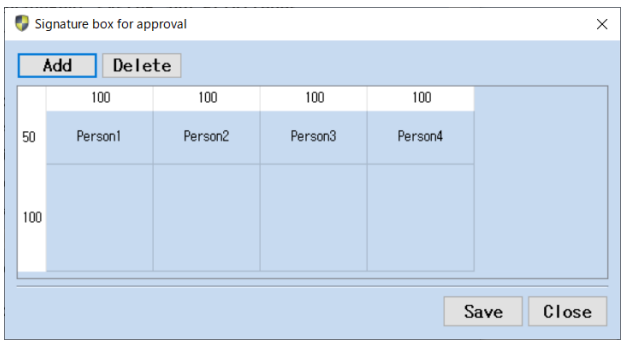
When log data of Security and Audit Trail, etc. is exported/copied, it will be automatically converted to PDF file.

3.3 Database Redundancy

Make the database added in the path other than the existing database redundant to use.

3.4 Add signature box when converting to PDF file

Add a signature box as shown in the below picture when converting the file to PDF.



[Pic. Signature box]

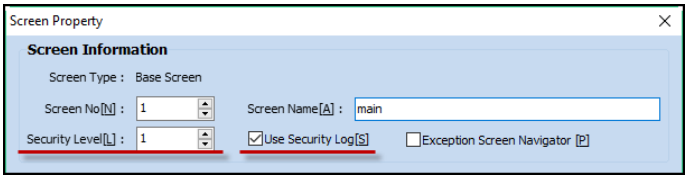
(4) Modification history and tracking

4.1 Log history and tracking for all New/Modification/Delete (SecurityLog folder)
Records critical hardware errors and alarms (e.g., insufficient disk capacity, communication failure, blackout, etc.)
Records the previous and new value of the changed parameter.

4.2 Keep modification history and tracking records for 1 year (No modification or deletion)
History of Audit Trail shall not be deleted or modified for 1 year.

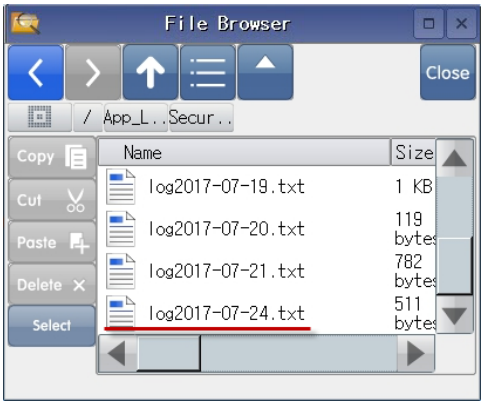
4.1.50 Apply Security Level

(1) Set security level to base screen
There is a section that applies [Security Level] in Property, Base Screen.

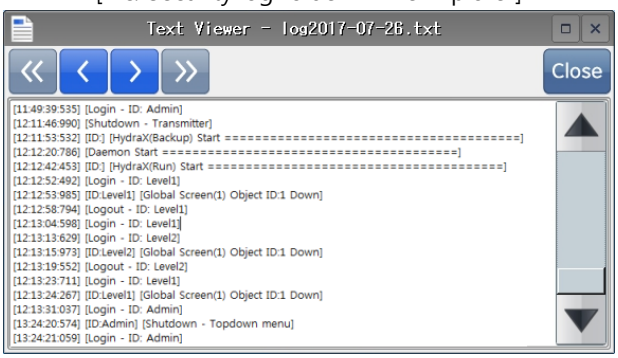


[Pic. Base Screen - Property]

Level [0] means no security level applied. When you set the level higher than level [1], you need to login with the set level when switching screens. Check [Use Security Log] to record security log in TOP memory. When viewed by File Explorer in Menu Screen, login/logout records are saved as text file by date in [App_Log]-[SecurityLog] folder of TOP memory.



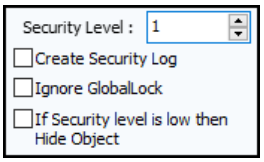
[Pic. SecurityLog folder in File Explorer]



[Pic. Security log file]

(2) Set security level to object

At the bottom left corner of all objects, the security level setting section can be found as below.

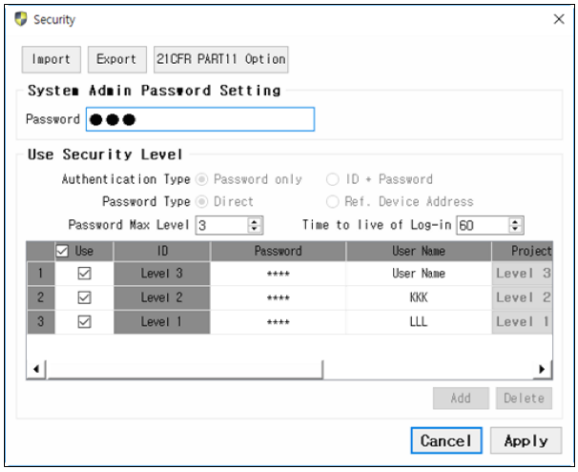


[Pic. Apply security level of object]

No	Object Security Level	Description
1	Security Level	Set the security level. Log in with the corresponding level to activate object.
2	Create Security Log	Record security log in text files by date in [App_Log]-[SecurityLog] folder in TOP memory.
3	Hide if Security Level is Insufficient	If the user is logged in with a lower level than the set security level, hide the object from the screen. Log in with the set security level to see the object.

4.1.51 Modify Settings at TOP [Menu Screen]-[Security]

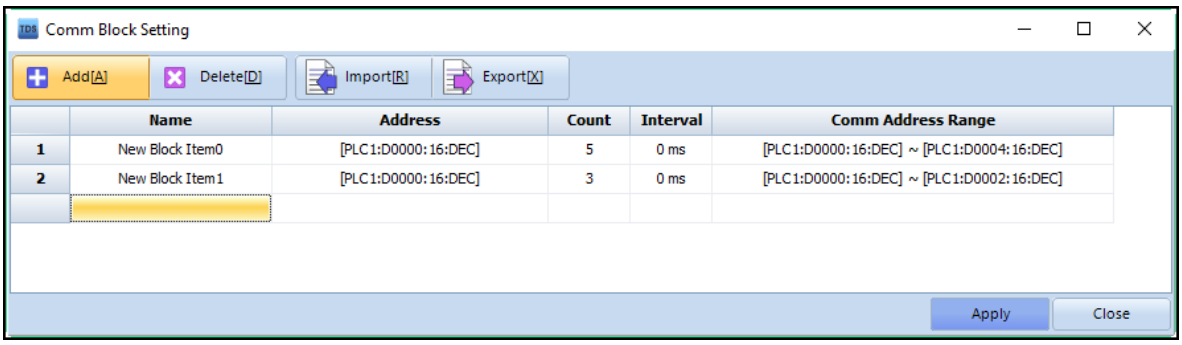
[Project]-[Security] setting can be done in TOP menu screen's [Control Panel]-[Security]. You can remove, set, or modify the password at Admin Password. Security Level can be modified on TOP menu screen if it is set in [Project]-[Security]. [Authentication Type/Password Type] cannot be modified and [Max Password Level/Login Pulse Time] can be modified. If Authentication Type is set to [Password], you may modify [Password/User Name/Authorization] columns. If Authentication Type is set to [Account+Password], you may modify [Account/Password/User Name/Level/Authorization].
(For [Control Panel]-[Security] setting in the menu screen, please see Chapter 1.2.7 [Control Panel Icon – System]-[(2) Security].



[Pic. Control Panel-Security setting in menu screen]

Comm Block

Comm Block is a part of table for communicating with controller by project. TOP creates a separate CommTable with the object's address registered to the operating screen to communicate with the controller.
Comm Block is a separate communication to CommTable and communicates with the controller by [Interval] regardless of the screen in operation.



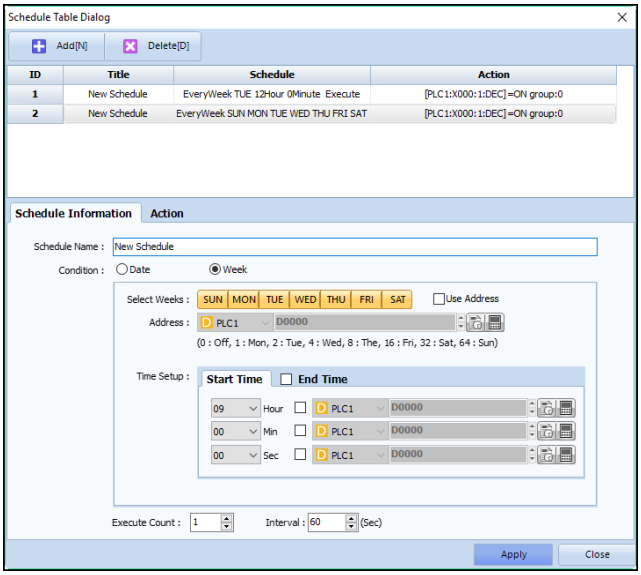
[Pic. Comm Block]

No	Comm Block	Description
1	Add [A]	Add a Comm Block.
2	Delete [D]	Delete the selected Comm Block.
3	Import [R]	Import a saved Comm Block file (*.hcmb) to the current project.
4	Export [X]	Export the Comm Block set in the current file as a (*.hcmb) file.

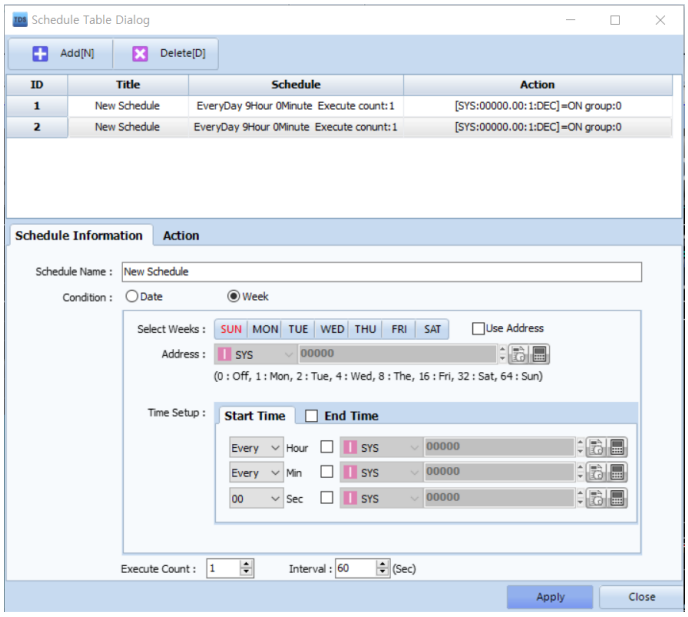
Register devices that can have slower communication than comm scan interval to Comm Block make symbols with address registered to Comm Block in Symbol Manager. Use address as symbol in the object to communicate slower than comm scan interval. For other device addresses, it will make the comm scan interval faster.

Schedule

This function executes actions set on a specific time or at a regular interval.



[Pic. Schedule]



[Pic. Schedule setting]

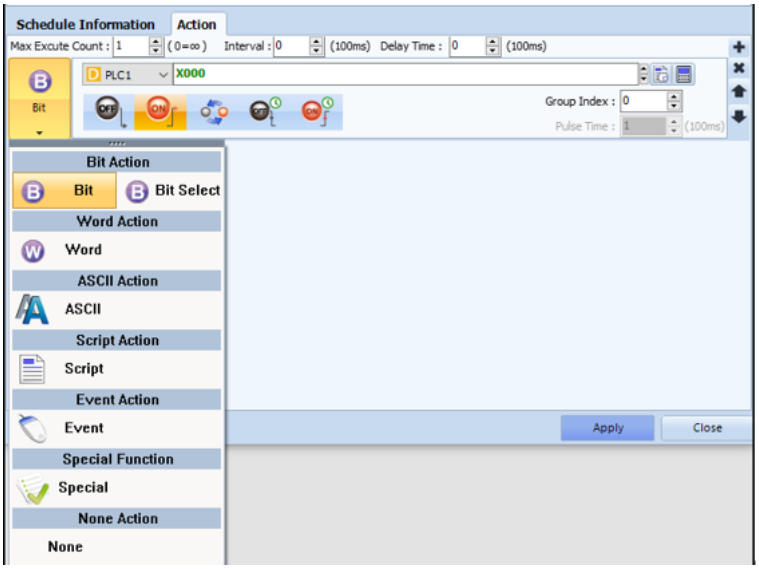
4.1.52 **Schedule Information Page**

Set the schedule to run [Action].

No	Schedule Information	Description
1	Schedule Name	Enter the schedule name.
2	Condition	Set a schedule. Schedule can be selected from [Date] or [Day]. For [Date], you get to set [Year/Month/Date/Hour/Minute/Second] of the date and assign the [Start Day] and [End Day]. Set the schedule from PLC address. Select a [Day] from [SUN/MON/TUE/WED/THU/FRI/SAT] or assign a day from PLC address with [Use Address]. [Start Time] and [End Time] can be set. Time can be set from PLC address. [Execute Count] can be set between [1-99]. If set to [1], it will run 1 action at every set time. If the figure is [2] or higher, it is run when it is the time and executes the action by Execute Count at every [Interval (Second)]. [Interval] is set to [Second] unit if Execute Count is more than [2].

4.1.53 **Action Page**

When it is the schedule set on the [Schedule Information] page, [Action] page sets the [Action] to be executed.



[Pic. Action page]

Send Message

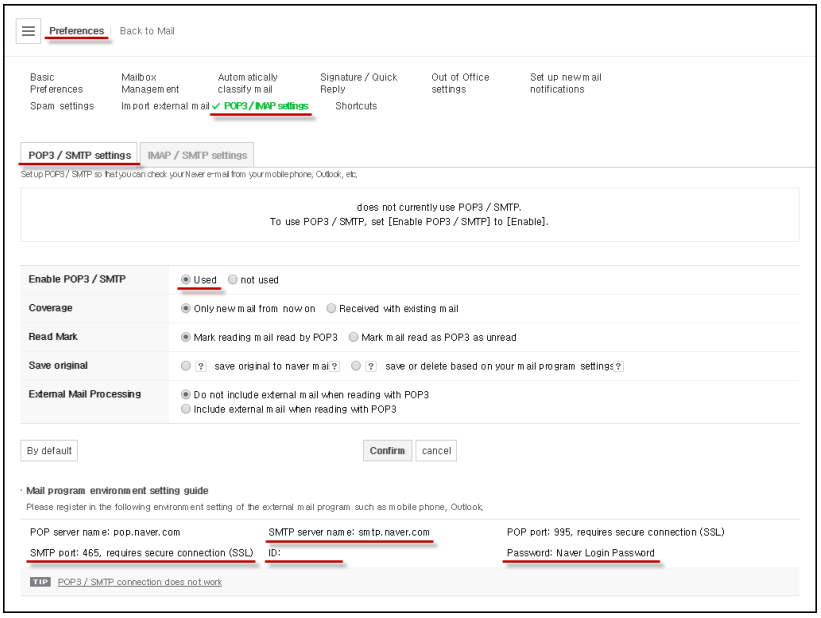
Run Send Message menu to display [Message Manager] screen. In this screen, users can write [Email/SMS] and save them. Written [Email/MSM] can be sent by running [Send Message] action.

4.1.54 Email

Email function sends emails saved in [Project]-[Send Message] with the [Send Message] action from TOP.

▶ NAVER email settings

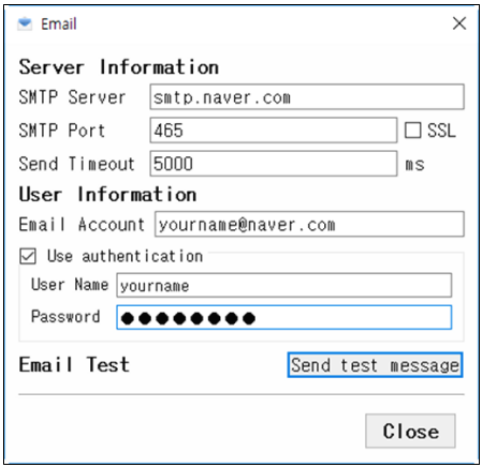
Let me explain further with the example of Naver email. To use Naver email, access Naver email as shown below and configure settings at [Settings]-[POP3/IMAP Setting].



[Pic. Naver SMTP setting]

Set as above picture and check SMPT Server Name/SMPT Port/User Name (ID)/Password (Naver login password) at the bottom and enter them in [Control Panel]-[Email] in TOP menu screen.

▶ Menu screen [Control Panel]-[Email] setting

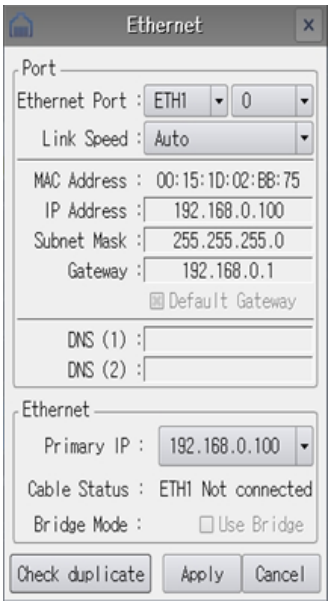


[Pic. [Menu Screen]-[Email] setting]

Click [Send a test email] button to send the email and a [Successfully Sent/Failed to Connect] message will be displayed.

▶ Menu screen [Control Panel]-[Ethernet] setting

Connect TOP and PC with an Ethernet cable and set [IP/Subnet mask/ Gateway/DNS server] in TOP.

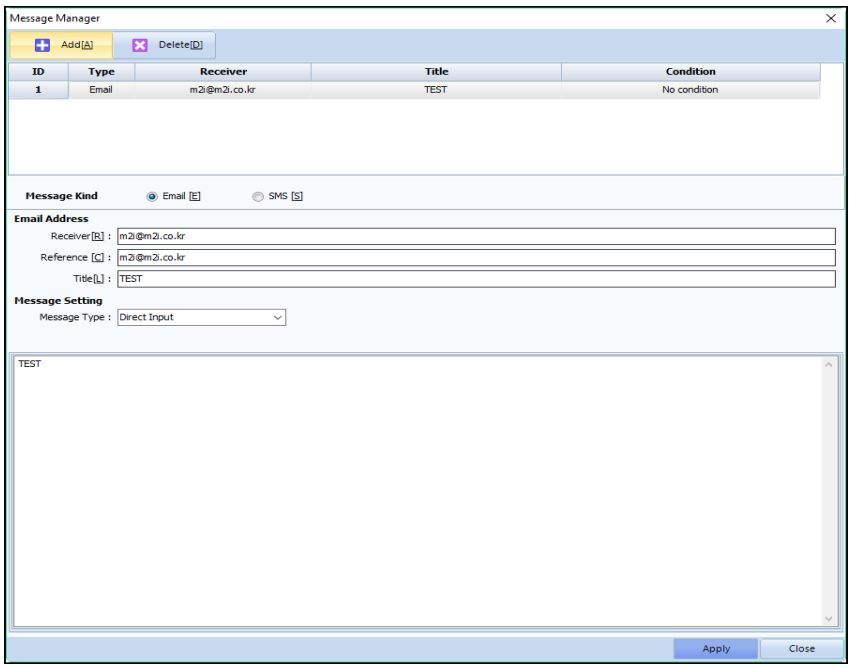


[Pic. [Menu Screens]-[Ethernet] setting]

With a different [Gateway], you cannot go to external network. Without [DNS] address, the actual IP address of Naver email cannot be found.

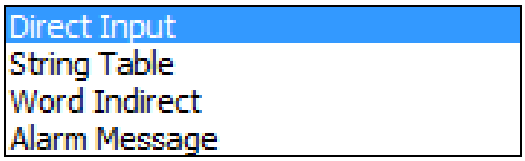
▶ Write email at [Project]-[Send Message]

Run [Project]-[Send Message] in TDS and write an email in [Message Manager].



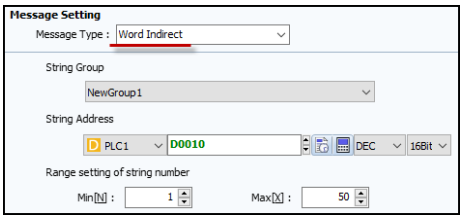
[Pic. Message Manager_Email]

Select [Email] as [Message Type] and click [Add] menu on the top to register an email with ID of [1].
Enter [Recipient Email Address/Title] in [Email Address].
First, select [Message Type] in [Message Setting] and enter texts.



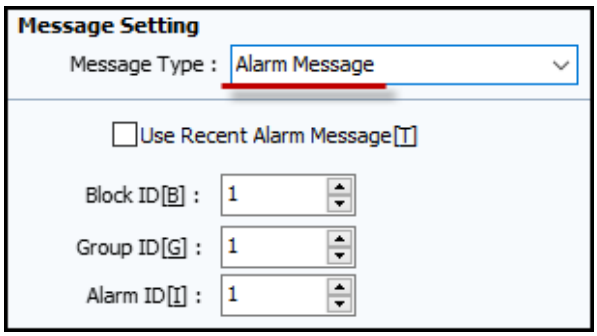
[Message Type]

Enter message yourself with [Normal]. Load contents from [Project]-[String] with [String Table]. Select a string group and select a string to register as content from the list.
[Indirect Word] loads the string address data that sets the string registered in [Project]-[String]. The string of ID that corresponds to the set address data is used as the content.



[Pic. Email Contents_Indirect Word]

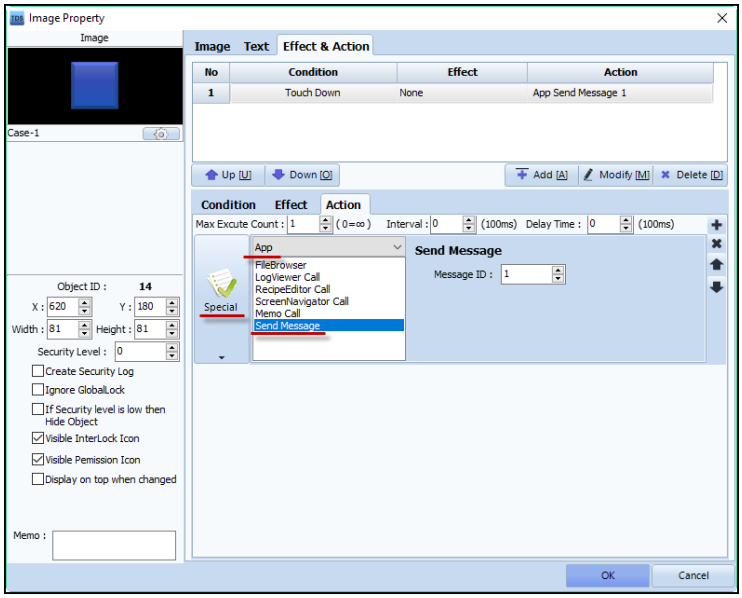
[Alarm Message] loads [Alarm Contents] from [Project]-[Alarm].
[Alarm Contents] that corresponds to [Block ID/Group ID/Alarm ID] is used as the email's content.



[Pic. Email Contents_Alarm Message]

▶ Send Email

Emails written in [Message Manager] are sent by below action. Go to [Action] page and select [Special]-[App]-[Send Message] and enter the message ID.



[Pic. Send message button]

Email is sent when above action is taken.

4.1.55 SMS

For SMS function, please use TOP Design Studio V1.4.11.xx (version with additional function)

To use SMS function, link to an SMS provider. 'Coolsms' must be used to use Send SMS function and the length of each SMS is limited to 90 Byte (Excluding spaces and special characters. 90 characters for English and 45 characters for Korean). Sender information cannot be modified. Request the service provider for registration. Also, you must request the provider to unlock the limit to send SMS from the web of each network service provider.

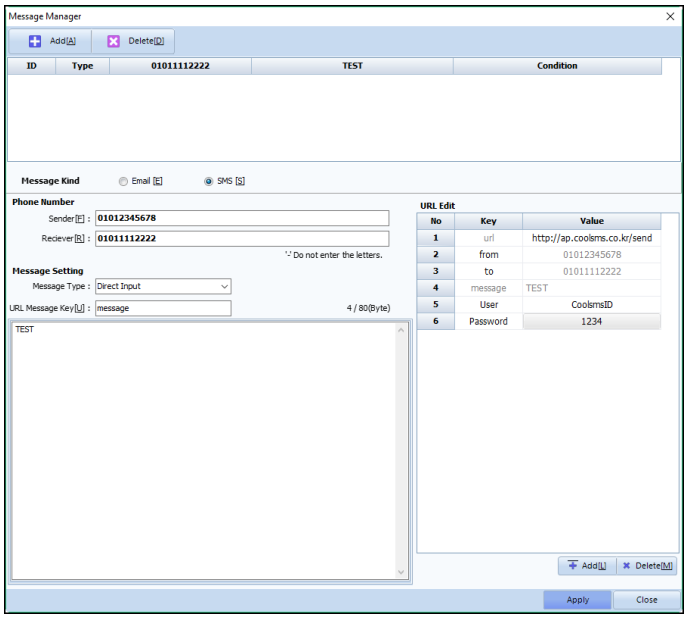
▶ The 'Coolsms' website address is: http://www.coolsms.co.kr/

Update [Account Name] and register ID to use this function in 'Coolsms'.



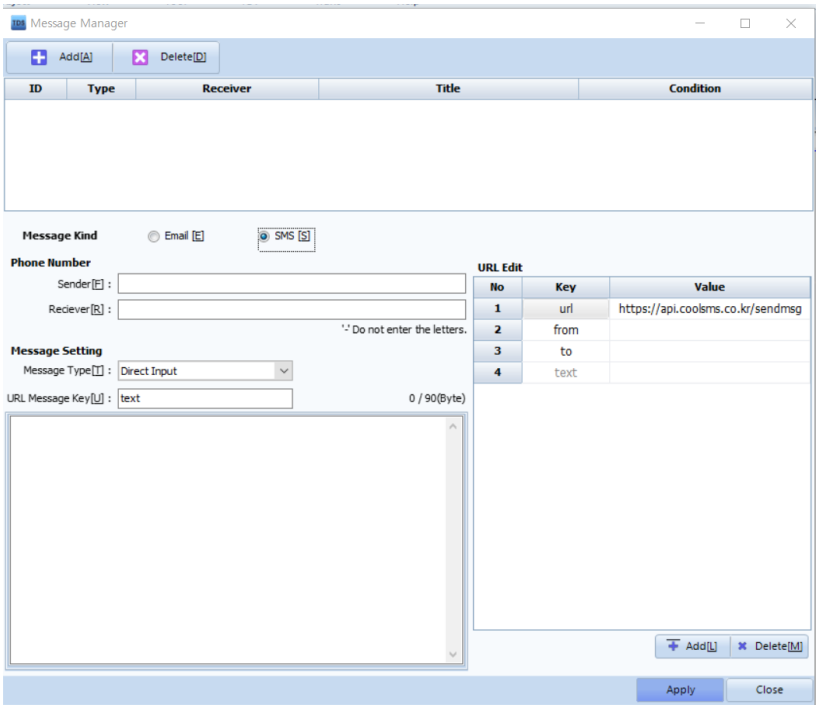
4.1.56 **Send Message**

Set options for sending SMS in [Project]-[Send Message] section that can be found on top of the TOP Design Studio.



[Pic. Message Manager_Default Setting]

No	SMS	Description
1	Sender	Register the sender number that is registered in Coolsms.
2	Receiver	Register the receiver number to receive SMS.
3	Message Type	Select the message content type from Normal, String Table, Indirect Word, and Alarm Message.
4	URL Message Key	Set the text when using 'Coolsms'.

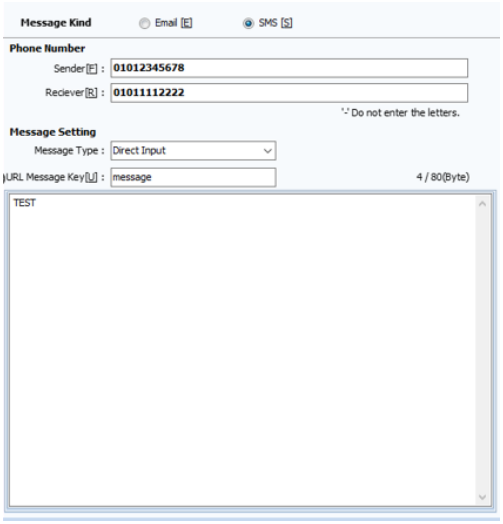


[Pic. Message Manager_Edit URL]

No	Edit URL	Value
1	url	When using 'Coolsms,' enter https://api.coolsms.co.kr/sendmsg.
2	from	Enter the left Sender to automatically register it.
3	to	Enter the left Receiver to automatically register it.
4	text (URL Message Key)	Automatically register by entering the left URL message key. Enter text if using 'Coolsms.'
5	user	Enter the 'Coolsms' ID. You must add it yourself by using the Add button at the bottom of Edit URL.
6	password	Enter the 'Coolsms' password. You must add it yourself by using the Add button at the bottom of Edit URL.

4.1.57 **Message Type – Normal**

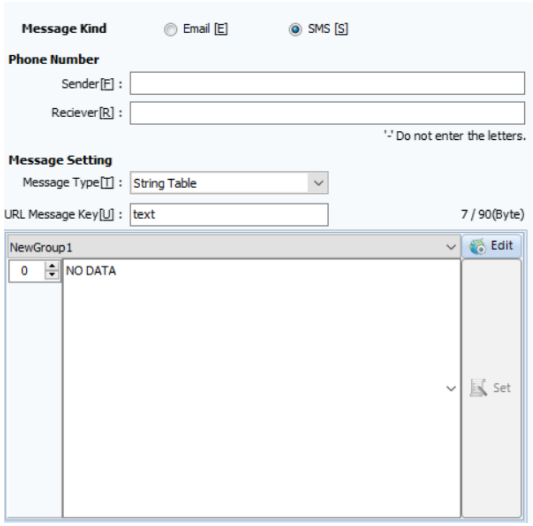
Enter contents of SMS in advance and send it when SMS message sending condition is met.



[Pic. Message Type_Normal]

4.1.58 Message Type – String Table

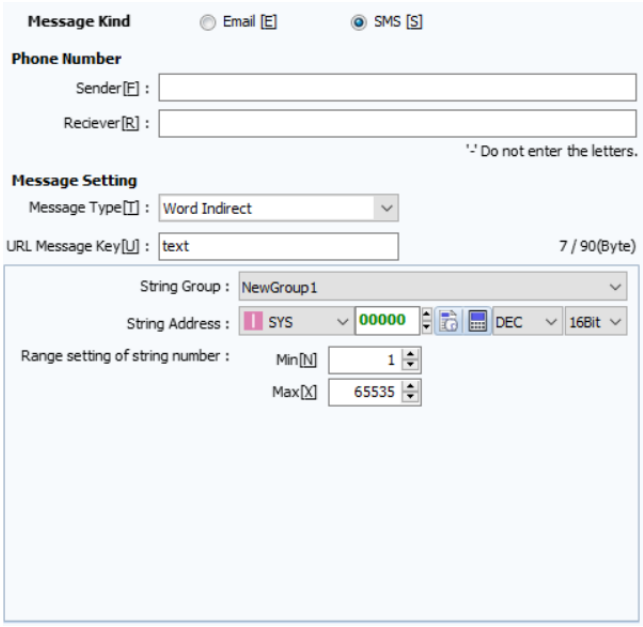
Use a selected String (Multi Language) Table to send content that you wish to send out in SMS.
Select 1 string that is set to String (Multi Language) Table and use it as SMS message content.
(For String (Multi Language), please see Chapter 4.4 [String].)



[Pic. Message Type_String Table]

4.1.59 Message Type – Indirect Word

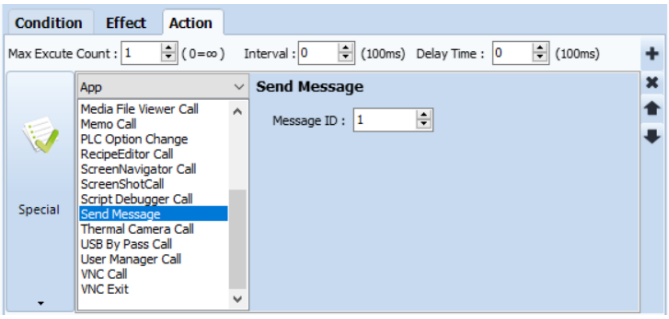
Send the string table content registered to the string group set according to the address value set in String Address. For example, if the string address value is 5, the content no. 5 in the string group will be sent out in SMS message.
(For String (Multi Language), please see Chapter 4.4 [String].)



[Pic. Message Type_Indiret Word]

4.1.60 Send SMS (1)

Set actions to send SMS messages written in [Message Manager].
Select [Special]-[App]-[Send Message] in [Action] page and set the ID number of the message to be sent.



[Pic. Send message]

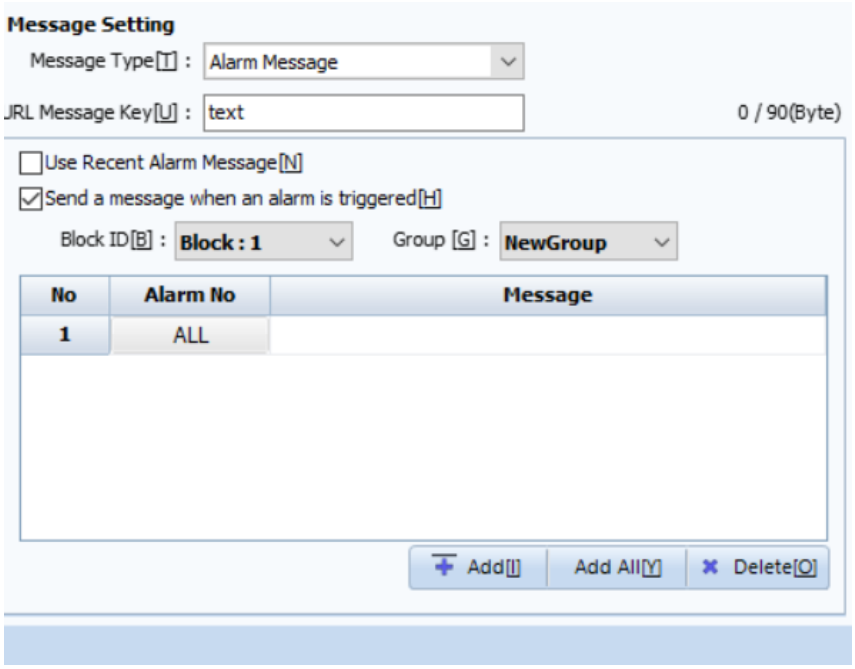
The SMS message is sent when above action is taken.

No need to register if "Send message when alarm is issued" item is set in Message Type-Alarm Message.

4.1.61 Message Type – Alarm Message

Send the alarm content set in [Project]-[Alarm] in SMS message.

(Please see Chapter 4.1 [Alarm] for more detailed description of alarms.)



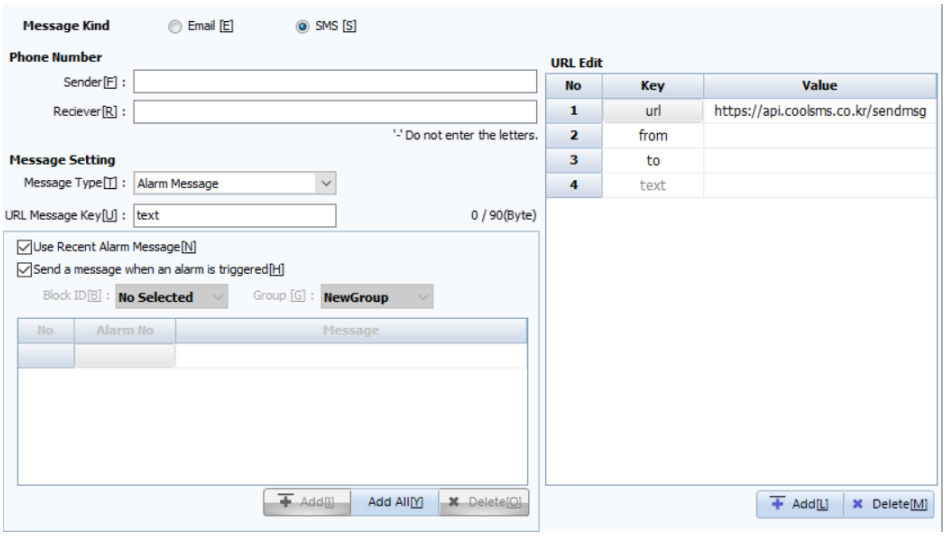
[Pic. Message Type_String Table]

No	Name	Description
1	Use Recent Alarm Message	When sending SMS messages, send out the alarm content that has occurred last from the alarms set at [Project]-[Alarm].
2	Send a message when an alarm is triggered	Send the content of a set alarm when it is on in SMS message.
3	Block ID	Use when "Use Recent Alarm Message" is unchecked. Select which alarm block will be sent in SMS message from the alarm block set in [Project]-[Alarm].
4	Group	Use when "Use Recent Alarm Message" is unchecked. Select which alarm group in the set alarm block will be sent in SMS message.
5	Alarm No	Select the alarm content to be sent out in SMS message. When ALL, all alarms in the selected block and group will be sent out in SMS

		message.
6	Message	Display content registered in the alarm.

4.1.62 Send SMS (2)

When "Send Message when Alarm is Issued" item is set in Message Type-Alarm Message, a SMS message will be sent out when an alarm is issued.



[Pic. Send message when alarm is issued]

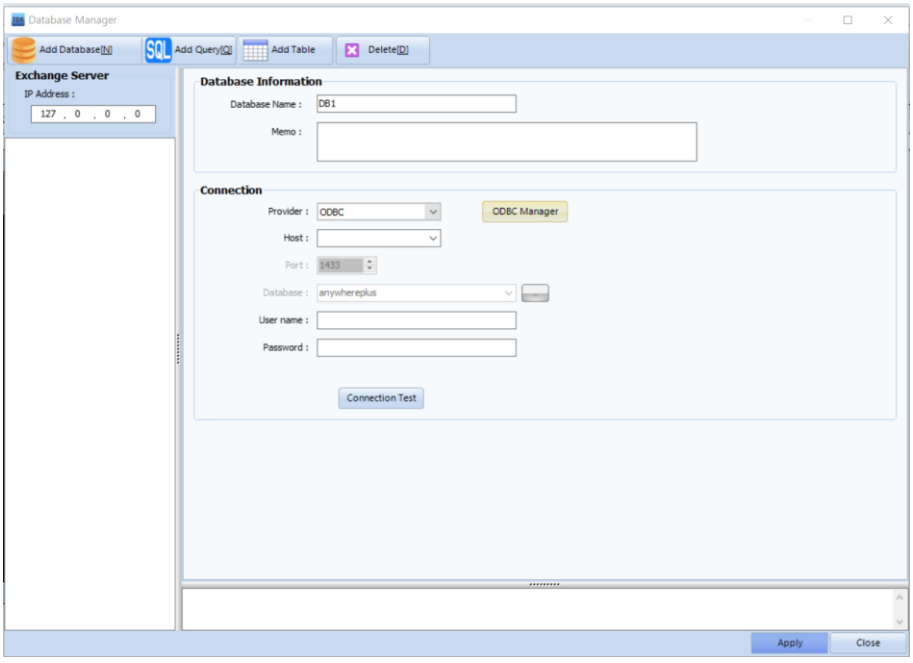
Database

Use [Database Manager] to connect with database and set DB Server that is connected to TOPView on the network.

(For more detailed settings, please see Chapter 28 [Database].)

4.1.63 Database Manager Page

Click [Database] button to display Database Manager screen as below.



[Pic. Database Manager]

No	Button	Description
1	Add Database	Create a database.
2	Add Query	Add a query to the selected database.
3	Add Table	Add a table of the selected database.
4	Delete	Delete the selected item.
5	IP Address	Enter the IP of the server (TOPVIEW) where the database is operating.
6	Database Name	Set the database name.
7	Memo	Memo the database information.
8	Provider	Select the database type. Select a database e.g., ODBC, Oracle, MySQL, SQLLite, Internal SQLLiteDB to connect.
9	Host	Enter the IP of the DB server where the database is installed/operating.
10	Port	Set the database port.
11	Database	Enter the database service name. Multiple database services can be operated on one host, so DB service name must be assigned to differentiate these databases.
12	User name	Enter the database login ID.
13	Password	Enter the database login password.
14	Connection Test	Run a connection test to verify if database connection is available.

Roll Printer

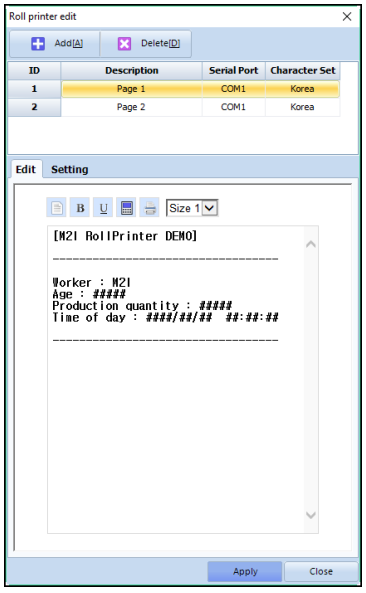
Roll Printer is a mini printer that prints on the roll paper. Connect a Roll Printer to TOP's Serial Port and print using RS-232C communication.

4.1.64 Roll Printer Specifications

Available for all roll printer products with built-in Epson protocol.

4.1.65 Roll Printer Format

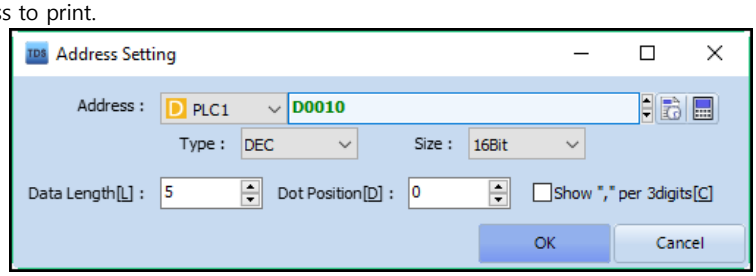
Edit the print format in [Project]-[Roll Printer] as follows.



[Pic. Fill out roll printer format]

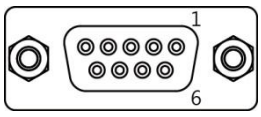
Create [Page 1] with [Add] button. You can add up to 1000 pages.

Write text in the below [Edit] page and use  to edit.

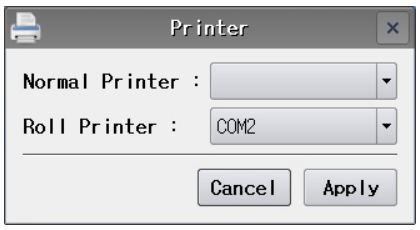
No	Button	Description
1	Source	Switch to View Source. Click it again to switch to Edit Mode.
2	Bold	Bold the selected text.
3	Underline	Underline the selected text.
4	Address	Add an address to print.  Set [Address/Type/Size/Data Length (total no. of digits)/Dot Position]. Check [Fill Empty Cell with '0'] to display places other than the address value in the set data length as 0. E.g.) If address value: 10, data value: 5, it will be displayed as 00010. [Check "," every 3 digits] to display [Currency]. Click [OK] and ##### will be displayed on the Edit Screen. Click ##### on the screen and [Enter Address && Format] screen will appear to edit the address.
5	Print	Run a test print.
6	Size 1	Edit the text size in the selected area. You may set the size from 1 to 7. Size 1 is the smallest. Size 2 is double, Size 3 is triple, ... Size 7 is seven times Size 1, etc.

4.1.66 Communication Setting between TOP and Roll Printer

COM1/COM2 ports of TOP are as follows:

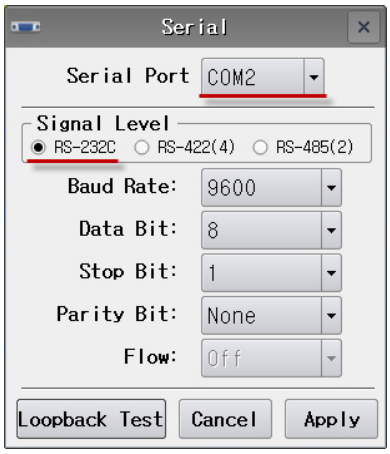
Type	Pin number	Signal name	Direction	Contents
9Pin Female 	1	RDA(RD+)	Input	RS-422/485 Data Reception (+)
	2	RD(RxD)	Input	RS-232C Data Reception (+)
	3	SD(TxD)	Output	RS-232C Data Transmission
	4	RDB(RD-)	Input	RS-422/485 Data Reception (-)
	5	SG		Signal Ground
	6	SDA(SD+)	Output	RS-422/485 Data Transmission (+)
	7	Power	Output	5V
	8	Power	Input	Power Ground
	9	SDB(SD-)	Output	RS-422/485 Data Transmission (-)

For the cable between TOP and Roll Printer, SDof TOP is connected with RD of Roll Printer,RD of TOP with RD ofRoll Printer, and SG of TOP with SG of Roll Printer. Set the port that connects to Roll Printer from COM1/COM2 of TOP in [Control Panel]-[Printer] in menu screen.



[Pic. Port settings for TOP that is connected with a Roll Printer]

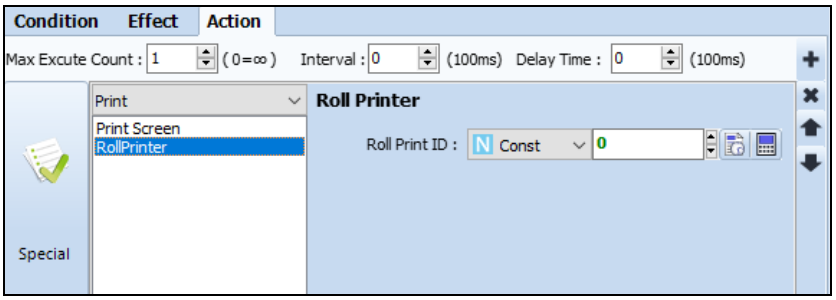
Configure Communication Setting of Roll Printer at [Control Panel]-[Serial] in the menu screen.



[Pic. Enter communication setting for roll printer]

4.1.67 Run Print Button for Roll Printer

Print Action button is in [Special Function] on [Action] page. Select RollPrinter at [Action]-[Special]-[Print] in [Effect & Action] page and set the ID in the print format written in [Project]-[Roll Printer].
Run this action and the connected roll printer will print in the ID format.



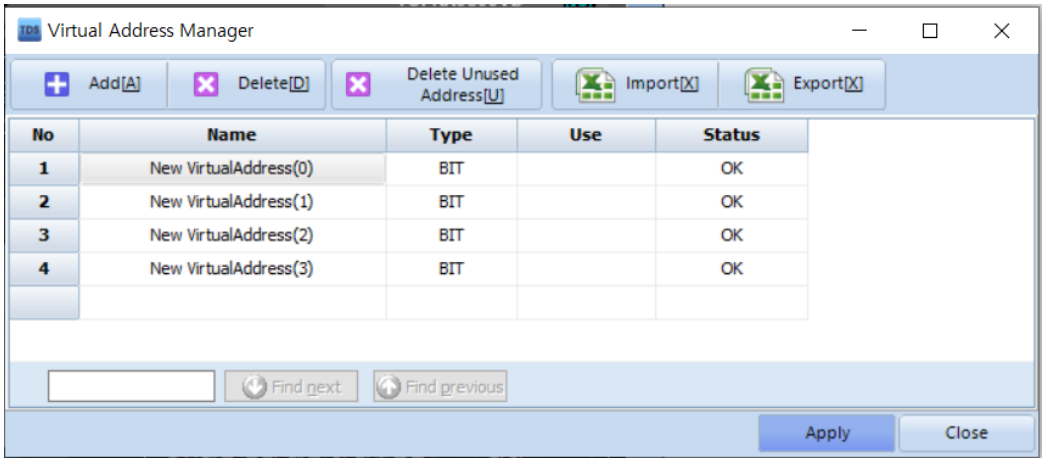
[Pic. Print button]

Virtual Address

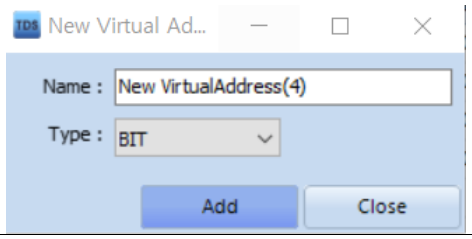
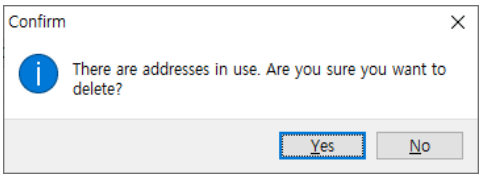
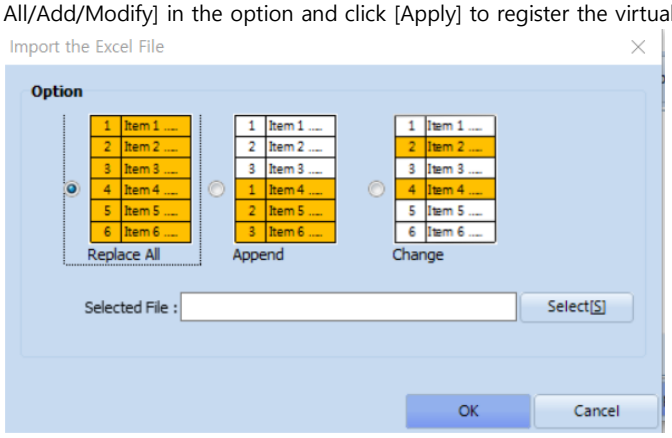
Virtual address that can be used as a variable. Use it by selecting [Virtual] for Display Address. This address is single-use only and will all be reset to [0] when TOP power is reset.

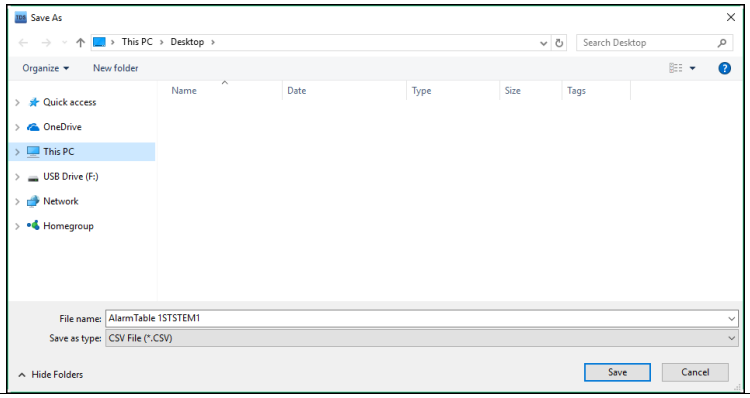
4.1.68 Virtual Address Manager Page

Check the name, size, use, and status of registered virtual address.



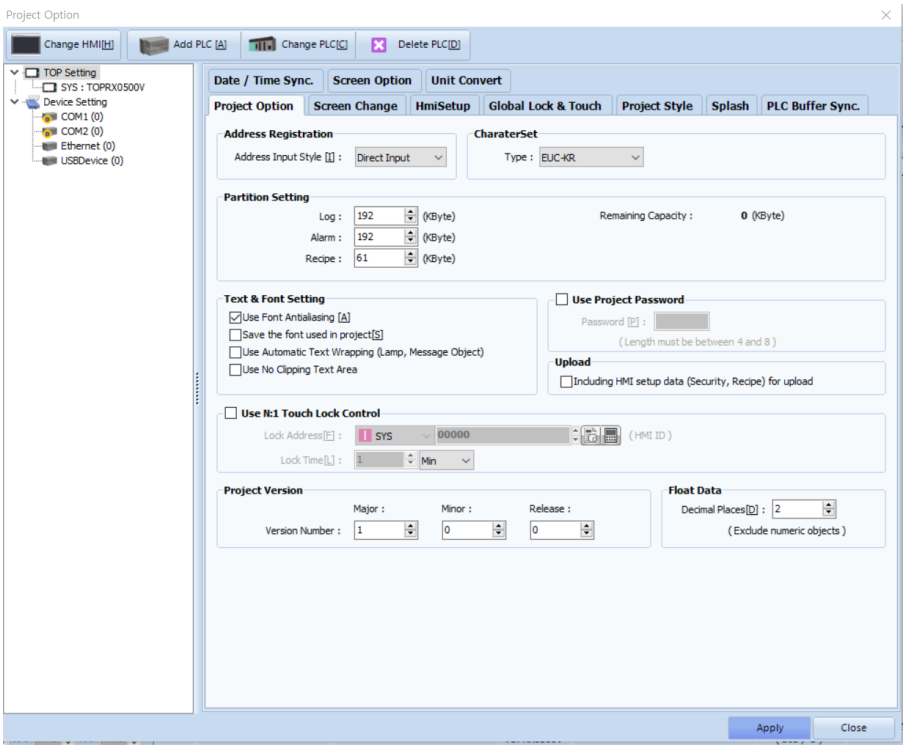
[Pic. Virtual address manager]

No	Schedule Information	Description
1	Add	Set the name and size of virtual address and click Add button to create the address. 
2	Delete	Delete a registered virtual address. Deleting a virtual address in use of a project will display a confirmation message. 
3	Delete Unused Address	Delete all unused virtual addresses except the ones in use in project. No / Name / Type / Use / Status 1 / ABC / BIT / / OK 2 / New VirtualAddress(1) / BIT / / OK 3 / New VirtualAddress(2) / WORD/ASCII / O / OK
4	Import	Click [Import CSV] will display below screen. Click [Select] to open [Open] screen. Select a CSV file saved with [Export] and click [Open]. Select [Replace All/Add/Modify] in the option and click [Apply] to register the virtual address.  [Replace All] replaces all virtual addresses. [Add] adds addresses behind the selected existing

		virtual address. [Modify] will replace the virtual address of files with the same numbers from the virtual address item and add if there is any new virtual address number.
5	Export	Save registered virtual address list as a [*.CSV] file. Saved CSV files can be opened and edited with Excel. Click [Export] and [Save As] screen will be displayed as below. Set the save path of the log file, enter the file name, and save. 

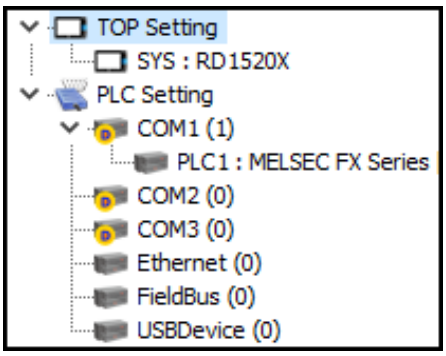
Project Property

Project property sets various options that are applied to TOP/PLD Property and all projects.



[Pic. Project option]

[TOP Setup] and [Device Setting] is on the left side of the [Project Option] screen.

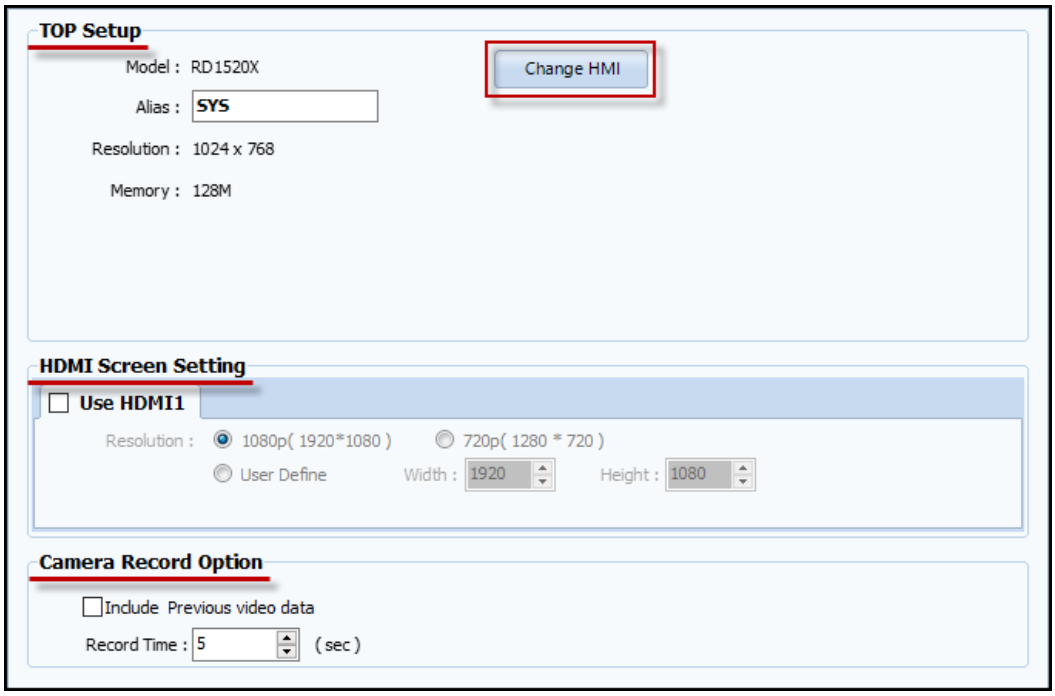


[Pic. TOP Setup/Device Setting]

On the right hand side, different screens will appear as you select [TOP Setup], [TOP Model Name], or [PLC Model Name] from the left list.

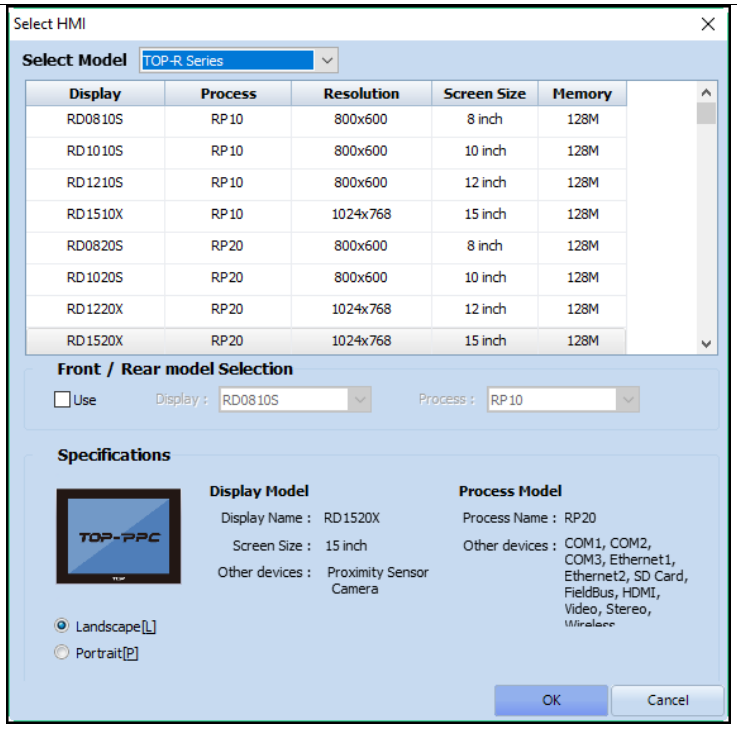
4.1.69 TOP Setup

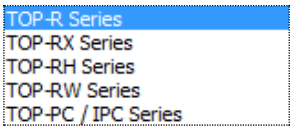
The set [TOP Model Name] is in the subsidiary list of [TOP Setup]. Select a model name and the TOP model's detailed information will be displayed on the right of the screen.

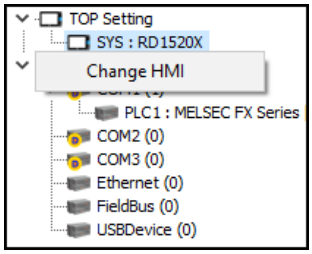


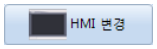
[Pic. Right screen when selecting a TOP model name]

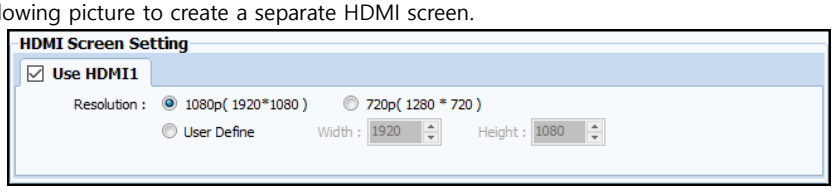
No	TOP Setup	Description
1	TOP Setup	Show TOP [Model/Alias/Resolution/Screen Memory]. Alias is the name used in address list and can be modified. Click [Modify HMI] to display [Select HMI] screen to modify [TOP Model].

<table>
<tr>
<td></td>
<td></td>
<td>


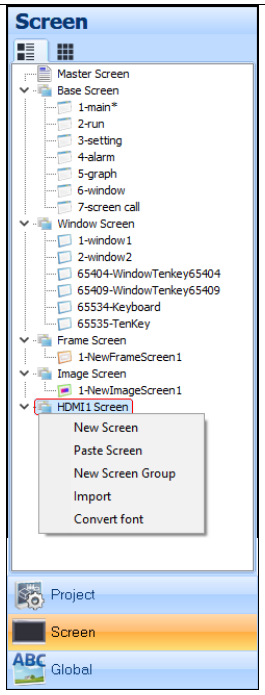
Select a series in [Select Model] and select the model name and click [OK] to change.


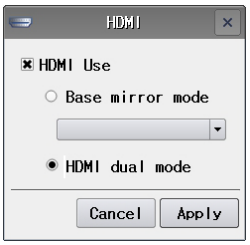
To modify TOP model name, use [Change HMI] button as above or use the [Change HMI] menu that pops up when selecting the model name in the list on the left and right-clicking it.


Also, you can also change it with the same method by using the 

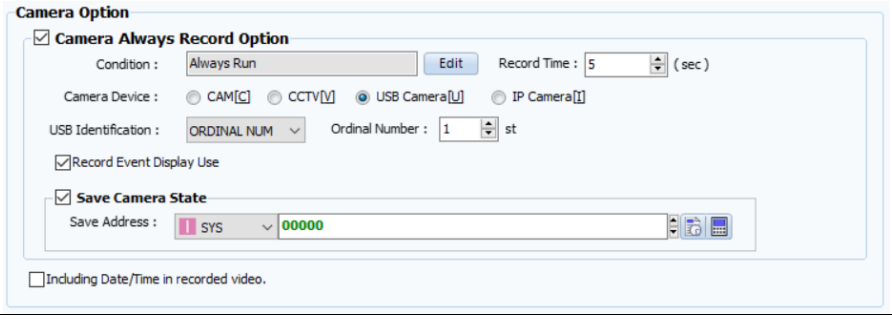
menu on the top of the Project Option screen.
</td>
</tr>
<tr>
<td>2</td>
<td>HDMI Screen Setting</td>
<td>
Available for TOPR Premium model only that supports HDMI ports. It creates a separate HDMI screen that is different from the operating TOP screen on [Monitor/TV/Projector] that is connected to the HDMI port for monitoring purposes. Check [Use HDMI1] in the following picture to create a separate HDMI screen.


Check [Use HDMI1] as above and set the resolution of the screen to monitor on the device connected to the HDMI port. Then, [HDMI1 Screen] will be displayed as following on the [Project Manager]-[Screen] window.
</td>
</tr>
</table>

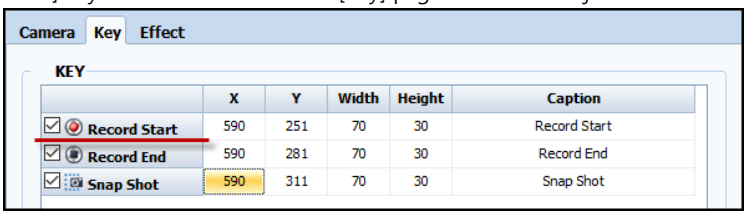
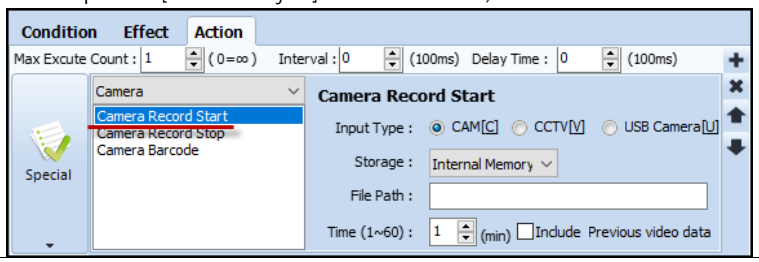
<table>
<tr>
<td></td>
<td></td>
<td>


Create a new screen in [HDMI1 Screen] of Project Manager or copy and paste an existing base screen to form a monitoring screen.
The HDMI1 screen created like this is monitored in the device connected to the HDMI port when the [HDMI Dual Mode] is set in [Control Panel]-[HDMI] in the TOP menu screen.


[Control Panel]-[HDMI] settings in the TOP menu screen can turn HDMI on/off and set its mode.
[Default Copy Mode] monitors the screen that is the same as the TOP screen that is operating in the device connected to HDMI. [HDMI Dual Mode] monitors a separate HDMI screen that is operating in the device connected to HDMI.
</td>
</tr>
<tr>
<td>3</td>
<td>Camera Option</td>
<td>
Only available for TOPR Premium model that supports camera and video ports. Check [Camera Always Record Option] to active below options. When [Condition] is met, recording will start. For camera devices, there are Cam/CCTV/USB Camera/IP Camera].

[Cam] is the video filmed by the camera that is mounted on the front of the TOPR Display section.
[USB Camera] is the video filmed by the external USB camera that is installed to the USB port of TOPR.
[CCTV] and [IP Camera] are videos filmed by the device installed to TOPR's video port.
Videos can be viewed on the screen with [Camera] object in real-time.


</td>
</tr>
</table>

		Use [Record Start/Record End] key to record videos filmed with the camera to the set memory. When starting recording, the record includes the previous video data by [Record Time] instead of starting from the moment when [Record Start] action is taken. That is, it records from the video 5 seconds before the moment that Record Start is activated. [Record Start] key can be added from the [Key] page in Camera Object.  [Pic. Record Start key in Camera Object] Also, [Record Start] action can be implemented in [Special]-[Camera] which can be found in the [Action] page of object [Effect & Action]. (Please see Chapter 20 [Camera Object] for more details.) 

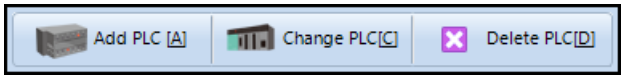
4.1.70 Device Setting

You may see a device connected to TOP in the [Device Setting] list on the left. In the subsidiary lists, although there are slight differences as each TOP model supports different ports, there are [COM1/COM2/COM3], the serial ports, [Ethernet], the Ethernet port, [Wireless], the wireless port, and [USBDevice], the USB port.

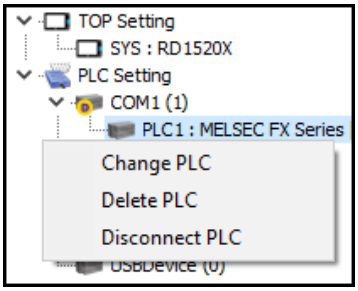
How to Add/Modify/Delete PLC to each port is as follows.

▶ Select the PLC or port and run the top menu.

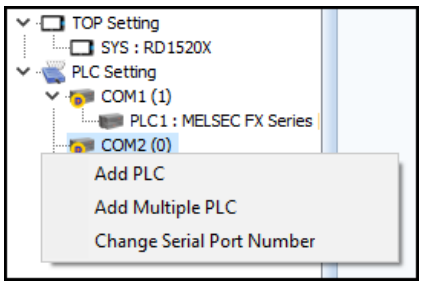
▶ Select the PLC or port with a right-click and run the menu that appears.



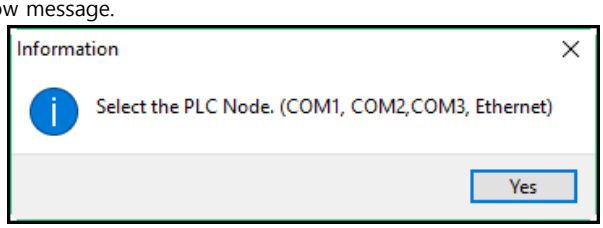
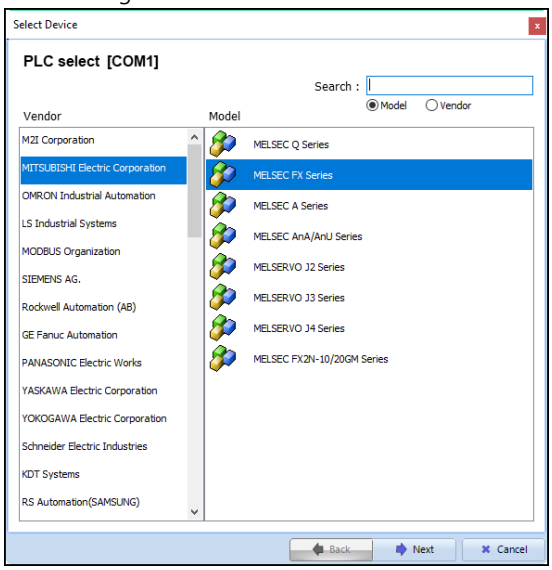
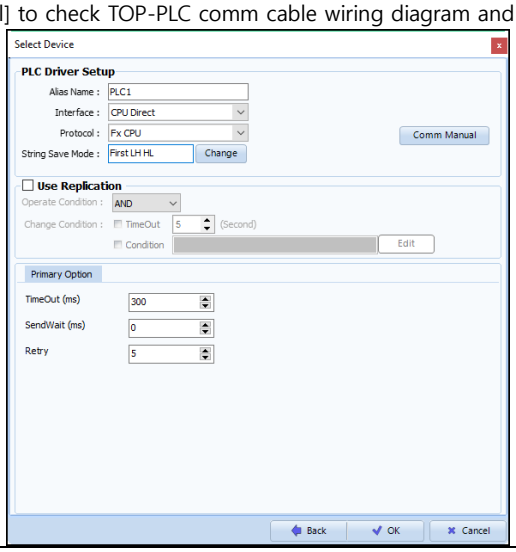
[Pic. Top menu]

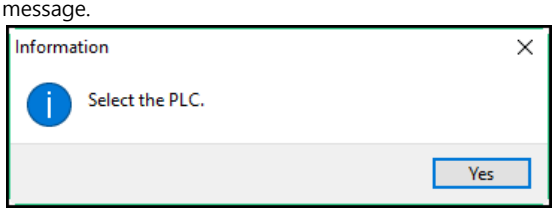
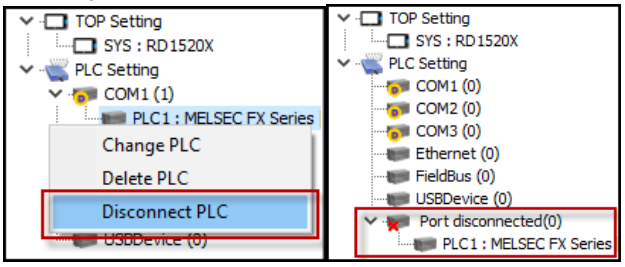
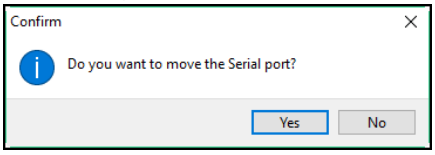
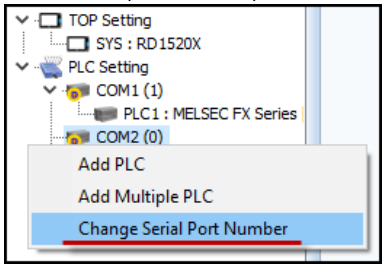
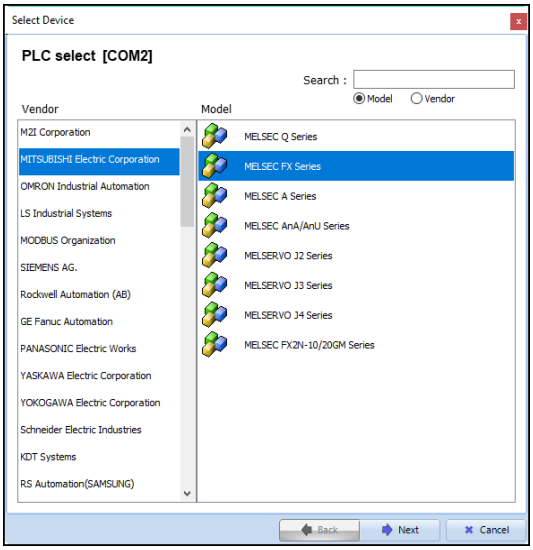


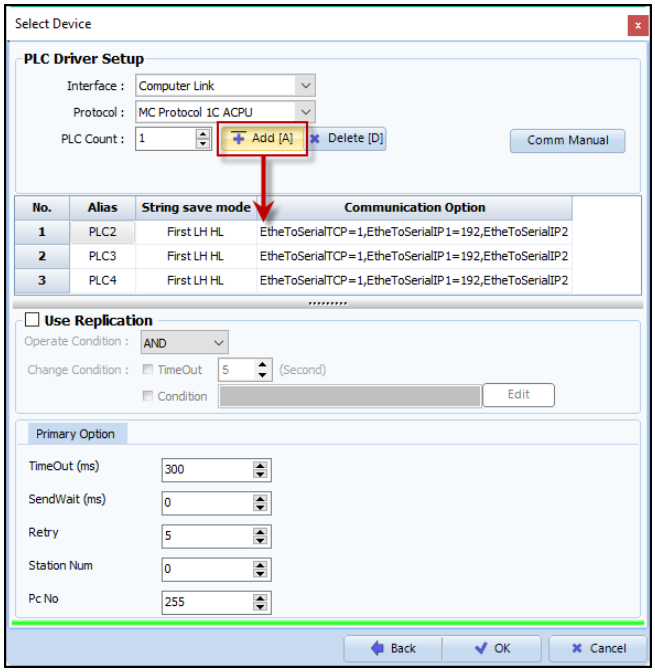
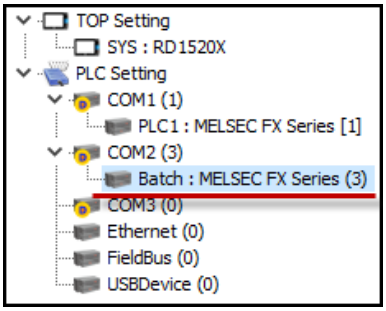
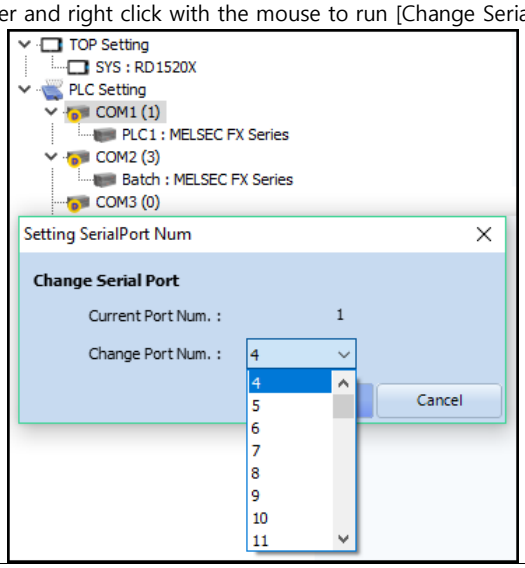
[Pic. Right-click menu appearing after selecting PLC]

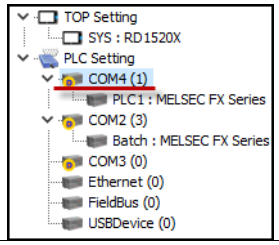


[Pic. Right-click menu appearing after selecting port]

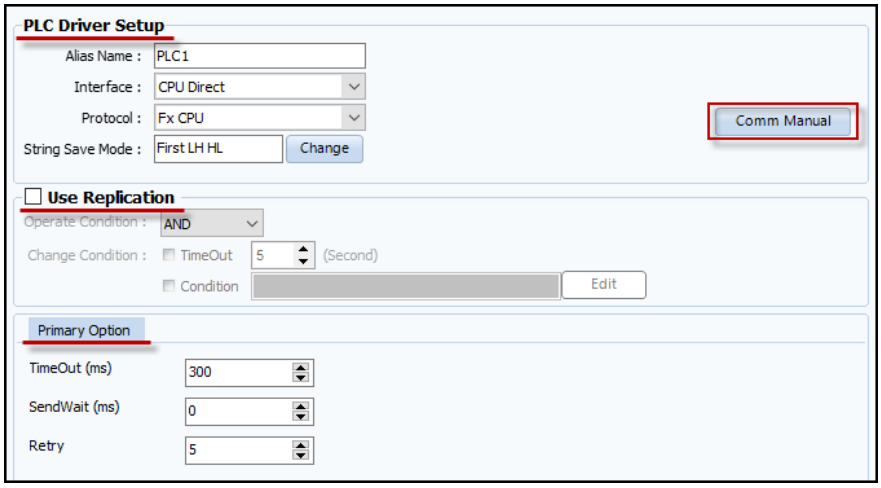
No	Project Setting	Description
1	Add PLC	Select a port to connect PLC and run [Add PLC] menu. Running it without selecting a port will display below message.  When a port is selected and [Add PLC] menu is run, [Select Device] screen will be displayed. Select the PLC vendor and model name from the [Select Device] screen. Click [Next] to display the PLC Detailed Settings screen.  Set PLC Alias/Interface/Protocol/String Save Mode in PLC's Detailed (Option) Setting screen. Click [Comm Manual] to check TOP-PLC comm cable wiring diagram and setting methods. 

2	Change PLC	Change the selected PLC to another PLC. Running [Change PLC] menu without selecting PLC will display below message.  Select a PLC to modify on [Select Device] screen. This is the same with Add PLC.
3	Delete PLC	Delete the selected PLC.
4	Disconnect PLC	Select a PLC to disconnect and run [Disconnect PLC]. [Disconnect PLC] moves the settings of the PLC to the subsidiary list of [Port Not Connected].  [Drag & Drop] PLC under the subsidiary list of [Port Not Connected] to [COM1/COM2/COM3/Ethernet/Fieldbus/USBDevice] port. Below message will be displayed and it will be moved to the selected port.  PLC selected as serial can only be moved to a serial port, and PLC selected as Ethernet to an Ethernet port.
5	Add Multiple PLC	Use it to add multiple of the same PLCs to a selected port. Communication that connects one TOP port to multiple PLCs is called [1:N] communication.  Select PLC vendor and model name in Select Device screen and click [Next].  The following detailed PLC option setting screen will be displayed. Enter the [PLC Count] to

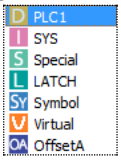
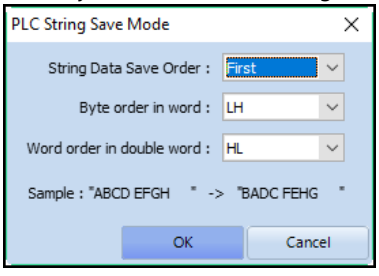
		add and click [Add] to add the PLCs in the below list.  Complete by clicking [OK] button to add PLC under the name of [All] as below.  If the PLC does not support [1:N] communication, below message will be displayed. 
6	Change Serial Port Number	This function is required in TOPView (SCADA) and used when port number needs to be changed when connecting a controller to PC's serial port. Select a serial port that you wish to change its number and right click with the mouse to run [Change Serial Port Number]. 

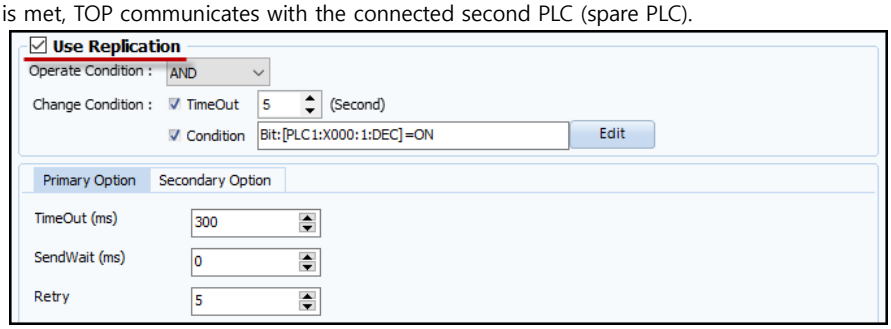


Select PLC name to display PLC details on the right of the screen.



[Pic. PLC detailed option]

No	PLC Driver Setup	Description
1	PLC Driver Setup	Alias is used as the name when entering address under the name of PLC.  Select PLC [Interface/Protocol]. For String Save Mode, click [Modify] and set it in [PLC String Save Mode].  One string is 1 byte. Choose either [First/Last] for [String Data Save Order]. With First, it will input the first string as the first address. When entered "ABCDEFGH", it will be input as "ABCDEFGH". Choosing Last will input "ABCDEFGH" as "ABCDEFGH". (Assuming Byte order in word: HL, Word order in double word: HL) In [Byte order in Word], H refers to High (higher bytes) and L refers to Low (lower bytes). [HL] inputs ABCDEFGH as -> ABCDEFGH. [LH] inputs ABCDEFGH as -> BADCFEHG. In [Word Order in Double Word], H refers to High (higher word) and L to Low (lower

		word). [HL] inputs ABCDEFGH as -> ABCDEFGH. [LH] inputs ABCDEFGH as -> CDABGHEF. Click [Comm Manual] to check TOP-PLC comm cable wiring diagram and setting methods. (For Comm Manual, please see Chapter 4.14.4 [How to Read Comm Manual].)
2	Use Replication	[Redundancy] can be used if the comm is RS-485 serial communication and connects 2 PLCs of the same settings to TOP. 1 PLC is the main communicator and another is spare. Usually, it communicates with the first PLC. When [Change Condition] of [Use Redundancy] is met, TOP communicates with the connected second PLC (spare PLC).  There are two setups available for [Change Condition]. When the first PLC exceeds the time set in [TimeOut] and the communication is severed, the communication switches to the second PLC. And when the set [Condition] is true, the communication switches to the second PLC. These two conditions can be set at the same time. The communication is switched to the second PLC if [Calculation Condition] is [AND] and both conditions are met. If it is [OR], it switches even if only one [Change Condition] is met. Set the communication option of the first and second PLCs. [TimeOut(ms)] is the time for waiting the response of a controller (PLC). After TOP starts its communication with a controller, it waits for the length of the set Timeout for the response from the controller. When there is no response within the time, an error is issued. [SendWait(ms)] is the pre-transmission delay time for PLC communication. Pre-transmission delay time frees communication overload on controller by allowing TOP to send the next request after SendWait time rather than sending one immediately after TOP sending the initial request as Master and receiving a response from the controller. It is used when communication scan of the controller is not fast. [Retry] is the number of re-sent communication protocols by TOP. First, TOP commences communication with controller, waits for the TimeOut time length when there is no response from the controller, and sends communication protocols again. It repeatedly sends protocols after waiting for the TimeOut time. If there is no response after the set amount of re-sent protocols, it issues an error.

4.1.71 Option Module Setting

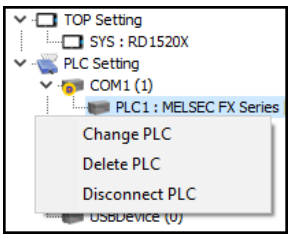
Check option modules available to be installed on TOP from the [Option Module Setting] list on the left. [Option Module Setting] is available for TOPR model only. There are [Fieldbus] and [RFID], two option modules in the subsidiary list. How to add/change/delete it to each port is as follows.

▶ Select the PLC or port and run the top menu.

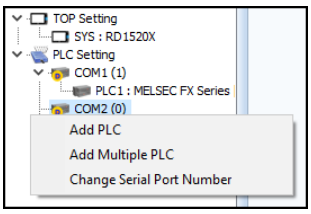
▶ Select the PLC or port with a right-click and run the menu that appears.



[Pic. Top Menu]



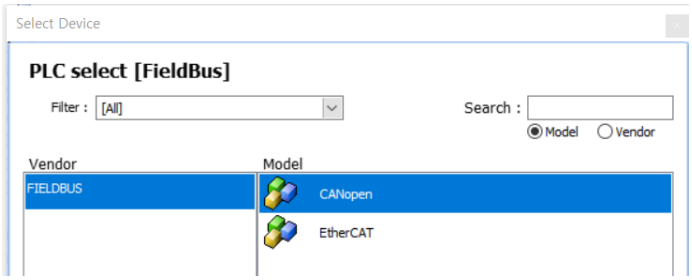
[Pic. Right-click menu appearing after selecting PLC]



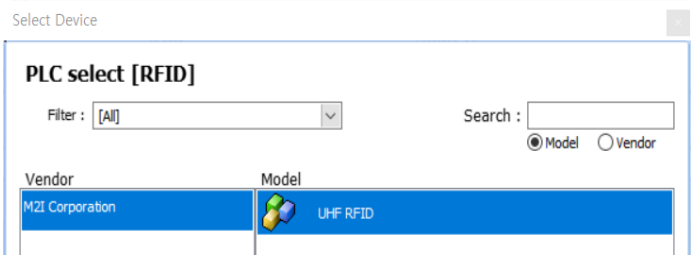
[Pic. Right-click menu appearing after selecting port]

▶ PLC functions of Add, change, delete, and add all are the same as described in Chapter 4.14.2 [Device Setting].

CANopen and EtherCAT can be registered in [Fieldbus] port and UHF RFID can be registered in [RFID] port.

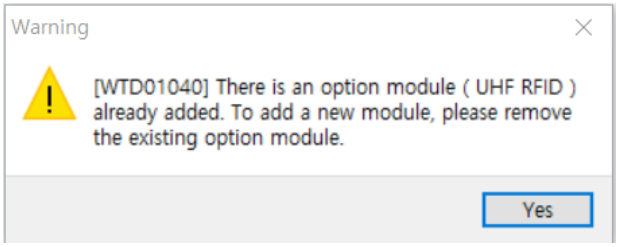


[Pic. Add FieldBus Port PLC]



[Pic. Add RFID Port PLC]

In [Option Module Setting], one PLC can be registered. If you attempt to add more, below warning message is displayed.



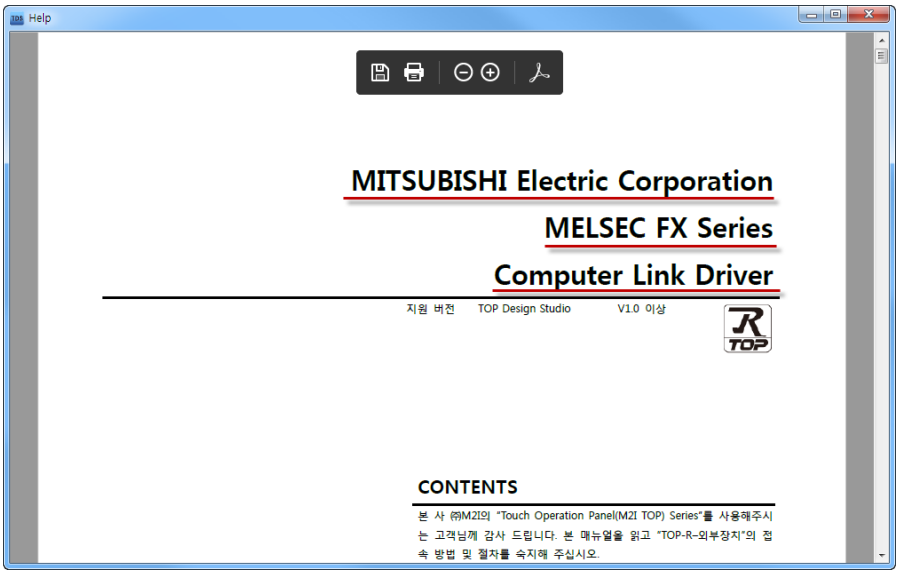
[Pic. Option Module Setting - Warning Message]

4.1.72 How to Read Comm Manual

Comm Manual has descriptions for communication such as cable wiring diagram, communication

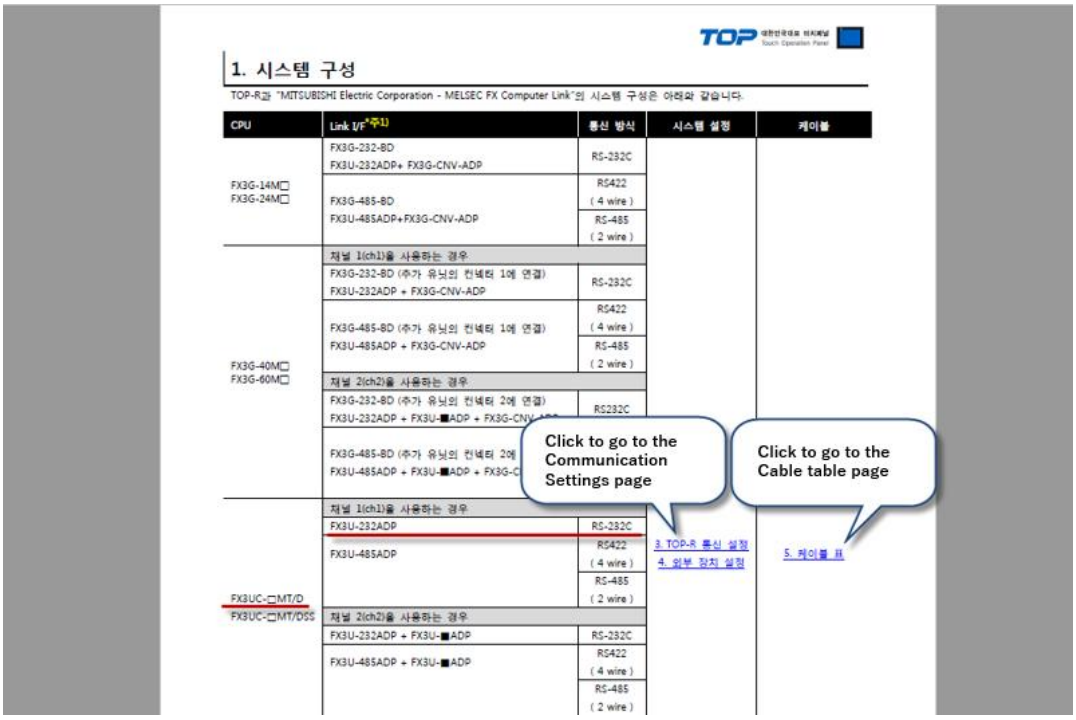
setting methods, etc. [Comm Manual] button can be found if you click the PLC name of the [PLC Driver Setup] that is on the left side of [Project Option] screen that pops up when running [Project]-[Property] menu. Click [Comm Manual] to popup the selected PLC's comm manual file and this file is in a PDF format.

Go to Comm Manual page 1 and check if the PLC vendor and model name match.



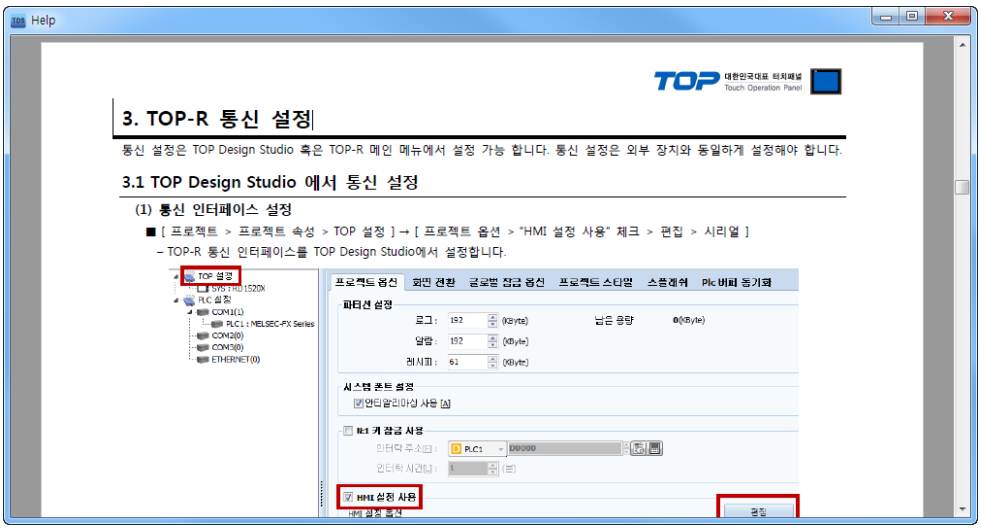
[Pic. Comm Manual page 1]

Find the PLC CPU Model/Communication Card Model from the table in [System Configuration] on page 2. Follow the corresponding model to find System Setup and Cable Table. Click to move to the page.



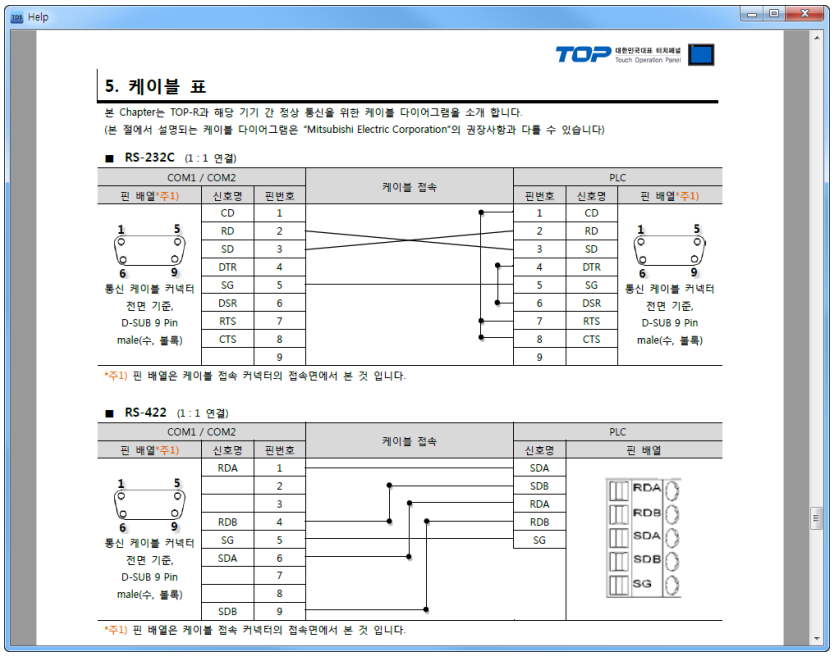
[Pic. Comm Manual page 2]

Click [System Setup] of the PLC to see detailed communication setting description as follows. Settings for TOP and PLC are all described. Follow the steps.



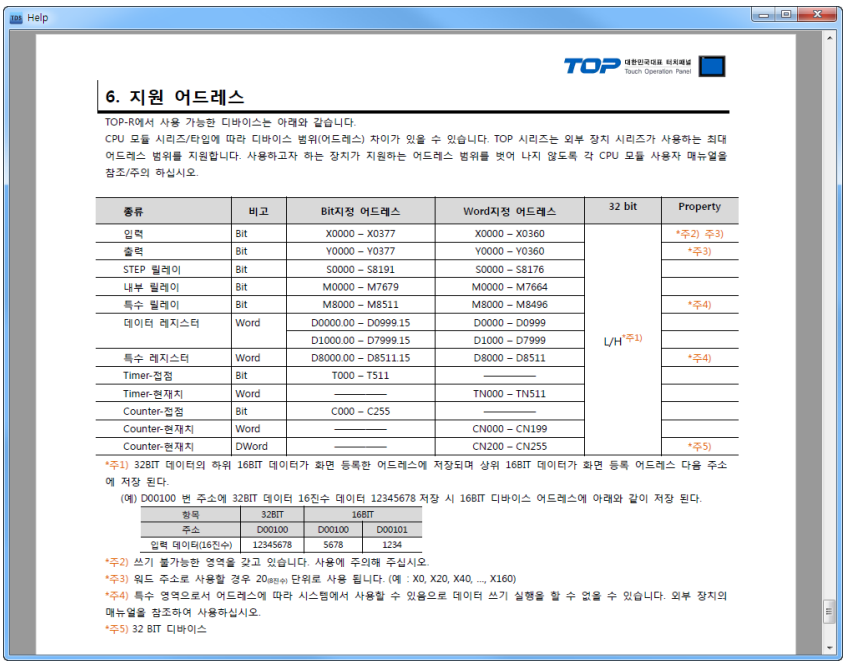
[Pic. How to configure Communication Setting]

Click the PLC's [Cable] and the following cable wiring diagram will be displayed.
Check TOP port and make a cable with the correct wiring diagram.



[Pic. Cable wiring diagram]

Address list and area of the PLC is described in the last page of Comm Manual.



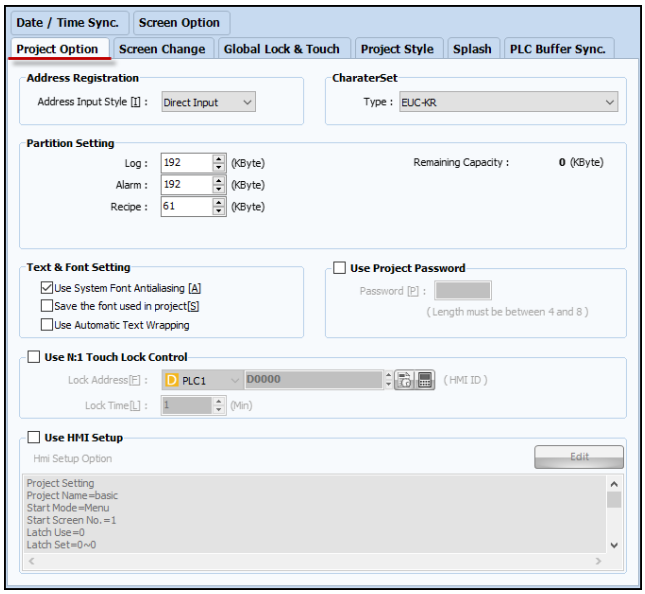
[Pic. Supported address list]



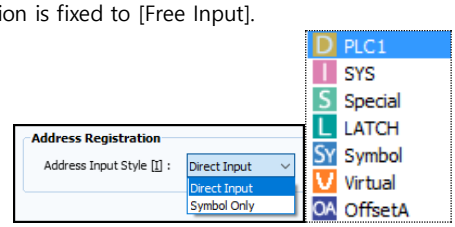
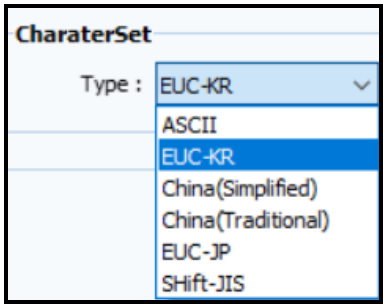
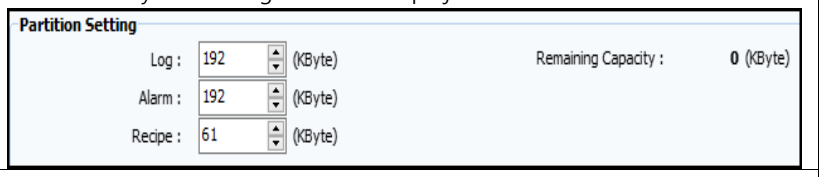
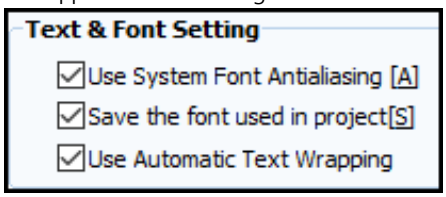
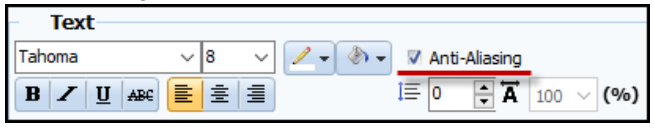
[Save As File/Print/Zoom In/Out] in the menu that is displayed as above when clicking Manual Screen.

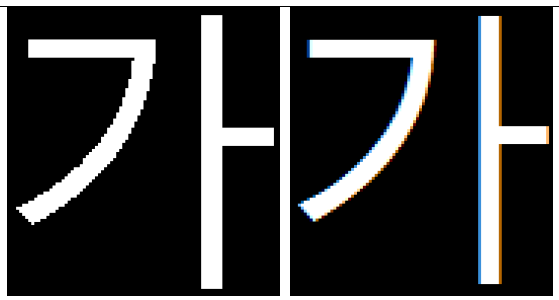
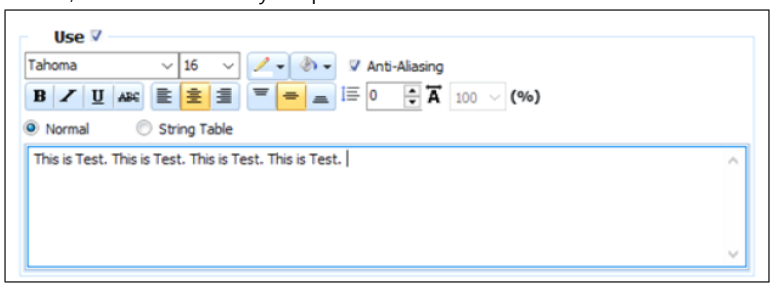
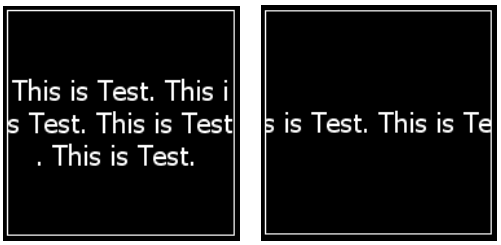
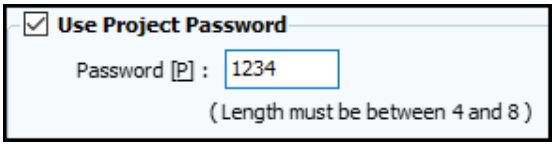
4.1.73 **Project Option Page**

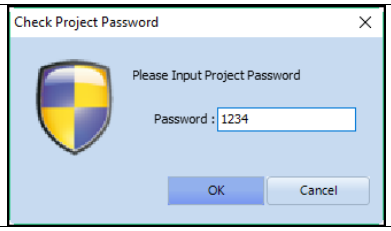
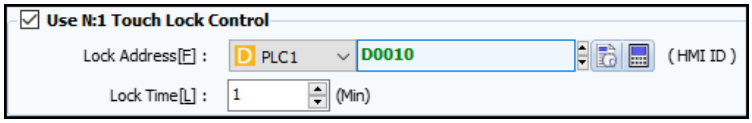
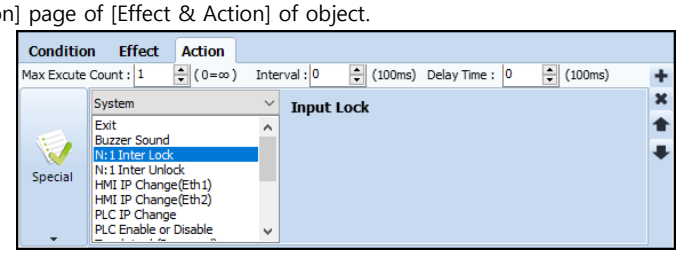
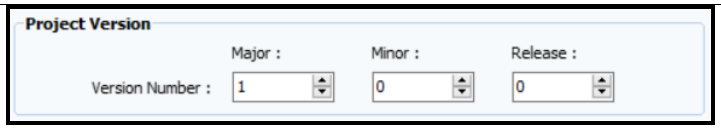
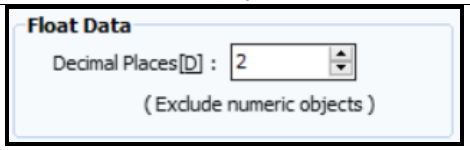
Describes Project Option page.



[Pic. Project Option page]

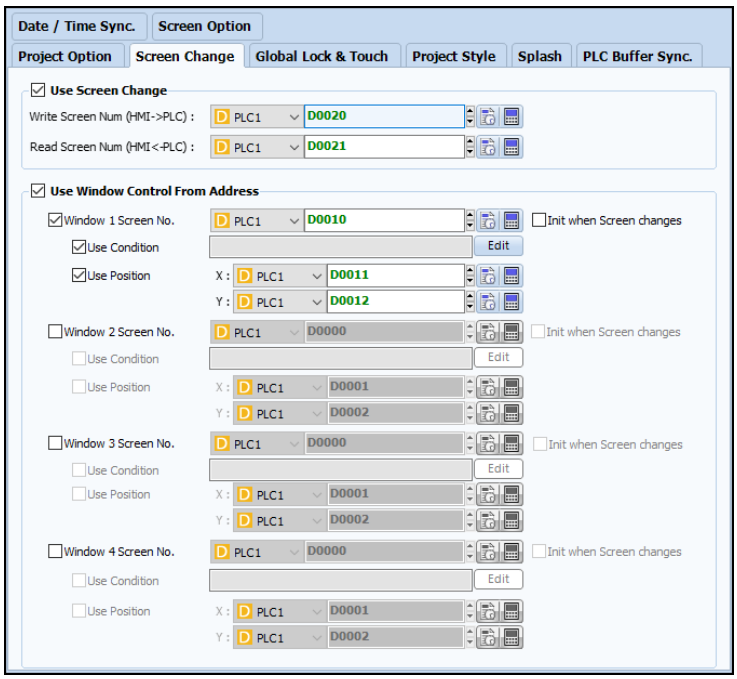
No	Project Option	Description
1	Address Registration	Address registration is fixed to [Free Input].  With [Free Input], you can go to [Project]-[Symbol] and select [Symbol] in Address List to enter the registered PLC address. Or you can enter [PLC1] from the address list to enter the PLC address yourself.
2	Character Set	In [Character Set], you may choose the language process method from [ASCII/EUC-KR/China/EUC-JP/Shift-JIS].  Most controllers use ASCII. (With ASCII, Korean alphabets are 2 Byte each.) Choose [EUC-KC] if you need to use Unicode. Select appropriate Character Set according to the Window Language used in PC.
3	Partition Setting	[Partition Setting] divides TOP memory according to its use. Total backup memory is 512 Kbyte. This area includes internal address area of 10Kword. Capacity available for [Log/Alarm/Recipe] to use is 445 Kbyte. Divide 445 Kbyte according to the use in project. 
4	Text & Font Setting	Set the [Option] to be applied when entering texts.  (1) Use Font Anti-aliasing Check [Use System Font Anti-aliasing] to create [Anti-aliasing] checkbox in font settings when entering texts as below.   Large-sized text may display rough edges like stairs. [Anti-aliasing] smooths this section into a curve.

		 Anti-aliasing is applied when the font size is 20 or larger. (2) Save the Font Used in Project Use this function when you wish to maintain the same font you used to write a project in PC. When opening a project written in Korean Window environment in Chinese Window environment, the font is changed and not correctly display due to the lack of Korean fonts in the Chinese Window environment. In this case, use this function to normally display Korean. Note) If object string is modified, the saved font in the object cannot be used. (3) Use Automatic Text Wrapping Check [Use Automatic Text Wrapping] to automatically wrap texts when they go out of the object size. This is also applied when [Alarm Contents] are displayed in Alarm View object. If the width of the message is smaller than the alarm contents, it will automatically wrap texts.   The left picture shows this function in use. The right picture this function not in use. (4) Use No Clipping Text Area Check US to show all text contents that exceeded the text display area.
5	Use Project Password	Check [Use Project Password] and enter a password. You will be required to enter password when opening a project. Password should be composed of 4-8 [Number/Upper&Lowercase Alphabets].  [Open Project] and password check screen will be displayed as below.

		
6	Including HMI setup data (Security, Recipe) for upload	When uploading a project file, it includes HMI security and recipe setting value.
7	Use N:1 Touch Lock Control	When multiple TOPs and one controller communicate, it is called [N:1 Communication]. To prevent issues that may occur when multiple TOPs control one controller, set [Use N:1 Touch Lock Control].  Enter HMI ID as data in Interlock Address (HMI ID can be checked by navigating to [Control Panel]-[Project Setting]-[HMI ID] from TOP menu screen.). Interlock Address [D0010] data becomes a controllable HMI ID. All the other TOPs except for the one with this HMI ID will be unable to recognize the touch Input. If Interlock Address [D0010] is [0], all TOPs can input touch. [Interlock Time] inserts [0] to Interlock Address after 1 minute since the last touch input and unlocks the interlock. This function can be controlled with [Special Function]-[System]-[N:1 Inter Lock/N:1 Inter Unlock] action that can be found in [Action] page of [Effect & Action] of object.  [N:1 Inter Lock] performs an action that uses its own HMI ID to the Interlock Address to block TOP input other than itself. [N:1 Inter Unlock] inserts [0] to the Interlock Address and disables N:1 Interlock.
8	Project Version	 Assign a project version of the written project file for a user to recognize.
9	Float Data	 Set the decimal places of float data. (Exclude numeric object)

4.1.74 Screen Change Page

In [Screen Change], you may change the base screen with address data or popup a window screen.

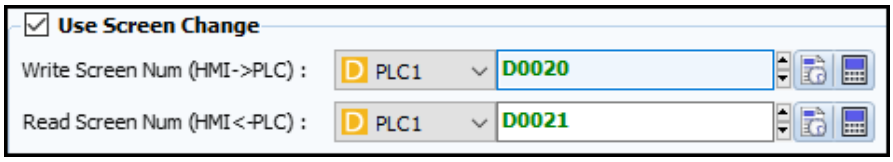


[Pic. Screen Change Page]

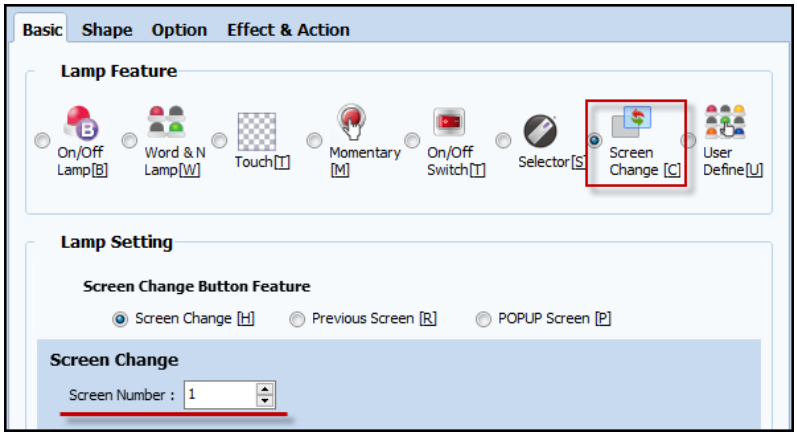
(1) Use Screen Change

Use Screen Change is the function that changes base screen by using the address data. It is often used when changing the TOP screen in the PLC program.

Check [Use Screen Change] and set each address in [Write Screen Number/Read Screen Number].



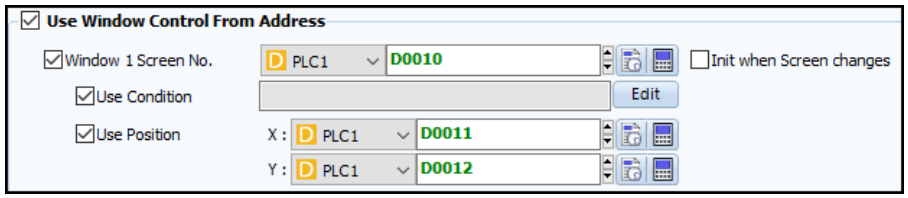
[Pic. Use Screen Change]

No	Screen Change	Description
1	Write Screen Num (HMI->PLC)	When the switch of Base Screen is run in TOP, it writes the Base Screen Number that has been switched in the [Write Screen Number] address (D0020).  PLC reads this address data to identify the current screen number of TOP.
2	Read Screen Number (HMI<-PCL)	To switch the Base Screen of TOP in PLC program, enter the number of Base Screen you wish to switch to in [Read Screen Number] address (D0021) as data. TOP reads data in this address and switches to the Base Screen of the corresponding number.

3	Write Option	Select Write Option to write once or consecutively.

(2) Window Control from Address

This function controls Window Screen popup with address regardless of a specific screen. Up to 4 of this function can be set.



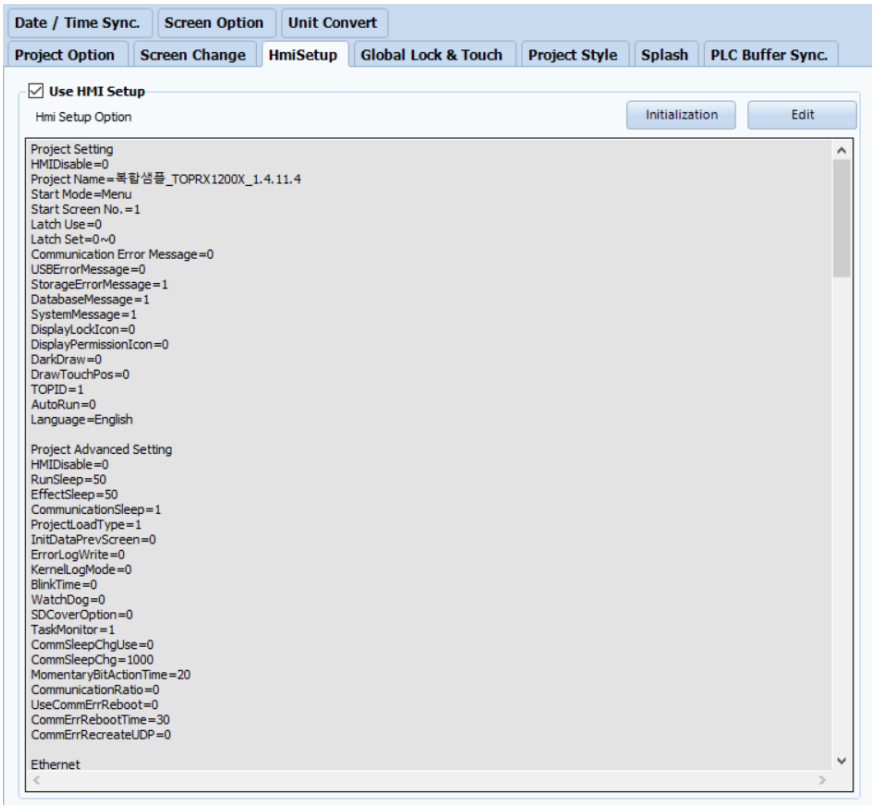
[Pic. Use Window Control from Address]

No	Window Screen Control	Description
1	Window Screen Number	Input the Window Screen Number to popup. Check [Initialize When Changing Screen] to initialize the [Address] of the window screen number to [0] when Base Screen is changed.
2	Use Condition	Set the condition to popup certain window screens. Run [Edit] button to set the condition. During the condition is true, corresponding window will pop up. If [Condition] is not used, the window will pop up when there is a window screen that corresponds to the [Window Screen Number] and disappears when there is not.
3	Use Position	Set the [X, Y Position] where window screen pops up as the data of address that is set to [X] and [Y]. The [X, Y position] will be the top left corner of the popup window screen.

4.1.75 HMI Setup Page

This function sets TOP [Menu Screen]-[Control Panel] setting in a project.

Check [Use HMI Setup] to display current setting information at the bottom.



[Pic. HMI Setup Page]

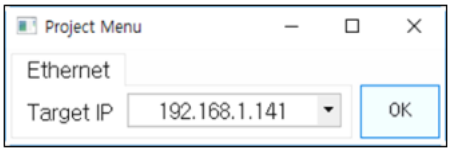
Run [Edit] menu and [Control Panel] screen will be displayed as below.
Click each menu on the [Control Panel] screen and configure settings.



[Pic. Edit - Control Panel]

Run [Import HMI Setup] menu at the bottom and Ethernet-connected TOP control panel settings will be retrieved.

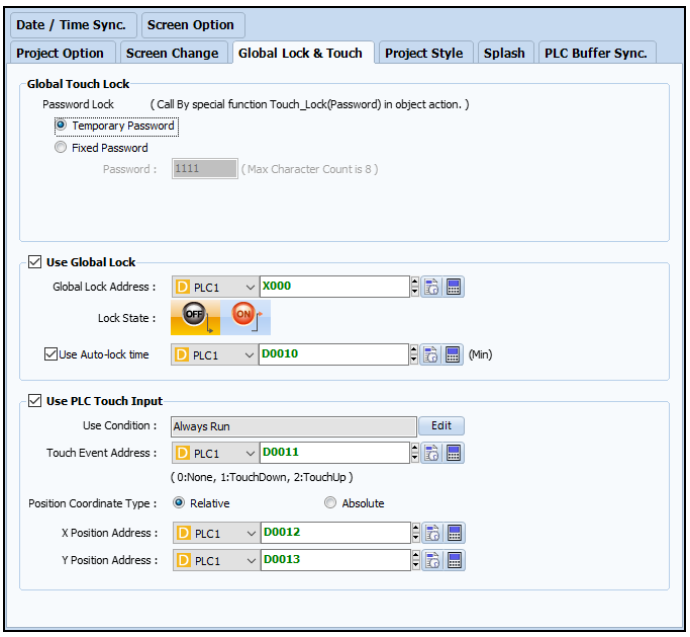
As below, input the IP of the TOP connected via Ethernet and click [OK].



Control panel settings set to [Use HMI Setup] in project is applied to TOP when sending a project.

4.1.76 Global Lock & Touch Page

Global Lock prevents TOP touch inputs and there are [Global Touch Lock/Use Global Lock/Use PLC Touch Input].



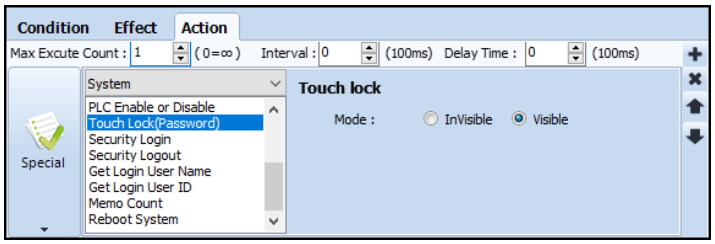
[Pic. Global Lock & Touch Page]

(1) Global Touch Lock

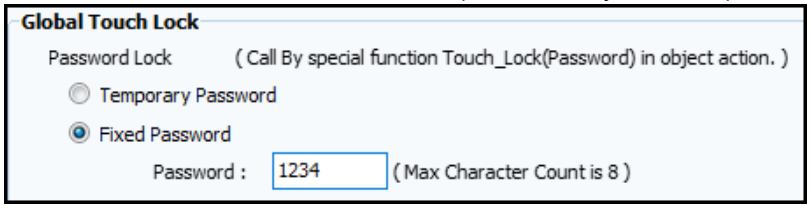
[Global Touch Lock] locks the screen with [Touch Lock] to prevent touch inputs. User must login with the password to enable touch input.

It is used to temporarily block touch inputs to work on site.

To place [Touch Lock] while TOP is running or disable [Touch Lock] by entering the password, run [Special Function]-[System]-[Touch Lock(Password)] action in [Effect & Action] page.



Running [Touch Lock (Password)] action in a project will activate [Touch Lock] to TOP and block input. At the same time, [Touch Lock (Password Input Screen)] will be displayed. Enter the password in the screen to unlock [Touch Lock] to enable touch input. There are two passwords; [Temporary Password/Fixed Password]. Password is entered to unlock Touch Lock. The password may include up to 8 characters.

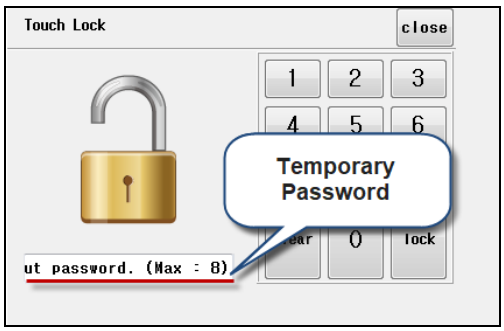


[Pic. Global Touch Lock]

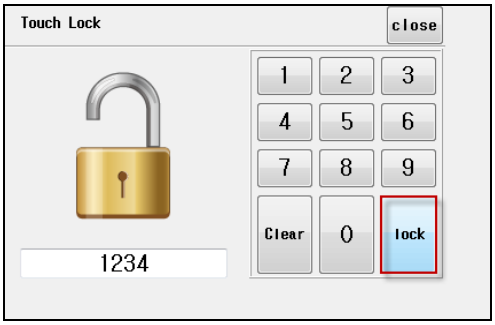
▶ Temporary Password

Create a password every time lock is set.

Run [Touch Lock(Password)] and below screen will be displayed for the user to create a temporary password.

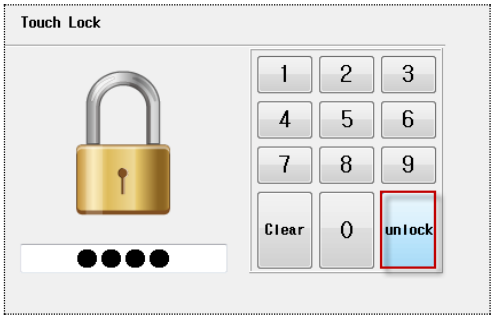


[Pic. Create Temporary Password]



[Pic. Create Temporary Password]

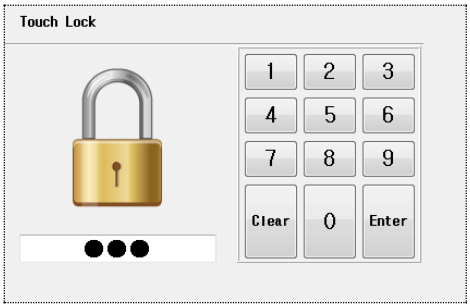
Enter password and press [Lock] button to create a temporary password and activate [Touch Lock]. [Touch Lock (Password Input Window)] will be modified as below. After completing the work, enter [Temporary Password] in this window and enter [Unlock] button to disable [Touch Lock].



[Pic. Disable touch lock by entering password]

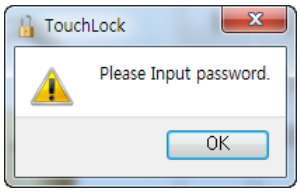
▶ Fixed Password

Fixed Password is a permanent password setting. Run [Touch Lock (Password)] action to enable [Touch Lock] and [Touch Lock (Password Input Window)] as below will be displayed.

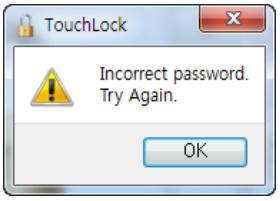


[Pic. When Touch Lock (Password Input Window)_Mode is set to Show]

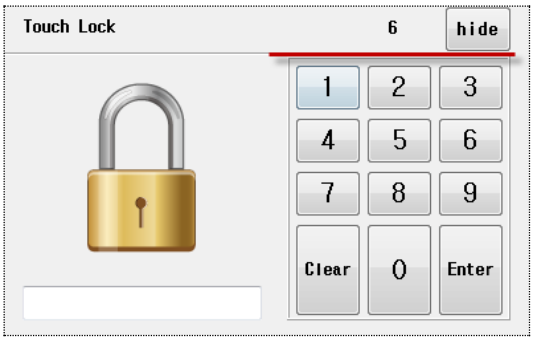
After completing the work, enter the password in [Touch Lock (Password Input Window)] to disable [Touch Lock]. This will also close [Touch Lock ((Password Input Window)].
Pressing [Enter] without entering the password will display the following message.



Pressing [Enter] after entering incorrect password will display the following message.



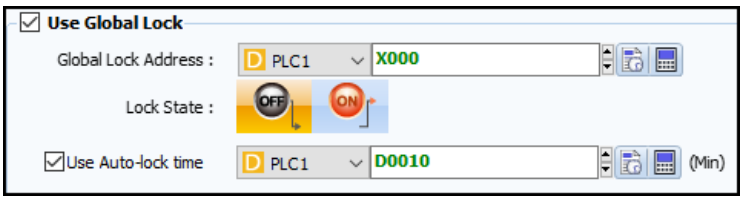
[Touch Lock(Password)] action's [Mode] sets [Touch Lock(Password Input Window)] always visible or hidden on the screen.
When set to [Show], [Touch Lock(Password Input Window)] will always be visible in the touch lock state.
Enter the correct password and disable the touch lock to close [Touch Lock(Password Input Window)].
When set to [Hide], [Touch Lock(Password Input Window)] will be invisible in the touch lock state.
Run [Hide] button in [Touch Lock(Password Input Window)] to hide it.
And when the reverse-counted number (e.g., 10, 9, 8, ...) becomes [0], it will be hidden.
Press [0~9, Clear, Enter] key to reset the count to 10.



[Pic. Touch lock screen when it is set to the hide mode]

Touch the TOP screen when [Touch Lock(Password Input Window)] is hidden and [Touch Lock(Password Input Window)] will be displayed. To disable the touch lock, enter the password.
If you need to enable the touch lock again, run Touch Lock (Password) action.

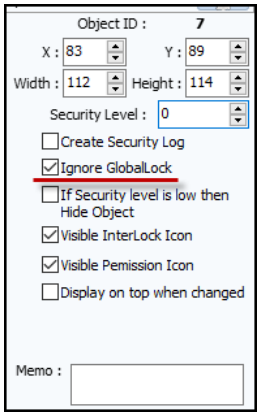
(2) Use Global Lock
When the set condition is met, Use Global Lock [locks] [Touch Input].



[Pic. Use Global Lock]

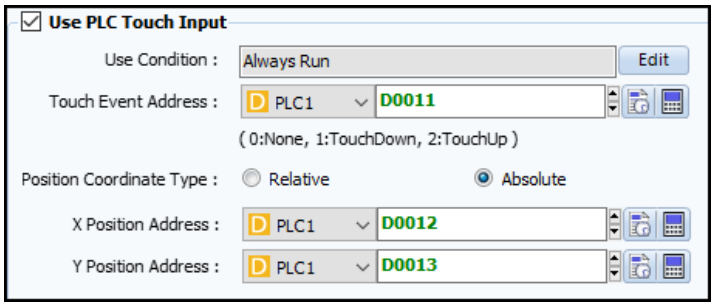
Set the address that will control [Lock/Unlock] to [Global Lock Address]. [Lock State] sets whether [Lock] will be enabled when the data of [Global Lock Address] is [OFF] or [ON]. When set as above, [Touch Lock] is enabled when [Y000] is [ON] and disabled when it is [OFF].
[Address] data set in [Auto Lock Time] becomes the time in minutes. When the set time passes from the moment of the last touch input while TOP is not touch locked, [Touch Lock] is automatically blocked. Modify [Global Lock Address] to [Lock State] to enable [Touch Lock].
Please be aware that when [Auto Lock Time] is [0], it changes [Global Lock Address] to [Lock State] and make it always [Touch Locked].

▶ [Ignore GlobalLock] setting is at the bottom left corner of object. Objects checked with this function can be touched for input even when other objects cannot be touched in [Global Lock] state.



[Pic. Ignore GlobalLock]

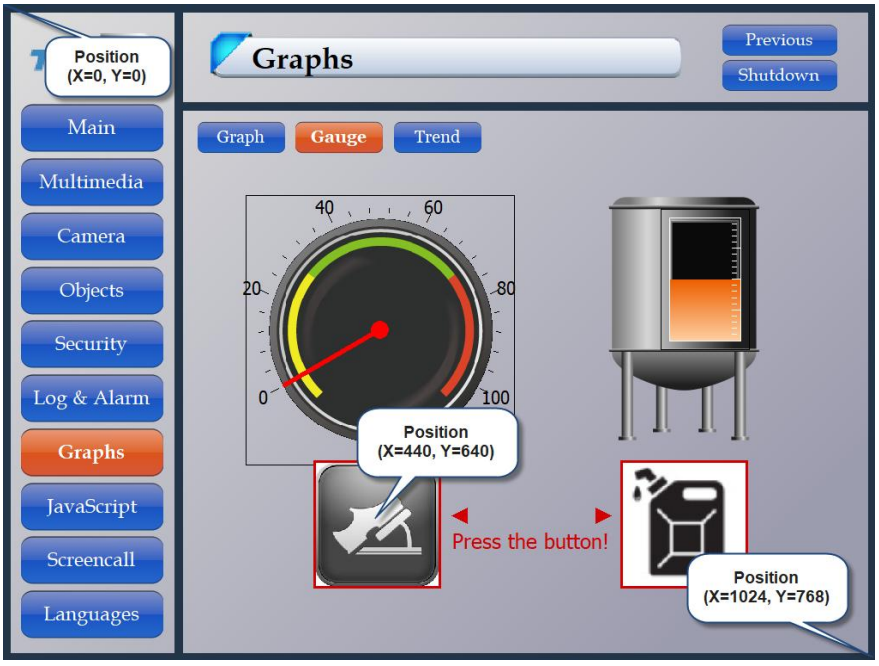
(3) Use PLC Touch Input
This function allows touch input in the PLC. It uses PLC address data to allow inputs to be recognized on certain spots on TOP screen.



[Pic. Use PLC Touch Input]

No	PLC Touch Input	Description
1	Use Condition	Set the condition where PLC Touch Input occurs.
2	Touch Event Address	Set the PLC address to control Touch Event type. Touch event will occur as below

		according to the set address's data value. [0]: No touch event. [1]: Touch down action is ON according to Use Condition.
3	Position Coordinate Type	Choose from [Relative/Absolute] for the type of calculation to get the position of touch event. [Relative]: The coordinate is set relative to the activated screen. With [Relative] option, if a window screen is popped up, the top left corner of the window will be set as the center, (0, 0). [Absolute]: The coordinate is set to the resolution of the entire TOP screen. The top left corner of the entire screen becomes the reference point (0, 0) and the position is calculated.
4	X Position Address	Set the PLC address that would control the X position where a touch event will occur. The set address's data will be the X position where a touch event will occur.
5	Y Position Address	Set the PLC address that would control the Y position where a touch event will occur. The set address's data will be the Y position where a touch event will occur.



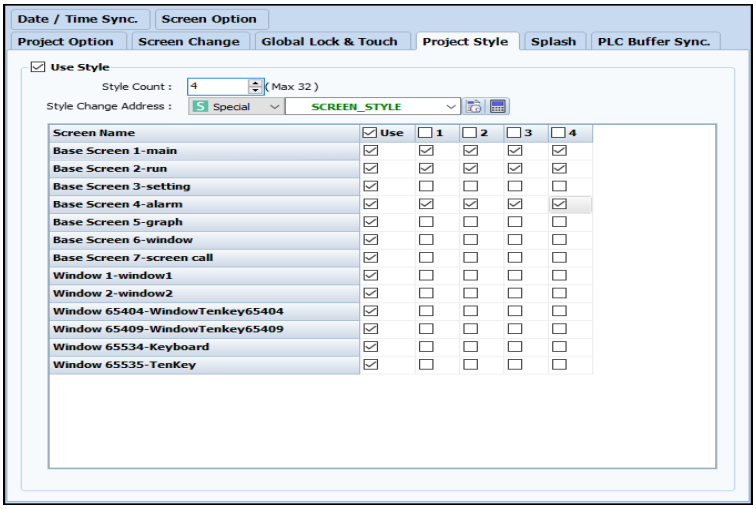
E.g.) To touch the coordinate (440,640) on a 1024x768 screen using PLC address,

Substitute [440] in [D0012] and [640] in [D0013], then [640] in [D0011]. The same motion as directly touching the object at the coordinates occurs.

4.1.77 **Project Style Page**

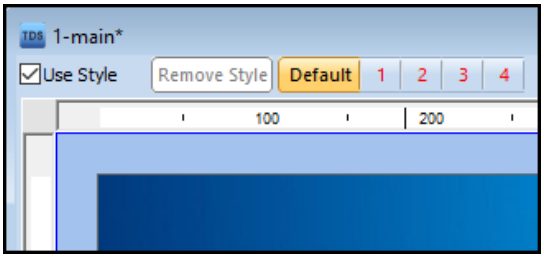
[Project Style] can write one screen in various styles to modify the style according to [Style Change Address] while TOP is in operation. Set [Style Count]. You may create up to [32] styles.
[Style Change Address] is set to Special Address [SCREENS_STYLE] by default, but it may be modified.
When [SCREENS_STYLE] data is 1, style no. [1] will be applied. If it is 2, style no. [2] will be applied.
You may modify [SCREENS_STYLE] data during TOP in operation to change a style.

Changing style resets TOP power. Check [Use] in the screen to apply the style in the below screens list and check [Style Number] by the number of styles needed. Do not check [Use] to screens where styles are not to be applied.

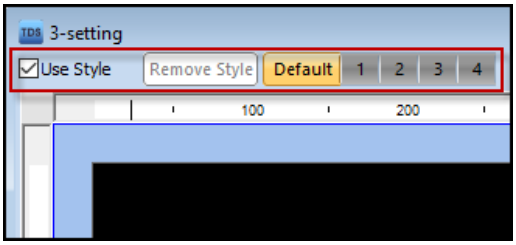


[Pic. Project Style]

Style application to the screen can be modified in each screen. If [Use Style] is checked in [Project]-[Setting]-[Project Style], Use Style edit menu will be displayed on the top left corner of each screen.



[Pic. Screen with Use Style checked as [Use]]



[Pic. Screen with Use Style not checked as [Use]]

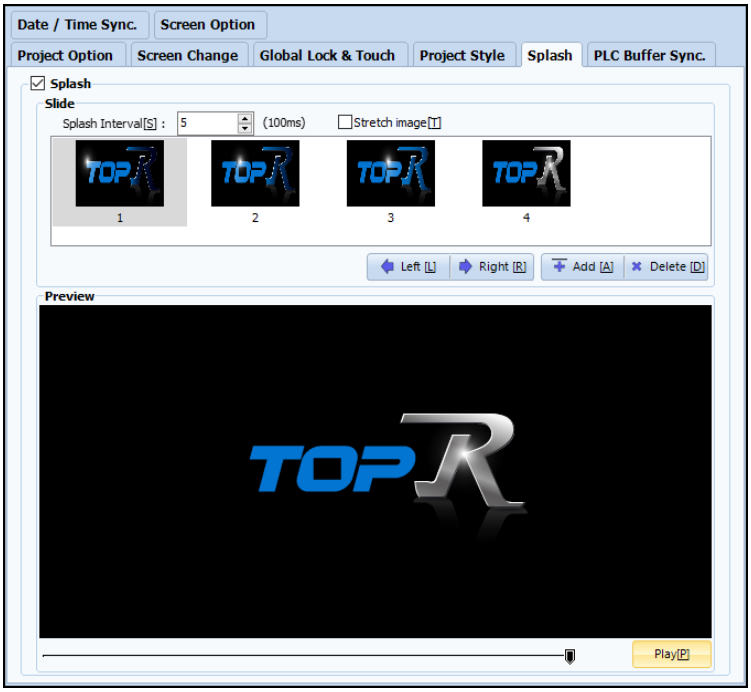
Set the style count as 4 to form 5 screens: [Base], [1], [2], [3], and [4]. Click [Base] button at the top to implement [Base] screen. In the [Base] screen, contents that are included by default in the style screens, [1], [2], [3], and [4], are implemented. [Base] screen is displayed when the value of [Style Change Address] is other than the value of the style number screen.

Write style screens by entering [1], [2], [3], and [4] at the top.

Select the number of unnecessary style screen and click [Remove Style] menu to delete.

4.1.78 Splash Page

The screen that catches your eyes when TOP starts.



[Pic. Splash]

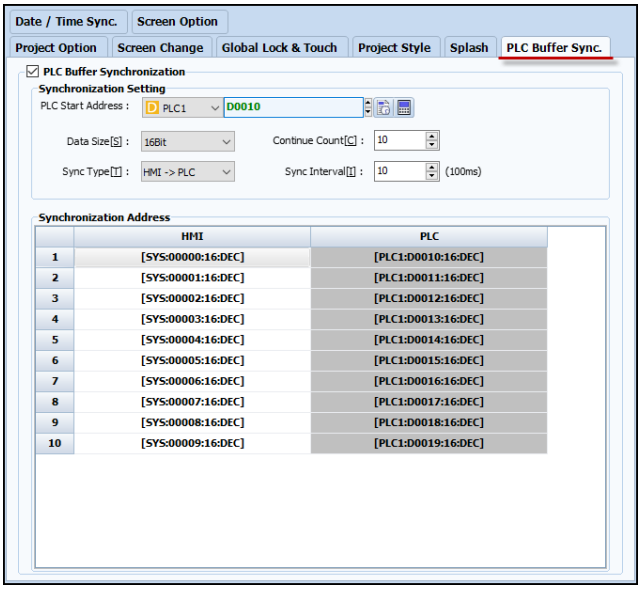
It changes the images added by [Splash Interval (100ms)] according to the numeric order to give an animation-like effect.

No	Splash	Description
1	Left [L]	Move the selected image to the left.
2	Right [R]	Move the selected image to the right.
3	Add [A]	You may add up to 5 images. Check [Expand Image] to adjust the image size to fit the resolution of TOP entire screen.
4	Delete [D]	Delete the selected image.

Click [Action] button to run [Preview] to see how Splash is run.

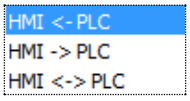
4.1.79 PLC Buffer Synchronization Page

Synchronize the PLC address area and TOP internal address area.



[Pic. PLC buffer synchronization]

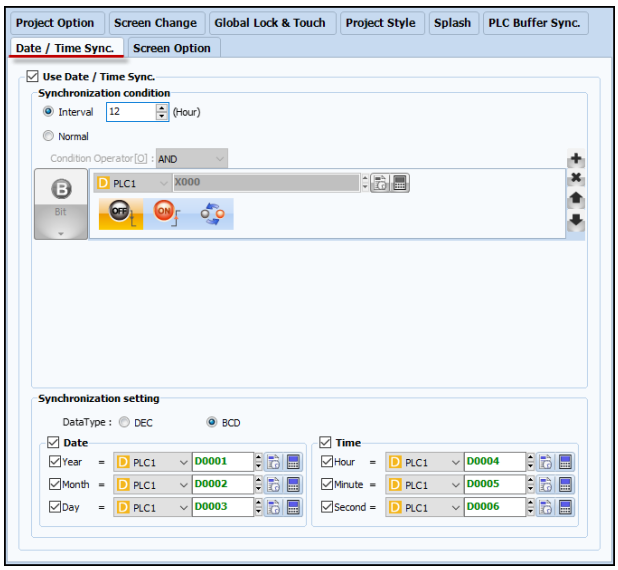
Check [PLC Buffer Sync.]. The PLC address area to be synchronized must be a consecutive address area. Each internal address of TOP can be set individually. Therefore, if you set [PLC Start Address], [Data Size], and [Consecutive Count], the list will be added to the below [Synchronization Address]. Double click each HMI (TOP) address from the [Synchronization Address] list to configure their settings.
Synchronization is done according to the [Synchronization Type] at each set [Synchronization Interval (100ms)].
Please choose from the following three Sync Types.



No	Sync Type	Description
1	HMI<-PLC	Substitute the PLC address area data in HMI (TOP) address area.
2	HMI->PLC	Substitute the HMI (TOP) address area data in PLC address area.
3	HMI<->PLC	If there is modified data in PLC/HMI address, it will be synchronized to each address. Therefore, if there is modified data in the PLC address area, it substitutes the modified data to the HMI (TOP) sync address. If there is modified data in the HMI (TOP) address area, it substitutes the modified data in the PLC sync address. If both PLC/HMI addresses are modified, it synchronizes with the last modified data.

4.1.80 Date/Time Sync. Page

TOP has a clock. Time can be set in the bottom of the TOP menu screen or in [Control Panel]-[Date/Time]. TOP time and PLC (controller) time may not match, so you will need to synchronize the TOP and PLC time in [Date/Time Sync.]. PLC address's time moves to TOP.



[Pic. Date/Time Sync. Page]

Check [Use Date / Time Sync] and choose [Synchronization Condition] from [Interval/Normal]. With [Interval (Time)], synchronization is done by the set interval when condition is met. With [Normal], synchronization is done when the set condition is true.

For [Synchronization Setting], choose the data type from [DEC/BCD]. Time is usually BCD type, but set it to DEC if the time is saved as DEC (decimal number) type according to PLC.

Check [Date] and [Time] and set the PLC address that corresponds to the [Year/Month/Date/Hour/Minute/Second].

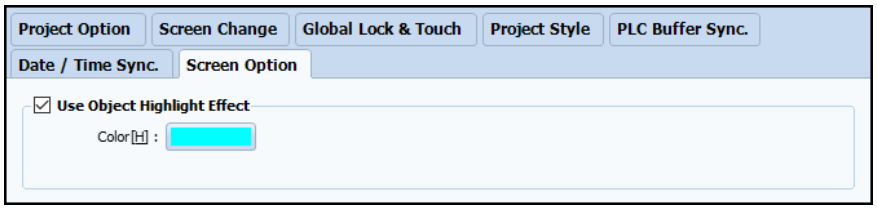
When [Synchronization condition] is met, the time data of PLC address will be set as the TOP time.

TOP saves current time to Special Address [DATE_YYYY(Year), DATE_MM(Month), DATE_DD(Date), TIME_HH(Hour), TIME_MM(Minute), TIME_SS(Second)].

4.1.81 Screen Option Page

[Use Object Highlight Effect] in [Screen Option] page is a function supported by TOPView (SCADA).

Bring the cursor over an object that can be touched to create [Highlight Box] that is in the set [Color]. It visually highlights the touchable object.



[Pic. Screen Option Page]

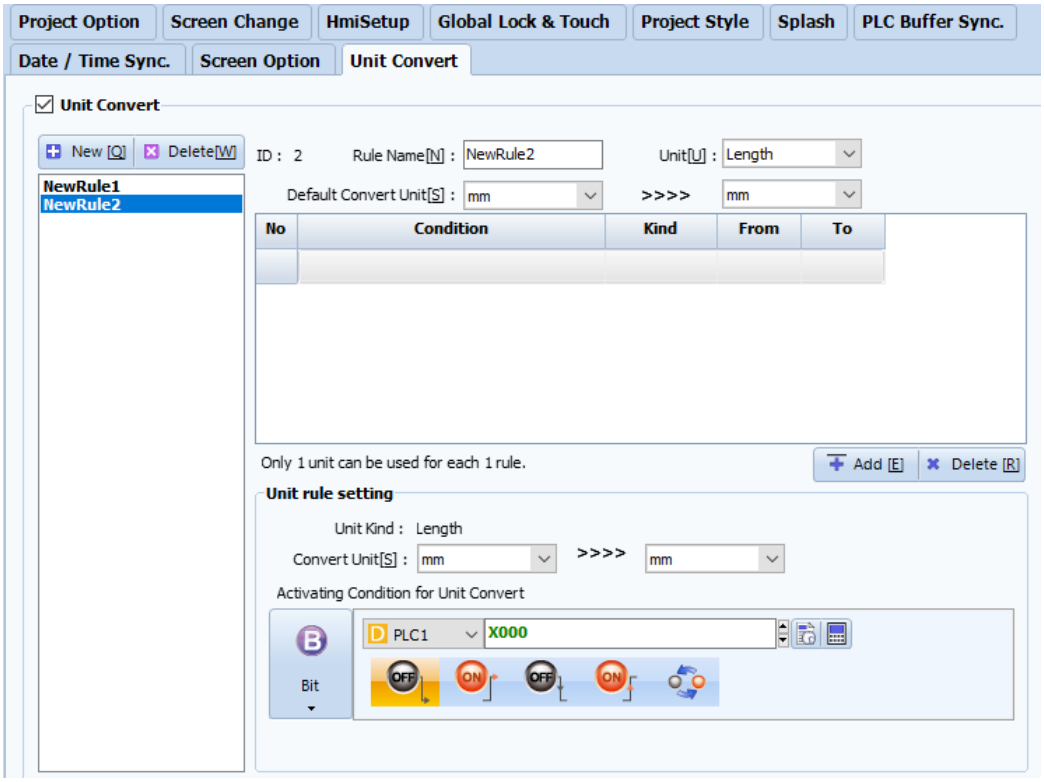
Bring the cursor over the touchable object and [Highlight Box] will be created as shown in the below picture.



[Pic. Use Object Highlight Effect]

4.1.82 Unit Convert Page

Using Unit Convert in [Unit Convert] page creates rules to convert the base unit that is in use.

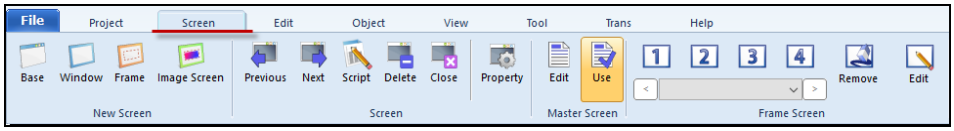


[Pic. Unit Convert Page]

No	Unit Convert	Description
1	ID	The fixed ID of the created rule.
2	Rule Name	Enter the rule name.
3	Unit	Select the type of unit to convert. Length/Width/Weight/Efficiency/Volume/Pressure/Temperature/Speed/Data/Time
4	Default Convert Unit	When the type of conversion unit is selected, units applicable for the type are shown. Then, set a conversion unit.
5	Unit Rule Setting	Only one unit can be used for each rule. After checking the unit classification and conversion unit, set the unit conversion activation condition.

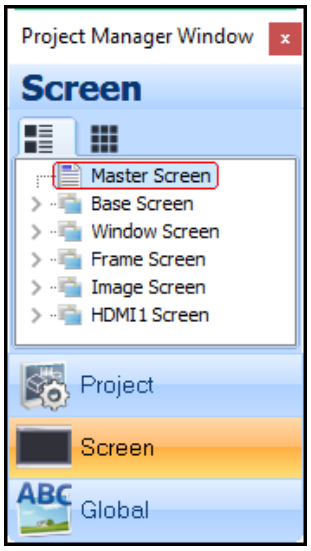
CHAPTER 5 - Screen Menu

The screen manager menu.



[Pic. Screen menu]

There are five types of screens: master screen, base screen, window screen, frame screen, and image screen. You can see screen list in [Project Manager] window.

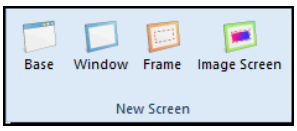


[Pic. Project manager screen]

No	Screen	Description
1	Base Screen	The main screen that appears and operates when sending a project to TOP. Therefore, the size of Base Screen is the same as the screen resolution of the TOP model. Default screen number will start from no.1 and can be created up to no. 65535.
2	Window Screen	This screen can be conditionally popped up from the base screen or hidden when not needed. Window screens can be created from screen no. 1 up to no. 65535. (Warning) From screen no. 65400, certain functions (Tenkey, etc.) that are automatically created are fixed to the window assignment screen and cannot be used as a user screen.
3	Master Screen	This is a screen that can implement the screen call function. The background screen or any repeated functions that are applied to every screen can be implemented on the master screen to call them to the base screen. Check its use at the base screen's property section to register a master screen to the base screen like a background. Only 1 master screen can be made. Increase memory and editing efficiency by reusing common functions.
4	Frame Screen	This screen can perform the call screen function and can create up to 65535 frame screens. Frame Screen is a screen that forms contents in areas that can be commonly used into frames to reuse them in various base screens. Using Frame Screen can minimize repetitive works and reduce the size of the whole project. You may register maximum 4 Frame Screens in the base screen.
5	Image Screen	This is the screen used for calling in the base screen. It can be created up to no. 65535 and can only use shape objects. Numeric or graph objects cannot be registered. It is mainly used to register image objects on the base screen and call image screens from the registered image objects. It expresses status in various ways by calling different image screens according to the bit on/off or word value changes.

New Screen Menu

Create the base screen, window screen, and frame screen.



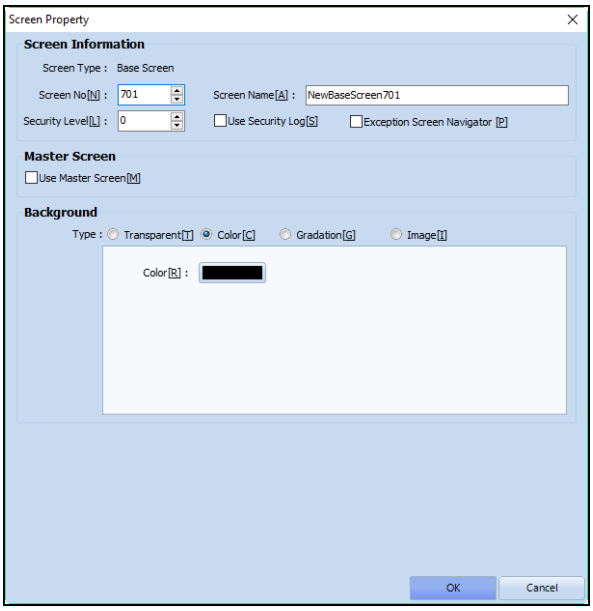
[Pic. New Screen Menu]

Click [Base] menu to create the base screen, [Window] to create the window screen, [Frame] to the frame screen, etc. The same is applied to [Image Screen].
[Master Screen] has 1 screen and is pre-made when a project is created.

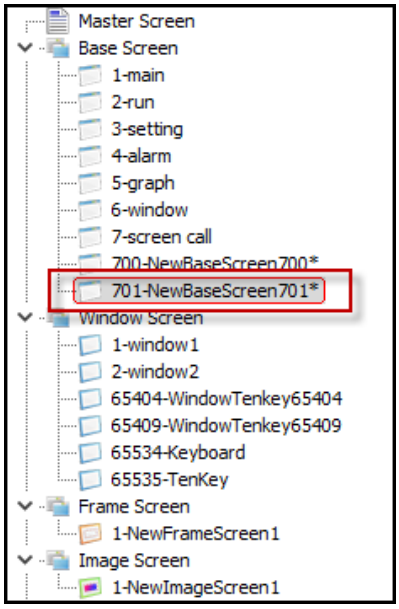
5.1.1 New Base Screen

Create a new base screen. Click [Base Screen] menu and a new base screen's [Screen Property] screen will be displayed. The number of the newly created screen will be assigned as the next number of the last number of each screen.

E.g.) If there are 700 base screen and you create a new base screen, the new one will be assigned as base screen no. 701 as shown in the below picture and [Screen Property] screen will be displayed. Set Screen Number/Screen Name on the [Screen Property] screen and click [OK] to create a new screen.



[Pic Base screen property]



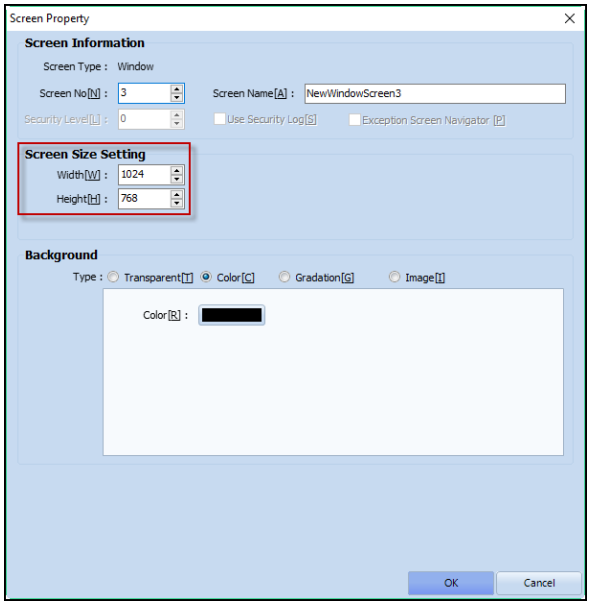
[Pic. Create a new base screen]

No	Property	Description
1	Screen Type	Displays a screen type. There are five types of screen: master screen, base screen, window screen, frame screen, and image screen.
2	Screen Number	Base/Window/Frame/Image Screen can create up to 65535 screens and assign screen numbers from no. 1 to no. 65535. Duplicate numbers cannot be assigned to the same type of screen.
3	Screen Name	Enter the screen name.
4	Security Level	This is only available when [Security] function in [Project] menu is set. If a level other

		than 0 is set, the password will be set on the screen. When switching to the screen, the user will be required to log in on the password screen to see the screen. User may set up to 16 levels of passwords in [Project]-[Security]. The higher the level number, the higher the level. When moving to a higher level screen, it is required to enter the corresponding password. User can instantly move to a lower level screen.
5	Use Security Log	When setting the security level, user log record will be automatically left when approaching to the screen.
6	Exception Screen Navigator	[Screen Navigator] function is located on the top menu that can be accessed from TOP system unit. It displays the base screen list in thumbnails and allows easy switches between screens. Check to exclude Screen Navigator from the list.
7	Master Screen	Check [Use Master Screen] and all objects registered in the master screen will be called to the base screen.
8	Background	Set the screen background. (1) Transparent means that there is no background color. TOP shows black by default. (2) It is set as the background color. (3) Gradation selects two background colors and add gradation effect according to the direction. (4) Image: Import an image file and set it as the background. You can import JPG, BMP, PNG, and SVG image files. You can choose the image placement from center/tiles/stretch. 

5.1.2 New Window Screen

Create a new window screen. It is created in the same way a base screen is created, so only the difference will be described in this section. Click [Window] menu and [Screen Property] screen for the new window screen will be displayed. Set screen number/screen name on the [Screen Property] screen and click [OK] to create a new window screen.



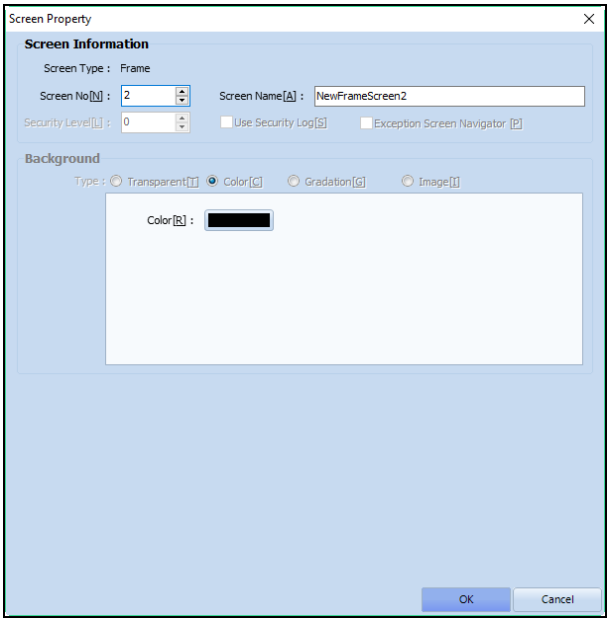
[Pic. Window Screen Property]

No	Property		Description
1	Security Level/Use Security Log Screen Navigator		This setting is available on the base screen only.
2	Window Screen Setting	Width	Set the width of the window screen.
		Height	Set the height of the window screen.

5.1.3 New Frame Screen

Create a new frame screen. It is created in the same way a base screen is created, so only the difference will be described in this section.

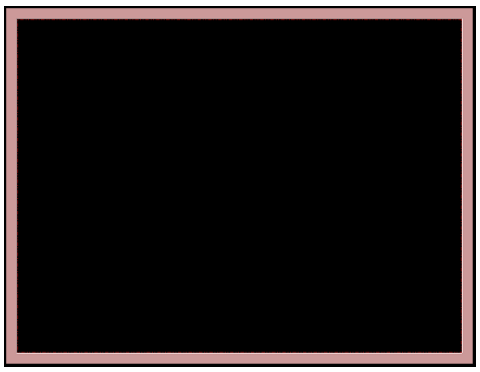
Click [Frame] menu and [Screen Property] screen for the new frame screen will be displayed. Set screen number/screen name on the [Screen Property] screen and click [OK] to create a new frame screen.



[Pic. Frame Screen Property]

No	Property	Description
1	Security Level/Use Security Log Screen Navigator	This setting is available on the base screen only.
2	Background	Frame screen is a screen that calls and registers some or all area to the base screen and it cannot set a background.

Created frame screen, as shown in below picture, has a red frame area. This rectangular area's size and position can be modified. When called to the base screen, only the objects in the frame area is called and all objects such as shapes and tags can be used in the frame screen.

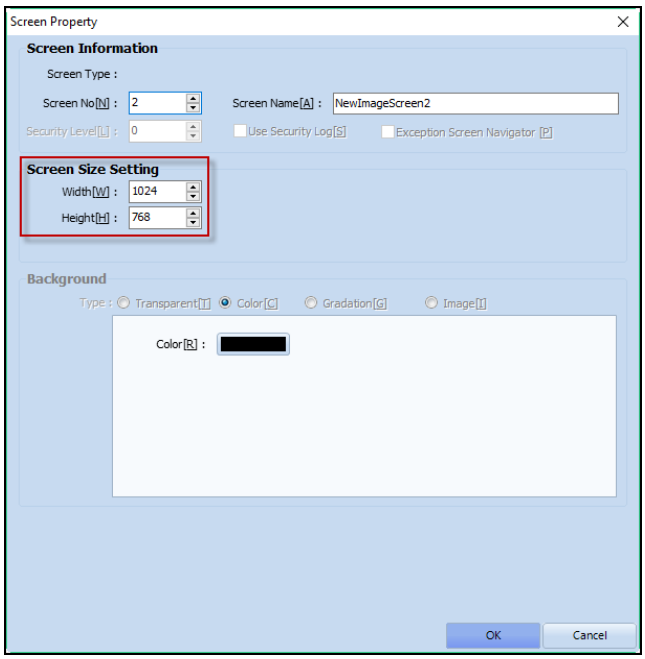


[Pic. New frame screen]

5.1.4 Create Image Screen

Create a new Image Screen. It is created in the same way a base screen is created, so only the difference will be described in this section.

Click [Image Screen] menu, and [Screen Property] screen for the new window screen will be displayed. Set screen number/screen name on the [Screen Property] screen and click [OK] to create a new Image Screen.



[Pic. Image Screen - Screen Property]

No	Property		Description
1	Security Level/Use Security Log Screen Navigator		This setting is available on the base screen only.
2	Screen Size Setting	Width	Set the width of the image screen.
		Height	Set the height of the image screen.

This screen is used to call on the base screen.

Only shape objects can be registered to a screen. Action objects such as numbers or graphs cannot be registered.

It is mainly used to register image objects on the base screen and call image screens from the registered image objects. It expresses status in various ways by calling different image screens according to the bit on/off or word value changes.

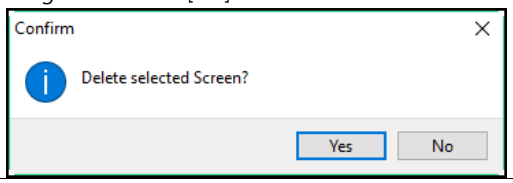


[Pic. New image screen]

Move/Delete Screens Menu



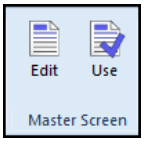
[Pic. Screen manager menu]

No	Menu	Description
1	Previous	Move to the previous screen from the base edit, window screens, or frame screen that you are editing.
2	Next	Move to the next screen from the base edit, window screens, or frame screen that you are editing.
3	Script	Calls the script screen so that you can set scripts in the screen that you are editing. Scripts can be set to the base screen or window screen, or to the object registered to the base screen/window screen.
4	Delete	Delete the screen that is being edited. Click [Yes] from the delete confirmation message to delete. 
5	Close	Close the screen that is being edited.

Screen Property

Select [Screen Property] menu to display the Property Screen of the screen that you are editing.
Screen Property is property for the base, window, and frame screen. For more information, please see Chapter 5.1 [New Screen Menu].

Master Screen Menu

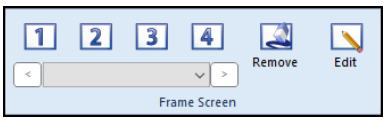


[Pic. Master screen menu]

No	Menu	Description
1	Edit	Opens the master screen to allow the user to edit.
2	Use	Master screen is called to the base screen that is in editing and registered.

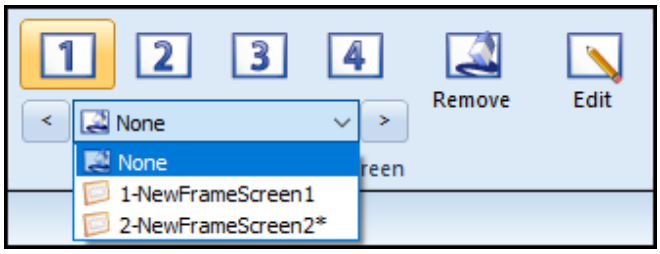
Frame Screen Menu

It calls and registers a frame screen to the base screen and window screen or remove it.



[Pic. Frame screen menu]

You may call and register four frame screens in a screen. To call and register one frame screen that you have made, select 1 and select the frame screen that you will register in the Combo Box below. You may add up to four of these screens with [Delete Frame] and [Edit Frame] buttons.

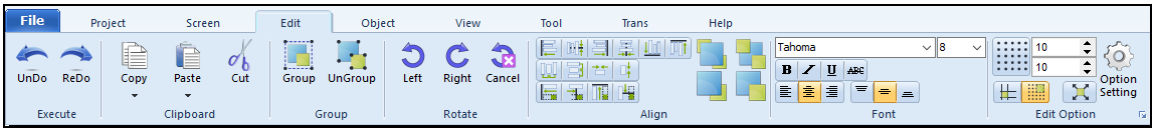


[Pic. Select frame]

No	MENU	DESCRIPTION
1	Delete Frame	Remove a frame screen that is registered to a base screen by selecting [None] in the Combo Box or clicking [Delete Frame] button. At this time, the frame screen that has been called to the base screen is being deleted, not the frame screen itself.
2	Edit Frame	Edit the frame that is on the selected screen. To edit the frame, first, select a frame screen that is registered to the no. 1, 2, 3, and 4. Click button no. 1 to edit the frame screen set to no. 1 then click [Edit Frame] button. The frame screen will be displayed for you to edit.

CHAPTER 6 - Edit Menu

Edit Menu provides general object editing functions such as [Copy/Paste/Rotate/Align] and editing functions such as [Edit Screen/Edit Designer Option/User Define Option].

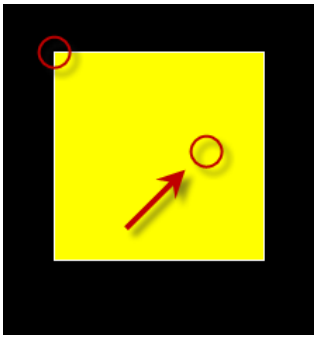


[Pic. Edit Menu]

Select Object

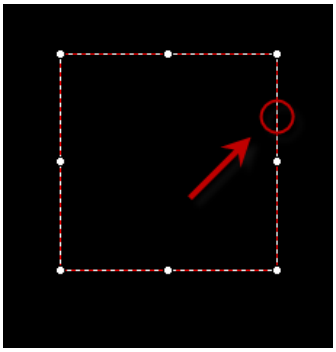
6.1.1 Normal Selection

All objects registered to a screen can be selected with a mouse left-click. For shapes, selection method varies by whether or not they are filled. For objects with a fill style, clicking any part within the range will select the object.



[Pic. Selecting an object with fill style]

When an object does not have fill style, you must click the border line of the object to select it.

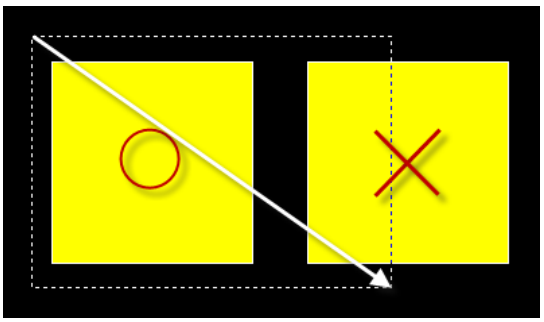


[Pic. Selecting an object without fill style]

6.1.2 Select Object Range (Drag)

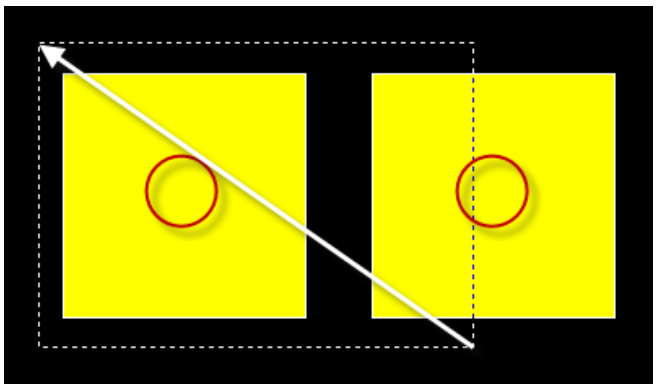
Select objects with the rectangular dotted line range that appears with a mouse drag on an editing screen. There are two ways to select range. Use them accordingly while editing to select or disable the object more conveniently.

(1) Set the direction of the area selection from the left to right and select objects that are entirely within the range.



[Pic. Select objects that are entirely within the range]

(2) Set the direction of the area selection from the right to left and select all objects that fall within the range.

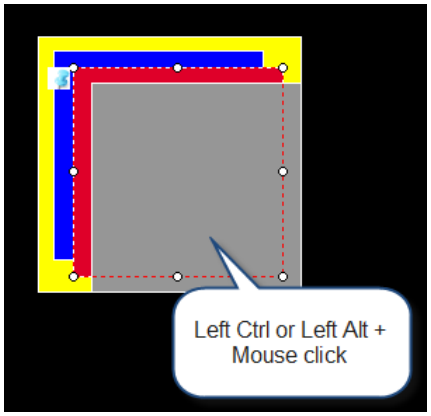


[Pic. Select objects that are partially within the range]

6.1.3 Selecting Overlapping Objects

When there are two or more overlapping objects, it may be difficult to select the object you wish to choose.

As shown in [Pic. Selecting overlapping objects], when there are multiple overlapping shapes, press the [Ctrl] key right on the keyboard or [Alt] key left on the keyboard and click the object with the mouse left-click to select one shape at a time every time you click.



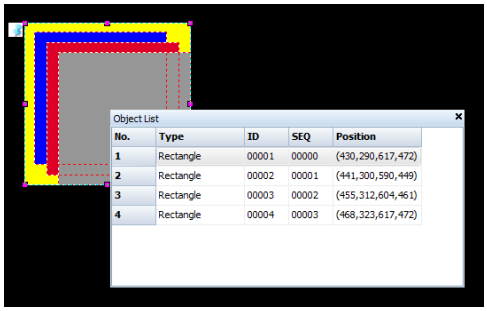
[Pic. Selecting overlapping objects]

6.1.4 Selecting Overlapping Objects Using Popup Menu

When there are overlapping objects, you may use the popup menu to select one object you wish to select. Use Select Range to select all objects including the one that you wish to select and double click. Then a popup menu that displays the selected objects' list as shown in [Pic. Select popup menu] will

appear.

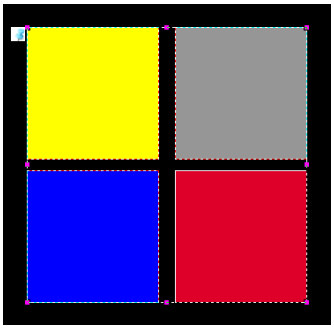
-You can easily select the object you wish to select by selecting the objects in the list one after the other.



[Pic. Select popup menu]

6.1.5 Multiple Select and Cancel

When an object is selected and then other objects are selected with [Shift] key on the keyboard, you can select or deselect additional shapes.

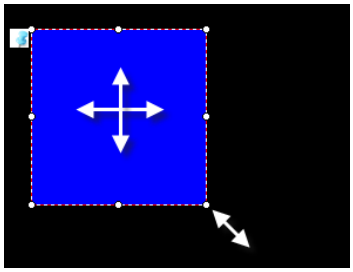


[Pic. Multiple selection]

Move and Resize

6.1.6 Move and Resize Using the Mouse

When an object is selected, a tracker will be displayed as [Pic. Tracker and mouse cursor]. The tracker has 8 directions. The user can select the tracker of the direction that he/she wishes to move to with a mouse left-click and drag to resize. If the mouse cursor is above an object that has Fill Style or the border of an object that does not have Fill Style, it will change to a cross arrow-shape and you can drag it with a left click to move it to the position you want to move the object to.



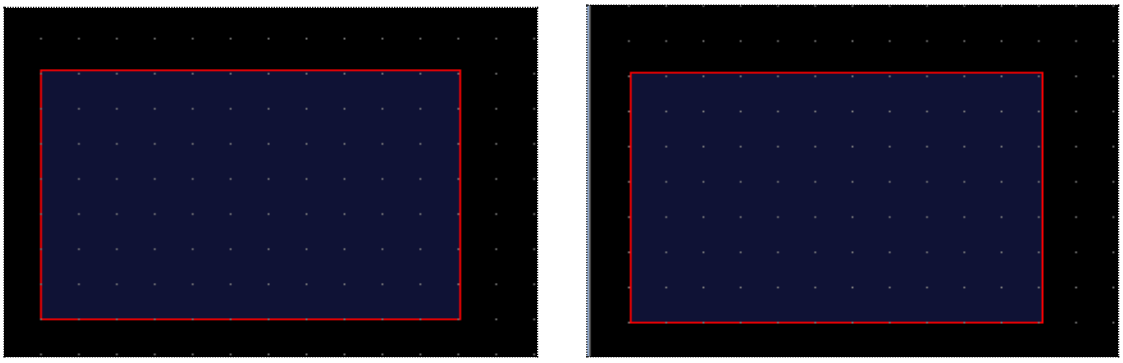
[Pic. Tracker and mouse cursor]

6.1.7 Movement Using Keyboard

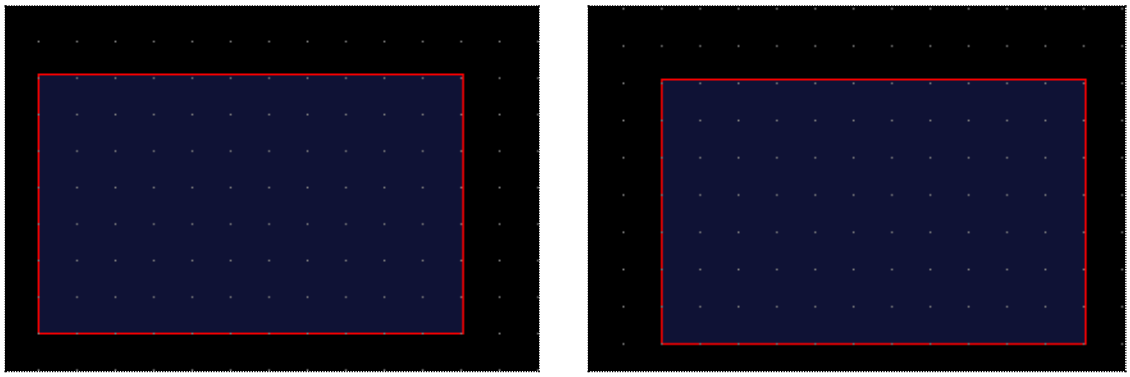
Use the keyboard direction keys while an object is selected to move the object. There are two ways to

move an object with a keyboard. Use these two methods depending on the editing situation to move the objects more conveniently.

(1) Pixel-unit movement using Space Bar and Grid movement
Press [Space Bar] to change as [Pic. Pixel unit movement] and [Pic. Grid unit] in a sequence.



[Pic. Pixel unit movement]



[Pic. Grid unit movement]

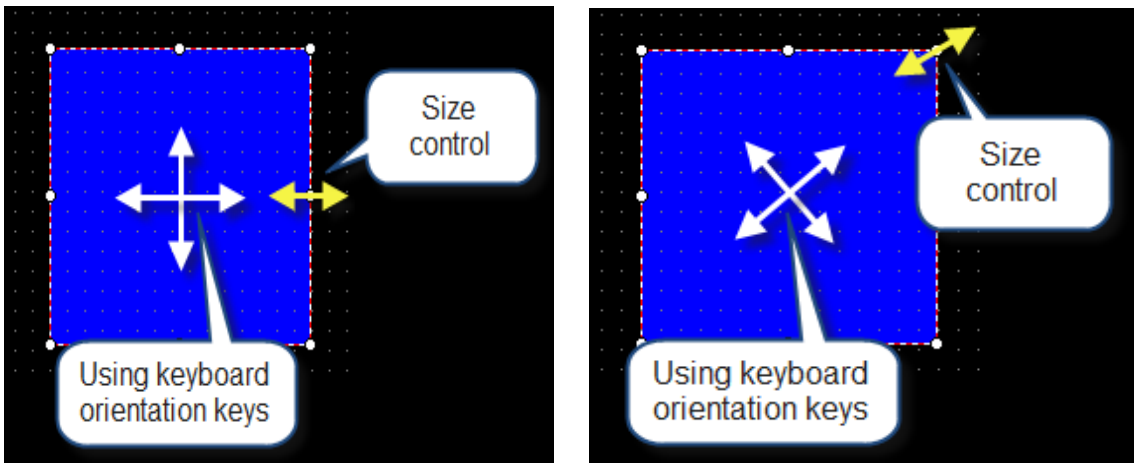
(2) Move in a Grid unit using [Ctrl] key when moving an object
Use the direction keys on the keyboard to move an object. Keep the [Ctrl] key pressed and move to move the object by [Grid Unit].

6.1.8 Resize with the Keyboard and Mouse

Use the keyboard while an object is selected to resize it. There are two ways to resize an object using a keyboard; to resize with the keyboard only or use the keyboard and the mouse. Use these methods according to your editing status to modify the object's size more conveniently.

(1) Select an object, keep the [Shift] key pressed, and press the keyboard's direction keys to resize the object. (The size is modified by [Pixel Unit].)

(2) Use the tracker with the cursor and keyboard direction keys to resize
Place the mouse cursor on the 8 direction of the trackers. Mark to resize and use the keyboard's direction keys [Pic. Resize with the keyboard and mouse] to modify the size.



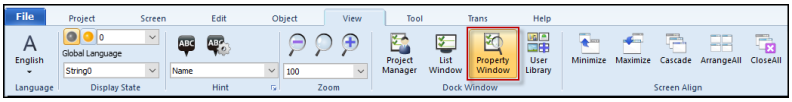
[Pic. Resize with the keyboard and mouse]

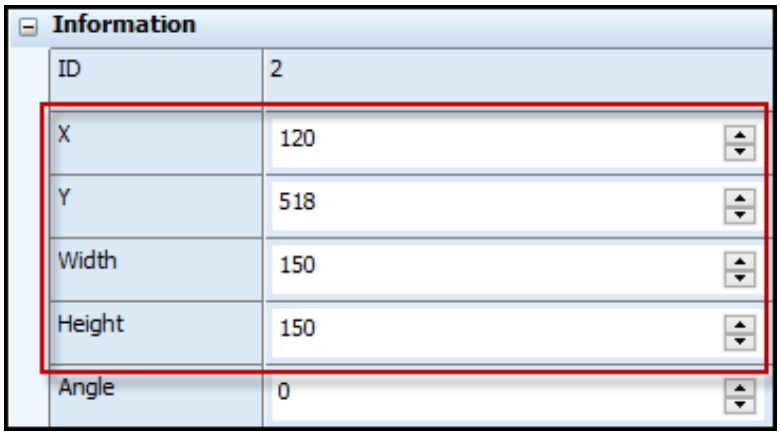
When modifying the size, clicking [Space Bar] will enable [Pixel Unit Movement] and [Grid Unit] format in a sequence for you to change the size and use.

6.1.9 Move and Resize in Property Page

Modifying the coordinate and size information in [View]-[Property] page will change the position and size.

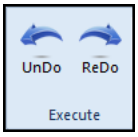
The left and top trackers to the object will be the standard point of the coordinate and the size unit is in pixels.





[Pic. Move and resize in property page]

Execute Menu



[Pic. Execute menu]

6.1.10 Undo (Ctrl + Z)

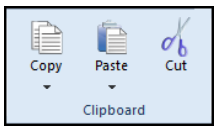
You may cancel all creation, movement, copy, paste, delete, etc. of objects took place in the project

screen in a sequence. (Available for 100 times for each screen.)

6.1.11 Redo (Ctrl + R)

Reverse [Undo] that took place in the project screen to the previous state. (Available for 100 times for each screen.)

Clipboard Menu



[Pic. Clipboard Menu]

6.1.12 Copy

(1) Copy (Ctrl + C)

A shortcut for creating a copy of an object.

Select the object to copy and select [Edit]-[Copy] in the menu, or right-click the mouse and select [Copy] from the popup menu.

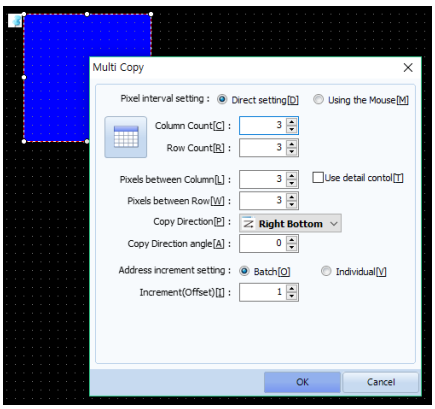
Copying an object data saves it in the WINDOWS clipboard until the next copy or cut.

(2) MultiCopy (Ctrl + T)

Use this function when you wish to copy multiple objects.

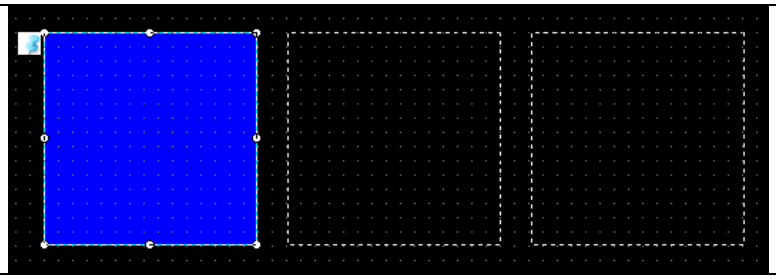
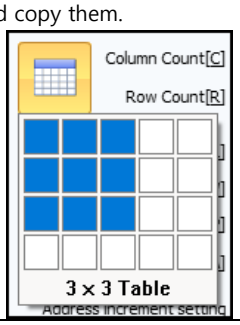
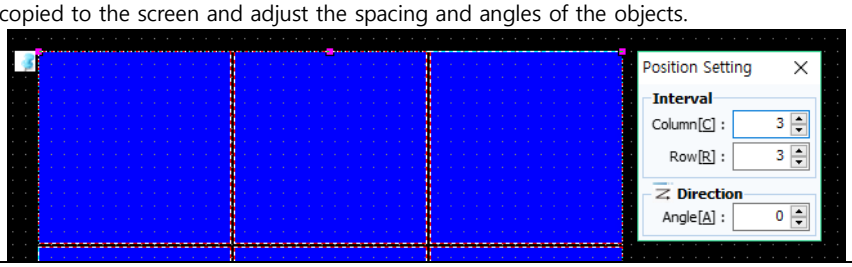
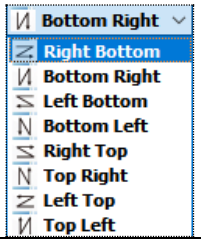
For tags, it can automatically increase addresses used for tags according to options.

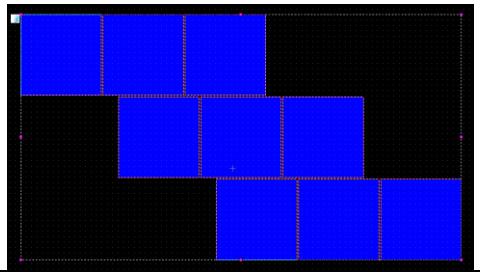
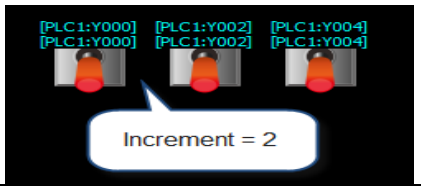
Select a tag and click [Edit]-[Copy]-[MultiCopy] icon in the menu to display [MultiCopy] as shown in [Pic. Multi copy].



[Pic. Multi copy]

No	MultiCopy	Description
1	Pixel Interval Setting	Choose whether to [Set Manually] with pixel or set as [Use Mouse] for object spacing. E.g.) If [Use Mouse] is selected, you may set the spacing using the mouse as the picture.

		
2	Column/Row Count	Each of them are copied by the amount set in the Row (Vertical) and Column (Horizontal) direction and increases. Also, you may click the table icon on the left and set by the number of tables and copy them. 
3	Pixels between Column/Row	Set the spacing between items that will be created in the Row (Vertical) and Column (Horizontal) direction by pixel unit.
4	Use Detail Control	Set MultiCopy option, check Use Detail Control, and click [OK] to see the objects copied to the screen and adjust the spacing and angles of the objects. 
5	Copy Direction	Set the copy direction. (1) Bottom Right: Prioritize the Copy Direction at the bottom of the Y Axis and create it on the right. (2) Right Bottom: Prioritize the Copy Direction at the right side of the X Axis and create it from top to bottom. (3) Left Bottom: Prioritize the Copy Direction at the left side of the X Axis and create it from top to bottom. (4) Bottom Left: Prioritize the Copy Direction at the bottom of the Y Axis and create it on the left. (5) Right Top: Prioritize the Copy Direction at the right side of the X Axis and create it from bottom to top. (6) Top Right: Prioritize the Copy Direction at the top of the Y Axis and create it to the right. (7) Left Top: Prioritize the Copy Direction at the left side of the X Axis and create it from bottom to top. (8) Top Left: Prioritize the Copy Direction at the top of the Y Axis and create it to the left. 

6	Copy Direction Angle	When copying an object, create it by the Copy Angle with the Copy Direction as the standard in the axis. E.g.) If the copy direction is [Bottom Right] and the Copy Angle is 47, it will be created as shown in the below picture. 
7	Address increment setting	When copying more than two objects, you may set the address incremental value individually.
8	Increment(Offset)	The address of the copied item will be automatically increase by the amount set in [Address Increment] from the set address number of the original. E.g.) When the original address is [0000.00] and there are six multicopies and the incremental value is 2, the addresses of the created copies are [0000.00, 0000.02, 0000.04, 0000.06, 0000.08, 0000.10] in order. 

6.1.13 **Paste**

(1) Paste (Ctrl + V)

This function inserts the object saved in the clipboard by copy or cut function to the position designated by the user.

Select [Edit]-[Paste] in the menu or select [Paste] that appears in the popup menu that is displayed by a right click of the mouse and select the position to paste the item with a left click. Running Paste without having run Copy or Cut function before, nothing will happen.

(2) Paste (Same Position) (Shift + Ctrl + V)

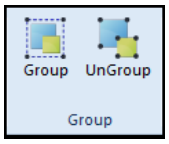
[Paste (Same Position)] copies an object and the object's position and inserts it to the same position on a different screen. Using Paste (Same Position) on the same screen will create an overlapping object.

Select [Edit]-[Paste (Same Position)] in the menu on the screen to paste the object in or select [Paste (Same Position)] from the popup menu that appears when clicking a right click.

6.1.14 **Cut**

Cut (Ctrl + X) is a function that is equivalent to copying and deleting an object at the same time. Select an object and select [Edit]-[Cut] in the menu or right-click the mouse and select [Cut] from the popup menu. Executing copy will save the selected object in the WINDOWS clipboard.

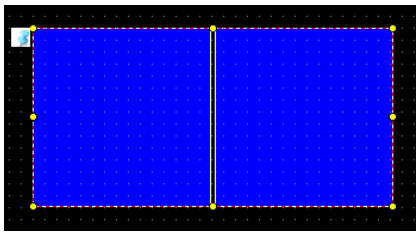
Group Menu



[Pic. Group]

6.1.15 Group (Ctrl + G)

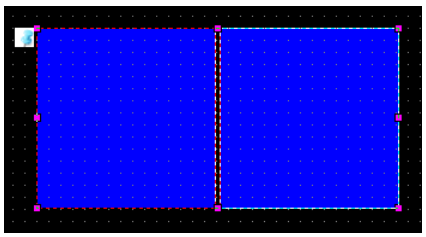
Assign multiple objects to groups and edit them. Select more than two objects and select [Edit]-[Group] in the menu or display a popup menu with a right click of the mouse and select [Group] to assign them to groups. The tracker of the object assigned to a group will be displayed in yellow.



[Pic. Set to a group]

6.1.16 Ungroup (Ctrl + U)

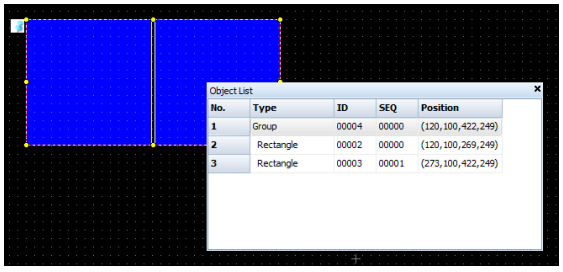
Ungroup objects that are assigned to a group. Select [Edit]-[UnGroup] in the menu or display a popup menu with a right click of the mouse and select [Ungroup] to ungroup.



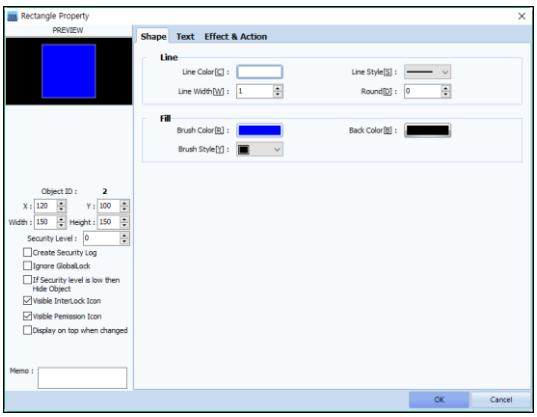
[Pic. Ungrouped]

6.1.17 Edit Objects in a Group

You may modify properties such as color or address without ungrouping objects that are in a group. Select a group and right-click the mouse and display the popup menu. Then select [See Object List] to display the list of objects that are in the group as shown in [Pic. Object List]. Double click the object you wish to modify properties to call Property Edit window as shown in [Pic. Object Property].

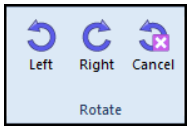


[Pic. Object List]



[Pic. Object Property]

Rotation Menu



[Pic. Rotate]

This function rotates an objects to left or right by [1°] unit within the [0°~359°] range. Select the object and select the rotation direction you want in the [Edit]-[Rotate] section of the menu or right-click with the mouse, display the popup menu, and select [Rotate].

6.1.18 Rotate Left (Ctrl + ,)

Rotate the selected object [Left] by 359°-0°.



[Pic. Rotate left]

6.1.19 Rotate Right (Ctrl + .)

Rotate the selected object [Right] by 0°-359°.



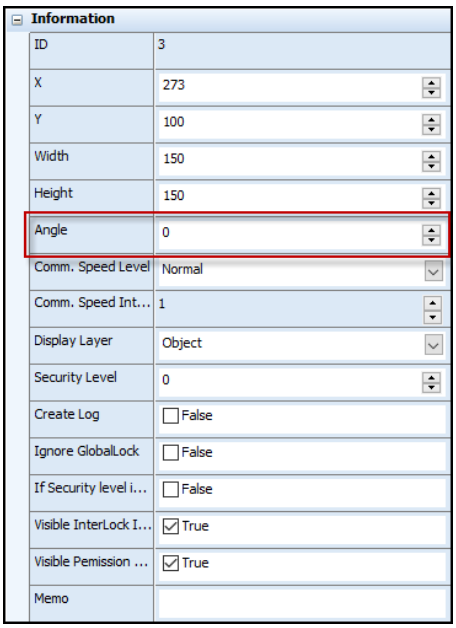
[Pic. Rotate right]

6.1.20 Cancel Rotate

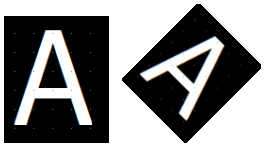
Restore the rotated object to the original state.

6.1.21 Change of Rotation Angle using Property Window

Use the property window to rotate the rotation angle to [0°-359°].



[Pic. Property angle]



[Pic. Rotate 45°]

Align Menu



[Pic. Align]

TOP Design Studio provides various alignment functions. Select objects to align and select an alignment method from [Edit]-[Align] in the menu or right-click the mouse and select an option from Align in the popup menu.

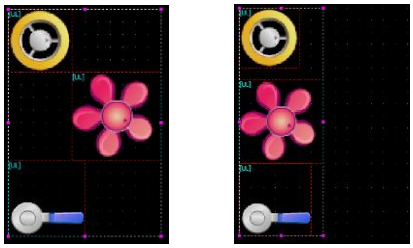
6.1.22 Align Left/Right/Top/Bottom/Center



Pic. Align Left/Right/Top/Bottom/Center]

Modify the object's position by aligning it to the reference point. The icon will be aligned by the reference point of left/center horizontal/right/center vertical/bottom/top.

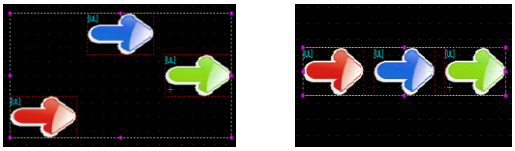
(1) Align Left (Shift + Ctrl + ←)
Move the far left object from the selected objects to the left.



[Pic. Align left]

(2) Align Horizontal Middle (Shift + Ctrl + ←)

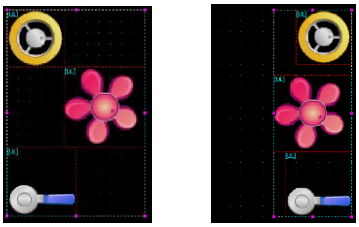
Move to align the X axis of the selected objects to be the center point.



[Pic. Align middle]

(3) Align Right (Shift + Ctrl + →)

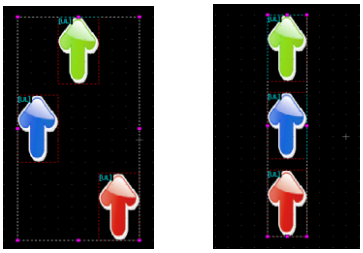
Move the far rightmost object from the selected objects to the right.



[Pic. Align right]

(4) Align Vertical Center (Shift + Ctrl + C)

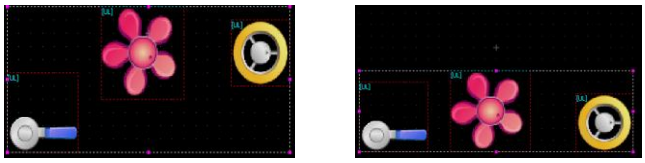
Move to align the Y axis of the selected objects to be the center point.



[Pic. Align center]

(5) Align Bottom (Shift + Ctrl + ↓)

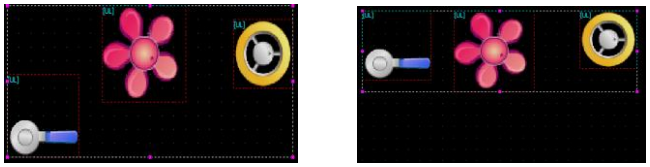
Move by the bottom of the object that is positioned at the very bottom from the selected objects.



[Pic. Align bottom]

(6) Align Top (Shift + Ctrl + ↑)

Move by the top of the object that is positioned at the very top from the selected objects.



[Pic. Align top]

6.1.23 Interval/Align Center to the Screen

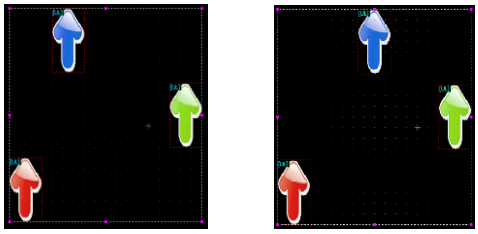
Align the spacing between objects uniform or move it to the middle of the screen.



[Pic. Interval/align center to the screen]

(1) Align Horizontal Space (Shift + Ctrl + Z)

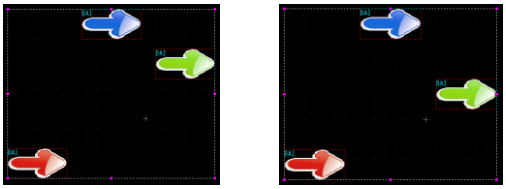
Move the selected objects so that their horizontal spacing is uniform.



[Pic. Align horizontal space]

(2) Align Vertical Space (Shift + Ctrl + E)

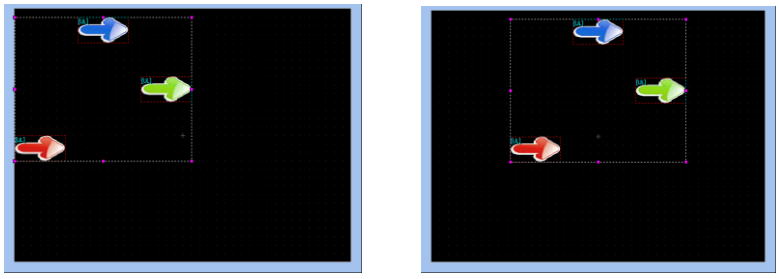
Move the selected objects so that their vertical spacing is uniform.



[Pic. Align vertical space]

(3) Move to the Horizontal Middle of Screen (Shift + Ctrl + R)

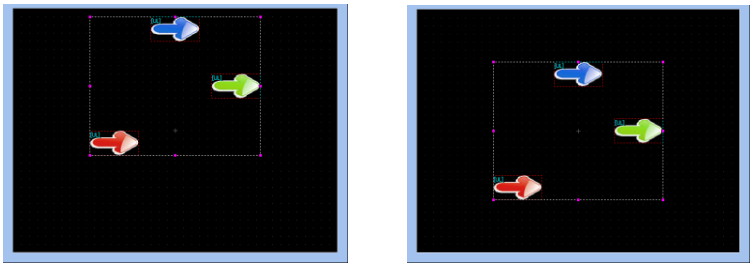
Move the selected objects horizontally to the center of the editing screen.



[Pic. Move to the horizontal middle of screen]

(4) Move to the Vertical Middle of Screen (Shift + Ctrl + I)

Move the selected objects vertically to the center of the editing screen.



[Pic. Move to the vertical middle of screen]

6.1.24 **Match Size**

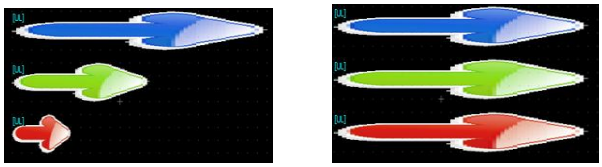
Match the length/height size of a selected object to one object.



[Pic. Match size]

(1) Horizontal Size to Big (Shift + Ctrl + B)

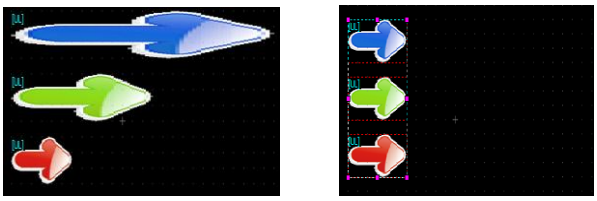
Match to the largest width from the selected objects.



[Pic. Horizontal size to big]

(2) Horizontal Size to Small (Shift + Ctrl + T)

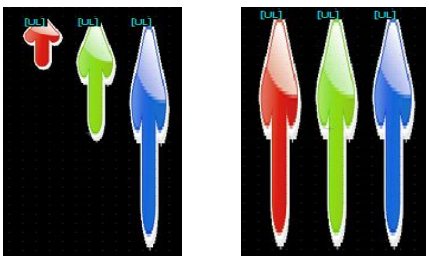
Match to the smallest width from the selected objects.



[Pic. Horizontal size to small]

(3) Vertical Size to Big (Shift + Ctrl + G)

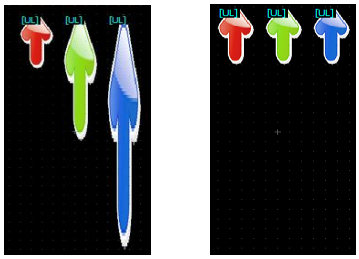
Match to the largest height from the selected objects.



[Pic. Vertical size to big]

(4) Vertical Size to Small (Shift + Ctrl + L)

Match to the smallest height from the selected objects.



[Pic. Vertical size to small]

6.1.25 **Move Front/Back**

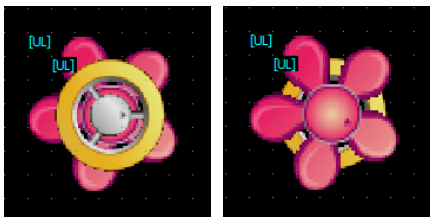
Send a selected object from the overlapping object front or back.



[Pic. Move front/back]

(1) Send Front (Home)

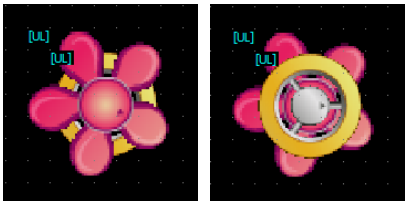
When objects are overlapping, send the selected shape front by one step.



[Pic. Send front]

(2) Send Back (End)

When objects are overlapping, send the selected shape back by one step.



[Pic. Send back]

(3) Send Front End (Ctrl + Home)

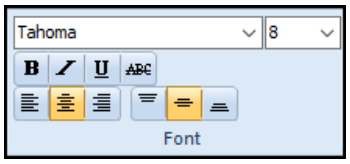
It is the same function to [Send Front], but when there are multiple overlapping objects, send the selected object to the very front.

(4) Send Back End (Ctrl + End)

It is the same function to [Send Back], but when there are multiple overlapping objects, send the selected object to the very back.

Font Menu

Set the text font.



[Pic. Font]

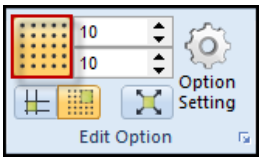
Font	Description
Tahoma	Change the text font. TOP Design Studio provides about 400 types of fonts.
8	Set the text size.
B I U ABC	You can give bold/italic/underline/strike effects to texts.
	When multiple lines of texts have been entered, set to align to the left, middle, or right.
	If a text has been inserted inside a shape or image object, you can align this text position to the top/middle/bottom.

Edit Option Menu

6.1.26 Grid Setting

(1) Set the Use of Grid

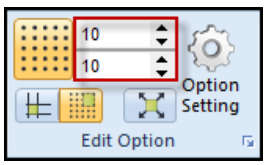
Display or hide Grid on the screen. Grid is a set of dots that are displayed in a sequential order on a screen and it helps you to better place objects.



[Pic. View grid]

(2) Grid Spacing

Modify the Grid Spacing to enable a more precise or rough design. The horizontal and vertical grid spacing can be adjusted separately and [Pic. Grid Spacing]'s top adjusts the vertical direction, and the bottom adjusts the horizontal direction of grid spacing.



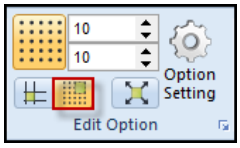
[Pic. Grid spacing]

6.1.27 Snap Type Setting

The lexical meaning of Snap is 'clicking sound'. Snap function is also called as magnetic function and it refers to providing a function that attaches to a certain standard like a magnetic when drawing, moving, or changing the size of a shape or a tag.

(1) Snap Grid

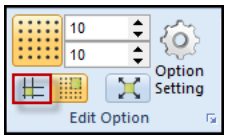
Snap Grid is a function that allows the editing of the movement or size change of an object by grid unit when the view grid option is used in the editing screen. When using a mouse, the mouse pointer is moved by the unit of spacing of the grid rather than pixels. When using a keyboard, you will be moving cell by cell by the grid every time a direction key is pressed.



[Pic. Snap grid]

(2) Snap Object

While Grid Snap snaps by the pre-determined grid unit, Object Snap is the function that freely snaps with the corner of the object that is already registered to the screen by the user, without the restriction of the grid. There are various options related to snap in [Edit]-[Option Setting]-[Screen Edit Option] in the menu. For Object Snap, you can display snap points in lines according to options.

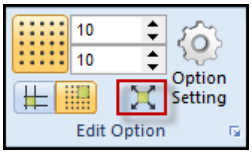


[Pic. Snap object]

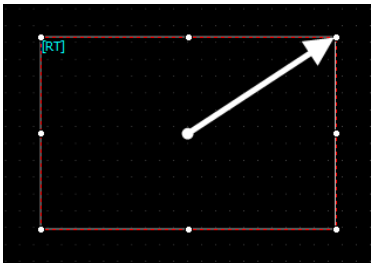
6.1.28 Draw from Center to Outside Option

When drawing an object, the initially selected point becomes the center and the object is drawn toward outside.

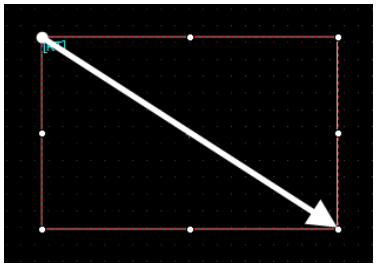
If this function is not selected, the initial selection point becomes the object's corner.



[Pic. Draw base screen]



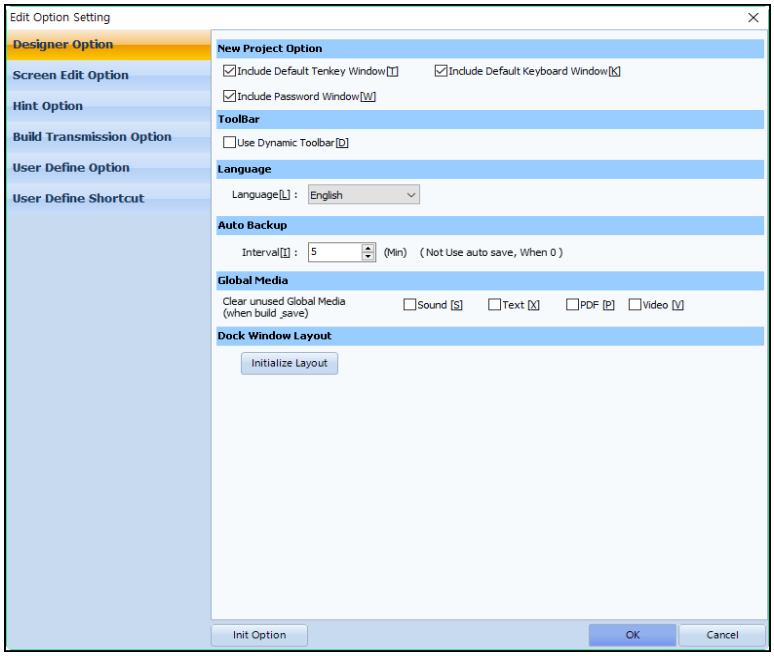
[Pic. Draw base screen setup]



[Pic. Draw base screen not setup]

6.1.29 **Option Setting**

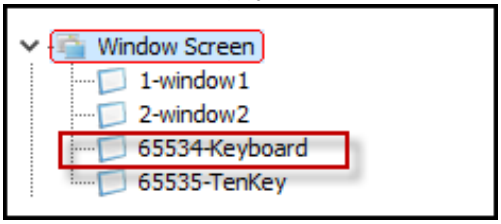
Option Setting provides options to configure TDS environment to fit the user. Set [Designer/Edit Screen/Hint/Build and Transmission/User Define] option and User Define Shortcut. Modified options reset when the [Init Option] button at the bottom is clicked.

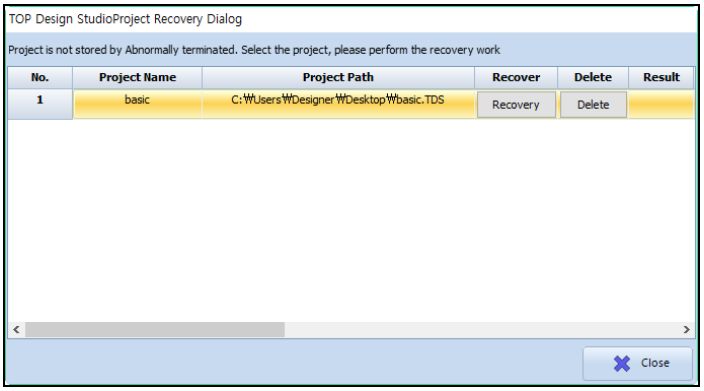
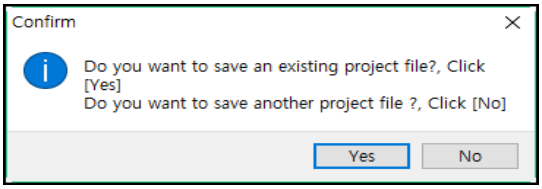
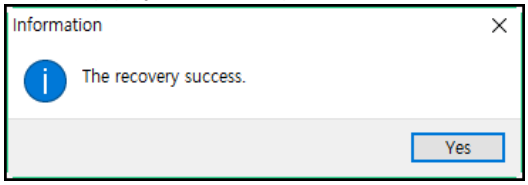
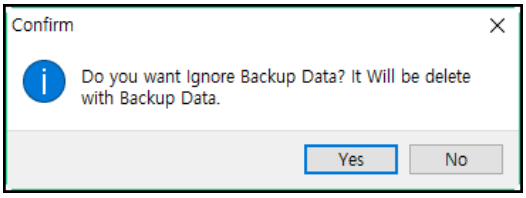


[Pic. Option setting]

(1) Designer Option

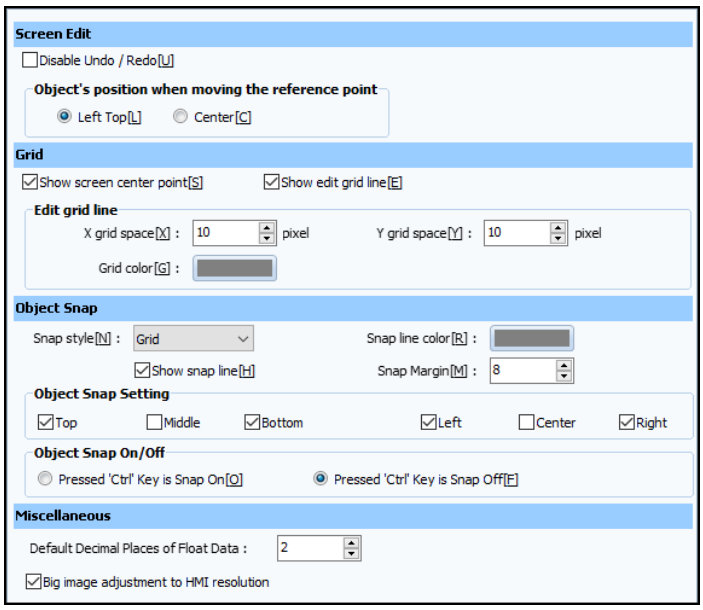
Set options for New Project Option, ToolBar, Language, and Backup.

No	Option	Description
1	New Project Option	Check [Include Basic Tenkey Window] to automatically add the no. 65535 Tenkey (numeric keypad) in the window screen when a new project is created. Check [Include Basic Tenkey Window] to automatically add the no. 65534 Keyboard (text keypad) in the window screen when a new project is created.  Check [Include Password Window] to include a password window when creating a new project. Check [Editing Screen Window Mode when Opening Project] to open a base screen that edits a new project in a window mode.
2	ToolBar	Check [Use Dynamic Toolbar] and the Toolbar will move dynamically. It allows you to use the frequently used object menus and editing menus. Click the editing screen to move to the [Object Menu] and selecting the object will automatically send you to the [Edit Menu].
3	Language	Set the display language of TDS.
4	Auto Backup	Set an interval to automatically backup projects in editing by the [Interval]. When set to [0], automatic backup is not performed. When [Auto Backup] is set and the project has been terminated abnormally, running TDS again will display [TOP Design Studio Project Recovery

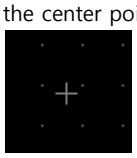
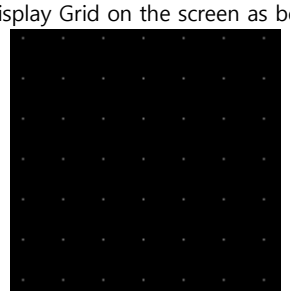
		Dialog] as below.  In the [Project Recovery Dialog], you will see the list of projects that have been abnormally terminated. Click [Recovery] button to display a message that asks you whether to recover the backup project file or save as a new file.  Click [Yes] to load the backup project file and open it in TDS.  Click [No] and [Save As] window will be displayed and the backup project will be saved as a file. Click [Delete] and the following message will be displayed. Click [Yes] and the backup project file will be deleted.  Note) In the path where the existing projects are saved, a file named [~$Project Name.hgid] will be found. This file appears while the project is open (in editing) and automatically disappears when the project is terminated normally. However, when the project is terminated abnormally, it will remain. This file has the path information of the backup file and if deleted by the user, the file will not be recovered when running TDS again.
5	Global Media	Clear Global Media that is unused for builds and saves. You can select from sound/text/PDF/video media.
6	Dock Window Layout	Run [Initialize Position] to reset the left and right Dock Window's positions.

(2) Screen Edit Option

Set the Edit Options.



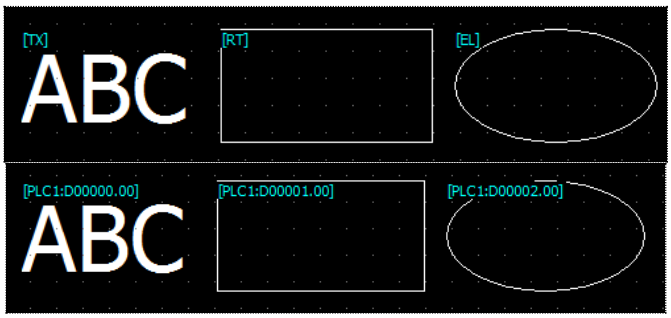
[Pic. Screen edit option]

No	Option	Description
1	Edit Screen	Check [Disable Undo/Redo] to disable these functions. Select [Object Position within Screen Window Area] to place objects within the screen window area. With [Object's Position when Moving the Reference Point] allows objects that refers to the position to select from [Top Left/Center].
2	Grid	Check [Display Screen Center] to display the center point of the screen.  Check [Show Edit Grid Line] to display Grid on the screen as below.  You may set the Grid Spacing by setting the [X Grid Spacing] and [Y Grid Spacing] on the [Edit Grid Line] by pixel unit. Set the color of the dot that marks the grid in [Grid Color].
3	Object Snap	Snap is a function that allows the user to draw objects by the grid or displays Snap Line to draw after the nearby object. Select [Object/Grid] at [Snap Style]. [Object] draws after the nearby objects when editing. Check [View Snap Line] to display horizontal/vertical snap line. Set the snap line color at [Snap Line Color]. [Snap Margin] is the pixel at where the snap is played. Set as above and the snap line of the object that you are editing will be snapped in with a clicking sound when it goes inside the 8 pixel range from the surrounding objects. Set it to [0] and the snap will not be triggered. [Object Snap Setting] checks the position of the snap's movement at the [Top/Middle/Bottom], [Left/Center/Right] of the object. If set as above, the [Top/Bottom/Left/Right] side of the editing object will be closer to the nearby objects and the snap will be triggered. Set the snap action when the Ctrl key is pressed in [Object Snap On/Off]. [Grid] draws by the grid when editing.
4	Miscellaneous	[Change Large Image to HMI Resolution size] automatically resizes the image you wish to register to HMI resolution if its resolution is larger than the HMI's resolution. Select [Automatic

		Text Wrapping when Editing Scrip] to apply automatic text wrapping when you are editing scripts.

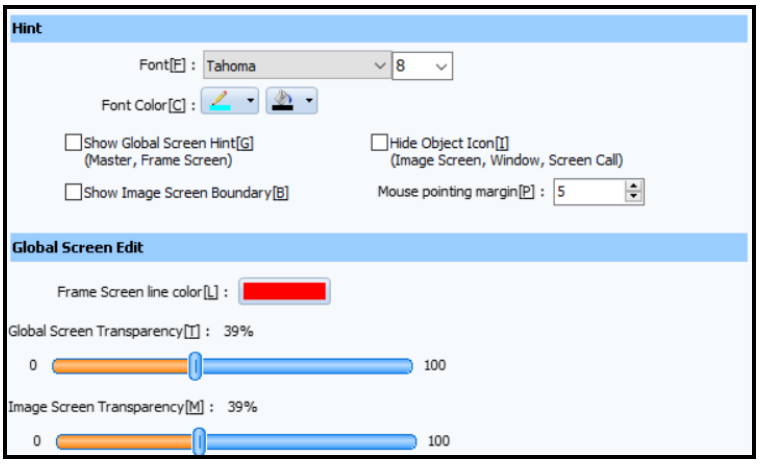
(3) Hint Option

Hint is information of an object that is shown on the top left corner of the object.



[Pic. Show hint]

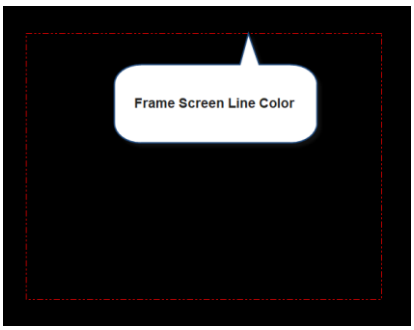
With Hint Option, you are able to set the font settings and global screen (master screen/frame screen) options for the hint.



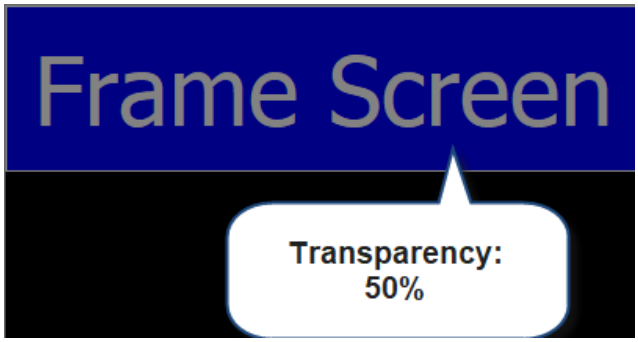
[Pic. Hint option]

No	Hint	Description
1	Font Color	Set the font and text color/background color of the hint.
2	Show Global Screen Hint	Set whether or not to display hints when objects in the master screen and frame screen are displayed in other screens.
3	Hide Object Icon	Set Hide Image Screen, Window, and Screencall object icon.
4	Show Image Screen Boundary	Display the border of Image Screen area.
5	Mouse Pointing Margin	Set the pointing margin for the visible object hint that the mouse is pointing at.

Set [Frame Screen Line Color] to apply the color to the rectangle that displays the frame area in the frame screen as shown in the below picture.



[Global Screen Opacity] and [Image Screen Opacity] are set to display objects that are called from the master screen/frame screen when a master screen or frame screen is called to the base screen. Objects directly registered to the base screen will be displayed vividly while the objects called from master screen/frame screen will be opaque to differentiate them.



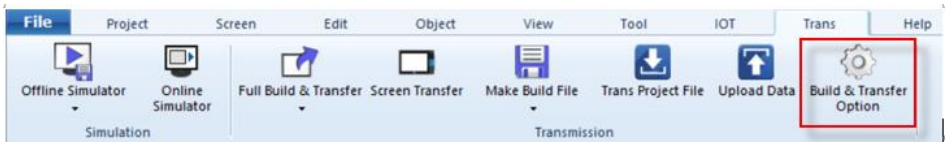
[Pic. Frame screen opacity 50%]



[Pic. Frame screen opacity 100%]

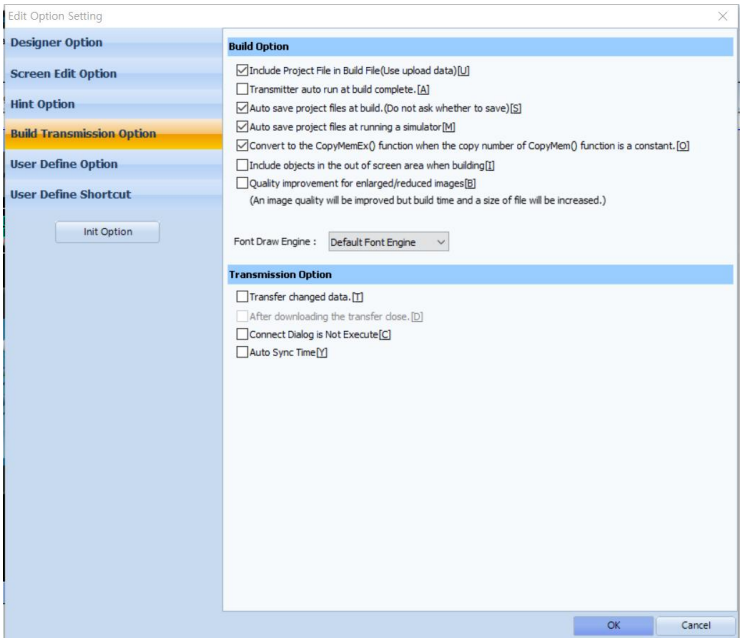
(4) Build Transmission Option

It supports the user to perform Build and Transfer more conveniently.



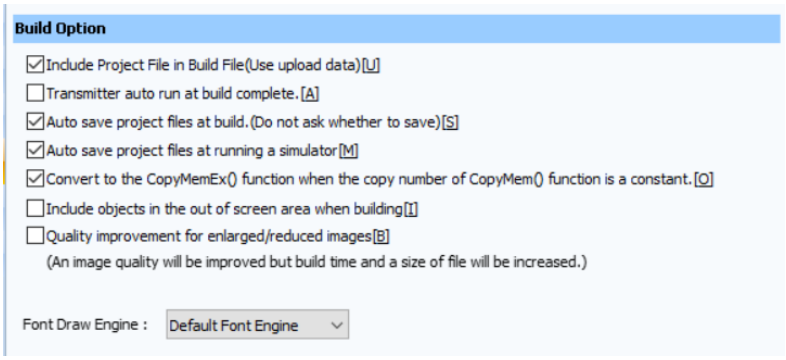
[Pic. Build & transfer option]

Running this function will display below window.



[Pic. Build transmission option]

Build Option is the function that allows the user to include data they want or automatic transmission after build.



[Pic. Build option]

No	Build Property	Description
1	Include Project File in Build File (Including Upload Data) [U]	Allow to include upload data when building. If Build and Transmission is performed without using this function, TOP data will not be uploaded from TDS.
2	Transmitter Auto Run at Build Complete [A]	If connected to TOP after building, transmission will be performed immediately. If this function is not set, you must click [Send] button after building.
3	Auto Save Project Files at Build [S]	The project file will be automatically saved before building. If not set, the project file will not be automatically saved in the process of building.
4	Auto Save Project Files at Running a Simulator [M]	When running the simulation in TDS, the project file is automatically saved.
5	Convert to the CopyMemEx() Function when the Copy Number of CopyMem() Function is a Constant [O]	If the copy count of the available function (CopyMem) at [Project]-[Script] is a constant value, convert the function into a CopyMemEx function and send.
6	Include Objects in the Out of Screen Area when Building [I]	Check whether or not to build objects outside the screen when building a project. The area outside a screen is invisible to TOP. Checking this option will increase

		the build size.
7	Quality improvement for enlarged/reduced images [B]	If you wish to register an image by zooming in/out of the original image size, use this function to smooth the image. However, this will increase the build size.
8	Font Draw Engine	There are two fonts provided in TOP and this function allows you to decide which font to use for the output. Default Font Engine: Output with TOP basic font. (Characters may be distorted if rotated or in small font sizes.) Second Font Engine: Output with the second TOP font. (left-oriented characters such as Arabic or Hebrew and some logotypes (characters combined and processed) may be distorted.)

Use transmission option for a quicker and more convenient transmission.

These are functions about Connection Setting, Send File, Data Transmission, etc. for transmission.

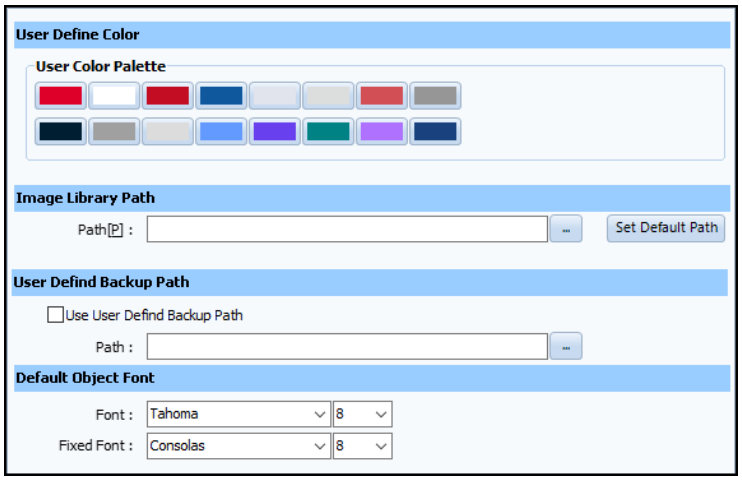


[Pic. Transmission option]

No	Transmission Property	Description
1	Transfer Changed Data	When transferring the same project, you will transfer the changed data only. Use this function to send data faster.
2	Connect Dialog is Not Execute	After the initial connection of PC to TOP, automatically connect without asking whether or not to reconnect when using [Trans Project File] and [Upload Data] functions.
3	Auto Sync Time	Set this to automatically set the PC time to the TOP in transmission.

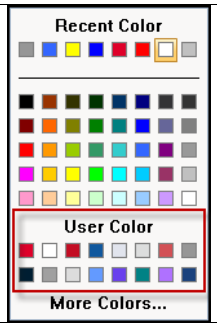
(5) User Define Option

Set user define color/image library path/backup path/font, etc.



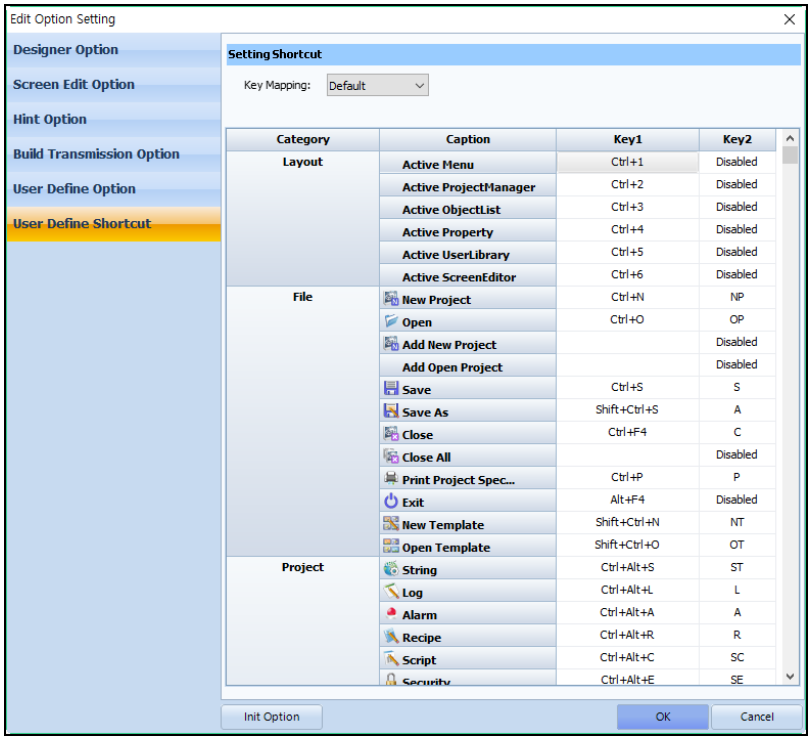
[Pic. User Define Option]

No	User Define Option	Description
1	User Define Color	Compose the User Color Palette. Register 16 frequently used colors. When setting colors in a project, [User Define Color] will appear in [User Color] in the color pallet as shown in the below picture.

		
2	Image Library Path	Set the library path used for adding images. If path setting is incorrect, the image list will not be displayed in the image library. In this case, click [Default Path Setting] button to reset to the default path.
3	User Define Backup Path	If [Edit]-[Option Setting]-[Designer Option]-[Auto Backup] is set, the current project will be backed up by the set [Interval]. When TDS has been abnormally terminated while editing a project, [Recovery Dialog] that recovers the backup project file when the TDS restarts will be displayed. Default backup path will be assigned by TDS internally. Set the [User Define Backup Path] to save the project backup file in the path assigned by the user. Note) Backup files are for recovery and not *.TDS files. Users cannot open this file in a project.
4	Default Object Font	The font set in [Font/Fixed Width Font] will be the default font for registering text/string/number, etc. (Set the font type and size.) [Font] is the default font for registering texts in a project. [Fixed Width Font] is the default font for registering objects such as [Number/String/Clock/Number Key/String Key], etc. in a project. Fixed Width Font refers to fonts that have uniform width of one character.

(6) User Define Shortcut Keys

Users can check and edit shortcut keys.

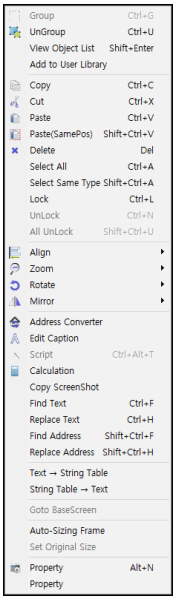


[Pic. User Define Shortcut]

No	User Define Shortcut	Description
1	Key Mapping	[Default] is the default shortcut key set by TDS. [User Define] allows user-defined shortcut key settings.
2	Key1	TDS has default shortcut keys. To reset these shortcut keys, change [Key Mapping] to [User Define] and double click the column to modify.
3	Key2	This function allows the user to use shortcut keys by using [ALT] key. TDS has default shortcut keys. To reset these shortcut keys, change [Key Mapping] to [User Define] and double click the column to modify.

Popup Menu

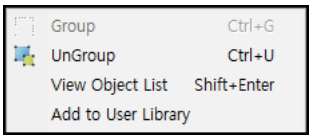
Popup menu is the menu that is displayed when you right-click with the mouse while editing.



[Pic. Popup menu]

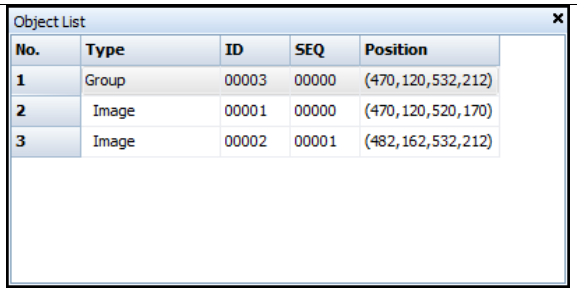
6.1.30 Group Menu

Manage the group by using the popup menu



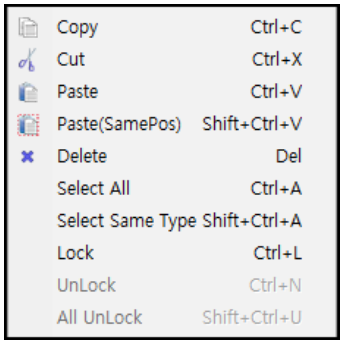
[Pic. Menu group]

No	Popup Menu	Description
1	Group	Bind the selected objects into a group.
2	UnGroup	Ungroup the selected group.
3	View Object List	IT shows the list of more than 1 selected objects. It displays the type, ID, sequence, and coordinates of the objects and opens the property screen of the object when it is double clicked.

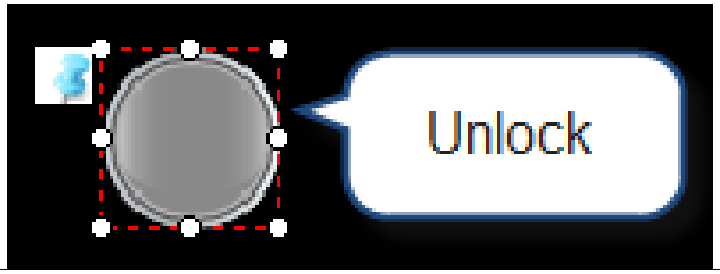
		 Sequence is the order that the object is executed and it may be modified at [Object List Window] screen.
4	Add To User Library	Add more than 1 selected objects to [View]-[User Library]. (For the use of User Library, please see Chapter 22.9 [User Library Window].)

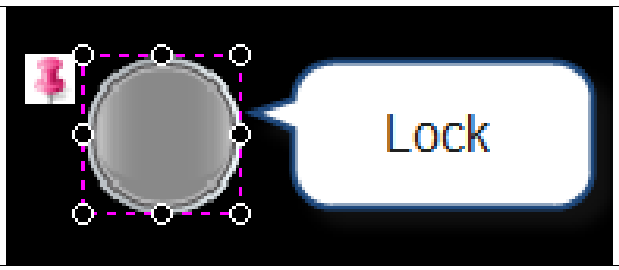
6.1.31 Clipboard/Lock Menu

Use the popup menu to set edit and lock the clipboard.



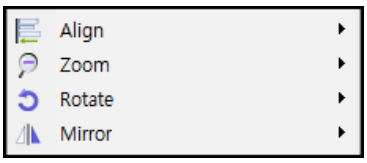
[Pic. Clipboard and lock menu]

No	Popup Menu	Description
1	Copy (Ctrl + C)	Copy the selected object.
2	Cut (Ctrl + X)	Cut the selected object.
3	Paste (Ctrl + V)	This function inserts the object saved to the clipboard by the copy/cut function to the position you want.
4	Paste (Same Position) (Shift + Ctrl + V)	This function allows you to paste an object saved by the copy/cut function to the same position of the original object.
5	Delete (Del)	Delete the selected object.
6	Select All (Ctrl + A)	Select all objects in the current screen.
7	Select Same Type (Shift + Ctrl + A)	Select all the objects of the same type as the selected object.
8	Lock (Ctrl + L)	Locks the selected object so that it cannot be edited. You can also set the lock by clicking the icon on the top left corner that appears 3 seconds after selecting the object. 
9	UnLock	Unlock the selected object. You can also unlock by clicking the icon on the top left corner that appears 3 seconds after selecting the object.

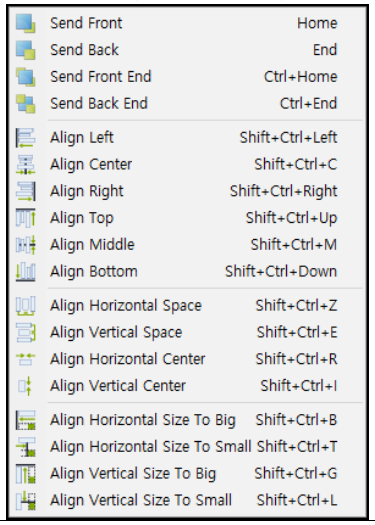
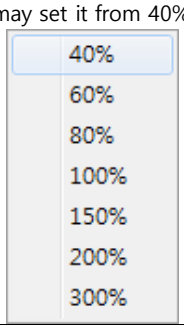
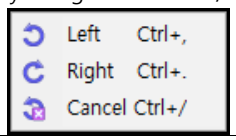
			
10	All UnLock	Unlock all objects that are locked on the current screen.	

6.1.32 **Align Menu**

Use the popup menu to align/zoom/rotate/mirror.



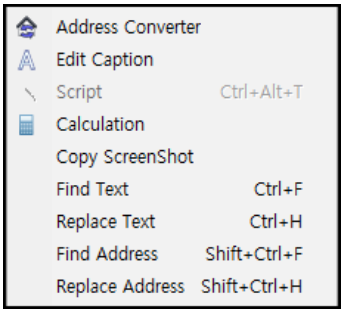
[Pic. Align menu]

No	Popup Menu	Description
1	Align	Align the selected object. (For more details, please see Chapter 6.7 [Align Menu].) 
2	Zoom	[Zoom In/Out] the project screen. (You may set it from 40% to 300%.) 
3	Rotate	Rotate the selected object. (Rotate it by 1 degree in the left/right direction.) 
4	Mirror	Mirror the selected object vertically/horizontally. Mirror inverts the object up and down, and horizontal symmetry inverts the object left and right.

			Mirror Vertical Alt+, Mirror Horizontal Alt+.

6.1.33 **Tool Menu**

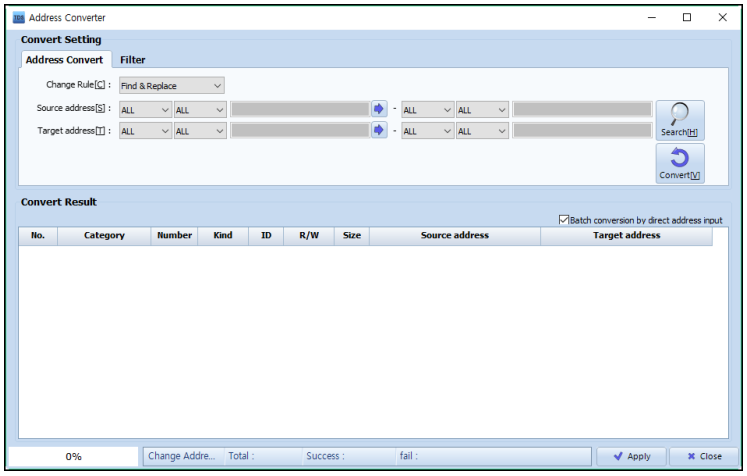
Use the popup menu to run [Convert Address/Edit Caption/Script/Copy ScreenShot/Find Text/Modify Text/Find Address/Replace Address].



[Pic. Tool menu]

(1) Convert Address

You may [Search] and [Convert] address that is registered to the project. It also allows you to modify all address values in a certain range or modify them individually. (For more details about Convert Address function, please see Chapter 23.3 [Convert Address].)



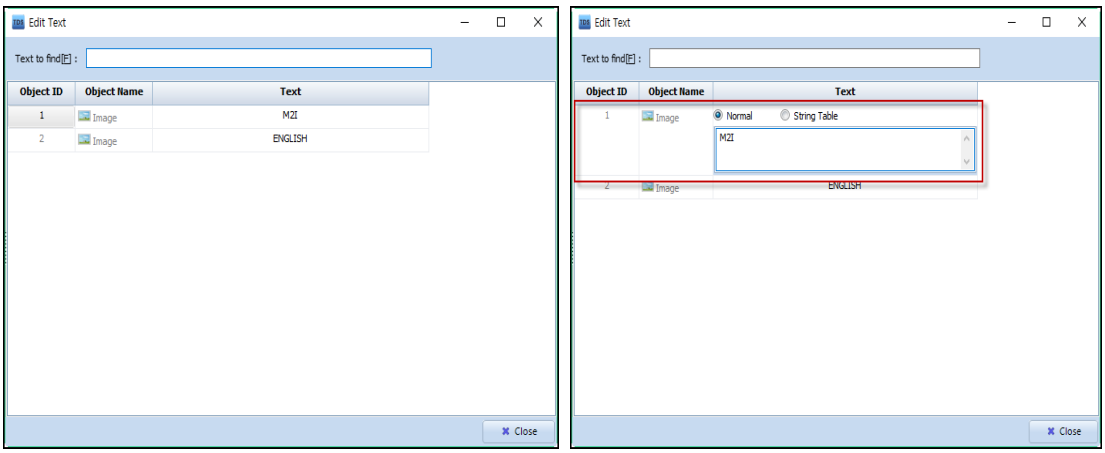
[Pic. Convert address]

(2) Calculation

When selecting Calculation function on the current screen, you will be moved to the Calculation Function Setting Screen. Calculation function is the same as [Object]-[Calculation]. (For more detailed information of Calculation function, please see Chapter [Calculation Object].)

(3) Edit Caption

The Edit Caption screen. Here, you can search and convert texts in the selected objects easily. Run Edit Caption to display the list of the currently selected objects as the bottom of the following picture. Insert a search keyword to search for specific text or double click the text of the object that you wish to convert to edit.



[Pic. Edit text]

(4) Script (CTRL + ALT + T)

Enter the Script Setting Screen when selecting script on the current screen.

(For more detailed information about script setting, please see Chapter 4.5 [Script].)

(5) Copy ScreenShot

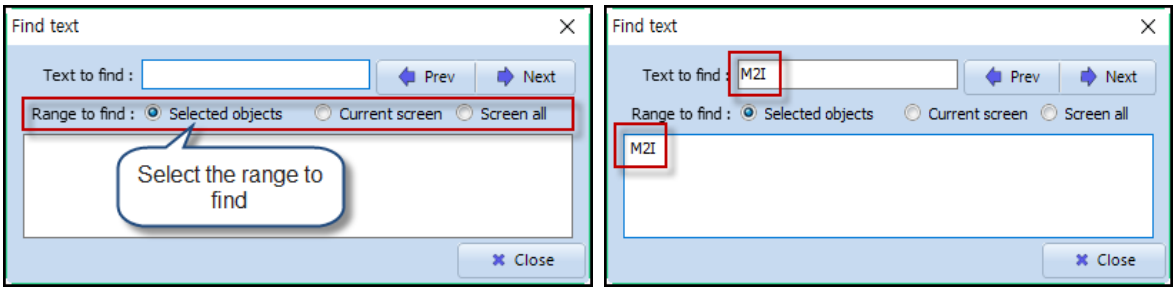
Copy the current project screen and save to the clipboard. Later, you can use [Paste] function to paste it to any position you want.

(6) Modify Text (CTRL + H)

Search the object that includes the corresponding text content and change it to a different string. Select the [Range to Find] from [Selected Objects/Current Screen/Screen All] and click [Next] to find the object that includes the text. Then enter the [Replace with] and click [Replace/Replace All] to change the string.

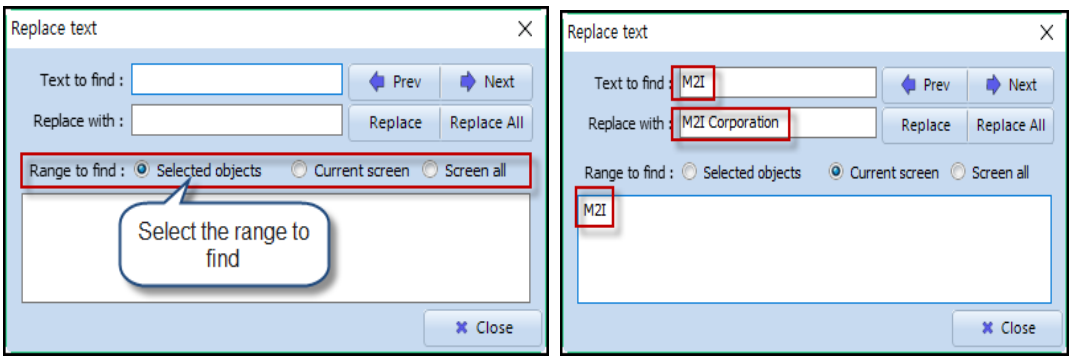
(7) Find Text (CTRL + F)

This function finds the object that includes the corresponding text content. Select the [Range to Find] from the selected object, current screen, or screen all and click [Next].



[Pic. Find text]

[Replace All] changes all objects that include the corresponding text to [Replace with].

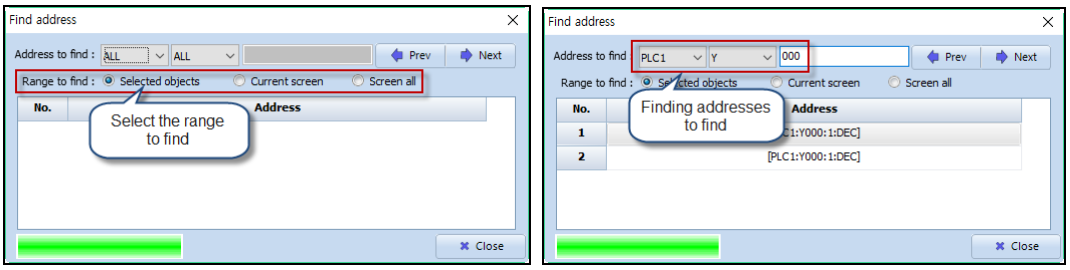


[Pic. Modify text]

(8) Find Address (CTRL + SHIFT + F)

This function searches for the object that includes the address. Select the address to find and range from [Selected objects/Current screen/Screen all] and click [Next].

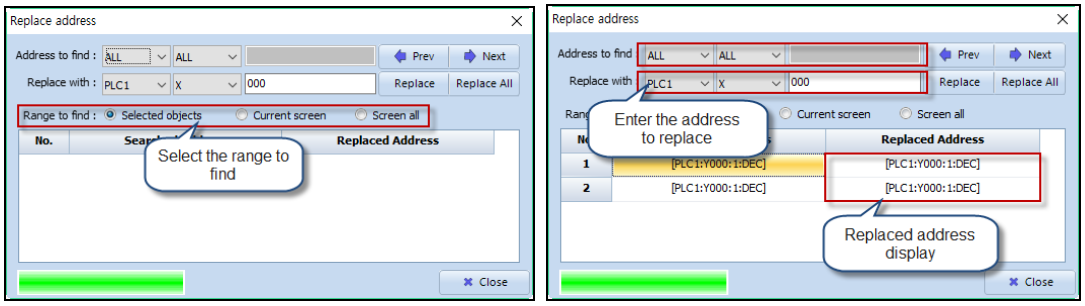
(This is a quick Find Address. For more detailed description, please see Chapter 23.1 [Cross Reference].)



[Pic. Find Address]

(9) Replace Address (CTRL + SHIFT + H)

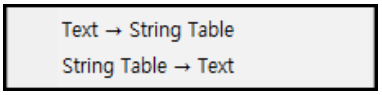
This function finds objects that use the corresponding address and modifies the address. Select one from the selected object, current screen, or all screen where you selected the range to search, and click [Next] to find objects where the address has been used to. Enter an address you wish to change to, and click [Change] or [Replace All] button to modify the address. [Replace All] changes the addresses of all the objects where the corresponding address is used.



[Pic. Replace address]

6.1.34 Return String

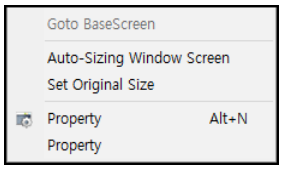
Perform [Text → String (Multi Language) Table Convert/String (Multi Language) Table → Text] conversion to the selected object.



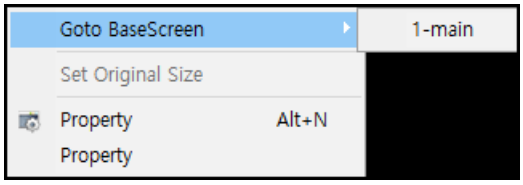
[Pic. String conversion]

No	Popup Menu	Description
1	Text → String Table	Convert the text of the selected object from [Normal] to [String Table]. To convert objects in all projects, run the [Tool]-[Return String] menu. (Note) The conversion is available when the group is set to String Table. (For String (Multi Language) Table, please see Chapter 4.4 [String].)
2	String Table → Text	Change the selected object's text from [String Table] to [Normal]. To convert objects in all projects, run the [Tool]-[Return String] menu. (For String (Multi Language) Table, please see Chapter 4.4 [String].)

6.1.35 Shortcut to Base Screen/Set Original Size/Screen Property/Object Property



[Pic. Base Screen, Original Size, Screen Property, Property]

No	Popup Menu	Description
1	Go to Base Screen	This function moves you from the object where [Screen Change] function is set at the editing screen to the set screen change number. Select the object where [Screen Change] function is set and run [Go to Base Screen] to display the list of screen that corresponds to the set screen change number. Select a screen to move.   Run [2-Logging Setting (2)] to move to the screen no. 2.
2	Set Original Size	Modify to the original size of the image set in the selected image object.
3	Property (Alt + N)	Displays the current screen's [Screen Property].
4	Property	Show the Property Screen of the selected object.

CHAPTER 7 - Object Common

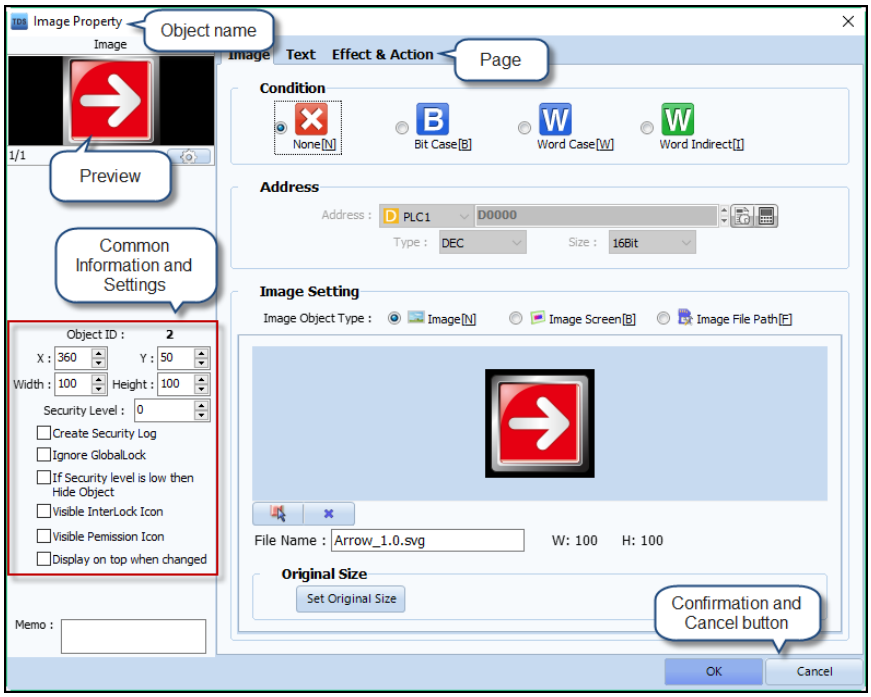
Run objects using the object menu on the top.
As the types of objects, there are [Select/Dot/Line/Rectangle/Ellipse/Polyline/Images/Paint/Text/Grid], [Lamp/Number/Message View/Window/Calculation/Screen Call/Log View/Alarm View/Graph/Camera/Video/Slide/Table].
Select the object to register on the screen, drag it to a position you want on the screen, and edit it.

This chapter describes the common parts of the object.

Object Property Screen

7.1.1 Composition of the Object Property Screen

All objects are configured for their detailed styles and functions using Property Screen. Select the object registered on a screen and [Double Click] it or [Right Click] with a mouse to display a popup menu. Run the [Property] menu from the popup menu and Property Screen will be displayed. Each property screen of object varies in style, but their structures are similar.
Property Screen of each object can be divided to the fixed left section and the right section that consists of multiple pages as shown in the below picture.
[Left] has Preview and [General Information] where information such as object position/size/security setting can be displayed/edited, and this section is the same for all objects.
[Right] consists of multiple pages, which have some common parts, and may have separate pages according to object.



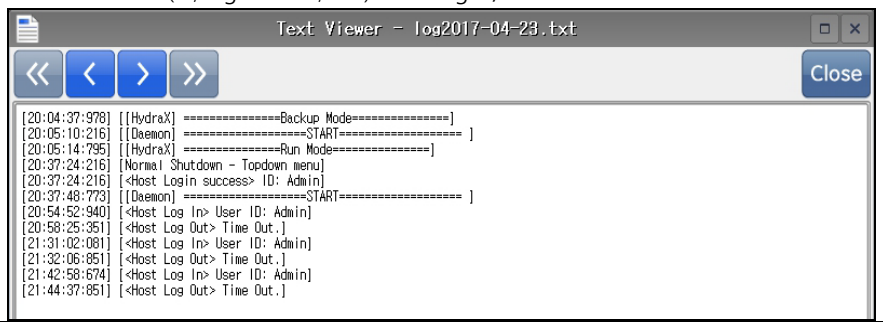
[Pic. Composition of object property]

No	Property Screen	Description
1	Object Name	The object name is written on the top left title bar.
2	Preview	The set object's shape is displayed on the Property that is below the top left title.

3	Common Information and Setting	Display and edit object information such as ID, position, size, security, etc. on the bottom left corner.
4	Page	There are multiple pages where you can configure settings according to object.
5	Confirm/Cancel Button	Click [OK] button on the bottom to apply the modified settings. Click [Cancel] not to apply the modified setting and revert to the previous setting.

7.1.2 General Information of the Object Property Screen

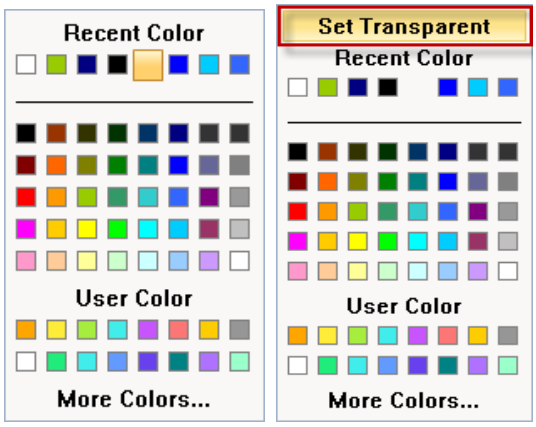
This is the bottom left part of the Object Property Screen where various information of objects are displayed and edited.

No	Property	Description
1	ID	This is the number assigned automatically to objects in a screen according to their registration order. These numbers cannot be set manually. *Deleting ID objects in the middle of the sequentially drafted list will not affect other IDs. E.g.) If you delete object no. 2 among the objects no.1, 2 and 3, the objects no. 1 and 3 will remain.
2	SEQ	This is the number assigned automatically to objects in a screen according to their registration order. These numbers cannot be set manually. *Deleting SEQ objects in the middle of the sequentially drafted list will automatically change other objects' SEQs. E.g.) If you delete object no. 2 with SEQ no. 1, 2, and 3, the SEQ no. 3 will be changed to SEQ no. 2 and object no. 1 and 2 will remain.
2	X	The horizontal direction position from the top left corner of the object that is registered on the screen. The value may be modified to change the position. The left end of the screen is position 0, and the right end of the screen becomes the model's resolution. E.g.) If the product has 800x600 resolution, the rightmost end position will be 800.
3	Y	The vertical direction position from the top left corner of the object that is registered on the screen. The value may be modified to change the position. The top end of the screen is position 0, and the bottom end of the screen becomes the model's resolution. E.g.) If the product has 800x600 resolution, the bottom end position will be 600.
4	Width	Display and edit an object's horizontal size.
5	Height	Display and edit an object's vertical size.
6	Security Level	It can be set when security level is set in [Project]-[Security] menu. Level [0] means the object does not use security level. If it is set higher than level [1], the object will be visible even if you are not logged in above the set security level, but the set action will not run. If [Hide If Insufficient Security Level] is checked, the object will be hidden and invisible unless you log in with the set level or higher level.
7	Create Security Log	Create log file by date in the [App_Log]-[SecurityLog] folder in TOP and record and save time and content (ID, login status, etc.) when log in/out. 
8	Ignore GlobalLock	This is applied when [Global Lock & Touch] is set in [Project]-[Property] menu. Object will not operate while the program is locked, but checking [Ignore GlobalLock] will allow the object to operate even if it is locked.
9	If Security level is	If the security level is set to level [1] or higher, objects will not be visible if not logged in

	low then Hide Object	with the corresponding level. Not checking [Hide If Insufficient Security Level] will display the objects, but they will not function.
10	Visible InterLock Icon	Click an object in which Interlock is set without disabling the interlock, and the interlock icon [LOCK] will appear as shown in the below picture. 
11	Visible Permission Icon	If you have no permission to access the current object, an icon that says [Not Allowed] will be displayed on top of the object unless you log in with the corresponding security level. 
12	Memo	You can take a memo on the object.

Select Color Dialog

The part where color is configured in editing process uses [Color Pallet] in common. Colors are used in objects, background of a screen, etc. and clicking Color Setting section will display below [Color Pallet]. The color will be displayed in a small rectangle. Click the rectangle of the color you want to select.



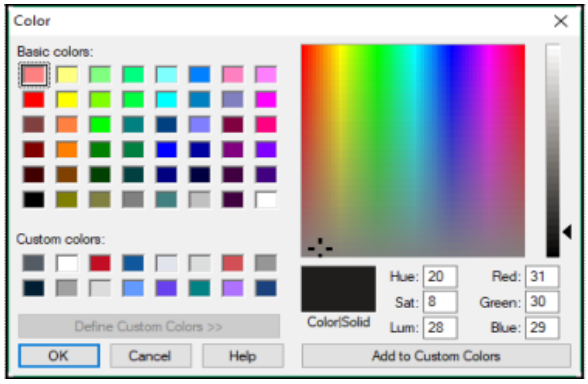
[Pic. Select color]

[Set Transparent] button of the color dialog on the right picture is displayed when the background color () is being set in the object font configuration part. [Set Transparent] sets the background transparent. There are three parts in Color Dialog.

No	Color	Description
1	Recent Color	It shows the list of recently used colors. There will be a total of eight colors saved.
2	Color Palette	In the middle, there is a basic color pallet with 40 colors.
3	User Color	This is the user-defined color. Users can register frequently used colors or colors that are not registered to the basic color pallet. Set it in the [More Colors...] button.

Use [More Colors...] button at the bottom to choose more detailed colors. Clicking the button will display the following screen.

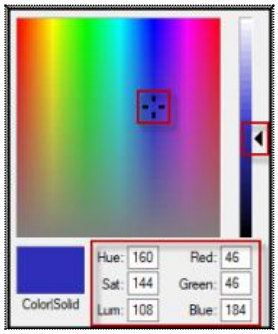
7.1.3 How to Select a Color



[Pic. Color setting]

[More Colors...] button allows the user to choose basic colors or user define colors more easily. There are 48 basic colors and they are fixed. Users may register/edit frequently used colors from the colors that are not in the basic colors for easier use.

You may choose detailed colors from the color pallet on the right. Move the cross-shaped icon ( ) from the color pallet, adjust the arrow ( ) on the brightness color bar on the far right or enter [Color/Chroma/Brightness, Red/Green/Blue] values manually to choose the color.



[Pic. Select detailed color]

The selected color is displayed in the [Color|Solid Color] section. Click [OK] button to select the color.

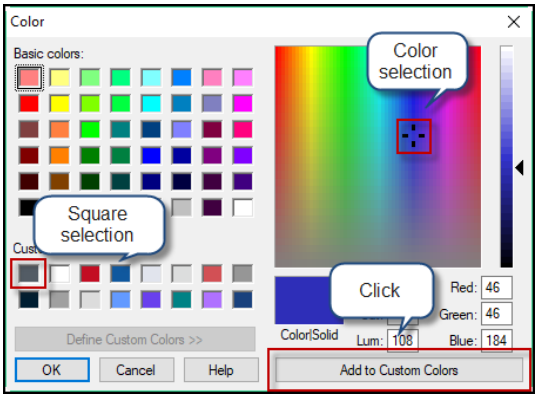


[Pic. Selected color]

7.1.4 [User Define Color] Editing the Pallet

You may edit User Define Color as following method. First, select the slot to register the User Define Color from the 16 slots in the [User Define Color] section. Secondly, choose a color to register from the color pallet on the right.

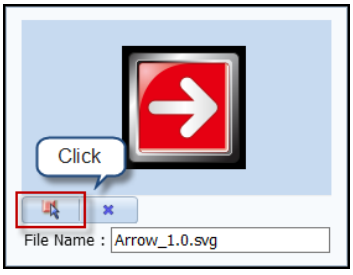
Lastly, click the [Add to User Define Color] on the bottom right to register the selected color as a [User Define Color] in the selected slot.



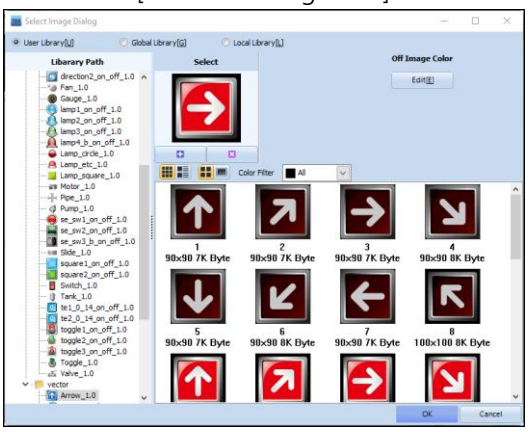
[Pic. Adding a User Define Color]

Select Image Dialog

Click the icon that selects image in objects to display the Select Image Dialog.



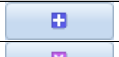
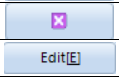
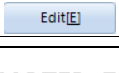
[Pic. Select Image Icon]

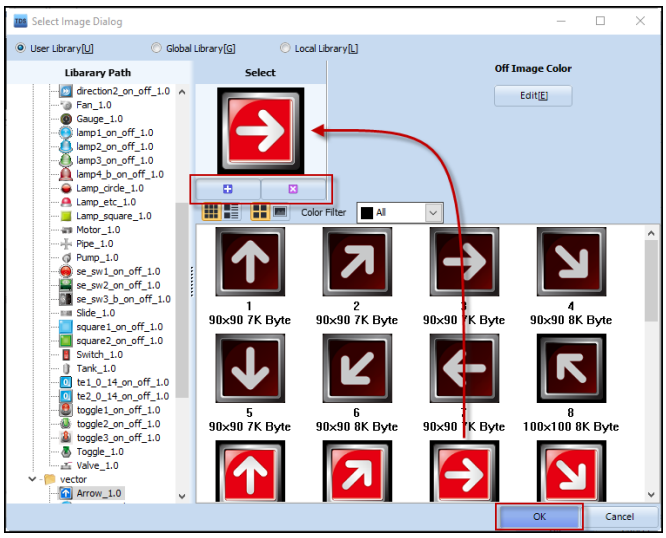


[Pic. Select Image Dialog]

7.1.5 How to Select an Image

You can select images from the User Library, the TDS-provided images or from the images registered in the global library. You may also select images from the local library which is a PC save path. Go to [Library Path] on the left to select a group and select the image in the Image List on the right. Drag & drop the selected image and leave it in the [Select] section or click [+] button then [OK] button to complete the selection.

No	Button	Description
1		Click and select an image from the Image List.
2		Delete the selected image.
3		Modify the color of the selected button in detail.

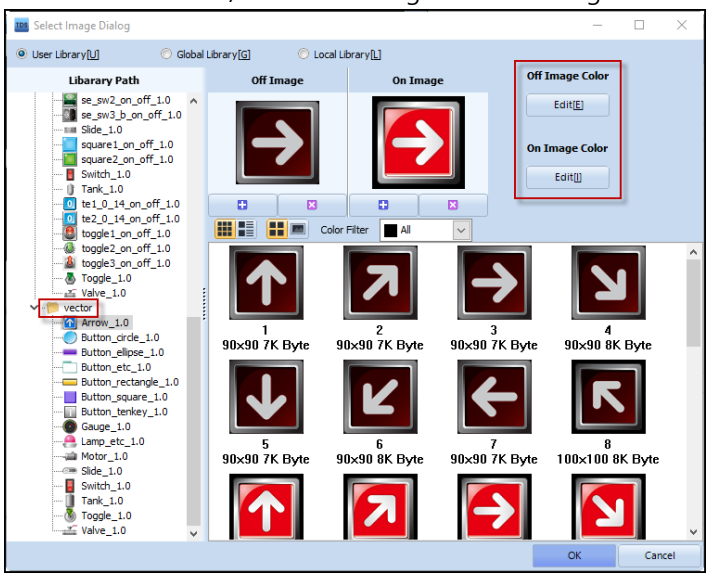


[Pic. Select image]

7.1.6 User Library

User Library is the basic image library that is provided by TDS. This library is included in the installation path [C:₩Program Files (x86)₩M2I Corp₩TOP Design Studio₩Library]. You can see the lists of images by groups in the [Library Path] on the left. Selecting each Group Name displays images that are included in the group on the right side.

There are Raster images and Vector images in User Library. Raster images are BMP, PNG, JPG, etc. They are the clearest when registered in their original sizes, and when zoomed in/out, the image quality will be reduced by the extent of the zoom in/out. Vector images are SVG images.

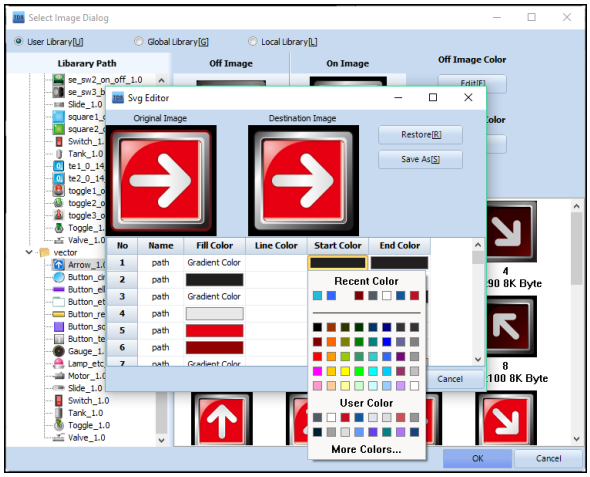


[Pic. Vector image]

It stays clear without breaking even when it is registered at a smaller or bigger size to its original size. Colors of a vector image can be edited. To edit a selected vector image, click [Edit] button.
Use SVG Editor to edit each color.



[Pic. Edit vector image]



[Pic. Edit vector image]

Modify [Fill Color/Line Color/Start Color/End Color] to edit an image. Click the color slot and a [Select Color Dialog] to modify the color. If the [Destination Image] is not the image you want, click [Recover Image] to restore the image to the original state.

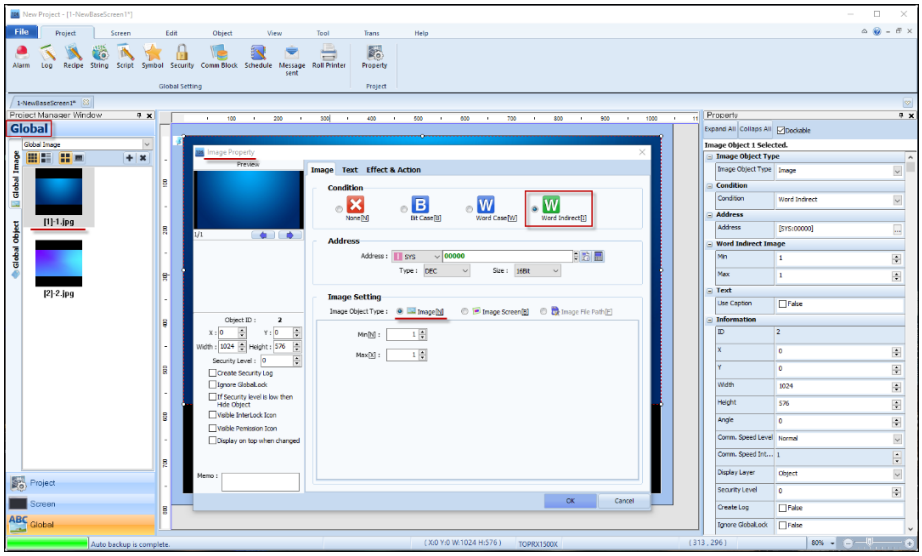
Use [Save As] button to save the image as a BMP, PNG, or JPG file.

7.1.7 Global Image

Global Image is a separately registered image by the user's needs.

(1) Use of Global Image

Registered global images can be selected from [Project Manager]-[Global] on the left and taken out with [Mouse Drag & Drop] to the screen. Also, it can be used as below example in Image Object.

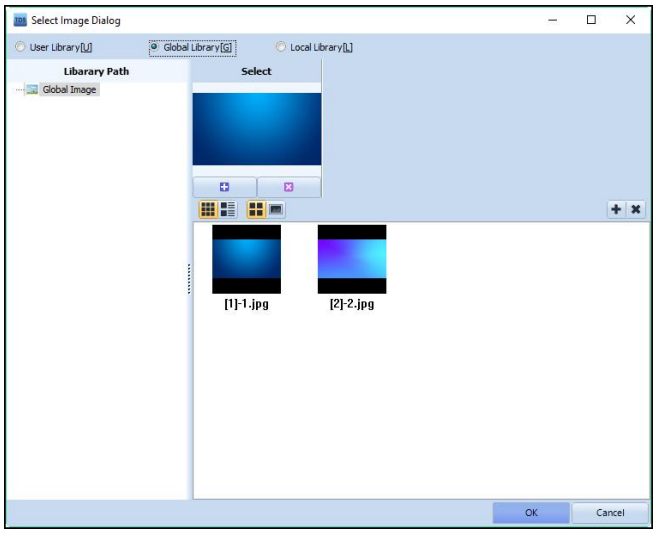


[Pic. Use of Global Image]

Register Image Objects as above picture and set the [Condition] as Word Indirect and set the [Min] ID and [Max] ID of Global Image. If the assigned address' value is the same as the ID of a Global Image, it will be displayed on the screen. Use this function to modify various images according to address values to display them on the screen.

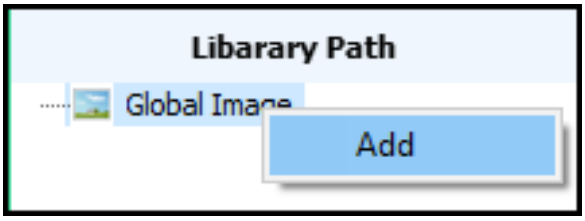
(2) Registration of Global Image

Import BMP, PNG, JPG, JPEG, MBS, or DWG images to register. Images will be assigned with sequential numbers such as [1], [2], [3] ... after their image name according to their registration order. You can register Global Image at [Global] in [Project Manager] screen, at [Tool]-[Image Library] menu, or at Select Image Dialog.



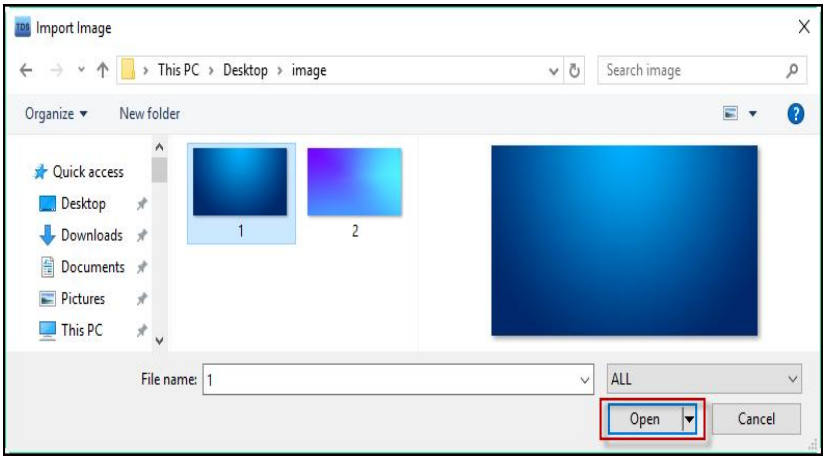
[Pic. Global image]

Click + button at Select Image Dialog or import image from [Import Image] dialog that appears when selecting [Add] menu that is displayed when right-clicking the mouse after selecting [Global Library] list from [Image Library] to register as a Global Image.



[Pic. Add Global image]

Select an image to register as a Global Image from [Import Image] dialog and click [Open] button.



[Pic. Import image to register as Global Image]

No	Button	Description
1	✚	Register a Global Image.
2	✖	Delete the selected images from the registered Global Images.

Global Images are automatically assigned with [ID]s, which are the numbers that are sequentially given to file names. This ID numbers can be used as [Solution Item Number] of [Alarm]-[Solution] or in [Word Indirect] function in the image object.

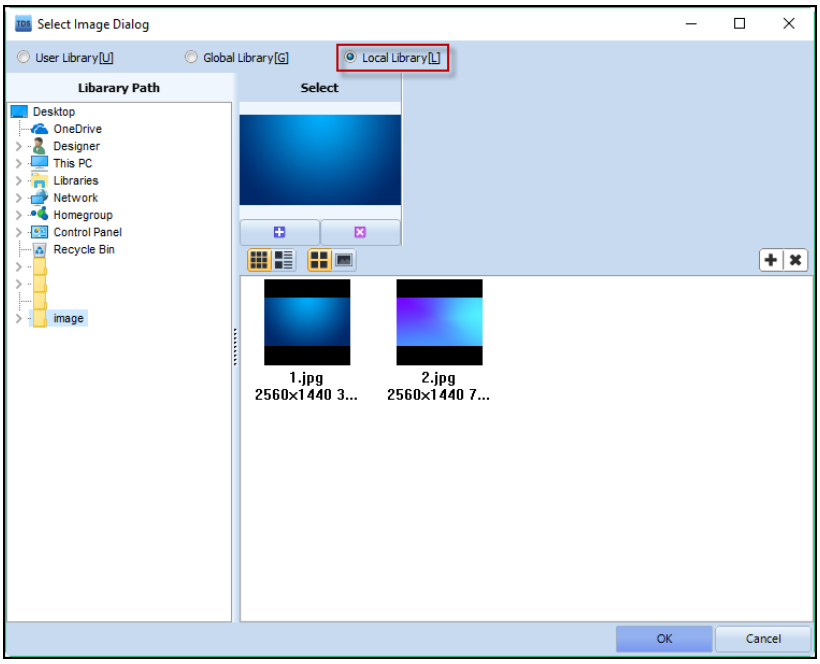


[Pic. Registered Global Image]

To use a registered Global Image, select an image and click [OK].

7.1.8 Local Image

Local Images are used when importing images in the user's PC. There is no need to move images in PC to [User Library]. You can import them directly and register to the screen. You may import BMP, PNG, and JPG images.

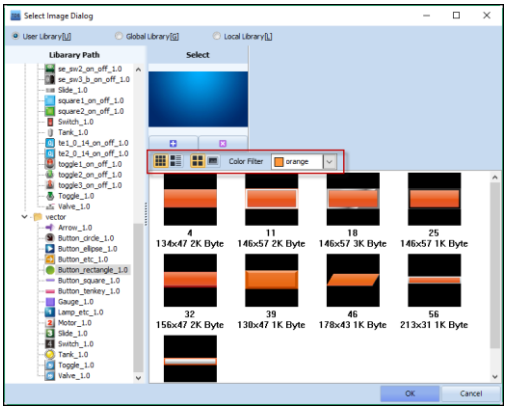


[Pic. Local Image]

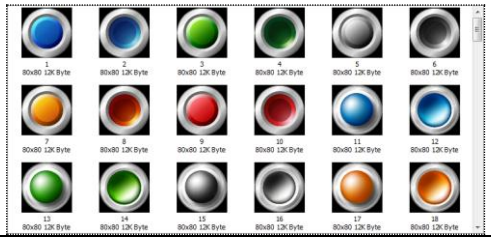
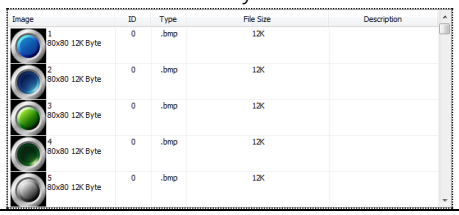
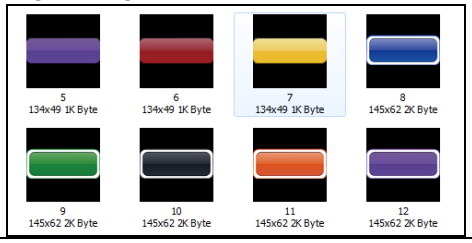
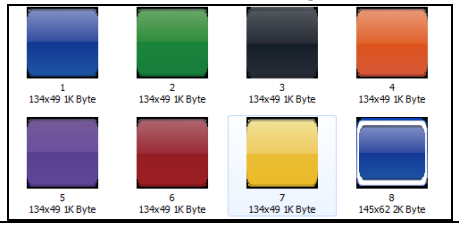
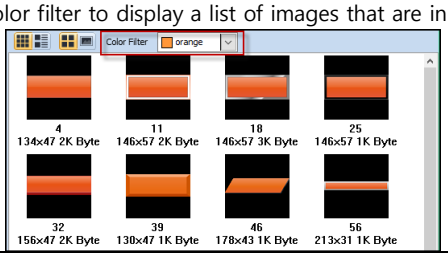
A list that is similar to PC's Window Explorer will appear in the library path.
Select an image from the image path and click [OK].

7.1.9 View Image List

You can change the way the image list is viewed for your convenience.

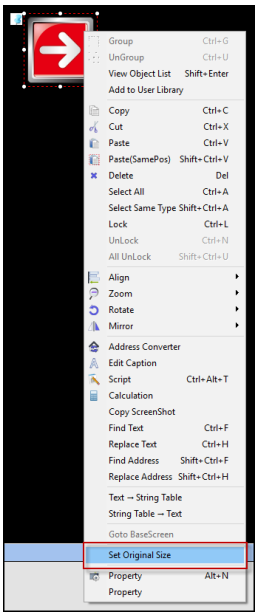


[Pic. Change the view style]

No	View Style	Description
1		It shows the images in the list as icons. 
2		It shows the images in the list in the View Detail style. 
3		It shows the image in the original image's horizontal and vertical ratio. 
4		It fills the image's horizontal and vertical ratio to a rectangle. 
5	Color Filter	It applies only in the user library. You may select and see only the images of the selected colors in the color filter from the images in the folder. E.g.) Select Yellow in the color filter to display a list of images that are in yellow. 

7.1.10 Set Original Size

All images are registered in their best resolution when registered at their Original Size. Select an image and right-click to display a popup menu. Select [Set Original Size] in the menu to quickly resize the image to the original size.



[Pic. Set original size]

Address Type

Describes how to set an address in a project.

7.1.11 Address Type

For the type of address, there are [PLC/SYS/Special/LATCH/LOG/Recipe/Symbol/Virtual/Offset].



[Pic. Address type]

Detailed description of each address is as follows.

No	Address	Description
1	PLC Address	[D] icon is the abbreviation of Device. It is the address of PLC (controller) set at TDS.
2	SYS Address	[I] icon is the abbreviation of Internal Address. It is an internal address of TOP and system buffer. It is a 16 Bit (1 Word) address and [0-10239] addresses are provided. If the latch is not set with [Control Panel]-[Project Setting]-[3. Latch Setting], data will be all deleted when TOP power resets.
3	Special Address	[S] icon is the abbreviation of Special Address. It is a special address of TOP. This is an address list that has a name assigned to each address for special functions. There are Bit Special Address and Word Special Address.

4	Latch Address	[L] icon is the abbreviation of Latch Address. It is the latch address that is provided separately as a TOP internal address. It is a 16 Bit (1 word) address and numbers [0-127] are provided. This address' data is not deleted even when TOP power is reset.
5	LOG Address	It is visible on the list when [Project]-[Log] is set. It can display 1 log data. Set the block number and column number to display the log data on the screen.
6	Recipe Address	It is visible on the list when [Project]-[Recipe] is set. It can display 1 recipe data. Set the recipe item number and parameter number to display the recipe data on the screen.
7	Symbol Address	[SY] icon is the abbreviation for Symbol Address. It is the address list where names are given as symbol addresses. Use it after drafting a symbol address list at the symbol manager in [Project]-[Symbol].
8	Virtual Address	Virtual addresses can be used like variables. This address is single-use only and will all be reset when TOP power resets.
9	Offset A Address	[OA] icon is the abbreviation for Offset Address and is an Offset Address. [Actual Address] changes according to the [Value of Offset Address] and the value that is the result of adding the offset address value to the address number becomes the actual address number.
10	Offset V Address	[OV] icon is the abbreviation for Offset Value and is an Offset Address. [Actual Address] changes according to the [Value of Offset Address] and the value that is the result of adding the offset address value to the address number becomes the actual address number.

7.1.12 PLC Address (Controller Address)

It is the address of the controller that communicates with TOP. Lists will be created by the counts of the connected controllers.

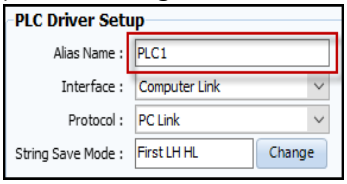
(1) PLC Name

One TOP may be connected to multiple controllers. When multiple controllers are connected, the PLC name will be created in order such as [PLC1], [PLC2], PLC3] ... as shown in the below picture.



[Pic. PLC name]

Select each PLC in [Project]-[Project Option] to change PLC name in [Alias Name] of [PLC Driver Setup].



[Pic. Change PLC name]

(2) Characteristic of PLC Address

Each PLC address has individual device name (identifier) and address number, and number digits.

When entering address, you must enter correct address to each PLC's address format.

E.g.) For MITSUBISHI's MELSEC FX Series, the address that is used is as the following table.

Type	Remarks	Bit-designated address	Word-designated address
Input	Bit	X0000 – X0377	X0000 – X0360

Output	Bit	Y0000 – Y0377	Y0000 – Y0360
STEP relay	Bit	S0000 – S8191	S0000 – S8176
Internal relay	Bit	M0000 – M7679	M0000 – M7664
Special relay	Bit	M8000 – M8511	M8000 – M8496
Data register	Word	D0000.00 – D0999.15	D0000 – D0999
		D1000.00 – D7999.15	D1000 – D7999
Special register	Word	D8000.00 – D8511.15	D8000 – D8511
Timer-Contact	Bit	T000 – T511	————
Timer-Current value	Word	————	TN000 – TN511
Counter-Contact	Bit	C000 – C255	————
Counter-Current value	Word	————	CN000 – CN199
Counter-Current value	DWord	————	CN200 – CN255

More details about each PLC address is described in the [Comm Manual] for each PLC that is separately provided.

To see Comm Manual, go to [Project]-[Property] and select PCL Name in PLC Driver Setup. [Comm Manual] button is on the right.

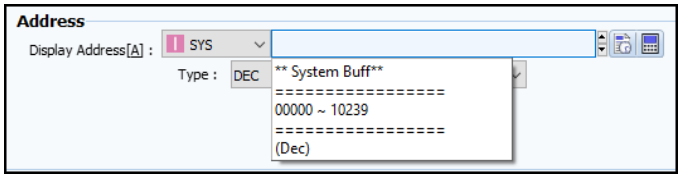
It displays the available address area and address number range when entering PLC address in TDS and displays error when an incorrect address has been entered to prevent input of wrong addresses.

7.1.13 SYS Address (Internal Address)

SYS Address is the internal address. TOP has address area within its internal memory.

This area is in a [16 Bit] unit, i.e. in a 1 word unit, and has no any separate identifier.

The available address range is from [00000] to [10239].

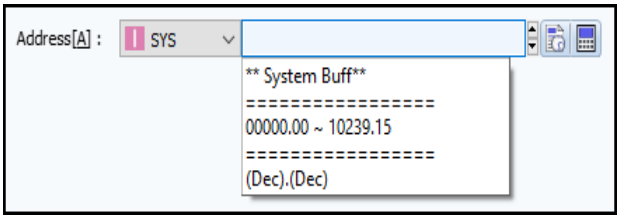


[Pic. Internal address used as word address]

When using it as a word address, as the internal address is in word unit, you may enter the address number as is.

When using it as a bit address, you must enter bit digits after the address number.

E.g.) When using the [6th Bit] of internal address [address 10], enter [10.05].



[Pic. Internal address used as Bit Address]

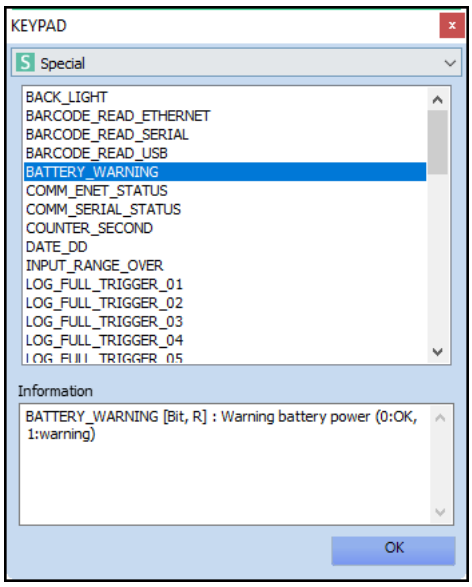
7.1.14 Special Address

Special Address is a special address in TOP internal memory. Special addresses are addresses that have individual names given for special functions.

Different special address lists are provided for objects that use [Bit Address] and objects that use [Word

Address]. For objects that use Bit Address, there are Bit Lamp, Button, Switch, Bit Message, etc.
For objects that use Word Address, there are Word Lamp, String, Number, Word Message, etc.
Selecting a special address in [Insert Address Device] will display description for each special addresses in the [Information] section at the bottom.

(1) Bit Special Address



[Pic. Special Address in Bit unit]

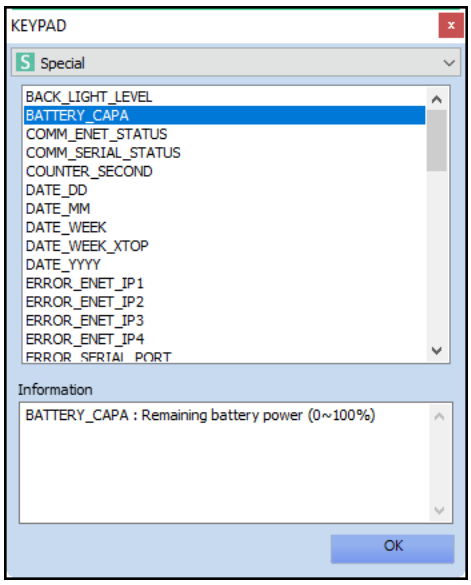
The Bit unit Special Address is as follows.

No	Bit Special Address	Read	Write	Description
1	ABNORMAL_EXIT	O	X	It is a special address used when using TOPView. When TOPView is force terminated, it turns [1].
2	BACK_LIGHT	O	O	If it is not [1], the backlight is off. If it is [1], the backlight is on. When the backlight is off, touch the screen to turn on the backlight and the value automatically becomes [1].
3	BARCODE_READ_ETHERNET	O	O	When successfully read by the Ethernet bar code reader, the value becomes [1]. (The value will not be automatically turned off.)
4	BARCODE_READ_SERIAL	O	O	When successfully read by the serial bar code reader, the value becomes [1]. (The value will not be automatically turned off.)
5	BARCODE_READ_USB	O	O	When successfully read by the USB bar code reader, the value becomes [1]. (The value will not be automatically turned off.)
6	BATTERY_WARNING	O	X	It displays insufficient battery warning. (0: Normal, 1: Warning)
7	COMM_1SCAN	O	O	After the initial execution, it becomes [1] when communication scan is completed once or a timeout occurs.
8	COMM_ENET_STATUS	O	X	Displays the Ethernet communication status. (0: Normal, 1: Timeout error) Timeout error occurs when the controller that is connected to TOP via Ethernet is not communicable.
9	COMM_SERIAL_STATUS	O	X	Displays the serial communication status. (0: Normal, 1: Timeout error) A timeout error occurs when the controller that is connected to TOP via serial is not communicable.

10	COUNTER_SECOND	O	O	Repeats ON (1) and OFF (0) for each second during operation.
11	DATE_DD	O	O	It shows the status of the no. 0 bit of the Day (Date) data of TOP RTC.
12	DATE_MM	O	O	It shows the status of the no. 0 bit of the Month data of TOP RTC.
13	DATE_YYYY	O	O	It shows the status of the no. 0 bit of the Year data of TOP RTC.
14	ETH1_CABLE_STATUS	O	X	It becomes [1] when ETH1 cable is connected (It may not work in Bridge Mode.)
15	ETH2_CABLE_STATUS	O	X	It becomes [1] when ETH2 cable is connected (It may not work in Bridge Mode)
16	INPUT_RANGE_OVER	O	O	This address value becomes [1] when the keypad input escapes the input range. (It will be automatically turned off when input begins.)
17	LOG_FULL_TRIGGER_01	O	X	It becomes [Full] [1], when [Log 1] occurs by the set [Log Count] and fills up the memory.
18	LOG_FULL_TRIGGER_02	O	X	It becomes [Full] [1], when [Log 2] occurs by the set [Log Count] and fills up the memory.
19	LOG_FULL_TRIGGER_03	O	X	It becomes [Full] [1], when [Log 3] occurs by the set [Log Count] and fills up the memory.
20	LOG_FULL_TRIGGER_04	O	X	It becomes [Full] [1], when [Log 4] occurs by the set [Log Count] and fills up the memory.
21	LOG_FULL_TRIGGER_05	O	X	It becomes [Full] [1], when [Log 5] occurs by the set [Log Count] and fills up the memory.
22	LOG_FULL_TRIGGER_06	O	X	It becomes [Full] [1], when [Log 6] occurs by the set [Log Count] and fills up the memory.
23	LOG_FULL_TRIGGER_07	O	X	It becomes [Full] [1], when [Log 7] occurs by the set [Log Count] and fills up the memory.
24	LOG_FULL_TRIGGER_08	O	X	It becomes [Full] [1], when [Log 8] occurs by the set [Log Count] and fills up the memory.
25	LOG_FULL_TRIGGER_09	O	X	It becomes [Full] [1], when [Log 9] occurs by the set [Log Count] and fills up the memory.
26	LOG_FULL_TRIGGER_10	O	X	It becomes [Full] [1], when [Log 10] occurs by the set [Log Count] and fills up the memory.
27	LOG_FULL_TRIGGER_11	O	X	It becomes [Full] [1], when [Log 11] occurs by the set [Log Count] and fills up the memory.
28	LOG_FULL_TRIGGER_12	O	X	It becomes [Full] [1], when [Log 12] occurs by the set [Log Count] and fills up the memory.
29	LOG_FULL_TRIGGER_13	O	X	It becomes [Full] [1], when [Log 13] occurs by the set [Log Count] and fills up the memory.
30	LOG_FULL_TRIGGER_14	O	X	It becomes [Full] [1], when [Log 14] occurs by the set [Log Count] and fills up the memory.
31	LOG_FULL_TRIGGER_15	O	X	It becomes [Full] [1], when [Log 15] occurs by the set [Log Count] and fills up the memory.
32	LOG_FULL_TRIGGER_16	O	X	It becomes [Full] [1], when [Log 16] occurs by the set [Log Count] and fills up the memory.
33	LOG_ON_TRIGGER_01	O	X	It becomes [1] every time [Log 1] occurs. (The value will not automatically turn to [0].)
34	LOG_ON_TRIGGER_02	O	X	It becomes [1] every time [Log 2] occurs. (The value will not automatically turn to [0].)
35	LOG_ON_TRIGGER_03	O	X	It becomes [1] every time [Log 3] occurs. (The value will not automatically turn to [0].)
36	LOG_ON_TRIGGER_04	O	X	It becomes [1] every time [Log 4] occurs. (The value will not automatically turn to [0].)
37	LOG_ON_TRIGGER_05	O	X	It becomes [1] every time [Log 5] occurs. (The value will not automatically turn

				to [0].)
38	LOG_ON_TRIGGER_06	O	X	It becomes [1] every time [Log 6] occurs. (The value will not automatically turn to [0].)
39	LOG_ON_TRIGGER_07	O	X	It becomes [1] every time [Log 7] occurs. (The value will not automatically turn to [0].)
40	LOG_ON_TRIGGER_08	O	X	It becomes [1] every time [Log 8] occurs. (The value will not automatically turn to [0].)
41	LOG_ON_TRIGGER_09	O	X	It becomes [1] every time [Log 9] occurs. (The value will not automatically turn to [0].)
42	LOG_ON_TRIGGER_10	O	X	It becomes [1] every time [Log 10] occurs. (The value will not automatically turn to [0].)
43	LOG_ON_TRIGGER_11	O	X	It becomes [1] every time [Log 11] occurs. (The value will not automatically turn to [0].)
44	LOG_ON_TRIGGER_12	O	X	It becomes [1] every time [Log 12] occurs. (The value will not automatically turn to [0].)
45	LOG_ON_TRIGGER_13	O	X	It becomes [1] every time [Log 13] occurs. (The value will not automatically turn to [0].)
46	LOG_ON_TRIGGER_14	O	X	It becomes [1] every time [Log 14] occurs. (The value will not automatically turn to [0].)
47	LOG_ON_TRIGGER_15	O	X	It becomes [1] every time [Log 15] occurs. (The value will not automatically turn to [0].)
48	LOG_ON_TRIGGER_16	O	X	It becomes [1] every time [Log 16] occurs. (The value will not automatically turn to [0].)
49	PROJECT_1SCAN (_1ON_RUN)	O	O	Go to RUN and the initial scan only will be [1]. (It will be automatically reversed to [0] after the initial scan.)
50	REMOTE_CONTROL_BLOCK	O	O	Input [1] to block VNC remote control.
51	SCREEN_1SCAN(_1ON)	O	O	Starting the operation screen or switching screens in operation will make it [1] in the initial scan. (It will be automatically reversed to [0] after the initial scan.)
52	SCREEN_CHANGE	O	O	It becomes [1] in the initial scan when the screen change is completed. (It will be automatically reversed to [0] after the initial scan.)
53	SD_INSERT	O	X	It becomes [1] when SD card is installed to TOP. It becomes [0] when SD card is removed from TOP.
54	SECURITY_LOGIN_STATUS	O	X	Display the security login status. (0: Logout, 1: Login)
55	TIME_HH	O	O	It shows the status of the no. 0 Bit of the Hour data of TOP RTC.
56	TIME_MM	O	O	It shows the status of the no. 0 Bit of the Minute data of TOP RTC.
57	TIME_SS	O	O	It shows the status of the no. 0 Bit of the Second data of TOP RTC.
58	TOUCH_PRESSED	O	O	Touch TOP to make it [1]. (The value will not be automatically turned off.)
59	USB_INSERT	O	X	It becomes [1] when USB memory is installed to TOP. It becomes [0] when USB memory is removed from TOP.

(2) Word Special Address



[Pic. Word Unit Special Address]

The Word Unit Special Address is as follows.

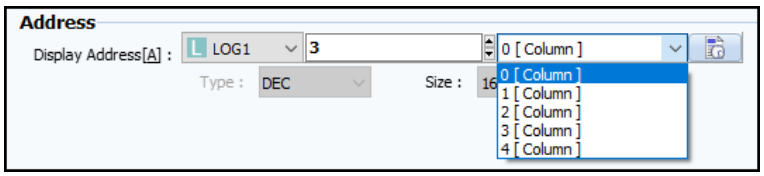
No	Word Special Address	Read	Write	Description
1	BACK_LIGHT_LEVEL	O	O	The LCD brightness level. (Range: 0-10, [0]: The darkest, [10]: The brightest)
2	BATTERY_CAPA	O	X	Displays the remaining battery. (Range: 0-100%)
3	COMM_ENET_STATUS	O	X	Displays the Ethernet communication status. If the value is [0], the communication is normal. If the value is [1], it is timed out.
4	COMM_SERIAL_STATUS	O	X	Displays the serial communication status. If the value is [0], the communication is normal. If the value is [1], it is timed out.
5	COUNTER_SECOND	O	X	It increases by 1 at every second of operation.
6	DATE_DD	O	O	The Day [Date] data of TOP RTC. (Range: 1-31, [1]: 1 Day, [2]: 2 Days ...)
7	DATE_MM	O	O	The Month data of TOP RTC. (Range: 1-12, [1]: January, [2]: February ...)
8	DATE_WEEK	O	X	The day of the date set to TOP. (1-Monday, 2-Tuesday, 3-Wednesday, 4-Thursday, 5-Friday, 6-Saturday, 7-Sunday)
9	DATE_WEEK_XTOP	O	X	Save Week as the same value as XTOP. (0-Sunday, 1-Monday, 2-Tuesday, 3-Wednesday, 4-Thursday, 5-Friday, 6-Saturday)
10	DATE_YYYY	O	O	The Year data of TOP RTC. (Range: 1999-2098)
11	ERROR_ENET_IP1	O	X	When an Ethernet communication error occurs (when the special address COMM_ENET_STATUS becomes 1), the first IP of the four digit IP address where the error has occurred is saved in this address.
12	ERROR_ENET_IP2	O	X	When an Ethernet communication error occurs (when the special address COMM_ENET_STATUS becomes 1), the second IP of the four digit IP address where the error has occurred is saved in this address.
13	ERROR_ENET_IP3	O	X	When an Ethernet communication error occurs (when the special address COMM_ENET_STATUS becomes 1), the third IP of the four digit IP address where the error has occurred is saved in this address.
14	ERROR_ENET_IP4	O	X	When an Ethernet communication error occurs (when the special address COMM_ENET_STATUS becomes 1), the fourth IP of the four digit IP address where the error has occurred is saved in this address.

15	ERROR_SERIAL_PORT	O	X	The number of the port where the most recent serial communication error has occurred. (0: NONE, 1: COM1, 2: COM2, 3: COM3)
16	ETH1_CABLE_STATUS	O	X	It becomes [1] when ETH1 cable is connected (It may not work in the bridge mode)
17	ETH2_CABLE_STATUS	O	X	It becomes [1] when ETH2 cable is connected (It may not work in Bridge Mode)
18	HMI_ID	O	X	Displays the HMI ID.
19	INPUT_MAX_VALUE	O	X	Displays the maximum value available for input when entering numbers.
20	INPUT_MIN_VALUE	O	X	Displays the minimum value available for input when entering numbers.
21	INPUT_X_POS	O	X	It is the X coordinate value of the screen touch position. The far left side of the TOP screen is [0].
22	INPUT_Y_POS	O	X	It is the Y coordinate value of the screen touch position. The far top side of the TOP screen is [0].
23	LAST_ALARM_DATA	O	X	It is the last alarm ID that occurred in the corresponding alarm block. It is a 9-digit data. (32 Bit, UDEC) [00 (2 digits): Block, 00 (2 digits): Group, 00000 (5 digits): Alarm ID]
24	LAST_INPUT_TIME	O	X	Displays the elapsed time since the last touch input in seconds.
25	LOG_COUNT_01	O	X	Displays the currently accumulated Log Count of [Log 1].
26	LOG_COUNT_02	O	X	Displays the currently accumulated Log Count of [Log 2].
27	LOG_COUNT_03	O	X	Displays the currently accumulated Log Count of [Log 3].
28	LOG_COUNT_04	O	X	Displays the currently accumulated Log Count of [Log 4].
29	LOG_COUNT_05	O	X	Displays the currently accumulated Log Count of [Log 5].
30	LOG_COUNT_06	O	X	Displays the currently accumulated Log Count of [Log 6].
31	LOG_COUNT_07	O	X	Displays the currently accumulated Log Count of [Log 7].
32	LOG_COUNT_08	O	X	Displays the currently accumulated Log Count of [Log 8].
33	LOG_COUNT_09	O	X	Displays the currently accumulated Log Count of [Log 9].
34	LOG_COUNT_10	O	X	Displays the currently accumulated Log Count of [Log 10].
35	LOG_COUNT_11	O	X	Displays the currently accumulated Log Count of [Log 11].
36	LOG_COUNT_12	O	X	Displays the currently accumulated Log Count of [Log 12].
37	LOG_COUNT_13	O	X	Displays the currently accumulated Log Count of [Log 13].
38	LOG_COUNT_14	O	X	Displays the currently accumulated Log Count of [Log 14].
39	LOG_COUNT_15	O	X	Displays the currently accumulated Log Count of [Log 15].
40	LOG_COUNT_16	O	X	Displays the currently accumulated Log Count of [Log 16].
41	MBUS_LOCK_IP	O	X	Display the IP of TOP that uses N:1 Inter Lock function in MBUS and [Effect & Action]-[Special] function.
42	MBUS_LOCK_TIMEOUT	O	X	Display the lock timeout time of TOP that uses N:1 Inter Lock function in MBUS and [Effect & Action]-[Special] function in second unit.
43	MULTI_LANGUAGE	O	O	Change the type of the language set in Multi Language Table. (0: First table language, 1: Second table language ...)
44	PLAYED_VIDEO_NAME	O	X	Displays the file name of the video that is currently playing.
45	SCREEN_NUMBER	O	O	Saves the current screen number and switches the screen when the screen number that you wish to move is entered. ([2]: Switch to the screen no. 2, [7]: Switch to the screen no. 7.)
46	SCREEN_NUMBER_HDMI1	O	O	Saves the current HDMI1 screen number and switches the screen when the screen number that you wish to move is entered. ([2]: Switch to the screen no. 2, [7]: Switch to the screen no. 7.)
47	SCREEN_NUMBER_HDMI2	O	O	Saves the current HDMI2 screen number and switches the screen when the screen number that you wish to move is entered. ([2]: Switch to the screen no. 2, [7]: Switch to the screen no. 7.)

48	SCREEN_NUMBER_HDMI3	O	O	Saves the current HDMI3 screen number and switches the screen when the screen number that you wish to move is entered. ([2]: Switch to the screen no. 2, [7]: Switch to the screen no. 7.)
49	SCREEN_NUMBER_HDMI4	O	O	Saves the current HDMI4 screen number and switches the screen when the screen number that you wish to move is entered. ([2]: Switch to the screen no. 2, [7]: Switch to the screen no. 7.)
50	SCREEN_SAVE_TIME	O	O	Displays and modified the battery save time. ([Min] unit) Go to [Control Panel]-[Display]-[Battery Saver] in the TOP menu screen to display the set time and enter values to modify the time. Battery Saver function turns off the screen backlight when there is no TOP operation (input) for a set time. Touch the screen again to turn the backlight on again.
51	SCREEN_STYLE	O	O	Display the style number of the screen that is currently in use and modify the style number. (Range: 1-32, [1]: Style no. 1, [2]: Style no. 2 ...)
52	SECURITY_LOGIN_LEVEL	O	X	Displays the security level of the user that is currently logged in.
53	SECURITY_LOGIN_SECOND	O	X	When currently logged in, it displays the login pulse time.
54	SECURITY_PASSWORD_EXPDAY	O	X	Displays the remaining time until the password update for the password that you are currently logged in with.
55	TIME_HH	O	O	The Hour data of TOP RTC. [Data type: DEC, Range: 0-23]
56	TIME_MM	O	O	The Minute data of TOP RTC. [Data type: DEC, Range: 0-23]
57	TIME_SS	O	O	The Second data of TOP RTC. [Data type: DEC, Range: 0-23]
58	VERSION_MAJOR	O	X	The Major number from the project version information in [Project]-[Property]. E.g.) X.0.0 (The first digit)
59	VERSION_MINOR	O	X	The Minor number from the project version information in [Project]-[Property]. E.g.) X.0.0 (The second digit)
60	VERSION_RELEASE	O	X	The Release number from the project version information in [Project]-[Property]. E.g.) X.0.0 (The third digit)
61	WIFI_SENSITIVITY_DBM	O	X	The Wi-Fi DBM number.
62	WIFI_SENSITIVITY_STATUS	O	X	The wireless Wi-Fi reception sensitivity (Range: 0-100%)

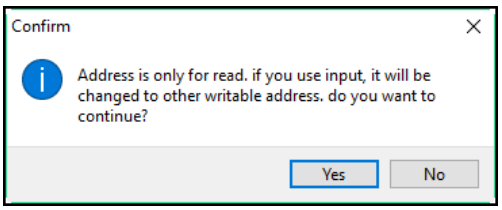
7.1.15 Log Address

Displays 1 log data. It is visible on the list when [Project]-[Log] is set. A log can have a total of 16 log IDs from 1-16, and when Log 1 is set, [LOG 1] will be added and visible in the address list. Set the [Block Number] and [Column Number] to display the corresponding log data on the screen as shown in the below picture.



[Pic. Log address]

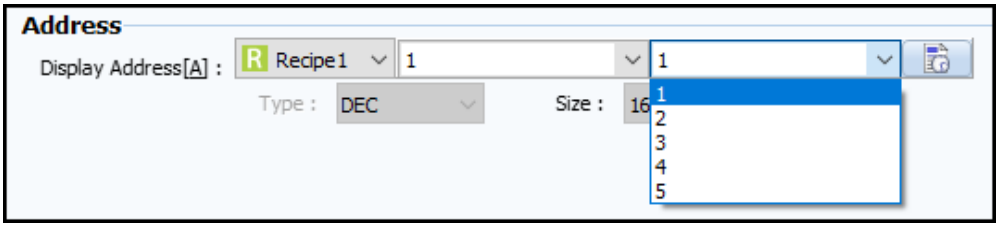
Log Data is read-only address and cannot be entered. Therefore, log data can be displayed but cannot be entered. When it is set as Input Address, below error message will be displayed or an error will occur in [Project Build].



[Pic. Error message]

7.1.16 Recipe Address

Displays or enter 1 recipe data. It is visible on the list when [Project]-[Recipe] is set. A recipe can have a total of 32 recipe IDs from 1-32, and when Recipe 1 is set, [Recipe 1] will be added and visible in the address list. Set the [Item Number] and [Parameter Number] to display the recipe data and modify the recipe data by entering values.



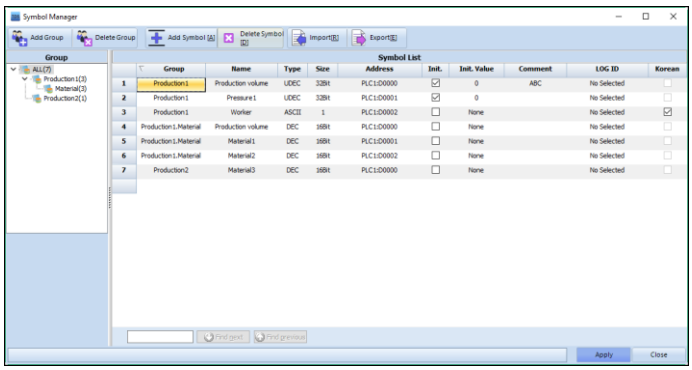
[Pic. Recipe address]

7.1.17 Symbol Address

Symbol Address is an address that replaced address with Alias Name.

(1) Draft Symbol List in Symbol Manager

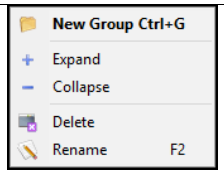
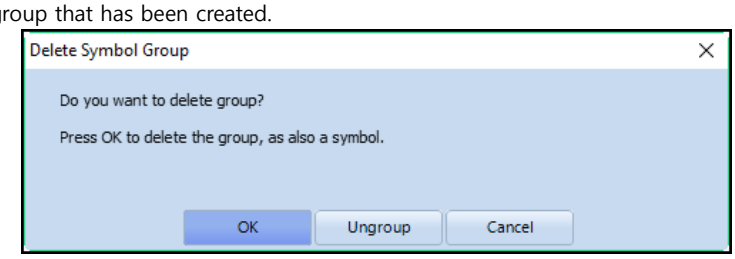
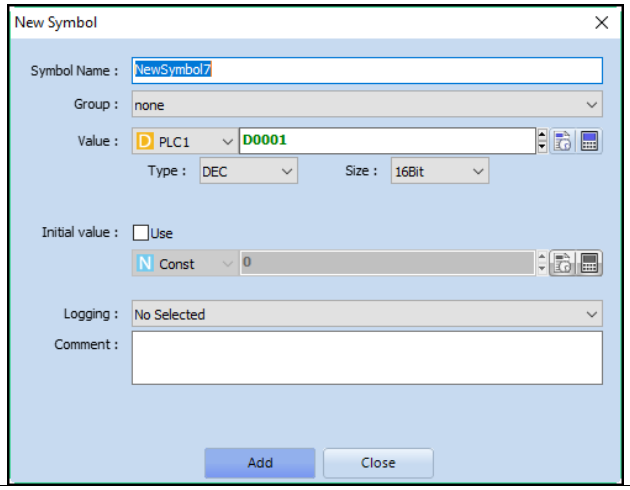
Draft a Symbol List in [Symbol Manager] which is displayed when running [Project]-[Symbol] menu.

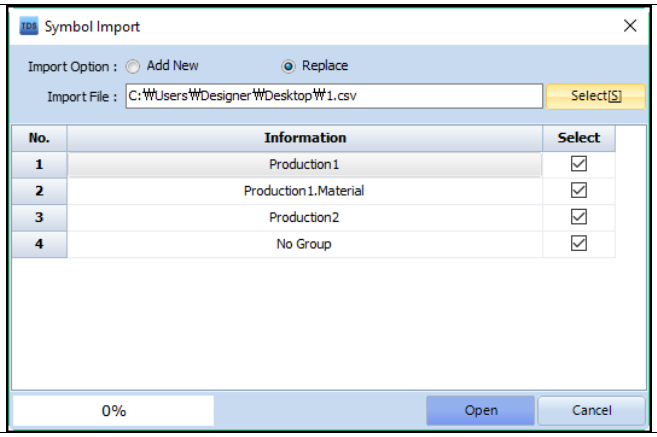
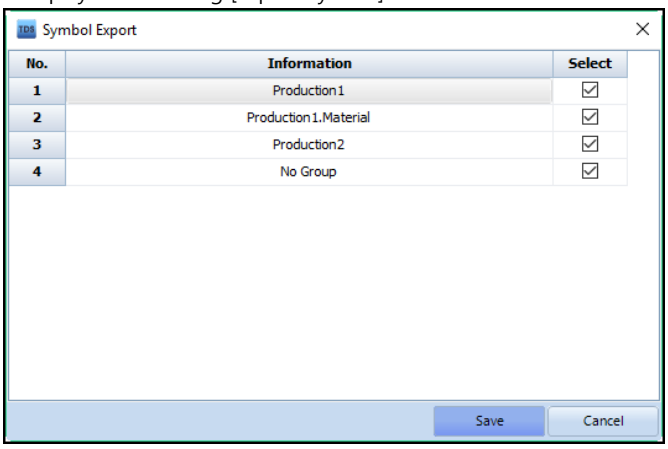


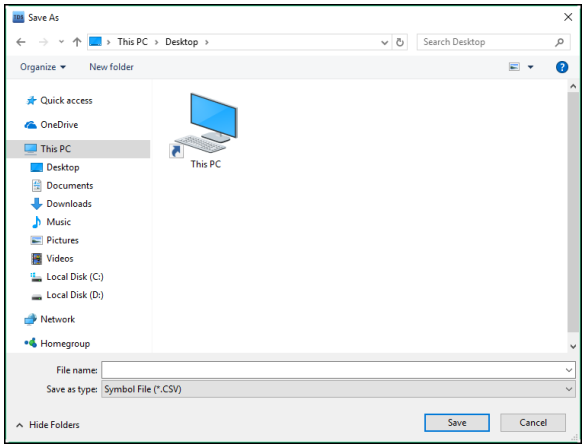
[Pic. Symbol manager]

The followings are the buttons on top of Symbol Manager.

No	Symbol Manager	Description
1	Add Group	Add a new group. Adding a group will display the added group at [Group] window on the left. The group is created under [All] and you can continually create more [Subsidiary Group] under each group. [All] shows all groups' symbol lists in one glance. Select a group and right-click with the mouse to display the following popup menu.

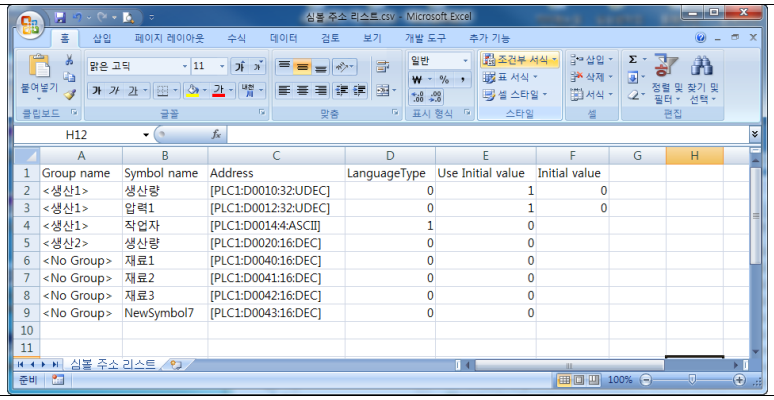
		 [New Group] adds a new group as a subsidiary group of the selected group. [Expand] shows all subsidiary groups of the selected group. [Collapse] hides all subsidiary groups of the selected group. [Delete] deletes the selected group. [Change Name] changes the selected group's name.
2	Delete Group	Delete a group that has been created.  Click [Ungroup] to delete the group but keep the group's symbol list without the group in All.
3	Add Symbol [A]	Add a symbol list. Symbols can be added without assigning them to a group. If a group is selected in [Group] window, a symbol will be added to the group. Add a symbol list. Click [Add Symbol] to display [New Symbol] window. Configure various settings for symbol address and click [Add] to add. 
4	Symbols Delete [D]	Delete the selected symbol address from the symbol list.
5	Import [R]	Read a saved symbol address list. The symbol address list must be a file saved by [Export] function. Click [Import] to run the following [Import Symbol] window. Choose whether to [Add New] or [Replace] the imported symbol address list file to the existing symbol address list. Choosing [Add New] will create all imported symbol address list imported to the current project's symbol address list new. [Replace] only adds other symbol address lists by replacing symbol addresses that are the same as the existing ones. Go to [Select File] and open a symbol file in CSV format and click [Open].

<table>
<tr><td></td><td></td><td> 
</td></tr>
<tr><td>6</td><td>Export [E]</td><td>Save the currently registered symbol address list in CSV file format.
Click [Export] to display the following [Export Symbol] window.
 

Click [Save] and [Save As] window will be displayed for you to enter the PC's save path and file name.
 

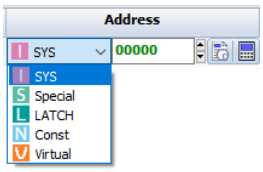
When it is saved, below message will be displayed.
Click [Yes] and a message will appear and the Export window will be closed.
 

The saved symbol file can be opened and edited as an Excel file. You can also add symbol address list by using [Import] button for this file in other projects.</td></tr>
</table>

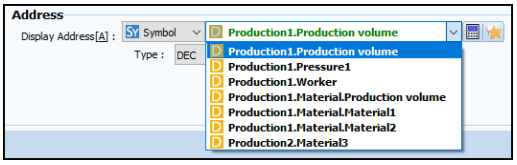
Group name	Symbol name	Address	LanguageType	Use Initial value	Initial value
<생산1>	생산량	[PLC1:D0010:32:UDEC]	0	1	0
<생산1>	압력1	[PLC1:D0012:32:UDEC]	0	1	0
<생산1>	작업자	[PLC1:D0014:4:ASCII]	1	0	
<생산2>	생산량	[PLC1:D0020:16:DEC]	0	0	
<No Group>	재료1	[PLC1:D0040:16:DEC]	0	0	
<No Group>	재료2	[PLC1:D0041:16:DEC]	0	0	
<No Group>	재료3	[PLC1:D0042:16:DEC]	0	0	
<No Group>	NewSymbol7	[PLC1:D0043:16:DEC]	0	0	

Detailed items of the symbol address are as follows.

No	Symbol Manager	Description
1	Number	This is the number assigned in sequential order when a symbol list is added.
2	Group	It displays which group the registered symbol list belongs to.
3	Name	Enter the alias of the address. Use this alias when writing a project instead of an address.
4	Type	Set the address type. Select from (UDEC, DEC, HEX, BCD, FLOAT, ASCII).
5	Size	Set the address size. If you have chosen one from [DEC, UDEC, HEX, BCD] in Type, choose from (1 Bit, 16 Bit, and 32 Bit). If you have chosen [FLOAT] in Type, it will be fixed to (32 Bit). If [ASCII] type is selected, set the string count. (For Korean, you may input 1 string per 2 sizes.)
5	Address	Set the actual address to use. 
6	Initialize	Check whether or not to use Initialization. When in use, it will be reset to the initialization value every time the project is started.
7	Initialization Value	Set the Initialization Value to use if [Initialization] function is checked.
8	Description	Describe the symbol address.
9	Log ID	Used when [Symbol] is selected as [Address Block] in [Log Address] page of [Project]-[Log]. Set Log ID to the symbol address to use as the log address from the symbol address list that is registered to Symbol Manager.
10	Use Korean	It can only be configured when the type is set to ASCII. Use this setting to enter Korean or use to save Korean text as screen-displayed address.

(2) Use of Symbol Address

Select Symbol as the address type when using symbol address in Insert Address window. A symbol address list will be displayed in the Insert Address section for you to select a symbol address to use. Click the yellow star-shaped icon on the right to display [Symbol Manager] window for you to edit symbol address.



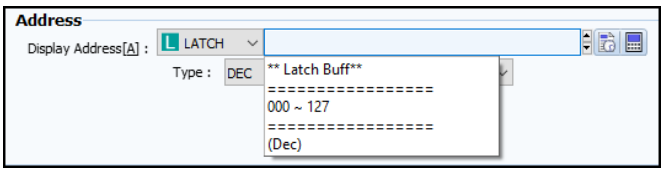
[Pic. Insert symbol address]

7.1.18 Latch Address

Latch address is the internal address of TOP and it is the address area where data is not deleted even when the TOP power is reset.

Part of system address may set the latch area in [Control Panel]-[Project Setting]-[Latch Setting], but this latch address is provided as an area where data will not be deleted without any separate settings.

Each address number of this area is in [16 Bit] unit, i.e. 1 word unit. The range is available from address [000] to [127].

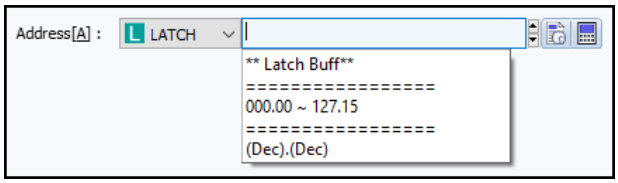


[Pic. Latch address used as word address]

When using it as a Word Address, as the latch address is in word unit, you may enter the address number as above.

When using it as a Bit Address, you must enter bit digits after the address number.

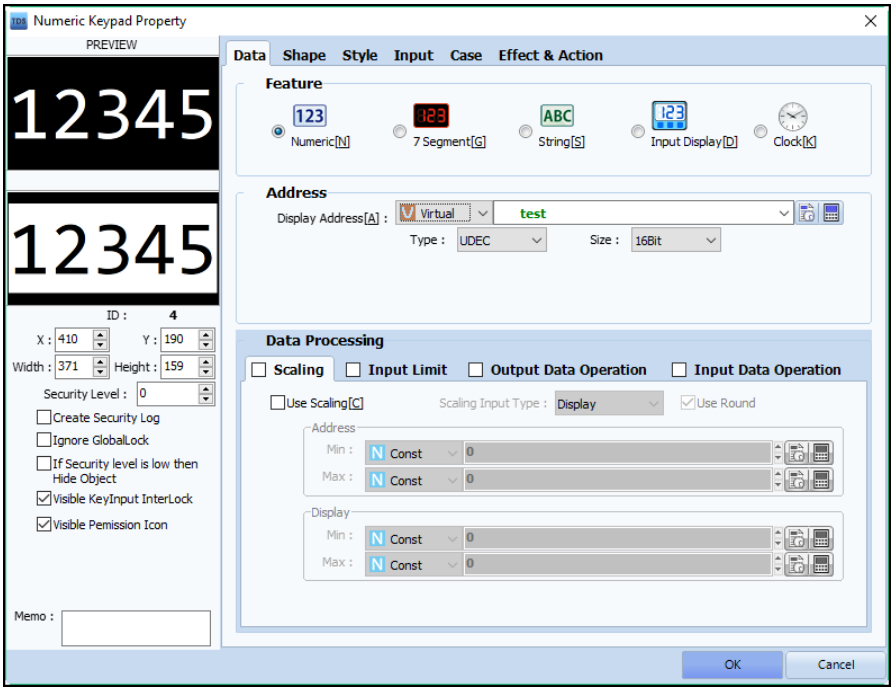
E.g.) When using the [6th Bit] of latch address [address 10], enter [010.05].



[Pic. Latch address used as Bit Address]

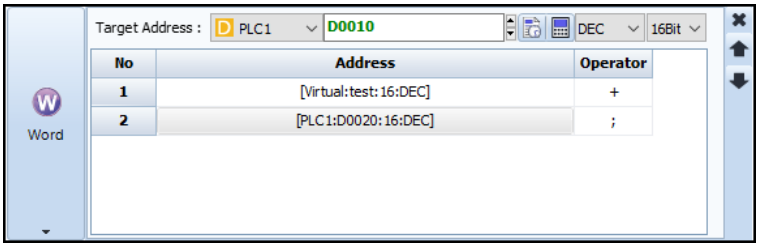
7.1.19 Virtual Address

Virtual addresses can be used like variables.



[Pic. Numeric object]

Select [Virtual] address in Display Address and enter the Address Name. Set [Type] and [Size] and an address is created. Insert data in number object and data will be inserted in Test address.
The virtual address of Test can be used in other objects as below.

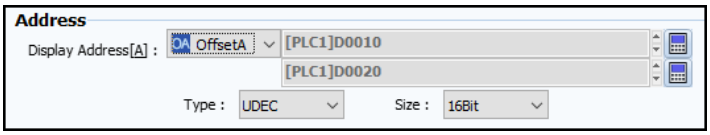


[Pic. Word Calculation in the calculation page]

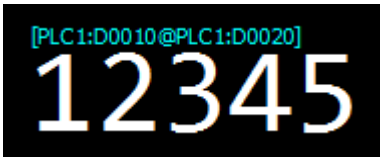
Virtual address data will be initialized to [0] when the TOP power is reset.

7.1.20 Offset A Address

Offset A address may be set additionally to the actual address. There are two Offset address types: [Offset A/Offset V]. Offset A address refers to Offset Address and this function modifies the address number of the actual address using the Offset address value.



[Pic. Offset A address]



[Pic. The number object as the Offset A address]

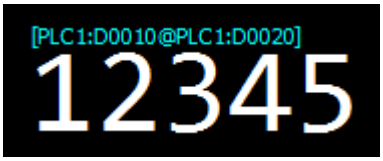
Display address is set to [D0010] and Offset A address is set to [D0020].
The actual displayed value will vary according to the value of [D0020] which is the Offset A address.
The [Actual Display Address Number] will be the outcome of adding Offset A address [D0020] data value to the display address [D0010] address number 10. That is, when the value of [D0020] data value is 0, the actual display address will be [D0010] (10+0=10), and if the data value of [D0020] is 3, the actual display address will be [D0013] (10+3=13).

7.1.21 Offset V Address

Offset V address may be set additionally to the actual address. There are two offset address types: [Offset A/Offset V]. Offset V address refers to Offset Value and this function modifies the value of the actual address using the offset address value.



[Pic. Offset V address]



[Pic. The number object as the Offset V address]

Display Address is set to [D0010] and Offset V Address is set to [D0020]. The actual displayed value will vary according to the value of [D0020] which is the Offset V Address.

The [Actual Display Address Value] will be the outcome of adding Offset A address [D0020] data value to the display address [D0010] value. That is, when the value of [D0010] is 100 and [D0020] is 20, the actual display value will be [100+20=120].

Thus, it displays the value of adding [D0010] data to [D0020] data.

Entering Address

There are two ways to enter addresses: typing with a keyboard and using Calculator button.

7.1.22 Set Address with Keyboard Input

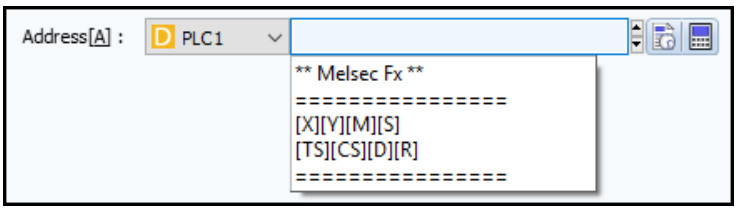
Set the address with keyboard input. First, select [Address Type] from the Address List.



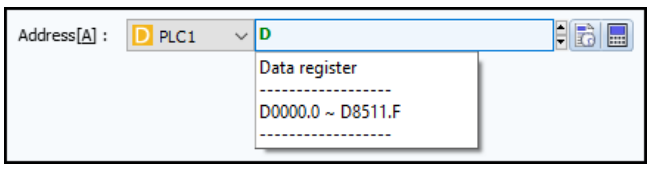
[Pic. Address Type]

Next, type the keyboard according to the selected address type and enter.

At this time, if you click the Insert Address part, the information of [Controller/Available Device/Address Number Range/Address Number Digits], etc. as a popup description to help you enter the correct address.



[Pic. Popup description for entering address]



[Pic. Popup description for entering address]

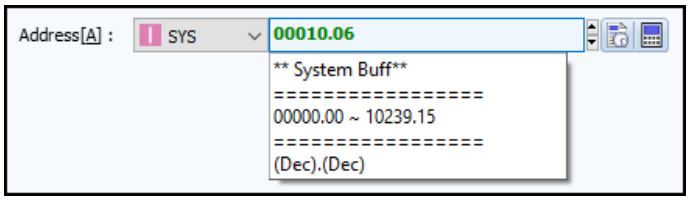
Press [ENTER] key after entering the address and the address number digits will be automatically set.



[Pic. Automatic address number digit setting]

When Word Address is used as Bit function, you must enter a dot and two bit digits [.00-.15] behind the address number.

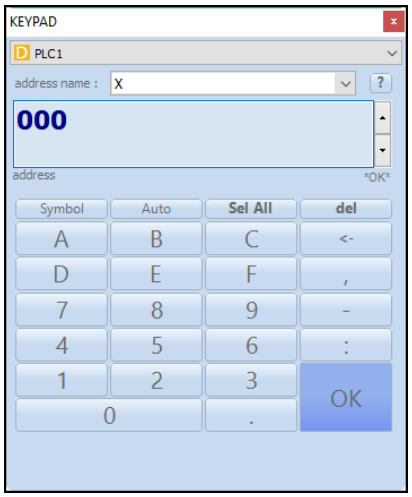
E.g.) If you use the 7th bit for the internal address no. 10, you must set it to [00010.06] as shown in the below picture.



[Pic. Use word address as Bit function]

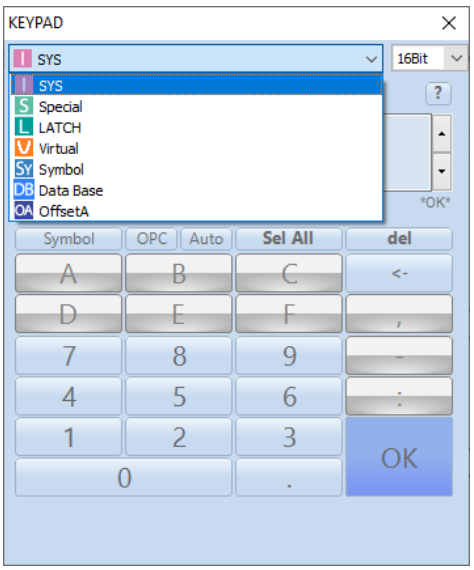
7.1.23 Set Address with Insert Address Keypad

Press the calculator shaped ( ) icon on the far right corner of the Address Setting section and the Insert Address Keypad will appear as shown in the below picture for you to set an address.



[Pic. Insert address keypad]

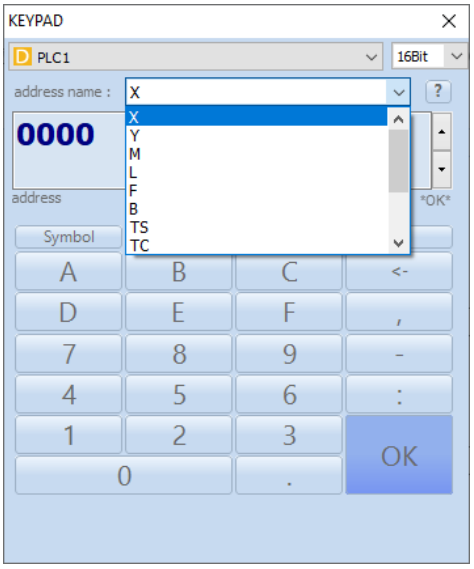
First, select [Address Type].



[Pic. Select address type]

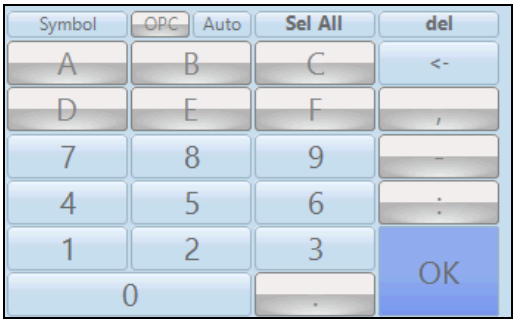
Select [Address Name (Device Name)] according to the selected address type. The address name will be automatically shown in a list and displayed.

E.g.) Select [Address Type] as PLC and the PLC's device name will be automatically listed and displayed in [address name] as shown in the below picture.



[Pic. Select address name]

Next, enter the address number according to the range and digits with the keypad below.



[Pic. Number keypad of insert address device]

No	Number Keypad	Description
1	A - F	The keys to input hexadecimal data.
2	0 - 9	There are the 10 number keys.
3	.	This is the decimal place key.
4	OK	After entering an address, press [OK] to complete the address input.

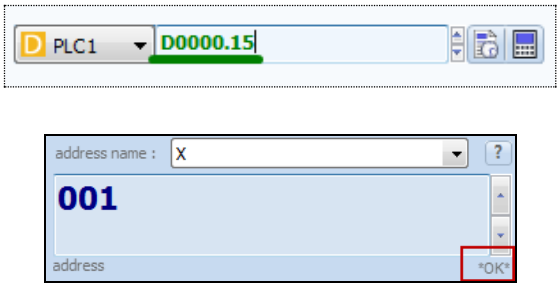
You may also enter the address with a PC keyboard.

It is the edit button on the top corner of the keypad.

Button	Description
Symbol	Register a new symbol address.
OPC	When setting the OPC server with TOPVIEW, you may register a new OPC address.
Auto	Automatically sets the address number digits. E.g.) When entering [D0020] address, enter [20] in the address number area and click [Auto] button to automatically set the address number digits to [0020].
Set All	Select all addresses.
del	Delete the right address to the cursor.

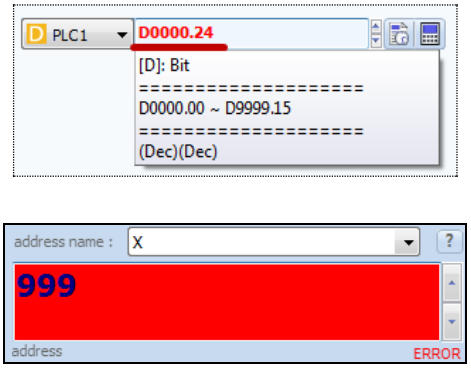
7.1.24 Input of Correct Address and Recent Address List

If there is any invalid address in a project, an error will occur in the communication to the controller that is connected to the TOP and it will not function normally. Therefore, it is imperative to set correct address. If the entered address is correct, it will be displayed in green.



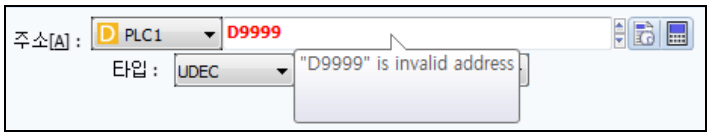
[Pic. When correct address is entered]

On contrary, if you enter a device name that does not exist in PLC, exceeds the address number range, or insert incorrect address format, the address will be displayed in red.



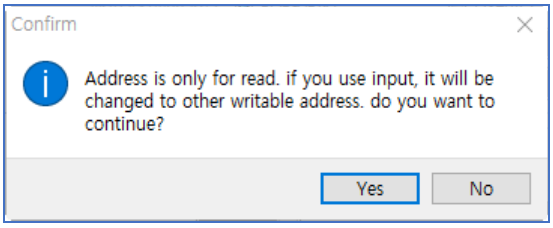
[Pic. When incorrect address is entered]

Entering an incorrect address and pressing [OK] in object will display below error message and the [Object Property] screen will not be closed.



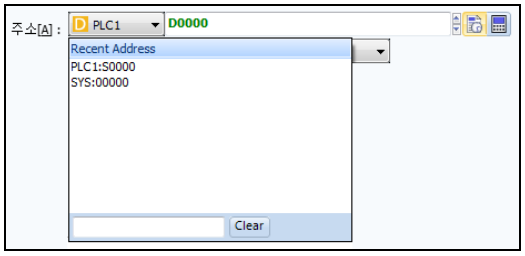
[Pic. Error message for entering incorrect address]

If read-only address of a special address is set to an object that uses data, below error will occur.



[Pic. Error message for read-only address]

 Click the button to display the list of recently used addresses as shown in the below picture. Press [Clear] button at the bottom to delete the list.



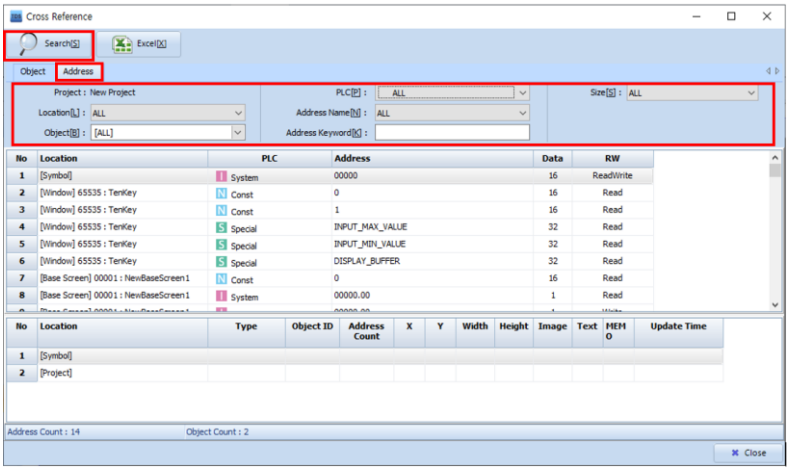
[Pic. List of recently used addresses]

7.1.25 **Search Address**

Use [Tool]-[Search Address/Object] menu to search addresses used in the project.

Select [Address] page and set [Location/Object/PLC/Address Name/Address Keyword/Size] and click [Search] button at the top to display a list of addresses searched as below. You can check screens and objects where the address is used. [Double Click] the list to open the property screen of the object.

(For more detailed description, please see Chapter 23.1 [Cross Reference].)



[Pic. Cross Reference]

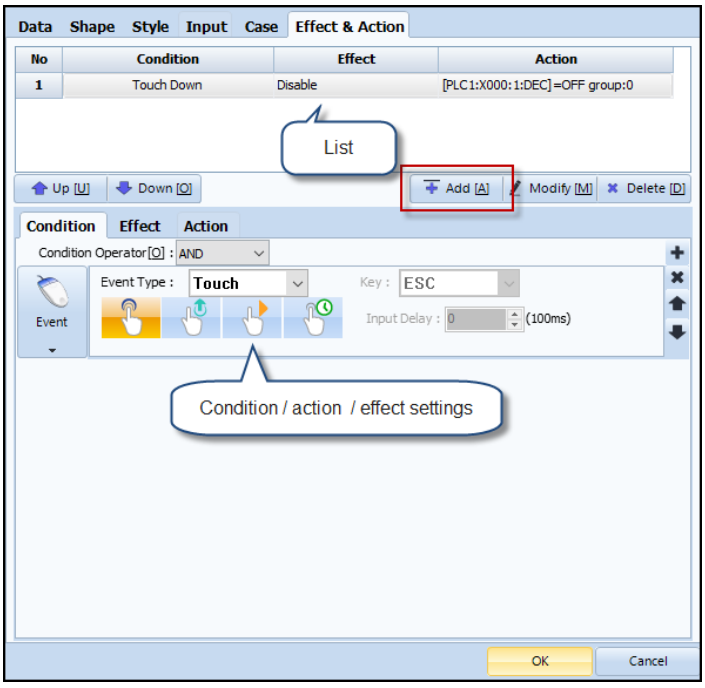
How to Set [Effect & Action] Page

Most objects have [Effect & Action] page in the [Object Property] screen.

Go to [Effect & Action] page and [Condition], [Effect], and [Action] pages can be found below.

Set [Condition] first and set the action to be executed at [Effect] and [Action] when the condition is true. [Effect] gives effects to the display parts such as shape/position of object, [Action] runs specific actions or calculation.

Set [Condition], [Effect], and [Action] then click [Add] button to add the set content at the top list. You may add up to [32] set lists. Select a list and [Condition], [Effect], and [Action] page below will display the descriptions to modify the content. To apply the changes to the list, click [Edit] button.



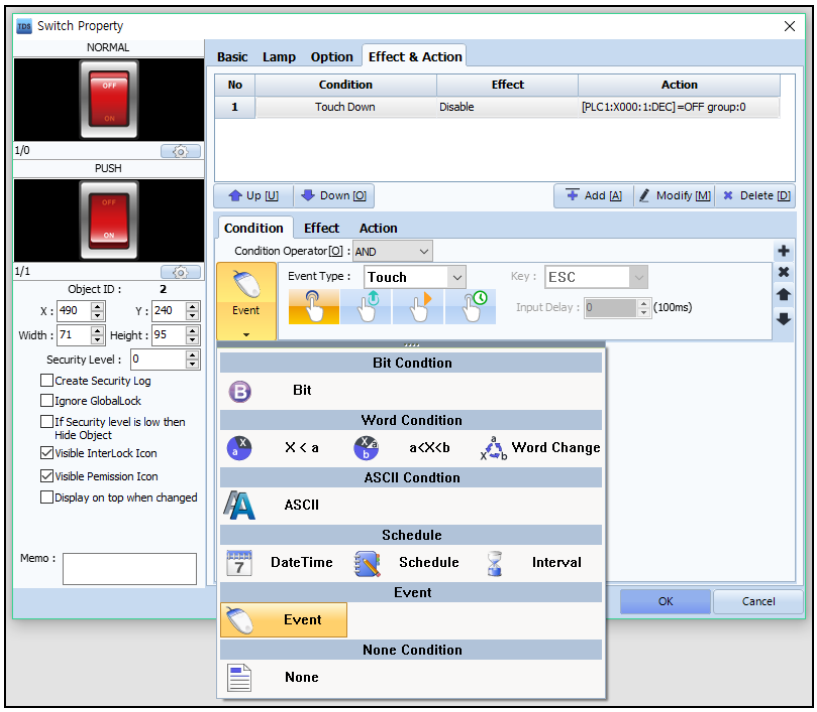
[Pic. Effect & Action page]

No	Button	Description
1	Up [U]	Push the selected list up by one cell. When the condition is met, it will be executed in the number order, and the top number [no. 1] will be executed first.
2	Down [O]	Push the selected list down by one cell.

		When the condition is met, it will be executed in the number order, and the top number [no. 1] will be executed first.
3	Add [A]	Add the set content in the [Condition], [Effect], and [Action] page in the list. Only the content added to the list will be executed.
4	Modify [M]	Modify and save the content of the [Condition], [Effect], [Action] of the selected list.
5	Delete [D]	Delete the selected List.

[Condition] Page Setting

[Condition] is the page where you can set conditions to execute [Effect] and [Action].
When the condition is met, the set [Effect] and [Action] will be run.
For [Condition], there are [Bit/Word/ASCII/Schedule/Event/None Condition].

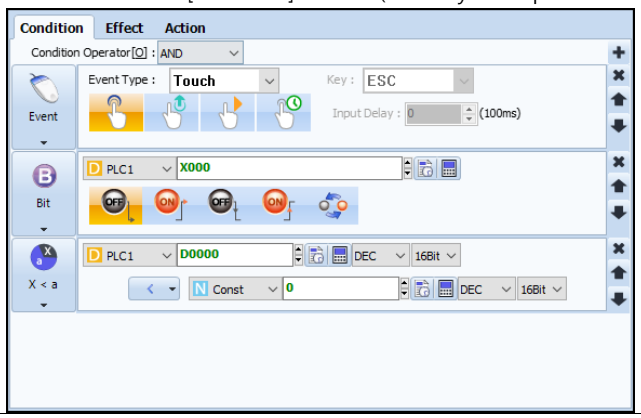


[Pic. Condition setting]

Details of each condition is as below.

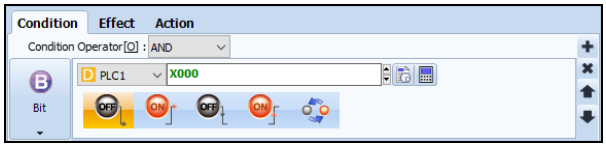
No	Condition	Description
1	Bit Condition	Use the ON/OFF value of the set address as the condition.
2	Word Condition	Use the Word value (analog value) of the set address as the condition.
3	ASCII Condition	Use the ASCII value (string) of the set address as the condition.
4	Schedule	Use time as the condition.
5	Event	Use touch input as the condition.
6	None Condition	It will run continuously. It runs continuously when the screen to which the object is registered is in operation.

It describes the button that is used in common on the Condition Page.

No	Button	Description
1		Multiple conditions can be set with [Condition] button. (You may add up to 8 conditions.) 
2		Delete the condition.
3		Moves the condition to the top of the list.
4		Moves the condition to the bottom of the list.
5	Calculation Condition	When multiple [Condition] List is set, set the Operate Condition. With [AND], it will be [True] when all conditions are true. With [OR], it will be [True] when more than one condition is true.

7.1.26 [Condition] Page: Bit Condition

Bit Condition uses the ON/OFF value of the set address as the condition.

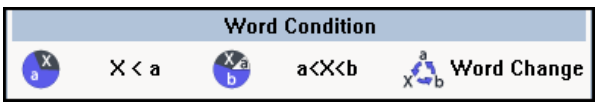


[Pic. Bit Condition]

No	Property	Description
1	Address Setting	Set the actual address to use as Bit Condition. 
2		As long as the data of the address set to [OFF continue] is 0, it will be true.
3		As long as the data of the address set to [ON continue] is 1, it will be true.
4		Once the data of the address set to [OFF edge] changes from 0 to 1, it becomes true.
5		Once the data of the address set to [ON edge] changes from 0 to 1, it becomes true.
6		Once the data of the address set to [REVERSE] changes from 1 to 0, or vice versa, it becomes true.

7.1.27 [Condition] Page: Word Condition

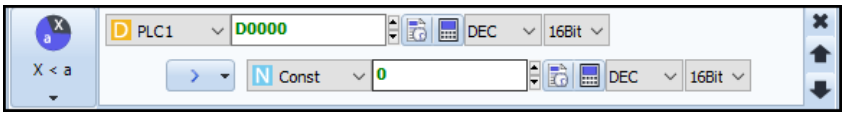
Word Address refers to 16 Bit unit address. Word Condition uses the data of the set Word Address (Analog value) as the condition.



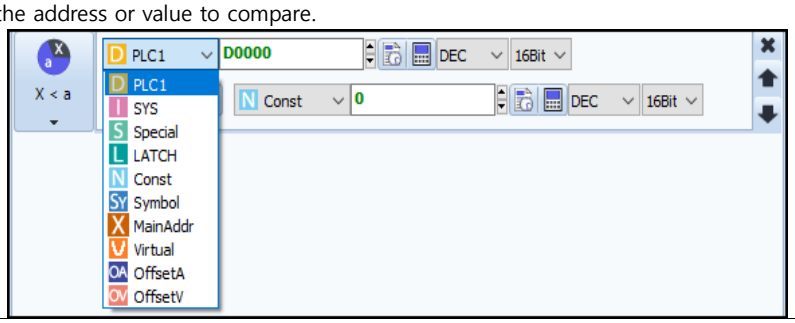
[Pic. Word Condition]

(1) X < a condition

It becomes true when the condition is met by comparing two data. [X] and [a] may be set as addresses or constant values. There are 6 types of comparative operators between [X] and [a]. If set as shown in the below picture, it will be true when the [D0100] data changes and the value is larger than 0.



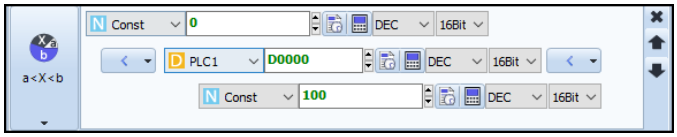
[Pic. Word Condition's X < a]

No	Property		Description
1	[X], [a]		Set the address or value to compare. 
2	Comparative Operator	<	It is the operator that compares two operands. In this condition, the value of the left operand is smaller than the right one.
		>	It is the operator that compares two operands. In this condition, the value of the left operand is bigger than the right one.
		<=	It is the operator that compares two operands. In this condition, the value of the left operand is the same or smaller than the right one.
		>=	It is the operator that compares two operands. In this condition, the value of the left operand is the same or bigger than the right one.
		==	It is the operator that compares two operands. In this condition, the value of the left operand is the same as the right one.
		!=	It is the operator that compares two operands. In this condition, the value of the left operand is different from the right one.

(2) a<X<b Condition

Three sets of data are compared and when their conditions are met, it becomes true. You may set addresses or constant values for [a], [X] and [b]. It is normally used when setting the condition where the [X] value is between [a] and [b].

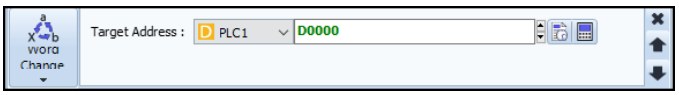
If set as shown in the below picture, it becomes true when the [D0100] data changes and the value falls between 0 and 100.



[Pic. Word Condition's a<X<b]

(3) Word Change Condition

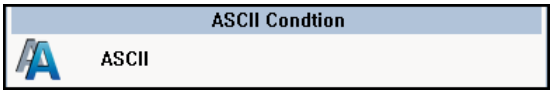
It becomes true when the set address' data is changed. If set as shown in the below picture, it will be true once, when [D0100] data is changed.



[Pic. Word Change of Word Condition]

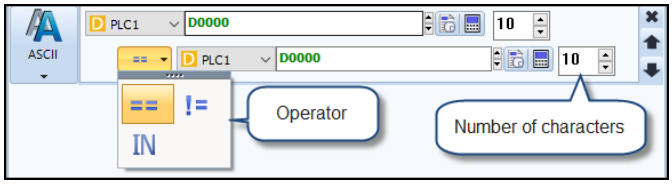
7.1.28 [Condition] Page: ASCII Condition

Use the ASCII value (string) of the set address as the condition.



[Pic. ASCII Condition]

Set the address where the string is started at the top and bottom and set the string count. Set an operator between two addresses. The strings of the top address and the bottom address are compared and it becomes true when the condition is met.



[Pic. ASCII Condition]

[==] Operator becomes true when the top address string and the bottom address string are the same.
[=!] Operator becomes true when the top address string and the bottom address string are different.
[IN] Operator becomes true when the top address string is included in the bottom address string.

7.1.29 [Condition] Page: Schedule

Schedule Condition uses time as its condition.

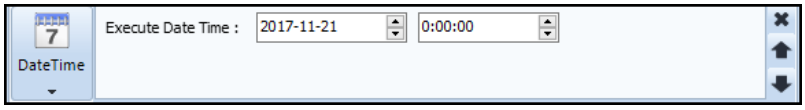


[Pic. Schedule condition]

(1) DateTime

Specific date and time become the condition for DateTime. Set both Date (Year/Month/Date) and Time (Hour/Minute/Second).

It becomes true when it is the corresponding time and date.



[Pic. DateTime]

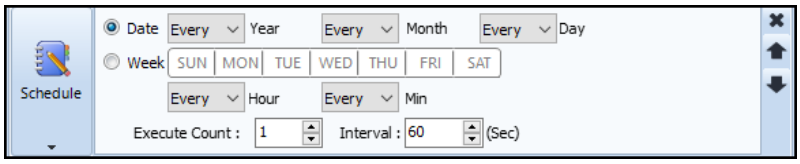
(2) Schedule

You may set the Schedule to be true at the time you desire. Set by selecting from [Date] and [Day].

Select [Every] in [Year/Month/Day] setting for [Date], it will be true at the [Hour/Minute] of [Every Year/Every Month/Every Day].

Selecting [Day] will make it true at the corresponding [Hour/Minute] of the corresponding [Day].

Similarly, for [Hour/Minute]; set [Every] to make it true [Every Hour/Every Minute]

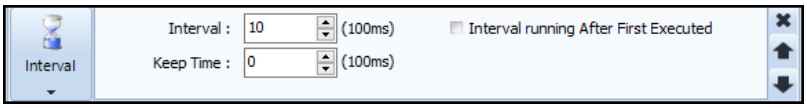


[Pic. Schedule]

If the Execute Count is [1], it will be true once at the corresponding [Year/Month/Day/Hour/Minute]. If you set Execute Count [2] or above and set the Interval (sec), it will be true once at the corresponding [Year/Month/Day/Hour/Minute] and it will be true at every (Execute Count-1) at every interval.

(3) Interval

Interval is used to set cyclic condition. If set as below, it will be true as soon as the object is executed. The true status will be maintained for 0.5 second and then it'll be switched to false. After it becomes true, it will become true again after [20x100ms=2s], i.e. every 2 seconds, then maintained for 0.5 second, then become false. This cycle will be repeated.



[Pic. Interval]

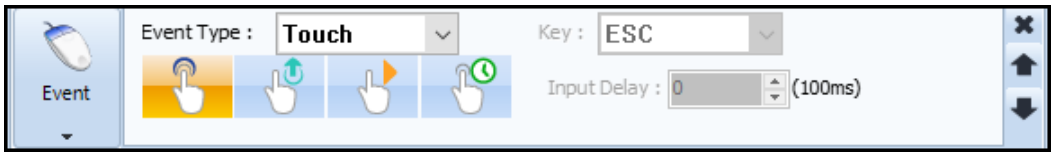
No	Property	Description
1	Spacing	The interval (Time Interval) where the condition becomes true.
2	Pulse Time	The length of time where true status is kept.
3	Interval Running After First Executed	This function makes the object true as soon as it is run. If not checked, the object will turn true after a set time in Interval after it is run.

7.1.30 [Condition] Page: Event

Event uses touch input as a condition.

(1) Event Type (Touch)

Event Type (Touch) uses touch input as a condition.



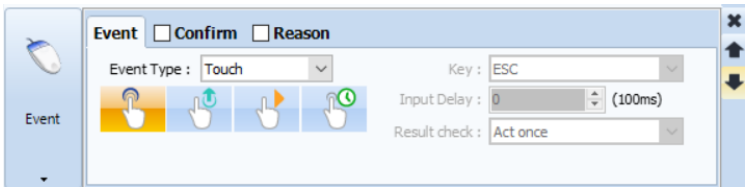
[Pic. Event Type Touch]

No	Property	Description
1	Event Type	Set the type to use the condition as Touch/Key.
2	Touch Down	It turns true once when the object is touched.
3	Touch Up	It turns true once when you draw your hand away from the object.
4	Momentary	If you touch an object for longer than the time set in [Input Delay], it becomes true and keeps being true until you untouch it.

		If the Max Execute Count is set for more than [2] at [Action] page and the [Interval] is set, it will be run for the Max Execute Count for each [Interval] while it is true. When the communication is severed while pressing a button, [Result Check] "Request Once" requests the opposite Bit Action "once", and "Retry after Check" requests opposite Bit Action until the "Communication is back online".
5	Touch Delay	Touch an object for longer than the time set in [Input Delay] and it will be true once. Even if the Max Execute Count is set to more than [2] in [Action] page, it will be run once only.

(2) Event Type (Key)

Event Type (Key) uses key input (Keyboard/Keypad/Function key, etc.) as conditions.

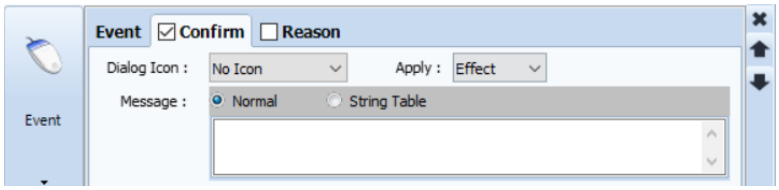


[Pic. Event Type Key]

No	Property	Description
1	Event Type	Set the type to use the condition as Touch/Key.
2	Touch Down	It turns true once when the set key is pressed.
3	Momentary	Pressing the set key makes it true and keeps it true until the touch is withdrawn. If the Max Execute Count is set for more than [2] at [Action] page and the [Interval] is set, it will be run for the Max Execute Count for each [Interval] while it is true. When the communication is severed while pressing a button, [Result Check] "Request Once" requests the opposite Bit Action "once", and "Retry after Check" requests opposite Bit Action until the "Communication is back online".

(3) Confirm

Confirm is used to check the execution of [Effect]/[Action] once again after inputting touch (key).

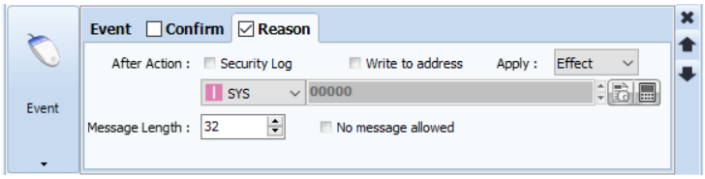


[Pic. Confirm]

No	Property	Description
1	Icon	Input the touch (key) to the object and select the popup window icon that checks its execution. There are icon shapes [No Icon/Information/Warning/Critical/ Question] for you to select.
2	Apply	[Effect] displays a popup window that confirms the execution of [Effect] before its execution. [Action] displays a popup window that confirms the execution of [Action] before its execution.
3	Message	With [Normal], you may enter the texts in popup window manually. With [String Table], you may select text for the popup window from the string table to display.

(4) Reason

Reason is used to leave a user record before [Effect]/[Action] is run after touch (key) is input.



[Pic. Reason]

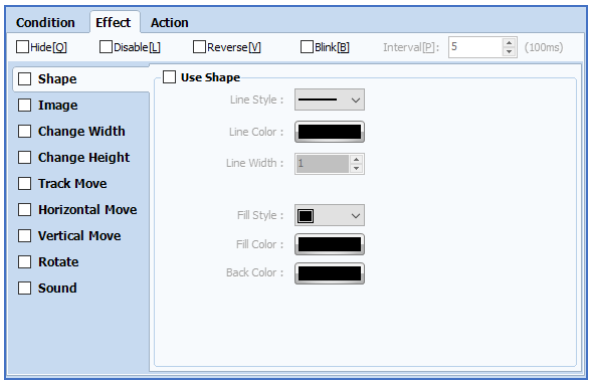
No	Property	Description
1	After Action	[Security Log] leaves records in [File Browser]-[App_Log]-[Security Log] of TOP. [Write to Address] leaves ASCII data records in the set address.
2	Apply	[Effect] pops up a keypad that allows you to record the reason and ground of execution before executing [Effect]. [Action] pops up a keypad that allows you to record the reason and ground of execution before executing [Action].
3	Message Length	Select the number of letters to enter.
4	No message allowed	Allow [Effect]/[Action] to be run when you press [OK] without entering anything in the popup keypad.

7.1.31 [Condition] Page: None Condition

None Condition is a condition that is always true. Set it to None Condition and set [Effect]/[Action] and the [Effect] will run continuously and [Action] will run by the Max Execute Count.

[Effect] Page Setting

[Effect] changes the display parts such as object's shape/position when the condition is true.



[Pic. Effect]

There are various effects as below. To run these, check the effect and configure their details. You may check multiple effects at the same time and run them in a combined way.

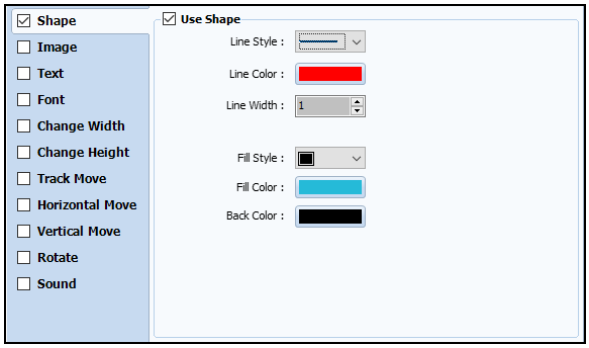
No	Effect	Description
1	Hide	When the condition is true, the object is hidden and rendered invisible.
2	Disable	When the condition is true, the object is disabled and the set action is not executed.
3	Reverse	When the condition is true, reverses (XOR) the set object color. When the condition changes from

		true -> false, it will be reversed back to the original color after the set time.  
4	Blink/Interval	When the condition is true, the object repeatedly appears and disappears by the [Interval]. It is often used to emphasize the object. The [Interval] is in 100 ms unit and it can be set to maximum 60,000x100 ms (=6,000 sec).

No	Effect	Description
1	Shape	When the condition is true and the object is [Dot/Line/Rectangle/Ellipse/Polyline/Paint], change the shape and color of [Line and Fill].
2	Image	When the condition is true, modifies the image of object. (It is available for object that uses image.)
3	Text	When the condition is true, modifies the text of object. (It is available for object that uses string.)
4	Font	When the condition is true, changes the object's font. (It is available for object that uses string.)
5	Change Width	When the condition is true, changes the object's width.
6	Change Height	When the condition is true, modifies the height of object.
7	Track Move	When the condition is true, the object is moved to multiple set positions (X, Y).
8	Horizontal Move	When the condition is true, the object is moved horizontally.
9	Vertical Move	When the condition is true, the object is moved vertically.
10	Rotate	When the condition is true, rotate the object.

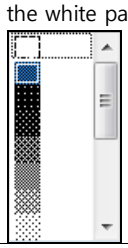
7.1.32 **[Effect] Page: Shape Effect**

When the object is Shape (Dot/Line/Rectangle/Ellipse/Polyline/Paint), this function modifies the [Line] property and [Fill] property. After checking [Shape] and when the condition is true, set the Line Property (Style/Color/Width) and Fill Style (Style/Fill Color/Background Color) when the condition is true.



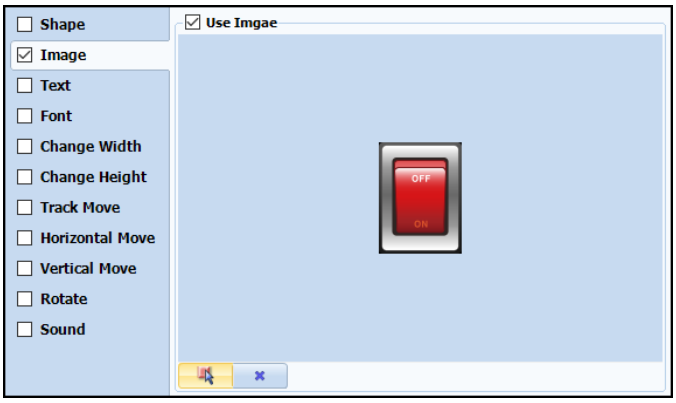
[Pic. Shape Effect]

No	Style Effect	Description
1	Line Style	Select a line style from the list below. If you select [None], the line will be invisible.

		
2	Line Color	Set the color of the line.
3	Line Width	The thickness of the line. It can be set to pixels in the range [1 to 10].
4	Fill Style	Set the Fill Style. Select  if Fill Style is not used. [Fill Color] will be filled in the black part and the [Background Color] will be filled in the white part. 
5	Fill Color	Set the Fill Color.
6	Back Color	Set the Background Color.

7.1.33 [Effect] Page: Image Effect

Use for objects that use image. When the condition is true, it changes the image. Check [Image] and set the image to change.

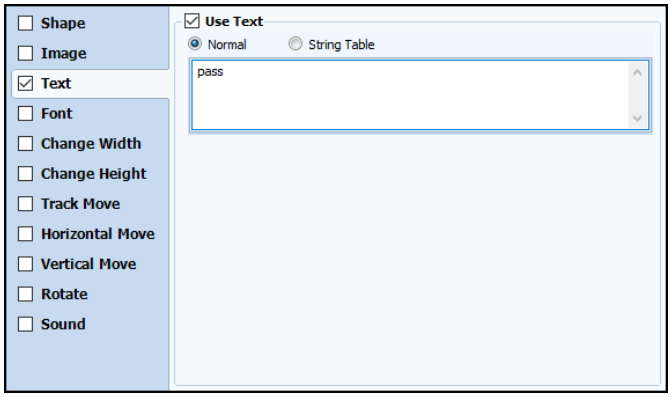


[Pic. Image effect]

No	Image Effect	Description
1		Use Import button to import the image to change through the Image Library.
2		Use Delete button to delete the set image.

7.1.34 [Effect] Page: Text Effect

Text is changed when the condition is true. It can be used for objects that use strings. Check [Text] then input the string to modify.

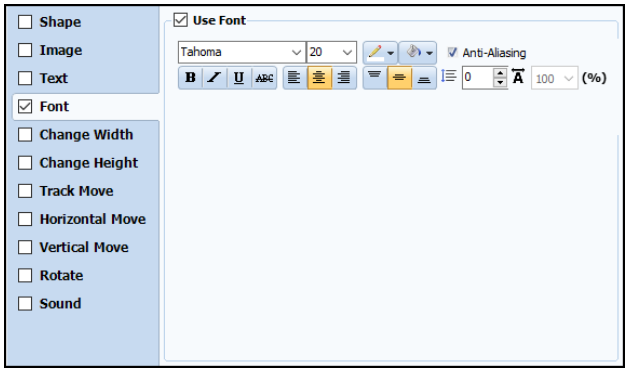


[Pic. Text effect]

No	Text Effect	Description
1	Normal	Enter strings manually.
2	String Table	Import the strings registered at [Project]-[String]. (For String Table, please see Chapter 4.4 [String].)

7.1.35 [Effect] Page: Font Effect

It can be used for objects that use strings. It changes the font when the condition is true. Check [Font] and set the font you want to change to.

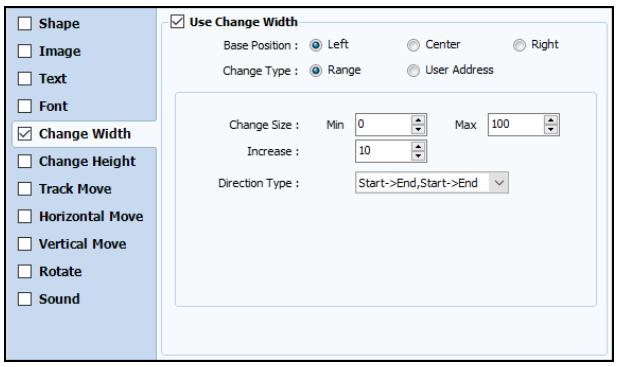


[Pic. Font]

No	Font Effect		Description
1	Font Type		Set the font type.
2	Font Size		Set the font size.
3	Font Color		Set the color of the font.
			Set the background color of the text.
4	Anti-Aliasing		This function smooths the curves on low-resolution images. It sharpens characters by smoothing the outer lines of characters when the font size grows bigger.
5	Edit Font		Give a bold effect to the characters.
			Give an italics effect to the characters.
			Underline the characters.
			Adds strikethrough text formatting.
6	Align Font		Align texts to the left.
			Align texts to the center, horizontally.
			Align texts to the right.
			Align texts to the top.
			Align texts to the center, vertically.
			Align texts to the bottom.
7	Spacing		If using strings with more than two lines, set the Spacing. Place margin by the set pixel.
			This function stretches or contracts texts horizontally. 100% is the original size. You may set it between [20-800%]. Some fonts support this function but some does not.

7.1.36 [Effect] Page: Change Width

When the condition is true, changes the object's width.



[Pic. Change width]

If set as above, it will become as the below picture. The width will increase by 10 pixels from 0, and when it reaches 100, it resets to 0 and increases by 10 again repeatedly. When the width becomes 0, the object will be invisible. With 10, the base position is [Left], and the object will be lengthened by 10 pixels from the left of the registered object.

When the width is 10,

When the width is 20,

When the width is 30,

When the width is 40,

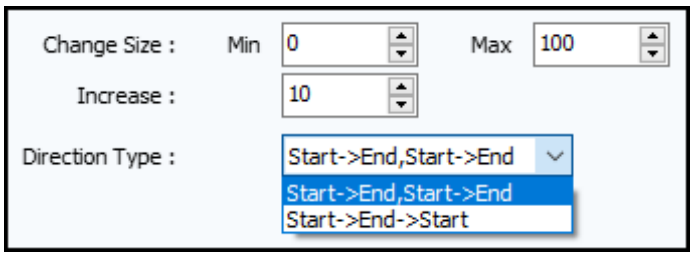
When the width is 50,

[Pic. Example of changing width by range]

No	Change Width		Description
1	Base Position	Left	The width increases/decreases in the right direction based on the left side of the object.
		Center	The width increases/decreases in both directions based on the horizontal center of the object.
		Right	The width increases/decreases in the left direction based on the right side of the object.
2	Change Type	Range	Set the [Min/Max Value of Width, Incremental Value, Direction Type] to change the width by the [Incremental] value within a certain range.
		User Address	Set [Address] and make it the address data's width. You can configure [Limit Function/Scale Function].

(1) When Change Type is set to [Range].

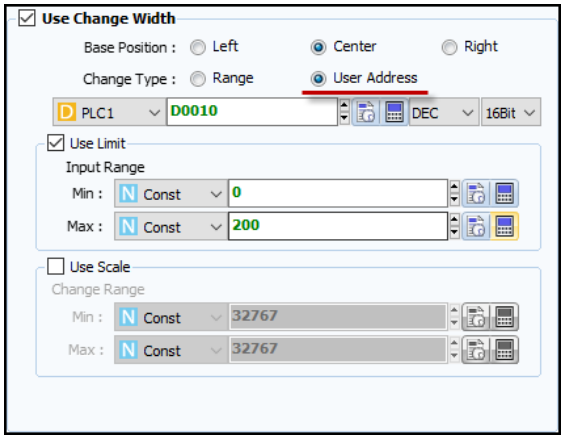
The width changes by [Increment] pixel within a certain range.



[Pic. Range]

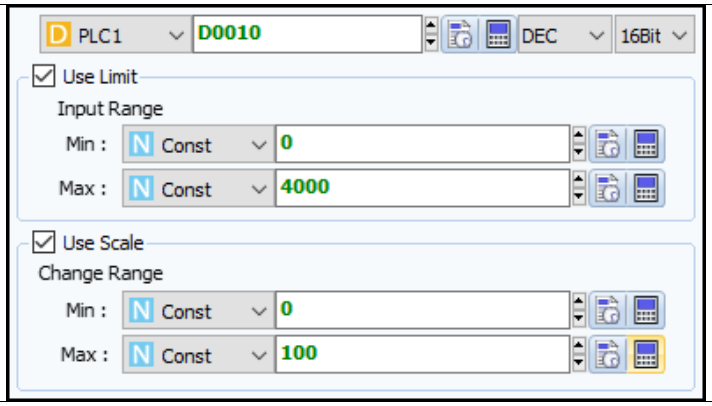
No	Range		Description
1	Change Size	Min	Set the minimum value of the object width.
		Max	Set the maximum value of the object width.
2	Increment	Set the incremental value of the width that increases every time the condition is true.	
3	Direction Type	Start->End, Start->End	When the width goes above the maximum value, it is reset to the minimum value.
		Start->End->Start	When the width goes above the maximum value, it decreases by the [Increment] value.

(2) When the data change is set to [User Address],
The width changes according to the set address data.



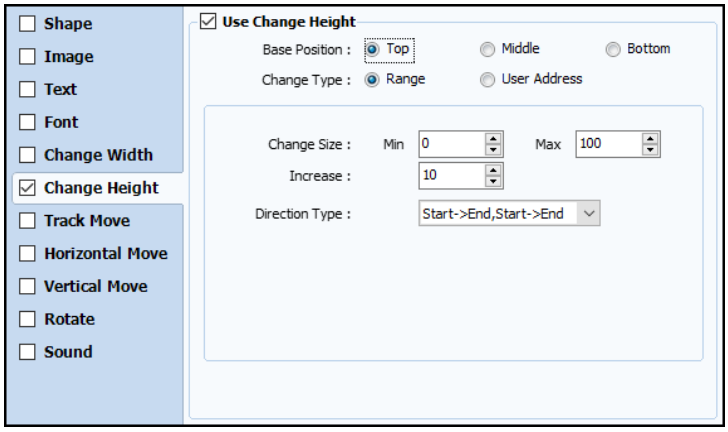
[Pic. User address]

No	User Address		Description
1	Address Setting		Set the address. This address data becomes the object width.
2	Use Limit	Functions	Check to limit the width range.
		Min	Set the min value of limit for the width. When the address value falls below the min value, the width becomes the min value.
		Max	Set the max value of limit for the width. When the address value goes over the max value, the width becomes the max value.
3	Use Scale	Functions	[Use Scale] must be used with [Use Limit]. The width is calculated proportional to the [Min/Max] of [Use Limit] and [Max/Min] of [Use Scale]. If set as below, the actual address value is 0-4000, and the range proportionally calculated to this actual address value and applied to the width is 0-100. Thus, if [D0010] value is 1000, the actual width will be 25. If [D0010] value is 2000, the actual width will be 50, and if [D0010] value is 4000, the actual width will be 100. If the [D0010] value is above 4000, the actual width will be 100, and if the [D0010] value falls below 0, the actual width will be 0.

				
		Min	Set the min value to be used to the width proportional to the actual address value.	
		Max	Set the max value to be used to the width proportional to the actual address value.	

7.1.37 [Effect] Page: Change Height

When the condition is true, modifies the height of object.

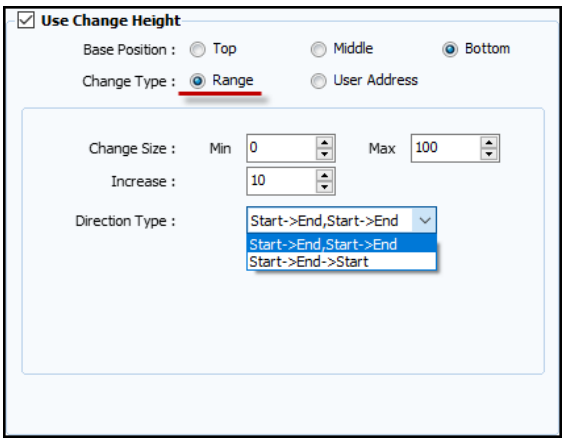


[Pic. Change Height]

No	Change Height		Description
1	Base Position	Top	The height increases/decreases toward the bottom from the top of the object.
		Middle	The height increases/decreases to both directions from the vertical center of the object.
		Bottom	The height increases/decreases toward the top from the bottom of the object.
2	Change Type	Range	Set the [Min/Max Value of Height, Incremental Value, Direction Type] to change the height by the [Incremental] value within a certain range.
		User Address	Set [Address] and make it the address data's height. You can configure [Limit Function/Scale Function].

(1) When Change Type is Set to [Range].

The width changes by [Increment] pixel within a certain range.



[Pic. Range]

If set as above, it will be as the below picture. The height will increase by 10 pixels from 0, and when it reaches 100, it is reset to 0 and increase by 10 again repeatedly. When the height becomes 0, the object will be invisible. With 10, the base position is [Bottom], and the object will be lengthened by 10 pixels toward the top from the bottom of the registered object.

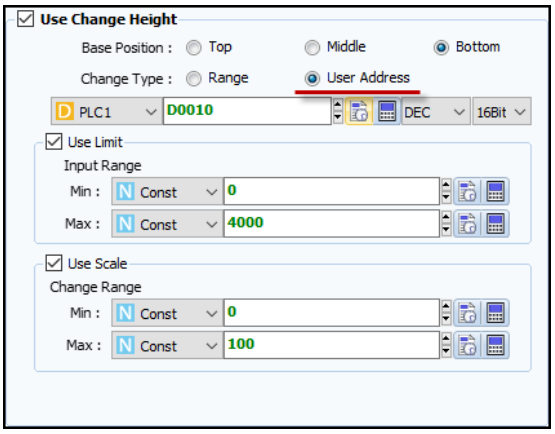
Height 10  , Height 20  , Height 30  , Height 40  , Height 50 

[Pic. Example of changing height by range]

No	Range		Description
1	Change Size	Min	Set the min value of the object height.
		Max	Set the max value of the object height.
2	Increment	Set the incremental value of the height that increases every time the condition is true.	
3	Direction Type	Start->End, Start->End	When the height goes above the maximum value, it is reset to the minimum value.
		Start->End->Start	When the height goes above the maximum value, the width decreases by the [Increment] value.

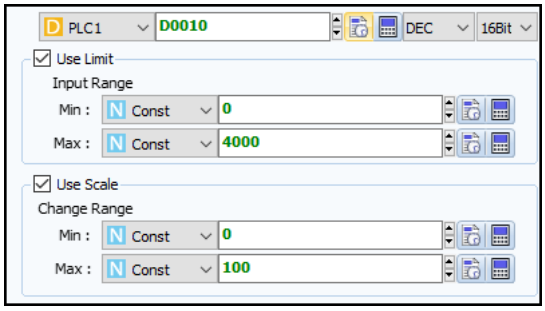
(2) When Change Type is set to [User Address].

The height changes according to the set address data.



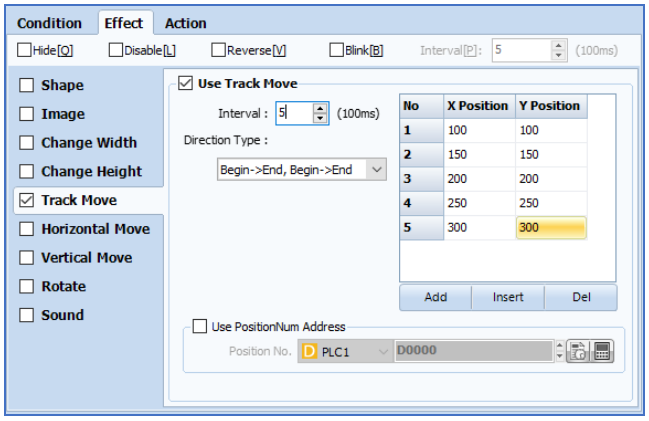
[Pic. User Address]

No	User Address	Description

1	Address Setting		Set the address. This address data becomes the object height.
2	Use Limit	Functions	Check to limit the height range.
		Min	Set the min value of limit for the height. When the address value falls below the min value, the height becomes the min value.
		Max	Set the max value of limit for the height. When the address value goes over the max value, the height becomes the max value.
3	Use Scale	Functions	[Use Scale] must be used with [Use Limit]. The height is calculated proportional to the [Min/Max] of [Use Limit] and [Max/Min] of [Use Scale].  If set as above, the actual address value is 0-4000, and the range proportionally calculated to this actual address value and applied to the height will be 0-100. Thus, if [D0010] value is 1000, the actual height will be 25. If [D0010] value is 2000, the actual height will be 50, and if [D0010] value is 4000, the actual height will be 100. If the [D0010] value is above 4000, the actual height will be 100, and if the [D0010] value falls below 0, the actual height will be 0.
		Min	Set the min value to be used for the height proportional to the actual address value.
		Max	Set the max value to be used to the height proportional to the actual address value.

7.1.38 [Effect] Page: Track Move Effect

When the condition is true, the object moves to the set position.



[Pic. Track move effect]

[Number] is the order sequence that an object moves and [X Coordinate/Y Coordinate] are the position on the screen.

[X Coordinate] is the horizontal position of the screen and [Y Coordinate] is the vertical position of the screen.

The coordinate of the top left corner of the screen is (0, 0) and the position of the bottom right corner of the screen becomes the screen's resolution.

E.g.) The bottom right corner of a product that has the resolution of 1024x768 has the coordinates of

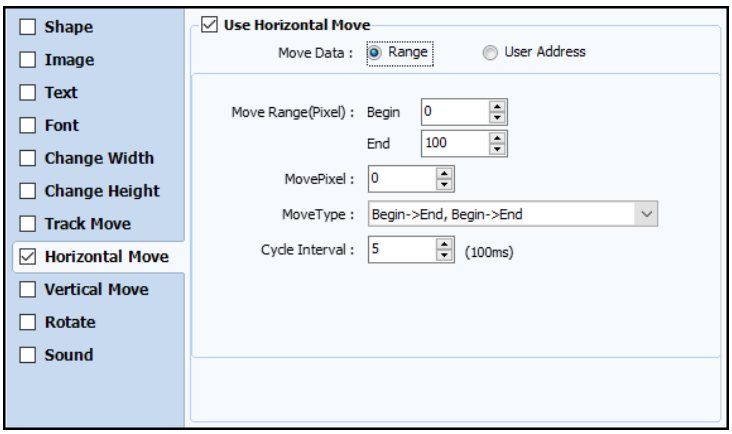
(1024,768).

If set as above picture, when the condition is true, the position of the object moves in the order of no. 1 -> no. 2 -> no. 3 -> no. 4 -> no. 5 -> no. 1 -> no. 2 ... by 0.5 sec interval.

No	Track Move Effect		Description
1	Interval		It is the interval where an object moves along the track. Set by 100 ms unit.
2	Direction Type	Begin->End, Begin->End	The object starts from the position no. 1 and moves along the [Number] in a sequential order. The object moves back to the position no. 1 from the last position. [no. 1 -> no. 2 -> no. 3 -> no. 4 -> no. 5 -> no. 1 -> no. 2 -> no. 3 -> no. 4 -> no. 5 -> no. 1 -> ...]
3		End->Begin, End-> Begin	The object starts from the position of the last number and moves back in the reverse order of [Number]. It moves to no. 1 and moves back to the position of the last number. [no. 5 -> no. 4 -> no. 3 -> no. 2 -> no. 1 -> no. 5 -> no. 4 -> no. 3 -> no. 2 -> no. 1 -> no. 5 -> ...]
4		Begin->End->Begin->End	The object starts from the position no. 1 and moves along the [Number] in a sequential order. When it gets to the position of the last number, it moves back in the reverser order, and when it reaches the position no. 1, it will move in the sequential order again. [no. 1 -> no. 2 -> no. 3 -> no. 4 -> no. 5 -> no. 4 -> no. 3 -> no. 2 -> no. 1 -> no. 2 -> no. 3 -> ...]
5		End->Begin->End->Begin	The object starts from the position of the last number and moves along the [Number] in a reversal order. When it gets to the position of no. 1, it moves in the sequential order again, and when it reaches the position of the last number, it will move in the reversal order again. [no. 5 -> no. 4 -> no. 3 -> no. 2 -> no. 1 -> no. 2 -> no. 3 -> no. 4 -> no. 5 -> no. 4 -> no. 3 -> ...]
6	Absolute Coordinate		With the screen in the center, the top left corner will be set to (0, 0), and the bottom right will be fixed to the TOP resolution.
7	Relative Coordinate		Set the top left corner of the object as (0, 0) to calculate the coordinates.
8	Use PositionNum Address		Set the address to make the address data [Number]. If the address data is [3], the object will move to the position no. 3. Check [Use PositionNum Address] and set [Position No.]. Using this function will not apply [Interval/Direction Type].

7.1.39 **[Effect] Page: Horizontal Move Effect**

When the condition is true, the object moves horizontally.

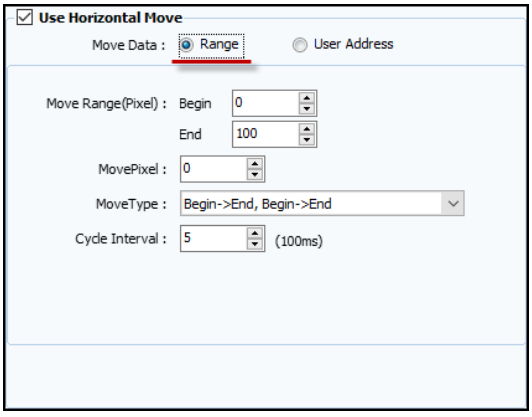


[Pic. Horizontal move effect]

No	Horizontal Move Effect	Description
1	Range	Set the range of the X position to move to. It moves horizontally to left/right by certain pixels by the cycle interval.
2	User Address	The set address data's object will become the X position. Modify the address data to move the object horizontally.
3	Absolute Coordinate	Based on the screen in the center, the resolution of the left will be fixed to 0, and the right to TOP.
4	Relative Coordinate	Set the left side of the object as 0 to calculate the coordinates.

(1) When the Data Movement is Set to [Range]

Set the range of X position where the object will move to and move horizontally to left/right by uniform pixel spacing for each interval within the range.



[Pic. Range]

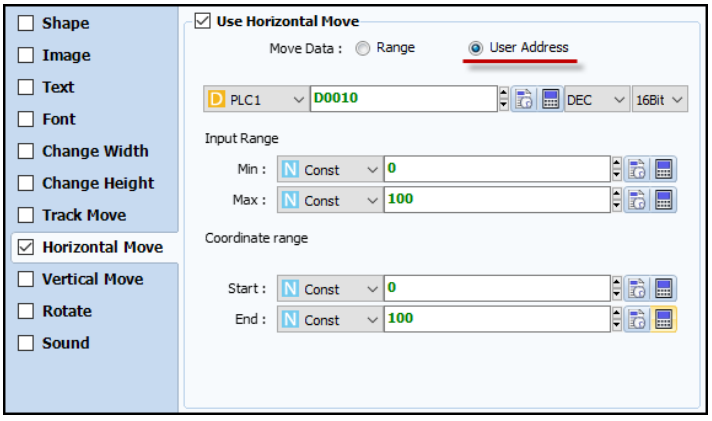
When set as above, the object starts from the X position [0] and moves right by 10 pixels every 0.5 second, when the condition is true. When the X position reaches the position [100], it moves back to position [0].

No	Range		Description
1	Movement Range (Pixel)	Start	It is the start point X position of the range of the horizontal movement. Set the leftmost position within the range of movement.
		End	It is the end point X position of the range of the horizontal

			movement. Set the rightmost position within the range of movement.
2	Pixel Movement	Set the object movement spacing in pixel unit.	
3	Direction Type	Functions	Choose the direction of the movement of object.
		Begin->End, Begin->End	Start from the start position and move right by the [MovePixel] spacing to the end position. When it reaches the end position, it jumps to the start position.
		End->Begin, End->Begin	Start from the end position and move left by the [MovePixel] spacing to the start position. When it reaches the start position, it jumps to the end position.
		Begin->End->Begin->End	Start from the start position and move right by the [MovePixel] spacing to the end position. When it reaches the end position, it moves left again by the [MovePixel] spacing to the start position.
		End->Begin->End->Begin	Start from the end position and move left by the [MovePixel] spacing to the start position. When it reaches the start position, it moves right again by the [MovePixel] spacing to the end position.
4	Interval	Set the action interval.	

(2) When the Data Movement is Set to [User Address].

Set the address and move the object to the address data horizontally. The address data's object will become the X position.

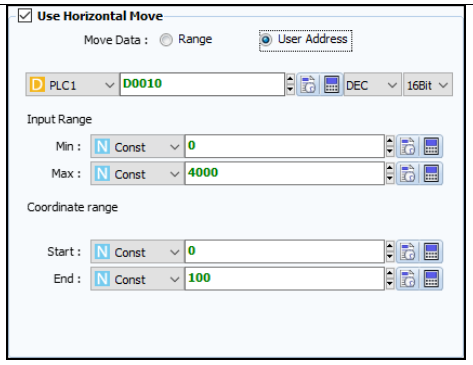


[Pic. User address]

Set as above and the [D0010] data becomes the X position of object.

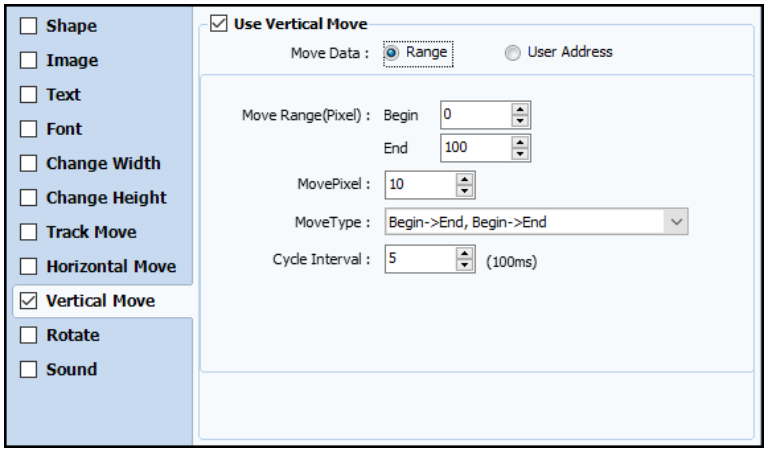
When the [D0010] data is [30], the object will move horizontally to X position [30].

No	User Address		Description
1	Address Setting		Set the address to use as the X position for horizontal move.
2	Input Range	Min	Set the min. range of address data. If it is set as the above picture, the object will move to the position of [0] even if the address data value is below [0].
		Max	Set the max. range of address data. If it is set as the above picture, the object will move to the position of [100] even if the address data value is above [100].
3	Coordinate Range	Functions	The range of the coordinate where the actual object will move to. If the [Input Range] and [Coordinate Range] are the same, the actual data of the address will be the X position of the object. (If within the input range) If [Input Range] and [Coordinate Range] are different, the [X Position] to move to will be calculated proportionally.

			 If set as the above picture, the actual address' data is [0-4000] and the coordinate range to apply to the [X Position] by calculating proportionally to this actual address value will be [0-100]. Thus, if [D0010] value is 1000, the actual X position will be 25. If [D0010] value is 2000, the actual X position will be 50, and if the value is 4000, the actual X position will be 100. If the [D0010] value is above 4000, the actual X position will be 100, and if the [D0010] value falls below 0, the actual X position will be 0. [Input Range] and [Coordinate Range] may be set as fixed constant values or set as address to be modified flexibly according to the address data.
		Start	Set the Start Value of the coordinate range where the actual object would move to. It means the leftmost position of the movement range.
		End	Set the End Value of the coordinate range where the actual object would move to. It means the rightmost position of the movement range.

7.1.40 [Effect] Page: Vertical Move

When the condition is true, the object moves vertically.



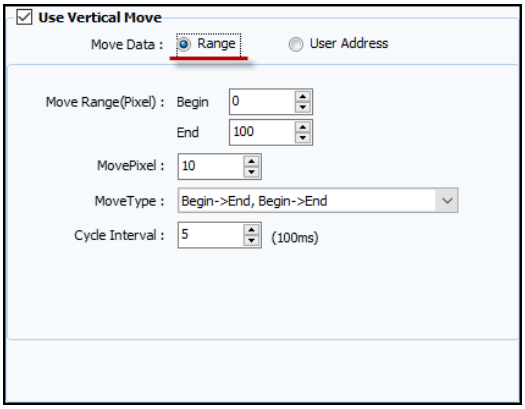
[Pic. Vertical Move]

No	Vertical Move	Description
1	Range	Set the range of the Y position to move to. It moves vertically to up/down by certain pixels by the cycle interval.
2	User Address	The set address data's object will become the Y position. Modify the address data to move the object vertically.
3	Absolute Coordinate	With the screen in the center, the resolution of the top will be fixed to 0, and the bottom to TOP.

4	Relative Coordinate	Set the top of the object as 0 to calculate the coordinates.

(1) When the Data Movement is Set to [Range]

Set the range of Y position where the object will move to and move vertically up/down by uniform pixel spacing for each interval within the range.



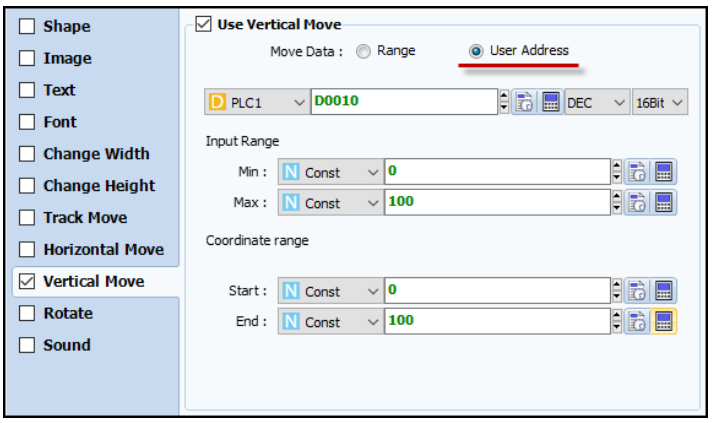
[Pic. Range]

When set as above, the object starts from the Y position [0] and moves down by 10 pixels every 0.5 second, when the condition is true. When the Y position reaches the position [100], it moves back to position [0].

No	Range		Description
1	Movement Range (Pixel)	Start	It is the start point Y position of the range of the vertical move. Set the top position within the range of movement.
		End	It is the end point Y position of the range of the horizontal movement. Set the bottommost position within the range of movement.
2	MovePixel	Set the object movement spacing in pixel unit.	
3	Direction Type	Functions	Choose the direction of the movement of object.
		Begin->End, Begin->End	Start from the start position and move down by the [MovePixel] spacing to the end position. When it reaches the end position, it jumps to the start position.
		End->Begin, End->Begin	Start from the end position and move up by the [MovePixel] spacing to the start position. When it reaches the start position, it jumps to the end position.
		Begin->End->Begin->End	Start from the start position and move down by the [MovePixel] spacing to the end position. When it reaches the end position, it moves up to the start position by the [MovePixel] spacing.
		End->Begin->End->Begin	Start from the end position and move up by the [MovePixel] spacing to the start position. When it reaches the start position, it moves down to the end position by the [MovePixel] spacing.
4	Interval	Set the action interval.	

(2) When the Data Movement is Set to [User Address].

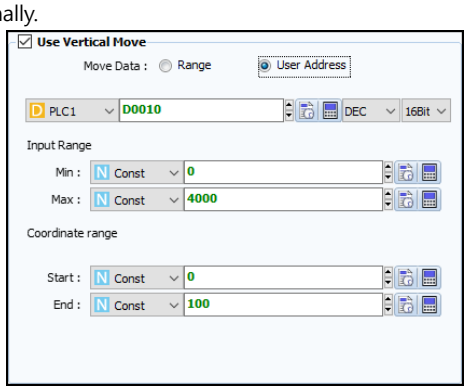
Set the address and move the object to the address data vertically. The address data's object will become the Y position.



[Pic. User address]

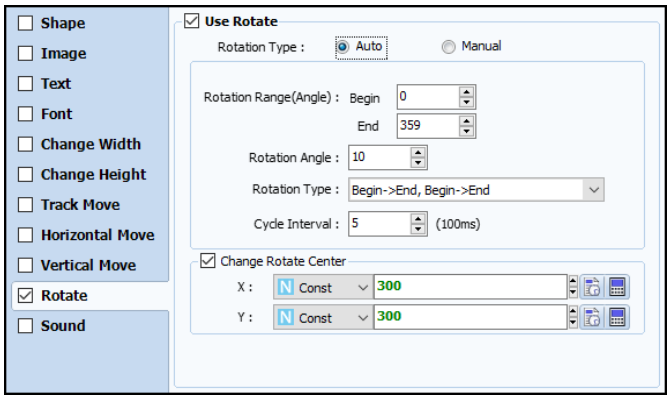
Set as above and the [D0010] data becomes the Y position of object.

When the [D0010] data is [30], the object will move vertically to Y position [30].

No	User Address		Description
1	Address Setting		Set the address to use as the Y position for vertical move.
2	Input Range	Min	Set the min. range of address data. If it is set as the above picture, the object will move to the position of [0] even if the address data value is below [0].
		Max	Set the max. range of address data. If it is set as the above picture, the object will move to the position of [100] even if the address data value is above [100].
3	Coordinate Range	Functions	It is the coordinate range where the actual object will move to. If the [Input Range] and [Coordinate Range] are the same, the actual data of the address will be the Y position of the object. (If within the input range) If [Input Range] and [Coordinate Range] are different, the [Y Position] to move to will be calculated proportionally.  If set as the above picture, the actual address' data is [0-4000]and the coordinate range to apply to the [Y Position] by calculating proportionally to this actual address value will be [0-100]. Thus, if [D0010] value is 1000, the actual Y position will be 25. If [D0010] value is 2000, the actual Y position will be 50, and if [D0010] value is 4000, the actual Y position will be 100. If the [D0010] value is above 4000, the actual Y position will be 100, and if the [D0010] value falls below 0, the actual Y position will be 0. [Input Range] and [Coordinate Range] may be set as fixed constant values or set as address to be modified flexibly according to the address data.
		Start	Set the start value of the coordinate range where the actual object would move to. It means the top position of the movement range.
		End	Set the end value of the coordinate range where the actual object would move to. It means the bottommost position of the movement range.

7.1.41 [Effect] Page: Rotation Effect

When the condition is true, the object rotates.

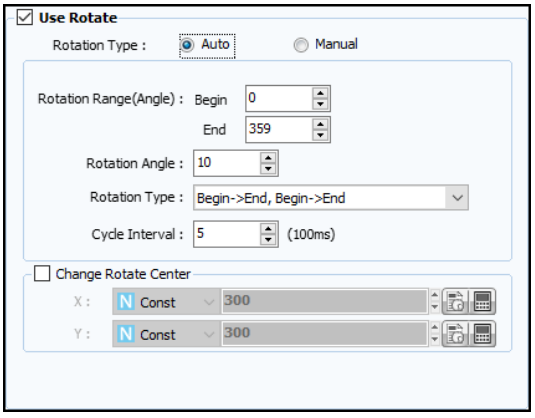


[Pic. Rotation effect]

No	Rotate		Description
1	Rotation Type	Automatic	It periodically rotates by the set angle within the rotation range.
		Manual	Set the address to make the address data as the object's rotation angle.
2	Change Rotation Center	Functions	Changes the rotation center coordinate of the object. When [Change Rotation Center] is not checked, the center coordinate of the object becomes its rotation center coordinate. Thus, in this case, the object will rotate in position. Check [Change Rotation Center] to set a separate rotation center for an object and the [Object Center Coordinate]'s distance from the set [Rotation Center Coordinate] becomes the rotation diameter.
		X	Set the X coordinate of the rotation center to modify.
		Y	Set the Y coordinate of the rotation center to modify.

(1) When Rotation Type is Set to [Automatic].

It periodically rotates by the set angle within the rotation range.



[Pic. Automatic type]

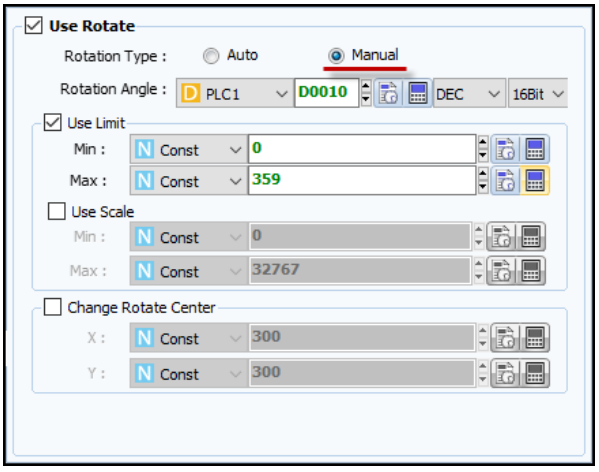
When set as above, the object will rotate clockwise by 10 degrees every 0.5 second within the rotation range [0-359].

When the angle reaches beyond 359 degrees, it reverts to 0.

No	Automatic		Description
1	Rotation Range (Angle)	Start	Set the start angle of the rotation. It may be set within the range of [0-359]. E.g.) If set to 0, the object will start the rotation from the position where it is registered. If set to 90, the object will start the rotation from the position where the object is rotated 90 degrees clockwise.
		End	Set the end angle of the rotation. It may be set within the range of [0-359]. E.g.) If set to 180, it only rotates the object 180 degrees clockwise.
2	Rotation Angle	Set the angle to rotate in one [Interval].	
3	Rotation Type	Begin->End, Begin->End	Rotate the object clockwise. The object will be rotated clockwise from the start angle to the end angle. It will be moved back to the start angle and rotate clockwise.
		End->Begin, End-> Begin	Rotate the object anti-clockwise. The object will be rotated anti-clockwise from the end angle to the start angle. It will be moved back to the end angle and rotate anti-clockwise.
		Begin->End->Begin->End	Rotate clockwise from the start angle to the end angle. When the object reaches the end angle, it rotates toward the start angle anti-clockwise. When it reaches back the start angle, it rotates toward the end angle clockwise.
		End->Begin->End->Begin	Rotate anti-clockwise from the end angle to the start angle. When the object reaches the start angle, it rotates toward the end angle clockwise. When it reaches the end angle again, it rotates toward the start angle anti-clockwise.
4	Cycle Interval	Set the interval that triggers [Rotation Angle] once.	

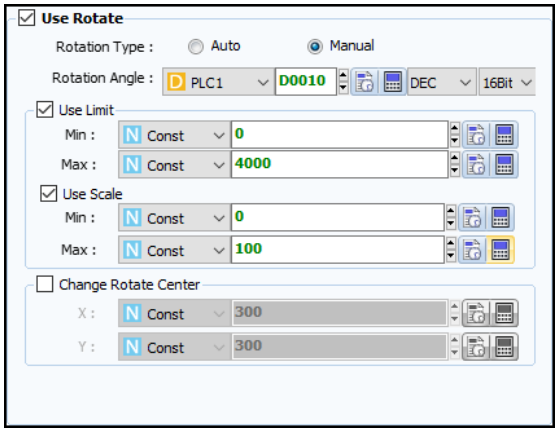
(2) When Rotation Type is Set to [Manual].

Set the address to make the address data as the object's rotation angle.



[Pic. Manual type]

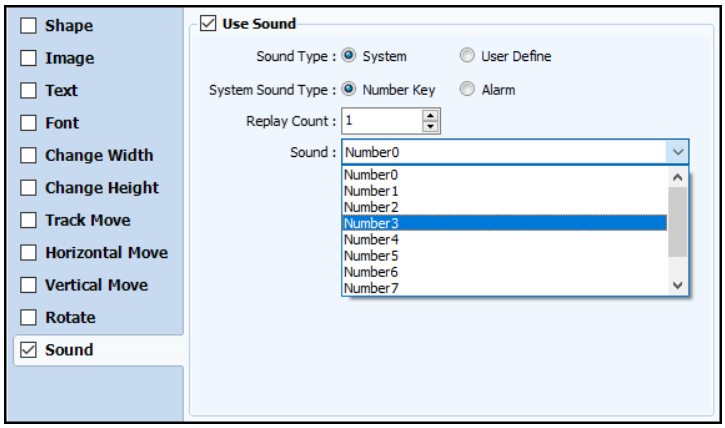
Set as above and the [D0010] data becomes the rotation angle of the object.
When the [D0010] data is [90], the object will rotate clockwise by [90] degree.

No	Manual		Description
1	Rotation Angle		Set the address that will be used as rotation angle.
2	Use Limit	Min	Set the min value of address data.
		Max	Set the max value of address data.
3	Use Scale	Functions	[Use Scale] must be used with [Use Limit]. The [Rotation Angle] is calculated proportional to the [Min/Max] of [Use Limit] and [Max/Min] of [Use Scale].  If set as the above picture, the actual address' data is [0-4000] and the coordinate range to apply to the [Rotation Angle] by calculating proportionally to this actual address value will be [0-100]. Thus, if [D0010] value is 1000, the actual [Rotation Angle] will be 25. If [D0010] value is 2000, the actual [Rotation Angle] will be 50, and if [D0010] value is 4000, the actual [Rotation Angle] will be 100. If the [D0010] value is above 4000, the actual [Rotation Angle] will be 100, and if the [D0010] value falls below 0, the actual [Rotation Angle] will be 0. [Use Limit] and [Use Scale] may be set as fixed constant values or set as address to be modified flexibly according to the address data.
		Min	Set the min value of the rotation angle to apply proportionally to the [Min/Max] of [Use Limit].
		Max	Set the max value of the rotation angle to apply proportionally to the [Min/Max] of [Use Limit].

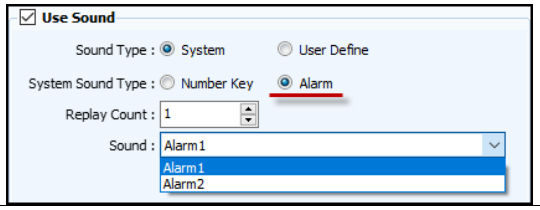
7.1.42 [Effect] Page: Sound Effect

When the condition is true, output the set sound.

Sound effect is available for TOPR premium products that provide audio (output) feature.

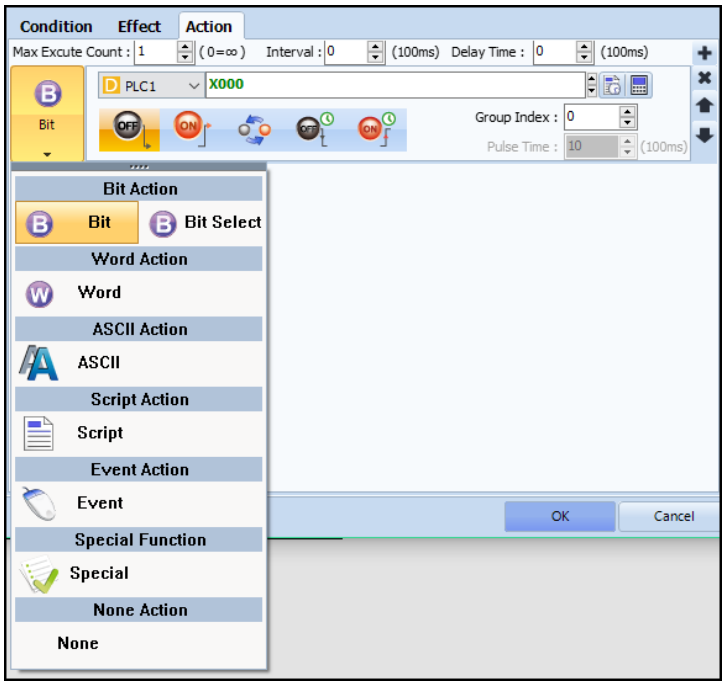


[Pic. Sound effect]

No	Sound Effect		Description
1	Sound Type	System	System is the basic sound provided. Select [Number Key] and [Alarm] in [System Sound Type]. Select the sound provided by [Sound]. [Number Key] provides sound that outputs numbers [0-9] in voice sound as above picture. This function is used to sound the numbers clicked on the keypad. For [Alarm], two alarm sounds are provided as shown in the below picture: [Alarm1/Alarm2]. This is used to sound alarm when an [Alarm] is issued. 
2	Replay Count	Set the replay count for the sound. When the condition is true, the sound will be played continually by the replay count.	

[Action] Page Setting

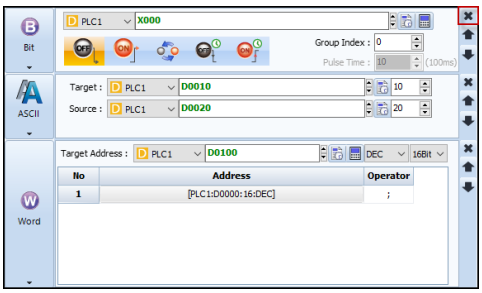
[Action] page sets the action to be run when the condition is true. As below picture, actions include [Bit Action/Word Action/ASCII Action/Script Action/Event Action/Special Function/None Action].



[Pic. Action page]

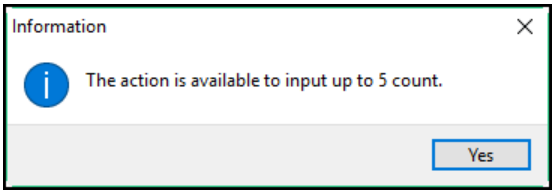
No	Action	Description
1	Bit Action	Controls the Bit Address data.
2	Word Action	Controls the Word Address data.
3	ASCII Action	Insert strings into the set address.
4	Script Action	Configure the script calculation.
5	Event Action	Configure [Keyboard/Keypad/Tenkey] settings.
6	Special Function	Configure actions related to [Screen/Print/SD Memory/Memory/System/App/Camera].
7	No Action	The action to be executed is not set.

Click  at the top right to add up to 10 of these actions.
Register multiple actions, and if the condition is true, they will be executed from the top in a sequential order.



[Pic. Add action]

When 10 or more actions are added, below message will be displayed.



[Pic. Message of action count limit]

There are 3 buttons on the right hand side of each action as below.

No	Action	Description
1		Delete the action.
2		If multiple actions are registered, actions will be executed in an order from the top when the condition is true. This button is for modifying the execution order of actions. Use it to push an action one cell upward.
3		If multiple actions are registered, actions will be executed in an order from the top when the condition is true. This button is for modifying the registration order (execution order) of actions. Use it to push an action one cell downward.

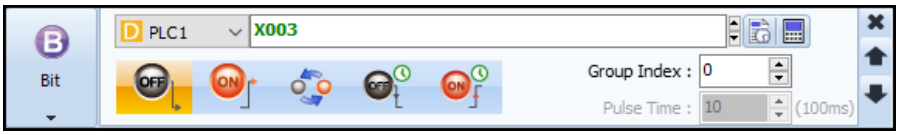
You may set the [Max Execution Count/Interval/Delay Time] etc. for the execution of an action while the condition is true.

No	Action	Description
1	Max Execution Count (0=∞)	This is the count for running the set actions. With [0], it will run continuously while the condition is true. With [1], the action will run once only even if the condition continues to be true.
2	Interval (100ms)	This is the time interval for running actions. [0] will continuously scan and is the top speed.
3	Delay Time (100ms)	This is the delay time for running actions. With [0], the action will be run immediately when the condition is true. If set to [5]x100ms, action will be executed after [0.5 sec] when the condition is true.

7.1.43 [Action] Page: Bit Action

(1) Bit

When the condition is true, control the Bit Address.



[Pic. Bit]

No	Bit	Description
1	Address	Choose the Bit Address to control.
2		[OFF continue]. It turns off data of the set address when the condition is true.
3		[ON continue]. It turns on data of the set address when the condition is true.
4		[Reverse]. When the condition is true, data of the set address turns from [0] to [1]. If it is [1], it turns [0].
5		[OFF pulse]. When the condition is true, it turns data of the set address off by [Pulse Time]. Thus, the address data will become [0] by the Pulse Time and will turn back to [1].

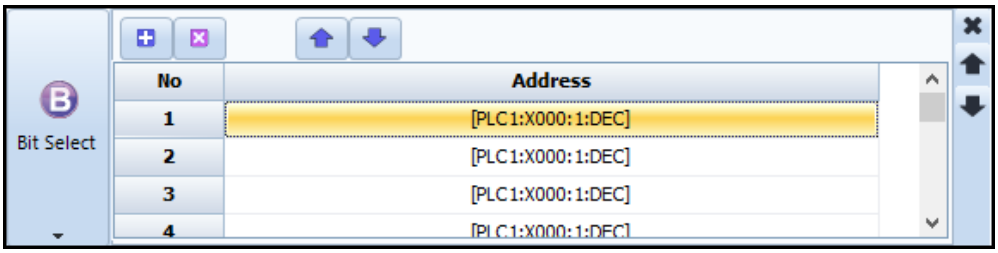
6		[ON pulse]. When the condition is true, it turns data of the set address on by [Pulse Time]. Thus, the address data will become [1] by the Pulse Time and will turn back to [0].
7	Group Index	Set Group Index to multiple Bit Addresses. To group multiple Bit Addresses, enter numbers other than [0] in [Group Index]. Enter [0] to not use Group Index. You must set the same number to group Bit Addresses to group them into one group.  Make one of the Bit Addresses from the same Group Index ON and the rest of data of the addresses will be OFF. E.g.) Set from [X001] to [X005] as the same Group Index and turn [X001] [ON] to turn the rest of the addresses [X002-X005] OFF.
8	Pulse Time (100ms)	Used for [OFF pulse] and [ON pulse]. This is the time that the value is maintained after it turns OFF or ON. You may set it between the range of [1-600] (100ms).

(2) Select Bit

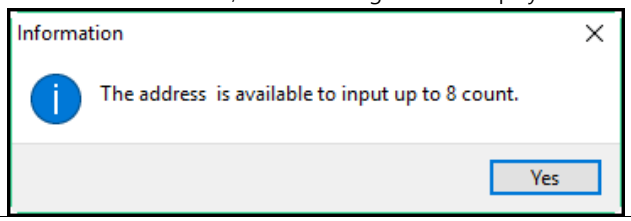
Set multiple Bit Addresses. You may add up to 8 Bit Addresses.

When the condition is true, it turns Bit Addresses ON in the order of their [Number].

When one Bit Address is turned ON, the rest of them will be OFF.

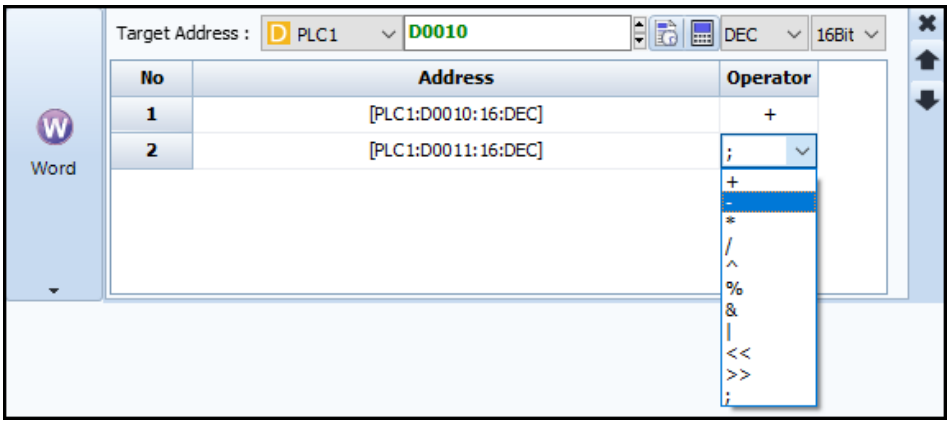


[Pic. Select Bit]

No	Select Bit	Description
1	Address	Double click the Insert Address to set the address.
2		Add addresses to use for Select Bit. You may add up to 8 addresses. If more than 8 of them have been added, below message will be displayed. 
3		Delete the selected address.
4		Push the number of the selected address up.
5		Push the number of the selected address down.

7.1.44 [Action] Page: Word Action

It controls Word Address data when the condition is true. Word Address refers to 16 Bit Address that saves analog data. It inserts certain data or calculation result to this address.



[Pic. Word calculation]

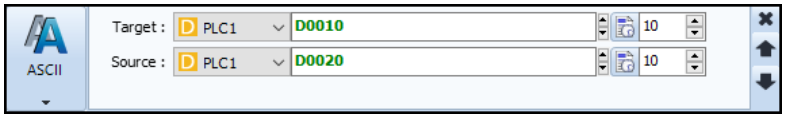
When set as above, it will insert the result of adding [D0010] value and [D0011] value to [D0010] when the condition is true.

No	Word Calculation		Description
1	Target Address		It sets the Word Address to save the calculation result. Use DEC 32Bit to set Data Type (DEC, UDEC, HEX, BCD, FLOAT) and Size (16Bit, 32Bit).
2	Address		Set Address to No [1]. Selecting [;] from Operator will perform a calculation that inserts the address value of No [1] to Target Address. Select an Operator other than [;] to create No [2]. Set the address to perform calculation in No [2]. Calculate with the operator that has selected No [1] and No [2] and insert the result to Target Address. Keep setting operator as above, and set address to perform calculation to add calculation formula. Calculation will be performed regardless of the type of operator from No [1] in a sequential order. Thus, it will calculate the calculation result of No [1] and [2] with No [3], and its result with No [4].
3	Operator	+	Add two operands and insert the result to Target Address.
		-	Subtract one operand from another and insert the result to Target Address.
		*	Multiply two operands and insert the result to Target Address.
		/	Divide one operand by another and insert the result to Target Address.
		^	Perform Bit XOR calculation on two operands and insert the result to Target Address.
		%	Perform remainder calculation with two operands and insert the result to the Target Address. Remainder calculation is the calculation that has the calculation result of remainders instead of quotient when a division is performed.
		&	Perform Bit AND calculation on two operands and insert the result to Target Address.
		|	Perform Bit OR calculation on two operands and insert the result to Target Address.
		<<	This is the left Bit Shift Operator. When the first operand is expressed in binary numbers, perform Left Bit Movement from the second operand by the set number. E.g.) The first operand data of [D0001] is [1] and the second operand is constant value [3]. Therefore, when the calculation is performed as [D0001] << 3], the value that expresses [1] in binary format would be [0000000000000001]. Move this value left by 3 digits and it will be [0000000000001000]. Change this value in decimal format and it will be [8].
		>>	This is the Right Bit Shift Operator. When the first operand is expressed in binary numbers, perform Right Bit Movement from the second operand by the set number. E.g.) The first operand data of [D0001] is [8] and the second operand is constant value [3]. Therefore, when the calculation is performed as [D0001] << 3], the value that expresses [8] in binary format would be [0000000000001000]. Move this value right by 3 digits and it will be

			[0000000000000001]. Change this value in decimal format and it will be [1].
		;	It refers to the end of a formula.

7.1.45 [Action] Page: ASCII Action

When the condition is true, it imports string of [Read] address and insert (copy and paste) to the [Target] address.



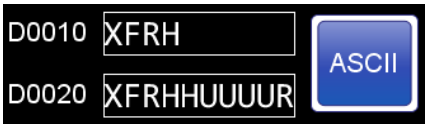
[Pic. ASCII Action]

Each text of ASCII text is 8 bit. Therefore, 1 word (16 bit) address has 2 texts. Set [String Count] at [Target] address and the right side of [Read] address, respectively. When set as above, and the condition is true, there are 10 texts starting from [D0020]. Insert the 10 texts in the 5 addresses from [D0020] to [D0024] in [D0010]-[D0014].

The String Count of [Target] address and [Read] address can be different. String Count of [Read] Address is 4. If the String Count of [Target] Address is 10, it will be copied as below with 4 Strings.



[Pic. When String Counts have been set differently]



[Pic. When String Counts have been set differently]

7.1.46 [Action] Page: Script Action

When the condition is true, the script is run. The set script can be edited in [Project]-[Script]. (To see how to use Script, see Chapter 4.5 [Script].)



[Pic. Script action]

7.1.47 [Action] Page: Event Action

It is used to make keys on Keypad.



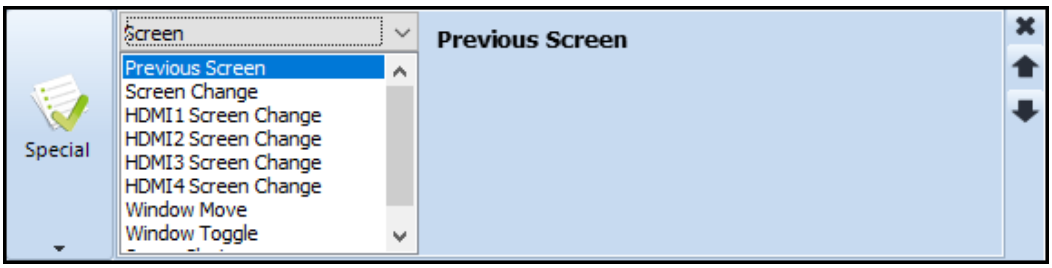
[Pic. Event Action]

No	Event Action		Description
1	Key		Select the type of key.
2	Action		Touch Down is for pressing a key.
			Touch Up is for releasing a key.

There are diverse types of hotkeys. You can make various String Input Keyboard and Number Input Keypad.

7.1.48 [Action] Page: Special Function

Set the special actions to run when the condition is true.



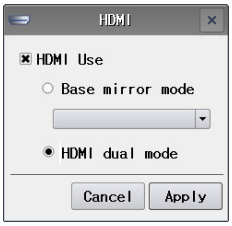
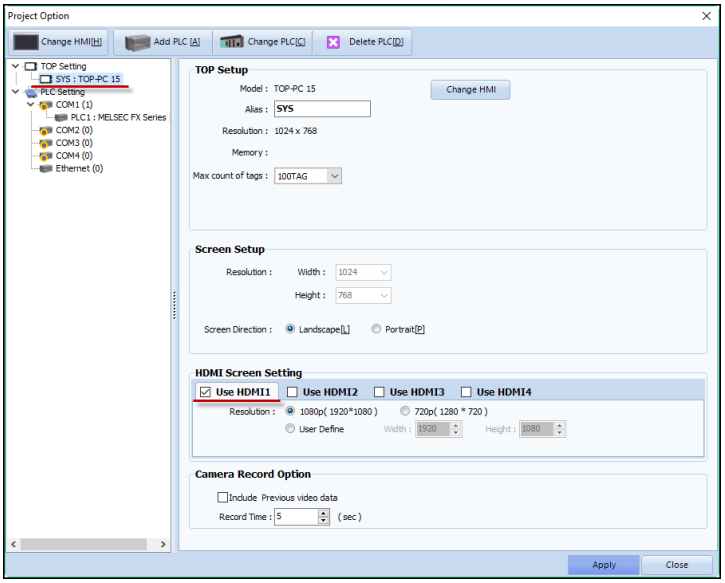
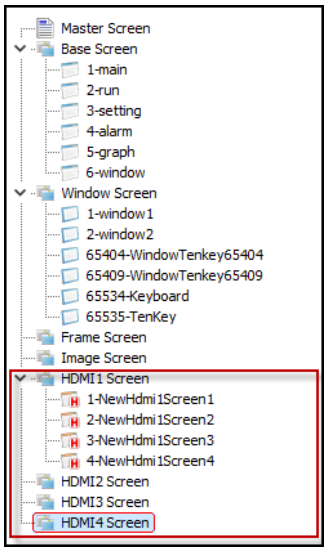
[Pic. Special Function]

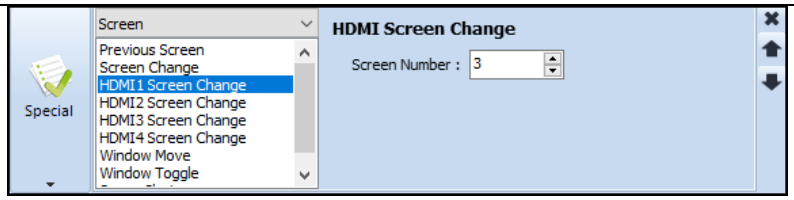
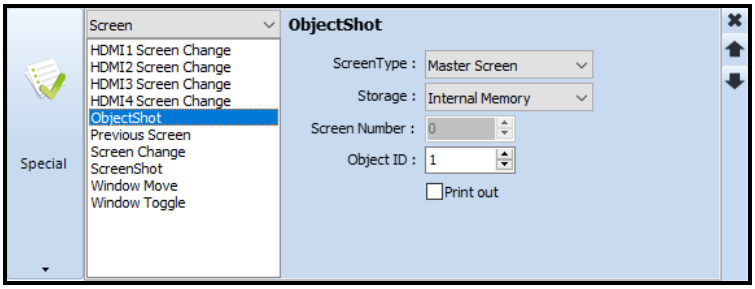
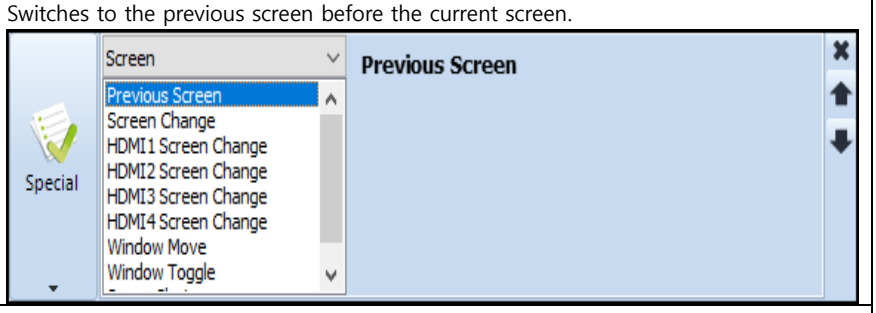
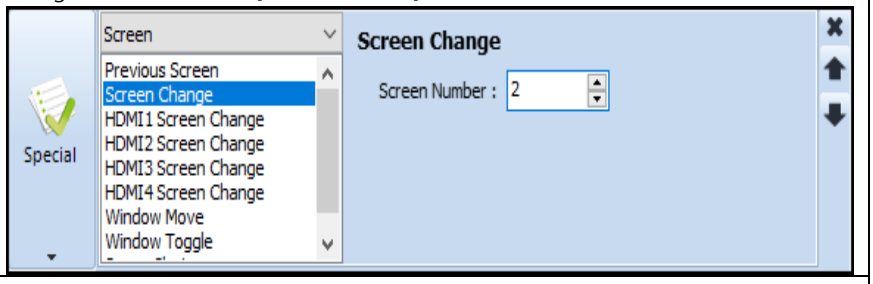
No	Special Function	Description
1	Screen	It sets actions related to screens such as [Move Base Screen/Move HDMI Screen/Popup and Move Window Screen/Screen Capture], etc.
2	Print	It sets actions related to print.
3	Storage	It sets actions related to memory installed in TOP.
4	Memory	It sets actions related to Copy Memory/Delete Log Data.
5	System	Set actions related to System/Security.
6	App	It calls applications in Menu Screen.
7	Camera	It sets actions of internal/external camera of TOPR Premium Model.

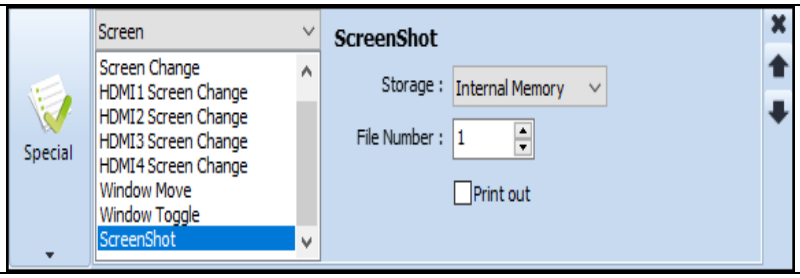
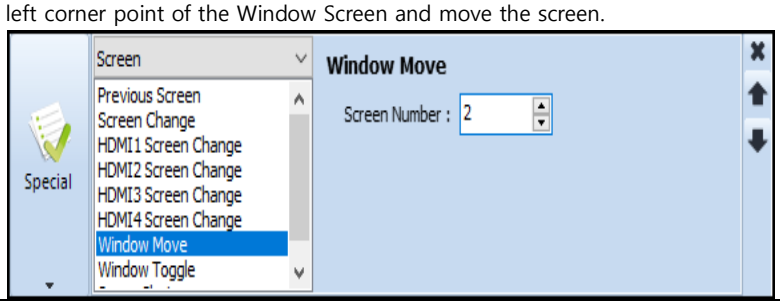
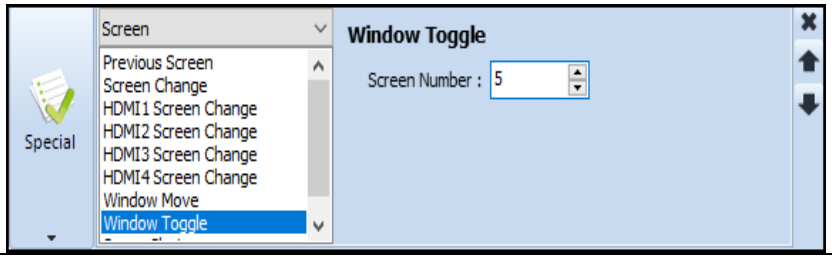
(1) [Action] Page: Special (Screen)

It sets actions related to screens such as [Move Base Screen/Move HDMI Screen/Popup and Move Window Screen/Screen Capture], etc.

No	Screen	Description
1	HDMI1 Screen Change HDMI2 Screen Change	Connect [Projector/PC/TV], etc. to TOP via HDMI to monitor TOP screen. TOPR Premium Model can connect to 1 HDMI and TOPView can connect to 4 HDMIs.

	HDMI3 Screen Change HDMI4 Screen Change	If it is set to [Basic Copy Mode] in [Control Panel]-[HDMI] in TOP Menu Screen, it is monitored in the device connected to HDMI, same as on the TOP screen. Accordingly, there is no need to form a separate HDMI screen. However, if it is set to [HDMI Dual Mode], form a separate HDMI screen to monitor.  Run [Project]-[Property] menu in TDS to display [Project Option] screen. Click the TOP model name in [TOP Setup] at the top left side of the screen to display [HDMI Screen Setting] at the bottom right corner. Use HDMI Dual Mode to check HDMI that will form a separate screen from TOP screen. In the below picture, the project is set to TOPView and therefore, it can set up to four HDMIs.  Check as above to display [HDMI1-HDMI4] as below in [Project Manager] screen and create and edit a separate HDMI Screen.  If the above function is in use, use [HDMI1 Screen Change] to change the screen. When the condition is true, the HDMI screen will be switched to the set [Screen Number].

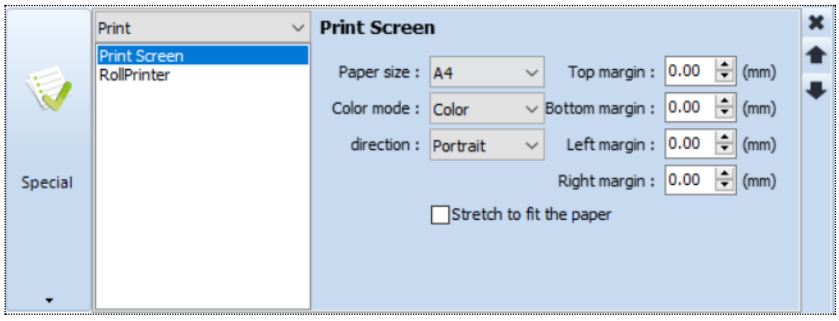
		 The same method applies to HDMI2, HDMI3, and HDMI4.
2	ObjecShot	Save the set object as photo.  [Screen Type] selects the screen position of the object to take a photo of. [Storage] selects the location to save photo. [Screen Number] selects screen number other than the master screen. [Object ID] selects the ID of the object to take a photo of. [File Number] is the number assigned when the file name is created. Thus, when set as above, captured images will be saved as JPG images in [File Browser]-[ScreenCapture] folder in TOP memory. The first file will be saved as [20210929_191430_001], the second file as [20210929_191430_002], the third file as [20210929_191430_003] ... and so on.
3	Previous Screen	Switches to the previous screen before the current screen. 
4	Screen Change	Change screen to the set [Screen Number]. 
5	ScreenShot	When the condition is true, capture the current screen and save it as a JPG image. For [Storage], select from [Internal Memory/SD Card/Ext Cam32/USB]. [Internal Memory] is TOP memory. Captured images saved in the internal memory can be found in [ScreenCapture] folder in [Menu Screen]-[File Explorer]. [SD Card] allows it to be saved in SD card installed to TOP. [USB] allows it to be saved in USB memory installed to TOP. Captured images saved in [SD Card/Ext Cam32/USB] can be found in [UserData]-[ScreenCapture] folder. File Name is saved as [Current Date-File Number]. [File Number] is the number assigned when the file name is created. Thus, when set as above, captured images will be saved as JPG images in [File Browser]-[ScreenCapture] folder in TOP memory. The first file will be saved as [20210929_191430_001], the second file as [20210929_191430_002], the third file as [20210929_191430_003] ... and so on.

		
6	Window Move	Move the position of the popup window screen. Using [Touch] object, set [Condition] page with [Event]-[Touch Down] and select [Window Move] in [Action] page and set the number of the window screen to move with [Screen Number]. This [Touch] object can be registered to the window screen where you wish to move it to or in the base screen. To activate TOP action, first, touch the object to which [Window Move] is set and touch the position to move the popup Window Screen to, then the position will be the top left corner point of the Window Screen and move the screen. 
7	Window Toggle	When the condition is true, pop up the window screen of the set [Screen Number]. 

(2) [Action] Page: Special (Print)

It sets actions related to print.

When the condition is true, print out the screen or print the content set in [Project]-[Roll Printer] with a roll printer.



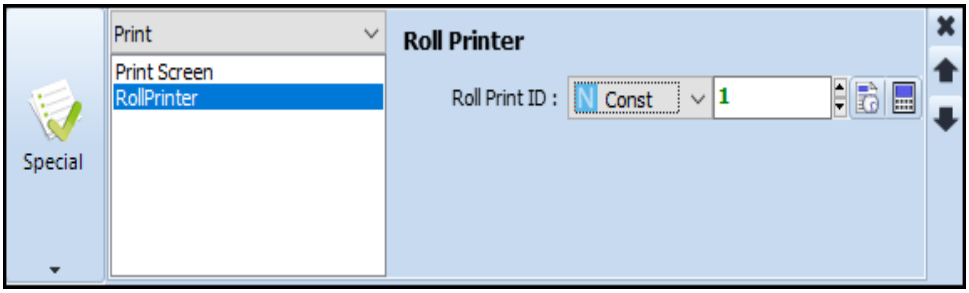
[Pic. Print]

No	Print	Description
1	Print Screen	When the condition is true, print the project screen. Select the paper size to print at [Paper Size]. Select the print color at [Color Mode].

		[Direction] sets the print direction. (Portrait is vertical and Landscape is horizontal.) [Top/Bottom/Left/Right Margin] sets the margin between the print paper and the content.
2	RollPrinter	When the condition is true, it will be printed out in the set Roll Printer format.

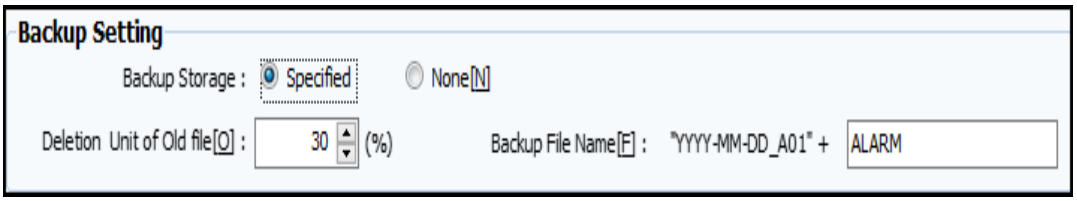
Connect a Printer/Roll Printer to TOP and print out in an edited format.
(For Roll Printer, please see Chapter 4.12 [Roll Printer].)

If it is set to RollPrinter and the Roll Printer ID is set as below, and when the condition is true, the connected Roll Printer will [Print]. [Roll Printer ID] refers to the ID of the page to be printed at TDS [Project]-[Roll Printer].



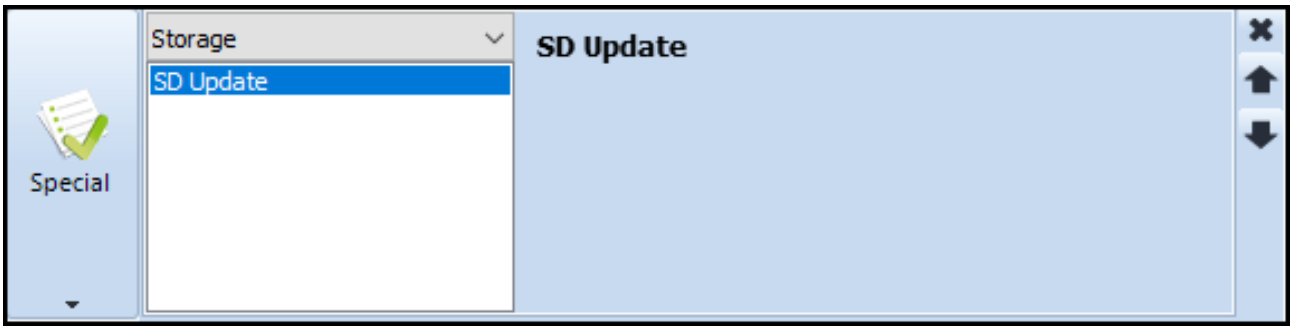
[Pic. Special Function RollPrinter]

(3) [Action] Page: Special (Storage)
It sets actions related to storage device installed in TOP.
When you set Alarm/Log Data saved in TOP to be backed up in SD Card and if the designated memory capacity is full, Alarm/Log Data saved in TOP memory will be automatically moved by a set % (Old Log File Deletion Unit) and will be deleted from TOP memory.



[Pic. Backup Setting with SD Card]

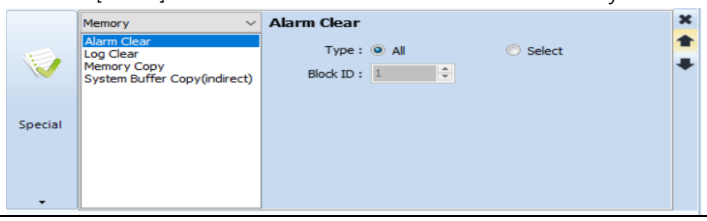
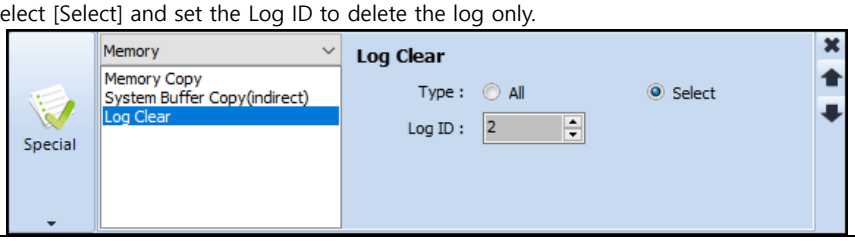
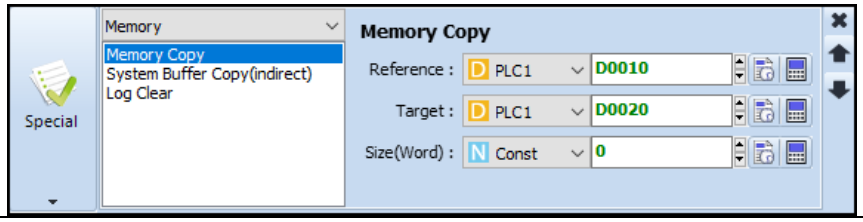
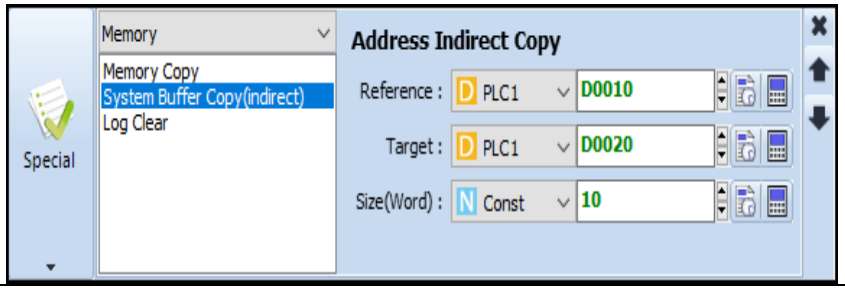
[SD Update] backs up all alarm/log data that have not been backed up to SD card and deletes TOP memory's alarm/log data that have been backed up.



[Pic. Special function SD update]

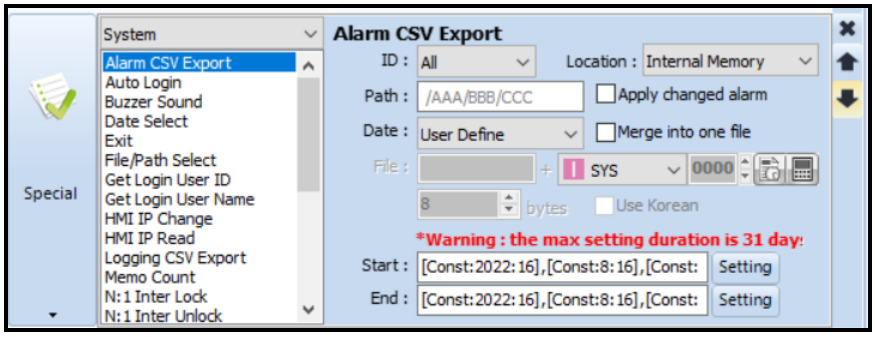
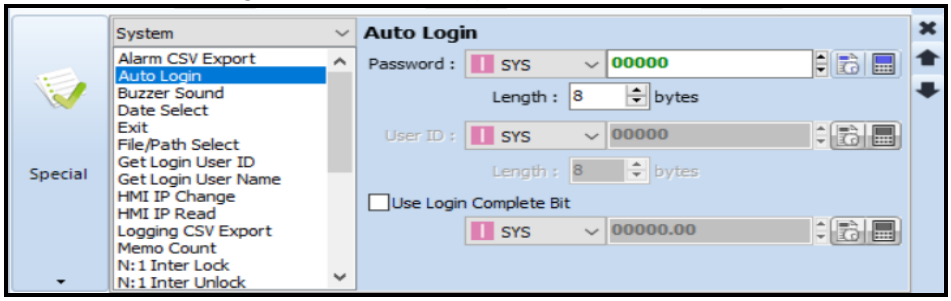
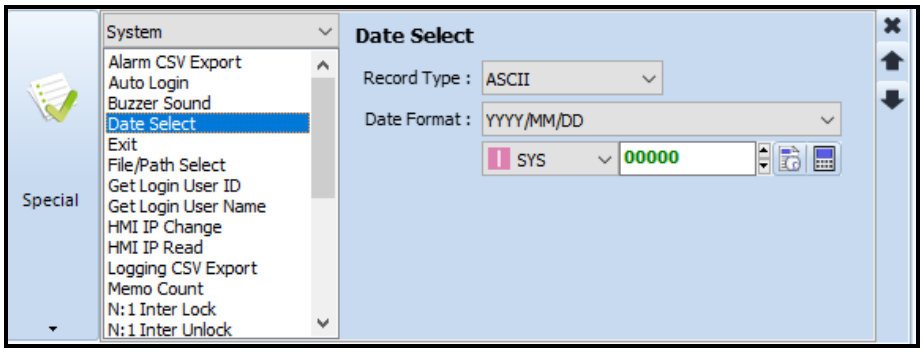
(4) [Action] Page: Special (Memory)

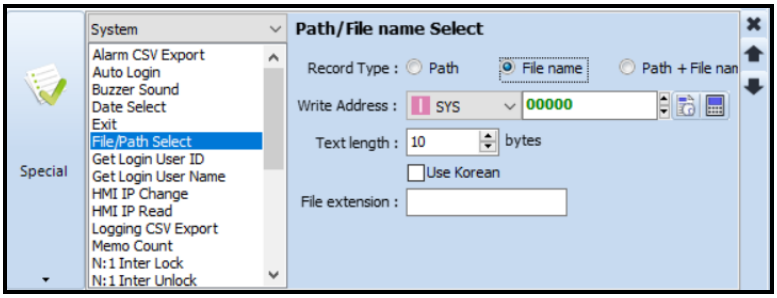
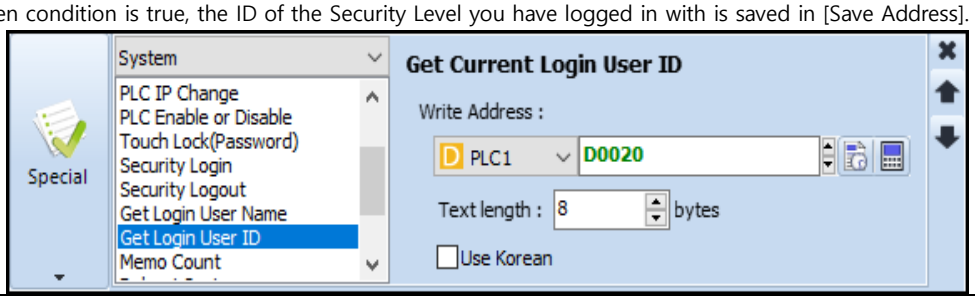
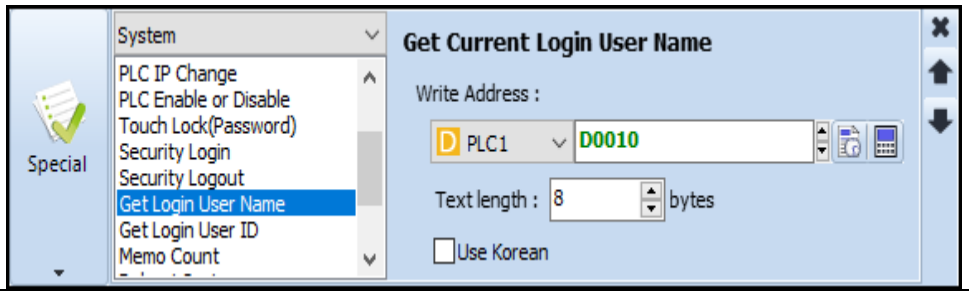
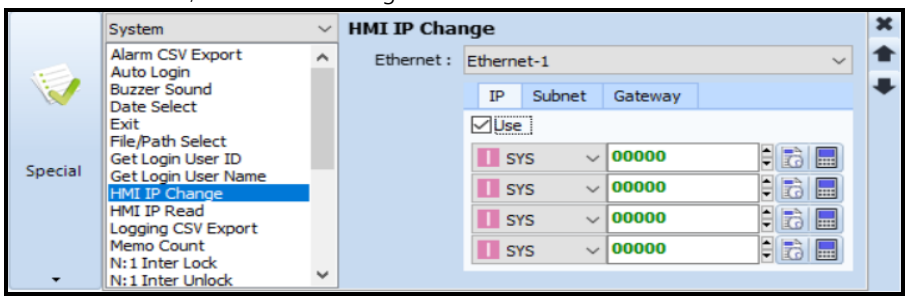
It sets actions related to Copy Memory/Delete Log Data.

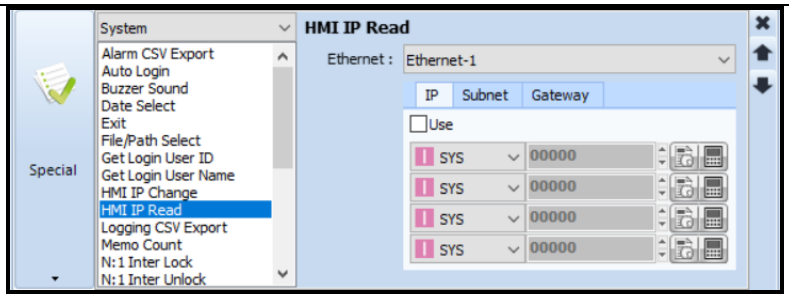
No	Memory	Description
1	Alarm Clear	Delete alarm data saved in TOP Memory. For alarms, up to 16 [Alarm ID] may be set from no. 1 to 16. Select [All] to delete all alarm data. Select [Select] and set the Alarm ID to delete the alarm only. 
2	Log Clear	Delete log data saved in TOP Memory. For logs, up to 16 [Log ID] may be set from no. 1 to 16. Select [All] to delete all log data. Select [Select] and set the Log ID to delete the log only. 
3	Memory Copy	Copy data of [Reference] to [Target Address]. [Size (Word)] is the number of addresses to copy. The set [Reference] and [Target Address] are starting addresses, and it will be copied by [Size] from Start Address. If set as below, data of [D0010] to [D0019] will be copied to [D0020]-[D0029] in order. Thus, it will be D0020=D0010, D0021=D0011, D0022=D0012, ... D0029=D0019. 
4	System buffer Copy (indirect)	Copy data of TOP internal address (system buffer). This is indirect address and data of [Reference] and [Target Address] are the internal address number of TOP. [Size] is the number of addresses to copy. After setting as below, the value of [D0010] is 20 and the value of [D0020] is 40, it copies data of internal address data no. 20 to 29 to internal address no. 40 to 49 in order. Thus, it will be [00040]=[00020], [00041]=[00021], [00042]=[00022], ... [00049]=[00029]. 

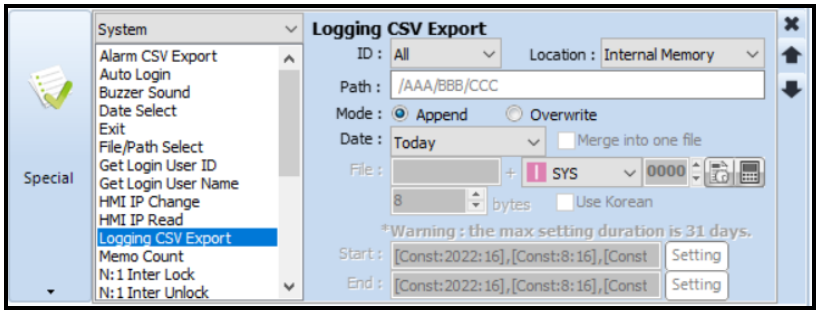
(5) [Action] Page: Special (System)

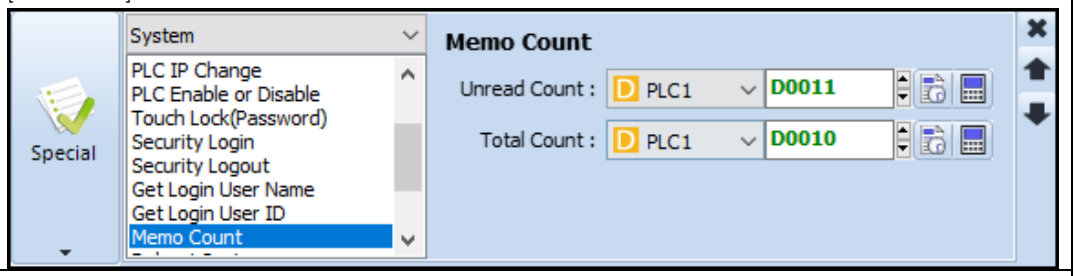
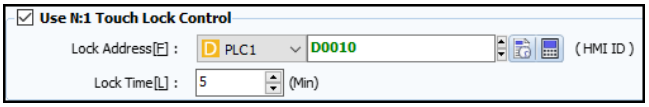
Set actions related to System/Security.

No	Memory	Description
1	Alarm CSV Export	When the condition is true, it copies and exports alarm data saved in TOP in CSV file format.  [ID] selects the ID of the alarm to copy. [Save location] selects the location to save the copy. (Internal Memory/SD Card/Ext Cam32/USB) [Path] selects the path of the save location (folder name, etc.) [Apply changed alarm] chooses whether or not to delete a CSV file and make a new one when there is already a CSV file with the same date in the save path. [Date] selects the data period to copy. (Today/Last Week/All (MRAM)/User Define) If the date is set to User Define, [Merge into One File] merges data of the set date into one CSV file and copy. [File] allows the user to select file name when "Merge into one file" function is in use. If Address is in use, the file name will be 'manually entered file name' + 'address ASCII value'. [Start] selects the data start date of User Define to copy. [End] selects the data end date of User Define to copy.
2	Auto Login	When the condition is true, login with the set ID and password.  [Password] sets the value of the set address as a password. [User ID] is activated when "Account+Password" is used in [Project]-[Security], and the value of the set address will be the User ID. [Use Login Complete Bit] makes the set address [1] with a successful login. (The value will not be automatically turned off.)
3	Buzzer Sound	When the condition is true, it sounds Buzzer.
4	Date Select	When the condition is true, it saves the TOP date to the set address.  [Save Type] selects the type of date to be saved. (ASCII/INT/BCD/UTC)

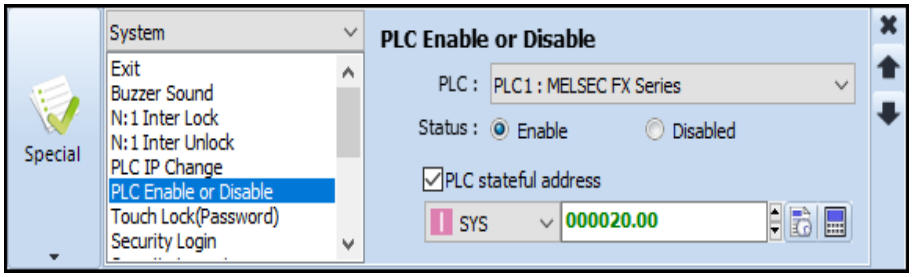
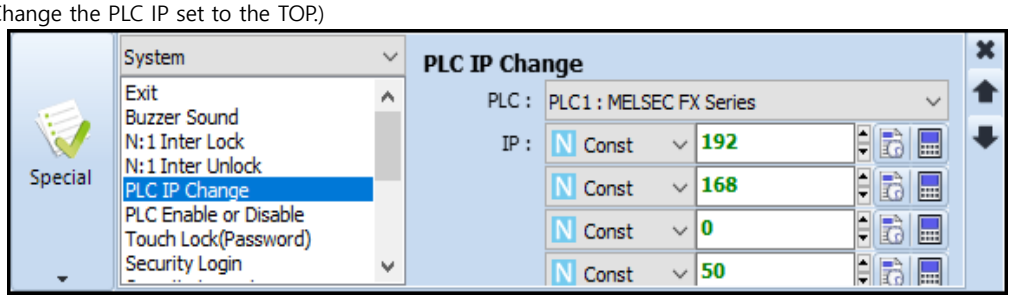
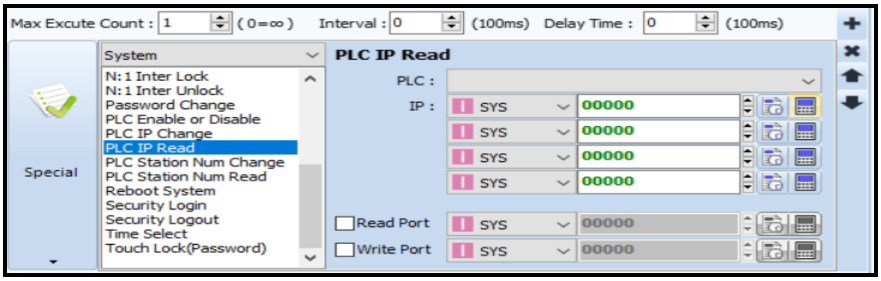
		[Date Format] selects the format of the date to be saved in address. (YYYY/MM/DD , YY/MM/DD, etc.)
5	Exit	When the condition is true, it closes the screen in operation, and moves to the menu screen.
6	File/Path Select	When the condition is true, it saves Path/File Name/Path + File name to the set address.  [Record Type] chooses the type to be used to save address. (Path/File Name/Path + File name) [Byte Length] selects the total length of data to be saved in the address. If data to be saved in the address is a file, [File extension] registers the file's extension.
7	Get Login User ID	When condition is true, the ID of the Security Level you have logged in with is saved in [Save Address]. 
8	Get Login User Name	When condition is true, the User Name of the Security Level you have logged in with is saved in [Save Address]. 
9	HMI IP Change	When the condition is true, the Ethernet setting of TOP is modified.  [Ethernet] selects Ethernet port Ethernet-1/2 to change according to the model of TOP. [IP] modifies the IP of TOP to the set address value. [Subnet] modifies the Subnet of TOP to the set address value. [Gateway] modifies the Gateway of TOP to the set address value. [Note] IP modification in operation is reflected according to the network composition and it may take some time (usually a few seconds).
10	HMI IP Read	When the condition is true, it saves the Ethernet value set to TOP to address.

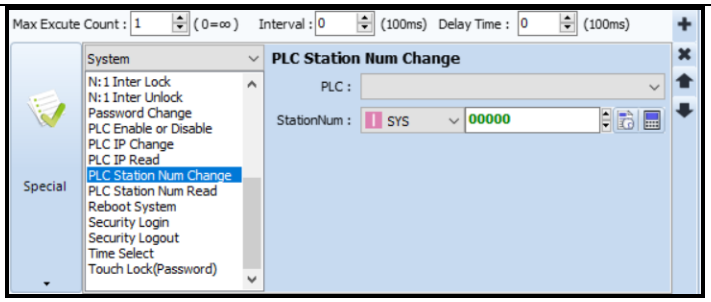
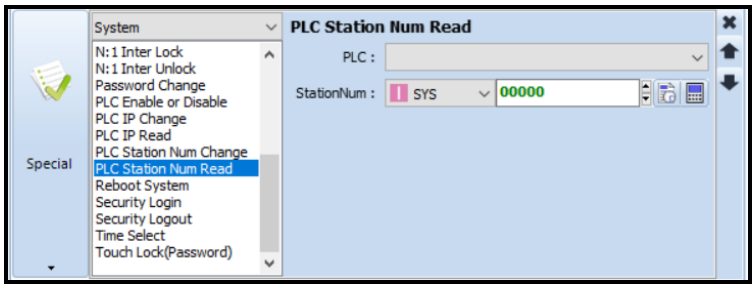
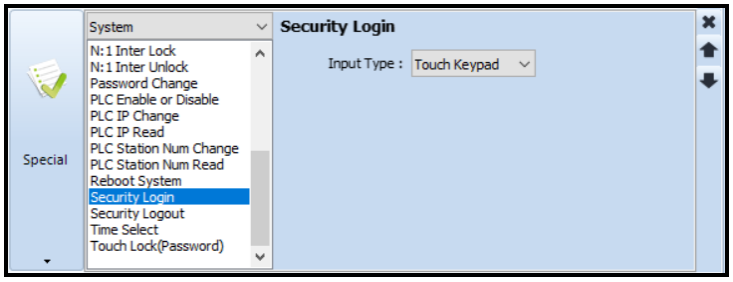
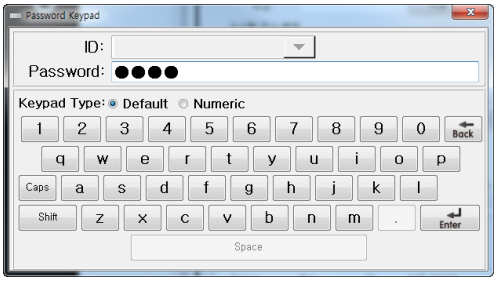
<table>
<tr><td></td><td></td><td> 

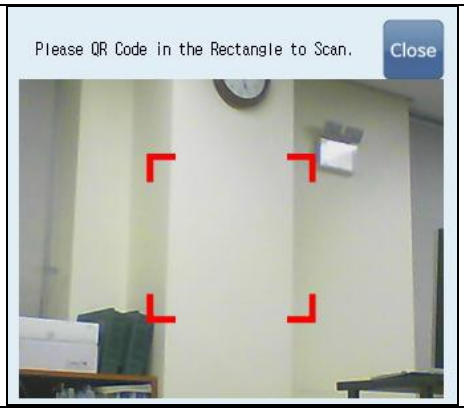
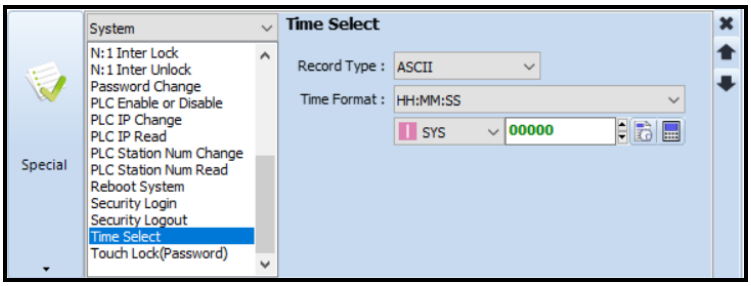
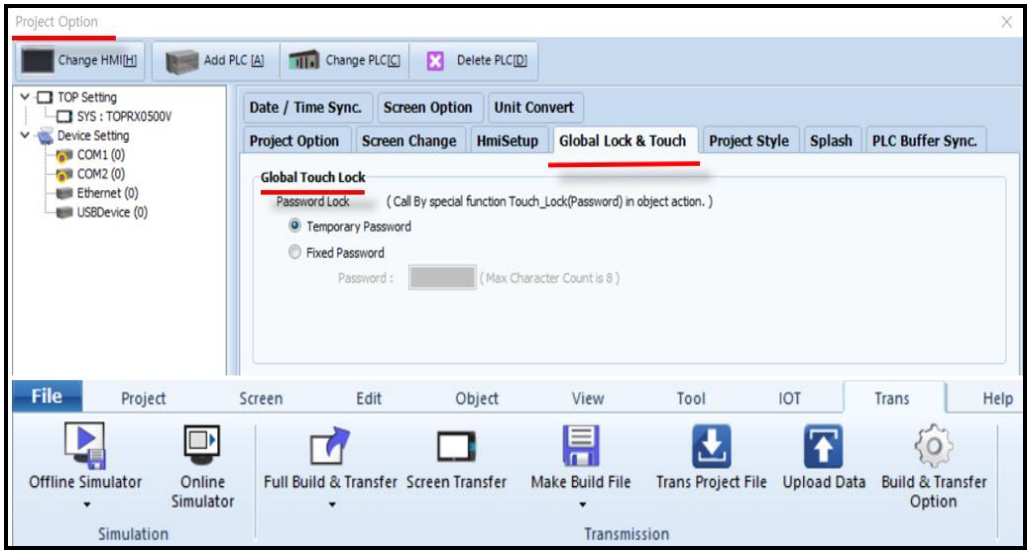
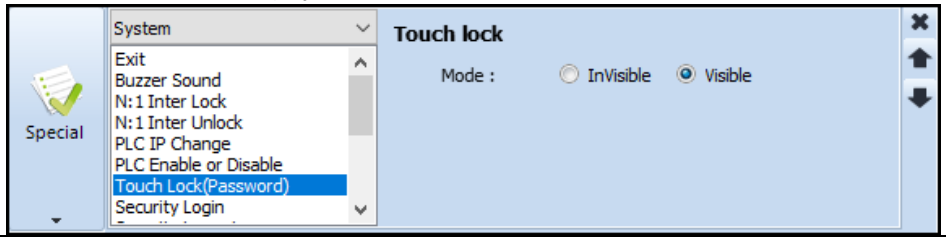
[Ethernet] selects Ethernet port Ethernet-1/2 to import according to the model of TOP.
[IP] saves the IP of TOP to the set address.
[Subnet] saves the Subnet of TOP to the set address.
[Gateway] saves the Gateway of TOP to the set address.</td></tr>
<tr><td>11</td><td>Logging CSV Export</td><td>When the condition is true, it copies and exports log data saved in TOP in CSV file format.
 

[ID] selects the ID of log to copy.
[Save location] selects the location to copy and save. (Internal Memory/SD Card/Ext Cam32/USB)
[Path] selects the path (folder name, etc.) of the save path.
[Date] selects the data period to copy. (Today/Last Week/All (MRAM)/User Define)
If the date is set to User Define, [Merge into one file] merges data of the set date into one CSV file and copy.
[File] allows the user to select file name when “Merge into one file” function is in use.
If Address is in use, the file name will be ‘manually entered file name’ + ‘address ASCII value’.
[Start] selects the data start date of User Define to copy.
[End] selects the data end date of User Define to copy.</td></tr>
<tr><td>12</td><td>Memo Count</td><td>When the condition is true, it saves the count of memo to the set address.
[Unread Count] saves the count of unread memo to the set address.
[Total Count] saves the total count of memo to the set address.
 
</td></tr>
<tr><td>13</td><td>N:1 Inter Lock</td><td>When multiple TOPs and one controller communicate, it is called [N:1 Communication].
To prevent issues that may occur when multiple TOPs control one controller, lock TOP input. Check [Use N:1 Touch Lock Control] in [Project Option] screen that appears when [Project]-[Property] menu is run, then use [N:1 Inter Lock] action.
 

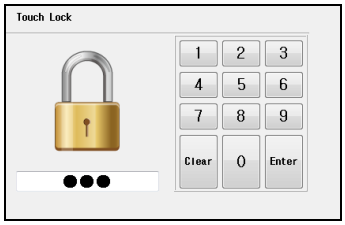
Interlock Address [D0010] data becomes a controllable HMI ID. All the other TOP except for the one with this HMI ID will be unable to recognize Touch Input. (HMI ID can be checked in [Control Panel]-[Project Setting]-[HMI ID] in TOP Menu Screen.)
If Interlock Address [D0010] is [0], all TOP can input touch.</td></tr>
</table>

		Interlock Time substitutes [0] to Interlock Address after 5 minutes since the last touch input and unlocks Interlock. When the condition is true, [N:1 Inter Lock] performs an action that uses its own HMI ID to the Interlock Address to block TOP input other than itself. [Note] If there is a device that has the same HMI ID of the TOP, Inter Lock function may not run as it should.
14	N:1 Inter Unlock	When the condition is true, it inserts [0] to Interlock Address and unlocks the N:1 interlock.
15	Password Change	When the condition is true, it calls the account's password change window.
16	PLC Enable or Disable	Sets the use of connected PLC when the condition is true. [Enabled] means that communication is in operation, whereas [Disabled] is not.  [PLC Status Save Address] saves the state of PLC Enabled/Disabled. If the set address is [1], it is enabled, and if [0], disabled.
17	PLC IP Change	When the condition is true, the IP address of PLC registered to Ethernet will be changed to the set IP address. (Change the PLC IP set to the TOP.)  [PLC] selects the PLC that changes the IP. [IP] changes the address value to the IP of PLC. [Read Port] changes the address value to PLC Read Port. [Write Port] changes the address value to PLC Write Port.
18	PLC IP Read	When the condition is true, it saves the PLC IP set in TOP to an address.  [PLC] selects the PLC to save IP to an address. [IP] saves the IP of PLC set in TOP to an address. [Read Port] saves Read Port of PLC set in TOP to an address. [Write Port] saves Write Port of PLC set in TOP to an address.
19	PLC Station Num Change	When the condition is true, it changes the PLC StationNum registered in TOP to the set StationNum. (Change the PLC StationNum set to the TOP.)

		 [PLC] selects the PLC StationNum that is going to be modified. [StationNum] changes the PLC StationNum to the set address value.
20	PLC Station Num Read	When the condition is true, it saves the PLC StationNum set to TOP to an address.  [PLC] selects the PLC where the StationNum will saved to the address. [StationNum] saves PLC StationNum to the set address.
21	Reboot System	When the condition is true, it restarts TOP.
22	Security Login	It is available when Security Level function is checked in [Project]-[Security]. When the condition is true, use this action to log in. (For more detailed feature of Security Level, please see Chapter 4.7.2 [Security Level].)  Setting the [Input Type] as [Touch Keypad]/[RFID] will call up the next keypad when the action is run. Enter the password and press [Enter].  Set [Input Type] as [QR Code] to recognize the QR code using front camera and bar code scanner. (TOPR premium model can recognize QR codes with its built-in front camera and other models can run this action by installing a bar code scanner that can recognize QR codes.) When the action is run, the following screen will pop up. Place the QR code in the red square area to login.

		
23	Security Logout	When the condition is true, the currently logged in account will be logged out.
24	Time Select	When the condition is true, it saves the TOP time to the set address.  [Save Type] selects the type of time to be saved. (ASCII/INT/BCD/UTC) Select the format of time to be saved in address with [Time Format] (HH:MM:SS , HH:MM , MM:SS).
25	Touch Lock(Password)	If [Project]-[Property]-[Global Lock & Touch]-[Global Touch Lock] is set in TDS, use this action to lock or login to unlock.  [Global Touch Lock] locks all objects registered to the screen with [Touch Lock] to prevent touch inputs. Users must login with the password to enable touch input. It is used to temporarily block touch inputs to work on site. (For detailed description of Global Touch Lock, please see Chapter 4.14.8 [Global Lock & Touch Page].) Lock will not be enabled when a project is executed. 

Activate Touch Lock (Password) set as above to enable Touch Lock and display [Touch Lock Password Input Window] as shown in the below picture.



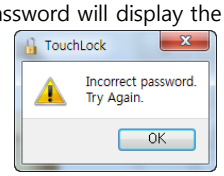
Complete your work in Touch Lock state and enter password in the above window to unlock [Touch Lock]. The password input window will disappear.

If you need to enable Touch Lock again, run Touch Lock (Password) action.

Pressing [Enter] without entering the password will display the following message.



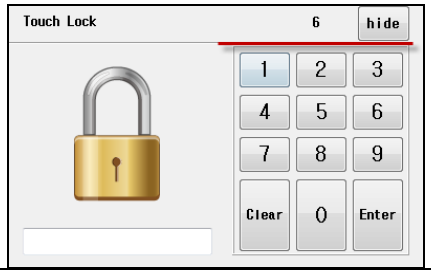
Pressing [Enter] after entering incorrect password will display the following message.



If you have lost the temporary password, press the key-shaped icon for 5 seconds to display password in the below password input box. Set [Mode] to [Visible] to popup [Touch Lock Password Input Window] until the correct password is entered in the Touch Lock state. Set [Mode] to [Invisible] to make [Touch Lock Password Input Window] disappear even if the password has not been entered in Touch lock state.

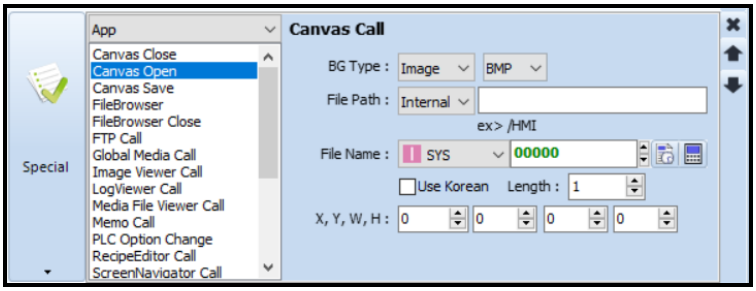
As below picture, [Hide] button and reverse-counting numbers from 10, 9, 8 ... will be displayed. Press [Hide] to close the login window. And, when the number becomes [0], the login window will automatically be closed.

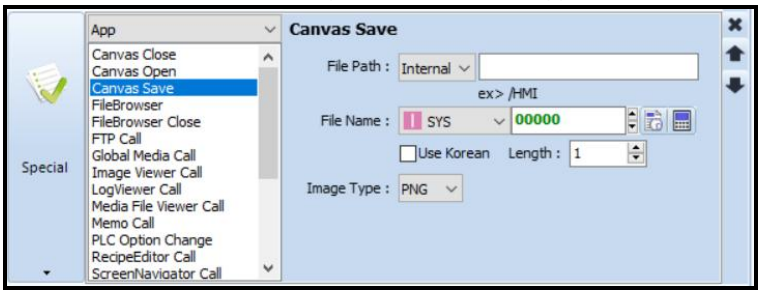
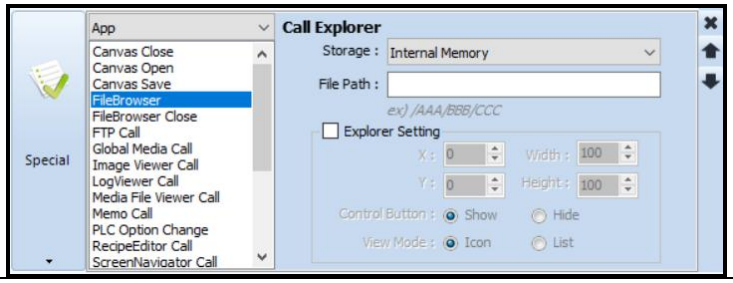
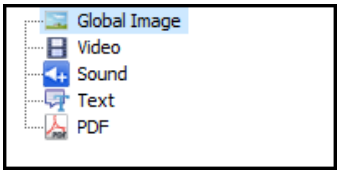
Press [0-9, Clear, Enter] key to reset the count to 10.

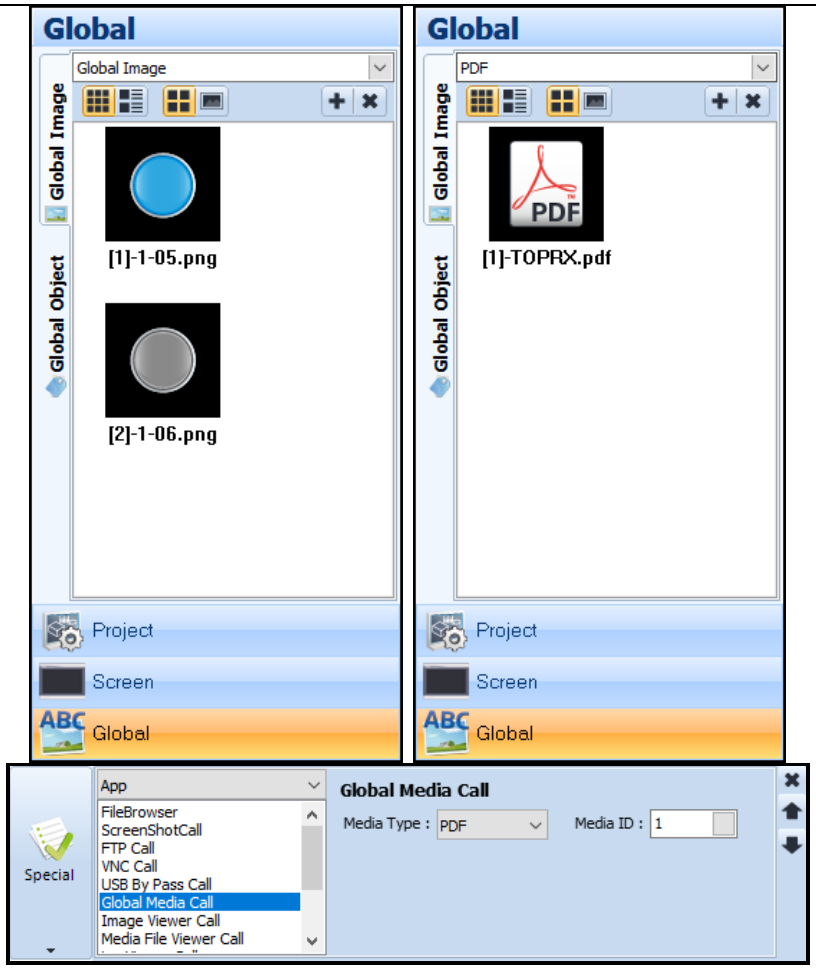


(6) [Action] Page: Special (App)

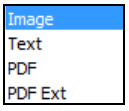
Set the action that calls application on TOP menu screen.

No	Memory	Description
1	Canvas Close	When the condition is true, exit Canvas App.
2	Canvas Open	When the condition is true, call Canvas App.  Select the Background Type to call to Canvas App at [BG Type] (Image/Color/Transparent).

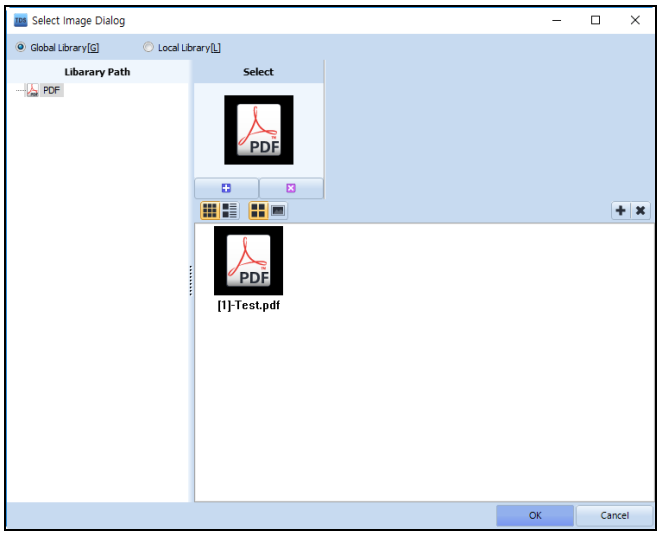
		Select the path of image file if the background type is Image at [File Path]. Select the name for the file saved by using the value of ASCII registered to Address for [File Name]. [X,Y,W,H] chooses the position of Canvas App.
3	Canvas Save	When the condition is true, save the file painted with Canvas App.  [File Path] selects the path to save the file (Internal Memory/SD Card/Ext Cam32/USB). For [File Name], the value of ASCII registered in the address will be the name of the file. Select the file extension to save the file at [Image Type] (BMP/JPG/PNG).
4	FileBrower	When the condition is true, calls the File Explorer App. Select [Internal Memory/SD Card/Ext Cam32/USB] at [Save Location]. When calling File Explorer, it shows the storage device selected in [Save Location] as the default location. 
5	FileBrowser Close	When the condition is true, exits the File Explorer App.
6	FTP Call	When the condition is true, calls the FTP Explorer App.
7	Global Media Call	When the condition is true, it calls registered Global Media while in operation. Global Media can be registered and managed in [Project Manager]-[Global]. The types of Global Media are as follows.  Click  button at the top right corner of [Project Manager]-[Global] to register each media.



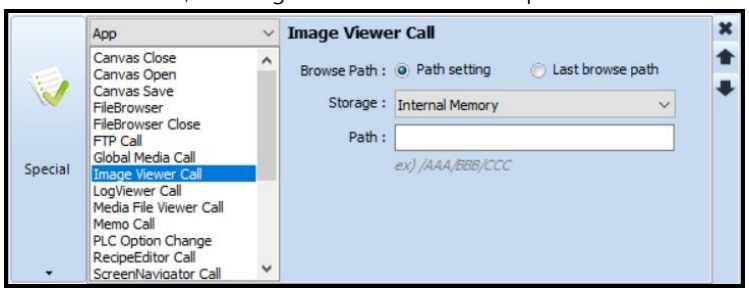
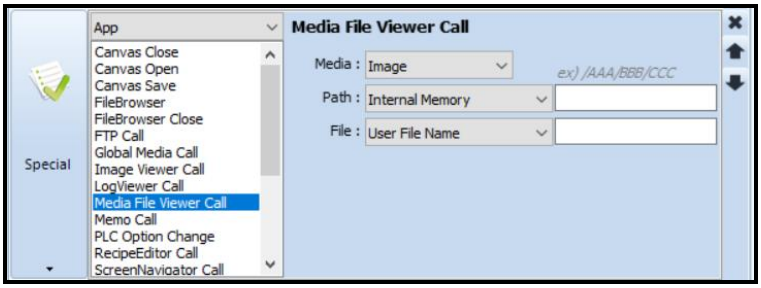
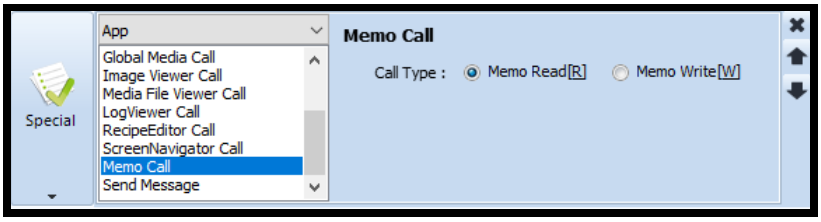
Select a [Media Type] to call from [Image/Text/PDF/PDF Ext].

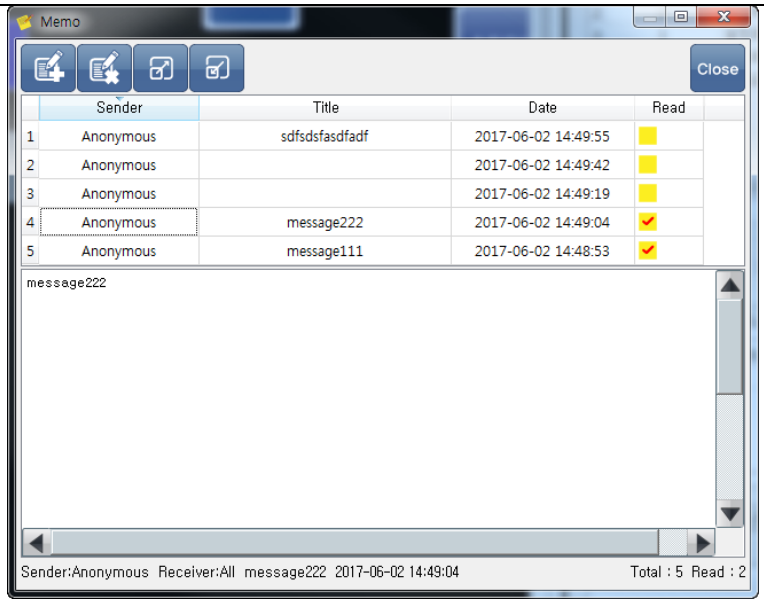


Click ▢ button of [Media ID] to display a dialog where you can select the following media. Select media and click [OK].



If set as above, the designated media as following will be displayed on the screen when the condition is true.

		 (For more detailed description of Global Media, please see Chapter [Global Part].)
8	Image Viewer Call	When the condition is true, call Image Viewer in the selected path.  [Browse Path] selects the path of the image file to view on Image Viewer. [Storage] selects the save location of image file for Path Setting. (Internal Memory/SD Card/Ext Cam32/USB) [Path] selects detailed path from the save location of image file. [Last browse path] finds and calls the path of the last browsed image file.
9	LogViewer Call	When the condition is true, calls LogViewer. Use LogViewer to see TOP memory or saved log CSV file.
10	Media File Viewer Call	When the condition is true, calls Media File Viewer.  [Media] chooses the media type to call. (Image/Text/PDF/PDF Ext) [Path] chooses the path location of the file to call. (Internal Memory/SD Card/Ext Cam32/USB) [File] selects which file to call from the files in the path. (User File Name/First File Name from Ascending Order/First File Name from Descending Order/Last Edited File)
11	Memo Call	When the condition is true, calls [Read Memo] and [Write Memo] windows. You may write or check memos on site.  Set Call Type as [Read Memo] to call below screen to see the memos.



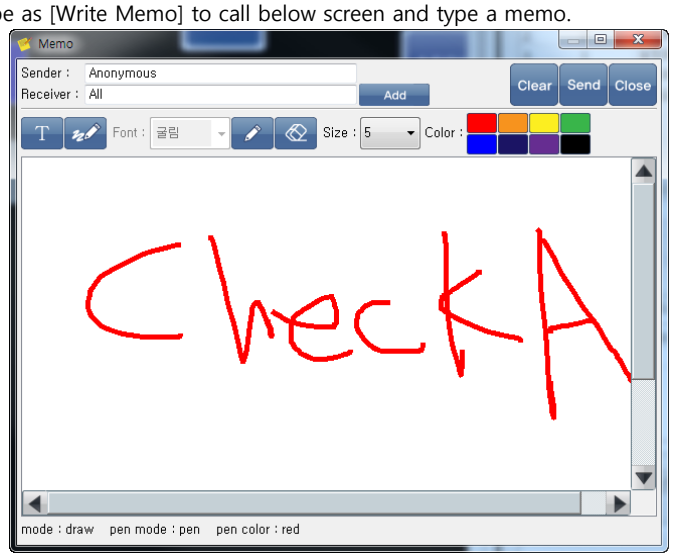
Write Memo window appears for you to leave a memo.

Delete the selected memo.

Memo List will disappear and you will see the content of the selected memos only.

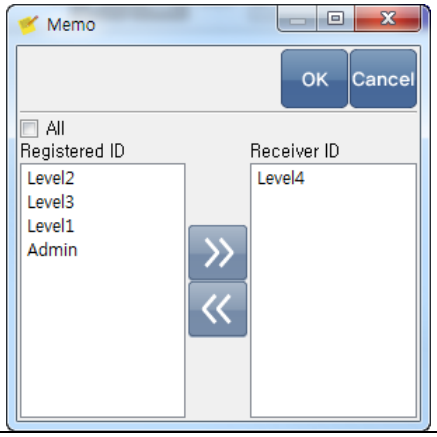
Memo List will appear at the top and you will be able to see the selected memo's content at the bottom.

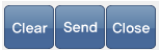
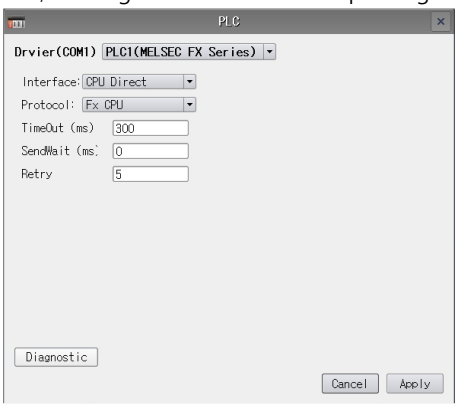
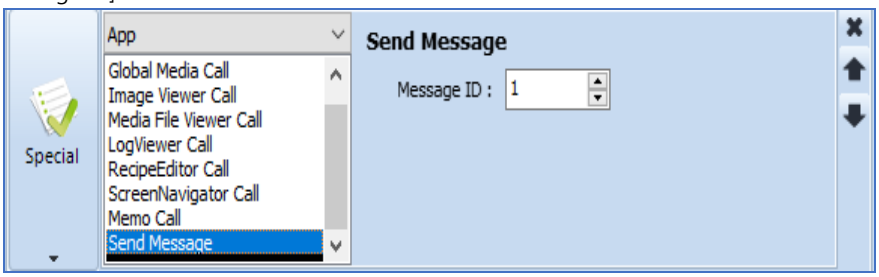
Set Call Type as [Write Memo] to call below screen and type a memo.

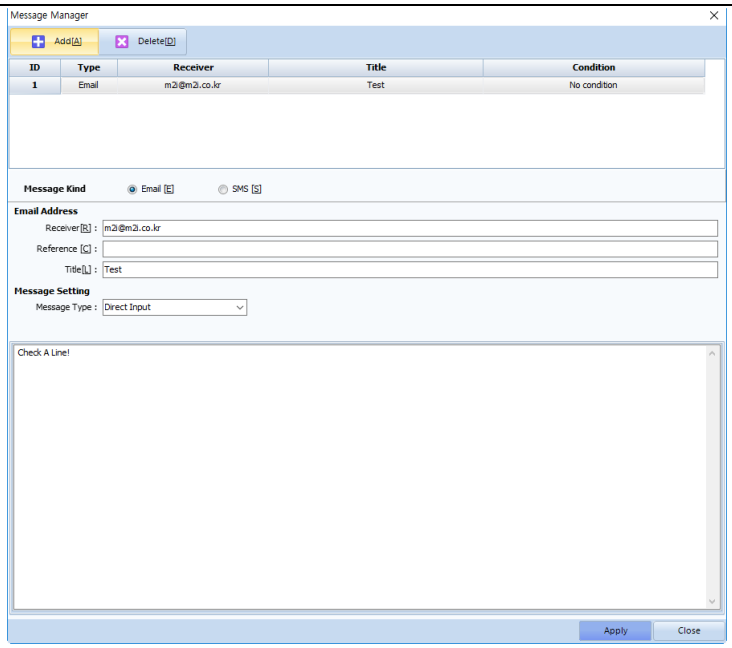
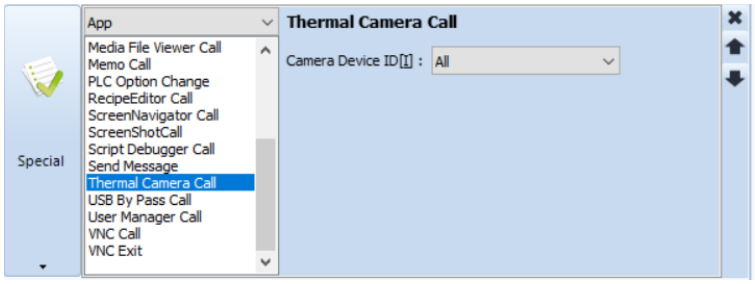
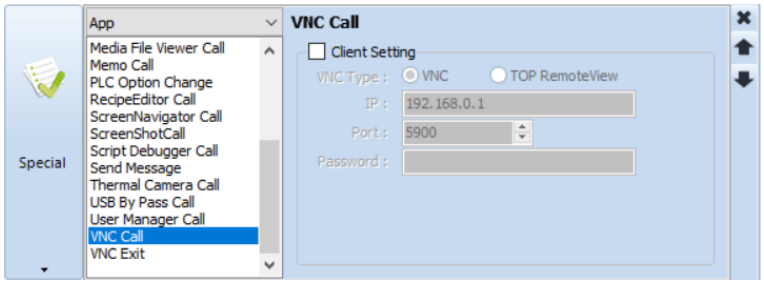


Sender is the one who sent the memo and Receive is the one who receives memo.

Click Add button to add Receivers.



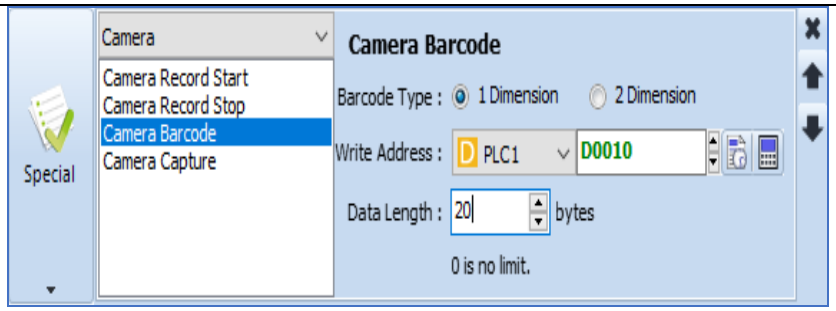
		 It is Text Write Mode and Paint Mode.  Set the text font.  Write and Clear Mode.  Set the text size.  Set the color of text/picture.  Clear deletes memo. Send sends memo. Close closes Write Memo window.
12	PLC Option Change	When the condition is true, it changes the PLC Driver Setup configured in TOP.  It may be modified in [Control Panel]-[PLC] menu in TOP menu screen.
13	RecipeEditor Call	When the condition is true, calls Recipe Editor. Use Recipe Editor to see and edit TOP memory or saved Recipe File.
14	ScreenNavigator Call	When the condition is true, calls Screen Navigator. See all project screens at a glance and select and run a screen.
15	ScreenShotCall	When the condition is true, calls the ScreenShot App.
16	Send Message	When the condition is true, send the message registered to [Message Manager]. Set the [Message ID] to send.  [Message Manager] will be displayed when [Project]-[Send Message] menu is run.

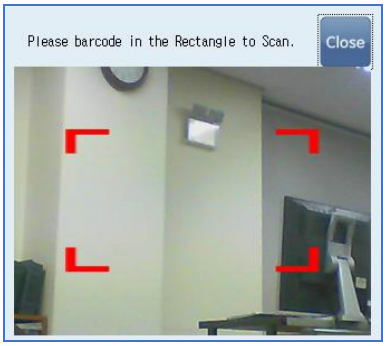
		 (Please see Chapter 4.10 [Send Message] for more detailed description of Message Manager.)
17	Thermal Camera Call	When the condition is true, calls thermal camera.  [Camera Monitor ID] selects the ID of the thermal camera to call.
18	USB By Pass Call	When the condition is true, the window that selects front USB mode is called. *Change the front USB mode to restart TOP.
19	User Manager Call	When the condition is true, calls the Security Setting App.
20	VNC Call	When the condition is true, call VNC Viewer.  [Client Setting] calls VNC viewer to select the VNC client setting to connect.
21	VNC Exit	When the condition is true, closes VNC Viewer.

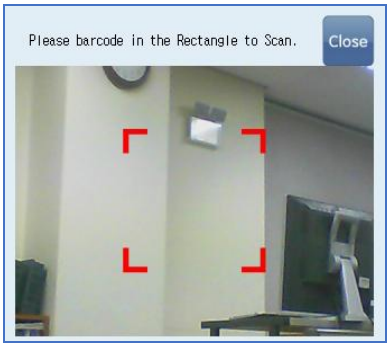
(7) [Action] Page: Special (Camera)

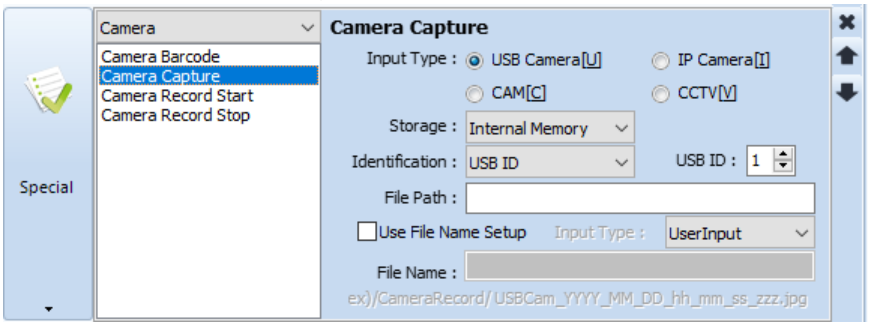
It sets actions of internal/external camera of TOPR Premium Model.

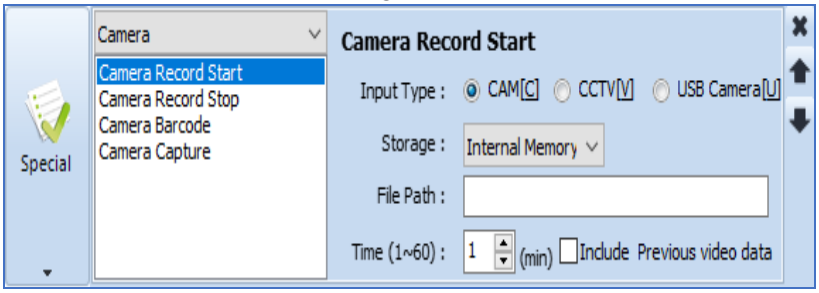
No	Camera	Description
1	Camera Barcode	When the condition is true, use the front camera to read barcode.

<table>
<tr>
<td></td>
<td></td>
<td>


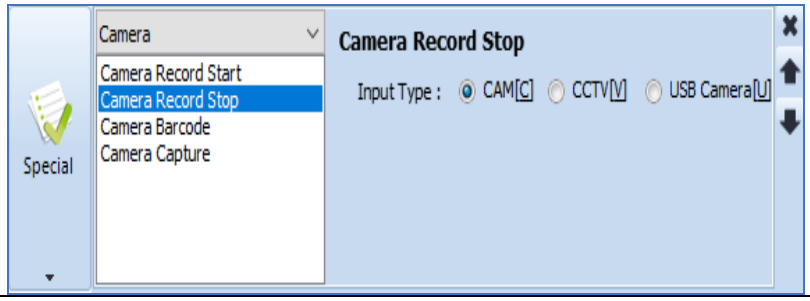
Select Barcode [Normal] / 2 Dimension Barcode [QR] for [Barcode Type].
For [Save Address], select the address to save the recognized barcode value.


[Pic. Barcode (Normal)]


[Pic. 2 Dimension Barcode (QR Code)]
</td>
</tr>
<tr>
<td>2</td>
<td>Camera Capture</td>
<td>
When the condition is true, it captures and saves the screen of the set camera.


Select the connected camera type for [Input Type].
Select the location to save the captured photo for [Storage].
Select the setting of the connected camera for [Identification (IP Camera)] (USB ID/IP, etc.).
Select the path to save the captured photo for [File Path].
[File Name Setup] allows you to modify the file name of the captured photo.
For [Input Type], check File Name Setup and select the file name with UserInput (manual)/Address (address value).
</td>
</tr>
<tr>
<td>3</td>
<td>Camera Record Start</td>
<td>
When the condition is true, start recording with the camera.


[Input Type] selects the camera to record with.
Select the location to save the recorded video for [Storage].
Select the setting of the connected camera for [Identification] (USB ID/IP, etc.).
Select the path to save the recorded file for [File Path].
[File Name Setup] allows you to modify the file name of the recorded file.
</td>
</tr>
</table>

		For [Input Type], check File Name Setup and select the file name with UserInput (manual)/Address (address value). [Start Confirmation Bit] makes the set bit [1] when the recording starts.
4	Camera Record Stop	When the condition is true, stops the set camera recording. 

7.1.49 **[Action] Page: None**

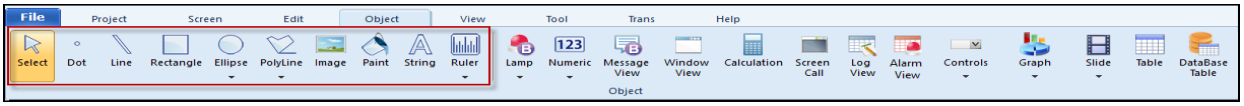
When the condition is true and there is no action to be executed, set it to [None].



[Pic. None Action]

CHAPTER 8 - Object (1)

An object is something that can be registered to a screen to be designed or run actions.
This chapter describes shape objects.



[Pic. Object (1)]

[Effect & Action] page that is included in each object is described in detail in Chapter 7.6-7.9 [Object Common] and will be excluded from this chapter. [Text] page that is included in each object is the same as Chapter 8.10 [Text Object] and therefore, it is excluded from this chapter.

Select

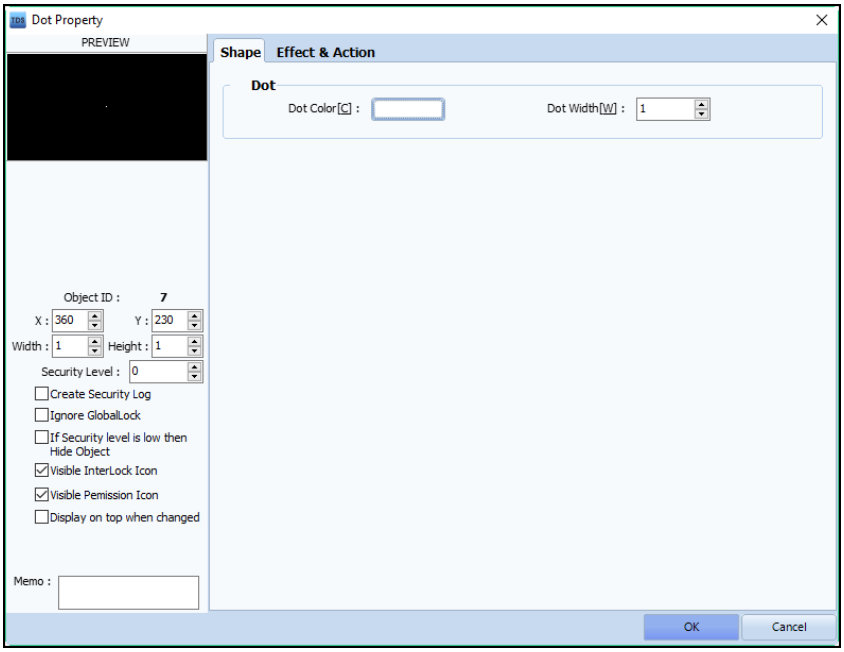


Select is the function that allows you to select objects on the screen.
Select an object and click [ESC] key to deselect and go back to [Select].
Select an object and register it on the screen and you will be automatically go back to [Select].

Dot Object



Draws a dot.

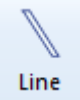


[Pic. Dot object]

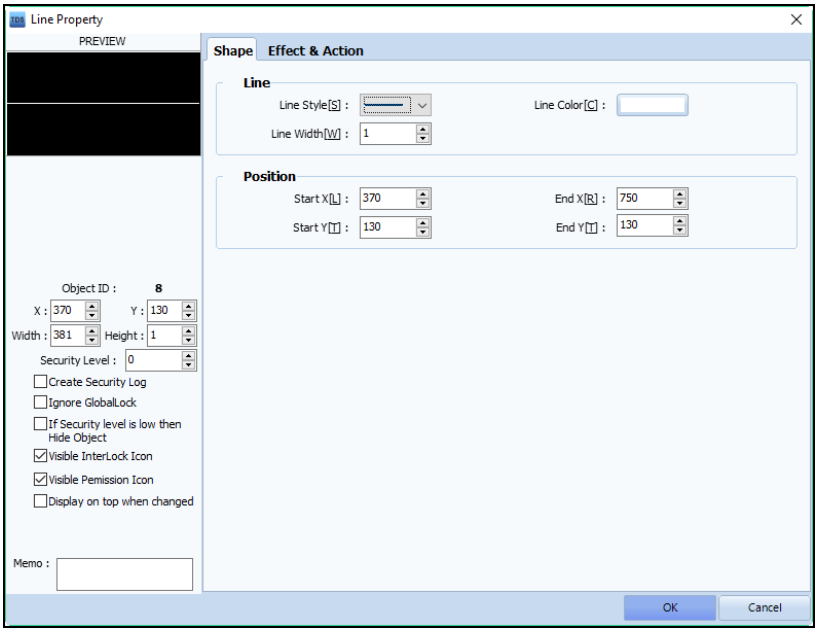
8.1.1 Shape Page

No	Dot	Description
1	Dot Color	Use Color Pallet to set the Dot color.
2	Dot Width	Set Dot Width to fall within the range of 1-10 dot.
3	Shadow	Set the shadow of Dot. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Line Object



Draw a line. Select the start point of the line and drag and drop at the end point. Press [Shift] key on the keyboard to draw a circle fixed to a straight line or horizontal line.



[Pic. Line object]

8.1.2 Shape Page

(1) Line

No	Line	Description
1	Line Style	Select a line style from Combo Box.
2	Line Color	Use Color Pallet to set the line color.
3	Line Width	Select the line width from 1-10 dot.

(2) Position

No	Position	Description
1	Start X	Set the position of X coordinate, the start point of a line.
2	Start Y	Set the position of Y coordinate, the start point of a line.
3	End X	Set the position of X coordinate, the end point of a line.
4	End Y	Set the position of Y coordinate, the end point of a line.

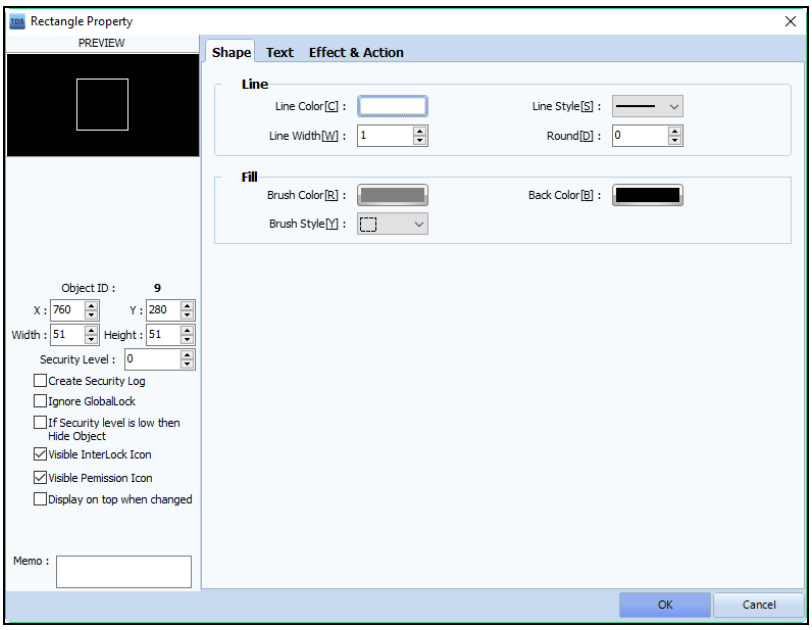
(3) Shadow

No	Position	Description
1	Shadow	Set the shadow of Line. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Rectangle Object



Draws a Rectangle. Select a start point on the screen, drag and drop.
Press [Shift] key on the keyboard to draw a square.



[Pic. Rectangular object]

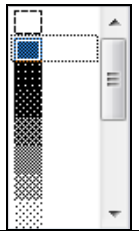
8.1.3 Shape Page

(1) Line

No	Line	Description
1	Line Color	Use Color Pallet to set the line color.
2	Line Style	Select a line style from Combo Box.
3	Line Width	Select the line width from 1-10 dot.
4	Round	[0] is a square. Enter a value other than 0 to make a round-cornered rectangle. The range of value for the size of rectangle is different. The larger the value, the closer it will be to a circle (0-57).

(2) Fill

Fill color in the rectangle.

No	Fill	Description
1	Fill Color	Set the color of the black area in the [Fill Style] pattern.
2	Back Color	Set the color of the white area in the [Fill Style] pattern.
3	Fill Style	Select the color pattern for the inside of the rectangle from the list. 

(3) Shadow

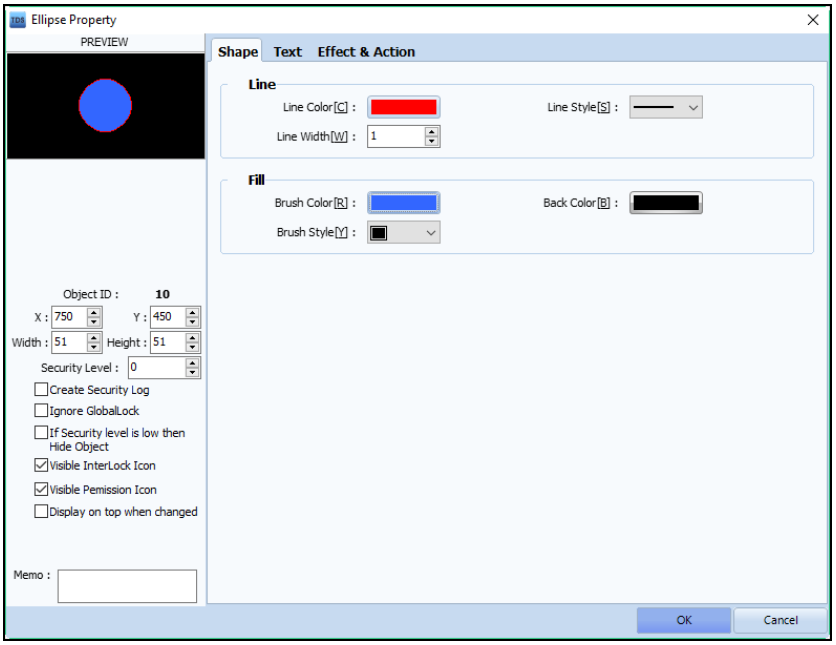
No	Position	Description
1	Shadow	Set the shadow of the rectangle. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Ellipse Object



Draws an ellipse.

Press [Shift] key on the keyboard to draw a circle.



[Pic. Ellipse Object]

8.1.4 Shape Page

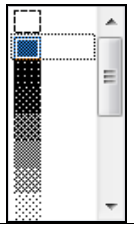
(1) Line

No	Line	Description
1	Line Color	Use Color Pallet to set the line color.

2	Line Style	Select a line style from Combo Box.
3	Line Width	Select the line width from 1-10 dot.

(2) Fill

Fill color in the ellipse.

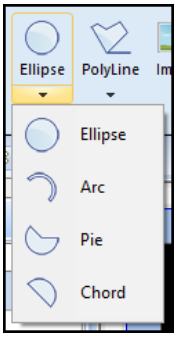
No	Fill	Description
1	Fill Color	Set the color of the black area in the [Fill Style] pattern.
2	Back Color	Set the color of the white area in the [Fill Style] pattern.
3	Fill Style	Select the color pattern for the inside of the ellipse from the list. 

(3) Shadow

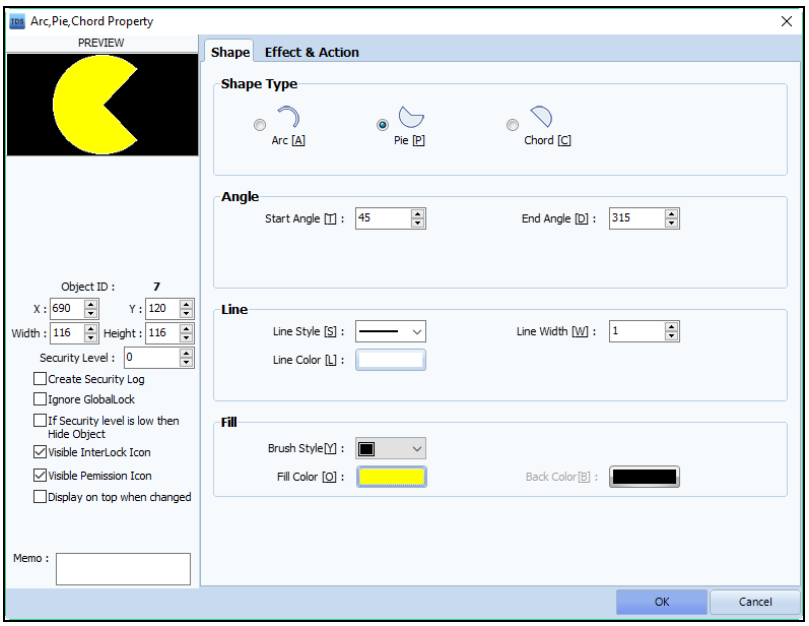
No	Position	Description
1	Shadow	Set the shadow of the Ellipse. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Arc/Pie/Chord Object

Click the arrow at the bottom of an ellipse object to see Arc/Pie/Chord Object.

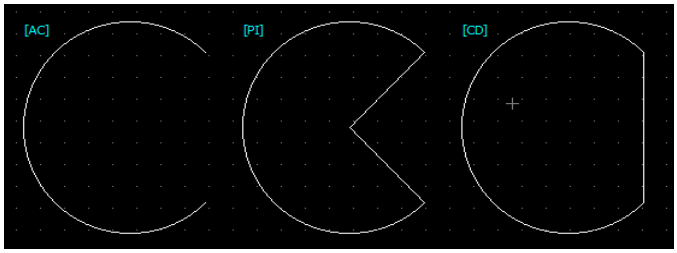


[Pic. Arc/Pie/Chord Object]



[Pic. Arc/Pie/Chord Object]

Arc is an opened shape while Pie and Chord are closed shapes. The shapes of Arc/Pie/Chord are as follows.



[Pic. Arc, Pie, Chord]

Select registered [Arc/Pie/Chord] object to display a white tracker and a yellow tracker. Drag [White Tracker] to change the size and drag [Yellow Tracker] to adjust its angles.

8.1.5 Shape Page

(1) Shape Type

Select from [Arc/Pie/Chord].

(2) Angle

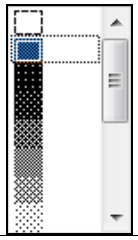
Set the Start Angle and End Angle. [Start Angle] is the angle that rotates anti-clockwise from 0 degree by the 3 o'clock. [End Angle] is the angle that rotates clockwise from 360 degrees by the 3 o'clock.

(3) Line

No	Line	Description
1	Line Style	Select a line style from Combo Box.
2	Line Width	Select the line width from 1-10 dot.
3	Line Color	Use Color Pallet to set the line color.

(4) Fill

Fill color inside a Pie/Chord. Arc is not a closed shape and therefore, it cannot be filled.

No	Fill	Description
1	Fill Color	Set the color of the black area in the [Fill Style] pattern.
2	Back Color	Set the color of the white area in the [Fill Style] pattern.
3	Fill Style	Select the color pattern for the inside of the Pie/Chord from the list. 

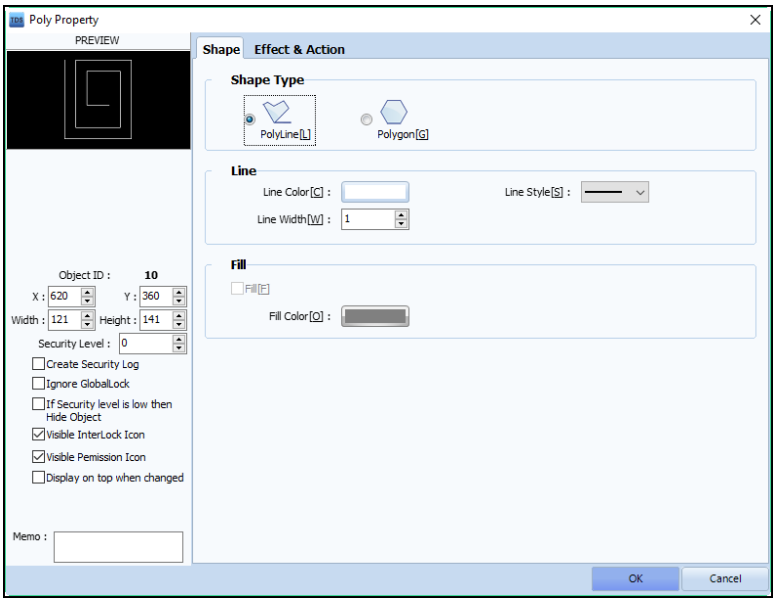
(5) Shadow

No	Position	Description
1	Shadow	Set the shadow of Art/Pie/Chord. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Polyline/Polygon Object



Draws a Polyline/Polygon. A shape that connects a line with another line is called Polyline/Polygon. A polygon is a closed shape. Left-click with the mouse continuously on a dot to make them into apexes. Right-click with the mouse to quit drawing.



[Pic. Polyline/Polygon Object]

Select registered [Polyline/Polygon] object to display a white tracker and a yellow tracker. Drag [White Tracker] to change the size and drag [Yellow Tracker] to adjust its shape.

8.1.6 Shape Page

(1) Shape Type

Choose from a Polyline or Polygon. [Polyline] is a shape that connects a line with another every time you draw, and [Polygon] is a shape that creates a side when drawing.

(2) Line

No	Line	Description
1	Line Color	Use Color Pallet to set the line color.
2	Line Style	Select a line style from Combo Box.
3	Line Width	Select the line width from 1-10 dot.

(3) Fill

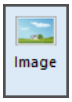
Fill color inside a [Polygon]. [Polyline] is not a closed shape and therefore, it cannot be filled.

No	Fill	Description
1	Fill Color	Check [Fill] and set the color.

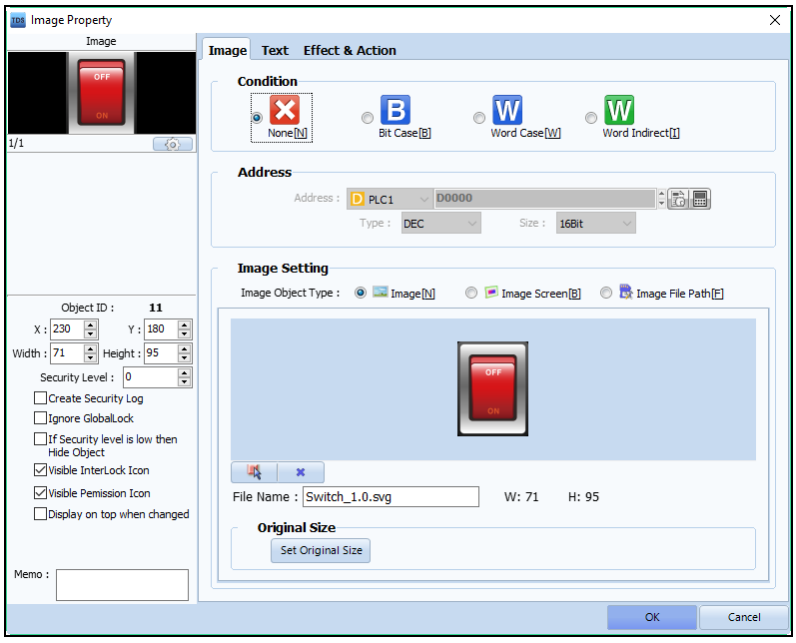
(4) Shadow

No	Position	Description
1	Shadow	Set the shadow of Polyline/Polygon. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Image Object



Register images. The image formats available for registration are [JPG, BMP, JPEG, PNG, SVG, MBS, DWG].



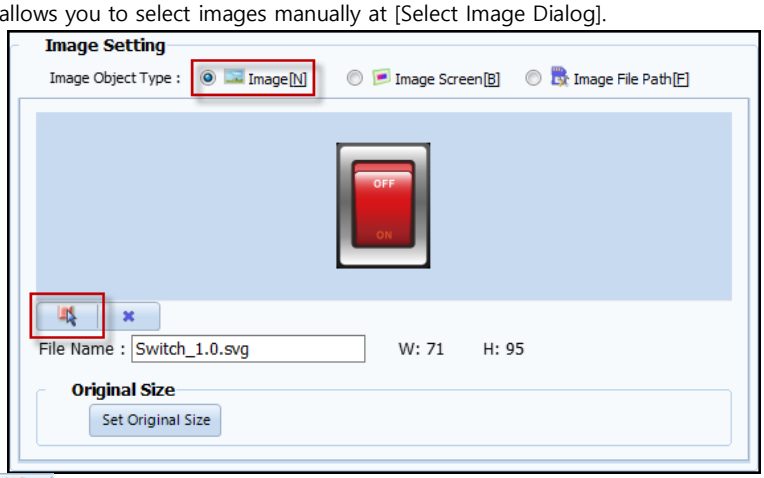
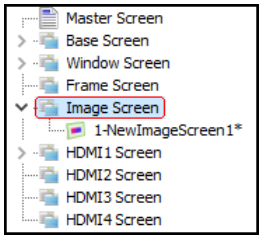
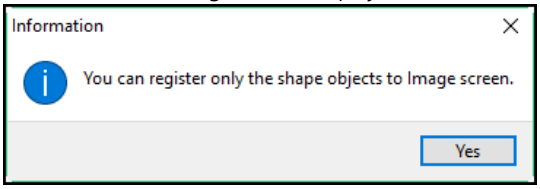
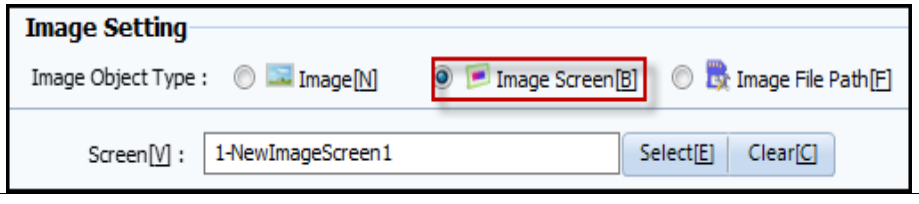
[Pic. Image object]

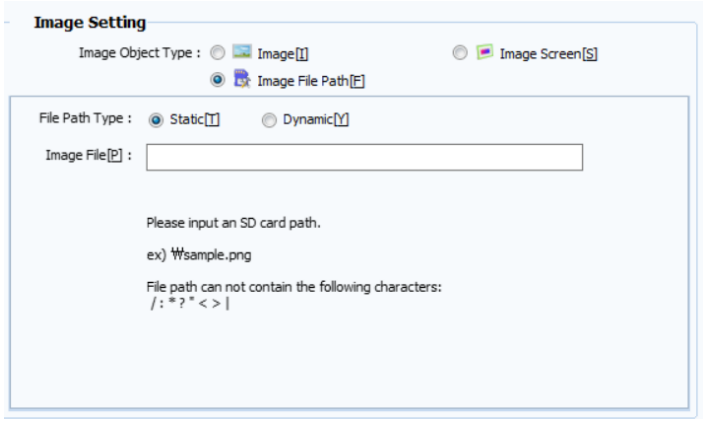
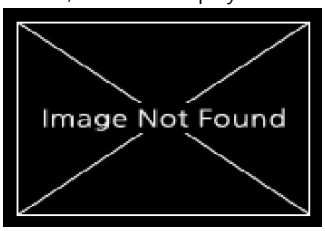
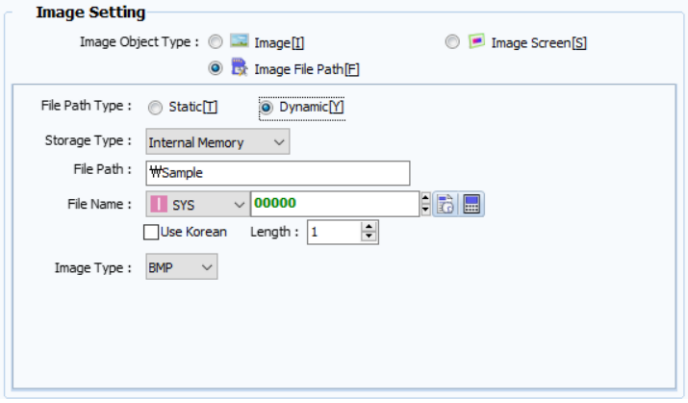
8.1.7 Image Setting: Image/Image Screen/Image File Path

The image types (kinds) available for registration are [Image/Image Screen/Image File Path].



[Pic. Image object type]

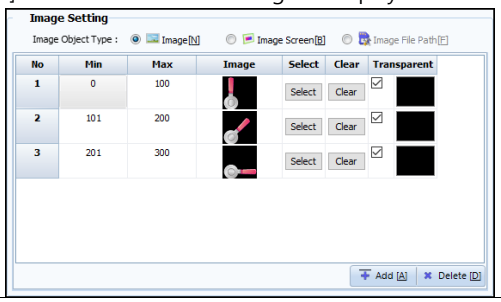
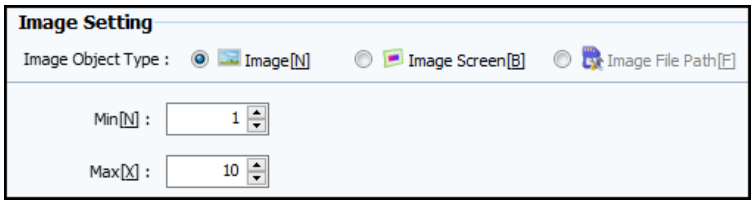
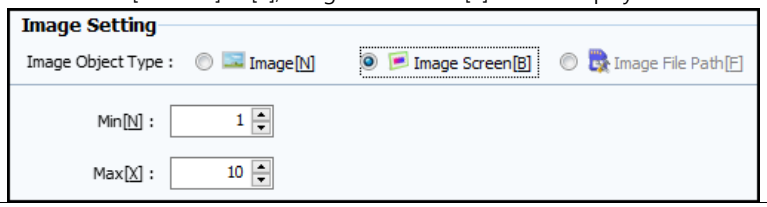
o	Image Setting	Description
1	Image	[Image] allows you to select images manually at [Select Image Dialog].  Run  button to display [Select Image Dialog] and import image. (For Select Image Dialog, please see Chapter 7.3 [Select Image Dialog].)  deletes the selected image.  is used to make the image background [Opaque]. The set color will appear opaque when registering the image. [File Name] displays the imported image's name. [W] is the width size (pixel) of the image and [H] is the height size (pixel) of the image. Click [Set to Original Size] button to register the image in the registered size to the screen regardless of the size of the image object appearing on the screen.
2	Image Screen	[Image Screen] is a type of screen.  (To see how to create an Image Screen, please see Chapter 5.1.4 [Create Image Screen].) Image Screen is where you can draw images other than [Action]. Therefore, when you register objects that include actions, below message will be displayed.  

		Registered Image Screen can be imported with [Select] button. Click [Remove] to disable the selection.
3	Image File Path	[Image File Path] is used to display saved images on screen.  If fixed, it will be as below. Save the image to display on screen in SD card. Make sure to input correct File Name and Extension in [File Path] as shown in the example. If the image is found in the SD card installed in the TOP, it will be displayed on screen. If SD card is not installed or the image is not found in the SD card, it will be displayed as below.  If you have removed SD card and re-installed it, restart TOP, or exit and restart TOP to recognize the image in the SD card.  If Indirect, it is as below. Select the path where the image is saved for [Storage Type]. (Internal Memory/SD Card/Ext Cam32/USB) [File Path] selects a specific save path to save a file. [File Name] selects the file with the same name to the ASCII value of the address saved in the set path. [Image Type] selects the file extension of the image. (BMP/JPG/PNG) If you use [Image File Path], [Word Case] and [Word Indirect] conditions are not supported in [Condition].

8.1.8 Image Condition: Not Used/Bit Case/Word Case/Word Indirect

Set the condition to display images. Select a condition from [Not /used/Bit Case/Word Case/Word Indirect].

No	Image Condition	Description
1	Not Used	The image set in [Image Setting] will be visible permanently.

2	Bit Case	Display image according to the ON/OFF data of the set Bit [Address]. It sets the image for [ON] and [OFF] individually.
3	Word Case	Display multiple images according to the range of the data of the set Word [Address]. Set the [Min] and [Max] of data and select an image to display when it falls within that range. 
4	Word Indirect	Display multiple images according to the range of the word [Address] set by [Word Indirect]. If the [Image Object Type] is [Image], register the image at [Project Manager]-[Global]-[Global Image] and display it on screen using the image [Number]. The [Data] of Word Address will be the [Number] of the Global Image to be displayed. Thus, if data of Word Address is [1], image no. [1] will be displayed. (To see how to register Global Image, please see Chapter 7.3.3 [Global Image].)  If the [Image Object Type] is [Image Screen], it will be displayed on screen using the Image Screen [Number]. The data of Word [Address] will be the number of Image Screen to be displayed. Thus, if data of Word [Address] is [1], Image Screen no. [1] will be displayed. 

8.1.9 **Shape Page**

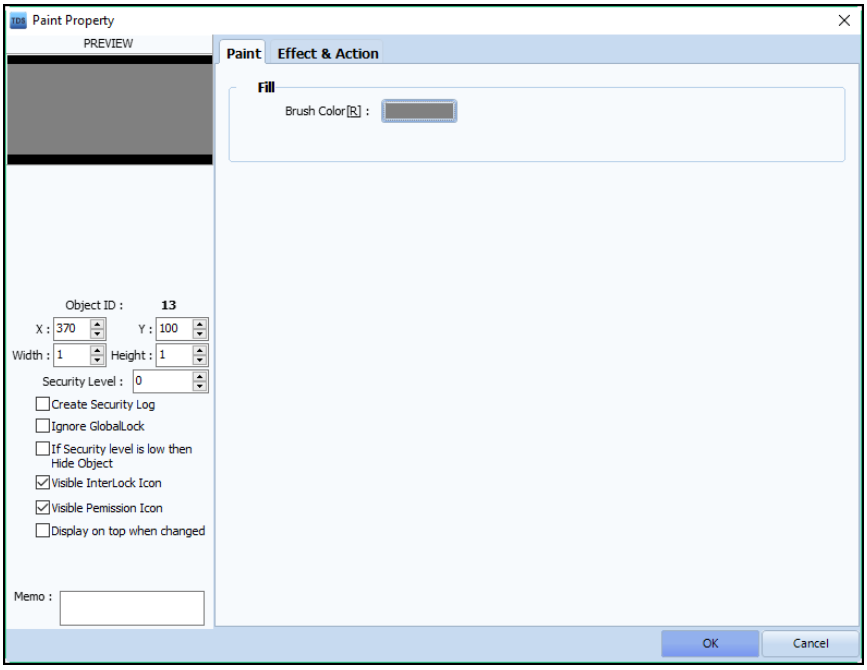
(1) Shadow

No	Position	Description
1	Shadow	Set the shadow of image. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Fill Object



Fill is the function that fills a color inside the enclosed area of a shape. Fill Object fills the color in the enclosed area at the registered position. Objects (Rectangle/Ellipse/Polygon) that have enclosed area have Fill option in their properties and therefore, there is no need to separately register a Fill Object.



[Pic. Fill Object]

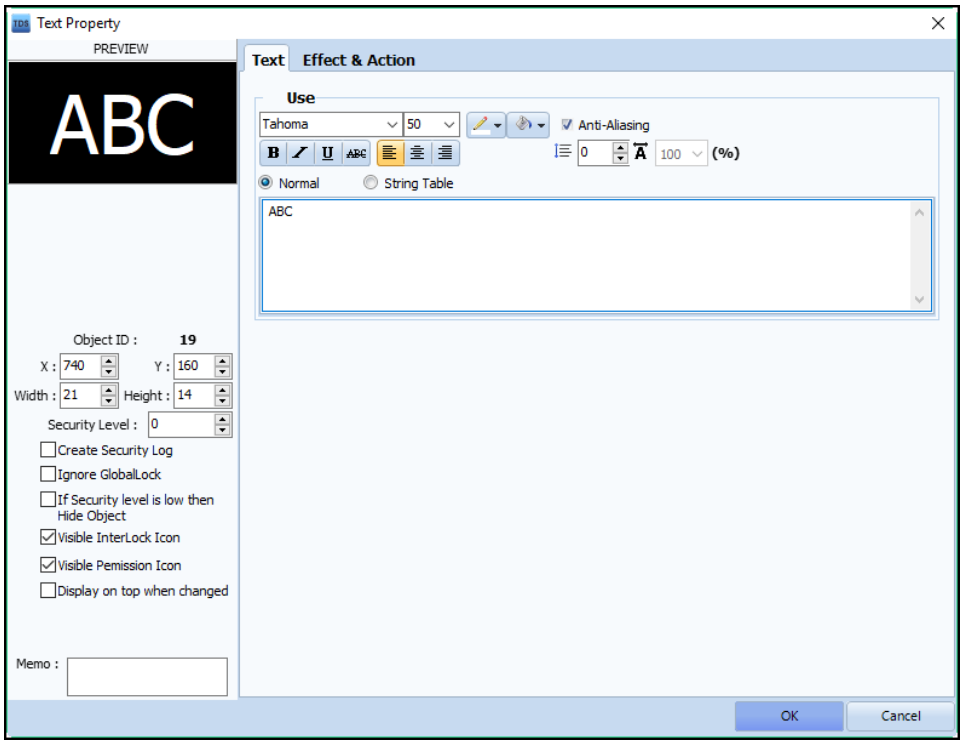
8.1.10 Fill Page

Select the color to use at [Fill Color].

Text Object



Register Text (String).



[Pic. Text Object]

8.1.11 Text Page

Enter string and set font.

No	Text	Description
1	Normal	Enter strings manually.
2	String Table	Import the strings registered at [Project]-[String]. (For String Table, please see Chapter 4.4 [String].)

No	Text		Description
1	Font Type		Set the font type.
2	Font Size		Set the font size.
3	Font Color		Set the color of the font.
			Set the background color of the text.
4	Anti-Aliasing		This function improves the font quality. It sharpens characters by smoothing the outer lines of characters when the font size grows bigger.
5	Edit Font	B	Give bold effect to the characters.
			Give Italics effect to the characters.
		U	Underline the characters.
		ABC	Adds strikethrough text formatting.
6	Align Font		Align texts to the left.
			Align texts to the center, horizontally.
			Align texts to the right.

7	Spacing	0	If using strings with more than two lines, set the Spacing. Place margin by the set pixel.
		100 (%)	This function stretches or contracts text horizontally. 100% is the original size. You may set it between [20-800%]. Some fonts support this function but some does not.

8.1.12 Shape Page

(1) Shadow

No	Position	Description
1	Shadow	Set the shadow of text. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

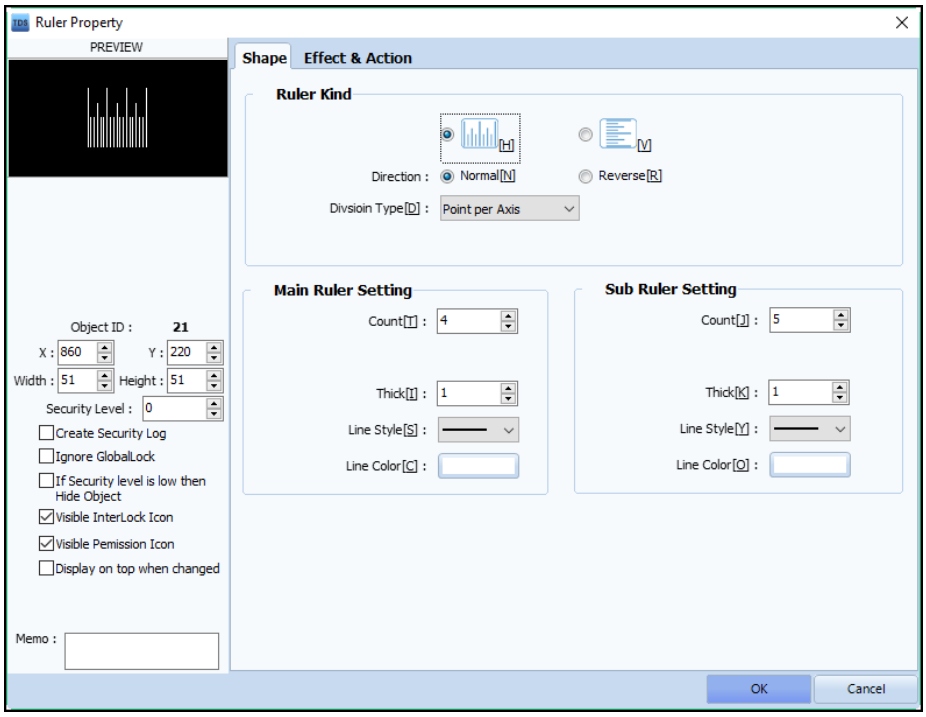
Grid Object



Register Grid. There are two types of grids: [Rect Grid] and [Circle Grid]. They are usually used to decorate graphs.

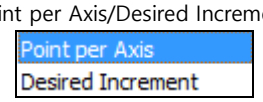
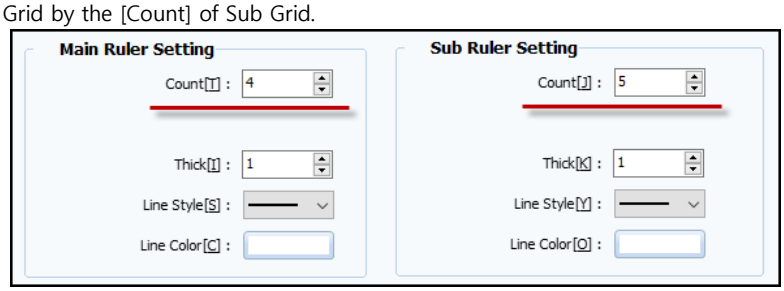
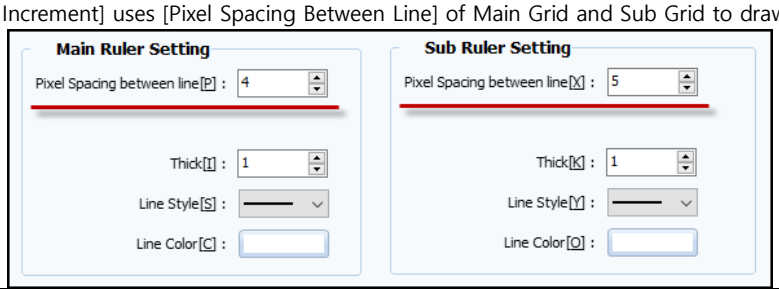
8.1.13 Rect Grid Object

Draw horizontal and vertical Rect Grids. The same method to drawing a Rectangle Object is applied. Select the position for the top left corner and drag to the desired size. Sub Grids will be drawn between each Main Grid.



[Pic. Rect Grid Object]

(1) Grid Kind

No	Grid	Description
1	Grid Kind	Choose from Horizontal Grid ([H]) and Vertical Grid ([V]).
2	Grid Direction	Choose the direction of Sub Grid from [Normal/Reverse]. Set whether the Sub Grid is positioned inside or outside the graph.
3	Division Type	Choose the Division Type from [Point per Axis/Desired Increment].  [Point per Axis] sets the [Count] of Main Grid and Sub Grid, displays Main Grid by dividing the total size of grid by the set count of Main Grid, and displays Sub Grid by dividing the total size of Main Grid by the [Count] of Sub Grid.  [Desired Increment] uses [Pixel Spacing Between Line] of Main Grid and Sub Grid to draw grids. 

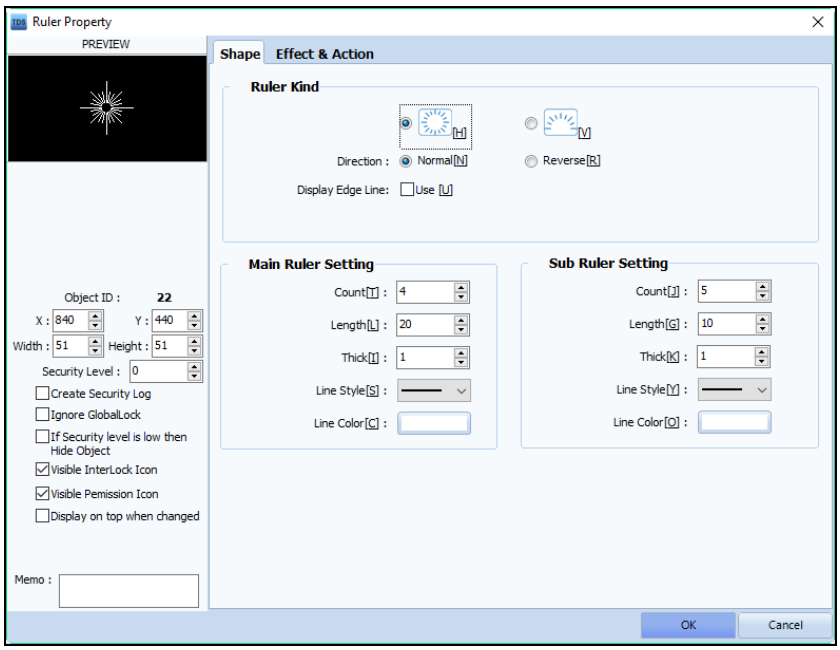
(2) Main Grid Setting/Sub Grid Setting

Set [Grid Thickness/Line Style/Line Color].

No	Grid	Description
1	Grid Thickness	Select the thickness of Grid line between 1-100 dot.
2	Line Style	Select the style of the grid line.
3	Line Color	Set the color of Grid line.
4	Shadow	Set the shadow of Rect Grid. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

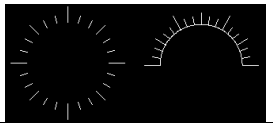
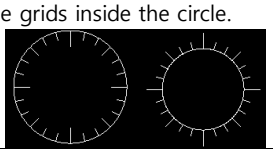
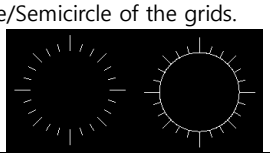
8.1.14 **Circle Grid Object**

Draw the grids of a Circle. The same method for drawing a Rectangle Object is applied. Select the position for the top left corner and drag to the desired size.



[Pic. Circle Grid Object]

(1) Grid Kind

No	Grid	Description
1	Grid Kind	Choose from [Circle Grid/Semicircle Grid]. 
2	Direction	Choose the direction of Sub Grid from [Normal/Reverse]. [Normal] draws the grids outside the circle, and [Reverse] draws the grids inside the circle. 
3	Display Edge Line	Draw the [Edge Line] of the Circle/Semicircle of the grids. 

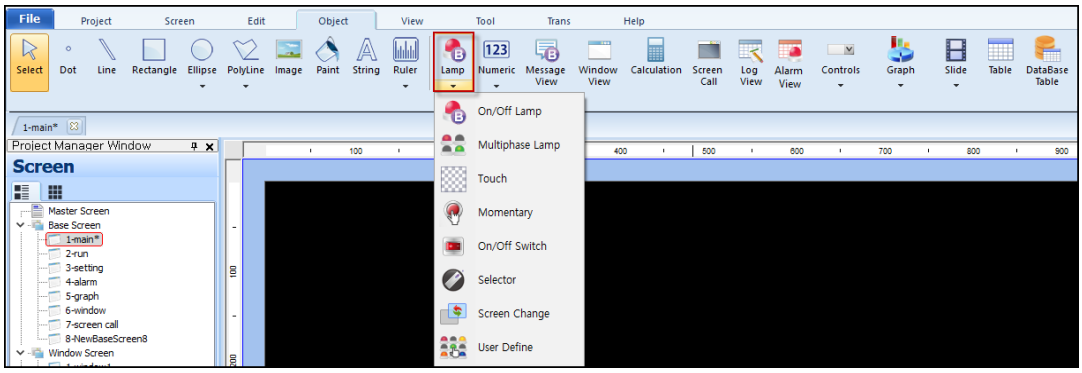
(2) Main Grid Setting/Sub Grid Setting

No	Grid	Description
1	Grid Count	Set the count of Main Grid and Sub Grids to go between the Main Grids.
2	Grid Length (Pixel)	Set the individual length of Main Grid and Sub Grid. (1-100)
3	Grid Thickness (Pixel)	Select the thickness of Grid line between 1-100 dot.
4	Line Style	Select the style of the grid line.
5	Line Color	Select the color of grid.
6	Shadow	Set the shadow of Circle Grid. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

CHAPTER 9 - Lamp Object



Lamp Object turns the light on according to the status of [Address]. You may add switch function to lamp object. There are [Bit Lamp/Multiphase Lamp/Touch/Momentary/Bit Switch/Selection Switch/ Change Screen/User Define] lamp objects according to their functions.



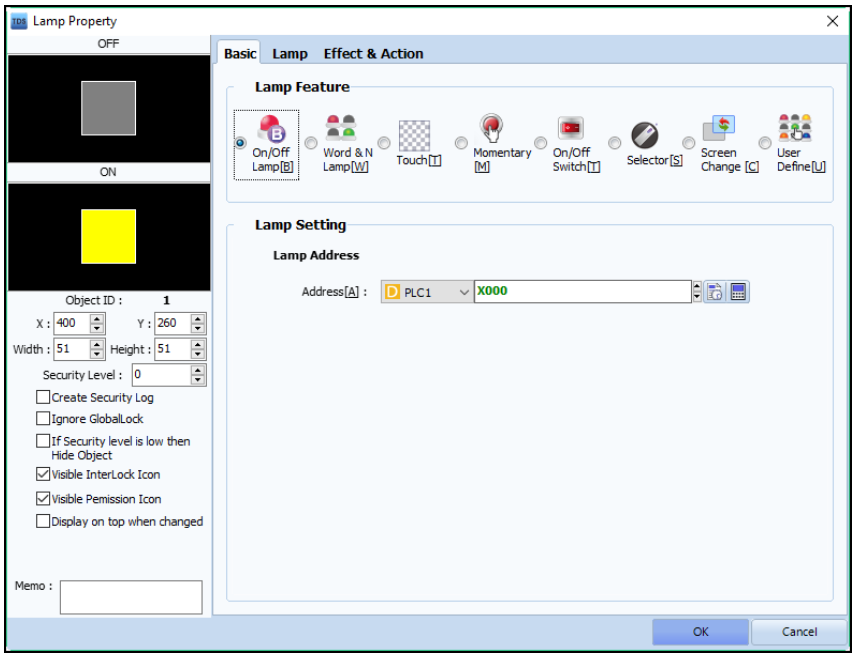
[Pic. Lamp Object]

You may select menus under [Object]-[Lamp] menu to set the type of Lamp Object.
Also, you may select and set [Lamp Feature] in [Default Page] of Lamp Object.

No	Lamp Feature	Description
1	Bit Lamp	Display lamp according to the On/Off status of the set Bit Address.
2	Multiphase Lamp	There are [Word Lamp/N-Bit Combination/N Bit Independent] according to its feature. [Word Lamp] displays lamp according to the set [Condition]. [N-Bit Combination] displays lamp according to the [On/Off Combination] of multiple Bit Addresses. [N-Bit Independent] displays lamp according to the Bit Address that is in On status from multiple Bit Addresses.
3	Touch	Create a button that runs Switch Action.
4	Momentary	Create a switch that is on when touched and off when untouched.
5	Bit Switch	Create On Switch/Off Switch/Reverse (Toggle) Switch.
6	Selector	Create a switch that turns Bit Address on in a sequence at every touch from multiple Bit Addresses.
7	Screen Change	Create a switch that changes Base Screen and a switch that pops up a set Window Screen.
8	User Define	Switch function is set at [Effect & Action] page, and select [Lamp] function from [Bit Lamp/Word Lamp/N-Bit Lamp/N-Bit Independent].

Bit Lamp

[Bit Lamp] displays the ON/OFF status of the set Bit Address.



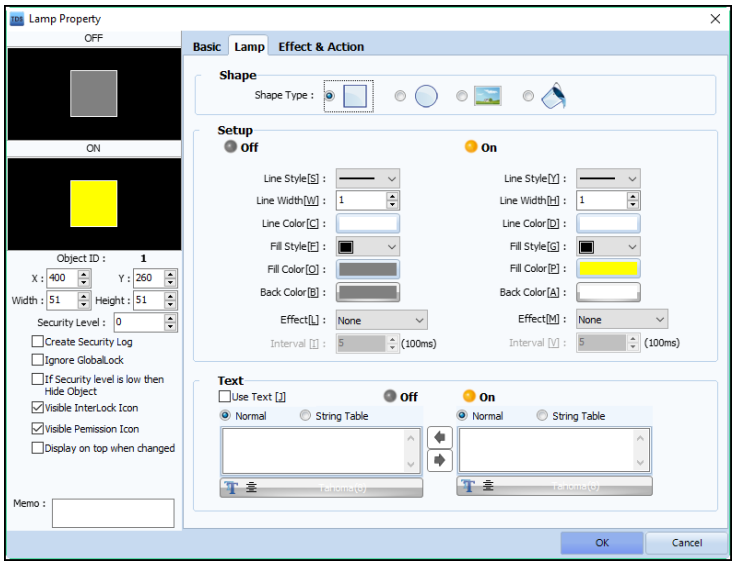
[Pic. Bit Lamp]

9.1.1 Default Page

Select [Bit Lamp] in [Lamp Feature]. Set the Bit Address to display as Lamp in [Lamp Setting].

9.1.2 Lamp Page

Set the Lamp Shape when data of the set Bit Address is [On/Off].



[Pic. Lamp Page]

▶ Choose [Shape Type] from [Rectangle/Ellipse/3D Button/Image/Image Screen/Fill Enclosed Area].

(1) If Shape Type is [Rectangle/Ellipse]

If Shape Type is [Rectangle/Ellipse], the setup method is the same. Configure [Line Property/Line Width/Line Color] and set [Fill Property/Fill Color/Back Color/Effect] for [Fill].

No	Rectangle/Circle	Description
1	Line Style	Select the style of the outer line of a shape. 
2	Line Width	Set the width of the outer line of shape. The line width can be set from 1 pixel to 10 pixels.
3	Line Color	Set the color of the outer line of a shape.
4	Fill Style	Select the pattern to fill the inside of a shape. 
5	Fill Color	Set the color to fill the black part of the pattern selected in [Fill Style].
6	Back Color	Set the color to fill the white part of the pattern selected in [Fill Style].
7	Effect	Set special effects in lamp. (None/Blink/Hide/Color Inversion). *Blink gives the blinking effect by a set interval.

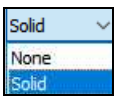
(2) If Shape Type is [3D Button]

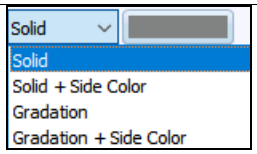
If [3D Button] has been selected as the Shape Type, the setup method is the same. Set [Line Style/Line Width] for Line and set [Fill Type/Gradation/Side Color/Side Size/Effect] for [Fill].





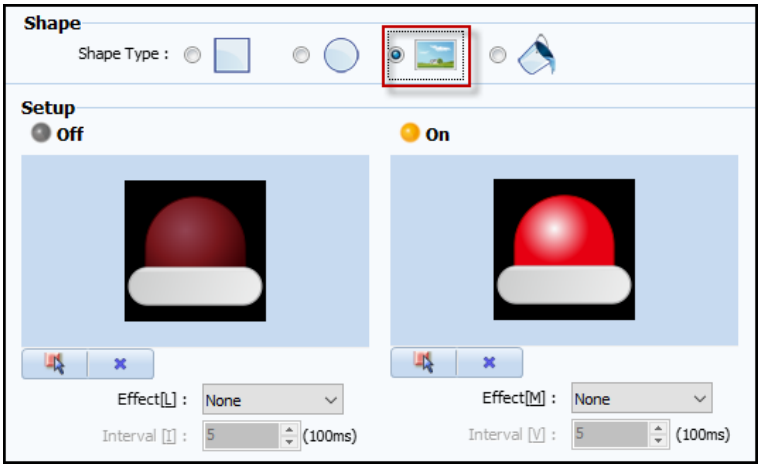
[Pic. 3D Button Page]

No	3D Button	Description
1	Line Style	Select the style of the line of a shape.  [None] sets no line style. [Solid] sets the line style in 3D.
2	Line Width	Set the width of the line of shape. The line width can be set from 1 pixel to 10 pixels.
3	Fill Type	Set the color to fill a shape.

		 [Solid] fills a 3D Button with one shape. [Solid + Side Color] sets the center and sides of a 3D Button separately. [Gradation] applies gradation effect to a 3D Button. [Gradation + Side Color] sets the center and sides of a 3D Button separately and applies gradation effect. Select the center color of a 3D Button with [Color].
4	Gradation	Choose color and direction to give to the gradation of a shape.
5	Side color	Select the shape's side color.
6	Side Size	Select the percentage (%) of the side size of a shape.
7	Effect	Set special effects in lamp. (None/Blink/Hide/Color Inversion). *Blink gives the blinking effect by a set interval.

(3) If Shape Type is [Image]

Select Image as the lamp shape.



[Pic. If Shape Type is Image]

No	Image	Description
1		It allows to set the image by importing Select Image Dialog. (Please see Chapter 7.3 to see how to set Select Image Dialog.)
2		Cancel the selected image in Select Image Dialog.
3		It is set to make the background of the selected image transparent. Make the set color opaque in the image.
4	Effect	Set special effects in lamp. (None/Blink/Hide/Color Inversion). *Blink gives the blinking effect by a set interval.

(4) If Shape Type is [Image Screen].

Choose Image Screen as the shape of Lamp. This function imports a screen that is registered to Image Screen.



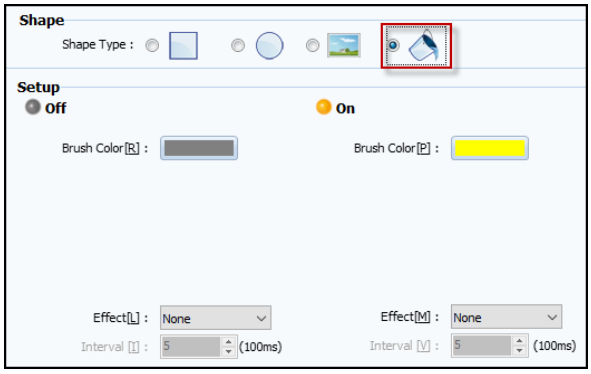
[Pic. If Shape Type is Image Screen]

No	Image Screen	Description
1	Select	Import Select Image Screen Dialog to present Image Screen selection options.
2	Clear	Cancel the selected image screen.
3	Effect	Set special effects in lamp. (None/Blink/Hide/Color Inversion). *Blink gives the blinking effect by a set interval.

(5) If Shape Type is [Enclosed Area].

Select Fill Enclosed Area for the Lamp Shape.

Fill Enclosed Area is the lamp that fills an existing enclosed area.



[Pic. If Shape Type is Fill Enclosed Area]

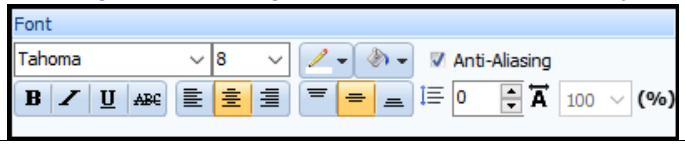
No	Enclosed Area	Description
1	Brush Color	Set the color to fill when ON/OFF.
2	Effect	Set special effects in lamp. (None/Blink/Hide/Color Inversion). *Blink gives the blinking effect by a set interval.

▶ String adds text above a lamp.

Check [Use Text] to configure On/Off String settings individually.

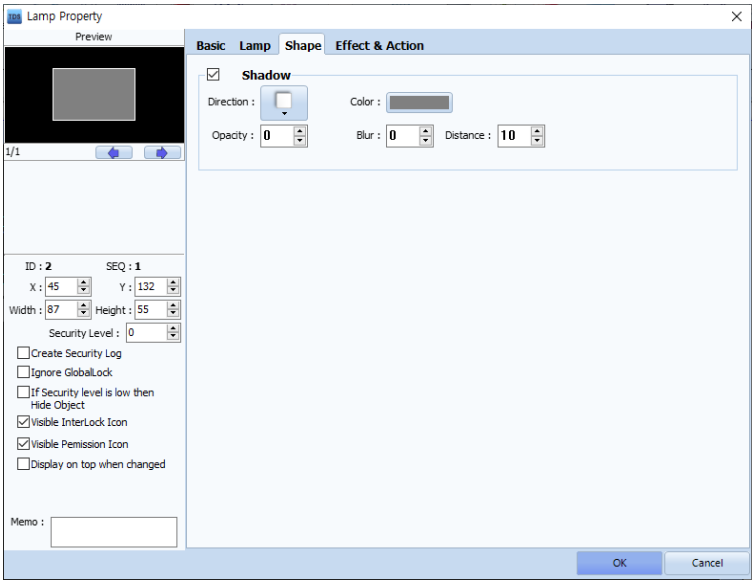


[Pic. String]

No	String	Description
1	Normal	Enter strings manually.
2	String Table	Select strings registered in [Project]-[String].
3		Copy the On String to the Off String.
4		Copy of Off String to the On String.
5	Font Setting	Set the font of String. (For Font settings, please see Chapter 8.10 [Text Object].) 

9.1.3 Shape Page

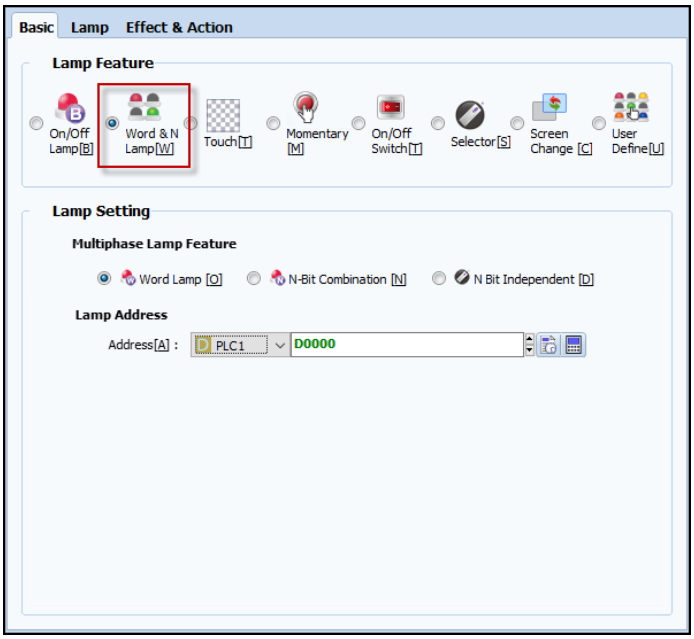
You may set the shadow of the object in Shape Page.



No	Shadow	Description
1	Shadow	Set the shadow of Bit Lamp. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Multiphase Lamp

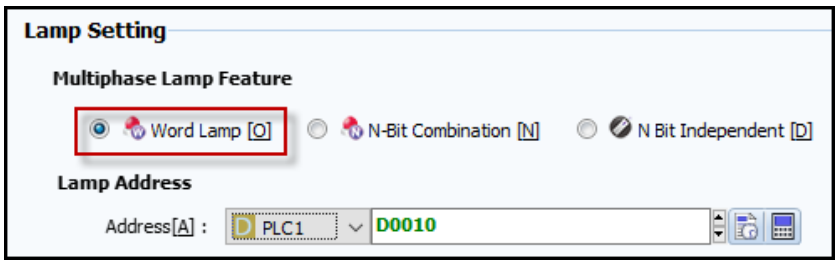
[Multiphase Lamp] refers to the lamp that can display various states according to its condition. There are [Word Lamp/N-Bit Combination/N-Bit Independent] for [Multiphase Lamp Feature].



[Pic. Multiphase Lamp]

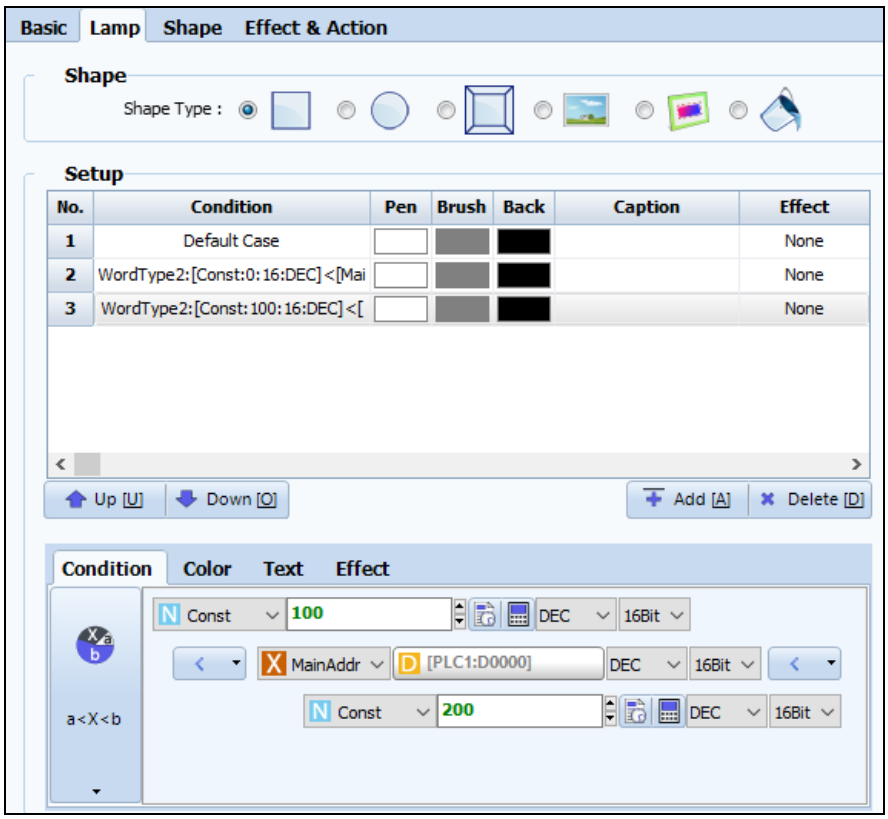
9.1.4 Word Lamp

[Word Lamp] displays lamps according to the set [Condition]. Generally, it uses [Data Range] of Word Address as the condition.



[Pic. Word Lamp]

Set [Word Lamp] at [Multiphase Lamp Feature] and set Word (16 Bit) Address to [Lamp Address]. Set the lamp to be displayed according to the data range of the address set at [Lamp Address] in [Lamp] page.



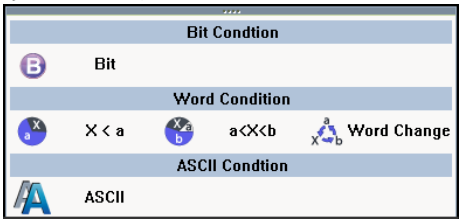
[Pic. Lamp Page]

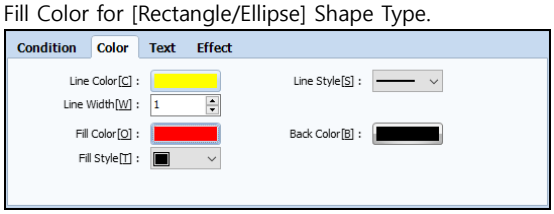
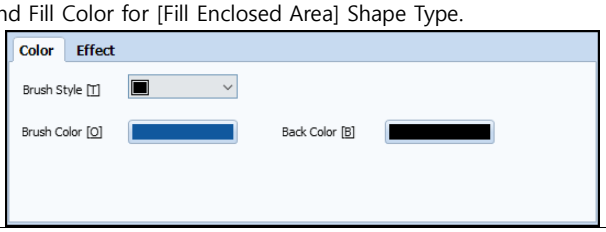
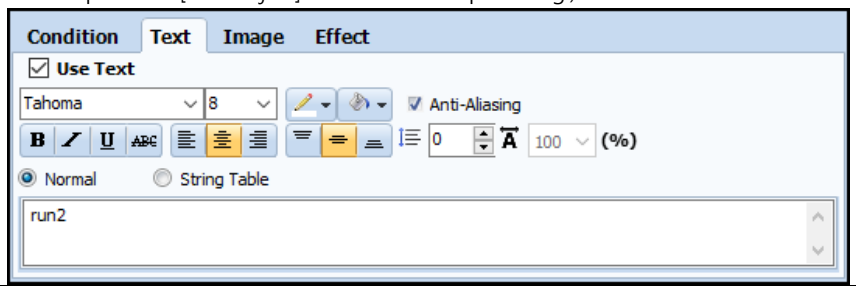
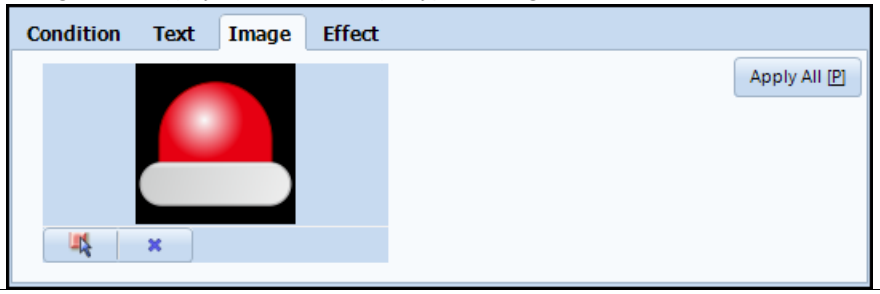
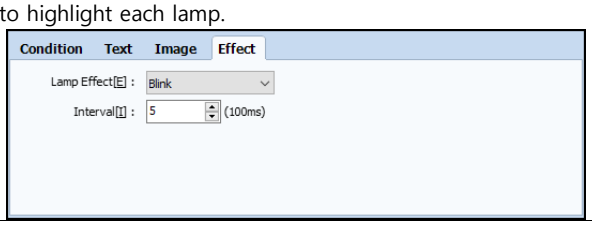
▶ Choose the Shape Type for [Shape] from [Rectangle/Ellipse/Image/Fill Enclosed Area].
The shape of lamp set according to the Shape Type is the same to Bit Lamp, so please see Chapter 9.1.2 for reference.

▶ Press [Add] button by the number of lamps to be displayed according to the [Condition] at [Setting] to create lamps.
Lamp no. 1 is the [Default Case] and it will be displayed when no condition is met in the Lamp List.

No	Lamp List Button	Description
1	Add	Add a Lamp. Set the [Condition/Color/String/Image/Effect] of the added lamp at the bottom.
2	Delete	Delete the selected lamp.
3	Up	Move the selected lamp up by one list.
4	Down	Move the selected lamp down by one list.

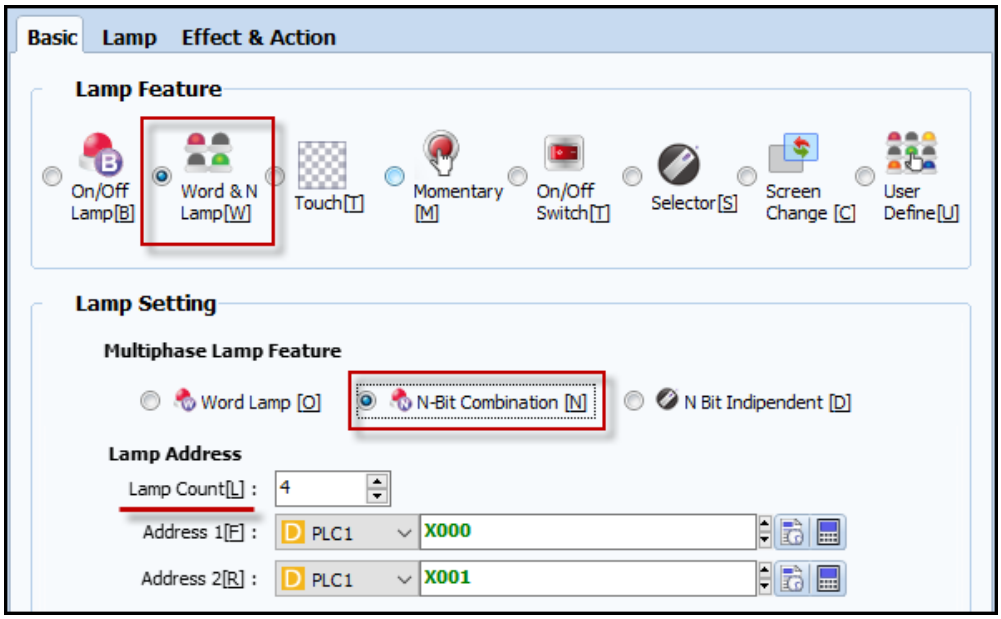
▶ Each lamp can be set with its [Condition/Color/String/Image/Effect].

No	Setting	Description
1	Condition	Set the [Condition] to display the set lamp.  You may configure [Bit Condition], [X<a, a<X<b, Word Change], and [ASCII Condition] settings. (Please see Chapter 7.7 [Condition Page Setting] to learn how to set conditions.)

2	Color	Set the Line Style and Fill Color for [Rectangle/Ellipse] Shape Type.  Set the Line Style and Fill Color for [3D Button] Shape Type.  Set the Line Style and Fill Color for [Fill Enclosed Area] Shape Type. 
3	String	Draft the String to add above the lamp. (Please see Chapter 8.10 [Text Object] to see how to input String.) 
4	Image	Set the image to be displayed when the Shape Type is [Image]. 
5	Effect	You may set effects to highlight each lamp. 

9.1.5 N-Bit Combination

[N-Bit Combination] displays a lamp according to the [On/Off Combination] of multiple Bit Addresses.



[Pic. Default Page of N-Bit Combination]

▶ Set [Multiphase Lamp Feature] as [N-Bit Combination]. Set the [Lamp Count] and [Address] to be displayed in [Lamp Address].

Maximum [Lamp Count] available for display is 16. As this function displays the On/Off combination of address through the Lamp, one Bit Address will have two On and Off combinations. Therefore, one address may display two lamps. With two addresses, up to four lamps can be displayed. With three addresses, up to 8 lamps, and with four addresses, up to 16 lamps.

Set [Lamp Count] to create [Address 1/Address 2/Address 3/Address 4] according to the required Address Count.

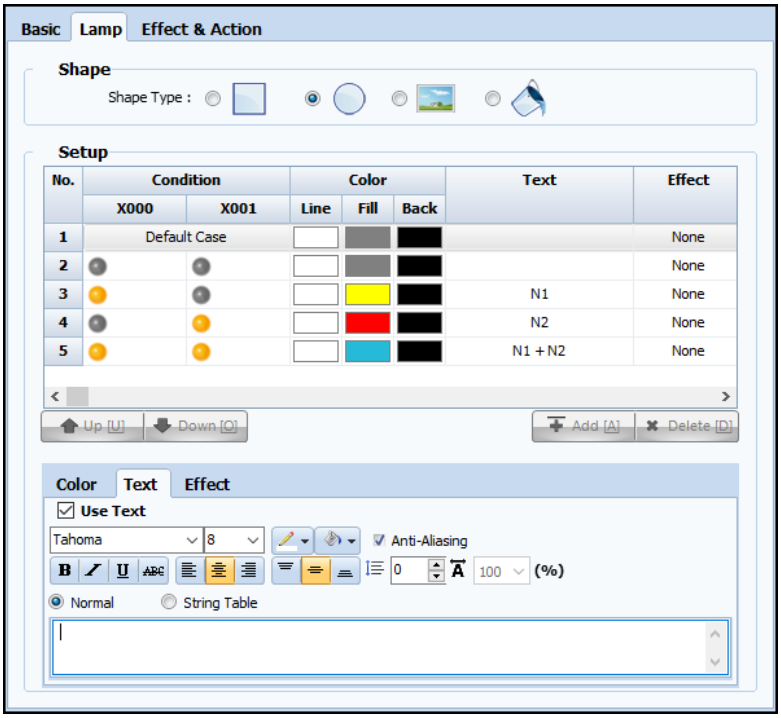
▶ Set the lamp that fits the On/Off combination of [Address 1/Address 2] that have been set at [Lamp Page].

It automatically creates a list in [Setting] according to the [Address] set in the Default Page.

mark means that this address is on, and mark means that this address is off.

Set lamps for the state in which both [Address 1] and [Address 2] are off, on, or one of them are on.

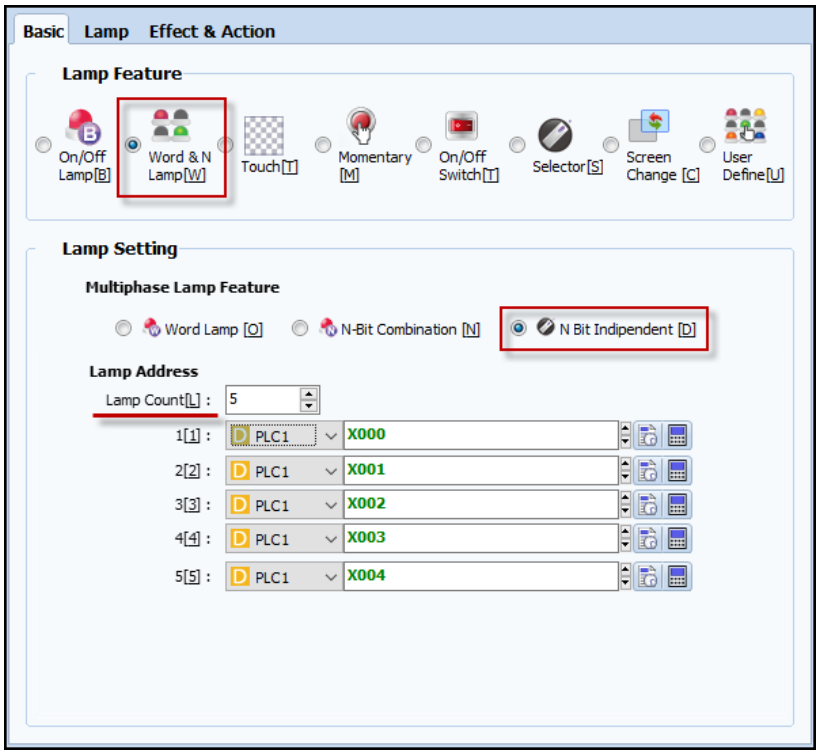
For detailed configuration of a lamp according to [Shape Type], please see Chapter 9.1.2 [Bit Lamp]-[Lamp Page].



[Pic. Lamp Page of N-Bit Combination]

9.1.6 N -Bit Independent

[N-Bit Independent] displays a lamp according to the Bit Address that is in On status from multiple Bit Addresses.



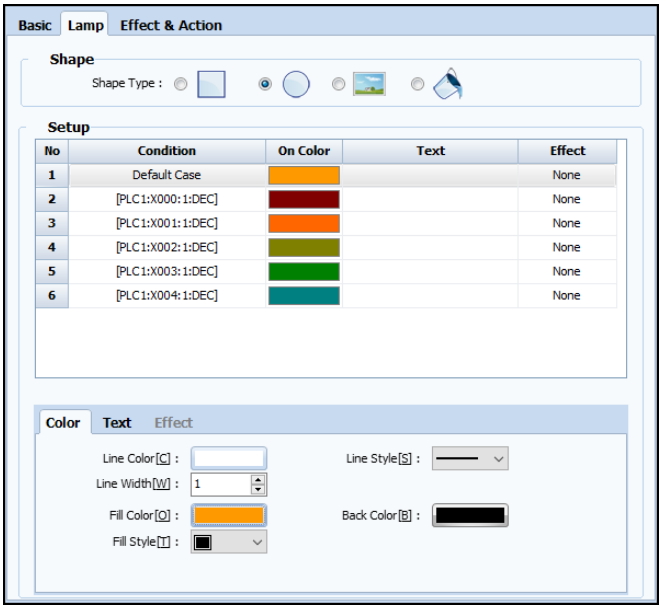
[Pic. Default Page of N-Bit Independent]

▶ Set [Multiphase Lamp Feature] as [N-Bit Independent].

Setting the lamp count in [Lamp Address] will create Address Input Window by the number of the set counts. The Max Lamp Count available for setup is 8. It displays the lamp of the Bit Address that is on

from the set Bit Addresses.

▶ Set Lamp that corresponds to each Bit Address.
(For detailed lamp settings according to [Shape Type], please see Chapter 9.1.2 [Bit Lamp]-[Lamp Page].)

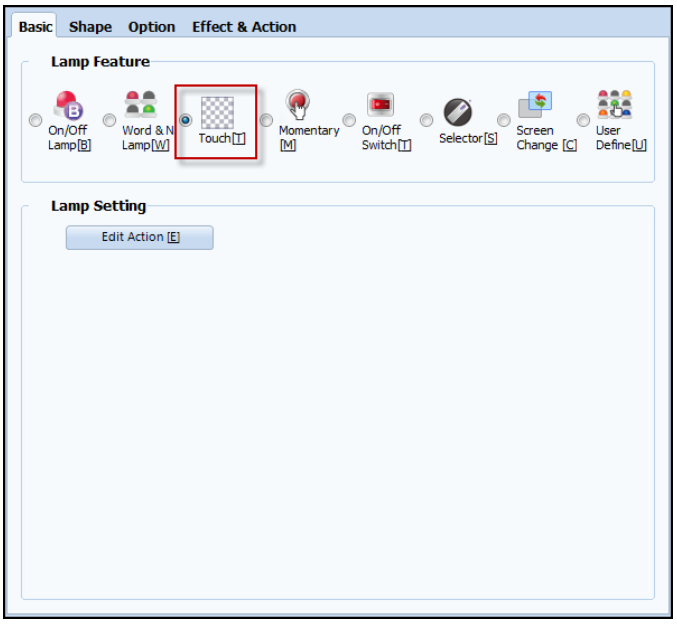


[Pic. Individual lamp page for N bits]

There is an order for the set Bit Addresses according to the set [Lamp Count]. If there is 1 Lamp Address that is ON, the order does not matter. However, if there are more than 2 of them, the top lamp is displayed first according to the order.
To display lower numbered lamps, all top lamps must be off.

Touch

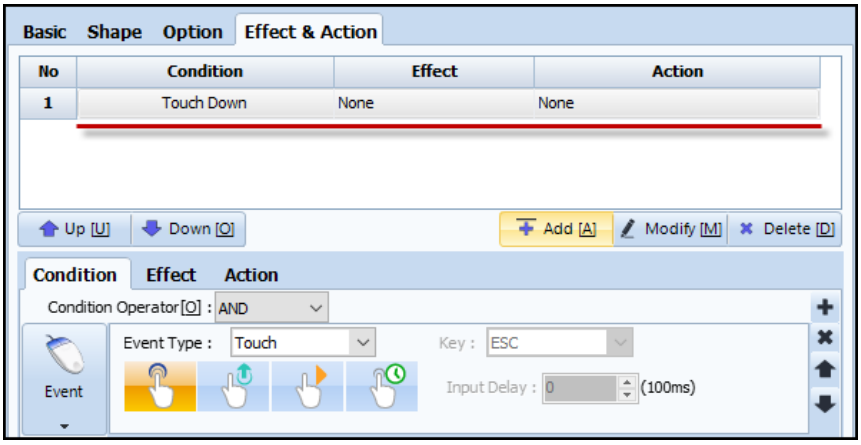
Touch Objects are objects that perform action through Touch.



[Pic. Touch Object]

9.1.7 Default Page

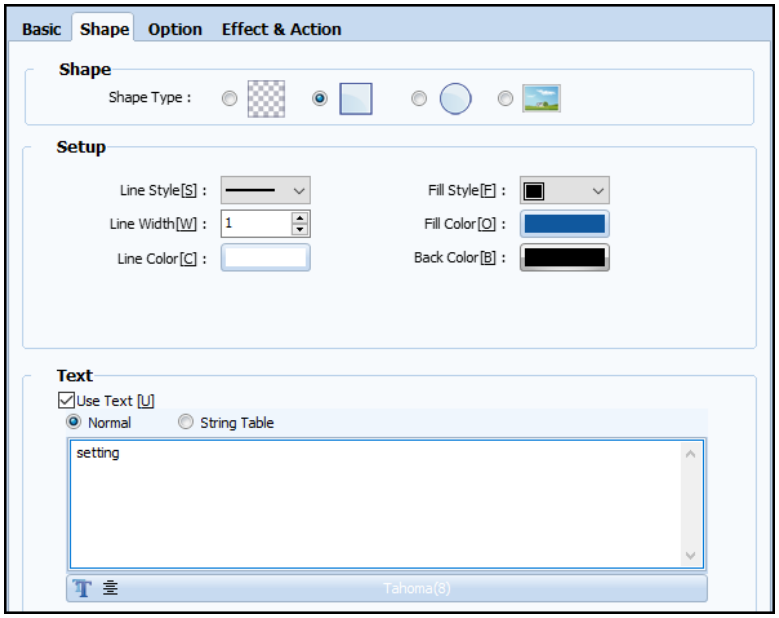
[Lamp Feature] is set to [Touch]. It may be changed to another feature. Click [Switch Action Setting] in [Property Setting], you will be directed to [Effect & Action] page to set actions. The [Condition] in [Effect & Action] is already added as [Touch Down], you will only need to modify [Effect/Action] to use.



[Pic. Effect & Action page]

9.1.8 Shape Page

Set the shape of touch object.



[Pic. Shape page]

(1) Shape

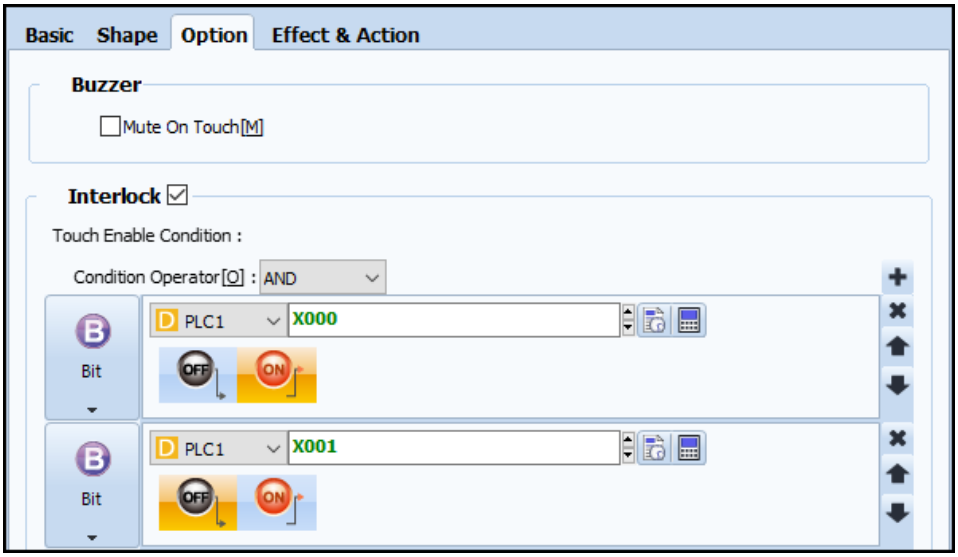
▶ Choose [Shape Type] from [None/Rectangle/Ellipse/3D Button/Image/Image Screen].

No Shape ( ) literally means that there is no shape of Touch Object.

The rest of Shape Types are the same as Bit Lamp.

9.1.9 Touch Option Page

Set the Buzzer Sound and Interlock of Touch Object.



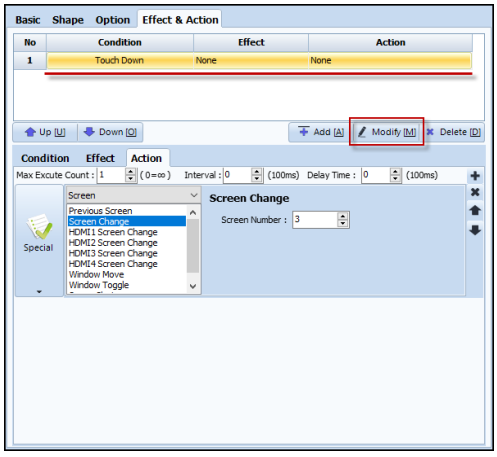
[Pic. Touch Option of Touch Object]

No	Property Page	Description
1	Buzzer	Set the use of Touch Sound. Touch Sound is a short Buzzer sound of 'beep' that is made when the Touch Object is touched. Check [No Touch Sound] to not make the sound.
2	Interlock	Set the Interlock of Touch Object. Check [Interlock] and set [Touch Enable Condition], then when the [Touch Enable Condition] is met and the condition of "Effect & Action" is true, Touch Object runs. If those conditions are not met, it does not run. Touch Enable Condition can be added with ✚ button and you may set up to 8 of them. Set the Operate Condition from [AND/OR]. With [AND], it becomes true when all [Touch Enable Condition] is met. With [OR], it becomes true when more than one [Touch Enable Condition] is met.

9.1.10 Effect & Action Page

Set Effect & Action. Click [Switch Action Setting] button in [Default] page to move to [Effect & Action] page. [Condition] of Touch Object is added as [Touch Down], so you need to set and edit [Effect/Action] only.

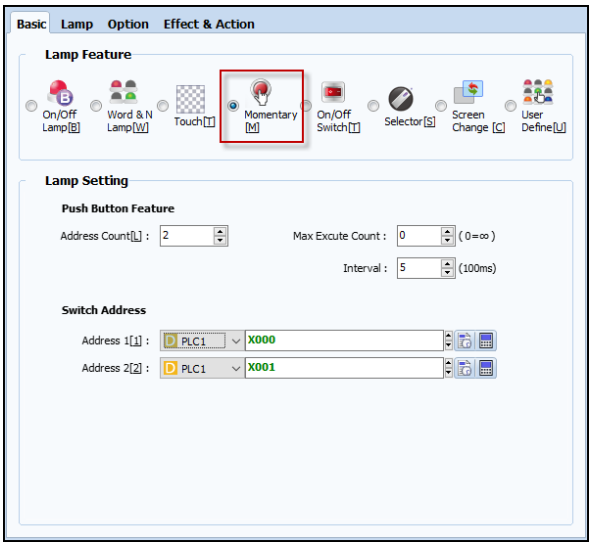
(To see how to set Effect & Action Page, please see Chapter 7.6 [Effect & Action Page Setup].)



[Pic. Effect & Action page]

Momentary

Momentary is an action that makes the value of the set Bit Address ON while the button is being touched and OFF when untouched.



[Pic. Momentary]

No	Property Page	Description
1	Basic	Set the Momentary address.
2	Lamp	Set the shape of Momentary Object in its On/Off state. (The content of this page is the same as Bit Lamp Object. Please see Chapter 9.1.2.)
3	Touch Option	Set the Buzzer Sound and Interlock. (The content of this page is the same with Touch Object. Please see Chapter 9.3.3.)
4	Effect & Action	You can add [Effect & Action] other than Momentary function. (For [Effect & Action], please see Chapter 7.6.)

9.1.11 Default Page

Set [Momentary] in [Lamp Feature]. You may set up to 5 [Address Count] in [Property Setting]. Bit Addresses will be added to [Switch Address] by the set [Address Count]. While the button is being pressed, the set Bit Address will be ON. When it is not pressed, it will be OFF.

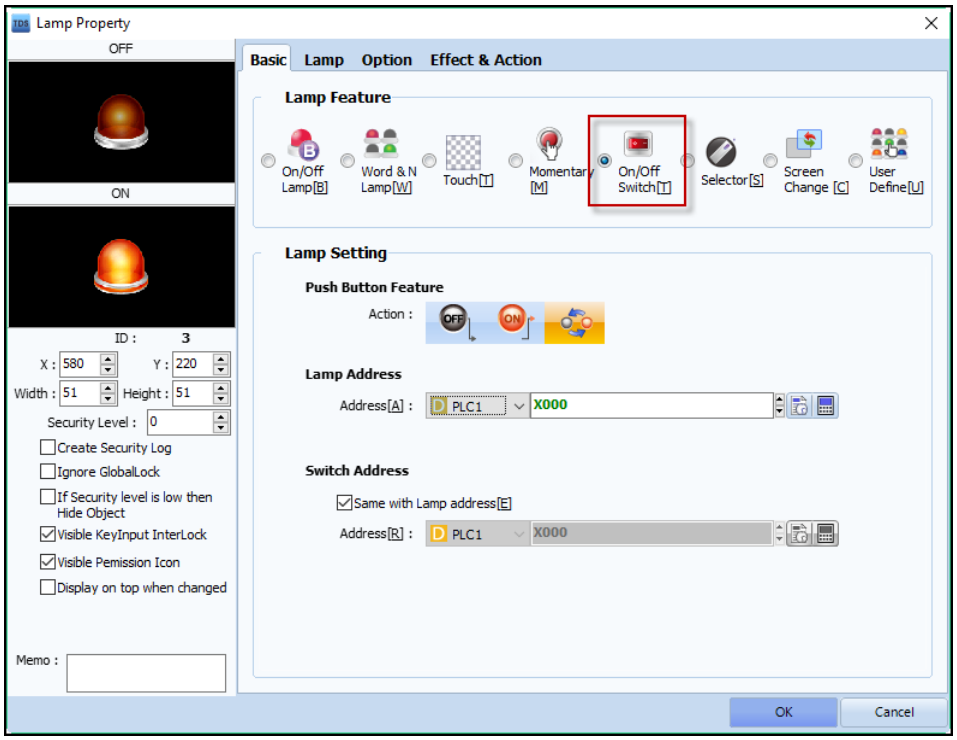
▶ When [Max Execute Count] is [1], as soon as the button is pressed, it writes ON to Bit Address, and writes OFF when it is untouched. Thus, while the button is being pressed, data of the address does not turn back ON even if it turns OFF by PLC program, etc.

▶ If [Max Execute Count] is [2] or more, it writes ON as soon as the button is pressed and writes ON again by [Max Execute Count] at every set [Interval]. Untouch to write OFF.

▶ When [Max Execute Count] is [0], as soon as the button is pressed, it writes ON, and writes OFF when it is untouched. Thus, while the button is being pressed, data of the address does not turn back ON even if it turns OFF by PLC program, etc.

Bit Switch

Bit Switch is ON/OFF switch that sets [On/Off/Reverse] action to Bit Address.



[Pic. ON/OFF Switch]

No	Property Page	Description
1	Basic	Set the property of Bit Switch.
2	Lamp	Set the shape of Bit Switch in its On/Off state. (The content of this page is the same as Bit Lamp Object. Please see Chapter 9.1.2.)
3	Touch Option	Set the Buzzer Sound and Interlock. (The content of this page is the same with Touch Object. Please see Chapter 9.3.3.)
4	Effect & Action	You can add [Effect & Action] other than the Bit Switch function. (For [Effect & Action], please see Chapter 7.6.)

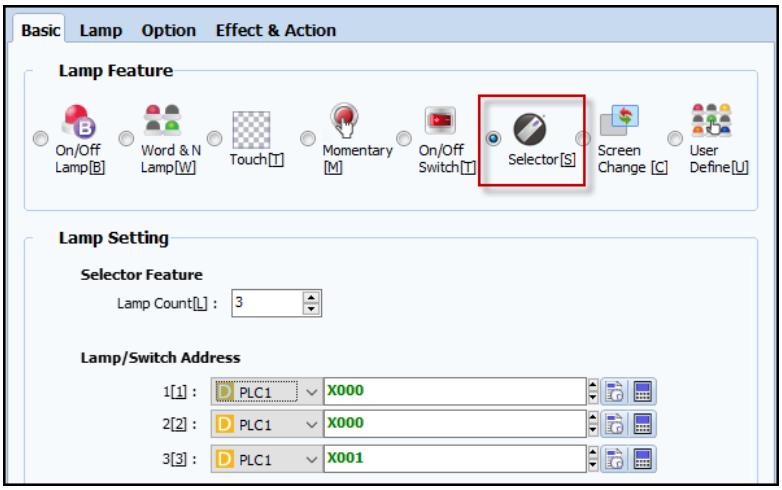
9.1.12 Default Page

Set [Bit Switch] in [Lamp Feature].

No	Property	Description
1	Push Button Feature	Select the switch action from [On/Off/Reverse].  is Off action. Click this button to use Off to Bit Address.  is On action. Click this button to use On to Bit Address.  is Reverse action. When data of Bit Address is On, it uses Off, and when it is Off, it uses On.
2	Lamp Address	Set the Lamp Address to display On/Off status.
3	Switch Address	Set the Bit Address to control according to the set action. Check [Same with Lamp Address], the address will be set the same address as the Lamp Address.

Selector

Selector is an action that sets multiple Bit Addresses and allows only one of them to be ON.



[Pic. Selector]

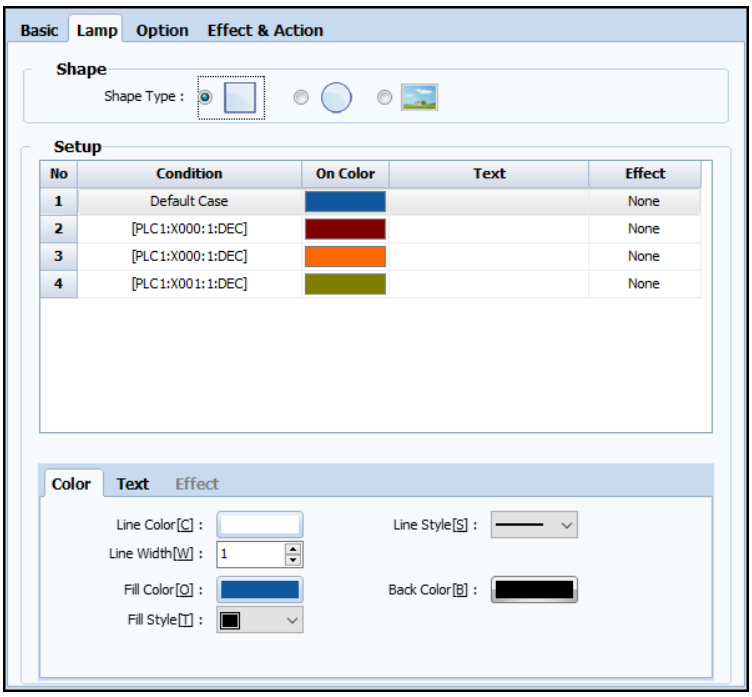
No	Property Page	Description
1	Basic	Set the address of Selector address.
2	Lamp	Set the Shape of Selector. (The content of this page is the same as Bit Lamp Object. Please see Chapter 9.1.2.)
3	Touch Option	Set the Buzzer Sound and Interlock. (The content of this page is the same with Touch Object. Please see Chapter 9.3.3.)
4	Effect & Action	You can add [Effect & Action] other than Selector function. (For [Effect & Action], please see Chapter 7.6.)

9.1.13 Default Page

Set to [Selector] at [Lamp Feature]. Set the [Lamp Count] and [Lamp & Switch Address] at [Property Setting]. Maximum [Lamp Count] available for setup is 8. Bit Addresses will be added to [Lamp & Switch] by the set [Lamp Count]. Every time the Selector is touched, the Bit Address set to [Lamp & Switch Address] will be turned on in a sequence, and all the other Bit Addresses will be turned off. After the last number is turned on, Bit Address no. 1 will be turned on.

9.1.14 Lamp Page

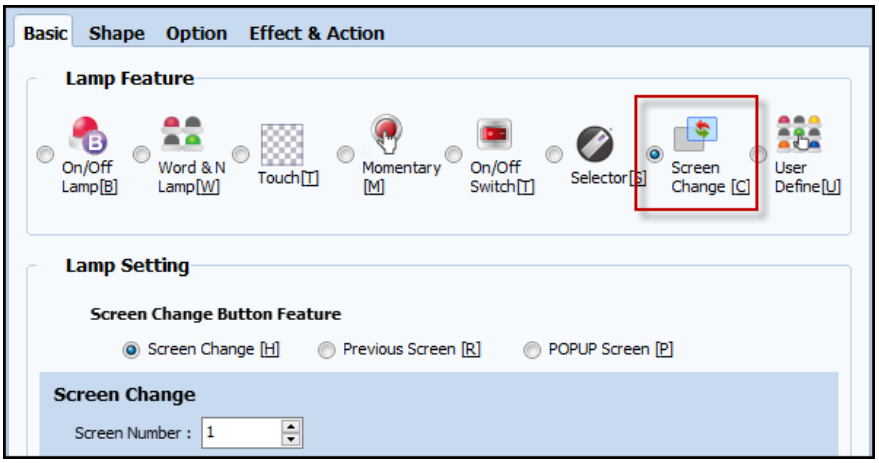
Lamp List will be displayed on [Setting] according to the Lamp Count and Address set in Default Page. Select each Lamp from the list and set the shape and string of Lamp at the bottom.
Shape and String of Selector is the same with Bit Lamp Setting (Chapter 9.1.2).



[Pic. Lamp Setting of Selector]

Screen Change

Screen Change Object performs action that moves Base Screen or pops up Window Screen.

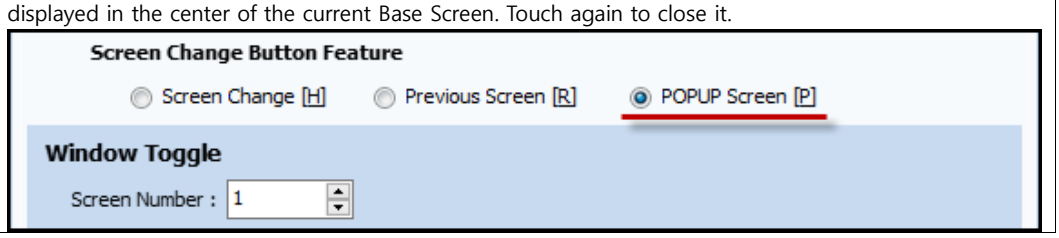


[Pic. Screen Change]

No	Property Page	Description
1	Basic	Set Screen Change Action.
2	Shape	Set the shape of the Screen Change button. (The content of this page is the same with Touch Object. Please see Chapter 9.1.2.)
3	Touch Option	Set the Buzzer Sound and Interlock. (The content of this page is the same with Touch Object. Please see Chapter 9.3.3.)
4	Effect & Action	You can add [Effect & Action] other than Screen Change function. (For [Effect & Action], please see Chapter 7.6.)

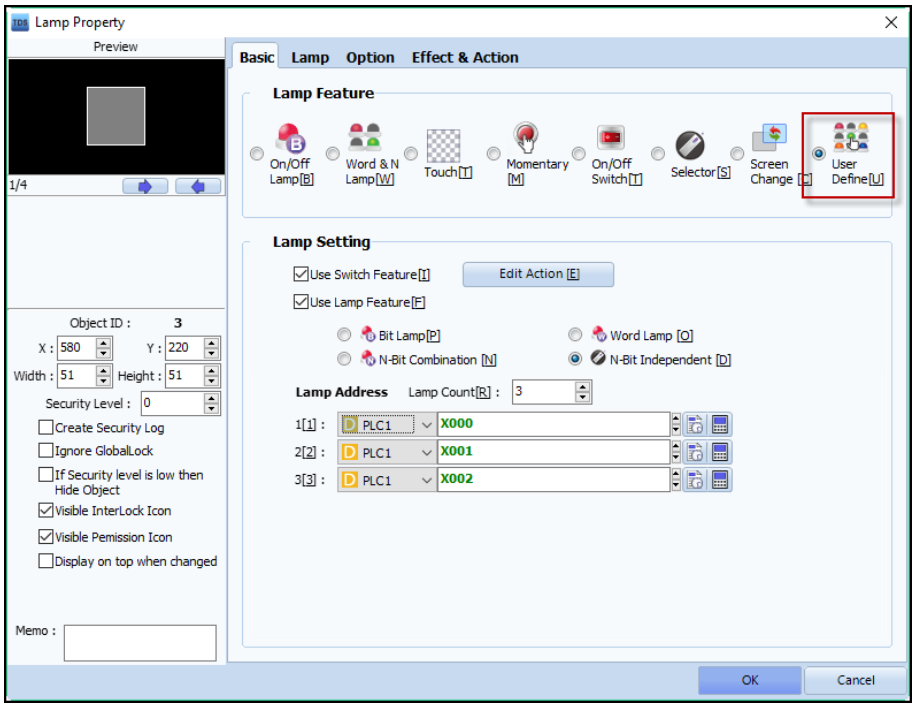
9.1.15 Default Page

Set [Screen Change] at [Lamp Feature]. Choose [Screen Change Button Feature] from [Screen Change/Previous Screen/Window Popup].

No	Property	Description
1	Screen Change [H]	Touch the button to move to the set [Screen Number].
2	Previous Screen [R]	Touch the button to go back to the previous screen.
3	Popup Screen[P]	Touch the button to popup the Window Screen of the set [Screen Number]. Window Screen will be displayed in the center of the current Base Screen. Touch again to close it. 

User Define

With User Define, you may select [Switch] and [Lamp] to your preference to use.



[Pic. User Define Object]

No	Property Page	Description
1	Basic	Set the functions of [Switch] and [Lamp] and set the Lamp Address.
2	Lamp	Set the shape of Lamp according to the Lamp function selected in Default Page.
3	Touch Option	Set the Buzzer Sound and Interlock. (The content of this page is the same with Touch Object. Please see Chapter 9.3.3.)
4	Effect & Action	You can add [Effect & Action] other than Screen Change function. (The content of this page is the same with Touch Object. Please see Chapter 7.6)

9.1.16 **Default Page**

Set [User Define] for [Lamp Feature].

Set the functions of [Switch] and [Lamp] in [Property Setting] and set the Lamp Address.

Check [Use Switch Function] to activate [Switch Action Setting] button. Click the button and you will be moved to [Effect & Action] page to set actions according to [Condition]. You may also use Lamp function only without checking [Use Switch Function].

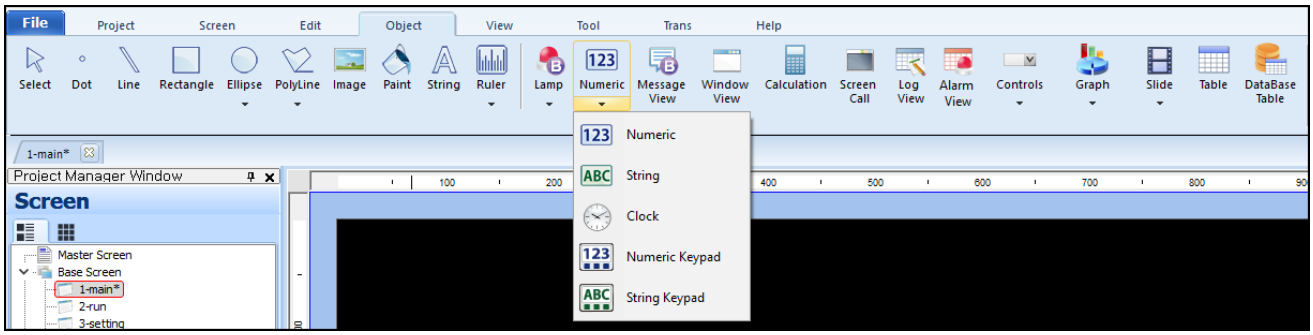
If [Lamp] feature is in use, check [Use Lamp] and choose the type of lamp from [Bit Lamp/Word Lamp/N-Bit Combination/N-Bit Independent].

As [Bit Lamp] is the same function as Bit Lamp Object, please see Chapter 9.1 Bit Lamp for reference.

As [Word Lamp/N-Bit Combination/N-Bit Independent] are the same functions as Multiphase Lamp Object, please see Chapter 9.2 Multiphase Lamp for reference.

CHAPTER 10 - Numeric/String Object

Numeric/String Object performs the function that displays address values in numeric or string format on screen.



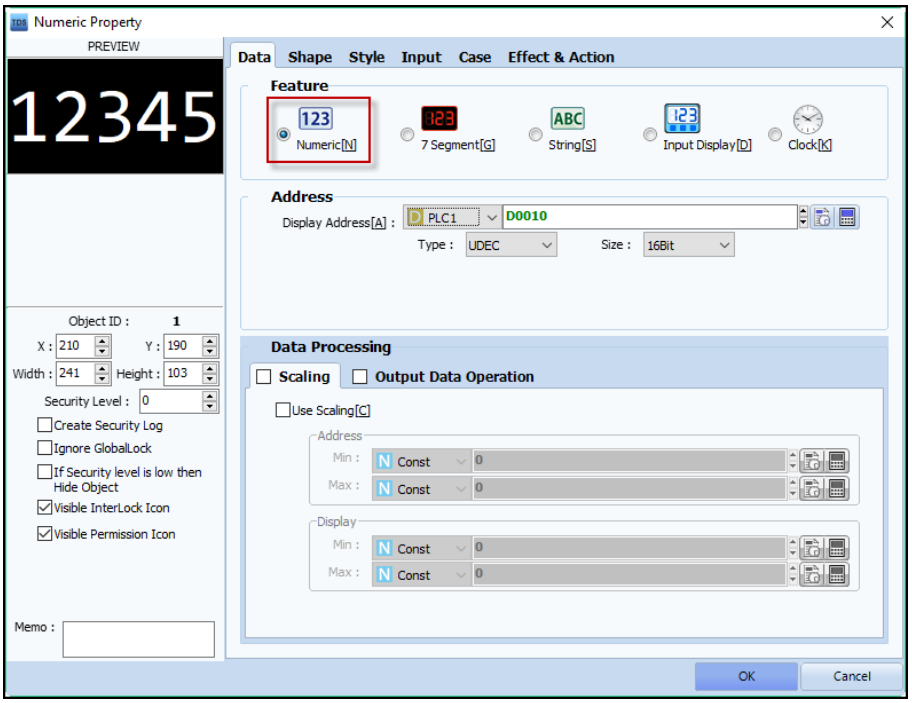
[Pic. Numeric/String Object]

No	Object	Description
1	Number	Display data of the set address in numbers.
2	String	Display data of the set address in string.
3	Clock	Display the date and time of TOP.
4	Numeric Keypad	It is the same as Numeric Object, but it checks [Use Input] in [Input] page and inputs numeric data.
5	String Keypad	It is the same as String Object, but it checks [Use Input] in [Input] page and inputs String data.

Numeric Object



Numeric Object displays data of the address set in [Display Address] in numbers.



[Pic. Numeric Object]

10.1.1 Data Page

Set [Number] or [7 Segments] in [Display Type]. [7 Segments] will be the same as [Number], and only the [Font] section in [Style] page will be different.

(1) Address

Set the address to be displayed in numbers at [Display Address]. Set the type and size of address.

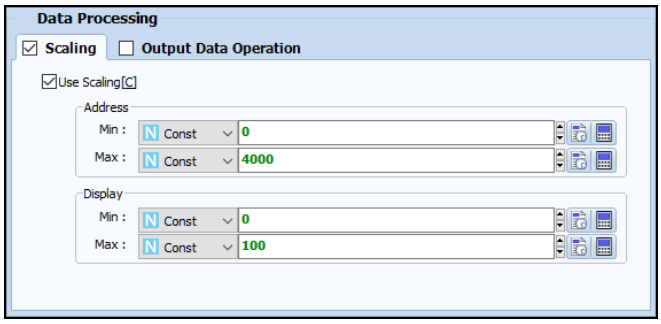
No	Address	Description
1	Display Address	It sets the Word Address to be displayed in numbers.
2	Type	Set the data type. It will be displayed in the set data type. DEC UDEC HEX BCD FLOAT BIN [DEC] is the sign decimal number. [UDEC] is non-sign decimal number. [HEX] is hexadecimal number. [BCD] is hexadecimal number used like decimal number. (It actually is hexadecimal number, but it does not display data that include A-F.) [FLOAT] is decimal point data. [BIN] is binary.
3	Size	Select the address size from [16 Bit/32 Bit]. If Display Address is 16Bit and the size is set to 32Bit, the next address number of the set Display Address will be the upper word and the Display Address will be the lower word that displays 32 Bit data.

(2) Data Processing

Data Processing is the function that calculates and displays data of Display Address.

▶ Scaling

Scaling calculates data proportionally within the display range and displays it.



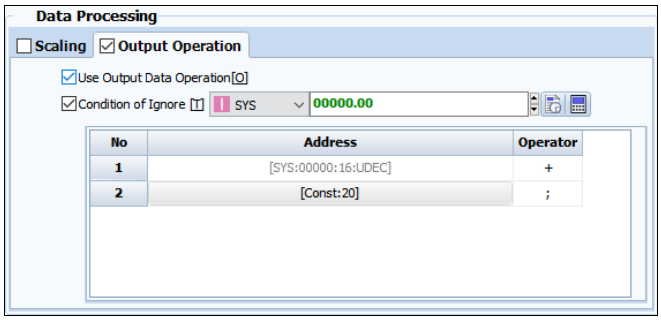
[Pic. Scaling]

[Min/Max] of [Address] is the range of actual data of [Display Address]. [Min/Max] of [Display] is the range of data to be displayed on screen. For [Min/Max] of [Address], calculate [Min/Max] of [Display] proportionally as following. Display value = [(Max Display - Min Display)/(Max Address - Min Address)] x Actual Data

Set as above picture and if the actual data of address is 2000, calculate it as [(100-0)/(4000-0)]x2000=50, and it will be displayed as 50. If actual data is below 0, it will be displayed [0]. If the value is above 4000, it will be displayed [100].

▶ Output Operation

Output Operation is the function that calculates and displays data of [Display Address]. Check [Output Operation] and [Use Output Data Operation].



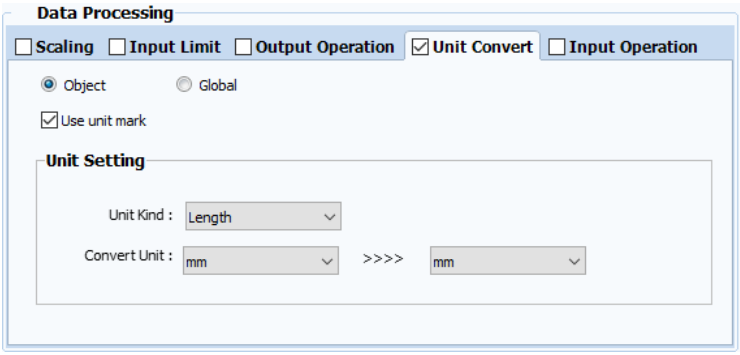
[Pic. Output Data Operation]

Check [Ignore Condition] to set Bit Address to be used as the condition. If data of the Bit Address is ON, Output Data Operation will not run. If data of the Bit Address is OFF, Output Data Operation will run. Uncheck [Ignore Condition] to always run Output Data Operation.
Set operation using [Address] and [Operator]. Address no. 1 is fixed as [Display Address]. Set operator in [Operator] excluding [Semicolon (;)] to add address no. 2.
If set as above and the internal address [00000.00] is OFF, it will display the value that adds 20 to [Display Address].

No	Operator	Description
1	+	Add two operands.
2	-	Subtract one operand from another.
3	*	Multiply two operands.
4	/	Divide one operand by another.
5	^	Perform Bit XOR calculation on two operands.
6	%	Perform remainder calculation on two operands and insert the result to Target Address. Remainder Calculation is the calculation for the remainder, which becomes the calculation result instead of quotient when a division is performed.
7	&	Perform Bit AND calculation on two operands.
8	|	Perform Bit OR calculation on two operands.
9	<<	The left Bit Shift operator. When the first operand is expressed in binary numbers, perform Left Bit Movement from the second operand by the set number.
10	>>	The Right Bit Shift operator. When the first operand is expressed in binary numbers, perform Right Bit Movement from the second operand by the set number.
11	;	It refers to the end of a formula.

▶ Unit Convert

Unit Convert is the function that calculates and displays data unit of [Display Address]. Check [Unit Convert] and check [Object]/[Global].

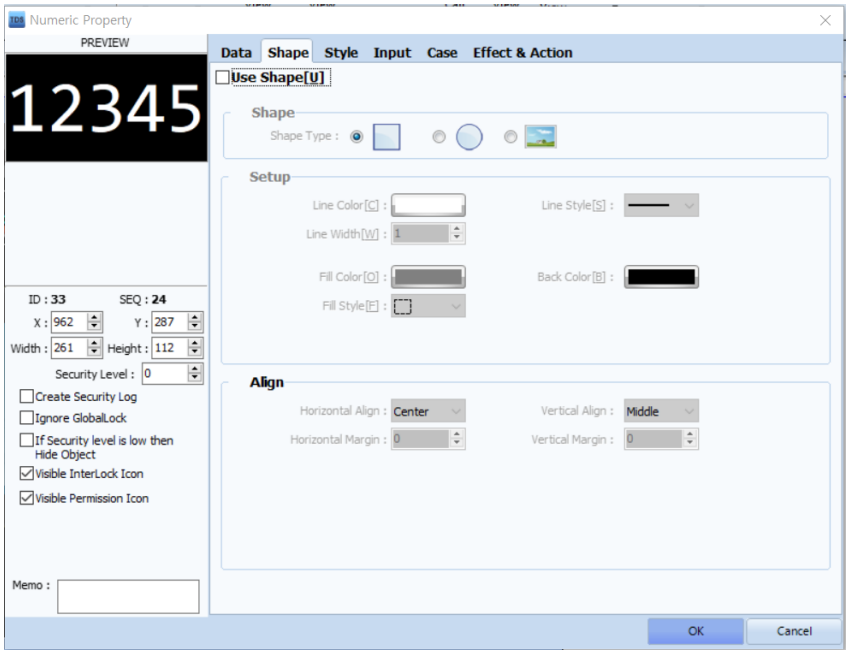


[Pic. Unit Convert]

Check [Object] to set unit convert of individual object. Check [Global] to select rules set in [Project]-[Property]-[Unit Convert]. If set as above, when Display Address data is 1000, 1m, the conversion value of 1000mm to m unit, will be displayed on screen.

10.1.2 Shape Page

It is used to add shape below a number. If [Rectangle/Circle] is selected in Shape Type, it will set [Line and Fill] as follows.

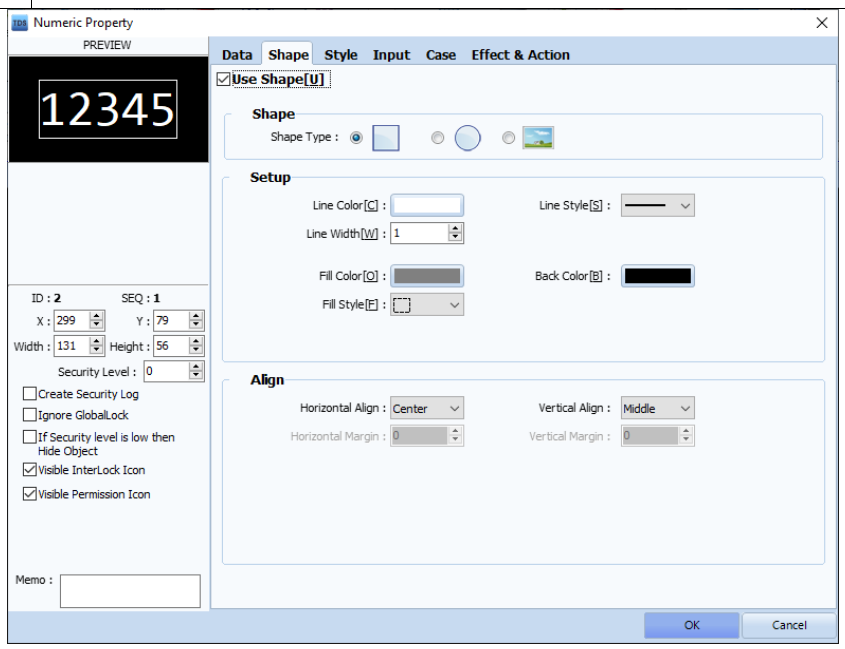


To modify the size of the set shape, close the Numeric Property Screen and select Numeric Object.

No	Setting	Description
1	Line Color	Set the color of the outer line of a shape.
2	Line Style	Select the style of the outer line of a shape. 
3	Line Width	Set the width of the outer line of a shape. The line width can be set from 1 pixel to 10 pixels.
4	Fill Color	Set the color to fill the black part of the pattern selected in [Fill Style].
5	Back Color	Set the color to fill the white part of the pattern selected in [Fill Style].
6	Fill Style	Select the pattern to fill the inside of a shape.

No	Align	Description
1	Horizontal Align	Select the horizontal position of the number within a shape. (Left/Center/Right)
2	Horizontal Margin	When Left/Right is in use, select the margin between a shape and number.
3	Vertical Align	Select the vertical position of the number within a shape. (Left/Center/Right)
4	Vertical Margin	When Top/Bottom is in use, select the margin between a shape and number.



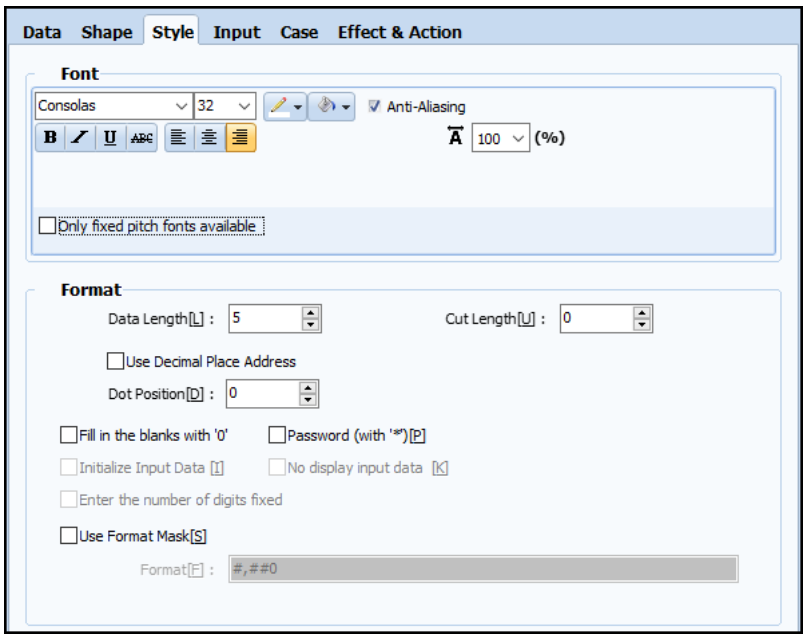
[Pic. Shape Page]

If [Image] is selected in Shape Type, it registers an image.

No	Align	Description
1	Horizontal Align	Select the horizontal position of the number within a shape. (Left/Center/Right)
2	Horizontal Margin	When Left/Right is in use, select the margin between a shape and number.
3	Vertical Align	Select the vertical position of the number within a shape. (Left/Center/Right)
4	Vertical Margin	When Top/Bottom is in use, select the margin between a shape and number.

10.1.3 **Style Page**

Set the font and display style of number.



[Pic. Style Page]

(1) Font

▶ If [Feature] is set to [Number] in [Data Page], set fonts as above.

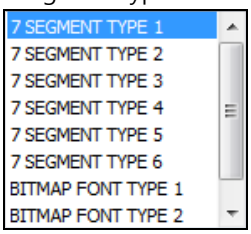
No	Numeric Font		Description
1	Font Type		Set the type of font in Font List. Check [Use Fixed Width Font Only] to display fonts that have the same width and height in the list.
2	Font Size		Set the font size.
3	Font Color		Set the color of the number.
			Set the Back Color of the number.
4	Anti-Aliasing		It smooths the outer lines of fonts when the font size grows bigger to raise their resolution.
5	Edit Font	B	Give bold effect to numbers.
			Give Italics effect to numbers.
		U	Underline numbers.
		ABC	Strike numbers.
6	Align Font		Align numbers to the left.
			Align numbers to the horizontal middle.
			Align numbers to the right.
7	Spacing	100 (%)	This function stretches or contracts the font horizontally. 100% is the original size. You may set it between [20-800%]. This supports the fixed width font only.

If [Feature] is set to  [7 Segments] in [Data Page], [7 Segments] will be the same as [Number], but different to [Font] section in [Style] page. 7 Segments is the function that displays numbers in 7 LEDs.



[Pic. Font when set to 7 Segments]

Set the font of number to Image Font of 7-Segment type. A total of 9 Image Fonts are provided.

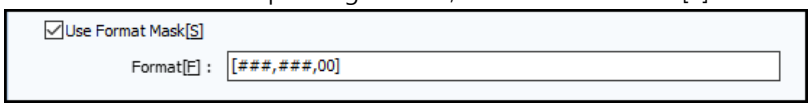


[Pic. Types of Image Font]

No	7 Segments Font	Description
1	Font Width	This is the width of one number character.
2	Font Height	This is the height of one number character.
3	Font Color	This is the color of the number.
4	Font Back Color	This is the back color of the number.
5	Font Align	Set the [Left/Right] align of the number.

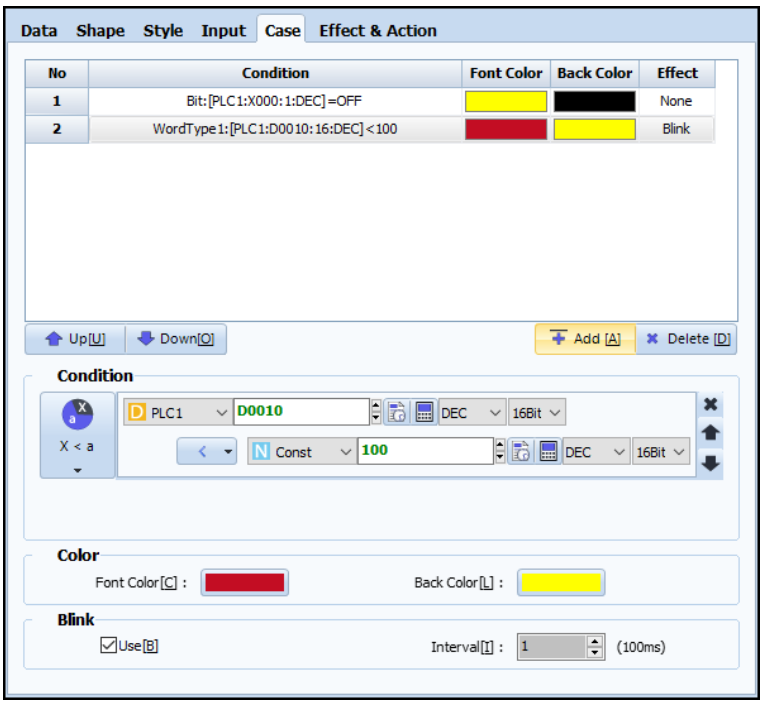
(2) Format

No	Format	Description
1	Data Length	The total length of a number. Decimal point and signs are not included in data length. If the actual data is [1234] and data length is [3], it will be displayed as [234]. ▶ If address [Size] is 16 Bit in Data Page If data type is UDEC (non-sign decimal), the data range is [0 - 65535], and if data type is DEC (sign decimal), the data range is [-32768 - 32767]. Therefore, data length can be set up to the 5th place. If data type is HEX (hexadecimal), data range is [0 - FFFF], and if data type is BCD, data range is [0 - 9999]. Therefore, data length can be set up to the 4th place. If data type is [BIN (binary)], data length can be set up to the 16th place. ▶ If address [Size] is 32 Bit in Data Page If data type is UDEC (non-sign decimal), the data range is [0 - 4294967295], and if data type is DEC (sign decimal), the data range is [-2147483648 - 2147483647]. Therefore, data length can be set up to the 10th place. If data type is HEX (hexadecimal), data range is [0 - FFFFFFFF], and if data type is BCD, data range is [[0 - 99999999]. Therefore, data length can be set up to the 8th place. If data type is [BIN (binary)], data length can be set up to the 32rd place. In case data type is [FLOAT], the [Size] will be 32 Bit by default, therefore it will be automatically set to [32 Bit]. As the data range is [-99999999.99 - 99999999.99], data length can be set up to the 10th place.
2	Cut Length	Start from the unit digit of the actual data and remove numbers by the set [Length to Control]. If the actual data is [12345] and [Data Length] is 5 digits, and [Length to Control] is 2 digits, it will be displayed as [123]. Check [Use Input] in [Input] page to use this function.
3	Dec point length	Put a decimal place to a number. If the decimal place length is set to [2] and the actual data is 123, it will be displayed as [1.23]. If the address type is [HEX], it cannot be set. Check [Use Address] to set the address.  This function sets the decimal point length as address. If set as above, data of [D0100] will be the length of the decimal point. If [D0100] data is modified during the operation, the decimal point length will be modified.

		 Note) If the actual data is [1.23] and decimal point length is [2] ▶ If the address type is [DEC/UDEC] Number Object can recognize integers only. Therefore, it reads 1 only and displays it as [0.01]. Therefore, if the type is [DEC/UDEC], data must be made into an integer and imported to display data with decimal places. Make it into an integer by applying x10 to 1 decimal point and x100 to 2 decimal points. For the above case, make it into 1.23x100=123 to read the number and display it as [1.23]. ▶ If the address type is [FLOAT] Numeric Object reads 1.23 as is and displays as [1.23].
4	Fill in the blink by '0'	Fill 0 to the blank space of number. If the data length is 5 digits and the actual data is [12], it will be displayed as [00012]. If the data length is 5 digits, the decimal point length is 2 digits, and the actual data is [1.2], it will be displayed as [001.20].
5	Password (with '*')	Display data as *. It is often used to display password. If the actual data is [1234], it will be displayed as [****].
6	Word Swap	If the address set in [Address] of data page is 16 Bit (Word) and the [Size] is set as 32 Bit, the address set to [Address] will be a subsidiary word and the next address number of the address will be the top word and displays 32 Bit data. Check [Word Swap] to make the address set in [Address] to top word and the next address number as subsidiary word.
7	Use Format Mask	It is used to add strings between numbers. [#] refers to number. When there is no corresponding number, it will be filled with [0].  Set as above, and if the actual data is 12345.6, it will be displayed as [12,345.60]. If [Use Input] is checked in [Input] page, this function cannot be used.

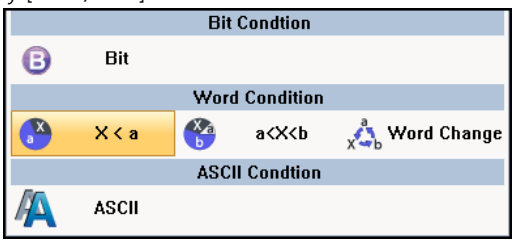
10.1.4 **Case Page**

In Case Page, you may change the color of the number according to [Condition] or give [Blink] effect.



[Pic. Case Page]

Add Case with [Add] button by the number of the registered cases. Select each Case and set [Condition/Color/Blink] at the bottom.

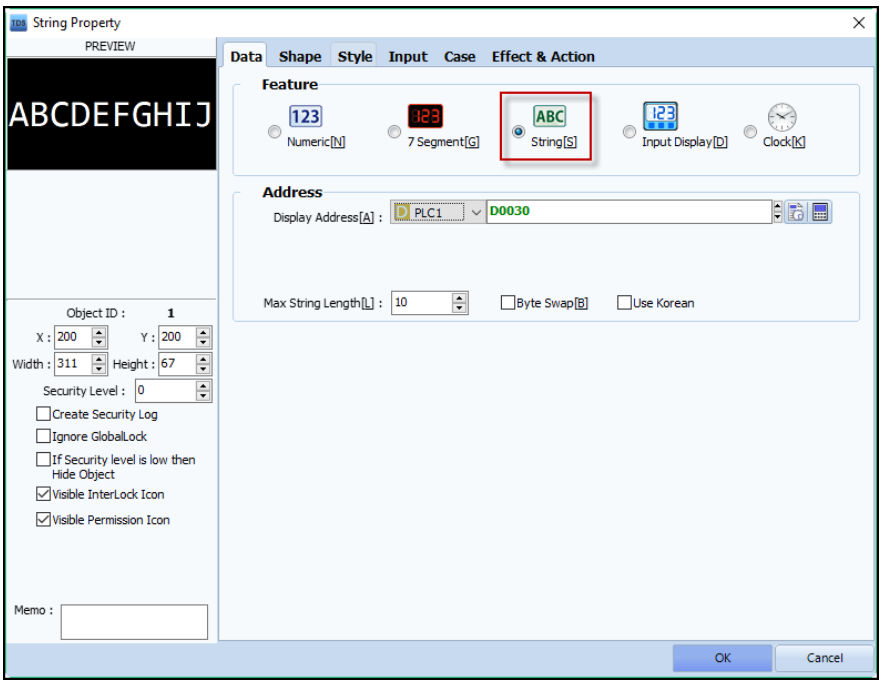
No	Case	Description
1	Condition	Set the condition to apply [Color/Blink].  The available conditions for setup are [Bit/Word/ASCII]. (Please see Chapter 7.7 to see how to set condition.)
2	Color	Font Color is the color of the number. Back Color is the background color of the number.
3	Blink	Check [Use] and set the [Interval] to make the number appear and disappear by the set [Interval].

Delete unnecessary cases with [Delete] button. If condition no. 1 and 2 are all met, Numeric Object will be displayed in the [Font Color/Back Color] of no. 1. Therefore, modify the number with [Up/Down] buttons and set to the priority of the case. [Up] button will push the selected case up by one cell. [Down] button will push the selected case down by one cell.

String Object



String Object displays data of the address set in [Display Address] in string.
[Max String Length] available for display is 255.



[Pic. String Object]

No	Property Page	Description
1	Data	Set [Feature] and [Address].
2	Shape	It is used to add a shape below a string. (It is the same content as the Shape page of Numeric Object. Please see Chapter 10.1.2 for more details.)
3	Style	Set the font and display style of string. Describes sections that are different from sections of the style page of Numeric Object. (Please see Chapter 10.1.3 for Numeric Object Style.)
4	Input	Input Page will be explained in Numeric Keypad/String Keypad Object.
5	Case	Set the color and blink effect of the text according to the [Condition]. (It is the same content as the Case page of Numeric Object. Please see Chapter 10.1.4 for more details.)
6	Effect & Action	You can add [Effect & Action] other than String Display function. (For [Effect & Action], please see Chapter 7.6.)

10.1.5 **Data Page**

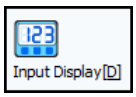
You may set the feature and address of String Object in Data Page.

Set [Feature] as [String].

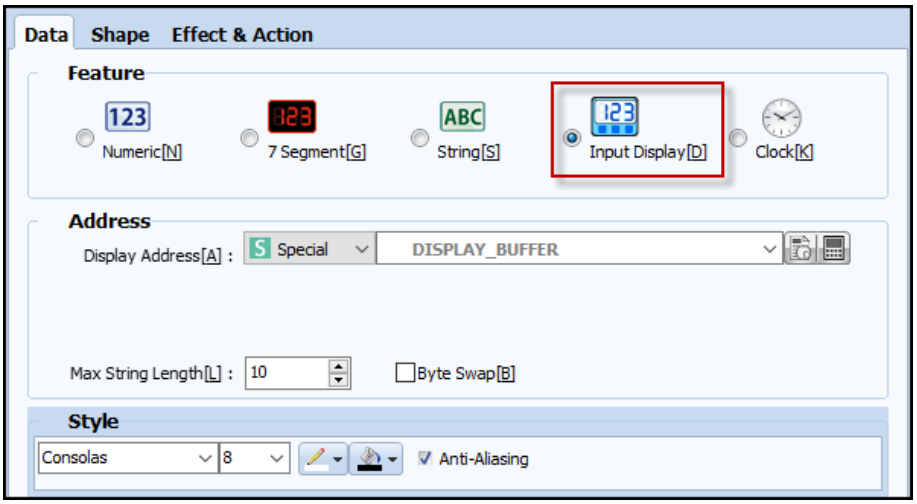
No	Data Page	Description
1	Display Address	Set the starting address to import String from.
2	Max String Length	Set the count of strings to be displayed. The count of strings that can be saved in a 16 Bit Word Address is 2 characters for [English/Number/Special Characters, etc.] and 1 character for Korean. If you enter [10] characters as above, 2 will be assigned to [Display Address], you will need 5 Word Addresses from the Display Address. Therefore, data of [00100 - 00104] will be read to string.
3	Byte Swap	1 character is 8 Bit and 1 Byte. Set when there is a need to swap the upper and lower bytes according to the address feature of controller.

		Byte Swap data ABCD will make it BADC.
4	Use Korean	Check to use Korean for Strings.

Input Display Object



[Input Display] is the object that displays the key value input with a keypad (Tenkey).



[Pic. Input Display]

No	Property Page	Description
1	Data	[Feature] is fixed to DISPLAY_BUFFER and sets the Max String Length and Byte Swap/Font.
2	Shape	It is used to add shape below an Input Display Object. (It is the same content as the Shape page of Numeric Object. Please see Chapter 10.1.2 for more details.)
3	Effect & Action	You can add [Effect & Action] other than Display function. (For [Effect & Action], please see Chapter 7.6.)

Input Display Object registers keys at the top of Keypad as shown in the below picture and display them. This object does not input but display only.



[Pic. Use Input Display]

10.1.6 Data Page

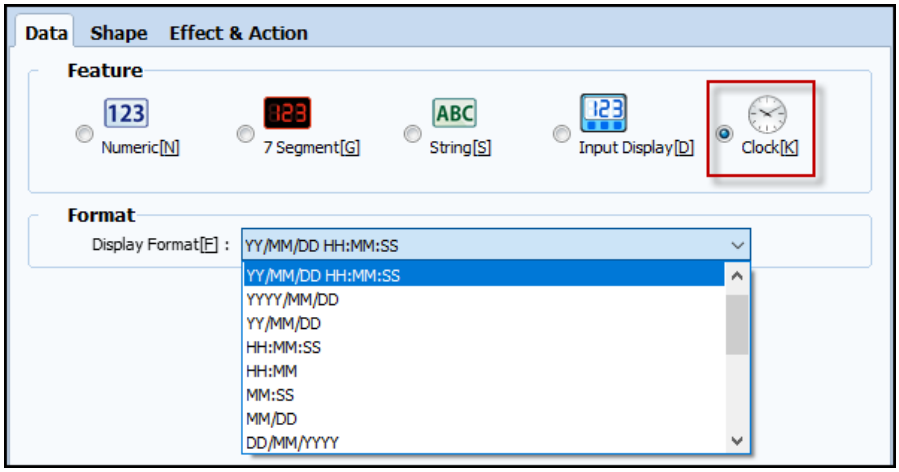
Set [Input Display] at [Feature]. The [Display Address] will be automatically set to [DISPLAY_BUFFER] of the

Special Address. Set the count of string to display at [Max String Length]. The count of Max String can be set up to 255. Check [Byte Swap] to swap the upper and lower bytes. (Swap byte of data ABCD to make it BADC.) Set font in [Style].

Clock Object



Clock Object displays the date and time of TOP.



[Pic. Clock Object]

No	Property Page	Description
1	Data	Select the style to display date and time.
2	Shape	It is used to add a shape below a Clock Object. (It is the same content as the Shape page of Numeric Object. Please see Chapter 10.1.2 for more details.)
3	Effect & Action	You can add [Effect & Action] other than Clock Object function. (For [Effect & Action], please see Chapter 7.6.)

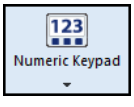
Set to [Clock] in [Feature].

Select the display format [Year/Month/Day/Hour/Minute/Second] in [Display Format]. Y-YEAR, M-MONTH, and D-DAY are date components and H–HOUR, M–MINUTE, and S–SECOND are hour components. If the [Year] display appears as YYYY, it will be displayed as [2015]. If it appears as YY, it will be displayed as [15], for example.

The current time information of TOP is saved in Special Address in the format of [DATE_DD], [DATE_MM], [DATE_WEEK], [DATE_YYYY], [TIME_HH], [TIME_MM], [TIME_SS].

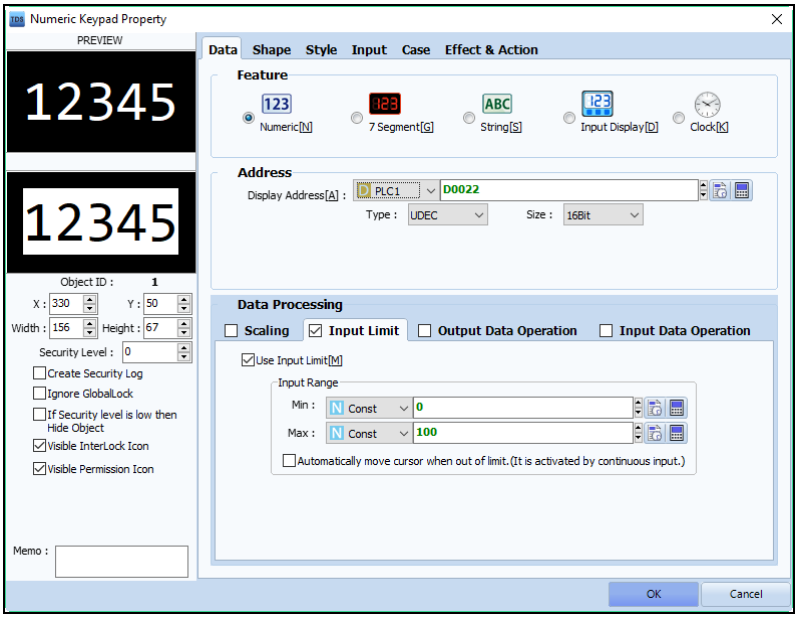
Date and Time can be modified in Status Bar at the bottom of Menu Screen or at [Control Panel]-[Date/Time]. Modification of date and time will also apply the same modification of special address data where the time is saved. Also, modifying the special address that stores time will change TOP date and time.

Numeric Keypad Object



[Numeric Keypad Object] is used to input numbers with a keypad. It is an object with the

same functions as Numeric Object but with added Input function. Check [Use Input] in [Input] page to make it [Numeric Keypad Object] and uncheck it to make it [Numeric Object].



[Pic. Numeric Keypad Object]

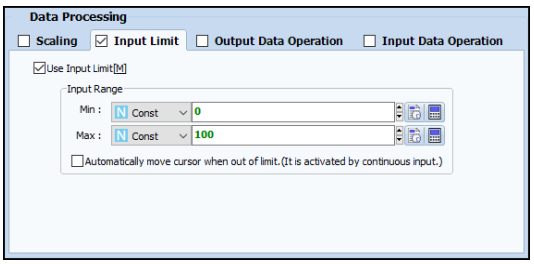
No	Property Page	Description
1	Data	Set [Feature] and [Address]. Set parts other than the same parts to the data page of Numeric Object. (Please see Chapter 10.1.1 for Numeric Object.)
2	Shape	It is used to add a shape below a number. (It is the same content as the Shape page of Numeric Object. Please see Chapter 10.1.2 for more details.)
3	Style	Set the font and display style of number. Describes sections that are different from sections of the style page of Numeric Object. (Please see Chapter 10.1.3 for Numeric Object.)
4	Input	Set the input method.
5	Case	Set the color and blink effect of the number according to the [Condition]. (It is the same content as the Case page of Numeric Object. Please see Chapter 10.1.4 for more details.)
6	Effect & Action	You can add additional [Effect & Action] other than the Number Display/Input function. (For [Effect & Action], please see Chapter 7.6.)

10.1.7 **Data Page**

As this is an object that inserts numeric data, [Input Limit/Input Operation] will be added in Data Processing.

(1) Input Limit

Input Limit is the function that sets an [Input Range] for entering numbers so that it can be entered within a set range.



[Pic. Input Limit]

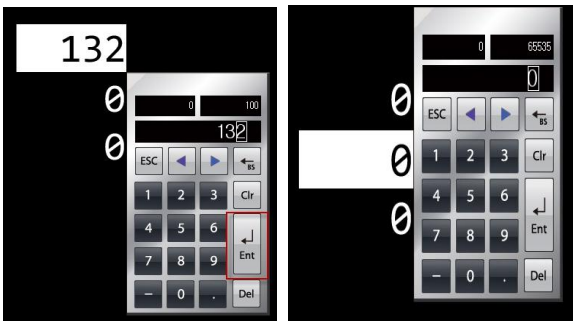
Check [Use Input Limit] and enter [Min] and [Max]. Set the smallest value as [Min] and the largest as [Max]. The reverse cannot be entered. [Min/Max] can be set as [Const], constants, or set as address to modify [Min/Max] while in operation.

If set as above, [Min] and [Max] will be displayed on the keypad as below. If you enter data that is outside the input range [0-100] and press [Enter], it will not be entered and the status will be as shown in the below picture.



[Pic. When data out of the input range has been entered]

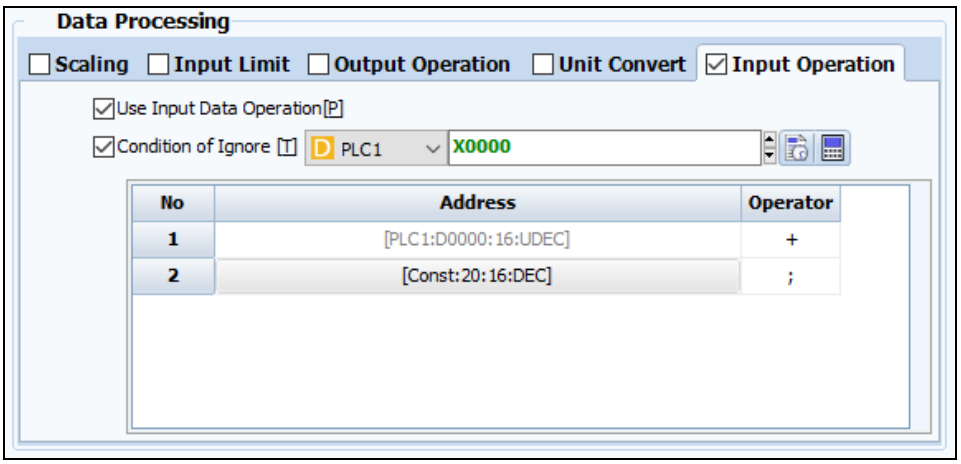
[Move to the Next Input even if it exceeds the Input Range during Continuous Input] will be used if [Continuous Input] is set in [Input Range]. Input data that exceeds the [Input Range] and press [Enter]. Then, the value will not be input but the cursor will move to the Numeric Keypad Object of the next [Key Input Order].



[Pic. Move cursor automatically when exceeding the input range]

(2) Input Operation

[Input Operation] is the function that calculates the input data and saves it to [Display Address]. Its setup is the same as [Output Operation].



[Pic. Use Input Data Operation]

Check [Input Operation] and [Use Data Operation]. Check [Ignore Condition] to set Bit Address to be used as the condition. If data of the Bit Address is ON, Input Data Operation will not run. If data of the Bit Address is OFF, Input Data Operation will run. Uncheck [Ignore Condition] to always run Input Data Operation.

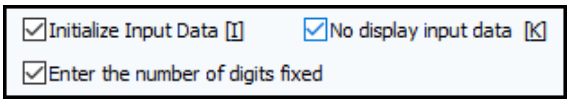
Set Operation using [Address] and [Operator]. Address no. 1 is fixed to [Display Address].

Set operator in [Operator] excluding [Semicolon (;)] to add address no. 2.

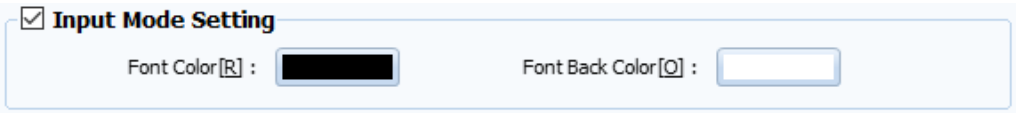
If set as above and the internal address [00000.00] is OFF, save the value of the input data plus 20 in [Display Address].

10.1.8 Style Page

(Please see Chapter 1.1.3 Style Page for Numeric Object.)



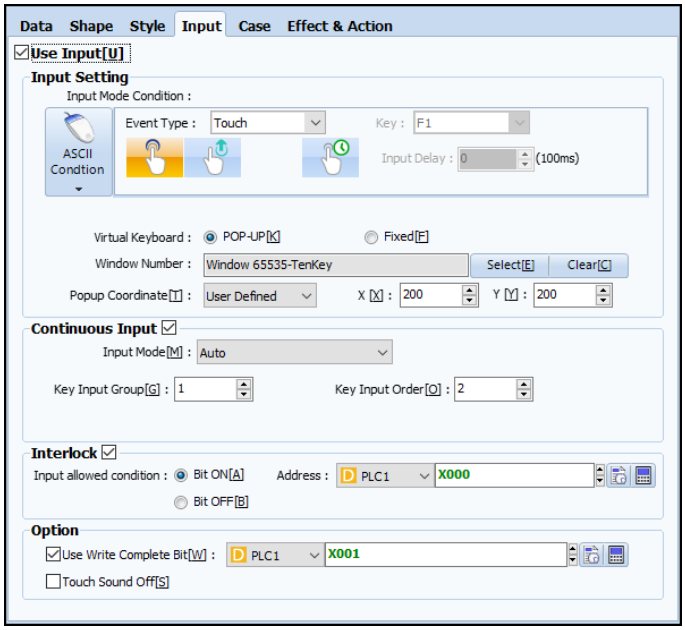
No	Style Page	Description
1	Initialize Input Data	Select Initialize Input Data to initialize data when inputting data.
2	No display input data	Data will not be displayed during its input.
3	Enter the number of digits fixed	Complete the input by entering it by the set data length. Insufficient digits will prevent it from being input.



No	Input Mode Setting	Description
1	Font Color	Select the font color for data input.
2	Font Back Color	Select the back color for data input.

10.1.9 Input Page

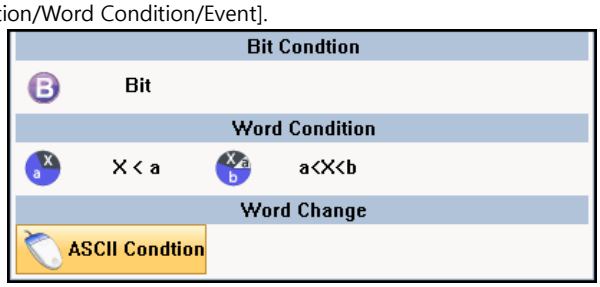
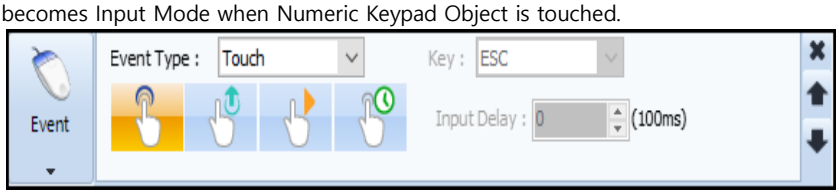
When Numeric Keypad Object is registered, [Use Input] in [Input] page will have been checked. Checking [Use Input] will allow you to configure various settings to input data. Checking [Use Input] in [Input] page will make it [Numeric Keypad Object], and unchecking it will make it [Numeric Object].

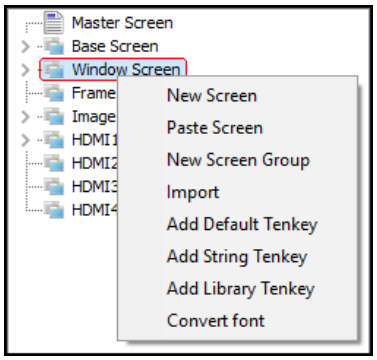
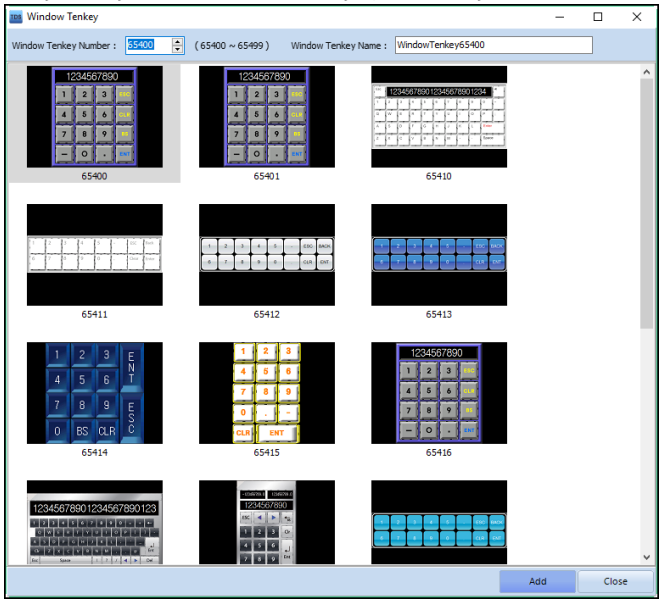
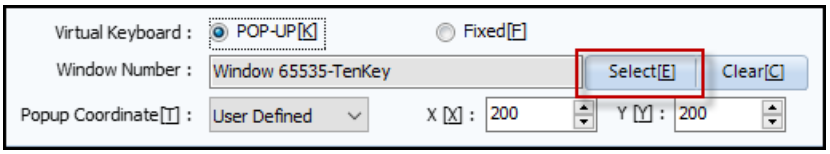


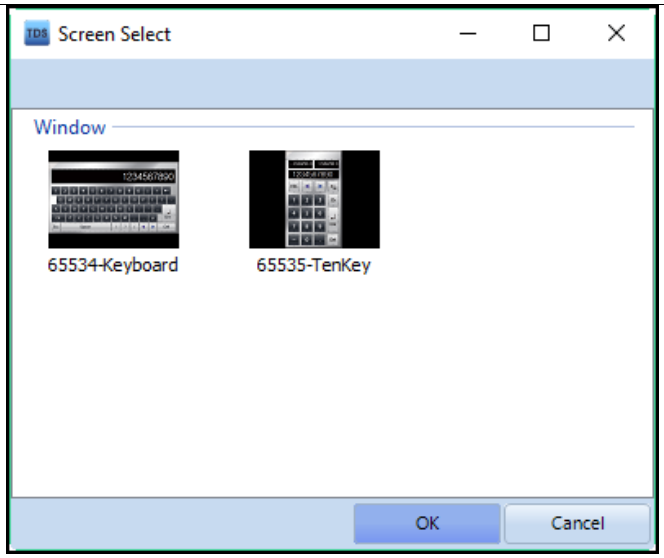
[Pic. Input Page]

(1) Input Setting

Set the Input Mode Condition and keyboard.

No	Input Setting Property	Description
1	Input Mode Condition	Input Mode is the status where input is available (active). When [Input Mode Condition] is met, Numeric Keypad Object becomes Input Mode Condition. Available setting conditions are [Bit Condition/Word Condition/Event].  [Pic. Input Mode Condition] ▶ When [Event Type] is [Touch] in Event Condition. It becomes Input Mode when Numeric Keypad Object is touched.  ▶ When [Event Type] is [Key] in Event Condition. It becomes Input Mode when the set [Key] is entered. (Please see Chapter 7.7 to see how to set condition.) 
2	Virtual Keyboard	Choose from [Popup Type/Fixed Type]. [Popup Type] pops up a keyboard that is set to [Window Number] when Input Mode is on. [Fixed Type] registers the keyboard to Base

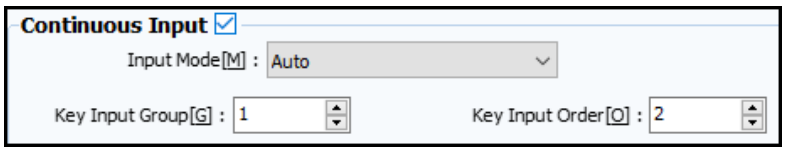
		Screen to use.
3	Window Number	Select a keyboard. Register Numeric Keypad Object and it will be automatically set to [Window 65535-Tenkey]. Registering String Keypad Object will automatically set it to [Window 65534-Keyboard]. Above two keyboards will be automatically created when the project is created. If [65535-Tenkey] and [65534-Keyboard] Window Screens have been deleted or modified, select Window Screen at [Project Manager] and create them again in the popup menu that is displayed when right-clicking the menu. Run [Add Default Tenkey] to create [65535-Tenkey] Window Screen. Run [Add String Tenkey] to create [65534-Keyboard] Window Screen.  Run [Add Library Tenkey] to add various Tenkeys provided by TDS.  Select the keyboard to add and press [Add] button to save it to the designated Window Screen Number. 100 screens of Window Screen Number [65400-65499] are set as screens where Library Tenkeys can be added to. Added Tenkey (Keyboard) can be registered with the [Select] button of below [Window Number].  Click [Select] button and following [Select Screen] screen will be displayed. On this screen, you will see the list of registered Tenkey (Keyboard). Select the keyboard to use and press [OK] button.

		 You may disable the selected keyboard with [Clear] button.
4	Popup Coordinate	Set it when [Virtual Keyboard] is [Popup Type]. Choose from [Automatic Calculation/User Define]. [Automatic Calculation] automatically calculates the position with enough margins on all directions from the position where the Numeric Keypad Object is registered to popup the keyboard. [User Define] sets the [X] and [Y] coordinates to popup the keyboard at the designated position. [X] and [Y] coordinates will be the top left corner position of the keyboard.

(2) Continuous Input

Continuous Input is set to use multiple Numeric Keypad Objects on one screen.

When the input is complete, this function moves the input mode to the next Numeric Keypad Object.



[Pic. Continuous Input]

▶ If Move of input focus is [Auto]

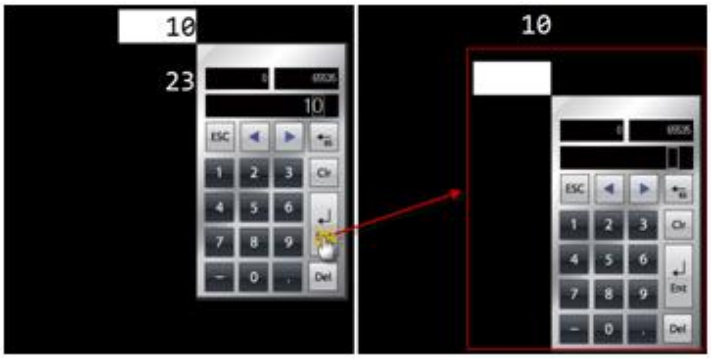
The Input Mode of Numeric Keypad Object of the same [Key Input Group] moves according to the [Key Input Order].

Set the Numeric Keypad Object to perform Continuous Input with the same [Key Input Group]. Consider the movement direction of the input mode and set [Key Input Order].

Enter data in Numeric Keypad Object in Input Mode and press [Enter] to complete input. Then, the input mode will be automatically changed to [Key Input Order]. At this time, pressing Enter key without entering any data will also send you to the next Numeric Keypad Object.

Press [UP/DOWN/LEFT/RIGHT] key in Input Mode and Input Mode will find and move to the nearest Numeric Keypad Object in [UP/DOWN/LEFT/RIGHT] position.

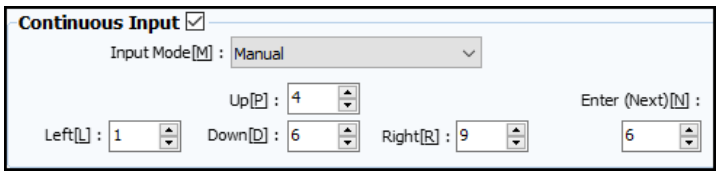
In the following picture, set no. 1 and 2 [Key Input Group] the same. And when the no. 1 is set with no. 1 [Key Input Order] and no. 2 with no. 2 [Key Input Order], the Input Mode will automatically move to no. 2 after no. 1's input is complete.



[Pic. Continuous Input Auto]

▶ If Move of input focus is [Manual]

With [Manual], the Input Mode manually designates each Numeric Keypad Object to move to.

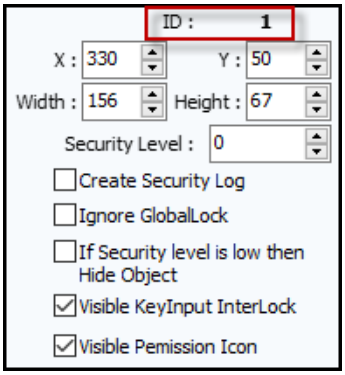


[Pic. Manual]

Set the ID of Numeric Keypad Object to move to when [Left/Right/Up/Down/Enter] keys have been pressed.

No	Manual	Description
1	Up	Set the value of [ID] of object for the Input Mode to move to when [Up] key has been pressed.
2	Down	Set the value of [ID] of object for the Input Mode to move to when [Down] key has been pressed.
3	Left	Set the value of [ID] of object for the Input Mode to move to when [Left] key has been pressed.
4	Right	Set the value of [ID] of object for the Input Mode to move to when [Right] key has been pressed.
5	Enter (Next)	Set the value of [ID] of object for the Input Mode to move to when [Enter] key has been pressed.

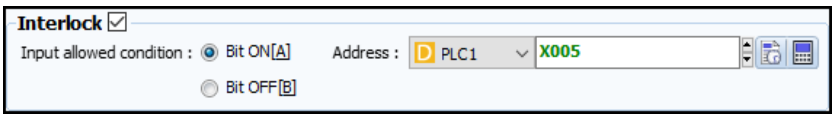
ID is located in the left middle of the Object Property Screen.



[Pic. ID]

(3) Interlock

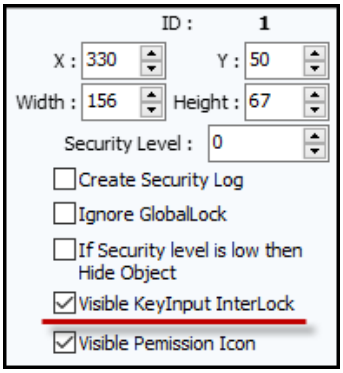
Interlock is the function that allows input when the [Condition] is met and blocks input when the [Condition] is not met.



[Pic. Interlock]

Select [Bit ON] as above to allow input when the set Bit Address [Y005] is ON and block input when it is OFF. Select [Bit OFF] to allow input when the set Bit Address is OFF and block input when it is ON.
If key input is blocked when [Input Mode Condition] is running, below [Key Input Interlock Icon] appears briefly at the bottom left corner of Numeric Keypad Object and disappears. This icon is visible when [Key Input Interlock Icon] is checked in the Property of Numeric Keypad Object.

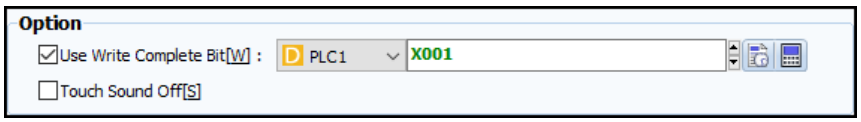




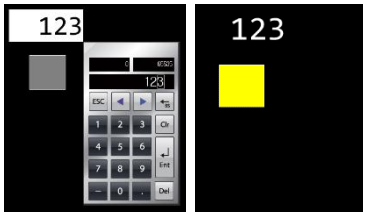
[Pic. Key Input InterLock Icon]

(4) Option

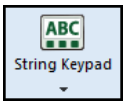
Set [Use Write Complete Bit] and [Touch Sound Off].



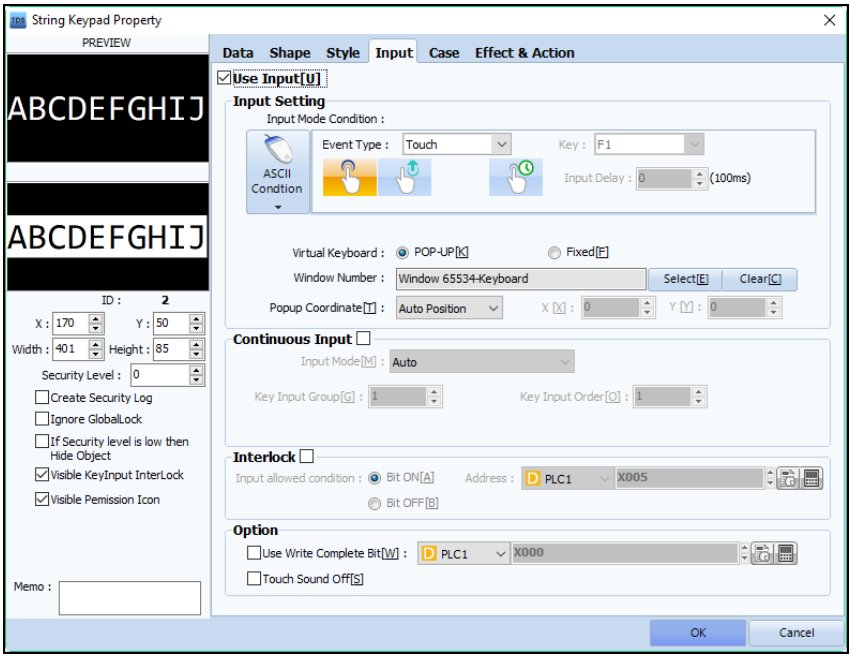
[Pic. Option]

No	Option	Description
1	Use Write Complete Bit	When data input to Number Keypad Object is completed, this function turns the set Bit Address ON.  When Bit Address is on, it does not revert back to off automatically. Therefore, you need to implement an action that turns off once it is turned on. If not turned off, it will continue to be on.
2	Touch Sound Off	If [Input Mode Condition] is set to Event, it turns off the Touch Sound made when touching number keypad objects. Keypad (Tenkey) touch sound will be kept on.

String Keypad Object



[String Keypad Object] is used to input string using keypad.



[Pic. String Keypad Object]

No	Property Page	Description
1	Data	Set [Feature] and [Address]. Describe parts other than the parts same with the Data page of Numeric Object. (Please see Chapter 10.1.1 for Numeric Object.)
2	Shape	It is used to add a shape below a string. (It is the same content as the Shape page of Numeric Object. Please see Chapter 10.1.2 for more details.)
3	Style	Set the font and display format of String. Set parts other than ones that are the same with the style page of Number/Numeric Keypad Object. (Please see Chapter 10.1.3 for the same function.)
4	Input	Set the input method. Parts other than the parts that are the same with the Input page of Numeric Keypad Object will be described here. (Please see Chapter 10.5.3 for Numeric Keypad Object.)
5	Case	Set the color and blink effect of the text according to the [Condition]. (It is the same content as the Case page of Numeric Object. Please see Chapter 10.1.4 for more details.)
6	Effect & Action	You can add [Effect & Action] other than String Display/Input function. (For [Effect & Action], please see Chapter 7.6.)

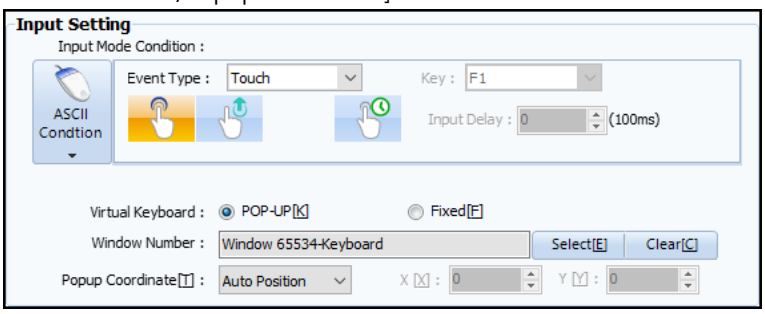
10.1.10 Data Page

Check [Use Korean] in [Address] to input Korean. Each character of [Alphabet/Number/Special Character, etc.] have 8 bit, but Korean characters have 16 Bit per character. Therefore, to input 5 Korean characters, you must set the [Max String Length] as [10].

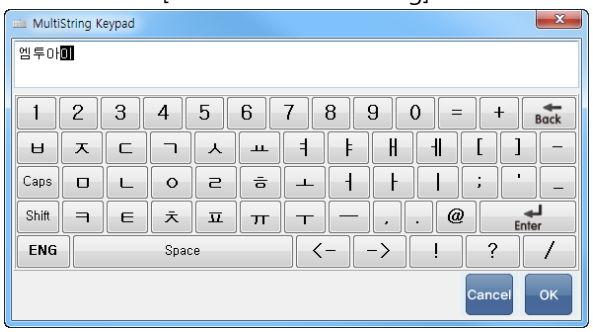
Korean Keypad will automatically pop up in system when the [Input Mode] condition is met without a

separate registration.

[Virtual Keyboard/Window Screen/Popup Coordinate] will be disabled.



[Pic. Use Korean Setting]

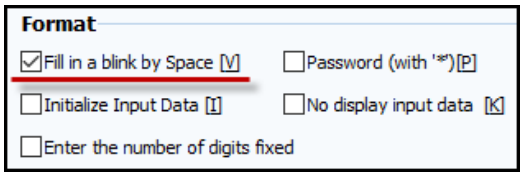


[Pic. Korean Keypad]

Press ENG button to switch to English keypad.

10.1.11 Style Page

This part will describe parts that are different to Numeric Object only.

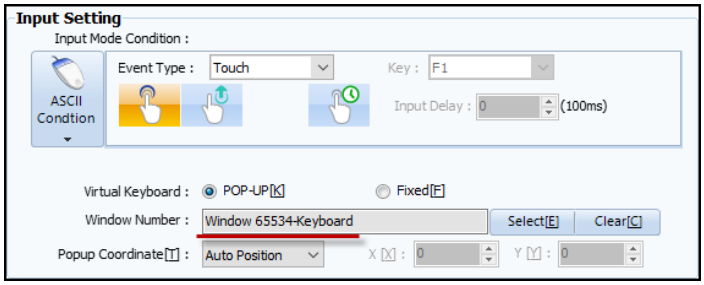


[Pic. Display Format]

Check [Fill Blank with Space] to save Space (Space key, 0x20) in parts that are left blank by [Max String Length]. If it is not checked, the blank parts will be 0.

10.1.12 Input Page

Check [Use Input] in [Input] page to activate [String Keypad Object], and uncheck it to activate [String Object]. Registering String Keypad Object will have [Use Input] checked in [Input Page], and it will be set as shown in the below picture. To input strings, string keypad is registered to [Window Number].

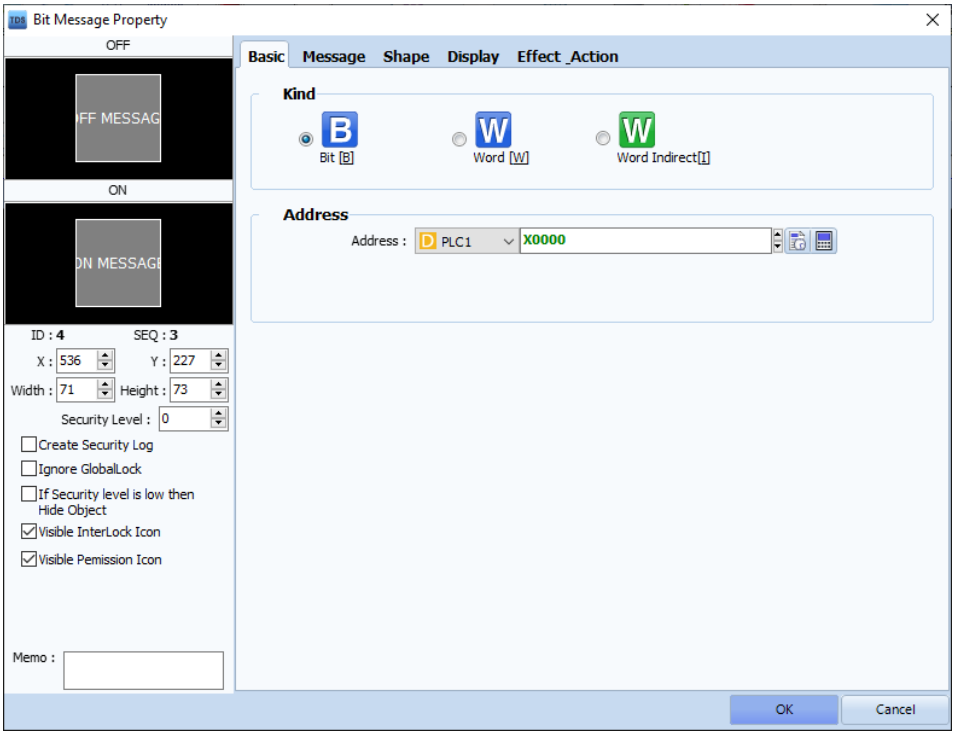


[Pic. Input Page]

CHAPTER 11 - Message Object

This object shows string according to address data.

String can be manually entered or strings registered in [Project]-[String] can be displayed.



[Pic. Message]

No	Property Page	Description
1	Basic	Set the type of message and the address to be used.
2	Message	Select the message to be displayed from String Table or enter it manually.
3	Shape	Set the shadow of Message Object.
4	Display	Set the shape, use of scroll, and display of message.
5	Effect_Action	This is the Effect & Action Page.

Default Page

There are three types of message as follows.

No	Type	Description
1	Bit [B]	It displays messages according to the [ON/OFF] status of the set Bit Address.
2	Word [W]	It displays messages according to data of Word Address.
3	Word Indirect [I]	It displays the message of the ID (Number) that is the same with data of Word Address.

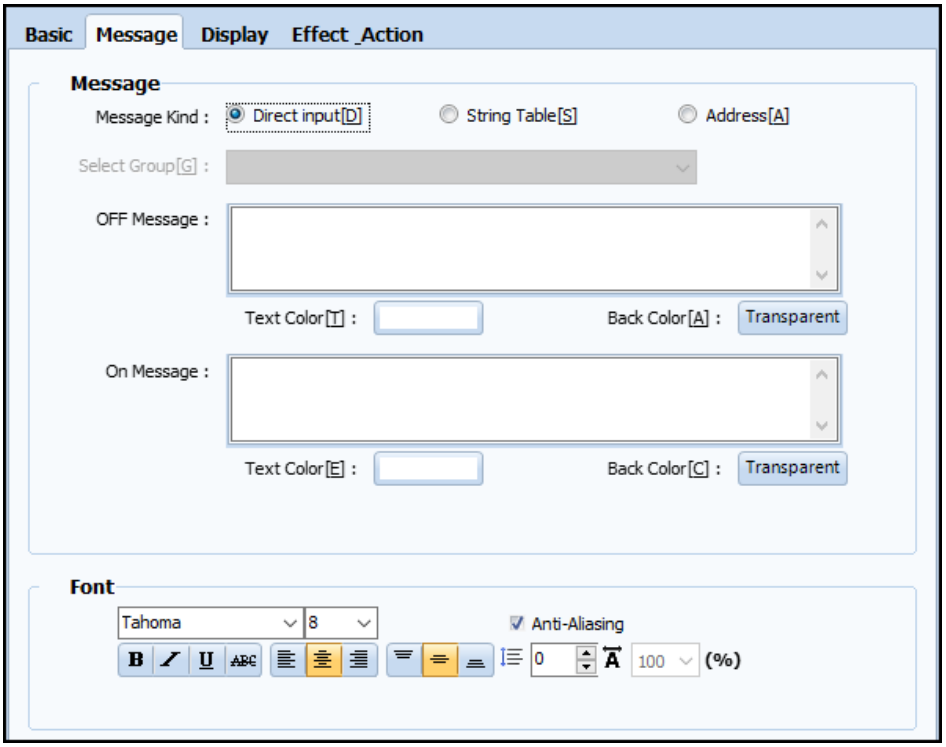
It sets [Address] according to the set Message Kind.

Message Page

Message Page varies according to the type of message. Set String and Font to be displayed according to data of Address. You may manually input strings or register strings registered in String Table.

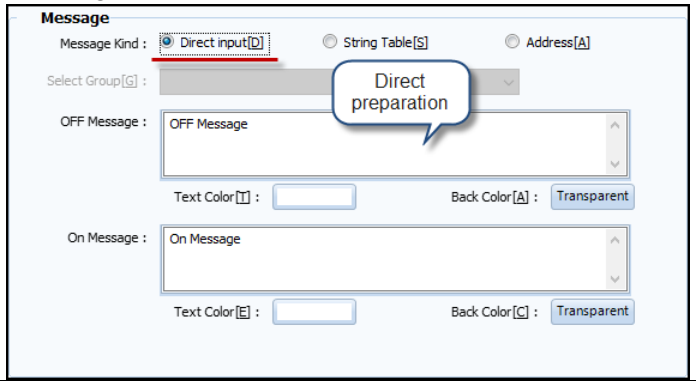
11.1.1 Bit Message

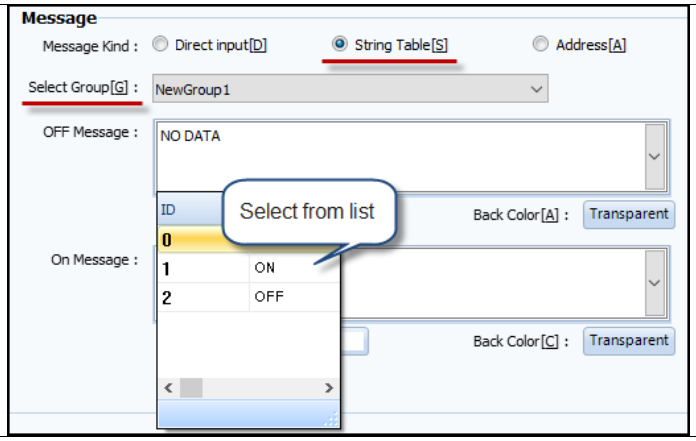
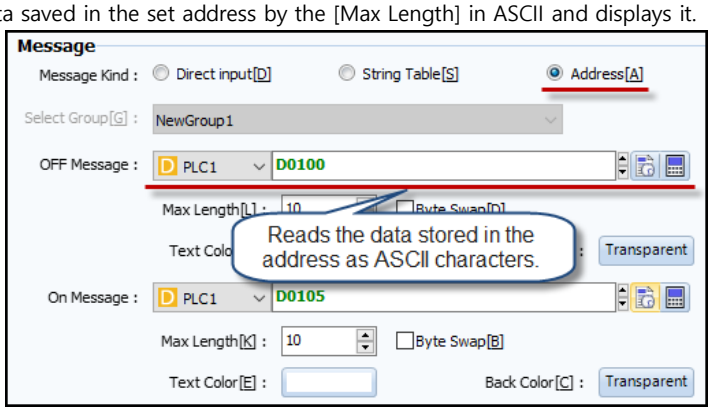
Bit Message displays a message according to the ON/OFF status of Bit Address.
Manually input or select a message from String Table to be displayed during ON/OFF status.

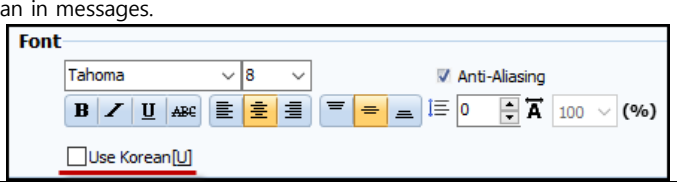


[Pic. Bit Message]

Choose the Message Type from [Normal/String Table/Read Address].

No	Message Type	Description
1	Direct input	Manually enter messages. 
2	String Table	Select a String registered in [Project]-[String]. Select Group Name of the String from [Message Group]. (For String Table, please see Chapter 4.4 [String].)

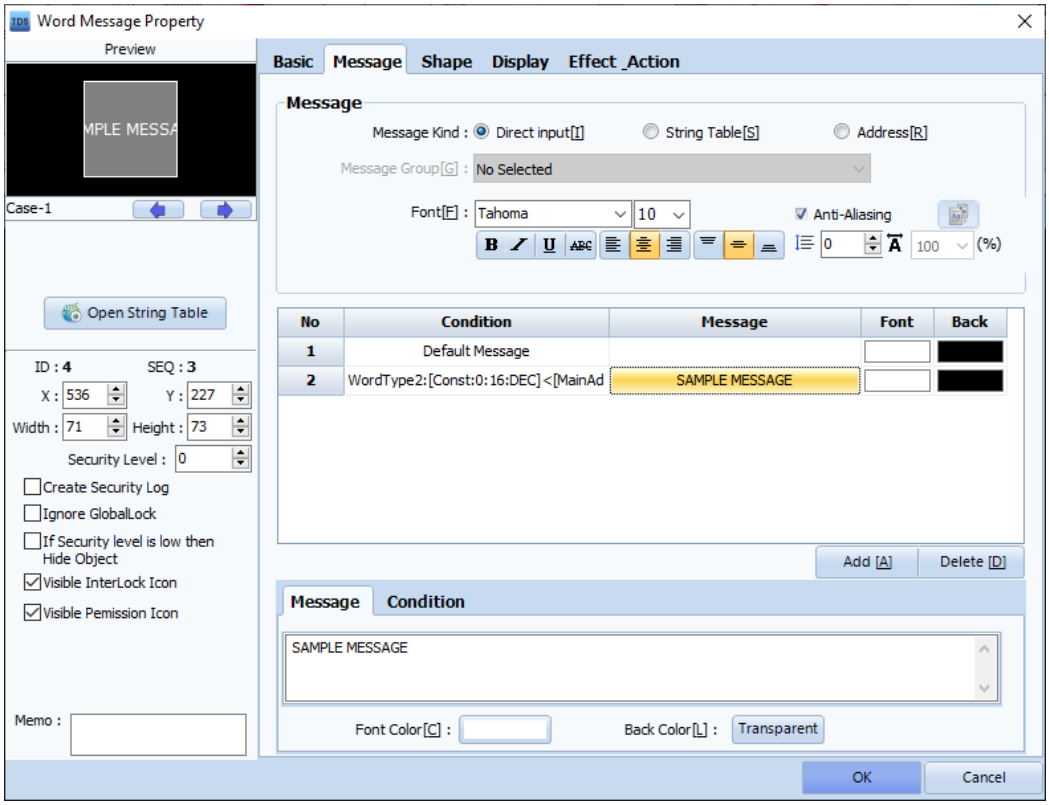
<table>
<tr>
<td></td>
<td></td>
<td> 
</td>
</tr>
<tr>
<td>3</td>
<td>Address</td>
<td>It reads data saved in the set address by the [Max Length] in ASCII and displays it.
 

[Max Length] is the length of string. One string is 8 Bit (1Byte). Therefore, to import 10 strings, it requires 10 Bytes, that is, 5 Words. If set as above, it imports strings saved from [D0100] to [D0104] and displays them as messages.
If the string is ABCDEFGHIJ, check [Byte Swap] to display it as BADCFEHGJI.
If [Use Korean] is checked in below font, it imports data saved in the address in Korean and displays Korean in messages.
 
</td>
</tr>
</table>

[Text Color] is the color of string that is displayed and [Back Color] is the background color of string.
Set the font and alignment to display the strings in at [Font].

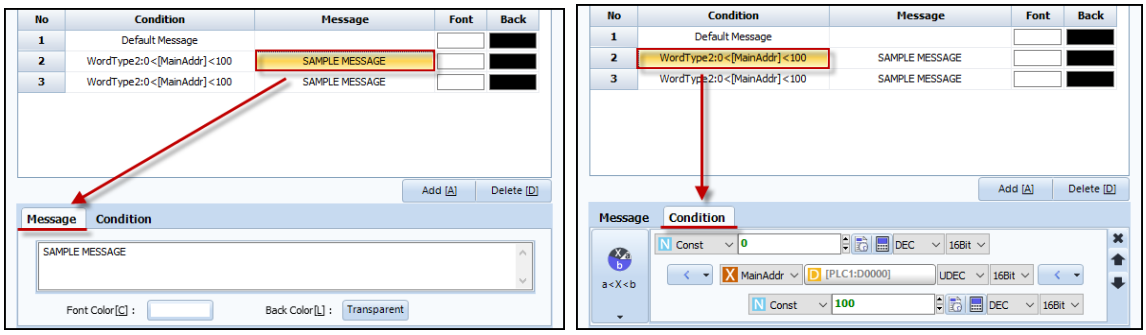
11.1.2 Word Message

Word Message displays messages according to data of Word Address. Set [Word Condition] for Word Message and manually input messages to be displayed when the condition is true or choose them from String Table.



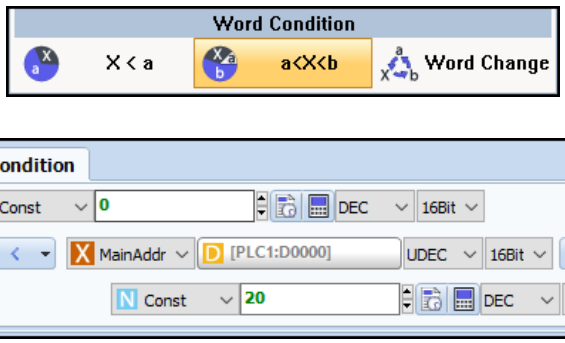
[Pic. Word Message]

Message Type is the same with Bit Message. Please see Chapter 11.2.1 for detailed information.
Default Message no. 1 is registered. Add Message List with [Add] button. If it does not meet the condition of the Total Message List, [Default Message] will be displayed. If a Default Message has not been registered, message will not be displayed. Use [Delete] button to delete unnecessary message lists. You may not delete the Default Message. Select each added message from Message List and configure their [Message] and [Condition] at the bottom.



[Pic. Message/Condition Setting]

Input message according to the type of message set in [Message Type]. Select [Condition] from [X<a, a<X<b, Word Change].



[Pic. Condition setting]

[X<a] compares two data and displays the corresponding message when the condition is met.
[a<X<b] compares three data and displays the corresponding message when the condition is met.

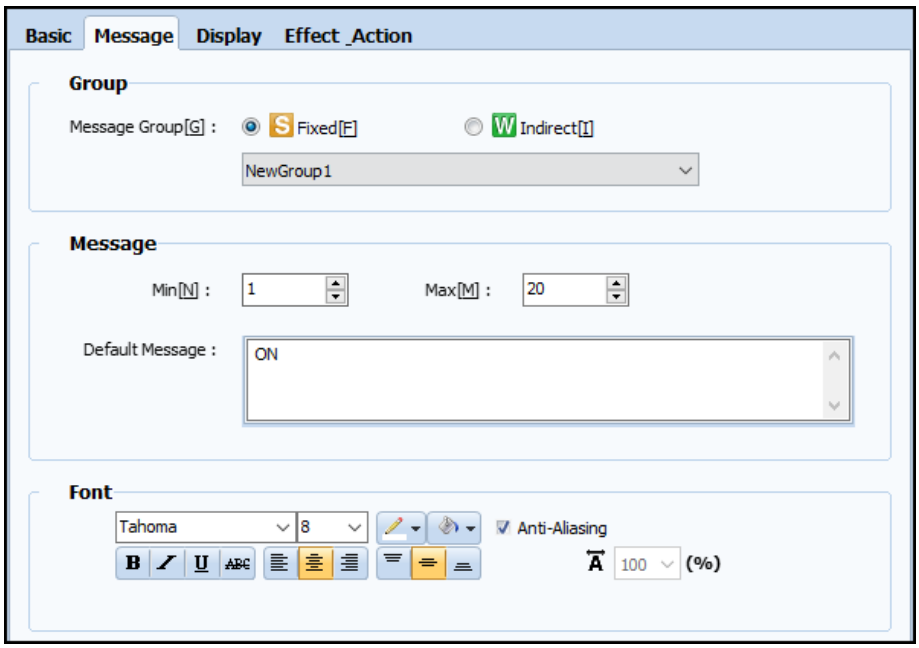
Comparative operators that can be configured are as follows.

No	Comparative Operator	Description
1	<	This is the operator used when comparing the sizes of two operands and it becomes true when the right operand is larger.
2	>	This is the operator used when comparing the sizes of two operands and it becomes true when the left operand is larger.
3	<=	This is the operator used when comparing the sizes of two operands and it becomes true when they are the same or the right operand is larger.
4	>=	This is the operator used when comparing the sizes of two operands and it becomes true when they are the same or the left operand is larger.
5	==	This is the operator used when comparing the sizes of two operands and it becomes true when they are the same.
6	!=	This is the operator used when comparing the sizes of two operands and it becomes true when they are different.

[Word Change] displays the corresponding message when the set address data is modified.
[Text Color] is the color of string that is displayed and [Back Color] is the background color of string.

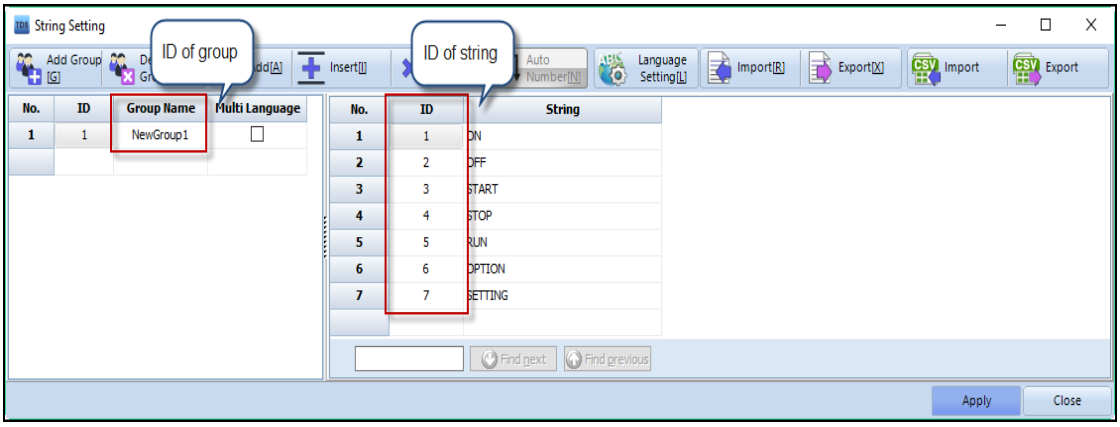
11.1.3 Word Indirect Message

Word Indirect Message displays the string of the same ID to the Word Address data set in [Default Page].
String displays strings registered in [Project]-[String] but cannot be manually entered.



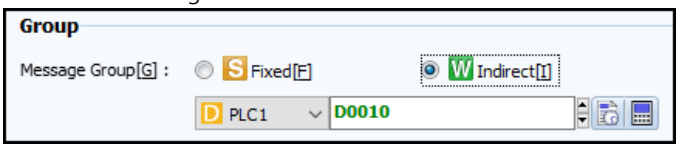
[Pic. Word Indirect Message]

Message Group is the group in [Project]-[String].



[Pic. Project String]

Choose from [Fixed/Address variable].

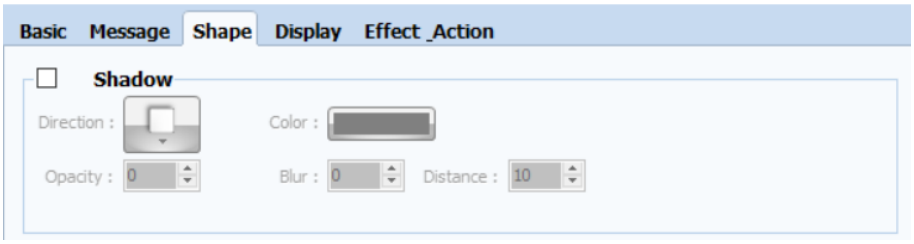
No	Message Group	Description
1	Fixed	Fix the Message Group. Select Group Name from the List.
2	Address Indirect	Address variable displays the string of the GroupID that corresponds to the data of the set address. Group may be modified according to the data of the set address.  If data of [D0010] is 1, display string that has the GroupID of 1. If data of [D0010] is 2, display string that has the GroupID of 2.

[Message] sets the range of String ID to be displayed. [Min Value] sets the minimum value of the String ID range to be displayed. [Max Value] sets the maximum value of the String ID range to be displayed. Default

Message is the message to be displayed when data of the address set in [Default Page] exceeds the [Min Value] and [Max Value] range. It is optional for you to draft this message. Set font and alignment of string to be displayed in [Font].

Shape Page

Set the shadow style of Message Object.

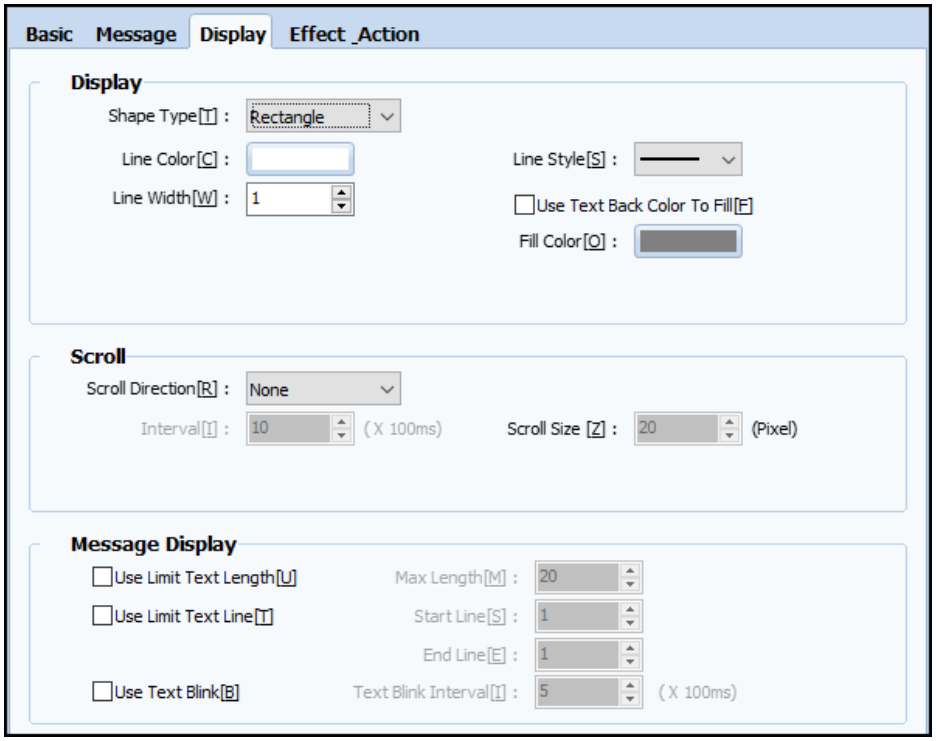


[Pic. Shape page]

No	Shape setting	Description
1	Shadow	Set the shadow of Message. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Display Page

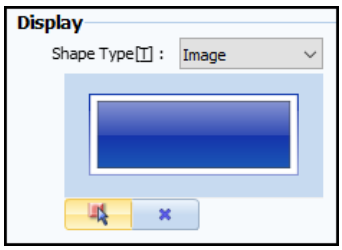
Set the shape, scroll, and message display of Message Object.



[Pic. Display Page]

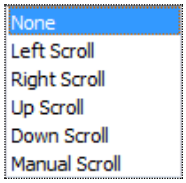
▶ Select the shape of the message object in [Display].

Select [Shape Type] from [Rectangle/Image]. [Rectangle] refers to a rectangular shape. Set the [Line Color/Sub Line Style/Line Width/Fill Color] of the rectangle. If [Use Text Back Color To Fill] is checked, it will apply the string [Back Color] set in [Message Page] as the [Fill Color] of the rectangle. [Image] refers to an image. Select an image at the Image Library.



▶ [Scroll] is the function that allows displayed strings to move in the set direction.

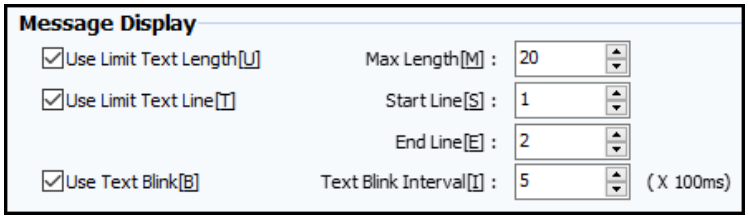
[Scroll Direction] is the direction of movement of string.



No	Scroll Direction	Description
1	None	Scroll function is not used.
2	Left Scroll	String moves left.
3	Right Scroll	String moves right.
4	Up Scroll	String moves up.
5	Down Scroll	String moves down.
6	Manual Scroll	Use [Up/Down/Left/Right] keys to move strings.

[Interval] is the cycle with which strings move. (Set by 100 ms unit.) [Scroll Size] is the distance of movement. (Set by pixel unit.)

▶ [Message Display] is the option that displays messages.



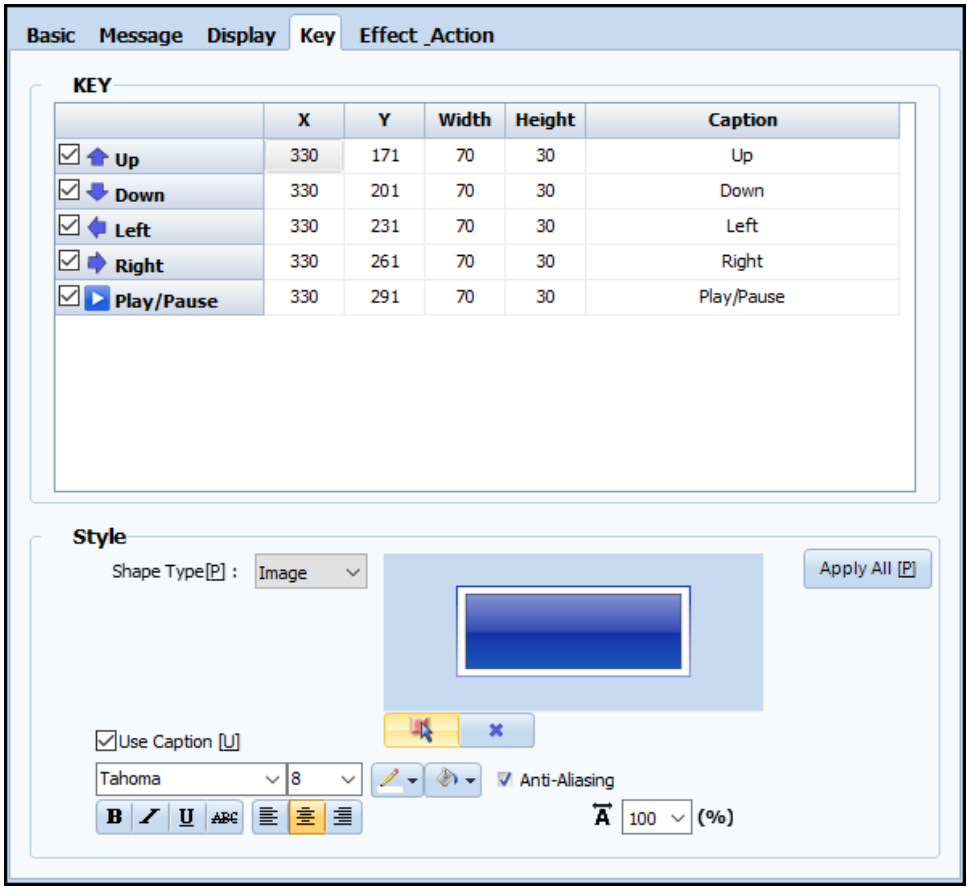
[Pic. Message Display]

No	Message Display	Description
1	Use Limit Text Length	Limit the number of texts displayed in string. When a string exceeds its [Max Length], it will be displayed up to the [Max Length] and the rest will be omitted.

2	Use Limit Text Line	Limit the rows of string. [Start Line] is the starting row. [End Line] is the last row. When there are three lines in a string, set as above to display the first and second rows only.
3	Use Text Blink	Blink strings with [Text Blink Interval].

Key Page

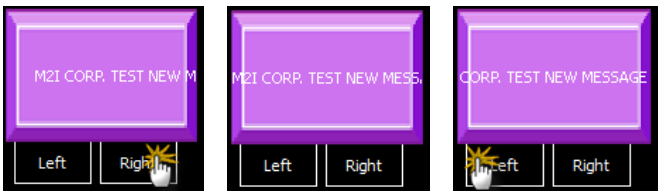
If [Scroll] function is set in [Display Page], [Key Page] will be created.
[Scroll] is the function that moves strings of Message Object to the set direction.
Set Key in Key Page to control the movement.



[Pic. Key Page]

Check Key to register. You may set the position (X, Y), width, height, and caption of the key.
Select and set the key shape from Rectangle or Image at [Shape].

No	Key	Description
1	Up	Move String up.
2	Down	Move String Down.
3	Left	Move String Left.
4	Right	Move String Right.
5	Play/Pause	Stop/Play String. Click once to stop and click again to play.

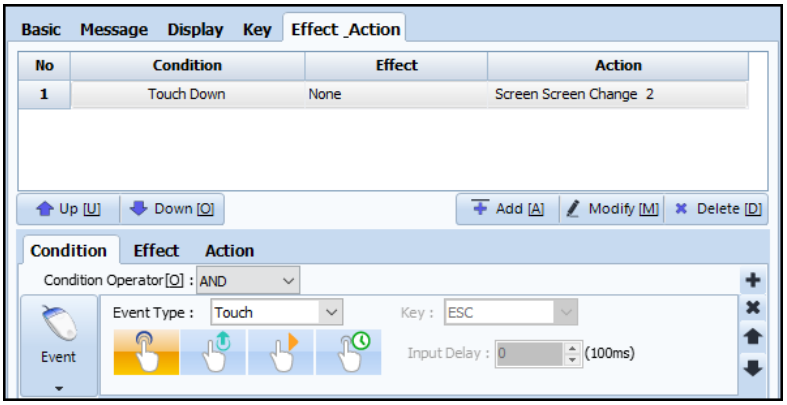


[Pic. Action of Scroll Key]

Effect & Action Page

This is the Effect & Action Page.

(Please see Chapter 7.6 [Setup of Effect & Action Page].)

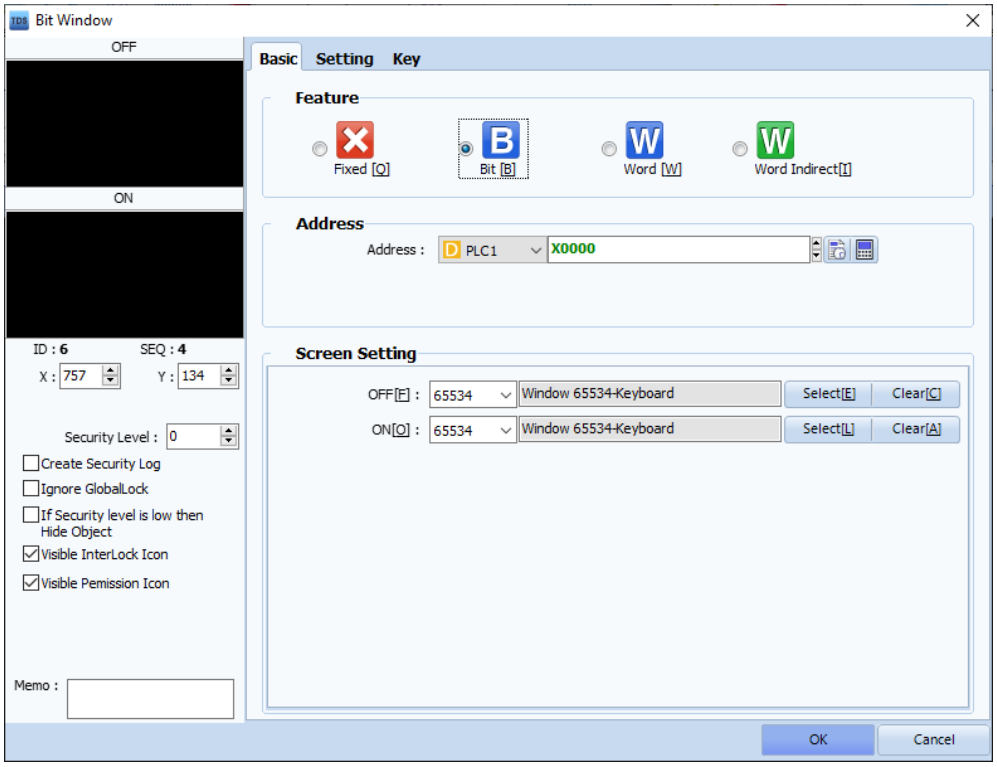


[Pic. Effect & Action page]

CHAPTER 12 - Window Object

This object calls the Window Screen that is set to the position where Window Object is registered.
(To see how to create a new Window Screen, please see Chapter 5.1.2 [New Window Screen].)

There are four types: [Fixed/Bit/Word/Word Indirect].



[Pic. Window Object]

No	Property Page	Description
1	Basic	Set the type and address of Window Object and the Window Screen to call.
2	Setting	Set the popup position, style, etc. of Window.
3	Key	Register the Toggle key that controls window popup.

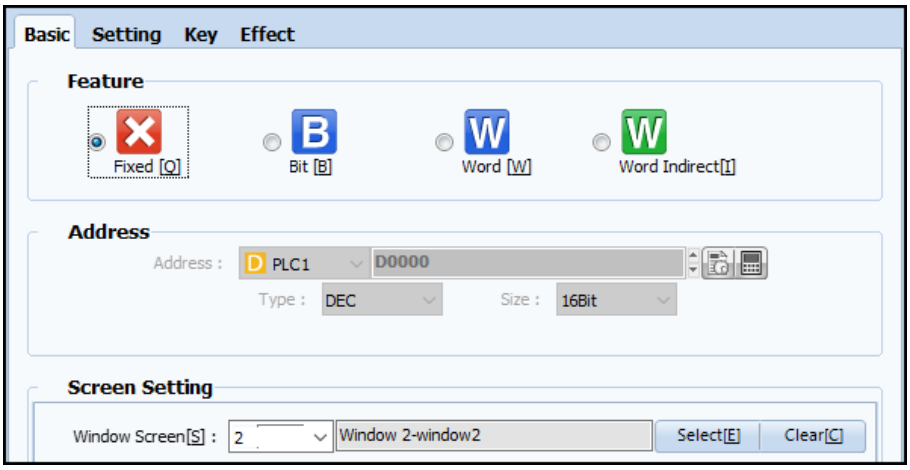
Default Page

Choose the type of Window Object from [Fixed/Bit/Word/Word Indirect].
Set [Address] and [Window Screen] according to the type of Window Object.

No	Feature	Description
1	Fixed [Q]	It always calls the set Window Screen and fixes it to the Base Screen to use.
2	Bit [B]	It calls the set Window Screen according to the Bit Address's [ON/OFF] status.
3	Word [W]	It uses the data range of Word Address to import Window Screen.
4	Word Indirect [I]	It imports Window Screen Number that is the same with data of Word Address.

12.1.1 **Fixed Window**

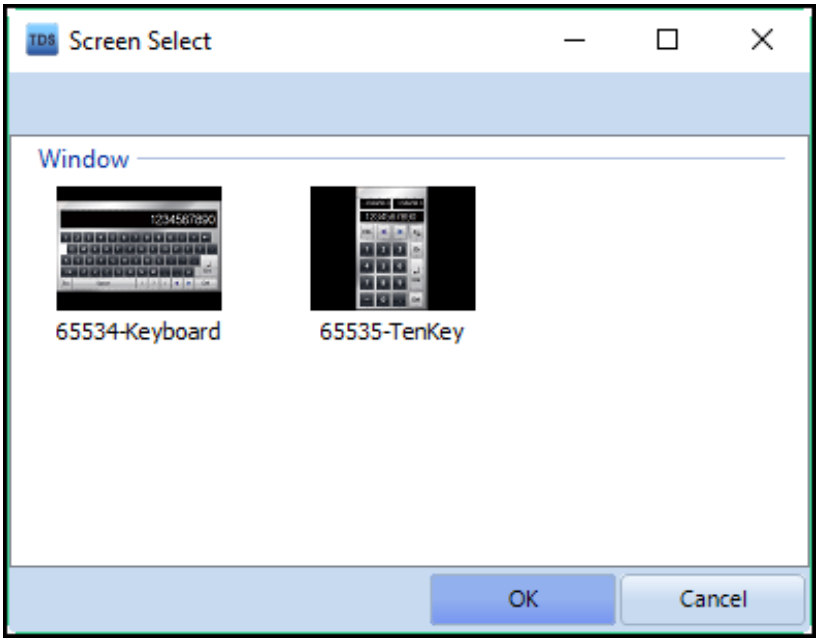
[Fixed Window] object always imports the set Window Screen and fixes it to the Base Screen to use.



[Pic. Fixed Window]

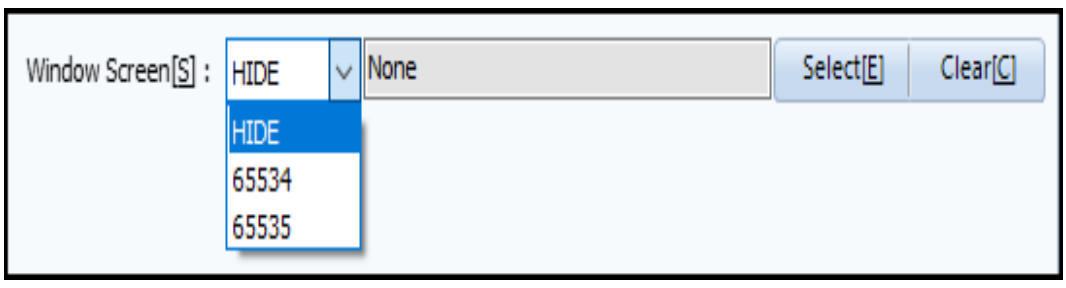
Set one Window Screen to always import from [Screen Setup].

Press [Select] button to select the Window Screen to import from the Window Screen List in the [Screen Select] window.

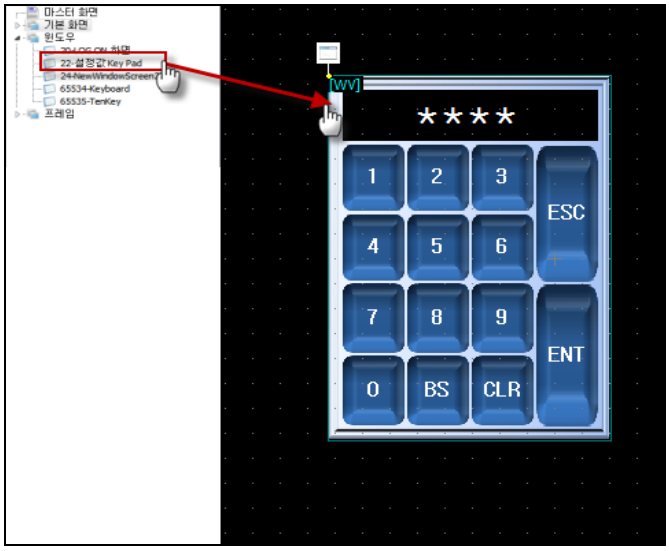


[Pic. Select Window Screen]

You may enter Window Screen Number manually as shown in the below picture without pressing [Select] button. To disable the selected Window Screen, press [Clear] button.



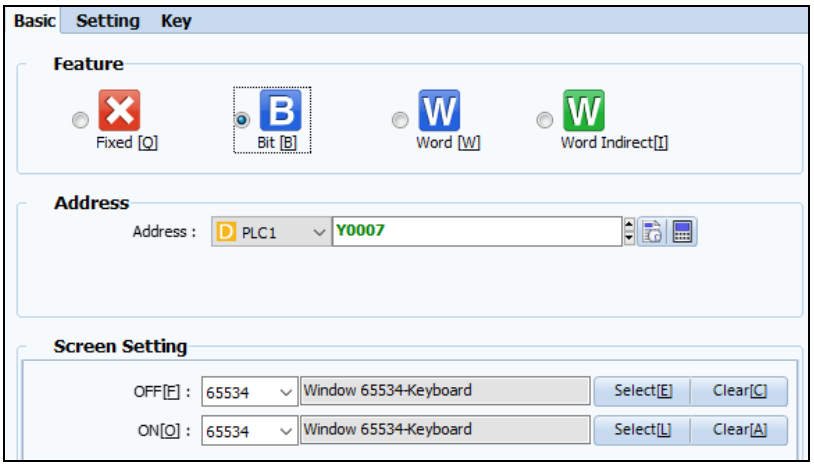
Note) You may set Fixed Window after registering Window Object. You may also [Drag] the Window Screen in [Project Manager] and [Drop] it in the Default Screen to automatically register it as a Fixed Window.



[Pic. Screen with a fixed window with mouse drag]

12.1.2 Bit Window

Bit Window calls the set Window Screen according to the Bit Address's [ON/OFF] status. It can call the Window Screen for [ON] status and [OFF] status individually.

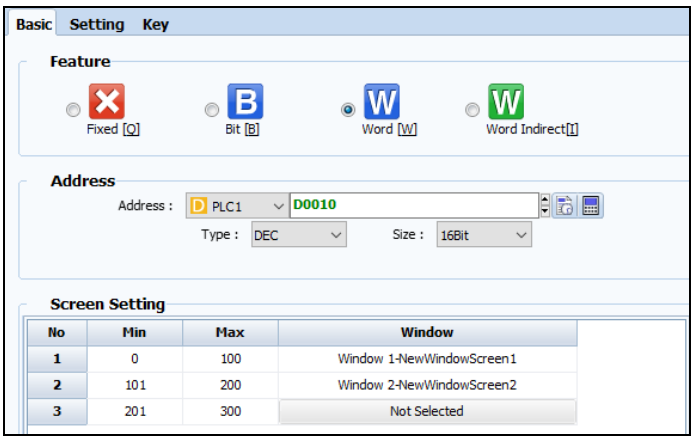


[Pic. Bit Window]

Set the Bit Address to control the call of Window Screen at [Address]. Set [OFF/ON] Window Screen at [Screen Setup]. If set as above, Window Screen no. 2 will popup while [Y007] is [ON]. When OFF, Window Screen is set to None. Therefore, when [Y007] turns to [OFF], Window Screen no. 2 will be closed.

12.1.3 Word Window

Word Window calls multiple Window Screens using data of Word Address. Set the Window Screen that will be called for [Min] and [Max] range.



[Pic. Word Window]

Set the Word Address to control the call of Window Screen at [Address]. Set [Add] buttons by the number of Window Screens to call. Set the [Min/Max/Window Screen to Call].

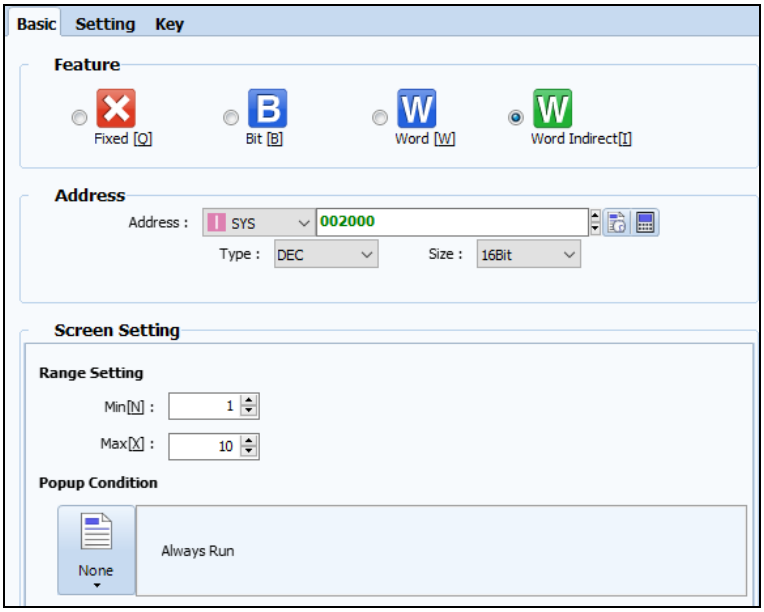
When set as above, if data of [D0010] is [0-100], Window no. 1 will be called.

When set as above, if data of [D0010] is [101-200], Window no. 2 will be called.

If data of [D0010] is [Below 0 or Over 200], the called Window Screen will be closed.

12.1.4 Word Indirect Window

[Word Indirect Window] calls the Window Screen Number that is the same number with the Word Address's data.



[Pic. Word Indirect Window]

Set the Word Address to control the call of Window Screen at [Address]. Set the [Min/Max] range of Window Screen Number to call in [Screen Setup].

When set as above, if data of the internal address [02000] is 1, Window no. 1 will be called.

If data of the internal address [02000] is 2, Window no. 2 will be called.

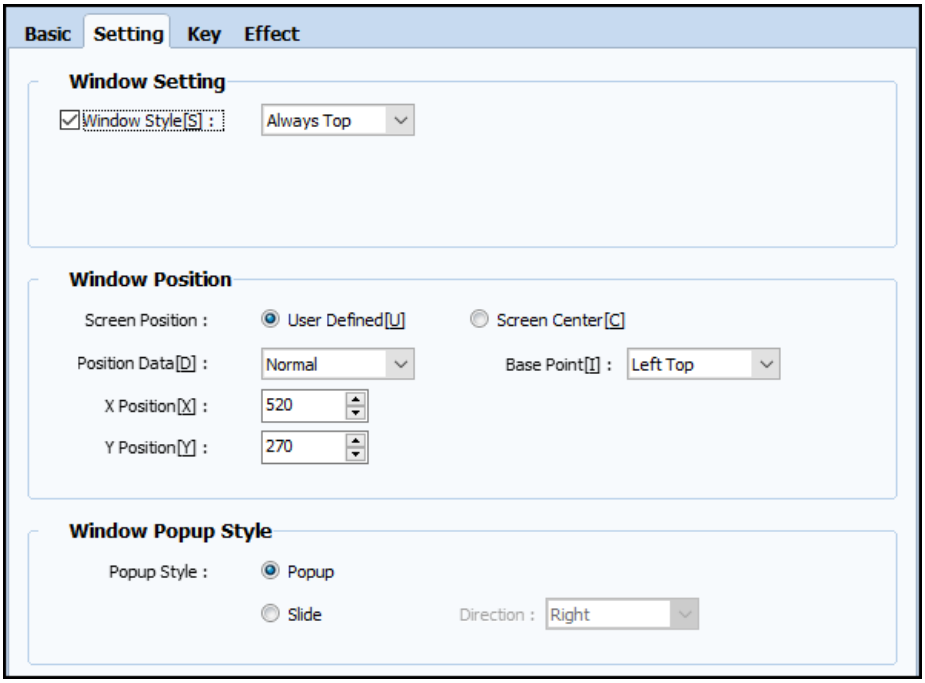
If data of the internal address [02000] is 10, Window no. 10 will be called.

Thus, data of [02000] will be the number of the Window Screen to call.

If data of [02000] is a value other than [1-10], Window Screen will not be called, and if there already is a Window Screen called previously, it will be closed. Also, if there is no Window Screen that corresponds to no. [1-10], none will be called. If [Always Run] is the [Popup Condition] as above, it is the same as [None Condition]. Thus, it will run as above regardless of the condition.
Set [Condition] to popup the Window Screen that corresponds to the set address data while the set condition is true. If the [Condition] is not met, the window will not pop up even if data of [02000] falls between [1-10].
(Please see Chapter 7.7 [Condition Page Setting] to learn how to set conditions.)

Setup Page

Set [Window Style/Window Position/Window Popup Style].
[Window Style] allows a Window Screen to appear at the very front when there are overlapping window screens.
[Window Position] sets the popup location of Window Screen.
You can set slide effects at [Window Popup Style].



[Pic. Setting Page]

12.1.5 Window Setting

Select [Window Style] from [Normal/Always Top]. Configure this option when multiple window screens pop up and overlap.



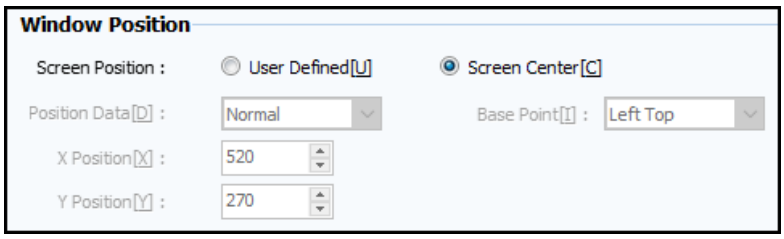
[Pic. Window Setting]

No	Window Style	Description

1	Normal	The Window Screen called in last will be displayed on the very front.
2	Always Top	The current Window Screen will always be displayed on the very front. It will not be covered by other Window Screens.

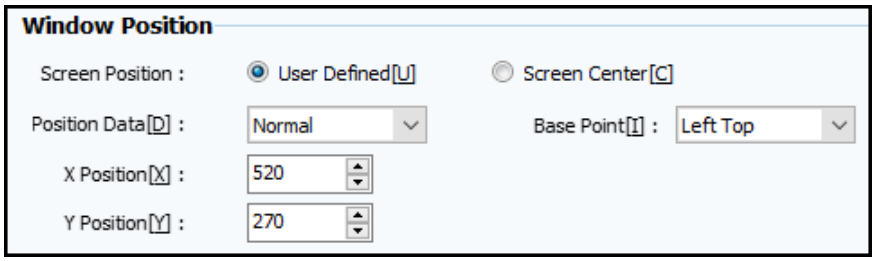
12.1.6 Window Position

[Window Position] sets the popup location of Window Screen.



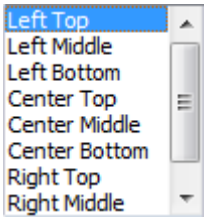
[Pic. Window Position]

[Screen Middle] calls the Window Screen in the middle of the TOP screen.
[User Define] manually sets the [Position Data/Base Point/X Position/Y Position].

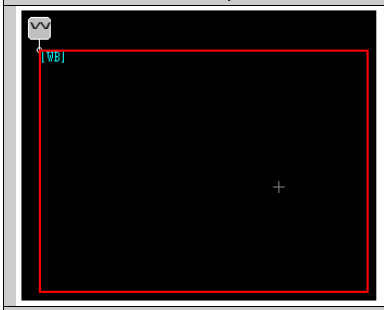
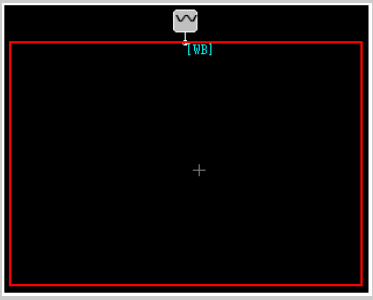
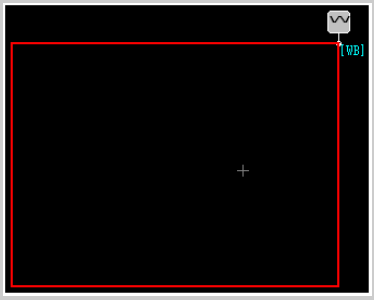
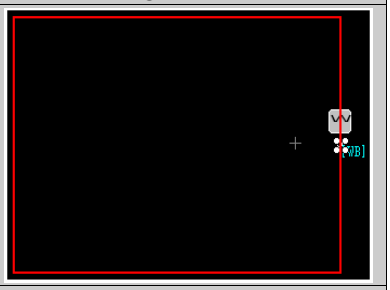
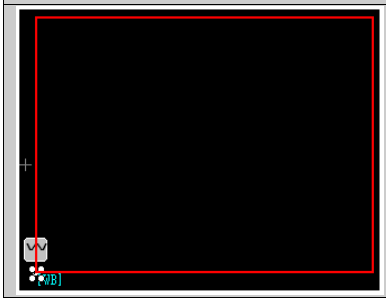
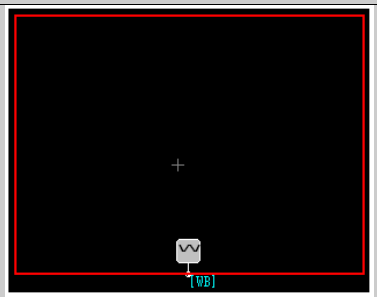


[Pic. User Define]

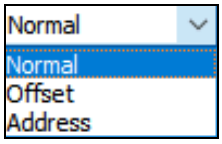
If set as [User Define], set [Position Data/Base Point/X Position/Y Position] as follows. First, set the [Base Point]. [Base Point] dictates to which direction the [Window Screen] pops up. There are a total of 9 Base Points.



[Pic. Base Point]

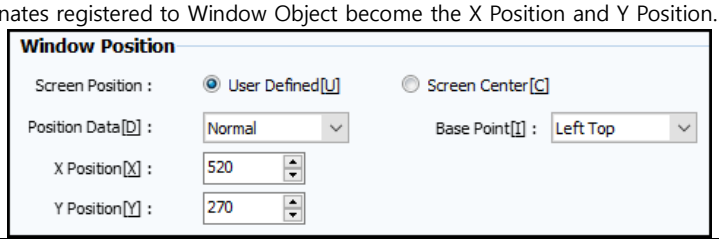
Left Top	Middle Top	Right Top
		
Left Middle	Center Middle	Right Middle
		
Left Bottom	Center Bottom	Right Bottom
		

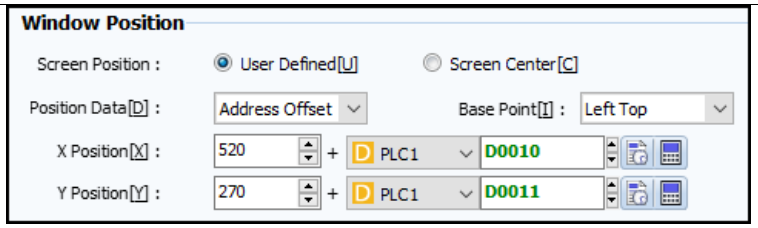
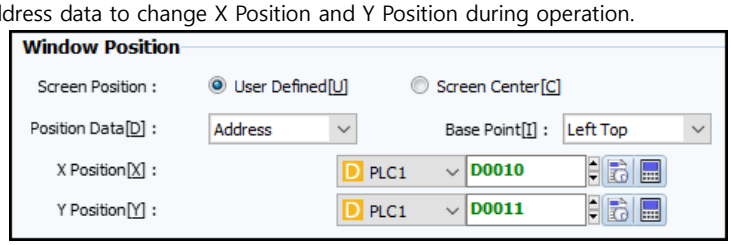
Next, select [Position Data] from [Normal/Offset/Address].



[Pic. Position Data]

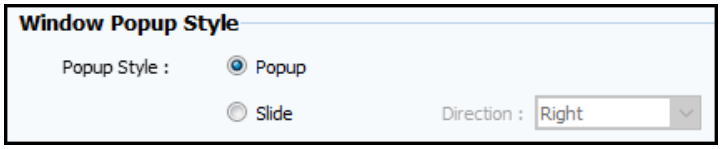
[X Position] and [Y Position] that pop up will vary according to the selected [Position Data].
[X Position] is the horizontal position (pixel) where Window Screen pops up.
[Y Position] is the vertical position (pixel) where Window Screen pops up.

No	Position Data	Description
1	Normal	The coordinates registered to Window Object become the X Position and Y Position. 
2	Offset	The position that adds the X and Y Position where the Window Object is registered + Data of the set address will be the X and Y Position. Modify address data to change X Position and Y Position during operation.

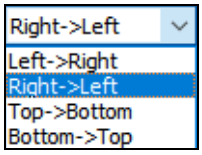
		 If set as above, [X Position] value will be the result of adding 367, the X coordinate of Window Object and data of [D0010]. [Y Position] value will be the result of adding 188, the X coordinate of Window Object and data of [D0011].
3	Address	The set address' data will be the X Position and Y Position. Modify address data to change X Position and Y Position during operation.  When set as above, if data of [D0010] will be the [X Position]. [D0011] data becomes the [Y Position].

12.1.7 Window Popup Style

[Window Popup Style] sets the style of the Window Screen when called from [Popup/Slide].

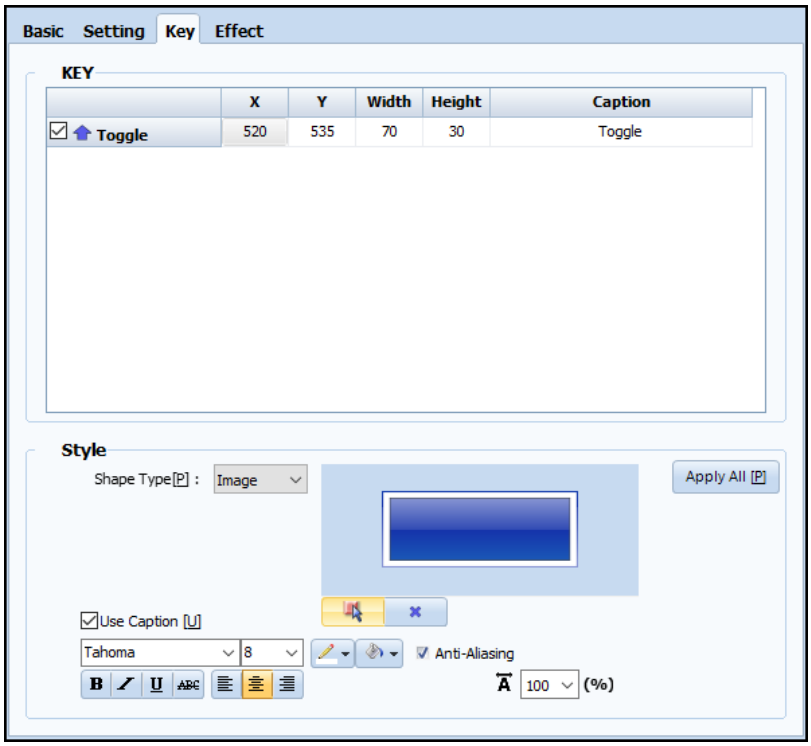


[Pic. Window Popup Style]

No	Popup Style	Description
1	Popup	Window Screen is called in popup style.
2	Slide	Call Window Screen in slides. Set [Direction] from [Left->Right/Right->Left/Top->Bottom/Bottom->Top] as below.  [Pic. Direction] If set as [Left->Right], Window Screen will slide from the left side to its popup position when called. Closing the Window Screen will revert the movement, sliding to the left from the popup position and the window will be closed.

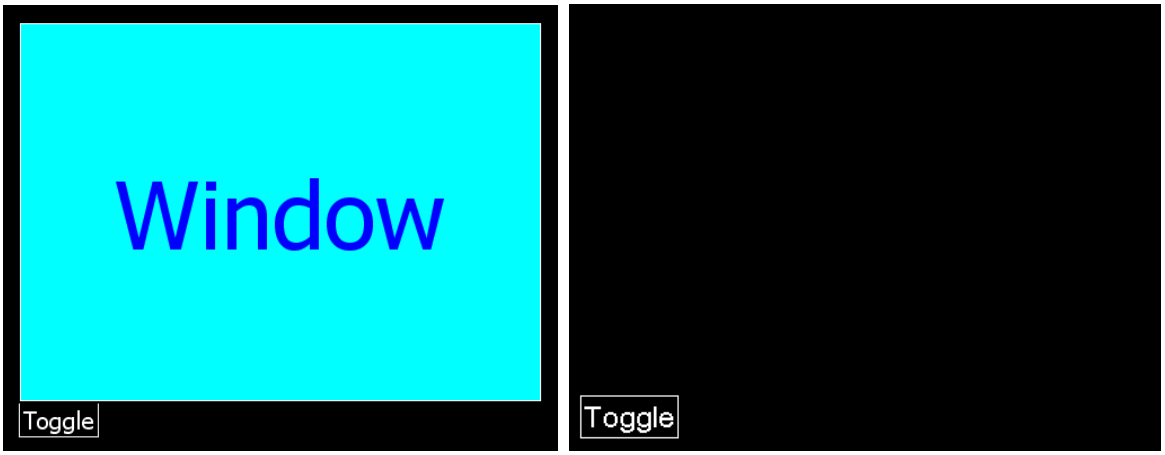
Key Page

Set the Toggle Key that [Popup/Disable] the Window Screen set in Window Object.



[Pic. Key Page]

Check Toggle in [Key]. You may set the position (X, Y), width, height, and caption of the key.
Select and set the key shape from Rectangle/Image at [Shape] at the bottom.
With one touch, Toggle Key pops up the Window Screen set in Window Object. Touch again to close the window.



[Pic. Action of Toggle Key]

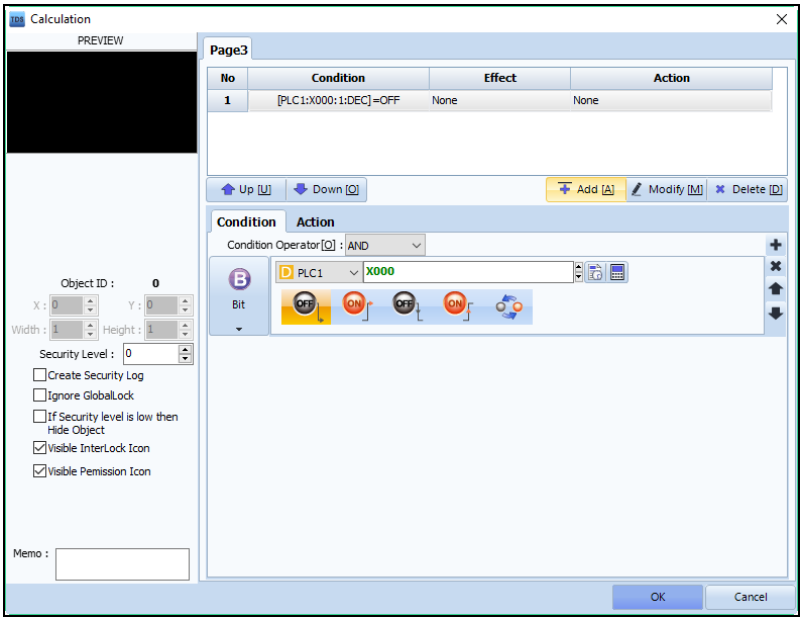
CHAPTER 13 - Calculation Object

Calculation Object is an object that runs set actions when the condition is true by setting [Condition] and [Action]. They can be registered on screen and used in the same way as other objects and run by the condition set in the screen where they are registered.

However, the objects are not displayed on screen. Therefore, there is no display part that sets object appearance.

Registration of Calculation Object

Run [Object]-[Calculation].



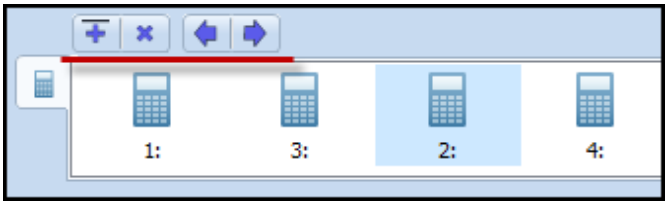
[Pic. Calculation Object]

Set [Condition] and [Action]. Click [OK] button to register Calculation Object at the bottom of the screen as below.



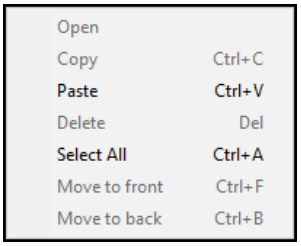
The registered Calculation Object will run from the very left to right in a sequential order.

Calculation Object will be displayed in a calculator-shaped icon. When the object is [Double Clicked], Property Screen will be displayed.



[Pic. List of Calculation Object]

You may set or delete Calculation Object with the button at the top of the list. You can also modify the execution order of objects. Furthermore, you may edit it with the menu that pops up when the object is right-clicked.

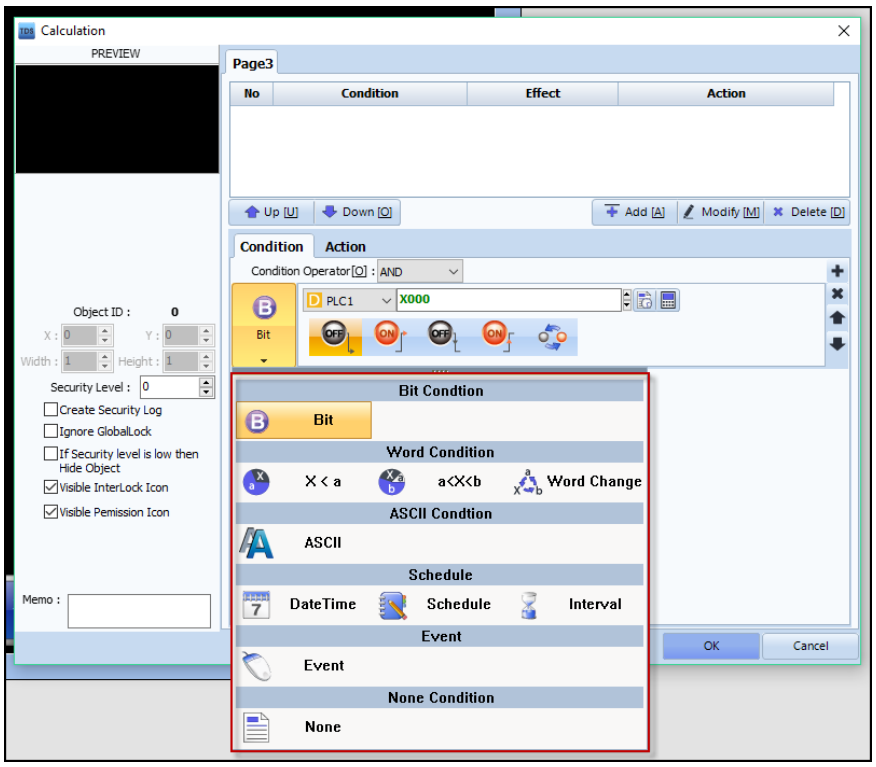


[Pic. Popup Menu of Calculation Object]

No	Property	Description
1	Open	Popup the Property Screen of the selected Calculation Object. Or double click Calculation Object to popup the Property Screen.
2	Copy	Copy the selected Calculation Object.
3	Paste	Paste the copied Calculation Object in. Click button to [Copy] the last registered Calculation Object and [Paste] it in.
4	Delete	It deletes the selected object in the same way as running the button.
5	Select All	Select all registered Calculation Objects.
6	Move to front	It is the same action as running button. Move Calculation Object one cell to the left to move the execution order one cell forward.
7	Move to back	It is the same action as running button. Move Calculation Object one cell to the right to move the execution order one cell backward.

[Condition] Page Setting

[Condition] is the page where you can set conditions to execute [Effect] and [Action]. When the condition is met, the set [Effect] and [Action] will be run. For [Condition], there are [Bit/Word/ASCII/Schedule/Event/None Condition].

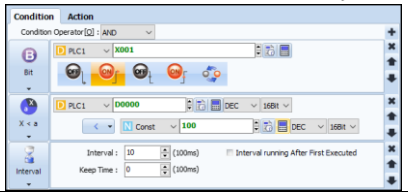


[Pic. Condition Setting]

Details of each condition is as below.

No	Condition	Description
1	Bit Condition	Use the ON/OFF value of the set address as the condition.
2	Word Condition	Use the Word value (analog value) of the set address as the condition.
3	ASCII Condition	Use the ASCII value (string) of the set address as the condition.
4	Schedule	Use time as the condition.
5	Event	Use touch input as the condition.
6	None Condition	It will run continuously. It runs continuously when the screen to which the object is registered is in operation.

It describes the button that is used in common on the Condition Page.

No	Button	Description
1		Multiple conditions can be set with [Condition] button. (You may add up to 8 conditions.) 
2		Delete the condition.
3		Moves the condition to the top of the list.
4		Moves the condition to the bottom of the list.
5	Calculation Condition	When multiple [Condition] List is set, set the Operate Condition. With [AND], it will be [True] when all conditions are true. With [OR], it will be [True] when more than one condition is true.

13.1.1 [Condition] Page: Bit Condition

Bit Condition uses the ON/OFF value of the set address as the condition.

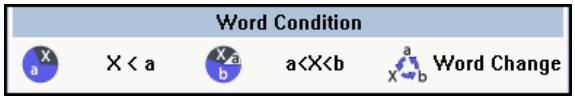


[Pic. Bit Condition]

No	Property	Description
1	Address Setting	Set the actual address to use as Bit Condition. 
2		As long as the data of the address set to [OFF continue] is 0, it will be true.
3		As long as the data of the address set to [ON continue] is 1, it will be true.
4		Once the data of the address set to [OFF edge] changes from 0 to 1, it becomes true.
5		Once the data of the address set to [ON edge] changes from 0 to 1, it becomes true.
6		Once the data of the address set to [REVERSE] changes from 1 to 0, or vice versa, it becomes true.

13.1.2 [Condition] Page: Word Condition

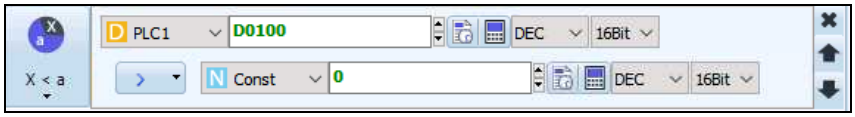
Word Address refers to 16 Bit unit address. Word Condition uses the data of the set Word Address (analog value) as the condition.



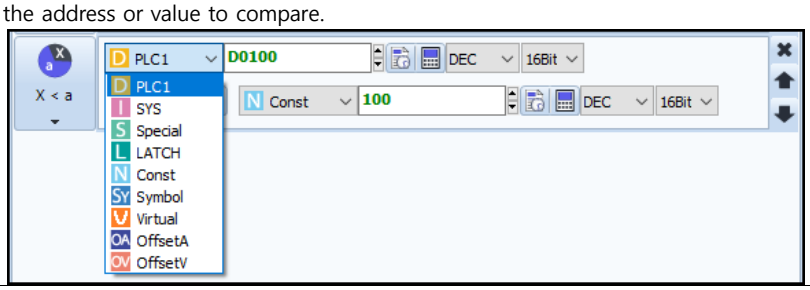
[Pic. Word Condition]

(1) X < a condition

It becomes true when the condition is met by comparing two data. [X] and [a] may be set as addresses or constant values. There are 6 types of comparative operators between [X] and [a]. If set as shown in the below picture, it will be true when the [D0100] data changes and the value is larger than 0.



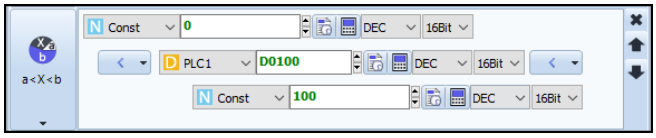
[Pic. Word Condition's X < a]

No	Property		Description
1	[X], [a]		Set the address or value to compare. 
2	Comparative Operator	<	It is the operator that compares two operands. In this condition, the value of the left operand is smaller than the right one.
		>	It is the operator that compares two operands. In this condition, the value of the left operand is bigger than the right one.

		<=	It is the operator that compares two operands. In this condition, the value of the left operand is the same or smaller than the right one.
		>=	It is the operator that compares two operands. In this condition, the value of the left operand is the same or bigger than the right one.
		==	It is the operator that compares two operands. In this condition, the value of the left operand is the same as the right one.
		!=	It is the operator that compares two operands. In this condition, the value of the left operand is different from the right one.

(2) a<X<b Condition

Three sets of data are compared and when their conditions are met, it becomes true. You may set addresses or constant values for [a], [X] and [b]. It is normally used when setting the condition where the [X] value is between [a] and [b]. If set as shown in the below picture, it becomes true when the [D0100] data changes and the value falls between 0 and 100.

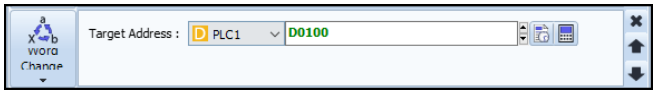


[Pic. Word Condition's a<X<b]

(3) Word Change Condition

It becomes true when the set address' data is changed.

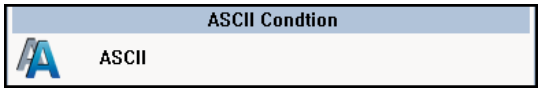
If set as shown in the below picture, it will be true once when [D0100] data is changed.



[Pic. Word Change of Word Condition]

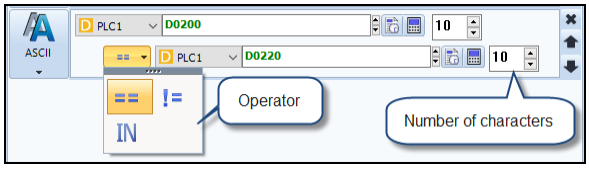
13.1.3 [Condition] Page: ASCII Condition

Use the ASCII value (string) of the set address as the condition.



[Pic. ASCII Condition]

Set the address where the string is started at the top and bottom and set the string count. Set an operator between two addresses. The strings of the top address and the bottom address are compared and it becomes true when the condition is met.



[Pic. ASCII Condition]

[==] Operator becomes true when the top address string and the bottom address string are the same.

[=!] Operator becomes true when the top address string and the bottom address string are different.

[IN] Operator becomes true when the top address String is included in the bottom address string.

13.1.4 [Condition] Page: Schedule

Schedule Condition uses Time as its condition.

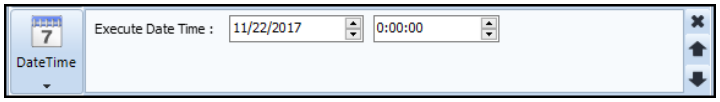


[Pic. Schedule Condition]

(1) DateTime

Specific date and time become the condition for DateTime. Set both Date (Year/Month/Date) and Time (Hour/Minute/Second).

It becomes true when it is the corresponding time and date.



[Pic. DateTime]

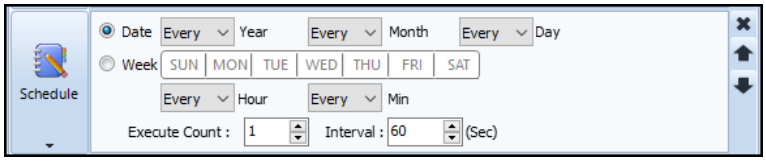
(2) Schedule

You may set the Schedule to be true at the time you desire. Set by selecting from [Date] and [Day].

Select [Every] in [Year/Month/Day] setting for [Date], it will be true at the [Hour/Minute] of [Every Year/Every Month/Every Day].

Selecting [Day] will make it true at the corresponding [Hour/Minute] of the corresponding [Day].

Similarly, for [Hour/Minute]; set [Every] to make it true [Every Hour/Every Minute].

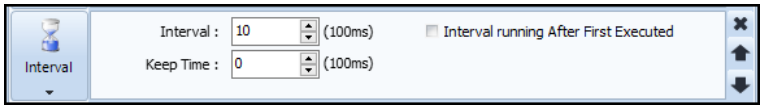


[Pic. Schedule]

If the Execute Count is [1], it will be true once at the corresponding [Year/Month/Day/Hour/Minute]. If you set Execute Count [2] or above and set the Interval (sec), it will be true once at the corresponding [Year/Month/Day/Hour/Minute] and it will be true at every (Execute Count-1) at every interval.

(3) Interval

Interval is used to set cyclic condition. If set as below, it will be true as soon as the object is executed. The true status will be maintained for 0.5 second and then it'll be switched to false. After it becomes true, it will become true again after [20x100ms=2s], that is, 2 seconds, maintain for 0.5 second, and then become false. This cycle will be repeated.



[Pic. Interval]

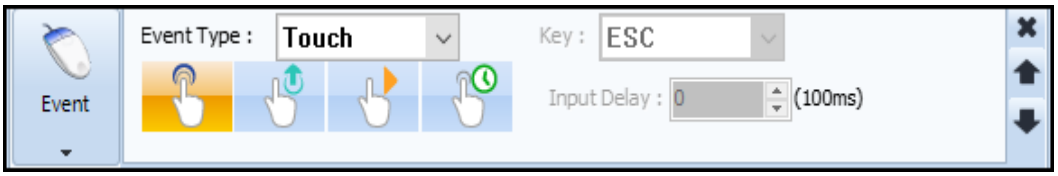
No	Property	Description
1	Spacing	The interval (Time Interval) where the condition becomes true.
2	Pulse Time	The length of time where true status is kept.
3	Interval	This function makes the object true as soon as it is run.

	Running After First Executed	If not checked, the object will turn true after a set time in Interval after it is run.

13.1.5 [Condition] Page: Event

(1) Event Type (Key)

Event Type (Key) uses key input (Keyboard/Keypad/Function key, etc.) as conditions.



[Pic. Event Type Key]

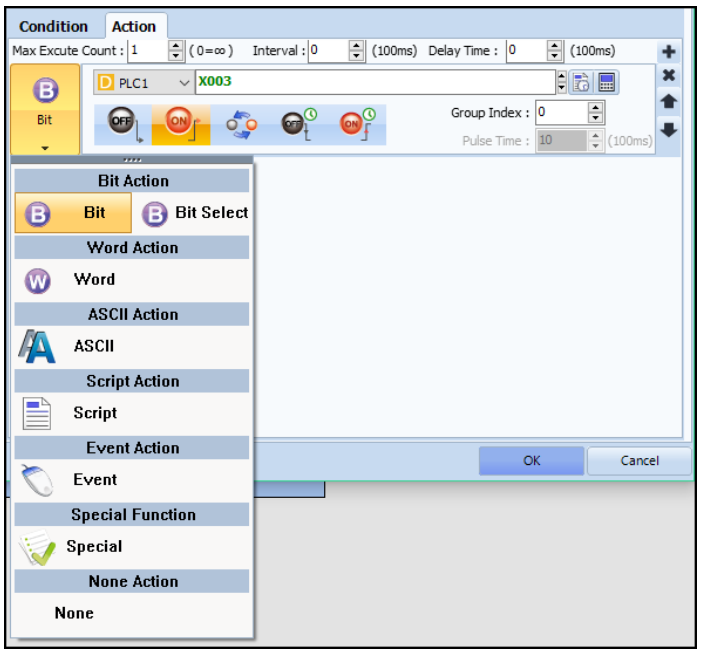
No	Property	Description
1	Event Type	Set the type to use the condition as Touch/Key.
2	Touch Down	It turns true once when the set key is pressed.
3	Momentary	Pressing the set key makes it true and keeps it true until the touch is withdrawn. If the Max Execute Count is set for more than [2] at [Action] page and set the [Interval], it will be run for the Max Execute Count by the [Interval] while it is true. When the communication is severed while the button is being pressed, "Request Once" at [Result check] requests the opposite Bit Action "once," and "Retry after Check' requests opposite Bit Action until the "Communication is back online."

13.1.6 [Condition] Page: None Condition

None Condition is a condition that is always true. Set it to None Condition and set [Effect]/[Action] and the [Effect] will run continuously and [Action] will run by the Max Execute Count.

[Action] Page Setting

[Action] page sets the action to be run when the condition is true. As below picture, actions include [Bit Action/Word Action/ASCII Action/Script Action/Event Action/Special Function/None Action].

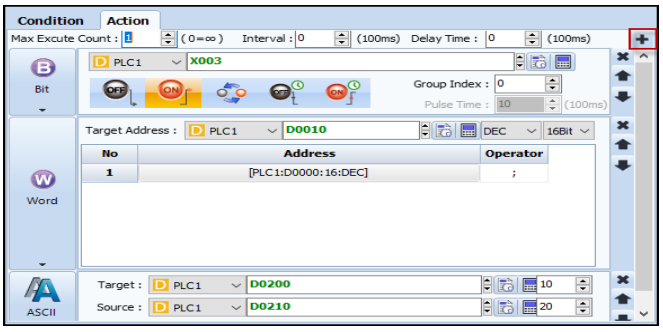


[Pic. Action Page]

No	Action	Description
1	Bit Action	Controls the Bit Address data.
2	Word Action	Controls the Word Address data.
3	ASCII Action	Insert strings into the set address.
4	Script Action	Configure the script calculation.
5	Event Action	Configure [Keyboard/Keypad/Tenkey] settings.
6	Special Function	Configure actions related to [Screen/Print/SD Memory/Memory/System/App/Camera].
7	No Action	The action to be executed is not set.

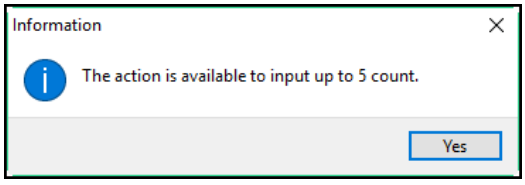
Click ✚ at the top right to add up to 10 of these actions.

Register multiple actions, and if the condition is true, they will be executed from the top in a sequential order.



[Pic. Add Action]

When 10 or more actions are added, below message will be displayed.



[Pic. Message of action count limit]

There are 3 buttons on the right hand side of each action as below.

No	Action	Description
1		Delete the action.
2		If multiple actions are registered, actions will be executed in an order from the top when the condition is true. This button is for modifying the execution order of actions. Use it to push an action one cell upward.
3		If multiple actions are registered, actions will be executed in an order from the top when the condition is true. This button is for modifying the registration order (execution order) of actions. Use it to push an action one cell downward.

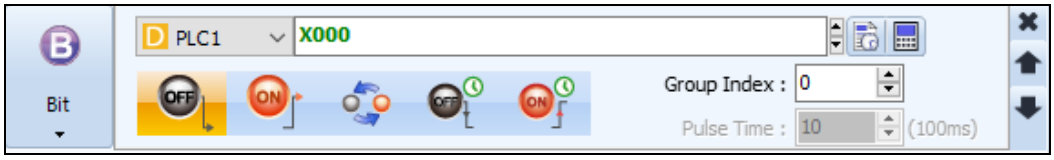
You may set the [Max Execution Count/Interval/Delay Time] etc. for the execution of an action while the condition is true.

No	Action	Description
1	Max Execute Count (0=∞)	This is the count for running the set actions. With [0], it will run continuously while the condition is true. With [1], the action will run once only even if the condition continues to be true.
2	Interval (100ms)	This is the time interval for running actions. [0] will continuously scan and is the top speed.
3	Delay Time (100ms)	This is the delay time for running actions. With [0], the action will be run immediately when the condition is true. If set to [5]x100ms, action will be executed after [0.5 sec] when the condition is true.

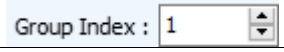
13.1.7 [Action] Page: Bit Action

(1) Bit

When the condition is true, control the Bit Address.



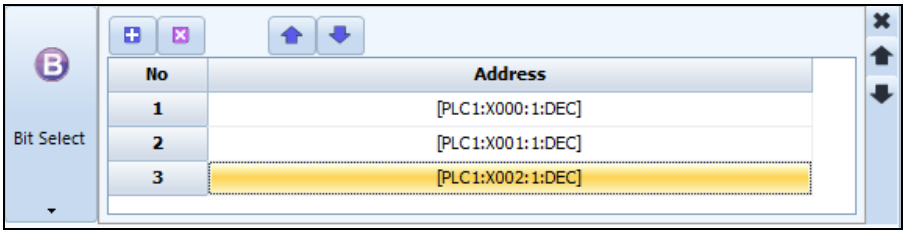
[Pic. Bit]

No	Bit	Description
1	Address	Choose the Bit Address to control.
2		[OFF continue]. It turns off data of the set address when the condition is true.
3		[ON continue]. It turns on data of the set address when the condition is true.
4		[Reverse]. When the condition is true, data of the set address turns from [0] to [1]. If it is [1], it turns [0].
5		[OFF pulse]. When the condition is true, it turns data of the set address off by [Pulse Time]. Thus, the address data will become [0] by the Pulse Time and will turn back to [1].
6		[ON pulse]. When the condition is true, it turns data of the set address on by [Pulse Time]. Thus, the address data will become [1] by the Pulse Time and will turn back to [0].
7	Group index	Set Group Index to multiple Bit Addresses. To group multiple Bit Addresses, enter numbers other than [0] in [Group Index]. Enter [0] to not use Group Index. You must set the same number to group Bit Addresses to group them into one group. 

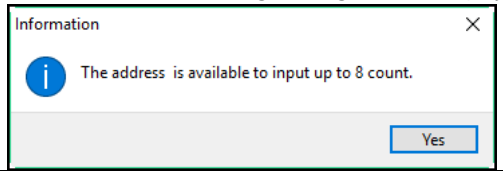
		Make one of the Bit Addresses from the same Group Index ON and the rest of data of the addresses will be OFF. E.g.) Set from [X001] to [X005] as the same Group Index and turn [X001] [ON] to turn the rest of the addresses [X002-X005] OFF.
8	Pulse Time (100ms)	Used for [OFF pulse] and [ON pulse]. This is the time that the value is maintained after it turns OFF or ON. You may set it between the range of [1-600] (100ms).

(2) Select Bit

Set multiple Bit Addresses. You may add up to 8 Bit Addresses. When the condition is true, it turns Bit Addresses ON in the order of their [Number]. When one Bit Address is turned ON, the rest of them will be OFF.

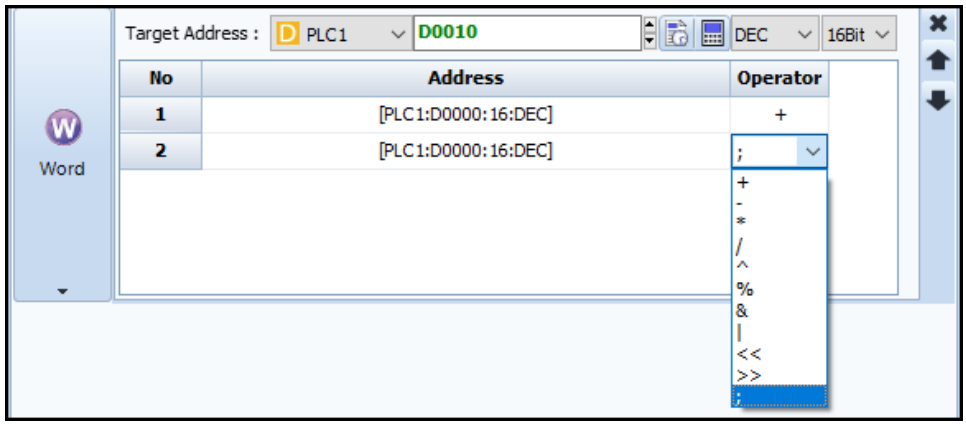


[Pic. Select Bit]

No	Select Bit	Description
1	Address	Double click the Insert Address to set the address.
2		Add addresses to use for Select Bit. You may add up to 8 addresses. If more than 8 of them have been added, following message will be displayed. 
3		Delete the selected address.
4		Push the number of the selected address up.
5		Push the number of the selected address down.

13.1.8 [Action] Page: Word Action

It controls Word Address data when the condition is true. Word Address refers to 16 Bit Address that saves analog data. It inserts certain data or calculation result to this address.



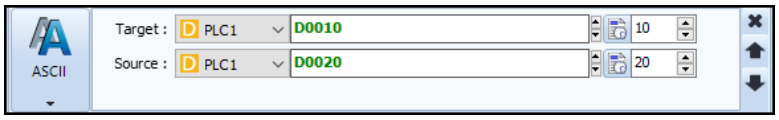
[Pic. Word Calculation]

When set as above, it will insert the result of adding [D0010] value and [D0011] value to [D0010] when the condition is true.

No	Word Calculation		Description
1	To Reference		It sets the Word Address to save the calculation result. Use to set Data Type and Size. DEC 32Bit (DEC, UDEC, HEX, BCD, FLOAT / 16Bit, 32Bit)
2	Address		Set Address to No [1]. Selecting [;] from Operator will perform a calculation that inserts the address value of No [1] to Target Address. Select an Operator other than [;] to create No [2]. Set the address to perform calculation in No [2]. Calculate with the Operator that has selected No [1] and No [2] and insert the result to Target Address. Continuously set operator as above, and set address to perform calculation to add calculation formula. Calculation will be performed regardless of the type of operator from No [1] in a sequential order. Thus, it will calculate the calculation result of No [1] and [2] with No [3], and its result with No [4].
3	Operator	+	Add two operands and insert the result to Target Address.
		-	Subtract one operand from another and insert the result to Target Address.
		*	Multiply two operands and insert the result to Target Address.
		/	Divide one operand by another and insert the result to Target Address.
		^	Perform Bit XOR calculation on two operands and insert the result to Target Address.
		%	Perform remainder calculation on two operands and insert the result to Target Address. Remainder Calculation is the calculation for the remainder, which becomes the calculation result instead of quotient when a division is performed.
		&	Perform Bit AND calculation on two operands and insert the result to Target Address.
		|	Perform Bit OR calculation on two operands and insert the result to Target Address.
		<<	This is the left Bit Shift Operator. When the first operand is expressed in binary numbers, perform Left Bit Movement from the second operand by the set number. E.g.) The first operand data of [D0001] is [1] and the second operand is constant value [3]. Then, when the calculation is performed as [D0001] << 3], the value that expresses [1] in binary format would be [0000000000001000]. Move this value left by 3 digits and it will be [0000000000001000]. Change this value in decimal format and it will be [8].
		>>	The Right Bit Shift operator. When the first operand is expressed in binary numbers, perform Right Bit Movement from the second operand by the set number. E.g.) The first operand data of [D0001] is [8] and the second operand is constant value [3]. Then, when the calculation is performed as [D0001] << 3], the value that expresses [8] in binary format would be [0000000000001000]. Move this value Right by 3 digits and it will be [0000000000000001]. Change this value in decimal format and it will be [1].
		;	It refers to the end of a formula.

13.1.9 [Action] Page: ASCII Action

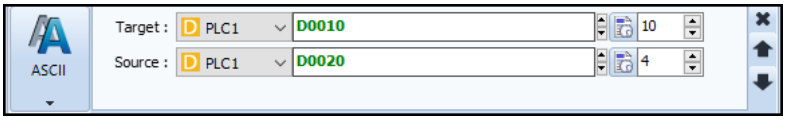
When the condition is true, it imports string of [Read] address and insert (copy and paste) to the [Target] address.



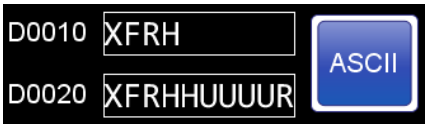
[Pic. ASCII Action]

Each text of ASCII text is 8 bit. Therefore, 1 word (16 bit) address has 2 texts. Set [String Count] at [Target] address and the right side of [Read] address, respectively. When set as above, and the condition is true, there are 10 texts starting from [D0020]. Insert the 10 texts in the 5 addresses from [D0020] to [D0024] in [D0010]-[D0014].

The String Count of [Target] address and [Read] address can be different. String Count of [Read] Address is 4. If the String Count of [Target] Address is 10, it will be copied as below with 4 Strings.



[Pic. When String Counts have been set differently]



[Pic. When String Counts have been set differently]

13.1.10 **[Action] Page: Script Action**

When the condition is true, the script is run. The set script can be edited in [Project]-[Script]. (To see how to use Script, see Chapter 4.5 [Script].)



[Pic. Script Action]

13.1.11 **[Action] Page: Event Action**

It is used to make keys on Keypad.



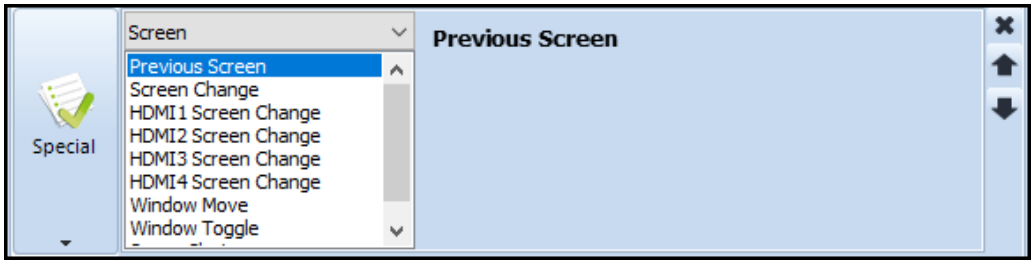
[Pic. Event Action]

No	Event Action		Description
1	Key		Select the type of key.
2	Action		Touch Down is for pressing a key.
			Touch Up is for releasing a key.

There are diverse types of hotkeys. You can make various String Input Keyboard and Number Input Keypad.

13.1.12 **[Action] Page: Special Function**

Set the special actions to run when the condition is true.

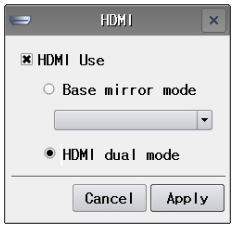


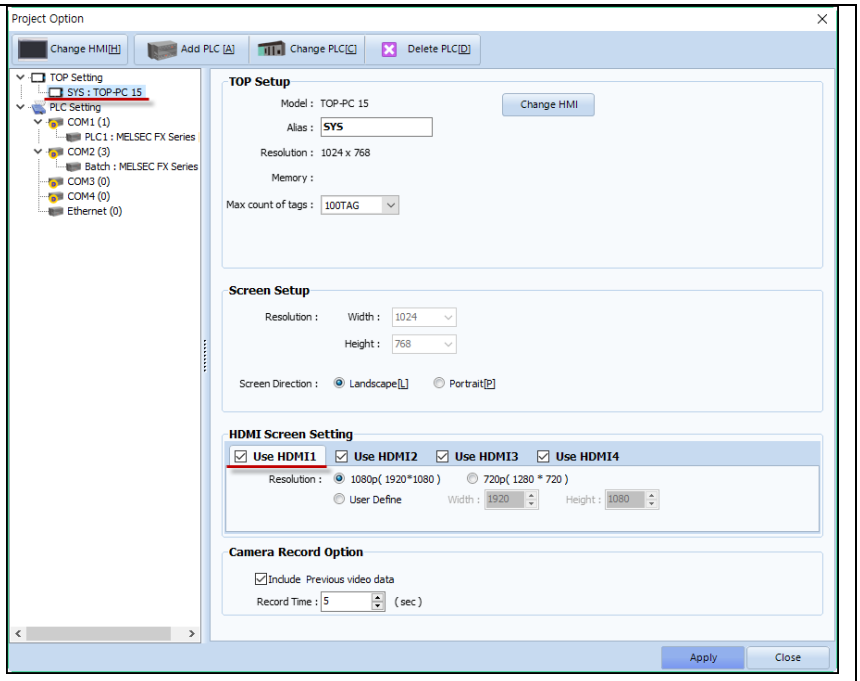
[Pic. Special Function]

No	Special Function	Description
1	Screen	It sets actions related to screens such as [Move Base Screen/Move HDMI Screen/Popup and Move Window Screen/Screen Capture], etc.
2	Print	It sets actions related to print.
3	Storage	It sets actions related to memory installed in TOP.
4	Memory	It sets actions related to Copy Memory/Delete Log Data.
5	System	Set actions related to System/Security.
6	App	It calls applications in Menu Screen.
7	Camera	It sets actions of internal/external camera of TOPR Premium Model.

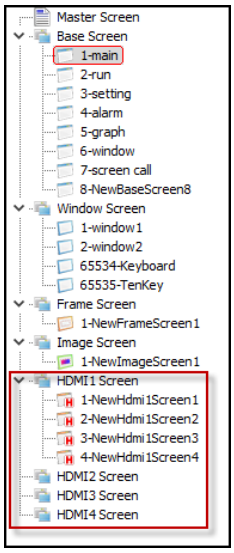
(1) [Action] Page: Special (Screen)

It sets actions related to screens such as [Move Base Screen/Move HDMI Screen/Popup and Move Window Screen/Screen Capture], etc.

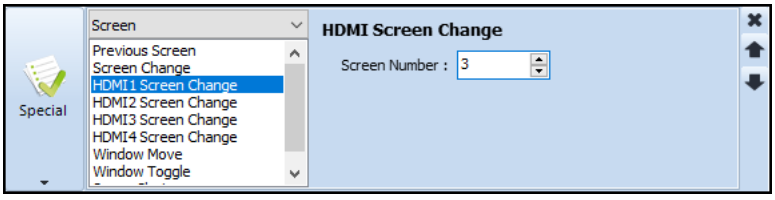
No	Screen	Description
1	HDMI1 Screen Change HDMI2 Screen Change HDMI3 Screen Change HDMI4 Screen Change	Connect [Projector/PC/TV], etc. to TOP via HDMI to monitor TOP screen. TOPR Premium Model can connect to 1 HDMI and TOPView can connect to 4 HDMIs. If it is set to [Basic Copy Mode] in [Control Panel]-[HDMI] in TOP Menu Screen, it is monitored in the device connected to HDMI, same as on the TOP screen. Accordingly, there is no need to form a separate HDMI screen. However, if it is set to [HDMI Dual Mode], form a separate HDMI screen to monitor.  Run [Project]-[Property] menu in TDS to display [Project Option] screen. Click the TOP model name in [TOP Setup] at the top left side of the screen to display [HDMI Screen Setting] at the bottom right corner. Use HDMI Dual Mode to check HDMI that will form a separate screen from TOP screen. In the below picture, the project is set to TOPView and therefore, it can set up to four HDMIs.



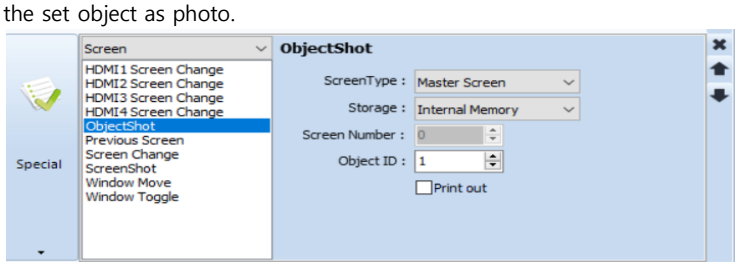
Check as above to display [HDMI1-HDMI4] as below in [Project Manager] screen and create and edit a separate HDMI Screen.

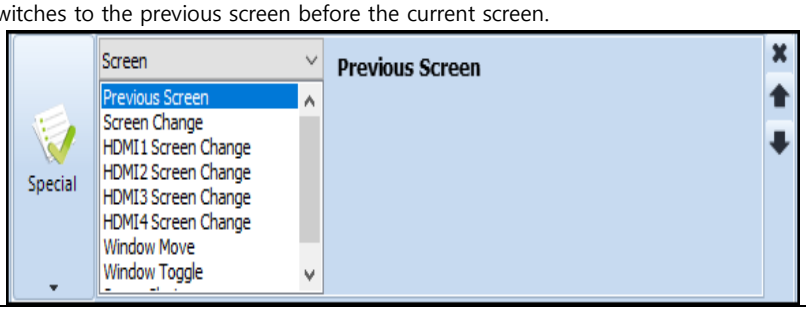
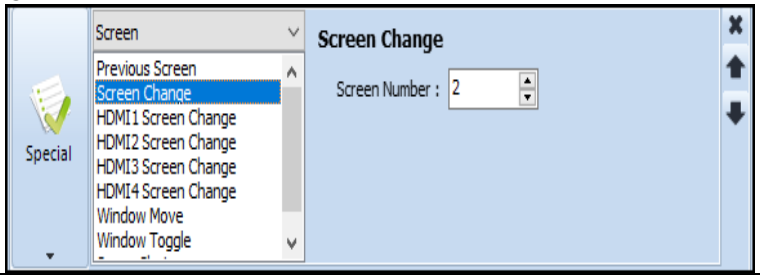
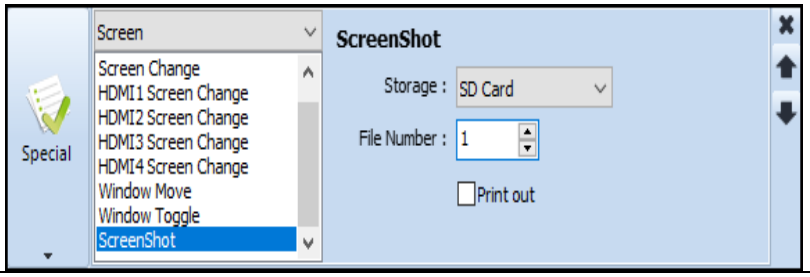


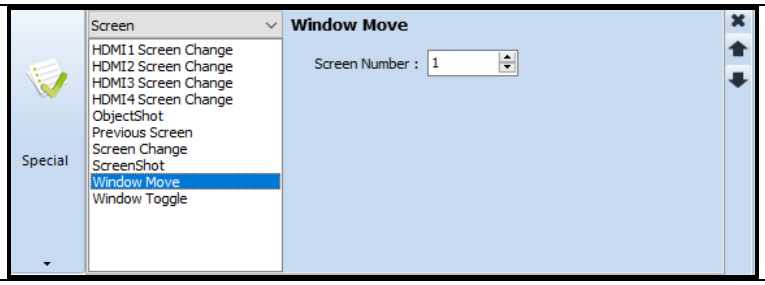
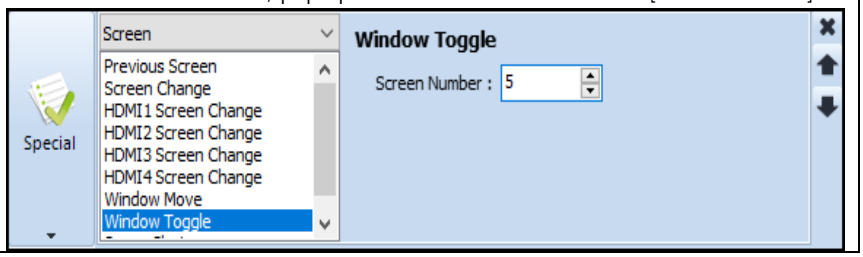
If the above function is in use, use [HDMI1 Screen Change] to change the screen. When the condition is true, the HDMI screen will be switched to the set [Screen Number].



The same method applies to HDMI2, HDMI3, and HDMI4.

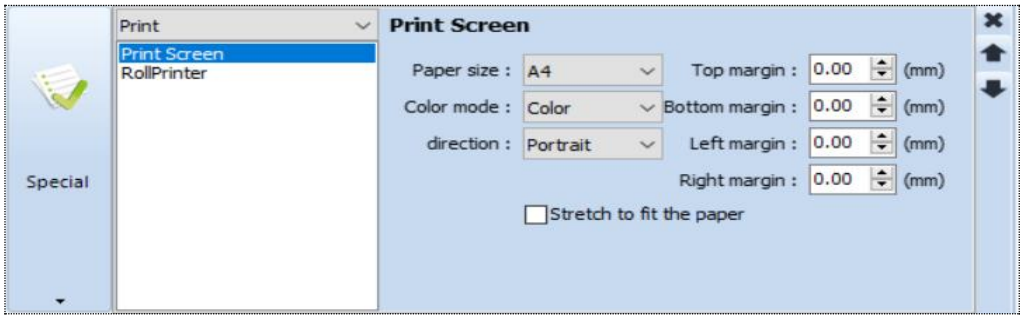
2	ObjecShot	Save the set object as photo.  [Screen Type] selects the screen position of the object to take a photo of. [Storage]

		selects the location to save a photo. [Screen Number] selects screen number other than Master Screen. [Object ID] selects the ID of the object to take a photo of. [File Number] is the number assigned when the file name is created. Thus, when set as above, captured images will be saved as JPG images in [File Browser]-[ScreenCapture] folder in TOP memory. The first file will be saved as [20210929_191430_001], the second file as [20210929_191430_002], the third file as [20210929_191430_003] ... and so on.
3	Previous Screen	Switches to the previous screen before the current screen. 
4	Screen Change	Change screen to the set [Screen Number]. 
5	ScreenShot	When the condition is true, capture the current screen and save it as a JPG image. For [Storage], select from [Internal Memory/SD Card/Ext Cam32/USB]. [Internal Memory] is TOP memory. Captured images saved in the internal memory can be found in [ScreenCapture] folder in [Menu Screen]-[File Explorer]. [SD Card] allows it to be saved in SD card installed to TOP. [USB] allows it to be saved in USB memory installed to TOP. Captured images saved in [SD Card/Ext Cam32/USB] can be found in [UserData]-[ScreenCapture] folder. File Name is saved as [Current Date-File Number]. [File Number] is the number assigned when the file name is created. Thus, when set as above, captured images will be saved as JPG images in [File Browser]-[ScreenCapture] folder in TOP memory. The first file will be saved as [20210929_191430_001], the second file as [20210929_191430_002], the third file as [20210929_191430_003] ... and so on. 
6	Window Move	Move the position of the popup Window Screen. Using [Touch] object, set [Condition] page with [Event]-[Touch Down] and select [Window Move] in [Action] page and set the number of the Window Screen to move with [Screen Number]. This [Touch] Object can be registered to the Window Screen you wish to move or Base Screen. To activate TOP action, first, touch the object to which [Window Move] is set and touch the position to move the popup Window Screen to, then the position will be the top left corner point of the Window Screen and move the screen.

		
7	Window Toggle	When the condition is true, pop up the window screen of the set [Screen Number]. 

(2) [Action] Page: Special (Print)

Configure print actions. When the condition is true, print out the screen or print the content set in [Project]-[Roll Printer] with a Roll Printer.



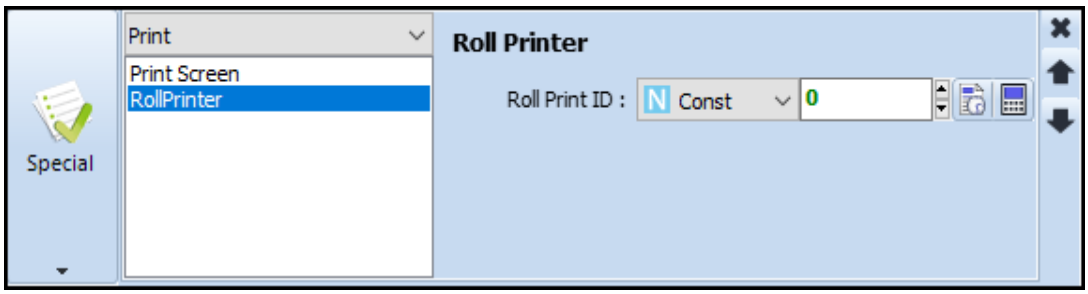
[Pic. Print]

No	Print	Description
1	Print Screen	When the condition is true, print the project screen. Select the paper size to print on with [Paper Size]. Select Print Color with [Color Mode]. Configure print direction with [Direction] (Portrait is vertical and Landscape is horizontal). [Top/Bottom/Left/Right Margin] sets the margin between the print paper and the content.
2	RollPrinter	When the condition is true, it will be printed out in the set Roll Printer format.

Connect a Printer/Roll Printer to TOP and print out in an edited format.

(For Roll Printer, please see Chapter 4.12 [Roll Printer].)

If it is set to RollPrinter and the Roll Printer ID is set as below, and when the condition is true, the connected Roll Printer will [Print]. [Roll Printer ID] refers to the ID of the page to be printed at TDS [Project]-[Roll Printer].

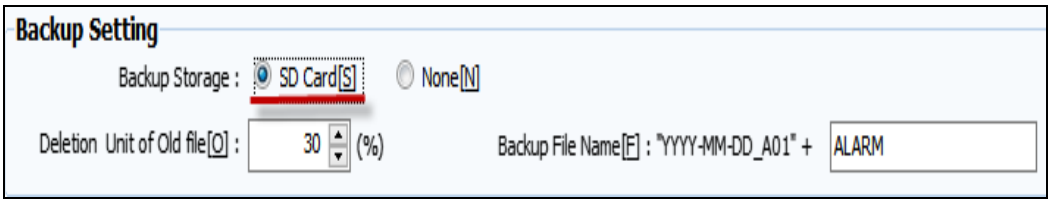


[Pic. Special Function RollPrinter]

(3) [Action] Page: Special (Storage)

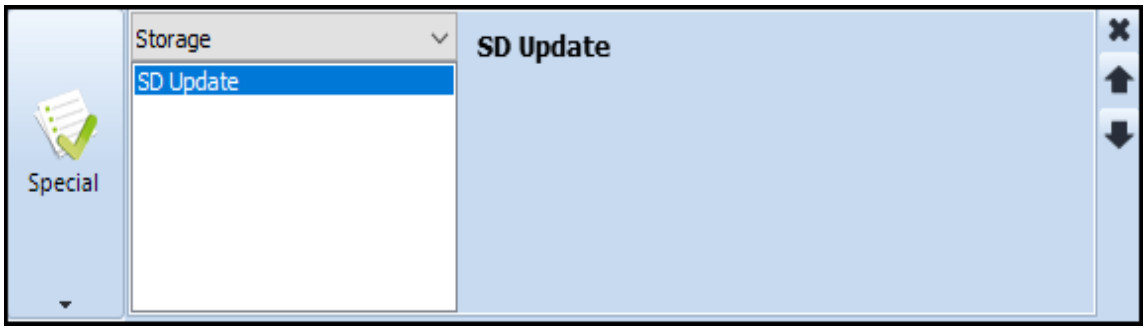
It sets actions related to storage device installed in TOP.

When you set Alarm/Log Data saved in TOP to be backed up in SD Card and if the designated memory capacity is full, Alarm/Log Data saved in TOP memory will be automatically moved by a set % (Old Log File Deletion Unit) and will be deleted from TOP memory.



[Pic. Backup Setting with SD Card]

[SD Update] backs up all Alarm/Log Data that have not been backed up to SD Card and deletes TOP Memory's Alarm/Log Data that have been backed up.

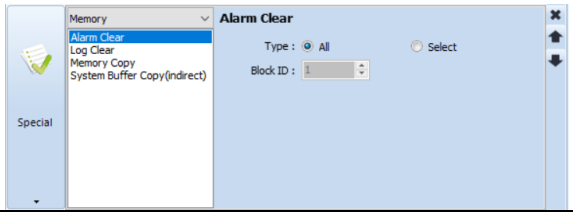
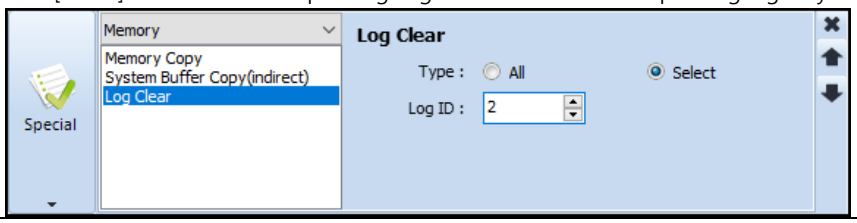
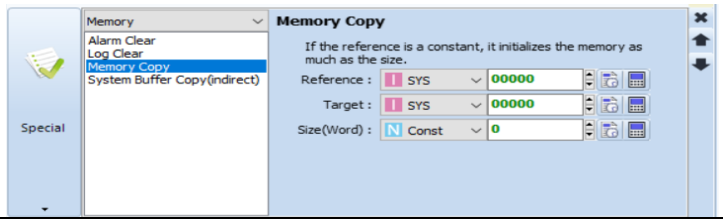
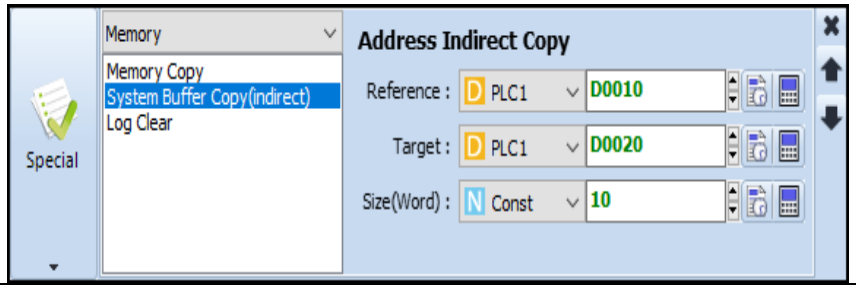


[Pic. Special Function SD Update]

(4) [Action] Page: Special (Memory)

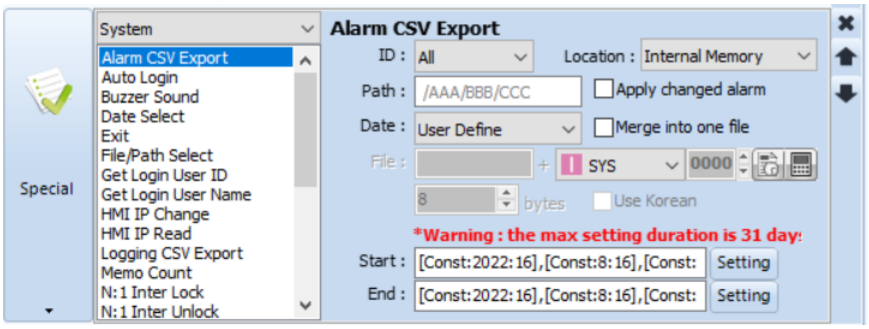
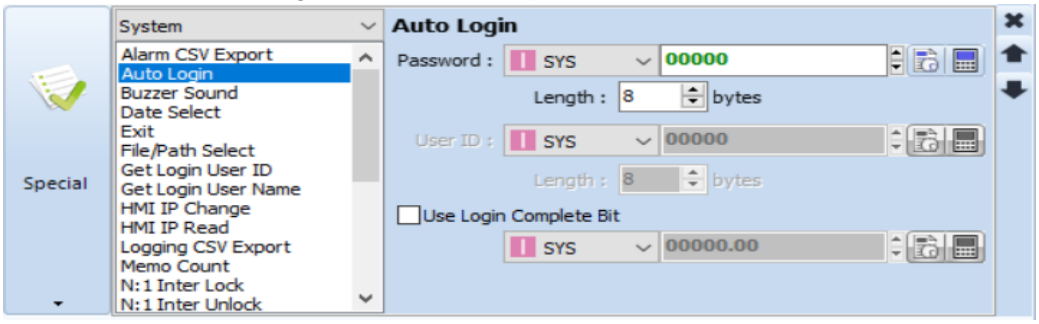
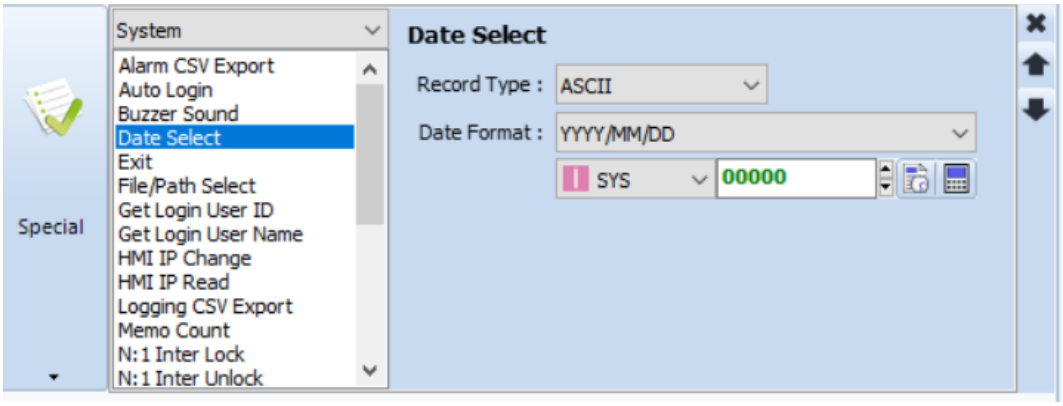
It sets actions related to Copy Memory/Delete Log Data.

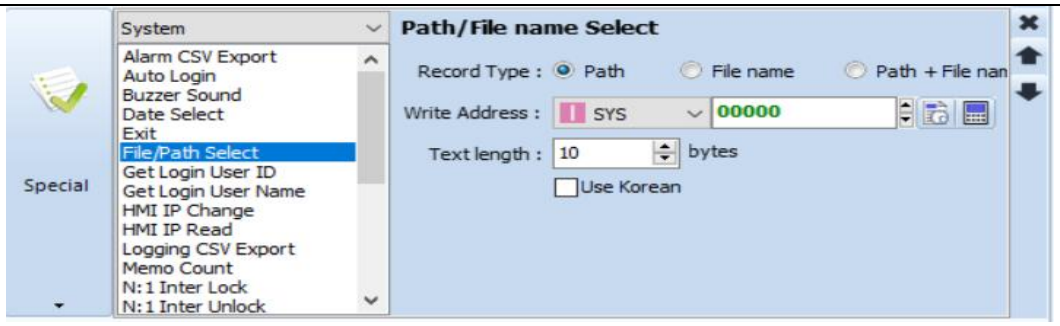
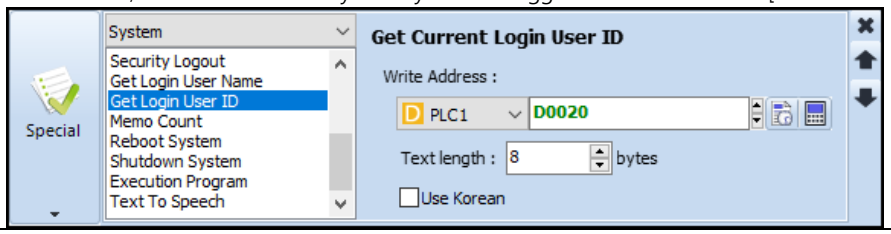
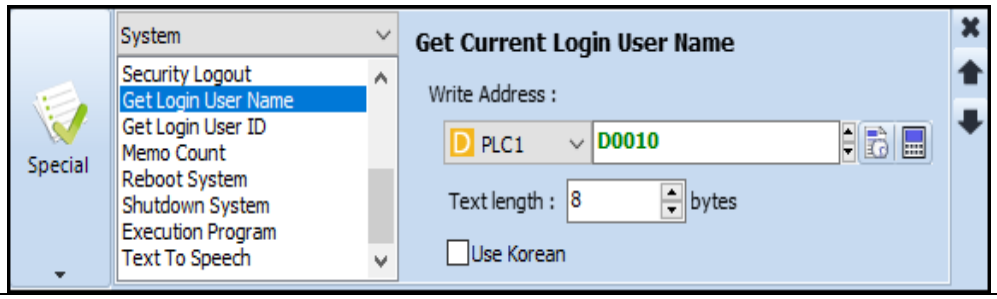
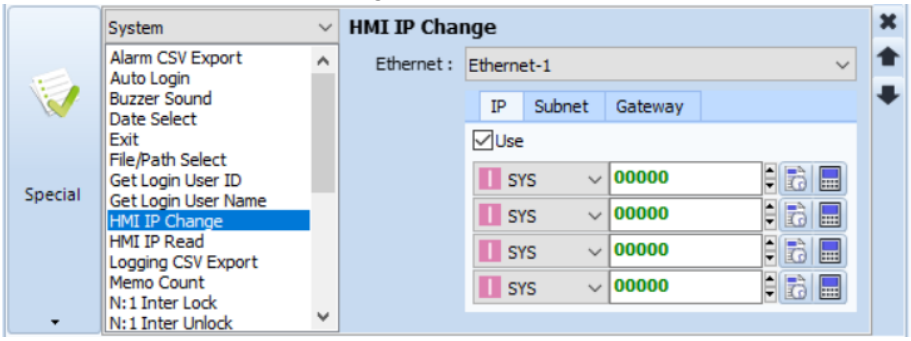
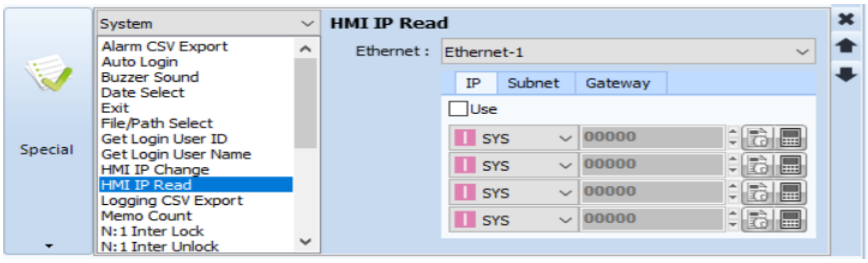
No	Memory	Description
1	Alarm Clear	Delete alarm data saved in TOP Memory. For alarms, up to 16 [Block ID] may be set from no. 1 to 16.

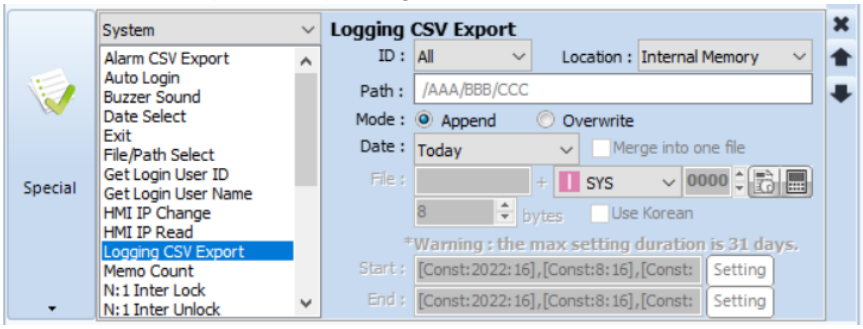
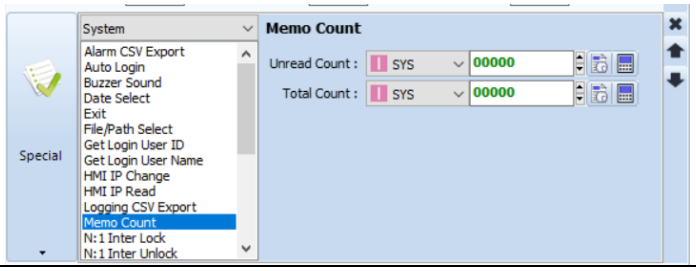
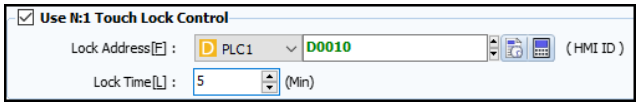
		Select [All] to delete all selected alarm data. Select [Select] and set the corresponding Block ID to delete the corresponding alarm only. 
2	Log Clear	Delete log data saved in TOP Memory. Up to 16 [Log ID], it can be set from no. 1 to 16. Select [All] to delete all log data. Select [Select] and set the corresponding Log ID to delete the corresponding log only. 
3	Memory Copy	Copy data of [Reference Address] to [Target Address]. [Size (Word)] is the number of addresses to copy. The set [Reference Address] and [Target Address] are starting addresses, and it will be copied by [Size] from Start Address. If set as below, data of [D0010] to [D0019] will be copied to [D0020]-[D0029]. Thus, it will be D0020=D0010, D0021=D0011, D0022=D0012, ... D0029=D0019. 
4	System buffer Copy (indirect)	Copy data of TOP internal address (System Buffer). This is indirect address, and data of [Reference Address] and [Target Address] are the internal address number of TOP. [Size] is the count of addresses to copy. After setting as below, the value of [D0010] is 20, and the value of [D0020] is 40, it copies data of internal address data no. 20 to 29 to internal address no. 40 to 49 in order. Thus, it will be [00040]=[00020], [00041]=[00021], [00042]=[00022], ... [00049]=[00029]. 

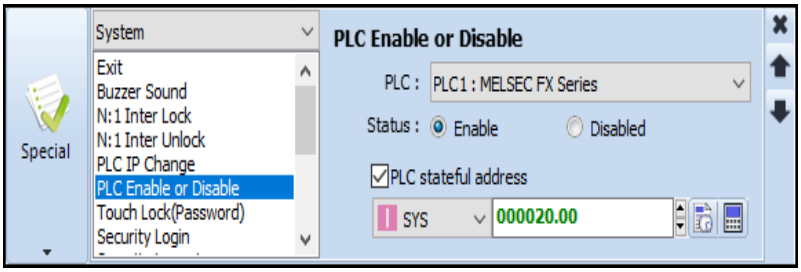
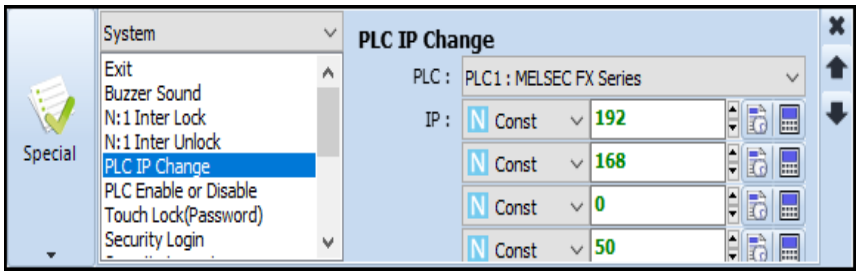
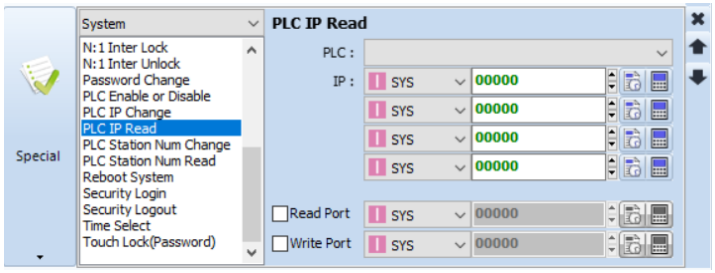
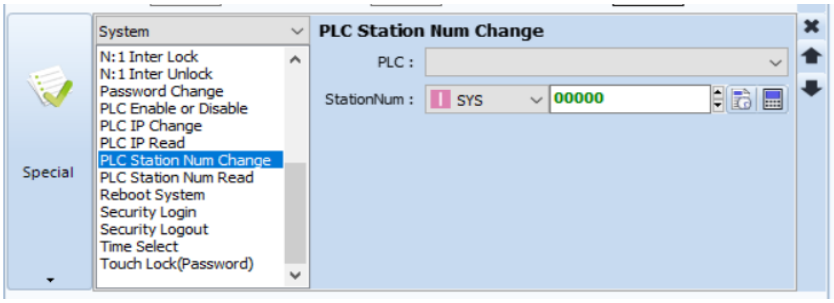
(5) [Action] Page: Special (System)

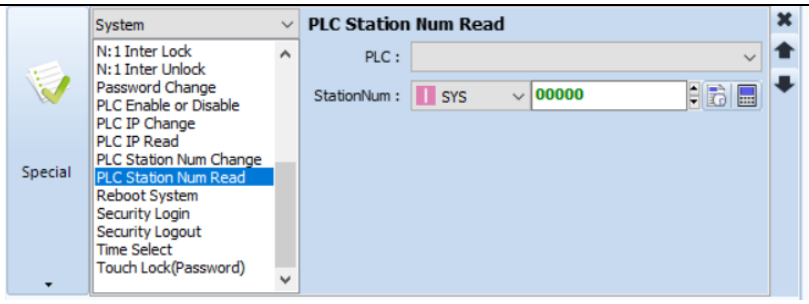
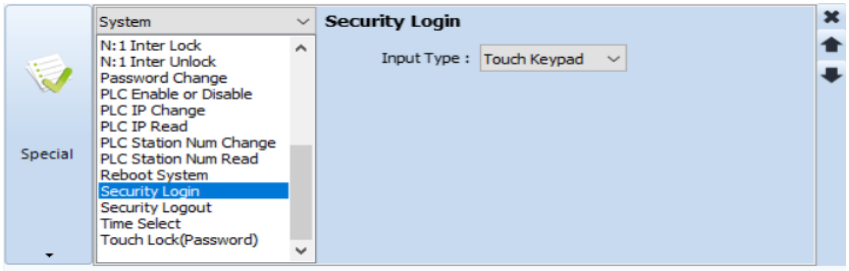
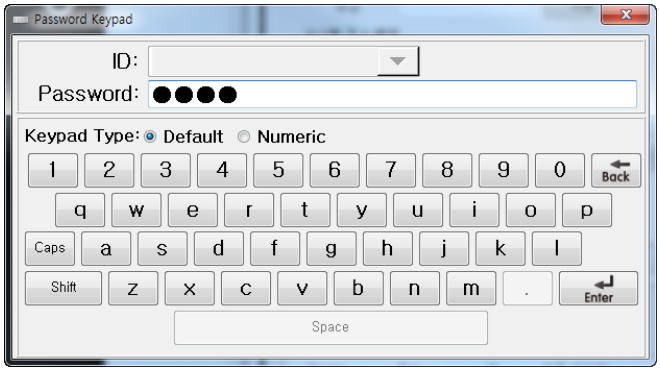
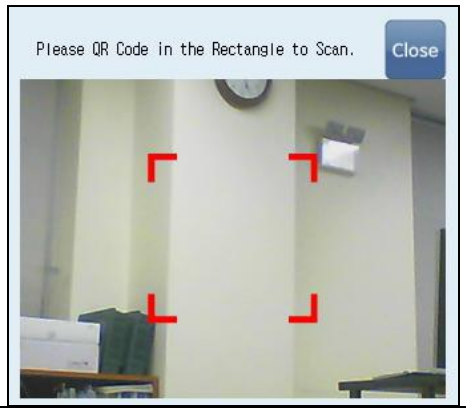
Set actions related to System/Security.

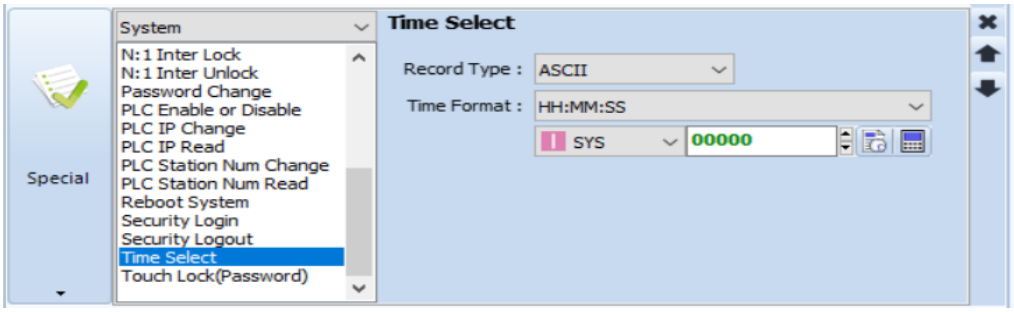
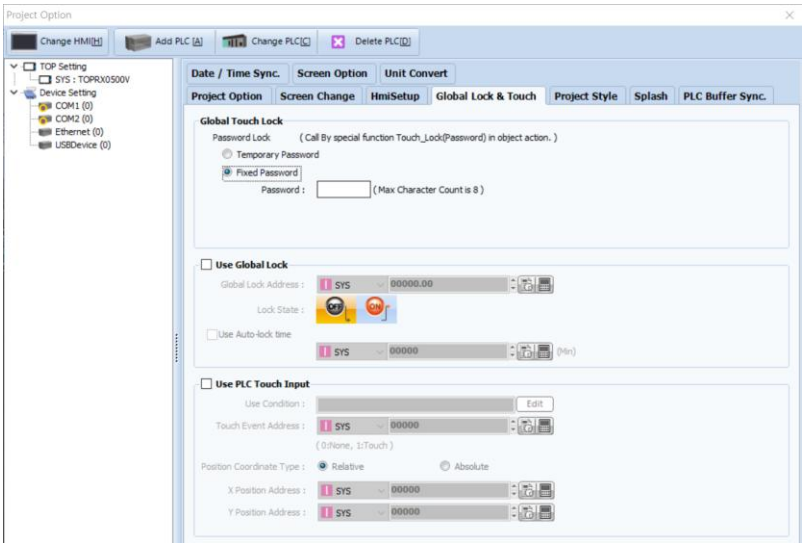
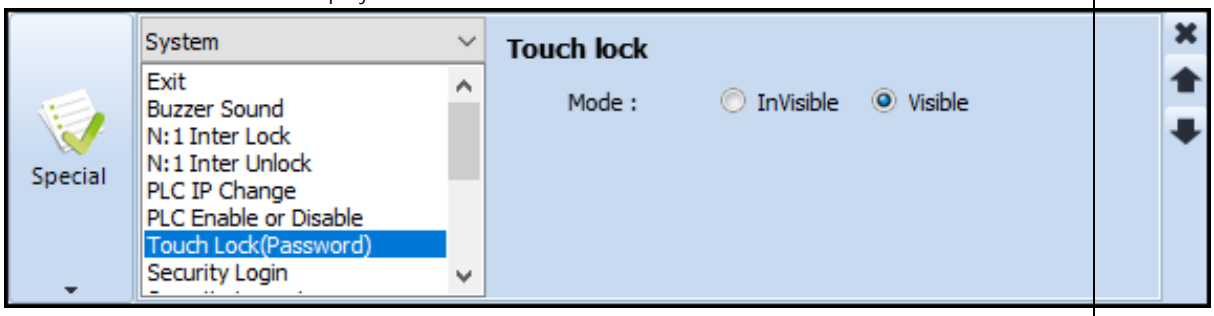
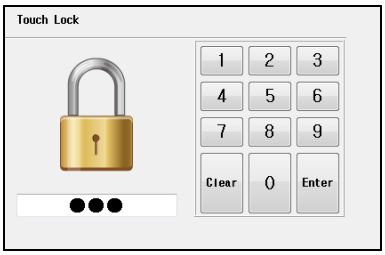
No	Memory	Description
1	Alarm CSV Export	When the condition is true, it copies and exports alarm data saved in TOP in CSV file format.  [ID] selects the ID of the alarm to copy. [Save Location] selects the location to save the copy. (Internal Memory/SD Card/Ext Cam32/USB) [Path] selects the path of the save location (folder name, etc.). [Apply Changed Alarm] chooses whether or not to delete a CSV file and make a new one when there is already a CSV file with the same date in the save path. For [Date], select the data period to copy (Today/Last Week/All (MRAM)/User Define). If the date is set to User Define, [Merge into one File] merges data of the set date into one CSV file and copy. [File] allows the user to select file name when "Merge into One File" function is in use. If Address is in use, the file name will be 'Manually entered file name' + 'Address ASCII value. [Start] selects the data start date of User Define to copy. [End] selects the data end date of User Define to copy.
2	Auto Login	When the condition is true, login with the set ID and password.  [Password] sets the value of the set address as a password. [User ID] is activated when "Account+Password" is used in [Project]-[Security], and the value of the set address will be the User ID. [Use Login Complete Bit] makes the set address [1] with a successful login. (The value will not be automatically turned off.)
3	Buzzer Sound	When the condition is true, it sounds Buzzer.
4	Date Select	When the condition is true, it saves the TOP date to the set address.  [Save Type] selects the type of date to be saved. (ASCII/INT/BCD/UTC) [Date Format] selects the format of the date to be saved in address. (YYYY/MM/DD , YY/MM/DD, etc.)
5	Exit	When the condition is true, it closes the screen in operation, and moves to the menu screen.
6	File/Path	When the condition is true, it saves Path/File Name/Path + File name to the set address.

	Select	 [Record Type] chooses the type to be used to save address. (Path/File Name/Path + File name) [Byte Length] chooses the total length of the data to be saved in the address. If data to be saved in the address is a file, [File extension] registers the file's extension.
7	Get Login User ID	When condition is true, the ID of the Security Level you have logged in with is saved in [Save Address]. 
8	Get Login User Name	When condition is true, the User Name of the Security Level you have logged in with is saved in [Save Address]. 
9	HMI IP Change	When the condition is true, the Ethernet setting of TOP is modified.  [Ethernet] selects Ethernet port Ethernet-1/2 to change according to the model of TOP. [IP] modifies the IP of TOP to the set address value. [Subnet] modifies the Subnet of TOP to the set address value. [Gateway] modifies the Gateway of TOP to the set address value. [Note] IP modification in operation is reflected according to the network composition and it may take some time (usually a few seconds).
10	HMI IP Read	When the condition is true, it saves the Ethernet value set to TOP to address.  [Ethernet] selects Ethernet port Ethernet-1/2 to import according to the model of TOP.

		[IP] saves the IP of TOP to the set address. [Subnet] saves the Subnet of TOP to the set address. [Gateway] saves the Gateway of TOP to the set address.
11	Logging CSV Export	When the condition is true, it copies and exports log data saved in TOP in CSV file format.  [ID] selects the ID of the log to copy. [Save Location] selects the location to save the copy. (Internal Memory/SD Card/Ext Cam32/USB) [Path] selects the path (folder name, etc.) of the save path. [Date] selects the data period to copy (Today/Last Week/All (MRAM)/User Define). If the date is set to User Define, [Merge into One File] merges data of the set date into one CSV file and copy. [File] allows the user to select file name when "Merge into One File" function is in use. If Address is in use, the file name will be 'Manually entered file name' + 'Address ASCII value. [Start] selects the data start date of User Define to copy. [End] selects the data end date of User Define to copy.
12	Memo Count	When the condition is true, it saves the count of memo to the set address. [Unread Count] saves the count of unread memo to the set address. [Total Count] saves the total count of memo to the set address. 
13	N:1 Inter Lock	When multiple TOPs and one controller communicate, it is called [N:1 Communication]. To prevent issues that may occur when multiple TOPs control one controller, lock TOP input. Check [Use N:1 Touch Lock Control] in [Project Option] screen that appears when [Project]-[Property] menu is run, then use [N:1 Inter Lock] action.  Interlock Address [D0010] data becomes a controllable HMI ID. All the other TOP except for the one with this HMI ID will be unable to recognize Touch Input. (HMI ID can be checked in [Control Panel]-[Project Setting]-[HMI ID] in TOP Menu Screen.) If Interlock Address [D0010] is [0], all TOP can input touch. Interlock Time substitutes [0] to Interlock Address after 5 minutes since the last touch input and unlocks Interlock. When the condition is true, [N:1 Inter Lock] performs an action that uses its own HMI ID to the Interlock Address to block TOP input other than itself. [Note] If there is a device that has the same HMI ID of the TOP, Inter Lock function may not run as it should.
14	N:1 Inter Unlock	When the condition is true, it inserts [0] to Interlock Address and unlocks the N:1 interlock.
15	Password Change	When the condition is true, it calls the account's password change window.

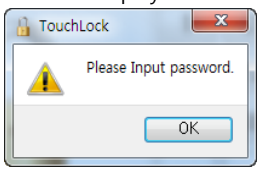
16	PLC Enable or Disable	Sets the use of connected PLC when the condition is true. [Enabled] means that communication is in operation, whereas [Disabled] is not.  [PLC Status Save Address] saves the state of PLC Enabled/Disabled. If the set address is [1], it is enabled, and if [0], disabled.
17	PLC IP Change	When the condition is true, the IP address of PLC registered to Ethernet will be changed to the set IP address. (Change the PLC IP set to the TOP.)  [PLC] selects the PLC that changes the IP. [IP] changes the address value to the IP of PLC. [Read Port] changes the address value to PLC Read Port. [Write Port] changes the address value to PLC Write Port.
18	PLC IP Read	When the condition is true, it saves the PLC IP set in TOP to an address.  [PLC] selects the PLC to save IP to an address. [IP] saves the IP of PLC set in TOP to an address. [Read Port] saves Read Port of PLC set in TOP to an address. [Write Port] saves Write Port of PLC set in TOP to an address.
19	PLC Station Num Change	When the condition is true, it changes the PLC StationNum registered in TOP to the set StationNum. (Change the PLC StationNum set to the TOP.)  [PLC] selects the PLC StationNum that is going to be modified. [StationNum] changes the PLC StationNum to the set address value.
20	PLC Station Num Read	When the condition is true, it saves the PLC StationNum set to TOP to an address.

		 [PLC] selects the PLC where the StationNum will saved to the address. [StationNum] saves PLC StationNum to the set address.
21	Reboot System	When the condition is true, it restarts TOP.
22	Security Login	It is available when Security Level function is checked in [Project]-[Security]. When the condition is true, use this action to log in. (For more detailed feature of Security Level, please see Chapter 4.7.2 [Security Level].)  Setting the [Input Type] as [Touch Keypad]/[RFID] will call up the next keypad when the action is run. Enter the password and press [Enter].  Set [Input Type] as [QR Code] to recognize QR Code using front camera and barcode scanner (TOPR Premium model can recognize QR Codes with its built-in front camera and other models can run this action by installing a barcode scanner that can recognize QR Codes.). When the action is executed, the following screen will pop up. Place the QR Code in the red square area to log in. 
23	Security Logout	When the condition is true, the currently logged in account will be logged out.

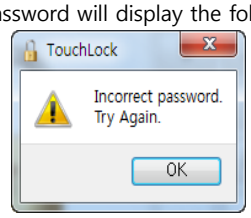
24	Time Select	When the condition is true, it saves the TOP time to the set address.  [Save Type] selects the type of time to be saved. (ASCII/INT/BCD/UTC) Select the format of time to be saved in address with [Time Format] (HH:MM:SS , HH:MM , MM:SS).
25	Touch Lock(Password)	If [Project]-[Property]-[Global Lock & Touch]-[Global Touch Lock] is set in TDS, use this action to lock or login to unlock.  [Global Touch Lock] locks all objects registered to the screen with [Touch Lock] to prevent touch inputs. Users must login with the password to enable touch input. It is used to temporarily block touch inputs to work on site. (For detailed description of Global Touch Lock, please see Chapter 4.14.8 [Global Lock & Touch Page].) Lock will not be enabled when a project is executed.  Activate Touch Lock (Password) set as above to enable Touch Lock and display [Touch Lock Password Input Window] as shown in the below picture.  Complete your work in Touch Lock state and enter password in the above window to unlock [Touch Lock]. The password input window will disappear.

If you need to enable Touch Lock again, run Touch Lock (Password) action.

Pressing [Enter] without entering the password will display the following message.



Pressing [Enter] after entering incorrect password will display the following message.



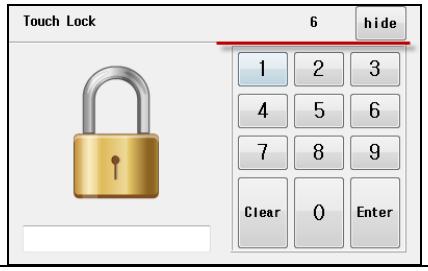
If you have lost the temporary password, press the key-shaped icon for 5 seconds to display the password in the below password input box.

Set [Mode] to [Visible] to popup [Touch Lock Password Input Window] until the correct password is entered in the Touch Lock state.

Set [Mode] to [InVisible] to make [Touch Lock Password Input Window] disappear even if the password has not been entered in Touch Lock state.

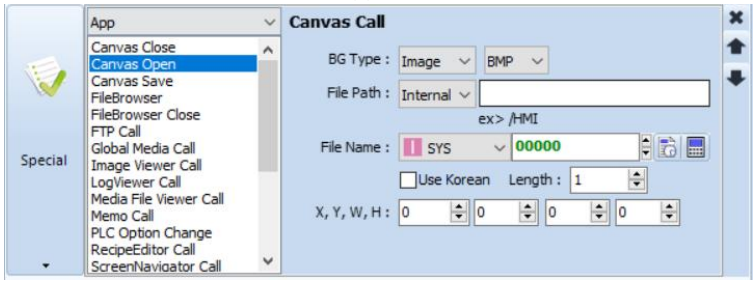
As below picture, [Hide] button and reverse-counting numbers from 10, 9, 8 ... will be displayed. Press [Hide] to close the login window. And, when the number becomes [0], the login window will automatically be closed.

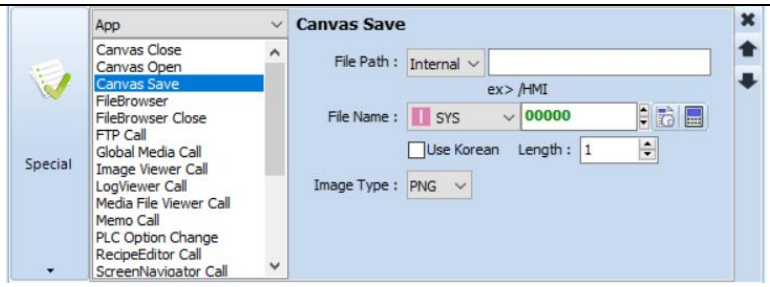
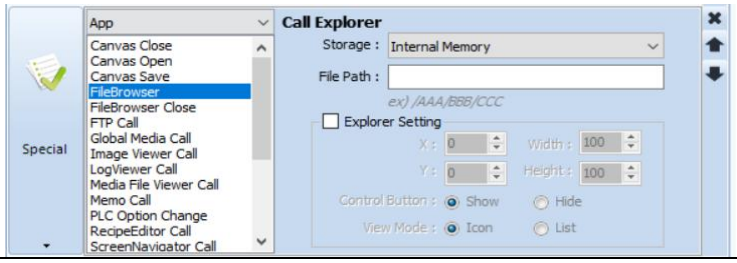
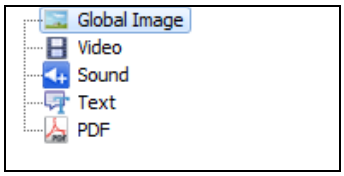
Press [0-9, Clear, Enter] key to reset the count to 10.

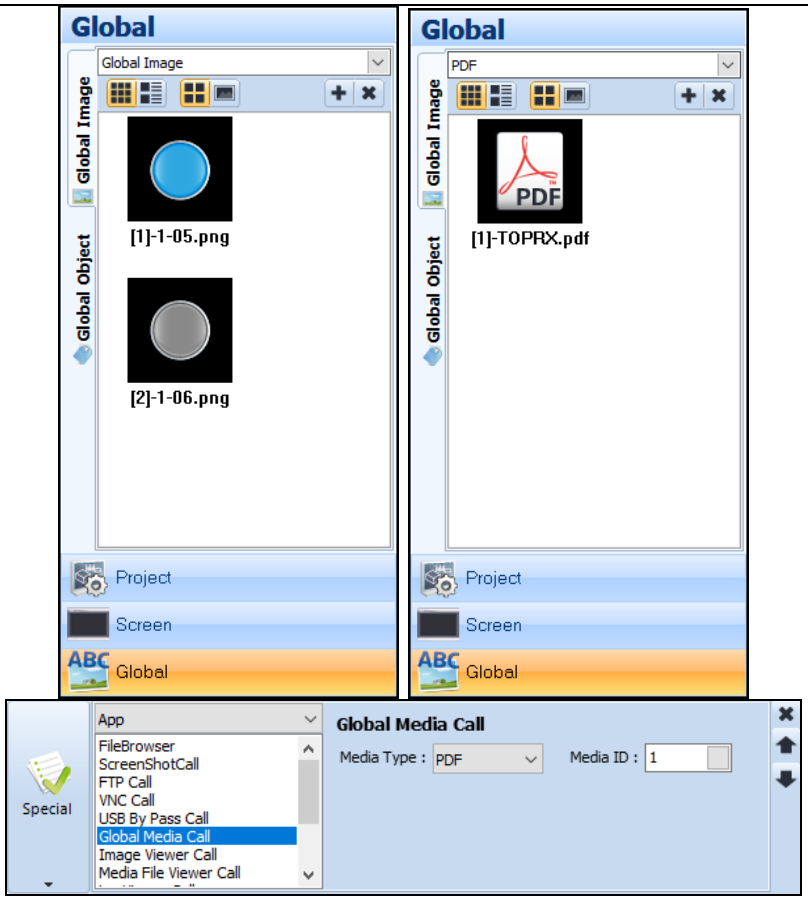


(6) [Action] Page: Special (App)

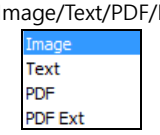
Set the action that calls application on TOP menu screen.

No	Memory	Description
1	Canvas Close	When the condition is true, exit Canvas App.
2	Canvas Open	When the condition is true, call Canvas App.  Select the Background Type to call to Canvas App at [BG Type] (Image/Color/Transparent). Select the path of image file if the background type is Image at [File Path]. Select the name for the file saved by using the value of ASCII registered to Address for [File Name]. [X,Y,W,H] chooses the position of Canvas App.
3	Canvas Save	When the condition is true, save the file painted with Canvas App.

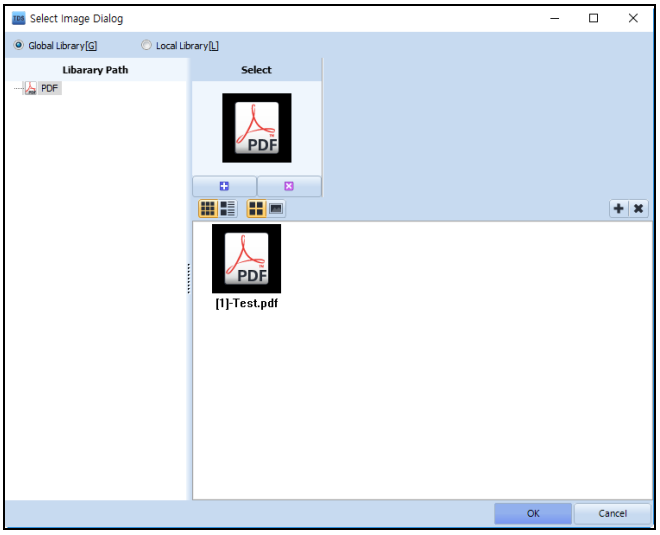
		 [File Path] selects the path to save the file (Internal Memory/SD Card/Ext Cam32/USB). For [File Name], the value of ASCII registered in the address will be the name of the file. Select the file extension to save the file at [Image Type] (BMP/JPG/PNG).
4	FileBrower	When the condition is true, calls the File Explorer App. Select [Internal Memory/SD Card/Ext Cam32/USB] at [Save Location]. When calling File Explorer, it shows the storage device selected in [Save Location] as the default location. 
5	FileBrowser Close	When the condition is true, exits the File Explorer App.
6	FTP Call	When the condition is true, calls the FTP Explorer App.
7	Global Media Call	When the condition is true, it calls registered Global Media while it is running. Global Media can be registered and managed in [Project Manager]-[Global]. Types of Global Media are as follows.  Click  button at the top right corner of [Project Manager]-[Global] to register each media.



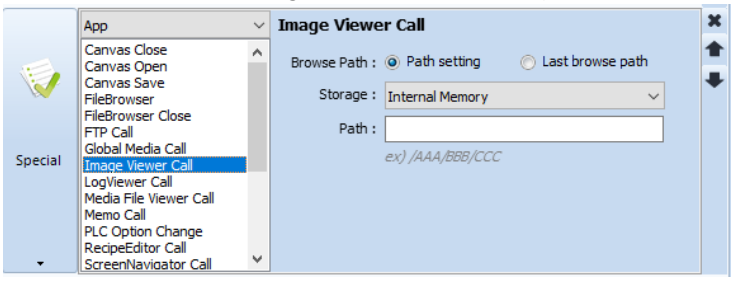
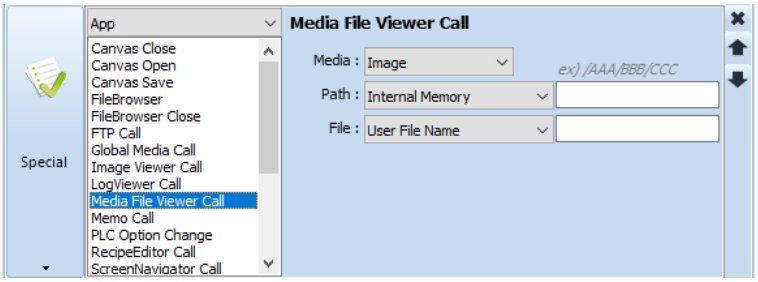
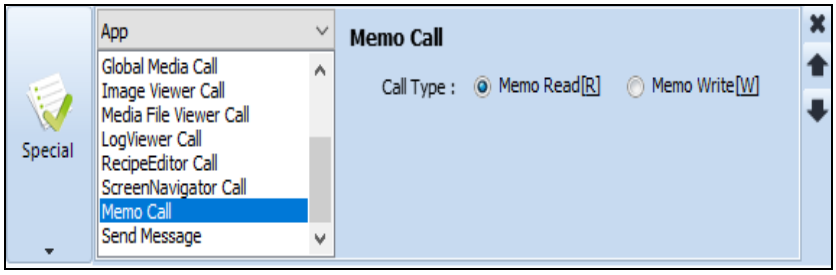
Select a [Media Type] to call from [Image/Text/PDF/PDF Ext].

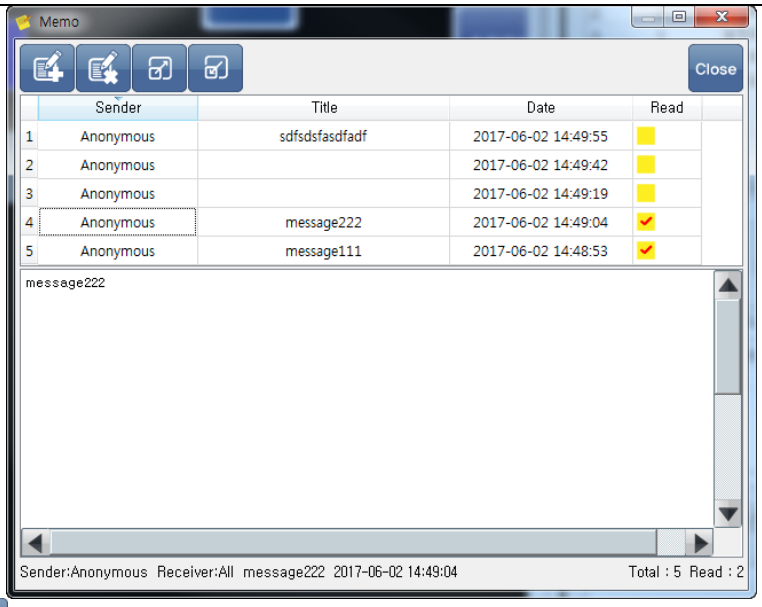


Click ☐ button of [Media ID] to display a dialog where you can select the following media. Select media and click [OK].



If set as above, the designated media will be displayed on screen as below when the condition is true.

		 (For more detailed description of Global Media, please see Chapter 22.6.3 [Global Part].)
8	Image Viewer Call	When the condition is true, call Image Viewer in the selected path.  [Browse Path] selects the path of the image file to view on Image Viewer. [Storage] selects the save location of image file for Path Setting. (Internal Memory/SD Card/Ext Cam32/USB) [Path] selects detailed path from the save location of image file. [Last Browse Path] finds and calls the path of the last browsed image file.
9	LogViewer Call	When the condition is true, calls LogViewer. Use LogViewer to see TOP memory or saved log CSV file.
10	Media File Viewer Call	When the condition is true, calls Media File Viewer.  [Media] chooses the media type to call. (Image/Text/PDF/PDF Ext) [Path] chooses the path location of the file to call. (Internal Memory/SD Card/Ext Cam32/USB) [File] selects which file to call from the files in the path. (User File Name/First File Name from Ascending Order/First File Name from Descending Order/Last Edited File)
11	Memo Call	When the condition is true, calls [Read Memo] and [Write Memo] windows. You may write or check memos on site.  Set Call Type as [Read Memo] to call below screen to see a memo.



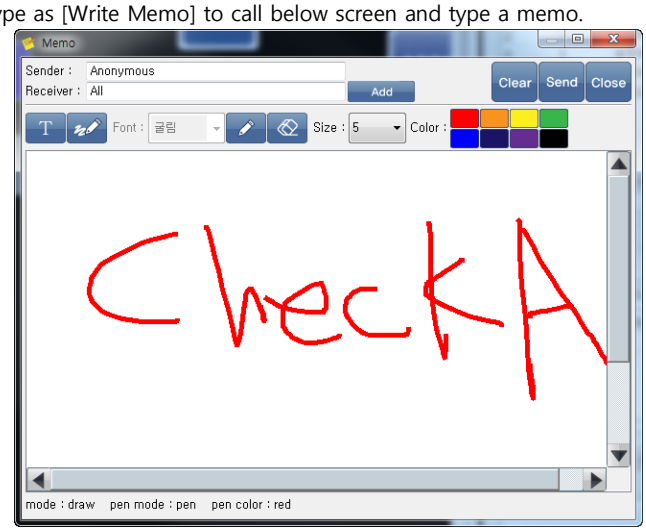
 Write Memo window appears for you to leave a memo.

 Delete the selected memo.

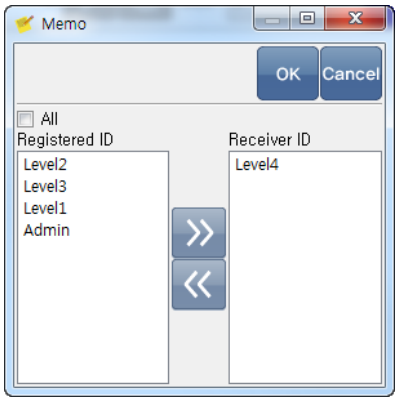
 Memo List will disappear and you will see the content of the selected memos only.

 Memo List will appear at the top and you will be able to see the selected memo's content at the bottom.

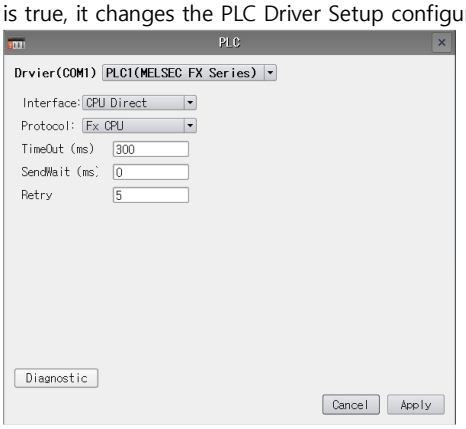
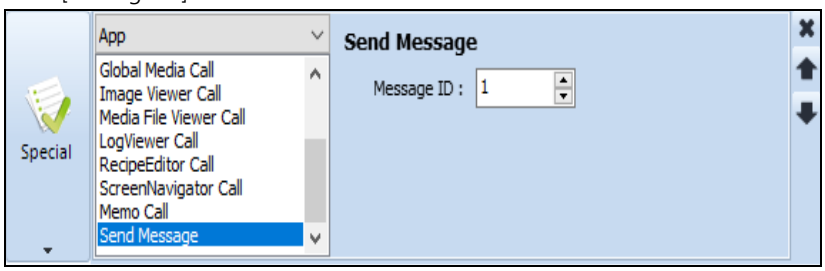
Set Call Type as [Write Memo] to call below screen and type a memo.

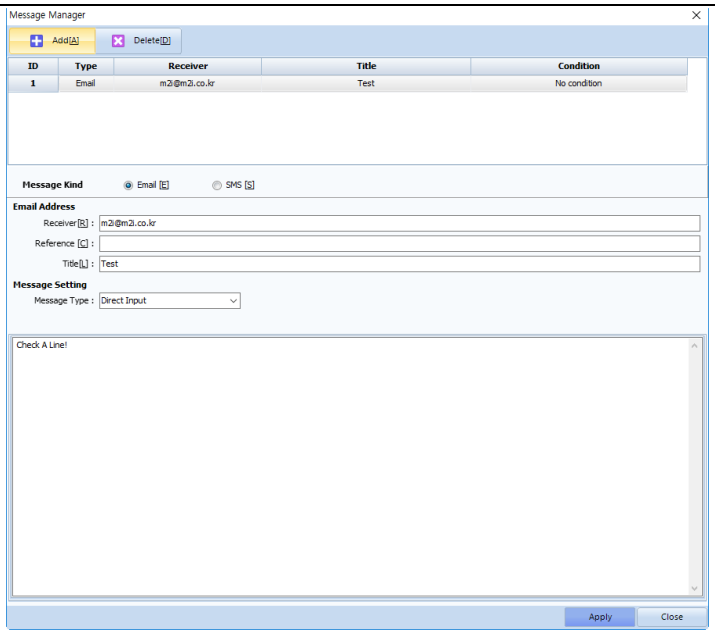
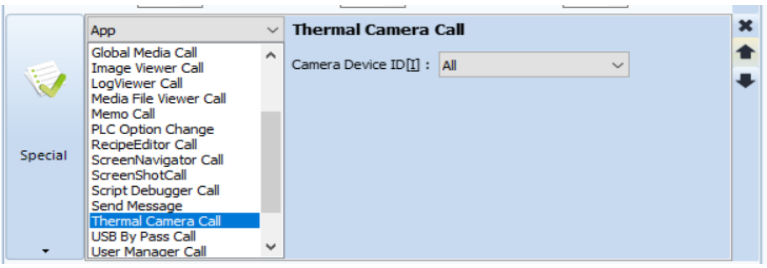
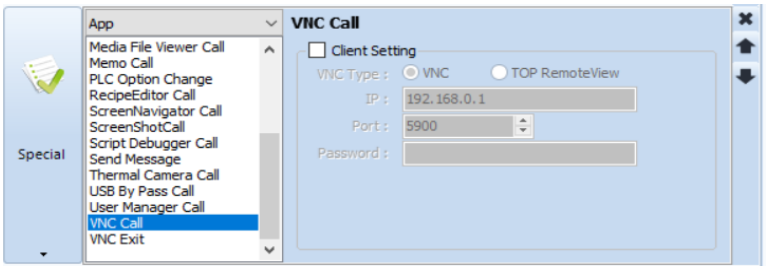


Sender is the one who sent the memo and Receiver is the one who receives the memo. Click Add button to add Receivers.



 It is Text Write Mode and Paint Mode.

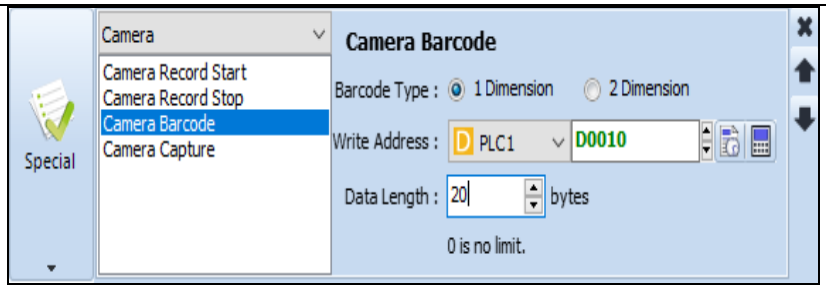
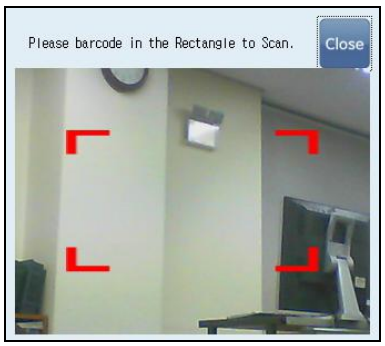
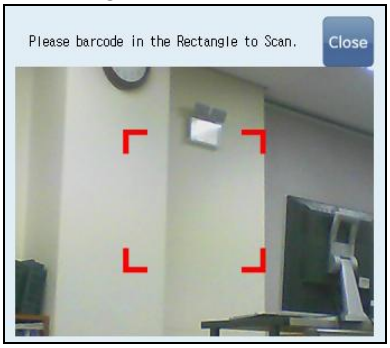
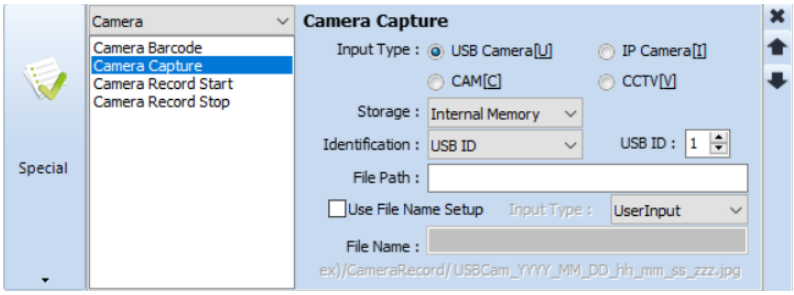
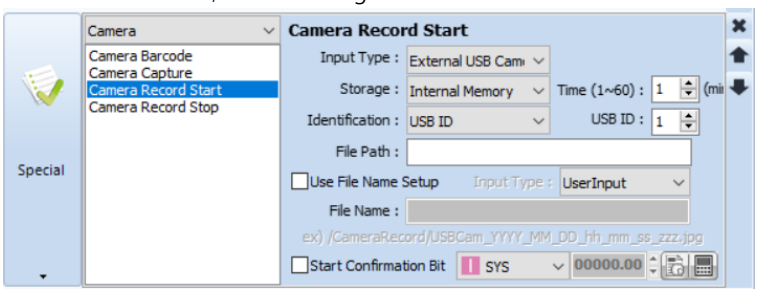
		 Set the text font.  Write and Clear Mode.  Set the text size.  Set the color of text/picture.  Clear deletes memo. Send sends memo. Close closes Write Memo window.
12	PLC Option Change	When the condition is true, it changes the PLC Driver Setup configured in TOP.  It may be modified in [Control Panel]-[PLC] menu in TOP menu screen.
13	RecipeEditor Call	When the condition is true, calls Recipe Editor. Use Recipe Editor to see and edit TOP memory or saved Recipe File.
14	ScreenNavigator Call	When the condition is true, calls Screen Navigator. See all project screens at a glance and select and run a screen.
15	ScreenShotCall	When the condition is true, calls the ScreenShot App.
16	Send Message	When the condition is true, send a message registered in [Message Manager]. Set the [Message ID] to send.  [Message Manager] will be displayed when [Project]-[Send Message] menu is run.

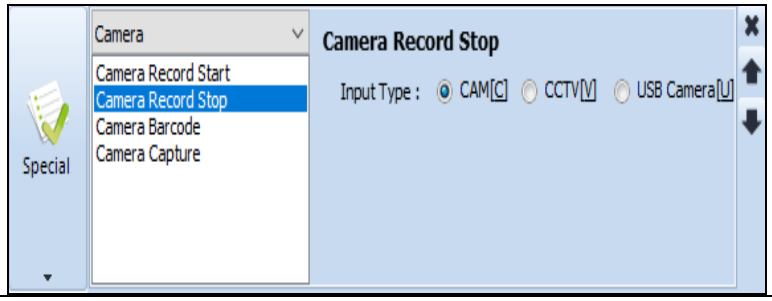
		 (Please see Chapter 4.10 [Send Message] for more detailed description of Message Manager.)
17	Thermal Camera Call	When the condition is true, calls thermal camera.  [Camera Monitor ID] selects the ID of the thermal camera to call.
18	USB By Pass Call	When the condition is true, the window that selects front USB mode is called. *Change the front USB mode to restart TOP.
19	User Manager Call	When the condition is true, calls the Security Setting App.
20	VNC Call	When the condition is true, call VNC Viewer.  [Client Setting] calls VNC viewer to select the VNC client setting to connect.
21	VNC Exit	When the condition is true, closes VNC Viewer.

(7) [Action] Page: Special (Camera)

It sets actions of internal/external camera of TOPR Premium Model.

No	Camera	Description
1	Camera Barcode	When the condition is true, use the front camera to read barcode.

		 Select Barcode [Normal] / 2 Dimension Barcode [QR] for [Barcode Type]. For [Save Address], select the address to save the recognized barcode value.  [Pic. Barcode (Normal)]  [Pic. 2 Dimension Barcode (QR Code)]
2	Camera Capture	When the condition is true, it captures and saves the screen of the set camera.  Select the connected camera type for [Input Type]. Select the location to save the captured photo for [Storage]. Select the setting of the connected camera for [Identification (IP Camera)] (USB ID/IP, etc.). Select the path to save the captured photo for [File Path]. [File Name Setup] allows you to modify the file name of the captured photo. For [Input Type], check File Name Setup and select the file name with UserInput (manual)/Address (address value).
3	Camera Record Start	When the condition is true, start recording with the camera.  [Input Type] selects the camera to record with. Select the location to save the recorded video for [Storage]. Select the setting of the connected camera for [Identification] (USB ID/IP, etc.). Select the path to save the recorded file for [File Path]. [File Name Setup] allows you to modify the file name of the recorded file. For [Input Type], check File Name Setup and select the file name with UserInput (manual)/Address (address value).

		[Start Confirmation Bit] makes the set bit [1] when the recording starts.
4	Camera Record Stop	When the condition is true, stops the set camera recording. 

13.1.13 **[Action] Page: None**

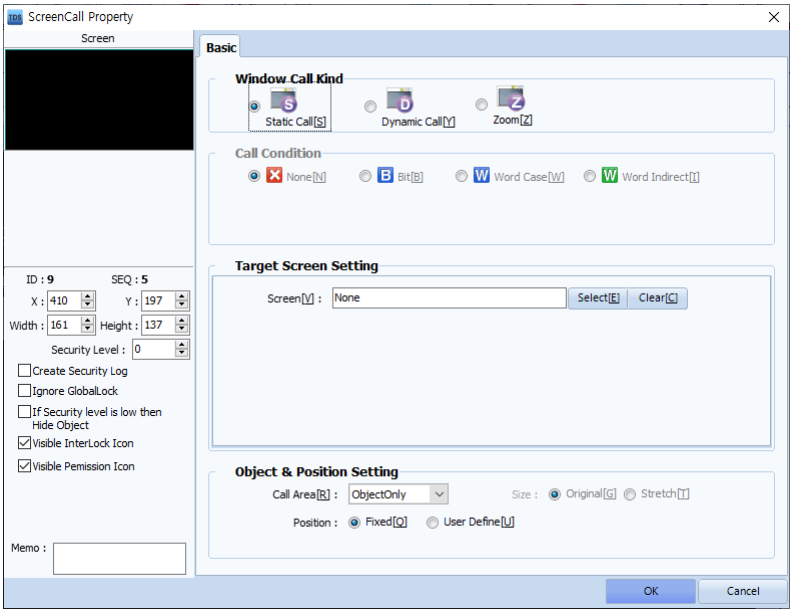
When the condition is true and there is no action to be executed, set it to [None].



[Pic. None Action]

CHAPTER 14 - ScreenCall Object

ScreenCall is the function that calls multiple [Base Screen] to one Base Screen to monitor.
Touch the screen called by ScreenCall Object to move to the corresponding screen.

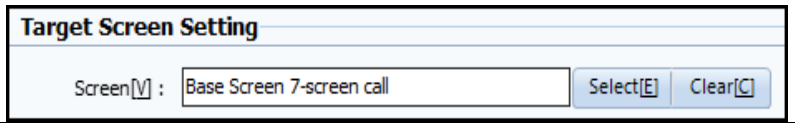


[Pic. Screencall Object]

Default Page

14.1.1 Screen Call Type

There are [Static Call]/[Dynamic Call]/[Zoom] for [Screen Call Type].

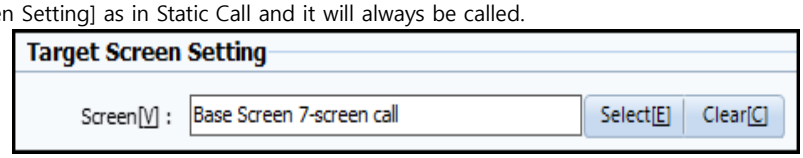
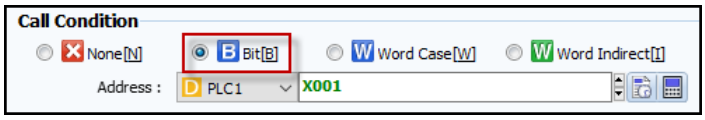
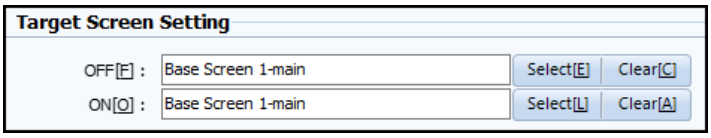
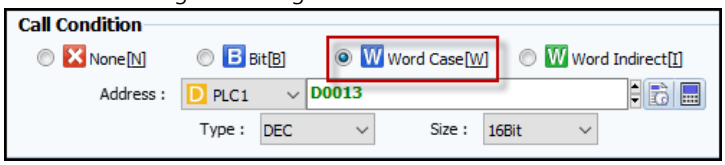
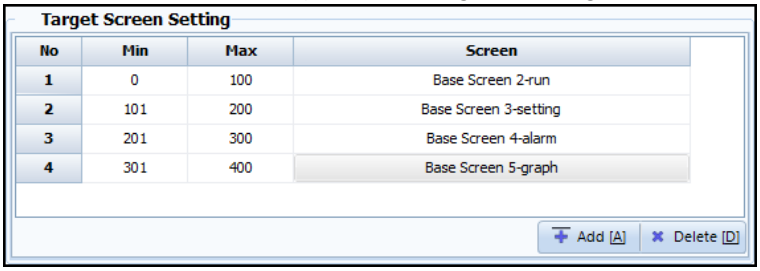
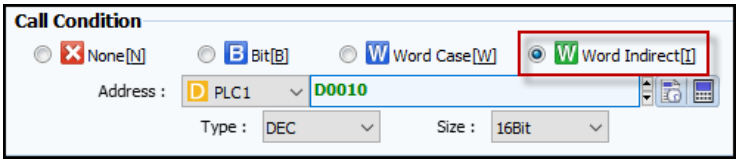
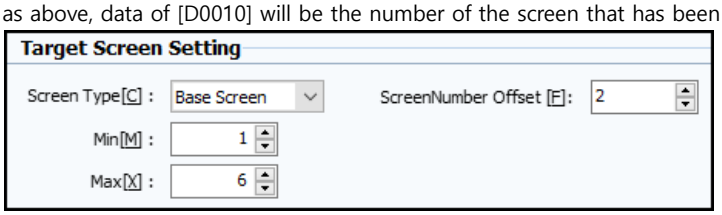
No	Property	Description
1	Static Call	You may select 1 [Base Screen/Frame Screen] from [Target Screen Setting]. The selected screen cannot be changed and it will always be called in its original size. Configure [Call Area] and [Position]. 
2	Dynamic Call	Target Screen may be modified according to [Condition] by configuring [Call Condition] and the Screen Size may also be adjusted by setting it to [Stretch].
3	Zoom	Target Screen may be modified according to [Condition] by configuring [Call Condition] and the Default Scale of a Screen may be configured to zoom in/out. Hide Zoom button or Use Control Lock.

14.1.2 Call Condition/Target Screen Setting

[Call Condition] may only be configured when [Dynamic Call]/[Zoom] have been set, and the user may select drafted screens on [Base Screen] according to condition. There are four types of [Call Condition]: [Not Used/Bit/Word/Word Indirect].

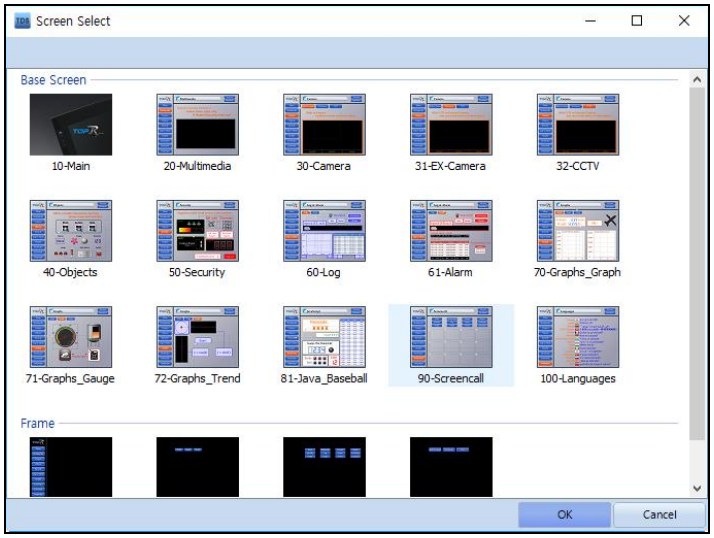


[Pic. Call Condition]

No	Property	Description
1	Disabled [N]	Disable Call Condition. With this option, the selected screen cannot be modified at [Target Screen Setting] as in Static Call and it will always be called.  The difference from Static Call is that it will be set to [Stretch] at [Size] and will automatically adjust the selected screen to fit the size of the ScreenCall Object Screen.
2	Bit [B]	Call the selected screen from [Target Screen Setting] according to the ON/OFF status of Bit Address.  If set as above, select the screen to call when [Y001] data is [OFF] and [ON] as below.  Select the screen to call with [Select] button. Remove the selected screen with [Remove] button. Use [Bit] condition to switch between up to 2 screens and call.
3	Word Case [W]	Call the set screen according to the range of Word Address data.  If set as above, it calls the corresponding screen according to data of [D0013]. You may switch between and call multiple screens using various ranges.  Press [Add] button by the number of screens to call according to the range to create a list. Set the [Min/Max] of the data range and set the screen to call. Called screen can be selected by clicking the ... button which will be displayed when [Screen] column is double-clicked.
4	Word Indirect [I]	Call the screen with the same number to the Word Address Data.  When set as above, data of [D0010] will be the number of the screen that has been called.  Screen Type will be selected as [Base Screen]. Set the range of the screen to call at

		[Min/Max]. Screens that are out of the range of the screen that has been called will not be called in. If [Screen Number OffSet] is set above [1], the resulting value of adding [D0010] data to [Screen Number OffSet] will be the number of the screen to call. Thus, when [D0010] data is 3 and the [Screen Number OffSet] is 2, Base Screen no. 5 will be called. Modify data to change to multiple screens to call them.

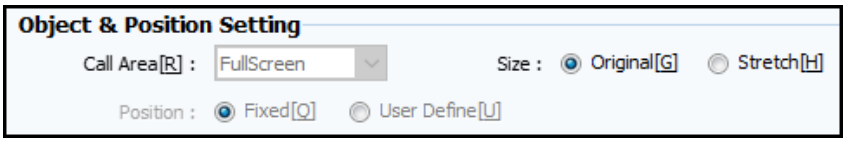
Click [Select] button to select each screen to call at Target Screen Setting and below [Select Screen] screen will be displayed. Select a screen to call at this screen and press [OK] to call it.



[Pic. Select Screen]

14.1.3 Object & Position Setting

Set the Call Area/Position/Size of ScreenCall Object. For [Static Call], you may configure [Call Area] and [Position]. For [Dynamic Call], you may configure [Size].



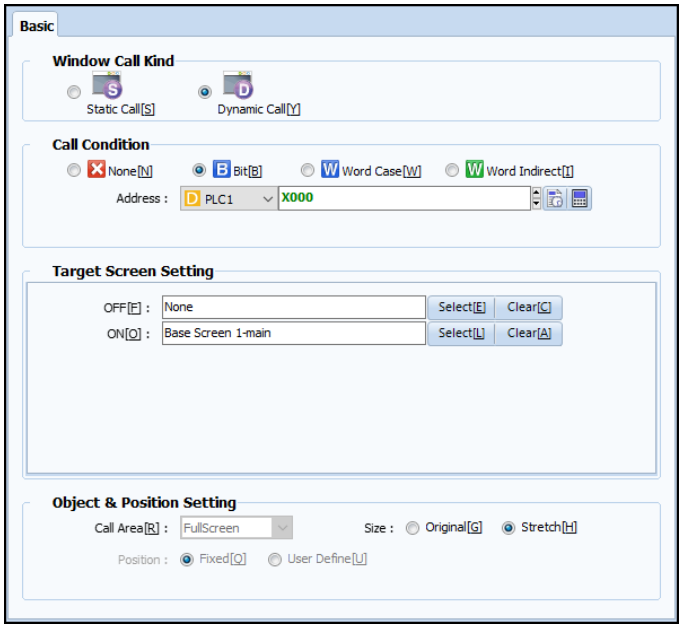
[Pic. Object & Position Setting]

No	Object & Position Setting	Description
1	Call Area	Set the part to call from the Target Screen. ObjectOnly Object+Global FullScreen Call Object only from [ObjectOnly] Target Screen. Call Object and Global Area (Master Screen/Frame Screen) from [Object+Global] Target Screen. Call All Target Screen [FullScreen].
2	Position	Configure the position to call Target Screen. [Fixed] calls the position of the Target Screen as it is. That is, the Object/Global Area, etc. on Target Screen will be called as their registered position. Position may not be modified. [User Define] may be modified by editing the position of the Target Screen to call and the position of ScreenCall Object.
3	Size	Choose the size of the called Target Screen from [Original/Stretch]. [Original] will call

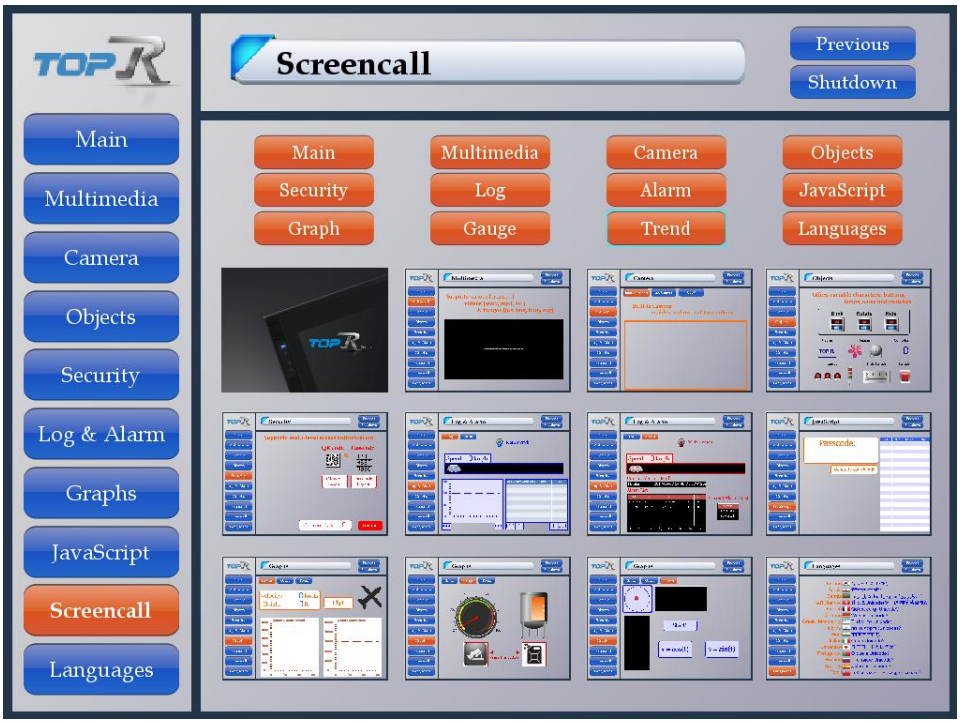
		the Target Screen size as it is. [Stretch] will call the selected screen and adjust it automatically to fit the screen size of the ScreenCall Object.

Use ScreenCall Screen

Use the size [Stretch] of Dynamic Call to monitor multiple screens on one screen.
Touch each screen to move to the corresponding screen.



[Pic. Use ScreenCall]

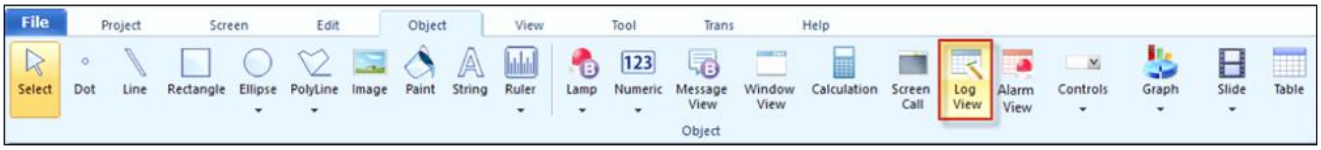


[Pic. Use ScreenCall Screen]

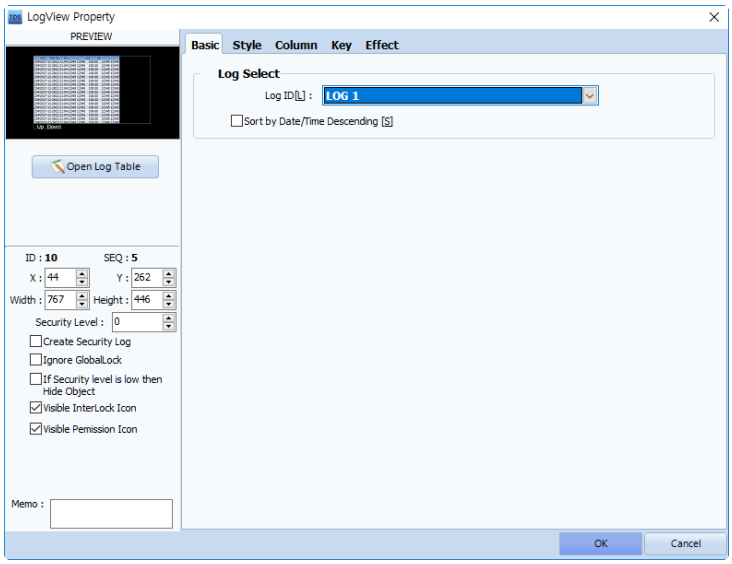
CHAPTER 15 - LogView Object

This object displays log data recorded with [Project]-[Log] setting on screen in table format.
(Please see Chapter 4.2 [Log] for Log Setting.)

Run [Object]-[Log View] object.

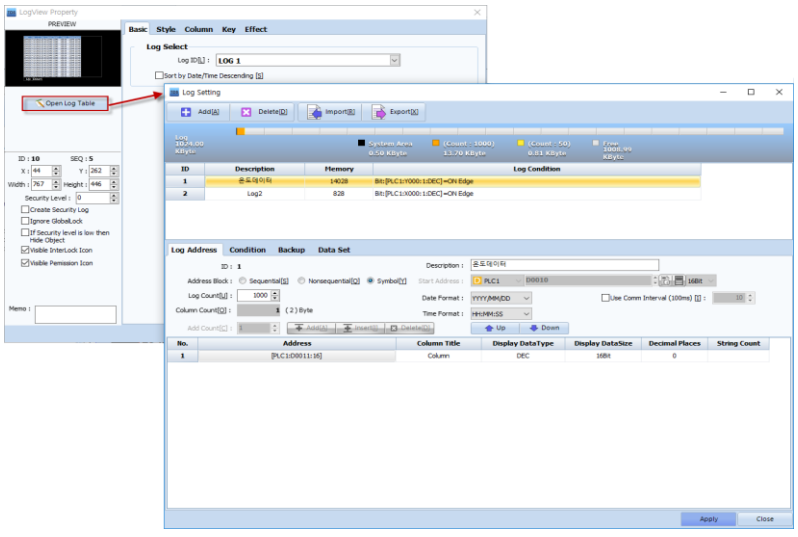


[Pic. Log View Object]



[Pic. Log View Property]

To check the log setting, run [Project]-[Log] menu, [Project Manager]-[Project]-[Log] list, or run the [Open Log Table] menu below the Log View Object Preview.



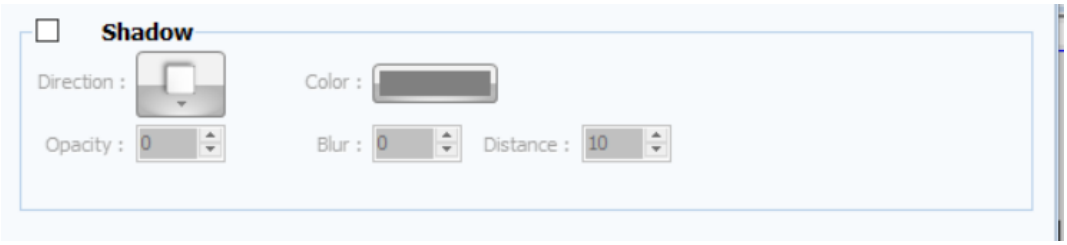
[Pic. Open Log Table]

Default Page

Set the [Log ID] configured at [Project]-[Log].
Check [Sort by Date/Time Descending] to display log data recorded in the most recent Date/Time at the top row and older one at the bottom. Uncheck it to display older log data at the top row and recent ones at the bottom.
Check [Do Not Draw If There Is Not Enough Space to Display] not to display log data with insufficient row height.

Shape Page

Set the shadow style of Log View Object.

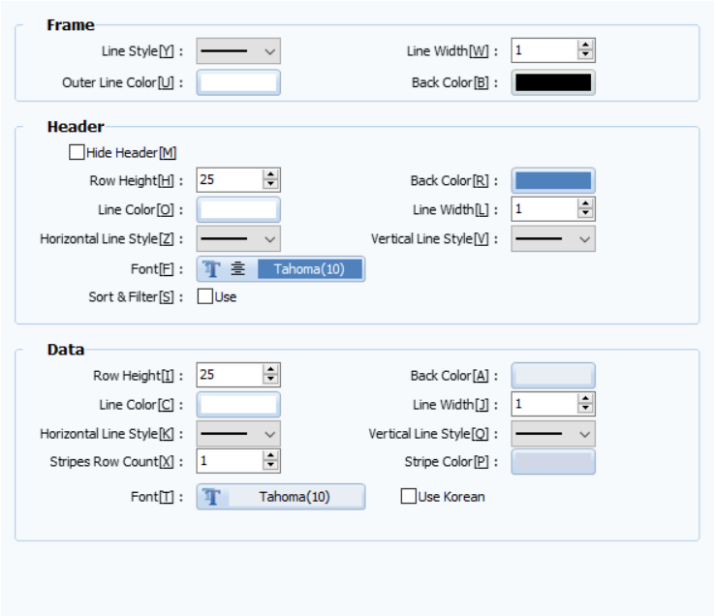


[Pic. Shape page]

No	Shape setting	Description
1	Shadow	Set the shadow of Log View. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

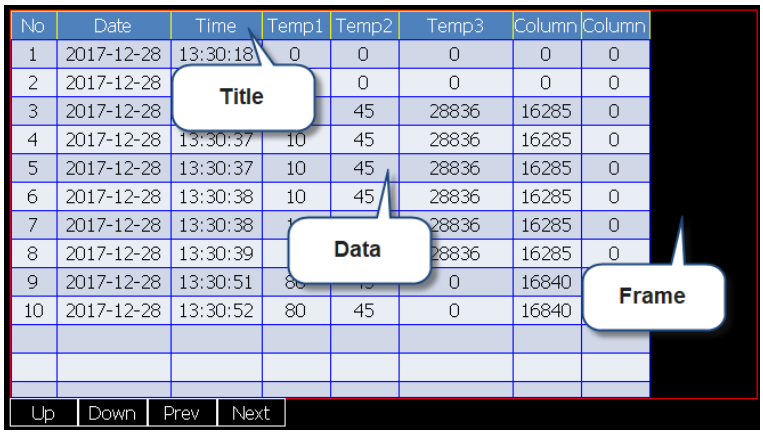
Style Page

Set the Table Style (Display settings e.g., Color/Font, etc.).

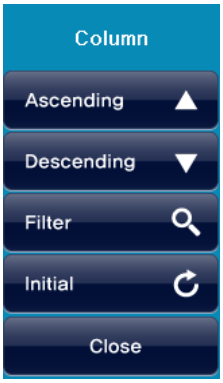
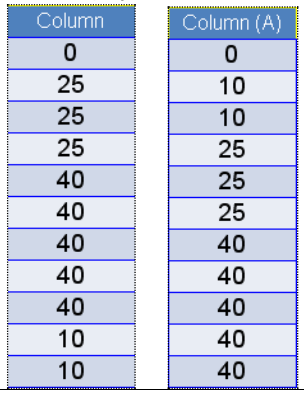


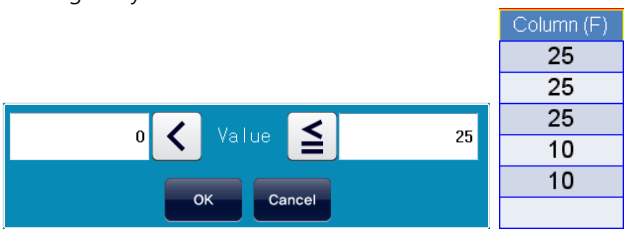
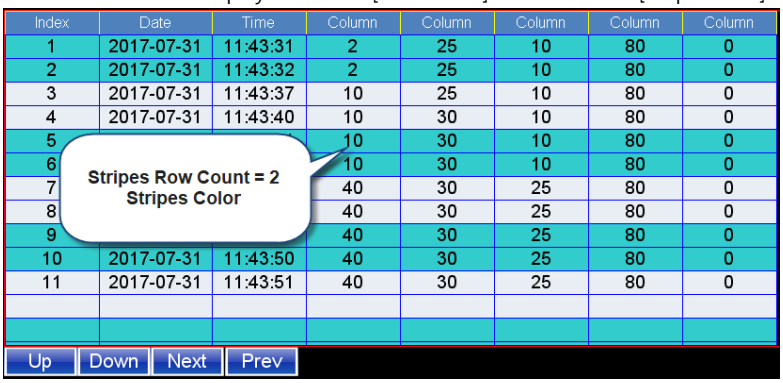
[Pic. Style Page]

The outside of a table is called Frame. Data Area is the section where the Header and Log Data are displayed.



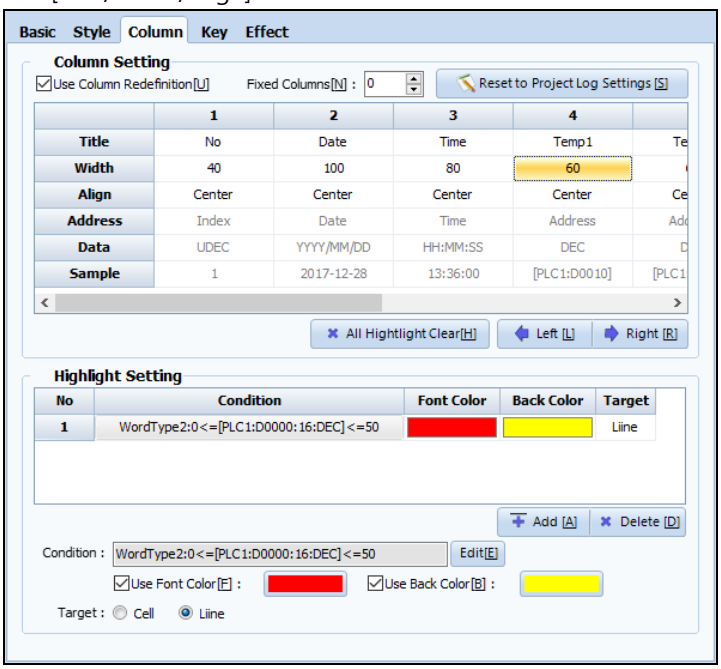
[Pic. Log View]

No	Style	Description
1	Frame	The outer side of a table is called Frame. Set the Back Color of Frame and Line Style. Set the [Line Style/Line Color/Line Width]. Draw a table in the same size with the frame to make the frame invisible. However, drawing a frame bigger than a table will show the background at the right as above picture. [Back Color] is the background color of the frame.
2	Header	The title section is called [Header]. Check [Hide Header] to make it invisible. Set the table style, [Row Height (Pixel)/Back Color/Line Color/Line Width/Horizontal Line Style/Vertical Line Style], of the Header, and set [Font] for the title text. Check [Sort & Filter] to display below [Sort & Filter] menu when the header is touched while TOP is in operation.  [Ascending] is the ascending order, and [Descending] is the descending order. Select a column to sort and run [Ascending] in [Sort & Filter] menu to sort data in the corresponding column in an ascending order. Also, columns will be displayed with an (abbreviation) in their title if sorting or filter has been applied to. Ascending will be displayed as [Column (A)] and Descending will be displayed as [Column (D)]. Filter will be displayed as [Column (F)]. 

		[Filter] is the function that allows the user to search required data only. Run Filter menu to display below window that sets the range. Configure the range and press [OK] button to search log data within that range only.  [Initial] initializes Log View and [Close] closes the Sort & Filter screen.
3	Data Area	This is the area where Log Data is displayed in a table. Set the style, [Row Height (Pixel)/Back Color/Line Color/Line Width/Horizontal Line Style/Vertical Line Style], of the Data Area and set [Font] for the text and numbers of data. To make visually highlight rows, you may apply [Stripes Row Count/Stripe Color]. If [Stripes Row Count] is set to [2] and Stripe Color is applied, it will alternate the row colors and display 2 rows of [Back Color] and 2 rows of [Stripe Color].  Check [Use Korean] to display Korean in Data Area.

Column Page

This section is for setting columns to be displayed in Log View. Log Data columns consist of [Index/Date/Time/Data]. The count of data will be created by the [Column Count] in Log Setting. Configure each column's [Title/Width/Align] etc.

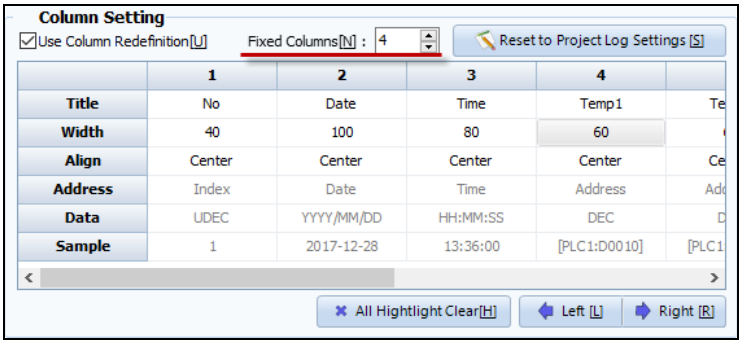


[Pic. Column Page]

15.1.1 Column Setting

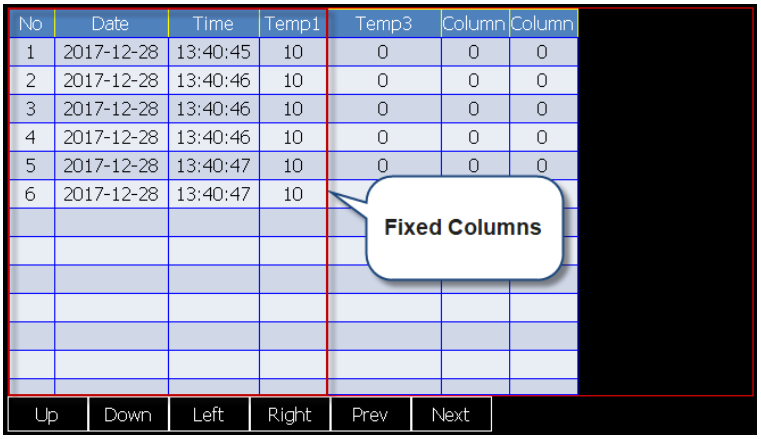
To edit [Title/Width/Align] of each column, check [Use Column Data Redefine].

With [Count of Column to Fix], when scrolling Log View left and right by using [Left/Right] keys, the set number of columns will be fixed and not scrolled.



	1	2	3	4	
Title	No	Date	Time	Temp1	Te
Width	40	100	80	60	
Align	Center	Center	Center	Center	Ce
Address	Index	Date	Time	Address	Ad
Data	UDEC	YYYY/MM/DD	HH:MM:SS	DEC	D
Sample	1	2017-12-28	13:36:00	[PLC1:D0010]	[PLC1

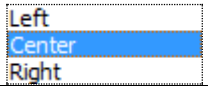
[Pic. Count of Columns to Fix]



[Pic. When the Count of Columns to Fix is set to [4]]

Press [From Log Table Setting] button to initialize columns to the [Project]-[Log] settings.

The column position may be moved left and right with the [Left/Right] buttons at the bottom.

No	Column Setting	Description
1	Title	This is the title of the column. Enter text to modify.
2	Width	This is the width (pixel) of the column. Enter numbers to modify.
3	Align	Select the data align method for the column from [Left/Center/Right]. 
4	Address	Show which data is to be displayed in the column. [Index] is the sequentially assigned number. [Date] is the date, [Time] is the time, and [Address] is the address value (log data).
5	Data Type	Display the data type of the column set in [Project]-[Log]-[Log Address].
6	Example	Display the example of data to be displayed in the column and the log address.

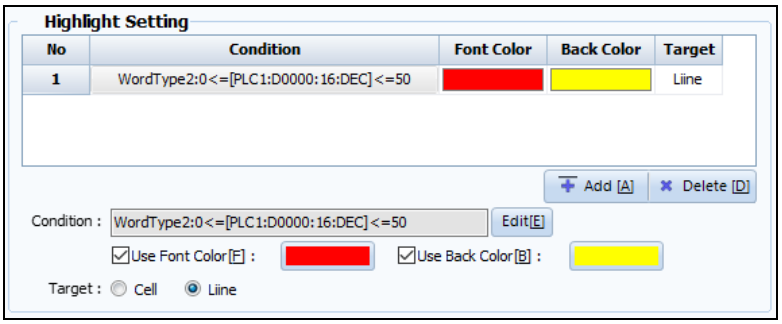
15.1.2 Highlight Setting

Use Highlight to emphasize log data in certain situations. First, select the column to apply Highlight Setting at the top and press [Add] button at Highlight Setting. Configure the conditions to display Highlight by editing [Condition].

[Use Item Font Color] is the color in which data of the corresponding column when the Highlight

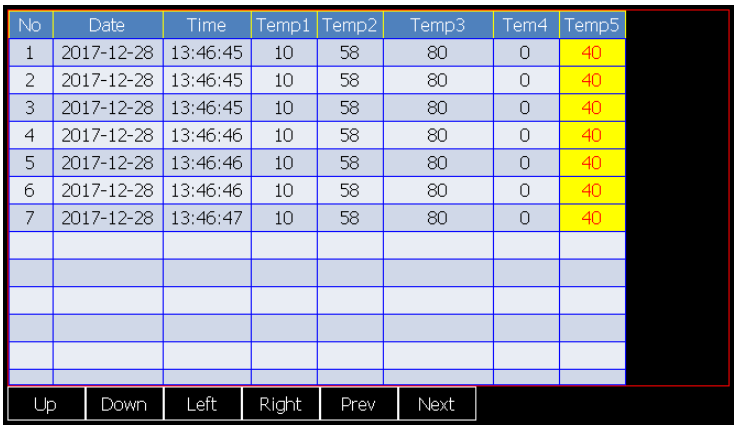
Condition is met.

[Back Color] is the color in which the Background of the corresponding column will be displayed in when the Highlight Condition is met.



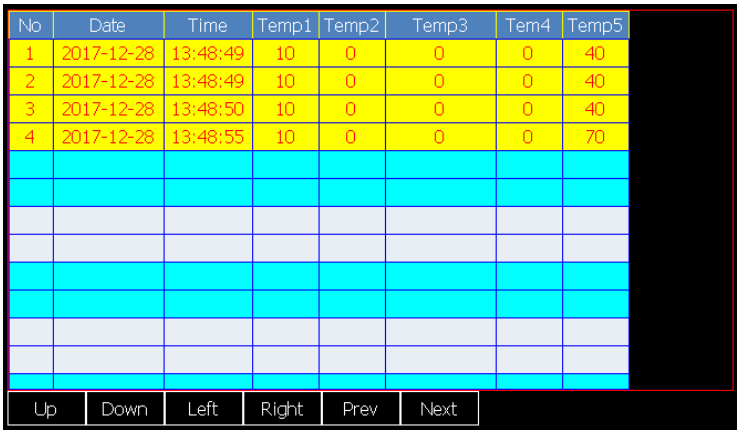
[Pic. Highlight Setting]

Select [Cell] as the target to apply the highlight color to the corresponding column only as below picture.



[Pic. When the highlight target is a cell]

Select [Line] as the target to apply the highlight color to the entire line as below picture.



[Pic. When the highlight target is a Line]

When the highlight condition is false, the corresponding highlight will be turned off.

Run [Remove All Highlights] menu to delete all highlight settings configured in columns.

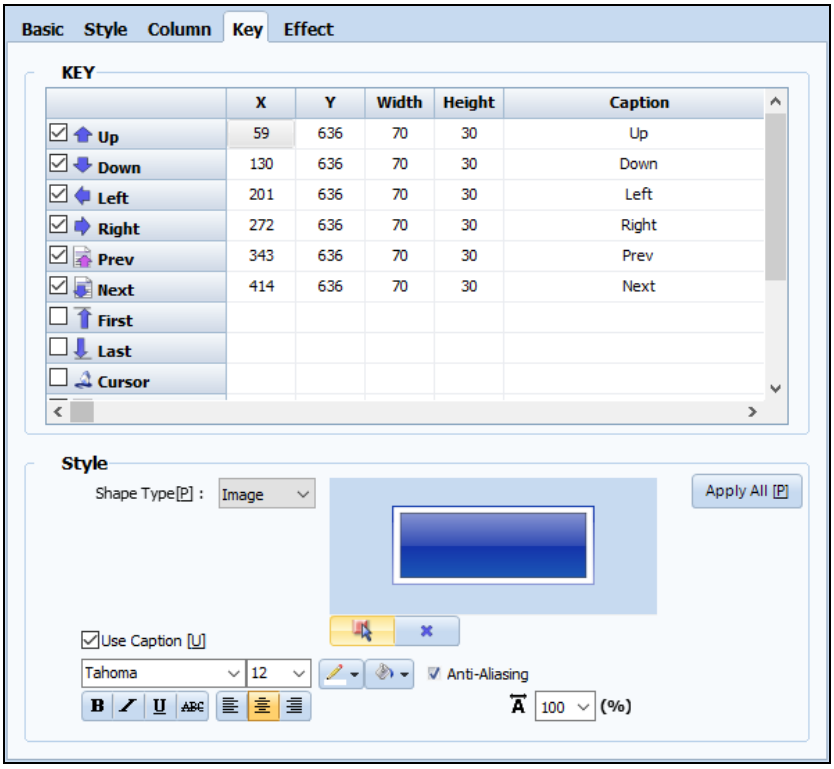
Key Page

Configure the composition and design of the [Key (Button)] required for Log View. Check the required keys at the top [Key] section. Location Coordinates (X, Y), Size (Width and Height), and Caption (String) of [Key] may be configured. At the below [Shape] section, set the [Shape] of the added Key and [Font] to be applied to the Caption (String).

If Color has been chosen as [Shape Type], it will be a rectangle with color.

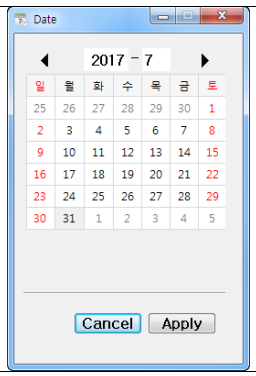
If Image has been chosen as [Shape Type], it will import an image to be applied to the Key.

Press [Apply All] button to modify the shapes and fonts of all keys will be made uniform.



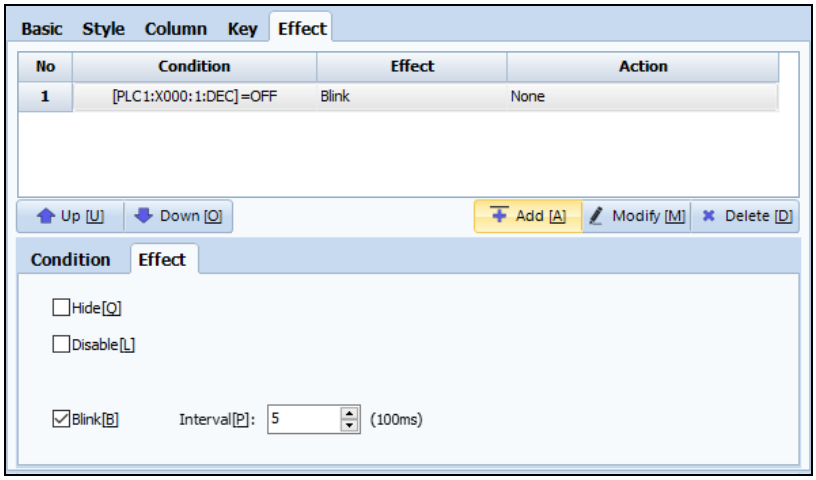
[Pic. Key Page]

No	Key Type	Description
1	Up	Run it to check top log data. Move log data down by one line. If the cursor is selected, move the cursor up by one line.
2	Down	Run it to check bottom log data. Move log data up by one line. If the cursor is selected, move the cursor down by one line.
3	Left	Run it to check left log data. Move log data right by one column.
4	Right	Run it to check right log data. Move log data left by one column.
5	Prev	Move to the previous page of the current page.
6	Next	Move to the next page of the current page.
7	First	Move to the first page.
8	Last	Move to the last page.
9	Cursor	Select a line of log data.
10	Date Search	This is Log Data search function. Select the date and click [Apply] button to search and show Log Data of the corresponding date.

		
11	View Clear	Hide all log data and render them invisible. Actual log data in TOP memory will not be deleted.
12	Today	Display today's log data only.
13	History	Show all Log Data.
14	File	It is run only when [Backup] is set to [SD Card] at [Project]-[Log] setting. Import and show log file saved in [SD Card]. Press [File] to run [File Explorer] to select and import log files saved in [SD Card].

Effect Page

[Hide/Disable/Reverse/Blink] effects can be given according to the set [Condition].

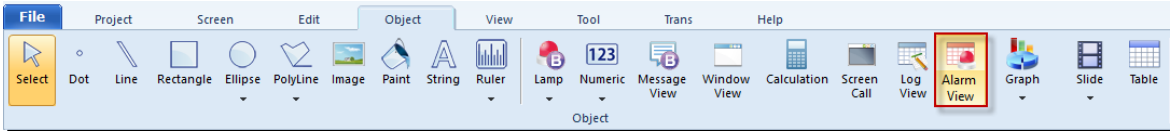


[Pic. Effect Page]

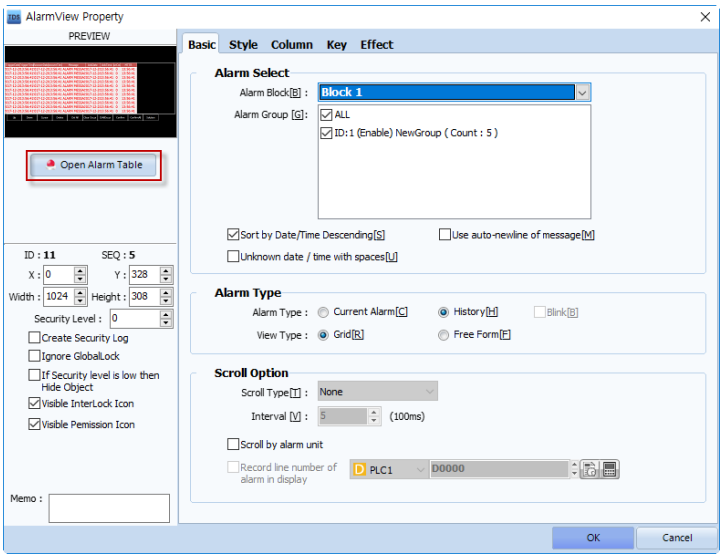
No	Effect	Description
1	Hide	Hide Log View.
2	Disable	Disable Log View.
3	Blink	Log View will blink by the set [Interval].

CHAPTER 16 - Alarm View Object

This is the object that displays alarm data recorded by the [Project]-[Alarm] setting on screen.
Run [Object]-[Alarm View] object (Please see Chapter 4.1 [Alarm] for Alarm Setting.).

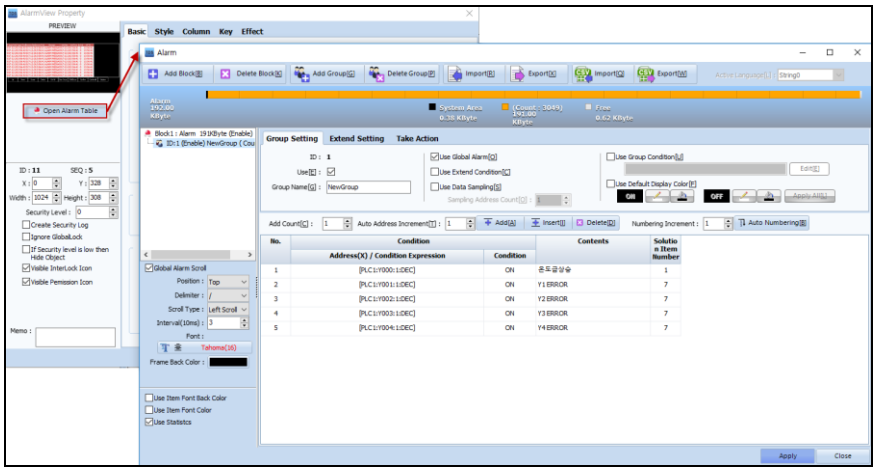


[Pic. Alarm View Object]



[Pic. Alarm View Object]

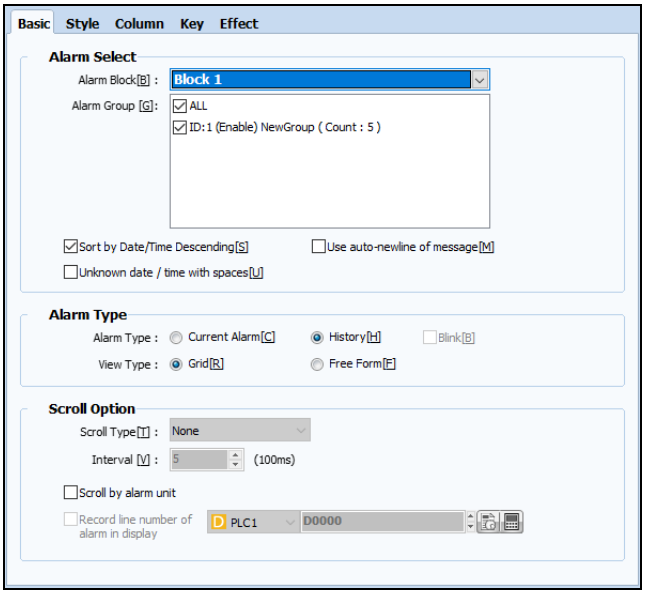
To configure [Alarm], run [Project]-[Alarm] menu or run [Project Manager]-[Project]-[Alarm] list.
Run [Open Alarm Table] menu below Preview in Alarm Object to open [Project]-[Alarm] screen and see the content of [Alarm Setup].



[Pic. Open Alarm Table]

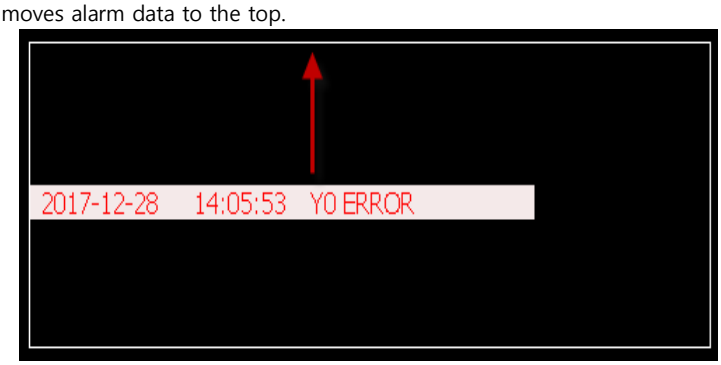
Default Page

Select [Alarm Block] and [Alarm Group] set in [Project]-[Alarm]. Set which alarm to be expressed in which format.



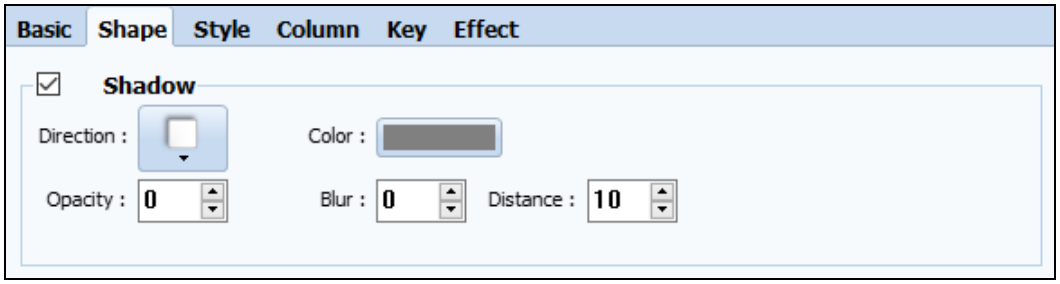
[Pic. Default Page]

No	Default Page	Description
1	Alarm Select	Select [Alarm Block] and [Alarm Group] set in [Project]-[Alarm]. Select [Alarm Block] to display the Alarm Group that belongs to the corresponding block. Check Alarm Group to display. It displays the saved Alarm Data when the alarm that belongs to the checked Alarm Group is on/off. Alarm Data shows older data at the top of the table and recent ones at the bottom. Check [Sort Date/Time in Descending Order] to show recent alarms at the top of the table and the older ones at the bottom. Check [Unknown Date/Time with Spaces] to leave alarms blank when the date and time of an alarm is not verified. [Use Auto-Newline of Message] automatically wraps texts when the [Alarm Contents] exceed the [Message Column Width] and display the rest of the strings of the alarm content in the next line. Check [Do Not Draw If There Is Not Enough Space to Display] not to display the line that has a height lower than the Alarm View row.
2	Alarm Type	Choose the [Alarm Type] from [Current Alarm/Alarm History]. [Current Alarm] displays currently issued alarms only and does not display disabled alarms. If the alarm is current, check [Blink] to highlight all displayed alarm data by giving them blinking effects. [Alarm History] displays all issued/disabled alarm history data. Choose [View Type] from [Table Style/Free Style]. [Table Style] displays alarm data in a table. [Free Style] displays alarm data without a table, or if the alarm type is [Current Alarm], set [Scroll Option] to make the alarm data to flow in the set direction. Select [Current Alarm] to activate [Record Line Number of Alarm in Display]. This allows the alarm line number to be recorded in the set address.
3	Scroll Option	It can be configured if the Alarm Type is [Current Alarm] and View Type is [Free Style]. It displays alarm data to flow in a set direction. Choose the [Scroll Type] from [None/Left Scroll/Right Scroll/Up Scroll/Down Scroll]. [None] will disable Scroll Option. [Left Scroll] moves alarm data to the left.  [Right Scroll] moves alarm data to the right.

		[Up Scroll] moves alarm data to the top.  [Down Scroll] moves alarm data to the bottom. [Interval] sets the movement interval by (100 ms) unit.

Shape Page

Set the shadow style of Alarm View Object.



[Pic. Shape page]

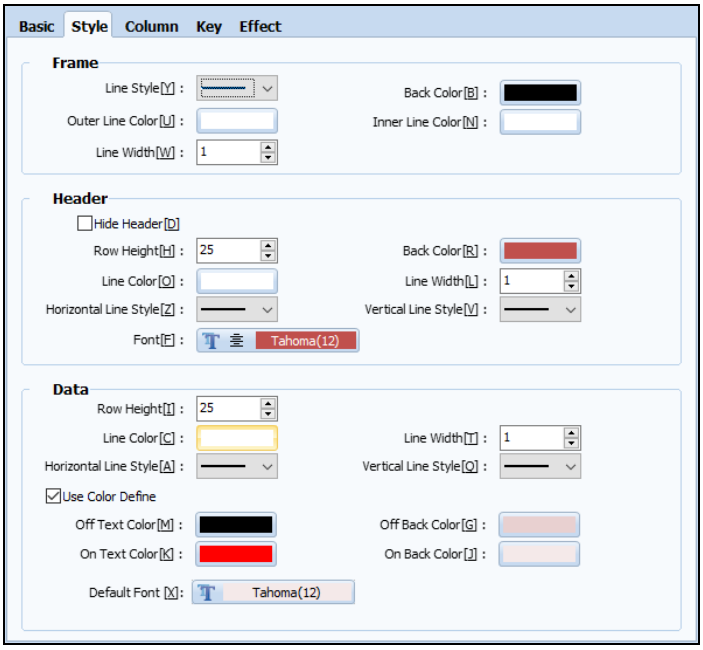
No	Shape setting	Description
1	Shadow	Set the Alarm View Shadow. Select shadow direction at [Direction]. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Style Page

Set the style (display options such as color/font, etc.) for the Alarm View to be displayed.
Style Page will be composed differently in View Type according to the [Table Style/Free Style].

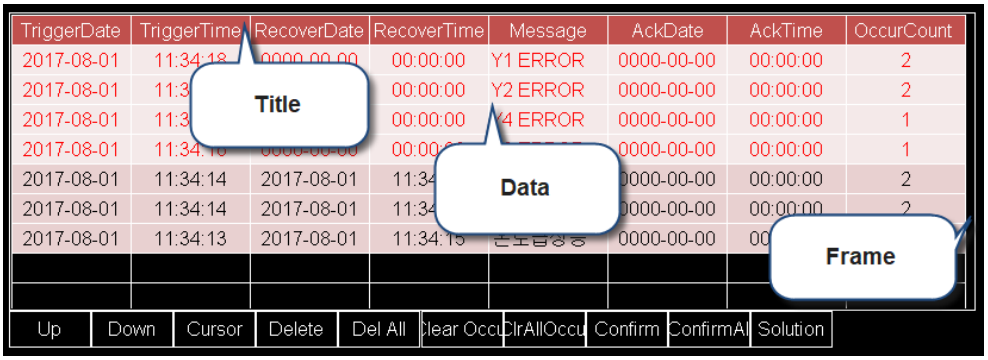
16.1.1 [Table Style] View Type

This is the Style Page that has set the [View Type] as [Table Style] in the [Default] page.



[Pic. Style Page when the View Type is [Table Style]]

The outside of a table is called Frame. Data Area is the section where the Header and Alarm Data are displayed.

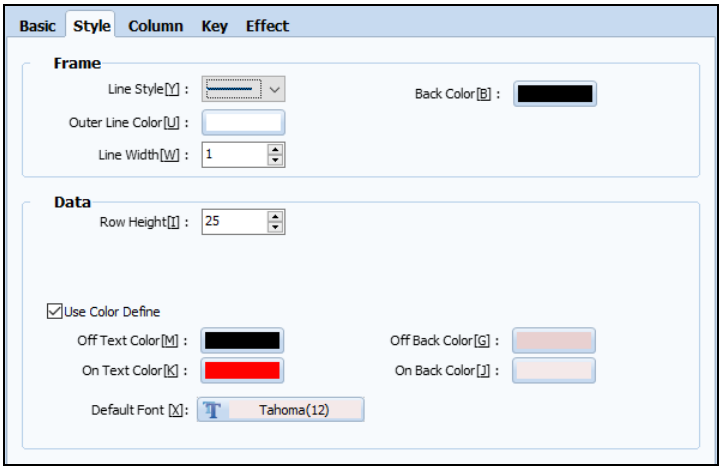


[Pic. Alarm View_Table Style]

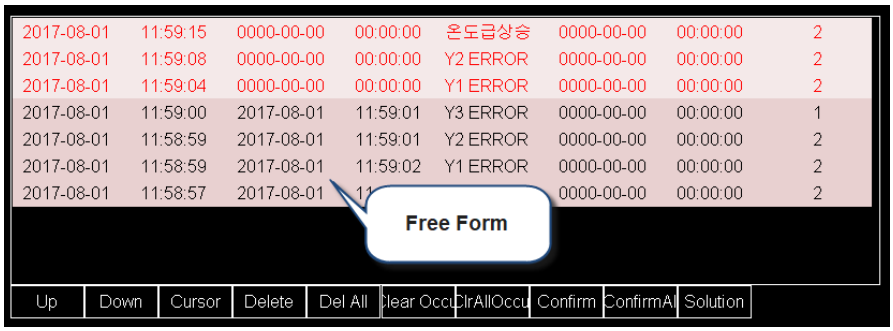
No	Style	Description
1	Frame	The outer side of a table is called Frame. Set the Back Color of Frame and Line Style. Set the [Line Style/Line Color/Line Width]. Draw a table in the same size with the frame to make the frame invisible. However, drawing a frame bigger than a table will show the background on the right as above picture. [Back Color] is the background color of the frame.
2	Title (Header)	The title section is called [Header]. Check [Hide Header] to make it invisible. Set the table style, [Row Height (Pixel)/Back Color/Line Color/Line Width/Horizontal Line Style/Vertical Line Style], of the Header, and set [Font] for the title text. [Date/Time] Header has Sort function. If you touch the title of a column, it sorts based on that column. The sorting method will switch between [Ascending/Descending] at every touch.
3	Data Area	This area displays alarm data in a table. Set data area style, [Row Height (Pixel)/Back Color/Line Color/Line Width/Horizontal Line Style/Vertical Line Style], and set [Font] for alarm data. Check [Use Color Define] to differentiate the color of the ongoing and disabled alarm data. The top four alarms in red in the above are ongoing alarms and the three alarms in black are disabled alarms. [Off Text Color/Off Back Color] are the Text Color/Back Color of disabled alarms. [On Text Color/On Back Color] are the Text Color/Back Color of ongoing alarms.

16.1.2 **[Free Style] View Type**

This is the Style Page that has set the [View Type] as [Free Style] in the [Default] page.



[Pic. Style Page when the View Type is [Free Style]]

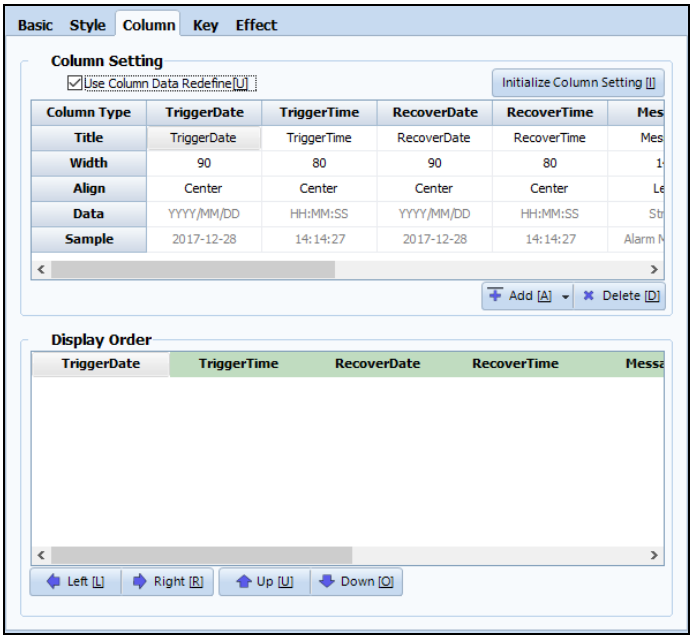


[Pic. Alarm View_Free Style]

No	Style	Description
1	Frame	The outer side is called Frame. Set the Back Color of Frame and Line Style. Set the [Line Style/Line Color/Line Width]. [Back Color] is the background color of the frame.
2	Data Area	This is the area where alarm data is displayed. Set the [Row Height (Pixel)] and [Font] to display alarm data. Check [Use Color Define] to differentiate the colors of the ongoing and disabled alarm data. The top four alarms in red in the above are ongoing alarms and the three alarms in black are disabled alarms. [Off Text Color/Off Back Color] are the Text Color/Back Color of disabled alarms. [On Text Color/On Back Color] are the Text Color/Back Color of ongoing alarms.

Column Page

Set the composition and order of columns.



[Pic. Column Page]

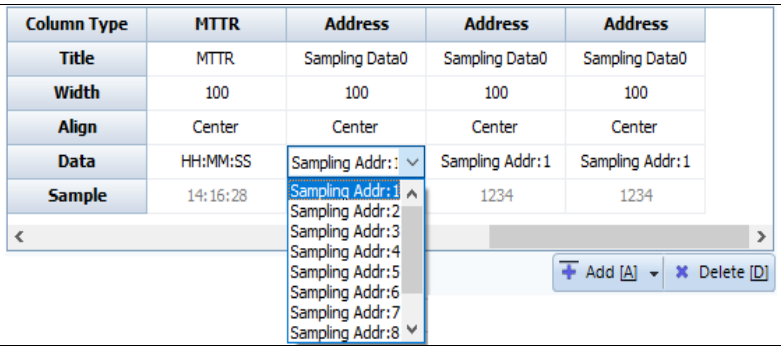
16.1.3 Column Setting

If [User Define Column] is used in the block's [Column Format] in [Project]-[Alarm] setting, it will be displayed in [Column Setting] as set in the [Column Format].

If it is [Current Alarm], there are [Occur Date (TriggerData)/Occur Time (TriggerTime)/Alarm Contents (Message)/Sampling Data (Address)] columns. For [Alarm History], there are [Occur Date (TriggerData)/Occur Time (TriggerTime)/Alarm Contents (Message)/AckDate/AckTime/RecoverDate/RecoverTime/Sampling Data (Address)/Occur Count (OccurCount)/ MTTR] columns.

Check [Use Column Data Redefine] to edit [Title/Width/Sorting/Data] of each column and column composition.

No	Column Setting	Description
1	Title	This is the title of the column. Enter text to modify.
2	Width	This is the width (pixel) of the column. Enter numbers to modify.
3	Align	Select the data align method for the column from [Left/Center/Right]. Left Center Right
4	Data	Display the type of data to be displayed in columns. If the columns are for Date/Time, select the data type of Date/Time. YYYY/MM/DD YY/MM/DD MM/DD/YYYY MM/DD/YY DD/MM/YYYY DD/MM/YY MM/DD DD/MM HH:MM:SS HH:MM HH:MM:SS:MS MM:SS In case that a column is for Sampling Data, double click it to set which number of sampling address it is.

		
5	Data Sample	Shows the sample of data that is to be displayed in column.

Add columns with [Add] button at the bottom. Also, select columns to be deleted and press [Delete] button to delete the selected columns. Press [Initialize Column Setting] to initialize columns to the settings in [Project]-[Alarm].

16.1.4 Display Order

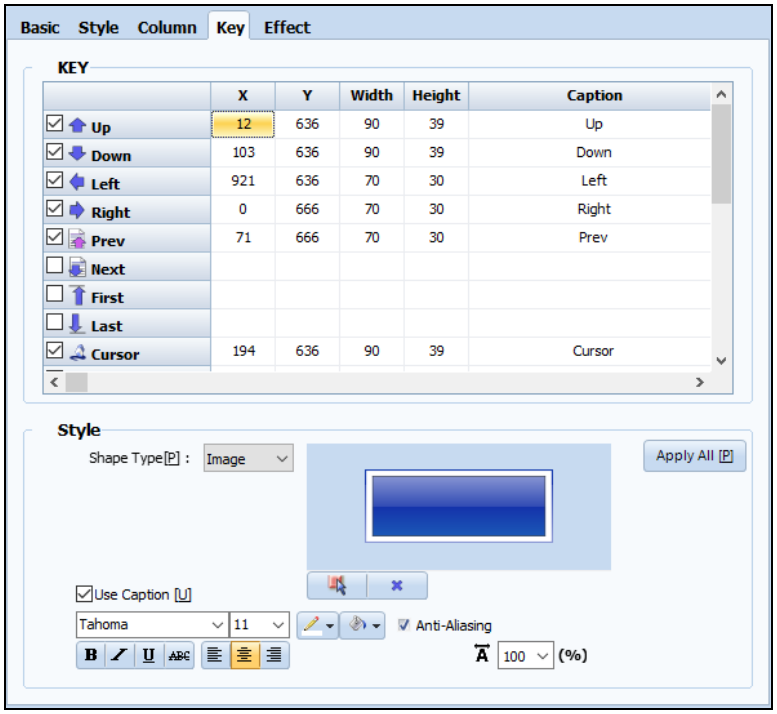
Change the display order of columns.

The column position may be moved left and right with the [Left/Right] buttons at the bottom.

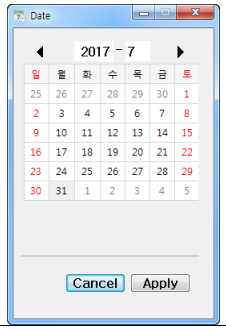
No	Property	Description
1	Left [L]	Move the selected column to the left by one cell.
2	Right [R]	Move the selected column to the right by one cell.

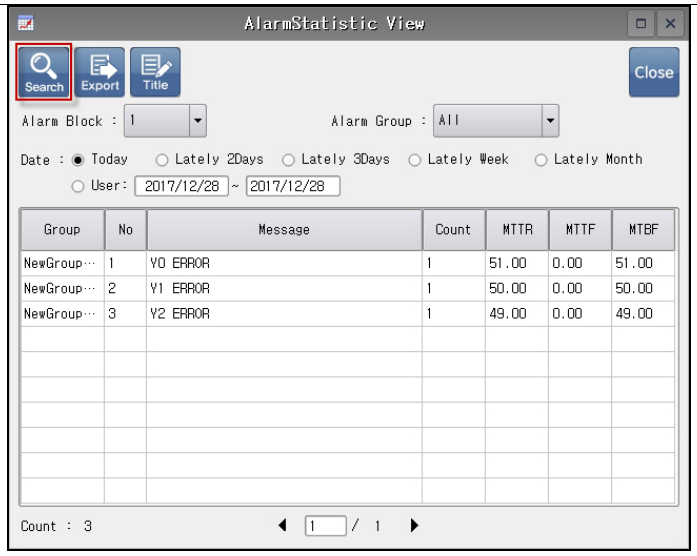
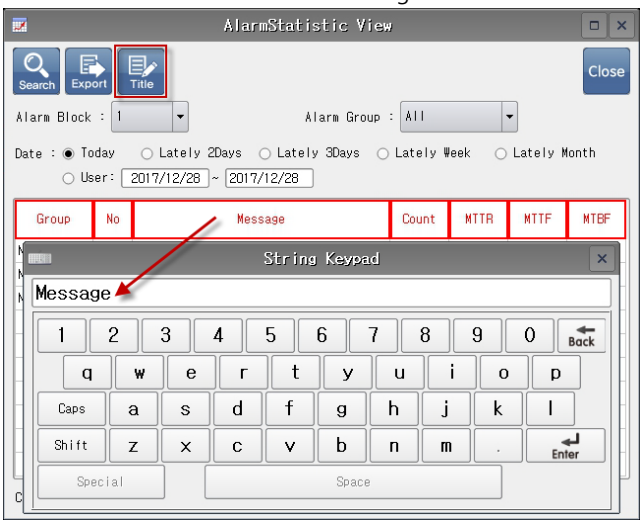
Key Page

Configure the composition and design of the [Key (Button)] required for Alarm View. Check the required keys at the top [Key] section. Location Coordinates (X, Y), Size (Width and Height), and Caption (String) of [Key] may be configured respectively.



[Pic. Key Page]

No	Key Type	Description
1	Up	Run to check the top alarm data. It allows log data to move down by one line. If the cursor is selected, move the cursor up by one line.
2	Down	Run to check the bottom alarm data. It allows log data to move up by one line. If the cursor is selected, move the cursor down by one line.
3	Left	Run to check the left alarm data. It allows log data to move right by one column.
4	Right	Run to check the right alarm data. It allows log data to move left by one column.
5	Prev	Move to the Previous page of the current page.
6	Next	Move to the next page of the current page.
7	First	Move to the first page.
8	Last	Move to the last page.
9	Cursor	Select a line of alarm data.
10	Delete	Delete all selected alarm data.
11	Del All	Delete all alarm data.
12	Clear Occur	Initialize the Occur Count of selected alarm data.
13	ClearAll Occur	Initialize the Occur Count of all alarm data.
14	Confirm	Record the check Date/Time of all selected alarm data.
15	Confirm All	Record the check Date/Time of all alarm data.
16	Solution	Select alarm data that has solution applied with [Cursor] and press [Solution] button to run the set solution. Solution will also be run when alarm data has been manually selected by touching it.
17	Date Search	This is Alarm Data search function. Select the date and click [Apply] button to search and show Alarm Data of the date. 
18	Statistics View (Alarm Statistics View)	Search and check alarm data by date range or save as file.

		 Alarm Block is the alarm block and Alarm Group is the alarm group. [Date] is used to search by date. Choose from [Today/Past 2 Days/Past 3 Days/Past Week/Past Month/Date Period]. Set the [Date] and press [Search] button to search alarm data that occurred during the period and display them in a list. Press [Export] button to run File Explorer to save the searched alarm data in [TOP Internal memory/USB/SD Card] as files. [Title] is the button for modifying the title. Press [Title] and the title will be in red as below picture. Select the title to change and [String Keypad] will run and the title will be available for editing.  [Count] means the occurrence count, [MTTR] is the time from alarm on to off, [MTTF] is the time from alarm off to on, and [MTBF] is the time from one alarm on to another alarm on. (Please see Chapter 4.1.5 [Use Alarm Statistics] for more details.)
19	Current Alarm	Display the currently ongoing alarm only and hide disabled alarm data. Touch again to display all alarm data.
20	Today	Display today's alarm data only.
21	History	Show all alarm data.
22	File	It will be run only when [Backup] is set to [SD Card] in [Project]-[Alarm] setup. Import and show alarm files saved in [SD Card]. Press [File] to run [File Explorer] to select and import alarm files saved in [SD Card].

At the below [Shape] section, set the [Shape] of the added Key and [Font] to be applied to the Caption (String).

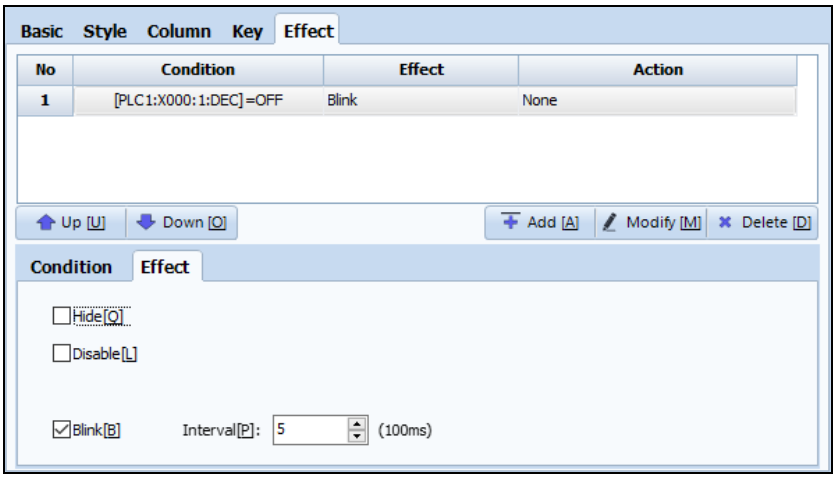
If Color has been chosen as [Shape Type], it will be a rectangle with color.

If Image has been chosen as [Shape Type], it will import an image to be applied to the Key.

Press [Apply All] button to modify the shapes and fonts of all keys will be made uniform.

Effect Page

[Hide/Disable/Reverse/Blink] effects can be given according to the set [Condition].

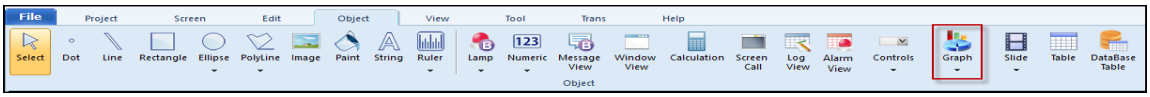


[Pic. Effect Page]

No	Effect	Description
1	Hide	Hide Alarm View.
2	Disable	Disable Alarm View.
3	Reverse	The Alarm View color will be inverted.
4	Blink	Alarm View will blink by the set [Interval].

CHAPTER 17 - Graph Object

Graph Object displays the data value of the address that the user wishes to see in [Graph/Trend/Record/Gauge] for the user to see at a glance. In other words, this function expresses the changing data of the address in pictures.

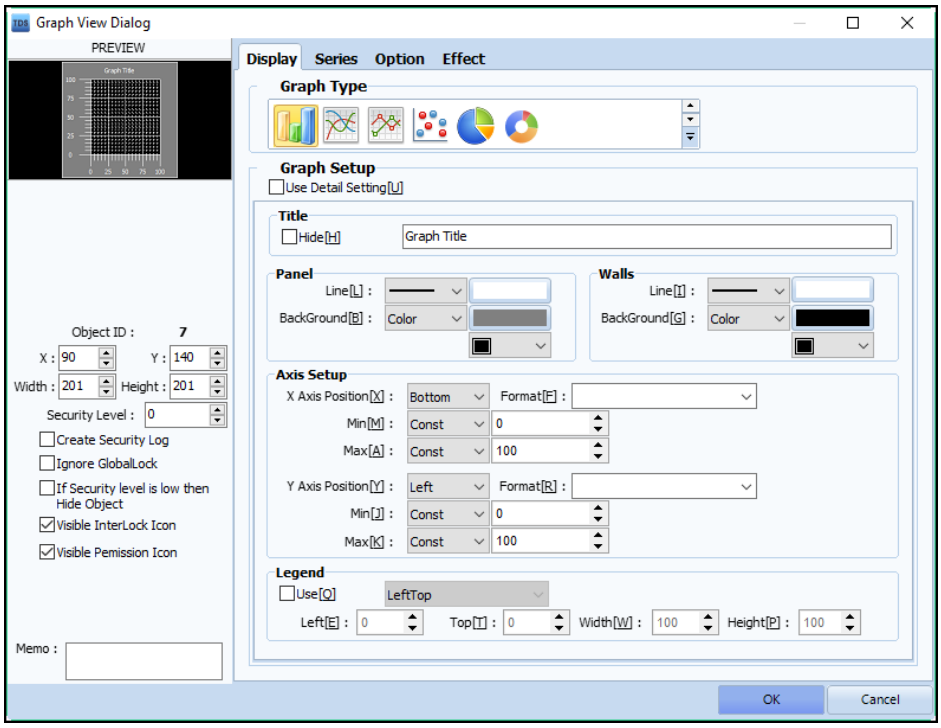


[Pic. Graph Object]

Graph Object



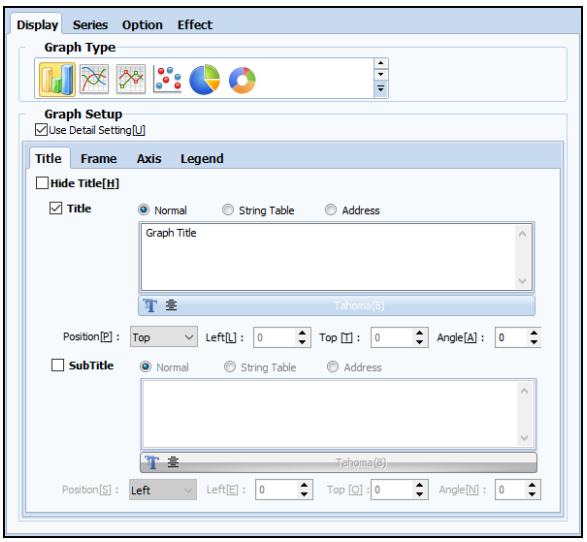
Graph can express data of designated addresses in [Bar/Line/PointLine/Point/Pie/Doughnut] style. This allows a quicker graph interpretation based on the data used in graphs.



[Pic. Graph Object]

17.1.1 Display Page

The type, title, and style of graphs may be modified in the Display Page of graphs.

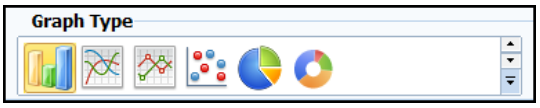


[Pic. Display Page]

(1) Graph Type

Set the graph type. For Graph Types, there are Bar, Line, PointLine, Point, Pie, and Doughnut Graphs. Selecting a graph will display setting options that correspond to the graph.

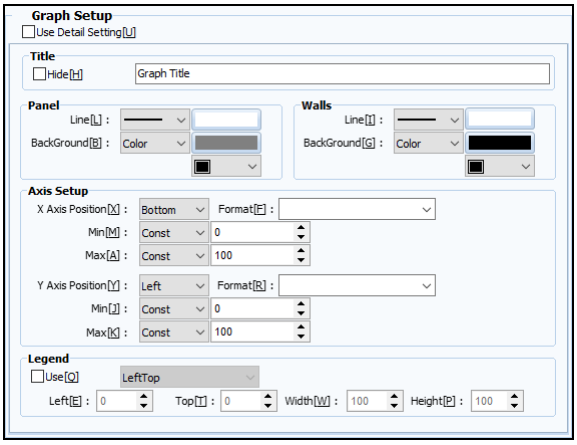
For Doughnut Graphs, you may set the Hole Size.



[Pic. Graph Type]

(2) Normal Graph Setting

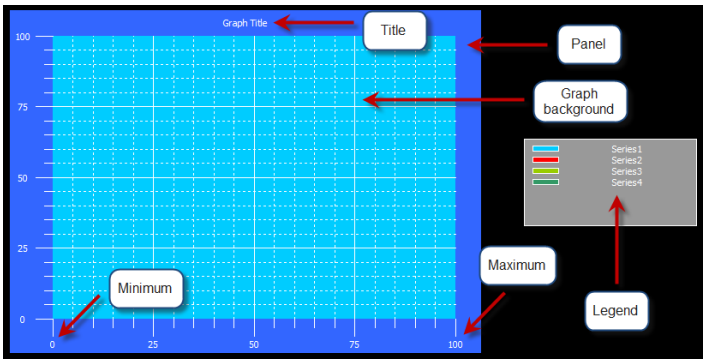
If Detail Setting is not in use, basic graph settings will be used.



[Pic. Detail Setting not used]

No	Normal Setting		Description
1	Title		Set the Graph Title. You may use Hide (H) function to hide the Title.
2	Panel		Select the Line and Background of the Panel that surround the Graph.
3	Wall		Choose the border of the graph and the background inside the graph.
4	Axis Setup	Axis Position	Set the X-Axis and Y-Axis position individually. X-Axis can be set as top or bottom and Y-Axis as the left or right.

		Min	Set the Min Value of X-Axis and Axis. Min Value refers to the Start Value of the Graph Grid. [Auto] automatically sets the value. With [Const], the user will have to input constant values manually. [Address] sets the data value for the designated address to minimum. [Series] displays the Min Value of the Series selected by the cursor.
		Max	Set the Max Value of the Axis. It will be configured in the same way as the minimum value.
		Format	Set the format of the displayed Grid Numeric. E.g.) #,##0, or #,##0.00mm, etc.
5	Legend		Set the Legend that displays the current Graph's Series List. It may be configured to fit the position of the user's preference.

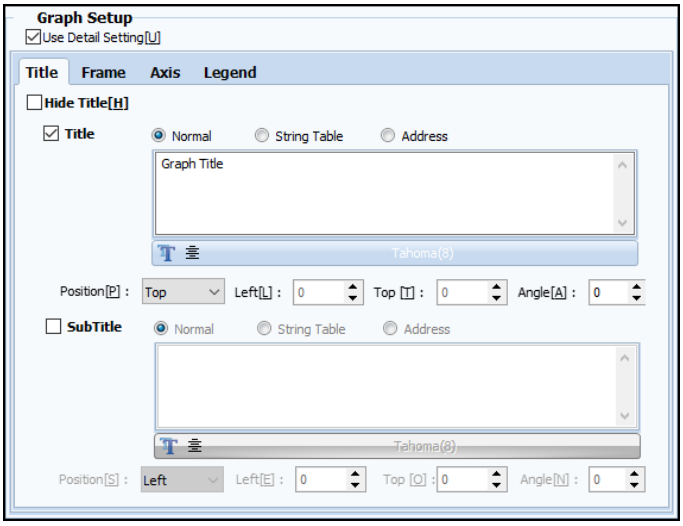


[Pic. Graph Setup Name]

(3) Graph Detail Setting - Title

Use Graph Detail Setting to use more detailed graph settings and set configurations in [Title], [Frame], [Axis], and [Legend] tabs. Title is the section where the user can set the graph title.

The title and font as well as a subtitle of the graph can be set.



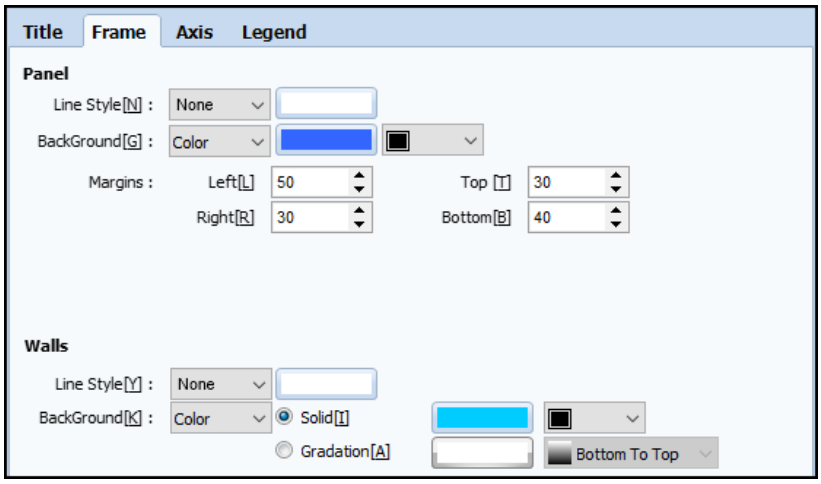
[Pic. Title]

No	Title Setting		Description
1	Hide Title [H]		Hide the title of the graph.
2	Title /SubTitle	Font setting	Set font, size, and decoration of the title.
		Input Setting	Use [Normal], [String Table], and [Address] to display the title. If used as an [Address], it must have a title address.

3	Position [P]	Set the title position. It may be set to [Left], [Right], [Top], [Bottom], and [User Define].
4	Left [L]	If set to [Position]-[UserDefine], set the title position based on the far left side of the graph.
5	Top [T]	If set to [Position]-[UserDefine], set the title position based on the far top side of the graph.
6	Angle [A]	If set to [Position]-[UserDefine], set the title angle.

(4) Graph Detail Setting - Frame

Frame refers to the section that sets the line and background of a graph.

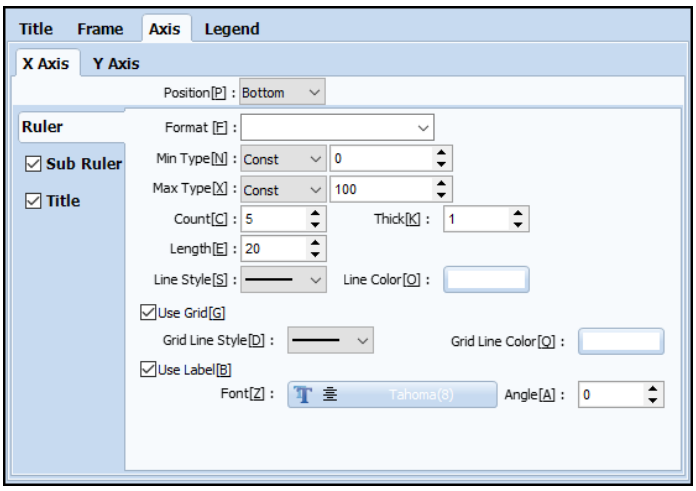


[Pic. Frame]

No	Frame Setting		Description
1	Panel	Line Style [N]	Set the style and color of the line that surround the graph.
		Background [G]	Set the background, background effect, and back color that surround the graph.
		Margin	Set the margin of the graph to manually set its size.
2	Wall	Line Style [Y]	Set the background line of the graph.
		Background [K]	Set the background, background effect, and back color of the Graph.

(5) Graph Detail Setting - Axis

This is the section that configures the X-Axis and Y-Axis of the graph. The title of the axis, ruler that appears on the axis, and sub ruler can be set here.



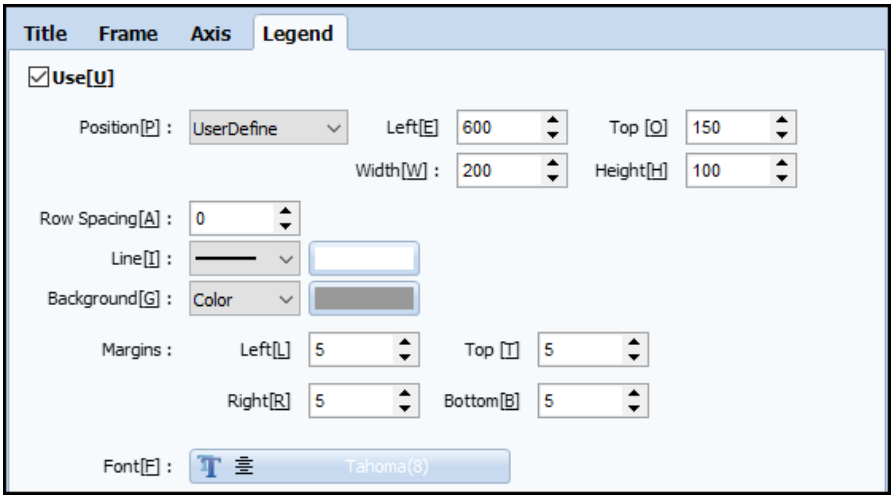
[Pic. Axis]

No	Axis Setup		Description
1	Position	X Axis, Y Axis	Set the Axis position. It may be set to [Left], [Right], [Top], and [Bottom] according to the direction of the axis.
2	Grid	Format	Set the format of the displayed Grid Numeric. E.g.) #,##0, or #,##0.00mm, etc.
		Min Type [N]	Set the type and minimum value of Grid. [Auto] will automatically set the value. With [Const], the user will have to input constant values manually. [Address] sets the data value for the designated address to minimum. [Series] makes the graph display value change according to the value of the cursor's position.
		Max Type [X]	Set the type and maximum value of Grid. It will be configured in the same way as the minimum value.
		Count [C]	Set the count of the Main Grid.
		Thick [K]	Set the Thickness of the Main Grid.
		Length [E]	Set the Length of the Main Grid.
		Line Style [S]	Set the Main Grid's Line Style.
		Line Color [O]	Configure the Main Grid's Line Color.
		Use Grid [G]	Add Grid Line to the Main Grid.
		Grid Line Style [D]	Set the shape of Grid Line.
		Grid Line Color [Q]	Set the Grid Line's Color.
		Use Label [B]	Use Main Grid Label (value).
		Font [Z]	Set the font of the Main Grid Label (value).
		Angle [A]	Set the Angle of the Main Grid Label (value).
3	Sub Ruler	Count [C]	Set the count of the Sub Grid.
		Length [L]	Set the length of the Sub Grid.
		Thick [T]	Set the thickness of the Sub Grid.
		Line Style [S]	Set the Sub Grid's Line Style.
		Line Color [O]	Set the Sub Grid's Line Color.
		Use Grid [G]	Add Grid Line to the Sub Grid.
		Grid Line Style [Y]	Set the shape of Grid Line.
		Grid Line Color [R]	Set the Grid Line's Color.
4	Title	Setting	Use [Normal], [String Table], and [Address] to display the title. If used as an [Address], it must have a title address.

		Use User Define	Set the title position.
		Left [L]	If [Use User Define] is set, set the title position based on the far left side of the graph.
		Top [T]	If [Use User Define] is set, set the title position based on the far top side of the graph.
		Angle [A]	If [Use User Define] is set, set the title angle.

(6) Graph Detail Setting - Legend

You may set the legend to check the type of graph line.

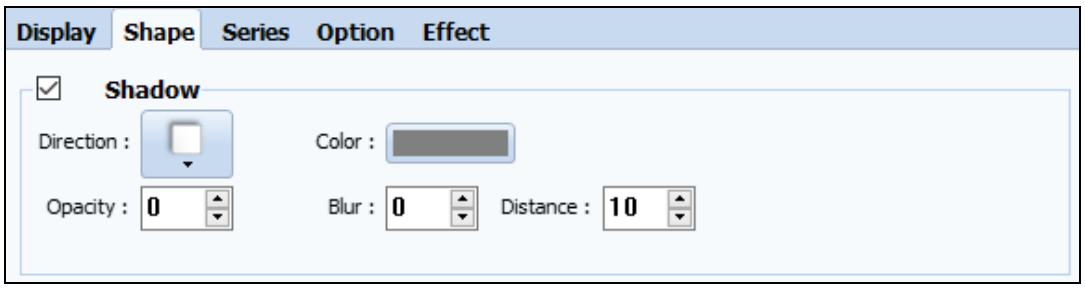


[Pic. Legend]

No	Legend Setup		Description
1	Use [U]		Configure the use of Legend that displays Series List.
2	Position [P]		Set the position of the Legend. You may set it to [Left], [LeftTop], [LeftMiddle], [LeftBottom], [Right], [RightTop], [RightMiddle], [RightBottom], or [UserDefine].
3	Left [E]		If set to [Position]-[UserDefine], set the left position.
4	Top [O]		If set to [Position]-[UserDefine], set the top position.
5	Width [W]		If set to [Position]-[UserDefine], set the width.
6	Height [H]		If set to [Position]-[UserDefine], set the height.
7	Row Space [A]		Set the Series Line Space displayed in the Legend.
8	Line [I]		Set the type and color of the line that encircles the Legend.
9	Background [G]		Set the internal Background and Back Color that encircles the Legend.
10	Margin	Left [L]	Set the left margin of the internal characters that encircle the Legend.
		Right [R]	Set the right margin of the internal characters that encircle the Legend.
		Top [T]	Set the top margin of the internal characters that encircle the Legend.
		Bottom [B]	Set the bottom margin of the internal characters that encircle the Legend.
11	Font [F]		Set the size, type, and decoration of the Font.

17.1.2 Shape Page

You may set the shadow of the graph in the Shape Page of the graph.



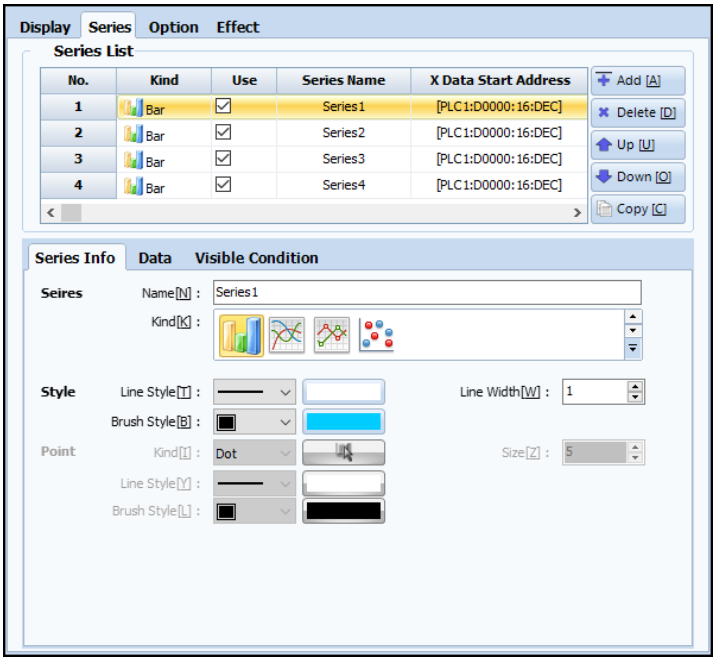
[Pic. Shape]

No	Shape setting	Description
1	Shadow	Set the shadow of Graph. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

17.1.3 **Series Page**

This is the Graph Series Page. Series refers to a group of graphs that have the same series information.

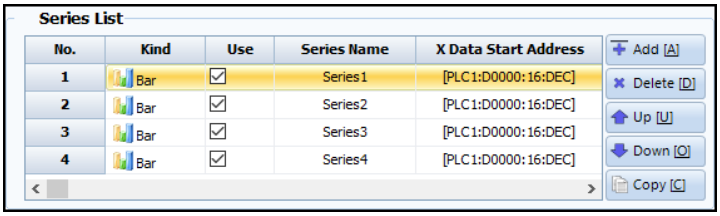
E.g.) The following picture shows Bar Type Series and Point Line Series.



[Pic. Series Page]

(1) Series List

Add or delete Series. Use Up and Down keys to reorganize the list order and you may use copy function. The series selected from the Series List can be assigned with individual characteristic at the below Series Information, Data Option, and Visible Condition.



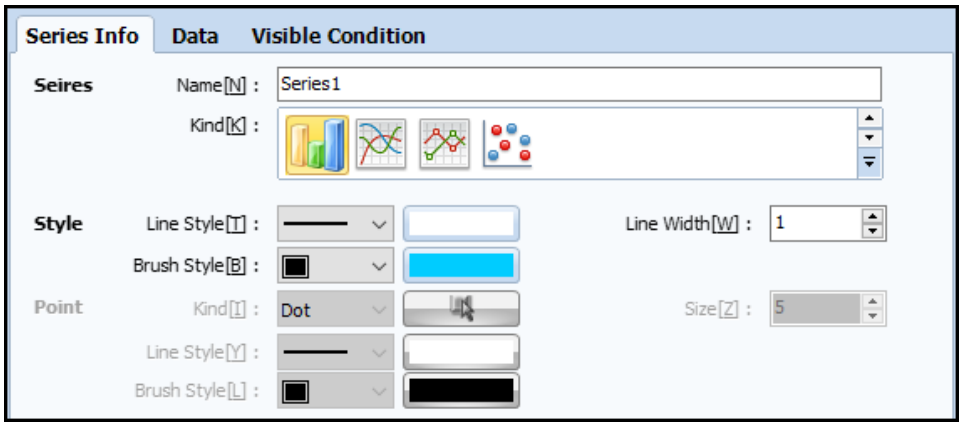
[Pic. Series List]

No	Series List Button	Description
1	Add [A]	Add Series Information.
2	Delete [D]	Delete Series Information.
3	Up [U]	Move the selected Series Info List by one step up.
4	Down [O]	Move the selected Series Info List by one step down.
5	Copy [C]	Copy the selected Series Info.

(2) Series Info

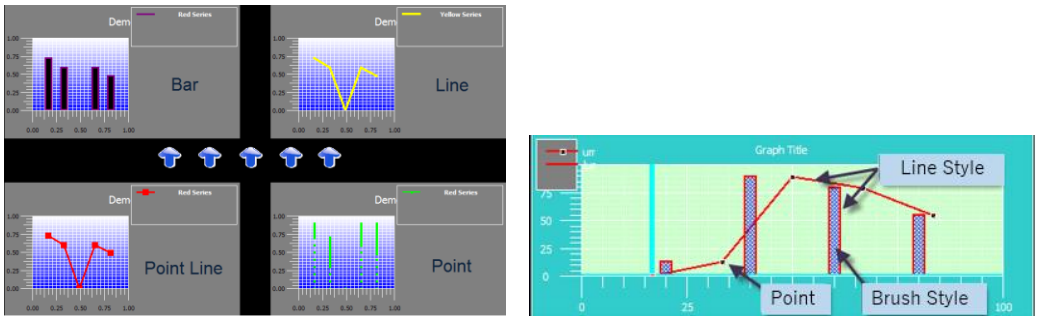
It determines the appearance of selected Series. It configures the name, type, and line of a Series.

There are Bar, Line, Point Line, and Point for Series Types. You may configure Line Style, Type, and Color according to the corresponding Series.



[Pic. Series Info]

No	Series Type	Description
1	Bar	Create a Series of Bar Graphs.
2	Line	Create a Series of Line Graphs.
3	Point Line	Draw a line graph with dots at its points (dot).
4	Point	Draw a graph that consists of points (dots) only.



[Pic. Types, styles, and points of series]

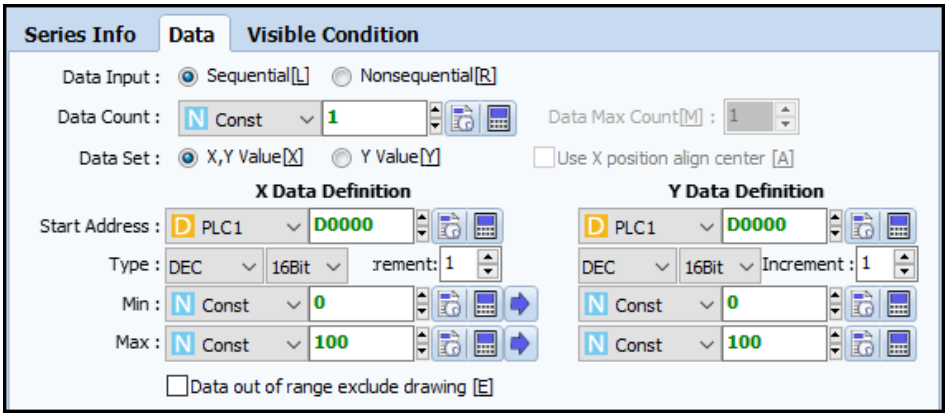
Set the style, color, and width of lines and brushes in Series Style and Point.

Style-Brush Style (Internal Fill Style) is available on Bar Graphs only.

Also, points can be used in Point Line and Point Graphs only.

(3) Series Data

Define the data value of the series. X and Y data may be configured separately.

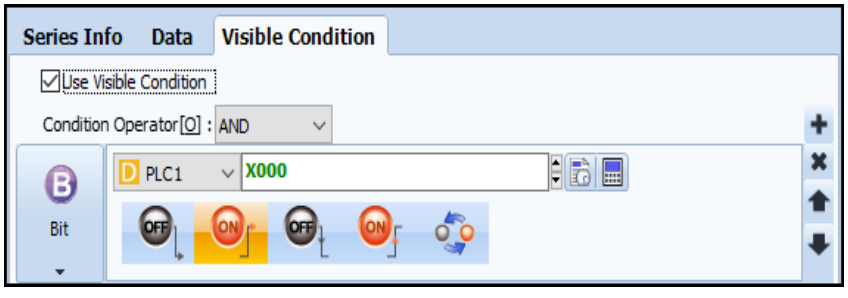


[Pic. Series Data]

No	Data Setup		Description
1	Data Input	Sequential [L]	Set Start Address, Max Count, and Increment Value of data to increase and display the address by the incremental value in sequence.
		Nonsequential [R]	Set addresses by the set Data Count individually.
2	Data Count		Configure the Data Count to use from the Start Address. Set Max Data Count when the Data Count Setting is configured as Address.
3	Data Set	X, Y Value [X]	It will have data of both X and Y Axis as variables. Therefore, X and Y must both be set.
		Y Value [Y]	It will have Y-Axis data only as variable. If the data count is N, then N start points will be automatically lined up on the X-Axis.
		Use X position align center [A]	It is activated when Y-Axis Data only is assigned as variable, and the X-Axis line will be automatically aligned to the center.
4	Start Address		This is the initial Start Address of data configured when Sequence is used.
5	Increment		Select the data increment in a sequence.
6	Type		Determine the type of address. It may determine the type (DEC, UDEC, HEX, BCD, FLOAT, DOUBLE) and size (16Bit, 32Bit, 64Bit) of address.
7	Min		Set the min value of data variable. Constant value may be set using Address Assignment or : Const
8	Max		Set the Max Value of data variable. Constant value may be set using Address Assignment or : Const
9	Data out of range exclude drawing [E]		When this is setup, values below Min Value and above Max Value will not be drawn.

(4) Show Series Condition

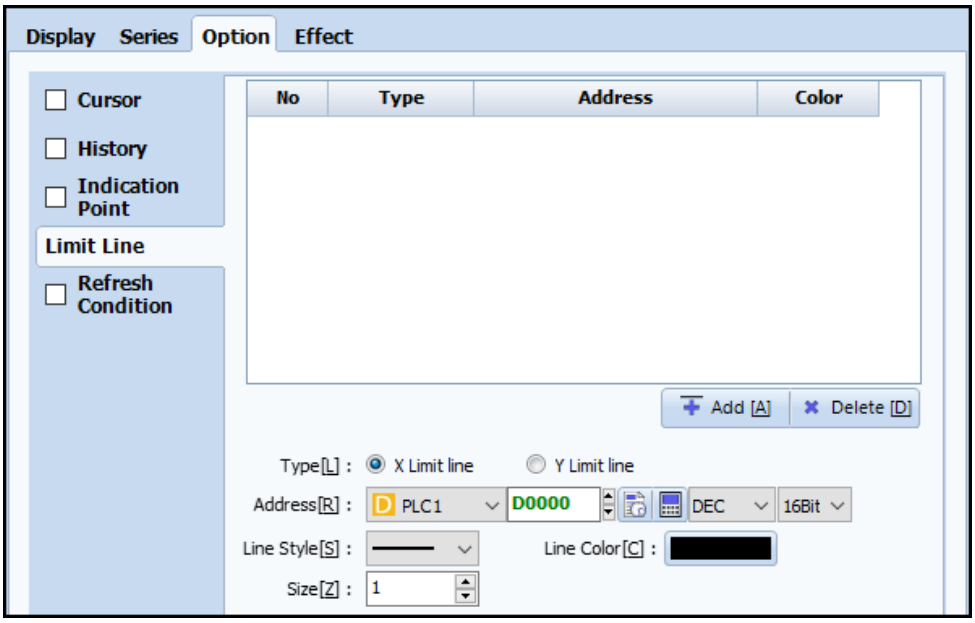
Use a condition to show a series that is hidden inside a graph. If set as below picture, the series will be invisible in normal times and will become visible when SYS:00150.00 = ON.



[Pic. Show Series Condition]

17.1.4 Option Page

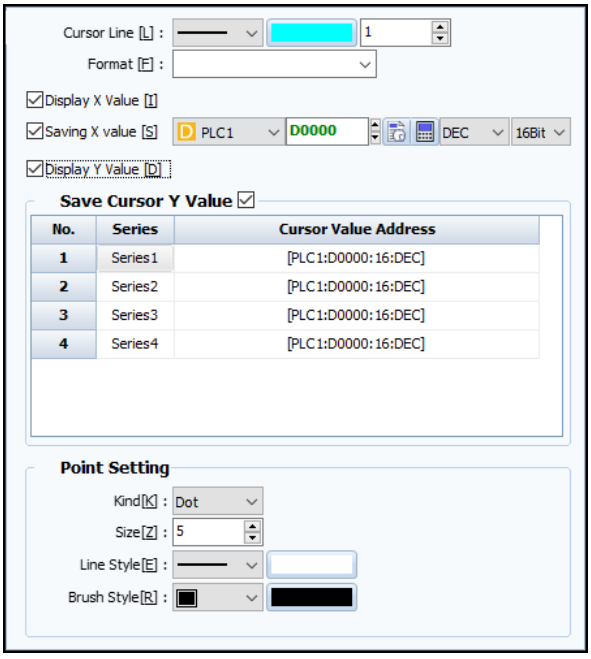
This is the option page of the graph. Here, various functions such as Cursor, Record, Indication Point, Limit Line, Refresh Condition, etc. may be added to the graph for the user convenience.



[Pic. Option]

(1) Cursor

Create the cursor that marks the end point of a graph. The cursor will consist of two cursor lines that are parallel to X and Y-Axis and the point that marks the end point.

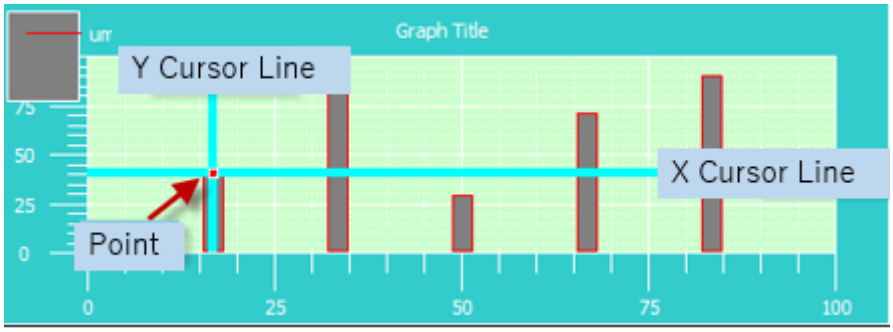


[Pic. Cursor]

No	Cursor Setting	Description
1	Cursor Line	Edit the Cursor Line. You may set its Type, Color, Thickness, and Format (decimal point unit).

2	Display X Value	Display the X Value that the Cursor displays.
3	Saving X Value	Save the X Value that the Cursor displays to the set address. (For more detailed information, please see Chapter 7.5 [Saving of Address].)
4	Display Y Value	Display the Y Value that the Cursor displays. Show both information if chosen with X Value.
5	Save Y Cursor Value	Save the Y Value that the Cursor displays to the set address. It can be set in the same way as Save X Value.
6	Point Setting	Set the point that appears on the cross point of the X and Y-Axis cursor lines. Set the type, size, line style, and brush style of Points.

If the cursor and point have been set, the graph will appear as the following picture.

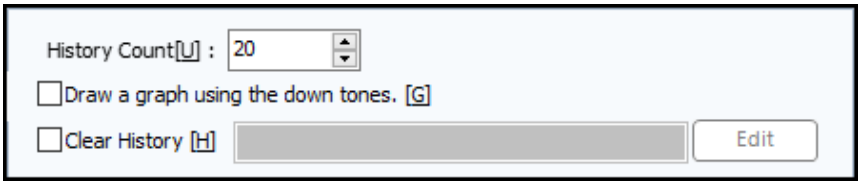


[Pic. Cursor Display]

(2) History

This function shows previous data before current data in the graph.

Previous data may be displayed in Down Tone to separate them from current data.

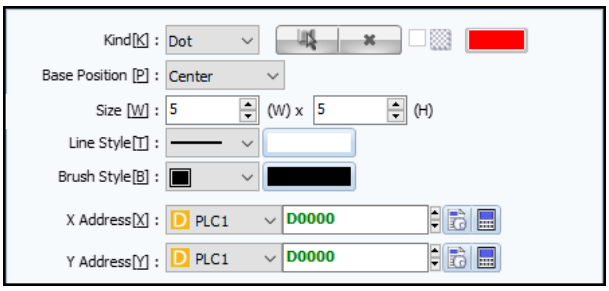


[Pic. History]

No	History	Description
1	History Count	Set the count of the previous data to be displayed.
2	Draw a graph using the down tones.	Previous data may be displayed in Down Tone to separate them from current data.
3	Clear History	Set the condition to delete all previous data.

(3) Indication Point

Use Indication Point to mark points on a graph.

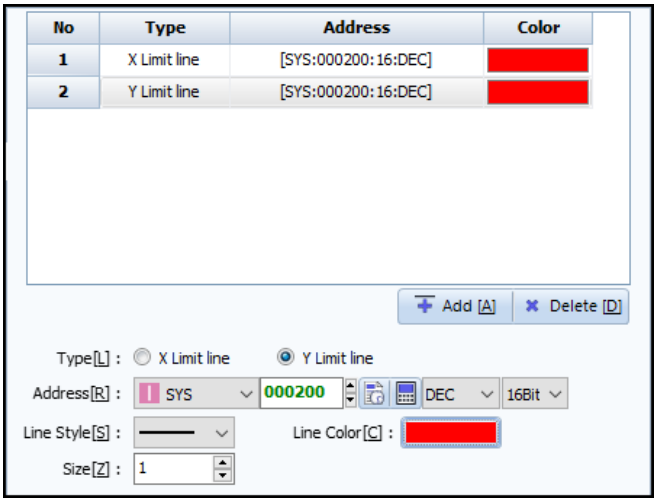


[Pic. Indication Point]

No	Indication Point	Description
1	Kind	For Indication Points, there are Dots, Rectangle, Circle, and Image.
2	Base Position	Designate the position of the point based on the X and Y address values.
3	Size	Set the size of the Indication Point. Set W (Width) and H (Height) individually.
4	Line Style	Set the Line Style of the Point. Line is the sides that surround points.
5	Brush Style	Set the Brush Style of Point. Brush is the fill color.
6	X , Y Address	Set the address of the Indication Point. You may set X, Y Address individually.

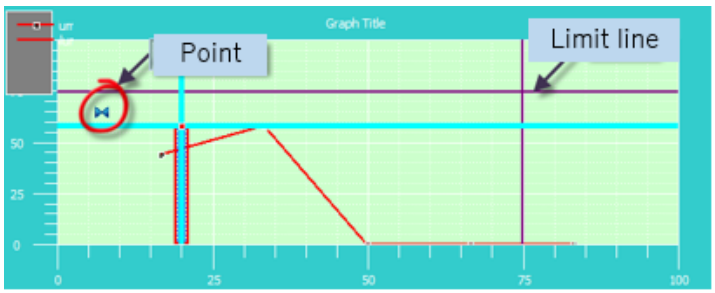
(4) Limit Line

Draw Limit Line to a designated Address Value of the graph to help the user recognize the user-set standard.



[Pic. Limit Line]

No	Limit Line Setup	Description
1	Type	Set the limit by designating X-Axis or Y-Axis.
2	Address	Set the address to place the Limit Line of X and Y Axis.
3	Line Style	Set the Line Shape of the Limit Line.
4	Line Color	Set the Line Color of the Limit Line.
5	Size	Set the thickness of the Limit Line.



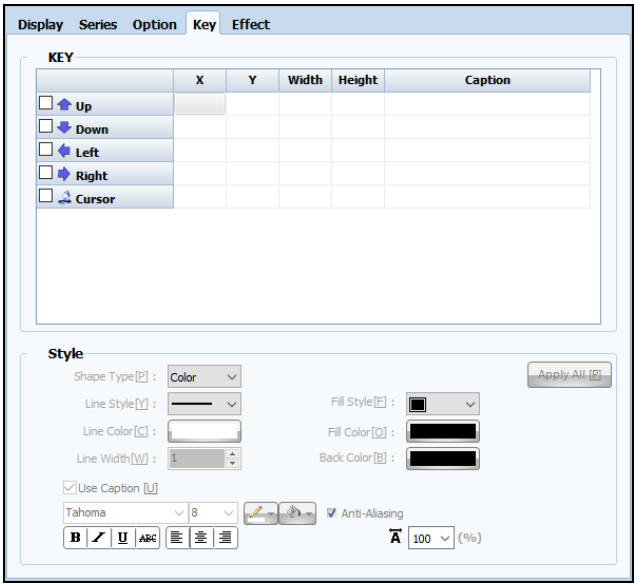
[Pic. Indication Point & Limit Line]

(5) Refresh Condition

Set the Refresh Condition of Graph. Draw the Series Value of the moment when the condition is met into a graph.

17.1.5 Key Page

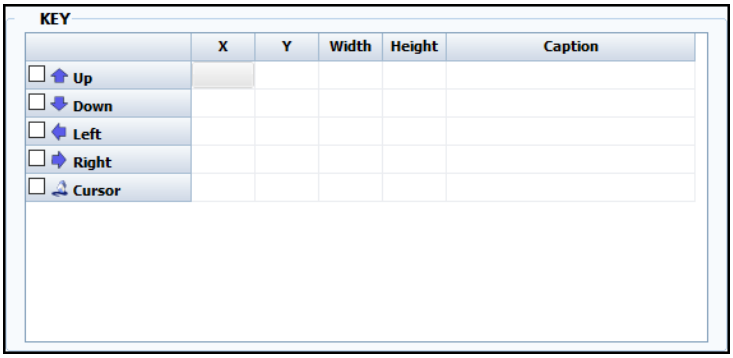
If [Option]-[Cursor] is in use, [Key] will be available for creation. [Key] refers to the button that can modify the position of the cursor.



[Pic. Key Page]

(1) Key List

Create the key that moves the cursor of the graph. The created key will automatically appear at the bottom of the graph as an object.



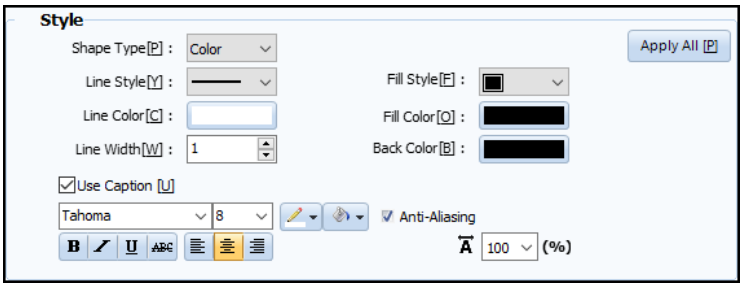
[Pic. Key List]

No	Key Object	Description

1	Up	It creates the key that can move the position of the cursor up.
2	Down	It creates the key that can move the position of the cursor down.
3	Left	It creates the key that can move the position of the cursor left.
4	Right	It creates the key that can move the position of the cursor right.
5	Cursor	It creates the key that displays/hides the currently displayed Cursor and Indication Point.

No	Key Column	Description
1	X	Set the position of X coordinate of the selected key.
2	Y	Set the position of Y coordinate of the selected key.
3	Width	Set the width of the selected key.
4	Height	Set the height of the selected key.
5	Caption	The user may modify the name of the selected key.

(2) Shape Setting



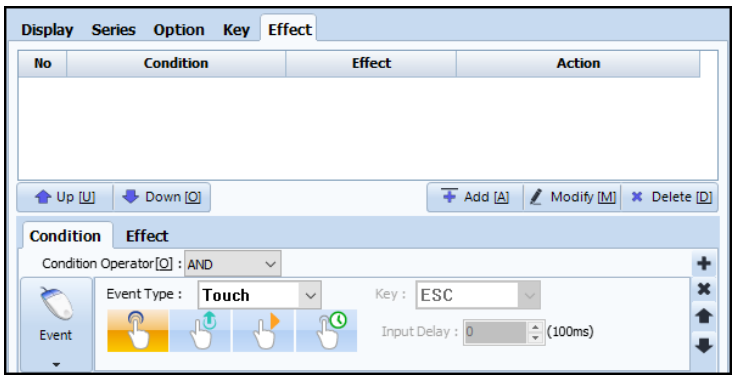
[Pic. Shape setting]

No	Style Setting	Description
1	Shape Type [T]	Set the shape of the key. You may configure it with shapes and images.
2	Line Style [Y]	Set the Line Style if the Key Shape is Color.
3	Line Color [C]	Set the Line Color if the Key Shape is Color.
4	Line Width [W]	Set the Line Width if the Key Shape is Color.
5	Fill Style [W]	Set the Fill Style if the Key Shape is Color.
6	Fill Color [O]	Set the Fill Color if the Key Shape is Color.
7	Back Color [B]	Set the Back Color if the Key Shape is Color.
8	Use Caption [U]	Set to display the key name.
9	Font setting	Set font type, size, and decoration of Caption.
10	Apply All [P]	Apply the set style to all keys.

17.1.6 **Effect Page**

It gives various effects to Graph.

Please see Chapter 7.8 [Effect Page Setup] for detailed effect setup.



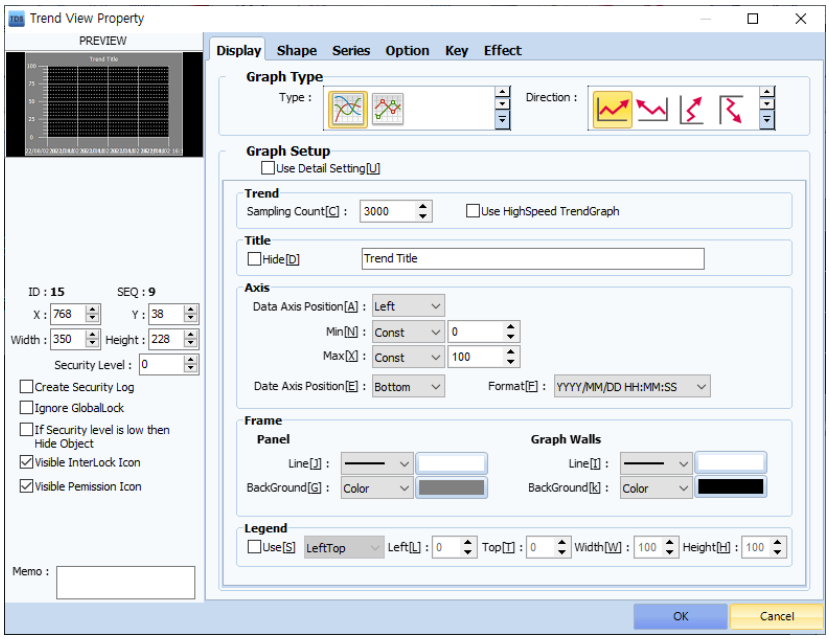
[Pic. Graph Effect]

Trend Object



Trend refers to the graph that displays the changes in data over time.

Unlike [Graph], it can be configured either X or Y Axis as the data variable, while the other axis displays the date.

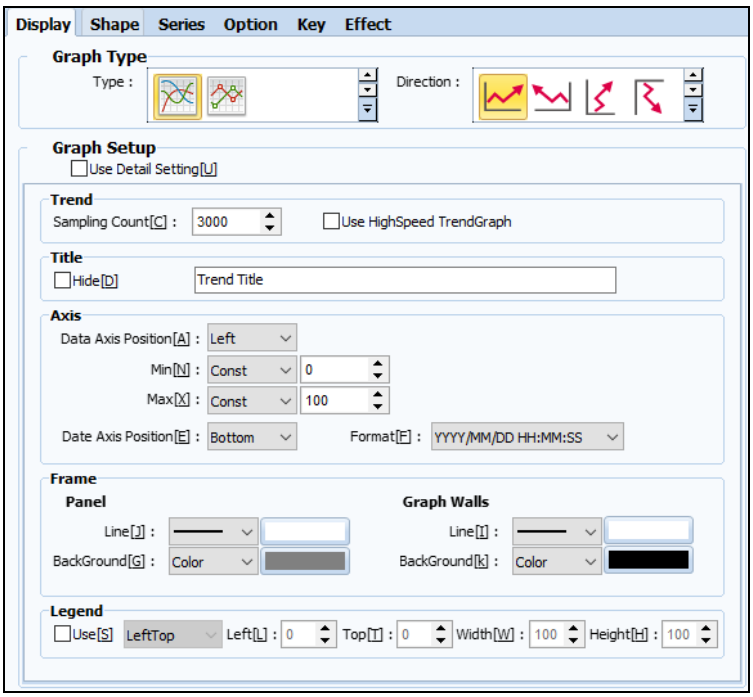


[Pic. Trend Object]

17.1.7 Display Page

On Display Page, you may configure the type and appearance of Trend.

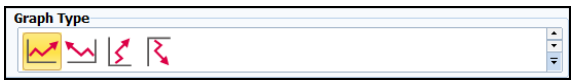
This section is identical to [Graph]. Please see Chapter 17.1.1 [Graph]-[Display Page] for reference.



[Pic. Display Page]

(1) Graph Type

Set the type of graph. Display will vary by the type of graph.

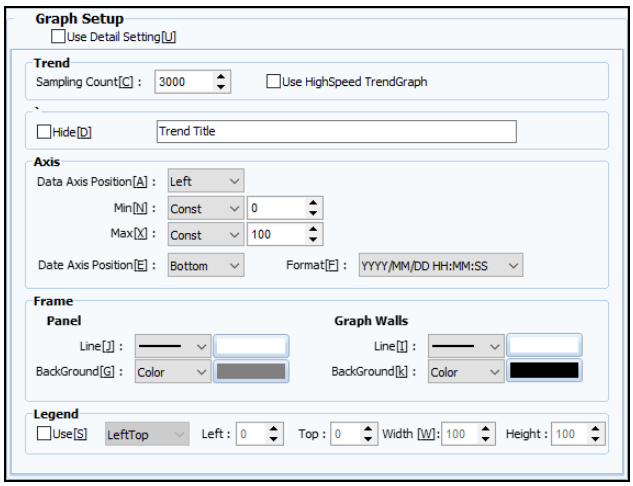


[Pic. Graph Type]

Graph Type	Description	
Line	Draw a line graph.	
Point Line	Draw a line graph with dots at its points (dot).	
Graph Type	Data Variable	Description
	It has Y-Axis as the data variable and X-Axis as Time.	It has Y-Axis as the data variable and is drawn by moving from the left to the right.
		It has Y-Axis as the data variable and is drawn by moving from the right to the left.
	It has X-Axis as the data variable and Y-Axis as Time.	It has X-Axis as the data variable and is drawn by moving from the bottom to top.
		It has X-Axis as the data variable and is drawn by moving from the top to bottom.

(2) Normal Graph Setting

As graph setup, the user may configure Sampling Count that shows trend, Use HighSpeed TrendGraph, Title, Axis Setup, Frame, Legend, etc.

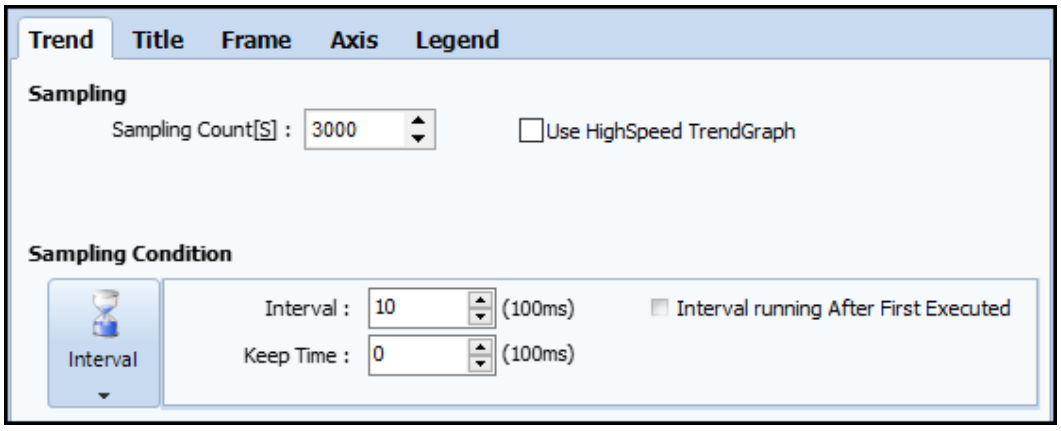


[Pic. Normal Graph Setting]

No	Normal Setting	Description
1	Trend	Designate the Sampling Count of Trend. Sample refers to saving Trend Graph's information. Set the number of samples and decide how much data to save.
2	Use HighSpeed TrendGraph	Used to quickly draw Trend. However, normal Trend functions (cursor, key, etc.) are not available. Also, when using HighSpeed Trend, the speed will be compromised with the use of multiple Global Objects.
3	Title	Manually input the title. Use Hide[D] to hide the title.
4	Axis	Axis refers to the rulers that are marked on a graph. Adjust Data and Date Axis position and set the minimum and maximum values. The axis position will vary according to the type of the graph as below picture.
		Data is Y-Axis and Date is X-Axis. Therefore, Data Axis can be chosen between Left or Right and the Date Axis between Top and Bottom.
		Data is X-Axis and Date is Y-Axis. Therefore, Data Axis can be chosen between Top or Bottom and the Date Axis between Left and Right.
	Format	Set the display format of date. It can be expressed in various combinations of Year, Month, Day, Hour, Minute, and Second.
5	Frame	Set Panel and Graph Walls. Please refer to Chapter 17.1.1 [Graph]-[Display Page].
6	Legend	Set the Legend. Please see Chapter 17.1.1 [Graph]-[Display Page] for more details.

(3) Graph Detail Setting - Trend

It can configure more detailed Trend, Title, Frame, Axis, and Legend than Graph General Setting.

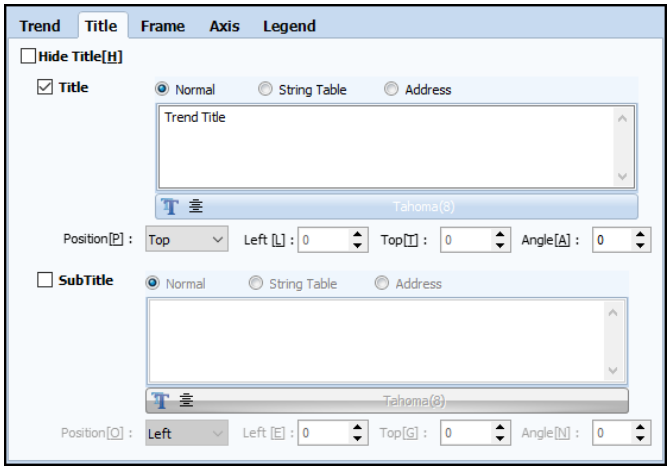


[Pic. Use Detail Setting]

No	Detail Setting	Description
1	Sampling	Sampling Count refers to the count of trend display. It may be set to minimum 100 and maximum 20,000.
2	Use HighSpeed TrendGraph	Used to quickly draw Trend. However, normal Trend functions (cursor, key, etc.) are not available. Also, when using HighSpeed Trend, the speed will be compromised with the use of multiple Global Objects.
3	Sampling Condition	Set the condition that triggers Sampling. This is identical to the condition setup of [Effect & Action]. Please refer to Chapter 7.7 [Condition Page Setting].

(4) Graph Detail Setting - Title

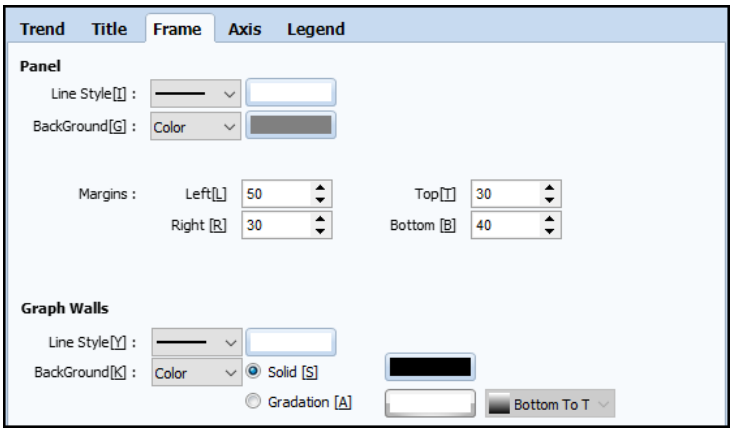
Title refers to the title of Trend. This function can decorate the title or add a Subtitle.



[Pic. Title]

(5) Graph Detail Setting - Frame

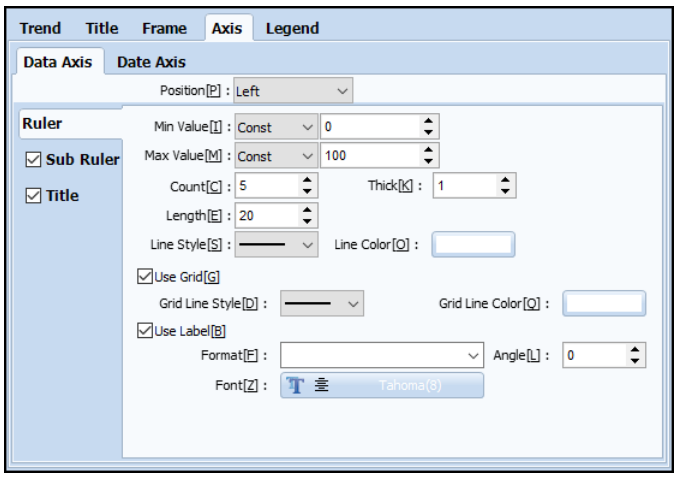
Frame is divided into the part where the background and line of Trend are configured and the panel where trend object's appearance can be decorated.



[Pic. Frame]

(6) Graph Detail Setting - Data Axis

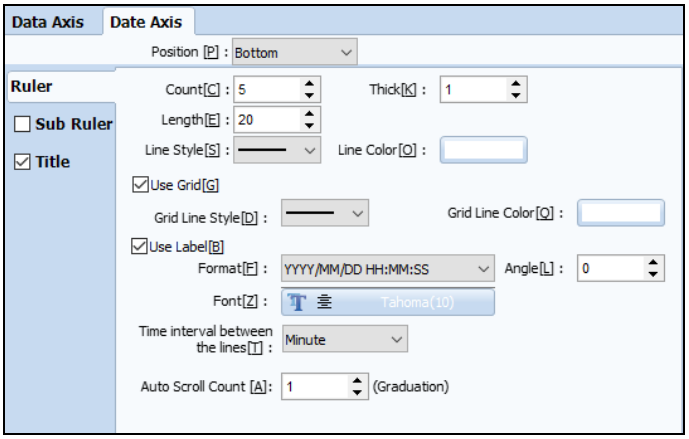
Trend Axis is divided into Data Axis and Date Axis. Generally, Axis Setup has functions that can add Grids and Titles and can decorate the contents.



[Pic. Data Axis]

(7) Graph Detail Setting - Date Axis

Configure detailed settings of the Date Axis of Trend.

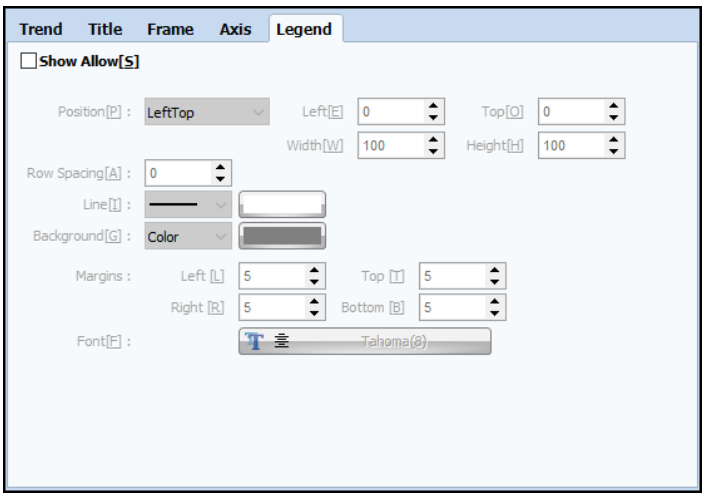


[Pic. Date Axis]

No	Detail Setting	Description
1	Time interval between the lines	This function sets the time between the spacing of the Main Grid. There are Day, Hour, Minute, and Second.
2	Auto Scroll Count	This function moves the screen to the left by the Auto Scroll Count and draws a graph in the next screen when a screen is filled with graphs. E.g.) If the Auto Scroll Count is 1 and a page is filled with graphs, push 1 cell to the left, and continue drawing graphs in the next page.

(7) Graph Detail Setting - Legend

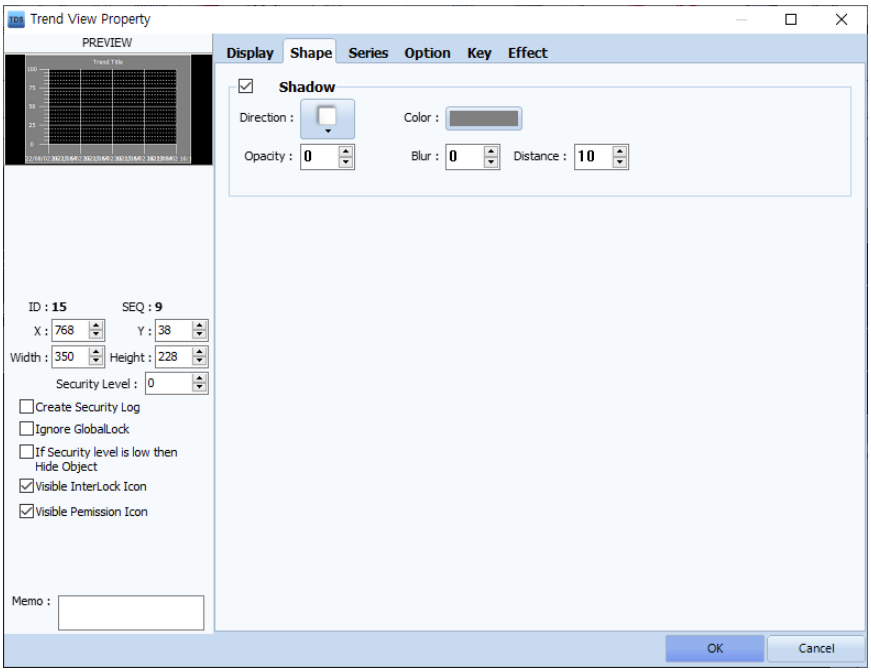
You may set the legend to check the type of Trend line.



[Pic. Legend]

17.1.8 Shape Page

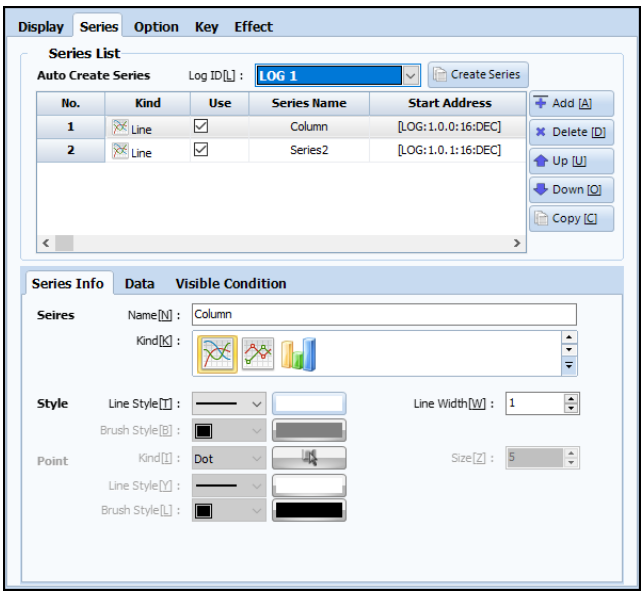
In the Trend Shape page, you may set the shadow of the graph.



[Pic. Shape]

17.1.9 Series Page

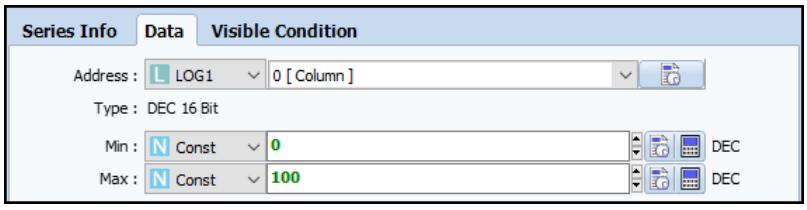
This is the Series Page of Trend. Please see Chapter 17.1.3 [Graph]-[Display Page] for more details. Unlike [Graph] Series, only two types; [Line] and [Point Line] are available. Bar and Point types are unavailable for use.



[Pic. Series Page]

(1) Data

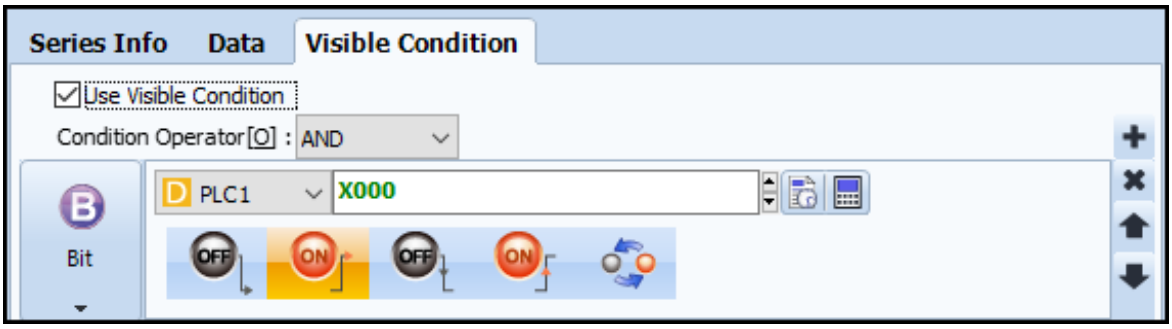
This page is for setting data of Series. One axis in Trend displays Date and therefore, it can only configure one data. Set the type and address of data to be displayed as the following picture. After that, configure Min and Max Value of data, as well.



[Pic. Series Data]

(2) Visible Condition

Use a condition to show a series that is hidden. If set as below picture, the series will be invisible in normal times and will become visible when SYS:00150.00 = ON.



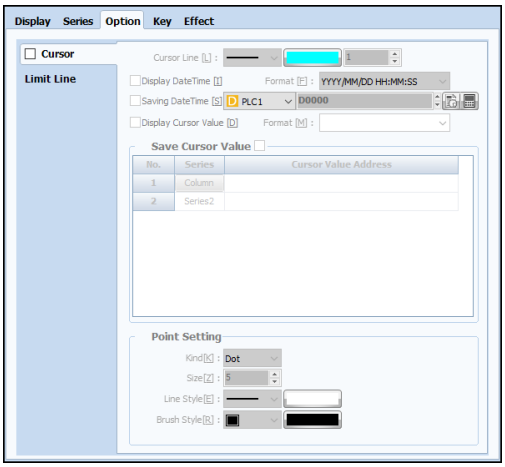
[Pic. Show Series Condition]

17.1.10 **Option Page**

(1) Option

Add Cursor, Indication Point, Limit Line to the graph for user convenience.

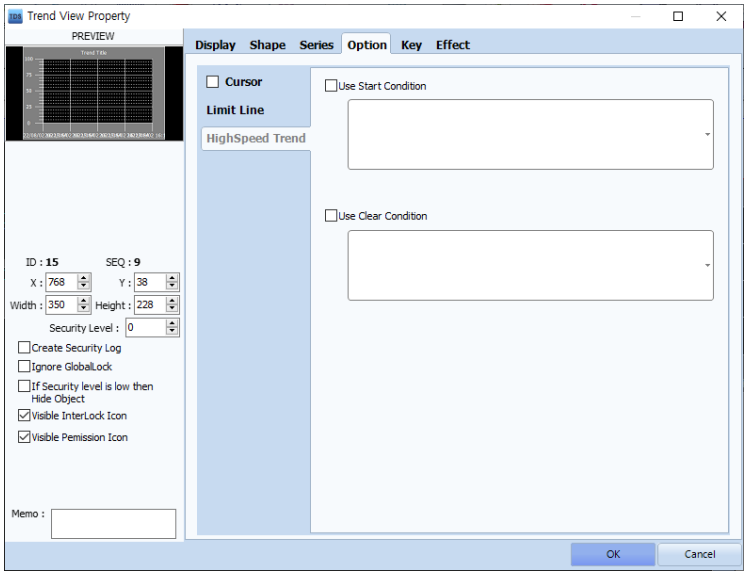
This function is identical to Chapter 17.1.4 [Graph]-[Option Page] other than the HighSpeed Trend.
Additionally, the format of [DateTime Display] on X-Axis and the format of [Cursor Value Display] may be configured.
If [Cursor] is used, create a [Key] to control the cursor position of the trend. However, [Cursor] is not available for HighSpeed Trend.



[Pic. Option Page]

(2) HighSpeed Trend

This is the HighSpeed Trend setup section.

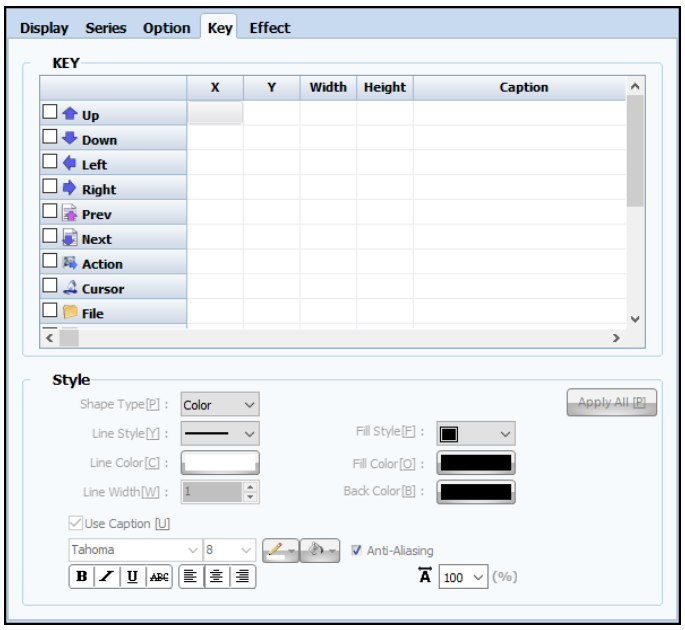


[Pic. HighSpeed Trend]

No	Detail Setting	Description
1	Use Start Condition	Select the condition to begin the drawing of HighSpeed Trend. If not selected, it will run based on Sampling Condition.
2	Use Clear Condition	Select the condition to initialize the HighSpeed Trend.

17.1.11 **Key Page**

If [Option]-[Cursor] is in use, [Key] will be available for creation.

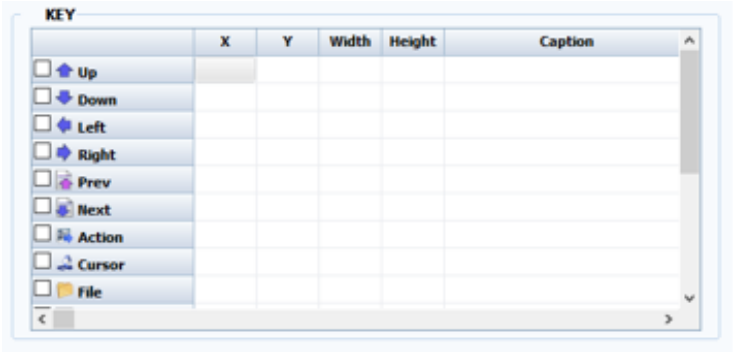


[Pic. Key Page]

(1) Key List

Create Keys that move the Graph Cursor and Keys that move Graph Screens.

The Key will automatically appear at the bottom of the graph as an object.



[Pic. Key List]

No	Key Object	Description
1	Up	It creates the key that can move the position of the cursor up.
2	Down	It creates the key that can move the position of the cursor down.
3	Left	It creates the key that can move the position of the cursor left.
4	Right	It creates the key that can move the position of the cursor right.
5	Prev	Create a key that reverts a Trend Screen to the previous screen. Pressing this button will pause the graph.
6	Next	Create a key that changes a Trend Screen to the next screen. Pressing this button will pause the graph.
7	First	Create a key that jumps the user to the initial position where the graph is drawn. Pressing this button will pause the graph.
8	Last	Create a key that jumps the user to the last position where the graph is drawn. Pressing this button will pause the graph.
9	Clear	Create a key that initializes a drawn graph.
10	Action	Create a key that makes paused graphs move.
11	Cursor	It creates the key that displays/hides the currently displayed Cursor and Indication Point.

No	Key Column	Description
1	X	Set the position of X coordinate of the selected key.
2	Y	Set the position of Y coordinate of the selected key.
3	Width	Set the width of the selected key.
4	Height	Set the height of the selected key.
5	Caption	The user may modify the name of the selected key.

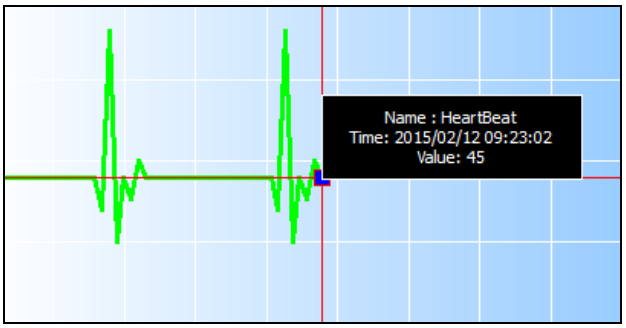
(2) Shape Setting



[Pic. Shape setting]

No	Style Setting	Description
1	Shape Type [T]	Set the shape of the key. You may configure it with shapes and images.
2	Line Style [Y]	Set the Line Style if the Key Shape is Color.
3	Line Color [C]	Set the Line Color if the Key Shape is Color.
4	Line Width [W]	Set the Line Width if the Key Shape is Color.
5	Fill Style [W]	Set the Fill Style if the Key Shape is Color.
6	Fill Color [O]	Set the Fill Color if the Key Shape is Color.
7	Back Color [B]	Set the Back Color if the Key Shape is Color.
8	Use Caption [U]	Set to display the key name.
9	Font Setting	Set font type, size, and decoration of Caption.
10	Apply All [P]	Apply the set style to all keys.

Use [Cursor] to display the locational information of the cursor that the user wishes to know as the following picture. This [Cursor] may be controlled with the [Key].

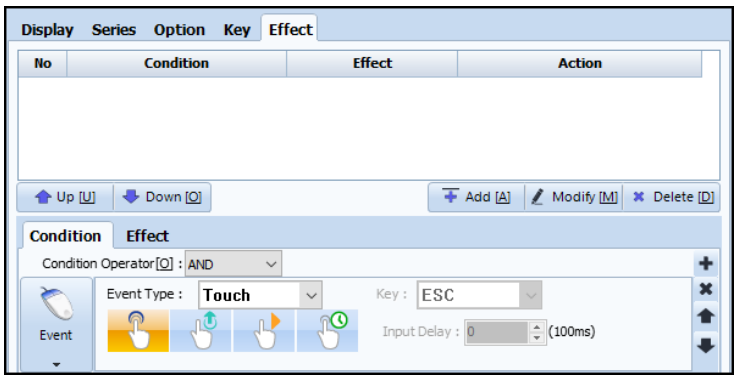


[Pic. Cursor]

17.1.12 **Effect Page**

It gives various effects to trends.

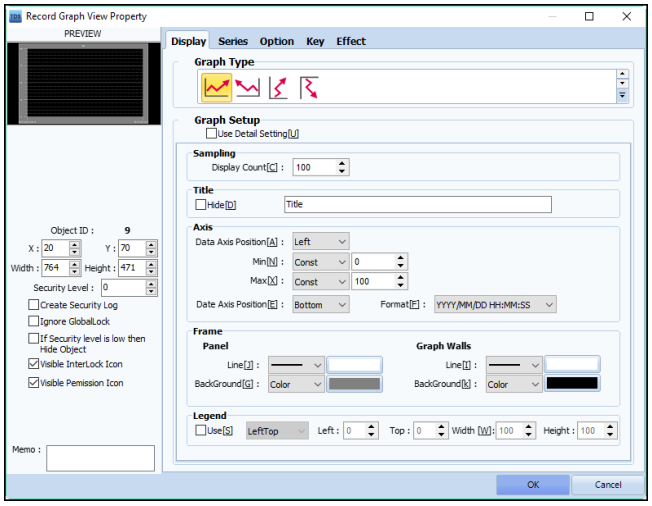
Please see Chapter 7.8 [Effect Page Setting] to learn how to set effects.



[Pic. Effect Page]

Record Object

Unlike [Log View Object], Record refers to log data drawn in the format of [Trend].
This is drawn in the same way with drawing trends and graphs. Records require saved log data.



[Pic. Record object]

17.1.13 Display Page

This is the display page of Record Object. In this section, the type and appearance of record can be configured.

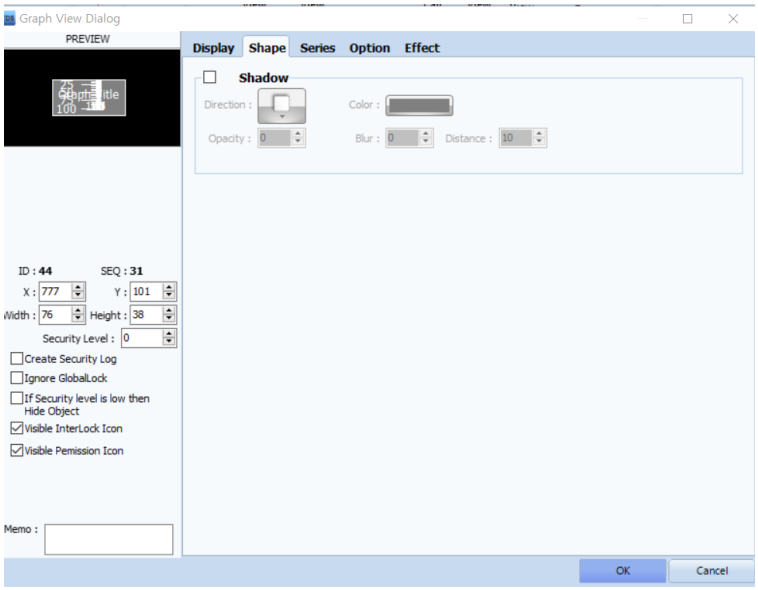
* The Sampling Condition of Record Graph is the same as Log Condition.

Please refer to Chapter 17.2.1 [Trend]-[Display Page].

17.1.14 Shape Page

In the Record Shape page, you may set the shadow of the graph.

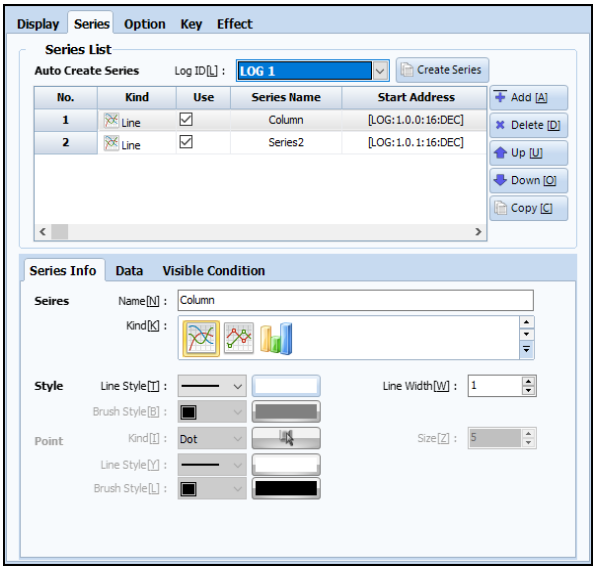
Please refer to Chapter 17.2.2 [Trend]-[Shape Page].



[Pic. Shape]

17.1.15 **Series Page**

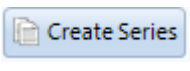
This is the Record Series page.



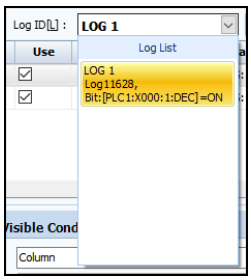
[Pic. Series Page]

(1) Series List

It shows the Series List and has Auto Create Series function. It usually uses information registered in logs and therefore, it selects log IDs in the following picture and creates series.

Log ID will display logs currently registered in Log Setting only. After that, press 

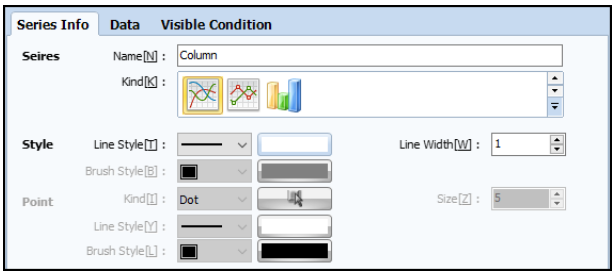
key to create the set log series. The created series can be edited in Series Info and Data.



[Pic. Auto Create Series]

(2) Series Info

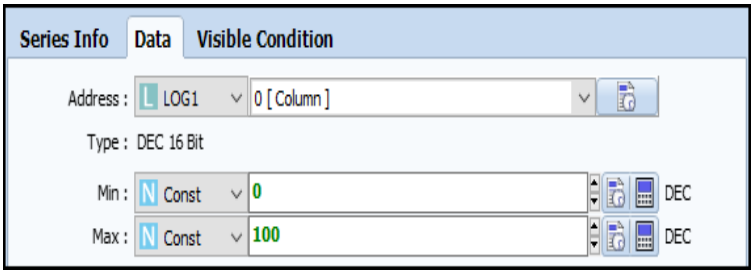
This is the Series Info of Record. Please refer to Chapter 17.2.3 [Trend]-[Series Page].



[Pic. Series Info]

(3) Series Data

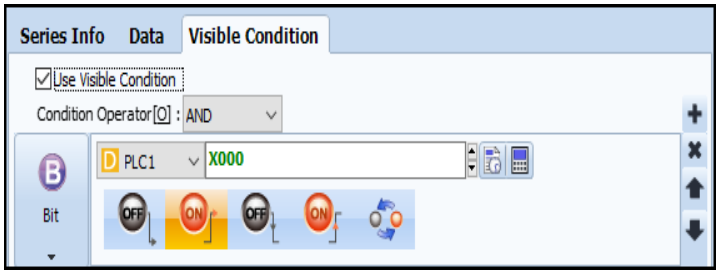
This is the Series Data Setup Page. As records are drawn as log data, log address should be configured. First, select a log number and configure it by designating an address value. The min value and max value of data can also be setup on this screen.



[Pic. Series Data]

(4) Visible Condition

Use a condition to show a series that is hidden inside a graph. If set as below picture, the series will be invisible in normal times and will become visible when SYS:00150.00 = ON.

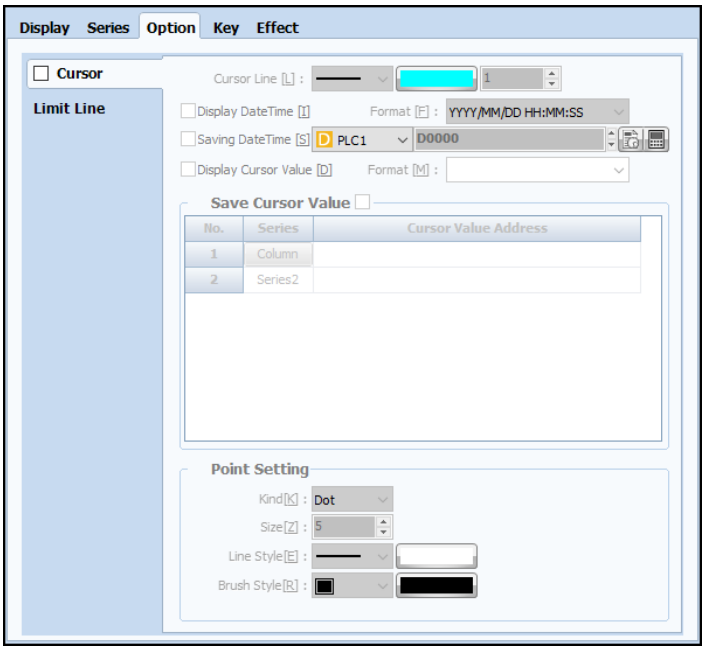


[Pic. Series Visible Condition]

17.1.16 **Option Page**

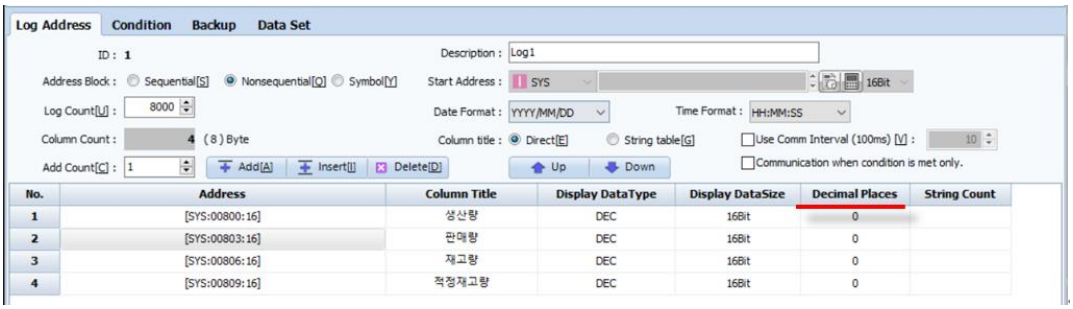
(1) Option

This is the Option Page of Record. Add Cursor, Indication Point, Limit Line to the graph for the user convenience. This function is identical to Chapter 17.1.4 [Graph]-[Option Page] other than the Zoom function. Additionally, the format of [DateTime Display] on X-Axis and the format of [Cursor Value Display] may be configured.



[Pic. Option Page]

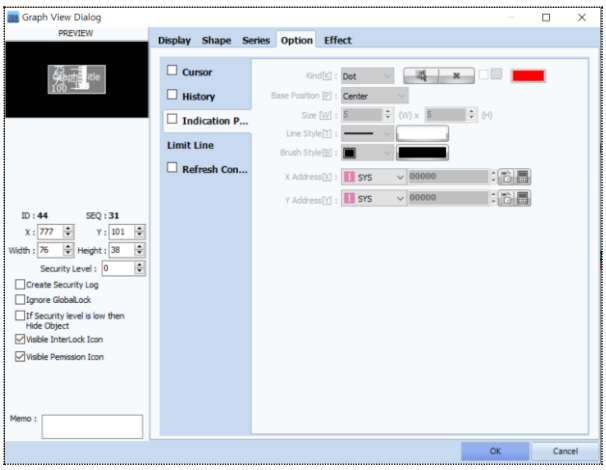
Set to [Log Table Column Format] in [Cursor Value Display] to display the cursor value by the decimal point place input in the log setting window of [Project]-[Log].



[Pic. Log Setting - Decimal Places]

(2) Zoom

This is the Zoom setting section for Record.

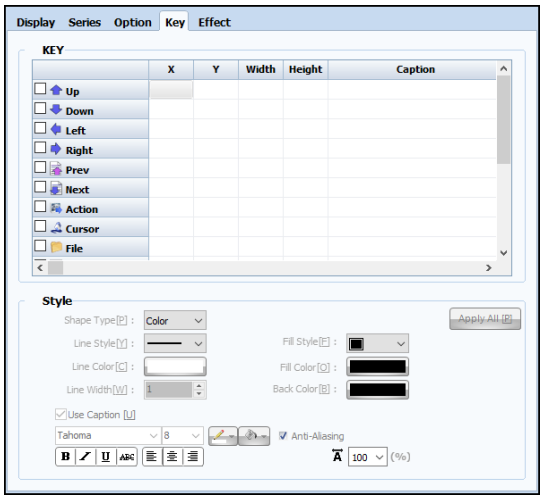


[Pic. Zoom]

No	Detail Setting	Description
1	X-Axis	Save the zoom-in ratio of the X-Axis to the set address.
2	Y-Axis	Save the zoom-in ratio of the Y-Axis to the set address.

17.1.17 **Key Page**

This page creates Record Key.

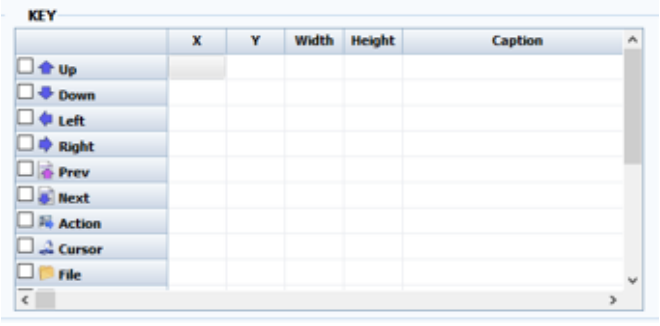


[Pic. Key Page]

(1) Key List

Create Keys that move the Graph Cursor and Keys that move Graph Screens.

The Key will automatically appear at the bottom of the graph as an object.



[Pic. Key List]

No	Key Object	Description
1	Up	It creates the key that can move the position of the cursor up.
2	Down	It creates the key that can move the position of the cursor down.
3	Left	It creates the key that can move the position of the cursor left.
4	Right	It creates the key that can move the position of the cursor right.
5	Prev	Create a key that reverts a Trend Screen to the previous screen. Pressing this button will pause the graph.
6	Next	Create a key that changes a Trend Screen to the next screen. Pressing this button will pause the graph.
7	Action	Create a key that makes paused graphs move.
8	Cursor	It creates the key that displays/hides the currently displayed Cursor and Indication Point.
9	File	Create a key that draws graphs by selecting saved CSV files. Press Prev or Next at the start or the end of a graph to import the previous or next CSV file to draw a graph. Moving the graph with this key will temporarily pause the graph.
10	Date Search	Move the graph to the position of the searched date and time. However, log data must be saved in HMI. Press Prev or Next at the start or the end of a graph to import the previous or next CSV file to draw a graph. Moving the graph with this key will temporarily pause the graph.
11	X-Zoom In	Create a key that zooms in with the X-Axis cursor as the base point. Pressing this button will pause the graph.
12	X-Zoom Out	Create a key that zooms out with the X-Axis cursor as the base point. Pressing this button will pause the graph.
13	Y-Zoom In	Create a key that zooms in with the Y-Axis cursor as the base point. Pressing this button will pause the graph.
14	Y-Zoom Out	Create a key that zooms out with the Y-Axis cursor as the base point. Pressing this button will pause the graph.
15	Zoom Reset	Create a key that initializes the zoomed graph to the original state. Pressing this button will pause the graph.
16	Zoom Stretch	Create a key that switches the zoomed graph to Full Screen. Display the zoomed graph to fill the current screen.
17	Y-View Up	Create a key that moves the Y-Axis of the zoomed graph up.
18	Y-View Down	Create a key that moves the Y-Axis of the zoomed graph down.
19	Page Jump	Create a key that moves the user to the page they wish to view when there are multiple pages in a graph. Pressing this button will pause the graph.

No	Key Column	Description
1	X	Set the position of X coordinate of the selected key.
2	Y	Set the of Y coordinate of the selected key.
3	Width	Set the width of the selected key.
4	Height	Set the height of the selected key.
5	Caption	The user may modify the name of the selected key.

(2) Setting



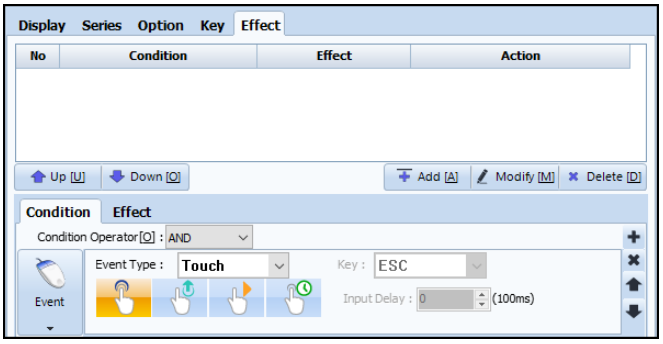
[Pic. Shape setting]

No	Style Setting	Description
1	Shape Type [T]	Set the shape of the key. You may configure it with shapes and images.
2	Line Style [Y]	Set the Line Style if the Key Shape is Color.
3	Line Color [C]	Set the Line Color if the Key Shape is Color.
4	Line Width [W]	Set the Line Width if the Key Shape is Color.
5	Fill Style [W]	Set the Fill Style if the Key Shape is Color.
6	Fill Color [O]	Set the Fill Color if the Key Shape is Color.
7	Back Color [B]	Set the Back Color if the Key Shape is Color.
8	Use Caption [U]	Set to display the key name.
9	Font setting	Set font type, size, and decoration of Caption.
10	Apply All [P]	Apply the set style to all keys.

17.1.18 **Effect Page**

It gives various effects to Record.

Please see Chapter 7.8 [Effect Page Setup] for effects.



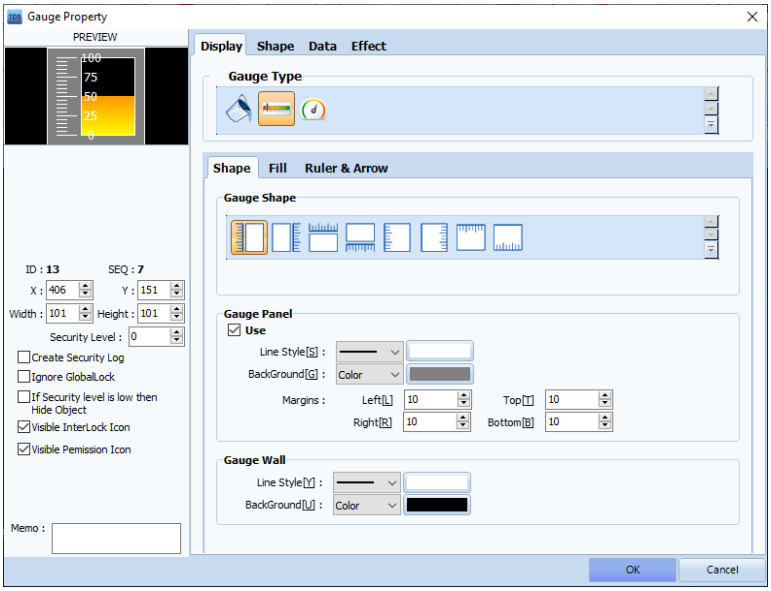
[Pic. Record Effect]

Gauge Object



Gauge refers to the quantitative standards such as length, angle, shape, etc. In TOP Design Studio, Gauge helps the user to understand data at a glance by displaying data changes in a gauge

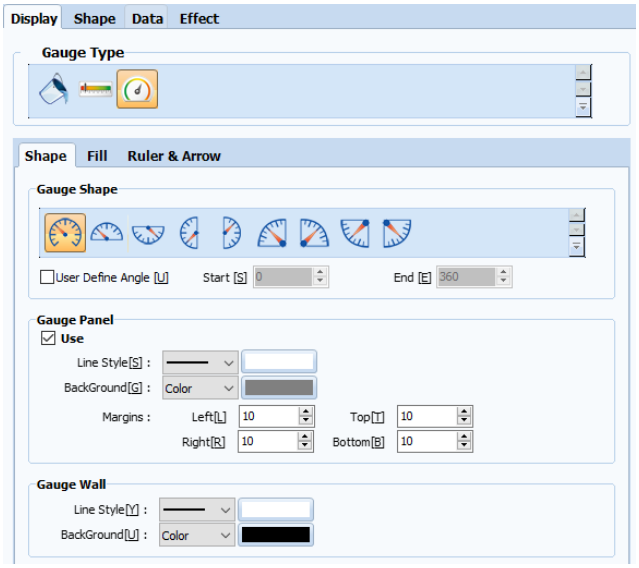
format that is familiar to the user. There are Paint Enclosed Area, Bar Type, and Circle Type for Gauge Types.



[Pic. Gauge Object]

17.1.19 **Display Page – Shape Setting**

This is the Display Page of Gauge. Shapes and Fill Style will vary by Gauge Type. Shape Setting refers to the decoration of Gauge Shape.



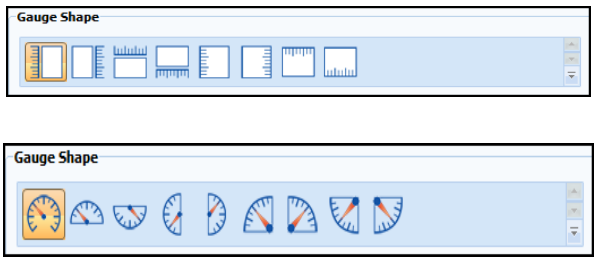
[Pic. Display Page]

(1) Gauge Shape

There is no Gauge Shape for Paint Enclosed Area. Modification is available for [Bar Type] and [Circle Type] only.

For [Circle Type], the user may set the angle to their discretion.

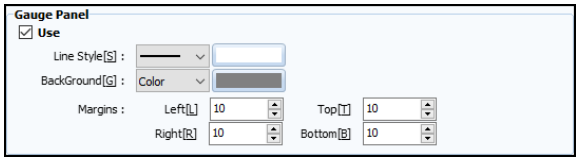
E.g.) If Start Angle: 90, End Angle: 90, the Standard (0) of the Gauge will be modified to 12 o'clock.



[Pic. Gauge Shape]

(2) Gauge Panel

Gauge Panel is the outer rectangular area of a Gauge Object. You may configure the rectangular area's line, background, and margin.

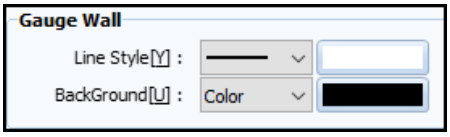


[Pic. Gauge Panel]

No	Panel Setting		Description
1	Line Shape [S]		Set the shape and color of the line that envelops an object.
2	Background [G]		Set the background and background color of the object.
3	Margin	Left [L]	Set the Left Margin between gauges in an object.
		Right [R]	Set the Right Margin between gauges in an object.
		Top [T]	Set the Top Margin between gauges in an object.
		Bottom [B]	Set the Bottom Margin between gauges in an object.

(2) Gauge Wall

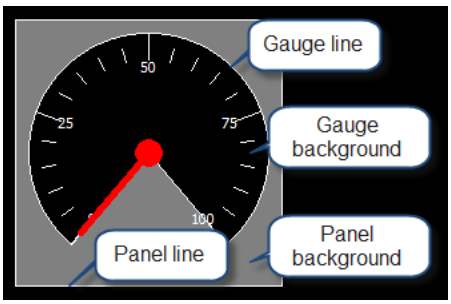
Set the Gauge Wall only, not the entire background of an object.



[Pic. Gauge Wall]

No	Background Setting	Description
1	Line Style [Y]	Set the Shape and Color of the Border of a Gauge.
2	Background [U]	Set the Gauge Wall and Back Color.

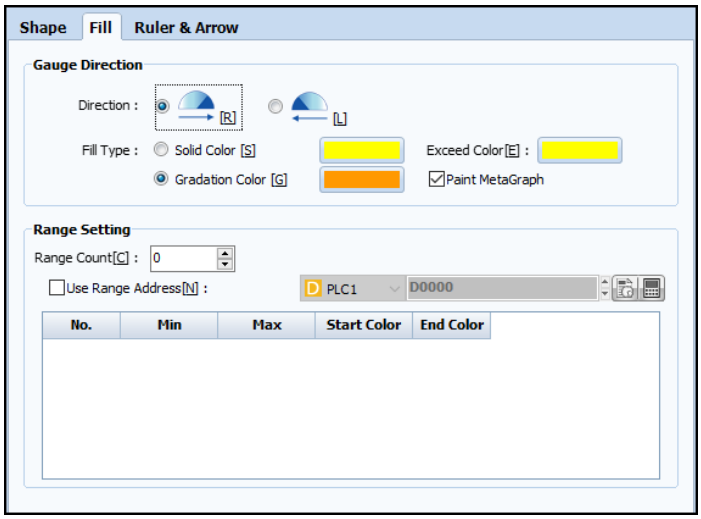
The following picture shows the area that is marked when the Gauge and Panel change.



[Pic. Gauge Panel and Wall]

17.1.20 **Display Page – Fill Setting**

Set the direction to fill the gauge and the fill style. Also, the user can also edit the color that fills designated sections.

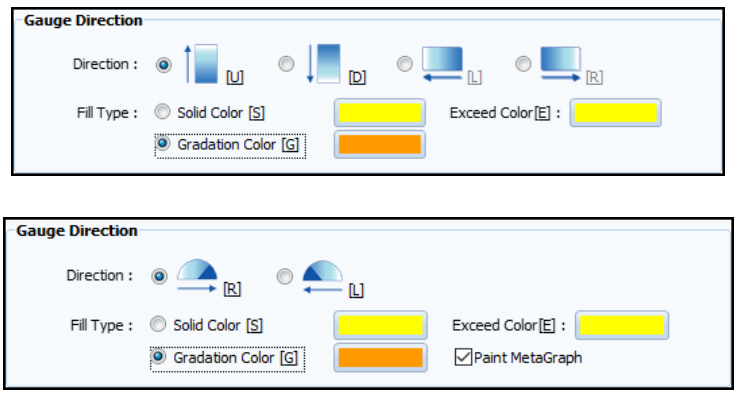


[Pic. Fill Setting]

(1) Gauge Direction

Configure the direction that displays the Gauge. Also, configure the color that fills the gauge when it is displayed.

If Fill Enclosed Area is used, set the direction and color the same as Bar Type.



[Pic. Gauge Direction]

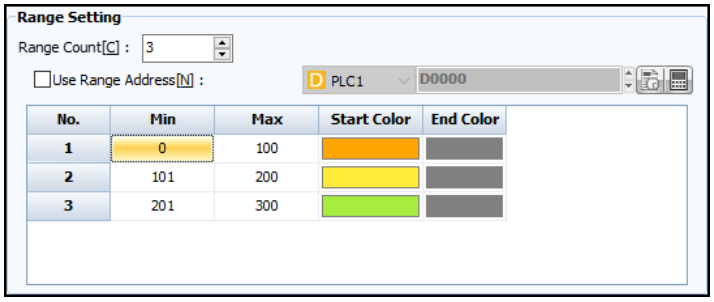
No	Gauge Direction Setting		Description
1	Grid Direction	[U]	Set the Gauge fill direction from the bottom to the top.
		[D]	Set the Gauge fill direction from the top to the bottom.

		[L]	Set the Gauge fill direction from the right to the left.
		[R]	Set the Gauge fill direction from the left to the right.
		[R]	Set the Gauge movement direction from the left to the right.
		[L]	Set the Gauge movement direction from the right to the left.
2	Fill Style	Solid Color	Set the Gauge fill color as solid color.
		Exceed Color	Set the fill color for exceeding the Gauge range.
		Gradation Color	Set the Gauge fill color as Gradation Color.
		Paint MetaGraph	Set whether or not to use Color Fill when using circular graphs.

(2) Range Setting

Range Setting is the function that modifies the Gauge fill color by sections.

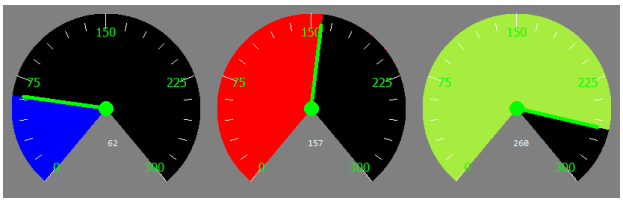
Set the number of the sections and the min and max value to use.



[Pic. Range Setting]

No	Range Setting	Description
1	Range Count [C]	Set the count of the range (section).
2	Use Range Address For Color Display [N]	Set the address to display range. You may modify the gauge color according to the set address value. If it is used with data address, it will allow the user to modify the fill color according to the changes in data.
3	No	This is the number of the range.
4	Min	Set the Min Value of the range.
5	Max	Set the Max Value of the range.
6	Fill Color	Set the color that will fill the range.

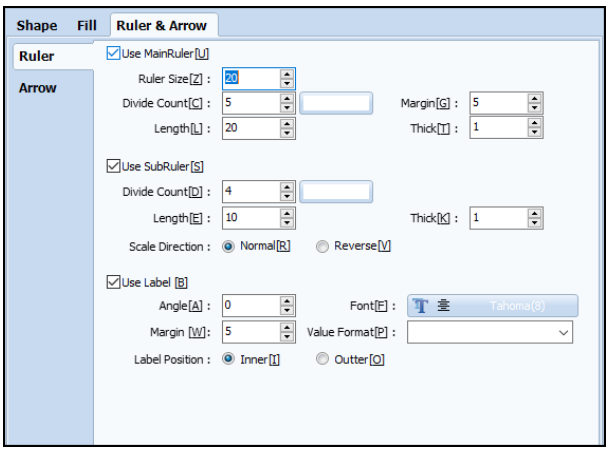
Set the range to modify the color according to the changes in the gauge as the following picture.



[Pic. Range Setting Gauge]

17.1.21 **Display Page - Grid & Arrow Setting**

This section is for setting arrow and rulers that are displayed in the gauge.



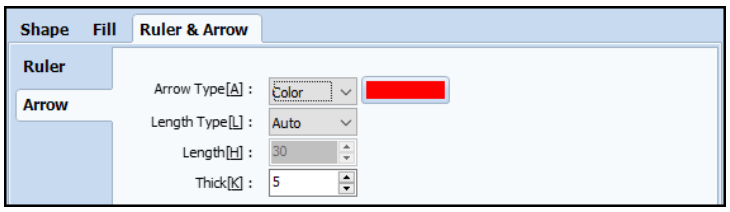
[Pic. Grid]

(1) Ruler

No	Ruler Setting		Description
1	Use MainRuler	Ruler Size	Set the size of the Main Grid. It may be set up to 1000.
		Divide Count	Set the count of Main Grids that would divide the Gauge. There may be up to 24 of them.
		Margin	Set the margin of the Main Grid. It may be set up to 1000.
		Length	Set the length of Main Grids. The length may be up to 100.
		Thick	Set the thickness of Main Grids. The thickness may be set up to 10.
2	Use SubRuler	Division Count	Set the count of Sub Grids that divide Main Grids. There may be up to 24 Sub Grids.
		Length	Set the count of Sub Grids. The length may be up to 100.
		Thick	Set the thickness of Sub Grids. The thickness may be set up to 10.
		Scale Direction	Set the scale direction of Sub Grids. The normal direction will have the rulers outward from the inside, and the reverse direction have the rulers inward from the outside.
3	Use Label	Angle	Set the label angle.
		Font	Set the label font.
		Margin	Set the margin from the inside or outside of the label.
		Value Format	Set the format of the displayed Grid Numeric. E.g.) #,##0, or #,##0.00mm, etc.
		Label Position	Set the position of the label inside or outside of the gauge border.

(2) Arrow

Arrow is used when the type of the gauge is circle. Set it to the length and arrow shape of the user's preference.



[Pic. Arrow]

No	Range Setting	Description
1	Arrow Type	Set the shape of the arrow that points the gauge. Set its color or image.
2	Length Type	Choose the length type. If [Auto] is selected, the length of the arrow will be automatically set

		according to the size of the gauge. If [Value] is selected, the user will manually set the length. Adjusting the size of the gauge will not change the arrow length.
3	Length	Set the length of the arrow manually. Select Value in Length Type to activate it.
4	Thick	Set the width of the arrow. It may be set from 1 to 10.

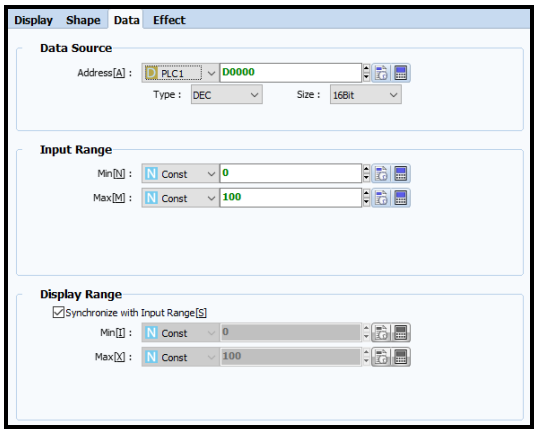
17.1.22 **Shape Page**

In the Gauge Shape page, you may set the shadow of the graph.

Please see Chapter 1.1.2 [Graph]-[Shape Page].

17.1.23 **Data Page**

This is the data page of the gauge. The user may set the address of the data source, input range, and display range here.



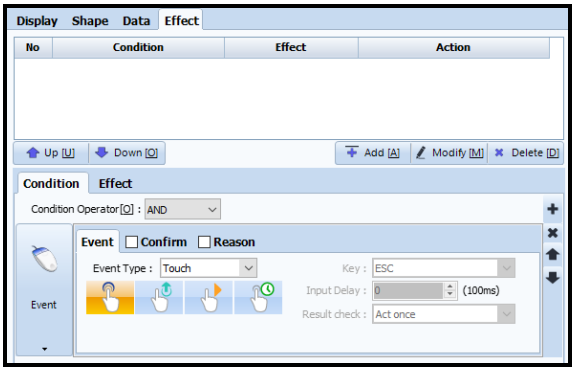
[Pic. Data]

No	Data	Description
1	Data Source	Set the source address of data that displays the gauge value.
2	Input Range	Set the Max/Min range of the value input to data. If data reaches the max input range, the gauge will be full.
3	Display Range	Set the Max/Min range of the value that displays data. The display range is the ruler counts that are marked on the gauge.

17.1.24 **Effect Page**

It gives various effects to Gauge.

Please see Chapter 7.8 [Effect Page Setup] for effects.

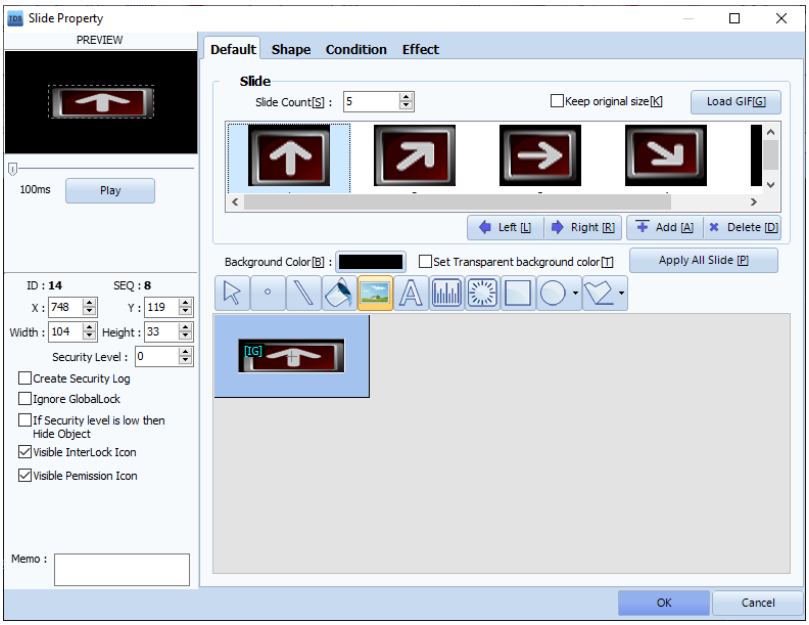


[Pic. Effect Page]

CHAPTER 18 - Slide Object



[Slide Object] is the function that displays multiple screens on the screen in a sequence by certain time interval to give animation effect. The max number of slides that can be used is 64 and only shapes can be used.



[Pic. Slide Object]

[Preview] shows the first slide screen and pressing [Action] will show the slide action. The slide object's size will be the size of the slide screen. Modify [Width/Height] to set the size of slide screens.

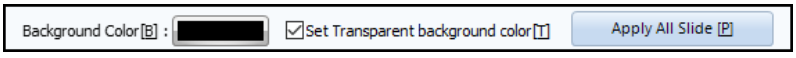
Default Page

▶ Create new slide screens.

Set [Slide Count] to create the set number of slide screens. Also, press [Add] button to create new slide screens. Up to 64 [Slide Count] may be created.

No	Slide setting	Description
1	Keep original size	Check this function when registering GIF files in the PC to slides or when registering GIF files in their original size.
2	Load GIF	Register GIF files in the PC to slides.
3	Left	Move the selected slide screen left.
4	Right	Move the selected slide screen right.
5	Add	Add a new slide screen after the last number.
6	Delete	Delete the selected Slide Screen.

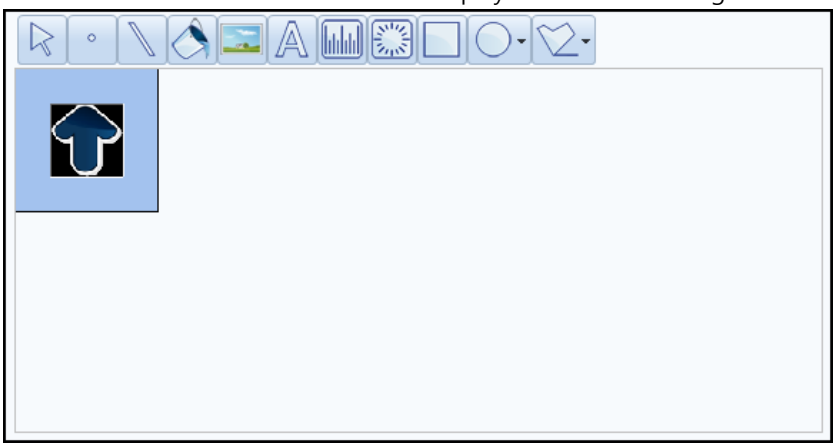
▶ Set the Back Color of the Slide Screen.



No	Edit Slide	Description
1	Back Color	Set the Back Color of the Slide Screen.
2	Set Transparent Background Color	Set the background color as transparent to display the object only when it runs.
3	Apply All Slide	Apply the [Back Color/Transparent Back Color] setting to all slide screens.

▶ Edit each Slide Screen.

Select the slide screen to edit on Slide Screen List to display the screen's editing screen at the bottom.



[Pic. Editing of a slide screen]

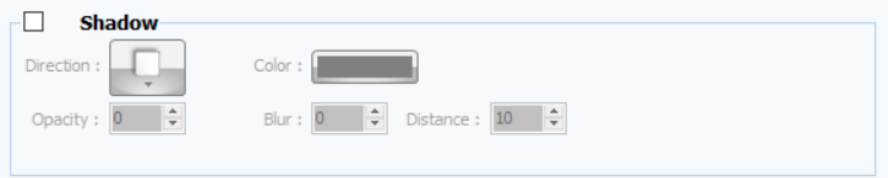
Use [Select/Dot/Line/Fill/Image/Text/Rect Grid/Circle Grid/Rectangle/Ellipse/Polyline] menus at the top of the Slide Screen to register shape objects ([Action] may not be configured.).

Please see Chapter 8 [Object (1)] to see how to register shape objects to a screen.

The size of a screen is identical to the size of a Slide Object. Modify the [Width/Height] of Slide Objects to modify the size of the Slide Screen. Use [Ctrl+Mouse Wheel] on the Slide Screen to [Zoom] the screen. The actual size will not be modified.

Shape Page

You may set the shadow of the object in Shape Page.

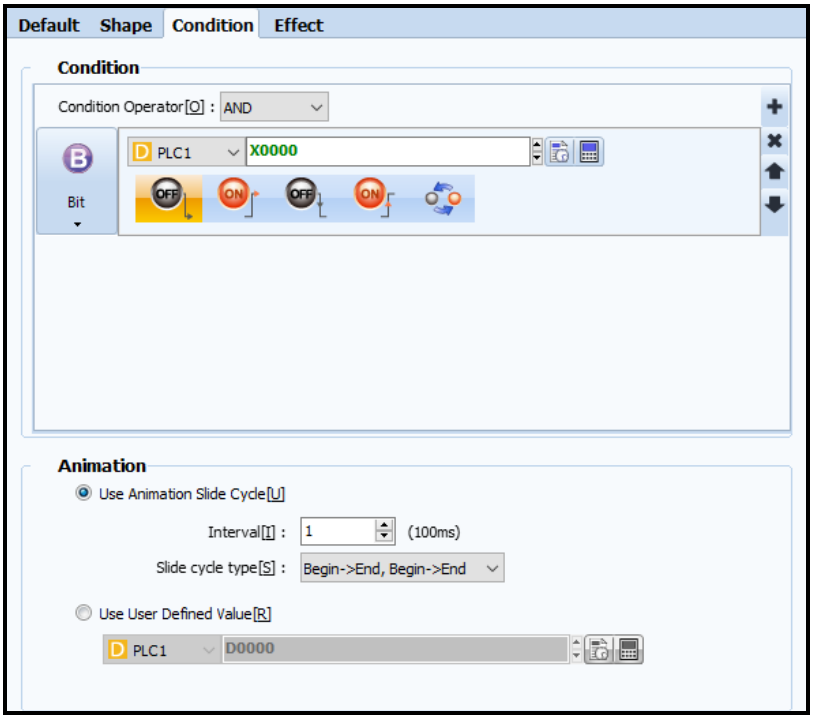


[Pic. Shape page]

No	Shadow	Description
1	Shadow	Set the shadow of Slide. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Condition Page

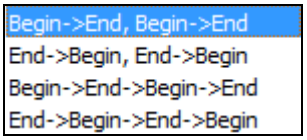
Set the action condition for Slide Objects and configure [Animation] settings.



[Pic. Condition Page]

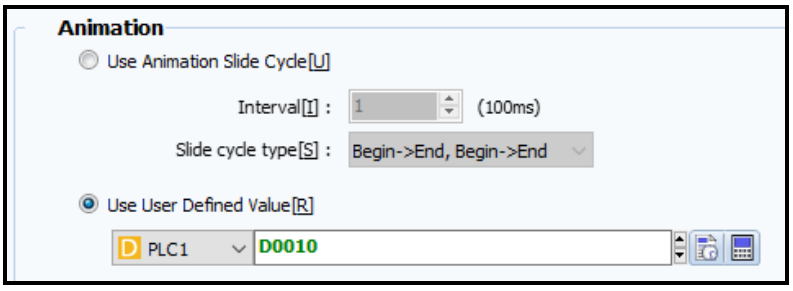
[Condition] is the section where Slide Object action condition is configured, and Slide Objects run while the set condition is true (Please see Chapter 7.7 [Condition Page Setting] to learn how to set conditions).

[Animation] is the section where the user can set the switch interval and order to the next slide while the set condition is true. Choose from [Use Animation Slide Interval] and [Use User Define Value].
[Use Animation Slide Interval] allows the user to manually set the [Interval] and [Slide Cycle Type] to change the slides by the set [Interval] to animate.
[Interval] may be set by 100ms unit. There are four direction types for [Slide Cycle Type].



No	Slide Cycle Type	Description
1	Begin->End, Begin->End	Display Slides from no. 1 to the last one in sequence. When the last slide is displayed, it will return to the slide no. 1.
2	End->Begin, End->Begin	Run slides from the last number to no. 1 repeatedly. When the first slide is displayed, it will return to the last slide.
3	Begin->End->Begin->End	Display the first slide to the last slide in sequence. Then, display the last slide to the first slide.
4	End->Begin->End->Begin	Display the last slide to the first slide in sequence. Then, display the first slide to the last slide in sequence.

If set as above, the slides will be displayed in the order of 1->2->3->4->1->2->3->4->1->2->3->4 ... by 200ms interval.
[Use User Define Value] sets Word Address to display slides that correspond to the Word Address to animate them.

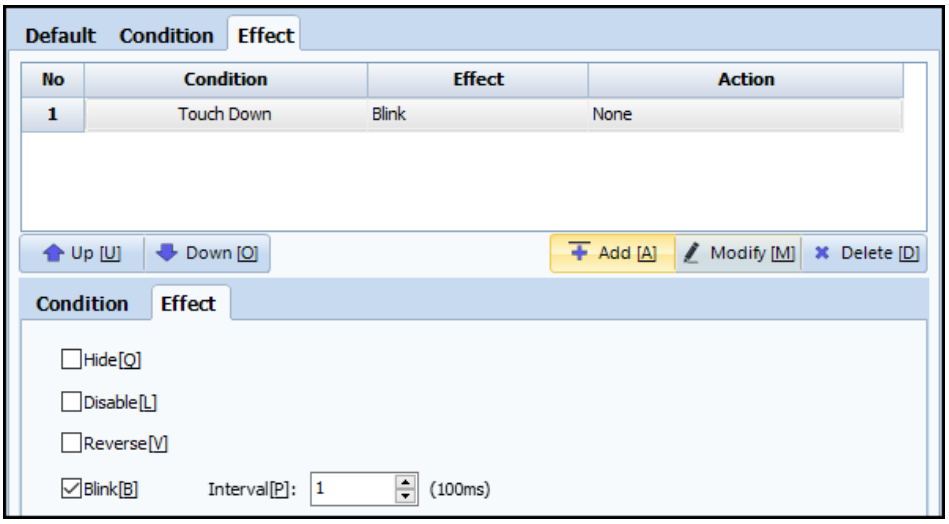


[Pic. Use User Define Value]

Change data of [User Define Value Address] and move slides.
If set as above, when data of [MW000010] is [1], slide no. 1 will be displayed.

Effect Page

[Hide/Disable/Reverse/Blink] effects can be given according to the set [Condition].



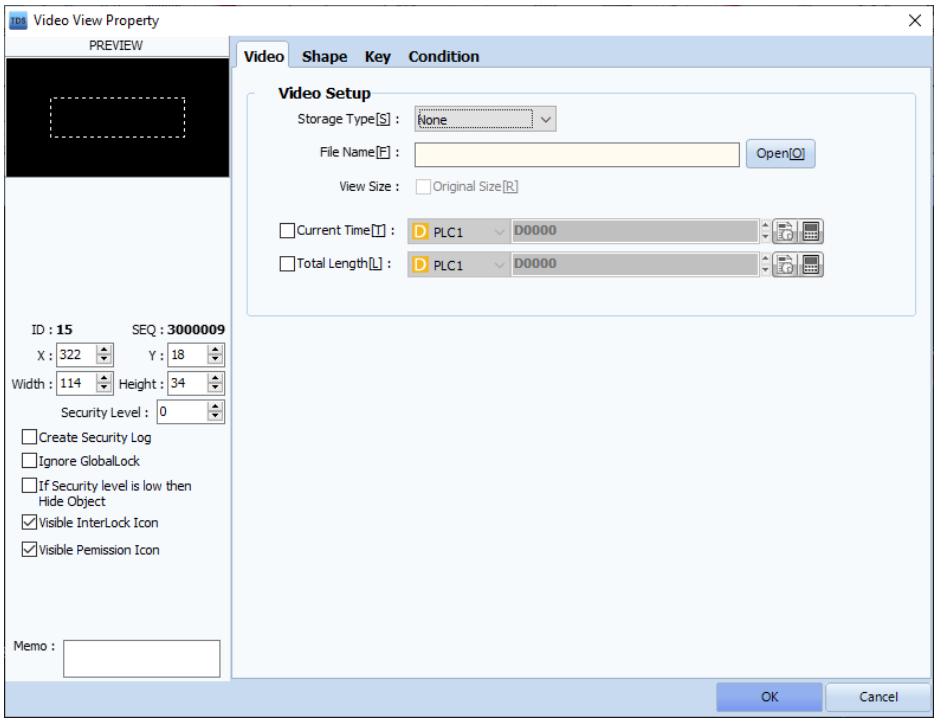
[Pic. Effect Page]

No	Effect	Description
1	Hide	When the condition is true, the Slide Object is hidden.
2	Disable	When the condition is true, the Slide Object will be disabled.
3	Reverse	When the condition is true, the color of the Slide Object will be displayed in reverse by the set [Pulse Time].
4	Blink	When the condition is true, the Slide Object will blink by the set [Interval].

CHAPTER 19 - Video Object



Video Object is the function that displays and plays video files on screen.
[WMV/MP4] video file formats are supported. Video files with up to 300 Mbyte can be played.

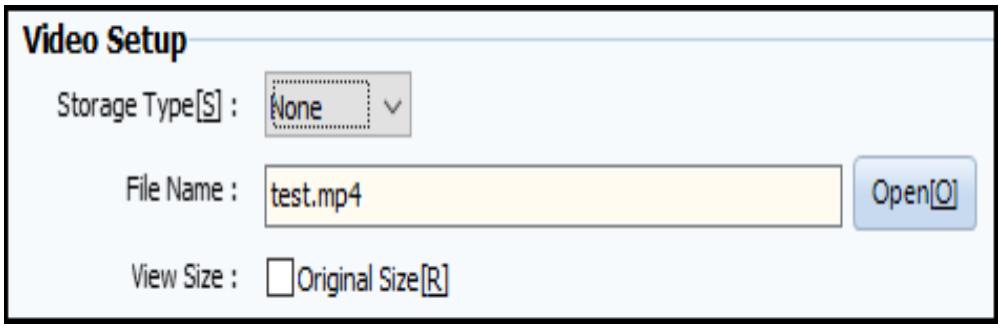


[Pic. Video View Setting Page]

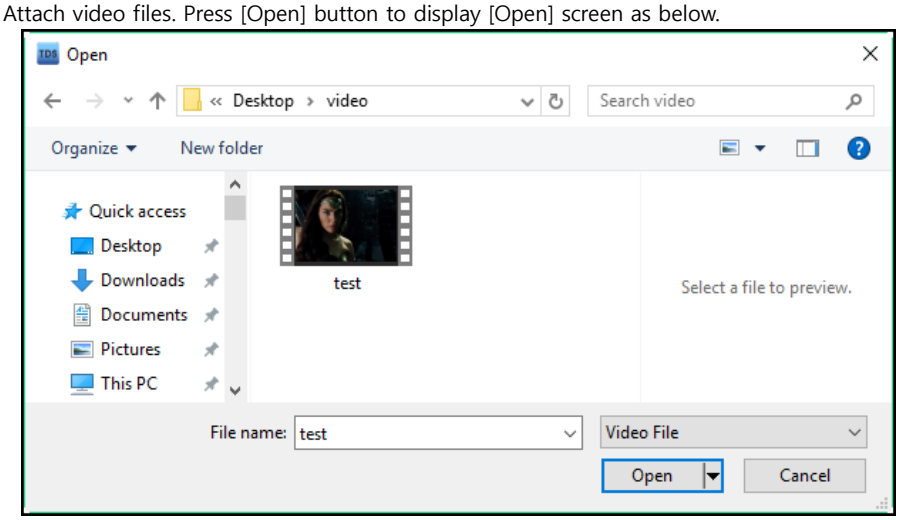
Note) Some video files may not be played due to the codec that they are produced with. Playing video files with high resolution in smaller size may slow its play. Playing videos in their [Original Size] will provide the best quality. 640x480 resolution is recommended.

Video Page

In this page, you may set [Storage Type]/[File Name]/[View Size]/[Current Time]/[Total Length].

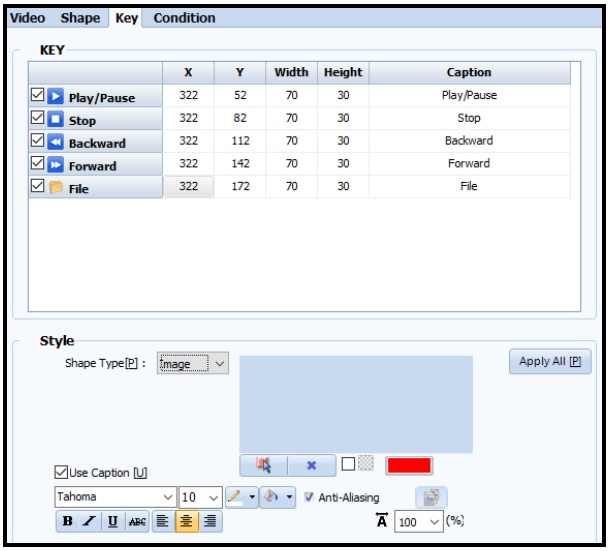


[Pic. Video Page]

No	Video Setup	Description
1	Storage Type	With [None], video files attached to [File Name] to the system unit of Touch Screen. [SD Card/Ext Cam32] saves the video file attached at [File Name] in the SD Card installed in the Touch Screen or TOPR_OPT_CAM32.
2	File Name	Attach video files. Press [Open] button to display [Open] screen as below.  Select a video file and press [Open] button to attach the file.
3	View Size	Check [Original Size] to play the attached video in the original size. The video quality is at the best when it is played in its [Original Size]. Uncheck [Original Size] to play the video by the Video Object size.
4	Current Time	When a video is running, save the "Current Time" of the video to the address where the data is configured (in seconds).
5	Total Length	Save the total play time of the registered video in the set address (in seconds).

Key Page

Add keys to a video object to play the video or jump the play section.



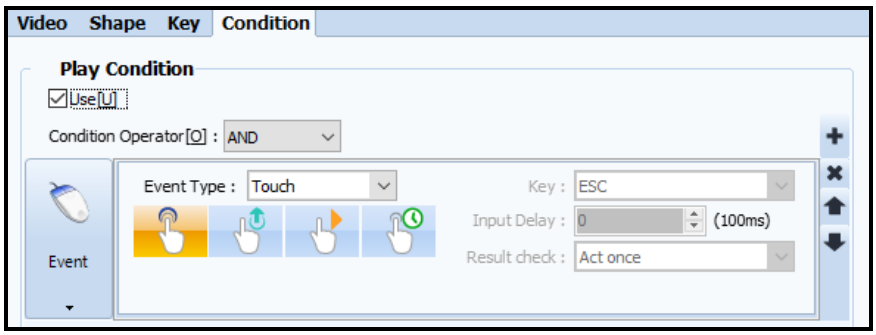
[Pic. Key Page]

There are five types of Video Object Keys. Click checkboxes to add or remove keys.
Modify X, Y Coordinates, Width/Height, and Caption to configure the position and size of the key that the user wishes to add.

No	Video Key List	Description
1	Play/Pause	Play or pause the video. After being paused, the video will be played again from the paused point.
2	Stop	Stop a video. If the video is played again after being stopped, it will be played from the beginning.
3	Backward	Move the play section of a video backward.
4	Forward	Move the play section of a video forward.
5	File	Import a video file saved within the touch screen.

Condition Page

Set the condition that triggers Video Object to run. Uncheck [Use] not to set the condition and the video will always be played.
(Please see Chapter 7.7 [Condition Page Setting] to learn how to set conditions.)

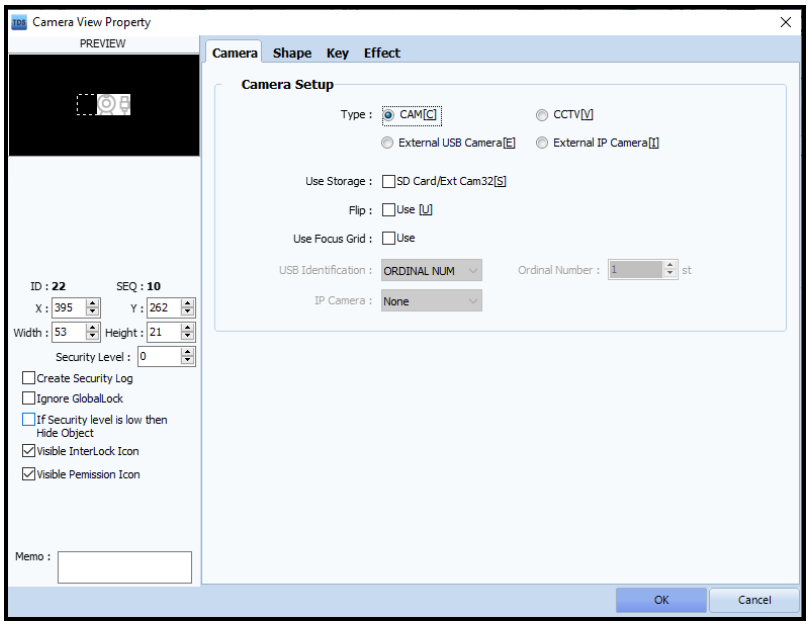


[Pic. Condition Page]

CHAPTER 20 - Camera Object



[Camera Object] is an object that allows the user to check the video that is in recording through [Internal Camera/External Camera/CCTV]. Camera is a function supported by TOPR Premium Model.



[Pic. Camera Object]

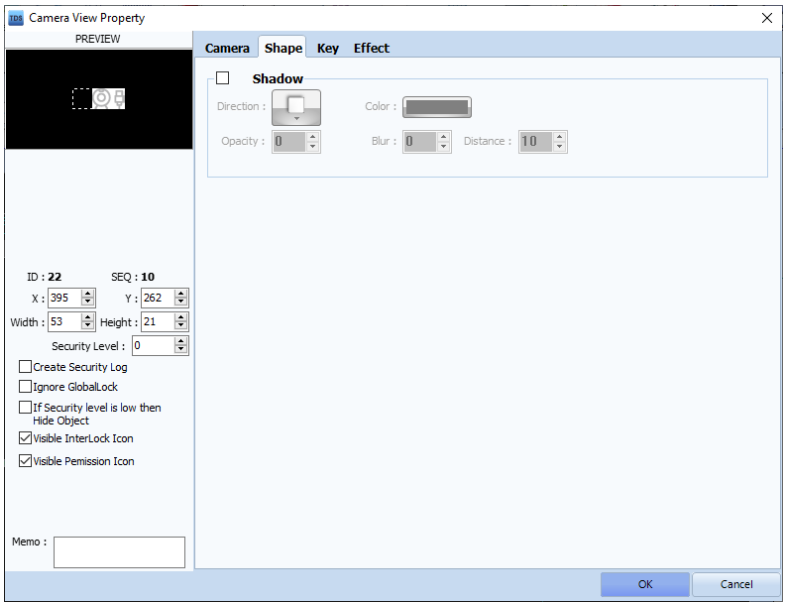
Camera Page

You may configure various types of camera according to the [Type] of camera.

No	Camera Setup	Description
1	Type	[Cam] shows the video that is being recorded by the front camera of the TOPR. [CCTV] shows the video that is being recorded by the CCTV installed in the Video Port of TOPR. [External USB Camera] shows videos being filmed by the external USB Camera that is installed to the USB port of TOPR. [External IP Camera] shows videos being filmed by the external IP Camera that is installed in the Ethernet port of TOPR.
2	Use Storage	Check [SD Card] to save the filmed videos in the SD Card installed in the TOPR. Uncheck [SD Card] to save the filmed videos in the memory of TOPR.
3	Flip	Check [Use] to display the video of the camera by reversing it left and right (flipped 180 degrees).
4	Use Focus Grid	Check [Use Focus Grid] to show fixed objects registered on the camera object do not hide behind the camera object, but appear above the camera shot.
5	USB Identification	Use [External USB Camera] to configure the identification method of the USB device. Set the ID of the connected USB Camera with [USB ID] (ID may be checked in [Control Panel]-[Option Device]-[USB Manager] in the Menu Screen). [ORDINAL NUM] assigns numbers in sequence when a USB Camera is connected to TOPR to display cameras of the corresponding order.
6	IP Camera	Select which camera to be displayed from the IP Cameras that are connected to Ethernet port.

Shape Page

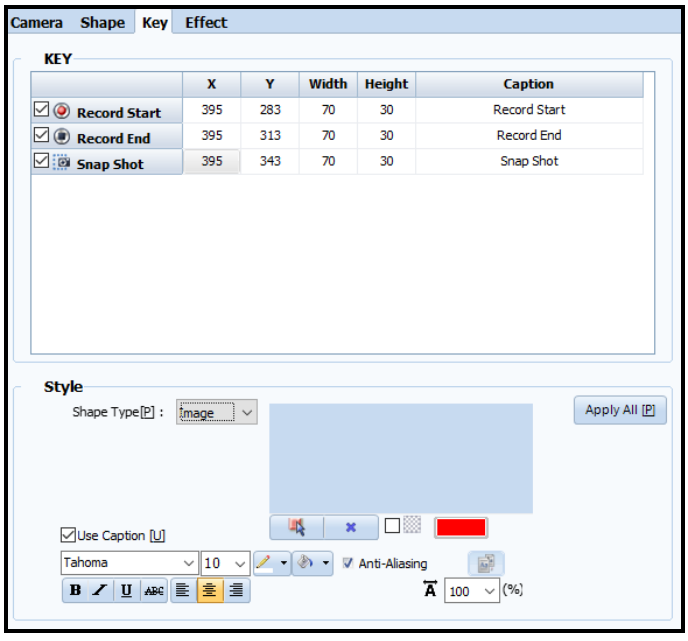
You may set the shadow of the object in Shape Page.



No	Shadow	Description
1	Shadow	Set the shadow of Camera. Select [Direction] for the direction of the shadow. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Key Page

Register keys required for Camera Object. It can record videos or save Snapshots.

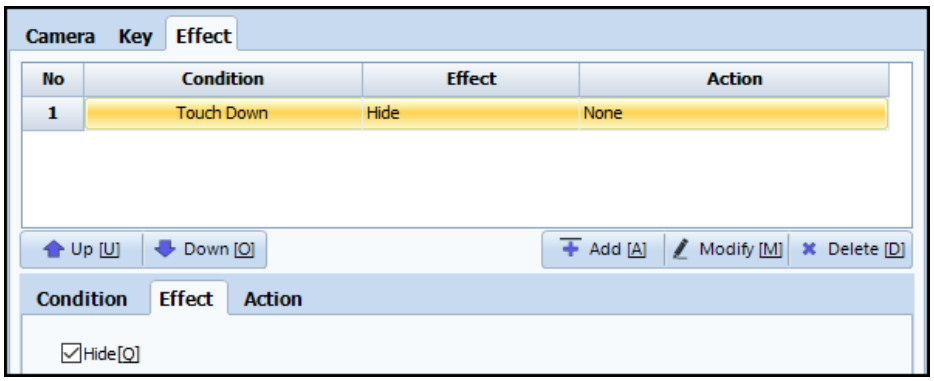


[Pic. Camera Key Page]

No	Key	Description
1	Record Start	Start recording. When recording is started, a red dot will appear at the top left corner of the Camera Object and blink. According to the [Use Storage] configuration set in [Camera Page], video files will be saved either in SD Card or Touch Screen memory (It will be saved in the [CameraRecord] folder).
2	Record End	End the recording. The red dot mark will disappear.
3	Snap Shot	Capture the video recording of the camera and save (It will be saved in the [CameraScreenShot] folder.).

Effect Page

Configure [Hide] effect and [Action] according to the set condition.



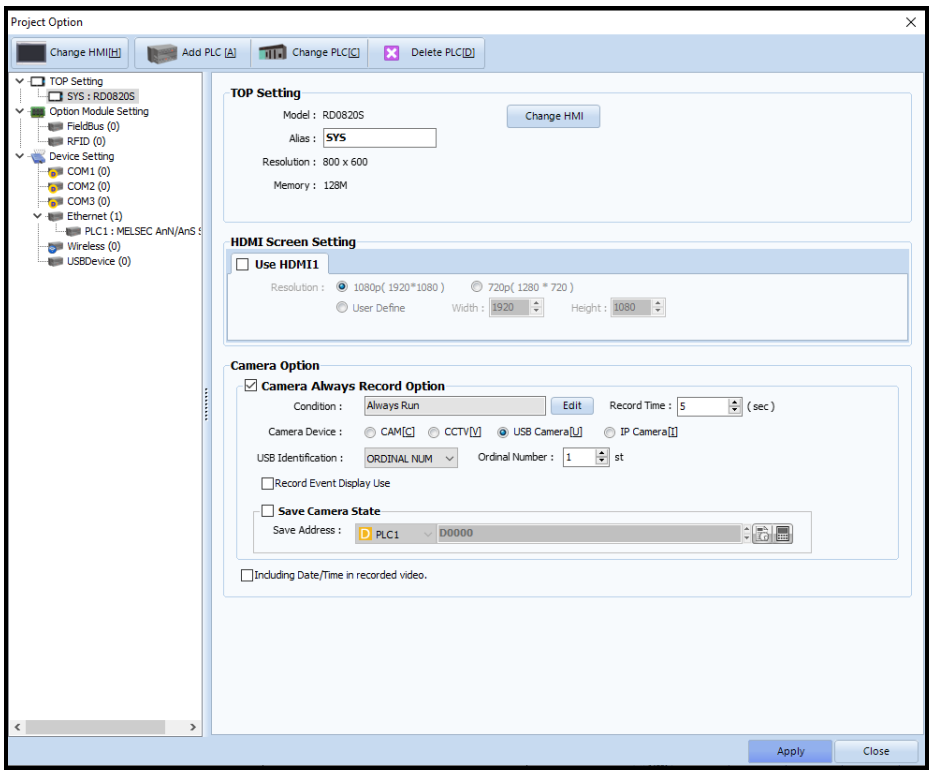
[Pic. Effect Page]

[Hide] effect hides the Camera Object when the condition is true.
Please see Chapter 7.6 for [Condition/Effect/Action] settings.

Camera Option

Select HMI Model registered in [Project]-[Property]-[TOP Setup] and you may setup Camera Option as below screen. [Camera Always Record Option] allows the Touch Screen to run constant camera recording during the set [Record Time] to include the video that is constantly recorded before the event. Event refers to pressing [Record Start] in the [Key] tab of Camera Object or running the camera recording function in [Effect & Action]-[Special], and the Record Time may be set between 1-10 secs and it refers to the [Record Time] of [Camera Always Record Option]. Therefore, when [Camera Always Record Option] is in use, one video file will be created from "constant record by the set [Record Time] before the event's occurrence" to the "video recorded from the record-triggering event occurrence to the end of the recording."

※ During constant recording, Camera Barcode function becomes unavailable in [Special] function. When using Camera Barcode, make sure you turn OFF the constant recording condition.



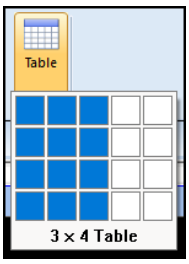
[Pic. Property Page]

No	Camera Record Option	Description
1	Condition	Select the Camera Always Record Option in Touch Screen (Always Record will record when the condition is ON by the record time).
2	Record Time	Set the constant record time before the occurrence of an event (0-10). E.g.) When Record Time is 5 and the start and end time of an event is 9:00:00 and 9:10:00 respectively, a separate video file from 8:59:55, 5 seconds before the occurrence of the event, to 9:10:00 will be created.
3	Camera Device	Select a camera to run constant recording (Only 1 camera).
4	Use Identification	When the record has started during the constant recording, it will display texts stating that the recording has been started at the bottom of the video. 
5	Save Camera State	Display the current camera status. [1] means Always Record, [2] means it is now recording (Record Start), and [3] is Always Record + Record Start
6	Including Date/Time in recorded video.	Display the record Date/Time on the recorded video as below picture. 

CHAPTER 21 - Table Object



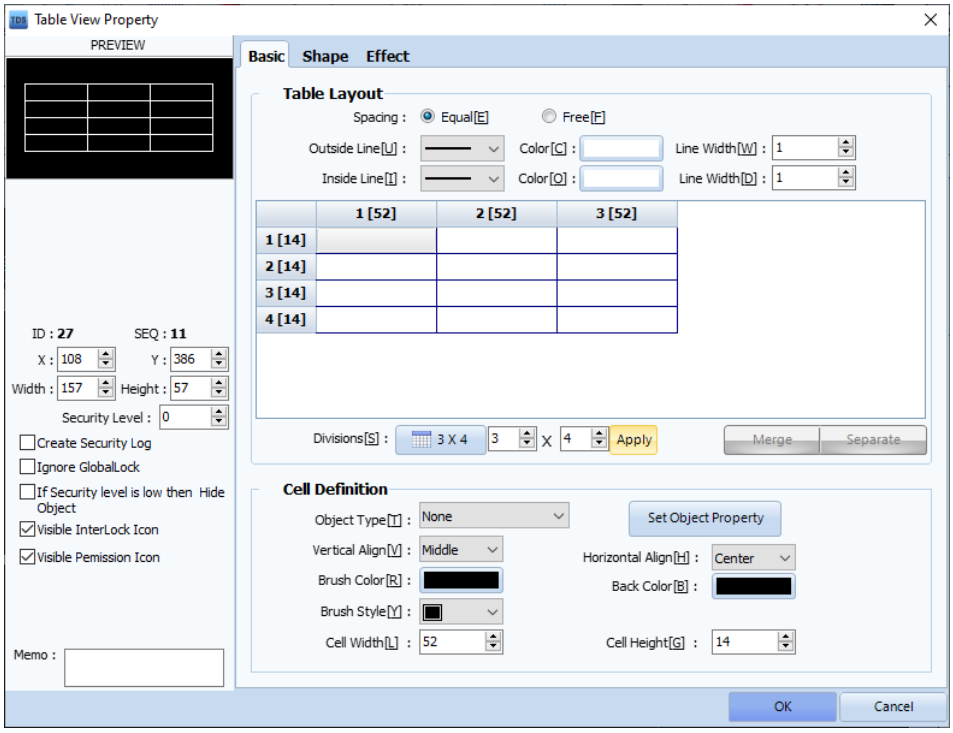
[Table] is used to make a table. Select Table Object from the menu to view 5x4 table as the below picture. Drag down to set the blue area to fit your use and place it on the Editing Screen in its full size.
The created table's size can be adjusted using the 8 white dots displayed on the outer line of the object when it is selected. Also, double click an object or have it selected and right-click with the mouse to popup Property Page.



[Pic. New Table]

Default Page

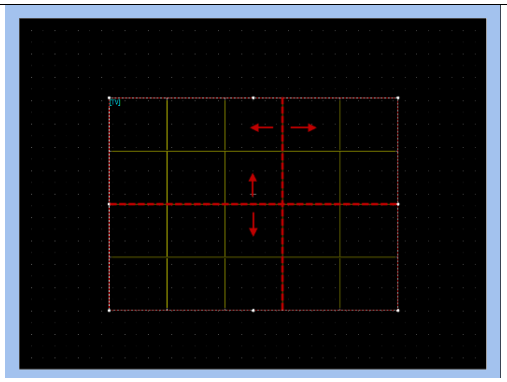
Set Object to each Cell and Table Layout.



[Pic. Table View Property Page]

21.1.1 Table Layout

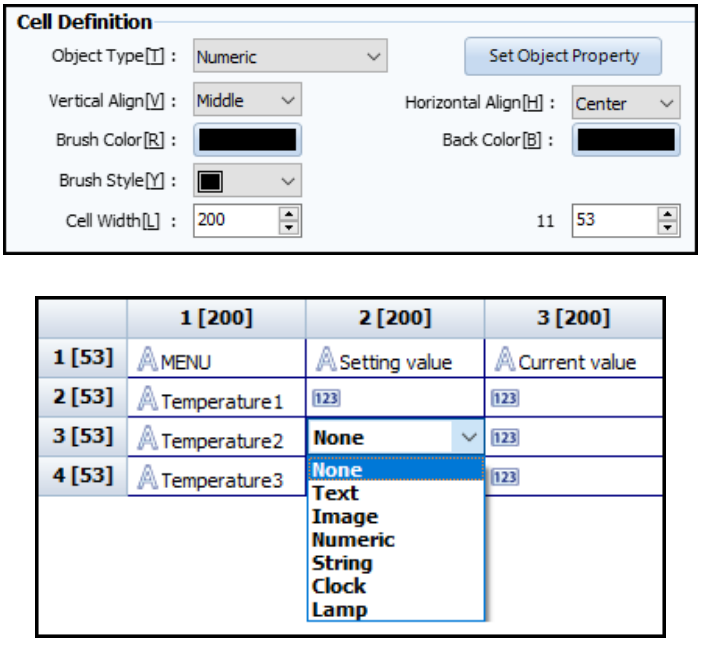
No	Table Layout	Description
1	Spacing	Select from [Identical/Free]. [Identical] will set the spacing of each cell in a table identically. [Free] allows the user to freely modify the table spacing. Place the mouse cursor on the line of the table and it will change to a hand icon. Then, drag the table to modify its spacing.

		 Change the spacing setting to [Identical] to change all table spacing identical again.
2	Outside Line	Set the line style of the outer border of a table. Set [Line Style/Color/Line Width].
3	Inside Line	Set the line style of the inside line of a table. Set [Line Style/Color/Line Width].
4	Divisions	Modify the horizontal/vertical cells (slots) of a table.  Set the horizontal and vertical cells and press [Apply] button.

Selecting multiple cells (more than 2) will activate the [Merge] button at the bottom. Press Merge button to merge 2 or more cells. Select the merged cell to activate [Separate] button. Press [Separate] button to separate the merged cells again.

21.1.2 Cell Definition

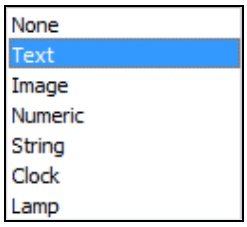
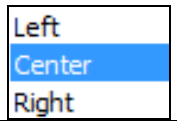
Register objects in each Cell.



[Pic. Cell Definition]

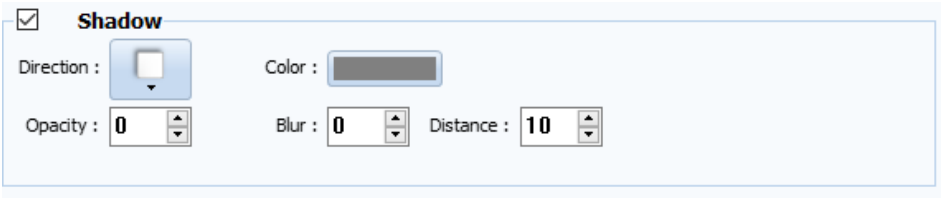
If you double-click the cell to register an object, a list of objects that can be registered is displayed. Objects available for registration to each cell would be [Text/Image/Numeric/String/Clock/Lamp] objects. Or, select a cell and set objects to register in the cell in the [Cell Definition] at the bottom of the default tab.

No	Cell Definition	Description

1	Object Type	Set the Object Type to be registered in a cell.  [Text/Image/Numeric/String/Clock/Lamp] objects may be set. Click [Set Object Property] button to open the Property Screen of the set object.
2	Vertical Align	Select the Vertical Align of the registered object from [Top/Middle/Bottom] based on the height of the cell. 
3	Horizontal Align	Select the Horizontal Align of the registered object from [Left/Right/Center] based on the width of the cell. 
4	Brush Color	Set the Fill Color.
5	Back Color	Set the Background Color.
6	Fill Style (Brush Style)	Set the Fill Style. Select if Fill Style is not used. [Fill Color] will be filled in the black part and the [Background Color] will be filled in the white part. 
7	Cell Width/Height	If the spacing is set to [Identical], change the [Cell Width/Cell Height] to automatically adjust all cells to the set [Cell Width/Cell Height] and the size of the entire table will be modified. If the spacing is [Free], only the selected cell's [Cell Width/Cell Height] will be adjusted.

Shape Page

You may set the shadow of the object in Shape Page.

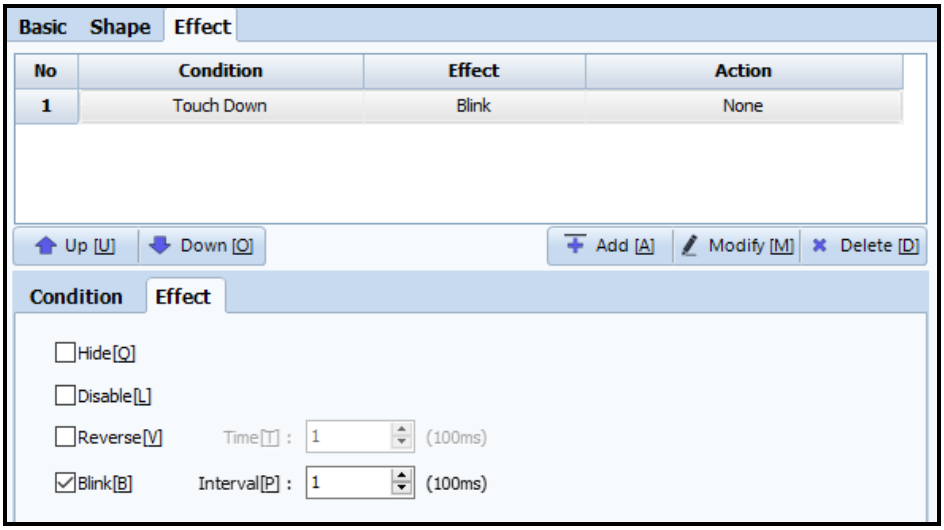


[Pic. Shape page]

No	Shadow	Description
1	Shadow	Set the Shadow of the Table. Select the shadow direction at [Direction]. Select shadow color at [Color]. Select shadow opacity at [Opacity]. (0-100) Select the degree of blur for shadow at [Blur]. (0-30) Select the distance between the object and shadow at [Distance]. (0-200)

Effect Page

[Hide/Disable/Reverse/Blink] effects can be given according to the set [Condition].



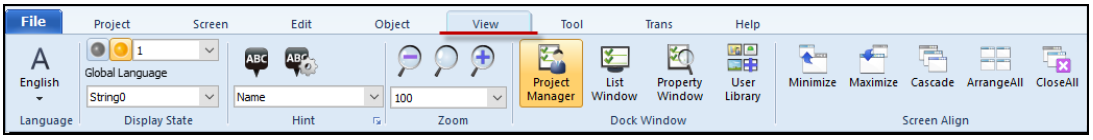
[Pic. Effect Page]

No	Effect	Description
1	Hide	When the condition is true, the Slide Object is hidden.
2	Disable	When the condition is true, the Slide Object will be disabled.
3	Reverse	When the condition is true, the color of the Slide Object will be displayed in reverse by the set [Pulse Time].
4	Blink	When the condition is true, the Slide Object will blink by the set [Interval].

CHAPTER 22 - View Menu

[View] Menu is described.

View Menu provides editing functions for the visual parts of TOP Design Studio. Here, you may set Display Language, Display State, Show/Hide Hint, Zoom, etc. Also, you can manage Dock Window that is displayed on the left and right side of the software or sort the screens in editing in various ways.



[Pic. View Menu]

Display Language

Select the language to display in TOP Design Studio. The language is selected at the initial installation and it may be changed at a later stage (The supported languages may vary by the version of TOP Design Studio).

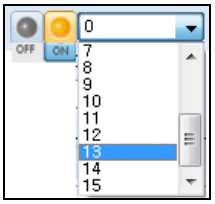


[Pic. Language]

Display Status

22.1.1 Status No

[Status No] is the function that displays object shape like it actually moves on Touch Screen according to the data status of the address set in Lamp.



[Pic. Status No]

Objects are displayed according to the [ON/OFF] status for Bit Addresses. [ON Status] displays the object shape when data of the objects is [ON]. This corresponds to 1 in Status Number. In [OFF Status], the object shape is displayed when data of the objects is [OFF]. It corresponds to status number 0.
For Word Addresses, it displays the object's state according to the state of the first [0] Bit to the last [15] Bit.

22.1.2 Global Language

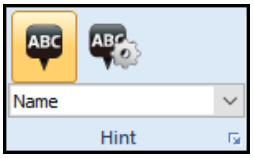
Global Language displays the languages pre-set in the [Project]-[String]-[Language Table Setting] to each string by the user on screen. 0 to 31 strings may be registered.



[Pic. String Language Selection]

Hint

Hint appears at the top left corner of an object. There are Name, All address, Read Address, Write Address, ID, SEQUENCE, and Memo for the types of hint. You may edit fonts, colors, etc. in Hint Option.

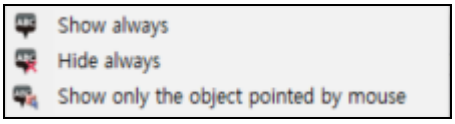


[Pic. Hint]

22.1.3 Show Hint



[Show Hint] menu sets whether or not to display popup Help. [Show Always] will make all objects' hint visible. [Hide Always] will make all objects' hint invisible.
[Show objects pointed by the cursor only] will display hints of the objects pointed by the cursor only.



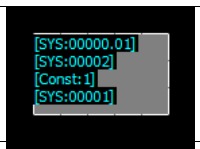
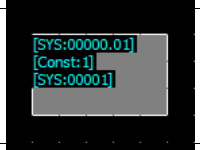
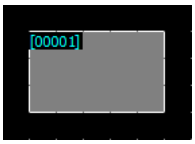
[Pic. Show Hint]

22.1.4 Select Hint



[Select Hint] is for selecting the types of hint to be displayed. There are Name, All Address, Read Address, Write Address, ID, SEQUENCE, and Memo as the types of hint that can be displayed.

No	Type	Description	
1	Name	Display Object Name at the top left corner of the Object. The Object Name will be displayed in an abbreviation and each name can be checked at [Table. Object Name Display].	

2	All address	Display both Read Address and Write Address. Nothing will be displayed if there is no address in the object.	
3	Read Address	Display data imported to the current object.	
4	Write Address	Display the Target Address where data will be sent from the current object.	
5	ID	This is the number assigned automatically to objects on the screen according to their registration order. These numbers cannot be set manually. *Deleting ID objects in the middle of the sequentially drafted list will not affect other IDs. E.g.) If you delete object no. 2 among the objects no.1, 2 and 3, the objects no. 1 and 3 will remain.	
7	SEQUENCE	This is the number assigned automatically to objects on the screen according to their registration order. These numbers cannot be set manually. *Deleting SEQ objects in the middle of the sequentially drafted list will automatically change other objects' SEQs. E.g.) If you delete object no. 2 with SEQ no. 1, 2, and 3, the SEQ no. 3 will be changed to SEQ no. 2 and object no. 1 and 2 will remain.	
8	Memo	The memo that has been inserted in [Memo] of Object Property screen will be displayed.	

Display of the Object Name will be as the following table.

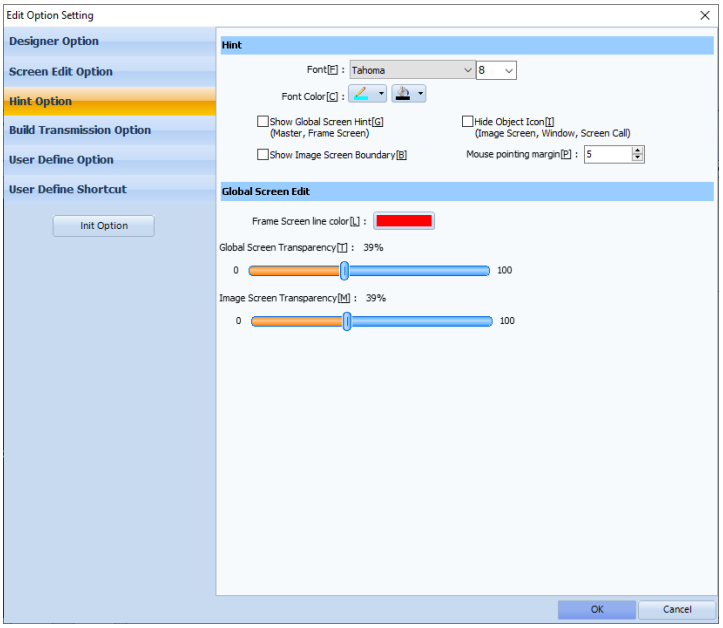
No	Object	English Name	Display Tag Name
1	Dot	Dot	[DT]
2	Line	Line	[LN]
3	Rectangle	Rectangle	[RT]
4	Ellipse	Ellipse	[EL]
5	Arc	Arc	[AC]
6	Pie	Pi	[PI]
7	Chord	Chord	[CD]
8	Polyline	Polyline	[PL]
9	Polygon	Polygon	[PG]
10	Image	Image	[IG]
11	Text	Text	[TX]
12	Rect Grid	Rectangle Scale	[RL]
13	Circle Grid	Circle Scale	[CL]
14	Bit Lamp	Bit Lamp	[BL]
15	Multiphase Lamp	Multiple Lamp	[ML]
16	Touch	Touch	[TC]
17	Momentary Switch	Momentary Switch	[MS]
18	Bit Switch	Bit Switch	[BS]
19	Selector	Select Switch	[SS]
20	Screen Change Lamp	Screen Change	[SC]

21	User Defined Lamp	User defined Lamp	[UL]
22	Numeric	Numeric	[NU]
23	String	String	[ST]
24	Clock	Clock	[CK]
25	Message View	Message	[MV]
26	Window	Window View	[WV]
27	Screen Call	Screen Call	[SC]
28	Log View	Log View	[LV]
29	Alarm View	Alarm View	[AV]
30	Graph	Graph View	[GV]
31	Trend	Trend View	[TV]
32	Record	Record Graph	[RG]
33	Gauge	Gauge Graph	[GG]
34	Camera	Camera View	[CV]
35	Thermal Camera	Thermal Camera	[TH]
36	Video	Video View	[VV]
37	Slide	Slide	[SL]
38	Table	Table	[TV]

22.1.5 Set Hint Option



Run [Set Hint Option] to move to [Edit]-[Option Setting]-[Hint Option].
Set the [Font/Color/Back Color/Size] of hint at Hint Option Setting.
Please refer to Chapter 6.9.4 [Edit Menu]-[Option Setting].



[Pic. Set Hint Option]

22.1.6 Visible Object Icon



[Visible Object Icon] sets whether or not to show the [Image Screen, Window, ScreenCall] object icons. [Image Screen, Window, ScreenCall] objects are not always displayed on Base Screen. Corresponding [Image/Window Screen/Base Screen] are called and displayed when the condition is met.

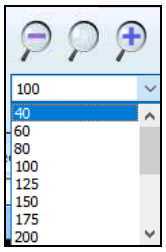
Therefore, these objects have icons at the top left corner to display their registration position. Use [Visible Object Icon] button when editing the screen to hide or display this icon.



[Pic. Icon of Window Object]

Zoom

Set the Zoom In/Out ratio of the editing screen of a project. Default is set to 100% and you may zoom in and out 40% to 400%.



[Pic. Zoom]

Or you may zoom in/out by scrolling the mouse wheel up/down while pressing the [Ctrl Key].

No	Zoom		Functions
1	Zoom In		Enlarge the current screen. The maximum zoom in value is 400%.
2	Default Zoom		Return to the default size 100%.
3	Zoom Out		Shrink the current screen. The minimum zoom out value is 40%.
4	User Defined Value		Display the current zoom ratio and change to the zoom ratio.

Dock Window

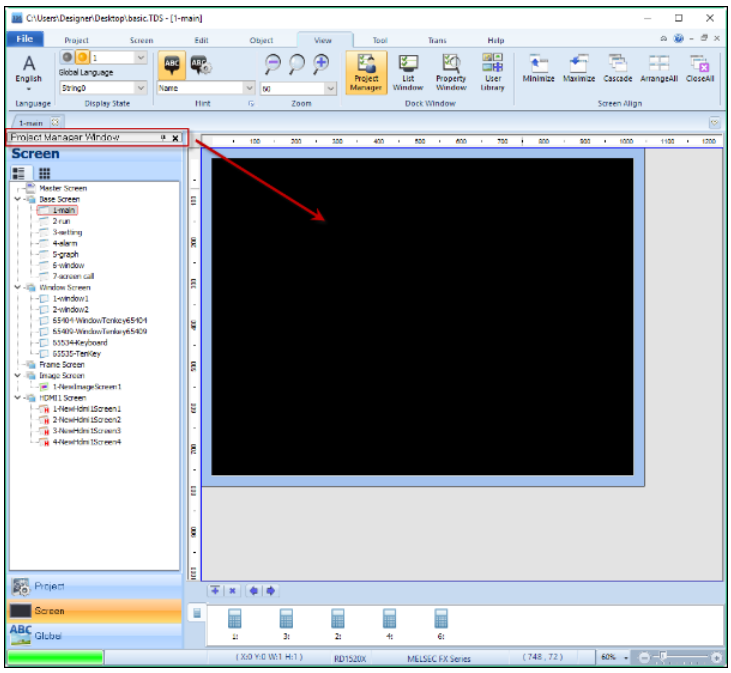
Dock refers to attaching something like a magnet. Dock Window refers to functional windows that dock to the left or right of the software. TOP Design Studio's functional Dock Window includes [Project Manager], [List], [Property], and [User Library].

22.1.7 Handling Dock Window

Dock Window can be used by being docked to or separated from the working screen and can be visible or hidden as necessary.

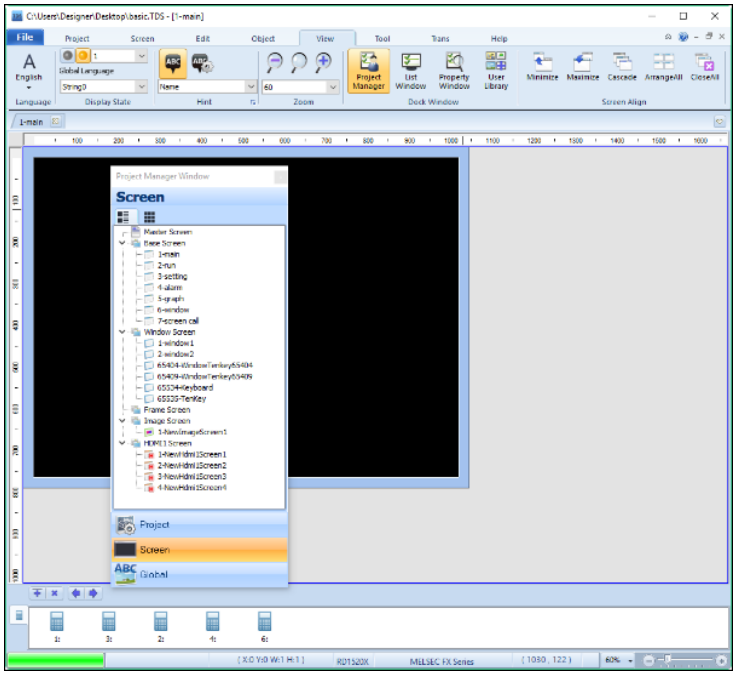
(1) Separation of Dock Window

Dock Window fixed left and right can be easily separated by dragging it with a mouse.



[Pic. Separation of Dock Window]

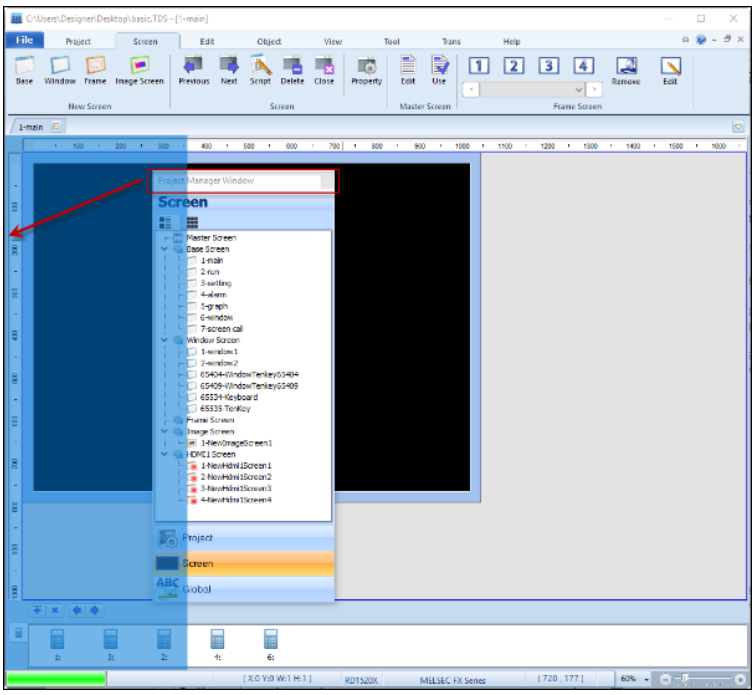
Click the [Title] section of fixed Project Manager Window and drag it with the mouse to move it to the arrow direction to separate the Dock Window as below picture.



[Pic. Separation of Dock Window]

(2) Dock Left and Right

Separated Dock Window will be docked to the left when [Dropped] to the arrow direction by dragging its [Title] part as below picture. [Drop] it to the right to dock it to the right.

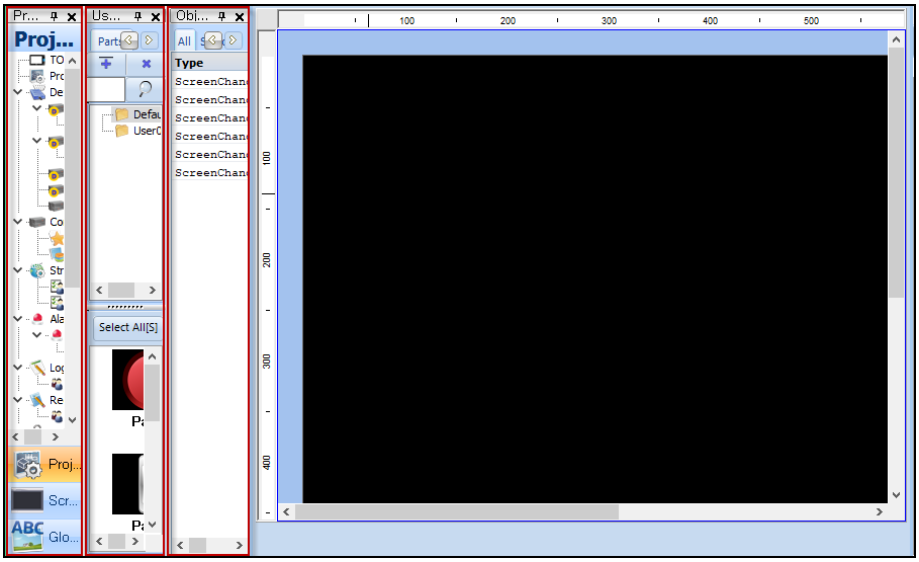


[Pic. Fixing of Dock Window]

(3) Auto Hide

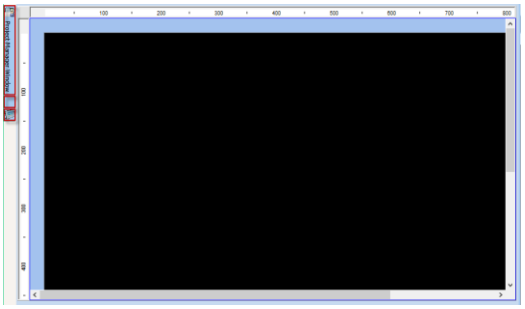
When multiple Dock Windows are in use, dock all Dock Windows you wish to use and Auto Hide them to simply display them when needed.

① Auto Hide of Dock Window

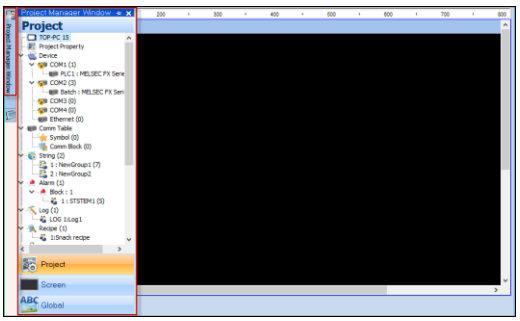


[Pic. Auto Hide not in use]

Running multiple Dock Windows without using Auto Hide will make the room to run projects insufficient as it takes a lot of space as above picture. In this case, use Auto Hide to hide Dock Windows at the corner with their titles displayed only. Their titles will be displayed only as [Pic. Use Auto Hide], but when you bring the cursor on them, they will be enlarged as in [Pic. Select Window Title] for you to use. To fix these enlarged windows, change the pin icon to Fixed [ ]. To minimize them, change the pin icon to Disabled [ ].



[Pic. Use Auto Hide]



[Pic. When Window Title is selected]

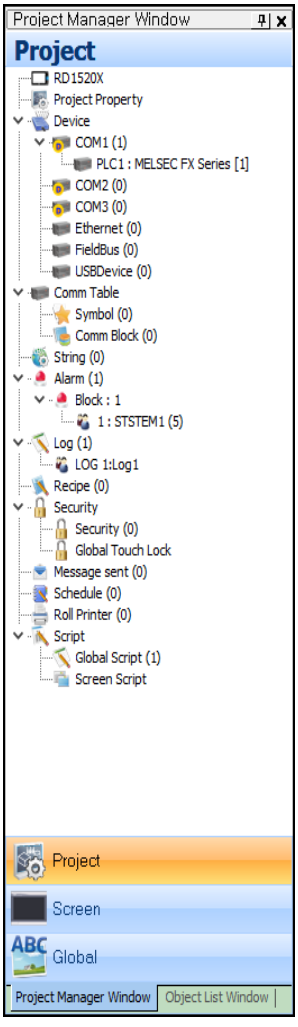
Project Manager

[Project Manager] is the window that allows the user to understand and manage all screens and global sets at a glance.

[Project Manager] is divided into Project, Screen, and Global. If you run programs, create new projects, or open existing projects, it will display screen and global setting lists.

22.1.8 Project

[Project Manager]-[Project] is a common setting applied to across projects and displays all settings of Project Menu Property, Option Module, Device, Comm. Table, Multi Language, Log, Recipe, Security, Send Message, Schedule, Roll Printer, Virtual addresses, Database, and Script. Double click each list to display the corresponding setting screen.



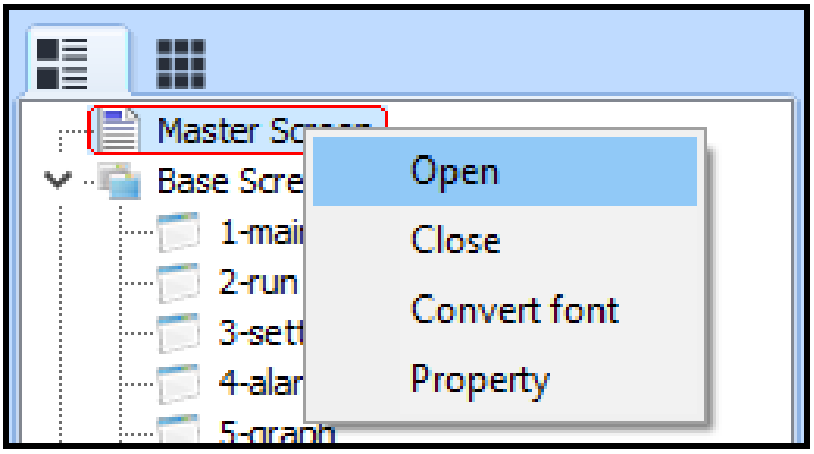
[Pic. Project]

No	Project	Description
1	Select HMI	Check and change the currently set touch model.
2	Project Property	Check the property of the currently set project. (Please refer to Chapter 4.14.1 [TOP Setup].)
3	Option Module	Configure the currently connected Option Module (Please see Chapter 4.14.3 [Option Module Setting].).
4	Device	Configure the currently connected device (Please see Chapter 4.14.2 [Device Setting].).
5	Symbols	Show the Symbol Setting (Please see Chapter 4.6 [Symbol]).
6	Comm Block	Show Comm Block (Please see Chapter 4.8 [Comm Block].).
7	Multi Language	Show Multi Language Table (Please see Chapter 4.4 [String].).
8	Alarm	Show Alarm Data. (Please see Chapter 4.1 [Alarm].).
9	Log	Show Log Data. (Please see Chapter 4.2 [Log].).
10	Recipe	Show Recipe Data. (Please see Chapter 4.3 [Recipe].).
11	Security	Show the Security Setting (Please see Chapter 4.7 [Security].).
12	Send Message	Show Message Manager (Please see Chapter 4.10 [Send Message].).
13	Schedule	Show Schedule Table Dialog (Please see Chapter 4.9 [Schedule].).
14	Roll Printer	Show Roll Printer Edit Screen (Please see Chapter 4.12 [Roll Printer].).
15	Virtual Address	Show Virtual Address Edit Screen (Please see Chapter 4.13 [Virtual Address].).
16	Database	Show Database Edit Screen (Please see Chapter 4.11 [Database].).
17	Script	Show Script Setting (Please see Chapter 4.5 [Script].).

22.1.9 **Screen Section**

See the screen composition of a project.
[Master Screen/Base Screen/Window Screen/Frame Screen/Image Screen] consist the composition in a tree structure.

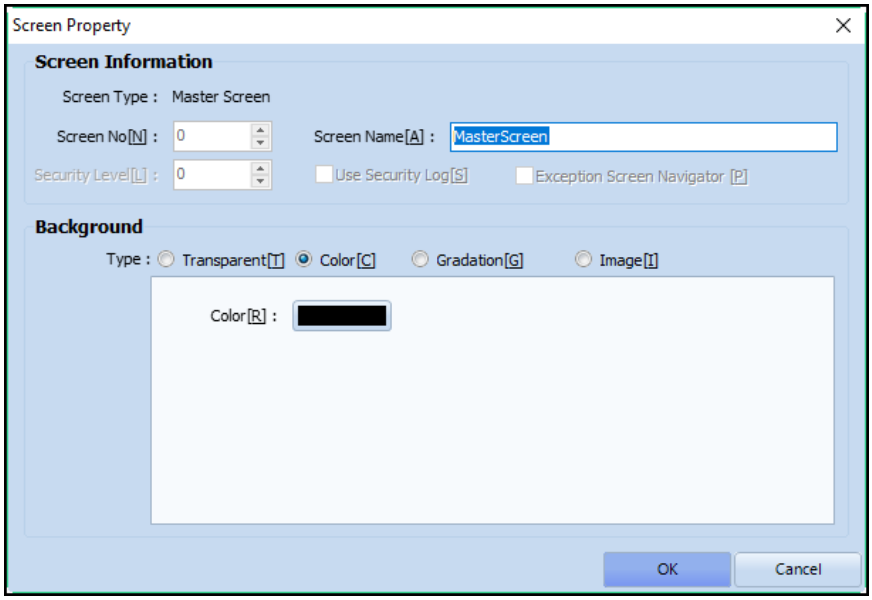
(1) Master Screen



[Pic. Master Screen]

No	Popup Menu	Description
1	Open	Open the selected Master Screen.
2	Close	Close the selected Master Screen.
3	Converter Font	Convert the font registered to Master Screen.
4	Property	Change the name/background of Master Screen.

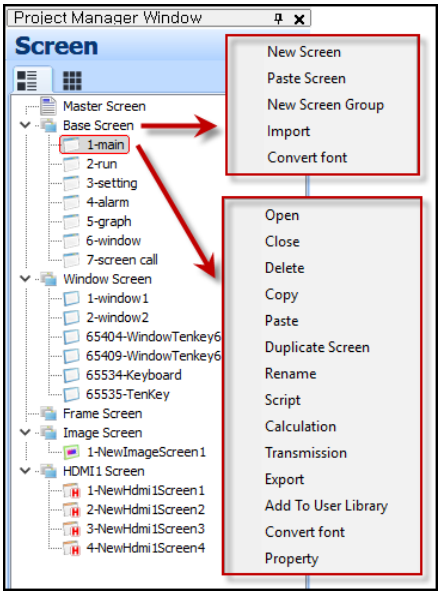
① Master Screen Property



[Pic. Master Screen Property]

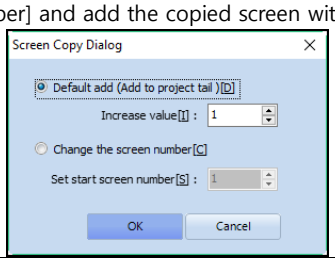
No	Property	Description
1	Screen Number	Show the screen number of Master Screen. There is only 1 Master Screen, therefore the screen number cannot be modified.
2	Screen Name	Show the name of Master Screen.
3	Security Level	Master Screen do not support this function.
4	Use Security Log	Master Screen do not support this function.
5	Exception Screen Navigator	Master Screen do not support this function.
6	Background Type	Select the Background Type of Master Screen. As BG Types, there are [Transparent], [Color], [Gradation], or [Image].

(2) Base Screen

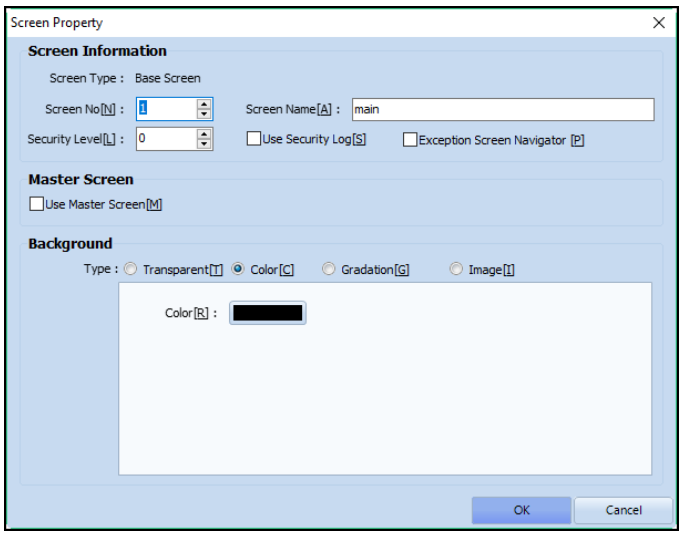


[Pic. Base Screen]

No	Popup Menu	Description
1	New Screen	Create a new Base Screen.
2	Paste Screen	Paste the copied screen.
3	New Screen Group	Create a New Screen and categorize Base Screens.
4	Import	Add a saved Base Screen.
5	Font Converter	Convert the font registered to Base Screen.

No	Popup Menu	Description
1	Open	Open the selected Base Screen.
2	Close	Close the selected Base Screen.
3	Delete	Delete the selected Base Screen.
4	Copy	Copy the selected Base Screen.
5	Paste	Available for use when [Copy] function has been performed. Paste a copied Base Screen to the current project or as an Base Screen of other projects.
6	Duplicate Screen	Copy the selected Base Screen and add to fit the setting. Press Copy Screen to display Setting Screen. [Default add (Add to project tail)] adds the copied screen after the registered Base Screen with the largest number. At this time, the user may configure the incremental value of the screen number. [Change the screen number] inputs [Start Screen Number] and add the copied screen with the entered number. 
7	Rename	Change the name of the selected Base Screen.
8	Script	Configure script that will only be applied to the selected Base Screen.
9	Calculation	Set the calculation that will be applied to the selected Base Screen only.
10	Transmission	It is possible to compare projects connected to touch screen and the Project to send the selected Screens separately (Individually sent screens will not be included in the upload files.).
11	Export	Save the selected Base Screen under a different name. Screen saved as this can be added with the [Import] function.
12	Add To User Library	Save the selected screen to User Library.
13	Font Converter	Convert the font registered to Base Screen.

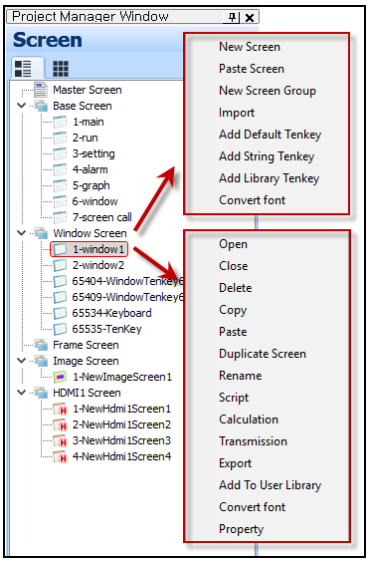
① Base Screen Property



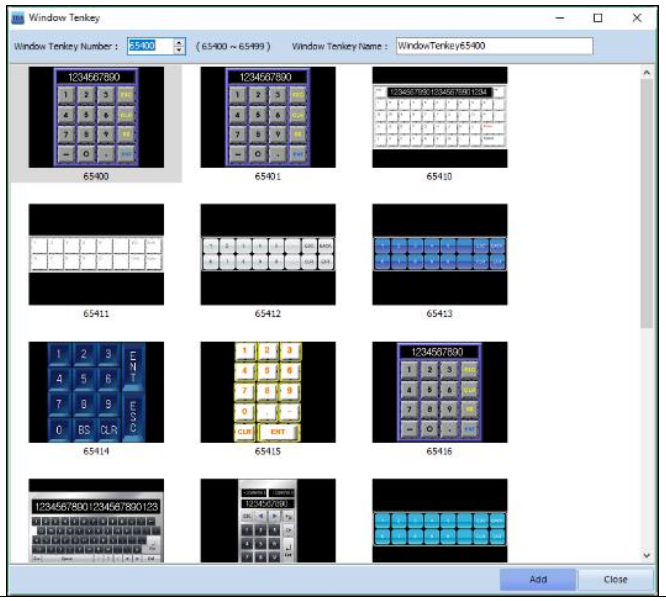
[Pic. Base Screen Property]

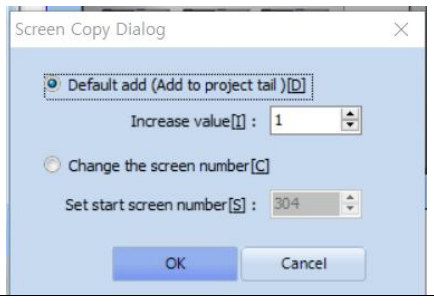
No	Property	Description
1	Screen Number	Show the screen number of Base Screen.
2	Screen Name	Show the name of Base Screen.
3	Security Level	Set the Security Level of the Base Screen. Security Level is set between 0 to 15 and it follows the pre-set password in [Project]-[Security] (Security Level 0 refers to no security level setup.).
4	Use Security Log	When the [Security Level] is set to [1] or above, checking [Use Security Log] will record login/logout information in the touch screen memory. (Please see Chapter 4.7 [Security].)
5	Exception Screen Navigator	When applied, it will be excluded from Screen Navigator (Screen Navigator is found at the top menu. Please see (17) Top Menu in Chapter 1.2.7 [Control Panel Icon – System].).
6	Use Master Screen	Apply Master Screen to a Base Screen. (For Master Screen, please see Chapter 5.4 [Master Screen menu].)
7	BackGround Type	Select the BG Type of Base Screen. As BG Types, there are [Transparent/Color/Gradation/Image].

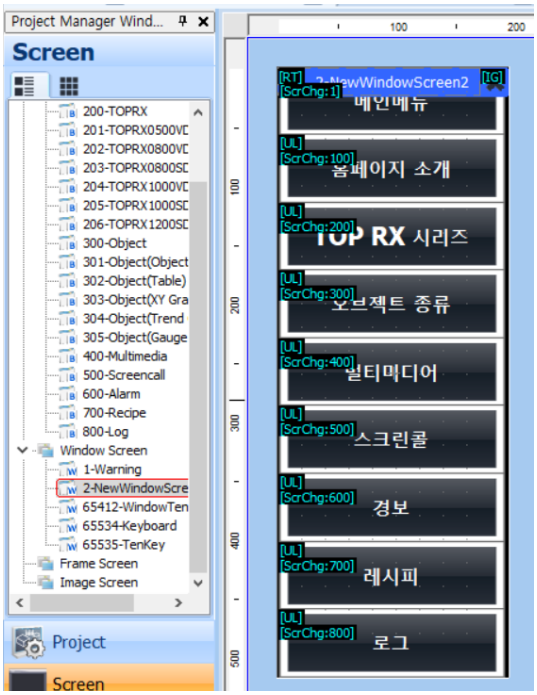
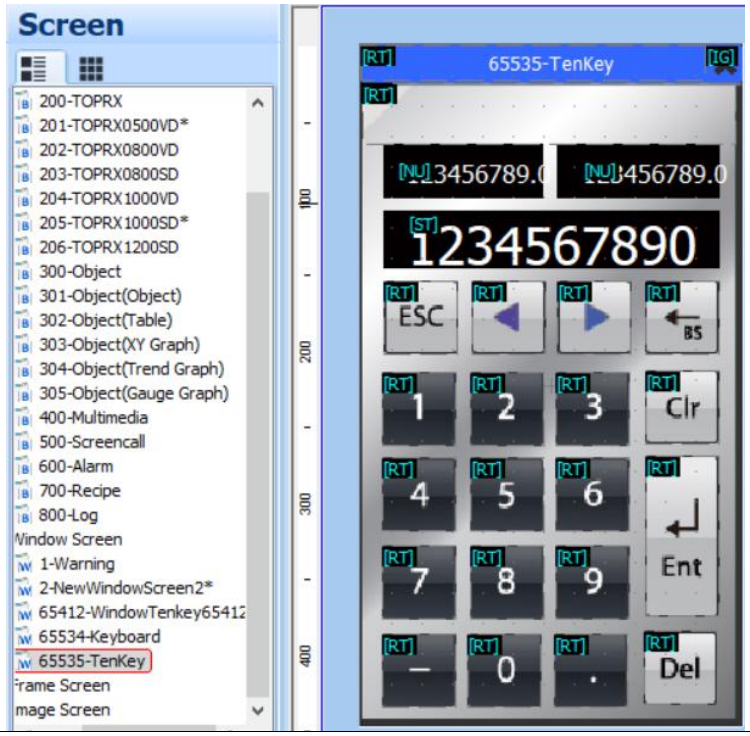
(3) Window Screen



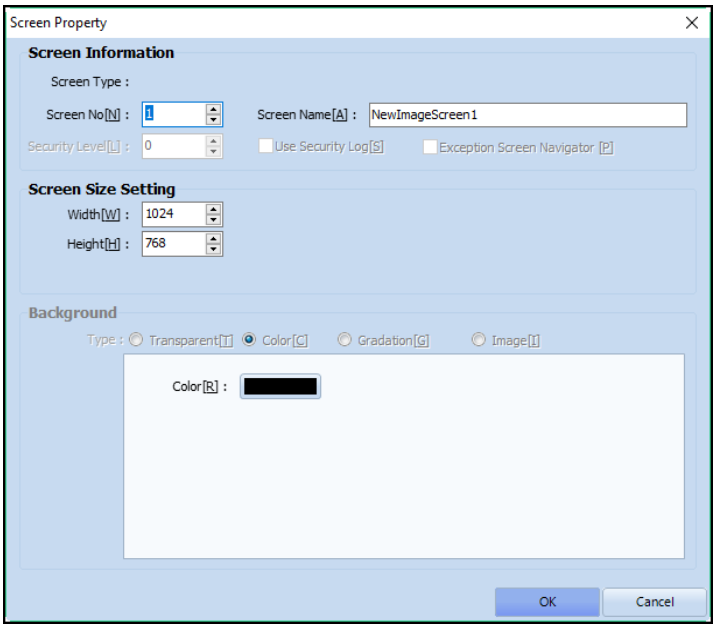
[Pic. Popup Menu of Window Screen]

No	Popup Menu	Description
1	New Screen	Create a new Window Screen.
2	Paste Screen	Paste the pre-copied Window Screen.
3	New Screen Group	Create a New Screen and categorize Window Screen.
4	Import	Add a saved Window Screen.
5	Add Default Tenkey	Add the default Tenkey (65535-TenKey). If there already is a Tenkey, it will not be added.
6	Add String Tenkey	Add Keyboard (65534-Keyboard) that can input texts. Likewise, if there already is one, it will not be added.
7	Add Library Tenkey	Add registered Tenkey (Keypad) Window Screen to Library. Select a Tenkey to register as Window Screen and enter the [Window Number] and press [Add] button at the bottom. The window numbers available for registration at Library Tenkey are set to no. [65400-65499]. 
8	Font Converter	Convert the font registered to Window Screen.

No	Popup Menu	Description
1	Open	Open the selected Window Screen.
2	Close	Close the selected Window Screen.
3	Delete	Delete the selected Window Screen.
4	Copy	Copy the selected Window Screen.
5	Paste	Available for use when [Copy] function has been performed. Paste a copied Window Screen to the current project or as an Window Screen of other projects.
6	Duplicate Screen	Copy the selected Window Screen and add to fit the setting. Press Copy Screen to display Setting Screen. [Default add (Add to project tail)] adds the copied screen after the registered Window Screen with the largest number excluding Tenkey (Keypad) numbers. At this time, the user may configure the incremental value of the screen number. [Change the screen number] inputs [Start Screen Number] and add the copied screen with the entered number. 

7	Rename	Change the name of the selected Window Screen.
8	Script	Configure script that will only be applied to the selected Window Screen.
9	Calculation	Set the calculation that will be applied to the selected Window Screen only.
10	Transmission	It is possible to compare projects saved in the connected touch screen and Project to send the selected Window Screen separately (Individually sent screens will not be included in the upload files.).
11	Export	Save the selected Window Screen under a different name. Screen saved as this can be added with the [Import] function.
12	Insert Window Title	[Add to top] adds the title of Window Screen to the top of the created Window Screen (the window screen size will be fixed.).  [Add to top (Stretch Screen)] adds the title of Window Screen to the top of the created Window Screen (the screen size of the added screen will be stretched.). 
13	Add To User Library	Save the selected Window Screen to User Library.
14	Converter Font	Convert the font registered to Window Screen.

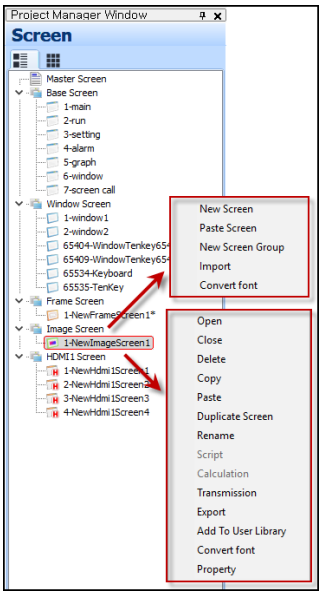
① Window Screen Property



[Pic. Window Screen Property]

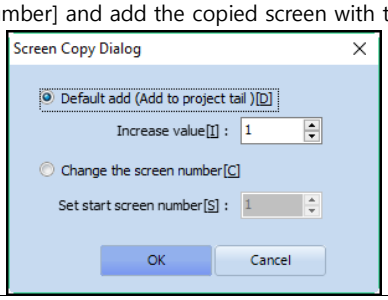
No	Property	Description
1	Screen Number	Show the screen number of Window Screen.
2	Screen Name	Show the name of Window Screen.
3	Security Level	Window Screen do not support this function.
4	Use Security Log	Window Screen do not support this function.
5	Exception Screen Navigator	Window Screen do not support this function.
6	Screen Size Setting	Configure the width, height, and style of Window Screen.
7	Background Type	Select the BG Type of Window Screen. As BG Types, there are [Transparent], [Color], [Gradation], or [Image].

(4) Frame Screen

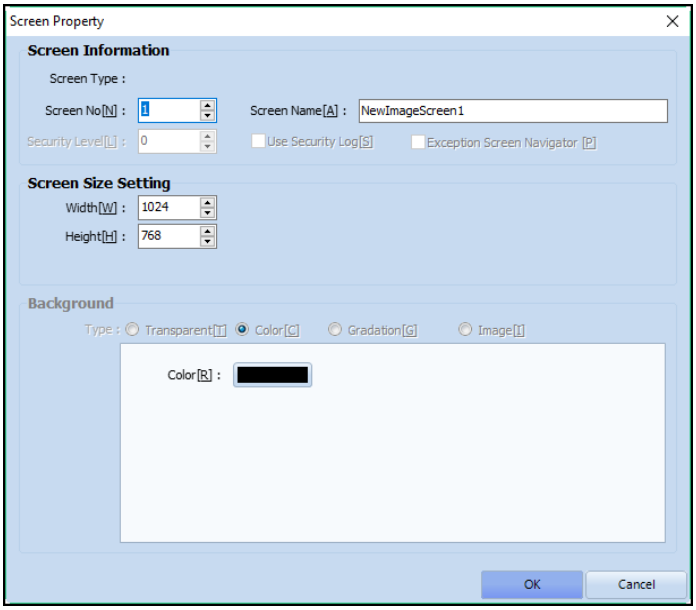


[Pic. Popup Menu of Frame Screen]

No	Popup Menu	Description
1	New Screen	Create a new Frame Screen.
2	Paste Screen	Paste the pre-copied Frame Screen.
3	New Screen Group	Create a New Screen and categorize Frame Screen.
4	Import	Add a saved Frame Screen.
5	Converter Font	Convert font registered to Frame Screen.

No	Popup Menu	Description
1	Open	Open the selected Frame Screen.
2	Close	Close the selected Frame Screen.
3	Delete	Delete the selected Frame Screen.
4	Copy	Copy the selected Frame Screen.
5	Paste	Available for use when [Copy] function has been performed. Paste a copied Frame Screen to the Frame Screen of the current project or as an Frame Screen of other projects.
6	Duplicate Screen	Copy the selected Frame Screen and add to fit the setting. Press Copy Screen to display Setting Screen. [Default add (Add to project tail)] adds the copied screen after the registered Frame Screen with the largest number. At this time, the user may configure the incremental value of the screen number. [Change the screen number] inputs [Start Screen Number] and add the copied screen with the entered number. 
7	Rename	Change the name of the selected Frame Screen.
8	Script	Frame Screen does not support this function.
9	Calculation	Set the calculation that will be applied to the selected Frame Screen only.
10	Transmission	It is possible to compare projects saved in the connected touch screen and Project to send the selected Frame Screen separately (Individually sent screens will not be included in the upload files.).
11	Export	Save the selected Frame Screen under a different name. Screen saved as this can be added with the [Import] function.
12	Add To User Library	Save the selected Frame Screen to User Library.
13	Converter Font	Convert font registered to Frame Screen.

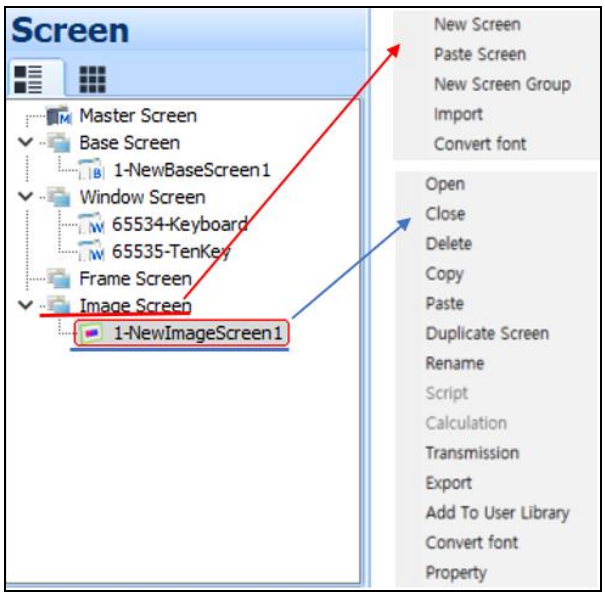
① Frame Screen Property



[Pic. Screen Property of Frame Screen]

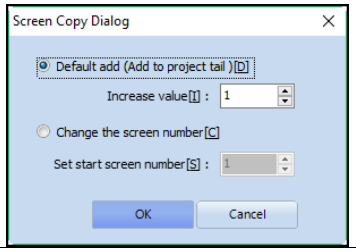
No	Property	Description
1	Screen Number	Show the screen number of Frame Screen.
2	Screen Name	Show the name of Frame Screen.
3	Security Level	Frame Screen does not support this function.
4	Use Security Log	Frame Screen does not support this function.
5	Exception Screen Navigator	Frame Screen does not support this function.
6	Background	Background setting is not available for Frame Screens.

(5) Image Screen

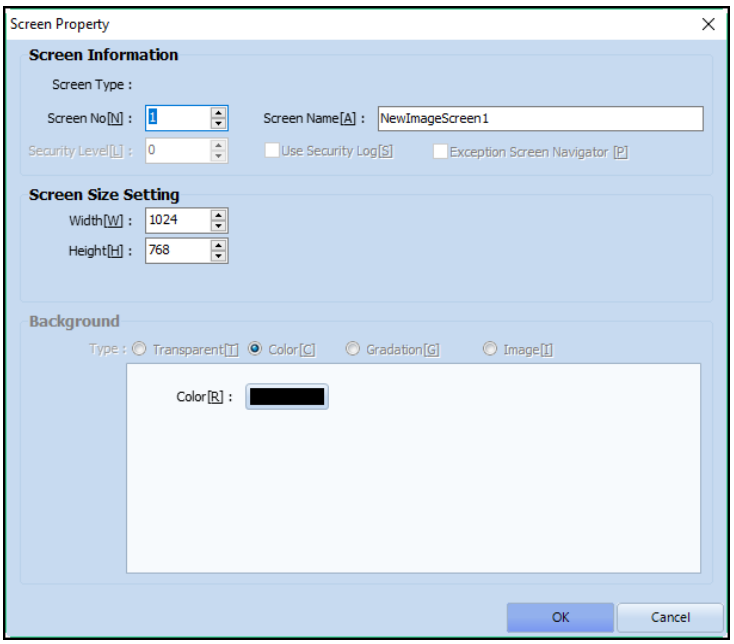


[Pic. Popup Menu of Image Screens]

No	Popup Menu	Description
1	New Screen	Create a new Image Screen.
2	Paste Screen	Paste a pre-copied Image Screen.
3	New Screen Group	Create a New Screen and categorize Image Screens.
4	Import	Add a saved Image Screen.
5	Converter Font	Convert font registered to Image Screen.

No	Popup Menu	Description
1	Open	Open the selected Image Screen.
2	Close	Close the selected Image Screen.
3	Delete	Delete the selected Image Screen.
4	Copy	Copy the selected Image Screen.
5	Paste	Available for use when [Copy] function has been performed. Paste a copied Image Screen to the Image Screen of the current project or as an Image Screen of other projects.
6	Duplicate Screen	Copy the selected Image Screen and add to fit the setting. Press Copy Screen to display Setting Screen. [Default add (Add to project tail)] adds the copied screen after the registered Image Screen with the largest number. At this time, the user may configure the incremental value of the screen number. [Change the screen number] inputs [Start Screen Number] and add the copied screen with the entered number. 
7	Rename	Change the name of the selected Image Screen.
8	Script	Image Screen does not support this function.
9	Calculation	Image Screen does not support this function.
10	Transmission	It is possible to compare projects saved in the connected touch screen and Project to send the selected Image Screen separately (Individually sent screens will not be included in the upload files.).
11	Export	Save the selected Image Screen under a different name. Screen saved as this can be added with the [Import] function.
12	Add To User Library	Save the selected Image Screen to User Library.
13	Converter Font	Convert font registered to Image Screen.

① Image Screen Property



[Pic. Image Screen - Screen Property]

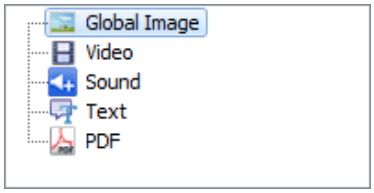
No	Property	Description
1	Screen Number	Show the screen number of Image Screen.
2	Screen Name	Show the name of Image Screen.
3	Security Level	Image Screen does not support this function.
4	Use Security Log	Image Screen does not support this function.
5	Exception Screen Navigator	Image Screen does not support this function.
6	Screen Size Setting	Configure the width, height, and style of Window Screen.
7	Background	Background setting is not available for Frame Screens.

22.1.10 **Global Part**

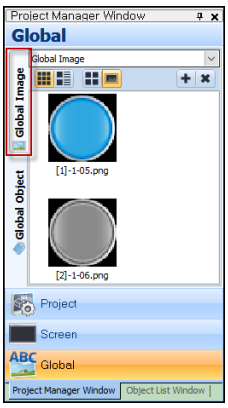
It provides an overall view of [Global Image] and [Global Object] which are the resources of a project.

(1) Global Image

Register [Global Image/Video/Sound/Text/PDF]. Drag & Drop images added to [Global Image] to Editing Screen for registration or register them at [Select Image Dialog]-[Global Image]. Files added to [Global Image/Text/PDF] can be used in [Project]-[Alarm]-[Solution].



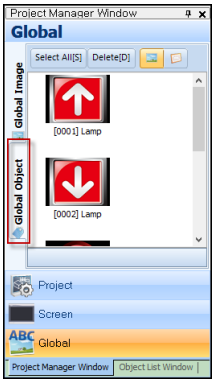
Global Images are numbered according to their registration order. Registered images can be added/deleted by using + and ✖ at the top.



[Pic. Global Image]

(2) Global Object

Global Object is the function that allows the user to register frequently used shapes, tags, and groups for easier use. The concept of Inheritance is applied, making them easy to be edited.

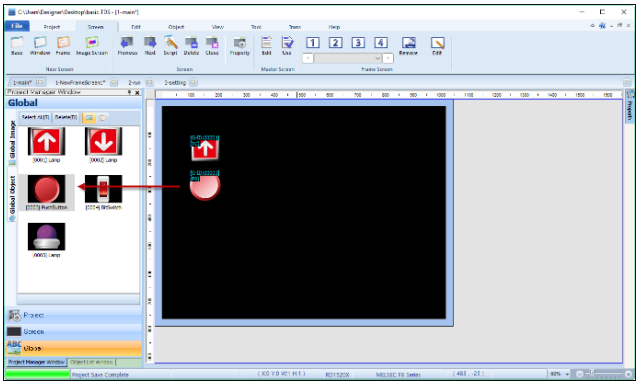


[Pic. Global Object]

Use the registered Global Objects on screen to inherit the property. Inheritance refers to the state where an object has the property intact. Property can be modified at Global Object Window List and the modification will be applied to all properties of global objects registered to screen at once. Therefore, when copying and using object groups with the same property on multiple screens, register them as global objects to use. When editing them, you will need to edit them once only at Global Object List.

① Registration of Global Object

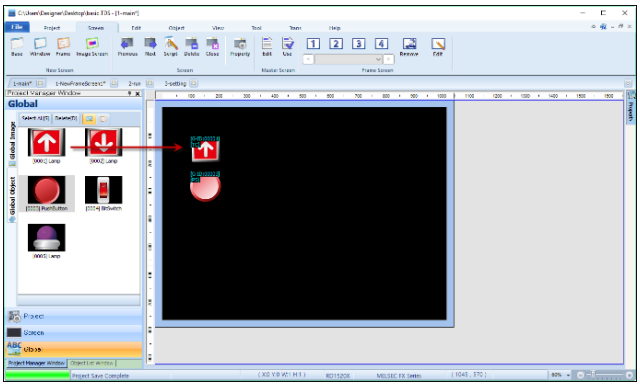
Drag & Drop objects and groups on screen to Global Object Window with the Global Object function.



[Pic. Registration of Global Object]

② Using Global Object

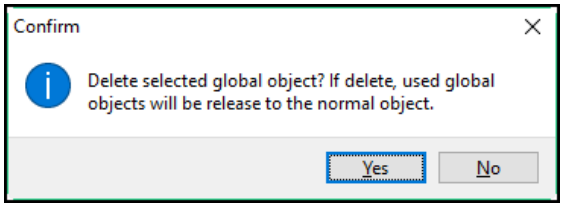
To use lists registered to Global Object Window on screen, select them as shown in the below picture and drag & drop them to register.



[Pic. Use Global Object]

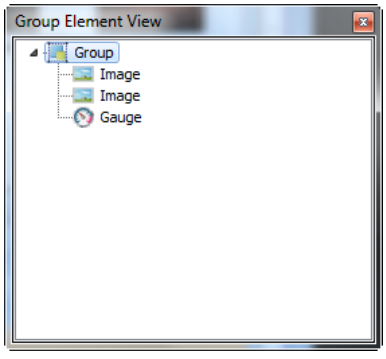
③ Delete and Property Change

Registered Global Objects can be deleted by clicking [Delete] that appears when right-clicking each objects as shown in the below picture. To delete multiple Global Objects at once, select the list to delete and press [Delete] button at the top. Deleting a Global Object will display a message that says [Used Global Object will be disabled to Normal Object.] as below.



[Pic. Delete confirmation message]

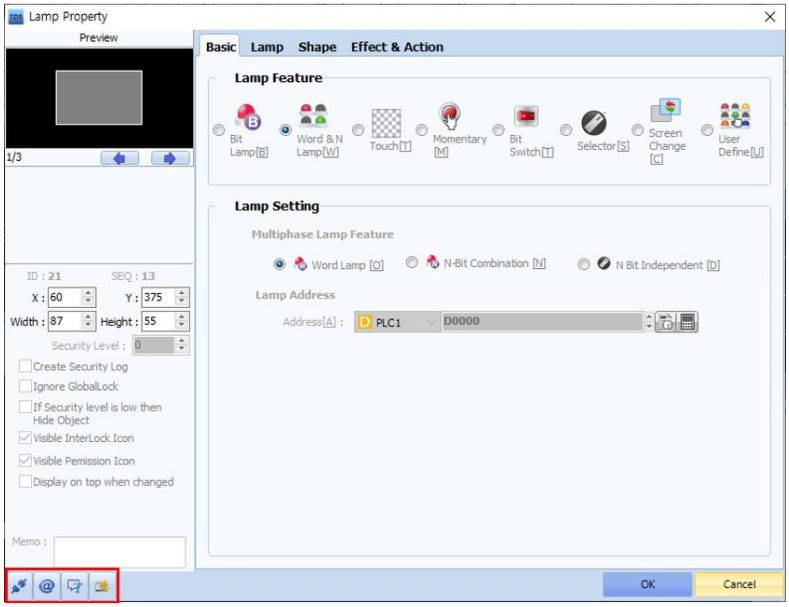
Press [Yes] to delete and [No] to cancel. Right-click an object on Global Object Window and a popup window will appear for you to select and modify property. If Global Object is a group, it will appear in a screen as shown in the below picture for you to modify properties of each object in the group.



[Pic. Group Property List]

④ Cancel Inheritance

Cancel Inheritance all or partially to edit property. Once Cancel Inheritance is done, any changes made in Global Object List will not be applied.



[Pic. Cancel Inheritance of Shapes]

Double click the shape imported from Global Object and registered on screen to display above Property Screen. Cancel Inheritance and Redefine Effect are common parts for all objects. Partial Cancel Inheritance varies slightly due to object properties, and individual functions are as below.

No	Partial Clear	Image	Description
1	Cancel Inheritance		Clear the inheritance. All properties are made available for editing.
2	Redefine Address		Make the re-definition of addresses from property available.
3	Redefine Image		Make the re-definition of Images from property available.
4	Redefine Caption		Make the re-definition of Text from property available.
5	Redefine Effect		Make [Effect & Action] from properties available for editing.

Cancel Inheritance to activate the settings part to edit properties. However, it will not inherit modified Global Object properties and the changes will not be applied.

List Window

List Window shows the list of objects/groups registered to the current editing screen to enable overall management. List Window includes [All], [Selected], and [User] pages.

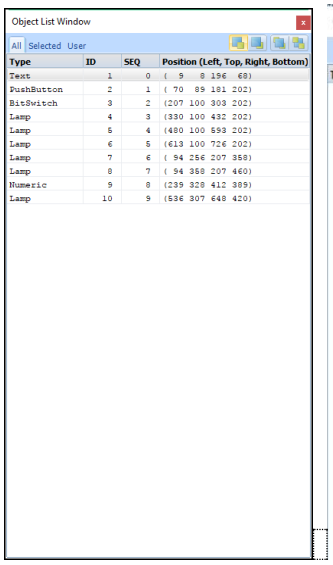
22.1.11 Page Type

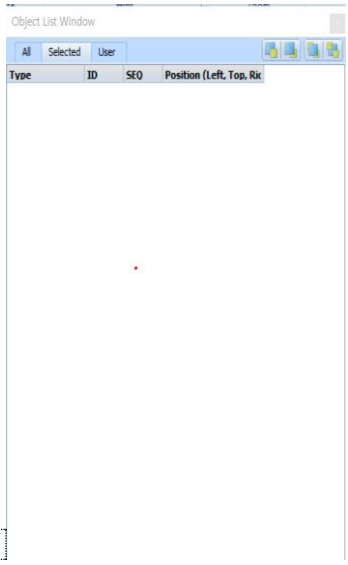
(1) All

Show all objects and groups of objects that are on screen. Display their types, ID, order, and position.

(2) Selected

Show objects currently selected by the user only.

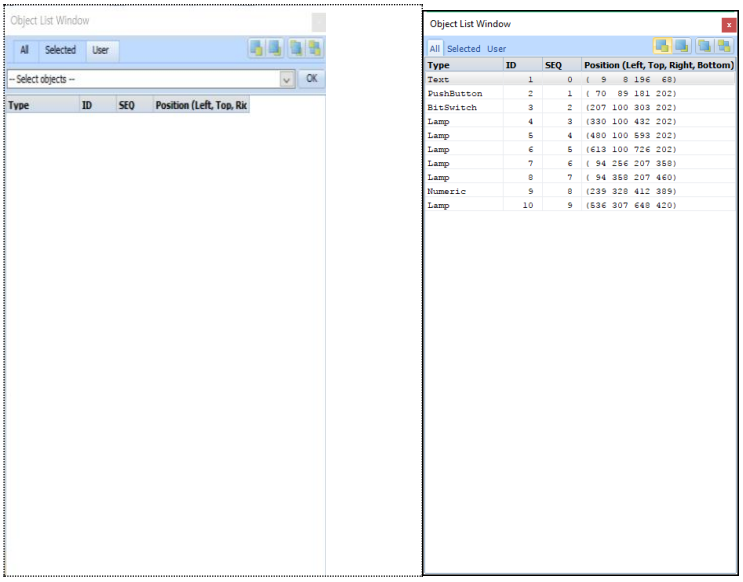




[Pic. List Window - All] [Pic. List Window - Selected]

(3) User

Show the types of objects selected by the user only from all objects. Select the type of object you want as below to display a list of selected objects.



[Pic. List Window – User]

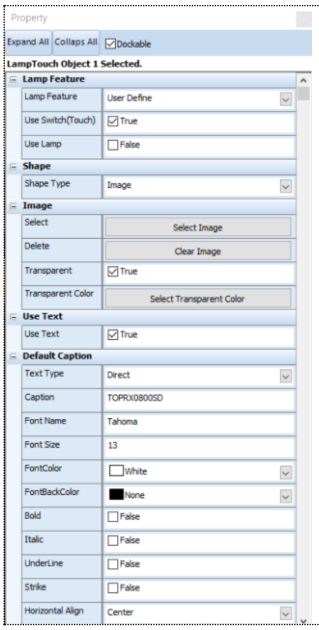
22.1.12 **List Order**

Set the order of the object lists at the top right corner of List Window screen. Each function is as follows.

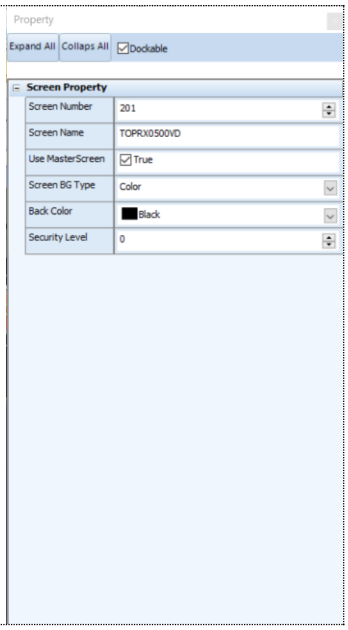
No	Sort Order	Image	Description
1	Send Down		Send the selected object down by one step.
2	Send Up		Send the selected object up by one step.
3	Send Up End		Send the selected object to the very top.
4	Send Down End		Send the selected object to the very bottom.

Property Window

In Property Window, the user may see or edit the properties of screens or objects registered to screens.



[Pic. Property – Expand All]



[Pic. Property – Collapse All]

22.1.13 **Composition of Property Window**

Describe detailed contents of Property Window.

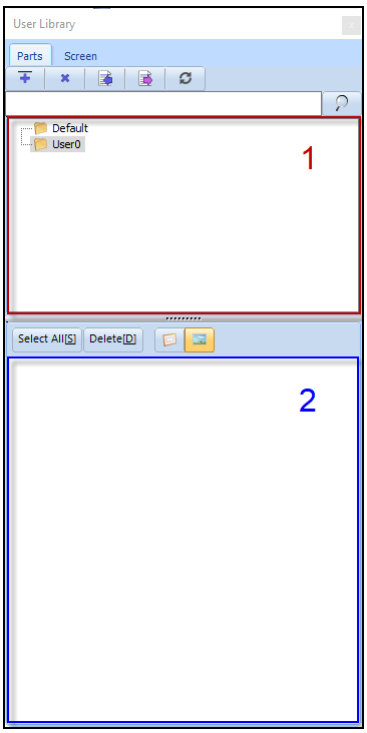
No	Detailed Settings	Description
1	Expand All	Expand all properties to see.
2	Collapse All	Collapse all properties and display them by categories.
3	Dock-able	Check to dock Property Window to the right. If unchecked, Property Window will be separated and will not be docked.

User Library Window

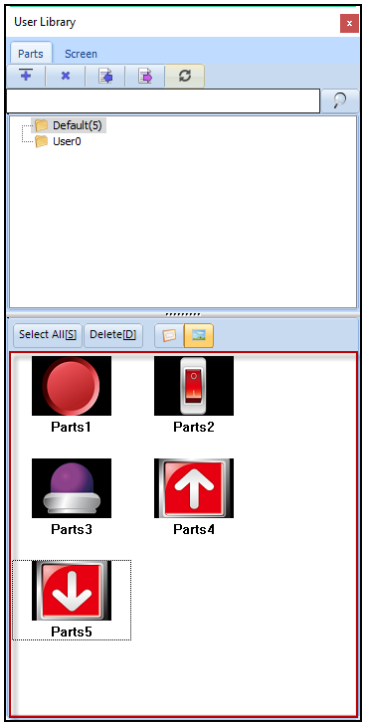
Register frequently used objects or screens to User Library for easier use.

22.1.14 **Registration of User Library**

You may configure folders to compose User Library in the area no. 1 of below [Pic. User Library]. After completing the folder configuration, select the folders you want and drag & drop the objects you wish to add in the area no. 2 to add.



[Pic. User Library]

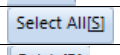


[Pic. Add Object]

22.1.15 **Use User Library Window**

Register drafted objects and screens to User Library and drag & drop the objects and screens to screens where you wish to add them to.

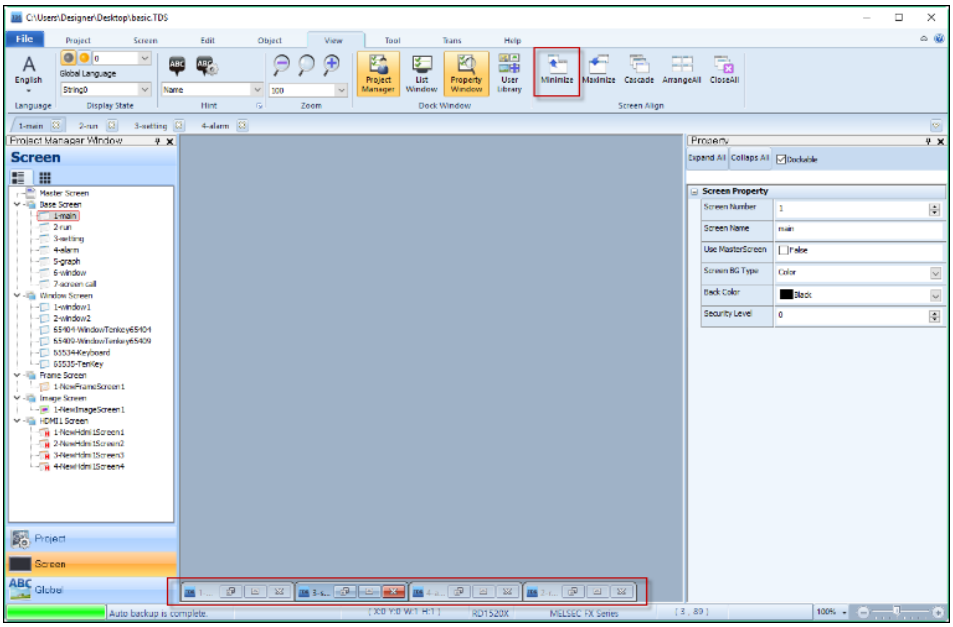
22.1.16 **Composition of User Library Window**

No	Property	Description
1	Parts	Open the folder that saves objects in User Library.
2	Screen	Open the folder that saves screens in User Library.
3		Add a new folder. To create a subsidiary folder, right-click a top folder and select Add Group.
4		Delete the selected folder.
5		Import the saved User Library.
6		Save the currently drafted User Library.
7		Select all files in a folder.
8		Delete the selected file.
9		Show file in its name.
10		Show file in image.

Screen Align

22.1.17 Minimize

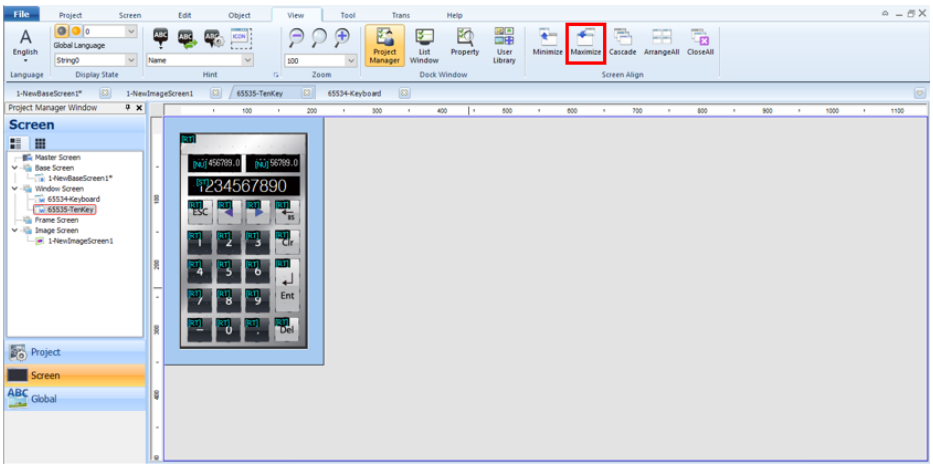
Minimize all screens open in the program and sort them at the bottom.



[Pic. Minimize]

22.1.18 Maximize

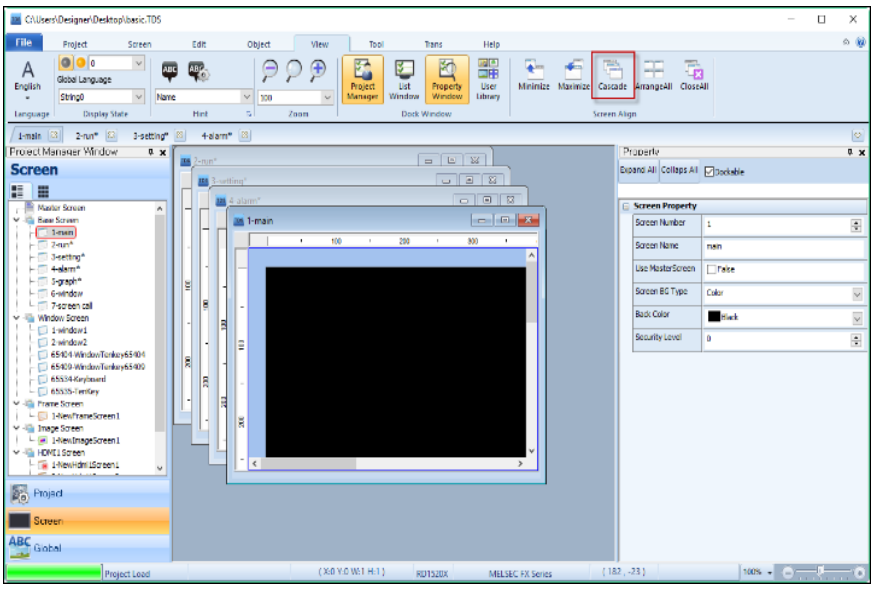
Maximize all screens open in the program.



[Pic. Maximize]

22.1.19 Cascade

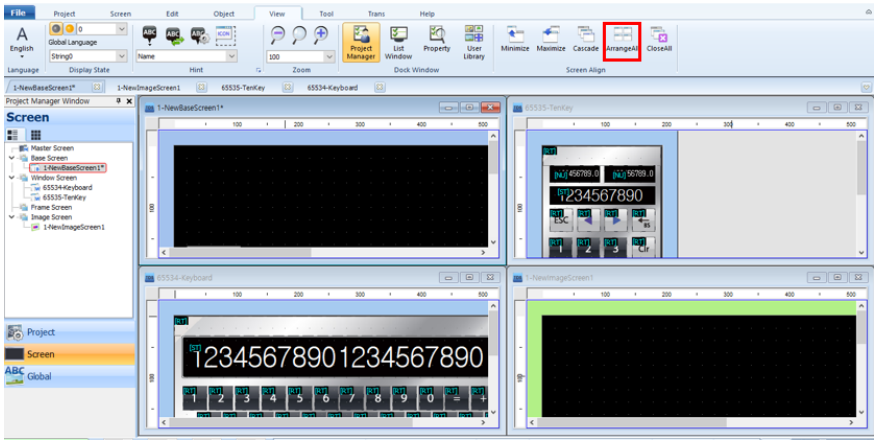
Cascade and sort all screens open in the program in order.



[Pic. Cascade]

22.1.20 **Arrange All**

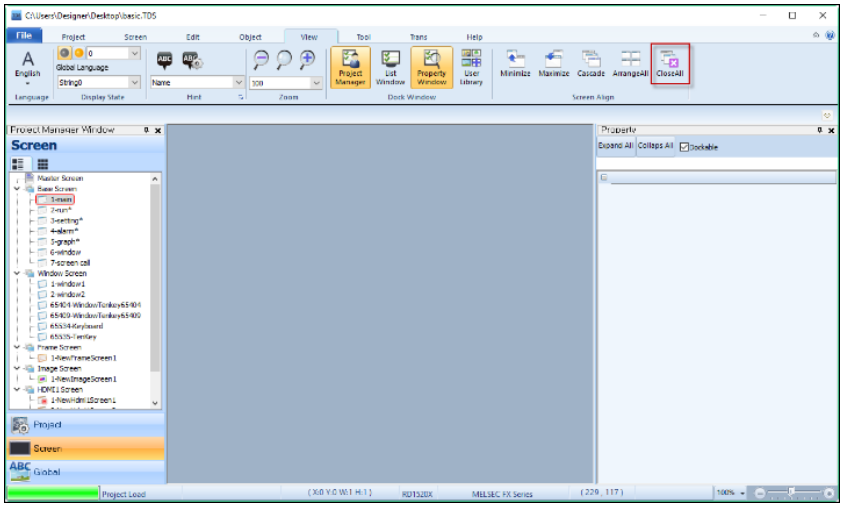
Arrange and sort all screens open in the program in order.



[Pic. Arrange All]

22.1.21 **Close All**

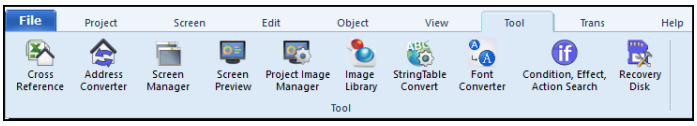
Close all screens open in the program.



[Pic. Close All]

CHAPTER 23 - Tool Menu

[Tool] menu has functions that help project editing and management. In particular, it offers functions that search used objects and addresses and convert addresses. With these functions, you may simply apply them to other projects or change them all at once.

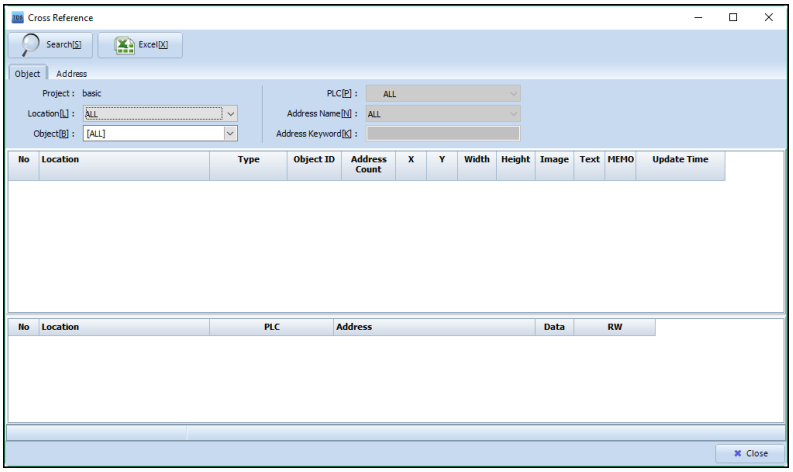


[Pic. Tool Menu]

No	Tool Menu	Description
1	Address/Object Search	This tool searches addresses and objects that have been used in projects and manage them in Excel file format.
2	Convert Address	This tool is for modifying and editing addresses used in a project at once.
3	Screen Manager	This tool manages Base, Window, Frame, Image, and HDMI Screens.
4	Screen Preview	This tool provides preview of project screens and helps the user to save them as image files.
5	Project Image Tool	This tool manages images used in projects.
6	Image Library	This tool manages libraries used by the project.
7	Convert String	This tool converts texts used in a project to String Table or String Table to general texts.
8	Font Converter	This tool is used to change all fonts used in a project.
9	Condition, Effect, Action Search	This tool searches and manages condition, effects, and actions that are being used by the project.
10	Recovery Disk	This tool creates disks that initialize all programs and data of touch screen.

Address/Object Search

[Search] addresses and objects being used by the project. Also, sort them into an [Excel File] to manage objects/addresses used while building a project.

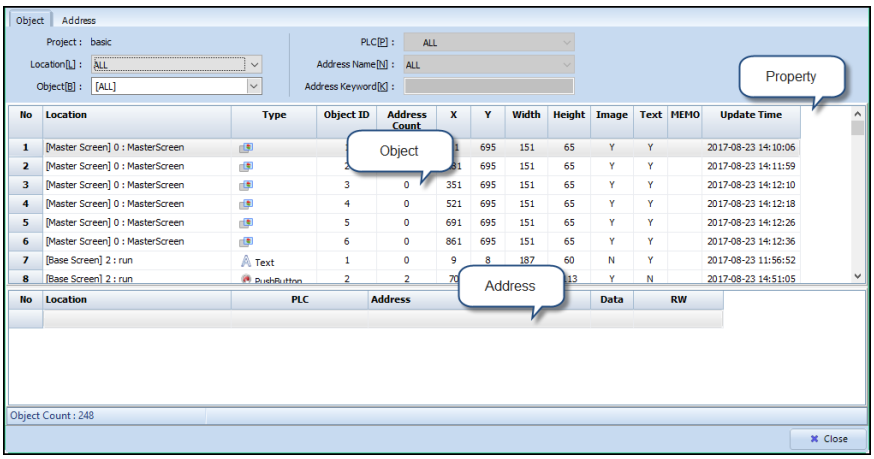


[Pic. Cross Reference]

No	Address/Object Search	Description
1	Search [S]	Search project objects and addresses per the set condition.
2	Excel [X]	Export search results in Excel file format.

23.1.1 **Object Search**

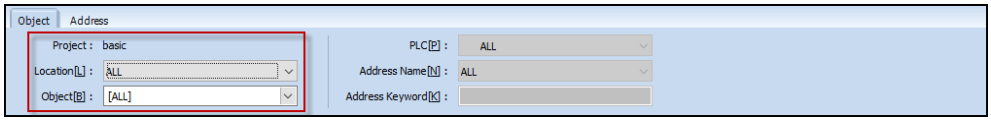
Search all objects that are being used in the project per the search condition. [Mouse Double-click] the addresses/objects in the search result and the object's property window will popup. You may edit property values in that popup screen at any time. Edit and close the window to display the edited result straight away.



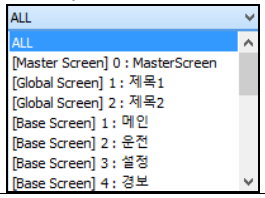
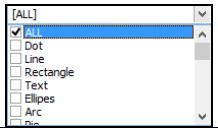
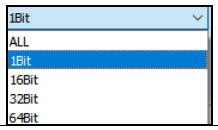
[Pic. Object Search]

(1) Object Search Property

Object search is performed based on the filter setup. Select the location and type of objects, the filtering value, to configure the search condition.



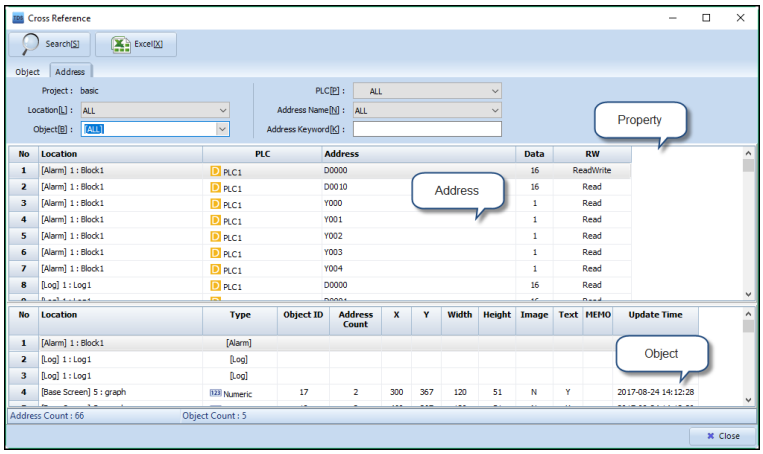
[Pic. Object Search Property]

No	Object Search	Description
1	Project	Show the current project name.
2	Location [L]	Select a screen to search. There are Master Screen, Base Screen, Window, and Frame for the types of screen. Select All to search all objects/addresses on the current screen. 
3	Object [B]	Set the object to search from the selected screen or all screens. Select then search the object to search, then the objects created in the screens selected at [Location] will be searched for. 
4	Size	Select the size (bit) of data to search for. 

23.1.2 **Address Search**

Search all addresses that are in use in the project per the search condition.

[Double Click] the search result addresses/objects to edit their property values.

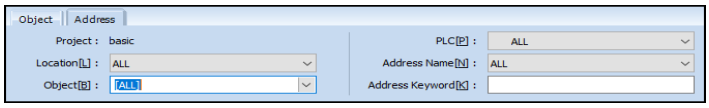


[Pic. Address Search]

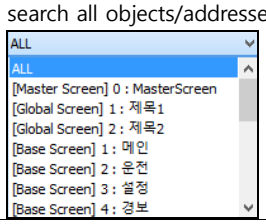
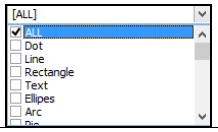
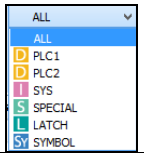
(1) Address Search Property

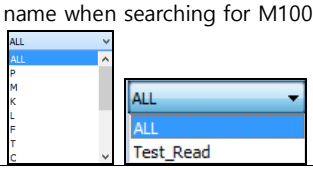
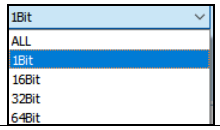
Address Search is performed per the filtering setting.

Select Alias, Address Name, Address Number, and Size of PLC, the filtering value, to setup the search condition.



[Pic. Address Property]

No	Address Search	Description
1	Project	Show the current project name.
2	Location [L]	Select a screen to search. There are Master Screen, Base Screen, Window, and Frame for the types of screen. Select All to search all objects/addresses on the current screen. 
3	Object [B]	Set the object to search from the selected screen or all screens. Select then search the object to search, then the objects created in the screens selected at [Location] will be searched for. 
4	PLC[P]	Select the address type to search for. E.g.) Select PLC1 for the PLC when searching for M1000 of PLC1. 
5	Address Name [N]	Select the address name to search for.

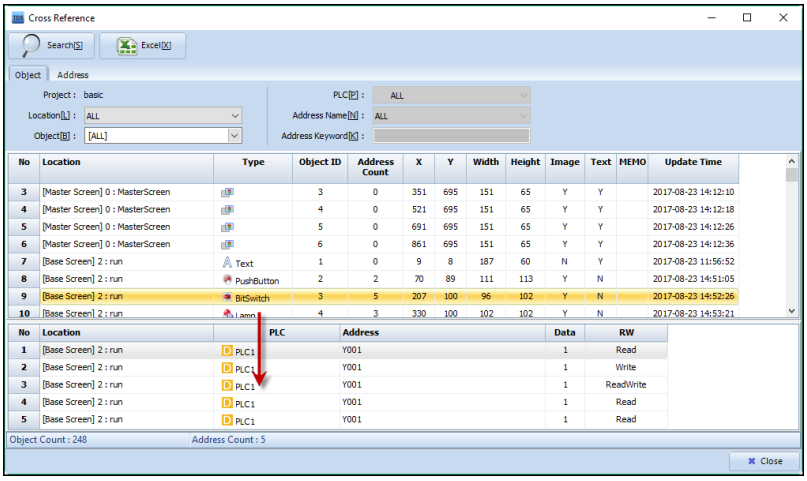
		E.g.) Select M for the address name when searching for M1000 of PLC1. 
6	Address Keyword [K]	Input the search address value. E.g.) Select 1000 as the address keyword when searching for M1000 of PLC1.
7	Size	Select the size (bit) of data to search for. 

23.1.3 Search Result

Output the search results in a list to [Sort] each column and modify them by opening their [Object] and [Address] property windows.

(1) Object Search Result

If [Object] is searched per the standard, the object search result list is located at the center. Select an [Object] to output its [Address] at the bottom of the result list. [Status Bar] displays the count of the search result.

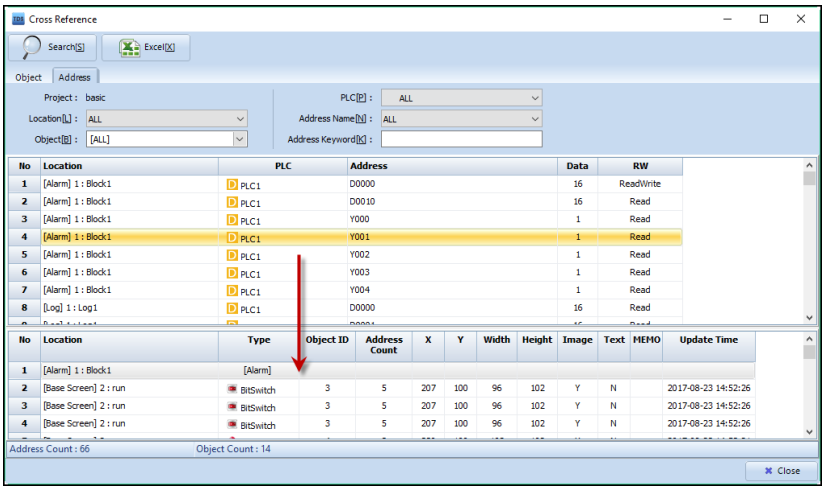


[Pic. Object Search Result]

Search Result List		Description
Object	No	Show the order of the searched objects.
	Location	Show the screen where the searched object is located.
	Type	Show the type of Object.
	Object ID	Show the Object ID of the searched object.
	Address Count	Show the use count of the searched object.
	X	Show the X coordinate of Object.
	Y	Show the Y coordinate of Object.
	Width	Show the length of Object.
	Height	Show the height of Object.
	Image	Show whether or not image has been used by the Object.
	Text	Show whether or not text has been used by the Object.
	MEMO	Show the memo recorded in Object Edit Screen.
	Update Time	Show the last modification date.

(2) Address Search Result

If [Address] is searched per the standard, the address search result list is located at the center. Select an [Address] to output its [Object] at the bottom of the result list. [Status Bar] displays the count of the search result.

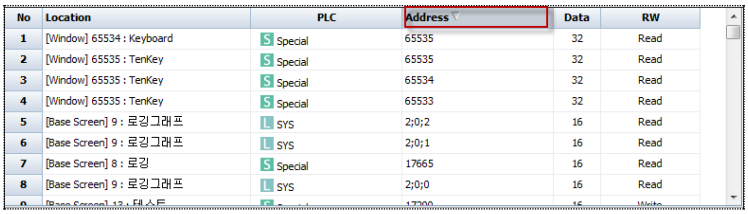


[Pic. Address Search Result]

Search Result List		Description
Address	No	Show the order of the searched address.
	Location	Show the screen where the searched address is located.
	PLC	Show the type of Address.
	Address	Show the number of the searched address.
	Data	Show the length of data that the address is using.
	RW	Show the use of Read, Write, or Read&Write by the address.

(3) Sort Search Result

To sort in [Ascending] and [Descending] order, [Mouse Click] the column title of the result list and the following small arrow will appear to sort the results.



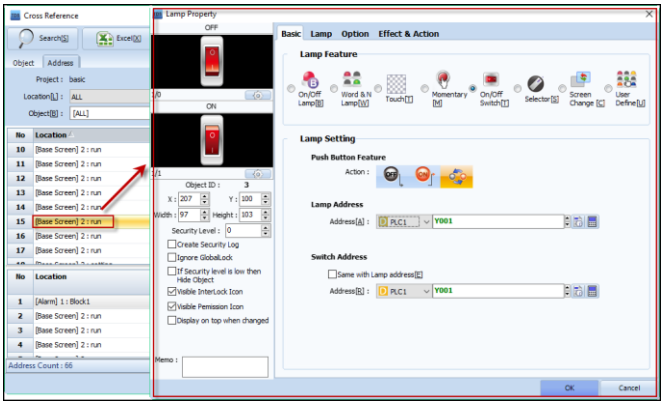
[Pic. Sort Search Result]

No	Sorting Option	Description
1		Sort by [Ascending] order.
2		Sort by [Descending] order.

(4) Edit Object & Address

It is simple to edit the search result of [Object] of [Address].

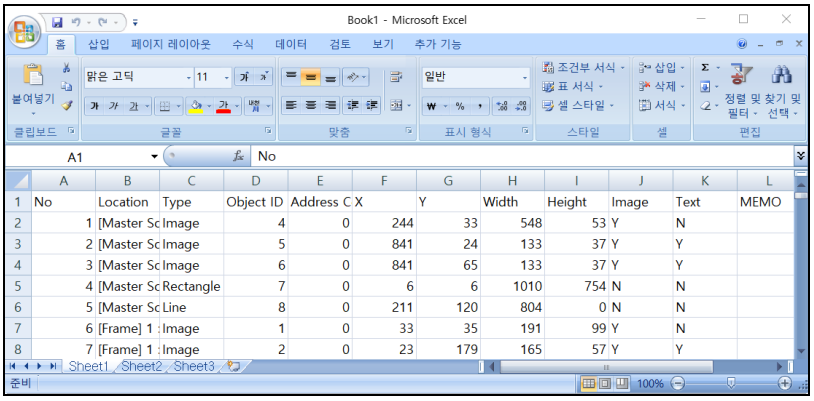
[Mouse Double-click] the [Object] or [Address] to edit as the following picture to popup the object's property window for editing.



[Pic. Edit Object & Address]

23.1.4 **Excel**

Save the search result as an Excel file. Click [Excel] to automatically create an Excel file as the following picture.



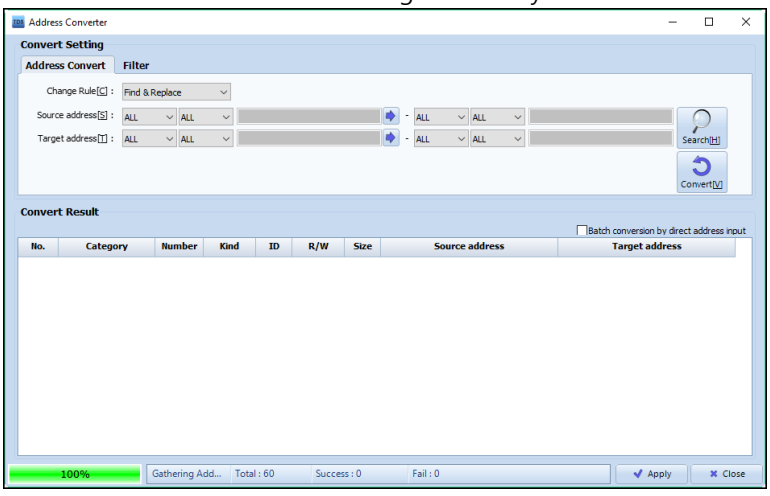
No	Location	Type	Object ID	Address C	X	Y	Width	Height	Image	Text	MEMO
1	1	[Master Sc	Image	4	0	244	33	548	53	Y	N	
2	2	[Master Sc	Image	5	0	841	24	133	37	Y	Y	
3	3	[Master Sc	Image	6	0	841	65	133	37	Y	Y	
4	4	[Master Sc	Rectangle	7	0	6	6	1010	754	N	N	
5	5	[Master Sc	Line	8	0	211	120	804	0	N	N	
6	6	[Frame] 1	Image	1	0	33	35	191	99	Y	N	
7	7	[Frame] 1	Image	2	0	23	179	165	57	Y	Y	

[Pic. Excel]

Convert Address



[Search] and [Convert] addresses registered to a project. Use [Filter] to set search condition. Modify all address values within a certain searched range or modify individual address.



[Pic. Convert Address]

No	Convert Address	Description
1	Search [S]	Search the Target Address to convert.
2	Convert [V]	Convert the Source Address to Target Address.
3	Apply [A]	Apply the changes.
4	Close	Close the Address Converter window.

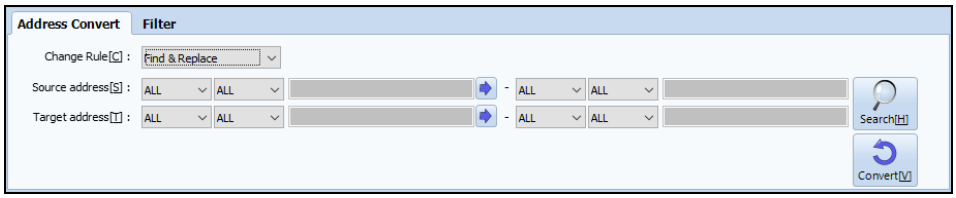
23.1.5 **Convert Setting**

Configure search options and search the Target Address to modify.

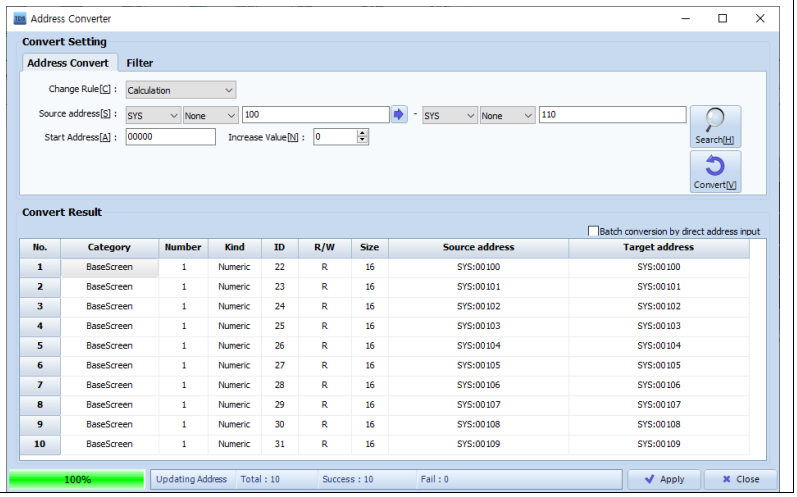
Also, use Filter option to configure and search for screen and global data.

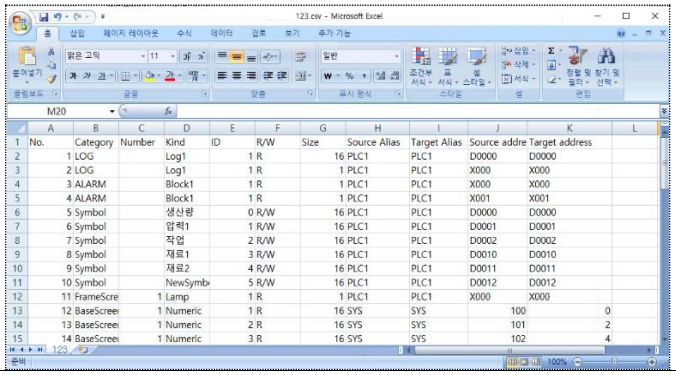
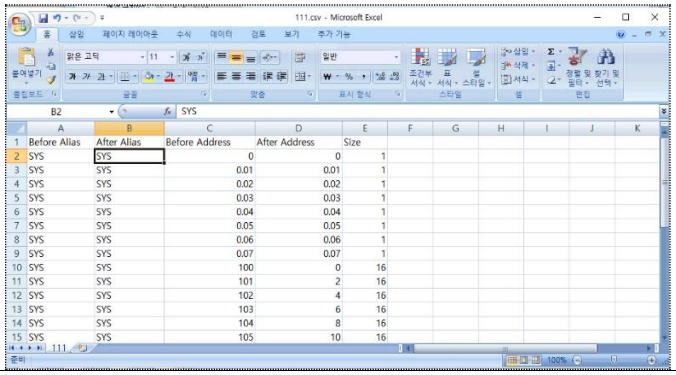
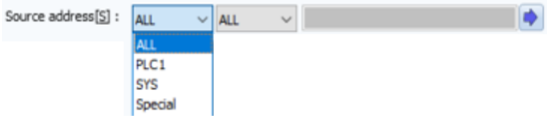
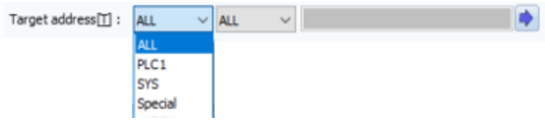
(1) Convert Address

Configure the address type and range of the [Target Address] and press [Search] button.



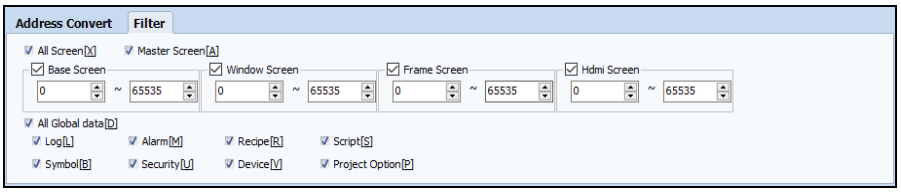
[Pic. Address]

No	Convert Address		Description
1	Change Rule	Increase/Decrease	Address will be increased or decreased by the Inc/Decrease value set to Source Addresses. If the Inc/Decrease value is set to 1 and the Source Address is internal address number 1, the Target Address will be internal address number 1. 
		Find & Replace	Convert the Source Address to the Target Address. If the Address Range of the source and target addresses are the match, the conversion is performed normally. However, please take caution as if they do not match, some of them may not be converted.
		Calculation	When converting Target Address, increase or decrease the set Start Address by Inc/Decrease Value to convert the address. E.g.) When the Target Address is SYS 00100 - SYS 00110 and Start Address is 0000 while the Increment Value is 3, then the conversion will be: SYS 00100 => SYS 00000, SYS 00101 => SYS 00003 

		User Define(1:1)	Import CSV file that has been drafted according to the format and convert each address per object to 1:1. Run [Export] to see it as below format. Enter conversion value and save Target Alias (Address Type) and Target Address (change address) then run [Import] to [Convert] and it will be converted to CSV file. 
		User Define(1:N)	Import CSV file that has been drafted according to the format and convert address to 1:N. Unlike 1:1, it changes addresses in batch. Run [Export] and it will be as below format. Input the value to convert After Alias (Address Type) and After Address (Target Address) and save. Run [Import] to [Convert] and it will be converted to CSV file. 
2	Source Address		Set the type and range of the existing addresses. 
3	Target Address		Set the type and range of the Target Address to replace Source Address. 
4	Search		Search by [Search Type], [Search Range], and [Filter].
5	Convert		Convert [Target Address] per the set convert method.

(2) Filter

Select the location to perform an address search.

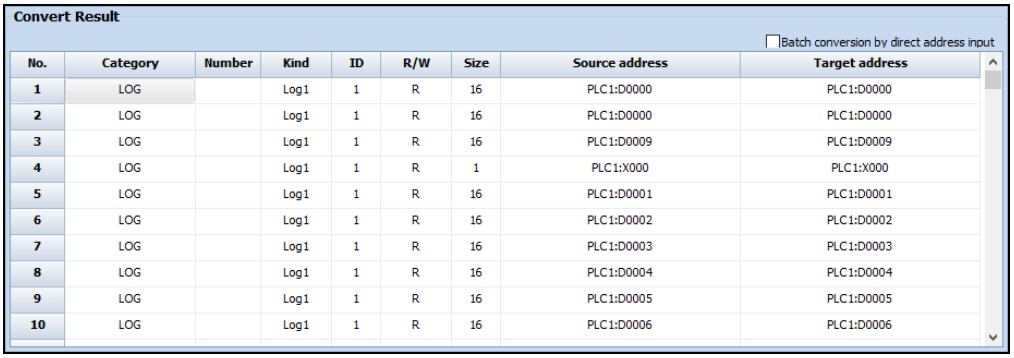


[Pic. Filter]

No	Filter Property	Description
1	All Screen[X]	Configure to search from Full Screen mode.
2	Master Screen[A]	Add Master Screen to the search condition.
3	Base Screen	Add Base Screen to the search condition.
4	Window Screen	Add Window Screen to the search condition.
5	Frame Screen	Add Frame Screen to the search condition.
6	Hdmi Screen	Add HDMI Screen to the search condition.
7	All Global Data[D]	Configure to search Global Data.
8	Log[L]	Add Log to the search condition.
9	Alarm[M]	Add Alarm to the search condition.
10	Recipe[R]	Add Recipe to the search condition.
11	Script[P]	Add Script to the search condition.
12	Security[U]	Add Security Page to the search condition.
13	Device[V]	Add a device (PLC) that has a PLC address assigned to the search condition.
14	Project Option[P]	Add settings at Project Property to the search condition.
15	OPC UA[O]	Add settings at OPC UA to the search condition.

23.1.6 **Convert Result**

Show the result of running the set [Source Address] and [Target Address] values with the [Search] and [Convert] buttons.



No.	Category	Number	Kind	ID	R/W	Size	Source address	Target address
1	LOG		Log1	1	R	16	PLC1:D0000	PLC1:D0000
2	LOG		Log1	1	R	16	PLC1:D0000	PLC1:D0000
3	LOG		Log1	1	R	16	PLC1:D0009	PLC1:D0009
4	LOG		Log1	1	R	1	PLC1:X000	PLC1:X000
5	LOG		Log1	1	R	16	PLC1:D0001	PLC1:D0001
6	LOG		Log1	1	R	16	PLC1:D0002	PLC1:D0002
7	LOG		Log1	1	R	16	PLC1:D0003	PLC1:D0003
8	LOG		Log1	1	R	16	PLC1:D0004	PLC1:D0004
9	LOG		Log1	1	R	16	PLC1:D0005	PLC1:D0005
10	LOG		Log1	1	R	16	PLC1:D0006	PLC1:D0006

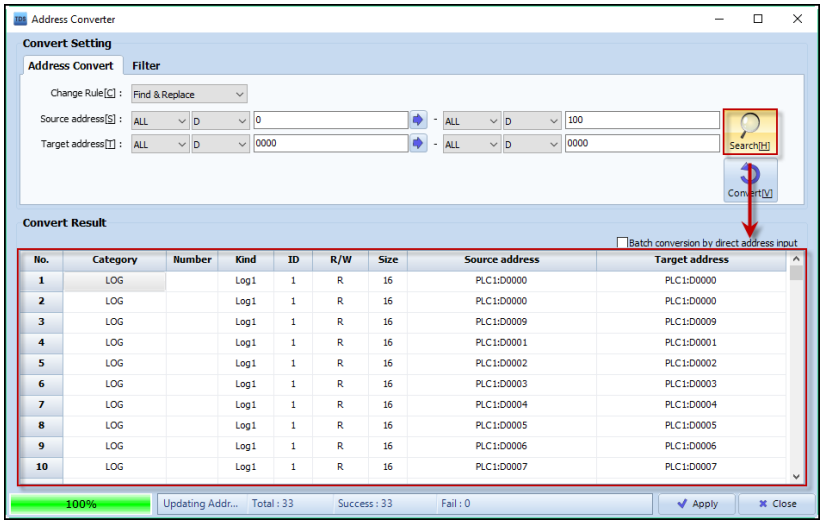
[Pic. Search & Convert Result]

No	Convert Result Property	Description
1	Batch conversion by direct address input	Manually input the address to change to in the searched result window without using Convert Address page, then change all remaining addresses in batch. They will be converted to the rules of the target address. That is, if the target addresses are in order (e.g., address no. 0000, 0001, 0002, ...), the target addresses will also be converted in a sequential order.
2	Number	Show the order of searched data.
3	Category	Show the location of searched data.
4	Screen Number	Show the screen number of searched data.
5	Kind	Show the object type of searched data.
6	ID	Show the object ID of searched data.
7	Read/Write	Show whether searched data is Read or Write type (Read: R, Write: W, Read/Write: R/W).
8	Size	Show the address size of searched data.
9	Source address	This is the address to convert to. Set [To Reference] and show the search results.
10	Target Address	This is the address that has been [Converted] according to the conversion method. It can be individually converted.

23.1.7 Use Convert Address (Increase/Decrease/Find&Replace/Calculation)

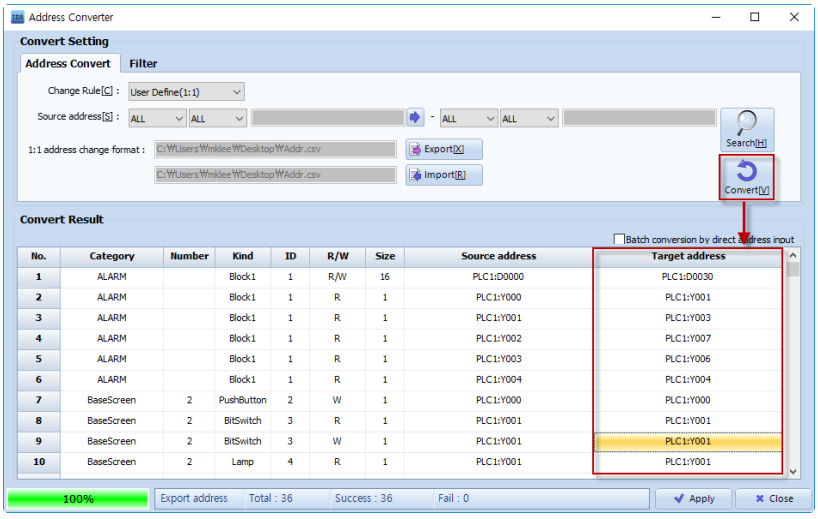
(1) Convert Address is done in the process of [Search]-[Convert]-[Apply].
Search the address to convert and setup the conversion rule and method to perform conversion and apply the settings to complete the conversion.

Select [Filter] setting and [Target Address] range and [Search]. Press [Search] and the searched addresses will appear at the bottom of [Convert Result]. As the conversion rule or method have not been setup, target addresses will appear as conversion address.



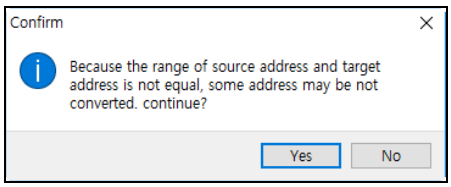
[Pic. Use Convert Address 1]

(2) Setup [Change Rule] and configure [Target Address] and [Change Condition (Start Address, Incremental Value, etc.)] according to each [Change Rule] and proceed to [Convert]. Press [Convert] and the changed address will be displayed at [Change Address] in [Convert Result] at the bottom.



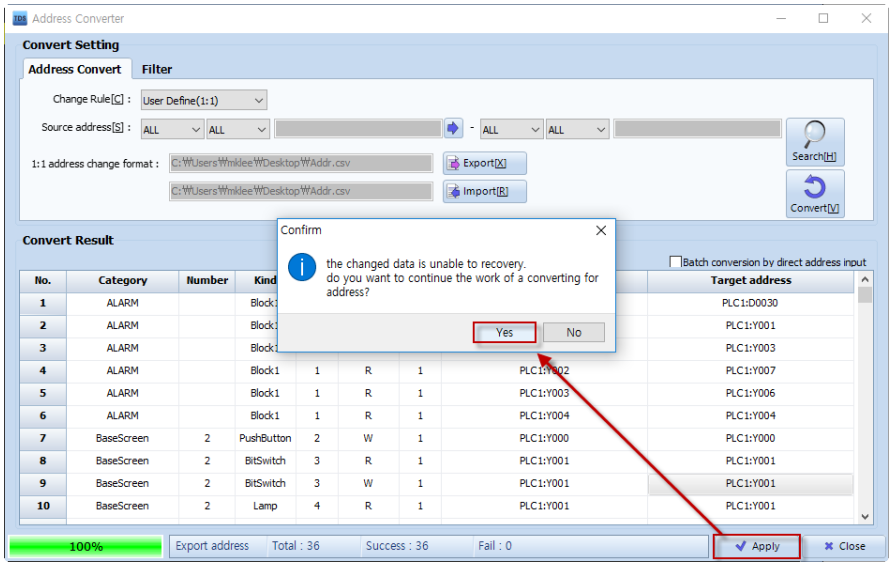
[Pic. Use Convert Address 2]

(3) In case there is an issue in address, following error window will pop up for you to check and edit the address with the issue.



[Pic. Use Convert Address 3]

(4) Use [Apply] button to make the final confirmation. Select Yes to complete Convert Address.

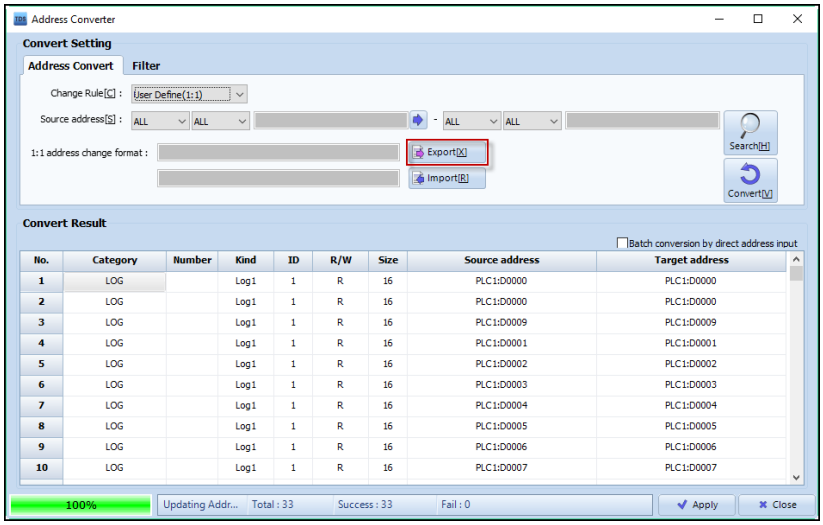


[Pic. Use Convert Address 4]

23.1.8 Use Convert Address (User Define)

Convert Address using User Define (1:1, 1:N) is also done in the process of [Search]-[Convert]-[Apply]. Search the address to convert and use Excel file to set the address to convert and proceed to the conversion.

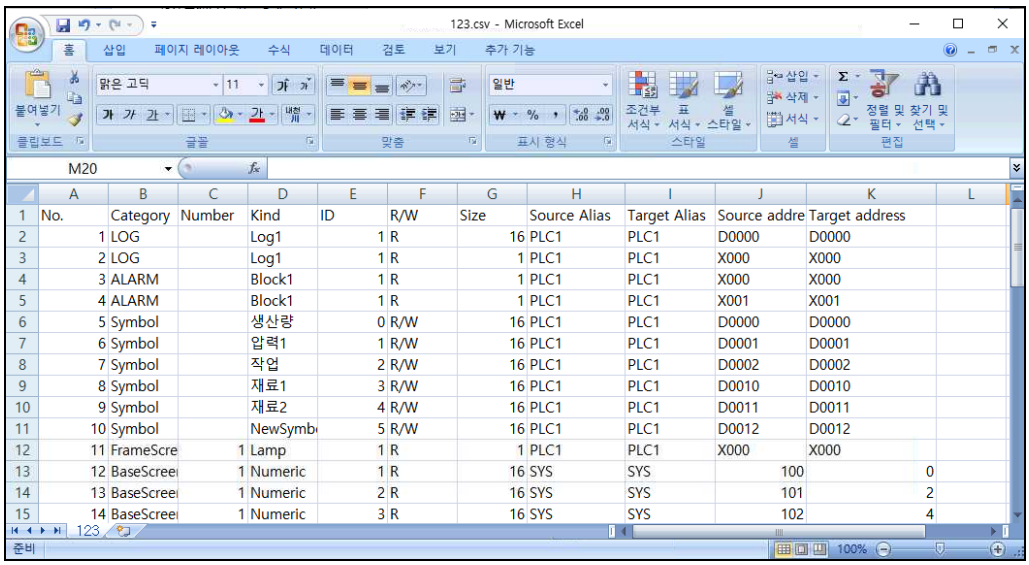
(1) Select [Filter] setting and [Target Address] range and [Search]. Press [Search] and the searched addresses will appear at the bottom of [Convert Result]. Save the search results as Excel file with the [Export] function.



[Pic. User Define-Export]

(2) Open the Excel file to setup the replacement address. For 1:1, each address need to be configured individually. However, for 1:N, they need to be configured in batch by address. Therefore, even for the same SYS 00100 address number, 1:1 requires individual configuration by object, while 1:N converts all SYS 00100 addresses regardless of objects.

For 1:1, input the value to convert Target Alia (Address Type) and Target Address and save, then run [Import]. [Convert], then they will be converted to CSV files.



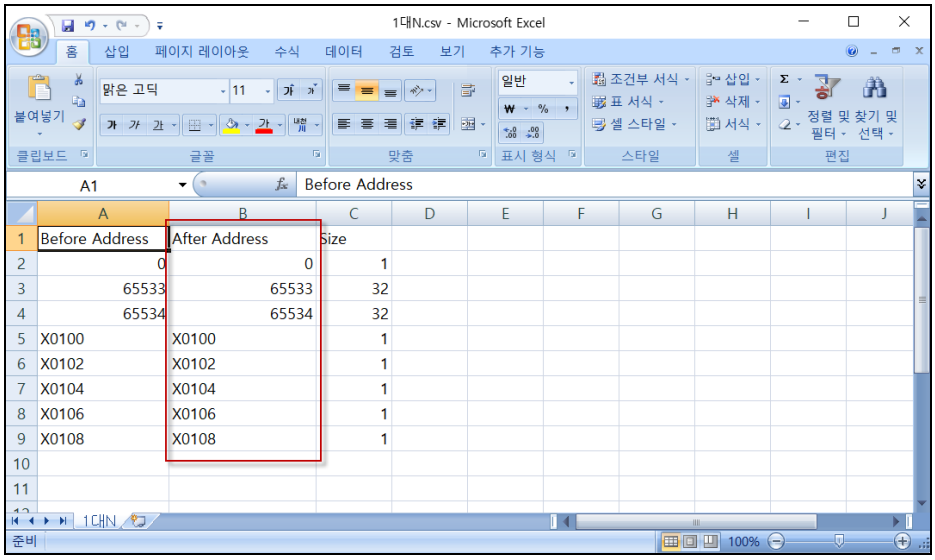
123.csv - Microsoft Excel

M20

	A	B	C	D	E	F	G	H	I	J	K	L
1	No.	Category	Number	Kind	ID	R/W	Size	Source Alias	Target Alias	Source addre	Target address	
2	1	LOG		Log1	1	R	16	PLC1	PLC1	D0000	D0000	
3	2	LOG		Log1	1	R	1	PLC1	PLC1	X000	X000	
4	3	ALARM		Block1	1	R	1	PLC1	PLC1	X000	X000	
5	4	ALARM		Block1	1	R	1	PLC1	PLC1	X001	X001	
6	5	Symbol		생산량	0	R/W	16	PLC1	PLC1	D0000	D0000	
7	6	Symbol		압력1	1	R/W	16	PLC1	PLC1	D0001	D0001	
8	7	Symbol		작업	2	R/W	16	PLC1	PLC1	D0002	D0002	
9	8	Symbol		재료1	3	R/W	16	PLC1	PLC1	D0010	D0010	
10	9	Symbol		재료2	4	R/W	16	PLC1	PLC1	D0011	D0011	
11	10	Symbol		NewSymb	5	R/W	16	PLC1	PLC1	D0012	D0012	
12	11	FrameScre	1	Lamp	1	R	1	PLC1	PLC1	X000	X000	
13	12	BaseScree	1	Numeric	1	R	16	SYS	SYS	100	0	
14	13	BaseScree	1	Numeric	2	R	16	SYS	SYS	101	2	
15	14	BaseScree	1	Numeric	3	R	16	SYS	SYS	102	4	

[Pic. User Define (1:1) Setting]

For 1:N, input and save the value to convert After Alias (Address Type) and After Address (Target Address) and run [Import] to [Convert]. Then, it will be converted to CSV file.



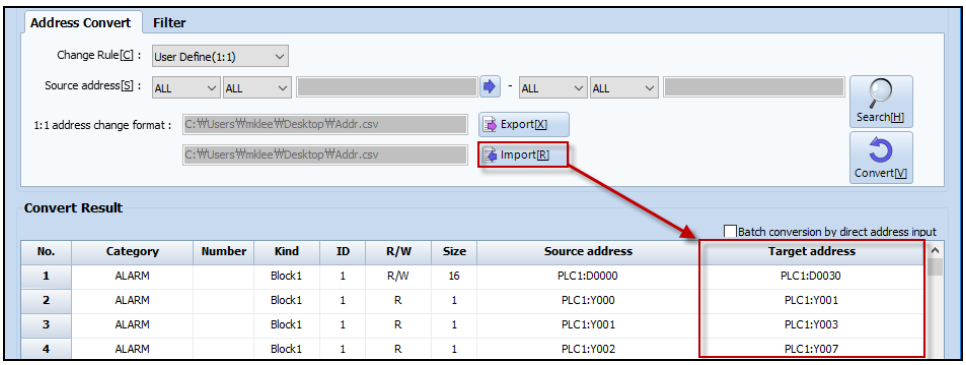
1대N.csv - Microsoft Excel

A1 Before Address

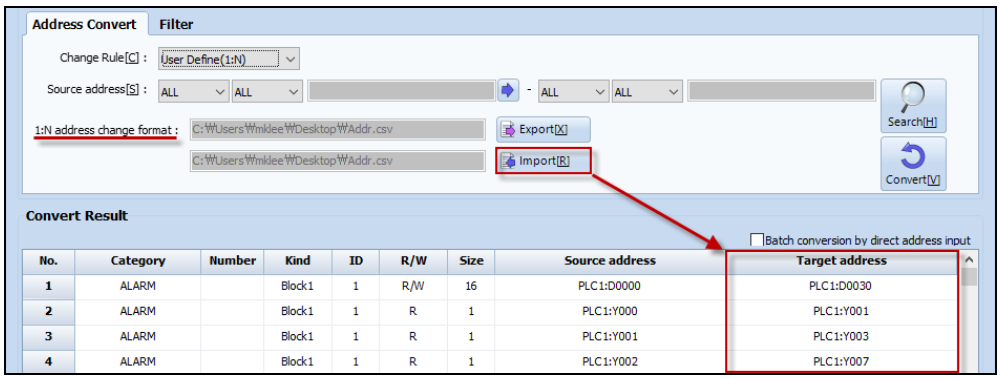
	A	B	C	D	E	F	G	H	I	J
1	Before Address	After Address	Size							
2	0	0	1							
3	65533	65533	32							
4	65534	65534	32							
5	X0100	X0100	1							
6	X0102	X0102	1							
7	X0104	X0104	1							
8	X0106	X0106	1							
9	X0108	X0108	1							
10										
11										

[Pic. User Define (1:N) Setting]

(3) When Convert Address setting is done in the Excel file, save the file and load the file using [Import]. Press [Convert] button after importing the Excel file to convert it.



[Pic. User Define (1:1) Address Convert]



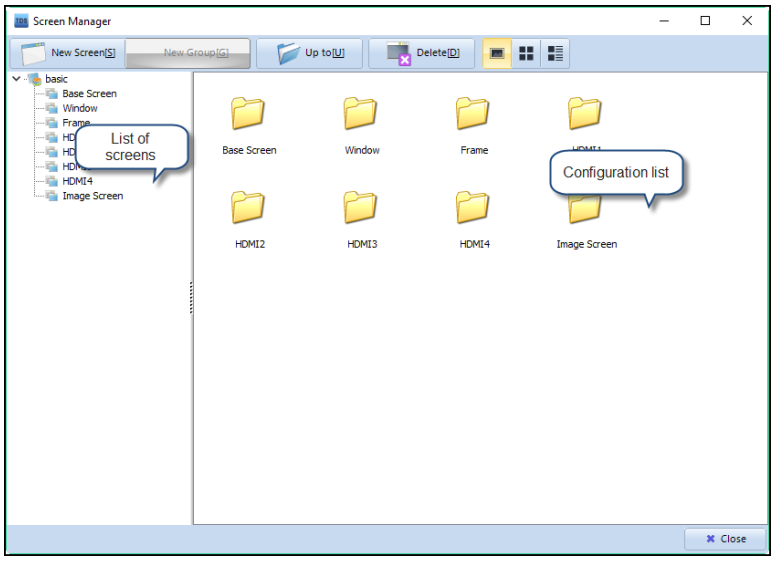
[Pic. User Define (1:N) Address Convert]

(4) Use [Apply] button to make the final confirmation. Select Yes to complete Convert Address.

Screen Manager



It helps to simply and conveniently manage all screens that are in use in a project. It helps the user to manage menu screens in a project by Screen List or Group, change property by clicking each screen, and perform add, copy, and delete functions. Through this, the user can easily manage multiple screens in a project.

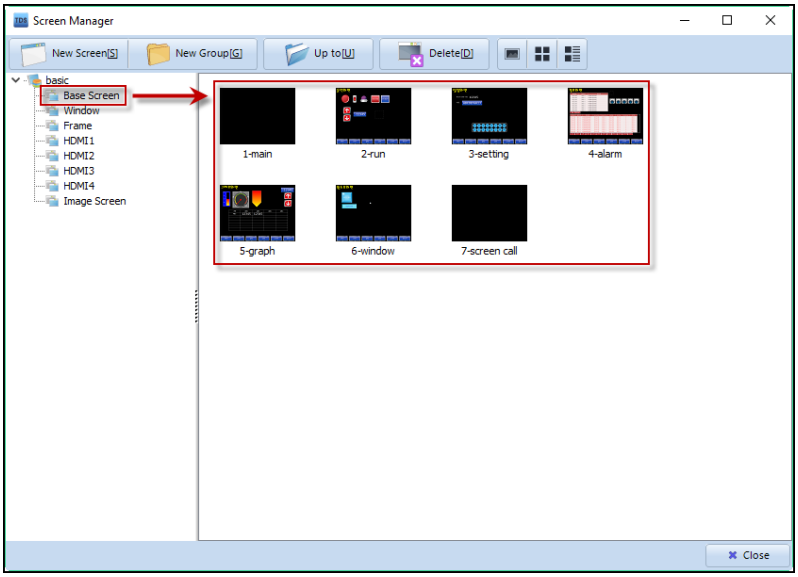


[Pic. Screen Manager]

No	Screen Manager	Description
1	New Screen [S]	Add a new screen to the selected screen list.
2	New Group [G]	Create a new group to the selected screen list.
3	Up [U]	Move to the top folder.
4	Delete [D]	Delete the selected List.
5		Change the [Composition List] style to Large Icons.
6		Change the [Composition List] style to Small Icons.
7		Change the [Composition List] style to View Detail.

23.1.9 **Screens / Composition List**

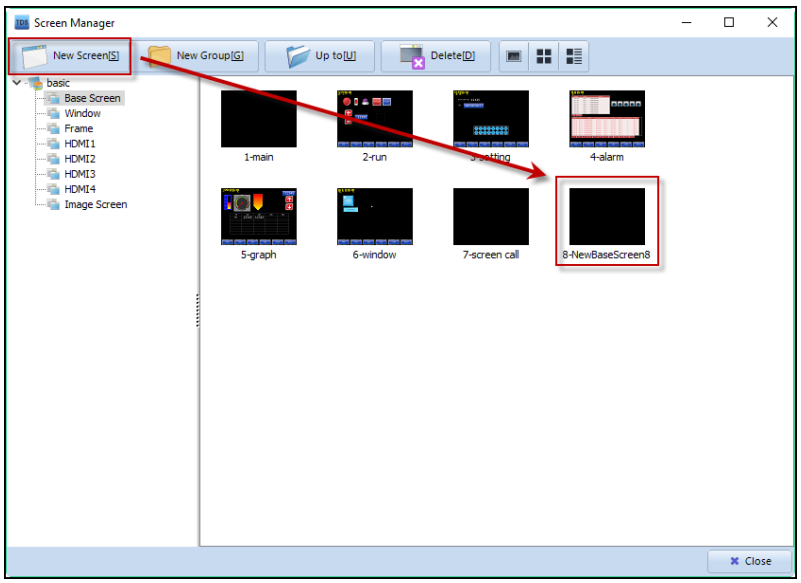
Select [Screen List] to display [Composition List]. From the [Composition List], you may drag multiple screens and press [Ctrl+C] and [Ctrl+V] to copy and paste them all at once.



[Pic. Screen Manager]

(1) New Screen

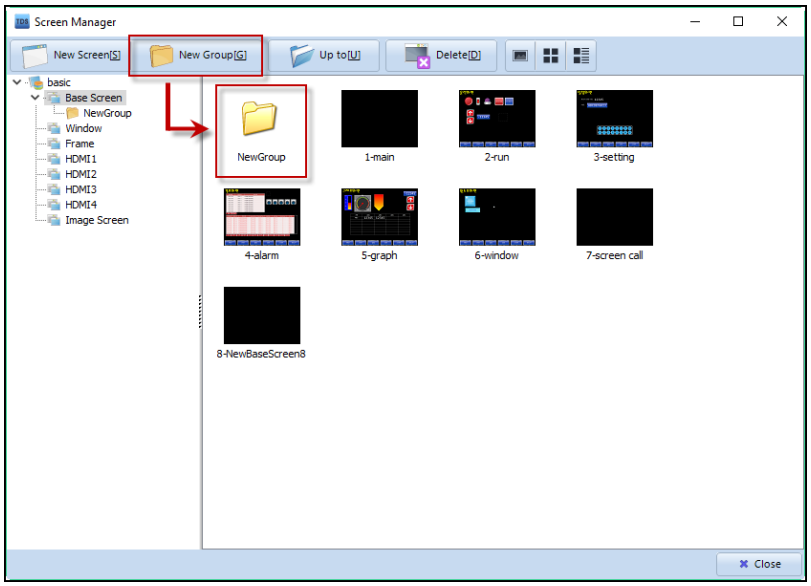
Select Screen List and press [New Screen] button to add a new screen as shown in the below picture.



[Pic. New Screen]

(2) Add Group

Select Screen List and press [New Group] button to add a folder as shown in the below picture. Manage screens by folder.

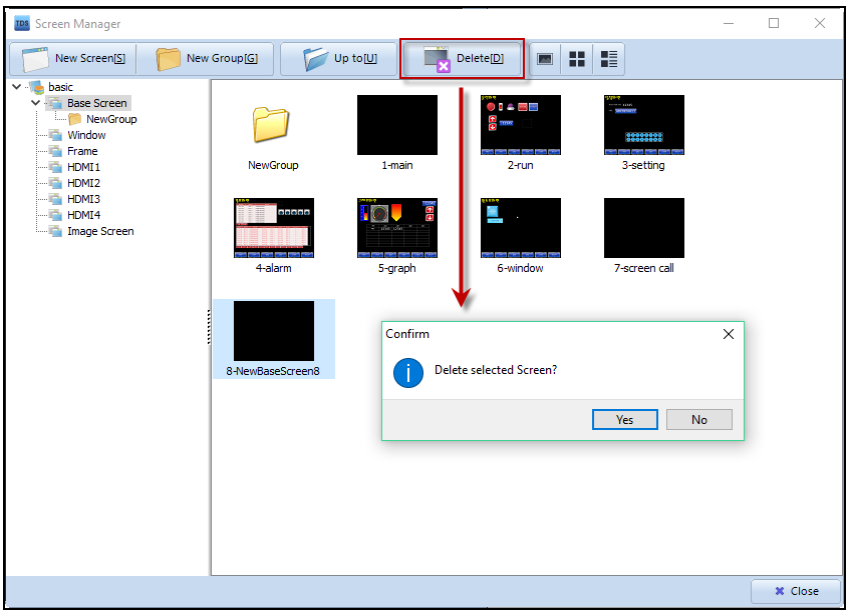


[Pic. Add Group]

(3) Delete

Select screen and press [Delete] button to display delete confirmation window as shown in the below picture.

A message screen that asks [Would you like to delete the selected screen?] will appear as shown in the below picture. Click [YES] to delete the screen.

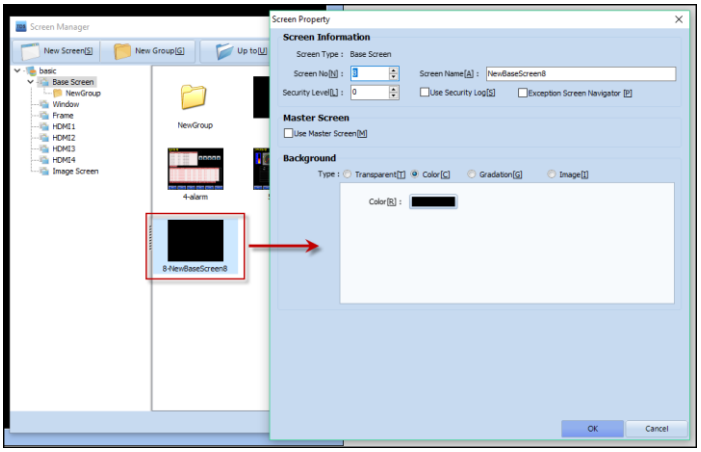


[Pic. Delete]

(4) Screen Property

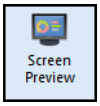
Check and modify [Screen Property] through [Screen Manager].

Select screen as the following picture and [Mouse Double-click] it. [Screen Property] will be displayed for you to edit.

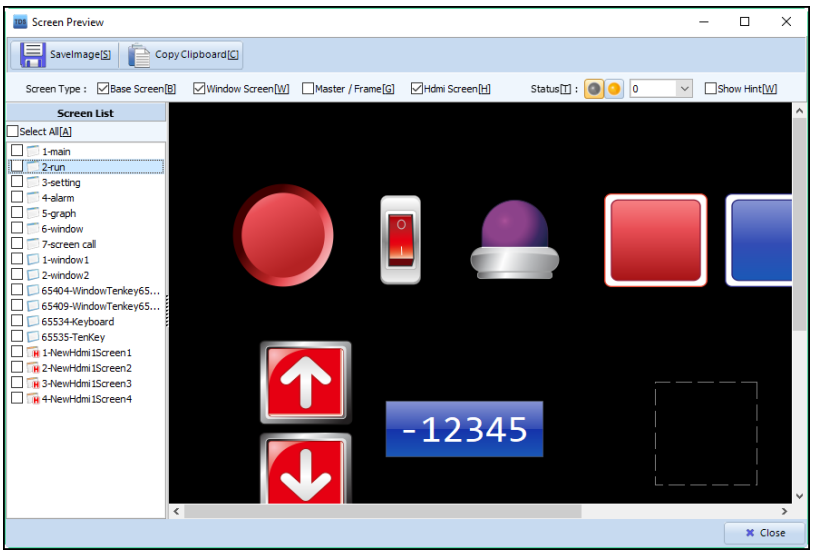


[Pic. Screen Property]

Screen Preview



[Screen Preview] is the function that saves Project Screen as an image file.



[Pic. Screen Preview]

No	Screen Preview	Description
1	Save Image [S]	Save the selected screen as an image file.
2	Copy to Clipboard [C]	Copy the selected screen to the clipboard.

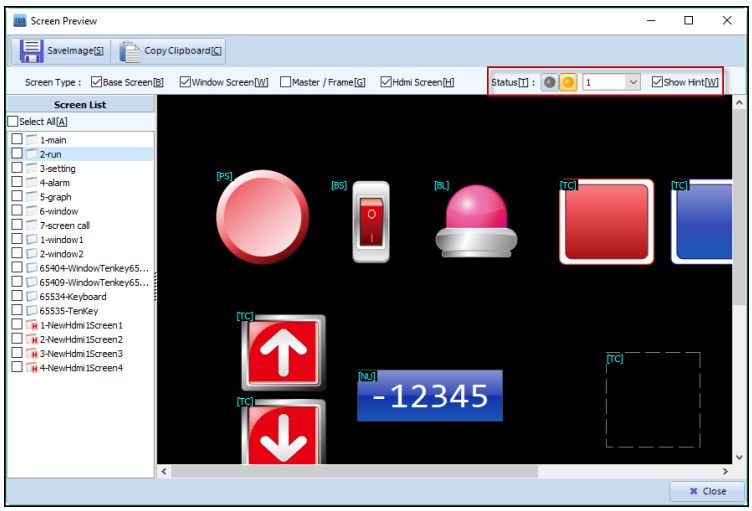
No	Screen Preview		Description
1	Screen Type	Base Screen	Add Base Screen to the Screen List.
		Window Screen	Add a Window Screen to the Screen List.
		Master/Frame	Add a Master/Frame Screen to the Screen List.
		HDMI Screen	Add a HDMI Screen to the Screen List.
2	Status [T]		Show the object image on screen in OFF status.
			Show the object image on screen in ON status.
			For Word Addresses, the object status will be displayed according to the ON/OFF state from the first 00 Bit to the last 15 Bit. Word Lamp Object and Word Message Objects are displayed in the status of their set order.
3	Show Hint [H]		Show hint of the objects that are in use on screen. Please see Chapter 22.3 [Hint].
4	Screen List		Select a screen to export as an import.
5	Select All		Select all screens in the screen list.

23.1.10 **Save Screen Images**

The following is how to save screen images: First, set its type, status, and the use of Show Hint.

Then, select a screen to export as an image from [Screen List] and run [Save Image] or [Copy to Clipboard].

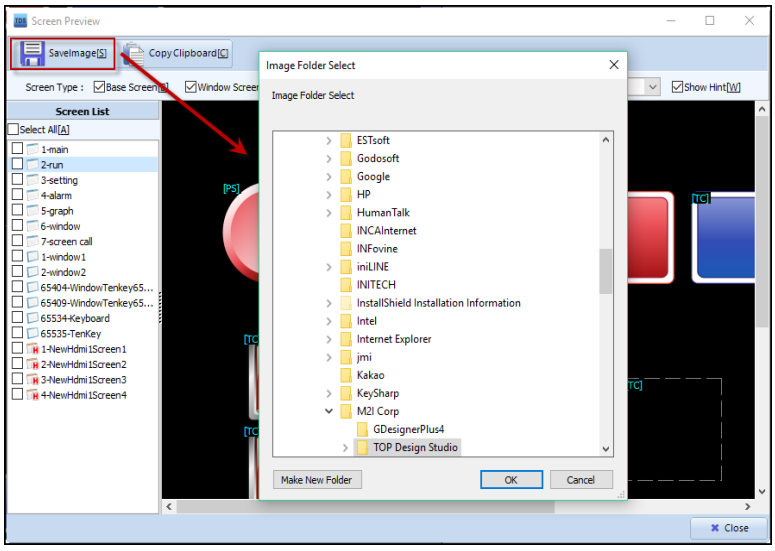
Below picture shows a screen that has changed the [Status] information before saving the image to 'ON' and checked [Show Hint] to activate the Object Name on screen.



[Pic. Save Screen Images 1]

Complete the setting of the screen to save as above and press [Save Image] at the top. Pressing the button will display a window where you can select the save path as shown in the below picture. Images will be saved as bitmap (.BMP) files.

Select [Copy to Clipboard] button to copy the screen immediately to use.

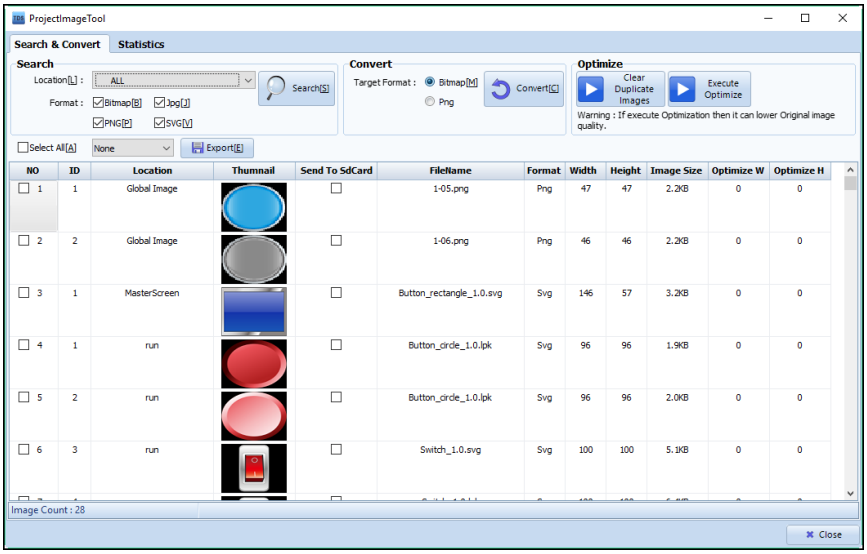


[Pic. Save Screen Image - Setup save path]

Project Image Tool



This function allows the user to search images that are used in a project to export them as files or check and manage the size of images that are in use.

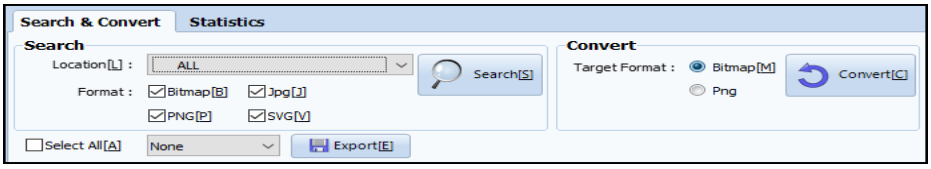


[Pic. Project Image Tool]

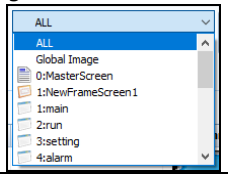
No	Button	Description
1	Search [S]	Search images that are in use in the project (bmp [B]/jpg [J]/png [P]/svg [V]).
2	Convert [C]	Convert the selected image to [.bmp] or [.png] formats.
3	Clear Duplicate Images	Organize duplicate images from the images that are in use in a project. If there are duplicate images with different sizes, both images will be included at build. To prevent this, organize the duplicate images to reduce the size.
4	Execute Optimize	Run optimization of images that are in use in a project. Optimization may somewhat reduce the quality of the original image.
5	Export [E]	Export the selected image.

23.1.11 **Search & Convert**

Configure and search the screen location and format of images. Use [Convert] to change the formats of the searched images.



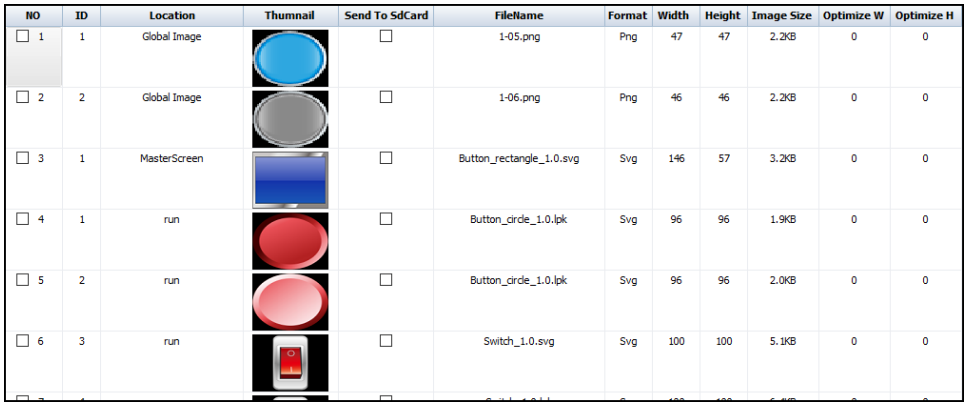
[Pic. Search & Convert]

No	Search & Convert Property		Description
1	Search	Location [L]	Configure the screen to search images from. Select All to search images in all screens. 
		Format	Select the format of the image to search for. The available formats for search are bmp [B], jpg [J], png [P], and svg [V].
2	Convert	Target Format	Set the format to convert the selected images from the search results to. The formats available for conversion are bmp [B] and png [P].
3	Select All [A]		Select all searched images or set the file format to select.

			JPG None Select All BMP JPG SVG DWG

23.1.12 **Search list**

Show the image search result or convert result. You may check each image's file size and name and select files on the list to save and convert (Note that User Library does not provide [Export] function.).



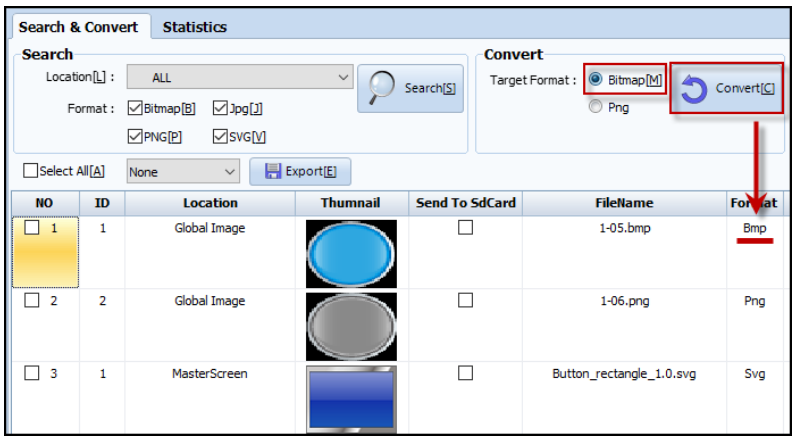
NO	ID	Location	Thumnail	Send To SdCard	FileName	Format	Width	Height	Image Size	Optimize W	Optimize H
1	1	Global Image			1-05.png	Png	47	47	2.2KB	0	0
2	2	Global Image			1-06.png	Png	46	46	2.2KB	0	0
3	1	MasterScreen			Button_rectangle_1.0.svg	Svg	146	57	3.2KB	0	0
4	1	run			Button_circle_1.0.lpk	Svg	96	96	1.9KB	0	0
5	2	run			Button_circle_1.0.lpk	Svg	96	96	2.0KB	0	0
6	3	run			Switch_1.0.svg	Svg	100	100	5.1KB	0	0

[Pic. Search List]

No	Search List Property	Description
1	NO	This is the order of the searched image list and it is for checking Select Image.
2	ID	Show the ID value used in the project.
3	Location	Show the position where the image is in use in the project.
4	Thumbnail	Show the images used in the project.
5	Send To SD Card	Save the selected image to SD Card. (Note: If there is no SD Card installed, the image may not be displayed properly.)
6	FileName	Show the image file name.
7	Format	Show the image file format.
8	Width	Show the width of the image.
9	Height	Show the height of the image.
10	Image Size	Show the size of the image file.
11	Optimize W	Show the length after the object optimization.
12	Optimize H	Show the height after the object optimization.

(1) Change Image Format

If you wish to change the image format, select [Target Format] and [Target Image] and click [Convert] to convert the image file format as the following picture.



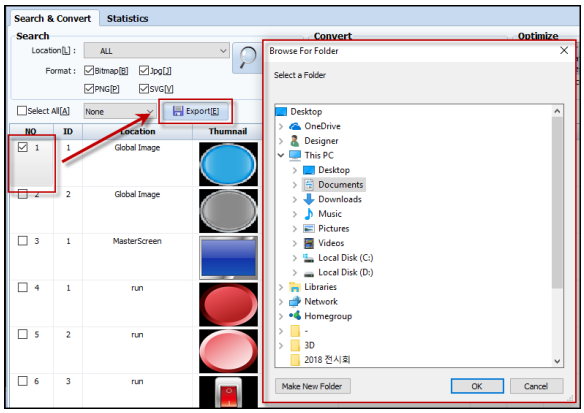
[Pic. Change Image Format]

(2) Export Image

Use [Export] button to save the selected image as a file.

[User Library] provided by TDS software does not provide Export function.

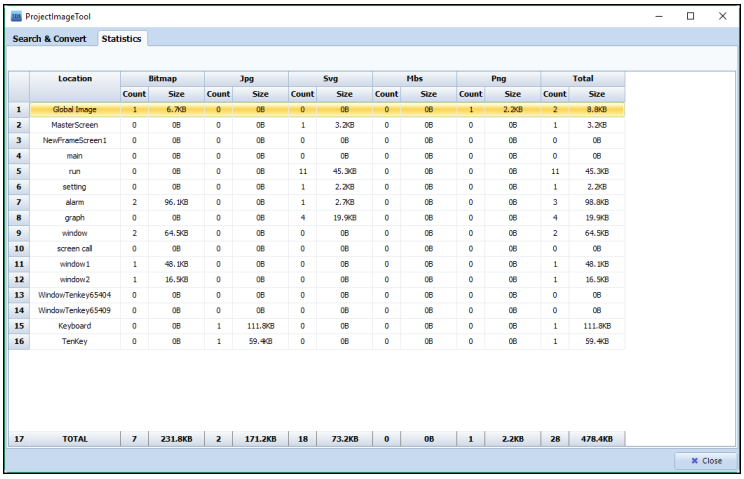
Privately added Global Images or Local Images only can be exported.



[Pic. Export Image]

23.1.13 **Statistics**

Show the statistics of all image files used in a project. IT shows the count and size of images located in each screen of the project by their file format. You can check the total count and size of the images used.



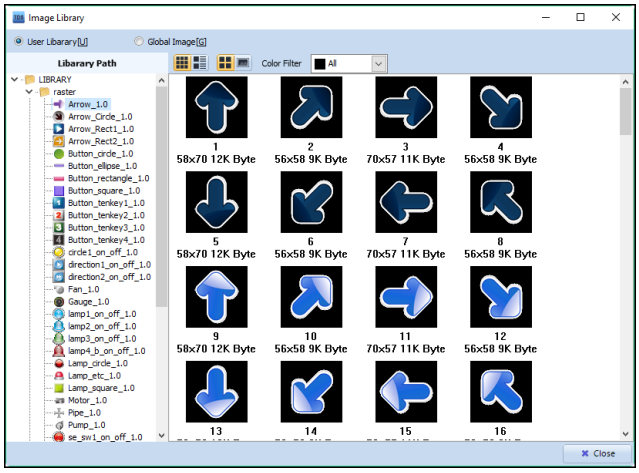
[Pic. Statistics]

No	Statistics Property		Description
1	Location		Output the location of Base, Window, and Global Screen.
2	File Format/Total	Count	Output the total count of image files that are on the screen.
		Size	Output the total size of image files that are on the screen.

Image Library



It registers and manages the basically provided [User Library] or [Global Image]. In particular, media (Global Image/Text/PDF) used in [Alarm]-[Solution] must be registered in [Global Image]. Register them once and you can apply them to project conveniently.



[Pic. Image Library]

No	Image Library	Description
1		Show images in large icons.
2		Show images in detail.
3		Show images in small sizes.
4		Show images in large sizes.
5	Color Filter All	Select the color to show in the image list.
6		Add Image to the selected path ([User Library] is not available for us.).
7		Delete the selected image ([User Library] is not available for us.).

No	Image Library	Description
1	User Library [U]	These are the image files provided by TDS software.
2	Global Image [G]	This is a file that the user needs to add manually.

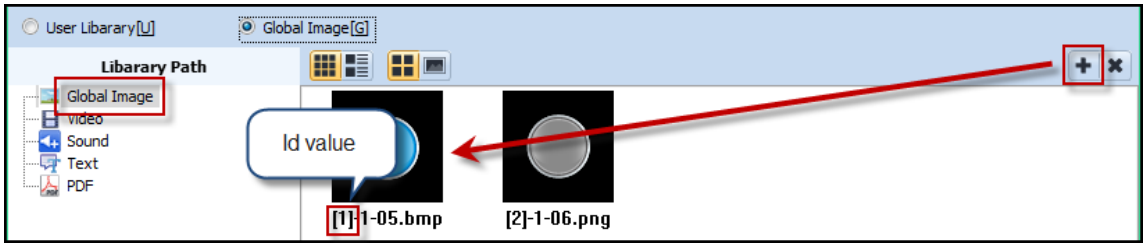
23.1.14 **Global Image**

This file can be used by users through manual registration. Global Image, Video, Sound, Text, and PDF are data formats that can be registered. The video file format available for Global Image registration is mp4 and sound file format is wav.

Note) Videos and sound files may not be played according to the codec that they are produced in.

Select the data type from [Library Path] and click  button to register data.

When an image is registered, the [ID Value] is automatically assigned next to the file name. The value may be used as [Solution Item Number] in [Alarm]-[Solution] or through [Word Indirect].

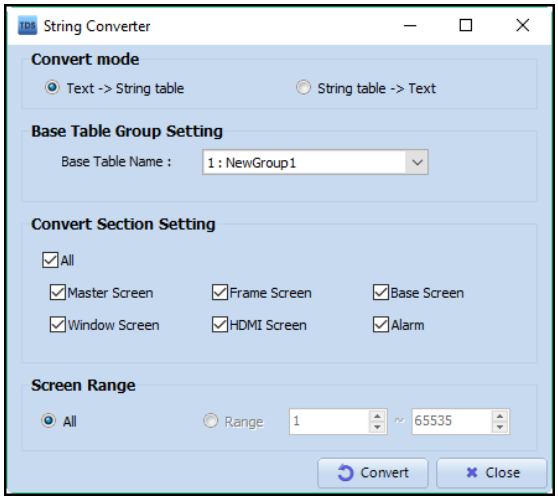


[Pic. Global Image]

Convert String



Convert String is the function that changes texts that are in use in a project to String (Multi Language) Tables or Strings set in String (Multi Language) Tables to texts. All strings in a project may be modified, but modification of strings in certain strings or ranges is also available. To use Convert String, a project must have String (Multi Language) Table setup.



[Pic. String Converter]

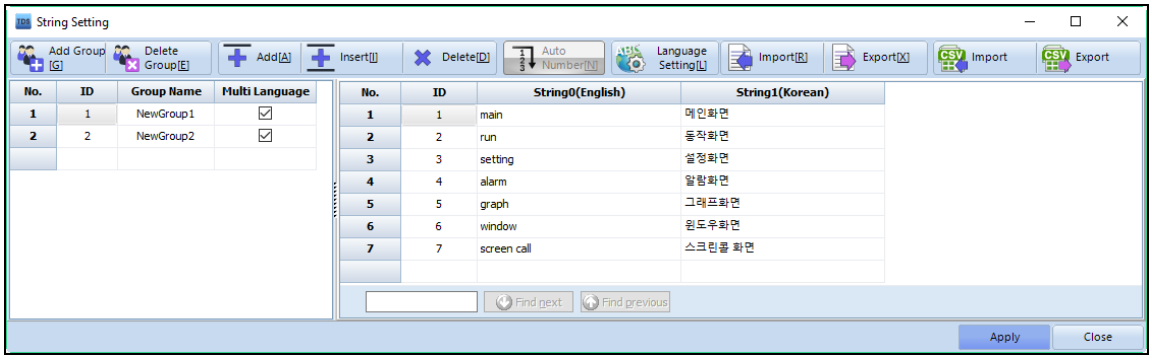
No	String Table Converter		Description
1	Convert Mode	Text -> String (Multi Language) table	Convert normal text used in objects to String (Multi Language) Table.
		String (Multi Language) table -> Text	Convert String (Multi Language) Table used in objects to normal text.
2	Base Table Group Setting	Table Name	Select the String (Multi Language) Table to convert normal text.
3	Convert Section Setting	All	Perform String conversion in All Screens.
		Master Screen	Perform String conversion in Master Screen only.
		Frame Screen	Perform String conversion in Frame Screen only.
		Base Screen	Perform String conversion in Base Screen only.
		Window Screen	Perform String conversion in Window Screen only.
		HDMI Screen	Perform String conversion in HDMI Screen only.
		Alarm	Perform String conversion in Alarm setting only.

4	Screen Range	All	Convert Strings in all screens in the selected convert area.
		Range	Perform Convert String in screens that are included in certain areas of the selected convert area.
5	Convert		Start conversion according to the Convert settings.
6	Close		Close the String Converter screen.

23.1.15 **Text -> String (Multi Language) Table**

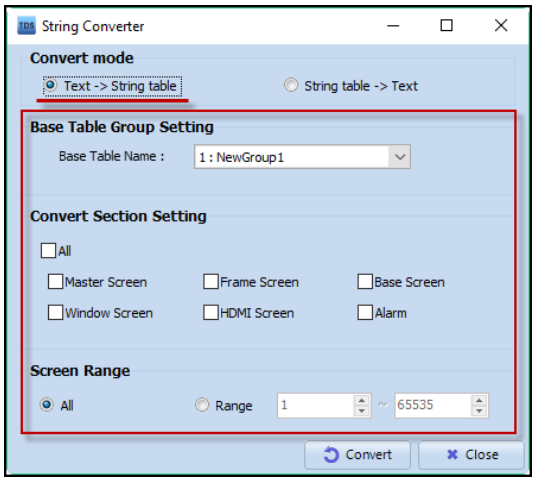
To convert Text drafted in object to String (Multi Language) Table, first, set String (Multi Language) Table. If String (Multi Language) Table is not set, Convert String will not be executed.

To see how to setup String (Multi Language) Table, please see Chapter 4.4 [String].



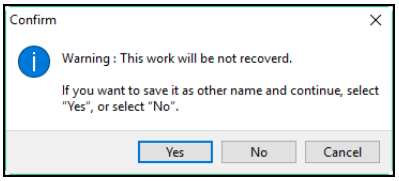
[Pic. String (Multi Language) Setting]

After completing String (Multi Language) Setting as above, you may begin string conversion. Set the Convert Mode to [String->String (Multi Language) Table] and configure the String Table to use and the type and range of the screen to convert.



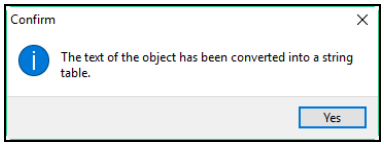
[Pic. Text -> String (Multi Language) Table]

Complete the setup, then press [Convert] button and proceed to convert. When performed, the previous history will not be restored and a message window that asks the user to save the file under a different name before proceeding to convert. Click [Yes] to save and proceed or [No] to proceed without saving.



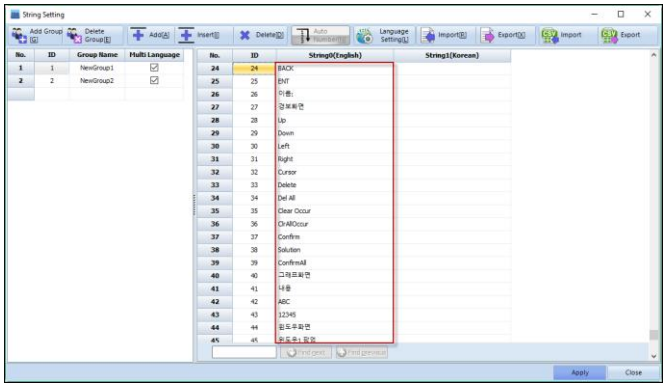
[Pic. Message Window]

Decide whether or not to save and the string conversion will begin automatically. When the conversion is completed, below message window will popup.



[Pic. String conversion completion message window]

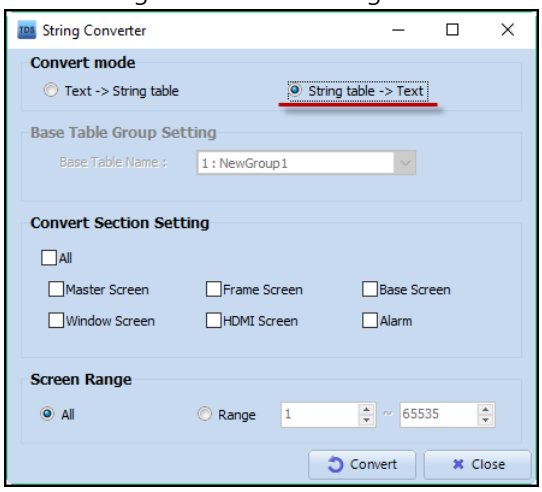
When the conversion is completed, the text in the set area will be converted to string and it can be checked in the String Page of each object. For texts that had not been set to String (Multi Language) Table, it will be automatically registered to String (Multi Language) Table after the conversion.



[Pic. Text newly registered to string table after the string conversion]

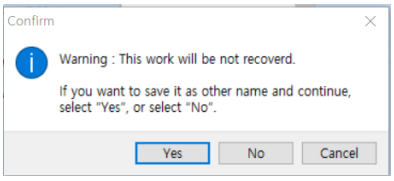
23.1.16 String (Multi Language) Table -> Text

Conversion of String (Multi Language) Table to Normal Text is the same to Text -> String (Multi Language) Table. Set the screen area and screen range to convert and begin the conversion.



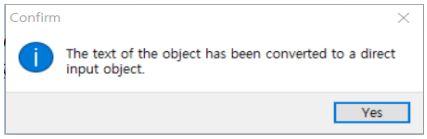
[Pic. String (Multi Language) table -> Text Setting]

Complete the setup, then press [Convert] button and proceed to convert. When performed, the previous history will not be restored and a message window that asks the user to save the file under a different name before proceeding to convert. Click [Yes] to save and proceed or [No] to proceed without saving.



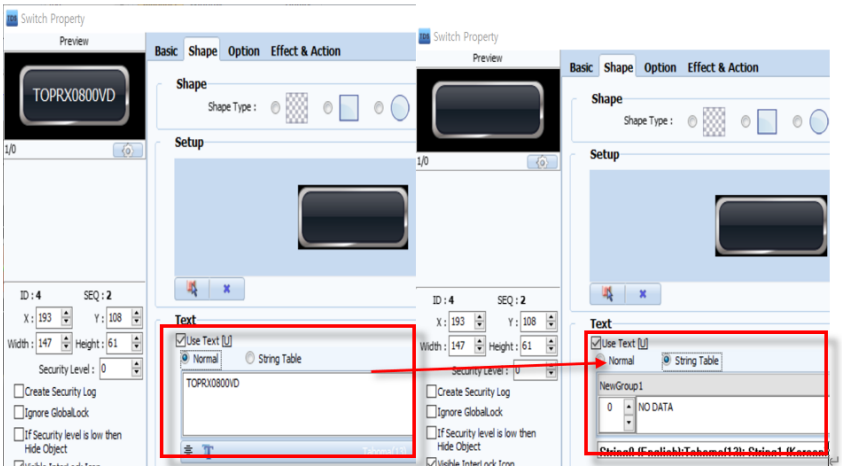
[Pic. Message Window]

Decide whether or not to save and the Normal conversion will begin automatically. When the conversion is completed, below message window will popup.



[Pic. Normal conversion completion message window]

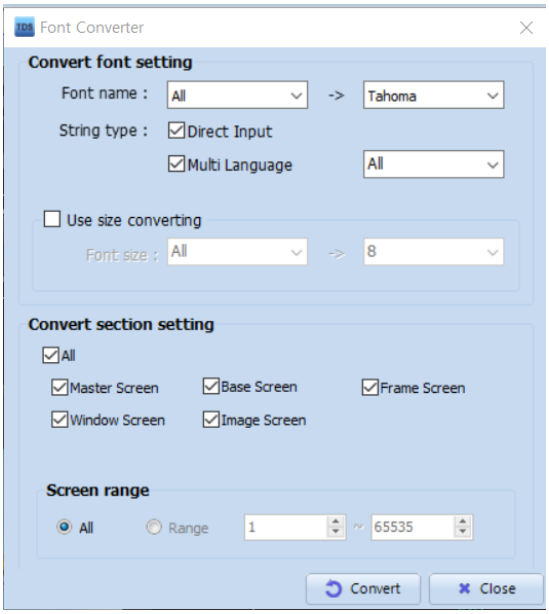
When the conversion is completed, you will see that String (Multi Language) Table has been converted to Normal Text in Object.



[Pic. String (Multi Language) Table -> Text conversion before/after]

Font Converter

This tool is used to change all fonts used in a project.



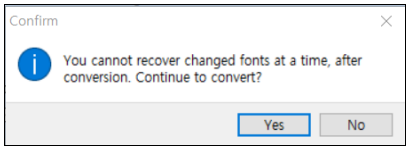
[Pic. Convert Font]

Select the current font and the font to convert to at [Font Name]. Check [Convert Section Setting] and press [Convert] button to change all fonts to the target font. If set as above, all fonts in the project will be converted to [Malgun Gothic]. If Multi Language function is in use, fonts may be changed all at once by

language.

No	Font Converter		Description
1	Font Setting	Font Name	Select the current font and the font to change to.
		Multi Language	Select the table to modify font from String (Multi Language) Table.
2	Use Size Converting	Font Size	Select it to change the sizes of all fonts that are in use.
3	Convert Section Setting	All	Perform font conversion in All Screens.
		Master Screen	Perform font conversion in Master Screen only.
		Base Screen	Perform font conversion in Base Screen only.
		Frame Screen	Perform font conversion in Frame Screen only.
		Window Screen	Perform font conversion in Window Screen only.
		Image Screen	Perform font conversion in Image Screen only.
		HDMI Screen	Perform font conversion in HDMI Screen only.
4	Screen Range	All	Convert Strings in all screens in the selected convert area.
		Range	Perform Convert String in screens that are included in certain areas of the selected convert area.
5	Convert		Start conversion according to the Convert settings.
6	Close		Close the String Converter screen.

Complete the setup, then press [Convert] button and proceed to convert. When performed, the previous history will not be restored and a message window will pop up to ask the user if they wish to proceed. Click [Yes] to proceed or [No] to stop.



[Pic. Message Window]

Select [Yes] to automatically convert fonts. When the conversion is completed, below message window will popup.

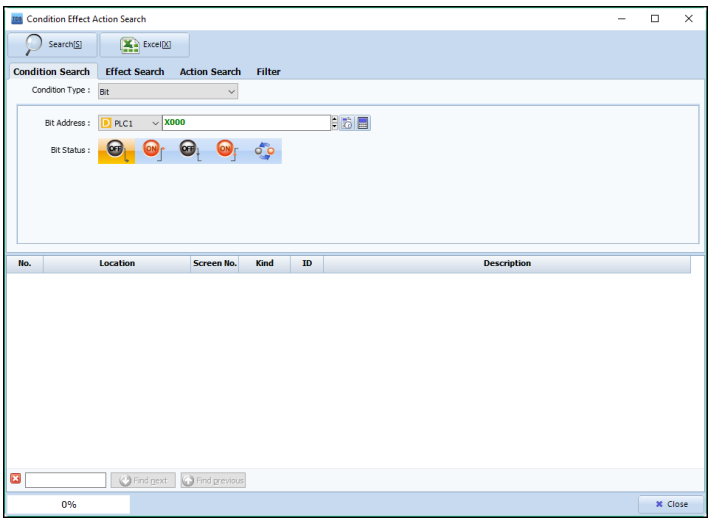


[Pic. Convert Font completion message window]

Condition, Effect, Action Search

[Condition, Effect, Action Search] function is for searching and managing conditions, effects, and actions set to objects.

You may configure the search area and range with filter and conveniently manage the search result by converting it in an Excel file.

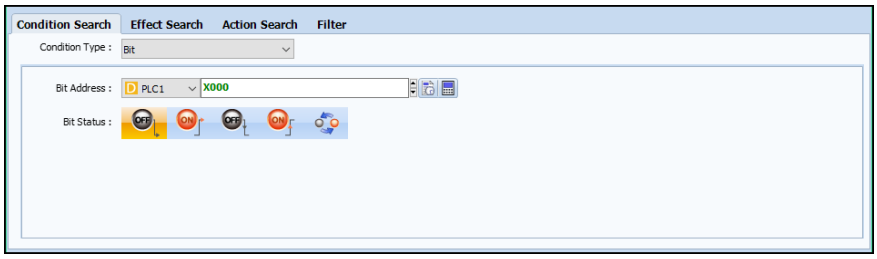


[Pic. Condition, Effect, Action Search]

No	Condition, Effect, Action Search	Description
1	Search	Search conditions, effects, and actions.
2	Excel	Convert the search result into an Excel file and export.
3	Condition Search	Search the condition that the object is using.
4	Effect Search	Search the effect that the object is using.
5	Action Search	Search the action that the object is using.
6	Filter	Configure the search area for addresses, effects, and actions.
7	Close	Close the condition, effect, and action search window.

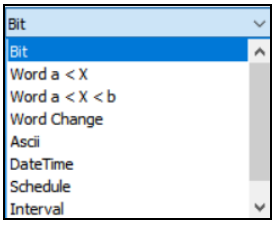
23.1.17 **Condition Search Page**

Search conditions that the project is using. Configure settings for each condition type to have an overall view on which condition is being used in which screen and object.



[Pic. Condition Search Page]

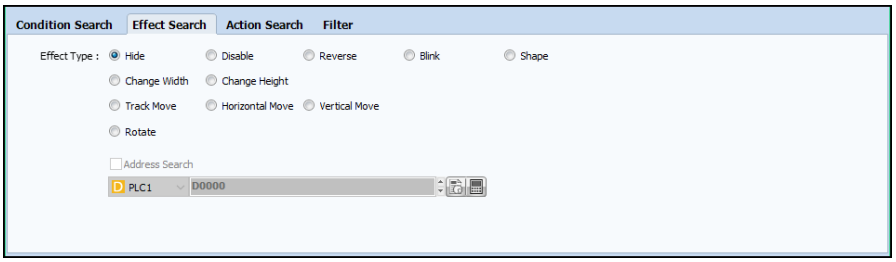
Condition Types that can be searched by Condition Search is as follows. These are the same as the types of conditions that can be configured in [Effect & Action] page.



[Pic. Condition Type]

23.1.18 **Effect Search Page**

Search Effect Types that the project is using. Configure the effect types to search for to have an overall view on which effect is being used in which screen and object.

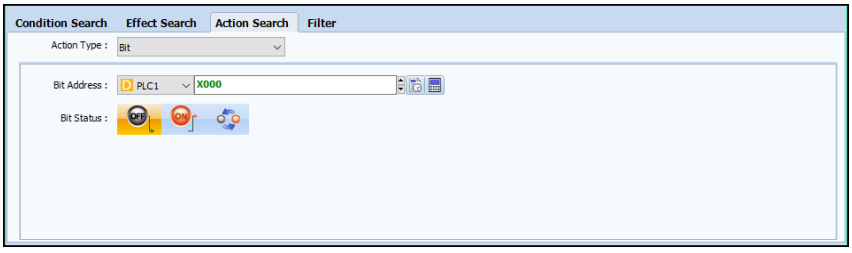


[Pic. Effect Search Page]

Effect Types that can be searched in Effect Search is the same effect types that may be configured in [Effect & Action] page.

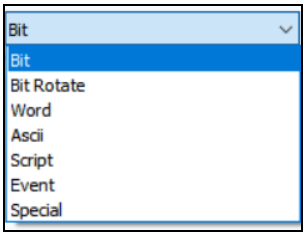
23.1.19 **Action Search Page**

Search Actions that the project is using. Configure settings for each action type to search for and select Target Address and Status to have an overall view of which action is being used in which screen and object.



[Pic. Action Search Page]

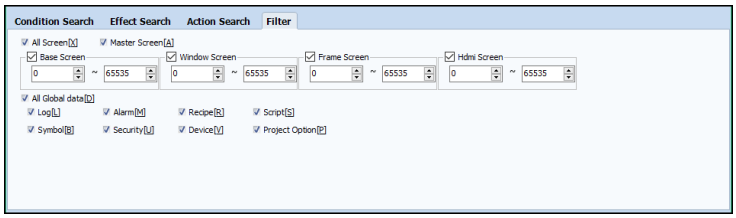
Action Types that may be searched in Action Search is as follows. They are the same action types that may be configured in [Effect & Action] page.



[Pic. Action Type]

23.1.20 **Filter**

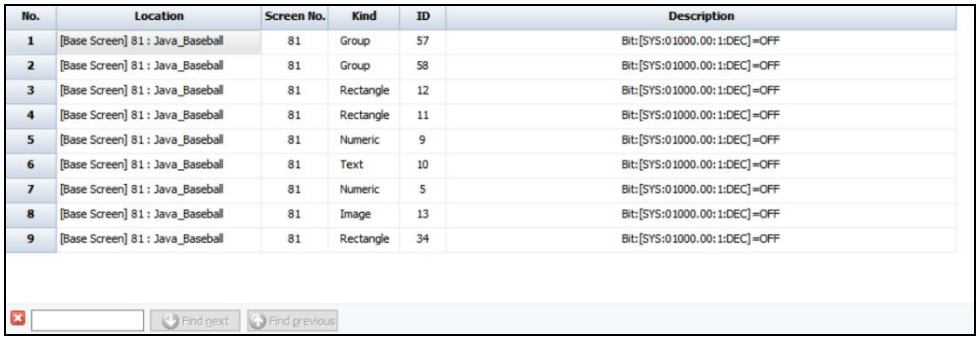
When searching condition, effect, and action, you may set the type and range of the screen to search.



[Pic. Filter]

23.1.21 **Search Result**

Select Condition, Effect, Action Search and Filter then press [Search] button to see the search result of the setting. Searched result can be conveniently managed with [Excel] function.

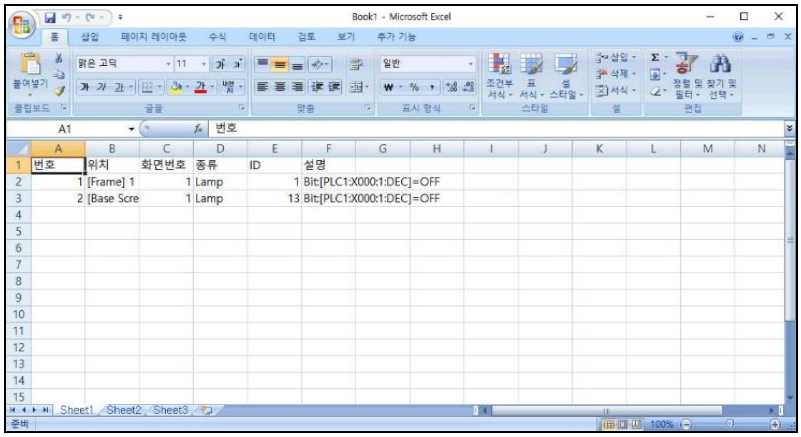


No.	Location	Screen No.	Kind	ID	Description
1	[Base Screen] 81 : Java_Baseball	81	Group	57	Bit:[SYS:01000.00:1:DEC]=OFF
2	[Base Screen] 81 : Java_Baseball	81	Group	58	Bit:[SYS:01000.00:1:DEC]=OFF
3	[Base Screen] 81 : Java_Baseball	81	Rectangle	12	Bit:[SYS:01000.00:1:DEC]=OFF
4	[Base Screen] 81 : Java_Baseball	81	Rectangle	11	Bit:[SYS:01000.00:1:DEC]=OFF
5	[Base Screen] 81 : Java_Baseball	81	Numeric	9	Bit:[SYS:01000.00:1:DEC]=OFF
6	[Base Screen] 81 : Java_Baseball	81	Text	10	Bit:[SYS:01000.00:1:DEC]=OFF
7	[Base Screen] 81 : Java_Baseball	81	Numeric	5	Bit:[SYS:01000.00:1:DEC]=OFF
8	[Base Screen] 81 : Java_Baseball	81	Image	13	Bit:[SYS:01000.00:1:DEC]=OFF
9	[Base Screen] 81 : Java_Baseball	81	Rectangle	34	Bit:[SYS:01000.00:1:DEC]=OFF

[Pic. Search Result]

No	Search Result	Description
1	Number	Show the order of the search results.
2	Location	Show the screen where the search target is located.
3	Screen Number	Show the screen number where the search target is located.
4	Kind	Show the object type of the search target.
5	ID	Show the Object ID of the search target.
6	Description	Show the searched condition, effect, or action.
7		Input keyword from the searched results to find the target.
8	Find next	Show the next target found by the search keyword.
9	Find previous	Show the previous target found by the search keyword.

Run [Excel] to convert the search result into an excel file as shown in the below picture.



[Pic. Excel]

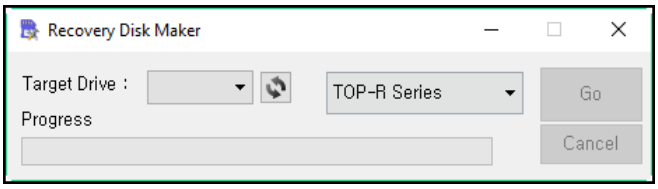
Make Recovery Disk



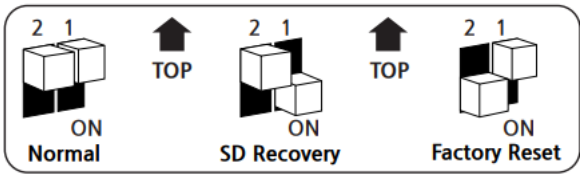
Recovery Disk is used when the system unit of touch screen is not answering or unable to operate in the normal way by initializing the touch screen. An SD Card is required to make Recovery Disk and it will initialize OS, Hydra, Daemon, Util, and all data of the main body of touch screen will be

initialized.

#Note: After an initialization, previous data will cannot be recovered.
#Note: Current touch screen products in the market have built-in Recovery Disks. Models with built-in Recovery Disks have description stickers attached on the cover of the back SD Card slot.



[Pic. Make Recovery Disk]



[Pic. Sticker]

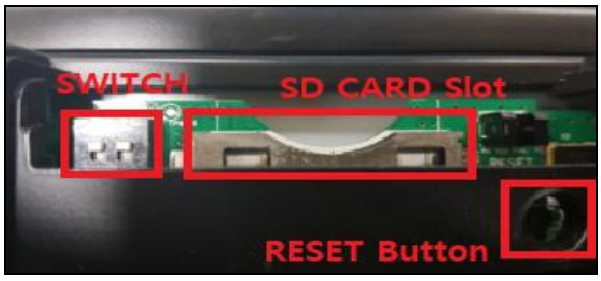
23.1.22 **Make Recovery Disk**

SD Card is required to make Recovery Disk. Connect SD Card to PC and create Recovery Disk according to the following steps. * Recommended SD Card specification is 32GB or smaller/FAT32 format.

Insert an SD Card and run [Create Recovery Disk]. Select the drive location of the SD Card in [Drive]. Select the product series [TOP-R/RX/RH/RW/RE] of the touch screen product to use the Recovery Disk and select the product model version of touch screen. Basically, most products have Ver 1.x. Ver 2.x products will have [Rev 2.0] marked on their product labels separately. Click [Start] button to proceed to create Recovery Disk.

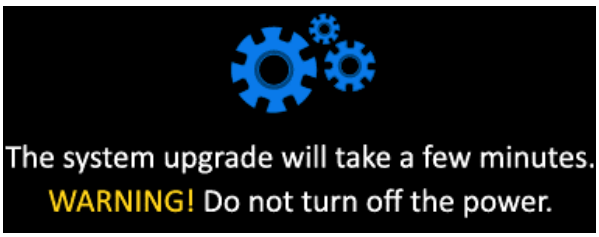
23.1.23 **How to use Recovery Disk**

Open the SD Card cover that is located at the back of touch screen to see SD Card slot, white switch, and reset button as the following picture. Use them to initialize touch screen. The position of the switch and reset button may slightly vary by the touch screen model.



[Pic. SD Card Slot]

Open the SD Card slot cover located at the back of the system unit of touch screen. Insert an SD Card that has Recovery Disk into the SD Card slot. Push down the first white switch next to the SD Card slot and reset the touch screen's power. When the recovery begins after few seconds (5-10 secs), a cog image will appear on screen and a message that says do not reset the power will be displayed.



[Pic. Recovery Cog]

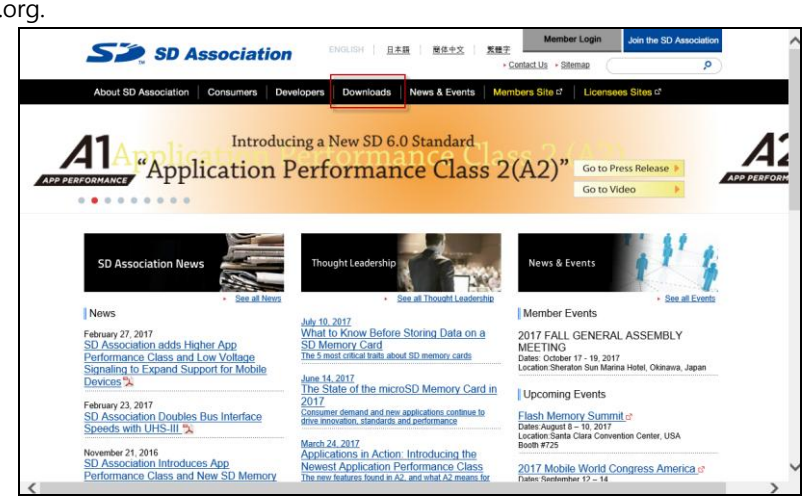
When multiple buzzer sounds have been made on touch screen, the recovery has been completed successfully. Remove the inserted SD Card and move the white switch to its original position (push both no. 1 and 2 up.), then reset the touch screen once again.

23.1.24 How to Format Recovery Disk

The SD Card in which Recovery Disk is created will be reduced in storage capacity.

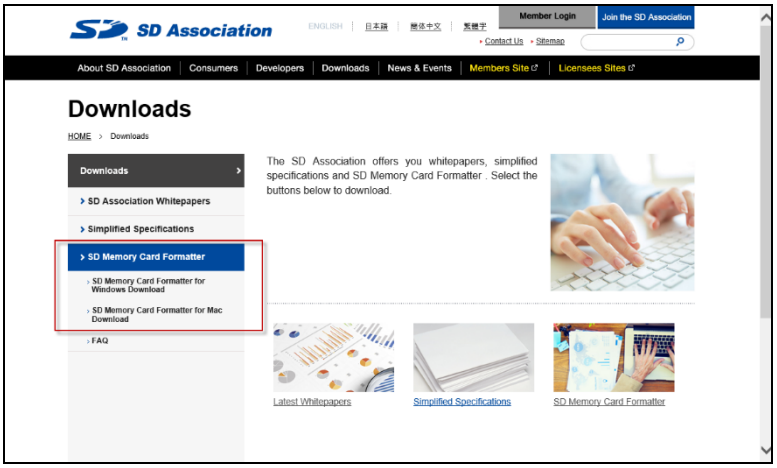
To restore the SD Card to its original storage capacity after making it into a Recovery Disk card, a format process is required. Window-provided formats are not valid. It must be formatted with the format program provided by SD Association.

Go to www.sdcard.org.



[Pic. Website of SD Association]

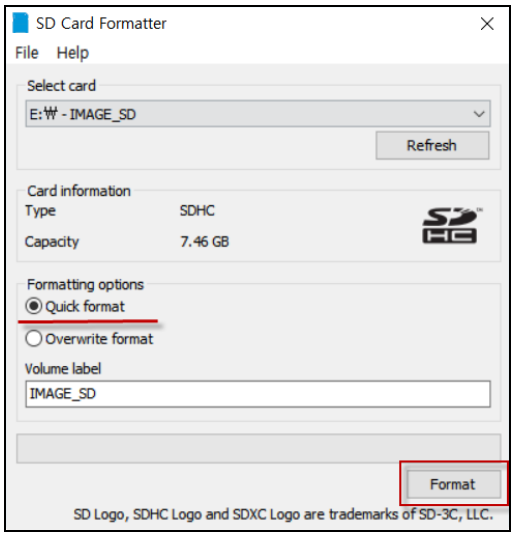
Go to [Downloads] menu. Select SD Memory Card Formatter from the software available for download. The available OS are Windows and Mac. Download the correct program for your OS.



[Pic. SD Memory Card Formatter Download Page]

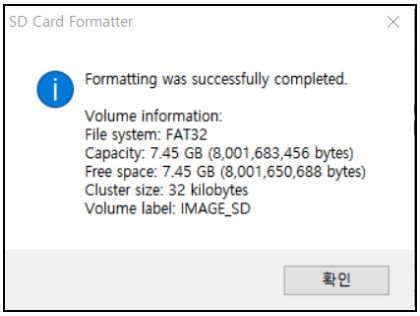
Press Accept button at the bottom of the Usage Right Agreement screen to download. When the

download is completed, proceed to install the program per the installation wizard. Run the program once the installation is completed.



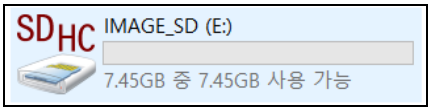
[Pic. SD Card Formatter Screen]

Select the SD Card to proceed with the format and designated the format option as [Quick Format]. Then, press [Format] button to proceed. When format is in progress, a message will be displayed, saying that all data in the SD Card will be deleted. Click [Yes (Y)] to start format. When it is completed, a window will pop up as below, saying that it has been successfully formatted.



[Pic. Format completion window]

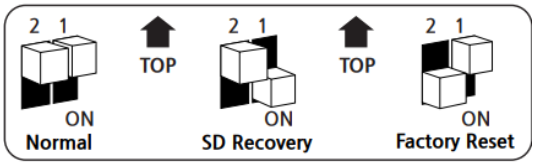
When format is completed, the SD Card will be reverted to its original storage capacity as shown in the below picture.



[Pic. SD Card format completed]

23.1.25 **Factory Reset**

Open the back SD Card slot and there will be a description stickers attached on the cover of the back SD Card slot that describe the recovery process.



[Pic. Sticker]

SD Recovery is the method that performs initialization by creating a Recovery Disk using the above mentioned SD Card. Factory Reset is the method that performs initialization without an SD Card by using the built-in Recovery Disk in Touch Screen.
Opposite to the SD Card Recovery, push down the second white switch next to the SD Card slot and reset the touch screen's power. When the recovery begins after few seconds (5-10 secs), a cog image will appear on screen and a message that says do not reset the power will be displayed.



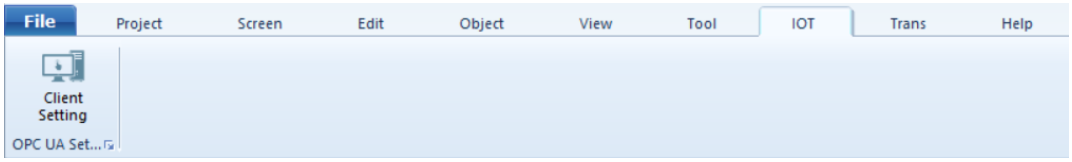
[Pic. Recovery Cog]

When the recovery begins after few seconds (5-10 secs), a cog image will appear on screen and a message that says do not reset the power will be displayed. When multiple buzzer sounds have been made on touch screen, the recovery has been completed successfully. Remove the inserted SD Card and move the white switch to its original position (push both no. 1 and 2 up.), then reset the touch screen once again.

CHAPTER 24 - IOT Menu

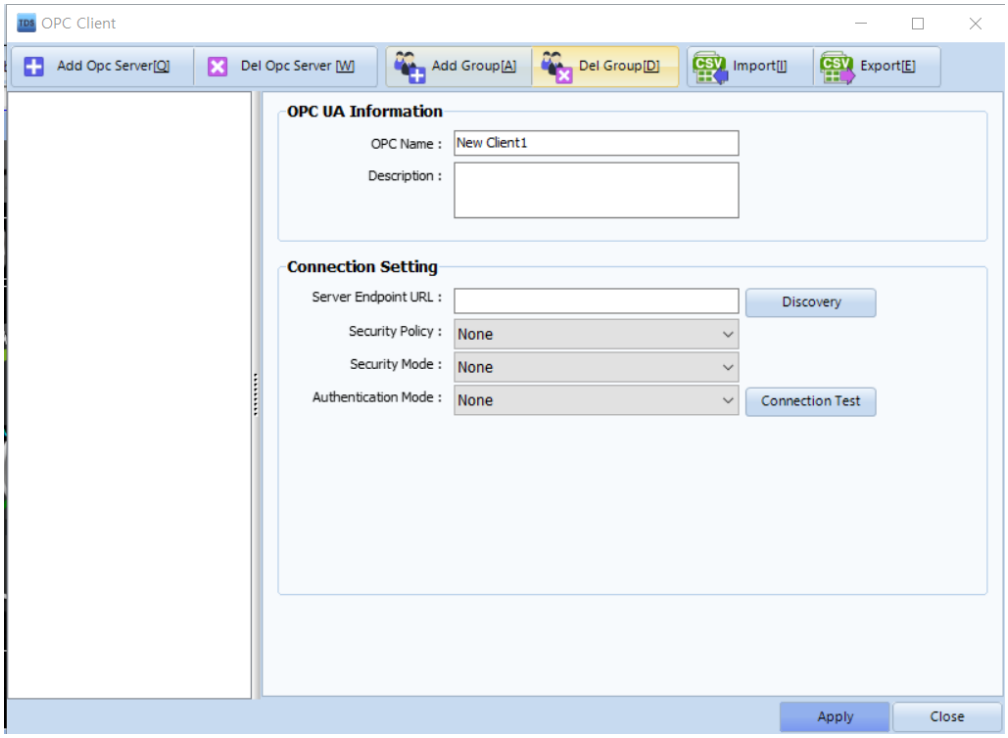
Client Setting

[Client Setting] is OPC UA Client Setting to access OPC UA server which is standardized communication protocol.

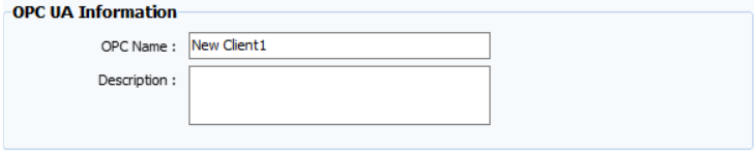


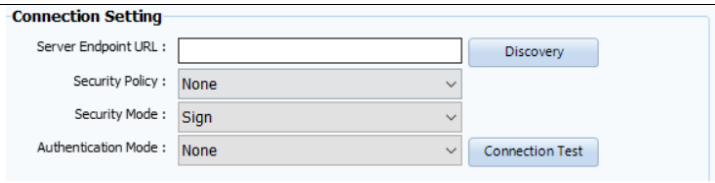
[Pic. IOT Client Setting Menu]

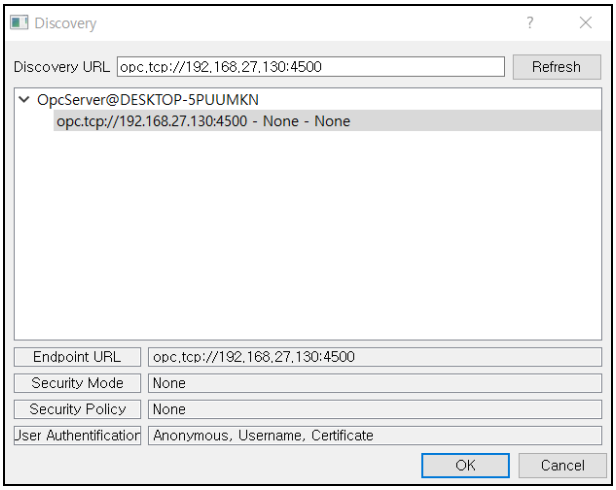
Press [Client Setting] and the following OPC Client Screen will be displayed.



[Pic. OPC Client]

No	Button	Description
1	Add OPC Server	Add an OPC server.
2	Del OPC Server	Deleted the selected OPC server.
3	Add Group	Add the group of the selected OPC server.
4	OPC UA Information	Enter the address information of OPC server.  [OPC Name] is for setting the name of the OPC server. [Description] is for entering the OPC server information.
5	Connection Setting	Setup the connection to OPC server.

<table>
<tr>
<td></td>
<td></td>
<td>


[Server Endpoint URL] registers the URL of OPC server. [Viewer] inquire the OPC server to connect to.


▶ Security Policy

[None] refers to no setting. [Basic128RSA15] is Key Wrapping Algorithm that uses RSA15 and imports algorithm collection that uses 128 Bit Basic with message encryption algorithm. [Basic256] is message encryption algorithm that imports algorithm collections that use 256 Bit Basic. [Basic256SHA256] uses SHA256 to the Signature Digest and is a message encryption algorithm that imports algorithm collections that use 256 Bit Basic.

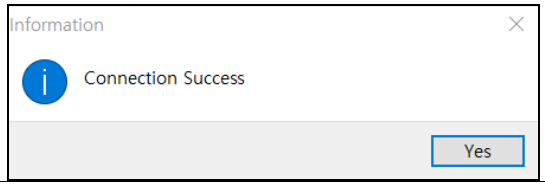
▶ Security Mode

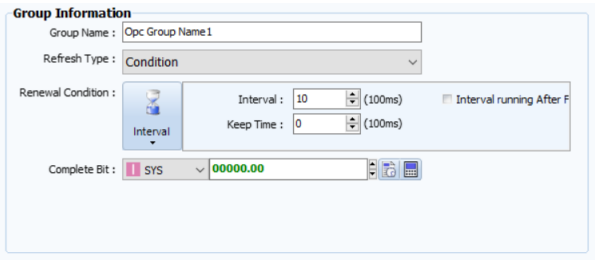
[None] is no setting, [Sign] is signature, and [Sign & Encrypt] is signature and encryption.

▶ Authentication Mode

[None] is no setting, [User Name & Password] is user ID & PW (login method)

[Authentication & Private Key] is the method that registers Certificate Path and Private Key Path.

[Connection Test] checks the connection status to OPC server.


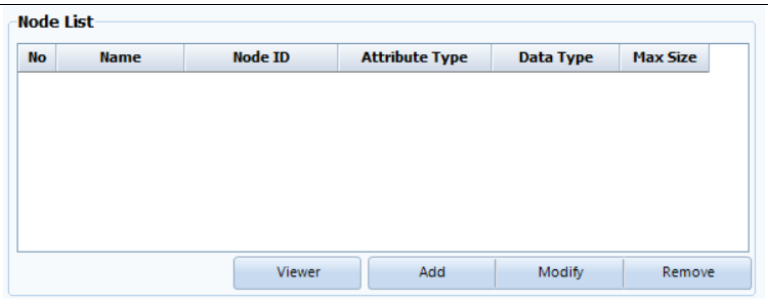
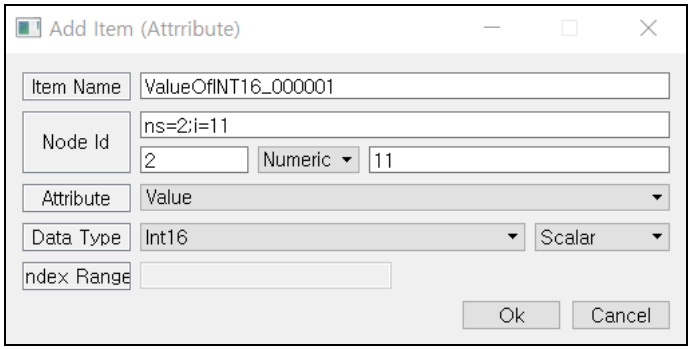
</td>
</tr>
<tr>
<td>6</td>
<td>Group Information</td>
<td>Set the information of the group added to OPC server.


[Group Name] is for setting the name

[Refresh Type] sets the method of the update for data receive from the server

[Refresh Condition] sets the moment of the update for data receive from the server

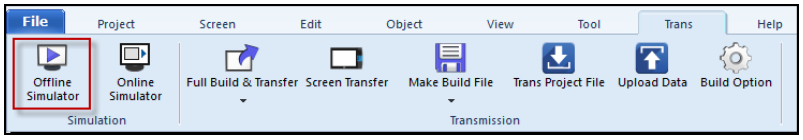
[Complete Bit] will become 1 when the data received from the server is completed (It does not automatically turn 0).</td>
</tr>
</table>

7	Node List	 ▶ **Node List** [No] refers to the order of the registered address. [Name] refers to the name of the registered address. [Node ID] refers to the NODE ID of the registered address. [Attribute Type] refers to the property type of the registered address. [Data Type] refers to the data type of the registered address. [Max Size] refers to the maximum number of the strings when the data type of the registered address is STRING. [Viewer] searches for information of the connected OPC UA server. [Add] ass a new address.  [Item Name] sets the name of the address. [Node ID] set the node ID of the address. ▶ What is Node ID? It refers to the address that connects OPC server and client. It is categorised into Namespace (Numeric Value) and Identifier (Number/String/Guide/Byte String). It will be displayed as ns=<Namespace Index>;<Identifier Type>=<Identifier>. E.g.) ns=2;s=Current Temperature (Namespace Index 2, String Identifier) i=2045 (Namespace Index 0, Numeric Identifier) ns=1;g=09087e75-8e5e-499b-954f-f2a9603db28a (Namespace Index 1, GUID Identifier) ns=1;b=M/RbKBsRVkePCePcx24oRA==' (Namespace Index 1, opaque Identifier) [Edit] edits registered addresses. [Delete] deletes registered addresses.

CHAPTER 25 - Trans Menu

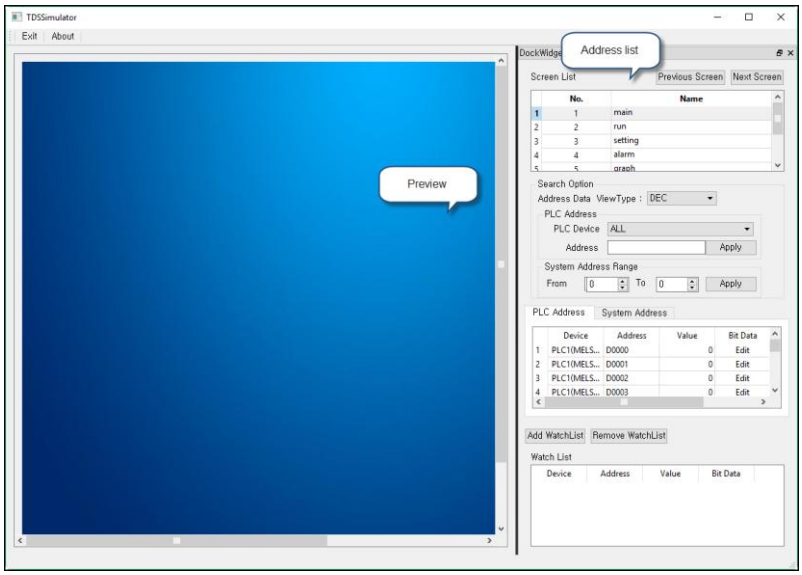
Offline Simulator

[Offline Simulator] is the function that runs a simulation on PC without sending a project to touch screen. Therefore, it runs on the same screen on PC as it does on a touch screen and provides detailed observation of Address Info. Click the Run icon to run or use [F12] shortcut key.



[Pic. Offline Simulator Menu]

Click Action Screen with the cursor and it will run in the same way you touch a touch screen with a finger. Check Action Screen at the Preview Screen on the left and address status and value will become available for display and control on the Screens List and Address List on the right.



[Pic. Simulator Window]

25.1.1 **Preview Screen**

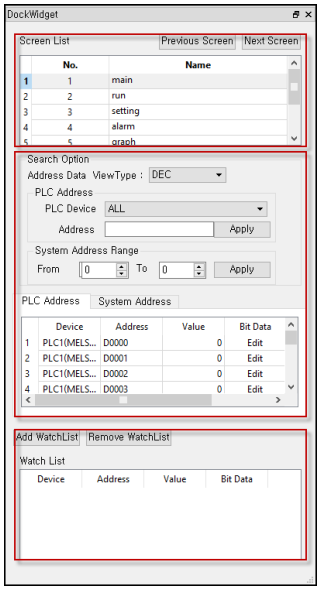
Preview Screen is the same as the screens on the touch screen. Use the mouse instead of touches to check the touch actions of the project.



[Pic. Preview Screen]

25.1.2 **Inspector**

Inspector offers functions that show information regarding the screens and addresses used in the preview. Manually input address data in the screen where you wish to check to check the On/Off status of objects or changes in the analog values on the preview screen. There are [Screen List] that provides screen list previews, [Search Option] for address search, and [Monitor List] for monitoring address information.

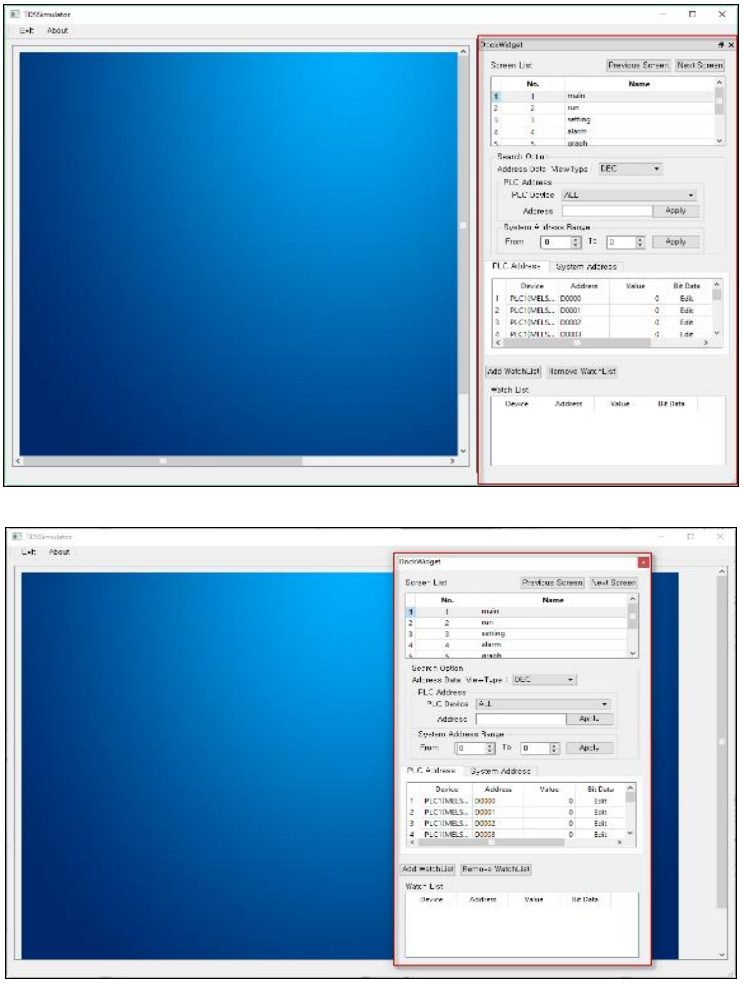


[Pic. Inspector Window]

No	Address List	Description
1	Screen List	Show the Screen List registered to the project. You may select them with the mouse to move to the screen.
2	Search Option	This function allows the user to search addresses frequently used in a project.
3	Monitor List	This function registers the changing object actions and addresses to monitor them.

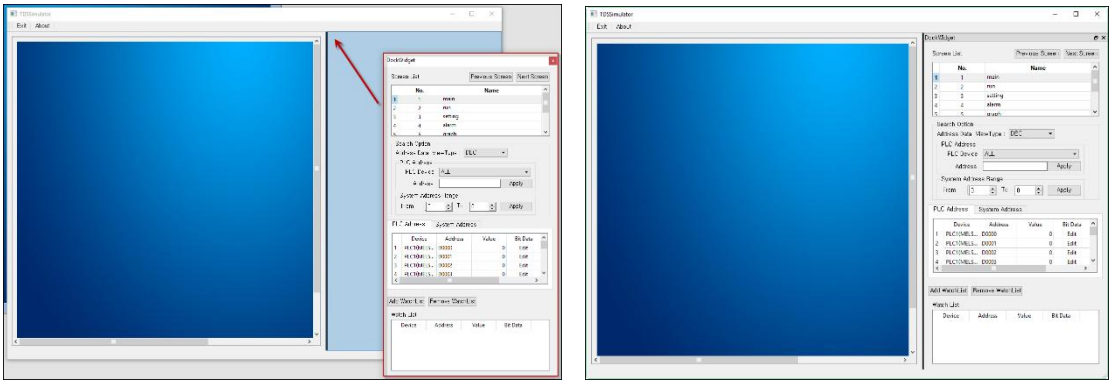
(1) Disable Fixed Inspector Window

[Mouse Drag] or [Double-click] the title of the Inspector window to undock it as the following picture.



[Pic. Disable Fixed Inspector Window]

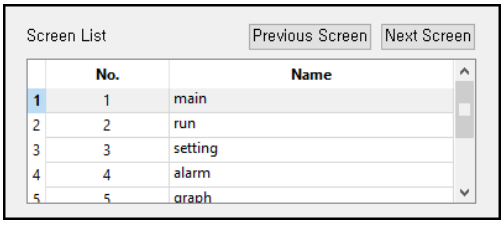
Fix the Inspector Window again to [Mouse Drag] it and move it back to its original position and register it where the fixed parts turn blue or [Double-click] it.



[Pic. Fix Inspector Window]

25.1.3 **Screen List**

Show the Screen List of the project in operation. To check the screen, click the [Button] or [Screen Number] to see it moving.



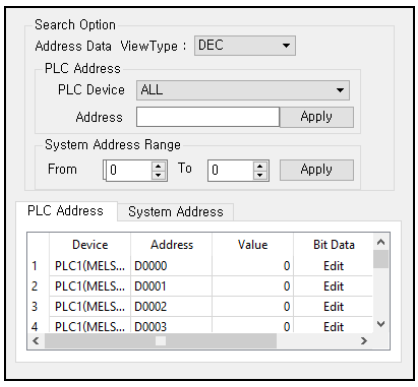
[Pic. Screen List]

No	Screen List	Description
1	Previous Screen	Move to the previous screen.
2	Next Screen	Move to the next screen.
3	No	Show the screen number.
4	Name	Show the screen name.

25.1.4 **Search Option**

Search addresses that are in action in Preview Screen or modify data.

It is divided into PLC Address, System Address, and Special Buffer.



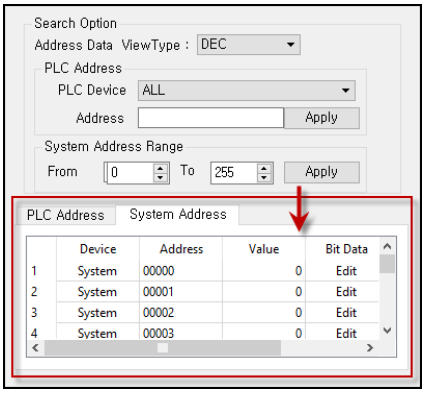
[Pic. Search Options]

No	Search Option		Description
1	Address Data ViewType		Set the type of the address to search for. It is categorized into [DEC], [UDEC], [HEX], and [BIN].
2	PLC Address	Device	Select the PLC Alias to search the address for from the PLCs registered to [Project]-[Property]-[Device Setting] ('PLC1', 'PLC2', etc.).
		Address	Set the PLC address to search.
		Apply	Set the device and address and click the button to output the search list in the PLC Address.
3	System Address Range	From	Enter the Start Address to search System Address. The range is between 0 to 10239.
		To	Enter the End Address to search System Address. The range is between 0 to 10239.

		Apply	Set the System Address Range and click the button to output the search list in System Address.
4	PLC Address List		PLC Address List will be printed.
5	System Address List		System Address List will be printed.
6	Special Buffer		Special Address List of touch screen will be displayed. For Special Address, please see Chapter 7.4.4 [Special Address].

(1) Search PLC Address & System Address

Set the search address and click [Apply] button to display the search result.



[Pic. Address Search]

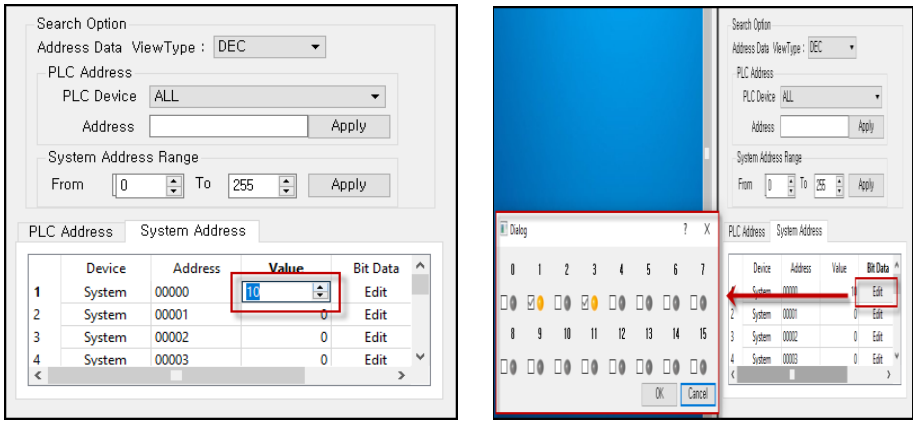
No	Column Item	Description
1	Device	Show search devices (PLC1, SYS, Special, etc.).
2	Address	Show the address of searched device.
3	Value	Show the status value of address in decimal system. The user may input values manually.
4	Bit Data	Show the status value of address in Bit format. The user may modify the Bit Status manually.

(2) Modify PLC Address and System Address Values

Use [Value] and [Bit Data] of the searched addresses to modify their values.

[Value] is displayed in decimal system and [Bit Data] is in binary system.

[Mouse Double-click] the [Value] or [Bit Data] to modify.

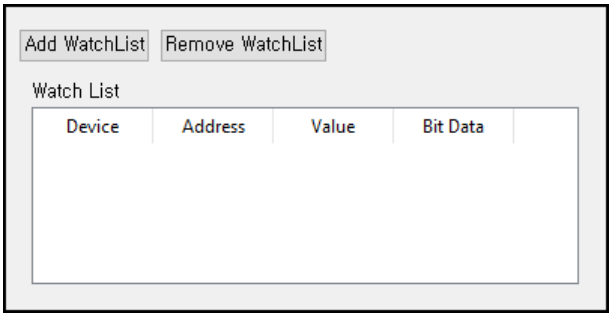


[Pic. Change Address Value]

25.1.5 **Monitor List**

Put the searched address to Monitor List to monitor the address values that fluctuate according to the changes in the actions.

This function allows the user to view addresses that are frequently used or the user wishes to focus on in detail.



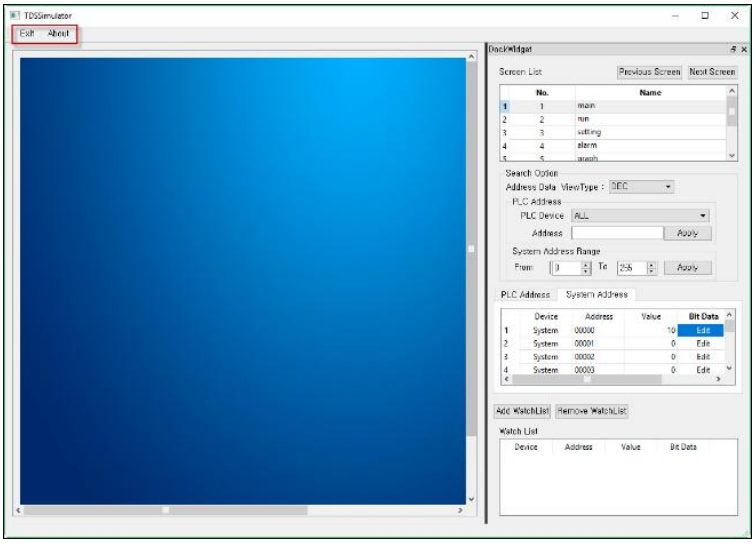
[Pic. Address Monitor List]

No	Monitor List	Description
1	Add Monitor List	Add the selected addresses from the search result list to Monitor List.
2	Delete Monitor List	Delete the selected addresses from the Monitor List.

25.1.6 **Offline Simulator Information and Exit**

Offline Simulator is a program provided by TDS, therefore it has version information.

To check its version, please use [Information] button.

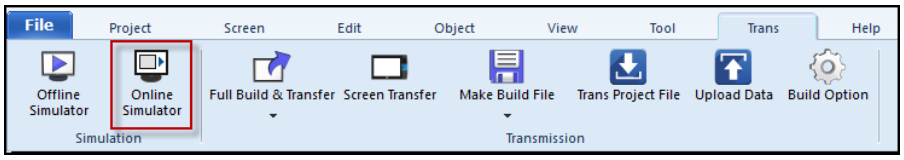


[Pic. Offline Simulator Information and Exit]

No	Simulation	Description
1	Information	Check the version of the Simulation Program.
2	Exit	Exit the Offline Simulator.

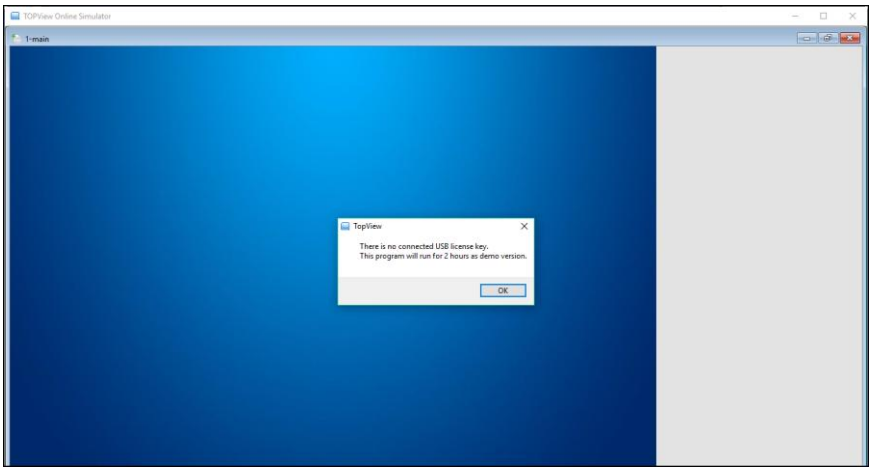
Online Simulator

Unlike [Offline Simulator], [Online Simulator] can communicate between PC and PLC as it actually communicates touch screen and PLC to check actions. Connect Ethernet port or serial ports of the PC to connected to the actual PLC (controller) to communicate and check actions.



[Pic. Online Simulator menu]

Click [Online Simulator] in [Transmission] menu or press [F10] shortcut key to run it.



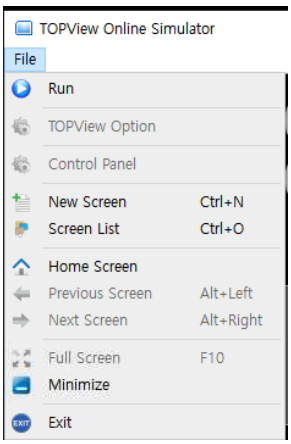
[Pic. The initial operation of Online Simulator]

When Online Simulator is activated, application program of [TOPView] will run, and warns the user that it will be closed every 2 hours without a valid license key. If the license key of [TOPView], a SCADA software which is PC HMI, is installed to the PC, you may monitor/control PLC on the PC without any time limitation.

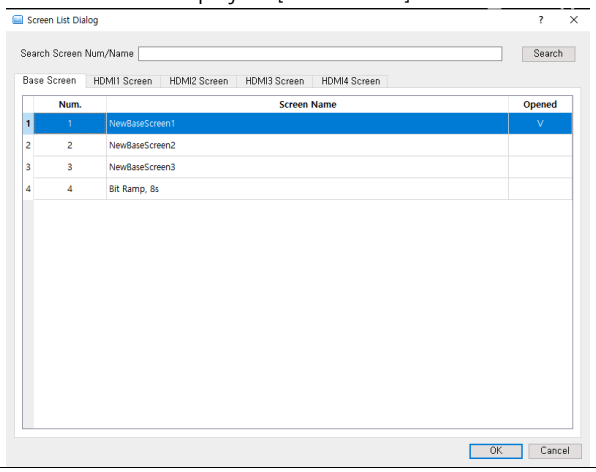
Please see Chapter 27 [Run TOPView] for TOPView.

25.1.7 Online Simulator File

Online Simulator Files perform the execution/screen change/exit functions for the Simulator.

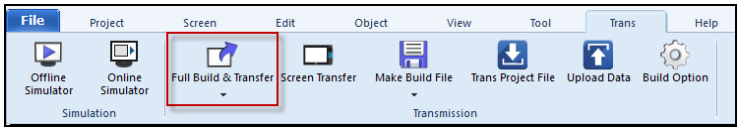


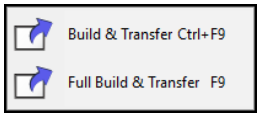
[Pic. Online Simulator File]

No	Simulation	Description
1	RUN	Run online simulations.
2	TOPView Option	It is not supported in online simulation.
3	Control Panel	It is not supported in online simulation.
4	New Screen	Create a new screen.
5	Screen List	Popup the Screen List window in the project. [Double-click] the desired screen to open it. 
6	Home Screen	Switch to the Start Screen Number.
7	Previous Screen	Switch to previous screen.
8	Next Screen	Switch to the previous screen.
9	Full Screen	It is not supported in online simulation.
10	Minimize	Minimize the online simulation.
11	Exit	Exit the online simulation.

Build && Transfer

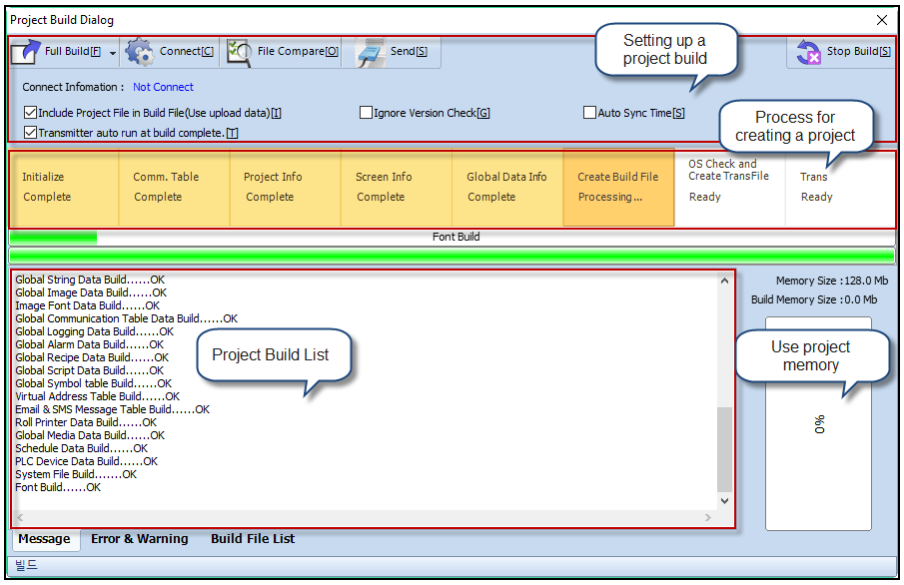
Send the project to the system unit of the touch screen.





[Pic. Build & Transfer]

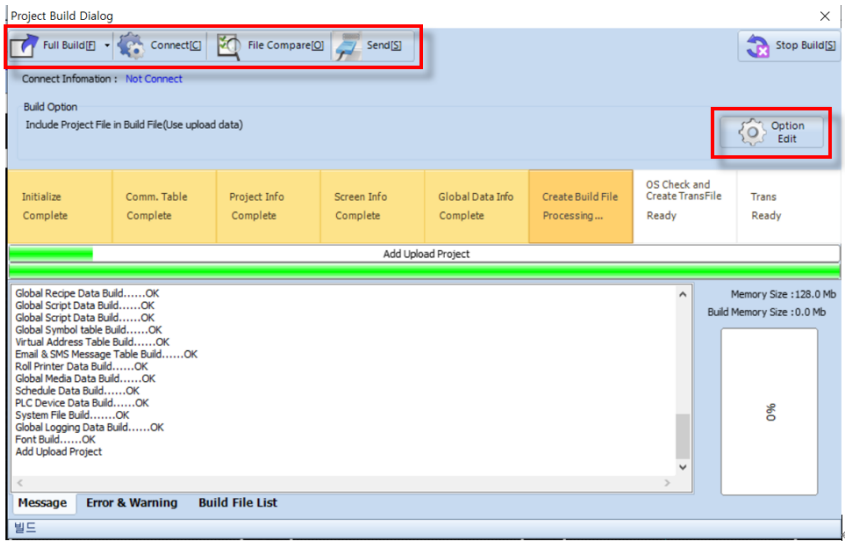
No	Icon	Description
1	Full Build && Transfer	Build (compile) the entire project and transfer it to the touch screen. It will include all factors of the current project and transfer.
2	Build & Transfer	For the initial project transfer, it is the same as [Full Build && Transfer]. From the second transfer, it will compare the project in the system unit of the touch screen and the project open in TDS and build and send the changes only.



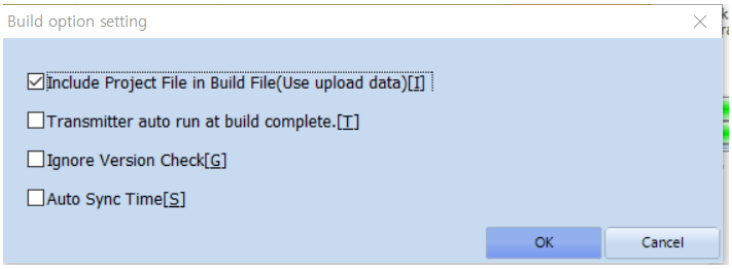
[Pic. Project Build]

25.1.8 **Project Build Window**

For Project Build Windows, there are [Full Build], [Connect], [File Compare], and [Transmission] buttons, and there are options such as Upload Information Included for Transmission (Backup project file), Auto Sync Time, etc.



[Pic. Project Build Window]

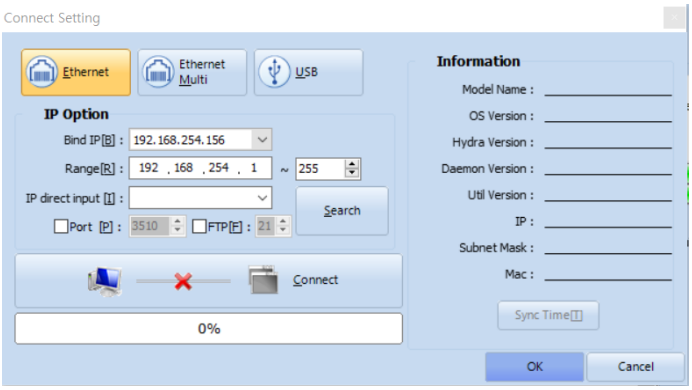


[Pic. Project option settings]

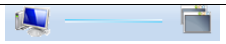
No	Project Build Property	Description
1	Full Build/Build	Restart TDS Project Build. If Build && Transfer has been performed, you do not need to build again. As mentioned above, there are ways to perform full build and build edited items only.
2	Connection	Connection Setting window to connect the touch screen and PC will be displayed. (Ethernet/Ethernet Multi/USB connection available)
3	File Compare	Compare project file saved in Touch Screen and the file that is currently open in TDS. The comparison result will be displayed in a list of differences.
4	Transmission	Send project built in a touch screen.
5	Connection Information	Show the connection status between touch screen and PC.
6	Include Project File in Build File	Make sure to check this option if you wish to upload the original project file from touch screen at a later stage. Check it to send it to touch screen including the original project file at build. Uncheck it and you will never be able to upload project files from touch screen.
7	Transmitter auto run at build complete.	If connected to a touch screen, it will automatically send project to the touch screen after build.
8	Ignore Version Check	When sending to touch screen, skip the version check of the firmware (OS, Daemon, Hydra, Util) and send the project unconditionally.
9	Auto Sync Time	Auto sync the PC time to touch screen when sending a project to touch screen.
10	Close	Close the Project Build window.

(1) Connection

It refers to the Connection Setting for the connection between touch screen and PC. Click [Connect] to display Connection Setting window as the follow picture. This will vary by the connection device set by the user. Also, the user will be able to check information of the connected touch screen.

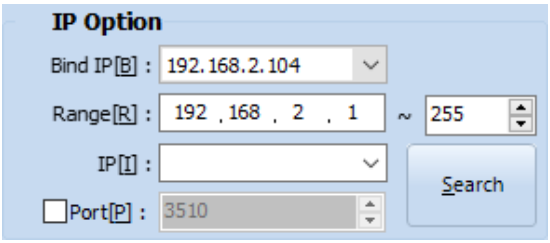


[Pic. Project Build Connection Setting]

No	Connection Setting	Description
1	Ethernet	Set it up to connect the touch screen to a PC via Ethernet. To use this function, PC and touch screen must be connected via Ethernet and the assigned IP information must be checked and setup.
2	Ethernet Multi	Set it up to connect the touch screen to multiple PCs via Ethernet. To use this function, PC and touch screens must be connected via Ethernet and the assigned IP information must be checked and setup.
3	USB	Set it up to connect the touch screen to a PC via USB. Connect to the front USB of a touch screen while the USB driver is installed.
4	 Connect	Connect to the touch screen according to the Ethernet or USB setting.
5	Information	When successfully connected, show various information of the connected touch screen.
6	Sync Time	Change the PC time to touch screen time immediately.
7	OK	Save the current state and exit.
8	Cancel	Exit without saving the current state.

(2) How to connect to Ethernet

To use Ethernet, the user must configure IP setup. Check the IP setup of PC and touch screen. Also, in case it uses a public IP, it can be setup as is. However, if in case it uses a private IP, it must be setup with the same network (Subnet Mask/Gateway/DNS, etc.).



[Pic. How to connect to Ethernet]

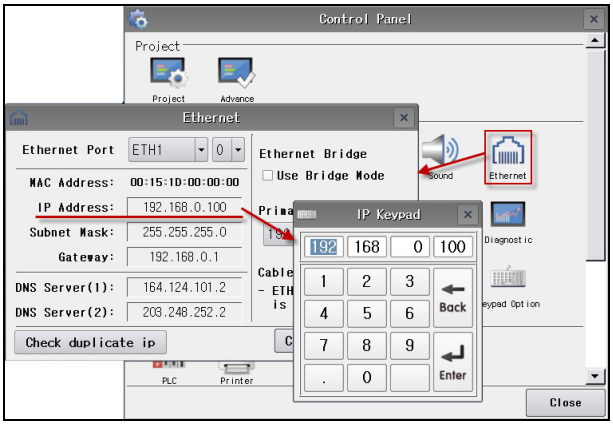
No	Ethernet	Description
1	PC IP[B]	Select the PC IP. If a PC has more than two IPs, select Ethernet IP that is connected to the touch screen via cable.
2	Range [R]	If the exact IP of touch screen is unknown, find the touch screen by Search.
3	IP Direct Input [I]	Enter the correct IP set to the touch screen and press connect to immediately connect.
4	Port [P]	This is the port for connecting to touch screen and uses 3510 port as default. This setting is used when accessing the touch screen by changing the port externally for special purposes such as port forwarding.
5	FTP	This is the port for sending to touch screen and uses 21 port as default. This setting is used when accessing the touch screen by changing the port externally for special purposes such as port forwarding.
6	Search [S]	Search touch screen within the search range.

Use Command window of Windows to check your own IP. Press [Window]+[R] and the following CMD window will appear. Enter [ipconfig -all] to check the IP information assigned to you.



[Pic. How to check the PC IP]

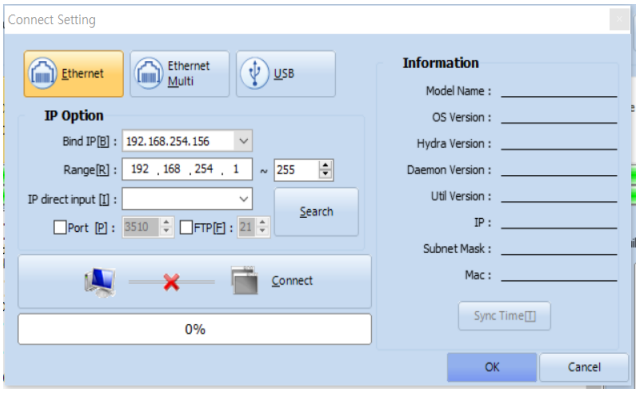
To check the IP address assigned to the touch screen, please go to [Menu Screen]-[Control Panel].



[Pic. How to check the touch screen IP]

(3) How to connect Ethernet Multi

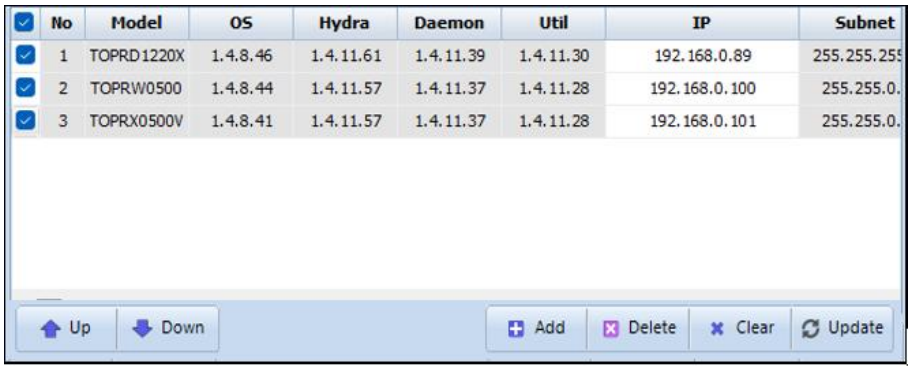
Ethernet Multi has the same connection setting to Ethernet.



[Pic. How to connect Ethernet Multi]

No	Multi	Description
1	PC IP[B]	Select the PC IP. If a PC has more than two IPs, select Ethernet IP that is connected to the touch screen via cable.
2	Range [R]	If the exact IP of touch screen is unknown, find the touch screen by Search.
3	IP Direct Input [I]	Ethernet Multi does not provide this function.
4	Port [P]	This is the port for connecting to touch screen and uses 3510 port as default. This setting is used when accessing the touch screen by changing the port externally for special purposes

		such as port forwarding.
5	FTP	This is the port for sending to touch screen and uses 21 port as default. This setting is used when accessing the touch screen by changing the port externally for special purposes such as port forwarding.
6	Search [S]	Search touch screen within the search range.

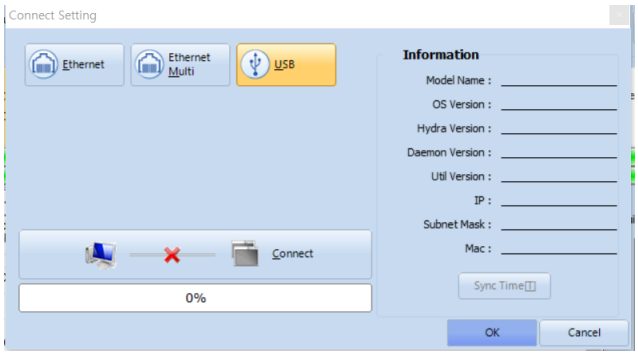


[Pic. Ethernet Multi Search]

No	Multi	Description
1	No	Show the order of the searched touch screen.
2	Model	Show the model of the searched touch screen.
3	OS	Show the OS Version of the searched touch screen.
4	Hydra	Show the Hydra Version of the searched touch screen.
5	Daemon	Show the Daemon Version of the searched touch screen.
6	Util	Show the Util Version of the searched touch screen.
7	IP	Show the IP of the searched touch screen.
8	Subnet	Show the Subnet Mask of the searched touch screen.
9	Up/Down	Modify the order of the selected model from the searched touch screens.
10	Add	Manually input the IP of the unsearched touch screen to search for.
11	Delete	Delete the selected model from the searched touch screens.
12	Clear	Delete all searched touch screens.
13	Update	Refresh the search screen.

(4) How to connect USB

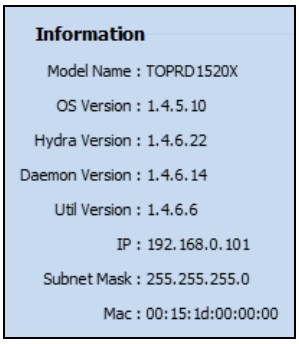
Unlike Ethernet Connection, when using USB connection, there is no additional setup required as long as the driver is installed. Press USB connection setting and press [Connect]. It will be connected and the connection information will be displayed.



[Pic. How to connect USB]

(5) Connection Information

When a PC and touch screen is connected, the device's status information will be displayed. Through this, you may check the OS status, various system versions, and IP address on screen.



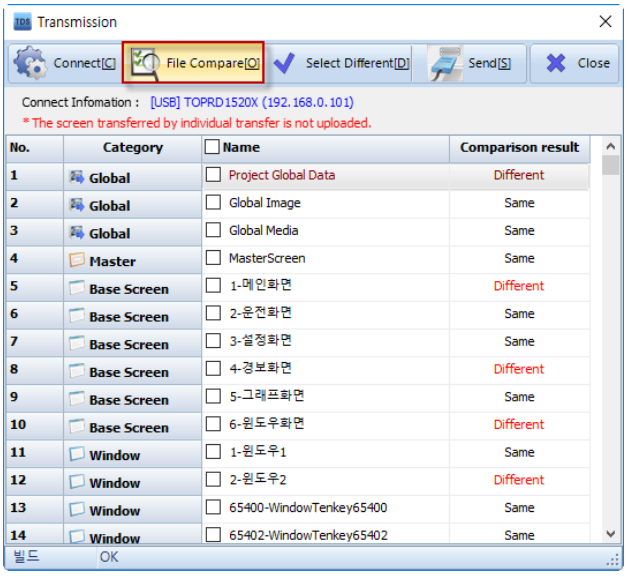
[Pic. Connection Information]

No	Connection Information	Description
1	Model Name	Display the model name of the touch screen.
2	OS Version	Display the Daemon version of the touch screen.
3	Hydra Version	Display the Hydra version of the touch screen.
4	Daemon Version	Display the Daemon version of the touch screen.
5	Util Version	Display the Util version of the touch screen.
6	IP	Display the IP address of the touch screen.
7	Subnet Mask	Display the Subnet Mask address of the touch screen.
8	Mac	Display the Mac address of the touch screen.

(6) File Compare

File comparison is available when the touch screen and PC are connected (by Ethernet or USB).

The project file downloaded to the connected touch screen and the project file open in the PC's TDS will be compared and their differences will be listed down. It compares all screen factors such as Global Data (Alarm, Log, Recipe, etc.), Global Image, Global Media, Master Screen, Base Screen, Window, Frame, Image Screen, etc. and their similarities and differences are displayed.



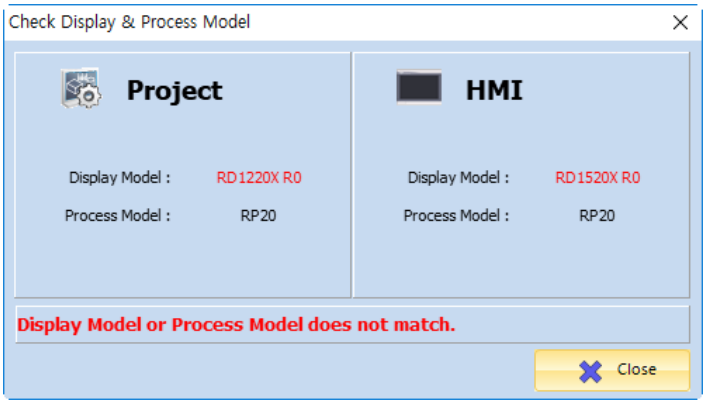
[Pic. File Compare result]

No	File Compare	Description
1	Connection	Connect when reconnection is required due to touch screen replacement or lost connection.

2	File Compare	When touch screen is reconnected, compare again to mark the result.
3	Select Different	Select all files that have different project comparison result. You may also select them individually with mouse clicks. Select the all or separately, then send the selected screens only (The screen transferred by individual transfer is not uploaded.).
4	Transmission	Send the selected screen or global data to touch screen.
5	Close	Close the file comparison window.

(7) Transmission

Send project files to the connected touch screen. The project files will be sent via the connected Ethernet or USB. If the touch screen model setup in TDS and the actual model are different, below error message will pop up. You may reset the touch screen model at [Project]-[Property] menu in TDS.

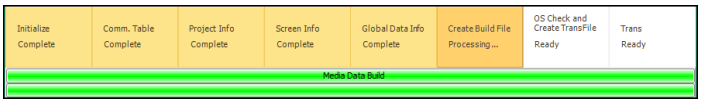


[Pic. Transmission Error Message - Mismatched Model]

The transmission begins when there is no issue in the cable connection and model setting, and the touch screen restarts when the transmission is completed.

25.1.9 Project Build Process

Show the process in which project build is completed. In particular, it will give an insight in how to identify where the issues occur for the project during the build process.



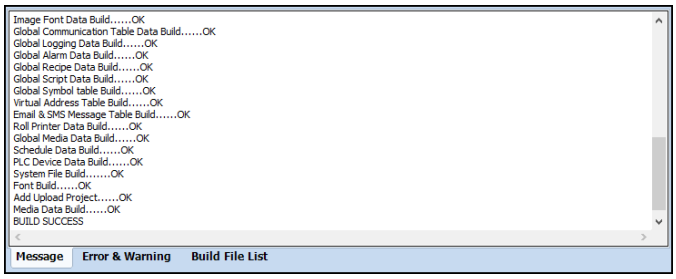
[Pic. Project Build Process]

No	Build Process	Description
1	Initialize	Initialize the build file.
2	Create Comm. Table	Create Comm. Table that can communicate with PLC.
3	Project Info	Create HMI Setup information of project.
4	Screen Info	Create project screen information.
5	Global Data Info	Create global data information such as log, alarm, security, etc.
6	Create Build File	Create previous data as build files. This process completes the build.
7	OS Check and Create Build File	Check the OS version sent by TDS and the touch screen's OS version and create a transmission file.
8	Transmission	A project is sent to the touch screen.

25.1.10 Project Build List

Show the list that is implemented during the project build process and the list where errors are registered.

Also, the user may check the build file memory here.

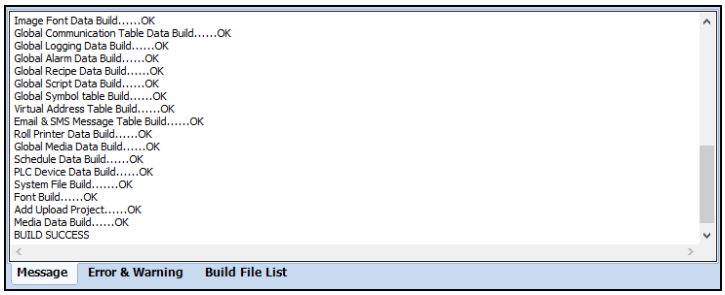


[Pic. Project Build List]

No	Build List Property	Description
1	Message	Show the build process message.
2	Error & Warning	Show the list of errors that occurred at build.
3	Build File List	Show the size and description of the built file.

(1) Message

Show the completed build list in a message format.



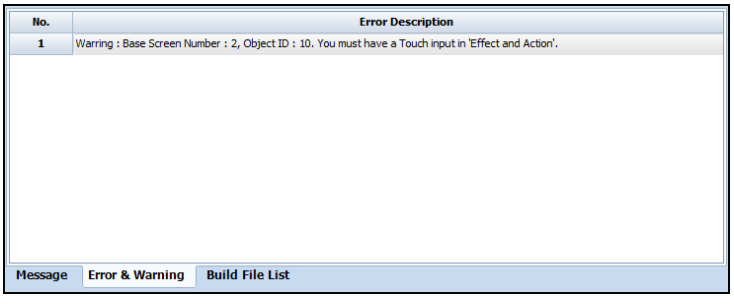
[Pic. Message]

(2) Error & Warning

It shows errors and warning issued at build in a list and display the descriptions of the issued errors.

When an error is issued, build fails and cannot be transmitted.

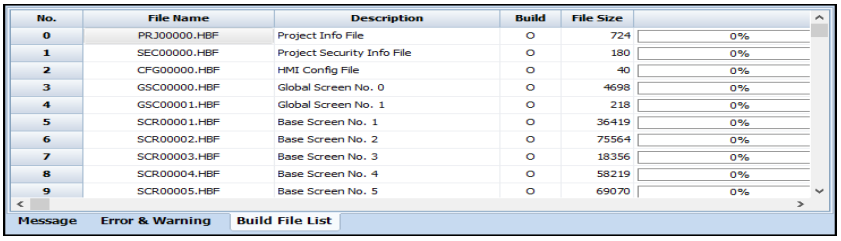
Warnings do not affect the transmission of build, however, it allows the user to double check the user mistakes.



[Pic. Error List]

(3) Build File List and Memory Information

Show the name, description, and file size of the file created after build in a list.

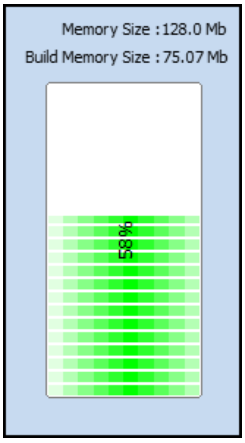


[Pic. Build File List]

25.1.11 **Use Project Memory**

Build a project and you will see the memory usage of the current project from the total memory of the touch screen.

The total memory capacity of the connected touch screen will be displayed and the used memory space will be displayed as [Build Memory Size].

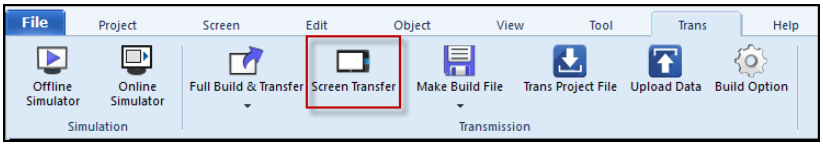


[Pic. Project Memory Usage Display]

Screen Transfer

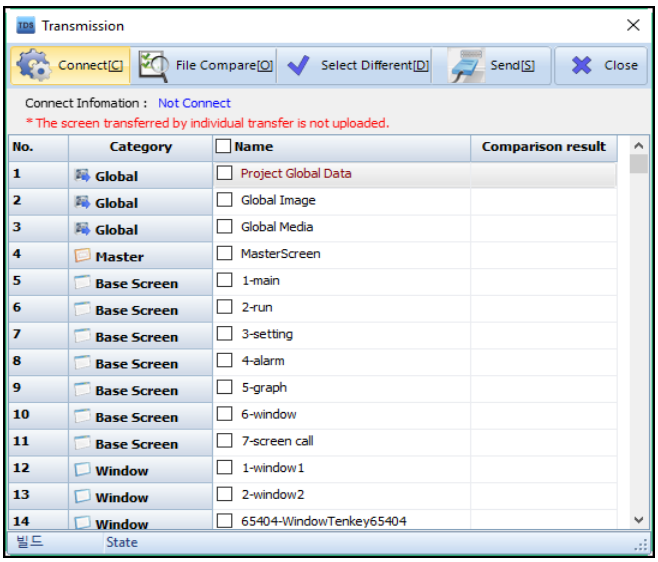
[Screen Transfer] is used when sending individual screen. Generally, they are sent by building the entire project file through [Full Build && Transfer]. For special occasions, you may use [Screen Transfer] to send the selected screen only.

Individually sent screens will not be uploaded.



[Pic. Screen Transfer]

Run [Screen Transfer] and the below window will be displayed.



[Pic. Select Transmission Screen]

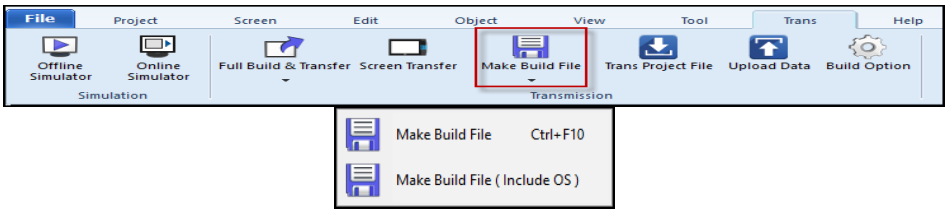
Show all screens in a project, global data, image screen, etc. in a list.

Select (check) the screen you wish to transfer to send the selected factors only. Also, you may also see the result from the previously described [File Compare] and send selectively.

However, screens transferred individually will not be not uploaded.

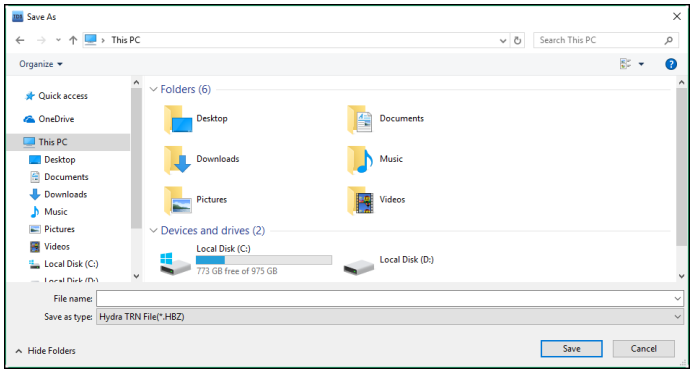
Make Build File (Include OS)

[Make Build File] is used when creating transfer files (*.HBZ) in TDS. Usually, it is used when the user does not wish to leak the original project file but send transfer files only to the touch screen.



[Pic. Make Build File]

Run [Make Build File] and the below window will be displayed.



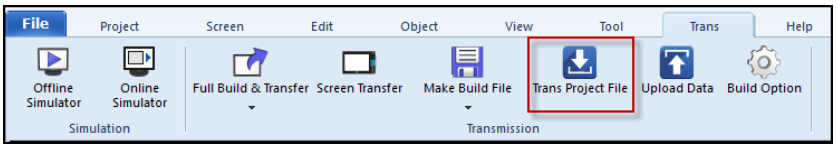
[Pic. HBZ File Save Path]

Set [File Name] and [Save] to create and save a HBZ File. [Make Build File (Include OS)] includes project

file and the OS (Firmware) included in the current TDS version to HBZ files. Afterward, use [Trans Project File] or [USB Memory Stick] to select and send the created HBZ files.

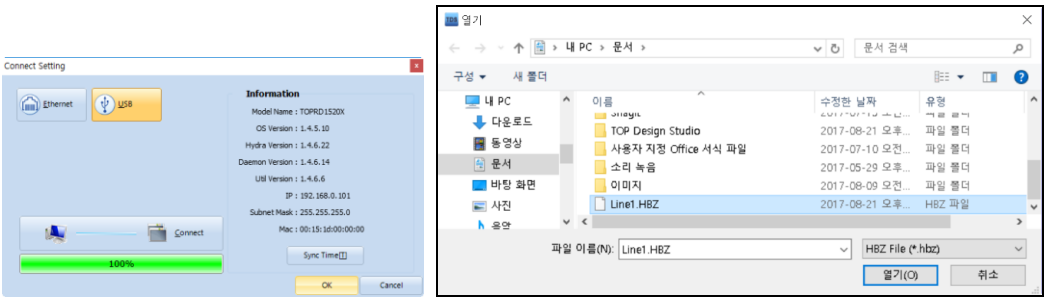
Trans Project File

Select and send the transmission file (HBZ) described above.



[Pic. Trans Project File]

Click the icon and [Connection Setting] window will be displayed.
Connect to a touch screen, find *.HBZ file, and [Open] it to send.

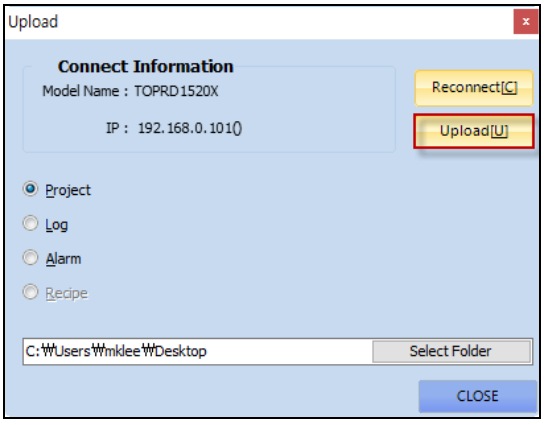


[Pic. Connection and selection of HBZ File]

Connection setting process can also be checked in detail in [Connect] at [Project Build Setting].

Upload Data

Use to upload projects and global data in touch screen to PC. In other words, it is the function for the user to backup log, alarm, and project files in PC. To [Upload], connect (via USB or Ethernet) as you [Download] and below window will be displayed.



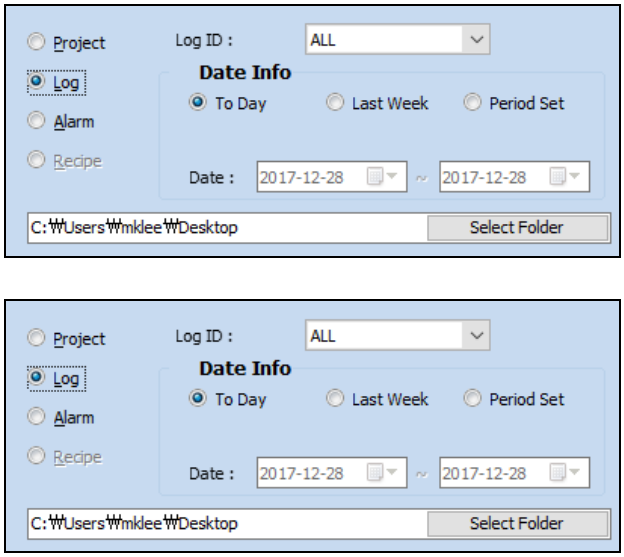
[Pic. Upload]

No	Upload Property	Description

1	Reconnect [C]	If not connected or reconnecting with a different touch screen, you will be redirected to Connection Setting window.
2	Upload [U]	Begin uploading selected files.
3	Project	Select to upload projects in the connected touch screen.
4	Log	Select to upload Log Data in the connected touch screen.
5	Alarm	Select to upload Alarm Data in the connected touch screen.
7	Select Folder	Set the path to save upload data.

(1) Log/Alarm Upload Setting

When uploading logs and alarm data, you may setup and import their dates.



[Pic. Log/Alarm Upload Setting]

No	Upload Property		Description
1	Log/Alarm ID		Select Log/Alarm IDs to upload.
2	Date Info	Today	Set the data to upload as log/alarm data recorded on today's date.
		Last Week	Set the data to upload as log/alarm data recorded on the last week
		Period Set	Set the data to upload as log/alarm data that have been recorded during the Set Period.

Build && Transfer Option



Run [Set Build && Transfer Option] to move to [Edit]-[Option Setting]-[Build Transmission Option].

Build Transmission Option sets the [Build Option/Transmission Option] during the transmission.

For more detailed description, please see Chapter 6.9.4 [Edit Menu]-[Option Setting]-[(4) Build Transmission Option].

CHAPTER 26 - Help Menu

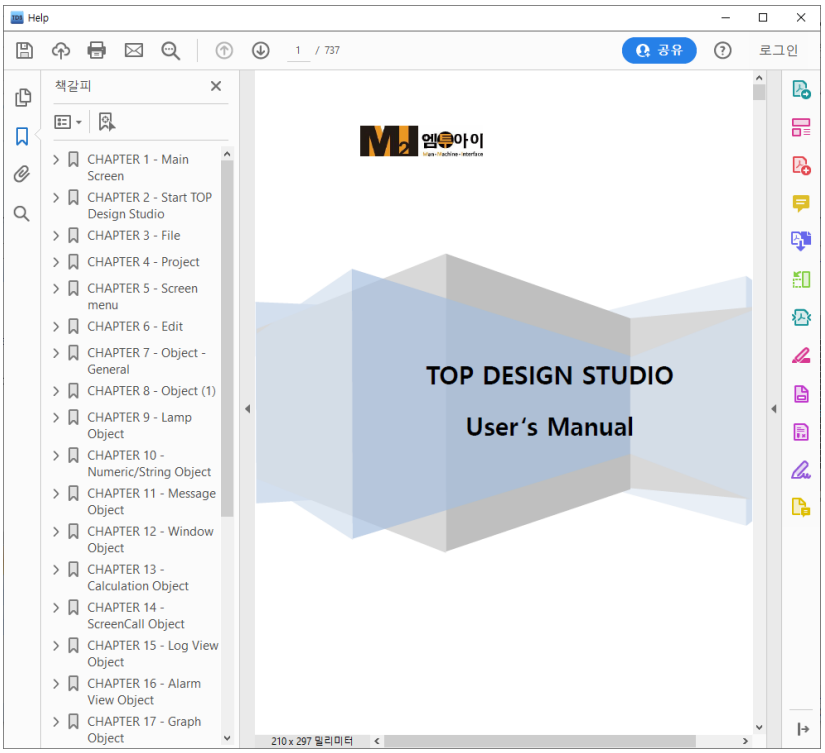
Describe the Help menu. Run the Help menu to execute TDS Software manual. Run the About to check the TDS software version.



[Pic. Help Menu]

Help

Run Help menu and Software Manual will be executed as shown in the below picture. Click Chapter on the left to move to the desired page.



[Pic. TDS Software Manual]

Product Information

Run Product Information menu to check the TDS Software Version as shown in the below picture.



[Pic. Product Information]

CHAPTER 27 - Run TOPView

TOPView (SCADA) is Windows-based automated site monitoring/control software.

Types of TOPView (SCADA)

You can create programs with TDS Design Studio, a free software provided on our website. To run created projects, you must purchase a TOPView license.
(You may use the trial version for up to 2 hours for testing purposes.)
There are 6 TOPView license products according to the tag counts. They are in USB Key Lock format and installed to PC USB port for us.

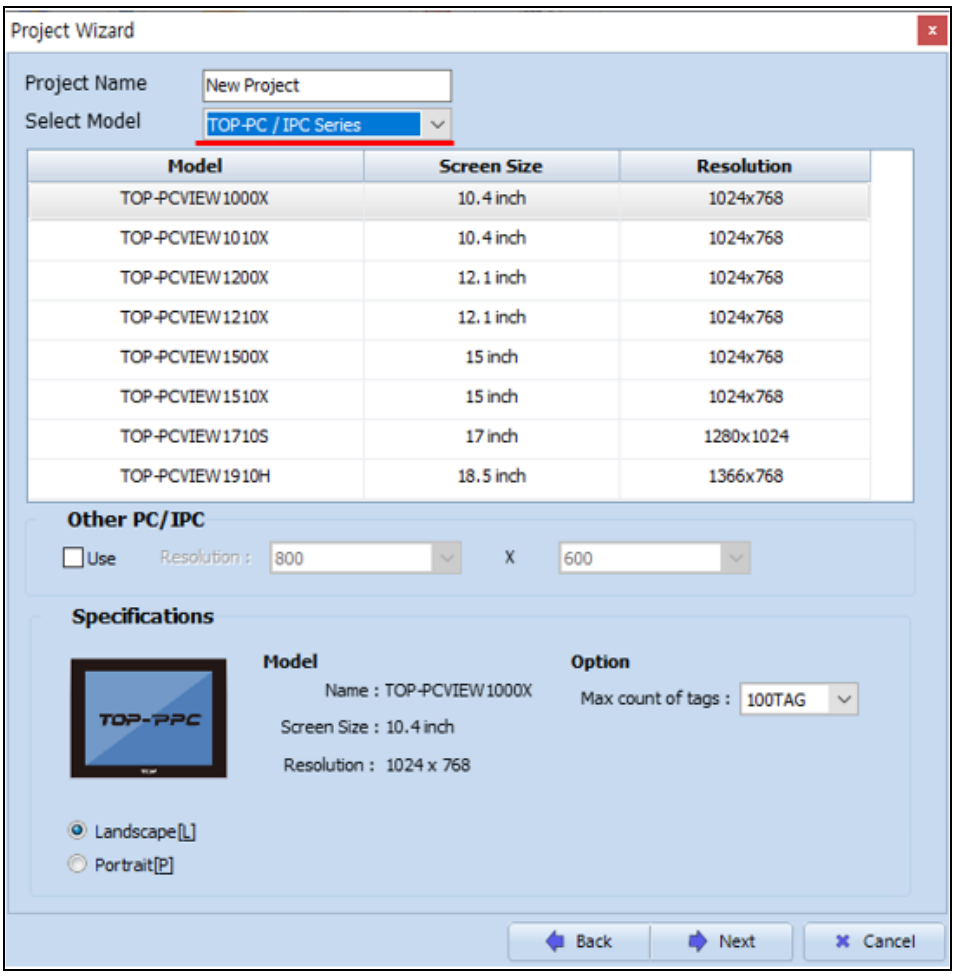
No	TOPView Model Name	Tag Count
1	TOP-VIEW100P	100 tags
2	TOP-VIEW300P	300 tags
3	TOP-VIEW600P	600 tags
4	TOP-VIEW1300P	1300 tags
5	TOP-VIEW2000P	2000 tags
6	TOP-VIEWFULLP	Infinity tags (Full tag)

It is a PC- based HMI with TOPView Full Tag License. There are TOP-PCVIEW series.
TOP-PCVIEW is a panel PC with aluminum body.

No	TOP-PCVIEW Model Name	Display
1	TOP-PCVIEW1910HA	19 Inch, 1366x768
2	TOP-PCVIEW1710SA	17 Inch, 1280x1024
3	TOP-PCVIEW1510XA	15 Inch, 1024x768
4	TOP-PCVIEW1210XA	12 Inch, 1024x768
5	TOP-PCVIEW1010XA	10 Inch, 1024x768

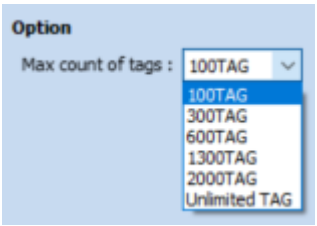
Create TOPView Project

TOPView Projects create and visualize in the same way that TOP products' projects do using TDS Design Studio (hereinafter TDS). It can not only program [By Tag] but also [By Device]. It can also convert TOPView Projects to TOP products' projects, and vice versa.
Run [New Project] menu in TDS and the following [Project Wizard] will be created. At this time, select [TOP-PC/IPC Series] at [Select Model] and choose the resolution from the Model List.

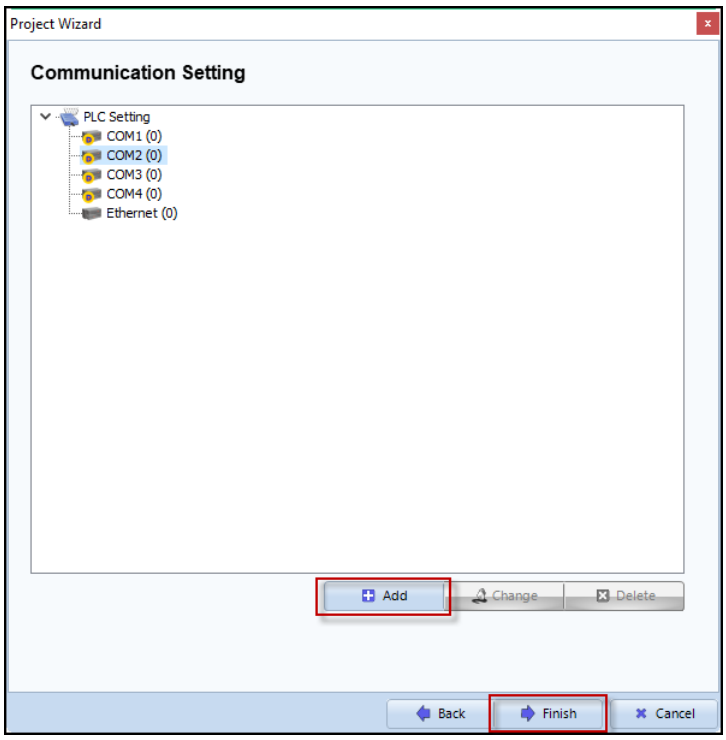


[Pic. Create TOPView Project]

Set the max count of tags at [Option] according to the TOPView program in use.

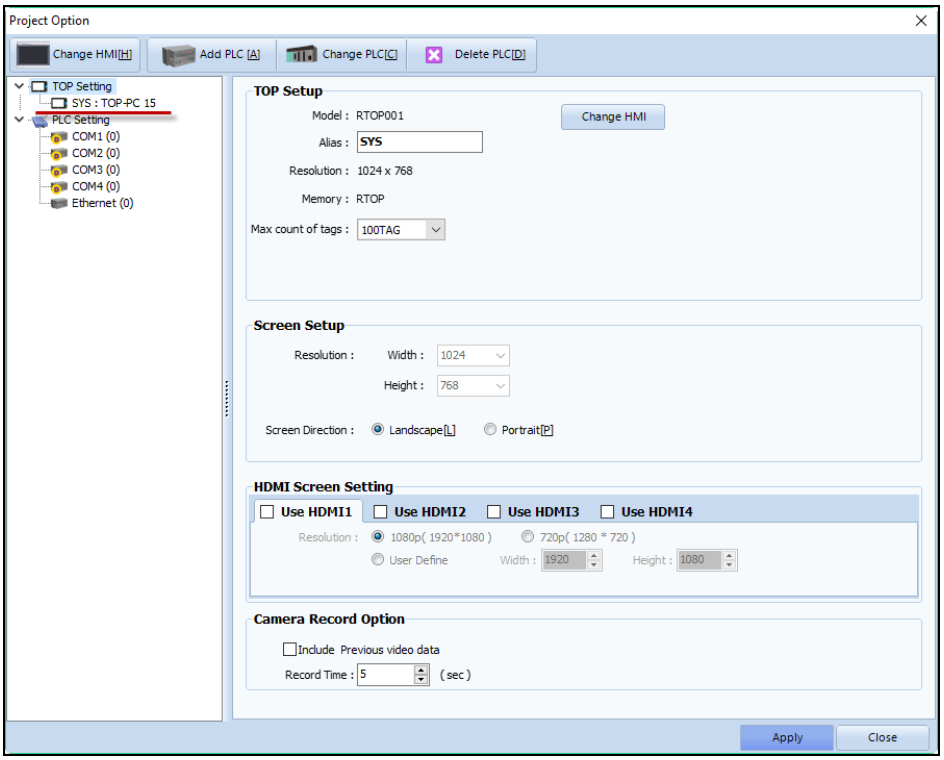


Press [Next] button at the bottom to move to [Communication Setting] screen. Configure PLC Driver Setup to communicate with at the Communication Setting screen. The basically provided ports will be the serial ports [COM1/COM2/COM3/COM4] and the Ethernet port.



[Pic. Communication setting when creating TOPView projects]

Communication setting can be configured on this screen and it can also be setup in [Project]-[Property] menu. Press [Finish] button to complete the project creation. Edit the settings in [Project Option] screen that appears when running [Project]-[Property] menu. Select TOPView model name in [TOP Setup] at the top left corner and make changes on the right screen.



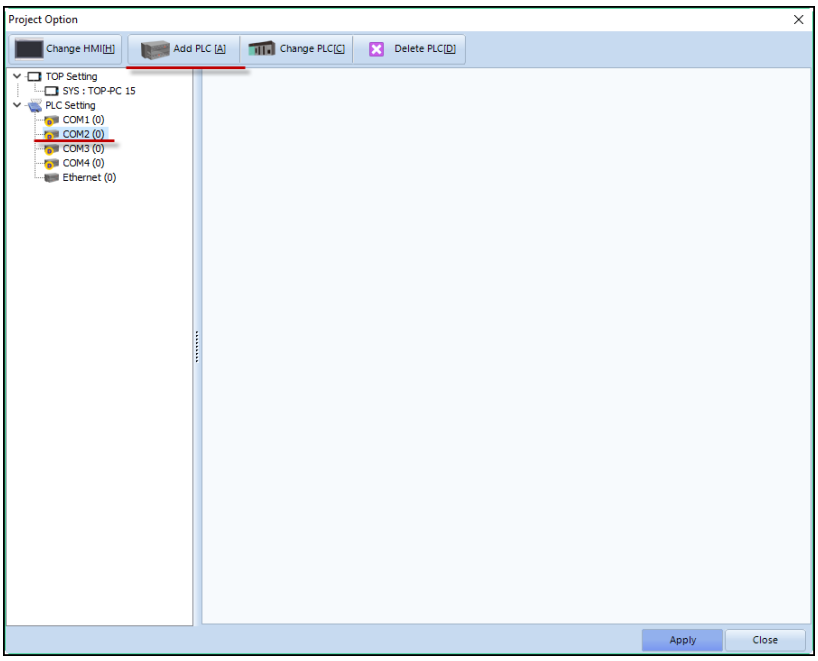
[Pic. Project option]

Finish [Create Project], then run [File]-[Save] menu to save the created project as a file.

PLC Driver Setup

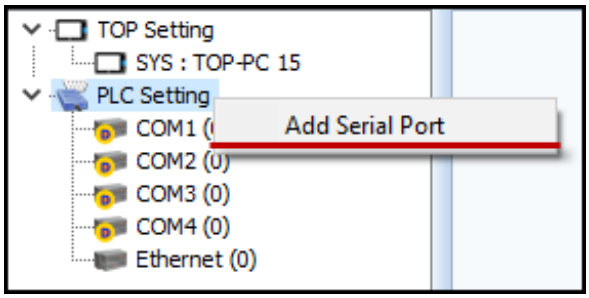
27.1.1 How to Setup PLC Driver Setup

Setup the PLC (Controller) that will be connected to the port of the PC where TOPView operates.
Configure PLC Driver Setup on [Project Option] screen that appears when [Project]-[Property] menu is run.



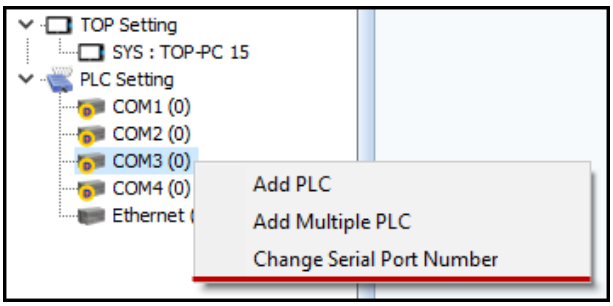
[Pic. Project option]

Select the port to connect to, then run [Add PLC] menu at the top to setup the PLC to communicate. There are more PC serial port numbers than the basically provided [COM1-COM4] and you may add or edit them at [Project]-[Property]. Right-click with the mouse at [PLC Driver Setup] to popup the following [Add Serial Port] menu. A serial port with the number after the last serial port number.



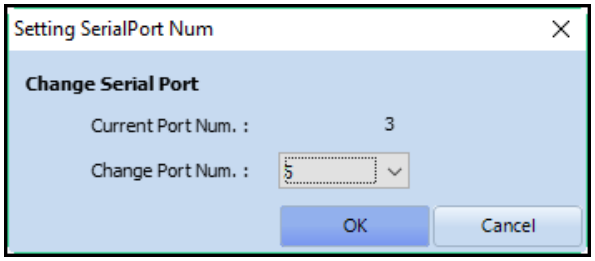
[Pic. Add Serial Port at Project Option]

Select the Serial Port which you aim to change its number then right-click with the mouse to popup [Change Serial Port Number] menu.



[Pic. Modify Serial Port Number at Project Option]

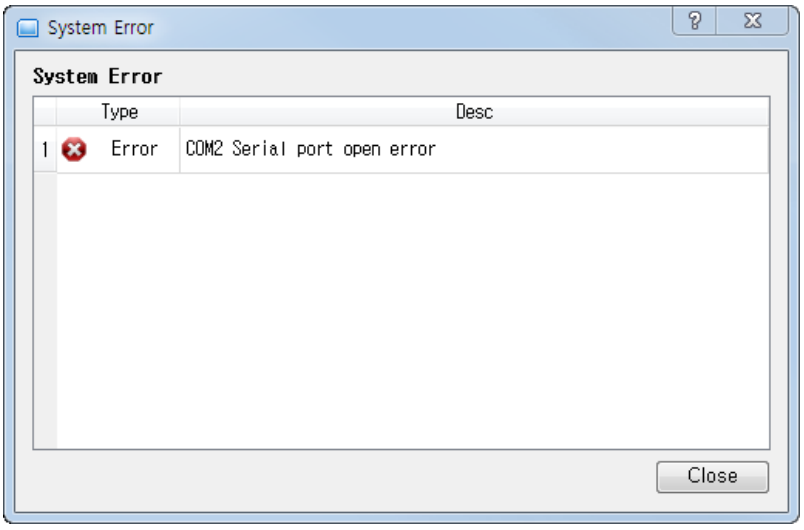
Enter [Change Port Num] as below to change COM3 to COM7.



[Pic. Modify Serial Port Number at Project Option]

27.1.2 Communication Error

When communication error occurs with the set PLC when running TOPView, below screen will pop up.



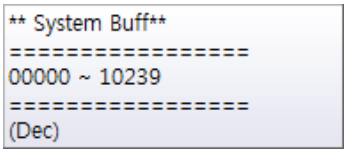
[Pic. Communication Error]

When a communication error occurs, check the Comm Manual and check the cable wiring diagram and communication setting between the PC and PLC.

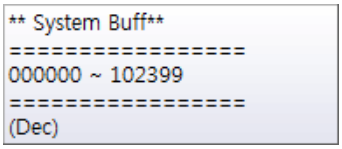
Input/Tag Count of Address

27.1.3 Internal address (System address)

Internal addresses of TOPView are provided at the 10 ties of the TOP product. Available address numbers are 0-102399. The unit of the internal addresses are 16 Bit (Word).



[Pic. Internal addresses of TOP product]



[Pic. Internal address of TOPView]

27.1.4 PLC Address Management

TOPView has different licenses according to the number of the addresses (tags) available for us. Therefore, to manage addresses, use Symbol Manager and Comm Block.

(1) Register Symbol Manager

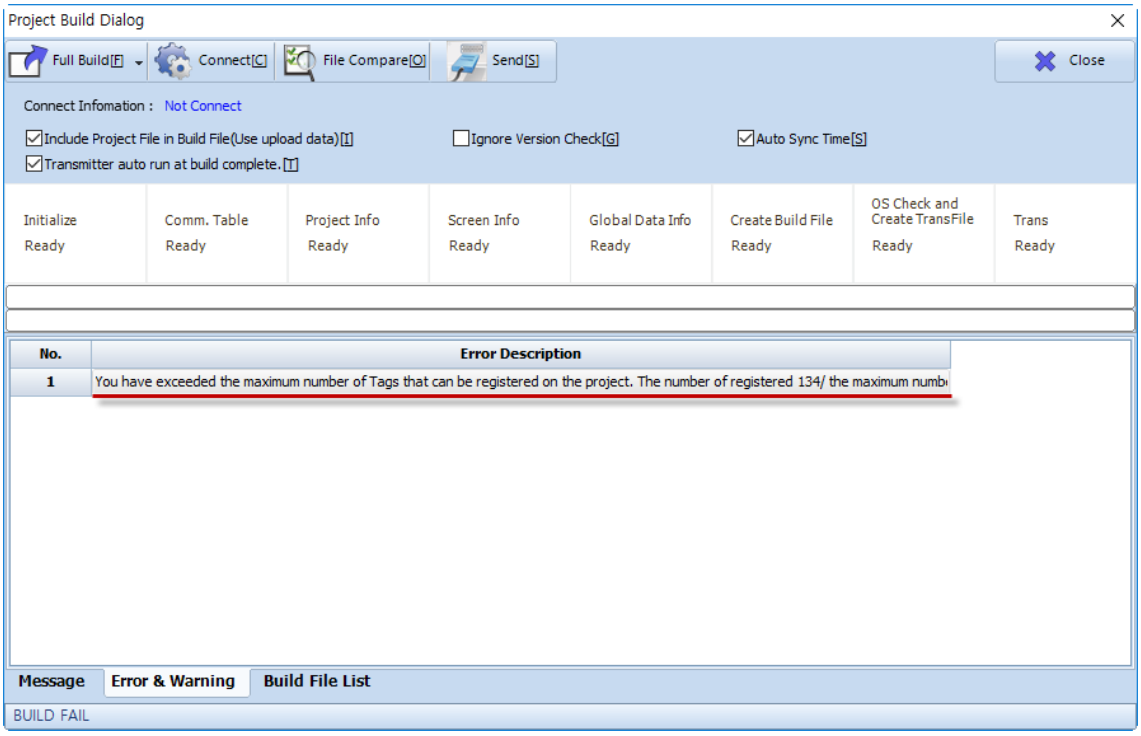
Run [Project]-[Symbol] menu to register address to [Symbol Manager] and use [Symbol] address when entering addresses. For Symbol Manager, please see Chapter 4.6 [Symbol].

(2) Use Comm Block

Run [Project]-[Comm Block] menu to draft an Address Table to communicate with PLC.
For more detailed description of Comm Block, please see Chapter 4.8 [Comm Block].

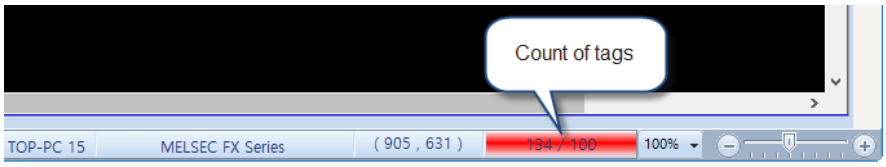
(3) In case the max tag count available for project registration has been exceeded

The max count of tags that can be registered to projects vary according to the purchased TOPView license. When the max tag count is exceeded, below error will occur when running [Transmission]-[Full Build && Transfer].



[Pic. Error message when the tag count has been exceeded]

The max tag count and the count of tags used in the current project can be seen on the status bar at the bottom.



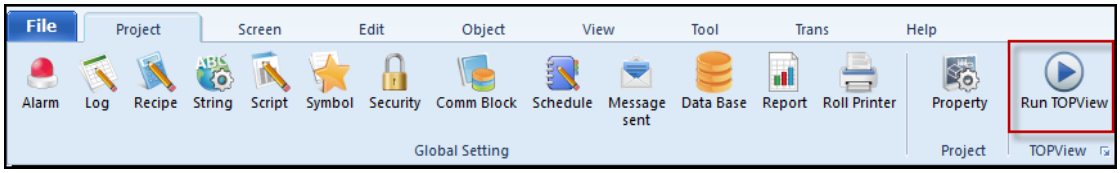
[Pic. Tag count display on status bar]

Run TOPView

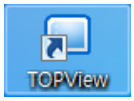
Draft projects in TDS and run the project straight away.

27.1.5 How to run TOPView

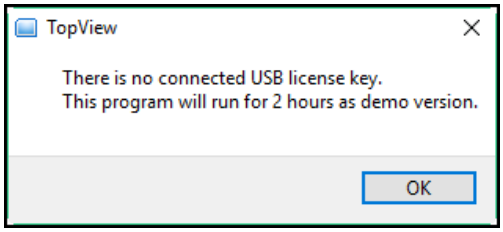
Run [Run TOPView] in [Project] menu.



[Pic. TOPView Execution Menu]

Or, run TOPView icon 

on Desktop screen. If you have not entered the purchased TOPView license key to the PC, below message will be displayed. You may run the program up to 2 hours without entering the license key. It will be automatically closed after 2 hours.



[Pic. License key message]

27.1.6 TOPView Execution Screen

This is the execution screen of TOPView. There are menus and ToolBar at the top of this screen.



[Pic. TOPView Execution Screen]

TOPView Screen Menu

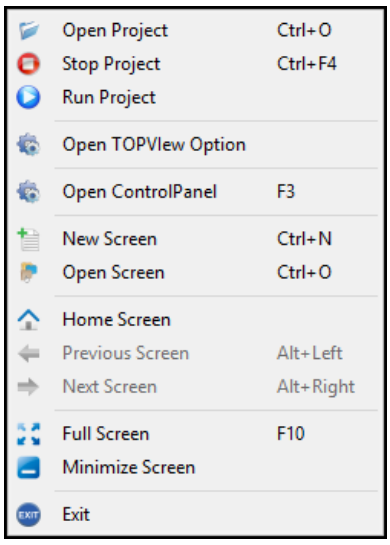
Describe the TOPView screen menu.



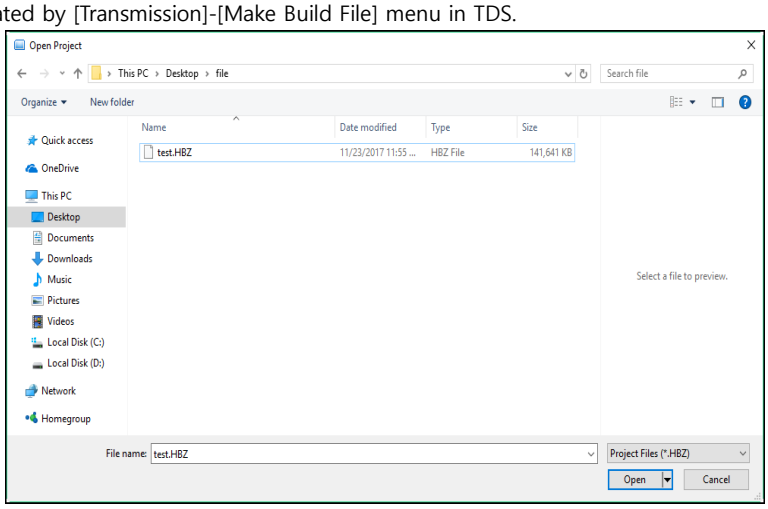
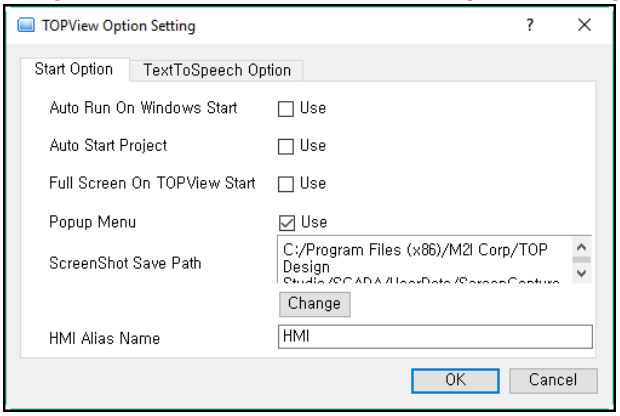
[Pic. Menu]

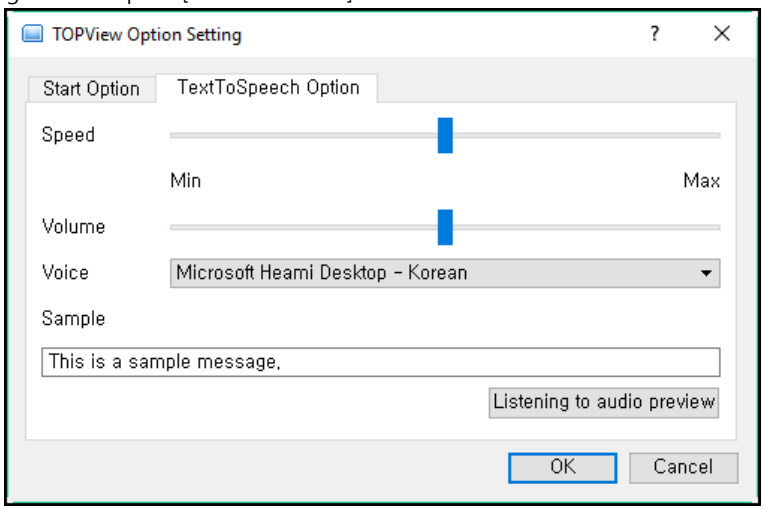
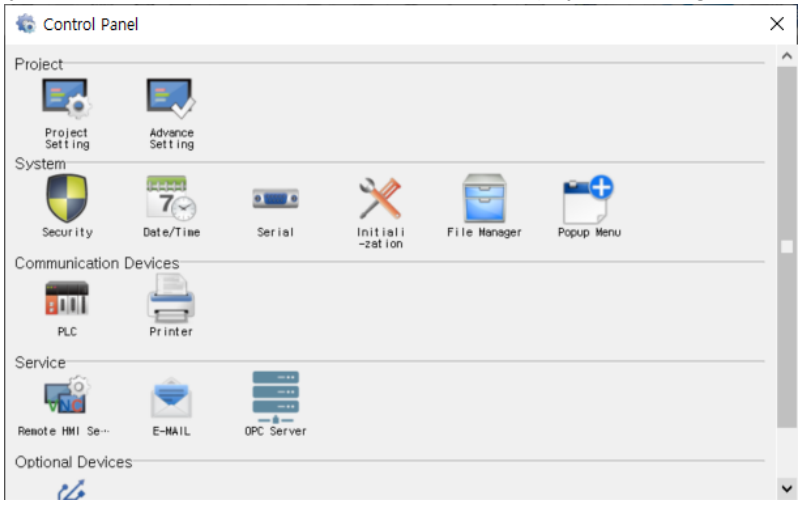
27.1.7 File Menu

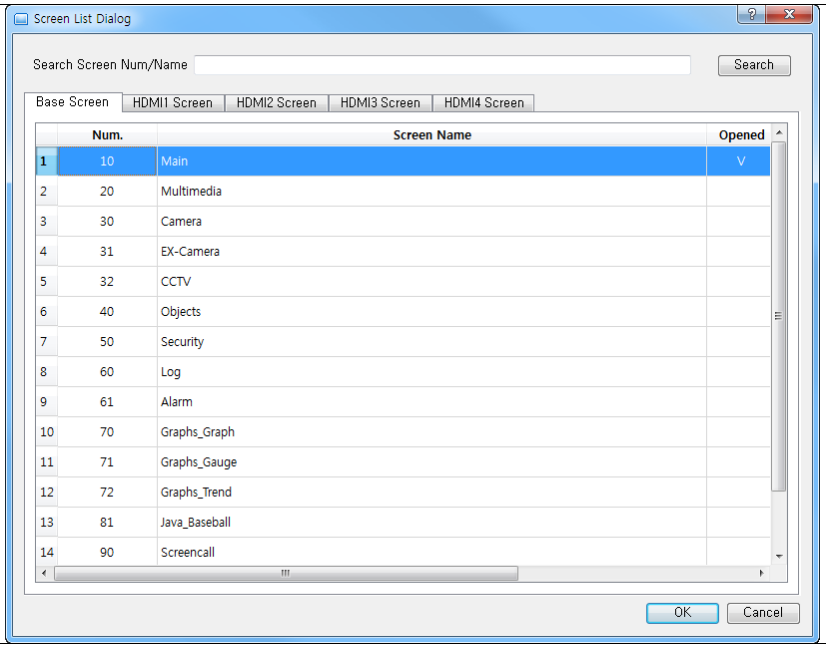
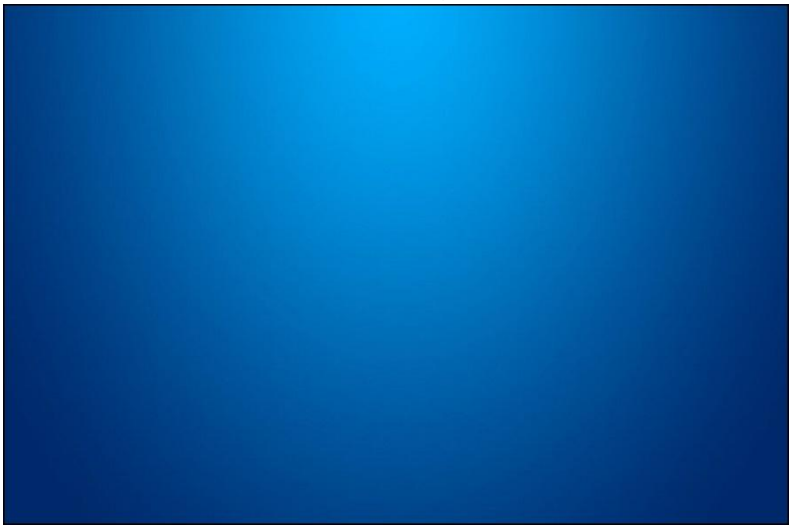
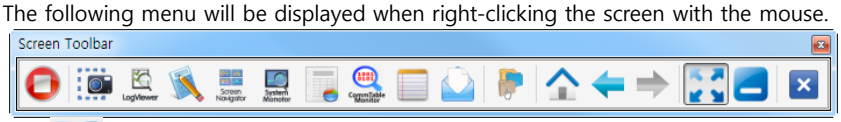
This is the file menu.

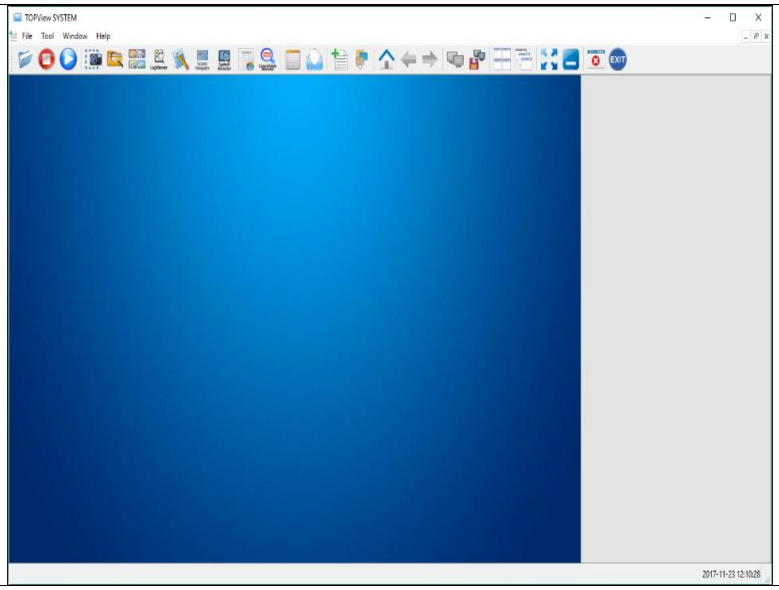
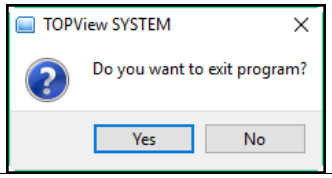


[Pic. File Menu]

No	File Menu	Description
1	Open Project	Open HBZ files manually in TOPView program to run projects. [HBZ File] is the type of file built by projects created in TDS for transmission and is created by [Transmission]-[Make Build File] menu in TDS.  [Pic. Open Project]
2	Stop Project	Stop the currently running project and close the operation screen.
3	Run Project	Run the last executed project.
4	Open TOPView Option	[Start Option] page is the option that appears when starting TOPView programs.  [Pic. Option Start] [Auto Run at Window Start] is the option that automatically starts TOPView program when the Windows of the PC starts. [Autostart Project] is the option that

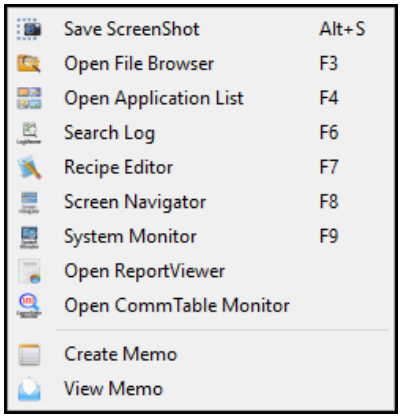
		automatically runs project when TOPView program starts. [Full Screen at TOPView Start] is the option that maximizes the screen when TOPView program is run. [Popup Menu] configures the use of popup menu that appears at a mouse right-click on Operation Screen.  [Pic. Mouse Right-click Popup Menu] [ScreenShot Save Path] is the screen capture file save path. Use [Change] button to change the save path. [HMI Alias Name] is an alia of TOPView.  [Pic. String Voice Option] [String Voice Option] page is an option page of the function that converts strings in spoken voices. [Speed] is for adjusting the speed of the spoken voice. [Volume] is for raising or reducing the volume of the spoken voice. Go to [Voice] to select voices from the list. [Sample] is sample strings. Press [Preview Audio] button to listen to the voice of the drafted strings according to the options.
5	Open Control Panel	The Control Panel menu of the menu screen. Control Panel can be configured at [Stop Project]. All menus of Control Panel are disabled when a project is running.  For more detailed information of Control Panel, please see Chapter 1.2.7-1.2.10 [Control Panel Icon].
6	New Screen	Create a new Execution Screen. A new Execution Screen will be created by the screen setup at [Control Panel]-[Project Setting]-[3. Start Screen Number].
7	Open Screen	Select a screen at [Screen List Dialog] and press [OK] button at the bottom to create a new Execution Screen with the selected screen.

		
8	Home Screen	Move to the set screen from [Control Panel]-[Project Setting]-[3. Start Screen Number].
9	Previous Screen	Move back to the previous screen. Move to the previously operated screen from the current screen. When there has been no screen switch since a project has been run, there is no previous screen, therefore [Prev Screen] menu will be disabled.
10	Next Screen	Move to the next screen. When you have move to the previous screen by running [Prev Screen] menu, run [Next Screen] menu to move back to the screen where you were at before running [Prev Screen]. If you have not run Prev Screen menu, [Next Screen] menu will be disabled.
11	Full Screen	Switch the Execution Screen to Full Screen, except for the menus.  The following menu will be displayed when right-clicking the screen with the mouse.  Run  menu to switch back to the Execution Screen that includes menus.

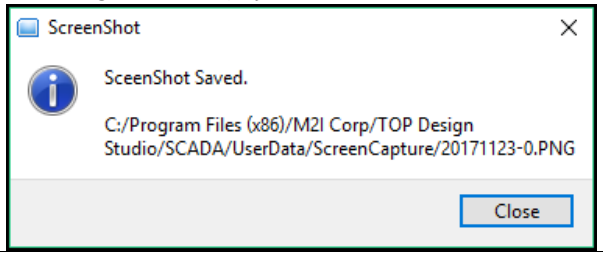
		
12	Minimize Screen	Minimize TOPView program screen.
13	Exit	Exit TOPView program. Press [Yes] to exit. 

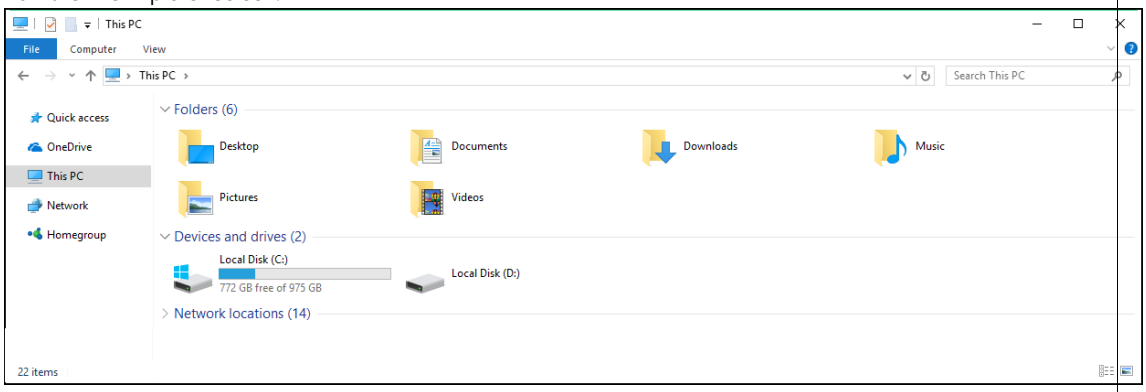
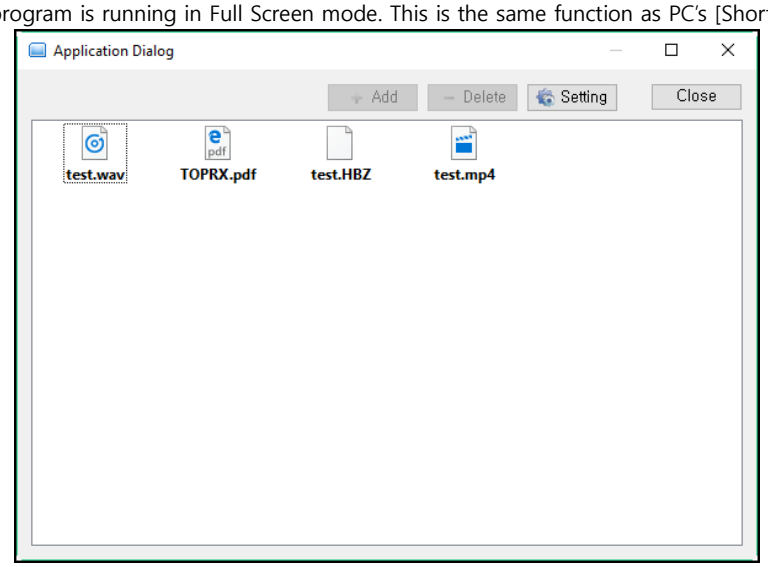
27.1.8 **Tool Menu**

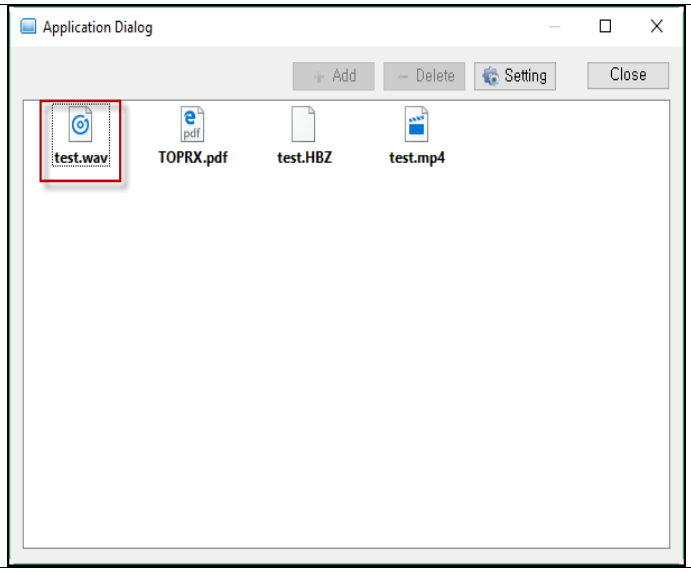
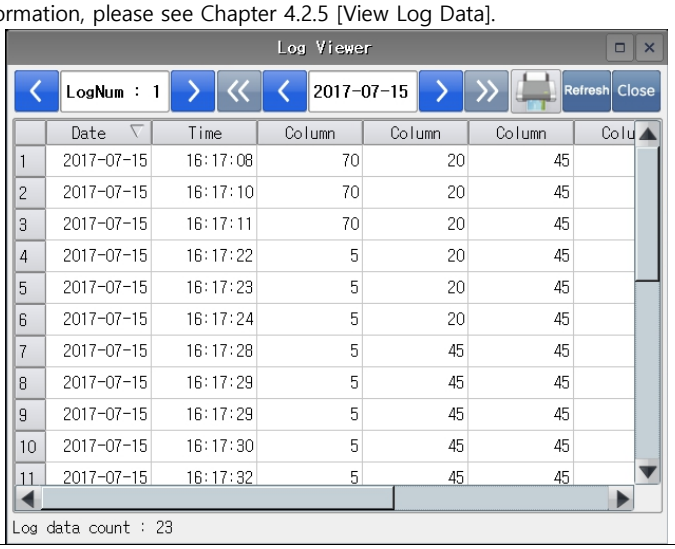
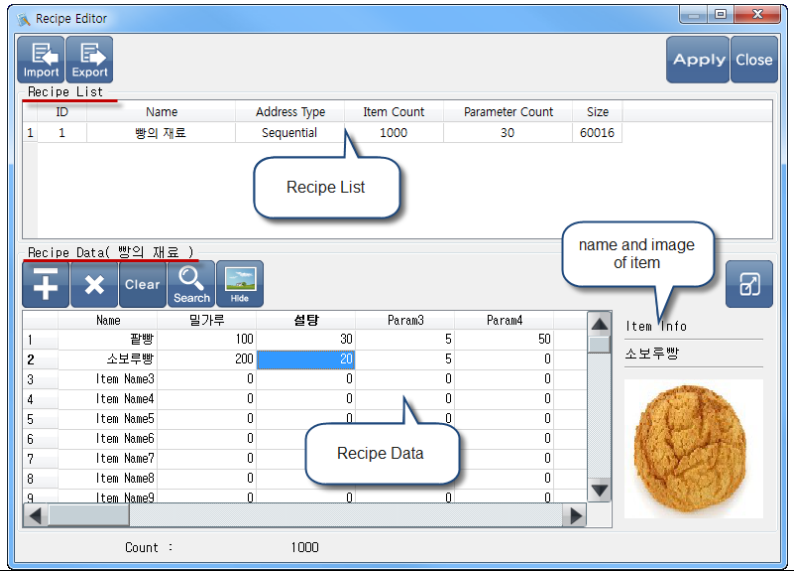
This is the Tool menu.

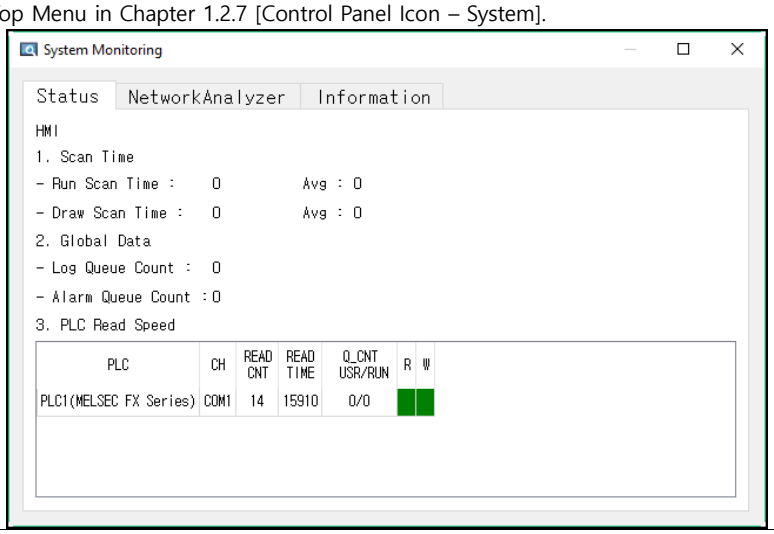
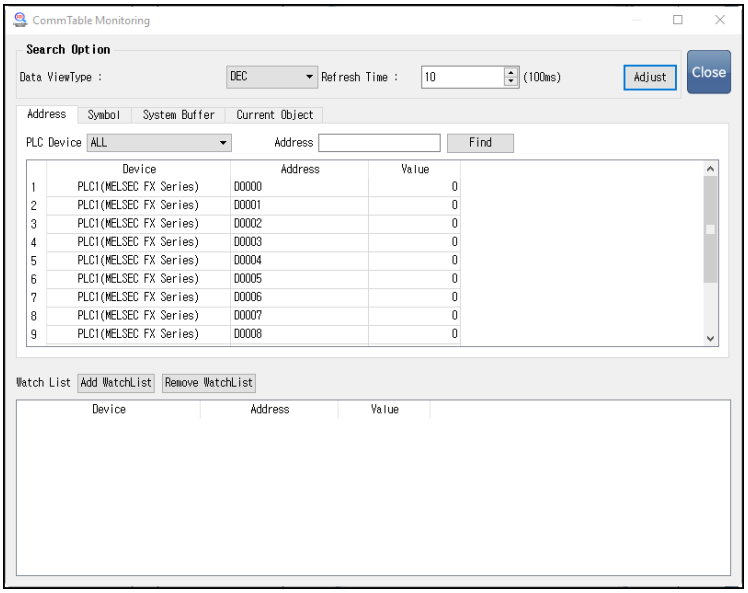


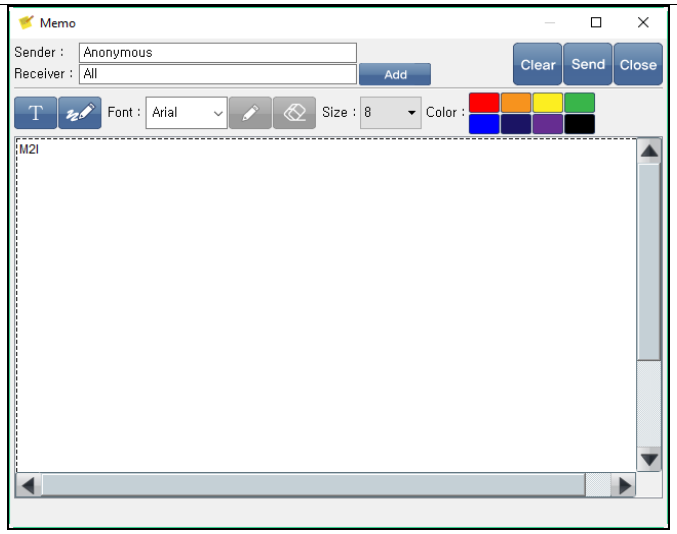
[Pic. Tool Menu]

No	Tool Menu	Description
1	Save ScreenShot	The full screen of the TOPView program will be captured and saved. You may setup the screenshot save path at [TOPView Option]. The file name will be [Date-Number.PNG]. After the file is saved, below message will be displayed. 

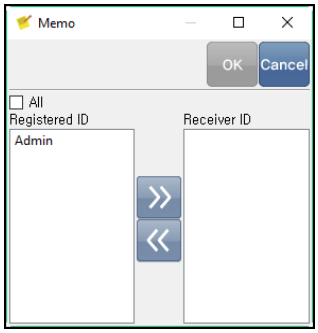
2	Open File Browser	Run the File Explorer screen.  [Pic. File Explorer]
3	Open Application List	Register frequently used application in the Application List and use the registered applications in [Tool]-[Open Application List] menu. Use this function to eliminate the hassle of minimizing closing TOPView program to open other applications when TOPView program is running in Full Screen mode. This is the same function as PC's [Shortcut].  ▶ Press [Setup] button to enable [Add/Delete] buttons to [Register/Delete Application]. Press [Add] button and [Open] dialog will be displayed. Select and add Execution File from the [Open] dialog. You may add all Execution Files (Images/Documents/Programs, etc.). Added Execution Files can be deleted by checking and pressing [Delete] button. ▶ Press [Setup] button again to disable [Add/Delete] button and you will be able to run applications. Click an application to run as shown in the below picture to run it immediately.

		
4	Log Search	Run the [View Log] screen where log data may be searched by [Log ID/Date]. It is the same function as [LogViewer] at the top of the TOP menu. For more detailed information, please see Chapter 4.2.5 [View Log Data]. 
5	Recipe Editor	Run [Recipe Editor] where you can check and edit recipes. You can edit Item Name and Recipe Data. It is the same function as [Recipe] at the top menu of TOP. Please see Chapter 4.3.8 [Recipe Editor on Top Menu in operation]. 
6	Screen Navigator	[Screen Navigator] allows the user to see all project screens at a glance and select and run a screen. It is the same function as the [Screen Navigator] at the top of the TOP menu.

		
7	System Monitor	Monitor [System State/Network Analysis/Information] with [System Monitor]. It is the same function as [System Monitor] at the top menu of TOP. Please see (17) Top Menu in Chapter 1.2.7 [Control Panel Icon – System]. 
8	Open Report Viewer	Run Report Viewer. Please see Chapter 19 [Report].
9	Open Comm Table	See the Comm. Table of the current execution screen. It is the same function as [CommTable Monitor] in the top menu of TOP. Addresses that are used in the currently operating screen are registered. You may monitor addresses and their values in real-time.  Setting [Data Type] will display [Value] in the set data type. [Refresh Time] updates addresses and values by a sert time interval. Select [Address] and click [Add Watch List] to register the address to Watch List. Addresses registered in this Watch List will always be available for monitoring even if the screen changes.
10	Create Memo	Create memo in TOPView program. Drafted memos can be seen in [Tool]-[View Memo]. Input the [Sender].

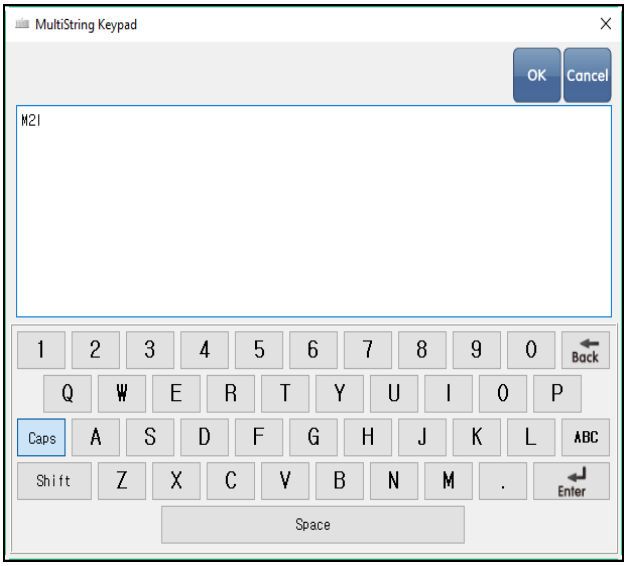


To set [Recipient], press [Add] button and set it at the bottom screen.

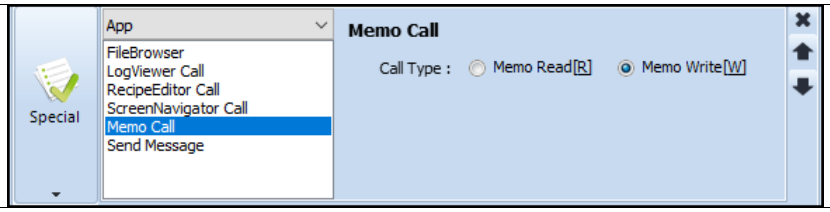
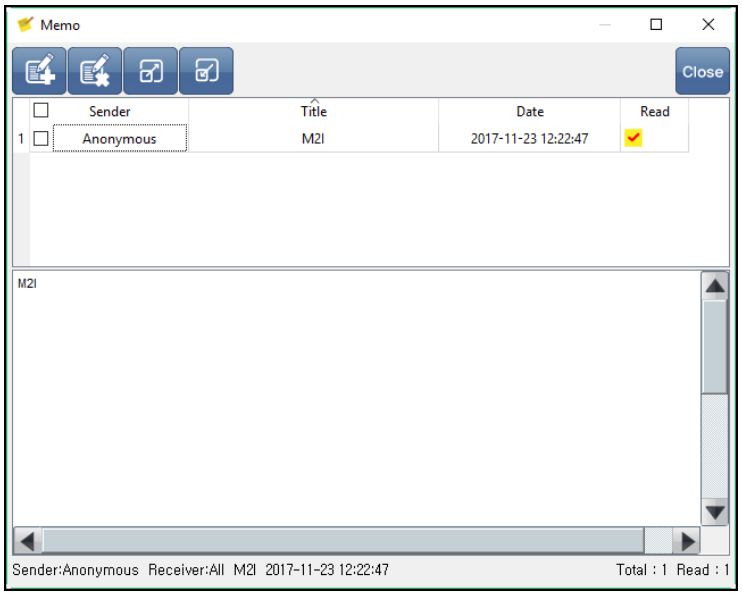
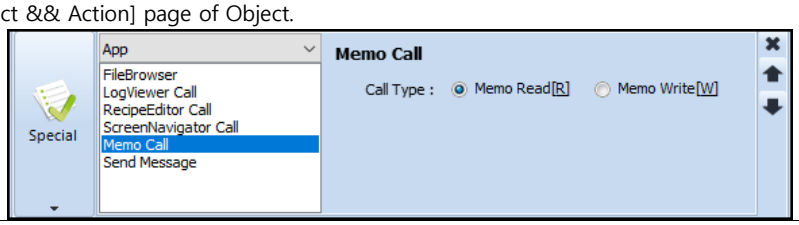


Check [All] to make it visible to all. Uncheck [All] and set ID configured in the Security Level at [Control Panel]-[Security] to allow only the users at the level to check the memo. Select ID from [Registered ID] and use arrows to set [Recipient ID] and press [OK] button.

Select [Text Mode/Paint Mode] to draft memos. With [Text Mode], clicking the main body text area will display the following [Text Keypad]. Type the content with the text keypad or with the keyboard. Setup [Font/Size/Color] of text.

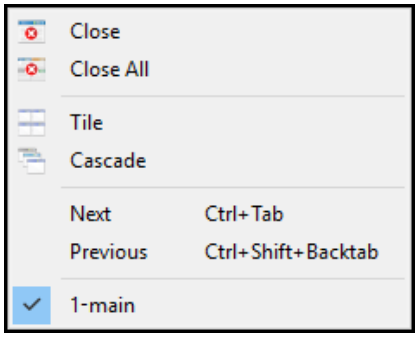


With [Paint Mode], you will be writing with a pen as if drawing a picture. Write with [Pen/Eraser]. You may set the size and color of [Pen/Eraser]. This function is the same action as the [Write Memo] setup in [Special]-[App]-[Memo Call] that can be found in [Action] in [Effect && Action] page of Object.

		
11	View Memo	Check memos drafted in [Tool]-[Create Memo]. Check [Sender/Title/Date/Read Status] of memos from the Memo List. Select memos to read from the list to display their content at the bottom. Reading memos will check the [Read] column.  This function is the same action as the [Read Memo] setup in [Special]-[App]-[Memo Call] that can be found in [Action] in [Effect && Action] page of Object. 

27.1.9 Window Menu

This is a window menu related to Execution Screen.



[Pic. Window Menu]

No	Window Menu	Description
1	Close	Close the selected (activated) Execution Screen.
2	Close All	Close all Execution Screens.
3	Tile	Sort Execution Screen in Arrange All style.
4	Cascade	Sort Execution Screen to cascade.

5	Next	Switch to the next screen.
6	Prev	Switch to previous screen.
7	Execution Screen List	Screens in operation will be displayed in a list. The checked screens are the currently activated screens.

27.1.10 **Help Menu**

Check the version and license information of TOPView.

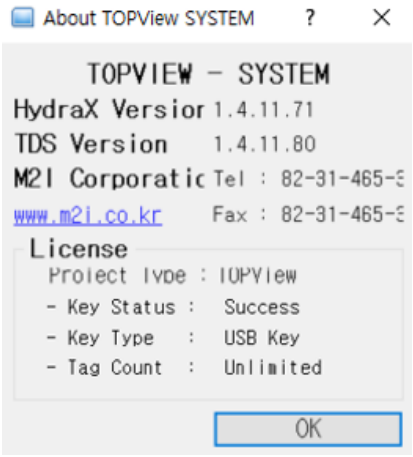


[Pic. Help Menu]

Run Information Menu and below screen will be displayed.

[HydraX Version] is a program version of TOPView .

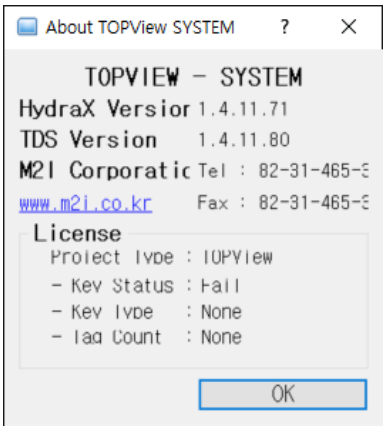
[License] shows the installation and information of TOPView license.



[Pic. Information Menu]

[Key State] shows whether or not the license key is installed (successful/failed). When it is successfully installed, it will be displayed as [Successful]. When it is not installed, it will be displayed as [Failed]. [Key Type] is the type of the installed key. [Tag Count] shows the max tag count that can be used by the program according to the type of the TOPView product.

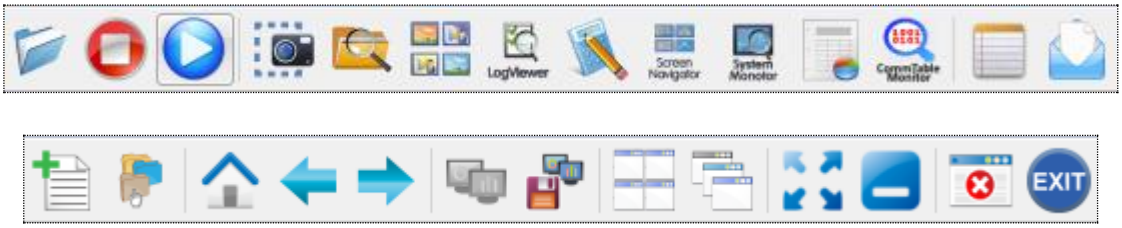
If the license key has not been installed, it will be displayed as follows. You may run TOPView program for up to 2 hours without entering the license key. It will be automatically closed after 2 hours.



[Pic. Information Menu]

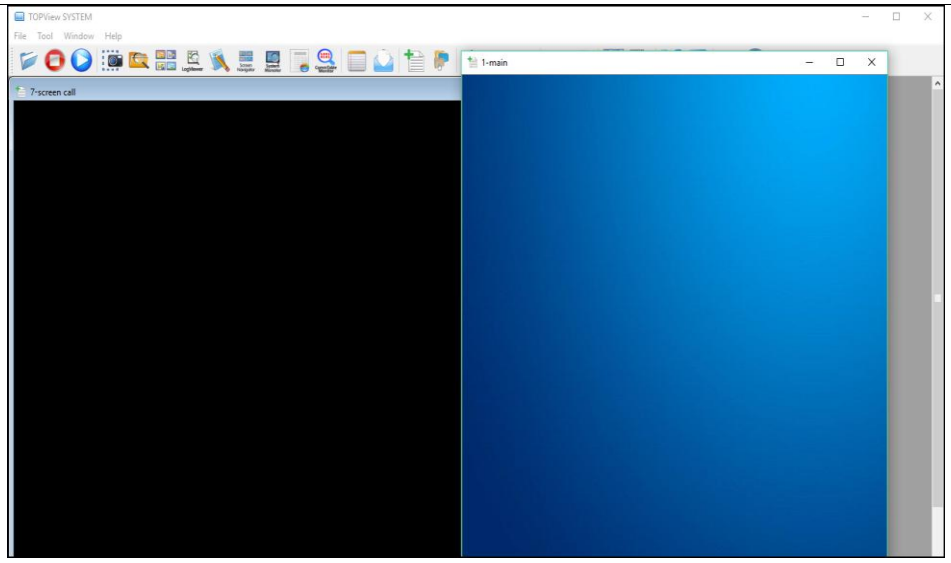
27.1.11 **ToolBar (Icon)**

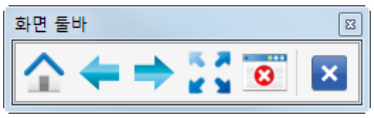
There are following ToolBar at the bottom of the screen menu. This function is included in most menus.

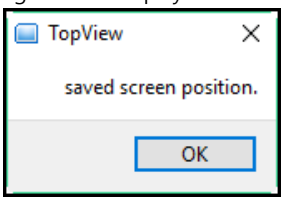


[Pic. ToolBar]

No	ToolBar	Description
1		This is Open Project menu.
2		This is Stop Project menu.
3		This is Run Project menu.
4		This is Save ScreenShot menu.
5		This is Open File Browser menu.
6		This is Open Application List menu.
7		This is Search Log menu.
8		This is Recipe Editor menu.
9		This is Screen Navigator menu.
10		This is System Monitor menu.
11		This is Open ReportViewer menu.
12		This is Open Comm Table Monitor menu.
13		This is Create Memo menu.
14		This is View Memo menu.
15		This is New Screen menu.
16		This is Open Screen menu.
17		This is Home Screen menu.
18		This is Previous Screen menu.
19		This is Next Screen menu.
20		This is the Muti Screen Mode. The menu will be activated when more than two execution screens are running. It exits the selected execution screen outside the TOPView program. It is used when more than two monitors are in use and when taking the execution screen outside of TOPView program to another monitor.

<table>
<tr><td></td><td></td><td> 

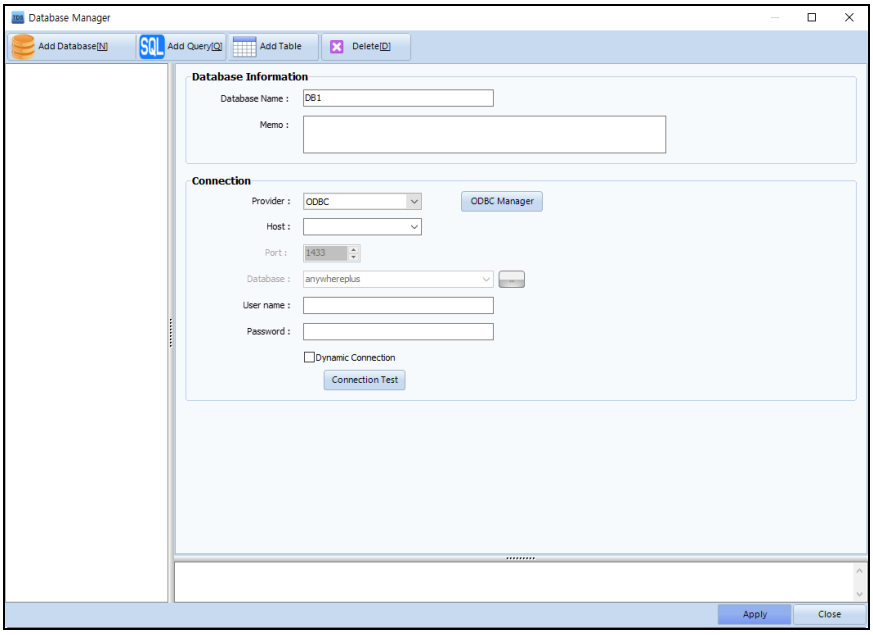
Right-click with mouse on the execution screen outside the TOPView program to display [Screen ToolBar].
 

[Pic. ToolBar on Multi Screen]</td></tr>
<tr><td>21</td><td>  </td><td>This is the Multi Save Screen Position save menu.
When using it as a multi-screen by running [Multi Screen Mode], it saves the current setting.
When save is completed, below message will be displayed.
 

When Multi Screen Setting is saved, TOPView program will be run with the saved multi-screen state when it starts.</td></tr>
<tr><td>22</td><td>  </td><td>This is Tile menu.</td></tr>
<tr><td>23</td><td>  </td><td>This is Cascade menu.</td></tr>
<tr><td>24</td><td>  </td><td>This is Full Screen menu.</td></tr>
<tr><td>25</td><td>  </td><td>This is Minimize Screen menu.</td></tr>
<tr><td>26</td><td>  </td><td>This is Close menu.</td></tr>
<tr><td>27</td><td> 
</td><td>This is Exit menu.</td></tr>
</table>

Database Connection

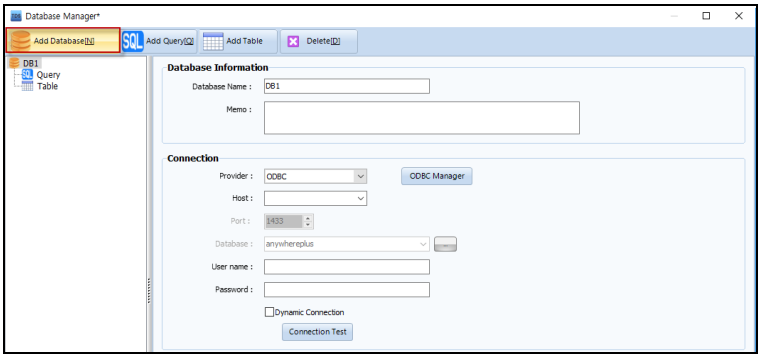
TOPView provides two database connection methods which are OLE DB and ODBC, and it can synchronize with various databases such as Oracle, MySQL, SQLLite, MSSQL, etc. To connect with a database, use [Database Manager] and configure connection with a DB Server on a network. Press [Project]>[Database] button to popup the Database Manager screen as shown in the below picture.



[Pic. Database Manager]

28.1.1 Add Database and Connection Setting

Press [Add Database] button in the menu of [Database Manager] screen and a Database Item with the name of 'DB1' will be created on the left side of the screen. When a Database Item is created, you may connect to the database through Connection Setting.



[Pic. Database Connection Setting]

Select the database type. Select a database e.g., Oracle, MySQL, SQLLite, ODBC, etc. to connect.
[Note] To see how to connect to Database using ODBC, please see Chapter 28.1.2 [Connection using ODBC].

- ODBC Manager: Run 'ODBC Original Data Manager'. For Database connections using ODBC,

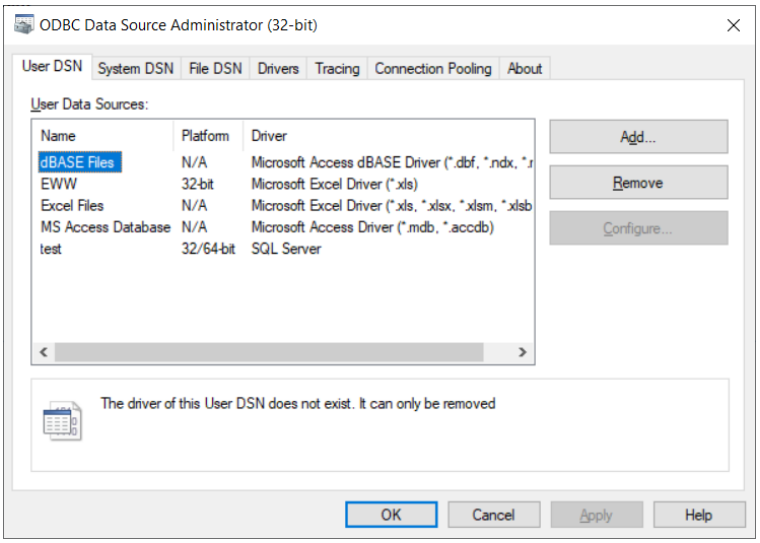
databases that are to be connected to 'ODBC Original Data Manager' must be registered for use.

- Host: Input the IP of the server (PC) where the database is installed/operating. However, for ODBC, you must select the Database Name that is registered to ODBC Manager.
- Database: Enter the Database service name. Multiple database services can be operated on one host, so DB service name must be assigned to differentiate these databases.
- User: Enter the database login ID.
- Password: Enter the database login password.
- Dynamic Connection: Maintain the connection to database and select whether to inquiry data or connect only when necessary. Do not check if data inquiry is performed at every seconds. Please check this option when infrequent data inquiry is required.
- Connection Test: Run a connection test to verify if database connection is available.

28.1.2 Connection using ODBC

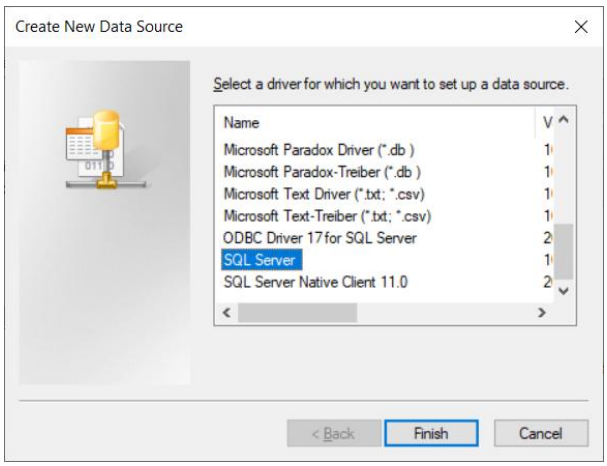
ODBC (open database connectivity) refers to open database access tool developed by Microsoft that can connect to database with ODBC drivers of various database vendors such as Oracle, MSSQL, MySQL, etc.

To use ODBC to connect, first, use ODBC Original Database Manager to setup database connection.



[Pic. ODBC Original Data Manager]

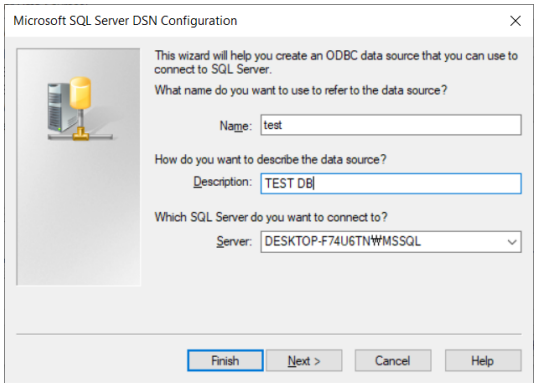
Click 'ODBC Manager' at [Pic. Database Manager] to run ODBC Original Data Manager, then click [Add] button on the right side of the screen.

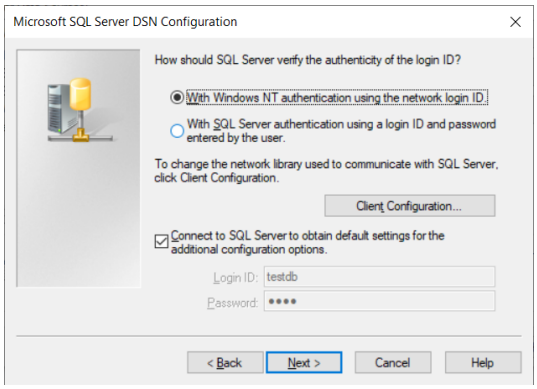


[Pic. Create New Original Data]

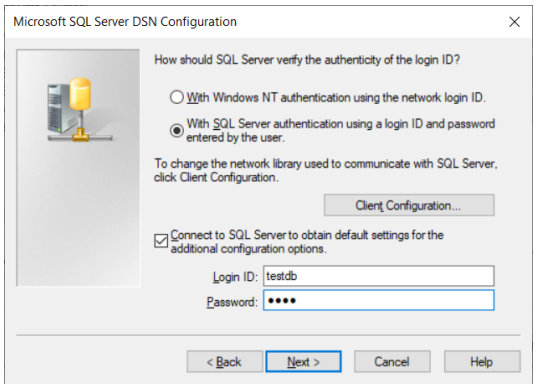
Select the desired database to connect with on [Create New Original Data] screen.
For example, if you wish to register and use a new MSSQL, select 'SQL Server,' input information as the following picture, then enter 'Next.'

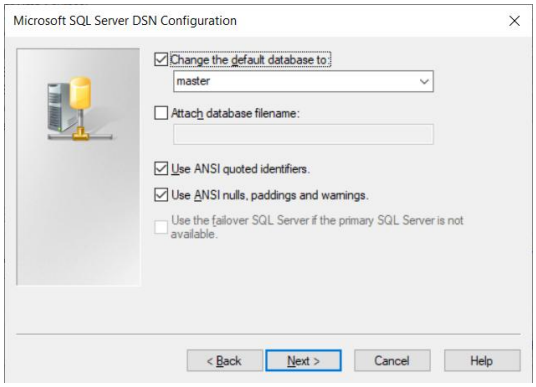
① Database Name and Server Definition

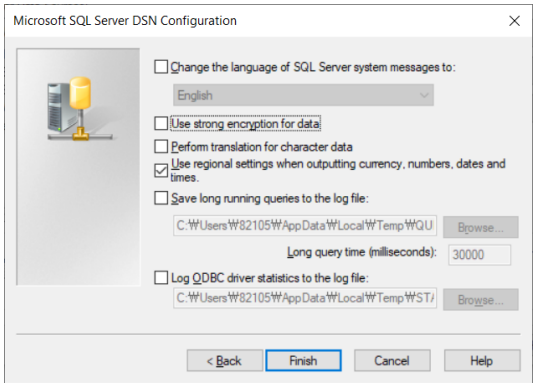




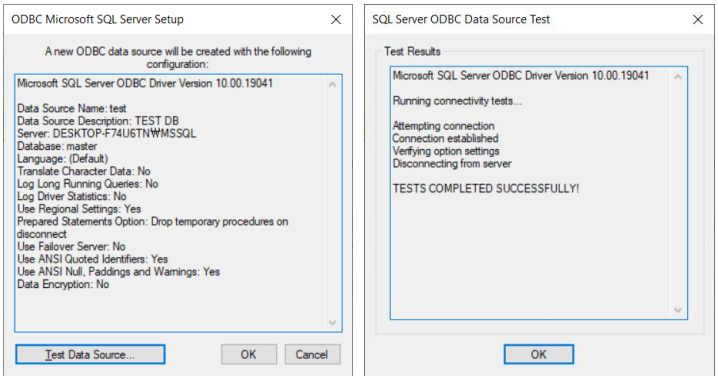
② ID and PW Setting



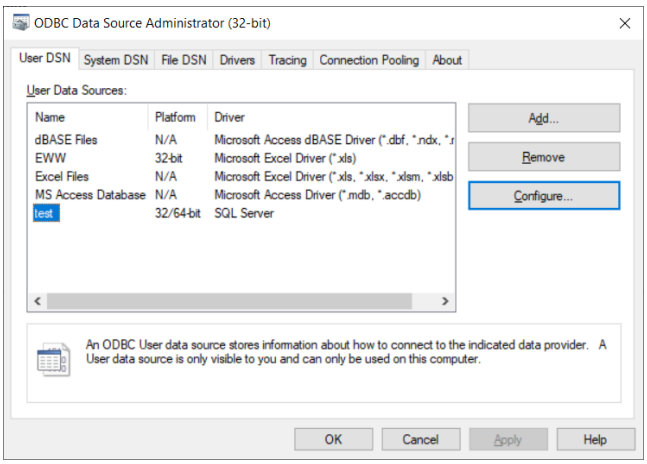




③ Database Connection Test and Completion



Input in order and press [OK] and database connection item called 'any' will be created as shown in the below picture.

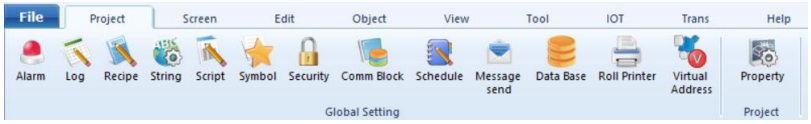


④ Database Manager

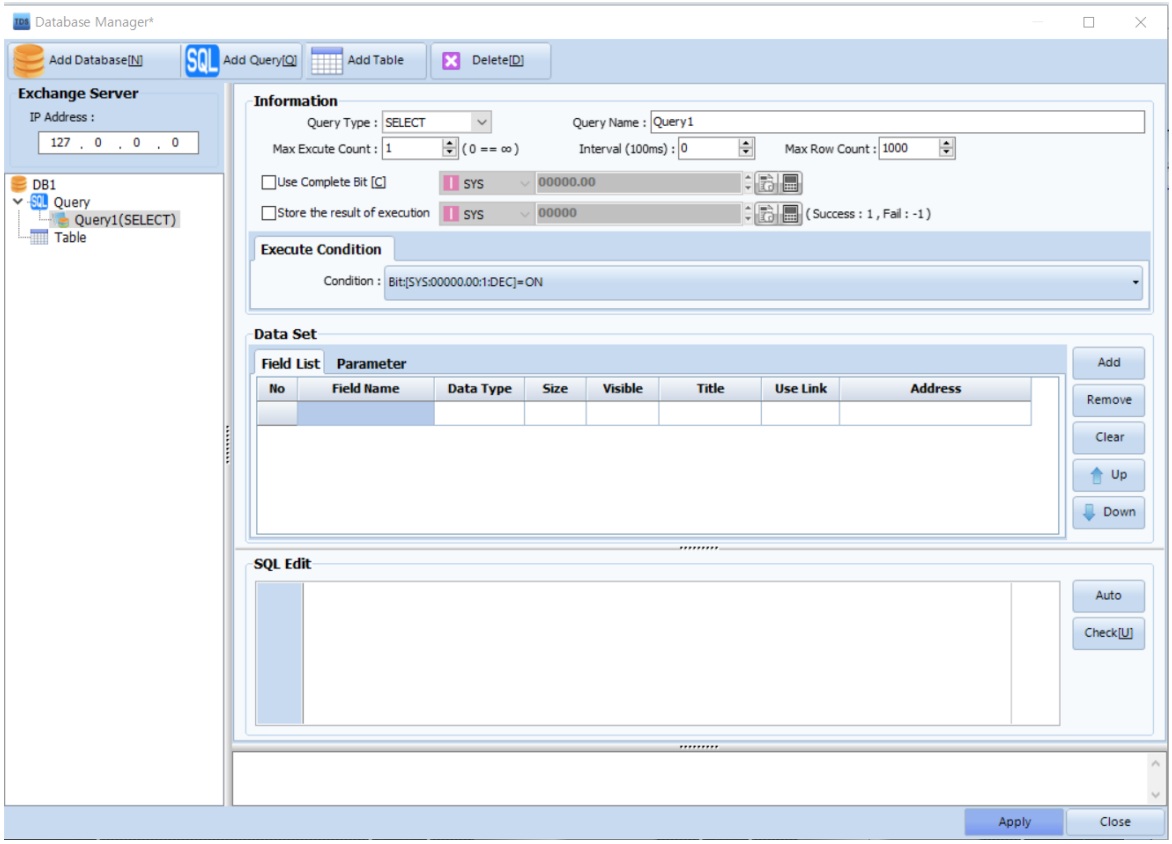
Run Query registered to Database Manager to print the inquired data in form and list formats.

Use Database Manager to register [Database]-[Query].

Run Query to inquiry data first, then run Create Report to create reports properly.



[Pic. Run Database Manager]



[Pic. Register Database Query]

Use reserved word called "$V(Address)" to input inquired query data to Excel.

Input database address as below format.

[Address Categorization]: [Database Name] . [Query Name] . [Field Name] . [ROW INDEX (Optional)]

[Address Categorization]: Fixed to "DB"

[Database Name]: The registered database name

[Query Name]: The query name registered to the database

[Field Name]: The field name registered to the query

[ROW INDEX]: When assigning a certain row, set it to 0 Base to leave it out (0: The first row, 1: The second row).

When left out, the first row is automatically assigned.

When entering single field data in form type, input them as below formats.

- "$V(DB:DB1.Query1.NO)": Record the "NO" field value of the first row inquired.
- "$V(DB:DB1.Query1.NO.0)": Record the "NO" field value of the first row inquired.
- "$V(DB:DB1.Query1.NAME.1)": Record the "NAME" field value of the second row inquired.

1			
2	First Row Data	No.	$V(DB:DB1.Query1.NO.0)
3		Name	$V(DB:DB1.Query1.NAME.0)
4		Age	$V(DB:DB1.Query1.AGE.0)
5		Telephone	$V(DB:DB1.Query1.TEL_NO.0)
6		Address	$V(DB:DB1.Query1.ADDRESS.0)
7			
8	Second Row Data	No.	$V(DB:DB1.Query1.NO.1)
9		Name	$V(DB:DB1.Query1.NAME.1)
10		Age	$V(DB:DB1.Query1.AGE.1)
11		Telephone	$V(DB:DB1.Query1.TEL_NO.1)
12		Address	$V(DB:DB1.Query1.ADDRESS.1)
13			

[Pic. Example of Excel Database Form Type]

When written in a list format, input the direction (down, right) for output data.

- "$V(DB:DB1.Query1.NO , DOWN)": Record the inquired NO field values by the inquired row counts downward in batch.

	A	B	C	D	E
1	No.	Name	Age	Telephone	Address
2	$V(DB:DB1.Query1.NO , DOWN)	$V(DB:DB1.Query1.NAME , DOWN)	$V(DB:DB1.Query1.AGE , DOWN)	$V(DB:DB1.Query1.TEL_NO , DOWN)	$V(DB:DB1.Query1.ADDRESS , DOWN)
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

[Pic. Example of Excel Database List Type]

Data Inquiry

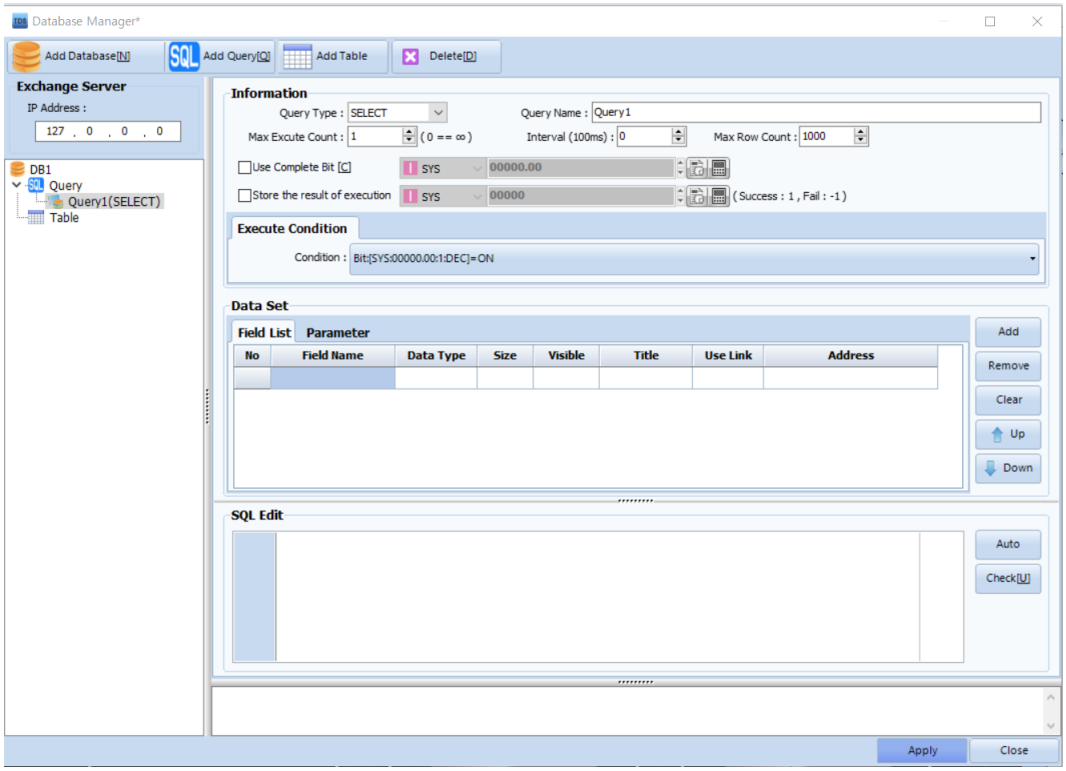
Normally, databases consist of more than one table and use standardized language called Query to inquire or insert/edit desired data from these tables. In this chapter, we will learn how to input and output data into/from databases.

Database Manager provides two data inquiry and insert/delete methods, largely. If you are not proficient in Query or require simple data inquiry/control, use 'Table', and if you need to perform complicated data inquiry/control using Query from more than two tables, please use 'Query.'

28.1.3 Data Input/Output using Table

If you do not know about Query, you may easily realize complicated actions such as inquiry/insertion/deletion/editing of data by using 'Table' function and 'Database Table Object' functions provided by [Database Manager].

Press [Add Table] button on the toolbar on top of the [Database Manager] screen and Add Table screen will pop up as the below picture.



[Pic. Add Table Screen]

(1) Information

Designate the table to be displayed on Database Table Object and configure work execution conditions for Inquiry/Insert/Delete/Edit, etc. If Database connection is available, the table list will automatically appear on the combo box of the table name. Pressing [Make DataSet] button will automatically display data field list that is included in the table at the below 'Data Set' section. If data is not connected, you may manually input the table name.

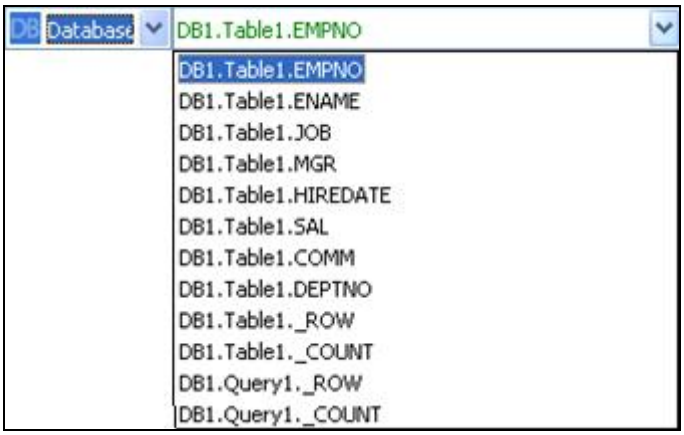
- Use Complete Bit: Regardless of successful or failed Query Execution Completion such as Inquiry/Insert/Delete/Edit, etc., it turns the set Bit Address ON (※ Completed Bit that has been turned ON once will not be automatically turned OFF.).

- Store the result of execution: Record whether or not Query executions such as Inquiry/Insert/Delete/Edit, etc. have been properly run in 1 and -1 values. When Query has been successfully completed, it records 1, and record -1 when failed due to errors.

(2) Inquiry/Insert/Delete/Edit

Even if you do not use 'Database Table' Object, you may perform Inquiry/Insert/Delete/Edit works simply using String/Numeric Keypad objects.

Place String of Numeric Keypad objects on screen and select DataBase Category from Address Input section in Dialog and field information of table will be displayed as shown in the below picture.



[Pic. Database Table Field Info]

For example, if a table named 'Table1' is registered to the database of 'DB1,' register the query condition and run and the query result will be returned from the Database server. Although it will not appear on screen, it will be created in a table format as [Pic. Virtual Data Table] in the memory.

No	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	1100	Hong Gil-dong	Emp	Y	2011.02.03	120000		10
2	1200	Choi Cheol-su	Emp	N	2012.03.02	134500		10
3	1300	Goh Young-su	Emp	N	2013.05.11	145000		20
4	1400	Cho Hyun-bae	Emp	N	2014.01.01	154000		10
5	1500	Roh Tae-young	Emp	Y	2009.12.23	290000		30
6	1600	Kim Pan-su	Emp	N	2014.05.20	300000		20
7	1700	Kim Young-ho	Emp	N	2008.08.05	451000		20
8	1800	Lee Young-ae	Emp	N	2009.09.09	521000		10
9	1900	Kang Il-ho	Emp	N	2011.11.12	854000		30
10	2000	Kim In-sik	Emp	Y	2011.06.30	452000		10

[Pic. Virtual Data Table]

The count of Data Tables created in the memory from Database server is recorded in 'DB1.Table1._COUNT'. For example, if 10 sets of data have been transferred as a result of a query, 10 will

be recorded at 'DB1.Table1._COUNT'.

No	Address	Description
1	DBName.TableName._COUNT (DB1.Table1._COUNT)	The address in which Row Count of data received from Database is recorded.
2	DBName.TableName._ROW (DB1.Table1._ROW)	The address which assigns the desired Row Number for Inquiry/Edit/Delete from Data Tables.

If you wish to display no. 6 data of Kim Pan-su from [Pic. Virtual Data Table], use Text/Numeric Object and register fields such as 'DB1.Table1.EMPNO', 'DB1.Table1.ENAME', 'DB1.Table1.JOB' to the address section and input desired number to 'DB1.Table1._ROW'.

- Query Condition: Setup the table data query condition defined in the table of Database Manager.
- Insert Condition: Setup the condition that adds data recorded in 'DB1.Table1.EMPNO', 'DB1.Table1.ENAME', 'DB1. Table1.JOB' to database.
- Delete Condition: Set the condition that deletes data (row) that correspond to the number defined by DBName.TableName._ROW(ex:DB1.Table1._ROW) from the table (Start Number of the table rows is 0.).
- Edit Condition: Set the condition that updates data (row) that correspond to the number defined by DBName.TableName._ROW(ex:DB1.Table1._ROW) to data defined in 'DB1.Table1.EMPNO', 'DB1.Table1.ENAME', 'DB1. Table1.JOB'.

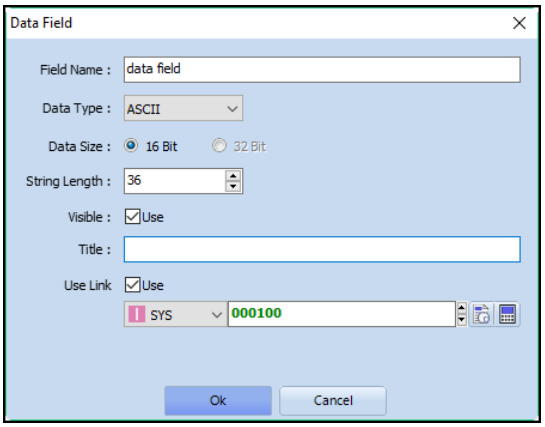
(3) Data Set

Define fields to be displayed to 'Database Table' Object and define parameters as necessary.

▶ Field List

If database is available for connection, use [Auto Field Register] button in SQL Edit section to automatically register data fields. If database connection is not available, you must register data fields manually.

When registering data fields manually, press [Add] button on the left and data field registration screen will appear as shown in the below picture.



- Field Name: Input the field name defined in Database Table.
- Data Type: Designate the data type.
- Data Size: For numeric types (DEC, Float, etc.), designate the data size.
- String Length: When the data type is ASCII, designate the string length.

- Show: Set to show DataBase Table Objects.
- Title: Set the column title to display on DataBase Table Object.
- Use Link: Designate the address to sync with touch memory.

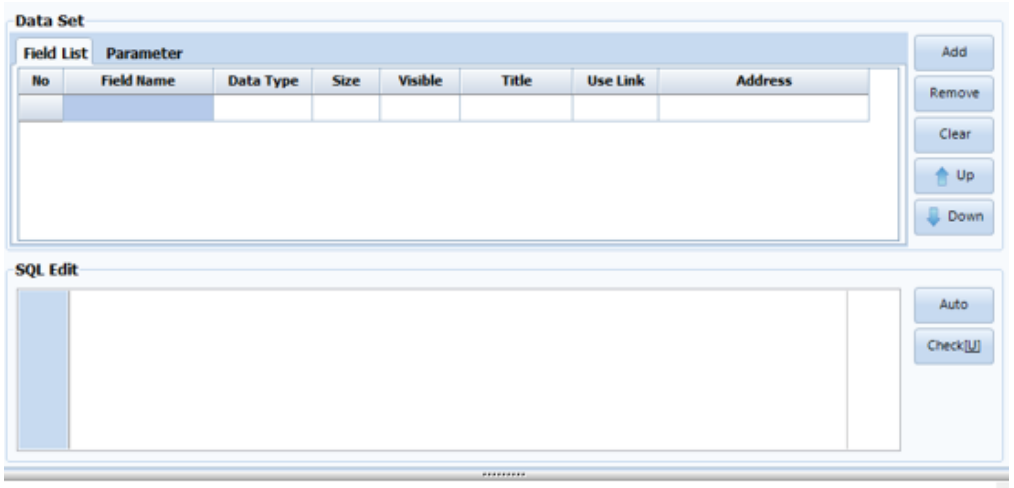
[Note] If there is more than one set of data that meet the condition from data in the table, to assign data to the linked address, the desired Row number must be assigned to 'DB1.Table1._ROW'.

▶ **Parameter**

When a new table is registered under the name of EMP, SELECT * FROM EMP' query syntax will be automatically registered to the SQL Edit section at the bottom of the Database Manager screen. This query means that it will SELECT all data in a table called 'EMP'. However, generally, it is rare to SELECT all data sets in a table. Normally, queries are written in the following syntax.

```
SELECT * FROM EMP
WHERE SAL > 1000;
```

It means that inquire data sets that have SAL field values larger than 1000 from EMP Table's data sets. 'SAL > 100' part plays a role of filter in this Query. Depending on the situation, you may need to inquiry data sets that are larger than 500 or 2000. In this case, register the '1000' part as a parameter and map it as SYSTEM buffer of PLC address to perform more detailed data inquiries.



[Pic. Example of Using Parameter]

As shown in [Pic. Example of Using Parameter], register a parameter called 'MyValue' and map it in 'SYS:00100' and register ':MyValue' in the Query to easily convert the value of ':MyValue' through 'SYS:00100'.

(4) Edit SQL

When adding tables, you may use auto-created Queries, however, if you require more detailed data management, you may write desired syntax in SQL Edit screen.

For example, if you wish to add more filter conditions other than the filter that uses 'SAL > 1000' syntax or sort data of the query result by name, write as follows.

```
SELECT * FROM EMP
 WHERE SAL > 1000
```

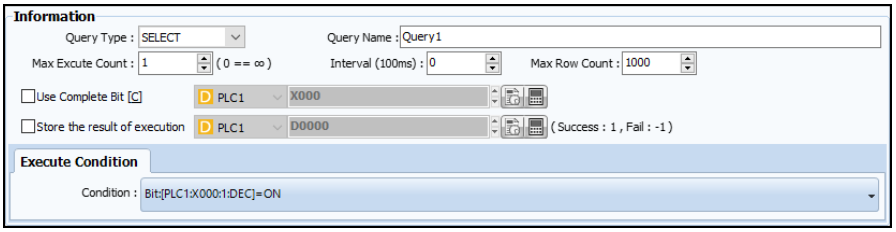
```
    AND HIREDATE > '2016-01-01'
ORDER BY ENAME;
```

- Auto Field Registration: Automatically register the field lists that are included in the selected tables to 'Data Set' and 'Field List' sections. However, the computer on which you are performing editing must be available for connection to database server.
- Check: Run a check to see whether or not the Query written by the user is valid. However, the computer on which you are performing editing must be available for connection to database server.

※ All commands or use of Query cannot be described in full detailed due to its extensive range. Therefore, if you wish to learn more wide range of its uses, please see 'Standard SQL' texts or use Internet search engines.

28.1.4 Data Input/Output Using Query

If the data input/out method using table introduced in 28.2.1 is for users who are unfamiliar with Query, data input/out using Query is for users who are proficient in using Query and offers more options for detailed and diverse data input/output.

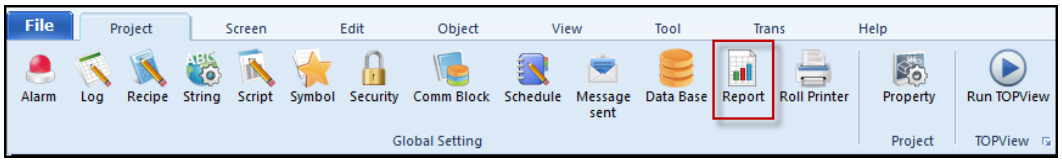


- Query Type: Select the desired task from SELECT, UPDATE, INSERT, and DELETE.
- Query Name: Define the name of Query. Duplicate Query Name cannot be used.
- Max Execute Count: Set the max count to execute when the execution condition at the bottom of the screen is met.
- Execute Interval: Set the execution interval when the Max Execute Count is infinite (0) or larger than 2. The Min Execute Interval is 100 ms.
- Max Row Count: Set the max count of returned data sets when SELECT query has been run.
- Use Complete Bit: Regardless of successful or failed Query Execution Completion, it turns the set Bit Address ON (※ Completed Bit that has been turned ON once will not be automatically turned OFF.).
- Store the result of execution: Record whether or not Query executions such as Inquiry/Insert/Delete/Edit, etc. have been properly run in 1 and -1 values. When Query has been successfully completed, it records 1, and record -1 when failed due to errors.

※ For detailed description of Data Set or SQL Edit, please see Chapter 28.2.1 [Data Input/Output Using Table].

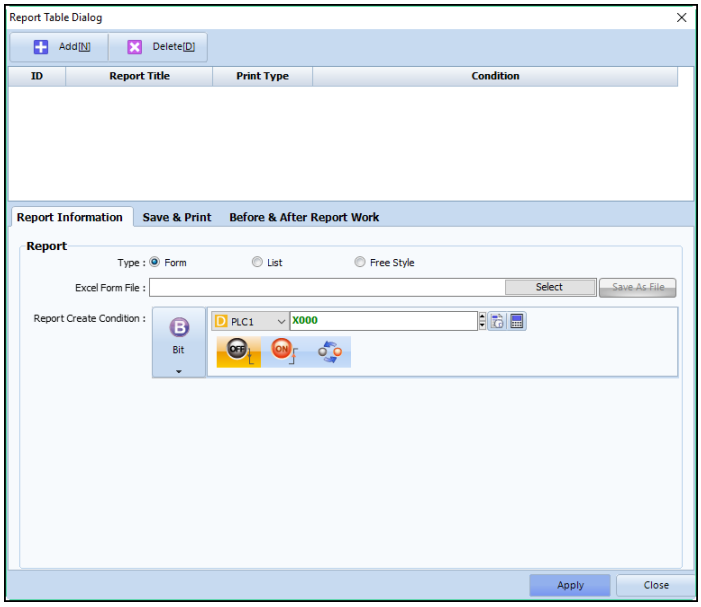
CHAPTER 29 - Report

TOPView (SCADA) can easily output Excel file type reports. You can enter data in an Excel file directly to compose desired formats or input setting or current values with reserve words at desired locations to easily save/output reports.



[Pic. Run Report]

Running reports will display following setup box.



[Pic. Report Dialog]

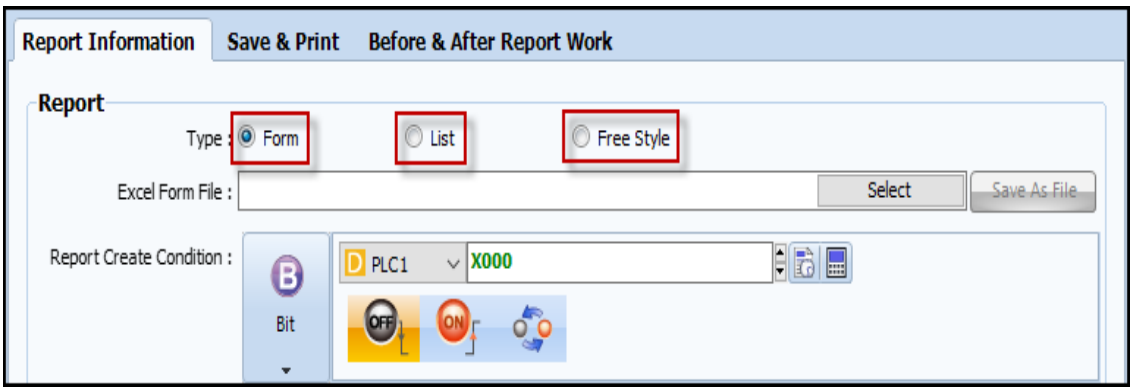
Add multiple reports of the Forms/Lists that will be describe below to use.
That is, you may save/print more than 2 prints or save multiple accumulated lists as Excel files.

Report Information

You may select report types and setup Report Create Condition at Report Information Setting.

29.1.1 Report Type

There are 3 types of reports.



[Pic. Report Types]

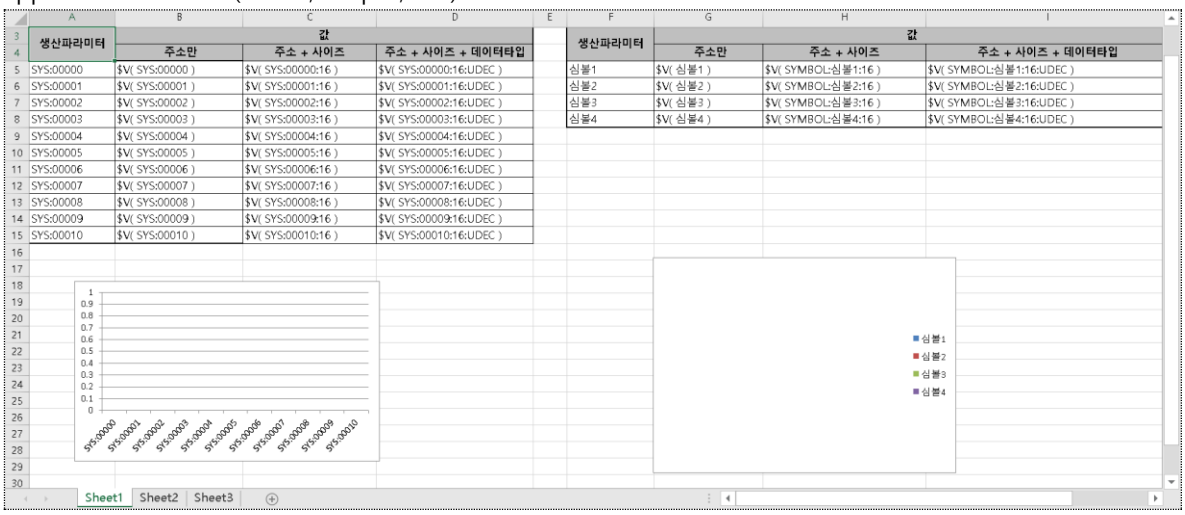
No	Report Type	Description
1	Form	This is the report that records changing data such as production volume, fault count, production parameter, etc. at the desired point of time (Bit trigger, etc.) after entering a general report format in MS Excel.
2	List	This report usually inputs titles and columns in Excel first then record accumulating data over time downward or to the right. It is a similar function to Log Record.
3	FreeStyle	This function allows the user to freely enter data or text to each cell of Excel file. Use Script Function to record data to the desired moment and position dynamically.

29.1.2 **Excel Form File**

Select an Excel file that has a report form. That is, select a pre-saved MS Excel file. It is very simple and intuitive to draft excel files.

(1) Form types

Input the desired shape and text to Excel manually as shown in the below picture. All texts except for the reserved word "$V(Address)" will be reflected in the report result (excel file) directly. You may use all applications of Excel (Macro, Graphs, etc.).



[Pic. Excel Form File]

- System Buffer

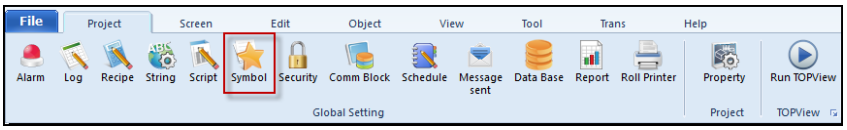
The reserved word that records System Buffer values to the cells of Excel is "$V(SYS:System Buffer Address)". Therefore, if you enter "$V(SYS:00000)" to [B,5] cell of Excel, when a report is created, System Buffer address number 0 value is saved. If data is not normal decimal number data, it may use extended reserved word.

- "$V(SYS:00000:32:FLOAT)": Process and save the values of System Buffer Address 0 and 1 as 32bit float.
- "$V(SYS:00000:7:ASCII)": Process and save the values of System Buffer Address 0-3 as ASCII 7 String.
- "$V(SYS:00000:16:HEX)": Save System Buffer Address 0 value in 16bit Hexadecimal number system.
- "$V(SYS:00000:16:HEX)": Save System Buffer Address 0 value in 16bit sign decimal number system.
- "$V(SYS:00000:16:UDEC)": Save System Buffer Address 0 value in 16bit non-sign decimal number system.
- "$V(SYS:00000)": Save System Buffer Address 0 value in 16Bit non-sign decimal number system.

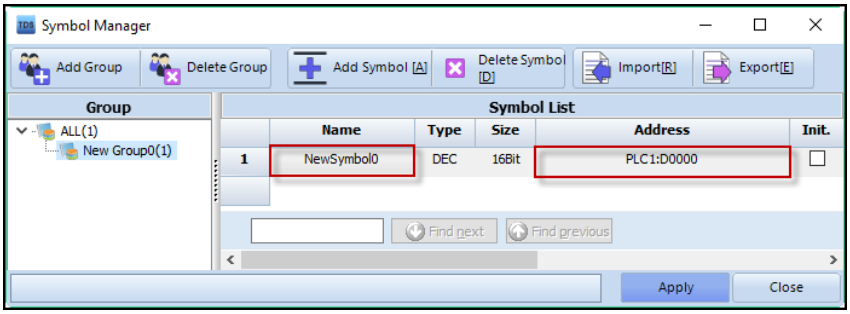
Therefore, when data size and type are omitted, it will be considered as 16Bit non-sign decimal number.

- PLC Address

The reserved word for recording PLC value to Excel cells is "$V(SYMBOL:Symbol Name)".
Therefore, when entering "$V(SYMBOL:Symbol Name)" to [H,5] cell in Excel, [Symbol1] address value is saved when a report is created. For example, in the below example, [Symbol1] refers to "D0008" that has been pre-registered in Symbol Manager.



[Pic. Run Symbol Manager]



[Pic. Symbol Manager]

If data is not general decimal number data, similarly, extended reserved words may be used.

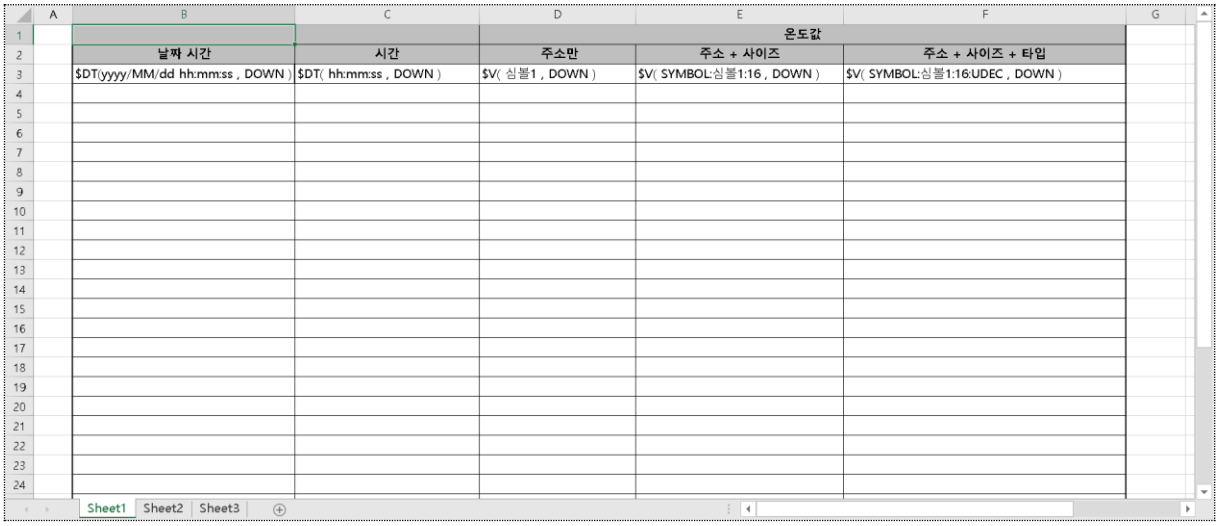
- "$V(SYSMBOL:Symbol1:32:FLOAT)": If the address registered to Symbol1 is float, process it as float and save.
- "$V(SYSMBOL:Symbol1:7:ASCII)": If the address registered to Symbol1 is ASCII 7 Text, save it as string.
- "$V(SYSMBOL:Symbol1:16:HEX)": Save the value of the address registered to Symbol1 in 16Bit Hexadecimal number.
- "$V(SYSMBOL:Symbol1:16:DEC)": Save the value of the address registered to Symbol1 in 16Bit sign decimal number.
- "$V(SYSMBOL:Symbol1:16:UDEC)": Save the value of the address registered to Symbol1 in 16Bit non-sign decimal number.
- "$V(SYSMBOL:Symbol1)": Save the value of the address registered to Symbol1 in 16Bit non-sign decimal number.

Therefore, when data size and type are omitted, it will be considered as 16Bit non-sign decimal number.

When -"$V(Symbol1)": "SYMBOL", data size, and type are omitted, it will be considered as 16Bit non-sign decimal number.

(2) List Type

The basics are the same as the form type. Input the desired shape and text to Excel manually as shown in the below picture. All texts except for the reserved words "$V(Address, DOWN/RIGHT)" and "$DT(Date or Time, DOWN/RIGHT)" will be reflected in the report result (excel file) directly. You may use all applications of Excel (Macro, Graphs, etc.).



	A	B	C	D	E	F	G
1				온도값			
2		날짜 시간	시간	주소만	주소 + 사이즈	주소 + 사이즈 + 타입	
3		$DT(yyyy/MM/dd hh:mm:ss , DOWN)	$DT(hh:mm:ss , DOWN)	$V(심볼1 , DOWN)	$V(SYMBOL:심볼1:16 , DOWN)	$V(SYMBOL:심볼1:16:UDEC , DOWN)	
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

Sheet1 Sheet2 Sheet3

[Pic. Excel List File]

Date and time can be printed with the following reserved words. It will be composed in the form of "$DT(Date/Time Format, Direction)".

- "$DT(yyyy/MM/dd hh:mm:ss, DOWN)": When [Create Data Condition] is met, output [Year/Month/Day Hour:Minute:Second] downward by changing the cells.
- "$DT(hh:mm:ss, DOWN)": When [Create Data Condition] is met, output [Hour:Minute:Second] downward by moving through the cells.
- "$DT(yyyy/MM/dd, RIGHT)": When [Create Data Condition] is met, output [Year/Month/Day] to the right by moving through the cells.

Data Value follows the reserved word rules described above (form type). However, from the list type, only direction (Down or Right) will be added.

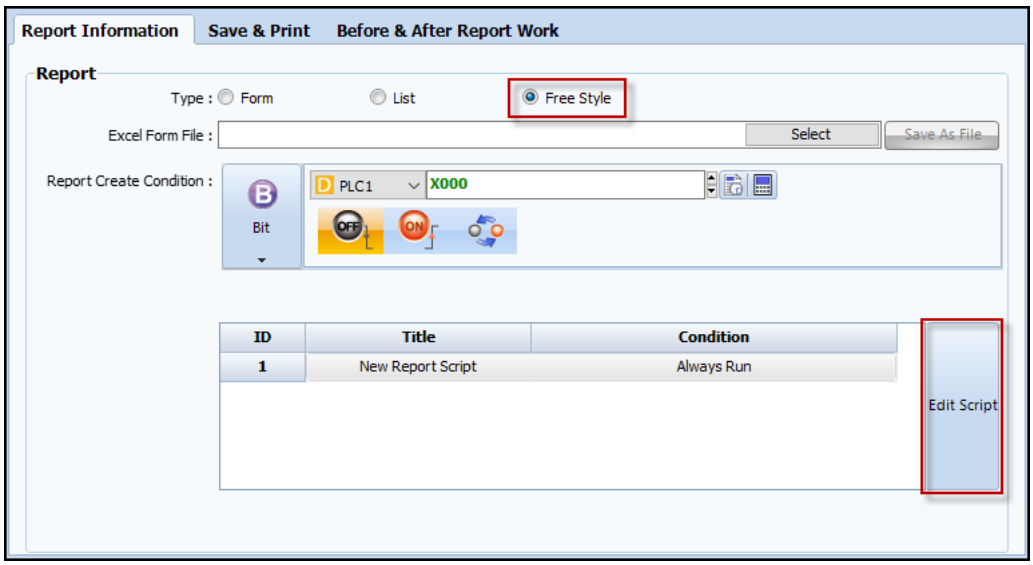
-"$V(SYS:00000:16:HEX, DOWN)": Save System Buffer Address 0 value in 16bit Hexadecimal number system. Every time [Create Data Condition] is met, move down the cell and record.

-"$V(SYSMBOL:Symbol1, RIGHT)": Save the value of the address registered to Symbol1 in 16Bit non-sign decimal number. Every time [Create Data Condition] is met, move to the right cell and record.

When [Create Report Condition] is met, data accumulated and saved every time [Create Data Condition] is met will be made into list and saved as file.

(3) Free Style

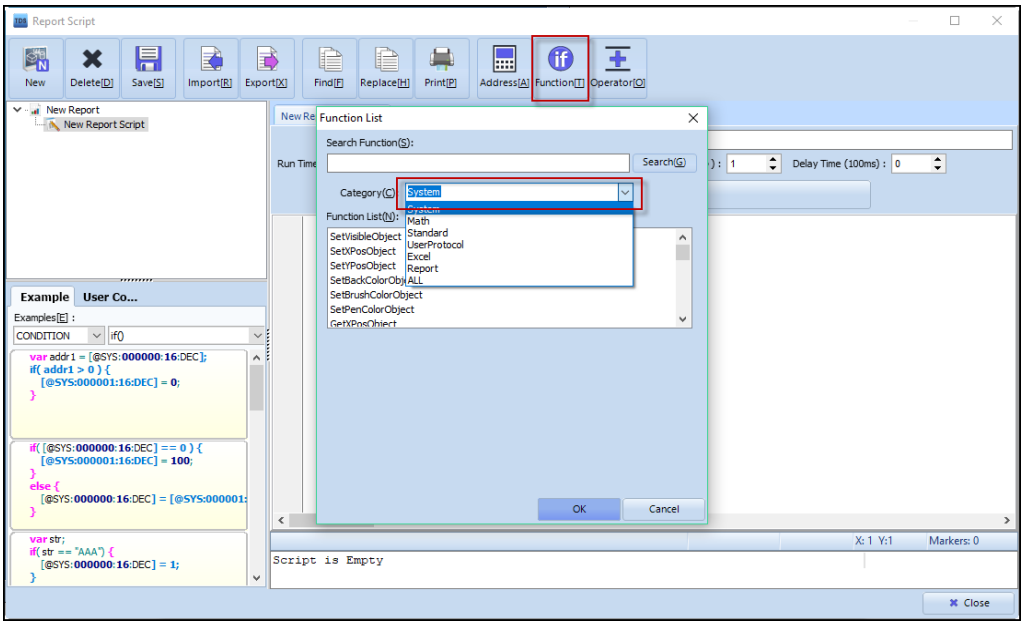
Manually input desired shapes and texts into an Excel file. Unlike Form/List Reports, it does not provide any separate reserved words. Use scripts only to input desired data to certain positions. You may use all applications (Macro, Graphs, etc.) of Excel.



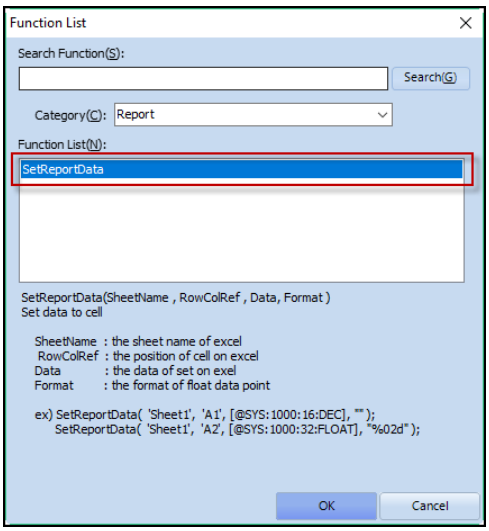
[Pic. Register Free Style Script]

Press [Edit Script] button and the free style report script registration window will be displayed.

Clicking [Function] in the popup [Report Script] window will display Function List. Select [Select Range] as the report to register a function called "SetReportData".



[Pic. Register Free Style Script]



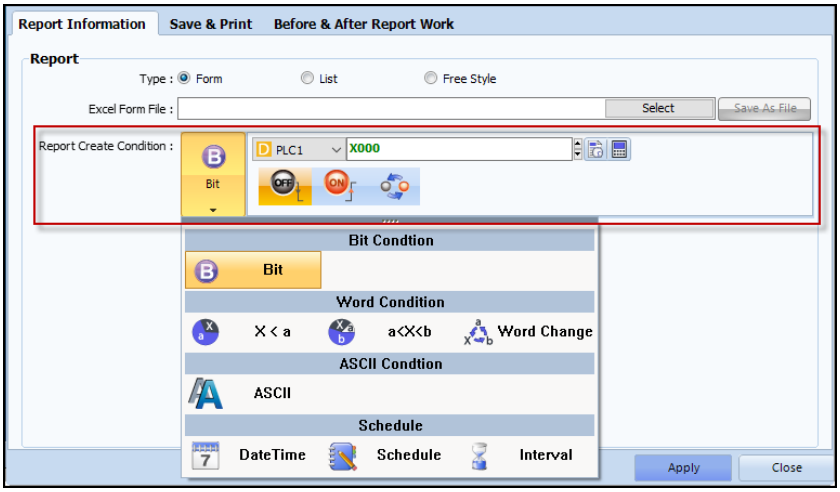
[Pic. Registration of SetReportData Function]

E.g.) SetReportData('Sheet1', 'A1', [@SYS:00000:16:DEC], "");

Use syntax in scrips and System Buffer address number 0 value will be processed in 16Bit sign to the [A,1] cell position in the [Sheet1] of the excel file. Data will be input according to the script execution condition and the point of time when the actual excel file is created will follow the [Report Create Condition] as Form/List report.

29.1.3 Report Create Condition

Report Create Condition refers to the condition that saves (prints) Excel files, the results of reports, to designated location. It can be setup in the same way as the previously introduced conditions.

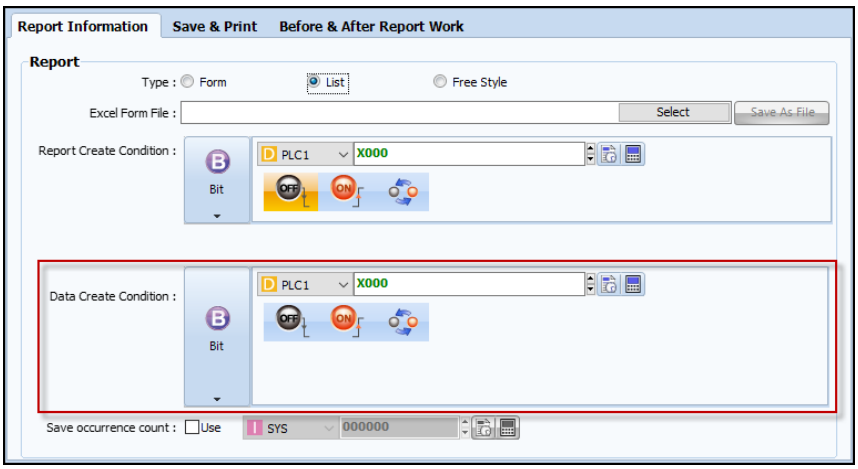


[Pic. Report Create Condition]

29.1.4 Data Create Condition

Set only when the report type is [List]. As List Reports are reports that generally record data accumulating over time downward or to the right, it needs a point of time (similar to log condition) of the accumulation.

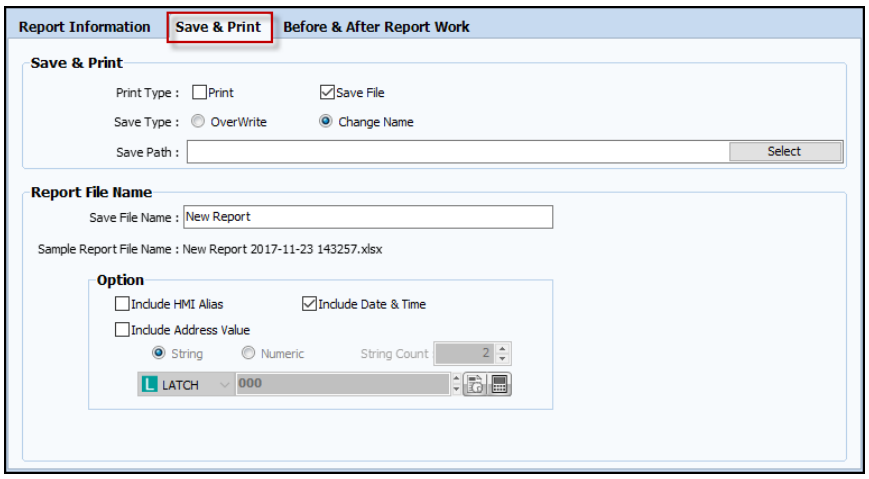
[Data Create Condition] refers to the condition where data is accumulated in the list.



[Pic. Data Create Condition]

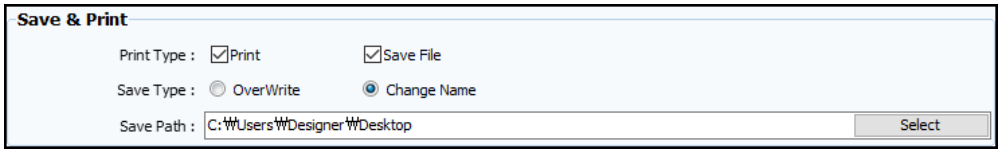
Save && Print

Setup the file save path and save name rules, etc. at Save && Print.



[Pic. Save && Print]

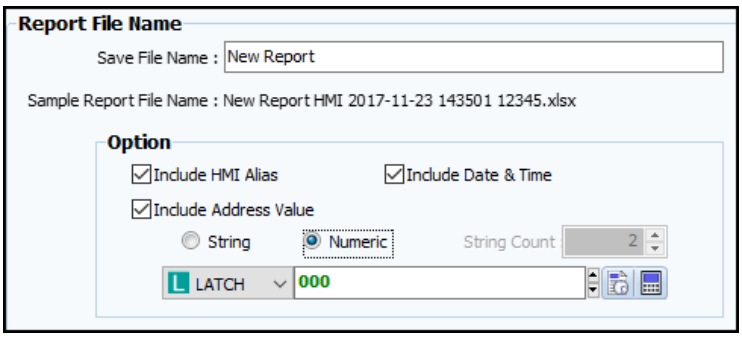
29.1.5 Print and Save



[Pic. Print and Save]

No	Items	Description
1	Print Type	Usually uses [Save File]. Setup [Print] at the same time to save and print all at once.
2	Save Type	Set to [OverWrite] to replace files with the same name when files are created when file creation condition is met. Set to [Change Name] to create new files with "_1", etc. added at the end of the file name.
3	Save Path	Set the path to save reports.

29.1.6 Report File Name

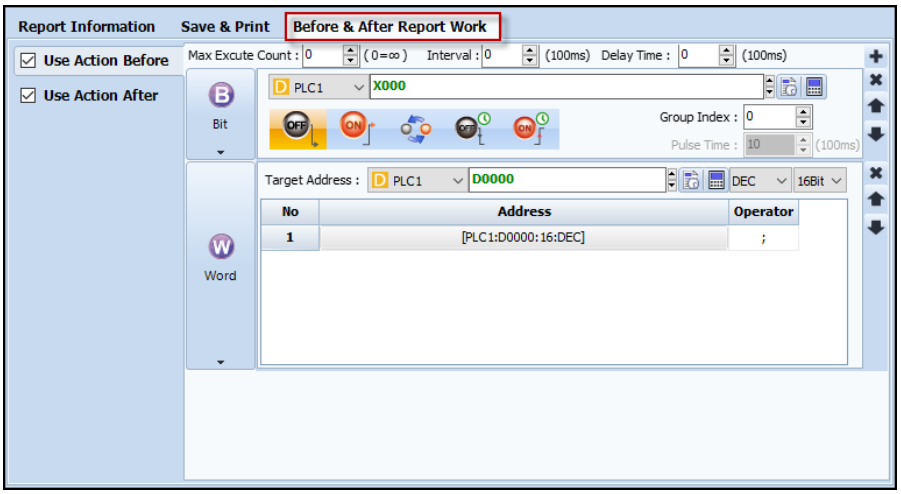


[Pic. Report File Name]

No	Items	Description
1	Save File Name	Enter the file name. Set other options to continue at the back of the basic save file name.
2	Sample Report File Name	Show samples of the file names that will be saved. For "New Report HMI 2017-09-04 004838 12345.xlsx", "New Report": Save file name "HMI": HMI Alias Name (Optional) "2017-09-04": Save Date (Optional) "000438": Save Time (Hour/Minute/Second) (Optional) "12345": Describes the PLC value or internal buffer value at the moment of the saving (Optional)
3	Include HMI Alias	Select Include HMI Alias to include the alias setup in TOP.
4	Include Date & Time	Select Include Date & Time to include the date and time of the moment of save to the file name.
5	Include Address Value	Select Include Address Value to express additional information by adding numbers or texts at the end of file names. It is usually used to express line names, equipment names, or production type.

Before && After Report Work

Set actions before or after Report Work. Turn certain Bit on before file is created or set word value. Also, after a file is created, initialize the value or use it as completion information.



[Pic. Before & After Report Work]

For Action, please see Chapter 7.9 [Action Page Setting].